LAKE (Colonial)

57–6–1 Colonial Applies to Model C1 Aircraft Serial Numbers 2 Through 10 Inclusive, and Serial Number 13.

Compliance required by May 1, 1957.

To prevent unwanted extension of the landing gear, a more positive lock must be installed for the landing gear selector valve lever in accordance with Colonial Service Bulletin No. 1 dated January 25, 1957.

57–13–1 Colonial Applies to All Model C–1 Aircraft.

Compliance required within next 10 hours of operation or July 15, 1957, whichever occurs first unless already accomplished, and every 100 hours' operation thereafter.

Inspect with 10-power glass the engine pylon side strut attaching fittings (P/N 3208–10) for cracks in the weld areas. (Inspection may be readily accomplished after removal of the fairing cuff, P/N 5400–33.) Fittings with cracks originating across the edge may be salvaged for use if the crack can be removed by grinding to a maximum depth of $\frac{1}{16}$ inch measured in from the edge. Fittings with cracks located in areas other than the edge or in excess of the salvage limits must be replaced.

(Colonial Service Bulletin No. 4 revision 1 dated May 22, 1957, covers this same subject.)

59–12–5 Colonial Applies to Models C–1 and C–2 Aircraft Serial Numbers 1 Through 132.

Compliance required as indicated.

Due to a recent incident where the plastic lock for the control surface hinge pin cracked, thus making it possible for the hinge pin to work out, the following inspection and replacement of all plastic locks is required. Prior to next flight inspect the control surface hinge pin locks.

(1) If made of metal, no further action necessary.

(2) If made of plastic material inspect for cracks. Parts found cracked must be replaced with locks fabricated of 0.025 2024–T3 aluminum alloy material or equivalent before further operation.

(3) All plastic locks must be replaced within the next 10 hours of operation with metal locks fabricated of 0.025 2024–T3 aluminum alloy material or equivalent.

(Colonial Service Bulletin No. 15 covers this same subject.)

59–15–2 Colonial Applies to All Models C–1 and C–2 Aircraft.

Compliance required as indicated.

An incident has recently been experienced where the rivets fastening the aluminum throttle control handle to the steel bell crank have loosened and sheared. Accordingly these two rivets should be inspected immediately and replaced with the following hardware if any looseness is apparent: Two each AN 23–8 clevis bolt, AN 960D10L washer, and AN 364–1032 self-locking thin nut. In any case the rivets should be replaced with the foregoing parts not later than the next periodic inspection or December 1, 1959, whichever comes first.

In order to accomplish this modification it is necessary to remove the throttle from its supporting bracket to change the rivets to bolts. In addition the slot in the bracket should be widened to allow $\frac{1}{8}$-inch minimum clearance between the end of the bolt and the edge of the bracket.

(Colonial Service Bulletin No. 14 revision A covers the same subject.)

59–17–4 Colonial Applies to All Models C–1 and C–2 Aircraft.

Compliance required within the next 10 hours but not later than October 15, 1959, and at each 100 hours thereafter.

Due to failures in service, remove, inspect, and replace, if damaged, the two AN 4 bolts attaching the wing rear spar to the hull on each side at hull Station 138. The bolts are located adjacent to the inboard flap hinge and are accessible through the wheel wells. Remove only one bolt per side at a time and replace before removing the other bolt. The torque applied to these bolts shall not exceed 70 inch-pounds.

60-22-1 Lake (Colonial) Amdt. 213 Part 507 Federal Register October 29, 1960. Applies to Colonial C-2 Serial Numbers 115, 121, 126 and Subsequent. Lake Serial Numbers 244 and 245.

Compliance required within 100 hours' time in service after effective date of this amendment.

Due to several failures of the engine mount bolts, the following shall be accomplished:

(a) Replace AN 7-35 engine-to-engine mount bolts with MS 20007-48 or NAS 464-7L-51 strength bolts or equivalent (4 places).

(b) Replace Lord Mounts P/N J-7402-1 with Lord Mounts P/N J-7402-5 or -6, or equivalent (4 places).

(Lake Service Bulletin Number 2 covers this same subject.)

This directive effective November 29, 1960.

LOCKHEED

46–13–1 Lockheed (Was Service Note 2 of AD–723–2.) Applies to All Model 18 Aircraft.

When replacing the landing gear actuating cylinder flexible hose, P/N 55252–3, the length of ferrules should be compared. If longer ferrules are found on the new hoses, an elbow should be inserted between the hose and the cylinder aft port, to prevent possible damage to the hose by the landing gear scissors. (Lockheed Service Letter No. 18–28, dated June 15, 1945, revised December 10, 1945, covers this same subject.)

46–13–2 Lockheed (Was Mandatory Note 18 of AD–723–2). Applies Only to Model 18 Airplanes Used in Scheduled Air Carrier Operation.

Compliance required not later than April 30, 1946.

In order to comply with CAR Special Regulation 333, the present fuel system plumbing equipment shall be replaced with a dual fuel system in accordance with Lockheed Service Bulletin No. 18/SB–113, dated August 17, 1945, or any other dual fuel system approved by the Administrator.

46–13–3 Lockheed (Was Mandatory Note 6 of AD–723–2.) Applies to Model 18 Aircraft.

Compliance required before next 10 hours of operation.

The oil tanks should be examined to determine whether or not they are of the hopper type, and appropriate action in one of the following manners must be taken:

1. If a hopper type oil tank is installed and is to be retained in accordance with Note 14 (b) of Aircraft Specification A–723–4 (for use with oil dilution), the following action must be taken (applies only to Serial Numbers 2294 and up):

(*a*) Install a propeller feathering reserve oil tank (P/N 174399) forward of the firewall. (Lockheed Service Bulletin No. 18/SB–115 dated April 18, 1945, covers this same subject.)

(*b*) Rework the hopper assembly to provide better support at the sump by installing a new support assembly (P/N 174321). At each engine change, remove plate and elbow on bottom of sump housing (P/N 114690) and inspect hopper with a light and mirror. (Lockheed Service Bulletin No. 18–99 dated September 29, 1943, covers this same subject.)

2. If the hopper type oil tank is to be removed, the following action must be taken (applies only to Serial Numbers 2294 and up, except Serial Numbers 2359, 2403, 2464, and 2465):

Remove the hopper type oil tank and propeller feathering lines and replace with a conventional type tank (P/N 73662), fitted with a standpipe to provide a reservoir of oil for propeller feathering, and install a separate feathering line from the oil tank to the feathering pump. (Lockheed Service Bulletin No. 18–100 dated March 3, 1944, covers this same subject.)

3. On airplanes which have conventional oil tanks other than P/N 73662, the standpipe at the outlet in each tank must be revised in one of the following manners, whichever is applicable. (Applies to all Series 18 airplanes, except Models 18–07 and 18–40, with Serial Numbers 2293 and below, 2359, 2403, 2464, and 2465.)

(*a*) If the tanks are equipped with the standard $3^{31}/_{32}$-inch long standpipes (P/N 164101), the standpipe in each tank should be removed and a new $4^{15}/_{16}$-inch standpipe (P/N 16401, change D) installed.

(*b*) If the tanks are equipped with oil stick gage foam guards, the existing standpipe in each tank should be cut off near the bottom of the tank, the foam guard cut off approximately 5.38 inches from the bottom surface of the oil tank outlet connection boss, and a new standpipe assembly (P/N 173806) installed.

(Lockheed Service Bulletin No. 18–105 dated October 19, 1943, covers this same subject.)

47-10-2 Lockheed (Was Mandatory Note 1 of AD-763-3). Applies Only to Model 49 Serial Numbers 2021 to 2054, Inclusive.

Compliance required prior to March 1, 1947.

Install an AN 3161-P15 (or equivalent) non-trip-free circuit breaker in the elevator tab control circuit. The breaker is to be located in the pilots' control stand, with access through a plate immediately forward of the control quadrant. Minor wiring changes to connect the circuit breaker are also necessary. (LAC Service Bulletin 049 SB-4 covers this same subject.)

47-10-3 Lockheed (Was Mandatory Note 2 of AD-763-3.) Applies Only to Model 49 Serial Numbers 2021 to 2079, Inclusive.

Compliance required prior to March 1, 1947.

(Note: AD 47-10-2 must be complied with prior to or in conjunction with this Note.)

Install non-trip-free circuit breakers in the rudder and elevator auxiliary boost motor circuits, in place of switches and relays, and revise the wiring of the circuits as necessary. (LAC Service Bulletin 049 SB-22 covers this same subject.)

47-10-4 Lockheed (Was Mandatory Note 4 of AD-763-3.) Applies Only to Model 49 Serial Numbers 2021, 2022, 2026, 2027, 2028, 2034, and 2035.

Compliance required prior to March 15, 1947.

Add 12 grounding jumpers between the engine autosyn transmitters and their support brackets. (LAC Service Bulletin 049 SB-20 covers this same subject.)

47-10-5 Lockheed (Was Mandatory Note 6 of AD-763-3.) Applies Only to Model 49 Serial Numbers 2021 to 2088, Inclusive.

Compliance required prior to March 15, 1947.

Inspect landing gear selector valve (Bendix P/N 403875-0-1) installed in forward cargo compartment. Those valves bearing Serial Numbers 1 through 120 and identified by letter "R" following the serial number have been reworked to incorporate a new type poppet. All unreworked valves should be replaced with reworked valves. (LAC Service Instruction 049/SI-34 covers this same subject.)

47-10-6 Lockheed (Was Mandatory Note 7 of AD-763-3.) Applies to All Model 49 Serials Incorporating Parker 4-1042-11-2 Plug Valves in the Fuel System.

Compliance required prior to March 15, 1947.

Rework all fuel tank shutoff and fuel cross transfer valves by installing new type shaft sealing rings, valve caps, packing caps, cap gaskets and cap attachment screws. This rework also applies to valves previously reworked, as identified by the use of countersunk head screws with star lock washers or fillister head screws.

(LAC Service Instruction 049/SI-74, revised September 9, 1946, or subsequent, covers this same subject.)

47-10-7 Lockheed (Was Mandatory Note 8 of AD-763-3.) Applies Only to Model 49 Serial Numbers 2021 to 2088, Inclusive.

Compliance required prior to April 1, 1947.

Replace the existing restrictor valve P/N 66404) in each main landing gear down line with a winterized type restrictor valve (LAC P/N 667489.)

(LAC Service Instruction 049/SI-75, covers this same subject.)

47-10-8 Lockheed (Was Mandatory Note 9 of AD-763-3.) Applies Only to Model 49 Serial Numbers 1975 to 1978, Inclusive; 1980; and 2021 to 2059, Inclusive.

Compliance required prior to August 9, 1946.

Rework the elevator booster shifter horn assembly by reducing the width of the teeth on 278488 gear. 0.120 inch should be removed from each end of all the teeth.

(LAC Service Bulletin 049/SB-19 covers this same subject.)

47-10-9 Lockheed (Was Mandatory Note 11 of AD-763-3.) Applies to All Model 49 Serials Up to and Including 2088.

Compliance required after each engine change.

When found necessary as a result of engine replacement in a quick-change powerplant unit, add seal plates to the engine oil lines where they pass through the engine fire seals, and add cover plates to the alternate oil line cutouts in the fire seals.

(LAC Service Instruction 49/51-39 and LAC Service Bulletin 49/SB-63 cover this

same subject for Models 49–51 and 49–46, respectively.)

47–10–10 Lockheed (Was Mandatory Note 12 of AD–763–3.) Applies to All Model 49 Serials Up to and Including 2088.

Compliance required immediately.

Remove all soundproofing pads adjacent to and surrounding the voltage regulators.

(LAC Service Bulletin 49/SB–171 covers this same subject.)

47–10–11 Lockheed (Was Mandatory Note 13 of AD–763–3.) Applies to All Model 49 Serials Up to and Including 2088.

Compliance required not later than 200 hours of operation after March 1, 1947.

Replace all Fenwall Type S–2223 fire detector units on fire seals and firewalls and in nacelles and cabin heater compartments with Type 17343–3–450 fire detector units (100 units for each Model 49–51 aircraft, 116 units for each Model 49–46 aircraft.)

(LAC Service Bulletin 49/SB–65 covers this same subject.)

47–10–13 Lockheed (Was Mandatory Note 15 AD–763–3.) Applies to All Model 49 Serials Up to and Including 2075.

Compliance required prior to July 1, 1947.

(*a*) On all firewalls, replace aluminum alloy bulkhead fittings for fuel, oil, and hydraulic lines with nickel steel fittings or others of equivalent fire resistance.

(LAC Service Bulletin 49/SB–108 covers this same subject.)

(*b*) In nacelle zones 1 and 2 replace all tubing having cut-length hose connections with flexible coupled hose assemblies.

(LAC Service Bulletin 49/SB–103 covers this same subject.)

47–10–14 Lockheed (Was Mandatory Note 16 of AD–763–3.) Applies to All Model 49 Serials Up to and Including 2088.

Compliance required prior to April 15, 1947.

Install a single flexible hose assembly between each fuel pump and flowmeter in place of the combination of short hose assembly and tube with hose couplings.

(LAC Service Bulletin 49/SB–143 covers this same subject.)

47–10–15 Lockheed (Was Mandatory Note 17 of AD–763–3.) Applies to All Model 49 Serials Up to and Including 2075.

Compliance required prior to recertification.

Prior to recertification of all aircraft whose certificates were revoked by direction of the Administrator on July 11, 1946, the following Service Documents must be complied with.

LOCKHEED SERVICE BULLETINS:

*49/SB–50, revised August 24, 1946—Revision of Cabin Air Recirculating Fan.

49/SB–58, dated July 22, 1946—Sealing of Main Landing Gear Doors.

49/SB–86, dated July 18, 1946—Rerouting of Thermocouple Wires.

*49/SB–91, revised September 10, 1946—Replacements of Electrical Power Feed—Through Studs.

*49/SB–93, revised August 11, 1946—Rework of Exhaust System Ball Joints and Collector Segment.

49/SB–95, dated July 22, 1946—Insulation of Generator Circuit Breakers.

(a) 49/SB–97, revised October 28, 1946—Sealing, Draining, and Ventilation of Nacelles.

49/SB–98, dated July 26, 1946—Removal of Engine Filtered Air Components and Plumbing.

*49/SB–100, revised August 27, 1946—Replacement of Fuel Pressure Warning Units.

49/SB–101, revised August 6, 1947—Modification of Hydraulic Pump Case Drain Lines.

49/SB–102, dated July 23, 1946—Relocation of Engine Fuel Pump Lines.

49/SB–104, revised July 23, 1946—Replacement of Windshield Wiper Motor Circuit Fuse.

49/SB–106, dated July 22, 1946—Replacement of Windshield Heater Wire.

49/SB–109, revised August 22, 1946—Provision for Vacuum Pump Cooling.

49/SB–113, revised August 6, 1946—Replacement of Aluminum Electrical Wires and Terminals.

49/SB–114, revised July 31, 1946—Protection of Electrical Receptacle.

49/SB–115, dated July 23, 1946—Insulation of Galley Circuit Breaker.

49/SB–116, revised August 2, 1946—Installation of Generator Field Circuit Breaker (Switch Type).

*49/SB–117, revised September 5, 1946—Insulation of Right Angle Electrical Terminals and Electrical Wiring.

49/SB–118, revised August 10, 1946—Support of Electrical Wiring in Main Gear Wheel Well.

49/SB–119, revised July 27, 1946—Sealing of Main Landing Gear Door Hinge.

49/SB–119A, revised August 13, 1946—Sealing of Main Landing Gear Doors.

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*Service Documents identified by an asterisk and by (a) have been revised subsquent to issuance of AD-763 (Special) dated Aug. 21, 1946, as indicated by the later revision date effective in each instance. Aircraft previously recertificated in accordance with AD–763 (Special) should be checked for compliance with these later revisions within next 200 hours of operations.

*49/SB-121, revised September 16, 1946—Installation of Fire Resistant Hoses and Double Hose Clamps in Nacelle Zones 2 and 3.

49/SB-122, dated July 25, 1946—Installation of Stainless Steel CO_2 Lines.

*49/SB-123, revised August 27, 1946—Replacement of Alcohol Tank, Supply Lines and Vent Line (4-pump system).

49/SB-125, dated June 23, 1946—Removal of Cargo Compartment Insulation.

49/SB-126, dated July 23, 1946—Protection of Electrical Junctions and Disconnects at Fire Wall.

49/SB-127, revised July 31, 1946—Sealing of Cabin Heater Panel.

49/SB-131, revised August 10, 1946—Rerouting of Drain Line for Deicer Distributor Oil Separator.

49/SB-132, revised August 12, 1946—Attachment of Electrical Wire Bundles in Forward Passenger Compartment.

49/SB-133, revised July 31, 1946—Installation of Brass Liners and Double Hose Clamps in Line Between Sump Tank and Propeller Feathering Pump.

(a) 49/SB-134, revised October 28, 1946—Installation of Protective Shield for Engine Torquemeter Plumbing.

49/SB-135, revised August 11, 1946—Addition of Fuselage Drain Provisions.

49/SB-136, dated July 31, 1946—Protection of Cabin Heater Flexible Fuel Line.

49/SB-137, dated July 27, 1946—Addition of Double Hose Clamps on Inboard Fuel Tank Interconnection Line.

*49/SB-138, revised September 25, 1946—Provisions for Increase of CO_2 Capacity.

*49/SB-155, revised August 28, 1946—Installation of Copper Wires in Lieu of Aluminum Wires.

**49/SB-161, dated August 29, 1946—Replacement of Alcohol Tank, Supply Lines, and Vent Line (2-pump system).

LOCKHEED SERVICE INSTRUCTIONS:

*49/SI-22, revised October 10, 1946—Installation of Engine Plumbing and Electrical Wiring Heat Protective System.

*49/SI-41, revised August 16, 1946—Nacelle Fire Extinguishing System Revisions.

49/SI-105, revised August 7, 1946—Replacement of Hydraulic Secondary Return Line.

LOCKHEED SERVICE INFORMATION LETTERS:

*No. 42, revised September 10, 1946 (Canceled).

No. 56, dated August 10, 1946—Periodic Inspection of Vacuum Pump Pressure Hose.

No. 57, revised August 15, 1946—Fuselage Fire Control and Smoke Elimination Procedures.

No. 58, revised August 15, 1946—Combating Belly Cargo Compartment and Fuselage Fires.

No. 60, dated August 10, 1946 (Canceled).

TWA Engineering Order No. 2762—Rework of Auxiliary Hydraulic Supply Tank and Discharge Line.

47-10-16 Lockheed (Was Mandatory Note 18 of AD-763-3.) Applies to All Model 49-46 Serials Up to and Including 2075 and to All Model 49-51 Airplanes. (This supersedes Supplement Number 1 to AD-763 (Special) Dated August 26, 1946.)

Compliance required prior to June 1, 1947.

All Model 49-51 aircraft shall be converted to Model 49-46 aircraft. Prior to recertification of Model 49-46 aircraft converted from Model 49-51 aircraft, the following Service Bulletins in addition to those listed in Note 47-10-15 must be complied with:

**49/SB-1, revised June 7, 1946—Installation of Two-Speed Supercharger Controls.

*49/SB-14, revised July 27, 1946—Installation of Bendix Direct Fuel Injection System.

49/SB-24, dated June 5, 1946—Rework of Engine Cowl Diaphragm Structure.

49/SB-124, revised July 27, 1946—Rewiring of Engine Fire Detector System.

Wright Aeronautical Corp. Bulletin C18-23, dated October 4, 1946—Fuel Injection Tube Installation.

**49/SB-230, dated November 3, 1946—Engine Oil Cooler Temperature Control Regulators—Recalibration of.

**49/SB-231, dated November 2, 1946—Engine Oil Pump Pressure and Engine Oil Pressure Gauge Range Markings—Adjustment of.

47-10-17 Lockheed (Was Mandatory Note 19 of AD-763-3.) Applies to All Model 49 Serials Up to and Including 2075.

Compliance required prior to resumption of cabin supercharger operation.

Prior to resumption of cabin supercharger operation, the following Lockheed Service Bulletins must be complied with:

49/SB-107, revised November 22, 1946—Replacement of Cabin Supercharger Drive Shafts.

49/SB-141, revised August 7, 1946—Replacement of Cabin Supercharger.

49/SB-156, revised September 17, 1946—Installation of Supercharger Oil Temperature Indicator.

**Service Bulletin 49/SB-161 was not called for in AD-763 (Special), but has subsequently been found necessary, inasmuch as Bulletin 49/SB-123 does not adequately describe changes to 2-pump anti-icing systems. Aircraft incorporating 2-pump anti-icing systems should be checked for conformity with Bulletin 49/SB-161 prior to certification.

*Service Bulletin 49/SB-14 has been revised subsequent to issuance of AD-763 (Special), Supplement No. 1, dated Aug. 26, 1946. Model 49-46 aircraft certificated in accordance with that AD Supplement should be checked for compliance with this later revision within next 200 hours of operation.

**Service Bulletin 49/SB-1 was not listed in AD-763 (Special), Supplement No. 1, dated Aug. 26, 1946, but must be complied with to permit use of new performance values shown in the Operation Manual for Model 49-46 aircraft, Lockheed Report No. 5817. All Model 49-46 aircraft certificated in accordance with that Supplement to AD-763 (Special) should be checked for compliance with Bulletins 49/SB-1, 230 and 231 within next 200 hours of operation.

The revision dates given for these three Bulletins are later than those listed in the Supplement to AD–763 (Special) dated September 25, 1946. Aircraft on which the cabin supercharging equipment was rendered operative in accordance with that Supplement should be checked for compliance with these later revisions dates within the next 150 hours of operation.

47–10–18 Lockheed (Was Mandatory Note 20 of AD–763–3.) Applies to All Model 49–46 Aircraft.

Compliance required not later than 100 hours of operation after March 1, 1947, or during conversion of Model 49–51 aircraft to Model 49–46 aircraft, whichever occurs first.

The hose connections in the fuel line between air metering chamber and fuel injection pump shall be changed to incorporate fire resistant hose and double hose clamps, using Wright Aeronautical Corporation P/N 856864 and 855403.

