



No.	CF-2002-13R2	1/3
Issue Date	19 May 2005	

# AIRWORTHINESS DIRECTIVE

The following airworthiness directive (AD) may be applicable to an aircraft which our records indicate is registered in your name. ADs are issued pursuant to **Canadian Aviation Regulation (CAR) 593**. Pursuant to **CAR 605.84** and the further details of **CAR Standard 625, Appendix H**, the continuing airworthiness of a Canadian registered aircraft is contingent upon compliance with all applicable ADs. Failure to comply with the requirements of an AD may invalidate the flight authorization of the aircraft. Alternative means of compliance shall be applied for in accordance with **CAR 605.84** and the above-referenced **Standard**.

This AD has been issued by the Continuing Airworthiness Division (AARDG), Aircraft Certification Branch, Transport Canada, Ottawa, telephone 613 952-4357.

**Number:** CF-2002-13R2

**Subject:** Main Landing Gear Up-Lock Assembly

**Effective:** 17 June 2005

**Applicability:** Bombardier Inc. DHC-8, Models 400, 401 and 402, Serial Numbers 4001 and 4003 through 4087, equipped with main landing gear up-lock assembly Part Number 46500-3 or 46500-5.

**Revision:** This revision supersedes Airworthiness Directive CF-2002-13R1 issued 20 November 2002.

**Compliance:** When indicated, unless already accomplished.

**Background:** A DHC-8 Series 400 aircraft experienced difficulties in extending the right main landing gear. The cause is attributed to failure of the gear up-lock unit to disengage. Investigation of the up-lock hook revealed a groove in the lower jaw due to premature wear. In addition, it was found that the low friction liner was omitted on a batch lot of up-lock rollers, including the incident aircraft. These factors may result in the inability to extend the main landing gear.

A modified up-lock assembly, P/N 46500-5, has been introduced as a substitute for P/N 46500-3 which is no longer in production. However, the design of the modified up-lock assembly is very similar to P/N 46500-3 and could be subjected to the same failure. Therefore, Revision 1 of this directive is issued to mandate the repetitive replacement of this modified up-lock assembly, and also to allow it as a substitute for P/N 46500-3. This revision also clarifies the compliance time for Part II. A.

Revision 2 of this directive provides alternate inspection requirements for P/N 46500-5 up-lock assembly, in place of the life limit imposed in Revision 1 of this directive. In addition, a modified up-lock assembly, P/N 46500-7, has been introduced as a substitute for P/N 46500-3 or 46500-5 and is terminating action to this directive. The applicability section of this directive is also revised to reflect production aircraft that have incorporated the terminating action.

**Corrective Actions:** **Part I. Air Operator Action.**

A. Within three calendar days after 4 February 2002 (the effective date of the original issue of this directive), amend all copies of the Aircraft Flight Manual (AFM), PSM 1-84-1A (Models 400, 401, 402) by adding the following procedure opposite to page 4-21-1. Advise all flight crews of these changes.

Note: The amendment required may be accomplished by inserting a copy of this directive into the affected section of the Airplane Flight Manual.

Pursuant to **CAR 202.51** the registered owner of a Canadian aircraft shall, within seven days, notify the Minister in writing of any change of his or her name or address.

To request a change of address, contact the Civil Aviation Communications Centre (AARC) at Place de Ville, Ottawa, Ontario K1A 0N8, or 1-800-305-2059, or [www.tc.gc.ca/civilaviation/communications/centre/address.asp](http://www.tc.gc.ca/civilaviation/communications/centre/address.asp)



If ONE main landing gear fails to extend after performing landing gear extension per normal procedures given in paragraph 4.3.7 and alternate extension procedures per paragraph 4.21.1 of the AFM:

