SCHLEICHER

61–13–3 Schleicher Amdt. 299 Part 507 Federal Register June 24, 1961. Applies to Model K–7 Gliders With Serial Numbers Up To and Including 935 and Serial Number 984.

Compliance required prior to next flight unless already accomplished.

To preclude the buckling of fuselage steel tube members on each side at the rear of the fuselage, replacement of five tubes with tubes having greater wall thickness is required. Replace the existing steel tube diagonal members, counting forward from the tail post as follows, using Civil Aeronautics Manual 18 repair procedures or manufacturer's recommendation.

(a) Right side only, third member: Replace with 12 MMS. (15/32″), outside diameter, 1MM. (.040″) wall thickness tube.

(b) Right and left side, fourth and sixth members: Replace with 14 MMS. (9/16″) outside diameter, 1 MM. (.040″) wall thickness tubes.

(Schleicher Drawing No. L–211.10–A4 dated March 15, 1961, covers this subject.)

This directive effective June 24, 1961.

SIKORSKY

47–32–15 Sikorsky (Was Mandatory Note 1 of AD–2H–1.) Applies to Model S–51 Helicopters.

Compliance required prior to next flight.

Inspect the chain and sprockets of the control system for an accumulation of excessive grease and foreign matter. Excessive grease and any foreign matter adhering to the chain and sprockets should be removed prior to the next flight in order to prevent possible malfunctioning of the flight control system. The recommended procedure as contained in the Sikorsky Service Information Circular No. 17 dated June 2, 1947, should be followed at the first disassembly of these parts.

47–35–1 Sikorsky (Was Mandatory Note 1 of AD–7L–1.) Applies to Model R4–B Helicopter Serial Numbers 43–46500 to 43–46502 and 43–46504 to 43–46539 Inclusive.

Compliance required before November 15, 1947.

To reduce the possibility of loss of flight control due to failure of the main rotor links from lack of lubrication, the links should be reworked in accordance with the following instructions. This change involves the removal and inspection of main rotor link, P/N VS 36181 and machining of oil grooves.

1. Strip paint from the subject links with a paint remover or lacquer thinner, Specification No. AN–TT–T–256 or equivalent. Do not use scraper or wire brush on links, because small cracks may be filled in and covered.

2. Visually inspect main rotor links, P/N VS 36181 by one of the following methods for cracks around link pin hole and longitudinally along what was the flash line in original forging. (See Figure 1.) If cracks are present, links should be scrapped.

(*a*) Visual inspection after re-anodizing; or

(*b*) By caustic etching; or

(*c*) By an approved fluorescent-black light method.

3. Machine oil grooves. (See Figure 1.)

4. Remove burrs and clean after machining.

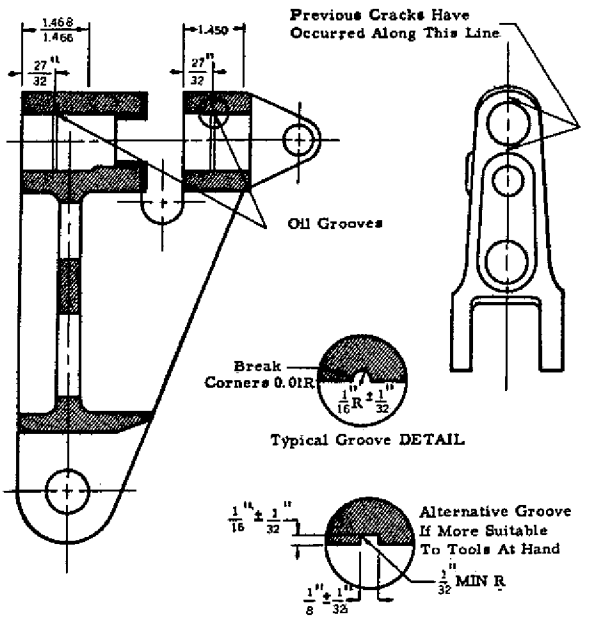

FIGURE 1

5. Inspect the two bearings removed from each of the three subject links.

(*a*) If bearings removed are P/N AT–16, replace with P/N AT–16–OH bearings on assembly. (Bearing AT–16–OH is an AT–16 bearing with an oil hole added to its outer race.)

(*b*) If bearings removed are P/N AT–16–OH and retainer washers are damaged or show evidence of foreign matter, they are to be replaced.

(Sikorsky Service Bulletin R–4B No. 10 and Army T. O. 01–230HA–15 also cover this same subject.)

47–35–2 Sikorsky (Was Mandatory Note 2 of AD–7L–1.) Applies to Model R–4B AAF Helicopter Serial Numbers 43–46500 and 43–46504 to 43–46567 Inclusive.

Compliance required prior to November 15, 1947.

To compensate for an increased overhang of the tail rotor gearbox, a diagonal brace that changes the aft boom load distribution shall be installed in accordance with the following instructions:

(*a*) Fit the two tube brace assemblies,

Sikorsky P/N S38566 and S38567, in telescopic position, to lower right longeron and upper left longeron. (See Figures 2 and 3.)

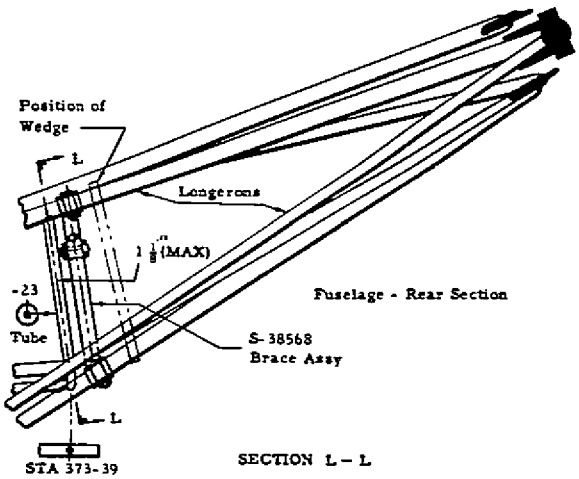

FIGURE 2

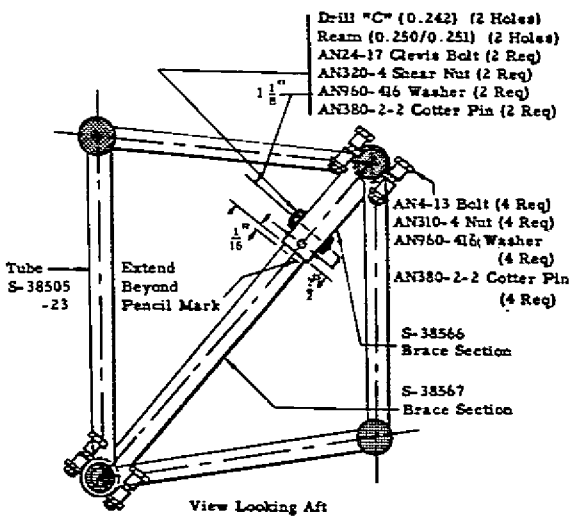

FIGURE 3

(1) Insert bolts, P/N AN 4–13, into halves of clamp of each section of brace; attach washers, P/N AN 960–416, and nuts, P/N AN 310–4.

(2) Locate brace so that its center and that of vertical tube, P/N S38505–23, forward of it, are a maximum of 1⅛ inches apart. (See Figure 2.)

(3) Tighten securely four bolts, P/N AN 4–13, which hold subject brace in position.

(4) Secure nuts, P/N AN 310–4, with cotter pins.

(*b*) Mark with a pencil the overlap of tube brace assembly, P/N S38566, on assembly P/N S38567. (See Figure 3.)

(*c*) Fashion a wedge, using a piece of wood 1 x 3 x 14 inches, and "V" notch both ends. (See Figure 4.)

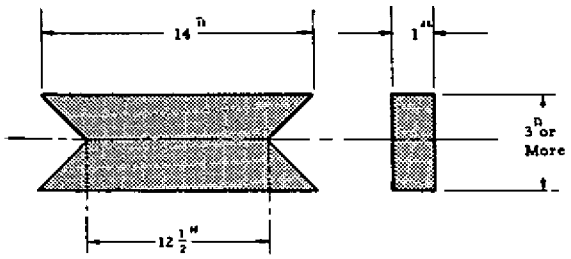

FIGURE 4

(*d*) Insert wedge approximately parallel to telescopic brace.

(1) Tap alternately the ends of wedge forcing the subject assembly to extend 1/16 inch beyond the pencil line requested in paragraph (*b*). (Extra extension of 1/16 inch permits brace to assume the desired stress load.)

(2) Wrap longerons with friction tape at point of wedge contact, or insert cardboard or any suitable material at ends of wood wedge to prevent paint abrasion.

(*e*) With wedge securely in position, using drill No. 40 (0.098-inch), drill two holes through brace at 90° to each other. (See Figure 3.)

(1) Enlarge holes, using drill No. C (0.242 inch) and ream to 0.250 inch.

(*f*) Bolt two sections of brace together with bolts, P/N AN 24–17, nuts, P/N AN 320–4, and secure with cotter pins.

(*g*) Remove the wood wedge.

(*h*) If paint on longerons of tail fuselage has been damaged, touch up with paint.

(Sikorsky Service Bulletin R–4B No. 8 and Army Technical Order 01–230HA–11 also cover this same alteration.)

47-50-8 Sikorsky Applies to Model S–51 Helicopters.

Compliance required at each 200-hour inspection period.

Disassembly and inspection of the vertical hinge pins and bearings is a mandatory procedure and should be accomplished at each 200-hour inspection period.

The helicopters which utilize Torrington No. 4479 bearings at the vertical hinge pins are

subject to replacement of these bearings at each 200-hour inspection period.

The procedure followed is explained on page 4 of Sikorsky Service Bulletin No. 7 dated August 4, 1947.

