

GNC 420

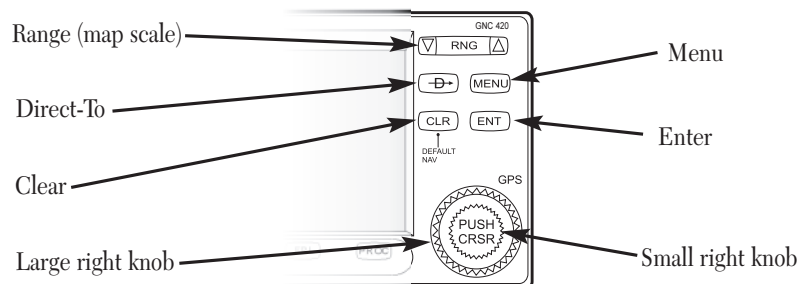
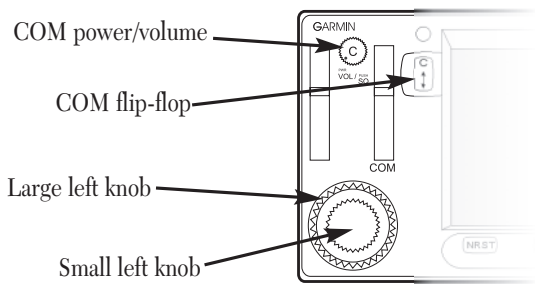


Quick Reference



KEYS AND KNOBS

Unit Keys and Knobs (excluding bottom row)



The COM power/volume knob (C) controls unit power and communications radio volume. Press momentarily to enable/disable automatic squelch control.

The large left knob (C) is used to tune the megahertz (MHz) value of the standby COM frequency for the transceiver.

The small left knob (●) is used to tune the kilohertz (kHz) value.

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

The range key (▽ RNG △) allows you to select the desired map scale. Use the up arrow side of the key to zoom out or the down arrow side to zoom in.

The direct-to key (B->) allows you to enter a destination waypoint and establish a direct course to the selected destination.

The menu key (MENU) displays a context-sensitive options list. The options list allows you to make settings changes which relate to the currently displayed page.

The clear key (CLR) is used to erase information or cancel an entry. Press and hold this key to immediately display the Default NAV Page.

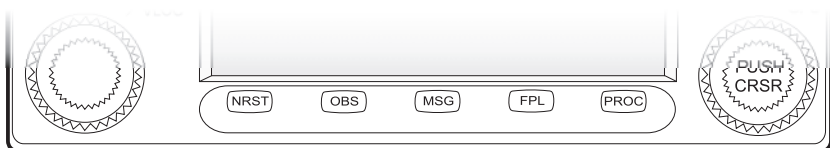
The enter key (ENT) is used to approve an operation or complete data entry. It is also used to confirm information, such as during power on.

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

The small right knob (PUSH CRSR) is used to select between the various pages within one of the groups listed above. 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.

KEYS / POWER ON

Bottom Row Keys



The NRST key (NRST) displays the nearest airports page. Then, rotating the small right knob (CRSR) steps through the NRST pages.

The OBS key (OBS) is used to select manual or automatic sequencing of waypoints. Pressing the OBS 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 HSI or CDI.

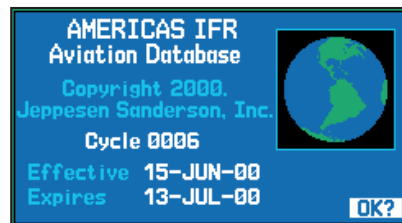
The message key (MSG) is used to view system messages and to alert you to important warnings and requirements.

The flight plan key (FPL) 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.

The procedures key (PROC) allows you to select approaches, departures and arrivals from your active 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.

