

**Note:** The FAA recommends periodic treatment of deicing boots with approved ice release agents, such as ICEX™, in accordance with the manufacturer's application instructions.

(e) *Can the pilot accomplish the action?*

Yes. Anyone who holds at least a private pilot certificate, as authorized by § 43.7 of the Federal Aviation Regulations (14 CFR 43.7), may incorporate the AFM revisions required by this AD. You must make an entry into the aircraft records that shows compliance with this AD, in accordance with section 43.9 of the Federal Aviation Regulations (14 CFR 43.9).

(f) *Can I comply with this AD in any other way?* Yes.

(1) You may use an alternative method of compliance or adjust the compliance time if:

(i) Your alternative method of compliance provides an equivalent level of safety; and

(ii) The Manager, Small Airplane Directorate, approves your alternative. Submit your request through an FAA Principal Maintenance Inspector, who may add comments and then send it to the Manager.

(2) 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 (f)(1) 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 you have not eliminated the unsafe condition, specific actions you propose to address it.

(g) *Where can I get information about any already-approved alternative methods of compliance?* Contact the Small Airplane Directorate, 901 Locust, Room 301, Kansas City, Missouri 64106; telephone: (816) 329-4121; facsimile: (816) 329-4091.

(h) *What if I need to fly the airplane to another location to comply with this AD?* The FAA can issue a special flight permit under sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate your airplane to a location where you can accomplish the requirements of this AD.

(i) *When does this amendment become effective?* This amendment becomes effective on May 5, 2000.

Issued in Kansas City, Missouri, on March 10, 2000.

**Michael Gallagher,**

Manager, Small Airplane Directorate, Aircraft Certification Service.

[FR Doc. 00-6617 Filed 3-17-00; 8:45 am]

**BILLING CODE 4910-13-P**

## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 39

[Docket No. 99-CE-43-AD; Amendment 39-11642; AD 2000-06-02]

RIN 2120-AA64

#### Airworthiness Directives; Dornier Luftfahrt GmbH 228 Series Airplanes

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

**ACTION:** Final rule.

**SUMMARY:** This document adopts a new airworthiness directive (AD) that applies to all Dornier Luftfahrt GmbH (Dornier) 228 series airplanes that are equipped with pneumatic deicing boots. This AD requires revising the Airplane Flight Manual (AFM) to include requirements for activation of the airframe pneumatic deicing boots. This AD is the result of reports of in-flight incidents and an accident that occurred in icing conditions where the airframe pneumatic deicing boots were not activated. The actions specified by this AD are intended to assure that flightcrews activate the pneumatic wing and tail deicing boots at the first signs of ice accumulation. This action will prevent reduced controllability of the aircraft due to adverse aerodynamic effects of ice adhering to the airplane prior to the first deicing cycle.

**EFFECTIVE DATE:** May 5, 2000.

**ADDRESSES:** You may examine information related to this AD at the Federal Aviation Administration (FAA), Central Region, Office of the Regional Counsel, Attention: Rules Docket No. 99-CE-43-AD, 901 Locust, Room 506, Kansas City, Missouri 64106.

**FOR FURTHER INFORMATION CONTACT:** Mr. John P. Dow, Sr., Aerospace Engineer, FAA, Small Airplane Directorate, 901 Locust, Room 506, Kansas City, Missouri 64106; telephone: (816) 329-4121; facsimile: (816) 329-4090.

#### SUPPLEMENTARY INFORMATION:

#### Events Leading to the Issuance of This AD

*What caused this AD?:* This AD is the result of reports of in-flight incidents and an accident that occurred in icing conditions where the airframe pneumatic deicing boots were not activated.

*What is the potential impact if the FAA took no action?:* The information necessary to activate the pneumatic wing and tail deicing boots at the first signs of ice accumulation is critical for flight in icing conditions. If we did not

take action to include this information, flight crews could experience reduced controllability of the aircraft due to adverse aerodynamic effects of ice adhering to the airplane prior to the first deicing cycle.

*Has the FAA taken any action to this point?:* Yes. We issued a proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) to include an AD that would apply to all Dornier 228 series airplanes that are equipped with pneumatic deicing boots. This proposal was published in the **Federal Register** as a notice of proposed rulemaking (NPRM) on October 8, 1999 (64 FR 54818). The NPRM proposed to require revising the Limitations Section of the AFM to include requirements for activating the pneumatic deicing boots at the first indication of ice accumulation on the airplane.

