

Done in Washington, DC, this 28th day of January 2000.

**Bobby R. Acord,**

*Acting Administrator, Animal and Plant Health Inspector Service.*

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## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 39

[Docket No. 99-NM-76-AD; Amendment 39-11540; AD 2000-02-22]

RIN 2120-AA64

#### **Airworthiness Directives; Boeing Model 747-400 Series Airplanes Equipped with Rolls-Royce RB211-524G/H and RB211-524G-T/H-T Engines**

**AGENCY:** Federal Aviation Administration, DOT.

**ACTION:** Final rule; request for comments.

**SUMMARY:** This amendment adopts a new airworthiness directive (AD), applicable to certain Boeing Model 747-400 series airplanes. This action requires installation of a modification of the thrust reverser control and indication system and wiring on each engine; and repetitive operational checks of that installation to detect discrepancies, and repair, if necessary. This amendment is prompted by the results of a safety review, which revealed that in-flight deployment of a thrust reverser could result in a significant reduction in airplane controllability. The actions specified in this AD are 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 airplane.

**DATES:** Effective February 18, 2000.

The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of February 18, 2000.

Comments for inclusion in the Rules Docket must be received on or before April 3, 2000.

**ADDRESSES:** Submit comments in triplicate to the Federal Aviation Administration (FAA), Transport Airplane Directorate, ANM-114, Attention: Rules Docket No. 99-NM-

76-AD, 1601 Lind Avenue, SW., Renton, Washington 98055-4056.

The service information referenced in this AD may be obtained from Boeing Commercial Airplane Group, P.O. Box 3707, Seattle, Washington 98124-2207. This information may be examined at the FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC. **FOR FURTHER INFORMATION CONTACT:** Ed Hormel, Aerospace Engineer, Propulsion Branch, ANM-140S, FAA, Transport Airplane Directorate, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98055-4056; telephone (206) 227-2681; fax (206) 227-1181.

**SUPPLEMENTARY INFORMATION:** On May 26, 1991, a Boeing Model 767-300ER series airplane was involved in an accident as a result of an uncommanded in-flight deployment of a thrust reverser. Following that accident, a study was conducted to evaluate the potential effects of an uncommanded thrust reverser deployment throughout the flight regime of the Boeing Model 747 series airplane. The study included a re-evaluation of the thrust reverser control system fault analysis and airplane controllability. The results of the evaluation indicated that, in the event of a thrust reverser deployment during high-speed climb using high engine power, these airplanes also could experience control problems. This condition, if not corrected, could result in possible failure modes in the thrust reverser control system, inadvertent deployment of a thrust reverser during flight, and consequent reduced controllability of the airplane.

The FAA has prioritized the issuance of AD's for corrective actions for the thrust reverser system on Boeing airplane models following the 1991 accident. Based on service experience, analyses, and flight simulator studies, it was determined that an in-flight deployment of a thrust reverser has more effect on controllability of twin-engine airplane models than of Model 747 series airplanes, which have four engines. For this reason, the highest priority was given to rulemaking that required corrective actions for the twin-engine airplane models. AD's correcting the same type of unsafe condition addressed by this AD have been previously issued for specific airplanes within the Boeing Model 737, 757 and 767 series.

Service experience has shown that in-flight thrust reverser deployments have occurred on Model 747 airplanes during

certain flight conditions with no significant airplane controllability problems being reported. However, the manufacturer has been unable to establish that acceptable airplane controllability would be achieved following these deployments throughout the operating envelope of the airplane. Additionally, safety analyses performed by the manufacturer and reviewed by the FAA have been unable to establish that the risks for uncommanded thrust reverser deployment during critical flight conditions are acceptably low.

#### **Other Relevant Rulemaking**

This AD is related to AD 94-15-05, amendment 39-8976 (59 FR 37655, July 25, 1994), which is applicable to all Boeing Model 747-400 series airplanes, and requires various inspections and tests of the thrust reverser control and indication system, and correction of any discrepancy found. Accomplishment of the actions required by this AD would terminate certain inspections and tests required by AD 94-15-05.

#### **Explanation of Relevant Service Information**

The FAA has reviewed and approved the following Boeing Service Bulletins:

- 747-45-2016, Revision 1, dated May 2, 1996, and 747-45-2007, dated March 29, 1990, which describe procedures for modifications to the central maintenance computer system hardware and software.
- 747-73-2052, Revision 1, dated April 23, 1992, which describes procedures for modification of the fuel temperature indicating system. This service bulletin references Rolls-Royce Service Bulletin RB.211-71-9043, dated May 4, 1990, which describes additional procedures for modification of the fuel temperature indicating system.
- Accomplishment of Boeing Service Bulletin 747-73-2052, Revision 1, requires prior or concurrent accomplishment of Boeing Service Bulletin 747-45-2007; and Rolls-Royce Service Bulletin RB.211-71-9043.
- 747-31-2246, dated May 2, 1996, which describes procedures for modifications of the integrated display system software.
- 747-78-2157, Revision 2, dated November 26, 1997, and 747-78-2121, dated October 29, 1992, which describe procedures for the installation of provisional wiring for an additional thrust reverser locking device. These service bulletins reference the Boeing Standard Wiring Practices Manual, which describes wire installation and separation procedures.
- 747-78-2158, Revision 2, dated July 29, 1999, which describes

procedures for installation of an additional locking system on the thrust reversers. This service bulletin references the following Rolls-Royce Service Bulletins:

