PIAGGIO

57-8-4 *See* Hartzell Propellers.

58-17-4 Piaggio Applies to All Models P.136-L1 and P.136-L2 Aircraft.

Compliance required by December 1, 1958.

Several cases have occurred where the water rudder inadvertently dropped into the extended position during water landings. In order to avoid future occurrences, Piaggio & Co. recommends that a hook be incorporated at the water rudder retraction cylinder, which is controllable by the pilot.

In addition, the forward section of the water rudder should be cut off, in order to prevent any interference with the retraction of the water rudder because of the accummulation of debris.

This modification is considered mandatory by the Registro Aeronautico Italiano. The FAA concurs and considers compliance therewith mandatory.

(Piaggio & Co. Change Order No. 36 L-42, dated May 29, 1958, covers the same subject.)

59-22-1 Piaggio Applies to All Model P.136-L2 Aircraft.

Compliance required by November 30, 1959.

In order to preclude the possibility of condensed water vapor from freezing and obstructing the oil tank breather lines, these lines for both the right and left engines should be rerouted to provide an increased slope in accordance with Piaggio & Co. Change Order No. 36-52 which covers this same subject.

59-23-1 Piaggio Applies to All Models P.136-L1 and P.136-L2 Aircraft.

Compliance required by December 31, 1959.

In order to preclude the water rudder cables from fouling the bolt end and nuts that secure the microswitch to the water rudder retraction cylinder, a cable guard plate must be installed. The Registro Aeronautico Italiano considers compliance mandatory.

(Piaggio & Co. Change Order No. 36 L-48 covers the same subject.)

60-23-3 Piaggio Amdt. 220 Part 507 Federal Register November 8, 1960. Applies to All Model P.136-L2 Aircraft.

Compliance required within 25 hours' time in service from the effective date of this directive.

In order to prevent hazardous quantities of oil from flowing into the engine compartment in the event of a fire, the engine oil system lines must be rerouted in accordance with Piaggio Change Order No. 36-55 which covers this same subject.

This directive effective December 8, 1960.

61-26-3 Piaggio Amdt. 378 Part 507 Federal Register December 15, 1961. Applies to Models P.136-L1 and P.136-L2 Aircraft, Serial Numbers 196 Through 242.

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

The existing fuel vent line is provided with vent holes that are located inside the hull to provide venting in the event of blockage of the external vent outlet by ice or other foreign matter. As a result, fuel and fuel vapor have been detected within the hull constituting a fire and explosion hazard. These vent holes must, therefore, be sealed and other vent anti-icing means provided as follows:

(a) Install one Mil H-5511 hose or equivalent, ¾-inch I.D. by ⅝-inch long, and one clamp, AN 737-TW38 or equivalent, over holes in the outboard end of the fuel tank vent line. Sleeve may be slit if necessary but slit must not be over any hole.

(b) Install one Piaggio fuel vent anti-icing "bump" or equivalent.

(c) Apply a nonfuel or water soluble, noncorrosive to aluminum sealing compound to the flange of the anti-icing "bump" and rivet "bump" to the skin forward of the fuel vent outlet using eight AN 470AD4-2, or equivalent, rivets. "Bump" flange should be about ⅛-inch forward of vent outlet flange. "Bump" longitudinal centerline must coincide with fuel vent

outlet centerline and be level when aircraft is level. "Bump" must be oriented so that the thick end is forward.

This directive effective January 16, 1962.

62–16–4 Piaggio Amdt. 463 Part 507 Federal Register July 13, 1962. Applies to Model P.166 Aircraft, Serial Numbers 341 to 403 Inclusive.

Compliance required as indicated.

In order to preclude failure of the frame 20 angle bar at the attachment of the elevator control sector bracket, accomplish the following:

(a) Within the next 10 hours' time in service after the effective date of this AD and thereafter within each 20 hours' time in service, inspect the frame 20 angle bar for cracks in the area of the elevator control sector bracket attachment.

(b) If cracks are found, repair in accordance with the procedures specified under Second Assumption in Piaggio Service Bulletin 166–16, or FAA approved equivalent prior to further flight. When this has been accomplished the inspections required in (a) may be discontinued.

(c) The inspections required in (a) may be discontinued after incorporating the reinforcement specified under First Assumption in Piaggio Service Bulletin 106–16 or FAA approved equivalent.

This directive effective July 20, 1962.

PIPER

46-36-1 *See* Continental Engines.

46-36-2 Piper (Was Mandatory Note 3 of AD-780-3.) Applies to PA-12 Aircraft Serial Numbers 12-1 to 12-207, Inclusive.

Compliance required prior to November 1, 1946.

Several instances have been reported of loosening of the cap screws attaching the air scoop to the carburetor on these aircraft, thus creating a hazard. These cap screws should be removed and drilled for safety wire. They should then be reinserted and safety wire installed.

(Piper Service Bulletin No. 90 dated July 17, 1946, covers this same subject.)

46-36-3 Piper (Was Mandatory Note 2 of AD-780-3.) Applies Only to PA-12 Aircraft Serial Numbers 12-1 to 12-285, Inclusive.

Compliance required not later than next periodic inspection.

To prevent possible failure of the tailpipe and cracking of the muffler, install the additional brace tube, Piper P/N 10860 and new clamp, P/N 80002-28. The new brace will form, together with the original brace, a "V" instead of a single leg. A careful inspection of the muffller should be made and if any cracks are present, a new muffller should be installed.

(Piper Service Bulletin No. 92 dated August 7, 1946, covers this same subject.)

46-37-1 Piper (Was Mandatory Note 12 of AD-691-2 and Mandatory Note 1 of AD-780-3.) Applies to J3C-65 and J3C-65S, Serial Numbers 14027 and Up and All PA-12.

Compliance required by November 1, 1946.

To prevent possible failure of the fuel strainer bowl, replace the present thin fuel strainer bowl gasket with a 1/8-inch thick cork and neoprene gasket supplied by Piper. The bowl seat nut should be tightened only finger tight. The bowl should be carefully examined for signs of flaws or cracks and should be replaced if any are found.

(Piper Service Bulletin No. 89 dated July 11, 1946, covers this same subject.)

46-37-2 Piper (Was Mandatory Note 13 of AD-691-2.) Applies to J3C-65, J3C-65S, Serial Numbers 14027 Through 17959, Inclusive.

Compliance required immediately.

Affected airplanes should be examined immediately to ascertain that the fuel strainer is properly installed. The strainer should be installed with the IN port adjacent to the firewall and the OUT port facing the carburetor. If the strainer is not installed as above, it should be reversed for proper fuel flow.

(Piper Service Bulletin No. 91 covers this same subject.)

47-22-3 Piper (Was Mandatory Note 4 of AD-780-3.) Applies Only to PA-12 Aircraft Serial Numbers 12-1 and Up to 12-249 Except Serial Numbers 12-221, 12-236, 12-239 and 12-244.

Compliance required prior to August 1, 1947.

Reinforce the upper end of the tie strap on the landing gear with a 0.125 x 1½ x 4½, 4130 steel plate. Bend and trim to fit and install over end of strap by edge welding.

(Piper Service Bulletin No. 93 dated August 8, 1946, covers this same subject.)

47-40-2 *See* Continental Engines.

47-47-1 Piper (Was Mandatory Note 5 of AD-780-3.) Applies to PA-12 Aircraft Serial Numbers 12-221, 12-236, 12-239, 12-244, 12-250 and Up to 12-3561 and 12-3901 to 12-3988.

Compliance required prior to January 15, 1948.

Reinforce the upper end of the tie strap on the landing gear with a 4130 steel plate (Piper No. 10028-13). Install over end of strap by edge welding. As further reinforcement, install a trapezoidal gusset plate (Piper No. 10028-14) on each side of this upper strap attachment by forming and edge welding on assembly.

(Piper Service Bulletin No. 97 dated July 10, 1947, covers this same subject.)

47-47-2 Piper (Was Mandatory Note 6 of AD-780-3.) Applies to PA-12 Aircraft Serial Numbers 12-1 to 12-796 Inclusive, 12-815, 12-817 to 12-822 Inclusive, 12-825 to 12-831 Inclusive, 12-833, 12-835 to 12-848 Inclusive, 12-863 to 12-893 Inclusive, 12-895 to 12-901 Inclusive.

Compliance required as soon as practicable but not later than January 15, 1948.

To eliminate the possibility of a short circuit occurring between the battery terminal bases and the battery box, a wood filler block ¼ inch x 1½ inches x 10 inches (Piper P/N 11367) should be fastened to the upper inside edge of the battery box with two No. 6-32 x ½ flat head machine screws. Any insulating spacer which will accomplish this same objective may also be used. On completion of this change appropriate entry shall be made in the aircraft log book.

If the Reading R24L Battery has been replaced with an S24 Battery and proper spacer channels (Piper P/N 10926 and 10927) are installed, the above change is unnecessary.

(Piper Service Bulletin No. 98 dated July 28, 1947, covers this same subject.)

47-47-3 Piper (Was Mandatory Note 7 of AD-780-3.) Applies to All PA-12S Seaplanes Equipped With Edo 89-2000 Floats.

Compliance required by January 15, 1948.

Racking loads imposed by rough water operation can result in damage to the airplane fuselage structure. The following inspection and modification, therefore, is necessary:

1. Inspect fuselage members to which the float braces are attached, particularly in the left side truss. Any parts damaged or bent shall be properly repaired or replaced.

