Apollo 360 Map Display
User's Guide

II Morrow Inc.
2345 Turner Road S.E.
Salem, Oregon 97309

November 1996   P/N 560-0119-00

Apollo 360 Map Display

No part of this document may be reproduced in any form or by any means without the express written consent of II Morrow Inc.

II MORROW INC.™
A United Parcel Service Company

P/N 560-0119-00

History of Revisions

November 1996   Original Release

Ordering Information

To receive additional copies of this publication, order part #560-0119-00, *Apollo 360 Map Display User's Guide*.

About This Manual

This manual is divided into five sections, each contains information of a specific type. This information is presented in a logical order such that the best understanding of unit operation can be had by reading this manual in its entirety from front to back. The three appendices at the back of this manual contain information helpful, but not critical to operation of the Apollo 360.

Those who are familiar with navigation displays will find that Sections 1 and 2 impart a good understanding of unit operation, although it is recommended that a more thorough knowledge of how to use the Apollo 360 is gained before using it as a navigation aid.

Here is a brief summary of information presented in each section and appendix.

Section 1 ▪ An introduction to operating the Apollo 360 Map Display with a description of the function keys, knobs, and useful features

Section 2 ▪ A listing of the steps necessary to begin using the Apollo Map Display

Section 3 ▪ Information on using the unit to assist in navigating a trip and a description of it's options

Section 4 ▪ An explanation of each main menu option

Section 5 ▪ A description of the waypoint database and information it contains

Appendix
　A ▪ A glossary of navigation terms

Appendix
  B   ▪ troubleshooting guide explaining what to do if the
             display fails to operate properly

Appendix
  C   ▪ Summary of features

Welcome...

Welcome to the ever-growing family of II Morrow customers using Apollo products around the world to navigate with a high degree of accuracy. We at II Morrow are proud of our reputation as a leading manufacturer of navigation equipment. Your Apollo model 360 Map display is an advanced navigation display built with quality and pride. We are certain you will find it to be a versatile and valuable navigation aid.

Contacting the Factory
Our staff of service technicians is available to assist you with any operational difficulties you may experience or to answer questions about your Apollo 360. Contact the factory anytime from 8:00 A.M. until 5:00 P.M. Pacific time Monday through Friday (excluding holidays).

II Morrow Inc.
Technical Service Department
2345 Turner Road S.E.
Salem, OR 97301
U.S.A.

U.S.A. Toll Free 800-525-6726
Canada Toll Free 800-654-3415
FAX (503) 364-2138
International (503) 391-3411

<u>Caution</u>

The Apollo 360 is a powerful navigation display, but you should never rely solely on any one piece of navigation equipment. It is important to maintain a constant awareness of the navigation picture by using all appropriate resources.

This device should be installed only by an FAA certified facility. Certified avionics technicians will properly install and checkout your Apollo 360, ensuring trouble free operation when you fly with the unit.

Federal Aviation Administration regulations require pilots to practice SEE and AVOID. Do not study this manual while flying. Make your first flight using the Apollo 360 during good weather in a low traffic area. Read at least Sections 1 and 2 of this manual before you fly.

It is recommended that you read through this entire manual and familiarize yourself with the controls and operation of the unit before navigating with the Apollo 360.

Remember, use the Apollo 360 Map Display for VFR operation only.

Table of Contents

Section 1

Introduction to the Apollo 360 Map Display

This section introduces you to the Apollo 360 and explains how to use and switch between the unit's operating functions. A description of information that shows on the display when you use each function is included at the back of this section. Section 2 builds on the introductory information presented here as you switch on and begin using the Apollo 360.

Remember that the Apollo 360 Map is <u>not</u> a primary navigation instrument. It works in conjunction with a GPS or Loran that can provide position, bearing, flight plan, and other useful information. The Apollo 360 Map is a supplemental navigation display. The quality of the position information it displays is dependent on the navigation device providing that information. <u>Do not</u> attempt to conduct an approach based on the information from the Apollo 360 Map. Use a navigation device authorized for flying approaches to navigate this phase of flight.

The Operating Functions

There are five main operating functions, each performing a different and unique task while you navigate. Each function also provides one or more screens of information on the display. At least one of these functions is always in use when the unit is on. The functions operate independently of one another, so you can switch between them.

The five operating functions are:

- Navigation (always active)
- Menu
- Goto nearest
- New waypoint
- Waypoint information

As you navigate a course with the Apollo 360, you will typically use several of these operating functions. During the trip, you will use the navigation function most of the time to monitor your progress. To most effectively use the Apollo 360, become well acquainted with each operating function.

Function Keys Each of the operating functions is easily accessible from the front panel by using the function keys. Remember, the navigation function is always active -pressing a key is not necessary to enable it.

Menu Function

Goto Nearest Function

New Waypoint Function   Waypoint Information Function   LCD Backlight
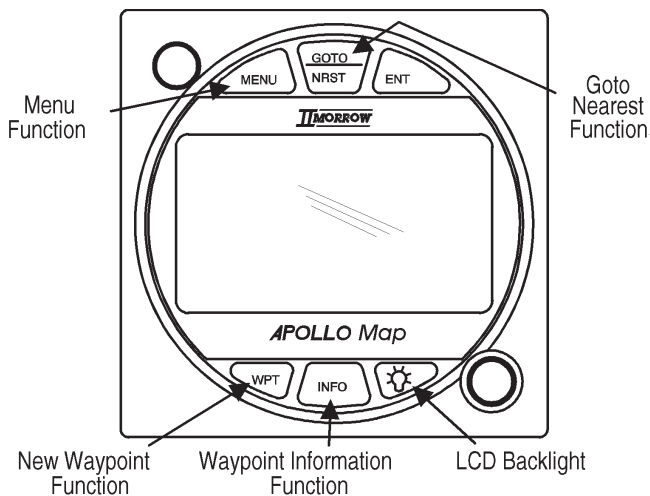
Navigation Function This function starts automatically when the unit is switched on and stays active. You will use this function most often while flying. The navigation function provides information about:

- Your current position and navigation progress to a destination

- Your current route, and legs within your current route

- Events or conditions important to trip navigation

Navigation function screens show on the display whenever other functions are not in use.

Menu Function `MENU`	Use this function to access a menu of options that modify the way navigation information shows on the display. In this way, you may customize the Apollo 360 to best suit your navigation display requirements. The menu function also controls many other important ways the unit operates.
Goto Nearest Function `GOTO NRST`	Press this key once for a list of waypoints nearest to your present position. This function allows you to quickly and easily obtain the information that you need to create or change a flight plan while navigating.
New Waypoint Function `WPT`	Use the waypoint function to create your own waypoints and store them in the Apollo 360's memory. You can create up to 2,000 of your own waypoints, each with a name you choose. You can create waypoints based upon your present position, or you can enter latitude and longitude coordinates (usually abbreviated lat/lon) to define the waypoint location.
Waypoint Information Function `INFO`	Use this function to get information about any waypoint in the Apollo 360's built-in database, including those you have created and stored. Available information includes:

- Waypoint identifier and type (airport, VOR, NDB, or intersection)

- Bearing and distance to the waypoint from your current position

- Lat/lon coordinates of waypoint

- For airports, the elevation, fuel availability and type, radio communication frequencies, runway details, runway map diagram, and more

The
Display

The display shows information for each operating function. This information typically includes navigation progress, waypoint information, and menu options and selections. Display contrast and the display backlight are adjustable to best suit viewing conditions in the cockpit. See "Screen Controls" in Section 4 for details on adjusting the screen.

Display
Care and
Cleaning
Instructions

Your new Apollo 360 Map has a space-age anti-glare film that has been applied to the display screen. This is the same film that is used on the NASA Space Shuttle windows. The surface of the film has a hard coating that is scratch resistant. Despite this coating, extreme care must be taken when cleaning the display screen. To remove stains, smudges, fingerprints, and so forth, we recommend these cleaning methods (if the first method fails to remove the problem, try the next method):

- Wipe with a clean, dry, non-abrasive fabric (for example, cotton or Handi-wipes)

- Blow on the area to condense moisture on the display and then wipe the area with the clean fabric

- Moisten a clean fabric with a small amount of water and wipe the display area

- Apply a small amount of glass cleaner (<u>without</u> ammonia) to the fabric and wipe the area

- Apply a small amount of isopropyl alcohol and wipe the area (this is the last resort)

<u>Note:</u>

Use a clean fabric with each cleaning method to avoid other contaminates.

LCD
Backlight

This key controls the Liquid Crystal Display (LCD) backlight, enabling you to easily view the display in a wide variety of cockpit ambient light conditions. Five backlight intensity levels are available from no intensity (off) to high intensity.

Helpful
Instructions
on the
Display

While you use most functions, the Apollo 360 shows you what to do. Helpful instructions typically appear on the top and bottom lines of the display. A highlighted, or darkened word in an instruction advises you which key to press to select an option.

```
SCREEN CONTROLS          ◄— Instruction lines
ROUTE DISP!   1-LEG         in the Screen Controls
BACKLIGHT:     Lo           function showing title,
CONTRAST:       ↔           selection options and
 —▮▮▮▮▮▮▮▮▮▮      +
 PRESS ENTER OR ↔↕       ◄— which key to press
```

Control
Knobs

The control knobs switch the Apollo 360 on and off, select menu options and make changes. The control knobs consist of the power knob at the upper left corner of the front panel and the concentric rotary knobs at the lower right corner of the front panel.

