Owner's Manual
And
Approved Flight Manual

Supplement Number 2

Garmin GNS 430 GPS Navigator
With
VHF Nav, ILS, and VHF Com

When a Garmin GNS 430 GPS Navigator with NAV, ILS, and COM is installed in the CH 2000, this supplement is applicable and must be inserted in the CH 2000 Pilot's Operating handbook. This document must be carried in the airplane at all times. Information in this supplement either adds to, supersedes, or deletes information in the basic CH 2000 Pilot's Operating Handbook.

Approved _____

Date: 20 October 2003

Chief, Flight Test
for Director, Aircraft Certification
Transport Canada

SUPPLEMENT NUMBER 2
LOG OF REVISIONS

Revision Date	Revised Pages	Description of Revision
15 Oct 03	All pages	Initial Issue

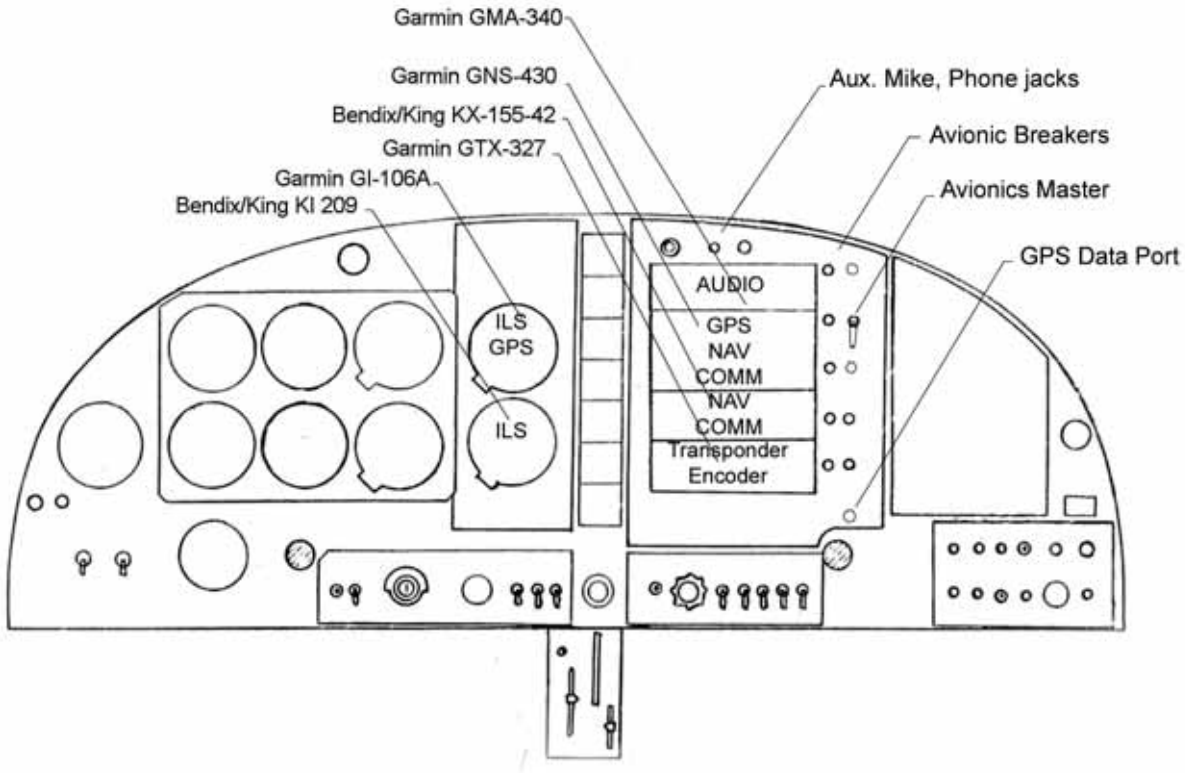
Supplement Number 2	Page	Date
	11-1-APP 11-2-APP 11-3-APP	15 Oct 03 15 Oct 03 15 Oct 03
	11-4-APP 11-5-APP 11-6-APP	15 Oct 03 15 Oct 03 15 Oct 03

SECTION 1 – GENERAL

The airplane is equipped with a Garmin GNS 430 GPS Navigator with VHF Nav, ILS, and VHF Com herein referred to as the "Navigator". The GNS 430 is capable of providing IFR enroute, terminal, and approach navigation with position accuracies better than 15 meters. The system utilizes the Global Positioning System (GPS) satellite network to derive the airplane's position (latitude, longitude, and altitude) and the altitude digitizer to enhance the altitude calculation.

