

Airworthiness Directive

Federal Register Information

Header Information

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

Amendment 39-3742; AD **80-07-02**

BOEING Model 707/720/727/737/747 Series Airplanes

PDF Copy (If Available):

Preamble Information

AGENCY: Federal Aviation Administration, DOT

DATES: Effective April 21, 1980.

Regulatory Information

80-07-02 BOEING: Amendment 39-3721 as amended by Amendment 39-3742. Applies to all Model 707/720/727/737/747 series airplanes that contain the hydraulic components, listed below, that have been repaired or parts produced by FORTNER ENGINEERING AND MANUFACTURING, INC., OF GLENDALE, CALIFORNIA under FAA Repair Station Certificate No. 417-5. Accomplish the following:

A. To detect a control valve which could cause control surface reversal, within three days from the effective date of this AD, unless already accomplished within the last 14 days, conduct a one time manual input hardover test on the flight control systems containing parts listed in paragraph B below, as follows:

Rudder (yaw damper off), elevator (autopilot off) and aileron (autopilot off) and all associated hydraulic systems on. Run the hydraulic systems for approximately ten minutes or until the system is at normal operating temperatures prior to conducting the hardover tests. Apply an abrupt hardover command one way, stop to stop, until the flight surface reaches full travel. The commanded rate must be rapid enough to saturate the control valve, as evidenced by a noticeable resistance in the control input. The flight control shall be held hardover in that position for five seconds. Repeat this procedure applying an abrupt command in the opposite direction.

1. On the 737, use of single hydraulic systems during the test can be an aid in isolation of individual actuators.

a. Use the "B" system electric pumps or an external hydraulic source to pressurize the "B" hydraulic system (ground interconnect closed).

- b. Turn on the "B" Flight Control hydraulics circuit breaker.
 - c. Conduct the elevator and aileron control checks. Failure of the test indicates that the right hand elevator actuator (as viewed from the airplane tail) or the upper aileron actuator is faulty.
 - d. Open the ground interconnect or use an external hydraulic source to pressurize the "A" hydraulic system.
 - e. Turn "off" the "B" Flight Control hydraulic circuit breaker and turn "on" the "A" Flight Control hydraulic circuit breaker.
 - f. Conduct the elevator and aileron control checks (failure of the test indicates that the left hand elevator actuator or lower aileron actuator is faulty).
2. On the 727 elevator, conduct the hardover tests using hydraulic system A and then hydraulic system B. If a surface reversal occurs, isolation should be accomplished by removal of an actuator and the use of a bench functional test with a maximum rate input to confirm the fault. If the fault cannot be confirmed, the other actuator should be checked.
3. On the 707 Rudder package with the series yaw damper, it is recommended that only pedal inputs be made, since this is adequate to provide the necessary valve overtravel (up to 200% of active travel).
4. The 747 inboard elevator test procedure is as follows:
- a. Turn on all four ADP's and pressurize #1 hydraulic system only.
 - b. Pull column full aft into stops at maximum rate and hold for 3 to 5 seconds. Check for signs of abnormality such as column reversal. Repeat for full forward column.
 - c. Turn off #1 hydraulic system and repeat max rate test with hydraulic systems #2, #3 and #4 individually.
 - d. A malfunction in System #1 or #2 indicates a problem with the right hand inboard elevator: System #3 or #4 indicates the left hand inboard elevator.

During these tests, observe the appropriate aileron, elevator or rudder positions or their cockpit indicators. If the flight surface reverses direction or if the rudder pedals or flight control wheel back drive in the opposite direction of command, immediately notify the FAA Northwest Region (telephone (206) 767-2600) and remove the associated power control unit from service.

B. Within 30 days from the effective date of this airworthiness directive, remove from service any of the following valve assemblies, and their detail subassemblies, that have been overhauled or produced by Fortner Engineering and Manufacturing, Inc., and replace with units which are either new manufacture or have been overhauled in accordance with FAA approved data:

PCU UNIT (Used on)	Valve Assy. P/N*	Lap Assy. P/N**	Supplier
707/720 Series Yaw Damper rudder PCU P/N 60000()	60010-1/-9/ -5005, - 5007	60010-1/-9/-13	Berteau
727 Elevator PCU P/N 68000-()	68010-5001	68010-1	Berteau
737 Aileron/ Elevator PCU P/N 65-44761-()	65-44828-2/-4	65-44671-1, -3	Boeing/Berteau
737 Rudder PCU P/N 65-44861-()	68010-5003 This part has been covered by FAA telegraphic AD T80NW-4 dated 1-29- 80.	68010-11	Berteau
747 Inboard Elevator PCU P/N 93600-()	93610-5003	93610-11	Berteau

*Component part numbers to be removed. Note: Some operators refer to the valve assembly as the lap assembly.

**These part numbers are the original Berteau or Berteau/Boeing detail subassembly part numbers. These lap subassemblies may have been replaced with Fortner assemblies by the repair station or operator. The Fortner Engineering and Manufacturing parts are to be removed from service.

C. Airplanes may be flown, in accordance with FAR 21.199 to a maintenance base, for the purpose of complying with this AD.

NOTE: These parts, repaired or produced by Fortner Engineering and Manufacturing, Inc. of Glendale, California, referenced herein were not installed on new production airplanes delivered by Boeing nor were they overhauled or produced by Fortner Accessory Service Corporation, a subsidiary of Parker Haniffin Corporation.

Amendment 39-3721 became effective April 3, 1980.

This amendment 39-3742 becomes effective April 21, 1980.

Footer Information

Comments