*Was the public invited to comment?:* Yes. Interested persons were afforded an opportunity to participate in the making of this amendment. The following paragraphs present the comments received on the NPRM. Also included is the FAA's response to each comment, including any changes incorporated into the final rule based on the comments.

#### Comment Issue No. 1: Coordinate With Original Equipment Manufacturer

*What is the Commenter's Concern?:* One commenter states that the FAA should coordinate with the original equipment manufacturer before issuing the AD.

*What is the FAA's Response to the Concern?:* We concur. The FAA coordinates and will continue to coordinate with the manufacturer of any affected airplanes before issuing an AD.

*Is it Necessary to Change the AD?:* No.

#### Comment Issue No. 2: Provide the Criteria for Determining Acceptable Stall Warning Margins

*What is the Commenter's Concern?:* One commenter requests that the FAA provide the criteria for determining whether an airplane has an acceptable stall warning margin. The commenter references recent NPRM AD withdrawals in the FAA's Transport Airplane Directorate.

*What is the FAA's Response to the Concern?:* We cannot provide such information because no regulatory basis exists for determining or applying a mandatory stall margin with contamination. We can review manufacturer-provided data to determine what testing was conducted, and then determine the effects of ice accretion on the stall angle and the handling characteristics in the roll axis. This would include reviewing the

service history of each airplane. With all of this information, we could determine whether the stall warning margin was acceptable and if the AD action could be withdrawn.

Such was the case with the NPRM withdrawals in the FAA's Transport Airplane Directorate. The airplanes affected were Cessna Models 500, 501, 550, 551, and 560 series airplanes, and British Aerospace Jetstream Model 4101 airplanes. You may find the specific justification for each of these withdrawals in the **Federal Register** through the following citations:

—For the Cessna airplanes: 64 FR 62995, November 18, 1999; and

—For the Jetstream airplanes: 64 FR 62990, November 18, 1999.

No specific information was submitted for the Dornier 228 series airplanes airplanes.

*Is it Necessary to Change the AD?:* No.

### **Comment Issue No. 3: Review the Effects of Ice Bridging**

*What is the Commenter's Concerns?:*

A commenter states that the FAA did not reference in the NPRM any testing to assure that ice bridging does not exist on any of the affected airplanes. This commenter requests that the FAA carefully review the effects of ice bridging. Ice bridging, as referred to in the aviation community, occurs when the mechanical deicing boots do not clear airframe icing from the wing surface. This occurs because the "ice bridge" that forms over the inflated boots increases in ice thickness while the deicing boots ineffectively inflate and deflate under the ice bridge.

The commenter also requests explanation on the use of the term "modern" in a similar AD action that the FAA's Transport Airplane Directorate initiated.

*What is the FAA's Response to the Concerns?:* The FAA considered the effects of ice bridging while developing the AD. We consulted the aviation community, including airframe manufacturers, air carriers, airline pilot associations, airplane owner associations, deicing boot manufacturers, and the National Aeronautics and Space Administration (NASA). Based on information from the aviation community, we believe that little evidence of ice bridging exists as it relates to current deicing boot designs. Also, ice that is not shed after the initial boot cycle continues to increase in thickness and sheds during subsequent cycles.

The FAA's Transport Airplane Directorate addressed the issue of "modern" versus "older" pneumatic

boot systems in a recent AD action. That information, in its entirety, follows:

"Several commenters request that the difference between the "older" and "modern" boot systems be explained. These commenters express concern that although both systems are addressed in the proposal, there may not be a sound technical reason to apply the requirements of the proposal to both types of boot systems.

The FAA acknowledges that definitions of "older" and "modern" pneumatic boot systems should be provided. Therefore, for the purposes of this AD, "modern" pneumatic boot systems may be characterized by short segmented, small diameter tubes, which are operated at relatively high pressures [18–23 pounds per square inch (psi)] by excess bleed air that is provided by turbine engines. "Older" pneumatic boot systems may be characterized by long, uninterrupted, large diameter tubes, which were operated at low pressures by engine driven pneumatic pumps whose pressure varied with engine revolutions per minute (rpm). This low pressure coupled with long and large diameter tubes caused early deice systems to have very lengthy inflation and deflation cycles and dwell times. (Dwell time is the period of time that the boot remains fully expanded following the completion of the inflation cycle until the beginning of the deflation cycle.)"

*Is it Necessary to Change the AD?:* No.