47–10–19 Lockheed (Was Mandatory Note 21 of AD–763–3.) Applies to All Model 49 Serials Up to and Including 2088, Except as Noted.

Compliance required not later than 100 hours of operation after June 10, 1947.

(*a*) In each cabin heater installation, relocate and waterproof the fuel solenoid valve and replace and reroute the fuel pump bypass line.

(LAC Service Bulletin 49/SB–73 covers this same subject.)

(*b*) In zone 2 of each nacelle, install heat protective shield between propeller feathering line and cowl diaphragm. Applies to all serials up to and including 2082.

(LAC Service Bulletin 49/SB–150 covers this same subject.)

(*c*) In each outboard nacelle main junction box, replace existing mounting nuts (Tinnerman) and PK screws with AN 366 nuts and NAS 221 screws.

(LAC Service Bulletin 49/SB–152 covers this same subject.)

(*d*) Drill one ¼-inch drain hole on lower center line of spinner fairing lower panel assembly for each engine.

(LAC Service Instruction 49/SI–95 covers this same subject.)

47–10–20 Lockheed (Was Mandatory Note 22 of AD–763–3.) Applies to All Model 49 Serials Up to and Including 2075.

Compliance required prior to June 1, 1947.

Replace all existing alcohol tanks with new type heavier tanks, LAC P/N 296424. Replace existing tank cradles with new cradles LAC P/N 296465.

(LAC Service Bulletin 49/SB–110, revised October 2, 1946, or subsequent, covers this same subject.)

47–10–21 Lockheed (Was Mandatory Note 23 of AD–763–3.) Applies to Model 49 Serials Up to and Including 2088.

Compliance required prior to July 1, 1947.

Install steel torque links, LAC P/N 293882, on each main landing gear.

(LAC Service Instruction 49/SI–100A covers this same subject.)

47–10–22 Lockheed (Was Mandatory Note 24 of AD–763–3.) Applies to Model 49 Serials 1975, 1976, 1977, and 2021 Through 2065.

Compliance required prior to March 1, 1947.

Install steel retainer washer (American La France P/N 2CD–3054C) in place of existing aluminum alloy retainer washer on fire extinguisher selector valve.

(LAC Service Bulletin 49/SB–27 covers this same subject.)

47–10–23 Lockheed (Was Mandatory Note 25 of AD–763–3.) Applies to Model 49 Serials 1975, 1976, and 2021 Through 2059.

Compliance required immediately.

Install AC364–524 steel nuts in place of any AC364–B524 brass nuts which may be installed on bolts through bathtub fittings at wing Station 80 (5 nuts per fitting, 170 nuts per airplane should be checked.

(LAC Service Bulletin 49/SB–42 covers this same subject.)

47–10–24 Lockheed (Was Mandatory Note 27 of AD–763–3.) Applies to All Model 49 Serials Up to and Including 2088.

Compliance required prior to June 1, 1947.

Install thermal relief valve and bypass line in fuel crossfeed line adjacent to No. 4 cross transfer valve.

(LAC Service Bulletin 49/SB–48 covers this same subject.)

47-10-25 Lockheed (Was Mandatory Note 28 of AD-763-3.) Applies to All Model 49 Serials Incorporating Eclipse Type 1193, Model 1, Style A Generators on Which the Serial Numbers Are Not Followed by the Letter "M".

Compliance required prior to March 1, 1947.

Replace the 12 mounting head-to-yoke bolts in each generator with new ¼-inch bolts (P/N 63937 referred to in Eclipse-Pioneer Bulletin No. 70).

(LAC Service Bulletin 49/SB-64 covers this same subject.)

47-10-26 Lockheed (Was Mandatory Note 29 of AD-763-3.) Applies to All Model 49 Serials Up to and Including 2075.

Compliance required prior to June 1, 1947.

Reroute flap and fan motor drain lines to return direct to main hydraulic system instead of through aspirator, and install check valves at points where drain lines connect to the main system.

(LAC Service Bulletin 49/SB-169 covers this same subject.)

47-10-27 Lockheed (Was Mandatory Note 30 of AD-763-3.) Applies to All Model 49 Serials Up to and Including 2078.

Compliance required prior to July 1, 1947.

Install new type fuel tank vent outlets and add extension to fuel dump chutes.

(LAC Service Bulletin 49/SB-201 covers this same subject.)

47-10-28 Lockheed (Was Mandatory Note 31 of AD-763-3.) Applies to All Model 49 Serials Up to and Including 2088.

Compliance required prior to July 1, 1947.

Enlarge holes in elevator cable seals in aft pressure bulkhead to 0.19 ± 0.031-inch diameter.

(LAC Service Bulletin 49/SB-208 covers this same subject.)

47-10-29 Lockheed (Was Mandatory Note 32 of AD-763-3.) Applies to All Model 49 Serials Prior to 2080 on Which Metal Ailerons Are Installed.

Compliance required prior to April 1, 1947.

Between aileron Stations 69.5 and 99.7, install drain holes in the lower aileron surface outboard of each rib and forward of each stringer (17 holes total).

(LAC Service Bulletin 49/SB-214 covers this same subject.)

47-10-30 Lockheed (Was Mandatory Note 33 of AD-763-3.) Applies to Model 49 Serials 2047 Up to and Including 2075 and to Serials Prior to 2047 Which Have Had 68092 Surge Box Flapper Valves Replaced by 285750 Valves in Accordance With Lockheed SI-15, Dated June 18, 1946.

Compliance required prior to April 1, 1947.

Replace fuel tank surge box flapper valves, LAC P/N 285750, with new type valve, LAC P/N 285750-600.

(LAC Service Instructions 49/SI-15, revised August 10, 1946, and 49/SI-15A, revised August 3, 1946, or subsequent, cover this same subject.)

47-10-31 Lockheed (Was Service Note 1 of AD-763-3.) Applies to All Model 49 Serials Up to and Including 2088.

At periods not to exceed 100 hours the webs of all landing gear torque arms should be examined closely at the knee bolt ends for the presence of cracks. When a nose gear arm is found to be cracked, it should be replaced with a new part. When either main gear arm is found to be cracked, the 283557 or 292132 aluminum alloy torque link assemblies on both main gears should be replaced with 293882 steel torque link assemblies. When Note 47-10-21 is complied with, this periodic inspection procedure for the main gear may be discontinued.

47-10-32 Lockheed (Was Service Note 2 of AD-763-3.) Applies Only to Model 49 Serial Numbers 2021 to 2067, Inclusive.

At each periodic inspection, examine the upper wing surface forward of the aileron beam and just outboard of Station 458 joint for the presence of buckles. If serious buckles are found the skin in that area should be replaced and gussets added. After the entire affected area (approximately 5 inches x 36 inches) has been reworked in this manner, no further periodic inspections will be required.

(LAC Service Instruction 49/SI-26 covers this same subject.)

47-10-33 Lockheed (Was Service Note 4 of AD-763-3.) Applies to Model 49.

Difficulties have been experienced with cylinder heads turning or unscrewing slightly on

certain Wright 739C18BA1 and 2 engines. This condition has occurred on older type cylinders having barrels designated as "light type" barrels. Later type cylinders have "heavy type" barrels on which this turning tendency has been eliminated. Heavy type cylinder barrels have a circumferential groove on the mounting flange to distinguish them from the light type barrels.

Following procedure shall be established for inspection and replacement as necessary of light barrel cylinders:

(*a*) Prior to certification or next 60 hours of operation:

(1) Mark detonation pickup bosses on light barrel cylinders with yellow paint for ready identification.

(2) Scribe front of these light barrel cylinders by marking heavy flange near bottom of cylinder head and continuing scribe line down seven barrel fins. Dark paint may be used as background for scribe lines. Wright Aeronautical have provided a scribing tool which may be used for this purpose. The scribe line should be on front of cylinders where it can be easily seen with engines installed in airplanes.

(*b*) After each succeeding 35 to 60 hours of operation:

(1) Inspect scribe lines for signs of cylinder head turning.

(2) Cylinder heads which have turned 1/32 inch or more since prior inspection should have valve clearances checked and reset to normal cold clearances if necessary, provided total head turning does not exceed 1/8 inch.

(3) Cylinders on which heads have turned more than 1/8-inch total shall be replaced immediately with heavy barrel cylinders.

(*c*) At first engine overhaul, light barrel cylinders Nos. 1, 11, 13, 15, and 17 shall be replaced with heavy barrel cylinders. Replaced cylinders may be used in other locations provided total amount of turning has not exceeded 1/8 inch.

47–10–34 Lockheed (Was Service Note 5 of AD–763–3.) Applies to All Model 49 Serials Up to and Including 2088.

(*a*) Revised exhaust system ball joint assemblies (Solar P/N CV–611 and CV–615–1 through CV–615–18, reworked in accordance with Solar E.O. Nos. 16696 and 16697), as called for in LAC Service Bulletin 49/SB–93 and AD 47–10–15, above, may continue to be used, provided a rigid inspection for condition is made in accordance with LAC Service Information Letter No. 42, except that the lowest periodic inspection interval listed on each operator's approved aircraft maintenance specification may be used instead of the 30-hour period referred to in the Lockheed Letter.

(*b*) The revised exhaust system ball joints described in part (*a*) of this Note may be reinstalled after completion of the 250-hour period referred to in LAC Service Information Letter No. 42, provided that each ball joint is disassembled as far as practicable at the end of these 250-hour periods and unsatisfactory parts are replaced. This 250-hour disassembly period may be increased upon application by an operator and approval by the FAA, provided the service record of the components used by the operator justified the increase requested.

(*c*) When the revised exhaust system ball joints, described in part (*a*) of this AD, are replaced by new type Solar ball joint parts, as listed in LAC Service Bulletin 49/SB–94, the overhaul period for exhaust system ball joints may be established as the same as the engine overhaul period approved for the operator involved. Intermediate inspections similar to those described in LAC Service Information Letter No. 42 shall be conducted on the new type ball joint assemblies at intervals as specified in the operator's approved aircraft maintenance specification.

47–10–36 Lockheed (Was Service Note 7 of AD–763–3.) Applies to All Model 49 Serial Numbers Up to and Including 2088.

Between the edges of the inboard and outboard nacelle attach angles, the rivets used to attach the leading edge lower skin to the front beam should be inspected for looseness at periods not to exceed 200 hours of operation. When loose rivets are found the following corrective action should be taken:

Add stiffener to lower surface of leading edge skin between Stations 287 and 299, install 5/32-inch rivets in place of existing 1/8-inch rivets used to attach lower leading edge skin to front bam between Station 287 and outboard nacelle, and install six 10–32 screws in place of six rivets in this same rivet line

(two each at Stations 263, 287, and 312). After this rework has been accomplished, no further periodic inspections will be required.

(LAC Service Instruction 49 SI–121 covers this wing leading edge reinforcement and rivet replacement.)

47–10–37 Lockheed (Was Service Note 8 of AD–763–3.) Applies to All Model 49 Serials Up to and Including 2071.

At periods not to exceed 500 hours, check the tightness of the inboard pair of bolts in the outboard fulcrum and the outboard pair of bolts in the inboard fulcrum of each main landing gear, using a torque wrench. A continuous record should be kept to show whether these bolts become more loose with time: therefore, these bolts should not be tightened during the periodic inspections. When any of these 8 bolts loosen to a torque wrench reading of approximately 900 inch-pounds, all fulcrum bolts (16 per airplane) should be removed, the fitting holes countersunk 0.064 x 45° to accommodate the bolt head fillets, the bolts replaced and tightened to a torque wrench reading of 2,300–2,500 inch-pounds. The 500-hour inspection may then be discontinued.

(Lockheed Service Bulletin 49/SB–51, revised March 3, 1947, covers this same subject.)

47–10–38 Lockheed (Was Service Note 9 of AD–763–3.) Applies to All Model 49 Serials Up to and Including 2059.

At periods not to exceed 500 hours, inspect the shank end of each main landing gear drag link crosshead assembly for signs of cracks in the fillet region. If cracks are found, install new type crosshead assembly, LAC P/N 288982, and, if necessary, replace the 283418 drag links with 288983 drag links. The periodic inspection procedure may be discontinued when the new type crosshead assembly is installed.

(LAC Service Instruction 49/SI–27 covers this same subject.)

47–10–39 Lockheed (Was Service Note 10 of AD–763–3.) Applies to All Model 49 Serials Up to and Including 2046 on Which All Metal Ailerons Are Not Installed.

At periods not to exceed 250 hours, inspect the aileron inboard of the trim tab for evidence of cracks in the trailing edge and in the aft portions of the ribs. When cracks are found, parts of heavier gage should be installed and the aileron rebalanced. The periodic inspection may be discontinued when this modification has been made.

(LAC Service Bulletin 49/SB–52 covers this same subject.)

47–43–10 Lockheed (Was Mandatory Note 21 of AD–723–3.) Applies to All Model 18 Serial Numbers.

Compliance required prior to February 1, 1948.

Inspect all Alfite Model 2CD1722 operating heads for the CO_2 bottles (fire extinguishing system) and nitrogen bottles (emergency landing gear extension system) to determine whether these heads have been stamped with the letter "L" adjacent to the swivelnut. If the head is not marked in this manner, disassemble the head and examine the cable sheave for part number. All 2CD2248 sheaves should be reworked by rounding the inner shoulder of the ramp at its lower end throughout a distance of 1¼ inches, to eliminate possible jamming of the mechanism. When reworked sheaves are installed, the operating heads should be identified by the letter "R" stamped adjacent to the swivelnut.

(Lockheed Service Bulletin 18/SB–140 covers this same subject.)

47–43–11 Lockheed (Was Mandatory Note 22 of AD–723–3.) Applies to All Model 18 Serial Numbers.

Compliance required prior to next periodic inspection.

Remove bolts connecting the elevator push-pull rod to the elevator horn and bellcrank and ascertain that the shank diameter falls within the limits of 0.248 to 0.250. Bolts outside these limits should be replaced with NAS 54–12 bolts. In view of the similarity of the Lockheed bolts with the standard AN bolt, it is suggested that they be replaced with close tolerance bolts, NAS 54–12 and the push-pull rod. P/N 72149 placarded "Use NAS 54–12 bolt".

47–49–1 Lockheed (Was Mandatory Note 34 of AD–763–3.) Applies to All Model 49 Serials Up to and Including 2088.

Compliance required prior to December 31, 1947.

Relocate the rudder trim tab cockpit control unit to comply with provisions of CAR 4b.322 regarding plane and sense of motion of control.

(LAC Service Instruction 49/SI-18 covers this same subject.)

47-49-2 Lockheed (Was Mandatory Note 35 of AD-763-3.) Applies to All Model 49 Serials Up to and Including 2088.

Compliance required prior to February 15, 1948.

Inspect nose landing gear emergency extension line in nose wheel well (LAC P/N 272239-164) to ascertain whether adequate clearance exists with respect to the nose gear actuating cylinder. If adequate clearance does not exist, replace this line with a new part, LAC 285106-311 or equivalent.

(LAC Service Bulletin No. 49/SB-164 covers this same subject.)

47-49-3 Lockheed (Was Mandatory Note 36 of AD-763-3.) Applies to All Model 49 Serials Up to and Including 2080, Except 2033, 2058 and 2071 Through 2075.

Compliance required at next engine change period.

Inspect all attachments of rudders to torque tube flanges for evidence of stripped threads or elongated holes. (This does not require removal of rudders.) When such evidences are found, redrill holes to next larger size and/or install new nuts as required.

(LAC Service Bulletin 49/SB-256 covers this same subject.)

47-49-4 Lockheed (Was Mandatory Note 37 of AD-763-3.) Applies to Model 49 Serials 2068 to 2088, Inclusive.

Compliance required within next 50 hours of operation unless the $1\frac{3}{16}$-inch headless drive pin has been installed.

Inspect attachments of rudder pedal lever arms to the clip assembly in the 284587 rudder pedal slot cover guide assemblies to determine whether it is possible for the flat head pin to cause jamming of the system. If any possibility of jamming exists, the flat head pin should be replaced with a headless drive pin $1\frac{3}{16}$ inches long.

(LAC Service Bulletin 49/SB-260 covers this same subject.)

47-49-5 Lockheed (Was Mandatory Note 38 of AD-763-3.) Applies to All Model 49 Serials Up to and Including 2088.

Compliance required prior to February 15, 1948.

Replace quick-disconnect fasteners used to attach aileron control cable housing on radio operator's floor (LAC P/N 28717-8) with screws and AN 366F8-32 nut plates.

(LAC Service Bulletin 49/SB-300 covers this same subject.)

47-49-6 Lockheed (Was Mandatory Note 39 of AD-763-3.) Applies to Model 49 Serials 2076 to 2088, Inclusive.

Compliance required not later than next No. 3 inspection (or not later than next 150 hours for non-air-carrier operations).

The rear oil pressure gage operational placard on the flight engineer's panel, LAC P/N 296770, must be removed or replaced with new placard, LAC P/N 296995 or equivalent.

(LAC Service Bulletin 49/SB-245 covers this same subject.)

47-49-7 Lockheed (Was Mandatory Note 40 or AD-763-3.) Applies to All Model 49 Serials Up to and Including 2088, Unless Equipped With MLG Drag Strut Dampers.

Compliance required prior to February 1, 1948.

(*a*) Replace the NAS58A65 bolt used to connect the two halves of each MLG upper drag link assembly, LAC P/N 283418 and 288983, with a $\frac{5}{8}$-inch diameter high strength bolt, LAC P/N 297902.

(LAC Service Bulletin 49/SB-368 covers installation of MLG shock strut dampers.)

(*b*) Reduce MLG shock strut inflation pressures to provide a static extension of 2 inches at maximum landing weight.

47-49-8 Lockheed (Was Service Note 8 of AD-763-3.) Applies to All Model 49 Serials Up to and Including 2046.

At periods not to exceed 250 hours, inspect the aileron leading edge ribs at Stations 571 and 577, the adjacent leading edge skin and the counterbalance supports for signs of cracks. When cracks are found, install heavier supports, new rib elements, new leading edge skin, and rib reinforcements, as required. When both ribs have been reinforced and heav-

ier supports installed, this periodic inspection may be discontinued.

(LAC Service Bulletin 49/SB-162 covers this same subject.)

47-49-9 Lockheed (Was Service Note 9 of AD-763-3.) Applies to All Model 49 Serials Up to and Including 2088 and to Models 649 and 749 Serials 2501 Through 2513, Inclusive.

At each engine change period, inspect the wing attaching pins at Station 80 to determine whether any of these pins are working upward through the fittings. If any pin has worked up until only the lower chamfered portion protrudes, replace the Station 80 cover strip with a new 0.064 24ST alclad strip. When this strip has been replaced the periodic inspection of that joint may be discontinued.

(LAC Service Bulletin 49/SB-151 covers this same subject.)

47-49-10 Lockheed (Was Service Note 10 of AD-763-3.) Applies to All Model 49 Airplanes Which Are Equipped With Astrodomes During Pressurized Cabin Operations, Unless Permanently Sealed Off.

(*a*) Prior to next flight, provide an internal cover plate for the astrodome opening fabricated of $\frac{3}{16}$-inch 24ST aluminum alloy or equivalent, with provisions for installing this plate in the astrodome opening in the event of loss of the astrodome.

(LAC Service Bulletin 49/SB-331 covers this same subject.)

(*b*) Prior to the next flight, provide a navigator's safety harness with suitable attachments to the floor structure beneath the astrodome.

(LAC Service Bulletin 49/SB-264 covers this same subject.)

(*c*) Prior to next flight, install a placard adjacent to the astrodome opening, reading as follows: "Wear safety harness whenever using astrodome. Check security of harness attachment to floor after each installation".

(*d*) Prior to each flight, closely inspect each astrodome for cracks, crazing or other defects, with particular attention given to area around radius adjacent to the flange. When any defects are found, the dome should be replaced at least before the next departure from a terminal base.

(LAC Service Information Letter No. 101 covers the necessary inspection procedure.)

(*e*) If new type laminated astrodome assembly and ring, LAC Parts 298679 and 298735, respectively, are installed with necessary seals and attachments, the requirements of parts (*a*), (*b*), and (*c*), may be disregarded. The preflight inspection called for in (*d*) should be continued.

(LAC Service Bulletin 49/SB-324, revised April 30, 1947, covers installation of the new type astrodome and mounting ring.)

47-49-11 Lockheed (Was Service Note 11 of AD-763-3.) Applies to Models 49, 649, and 749 Serials as Noted.

At periods not to exceed 50 hours of operation, inspect the following fuel system elements to determine that they are tight and will not permit leakage or other hazardous conditions:

(*a*) Fuel dump valve shaft gland nuts (Serials up to and including 2075).

(*b*) Valves on drain lines from outboard portion of inboard fuel tanks, fuel system crossfeed lines, and cabin heater fuel lines (Serials 2047 to 2088, inclusive, and 2501 to 2503, inclusive).

If safety wiring of these items is provided, the required inspections may be discontinued.

(Lockheed Service Bulletin 49/SB-215 covers part (*a*), and Lockheed Service Instruction 49/SI-10A covers part (*b*).)

47-49-12 Lockheed (Was Service Note 12 of AD-763-3.) Applies to All Models 49, 649, and 749 Serials Which Incorporate Short Type Metal Aft Doors for the Main Landing Gear.

At periods not to exceed 250 hours inspect the metal aft doors of the main landing gear for signs of cracks in the vicinity of the forward hinge attachments. When cracks are found, satisfactory reinforcements and doublers should be installed.

When doublers have been installed (doublers only are necessary if the doors are not already cracked) the periodic inspections may be discontinued.

(LAC Service Bulletin 49/SB-274 covers this same subject.)

48–12–3 Lockheed Applies to All 649 and 749 Series Aircraft As Specified by Civil Air Regulations Amendments 41–3, 42–2 and 61–2.

To be accomplished not later than the dates specified in the above amendments as revised by special Civil Air Regulations Serial Nos. 385, 390, 390A, 390B and any subsequent regulations affecting these compliance dates.

