

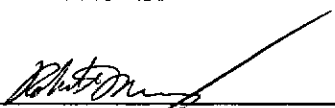
FAA APPROVED AIRPLANE FLIGHT MANUAL SUPPLEMENT
GARMIN GNS 530 VHF COMMUNICATION
TRANSCIEVER VOR/ILS RECEIVER / GPS RECEIVER /
TERRAIN AWARENESS AND WARNING SYSTEM (TAWS)

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FAA APPROVED
AIRPLANE FLIGHT MANUAL SUPPLEMENT
FOR
PIPER PA32
WITH
GARMIN GNS 530 VHF COMMUNICATION
TRANSCIEVER / VOR/ILS RECEIVER / GPS RECEIVER /
TERRAIN AWARENESS AND WARNING SYSTEM (TAWS)
Reg. No. _____ S/N _____

This Supplement must be attached to the FAA Approved Airplane Flight Manual when the GARMIN GNS 530 VHF Communication Transceiver / VOR/ILS Receiver / Global Positioning System / Terrain Awareness and Warning System is installed in accordance with STC# SA00864WI-D. 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


Robert Murray
Lead DAS Administrator
Garmin International, Inc.

DATE: 04/04/00
REVISED: 08/27/07

| LOG OF REVISIONS | | | | |
|------------------|----------------|--|--------------|------------------|
| Revision Number | Page Number(s) | Description | FAA Approved | Date of Approval |
| A | All | Initial Release | K. Campbell* | 4/4/00 |
| B | 5, 10 | Remove SKYWATCH and add GTX 330 TIS | G. Baker* | 11/21/02 |
| C | All | Add TAWS; Add North Atlantic MNPS with two GNS 530 units; Change AMJ 20X2 to ACJ 20X4; Pilot's Guide Addendum statement. | G. Baker* | 11/19/04 |
| D | All | Administrative Revision to synchronize revisions | G. Baker* | 08/31/05 |
| E | All | Administrative Revision to synchronize revisions | G. Baker* | 08/31/05 |
| F | All | Change STC number to include "-D"; Changed operational characteristics | See Cover | See Cover |
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* For Manager Wichita Aircraft Certification Office

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SECTION I GENERAL

1. The GNS 530 System is a fully integrated, panel mounted instrument, which contains a VHF Communications Transceiver, a VOR/ILS receiver, and a Global Positioning System (GPS) Navigation computer and a Terrain Awareness and Warning System (TAWS). The system consists of a GPS antenna, GPS Receiver, VHF VOR/LOC/GS antenna, VOR/ILS receiver, VHF COMM antenna and a VHF Communications Transceiver. The primary function of the VHF Communication portion of the equipment is to facilitate communication with Air Traffic Control. The primary function of the VOR/ILS Receiver portion of the equipment is to receive and demodulate VOR, Localizer, and Glide Slope signals. 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. The primary function of the TAWS portion of the system is to provide terrain situational awareness.
2. Provided the GARMIN GNS 530'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, and RNAV) operation within the U.S. National Airspace System in accordance with AC 20-138.
 - North Atlantic Minimum Navigation Performance Specification (MNPS) Airspace in accordance with AC 91-49, AC 91-70 and AC 120-33 provided two GNS 530 systems are installed or a single GNS 530 installation in combination with another approved sensor and are operable and receiving valid GPS signals. The GPS sensor meets the requirements of FAA Notice 8110.60 for primary navigation sensors. This does not constitute an operational approval.
 - The systems meets RNP5 airspace (BRNAV) requirements of AC 90-96 and in accordance with AC 20-138 and JAA GAI-20 ACJ 20X4 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.

SECTION II LIMITATIONS

1. The GARMIN GNS 530 Pilot's Guide, P/N 190-00181-00, Rev. D, dated February 2007 or later appropriate revision must be immediately available to the flight crew whenever navigation is predicated on the use of the system.
2. The GNS 530 must utilize the following or later FAA approved software versions:

| Sub-System | Software Version |
|------------|------------------|
| Main | 6.03 |
| GPS | 3.01 |
| COMM | 6.00 |
| VOR/LOC | 3.01 |
| G/S | 2.03 |

The Main software version is displayed on the GNS 530 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 Versions".

