



Repl. by 22A-6100

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# ADVISORY CIRCULAR

## DEPARTMENT OF TRANSPORTATION FEDERAL AVIATION ADMINISTRATION

**SUBJECT:** ALTITUDE ALERTING DEVICES/SYSTEMS

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1. PURPOSE. This circular provides guidelines for installing and evaluating altitude alerting systems.
  2. REFERENCES. FAR 91.51.
  3. BACKGROUND. The increased number of accidents and incidents involving lack of altitude awareness prompted the FAA to initiate rulemaking action which resulted in a requirement for an approved altitude alerting device/system on all turbojet aircraft after February 28, 1971.
  4. GUIDELINES.
    - a. Altitude alerting devices/systems are not considered additional primary altitude indicators or substitutes for basic altimeters nor was it intended to require these systems to serve an altitude keeping function. Accordingly, the FAA does not plan on developing specifications or TSO's prescribing tolerances and performance requirements for this equipment.
    - b. Since the rule permits industry to accomplish the altitude alerting objective by any appropriate system or device, it is expected that various methods of complying with the rule will be presented for approval. As an example, altitude alerting devices may utilize information from: the basic altimeter system, an independent device, air data systems, radio altimeters, autopilot systems, or other systems. One system currently being installed by an air carrier utilizes barometric information to actuate visual and aural signals 1000 feet and 500 feet respectively before the preselected altitude. The assigned or desired level off altitude can be programmed into the device in 100-foot increments by the pilot setting an associated knob on the face of the instrument.
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This self-contained system, which utilizes an independent device, is just one example of a device that complies with the intent of FAR 91.51.

- c. Alerting devices may be installed in accordance with existing installation regulations/procedures and evaluated without regard to compliance with FAR 91.51 during the interim period before February 28, 1971. However, applicants (air carriers, general aviation operators, etc.), who desire to obtain approval of altitude alerting devices/systems should contact the appropriate air carrier district office or general aviation district office and make arrangements for an operations inspector to observe the performance of the installed device/system to determine compliance with FAR 91.51 (b) and (c). This may be accomplished on training flights, flight checks, test flights, en route inspections, or a combination of these flights. The alerting device should be checked at various altitudes during climb and descent, however, it need not be evaluated at the highest altitude at which the aircraft is certificated.
- d. There are no specific requirements for precise correlation between indications of the altitude alerting system and aircraft primary altimeter systems. In addition, there are no specific tolerances for the alerting system. The tolerances specified by the equipment manufacturers are considered acceptable if visual and aural signals occur in sufficient time to permit establishing level flight at the selected altitude. The altitude increments at which these signals are programmed to precede the level-off altitude e.g., 1000'-500'; 800'-300'; etc. should be selected and preset by the operator after considering combined aircraft and system performance characteristics. A visual signal should be located so as to be readily discernible to both pilots. In some aircraft this may require the installation of a light on both the pilot and copilot instrument panels, however, controls for setting the alerting system need be accessible to only one pilot.
- e. Altitude alerting systems which are installed by an aircraft manufacturer or modifier in compliance with a type certificate or supplemental type certificate will be evaluated in accordance with the test procedures outlined above. In this case, the aircraft would be delivered with an approved device/system.

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- f. If an airline or operator installs the same type of alerting system on several different types of aircraft, compliance with FAR 91.51 (b) and (c) would normally only need to be demonstrated on one aircraft type.
- g. Procedures for utilizing the system, including preflight tests to be conducted by the pilots, should be established by each operator.

  
acting Director  
Flight Standards Service