

FLIGHT DIRECTOR EQUIPMENT

1. **PURPOSE:** This Standard specifies the minimum Standards for Flight Director Equipments under standard and environmental conditions.
2. **SCOPE:** This Aerospace Standard covers Flight Director Equipments which display to the pilot a computed command for the operation of an aircraft in accordance with selected Mode(s). The term "Equipment" may include controls, displays, computers, etc. and may include sensors if furnished as a part of the Flight Director.
3. **GENERAL STANDARDS:**
  - 3.1 **Operation of Controls:** The design of the equipment shall be such that the controls intended for use during flight cannot be operated in any possible position combinations or sequences that would result in a condition detrimental to the continued performance of the equipment or have any detrimental effect on associated equipments.
  - 3.2 **Accessibility of Controls:** Controls not intended for adjustment in flight shall not be readily accessible to flight personnel.
  - 3.3 **Fire Hazard:** Except for small parts (such as knobs, fasteners, seals, grommets, and small electrical parts) that would not contribute significantly to the propagation of a fire, all materials, used must be self extinguishing when tested in accordance with the requirements of Federal Aviation Regulation 25.1359(d) and Appendix F thereto, with the exception that materials tested may be configured in accordance with paragraph (b) of appendix F or may be configured as used.
  - 3.4 **Control Command Display:** Where indicated by two symbols, one representing the airplane and one representing the direction of command control, the symbols shall diverge as the aircraft departs from a computed steering command and converge as it returns. Departure in the direction of a left roll, or a decreased heading or course, shall cause the aircraft symbol to appear to move laterally or rotationally to the left with respect to the command symbol, and in the opposite direction for an increased heading.

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## 3.4 (Continued):

Departure in the direction of nose down pitch attitude or decreased altitude shall cause the aircraft symbol to appear to move below the command symbol, and in the opposite direction for a nose up departure. Control commands shall be satisfied when the symbols coincide.

Where command Control is presented by a cross pointer display, the sensing of the command presentation shall be such that the aircraft is flown toward the indication to satisfy the command i.e. the 'fly to the needle' convention shall apply.

## 3.5 Heading and Course Selectors (if applicable):

(a) Heading Selector - Means shall be provided to permit setting the desired heading into the Flight Director Equipment. The indication of the heading selected shall be continuously displayed.

(b) Course Selector - Means shall be provided to permit setting the desired course into the Flight Director Equipment. The indication of the course selected shall be continuously displayed.

## 3.6 Corrective Control Range: The flight director equipment shall present effective control information for recovery of the aircraft to straight and level flight from any attitude about the three axes throughout the following minimum ranges from level flight:

Pitch:  $\pm 50^\circ$

Roll:  $\pm 75^\circ$

Yaw:  $\pm 20^\circ$

## 3.7 Function Selection: Means shall be provided for selecting the desired modes of operation and indicating the operative mode or sub-mode, as applicable. Possible modes of operation may include, but are not limited to the following:

- (a) Preselect Altitude and Hold
- (b) Preselect Heading and Hold
- (c) Altitude Hold
- (d) Airspeed Hold
- (e) ILS Approach
- (f) VOR/LOC Course

Where there may be armed modes as well as capture modes there shall be provisions to annunciate both the armed mode(s) and the operative mode(s).

## 3.8 System Interlock: Means shall be provided to prevent the flight director from presenting command signals until it has reached a fully operable condition. An inoperative condition shall be made obvious to the flight crew by such means as warning flags and/or retraction of command bars from view, or other positive means. As an example, loss of ILS ground station validity during use of selected approach modes would be indicated.