3 Navigation

NAVIGATION APPS & FUNCTIONS

Selections vary based on features and optional equipment installed with Garmin avionics.

Map

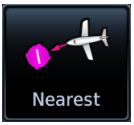
- Display moving map
- Adjust detail level
- Customize map overlay features
- Edit user fields
- Graphically edit a flight plan
- Select a CDI source (GTN 750Xi only)

Charts

- View terminal procedures & airport surface diagrams

Waypoint Info

- Search waypoints
- Create & store user waypoints



Nearest

- View nearest waypoints, airspaces, or facilities

Flight Plan

- Create & edit a flight plan
- View active leg status
- Catalog & manage saved flight plans
- Specify a parallel course offset
- Import a flight plan

Procedures

- Load & activate procedures
- Activate a missed approach

Direct To

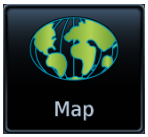
- Set a direct course to any waypoint
- Generate a custom hold
- Generate a search-and-rescue pattern

GTN 650Xi SERIES

Default NAV

- Configure user fields
- Enable OBS mode
- Select a CDI source (GTN 650Xi only)

Map



To increase situational awareness, Map depicts the aircraft's current position relative to land, aeronautical, weather, and traffic information.

FEATURE REQUIREMENTS

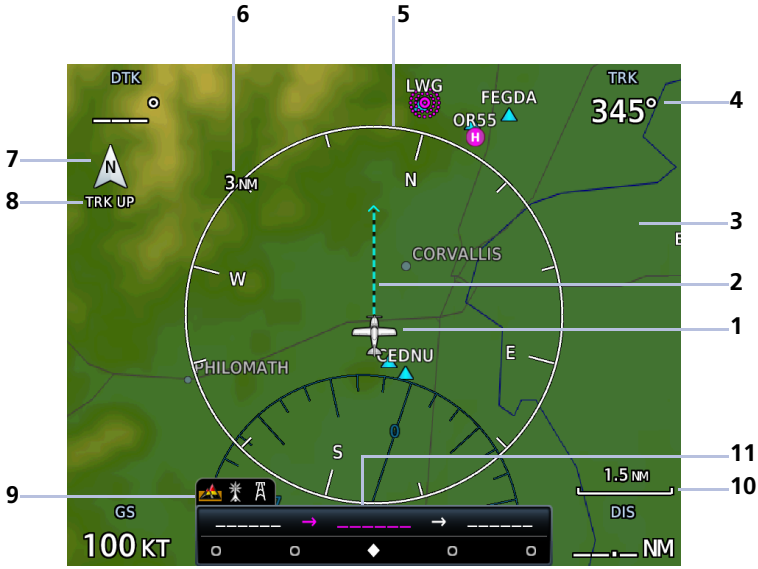
- *Active GPS source (aircraft position symbol)*
- *Active weather subscription (Connext & SiriusXM only)*
- *FIS-B and GDL 88 or GTX 345 (FIS-B Weather)*
- *GDL 69/69A SiriusXM receiver (SiriusXM Weather)*
- *GDL 69, GDL 88, GTX 345, or GSR 56, with appropriate weather service subscription (NEXRAD/PRECIP overlay)*
- *GSR 56 Iridium satellite transceiver (Connext Weather)*
- *WX-series Stormscope receiver (Stormscope lightning data)*
- *Valid heading source (Radar, Stormscope & Traffic)*
- *Matching chart databases (dual GTN/crossfill configurations only)*
- *Traffic system*

GTN 750Xi Series only:

- *GWX 68/70/75/80 or ARINC 708 connected radar (airborne weather radar overlay)*
- *Valid charts database with effective database cycle; aircraft to be airborne (ChartView, FliteCharts)*

FEATURE LIMITATIONS

- *NEXRAD/PRECIP, Radar, and Terrain overlay functions are mutually exclusive; enabling one automatically disables the other*
- *Radar, Stormscope, and Traffic overlays do not display if user navigation angles are active*



Default Map Features

1	**Ownship Icon** Depicts current aircraft position and orientation.
2	**Track Vector** Current ground track indication.
3	**Basemap** Presents a graphical depiction of land and water data.
4	**User Field** Customizable data field appearing in each corner of the map.
5	**NAV Range Ring** Displays current direction of travel on a rotating compass. Orientation: Magnetic north
6	**Map Range Indicator** Displays current map range in the upper left quadrant of the range ring (i.e., the distance from the aircraft to the range ring).
7	**North Indicator** Indicates True north.

8	**Map Orientation Label** Reflects the selected map orientation.
9	**Map Overlay Icons** Indicates status of overlays at the current map range. Includes: obstacles, power lines, precipitation, terrain, and traffic
10	**Zoom Scale** Displays the current magnification level.
11	**CDI & GPS Nav Status Indicator** Lower bar presents a sliding lateral deviation indicator. Upper bar presents from, to, and next waypoints and active leg status annunciations.

FEATURE LABELS

To maintain readability, map feature labels remain uniform at all zoom levels.

TRAFFIC UNITS

System Units page selections do not affect the display of traffic on Map.

LAND AND WATER DEPICTIONS

Land and water data are for general reference only. Data accuracy is not suitable for use as a primary navigation source. The information is intended to supplement and not replace official government charts and notices.

DATA DRAWING ORDER

The electronic map draws data in order of priority, from highest (1) to lowest (36), with higher priority features drawn atop those of lower priority.

LEVEL	FEATURE
1	Traffic
2	Ownship
3	Flight Plan
4	TAWS Alerts
5	Weather Radar[1]
6	Charts[1]
7	Stormscope
8	Obstacles
9	Fuel Range Ring
10	TFRs
11	Freezing Levels
12	Cell Movement
13	Lightning
14	METARs
15	Winds Aloft
16	SIGMETs
17	AIRMETs
18	Cyclone Warning

LEVEL	FEATURE
19	County Warning
20	PIREPs
21	AIREPs
22	City Forecast
23	Surface Analysis
24	Airspace
25	Waypoints
26	Airways
27	Turbulence
28	Icing Potential
29	Echo Tops
30	NEXRAD
31	Cloud Tops
32	IR Satellite
33	SafeTaxi
34	Terrain
35	Basemap
36	Topo

[1] GTN 750Xi Series only.

Map Setup

Map Setup Tabs

- Map
- Aviation
- Airspace
- Land
- Traffic
- Weather

Map Setup Menu

- Orientation
  - North Up
  - Track Up
  - Heading Up
- North Up Above
  - Set range
- Visual APPR Selector
  - Set selector range
- Auto Zoom [1]
- Auto Zoom Min
  - Set range
- Auto Zoom Max
  - Set range
- Track Vector Length
  - Set length
- Altitude Constraints
  - Select label display
- Glide Range Ring
  - Select ring type
- NAV Range Ring
- Fuel Range Ring [1]
- Fuel Reserve Time [2]
  - Set duration
- TOPO Scale [1]
- Point Obstacle Range
  - Set display range
- HOT Line Range
  - Set display range
- Chart Color Scheme
- Selected ALT Range Arc [1]
- Restore Defaults

Overlay data controls reside in the Map menu. Selections are organized into six groups.

Changes to an overlay setting take effect immediately.

RESTORE DEFAULTS

Located in the bottom of each list, this key restores all original factory settings for the active group tab.

Shared Map Settings

Changes to the following map settings also take effect on the configured datalink weather app(s). You may adjust these settings from the appropriate Map Setup tab.

- North Up Above range setting (Map tab)
- Runway Extensions and waypoint display range settings (Aviation tab)
- Road Detail, City Detail, State/Province Names, and River/Lake Detail (Land tab)

[1] On/off functionality only. [2] Dependent upon Fuel Range Ring selection.

Map Display Orientation

Set the orientation of the map display.

Tap **Menu** > **Map Setup** > **Orientation**, and select from the following options.

North Up	Track Up	Heading Up
Orients map to True north	Orients map to current aircraft GPS track	Orients map to current aircraft heading (requires heading data source interface)

Map orientation label changes to reflect the selected orientation.

Ownship Icon Position & Orientation

- The tip represents actual aircraft location
- Symbol type is dependent upon configuration
- This feature is absent if a GPS source is not available

North Up is useful when zoomed out to view the entire route or a frontal system on a NEXRAD display.

North Up Above

Sets the range at which map orientation changes to North Up.

Using the North Up Above feature causes the screen to switch at certain zoom levels. This is useful as a shortcut to quickly increase situational awareness.

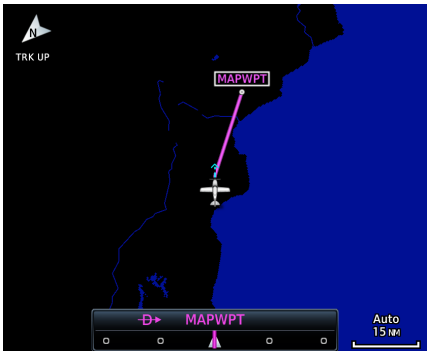
Visual Approach

Visual Approach Key

Sets the distance from the destination airport at which the **Visual Approach** selector key becomes active.

Auto Zoom

Automatically adjusts Map to display the next waypoint in flight plan at the closest possible map range.



Auto zoom presents SafeTaxi data while aircraft is on ground.

Automatic functionality is overridden during manual zoom interactions. It resumes when:

- Another waypoint is in sequence
- Aircraft transitions from on ground to airborne
- Auto zoom range matches manual override range

Local Auto Zoom (Rotorcraft Only)

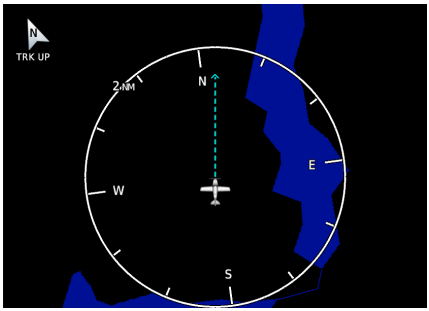
Rotorcraft use a local auto zoom function where auto zoom will remain at the 1500 ft zoom scale until the helicopter is above 400 ft GSL or 40 kts.

Set minimum and maximum values to best meet operational needs.

Track Vector

FEATURE LIMITATIONS

- *Indication absent when aircraft velocity is < 30 kt*



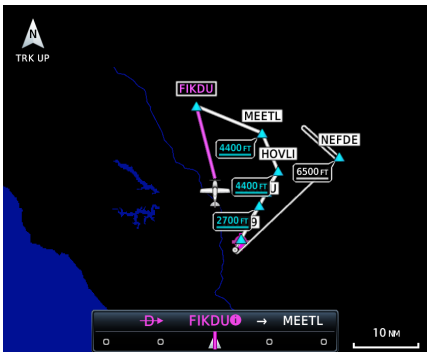
Indicates the current ground track.

Arrow tip represents aircraft position at the specified time interval (if the aircraft maintains current ground track during that time).

Track vector length options display as a dashed line and arrow extending from the aircraft icon, showing current track and distance the aircraft will travel in the selected time.

If the track vector is placed over a point on the map, and no data is entered into the system, the unit indicates a wind-corrected GPS track to that point. This is useful for intercepting airways and radials, making small but positive lateral corrections during approaches, and in setting up for arrivals in the terminal area.

Altitude Constraints



Displays altitude constraint labels within the flight plan.

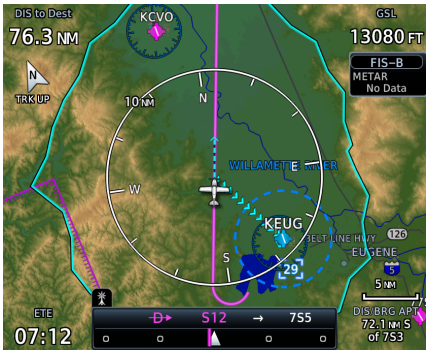
The active constraint is the altitude to which VNAV is currently providing guidance.

Glide Range Ring

FIXED WING AIRCRAFT ONLY

FEATURE REQUIREMENTS

- *Datalink winds or compatible PFD (Glide Range Ring wind compensation)*
- *For best glide performance, the aircraft must be configured in accordance with POH guidance*



Identifies map region and features within gliding distance. A cyan border indicates where the glide path reaches 50 ft above terrain.

The Glide Range Ring is an estimate based on the best glide speed and glide ratio published for the aircraft. For more information, consult the POH.

This overlay receives wind information from the integrated ADAHRS if present. It does not require an ADAHRS unit for operation.

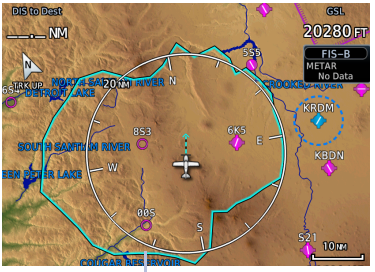
Glide Range Ring Options

- Off
- Ring Only
- Glide Only
- Ring and Glide

The Glide Range Ring depicts the estimated glide range down to 50 ft AGL. It does not show beyond 50 ft AGL where the aircraft reaches the ground.

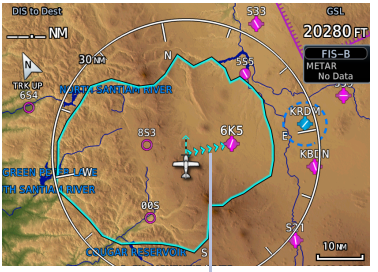
Data updates occur approximately every 10 seconds.

Ring Only



Glide Range Ring

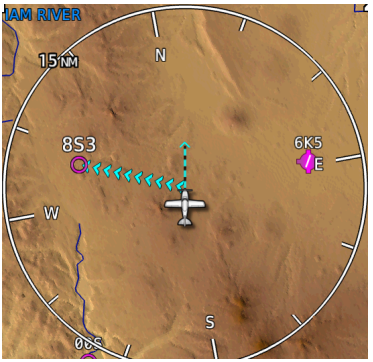
Ring and Glide



Best Glide Airport Indicator

Enable Glide Range Ring to stay aware of all airports within gliding distance. This is extremely helpful should you experience engine failure.

Glide Only



Best Glide Airport Indicator

Cyan arrows point toward the best glide airport at any given time. Best glide airport selection is based on distance from current location, runway length, and weather (if available). Airports beyond the range ring are not considered for routing.

To enable, tap **Glide Range Ring** and select **Ring and Glide** or **Glide Only**.

“No Wind Data” Indicator

This indication appears when FMS winds and datalink winds aloft are either unavailable or invalid.

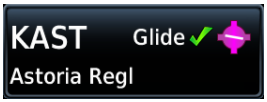
The Glide Range Ring does not adjust to account for current winds when the indicator is present.

NEAREST AIRPORT GLIDE INDICATIONS

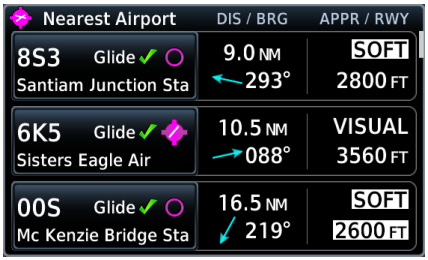
Airports with the "Glide" designation are within line-of-sight of the aircraft and reachable on glide.

Best Glide Airports

The calculated best glide airports appear at the top of the list.



An icon denotes which airports are reachable on glide. Select the identifier to view airport information, including available runways.



Surface type and runway length indications on GTN 650Xi.

Any airports within glide range that do not meet the pilot-specified nearest airport runway criteria may also appear in the list. GTN Xi highlights the offending criteria setting (runway length or surface type) in the APPR/RWY column.

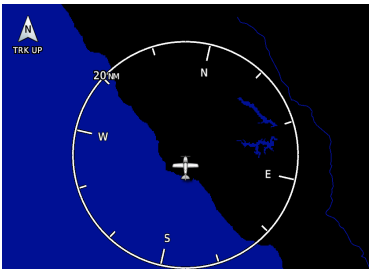
A message appears at the top of the list when no airports are within glide range.

Specify nearest airport runway criteria in the System Setup app. For more about these settings, read *Nearest Airport Runway Criteria* in section 2.

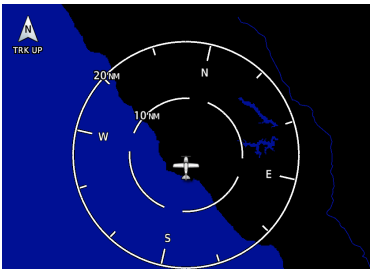
NAV Range Ring

Provides a more precise indication of distance between the aircraft and map objects.

On Setting



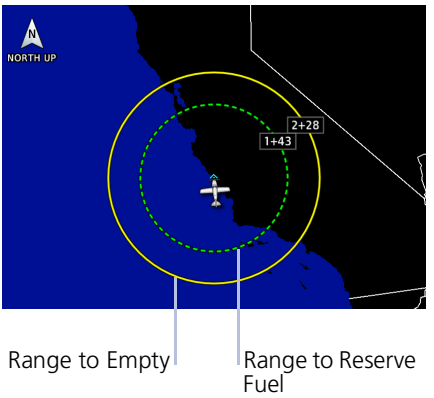
Enhanced Setting



Fuel Range Ring

FEATURE REQUIREMENTS

- *A Garmin EIS*
- *Third-party fuel systems*



- Estimates the remaining range at the current fuel consumption rate and ground speed.
- Calculations are based on the pilot specified fuel quantity in the fuel computer
- Dashed green circle indicates selected range to reserve fuel
- Solid yellow circle indicates total endurance range

TOPO Scale

Scale Location

Displays a topographical elevation scale. To remove the scale, toggle **TOPO Scale** off.

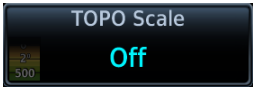
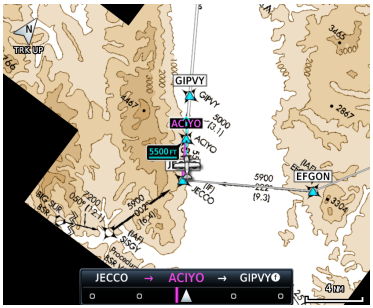


Chart Color Scheme

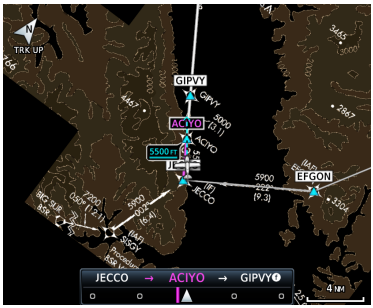
GTN 750Xi SERIES

Toggles chart color scheme between day and night modes.

Day



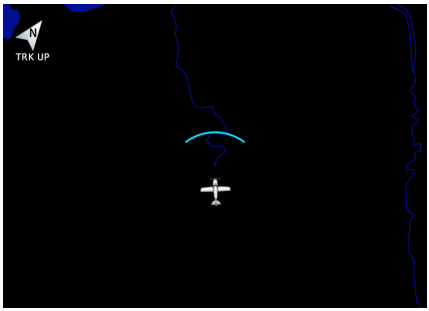
Night



Selected Altitude Range Arc

FEATURE REQUIREMENTS

- *A Garmin Display Unit*



Represents location at which the aircraft is expected to reach selected altitude.

