SERVICE BULLETIN NO. 172 - PIPER

PIPER Customer Services

SERVICE BULLETIN No. 172

Piper Aircraft Corporation

Lock Haven, Pennsylvania, U.S.A.
April 27, 1959

F. A. A. Approved

SUBJECT: Inspection of Control Wheel Sprocket Mounting Hole

MODELS AFFECTED: PA-24 "180" and PA-24 "250" Equipped with a Piper AutoControl Serial Numbers 24-1 to 24-764 incl., 24-766 to 24-779 incl., 24-781 to 24-820 incl., 24-822 to 24-842 incl., 24-844 to 24-849 incl., 24-851 to 24-856 incl., 24-858, 24-860 to 24-865 incl., 24-867 to 24-871 incl., 24-875, 24-878, 24-880, 24-881 and 24-885.

There is a possibility that the control wheel sprocket mounting stud (See Figure 1 below), at the extreme forward end of the control wheel shaft, has been subjected to an unusual amount of torque due to the improper installation of the AutoControl servo motor drive pin. This condition must be inspected by June 30, 1959 on airplanes 24-1 to 24-102 inclusive on the right control wheel shaft and on airplanes 24-103 to 24-885 inclusive on the left control wheel shaft if an AutoControl is installed or has been installed at any time.

An inspection procedure for the removal and inspection of the control wheel sprocket mounting stud on the above mentioned airplanes is attached to this bulletin. Inasmuch as special wrench, part number 869 865, is needed to remove the sprocket from the mounting stud, it is suggested that you take your airplane to the nearest Piper distributor, dealer or Certified Service Center to have this inspection performed.

Warranty labor of eight (8) hours will be granted upon receipt of a Warranty Claim Form.