—RB.211-71-9600, Revision 8, dated May 24, 1996; and RB.211-71-9608, Revision 3, dated April 18, 1997, which describe procedures for the installation of provisions on the engines to accommodate the installation of an additional thrust reverser locking gearbox; and

—RB.211-78-9601, Revision 5, dated February 20, 1998, which describes additional procedures for installation of an additional locking system on the thrust reversers; and

—RB.211-78-B207, dated November 19, 1994, which describes procedures for installation of a thrust reverser translating cowl assembly seal support.

—Accomplishment of Boeing Service Bulletin 747-78-2158 requires prior or concurrent accomplishment of the following service bulletins:

1. Boeing Service Bulletin 747-45-2052, Revision 1;
2. Boeing Service Bulletin 747-78-2121;
3. Boeing Service Bulletin 747-45-2016, Revision 1;
4. Boeing Service Bulletin 747-31-2246;
5. Boeing Service Bulletin 747-78-2157, Revision 2;
6. Rolls-Royce Service Bulletin RB.211-71-9600, Revision 8; and
7. Rolls-Royce Service Bulletin RB.211-71-9608, Revision 3.

In addition, this service bulletin requires concurrent accomplishment of Rolls-Royce Service Bulletins RB.211-78-9601, and RB.211-78-B207.

The modification procedures described by Boeing Service Bulletin 747-78-2158 were previously validated by the manufacturer, and the necessary changes have been incorporated into the latest revisions of the service bulletins. The FAA has determined that the procedures specified in Boeing Service Bulletin 747-78-2158, Revision 1, and Revision 2, as well as the other service bulletins referenced in this AD, have been effectively validated; therefore the FAA requires that this modification be accomplished. Several airplanes have been successfully modified in accordance with the service bulletins, and this past experience should minimize the likelihood for subsequent service bulletin revisions, requests for alternative methods of compliance, and superseding AD's.

Accomplishment of the actions described in all service bulletins listed previously would eliminate the need for certain repetitive inspections and tests.

### Explanation of Requirements of the Rule

Since an unsafe condition has been identified that is likely to exist or develop on other airplanes of the same type design, this AD is being issued to prevent possible failure modes that can result in inadvertent deployment of a thrust reverser during flight and consequent reduced controllability of the airplane. This AD requires installation of a modification of the thrust reverser control and indication system and wiring on each engine; and repetitive operational checks of that installation to detect discrepancies, and repair, if necessary. The actions are required to be accomplished in accordance with the service bulletins described previously, except as discussed below.

Repetitive operational checks to detect discrepancies of the gearbox locks and the air motor brake are required to be accomplished in accordance with procedure included in Appendix 1 (including Figure 1) of this AD. Correction of any discrepancy detected is required to be accomplished in accordance with the procedures described in the Boeing 747 Airplane Maintenance Manual.

### Differences Between Service Bulletin and This AD

Operators should note that, although Boeing Service Bulletin 747-78-2158, Revision 2, does not recommend a specific compliance time for accomplishment of the additional system lock installation, the FAA has determined that an unspecified compliance time would not address the identified unsafe condition in a timely manner. In developing an appropriate compliance time for this AD, the FAA considered not only the manufacturer's recommendation, but the degree of urgency associated with addressing the subject unsafe condition, the average utilization of the affected fleet, and the time necessary to perform the installation. In light of all of these factors, the FAA finds a 36-month compliance time for completing the required actions to be warranted, in that it represents an appropriate interval of time allowable for affected airplanes to continue to operate without compromising safety.

Operators also should note that, although the service bulletin does not specify operational checks of the actuation system lock installation following accomplishment of that installation, the FAA has determined that repetitive operational checks of the additional system lock on each thrust

reverser will support continued operational safety of thrust reversers with actuation system locks.

### Cost Impact

None of the Model 747 series airplanes affected by this action are on the U.S. Register. All airplanes included in the applicability of this rule currently are operated by non-U.S. operators under foreign registry; therefore, they are not directly affected by this AD action. However, the FAA considers that this rule is necessary to ensure that the unsafe condition is addressed in the event that any of these subject airplanes are imported and placed on the U.S. Register in the future.