Aviation Selections

Aviation Menu

- Heliports
- SafeTaxi Diagrams
- Runway Extensions
- Intersection Range
- NDB Range
- VOR Range
- VRP Range
- User Waypoint Range
- Airway Range
- TFR
- Restore Defaults

Setup options allow you to customize the display of aeronautical information.

- Enable heliports and TFRs
- Specify airway types and range values
- Customize the display of SafeTaxi and waypoint data
- Display runway extensions for a destination airport

With the exception of Heliports and TFRs, all Aviation tab selections provide on/off and range setting options.

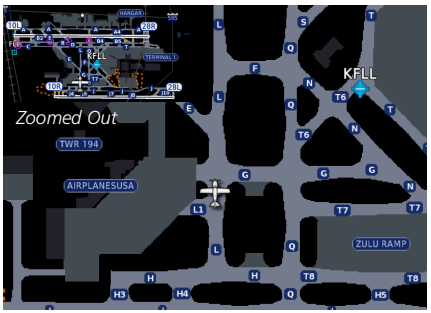
The runway feature extends the runway's centerline out 5 NM from the runway threshold. This is useful when setting up for a visual approach, especially at airports with parallel runways or low visibility.

AVIATION DATA SYMBOLS

	Non-towered, non-serviced airport[1]		Non-towered, serviced airport[1]
	Towered, non-serviced airport[1]		Towered, serviced airport[1]
	Soft surface, non-serviced airport		Soft surface, serviced airport
	Restricted (private) airport		Unknown airport
	Heliport		ILS/DME or DME only
	Intersection		LOM
	NDB		TACAN
	VOR		VOR/DME
	VORTAC		VRP
	User Airport		User Waypoint
	Runway extension		ATK

[1] Symbol depicts orientation of longest runway.

SafeTaxi



Zoomed In

SafeTaxi provides greater map detail and higher image resolution at lower zoom levels.

Feature labels denote:

- Runways
- Taxiways
- Airport landmarks

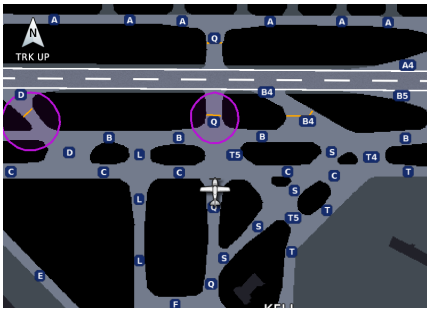
SafeTaxi Features

- Airport diagram overlay that includes hot spot information
- Aircraft position relative to taxiways, runways, and airport landmarks
- Pilot selectable range options

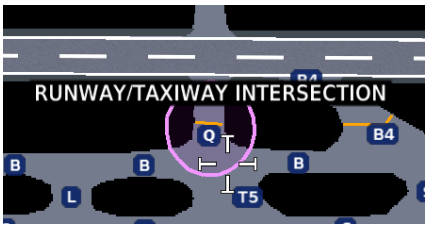
SAFETAXI DATA SYMBOLS

24R	Runway	E6	Taxiway
H	Helipad		Construction Area
	Airport Beacon		Unpaved Parking

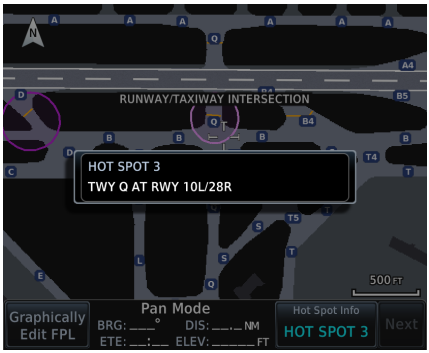
HOT SPOTS



SafeTaxi hot spots identify locations on an airport surface where positional confusion or runway incursions are likely to occur. These known problem areas require heightened attention by pilots.



Selecting the border of a hot spot displays a brief summary of the indicated hazard and an information key.



Tapping this key provides additional location information. Numbering corresponds to a list on the airport diagram.

The following airport features may be deemed hot spots by aviation authorities.

- Intersecting taxiways and runways
- Complex ramp areas
- Directional limitations
- Limited wing-tip clearance
- Overflight risk

CONSTRUCTION SPOTS

There are no expanded detail keys or notes associated with construction areas.

Airspace Selections

Airspace Menu

- Airspace Label Range
- Smart Airspace
- Show Airspaces
  - Select filter
- Class B/TMA/AWY Range
- Class C/CTA Range
- Class A/D Range
- Restricted Range
- MOA (Military) Range
- Other Range
- Restore Defaults

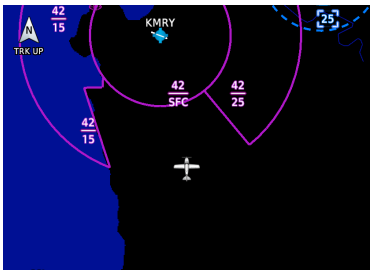
Filter airspace data according to altitude. The control for enabling smart airspace functionality also resides here.

With the exception of Smart Airspace, all Airspace tab selections provide on/off and range setting options.

Smart Airspace

Garmin's Smart Airspace feature automatically de-emphasizes non-pertinent airspace away from the aircraft's current altitude.

Smart Airspace off

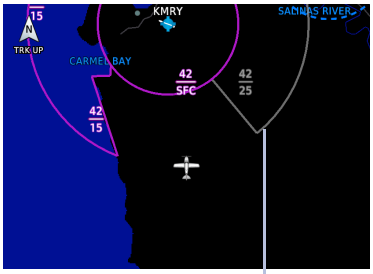


When an airspace's vertical proximity to the aircraft is >1,000 ft:

- Its boundary becomes transparent
- All associated altitude labels turn gray

This range increases linearly to 2,000 ft as the aircraft ascends to 10,000 ft.

Smart Airspace on

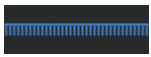


Non-pertinent Airspace

SMART AIRSPACE CRITERIA	
AIRCRAFT ALTITUDE	**AIRSPACE PROXIMITY TO AIRCRAFT[1]**
Sea level	>1,000 ft
>10,000 ft	2,000 ft

[1] Vertical distance above and below aircraft altitude.

AIRSPACE DATA SYMBOLS

	Class B Altitude Label (ceiling/floor)		Class C/CTA
	Class C Altitude Label (ceiling/floor)		Class D
	Class D Altitude Label (ceiling only)		Restricted/Prohibited
	TFR		MIL
	Class B/TMA		Other/ADIZ

Land Selections

Land Menu

- Road Detail
- City Detail
- State/Province Names
- River/Lake Detail
- Restore Defaults

Filter the display of land features according to detail level.

With the exception of State Province Names, all Land tab selections provide detail setting options.

LAND DATA SYMBOLS

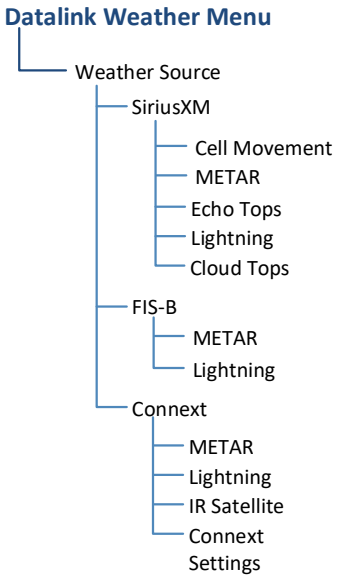
	Railroad		National Highway
	River/Lake		Freeway
	State/Province Border		Small City
	Local Road		Medium City
	Local Highway		Large City

Traffic & Weather Selections

TRAFFIC

Filter traffic data according to type. Other selections include on/off and range setting options.

WEATHER



Setup options are available for all active weather services.

- Specify a datalink weather source
- Toggle individual weather products on/off

Map Interactions

Basic Interactions

Typical map interactions include zoom, pan, and object selection.

PAN & ZOOM

Panning allows movement of the map in any direction without change to the current zoom setting. Zooming adjusts the current magnification level between pre-defined range parameters.

Before flight, consider which map scales are best for achieving the desired level of detail and map information.

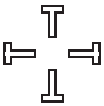
Generally, use smaller map scales in and around terminal areas and whenever precise navigation is required (e.g., airway or radial intercepts).

During cruise flight, increase the map scale to better balance navigation, situational awareness, and decision making.

OBJECT SELECTION

Tapping any object or location on the map displays a map pointer and an information banner.

MAP POINTER

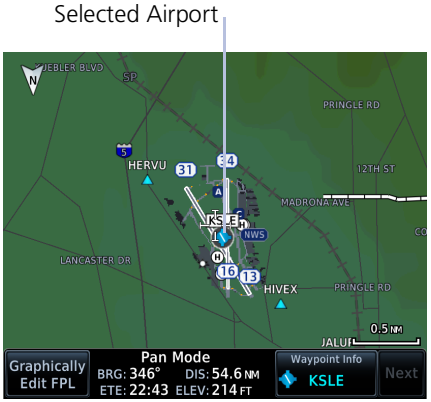


This symbol indicates point of contact on the map. A gray circle highlights any selected waypoint or obstacle.

MAP INFO

Available information and controls are dependent upon object or location type and proximity to other objects.

Selecting an airport icon displays the airport's highest field elevation. A map pointer icon corresponds with the touch point on the map.

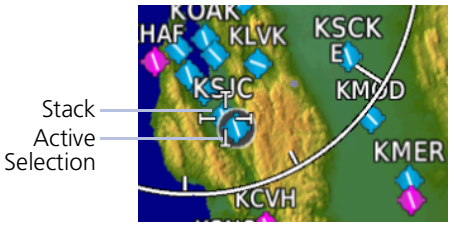


An information page access key displays when you select a waypoint, airspace, airport, airport surface hot spot, or TFR.

DATA FIELDS	CONTROLS
• Pan mode annunciation • Bearing and distance from current aircraft position to map pointer • Location elevation • Maximum altitude AGL and MSL for obstacles	• **Map Pointer/Create Waypoint** • **Graphical Edit** • **Next** (for stacked objects) • Associated information page access key, if applicable

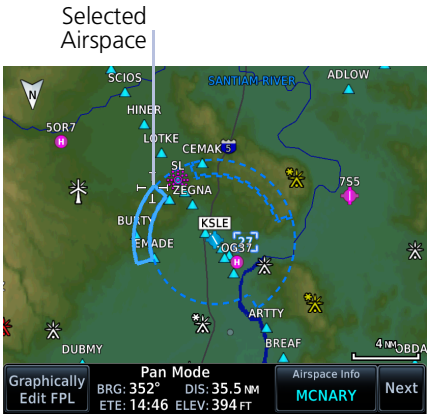
STACKED OBJECTS

To move the selector through each object in proximity of the map pointer, select an object and tap **Next**.



Overlapping objects may be difficult to identify at a given zoom level.

AIRSPACE INFO



When selected, active airspace boundaries change color.

Tapping **Airspace Info** opens the associated information page.

Data fields display information specific to the selected airspace.

GTN 650Xi SERIES

Tapping **Preview** displays the airspace boundary and a 2D map of the surrounding area.

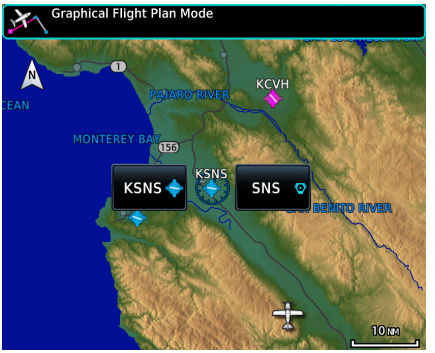
DATA FIELDS	CONTROLS
• Airspace name and type icon • ATC entity responsible for the airspace, if applicable • Floor and ceiling altitudes • Proximity to airspace • Airspace boundary on a 2D map	• **Frequencies**: View a list of all related radio frequencies

Graphical Flight Plan Editing

FEATURE LIMITATIONS

- *Parallel track offsets do not apply to the temporary flight plan*

Graphical editing allows quick changes to the active flight plan from the map display.



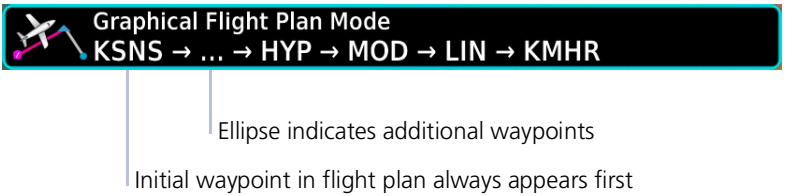
Map provides identifier keys for selecting waypoints that are stacked or in close proximity.

If the displayed options are not preferred, tap away or select **Cancel**.

TEMPORARY FLIGHT PLAN BANNER

An information banner displays waypoint selections made during graphical edit mode. All selections become active once you tap **Done**.

Lists up to five waypoint identifiers



Tapping **Undo** reverses the last edit. You may undo up to nine of the most recent actions.

On the map, dragging and releasing the leg away from any waypoints removes it from the temporary flight plan.

To exit edit mode without saving changes, tap **Cancel**.

ADD WAYPOINT TO AN EXISTING LEG

Existing Leg

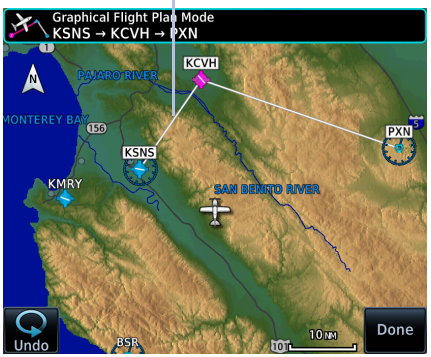
You can edit, add, or omit flight plan legs by tapping or dragging your finger directly on the map.

Selected Waypoint

1. Tap any location on the map.
2. Tap **Graphical Edit**.

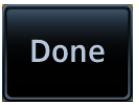
3. Tap and drag the leg to a new waypoint or airway, then release.

New Route



The temporary flight plan adjusts to show the new route.

If no other edits are necessary, tap **Done**.



The new waypoint now appears in the active flight plan.

Active route identifiers also appear on the GPS NAV status indicator.

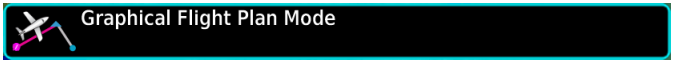
If configured, a user field shows active route identifiers on Map.

Delete any existing flight plan before attempting to graphically edit a direct-to waypoint. Map does not allow the addition of an intermediate waypoint between the current position and a direct-to waypoint unless the waypoint is in the flight plan.

REMOVE WAYPOINT FROM FLIGHT PLAN

You can tap and drag any leg to another waypoint or airway, or release it away from any waypoint if an alternate destination is not preferred.

CREATE LEGS WITHOUT AN EXISTING FLIGHT PLAN



If an active flight plan does not exist, you can graphically create one without ever leaving Map.

1. Tap any location on the map > **Graphical Edit**.
2. Begin tapping waypoints to add them to the temporary flight plan.
3. Tap **Done**.

Map Overlays

Overlay Selections

- TOPO
- Terrain
- Traffic
- NEXRAD
- Charts
- Stormscope
- Airways
- Radar

Overlay data controls reside in the Map menu. Changes to an overlay setting take effect immediately.

NEXRAD and Terrain overlays are mutually exclusive. Enabling one automatically disables the other.

Overlay Controls

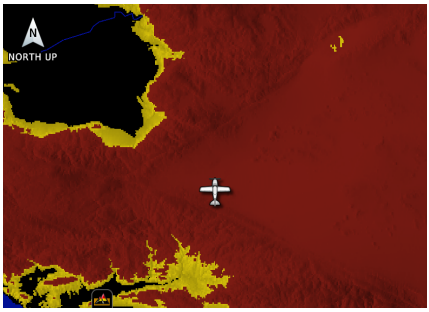
Control keys enable the specified overlay function only and do not activate interfaced equipment. Control keys remain active even in the absence of required data.

Overlay controls reside in the Map menu.

TOPO

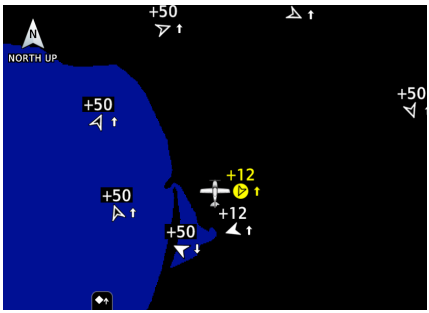
- Overlays topographical data and ground elevation scale
- Depictions are similar to a VFR sectional
- Pilot-selectable topographical elevation scale available

TERRAIN



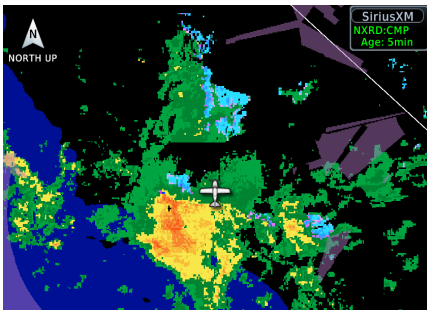
- Overlays terrain map data
- Color shading depicts terrain elevation relative to the aircraft's altitude

TRAFFIC



- Overlays traffic information
- Filter selection on the Traffic page determines altitude range
- Feature optional

NEXRAD



- Overlays datalink precipitation weather information
- Options dependent on weather data source
- Feature optional

CHARTS

Arrival and departure chart overlays are not available.

- Overlays geo-referenced chart information
- Approach chart for the active flight plan in the navigator
- Airport surface chart if nearest airport is within 200 nm and no approach is active
- Depicts planview area only; excludes inset information (e.g., missed approach procedure view)
- Feature optional

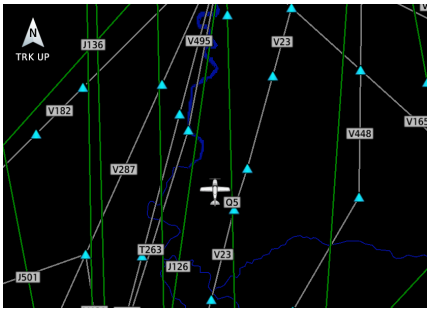
NOTE

In the case of a dual GTN/crossfill configuration, the chart database on each unit must be of the same type and version in order for the correct chart to display on Map.

STORMSCOPE

- Overlays Stormscope lightning information
- Feature optional

AIRWAYS



- Overlays the selected airway type(s) with identifier labels
- Options include: low, high, all, or off (none)
- High altitude airways are green, low altitude airways are gray

RADAR

- Overlays airborne weather radar information
- Depictions are identical to those on the Weather Radar display
- Excludes WATCH shading
- Feature optional

Overlay Status Icons

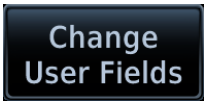
Icons indicate which overlays are present at the current map range. A crossed out icon means the overlay is active, but data is unavailable due to a failure, test, or standby condition (where relevant).