In addition to the Garmin 430 navigation computer and appropriate antennae, the following are included in the GPS/IFR instrumentation package:

-Garmin GI-106A indicator;
-Bendix/King KX155 Nav/Comm (optional) with KI 208 or KI 209 indicator (optional);
-Garmin GMA-340 Audio Panel;
-Garmin GTX-327 Transponder;
-Sandia #705154-00 Altitude Encoder



Instrument Panel for Garmin GNS 430 GPS Navigator
With VHF Nav, ILS, and VHF Com

Power to the Garmin avionics is supplied from the aircraft battery, to a 30A in-line fuse at the rear of the aircraft, to the Avionics Master Switch Breaker. Power for the Bendix/King KX155 is supplied from the aircraft power bar, through the main aircraft master. With the Avionics Master Switch turned "OFF", the pilot is able to have full use of the Bendix/King KX155 and can communicate by plugging-in the headset to the Aux. Mike, Phone jacks located on top of the Audio Panel.

SECTION 2 - LIMITATIONS

Provided the GPS Navigator is receiving adequate usable signals, it has been demonstrated capable of and has been shown to meet the accuracy specifications of:

VFR/IFR, enroute, terminal, and instrument approach (GPS, VOR) operations, that is, enroute, terminal, and instrument approach within the U.S. National Airspace System, North Atlantic Minimum Navigation Performance Specification (MNPS) Airspace using the WGS-84 (or NAD 83) coordinate reference datum in accordance with the criteria of AC 20-138, AC 91-49, and AC 120-33. Navigation data is based upon use of only the global positioning system (GPS) operated by the United States.

1. The Garmin GNS 430 Pilot's Guide and Reference, P/N 190-00140-00, Revision A dated December 1998 (or later appropriate revision) must be immediately available to the flight crew whenever navigation is predicated on the use of the GPS Navigator. The software status stated in the pilot's guide must match that displayed on the equipment.

2. The Naviator must utilize software version 2.XX (where X is a digit, 0-9).

3. GPS/IFR enroute and terminal navigation 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. GPS instrument approaches must be accomplished in accordance with approved instrument approach procedures that are retrieved from the Navigator's NavData database. The database must incorporate the current update cycle.
    a. Instrument approaches must be conducted in the approach mode and RAIM must be available at the Final Approach Fix.
    b. Accomplishment of ILS, LOC, LOC-BC, LDA, SDF, and MLS approaches are not authorized in GPS mode.
    c. The following limitation applies when required by national regulations: When an alternate airport is required by the applicable operating rules, it must be served by an approach based on other than GPS navigation, the aircraft must have operational equipment capable of using that navigation aid, and the required navigation aid must be operational.

5. The aircraft must have other approved navigation equipment installed and operating appropriate to the route of flight.

SECTION 3 - EMERGENCY PROCEDURES

1. If GPS Navigator information is not available or is invalid, utilize remaining operational navigation equipment as required.

2. If "RAIM NOT AVAILABLE…" or "RAIM POSITION WARNING" message is displayed, continue to navigate using the GPS equipment or revert to an alternate means of navigation 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.

Section 4 – Normal Procedures

Normal operating procedures are outlined in the GARMIN GNS 430 Pilot's Guide and Reference, P/N 190-00140-00, Revision A dated December 1998 (or later appropriate revision).

Activate GPS

1. Avionics Master Switch Breaker - on panel ---------- ON
2. Navigator Com/ Power Switch - on Garmin GNS-430 unit ---------- Rotate 'ON'
   The Navigator will display a welcome page while the self-test is in progress. When the self test is successfully completed, the Navigator asks for NavData database confirmation, acquires position, and then displays the acquired position on the Navigator's display and on the ARNAV display.

   Note: The Navigator is not coupled to an air and fuel data computer. Manual fuel-on-board and fuel flow entries must be made in order to use the fuel planning function of the AUX pages.

   The GPS Navigator utilizes altitude information from the altitude encoder's altitude digitizer to enhance altitude information.

GNS 430 Intergration

The GNS 430 Navigator is integrated in the CH2000 Avionics installation:
Single GARMIN GNS 430 (GPS) interfaced with the CDI.
In this configuration, pressing the alternate-action CDI push-button on the GARMIN GNS 430 alternately selects GPS or NAV for display on the CDI each time the button is pressed. The CDI source is indicated by illumination of the "GPS" or "VLOC" annunciation in the lower left corner of the GNS 430 display.
Note: The CDI displays course deviation from a VOR, Localizer (LOC) or Glideslope (G/S) when VLOC is selected for disply and displays GPS track deviation when GPS is the selected navigation source.

