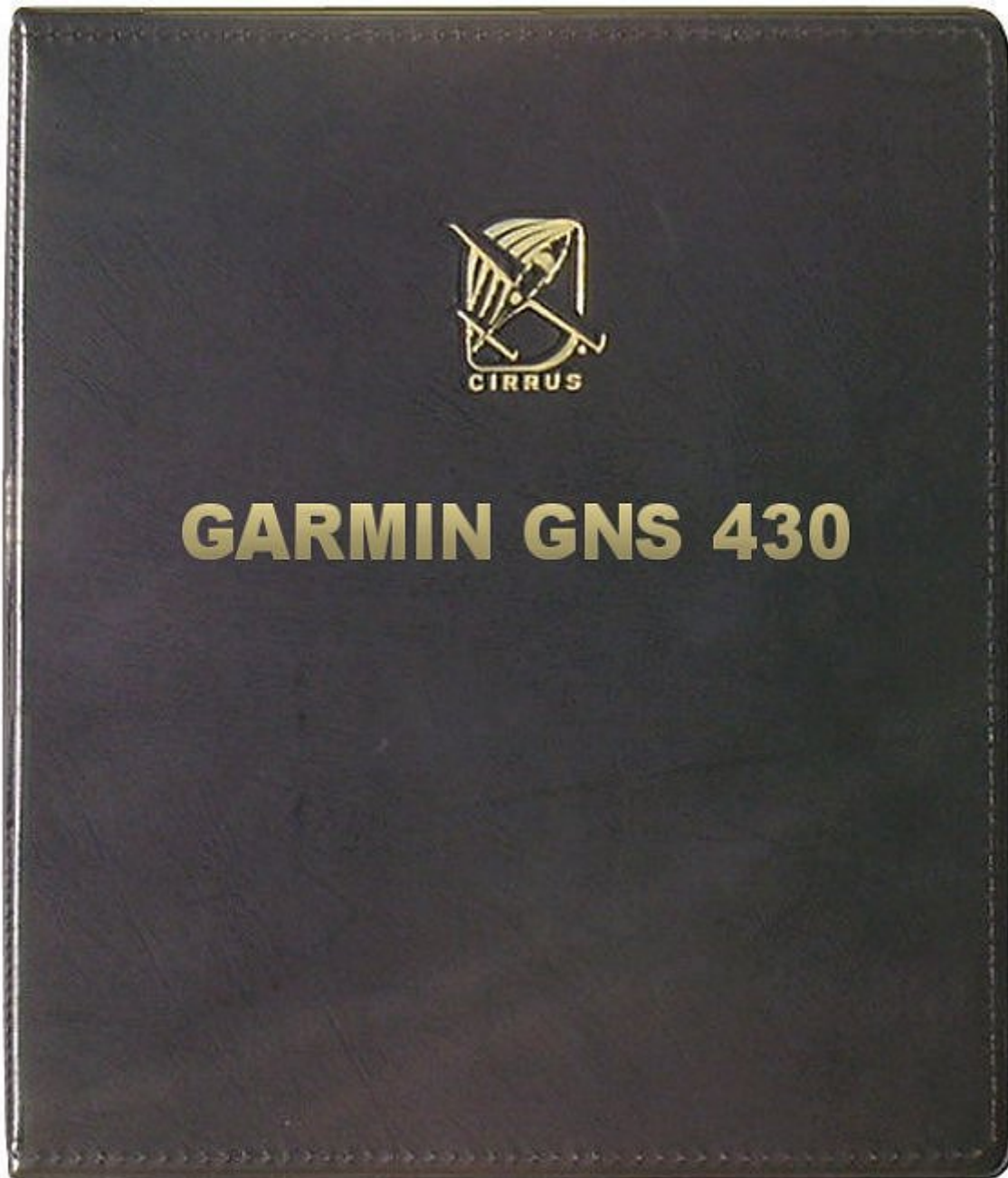


GARMIN GNS 430 GPS MANUAL



Standard Disclaimer

This manual is intended for recreational use in Microsoft Flight Simulation 2004 ONLY and may NOT be used in any Real World Aviation application. The authors are not responsible for errors or omissions.

GARMIN GNS 430 GPS MANUAL

The Eaglesoft Development Group Garmin GNS 430 Manual is designed to quickly orient the novice or experienced flight simulation pilot with an overview of the various controls of the Garmin GNS 430 available in the Cirrus SR20 G2 model.

The Eaglesoft GNS430 is built around the default Flight Simulator 9 G500 database in order to maximize the utility of these units within the simulator. Using vector graphic drawing instructions to replace bitmaps wherever possible in order to optimize the Eaglesoft GNS 430 units and more importantly to produce crisp, clear display was a baseline for our design. The result is that the Eaglesoft GNS 430 are nearly 99% pure vector graphics.

Like most flight simulation enthusiasts, we paid little attention to the G500 GPS bundled with FS9 until Bill Leaming actually got down to programming this version. We were pleasantly surprised by the overlooked possibilities present within the generic G500 default gauge. With the addition of some new capabilities that were implemented into the Eaglesoft GNS 430 units we feel that this GNS 430 solution offers plenty of functionality for average to above average flight simmers everywhere.

The following pages will help you become familiar with the operation of Garmin GNS 430.

Note: For Real World information and free Real World PDF Documents please visit the Cirrus Site from the following URL. <http://www.cirrusdesign.com/>

Note: For Real World information and free Real World PDF Documents please visit the Avidyne Site from the following URL. <http://www.avidyne.com/techpubs.shtml>

Note: For Eaglesoft Development Group Product Support: Please Register and Login to our Support Forums for product support at the following URL. <http://www.eaglesoftdg.com/forum>

Note: See **Avidyne Flightmax PFD and MFD Manuals** for detailed operation of PFD and MFD

GARMIN GNS 430 GPS MANUAL



GARMIN GNS 430 GPS MANUAL








Section 1 - Takeoff Tour <i>Key and Knob Functions</i>	4
Takeoff Tour – Selecting COM and VLOC Frequencies	8
COM Radio.....	8
NAV Page Group (Five Pages):	9
WPT Page Group (Seven Pages):.....	9
NEAREST Page Group:	10
Stand Alone Pages	10
Takeoff Tour - Navigating the Page Groups and Pages.....	11
Scrolling.....	11
Lost Among the Pages?.....	11
Section 2 - NAV GROUP PAGES	12
NAV1 - DEFAULT NAV PAGE:	12
NAV2 - Map Page Track Up View:	13
NAV3 - Map Page North Up View:	15
NAV4 - Departure Frequency Page:	15
NAV4 – Position Page:	15
Section 3 Waypoint Page Group	16
Select Identifiers (Airport, Intersection, NDB, VOR)	16
Duplicate Waypoints.....	16
WPT1 – Airport Location	17
WPT2 – Airport Runways.....	17
WPT3 – Airport Frequencies	18
WPT4 – Airport Approach Page	19
WPT5 – Intersection Page	20
WPT6 – NDB Page.....	20
WPT7 – VOR Page.....	20
Section 4 - NRST Page Group.....	21
Navigating to a Nearby Waypoint	21
NRST1 – Airport Page.....	21
NRST2 – Intersection Page.....	22
NRST3 – NDB Page	22
NRST4 – VOR Page	22
NRST5 – Airspaces Page	22
VLOC (VOR/Localizer/Glideslope) Receiver.....	24
VLOC Window and Tuning	24
Auto-Tuning.....	24
CDI Key	24
Section 5 - Standalone Pages.....	25
DTO – Direct-to Page	25
FPL – Flight Plan Page	27
PROC – Procedures Page.....	29

GARMIN GNS 430 GPS MANUAL

Section 1 Takeoff Tour *Key and Knob Functions*








The Eaglesoft GNS430 is designed to make operation as simple as possible. The key and knob descriptions on the following pages provide a general overview of the primary function(s) for each key and knob. This Takeoff Tour section is intended to provide a brief overview of the primary functions. Please refer to the detailed Reference sections for more information.

Lefthand Keys and Knobs

	The COM power/volume knob controls unit power. Click on the knob to turn unit on and off.	 <p>Lefthand Keys/Knobs</p>
	The VLOC knob has no function in this version.	
	The large left knob (COM/VLOC) [Outer] is used to tune the MHz value of the standby frequency for the COM or VLOC radio, depending on which one is selected with the tuning cursor.	
	The small left knob (COM/VLOC) [Center] is used to tune the KHz value of the standby frequency for the COM or VLOC radio, depending on which one is selected with the tuning cursor. Click in the middle of the knob to toggle the tuning cursor between the COM and VLOC frequency fields.	
	The COM flip-flop key is used to swap the active and standby COM frequencies.	
	The VLOC flip-flop key is used to swap the active and standby VLOC (NAV) frequencies.	