Should an affected airplane be imported and placed on the U.S. Register in the future, it would require approximately 397 work hours to accomplish the required modifications, at an average labor rate of \$60 per work hour. Required parts would be provided by the manufacturer at no cost to the operators. Based on these figures, the cost impact of the modifications required by this AD would be \$23,820 per airplane.

It would require approximately 185 work hours to accomplish the required installation of the locking gearbox, at an average labor rate of \$60 per work hour. Required parts would be provided by the manufacturer at no cost to the operators. Based on these figures, the cost impact of the installation of the locking gearbox required by this AD would be \$11,000 per airplane.

It would require approximately 2 work hours to accomplish the required operational check, at an average labor rate of \$60 per work hour. Based on these figures, the cost impact of the operational check required by this AD would be \$120 per airplane, per check.

### Determination of Rule's Effective Date

Since this AD action does not affect any airplane that is currently on the U.S. register, it has no adverse economic impact and imposes no additional burden on any person. Therefore, prior notice and public procedures hereon are unnecessary and the amendment may be made effective in less than 30 days after publication in the **Federal Register**.

### Comments Invited

Although this action is in the form of a final rule and was not preceded by notice and opportunity for public comment, comments are invited on this rule. Interested persons are invited to comment on this rule by submitting such written data, views, or arguments as they may desire. Communications shall identify the Rules Docket number

and be submitted in triplicate to the address specified under the caption **ADDRESSES**. All communications received on or before the closing date for comments will be considered, and this rule may be amended in light of the comments received. Factual information that supports the commenter's ideas and suggestions is extremely helpful in evaluating the effectiveness of the AD action and determining whether additional rulemaking action would be needed.

Comments are specifically invited on the overall regulatory, economic, environmental, and energy aspects of the rule that might suggest a need to modify the rule. All comments submitted will be available, both before and after the closing date for comments, in the Rules Docket for examination by interested persons. A report that summarizes each FAA-public contact concerned with the substance of this AD will be filed in the Rules Docket.

Commenters wishing the FAA to acknowledge receipt of their comments submitted in response to this rule must submit a self-addressed, stamped postcard on which the following statement is made: "Comments to Docket Number 99-NM-76-AD." The postcard will be date stamped and returned to the commenter.

### Regulatory Impact

The regulations adopted herein will not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, it is determined that this final rule does not have federalism implications under Executive Order 13132.

For the reasons discussed above, I certify that this action (1) is not a "significant regulatory action" under Executive Order 12866; (2) is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and (3) will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. A final evaluation has been prepared for this action and it is contained in the Rules Docket. A copy of it may be obtained from the Rules Docket at the location provided under the caption **ADDRESSES**.

### List of Subjects in 14 CFR Part 39

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

### Adoption of the Amendment

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (14 CFR part 39) as follows:

#### PART 39—AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

**Authority:** 49 U.S.C. 106(g), 40113, 44701.

#### § 39.13 [Amended]

2. Section 39.13 is amended by adding the following new airworthiness directive:

**2000-02-22 Boeing:** Amendment 39-11540. Docket 99-NM-76-AD.

**Applicability:** Model 747-400 series airplanes equipped with Rolls-Royce RB211-524G/H engines, and RB211-524G-T/H-T engines; certificated in any category.

**Note 1:** This AD applies to each airplane identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For airplanes that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (d) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if the unsafe condition has not been eliminated, the request should include specific proposed actions to address it.

**Compliance:** Required as indicated, unless accomplished previously.

To prevent inadvertent deployment of a thrust reverser during flight and consequent reduced controllability of the airplane, accomplish the following:

#### Modifications

(a) Accomplish the requirements of paragraphs (a)(1), (a)(2), and (a)(3) of this AD at the times specified in those paragraphs. Accomplishment of these actions, or installation of an additional locking system during production in accordance with production equivalent PRR 81000-39, constitutes terminating action for the inspections and tests required by paragraph (c) of AD 94-15-05, amendment 39-8976.

(1) Within 36 months after the effective date of this AD: Install an additional locking system on each engine thrust reverser in accordance with the Accomplishment Instructions of Boeing Service Bulletin 747-78-2158, Revision 2, dated July 29, 1999.

**Note 2:** Modifications accomplished prior to the effective date of this AD in accordance with Boeing Service Bulletin 747-78-2158, Revision 1, dated January 22, 1998; are considered acceptable for compliance with the applicable action specified in this amendment.

(2) Concurrent with the installation required by paragraph (a)(1) of this AD, accomplish the requirements of paragraphs (a)(2)(i) and (a)(2)(ii) of this AD.

(i) Accomplish the additional procedures for installation of an additional locking system on each engine thrust reverser in accordance with Rolls-Royce Service Bulletin RB.211-78-9601, Revision 5, dated February 20, 1998.

(ii) Install a thrust reverser translating cowl assembly seal support in accordance with Rolls-Royce Service Bulletin RB.211-78-B207, dated November 19, 1994.