Power Knob

MENU   GOTO   ENT
       NRST
Ⲧ MORROW

APOLLO Map

WPT   INFO   ☼

LARGE and SMALL
Concentric Rotary Knobs

The Power Knob

OFF ⬤ ON
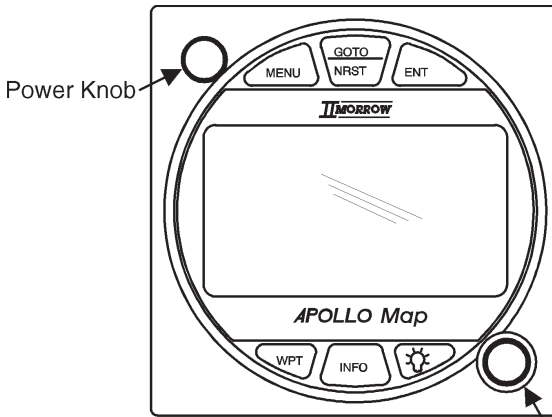
This knob switches the display on and off. Each time you switch the unit on, it performs internal diagnostics and activates the navigation display function. This process takes only a few seconds.

The Concentric Rotary Knobs

⬤

The LARGE and SMALL concentric rotary knobs allow you to move the highlight cursor around the display to select menu options and make changes. The highlight cursor typically shows on the display when you use an operating function. The cursor indicates that the highlighted item can be changed.

A vertical and/or horizontal arrow symbol often shows at the lower right corner of the display. These symbols indicate that additional options are available and that changes can be made.
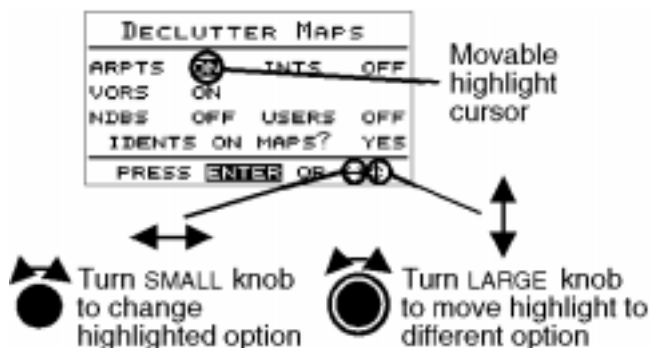
The
Display
Screens

Information you view on the display while using the Apollo 360 shows one page or "screen" at a time. Many of the operating functions can show more than one screen of information. When more than one screen of information is available, either the vertical arrow symbol or an instruction line shows on the display to inform you that more information awaits your view. Follow the instruction, or if the vertical arrow symbol shows on the display, turn the LARGE knob to view this additional information.

Information screens available while using each operating function are introduced here. Section 4 contains additional details about each operating function.

The
Startup
Screens

The startup screens show on the display for several seconds after you switch on the Apollo 360. While these screens show on the display, the unit performs internal diagnostics and activates the navigation display function.

PowerON

Startup
Screens

To Navigation Displays
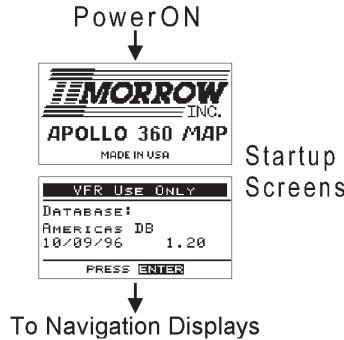
Route
Display
Selection

It is worth noting here that the Screen Controls screen (located under the Main Menu) allows the user to select either a 1-Leg or 3-Leg route display. The 1-Leg display provides larger character size for easier viewing, while the 3-Leg display provides more route information in a single screen.

Navigation Function Screens The Apollo 360 shows one of six screens while you use the navigation function. Each screen contains useful information. After the startup screens appear on the display, the unit shows the route screen. You can "scroll" or page through the other available screens by turning the LARGE knob.

Turn LARGE Knob to Scroll Screens

From Startup Screen

1-Leg Route Screen

REMOTE ROUTE

1 MMV   ARPT
       PDX   ARPT
       003° 22.2ᴹ Leg 01
                      VIEW

Current Messages Screen

MESSAGE ALERT

2 ARRIVING AT PDX   A
            NEXT SEA   A
            347° 112ᴹ
       PRESS ENTER

Present Position Screen

3 DTK 185°
       LAT 45°09.380'N
       LON 122°51.329'W

Bearing/Range/Ground Speed Screen

PDXᴀ   BRG 005°
4 RNG 43.6ᴹ GS 65ᴷ
       ETE 40:17 TRK 000°
       1.0   1.0

Bearing/Range/Track Moving MapScreen

            PDX   A
                  005°
MMV   41.4ᴹ
5   65ᵀ
            TK 000°
       S+E
       20   ENT

Moving Map Screen

PDX VEG   USX 005°
6
       MMV
       -4S   +
       20   SLE   35ᴹ

Menu
Function
Screen

MENU

The menu function contains options that control many ways the Apollo 360 operates and lets you customize the navigation function to suit your preference. The menu function screen is a main menu with options selected by turning the LARGE knob to move the arrow cursor up or down the list.

Turn LARGE Knob
to
Move Arrow Cursor

MAIN MENU
▶RETURN TO NAV
  SCREEN CONTROLS
  MAP SETUPS
  DECLUTTER MAPS
PRESS ENTER OR ↕
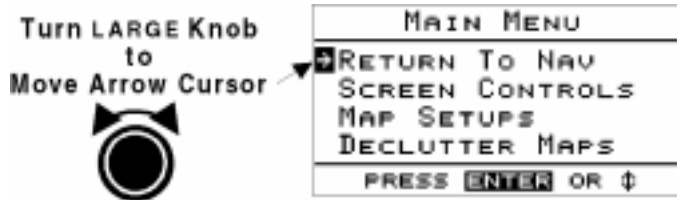
The main menu contains these options:

- Return to Nav -
  Returns the unit from the menu function to the navigation display function

- Screen Controls -
  Contains control settings for display backlight, contrast, and 1-leg or 3-leg route screen displays

- Map Setups -
  Contains control settings for information shown on moving map screens (navigation function)

- Declutter Maps -
  Contains control settings for types of waypoints to show on moving map navigation screens (navigation function) and in the nearest waypoint list

- Track Point History -
  Controls navigation "track point" storage in memory and whether points show on moving map navigation screens (navigation function)

- Arrival Alerts -
  Controls alert message at waypoint arrival

- Airspace Alerts -
  Controls alert message at airspace entry

- Countdown Time -
  Controls built-in countdown timer

- Display Units -
  Contains control settings for navigation units of measure

- User Wpt Mgmt -
  Controls editing or deletion of waypoints you have entered in the Apollo 360's memory

- System Info 1 -
  Enables showing of unit serial number and current hardware and software versions on the display

- System Info 2 -
  Enables showing of current database and operating system versions on the display

Using the menu function does not interrupt navigation. Section 4 describes how to use each main menu option.

Goto Nearest Function Screen

The goto nearest function allows you to quickly and easily get information on those waypoints nearest to your present position.

GOTO NRST

When you press the GOTO/NRST key, the nearest function starts. The nearest function screen shows a listing of up to 30 of the waypoints nearest to your present position and the location of each waypoint relative to your present position. You can get detailed information on any of the waypoints on the nearest function screen by selecting the waypoint and pressing the INFO key.

Press

PRESS **ENTER** TO QUIT

→7S9 A 055° 4.97ᴀ
 UAO A 016° 6.55ᴀ   Waypoints nearest to
 2S6 A 315° 9.37ᴀ   your present position
 4S9 A 054° 11.8ᴀ

QUIT   ↔↓
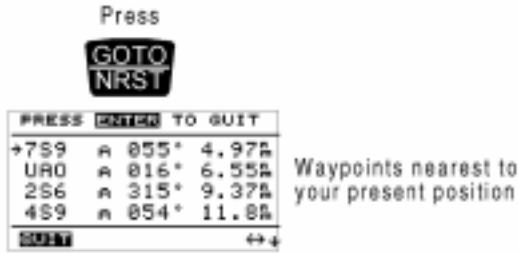
Navigation to an assigned waypoint is not interrupted while using this function.

New Waypoint Function Screen

WPT

This screen shows information about waypoints you create using the new waypoint function. You can use present position lat/lon coordinates for the new waypoint's location, or enter coordinates of your choice from this screen. Information on the screen includes the created waypoint's location and the location of the nearest VOR relative to your present position.