2. Install wire pulls (Edo P/N 89-S-176) inboard at the lower end of the front and rear float struts and add the diagonal brace wires (Edo P/N 92-S-200-9) between the floats.

(Edo Service Bulletin No. 4 dated September 5, 1947, contains detailed instructions for this change.)

47-47-4 Piper (Was Mandatory Note 8 of AD-780-3.) Applies to PA-12 Aircraft Serial Numbers 12-1 to 12-1989 Inclusive, 12-1991 to 12-1993 Inclusive, 12-1997, 12-1999, 12-2001 to 12-3443 Inclusive, 12-3461 to 12-3465 Inclusive, 12-3481, 12-3535 to 12-3542 Inclusive, 12-3553, 12-3901, 12-3903 to 12-3934 Inclusive, 12-3936, 12-3940, 12-3941, 12-3943 to 12-3954 Inclusive, 12-3961, 12-3964 to 12-3970 Inclusive, 12-3988.

Compliance required prior to February 1, 1948.

To prevent possible malfunctioning of the starter solenoid and damage to the starter cable installation, the following changes shall be accomplished as soon as practicable:

1. The starter solenoid, P/N 1456 shall be replaced by the solenoid, P/N 1453, or P/N 1464.

2. To eliminate the possiblity of pinching by the landing gear, the starter cable installation, running from the starter solenoid forward under the fuselage to the engine, shall be rerouted in accordance with Piper Drawing SK-206.

(Piper Service Bulletin No. 102 dated October 6, 1947, covers this same subject.)

47-50-3 Piper Applies to J3, J3C Series, J3F Series, J3L Series and J3P.

Inspection required after each 100 hours of operation.

Inspect the front and rear canvas seat installations and note the condition of canvas, eyelets, and lacing. Any parts showing signs of wear, tearing, fraying or substandard material the failure of which could cause possible interference with the control system should be replaced. Check the tautness of the canvas to insure that position clearance with all parts of the elevator control system exists when the seats are occupied.

(Piper Service Bulletin No. 45 covers this same subject.)

47-50-5 *See* Edo Equipment.

47-50-6 Piper Applies to All J3C-65 Series Airplanes Incorporating Landing Gear Approved for 1,220 Pounds Maximum Weight and PA-11 Airplane Serial Numbers 11-1 to 11-352, Inclusive; 11-354 to 11-357, Inclusive; 11-359, 11-361 to 11-369, Inclusive;

11-371 to 11-375, Inclusive; 11-377 to 11-385, Inclusive; 11-387, 11-396 to 11-402, Inclusive; 11-413, 11-414 and 11-430.

Compliance required at the next periodic inspection but not later than March 15, 1948.

Inspect the shock struts for cracks at the ends of the stop bolt slots. Damaged struts shall be properly repaired or replaced. To eliminate possible cracking of the shock struts at the ends of the slots, the rubber stop discs, Piper P/N 81232-13, four per airplane, shall be replaced with four leather discs, Piper P/N 81232-30 or may be made from belting leather, $1\frac{1}{16}$-inch diameter x $\frac{3}{16}$-inch thick.

(Piper Service Bulletin No. 103 dated September 29, 1947, covers this same subject.)

48-1-2 Piper Applies to PA-12 Aircraft Serial Numbers 12-1 Through 12-1989; 12-1991 Through 12-1993; 12-1997; 12-1999; 12-2001 Through 12-3443; 12-3445 Through 12-3450; 12-3452 Through 12-3457; 12-3461 Through 12-3465; 12-3481; 12-3535 Through 12-3542; 12-3553; 12-3901; 12-3903 Through 12-3934; 12-3936; 12-3940; 12-3941; 12-3943 Through 12-3954; 12-3961; 12-3964 Through 12-3970; and 12-3988.

Compliance required by February 1, 1948, and at each periodic inspection with modification not later than June 1, 1948.

Inspect for interference between the nose cowl and starter ring gear casting and for tightness of the cowl attachments. Replace gear casting if scored deeper than $\frac{1}{32}$ inch.

Prior to June 1, 1948, install cowl support braces, Piper P/N 11410, to insure proper position and support of cowl. (Piper Service Bulletin No. 100 dated October 20, 1947, covers this same subject.)

48-3-3 Piper Applies to PA-11 Aircraft Serial Numbers 11-1 Through 11-301, and 11-1350 Through 11-1400, Except Serial Numbers 11-233, 11-243, 11-261, 11-266, 11-281, 11-296, and 11-300.

Compliance required by April 1, 1948.

In order to prevent engine malfunctioning due to insufficient fuel flow when less than 5 gallons of fuel are in the wing tank and the airplane is operated in prolonged glides and dives, a header tank (Piper P/N 10725) must be installed in the fuel system. Until the header tank is installed, avoid prolonged glides and dives when less than 5 gallons fuel are in the main tank. (Piper Service Bulletin No. 99 dated July 29, 1947, covers this subject.)

48-13-3 Piper Applies to PA-12 Airplanes With Battery Holddown of Metal Bracket With Fiber Insulation at Its End.

Compliance required by October 1, 1948.

To eliminate battery short circuits caused by defective battery holddown brackets, replace brackets by wood blocks, Piper P/N 84682-3 and 84682-9 or equivalent. (Piper Service Bulletin No. 105 dated February 18, 1948, covers this same subject.)

48-13-4 Piper Applies to PA-12 Aircraft Serial Numbers 12-1 Through 12-3450; 12-3452; 12-3454 Through 12-3467; 12-3469 Through 12-3471; 12-3473 Through 12-3491; 12-3993 Through 12-3504; 12-3506; 12-3507; 12-3511 Through 12-3520; 12-3522 Through 12-3531; 12-3533; 12-3535 Through 12-3543; 12-3545 Through 12-3548; 12-3553; 12-3901 Through 12-3958; 12-3960 Through 12-3962; 12-3965 Through 12-3976; 12-3983; 12-3984; 12-3988; 12-3990 Through 12-3994.

Compliance required by May 1, 1948.

To avoid arcing between the fuse clip and the wire attachment plate on the fuse block caused by loosening of the fuse clip attaching rivets, replace rivets by No. 4 machine screws and stake threads. (Piper Service Bulletin No. 105 dated February 18, 1948, covers this same subject.)

48-14-1 Piper Applies to PA-12 Aircraft Serial Numbers 12-1 Through 12-1869; 12-1872; 12-1873; 12-1878; 12-1879; 12-1881; 12-1883; 12-1885 Through 12-1921; 12-2001 Through 12-2008; 12-2010 Through 12-2012; 12-2016; 12-2017; 12-2036 Through 12-2038; 12-2042; 12-2043; 12-2047; 12-2050; 12-2051.

Compliance required prior to August 1, 1948.

To prevent possible fuel leakage at the connection of the elbow fitting with the rear fuel valve, replace elbow with Piper P/N 11610.

(Piper Service Bulletin No. 104 dated January 30, 1948, covers this same subject.)

49-14-1 Piper Applies to Model J3 Series, Serial Numbers 14027 and Up; PA-11, Serial Numbers 11-1 to 11-910; and PA-12, All Airplanes.

To be accomplished by April 20, 1949.

Inspect the fittings (P/N 40861) at each end of the elevator connector tube (P/N 40261) to determine if the end fittings are riveted to the tube with two rivets 90° apart. If not, attach the end fitting to the tube with two ⅛-inch diameter, ¾-inch long soft steel, flat or round head rivets 90° apart; or replace with a new connector tube assembly. Full forward position of the control stick will expose the rearward fitting and full rearward position of the stick will expose the forward fitting.

(Piper Service Bulletin No. 111 covers the same subject.)

49–27–2 Piper Applies to Model PA–12, Serial Numbers 12–1 and up, and Model PA–14, Serial Numbers 14–1 Through 14–193.

To be accomplished not later than October 1, 1949.

Several aileron (and flap on Model PA–14) aluminum bellcrank castings (P/N 40092) have been found with cracks across the ears of the forked end. These cracks are believed caused by excessive tightening of the bolt which attaches the push rod to the casting. Inspect the forked end of these bellcrank castings and replace those found cracked.

(Piper Service Bulletin No. 109, dated November 9, 1948, covers this same subject.)

50–5–1 Piper Applies to All J3C, PA–11, PA–12 Aircraft Manufactured Between November 1945 and November 1946 Inclusive.

Compliance required at next periodic inspection but not later than March 1, 1950.

In order to minimize the possibility of understrength Nicopress sleeves in the control system, check the major dimension of the pressed portions of all sleeves. If this dimension exceeds 0.353 inch, the sleeve should be repressed to this dimension by two presses with National Telephone Supply Co.'s hand tool 51–M–850. The go-gage furnished with the tool may be used to check the 0.353-inch dimension. In repressing the sleeves, the hand tool used should be carefully adjusted in accordance with the manufacturer's instructions and the sleeves should be recompressed with the larger axis in the same plane as during the original press.

If new Nicopress sleeves are installed, three presses with the hand tool should be used as recommented by the sleeve manufacturer.

50–23–1 Piper Applies to All Models PA–17 Aircraft and PA–15 Aircraft Equipped With PA–17 Type Landing Gear Shock Struts.

Compliance required by July 15, 1950.

Inspect landing gear shock strut end fittings, P/N 11806 (four per airplane) for cracks or other defects in the small bend radii. Replace fittings found to be defective. Excessive tightening of the attachment bolts may induce failure by restricting rotation of the fitting on the bolt, therefore, the end fittings should be installed free to rotate.

(Piper Service Letter No. 129, dated October 28, 1949, covers the same subject.)