3. IFR enroute and terminal navigation predicated upon the GNS 530's GPS Receiver is prohibited unless the pilot verifies the currency of the data base or verifies each selected waypoint for accuracy by reference to current approved data.
4. Instrument approach navigation predicated upon the GNS 530's GPS Receiver must be accomplished in accordance with approved instrument approach procedures that are retrieved from the GPS equipment data base. 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.
 - (b) Accomplishment of ILS, LOC, LOC-BC, LDA, SDF, MLS or any other type of approach not approved for GPS overlay with the GNS 530's GPS receiver is not authorized.
 - (c) Use of the GNS 530 VOR/ILS receiver to fly approaches not approved for GPS require VOR/ILS navigation data to be present on the external indicator.
 - (d) 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.
 - (e) 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 “AUX Pages, SETUP Page, UNITS/POSITION” menu option of the GNS 530 prior to operation (refer to the GARMIN GNS 530 Pilot's Guide, P/N 190-00181-00, Rev. D, dated February 2007 or later appropriate revision 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) **posn**deg-min (sets navigation grid units to decimal minutes)
6. Navigation must not be predicated upon the use of the TAWS.

NOTE: The terrain display is intended to serve as a situational awareness tool only. It may not provide either the accuracy or fidelity, or both, on which to solely base decisions and plan maneuvers to avoid terrain or obstacles.

7. To avoid giving unwanted alerts, the TAWS must be inhibited when landing at an airport that is not included in the airport database.
8. Pilots are authorized to deviate from their current ATC clearance to the extent necessary to comply with TAWS warnings.
9. The TAWS databases have an area of coverage as detailed below:
 - (a) The Worldwide Terrain Database has an area of coverage from North 75° Latitude to South 60° Latitude in all longitudes.
 - (b) The US Airport Terrain Database has an area of coverage that includes the United States. The North American Airport Terrain Database has an area of coverage that includes the United States and portions of Canada, Mexico, and Latin America. The Worldwide Airport Terrain Database has an area of coverage that includes all airports from North 75° Latitude to South 60° Latitude in all longitudes.
 - (c) The US/Europe Obstacle Database has an area of coverage that includes the United States and Europe.

NOTE: The area of coverage may be modified as additional terrain data sources become available.

SECTION III EMERGENCY PROCEDURES

ABNORMAL PROCEDURES

1. If GARMIN GNS 530 navigation information is not available or invalid, utilize remaining operational navigation equipment as required. TAWS will not be available. A white 'TER N/A' or red 'TER FAIL' status annunciator will be displayed in the lower left corner of the GNS 530.
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 the GNS 530 VOR/ILS receiver or an alternate means of navigation other than the GNS 530's GPS Receiver. TAWS will not be available and a white 'TER N/A' status annunciator will be displayed by the GNS 530.
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 GNS 530's GPS receiver appropriate to the route and phase of flight. When continuing to use GPS navigation lateral position must be verified every 15 minutes using the GNS 530's VOR/ILS receiver, or 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. If flying a GPS based approach, execute the appropriate missed approach procedure. After completing the missed approach procedure, refer to paragraph 3 above before using GPS based navigation.
5. In an in-flight emergency, depressing and holding the Comm transfer button for 2 seconds will select the emergency frequency of 121.500 MHz into the "Active" frequency window.
6. If the white "TER N/A" status annunciation is displayed by the GNS 530, the system will no longer provide TAWS alerting or display relative terrain elevations. The crew must maintain compliance with procedures that ensure minimum terrain and obstacle separation.
7. If the red "TER FAIL" status annunciation is displayed by the GNS 530, the system will no longer provide TAWS alerting or display relative terrain elevations. The crew must maintain compliance with procedures that ensure minimum terrain and obstacle separation.
8. If a "TAWS has failed" message is displayed by the GNS 530, the system will no longer provide TAWS alerting or display relative terrain elevations. The crew must maintain compliance with procedures that ensure minimum terrain and obstacle separation.

SECTION IV NORMAL PROCEDURES

1. DETAILED OPERATING PROCEDURES

Normal operating procedures are described in the GARMIN GNS 530 Pilot's Guide, P/N 190-00181-00, Rev. D, dated February 2007, or later appropriate revision.