(3) Prior to or concurrent with the installation required by paragraph (a)(1) of this AD, accomplish the requirements of paragraphs (a)(3)(i), (a)(3)(ii), (a)(3)(iii), and (a)(3)(iv) of this AD:

(i) Modify the fuel temperature indicating system in accordance with Boeing Service Bulletin 747-73-2052, Revision 1, dated April 23, 1992; and Rolls-Royce Service Bulletin RB.211-71-9043, dated May 4, 1990. Prior to or concurrent with accomplishment of Boeing Service Bulletin 747-73-2052, Revision 1: Modify the central maintenance computer system (CMCS) hardware and software in accordance with Boeing Service Bulletin 747-45-2007, dated March 29, 1990; and Boeing Service Bulletin 747-45-2016, Revision 1, dated May 2, 1996.

(ii) Install the provisional wiring for the locking system on the thrust reversers in accordance with Boeing Service Bulletin 747-78-2121, dated October 29, 1992; and 747-78-2157, Revision 2, dated November 26, 1997.

(iii) Modify the integrated display system (IDS) software in accordance with Boeing Service Bulletin 747-31-2246, dated May 2, 1996.

(iv) Install engine provisions to accommodate the installation of an additional locking system on each engine thrust reverser in accordance with Rolls-Royce Service Bulletin RB.211-71-9600, Revision 8, dated May 24, 1996; and RB.211-71-9608, Revision 3, dated April 18, 1997.

#### Repetitive Operational Checks

(b) Within 3,000 flight hours after accomplishing the requirements of paragraph (a) of this AD, or within 1,000 flight hours after the effective date of this AD, whichever occurs later: Perform operational checks of the number 2 and number 3 gearbox locks and of the air motor brake, in accordance with the procedures described in Appendix 1 (including Figure 1) of this AD. Repeat the operational checks thereafter at intervals not to exceed 3,000 flight hours.

#### Corrective Actions

(c) If any operational check required by paragraph (b) of this AD cannot be successfully performed as specified in the procedures described in Appendix 1 (including Figure 1) of this AD, or if any discrepancy is detected during any operational check, prior to further flight, repair in accordance with the procedures specified in the Boeing 747 Airplane Maintenance Manual. Additionally, prior to further flight, any failed operational check required by paragraph (b) of this AD must be

repeated and successfully accomplished. Repeat the operational checks thereafter at intervals not to exceed 3,000 flight hours.

**Alternative Methods of Compliance**

(d) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, Seattle Aircraft Certification Office (ACO), FAA, Transport Airplane Directorate. Operators shall submit their requests through an

appropriate FAA Principal Maintenance Inspector, who may add comments and then send it to the Manager, Seattle ACO.

**Note 3:** Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the Seattle ACO.

**Special Flight Permits**

(e) Special flight permits may be issued in accordance with §§ 21.197 and 21.199 of the

Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the airplane to a location where the requirements of this AD can be accomplished.

**Incorporation by Reference**

(f) Except as provided by paragraphs (b), (c)(1), and (c)(2) of this AD, the actions shall be done in accordance with the applicable service bulletins, which contain the specified list of effective pages:

Service bulletin referenced and date	Page No. shown on page	Revision level shown on page	Date shown on page
Boeing 747-78-2157, Revision 2, November 26, 1997	1-151	2	November 26, 1997.
Boeing 747-78-2158, Revision 2, July 29, 1999	1-344	2	July 29, 1999.
Boeing 747-73-2052, Revision 1, April 23, 1992	1, 3-5, 8, 10, 15-17	1	April 23, 1992.
	2, 6-7, 9, 11-14, 18-41	Original	June 7, 1990.
Boeing 747-31-2246, May 2, 1996	1-12	Original	May 2, 1996.
Boeing 747-45-2016, Revision 1, May 2, 1996	1-33	1	May 2, 1996.
Boeing 747-78-2121, October 29, 1992	1-20	Original	October 29, 1992.
Boeing 747-45-2007, March 29, 1990	1-13	Original	March 29, 1990.
Rolls-Royce RB.211-78-9601, Revision 5, February 20, 1998	1-4	5	February 20, 1998.
	5	2	October 20, 1995.
	6-21	Original	August 7, 1992.
	Supplement.		
	1-3	4	February 20, 1998.
Rolls-Royce RB.211-71-9600, Revision 8, May 24, 1996	1, 71-72, 72A	8	May 24, 1996.
	2, 5-16, 18-32, 34-67, 73-77, 87-88.	2	February 26, 1993.
	3	7	October 20, 1995.
	4	6	March 31, 1995.
	17, 33, 86	4	February 11, 1994.
	68-70, 78, 80-84	Original	August 7, 1992.
	79, 85, 90-95	3	December 17, 1993.
	89	5	August 19, 1994.
	Supplement.		
	1-5	3	March 31, 1995.
Rolls-Royce RB.211-78-B207, November 19, 1994	1-15	Original	November 19, 1994.
	Supplement.		
	1	Original	November 19, 1994.
Rolls-Royce RB.211-71-9608, Revision 3, April 18, 1997	1, 5	3	April 18, 1997.
	2-4, 6-18, 20-48	Original	August 7, 1992.
	19	2	July 5, 1996.
	Supplement.		
	1-3	2	April 18, 1997.
Rolls-Royce RB.211-71-9043, May 4, 1990	1-18	Original	May 4, 1990.
	Supplement.		
	1-2	Original	May 4, 1990.

