Apollo 820
Flybuddy GPS

Pilot's Operating Manual

II Morrow Inc.
2345 Turner Road SE
PO Box 13549
Salem, Oregon 97309

October 1991

Revision 0
560-0067

II MORROW INC.
Limited Warranty
(Avionic Products)

1. Scope of Limited Warranty

II Morrow warrants to the original consumer purchaser that II Morrow products will be free of defects in materials and workmanship, under normal use, for the periods described below. The warranty begins on the original retail delivery date, or on the date of first use, whichever occurs earlier. Avionic receivers are covered for 26 months after delivery or first use, whichever is earlier. Antennas and antenna preamplifiers are covered for a period of 12 months after delivery or first use, whichever is earlier. This warranty shall be effective only if and when (i) II Morrow receives a completed warranty registration card with respect to the specific product unit found to be defective; (ii) the unit was installed by personnel certified by the FAA to install avionic equipment and copy of FAA Form 337 documenting the installation is provided to II Morrow (except for homebuilts); (iii) II Morrow receives notice of such defect during the period of the warranty; and (iv) the consumer purchases the unit in the United States or Canada. (II Morrow's sole and exclusive liability for breach of warranty shall be (at II Morrow's option) to repair or replace the defective II Morrow products or return the purchase price for any defective products that are returned during the warranty period. II Morrow products repaired or replaced under this warranty are subsequently warranted only for the remaining, unexpired portion of the warranty period applicable to the original product. If II Morrow elects to repair or replace the product, II Morrow shall have a reasonable time to do so.

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TO THE EXTENT ALLOWED BY LAW, ANY IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE APPLICABLE TO II MORROW PRODUCTS ARE LIMITED IN DURATION TO THE DURATION OF THESE WRITTEN WARRANTIES. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.

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4.Limitation of Warranty

The foregoing warranty shall not apply to defects resulting from (a) improper or inadequate maintenance; (b) unauthorized modification of the products; (c) operation of the products outside of their environmental specifications; (d) improper installation; (e) neglect, misuse or abuse of the products; (f) integration with other products not covered by a II Morrow warranty; or (g) exposure to corrosive environments. This warranty shall not apply to any products not manufactured by II Morrow. No one is authorized to change or add to this warranty.

5.Technical Assistance

The warranty set forth above shall not be enlarged, diminished or affected by, and no obligation or liability shall arise from II Morrow, any authorized dealer or any other person rendering of technical advice, assistance or service in connection with the selection, purchase or use of any II Morrow products.

6.Installation

II Morrow makes no warranty with respect to any installation of II Morrow products by II Morrow, any authorized dealer or any other person.

7.Other Rights

This warranty gives you specific legal rights. You may also have other rights which vary from state to state.

8.Place of Repair or Replacement

In order to obtain the benefits of this warranty, the defective II Morrow products must be returned to II Morrow at its plant at 2345 Turner Road, S.E., Salem, Oregon 97302, II Morrow Service Center, or to an authorized dealer, with transportation charges prepaid. II Morrow shall pay for the return of the repaired or replaced II Morrow products to you by surface transportation.

Effective September 1988

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Canada 1-800-654-3415

East Coast Service Center
8373 Piney Orchard Parkway, Suite 203
Odenton, MD 21113
(301) 674-6050 or 1-800-831-6050

Southeast Service Center
102 South 22nd St.
Tampa, FL 33605
(813) 247-4912 or 1-800-622-2723

Caution

The Flybuddy GPS is a powerful navigation tool, but you should never rely solely on any one piece of navigation equipment. It's important to maintain a constant awareness of the navigation picture by using all appropriate resources.

Your new receiver should be installed only by an FAA certified facility. Each installation is unique, and there are several variables and cautions that an installer must deal with for you to get the maximum benefit from your Flybuddy.

HISTORY OF REVISION

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Manual Revision	Software Version	
0	1.0	October 1991

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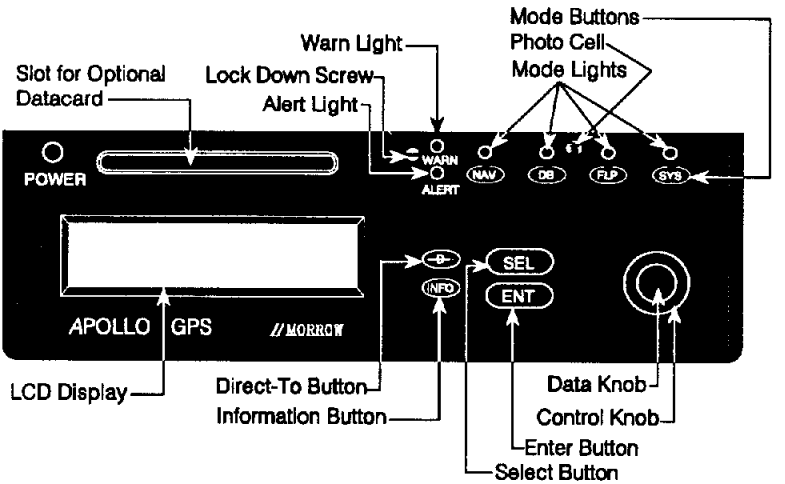
Displays, Lights, and Controls



Power Switch

Push on/pull off power switch.

LCD Display

The display, which uses the latest LCD technology, is comprised of two lines with 16 characters per line. An example of a NAV (navigation) mode display showing the estimated time enroute (ete), ground speed, and distance to the waypoint "SNA", is depicted below.

```
ete SNA      1:32
 214kts     328nm
```

Knobs

Control knob - The Control (large) knob has two functions. First, it is used to change pages (displays).

Second, after [SEL] is pressed, editing is active. The Control knob is then used to move the cursor. The cursor is a horizontal line appearing at the bottom of a character position when you're editing (altering) a display. To move the cursor to the right, turn the Control knob clockwise (cw). To move the cursor to the left, turn the control knob counterclockwise (ccw).

Data knob - The Data (small) knob has two functions. First, it is used to display sub pages of the page displayed with the Control (large) knob. For example, if the User database is displayed with the Control knob, turning the Data knob displays pages pertaining to User waypoints.

Second, after [SEL] is pressed, editing is active. The Data knob is then used to select characters on the display. When the cursor is under a character space, the available characters are displayed by turning the Data knob in either direction.

Buttons

[—D→] (Direct-To) - Press this button to navigate from your present position directly to a waypoint.

[INFO] (Information) - Press this button to obtain information on the displayed waypoint. Anytime the unit is in NAV mode, pressing INFO displays information on the current To waypoint. Turning the Data knob displays the various information pages.

You may enter your own information on User waypoints. For example, if you have created a waypoint at a private airport, you could include the following information-- "POWER LINES AT NRTH END OF RNWY." Press INFO again to exit the function.

[SEL] (Select) - Press this button to edit displays. A cursor appears under the character to be changed. For example, when the unit is in DB (Database) mode, pressing SEL causes the cursor to appear beneath the first character in the displayed waypoint. A new character may then be selected with the Data knob.

[ENT] (Enter) - Press this button to enter displayed data. For example, when changing the date and time, pressing ENT enters the displayed UTC Date and Time. Anytime a display is changed or edited, ENT must be pressed to save the changes. If ENT is not pressed, the changes will not be saved.

[NAV] [DB] [FPL] [SYS] Press the appropriate button to place the unit in the desired mode.

Multi-Purpose Controls

Each button and knob is designed to serve more than one function, which keeps the number of controls on the unit to a minimum. Fewer buttons make it easier to press the correct button when flying in turbulence.

Pressing [SEL] twice

The SEL button is used to enable editing, and if pressed a second time, disables editing. Therefore, if you're editing, and you decide you do not want to enter the changes you've made, press SEL again.

Changing modes also allows you to exit editing without entering any changes.

Pressing [NAV] twice

Since the Nearest Waypoint Listing is a feature you may want to use in the event of an emergency, it is important to remember that no matter what mode you are in, pressing the NAV button twice activates the Nearest Waypoint Listing. If you are in NAV mode, pressing NAV once activates the feature. The Data knob is then turned to display the nearest waypoint displays.

In an Emergency

If you want to fly to the displayed nearest waypoint, Press [D→] and then [ENT] to set up a new course direct from your present position.

If your purpose in looking at the nearest waypoints was only for information, rotate the Control (large) knob, or press a different mode button to exit the feature.

Hint

One way to exit any function is to change modes.

Pressing [ENT] when in NAV mode

The ENT button is used to enter changes after editing. When in NAV mode, pressing ENT activates Auto Nav Scroll. Pressing any button or turning any knob deactivates the feature.

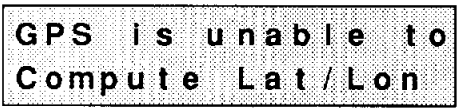
Pressing [DB] or [FPL] or [SYS] twice

Pressing one of these buttons the first time places the unit in the desired mode. The displayed page is the page that was displayed the last time the unit was in that mode.

Pressing the same mode button a second time displays the first page in the mode. Exception: If the WARN or ALERT light is on, the appropriate message is always displayed first when the SYS button is pressed.

Lights

- **WARN (warn light)** - This light flashes when the GPS signal quality or strength is insufficient to compute a position. Once the pilot has pushed the SYS mode button and viewed the WARN message, the WARN light stops flashing and stays on. If a new warning is generated, the light flashes again. Navigation information is NOT reliable when the WARN light is on or flashing. The WARN light is normally on for a minute or more after the power is turned on. During this time the unit is acquiring satellite signals. Below is an example of the warning message that appears while the unit is searching for the satellites after power-up.



See Basic Concepts, *Warn Displays* (page B - 17) for details concerning Warn messages.

- **ALERT** (alert light) - This light flashes to alert you of important information. The alert is generated when you arrive at a waypoint, or the countdown timer expires. Once you view the alert in SYS mode, the ALERT light stops flashing and remains on.

If a new alert is generated, the light flashes again. Some alerts cancel automatically. For example, after you have passed your arrival waypoint, the arrival alert cancels even if you have not viewed the alert display.

Below is an example of an alert message that appears when you arrive at your To waypoint. This alert clears automatically after you pass the waypoint.

Mode Lights - The light above a mode button is on to indicate the unit is in that mode.

Modes

Flybuddy has four operating modes--NAV (Navigation), DB (Database), FPL (Flight Plan), and SYS (System). To enter a mode, press the button with the mode name on it. The light above the button illuminates to indicate which mode the unit is in.

NAV (Navigation) mode:
Used to display navigation information, such as bearing and distance to your destination.

DB (Database) mode:
Used to access airports, VORs, and user created waypoints. Additional database information is available with an optional data card.

FPL (Flight Plan) mode:
Used to store and access specific routes of flight with up to 10 legs (11 waypoints).

SYS (System) mode:
Used to make certain selections and settings in the unit, such as starting the countdown timer, and customizing NAV (Navigation) displays. SYS mode is also used to display GPS signal information.

Notes

How To Use This Manual

The Action (left) column depicts the steps involved in each procedure. This column can be used by itself as a quick reference for pilots already familiar with the unit. The Explanation (right) column contains an explanation of each step, and a sample of the LCD display that results after completing the step.

Depicts the mode the unit is in after completing the step. In this example, the unit is in DB (Database) mode.

Action	Explanation
1. 	The unit is in DB mode. Turn the Control knob to display the user database.

In this example the action is, "Press the DB button, then turn the Control knob either direction."

DB

```
HELENS  46°11.97N
user   122°11.05W
```

Display Example

Notes

Operating Logic

Once you understand the basic logic used in operating Flybuddy, the steps involved in a procedure are generally self-evident, and there is no need to memorize them. There are only a few simple processes you must understand.

Hint

Don't be timid when you're learning to use the unit. You cannot hurt it by pressing or turning incorrect combinations of buttons and knobs. You cannot change any of the information contained in the airport or VOR data base, or on the optional database card.

