SUPPLEMENT A28
TO THE AIRPLANE FLIGHT MANUAL DA 40 D

COM / NAV / GPS
GNS 530
GARMIN
VFR-OPERATION

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1. GENERAL

This Supplement supplies the information necessary for the efficient operation of the airplane when the COM/NAV/GPS GNS 530 is installed. The information contained within this Supplement is to be used in conjunction with the complete AFM.

This Supplement is a permanent part of this AFM and must remain in this AFM at all times when the GNS 530 is installed.

2. LIMITATIONS

A. The GPS of the is limited to use under visual flight rules (VFR) only.

The following placard is in the pilot´s view:

GPS limited to VFR use only

B. If not previously defined, the following default settings must be made in the 'SETUP 1' menu of the GNS 530 prior to operation (refer to Pilot's Guide for procedure if necessary):

(1) **dis, spd:** nm, kt (sets navigation units to 'nautical miles' and 'knots')

(2) **alt, vs:** ft, fpm (sets altitude units to 'feet' and 'feet per minute')

(3) **map datum:** WGS 84 (sets map datum to WGS-84, see note below)

(4) **posn:** hddd°mm.mmm' (sets navigation grid units to decimal minutes)

(5) **fuel:** gl (sets fuel units to gallons)

NOTE

In some areas datums other than WGS-84 may be used. If the GNS 530 is authorized for use by the appropriate Airworthiness authority, the required geodetic datum must be set in the GNS 530 prior to its use for navigation.

C. The accuracy of the data base information is only assured if it is used before the end of the effectivity period. Use of out of date data base information is done entirely at the user´s own risk.

3. EMERGENCY PROCEDURES

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.

4A. NORMAL OPERATING PROCEDURES

DETAILED OPERATING PROCEDURES

Normal operating procedures are described in the GNS 530 Pilot's Guide, dated April 2000, or later appropriate revision.

4B. ABNORMAL OPERATING PROCEDURES

No change.

5. PERFORMANCE

No change.

6. MASS AND BALANCE

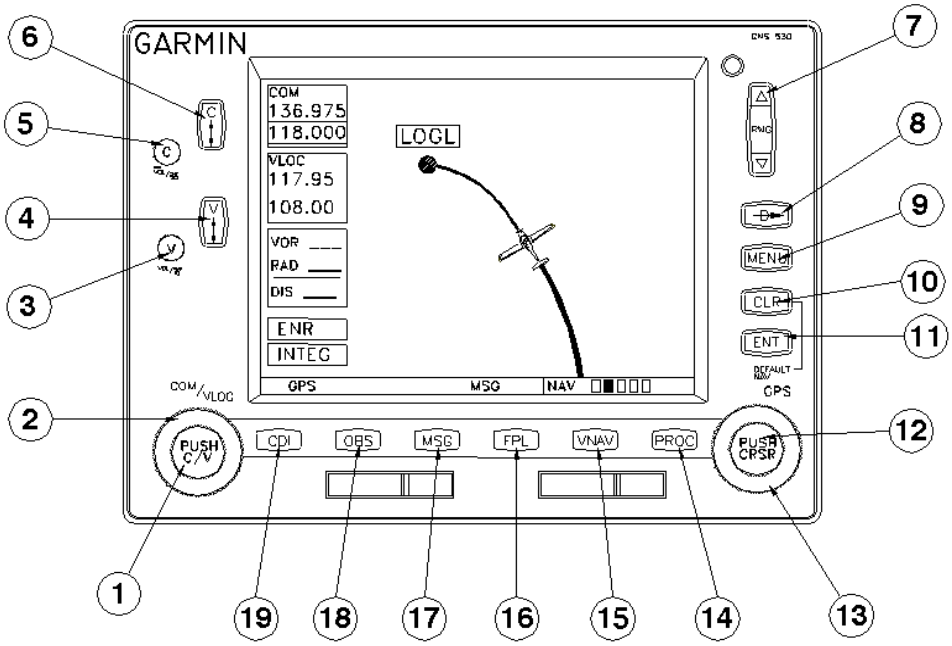
Upon removal or installation of the GNS 530 the change of empty mass and corresponding center of gravity of the airplane must be recorded according to Chapter 6 of the Airplane Flight Manual.

7. DESCRIPTION OF THE AIRPLANE AND ITS SYSTEMS

7.14 AVIONICS

GENERAL

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. 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.



KEY AND KNOB FUNCTIONS

The key and knob descriptions on the next pages provide a general overview of the primary function(s) for each knob.

LEFT-HAND KEYS AND KNOBS

1. The small left knob (PUSH C/V) is used to tune the kilohertz (kHz) value of the standby frequency for the communications transceiver (COM) or the VLOC receiver, whichever is currently selected by the tuning cursor. Press this knob momentarily to toggle the tuning cursor between the COM and VLOC frequency fields.