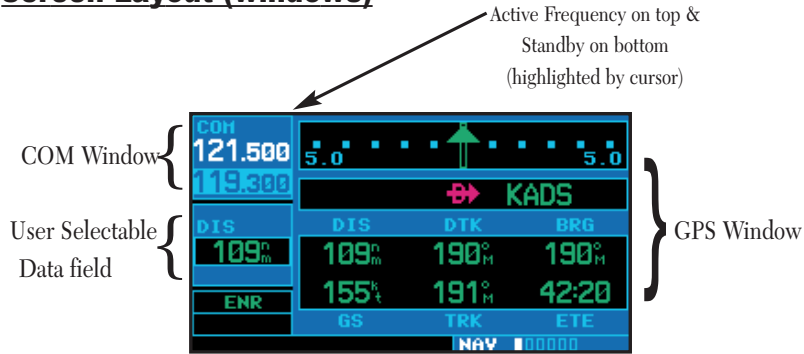
Powering on the GNC 420

1. Rotate the COM power/volume knob (C) clockwise to turn the unit on and set the desired radio volume.
2. A welcome page appears briefly, followed by the land data page, as the unit conducts a self-test to ensure proper operation.
3. Once the self-test concludes, the database page is displayed, showing the effective and expiration dates of the Jeppesen database on the NavData® card. Press (ENT) to acknowledge to database page and proceed to the instrument panel self-test page.
4. The instrument panel self-test page allows you to verify that the GNC 420 is communicating properly with the in-panel instruments. Compare on-screen indications with the information depicted on connected instruments, such as the CDI, HSI, RMI and/or external annunciators. Once you have verified proper operation, press (ENT) to display the Satellite Status Page.



SCREEN LAYOUT / CURSORS / FREQUENCY SELECTION

Screen Layout (windows)



The GNC 420's display is divided into three separate "windows" (or screen areas). The left 1/4 of the display provides a COM window (top two lines) and a user-defined data field below. The right 3/4 of the display consists of a GPS window for the various navigation, waypoint information and settings pages. The bottom of the display is used for annunciators.

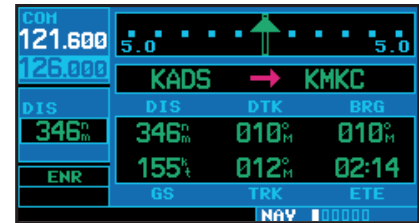
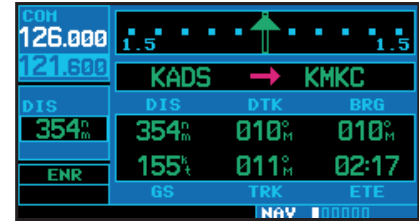
Each unique screen of information is referred to as a "page". Pages are typically selected using the small (PUSH) and large (PUSH) right knobs—with the cursor removed from the GPS window. See the following page for details on arrangement of the GNC 420's main pages.

Cursors

There are two separate cursors: a tuning cursor and a GPS window cursor. The tuning cursor is used to select the standby COM frequency. Use the small (PUSH) and large (PUSH) left knobs to select the desired frequency. The COM (C) flip-flop key is used to activate the selected frequency.

Frequency Selection

1. Rotate the large left knob (PUSH) to select the desired megahertz (MHz) value. For example, the "121" portion of the frequency "121.60".
2. Rotate the small left knob (PUSH) to select the desired kilohertz (kHz) value. For example, the ".60" portion of the frequency "121.60".
3. To activate the selected frequency, press the flip-flop key (C).



Data Entry

The GPS window cursor is used to select the desired fields. Press the small right knob (PUSH) to activate the cursor. Press again to deactivate it. The large right knob (PUSH) is used to move the cursor about the page. The small right knob (PUSH) is used to select individual characters for the highlighted cursor location (see illustration).




PAGE SELECTION



(Small right knob to select pages within the group)

FPL Group

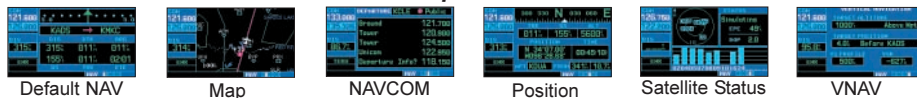
Flight plan pages are selected by pressing the **FPL** key and using the small right knob () to select the desired page.



Large right knob to change page groups



NAV Group







WPT Group



AUX Group



Selection of any main page is performed using the large () and small () right knobs. The large right knob () selects the page group: NAV, WPT or AUX. The small right knob () selects the desired page within a group. To quickly select the default NAV page, press and hold **CLR**.

NRST Group

To quickly select the nearest airport page, press **NRST**.

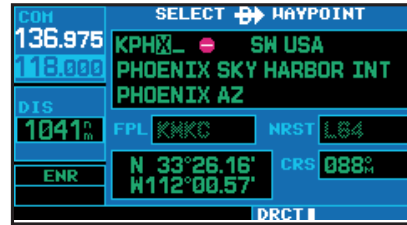
NRST



DIRECT-TO NAVIGATION

To Select a Direct-To Destination

1. Press the **-B>** key. A select direct-to waypoint page will appear, with the waypoint identifier field highlighted.
2. Use the small (PUSH CRN) and large (CRN) right knobs to enter the identifier of the desired destination waypoint.
3. Press **ENT** to confirm the selected waypoint, and **ENT** to activate the direct-to function.



