



**International**

**Piper Seneca V**

**Glass Avionics  
Operating Manual**

## **Introduction**

This Pilot's Guide provides information about the glass panel for the FSD Piper PA34 Seneca V, including the Electronic Horizontal Situational Indicator (EHSI) and Multi Function Display (MFD).

### **Note**

All images contained within this document, including screenshots and other displays, are for reference use only and are subject to change. The images contained herein may differ slightly from your actual equipment or display.

The instructions and warnings in this manual are not intended to replace the instructions and warnings for other equipment on your aircraft. It is critical that you as the pilot in command have a complete understanding of the warnings, operating instructions, and limitations for all equipment installed on your aircraft. FSD strongly recommends that you use the EHSI/MFD only under VFR conditions until you are very familiar with the instrumentation.

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## Glass Avionics Panel



The glass avionics panel provides the pilot with the state of the art in concise information and situational awareness without the necessity of scanning the entire cockpit for a variety of instruments.

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## Panel Views

Two panel views are available. The standard panel view offers a good view over the glare shield for maneuvering, takeoff and landing. The full panel view allows the pilot access to all of the pilot side controls.



Standard view

Full panel view





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You can swap between the two panel views via the mouse hotspot on the panel's glare shield.



## Main Panel Instruments

These instruments are in view regardless of which panel view you select.

### ANNUNCIATORS

Critical system and engine information is displayed here.







## AIRSPEED INDICATOR



Turn the **Altitude Selector Knob** until the current altitude from barometric pressure, in feet, is displayed in the **Altitude Selection Indicator** window. The corresponding True Airspeed (TAS), in knots, will show in the **True Airspeed Calculator** window.

The **Indicator Needle** registers Indicated Airspeed in Knots (KIAS).

## ALTIMETER



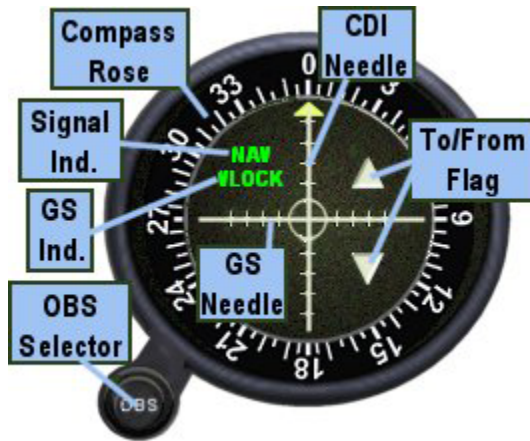
Indication needles for hundreds, and thousands and ten thousand feet.



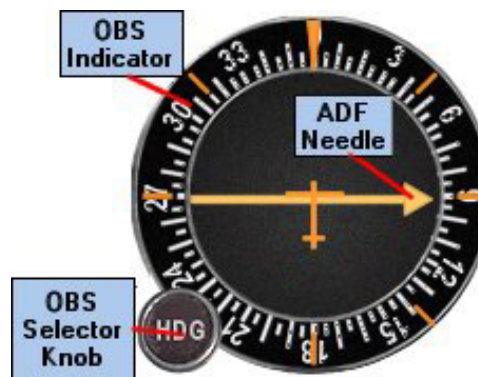
### Full Panel View

The full panel view provides access to standby instruments not visible from the standard view, along with oxygen, landing gear, navigation and lighting controls.

### VOR 2 INDICATOR



### ADF INDICATOR





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### DEICE CONTROLS

Surface/prop anti-icing, windshield heat, and pitot heat can be selected here. Current load of the anti-ice system is displayed on the ammeter directly to the left of the switches.



### LIGHTING CONTROLS

The panel light control has three positions:

- Off
- Instrument lights on
- Instrument lights and panel floodlights both on

The cabin light switch controls the interior dome lights (visible in VC)  
The wing lights switch is also located here.



### OXYGEN CONTROLS



To supply oxygen to the oxygen masks select Open (OP) on the valve control.