The absence of an overlay icon means one of two possible conditions:

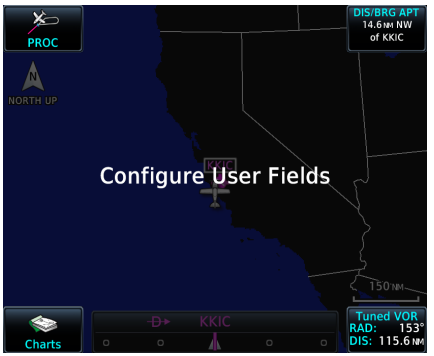
1. Overlay not present at the current detail level or zoom setting.
2. Overlay control is off.

	Obstacle		Power Line
	Stormscope Lightning		Traffic
	Terrain		Data not available

User Fields



User fields allow you to customize the display of data in each corner of the map. Tap **Change User Fields** to access available options.



In configuration mode:

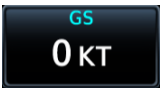
- All four data fields change to selectable keys
- All other map elements are inactive

Tap a key and select from the available data types.

USER FIELD TYPES

Options are organized into three selectable menu tabs:

Data	Function	Page
Lists available data fields (e.g., distance, bearing, desired track).	Lists available controls.	Lists available page access keys. These keys provide direct access to the specified page.



Data Tab Options:

Available field types and their corresponding labels are as follows:

ACTV WPT	Active waypoint	NAV/COM	Active NAV/COM frequency[4, 7]
BRG	Bearing to waypoint	OAT (static)	Outside static air temperature
D/B APT	Distance/bearing from destination airport (i.e., the straight line distance)	OAT (total)	Outside total air temperature
DIS	Distance to waypoint	Position	Current position (lat/lon)
DIS to Dest	Distance to destination (i.e., the distance along the flight plan)	RAD ALT	Height above ground as indicated by the radar altimeter[3]
DTK	Desired track	TKE	Track angle error
ESA	En route safe altitude	TRK	Track
ETA	Estimated time of arrival	Time	Current time
ETA at Dest	ETA at destination	Time	Current time with seconds
ETE	Estimated time en route	Time to TOD	Time to top of descent
ETE to Dest	ETE to destination	Trip Timer	Timer display
FLT ID	Flight ID[1]	VOR/LOC	Tuned VOR/LOC information[4, 5, 6]
Fuel Flow	Total fuel flow[2]	VSR	Vertical speed required
GS	GPS ground speed	Wind	Wind speed and direction
GSL	GPS Altitude	XTK	Cross track error
Generic Timer	Timer display	OFF	Do not display data field
MSA	Minimum safe altitude		

"Destination" refers to the missed approach point (if an approach is loaded) or the final airport in the flight plan.

[1] Available when a transponder or GDL 88 is present. [2] Available when a fuel sensor is present.
[3] Available when a radar altimeter is present. [4] Label information dependent upon active frequency selection.
[5] Tuned LOC shows airport and runway. Tuned VOR shows radar altimeter and distance to waypoint values.
[6] GTN 650Xi and GTN 750Xi units only. [7] GTN 650Xi only.

Function Tab Options:

CDI key	OBS/Suspend/Unsuspend key
DIS/BRG WPT key	On Scene mode key
Flap Override key[1]	MIC PA Mode toggle key[3]
Generic timer controls	Playback key[3]
GPWS Inhibit key[1]	TAWS/HTAWS Inhibit key
G/S Inhibit key[1]	Weather radar controls[3]
HTAWS RP Mode key[2]	OFF

Page Tab Options:

• Active Flight Plan • Approach • Arrival • Backlight • Charts[3] • Checklist
• Connext Weather • Default Navigation[4] • Departure • FIS-B Weather
• Fuel Planning • Map • Nearest • Nearest Airport • Procedures
• Scheduled Messages • Services • Sirius XM Weather • Stormscope • Terrain
• Traffic • Trip Planning • Utilities • User Frequencies • VCALC • VNAV
• Waypoint Information • Weather • Weather Radar[3] • OFF

TOPO SCALE & USER FIELDS

GTN 650Xi SERIES

When active, the topographic scale replaces the bottom left user field.

To view this field, turn off TOPO Scale (Tap **Menu** > **Map Setup** > **TOPO Scale**).

TOPO scale off

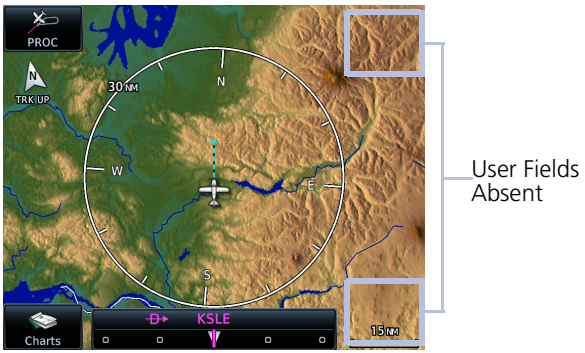
TOPO scale on

User Field Absent

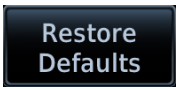
[1] Available when TAWS-A is active. [2] Available when HTAWS is active.
[3] GTN 750Xi series units only. [4] GTN 650Xi series units only.

TURN OFF USER FIELDS

Selecting "OFF" removes the corresponding user field from the map page.



RESTORE DEFAULTS



Tapping this key returns all fields to their default settings.

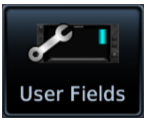
Default User Fields

- DIS - Distance
- GS - Ground Speed
- DTK - Desired Track
- TRK - Track
- BRG - Bearing[1]
- ETE - Estimated time en route[1]

[1] GTN 650Xi Series only.

User fields are useful during time sensitive and work load intense phases of flight.

ADDITIONAL USER FIELDS



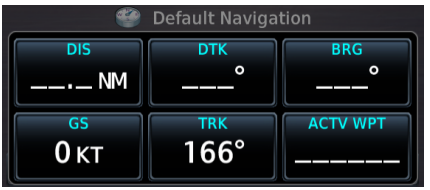
Depending on configuration, user fields may be available for display in the control bar. You can access these fields from the System menu.

Home > **System** > **User Fields**

GTN 650Xi SERIES

You can also configure user fields for display on the Default Navigation page. Options are identical to those available on Map.

Home > **Default NAV** > **Menu** > **Configure User Fields**



Bottom row user fields allow Data tab selections only.

Tap **Map** to view and configure user fields on moving map.

Map Detail

Changes to the map detail level take effect immediately. There are four levels from which to choose.

FEATURE	FULL	HIGH	MEDIUM	LOW
Small Cities	•			
Medium Cities	•			
Large Cities	•			
Freeways	•			
Highways	•			
Roads	•			
Railroads	•			
Basemap Labels	•			
VORs	•	•		
NDBs	•	•		
Line Obstacles	•	•		
Point Obstacles	•	•		
Airspaces that are not prohibited or restricted	•	•		
Waypoints	•	•	•	
SafeTaxi	•	•	•	
Restricted Airspaces	•	•	•	
Prohibited Airspaces	•	•	•	
Airways	•	•	•	•
Active Flight Plan	•	•	•	•

Present	•	**Removed**	

Charts

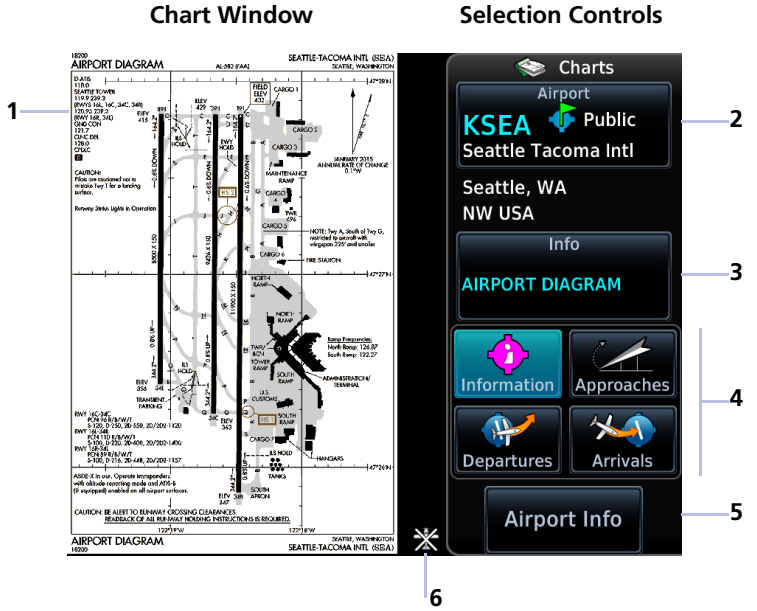
The Charts page provides terminal procedures and airport surface diagrams.

FEATURE REQUIREMENTS

- *A current and valid chart database*

FEATURE LIMITATIONS

- *Geo-referencing is not available for some arrival and departure charts*
- *FliteCharts and ChartView databases are optional and mutually exclusive*



1	Chart	**4**	Chart Type Selection Keys
2	Airports Selection Key	**5**	Airport Info Key
3	Charts Selection Key	**6**	Position Unavailable Icon

CHARTVIEW INFORMATION SECTIONS

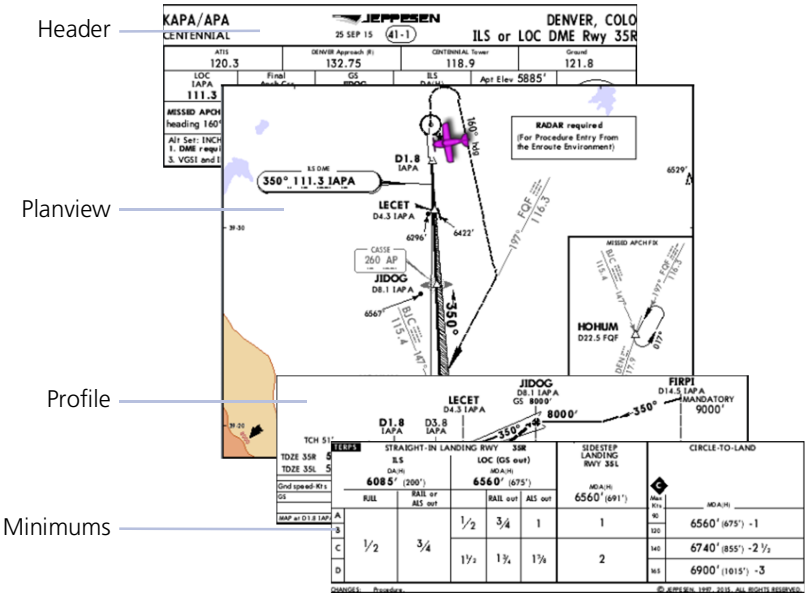
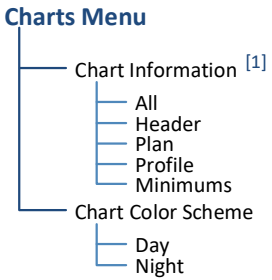


CHART STATUS

Active chart status displays at the bottom of the Charts display.

Getting Newer Charts	Charts are in the process up updating.
Charts Changed	Charts are up to date.
Expired 28–Apr–2016	Database is out of date.
Not Effective Until 31–Mar–2016	Database is installed before it is current.

Chart Setup



[1] ChartView only.

Tap **Menu** to access setup selections.

From here you can:

- View individual chart sections (ChartView only)
- Change the chart's color scheme for day or night viewing

Chart Information	Displays individual sections of a chart in the ChartView database only. Options include: • All • Header • Planview • Profile • Minimums
Invert Colors	Toggles chart color scheme between day and night modes. • Day mode displays black on white background • Night mode displays inverse white on black background

Chart Selection

To select a chart:

1. Tap **Airports**.
2. Enter an airport identifier.
3. Choose from the available chart types.

CHART TYPES	
	**Approach** All approach charts associated with the selected airport. Charts are listed according to level of precision and approach type. Runways are listed in numerical order.
	**Arrival** Arrival procedure instructions. Arrival charts are listed in alphabetical order.
	**Departure** Departure route descriptions, including takeoff minimums and obstacle notes.
	**Information** Airport surface charts, alternate minimums, rate of climb and descent tables, inoperative components or visual aids tables, hot spots, land and hold-short operations, and other destination specific flight data.

Upon selecting a chart type, you have the following options:

- *Choose a specific chart:* Tap the associated menu key and choose from the list of available charts.
- *View airport waypoint information:* Tap **Airport Info**.
- *Zoom the chart display in or out:* Tap **In** or **Out**.

AUTOMATIC CHART SELECTION

Automatic chart selection occurs every time the Charts page is opened. The type of chart selected is determined by aircraft status and content from the active flight plan. This function does not override manual chart selections unless a change occurs during one of the following conditions.

CONDITION	CHART DISPLAY DEFAULT
No flight plan or destination airport is present.	Nearest airport diagram.
Aircraft is on the ground.	Nearest airport diagram (regardless of flight plan).
Flight plan is present, but approach is not loaded.	Airport surface chart for previous airport in flight plan.
Approach is loaded in the selected GPS navigator.	Applicable approach chart.
No charts are available for a selected airport.	"Chart not available for [airport ID]."

Aircraft Position Icon

FEATURE REQUIREMENTS

- *Aircraft position is fully within chart boundaries*
- *FliteCharts or ChartView is active (airborne maneuvers only)*

FEATURE LIMITATIONS

- *SIDs and STARs do not support the display of aircraft position*
- *Not available for arrival and departure charts*
- *Displays only within the planview area of geo-referenced approach charts*

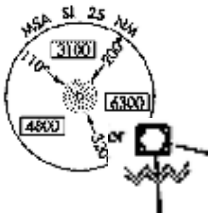
Aircraft position displays on airport diagrams and approach charts when the current position is known.

POSITION UNAVAILABLE INDICATION

A fault icon appears in the bottom right corner when:

- Aircraft position data is not available
- Selected chart does not contain geo-referenced data
- Selected chart layer is not All or Planview

OFF SCALE AREA



Some charts contain supplemental information within the planview. These areas are considered off scale as they are not geographically accurate.

Aircraft position depictions in off scale areas should be judged relative to the geo-referenced information within the planview only.

Waypoints

There are two types of waypoints: database and user

Database waypoints (i.e., waypoints contained in the navigation database) are organized into the following groups.

- Airport (APT)
- Intersection (INT)
- Very High Frequency Omni-directional Range (VOR)
- Visual Reporting Point (VRP)
- Non-Directional Beacon (NDB)

The Airport page is a great place to start when performing an approach brief, checking weather, or considering a diversion.

You also have the ability to define any point in space and store it. Unlike database waypoints, these "user" waypoints are editable.

Waypoint Information

Dedicated information pages provide waypoint search functions and details not available on Map.

FEATURE REQUIREMENTS

- *FIS-B (viewing NOTAMs)*
- *Navigation database containing VRP waypoint data*

FEATURE LIMITATIONS

- *FIS-B transmits distant and FDC NOTAMs within 100 nm of radio station position*

Intersection, VOR, VRP, and NDB information pages have a uniform layout.

VOR Information Page

1	Waypoint Identifier Key	**6**	Map Preview
2	Location Information	**7**	Station Declination
3	Class Information	**8**	Nearest NAVAID information
4	Frequency Selection Key	**9**	Waypoint coordinates
5	Waypoint Map Symbol	**10**	Waypoint Distance & Bearing

Common Page Features

Data Fields

- Distance and bearing from current aircraft position
- Latitude and longitude
- Applicable city, state, country and/or region (e.g., "NW USA")
- Identifier and type icon

Waypoint Identifier

This key provides access to multiple waypoint search options. These include the **FastFind** feature and multiple search tabs.

MAP PREVIEW WINDOW

A 2D map of the surrounding area (includes SafeTaxi airport depictions).

GTN 650Xi SERIES

Tapping **Preview** displays the waypoint location on a dedicated map page.

As you approach an airport, use the map preview function to orient yourself for such things as pattern entry or runway alignment.

Waypoint Specific Page Features

The following features are unique to the corresponding waypoint.

Airport

Selectable tabs:

Info: Airport location, elevation, time zone, and fuel availability.

Procedures: Available approach procedures.

Runways: Identifiers, size, surface type, and traffic pattern direction.

Tapping **Runway** opens a list of available runways.

Frequencies: Available communication and localizer frequencies. The "c" symbol denotes frequencies that function as the CTAF.

View additional frequency information by tapping **More Information**, if available.

WX Data: Applicable METARs, city forecasts, and TAF weather information.

NOTAMs: Applicable distant and FDC NOTAMs.

VRPs: Nearest VRPs.

Intersection

Data fields:

- Nearest VOR (identifier, type icon, bearing, and distance)

Very High Frequency Omni-directional Range

Frequency: Loads the indicated value as the COM or NAV frequency.

Data fields:

- Frequency
- Nearest airport (identifier, type icon, bearing, and distance)
- Station declination
- VOR class

Visual Reporting Point

Data fields:

- Nearest VRP (identifier, type icon, bearing, and distance)

Non-Directional Beacon

Data fields:

- Frequency
- Nearest airport (identifier, type icon, bearing, and distance)
- Marker description

User Waypoint

Selectable functions:

Edit: Opens the Create User Waypoint page for editing purposes.

View List: Displays a list of all user waypoint identifiers.

Delete: Removes the selected user waypoint from the list.

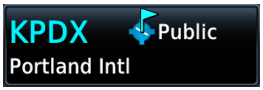
Delete All: Removes all user waypoints from the list. All deletions require user confirmation. User waypoints in the active flight plan cannot be edited or deleted.

Data fields:

- Reference position or nearest waypoint (identifier, type icon, radial, and distance), whichever is applicable
- Number of waypoints used out of 1,000

The User WPT page is the only page that allows you to view an entire list of all user waypoints created and saved in the database.

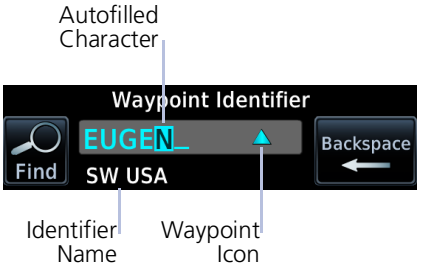
Waypoint Selection



The **Waypoint Identifier** key provides access to different waypoint search options.

Enter a specific identifier or select one from the available search tabs.

Waypoint Autofill



As you type the identifier name, alphanumeric characters autofill based on the first alphabetical match in the navigation database.

Autofill characters are cyan and display from the cursor position to the right of the field.

Matching waypoint entries typically change with the addition of each typed character.

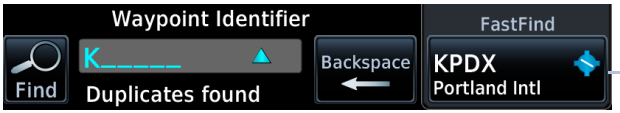
"No matches found" and "Duplicates found" annunciate when applicable.

FastFind Predictive Waypoint Entry

FastFind predicts a waypoint based on the characters you select. As you type, the key label changes to reflect the identifier of the nearest matching entry.

Tap to select the predicted waypoint and open the corresponding information page.

Because it relies on your GPS position, FastFind can make predictions based on a single key press.



If no matches are found, "No suggestion" annunciates and the key is not selectable.

FastFind & Flight Plan

For convenience, use FastFind when creating your flight plan. GTN will search for waypoints closest to the current GPS position.