All air carrier aircraft must be modified in all necessary respects to comply with the aircraft fire prevention requirements outlined in CAR Amendments 41–3, 42–2, and 61–2. Compliance with those requirements may be completed as follows:

1. Revise the smoke detection system in accordance with LAC Service Bulletin 49/SB–401. Other rework shown to be equivalent to that covered by this Service Bulletin will also be acceptable. (Applies to Serial Nos. 2512 through 2515, 2519 through 2543, 2545 through 2550, 2552 through 2555, 2560, and 2561 only.)

2. Inspect all cabin interior fabrics and finishes to determine that any substitutes or replacements for the materials originally installed comply with the applicable sections of CAR 4b. Safety Regulation Release 259 outlines acceptable procedures for complying with these particular requirements.

48–12–4 Lockheed Applies to All 49 and 149 Aircraft As Specified by Civil Air Regulations Amendments 41–3, 42–2, and 61–2.

To be accomplished not later than the dates specified in the above amendments as revised by special Civil Air Regulations Serial Nos. 385, 390, 390A, 390B and any subsequent regulations affecting these compliance dates.

All air carrier aircraft must be modified in all necessary respects to comply with the fire prevention requirements outlined in CAR Amendments 41–3, 42–2, and 61–2. Compliance with the requirements may be completed by accomplishing the modifications outlined in the following listed Lockheed Service Bulletins. Other rework shown to be equivalent to that covered by the Service Bulletins will also be acceptable.

49/SB–175, Installation of Cabin Door Louver Covers and Door Stops; 49/SB–179, Inspection and Replacement of Crew Seat Upholstery Covers; 49/SB–180, Rework of Receptacles for Used Towels, Paper, and Waste; 49/SB–181, Rework of Baggage Compartment Lining; 49/SB–183B, Installation of Smoke Detectors; 49/SB–184, Installation of CO_2 Provisions in Cargo Compartment; 49/SB–188, Enclosure of Cabin Heater Fuel Control System Components; 49/SB–191, Replacement of Firewall and Fire Seal Fittings and Cable Seals; Installation of CO_2 Fire Extinguisher Check Valves; 49/SB–153, Sealing of Access Doors in Stub Wing Fillet; 49/SB–216, Relocation of Fenwal Fire Detectors; 49/SI–44, Installation of Metal Main Landing Gear Aft Doors.

48–18–3 Lockheed Applies to Model 49–46 Aircraft.

Compliance required every 300 hours of operation.

1. Cabin supercharger drive shafts should be inspected at periods not to exceed 300 hours of operation in accordance with instructions and procedures specified in LAC Service Bulletin 49/SB–107, revised November 22, 1946. Concurrent with the foregoing inspection, the rear drive shaft universal joint, clutch end bearing, carbon oil seal and overriding clutch, should be completely overhauled. All defective parts are to be replaced and clutch end bearing 111GE is to be replaced regardless of condition. The sheet-metal retainer (LAC P/N 257643) is to be replaced as soon as practicable with bronze retainer (LAC P/N 299449).

2. The replacement of clutch end bearing 111GE will not be necessary if the supercharger is reworked to provide a double bearing support for the rear universal joint, and overrunning clutch assembly. This rework will also require replacing the present carbon faced oil seal with a slinger type and modify the supercharger housing to suit. The preflight inspections for oil seal damage can be dispensed with when slinger type seals have been installed.

(LAC Service Bulletin 49/SB–393 covers this same subject.)

48–18–4 Lockheed Applies to Model 49–46 Aircraft Serial Numbers 1975 Through 1980 and 2021 Through 2088.

Compliance with the following was required prior to September 19, 1947, by direct notification of operators.

Add thermocouple to cabin supercharger bevel gear housing, and direct reading indicator in cockpit to record temperatures of the rear supercharger universal coupling support bearing.

(LAC Service Bulletin 49/SB–390 covers this same subject.)

48–19–2 Lockheed Applies to Models 49–46, 149–46, 649–79 and 749–79 Aircraft.

Compliance required at next No. 1 inspection, and thereafter at periods not to exceed 550 hours of operation.

Inspect the two fittings, P/N 256019, "Lever-Cockpit Torque Tube", in the elevator control system for the presence of cracks or other signs of failure at the rivet attachment points, particularly at the base of the arm. Remove and replace any defective parts. The periodic inspection may be discontinued if the two levers are replaced with new parts, LAC No. 302349, or are reinforced with additional fittings, LAC No. 302337, or their equivalents.

(LAC Service Bulletin 49/SB–456 covers the lever substitution or reinforcement.)

48–26–1 Lockheed Applies to 649 and 749 Series Aircraft Equipped With Curtiss C632S–A14/850–4C2–0 Propellers.

Compliance required by July 7, 1948, and August 1, 1948.

To avoid failures under certain operating conditions, the following engine speed restrictions must be observed and two placards covering these restrictions must be installed in the cockpit. (Temporary placards must be installed not later than July 8, 1948, and permanent placards to be supplied by Lockheed installed not later than August 1, 1948.) One placard must be in full view of the pilots and one in full view of the flight engineer. Placards should read as follows:

"In flight avoid continuous operation below 1,625 r.p.m. and between 1,725 and 1,850 r.p.m., 1,900 and 2,000 r.p.m., and between 2,100 and 2,375 r.p.m. On ground avoid continuous operation between 1,200 and 1,450 r.p.m." For visual reference, all tachometers in the airplane must be marked as follows not later than August 1, 1948: "Red Band 1,200 to 1,625 r.p.m. Green band 1,625 to 1,725 r.p.m. with green radial line at 1,675 r.p.m. Red band 1,725 to 1,850 r.p.m. with green radial line at 1,875 r.p.m. Red band 1,900 to 2,000 r.p.m. Green band 2,000 to 2,100 r.p.m. with green radial line at 2,050 r.p.m. Red band 2,100 to 2,375 r.p.m. with green radial line at 2,400 r.p.m. Yellow band 2,400 to 2,800 r.p.m. with red radial line at 2,800 r.p.m."

48–27–1 Lockheed Applies to All Model 49 Aircraft Modified to Permit Operation at 93,000 Pounds Takeoff and 83,000 Pounds Landing Weights, and Model 49 Aircraft, Redesignated as Model 149, and Modified to Permit 100,000 Pounds Takeoff and 83,000 Pounds Landing Weights.

Compliance required not later than next wing change or aircraft overhaul, and in no event later than February 1, 1949.

In order to comply with the requirements of Civil Air Regulations, fuel dump stand pipes must be installed.

(LAC Service Bulletin 49/SB–403 and LAC Service Instruction 49/SI–12 dated September 25, 1946, cover this same subject.)

Pending the accomplishment of the above change, operations are permissible at the increased weights.

48–27–3 Lockheed Applies to 649 and 749 Series Airplanes Equipped With Curtiss C632S–A/850–4C2–0 Propellers.

Compliance required by August 1, 1948, and February 1, 1949.

To increase the ability of the propeller hubs to withstand excessive stresses under certain operating conditions the hubs must be returned to Curtiss-Wright Corp., Propeller Division, for shotpeening of the threaded portion of the hub barrels. Effective August 1, 1948, hubs not peened before accumulating 2,500 hours of operating time are to be permanently removed from Constellation operation. Hubs not peened before accumulating 2,000 hours of operating time are to be temporarily withdrawn from operation until shotpeened. Peening must be accomplished on all hubs by February 1, 1949, regardless of accumulated operating time.

48–33–1 Lockheed Applies to All 49–46, 149–46, 649–79 and 749–79 Models, Through Serial Number 2588.

Compliance with new placard restrictions required immediately. Placards to be installed not later than December 1, 1948.

Remove existing fuel placards and install three new placards covering fuel system operational procedure.

A. The placard to be removed from the 49–46 airplane is located on the Flight Engineer's lower instrument panel and reads:

"CAUTION: Do Not Land With More Than 900 Gallons of Fuel in Each Outer Tank".

B. The placard to be removed from the 649 airplane is located on the Flight Engineer's uppermost panel and reads:

"Fuel Load Restrictions Model 749. Takeoff: Do not Takeoff with Less Than the Following Fuel Loads":

The placards to be added read as follows:

1. "This Airplane Must be Fueled, and Fuel Used, in Accordance With the Charts in the Approved Operating Manual." (LAC, Part M302166).

2. "At All Times, Fuel in Tanks 2 and 3 Must Not Exceed Fuel in Tanks 1 and 4, Respectively." (LAC, Part M302163.)

3. "Fuel Transfer from one Tank to Another is not Permitted. When Operating the Fuel System on Crossfeed, the Tanks not Being Used Must be Turned Off." (LAC, Part M302109.)

On Models 49–46, 149, 649, and 749 install placard 1 on Pilot's instrument panel and placards 1, 2, and 3, on Flight Engineer's uppermost instrument panel. Placard 3 has been installed on airplane Serial Number 2577 and subsequent, prior to delivery.

(LAC Service Bulletin 49/SB–439, dated March 23, 1948 covers this same subject.)

48–42–2 Lockheed Applies to All Model 18 Aircraft Operated in Scheduled and Nonscheduled Air Carrier Passenger Service.

To be accomplished not later than the date established in accordance with the provisions of special Civil Regulation Serial Number SR–329, or any subsequent regulation affecting this compliance date.

All Lockheed Model 18 aircraft mentioned above must be modified to comply with the fire prevention requirements as outlined in CAR Amendments 41–3, 42–2, and 61–2. Compliance with these requirements may be accomplished by completing the modifications outlined in the following listed Lockheed Service Bulletins. Other rework shown to be equivalent to that covered by the Service Bulletins will also be acceptable.

Item	*CAR 4*	*Lockheed Service Bulletins No.*	*Title*
1.	.3824	18/SB–122	Revision to Waste Paper Container.
		18/SB–123	Installation of No Smoking Placard.
2.	.38250	18/SB–124	Installation of Fire Detection and Extinguishing System.
	.38251	18/SB–125	Installation of Hydraulic Reservoir Oil Tank Guard.
		18/SB–126	Installation of Windshield Alcohol Tank Guard.
		18/SB–127	Sealing of Baggage Compartment.
3.	.43	18/SB–135	Material Substitution—Propeller Feathering Reserve Oil Tank Support.
4.	.4700	18/SB–130	Firewall Revision.
5.	.49 .4900	18/SB–128	Replacement of Power Plant Lines and Fittings.
	.4901	18/SB–129	Installation of Emergency Oil Shut-Off Valves.
	.4902	18/SB–131	Revision to Cabin Heater Ducts.
	.4902	18/SB–133	Replacement of Firewall and Power Plant Lines & Fittings.
		18/SB–136	Installation of Dual Fuel System Fire Resistant Plumbing Provisions for Selective Shut-Off—Propeller.
		18/SB–141	Anti-Icing System (Airplanes having Standard Systems) Provisions for Selective Shut-Off—Propeller.
		18/SB–141A	Anti-Icing System (Airplanes with Tank & Pump in L.H. Nacelle).

In addition to the above, inspect cabin interior fabrics and finishes to determine that these materials or any substitutes or replacements for the materials originally installed comply with the applicable sections of CAR 4b. Safety Regulation Release 259 outlines acceptable procedures for complying with these particular requirements.

49–5–1 Lockheed Applies to All 749 Aircraft Equipped With Curtiss 850–4C2–0 Propeller Blades.

Compliance required by March 25, 1949.

Magnetically inspect the shank section, as far outboard as the 18-inch station, of all 850–4C2–0 blades delivered before November 1, 1948, having less than 700 hours service and which have not been magnafluxed since delivery, using a coil not greater than 27 inches in

diameter and providing at least 8,000 ampere turns, inspection of blades with lowest service time should be accomplished first wherever possible.

Curtiss Service Bulletin No. 47 covers this same subject.)

49–41–1 Lockheed Applies to All Models 649, 749 and 749A Aircraft Equipped With Curtiss Model C632S–A Propellers and Wright Model 749C18BD–1 Engines.

Compliance required on items 1, 2 and 3 by October 11, 1949.

In order to reduce the possibility of subjecting propellers to excessive stresses and to detect hub cracks which may have been caused by such stresses, the following steps are to be taken:

1. Change present 2,100–2,375 r.p.m. restriction to 2,050–2,375. Placard airplane or mark tachometer with green radial line for single point operation at 2,025 r.p.m. Other restrictions listed in AD 48–26–1 still apply.

2. Limit gross weight to 102,000 pounds maximum.

3. On hubs having more than 1,500 hours total service time, visually inspect for cracks the rear outboard portions of the hub barrels. Inspection is to be continued at intervals as close to 10 hours as practical but not exceeding 20 hours maximum. It is strongly recommended that whenever the necessary equipment is available, magnetic inspections be made at the same intervals in accordance with Curtiss Instruction entitled "Field Magnetic Inspection of C6832S–A Hubs." Remove from service any hub showing a crack. To facilitate these inspections, the propeller power unit is covered or sealed to prevent the entrance of water in the unit. As an alternate to the removal of the spinner, these inspections may be conducted through three 5-inch diameter holes located in the side of the spinner in accordance with instructions issued by Curtiss.

4. All C632S–A hubs (P N 116366) with over 2,000 hours total time shall be retired from service as soon as possible and not later than November 30, 1949.

5. Items 1 and 2 also apply when the C–632S–B hub (P/N 129914) is used to replace the C632S–A hub (P/N 116366).

49–49–1 Lockheed Applies to All Model 49 Series Aircraft Equipped With Eclipse-Pioneer Model PB–10 Automatic Pilots.

Compliance required prior to reconnection in aircraft.

Prior to reconnection in the aircraft of the Eclipse-Pioneer Model PB–10 automatic pilot, it is necessary to modify the installation to include provisions designed to safeguard the aircraft in the event of malfunctioning of the autopilot. This modification has been determined to consist of the following interdependent changes:

Modify the master direction indicator and wiring at the autopilot controller plug and amplifier to change the direction signal from the rudder channel to the aileron channel; install resistors in series with the variable phase of aileron, rudder and elevator servo motors to reduce servo forces; install aileron servo disconnect interlock switch and change wiring to this switch from the existing rudder servo disconnect interlock switch.

An acceptable method of accomplishing this modification is described in LAC Service Bulletin No. 49/SB–576.

This supersedes AD 49–36–1.

49–52–1 Lockheed Applies to All Models 49, 149, 649, and 749 Aircraft.

Compliance required as indicated.

Numerous instances of malfunctioning of the elevator booster system have been reported, causing longitudinal hunting of the airplane and, in one instance, injury to some passengers when operation of the elevator boost shifter mechanism was accomplished. Also, in other instances, it has sometimes been impossible to actuate the shifter mechanism, probably as a result of frozen moisture accumulating on the mechanism. To minimize further difficulties of these natures, the following must be accomplished:

A. Booster Unit Rework and Lubrication. At or prior to next engine overhaul period, rework all aileron, rudder and elevator booster control valves, as follows:

1. Drill six ⅛-inch water drain holes in the valve cap;

2. Line ream the bushing, P/N 266146–3, to 0.6270-inch/0.6285-inch diameter;

3. Replace AN 913–1 plug with AN 286–2 lubricator;

4. Pack cap assembly with AN G–25 grease, or equivalent;

5. Reidentify valve and cap assemblies by adding a –2 to each part number.

Relubricate booster control valves with AN G–25 grease or equivalent at each engine overhaul period. This lubrication interval may be increased as substantiated by service experience.

B. Rework of Elevator Shifter Latches. At or prior to the next No. 3 inspection, all elevator shifter latches, LAC P/N 278416, shall be reworked to remove the end which hooks around the anchor pin, LAC P/N 278484. (The overcenter spring on the shifter walking beam eliminates the necessity for the locking action of these hooks.) The shifter control system shall then be checked as follows: With the shifter walking beam in "boost on" position, the control system should be rigged so that (1) when the cockpit control is in full down position, the reworked latch is in firm contact with the anchor pin but acts as a stop device only; (2) when the cockpit control release button is depressed, the control springback is approximately 0.25 inch.

C. Rework of Elevator Booster Power Levers. As soon as practicable but not later than next engine change, the feel lever bolt holes in the elevator walking beam assembly shall be chamfered in accordance with LAC SD 67471.

D. Flight Manual Revisions. To be accomplished not later than July 15, 1949. Dependent upon the airplane model involved, ascertain that the Model 49 and Model 149 Flight Manuals incorporate approved revision dated March 4, 1949, or that revised Model 649/749 Flight Manual dated February 5, 1949, is being utilized. (The 49/149 revision and Section III, paragraph 2 of the revised 649/749 Manual outline the shifting techniques to be followed when shifting is desired.)

(Lockheed Service Bulletin 49/SB–578 dated October 25, 1949, covers item A and Lockheed Service Information Letter No. 425, dated February 28, 1949, covers item D above. Item C is covered by Lockheed telegram to all operators dated January 18, 1949, and similar information is contained in Lockheed Service Bulletin 49/SB–502. Two E. O. 4681A describes an approved method of complying with item B. The replacement link assemblies called for in LAC Service Bulletin 49/SB–502 utilize new latch hooks, P/N 303689. Installation of these new link assemblies does not preclude the necessity of removing the hook ends of the latches, as specified in item B.)

This supersedes AD 49–22–1.

52–8–1 Lockheed Applies to Certificated Army and Navy Versions of the Model 18 Aircraft Designated C57, C57B, R50–1, R50–2, R50–3, R50–5, R50–6, C60, C60A and C59.

Compliance required at next annual inspection, but in no event later than June 1, 1953.

Inspect all Lockheed Model 18 Series aircraft which have been converted from a military version to civil status, for compliance with Lockheed Drawing No. 50829, change A, to provide seal at the inboard end of the integral fuel tanks (inside fuselage) to prevent gasoline fumes from accumulating in the passenger compartment in case of fuel tank leakage. Inspection of the area can be accomplished by removal of the overhead panels adjacent to the fuselage skin in the No. 3 and No. 4 baggage compartments or by removing floor panels in the cabin.

Diaphragms and vents must be installed in accordance with Lockheed Drawing No. 50829 (or equivalent).

(Drawing No. 50829, change A, covering the required installation may be obtained from Lockheed Aircraft Corp., Burbank, Calif.)

52–12–3 Lockheed Applies to Models 49–46, 149–46, 649–79, 649A–79, 749–79, 749A–79, C–121A, and VC–121B Aircraft.

Compliance required as indicated.

Inspect the following by August 1, 1952:

1. Bulkhead ring at Station 527.6 for cracks in channel bend radius P/N 283984–2 and –3 for Models 49 and 149, and P/N 285772–2 and –3 for all other models, as well as bracket P/N 252886 for all models.

2. Inspect for and replace any missing or broken screws through the outer flange of the bulkhead 527 visible under fillet.

If no cracks are found on first inspection, reinspect at 2,000-hour intervals until total airplane time reaches 8,000 hours. After 8,000 hours, reinspect at approximately 600-hour intervals. If cracks are found, operation may continue prior to repair provided cracks are marked and reinspected at approximately 200-hour intervals and, further, provided: (1) Total length of all cracks on one side of airplane does not exceed sum of 2½ inches not counting cracks, if any, in bracket 252886; (2) Cracks in bracket 252886 left or right do not exceed sum of 2 inches. If cracks exceed either 2½ inches in the channel or 2 inches in bracket, repair by either the interim fix method or final fix. The interim fix may be accomplished by bolting steel blocks tightly to each side of bulkhead ring webs in the vicinity of the cracks, with additional bolts through the steel flange of the ring and tapped into the steel blocks.

(Lockheed Service Bulletin No. 49/SB-714 covers this repair.)

The final fix consists primarily of replacing the aluminum alloy bracket, P/N 252886, with a heat-treated alloy steel bracket of approximately the same dimensions except for gage, and adding 0.078 inch heat-treated alloy steel doublers to the cracked channels, all parts securely bolted together.

(Lockheed Service Bulletin No. 49/SB-715 describes this reinforcement.)

If the interim fix as described by Lockheed Service Bulletin No. 49/SB-714, or equivalent, has been complied with, the inspection period may be increased to approximately 400-hour intervals until the final fix is applied. If the final fix, as described in Service Bulletin No. 49/SB-715, or equivalent, is complied with, no further inspections are necessary.

The term "approximately" is used in connection with the inspection periods to provide flexibility so that these periods may be integrated with operators' regular inspection periods, nearest to the periods specified herein.

52-13-2 Lockheed Applies to All Constellation (49 Series) Airplanes With Hamilton Standard Reversing Propellers.

Items I, II and III are 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 1, 1952, and shall be completed no later than November 1, 1953.

I. In order to prevent inadventent 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 and the following instructions which pertain to specific features to be considered in isolation of the circuits. Airplanes which have other features not specifically referred to in this list shall be treated in an equivalent manner:

A. The multiple pin connector assembly at the reverse coordinating relay panel must comply with item 2 of attachment A.

B. Protect the following exposed terminals as specified in item 3 of attachment A:

(1) Exposed terminal on "A" relay in reverse coordinating relay panel;

(2) Exposed terminals at throttle reversing switches (not required if item IIA(1) is installed).

C. Modify Hamilton Standard relay box, where used, 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 any two relay boxes.

D. Reversing solenoid circuit wiring: Modify in accordance with item 4 of attachment A.

II. Other circuit modifications:

A. All airplanes shall be modified in one of the following ways:

(1) Install an additional switch in the reversing solenoid circuit which will prevent the application of power to the circuit until the switch has been closed by operation of the landing gear actuated throttle reversing lock system, or

(2) Comply with Hamilton Standard Service Bulletin No. 221.

III. Pedestal design (same compliance date as item I):

A. Reversing throttle switch and lock bar assembly: Modify the assembly by adding a

stop pin and plate for the lock bar and cutting clearance notches on No. 1 and No. 4 switch triggers.

IV. Maintenance practices:

A. At each nearest scheduled service to 350 hours:

(1) Inspect the points specified in item IB and any other critical points in the systems where two or more solenoid wires run together. These inspections may be discontinued if the modifications made to the system are of the type described in 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.

(3) If item IIA(1) is installed, perform an electrical check of the switch to assure that it opens when the throttle lock bar is in the locked position.