Helicopters which utilize Smith 14TR–X1 bearings at the vertical hinge pins are subject to inspection at each 200-hour interval and replacement of the bearings is not required unless the installation shows sign of serious wear or damage.

Helicopters which utilize Torrington No. 4479 bearings at the vertical hinge pins can be reworked to incorporate Smith 14TR–X1 bearings at the vertical hinge pins if desired by the owner.

(The procedure to follow for this exchange of bearings is as explained on page 2 of Sikorsky Service Bulletin No. 7 dated August 4, 1947.)

47–51–14 Sikorsky Applies to Models YR–6A, R–6A, HOS–1 Helicopters.

Compliance required at each removal and replacement of the power takeoff assembly.

In order to prevent failure of the pinion and ring gears in the main gearbox due to improper installation of the power takeoff assembly, the following teardown, inspection, and assembly procedure should be followed:

(*a*) Disconnect and remove the front end of the intermediate drive shaft.

(*b*) Remove the cotter pin and nut in the center of the spline coupling, P/N S–635104, and remove the spline coupling with attached brake disc.

(*c*) Check the backlash in the power takeoff gears. This should be 0.003 to 0.005 inch between the ring gear and pinion.

(*d*) Remove the five retaining nuts and washers securing the power takeoff to the main gearbox lower housing.

(*e*) Using a fiber mallet, for starting, remove the power takeoff.

CAUTION: Do not use a screwdriver or pry bar on the mating surfaces, as the slightest deformation of the surfaces may cause gear failure.

(*f*) Inspect the shims, P/N S–635117, and gasket, P/N S–635115, for dents and tears. Only shims and gaskets in perfect condition should be considered serviceable. Also, the mating surfaces of the housings should be free from rough spots or tool deformations.

(*g*) With a micrometer, measure the total thickness of the shim. If it is necessary to replace a shim, and the backlash was within limits, the replacement shim must have the same total thickness as the parts removed.

(*h*) Lightly coat with Prussian blue the teeth of the power takeoff pinion.

(*i*) Place gasket P/N S–635115 in gasket recess.

(*j*) Replace the shims over the five studs in the lower case of the main gearbox, install the power takeoff housing assembly, and secure the five washers and nuts.

(*k*) Check the backlash between the ring gear and pinion, which must be between 0.003 to 0.005 inch.

(*l*) After the power takeoff has been fastened securely in place, the gearbox must be operated by hand by turning the end of the pinion shaft protruding from the power takeoff. After a few revolutions, remove the power takeoff and check the tooth pattern. The correct tooth pattern is shown in Figure 5. The necessary adjustment for proper tooth pattern and backlash should be accomplished by shimming with power takeoff housing shims. Shims are to provide adjustments for both mounting distance of ring gear and pinion and also tooth pattern.

(*m*) When the proper tooth pattern and backlash have been obtained, install the power takeoff and securely tighten retaining nuts.

(*n*) Replace the spline coupling with brake disc attached and secure with washer, nut, and cotter pin.

(*o*) Reassemble the front end of the intermediate drive shaft.

(Similar instructions are contained in AAF Technical Order No. 01–230 of HC–16, dated March 6, 1946, and in Bureau of Aeronautics Aircraft Bulletin No. 6 dated March 28, 1947.)

48–17–3 Sikorsky Applies to Model S–51 Helicopters.

Compliance required at each 800-hour inspection.

In order to preclude any malfunctioning of the main rotor gearbox due to the normal wear which may be expected to occur in the primary and secondary planet pinion shafts

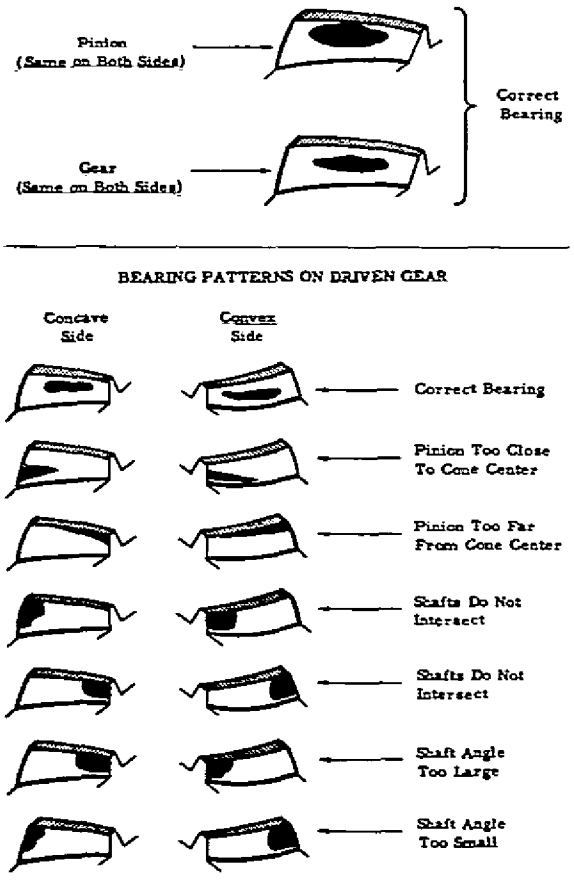

FIGURE 5

(Sikorsky P/N S–535524), these parts should be rotated 180° or replaced by new parts after 800 hours of operation. If rotated, replacement by new parts should be made after an additional 800 hours.

(Sikorsky Aircraft Service Information Circular No. 8 Revision "B" dated January 13, 1948, covers this same subject.)

48–18–2 Sikorsky Applies to Model S–51 Series Helicopters Serial Numbers SS–5101 Through SS–5157.

Compliance required at first main gearbox overhaul but in any event not later than the next 400 hours of operation.

To prevent cracks caused by stress concentration at the corners of the internal splines on the bevel drive gear (Sikorsky P/N S–535360), a 1/32-inch radius relief should be formed at the lower end of each spline. The procedure for accomplishing this modification is given in Sikorsky Aircraft Information Circular No. 40 and No. 40 Revision "A."

50–8–1 Sikorsky Applies to All Model S–51 Helicopters.

Compliance required at each 25-hour inspection.

Inspect the upper longerons, Drawing S–520879, of the S–10–20–3003 tail cone mounting assembly for cracks in the area adjacent to the generator support plate and clamps, and in all the welds on the longerons adjacent to the clamps. If cracks are found, the defective member should be reinforced or replaced prior to continuing flight.

(Sikorsky Service Information Circular No. 38, Revision A, dated January 4, 1950, covers this same subject.)

This supersedes AD 48–11–3.

51–22–1 Sikorsky Applies to All Model S–51 Helicopters.

Compliance required within the next 25 hours of operation, but not later than November 1, 1951.

Due to the reported failures of Gear Shaft (Generator Drive—Tail Drive Transmission System) P/N S–10–35–1004, all shafts in service shall be replaced by shafts which have been jig drilled (i.e., the taper pin hole is located squarely with respect to the splines) and which have been stoned and polished to deburr and remove any sharp radii where the taper pin hole intersects the splines.

(Sikorsky Service Information Circular No. 172, dated August 30, 1951, covers this same subject.)

51–23–4 Sikorsky Applies to All Model S–51 Helicopters.

Compliance required as indicated.

1. Compliance required prior to next flight.

Inspect all main rotor link assemblies (P/N S510348) received from the manufacturer between June 1 and September 6, inclusive for location of the identification stamp "F". Links with the "F" metal-stamped in the critical area on the inner faces of the ears should be retired from service. Those with the "F" stamped on the outer faces or on noncritical areas of the inner faces of the ears should be polished locally with emery and crocus cloth to remove the "F" and the links may be returned to service. (See Figure 6.)

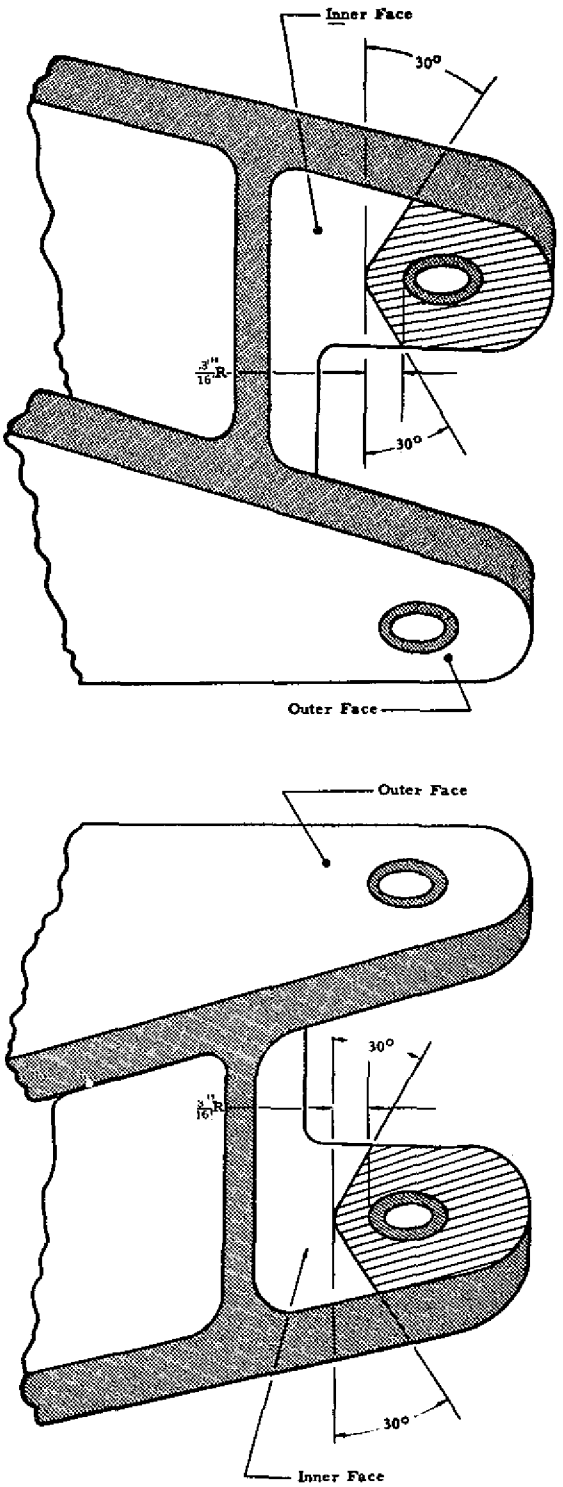

FIGURE 6

(Sikorsky Information Circular No. 175, dated September 7, 1951, covers this same subject.)