50–47–1 *See* Sensenich Propellers.

51–15–1 Piper Applies to All Models J3 Series and PA–11 Aircraft.

Canceled January 5, 1962.

51–19–2 Piper Applies to Models PA–18 Serial Numbers 18–487 to 18–730 Inclusive; PA–20 Serial Numbers 20–554 to 20–690 Inclusive; and PA–22 Serial Numbers 22–1 to 22–90 Inclusive.

Compliance required by August 31, 1951.

Overage oil radiator hose was installed in an undetermined number of Piper airplanes. Inspect immediately to determine that the proper hose marked with a solid white line and a broken red line and AN H–35 or MIL H–6000 are installed. Defective hose are marked "Aromatic Resistant Gates Vulco" followed by a date with the opposite side marked by a solid white line and broken red line. All defective hose should be replaced as soon as possible but not later than August 31, 1951.

(This information supersedes that in Piper Service Letter No. 165 dated March 23, 1951.)

51–21–2 Piper Applies to All Model PA–12 Airplanes.

Compliance required not later than October 15, 1951, and each 100 hours of operation thereafter unless reinforcements are installed.

Carefully inspect aileron hinge brackets to false spar attachment fittings, P/N N10931, (3 per wing), for cracks at the bend between the channel and flat portions of the fittings. If cracked fittings are found, add reinforcement bracket P/N 12047. With reinforcement brackets P/N 12047 installed, special inspections may be discontinued.

(Piper Service Bulletin No. 107, dated September 24, 1948, covers this same subject.)

51-23-3 Piper Applies to Model PA-16 Aircraft, Serial Numbers 16-1 and Up; PA-20 Aircraft, Serial Numbers 20-1 Through 20-802; and PA-22 Aircraft, Serial Numbers 22-1 Through 22-348.

Compliance required as soon as possible, but not later than October 15, 1951.

Install insulators of sufficient area inside the battery box cover over the battery terminals to positively prevent a metallic contact between the wing nuts or terminals and cover. Hard fiber rubber or phenolic insulating materials 1/16-inch minimum thickness may be used.

(Piper Service Bulletin No. 118 covers this same subject.)

51-27-3 Piper Applies to All Model PA-22 Aircraft, Serial Numbers 22-1 Through 22-354.

Compliance should be made before next flight in freezing temperature, but not later than December 15, 1951.

Driving rain or washing may cause an accumulation of water in nose wheel oleo housing which can freeze in lower bearing and render rudder system inoperative. To provide drainage, locate a 3/16-inch hole on aft side of nose wheel oleo housing, P/N 13035, centered 9/16-inch above lower edge of housing. Unless oleo strut is removed from housing, use extreme care not to damage oleo strut while drilling drain hole. Insure strut is drained. Fill upper end of housing and upper bearing area with generous amount of cup grease to seal against water.

(Piper Service Bulletin No. 119, dated November 7, 1951, covers this same subject.)

52-7-3 Piper Applies to All Models J3 Series and PA-11 Aircraft.

Compliance required prior to November 1, 1952.

1. Revise the present front and rear wing lift strut as follows:

(*a*) Cut 1/8 inch from lower end of barrel assembly and strut end.

(*b*) Remove the flanges and weld metal which extends through upper and lower strut surface, taking care not to damage struts.

(*c*) Remove barrel assembly from strut by applying a slight pull through an old forked fitting.

(*d*) Inspect strut for (internal) rust, bending, excessive wear, or other damage, and replace strut if necessary.

(*e*) Clean surplus old weld or rough edges from slots in the strut ends .

(*f*) Increase depth of these slots (approximately 1/8 inch) so the new barrel's lower flange will extend 3/32 inch beyond the strut end.

(*g*) Insert new plate and barrel assembly, P/N 12521, with its centerline parallel with the centerline of the strut.

(*h*) Weld fitting into strut around the slots and lower strut end.

(*i*) Refinish strut.

(*j*) Install new forked fitting, P/N 13710 and AN 315-7R locknut.

(*k*) Due to the importance of this rework, care must be exercised and it is recommended that only competent welders with extensive recent welding experience should undertake this work.

2. After installing reworked lift struts rerig the aircraft in accordance with appropriate Piper Service Manual Instructions.

3. Placard all lift struts, "No step".

4. Compliance with AD 51-15-1, covering the periodic inspection of lower lift strut fork fittings, P/N 11281, may be discontinued after compliance with this airworthiness directive.

(Piper Service Bulletin No. 120, dated March 28, 1952, covers this same subject.)

53-4-1 Piper Applies to All Model PA-18 Aircraft Which Have Not Had the Control Stick Retention Device Modified to Incorporate a Through Bolt.

Compliance required by April 1, 1953.

In order to prevent the control stick inadvertently pulling out of the socket, continue the existing hole for the retention pin on the

quick detachable control stick spring device through the control stick and socket and install an AN 3-14 or AN 3-14A through bolt.

(Piper Service Letter No. 162 dated March 6, 1951, covers this same subject.)

53-24-4 Piper Applies to PA-18, Serial Numbers 18-1 to 18-3000 Inclusive; PA-20, Serial Numbers 20-1 to 20-928 Inclusive; and PA-22, Serial Numbers 22-1 to 22-1689 Inclusive.

Compliance required not later than February 1, 1954.

In order to preclude the possibility of loss of fuel and hydraulic oil and fire in flight caused by chafing of these lines between the firewall and muffler, the following should be accomplished:

(*a*) To prevent contact with the muffler, reroute the fuel primer line, and wheel brake hydraulic line if necessary, so that they do not pass behind the muffler.

(*b*) Use clamps to fasten the lines to the firewall to prevent movement and vibration of these lines.

(Piper Aircraft Corp. Service Letter No. 213 covers this alteration.)

54-2-2 *See* Federal Equipment.

54-19-1 Piper Applies to Models PA-18A and PA-18A Restricted Category Aircraft With Dusting Venturi, Up to and Including Serial Number 18-3752.

Compliance required not later than October 15, 1954.

There have been several instances of excessive CO concentration in the cockpit when the dusting venturi is used. Such contamination has serious adverse effects upon pilot reaction. To prevent CO from entering the cockpit, a new trim plate should be installed and a new brake line cover plate should be placed over the brake line where the line enters the bottom of the fuselage.

(Piper Service Letter No. 225, dated August 23, 1954, covers the same subject.)

55-7-2 Piper Applies to All Model PA-22 Aircraft Except Serial Numbers 22-2377, 22-2379, 22-2385, 22-2388, 22-2389, 22-2391, 22-2394 and Up.

Compliance required by June 1, 1955.

Numerous instances have been reported of cracking in the leading edge of the streamlined tube of the landing gear at the point where the tube joins the inboard end of the axle. To prevent future failures, this joint should be reinforced by welding a steel strap reinforcement.

(Piper Service Letter No. 124 dated August 30, 1954, covers the same subject.)

55-8-4 Piper Applies to Model PA-22 Serial Numbers 22-1621 Through 22-1625, 22-1627, 22-1630, 22-1633, 22-1634, 22-1637.

Compliance required as soon as possible but not later than July 1, 1955.

The Hypass No. 48P6 ignition filters should be removed from the magnetos and replaced with magneto filter, Piper No. 63149 (Lear) obtainable from the Piper Service Department. It has been found that the Hypass No. 48P6 filters short and ground out the magnetos when subjected to a temperature which has been reported to be equal to the engine accessory temperature after a series of take-offs have been performed.

55-11-2 Piper Applies to Model PA-23 Serial Numbers 23-1 to 23-142 Inclusive, 23-144 to 23-162 Inclusive, 23-164 to 23-173 Inclusive, 23-175 to 23-177 Inclusive, 23-179 to 23-183 Inclusive, and 23-186.

Compliance required by August 1, 1955.

In order to eliminate excessive pressures in the hydraulic system due to thermal expansion which can result in failure of the hydraulic actuating cylinders, it will be necessary to install thermal relief valves in the landing gear retraction line, landing gear extension line and the flap retraction line. These relief valves are to be installed in accordance with the sketch and instructions contained in Piper Thermal Relief Valve Kit 754 095.

(Piper Service Bulletin No. 136 dated April 26, 1955, covers this same subject.)

55-13-1 Piper Applies to Model PA-23, Serial Numbers 23-160 to 23-162 Inclusive, 23-166 to 23-168 Inclusive, 23-170, 23-172, 23-177, 23-193 to 23-219 Inclusive, 23-221 to 23-224 Inclusive, 23-226 to 23-229 Inclusive, 23-231 to 23-234 Inclusive, and 23-237.

Compliance required by August 1, 1955.

It has been found that all the PA–23 Models listed above have installed two flexible fuel valve controls that have been found to flex excessively at the splice. The addition of an idler bellcrank should be accomplished by the use of Piper Kit No. 754 103 and the instructions included. Owners of PA–23's with auxiliary fuel tanks must not operate the auxiliary fuel system until this modification has been accomplished.

(Piper Immediate Action Service Bulletin No. 139 applies to this malfunction.)

55–14–2 Piper Applies to Model PA–23 Serial Numbers 23–1 to 23–208 Inclusive.

Compliance required by August 1, 1955.

Because of possible damage to the hydraulic actuating cylinders for the landing gear system and flap system of the two end plug retaining pins, as a result of excessive pressures caused by thermal expansion, it is necessary that these cylinders be inspected and replaced or modified as follows:

1. If the cylinder housing is upset or fractured, it must be replaced by a new reinforced cylinder P/N 455927.

(Piper Service Bulletin No. 138 dated May 9, 1955, covers this same subject.)