Pages

Each display that appears on the unit is called a "page". Some pages may only be viewed; you cannot input anything into the unit when these pages are displayed. Other pages allow input from you. For example, a page depicting a leg in a flight plan allows input, i.e. you can change the leg to a different leg, delete the leg, or insert a new leg.

Displaying a Page

This three-step process is used to enter a specific mode and display a specific page.

1. Press [NAV] or [DB] or [FPL] or [SYS]

2. Turn  to display the desired page.

3. - Turn  to display sub pages pertaining to the page selected with the Control (large) knob. Some pages don't have sub pages that pertain; in which case, turning the Data knob has no effect.

Editing

Any piece of navigation equipment must allow for your input. For example, a VOR receiver allows you to enter a frequency and a radial. Likewise, Flybuddy allows you to input certain items, such as your route of flight and your destination. With the Flybuddy GPS, your input is allowed by changing something on a page. For example, you may alter the page showing your route of flight. This process of changing what you see on a display is known as "editing." No matter what you're editing, the same process applies.

1. - Display the page to be edited.

2. - Press [SEL] to activate editing. The cursor appears.

3 - Turn  to move the cursor under the character to be changed.

4 - Turn  to display the desired character. If necessary, repeat the third and fourth step to change other characters on the page.

5 - Press [ENT] to enter the change.

Searching Databases

Any page in any of the databases (including data from the optional datacards) may be displayed by entering DB mode, turning the Control knob to display the desired database, and turning the Data knob to display the desired page. The internal Airport and VOR databases contain over 13,000 waypoints. Normally, it isn't practical to turn the Data knob to display the desired waypoint, as there are too many waypoints to scroll through. The Search feature allows you to input the desired waypoint identifier, and have the unit automatically locate and display the waypoint (see page N-7).

1. - Press DB

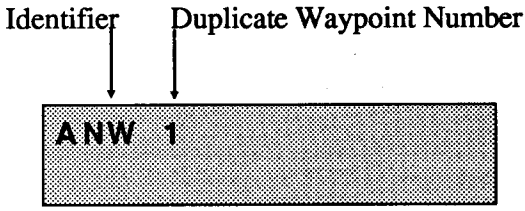
2. - Turn  to display the desired DB.

3. - Press SEL to activate the Search feature. This causes the cursor to appear. You may now edit the waypoint identifier using the same process described in the previous topic, *Editing*. The unit automatically locates and displays the waypoint.

Exception: When displaying the User database, pressing SEL the first time activates editing (altering) the waypoint; for example, you may change the identifier and/or the latitude/longitude. Pressing SEL the second time activates the Search feature. Since you cannot change any waypoints except in the User database, the Search feature is activated the first time SEL is pressed in all databases except the User database.

Duplicate Waypoints

If more than one waypoint exists with the same identifier, a "duplicate waypoint number" will appear next to the end of the identifier to force unique idents. Using the control knob, move the cursor to the duplicate waypoint number. Next, use the Data knob to choose the desired waypoint. Waypoint INFO may be used to help choose between duplicate waypoints.



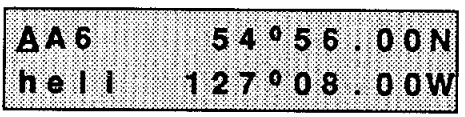
In all cases, the number of duplicates will follow the identifier. However, the above display will vary depending on which mode you are in. For additional information and examples of duplicate waypoints, please refer to the following pages:

Duplicate waypoints in Database Mode Page N-9
Duplicate waypoints in City Search Page N-12
Duplicate waypoints in Flight Plan Mode Page N-20

Searching By City Name

Searching by city name is only possible with the datacard option. The DB mode display shown below is used to search by city name in the heli (Heliport) database. You may search by city name only in the Airport, Seabase, and Heliport databases. The top line of the display below shows the identifier (AA6), the database (heli), the state or providence (BC--British Columbia), and the country (CAN--Canada). The city name appears on the bottom line. Pressing SEL (i.e. activating the Search feature) causes the cursor to appear under the city name. You may then edit the city name to display waypoints in that city. If "dup" appears in place of the database name, then there are two or more waypoints in the database with that city name. Turn the Data knob to display the other waypoints associated with the city (see page N-11 for additional information).

In contrast, the display below is used to search by identifier. Pressing SEL causes the cursor to appear under the identifier.



Notes

Warn Displays

The following displays may appear when the WARN light is on. Warn messages may be viewed in SYS Mode by turning the Data knob. After Warn messages are displayed, the WARN light stops flashing until a new Warn condition exists. The WARN light remains lighted as long as there is a Warn condition. Some Warn displays automatically clear when the Warn condition is remedied, while others are cleared when viewed. For more information on the WARN light, see Basic Concepts, *Displays, Lights, and Controls* (page B - 5).

The display below only appears when the WARN light is on or flashing, and more than one WARN message is available.

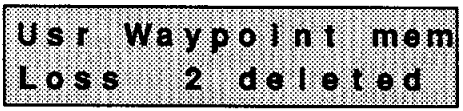
```
2 Warn Messages
turn Small knob
```

GPS Receiver Warn Messages

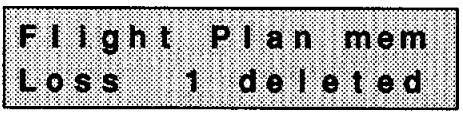
The display below warns that the Flybuddy GPS is acquiring satellite signals after power on. If the warn condition does not go away after 2-3 minutes, it may indicate a problem with the installation or receiver.

```
GPS is unable to
Compute Lat/Lon
```

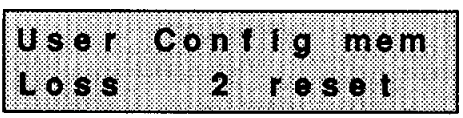
The display below indicates a checksum error in the User database. When a checksum error is detected, the displayed number of affected User waypoints are deleted. Flybuddy searches for errors each time the unit is turned on. The warning clears after the message is displayed.



The display below indicates one or more flight plans had a checksum error. When an error is detected, the displayed number of affected flight plans are deleted. The warning clears after the message is displayed.



The display below indicates one or more settings adjusted by the pilot in SYS Mode are not within valid limits. When an error is detected, the affected settings are automatically reset to the default factory values. The display indicates how many settings were reset. Flybuddy checks the settings each time the unit is turned on. The warning clears after the message is displayed.

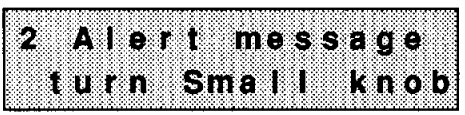


The display below indicates the GPS sensor has failed, and the unit must be returned for servicing. This display will not clear without servicing.

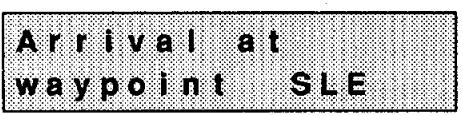
Alert Messages

The following displays may appear when the ALERT light is on. Alert messages may be viewed in SYS mode. After Alert messages are displayed, the ALERT light stops flashing until a new Alert is generated. For more information on the Alert light, see Basic Concepts, *Displays, Lights, and Controls* (page B - 5).

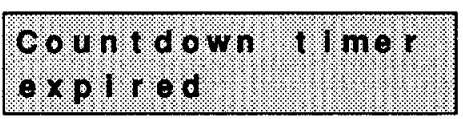
The display below indicates the number of Alert messages. Turn the Data knob to display Alert messages. This display remains until Alert messages have been cleared.



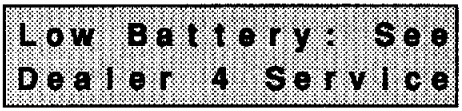
The display below indicates the aircraft is within the arrival radius of the TO waypoint. The alert automatically clears when viewed.



The display below indicates the countdown timer is at 00:00:00. The alert clears after the message is displayed.



The display below indicates the internal battery used for memory backup is low, and needs to be replaced. Flybuddy must be returned for servicing to replace the battery before memory is lost. The alert message clears when the battery is replaced.



If an Apollo Altitude Encoder or Converter is interfaced to the Flybuddy GPS, and it fails to during normal operation, the following ALERT will be generated. The unit will begin to use the manually entered altitude information to generate a position.

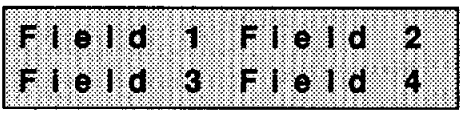
If the Flybuddy GPS installation does not include an Apollo Altitude Encoder or Converter, the following ALERT will be generated, reminding the pilot to periodically update the unit by entering the current altitude manually.

Display Fields

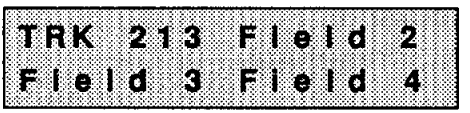
Flybuddy allows you to change (customize) the following 4 NAV displays:

- Track/CDI
- Bearing/Distance/Track/Ground Speed
- ETE/Ground Speed/Distance
- Desired Track/Distance/Flight Time/Bearing

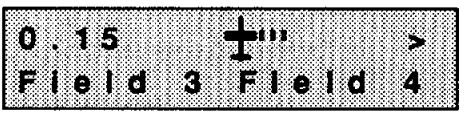
The Flybuddy display is divided into four 8 character fields.



Some NAV displays require one field, such as the Magnetic Track indicator. These displays may be placed in any of the four fields.



Some displays require 2 fields, such as the CDI. These displays require the entire top or bottom line.



The Lat/Lon, From/To/Next, Bearing/Distance/CDI, and Nearest Waypoint pages may not be customized.

For the procedure used to customize NAV displays, see System Mode, *NAV Mode Display Customizing* (page S - 33).

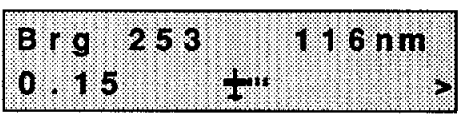
Notes

NAV Displays

In NAV mode, turning the Control knob displays the Nav pages depicted below. These are the default displays set at the factory. Displays listed as Custom may be customized (altered), and displays listed as Auto Nav may be included in the Auto Nav Scroll. For more information on Auto Nav Scroll, see Basic Concepts, *Auto Nav Scroll* (page B - 47). For more information on customizing NAV displays, see Basic Concepts, *NAV Display Fields* (page B - 21).

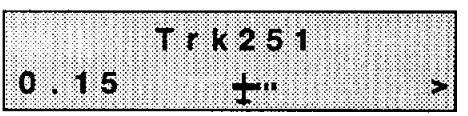
Bearing/Distance/CDI

Auto Nav



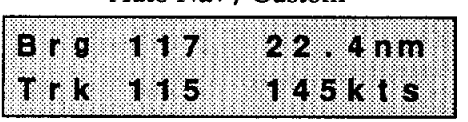
Track/CDI

Auto Nav / Custom



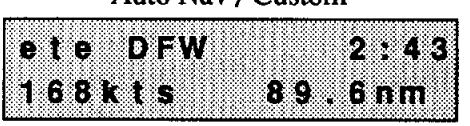
Bearing/Distance/Track/Ground Speed

Auto Nav / Custom



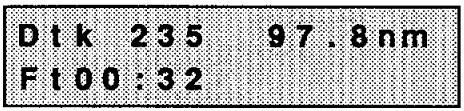
ETE/Ground Speed/Distance

Auto Nav / Custom

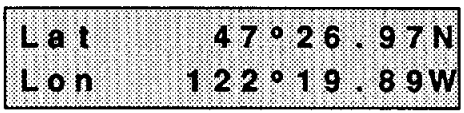


Desired Track/Distance/Flight Time

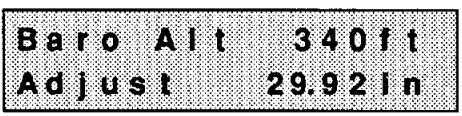
Auto Nav / Custom



Position (Latitude/Longitude)



Altitude (with Encoder)

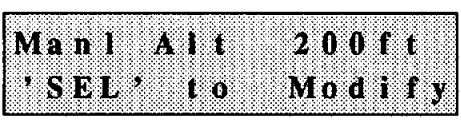


Or

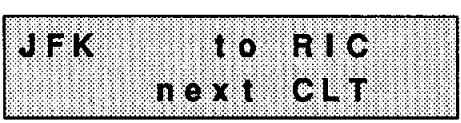
Altitude (No Encoder, 3D fix)

Or

Altitude (No Encoder, no 3D fix)

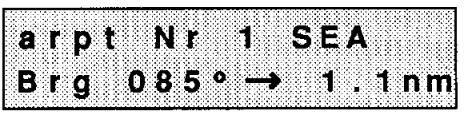


From/To/Next



Pressing the NAV button when already in NAV mode, or pressing the NAV button twice when in another mode, displays the Nearest Waypoint page.