2. Main rotor link assemblies (P/N S510348) shall be retired from service when a total flight time of 960 hours on the links has been accumulated.

(Sikorsky Information Circular No. 122, Revision B, dated September 10, 1951, covers this same subject.)

54–1–3 Sikorsky Applies to All Model S–51 Helicopters.

Compliance required prior to next flight.

Finger fuel strainer installed on all tanks should be removed and inspected to determine whether it incorporates a small disc screen located inside the body of the strainer. This disc screen should be removed if found to be incorporated, since it would tend to restrict fuel flow if it became clogged with foreign material.

(Sikorsky Service Information Circular No. 1430–410, dated November 9, 1953, covers the same inspection modification.)

54–13–1 Sikorsky Applies to All Model S–55 Helicopters.

Compliance required as indicated.

1. The twelve (12) AN 73A bolts which clamp the S510170 retainer to the bottom of S10–10–4302 rotating star, and the eight (8) AN 73A bolts which clamp the S510156 retainer to the top of the S10–10–4302 rotating star should be replaced. The 20 new bolts should be torqued to 25–35 inch-pounds. These replacements are to be accomplished every 60 hours until the AN 74A bolts called for in item 2. are incorporated.

2. At the next major overhaul period of the star assembly S10–10–4300, replace the twenty (20) AN 73A bolts covered in 1 with ¼-inch diameter AN 74A bolts. The AN 74A bolts should be relocated between the existing holes. When the AN 74A bolts have been incorporated, the replacements of 1 are no longer required.

3. At the next major overhaul period of the star assembly S10–10–4300, replace the twelve (12) AN 509–10R–35 screws which secure the clamp the S12–10–4015 liner and the Y96PW1–DB bearings to the S12–10–4013 stationary star. The screws should be torqued to 35–40 inch-pounds.

(Sikorsky Service Information Circular No. 1410–222 dated March 4, 1952, through Revision D dated April 15, 1954, covers this same subject.)

54–16–1 Sikorsky Applies to All Model S–55 Helicopters.

Compliance required as indicated.

1. (*a*) The rear accessory covers of main transmission S14–35–4000 and S14–35–4300 should be inspected for cracks in the areas surrounding the points of attachment of the generator to the cover. Prior to the inspection, the paint in these areas should be removed. The inspections should be accomplished by the dye penetrant method. Covers found with cracks should be replaced immediately. These inspections are to be accomplished at every intermediate inspection.

(*b*) Vibration isolators S14–35–4442 and S14–35–4443 have been designed by the manufacturer to prevent further failures. When these parts are installed in accordance with Sikorsky Information Circular No. 1435–443, the inspection outlined in item 1. (*a*) will be required at every major inspection for the first two inspections and then at every second major inspection if the cover has been operated without the isolator. If the cover has never been operated without the isolator, the inspection should be accomplished at the regular transmission overhaul period.

(*c*) The retirement time for vibration isolators is specified in Sikorsky Information Circular S14–00–354, Rev. Z.

2. (*a*) The upper and lower ends of the main transmission support assembly, S14–20–2503, both fore and aft, must be inspected visually for cracks at every intermediate inspection. Particular attention should be directed at the underside of the attachment points, the welded joints and the small drive screws. Assemblies found with cracks are to be replaced immediately.

(*b*) Prior to or at the next intermediate inspection and at every transmission overhaul thereafter, the S14–20–2503 support assemblies must be subjected to a Magnaflux inspection. Any cracks detected are cause for replacement.

3. The forward and aft lugs, to which the S14–20–2503 supports are attached, on the upper housing of the main transmission must be inspected at every major inspection. This inspection should be directed at each face of each lug in the area surrounding the bushing. Any crack detected is cause for replacement.

4. (*a*) The main rotor control servo brackets, S14–40–2113, S14–40–2143 and S14–40–2411 should be inspected for cracks in the area of the bracket ears. Prior to the inspection, all paint should be removed. The inspections should be accomplished by the dye penetrant method. Parts found with cracks should be replaced immediately. The exposed surfaces of brackets found satisfactory for return to service should be protected with several coats of zinc chromate primer. Extreme care should be taken in the installation procedure of either new or old brackets. These inspections are to be accomplished every 30 hours.

(*b*) The inspections of 4. (*a*) will no longer be necessary when steel servo brackets S14–40–2415 are installed in accordance with Sikorsky Service Information Circular No. 1440–457 dated March 24, 1954.

5. The main rotor scissors bracket assembly S10–14–1447, should be inspected for sufficient edge distance at the bolt hole through which the scissors assembly S10–10–4350, is secured. A minimum edge diameter of $\frac{5}{32}$ inch is allowable. Any S10–10–1447 brackets with less than $\frac{5}{32}$-inch edge distance should be replaced. These inspections are to be performed on those helicopters with the S10–10–1400 Timken rotor head and are to be accomplished every 30 hours.

(Sikorsky Service Information Circular No. 1435–383 dated September 3, 1953, as amended by revision A dated April 28, 1954, and revision B dated June 18, 1954, covers the same subject, except that section II of the Circular is amended by paragraph 1. (*c*).)

This supersedes AD 53–25–2.

54–19–2 Sikorsky Applies to All Model S–55 Helicopters.

Compliance required before October 1, 1954.

To insure against the loosening of the servo pilot valve locknut and subsequent improper servo operation, safety clips, Sikorsky P/N S–14–40–5194, should be installed and safetied to P/N S14–40–3227–24 lockwasher.

(Sikorsky Service Information Circular 1440–458 covers this same subject.)

54–20–2 Sikorsky Applies to All Model S–55 Helicopters.

Compliance required as indicated.

In order that cracks in the fore and aft

transmission support assemblies (S14-20-2503) may be detected, these assemblies should be inspected daily, without removing the support assemblies from the helicopter, in accordance with the following procedure:

1. Remove the paint, grease and foreign matter from all welds and from the areas of the tubes within 3 inches of a weld on both upper and lower ends.

2. Inspect for cracks all areas of the tubes within 2 inches of a weld and all welds visually, and, where possible, with the assistance of a 5- to 7-power glass.

3. Assemblies found with a crack should be replaced immediately.

4. Protect the exposed areas of metal with any suitable corrosion preventive.

The manufacturer is presently investigating the reasons for the occurrence of such cracks and a permanent repair is expected in the near future which, when incorporated, will make these daily inspections unnecessary. These inspections are in addition to those required by AD 54-16-1.

(Revision C to Sikorsky Information Circular No. 1435-383 covers this same subject.)

When transmission support, S14-20-4603, is installed in place of support S14-20-2503, the above inspection may be performed at every intermediate inspection rather than on a daily basis.

(Sikorsky Service Information Circular No. 1420-548, dated December 3, 1954, covers the installation instructions.)

55-25-4 Sikorsky Applies to All Model S-55 Helicopters.

Compliance required as indicated.

A recent failure of the tail cone skin in the area where the tail cone is spliced to the fuselage has been reported in a Model S-55 helicopter. Since this is the means of attaching the tail cone to the fuselage and to preclude further failures, the following inspections and reinforcements for the splice area are considered necessary.

1. Tail cones with less than 1,500 hours, add reinforcements at the next major inspection or within the next 150 hours.

2. Tail cones with 1,500 hours to 2,000 hours, inspect the skin for cracks at the next major inspection or within the next 150 hours. If no cracks are found, add reinforcements. If cracks are found, replace the skin and add reinforcements.

3. Tail cones with 2,000 hours or more, inspect the skin for cracks at the next intermediate inspection or within the next 50 hours. If no cracks are found, add reinforcements. If cracks are found, replace the skin and add reinforcements.

4. The inspection procedures to be followed, the reinforcements to be added and the method of attaching the reinforcements are explained in detail in Sikorsky Information Circular No. 1420-632.

56-13-2 Sikorsky Applies to All Model S-51 Helicopters.

Compliance required as indicated.

As a result of recent service experience, the main rotor hubs are to be retired from service at the times indicated.

1. Main rotor hubs, S10-10-1015 and S510117, are to be replaced every 480 hours. Magnaflux inspections are to be conducted at the 200-240 hour interval.

2. Main rotor hubs, S10-10-1033, with 1/16 inch or larger chamfer at the base on the outer edge of each arm, with 240 hours of service, must be replaced by September 15, 1956, or prior to the accumulation of 480 hours, whichever occurs first. The S510122 outer arm locknuts are to be checked for looseness every 30 hours on hubs continuing in service beyond 240 hours. With any indication of looseness, the hub is to be removed and a Magnaflux inspection for cracks at the root radius of the threads on the outer arm is to be conducted. Any hub with a crack is to be replaced. Hubs with 480 hours or more must be replaced prior to further service. After September 15, 1956, all hubs are to be replaced every 240 hours.

3. Main rotor hubs, S10-10-1033, with chamfer less than 1/16 inch at the base on the outer edge of each arm are to be replaced every 960 hours. Magnaflux inspections are to be conducted every 200-240 hours of service.

(Service Information Circular No. 76 Revisions D & F cover the same subject.)

This supersedes AD 49-44-1.

56–16–3 Sikorsky Applies to All Model S–55 Helicopters With S14–10–2000–1, –2, –3, –4, and –5 Main Rotor Blades Bearing Serial Numbers 100–3700 Inclusive, and All Model S–51 Helicopters With S10–10–2065 Series Main Rotor Blades Bearing Serial Numbers 100–3700 Inclusive.