B. At any time that an electrical fault occurs in a circuit which is carried in the same bundles or the same conduit 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.

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

VI. (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.)

ATTACHMENT A

Criteria for isolation of reversing circuits at terminal points and connections:

1. Terminal Strips. The following methods of isolation can be used:

(*a*) Elimination of connections at terminal strips by using continuous wiring,

(*b*) Providing separate, covered terminal strip for reversing lead connections,

(*c*) Isolating the solenoid lead stud, terminals and associated hardware from all other nearby studs or terminals by enclosing these components in an insulating cover which is so designed or secured to the wiring that the wire will stay in place in case of breakage at the terminal or so that the broken wire and terminal will remain insulated by the cover from contact with other circuits if the wire comes off its terminal. The nature of the cover design or provisions for its attachment must be such that its installation will not be overlooked during maintenance,

(*d*) Removing or grounding studs adjacent to solenoid valve lead stud and securing all adjacent wiring and the reversing solenoid lead to prevent contact of broken leads with reversing solenoid terminal or contact of broken reversing solenoid lead with other terminals. If the adjacent studs are grounded, rather than removed, the studs must be identified distinctively so that they will not inadvertently be used for the attachment of wires serving other circuits.

2. Multiple Pin Connector Assemblies. The following methods of isolation can be used:

(*a*) Elimination of pin connectors by using continuous wiring,

(*b*) Providing separate pin connectors for each reversing solenoid circuit,

(*c*) Deactivating all pins adjacent to the one carrying the reversing solenoid circuit. These pins are to be retained in the connector but identified distinctively so that they will not be used inadvertently. When distinctively identified, these pins may also be used for circuits which cannot supply sufficient energy to actuate the reversing solenoid or circuits which are energized only when reversing is desired. At the points where wires are attached to the connector pins, all exposed metal parts are to be protected with insulating covers so secured that contact between circuits cannot occur in

case of failure at the connection or in case foreign material is left in the connector assembly.

3. Exposed Terminals on Relays and Switches. Protect these terminals in either one of the following ways:

(*a*) As specified in item 1(*c*) for terminal strips, or

(*b*) If the terminal is a type which cannot be protected as specified above, cover all exposed metal components with insulating material and secure all wires so that no wire can touch another terminal if the wire breaks or falls off its own terminal. Install insulating barriers as necessary to prevent inadvertent contact between broken or loose wires and other terminals.

4. Reversing Solenoid Circuit Wiring. Modify in one of the following ways:

(*a*) Physically isolate the wiring from all other circuits.

(*b*) If the wiring is run in bundles with other wires, a shielded wire is to be used. The shielding shall be grounded at both ends and a protective cover shall also be provided over the shielding. The shielding shall be carried as close as possible to the terminal points.

5. Operating Instructions. Not later than August 1, 1952, 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 inadvertent reversing during the unfeathering operation:

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

(*b*) 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.)

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

53–5–1 *See* Curtiss Propellers.

53–15–2 Lockheed Applies to All Models 049, 149, 649 and 749 Series Aircraft.

Compliance required as indicated.

At the first arrival at the main base, unless already accomplished, inspect for cracks in the forward flange of the lower front spar cap at wing Station 326, left and right, with particular reference to spar cap joggle areas using dye penetrant inspection method or equivalent.

1. If crack is found in the forward flange and does not extend into the vertical leg, stop drill the crack unless it terminates in a rivet hole and make permanent repair or install the serviceable repair in accordance with LAC Drawing 325800. When serviceable repair is used, a visual inspection must be conducted at periodic intervals not to exceed 50 hours with dye penetrant inspection or equivalent method to be used at periods not to exceed every 200 hours until incorporation of the reinforcement per LAC Drawing 325667, change A or equivalent.

2. If crack in the front spar flange extends into the vertical leg, remove tank sealant as necessary for skin and web inspection using dye penetrant inspection method or equivalent. Reinforcement per LAC Drawing 325667, change A or equivalent is necessary before resuming commercial operation and normal inspection procedures.

3. If no cracks are found, reinspect using dye penetrant inspection method or equivalent on all aircraft with 10,000 hours or more total flight time, at intervals not to exceed 200 hours, and on all other aircraft at each major airframe inspection period until such time as reinforcement per LAC Drawing 325667, change A or equivalent is accomplished.

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

54–22–1 Lockheed Applies to Models 49, 649, 749, and 1049 Airplanes as Noted in Referenced Service Bulletins.

Compliance required by April 1, 1955.

A recent engine fire resulted in a premature failure of a flexible hose in the feathering line and in penetration of fire from zone 1 into zone 2.

1. To increase the fire resistance integrity of the propeller feathering line between the pump and the governor, replace the existing flexible hose assemblies meeting current fire resistance requirements. The following Lockheed Service Bulletins cover this subject: No. 49/SB–786 for Model 049 through 749 airplanes and No. 1049/SB–2195 for Model 1049 airplanes. The following hose assemblies may also be considered acceptable for this application:

(*a*) Aeroquip 680–10S hose assemblies with Aeroquip 304 protective sleeves over end fittings.

(*b*) Resistoflex—SSFR–3800–10 hose assemblies.

2. To increase the fireproof integrity of the zone 1 fire seal diaphragm against burn-through into zone 2 in the event of a power section fire install steel plates over the lower engine cowling longerons adjacent to the diaphragm. The following Lockheed Service Bulletins cover this subject: No. 49/SB–760 for Model 649/749 airplanes and No. 1049/SB–2115 for Model 1049 airplanes.

54–24–2 Lockheed Applies to 1049C, Serial Numbers 4520 Through 4548; Model 1049E, Serial Numbers 4549 Through 4556, 4558 Through 4560, and 4563 Through 4565; Model 1049D, Serial Numbers 4163 Through 4166.

Compliance required as indicated.

1. Perform a visual inspection of the outer wing main beam web between Stations 551 and 637, left and right, for cracks as soon as practical, and reinspect at intervals of approximately 125 hours until this area is reinforced as outlined in paragraph 2. If cracks are found repair and reinforce as per paragraph 2 immediately. Inspection for fuel stains alone as an indication of a crack is not sufficient due to the presence of sealant on the inside of the tank surface.

2. Reinforce the main beam web between wing Stations 551 and 637, left and right as soon as possible, convenient with aircraft check periods, but not later than 1,000 hours after receipt of parts from the manufacturer or March 1, 1955, whichever occurs first. This may be accomplished by the addition of extruded aluminum alloy (75ST6) stiffeners (LS347–3), one between each of the original stiffeners in this area.

(Lockheed Service Bulletin No. 1049/SB–2559 describes this reinforcement.)

54–24–3 Lockheed Applies to All Models 49, 149, 649, 749, and 1049 Aircraft.

Compliance required no later than the next regularly scheduled landing gear overhaul for all subject type aircraft.

Failures of Bendix No. 405308 main landing gear actuating cylinder assembly are continuing to occur and may result in flight hazards due to inability to actuate the landing gear. Bendix Pacific Division issued their Service Bulletin No. 71 dated December 26, 1952, for rework and inspection of these assemblies. Lockheed has written to all operators, August 20, 1954, specifying additional rework.

It is necessary, in order to increase service life of these cylinders, to either replace them with cylinders of the new Bendix design (which incorporate a $\frac{3}{16}$-inch radius in the barrel) or to accomplish the following:

1. Rework cylinder assemblies 405308–0–1, –0–2, –0–3, –0–4, –0–5 and –1, to provide a $\frac{3}{32}$-inch relief radius at the juncture of the barrel bore relief area and bottom of the barrel, and to spot-peen this $\frac{3}{32}$-inch radius area.

2. Magnetically inspect the barrel internally and externally prior to and following the rework per item 1. If the barrel is cracked, it must be scrapped.

(Bendix Service Bulletin No. 71 and Lockheed Letter FS/93931 to operators dated August 20, 1954, covers this same subject.)

55–5–2 *See* Hamilton Standard Propellers.

55–15–3 Douglas and Lockheed Applies to All Douglas DC–3 and C–47 Series Aircraft, DC–4 and C–54 Series Aircraft; and All Lockheed 18 Series Aircraft Equipped With Hamilton Standard Propellers Used in Air Carrier Passenger Operations.

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

To increase 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 the current fire resistance requirements. However, if the feathering line in zone 1 includes a section of steel tubing, flexible hose assemblies located forward of the cylinders and connecting to the governor are not affected by this directive.

The following flexible hose assemblies are acceptable for use in this application:

(*a*) Resistoflex SSFR–3800–10 hose assemblies.

(*b*) Aeroquip 680–10S hose assemblies with Aeroquip 304 protective sleeves over end fittings (Aeroquip assembly P N 304000).

(*c*) Aeroquip 309009 hose assemblies.

(*d*) Aeroquip 309009–8S hose assemblies (where feathering system requires this size).

55–15–6 Lockheed Applies to 049–149 Aircraft, Serial Numbers 1963 Through 1980, 2021 Through 2088; 649–749 Aircraft, Serial Numbers 2503 Through 2590, 2610, 2611, 2614 Through 2618; 1049C Aircraft, Serial Numbers 4501 Through 4548; 1049E Aircraft, Serial Numbers 4549 Through 4555, 4558, 4559, and 4563 Through 4565; 1049D Aircraft, Serial Numbers 4163 Through 4166.

Compliance required by April 1, 1956, for Model 1049 aircraft and October 1, 1956, for Models 049 149 and 649 749 aircraft.

To improve the fire-resistance integrity of the above aircraft, revisions to the system supplying cooling air to the accessory section of the powerplant installation are considered necessary.

For 049–149 aircraft and 649–749 aircraft, the revision consists of installing a shutoff valve in a fireproof duct.

For the 1049C and E aircraft, the revision consist of replacing a section of aluminum duct between the oil cooler scoop, and the existing shutoff valve, with a fireproof duct. This section is in zone 1, and provides a possible zone 1 to zone 2 firepath.

Lockheed Service Bulletins 49/718, for 049/149 aircraft; 1049/2384, for 1049 aircraft; and 49/391A, for 649–749 aircraft, cover these subjects.

55–17–1 Lockheed Applies to All Models 49, 149, 649, 749, and 1049 Airplanes.

Compliance required by December 1, 1955, unless already accomplished.

A recent failure of wing flap torque tube assembly, P/N 326605–3, on a Model 1049C is attributed to a defective bolt, P N AN 23–19. Initial overtorque of the bolt is suspected as the cause of failure of the bolt. It is therefore necessary that all Constellation and Super Constellation airplanes be inspected to ascertain proper installation of bolts, including bolt torque, on all wing flap torque tubes.

Proper torque value for the AN 23–19 bolts is 10 to 20 inch-pounds. Nut torque must be checked with a torque wrench and all overtorqued bolts replaced. If necessary, the next size longer bolt (P/N AN 23–20) may be used to facilitate installation within proper torque tolerances. Washers may be used as required, but not to exceed two under the head or two under the nut, to prevent the nut from bottoming on the shank.

55–23–2 Lockheed Applies to Models 1049C, D, E, and G, Serial Numbers 4163 Through 4166, 4520 Through 4581, 4583 Through 4605, 4608 Through 4615, and 4620.

Compliance required as indicated.

1. Inspect the outer wing main beam web between wing Stations 510 and 668 left and right for cracks as soon as practical and repeat at 125-hour intervals until reinforcement in accordance with paragraph 2 is accomplished. If cracks are found repair immediately in accordance with Lockheed Repair Manual, Report 8882, and continue 125-hour inspections until reinforcement per paragraph 2 is accomplished. Inspection for fuel stains alone as an indication of a crack is not sufficient because of the presence of fuel sealant on the forward side of the web.

2. To be accomplished as soon as possible, but not later than next scheduled progressive overhaul time, and in no case later than December 1, 1956, whichever occurs first: Reinforce the main beam web, left and right, between wing Stations 510 and 668. This shall be accomplished by the addition of three extruded 75S–T6 stiffeners, (LS2186 or LS6097) or equivalent between each of the original stiffeners. The LS347–3 stiffeners added previously in accordance with AD 54–24–2 on some of these aircraft may be retained. In these cases, one new (LS2186 or LS6097 or equivalent) stiffener must be added between each of these and the original stiffeners in this area.

(Lockheed Service Bulletin No. 1049/SB–2753 also covers this subject.)

55–23–3 Lockheed Applies to Models 49, 149, 649, 749 and 1049 Aircraft, Serial Numbers 1963 Through 1980, 2021 Through 2088, 2503 Through 2590, 2610, 2611, and 2614 Through 2677, 4001 Through 4024, 4163

Through 4166, 4501 Through 4581. 4583 Through 4594, 4602 Through 4604, and 4613 Through 4615.

Compliance required as indicated.

1. As soon as possible, but not later than next 250 hours conduct magnetic particle or magnaglow inspections on main landing gear downlock spring cylinder assembly rod end P/N 295168 for cracks in the threaded portion. If cracks are found replace the part immediately. Repeat inspection, magnetic particle or 20-power magnifying glass at 300-hour intervals until replacement in accordance with paragraph 2 is accomplished.

2. Replace downlock spring cylinder assembly P/N 270104 with new assembly P/N 475211 as soon as practical but not later than the next progressive or base overhaul period approximately 2,500 hours. Concurrently with this replacement, line ream the lugs on the downlock strut assembly to (0.3770 inch–0.3780 inch) diameter and replace the spacer P/N 268225–2 with bushing P/N LS3859–4–1094 and replace bolt AN 23–21 with AN 23–22 attaching the lower end of the spring cylinder assembly to the downlock strut.

(Lockheed Service Bulletins 49/860 and 1049/2709 also cover this subject.)

56–8–1 *See* Curtiss Propellers.

56–16–2 Lockheed Applies to All Models 49, 149, 649, 749 and 1049 Series Aircraft Equipped With Bendix Eclipse-Pioneer Type PB–10 Series Automatic Pilot Installations.

Compliance required as indicated.

Numerous instances of fatigue failures have been reported in the side webs of the Bendix Eclipse-Pioneer Type DQ–15 Series servo disconnect mounting brackets in the primary flight control system. Since complete failure could result in disabling the flight control system, the following must be accomplished as indicated:

1. The rudder and elevator servo disconnect mounting bracket installations in the primary flight control system must be inspected by dye penetrant or equivalent method, at 125-hour intervals until item 2 is accomplished. Defective servo mounting brackets must be discarded.

2. To be accomplished as soon as possible but not to exceed next overhaul period after parts become available. The rudder and elevator servo must be reinforced by installation of a secondary servo support bracket to provide additional support and vibration dampening.

(Bendix Eclipse-Pioneer Service Bulletin No. 858 and Lockheed Service Bulletins Nos. 49–864 and 1049–2830 also cover this subject.)

56–25–1 Lockheed Applies to All Models 49, 149, 649, 649A, 749, 749A Aircraft; Model 1049 Serial Numbers 4001 Through 4024; Model 1049C Serial Numbers 4501 Through 4520 and 4523 Through 4538.

Compliance required at first block overhaul following receipt of parts or by March 1, 1958, whichever occurs first.

In view of the continuing series of incidents wherein flaps extend on one side of the aircraft out of symmetry with the other side, a means shall be installed which will automatically shut off the hydraulic power to the flap actuating motors whenever an asymmetrical condition exists. One method of accomplishing this means is described in Lockheed Service Bulletin No. 49/SB–794 for the 49/749 Series and No. 1049/SB–2270 for the 1049 Series.

56–26–1 Lockheed Applies to Super Constellation 1049 Series Aircraft, LAC Serial Numbers 4501 Through 4565, 4572 Through 4647 and 4163 Through 4166.

Compliance required as soon as possible but not later than the next block overhaul or major inspection period after parts become available.

The relays housed within the generator feeder protection main relay box have been found capable of overheating at high generator output. This could become excessive when one or more generators become inoperative. This box contains the main DC bus, which is the tie-point of all primary electric power for the airplane. To minimize the probability of complete electrical outage in this vital area, greater heat transfer capability shall be provided either by installing a blower and replacing the existing interconnecting bus bars with new bus bars having increased cooling areas, or by an equivalent means approved by the Chief, Engineering and Manufacturing Branch, FAA Western Region.

(Lockheed 1049 Service Bulletin No. 2838, dated August 20, 1956, contains FAA-approved rework information for compliance with this AD.)

This airworthiness directive does not apply to aircraft equipped with two 11 KVA alternators.

Revised July 25, 1962.

57–3–2 Lockheed and Douglas Applies to Lockheed Models 49, 149, 649, 749 and 1049 Series Airplanes and Douglas DC–7 Series Airplanes With Wright Engines.

Compliance required not later than December 1, 1957.

Under certain cold weather operating conditions it is possible for the fuel inlet strainer and other parts in the engine master control to become clogged with ice as a result of entrained water in the fuel freezing on the screen. This has caused a loss of power on all engines simultaneously.

To relieve strainer icing, a screen having a bypass valve Bendix P/N 366204 should be installed in replacement of the screen not having a bypass valve. Bendix Service Bulletin No. 797 covers this subject. It should be noted that the incorporation of the screen with bypass will not positively prevent power loss from fuel ice: therefore, work is continuing to develop a means to protect other portions of the master control downstream of the inlet strainer. If necessary, a supplement to this note will be published when additional information becomes available.

57–3–3 Lockheed and Douglas Applies to Lockheed Models 49, 149, 649, 749 and 1049 Series and Douglas DC–7 Series Airplanes.

Compliance required by April 1, 1957, for Lockheed aircraft and by May 1, 1957, for DC–7 aircraft.

Under certain cold weather operating conditions the perforated paper covering around the Purolator micronic filter elements are subject to accumulation of ice as a result of entrained water crystals in the fuel freezing on this covering. This interferes with proper fuel filtering by causing the fuel to pass through the bypass valve in the filter unit.

To make the micronic filter less susceptible to clogging by ice, the perforated paper covering around the filter element is to be removed. Removal of the perforated cover does not affect the filtering characteristics of the filter element. Filter elements without the paper covering are identified as Purolator P/N 30868–3.

57–23–1 Lockheed Applies to All Model 18 Aircraft Equipped With Vacuum Systems.

Compliance required at next engine overhaul but not later than July 15, 1958.

To guard against the possibility of excessive air temperature and associated fire hazards in the vacuum system discharge line, one of the following modifications must be accomplished:

1. Install a fusible plug in the side of the vacuum pump discharge port at right angles to the axis of the discharge port boss. Some pumps incorporate a plugged hole in the discharge port which may be enlarged to a ⅜-inch pipe tapped hole to accommodate the fusible plug. This plug should employ an AN 840–8D fitting with a binary eutectic mixture of 67.8 percent tin and 32.2 percent cadmium, which has a melting point of 351° F. A drawing describing the design of such a plug is shown in Douglas Figure 2. The ⅜-inch plug fitting is intended for pumps such as the Model 3P–211 and 3P–485. For smaller pumps such as the 3P–207, and AN 840–6D fitting, incorporating the same modification as shown below, should be used. Brass fittings of the same design as the above dural fittings are acceptable. Incorporation of an overboard drain line clamped to the fusible plug is recommended but is not mandatory. On installations which do not use an overboard discharge line the possibility exists that the plug may damage other nacelle components if it can hit them upon being blown out of the adapter at high velocity. Therefore, if no overboard discharge line is provided, the installation must be made in such a manner that the plug will not be directed toward any vulnerable components when it issues from the adapter, or

2. Employ an oil separator equivalent in principle to the Genisco No. 40081 incorporating a pressure relief valve which can be disassembled for cleaning.

58–1–5 Lockheed Applies to All Models 49–46, 149, 649, 649A, 749, 749A, and 1049–54 Aircraft.

Compliance required as indicated.

As a result of cracks discovered in Lockheed 749A wing skin and stringers, the following inspections shall be accomplished on the various model aircraft as indicated, and if any cracks are discovered, they must be repaired prior to further operation. Any FAA/LAC approved repair may be used.

Inspect and reinspect for cracks in the lower wing skin and stringers, left and right, from wing Station 125 through Station 215 between the front and rear beams. Inspections to be conducted at the following specified times and intervals using X-ray and visual, or visual means. The X-ray inspection method is recommended if equipment is available, since cracks under the stringers would be detected.

I. For Models 649, 649A, 749, 749A and 1049–54:

A. The first inspection should be performed before 20,500 hours have been accumulated on the aircraft. For aircraft on which inspections of STA 191 through 206 have already been made in accordance with AD 56–3–1, initial inspections of additional indicated areas need not be earlier than and may be correlated with reinspections required by B1, B2, and B3.

B. Reinspections must be accomplished in accordance with *one* of the following programs:

(1) X-ray at 2,500 hours (maximum) intervals without opening the fuel tanks following the recommendations and technique outlined on Lockheed Sketch No. 101057 or a FAA/LAC approved equivalent. In addition to the X-ray inspection at this time, the bottom side of the wing skin must be visually inspected from front to rear beam beneath the nacelle to wing fillets on the inboard and outboard sides of No. 2 and No. 3 nacelles. This necessitates opening the kidney plate inspection holes in these fillets and/or removal of the tail cone assembly. See Lockheed Sketch No. 101057 for location of cracks which have previously been discovered; or

(2) X-ray at 3,200 hours (maximum) intervals by opening the fuel tanks and following the technique outlined on Lockheed Sketches No. 101057 and No. 101058, or FAA/LAC approved equivalent. In addition to the X-ray inspections at 3,200 hours, aircraft with over 20,000 hours must be visually inspected at 200-hour (maximum) intervals as follows:

Inspect the bottom side of lower wing skin, for leaks resulting from cracks, from front beam to rear beam between W.S. 125 and W.S. 145 and between W.S. 191 and W.S. 215. This necessitates opening the kidney plate inspection holes in the nacelle to wing fillets on the inboard and outboard sides and/or removal of the tail cone assembly of nacelles No. 2 and No. 3. This area should be given special attention. If leaks are discovered and cracks suspected, tanks must be opened and stripped of sealant to visually inspect upper side of skin. Inspect the upper side of lower wing skin for cracks in the dry area from front beam to rear beam between W.S. 145 and W.S. 191. See Lockheed Sketches No. 101057 and No. 101058 for location of cracks which have been previously discovered; or

(3) When X-ray equipment is not available, a visual inspection must be made at 800-hour (maximum) intervals after opening the fuel tanks and removing the sealant from the designated areas. It should be noted that cracks under stringers cannot be detected by the visual inspection method.