### **Comment Issue No. 4: Limit the AFM Change to Approach and Hold Phases of Flight**

*What is the Commenter's Concern?:*

One commenter requests that the FAA limit the AFM change of operating the boots at the first sign of ice accretion to the approach and hold phases of flight. This commenter references the work that the Ice Protection Harmonization Working Group (IPHWG) is currently doing. The commenter states that the IPHWG believes that the only phases of flight that demonstrate a safety concern are holding patterns and various approach segments. Since these operations occur at lower speeds, ice accumulating on the wing and tail surfaces could cause instability.

*What is the FAA's Response to the Concern?:* We do not concur to limiting the AFM change to the holding and approach phases of flight. We acknowledge that the IPHWG is working on a proposed operations rule. The IPHWG continues to work on this proposed rule and has not reached technical agreement. We have records of in-flight roll upsets in icing during the climb and cruise phases of flight on small airplanes that are of a similar type design to the Dornier 228 series airplanes.

We concur that the ice protection system should not be operated at times

when no ice is accreting. We have changed the description of the atmospheric conditions that the deicing boots must be operated from "icing conditions" to "known or observed/detected icing that the flight crew visually observed on the aircraft or was identified by the on-board sensors."

*Is it Necessary to Change the AD?:*

Yes. We have made the change described above in the final rule.

### **Comment Issue No. 5: Conduct Further Testing Before Issuing the AD**

*What is the Commenter's Concern?:*

One commenter requests that the FAA conduct more tests before proceeding with this AD action. The commenter agrees that operating the pneumatic boots continuously is the best way to identify ice accretion. However, the commenter states concern over the residual ice that could accumulate in this mode. The commenter recommends the following:

- The FAA research the possibility of mandating the installation of a reliable ice detection system to alleviate the difficulties associated with flightcrew recognition of airfoil ice accretions;
- The FAA work together with the manufacturers to determine how efficient the pneumatic boots are in shedding significant thinner ice accretions than encountered previously; and
- The FAA quantify the performance effects of prolonged operation with residual ice on the airfoil prior to implementing any new boot operation procedures.

*What is the FAA's Response to the Concern?:* We do not concur with the concerns over residual ice. Operation of the pneumatic deicing boots typically results in persistent ice accretions on the boots surfaces, even with ¼-inch to ½-inch of ice accretion prior to activation of the boots. The persistent residual and inter-cycle ice accretions typically result in adverse aerodynamic effects and degraded airplane flying qualities. Activating the wing and tail pneumatic deicing boots at the first sign of ice accretion (or at the announcement of an ice detector system) and periodically operating the deicing boots will result in persistent ice accretions.

However, the proposed actions will minimize the residual and intercycle ice accretions because the ice will shed when the minimum thickness or mass required for shedding is reached. The residual and intercycle ice accretion thickness that results from this procedure is less than the ice accretion thickness typically recommended prior

to operation of the pneumatic deicing boot. The thickness, shape, texture, and location of the ice accretion affect the adverse airplane flying qualities that result from ice accretions.

Certain airplane manufacturers have previously issued AFM information that contains procedures to activate the deicing boots at the first sign of ice accumulation. We have received no reports indicating any adverse effects of residual ice because of early activation of the deicing boots for these airplane designs.

Those airplane models that are equipped with deicing boot systems with automatic operating modes result in operation of the boots with less than the recommended thickness of accreted ice. We have received no reports indicating any adverse effects resulting from the use of the automatic mode.

We concur that the installation of a reliable ice detection system would alleviate the difficulties associated with flightcrew recognition of airfoil ice accretion. We are working with industry on the possibility of developing such a system. If developed, tested, and approved, the FAA may consider additional rulemaking. For the time being, we are issuing this AD to impose a deicing boot operation change to address the reduced handling qualities or controllability problems associated with ice accretion on the protected surfaces.

*Is it Necessary to Change the AD?:* No.

#### **Comment Issue No. 6: Require Action To Reduce Adhesion Characteristics**

*What is the Commenter's Concern?:* One commenter requests that the FAA mandate actions to minimize or reduce the ice adhesion characteristics of boot material. The commenter states that one reason flightcrews see large amounts of residual ice is because residual ice sticks to the boot surface as the boot ages. This may increase if the adhesion qualities of the boot material are not maintained. The commenter suggests the use of certain compounds, such as ICEX™ (an ice-phobic chemical spray), to reduce ice adhesion.

