

Instructions for Removal, Inspection and Replacement of the Torque Tube Assembly, and Pitch Control Horn, PA-24/30/39

1. Remove fuselage access cover plate.
2. Disconnect stabilator control cables on balance weight arm. Item A.
3. Remove bolt from stabilator trim tab born. Item B.
4. Remove bolt from stabilator rear spar. Item C.
5. Remove four bolts attaching stabilator to stabilator torque tube and remove stabilators. Item D.
6. Remove top and bottom fuselage tail fairings.
7. Remove stabilator bearing block reinforcement channels. Item E.
8. Remove two bolts holding stabilator tab control bellcrank assembly to stabilator bearing blocks. (It is not necessary to further disassemble this unit.) Item F.
9. Remove the bolts from the right stabilator bearing block and the bottom bolt in the left bearing block. DO NOT REMOVE the top bolt in the left bearing block. Item G.
(Caution - Mark top for proper reassembly.)
10. By pulling rearward and rotating the right end of the stabilator torque tube downward to pass the rudder arm, the entire torque tube and counterbalance assembly can be removed from the aircraft. The top left bearing block bolt should stay in place.
11. During disassembly of the torque tube assembly note the position of parts so that it can be properly reassembled.
12. Remove left bearing block by tapping with a soft mallet. Note shims, part number 81262-72 if installed. Item H.
13. Remove stop assembly. Item J.
14. Remove counterbalance arm assembly. Item K.
15. Remove right bearing block assembly. Note shims (81262-72) if installed. Item L.
16. Inspect the inner boar of the horn by an appropriate means, for cracking, radiating horizontally from any bolt hole, or in the shoulder of the center boar for the balance arm. If no cracking is found, chamfer the sharp shoulder of the balance arm boar to relieve future stress. If cracking is found, replace with serviceable horn assembly. If excessive corrosion is found on torque tube, replace with serviceable torque tube.
17. Reassemble the torque tube assembly with new hardware, and reinstall on the aircraft. Reinstall stabilator.

Notes:

Item # Above

5. To remove the stabilator halves, it may be required that the inner collar be removed from the stab half if the torque tube is corroded excessively. To do this, rotate the leading edge up, look into the stab from the fuselage side, remove the 4 bolts and conical washers (do not lose) holding the collar to the rib, and remove the stab. Doing this will require the inboard collar to be removed at a later time before the bearing /block can be removed from the tube.
12. Bearings can be removed from the blocks by swiveling them 90 degrees, and then pulling them free. They should be inspected for freedom of movement, and repacked or replaced with new if found to be unservicable.
14. This is removal of the entire assembly, INCLUDING the horn. **Do not remove the counterbalance arm from the horn. This is an interference fit and can be very difficult to re-install.** Some horns are more difficult to remove from the torque tube than others. Be sure that all paint/corrosion/obstructions have been removed from the torque tube. Make sure the area of the junction of the horn and tube is also free of any paint lip etc. Once the tube is clean, some mild heating of the horn will help it slide easily from the tube.
15. Same note as #12
16. Some examples of cracking:



17. When reassembling the horn assembly onto the torque tube, do not torque the through bolts to 140 inch/pounds as these are in shear, not tension. The proper torque is 65 inch/pounds for the through bolts.