2. If the cylinder housing is not upset or fractured, it must either be replaced by P/N 455927, or reinforced by adding two retaining plugs in accordance with Piper Service Letter No. 250 dated June 8, 1955.

This supersedes AD 55–12–1.

55–21–2 Piper Applies to All Model PA–23 Aircraft Through Serial Number 23–321, Except Serial Numbers 23–310, –311, –315, and –319.

Compliance required as indicated.

The wing front spar attachment fitting P/N 17079 at the centerline of the fuselage must be inspected and reinforced as indicated below. This is a welded steel fitting bolted to the front face of the front spar web and is accessible through the wing bottom access panel.

I. Compliance required prior to next flight and at every 15 hours thereafter. Visually inspect the wing front spar attachment fitting and if any damage is found such as bent flanges or any other visible distortion contact the Piper Corp. for further instruction prior to returning airplane to flight status.

II. Compliance required prior to November 1, 1955. If inspection of item I discloses no defects install reinforcement fitting assembly in accordance with Piper reinforcement Kit 754112 or equivalent. The inspections required in item I are not required after incorporating the fitting reinforcement.

(Piper Service Bulletin No. 142 dated October 4, 1955, covers this same subject.)

55–22–3 Piper Applies to All Model PA–22 Aircraft.

Compliance required as soon as possible but not later than November 30, 1955.

To prevent rain water from entering the fuel tanks, all Piper PA–22 aircraft must be equipped with new type fuel tank cap Piper P/N 454039 installed. This cap incorporates a redesigned venting system and a gasket seal of black composition rubber ring in place of the fiber gasket on the old type caps.

56–27–3 Piper Applies to Model PA–23, Serial Numbers 23–1 Through 23–800 Except 23–732, 23–736, 23–739, 23–740, 23–741, 23–769, 23–777, 23–784, 23–787, 23–794, 23–797 and 23–799.

Compliance required by February 1, 1957.

In order to prevent fatigue cracking in the aileron balance weight bracket at a point where the bracket tubes are welded to form a 90° angle, it will be necessary to remove both the right and left aileron balance weight brackets and reinforce them with gussets, Piper P/N 17126–07 in accordance with the instructions and sketch contained in Piper Service Bulletin No. 149 dated December 10, 1956.

57–1–2 Piper Applies to Model PA–23, Serial Numbers 23–1 to 23–844 Inclusive.

Compliance required not later than February 15, 1957.

The following inspection and action is necessary in order to prevent the possibility of stabilizer failure or malfunction in the event the proper number of bolts are not found attaching the front stabilizer fittings, right and left, P/N 17093–00.

Inspect the two front stabilizer attachment fittings and ascertain that there are three bolts securing each fitting to the longitudinal stringer and the bulkhead (two in the stringer and one in the bulkhead). If less than three bolts have been used, the unsatisfactory condition must be corrected. It will be necessary to remove the stabilizer fairing on the bottom side, and to use a mirror to make the inspection.

(Piper Service Bulletin No. 150 of December 21, 1956, covers this same subject.)

57–5–3 Piper Applies to Model PA–23, Serial Numbers 23–1 to 23–903 Inclusive.

Compliance required at the next 100-hour inspection but not later than May 1, 1957.

The following careful examination and action is required to overcome excessive wear and possible failure of the elevator push-pull tube.

1. Careful examination should be made of the wear area on the elevator push-pull tube at the points where it passes through the fiber rollers. Any tube that shows wear exceeding 0.005 inch must be replaced.

2. Obtain four each of nylon block, Piper P/N 19225–00 and eight AN 960–516 washers. Remove the four bearings, P/N 80012–67 and the six washers, P/N 81342–61 from the fiber roller installation and reuse in the nylon block installation. Install the above parts, except for the rollers, in accordance with the sketch and instructions shown in Piper Service Bulletin No. 151 dated February 11, 1957.

57–10–2 Piper Applies to Model PA–23 Aircraft Serial Numbers 23–1 to 23–1391 Inclusive.

Compliance required as soon as possible but not later than June 15, 1957.

It has been reported that the flare on the oil pressure gage line has cracked or broken where it attaches to the connector fitting on the aft side of the firewall resulting in loss of oil pressure.

Inspect both right and left oil pressure line flares to determine whether or not they are normal and also to determine that the lines in the area of the flares are not cracked or broken.

Lines that are cracked or broken or have defective flares should be cut off and reflared. Care should be taken that there is no line strain against the fitting or the retainer block and that the line into the fitting is straight. If the line is too short for this repair, it should be cut off and spliced using a connector and flexible hose, Piper P/N 17766–07 or equivalent.

(Piper Service Bulletin No. 152A covers this subject.)

57–13–8 Piper Applies to Model PA–23 Serial Numbers 23–1 to 23–729, Inclusive.

Compliance required by September 1, 1957.

To prevent inadvertent retraction of the landing gear due to malfunction of the landing gear hydraulic system, install an anti-retraction device (Piper Kit No. 754140 or equivalent) that will prevent start of the retraction cycle and consequent landing gear collapse while the aircraft is on the ground.

(Piper Service Bulletin No. 145 of December 31, 1956, covers this subject.)

57–13–9 Piper Applies to Model PA–23 Aircraft Serial Numbers 23–1 to 23–934; 23–936 to 23–939; 23–941 to 23–973; 23–977; 23–980; 23–981; 23–983 to 23–986; 23–988 to 23–991; 23–994 to 23–996. All Numbers Are Inclusive.

Compliance required as indicated.

The following inspection and replacement programs are required as indicated as a result of reported cases of cracked parts.

See AD 58–1–6 for material covering P/N 17093–00.

I. Compliance required within the next 5 hours operation, unless already accomplished, and every 25 hours thereafter until part II is accomplished. Visually inspect the following: (It is necessary to remove tail cone, coverings and fairings to gain access to most of the parts. However, parts need not be disassembled and/or removed from the aircraft to accomplish this inspection.) Parts with cracks visible during this inspection must be replaced prior to further flight except as noted.

Part No.	*Name*
17058–3	Elevator Butt Rib
17058–20	Elevator Butt Rib Doubler Plate

Part No.	*Name*
17033–00	Elevator Torque Tube Bracket
17033–01	Elevator Torque Tube Bracket
*17049–00	Front Stabilizer Attachment
17060–00	Rudder Torque Tube Horn
17066–00	Elevator Torque Tube Horn
17062–00	Rudder Torque Tube Bracket

*Regardless of the size of crack in front stabilizer bracket, *P/N 17049–00*, between the upper rivet hole and the top of the fitting, the part need not be replaced until replacement fittings, P/N 19253–00, are available, but not later than August 1, 1957.

II. Compliance require as soon as possible, unless already accomplished, but not later than August 1, 1957.

(*a*) Remove the following parts from the aircraft and inspect the complete part using dye penetrant or fluorescent inspection method:

Part No.	*Name*
17033–00	Elevator Torque Tube Bracket
17033–01	Elevator Torque Tube Bracket
17060–00	Rudder Horn Assembly
17066–00	Elevator Horn Assembly
17062–00	Rudder Torque Tube Bracket
†17052–00	Elevator Hinge Fitting

†See note below.

(*b*) Visually inspect fin attachment bracket, P/N 17072–00, when accomplishing above inspection (*a*). (See note below.)

(*c*) Cracked parts should be replaced immediately. However, if replacements are not available, parts with crack indications visible only by dye penetrant inspection may continue in service, subject to the following limitations provided visual inspections are available and no cracks become visible during this visual inspection, but in any case not later than August 1, 1957.

Limitations: Such dye penetrant cracks located in edges, webs, flanges, edges of holes, fillet radii, tubular sections, flat portions, tangs and projections are acceptable provided no individual part contains more than five cracks, nor any crack that extends entirely between two holes, nor any crack of greater length than 1½ inches.

NOTE: If not already accomplished, the dye penetrant inspection of P/N 17052–00 and the visual inspection of *P/N 17072–00* may be deferred until the next 100-hour inspection.

III. Compliance required every 100 hours after completion of inspection II and all parts found with cracks have been replaced.

Visually inspect all of the parts covered in inspection I and II. Parts with cracks must be replaced. It is necessary to remove tail cone, covering and fairings to gain access to most of the parts. However, parts need not be disassemblied and/or removed from the aircraft to accomplish this inspection.

IV. Parts shall be assembled and installed to obtain proper alinement and to prevent distortion, overtorqueing of bolts and the probability of corrosion. Installation and/or reassembly must be accomplished in accordance with Piper Service Bulletins Numbers 146A and 155. (These Bulletins cover the above difficulties.)

This supersedes AD 57–11–2.

57–19–1 Piper Applies to Model PA–23, Serial Numbers 23–129, 23–132 to 23–228 Inclusive; 23–230 to 23–766 Inclusive; 23–768 to 23–850 Inclusive; 23–852 to 23–883 Inclusive; 23–885 to 23–937 Inclusive; 23–939 to 23–1017 Inclusive; 23–1019, 23–1020, 23–1022 to 23–1030 Inclusive; 23–1032 to 23–1042 Inclusive; 23–1044, 23–1046 to 23–1057 Inclusive; 23–1059 to 23–1064 Inclusive; 23–1066, 23–1069 to 23–1074 Inclusive; 23–1076, 23–1078 to 23–1082 Inclusive.

Compliance required by November 1, 1957.

