AIRWORTHINESS DIRECTIVE

For the reasons set out in the background section, the CASA delegate whose signature appears below issues the following Airworthiness Directive (AD) under subregulation 39.1 (1) of CAR 1998. The AD requires that the action set out in the requirement section (being action that the delegate considers necessary to correct the unsafe condition) be taken in relation to the aircraft or aeronautical product mentioned in the applicability section: (a) in the circumstances mentioned in the requirement section; and (b) in accordance with the instructions set out in the requirement section; and (c) at the time mentioned in the compliance section.

Boeing 747 Series Aeroplanes

AD/B747/278 Thrust Reversers 10/2002

Applicability: Model 747 series aeroplanes equipped with Pratt & Whitney JT9D-70 series engines.

Requirement:

1. Inspect the thrust reverser wiring on each engine, in accordance with Boeing Alert Service Bulletin (ASB) 747-78A2149, Revision 1, dated 9 May 1996, or Revision 2, dated 29 August 1996, to detect any discrepancies.

2. Repair any discrepancy, detected during the Requirement 1 inspection, in accordance with ASB 747-78A2149, Revision 1 or Revision 2.

3. Accomplish the thrust reverser wiring modification on each engine in accordance with ASB 747-78A2149, Revision 1 or Revision 2.

4. Accomplish the modification of the thrust reverser control system wiring specified in Rohr Service Bulletin (SB) TBC-CNS 78-32, Revision 1, dated 20 August 1996.

5. Perform an operational test of the thrust reverser wiring on each engine to detect discrepancies in accordance with ASB 747-78A2149, Revision 1 or Revision 2.

6. Rectify any discrepancy, detected during the Requirement 5 operational test, in accordance with ASB 747-78A2149 Revision 1 or Revision 2.

7. Perform the following inspections and tests of the thrust reverser control and indication system to detect discrepancies in accordance with Boeing ASB 747-78A2159, dated 18 May 1995:

   a. Inspect in accordance with Part III, "1,000 Flight Hour Inspections" of the ASB Accomplishment Instructions.

   b. Inspect and test in accordance with Part III, "18 Month Thrust Reverser System Checks" of the ASB Accomplishment Instructions.

   Accomplishment of Requirements 9, 10 and 11 constitutes terminating action for the Requirement 7 repetitive inspections and tests.

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8. If any Requirement 7 inspection or test required cannot be successfully performed as specified in the referenced service bulletin, or if any discrepancy is detected during any inspection or test, repair in accordance with ASB 747-78A2159. Additionally, any failed inspection or test must be repeated and successfully accomplished.

9. Install an additional locking system on each engine thrust reverser in accordance with the Accomplishment Instructions of Boeing SB 747-78-2153, Revision 1, dated 27 November 1996.

10. Accomplish the installation of provisional wiring for the locking system on the thrust reversers in accordance with Boeing SB 747-78-2135, dated 31 August 1995; and ASB 747-78A2149, Revision 1 or Revision 2.

11. Accomplish the installation of the provisional wiring described previously in accordance with Rohr SB TBC-CNS 78-33, Revision 1, dated 20 August 1996.

12. Perform a functional test to detect discrepancies of the additional locking system on each thrust reverser, in accordance with Appendix 1 (including Figures 1 and 2) of this Directive.

13. Correct any discrepancy, detected during the Requirement 12 functional test, in accordance with the procedures described in the Boeing 747 Aeroplane Maintenance Manual.

Note: FAA AD 2000-10-17 Amdt 39-11741 refers.

Compliance: For Requirement 1 - Prior to the issue of a Certificate of Airworthiness.

For Requirement 2 - Prior to further flight, after the Requirement 1 inspection.

For Requirement 3 - Within 5,000 flight hours or 500 flight cycles after the effective date of this Directive, whichever occurs later.

For Requirement 4 - Concurrent with accomplishment of ASB 747-78A2149, Revision 1 or Revision 2 (see Requirement 3).

For Requirement 5 - Prior to further flight following accomplishment of the modification specified in Requirements 3 and 4.

For Requirement 6 - Prior to further flight after completion of the Requirement 5 operational test.