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## LANDING GEAR CONTROL AND FLAPS INDICATOR

If the emergency gear release is pulled into the out position it will release the hydraulic cylinders and allow the gears to fall into their down and locked position. Once this control is used the gear handle will be inoperative, requiring repair of the gears via the Load Manager.



## Auxiliary Panel Icons

The Seneca V instrument panel incorporates several auxiliary panels, and multiple panel views. Many panel views are accessed via the hotspots illustrated above. Others are accessed via standard panel icons:



1. Throttle/pedestal
2. Radio stack
3. GPS
4. ATC menu
5. Trim/fuel panel
6. Bus panel/environmental controls





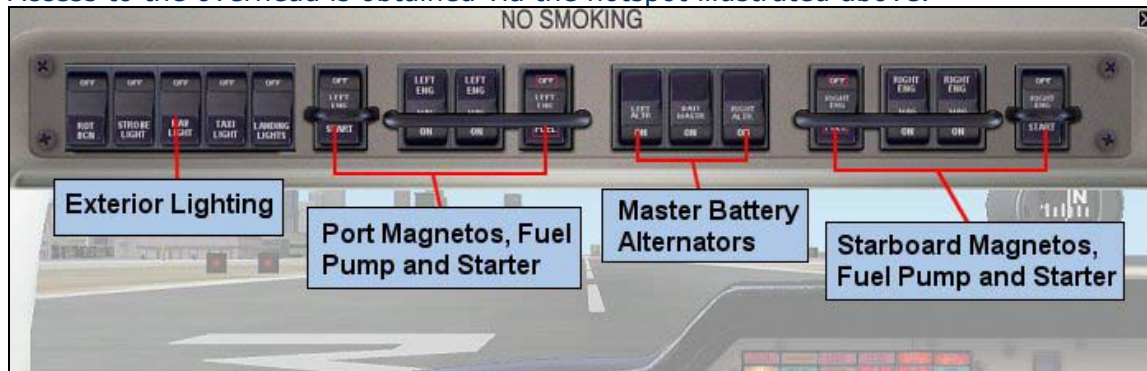
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## OVERHEAD PANEL

Access to the overhead is obtained via the hotspot illustrated above.



## BUS PANEL ECS CONTROLS

Circuit breakers for aircraft systems and instrumentation are located here.

Cabin temperature is displayed on the digital readout. Display will be in Fahrenheit if US System is selected on the simulator's International Settings. Otherwise display will be in Celsius.

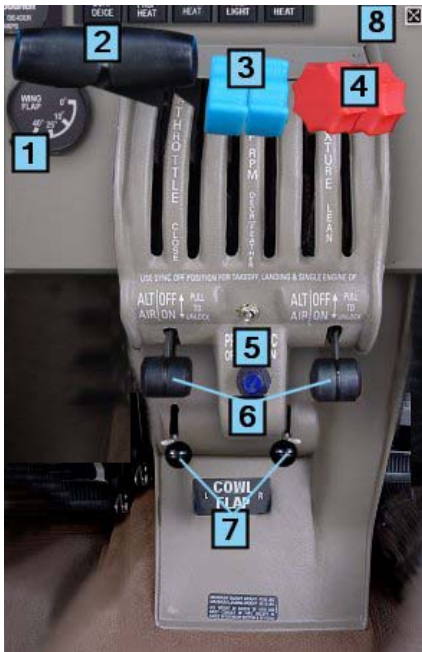




To heat or air condition the cabin set the thermostat (1) to the desired comfort level. Move the Air Conditioning/Heater master switch (2) to ON. The cabin temperature will be maintained according to your thermostat setting.



## PEDESTAL



1. Flaps Indicator
2. Throttle Levers
3. Prop Pitch Levers
4. Mixture Levers
5. Prop Syncophaser control
6. Outside Air Vents
7. Cowl Flaps controls \*
8. Close Panel Hotspot.

\*Note that use of the cowl flaps will induce a certain amount of drag, and a slight drop in airspeed can be anticipated.



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## FUEL/TRIM CONTROLS



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### RADIO STACK



The radio stack is in fact two major components: The **Nav/Com Radios**, and the **Radio Stack**.

