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**Federal Aviation
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InFO

Information for Operators

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

An InFO contains valuable information for operators that should help them meet certain administrative, regulatory, or operational requirements with relatively low urgency or impact on safety.

Subject: Inadvertent Selection of Concentrically-Centered Controls

Purpose: This InFO cancels InFO 10008 and advises operators of the potential for inadvertently changing existing, correct selections in avionics and other systems equipped with concentrically-centered controls (knobs).

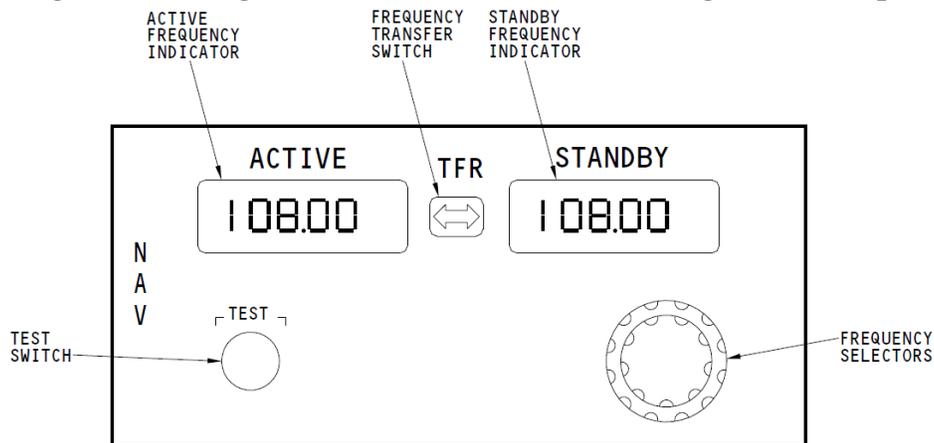
Background: Manufacturers have increasingly equipped avionics and other systems with concentrically-centered controls to conserve limited space in the instrument and control panels of aircraft. Unfortunately a drawback to this type of design is that settings/selections can be inadvertently changed. For example, in one reported incident, rotating the navigation course selection knob resulted in an unintentional change to the barometric altitude setting. A few examples of common causes of unintentional selections include:

- Mechanical interference between two concentrically-centered knobs;
- Pilot accidentally rotating two knobs at once as a result of finger positioning errors and/or finger slippage; and
- Pilot inadvertently selecting the wrong knob and subsequently fails to make appropriate corrections or fails to detect the inadvertent selection.

Reports from manufacturers and from pilots indicate that these incidents are occurring with some regularity.

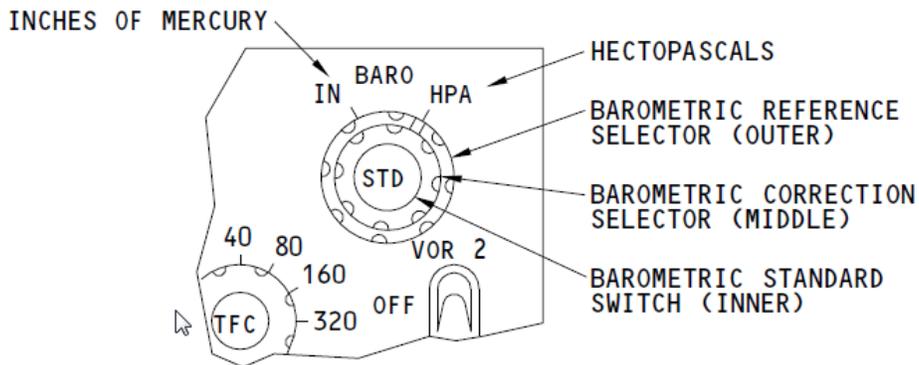
Discussion: Concentrically-centered knobs are typically designed so that the larger outer knob closest to the face of the panel changes cursor position, selects information category, operating/display mode, or large value changes. The smaller inner knob is used to select among the information content, sub categories of the position selected with the larger outer knob, or fine value changes. The most familiar implementation of concentrically-centered control is probably in navigation and communication tuning heads (e.g., to set the frequency in the standby frequency indicator, turn the frequency selectors to set the frequency). The first digit is always 1. The outer knob sets the second two digits (10 MHz and 1MHz) in 1 MHz increments. The inner knob sets the fourth, fifth, and sixth digits (100 kHz, 10 kHz, and 1 kHz) in 25 kHz increments (see Figure -1).

Figure -1: Navigation and Communication Tuning Head example



More complex variations exist, in which multiple and mixed functions are assigned to concentrically-centered controls, or controls with different functions are located near each other (see Figure -2). A change to one function might affect another, totally unrelated function without being detected by the flightcrew.

Figure -2: Electronic Flight Instrument System Control Panel example of a complex (outer, middle, inner 3 concentric positions) Barometric knob



Operators should report instances of mechanical interference to the appropriate equipment or system manufacturer; or they may submit reports through the Federal Aviation Administration (FAA) Service Difficulty Reporting using a Malfunction or Defect Report Submission Form available at: <http://av-info.faa.gov/sdrx/>

Recommended Action: Directors of safety, directors of operations, fractional ownership program managers, training managers, flight instructors, and aircraft owners and pilots should be aware of the potential for inadvertently changing existing, correct selections in avionics and other systems equipped with concentrically-centered controls (knobs). They should collaborate to address that potential in operations and training of flightcrew, stressing diligence in operating concentric controls, and in checking for unintentional changes to unrelated systems.

Contact: Questions or comments regarding this InFO should be directed to the Aircraft Maintenance Division, AFS-300, telephone (202) 267-1675.