This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from Boeing Commercial Airplane Group, P.O. Box 3707, Seattle, Washington 98124-2207. Copies may be inspected at the FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

(g) This amendment becomes effective on February 18, 2000.

**Appendix 1**

*1. Gearbox Lock and Air Motor Brake Test*

**A. General**

(1) To do the test of the gearbox locks and air motor brake, you must do the steps that follow:

- (a) Do the deactivation procedure of the thrust reverser system.
- (b) Do the test of the air motor brake.
- (c) Do the test of the gearbox locks.
- (d) Do the activation procedure of the thrust reverser system.

**B. Equipment**

- (1) CP30784—INA Access Platform, Rolls-Royce
- (2) CP30769—Protection Pads, Rolls-Royce
- (3) CP30785—Access Stools, Rolls-Royce
- (4) UT1293/1—Load Tool, Rolls-Royce (2 required)

**C. Procedure (Fig. 1).**

**WARNING: DO THE DEACTIVATION PROCEDURE OF THE THRUST REVERSER SYSTEM, WHICH MUST INCLUDE THE INSTALLATION OF LOCK BARS (OR BLOCKERS), TO PREVENT THE ACCIDENTAL OPERATION OF THE**

**THRUST REVERSER. THE ACCIDENTAL OPERATION OF THE THRUST REVERSER COULD CAUSE INJURY TO PERSONS AND DAMAGE TO EQUIPMENT.**

(1) Do the deactivation procedure of the thrust reverser in the forward thrust position for ground maintenance.

(2) Use a 0.25 inch (6.4 mm) square drive to turn the manual lock release screw to release the No. 2 and No. 3 gearbox locks.

**Note:** It is not always easy to turn the manual lock release screws. This is because of a preload in the systems. To release the preload, lightly turn the manual cycle and lockout shafts in the stow direction.

(a) Make sure the lock indicators are extended at gearboxes No. 2 and No. 3.

(3) Do a test of the air motor brake:

(a) **IF YOU USE THE LOAD TOOLS;**

Try to move the translating cowl in the extend direction as follows:

(1) Remove the lock bars that you installed in the deactivation procedure.

(2) Install the load tools through the cutouts and into the No. 2 and No. 3 gearboxes.

(3) Attach the torque wrenches to the load tools.

(4) Try to move the translating cowl in the extend direction.

(b) IF YOU DO NOT USE THE LOAD TOOLS;

Try to move the translating cowl in the extend direction as follows:

(1) Remove the lock bars that you installed in the deactivation procedure.

(2) Put the 0.25 inch (6.4 mm) square drive extensions into the manual cycle and lockout shaft at the No. 2 and No. 3 gearboxes.

(a) Attach the standard drive tools.

(3) Try to move the translating cowl in the extend direction.

(c) If the translating cowl moves, replace the air motor and shutoff valve.

(4) Do a test of the gear box locks:

**Note:** The steps that follow are for the No. 3 gearbox. Then, do these steps again for the No. 2 gearbox.

(a) Install the lock bars in the manual cycle and lockout shafts at the No. 2 and No. 3 gearboxes.

(b) Install the INA access platform in the exhaust mixer duct.

(c) Install the protection pads and the access stools.

(d) Release the air motor brake:

(1) Open the air motor access and pressure relief panel.

(2) Pull the air motor brake release handle forward and turn it counterclockwise to lock the handle in its position.

(e) Turn the manual lock release screw clockwise to engage the No. 3 gearbox lock.

(1) Make sure that the lock indicator is retracted (under the surface) at gearbox No. 3.

(f) Make sure No. 2 gearbox lock is released.

(1) Make sure the lock indicator is extended at gearbox No. 2.

(g) IF YOU USE THE LOAD TOOLS; Do a check of the lock dogs as follows:

(1) Remove the lock bars from the No. 2 and No. 3 gearboxes.

(2) Install the load tool through the cutout and into the No. 3 gearbox.

(3) Attach the torque wrench to the load tool.

**CAUTION: DO NOT APPLY A TORQUE LOAD OF MORE THAN 30 POUND-INCHES (3.4 NEWTON-METERS) TO THE MANUAL CYCLE AND LOCKOUT SHAFT. A LARGER TORQUE LOAD CAN CAUSE DAMAGE TO THE MECHANISM.**

(4) Apply a torque counterclockwise through the manual wind position of the No. 3 gearbox.