- If inserting a waypoint in the middle of the flight plan, GTN searches for waypoints between the next and previous waypoints.
- If adding a waypoint to the end, GTN searches for waypoints closest to the last waypoint in the flight plan.

FastFind is a convenient shortcut when you are adding waypoints to a flight plan or trying to find a waypoint in a hurry.

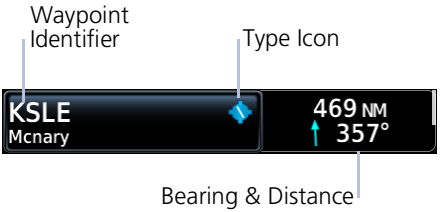
Search Tabs

The **Find** key provides access to multiple search tabs.

Waypoint Search Tabs

Each tab displays a list of selectable identifiers based on specific criteria. These include:

- Recent
- Nearest
- Flight Plan
- User
- Search Name
- Search City



Each entry includes general information about the associated waypoint.

RECENT

Lists up to 20 of the most recently viewed waypoints.

NEAREST

Lists up to 25 waypoints within a 200 nm radius.

Tap **Filter** and select from the available filter options. Only waypoints belonging to the selected class appear in the list.

To list all classes, select **All**.

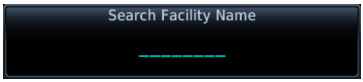
FLIGHT PLAN

Lists all waypoints contained in the active flight plan.

USER

Lists up to 1,000 user-defined waypoints.

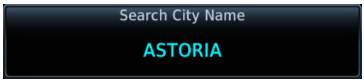
SEARCH BY NAME/CITY



Search By Name

Lists all airports, NDBs, and VORs associated with the specified facility name.

Tap **Search Facility Name** to begin search.



Search By City

Lists all airports, NDBs, and VORs found in proximity of the city.

Tap **Search City Name** to begin search.

Create User Waypoints

Create and store up to 1,000 user defined waypoints.

FEATURE LIMITATIONS

- *Duplicate user waypoint identifiers are not allowed*
- *Names may be up to six characters in length*
- *Comment may be up to 25 characters*
- *Maximum waypoint limit: 1,000*

WHERE TO FIND IT

Home
Waypoint Info
Create WPT

You may access this page from the following applications:

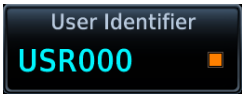
- Waypoint Info
- Map

MAP POINTER/CREATE WAYPOINT KEY

Tapping any location on Map that is not an existing waypoint displays this page access key.

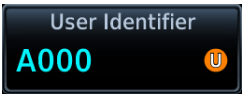
USER WAYPOINT IDENTIFIER

Assign a unique identifier or keep the unit generated identifier. If an identifier is already in use, the three digit number increments automatically upon opening the page.



User Waypoint

By default, the identifier format is "USR" followed by a sequential three digit number.

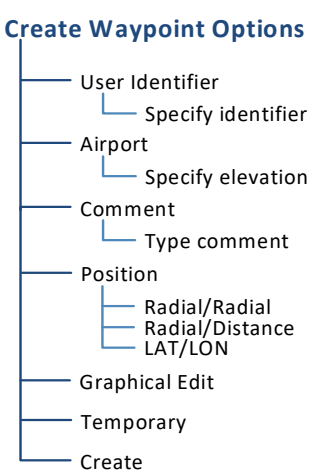


User Airport

Identifier format is "A" followed by a sequential three digit number.

User waypoints are helpful when ATC requests that you fly one radial to intercept another. While the point is often defined by an intersection in the navigation database, this is not always the case. The Create User Waypoint function allows you to define the new intersection and insert it into the flight plan in advance, as opposed to using the NAV radio to tune each VOR and specify the radials to fly inbound and outbound.

Define Waypoint Criteria



Active user waypoints already existing in a flight plan are not editable.

When creating a user waypoint, you have the option to:

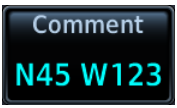
- Assign a unique identifier
- Set the waypoint as temporary
- Enter a comment
- Set waypoint position
- Specify elevation (user airports only)
- Edit the waypoint graphically

User Identifier	Assign a unique identifier.
Airport	Label the user waypoint as a user airport
Comment	Type a comment regarding the new waypoint.
Position	Set the waypoint position.
Graphical Edit	Open a preview map for graphical editing purposes. User waypoint icon remains stationary as you move the surrounding map to the new location.
Temporary	Assign the waypoint a temporary status. Identifier remains available until the next unit power cycle.
Elevation	Specify the elevation of the user airport. Available only when the Airport key is active.
Create	Add the new identifier to the used waypoints list. The associated information page opens automatically for viewing and editing purposes.

COMMENT FORMAT

Default comments display in a specific format for each reference type.

LAT/LON



<LAT> <LON>

Radial/Distance

<Waypoint><Radial> / <Distance>

Radial/Radial

<Waypoint 1><Radial 1> / <Waypoint 2><Radial 2>

POSITION TYPE

Set the waypoint position type using one of the following options.

Radial/Radial	Radial/Distance	LAT/LON
Specify a waypoint and radial for each of the two reference points.	Specify the reference waypoint, radial, and distance.	Specify the point's latitude and longitude.

MARK WAYPOINTS

Installations equipped with an external Mark on Target (MOT) switch allow immediate user waypoint creation by marking the point in space at which the switch is activated.

These waypoints contain a unique identifier with a sequential three digit number ("MOT###") that increments with every push of the MOT switch. If the number exceeds 999, the counter resets and begins to overwrite identifiers at the beginning of the list.

Upon marking a target with an MOT switch, the waypoint may be obscured by the ownship and not readily visible. In such cases, you may verify waypoint creation by changing the map zoom level or viewing the User Waypoints page.

Create a User Waypoint

OPEN CREATE USER WAYPOINT PAGE

From Map:

Home > **Map** > select any non-waypoint location > **Map Pointer/Create Waypoint**

From Waypoint Info:

Home > **Waypoint Info** > **Create Waypoint**

ASSIGN POSITION VALUES

From the Create User Waypoint page:

1. Tap **Position** > **LAT/LON** > **Latitude/Longitude** > specify the waypoint's coordinates > **Create**.

OR

1. Hold and drag the basemap until the user waypoint icon appears over the desired location.
2. Tap **Create**.

MODIFY DEFAULT SETTINGS

Modify default settings as necessary.

- *Create a custom identifier:* Tap **User Identifier** and enter a new one.
- *Add a comment:* Tap **Comment** and enter the appropriate text.
- *If the waypoint is an airport:* Tap **Airport** > **Elevation**, then specify the number of feet.
- *If the waypoint is for temporary use:* Tap **Temporary**.

Once all modifications are complete, tap **Create**.

Edit an Existing User Waypoint

FEATURE LIMITATIONS

- *User waypoints that are part of a flight plan or direct course are not editable*

ACCESS USER WAYPOINT EDIT OPTIONS

You can access the edit function multiple ways.

From the dedicated information page:

Home > **Waypoint Info** > **User WPT** > specify an identifier, or tap **View List** and select an identifier from the used waypoints list > **Edit**

From the Nearest page:

Home > **Nearest** > **User WPT** > select an identifier from the list (e.g., USR001) > **Edit**

From the Active FPL page:

Home > **Flight Plan** > select the identifier from the flight plan > **Waypoint Info** > **Edit**

MODIFY POSITION VALUES

From the Edit WPT page, you can modify a user waypoint's position one of two ways:

1. Tap **Position** > **LAT/LON** > **Latitude/Longitude** > specify the waypoint's coordinates > **Save**.

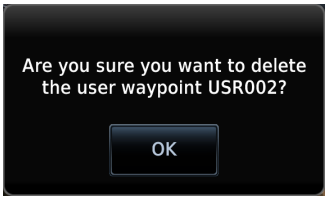
OR

1. Hold and drag the basemap until the user waypoint icon appears over the desired location.
2. Tap **Save**.

Delete User Waypoints

FEATURE LIMITATIONS

- *User waypoints that are part of a flight plan or direct course cannot be deleted*



You can delete a user waypoint from its information page:

1. Select the user waypoint, then tap **Delete**.
2. Confirm the request.

DELETE ALL USER WAYPOINTS

From the User Waypoints list, you can delete all user waypoints or filter the list and delete only a certain type.

This list is accessible from the information page.

User Waypoints List

1. Tap **View List** > **Menu**.
2. Tap **Filter** and select the type of user waypoints you wish to delete. Options include All, Basic, and Airport.
3. Tap **Delete All**.

Import User Waypoints

The **Import Waypoints** key appears when the unit detects a user waypoint on the datacard.

NOTE

The import function overwrites any existing user waypoint of the same name.

FUNCTIONAL LIMITATIONS

- *User waypoint file size must not exceed 8 GB*

CREATE USER WAYPOINT FILE

You may create a list of new user waypoints using any spreadsheet program. Read "User Waypoint File Considerations" for limitations and formatting specifications. Organize columns as follows.

A	B	C	D
Waypoint Name	Comment	Latitude	Longitude

	A	B	C	D
1	MTHOOD	MT HOOD PEAK	45.3723	-121.69783
2	CRTRLK	CRATER LAKE	42.94683	-122.11083
3	EIFFEL	EIFFEL TOWER	48.858151	2.294384
4	OCEAN		32.68735672	-51.45543634

User Waypoint File

User Waypoint File Considerations

- Limit one waypoint per row
- Names may be up to six characters in length
- Comments may be up to 25 characters
- All letters must be upper case
- Latitude: two digits left of decimal; up to nine digits right of decimal
- Longitude: three digits left of decimal; up to eight digits right of decimal
- (-) indicates southern latitudes (column C) or western longitudes
- Express latitude and longitude coordinates in decimal degrees

Save the file in the .csv format under the name "user.csv." Change the file extension to ".wpt" before copying the file to a blank SD card.

IMPORT USER WAYPOINTS

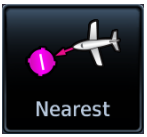
1. Ensure that the unit power is off.
2. Insert datacard containing user waypoints.
3. Power on unit.
4. From the Home page, tap **Waypoint Info** > **Import Waypoints**.
5. Acknowledge the pop-up message.

The import function executes in the background. Once the import is complete, an advisory message informs: "User waypoints were imported successfully."

The waypoints are now available for use. You may power down the unit and remove the SD card.

If an imported waypoint is within 0.0001 degree (latitude and longitude) of an existing user waypoint, the existing waypoint and name will remain in use.

Nearest



View a list of the nearest waypoints, frequencies, or facilities within 200 nm of the aircraft's position.

From the Home page:

1. Tap **Nearest** and then select a waypoint or frequency icon.
2. Scroll through the list of entries.

Information varies according to the selected waypoint or frequency type. Nearest waypoints provide an identifier key for accessing the associated information page.

Nearest Airport
• identifier • symbol • distance • bearing • approach type • length of longest runway

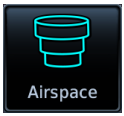
Nearest Intersection
• identifier • symbol • distance • bearing

Nearest Very High Frequency Omni-directional Range
• identifier • symbol • distance • bearing • frequency

Nearest Visual Reporting Point
• identifier • symbol • distance • bearing

Nearest Non-Directional Beacon
• identifier • symbol • distance • bearing • frequency

Nearest User Waypoint
• identifier • symbol • distance • bearing



Nearest Airspace

• identifier • symbol • proximity

Nearest Air Route Traffic Control Center

• facility name • distance • bearing • frequency

Nearest Flight Service Station

• facility name • distance • bearing • frequency
("RX" denotes receive-only frequencies)

Nearest Weather Frequency

• facility name • distance • bearing

• frequency of nearest ATIS, ASOS, AWOS, and VOR

ENTRY LIMITS

NEAREST LIST	ENTRY LIMIT
ARTCC, FSS	05
Airspace	20
Airport, Intersection, VOR, VRP, NDB, User, Weather FREQ	25

The number of entries displayed varies according to item type.

Entries are ordered from closest to farthest.

UPDATE INTERVALS

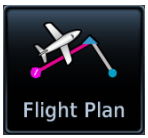
With the exception of nearest airspace, all lists update every 30 seconds. The nearest airspace list updates once per second.

MULTIPLE FREQUENCIES

This key displays when more than one frequency is available at the indicated range.

Applicable to functions displaying information only (ARTCC, FSS, and WX FREQ).

Active Flight Plan



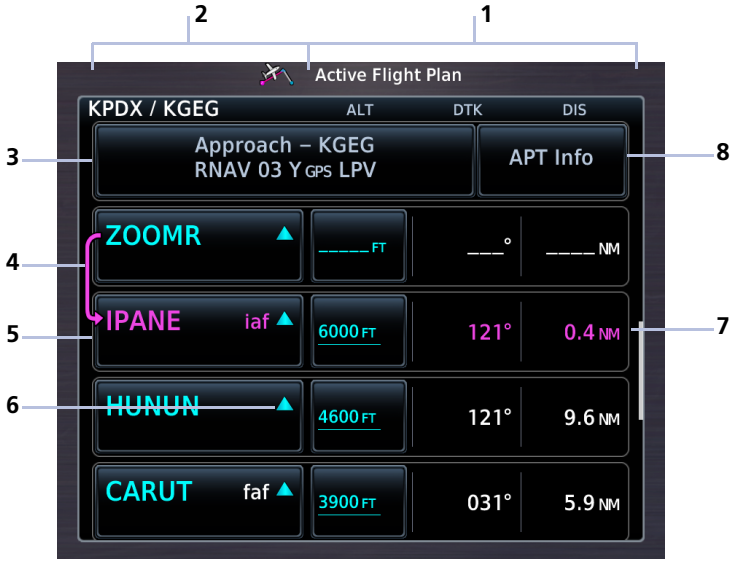
Current flight plan information displays as a scrolling list on the Active Flight Plan (FPL) app.

FEATURE REQUIREMENTS

- *Active flight plan*

FEATURE LIMITATIONS

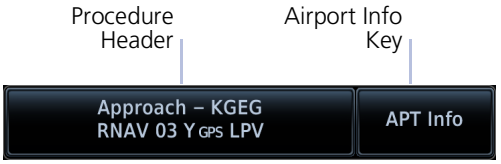
- *Displays up to 99 waypoints for an active flight plan*



Active Flight Plan

1	Selectable Data Field Columns	**5**	Current Waypoint
2	Waypoint Identifier Column	**6**	Waypoint Type Icon
3	Procedure Header	**7**	Leg Data
4	Active Leg Indicator	**8**	Airport Info Key

AIRPORT INFO



For convenience, airport information is directly accessible from the procedure header. This includes airports specified in active approaches, arrivals, and departures.

Tap **Airport Info** to open the corresponding information page.

FIX TYPE INDICATIONS

LABEL	FIX TYPE
iaf	Initial Approach Fix
faf	Final Approach Fix
map	Missed Approach Point
mahp	Missed Approach Hold Point
-p	Parallel Track (no fix)

When applicable, labels indicate the fix type associated with an identifier.

ACTIVE LEG STATUS INDICATIONS

Magenta symbols denote active leg status on from/to/next waypoint indications. Fix type symbols (e.g., FAF, MAP) correspond with labels appearing on the flight plan.

	IAF		Arc Left
	FAF		Holding Pattern (Right Turns)
	MAP		Holding Pattern (Left Turns)
	MAHP		Active Leg Arrow
	Parallel Track		Direct To
	Arc Right		

Create a Flight Plan

NOTE

The unit cannot verify the accuracy of cataloged flight plans with modified procedures.

There are three methods for creating a new flight plan.

CREATE FROM THE ACTIVE FLIGHT PLAN PAGE

1. Tap **Flight Plan**.
2. Delete the existing flight plan if necessary (**Menu** > **Delete**).
3. Tap **Add Waypoint**.
4. Select an identifier using the provided search options.
5. Repeat steps 3 - 4 for each waypoint in the route.

CREATE FROM MAP

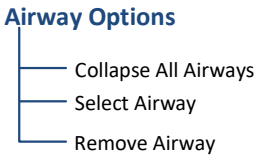
Build a flight plan by selecting waypoints directly on the map using Map's Graphical Flight Plan mode.

CREATE FROM THE FLIGHT PLAN CATALOG

1. Tap **Flight Plan** > **Menu** > **Catalog**.
2. Scroll to the end of the flight plan list.
3. Tap **Create New Catalog Route** > **Add Waypoint**.
4. Add waypoints using the provided search options.
5. Tap **Menu** > **Preview** > **Store** or **ACTV** (**Activate**).

As a general practice, never save flight plans with modified procedures in the catalog.

Airway Options



Selecting an airway from the active flight plan opens a menu. You may elect to:

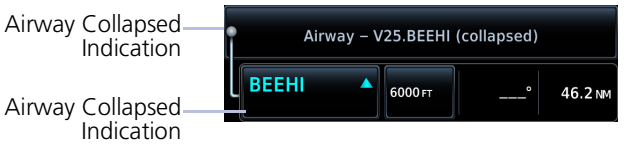
- Collapse all legs of the airway
- Select a new airway
- Remove an airway from the flight plan

Collapse All Airways

Airways automatically display as flight plan legs. A single airway may contain numerous legs. Airways without an active leg collapse for simplification. This does not affect airway legs shown on the external navigator(s).

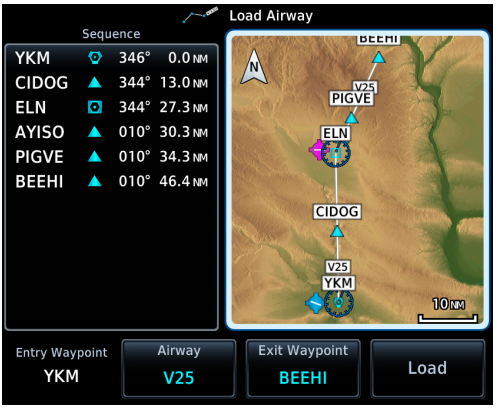
All airways begin with an indicator field and end with an exit identifier.

To hide all waypoints along an airway, but not the airway's exit waypoint, tap **Collapse All Airways.**



Sort Airways

Preview of a sorted airway waypoint list.



A toggle key allows you to sort the airway waypoint list alphabetically or by distance.

This option is available once you select an airway.

The sort function is useful when you are searching for an exit point from the airway.

En Route Vertical Navigation

Create a vertical navigation (VNAV) path with multiple altitude constraints in the flight plan.

WARNING

Do not rely solely on VNAV guidance when navigating horizontally and vertically around user-defined airports. It is the pilot's responsibility to ensure separation from terrain and obstacles during an approach to a user-defined airport.

FEATURE REQUIREMENTS

- *Enablement by the installer*
- *Baro-corrected altitude source*

FEATURE LIMITATIONS

The following flight plan waypoints do not allow altitude constraints:

- *Legs containing headings*
- *Legs that terminate at an altitude (e.g., a climb to 1,800 ft before making a turn and proceeding direct to fix)*

Storing a flight plan in the catalog removes its altitude constraints.

WHERE TO FIND IT

Home
Utilities
VNAV

The vertical navigation (VNAV) feature provides vertical profile guidance during the descent phase of flight. Guidance is based on altitude constraints associated with lateral waypoints in the active flight plan.