GARMIN GNS 430 GPS MANUAL

Righthand Keys and Knobs






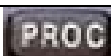
	The range key allows you to select the desired map scale. Use the up arrow side of the key to zoom out to a larger Area, or the down arrow side to zoom in to a smaller area.
	The direct-to key provides access to the direct-to function, which allows you to enter a destination waypoint or airport and establishes a direct course to the selected destination.
	The menu key will display a list of options. At this time there is only one option available.
	The clear key is used to erase information or cancel entry. Press and hold this key to immediately display the Default Navigation Page, regardless of which page is current.
	The enter key is used to approve an operation or complete data entry. It is also used to confirm information.
	The large right knob (CRSR) [Outer] is used to select between the various page groups: NAV, WPT, or NRST. With the on-screen cursor enabled, the large right knob allows you to move the cursor about the page.
	The small knob (CRSR) [Center] is used to select between the various Pages within one of the groups listed above. Click this knob Momentarily to display the on-screen cursor.



Righthand Keys/Knobs

GARMIN GNS 430 GPS MANUAL

Bottom Row Keys


	
	The CDI key is used to toggle which navigation source (GPS) or (VLOC) provides output to an external HSI or CDI.
	The OBS key 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, a SUSP message will appear, and you may set the desired course to/from a waypoint using the external OBS selector knob.
	The message key is used to view system messages and alert you to important warnings and requirements. Press and hold the MSG key to suspend all messages and alerts.
	The flight plan key allows you to display the active flight plan page, as well as access waypoint information or activate a specified leg. See the detailed section for more information on flight plans.
	The procedures key allows you to select and remove approaches from your flight plans. When using a flight plan, available approaches for your arrival airport are offered automatically. Otherwise, you may select the desired airport, then the desired procedure.

GARMIN GNS 430 GPS MANUAL

Takeoff Tour – Selecting COM and VLOC Frequencies




COM Radio

Turning On GNS430

Click on the  knob to turn the unit on and off.

Knobs and Controls

The GNS430's display is divided into separate "windows," including a COM window, VLOC window and the GPS window (the right ¾ of the display).

Clicking the small left knob  activates the tuning cursor (the light blue background) in the desired frequency window. To select the active frequency, you must first enter the desired frequency in the standby field (the lower field in each window), and use the  or  key to move it to the active field.





Large Left Knob: tunes MHz (100's)



Small Left Knob: tunes KHz (decimals), click on "Push C/V" to move tuning cursor

Tuning a COM or VLOC Frequency

- 1) Press the small left knob if needed to flip-flop the tuning cursor to the COM or VLOC radio as desired.
- 2) Click on the large left knob's "hot spots" to tune the desired frequency into the standby window.
- 3) Click on the  or  key as appropriate to transfer the standby frequency to the active frequency.

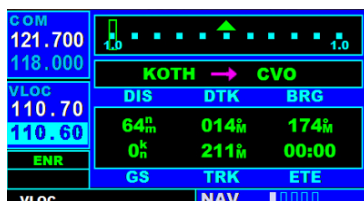
GARMIN GNS 430 GPS MANUAL

Takeoff Tour - About Page Groups and Pages

The information that appears on the GPS screen is presented on pages, and you can only view one page at a time. Some pages are organized into groups of related pages, called page groups. Think of page groups as chapters in a book, and pages as the pages within each chapter.

NAV Page Group (Five Pages):

NAV Page 1: Default CDI



NAV Page 2: Track Up



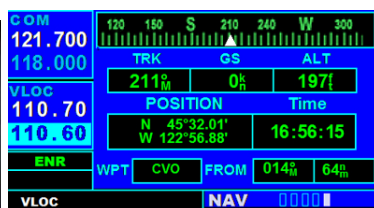
NAV Page 3: North Up



NAV Page 3: Departure Freq.

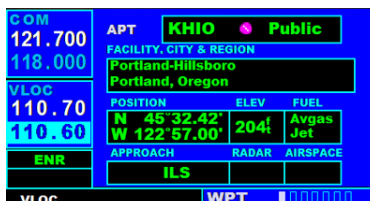


NAV Page 4: Position



WPT Page Group (Seven Pages):

WPT Page 1: Airport



WPT Page 2: Airport Runways



WPT Page 3: Airport Freq.



WPT Page 4: Approaches



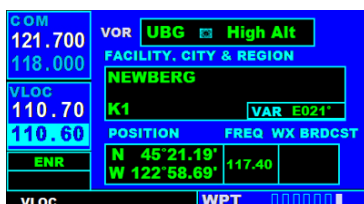
WPT Page 5: Intersections



WPT Page 6: NDB



WPT Page 7: VOR



GARMIN GNS 430 GPS MANUAL

NEAREST Page Group:

NRST Page 1: Airports

COM	NEAREST AIRPORT			
121.700	APT	BRG	DIS	APR
118.000	KHIO	330°	0.4%	ILS
	twr	119.300	rwg	6595'
VLOC	OR80	195°	1.7%	
110.70				
110.60	OR81	279°	3.4%	
		000.000	rwg	2000'
ENR	10R3	304°	4.3%	
		000.000	rwg	3050'
VLOC				
	NRST	0000		

NRST Page 2: Intersections

COM	NEAREST INTERSECTION			
121.700	INT	BRG	DIS	
118.000	MAJUC	068°	0.1%	
	MADUF	309°	1.1%	
VLOC	NOONS	272°	2.5%	
110.70	EYOHE	167°	4.9%	
110.60	BEAST	026°	6.0%	
	ABATE	306°	7.1%	
ENR	WETTR	005°	9.9%	
	SAUVI	016°	9.9%	
VLOC	WOODD	026°	10.2%	
	NRST	0000		

NRST Page 3: NDBs

COM	NEAREST NDB			
121.700	NDB	BRG	DIS	FREQ
118.000	HI	306°	7.1%	356.0
	PLV	134°	16.8%	366.0
VLOC	MM	172°	17.6%	383.0
110.70	IA	069°	20.4%	332.0
110.60	LSO	343°	37.4%	256.0
ENR	TKW	247°	38.3%	271.0
	SL	161°	41.2%	266.0
VLOC	PEN	305°	45.1%	201.0
	NRST	0000		

NRST Page 4: VORs

COM	NEAREST VOR			
121.700	VOR	BRG	DIS	FREQ
118.000	UBG	167°	10.9%	117.40
	CBU	058°	14.5%	109.20
VLOC	PDX	057°	14.8%	111.80
110.70	BTG	030°	19.7%	116.60
110.60	AST	295°	54.2%	114.00
ENR	CVO	174°	63.7%	115.40
	ONP	201°	74.4%	117.10
VLOC	LTJ	062°	78.3%	112.30
	NRST	0000		

NRST Page 5: Airspaces

COM	NEAREST AIRSPACE			
121.700	SEATTLE			
118.000	Inside of airspace			
VLOC	SEATTLE			
110.70	SEATTLE			
110.60	SEATTLE			
ENR	SEATTLE			
VLOC				
	MSG	NRST	0000	

Stand Alone Pages

There are five "Stand Alone Pages" that are conveniently and directly accessible through single button presses.

Flight Plan Page:

COM	ACTIVE FLIGHT PLAN			
121.700	00	KOTH to KHIO		
118.000	WAYPOINT	DTK	DIS	CUM
VLOC	KOTH	014°	64 ^m	64 ^m
110.70	CVO	354°	64 ^m	128 ^m
110.60	KHIO			
ENR				
VLOC				
	FPL			

Direct To Page:

COM	SELECT D> WAYPOINT			
121.700	IDENT, FACILITY & CITY			
118.000	KSEA			
	Seattle-Tacoma Intl			
VLOC	Seattle, Washington			
110.70	FPL	KOTH	NRST	KHIO
110.60	POSITION	CRS		
ENR	N 47°26.93'	353°		
	W 122°18.56'			
VLOC	Activate?			
	NAV	0000		

Procedures Page:

COM	PROCEDURES			
121.700	Activate Vectors-To-Final?			
118.000	Activate Approach?			
VLOC	Select Approach?			
110.70	LOADED PROCEDURES			
110.60				
ENR	APR	----		
	ARVL	----		
	DEP	----		
VLOC	PROC 0			

Menu Page:

COM	PAGE MENU			
121.700	Data Fields Off?			
118.000				
VLOC				
110.70				
110.60				
ENR				
VLOC				
	NAV	0000		

Message Page:

COM	NEAREST AIRSPACE MESSAGE			
121.700	SEA			
118.000	SEA			
VLOC	SEA			
110.70	SEA			
110.60	SEA			
ENR	SEA			
VLOC				
	MSG	NRST	0000	

All of the page groups and pages are explained in detail in the following pages, in the order in which they appear above.