(a) If the translating cowl does not move, the lock bar touched one of the two lock dogs.

(b) If the translating cowl moved, lock the thrust reverser until the No. 3 gearbox is replaced.

(5) Turn the manual lock release screw counterclockwise to release the gearbox lock.

(a) Make sure that the indication rod comes out of the No. 3 gearbox.

(6) Turn the manual cycle and lockout shaft counterclockwise a ¼ of a turn.

(7) Turn the manual lock release screw clockwise to engage the No. 3 gearbox lock.

(a) Make sure that the indication rod is fully retracted (under the surface).

**CAUTION: DO NOT APPLY A TORQUE LOAD OF MORE THAN 30 POUND-INCHES (3.4 NEWTON-METERS) TO THE MANUAL CYCLE AND LOCKOUT SHAFT. A GREATER TORQUE LOAD CAN CAUSE DAMAGE TO THE MECHANISM.**

(8) Apply a torque counterclockwise through the manual wind position of the No. 3 gearbox.

(a) If the manual cycle and lockout shaft can not be turned more than approximately ¼ turn, the second lock dog is serviceable.

(b) If the manual cycle and lockout shaft can be turned more than approximately ¼ turn, the second lock dog is unserviceable. Lock the thrust reverser until the No. 3 gearbox is replaced.

**Note:** The two lock dogs are found ½ turn apart when you use the manual cycle and lockout shaft. If necessary, do the check again to make sure that the lock dogs are serviceable.

(9) Do the procedure given above for the No. 2 gearbox lock.

(h) IF YOU DO NOT USE THE LOAD TOOLS; Do a check of the lock dogs as follows:

(1) Remove the lock bars from the No. 2 and No. 3 gearboxes.

(2) Put the 0.25 inch (6.4 mm) square drive extensions into the manual cycle and lockout shaft at the No. 2 and No. 3 gearboxes.

(a) Attach the standard drive tools.

**CAUTION: DO NOT APPLY A TORQUE LOAD OR MORE THAN 30 POUND-INCHES (3.4 NEWTON-METERS) TO THE MANUAL CYCLE AND LOCKOUT SHAFT. A LARGER TORQUE LOAD CAN CAUSE DAMAGE TO THE MECHANISM.**

(3) Apply a torque counterclockwise through the manual wind position of the No. 3 gearbox.

(a) If the translating cowl does not move, the lock bar touched one of the two lock dogs.

(b) If the translating cowl moved, lock the thrust reverser until the No. 3 gearbox is replaced.

(4) Turn the manual lock release screw counterclockwise to release the gearbox lock.

(a) Make sure that the indication rod comes out of the No. 3 gearbox.

(5) Turn the manual cycle and lockout shaft counterclockwise a ¼ of a turn.

(6) Turn the manual lock release screw clockwise to engage the No. 3 gearbox lock.

(a) Make sure that the indication rod is fully retracted (under the surface).

**CAUTION: DO NOT APPLY A TORQUE LOAD OF MORE THAN 30 POUND-INCHES (3.4 NEWTON-METERS) TO THE MANUAL CYCLE AND LOCKOUT SHAFT. A**

**GREATER TORQUE LOAD CAN CAUSE DAMAGE TO THE MECHANISM.**

(7) Apply a torque counterclockwise through the manual wind position of the No. 3 gearbox.

(a) If the manual cycle and lockout shaft can not be turned more than approximately ¼ turn, the second lock dog is serviceable.

(b) If the manual cycle and lockout shaft can be turned more than approximately ¼ turn, the second lock dog is unserviceable. Lock the thrust reverser until the No. 3 gearbox is replaced.

**Note:** The two lock dogs are found ½ turn apart when you use the manual cycle and lockout shaft. If necessary, do the check again to make sure that the lock dogs are serviceable.

(8) Do the procedure given above for the No. 2 gearbox lock.

(5) Install the lock bars in the manual cycle and lockout shafts at the No. 2 and No. 3 gearboxes.

(6) Apply the air motor manual brake:

(a) Turn the air motor brake release handle clockwise and then release.

(b) Close the air motor access and pressure relief panel.

(7) Make sure the No. 2 and No. 3 gearbox locks are released.

(a) Make sure the lock indicator rods are extended at the No. 2 and No. 3 gearboxes.

(8) IF YOU USE THE LOAD TOOLS;

Try to move the translating cowl in the extend direction as follows:

(a) Remove the lock bars from the No. 2 and No. 3 gearboxes.

(b) Install the load tools through the cutouts and into the No. 2 and No. 3 gearboxes.

(c) Attach the torque wrenches to the load tools.

(d) Try to move the translating cowl in the extend direction.