*What is the FAA's Response to the Concern?:* We concur that materials such as ICEX could reduce ice adhesion. However, factors such as normal wear and tear, patching, and oxidation of boot material, prevent us from establishing an effective level of application or adequate intervals of application. We will include a NOTE in the AD to recommend regular treatment of deicing boots with use of approved ice release agents. This is in addition to the required actions.

*Is it Necessary to Change the AD?:* No. However, as discussed above, the FAA is including a NOTE in the AD to recommend regular treatment of deicing boots with use of approved ice release agents.

#### **The FAA's Determination**

*What is the FAA's final determination on this issue?:* After careful review of all available information related to the subject presented above, we have determined that air safety and the public interest require the adoption of the rule as proposed except for the following:

- The change in the description of the atmospheric conditions that the deicing boots must be operated;
- The addition of the NOTE to recommend regular treatment of deicing boots with use of approved ice release agents; and
- Minor editorial corrections.

*How does the change, addition, and corrections affect the AD?:* We have determined that the change, addition, and minor corrections will not change the meaning of the AD and will not add any additional burden upon the public than was already proposed.

#### **Cost Impact**

*How many airplanes does this AD impact?:* We estimate that 13 airplanes in the U.S. registry will be affected.

*What is the cost impact of the affected airplanes on the U.S. Register?:* There is no dollar cost impact. We estimate that to accomplish the AFM revision it will take you less than 1 workhour. You can accomplish this action if you hold at least a private pilot certificate as authorized by section 43.7 of the Federal Aviation Regulations (14 CFR 43.7). You must make an entry into the aircraft records that shows compliance with this AD, in accordance with section 43.9 of the Federal Aviation Regulations (14 CFR 43.9). The only cost impact of this AD is the time it will take you to insert the information into the AFM.

#### **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 copy of the final evaluation prepared for this action is contained in the Rules Docket. A copy of it may be obtained by contacting the Rules Docket at the location provided under the caption **ADDRESSES**.

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

Air transportation, Aircraft, Aviation safety, 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 a new airworthiness directive (AD) to read as follows:

#### **2000-06-02 Dornier LuftfahrtGMBH:**

Amendment 39-11642; Docket No. 99-CE-43-AD.

(a) *What airplanes are affected by this AD?:* Models Dornier 228-100, Dornier 228-101, Dornier 228-200, Dornier 228-201, Dornier 228-202, and Dornier 228-212 airplanes, all serial numbers, that are:

(1) Equipped with pneumatic deicing boots; and

(2) Certificated in any category.

(b) *Who must comply with this AD?:*

Anyone who wishes to operate any of the above airplanes on the U.S. Register. The AD does not apply to your airplane if it is not equipped with pneumatic de-icing boots.

(c) *What problem does this AD address?:* The information necessary to activate the pneumatic wing and tail deicing boots at the first signs of ice accumulation is critical for flight in icing conditions. If we did not take action to include this information, flight crews could experience reduced controllability of the aircraft due to adverse aerodynamic effects of ice adhering to the airplane prior to the first deicing cycle.

(d) *What must I do to address this problem?:* To address this problem, you must revise the Limitations Section of the FAA-approved Airplane Flight Manual (AFM) to include the following requirements for activation of the ice protection systems. You must accomplish this action within the next 10 calendar days after the effective date of

this AD, unless already accomplished. You may insert a copy of this AD in the AFM to accomplish this action:

• Except for certain phases of flight where the AFM specifies that deicing boots should not be used (e.g., take-off, final approach, and landing), compliance with the following is required.

• Wing and Tail Leading Edge Pneumatic Deicing Boot System, if installed, must be activated:

—At the first sign of ice formation anywhere on the aircraft, or upon annunciation from an ice detector system, whichever occurs first; and

—The system must either be continued to be operated in the automatic cycling mode, if available; or the system must be manually cycled as needed to minimize the ice accretions on the airframe.

• The wing and tail leading edge pneumatic deicing boot system may be deactivated only after:

—Leaving known or observed/detected icing that the flight crew has visually observed on the aircraft or was identified by the on-board sensors; and

—After the airplane is determined to be clear of ice.”

**Note:** The FAA recommends periodic treatment of deicing boots with approved ice release agents, such as ICEX, in accordance with the manufacturer's application instructions.

(e) *Can the pilot accomplish the action?* Yes. Anyone who holds at least a private pilot certificate, as authorized by § 43.7 of the Federal Aviation Regulations (14 CFR 43.7), may incorporate the AFM revisions required by this AD. You must make an entry into the aircraft records that shows compliance with this AD, in accordance with section 43.9 of the Federal Aviation Regulations (14 CFR 43.9).