GARMIN GNS 430 GPS MANUAL

Takeoff Tour - Navigating the Page Groups and Pages



Navigation between Page Groups and Group Pages is accomplished with the two knobs in the lower right corner of the GNS430. The large, outer knob controls Page Groups, and the smaller, inner knob controls Group Pages. Clicking in the center of the small knob activates the Cursor, so that changes to various parameters may be made.

The "Page Bar" (circled in red above) indicates which GROUP and which PAGE is currently displayed (for example, **NAV**, **WPT**, or **NRST**), the number of screens available within that group (indicated by rectangular page icons) and the placement of the current screen within that group (indicated by the highlighted icon). To select a different page within the group, rotate the **small knob**.

The pages within a page group are persistent. That is, if you switch to a different page group, and then return to the group you were using, the GPS will display the page that you were last looking at within that group.

Scrolling



Whenever the GPS displays a list of information that is too long for the display screen, a scroll bar will appear along the right side of the display.

To scroll down to see the rest of a page

- 1) Press the **CRSR** button to activate the cursor.
- 2) Rotate the **large knob** to scroll through the list.

Lost Among the Pages?

Press and hold the **CLR** button to immediately display **DEFAULT NAV 1** page, regardless of which page is currently displayed.

GARMIN GNS 430 GPS MANUAL

Section 2 - NAV GROUP PAGES

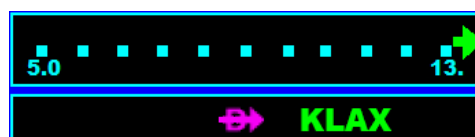
NAV1 - DEFAULT NAV PAGE:

The first **NAV** page is the *default NAV* page. This page may quickly be selected from **ANY** page by pressing and holding the **CLR** key.

The *default NAV* page displays a graphic course deviation indicator (CDI) across the top of the page. Unlike the angular limits used on a mechanical CDI coupled to a VOR or ILS receiver, full scale limits for this CDI are defined by a GPS-derived distance ranging from 1.0 to 5.0 nm as indicated at both ends of the CDI. By default, the CDI scale will automatically adjust to the desired limits based upon the current phase of flight: en route, terminal area or approach. The CDI will display guidance from either the VLOC radio or the GPS as selected by the **CDI** key. In the picture above, the CDI is displaying the deviation from the VLOC radio.



In addition, while under GPS guidance, if you are currently greater than 5 nm from your intended track, an arrow will appear to indicate the direction to fly and the scale will indicate the actual deviation in nautical miles from the desired track.



The graphic CDI shows your position at the center of the indicator, relative to the desired course (the moving course deviation needle). As with a traditional mechanical CDI, when you're off course simply steer toward the needle. The TO/FROM arrow in the center of the scale indicates whether you are heading to (up arrow) or from (down arrow) the waypoint.










NOTE: The GNS430 always navigates TO a waypoint unless the OBS switch is set (preventing automatic waypoint sequencing), or you have passed the last waypoint in your flight plan.

Directly below the CDI appears the active leg of your flight plan, or the direct-to destination

when using the **→** key. This will automatically sequence to the next leg of your flight plan as you reach each interim waypoint. If no flight plan or direct-to destination has been selected, the destination field will remain empty.

GARMIN GNS 430 GPS MANUAL

Between the TO and FROM fields on the Active Leg Display, one of the following ICONS will be displayed, based on the phase of the flight plan you are currently flying:


	Direct-to a Waypoint		Vectors-To-Final		Left-hand Holding
	Course to a Waypoint		DME Arc Left		Right-hand Holding
	Left Procedure Turn		DME Arc Right		
	Right Procedure Turn				

At the bottom of the *default* NAV page you'll find six fields, which display the data you'll need as your flight progresses. These fields display distance to destination (DIS), desired track (DTK), bearing to destination (BRG), ground speed (GS), ground track (TRK), and estimated time en route (ETE). In this representation of the GNS430, these are fixed fields. In the actual GNS430, there are user-selectable alternate fields that may be displayed. If no flight plan or direct-to has been selected, only speed, track data will be displayed. All other data types will be blank lines – on the *default* NAV page – until a destination is selected.



NAV2 - Map Page Track Up View:

The second NAV page is the Map "Track Up" View, which displays your present position using an airplane symbol, along with nearby airports, nav aids, user-defined waypoints, airspace boundaries, lakes, rivers, and political boundaries.

In the lower left corner of the MAP display is a scale indicator, which is the Map's zoom factor. This is set

using the  key, as indicated above.



HINT: Too much information? Use the  key to sequentially "de-clutter" the information displayed. Just after the ZOOM factor display will appear a negative number, which indicates that "de-clutter" is active, and what level. Continue clicking the  key to return the display to normal. There are three levels of "de-clutter" possible.

GARMIN GNS 430 GPS MANUAL

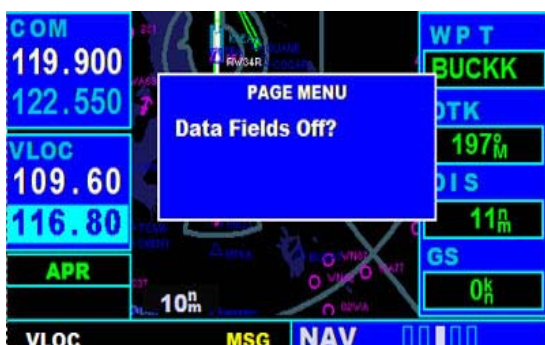
Because this MAP View and the other MAP View (North Up) display the same information, the symbols used will be described in this section only to conserve space. Different symbols are used to distinguish between waypoint types. The identifiers for any on-screen waypoints can also be displayed. Special-use and controlled airspace boundaries appear on the map, showing the individual sectors in the case of Class B or Class C airspace. The following symbols are used to depict the various airports and nav aids on the map page(s).

	Airport with hard surface runway(s): Primary runway shows relative orientation; NS, EW, NE_SW, NW_SE.		
	Airport with soft surface runway(s) only		
	Private Airfields		Intersections
	VOR		VORTAC
	VOR/DME		TACAN
	DME		NDB
	Localizer		Locator Outer Marker

To the right of the MAP display is a DATA FIELDS information box. The data displayed is the WPT name, the DTK (desired track), DIS (distance to waypoint) and GS (ground speed). The

DATA FIELDS information box is controlled by the MENU key.

Click this key to bring up a selection dialogue, which will allow you to selectively toggle the DATA FIELDS display on or off. Turning the DATA FIELDS display off will of course enlarge the viewable area of the MAP, but will also cause the map and aircraft symbol to automatically re-center the MAP display. If this option has been selected and the data fields are off, "Data Fields On?" will appear as an option instead.



GARMIN GNS 430 GPS MANUAL

NAV3 - Map Page North Up View:

The Map Page North Up View is functionally identical to the Track Up View, except of course that the Map is oriented to magnetic north. The picture here illustrates the North Up View with the Data Fields toggled off.

Note: on both Map Views there is a hidden mouse point in the upper left corner (click on Garmin) that will toggle the color terrain map on/off, as you desire.

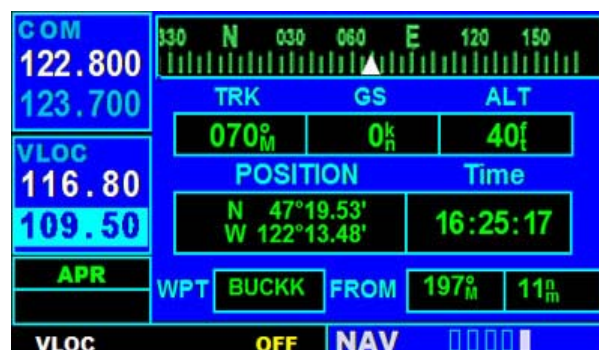
**NAV4 - Departure Frequency Page:**

The Departure Frequency Page is an informational page only at this time. This page will display all the frequencies in use at your selected departure airport. It is actually a mirror image of WPT Page 3, where you have the option of actively selecting and auto-tuning the COM and VLOC radios.

NAV4 – Position Page:

The *position page* (the final page in the NAV Page Group) displays your present position in latitude and longitude and altitude. This page also displays your current track, ground speed, time and a reference waypoint field.