WPT

Waypoint lat/loncoordinates and location relative to your present position

PRESS **ENTER** TO CREATE

Waypoint name
of your choice
(default name
shown)

WPT #0001   AT   342°
44°54.581'N   0.00ᴀ
123°00.078'W
RAD 164°   DIST 26.6ᴀ
UBG   VOR
                ↔↕

Location of
nearest VOR
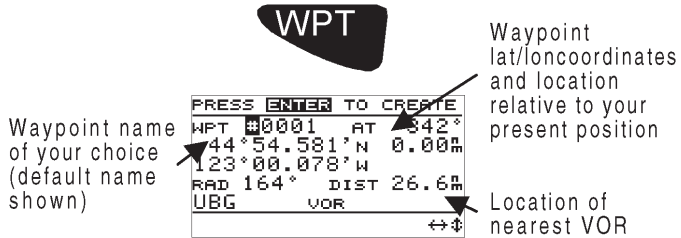
Waypoint
Information
Function
Screen

INFO

The waypoint information function can be used anytime to get information about a waypoint without interrupting navigation. The waypoint information function screen shows the waypoint identifier, and distance and bearing from your present position. The vertical arrow symbol at the bottom right corner of the display indicates that more information is available by turning the LARGE knob to scroll through additional screens.

INFO

Waypoint identifier, and distance and bearing from present position

```
SBA   A  152°   724ᴹ
Santa Barbara Mu
Santa Barbara
ELEV    10'   CA USA
Avgas/Jet Public
PRESS INFO TO EXIT  ↕
```

Additional waypoint information (more available by turning LARGE knob)

Summary

Once you have become familiar with using the Apollo 360 to supplement your navigation, you will find that switching between operating functions is fast and easy and that you will do this often while navigating a trip. No matter which operating function you use, the unit allows you to quickly and easily return to the always active navigation display function. Your present position continues to be updated from the primary navigation device without interruption while you use the other operating functions.

Here is a quick review of the purpose of each operating function.

Always
Active

Navigation display function - provides information about your current position and navigation progress, multiple leg trips, and messages showing important events or conditions while you navigate. You exit from other functions to return to this one.

MENU

Menu function - calls up the main menu of options to control ways the Apollo 360 operates. This function also controls the way navigation information shows on the display.

NEAREST

Nearest function - Calls up a list of up to 30 waypoints nearest to your present position, and allows you to obtain information about any of them.

WPT

New waypoint function - creates waypoints and stores them in memory. Created waypoints can be based upon your present position, or lat/lon coordinates you enter.

INFO

Waypoint information function - calls up information from the Apollo 360's built-in waypoint database. You can also access information about waypoints you have created. Information includes the waypoint identifier and type, waypoint bearing and distance from your current position, waypoint lat/lon coordinates, and more.

Backlight

LCD backlight - controls whether or not the backlight is on, and the backlight intensity level.

The next section explains the start up procedures for the Apollo 360. Once the start up tasks are completed, the unit is ready to use to assist you in navigating your trip.

Notes:

Section 2

Getting Started

This section explains how to get started using the Apollo360. Information in this section explains how to quickly start the Apollo 360 and check for proper operation.

- Power up

- Check for host input

- Check for route input

- Begin navigating

Power Up To switch the unit on, turn the power knob clockwise (the knob is above and to the left of the display). The startup screens show on the display for several seconds.
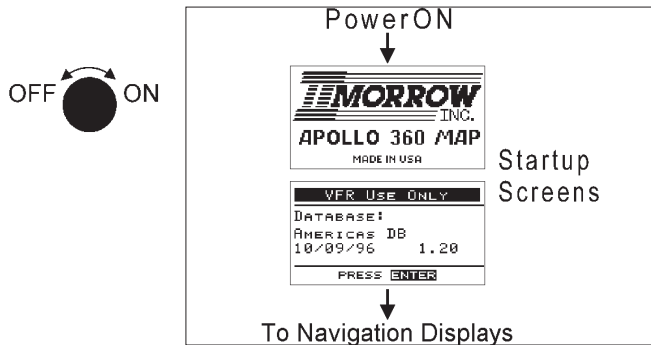
The first screen identifies the procuct. The second screen provides a reminder that this product is approved for VFR use only. It also identifies the installed database and gives the expiration date. Press Enter to acknowledge the startup information and proceed to the navigation displays.

Check for
Host Input
The Apollo 360 Map Display relies on position and route information inputs from a host navigation device. When the unit is powered up, it looks first for an input. If the input is present, it looks for position and route information. If no input is present, the message alert shown below will appear and a "No Input" message will be displayed on all other navigation screens.

```
┌─────────────────────────┐
│   MESSAGE ALERT         │
├─────────────────────────┤
│                         │
│ No INPUT FROM HOST      │
│                         │
│                         │
│      PRESS ENTER        │
└─────────────────────────┘
```

If no route is entered on the host device or if the host device does not have a position fix, the route screen on the Apollo 360 will be blank, the message screen will display "No Position Fix", and a "No Fix" message will be displayed on all other navigation screens. Dashed lines will appear on all screens in place of the missing input information.

```
┌─────────────────────────┐
│   MESSAGE ALERT         │
├─────────────────────────┤
│                         │
│ No POSITION  FIX        │
│                         │
│                         │
│      PRESS ENTER        │
└─────────────────────────┘
```

```
┌─────────────────────────┐
│ – – – – – A  BRG – – –   │
│            n        K    │
│ RNG – – – –m  GS – – –   │
│                          │
│ ETE – –:– –  TRK – – –   │
│      No Fix              │
└─────────────────────────┘
```

With route and position input available, the Apollo 360 Map is ready to begin assisting in navigating a trip. Refer to Section 3 for information on how to use the navigation display function while you fly.

Section 3

Navigating a Trip

This section explores the navigation display function and describes the powerful features it contains. You will use this function most frequently while you fly, so it is important to have a good understanding of this operating function. Follow the instructions provided in Sections 1 and 2 before you read this section. Leave the unit on, relax in the cockpit with your aircraft parked, and use the features this section describes to become familiar with them. In this way, you can more effectively use this powerful navigation aid to your advantage when flying. Even though you may not be actively navigating, you will be able to gain valuable familiarity with the unit. When you become thoroughly familiar with the controls and comfortable operating the unit, you will be better able to use this powerful tool in the air.

About the Navigation Function
The navigation display function is always active. When you use other functions, the navigation display function continues to run "in the background" calculating your present position, navigating your multiple leg trip (if active), and alerting you to events or conditions important to the navigation process. When you finish using other functions, the unit automatically returns to the navigation display function, displaying the last navigation screen used.

About the Navigation Function Screens
While you navigate, the Apollo 360 gives information on six screens. Each screen contains unique information useful to the navigation effort.

The LARGE knob "scrolls" or pages forward or backward through the screens in the order shown in Section 1. After you become more familiar with each screen, you may develop a preference for some. This section describes each screen.

Current Messages Screen

The Apollo 360 helps you navigate by informing you of important events or conditions while you fly. When an important event or condition occurs, an alert message shows on the display to inform you. (Alerts marked with the * can be controlled by menu options described in Section 4.) Alerts may show on the display anytime the unit is operating to alert you of the following conditions:

Airspace penetration*

```
┌─────────────────────────┐
│     MESSAGE ALERT       │
│ WITHIN 10 MIN OF        │
│     PORTLAND OR         │
│ CLASS C AIRSPACE        │
│ BRG 005°  RNG  32ᴹ      │
│      PRESS ENTER        │
└─────────────────────────┘
```

Arrival at a destination*

```
┌─────────────────────────┐
│     MESSAGE ALERT       │
│                         │
│ ARRIVING AT MMV    A    │
│         NEXT SEA   A    │
│       356° 140ᴹ         │
│      PRESS ENTER        │
└─────────────────────────┘
```

Loss of position fix

```
┌─────────────────────────┐
│     MESSAGE ALERT       │
│                         │
│  NO POSITION  FIX       │
│                         │
│      PRESS ENTER        │
└─────────────────────────┘
```

Low memory back-up battery

```
┌─────────────────────────┐
│     MESSAGE ALERT       │
│    LOW BATTERY          │
│     VOLTAGE             │
│  SEE DEALER FOR         │
│     SERVICE             │
│      PRESS ENTER        │
└─────────────────────────┘
```

Expiration of countdown time

```
┌─────────────────────────┐
│  MESSAGE ALERT          │
│                         │
│  COUNTDOWN TIMER        │
│    HAS EXPIRED          │
│                         │
│  ─────────────────────  │
│      PRESS ENTER        │
└─────────────────────────┘
```

Magnetic variation
compensation limitation

```
┌─────────────────────────┐
│  MESSAGE ALERT          │
│                         │
│  AUTOMATIC MAG VAR      │
│  IS SET TO 0° ABOVE     │
│    70° NORTH LAT        │
│  ─────────────────────  │
│      PRESS ENTER        │
└─────────────────────────┘
```

When you see one of these alerts on the display, follow the instruction shown to clear it. Clearing the alert removes it from the display. The screen shown before the alert appeared returns to the display.

The current messages screen serves as a review of any alerts presented this way during the trip. Alert messages that show on the screen must be valid at the time you check them or they will not show as a current message. Press ENT, as shown on the current message screen, to view other current messages (if available).