To Select a Direct-To Destination from the Map Page

1. Select the map page from the main page group. (See page 5.)
2. Press the small right knob (PUSH CRN) to display a panning pointer.
3. Rotate the small (PUSH CRN) and large (CRN) right knobs to place the panning pointer at the desired destination location.
4. If the panning pointer is placed on an existing airport, navaid or user waypoint, the waypoint name will be highlighted. Press **-B>** and **ENT** twice to navigate to the waypoint.
5. If the panning pointer is placed on an open location, press **-B>** and **ENT** twice to create a "+MAP" waypoint and navigate to it.

To Select a Direct-To Destination by Facility Name or City

1. Press the **-B>** key. The select direct-to waypoint page will appear, with the waypoint identifier field highlighted.

2. Rotate the large right knob (CRN) to highlight the facility name (second line) or the city (third line) field.
3. Use the small (PUSH CRN) and large (CRN) right knobs to enter the facility name or city location of the desired destination waypoint. As you spell the facility name or city, the GNC 420's Spell'N'Find feature will select the first entry in the database based upon the characters you have entered up to that point.
4. Continue rotating the small right knob (PUSH CRN) to scroll through any additional database listings for the selected facility name or city. You can also scroll backwards with the small right knob (PUSH CRN) if you scroll past the desired waypoint.
5. Press **ENT** to confirm the selected waypoint, and **ENT** to activate the direct-to function.



To Select a Nearby Airport or a Flight Plan Waypoint as a Direct-To Destination

1. Press the **-B>** key.
2. Rotate the large right knob (CRN) to highlight the nearest airport (NRST) or flight plan (FPL) field.
3. Rotate the small right knob (PUSH CRN) to display a window listing nearby airports or all waypoints in the active flight plan.
4. Continue rotating the small right knob (PUSH CRN) to scroll through the list and highlight the desired waypoint.
5. Press **ENT** to confirm the selected waypoint, and **ENT** to activate the direct-to function.

AIRPORT INFORMATION

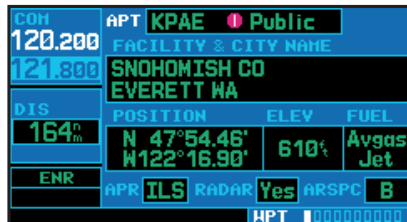
Viewing Airport Information

1. From any page, press and hold **CLR** to select the default NAV page. (You may skip this step if you are already viewing any of the main GPS pages.)
2. Rotate the large right knob (**⌚**) to select the WPT page group. "WPT" will appear in the lower right corner of the screen.
3. Rotate the small right knob (**⌚**) to select the desired WPT page. Airport information is displayed on the first six WPT pages: airport location, airport runway, airport frequency, airport approach, airport arrival and airport departure.
4. Press the small right knob (**⌚**) to activate the cursor.
5. Use the small (**⌚**) and large (**⌚**) right knobs to enter the identifier of the desired airport.
6. Once the identifier is entered, the information for that airport will appear on the page. Press **ENT** to accept the selected identifier.
7. To view the other airport information pages, press the small right knob (**⌚**) to remove the flashing cursor and rotate the small right knob (**⌚**) to select the desired page.



Viewing Airport Information by Facility Name or City

1. Select the airport location page. (See page 5.)
2. Press the small right knob (**⌚**) to activate the cursor.

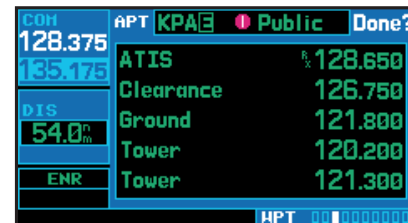


3. Rotate the large right knob (**⌚**) to highlight the facility name (second line) or the city (third line) field.
4. Use the small (**⌚**) and large (**⌚**) right knobs to enter the facility name or city location of the desired destination waypoint. As you spell the facility name or city, the GNC 420's Spell'N'Find feature will select the first entry in the database based upon the characters you have entered up to that point.
5. Once the identifier is entered, the information for that airport will appear on the page. Press **ENT** to accept the selected identifier.
6. To view the other airport information pages, press the small right knob (**⌚**) to remove the flashing cursor and rotate the small right knob (**⌚**) to select the desired page.