Nearest Waypoint

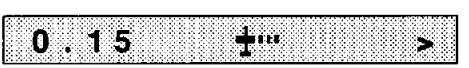


Interpreting NAV Displays

Individual NAV displays and NAV fields are depicted and explained below.

The Magnetic Bearing display. In the example, the Magnetic Bearing to the waypoint is 253 degrees.

Distance to the To Waypoint. In this example, the distance is 116 nautical miles.

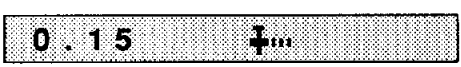


The CDI (Course Deviation Indicator) line. The dots to the side of the symbolic aircraft represent distance units the aircraft is off-course. The sensitivity of the CDI is adjustable. For the adjustment procedures, refer to System Mode, *Manually Adjusting CDI Sensitivity* (page S - 13).

When the default (factory) setting is in use, and the aircraft is off course 1 mile or more, the bar is 4 dots high, and each column of dots represents .25 nautical miles off course.

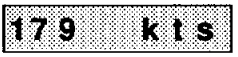
When the default (factory) setting is in use, and the aircraft is off course less than 1 mile, the bar is 2 dots high, and each column of dots represents .05 nautical miles off course. The CDI automatically become more sensitive when the aircraft is within 1 mile of the selected course. When manual sensitivity is in use, the bar is 2 dots high, and appears at the bottom of the Nav line instead of the middle of the line.

If the bar is to the right of the symbolic aircraft, the desired course is to the right. The number, in this example 0.15, defines the distance in nautical miles the aircraft is off course. This number appears on the opposite side from the CDI bar. The arrow located at the end of the line indicates the trend of the bar. In this example, the arrow points away from the center of the display; therefore, the bar is growing. When the arrow points towards the center of the display, the bar is shrinking, and the aircraft is moving towards the course line.



CDI From. When the final destination waypoint is reached, the Flybuddy GPS will change from TO to FROM operation. This is indicated in two ways. The "aircraft" symbol on the internal CDI display will invert (point upside down) to indicate FROM. Also, the output for an external TO/OFF/FROM/ flag will change to FROM.

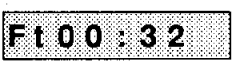
The Magnetic Track. In this example the track is 213 degrees.



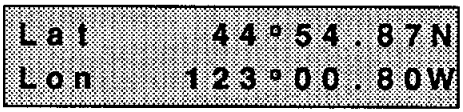
The Ground Speed display. In the example ground speed is 179 knots. Ground speed may be displayed in knots, miles per hour, or in kilometers per hour. For information on ground speed unit selection, refer to System Mode, *Ground Speed Selection* (page S - 17).

Estimated Time Enroute (ETE) to the To waypoint for the current leg. In the example the ETE to DFW is 2 hours, 43 minutes.

The Desired Track and Distance display. The display shows the desired track and distance between the From and To waypoints. The desired track is a magnetic bearing for the current leg, and is computed using the magnetic variation at the From waypoint. In the example the desired track is 235 degrees, and the distance between the waypoints is 97.8 nautical miles.



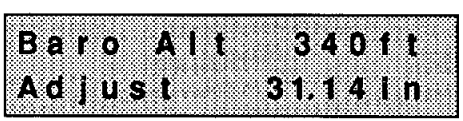
Elapsed Flight Time display. The display shows the elapsed flight time since departure. In the example the elapsed time is 0 hours, 32 minutes.



Latitude and Longitude display. The display shows the aircraft's present position coordinates. Note the numbers to the right of the decimal point represent hundredths of a minute, not seconds. In this example, the aircraft's position is 44 degrees, 54.87 minutes North latitude, and 123 degrees, 00.80 minutes West longitude. In the continental U.S. all longitudes are West (W), and all latitudes are North (N). This display may not be customized.

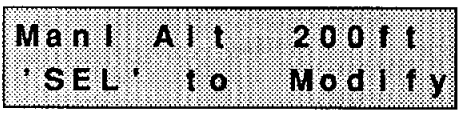
Altitude Display

One of three possible **Altitude Display Pages** (manual altitude, GPS altitude, and Barometric altitude) will be shown depending on whether an altitude encoder is provided and whether or not the unit has a 3D position fix.

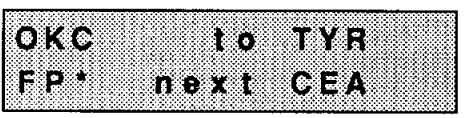


Barometric Altitude Display (with Encoder).
If an Apollo Altitude Encoder or Converter IS installed, this page will be displayed. The barometric pressure must be periodically updated to correct the barometric altitude used to compute an accurate GPS position. To set the barometric pressure, press the SEL button, then turn the Data knob to adjust the reading. If millibars is preferred over inches of mercury, turn the Control knob one click, then turn the Data knob to select the desired units. When completed with all editing on the page, press ENT.

GPS Altitude Display (no Encoder, 3D fix).
If an Apollo Altitude Encoder or Converter is not installed, and four or more satellites are being tracked (a 3D position fix) the Flybuddy GPS will compute a "GPS" altitude. The manual altitude display will then be continuously updated with this "GPS" altitude.



Manual Altitude Display (no Encoder, no 3D fix).
If an Apollo Altitude Encoder or Converter is NOT installed, this page will be displayed. By pressing the SEL button, the altitude may be adjusted (in 100ft. increments) using the Data knob and pressing ENT when completed. This altitude is necessary for an accurate GPS position when only three satellites are usable (2D position fix).

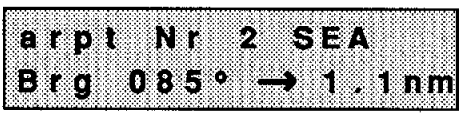


From/To/Next Waypoint Display. The top line shows the From and To identifiers for the current leg. In this example, the leg is from OKC (Will Rogers Airport) to TYR (Tyler Ponds Airport). The lower line displays the next waypoint after the current leg. In this example, the next waypoint is CEA. "FP*" only appears if a stored flight plan is active.

Nearest Waypoint Listing

When in NAV mode, pressing the NAV button activates the Nearest Waypoint Listing. The unit locates the 10 nearest airports in the airport database, the five nearest VORs, and the 5 nearest waypoints in the User database. With the datacard option, the 5 nearest NDBs are also located.

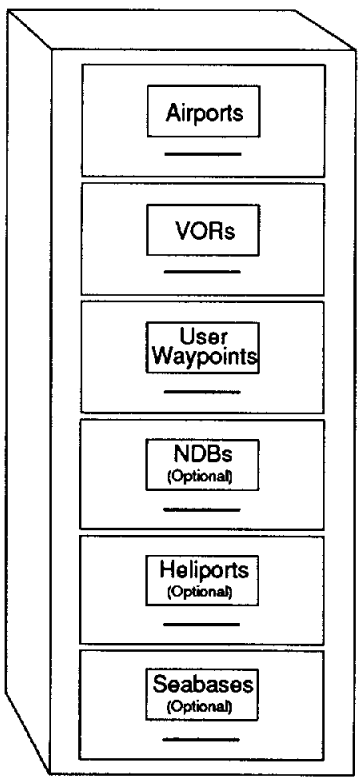
In the example below, "arpt" indicates the waypoint is stored in the airport database, and "Nr" indicates the Nearest Waypoint Listing is active. The "2" indicates the waypoint is the second closest waypoint to your location in the airport database. The waypoint identifier is SEA. The bearing, approximate relative bearing arrow, and distance are shown on the bottom line. Turn the Data (small) knob to scroll though the nearest waypoints. Turn the Control (large) knob or change modes to exit the Nearest Waypoint Listing. For more information, see Normal Procedures, *Navigating to a Nearest Waypoint (Emergency Search)* (page N - 1).



Databases

Your Flybuddy GPS has three internal databases--Airport, VORs and User. If your Flybuddy GPS was ordered with the datacard option, you have the choice of using the built-in databases, or plugging in one of the larger, pilot replaceable datacards. When a datacard is inserted, the internal databases are deactivated (except User), and the databases on the datacard take over (the internal databases are reactivated when the datacard is removed). The datacards include Airport, VOR, and NDB databases. The Airport and VOR databases are similar to the internal ones, but include more waypoint information (city names, runway lengths and frequencies).

It is useful to think of databases, both internal and on the datacard, as "drawers" in an electronic "file cabinet." Each drawer contains "folders," and each folder represents a waypoint, a specific location on the earth. The User database is the only database that allows you to change its contents. For a complete listing of the information available on datacards, refer to Basic Concepts, *Optional Datacards* (page B - 35).



User Database

When your new Flybuddy leaves the factory, the User Database is empty. You may create, remove, and edit (alter) waypoints in the User database. User waypoints may either be created at the location of the waypoint, or at some other location. When creating a User waypoint at the location of the waypoint, the correct position is automatically entered. If you're not at the location of the waypoint you want to create, you may enter latitude/longitude coordinates obtained from an aeronauticalf chart or some other source. Waypoints created at the location of the waypoint are generally slightly more accurate.

When you create a waypoint, it is automatically assigned a label (identifier). You may change the label and the latitude/longitude coordinates. You may also store and edit other information about the waypoint, such as "GOOD PLACE FOR LUNCH." The waypoints are sorted and stored alphanumerically.

Airport Database

This database (drawer) contains a "folder" for every public-use airport in the world. The folders are labeled and organized in alphanumeric order according to airport identifiers; however, Flybuddy automatically rearranges the order of the folders alphanumerically according to city name if you are searching for an airport by city name, rather than by identifier. Searching by city name is only possible with a datacard installed. Without the optional datacard, the only information in each of these folders is the bearing and distance from your present position, the latitude/longitude of the airport, and the fuel availability. The optional datacard provides additional information, including available runways and services; ATIS, Ground Control, and ILS frequencies.

VOR Database

This database (drawer) stores VORs. The internal database contains a "folder" for every VOR in the world. The folders are labeled and organized in alphanumeric order according to VOR identifiers. Each folder contains the bearing and distance from your present position to the VOR, and the latitude/longitude of the VOR. The optional datacard additionally provides VOR frequencies. You cannot change the contents of this database.

NDB Database

This database is only available with the optional datacard. It contains a "folder" for every NDB in the datacard region. The folders are labeled and organized in alphanumeric order according to NDB identifiers.

Each folder contains the latitude/longitude, City/State/Country, and the frequency of the NDB. You cannot change the contents of this database.

Heliport Database

This database is only available on some datacards covering the U.S. and Canada. The database contains a "folder" for every public-use heliport in the specified coverage area. The folders are labeled and organized in alphanumeric order according to heliport identifiers; however, Flybuddy automatically rearranges the order of the folders alphanumerically according to city name if you are searching for a heliport by city name, rather than by identifier. Each folder contains the bearing and distance from your present position to the heliport, the latitude/longitude of the heliport, and other information including elevation and frequencies. You cannot change the contents of this database.