Compliance required as indicated.

Main rotor blades of the S10–10–2065 Series on the S–51 and of the S14–10–2000–1, –2, –3, –4 and –5 Series on the S–55 have been found with fine cuts on the spar beneath the edges of the pockets. These cuts are believed to be a result of repairs to blade pockets and constitute serious stress raisers which may materially affect the service life of the blades. Inspections are to be accomplished as indicated below. The necessary preparations for inspections, the inspections, the finishing of serviceable blades and the rework of salvable blades are to be in accordance with the procedures recommended in Sikorsky Service Information Circular No. 676 for the S–51 and 1410–669 for the S–55.

1. All blades with less than 500 hours service since manufacture or complete rebuilding prior to May 1953, should be inspected as soon as practicable but prior to the accumulation of 500 hours.

2. All blades with 500 hours or more service since manufacture or complete rebuilding prior to May 1953, should be inspected as soon as practicable but not later than August 15, 1956.

3. Blades found to have no cuts may be returned to service after refinishing.

4. S–55 blades with less than 1,200 hours service and S–51 blades with less than 1,000 hours service and found to have cuts on the top or bottom may be salvaged.

5. Blades found to have cuts on the back are to be returned to the manufacturer for evaluation.

6. S–55 blades with 1,200 hours or more service and S–51 blades with 1,000 hours or more service and found to have cuts on the top, bottom or back are to be returned to the manufacturer for evaluation.

56–23–3 Sikorsky Applies to All Model S–55 Helicopters.

Compliance required as indicated.

Due to additional failures, it has been found necessary to lower the retirement time specified in AD 56–10–2. Accordingly, the horizontal hinge pin assembly, P/N S10–10–3331 and S10–10–3331–1 with 750 hours service must be replaced by December 1, 1956, or prior to the accumulation of 850 hours, whichever occurs first. Parts with 850 hours or more must be replaced prior to further service. Thereafter, P/N S10–10–3331 and S10–10–3331–1 are to be retired at not more than 750 hours.

This supersedes AD 56–10–2.

57–19–2 Sikorsky Applies to All Model S–58 Helicopters.

Compliance required as soon as possible but not later than October 30, 1957.

To avoid the possibility of slippage in S–58 hydromechanical clutch due to adverse tolerance conditions replace S1635–91046–1 rollers with S1635–91065 rollers.

The new rollers are three-thousandths (0.003) larger in diameter and may be identified by their dulite finish.

(Sikorsky telegraphic message SST–1–281 dated September 12, 1957, covers the same subject.)

59–16–4 Sikorsky Applies to All Model S–58 Helicopters.

Compliance required as indicated.

Due to the present design of the damper trunnion assembly, torque cannot be maintained on the bolt, thereby leading to fretting and fatiguing of the bolt. Although this problem has been partially corrected by replacing the AN 177–34 bolt with S1610–23198 bolt (NAS 627–48 bolt with cotter pin hole), working of the bolt in the assembly has not been completely eliminated. Accordingly, it is considered essential that close surveillance be maintained and the following inspection be carried out pending the development and installation of a redesigned trunion assembly to correct this difficulty.

During the 50-hour periodic inspection of the damper trunnion for freedom per item No. 20(c) of the Periodic Inspection Check Sheet, Airframe System S–58 Maintenance Manual, remove the damper trunnion bolt P/N S1610–23198 and inspect for condition. If indications of wearing, scouring or fretting are found the bolt must be replaced prior to further flight.

60-13-4 Sikorsky Amdt. 171 Part 507 Federal Register June 24, 1960. Applies to All Models S-51 and S-55 Helicopters.

Compliance required by August 15, 1960.

A fatigue failure of the RE5M7 shank rod end bearing has occurred in the S-55 main rotor upper controls. This rod had a hollow shank rather than a solid shank and is not an approved part. Preliminary investigation indicates that the hollow shank part has been installed in S-51 and S-55 helicopters because of improper identification. To ensure removal of this part from service, the following must be accomplished:

Unless already accomplished, remove the following rod assemblies and inspect for RE5M7 rod end bearings with hollow shanks and S510085 pivots with hollow shanks, as noted (S510085 pivots are altered RE5M7 rod ends.)

(a) Model S-51 main rotor assembly, P/N S510000.

(1) P/N S510333 (Alternate P/N S510140) rod assembly contains one RE5M7 rod end.

(2) P/N S510082 rod assembly contains one RE5M7 rod end and one P/N S510085 pivot.

(b) Model S-51 main rotor assembly, P/N S10-10-1100.

(1) P/N S510333 rod assembly contains one RE5M7 rod end.

(c) Model S-55 servo unit assembly, P/N S14-40-5000.

(1) P/N S14-40-5024 control arm contains one RE5M7 rod end.

Remove all hollow shank units and replace with solid shank units.

60-15-2 Sikorsky Amdt. 181.

Superseded by AD 62-15-1.

60-17-3 Sikorsky Amdt. 191 Part 507 Federal Register August 19, 1960. Applies To All S-58 Helicopters.

Compliance required as indicated.

As a result of a fatigue failure of the main rotor blade spar the following must be accomplished:

(a) All main rotor blades, P/N S1615-20100, with 1,330 or more hours' time in service shall be removed from service prior to further flight.

(b) An X-ray inspection covering the complete cross sectional area of the spar from the root section to the tip of the blade must be conducted for cracks, internal flaws or inclusions in the material of the spar on all main rotor blades, P/N S1615-20100, within the following time specified:

(1) All main rotor blades with 800 or more hours' time in service, prior to the next flight.

(2) All main rotor blades with less than 800 hours' time in service, within the next 100 hours' time in service except no rotor blade shall exceed 800 hours' time in service before X-ray inspection is conducted.

(c) Pending completion of the X-ray inspection in paragraph (b)(2), a daily visual inspection must be conducted on the spar of all blades with 500 or more hours' time in service as follows:

(1) Using a magnifying glass of not less than 8-power, inspect the external surface of the spar from the root section to the tip of the blade for cracks.

(2) Inspection of the upper surface of the spar must be conducted with the blade in normal static position.

(3) Inspection of the lower surface of the spar must be conducted by disconnecting the pitch controls and rotating the blade 180 degrees in pitch so that the surface being inspected is in tension due to the blades own dead weight.

(d) If any cracks, internal flaws or inclusions are found in the spar material the blade must be replaced prior to further flight.

This amendment shall become effective on the date of publication in the Federal Register for all operators not receiving individual notice by telegram dated August 3, 1960.

Revised October 16, 1962.

60-19-1 Sikorsky Amdt. 199 Part 507 Federal Register September 10, 1960. Applies to All S-52-3 Helicopters.

Compliance required as indicated.

As a result of further investigation of the service history of the HO5S-1 (S-52-3) helicopters, the following retirement, replacement

and inspection schedules must be accomplished at the times indicated:

(a) Effective immediately the following components must be retired from service at the hours of time in service indicated:

P/N S11-10-2200 Main Rotor Blade Assembly—1,100 hours.

P/N S11-15-1100 Tail Rotor Blades—1,700 hours.

(b) Effective October 14, 1960, the following components must be replaced with the redesigned components indicated, if not already accomplished:

P/N S11-35-2006, Clutch Spindle, replace with P/N S11-35-2009.

P/N S11-35-2013, Clutch Spring, replace with P/N S11-35-2013-1.

P/N S11-35-2019, Free Wheel Unit Spring, replace with P/N S11-35-2019-1.

P/N 13273, Bolt, Engine Fan, replace with AN 76-10 Bolt.

(c) Effective October 14, 1960, the following shall be accomplished at the times indicated:

(1) The torque of the AN 76-10 bolts in the engine fan must be checked every 30 hours' time in service and retorqued if necessary to a minimum value of 370 inch-pounds. Bolts found with less than 300 inch-pounds torque must be replaced with new bolts. (Sikorsky Service Information Circular 1135-22 covers this subject.)

(2) Within the next 30 hours' time in service and every 30 hours' time in service thereafter, inspect the DSP4 bearing in the rotating scissors in accordance with Sikorsky Service Information Circular 1110-46 and replace bearing every 100 hours' time in service with new bearing. When DSP4 bearing is replaced by DSRP4 bearing, the DSP4 inspection and replacement schedule no longer applies.

(3) Within the next 30 hours' time in service and every 30 hours' time in service thereafter, inspect the DSP4 bearing in the damper arm in accordance with Sikorsky Service Information Circular 1110-46 and replace bearing every 300 hours' time in service with new bearing. When DSP4 bearing is replaced by DSRP4 bearing, the DSP4 inspection and replacement schedule no longer applies.

This supersedes AD 60-4-6.

60-24-4 Sikorsky Amdt. 221 Part 507 Federal Register November 11, 1960. Applies to All S-58 Helicopters.

Compliance required within the next 50 hours' time in service after effective date.

Complete loss of electrical power and excessive battery fumes have resulted from the breakage of the cable connected to the L+ terminal of Eclipse Pioneer Voltage Regulator P/N 1597-1. In order to preclude the breakage of the L+ cable and the resulting loss of electrical power, the following is required unless already accomplished:

(a) Remove the existing clamp securing the voltage regulator cables to the airframe at a distance of approximately 12 inches from the regulator base.

(b) Install cable clamp MS 21919DG5, or equivalent, to secure the regulator cables to the regulator base utilizing an existing hole in the corner of the regulator base. This should be accomplished while providing enough cable slack to relieve tension on the terminal lugs but without changing the cable routing.

(c) If, in some installations, there is an unduly long length of unsupported cable existing beyond the voltage regulator after compliance with (a) and (b), an additional clamp of the same type should be provided to attach the cable to the airframe with care being exercised so that the motion of the regulator on its shockmount is not restricted.