For Requirement 7.a. - Within 90 days after the effective date of this Directive and thereafter, at intervals not to exceed 1,000 hours time in service (TIS), until accomplishment of Requirements 9, 10 and 11.

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For Requirement 7.b. - Within 1,500 hours TIS or four months after the effective date of this Directive, whichever occurs later, and thereafter at intervals not to exceed 18 months until accomplishment of Requirements 9, 10 and 11.

For Requirement 8 - Prior to further flight until the Requirement 7 tests and/or repairs have been successfully accomplished.

For Requirement 9 - Within 36 months after the effective date of this Directive.

For Requirement 10 - Prior to, or concurrent with, accomplishment of SB 747-78-2153, Revision 1 (see Requirement 9).

For Requirement 11 - Concurrent with accomplishment of SB 747-78-2153, Revision 1 (see Requirement 9).

For Requirement 12 - Within 4,000 hours TIS after accomplishment of Requirements 9, 10 and 11and thereafter at intervals not to exceed 4,000 hours TIS.

For Requirement 13 - Prior to further flight, after the Requirement 12 functional test.

This Airworthiness Directive becomes effective on 3 October 2002.

Background: This Directive requires inspections, tests, and modifications of the thrust reverser control and indication system and wiring on each engine, together with any necessary corrective action. This Directive also requires installation of a terminating modification, together with repetitive functional tests of that installation to detect discrepancies and, if necessary, any repairs.

The issue of the Directive is prompted by the results of a safety review conducted by the Federal Aviation Administration, which revealed that in-flight deployment of a thrust reverser could result in significant reduction in aeroplane controllability. Compliance with this Directive is intended to ensure the integrity of the fail-safe features of the thrust reverser system by preventing possible failure modes, which could result in inadvertent deployment of a thrust reverser during flight and consequent reduced controllability of the aeroplane.

James Coyne
Delegate of the Civil Aviation Safety Authority

20 August 2002

The above AD is notified in the *Commonwealth of Australia Gazette* on 11 September 2002.

Boeing 747 Series Aeroplanes

AD/B747/278 Thrust Reverser Sync-Lock Integrity Test 10/2002 Appendix 1

1. General

   A. Equipment and Materials

      1. Thrust reverser flex drive adapter - 196K8004-1 or 196K8004-3; Rohr Industries, Inc., Chula Vista, California 92012.

2. Thrust Reverser Sync-Lock Integrity Test

   B. Prepare for the thrust reverser sync lock test.

      1. Open applicable T/R CONT & BLEED SYS circuit breaker on P12 circuit breaker panel.

      2. Open fan cowl doors (Ref 71-11-02, Maintenance Practices).

      3. Check that forward and aft circumferential latches and all tension latches are engaged and locked.

      4. Depress drive unit latch operating arm and retain by engaging latch arm (detail C).

      5. Disengage stow latch hook on left and right thrust reversers (detail D).

      6. On either lower slave actuator (detail B), either remove coverplate from forward drive pad or remove locking plug from lower drive pad.

      7. Move left-hand sync-lock lever to the unlocked position.

      8. Using appropriate drive adapter (196K8004-1 at forward drive pad or 196K8004-3 at lower drive pad), attempt to manually deploy sleeves.

         CAUTION: DO NOT APPLY A TORQUE LOAD OF MORE THAN 75 POUND-INCHES TO THE ACTUATOR; A GREATER TORQUE LOAD CAN CAUSE DAMAGE TO THE MECHANISM.

      9. If sleeves move, replace the right-hand sync-lock.

      10. Move left-hand sync-lock lever to the locked position.

      11. Move right-hand sync-lock lever to the unlocked position.

      12. Repeat step 8 above.

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13. If sleeves move, replace the left-hand sync-lock.

14. Move left-hand sync-lock lever to the unlocked position.

15. Rotate actuator gearshaft to fully stow the sleeves.

16. When translating sleeves reach stowed position, check that stow latch hooks have engaged fixed hooks on both sides (detail D).

17. Depress latch operating arm and disengage latch arm (detail C); allow latch arm to raise.

18. After releasing arm, verify latch engagement by attempting to rotate feedback gear on drive unit using 1/4-inch square drive; gear shall not rotate in excess of 0.1 of a turn.