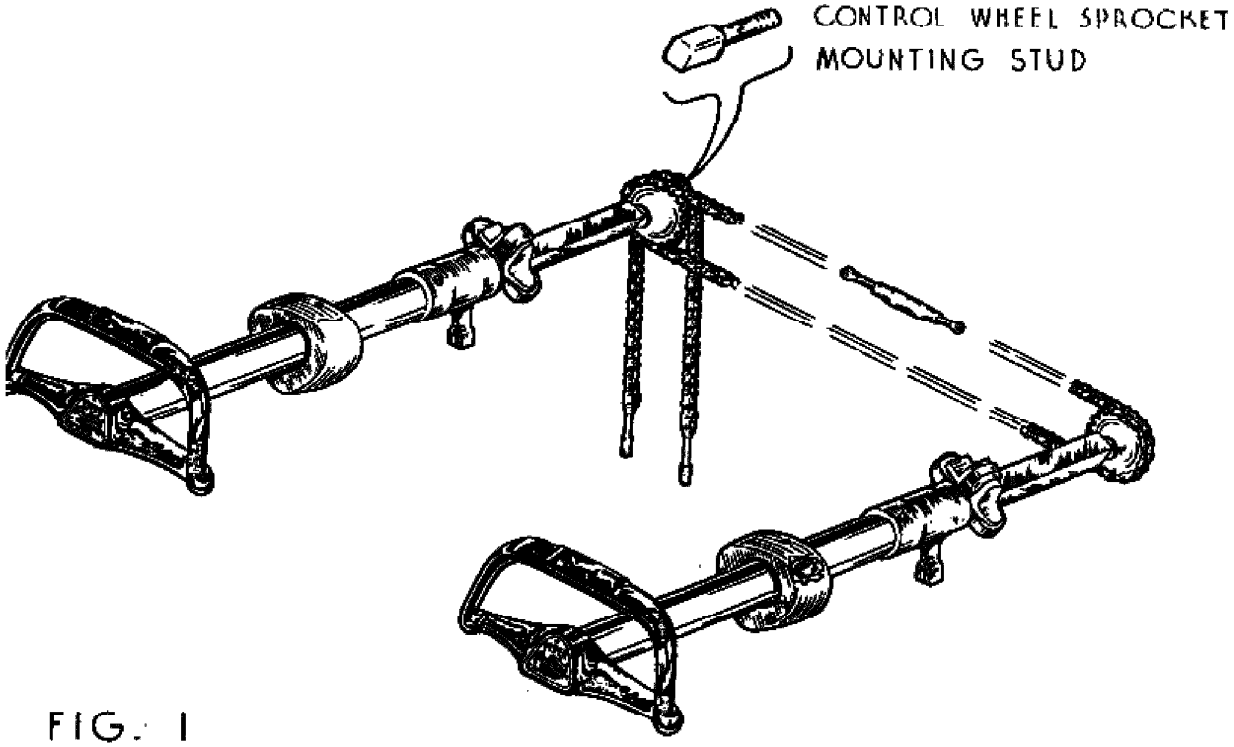

FIG. 1

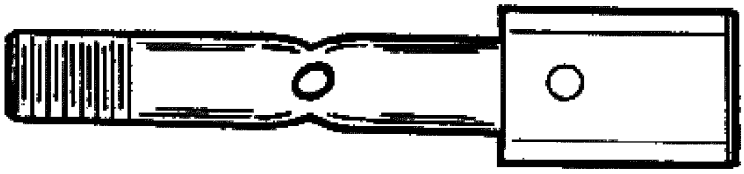

FIG. 2
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INSPECTION OF RIGHT CONTROL WHEEL SPROCKET MOUNTING HOLE
(24-1 to 24-102 inclusive)

1. Remove autocontrol servo unit cover located on the right front side of the firewall.
2. Remove (1/8") roll pin from the servo unit shaft by lightly tapping roll pin out with a drift punch the same size as the roll pin. Support servo unit shaft with a bucking bar during this operation to prevent bending the shaft.
3. Remove servo unit from shaft pulling out and away from the firewall. (Caution: Exercise care in removing the servo unit and when placing in a secure resting place until the rest of the inspection is completed.)
4. Remove instrument access cover panel from the top of the instrument panel by removing the mounting screws, the cotter pins from the two defroster tubes and disconnecting the compass light wire.
5. Remove the seven (7) mounting bolts from the control wheel bearing bracket located at the extreme end of the right control wheel shaft. (Note position of shims between the bearing bracket and the firewall to be certain they are placed in the proper position when re-installing the bearing bracket.)
6. Locate the two turnbuckles in the aileron control chain assembly that inter-connects the two control wheel shaft assemblies, remove safeties from the two (2) turnbuckles and disconnect the turnbuckle eyes. New safety clips are required when connecting the turnbuckles after this inspection is completed. (Noting of threads shown or the amount of turn-out required to remove the turnbuckle eyes will be assistance when re-installing the chain assembly.)
7. Remove the chain from the right control wheel sprocket.
8. Pull control column back until the two (2) roll pins in the forward end of the control wheel square shaft are exposed. In the event the square shaft has only one (1) roll pin and the end of the square shaft is peened, disregard paragrpahs 9 through 16 and refer to paragraphs 17 through 28.
9. Examine the roll pins carefully to determine which end has been subjected to pounding. Support shaft with a bucking bar when removing roll pins. Remove the two (2) roll pins from the shaft with a drift punch the same diameter as the roll pin. Drive the roll pins out in the opposite direction from which they were originally driven into the shaft.
10. Mark square shaft and sprocket to assure alignment when re-installing. Pull the control wheel sprocket stud out of the forward end of the square shaft. Light tapping on the bearing bracket may be necessary to loosen the sprocket stud.
11. Remove control wheel bearing bracket assembly from the airplane to a work bench.
12. Remove the 7/16 nut from the end of the control wheel sprocket stud. (Note: When re-installing this nut, tighten until it is just snug against the bearing. Do not over torque this nut .)