At the top of this display is the graphic “track” indicator, which indicates the direction you’re heading, or track, only when you’re moving. Directly below are three fields that display track, ground speed and altitude.



Below those fields is your Position specified as a specific latitude and longitude. To the right is a time display that by default will show “local time.” *There is a hidden mouse point in the upper right corner of the bezel to toggle this display from “local time” to “Zulu time.” Click on the 430 text in the upper right corner.*


The position page also features a reference waypoint field, located at the bottom left of the page, to indicate your bearing and distance from a current waypoint in your flight plan.

GARMIN GNS 430 GPS MANUAL

Section 3 Waypoint Page Group

The first section introduced the GNS430's main page groups, and the previous section described the NAV Page Group. This section will cover the pages in the WPT (Waypoint) Page Group. These pages provide information for the thousands of airports, VORs, NDBs, intersections, runways, frequencies and procedures provided by Flight Simulator 9's extensive Jeppesen database.



The WPT Page Group includes seven pages. While viewing any WPT page, rotate the small

right knob  to select a different WPT page. The first four pages provide detailed information for the selected airport: location, runways, frequencies and approaches. The last three pages provide information for intersections, NDBs, and VORs.

After a WPT page is selected, information for a waypoint may be viewed by entering the identifier (or name) of the desired waypoint. Airports may be selected by identifier or city name. NDBs and VORs may be selected by identifier.

Select Identifiers (Airport, Intersection, NDB, VOR)

To enter a waypoint identifier:


- 1) Select the desired WPT page and click the small right knob  to activate the flashing cursor.
- 2) Rotate the small right knob to select the first character of the waypoint's identifier. *
- 3) Rotate the large right knob to select the next character field.
- 4) Rotate the small right knob to select the desired character.
- 5) Repeat steps 3 and 4 until the identifier is selected, then press .
- 6) To remove or cancel the flashing cursor, click the small right knob again.

** TIP: To rapidly make a selection, after step 2 above, you may TYPE the entire identifier using the keyboard, then skip to step 6 to complete the operation!*



To enter a waypoint city location, follow the steps above, except use the large right knob to move the flashing cursor to the CITY field on the APT Page.

Please note that the GNS430 uses ICAO identifiers for all airports. All U.S. airport identifiers that contain only letters use the prefix "K." For example, Los Angeles International is KLAX under the ICAO standard. Other airports, such as Otten Memorial (3VS) that contain numbers in the identifier, do not require the "K" prefix. Many foreign countries use two letter prefixes.

Duplicate Waypoints

Once the identifier or facility location is entered, all four airport pages will display information for the selected airport. As you enter an identifier or location name, the GNS430's "Spell 'N' Find" feature will scroll through the database, displaying those waypoints matching the characters you have entered to that point. If duplicate entries exist for the entered facility location, additional entries may be viewed by continuing to rotate the small right knob during the selection process. If duplicate entries exist for an entered identifier, a duplicate waypoint page will appear once you select the identifier by pressing .

To select a waypoint identifier from a list of duplicates:

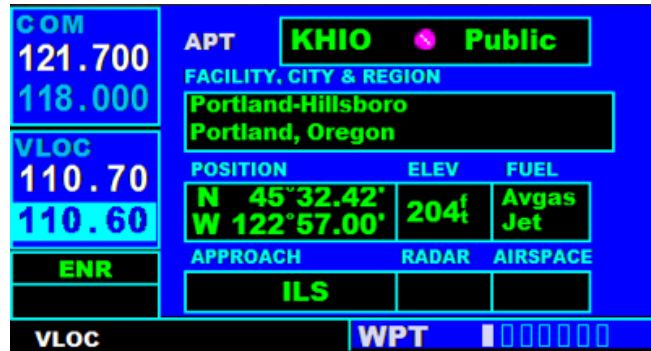
- 1) Select the desired airport or navaid following the steps outlined previously.
- 2) A duplicate waypoints window will appear: Rotate the large knob to select the desired waypoint and press . To remove the flashing cursor, press the small right knob .

GARMIN GNS 430 GPS MANUAL


WPT1 – Airport Location

As shown on the example to the right, information for KHIO is displayed. In addition to the Facility, City and Region data, the latitude, longitude, elevation and fuel availability is also shown.


At the bottom of the screen is the “suggested approach type,” whether radar is available, and the type airspace it is within.

**WPT2 – Airport Runways**

In the example to the right, I’ve selected KDEN in order to better illustrate the runway information available. Note that currently, information for runway 16R-34L is displayed, along with the length, width, and surface type and airport time of operations.

While on this page, clicking the small right knob  to activate the flashing



cursor, you can not only select the desired airport, but by turning the large right knob  to move the flashing cursor to the RUNWAY field, you can select the desired runway from a pop up box, as illustrated in the picture on the right.

NOTE: If you have any special AFCAD airport files installed that have “dummy runways” such as the one I have for KDEN, then the “fake runways” will also appear on the pick list! This is because this GNS430 is using the actual FS9 database.





GARMIN GNS 430 GPS MANUAL

WPT3 – Airport Frequencies

The *airport frequency page* displays radio frequencies and frequency types for the selected airport. If the selected airport has a localizer-based approach, the localizer frequency(s) is also listed on this page. The *airport frequency page* may be used to quickly select and tune a COM or VLOC frequency.

As will all other pages, if the list is too long to fit the screen's display, a scroll bar will appear on the right edge. To scroll through the list and tune to a desired frequency on the list:



- 1) Press the small right knob  to activate the cursor.
- 2) Rotate the large right knob to scroll through the list, placing the cursor on the line with the desired frequency.
- 3) Press  to place the selected frequency in the standby field of the COM or VLOC window.

Some listed frequencies may include designations for limited usage, as follows:

"TX" – transmit only "RX" – receive only "PT" – part time frequency

The following descriptions and abbreviations are use on the airport frequency page:

- Type--- Usage type: Public, Military or Private
- Frequency--- Communication frequencies that may include restrictions:

Approach	Arrival	Class B	Class C CTA
Departure	TMA	Terminal	TRSA

Communication frequencies without restrictions:

ATIS	ASOS	AWOS
Center	Clearance	Gate
Control	Ground	Helicopter
Multicom	Pre-taxi	Radar
Ramp	Unicom	Tower

Navigation frequencies:

ILS	LOC
-----	-----

GARMIN GNS 430 GPS MANUAL

WPT4 – Airport Approach Page

The *airport approach page* show the available approach procedures for the selected airport. Where multiple approach fixes (IAF's) and feeder routes are available, that information may also be displayed. A map image provides a layout diagram for each approach and transition.

To scroll through the available approaches and transitions:



- 1) Press the small right knob to activate the cursor.
- 2) Rotate the large right knob to place the cursor on the approach (APR) procedure name.
- 3) Rotate the small right knob to display a window of available approaches for the selected airport. Continue rotating the small right knob to select the desired approach.
- 4) Press **ENT**. The cursor will move to the transitions (TRANS) field.
- 5) Rotate the small right knob to display a window of available transitions. Continue rotating the small right knob to select the desired transition or select "VECTORS" for guidance only along the final course segment of the approach.
- 6) Press **ENT**. To remove the flashing cursor, click the small right knob.



Selecting the desired approach from the list.



"WUNKA" Transition selected.

Note in the picture above right that the map displays not only the IAF, but also the complete procedure, including the MAP (Missed Approach Point) as well as the hold.

NOTE: 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. ILS approaches, for example, must be flown by tuning the VLOC receiver to the proper frequency and coupling the VLOC receiver to the external CDI (or HSI).

GARMIN GNS 430 GPS MANUAL

WPT5 – Intersection Page

The *intersection page* displays the latitude, longitude, and region for the selected intersection. This page also displays the identifier, radial and distance from the nearest VOR, VORTAC or VOR/DME. The following descriptions and abbreviations are used:

- Position --- Latitude/Longitude
- RAD --- Radial from nearest VOR in degrees magnetic
- DIS --- Distance from nearest VOR, in nautical miles

COM 121.700 118.000	INT MAJUC	REGION		NEAREST VOR	
VLOC 110.70 110.60	K1	K1		IRDM	
ENR	POSITION N 45°32.01' W 122°56.80'	RAD 298°	DIS 108.1 ^m		
VLOC	WPT 0000100				

Intersections may only be selected by identifier, using the same key/knob sequences as the other pages already described.

NOTE: The VOR displayed on the intersection page is the nearest VOR, not necessarily the VOR used to define the intersection.