Inspect the Heim rod end bearing (P/N HMX–4M) located where the front elevator control tube attaches to the lower horn on the control column. If more than six threads show on the rod end, rerig the control column so that six or less threads are exposed.

(Piper Service Bulletin No. 156 dated July 2, 1957, covers this subject.)

57–21–1 Piper Applies to All Model PA–23 Aircraft.

Compliance required at next regular inspection period but not to exceed 100 hours.

Inspect the attachment of the rudder trim tab control rod to the rudder trim tab. If a flat head pin has been installed it must be

replaced by an AN 23-10 clevis bolt and AN 960-10L washer, secured with an AN 320-3 nut and AN 380-2-2 cotter pin.

(Piper Service Bulletin No. 159 covers this subject.)

57-22-1 Piper Applies to All Models PA-16, PA-20 and PA-22 Aircraft.

Compliance required as indicated.

To preclude the possibility of inflight fires the following inspection and rework is necessary to eliminate combustible material and possible ignition sources from the area aft of the firewall, underneath the forward cabin floor. Access to this section may be gained by removing the metal panels or opening the fuselage side cowl panels rearward of the firewall underneath the aircraft as shown in Piper Service Bulletin No. 161a. The relative difficulty in gaining access to this area has probably contributed to poor maintenance.

1. On all PA-16, PA-20, and PA-22 aircraft, Serial Numbers 22-1 through 22-2699, the following inspection and rework is necessary prior to December 15, 1957. Remove and discard any sound-proofing material contaminated with engine or hydraulic oil. Where the plastic septum has separated from the fiberglass or shows signs of drying or cracking it should be removed in its entirety from the affected blanket. Uncontaminated fiberglass, from which the plastic septum has been removed, may be continued in service. Inspect electrical wiring for chafing of the insulation and replace any found in an unsatisfactory condition. Check for a reasonable clearance between hydraulic lines, electrical wires, control cables and fuel lines and rework as necessary. The sealing of the firewall on all affected aircraft must be inspected as described in Piper Service Bulletin No. 161a and when found deficient must be resealed in accordance with the manufacturer's service bulletin or accepted aeronautical practices.

2. On PA-22 aircraft Serial Numbers 22-2700 to 22-6194 inclusive, the procedure outlined in 1 should be followed within the next 100 hours of operation.

3. Periodic inspection should be made of the exhaust system in accordance with Piper Service Bulletin No. 161a pertaining to inspection of the exhaust stack gaskets, exhaust stacks, muffler assembly, and muffler tailpipe.

4. The sealing of the firewall on all PA-16, PA-20 and PA-22 aircraft must be inspected at 100-hour intervals in accordance with Piper Service Bulletin No. 161a. If found deficient, it must be resealed in accordance with the manufacturer's service bulletin or accepted aeronautical practices.

5. The 100-hour inspection requirement on all Model Piper PA-22 aircraft, Serial Numbers 22-1 to 22-6194 inclusive, can be eliminated if Piper Kit, P/N 754237 or equivalent, is installed.

58-1-6 Piper Applies to Model PA-23 Aircraft, Serial Numbers 23-1 to 23-1219 Inclusive.

Compliance required as indicated.

Due to the installation of the front stabilizer-to-fuselage attachment fitting P/N 17093-00, on additional aircraft to those covered by AD 57-13-9 and since special inspections are not required when the redesigned fitting P/N 17093-03 is installed, this supersedes the portions of AD 57-13-9 concerning this fitting and revision issued on Card No. 57-22.

Inspect visually for cracks, the front stabilizer fitting, P/N 17093-00 every 100 hours until replaced with the redesigned fitting P/N 17093-03. Fittings found cracked must be replaced.

(Piper Service Bulletin No. 160 dated October 7, 1957, covers the same subject.)

58-1-7 Piper Applies to All J-3 Series and J-5 Series Aircraft.

Compliance required as indicated.

To preclude the possibility of failures of the fork end of the turnbuckles in the control system, the following inspection and rework is necessary. Failures of the fork end of the turnbuckles have occurred in the area covered by the safety wire. This results from binding caused by the attaching bolt being drawn up too tightly on the fork end of the turnbuckle.

Inspect the turnbuckle to horn attachment at the elevators, rudder and ailerons to determine that an AN 23-12 clevis bolt is installed with one AN 960-10 washer under the nut. This assembly should swivel freely.

58-4-3 Piper Applies to Model PA-23 Aircraft, Serial Numbers 23-1 to 2-1253 Inclusive.

Compliance required at next 100-hour inspection but not later than April 1, 1958, whichever occurs first.

As a result of a number of failures, the hollow rudder trim tab adjustment screw, P/N 18453-00, must be replaced with a solid screw, P/N 18453-02.

(Piper Service Bulletin No. 162 covers this same subject.)

58-10-2 Piper Applies to All Models PA-22, PA-20, PA-19, PA-18, PA-16, PA-14, PA-12, J4, J5, AE-1, and HE-1 Series Aircraft.

Service experience indicates that continual operation on rough water has caused fatigue failures in the wing lift-strut fork, P/N 14481-00 and P/N 11431 (J4 aircraft only).

All lift-strut forks, P/N 14481-00, must be removed, cleaned, and magnetically inspected on seaplanes having 500 hours or more of service and P/N 11431 (J4 aircraft only). The inspection must be repeated every 500 hours. These precautionary inspections are not required for landplanes. Forks with crack indications are to be replaced. All forks must be replaced with new forks at 1,000 hours on seaplanes and at 2,000 on landplanes.

All forks removed should be destroyed or permanently marked in a manner that will assure retirement from service.

(Piper Service Bulletin No. 157A covers the same subject.)

This supersedes AD 57-20-3.

58-12-2 Piper Applies to All Models J-3, PA-11, PA-15, PA-16 and PA-17 Aircraft.

Compliance required not later than July 15, 1958.

There is a possibility that some aileron hinge reinforcing brackets P/N 10931-02 supplied to the field during the past three years were fabricated from aluminum instead of steel. Brackets, which have been replaced since June 1954, must be inspected to determine the type of material. All aluminum brackets are to be removed and replaced with steel brackets.

(Piper Service Bulletin No. 165 covers this subject.)

58-16-1 Piper Applies to Model PA-20 Serial Numbers 20-1 to 20-1121 Inclusive, and Model PA-22 Serial Numbers 22-1 to 22-6087 Inclusive, That Have Cigar Lighters Installed.

Compliance required within next 100 hours of operation.

To preclude the possibility of blowing the master fuses, due to a short circuit caused by a faulty cigar lighter element, install a 15-ampere standard fuse, Bussman No. AGC-15 or equivalent, in the wire between the cigar lighter and the ammeter.

(Piper Service Bulletin Number 163A covers the same subject.)

58-22-3 Piper Applies to All Model PA-23 Aircraft Equipped With Goodrich G-3-787 Main Wheel Assemblies.

Compliance required as indicated.

Failures of the Goodrich G-3-787 wheel assembly are being reported. These wheels may be continued in service subject to inspection as specified below, or replaced with Goodrich G-3-880 wheel assembly or Cleveland Aircraft Products wheel assembly Model 3060 or 3080A and brake assembly Model 3000-500 or another equivalent approved type wheel and brake combination.

1. Remove wheels and tires and inspect wheels at each one hundred hours of operation or at each tire change, whichever occurs first.

2. Inspect the flange area of both wheel halves by means of Dy-Check or Zyglo, whichever is available. Cracks may appear on either the inside or outside surface of the flange.

3. If cracks are present in the flange area, remove the defective wheel half from service and replace as indicated above.

4. To detect possible flange failures during preflight inspection, look for outward deformation of flanges. A wheel with a flange failure will appear to wobble when rotated.

(Goodrich Service Bulletin No. 102, dated July 25, 1956, and Piper Service Letter No. 291, dated June 5, 1957, covers this same subject.)

58-25-5 Piper Applies to Model PA-24 Aircraft, Serial Numbers 1 Through 336.

Compliance required by February 1, 1959.

It has been determined that an unsafe condition exists with respect to the door latch arrangement of the aircraft affected. At present it is not possible to open the cabin door from the inside if it has been locked on the outside. In order to preclude occupants becoming inadvertently locked inside the cabin of PA–24 aircraft in the case of some emergency, the main cabin door latch assembly must be modified to permit opening the door from inside the aircraft under all conditions.

(Item No. 1 of Piper Service Letter No. 305 dated October 1, 1958, presents an acceptable method of modifying the aircraft.)

59–6–5 Piper Applies to Models PA–24 and PA–24 "250", Serial Numbers 24–1 To 24–503 Inclusive.

Compliance required by June 1, 1959.

Due to failures of the nose gear elastic bungee cord, P/N 31322–08, it must be replaced by a coil spring and link arrangement, Piper Modification Kit P/N 754 205 or equivalent.

(Piper Service Bulletin No. 168 covers this subject.)

59–7–5 Piper Applies to PA–24–180 Comanche Aircraft.

Compliance required not later than June 1, 1959.

Inspection has shown the clearance between oil cooler lines and exhaust stack is not adequate on some aircraft. Clearance between the lines and the stack should be a minimum of three-eighths of an inch. In the event inadequate clearance exists, the oil cooler lines should be reformed or the fittings in the cooler should be repositioned slightly so that proper clearance can be obtained. If necessary, adapters Piper P/N 451 855 (Weatherhead No. 3200 x 6) can be installed between the oil cooler and the oil cooler line fittings.

When providing for the proper clearance make certain there is no interference between the oil cooler lines and the cowl.