2. The large left knob (COM/VLOC) is used to tune the megahertz (MHz) value of the standby frequency for the communications transceiver (COM) or the VOR/Localizer receiver, whichever is currently selected by the tuning cursor.

3 The VLOC volume knob controls audio volume for the selected VOR/Localizer frequency. Press momentarily to enable/disable the ident tone.

4. The VLOC flip-flop key is used to swap the active and standby VLOC frequencies (i.e., make the selected standby frequency active).

5. The COM power/volume knob controls unit power and communications radio volume. Press momentarily to disable automatic squelch control.

6. The COM flip-flop key is used to swap the active and standby COM frequencies. Press and hold to select emergency channel (121.500 MHz).

RIGHT-HAND KEYS AND KNOBS

7. The range key allows you to select the desired map scale. Use the up arrow side of the key to zoom out to a larger area, or the down arrow side to zoom in to a smaller area.

8. The direct-to key provides access to the direct-to function, which allows you to enter a destination waypoint and establishes a direct course to the selected destination.

9. The menu key displays a context-sensitivity list of options. This options list allows you to access additional features or make settings changes which relate to the currently displayed page.

10. The clear key is used to erase information or cancel an entry. Press and hold this key to immediately display the Default Navigation Page, regardless of which page is currently being displayed.

11. The enter key is used to approve an operation or complete data entry. It is also used to confirm information, such as the Database Page during power on.

12. The small right knob (PUSH CRSR) is used to select between the various pages within one of the groups listed below. Press this knob momentarily to display the on-screen cursor. The cursor allows you to enter data and/or make a selection from a list of options.

13. The large right knob (GPS) is used to select between the various page groups: NAV, WPT, AUX, or NRST. With the on-screen cursor enabled, the large right knob allows you to move the cursor about the page.

BOTTOM ROW KEYS

14. The procedures key allows you to select approaches, departures and arrivals from your flight plan. When using a flight plan, available procedures for your departure and/or arrival airport are offered automatically. Otherwise, you may select the desired airport, then the desired procedure.

15. The vertical navigation key allows you to create a three-dimensional profile which guides you to a final (target) altitude at a specified location.

16. The flight plan key allows you to create, edit, activate and invert flight plans, as well as access approaches, departures and arrivals. A closest point to flight plan feature is also available from the flight plan key.

17. The message key is used to view system messages and to alert you to important warnings and requirements.

18. The OBS key is used to select manual or automatic sequencing of waypoints. Pressing this key selects OBS mode, which will retain the current 'active to' waypoint as your navigation reference even after passing the waypoint (i.e., prevents sequencing to the next waypoint). Pressing the OBS key again will return to normal operation, with automatic sequencing of waypoints. Whenever OBS mode is selected, you may set the desired course to/from a waypoint using the OBS Page, or an external OBS selector on your CDI or HSI.

19. The CDI key is used to toggle which navigation source (GPS or VLOC) provides output to the CDI or HSI.

OPERATION

POWERING UP THE GNS 530

The GNS 530´s power and COM volume are controlled using the COM power/volume knob (5) at the top left corner of the unit. Rotating it clockwise will turn unit power on and increase the COM radio volume. After turning the unit on, a 'welcome page' will be displayed while the unit performs a self test, followed by a 'land data page'.

The database confirmation page will appear next, which shows the current database information on the NavData card (with the valid operating dates, cycle number and database type indicated). The database is updated every 28 days, and must be current for approved instrument approach operations. Information on database subscriptions is available inside your GNS 530 package.

To acknowledge the database information, press the ENT-key.

Once the database has been acknowledged, the instrument panel self-test page will appear. To ensure that the GNS 530 and any connected instruments are working properly, check for the following indications on your CDI or HSI and external annunciators:

- Course deviation - half left / no flag
- TO/FROM flag - TO
- All external annunciators - on
- Glideslope - half up / no flag

ACQUIRING SATELLITES & VIEWING MESSAGES

The satellite status page will appear as the GNS 530 will begin to collect satellite information. An 'Acquiring' status will be displayed on the satellite status page, and the signal strength of any satellites received will appear as 'bar graph' readings. This is a good indication that you are receiving signals and a position fix will be determined. Following the first-time use of your GNS 530, the time required for a position fix will vary - usually from one to two minutes.

If the unit can only obtain enough satellites for 2D navigation (no altitude), the unit will use the altitude provided by the altitude encoder.

If the GNS 530 has not been operated for a period of six months or more, it may have to 'Search the Sky' to collect new data. This means the unit is acquiring satellite data to establish almanac and satellite orbit information, which can take 5 to 10 minutes. The satellite status page will display a 'Searching Sky' status, and the message annunciator (MSG), above the MSG key, will also flash to alert you of a system message, 'Searching the Sky'.

To view a system message, press MSG.

The message page will appear and display the status or warning information applicable to the receiver´s current operating condition.

To return to the previous page after viewing a message, press MSG again.