Seabase Database

This database is only available on some datacards covering the U.S. The database contains a "folder" for every public-use seabase in the specified coverage area. The folders are labeled and organized in alphanumeric order according to seabase identifiers; however, Flybuddy automatically rearranges the order of the folders alphanumerically according to city name if you are searching for a seabase by city name, rather than by identifier. Each folder contains the bearing and distance from your present position to the seabase, the latitude/longitude of the seabase, and other information including elevation and frequencies. You cannot change the contents of this database.

Intersection Database

This database is only available on some datacards. It contains a "folder" for every intersection in the datacard region. The folders are labeled and organized in alphanumeric order according to intersection identifiers.

Each folder contains the latitude/longitude, and the City/State/Country, You cannot change the contents of this database.

Optional Datacards

Flybuddy GPS may be purchased with the datacard option, or the unit may be upgraded later. A unique feature of the Flybuddy datacard is "hot replacement". Datacards can be changed or removed without any interruption in navigation. For example, if the pilot flies beyond the bounds of his regional datacard, the datacard can be removed to allow navigation from the internal database. Datacards are inserted in the slot above the display. The unit may be powered-up either with or without the datacard inserted. When a datacard is removed and stored, be sure to keep it free from moisture, and dust.

Some of the available datacards include:

- North America (includes Continental USA, Canada, Mexico, Central America, and Caribbean)
- Western USA/Canada
- Central USA/Canada
- Eastern USA/Canada
- Europe/Mideast.
- Australia
- South America
- Africa
- Pacific

Supplemental information for each database is shown on the next two pages. To interpret INFO (information) displays, see Basic Concepts, *Interpreting Database Information*, page B - 37).

Notes

Interpreting Database Information

The following examples show how to interpret database information for each of the possible databases.

Refer to the following sections for more information.

A description of the differences between internal databases and the databases available on the optional datacards is described in, Basic Concepts, *Databases* (page B-31).

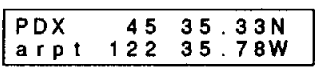
Displaying information on a waypoint, is described in Normal Procedures, *Displaying Waypoint Information* (page N - 13)

Entering information on a stored flight plan is described in Normal Procedures, *Entering INFO on a Flight Plan* (page N - 22).

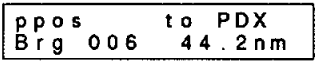
Entering information on User waypoints is described in Normal Procedures, *Entering/Editing INFO on a User Waypoint* (page N - 38).

Airport and Heliport Databases

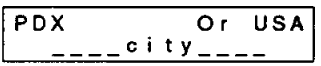
Information concerning airports may be displayed. In the examples below, the entire listing for the Portland International Airport (PDX) is shown. The Heliport database is only available on some datacards.



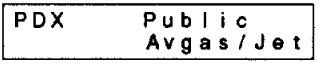
Airport identifier and Latitude
Airport database and Longitude



Present position to PDX
Bearing is 006° and Distance is 44.2nm



Airport , State and Country is Oregon, USA.
City name not available.



Airport is public use.
Avgas and Jet fuel available.

The following information is available only with an optional datacard installed.

PDX elev 27ft PORTLAND INTL	Airport Elevation is 27 ft. Airport name.
PDX OR USA PORTLAND	Airport State and Country is Oregon, USA. City is Portland.
PDX Public Avgas/Jet	Airport is public use. Avgas and Jet fuel available.
PDX 10R/28L Lit 11000ft Hard ILS	Runway 10R/28L is lit. Length is 11,000 ft, Hard surface, ILS.
PDX 10L/28R Lit 8000ft Hard ILS	Runway 10L/28R is lit. Length is 8000 ft, Hard surface, ILS.
PDX 02 /20 Lit 7000ft Hard LOC	Runway 02/20 is lighted. Length, Surface, Localizer.
PDX ATIS 128.35 UNIC 122.95	ATIS frequency Unicom frequency is 122.95.
PDX TWR 118.70 GRND 121.90	Tower frequency Ground Control frequency
PDX CLR 119.00 APPR 118.10	Clearance Delivery frequency Approach Control frequency
PDX APPR 126.90 APPR 133.00	Approach Control frequency is 126.90. Approach Control frequency is 133.00.
PDX DEP 118.10 DEP 133.00	Departure Control frequency is 118.10. Departure Control frequency is 118.10.

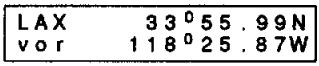
PDX ILS 109.90 Runway 10R	ILS frequency for Runway 10R is 109.90.
PDX ILS 111.30 Runway 28R	ILS frequency for Runway 28R is 111.30.
PDX LOC 108.90 Runway 20	Localizer frequency for Runway 20 is 108.90.

Another display that may appear in some listings is:

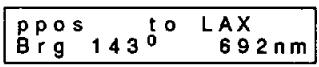
LA10 CTAF 122.90	Common Traffic Advisory Frequency is 122.90.

VOR Database

The following examples display information for the LAX VOR.



LAX Latitude
VOR database, Longitude

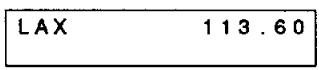


Present position to LAX
Bearing is 143° and Distance is 692 nm.

VOR, State and Country is California. U.S.A.
City name not available.

With one of the optional datacards, the city name and frequency is provided.

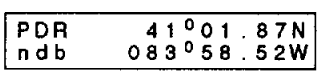
VOR State and Country is California, USA.
VOR City is Los Angeles.



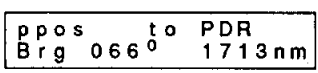
VOR frequency is 113.00

NDB Database

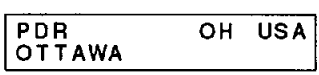
The NDB database is only available with an optional datacard installed. The following examples display information on the PDR NDB.



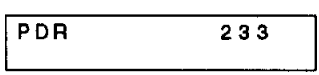
NDB identifier and Latitude.
NDB Database and Longitude.



Present position to PDR.
Bearing is 066° and Distance is 1713 nm.



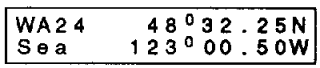
NDB State and Country is Ohio, USA.
NDB City is Ottawa.



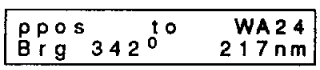
PDR frequency is 233.

Seabase Database

The Seabase database is only available on some datacards. The following examples display information on WA24 seabase.



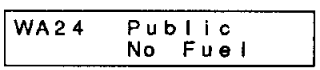
WA24 and Latitude.
Seabase database and longitude.



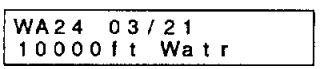
Present position to WA24.
Bearing is 342 and distance is 217nm.

Seabase Elevation is 0 ft.
Seabase Name is Friday Harbor.

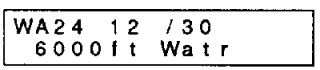
Seabase State and Country are Washington, USA.
Seabase city is Friday Harbor.



Seabase is public use.
No fuel is available



Runway 03/21 length is 10,000 ft, and has a water surface.

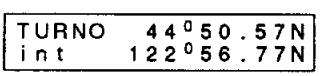


Runway 12/30 length is 6,000 ft, and has a water surface.

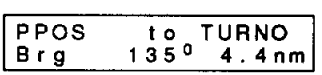
CTAF frequency is 122.80.

Intersection Database

The intersection database is only available on some datacards. The following examples display information on TURNO intersection.



TURNO Latitude
Intersection Database and Longitude



Present position to TURNO
Bearing is 135 and distance is 4.4nm

Notes

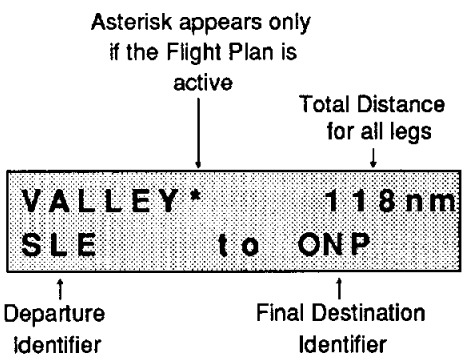
Flight Plans

Flight plans are specific routes you may store in Flybuddy's memory. Each flight plan may contain up to 10 legs (11 waypoints), and 10 flight plans may be stored.

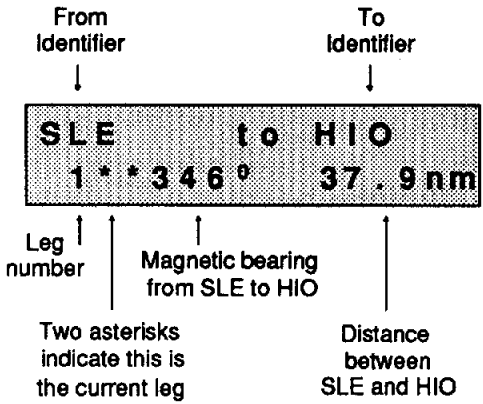
Flight plan identifiers and legs may be edited (altered). When 10 flight plans are stored, you must delete one of the existing flight plans to create a new flight plan.

The procedures pertaining to flight plans are described in Normal Procedures, *Flight Plans* (pages N - 15 through N - 32).

An example of a flight plan named VALLEY is depicted below.



An example of a leg of a flight plan is depicted below.



A status page shows the status of each flight plan.

The five status options are:

Active: Activates the flight plan.

Inactive: This deactivates the flight plan; however, the current leg remains in effect. This does not remove the flight plan from storage.

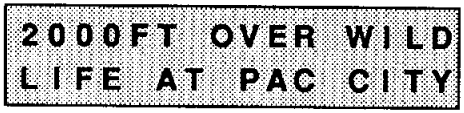
Hold: This prevents the sequencing of legs in a flight plan. When the status is changed to active, the legs again sequence.

Reverse: This reverses the order of the waypoints in the flight plan. Reverse status is not available when the flight plan is active or on hold.

Reverse/Active: This reverses the order of the waypoints in the flight plan, and activates the flight plan.

The From/To/Next NAV page shows the waypoints as they are used in the active flight plan.

For each flight plan, you may create and store a display containing information such as the one displayed below.



Notes

Auto Nav Scroll

This feature automatically displays each NAV (Navigation) page sequentially for a specified amount of time, from 1 to 9 seconds. Two NAV pages, the From/To/Next page and the position (latitude/longitude) page, are not included in Auto Nav scroll. To select the amount of time each page is displayed, please refer to SYS Mode, *Setting the Auto Nav Scroll Time* (page S - 31). Auto Nav scroll is started in NAV mode by pressing ENT.

Rotating either knob or pressing SEL or ENT stops Auto Nav Scroll.

Notes

First Flight

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First Flight

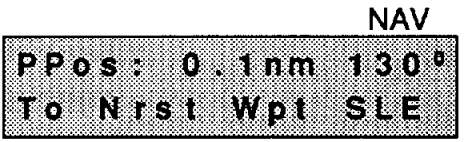
WARNING

Before routinely using Flybuddy in the air, you should be quite familiar with its operation. Federal Aviation Regulations require pilots to practice SEE AND AVOID. It is therefore critical you do NOT study this manual while flying. It is recommended your first flight be made during good weather in a low traffic area. It is important you understand at least the First Flight section before you fly.

Start-Up

This procedure is used to power-up your Flybuddy GPS and confirm your present position and time. If the correct present position and UTC Date and Time is already entered, go to the next procedure, *Direct Navigation* (page F - 5).

Action	Explanation
Push the power switch in.	After turning on the power, the Flybuddy GPS will briefly display a number of pages. These include password protected owner name (to discourage theft), and database description. There are two pages that must be verified and changed if necessary. Before the Flybuddy GPS can determine which satellites to use, it must first know its approximate location and UTC Date and Time.