Auto-Tuning a Frequency from a List

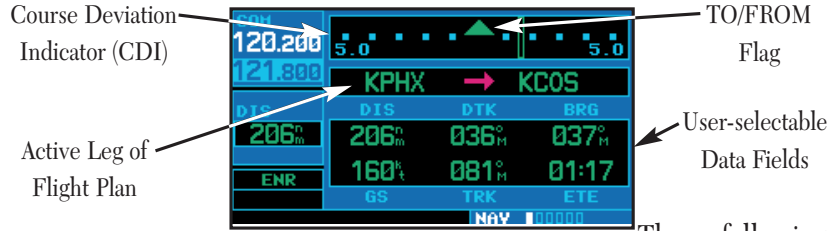
The GNC 420's auto-tune feature allows you to quickly select any displayed database COM frequency as your standby frequency. With a minimum of keystrokes, any frequency listed on the airport frequency page can be transferred to the standby field of the COM window. (NAV frequencies are shown for reference only.)

1. Select the airport frequencies page from the WPT page group. (See page 5.)
2. Press the small right knob (**⌚**) to place the cursor on the airport identifier field.
3. Use the small (**⌚**) and large (**⌚**) right knobs to enter the identifier of the desired airport. Press **ENT** when finished.
4. Rotate the large right knob (**⌚**) to highlight the desired frequency.

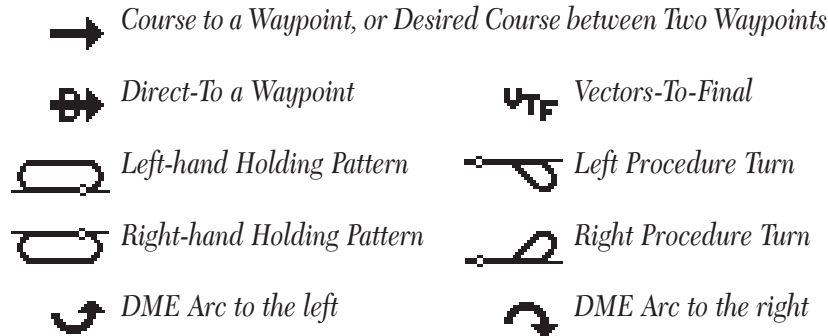


DEFAULT NAV PAGE

Default NAV Page



The following symbols are used (directly below the CDI) to depict the active leg of a flight plan or direct-to:

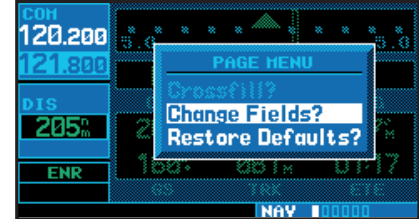


To Quickly Display the Default NAV Page

1. From any page, press and hold **CLR** for approximately two seconds.

To Select a Different Data Item for any Data Field

1. With the default NAV page displayed, press the **MENU** key to display an options menu.
2. Rotate the large right knob (⊖) to highlight the "Change Fields?" option, and press **ENT** to select this option.
3. Use the large right knob (⊖) to highlight the data field you wish to change.
4. Rotate the small right knob (⊖) to display the list of available data items. Continue rotating the small right knob (⊖) to select the desired data item from the list.
5. Press **ENT** to select the desired data item and return to the default NAV page.
6. Press the small right knob (⊖) momentarily to remove the cursor from the page.



MAP PAGE

Map Page



The following symbols are used to depict the various airports and nav aids on the map page:

	Airport with hard surface runway(s); Primary runway shown
	Airport with soft surface runway(s) only
	Private Airfield
	VOR
	VOR/DME
	DME
	Localizer
	Intersection
	VORTAC
	TACAN
	NDB
	Locator Outer Marker

To Select a Map Scale

1. Press the up arrow side of the key to zoom out to a larger map area.
2. Press the down arrow side of the key to zoom in to a smaller map area and more detail.

To Quickly Declutter the Map Display

1. Press the key momentarily (as often as needed) to select the desired amount of map detail. The declutter level will appear adjacent to the map scale.



To Turn the Data Fields Off and Display a Full Screen Map

1. With the map page displayed, press to display an options menu.
2. Rotate the large right knob () to highlight "Data Fields Off?" and press .
3. To re-display the data fields, follow steps 1 and 2, but instead select "Data Fields On?" from the options menu.