This feature is also accessible via the Active Flight Plan menu (Home > **Flight Plan** > **Menu** > **VNAV**).

Annunciations display within 60 seconds of the top or bottom of descent.
A "Vertical Track" aural message plays at 60 seconds from the top of descent.

VNAV Functions

- Presents vertical path guidance along the descent as either a line joining two waypoints with specified altitudes or a desired linear vertical path (i.e., the vertical angle from the specified waypoint or altitude)
- Integrates vertical waypoints into the active flight plan
- Supports both manual and autopilot coupling

For installation details related to en route vertical navigation, consult the AFMS.

Define a VNAV Profile

Active vertical navigation profile information displays on the VNAV Profile page. From here you can:

- Enable en route vertical guidance
- Specify a target vertical speed and flight path angle
- View active constraint data
- Set a default FPA (in the VNAV Profile menu)

VS Target and FPA may be unavailable if the selected altitude is set higher than the Active VNAV Constraint **or** if the aircraft is more than 50 NM from the top of descent.

ENABLE VNAV GUIDANCE

From the active flight plan:

Home > **Flight Plan** > **Menu** > **VNAV** > **VNAV Enabled**.

Tapping **VNAV** again toggles the function off.

Disabling vertical navigation:

- Invalidates required vertical speed, time to TOD/BOD, and vertical deviation data
- Removes vertical deviation and required vertical speed indications from the PFD

VNAV automatically re-enables when you initiate a direct course.

Altitude Constraints

Altitude constraints are either entered manually into the active flight plan, or automatically retrieved from the published altitudes in the navigation database. GTN automatically uses altitudes loaded with arrival and approach procedures (up to and including the FAF) for computing vertical deviation guidance.

Altitude constraints loaded from the database are jet altitudes. Some adjustment may be necessary for other types of aircraft. For the adjustment procedure, refer to the published chart.

ALTITUDE CONSTRAINT INDICATIONS

COLOR DEFINITIONS	
White	Altitude is for reference only.
Cyan	GTN honors the constraint for vertical guidance when the VNAV function is active.

When the VNAV function is active, altitudes may be accompanied by one or two altitude restriction bars. The position of the value (above or below the bar, or between two bars) denotes the required aircraft altitude relative to that constraint.

Dual values annunciate when the aircraft needs to cross between two altitudes.

Constraint values display in MSL or flight level (FL). Constraints at airports may be specified as MSL or AGL.

Examples:

Cross at or Above 5,000 ft

Cross at or Below 5,000 ft

Cross at 5,000 ft

Cross Between 5,000 ft and 6,000 ft

ALTITUDE TYPES	
	**Database Constraint** Altitude is retrieved from the navigation database and designated for use in determining vertical guidance.
	**Pilot-specified Constraint** Pencil icon indicates manual designation or manual data entry.
	**Invalid Altitude Constraint** GTN cannot use the altitude to determine vertical guidance.
	**Estimated Crossing Altitude** *For reference only.* System calculated estimate of aircraft altitude as it passes over the navigation point. Absence of bar(s) indicates it is not a potential constraint.
	**Published Reference Altitude** *For reference only.* Altitude is retrieved from the navigation database, but not for use in determining vertical guidance. Bar above and/or below the value indicates constraint type.

Altitude Constraint Data Priority

GTN prioritizes altitude constraint data for each navigation point and displays it in the ALT column of the active flight plan.

1. GTN honored constraints (includes invalid constraints)
2. Reference-only estimated crossing altitudes
3. Published reference altitudes
4. Empty (no altitude data)

INVALID ALTITUDE CONSTRAINTS

An altitude constraint is invalid if:

- Meeting the constraint requires the aircraft to climb
- Meeting the constraint requires the aircraft to exceed the maximum flight path angle (6° downward) or maximum vertical speed (-4,000 fpm)
- It results in a TOD behind the aircraft's current position
- It is within a leg type that does not support altitude constraints
- It is added to a waypoint past the FAF

ALTITUDE CONSTRAINT OPTIONS

Once added to the flight plan, an altitude constraint may be modified or deleted using the controls in the VNAV Options menu. Select a value in the ALT column to display available options.

Type	• Opens a list of available constraint types • Options: At, At or Above, At or Below, and Between
Altitude Data Entry	• Opens a keypad. Specify an altitude value for the selected constraint type • Unit options: MSL, AGL, and Flight Level
Revert Constraint	• Returns a modified altitude constraint to its original published value
Remove Constraint	• Removes the VNAV designation from the altitude • Value remains displayed for reference purposes. It is no longer used to compute vertical guidance • Removing the VNAV designation from an altitude may invalidate other displayed altitudes or cause them to change after recalculation

Designate a waypoint altitude for use with vertical guidance:

1. Select a waypoint altitude constraint.
2. Tap **Save**.

Enter or modify an altitude constraint:

1. Select an altitude constraint.
2. Tap **Type** and select the constraint type.
3. Select the altitude data key.
4. Enter an altitude constraint value using the keypad.
5. Select altitude units.
6. Tap **Enter** to accept the altitude.
7. Tap **Save**.

Delete an altitude constraint:

1. Select an altitude constraint.
2. Tap **Remove Constraint**.
3. Tap **OK**.

Return a modified altitude constraint to its original database value:

1. Select an altitude constraint containing the pencil icon.
2. Tap **Revert Constraint**.
3. Tap **OK**.

VNAV Direct To

This function creates a vertical navigation path from the aircraft's current position and altitude to a selected waypoint's location and altitude.

By removing any VNAV constraints between the aircraft and selected waypoint, it allows you to fly the lateral flight plan in a continuous descent and reach the waypoint at the specified altitude.

ACTIVATE VNAV DIRECT TO

1. Select an altitude constraint.
2. Tap **VNAV Direct To**.
3. Confirm the request.

Transition to Approach

FEATURE LIMITATIONS

- *Function availability dependent upon installer configuration*

VNAV responds differently based on approach type.

VNAV APPROACH RESPONSE	
Transition to Approach enabled	• Vertical path attempts a smooth transition from en route to approach vertical guidance • Aircraft intercepts with approach guidance from below the glidepath/glideslope
Transition to Approach not enabled	• En route VNAV terminates at the waypoint prior to the FAF on approaches with vertical guidance • En route VNAV terminates at the FAF (LNAV only)

For more information about the transition to approach function, consult the AFMS.

Temperature Compensated Altitude

NOTE

GTN and TXi displays use a single destination airport temperature for calculating compensated altitudes. Changing the temperature on one of these units automatically recalculates the value across all connected GTNs and GDUs.

FEATURE REQUIREMENTS

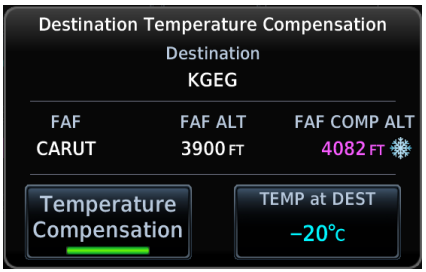
- *Active flight plan contains a destination airport*
- *GDU 700( )/1060 for access via PFD Minimums menu*

Calculate loaded approach altitudes based on the pilot-specified destination temperature. Once you enter the destination temperature, GTN increases the approach altitudes accordingly.

SETTING TEMPERATURE COMPENSATED ALTITUDE

Controls for setting temperature compensation are accessible from two places:

- Active Flight Plan menu
- Minimums menu (PFD only)



Snowflake icon indicates temperature compensated FAF altitude.

To toggle function on or off, tap **Temperature Compensation**.

ACTIVATE TEMPERATURE COMPENSATED ALTITUDE

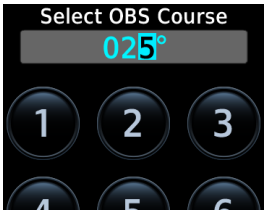
From the active flight plan:

Tap **Menu** > **Temperature COMP** > **Temperature Compensation** > **TEMP at DEST**, and specify the destination airport temperature.

The temperature compensated FAF altitude annunciates in magenta.

OBS

The Omni Bearing Selector (OBS) allows you to select between manual or automatic sequencing of waypoints.



When active, this function allows you to set the desired course To/From a waypoint using the provided controls or with an external OBS selector on HSI or CDI.

1. Tap **OBS**.
2. Specify a heading course.

OBS Mode

CDI indicates the OBS heading. The mode displays on the annunciator bar.

The unit retains the active To waypoint as a navigation reference even after passing the waypoint (i.e., prevents sequencing to the next waypoint).

Tapping the key again resumes automatic sequencing of waypoints (normal mode).

SUSPEND/UNSUSPEND

SUSP

This key displays for leg types that do not support OBS.

UNSUSP

This key displays for legs that auto suspend (e.g., leg holds, missed approaches).

Dead Reckoning

WARNING

Do not use projected position data as the only means of navigation.

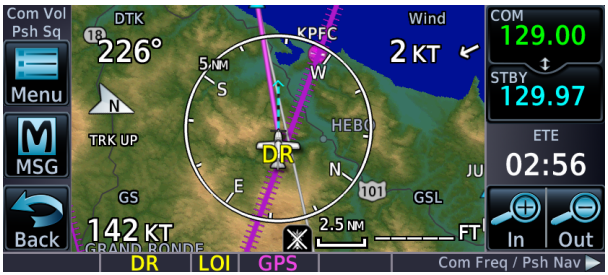
Points About Dead Reckoning

- Provides limited navigation using the last known position and speed following the loss of GPS navigation while on an active flight plan
- Becomes active after a loss of GPS position while navigating using an active flight plan and the flight phase is either En Route or Oceanic
- Allowed only during en route and oceanic phases of flight

When dead reckoning mode is active:

- System flags all external outputs dependent upon GPS position data
- Map reports "No GPS Position"; overlays are not available
- "DR" appears over the ownship icon
- DR mode annunciation replaces ENR or OCN
- Terrain functionality is not available
- Traffic and Stormscope data display on their respective pages only
- CDI is not available

Dead Reckoning Mode, GTN 650Xi



Dead reckoning mode ends once GPS position is restored.

Parallel Track

Create a parallel course offset relative to the current flight plan. Setup controls provide offset distance and direction setting (left of track or right of track).

FEATURE REQUIREMENTS

- *An active flight plan*

FEATURE LIMITATIONS

- *Function not available when Direct-to is active.*
- *Graphical editing of the active leg cancels the parallel track function*
- *Offset range: 1 nm to 99 nm*
- *Large offset values combined with certain leg types (e.g., approach) or leg geometries (i.e., changes in track >120°) do not support parallel track*

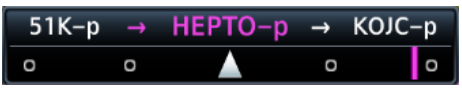
TRACK	COLOR
Offset	Magenta
Original	Gray

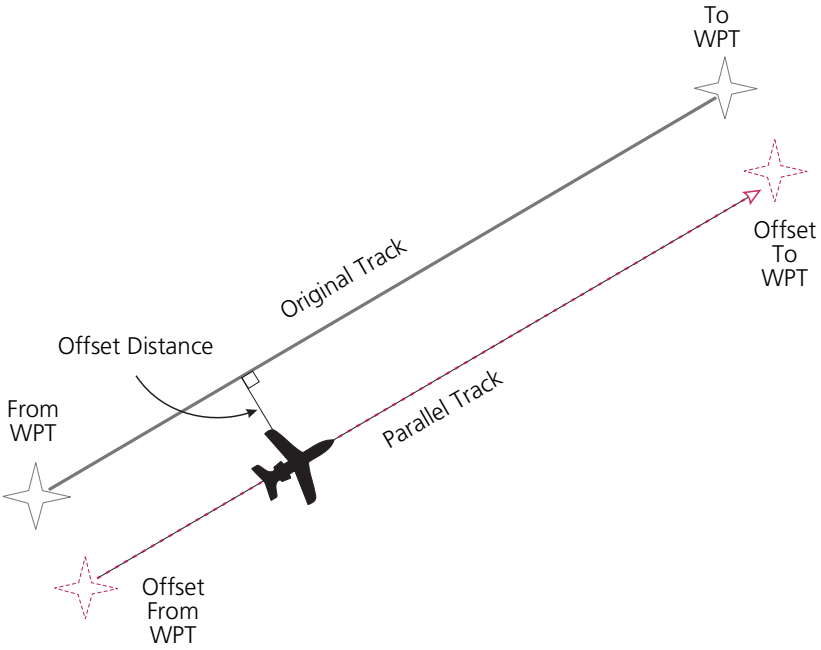
Once activated, a new track line appears to the left or right of the original course line at the specified distance. The aircraft navigates to the offset track with external CDI/HSI guidance now driven from the parallel track.

A graphical depiction overlays on the map.

Corresponding fix symbols on the flight plan indicate when the active leg is on a parallel track.

Active route identifiers also appear on the **GPS NAV Status** bar.





ACTIVATE A PARALLEL TRACK

1. Tap **Menu** > **Parallel Track**.
2. Tap **Offset** and specify a distance between 1 nm and 99 nm.
3. Tap **Direction** and select left of track or right of track.
4. Tap **Activate**.

To deactivate parallel track, tap **Menu** > **Remove PTK**.

Invert Flight Plan

Reverse the active flight plan and use it for navigation guidance back to your original departure point. Inverting the flight plan does not affect the original version stored in the catalog.

Be aware that inverting a flight plan removes all ATKs.

INVERT THE ACTIVE FLIGHT PLAN

Tap **Menu** > **Invert**.

Edit Data Fields

This function allows you to change the data type for any flight plan column. By default, flight plan displays:

• ALT • DTK • DIS

DATA FIELD SELECTIONS	
ALT	Altitude Constraint
CUM	Cumulative Distance
DIS	Distance
DTK	Desired Track
ESA	En Route Safe Altitude
ETA	Est. Time of Arrival
ETE	Est. Time En Route

Selections are identical for each data field.

GTN 750Xi SERIES

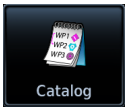
Data field columns are arranged in numerical order (1 - 3).

CHANGE DATA FIELD TYPE

1. Tap **Menu** > **Edit Data Fields**.
2. Tap any column/field and select a data type.

To restore data fields to their default settings, tap **Restore Defaults**.

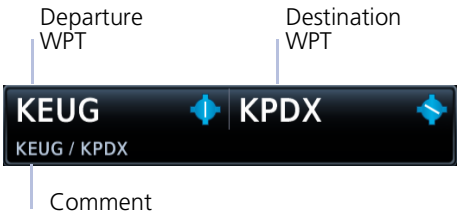
Flight Plan Catalog



Create, activate, edit, copy, and delete flight plans within the catalog.

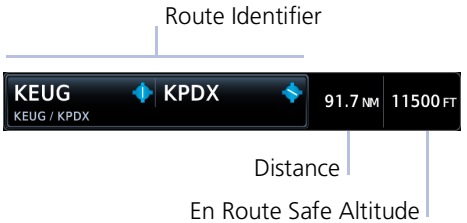
FEATURE LIMITATIONS

- *Stores up to 99 flight plans with a maximum of 100 waypoints each*



Each catalog entry includes the identifiers of the departure and destination waypoints. These comprise the route identifier.

GTN 750Xi SERIES



In addition to the route identifier, these units display the route distance and en route safe altitude.

Catalog Route Options

Route Options

- Activate
- Invert & Activate
- Preview
- Edit
- Copy
- Delete

Selecting a flight plan opens a menu. Changes to the active flight plan take effect immediately.

- Activate the selected flight plan (replacing the active flight plan)
- Reverse and activate the selected flight plan
- Preview a selected flight plan
- Make changes to a flight plan
- Copy the flight plan and modify it to create a similar one
- Remove individual or multiple flight plans

ACTIVATE

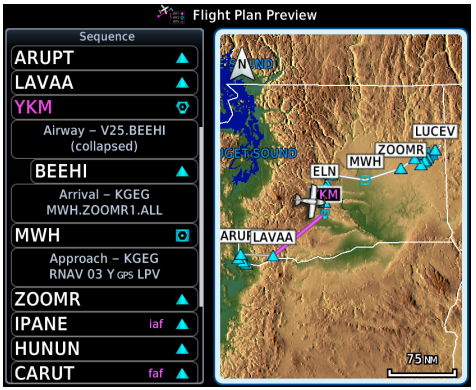
Activating a stored flight plan overwrites the active flight plan.

INVERT & ACTIVATE

Reverse and activate the selected flight plan for guidance back to your original departure point. The inverted flight plan is a copy. Changes do not affect the original flight plan, which remains stored in the catalog.

Remember: Inverting a flight plan removes all ATKs.

PREVIEW



View the flight plan route as it will appear on Map and on the Active Flight Plan app.

Options include Store, Activate

EDIT

Modify the selected flight plan on the Edit Catalog Flight Plan page.

COPY

Create a copy of the selected flight plan. A copy may be used as a starting point for creating a similar flight plan. Select the copy and tap Edit to make modifications.

DELETE A FLIGHT PLAN

Deleting the active flight plan does not delete the stored flight plan in the catalog.

From the FPL menu:

1. Tap **Menu** > **Delete**.
2. Confirm the request.

From the catalog:

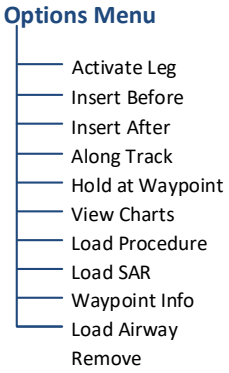
1. Select a flight plan.
2. Tap **Delete**.
3. Confirm the request to delete all waypoints.

DELETE ALL CATALOGED FLIGHT PLANS

To remove all flight plans from the catalog:

1. Open the catalog.
2. Tap **Menu** > **Delete All**.
3. Confirm the request to clear the catalog.
4. Tap **Delete Pending**.
5. Confirm the request to remove all flight plans pending preview.

Flight Plan Waypoint Options



Selecting a waypoint identifier opens a menu. Changes to the active flight plan take effect immediately.

- Change the active leg
- Insert a new waypoint into a flight plan
- Add a temporary route fix (ATK)
- Add a holding pattern to an existing waypoint
- Add an airway or procedure
- Add a search and rescue pattern
- View waypoint information and related charts
- Remove a selected waypoint

Activate Leg	Designate any TO waypoint as the active flight plan leg. Requires an active catalog flight plan.
Insert Before	Insert a new waypoint before the selected waypoint.
Insert After	Insert a new waypoint after the selected waypoint.
Along Track	Specify an along track offset value before or after the selected waypoint.
Hold at Waypoint	Create a user-defined hold at the selected waypoint. Specify hold parameters and preview holding patterns from a dedicated menu page.
View Charts	Open the Charts page for the selected airport or procedure.
Load Procedure	Open the Procedures app to specify a departure, arrival, or approach for loading. Available controls are dependent upon the relative position of the aircraft to the active flight plan. Options may include: • Activate Approach • Vectors to Final • Activate Missed Approach
Load Airway	Assign an airway and exit waypoint to the selected entry waypoint (e.g., intersection, VOR).
Load SAR	Open the Search and Rescue function to create and add an SAR pattern after the selected waypoint.
Waypoint Info	Open the dedicated information page for the selected waypoint.
Remove	Remove the selected waypoint or hold from the active flight plan.

