



Designation: F3064/F3064M – 24

Standard Specification for Aircraft Powerplant Control, Operation, and Indication¹

This standard is issued under the fixed designation F3064/F3064M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers minimum requirements for the control, indication, and operational characteristics of propulsion systems. It was developed based on propulsion system installed on aeroplanes, but may be applicable to other applications as well.

1.2 The applicant for a design approval must seek the individual guidance to their respective CAA body concerning the use of this standard as part of a certification plan. For information on which CAA regulatory bodies have accepted this standard (in whole or in part) as a means of compliance to their Aeroplane Airworthiness regulations (Hereinafter referred to as “the Rules”), refer to ASTM F44 webpage (www.ASTM.org/COMITTEE/F44.htm) which includes CAA website links. **Annex A1** maps the Means of Compliance described in this specification to EASA CS-23, amendment 5, or later, and FAA 14 CFR Part 23, amendment 64, or later.

1.3 *Units*—The values stated are SI units followed by imperial units in brackets. The values stated in each system are not necessarily exact equivalents; therefore, to ensure conformance with the standard, each system shall be used independently of the other, and values from the two systems shall not be combined.

1.4 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

¹ This specification is under the jurisdiction of ASTM Committee F44 on General Aviation Aircraft and is the direct responsibility of Subcommittee F44.40 on Powerplant.

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2. Referenced Documents

2.1 ASTM Standards:²

F3060 Terminology for Aircraft

F3061/F3061M Specification for Systems and Equipment in Aircraft

F3062/F3062M Specification for Aircraft Powerplant Installation

F3063/F3063M Specification for Aircraft Fuel Storage and Delivery

F3116/F3116M Specification for Design Loads and Conditions

F3117/F3117M Specification for Crew Interface in Aircraft

F3233/F3233M Specification for Flight and Navigation Instrumentation in Aircraft

F3367 Practice for Simplified Methods for Addressing High-Intensity Radiated Fields (HIRF) and Indirect Effects of Lightning on Aircraft

F3432 Practice for Powerplant Instruments

2.2 EASA Standard:³

CS-23 Certification Specifications for Normal-Category Aeroplanes

2.3 FAA Documents:⁴

14 CFR Part 23 Airworthiness Standards: Normal Category Airplanes

AC 33.28-1 Compliance Criteria For 14 CFR §33.28, Aircraft Engines, Electrical And Electronic Engine Control Systems

AC 33.28-2 Guidance Material For 14 CFR §33.28, Reciprocating Engines, Electrical And Electronic Engine Control Systems

AC 33.28-3 Guidance Material For 14 CFR §33.28, Engine Control Systems

3. Terminology

3.1 The following are a selection of relevant terms. See Terminology F3060 for more definitions and abbreviations.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from European Union Aviation Safety Agency (EASA), Konrad-Adenauer-Ufer 3, D-50668 Cologne, Germany, <https://www.easa.europa.eu>.

⁴ Available from Federal Aviation Administration (FAA), 800 Independence Ave., SW, Washington, DC 20591, <http://www.faa.gov>.

3.2 Definitions:

3.2.1 *automatic power reserve (APR) system, n*—the automatic system used only during takeoff, including all devices both mechanical and electrical that sense engine failure, transmit signals, actuate fuel/energy controls or power levers on operating engines, including power sources, to achieve the scheduled power increase and furnish cockpit information on system operation.

3.2.2 *critical time interval, n*—period starting at V_1 minus one second and ending at the intersection of the engine and APR failure flight path line with the minimum performance all engine flight path line. The engine and APR failure flight path line intersects the one-engine-inoperative flight path line at 122 m [400 ft] above the takeoff surface. The engine and APR failure flight path is based on the airplane's performance and must have a positive gradient of at least 0.5 % at 122 m [400 ft] above the takeoff surface. See Fig. 1.

3.2.3 *loss-of-thrust-control/loss of power control (LOTCL/LOPC), n*—loss of capability to modulate and maintain thrust or power between flight idle and a specified percent of maximum rated power or thrust, at all operating conditions.

3.2.4 *powerplant instrument, n*—the visual presentation of a powerplant (Terminology F3060) parameter, a powerplant installation (Terminology F3060) parameter, a parameter required by the engine manufacturer, or fuel/energy system parameter necessary to provide performance and condition information for the airplane operation.

3.2.5 *selected takeoff power, n*—the power obtained from each initial power setting approved for takeoff.

4. Powerplant Controls

4.1 General Requirements:

4.1.1 Powerplant controls must be located and arranged per Specification F3117/F3117M.

4.1.2 Each flexible control must be shown to be suitable for the particular application.

4.1.3 Each control must be able to maintain any necessary position without:

- 4.1.3.1 Constant attention by flight crew members; or
- 4.1.3.2 Tendency to creep due to control loads or vibration.

4.1.4 Each control must be able to withstand operating loads without failure or excessive deflection that will impede or negatively affect intended operation.

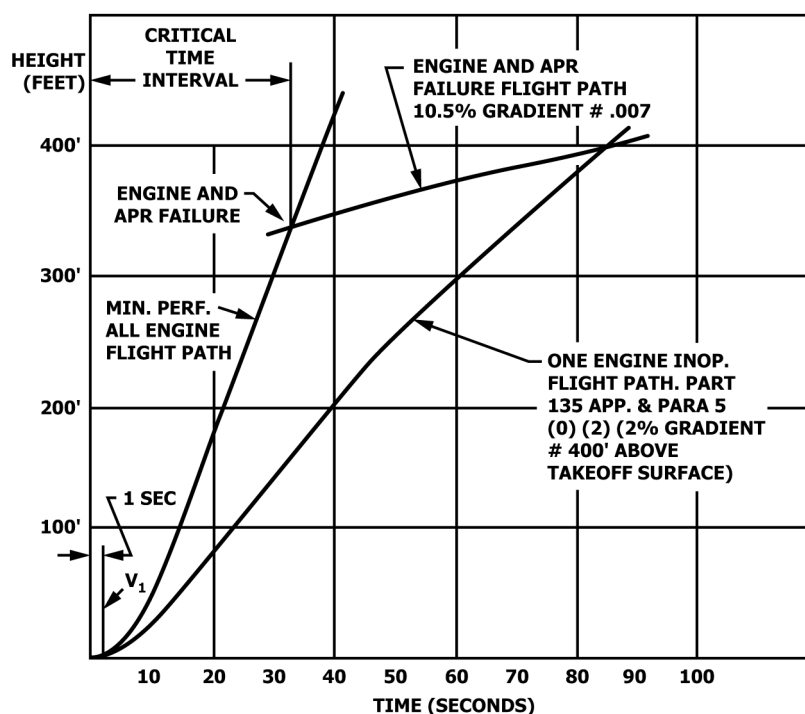
4.1.5 For turbine engine powered airplanes, no single failure or malfunction, or probable combination thereof, in any powerplant control system may cause the failure of any powerplant function necessary for safety.

4.1.6 The portion of each powerplant control located in the engine compartment that is required to be operated in the event of fire must be at least fire resistant.

4.1.7 Powerplant valve controls located in the cockpit must have:

4.1.7.1 For manual valves, positive stops or in the case of fuel valves suitable index provisions, in the open and closed position; and

4.1.7.2 For power-assisted valves, a means to indicate to the flight crew when the valve is in the fully open or fully closed position; or is moving between the fully open and fully closed position.



(For Illustration only - typical for 120 K climb speed)

FIG. 1 Critical Time Interval