2. PILOT'S DISPLAY

The GNS 530 System data will appear on the Pilot's HSI. The source of data is either GPS or VLOC as annunciated on the display above the CDI key.

NOTE: It is the pilot's responsibility to assure that published or assigned procedures are correctly complied with. Course guidance is not provided for all possible ARINC 424 leg types. See the GNS 530 Pilot's Guide for detailed operating procedures regarding navigation capabilities for specific ARINC 424 leg types.

3. AUTOPILOT / FLIGHT DIRECTOR OPERATION

Coupling of the GNS 530 System steering information to the autopilot/flight director can be accomplished by engaging the autopilot/flight director in the NAV or APR mode.

When the autopilot/flight director system is using course information supplied by the GNS 530 System and the course pointer is not automatically driven to the desired track, the course pointer on the HSI must be manually set to the desired track (DTK) indicated by the GNS 530. For detailed autopilot/flight director operational instructions, refer to the FAA Approved Flight Manual Supplement for the autopilot/flight director.

4. CROSSFILL OPERATIONS

Crossfill capabilities exist between the GNS 530 and GNC 500/GNC 400 Product Series. Refer to the GARMIN GNS 530 Pilot's Guide for detailed crossfill operating instructions for dual product series installations.

5. AUTOMATIC LOCALIZER COURSE CAPTURE

By default, the GNS 530 automatic localizer course capture feature is enabled. This feature provides a method for system navigation data present on the external indicators to be switched automatically from GPS guidance to localizer / glide slope guidance as the aircraft approaches the localizer course inbound to the final approach fix. If an offset from the final approach course is being flown, it is possible that the automatic switch from GPS course guidance to localizer / glide slope course guidance will not occur. It is the pilot's responsibility to ensure correct system navigation data is present on the external indicator before continuing a localizer based approach beyond the final approach fix. Refer to the GNS 530 Pilot's Guide for detailed operating instructions.

6. DISPLAY OF LIGHTNING STRIKE DATA

Lightning strike data detected by the BFGoodrich WX-500 Stormscope will appear on the moving map and weather pages of the GNS 530. For detailed operating instructions regarding the interface of the GNS 530 with the WX-500, refer to the WX-500 Pilot's Guide and the GARMIN GNS 530 Pilot's Guide, P/N 190-00181-00, Rev. D, dated February 2007 for the WX-500 Stormscope interface.

7. DISPLAY OF TRAFFIC INFORMATION SERVICE DATA

TIS surveillance data uplinked by Air Traffic Control (ATC) radar through the GTX 330 Mode S Transponder will appear on the moving map and traffic display pages of the GNS 530. For detailed operating instructions regarding the interface of the GNS 530 with the GTX 330, refer to the GARMIN GNS 530 Pilot's Guide, P/N 190-00181-00, Rev. D, dated February 2007 for the TIS System interface.

8. TERRAIN AWARENESS CAUTION

When a terrain awareness CAUTION occurs, take positive corrective action until the alert ceases. Stop descending or initiate either a climb or a turn, or both, as necessary, based on analysis of all available instruments and information.

9. TERRAIN AWARENESS WARNING

If a terrain awareness WARNING occurs, immediately initiate and continue a climb that will provide maximum terrain clearance, or any similar approved vertical terrain escape maneuver, until all alerts cease. Only vertical maneuvers are recommended, unless either operating in visual meteorological conditions (VMC), or the pilot determines, based on all available information, that turning in addition to the vertical escape maneuver is the safest course of action, or both.

10. TERRAIN INHIBIT

The TAWS Forward Looking Terrain Avoidance (FLTA) and Premature Descent Alerts (PDA) functions may be inhibited to stop alerting for acceptable flight conditions. For detailed operating instructions regarding the GNS 530 TAWS interface, refer to the GARMIN GNS 530 Pilot's Guide, P/N 190-00181-00, Rev. D, dated February 2007 for the TAWS System interface.

SECTION V PERFORMANCE

No change.

SECTION VI WEIGHT AND BALANCE

See current weight and balance data.

SECTION VII AIRPLANE & SYSTEM DESCRIPTIONS

See The GARMIN GNS 530 Pilot's Guide, P/N 190-00181-00, Rev. D, dated February 2007 or later appropriate revision for a complete description of the GNS 530 system.