

Pilot's Avionics Troubleshooting Guide

KEEP THIS GUIDE IN THE AIRCRAFT. This will help to troubleshoot a problem, and help your avionics shop diagnose a problem after all these common problems have been considered. Also, use this list to establish normal operation.

General Troubleshooting

- q Check the aircraft breaker or fuses.
Reset once only.
- q Is electrical system properly charging?
- q Could water have leaked onto the avionics?
- q Could a connector be loose or wire broken from recent maintenance?
- q Do you hear alternator or mag noise?
- q Are any antennas missing, corroded, dirty, broken, oil coated, delaminated?
- q Is the problem intermittent?
- q Could heat, cold, altitude or time be a factor?

Loran

- q Has the correct triad been selected?
- q Is manual triad mode selected?
- q Verify the correct waypoint.
- q Is there a NOTAM of any outages?
- q Are the signal and SNR levels adequate?
- q Are you in a fringe coverage area?
- q Is precipitation-static a factor?
- q Does it have the latest hardware/software updates?
- q Check present position, or nearest airport.
- q Are there any warning or error messages?
- q Is interference also affecting the ADF?
- q Are you near a thunderstorm?
- q Is the NAV selected to an ILS frequency locking out course deviation?

Transponder

- q Is ATC receiving both Mode-A (squawk code) and Mode-C (altitude)?
- q Has the problem occurred with more than one ATC facility?
- q Is Mode-C inop, or just reporting wrong altitude?
- q Does the reply lamp illuminate in radar coverage?
- q Is the reply lamp dimmer turned down?
- q Is it in the correct mode (standby/on/alt)?
- q Does it recycle (power off, then on, then wait 30 seconds)?
- q Does test position illuminate reply lamp?
- q Does turning off the DME resolve the problem?

Com/Audio Panel/Intercom

- q Is the correct frequency active (not standby)?
- q Are the audio switches set correctly?
- q Is the auto mode being used?
- q Is the same radio selected for transmit & receive?
- q Is the volume turned down?
- q Is a mic key stuck?
- q Are both the headphone and speaker working?
- q Does it both receive and transmit?
- q Do you hear your voice in headphone during transmit (sidetone)?
- q Did ATC say they heard carrier only without voice?
- q Is there background noise when in test mode (squelch off)?
- q Try a different headset or microphone.
- q Try emergency or isolation modes.
- q Are the plugs or jacks dirty, corroded or loose?
- q Do all crew & passenger headset locations have the same problem?
- q Does another com act the same?
- q Is oxygen mic switch in proper position?

Autopilot

- q Review operating procedures.
- q Does it pass self-test on the ground?
- q Does the autotrim work?
- q Does the manual electric trim work?
- q Does it engage?
- q Can you overpower it on the ground?
- q Do the controls lock when engaged?
- q Could the cables be loose from maintenance?
- q Is the aircraft out of trim?
- q Is the horiz gyro precessing?
- q Is gyro vacuum within limits?
- q Does it hold the wings level?
- q Does it hold heading?
- q Do the wings rock?
- q Does it respond in basic pitch hold?
- q Does it hold altitude?
- q Does it lose altitude in a turn?
- q Does it porpoise?
- q Does it respond in NAV?
- q How does it respond on an ILS?

Radar

- q Does it paint rain and ground clutter?
- q Is the gain turned down?
- q Is the brightness turned down?
- q Does it test?
- q Does it display wheel spokes?
- q Does the tilt work?
- q Are the images smeared?
- q Does it lose targets within 40 miles?
- q Is the radome damaged or delaminating or leaking?
- q Is stabilization working?

DME

- q Does it receive an ident code?
(Listen for 60 seconds)
- q Is the remote channeling switch set?
- q Is the display dimmed?
- q Does the GS and TTS function? (Flying directly to/from but not over station.)
- q Is problem present on other frequencies?
- q Does it test?
- q Is there a NOTAM of any outages?

ADF

- q Is it on the correct frequency?
- q Is the unit in ADF mode?
- q Does it point to the station?
- q Does the needle move in test?
- q Does the unit receive in ANTmode?
- q Does the unit receive in ADF mode?
- q Do all three frequency bands work—
(200-399, 400-799, 800-1699)?
- q Do you hear alternator or mag noise?
- q Is the reception better on the ground with the engine off?
- q Are other radios interfering with the ADF?
- q Are there thunderstorms in the area?
- q Is there a NOTAM of any outages?

Lightning Detection

- q Does it pass self test?
- q Does it display aircraft electrical noise?
- q Is heading orientation functioning?
- q In a turn, are the dots all in the same relative position?
- q Is the brightness turned down?

GPS

- q Verify the correct waypoint.
- q Check present position or nearest airport.
- q Are at least three satellites being tracked (VFR), four satellites (IFR)?
- q Is the satellite geometry poor?
- q Are the satellite signal levels adequate?
- q Has the unit been inactive for a few months?
- q Is the hold or OBS mode selected?
- q Is the NAV selected to an ILS frequency locking out course indication?
- q Is there a NOTAM of any outages?
- q Are there any warning or error messages?
- q Does it have the latest hardware/software updates?

VOR/ILS

- q Is the correct frequency active (not standby)?
- q Does it receive the ident code?
- q Do the needles or flags move at all?
- q Can you select a reciprocal OBScourse?
- q Does the To/From indicator work?
- q How many degrees off is the VOR?
- q Does the NAV test (self or VOT)?
- q Does it have 20° course width peg to peg?
- q Do both NAVs have the same problem?
- q Does the Localizer work but not the VOR?
- q Are you close or far from the station?
- q Does a change in engine rpm have an effect?
- q Is the RNAV or PAR mode active?
- q Is the Loran/GPSSwitched to the indicator?
- q Is there a NOTAM of any outages?
- q Is problem present on different frequencies?
- q Does VOR station position relative to aircraft have an effect?

Marker Beacon

- q Do the lamps illuminate over markers?
- q Do lamps test?
- q Are the lamps dimmed?
- q Is problem resolved when high sensitivity selected?
- q Is the audio turned down or not selected?
- q Are lights seen but tones not heard?
- q Are the correct tones heard?