13. Remove nut and bolt attaching sprocket to the sprocket stud. (Note: A special wrench, part number 869 865, will be necessary in order to remove and re-install the nut.) A few aircraft had a roll pin and safety instead of bolt and nut. If so, cut safety and remove roll pin. (Be sure to safety after assembly.)
14. Slide the bearing bracket and the sprocket from the sprocket stud.
15. Carefully inspect the sprocket stud, part number 20913-00, around the hole where the sprocket was attached and ascertain that the stud is not cracked or twisted and the hole is not elongated. (See Figure 2.)
16. After inspecting the sprocket stud, part number 20913-00, and replacing, if necessary, re-assemble in reverse (1) through (14). If part number 20913-00 or 20975-00 must be replaced, telephone the Service Department, Piper Aircraft Corporation, Lock Haven, Pennsylvania immediately.
17. (Refer to paragraph 8.) Cut the safety wire on the right control wheel shaft front and rear bearing retainer screws.
18. Remove the four (4) screws from the control wheel shaft front bearing.
19. Mark the location of the two (2) screws in the control wheel shaft rear bearing and remove the screws.
20. Remove the two (2) cotter pins guiding the aileron cable mounted on the control wheel shaft center bearing.
21. The control wheel shaft can now be removed by pulling the control wheel shaft out of the instrument panel which in turn will expose the control wheel square shaft.
22. The control wheel square shaft and the bearing bracket assembly can now be removed by putting the rear end of the square shaft into the hole in the instrument panel vacated by the control wheel shaft and by moving the front end towards the center of the airplane.
23. After this assembly has been removed and placed on a work bench, remove the 7/16 inch nut from the end of the control wheel sprocket stud. (Note: When re-installing this nut, tighten until it is just snug against the bearing. Do not over torque this nut.
24. Remove nut and bolt attaching sprocket to the sprocket stud. (Note: A special wrench, part number 869 865, will be necessary in order to remove and re-install the nut.) A few aircraft had a roll pin and safety instead of a bolt and nut. If so, cut safety and remove roll pin. (Be sure to safety after assembly.)
25. Slide the bearing bracket and the sprocket from the sprocket stud.
26. Carefully inspect the sprocket stud around the hole where the sprocket was attached and ascertain that the stud is not cracked or twisted and the hole is not elongated. (See Figure 2.)
27. After inspecting the sprocket stud and a replacement is found necessary, a control wheel square shaft and sprocket stud assembly, part number 20975-00, already assembled will be furnished by the factory. If part number 20913-00 or 20975-00 must be replaced, telephone the Service Department, Piper Aircraft Corporation, Lock Haven, Pennsylvania immediately.
28. After inspection is completed, re-assemble in reverse (1) through (26).