Present Position Screen This screen shows the lat/long coordinates of your present position, desired track, and any course deviation from desired track.

```
┌─────────────────────────┐
│  DTK 185°               │
│  LAT  45°09.380'N       │
│  LON 122°51.329'W       │
│  |  |  |  ↕  |  |  |  ⇕ │
└─────────────────────────┘
```
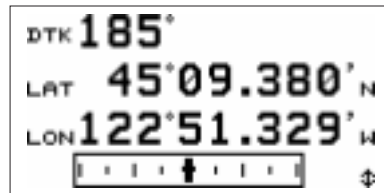
When you fly, this screen can be valuable to check your position against a chart with close precision.

Course deviation shows in the rectangular Course Deviation Indicator (CDI) at the bottom of the display. The airplane symbol moves over the graduated CDI to show your relative distance left or right of desired track. The CDI display correlates with the sending navigation device CDI output. If the sending device changes CDI scale it should drive the CDI "Needle" on the Apollo 360 Map to match the relative deflection amount to it's own CDI display.

Bearing/
Range/
Ground
Speed
Screen

The bearing/rang/ground speed screen, displays range, estimated time enroute (ETE), and ground speed (GS). Since this screen is viewable by turning the LARGE knob only one detent clockwise from the present position screen, you will likely find it convenient to switch back and forth between these two screens often to check your navigation progress.
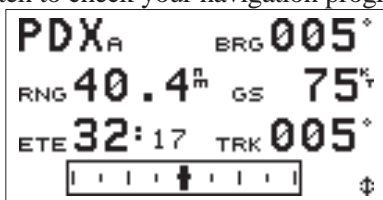
Moving
Map/Nav
Window
Screen

One of the most attractive features of the Apollo 360 is its ability to show your navigation progress graphically against a "moving map" of waypoints. Your present position is indicated by the airplane symbol near the center of the display.
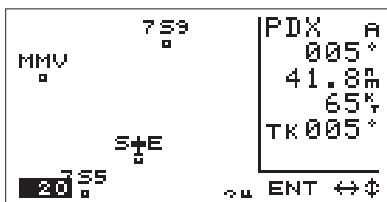
Using the moving map screen, you can easily track your navigation progress as the aircraft travels over or near waypoints beneath you. The moving map/nav window screen shows this information in the box at the right side of the display:

- The destination waypoint and type

- Bearing to the destination waypoint

- Range to the destination waypoint

- Ground speed

- Current track

The map scale shows in the highlight at the lower left corner of the screen. The scale shows the approximate distance represented on the map between the airplane symbol and the top border of the display. You can select distance units of measure for the map scale and all other navigation screens using the menu function "Display Units" option explained in Section 4.

The figure below shows a change in scale caused by turning the SMALL knob. The scale may be changed from .1 nm to 750 nm or set to auto. In this case, the distance from the airplane icon to the top of the screen is 20 miles.

Moving Map Screen

This moving map screen is similar to the one just described, but it fills the entire display.
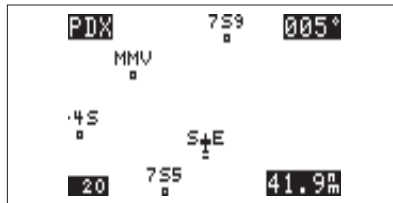
The following information shows in highlighted boxes at each corner of the display:

- The destination waypoint

- Bearing to the destination waypoint

- Map scale

- Range to the destination waypoint

The moving map screens represent graphic views of your navigation progress in a format easy to interpret while flying. Note that the display orientation may be changed so that the top of the may be north, desired track, or track. The map setup option, described in Section 4, explains how to change the orientation.

Zooming
In or Out
The moving map screens feature a handy zoom function to allow you to enhance your view of navigation progress. Zoom in or out by turning the SMALL knob. Zooming in changes the view to enlarge map detail, as if the airplane symbol was flying at a lower altitude over the map surface.

Similarly, zooming out allows a view of greater distance around the airplane symbol, as if the airplane was flying higher over the map. As you zoom in or out, the map scale changes to show the new distance represented between the airplane symbol and the top border of the display. Zooming in close to airport waypoints enables you to see your orientation in relation to available runways.
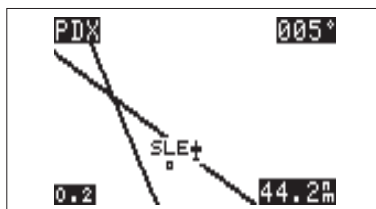
Auto
Zoom

The auto zoom feature changes the moving map scale automatically, adjusting the map scale to zoom in closer and closer as you near the destination waypoint. Similarly, this feature adjusts the map scale to zoom out as your distance from a waypoint of origin increases.
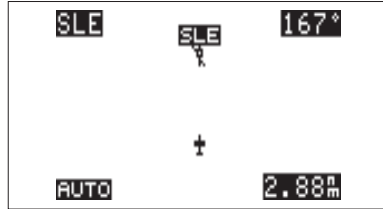
Enable auto zoom by turning the SMALL knob until "AUTO" shows as the map scale. Using auto zoom frees you from manually adjusting the map scale as you view the moving map screens.

The
Route
Screen

The Apollo 360 Map has the ability to display the route information from the host device in either a 1-Leg or 3-Leg route screen..
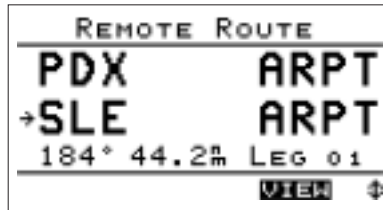
The preceding and following displays show the 1-Leg and 3-Leg route screens, respectively. You can select either display using the Screen Control function under the Main Menu.
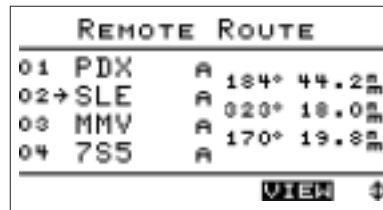
The route screen shows either two or four waypoints (depending on the selected screen) of the current route, as well as the desired track and distance between the displayed waypoints. The 1-Leg screen uses larger characters for easier viewing. The 3-Leg screen provides more information on a single display.

The Apollo 360 will not be able to match all waypoints that it receives from the host device with those in it's internal database. The unmatched waypoints are classified as "Remote" waypoints and identified by the designator "REMO" on the 1-Leg screen. On the 3-Leg screen, these waypoints are identified by an "R" designation.

```
┌─────────────────────────┐
│    REMOTE ROUTE         │
│  DIREC    REMO          │
│ →CABIN    REMO          │
│  342° 61.5� LEG 01   │
│                  ▣▣▣▣ ✛ │
└─────────────────────────┘
```
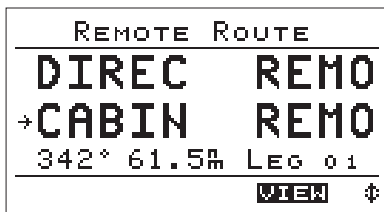
Searching for Nearest Waypoints An important feature of the Apollo 360 is its ability to locate waypoints closest to your position as you fly. Should you have to land the aircraft quickly, you can use this feature to locate a nearby waypoint and quickly navigate to it.

While navigating, press the GOTO/NRST key to activate the nearest function and search for waypoints closest to your present position.

```
GOTO
NRST
```

```
┌─────────────────────────┐
│ PRESS ▣ENTER▣ TO QUIT   │
│ →SLE   A 143°  5.37ᴹ    │
│  7S5   A 204° 10.2ᴹ     │
│  MMV   A 323° 12.6ᴹ     │
│  7S9   A 030° 16.9ᴹ     │
│ ▣QUIT▣            ↔ ↓   │
└─────────────────────────┘
```
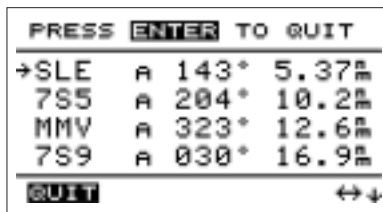
The nearest function screen shows up to 30 nearest waypoints in order of distance from your present position. The waypoint type, bearing to the waypoint, and range to the waypoint also shows.

Turn the LARGE knob clockwise to move the arrow cursor down the list to view a destination. Press the INFO key to display the information screens for the chosen waypoint.

Press the ENT key to return to the navigation function.

<p style="text-align:center">Important</p>

You can control the types of waypoints that show on the display as the result of a search for nearest waypoints. The menu function "Declutter Maps" option allows you to choose whether or not to display airports, VORs, NDBs, and intersections as searched waypoints and on the moving map screens. Before you fly, make sure to check this option and confirm that the waypoint types you wish to show will appear on the display after a search and while using the moving map screens. The "Declutter Maps" option is explained in Section 4.

Creating Waypoints The Apollo 360 allows you to create up to 2,000 of your own waypoints, each with a name you choose. As you navigate, you may wish to create waypoints at locations that are important to you. You can use your present position or enter lat/lon coordinates for the waypoint's location.

Use the new waypoint function to create waypoints. Press the WPT key. The new waypoint function screen allows you to enter a waypoint name of your choice, or you can use the default waypoint name that the unit assigns as a number.

```
PRESS ENTER TO CREATE
WPT #0001    AT    144°
 45°01.150'N   1.48ᴹ
123°03.210'W
RAD 172°   DIST 20.3ᴹ
UBG      VOR
                    ↔ ↕
```

[WPT]

Turn the LARGE knob to move the highlight to the desired character in the waypoint name to change it. Once you have entered the desired waypoint name, you can assign the new waypoint your present position coordinates by pressing the ENT key. If you wish your new waypoint to be located elsewhere, use the LARGE and SMALL knobs to move the highlight and change the waypoint lat/long coordinates. When you are finished, press the ENT key to enter the new waypoint into memory.