The Flybuddy GPS will search its database for the nearest airport to its last known position. Usually, this will be the airport you are on. If it does not find an airport within 600 miles, it will just show the Lat/Lon of the last known position.

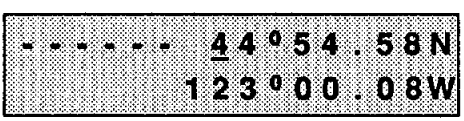
Initializing Start-Up Position

Action	Explanation
1. SEL	Pressing the SEL button will allow you to enter the present position. The two methods of getting a new position (entering a new Lat/Lon directly, or entering a new airport identifier) are described in steps 2a and 2b).

Entering Lat/Lon

2a. 

Turn the Data (small) knob to change the number with the flashing cursor.



Turn the Control (large) knob to move to the next numerical value of the Lat/Lon. Repeat the procedure until the Latitude and Longitude are correct.

```
------  40°00.00N
       098°00.00W
```

ENT

Press ENT to confirm the Lat/Lon

Entering Airport Identifier

2b. 

Turn the Control (large) knob counter clockwise one (1) position to display "chg".

Note: *see Duplicate Waypoint description on page B-14.*

```
Chg?   44°54.58N
      123°60.08W
```

ENT

Press ENT to proceed with Identifier change

```
AAP    29°43.33N
       095°35.29W
```

Using the Control and Data knobs, select the Identifier for your current location.

ENT ENT

Press ENT twice when the correct Identifier and Lat/Lon is displayed

Initializing Date or Time

NAV

```
Date: 01 NOV 91
Time: 22:01 UTC
```

1. SEL

If the date is incorrect or the time (UTC is Co-ordinated Universal Time, or Zulu) is off by more than a few minutes, then press SEL to begin correction.

2. 

Turn the Control (large) knob to select the field to be changed (day, month, year, hour, or minute).

3. 

Turn the Data (small) knob to change the selected field.

4. ENT

Press ENT when date and time are correct.

After the start-up sequence, the unit is in NAV mode, and the WARN light is flashing. The WARN light is normally on for one minute or more after power-up while the unit searches for the satellites.

NAV

```
Brg 182   86.4nm
0.15      +       >
```

Direct Navigation

This procedure is used to fly directly to a waypoint stored in the Airport (arpt), VOR, NDB, or User databases.

Warning
Be sure the WARN light is out before proceeding.

Action	Explanation
1. 	The unit is in NAV mode, and the Direct-To page is ready for waypoint entry. The cursor is under the first character in the waypoint identifier. The current database is shown in the lower-left corner.
Note: *see Duplicate Waypoint description on page B-14.*	NAV Enter Dir to Wpt arpt 00A
2. 	Turn the Control (large) knob to move the cursor under the database name. NAV Enter Dir to Wpt arpt 00A
3. 	Turn the Data (small) knob to display either the vor, ndb, arpt (airport), or user database. NAV Enter Dir to Wpt vor ABB

4. 

Turn the Control (large) knob to move the cursor under the first character in the waypoint identifier.

NAV

```
Enter Dir to Wpt
vor          ABB
```

5. 

Turn the Data (small) knob to select the first character in the waypoint identifier.

NAV

```
Enter Dir to Wpt
vor          DAG
```

6. Repeat steps 4 and 5 as required.

Select the remaining characters in the waypoint identifier.

NAV

```
Enter Dir to Wpt
vor          DLH
```

7. ENT

A direct course to the waypoint is entered. The Control knob is used to change NAV pages. See Basic Concepts--*Interpreting Nav Displays* (page B - 25) to interpret the navigation information.

NAV

```
Brg 182   86.4nm
0.15      +      >
```

Normal Procedures

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Navigating to a Nearest Waypoint (Emergency Search)

Flybuddy locates the ten nearest airports, 5 nearest VORs, and the 5 nearest user waypoints. With the datacard, the 5 nearest NDBs are also displayed.

Action	Explanation
1. NAV NAV	In NAV mode, press the Nav button again to activate the Nearest Waypoint Listing. The nearest airport is displayed. (To exit the Nearest Waypoint function without defining a course to one of the waypoints, turn the Control knob or change modes.)

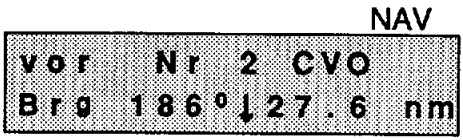
NAV

```
arpt Nr 1 SLE
Brg 096°→ 1.0 nm
```

2. 

Turn the Data knob to display the desired waypoint. Turning cw displays the 10 nearest airports first, beginning with the closest and ending with the most distant. Next, the 5 nearest VORs, and then the 5 nearest user waypoints are displayed. With the datacard installed, the 5 nearest NDBs are displayed after the VORs. Turning the knob ccw displays the waypoints in the opposite order, beginning with the most distant User waypoint and ending with the closest airport. If no user waypoints exist, they

will not be displayed. Only waypoints within 600 nm are displayed.

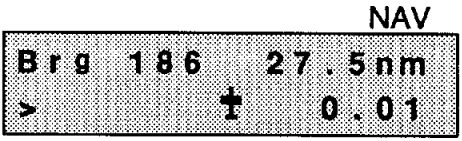


3. [→D←]

The page for entering the waypoint identifier appears. The editing function is active; however the selected waypoint identifier is already displayed. The Nearest Waypoint Listing is no longer active.

4. [ENT]

A direct course to the waypoint is entered.



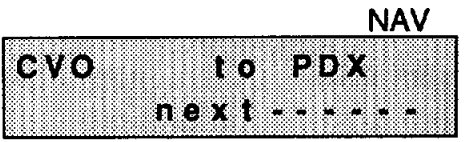
Hint

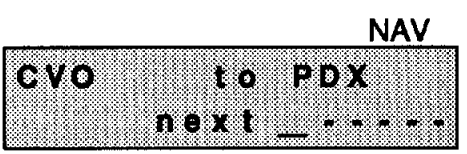
This feature is also useful when entering a new To waypoint that is near your location. There are fewer steps involved than if you begin by pressing the Direct-To button. Simply activate the Nearest Waypoint Listing, scroll to the desired waypoint, press the Direct-To button, and press ENT.

Using the From/To /Next NAV Page (Two Leg Flight)

This procedure is used to enter a waypoint stored in one of the databases as the From, To, or Next waypoint. In the sample displays shown in this procedure, a new From waypoint is entered. The same method is used to enter a new To or Next waypoint. The From/To/Next NAV page automatically displays the current leg when a Flight Plan is active.

Action	Explanation
1. NAV 	In NAV mode, turn the Control knob to display the From/To/Next page. The current From, To, and Next identifiers are displayed. Blank lines appear in spaces where there are currently no identifiers.
2. SEL	Pressing SEL activates the editing function.





3. 

Turn the Control knob to move the cursor under the desired identifier.

NAV

```
CVO      to PDX
      next ------
```

4. 

Turn the Data knob. The page allowing entry of the identifier appears. (If "direct" was the previous From waypoint identifier, question marks appear in place of the database name, and the cursor is under the question marks--in which case skip step 5.)

NAV

```
Enter From Wpt
arpt        CVO
```

5. 

Turn the Control knob to move the cursor under the database name.

NAV

```
Enter From Wpt
arpt        CVO
```

6. 

Turn the Data knob to display the desired database.

NAV

```
Enter From Wpt
vor         ABB
```

7. 

Turn the Control knob to move the cursor under the waypoint identifier.

NAV

```
Enter From Wpt
vor          ABB
```

8. 

Turn the Data knob to display the first character in the waypoint identifier. Turn the Control knob to move the cursor under the next character.

NAV

```
Enter From Wpt
vor          LAA
```

9. Repeat step 8.

ENT

Choose the remaining characters in the waypoint identifier. Press ENT to enter the waypoint.

NAV

```
LBL      to PDX
         next -----
```

Notes

Finding a Waypoint in DB Mode

These procedures are used to display a waypoint contained in one of the databases. After displaying the waypoint, pressing the INFO button displays information on the waypoint, or pressing the Direct-To button allows entry of the displayed waypoint as the To waypoint. When flying directly to a waypoint, it is *not* necessary to display the waypoint in DB mode. Instead, simply press the Direct-To button, regardless of what mode the unit is in, or what page is displayed.

Searching by Identifier

Waypoint identifiers are arranged in alphanumeric order.

Action	Explanation
1. DB 	In DB mode, turn the Control knob to display the desired Identifier Search database.
2. SEL	Pressing SEL activates the search function.

DB

ABB	38°35.33N
vor	85°38.16W

DB

ABB	Enter
vor	Ident

3. 

Turn the Data knob to display the first character in the waypoint identifier. Turn the Control knob to move the cursor under the next character.

DB

CAE	Enter
vor	Ident

4. Repeat step 3.

ENT

Choose the remaining characters in the identifier. Press ENT to activate the search. The waypoint is displayed.

DB

CBM	33°38.49N
vor	88°26.31W

Note

The small knob may also be used to scroll through all of the waypoints in the selected database in alphanumeric order; however, this is normally impractical due to the large size of the databases.

Duplicate Waypoints

If there is more than one waypoint with the same identifier, a "duplicate waypoint number" will appear at the end of the identifier to force "unique" idents. Compare the waypoint INFO to help choose the desired waypoint.

DB

```
ANW 1          Enter
aprt           Ident
```

Action	Explanation
1. INFO 	Push INFO and turn the Data knob to view waypoint information.

DB

```
ANW 1        NE USA
    ____city____
```

Action	Explanation
2. INFO 	Push INFO to return to the waypoint search display. Turn the Control knob to move the cursor to the duplicate waypoint number.

DB

```
ANW 1          Enter
aprt           Ident
```

3. 

Turn the Data knob to change to the next duplicate waypoint.

DB

```
ANW 2          Enter
aprt           Ident
```

4. INFO 

Push INFO and turn the Data knob to view waypoint information.

DB

```
ANW 2          Austrl
____city____
```

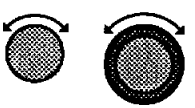
5. Repeat steps 3 & 4.

ENT

To display your desired waypoint, continue viewing the remaining duplicate waypoints. When you find the waypoint you want, press ENT.

Searching by City Name

Airports, Seabases, and Heliports may be displayed alphanumerically by city name.

Action	Explanation
1. DB 	In DB mode, turn the Control knob to display the desired City Search database.
	DB AB2 heli BC CAN ACTIVE PASS
2. SEL	Pressing SEL activates the search function.
	DB AB2 heli BC CAN ACTIVE PASS
3. 	Turn the Data knob to display the first character in the waypoint identifier. Turn the Control knob to move the cursor under the next character.
	DB 02B heli CT USA WALLINGFORD

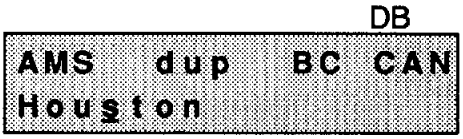
4. Repeat step 3.

ENT

Choose the remaining characters in the identifier. Press ENT to activate the search. The waypoint is displayed.

Duplicates

If more than one waypoint exists for a given city name, the database will change to "dup".



SEL

To select the desired city name, turn off the cursor by pressing SEL then turn the Data knob to scroll through the duplicates until you find the one you want.

Note

The Data knob may also be used to scroll through all of the waypoints in the selected database in alphanumeric order by city; however, this is normally impractical due to the large size of the databases.

Displaying Waypoint Information

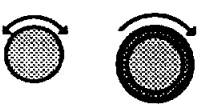
Action	Explanation
1. INFO 	In any mode, pressing INFO displays information about the displayed waypoint. Turning the Data knob scrolls through the Waypoint Information pages. For examples of waypoint information displays, see Basic Concepts, *Interpreting Database Information* (page B - 37)

Notes

Flight Plans

Creating a Flight Plan

For more information on flight plans, see Basic Concepts, *Flight Plans*, (page B - 43).

