UNITED STATES OF AMERICA
FEDERAL AVIATION AGENCY
WASHINGTON, D.C.

Civil Air Regulations Amendment 3-8
Effective: December 18, 1962
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Chapter I—Federal Aviation Agency

[Reg. Docket No. 1530; Amdt. 3-8]

PART 3—AIRPLANE AIRWORTHINESS; NORMAL, UTILITY, AND ACROBATIC CATEGORIES

Master Switch Requirements

In a petition for rule making dated May 14, 1962, the Aerospace Industries Association requested that § 3.688 of the Civil Air Regulations be amended to permit the installation of auxiliary circuits which are not deenergized by opening the master switch.

Section 3.688 requires that a master switch arrangement be provided to permit expeditious disconnection of all electric power sources from all load circuits and that the point of disconnection be adjacent to the power sources.

In support of its request, the petitioner contends: (1) That a number of inadvertent gear-up landing incidents could be attributed to the fact that the landing gear warning circuit is disconnected by the master switch; (2) that the safety increment attainable by wiring such low-amperage circuits around the master switch would more than balance any increase in the probability of fuel ignition during a crash; and (3) that, on the basis of past Agency rulings, several thousand airplanes were placed in service using circuits which were wired around the master switch, with no adverse effect on safety.

Evidence relating to this issue was submitted by an aircraft manufacturer in the course of recent administration of the master switch requirement. The aircraft manufacturer conducted tests (witnessed by Agency representatives) which demonstrated that faulted low-amperage circuits protected by low-rated protective devices are no more likely to ignite typical fuel-air mixtures than are switch-relay circuits designed to comply with § 3.688.

Concerning the petitioner's first point, few of the gear-up landing incidents on record involved the master switch, and even in these the master switch, which controls all load circuits, was unnecessarily operated in order to disconnect an individual circuit. An individual circuit may be disconnected, without using the master switch, by opening the circuit protective device in that circuit. In several incidents the master switch was opened to silence the landing gear warning horn because it distracted the pilot during training or practice maneuvers. Wiring the landing gear warning horn circuit around the master switch would not serve any purpose in these cases since other methods exist, or may be provided, to disconnect the landing gear warning horn circuit. For these reasons, the Agency considers that the rule change proposed by the petitioner cannot be justified on the basis of the gear-up landing incident record alone.

On the basis of the remaining evidence, however, the Agency is persuaded that load circuits wired directly to electric power sources through low-rated protective devices are not only less costly and more reliable than switch-relay circuits designed to comply with currently effective § 3.688, but are no more likely to ignite fuel in a crash; and that the tests previously mentioned, coupled with the satisfactory safety record established by aircraft which were fitted with auxiliary circuits wired around the master switch, indicate that electrical ignition of fuel during a crash is less probable than previously believed. For these reasons, the Agency believes that a relaxation of the present regulation, which requires that all load circuits be under the control of the master switch, is justified. Accordingly, § 3.688 is being amended to permit connection of load circuits in such manner that they remain energized after the master switch is opened if such circuits are protected by circuit protective devices, rated at five amperes or less, located adjacent to the electric power source.

Since this regulation provides relief from the provisions of the previous regulation, and imposes no additional burden upon any persons, compliance with the notice and public procedure provisions of the Administrative Procedure Act is unnecessary, and good cause exists for making this regulation effective immediately.

In consideration of the foregoing, § 3.688 of Part 3 of the Civil Air Regulations (14 CFR Part 3, as amended) is hereby amended, to read as follows, effective December 18, 1962:

§ 3.688 Arrangement.

A master switch arrangement shall be provided to permit expeditious disconnection of all electric power sources from the main bus. The point of disconnection shall be adjacent to the power sources. Load circuits may be connected in such manner that they remain energized after the master switch is opened if they are protected by circuit protective devices, rated at five amperes or less, located adjacent to the electric power source.

(Secs. 313(a), 601, 603, 72 Stat. 752, 775, 776; 49 U.S.C. 1354, 1421, 1423)

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N. E. HALABY,
Administrator.

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