Deactiviate GPS

1. Navigator Com/ Power Switch---------- Rotate CCW 'OFF'

SECTION 5 – PERFORMANCE

No change from basic Handbook.

SECTION 6 – WEIGHT & BALANCE

No change from basic Handbook

SECTION 7 – SYSTEM DESCRIPTION

Note: This supplement provides a general description of the Garmin GNS 430, its operation, and CH 2000 interface. For a detailed description of the GNS 430 and full operation instructions refer to the Garmin GNS 430 Pilot's Guide and Reference, P/N 190-00140-00, Revision A dated December 1998 (or later appropriate revision).

GNS 430 Integrated GPS/Nav/Com System

This airplane is equipped with a GNS 430 integrated GPS navigator, NAV receiver, and COM transceiver. The GPS navigator consists of a GPS receiver, a navigation computer, and a Jeppeson NavData database all contained in the GNS 430 control unit mounted in the center console. A VHF NAV receiver and tuner for receiving VHF Omnirange (VOR), Localizer (LOC), and Glideslope (G/S) is also integrated into the control unit. The NAV receiver is designated 'NAV 1'. Additionally, a VHF communications reciver, designated "COM 1', is also integrated into the unit. All tuning and display controls for the GPS, NAV, and COM are located in the GNS 430 control/display in the center console. The following paragraphs describe the GPS, NAV, and COM functions of this unit. For a complete description, as well as full operating instructions, refer to the Garmin GNS 430 Pilot's Guide and Reference.

GPS Navigator

The Garmin GPS 430 is capable of providing IFR enroute, terminal, and approach navigation with position accuracies better than 15 meters. The system utilizes the Global Positioning System (GPS) satellite network to derive the airplane's position (latitude , longitude, and altitude) and the altitude digitizer to enhance the altitude calculation. The GPS antenna is located behind the cabin roof along the airplane centerline. All GPS navigator controls and functions are accessible through the GNS 430 front control panel located in the center console. The panel includes function keys, power switches, MSG and Nav status annunciators, color LCD display, concentric selector knobs, and a Jeppesen NavData card slot. The GNS 430 navigator is powered by 14 VDC through the 5-amp GPS circuit breaker.

The Jeppesen Navigation Database provides access to data on Airports, Approaches, Standard Instrument Departures (SIDs), Standard Terminal Arrivals (STARs), VORs, NDBs, Intersections, Minimum Safe Altitudes, Controlled Airspace Advvisories and Frequencies. North American and International databases are available. Database information is provided on a card that can be inserted into the card slot on the GPS unit. Subscription information is provided in a subscription package provided with each system.

Navigation (Nav) Receiver

The Garmin GNS 430 provides an integrated Navigation (NAV) receiver with VHF Ominrange/Localizer (VOR/LOC) and Glideslope (G/S) capability. The VOR/LOC receiver receives on a frequency range from 108,000 Mhz to 117,950 Mhz with 50 Khz spacing. Glideslope is received from 329.150 to 335.00 in 150 Khz steps. The Nav receiver controls are integrated into the Garmin GNS 430 control mounted in the center console. The receiver control provides active and stadby frequency indication, frequency memory storage, and knob-operated frequency selection. IDENT audio output for VOR and LOC is provided to the audio system. The Nav antenna is mounted at the vertical tail. Fourteen VDC for navigation receiver operation is controlled through the Avionics Master Switch on the bolster switch panel and supplied through the 5-amp GPS circuit breaker on the Avionics Essential Bus. The airplane is equipped with a Garmin GNS 430 integrated GPS Navigator, Navigation (NAV) receiver with VHF Omnirange/Localizer (VOR/LOC) and Glidesope receiver.

Communication (COM) Transceiver

The GNS 430 includes a digitally-tuned integrated VHF communications (COM) transceiver. The transceiver and integrated controls are mounted in the Garmin GNS 430 unit. The transceiver receives all narrow and wide-band VHF communication transmissions transmitted with a frequency range of 118,000 Mhz to 136,975 Mhz in 25.0 Khz steps (720 channels). For European operations, the COM can be operator configured for 8.33 Khz channel spacing (2280 channels). The tuning controls are collocated with the NAV at the left side of the GNS 430 front panel. Frequency tuning is accomplished by rotating the large and small concentric knobs to select a standby frequency and then transferring the frequency to the active window. The COM frequency display window is at the upper left corner of the GNS 430 display. Auto-tuning can be accomplished by entering a frequency from a menu. The COM antenna is located above the cabin on the airplane centerline.