The fact that you may assign either your present position or lat/lon coordinates of your choice when you create waypoints is significant. You can create waypoints either as you fly, or more conveniently, before or after you fly when you are not busy navigating.

You can always edit or delete waypoints you have created. The menu function "User Waypoint Management" option allows you to perform these tasks. The use of this option is described in Section 4.

Getting Waypoint Information

Use the waypoint information function anytime to get information on waypoints in your route or any waypoints that appear in the Nearest list.. A complete listing of available information is included in Section 5, that explains the built-in waypoint database.

Destination Waypoint Information

Press the INFO key to activate the waypoint information function.

```
PDX   A   005°   44.2m
PORTLAND INTL
PORTLAND
ELEV     27'    OR USA
AVGAS/JET  PUBLIC
PRESS INFO TO EXIT   ↕
```

INFO

The waypoint information screen introduced in Section1 shows on the display with information about the current destination waypoint. Turn the LARGE knob to scroll through additional screens of information about the waypoint. Press the INFO key again to return to the navigation function.

Information About Other Waypoints
You can also get information about any other waypoint in your current route by using the route screen together with the waypoint information function. Press the ENT key to select the View mode then use the LARGE knob to select the waypoint name. When the arrow cursor points to the desired waypoint name, press the INFO key to get information about the waypoint. Press the INFO key again to return to the navigation function.

Information About Nearest Waypoints
The waypoint information function also works with the nearest function. This allows you to quickly get information about any of the waypoints nearest to your present position.

Press the GOTO/NRST key to search for nearest waypoints. When the list of these waypoints shows on the display, use the LARGE knob to move the arrow cursor to the desired waypoint. Press the INFO key to get information about the waypoint. To return to the navigation function, press the ENT key.
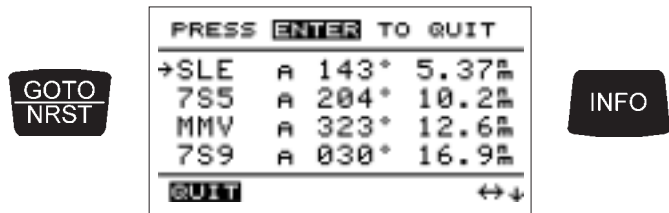
Scanning Waypoints for Information
You can "scan" waypoints on the moving map screens to get information quickly. With a moving map screen showing on the display, press the ENT key several times.
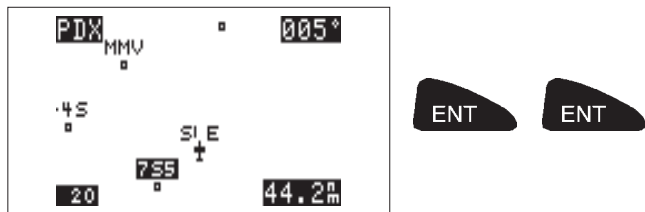
Notice that the highlight moves from the destination waypoint to a different waypoint on the screen each time you press this key. When the highlight has moved to the desired waypoint, press the INFO key to get information about the waypoint. This feature makes it fast and convenient to get information about any waypoint near your flight path while you navigate.

Section 4

Menu Function Options

This section details options available when you use the menu function. Use this function to access a menu of options that modify the way navigation information is displayed. The menu options allow you to customize the Apollo 360 to best suit your navigation requirements. The menu function also controls many other important ways the unit operates. A list of menu option default settings (those in effect when the unit is first switched on) for each option is included at the back of this section. Option settings are stored in memory and remain in effect until you change them.

<u>Note</u>

Background navigation calculations are not interrupted while you use other features.

The menu function makes these options available:

- Return to Nav
  Returns the unit from the menu function to the navigation function

- Screen Controls
  Contains control settings for display backlight and contrast as well as 1-Leg/3-Leg route display selection

- Map Setups
  Contains control settings for information shown on moving map screens (navigation function)

- Declutter Maps
  Limits items shown on the moving map screens and in the nearest waypoints list

- Track Point History
  Controls navigation "track point" storage in memory

and whether points show on moving map screens (navigation function)

- Arrival Alerts
  Controls alert message at waypoint arrival

- Airspace Alerts
  Controls airspace penetration alert message

- Countdown Time
  Controls built-in countdown timer

- Display Units
  Contains control settings for navigation units of measure

- User Wpt Mgmt
  Controls editing or deletion of waypoints you have entered in the Apollo 360's memory

- System Info 1
  Enables viewing of unit serial number and current hardware and software version information

- System Info 2
  Shows current database and operating system versions

Take a moment to become familiar with each menu option. Use the information in this section to explore each option and understand how it affects the operation of the Apollo 360. This section can also serve as a reference for later use to refresh your memory about options you may use infrequently.

The
Main
Menu

The main menu contains all menu function options. You can call up the main menu anytime to use the options. Press the MENU key. When the main menu shows on the display, select the desired option by turning the LARGE knob to move the arrow cursor up or down the list of options. With the desired option selected, press the ENT key to activate it.

```
            MAIN MENU
     ►RETURN TO NAV
      SCREEN CONTROLS
      MAP SETUPS
      DECLUTTER MAPS
      PRESS ENTER OR ✦
```
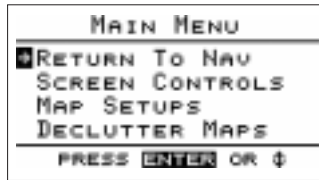
Changing
Menu
Option
Settings

Changing settings on any menu option screen is done in the same way. Use the LARGE knob to move the highlight on the screen to the option item you wish to change. Then use the SMALL knob to change the setting.

Return to
Nav

Use this option to leave the menu function and return to the screen shown on the display before you pressed the MENU key. This option is typically used when you are ready to continue navigating after using other menu options to make changes.

Note

"RETURN TO NAV" is automatically selected when you call the main menu. If you accidentally select the wrong menu option or if you decide to abandon making changes, you can easily leave the menu function by pressing the MENU key to again call the main menu. With "RETURN TO NAV" selected, press the ENT key to leave the menu function, or turn the LARGE knob to select a different option.

Screen
Controls

This option controls operation of the display backlight, and allows you to adjust display contrast. Turn the SMALL knob to select backlight Off, Lo, MLo, MHi, or Hi intensity levels. This option also allows selection of either 1-Leg or 3-Leg Route Display screens.

```
┌──────────────────────────────┐
│ SCREEN CONTROLS              │
│                              │
│ ROUTE DISP:        1-LEG     │
│ BACKLIGHT:           LO      │
│ CONTRAST:            ↔       │
│ ┌──────────────────────┐     │
│ ─│████████████         │+    │
│ └──────────────────────┘     │
│     PRESS ENTER OR ↔ ↕       │
└──────────────────────────────┘
```

<u>Note</u>

You can also control the display backlight using the backlight key at the lower right of the front panel. Press this key repeatedly to switch the backlight intensity through the levels described above.

Turn the LARGE knob to select "CONTRAST." Adjust display contrast by turning the SMALL knob.

Adjust the contrast to suit your preference and viewing angle. As you make adjustments, the horizontal bar at the bottom of the display shows the current contrast level. "-" indicates lower contrast, while "+" indicates higher contrast. A contrast setting near the middle of the bar is satisfactory in most cases. The contrast setting you select is stored in memory and remains in effect until you change it.

Turn the large knob to highlight the route display selection and the small knob to select between 1-Leg and 3-Leg Route Display screens. The 1-Leg display uses large letters for easier viewing. The 3-Leg display provides more information on a single screen.

Map
Setups

This option controls what and how information shows on the moving map screens. Select whether or not the Apollo 360 should show a route path or airspaces in the vicinity.

```
   MAP SETUP OPTIONS

ROUTE PATH:      OFF
AIRSPACES:       OFF
ORIENT UP:     TRACK

  PRESS ENTER OR ↔↕
```
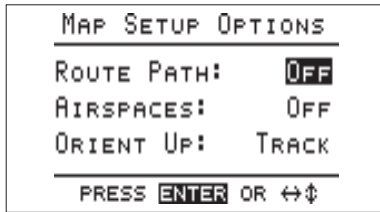
With route path "ON," a line representing your intended flight path shows on the moving map screens to aid you in navigating to your destination. Zooming in on the moving map screens, you can clearly see deviation from your course.

```
                   3S2   A
                   357°
                   0.64ᴺₘ
                    70ᴷₜ
                 TK338°

1.0              ENT ↔↕
```
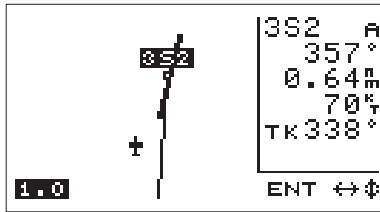
When airspaces are "ON," airspace boundaries show on the moving map screens.

```
PDX      59S TTD 013°
      6 PDX
                   S48
                   5S9
4S HIO
     7S3      0S2
          UBG      9S9
20       256  3S2 12.6ᴺₘ
```
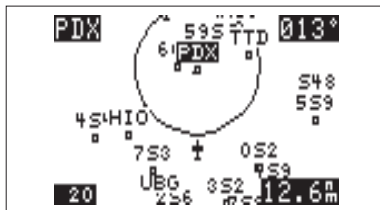
"ORIENT UP" allows you to select orientation of the moving maps, with the top of the screen representing current track, desired track, or true north.