You may also set a direct course to any existing waypoint in the active flight plan. Select an identifier and tap the **Direct To** key. Details about Direct To features are provided in the respective section.

Import a Flight Plan

NOTE

Flight plan format on GTN differs from that used by GNS 400W/500W Series navigators.

FEATURE LIMITATIONS

Flight plans over 99 waypoints in length are truncated. As a result, the last waypoint in the imported flight plan may not be the destination airport.

Import Options

You can import flight plans wirelessly from Garmin Pilot or from an SD card. Once imported, they may be previewed and then stored in the catalog or activated.

IMPORT USING CONNEXT

On your portable device: Select the option to transfer the flight plan(s) to GTN.

On GTN: The **MSG** key flashes, alerting you that a new message is active.

1. Tap **MSG** and read the "Flight Plan Import" message.
2. Tap **New FPL** to preview the flight plan.
   - For a single flight plan, the preview page opens.
   - For multiple flight plans, the catalog opens.

Selecting a cataloged flight plan that is "Pending Preview" opens a slide-out menu.

To view the flight plan, tap **Preview**. To delete it without viewing, tap **Delete**.

IMPORT FROM A DATACARD

On your personal computer: Create the flight plan(s) using compatible flight planning software. Save the file(s) to an SD card.

On GTN: After installing the datacard and applying power to the unit, go to the Active Flight Plan page and open the catalog.

From the Flight Plan Catalog:

1. Tap **Menu** > I**mport**.
2. Select a flight plan from the list of datacard files.
3. Tap **Store** or **Activate**.

Potential Import Errors

Pop-up messages alert you when an import problem occurs.

Tapping **Next** advances through multiple error messages. Tapping **OK** acknowledges the error and closes the popup.

The following errors can prevent GTN from successfully importing your flight plans.

Full catalog.

Delete any unnecessary catalog entries and try again.

Flight plan contains errors.

Any airways, procedures, or non-user waypoints not found in the database will result in an error. GTN replaces these with locked (*lockd*) waypoints, which must be resolved prior to activation.

Flight plan exceeds the waypoint limit.

GTN truncates the flight plan to the correct length; however, you should be aware that waypoints are missing from the end of the flight plan, including the destination waypoint.

Along Track Offsets

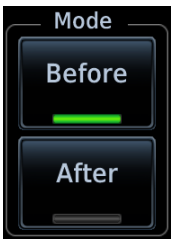
An along track (ATK) represents a temporary lateral position (or checkpoint) relative to an existing waypoint in the flight plan. Offset distance values range between 1 nm and 200 nm, and may be specified in 1 nm increments.

Unlike database waypoints, ATKs indicate a temporary route fix in the flight plan.

Once created, their position remains fixed until deleted by the pilot. Subsequent changes to the flight plan do not update the ATK's position.

Flight plan allows multiple entries.

ATKs appear in flight plan route depictions on Active Flight Plan and Map.



Inserting an ATK before the selected waypoint results in a negative offset value. Inserting it after results in a positive value.

CREATE AN ATK

From the active flight plan:

1. Select a reference waypoint.
2. Tap **Along Track** and specify an offset distance.
3. Choose **Before** or **After**.
4. Tap **Enter**.

CREATE AN ATK FOR AN ALTITUDE CONSTRAINT

From the active flight plan:

1. Select an altitude constraint.
2. Tap **Along Track** and specify an offset distance.
3. Choose **Before** or **After**.
4. Tap **Enter** > **Save**.

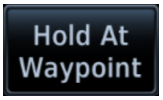
MODIFY AN ATK OFFSET

Once set, offset distances are not editable.

To adjust an existing offset value:

1. Select the ATK from the flight plan.
2. Tap **Delete**.
3. Create a new ATK with the correct offset distance.

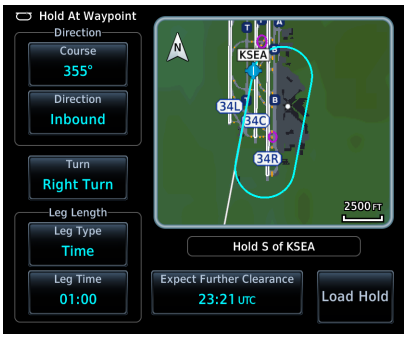
User Holds



User holds suspend automatic waypoint sequencing until they expire or are removed.

Tapping **Hold at Waypoint** displays available hold options.

Hold at Waypoint Options



The controls on this page allow you to:

- Specify course, direction, and turn.
- Set leg length according to distance or time.
- Set up an Expect Further Clearance reminder.
- Preview how the defined holding pattern will appear on Map.
- Load the specified hold for activation.

Course	Specify the course angle.
Direction	Select between Inbound or Outbound.
Turn	Select between Left Turn or Right Turn.
Leg Type	Select Time or Distance.
Leg Time	Specify the leg time in minutes and seconds (MM:SS).
Leg Distance	Specify the leg distance.
Expect Further Clearance (EFC)	Specify a time for the Expect Further Clearance reminder.
Load Hold	Accept the specified hold parameters and return to the previous window.
Preview	View the defined holding pattern as it will appear on Map. Available on GTN 650Xi Series units only.

HOLD PREVIEW

A window displays the defined holding pattern on a 2D map of the surrounding area (includes SafeTaxi depictions).

GTN 650Xi SERIES

Tapping **Preview** displays the hold on a dedicated map page. You may view and load the hold, or return to the setup menu for more options.

CREATE & ACTIVATE A HOLD

From the active flight plan:

1. Select a waypoint.
2. Tap **Hold at Waypoint**.
3. Specify hold parameters.
4. Tap **Load Hold**.
5. Select the hold from the active flight plan.
6. Tap **Hold Activate**.
7. Confirm the request.

Search and Rescue Patterns

Create a search and rescue pattern for any off-route course.

Tapping **Load SAR** displays options for defining a search and rescue pattern for the selected waypoint.

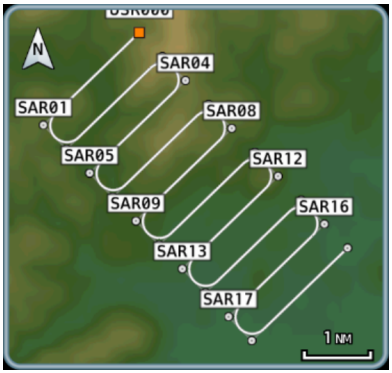
SAR Pattern Options

The controls on this page allow you to:

- Select a pattern type.
- Specify an initial track angle and spacing distance.
- Select the turn direction.
- Specify the number of legs.
- Load the specified pattern after the selected waypoint.
- Load and immediately activate the specified pattern.

SAR Pattern	Select a pattern from the list of available types.
Initial Track	Specify an initial track angle.
Initial Turn Direction	Select between Left or Right.
Leg Length	Specify the leg length.
Track Spacing	Specify the track spacing distance.
Leg Count	Specify the number of legs.
Load Pattern	Accept the specified pattern and return to the previous window.
Load Pattern & Activate	Accept and activate the specified pattern.
Preview	View the defined SAR pattern as it will appear on Map. Available on GTN 650Xi Series units only.

SAR PATTERN PREVIEW



A window displays the defined pattern on a 2D map of the surrounding area (includes SafeTaxi depictions).

GTN 650Xi SERIES

Tapping **Preview** displays the pattern on a dedicated map page. You may view and load the pattern, or return to the setup menu for more options.

SAR PATTERN TYPES

Depending on configuration, not all pattern types may be available.

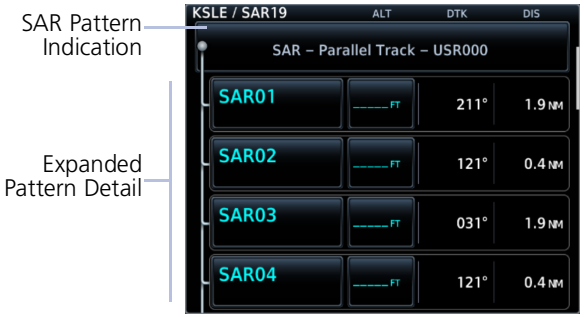
	Parallel Track		Sector Search
	Expanding Square		Orbit

CREATE & ACTIVATE A SEARCH AND RESCUE PATTERN

From the active flight plan:

1. Select a waypoint.
2. Tap **SAR Pattern** and select a pattern type.
3. Review the displayed pattern information. Edit as necessary.
4. Tap **Load Pattern & Activate**.

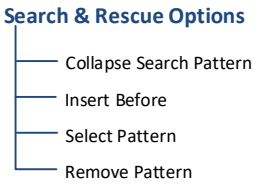
SAR patterns automatically display as flight plan legs. A search pattern may contain numerous legs.



SAR patterns begin with an indicator field and end with an exit identifier.

To activate a pattern leg, select the leg and then tap **Activate Leg**.

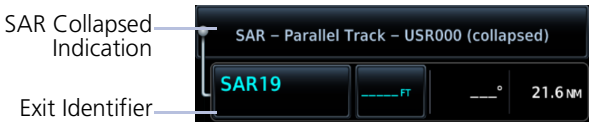
SAR Flight Plan Options



Selecting a search pattern indicator from the active flight plan opens a menu. You may elect to:

- Collapse all pattern legs
- Insert a waypoint before the search pattern
- Select a new pattern or modify the existing one
- Remove the search pattern from the active flight plan

Tapping **Collapse Search Pattern** hides all legs of the pattern except the exit leg.



REMOVE A SEARCH AND RESCUE PATTERN

From the active flight plan:

1. Select the SAR pattern identifier.
2. Tap **Remove Pattern**.
3. Confirm the request.

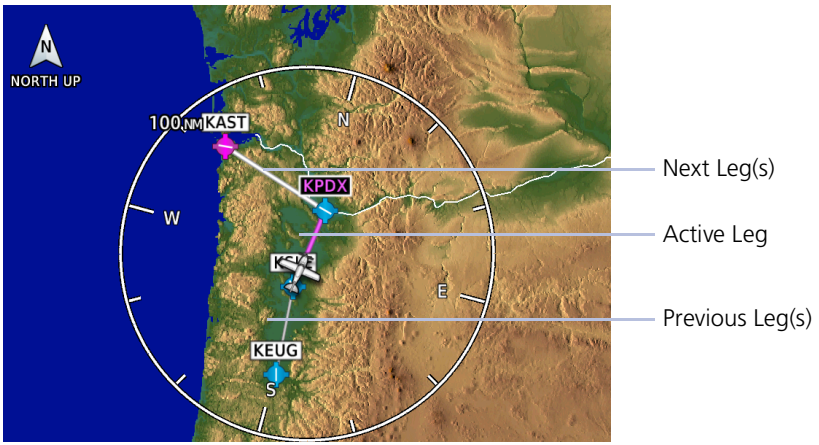
Flight Plan Map Overlays

Leg Status Indications

LEG STATUS	COLOR
Active	Magenta
Next & Future	White
Past or Inactive	Gray

Active, next, and previous flight plan legs overlay on Map and are display only.

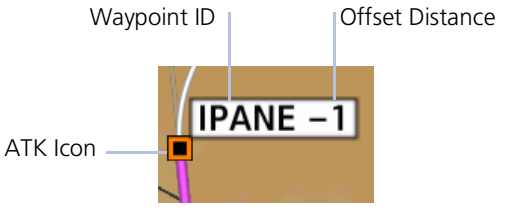
Status leg indications.



Along Track Offset Indications

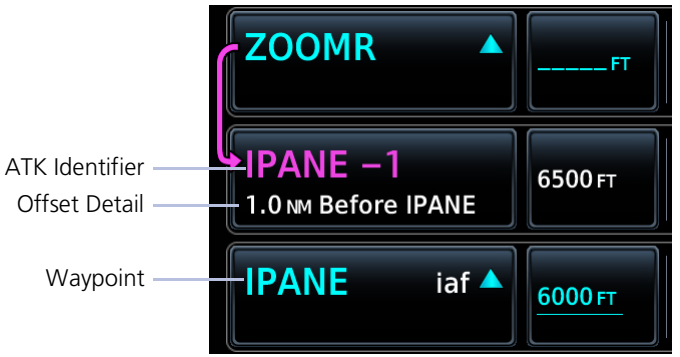
Map indications include a dedicated icon and an identifier label. Identifier labels on Map denote the adjacent waypoint's ID and offset distance from the specified ATK.

Selecting an ATK displays its bearing and distance in the info banner.



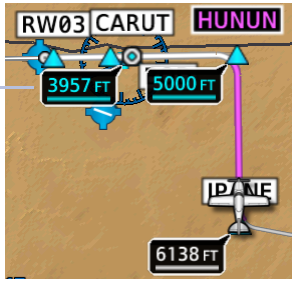
Abbreviated Map Label

Unlike waypoints, ATKs indicate a temporary route fix in the flight plan.



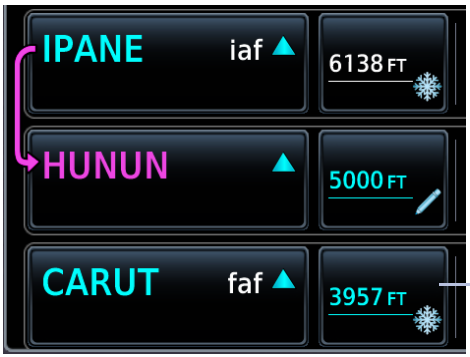
Altitude Constraint Labels

Altitude constraint data display as text labels on the Map. Units are typically feet or meters depending on current altitude setting in the System Units. They display as flight level altitudes if specified as such on the navigator.



Altitude Constraint Label

If excessive labels are cluttering the map, this feature may be turned off.

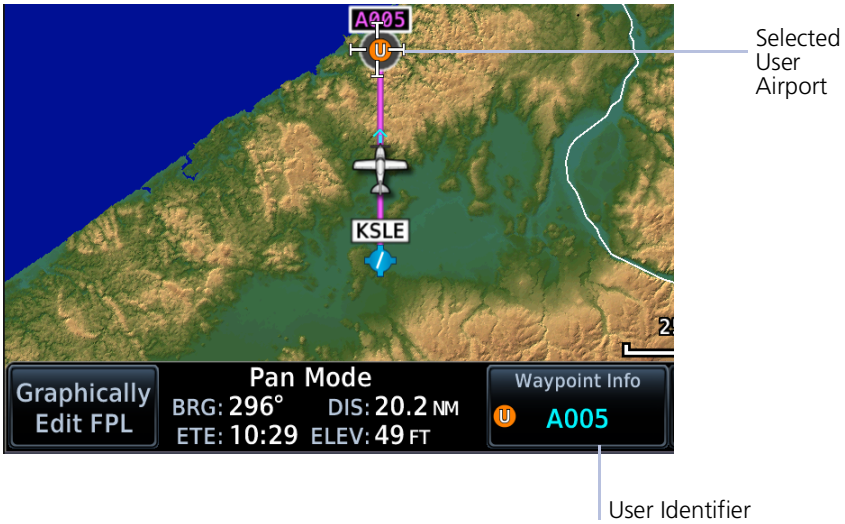


Altitude Constraint

User Airport Icon

A dedicated icon indicates user created airport waypoints. User airport indications display on Active Flight Plan and Map.

When selected, the user identifier annunciates in the info banner.



CDI

The CDI function selects data sent from the GPS or VLOC receiver to the external CDI (or HSI).

Tapping the **CDI** key toggles between navigation sources. If configured, this key resides in the control bar.

NOTE

Information provided by the onscreen CDI is based on GPS data. Do not use for primary navigation.

FEATURE LIMITATIONS

- *GPS phase of flight annunciations (e.g., LPV, ENR) are not applicable to the external CDI/HSI when VLOC is active.*
- *Availability dependent upon configuration*

For approaches not approved for GPS, select the VLOC receiver for display on the external CDI/HSI. The selected source annunciates at the bottom of the display.

GPS Receiver	VLOC Receiver
GPS	VLOC

If the unit is not configured for a CDI key:

Tapping **Activate GPS Missed Approach** only resumes automatic waypoint sequencing. To switch to GPS navigation, use your external source selection method (this is typical of an EFIS system).

GTN 650Xi SERIES

CDI scales display on the Default Navigation page (Home > **Default NAV**).

GTN 750Xi SERIES

CDI scales appear at the bottom of the map display. This indicator is not visible during pan mode.

GPS Nav Status Bar

FEATURE REQUIREMENTS

- *Active flight plan for from-to-next route information*

This selectable indicator bar shows from-to-next route information when an active flight plan exists. Indications change based on active leg status.

Tapping this bar provides direct access to the active flight plan.

No Flight Plan Exists

Underscores denote the absence of an active leg.

Active Route Display

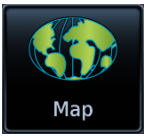
Fields change to show active route identifiers and leg types. Includes:

- From, to, and next waypoints
- Leg and waypoint types
- Identifier

GTN 650Xi SERIES

This indicator is a feature of the Default Navigation page (Home > **Default NAV**).

GTN 750Xi SERIES



GPS Nav status indications appear at the bottom of the map display as part of the CDI. This bar is not visible during pan mode.

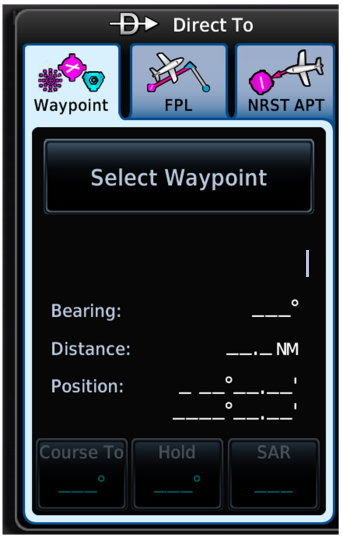
Direct To

Set a course to any waypoint using Direct To.

FEATURE LIMITATIONS

- *Not all flight plan entries are selectable using Direct To (e.g., holds, course reversals)*
- *Available search and rescue patterns are dependent upon configuration.*

Direct To Basics



Direct To Window

Pushing this bezel key opens a slide-out window. Search tabs provide three different methods of waypoint selection.

- *Waypoint:* Enter a specific waypoint or find one using additional search tabs.
- *FPL:* Select a waypoint from the active flight plan.
- *NRST APT:* Select a nearby airport.

Underscores denote the absence of a loaded course, hold, or search and rescue pattern.

Direct To is useful for quickly navigating to:

- New waypoints
- An existing waypoint in the active flight plan
- Nearby airports
- Map waypoints
- An off-route course
- User-defined holds

When navigating to a single waypoint (e.g., a nearby airport), the Direct To function provides a quicker alternative to using the active flight plan.

Direct To Search Tabs

WAYPOINT

Similar to an information page, but with course and hold options. This tab is active by default.

Selecting an identifier automatically displays the following information about the waypoint.

- Identifier and type icon
- Applicable city, state, country and/or region (e.g., "NW USA")
- Distance and bearing from current aircraft position
- Waypoint coordinates

Select Waypoint/ Identifier Key	Type an identifier or access multiple search tabs using the Find function.
Course To	Specify the course angle for the navigation path.
Hold	Create, load, and activate a user-defined hold.
SAR	Specify a search and rescue pattern.