(f) *Can I comply with this AD in any other way?* Yes.

(1) You may use an alternative method of compliance or adjust the compliance time if:

(i) Your alternative method of compliance provides an equivalent level of safety; and

(ii) The Manager, Small Airplane Directorate, approves your alternative. Submit your request through an FAA Principal Maintenance Inspector, who may add comments and then send it to the Manager.

(2) 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 (f)(1) 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 you have not eliminated the unsafe condition, specific actions you propose to address it.

(g) *Where can I get information about any already-approved alternative methods of*

*compliance?* Contact the Small Airplane Directorate, 901 Locust, Room 301, Kansas City, Missouri 64106; telephone: (816) 329-4121; facsimile: (816) 329-4091.

(h) *What if I need to fly the airplane to another location to comply with this AD?* The FAA can issue a special flight permit under §§ 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate your airplane to a location where you can accomplish the requirements of this AD.

(i) *When does this amendment become effective?* This amendment becomes effective on May 5, 2000.

Issued in Kansas City, Missouri, on March 10, 2000.

**Michael Gallagher,**

*Manager, Small Airplane Directorate, Aircraft Certification Service.*

[FR Doc. 00-6691 Filed 3-17-00; 8:45 am]

**BILLING CODE 4910-13-P**

## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 39

[Docket No. 2000-CE-11-AD; Amendment 39-11634; AD 2000-05-24]

RIN 2120-AA64

#### Airworthiness Directives; Honeywell International Inc. KAP 140 and KFC 225 Autopilot Systems

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

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

**SUMMARY:** This amendment adopts a new airworthiness directive (AD) that applies to all aircraft equipped with a certain Honeywell International Inc. (Honeywell) KAP 140 or KFC 225 autopilot system. AlliedSignal Avionics Inc. manufactured these autopilot systems before transferring the design data to Honeywell. This AD requires that you inspect the autopilot servo actuator for a loose fastener and modify the autopilot servo actuator when a loose fastener is found. This AD is the result of a report of failure of the autopilot servo actuator to disengage when the autopilot power was removed. The actions specified by this AD are intended to detect and correct a loose fastener in the autopilot servo actuator, which could cause the autopilot servo actuator to not disengage when power to the autopilot is removed. This could cause the pilot to experience additional control forces.

**DATES:** Effective April 12, 2000.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in the regulation as of April 12, 2000.

The FAA must receive any comments on this rule on or before April 28, 2000.

**ADDRESSES:** Submit comments in triplicate to the Federal Aviation Administration (FAA), Central Region, Office of the Regional Counsel, Attention: Rules Docket No. 2000-CE-11-AD, 901 Locust, Room 506, Kansas City, Missouri 64106.

You may get the service information referenced in this AD from Honeywell International Inc., 23500 West 105th Street, Olathe, Kansas 66061. You may examine this information at the FAA, Central Region, Office of the Regional Counsel, Attention: Rules Docket No. 2000-CE-11-AD, 901 Locust, Room 506, Kansas City, Missouri 64106; or at the Office of the Federal Register, 800 North Capitol Street, NW, suite 700, Washington, DC.

#### FOR FURTHER INFORMATION CONTACT:

Clyde Erwin, Aerospace Engineer, Wichita Aircraft Certification Office, FAA, 1801 Airport Road, Mid-Continent Airport, Wichita, Kansas 67209; telephone: (316) 946-4149; facsimile: (316) 946-4407.

#### SUPPLEMENTARY INFORMATION:

##### Discussion

*What Events Have Caused this AD?*

We recently received a field report describing an instance of excessive flight control friction associated with an airplane equipped with a Honeywell KS 271C aileron servo actuator. This event occurred during ground operations with no power applied to the airplane. The Honeywell KS 270C, KS 271C, and KS 272 series autopilot servo actuators are utilized on aircraft equipped with a Honeywell KAP 140 or KFC 225 autopilot system.

AlliedSignal Avionics Inc. manufactured these autopilot systems before transferring the design data to Honeywell.

Examination of the subject actuator revealed a loose fastener, which inhibited free motion of the servo actuator engagement and disengagement mechanism. This autopilot servo actuator failed to properly disengage when power to the autopilot was removed.

*What Are the Consequences if the Condition Is Not Corrected?*

This condition, if not detected and corrected, could cause the autopilot servo actuator to not disengage when power to the autopilot is removed. This could cause the pilot to experience additional control forces.