WPT6 – NDB Page

The *NDB page* displays the facility ID, name, city, and region for the selected NDB. This page also displays the frequency and weather broadcast indication (if applicable).

Use the procedures described for the other pages to select the NDB by ID. Rotating the large knob will place the flashing cursor on the frequency.

Press **ENT** to send the highlighted frequency to the NDB receiver.

COM 121.700 118.000	NDB HI	FACILITY, CITY & REGION			
VLOC 110.70 110.60	K1	ABATE (PORTLAND)			
ENR	POSITION N 45°37.82' W 123°02.75'	FREQ 356.0	WX BRDCST		
VLOC	WPT 0000010				

WPT7 – VOR Page

The *VOR page* displays the VOR ID, Facility Name, City and Region for the selected VOR. This page also displays the frequency and weather broadcast indication (if applicable).

Also, the Magnetic Variation in degrees is display on this page.

Use the procedures described for the other pages to select the NDB by ID. Rotating the large knob will place the flashing cursor on the frequency. Press **ENT** to send the highlighted frequency to the VLOC receiver.


COM 121.700 118.000	VOR UBG <input checked="" type="checkbox"/> High Alt	FACILITY, CITY & REGION			
VLOC 110.70 110.60	K1	NEWBERG			
ENR	POSITION N 45°21.19' W 122°58.69'	FREQ 117.40	WX BRDCST	VAR E021°	
VLOC	WPT 0000001				

GARMIN GNS 430 GPS MANUAL

Section 4 - NRST Page Group




The previous sections have described the first three Page Groups: NAV and WPT. This third page group (NRST) provides detailed information for the **nine nearest** airports, intersections, VORs, or NDBs within 200 nm of your current position. In addition, the NRST pages will include the **five nearest** Controlled Airspaces you may be in or near.

Navigating to a Nearby Waypoint

The NRST page can be used in conjunction with the GNS430's direct-to function  to quickly set a course to a nearby facility. This feature can be a real time saver compared to retrieving information from the database using the WPT pages! **More importantly, it instantly provides navigation to the nearest airport in case of an in-flight emergency.**

COM		NEAREST AIRPORT			
		APT	BRG	DIS	APR
121.700	118.000	KHIO	330°	0.4 ⁿ	ILS
		twr	119.300	rwly	6595'
VLOC	110.70	OR80	195°	1.7 ⁿ	
			000.000	rwly	1600'
110.60		OR81	279°	3.4 ⁿ	
			000.000	rwly	2000'
ENR		10R3	304°	4.3 ⁿ	
			000.000	rwly	3050'
VLOC		NRST			



To select a nearby airport, VOR, NDB, or intersection as a direct-to destination:

- 1) Use the flashing cursor to scroll through a NRST page list and highlight the desired nearest waypoint.
- 2) Press  to display the select direct-to waypoint page.
- 3) Press  to accept the selected waypoint's identifier and press  a second time (with "Activate?" highlighted) to begin navigating to the selected waypoint immediately.

NRST1 – Airport Page

The *nearest airport page* displays the identifier, symbol, bearing and distance to the nine nearest airports (within 200 nautical miles of your present position). For each airport listed, the *nearest airport page* also indicates the best available approach, common traffic advisory frequency (CTAF) and the longest runway.

Only the first four airports will be displayed on the screen.

- 1) Press the small right knob  to activate the flashing cursor. Use the large right knob to scroll and highlight the desired airport.
- 2) Press the  key to send the selection to the WPT1 – Airport page instantly. From this page, you can obtain details of the airport, or scroll through WPT2, or WPT3 pages for further information, or to select COM/VLOC frequencies as described on page 16 of this manual.

GARMIN GNS 430 GPS MANUAL

NRST2 – Intersection Page

The *nearest intersection page* displays the identifier, symbol, bearing, and distance of the nine nearest intersections (within 200 nautical miles of your present position).

To view additional information for a nearby intersection, start from the nearest intersection page and follow steps 1 and 2 listed above.

COM 121.700 118.000 VLOC 110.70 110.60 ENR	NEAREST INTERSECTION		
	INT	BRG	DIS
	MAJUC	068 ^M	0.1 ^N
	MADUF	309 ^M	1.1 ^N
	NOONS	272 ^M	2.5 ^N
	EYOHE	167 ^M	4.9 ^N
	BEAST	026 ^M	6.0 ^N
	ABATE	306 ^M	7.1 ^N
	WETTR	005 ^M	9.9 ^N
	SAUVI	016 ^M	9.9 ^N
	WOODD	026 ^M	10.2 ^N
VLOC	NRST 0000		

NRST3 – NDB Page

The *nearest NDB page* displays the identifier, symbol, bearing, and distance of the nine nearest NDBs (within 200 nautical miles of your present position).

To view additional information for a nearby NDB, start from the nearest NDB page and follow steps 1 and 2 listed above.

COM 121.700 118.000 VLOC 110.70 110.60 ENR	NEAREST NDB			
	NDB	BRG	DIS	FREQ
	HI	306 ^M	7.1 ^N	356.0
	PLV	134 ^M	16.8 ^N	366.0
	MM	172 ^M	17.6 ^N	383.0
	IA	069 ^M	20.4 ^N	332.0
	IA	069 ^M	20.4 ^N	332.0
	LSO	343 ^M	37.4 ^N	256.0
	TKW	247 ^M	38.3 ^N	271.0
	SL	161 ^M	41.2 ^N	266.0
	PEN	305 ^M	45.1 ^N	201.0
VLOC	NRST 0000			

NRST4 – VOR Page

The *nearest VOR page* displays the identifier, symbol, bearing, and distance of the nine nearest VORs (within 200 nautical miles of your present position).

To view additional information for a nearby VOR, start from the nearest VOR page and follow steps 1 and 2 listed above.

COM 121.700 118.000 VLOC 110.70 110.60 ENR	NEAREST VOR			
	VOR	BRG	DIS	FREQ
	UBG	167 ^M	10.9 ^N	117.40
	CBU	058 ^M	14.5 ^N	109.20
	PDX	057 ^M	14.8 ^N	111.80
	BTG	030 ^M	19.7 ^N	116.60
	AST	295 ^M	54.2 ^N	114.00
	CVO	174 ^M	63.7 ^N	115.40
	ONP	201 ^M	74.4 ^N	117.10
	LTJ	062 ^M	78.3 ^N	112.30
VLOC	NRST 0000			

NRST5 – Airspaces Page

The *nearest airspace page* will alert you to as many as nine controlled or special use airspaces near on in your flight path. Alerts are provided according to the following conditions:

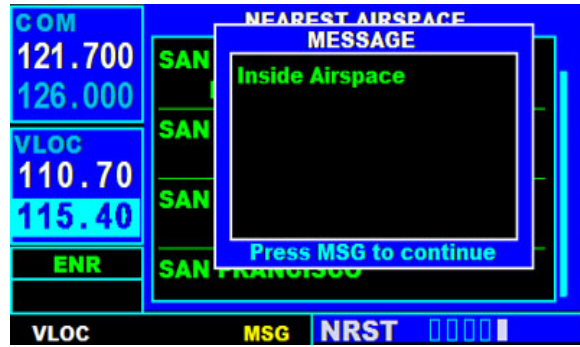
- If your projected course will take you inside an airspace within the next ten minutes, the alert message "Airspace ahead – less than 10 minutes" will appear. The *nearest airspace page* will show the airspace as "Ahead."
- If you are within two nautical miles of an airspace and your current course will take you inside, the message "Airspace near and ahead" will appear. The *nearest airspace page* will show "Within 2nm of airspace."

COM 121.700 118.000 VLOC 110.70 110.60 ENR	NEAREST AIRSPACE	
	SEATTLE	Inside of airspace
	SEATTLE	
	SEATTLE	
	SEATTLE	
VLOC	MSG	NRST 0000

GARMIN GNS 430 GPS MANUAL

- If you are within two nautical miles of an airspace and your current course will **not** take you inside, the message "Near airspace less than 2nm" will appear. The *nearest airspace page* will show "Ahead < 2nm."
- If you have entered an airspace, the message "Inside Airspace" will appear. The *nearest airspace page* will show "Inside of airspace."

Note that the airspace alerts are based on three-dimensional data (latitude, longitude and altitude) to avoid nuisance alerts. The alert boundaries for controlled airspace are also sectorized to provide complete information on any nearby airspace. Once one of the described conditions exists, the message annunciator will flash, alerting you of an airspace message.



To view an airspace alert message:

- 1) When the message annunciator above the **MSG** key flashes, press **MSG**.
- 2) Press **MSG** again to return to the previous page.
- 3) To disable the Airspace Alerts, press and hold the **MSG** key, until OFF appears.