FPL & NRST APT

FPL and NRST APT tabs provide a list of selectable identifiers. These tabs have a uniform layout.

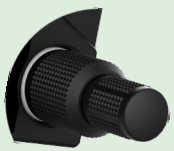
Lists all waypoints contained in the active flight plan.

Lists up to 25 waypoints within a 200 nm radius. The closest airport appears at the top of the list.

Direct To Activation

Activating a direct course establishes a point-to-point line from the aircraft's present position to the selected destination.

The unit provides course guidance until you remove the direct-to waypoint, or replace it with a new direct course or flight plan.



For convenience, you may activate a direct course using the inner control knob.

After selecting a waypoint, push the knob to activate the direct course.

The window closes and Map opens to show the active leg.

ACTIVE FIX INDICATIONS

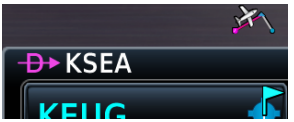
Upon activation, Map automatically opens to show a graphical representation of the active direct-to leg.

GPS Nav Status Bar

GPS navigation status changes to show the active direct-to fix. Indication includes the corresponding fix symbol and waypoint identifier.

Map User Field

If configured, a user field shows the active waypoint identifier on Map.



Active Flight Plan Indication

Fix symbol and identifier display in the upper-left corner of the flight plan.

Navigating Direct To

While most direct-to operations follow the same basic steps, the method for selecting a waypoint may vary.

DIRECT TO A NEW WAYPOINT

1. Tap **Direct To**.
2. Select a waypoint identifier.
3. Tap **Course** and specify the course heading (if a specific course is necessary).
4. Activate the selection.

DIRECT TO A FLIGHT PLAN WAYPOINT

Flight Plan Waypoints

If a flight plan exists, waypoint sequencing resumes once you reach the direct-to waypoint. If the waypoint is not in the flight plan, the flight plan is no longer active but remains available.

Direct To options are not available for all flight plan entries. Some entries include holds and course reversals which are not selectable using Direct To.

1. Tap **Direct To**.
2. Select **FPL** tab.
3. Select a flight plan leg.
4. Activate the selection.

DIRECT TO THE NEAREST AIRPORT

1. Tap **Direct To**.
2. Select **NRST APT** tab.
3. Select an airport.
4. Activate the selection.

DIRECT TO A MAP WAYPOINT

MAPWPT

For map locations without an existing name, Direct To assigns the "MAPWPT" identifier. Bearing, distance, and map coordinates display on the Waypoint tab.

Apply a direct course to any location on the map.

1. Tap a location on Map.
2. Tap **Direct To**.
3. Activate the selection.

You can modify direct-to routes on Map using the **Graphical Edit** function the same as you would a flight plan.

DIRECT TO AN OFF-ROUTE COURSE

You may activate an off-route course using any of the described direct-to methods.

Activating an off-route direct course automatically deactivates the current leg of the active flight plan.

Direct To & Procedure Fixes

Approach guidance is not available for procedure fixes. An example would be activating a direct course to a waypoint between the final approach fix and missed approach point. Upon arriving at the waypoint, approach guidance does not become active.

Remove a Direct Course

To cancel the current direct course, tap **Remove**.

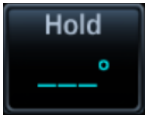
Removing a direct course:

- Reactivates the original active flight plan
- Assigns the leg nearest to the aircraft's position as the active leg
- Resumes waypoint sequencing

If no active flight plan exists, the aircraft continues on its current heading without any navigation guidance.

User Holds

Define a holding pattern for any direct-to waypoint.



Tapping **Hold** displays available hold options.

Loading the specified hold parameters returns you to the Direct To window. The **Hold** key label changes to reflect the specified course angle.

CREATE & ACTIVATE A HOLD

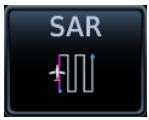
From the Waypoint tab:

1. Tap **Hold**.
2. Specify hold parameters.
3. Tap **Load Hold**.
4. Activate the selection: Tap **Hold Activate** or push the inner control knob.

Search and Rescue Patterns

Create a search and rescue pattern for any direct-to waypoint.

Tapping **SAR** displays options for defining a search and rescue pattern for the direct-to waypoint.



Loading a pattern returns you to the Direct To window. The **SAR** key label changes to reflect the selected pattern type.

When you create a search and rescue pattern as part of an off-route direct course, the function inserts the associated waypoints at the end of the en route portion of the active flight plan.

CREATE & ACTIVATE A SEARCH AND RESCUE PATTERN

From the Waypoint tab:

1. Tap **SAR** > **SAR Pattern**, and select a pattern type.
2. Review the displayed pattern information.
3. Tap **Load Pattern**.
4. Activate the selection: Tap **SAR Activate** or push the inner control knob.

Procedures

Lateral and vertical guidance is available for visual and GPS/RNAV approaches. The published instrument approach procedures allow precision and non-precision approaches to airports. These are directly accessible via the Procedures app.

FEATURE REQUIREMENTS

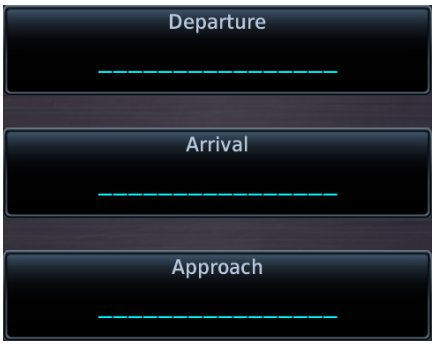
- *Baro-corrected altitude source (automatic sequencing of altitude leg types)*

In the absence of baro-corrected altitude data, altitude leg types require manual sequencing.

FEATURE LIMITATIONS

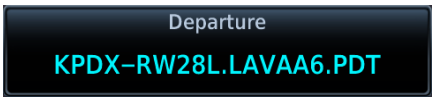
- *Flight Plan allows only one of each procedure type to be loaded at a time; adding a new procedure overwrites any existing procedure of the same type*

LOAD A PROCEDURE



Select a procedure type, then define the criteria for that procedure on the corresponding setup page.

By default, these keys display underscores.



Upon completion, the specified airport and procedure appear on the associated key.

When loading a procedure, always remember to check the runway, transition, and all waypoints.

COMMON PAGE CONTROLS

All procedure pages provide the following setup controls.

Airport: Select an airport for the procedure.

Transition: Select a transition.

Runway: Select a runway for the selected airport.

Preview: View a 2D map of the surrounding area (includes SafeTaxi airport depictions).

For page specific controls, refer to the appropriate procedure description.

Flight Procedure Basics

WARNING

Do not rely solely on VNAV guidance when navigating horizontally and vertically around user-defined airports. It is the pilot's responsibility to ensure separation from terrain and obstacles during an approach to a user-defined airport.

NOTE

Advisory climb altitudes for SIDs may not match charted altitudes. Do not rely solely on advisory altitudes.

- Always check the runway, transition, and waypoints for all procedures.
- Heading legs indicate in white as "HDG XXX°" on flight plans.
- The unit provides lateral and, when appropriate, vertical guidance for visual and GPS/RNAV approaches.
- Use Map as an aid to situational awareness during ILS, VOR, NDB, and non-precision localizer-based approaches. A magenta line depicts the active leg (or the portion of the approach currently in use).
- Always use the appropriate radio navigational aid for primary approach course guidance during non-GPS approaches.
- Check the annunciator bar for the current phase of flight.
- Many non-precision approaches have GPS overlays, improving accuracy so that approaches do not require overflying a VOR or NDB.
- The unit guides you through complex overlay approaches, automatically sequencing each leg up to the missed approach point.
- Fly approaches as published with the full transition using any published feeder route or initial approach fix, or with a vectors-to-final transition.
- While not required under TSO-C146e, an optional baro-corrected altitude source is recommended for automatic sequencing of altitude leg types.

When adding procedures to a flight plan:

Always verify the transition waypoints between each phase are correct. If using VNAV Descent, verify that the altitudes for the selected procedure match the charted or ATC cleared altitudes and are appropriate for the airframe type.

Map complements your printed approach plates by improving situational awareness during the approach. It does not replace printed approach plates. **Always fly an approach as it appears on the approach plate.**

Roll Steering

When switching the CDI source from GPS to VLOC during ILS, VOR, NDB, and non-precision localizer-based approaches, roll steering terminates when approach mode is selected on the autopilot. It becomes available once you initiate the missed approach.

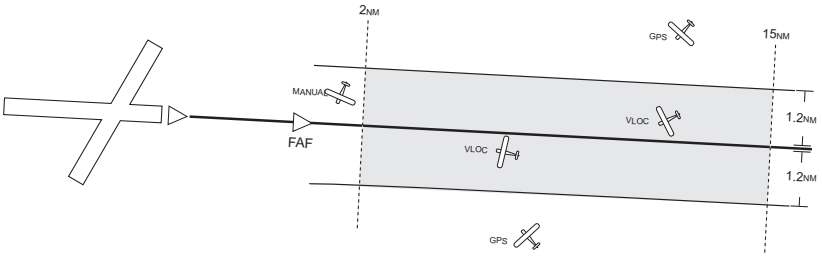
TO/FROM LEGS ON CDI

TO Legs	FROM Legs
On these legs, the FROM/TO flag on the CDI indicates "TO" and the Distance field on the flight plan decreases as you navigate the leg.	On these legs, the FROM/TO flag on the CDI indicates "FROM" and the Distance field on the flight plan increases as you navigate the leg.
Most legs are this type	From legs are typically found on procedure turns and on some missed approach procedures.

Localizer or VOR-based Approaches

GTN automatically switches the external CDI output from GPS to VLOC as you intercept the final approach course. When the ILS approach activates and the correct ILS frequency activates in the VLOC window, the GTN automatically switches to VLOC within 1.2 nm left or right of the final approach course. This switch can take place anywhere from 2.0 to 15.0 nm from the FAF.

This illustration shows multiple locations along the approach path and the CDI selection that you can expect: GPS or VLOC. The shaded area depicts where the automatic switch from GPS to VLOC should occur.



The automatic switch from GPS to VLOC is not immediate, but instead occurs gradually to prevent abrupt CDI changes when coupled to an autopilot. The CDI selection can also be changed manually by tapping **CDI**.

If you attempt to intercept the approach course at a distance less than 2.0 nm from the FAF, tap CDI to manually switch from GPS to VLOC.

GPS Flight Phase Annunciations

Check the annunciator bar for current phase of flight.

Map complements your printed approach plates by improving situational awareness during the approach. It does not replace printed approach plates. **Always fly an approach as it appears on the approach plate.**

Under normal conditions, these annunciations are green. They turn yellow when cautionary conditions exist.

Phase of flight annunciations are a direct indication of the current CDI behavior for the selected navigation source.

Not all annunciations are available for every navigator.

ANNUNCIATION	FLIGHT PHASE
0.30 NM	• 0.3 nm CDI scale • Based on pilot selection
1.00 NM	• 1.0 nm CDI scale • Based on pilot selection
DPRT	**Departure** • Terminal level with departure procedure as the active navigation • System using non-precision approach integrity • CDI full-scale deflection: 0.30 nm
DR	**Dead reckoning** • CDI not available
ENR	**En route** • CDI full-scale deflection: 2.0 nm or current CDI scale selection, whichever is smaller
LNAV	**Lateral Navigation Approach** • Fly to published LNAV minimums
LNAV+V	**Lateral Navigation Approach with Advisory Vertical Guidance** • Fly to published LNAV minimums
L/VNAV	**Lateral and Vertical Navigation Approach** • Fly to published LNAV/VNAV minimums

ANNUNCIATION	FLIGHT PHASE
LOW ALT	**Low Altitude** • Aircraft's estimated height is lower than the final approach waypoint height by approximately 50 meters • For LNAV+V, LNAV/VNAV, LP +V, or LPV approaches • Not active when terrain alerting functions are operational
LP	**Localizer Performance Approach** • Fly to published LP minimums
LP +V	**Localizer Performance Approach with Advisory Vertical Guidance** • Fly to published LP minimums
LPV	**Localizer Performance with Vertical Guidance Approach** • Fly to LPV minimums
MAPR	**Missed Approach** • System using missed approach integrity • CDI full-scale deflection: ±0.30 nm
OCN	**Oceanic** • CDI full-scale deflection: 2.0 nm
TERM	**Terminal** • CDI full-scale deflection: 2.0 nm or current CDI scale selection, whichever is smaller
VISUAL	**Visual Approach** • Vertical guidance based on advisory terrain avoidance calculations • CDI scaling is identical to LPV approaches

Departures

Loading a Departure into Flight Plan

- Flight plans allow only one departure procedure at a time
- Loading a departure when one is already present will replace the existing entry
- Selecting a departure, transition waypoint, and runway defines the route

FEATURE LIMITATIONS

- *Vector-only departures may be excluded from some databases*

PAGE SPECIFIC CONTROLS

Load Departure: Loads departure procedure into the active flight plan.

SELECT A DEPARTURE

From the Home page:

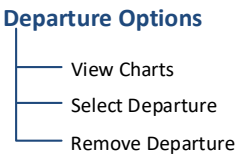
1. Tap **PROC** > **Departure**.
2. Confirm the selected airport. If necessary, tap **Airport** and choose an airport using the provided search options.
3. Tap **Departure** and select a departure from the list.
4. Tap **Transition** and select a transition.
5. Tap **Runway** and select a runway.
6. Tap **Preview**, then review the departure diagram and sequence list.
7. Tap **Load Departure**, then scroll the flight plan to view all departure waypoints.

To change the departure:

Tap the existing flight plan departure and select a different one.

If the selected runway displays a "B," such as "RW10B," this means the selected runway is both 10L and 10R.

Flight Plan Departure Options



Selecting a departure on the flight plan opens a menu. Changes to the active flight plan take effect immediately.

- View chart for selected departure
- Select a new departure
- Remove the selected departure from the flight plan

Arrivals

Loading an Arrival into Flight Plan

- Load a Standard Terminal Arrival (STAR) at any airport with a published arrival procedure
- Flight plans allow only one arrival procedure at a time
- Loading an arrival when one is already present will replace the existing entry
- Selecting an arrival, transition waypoint, and runway defines the route

PAGE SPECIFIC CONTROLS

Load Arrival: Loads arrival procedure into the active flight plan.

SELECT AN ARRIVAL

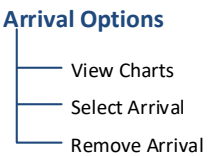
From the Home page:

1. Tap **PROC** > **Arrival**.
2. Confirm the selected airport. If necessary, tap **Airport** and choose an airport using the provided search options.
3. Tap **Arrival** > Select an arrival from the list.
4. Tap **Transition** > Select a transition.
5. Tap **Runway** > Select a runway.
6. Tap **Preview** > Review the arrival diagram and sequence list.
7. Tap **Load Arrival**. The Active FPL page opens.
8. Scroll the flight plan to view all arrival waypoints.

To change the arrival:

Tap the existing flight plan arrival and select a different one.

Flight Plan Arrival Options



Selecting an arrival on the flight plan opens a menu. Changes to the active flight plan take effect immediately.

- View chart for selected arrival
- Select a new arrival
- Remove the selected arrival from the flight plan

Approaches

Loading an Approach into Flight Plan

- Always check the runway, transition, and all waypoints
- Flight plans allow only one approach procedure at a time
- You may load an alternate approach during a missed approach procedure (flight plan retains all missed approaches)
- Loading an approach when one is already present will replace the existing entry
- Loading and not activating an approach does not remove the approach airport from the flight plan
- Selecting an approach, transition waypoint, and runway defines the route

PAGE SPECIFIC CONTROLS

Load Approach: Loads approach procedure into the active flight plan.

Load Approach & Activate: Loads approach procedure into the active flight plan and activates the approach.

Channel/ID: Loads an SBAS approach based on the specified channel.

SELECT AN APPROACH

From the Home page:

1. Tap **PROC** > **Approach**.
2. Confirm the selected airport. If necessary, tap **Airport** and choose an airport using the provided search options.
3. Tap **Approach** and select an approach from the list.
4. Tap **Transition** and select a transition.
5. Tap **Load Approach**. The Active FPL page opens.
6. Scroll the flight plan to view all approach waypoints.

To change the approach:

Tap the existing flight plan approach and select a different one.

SBAS APPROACHES

Channel ID Key

- Select the channel ID for an SBAS approach to the current destination
- Provides an alternate means of loading an approach.
- IDs are available from an approved approach chart
- In the case of duplicate numbers, select an approach from the provided list

To load an SBAS approach:

1. Tap **Channel/ID**.
2. Specify an approach channel.

If present, both channel and ID load automatically.

SUSPENDED APPROACH PROCEDURE ANNUNCIATION

"SUSP" indicates that automatic sequencing of approach waypoints is suspended on the active leg. This annunciation appears in the procedure field of the annunciator bar.

Suspended approaches typically occur during:

- Holding patterns
- Crossing the missed approach point
- Climb to altitude legs
- Hold to altitude legs

PROCEDURE TURNS

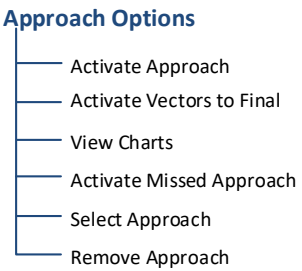
Roll Steering & Procedure Turns

The steering provided for a procedure turn does not guarantee that the aircraft will stay within the charted procedure turn boundaries. Always be sure to fly within the confines of the charted procedure.

A procedure turn is stored as another approach leg. It does not require any special operations other than flying the procedure itself.

Roll steering is available for aircraft with a compatible autopilot.

Flight Plan Approach Options



Selecting an approach on the flight plan opens a menu. Changes to the active flight plan take effect immediately.

- Activate the selected approach
- Activate vectors to final for the selected approach
- View chart for selected approach
- Activate a missed approach
- Select a new approach
- Remove the selected approach from the flight plan

Missed Approach

The method for activating a missed approach depends on your position in relation to the missed approach point.

BEFORE MISSED APPROACH POINT

Select **Activate Missed Approach**. This function is available in two applications:

Active FPL:

Home > **Flight Plan** > Select the approach > **Activate Missed Approach**

Procedures:

Home > **Procedures** > **Activate Missed Approach**

Once selected, guidance continues along an extension of the final approach course (i.e., final approach fix to missed approach point).

The unit automatically sequences to the first leg of the missed approach. This allows you to execute the missed approach prior to reaching the missed approach point.

CROSSING MISSED APPROACH POINT

When crossing the missed approach point:

- "SUSP" annunciation indicates that approach waypoint sequencing is suspended at the missed approach point
- FROM/TO flag on the CDI indicates "From" for non-composite CDIs
- FROM/TO field on the annunciator bar indicates "FR"
- Course guidance continues along the final approach course

If you need to go around the holding pattern again to lose extra altitude or speed, tap **SUSP** to manually suspend waypoint sequencing before crossing the holding waypoint the second time.

If you have already passed the waypoint, re-activate the holding pattern.

AFTER MISSED APPROACH POINT

Upon reaching the missed approach point, a pop-up presents two options.