1. Visually confirm that the affected gear has not extended and that the associated doors have opened.
2. Ensure No. 2 hydraulic system pressure and quantity are normal and the following landing gear advisory lights are illuminated: selector lever amber, gear green locked down (nose and non-affected main gear), red gear unlocked (affected main gear) and all amber doors open.
3. NOSE L/G RELEASE handle – Return to the stowed position.
4. LANDING GEAR ALTERNATE EXTENSION door – Close fully.
5. MAIN L/G RELEASE handle – Return to the stowed position.
6. LANDING GEAR ALTERNATE RELEASE door – Close fully.
7. LANDING GEAR lever – DN.
8. L/G DOWN SELECT INHIBIT SW – Normal and guarded. Check amber doors open advisory lights out (nose and non-affected main gear) and LDG GEAR INOP caution light out.
9. LANDING GEAR lever – UP Check all gear, door and LANDING GEAR lever advisory lights out.
10. With minimum delay, LANDING GEAR lever – DN. Check 3 green gear locked down advisory lights illuminate, all amber doors open, red gear unlocked and selector lever amber advisory lights out.
11. Items 9 and 10 may be repeated in an effort to achieve 3 gear down and locked.

#### CAUTION

Should the LDG GEAR INOP caution light illuminate, or loss of no. 2 hydraulic system pressure or quantity, or any abnormality in landing gear system indication other than those associated with the affected main landing gear be experienced, see paragraph 4.21.1 ALTERNATE LANDING GEAR EXTENSION.

B. Upon replacing both left and right main landing gear up-lock assemblies with P/N 46500-7 up-lock assemblies, remove the procedures mandated in Part I, paragraph A above from the AFM. Advise all flight crews of this change.

#### Part II. Maintenance Action.

A. Replacement of P/N 46500-3 Up-lock Assemblies

1. Initially, by the later of either (a) or (b) below:
  - (a) Within 14 calendar days after 4 February 2002 (the effective date of the original issue of this directive),
  - (b) Before the up-lock assembly accumulating 2500 hours air time or 3000 flight cycles, whichever occurs first.

2. Thereafter at intervals not exceeding 2500 hours air time or 3000 flight cycles, whichever occurs first.

Replace main landing gear up-lock assemblies, P/N 46500-3, with new or overhauled P/N 46500-3, P/N 46500-5 or P/N 46500-7 up-lock assemblies, as per instructions given in Chapter 32-31-21 of the DHC-8 Series 400 Aircraft Maintenance Manual, PSM 1-84-2.

#### B. Inspection/Replacement of the Up-lock Roller

Within 30 calendar days from 4 February 2002 (the effective date of the original date of this directive:

1. Inspect the up-lock roller of the left and right main landing gear for the presence of an inner low friction liner, in accordance with the Accomplishment Instructions of Bombardier Alert Service Bulletin (ASB) A84-32-15, dated 04 February 2002, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada.
2. Replace up-lock rollers that do not have an inner low friction liner with new rollers, P/N 46575-1.

#### C. Inspection of P/N 46500-5 Up-lock Assemblies:

Prior to the up-lock assembly accumulating 2500 hours air time or 3000 flight cycles, whichever occurs first; and thereafter, at intervals not exceeding 400 hours air time or 480 flight cycles, whichever occurs first.

1. Inspect the surface of the up-lock latch lower jaw for the presence of a wear groove and measure the wear groove depth to a 0.001 inch accuracy in accordance with DHC-8 Series 400 Aircraft Maintenance Manual, PSM 1-84-2, Task 32-31-21-220-801. If the groove depth exceeds 0.007 inches, replace the up-lock assembly with a new or overhauled P/N 46500-7 up-lock assembly as per instructions given in Chapter 32-31-21 of the DHC-8 Series 400 Aircraft Maintenance Manual, PSM 1-84-2.
2. Inspect the up-lock roller, P/N 46575-1, to ensure that it rotates freely. If the up-lock roller does not rotate freely, replace the up-lock roller with a roller of the same part number, as per instructions given in Chapter 32-31-21 of the DHC-8 Series 400 Aircraft Maintenance Manual, PSM 1-84-2.

#### Part III. Terminating Action.

Replacement of both left and right up-lock assemblies with P/N 46500-7 up-lock assemblies terminates the Part I Air Operator Action and Part II Maintenance Action of this directive.

**Authorization:** For Minister of Transport



Robin Lau  
Acting Chief, Continuing Airworthiness

**Contact:** Mr. Philip Tang, Continuing Airworthiness, Ottawa, telephone 613 952-4379, facsimile 613 996-9178 or e-mail tangp@tc.gc.ca or any Transport Canada Centre.