(Piper Service Bulletin No. 167 dated January 6, 1959, covers this item.)

59–8–3 Piper Applies to Model PA–23, Serial Numbers 23–1502 To 23–1558 Inclusive, 23–1560 To 23–1562 Inclusive and 23–1565 To 23–1567 Inclusive.

Compliance required by May 1, 1959.

Install an operating limitations placard on the instrument panel stating "This airplane must be operated as a normal category airplane in compliance with the airplane flight manual. Acrobatic maneuvers including spins prohibited."

(Piper Service Bulletin No. 169 covers this subject.)

59–10–8 Piper Applies to Models PA–18, PA–18A, PA–20 and PA–22 Aircraft.

Compliance required not later than July 15, 1959, for Models PA–18, PA–18A and PA–22, and not later than November 30, 1959, for the Model PA–20.

Recent occurrences have revealed improper compliance with AD 56–26–2 (Canceled March 24, 1958). Therefore, the tank vents drilled into the gas tank cap must be checked as follows: Insert a 0.030-inch diameter wire into the holes at the bottom of the cap. If the holes are properly drilled the wire can be inserted over ¾ inch until it hits the inside top of the cap. If the holes are not properly drilled the wire will hit the baffle and only enter approximately ¼ inch. Also, if the cap has one hole drilled and is marked with an "X" adjacent to the hole, and the cap rattles when shaken, a loose internal rivet is indicated. If either of the latter conditions exist, the following must be accomplished:

Rework the fuel tank caps by drilling two additional 0.067 holes ¼ inch from the existing center hole. Drill through bottom part of cap and baffle only. Check these newly drilled holes with the 0.030-inch diameter wire as outlined above.

(This airworthiness directive supplements Piper Service Bulletin No. 148A dated May 29, 1957. The drawings included in this bulletin may be referred to as a guide in reworking the fuel tank caps.)

59–12–9 Piper Applies to PA–24 and PA–24 "250" Aircraft Serial Numbers 24–1 Through 24–764, 24–766 Through 24–779, 24–781 Through 24–820, 24–822 Through 24–842, 24–844 Through 24–849, 24–851 Through 24–856, 24–858, 24–860 Through 24–865, 24–867 Through 24–871, 24–875, 24–878, 24–880, 24–881, and 24–885.

Compliance required not later than July 30, 1959.

Due to a recent inflight incident where control wheel sprocket stud P/N 20913-00 failed, inspect the sprocket stud P/N 20913-00 where the sprocket was attached on all aircraft that have or have had an automatic control system installed and ascertain that the stud is not cracked or twisted and the hole is not elongated. Parts found cracked or damaged are to be replaced before further operation.

(Piper Service Bulletin No. 172 covers this inspection in detail.)

59-13-2 Piper Applies to Models PA-24 and PA-24 "250" Aircraft Serial Numbers 24-1 to 24-978 Inclusive and 24-980.

Compliance required within the next 100 hours of operation or by October 1, 1959, whichever occurs first.

Service experience indicates that cracks have developed in the aileron balance weight attachment bulkheads. These bulkheads are riveted to the front spar of the aileron and are the supports to which the balance weight arm is attached. To reduce the probability of failure of the aileron balance weight arm attachment install reinforced bulkheads on both ailerons except on Serial Number 24-980 replace the balance weight attachment bulkhead on right aileron only.

(Piper Service Bulletin No. 173 also covers this subject and states "Service Kit, Part Number 734-233, is available from your nearest Piper distributor or dealer free of charge if the airframe serial number is included on the purchase order.")

59-26-2 Piper Applies to PA-24 and PA-24 "250" Airplanes Serial Numbers 24-1 To 24-1373 Inclusive.

Compliance required by January 15, 1960.

To prevent clogging, the two fuel cell vent tubes which are located under the wings shall be modified in the following manner:

Measure a distance of ½-inch down from the bottom of the wing skin along the forward side of each protruding vent tube. At this point, cut the tube off at a 45-degree angle to the bottom skin so that the end of the tube remains square.

(Piper Immediate Action Service Bulletin No. 180 covers this subject.)

60-1-7 Piper Amdt. 77 Part 507 Federal Register January 15, 1960, revised by Amdt. 206 Federal Register September 30, 1960. Applies to All Models PA-12, PA-14, PA-20, PA-22, PA-22 "135," PA-22 "150" and PA-22 "160" Series Aircraft.

Compliance required not later than January 30, 1960, and at each 100 hours' time in service thereafter, except Model PA-22 compliance required within the next 100 hours' time in service after the effective date of this amendment, and at each 100 hours' time in service thereafter.

A number of failures of a tail brace wire, P/N 10074-2 or P/N 10074-3 have occurred. In order to prevent the possibility of a catastrophic accident in the event one of these wires should fail, the following inspection shall be accomplished:

(a) Clean the tail brace wires and inspect for cracks, nicks, manufacturing flaws, and tool marks with a 10-power magnifying glass, paying particular attention to the leading and trailing edges. The wires may remain on the airplane for this inspection.

(b) Should cracks or nicks be found, it shall be acceptable to sand the affected area with No. 500 sandpaper or equivalent, to remove the cracks or nicks. Sanding shall not reduce the width of the wire by more than the 0.015 inch (1/64th). After the sanding operation the wires shall be painted to preclude corrosion of the sanded area. Any wire containing a crack or nick which cannot be removed by sanding within the specified limits shall be replaced. (The defective wires should be destroyed or permanently marked to prevent inadvertent reuse.) (Piper Service Bulletin No. 183 covers this subject.)

60-3-7 Piper Amdt. 88 Part 507 Federal Register January 26, 1960. Applies to PA-23 Aircraft Serial Numbers 23-747 To 23-1534 Inclusive.

Compliance required not later than March 1, 1960.

To preclude recurrence of short circuiting of the control circuits of the engine starter solenoids, electric cables Nos. P2B, P20A and P20B in the starter solenoid circuits shall be increased in size to 16 gage and a 15 ampere trip-free circuit breaker installed in the circuit

at the point where lead P2B connects into the electric system. An appropriate placard must be installed adjacent to the new circuit breaker to provide adequate identification. (Piper Service Bulletin No. 175 dated June 9, 1959, covers this subject.)

60–3–8 **Piper** Amdt. 92 Part 507 Federal Register January 26, 1960, revised by Amdt. 209 Federal Register October 19, 1960. Applies to PA–23 And PA–23 "160" Aircraft, Serial Numbers 23–1 and Up.

Compliance required as indicated.

As a result of several instances of fuel system cable malfunctioning and fuel valve leakage, the following inspections shall be accomplished:

(a) Ascertain that fuel is contained in all fuel cells. With the master switch on, energize the electric fuel pumps. While the fuel selector and crossfeed valve levers are cycled through their positions several times, observe through appropriate access openings the main valve (P/N 18598), auxiliary valve (P/N 17920) if installed, and the crossfeed valve (P/N 492044) in the cabin control pedestal. If leakage is observed, effect repairs. (Refer also to Piper Service Manual paragraph 9–17, 9–18.)

(b) Check rigging and clamping of control cable and rigging of valve control linkage to eliminate bowing and to insure proper valve operation.

Compliance with item (a) required by March 15, 1960, and every 50 hours of time in service thereafter on aircraft Serial Numbers 23–1 through 23–1695 until improved valves (P/N 492050 main and crossfeed, and 492051 auxiliary) are installed. After the improved valves are installed, the inspection period may be increased to every 100 hours of time in service. Aircraft Serial Numbers 23–1696 and up incorporated the new valves; therefore, these aircraft having less than 100 hours of time in service on March 15, 1960, may be operated until they have 100 hours, at which time the initial inspection shall be conducted, and then shall be inspected every 100 hours thereafter.

Compliance with item (b) required by March 15, 1960, and every 50 hours of time in service thereafter on aircraft Serial Numbers 23–1 through 23–289 until a more rigid control cable (P/N 18815 for main fuel system and P/N 18816 for auxiliary fuel system and idler bellcrank P/N 18782) is installed. After the new cable is installed, the inspection period may be increased to every 100 hours of time in service Aircraft Serial Numbers 23–290 and up incorporated the new cables; therefore, these aircraft having less than 100 hours of time in service on March 15, 1960, may be operated until they have 100 hours, at which time the initial inspection shall be conducted, and then shall be inspected every 100 hours thereafter.

(c) Not later than 25 hours' time in service after October 19, 1960, aircraft Serial Numbers 23–1 through 23–1695 which have improved valves (P/N 492050 main and crossfeed, and P/N 492051 auxiliary) installed must be inspected to ascertain that P/N 492051 was used for auxiliary and main shutoff valves on aircraft with auxiliary fuel systems, and P/N 492050 was used for main shutoff valves on aircraft without auxiliary tanks and for all crossfeed valves in accordance with Piper Service Letter 322A and Piper Service Manual paragraphs 9–17 and 9–18. If incorrect combinations are found, valves must be installed properly prior to further flight. (The above fuel valves are also identified by Scott P/N 4240–2 for P/N 492050 valve and P/N 4240–3 for P/N 492051 valve. Effective March 21, 1961.)

(Piper Service Letters Nos. 322A, and 286 cover the same subject.)

60–5–3 **Piper** Amdt. 108 Part 507 Federal Register March 2, 1960, revised by Amdt. 214 Federal Register November 2, 1960. Applies to PA–22 "150" and PA–22 "160" Aircraft Serial Numbers 22–3218, 22–3387, 22–3388 to 22–7049 Inclusive, and 22–7054.

