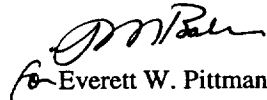


FAA APPROVED
AIRPLANE FLIGHT MANUAL SUPPLEMENT
FOR
PIPER PA32
WITH
GARMIN GPS 400 GPS RECEIVER

Reg. No. _____ S/N _____

This Supplement must be attached to the FAA Approved Airplane Flight Manual when the GARMIN GPS 400 Global Positioning System is installed in accordance with STC# SA00800WT. The information contained herein supplements the information of the basic Airplane Flight Manual. For Limitations, Procedures and Performance information not contained in this Supplement, consult the basic Airplane Flight Manual.

FAA APPROVED


for Everett W. Pittman
Manager, Aircraft Certification Office
Federal Aviation Administration
Wichita, Kansas
DATE: 7/6/89

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* For Manager Wichita Aircraft Certification Office

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SECTION I
GENERAL

1. The GPS 400 System is a fully integrated, panel mounted instrument, which contains a Global Positioning System (GPS) Navigation computer. The system consists of a GPS antenna and GPS Receiver. The primary function of the GPS portion of the system is to acquire signals from the GPS system satellites, recover orbital data, make range and Doppler measurements, and process this information in real-time to obtain the user's position, velocity, and time.
2. Provided the GARMIN GPS 400's GPS receiver is receiving adequate usable signals, it has been demonstrated capable of and has been shown to meet the accuracy specifications for:
 - VFR/IFR enroute, terminal, and non-precision instrument approach (GPS, Loran-C, VOR, VOR-DME, TACAN, NDB, NDB-DME, RNAV) operation within the U.S. National Airspace System in accordance with AC 20-138.
 - One of the approved sensors, for a single or dual GPS 400 installation, for North Atlantic Minimum Navigation Performance Specification (MNPS) Airspace in accordance with AC 91-49 and AC 120-33.
 - The system meets RNP5 airspace (BRNAV) requirements of AC 90-96 and in accordance with AC 20-138, and JAA AMJ 20X2 Leaflet 2 Revision 1, provided it is receiving usable navigation information from the GPS receiver.

Navigation is accomplished using the WGS-84 (NAD-83) coordinate reference datum. Navigation data is based upon use of only the Global Positioning System (GPS) operated by the United States of America.

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SECTION II
LIMITATIONS

1. The GARMIN GPS 400 Pilot's Guide, P/N 190-00140-60, Rev. A, dated April, 1999, or later appropriate revision, must be immediately available to the flight crew whenever navigation is predicated on the use of the system.
2. The GPS 400 must utilize the following or later FAA approved software versions:

Sub-System	Software Version
Main	2.08
GPS	2.00

The Main software version is displayed on the GPS 400 self test page immediately after turn-on for 5 seconds. The remaining system software versions can be verified on the AUX group sub-page 2, "SOFTWARE/DATABASE VER".

3. IFR enroute and terminal navigation predicated upon the GPS 400's GPS Receiver is prohibited unless the pilot verifies the currency of the database or verifies each selected waypoint for accuracy by reference to current approved data.
4. Instrument approach navigation predicated upon the GPS 400's GPS Receiver must be accomplished in accordance with approved instrument approach procedures that are retrieved from the GPS equipment database. The GPS equipment database must incorporate the current update cycle.
 - (a) Instrument approaches utilizing the GPS receiver must be conducted in the approach mode and Receiver Autonomous Integrity Monitoring (RAIM) must be available at the Final Approach Fix.

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- (b) Accomplishment of ILS, LOC, LOC-BC, LDA, SDF, MLS or any other type of approach not approved for GPS overlay with the GPS 400's GPS receiver is not authorized.
 - (c) When an alternate airport is required by the applicable operating rules, it must be served by an approach based on other than GPS or Loran-C navigation, the aircraft must have the operational equipment capable of using that navigation aid, and the required navigation aid must be operational.
 - (d) VNAV information may be utilized for advisory information only. Use of VNAV information for Instrument Approach Procedures does not guarantee Step-Down Fix altitude protection, or arrival at approach minimums in normal position to land.
5. If not previously defined, the following default settings must be made in the "SETUP 1" menu of the GPS 400 prior to operation (refer to Pilot's Guide for procedure if necessary):
- (a) **dis, spd** $\frac{n}{m} k_t$ (sets navigation units to "nautical miles" and "knots")
 - (b) **alt, vs** f_t fpm (sets altitude units to "feet" and "feet per minute")
 - (c) **map datum** .. WGS 84 (sets map datum to WGS-84, see note below)
 - (d) **posn** deg-min (sets navigation grid units to decimal minutes)

NOTE: In some areas outside the United States, datums other than WGS-84 or NAD-83 may be used. If the GPS 400 is authorized for use by the appropriate Airworthiness authority, the required geodetic datum must be set in the GPS 400 prior to its use for navigation.

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SECTION III
EMERGENCY PROCEDURES

ABNORMAL PROCEDURES

1. If GARMIN GPS 400 navigation information is not available or invalid, utilize remaining operational navigation equipment as required.
2. If "RAIM POSITION WARNING" message is displayed the system will flag and no longer provide GPS based navigational guidance. The crew should revert to an alternate means of navigation other than the GPS 400's GPS Receiver.
3. If "RAIM IS NOT AVAILABLE" message is displayed in the enroute, terminal, or initial approach phase of flight, continue to navigate using the GPS equipment or revert to an alternate means of navigation other than the GPS 400's GPS receiver appropriate to the route and phase of flight. When continuing to use GPS navigation, position must be verified every 15 minutes using another IFR-approved navigation system.
4. If "RAIM IS NOT AVAILABLE" message is displayed while on the final approach segment, GPS based navigation will continue for up to 5 minutes with approach CDI sensitivity (0.3 nautical mile). After 5 minutes the system will flag and no longer provide course guidance with approach sensitivity. Missed approach course guidance may still be available with 1 nautical mile CDI sensitivity by executing the missed approach.

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SECTION IV
NORMAL PROCEDURES

1. DETAILED OPERATING PROCEDURES

Normal operating procedures are described in the GARMIN GPS 400 Pilot's Guide, P/N 190-00140-60, Rev. A, dated April 1999, or later appropriate revision.

2. PILOT'S DISPLAY

The GPS 400 System data will appear on the Pilot's HSI.

3. AUTOPILOT / FLIGHT DIRECTOR OPERATION

Coupling of the GPS 400 System steering information to the autopilot / flight director can be accomplished by engaging the autopilot in the NAV or APR mode.

When the autopilot / flight director system is using course information supplied by the GPS 400 System, the course pointer on the HSI must be manually set to the desired track (DTK) indicated by the GPS 400 System. For detailed autopilot / flight director operational instructions, refer to the FAA Approved Flight Manual Supplement for the autopilot / flight director.

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**SECTION V
PERFORMANCE**

No change.

**SECTION VI
WEIGHT AND BALANCE**

See current weight and balance data.

**SECTION VII
AIRPLANE & SYSTEM DESCRIPTIONS**

See GPS 400 Pilot's Guide for a complete description of the GPS 400 System.