GARMIN GNS 430 GPS MANUAL

VLOC (VOR/Localizer/Glideslope) Receiver




The GNS430 includes digitally tuned VOR/localizer and glideslope receivers with the desired frequency selected on a VLOC window, along the left-hand side of the display. Frequency selection is performed by clicking the small left knob, and “rotating” the small and large left knobs to select the desired frequency.

VLOC Window and Tuning

VLOC frequencies are selected with the tuning cursor in the *standby* VLOC frequency field (lower field), and using the small and large left knobs to dial in the desired frequency. The standby frequency always appears below the *active* frequency. The active frequency is the one currently in use.


The tuning cursor normally remains in the COM window. If you wish to select a VOR/localizer/ILS frequency, click the small left knob momentarily to place the cursor in the VLOC window.

Auto-Tuning



A frequency may also be quickly selected from the database by simply highlighting the desired frequency on the VOR page or the nearest VOR page and pressing the  key. This process is known as *auto-tuning*. Once a frequency is selected in the standby field, it may be

transferred to the active frequency by pressing the  key.

When selecting a VOR or ILS approach, manual tuning of the VLOC receiver is not required. Once the approach procedure is “Loaded” or “Activated,” the GNS430 will automatically place the proper frequency in the standby field of the VLOC window. If you wish to use this

frequency, simply press the  key to activate the frequency.

CDI Key

The GNS430's  key is used to couple the GPS or VLOC receiver to the external CDI (or HSI). When the external CDI (or HSI) is being driven by the GPS receiver, “GPS” will appear at the bottom left corner of the page, directly above the  key. When being driven by the VLOC receiver, “VLOC” will appear instead.



NOTE: The external CDI or HSI must be coupled to the VLOC receiver for approaches that are not approved for GPS.

GARMIN GNS 430 GPS MANUAL




Section 5 - Standalone Pages

DTO – Direct-to Page

The GNS430's direct-to function provides a quick method of setting a course to a destination waypoint. Once a direct-to is activated, the GNS430 will establish a point-to-point course line (great circle) from your present position to the selected direct-to destination. Navigation data on the various NAV pages will provide steering guidance until the direct-to is cancelled or replaced by a new destination.

COM		SELECT D> WAYPOINT	
121.700		IDENT, FACILITY & CITY	
118.000		KSEA 	
VLOC		Seattle-Tacoma Intl	
110.70		Seattle, Washington	
110.60		FPL KOTH NRST KHIO	
ENR		POSITION CRS	
		N 47°26.93' 353M	
		W 122°18.56' Activate?	
VLOC		NAV 	


To select a direct-to destination:

- 1) Press the  key. The select direct-to waypoint page will appear, with the waypoint identifier field highlighted.
- 2) Use the small and large right knobs to enter the identifier of the desired destination airport. Don't forget that you can also "type the entry in" from your keyboard!
- 3) Press  to confirm the selected waypoint and  again to activate the direct-to function.

If you're navigating to a waypoint and get off course, the direct-to function may also be used to re-center the CDI (HSI) needle and proceed to the same waypoint.

To re-center the CDI (HSI) needle to the same destination waypoint:

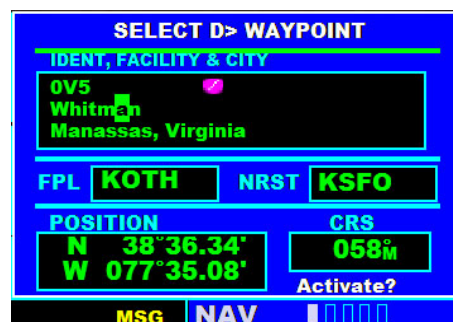
- 1) Press the  key, followed by the  key twice.

NOTE: If you're navigating an approach with the missed approach point (MAP) as the current destination, re-centering the CDI (HSI) needle with the  key will cancel the approach.



GARMIN GNS 430 GPS MANUAL

Selecting a Destination by Facility Name

In addition to selecting a destination by identifier, the Select Direct-to Waypoint page also allows you to select airports, VORs, and NDBs by facility name. If the database includes duplicate entries for the facility name or city you enter, you can view additional entries by continuing to rotate the small right knob during the selection process.



To select a direct-to destination by facility name

1. Press the  button. The **Select Direct-to Waypoint** page will appear, with the waypoint identifier field highlighted.
2. Rotate the **large right knob** to highlight the facility name (second line in the figure above).
3. Use the **small and large right knobs** to enter the facility name of the desired destination waypoint. As you spell the facility name, the GPS 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 to scroll through any additional database listings for the selected facility name or city. You can also scroll backwards with the small right knob if you scroll past the desired waypoint.
5. Press the  button once to confirm the selected waypoint, and again to activate the direct-to function.



Note: After you've turned the small knob to highlight the first letter, you can type the facility name on your keyboard.

Selecting a Destination from the Active Flight Plan

If you're navigating an active flight plan, you can select any waypoint contained in the flight plan as a direct-to destination from the **Select Direct-to Waypoint** page. (See Active Flight Plan Page below for more information on flight plans.)



To select a direct-to destination from the active flight plan

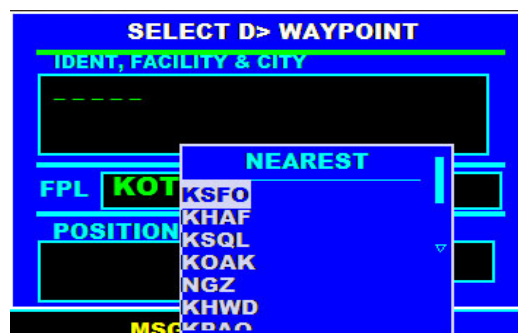
1. Press the  button. The **Select Direct-to Waypoint** page will appear, with the waypoint identifier field highlighted.
2. Rotate the **large right knob** to highlight the flight plan (FPL) field.
3. Rotate the **small right knob** to display a window showing all waypoints in the active flight plan.
4. Continue rotating the **small right knob** to scroll through the list and highlight the desired waypoint.
5. Press the  button once to confirm the selected waypoint, and again to activate the direct-to function.



GARMIN GNS 430 GPS MANUAL

Selecting the Nearest Airport as a Direct-to Destination





The **Select Direct-to Waypoint** page always displays the nearest airports (to your current position) on the NRST field. Navigating directly to a nearby airport is always just a few simple steps away.

To select a nearby airport as a direct-to destination



1. Press the  button.
The **Select direct-to waypoint** page will appear, with the waypoint identifier field highlighted.
2. Rotate the **large right knob** to highlight the nearest airport (**NRST**) field.
3. Rotate the **small right knob** to display a window showing as many as nine nearby airports.
4. Continue rotating the **small right knob** to scroll through the list and highlight the desired airport.
5. Press the  button once to confirm the selected waypoint, and again to activate the direct-to function.

Direct-To Shortcuts

Shortcuts are available when using the  button, allowing you to bypass the use of the **small and large knobs** to enter the destination waypoint's identifier. You can perform a direct-to from any page displaying a single waypoint identifier (such as the **WPT** pages for airports and navigation aids) by simply pressing the  button and then the  button twice. For pages that display a list of waypoints (e.g., the **Nearest Airport** page), you must highlight the desired waypoint with the cursor before pressing the  button.



FPL – Flight Plan Page

The **Active Flight Plan** page provides information for the active flight plan (or direct-to).

If you create a VFR or IFR flight plan using the Flight Planner, Flight Simulator will automatically load the flight plan into the GPS and activate the plan for use in navigation.

ACTIVE FLIGHT PLAN			
WAYPOINT	DTK	DIS	CUM
Enroute			
KSFO			
OAK	028°	10 ⁿ	10 ⁿ
SALAD	061°	13 ⁿ	22 ⁿ
ALTAM	061°	10 ⁿ	33 ⁿ
HAIRE	050°	14 ⁿ	47 ⁿ
ORANG	050°	11 ⁿ	58 ⁿ
LIN	050°	13 ⁿ	71 ⁿ

With an activated direct-to or flight plan loaded, the **Active Flight Plan** page will show each waypoint for the flight plan (or a single waypoint for a direct-to), along with the desired track (**DTK**), distance (**DIS**) for each leg, and cumulative distance (**CUM**).

You can select any leg within the active flight plan as the active leg (the leg which will currently be used for navigation guidance), using the  button, followed by the  button.