C. The reinspections required as per paragraph B1, B2, or B3, may be discontinued when permanent reinforcement per Lockheed Drawing No. 550236 has been accomplished, except that:

In the area from W.S. 125 to W.S. 191 where the size and kind of material remains unchanged (i.e., the old material is merely replaced with new) the reinspection program noted above must be reinstated not later than 20,000 hours after rework.

D. Lockheed Drawing Nos. 11755, 490668, 492806, and 493312, describe approved permanent repairs for individually affected areas in which cracks have been previously discovered. Reinspections in the area between W.S. 191 and W.S. 215 may be discontinued if permanent repair is made per Lockheed Drawing No. 11755. The reinspection program must be reinstated not later than 20,000 hours after rework is accomplished in the individually affected areas per drawing numbers 490668, 492806, or 493312.

II. For Models 49–46 and 149:

A. The first inspection should be per formed before 25,500 hours have been accumulated on the aircraft. For aircraft on which inspections of STA 191 through 206 have already been made in accordance with AD 56–3–1, initial inspections of additional indicated areas need not be earlier than and may be correlated with reinspection required by B1, B2, and B3.

B. Same as paragraph I.B.

1. Same as paragraph I.B.(1).

2. Same as paragraph I.B.(2) (except substituted 25,000 hours for 20,000 hours).

3. Same as paragraph I.B.(3).

C. The reinspections required as per paragraph B1, B2, or B3 may be discontinued, when permanent reinforcement per Lockheed Drawing No. 550236 has been accomplished, except that:

In the area from W.S 125 to W.S. 191 where the size and kind of material remains unchanged (i.e., the old material is merely replaced with new) the reinspection program noted above must be reinstated not later than 25,000 hours after rework.

D. Lockheed Dwg. Nos. 11755, 490191, 490668, 492806, and 493312 describe approved permanent repairs for individually affected areas in which cracks have been previously discovered. Reinspections in the area between W.S. 191 and W.S. 215 may be discontinued if permanent repair is made per Lockheed Drawing No. 11755 or 490191. The reinspection program must be reinstated not later than 25,000 hours after rework is accomplished in the individually affected areas per drawing Nos. 490668, 492806, or 493312.

This supersedes AD 56–3–1.

58–8–3 Douglas and Lockheed Applies to All Douglas DC–3, Lockheed 18, and PV–1 Aircraft Having Bromochloromethane (CB) Fire Extinguisher Systems. (NOTE: Not Applicable to Systems Which Provide Leakproof Enclosures for the Fire Extinguishing Agent Containers.)

Compliance required by October 1, 1958.

Due to the toxicity hazard for crew and passengers existing in these airplanes having Bromochloromethane (CB) fire extinguishing system installed, particularly when the fire extinguishing agent containers are installed in the fuselage, one of the following must be accomplished.

1. The Bromochloromethane (CB) fire extinguisher agent must be replaced with a quantity of Freon 13B1 (Bromo-tri or CF_3Br), equal to 0.8 times the installed weight of Bromochloromethane (CB) and a suitable breathing oxygen supply must be provided for the crew as specified in CAR 4b.651.

2. The Bromochloromethane (CB) fire extinguisher agent must be replaced with a quantity of carbon dioxide (CO_2) equal to 1.25 times the installed quantity of Bromochloromethane (CB) and a suitable breathing oxygen supply must be provided for the crew as specified in CAR 4b.651.

3. The installed Bromocholormethane (CB) system must be shown to comply with the requirements of CAR 4b.371(b) and 4b.484 (b)(2).

NOTE: This may be accomplished by enclosing the containers with a similar or equivalent system to that shown on AiResearch Drawings C–4900–77B sheets 1 to 3 inclusive.

58–11–2 Lockheed Applies to All Model 18 Aircraft.

Compliance required as indicated.

A number of reports has been received relative to cracks in the welds of the drag strut yoke (P/N XY450–2L–1) on the main landing gear. These cracks, as they progress, result in continuing reduction in the strength of the landing gear and hence render the landing gear unairworthy. It is, therefore, necessary to inspect the main landing gear for cracks in the area indicated as follows:

1. Not later than July 1, 1958, and at each 500 hours of operation thereafter inspect the main landing gear by means of dye penetrant, magnetic particle or equivalent.

2. At each 100 hours of operation conduct a visual inspection using an 8-power magnifying glass or equivalent.

In the event cracks are found, the oleo strut must be replaced.

If the oleo strut is replaced by a new part the above inspections need not be resumed until after 3,000 hours of service.

For the purpose of compliance with this airworthiness directive, X-ray inspection is not considered an equivalent of dye penetrant or magnetic particle inspection.

This supersedes AD 58-7-2.

58-11-3 Lockheed Applies to All Models 18 Series and PV-1 Aircraft.

Compliance required as soon as possible, but not later than December 1, 1958.

Numerous reports have been received of cracks occurring at the base of the rudder cable attachment tangs, on rudder control quadrant, Lockheed P/N 53026. There is evidence that excessive clearance may exist between the tangs and the rudder cable attach fittings which permits a bending load to be applied at the base of the tangs, when the AN 5 attach bolts are tightened.

P/N 53026 should be inspected by means of a dye penetrant or equivalent inspection means in the areas noted above. If cracks are found, the parts must be replaced.

Furthermore, the means of attaching the rudder cables to the quadrant must be modified to preclude over-loading the attach tangs and subsequent occurrence of cracks due to the tightening of the attach bolts.

Two acceptable means of accomplishing the modification are noted below:

the tangs, when the AN 5 attach bolts are tight

1. Replace both the AN 5 bolts with AN 4-12A bolts, AN 365 nuts and AN 960-516 washers, under the head and nut in conjunction with a 5/16 x 0.032-inch wall cadmium plated steel spacer 1-inch long as a sleeve. The length of the sleeve may protrude past the thickness of the washers a maximum of 1/16-inch or a minimum of 0.003 inch so that when tightened, the nut will bottom against the spacer and not on the washers.

NOTE: To compensate for machining tolerances and casting variation, additional washers or various length sleeves may be used to obtain the proper sleeve exposure.

2. Replace the AN 5 bolts with AN 25-20 clevis bolts, AN 516 washers, AN 320-5 nuts and AN 380-2-3 cotter pins.

NOTE: If more than 1/16-inch of bolt grip is exposed after installing the nut and washer, due to machining tolerances and casting variation, place additional washers under the head of the bolt to reduce the grip exposure to a minimum of 0.003-inch.

(Lockheed Service Bulletin No. 18/SB-150 covers this same subject.)

58-13-3 Lockheed Applies to All Model 1649A Aircraft.

Compliance required as indicated.

Model 1649A aircraft have been found to have possible hazardous wing bending oscillation, dynamically induced by aileron oscillation, under certain combinations of boost package tolerances and autopilot modulating piston follow-up failure. In order to correct this condition, the following must be accomplished:

Modify the aileron control valve by installing a new modulating piston stop to meet limits of aileron deflection rates of 7.5° per second minimum and 11° per second maximum. The valve is then to be reidentified as 668152-11 and to be painted yellow to denote noninterchangeability with elevator and rudder valves. Details of the necessary modifications are given in Lockheed communication FS/225805-W, dated June 13, 1958.

This modification is to be accomplished as soon as maintenance schedules will permit but not later than January 1, 1959. Until the modification is accomplished, the airplane must be flown in autopilot operation at speeds not to exceed 215 KIAS.

This supersedes AD 58-11-4.

58-20-3 Lockheed Applies to Models 049, 149, 649, 649A, 749, and 749A Aircraft; Serial Numbers 1963 Through 1980; 2021 Through 2088; 2501 Through 2631; 2633 Through 2638 and 2640.

Compliance required as indicated.

A recent in-flight failure of an aft pressure bulkhead has been determined to have resulted from severe corrosion in the area of the lavatories.

The following must be accomplished on all aircraft which have accumulated 6,000 or more flight hours. Items 1. and 2. are not applicable to any of the aircraft which have been inspected in accordance with 2. and repaired as necessary per 3., within the past 4,000 hours. All affected aircraft will be limited to 2 p.s.i. cabin pressure differential until 1. and 2. have been accomplished.

1. Unless already accomplished per Lockheed wire FS/228233W or FS/228562W, within next 50 flight hours thoroughly examine the aft side of the pressure bulkhead (Station 1037) and adjacent shell structure between stringers 24 and 48. Clean and apply concentrated pressure with a device, which will not scratch good metal, to detect any indication of corrosion which may have developed on the forward side. If even slight indication of corrosion is found, conduct inspection 2. immediately.

2. Unless already accomplished per Lockheed wire FS/228233W or FS/228562W, within next 200 flight hours remove toilets, trim, plywood, insulation, paint, sealant, etc., to expose all bulkhead, bulkhead ring and shell structure, both forward and aft side of Station 1037, below the seat level and between stringers 24 and 48 and thoroughly inspect both sides of the pressure bulkhead and ring. Particularly close inspection shall be made to detect any evidence of corrosion at the periphery of faying surfaces at the pressure diaphragm attachment to the bulkhead ring, the elevator-rudder cable pulley bracket attachment on the lower left side and the Cannon plug attachment.

3. Replace any material or parts which show evidence of corrosion damage and thoroughly clean entire area, apply inhibitor, reseal, and paint in accordance with standard maintenance procedure. (See also 5.)

4. Inspect as in 2. and repair as in 3. at each block overhaul or at periods not to exceed 4,000 hours. This time may be increased to 8,000 hours on those airplanes in which sealing and drainage provisions equivalent to those outlined in Lockheed Service Bulletin No. SB/597 are incorporated.

5. If corrosion is found, flight operations shall be restricted, pending repairs, as follows:

(a) No flight is permissible with significant corrosion damage to bulkhead ring, web, control brackets or shell structure.

(b) Unpressurized flight is permissible if damage is confined strictly to the pressure diaphragm.

(Lockheed wire FS/228562W, dated September 30, 1958, covers the same subject.) (Lockheed Structural Repair Manual, Report No. 5886, covers acceptable repair methods.)

58–21–1 **Lockheed** Applies to All Models 049, 149, 649, 649A, 749, 749A, 1049–54, 1049C, 1049D, 1049E, 1049G, and 1049H and 1649 Aircraft.

Compliance required as indicated.

This is a supplement to AD 58–20–3, in that it applies to an additional area of the pressure bulkhead (Station 1037) and to a greater number of aircraft. A recent inspection of a Model 1049E airplane with 10,500 hours logged time revealed extensive corrosion along W.L. 239 (approximately) between a wood strip and pressure diaphragm at the lavatory seat level. Reported corroded area was approximately 27 inches long by 5 inches wide.

Accordingly, on all aircraft that have or once had lavatories in this area, accomplish the following:

1. Unless already accomplished per Lockheed wire FS/229080–W, within the next 50 flight hours thoroughly examine the aft side of the bulkhead for corrosion in the area of W.L. 239 from a height of 2 inches above to 2 inches below the centerline of rivet or screw attachments across the full width of the bulkhead. Probe the area with a blunt tool to detect advance stages of corrosion. If any evidence of corrosion is found, conduct inspection under step 3. immediately.

2. Unless already accomplished per Lockheed wire FS/229080–W, within 400 hours, inspect in accordance with step 3, or alternatively as follows:

Remove 5/8-inch maximum diameter slugs from the pressure diaphragm by means of a hole saw or equivalent method. Take samples at approximately 6- to 7-inch spacing from the back side of the bulkhead across its full width at approximately W.L. 239. Do not cut samples from diaphragm area covered by stiffeners. If samples show any evidence of corrosion, conduct inspection in accordance with step 3. immediately. Holes in diaphragm may be plugged in accordance with negligible damage repair shown in applicable structural repair manual.

3. If corrosion is found as a result of steps 1. or 2., the following inspections shall be conducted immediately. If both steps 1. and 2. reveal no corrosion, the following inspection shall be conducted at the next block overhaul or within 4,000 flight hours whichever occurs

first and at each block overhaul or 4,000-hour period thereafter. Remove toilet seats and other portions of installation as required. Peel back trim and insulation to expose trim strip and at least 2 inches of bulkhead web above and below trim strip, completely across bulkhead within each lavatory compartment. Remove trim strip and all paint, sealant and cement from the exposed area of web. Make close visual inspection for corrosion.

4. Replace any material or parts which show evidence of corrosion damage. Strip to bare metal, apply inhibitor, sealant, and paint to all exposed web areas. In applying this protection, if the sealant and protective materials noted in Lockheed SB/597 are used, further special inspection at 4,000-hour intervals may be discontinued and normal routine inspections resumed.

5. If corrosion is found, flight operations shall be restricted, pending repairs as follows:

(*a*) Unpressurized flight is permissible if corrosion damage is found on the diaphragm as a result of inspection per steps 1. or 2. (Lockheed wire FS/229080–W, dated October 13, 1958, covers the same subject as this supplement.) (Lockheed Structural Repair Manuals, as applicable, cover acceptable repair methods.)

59–3–2 Lockheed Applies to All Models 049, 149, 649, 649A, 749, 749A, and 1049–54 Aircraft Except Those Already Incorporating the Improved Main Landing Gear Downlock Guide Assembly Per Lockheed Service Bulletin 49/SB–707 and 1049/SB–2021.

Compliance required as indicated.

The following inspections and replacement have been established as a result of fatigue failures in the fillet radius of the main landing gear downlock guide stub, P/N 270201–3.

Unless already accomplished, within the next 150 flight hours inspect all Model 049, 149, 649, 649A, 749, 749A and 1049–54 aircraft for fatigue cracks in the main landing gear downlock guide stub fillet radius, P/N 270201–3, by magnetic inspection.

If cracks are found replace the entire main landing gear guide assembly, P/N 270197, with downlock guide assembly P/N 318332. If P/N 318332 is not available P/N 270201–3 may be replaced by an identical part pending final replacement of the guide assembly as indicated below.

If no cracks are found the part must be reinspected in the same manner at intervals not to exceed 60 flight hours. This reinspection procedure may be terminated upon replacement by P/N 318332.

Unless sooner accomplished, P/N 270197 must be replaced by P/N 318332 at the first block overhaul after July 1, 1959, or in any case no later than July 1, 1960. (Lockheed Service Bulletins 49/SB–707 and 1049/SB–2021 describe the installation of P/N 318332.) (FAA telegraphic instructions of January 30, 1959, covered this subject.)

59–7–1 *See* Curtiss Propellers.

59–7–3 Lockheed

Superseded by AD 62–1–2.

59–7–4 Lockheed Applies to All Models 049, 149, 649, 749 and 1049 Series Aircraft.

Compliance required as indicated.

Several nose landing gear actuating cylinder attach bolt failures have been determined to have resulted from fatigue.

On all aircraft which have accumulated 10,000 or more flight-hours, the following must be accomplished at the next block overhaul, or 4,000 flight-hours, whichever occurs first, and thereafter at intervals not to exceed 10,000 flight-hours.

The two forward bolts, P/N 307403 and P/N 307404, which attach the forward end of the actuating cylinder to the fuselage structure via a universal joint, must be replaced with new unused bolts.

Similarly, the aft bolt, P/N 307402 which attaches the actuating cylinder rod to the drag strut pivot must be replaced with new unused bolts.

59–12–2 Lockheed Applies to All Models 049, 149, 649, 749 and 1049 Series Aircraft.

Compliance required as indicated.

The following inspections have been established as a result of recently found corrosion and cracking on the wing Station 80 bathtub fittings, P/N's 251245 and 251246 on Model 049, 149, 649, 749 Series aircraft and Model 1049–54 aircraft and P/N's 310008 and 310009 on the remaining Model 1049 Series aircraft.

These inspections shall be accomplished on all aircraft which have accumulated 12,000 or more flight-hours. Inspect affected aircraft at the next block overhaul or within 4,000 flight-hours, whichever occurs first.

Inspect all aircraft for cracked bathtub fittings as follows:

(1) Inspection may be made by removing the wing-to-fuselage fillet and dye checking the forward and aft edges on the neck of the bathtub fittings lugs of both the inner and stub wing fittings.

(2) Replace any cracked bathtub fittings.

Inspect each inner wing and stub wing Station 80 fitting for corrosion as follows:

(1) Visually inspect the inner and stub wing Station 80 joint bathtub fittings adjacent to the DD8 rivets and rivet attachments taking particular care to note any imperfections or paint defects. Probe further whenever defects in paint are discovered in order to detect any corrosion.

(2) Replace any wing Station 80 bathtub fittings on which corrosion cleanup exceeds a depth of 0.025-inch or a diameter of 0.70 inch (approximate diameter of a dime) around rivet attachments. Remove corrosion if within the allowable and treat per Lockheed Report 8882, (also 7789 and 5886) paragraph 1-67N, revised July 15, 1957, or equivalent.

(3) Inspect the stub wing and inner wing skin upper surface for corrosion around the bathtub fitting screw holes. Also inspect the stub wing and inner wing upper skin lower surfaces between corrugations for corrosion. Maximum allowable skin cleanup without resorting to a doubler repair is 0.020-inch deep or an area not exceeding one inch wide and three inches long, provided screw holes are not enlarged. Areas of skin corrosion exceeding these allowable limits should be repaired in accordance with applicable Structural Repair Manual procedures. Clean up and protect corroded areas per Lockheed Report 8882, (also 7789 and 5886) revised July 15, 1957, or equivalent. It must be determined that any corrosion is confined to the skin only and does not penetrate into the corrugations. Reinstall all screw attachments flush in to the cleaned up areas.

(4) Inspect the bathtub fitting end lugs for corrosion. Maximum permissible combined depth of corrosion on mating fitting lugs should not be such as to increase the total gap between mating faces in excess of 0.020 inch. Replace fittings which cannot be cleaned up within this tolerance.

The special inspection note above may be extended an additional 12,000 flight-hours for each wing on which all fittings are replaced. Otherwise reinspection at 4,000 flight-hour periods or block overhaul whichever occurs first is required to insure detection of cracked or corroded Wing Station 80 bathtub fittings or attachments.

(Lockheed Service Letter FS/231053 covers this same subject.)

59-16-2 Lockheed Applies to All Models 18, PV-1, and PV-2 Series Aircraft Except Those Incorporating Spar Reinforcement As Covered in Lockheed Aircraft Service Bulletin 18/SB-112.

Compliance required as indicated.

Numerous reports have been received wherein fatigue cracks have been found in the horizontal stabilizer spars in the area of the vertical fin attachments. In order to determine if this condition has developed, the following inspection is required.

Within the next 50 hours of flight and at 300-hour intervals thereafter inspect the horizontal stabilizer front and rear spar flanges and webs for cracks in the region of the vertical fin attaching angles. If cracks are found, stop-drill, install spar flange and web doublers and flange filler blocks extending beyond the fin attaching angles. Add doubler plates on the forward face of rear spar in region of rudder hinge bracket attachment holes. Visual inspections of the area with a 10-power glass are adequate. The 300-hour inspection may be discontinued after incorporation of the reinforcements. One approved method of accomplishing the above spar reinforcement is contained in Lockheed Aircraft Service Bulletin 18/SB-112 dated September 18, 1944, pertaining to this same subject.

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

59-18-4 Lockheed Applies to All Models 1049C, 1049D, 1049E, 1049G and 1049H Aircraft.

Compliance required as indicated.

The following inspections have been established as a result of recently found cracking in the inner wing rear spar web at Wing Station 458.

At the next block overhaul or 4,000 flight-hours, whichever occurs first, on all aircraft (regardless of accumulated flight time) inspect the inner wing rear spar web at Station 458 for cracks in the upper and lower notched web area shown in Lockheed Drawing 555353. Inspection is applicable to both left and right wings.

If cracks are discovered incorporate the reinforcements shown in Lockheed Drawing 555353, or equivalent.

If no cracks are discovered, the reinforcements shown in Lockheed Drawing 555353 may be incorporated. Otherwise, reinspection at 4,000 flight-hour periods or block overhaul, whichever is less, is required to insure detection of cracks.

(Lockheed Service Letter FS/231094 covers this same subject.)

59–20–2 Lockheed Applies to All Model 1649A Aircraft.

Compliance required on items (1) and (2) by October 15, 1959; compliance required on item (3) by December 1, 1959.

As a result of a recent accident involving a suspected explosion of a wing tank, the following shall be accomplished to prevent the possible recurrence of such an explosion:

(1) Remove the static wick on the inboard wings adjacent to the tank vents.

(2) Install temporary placard at engineer's station reading as follows: "In order to maintain a nonexplosive rich mixture in tanks, do not use fuel out of auxiliary tanks Nos. 5, 6, and 7 below 50 gallons. In operations which involve use of fuel from main tanks only, the 50 gallons of residual fuel in the auxiliary tanks must be replaced with 50 gallons of fresh fuel or mixed with at least 150 gallons of fresh fuel at the end of every 12 flight-hours or 5 flights, whichever occurs first."

(3) Install P/N 634014–1 or equivalent flame arrestors in the tank vent outlets.

After installation of flame arrestors described in item (3), item (2) may be disregarded.

59–21–2 Lockheed Applies to All Model 188 Series Aircraft.

Compliance required as indicated.

Due to repeated loosening of wing leading edge attachment screws between the fuselage and the outboard nacelles, the following inspections shall be conducted:

(a) At each 50 hours of service time, visually inspect the leading edge attachment screws, top and bottom, from the fuselage to the outboard nacelles, paying particular attention to screws adjacent to nacelles. Tighten any screws found loose.

(b) At 300-hour intervals retighten all affected screws to 25 to 40 inch-pounds torque.

The above inspection program may be discontinued upon the removal of the NAS 517–3 screws from all leading edge attachments, top and bottom, and the installation of LPHT 517–3 screws. Torque all new leading edge attaching screws to 45–55 inch-pounds.

(Lockheed Service Bulletin 88/SB–334 covers this same subject.)