Declutter Maps   This option controls the waypoints that show on the moving map screens and are used for nearest waypoint search. Types of waypoints you set to "ON" are displayed while those set to "OFF," are not visible on the moving map screens. You can choose whether or not to show the following types of waypoints:

- Airports (ARPTS)

- Very High Frequency Omnirange (VORS)

- Non-Directional Beacon (NDBS)

- Intersections (INTS)

- User Created (USERS)

```
      DECLUTTER MAPS

 ARPTS  ON    INTS   OFF
 VORS   ON
 NDBS   OFF  USERS   OFF
     IDENTS ON MAPS?   YES
     PRESS ENTER OR ↔↕
```

The "IDENTS ON MAPS" feature controls whether or not waypoint identifiers show on the moving map screens. With "NO" selected, small symbols represent locations of waypoints. Only the current To waypoint, and possibly route waypoints (see Map Setups) show on the moving map screens.

Note

The destination waypoint identifier always shows on the moving map screens, regardless of this setting.

Track Point History
This option allows you to store a record of navigation progress in memory. The stored record consists of a series of track points, each containing your position at the time the point was stored. You can choose whether or not to store track points, how often to store them, and manage the storage process using this option.

```
    TRACK POINT HIST
 TRACK HISTORY:    OFF
 STRATEGY:      FOREVER
 SAVE BY:      DISTANCE
 INTERVAL:       0.50m
 USED:  2%  CLEAR?   NO
    PRESS ENTER OR ↔↕
```

Each stored track point consumes space in memory. You can store up to 2,000 track points.

When track history is "ON," points are stored in memory. Your track history displays on the moving map screens as a series of dots showing your flight path. Each dot indicates a stored point. When track history is "OFF," no track points are stored or shown on the moving map screens.

You can select the track point storage strategy. Select "FOREVER" to continuously store points, starting again and writing over existing points when memory becomes full, or select "UNTIL FULL" to stop storing points when memory becomes full.

You can also control the storage interval for track points. Saving points by "DISTANCE" allows you to select a distance interval to determine when each track point is stored. Similarly, saving points by "TIME" allows you to select the minutes and seconds interval for each track point.

"USED" shows you the percentage of memory space used for track point storage. If you wish to empty the memory of track points, select "CLEAR?" and choose "YES."

Arrival Alerts   This option controls whether or not and when the Apollo 360 should alert you of arrival at a destination.

```
┌─────────────────────────────┐
│     WPT ARRIVAL ALERTS      │
│     ───────────────────     │
│   ALERT MESSAGE: YES        │
│                             │
│   DISTANCE:     1.00ᵐ       │
│     PRESS ENTER OR ↔↕       │
└─────────────────────────────┘
```
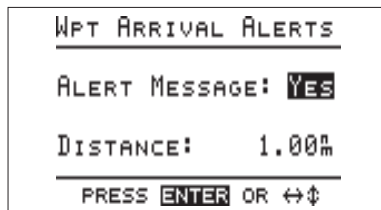
If you choose "YES" for the alert message, the arrival alert will show on the display to advise you of arrival at a destination waypoint.

```
    ┌─────────────────────────────────┐
    │         MESSAGE ALERT           │
    │                                 │
    │   ARRIVING AT MMV      A        │
    │          NEXT SEA      A        │
    │          356° 140ᴺ             │
    │  ─────────────────────────────  │
    │         PRESS ENTER             │
    └─────────────────────────────────┘
```

You can choose the radius distance around the destination
waypoint where the Apollo 360 alerts you. This distance
can be shown in the unit of measure you choose using the
"DISPLAY UNITS" setting described later in this section.

Airspace   Use this option to control whether or not and when the unit
Alerts   should alert you when approaching Class B, C, or special
            use airspaces.

```
    ┌─────────────────────────────────┐
    │        AIRSPACE ALERTS          │
    │                                 │
    │  ALERT MESSAGE: YES             │
    │  DIST BUFFER:  2.0ᴺ            │
    │  TIME BUFFER: 10MIN             │
    │  ─────────────────────────────  │
    │    PRESS ENTER OR ↔↕            │
    └─────────────────────────────────┘
```

If you choose "YES" for the alert message, the airspace
alert will show on the display advising you of approaching
airspace penetration within the distance or time you select.

```
    ┌─────────────────────────────────┐
    │         MESSAGE ALERT           │
    │  WITHIN 10 MIN OF               │
    │    PORTLAND OR                  │
    │  CLASS C AIRSPACE               │
    │  BRG 005°  RNG  32ᴺ            │
    │  ─────────────────────────────  │
    │         PRESS ENTER             │
    └─────────────────────────────────┘
```

The distance buffer is the distance from the airspace border
where you will be alerted. This distance can be shown in the
unit of measure you choose using the "DISPLAY UNITS"
setting described later in this section. The time buffer
contains the travel time (based upon current track and
speed) from the airspace border where you will be alerted.

Count-
down
Time

The Apollo 360 includes a countdown timer. Use this option to count elapsed time from as long as 60 minutes.

```
┌─────────────────────────────┐
│      COUNTDOWN TIME          │
│  ─────────────────────────   │
│  TOTAL TIME:   01:00         │
│                START         │
│                EXIT          │
│  ─────────────────────────   │
│     PRESS ENTER OR ⇕         │
└─────────────────────────────┘
```
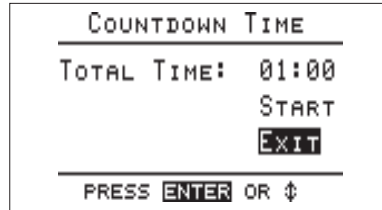
Enter a "TOTAL TIME" of up to 60 minutes (60:00). You can select a total time at:

▪ 1 second intervals from 1 to 10 seconds

▪ 5 second intervals from 10 to 60 seconds

▪ 10 second intervals from 1 minute to 10 minutes

▪ 30 second intervals from 10 minutes to 60 minutes

Select "START" and press the ENT key to begin countdown from the total time shown. As the countdown progresses, the screen shows "COUNTING" during the time you can stop the countdown, and continue it later.

Select "EXIT" to return to the main menu.

Note

The countdown timer can run "in the background" while you navigate and will not interfere with unit operation.

An alert message shows on the display when the countdown time has expired.

```
┌─────────────────────────────┐
│     MESSAGE ALERT            │
│  ─────────────────────────   │
│  COUNTDOWN TIMER             │
│    HAS EXPIRED               │
│  ─────────────────────────   │
│     PRESS ENTER              │
└─────────────────────────────┘
```
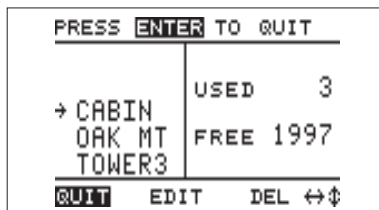
Display
Units

This option controls the way navigation units of measure show on the display. The units of measure you select show consistently throughout all screens in all operating functions.

```
┌─────────────────────────────┐
│    NAV DISPLAY UNITS        │
│                             │
│  DISTANCE: NM / KTS         │
│  ALTITUDE: FEET             │
│  LAT/LON:  D-M.MMM          │
│                             │
│   PRESS ENTER OR ↔↕         │
└─────────────────────────────┘
```

You can select the following units of measure for each navigation parameter:

- Distance - nm/kts; sm/mph; km/kph

- Altitude- feet; meters

- Lat/lon - d-m.mmm; d-m-s.s (where d=degrees, m=minutes, and s=seconds of latitude or longitude)

- UTMS - Universal Transverse Mercator System

User
Waypoint
Manage-
ment

This option allows you to manage waypoints you have created (user waypoints). You can edit or delete waypoints as your area of travel or other requirements change.

```
┌─────────────────────────────┐
│  PRESS ENTER TO QUIT        │
│                 │           │
│                 │ USED    3 │
│  → CABIN        │           │
│    OAK MT       │ FREE 1997 │
│    TOWER3       │           │
│  QUIT   EDIT    DEL  ↔↕      │
└─────────────────────────────┘
```

You can edit created waypoints to change the waypoint name or lat/lon coordinates. To edit a waypoint, turn the LARGE knob to move the arrow cursor to the desired waypoint. Turn the SMALL knob to select "EDIT."

```
PRESS ENTER TO EXIT
WPT CABIN   AT   238°
 41°27.518'N   737ᵐ
138°48.137'W
RAD 238°   DIST  727ᵐ
UBG      VOR
   TO CHANGE PRESS ↔↕
```

Move the highlight to the desired name character or
coordinate digit to make changes. When you finish making
changes, press the ENT key to save changes in memory.