Compliance required by April 1, 1960.

Install safety belt extension, P/N 14920–02 or equivalent, on the front seat belt in order to eliminate deterioration due to heat from the rear seat heater outlet and chafing where the web attaches to the attaching lug. P/N 14920–02 has the same geometric design as P/N 14920–0 being replaced, except that P/N 14920–02 is one inch longer measuring 3.5 inches between bolt centerlines. (Piper Service Bulletin No. 184 covers this same subject.)

This supersedes AD 57–17–2.

60-10-8 Piper Amdt. 149 Part 507 Federal Register May 13, 1960. Applies to All PA-22, PA-20, PA-18 Airplanes Equipped With Two Wing Tanks.

Compliance required prior to July 15, 1960, and every 100 hours' time in service thereafter.

Several accidents have occurred involving engine fuel starvation attributed to a lack of detent action in the fuel selector valve (P/N 11383), causing the pilot to position the selector improperly.

If the detent pin in the valve shaft is improperly centered or if the spring retaining washer is installed upside down, the pin will not engage the slotted detent washer. Therefore, the fuel selector valve in the above listed models must be thoroughly cycled to determine whether or not detent engagement is positive. There should be four distinct detents in one complete cycle. If detent engagement is not positive, the valve must be replaced prior to further flight.

Also, determine if the position of the fuel valve handle at detent engagement coincides with the proper markings on the indicator plate. If the handle does not coincide with the markings, the plate must be repositioned accordingly. (Piper Service Bulletin No. 141 covers this subject.)

60-24-3 Piper Amdt. 225 Part 507 Federal Register November 17, 1960. Applies to PA-24 and PA-24 "250" Aircraft Serial Numbers 24-1 to 24-2161 Inclusive.

Compliance required within the next 10 hours of operation or at the next periodic inspection, whichever occurs first, after the effective date of this directive.

To prevent any interruption in fuel flow should the vent tubes become obstructed, the two fuel cell vent tubes which are located under the wings shall be modified in the following manner:

Drill an 0.098-inch diameter hole (#40 drill) in the aft side of each tube three-fourths of an inch from the end. (Piper Service Bulletin No. 193 covers this subject.)

This directive effective December 19, 1960.

61-6-6 Piper Amdt. 266 Part 507 Federal Register March 17, 1961. Applies to All Models J-4, J-5, PA-12, PA-14, PA-15, PA-16, PA-17, and PA-20 Aircraft, and Model PA-22, Serial Numbers 22-1 Up To and Including Serial Number 22-7999.

Compliance required as indicated.

Fabric failures have been experienced where the fabric attaches to the channel along the top edge of the windshield.

(a) For all aircraft not on progressive inspection systems the requirements of paragraph (c) must be accomplished at the next periodic inspection after the effective date of this amendment and at each periodic inspection thereafter.

(b) For all aircraft on progressive inspection systems the requirements of paragraph (c) must be accomplished by not later than June 15, 1961, and at least once each year thereafter.

(c) (1) Inspect the fabric over the top surface of the attachment channel and along its forward edge (windshield removal not required).

(2) If any deterioration is found, prior to further flight, remove the windshield and add a fabric reinforcement strip starting from a line at least two inches behind the aft side of the channel and extending under the forward edge of the channel, around the inner surface of the channel and down to the fuselage tube member.

(d) For aircraft manufactured prior to June 1, 1959, in addition to the requirements of paragraph (c), the following must be accomplished prior to June 15, 1961.

(1) Remove the windshield and inspect the fabric attachment to the channel that retains the top edge of the windshield.

(2) If any deterioration is found, a fabric reinforcement strip must be added as described in paragraph (c) prior to further flight.

(3) If no deterioration is found, unless already accomplished, the fabric attachment to the channel must be modified so that the fabric or a spliced-in section of fabric follows the contour of the channel and extends down to the fuselage tube member.

(e) When the modification outlined in Piper Service Letter No. 362, dated November 30, 1961, is incorporated in Piper Models PA-20 and PA-22 aircraft, the repetitive inspections required by paragraphs (a) and (b) may be discontinued on these aircraft.

(Piper Service Bulletin No. 174B, and Piper Service Letter No. 362, both dated November 30, 1961, cover this same subject.)

This supersedes AD 59-16-3.

This directive effective April 15, 1961.

Revised February 13, 1962.

61-13-2 Piper Amdt. 298.

Superseded by AD 62-2-6.

61-16-5 Piper Amdt. 311 Part 507 Federal Register July 26, 1961. Applies to PA-18/150, PA-18A 125, PA-18A/135, PA-18A/150, PA-18S 150, PA-18AS 150: Serial Numbers 18-1667, 18-1887, 18-4260, 18-4860, 18-6127, 18-6289, 18-6301, 18-6332, 18-6375, 18-6398, 18-6418, 18-6424, 18-6434, 18-6437, 18-6438, 18-6444, 18-6463, 18-6466, 18-6501, 18-6540, 18-6604, 18-6606, 18-6609, 18-6616, 18-6657, 18-6668, 18-6679, 18-6680, 18-6681, 18-6682, 18-6771, 18-6855, 18-6914, 18-6924, 18-6981, 18-6991, 18-6992, 18-6993, 18-7018, 18-7025, 18-7037, 18-7043, 18-7047, 18-7058, 18-7071, 18-7072, 18-7075, 18-7078, 18-7093. PA-22/150, PA-22S 150, PA-22/160, PA-22S/160: Serial Numbers 22-6116, 22-6167, 22-6359, 22-6421, 22-6466, 22-6550, 22-6704, 22-6758, 22-6883.

Compliance required within 10 hours' time in service after the effective date of this AD unless already accomplished.

To preclude loss of control of the airplane as a result of failed nicopress sleeves in the control system, the following must be accomplished:

(a) In PA-18 Series aircraft, aileron, lower elevator, and flap flexible stainless steel cable assemblies, P/N's 12794-03, 13271-02, 13745-02, 40123-44, 40123-86, 40123-87, and 10870-12 shall be replaced with respective assemblies P/N's 12794-00, 13271-00, 13745-00, 40123-03, 40123-77, 40123-76, and 10870-08, or respective assemblies P/N's 12794-04, 13271-03, 13745-03, 14300-19, 14300-27, 14300-28, and 10870-17.

(b) In PA-22 Series aircraft, aileron, lower elevator, flap and rudder cable assemblies P/N's 11527-03, 12515-04, 13108-03, 13109-13, 13109-15, 40123-83, 40123-84, and 40123-94 shall be replaced with repective cable assemblies P/N's 11527-02, 12515-03, 13108-02, 13109-10, 13109-12, 40123-68, 40123-69, and 40123-93; or respective cable assemblies P/N's 11527-04, 12515-06, 13108-11, 13109-18, 13109-19, 14300-24, 14300-25, and 14300-29.

Standard landplane galvanized cables are satisfactory for continued or replacement use.

(Piper Service Bulletin Number 181 dated November 5, 1959, and Piper Service Letter No. 355, dated February 23, 1961, cover this same subject.)

This supersedes AD 59-26-6.

This directive effective July 26, 1961.

61-16-6 Piper Amdt. 314 Part 507 Federal Register July 29, 1961.

Applies to All PA-24 and PA-24"250" Aircraft Modified to Incorporate Brittain Wing Tip Fuel Tanks (Supplemental Type Certificates Nos. SA4-1235 and SA4-1351).

Compliance required within the next 150 hours' time in service after the effective date or at the next disassembly of fuel selector valves, whichever occurs first.

The fuel selector valve handles of aircraft equipped with Brittain wing tip fuel tanks can easily be reinstalled with incorrect indexing after the valves have been disassembled for servicing and lubrication. Incorrect indexing can cause serious fuel system malfunctioning and one accident resulting from this condition has been reported. To preclude future incorrect indexing of the fuel selector valve handles, the following must be accomplished:

(a) Remove any valve shafts with four flat sides at the handle end and replace with Brittain P/N 4018-15 shafts, or equivalent. The Brittain P/N 4018-15 shaft is identical to the original except that one of the four sides at the handle end has been modified to a convex shape.

(b) After reassembly and reinstallation of the selector valves, determine that the valve handles are properly indexed with respect to the selector valve placard.

(Brittain Aircraft Enterprises Service Letter No. 4000-1 dated April 26, 1961, covers this same subject.)

This directive effective August 31, 1961.

61-20-2 Piper Amdt. 336 Part 507 Federal Register September 20, 1961. Applies to Model PA-24 "250" Aircraft Serial Numbers 24-103 to 24-1629 Inclusive, Which Do Not Have a Reinforcing Plate Welded to the Stack in the Area Where the Rear Engine Cylinder Stack is Welded to the Exhaust Stack Assembly.

Compliance required as indicated.

Due to incidents of cracks occurring in the exhaust stack assembly, right side, P/N 21664–03, the following inspections and reinforcement must be accomplished:

(a) Within 25 hours' time in service after effective date of this AD, remove the carburetor heat shroud assembly and inspect the exhaust stack assembly, P/N 21664–03, for any indication of cracks or deterioration particularly in the area where the rear engine cylinder exhaust stack is welded to the exhaust stack assembly. If evidence of cracks or deterioration is noted, the assembly must be replaced with a new assembly prior to further flight. The provisions of this paragraph shall be reaccomplished at intervals of 50 hours' time in service until such time as the installation in paragraph (b) is accomplished.