The **Radio Stack** can be accessed via the Auxiliary Panel Icons from main panel view.

1. Audio panel
2. Autopilot
3. Nav/COM radio
4. ADF radio
5. Transponder
6. Avionics master switches

Licensed Reality XP users can configure the radio stack to include the advanced avionics suite. See the Load Manager instructions for details.

For Reality XP functionality, please review the Reality XP documentation.





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### Audio Panel

The **Audio Panel** at the top of the radio stack allows the pilot to select which source is monitored through the aircraft audio system.

Simply select the radio and/or audio channel/navigation beacon signal you want to hear.

Selecting **COM Both** will enable reception of both COM 1 and COM 2 radios



### NAV/COM Radio



Both NAV 1/COM 1 and NAV2/COM 2 are controlled here. DME reading and bearing to the navaid are also displayed.

### Autopilot

The autopilot master switch is located on the Avionics Master Switch panel. Individual autopilot functions may be selected on the autopilot unit. A green light will illuminate when the switch is activated. Altitude and vertical speed control are also selected and displayed here.





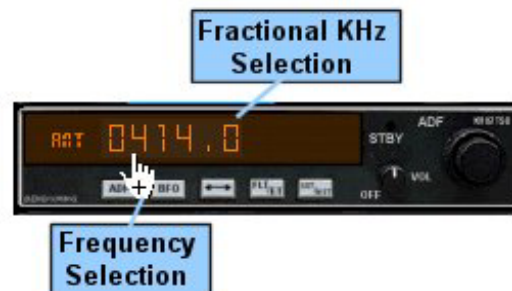
### Transponder

On the transponder, you will see a self-test screen for several seconds when first powered up. Squawk codes are simply dialed in on the **numeric keypad** pressing the numbers 0 through 7 in sequence. Numbers 8 and 9 are not used. The unit is in broadcast mode by default. This means that ATC will be able to interrogate the transponder for altitude and identity. The modes may be toggled off if desired. When the **FUNC** button is pressed, the unit will display flight level from pressure altitude when the aircraft is above 10,000 feet (i.e. 12,300 feet = FL 123)



### ADF Radio

The ADF receiver tunes similarly to the Nav/com radios. The unit will tune in a 500 Hz increment only once in each direction.





## Avionics Master Switches

The Radios/Avionics master switch, autopilot master switch, Flight Director master switch, and Yaw Damper switch can be found here.



## Flight Director

When the Flight Director is active, the flight director **FD** symbol will be visible on the HSI Annunciator, and on the autopilot display panel.

When the Flight Director is active, the command bars on the Artificial Horizon will point to the direction and/or altitude selected on the autopilot. The autopilot does not have to be engaged in order for the flight director bars to operate. Simply press the desired button on the autopilot control panel:

HDG Button	The flight director bars will guide you in the direction of the selected heading, as displayed on the HSI Heading Bug.
NAV Button	The flight director bars will guide you to the bearing of the VOR 1 navaid (if it is tuned in). If you have an active flight plan loaded, and you select the GPS Button on the NAV 1 Radio, the bars will guide you in the direction of the next active waypoint.
APR Button	If you select the approach (APR) button, and the NAV 1 radio is receiving the ILS beam, the flight director bars will guide you to the localizer
ALT Button	The flight director bars will guide you to the altitude selected on the Altitude Selector/Alerter (ASA). Also, if you are following a localizer beam, the bars will guide you along the glideslope.



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## EHSI Display





**Legend**

1	Engine data/trim data selector switches *
2	Flight plan waypoint display/toggle *
3	NAV 1 data display/toggle *
4	NAV 2 data display/toggle *
5	ADF data display/toggle
6	Navigation data displays (navaid identifier, frequency, bearing)
7	HSI
8	Magnetic heading display
9	Clock
10	Radar altimeter data – displays data when the aircraft is within 2000' AGL
11	True airspeed and ground speed displays
12	Autopilot heading data display/toggle *
13	Autopilot ALT data display/toggle *
14	Autopilot VS data/display toggle *
15	Kohlsman setting display/toggle *
16	Engine data or trim data (controlled by switch #1)
17	Airspeed indication
18	Artificial horizon
19	Altitude display
20	Vertical speed indicator
21	Ground Proximity Warning alert indicator
22	Stopwatch timer controls (displays underneath clock display)
23	Power on/off switch
24	Autopilot heading bug control knob
25	OBS selector knob
26	Kohlsman setting knob

\* = Display may be toggled on/off to unclutter the screen using the respective selector knob.