(Sikorsky Service Bulletin No. 58B55-1 covers this same subject.)

This directive becomes effective November 28, 1960.

61-1-3 Sikorsky Amdt. 238 Part 507 Federal Register December 30, 1960. Applies to All S-58 Helicopters.

Compliance required as indicated.

As a result of a recent failure of a salvaged S1635-20011-2 input bevel gear which caused an autorotative landing, the following must be accomplished:

(a) All input bevel gears (S1635-20011-2) salvaged in accordance with instructions in Sikorsky Service Information Circular No. 1635-1127 Revisions A and E must be retired

upon the accumulation of 1,200 hours' time in service since salvage unless reworked in accordance with paragraph (b).

(b) Gears salvaged as outlined in paragraph (a) that have accrued less than 1,200 hours' time in service since such salvage work may be reworked prior to accumulating 1,200 hours' since such salvage work or at overhaul, whichever occurs first, in accordance with the following:

(1) Strip the chrome plate from the gear by reverse electrolysis. (Use Unichrome 80X, manufactured by United Chrome Co., Waterbury, Conn., or equlvalent solution.)

(2) Measure the bearing journal diameter. If the diameter is more than 0.010 inch below the low limit of the manufacturing tolerance, reject the part.

(3) Perform a magnetic inspection on the bearing area of the gear for cracks, concentrating attention on fillet area; e.g., Magnaflux in accordance with SPEC MIL–I–6868.

(4) If cracks exist, reject the gear.

(5) If no cracks exist, proceed as follows:

(i) Machine and blend the fillet radius at the bearing journal using a radius of blending of 0.150 inch with the maximum depth of undercut equal to 0.010/0.015 inch.

(ii) Again perform a magnetic inspection.

(iii) Shotpeen the area to be chrome plated, in accordance with SPEC MIL–S–13165, at an intensity of 12A2 to 18A2, using S170 shot.

(iv) Bake the gear for five hours at 275°±10° F.

(v) Anodically clean the gear so as not to embrittle any carburized areas and to prepare the gear for chrome plating.

(vi) In accordance with FED. SPEC QQ–C–320, Class 2, chrome plate the bearing area to the thickness corresponding to the diameter below lower limits of manufacturing tolerance shown in the following table:

Diameter Below Lower Limits of Mfg. Tolerance	*Chrome Plate Thickness*
0.006	0.005
0.007	0.006
0.008	0.006
0.009	0.007
0.010	0.007

(vii) Bake the gear for five hours at 275°±10° F.

(viii) Final machine the newly chrome plated O.D. to 5.0382/5.0372 inches. After final machining, the chrome plated area shall have a minimum plate thickness of 0.002 inch.

(ix) Perform magnetic inspection after final machining.

(c) Gears reworked in accordance with the provisions of paragraph (b) shall be retired upon the accumulation of 2,400 hours total time in service.

(Sikorsky Service Bulletin No. 58B35–3A covers this same subject.)

This directive effective December 30, 1960.

62–15–1 Sikorsky Amdt. 459 Part 507 Federal Register July 7, 1962. Applies to All S–58 Series Helicopters.

Compliance required as indicated.

Fatigue cracks have been found in the area of the rear three bolt holes of upper pylon folding hinge fitting P/N S1620–63130–2 and the forward bolt holes of the mating fitting P/N S1620–64127. In order to preclude propagation of fatigue cracks in these areas, and consequent serious weakening of the pylon attachment, the following must be accomplished on all fittings, P/N's S1620–63130–2, –11, and P/N S1620–64127.

(a) As of the effective date of this AD, conduct daily visual inspections of the area around the fitting bolt holes for cracks. Fittings with cracks must be replaced prior to further flight.

(b) When P/N's S1620–63130–2 and –11 are reinforced in accordance with Sikorsky Drawing S1607–2169, the provisions of the AD no longer apply to these parts.

(Sikorsky Service Bulletin No. 58B20–1 covers this subject.)

(c) When P/N S1620–64127 is reinforced in accordance with Sikorsky Drawing S1607–2251, the provisions of the AD no longer apply to this part.

(Sikorsky Service Bulletin 58B20–6A covers this subject.)

This supersedes AD 60–15–2.

This directive effective July 18, 1962.

SILVAIRE

(*Luscombe*)

46–30–1 Luscombe (Was Mandatory Note 1 of AD–694–4.) Applies Only to Model 8A Serial Numbers 2201 to 2614 Inclusive; 2616 to 2632 Inclusive; 2635, 2637, 2639, 2642, and 2645.

Compliance required prior to completion of next 10 hours of operation.

Replace the adjustment screw now installed in the lower end of the control stick horn, which is located beneath the floor boards with an AN 520–10–44 screw in order to prevent interference with the lower fuselage skin on the forward flange of the landing gear bulkhead.

(Luscombe Service Bulletin No. 2–46 covers this same subject.)

46–36–1 *See* Continental Engines.

47–10–40 Luscombe (Was Mandatory Note 11 of AD–694–4.) Applies to Model 8 Series Aircraft Serial Numbers 1934 to 200 Inclusive.

Compliance required prior to May 1, 1947.

Determine if the attachment of the rudder control arm to the torque tube has been reinforced by a steel strap that extends completely around the torque tube and is securely welded to both the fore and aft flanges of the rudder control arms and the torque tube. If the reinforcing steel strap is not properly located and welded to both flanges, a repair should be made.

(Luscombe Service Bulletin No. 4–46 covers this same subject.)

47–22–1 Luscombe (Was Mandatory Note 12 of AD–694–4.) Applies Only to Model 8 Series Aircraft Equipped With Edo 60–1320 Floats.

Compliance required immediately if possible but in any event not later than August 1, 1947.

All seaplanes should be inspected to determine whether the bulkhead reinforcements of Luscombe Drawing 48701 are presently installed at fuselage Station 4 (rear float strut attachment. If not, those reinforcements shown on Luscombe Drawing 58730 must be installed to insure the structural integrity of the float installation. Each seaplane should also be inspected to determine conformity of Model 8A with Luscombe Drawing 58700 and Models 8C and 8D with Luscombe Drawing 58725.

47–40–2 *See* Continental Engines.

47–50–5 *See* Edo Equipment.

48–8–2 *See* Cleveland Equipment.

48–9–3 Luscombe Applies to Model 8 Series Airplanes Below Serial Number 5682 Equipped With Kollsman Airspeed Instruments.

Compliance required by April 1, 1948.

To obtain more accurate airspeed readings remove small baffle LAC P/N 181112, which is attached to the fuselage at the airspeed static tube opening. Installation of this baffle provides inaccurate airspeed readings ranging from approximately +6 m.p.h. at stall to approximately +15 m.p.h. at minimum trim speed.

48–48–1 *See* Freeedman Propellers.

48–49–1 Luscombe Applies to All Model 8 Series Aircraft.

Compliance required by January 15, 1949.

If the present vertical stabilizer rear spar fuselage attachment fitting No. 18419 is fabricated of 0.049 thickness steel or has been replaced by a new 0.049 thickness steel fitting from the Luscombe Airplane Corp., this airworthiness directive does not apply.

Inspect the vertical stabilizer rear spar fuselage attachment fitting No. 18419 for evidence of cracks in the flange of the fitting adjacent to the ⅜-inch tube welded across the web between the flanges. If the present fitting has been fabricated of 0.035 thickness steel and the ⅜-inch tube has been welded to the flanges with a satisfactory 360° weld and/or a partial weld (180°) provided the flange of the fitting has been locally widened to a minimum of 9/16-inch edge distance at the ⅜-inch cross tube

and there is no evidence of cracks in the flange, the fitting is considered satisfactory. However, if the fitting is cracked or does not have a satisfactory weld around the entire circumference of the bushing, the fitting must be reworked by making a complete 360° weld around the ⅜-inch tube attaching it to the flange in addition to welding any existing cracks. As an alternate repair or reinforcement, weld one-half of an AN 960–616 washer or equivalent to each flange of the 18419 fitting so that the flat cut edge is parallel to the web of the fitting. In any event the fitting should be removed for reworking. If more than one crack is found in each flange, or if any crack has occurred between the bushing and the fitting web, the fitting must be replaced.

The Luscombe Airplane Corp. will furnish without charge a new fitting fabricated of 0.049 thickness steel for each old fitting fabricated of 0.035 thickness steel found to be defective.

(Luscombe Service Bulletin 3–47, dated November 26, 1947, covers this same subject.)

This supersedes AD 48–8–4.

49–43–2 Luscombe Applies to All Model 8 Series Aircraft.

Compliance required before December 15, 1949, or at the next 100-hour inspection whichever occurs first.

As a result of several cases of excessive tightening of the attachment bolts for the stabilizer-fuselage front fittings thereby crushing the spacers and spar flanges, the following inspections and/or replacement are necessary:

Inspect for crushing of the stabilizer front spar and the aluminum alloy reinforcing spacers. A slight set in the spar flange is not considered critical as long as no cracks exist in the spar.

If appreciable crushing of the spar flange or cracks are found, the spar must be repaired and the aluminum alloy reinforcing spacers must be replaced. If spacers are crushed, they must be replaced.

Spacers should be replaced with similar spacers fabricated of 4130 steel of at least 0.049-inch thickness and may be attached to the spar using blind rivets the same size as the original rivets. An acceptable alternate replacement spacer may be made by cutting a ⅜-inch by 0.049-inch steel tube to fit between the spar flanges. The steel spacers should be zinc-chromated prior to the reassembly.

Excessive tightening of the attachment bolts should be avoided on reassembly. (A torque value of 50 to 75 inch-pounds should be sufficient.)

50–37–1 Luscombe Applies to All Model 8C Airplanes With a Continental A–75 Carburetor Engine Installed But Not Equipped With Either Wing Fuel Tanks, or an Engine-Driven Fuel Pump and the Chevrolet AC–R1 Hand Pump.