Note

*It is important to manage user waypoints wisely. With
the capacity to store up to 2,000 user waypoints in
memory, the Apollo 360 can hold an immense amount
of information. When you edit, use intuitive identifiers
for waypoints you have created. This will help you find
waypoints more easily when you need to navigate to
them.*

You can also delete waypoints you no longer need. With
the arrow cursor at the waypoint you wish to delete, move
the highlight at the bottom of the screen to "DEL" and
press the ENT key. The waypoint is removed from
memory.

Important

Waypoints deleted from memory cannot be recovered.

When you are finished, press the MENU key to return to
the main menu.

System
Info 1

This option shows your Apollo 360 serial number and hardware and software version information.

```
┌─────────────────────────┐
│     SYSTEM INFO 1       │
│─────────────────────────│
│ UNIT SER    5000000     │
│ H/W   VER       -00     │
│ BOOT  VER      1.10     │
│                         │
│─────────────────────────│
│      PRESS ENTER        │
└─────────────────────────┘
```

You will need this information and the information shown on the System Info 2 screen if you contact the factory about the unit. Record the serial number on your owner's warranty record and keep the card in a safe place with your avionic instrumentation records.

System
Info 2

This option contains more information about the software and database your Apollo 360 is equipped with. Also provide this information in correspondence with the factory about your unit.

```
┌─────────────────────────┐
│     SYSTEM INFO 2       │
│─────────────────────────│
│ S/W VER      2.00       │
│ AMERICAS DB             │
│ 10/09/96     1.20       │
│                         │
│─────────────────────────│
│      PRESS ENTER        │
└─────────────────────────┘
```

Default
Settings

The Apollo 360 is shipped from the factory with menu options set as shown here. Note that where a range exits for a setting, the upper and lower boundaries are shown with the default setting shown as **bold**.

These menu option settings are stored in memory and remain in effect until you change them.

Option	Description	Defualt	Alert
Screen Controls	Route Disp: Backlight: Contrast:	1-Leg Hi 0 - **50** - 100%	N/A
Map Setups	Route Path: Airspaces: Orient Up:	ON ON NORTH **TRK** DTK	N/A
Declutter Maps	ARPTS: VORS: NDBS: INTS: USERS: Idents On Maps:	ON ON OFF OFF OFF YES	N/A
Track Point History	Track History: Strategy: Save By: Interval: Used: Clear?	ON FOREVER **DIST** - TIME .1 - **.50** - 10nm **0** - 100% NO	N/A
Arrival Alerts	Alert Message: Distance:	NO .1 - **1** - 9.9 nm	YES
Airspace Alerts	Alert Message: Dist. Buffer: Time Buffer:	YES 0 - **2** - 100 nm 0 - **10** - 20 min	YES

Option	Description	Default	Alert
Countdown Time	Total Time:	(User programmable 1 sec. to 60 min.)	When time expires
Display Units	Distance: Altitude: Lat/Lon:	NM/KTS FEET D-M.MMM	N/A
User Wpt Mgmt	No default settings	N/A	N/A
System Info 1	No default settings	N/A	N/A
System Info 2	No default settings	N/A	N/A

Section 5

The Waypoint Database

Database
Structure

The Apollo 360 provides an extensive built-in database of waypoint information to aid the navigator.

Waypoints in the database are divided into 6 categories by type. This category structure allows you to more easily search for waypoint information, search for nearest waypoints, or display waypoints on moving map screens. The database filters waypoints by these types whenever you use it, controlling, organizing, and speeding the delivery of information.

The waypoint types are:

- Airports (ARPTs)

- Non-directional beacons (NDBs)

- Very high frequency omniranges (VORs)

- Enroute intersections (INTs)

- User created (USERs)

- Remote waypoints (REMOs)

The sixth type is Remote (REMO) waypoints. The Apollo 360 will attempt to match received route information with it's internal database. It does this by looking for an exact match with the received identifier and a position match within 1/100th of a minute of latitude and longitude.

If no match is found, the received identifier and it's lat/lon position are stored as a remote waypoint type in the 360 route list.

Available
Waypoint
Information
The following information is available for each waypoint type. Use the waypoint INFO function to get this information as Section 1 describes in "Waypoint Information Function."
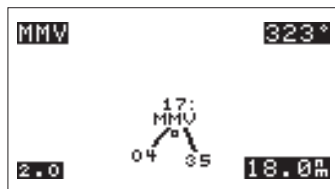
ARPT Waypoint Information

- Bearing and distance from present position

- Airport type

- Airport elevation

- Fuel availability by type

- Runway length(s) and surface type

- Radio communication frequencies (an asterisk at the frequency indicates part-time availability; "PCL" at the frequency indicates pilot controlled lighting, an "R" indicates that Radar service is available on this frequency.)

- Lat/lon coordinates

- Navigation beacon light

- IFR capability

- Landing fee

```
MMV   A   323°   18.0ᴺ
Mc MINNVILLE M
Mc MINNVILLE
ELEV    159'    OR USA
AVGAS/JET  PUBLIC
PRESS INFO TO EXIT    ⬍
```

```
MMV   A   323°   18.0ᴺ
        FREQUENCIES
UNIC  123.00        PCL
CTAF  123.00        PCL
CLR   118.35
APPR  126.00    R
PRESS INFO TO EXIT    ⬍
```

```
MMV   A   323°   18.0ᴺ
        RUNWAYS
04 /22    5420' LIT
     HARD SURFACE
17 /35    4660'
     HARD SURFACE
PRESS INFO TO EXIT    ⬍
```

```
MMV                    323°



         17:
         MMV
      04    35
2.0              18.0ᴺ
```

VOR Waypoint Information

- Bearing and distance from present position

- Operating frequency

- Lat/lon coordinates

- DME available

- Class (high/low/terminal)

- Weather broadcasts

```
PDX   v   004°   44.3m
PORTLAND
111.80 MHz    OR USA
Low
DME
PRESS INFO TO EXIT    ↕
```

```
PDX   v   004°   44.3m


LAT  45°35.621'N
LON 122°36.377'W
PRESS INFO TO EXIT    ↕
```

```
PDX                  004°

              21 L
          PDX /
      10R  /  PDX ▪
1.0            44.3m
```

NDB Waypoint Information

- Bearing and distance from present position

- Operating frequency

- Lat/lon coordinates

- DME available

- Class (high/low/terminal)

```
AAAMY ɪ 061°  1729m

                USA
LAT  43°04.127'N
LON 082°36.900'W
PRESS INFO TO EXIT    ↕
```

```
AAAMY                061°


        AAAMY
          ·
2.0             1729m
```

INT Waypoint Information

- Country

- Bearing and distance from present position

- Bearing from present position

- Lat/lon coordinates

```
CABIN u 342°    600m
LAT  54°54.581'N
LON 123°00.078'W
PRESS INFO TO EXIT    ↕
```

```
CABIN      CYNH  ˆᵘ Cᵞ342°
           CYCQ        EU
                 ᵇ BX74
        CYZY       ᵇ ᵇ  F
        CABIN
AH5        ᵘ
100    CYJM  CYXS 600m
```

USER Waypoint Information

- Bearing and distance from present position

- Distance from present position

- Lat/lon coordinates

Remote Waypoint Information

- Bearing and distance from present position

- Lat/lon coordinates

```
HOME  R 269°  35.4m
LAT  44°54.000'N
LON 123°50.000'W
PRESS INFO TO EXIT
```

Appendix A

Glossary of Navigation Terms

A   **Automatic Terminal Information Service (ATIS):**
Recorded information about weather and other conditions
at an airport, periodically updated when conditions
change.

Azimuth: Bearing, as measured clockwise from true or
magnetic north.

B   **Bearing (BRG):** The direction to any point, usually
measured in degrees relative to true or magnetic north.

C   **Constellation:** A group of stars or objects, such as GPS
satellites, in the heavens.

Coordinates: Values for latitude and longitude that
describe a geographical point on the surface of the earth.

Course: The planned direction of travel in a horizontal
plane.

Course Deviation: A measurement of distance left or
right from the desired course of travel.

Course Deviation Indicator (CDI): A graphic indicator
of course deviation typically shown as a graduated
horizontal bar with an icon indicating the deviation
distance left or right of course.

Common Traffic Advisory Frequency (CTAF)

D   **Database:** A collection of data structured in such a way as
to allow quick and convenient access to any particular
record or records. The Apollo 360 contains a built-in

database of waypoints and waypoint information. Users may add waypoints to this database.

Degree: 1/360th of a circle.

Desired Track (DTK): The desired course of navigation between a point of origin and a destination waypoint.

Distance: A measure of interval in space. Also referred to as range.

Distance Measuring Equipment (DME)

Drift: Displacement from the intended course of travel.

E   **Elevation:** The altitude above ground.

Estimated Time of Arrival (ETA)

Estimated Time Enroute (ETE)

F   **Fix:** A geographical location determined by either visual reference or by electronic navigation aids.

G   **Ground (GRND):** Ground communication frequency

Ground Speed (GS): Speed of travel across the ground. In aviation, the relation between ground speed and air speed is affected by the prevailing winds.

I   **Icon:** A symbol shown on the display depicting present position. The icon is shown as a symbol of an airplane on the Apollo 360's moving map screens.