Selector buttons allow you to display new information or change the display. Button labels change to reflect the current environment. The Lower Half Displays the Horizontal Situation Indicator (HSI) and other details about direction, speed, and flight plans.

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## ENGINE DATA/TRIM DATA DISPLAYS



By selecting the respective buttons (left) the main display can show engine data or trim data. Or both can be toggled off.

### Trim Display



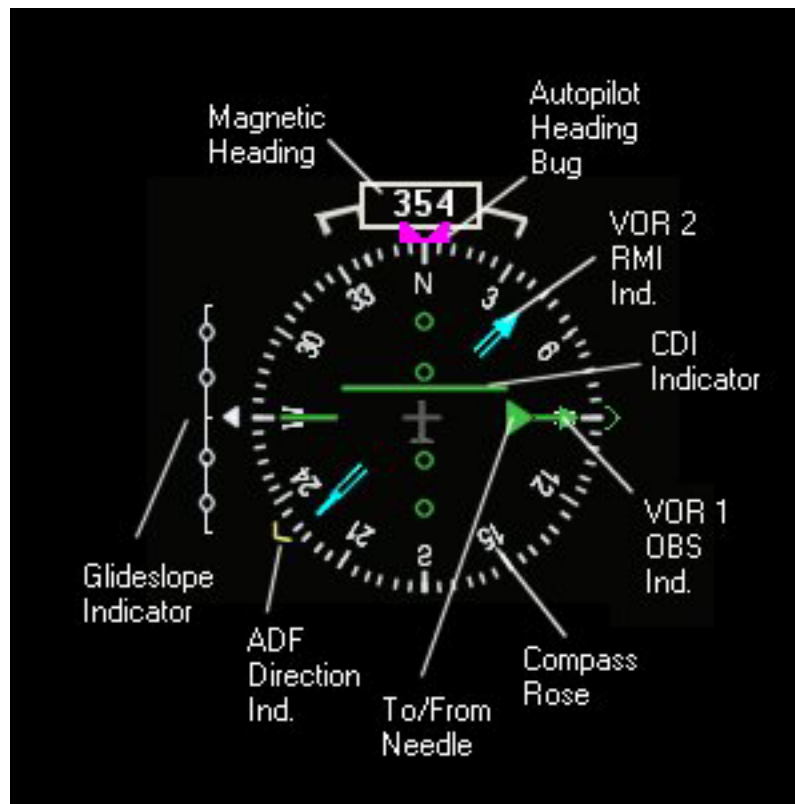


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## HSI DISPLAY



Glideslope indicator is only visible if a valid ILS glideslope signal is being received.

NAV 1, NAV 2, ADF and HDG bug indicators can be toggled on/off using the respective toggle selectors.





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The HSI is a cockpit navigation display, which is actually part of the flight-director system. It combines navigation and heading information in one easy to read display. All important information concerning the aircraft's position relative to ground-based navigation aids is presented in one convenient display. The HSI provides a basic horizontal view of the aircraft's navigation picture. It can provide navigation data to the selected VOR on your NAV 1 radio.

When you fly back course approaches, set in the ILS front course heading and then fly "the picture" using normal response to needle movements (i.e., needle left, correct left; needle right, correct right). Don't confuse a radial (which radiates outward from a VOR) with an inbound course (i.e., the reciprocal) when setting the course pointer. The HSI is equipped with "TO-FROM" NAV function, heading and glide slope warning flags.

To function properly, you must properly set the selected course and heading information. Because the HSI is a gyroscopic device, you must set it to the magnetic heading and check it periodically.

The autopilot heading may also be selected using the selector knob (25). The autopilot heading bug shows you the autopilot heading in relation to the other navigation information.

