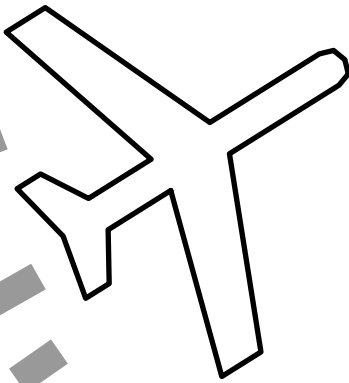# Operational Basics

You can *configure* and *control* the SN3308 to provide exactly the information you need at any point in the flight. *Configuring* the SN3308 refers to connecting the appropriate data to a given display. For example, a bearing pointer can be driven by either the VOR or the GPS receivers. *Controlling* the SN3308 refers to tailoring the display to suit your information needs. For example, you may decide to turn off a bearing pointer completely during the enroute portion of the flight and use it only during an approach.

Power-up Displays

On initial power-up, several different messages may be displayed on the SN3308. These messages are displayed along the top of the display. Some of the more urgent messages will require your acknowledgement by pressing the flashing [ACK] softkey. (VUE button)

The following messages are displayed on power-up under normal conditions, and do not require acknowledgment.

VER xxxxx CRC xxxxxxx	■ Displays the current version of internal software.
NavData Expires ddmmmmyy, xx	■ Displays the expiration date of the internal Jeppesen NavData database used for displaying the moving map.
Lamp xxx Hours Used	■ Indicates the total lamp usage in hours and minutes.

The following messages may be displayed on power-up and indicate an abnormal situation. These messages will require one or more acknowledgments by pressing the [ACK] softkey.

CRC Self-Test FAILED

■ Program CRC is not the expected value. The "CRC Self Test Failed" message must not appear on power-up if flight operations are predicated on the use of the SN3308 Navigational Display.

LAMP CHANGE SUGGESTED TEST FAILED xxx HOURS AGO

■ Indicates that the internal lamp monitoring system has detected a change in lamp characteristics and a lamp change is suggested within the next 50 hours. This message can only be removed by replacement of the lamp and resetting of the lamp monitor by your avionics shop.

TO PERFORM AUTOMATIC LAMP TEST, RUN FOR 2 MINUTES AT MAXIMUM BRIGHTNESS

■ The internal lamp monitoring system periodically tests the lamp when running at full brightness. This message indicates lack of the test due to operation below full brightness for more than 10 hours. Operating the unit at full brightness for at least two minutes will allow the test to complete and will remove this message from the next power-up cycle.

DEMO MODE: NOT FOR FLIGHT TO EXIT: POWER UP WHILE HOLDING NAV-MAP-BRG

■ The SN3308 has a special software mode for use with the Sandel demonstrator chassis. This message should never appear on an instrument installed in an aircraft. When in DEMO mode, certain installation-specific items such as gyro settings, calibrations, etc. are erased. If the message occurs, do not use the unit for flight until it has been reset by an avionics shop and a complete ground check has been performed.

In addition to these power-up messages, Chapter 7 describes a complete list of both normal and abnormal messages which can be displayed on the SN3308 at any time.

Selecting the Data

Sensor data is data that comes from various devices within the aircraft. This includes primary navigational instruments such as the VOR, ADF and GPS or loran receivers, as well as instruments such as the directional gyro (DG), fluxgate compass and Stormscope®. Heading data from the directional gyro and fluxgate compass is always applied directly to the SN3308's compass card display, while other types of sensor data can be displayed in several different ways. You can control these displays by configuring the *course pointer,* the *bearing pointers,* the *map data* and the *weather data.* See illustrations in Appendix 2.

Selecting the Primary Nav Source

The SN3308's course pointer and CDI (or "D-bar") can be driven from VOR, GPS or loran data.

In some installations, the [NAV] button on the SN3308 is used to select the primary nav source. In others, an external switch performs this function and the [NAV] button has no effect. Refer to your Aircraft Flight Manual Supplement for the details of your installation. If external switching is used, this section does not apply.

If external switching is *not* used, then pressing the [NAV] button repeatedly will cycle through the available choices, which are specific to your aircraft and were configured by your installer. Selecting a primary navigation source also connects it to the autopilot, if configured. Numeric data from the primary nav source, such as distance, bearing and groundspeed is displayed in the upper display area. If the selected nav source is a VOR receiver with a localizer frequency tuned, a status message of "LOC" appears at the upper left of the display as a reminder. If a valid glideslope signal is also being detected, the status message changes to "ILS". The message is turned off if the VOR receiver is tuned to a normal VOR (omni-bearing) frequency.

In some installations, the ILS Lockout function may be enabled on the SN3308. This function forces the selection of the NAV receiver when an ILS frequency is selected. Refer to your Aircraft Flight Manual Supplement to see whether ILS Lockout has been enabled for your installation.

