



U.S. Department
of Transportation
**Federal Aviation
Administration**

SAFO

Safety Alert for Operators

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Flight Standards Service
Washington, DC

http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo

A SAFO contains important safety information and may include recommended action. SAFO content should be especially valuable to air carriers in meeting their statutory duty to provide service with the highest possible degree of safety in the public interest. Besides the specific action recommended in a SAFO, an alternative action may be as effective in addressing the safety issue named in the SAFO.

Subject: Chaffing, Arcing, and Burning Damage to Boeing 737-100/200/300/400/500 Series Aircraft Flight Deck Overhead Wiring-Ducting

Purpose: This SAFO notifies maintenance personnel of a potentially hazardous situation which can cause serious injury and damage to aircraft when a flight deck ceiling/side panel gasper air duct hose thumb clamp (metallic) is used and incorrectly positioned.

Background: At least three Boeing 737 series airplanes encountered the serious event of chaffing, arcing, smoking, and a fire burning 50 plus wires, with numerous circuit breakers tripping from a gasper air duct clamp being incorrectly positioned with its current design. All were on scheduled flights, one of which was in flight and the other two occurred at the gate. In addition, from winter 2010 to spring of 2012, a number of operators inspected a combined total of 279 Boeing 737-series airplanes. Of the 279 Boeing 737-series airplanes inspected, 71 of the airplanes had the clamp installed in the improper orientation.

Discussion: Boeing's Aircraft Maintenance Manual (AMM) Chapter 21, section 21-22-09, installation of the gasper air outlet, has numerous warnings and figure illustrations to assist in proper installation; however, several factors appear to be contributing to the improper installation:

1. The ease of securing the metal thumb screw clamp is harder to tighten when it is installed in its proper location due to the clearance between the ceiling/side panel and the fixed gasper air duct. It is much easier to install 180 degrees from the proper location due to access.
2. The section for installing the ceiling/side panel only, found in AMM Chapter 25, has non-specific instructions and no warnings and/or figures illustrating the proper installation of the other attached components, which should be installed in accordance with AMM Chapter 21, section 21-22-09. It is apparent that most operators' work instructions [task cards] for after maintenance/ inspection close up, refer mechanics to the AMM Chapter 25 for this task, which lacks the specific instructions of AMM Chapter 21.
3. The design of the metal thumb hose clamp requires proper positioning to avoid creating a hazard, should its orientation be anywhere else but the specified location.
4. There is no placard on the flight deck ceiling/side panel interior or duct/hose warning of the required clamp position/orientation.

With the occurrence of these events, Boeing has developed Service Bulletin 737-21-1186, dated April 17, 2012, to inspect the clamp for both its proper orientation and part number. The service bulletin also provides an option to replace the metal clamp with a plastic tie strap on Group 1 and 2 aircraft.

Note: The B737 Next Generation (NG) aircraft panel cavity is not as congested and the AMM, chapter 21 calls for the tie strap at reinstallation.

Recommended Action: The following actions are recommended to mitigate incorrect installation of the gasper air duct hose thumb clamp (metallic):

1. Operator's that operate this make/model/series aircraft immediately alert maintenance personnel, including their maintenance providers, to the factors affecting proper installation of the gasper air outlet metal hose thumb clamps.
2. Incorporate Service Bulletin 737-21-1186, dated April 17, 2012, replace the metal clamp with a plastic tie strap on Group 1 and 2 aircraft at the next maintenance opportunity.
3. Develop AMM Supplements to Chapter 25 that include or refer to the steps, warnings, cautions, notes, illustrations, etc. in the AMM Chapter 21, section 21-22-09 for proper installation. [This last recommendation is also recommended for the B-737NG fleet.]

Recommended Follow-On Action: The Federal Aviation Administration (FAA) request operators provide feedback to both the FAA [operators who report under 14 CFR 121.703 (c)] and Boeing [who then reports as the type certificate (TC) holders under 14 CFR 21.3] on the effectiveness of the Electrical Wiring Interconnection Systems (EWIS) Instruction for Continued Airworthiness (ICA) tasks and intervals in detecting wire degradation. Operators should report findings of wire degradation by EWIS ICA task number and zone. This feedback information is needed to determine if the assumptions made during the Enhanced Zonal Analysis Procedure (EZAP) analysis are substantiated or require revisions to the type of tasks selected or intervals, to ensure the EWIS ICA tasks remain effective.

Contact: Questions or comments regarding this SAFO should be directed to Kevin E. Miller, ANM-SEA AEG-15, Seattle, Washington - Aircraft Evaluation Group-15, at (425) 917-6607.