Identifier: A name, typically abbreviated, assigned to a waypoint. The identifier may consist of numbers and alpha characters, up to six in length. For example, the airport identifier for Los Angeles International Airport is LAX.

Instrument Flight Rules (IFR)

Intersection (INT): A point defined by any combination of courses, radials, or bearings of two or more navigational aids.

K   **Knot (kt):** A unit of speed equal to one nautical mile per hour.

L   **Latitude (lat):** Any line circling the earth parallel to the equator, measured in degrees, minutes, and seconds north and south of the equator.

Longitude (lon): Any line from the north to the south pole, measured in degrees, minutes, and seconds of a circle, east or west of the Prime Meridian (Greenwich, England).

M   **Magnetic North:** The region, some distance from the geographic north pole where the earth's magnetic lines concentrate. A magnetic compass points to the magnetic north.

Magnetic Variation (Mag Var): The angle between the magnetic and true north. At various points on the earth it is different due to local magnetic disturbances. It is shown on charts as isogonic lines marked with degrees of variation, either east or west. These degrees must be added to or subtracted from the true course to get the magnetic course. (Easterly variations are deducted, and westerly variations are added.)

Map Datum: A mathematical model of the earth used for the purpose of creating navigation charts and maps.

Meter (m): A metric distance measurement equal to 39.37 inches.

Minute: 1/60th of a degree.

N   **Nautical Mile (nm):** A distance measurement equal to 6,076 feet, or 1.15 statute mile. One nautical mile is also equal to one minute of latitude.

         Non-directional Beacon (NDB): A low frequency/medium frequency navigation aid sending non-directional signals that can be used for navigation.

P   **Position Dilution of Precision (PDOP)**: A merit value for the calculated position based on the geometrical configuration of the satellites used; 3 is considered good, greater than 7 is considered poor.

R   **Radial:** Any of the 360 magnetic courses from a VOR or similar navigational aid, beginning at the navigational aid and proceeding outward in a straight line.

         Range (RNG): The distance from the present position to a destination waypoint.

S   **Second:** 1/60th of a minute of a degree.

         Statute Mile: A distance measurement equal to 5,280 feet or 0.87 of a nautical mile.

T   **Three-dimensional (3D) Position Fix:** A position fix defined by latitude, longitude, and altitude.

         Track (TRK): The imaginary line that the flight path of an airplane makes over the earth.

         True North: Geographic north, at the earth's north pole.

         Tower (TWR): Airport tower communication frequency

U   **UNICOM:** The radio frequencies assigned to aeronautical advisory stations for communication with aircraft.

Unicoms may provide such airport information as active runway, wind direction and velocity and other conditions of importance to pilots.

Universal Coordinated Time (UTC): Greenwich Mean Time, or the time at the Prime Meridian in Greenwich, England. Also referred to as Zulu time.

UTC Differential: The difference in time between that at the present position and UTC.

V **Very High Frequency Omnirange (VOR):** A navigational aid that transmits signals such that a receiver can indicate its current radial or bearing from the transmitter.

W **Waypoint:** A navigational fix used in area navigation and defined by latitude and longitude coordinates.

Notes

Appendix B

Troubleshooting

This appendix contains information to troubleshoot the Apollo 360 when improper operation is observed. The table below lists possible problems you could encounter while operating the unit. Examine the possible causes of the problem and take the action listed to correct the trouble. If you cannot correct the problem, contact your dealer. If your dealer is unavailable, contact the II Morrow factory at the address and phone number listed at the back of this appendix.

Problem	Possible Cause(s)	Action
Unit does not power on	Open in power supply circuit	Check circuit breaker - reset if necessary
	Faulty electrical wiring or connection	Contact your dealer to perform electrical system test
No Host signal input	Host device not turned on	Ensure that host device is powered up
	Faulty wiring or connection	Contact your dealer to check wiring ensure that unit is properly connected.
Display too dark or too light - characters hard to see	Change in view angle or ambient light conditions in cockpit	Adjust display backlight (use backlight key) or adjust display contrast as Section 5 describes in "Screen Controls" option

Problem	Possible Cause(s)	Action
No position fix	Host navigation device hasn't acquired fix yet No active route in host navigation device	Ensure that host device is working properly & in view of navigation signal input Some host devices won't supply nav. information unless an active route is present. Configure & activate a route in host device
Search for nearest waypoints reveals too few or wrong types of waypoints	Incorrect selection of waypoint types to show after search	Check "Declutter Maps" option as Section 5 describes to verify that desired waypoint types to search are "On"
Wrong types of waypoints show on moving map screens	Incorrect selection of waypoint types to show on moving map screens	See action above - the waypoint types you set to "No" do not show on moving map screens OR after nearest waypoint searches
Airspace boundaries missing from moving map screens	Airspace display on moving map screens set to "Off"	Check "Map Setup" option as Section 5 describes and verify that "Airspaces" item is set to "Yes"
Line representing route path on moving map screens is missing	Route path display on moving map screens set to "Off"	Check "Map Setup" option as Section 5 describes and verify that "Route Path" item is set to "Yes"

Contacting the Factory
If efforts to resolve the problem fail, contact your dealer or the factory weekdays from 8:00 A.M. until 5:00 P.M. Pacific time for technical assistance. The II Morrow technical service staff will gladly assist you.

II Morrow Inc.
Technical Service Department
2345 Turner Road S.E.
Salem, OR 97301 U.S.A.

U.S.A. Toll Free 800-525-6726
Canada Toll Free 800-654-3415
FAX (503) 364-2138
International (503) 391-3411

Notes

Appendix C

Features

The Apollo 360 is a powerful and versatile, supplemental navigation display aid designed with the latest technology to offer you unprecedented ease in navigating your aircraft. The unit includes:

- A graphic LCD display with adjustable contrast and backlight

- Display contrast automatically compensates to maintain optimum contrast during shifts in ambient temperature

- A moving map display to graphically show your navigation progress

- An extensive built-in database of airports, VORs, NDBs, and Intersections

- Memory capacity to store up to 2,000 user created waypoints

- Low power consumption circuitry

- A lightweight chassis to minimize instrument weight

- An internal fuse to protect against damage to electronic components (not user replaceable)

- A memory backup battery to protect against loss of user entered data (typical battery life is 4 to 6 years)

- A built-in low battery alert to advise you when memory backup battery requires replacement (not user replaceable)

Notes:

Limited Warranty

1. Scope of Limited Warranty

II Morrow warrants to the original consumer purchaser only 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. Avionics equipment is covered for 26 months (12 months reconditioned) 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 (a) II Morrow receives a completed warranty registration card with respect to the specific product unit found to be defective, (b) the unit was installed by personnel certified by the FAA to install avionic equipment and a copy of FAA Form 337 documenting the installation is provided to II Morrow (except homebuilts), (c) II Morrow receives notice of such defect during the period of the warranty, and (d) the consumer purchases the unit in the United States or Canada. II Morrow's sole and exclusive liability, and purchaser's sole and exclusive remedy under this Limited Warranty shall be, at II Morrow's option, either (a) the repair or replacement of the defective product or (b) the return of the price paid for such product. This Limited Warranty shall apply to a repaired or replacement product only for the remaining, unexpired portion of the warranty period applicable to the original product. In no event shall II Morrow's liability exceed the purchase price of the defective product. This Limited Warranty gives you specific legal rights. You may have other rights which vary from state to state.

2. No Other Warranties

TO THE EXTENT PERMITTED BY APPLICABLE LAW, AND EXCEPT ONLY AS PROVIDED IN PARAGRAPH 1 ABOVE, THE PRODUCTS ARE PROVIDED "AS IS" AND WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

3. Exclusion of Liability for Damages

IN NO EVENT SHALL II MORROW, ANY DISTRIBUTOR, OR THE SELLING DEALER BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL, PUNITIVE, OR EXEMPLARY DAMAGES (INCLUDING LOSS OF PROFITS, LOSS OF TIME, OR INCONVENIENCE) WHETHER BASED ON CONTRACT, TORT, STRICT LIABILITY, OR ANY OTHER LEGAL THEORY, EVEN IF II MORROW, SUCH DISTRIBUTOR, OR THE SELLING DEALER WAS ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. Some states do not allow limitations of incidental or consequential damages, so the above limitation may not apply to you.

4. Limitation of Warranty

The foregoing warranty is void if any defect to perform results from (a) improper or inadequate maintenance, (b) unauthorized modification of any product, (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 Limited Warranty. II Morrow makes no warranty with respect to any installation if II Morrow products, whether such installation is performed by II Morrow, any authorized dealer, or any other person.

5. Technical Assistance

The Limited 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 person rendering technical advice, assistance, or service in connection with the selection, purchase, or use of any II Morrow products.

6. Place of Repair or Replacement

In order to obtain the benefits of this Limited Warranty, the defective II Morrow products, along with a copy of your receipt, must be returned within the applicable warranty period and with the transportation charges prepaid, to II Morrow at its plant at 2345 Turner Road, S.E., Salem, Oregon 97302 or to any authorized II Morrow dealer. Products repaired or replaced by II Morrow under this Limited Warranty will be returned by surface transportation at II Morrow's expense.

Revised September 28, 1994