NOTE: the following ONLY applies if ILS Lockout is enabled:

Tuning the number 1 VOR receiver (NAV1) to an ILS frequency will cause the SN3308 to override the nav source selection and will force NAV1 as the selected nav source. The nav source will return to the previous selection after the ILS frequency is de-tuned.

While NAV1 is tuned to an ILS frequency and the nav source selection override is in effect, pressing the [NAV] button will not change sources. Instead, the following message is displayed: "NAV1 TUNED TO LOC". To defeat the override and restore the function of the [NAV] button, simply select a non-ILS frequency in the NAV1 receiver.

Selecting the Bearing Pointer 1 & 2 Nav Source

The SN3308 provides two independent bearing pointers which function in much the same way as a traditional radio magnetic indicator (RMI). The head of each bearing pointer indicates the bearing *to* the nav source, and the tail of each pointer indicates the bearing *from* the nav source. Either pointer can be connected to any available navigation source: VOR, GPS/loran, or ADF. When GPS, loran or other long-range nav system is selected as the nav source, the bearing pointer indicates the bearing to the current active waypoint.

To select which nav sources are connected to either bearing pointer, press [SHFT]>[BRG]. The resulting menus provide choices for each pointer including nav source, OFF, and AUTO. AUTO will automatically select the same source as that selected for the primary course pointer. The currently selected nav source is bracketed with asterisks (e.g.*AUTO*).

Displaying the Map Data

Map *data* consists of flight-plan waypoints from the LNAV receiver (either GPS or loran), as well as nearby airports, navaids, intersections and airspace from the SN3308's internal database. The map display is controlled by pressing the [MAP] button to cycle through the different map memory locations and by pressing the [↓] and [↑] buttons to zoom the map in and out. Pressing and holding the [MAP] button for 1.5 seconds will turn off both the map display and the WX-500 Stormscope display, if enabled.

A map memory is a list of which map items are to be displayed and which are not. There are four preset map memories, labeled 1 through 4. The factory default settings of the preset map memories are listed in the table below. There is also a scratchpad memory, labeled "S", which you can change at any time. To save a particular configuration of scratchpad memory into one of the presets, press [SHFT]>[MAP] and then [COPY] to select the desired memory location.

To change the display items in the scratchpad memory, press [SHFT]>[MAP]. Move the cursor up and down with the [MAP] and [BRG] buttons, and enable or disable the desired items along the bottom row of the display. The contents of scratchpad memory will be retained until you make further changes, even after cycling the power.

For a complete discussion of the SN3308 map features, see Chapter 5.

Map Memory Location	Factory Defaults
1	Flight plan waypoints and courselines only.
2	Flight plan waypoints and civil airports with runways>3500 ft. long.
3	Flight plan waypoints and high-level and low-level VORs.

Note: both the scratchpad memory and the memory location 4 are empty by default and will not show up in the [MAP] button rotation until edited.

Displaying Stormscope® Data

If a BF Goodrich WX-500 lightning detection sensor has been installed in the aircraft, it can be configured to display on the SN3308.

To turn the lightning display on and off, and to control the various functions of the WX-500 sensor, press [SHFT]>[↑] to display the related softkeys. The available WX-500 functions are listed below. For more information, refer to the WX-500 User's Guide.

Lightning strikes are displayed in the SN3308's primary display area, and are automatically synchronized with the aircraft's heading. A status word in the upper right corner of the SN3308 display is dedicated to the WX-500. In normal operation, this status word shows the current strike rate, preceded by an "S" for strike mode or a "C" for cell mode.

Softkey Label	Function
OFF	Turns off the Stormscope® display and clears the WX-500 status word.
CELL	Selects "CELL" mode, which displays a lightning symbol for each group of individual strikes.
STRK	Puts the WX-500 in "STRIKE" mode, which displays a lightning symbol for each individual strike.
CLEAR	Clears the WX-500 of all symbols.
ESC	Exits the sub-menu mode.
SETUP MENU	Accesses additional WX-500 system commands, see next page.

WX-500 SETUP MENU FUNCTIONS	
SELF TEST	Causes the WX-500 to execute a self-test.The result is displayed in the WX-500 status word. NOTE: ten seconds or more may be required for the test to complete.
DEMO	Causes the WX-500 to send a series of simulated lightning strikes to the SN3308 display.
ESC	Exits the sub-menu mode.

NOTE: Self-test or DEMO mode may be operated in-flight if desired with no adverse affect on SN3308 operation.

Controlling the Display

The SN3308 is capable of displaying a tremendous amount of data at once. Using the SN3308 effectively means balancing desirable redundancy against undesirable clutter. This section describes the controls available to help you achieve that balance.