(b) Within 100 hours' time in service after initial compliance with paragraph (a), a clamp-on reinforcement Piper Kit No. 754396 or equivalent, shall be installed on the exhaust stack assembly, P/N 21664–03. After installation of the clamp-on reinforcement, the provisions of paragraph (a) are no longer applicable.

(Piper Service Bulletin 202 dated May 22, 1961, applies to this subject.)

This directive effective October 20, 1961.

62–2–5 Piper Amdt. 386 Part 507 Federal Register January 18, 1962. Applies to Models PA–18 and PA–18A Series aircraft Serial Numbers 18–1 through 18–7768 inclusive. (Effective June 20, 1962.)

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

Several failures have been reported of the rudder cable attachment fitting lug, P/N 40831, at the weld on rudder pedals, P/N's 40842–04 and 40842–05. Accordingly, the following shall be accomplished:

Visually inspect the weld that attaches the rudder cable lug, P/N 40831, to the foot bar tube on both left and right rudder pedals for evidence of separation, cracks in the weld, insufficient length of weld, or excessive wear of weld. A weld of sufficient length must cover at least the top half perimeter of the tube (minimum). (Effective June 20, 1962.)

If the weld is separated, cracked, excessively worn, or of insufficient length, replace the rudder pedal assembly prior to further flight.

(Piper Service Bulletin No. 207A, dated May 10, 1962, covers this subject.) (Effective June 20, 1962.)

This directive effective January 23, 1962.

62–2–6 Piper Amdt. 387 Part 507 Federal Register January 18, 1962. Applies to Model PA–25 Aircraft, Serial Numbers 25–1 to 25–619 Inclusive, 25–622, 25–623, 25–625, and 25–626.

Compliance required as indicated.

As a result of inspections performed on the aluminum front spar wing-to-fuselage attachment fittings, Piper P/N's 61111–00 and 61111–01, it has been determined that the following action is necessary. Within the next 25 hours' time in service after the effective date of this AD, but not later than February 15, 1962, unless already accomplished, replace the aluminum front spar wing-to-fuselage attachment fittings, Piper P/N's 61111–00 and 61111–01, with steel forgings, Piper P/N's 60113–00 and 60113–01, or equivalent parts approved by the FAA Eastern Region, Engineering and Manufacturing Branch. The steel forgings have ⅛ inch raised digits "60112" or "60112–1" on the parts.

The replacement shall be accomplished in accordance with Piper Service Bulletin No. 206, dated August 24, 1961, or FAA approved equivalent.

(Piper Service Bulletin No. 206, dated August 24, 1961, pertains to this subject.)

This supersedes AD 61–13–2.

This directive effective January 18, 1962.

62–10–3 Piper Amdt. 431 Part 507 Federal Register April 26, 1962. Applies to Models PA–24 and PA–24"250" Aircraft, Serial Numbers 24–1 through 24–2264.

Compliance required within the next 50 hour's time service after the effective date of this AD.

Inspect the aileron counterweight bays on both wings for the presence of Rubatex blocks. If any of these blocks, whether loose or attached, are found they must be removed from the aircraft in order to prevent possible restriction of aileron travel.

(Piper Service Letter No. 364A, dated March 14, 1962, pertains to this subject.)

This directive effective April 26, 1962.

62-19-3 Piper Amdt. 478 Part 507 Federal Register August 23, 1962. Applies to All Model PA-28 Aircraft, Serial Numbers 28-1 to 28-314 Inclusive, 28-317 to 28-326 Inclusive, 28-328 to 28-331 Inclusive, 28-333 to 28-341 Inclusive, 28-343, 28-345 to 28-348 Inclusive, 28-351, 28-352, 28-356, 28-359, and 28-365.

Compliance required as indicated.

There has been inflight failure of the propeller attach bolts due to under-torqueing of the bolts. In order to preclude the loss of the propeller due to the failure of the bolts, the following is required:

(a) Within the next 10 hours' time in service after the effective date of this AD, unless already accomplished, remove the propeller spinner and remove each propeller attach bolt.

(b) Inspect for cracks in the bolt in the area of the threads using magnetic particle or FAA approved equivalent inspection method in conjunction with a 5-power or higher magnifying glass. Inspect the grip shank for brinelled surfaces with a 5-power or higher magnifying glass.

(c) If cracks are found or if the bolt is brinelled on the grip shank, replace with new bolts, AN 76-41S. Torque to 300 inch-pounds.

(d) If cracks are not found, reinstall the bolts and torque to 300 inch-pounds.

(e) In lieu of the inspection requirement of (b), new bolts, AN 76-41S, may be installed and torqued to 300 inch-pounds.

(Piper Service Bulletin No. 209, dated April 17, 1962, covers this same subject.)

This directive effective August 28, 1962.

62-26-5 Piper Amdt. 511 Part 507 Federal Register December 5, 1962. Applies to All Models PA-24 and PA-24"250" Aircraft.

Compliance required within the next 50 hours' time in service after the effective date of this AD, unless already accomplished.

To preclude hazardous carbon monoxide contamination in the cockpit and engine power loss, caused by cracked muffler heater shrouds, accomplish the following:

(a) For aircraft Serial Numbers 24-1 to 24-2298 inclusive, equipped with channel reinforced muffler P/N's 22594-00, 22594-02 on PA-24, and P/N's 22593-00, 23159-00 on PA-24"250" installed as service replacements:

(1) Remove the tail pipe, the right-hand exhaust stack, and carburetor heat shroud and inspect for cracks and hot spots. Pay particular attention to the junction of rear cylinder exhaust tube with the stack assembly.

(2) Remove the muffller and muffler heater shroud. Carefully inspect the muffler for viisble cracks, particularly in the area near the tail pipe opening and examine the internal baffle and perforated tube. Submerge the muffler in water and pressure test at 10 p.s.i.

(3) Replace the muffler prior to further flight if cracks, heat deterioration, defects, or wrinkles formed in the perforated tube are observed or if leaks are detected during the pressure test.

(4) Rework the muffler heater shroud by:

(i) enlarging the opening in the shroud in accordance with the Piper template;

(ii) installing the muffler reinforcement tube, P/N 23482-00 using 20 rivets PDR 134A-6, or FAA approved equivalent; and

(iii) installing cover plate P/N 23498-00 using 11 rivets AN 426A3-4, or FAA approved equivalent, in accordance with Piper Immediate Action Service Bulletin No. 210 (Kit P/N 754 484).

(5) Reinstall the muffler exhaust stacks, tailpipe, and air ducts on the airplane.

(b) For aircraft Serial Numbers 24-2299 to 24-3284 inclusive, equipped with channel reinforced muffler P/N's 22594-00, 22594-02 on PA-24, and P/N's 22593-00, 23159-00 on PA-24"250", except aircraft Serial Numbers 24-2876, 24-2929, 24-2949, 24-2967, 24-2990, 24-3033, 24-3095, 24-3114, 24-3130, 24-3150, 24-3155, 24-3173, 24-3191, 24-3193, 24-3194, 24-3196, 24-3198, 24-3203, 24-3204, 24-3222, 24-3233, 24-3234, 24-3241, 24-3244, 24-3248, 24-3254, 24-3257, 24-3258, 24-3265, 24-3268, 24-3270, 24-3273, 24-3274, 24-3276, 24-3277, 24-3278, 24-3279, 24-3280, 24-3282, 24-3283, which have been modified:

(1) Perform inspections required by (a) (1) and (a)(2), and the replacement required by (a)(3), if necessary.

(2) Install new cabin heater shroud, P/N 23507-00 on PA-24, and P/N 23489-00 on PA-24"250". Center the tailpipe in the shroud tailpipe opening.

(3) Reinstall the muffler exhaust stacks, tailpipe, and air ducts on airplane.

NOTE: PA-24 and PA-24"250" mufflers have been manufactured incorporating two different styles of tailpipe reinforcement brackets. This AD requires modification of one style only—those with channel style reinforcement. See Sketch A of Piper Service Bulletin No. 210 for further identification. Both types of mufflers have been sold as service replacements. It will therefore be necessary to examine aircraft Serial Numbers 24-1 to 24-2587 inclusive, if the original muffler has been replaced, to determine if the modification is required. Aircraft Serial Numbers 24-2588 through 24-3284, were manufactured with the channel shaped reinforcement and will require modification except those already modified as indicated.

(Use Piper Service Letter No. 324B as a guide for inspections in addition to Service Bulletin No. 210.)

This directive effective December 5, 1962.

62-26-6 Piper Amdt. 516 Part 507 Federal Register December 8, 1962. Applies to All Models PA-28-150 and PA-28-160 Airplanes With Serial Numbers 28-03, 28-1 through 28-671, 28-678, 28-679, 28-681, 28-685, 28-690, 28-691, 28-693, 28-697, 28-706, and 28-707, Except Those With Exhaust Assembly P/N 63726 Installed.

Compliance required within the next 10 hours' time in service after the effective date of this AD, and each 50 hours' time in service thereafter.

There have been cracks found in the exhaust system on Piper PA-28-150 and PA-28-160 airplanes. As this condition is likely to occur in other airplanes of the same type design, accomplish the following:

(a) Remove carburetor heat muff shroud and conduct a close visual inspection of the complete exhaust system piping for cracks in all welded joints and tubing bends. Pay particular attention to the area near the junction of the cylinder stacks and main exhaust manifold.

(b) If cracks are found, repair by gas welding. (The exhaust pipe is AISI 321 or 347 corrosion resistant steel.)

(Piper Service Letter 389 covers this same subject.)

This directive effective December 14, 1962.

PORTERFIELD

(*See Northwestern*)