    CAUTION: DO NOT APPLY A TORQUE LOAD OF MORE THAN 25 POUND-INCHES ON FEEDBACK GEAR; A GREATER TORQUE LOAD CAN CAUSE DAMAGE TO THE MECHANISM.

19. As applicable, install locking plug (with square section facing away from drive pad) or coverplate on actuator drive pad. Secure plug or plate with bolts tightened to 50-70 pound-inches.

20. Move both left- and right-hand sync-lock levers to the locked position.

21. Close fan cowl doors (Ref 71-11-02, Maintenance Practices).

22. Close T/R CONT & BLEED SYS circuit breaker.

23. Repeat the sync-lock integrity test on all remaining thrust reversers

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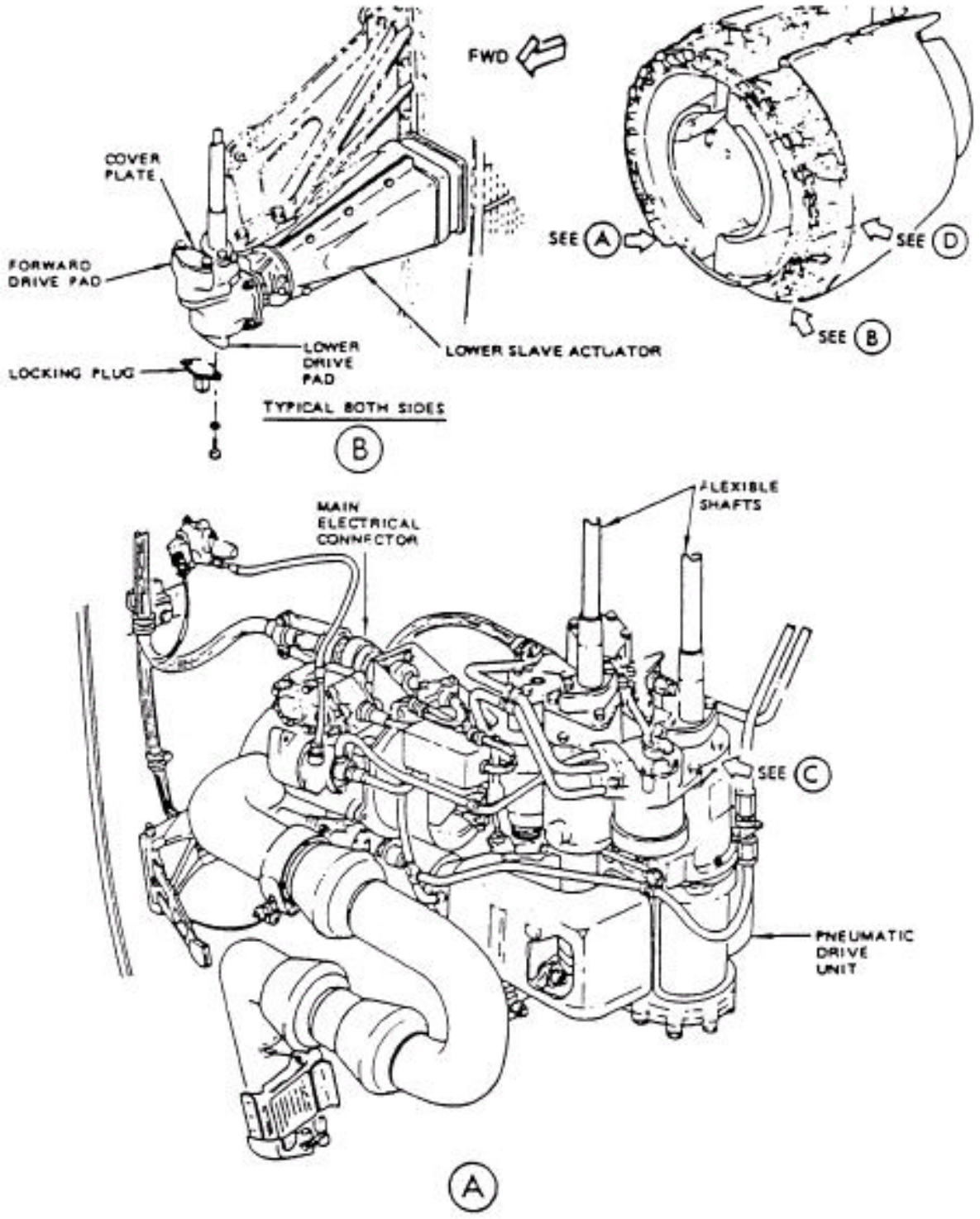