To Select a Different Data Item for any Data Field:

1. With the map page displayed, press the key to display an options menu.
2. Rotate the large right knob () to highlight "Change Fields?", and press .
3. Use the large right knob () to highlight the data field you wish to change.
4. Rotate the small right knob () to display the list of available data items. Continue rotating the small right knob () to select the desired data item from the list.
5. Press to select the desired data item and return to the map page.
6. Press the small right knob () momentarily to remove the cursor from the page.

NAVCOM PAGE / ANNUNCIATORS & MESSAGES

NAVCOM Page



The *NAVCOM page* provides a list of the airport communication and navigation frequencies at your departure, enroute and arrival airports.

To Select a Frequency List for a Departure, Enroute or Arrival Airport

1. Press the small right knob (PUSH CRB) to activate the cursor.
2. Rotate the large right knob (CRB) to place the cursor on the airport identifier field (top line on the NAVCOM page).
3. Rotate the small right knob (PUSH CRB) to select the desired airport and press ENT.

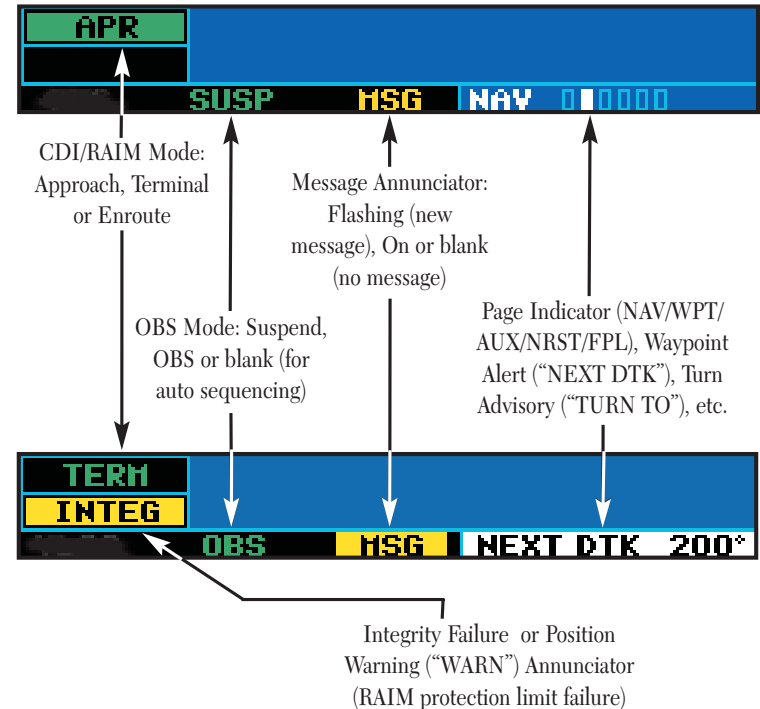
To Scroll Through the List of Frequencies

1. Activate the cursor, if not already active, by pressing the small right knob (PUSH CRB).
2. Rotate the large right knob (CRB) to move the cursor through the list of frequencies. If there are more frequencies in the list that can be displayed on the screen, a scroll bar along the right-hand side of the screen will indicate which part of the list is currently being displayed.

Auto-Tuning a Frequency from the NAVCOM Page

1. Highlight the desired frequency by scrolling through the list of frequencies, as described in the previous procedure.
2. To place a frequency in the standby field of the COM window, highlight the desired frequency and press ENT. (NAV frequencies are shown for reference only.)

Bottom Row Annunciators and Messages



NEAREST AIRPORTS

To View a List of the Nearest Airports

A list of the nearest airports can be selected by pressing the **NRST** key. The rest of the nearest pages can be seen by scrolling through the pages using the right small knob. (See page 5.)

1. Press **NRST**, to display the nearest airport page. “NRST” will appear in the lower right corner of the screen.
2. Rotate the small right knob (⊖) to select the desired nearest page.

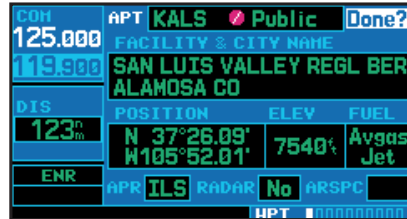


To Scroll Through the List of Nearest Airports

1. Press the small right knob (⊖) to activate the cursor.
2. Rotate the large right knob (⊕) to scroll through the list. The scroll bar along the right-hand side of the page will indicate which part of the list is currently being viewed.
3. To remove the flashing cursor, press the small right knob (⊖).