To be accomplished prior to the next annual inspection, but in no case later than October 1, 1951.

It has come to our attention that some Luscombe 8C airplanes equipped with carburetor engines and fuselage fuel tanks are in service without appropriate modifications to the fuel system. Because of the marginal rate of fuel flow which can exist with the gravity feed fuselage fuel tank, engine failure may occur during takeoff and climb under low fuel conditions. To eliminate this hazard, the airplane should be modified to provide either an engine-driven fuel pump and a hand operated Chevrolet AC–R1 wobble pump, or two 11.5-gallon wing fuel tanks and revised fuel system replacing the 14-gallon fuselage tank system.

Another satisfactory installation is to provide one 11.5-gallon wing fuel tank. This tank must not feed through the fuselage tank but must feed the engine directly. A placard must also be placed on the instrument panel or at the fuel valve reading, "For takeoff and landing, use 11.5-gallon wing tank only".

(Luscombe Service Letter, dated August 4, 1947, titled "Method of Effecting Engine Change for Increased Horsepower" pertains to this same subject.)

51–10–2 Luscombe Applies to All Model 8 Series Aircraft.

Compliance required by the next periodic inspection, but not later than June 1, 1951, and at each annual recertification thereafter.

Due to recurring failures of the control cables, all cables should be carefully inspected

at each section which passes either over a pulley or through a fairlead. To properly inspect the cables, they should be removed from the airplane to the extent necessary to expose the sections to be inspected. Care should be taken that the method of inspection is not damaging to the cable; i.e., do not sharply bend any strand or the whole cable and do not "bird-cage" the cable to the extent of putting permanent set in the strands or the whole cable. Any unairworthy cables must be replaced.

In reinstalling the control cables, the rigging of the entire control system should be checked and properly adjusted. The control surface travels may be obtained from Aircraft Specification A-694. Care should be taken that none of the cables drag across or rub against any structure or equipment due to misalinement of the fairleads. Luscombe Airplane Corp. Service Bulletin No. 1-51 furnishes further information on this subject and Luscombe Airplane Corp., Garland, Texas, should be contacted for further information, if needed, in rigging controls.

55-24-1 Luscombe Applies to All 8 Series Aircraft Except Model 8-F With Serial Numbers S-1 and Up.

To be accomplished by March 1, 1956, and at every annual periodic inspection thereafter.

Extreme surface corrosion has been found to exist inside the fuselage spar carry through structures P/N 28018 and 28019 of Luscombe Series 8 aircraft, particularly in those airplanes which are located near coastal areas. If allowed to progress, such corrosion could deteriorate the spar carry through members until a structural failure occurred.

This corrosion is internal and cannot be detected by an external inspection. Therefore, the inside surfaces of the spar carry through members must be inspected. This may be accomplished by either of the two following acceptable methods:

(1) Remove wings from the airplane and also the wing attachment fittings. The ends of both the front and rear spar superstructures will then be open so that an internal inspection of these hat-section members can be made.

(2) Use of this method of inspection will not require the removal of the wings from the airplane. One-half inch holes may be drilled through the top wing skin directly over each spar carry through member so that a visual inspection can be made directly into the bottom of the hat sections. The airframe structure had adequate margins of safety in this area so that the existence of the ½-inch inspection holes will not impair the structural integrity of the airplane. Five of these ½-inch holes should be drilled over each of the spar carry through hat sections, one hole at the middle of each spar carry through, one hole 5 inches from each outboard end of the wing attachment fittings and one hole approximately centrally located between this latter hole and the middle hole. This will provide a distance of approximately 7½ inches between holes and should render it possible to inspect all of the internal surface of the hat-section spar carry through members. After the inspection has been made, the ½-inch holes must be covered with a small patch of aircraft fabric doped to the surface of the wing skin or by the insertion of a rubber or neoprene seal plug, or equivalent. This method will also provide a ready means of rechecking the spar carry through members for corrosion during the time of subsequent inspections.

If any evidence of corrosion is found to exist, the affected spar carry through member should be removed and replaced with an identical new part.

The above inspections may be discontinued if both spar carry through structures are replaced with new parts that are identical to the original and properly anodized and painted to prevent corrosion.

61-3-5 Luscombe Amdt. 248 Part 507 Federal Register February 7, 1961. Applies to All Model 8 Series Aircraft Incorporating Wing Fuel Tanks.

Compliance required as indicated.

Within 50 hours' time in service after the effective date of this directive, remove the fairing at the wing root of each wing and inspect the wing root area for interference between the forward fuel line and the aileron cable

and/or aileron pulley. Remove the trim panel over the forward door post and inspect the forward door post area for interference between the forward fuel line and the aileron cable and/or pulley. If any interference is found, bend fuel line sufficiently to provide the necessary clearance. Replace any worn fuel lines being careful to provide clearance when installing the replacement fuel line.

This directive effective March 9, 1961.

62–24–3 Cessna and Silvaire Amdt. 505 Part 507 Federal Register November 10, 1962. Applies to All Cessna 120, 140, or 140A Aircraft and All Silvaire (Luscombe) 8E, 8F, or T–8F Aircraft Modified to Incorporate McKenzie Aircraft Repair, Inc. Installations of Various Lycoming Engines in Accordance With Supplemental Type Certificates Nos. SA4–95, SA4–173, SA4–376, SA4–581, SA4–629, SA4–639, SA4–640, SA4–641, SA4–642, SA4–1159, SA4–1201, and SA4–1286 and With FAA Engineering Approved Repair and Alteration Forms ACA–337 Dated March 30, 1955, and June 21, 1955.

Compliance required as indicated.

Failures of the exhaust stacks have occurred in the area of the cabin heat muffs. Such failures can cause hazardous carbon monoxide contamination of the cabin when cabin heat is used. To preclude additional failures and cabin CO contamination, accomplish the following:

(a) If continued use of the cabin heat system is desired:

(1) Within the next 10 hours' time in service after the effective date of this AD:

(i) Render the cabin heat system inoperative by positively securing the heat control in the "OFF" position; or

(ii) Install, adjacent to the cabin heat control, a placard with the following wording, "DO NOT USE CABIN HEAT—CONTROL MUST REMAIN IN 'OFF' POSITION."; or

(iii) Accomplish the inspection and rework required by (2).

(2) Unless already accomplished in accordance with (a)(1)(iii), not later than 50 hours' time in service after the effective date of this AD:

(i) Remove the cabin heat muff and perform a visual inspection of the exhaust stack for cracks. Pay particular attention to the area where the muff attaching straps are welded to the stack. Reinspect at intervals not to exceed 50 hours' time in service. Replace or repair by welding all cracked stacks;

(ii) Cut off the cabin heat muff attaching straps adjacent to the welds. Discard the straps and reattach the heat muff to the stack in accordance with McKenzie Aircraft Repair, Inc. Service Bulletin No. 1 dated September 6, 1962, or an FAA approved equivalent;

(iii) Unsecure the heat control required by (a)(1)(i), if secured; and

(iv) Remove the placard required by (a)(1)(ii), if installed.

(b) If use of the cabin heat system is not desired:

(1) Within the next 10 hours' time in service after the effective date of this AD:

(i) Remove the cabin heat muff and associated ducting and controls; and

(ii) Close any openings in the fire well that result from the removal of the ducting and controls in accordance with Civil Air Regulations 3.624.

(2) The cabin heat system may be reinstalled upon compliance with (a)(2)(i) and (ii).

This directive effective November 21, 1962.

L. B. SMITH

58–17–2 *See* Curtiss-Wright Aircraft.

58–17–3 *See* Curtiss-Wright Aircraft.

58–20–1 *See Curtiss-Wright* Aircraft.

59–7–2 Curtiss-Wright Applies to All L. B. Smith C46/CW20–T Aircraft Not Having This Modification Incorporated.

To be accomplished not later than August 1, 1959.

Service experience has indicated that the auxiliary hydraulic pump is unsatisfactory for use in compliance with the minimum gear retraction time.

To provide reliable continuous hydraulic pressure during landing gear retraction, the auxiliary hydraulic pump and motor must be removed from the hydraulic system and replaced by a hydraulic by-pass system in accordance with L. B. Smith Aircraft Corporation Report No. RX5.130.01 dated April 16, 1958, or an equivalent system. Airplane Flight Manual Revision, dated July 11, 1958, is required with this modification.

(L. B. Smith Service Modification No. SM20T–6 dated June 23, 1958, covers this same subject.)

60–3–2 *See* Curtiss-Wright Aircraft.

60–25–1 *See* Curtiss-Wright Aircraft.

SNOW

61-14-6 Snow Amdt. 306 Part 507 Federal Register July 11, 1961. Applies to All Model S2A Aircraft (Restricted Category).

Initial compliance required within 25 hours' time in service after the effective date of this AD unless accomplished within 75 hours' time in service preceding such date. Subsequent compliance required at each 100 hours' time in service after the initial compliance date.

Due to reports of excessive cable wear occurring at two AN 210-3B pulleys in the aileron system aft of the hopper and two AN 210-3B pulleys in the elevator system on the left and right of the pilot seat, the following must be accomplished:

(a) Detach the aileron and elevator cables by disconnecting the turnbuckles to obtain slack at the two pulleys in each system. Visually inspect the cables for fraying by flexing the cable in the areas of pulley contact in accordance with Snow Service Letter No. 4. Replace all frayed cables prior to further flight.

(b) Inspection of the elevator cable may be discontinued when the two AN 210-3B elevator system pulleys to the left and right of the pilot seat are replaced with AN 210-4B pulleys, in accordance with Snow Service Letter No. 6. Inspection of the aileron cable may be discontinued when the aileron cable system is replaced with a push-pull tube system in accordance with Snow Service Letter No. 7.

(Snow Service Letters 4, 6, and 7 cover this subject.)

This directive effective July 21, 1961.