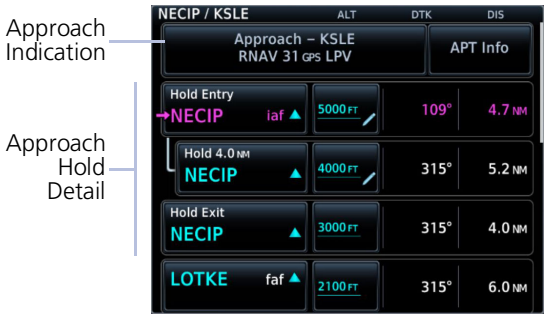
To continue with sequencing suspended, tap **Remain Suspended**.

To receive guidance to the missed approach hold point, tap **Activate GPS Missed Approach**.

Approach Hold

Published holds display on the flight plan one of two ways: with an exit leg or without. Most published holds have three distinct legs.

Hold Entry Leg	Hold Leg	Hold Exit Leg
This leg is active prior to crossing the hold fix for the first time.	This leg is active after crossing the hold fix for the first time. It remains active until: • Navigation is unsuspended and the hold fix is crossed again • The Hold exit leg is activated	This leg is active when the navigator is in an unsuspended state and the aircraft is established inbound.



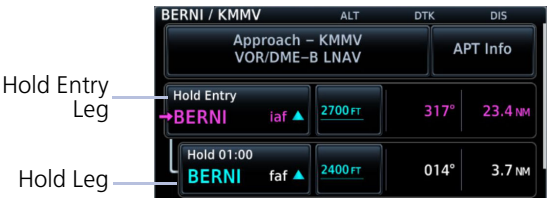
If VNAV is enabled, each hold leg is accompanied by a separate altitude constraint value.

It is the pilot's responsibility to verify that altitude constraints match published charts and ATC clearance.

In this example, the pilot may have received the instruction, "Cross NECIP at 5,000 ft, hold at NECIP, maintain 4,000 ft…"

To stay in the holding pattern, tap **SUSP**, and the Hold leg will remain active. When you are ready to exit the hold, tap **UNSUSP**, and the navigation will sequence the next time the airplane crosses the hold fix.

APPROACH HOLDS WITHOUT AN EXIT LEG



Not all published holds support a Hold Exit leg. Some show only Hold Entry and Hold legs. In this case, the Hold leg will remain active until crossing the hold fix for the final time.

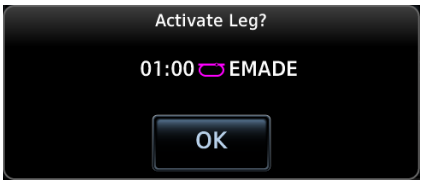
It is the pilot's responsibility to fly the procedure in accordance with published charts and ATC clearance.

FLIGHT PLAN APPROACH HOLD OPTIONS

Selecting an approach hold on the flight plan opens a menu. Changes to the active flight plan take effect immediately.

- Activate the selected hold
- Insert a waypoint after the hold
- Edit hold details
- Exit the holding pattern
- Remove the selected hold from the flight plan

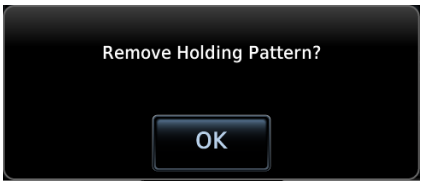
ACTIVATE HOLD



1. Select the hold.
2. Tap **Activate Hold**.
3. Confirm the request.

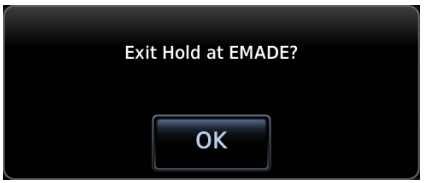
NOTE: Activating the hold will result in direct-to navigation to the hold fix.

REMOVE HOLDING PATTERN



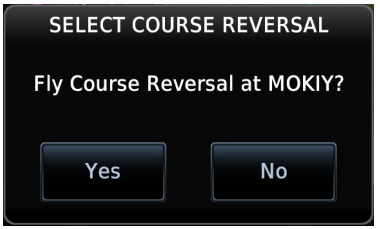
1. Select the hold.
2. Tap **Remove**.
3. Confirm the request.

EXIT HOLDING PATTERN



1. Select the hold.
2. Tap **Exit Hold**.
3. Confirm the request.

NON-REQUIRED HOLDING PATTERNS



Upon activating an RNP GPS approach, decide whether to skip non-required holding patterns during the initial transitions of the approach.

A pop-up presents two options.

Selecting **Yes** adds the hold to the flight plan.

Preview shows the hold in white.

Selecting **No** means the hold is not included in the flight plan.

Preview shows the hold in gray.

Timer/Distance field displays on the active flight plan (refer to when flying the outbound portion of the holding pattern). Holding pattern appears on Map with the active flight plan leg indication.

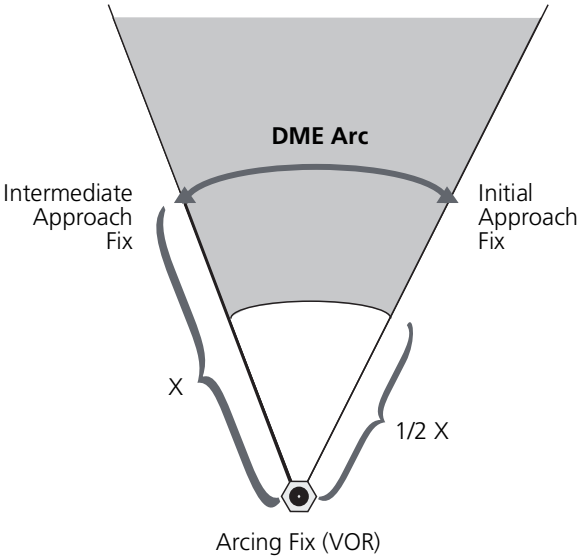
DME Arc

DME Arc Approaches

- Left/right guidance relative to the arc
- Manual arc leg activation once aircraft is near the arc

The unit supports approaches containing DME arcs.

To manually activate DME Arc, the aircraft must be within the shaded area.



RF Legs

AC 90-101A - RF Legs

AC 90-101A defines RF leg as "A constant radius circular path, around a defined turn center, that starts and terminates at a fix. An RF leg may be published as part of a procedure."

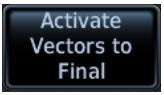
The unit supports radius-to-fix (RF) legs associated with RNAV RNP 1.0 non-AR approaches, when approved by the installation.

Flying a radius-to-fix approach is similar to flying a DME arc approach (status indications are identical).

Unlike DME arcs, however, RF legs are not based on a VOR. They may have varying radii, making them larger or smaller than arc legs.

For details regarding RF legs for specific aircraft, consult the AFMS.

Vectors to Final



Activating the approach with vectors to final displays an extension of the final approach course on Map.

Magenta depicts the active leg of the flight plan. CDI needle remains off center until you are established on the final approach course.

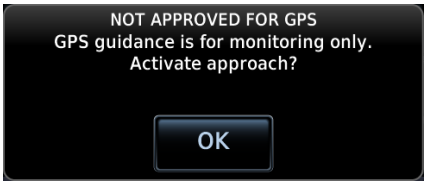
As a reminder, "vtf" annunciates as part of the active leg on the GPS Nav status bar.

Activating vectors-to-final while on the From side of the final approach fix suspends automatic waypoint sequencing. "SUSP" annunciates at the bottom of the screen. Sequencing resumes once the aircraft is on the To side of the final approach fix and within full-scale deflection.

ILS Approach

NOTE

ILS and LOC approaches are not approved for GPS. GPS guidance is for monitoring purposes only.



Selecting an ILS or LOC approach results in a pop-up message. Activate the approach or select a different one.

Do not attempt to use the unit as the primary navigation source during ILS approach.

RNAV Approaches

Always fly to the published minimums for:

- LNAV/VNAV
- LNAV
- LNAV+V
- LPV
- LP
- LP+V

Fly RNAV approaches according to the published chart.

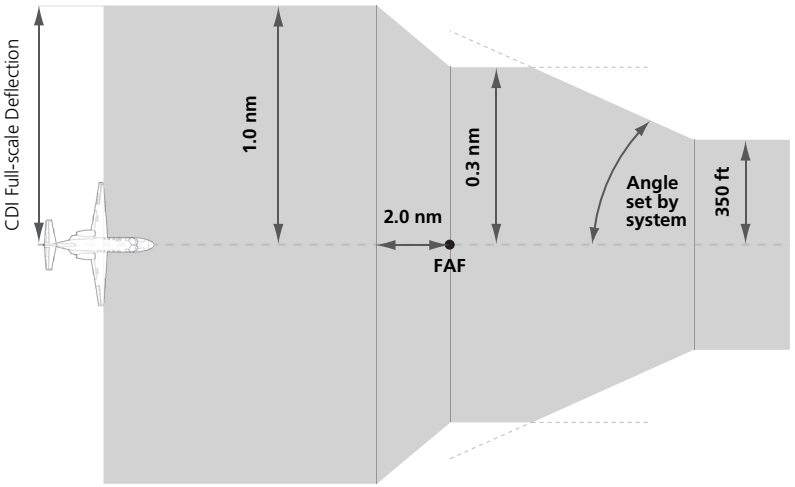
LNAV APPROACH

RNAV non-precision lateral navigation approach.

LNAV+V APPROACH

RNAV non-precision LNAV approach with advisory vertical guidance.

The glidepath is a light dashed line on the vertical profile (Jeppesen charts only) with an associated glidepath angle (usually in the 3.00 degree range) to assist in maintaining a constant vertical glidepath, similar to an ILS glideslope.



CDI scale varies when VTF is active.

LPV APPROACH

Localizer performance with vertical guidance. Similar to flying the standard ILS approach.

This segment describes a typical LPV approach sequence and the necessary pilot actions.

Within 31 nm of destination:

- Mode switches from En Route to Terminal
- CDI scale transitions from 2.0 nm to 1.0 nm, full-scale deflection

Approaching initial approach fix:

- Waypoint message annunciates
- Time to Turn advisory annunciates and 10 second timer counts down as the distance approaches zero

Approaching final approach fix:

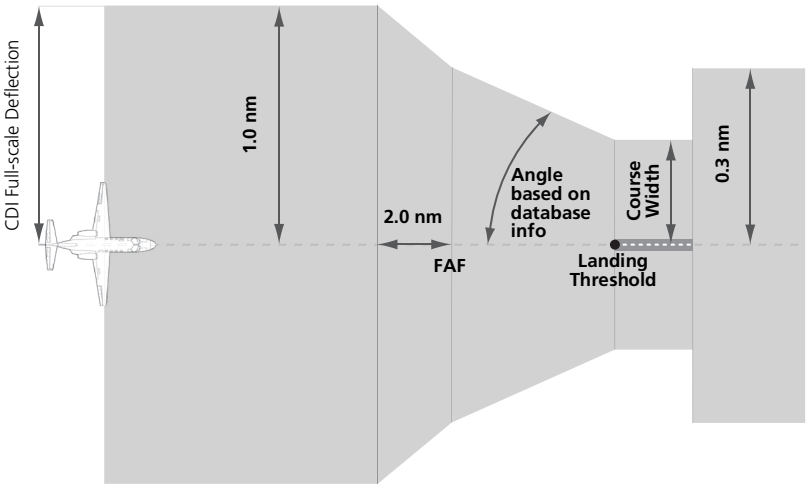
- Mode switches from Terminal to LPV

2.0 nm from final approach fix:

- CDI scaling tightens from 1 nm to the approach-defined angular full-scale deflection

60 seconds before final approach fix:

- System verifies GPS position integrity is within approach limits



CDI scale varies when VTF is active.

If GPS integrity exceeds the horizontal and/or vertical alarm limits:

- Approach downgrades to non-precision
- "LNAV" annunciates on Map to inform of the change if there are LNAV minimums for the approach
- Advisory message: "GPS approach downgraded. Use LNAV minima."
- Glideslope indication disappears
- Pilot continues approach using LNAV non-precision minimums, if applicable

If GPS integrity does not meet the non-precision horizontal alarm limits:

- Advisory message: "Abort Approach. GPS approach is no longer available."
- Pilot acknowledges message
- Unit reverts to terminal limits of 1 nm to support navigation to the missed approach

When crossing the final approach fix:

- Waypoint sequences to the missed approach point (e.g., RW31, the runway threshold)
- Pilot flies toward missed approach point, keeping the needle on the external CDI (or HSI) at center, and observing published altitude minimums
- Final course segment becomes the active flight plan leg on Map

After the aircraft passes final approach fix:

- Pilot captures the glidepath (method is same as for ILS glideslope)

Approaching missed approach point:

- Advisory message: "Arriving at Waypoint."

Crossing missed approach point:

- Sequencing suspends
- Pop-up message: "Missed Approach Waypoint Reached"
- Pilot decides whether to remain suspended or activate the missed approach
    - Tapping **Remain Suspended** allows you to continue with sequencing suspended
    - Tapping **Activate GPS Missed Approach** allows you to continue with guidance to the missed approach hold point

Prepare aircraft for missed approach operation:

- Pilot taps **UNSUSP** (sequences missed approach), then follows the unit provided guidance to the missed approach hold point and holds

LP APPROACH

Points About LP Approaches

- Use SBAS accuracy, making them similar to an LNAV approach but more precise
- Combine the lateral accuracy of an LPV approach with the angular scaling of a localizer approach
- Often contain step-down altitudes
- Always result in a minimum descent altitude and missed approach point

This segment describes a typical LP approach sequence and the necessary pilot actions.

Within 30 nm of destination:

- Mode switches from En Route to Terminal
- CDI scale transitions from 2.0 nm to 1.0 nm, full-scale deflection

Approaching initial approach fix:

- Turn direction message annunciates
- Time to Turn advisory annunciates and 10 second timer counts down as the distance approaches zero

Approaching final approach fix:

- Unit begins to automatically rescale in an angular fashion, allowing you to fly as you would a standard localizer approach

2.0 nm from final approach fix:

- CDI scaling tightens from 2 degrees or 0.3 nm full-scale deflection, whichever is smaller

60 seconds before final approach fix:

- System verifies GPS position integrity is within the horizontal limits to complete the LP non-precision approach

If pilot exceeds the horizontal alarm limits:

- Approach downgrades to non-precision
- "LNAV" annunciates on Map to inform of the change
- Advisory message: "GPS approach downgraded. Use LNAV minima."
- Pilot continues approach using LNAV non-precision minimums, if applicable

If GPS integrity does not meet the non-precision horizontal alarm limits:

- Advisory message: "Abort Approach. GPS approach is no longer available."
- Pilot acknowledges message
- Unit reverts to terminal limits of 1 nm to support navigation to the missed approach

If the approach indicates "LP+V," then advisory vertical guidance may be removed without annunciation. This is due to the vertical guidance not being within tolerances.

This does not constitute a downgrade. You may still fly the approach to LP minimums.

Flying an LP approach with advisory vertical guidance (LP+V) does not change how the approach should be flown. The pilot is still responsible for descending to the correct altitude at each step down.

The result is still an MDA and missed approach point.

When crossing the final approach fix:

- Waypoint sequences to the missed approach point (e.g., RW31, the runway threshold)
- Pilot flies toward missed approach point, keeping the needle on the external CDI (or HSI) at center, observing published altitude minimums
- Final course segment becomes the active flight plan leg on Map

Approaching missed approach point:

- Advisory message: "Arriving at Waypoint."

Crossing missed approach point:

- Sequencing suspends
- Pop-up message: "Missed Approach Waypoint Reached"
- Pilot decides whether to remain suspended or activate the missed approach
    - Tapping **Remain Suspended** allows you to continue with sequencing suspended
    - Tapping **Activate GPS Missed Approach** allows you to continue with guidance to the missed approach hold point

Prepare aircraft for missed approach operation:

- Pilot taps **UNSUSP** (sequences missed approach)

NOTE: For missed approaches with heading legs, fly manually until you reach the first active course leg.

- Pilot follows the unit provided guidance to the missed approach hold point and holds

Visual Approach

Points About Visual Approaches

- Provide advisory horizontal and optional vertical guidance for the selected runway
- Lateral guidance is always provided for visual approaches
- Helps stabilize the runway approach
- Three methods for loading and activation

FEATURE REQUIREMENTS

- *Valid terrain database*

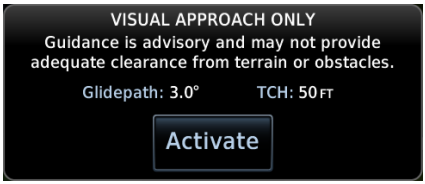
FEATURE LIMITATIONS

- *Not all airports in the database support visual approaches*

Published data is used to determine the visual approach GPA and threshold crossing height (TCH) for the selected runway. If no published data is available, the default is 3 degrees GPA and 50 ft TCH.

You may load and activate a visual approach from the following apps.

- Map
- Procedures
- Waypoint Info



Upon loading the visual approach, a pop-up informs when vertical guidance is available.

If available, the pop-up contains the glidepath angle (GPA) and threshold crossing (TCH).

If unavailable, it reads: "NO VERTICAL GUIDANCE"

Terrain and obstacle obstructions along the approach path determine the availability of vertical guidance advisories for visual approaches.

- If no known obstructions are within the approach path, vertical guidance is provided to a maximum distance of 28 nm from the runway.
- If there are known obstructions further than 3 nm, but within the 28 nm maximum distance from the runway along the approach, vertical guidance is limited to the approach path after crossing the known obstructions. After loading the approach, a shortened magenta line shows on the map.

If obstructions are within 3 nm to the runway, along the approach path, advisory vertical guidance is not available.

LOAD A VISUAL APPROACH FROM MAP

When the aircraft is within 10 nm of the destination airport, the **Visual Approach** selector key becomes active. This key may appear in one of two places:

On the map or at the left of the screen if the supporting airport is selected.

1. Select the airport icon.
2. Tap **Visual**.
3. Select from the list of available visual approaches.

Once selected, the visual approach immediately loads and activates.

For more about **Visual Approach** key configuration, refer to *Map Setup*.

LOAD A VISUAL APPROACH FROM PROCEDURES

Two methods:

Home > **PROC** > **Approach**

OR

Home > **Waypoint Info** > **Airport** > **PROC** > Select an approach (similar to published instrument approaches)

Autopilot Outputs

CAUTION

Engage the autopilot heading mode and set the heading bug appropriately to use the autopilot on heading legs using the autopilot's NAV, GPSS, or APR mode. Not all autopilots follow guidance on these leg types, Some revert to a roll only or wings level mode.

FEATURE REQUIREMENTS

- *Availability dependent upon configuration*

FEATURE LIMITATIONS

- *Applicable to King KAP 140 and KFC 225 autopilots*

Outputs for the King KAP 10/KFC 225 autopilot units require manual activation.

APR Guidance Advisory, GTN 650Xi

If configured, this function prompts you to enable autopilot outputs during the approach procedure.

Once enabled, the unit provides guidance information consistent with what the autopilot expects (i.e., angular CDI scaling and glideslope capture for LPV or other vertically guided GPS approaches).

ENABLE AUTOPILOT OUTPUTS

1. Acknowledge the advisory message.
2. Tap **Enable APR Output**.
3. Follow the unit provided guidance.