GARMIN GNS 430 GPS MANUAL

In the example shown on the right, the SALAD waypoint has been selected, and the popup

menu that appears after the **MENU** button has been pressed is asking for confirmation to "Activate?" the selected leg of the flight plan.

Press the **ENT** button to complete the selection process.



On the picture below, notice that the magenta arrow now points from the SALAD intersection to the ALTHAM intersection.



During instrument procedures, you can use this feature not only to activate a specific point-to-point leg, but also to activate the procedure turn portion of an approach, follow a DME arc, or activate a holding pattern.

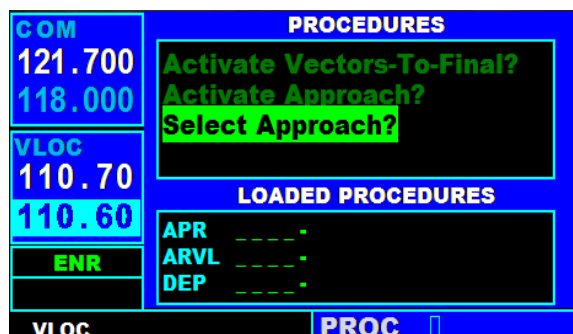
You can review any approach on the **Airport Approach** page in the WPT page group. (For more information, see the Waypoint Page Group section.)

GARMIN GNS 430 GPS MANUAL

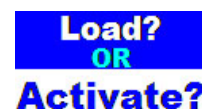
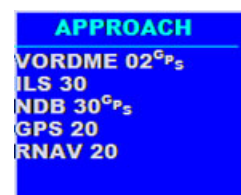
PROC – Procedures Page

The GPS430 allows you to fly nonprecision approaches to airports with published instrument approach procedures. Display the

Procedures page by pressing the **PROC** button. The **Procedures** page provides direct access to approaches based upon the active flight plan or direct-to destination. In either case, the destination airport must have published procedures associated with it.

**To select an approach**

1. Press the **PROC** button to display the **Procedures** page.
2. Rotate the **large right knob** to highlight **Select Approach?** and press the **ENT** button. A window will appear listing the available procedures.
3. Rotate the **large right knob** to highlight the desired approach and press the **ENT** button. A second window will appear listing the available transitions.
4. Rotate the **large right knob** to highlight the desired transition waypoint and press the **ENT** button. (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 the **ENT** button. **Load?** will add the approach 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.



Note: 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. **ILS** approaches, for example, must be flown by tuning the external **VOR/ILS** receiver to the proper frequency and using the external **CDI** (or **HSI**) for guidance.

If you're flying a **GPS** approach, or a nonprecision approach approved for **GPS**, and you plan on using the aircraft's **VOR 1** indicator to fly the approach, make sure the **Nav/GPS** switch on the aircraft instrument panel is set to **GPS**. If, however, you want to fly the approach using data from the **Nav 1** radio, and plan to use the **GPS** only for situational awareness, then make sure the **Nav/GPS** switch is set to **NAV**.

GARMIN GNS 430 GPS MANUAL

Once you select an approach, you may activate it for navigation from the **Procedures** page. Activating the approach overrides the en route portion of the active flight plan, proceeding directly to the approach portion (for a full approach, directly to the initial approach fix). Activating the approach also initiates automatic CDI scaling transition as the approach progresses.

To activate a previously loaded approach



1. Press the **PROC** button to display the **Procedures** page.
2. Rotate the **large knob** to highlight **Activate Approach?**
3. Press the **ENT** button.

Another **Procedures** page 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.

To activate the previously loaded approach, with vectors to final

1. Press the **PROC** button to display the **Procedures** page.
2. Rotate the large right knob to highlight **Activate Vectors-To-Final?**
3. Press the **ENT** button.

In many cases, it may be easiest to load the full approach while still some distance away, en route to the destination airport. Later, if vectored to final, use the steps above to select **Activate Vectors-To-Final**—which makes the inbound course to the FAF waypoint active. Otherwise, activate the full approach using the **Activate Approach?** option.

GARMIN GNS 430 GPS MANUAL


Basic Approach Operations

The GNS430 units provide nonprecision approach guidance. The GPS receiver can also be used as a supplemental aid for precision approaches and nonprecision localizer-based approaches, but external localizer and glide slope receivers **must** be used for primary approach course guidance.

Approaches designed specifically for GPS are often very simple and don't require overflying a VOR or NDB. Currently, many nonprecision approaches have GPS overlays to let you fly an existing procedure (VOR, VOR/DME, NDB, RNAV, and so forth.) more accurately using GPS.

Many overlay approaches are complex in comparison to GPS-only approaches. The GPS displays and guides you through each leg of the approach—automatically sequencing through each of these legs, including the missed approach procedure. Approaches may be flown "as published" with the full transition—using any published feeder route or initial approach fix (IAF)—or may be flown with a vectors-to-final transition.

To fly a typical approach using the GPS

1. Prior to departing, select the destination using the  button
-or-
Create a flight plan using the Flight Planner.
2. While en route, ATC will inform you which approach to expect.
(You can choose another if you'd like).
3. Press the  button and choose the **Select Approach?** option.
4. Load the expected approach (often while en route) in anticipation of its future use.
This places the approach in the active flight plan, but retains course guidance in the en route section until the approach is activated.
5. Activate the full approach or vectors-to-final approach, as appropriate.
In some scenarios, you may find it more convenient to immediately activate the approach and skip the load process.

Points to Remember for All Approaches




1. The GPS is designed to complement your printed approach plates and vastly improve situational awareness throughout the approach. However, *you must always fly an approach as it appears on the approach plate.*
2. The active leg (or the portion of the approach currently in use) is depicted in magenta on the Map page. As you fly the approach, the GPS will automatically sequence through each leg of the approach.
3. The published missed-approach course is shown as a dotted white line extending beyond the missed approach point (MAP). As you pass the MAP, the GPS will sequence to the first missed approach waypoint. Land, or fly the published missed approach procedure.

GARMIN GNS 430 GPS MANUAL

Approaches with Procedure Turns

The GPS stores the procedure turn portion of an approach as one of the legs of the approach. For this reason, the GPS requires no special operations from the pilot—other than flying the procedure turn itself—beyond what is required for any other type of approach.

To fly the procedure turn

1. Within 30 nm of the destination airport, the GPS will switch from **en route** mode to **terminal** mode (as indicated in the lower left corner of the screen), and the course deviation indicator (CDI) scale will transition from a 5.0 to 1.0 nm full scale deflection.
2. Several miles prior to reaching the initial approach fix (IAF), you may wish to review the approach sequence.
 - o Press the  button to display the **Active Flight Plan** page.
 - o Press the  button and Rotate the **large right knob** to review each segment of the approach.
 - o When finished, press the  button again to return to the previous page.
3. As you approach the IAF, dial the outbound course into the aircraft's CDI (or HSI) using the OBS knob and initiate a standard rate turn to this course heading.
4. Fly the outbound course, keeping the CDI needle centered.
5. After approximately 90 seconds, turn 45 degrees left or right (as indicated on chart or GPS) to initiate the procedure turn. The GNS430 receivers will provide course guidance relative to the outbound leg from the FAF, and through the procedure turn itself. (The GPS will display the procedure turn on the **Map** page, and will indicate the procedure turn as the active leg on the **Default NAV** and **Active Flight Plan** pages.) The CDI needle will start moving to the right.
6. After approximately one minute, make a 180-degree right turn to intercept the inbound course. The GPS will sequence to the inbound leg to the FAF, and the CDI needle will swing to the opposite side to provide proper sensing along the final course segment.
7. As the CDI needle starts to center, make a right turn to the final approach course.
8. Within 10 nm of the airport, the GPS will switch from **terminal** mode to **approach** mode. CDI scaling will be tightened from 1.0 to 0.3 nautical mile, full scale deflection.
9. As you approach the FAF, make any course adjustments necessary for the final course segment (FAF to MAP).
10. As you cross the FAF, the destination sequences to the MAP (for example, **RW04**, the runway threshold).
11. With the needle centered, fly toward the MAP, observing the altitude minimums indicated by the approach plate.
12. As you pass the MAP, the GPS will sequence to the first missed approach waypoint.
13. Land, or fly the published missed approach procedure.

GARMIN GNS 430 GPS MANUAL

Missed Approaches

After you pass the MAP, you must execute a missed approach if the runway isn't in sight. As you pass the MAP, the GPS will sequence to the first waypoint in the published missed approach, and then to each missed approach waypoint in sequence, including taking you through the hold.

On the right is a typical approach. In this case, RWY30 at KGYG via the *GARIE* intersection has been selected. Notice that there is a **procedure turn** following the arrival at the *GARIE* intersection.