STINSON

46-6-5 Stinson (Was Service Note 1 of AD-556-1.) Applies to All Model A Aircraft.

After each 100 hours of operation, make a visual inspection (using at least a 4-power magnifying glass) of the main spar lower fittings at the outer wing panel to inner wing panel connection for small fatigue cracks at the fish-mouth weld connecting the fittings to the chord tubes of the spar. These cracks are most likely to originate at the inboard corners of the fish-mouth weld on the outer panel fitting. If any cracks are found, repairs should be made before further operation of the aircraft. Proposed methods of repair should be submitted for engineering approval.

46-31-1 Stinson (Was Mandatory Note 1 of AD-764-1.) Applies to Model L-5B, -5C, -5E, -5E-1, -5G Aircraft.

Compliance required at time of civil certification or, if already certificated, prior to next periodic inspection.

The hinged back of the rear seat must be permanently fastened to preclude the possibility of interference with the rear control stick.

46-31-2 Stinson (Was Service Note 1 of AD-764-1.) Applies to All L-5 Series Aircraft.

After each 25 hours of operation make a visual inspection of the torque tube on welded bellcrank assemblies located in the fuselage immediately aft of the rear seat for cracks in the bellcrank around the torque tube. If any cracks are found, replace or reinforce part before further operation of the aircraft. Bellcranks manufactured from a casting and installed on L-5 airplanes, Serial Number 42-98885 and subsequent, are considered satisfactory. If inspection indicates that this more satisfactory part is installed, the 25-hour inspections may be discontinued.

46-36-1 *See* Continental Engines.

46-39-1 Stinson (Was Mandatory Note 5 of AD-709-1 and Special Note 6 of AD-346.) Applies to Models HW-75 and 10 Aircraft.

Inspect the lower tube members of the oleo truss for wear where the drip pan contacts the tubes. Damaged members should be repaired or replaced. The flanges on both sides of the drip pan should be bent to eliminate abrasive contact with tube members.

(Stinson Division Service Bulletin No. 224 covers this same subject.)

47-50-4 Stinson Applies to L-5 Series Aircraft.

Compliance required as soon as possible but not later than March 1, 1948.

To prevent loss of elevator control, the elevator push-pull tube assemblies, P/N 76-62204, should be inspected for security and proper staking of nut which secures rod end and D-4 bearing in housing P/N 76-62206. If there is no cotter pin securing this nut, it should be staked to the rod in at least three places.

SUD AVIATION

58–14–1 Sud Aviation Applies to All Alouette II SE 3130 Helicopters Equipped With Tail Rotor Blade Model Numbers 34.20.000, 34.20.000.50, 34.20.000.51, and 34.30.000.

Compliance required prior to next flight and each 5 hours of operation thereafter.

Two cases of defective bonding at the outboard end of the root end side plates of the tail rotor blades have been found. In order to preclude any possible fatigue failures of the blade, Sud Aviation has issued the following corrective measures which the French SGACC considers mandatory:

Inspection.

A. *Blades with rigid flapping restrainer.* (Aircraft Numbers 1137 and above or aircraft incorporating modification V.14.)

1. Saturate with turbine oil (Spec. AIR 3512 or DED 2479/6, Shell turbine oil No. 9 or Esso aviation oil No. 57) the edge of the side plate and the bead of adhesive at the outboard end of the side plate.

2. Move blade to and fro by pushing and pulling blade tip alternately four or five times respectively, applying a load of approximately 13 lb. (check with spring balance).

3. In the case of a defective blade, the oil will flow in and out and, at the same time, air bubbles may be produced.

4. If in doubt, wipe the side plate and repeat the above loading procedure.

B. *Blades with earlier type flapping restrainer.* (Aircraft Numbers 1136 and below which do not incorporate modification V.14.)

The previously described inspection procedure cannot be applied without risking distortion of the flapping restrainers.

The procedure may, however, be applied if the blades are removed and are clamped in a vise over the two inboard blade-cuff retaining bolts (bolts nearest root end of blade).

To avoid blade removal and inspection in a vise, the tools may be fabricated in order to rigidly support the blade root on the helicopter.

The tools can simply consist of a wood block cut to proper length so as to rest at one end against the two tail gearbox nuts and at the other end against the blade-cuff bolts.

To hold the blade in the other direction, strap the blade and the tail gearbox housing as shown in the sketch in the referenced Service Bulletin, using a cable cut to the proper length or, alternatively, a non-elastic strap.

The inspection procedure is the same as previously described.

C. Defective blades shall be retired from service immediately. Others may be left in service as long as the bonding is satisfactory up to a maximum of 300 hours.

The FAA concurs with this action and considers compliance therewith mandatory.

(Sud Aviation Helicopter Service Bulletin No. AL 34.11.131/A covers the same subject.)

This supersedes AD 58–13–4.

58–22–4 Sud Aviation Applies to All Alouette II SE 3130 Helicopters Except Serial Numbers 1168, 1169, 1170, 1175, 1176 and 1177.

Compliance required (1) inspection prior to next flight and (2) rivet replacement by November 15, 1958.

Due to sudden engine and rotor synchronization which may result upon completion of clutch engagement, stresses applied to the overall drive may be considerably increased. This can cause the shearing of rivets which hold the tail rotor inclined drive shaft tube to the yokes of the universal joints.

Sud Aviation issued the following corrective measures which French SGACC considers mandatory:

A. Prior to Next Flight: (1) Remove the tail rotor inclined drive shaft assembly as directed in instruction sheet P.I. 4404 of periodic inspection manual; (2) Check that the center lines of the bores in the yokes at each end of the shaft are parallel and lie in the same plane; (3) If drive shaft assembly is satisfactory, index the relative positions of the tube and yoke by means of a line of paint; (4) Repeat inspection after any sudden clutch engagement until compliance is shown with B.

B. Prior to November 15, 1958: Replace the two diametrically opposite rivets on both ends of the tail rotor inclined drive shaft assembly. Sud Aviation P/N 67.20.000 which attaches to the universal joint fork with bolt, Sud Aviation P/N 67.21.103.

(Sud Aviation Service Bulletin AL 67.11.140 and Modification Proposal V-42 cover this same subject.) (CAA telegraphic instructions of October 20, 1958, contained this information.)

59-5-6 Sud Aviation Applies to All Alouette II SE 3130 Helicopters Prior To Serial Number 1160 Except Serial Number 1085.

Compliance required as soon as possible but not later than May 1, 1959.

In order to preclude binding between the uniball bearing and oilite bearings at the main rotor swash plate, replace oilite bearings Sud Aviation P/N 68.10.009 and spacer P/N 68.10.010 with new oilite bearings P/N 68.10.014, spacer P/N 68.10.012, shim P/N 68.10.013, spacer P/N 68.10.011. (Note: This assembly must also be lubricated every five hours with Mil. L.644A oil in accordance with Sud Aviation Maintenance Manual.) The French SGACC considers this mandatory. The FAA concurs with this action and considers compliance therewith mandatory.

(Sud Aviation Service Bulletin AL.68.11.-159 and modification proposal V-49 cover this same subject.)

In addition, modifications stated in Republic Aviation Service Bulletins 3.45-1, safetying lateral trim cylinder cap nut and 8.10-3 on rework of emergency fuel shutoff lever must be accomplished immediately unless already completed.

This supersedes AD 59-2-3.

60-11-9 Sud Aviation Amdt. 154 Part 507 Federal Register May 18, 1960. Applies to All Alouette II SE 3130 Helicopters Equipped With Tail Rotor Blade Model Numbers 34.40.000 and 34.60.000.

Compliance required each five hours of time in service.

(a) Visually inspect the upper and lower blade surfaces to determine that the blade cuff at the attachment bolts and the skin around the entire reinforcement plate area are free from cracks.

(b) Check the end of the reinforcement plate for bonding separation by exerting light thumb pressure on the blade immediately outboard of the plate.

(c) If evidence of cracking or bonding separation is found blades must be replaced prior to further flight.

(d) All blade numbers 34.40.000 and 34.60.-000 must be retired at 2,500 hours of service time.

(Sud Alouette Helicopter Service Bulletin No. 34.11.138B covers the same subject in Part D.)

Revised February 28, 1962.

61-16-7 Sud Aviation Amdt. 321 Part 507 Federal Register August 5, 1961. Applies to All Alouette II SE 3130 Helicopters.

Compliance required as indicated.

As a result of two cases of cracks in the main rotor hubs, all main rotor hubs P/N 3130. S12.20.001 must be retired from service upon accumulation of 660 hours' time in service, except that main rotor hubs which have already accumulated 650 or more hours' time in service on the effective date of this directive must be retired from service within the next 10 hours' time in service.

(Sud Aviation Helicopters Service Alouette II SE 3130 No. AL 12.11.204 covers this subject.)

This directive effective August 5, 1961.

61-22-8 Sud Aviation Amdt. 354 Part 507 Federal Register October 28, 1961. Applies to All Model SE 3130 Alouette II Helicopters.

Compliance required as indicated.

To remove defective bolts and preclude the possibility of further failure of the tail rotor gear box housing attachment the following inspections are required:

(a) The tail rotor gear box attachment bolts P/N 66.20.043 and tail rotor gear box guides P/N 66.20.213 shall be inspected within the next 10 hours' time in service in accordance with paragraphs (d) and (e) unless this inspection has already been complied with and/or the bolts replaced with parts that comply with paragraphs (d) and (e) subsequent to August 25, 1961.

(b) Every 50 hours' time in service subsequent to the completion of inspection prescribed in paragraph (a), reinspect and check the torque of the bolts and nuts P/N 66.20.043. The torque should be between 10.1 and 12.3 ft.-lbs. If the bolts and nuts do not meet the torque requirements, remove the tail rotor gear box and inspect in accordance with paragraphs (d) and (e).

(c) Every 100 hours' time in service subsequent to completing inspection of paragraph (a), remove the tail rotor gear box and inspect the bolts and guides in accordance with paragraphs (d) and (e).