NOTE: LPHT–517 refers to Lockheed Specification for a Long-Lok, Polyvinyl insert, High torque screw.

59–25–4 Lockheed Applies to All Model 188 Series Aircraft—Serial Numbers 1002 Through 1072.

Compliance required as indicated.

Insufficient clearance between the generator feeder wires and the leading edge rib at wing Station 221 together with deflection of the leading edge has resulted in abrasion of the insulation on the generator feeder wires and grounding of the generator feeder.

(a) Inspect for evidence of abrasion not later than the next 8 hours' time in service with a light and mirror through fillet access doors N125 and N126 left and right without lowering the leading edge section. If the inspection shows evidence of abrasion, additional spacers must be installed prior to the next flight to obtain a minimum 0.38-inch clearance with the flange of the leading edge rib. If no evidence of abrasion is present, the inspection must be repeated at intervals of 60 hours' time in service but not to exceed 250 hours' time in service when additional spacers must be installed to provide at least a 0.38-inch clearance.

Functionally test the generator differential protection system in accordance with Lockheed Maintenance Manual, Section 24–1–0, page 201.

(b) Within the next 250 hours' time in service inspect all wiring in the leading edge and powerplant sections for actual or incipient abrasion of wires. If abrasion of wires or insufficient clearance is found, the conditions are to be corrected prior to the next flight.

(Lockheed Electra Alert Service Bulletin 376 covers this same subject.)

59–26–7 Lockheed Amdt. 73 Part 507 Federal Register December 19, 1959. Applies to Models 649 and 749 Aircraft, Serial Numbers 2518 Through 2524, 2529 Through 2535, 2548, 2549, 2554 Through 2556, 2610, 2611, 2614 Through 2618, 2642, 2653, 2659, 2660, 2662 Through 2673, Model 1049–54 Serial Numbers 4001 Through 4024 and Model 1049C, Serial Numbers 4523 Through 4538.

Compliance required as indicated.

As a result of cracks discovered in forward passenger door latch brackets the following shall be accomplished on the above serial numbered aircraft which have accumulated flight time of 10,000 hours or more.

Unless already accomplished, within the next 200 hours of service time and at each succeeding 1,000 hours of service time the following inspections are required:

(a) Models 649 and 749 aircraft.

(1) Remove and inspect by the dye penetrant method the top and bottom P/N 291924–2 and –3 brackets of the P N 291941–2 and –3 top and bottom latch assemblies of the P/N 290809 forward passenger door assembly for cracks in the fillet radius of attach flanges of the brackets.

(Lockheed Field Service Letters FS/222746 and FS 220393–W pertain to this subject.)

Cracked latch brackets must be replaced. The replacement part may be either a new bracket of the same part number, the improved latch assembly P N 554278–1, P N 554389–1 or P N 554289–3, whichever is applicable, or an equivalent item.

(2) Check door rigging and condition of safety bar and hooks.

(b) Models 1049–54 and 1049C aircraft.

(1) Remove and inspect by the dye penetrant method the upper and lower aft P/N 291925 and/or P/N 308236 brackets of the P/N 291940 and P/N 338239 upper and lower aft latch assemblies of the P/N 308269 and P/N 308269–600 forward passenger door assemblies for cracks in the fillet radius of the attach flanges of the brackets.

(Lockheed Field Service Letters FS/222746 and FS/220393–W pertain to this subject.)

Cracked latch brackets must be replaced. The replacement part may be either a new bracket of the same part number, the improved latch assembly P/N 554278–3, P/N 554289–1, or P/N 554289–3, whichever is applicable, or an equivalent item.

(2) Check door rigging and condition of safety bar and hooks.

When the improved latch assemblies (identified above by part number) are installed, this inspection procedure may be terminated. When the replacement bracket is identical to the originally installed bracket, this inspection procedure is to be reestablished upon accumulation of 10,000 flight-hours on the replacement brackets.

(Lockheed Service Bulletins 49/SB–882 and 1049/SB–3052 describe the installation of the improved latch assemblies mentioned above.)

60–1–5 Lockheed Amdt. 74 Part 507 Federal Register January 6, 1960. Applies to All 188A and 188C Aircraft.

Compliance required as indicated.

Continuing investigation of the propeller deicing power transfer relay has shown the design of the relay is such that properly tightened terminals cannot be assured for a practical interval of time due to cold flowing of plastic relay body.

Upon arrival at the next station where maintenance personnel are available, deactivate the propeller deicing system by pulling the control circuit breaker on the main and essential direct current bus at the forward load center. Placard the propeller deicing system inoperative.

On arrival at main base disconnect 8-gage power wires from the priority A and B bus to the propeller deicing power relay. Tape and stow at priority bus end.

With the propeller deicing system deactivated, aircraft may be dispatched into known icing conditions if Icex compound (B. F. Goodrich Company Adhesive Depressant No. 6) is applied to all propeller blade fairing heater boots and spinners under the following conditions: After initial application, Icex compound shall be reapplied after cumulative exposure to not more than six hours precipitation during flight or after 50 hours elapsed time, whichever occurs first.

(Lockheed Alert Bulletin No. 403 wired to all operators on November 27, 1959, covers this same subject.)

The propeller electrical deicing system may be returned to operative status when the original propeller ice control relay (Lockheed P/N 613649–1, Leach P/N 9202–4516) has been removed and a new relay (Lockheed P/N 613422–17, Hartman B124–GL) has been installed in the circuit and physically located in the main transfer relay box in a manner approved by an authorized representative of the Administrator. When the propeller electrical deicing system has been reactivated in this manner, Icex compound will no longer be required for aircraft dispatching into known icing conditions.

(Lockheed Alert Bulletin No. 403 wired to all operators on November 27 covers the deactivation of the original Leach relay and the use of Icex compound. Lockheed 188 Service Bulletin No. 403, effective December 15, 1959, describes a satisfactory and approved means of installing the replacement Hartman relay.)

This airworthiness directive sent by telegram to all operators of Lockheed 188A and 188C aircraft on December 8, 1959.

60–1–6 Lockheed Amdt. 85 Part 507 Federal Register January 16, 1960. Applies to All Model 188A and 188C Aircraft Except Serial Numbers: 1001, 1044, 1088, 1090 and Up, For the Wing Station 167 Area Inspections; 1001, 1044, 1057, 1066, 1068 and Up, For the Wing Station 209 Area Inspections.

Compliance with the following is required.

(a) A daily visual inspection of the No. 4 left and right upper wing surface planks for spanwise cracks. The affected areas are adjacent to the Nos. 2 and 3 nacelle attach angles above wing Stations 167 and 209 main landing gear ribs and near the forward edge of the plank. This inspection may be discontinued when an approved reinforcement designed to prevent cracking is installed.[1]

(b) If cracks are found, FAA approved repair and reinforcement must be accomplished [1] prior to the operation of the aircraft except that the aircraft may be ferried to the base at which the repairs and reinforcement may be performed. Upon installation of an approved reinforcement and repair the aircraft may be returned to service, and the daily inspection discontinued.[2]

(c) An approved reinforcement shall be installed prior to February 1, 1960.

This supersedes AD 59–16–6.

60–3–5 Lockheed Amdt. 95 Part 507 Federal Register February 2, 1960. Applies to All Model L–188 Aircraft.

Compliance required by April 1, 1960.

Loss of the top cowl panel over the engine tail pipe has occurred in flight due to insecurity of the cowl latches. To prevent recurrence of this difficulty, the following modifications must be accomplished:

(a) Modify latch assemblies by replacement of snap ring retention with clevis or shoulder pin design and safety in place.

(b) Install position pins and locators to provide more positive alinement of the cowling with the latches when in the closed position.

(Lockheed Service Bulletins Nos. 188/295 and 188/365 cover this same subject.)

60–4–3 Lockheed Amdt. 100 Part 507 Federal Register February 9, 1960. Applies to All Model L–188 Airplanes Equipped With Lord Engine Mounts Number LM–204A–SA4.

Compliance required as indicated.

As a result of two incidents of front Lord engine mount fatigue failures on units of old design the following must be accomplished:

(a) Inspect mounts for cracks particularly in the web and fillet areas upon next arrival at scheduled stop where maintenance facilities are available and repeat this inspection at intervals not to exceed 50 flight hours. Any

[1] Lockheed Service Bulletin No. 88/SB–306 contains an approved reinforcement for the wing Station 209 area.

[2] Eastern Air Lines sketches 62059 and 62259, revised June 25, 1959, contain an approved reinforcement and repair in the wing Station 299 area. Lockheed sketch ALS 82959, Change A, contains an approved reinforcement and repair for the wing Station 167 area.

mounts with cracks must be replaced immediately with LM-204A-SA5/Lockheed P/N 632182-9.

(b) Replace all LM-204A-SA4 mounts with LM-204A-SA5 mounts within 300 flight hours after first inspection required by (a) but not later than March 1, 1960.

(c) All spare quick engine change units must be modified to include the new SA5 mounts prior to installation in aircraft.

(Lockheed Service Bulletin No. 228 covers this same subject.)

This airworthiness directive sent by telegram to all operators of 188 aircraft on January 11, 1960.

60-4-4 Lockheed Amdt. 101 Part 507 Federal Register February 13, 1960, revised by Amdt. 127 Federal Register April 9, 1960: Amdt. 200 Federal Register September 15, 1960. Applies to All Models 049, 149, 649, and 749 Series Aircraft Which Have the Cleveland Pneumatic-Model 8298 Series Main Landing Gear Struts Installed With the Removable Side Brace Attachment Collar.

Compliance required as indicated.

Due to fatigue failures found in the above main landing gear outer cylinder, the following inspections and rework must be accomplished on all main landing gears which have accumulated 25,000 or more hours' time in service.

(a) Unless already accomplished in the last 1,000 hours' time in service, within 400 hours' time in service inspect for cracks in the main landing gear outer cylinder surface, at the 0.125-inch radius of the shoulder against which the drag strut-side brace collar retaining nut bears, by means of one of the three methods in (b). Reinspect every 1,000 hours' time in service thereafter, until the rework in (c)(2) is accomplished. Outer cylinders with cracks must be replaced prior to further flight. Cracked cylinders may be returned to service after repair and rework is accomplished in accordance with (c). Rework on all uncracked outer cylinders must be accomplished in accordance with (c)(2) not later than the total accumulated hours' time in service indicated in (b).

(b) Inspection and rework:

(1) *Ultrasonic shear wave detection method.* This procedure may be used on cylinders with piston and oil in the cylinder or the cylinder only. Rework in accordance with (c)(2) must be accomplished within 4,000 hours' time in service if the ultrasonic method is used.

(2) *Magnetic particle detection method.* This method requires removing and dismantling of the strut assembly. Rework in accordance with (c)(2) must be accomplished within 4,000 hours' time in service if the magnetic particle method is used.

(3) *Radiographic method.* This method requires the removal of the piston from the cylinder and complete 360° coverage. Rework in accordance with (c)(2) must be accomplished within 3,000 hours' time in service if the radiographic method is employed.

(c) Repair and rework instructions:

(1) Outer cylinders with cracks in the radius described in (a) and for a distance of 0.5 inch below the radius tangency point circumferentially around the cylinder may be repaired by grinding out to a maximum depth of 0.017 inch. Complete removal of cracks must be verified by magnetic particle inspection or equivalent. If cracks are completely removed as verified by such inspection, remove an additional 0.008 inch of material from the repaired area. Rework may be acceptable on outer cylinders with cracks that cannot be removed by grinding to a depth of 0.017 inch. Such cases may be submitted to the FAA for evaluation of the extent of cracking and to determine if rework is possible. Rework accomplished subsequent to such an evaluation must be in accordance with FAA approved repair instructions.

(2) On all cylinders, whether cracks are found or not, rework the area described in (c)(1) as follows:

(i) Clean and polish the above cylinder area to remove all tool marks and corrosion.

(ii) Shotpeen the above area using steel shot 0.019-0.033-inch diameter to an intensity of 0.012-0.016 A_2 ALEMENT (Reference LAC Process Bulletin 217M, Revision 1).

(d) Upon completion of the rework described in (c)(2), all Model 8298 cylinders shall be reinspected for cracks at periods not to

exceed 9,000 hours' time in service using one of the inspection methods noted in (b). Cracked cylinders must be replaced prior to further flight. Cracked cylinders may be returned to service after repair and rework is accomplished in accordance with (c).

(Lockheed Service Letter FS/239304 covers this same subject.)

60–5–2 Lockheed Amdt. 110 Part 507 Federal Register March 4, 1960, revised by Amdt. 139 Federal Register May 4, 1960; Amdt. 183 Federal Register July 29, 1960; Amdt. 198 Federal Register September 10, 1960. Applies to All Models 1049C, D, E, G and H Airplanes.

Compliance required by August 1, 1961, for items (a)(1) or (a)(2); July 1, 1961, for item (a)(3); and by September 30, 1960, for item (b).

An accident occurred in which fire originating in the engine section burned underneath the nacelle and entered the wheel well area rupturing flammable fluid lines and causing extensive damage. An incident also occurred in which fire originating in the power section blistered the paint on the landing gear wheel well doors. An examination of the burn pattern on the landing gear doors indicates that the circumstances surrounding this incident were quite similar to those of the accident but with less severity due to the lower exposure time. To correct fire protection deficiencies in the wheel well area, the following modifications are considered necessary:

(a) To prevent fire from entering the wheel well area, accomplish one of the following:

(1) Replace the present aluminum skin on the forward landing gear doors with fireproof material.

(2) Cover the present aluminum skin on the forward landing gear doors with fireproof material.

(3) Coat both inside and outside of the present aluminum skin on the forward landing gear doors with a material that will withstand a flame of 2000° F. for 15 minutes. Product Techniques Inc. Coating PT–209, 0.015-inch thick on each side of the door is considered satisfactory when applied in accordance with PTI Process Specifications PTP 40–22.

(b) Install fire sleeves over all flammable fluid-carrying flexible hose lines in zones 3 and 3A in the inboard engine nacelles.

60–8–4 Lockheed Amdt. 132 Federal Register April 14, 1960, revised by Amdt. 192 Federal Register August 19, 1960. Applies to All Models 1049 Series and 1649A Aircraft.

Compliance required as indicated.

As a result of several cases of rudder torque tube failure (P/N 306525–2 and P/N 306525–3), attributed to stress corrosion, the following inspection must be accomplished:

Within the next 300 hours' time in service on all aircraft which have accumulated 5,000 hours' time in service, visually inspect for cracks, using a 10-power magnifying glass, the lower attachment portion of the upper rudder torque tube and the upper attachment portion of the lower rudder torque tube. If cracks or crack indications are found, reinspect the above area using dye penetrant or equivalent. (The cracks progress along the longitudinal direction from the edge of the tube to the first row of bolt holes and beyond. The cracks may also emanate from the second row of bolt holes.)

Replace the torque tube prior to further flight if the tube is cracked beyond the first $\frac{3}{8}$-inch bolt attachment hole or if the tube is cracked at the second row of $\frac{5}{16}$-inch bolt attachment holes.

If the tube is cracked from the edge to the first $\frac{3}{8}$-inch bolt hole a repair may be used provided the repaired tube is reinspected in the above manner every 300 hours until replaced. The repair must be made prior to further flight and consists of the addition of two $\frac{1}{4}$-inch blind lockbolts or Jobolts, located one on each side of the crack, spaced halfway between the existing $\frac{3}{8}$-inch bolt holes and in line with these bolts. The maximum number of cracks permitted is two. If the crack progresses beyond the $\frac{3}{8}$-inch bolt attachment hole, with the repair installed, replace the torque tube prior to further flight.

If no cracks are found, reinspect visually every 1,300 hours' time in service. If torque tubes are replaced with new parts (P/N 306525–5 or P/N 306525–7), no further special inspections are required. (Lockheed Service Letter FS/237201 covers this same subject.)

60–9–3 Lockheed Amdt. 134 Part 507 Federal Register April 20, 1960, revised by Amdt. 174 Federal Register June 24, 1960. Applies to All Model 188 Series Aircraft.

Compliance required as indicated.

(a) Post following two placards in full view of pilot:

(1) Following operating speeds shall be observed, V_{no} normal operating speed equal to 225 knots CAS or MACH number 0.55; V_{ne} never exceed speed equal to 245 knots CAS or MACH number 0.55.

(2) Feather propeller in event the torquemeter indicator should go to zero or full scale in flight. This placard may be removed from the aircraft when all its installed engines are equipped with midbearing torquemeter, P/N 6823900 identified by a ½-inch by 2½-inch blue stripe on forward bevel of housing as described in Allison Commerical Engine Bulletin No. 72–113. In case of aircraft having one or more, but not all, engines equipped with midbearing torquemeters, the placard may be suitably altered to indicate those engines so equipped, which are exempt from compliance with its provisions.

The placard described in (a)(1) may be removed when the provisions of Lockheed Service Bulletin No. 88/SB–500 have been accomplished. The torquemeter placard described in (a)(2) may be removed when the provisions of AD 60–21–1, effective November 9, 1960, which requires installation of the midbearing torquemeter housing assembly, has been accomplished. The placard on aircraft having one or more but not all engines equipped with midbearing torquemeters may be suitably altered to indicate those engines so equipped which are exempt from compliance with its provisions. (Revised by telegram December 31, 1960.)

(b) Until modifications outlined below have been accomplished, the autopilot shall be deactivated. Operation of the autopilot is permissible under either of the following conditions:

(1) Modifications are made to the autopilot system as described in FAA approved Lockheed Alert Service Bulletin No. 88/SB–453 Part II as amended December 21, 1960, (reactivation of autopilot). Under this condition, the "altitude-hold" function is inoperative and operation with autopilot engaged is limited to speeds at or below 225 knots.

(2) Modifications are made to the autopilot system as described in Part II and Part III of FAA approved Lockheed Alert Service Bulletin No. 453 as amended December 21, 1960. Under this condition, the "altitude-hold" function is operative and the above Service Bulletin No. 453 Part II speed restriction is removed. ((b)(1)(2) revised by telegram December 31, 1960.)

(d) Supersede by AD 60–13–3.

This airworthiness directive sent by telegram to all operators of 188 aircraft on March 25, 1960.

60–10–4 Lockheed Amdt. 138 Part 507 Federal Register May 3, 1960. Applies to All Models 049, 149, 649, 749, 1049, and 1649 Series Aircraft.

Compliance required as indicated.

A crack was found in the segment ring of the fuselage aft pressure bulkhead. The crack, approximately 37 inches long, was in the top left section of the ring, extending from a point right of center. As a result of investigation of the failure, the following must be accomplished on all aircraft with more than 30,000 hours' time in service.

(a) Within the next 180 hours' time in service, unless already accomplished within the last 4,500 hours' time in service, and every 4,500 hours' time in service thereafter, inspect the entire peripheral ring of the aft pressure bulkhead at the bend radius adjacent to the skin using one of the following methods or equivalent:

(1) Radiographic inspection.

(2) Pressurize the cabin to a minimum of 2 p.s.i. Apply soap solution to the rear face of the ring and examine for leakage. This will require removal of the sealing compound.

(b) If cracks are found, they must be repaired in accordance with FAA approved manufacturer's instructions. Pressurized flight is prohibited until cracks are repaired.

(c) When any part of the aft pressure bulkhead peripheral ring is replaced by a new part, inspection of the new part per (a) is not required until the new part has accumulated 30,000 hours' time in service. (Effective July 11, 1961.)

(d) Upon request of the operator, an FAA maintenance inspector, subject to prior approval of the Chief, Engineering and Manufacturing Branch, FAA Western 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.

(Lockheed Service Letter FS/240954 covers this subject.)

Revised March 9, 1962.

60-10-5 Lockheed Amdt. 145 Part 507 Federal Register May 10, 1960. Applies to All Model 188 Aircraft.

Compliance required as indicated.

There have been reported instances of the main float closure port of the fuel tank vent valve remaining closed due to slight pressure in the tank. These pressures are considerably less than the 1.75 p.s.i. setting of the pressure relief poppet. There is also a possibility of sticking of the pressure relief poppet in the P/N 634056–1 tank vent valves. As a precautionary measure, underwing refueling must be accomplished with the overwing fuel caps removed until the following action has been taken. As soon as possible but no later than the next periodic inspection:

(a) Drill a ⅛-inch hole in the suction relief flapper approximately halfway between the center of the flapper and the flapper seat.

(b) Manually determine that the pressure relief poppet action is free.

Upon accomplishment of above action normal underwing fueling procedures may be resumed.

(Lockheed message to all Electra operators dated April 18, 1960, covers this same subject.)

This airworthiness directive sent by telegram to all operators of 188 aircraft on April 19, 1960.

60-10-6 Lockheed Amdt. 150 Part 507 Federal Register May 13, 1960. Applies to All Model 1049 Series Aircraft Equipped With Drag Strut Assemblies With Ground Acme Threads, P/N 469080–5 and –6, Serial Numbers 6001 Through 6363 and 10001 Through 10036, Manufactured By Sargent Engineering Corporation.

Compliance required as indicated.

As a result of two failures of the main landing gear drag strut cylinder, P/N 471035–3, the following inspections and rework are required, unless already accomplished.

(a) Within the next 425 hours' time in service inspect the root of the $6\frac{5}{16}$-inch diameter thread and thread relief area in the cylinder, P/N 471035–3, for cracks using one of the following inspection methods:

(1) Dye penetrant method.

(2) Magnetic particle method (liquid suspension only).

(3) Eddy current method.

(b) If no cracks are found, reinspection is required as follows, except that such reinspection will not be required if the parts are reworked in accordance with the rework instructions in (c).

(1) If inspection method (a)(1) or (a)(2) is employed, reinspection is required every 1,000 hours' time in service.

(2) If inspection method (a)(3) is employed, reinspection is required every 4,000 hours' time in service.

(c) Rework instructions:

(1) Remove 0.020-inch material by remachining new Acme threads and new thread relief in the cylinder, taking care to prevent heating of the cylinder material which may affect its strength. Grinding or rolling processes must not be used for making the threads.

(2) Cadmium plate the machine surfaces in accordance with aircraft practices for heat-treated steel.