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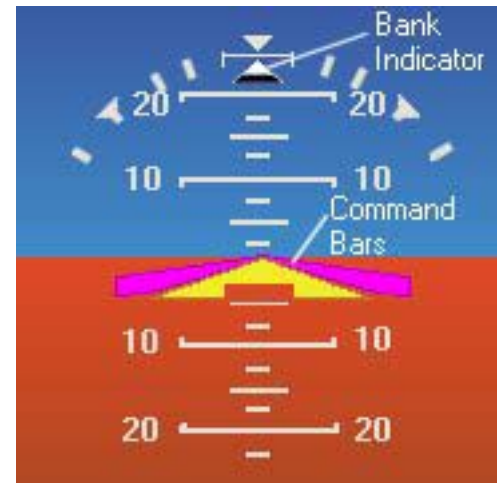
### AUTOMATIC DIRECTION INDICATOR (ADI)

**Bank Indicator**-The bank angle indicator is composed of an inverted white triangle and an upright white triangular Roll Pointer. The upright white triangle points to the current bank angle. Graduations are at 0, 10, 20, 30, 45, & 60 degrees. (Note: The 0 and 45 degree marks are inverted triangles).

**Flight Director Steering Command Bars** - Displays the accuracy of the pilot or autopilot tracking the autopilot commands. The pilot or autopilot is to steer the airplane toward the command bars until the ARS is tucked into the steering command bars.

**Pitch Ladder** -The pitch ladder is marked as follows:

- Every  $2\frac{1}{2}^{\circ}$  within the range of  $\pm 20^{\circ}$
- Every  $5^{\circ}$  from  $0^{\circ}$  to  $+20^{\circ}$  and  $0^{\circ}$  to  $-35^{\circ}$
- $10^{\circ}$  graduations of the pitch ladder have bar ends that point toward the horizon line.



### ELAPSED TIMER



To engage the elapsed timer just press the Timer button. The elapsed time will display directly underneath the clock display.



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To reset the counter to zero press the reset button.



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### Multi Function Display (MFD)

The MFD provides the pilot with a concise and comprehensive display showing a variety of aircraft conditions and parameters all in one place, eliminating the necessity to scan numerous instruments around the cockpit. There are two main screens available for the MFD, controlled by the selector knob on the lower left of the CRT:

#### DATA SCREEN





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## MAP SCREEN







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Data Screen Legend



- |                                 |                               |                        |
|---------------------------------|-------------------------------|------------------------|
| 1. Manifold pressure & RPM ind. | 2. Oil and percent power ind. | 3. TIT & CHT ind.      |
| 4. Electrical data              | 5. Vacuum pressure            | 6. Outside Air Temp.   |
| 7. Set initial fuel button      | 8. Engine hours data          | 9. Fuel totalizer data |
| 10. Fuel flow ind.              | 11. Fuel quantity ind.        |                        |