(d) The bolts P/N 66.20.043 are to be checked for cracks, corrosion, peening and surface finish. Surface finish inspection is applicable to paragraph (a) only. Remove the zinc chromate protective finish, if applicable, by using paint remover. The diameter of the bolt bearing area at the head and at the thread end shall be measured in two directions 90 degrees apart in order to detect any out of round condition. These diameters shall not be less than 8.29 mm (0.326 inch). The surface finish of the central necked down area and the radius at each end shall be as follows:

(1) The radius shall not be less than 1.61 mm (0.0630 inch).

(2) The maximum permissible surface roughness shall not exceed 1 micron (39 microinches).

(3) Localized defects no greater than 50 microns deep (1950 microinches) are permissible. If these standards are not met the bolts shall be replaced with bolts that do meet the standards.

(e) Check the bore of the three tail rotor gear box guides P/N 66.20.213 by measuring the bore along two directions 90 degrees apart. The bore dimension shall not exceed 8.33 mm (0.328 inch). If these standards are not met the tail rotor gear box shall be replaced with a new or overhauled unit or the gear box returned to the factory or approved overhaul agency for installation of new guides before reinstallation on the helicopter.

(Sud Maintenance Manual Vol. I, Chapter 5, Pages 3 and 7, and Sud Service Bulletin No. 66–11–206 cover the same subject.)

This directive effective October 28, 1961.

SUPERIOR

46-4-1 Culver (Was Service Note 7 of AD-730-2.) Applies to LCA and LFA Aircraft.

Inspect immediately and after every 100 hours of operation, the landing gear throttle stop operation and mechanism for proper clearance. Install placard (Culver Dwg. 7132) "Never unlock landing gear with throttle retarded below cuising setting."

(Culver Service Memorandum No. 22 dated October 26, 1945, covers this same subject.)

46-4-2 Culver (Was Service Note 6 of AD-730-2.) Applies Only to Model LCA Having Stromberg Model NA-S3A1 Carburetors Installed.

When inspecting or replacing carburetor float needle or needle seat, a check should be made to assure that when a rubber tipped needle is used, a seat having rounded edges is installed. Sharp-edged seats, when used with a rubber tipped needle, will cause sticking and cutting of the rubber tip.

(This matter is also covered by Continental Service Bulletin No. M45-6 dated May 25, 1945, and Stromberg Aircraft Carburetor Service Bulletin No. 71.)

46-36-1 *See* Continental—Engines.

47-2-7 Culver (Was Service Note 1 of AD-778-2.) Applies to Models V and V2 Aircraft.

Inspection required after each 100 hours of operation.

Inspect landing gear retraction system to determine that adjustments are as follows:

(1) With the landing gear extended and no load on the wheels, the push-pull rod adjustments should be such that the center joint of the retraction links attached to each shock strut will withstand a minimum upward pressure of 25 pounds without movement.

(2) The length of the push-pull rods in the wing should be so adjusted that the retraction links attached to both main gear struts are under equal pressure.

(3) The down limit switch should be adjusted to cut off when the gap between the down stop and the horn on the actuating mechanism is 0.015 inch to 0.020 inch. Maintenance of these adjustments is necessary to prevent damage to the retraction system.

(Culver Service Memorandum No. 12 dated November 27, 1946, covers this same subject.)

47-2-8 Culver (Was Mandatory Note 1 of AD-778-2.) Applies to Models V and V2 Aircraft Serial Numbers V-1 to V-21 Inclusive.

Compliance required prior to April 1, 1947.

To provide a complete firewall constructed material, remove the cold air scoop from the firewall and cover the firewall opening with a plate of suitable firewall material.

(Culver Service Bulletin No. 5 covers this same subject.)

47-2-9 Culver (Was Mandatory Note 2 of AD-778-2.) Applies to Models V and V2 Aircraft Serial Numbers V-1 to V-150 Inclusive.

Compliance required prior to April 1, 1947.

Replace the brazed cabin heater valve box mounted on the firewall with a similar welded valve box which has fire resistant properties equivalent to the firewall.

(Culver Service Bulletin No. 7 covers this same subject.)

47-25-1 Culver (Was Mandatory Note 3 of AD-778-2.) Applies to Models V and V2 Aircraft Serial Number V-1 and Up.

Compliance required prior to August 15, 1947.

In order to correct the possibility of unequal fuel feed from the two tanks, with the attendant possibility of air lock, rework the fuel system to incorporate a sump tank (P/N-11202-1) in former location of feed "T" fitting and revised fuel feed and vent lines.

(Culver Service Bulletin No. 17 covers this same subject.)

47-25-2 Culver (Was Mandatory Note 4 of AD-778-2.) Applies to All Model V Aircraft.

Compliance required prior to August 15, 1947.

Install wing fillets, Culver P/N 10477, at junction of fuselage and wing trailing edge. Attach with 6 x ¼ PK screws (12) or equivalent.

(Culver Service Bulletin No. 13 covers this same subject.)

47–25–3 Culver (Was Mandatory Note 5 of AD–778–2.) Applies Only to Serial Numbers V–1 to V–130, Inclusive.

Compliance required prior to August 15, 1947.

Inspect the nose gear drag link for the type of connection used to attach the aft fitting. The ¾-inch diameter tube must butt the aft fitting. If otherwise, replace the link or rework accordingly.

(Culver Service Bulletin No. 1 covers this same subject.)

47–25–4 Culver (Was Mandatory Note 6 of AD–778–2.) Applies Only to Model V Aircraft Certified for Night Flying.

Compliance required prior to August 15, 1947.

Provide adequate illumination for compass by installing a Lucite reflector, Culver P/N 11850, between the instrument panel and subpanel. The reflector is attached by means of the two upper attachment screws for the compass with its straight end extending to the nearest instrument light bulb. All paint should be scraped off the top half of this bulb. Other means of providing equivalent illumination of the compass are acceptable.

(Culver Service Bulletin No. 14 covers this same subject.)

47–25–5 Culver (Was Service Note 2 of AD–778–2.) Applies to Models V and V2 Aircraft.

Inspect the nose-main gear interconnection tube located in the nose wheel well for evidence of corrosion and apply ANG–3a grease to the unpainted aft end every 50 hours of operation. Since the aft end of the tube slides through a trunnion just aft of the wing spar any pitting or scaling of the tube surface in this area may result in binding and failure of the landing gear retraction system and necessitates replacement of the tube. Where climatic conditions promote accelerated corrosive action, as in coastal regions, the tube should be inspected during each daily line check.

(Culver Service Memorandum dated September 25, 1946, covers this same subject.)

47–40–2 *See* Continental Engines.

48–48–1 *See* Freedman Propellers.

50–4–2 Superior (Culver) Applies to All Model V, Serial V–3 Through V–357 and Model V2, Serial V2–503 Through V2–517 Not Previously Modified in Accordance With Superior Service Bulletin No. 18.

Compliance required at the next 100-hour inspection but not later than February 1, 1951.

The teeth of the final pinion, P/N 10528, in the gear reduction train of the landing gear retraction motor have inadequate strength to sustain the shock loads due to abrupt reversal of the landing gear retraction switch and to maladjusted limit switches. As stripping of these teeth makes the emergency extension system inoperative, gears 10528 and 10529 should be replaced with gears 11520 and 11521 which have stronger teeth and are obtainable from the Superior Aircraft Co., University Airport, 2501 North Hillside, Wichita 25, Kansas.

(Superior Service Bulletin No. 18 dated November 19, 1947, covers this same subject.)

This supersedes AD 48–5–2, and eliminates placard installation provisions.

50–47–2 Culver Applies to All Models V and V2 Aircraft Equipped With Sensenich Models C2FB3 or C2FB1 Propeller With C276A2, PC276A6, PC276A7 and C276A6 Blades.

Compliance required as indicated.

(1) Replacement required prior to January 31, 1951.

In order to eliminate the continued occurrence of broken blade lag screws and/or cracked blade shanks and ferrules, all C276–A2 blades must be retired from service and replaced with blade Model PC276A6, PC–276A7 or C276A6.

(2) Inspection required every 500 hours of operation after installation of blade Models PC276A6, PC276A7 and C276A6.

The propeller blades should be removed from the hub, and the wood blade shank and the split retaining ring groove in the blade ferrule should be carefully inspected for cracks. The lag screws should be check-tightened to 160 inch-pounds torque. Blade with broken lag screws or cracked wood shank or ferrule must be removed from service. The ferrule and all ferrous metallic parts of the hub should be magnetically inspected.

The blades are subjected to excessive vibratory stresses when operation beyond the allowable engine r.p.m. ratings inadvertently occurs. It is recommended, therefore, that the accuracy of the tachometer be checked in order to preclude such operation. Operation between 1,800–2,000 r.p.m. is to be avoided when the nose landing gear is extended.

(Sensenich Service Bulletins Nos. 133, 134 and 135 cover these same subjects.)

This supersedes AD 47–47–9.

60–24–5 Superior (Culver) Amdt. 223 Part 507 Federal Register November 15, 1960. Applies to All Superior (Culver) V and V2 Aircraft.

Compliance required as indicated.

To prevent fuel cell failures, the following must be accomplished:

(a) Within the next 25 hours of operation, but not later than the next periodic or progressive inspection, install a nonicing and nonwater accumulating fuel cell vent outlet (Superior P/N 12270 or equivalent) that will provide positive pressure within the vapor spaces of the cells during normal flight conditions.

(b) Inspect the attachment of the fuel cells to the wing structure at the time of the vent outlet modificaion and at each succeeding 100-hour inspection (if required by CAR 43.22) and each periodic aircraft inspection. Any attachment areas that are found to have failed must be recemented prior to the next flight.

(Superior Aircraft Company Service Bulletin No. 25 covers this subject.)

This directive effective December 13, 1960.