To View Additional Information for a Nearby Airport

1. Highlight the identifier of the desired airport by scrolling through the list, as described in the procedure above.
2. Press **ENT** to display the airport location page for the selected airport.



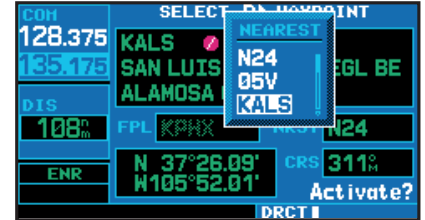
3. To view additional WPT pages for the selected airport (including the airport runway and airport frequency pages) press the small right knob (⊖) to remove the flashing cursor. Rotate the small right knob (⊖) to display the additional WPT pages. When finished, press the small right knob (⊖) to return the flashing cursor to the screen.



4. To return to the nearest airport page, verify that “Done?” is highlighted by the flashing cursor and press **ENT** (or press **CLR**).

To Select a Nearby Airport as a Direct-To Destination

1. Press **B->** to display the select direct-to waypoint page.
2. Rotate the large right knob (⊕) to place the flashing cursor on the nearest airport (NRST) field.
3. Rotate the small right knob (⊖) to display a window, listing up to nine nearest airports.
4. Continue rotating the small right knob (⊖) to highlight the desired airport.
5. Press **ENT** to accept the selected waypoint's identifier and press **ENT** a second time (with “Activate?” highlighted) to begin navigating to the selected waypoint.



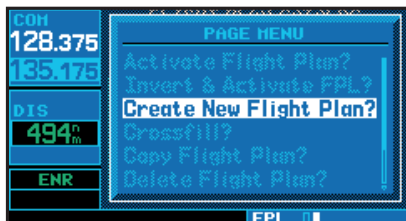
To Quickly Tune and Activate the 121.500 Emergency Channel

1. Press and hold **121.5** for approximately two seconds.

FLIGHT PLANS

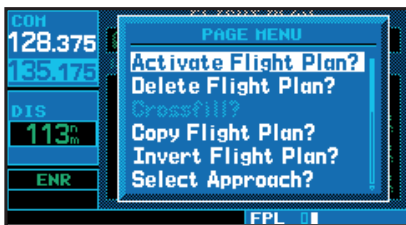
To Create a New Flight Plan

1. Press **FPL** and rotate the small right knob (**PUSH CRSR**) to display the flight plan catalog.
2. Press **MENU** to display the flight plan catalog options.
3. Rotate the large right knob (**CRSR**) to highlight “Create New Flight Plan?” and press **ENT**.
4. A blank flight plan page will appear for the first empty storage location. Use the small (**PUSH CRSR**) and large (**CRSR**) right knobs to enter the identifier of the departure waypoint and press **ENT**.
5. Repeat step #4 above to enter the identifier for each additional flight plan waypoint. Once all waypoints have been entered, press the small right knob (**PUSH CRSR**) to return to the flight plan catalog.



To Navigate a Flight Plan

1. Press **FPL** and rotate the small right knob (**PUSH CRSR**) to display the flight plan catalog.
2. Press the small right knob (**PUSH CRSR**) to activate the cursor and rotate the large right knob (**CRSR**) to highlight the desired flight plan.
3. Press **MENU** to display the flight plan catalog options.
4. Rotate the large right knob (**CRSR**) to highlight “Activate Flight Plan?” and press **ENT**.



To Stop Navigating a Flight Plan

1. Press **FPL**.
2. Press **MENU** to display the flight plan options.
3. Rotate the large right knob (**CRSR**) to highlight “Delete Flight Plan?” and press **ENT**. Press **ENT** again to confirm.

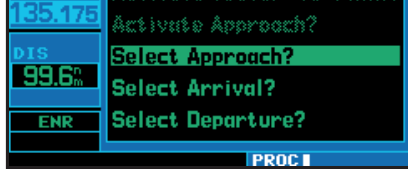
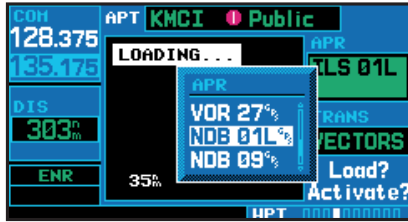
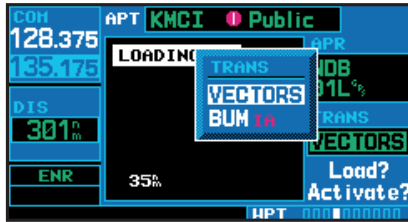
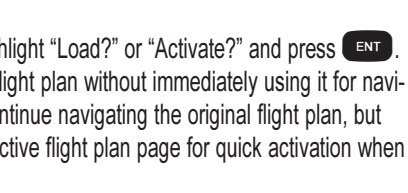