Figure 1

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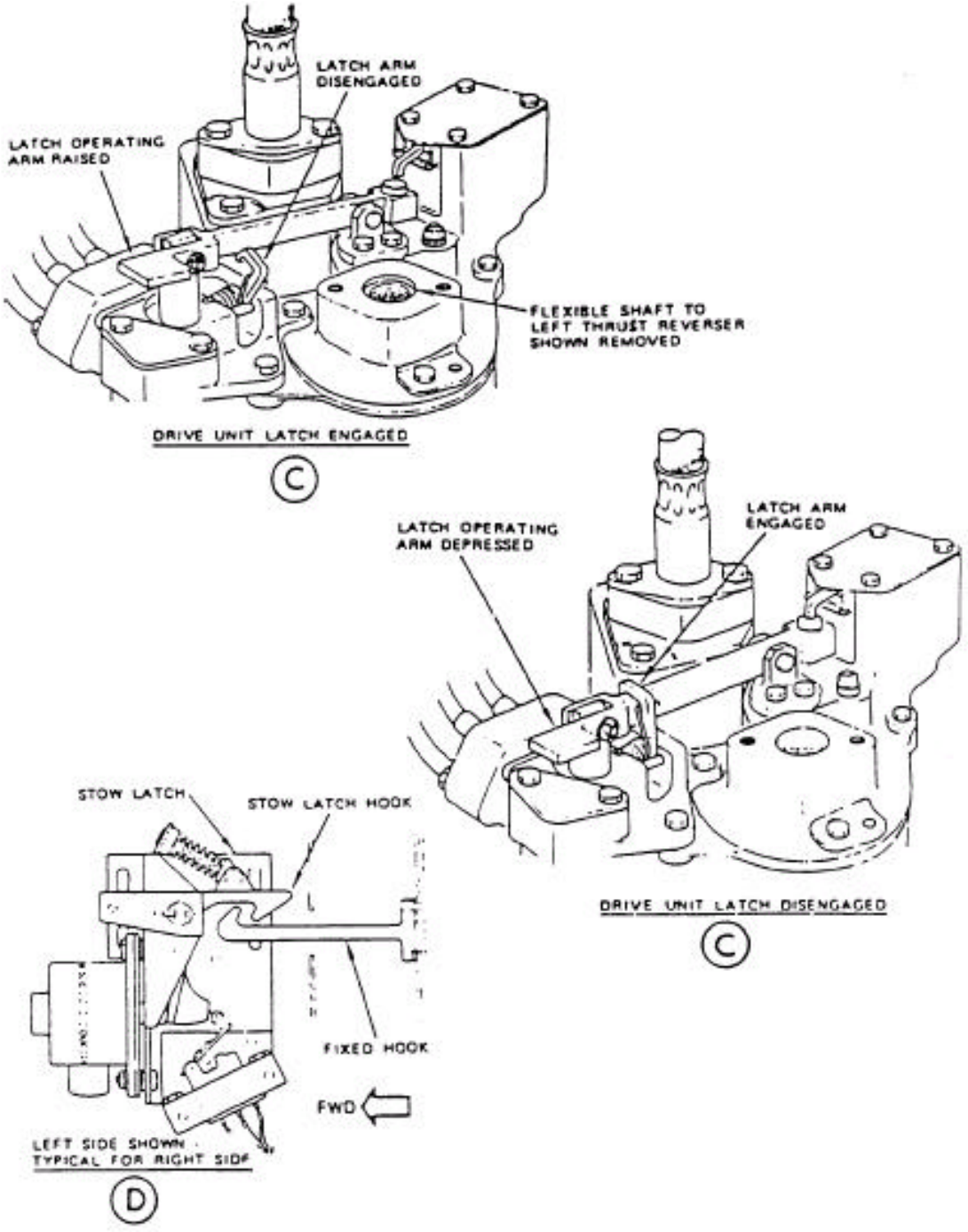

Figure 2