(9) IF YOU DO NOT USE THE LOAD TOOLS;

Try to move the translating cowl in the extend direction as follows:

(a) Remove the lock bars from the No. 2 and No. 3 gearboxes.

(b) Put the 0.25 inch (6.4 mm) square drive extension into the manual cycle and lockout shaft at the No. 2 and No. 3 gearboxes.

(1) Attach the standard drive tools.

(c) Try to move the translating cowl in the extend direction.

(10) If the translating cowl moves, do the full test again.

(a) If the translating sleeve moves again, lock the thrust reverser until you can replace the two locking gearboxes and the air motor and shutoff valve.

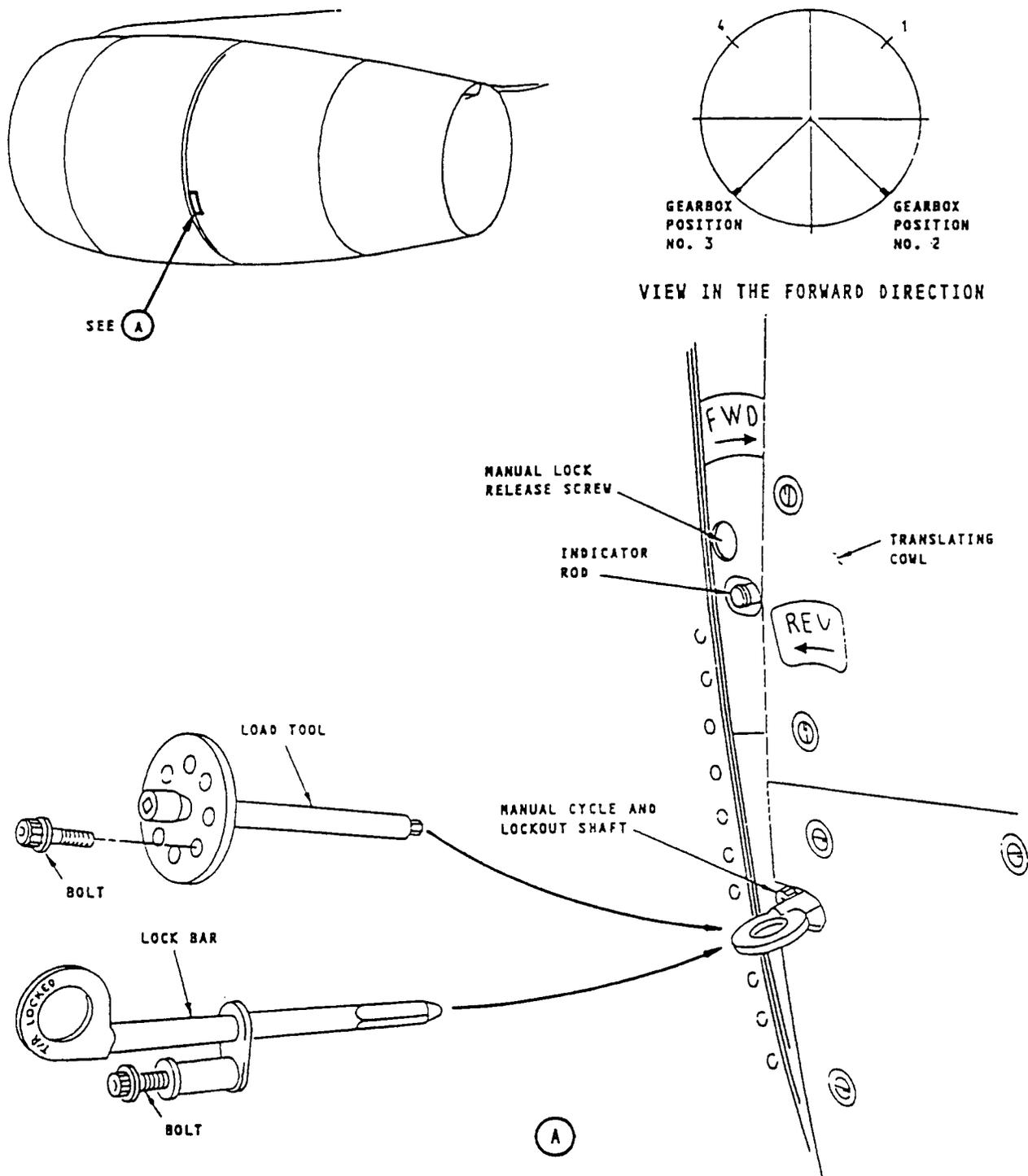
(11) Remove the access stools and protection pads.

(12) Remove the INA access platform from the exhaust mixer duct.

(13) Do the activation procedure of the thrust reverser system.

(14) Do the functional test of the thrust reverser system.

**BILLING CODE 4910-13-P**



**NOTE:** GEARBOX POSITION NO. 3 IS SHOWN.  
GEARBOX POSITION NO. 2 IS THE SAME.

Lock Bar/Load Tool Installation and Gearbox Manual Lock Release  
Figure 1

Issued in Renton, Washington, on January 25, 2000.