Action	Explanation
1. FPL 	In FPL mode, turn the Control knob to display the page for naming a new flight plan. This page does not appear if the maximum of 10 flight plans already exist.
2. SEL	Pressing SEL displays the page for entering the flight plan name. The identifier may contain a maximum of six characters.
3. 	Turn the Data knob to display the first character in the name. Turn the Control knob to move the cursor to the next space.

FPL
Press 'SEL' to name flight plan

FPL
_ - - - - - Enter flight plan name

FPL
D _ - - - - Enter flight plan name

4. Repeat step 3.

ENT

Choose the remaining characters in the name. Press ENT to enter the flight plan name.

FPL

```
Press 'SEL' to
Input first wpt
```

5. SEL

Pressing SEL displays the page for entering the From identifier for the leg. The leg number and database name appear on the bottom line.

FPL

```
____
 1 arpt
```

6. 

If necessary, turn the Control knob to move the cursor under the database name.

FPL

```
____
 1 arpt
```

7. 

Turn the Data knob to display the desired database.

FPL

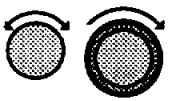
```
ABB
 1 vor
```

8. 

Turn the Control knob to move the cursor under the space for the first identifier character.

FPL

```
ABB
 1  vor
```

9. 

Turn the Data knob to display the desired character. Turn the Control knob to move the cursor to the next space.

FPL

```
PAE
 1  vor
```

10. Repeat step 9.

ENT

Choose the remaining characters in the identifier. Press ENT to enter the identifier as the From waypoint for the leg. The cursor moves to the space for the To identifier. The database for the To identifier appears on the bottom line, right.

FPL

```
PMD      to  ----
 1  vor        arpt
```

11. 

If necessary, turn the Control knob to move the cursor under the database name.

FPL
PMD to ----
1 vor arpt

12. 

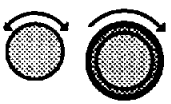
Turn the Data knob to display the database for the second waypoint.

FPL
PMD to BEND
1 vor user

13. 

Turn the Control knob to move the cursor under the identifier space.

FPL
PMD to BEND--
1 vor user

14. 

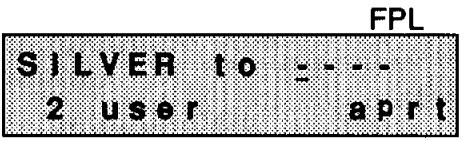
Turn the Data knob to display the first character in the identifier. Turn the Control knob to move the cursor under the next character.

FPL
PMD to SANDS
1 vor user

15. Repeat step 14.

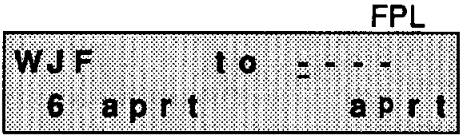
ENT

Choose the remaining characters in the identifier. Press ENT to enter the identifier in the flight plan. The cursor is under the character space for the waypoint in the second leg. The database for the identifier appears on the bottom line, right.



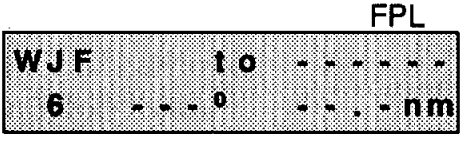
16. Repeat steps 11 - 15.

Choose the identifiers for the remaining legs. A maximum of 10 legs (11 waypoints) may be entered.



17. ENT

Pressing ENT without a To waypoint displayed for the leg, deactivates the editing function. The last waypoint chosen is the final destination for the flight plan.



18. 

Turn the Data knob to view the various legs, the main Flight Plan page, and the Status page. Leg four of the flight plan is depicted below.

FPL

```
PKE      to DAG
 4   286°   107nm
```

Duplicate Waypoints

If there is more than one waypoint with the same identifier, a "duplicate waypoint number" will appear at the end of the identifier to force "unique" idents. Compare the waypoint INFO to help choose the desired waypoint.

FPL

```
S30      to ANW  1
 1 arpt      arpt
```

Action	Explanation
1. INFO 	Push INFO and turn the Data knob to view waypoint information.

FLP

```
ANW 1        NE USA
   ____city____
```

2. INFO 

Push INFO to return to the waypoint search display. Turn the Control knob to move the cursor to the duplicate waypoint number.

FPL

```
S30      to ANW  1
 1 arpt      arpt
```

3. 

Turn the Data knob to change to the next duplicate waypoint.

4. INFO 

Push INFO and turn the Data knob to view waypoint information.

FPL

```
ANW 2       AUSTRL
    ____city____
```

5. Repeat steps 3 & 4.

To display your desired waypoint, continue viewing the remaining duplicate waypoints. When you find the waypoint you want, press ENT to enter the new leg.

Entering INFO on a Flight Plan

This procedure is used to enter information on a stored flight plan. Any desired changes can be made later using the same procedure.

	Action	Explanation
1.	FPL 	In FPL mode, turn the Control knob to display the desired flight plan.
2.	INFO	Press INFO to display the Plan Info page. The FPL light flashes while the INFO function is active.

FPL

```
COAST          172nm
AST     to OTH
```

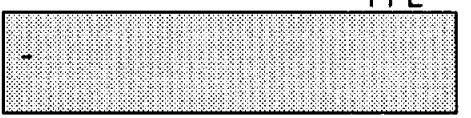
FPL

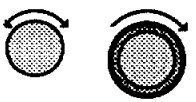
```
Plan Info: Press
 'SEL' to edit
```

3. SEL

Pressing SEL activates the editing function, causing a cursor to appear on an otherwise blank page.

FPL



4. 

Turn the Data knob to display the first character in the information to be entered. Turn the Control knob to move the cursor to the next space.

FPL

5. Repeat step 4.
ENT

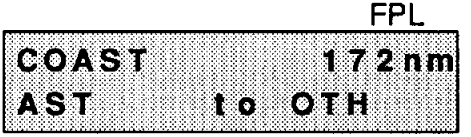
Choose the remaining characters in the information. Press ENT to store the information.

FPL

6. INFO

Press INFO to exit the information function. The FPL light stops flashing and remains on.

FPL



Editing a Flight Plan

Action	Explanation
1. FPL 	In FPL mode, turn the Control knob to display the Flight Plan to be changed.

FPL

```
ISLAND        83.6nm
BLI      to   S43
```

2. 	Turn the Data knob to display the leg to be edited.

FPL

```
S88        to  S43
 4   152°    15.3nm
```

3. SEL	Pressing SEL activates the editing function. The database for the From waypoint is displayed to the right of the leg number on the bottom line. The database for the To waypoint is display on the far right, bottom line.

FPL

```
S88        to  S43
 4  arpt        arpt
```

4. 

Turn the Control knob to move the cursor under the desired database name.

FPL
S88 to S43
4 arpt arpt

5. 

Turn the Data knob to display the desired database.

FPL
S88 to ABB
4 arpt vor

6. 

Turn the Control knob to move the cursor under the waypoint identifier.

FPL
S88 to ABB
4 arpt vor

7. 


Turn the Data knob to display the first character in the identifier. Turn the Control knob to move the cursor under the next character.

FPL
S88 to EAF
4 arpt vor

8. Repeat step 7.

ENT

Choose the remaining characters in the identifier. Press ENT to save the changes.

FPL

```
S88      to ELN
 4    114° 96.8nm
```

Deleting or Inserting a Waypoint

Action	Explanation

1. FPL 

In FPL mode, turn the Control knob to display the desired flight plan.

FPL

```
VALLEY      103nm
7S3      to 61S
```

2. 

Turn the Data knob to display the leg that is to be deleted or have a new waypoint inserted as the To waypoint.

FPL

```
S30      to EUG
 3    189° 27.5nm
```

3. SEL

Pressing SEL activates the editing function. The database for the From waypoint is displayed to the right of the leg number on the bottom line. The database for the To waypoint is display on the far right, bottom line.

FPL

```
S30      to EUG
 3 arpt      arpt
```

4. 

Turn the Control knob to move the cursor under the To waypoint identifier.

FPL

```
S30      to EUG
 3 arpt      arpt
```

5. 

Turn the Data knob to display "insrt?" if inserting a waypoint or "del?" if deleting the waypoint from the flight plan.

FPL

```
S30      to insrt?
 3 arpt      arpt
```

6. ENT

If deleting, the waypoint is deleted from the flight plan. The sample display below only appears if a waypoint is being inserted.

FPL
S30 to ----
3 arpt arpt

7. 

If necessary, turn the Control knob to move the cursor under the To waypoint database name.

FPL
S30 to ----
3 arpt arpt

8. 

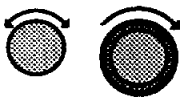
Turn the Data knob to display the desired database.

FPL
S30 to ABB
3 arpt vor

9. 

Turn the Control knob to move the cursor under the first identifier character.

FPL
S30 to ABB
3 arpt vor

10. 

Turn the Data knob to display the first character in the identifier. Turn the Control knob to move the cursor under the next character.

FPL

```
S30      to CAE
 3 arpt      vor
```

11. Repeat step 10.

ENT

Choose the remaining characters in the identifier. Press ENT to enter the new leg.

FPL

```
S30      to CVO
 3    246° 15.7nm
```

Deleting a Flight Plan

This procedure is used to delete a stored flight plan, and all of the legs and information it contains.

Action	Explanation

1. FPL 

In FPL mode, turn the Control knob to display the flight plan to be deleted.

FPL

```
RIVER      331nm
AST      to PSC
```

2. SEL

Pressing SEL activates the editing function.

FPL
RIVER 331nm
AST to PSC

3. 

Turn the Data knob to display "del?".

FPL
del?-- 331nm
AST to PSC

4. ENT

The flight plan is deleted. The next flight plan in alphanumeric order is displayed.

FPL
WORK 51.1nm
HOME to CRP

Changing Flight Plan Status (Activating a Flight Plan)
This procedure is used to change the status of a stored flight plan. The five status options are Hold, Inactive, Active, Reverse/active, and Reverse. For more information on flight plan status, see Basic Concepts, *Flight Plans*, (page B - 43).

Action	Explanation
1. FPL 	In FPL mode, turn the Control knob to display the desired flight plan.
	FPL ISLAND 165nm BLI to ELN
2. 	Turn the Data knob to display the Status page.
	FPL ISLAND Status Inactive
3. SEL	Pressing SEL activates the editing function.
	FPL ISLAND Status Inactive

4. 

Turn the Data knob to display the desired status.

FPL

```
ISLAND    Status
          reverse
```

5. ENT

The new status is entered. In this example, the order of the waypoints in the flight plan are reversed, but the flight plan will NOT be active until the "active" status is entered

FPL

```
ISLAND      1916nm
ELN         to BLI
```

User Waypoints

Creating a User Waypoint

For more information on User waypoints, see Basic Concepts, *User Database*, (page B - 32).

Action	Explanation
1. DB 	In DB, turn the Control knob to display the User database. If the User database is empty (contains no waypoints), the "open" waypoint page appears (shown in step 2). This page is used to create a new waypoint. It is unnecessary to complete step 2 if the open waypoint page is now displayed. If the User database contains waypoints, the waypoint that was displayed the last time the unit was in the User database appears. A previously entered waypoint is shown in the example below.

DB

```
FERN    44°04.15N
user   123°17.40W
```

2. DB	Pressing the DB button when the unit is in the User database displays the "open" waypoint page.

DB

```
#000    --°--.--N
user   ---°--.--W
```

3. SEL

Pressing SEL activates editing, The present latitude/longitude is assigned to the waypoint.

DB

```
#000    44°54.96N
edit   123°01.31W
```

Hint

If you want to quickly establish a waypoint as you fly over a position, you may choose to accept the automatically assigned numerical identifier instead of naming the waypoint. Pressing ENT at this point in the procedure eliminates the need to execute steps 4 and 5.