The dotted lines indicate the **missed approach procedure** which includes a **hold** over the *CGT* VOR.



Flying the Procedure Turn

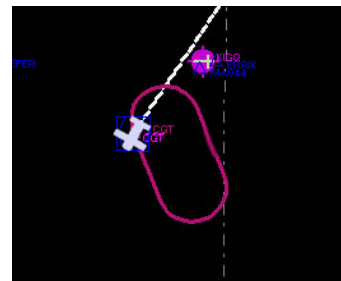
To the right, the MAP has been passed and the GNS430 has sequenced to the published **missed approach procedure**. The GNS430 will guide the aircraft directly to the **hold** over the *CGT* VOR.



Flying the Hold over CGT VOR

To initiate and fly the missed approach procedure

- Follow the missed approach procedures, as published on your approach plate, for proper climb and heading instructions.
The GPS will guide you through the published procedure to the holding pattern, and will provide course guidance through the holding pattern, including a modified entry.
- When leaving the holding pattern to refly the approach (or another approach), press the **PROC** button to **Select Approach?** or **Activate Approach?** as previously described. -or-
Use the **→** button to select another destination.



GARMIN GNS 430 GPS MANUAL

Approaches with a Hold

If an approach begins with a holding pattern, the GPS can make simple work of it.

To fly an approach with a hold

1. Within 30 nm of the airport, the GPS will switch from **en route** mode to **terminal** mode, and the CDI scale will transition from 5.0 to 1.0 nm, full scale deflection.
2. The GPS will display the holding pattern on the **Map** page, and indicate the holding pattern as the active leg on the **Default NAV** and **Active Flight Plan** pages.
3. The GPS will provide course guidance through the holding pattern, including a modified entry.
Note: If you need to lose extra altitude or speed by going around the holding pattern again, press the **OBS** button to manually suspend waypoint sequencing before crossing the holding waypoint the second time. If you've already passed this waypoint, reactivate the holding pattern on the **Active Flight Plan** page.
4. Within 10 nm of the airport, the GPS will switch from **terminal** mode to **approach** mode. CDI scaling will be tightened from 1.0 to 0.3 nautical mile, full scale deflection.
5. Make any course adjustments necessary for the final course segment (FAF to MAP).
6. As you cross the FAF, the GPS will sequence the destination to the MAP (for example, **RW21**, the runway threshold). With the needle centered, fly toward the MAP, observing the altitude minimums dictated by the approach plate.
7. As you pass the MAP, the GPS will sequence to the first missed approach waypoint.
8. Land, or fly the published missed approach procedure.



GARMIN GNS 430 GPS MANUAL

DME Arc Approaches

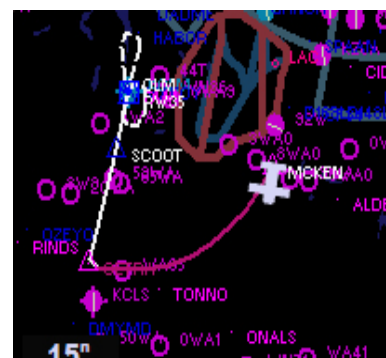
The GPS overlay for a DME arc approach uses additional Jeppesen-provided waypoints to define the arc. These waypoints are indicated by a **D** as the first letter in the waypoint name, followed by three numbers indicating the radial the waypoint lies on; the last letter indicates the radius of the arc.

When cleared for a DME arc approach, you may do either of the following to intercept the arc.

- Follow a specified radial inbound to intercept the IAF.
- Follow ATC vectors which allow you to intercept the arc at any point along the arc.

To fly a DME arc approach

1. Within 30 nm of the destination, the GPS will switch from **en route** mode to **terminal** mode and the CDI scale will transition from 5.0 to 1.0 nm, full scale deflection.
2. If you haven't already activated the approach, be sure to do so when cleared for the approach.
3. If you plan on using the aircraft's VOR 1 indicator to fly the approach, make sure the **Nav/GPS** switch on the aircraft instrument panel is set to **GPS**.
-or-
If you want to fly the approach using data from the Nav 1 radio, and use the GPS just for situational awareness, then make sure the **Nav/GPS** switch is set to **Nav**.
4. Follow the arc, keeping the CDI needle centered.
5. The next point in the approach is probably an intermediate fix. When the fix becomes the active waypoint, initiate a standard rate turn toward it.
6. Within 10 nm of the airport, the GPS will switch from **terminal** mode to **approach** mode.
CDI scaling will be tightened from 1.0 to 0.3 nautical mile, full scale deflection.
7. Turn to the final course segment (FAF to MAP) heading.
8. As you cross the FAF, the destination sequences to the MAP (for example, **RW22**, the runway threshold). With the needle centered, fly toward the MAP, observing the altitude minimums dictated by the approach plate.
9. As you pass the MAP, the GPS will sequence to the first missed approach waypoint.
10. Land, or fly the published missed approach procedure.



Flying the published
DME Arc Approach to
Rwy 35 at KOLM

ACTIVE FLIGHT PLAN			
00	Direct to KOLM		
WAYPOINT	DTK	DIS	CUM
MCKEN	359°		
dme arc	281°	19 ⁿ	19 ⁿ
SCOOT	356°	11 ⁿ	30 ⁿ
RW35	356°	4 ⁿ	34 ⁿ
2000f	356°	4 ⁿ	38 ⁿ
OLM	170°	7 ⁿ	45 ⁿ
hold	356°	9 ⁿ	54 ⁿ
FPL			

DME Arc Approach in FPL Page

GARMIN GNS 430 GPS MANUAL

Vectors-to-Final Approaches

If ATC tells you to "expect vectors" onto the final approach course, there are several ways to select "vectors to final." The first two options below normally require the least effort.

To select vectors to final

- When the approach is first selected, choose **VECTORS** from the transitions (TRANS) window.
-or-
- 1. Load a full approach, including the IAF from the transitions window.
- 2. When cleared, press the **PROC** button and select **Activate Vectors-To-Final?**

-or-
- 1. Load the full approach.
- 2. On the **Active Flight Plan** page, highlight the desired leg of the approach, then press the **MENU** button.
- 3. Press the **ENT** button to activate the leg.



The GPS has no way of knowing how ATC will vector you, just that you will intercept the final approach course somewhere outside the FAF. Thus, with a vectors-to-final approach activated, the **Map** page will display an extension of the final approach course in magenta (remember, magenta is used to depict the active leg of the flight plan) and **VTF** will appear as part of the active leg on the **Default NAV** page (as a reminder that the approach was activated with vectors to final). The CDI needle will remain off center until you're established on the final approach course, and the GPS will sequence to the next leg (FAF to MAP) as you cross the FAF.

Note that during the vectoring phase of a vectors-to-final approach, all of the information displayed in the GPS data blocks (**DTK**, **DIS**, **CTS**, and so forth) references the FAF. The GPS doesn't know where you will intercept the final approach course, just that you will eventually reach the FAF.

GARMIN GNS 430 GPS MANUAL

To fly a vectors-to-final approach

1. Within 30 nm of the destination, the GPS will switch from **en route** mode to **terminal** mode and the CDI scale will transition from 5.0 to 1.0 nm, full scale deflection.
2. If you haven't already done so, activate the approach (with vectors to final).
This allows the GPS to guide you to the final approach course.
3. ATC will give you multiple vectors.
4. ATC will instruct you to turn to intercept the final approach course.
As you converge with the final approach course the CDI needle moves toward the center.
5. As the CDI needle centers, make any remaining course corrections to establish yourself on the final approach course.
6. Within 10 nm of the airport, the GPS will switch from **terminal** mode to **approach** mode.
CDI scaling will be tightened from 1.0 to 0.3 nautical mile, full scale deflection.
7. As you cross the FAF, the destination sequences to the MAP (for example, **RW22**). With the needle centered, fly toward the MAP, observing the altitude minimums depicted on the approach plate.
8. As you pass the MAP, the GPS will sequence to the first missed approach waypoint.
9. Land, or fly the published missed approach procedure.

Vectors to Final Using an Autopilot

To fly a vectors-to-final approach using an autopilot, be sure to use **Heading** mode, not **Nav** mode. ATC will vector you to the final approach course and you can follow these vectors by moving the heading bug. Once you intercept the final approach course, you can switch to **Nav** or **Approach** mode as appropriate. Set the **Nav/GPS** switch to GPS to have the **GPS** course displayed on the Nav 1 indicator (or HSI). Set the switch to **Nav** to manually follow a VOR, Localizer, or ILS course tuned on the Nav 1 radio.