To Edit a Flight Plan

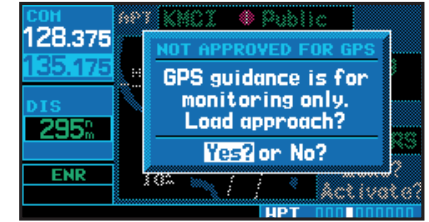
1. Press **FPL** and rotate the small right knob (**PUSH CRSR**) to display the flight plan catalog.
2. Press the small right knob (**PUSH CRSR**) to activate the cursor.
3. Rotate the large right knob (**CRSR**) to highlight the desired flight plan and press **ENT**.
4. To add a waypoint to the flight plan: Rotate the large right knob (**CRSR**) to select the point where you wish to add the new waypoint. (If an existing waypoint is highlighted, the new waypoint will be placed directly in front of this waypoint.) Use the small (**PUSH CRSR**) and large (**CRSR**) right knobs to enter the identifier of the new waypoint and press **ENT**.
5. To delete a waypoint from the flight plan: Rotate the large right knob (**CRSR**) to select the waypoint you wish to delete and press **CLR** to display a “remove waypoint” confirmation window. With “Yes” highlighted, press **ENT** to remove the waypoint.
6. Once all changes have been made, press the small right knob (**PUSH CRSR**) to return to the flight plan catalog.

APPROACHES

Selecting Approaches

1. Press the **PROC** key to display the procedures page.
2. Rotate the large right knob (⊕) to highlight “Select Approach?” and press **ENT**.
3. A window will appear listing the available procedures. Rotate the large right knob (⊕) to highlight the desired procedure and press **ENT**.
4. A second window will appear listing the available transitions. Rotate the large right knob (⊕) to highlight the desired transition waypoint and press **ENT**. (The approach “Vectors” option assumes you will receive vectors to the final course segment of the approach and will provide navigation guidance relative to the final approach course.)
5. Rotate the large right knob (⊕) to highlight “Load?” or “Activate?” and press **ENT**. (“Load?” will add the procedure to the flight plan without immediately using it for navigation guidance. This allows you to continue navigating the original flight plan, but keeps the procedure available on the active flight plan page for quick activation when needed.)

6. For precision approaches and some non-precision approaches, a reminder window will appear indicating that GPS guidance on such approaches is strictly for monitoring only—use the external navigation receivers and CDI (or HSI) for primary navigation. To confirm this reminder, highlight “Yes?” and press **ENT**.



Not all approaches in the database are approved for GPS use. As you select an approach, a “GPS” designation to the right of the procedure name indicates the procedure can be flown using the GPS receiver. Some procedures will not have this designation, meaning the GPS receiver may be used for supplemental navigation guidance only.

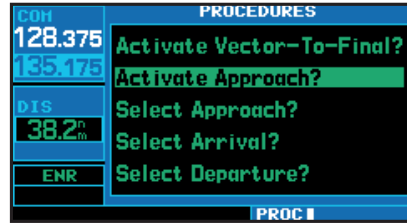
A selected approach may be *activated* or *loaded*. Activating the approach overrides the “enroute” portion of the active flight plan, proceeding directly to the “approach” portion (for a full approach, directly to the approach transition). Activating the approach also initiates automatic CDI scaling transitions as the approach progresses.

In many cases, it may be easiest to “Load” the full approach while still some distance away, enroute to the destination airport. Later, if vectored to final, use the following steps to select “Activate Vector-To-Final”—which makes the inbound course to the FAF waypoint active. Otherwise, activate the full approach using the “Activate Approach?” option.

APPROACHES

Activating an Approach

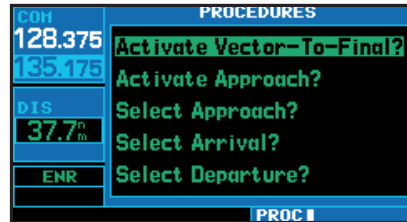
1. With an approach loaded in the active flight plan, press **PROC** to display the procedures page.
2. Rotate the large right knob (⊖) to highlight “Activate Approach?”.
3. Press **ENT**.



The “Activate Vector-To-Final?” option allows you to activate the final course segment of the approach. This option assumes you will receive vectors to the final approach fix (FAF) and guides you to intercept the final course, before reaching the FAF.