SELECTING COM/NAV FREQUENCIES

The GNS 530´s display is divided into separate 'windows' (or screen areas), including a COM window, VLOC window and the GPS window (the right 3/4 of the display).

Pushing the small left knob (1) moves the tuning cursor back-and-forth between the COM and VLOC frequency window. To select the active frequency, you must first enter the frequency in the standby field, and use the COM flip-flop (6) (or the VLOC flip-flop (4)) key to move it to the active field.

To change the standby communication frequency:

1. Press the small left knob (1) if needed, to move the tuning cursor to the COM window.
2. Rotate the large left knob (2) to select the MHz, and the small left knob (1) to select the kHz of the desired frequency.

To place the standby communication frequency in the active field, press the COM flip-flop key (6).

Once you have entered the active frequency, simply repeat steps 1 and 2, above, to enter the standby frequency. After both communication frequencies have been entered, you may select to keep the COM window 'hot' by leaving the cursor on the standby frequency, or move the cursor to the VLOC window by pressing the small left knob (1).

NOTE

When selecting VLOC frequencies, the tuning cursor will automatically return to the COM window after 30 seconds of inactivity.

To change the standby VLOC frequency:

1. Press the small left knob (1), if needed, to activate the tuning cursor in the VLOC window.
2. Rotate the large left knob (2) to select the MHz, and the small left knob (1) to select the kHz of the desired frequency.

To place the standby frequency in the active field, press the VLOC flip-flop key (4).

DIRECT-TO NAVIGATION

The GNS 530 can use direct point-to-point navigation to guide you from takeoff to touchdown. Once a destination is selected, the unit will provide speed, course and distance data based upon a direct course from your present position to your destination. A destination can be selected from any page with the direct-to-key (8).

To select a direct-to destination:

1. Press the direct-to-key. The select direct-to waypoint page will appear with the destination field highlighted.
2. Rotate the small right knob (12) to enter the first letter of the destination waypoint identifier. The destination waypoint may be an airport, VOR, NDB, intersection or user waypoint, as long as it is in the database or stored in memory as a user waypoint.
3. Rotate the large right knob (13) to the right to move the cursor to the next character position.
4. Repeat steps 2 and 3 to spell out the rest of the waypoint identifier.
5. Press ENT to confirm the identifier. The 'Activate?' function field will be highlighted.
6. Press ENT to activate a direct-to course to the selected destination.

NAVCOM PAGE

A frequency listed on the NAVCOM page can be quickly transferred to the standby field of the COM or VLOC windows. This time saving process prevents having to 're-key' a frequency already displayed elsewhere on the screen.

To select a communication or navigation frequency:

1. Push the small right knob (12) to activate the cursor in the GPS window.
2. Rotate the large right knob (13) to select the desired frequency from the list.
3. Press ENT to transfer the selected frequency to the standby field in the COM or VLOC window. COM frequencies will automatically go to the standby field of the COM window and navigation frequencies will automatically go to the standby field of the VLOC window, regardless of which window is currently being highlighted by the cursor.
4. To activate the selected frequency, press the COM flip-flop-key (6) or the VLOC flip-flop-key (4).

NEAREST AIRPORT EMERGENCY SEARCH

The NRST group provides detailed information on the nine nearest airports, VORs, NDBs, intersections and user-created waypoints within 200 nautical miles of your current position. In addition, pages are also provided to display the five nearest center (ARTCC/FIR) and Flight Service Station (FSS) points of communication, plus alert you to any special-use or controlled airspace you may be in or near.

To display the NRST pages:

1. If necessary, press the small right knob (12) to remove the cursor from the page.
2. Rotate the large right knob (13) to select the NRST page group, as indicated by 'NRST' appearing in the lower right corner of the screen.
3. Rotate the small right knob (12) to select the desired NRST page.

The nearest airport page is one of eight pages available under the NRST group:

- Nearest airport page
- Nearest NDB page
- Nearest user waypoints page
- Nearest FSS page
- Nearest intersection page
- Nearest VOR page
- Nearest ARTCC page
- Nearest airspace page

You may examine both the communication frequencies and runway information directly from the nearest airport page. As discussed earlier for the NAVCOM page, you may also place any displayed frequency into the standby COM or VLOC field by highlighting the frequency with the cursor and pressing ENT.

STORMSCOPE INTERFACE

The GNS 530 provides the display interface for the Goodrich Stormscope WX-500 Weather Mapping Sensor. The interface capability allows weather data to be shown on the color display which gives you the ability to look at your display and quickly identify weather hazards relative to your airplane.

NOTE

Refer to Supplement A24 to the AFM and to the WX-500 Pilot´s Guide for a detailed description of the WX-500 Stormscope.

NOTE

Refer to the Pilot´s Guide Section 11 of the GNS 530 for detailed operating procedures of the GNS 530 when the WX-500 Stormscope is installed.

8. AIRPLANE HANDLING, CARE AND MAINTENANCE

No change.