4. 

Turn the Data knob to display the first character in the desired waypoint identifier. Turn the Control knob to move the cursor to the next character position.

DB

```
H000    44°54.96N
edit   123°01.31W
```

5. Repeat step 4.

ENT

Edit the identifier, latitude, and longitude. The identifier may contain a maximum of six characters. Blank spaces may be chosen as well as characters. When a waypoint is created at the location of the waypoint, it is not necessary to edit

the position coordinates (latitude / longitude). Press ENT when the display is correct. The waypoint is stored, and the open waypoint page appears.

DB

```
#000    ---°---.---N
user    ---°---.---W
```

Editing a User Waypoint

This procedure is used to change the identifier or latitude/longitude coordinates of a waypoint in the User database.

Action	Explanation
1. DB 	In DB mode, turn the Control knob to display the User database. (If the open waypoint page is displayed, turn the Data knob to display any User waypoint. If the desired waypoint is displayed, skip step 2.)

DB

```
HELENS  46°11.97N
user   122°11.05W
```

2. SEL

ENT

Pressing SEL activates the search feature. Use the Data and Control knobs to display the desired identifier. Press ENT to display the waypoint.

DB

```
SPIRIT  46°16.75N
user   122°05.50W
```

3. SEL SEL

Pressing SEL twice activates the editing function. Turn the Control knob to move the cursor under the character to be changed. Turn the Data knob to display the desired character.

DB

```
SPIRIT  46°16.75N
edit   122°07.50W
```

4. ENT

Pressing ENT stores the changes in the User database. The search feature is activated, allowing another User waypoint to be displayed, if required.

DB

```
SPIRIT        Enter
user          Ident
```

Deleting a User Waypoint

Action	Explanation
1. DB 	In DB mode, turn the Control knob to display the User database. (If the open waypoint page is displayed, turn the Data knob to display any User waypoint. If the desired waypoint is displayed, skip step 2.)
2. SEL  ENT	Pressing SEL activates the search feature. Use the Data and Control knobs to display the desired identifier. Press ENT to display the waypoint.
3. SEL SEL 	Pressing SEL twice actives the editing function. Turn the Data knob to display "del?" in place of the identifier.

DB
SPIRIT 46°16.75N
user 122°07.50W

DB
HELM 36°32.05N
user 120°06.00W

DB
del? 36°32.05N
edit 120°06.00W

4. ENT

The waypoint is deleted. The next User waypoint in the database is displayed, and the search feature is activated.

DB

SPIRIT	Enter
user	Ident

Entering/Editing INFO on a User Waypoint

There are two INFO pages for each User waypoint. The first page may *not* be edited.

Action	Explanation

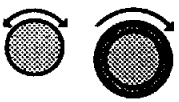
1. DB 

In DB mode, turn the Control knob to display the User database. (If the open waypoint page is displayed, turn the Data knob to display any User waypoint. If the desired waypoint is displayed, skip step 2.)

DB

SPIRIT	46°16.75N
user	122°07.50W

2. SEL



ENT

Pressing SEL activates the search feature. Use the Data and Control knobs to display the desired identifier. Press ENT to display the waypoint.

DB

```
HELM    36°32.05N
user   120°06.00W
```

3. INFO

The first INFO page appears. This page may not be edited. The bearing and distance appear on the bottom line. The arrow shows the approximate relative bearing to the waypoint. The arrow only appears if the ground speed is 20 knots or more. The DB light flashes while the INFO function is active.

DB

```
ppos      to HELM
Brg 006°↑ 84.7nm
```

4. 

Turn the Data knob to display the prompt for entering User information. (If INFO has previously been entered, the information is displayed instead of the prompt.)

DB

```
User Info: Press
 'SEL' to edit
```

5. SEL

Pressing SEL activates the editing function.

DB

-

6.

Turn the Data knob to display the first character in the information. Turn the Control knob to move the cursor under the next character position.

DB

S -

6. Repeat step 6.

ENT

Choose the remaining characters in the information. Press ENT when the display is correct.

DB

SPIRIT LAKE MT
ST HELENS 10000

7.

INFO

Press INFO to exit the information function. The DB light stops flashing and remains on.

DB

SPIRIT 46°16.75N
user 122°07.50W

Starting/Stopping Auto Nav Scroll

For an explanation of Auto Nav Scroll, see Basic Concepts--*Auto Nav Scroll* (page B - 47). To Adjust the amount of time each page is displayed, see SYS Mode, *Setting Auto Nav Time* (page S - 31).

Action	Explanation
1. NAV	Display any page in NAV mode.

NAV

```
Brg 186   27.5nm
Trk 188   188kts
```

2. ENT	Auto Nav Scroll is started. To stop the scroll, press SEL or ENT or turn either knob.

NAV

```
ete ILM     08:39
 188kts     27.1nm
```

Notes

System Mode

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Displaying WARN Messages

The first Warn message page is displayed when entering SYS mode if the WARN light is on. If the WARN light is off, this page does not appear. For an explanation of Warn messages, see Basic Concepts -- *Warn Displays* (page B - 17).

Warning
Do not navigate with the unit when the WARN light is on.

Action	Explanation
SYS	In SYS mode, the first Warn message page is displayed (provided the WARN light is on).

SYS

```
GPS is unable to
Compute Lat/Lon
```

Notes

Displaying Alert Messages

The Alert page is the first page displayed when entering SYS mode if the ALERT light is on; however, if the WARN light is also on, the Warn page appears before the Alert page. If the Alert light is off, the Alert page does not appear. For an explanation of Alert messages, see Basic Concepts, *Alert Messages* (page B - 19).

Action	Explanation
1. SYS 	In SYS mode, turn the Control knob (if necessary) to display the Alert page.
	SYS 2 Alert messages turn Small knob
2. 	Turn the Data knob to display each specific message.
	SYS Arrival at waypoint SLE

After each Alert message has been viewed, the ALERT light stops flashing and stays on. If a new Alert message comes up, the ALERT light will flash again. The light goes out when the Alert clears.

Notes

GPS Status

Action	Explanation
1. SYS 	In SYS mode, turn the Control knob (if necessary) to display the GPS position summary page.

SYS

```
GPS  NO Position
turn Small knob
```

GPS Position Summary Page

When the Flybuddy tracks enough satellites to compute a position fix, the display will change to indicate a 2D or 3D fix.

SYS

```
GPS  3D Position
turn Small knob
```

The Flybuddy GPS needs at least four satellites with good geometry to compute a 3D position. In addition to computing latitude and longitude, the receiver is also computing altitude, hence the three dimension or 3D notation.

SYS

```
GPS  2D Position
turn Small knob
```

A 2D position will be computed if three satellites with good geometry are being tracked. If you do not have an Apollo Altitude Encoder or Converter installed, you will have to periodically read your altimeter and update the "Manual Altitude" in NAV mode (see page B-29).

Satellite Status Page

Turn the Data knob to display the satellite status page.

SYS

```
Healthy Sats 16
Visible Sats 7
```

The satellite status is transmitted by the satellites periodically. This information is retained in the Flybuddy GPS to help locate satellites the next time the unit is turned on.

The number of healthy satellites is the total number in orbit, that may be available for use.

The number of visible satellites is the number of the healthy ones that should be visible above the horizon. This is computed using the UTC Date and Time and current (or last known) position. These satellites are the visible satellites the Flybuddy GPS will attempt to receive. However, some of these may be blocked or "shaded" by terrain, buildings, the wing, the tail, or other obstacles between the antenna and the satellite.

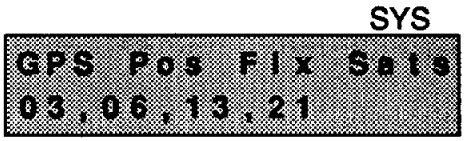
Position Fix Page

Turn the Data knob to display the position fix page.

SYS

GPS
No Position Fix

When the Flybuddy GPS is searching for satellites it will indicate that it has "No Position Fix".

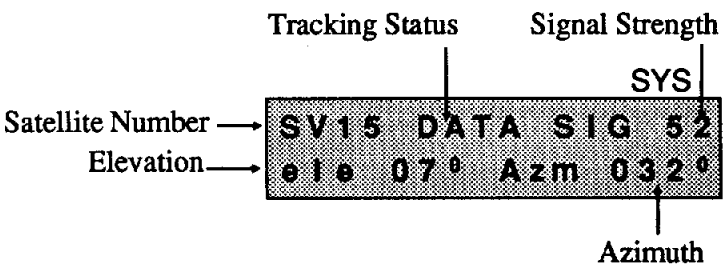


Once Flybuddy GPS computes a position fix the display will indicate which satellites it's using to compute a position. It is possible for the Flybuddy GPS to be tracking four to five satellites (i.e. in "data"), but not be able to compute a position. This happens when satellites are clustered together, giving poor geometry. This is similar to attempting a VOR fix when you can only receive two stations a few degrees apart.

Satellite Status Page

Turn the Data knob to display the **Satellite Status** pages. Satellite status may be shown for up to five visible satellites.

The satellite status page shows the signal level, elevation, azimuth and tracking status for each satellite in use.



A "Satellite Not Visible" message will be displayed for each page that does not have a visible satellite.
For example, if only four satellites are visible, the fifth satellite page will display: "Fifth Satellite Not Visible".

Satellite Number (SV) Each number is named with a SV (space vehicle) number.

Tracking Status The status may show one of three states - SRCH, TRCK, and DATA. The status will start at SRCH while the Flybuddy GPS is searching for a signal from a satellite. Once a signal from a satellite is detected, the status will change to TRCK while the Flybuddy GPS tracks and obtains data from the satellite. When the Flybuddy GPS has downloaded positioning data from the satellite, the tracking status will change to DATA. At least three satellites must be in DATA to compute a position fix.

Signal Strength

0	Still searching for satellite signal
0 - 20	very weak, not usable
20 - 40	weak
40 - 60	good
60 - 100	excellent

Signal strength depends primarily on the cabling to the antenna (length and quality), satellite elevation, and time. You should usually see signal strength in the weak , good or excellent ranges. It is not uncommon to see weak signals when satellites are very low in the sky (5-25 degrees elevation). It is normal to have signal strength readings vary between the ranges of "weak" and "excellent".

Elevation

The elevation of the satellite above the horizon is displayed.

Azimuth

This is the true, not magnetic, azimuth (or bearing) to the satellite. When used with satellite elevation you can estimate the satellite position relative to your aircraft. This will help you determine whether shading is affecting a given satellite.

Turn the Data knob to display the UTC Date and Time.

SYS

Nov. 01, 1991
22:01:34

If the Flybuddy GPS has a position fix, then this date and time is updated using information from the extremely accurate clocks on board the satellites. Otherwise, the Flybuddy's internal clock is running constantly, using the internal battery with a life span of greater than three years.

SEL

ENT

SEL

If the Flybuddy GPS does not have a position fix and this Time and/or Date is incorrect, turn the power off, then on again and press SEL, ENT, SEL. Enter the correct time and/or date.

Note

It is important to remember that this is UTC (Co-ordinated Universal Time) or Zulu Time.

Notes

Manually Adjusting CDI Sensitivity

If automatic CDI sensitivity is not desired, use this procedure to manually adjust the sensitivity. This adjusts both the NAV mode CDI display and the external CDI output. When manual sensitivity is in use, the deviation bar on the CDI display is two dots high, and is at the bottom of the display line. For more information on CDI sensitivity, see Basic Concepts--*Interpreting NAV Displays* (page B - 25).

Action	Explanation
1. SYS 	In SYS mode, turn the Control knob to display the CDI Sensitivity page.
2. SEL	Pressing SEL activates the editing function.
3. 	Turn the Data knob to display "man" (manual).