Activating an Approach with Vectors-To-Final

1. With an approach loaded in the active flight plan, press **PROC** to display the procedures page.
2. Rotate the large right knob (⊖) to highlight “Activate Vector-To-Final?”.
3. Press **ENT**.



Flying an Approach

Due to the variety of available approach procedures, the specific steps required will vary according to the approach selected. Keep the following general guidelines in mind while flying the approach:

- You will typically select the destination airport as the last waypoint in the active flight plan or using the **B>** key. Doing so ensures that the desired waypoint will automatically appear when choosing the “Select Approach?” option from the *procedures page*. (Otherwise, you must first choose the airport, then the approach procedure.)
- As you progress to each approach waypoint, a waypoint alert message (“NEXT DTK ###°”) will appear in the lower right corner of the display. (See page 10.)
- When you should begin a course change (via a standard rate turn), turn advisories (“TURN TO ###°”) will appear in the lower right corner of the display. (See page 10.)

APPROACHES / MISSED APPROACH

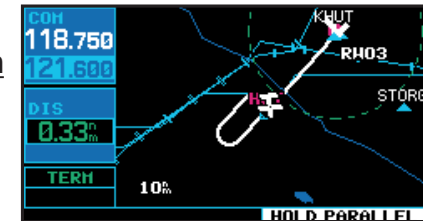
- For GPS-based approaches, receiver autonomous integrity monitoring (RAIM) will monitor satellite conditions and alert you—using an “INTEG” or “WARN” annunciation at the bottom left corner of the display (see page 10)—if protection limits cannot be maintained. If this occurs, the GPS receiver should not be used for primary navigation guidance. Revert to an alternate navigation source, or select an alternate destination airport.
- Within 30 nautical miles of the destination airport, CDI scaling will transition from 5.0 nautical miles (enroute mode; or “ENR”) to 1.0 nautical mile (terminal mode; or “TERM”)—or when leaving the departure airport, from 1.0 nm to 5.0 nm. Within 2.0 nautical miles of the final approach fix, GPS-based approaches will see a second transition from 1.0 nautical mile to 0.3 nautical mile (approach mode; or “APR”)
- A “START PROC TRN” prompt will appear in the lower right corner of the display to advise you when you are at a safe distance to initiate a procedure turn. The procedure turn is displayed on the map page, but guidance through the turn itself is not provided.
- Alerts for proper holding pattern entry (e.g. “HOLD DIRECT”) are displayed in the lower right corner of the display. Waypoint sequencing is automatically suspended (indicated by “SUSP” directly above the **OBS** key) at the holding waypoint. Press the **OBS** key again to return to automatic waypoint sequencing. For course reversals, waypoint sequencing is suspended for one trip around the holding pattern only (after which it will return to automatic waypoint sequencing).

- The CDI will guide you through a DME arc. Just keep the needle centered as you fly along the arc. When using an autopilot, the course select on the CDI (or HSI) must be periodically updated with the desired track (DTK).
- As you cross the missed approach point, “SUSP” will appear above the **OBS** key, indicating that automatic sequencing of waypoints is suspended at the missed approach point, and a “from” indication will appear on the CDI (or HSI).



Flying the Missed Approach

1. Press the **OBS** key. The next waypoint in the approach is automatically offered as the destination waypoint.
2. Follow the missed approach procedures, as published on your approach plate, for proper climb and heading instructions.
3. An alert message in the lower right hand corner of the screen will recommend entry procedures for the holding pattern (e.g., “HOLD TEARDROP”). As you fly the holding pattern, a timer appears on the default NAV page. The timer automatically resets on the outbound side of the hold when you are abeam the hold waypoint. The timer again resets as you turn inbound (within approximately 30° of the inbound course).
4. When leaving the holding pattern to re-fly the approach (or another approach) press the **PROC** key to “Select Approach?” or “Activate Approach?” as previously described. (Or, use the **-B->** key to select another destination.)





© 1999-2000 GARMIN Corporation

GARMIN International, Inc., 1200 East 151st Street, Olathe, KS 66062

GARMIN (Europe) LTD, Unit 5, The Quadrangle, Abbey Park Industrial Estate, Romsey, SO51 9AQ, U.K.

GARMIN (Asia) Corp., No. 68, Jangshu 2nd Road, Shijr, Taipei County, Taiwan

Website Address: www.garmin.com

Part No. 190-00140-21 Rev. B