**Donald L. Riggins,**

*Acting Manager, Transport Airplane Directorate, Aircraft Certification Service.*

[FR Doc. 00-2089 Filed 2-2-00; 8:45 am]

BILLING CODE 4910-13-C

## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 39

[Docket No. 99-NM-309-AD; Amendment 39-11539; AD 2000-02-21]

RIN 2120-AA64

#### **Airworthiness Directives; British Aerospace (Jetstream) Model 4101 Airplanes**

**AGENCY:** Federal Aviation Administration, DOT.

**ACTION:** Final rule.

**SUMMARY:** This amendment adopts a new airworthiness directive (AD), applicable to all British Aerospace (Jetstream) Model 4101 airplanes, that requires manufacture and installation of a placard on the left-hand instrument panel in the cockpit to prohibit push-backs of the airplane while the engines are running. In lieu of accomplishing the placard installation, this amendment requires repetitive installation of a new tow bracket sub-assembly that has the serial number and date of installation vibro etched on it. This amendment is prompted by issuance of mandatory continuing airworthiness information by a foreign civil airworthiness authority. The actions specified by this AD are intended to prevent fatigue failure of the towing bracket. Failure of the towing bracket could cause a towing vehicle to collide into the propeller while the airplane engines are running, and consequently, cause damage to the airplane, and injure ground personnel, flight crew, or passengers.

**DATES:** Effective March 9, 2000.

The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of March 9, 2000.

**ADDRESSES:** The service information referenced in this AD may be obtained from British Aerospace Regional Aircraft American Support, 13850 Mclearen Road, Herndon, Virginia 20171. This information may be examined at the Federal Aviation Administration (FAA), Transport Airplane Directorate, Rules Docket, 1601 Lind Avenue, SW., Renton,

Washington; or at the Office of the Federal Register, 800 North Capitol Street, NW., suite 700, Washington, DC.

**FOR FURTHER INFORMATION CONTACT:** Norman B. Martenson, Manager, International Branch, ANM-116, FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington 98055-4056; telephone (425) 227-2110; fax (425) 227-1149.

**SUPPLEMENTARY INFORMATION:** A proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) to include an airworthiness directive (AD) that is applicable to all British Aerospace (Jetstream) Model 4101 airplanes was published in the **Federal Register** on November 24, 1999 (64 FR 66121). That action proposed to require manufacture and installation of a placard on the left-hand instrument panel in the cockpit to prohibit push-backs of the airplane while the engines are running. In lieu of accomplishing the placard installation, the action proposed to require repetitive installation of a new tow bracket sub-assembly that has the serial number and date of installation vibro etched on it.

#### **Comments**

Interested persons have been afforded an opportunity to participate in the making of this amendment. No comments were submitted in response to the proposal or the FAA's determination of the cost to the public.

#### **Change Made to the Final Rule**

Paragraph (b) of the final rule has been changed to correct the citation of Jetstream Service Bulletin J41-32-070, Revision 1, dated September 14, 1999. "Revision 1" was inadvertently omitted in the citation.

#### **Conclusion**

After careful review of the available data, the FAA has determined that air safety and the public interest require the adoption of the rule with the change described previously. The FAA has determined that this change will neither increase the economic burden on any operator nor increase the scope of the AD.

#### **Cost Impact**

The FAA estimates that 59 airplanes of U.S. registry will be affected by this AD.

It will take approximately 1 work hour per airplane to accomplish the required placard installation, at an average labor rate of \$60 per work hour. Based on these figures, the cost impact of the placard installation required by this AD on U.S. operators is estimated to be \$3,540, or \$60 per airplane.

The cost impact figure discussed above is based on assumptions that no operator has yet accomplished any of the requirements of this AD action, and that no operator would accomplish those actions in the future if this AD were not adopted.

Should an operator elect to accomplish the optional action that is provided by this AD action, it will take approximately 2 work hours per airplane to accomplish it, at an average labor rate of \$60 per work hour. The cost of required parts will be approximately \$733 per airplane. Based on these figures, the cost impact of the optional action will be \$853 per airplane, per replacement cycle.

#### **Regulatory Impact**

The regulations adopted herein will not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, it is determined that this final rule does not have federalism implications under Executive Order 13132.

For the reasons discussed above, I certify that this action: (1) is not a "significant regulatory action" under Executive Order 12866; (2) is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and (3) will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. A final evaluation has been prepared for this action and it is contained in the Rules Docket. A copy of it may be obtained from the Rules Docket at the location provided under the caption **ADDRESSES**.

#### **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

#### **Adoption of the Amendment**

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (14 CFR part 39) as follows:

#### **PART 39—AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

**Authority:** 49 U.S.C. 106(g), 40113, 44701.