SYS
CDI Sensitivity
auto 0.25nm/mark

SYS
CDI Sensitivity
auto 0.25nm/mark

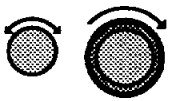
SYS
CDI Sensitivity
man 0.25nm/mark

4. 

Turn the Control knob to move the cursor under the desired character in the nautical miles per mark setting.

SYS

```
CDI Sensitivity
man   0.25nm/mark
```

5. 

Set the desired value using the Data and Control knobs. Press ENT to enter the new value. To return to automatic sensitivity, repeat this procedure choosing "auto".

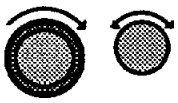
SYS

```
CDI Sensitivity
man   0.30nm/mark
```

Manually Adjusting Magnetic Variation

Flybuddy automatically accounts for magnetic variation when computing bearings and tracks. If desired, this procedure is used to manually enter the magnetic variation.

Action	Explanation
1. SYS 	In SYS mode, turn the Control knob to display the Mag Variation page.
	SYS Mag Variation auto 20°E
2. SEL	Pressing SEL activates the editing function.
	SYS Mag Variation auto 20°E
3. 	Turn the Data knob to display "manual".
	SYS Mag Variation manual 20°E

4. 

ENT

Display the desired variation value using the Control and Data knobs. Press ENT to enter the setting. To return to "auto" variation, repeat this procedure, selecting "auto".

SYS

Mag Variation
manual 15°E

Ground Speed Selection

This procedure is used to choose the units for ground speed displays. The selections are kts (knots), mph (miles per hour), or kph (kilometers per hour). The default setting is kts.

Action	Explanation
1. SYS 	In SYS Mode, turn the Control knob to display the Ground speed selection page.
	SYS Ground speed units: kts
2. SEL	Pressing SEL activates the editing function.
3.  ENT	Turn the Data knob to display the desired Ground speed units. Press ENT to save the selection.
	SYS Ground speed units: mph

Notes

Displaying Software and Database Version

If you need to call your dealer or the factory about a problem, it will be helpful if you write down your units' version number a described on these pages. A form is provided in the Troubleshooting section.

Action	Explanation
1. SYS 	In SYS mode, turn the Control knob to display the SW Vers (Software Version) page.

SYS

```
Flybuddy GPS
SW Vers      1.00
```

3. 

Turn the Data knob to display the Database Version page.

SYS

```
Worldwide DB
11/14/91 1.10
```

2. 

Turn the Data knob to display the GPS Version page.

SYS

```
GPS
FW Version   004
```

Notes

Activating the Display Test

Action	Explanation
1. SYS 	In SYS mode, turn the Control knob to display the Test page.
2. ENT	Pressing ENT activates the test.

SYS

```
To test display
      Press 'ENT'
```

Notes

Owner Information

Flybuddy allows the owner to input up to three and one-half pages of personal information. This is designed to discourage theft. The information may not be changed without the proper six letter password, also entered by the owner. Entry of this information is optional, but highly recommended.

Caution

To change the owner information, you must remember your password. The password can only be cleared by II Morrow technicians.

Entering Owner Information

Action	Explanation
1. SYS 	In SYS mode, turn the Control knob to display the Owner Name page.
2. SEL	Pressing SEL activates the editing function. The display below appears for 3 seconds.

SYS

```
Owner Name:
 'SEL' to edit
```

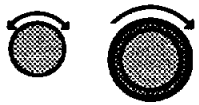
SYS

```
Please record &
verify Password
```

After 3 seconds the display below appears.

SYS

```
Enter owner
password _-----
```

3. 

Turn the Data knob to select the first character in the password, turn the Control knob to move the cursor to the next character space. Characters are not displayed after the cursor is moved. To review the characters, turn the Control knob.

SYS

```
Enter owner
password ----D-
```

4. ENT

Press ENT. The screen below is displayed for 3 seconds.

SYS

```
Caution Password
must be verified
```

After 3 seconds the display below appears.

SYS

```
Verify owner
password _-----
```

5. 

Use the Data and Control knobs to confirm your password.

```
Verify owner
password    ----D-
```

6. ENT

Pressing ENT saves the password. (If a mistake is made, Flybuddy will ask you to try again.) If the passwords match, the editing function is enabled. The display below appears for 3 seconds.

```
                              SYS
Password matched
editing enabled
```

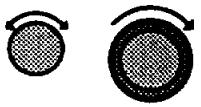
After 3 seconds, the display below appears.

```
                              SYS
Owner Name :
  'SEL' to edit
```

7. SEL

Pressing SEL activates editing.

```
                              SYS
Owner Name :
_
```

8. 

ENT

Turn the Data and Control knobs to select characters. Press ENT to save the information.

SYS

```
Owner Name:
JOE JONES
```

9. 

Turn the Data knob to display other owner information pages.

SYS

```
Owner Address:
 'SEL' to edit
```

10. Repeat steps 7 through 9.

Enter the Owner Address, Owner Phone Number, and Owner Aircraft Number displays.

SYS

```
Owner Name:
JOE JONES
```

Editing Owner Information

Owner information is protected by a password that you choose. To activate the owner information editing function, the password must be entered exactly. Once the password is entered, editing is possible at any time until Flybuddy is turned off.

Action	Explanation
1. SYS 	In SYS mode, turn the Control knob to display the Owner Name page.
2. SEL	The password must be entered to enable editing. After pressing SEL, The display below appears for 3 seconds.

SYS

```
Owner Name:
JOE JONES
```

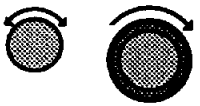
SYS

```
 User must first
enter Password..
```

After 3 seconds the display below appears.

SYS

```
Enter owner
password _-----
```

3. 

Turn the Data knob to select the first character in the password, turn the Control knob to move the cursor to the next character space. Characters selected are not displayed after the cursor is moved. To review the characters, turn the Control knob.

SYS

```
Enter owner
password  - - - -D-
```

4. ENT

Pressing ENT enters the password. (If an incorrect password is entered, Flybuddy will ask you to try again.) If the correct password is entered, the display below appears for 3 seconds.

SYS

```
Password matched
editing enabled
```

After 3 seconds the Owner Name page is displayed.

SYS

```
Owner name:
JOE JONES
```

5. 

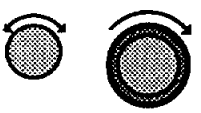
Turn Data knob to display the Owner information page to be edited.

SYS
WORK PHONE
503 123 4567

6. SEL

Pressing SEL activates editing.

SYS
WORK PHONE
503 123 4567

7. 

ENT

Use the Data and Control knobs to edit the display. Press ENT to save the changes.

SYS
HOME PHONE
503 765 4321

Notes

Setting the Auto Nav Scroll Time

Each NAV page may be displayed from 1 to 9 seconds during Auto Nav Scroll.

Action	Explanation
1. SYS 	In SYS mode, turn the Control knob to display the Autonav time page.
	SYS Autonav time 2 seconds/page
2. SEL	Pressing SEL activates the editing function.
	SYS Autonav time 2 seconds/page
3.  ENT	Turn the Data knob to display the desired value. Press ENT to enter the value.
	SYS Autonav time 4 seconds/page

Notes

NAV Mode Display Customizing

Navigation displays may be customized by the pilot. Flybuddy displays are divided into four different fields, and each Nav item requires either one or two fields. For more information, refer to Basic Concepts, *Display Fields* (page B - 21).

In addition to the Nav display fields included on the default navigation pages, there is also an altitude field available when customizing your navigation pages.

If an Apollo Altitude Encoder or Converter is installed and operating, the altitude field will display Barometric Altitude.

SYS

```
Baro Alt  240ft
```

Otherwise, Manual Altitude will be displayed.

SYS

```
Manl Alt  300ft
```

Customizing NAV Displays

Action	Explanation
1. SYS 	In SYS Mode, turn the Control knob to display the Nav mode programming page.

SYS

```
Nav mode display
programming pgs
```

2. 

Turn the Data knob to display the Nav page to edit.

SYS

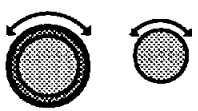
Brg 085	105nm
Trk 115	145kts

3. SEL

Pressing SEL activates the editing function.

SYS

Brg 085	105nm
Trk 115	145kts

4. 

Turn Control knob to move the cursor under the field to be changed. Turn the Data knob to display the desired Nav information.

SYS

Brg 085	105nm
ete SNA	00:44

5. Repeat step 4.

ENT

Edit other fields as necessary. Press ENT to save the changes.

SYS

Trk 115	105nm
ete SNA	00:44

Restoring Default Nav Pages

This procedure is used to restore customized Nav displays to their default (factory) configuration. Default pages are listed in Basic Concepts--*NAV Displays* (page B - 23).

Action	Explanation
1. SYS 	In SYS Mode, turn the Control knob to display the Nav Mode programming page.
	SYS Nav mode display programming pgs
2. 	Turn Data knob to display the restore page.
	SYS 'ENT' to restore default Nav pgs
.3. ENT	Pressing ENT restores the default Nav Pages.
	SYS Trk___ < 0.00

Notes

Setting the Countdown Timer

The countdown timer can be set in hours, minutes, and seconds. When the timer reaches 00:00:00 the ALERT light flashes. After viewing the alert in SYS mode, the alert clears. A maximum time of 99:59:59 may be entered.

Note
The timer does not display every second as it counts down.

Action	Explanation
1. SYS 	In SYS mode, turn the Control knob to display the Countdown Timer page. The setting that was last used appears.
	SYS Countdown Timer 00:03:00
2. SEL	Pressing SEL activates the editing function.
	SYS Countdown Timer 00:03:00

3. 

Turn the Control knob to move the cursor under the hours, minutes, or seconds setting.

SYS

Countdown Timer
00:03:00

4. 

Display the desired values using the Data and Control knobs. Press ENT to start the timer.

SYS

Countdown Timer
00:03:45

Troubleshooting

To Ensure Trouble Free Operation

Avoid high cockpit temperatures when the aircraft is not in use. Extreme heat shortens the life of any electronic equipment. Periodically check all antenna, power, and ground connections.

Caution

DO NOT clean the face plate with chemical cleaning agents, solvents, or harsh detergents. A mild detergent solution and a soft cloth may be used to clean the face plate. DO NOT wax or paint the antenna.

Battery Replacement

The Flybuddy memory is maintained by a lithium battery. The expected service life of this type of battery is from 5 to 10 years. This is not a user replaceable item. The lithium battery must be replaced by the factory, an authorized dealer, or service center.

Indication Of A Low Battery

"Low Battery Alert" appears as an Alert message in SYS mode. If the battery is not replaced, the unit will lose its memory.

If You Have A Problem

Please read the instructions again for the desired function.

If You Are Unable To Correct The Problem

Record the GPS data (displayed in SYS mode) for ALL satellites, and call your II Morrow dealer or the factory. The technician MUST have this information before the problem can be analyzed.

IN-FLIGHT

Indication	Problem
The WARN light is on and the Warn message is "GPS Failure Communications."	The unit is malfunctioning.
	Action
	Return to dealer for service.

	Problem
Bearing and distance displays appear to be wrong.	A mistake was made in entering the Latitude/Longitude coordinates of a User waypoint, or the wrong waypoint is selected.
	Action
	Verify that coordinates of the User waypoint are accurate. Check the hemispheric identifier. Check the "From" and "To" waypoints.

	Problem
(Same as above).	WARN light is still on.
	Action
	Do not rely on the Flybuddy GPS for navigation while the WARN light is on.

Hint

Verify your position by activating the Nearest Waypoint Listing. The correct bearing/distance to the nearest airports should be displayed.

ON THE GROUND

Indication	Problem
WARN light stays on after power-up (continued).	Aircraft may be parked near something interfering with the signal (APU, hanger, high-voltage lines).
	Action
	Move the aircraft. The unit will not work inside or near hangers.

Notes

Remove this page and insert GPS Reference Guide.

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