(3) A new nut, Lockheed P/N 557466–1, or equivalent, must be used to replace the existing nut.

(4) Reassemble the strut assembly and proof test to 12,300 p.s.i. (Lockheed 1049 Service Bulletin 3112 covers these rework instructions.)

(d) Parts found cracked must be replaced prior to further flight. Parts in which a heat affected zone is indicated by inspection method (a)(3) must be reworked in accordance with (c) within 1,000 hours' time in service.

(Lockheed Service Letter FS/240867L covers this same subject.)

60–11–3 **Lockheed** Amdt. 159 Part 507 Federal Register May 24, 1960, revised by Amdt. 205 Federal Register September 29, 1960. Applies to All 188 Series Aircraft.

Compliance required as indicated.

Due to loose attachments and cracked quick engine change upper cowl panel longerons the following inspections are required.

Prior to dispatch from a terminal where inspection facilities are available, unless already accomplished within the last 300 hours' time in service, and thereafter at every 300 hours' time in service, inspect the top cowl panel upper longerons and the attachments at the rear fittings for cracks or loose attachments.

(a) Replace loose attachments in the longeron fittings. Acceptable replacements are:

(1) One-sixty-fourths-inch diameter oversize Hi-Lok (P/N HL 56–6 pin, P/N HL 64–6–5 pin, P/N HL 85–6 collar).

(2) Thirteen-sixty-fourths-inch diameter NAS type close tolerance screw, minimum heat treat 160,000 p.s.i. Ream to oversize hole limits of 0.212–0.2192-inch diameter.

(3) Seven-thirty-seconds-inch diameter NAS type close tolerance screws; minimum heat treat 160,000 p.s.i.; minimum edge distance, 1½ diameters. Ream to oversize hole limits of 0.2181–0.2192-inch diameter.

(4) It is satisfactory to mix Huck bolts and Hi-Lok fasteners, but it is not acceptable to mix NAS type screws with Huck bolts or Hi-Lok fasteners.

(b) Cracked longerons must be replaced or an FAA approved repair incorporated before next flight.

The preceding inspections may be discontinued after the incorporation of the modifications contained in Lockheed Service Bulletin 88/SB–500. (Effective May 13, 1961.)

(Lockheed Alert Service Bulletin No. 467 covers this same subject.)

This airworthiness directive sent by telegram to all operators of 188 aircraft on April 29, 1960.

60–11–5 **Lockheed** Amdt. 165 Part 507 Federal Register May 28, 1960, revised by Amdt. 172 Federal Register June 24, 1960. Applies to All 188 Series Aircraft.

Canceled September 21, 1962.

60–13–2 **Lockheed** Amdt. 175 Part 507 Federal Register June 24, 1960, revised by Amdt. 280 Federal Register May 6, 1961, and Amdt. 405 Federal Register March 9, 1962. Applies to All Aeroproducts A6441FN–606 Propellers Installed On Lockheed 188 Series Aircraft.

Canceled May 12, 1962.

60–13–3 **Lockheed** Amdt. 176 Part 507 Federal Register June 24, 1960. Applies to All 188 Airplanes Not Equipped With Fuel Tank Pressure Relief Overflow Valves.

Compliance required as indicated.

Service experience indicates that a check of the fueling system valves at a high fuel level point should be made when filling tanks to capacity. This check is necessary to determine that the system is functioning properly since failure of a fueling valve to close fully may subject the tank to high fuel pressure which could cause not only tank rupture but structural damage. To prevent possible fuel tank overpressurizing, the following actions are required commencing not later than 10 days after publication of this airworthiness directive in the Federal Register.

(a) Conduct a check of the fueling system at the start of each fueling operation in accordance with the placard located on the fueling panel.

(b) (1) On all outboard tanks and on extended inboard tanks, when installed, conduct a second check of the primary and secondary controls between 8,000 and 10,000 pounds fuel per item 2 on the placard.

(2) When standard inboard tanks are installed, conduct a second check of the primary and secondary controls between 4,500 and 6,500 pounds fuel.

(c) Any malfunctions indicated by the checks required by items (a) and (b) of this airworthiness directive must be corrected prior to continuance of pressure fueling to that tank.

(d) The fueling panel will be monitored during the entire fueling operation.

This supersedes paragraph (d) of AD 60–9–3.

60–17–1 *See* Aeroproducts Propellers.

60–20–3 Lockheed Amdt. 202 Part 507 Federal Register September 28, 1960, revised by Amdt. 231 Federal Register December 8, 1960. *Applies to* All Model 188 Series Aircraft Serial Numbers 1002, 1004 Through 1102, 1104 Through 1126, 2001 Through 2014.

Compliance required within 1,000 hours' time in service after September 28, 1960.

Insufficient resistance to flammability of components of the AC Bus Transfer and Distribution Box has resulted in a fire. Temperatures within the AC Bus Transfer and Distribution Box and within the main electrical service center higher than that for which some of the equipment in these locations is designed contributes to over-temperature of the equipment.

Accomplish those portions of Lockheed Electra Alert Service Bulletins 408 and 287, revision 1, summarized below or equivalent:

(a) Within the AC Transfer and Distribution Box, replace the black vinyl covered flexible bus assemblies, which interconnect the circuit breakers, with jumpers made of MIL–W–7139 wire.

(b) Replace, with MIL–W–7139 wire, all size 6, 8, 10 and 12 wires which route within and between sections of the AC Transfer and Distribution Box except power wires to propeller deice power relay.

(c) Apply a fire retardant coating, Magna Coatings and Chemical Co. Laminar X–500, to the exposed and accessible portion of the inside and outside of the following impregnated fiberglass boxes: AC Bus Transfer and Distribution Box and its covers; forward load center bus box and cover; forward load center circuit breaker shrouds; flap asymmetry control panel cover; hydraulic pump shroud boxes.

(d) Replace, with moulded melamine terminal blocks, the stepped terminal block assemblies which serve as busses in the three upper compartments of the AC Bus Transfer and Distribution Box.

(e) Remove the short bus bars which serve as extensions for terminals T1 and T3 of relays No. 1 and No. 3.

(f) Replace the bus bar assemblies on terminals T2 of relays 1 and 3 with a type which does not have plastic in compression.

(g) Remove the short bus bars and terminal block assembly from terminals T1, T2 and T3 of relay No. 2.

(h) Modify the terminal block assembly between the external power feeders and relay No. 6 to remove plastic in compression.

(i) Within the AC Bus Transfer and Distribution Box, route the control wires for the generators separate from all power wires.

(j) Relocate the essential bus alternate feeder circuit breaker to a housing to be attached to the left side of the AC Bus Transfer and Distribution Box.

(k) Provide forced air cooling of the electrical load center by installing: two destratification fans; ducting from the fans to the AC Bus Transfer and Distribution Box; ducting and controller to regulate overboard dumping of heated air; ventilation holes in the AC Transfer and Distribution Box. Install a shield to cover hydraulic connectors between fuselage Stations 540 and 549.5.

(The portions of Lockheed Electra Alert Service Bulletins 408 and 287, revision 1, not summarized above are also approved.)

60–20–4 Lockheed Amdt. 203 Part 507 Federal Register September 28, 1960. Applies to 188 Aircraft Serial Numbers 1002, 1004 Through 1102, 1104 Through 1126, and 2001 Through 2015.

Compliance required by the next 300 hours' time in service after October 28, 1960.

Leaking lavatory tank ground drain valves have permitted drainage to the exterior surface of the aircraft in flight, resulting in ice formation which came off and struck the stabilizer. Since such ice formation is hazardous to aircraft in flight and to persons on the ground, all lavatory tank ground drain valves must be modified to incorporate LAC seal No. 838228–1 or equivalent. (LAC 88/SB–407 covers the intent of this change.)

This directive effective October 28, 1960.

60–21–2 Lockheed Amdt. 207 Part 507 Federal Register October 7, 1960. Applies to All Model 18 Aircraft Which Have Been Converted to the "Learstar" Configuration.

Compliance required as indicated.

Flight tests have disclosed that excessive temperature stratification at the carburetor air screen exists during operation with partial carburetor air preheat. This stratification re-

sults in erroneous readings on the cockpit carburetor air temperature gage and may, under icing conditions, cause ice formation on the cold portions of the air screen and in the carburetor. While full preheat is available if needed for ice elimination, only partial preheat should be used for continuous operation under certain temperature conditions in order to avoid exceeding the engine manufacturer's carburetor air temperature limit of 38° C. The following action is required:

(a) Effective November 15, 1960, Learstar aircraft shall be restricted against operation in known icing conditions until modifications to the air preheat system covered in paragraph (b) are accomplished. The following placard shall be posted in full view of the pilot:

"OPERATION INTO KNOWN ICING CONDITIONS PROHIBITED."

The limitations section of the FAA approved Airplane Flight Manual is hereby amended to incorporate this limitation.

(b) The operating restriction into known icing conditions shall continue until modifications are accomplished to the carburetor air preheat system which will result in conservative C.A.T. indications for the prevention of ice formation on the carburetor screen and engine induction system at all preheat positions. Such modifications shall also permit operation with preheat under varying power and ambient temperature conditions without resulting in excessive C.A.T. A satisfactory modification to meet the requirements is covered in FAA approved PacAero Engineering Corporation Service Bulletin No. 14, dated August 26, 1960. An FAA approved airplane flight manual revision setting forth recommended procedures for safe operation of the system will be supplied by PacAero with the modification kit. Any deviations from the modifications or procedures set forth in the service bulletin and airplane flight manual revision must be approved by FAA, Region Four, Engineering and Manufacturing Branch, Los Angeles, California.

(c) Upon compliance with paragraph (b), the operating restriction set forth in paragraph (a) is cancelled.

60-24-1 **Lockheed** Amdt 222 Part 507 Federal Register November 15, 1960. Applies to All 188 Aircraft.

Compliance required within 5,000 hours' time in service after the effective date of this directive.

To provide protection against possible overpressurization of fuel tanks during refueling, the following modification is required unless already accomplished:

Install pressure relief overflow valves in each fuel tank. Lockheed overflow valves P/N 634114-7 or -9 are satisfactory for this purpose. (Lockheed Service Bulletin 188/SB-422 covers this subject.)

This directive effective December 13, 1960.

60-25-2 **Lockheed** Amdt. 229 Part 507 Federal Register December 2, 1960. Applies to All Model 188 Series Aircraft.

Compliance required as indicated.

As a result of reported cracked aileron counterweight attaching angles, the following is required:

(a) At intervals not to exceed 300 hours' time in service, inspect for cracks in the angles which attach the aileron balance-weight brackets to the aileron spar at aileron Stations 13.85, 30.95, 48.01, 82.16, 116.31, 150.46 and 184.61. Cracked angles must be replaced before further flight.

(b) The replacement of angles found to be cracked must be made in accordance with either (1) or (2).

(1) Original angles may be replaced with parts having the same dimensions as the original parts but fabricated from 0.090-inch thickness AISI 8630 or AISI 4130 steel heat-treated to 150,000-170,000 p.s.i. ultimate tensile strength, cadmium plated and baked. Lockheed Process Specifications Nos. 522, 491, and 170 or FAA approved equivalent must be used for the respective processes indicated.

(2) Original angles may be replaced in accordance with the instructions in the kits outlined in Lockheed Service Bulletin 88/SB-451 or FAA approved equivalent. This service bulletin also contains detailed instructions for accomplishing this modification.

(c) After replacement of the original parts in accordance with the instructions in (b),

subsequent inspections of replaced parts may then be made at normal inspection periods.

This supersedes AD 60–11–4.

This directive effective December 2, 1960.

1960.

60–26–4 Lockheed Amdt. 234 Part 507 Federal Register December 14, 1960. Applies to All 188 Aircraft.

Compliance required as indicated.

Failure of the clamp or flange of the swirl straightener assembly resulted in at least two cases of overheating the nacelle area causing extensive damage to the nacelle. In addition, there have been a number of failures of the retaining clamp and cracks in the flange area of this assembly caused by dynamic loads imposed by the sugar scoop deflection of exhaust gases.

The following modifications shall be accomplished to correct the above conditions at the first engine change after December 14, 1960.

(a) Remove the present sugar scoop and the lower bellmouth. Install a new lower bellmouth of extended length to mate properly with the engine after removal of the sugar scoop. When this rework has been accomplished, it will be necessary to relocate the fire sensing elements on the structural shroud.

(b) Tack-weld the vanes to the clips located on the perimeter of the straightener assembly.

(c) Add rubbing strips on the tailpipe shroud door and drill holes in the nacelle cooling duct assembly to cool the bellmouth.

(The above items must be accomplished in accordance with Lockheed S/B No. 430, which covers the same subject.)

This directive effective December 14, 1960.

60–26–5 Lockheed Amdt. 236 Part 507 Federal Register December 22, 1960. Applies to All 188 Series Aircraft.

Compliance required as indicated.

(a) Within the next 150 hours' time in service commencing on November 22, 1960, unless already accomplished within the last 300 hours' time in service, inspect the elevator counterweight installation, Lockheed Drawing No. 829912, at airplane center line for evidence of free play as follows: with elevator blocked at extreme down position apply up and down force to balance weight Lockheed P/N 827020–1, and measure total movement of balance weight due to cumulative free play in joints of balance arm linkage. If movement of balance weight due to cumulative free play in system exceeds ⅛-inch inspect each joint in balance arm linkage and reduce the free play by bolt and/or part replacement at one or more of these joints so as to reduce total free play movement of the balance weight to 1/16-inch or less prior to further flight. This inspection must be repeated every 450 hours' time in service. When provisions of paragraph (c) (1) are accomplished, this special inspection may be discontinued.

(b) Within the next 300 hours' time in service, unless already accomplished within the last 700 hours' time in service, and following any occurrene of inflight elevator or control column oscillations, inspect the elevator booster control valve viscous damper diaphragm, Lockheed P/N 813612–1 for evidence of rupture. See Lockheed Electra (Model 188) Overhaul Manual Section 27–1–10 Page 1 for information on evidence of rupture. If such evidence is found the airplane shall not be returned to service until the diaphragm is replaced with a new part, or compliance with paragraph (c) (2) has been accomplished. This inspection must be repeated at periods not to exceed 1,000 hours' time in service until the provisions of paragraph (c) (2) have been accomplished.

(c) The following must be accomplished within the next 1,000 hours' time in service.

(1) Install a spring-loaded cartridge, Lockheed P/N 840404–1, in the elevator counterweight linkage in the manner described by Lockheed Service Bulletin 88/SB–524.

(2) Replace the elevator boost control valve viscous damper, Lockheed P/N 813608–3, with an orifice type damper, Lockheed P/N 492508–3, in accordance with Lockheed Service Bulletin No. 88/SB–524.

(3) Rework the elevator booster assembly in accordance with Lockheed Service Bulletin No. 88/SB–524 to incorporate an orifice valve assembly, Lockheed P/N 804551-1, and modify the booster piston rod end installation to incorporate two retaining washers, Lockheed P/N 839756–1, in accordance with Lockheed Service Bulletin No. 88/SB–498.

(FAA approved Lockheed Service Bulletins 88/SB–498 and 88/SB–524, Lockheed Electra

operating information letter No. 13 dated November 1, 1960, Lockheed Alert Bulletin No. 524 dated December 1, 1960, cover portions of this subject.)

This supersedes AD 60-24-2.

This directive effective December 22, 1960.

61-3-3 *See* Hartzell Propellers.

61-3-4 **Lockheed** Amdt. 244 Part 507 Federal Register January 27, 1961. Applies to All Model 1649A Aircraft.

Compliance required as indicated.

One of the following modifications to the vent system must be accomplished within 400 hours of time in service after the effective date of this directive.

(a) Modify only the right-hand vent float valve of the No. 7 tank (LAC P/N 634024-3, Aero Supply Mfg. Co. P/N 22-1845-002) to a combination pressure relief and suction relief valve by removing the float assembly so that only the pressure and suction relief features remain operational. Replace the valve spring (P/N 22-0228-1) with spring (P/N 22-0337-1) having a higher cracking pressure.

(b) Replace only the original right-hand side valve assembly on No. 7 fuel tank with a new valve assembly LAC P/N 634024-5 (Aero Supply Mfg. Co. P/N 22-1845-003).

(Lockheed Letter dated August 22, 1960, directed to all 1649 operators completely covers the details of this modification.)

This directive effective February 13, 1961.

61-4-4 **Lockheed** Amdt. 251 Part 507 Federal Register February 10, 1961. Applies to All Models PV-1 and B-34 Aircraft With Main Landing Gear Drag Strut Attach Plates, P/N 112900 or P/N 12665.

Compliance required as indicated. (It will be necessary for operators to maintain a record of landings in order to ascertain compliance with this AD.)

Investigation has shown that failure of the main landing gear drag strut attach plate. P/N 112900 has caused the main landing gear to collapse. The B-34 main landing gear drag strut attach plate, P/N 12665, is the same as the PV-1. As a result of this service experience the following shall be accomplished:

(a) Inspection in accordance with either (1) or (2) is required:

(1) Within the next 25 landings and every 50 landings thereafter, inspect the main landing gear drag strut attach plates, P/N 112900, or P/N 12665, in place on the aircraft for cracks and looseness.[1] Dye penetrant or FAA approved equivalent must be used for crack detection. If the drag strut attach plate is loose, then it must be visually inspected for elongation of the bolt holes and the attaching bolts visually inspected for cracks, or deformation. If cracks or elongation of the bolt holes are found in the drag strut attach plate, it must be replaced prior to the next flight. Deformed or cracked bolts must be replaced prior to the next flight.

(2) Within the next 25 landings, unless already accomplished within the last 125 landings and every 150 landings thereafter, remove the main landing gear drag strut attach plates, P/N 112900, or P/N 12665, and conduct an X-ray or dye penetrant, or FAA approved equivalent, inspection for cracks. The bolt holes in the drag strut attach plate must be visually inspected for elongation and the attaching bolts inspected for cracks or deformation. If cracks or elongation of the bolt holes are found in the drag strut attach plate, it must be replaced prior to the next flight. Deformed or cracked bolts must be replaced prior to the next flight.

(b) The special inspections contained in this AD may be discontinued after the Howard Aero, Inc., replacement main landing gear drag strut attach plates, P/N 5-302006, or FAA approved equivalents, are installed using 180,000 p.s.i. minimum ultimate tensile strength attaching bolts.

This directive effective March 14, 1961.

61-9-1 **Lockheed** Amdt. 279 Part 507 Federal Register April 28, 1961. Applies to All 188 Series Aircraft Which Incorporate Hydraulic Damper Housing P/N's 840655-1 and 475645-1 (rudder, elevator, and aileron control systems) Installed Per Lockheed Service Bulletin 88/SB-524 and 88/SB-532.

Compliance required not later than the next 50 hours' time in service.

[1] A method of inspection for looseness is to check for gapping of 0.010 inch or greater, between the drag strut plate and the backing plate at a point approximately 4.5 inches above the lower edge of the attach plate. Insert a feeler gage between the attach plate and the backing plate from the outboard side to make this check.

As a result of an incident involving elevator booster hydraulic damper malfunction, hydraulic damper housing P/N 840655–1 and P/N 475645–1 not identified with blue anodized color must be replaced with new parts identified with blue anodized color as received from the manufacturer or reworked to the following dimensions:

(a) Length of skirt 0.312 inch plus or minus 0.010 inch.

(b) Bore of body 1.3800—1.3817 inches.

(c) Clearance between piston and damper housing 0.0015—0.0040 inch.

(d) Identify the reworked housing with blue dye or blue paint.

The reinstallation of new or reworked damper housings must be accomplished in accordance with instructions in Lockheed Service Letter FS/251702–L dated February 14, 1961.

(Lockheed Service Wire to all operators dated April 7, 1961, applies to this same subject.)

This directive becomes effective upon publication in the Federal Register for all persons except those to whom it was made effective immediately by telegram dated April 7, 1961.

61–14–5 Lockheed Amdt. 307 Part 507 Federal Register July 11, 1961. Applies to All Model 1049 Series Aircraft.

Compliance required as indicated.

As a result of numerous occurrences of loss of main landing gear doors, the following inspections and rework are required.

(a) Within the next 30 hours' time in service after the effective date of this AD and every 30 hours' time in service thereafter, conduct a visual inspection for cracks or loose fasteners in the front main landing gear door assemblies paying special attention to the front ribs and front hinge fittings. If any defects are found, they must be repaired or replaced prior to further flight, except that a ferry flight may be authorized in accordance with CAR 1.76 to a base where the required replacement or modifications are to be made.

(b) When doors incorporating the modifications outlined in Lockheed 1049 Service Bulletin No. 2935, or FAA approved equivalent, are installed, the special inspections described in (a) may be discontinued.

(c) Upon request of the operator, an FAA maintenance inspector, subject to approval of the Chief, Engineering and Manufacturing Branch, FAA Western 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 July 26, 1961.)

(Lockheed 1049 Service Bulletin No. 2935 pertains to this subject.)

This directive effective July 17, 1961.

61–15–4 Lockheed Amdt 309 Part 507 Federal Register July 21, 1961. Applies to All 188 Series Aircraft Incorporating A Lounge Using Hardman Seats.

Compliance required as indicated.

Reports have been received that grommets are missing in some of the aft lounge safety belt cable guide brackets. Grommets are required in these brackets to permit the cable to withstand the design load. Within the next 100 hours' time in service inspect the safety belt cable guide bracket, Hardman P/N 5072–1, of the left and right aft lounge seats for presence of nylon grommets. It the nylon grommets are missing, install nylon grommets, P/N 295957–10A (United Carr Fastener Corp.), or equivalent, or restrict occupancy of the left and right aft lounge seats during takeoff and landing until such time as grommets are installed.

(Lockheed Service Bulletin 88/SB–541 refers to the same subject.)

This directive effective August 2, 1961.

61–19–3 Lockheed Amdt. 338 Part 507 Federal Register September 20, 1961. Applies to All 049, 149, 649, 749, and 1049 Series Aircraft.

Compliance required as indicated.

As a result of findings during investigation of a recent Lockheed Model 049 aircraft fatal accident, it is necessary to require the following corrective action.