CAUTION

Be certain the control wheel shaft center bearing which guides the aileron cable is free after this inspection is completed.

INSPECTION OF LEFT CONTROL WHEEL SPROCKET MOUNTING HOLE
(24-103 to 24-764 incl., 24-766 to 24-779 incl., 24-781 to 24-820 incl., 24-822 to 24-842 incl., 24-844 to 24-849 incl., 24-851 to 24-856 incl., 24-858, 24-860 to 24-865 incl., 24-867 to 24-871 incl., 24-875, 24-878, 24-880, 24-881 and 24-885.)

1. Remove autocontrol servo unit cover located on the left front side of the firewall.
2. Remove (1/8") roll pin from the servo unit shaft by lightly tapping roll pin out with a drift punch the same size as the roll pin. Support servo unit shaft with a bucking bar during this operation to prevent bending the shaft.
3. Remove servo unit from shaft by pulling out and away from the firewall. (Caution: Exercise care in removing the servo unit and when placing in a securing resting place until the rest of the inspection is completed.)
4. Remove instrument access cover panel from the top of the instrument panel by removing the mounting screws, the cotter pins from the two defroster tubes and disconnecting the compass light wire.
5. Remove instrument panel cover plate.
6. Disconnect the hoses from the directional gyro and the gyro horizon. Disconnect the co-ax cable from the gyro horizion and the three power cables from the directional gyro.
7. Remove the mounting screws, the directional gyro and the gyro horizon from the instrument panel. This will allow easier access to the control wheel column area. (Caution: Exercise care in removing the gyros and when placing in a safe resting place until the rest of the inspection is completed.)
8. Remove the seven (7) mounting bolts from the control wheel bearing bracket located at the extreme end of the left control wheel shaft. (Note position of shims between the bearing bracket and the firewall to be certain they are placed in the proper position when re-installing the bearing bracket.)
9. Locate the four (4) turnbuckles in the two (2) chain assemblies which are installed on the double sprocket at the forward end of the left control wheel shaft.
10. Remove safeties from the four (4) turnbuckles and disconnect turnbuckle eyes. (Noting of threads shown or the amount of turn-out required to remove the turnbuckle eyes will be of assistance when re-installing the chain assemblies.) New safety clips are required when connecting the turnbuckles after this inspection is completed.
11. Remove chains from left control wheel sprocket.
12. Pull control column back until the two (2) roll pins in the forward end of the control wheel square shaft are exposed. In the event the square shaft has only one (1) roll pin and the end of the square shaft is peened, disregard paragraphs 13 through 20 and refer to paragraphs 21 through 31.
13. Examine the roll pins carefully to determine which end has been subjected to pounding. Remove the two (2) roll pins from the shaft with a drift punch the same diameter as the roll pin. Drive the roll pins out in the opposite direction from which they were originally driven into the shaft.
14. Mark square shaft and sprocket to assure alignment when re-installing. Pull the control wheel sprocket stud out of the forward end of the square shaft. Light tapping on the bearing bracket may be necessary to loosen the sprocket stud.
15. Remove the control wheel bearing bracket assembly from the airplane to a work bench.
16. Remove the 7/16 inch nut from the end of the control wheel sprocket stud. (Note: When re-installing this nut, tighten until it is just snug against the bearing. Do not over torque this nut.)
17. Remove nut and bolt attaching sprocket to the sprocket stud. (Note: A special wrench, part number 869 865, will be necessary in order to remove and reinstall the nut.) A few aircraft had a roll pin and safety instead of a bolt and nut. If so, cut safety and remove roll pin. (Be sure to safety after assembly.)
18. Slide the bearing bracket and the sprocket from the sprocket stud.
19. Carefully inspect the sprocket stud, part number 20913-00, around the hole where the sprocket was attached and ascertain that the stud is not cracked or twisted and the hole is not elongated. (See Figure 2.)
20. After inspecting the sprocket stud, part number 20913-00, and replacing, if necessary, re-assemble in reverse (1) through (18). If part number 20913-00 or 20975-00 must be replaced, telephone the Service Department, Piper Aircraft Corporation, Lock Haven, Pennsylvania immediately.

RIGGING

Center the control wheels and be certain the aileron trailing edge is aligned with the trailing edge of the flaps before installing control chains.

After this operation is completed, ascertain the aileron cable tension is 26 lbs. plus or minus 20%.

21. (Refer to paragraph 12). Cut the safety wire on the control wheel shaft front and rear bearing retainer screws.
22. Remove the four (4) screws from the control wheel shaft front bearing.
23. Mark the location of the two (2) screws in the control wheel shaft rear bearing and remove the screws.
24. Remove the two (2) cotter pins guiding the aileron cable mounted on the control wheel shaft center bearing.
25. The control wheel shaft can now be removed by pulling the control wheel shaft out of the instrument panel which in turn will expose the control wheel square shaft.
26. The control wheel square shaft and the bearing bracket assembly can now be removed by putting the rear end of the square shaft into the hole in the instrument panel vacated by the control wheel shaft and by moving the front end towards the center of the airplane.
27. After this assembly has been removed and placed on a work bench, remove the 7/16 inch nut from the end of the control wheel sprocket stud. (Note: When installing this nut, tighten until it is just snug against the bearing. Do not over torque this nut.)
28. Remove nut and bolt attaching sprocket to the sprocket stud. (Note: A special wrench will be necessary in order to remove and re-install the nut.) A few aircraft had a roll pin and safety instead of a bolt and nut. If so, cut safety and remove roll pin. (Be sure to safety after assembly.)
29. Slide the bearing bracket and the sprocket from the sprocket stud.
30. Carefully inspect the sprocket stud around the hole where the sprocket was attached and ascertain that the stud is not cracked or twisted and the hole is not elongated. (See Figure 2.)
31. After inspecting the sprocket stud and a replacement is found necessary, a control wheel square shaft and sprocket stud assembly, part number 20975-00, already assembled will be furnished by the factory. If part number 20913-00 or 20975-00 must be replaced, telephone the Service Department at Piper Aircraft Corporation, Lock Haven, Pennsylvania immediately.
32. After inspection is completed, re-assemble in reverse (1) through (29).

CAUTION

Be certain the control wheel shaft center bearing which guides the aileron cable is free after this inspection is completed.