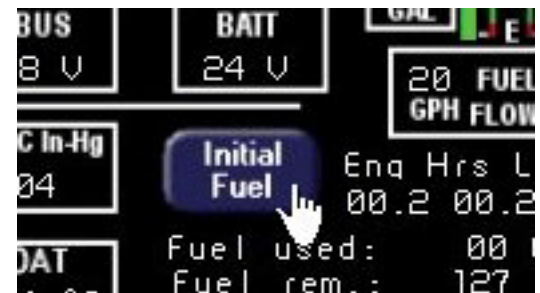
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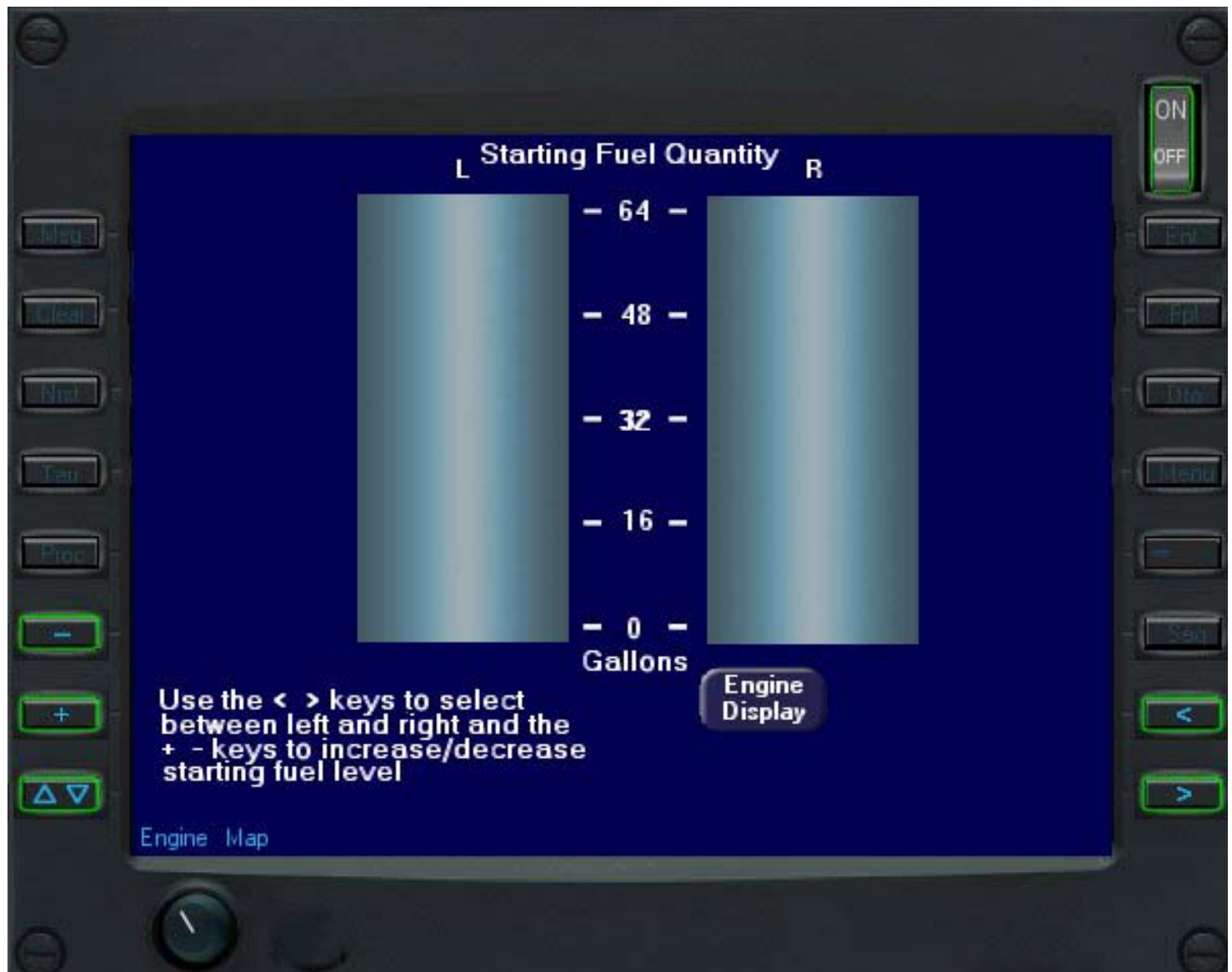
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### Setting Initial Fuel

The fuel totalizer data requires that you set the initial fuel that you started with at the beginning of the flight. Otherwise the value for total fuel used and total fuel remaining will not be accurate. This value is initialized at full fuel capacity when you load the aircraft. Setting a different value requires that you access the initial fuel menu via the button illustrated to the right.



Use the < > keys to select between left and right tanks, and the + - keys to increase or decrease the amount of fuel.





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#### Map/GPS Display Screen



The map display screen is accessed via the selector knob on the lower left of the CRT.

The Flight Simulator GPS/Map screens are used to look up instrument approaches, display current orientation of the aircraft in relation to nav aids, airports or terrain. Airport data can also be accessed from it's database. You can view the video from Microsoft for using this instrument [here](#).