Unless already accomplished within the last 50 hours' time in service, the following special inspection is required at the first layover or stop where qualified maintenance personnel and facilities are available and the inspection can be conducted without undue delay but not

to exceed the next 25 hours' time in service after the effective date of this AD. Inspect to ensure that the 5 bolts, nuts, and cotter pins in the parallelogram linkage between the elevator boost valve and boost mechanism are properly secured and safetied.

This directive effective September 20, 1961, for all persons except those to whom it was made effective immediately by telegram dated September 8, 1961.

61-21-5 Lockheed Amdt. 342 Part 507 Federal Register October 3, 1961. Applies to All Model 188 Aircraft.

Compliance required as indicated.

Several instances of inadvertent tripping of compass circuit breakers have occurred due to bumping the ganging bar by the occupant of the observers seat. Due to the effect of the loss of heading information upon operational safety, accomplishment of the following is required:

Within the next 100 hours' time in service after the effective date of this AD, inspect the pilot's and copilot's compass circuit breakers, and if the circuit breakers are ganged together, either remove the ganging bars, or install a protective guard which precludes inadvertent operation of the ganging bar. (These circuit breakers are located in the lowest circuit breaker panel beside the observers seat on the left side of the flight deck.)

This directive effective November 2, 1961.

61-21-6 Lockheed Amdt. 343 Part 507 Federal Register October 4, 1961. Applies to All PV-1 and B-34 Type Aircraft Having Main Landing Gear Lower Drag Struts P/N 112004.

Compliance required as indicated.

During investigation of a PV-1 main landing gear failure, the main landing gear lower drag strut, P/N 112004, was found to be understrength because it was not in the specified heat-treated condition. As a result of this service experience, the following is required:

(a) Within the next 50 hours' time in service from the effective date of this directive unles already accomplished, determine by the Brinell, Rockwell, or an equivalent hardness test method whether or not the struts, P/N 112004, are heat-treated to an ultimate tensile strength of 150,000 to 170,000 p.s.i. If the ultimate tensile strength is less than 150,000 p.s.i., the strut must be replaced with a similar part heat-treated to 150,000 to 170,000 p.s.i. or by a strut, P/N 125715 or equivalent, prior to further flight, except for ferry flight in accordance with the provisions of CAR 1.76.

NOTE: Strut, P/N 125715, originally designed for the PV-2 type aircraft is an acceptable alternative for strut, P/N 112004, and a hardness test on this strut is not necessary. If the P/N is missing or obscured, the struts may be identified by the following: The PV-2 strut, P/N 125715, weighs approximately 15.5 pounds and the PV-1 strut, P/N 112004, weighs approximately 10.5 pounds. The PV-2 strut tube has a wall-thickness of 0.25 inch whereas the PV-1 part has a wall-thickness of 0.156 inch. The wall-thickness can be measured by laying a straight edge along the tube and measuring the perpendicular distance between the straight edge and the end fitting.

(b) Spare lower drag struts, P/N 112004, must comply with the hardness test and replacement provisions of (a) prior to installation.

This directive effective November 3, 1961.

61-22-6 Lockheed Amdt. 351 Part 507 Federal Register October 21, 1961. Applies to All PV-1, B-34, and 18 Series Aircraft Having Elevator Control Mast Assembly Castings P/N 11467 or 56045.

Compliance required within the next 100 hours' time in service after effective date.

As a result of reported cracks in the elevator control mast assembly castings, the following inspections and installation procedures are required unless already accomplished:

(a) Inspect the elevator control mast assembly casting prior to removal, for mating marks to insure correct assembly. If none exist, determine the proper position of the cap on the mast and mark the assembly with a paint stripe or equivalent to insure future correct assembly of parts.

(b) Remove the elevator control mast assembly casting and inspect both the control mast and the cap castings for cracks in the attach bolt lugs using dye penetrant methods or equivalent. If any cracks are found, the casting must be replaced prior to further flight.

(c) Install the four AN 5-16A bolts in the casting in place on the aircraft, with the lockplate between the cast cap and the casting on the aft side, and with the mating marks matched. Torque the two bolts which go

through the lockplate to 50–70 inch-pounds, then the other two bolts to the same range of torque values. Measure the gap between the forward side of the castings. Fabricate an aluminum alloy shim, +0.002 to +0.005-inch greater than the measured gap. Remove the forward bolts, install the shim, replace the bolts, and torque all bolts to 100–140 inch-pounds. Ensure that the shim does not contact the surrounding structure.

This directive effective November 21, 1961.

61–24–4 Lockheed Amdt. 367 Part 507 Federal Register November 14, 1961. Applies to All Models 049, 149, 649, 749, and 1049 Series Aircraft Having 25,000 Or More Hours' Time In Service.

Compliance required as indicated.

As a result of reports of numerous cases of cracking in the horizontal stabilizer rear spar-to-fuselage attachment, the following inspections must be accomplished within the next 400 hours' time in service after effective date of this AD, unless already accomplished within the last 4,300 hours' time in service and at intervals of 4,700 hours' time in service.

Inspect the rear spar web (P/N 271488–4) for cracks in the 0.38 inch radius adjacent to the stabilizer-to-fuselage fitting on both the left and right sides of the airplane. If cracks are found, they must be repaired prior to further flight in accordance with Lockheed Service Letter FS/250615, or FAA approved equivalent.

The above inspection may be discontinued upon incorporation of the repair or reinforcement provisions of the Lockheed Service Letter, or FAA approved equivalent.

Upon request of the operator, an FAA maintenance inspector, subject to prior approval of the Chief, Engineering and Manufacturing Branch, FAA Western 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.

This directive effective December 14, 1961.

62–1–2 Lockheed Amdt. 384 Part 507 Federal Register January 9, 1962. Applies to All Models 49, 149, 649, 749, and 1049 Series Aircraft Incorporating Clevelend Pneumatic Tool Company Main Landing Gear Cylinders, P/N's 9040–2, 9040A–2, 9106–2, 9291–2, 9291B–2, 9291B–2B, or 9291D–2.

Compliance required as indicated.

As a result of failures of the cap weld on main landing gear cylinders which have been returned to service following compliance with the provisions of AD 59–7–3, as amended, all aircraft shall be inspected and/or modified as follows:

(a) Within the next 400 hours' time in service after the effective date of this AD, unless already accomplished, all landing gear cylinders with cap welds which previously have been inspected by the double-wall gamma radiographic technique in compliance with AD 59–7–3 shall be reinspected in accordance with (c), or shall be replaced with cylinders which have been inspected in accordance with (c) and found to exhibit no evidence of cracks.

(b) Within the next 1,200 hours' time in service after the effective date of this AD, unless already accomplished, all landing gear cylinders with cap welds which previously have been radiographically inspected by a method other than the double-wall gamma technique in compliance with AD 59–7–3, shall be reinspected in accordance with (c), or shall be replaced with cylinders which have been inspected in accordance with (c) and found to exhibit no evidence of cracks.

(c) The inspection techniques and procedures to be applied to all cylinders noted in (a) and (b) shall be those prescribed by Section B of Lockheed Field Service Letter No. FS/254049L, dated August 29, 1961, or FAA engineering approved equivalent. The entire periphery of the cap weld shall be inspected.

(d) Any cylinder with a cap weld which is found to exhibit any evidence of cracks when inspected as required by (a) or (b), shall be replaced prior to further flight of the aircraft. Cracked cylinders are not eligible for any further use in certificated aircraft.

(e) The cap welds on all cylinders which have been installed or which have been inspected, found to exhibit no evidence of cracks, and returned to service in accordance with (a) or (b), shall be reinspected in accordance with (c), at periods thereafter not to exceed 5,000 hours' time in service. The first periodic re-

inspection of any cylinder in service which, prior to the effective date of this AD, was inspected in the manner prescribed by (c) shall be accomplished within 5,000 hours' time in service following the date of that inspection.

(f) Cylinders with the cap welds which exhibit any evidence of cracks during any of these periodic reinspections shall be replaced prior to further flight of the aircraft. Cracked cylinders are not eligible for any further use in certificated aircraft.

(g) Upon request of the operator, an FAA maintenance inspector, subject to prior approval of the Chief, Engineering and Manufacturing Branch, FAA Western 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.

(h) When the cylinders described are replaced with new cylinders, TPC Co. P/N's 9040A-2A, 9106-2A, and 9291D-2A, incorporating flash welded caps, the inspections specified in (a) through (g), may be discontinued.

(Lockheed Field Service Letter FS 254049L covers this same subject.)

This supersedes AD 59-7-3.

This directive effective January 9, 1962.

62-16-3 Lockheed Amdt. 461 Part 507 Federal Register July 12, 1962. Applies to All Models 1049-54, 1049B, 1049C, 1049D, 1049E, 1049F, 1049G, and 1049H Series Aircraft.

Compliance required as indicated.

As a result of corrosion found on the wing rear spar upper cap exposed surfaces which exceeded the negligible damage limits the following is required:

(a) Within the next 700 hours' time in service after the effective date of this AD, unless already accomplished, inspect the exposed surfaces of the rear spar upper caps from wing Station 80 to wing Station 458 using a wood or micarta pick as a probe and a good light source to illuminate the area.

(b) If no corrosion is found, coat the spar cap with zinc chromate primer. The aircraft may then be returned to service.

(c) If corrosion damage is found on the exposed surfaces of the rear spar upper cap, remove enough rivets from the aft upper surface skin to allow lifting the skin for the purpose of inspecting the aft outer surface of the rear spar upper cap in accordance with (a).

(d) Repair all corrosion damage in accordance with Lockheed Report 8882, figure 2-25 and paragraph 1-67N, or FAA approved equivalent. If no corrosion is found on the aft outer surface of the rear spar upper cap, coat it with zinc chromate.

(e) All rear spar upper caps which have been inspected and repaired in accordance with (a) through (d) shall be reinspected and repaired in accordance with (a) through (d) at periods thereafter not to exceed 5,000 hours' time in service or two calendar years, whichever occurs first. The first periodic reinspection of any rear spar upper cap which was inspected and repaired in the manner prescribed in (a) through (d) prior to the effective date of this AD, shall be accomplished within 5,000 hours' time in service or two calendar years, whichever occurs first, following the date of that inspection.

(f) Upon request of the operator, and FAA maintenance inspector, subject to prior approval of the Chief, Engineering and Manufacturing Branch, FAA Western 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.

(Lockheed Field Service Letters FS/249582L dated November 4, 1960, and FS/250141L dated December 20, 1960, cover this same subject.)

This directive effective August 13, 1962.

62-19-2 Lockheed Amdt. 477 Part 507 Federal Register August 23, 1962. Applies to All Models 49, 149, 649, 749, and 749A Series Aircraft Incorporating Cleveland Pneumatic Tool Company Main Landing Gear Pistons, P/N's 8298-4, 8298B-4, 8298C-4, 8298C-4A, 8298D-4 or 8298F-4.

Compliance required as indicated.

As a result of one complete fatigue failure and subsequent cases of cracks in numerous pistons in the area immediately above the weld

that retains the metering pin bulkhead, accomplish the following:

(a) Within the next 800 hours' time in service after the effective date of this AD, and thereafter at intervals not to exceed 2,000 hours' time in service, inspect the main landing gear pistons, Cleveland Pneumatic Tool Company, P/N's 8298–4, 8298B–4, 8298C–4, 8298C–4A, 8298D–4, and 8298F–4, for cracks in the area immediately above the weld that retains the metering pin bulkhead. In those cases where an inspection in accordance with the procedures described in this AD has been accomplished within the last 1,200 hours' time in service as of the effective date of this AD, that inspection may be considered as the initial inspection, and the repetitive reinspection intervals shall then start no later than 2,000 hours' time in service from that date. This inspection may be made by dye penetrant, magnetic particle or ultrasonic methods.

(1) Pistons with cracks which exceed a depth of 0.050 inch as measured from the piston inner wall surface shall be modified in accordance with paragraph 4(b) of Lockheed Field Service Letter No. FS/256603L, dated January 24, 1962, or an FAA approved equivalent in order to be eligible for further use. Pistons with this modification are redesignated Cleveland Pneumatic Tool Company P/N's 8298C–4B, 8298C–4C, 8298D–4A, or 8298F–4A.

(2) Pistons with cracks which do not exceed a depth of 0.050 inch as measured from the piston inner wall surface shall be repaired in accordance with paragraph 4(a) of Lockheed Field Service Letter No. FS/256603L, dated January 24, 1962, or an FAA approved equivalent in order to be eligible for further use. Repaired pistons shall be identified by stamping a letter "R" in front of the part number.

(3) Pistons showing no evidence of cracks and pistons repaired in accordance with (a) (2) may be returned to service subject to the 2,000 hours' repetitive reinspection intervals.

(b) When modified pistons, P/N's 8298C–4B, 8298C–4C, 8298D–4A, or 8298F–4A, or FAA approved equivalent are installed, the periodic reinspections of (a) may be discontinued.

(c) Upon request of the operator, an FAA maintenance inspector, subject to prior approval of the Chief, Engineering and Manufacturing Branch, FAA Western 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.

(Lockheed Field Service Letter No. FS/256603L dated January 24, 1962, covers this same subject.)

This directive effective September 24, 1962.

62–21–4 Lockheed Amdt. 489 Part 507 Federal Register October 3, 1962. Applies to All Model 1649A Aircraft.

Compliance required as indicated.

As a result of chordwise cracks on the wing lower milled skin at wing Station 590, the following shall be accomplished:

(a) Within the next 400 hours' time in service after the effective date of this AD, unless already accomplished within the past 600 hours' time in service, and at periods thereafter not exceeding 1,000 hours' time in service following that initial inspection, inspect from wing Station 580 through wing Station 600, the external lower surface of the aft skin panels, P/N 472066, for any evidence of cracks emanating from the aft edge of the panel through the rear beam attachment holes. Inspection shall be by close visual or dye penetrant means.

(b) Any cracks shall be repaired prior to further flight in accordance with Lockheed 1649 Service Bulletin No. 73, Section 1, "Modification Data," and Lockheed Drawing SED 61–9004, or an equivalent method approved by the Chief, Engineering and Manufacturing Branch, FAA Western Region.

(c) The periodic inspections may be discontinued following repair per (b) or when an uncracked skin panel has been reinforced in accordance with Lockheed 1649 Service Bulletin No. 73.

(d) Upon request of the operator, an FAA maintenance inspector, subject to prior approval of the Chief, Engineering and Manufacturing Branch, FAA Western 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.

(Lockheed Field Service Letter FS/240893L, dated April 14, 1960, and Lockheed 1649 Service Bulletin No. 73 cover this same subject.)

This directive effective November 2, 1962.

62-26-3 **Lockheed** Amdt. 512 Part 507 Federal Register December 6, 1962. Applies to All Models 49, 149, 649, 649A, 749, 749A, and 1049-54 Series Aircraft Incorporating Main Landing Gear Crossheads, P/N 307866 or P/N 288982 Which Have Accumulated 10,000 or More Hours' Time In Service. Compliance required as indicated.

To detect fatigue cracking in the 0.25-inch radii adjacent to the one-inch diameter bearing surfaces on main landing gear crossheads, the failure of which would prevent normal extension and retraction of the main landing gear, the following shall be accomplished:

(a) Within the next 700 hours' time in service after the effective date of this AD, unless already accomplished within the last 1,800 hours' time in service prior to the effective date of this AD, and thereafter at intervals not to exceed 2,500 hours' time in service from the last inspection, inspect all crossheads as follows:

The crosshead shall be removed from the aircraft and inspected by the magnetic particle method or FAA approved equivalent for cracks in the 0.25-inch radii adjacent to the one-inch diameter bearing surfaces. All cracked crossheads shall be replaced with sound ones before the aircraft is returned to service. Crosshead replacement for 1049-54 aircraft shall be P/N 307866 only. Crosshead replacement for 49, 149, 649, 649A, 749, and 749A aircraft shall be either P/N 307866 or P/N 288982.

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

(Lockheed Field Service Letter FS 251565L, dated March 31, 1961, covers this same subject.)

This directive effective January 7, 1963.

62-26-4 **Lockheed** Amdt. 514 507 Federal Register December 5, 1962. Applies to All Model 188A and Model 188C Aircraft. Compliance required as indicated.

To permit early detection of cracks in both the closed and open section type elevator balance weight arms and to assure rework of uncracked arms and replacement of cracked arms, the failure of which could cause jamming of the elevator or adversely affect protection against flutter, the following shall be accomplished:

(a) Unless already accomplished within the last 75 hours' time in service prior to the effective date of this AD, all elevator balance weight arms of the closed (square tube) type shall, within the next 100 hours' time in service following the effective date of this AD and at intervals thereafter not to exceed 175 hours' time in service from the last inspection, be inspected in the manner prescribed in (c). Any closed type arm found to be cracked shall be replaced prior to further flight with an uncracked closed type arm of the same part number, with an uncracked open type arm of the proper part number as prescribed by Lockheed Field Service Letter FS/249931L or with an FAA engineering approved replacement arm. The replacement shall be accomplished in accordance with Lockheed Service Bulletin 88/SB-567, Revision 1, or FAA engineering approved equivalent.

(b) Unless already accomplished within the last 250 hours' time in service prior to the effective date of this AD, all elevator balance weight arms of the open (C—section) type shall, within the next 100 hours' time in service following the effective date of this AD and at intervals thereafter not to exceed 350 hours' time in service from the last inspection, be inspected in the manner prescribed in (c). Any open type arm found to be cracked shall be replaced prior to further flight with an uncracked arm of the same part number or with an FAA engineering approved equivalent arm. The replacement shall be accomplished in accordance with Lockheed Service Bulletin 88/SB-567, Revision 1, or FAA engineering approved equivalent.

(c) Conduct close visual inspections of all external exposed surfaces of both types of arms and of the inner surfaces of open type

arms in areas where external surfaces are hidden by clips. The close visual inspections shall be made with a magnifying glass or magnifying mirror of at least 3X magnification, with the elevator in full up position and with all elevator access doors at the trailing edge of the horizontal stabilizer, in the open position.

(d) Within 350 hours' time in service after the effective date of this AD, all balance weight arms inspected per (a) and (b) and found to be uncracked shall, unless already accomplished, be reworked in the manner described by paragraphs B(2) through B(6) of Lockheed Service Bulletin 88/SB-567, Revision 1, or in an FAA engineering approved equivalent manner.

(e) Closed type replacement arms installed per (a) and closed type uncracked arms reworked per (d) are subject to the inspection for cracks in accordance with (c) at intervals not to exceed 175 hours' time in service. Open type replacement arms installed per (a) or (b) and open type uncracked arms reworked per (d) are subject to the inspection for cracks in accordance with (c) at intervals not to exceed 350 hours' time in service. (FAA engineering approved equivalent replacement arms installed per (a) or (b) will be subject to such special inspections as may be prescribed by FAA in conjunction with the approval of the use of such arms.)

(f) Upon request of the operator, an FAA maintenance inspector, subject to prior approval of the Chief, Engineering and Manufacturing Branch, FAA Western 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.

(Lockheed Field Service Letters FS/249931L dated September 9, 1960, FS/250044L, dated November 28, 1960, and Service Bulletin 88-SB-567, Revision 1, cover this same subject.)

This supsersedes the Airworthiness Directive on the same subject issued and made effective by telegram dated November 23, 1962.

This directive effective December 4, 1962.

62-27-7 Lockheed Amdt. 521 Part 507 Federal Register December 27, 1962. Applies to All Models 1049C, 1049D, 1049E, 1049G, and 1049H Series Aircraft Which Have Accumulated 20,000 or More Hours' Time in Service and to Aircraft With Less Than 20,000 Hours' Time In Service, Upon the Accumulation of 20,000 Hours' Time In Service.

Compliance required as indicated.

As a result of fatigue cracking of the wing front spar lower cap and web at wing Station 325, accomplish the following:

(a) Unless already accomplished within 1,100 hours' time in service prior to the effective date of this AD all aircraft shall be inspected and repaired or reinforced as necessary within the next 400 hours' time in service following the effective date of this AD, and at periodic intervals thereafter not to exceed 1,500 hours' time in service as follows:

(1) Use X-ray film of the AAM type in a double loaded holder. Place the film on the front beam cap horizontal leg on each side of wing Station 325 and as close to wing Station 325 as possible. Use a minimum of 60 KV and 5 milliamps at 36 inches focal distance with an exposure time of approximately 3 minutes. The exposure is to be taken at 90° to the wing lower skin. All sealing compound in the area to be inspected must be removed prior to inspection.

(i) If no cracks are detected in the forward horizontal leg by the X-ray inspection, inspection of the spar cap and lower main beam web is not required.

(ii) If a crack is detected in the forward horizontal leg by the X-ray inspection, inspection of the spar cap and lower main beam web is required. All sealing compound in the area to be inspected must be removed prior to inspection. Inspection of the aft horizontal and vertical leg and inspection of the lower main beam web shall be accomplished by use of either radiographic or dye penetrant method.

(2) All aircraft that are inspected in accordance with (a)(1)(i) and are found not to be cracked may be returned to service. Any cracked spar caps or webs shall be repaired in accordance with Lockheed Structural Repair Manual, Report No. 8882, or FAA approved

equivalent prior to returning the aircraft to service. Repairs made in this area must be sealed against fuel leakage in accordance with Lockheed Report No. 5909 or FAA approved equivalent.

(b) The periodic reinspection may be discontinued on aircraft:

(1) on which the spar caps are found not to be cracked if such spar caps are reinforced in accordance with Lockheed 1049 Service Bulletin No. 3110, dated March 31, 1961, or FAA approved equivalent; and

(2) on which the cap and web are repaired and sealed in accordance with (a)(2).

(c) Upon request of the operator, an FAA maintenance inspector, subject to prior approval of the Chief, Engineering and Manufacturing Branch, FAA Western 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.

(Lockheed Field Service Letter FS/240885L, dated April 15, 1962, covers this same subject.)

This directive effective January 28, 1963.

LUSCOMBE

(*For Model 8 Series, see Silvaire*)

(*For Model 11 Series, see Temco*)