ARC View and 360-Degree View

As with sophisticated EFIS systems, the SN3308 allows you to switch between a traditional 360-degree view of the compass rose (see illustration 1 in Appendix 2) and a forward-looking ARC view (see illustration 2 in Appendix 2). The ARC view places the airplane symbol at the bottom of the screen and the heading indicator along an ARC of approximately 70-degrees around the top of the screen. Arc view maximizes the display of the ground track ahead of the aircraft and provides the greatest amount of screen area for map data.

Press [VUE] to switch back and forth between ARC and 360-degree views. This action only affects the screen display – all navigation sources, bearing pointers, and other settings remain the same.

Displaying the Deviation Bar

The small course deviation bar (or "D-bar") display in the lower portion of the screen is visible at all times. In addition, a larger conventional D-bar can be displayed. This D-bar will be displayed only under the following conditions:

- The "DEV BAR" setting under [SHFT]>[NAV] must be turned ON
- The map display must be turned OFF
- The [VUE] mode must be 360-degree view

To turn the map off, press [MAP] until "MAP OFF" appears in the upper right portion of the screen. Note that if the WX-500 Stormscope display is turned on, "MAP OFF" will not appear even though the map is deselected. To turn off both the map and the Stormscope display simultaneously, press and hold the [MAP] button for at least 1.5 seconds.

Displaying the Course Pointer

The course pointer itself can be removed from the display to allow navigating on the courseline from your LNAV receiver. Press [SHFT]>[NAV], then the [CRS PTR] softkey to toggle the setting between "AUTO" and "ON".

When set to "ON", the course pointer is always displayed.

When set to "AUTO", the course pointer will be turned off under the following conditions:

- An LNAV receiver (GPS or loran) is selected for navigation, and
- A waypoint or flight plan is entered, and
- Flight plan waypoints are enabled on the current map memory.

When NAV is selected for navigation, the course pointer is always displayed.

Auto-Slewing the Course Pointer

One unique feature of the SN3308 is its ability to automatically rotate the course pointer to the desired course being sent digitally from a GPS or loran. This feature is called "auto-slewing," and is especially useful during a GPS approach or while flying a complex flight plan.

To enable auto-slewing, press [SHFT]>[NAV], then press the softkey labeled "AUTO SLEW" to toggle this feature on and off. With auto-slew set "ON", the course pointer will be set to the desired track being sent by the selected GPS or loran. Turning the course select (OBS) knob has no effect, other than displaying the message "LEG/AUTO (AUTO SLEW) IS ON". With auto-slew set "OFF", the course select knob rotates the course indicator in the same way as a conventional HSI.

Note that certain GPS receivers such as the King KLN-90B and Garmin GNS 430 support an 'OBS' or 'HOLD' mode which when active will override auto-slew.

Centering the Heading Bug or Needle

To rapidly set the heading bug to the aircraft's present heading, press [SYNC]. To rapidly set the course pointer to the current Direct-to course (i.e., to center the CDI), press [SHFT]>[SYNC].

When no valid course is available, such as when flying a LOC/ILS approach, [SHFT]>[SYNC] rotates the course pointer to the lubber line (current heading) instead.

Setting the Map Range

Whenever map data is being displayed, the [↑] and [↓] buttons are available to zoom the image in and out. Each press of either button selects the next higher or lower map range. The map range refers to the depicted distance, in nautical miles, from the airplane symbol to the outside of the compass tick marks. The current map range is displayed at the upper right portion of the screen and is selectable between 1 and 1000 nautical miles.

When either a direct-to waypoint or a full flight plan has been entered on the LNAV, a one-touch auto-ranging function is available on the SN3308. Pressing and holding the [↑] button for at least 1.5 seconds will cause the map range to increase smoothly until reaching a setting at which the entire flight plan is visible. Similarly, pressing and holding the [↓] button for at least 1.5 seconds will set the map range to a value at which only the current waypoint is visible.

A-B Function

A unique feature of the SN3308 is its ability to maintain two different groups of display settings and to quickly swap back and forth between them. This allows you to set up a particular screen display and memorize the settings for later use. For example, your preferred "enroute" setup might be ARC view with only bearing pointer 1 displayed, connected to a VOR navaid. Your "approach" setup might be in 360-degree view with bearing pointer 2 displayed, connected to an ADF (to monitor the locator outer marker). In this case, you would simply set up either display, press [A-B], and then set up the other display. Pressing [A-B] repeatedly will then switch between the two displays. The current display setting in use is indicated by the letter "A" or "B" at the top of the screen.

Press [SHFT]>[A-B] to make both displays identical. Whichever display is visible at the time [SHFT]>[A-B] is pressed will be copied into the non-visible display. At this point, pressing [A-B] will have no apparent effect (other than changing the "A" or "B" legend) since both displays have the same content.