

G5 Electronic Flight Instrument Pilot's Guide for Certified Aircraft



1.3 SYSTEM POWER-UP

During system initialization, the G5 displays the message 'ALIGNING' over the attitude indicator. The G5 should display valid attitude typically within the first minute of power-up. The G5 can align itself both while taxiing and during level flight.

1.4 OPERATION

1.4.1 G5 ANNUNCIATIONS

When a G5 function fails, a Red-X is typically displayed over the instrument(s) or data experiencing the failure. Upon G5 power-up, certain instruments remain invalid as equipment begins to initialize. All instruments should be operational within one minute of power-up. If any instrument remains flagged, and it is not likely an installation related problem, the G5 should be serviced by a Garmin-authorized repair facility .



Figure 1-2 G5 PFD Page Failure Annunciations

If the G5 senses that the attitude solution is invalid, "ALIGNING KEEP WINGS LEVEL" is displayed. No attitude information is displayed while this indication is shown. The G5 can align itself both while taxiing and during level flight.



Figure 1-5 Attitude Aligned Keep Wings Level Indication

If the G5 inertial sensors fail, "ATTITUDE FAIL" is displayed in addition to a red-X flag. No attitude information is displayed while this indication is shown.



Figure 1-6 Attitude Failure Indication

1.4.1.2 G5 HEADING

The G5 can display magnetic heading information received from the GMU 11 magnetometer. If magnetic heading input data is not available, the G5 will display GPS-derived ground track and the heading field will have a red-X displayed.



Figure 1-7 Heading Fail (PFD Page)



Figure 1-8 Heading Fail (HSI Page)

If both magnetic heading and GPS are unavailable, the heading field will have a red-X displayed and the compass card will be removed from the HSI.



Figure 1-9 Heading/Track Fail (PFD Page)



Figure 1-10 Heading/Track Fail (HSI Page)

The G5 corrects for shifts and variations in the Earth’s magnetic field by applying the Magnetic Field Variation Database. The Magnetic Field Variation Database is derived from the International Geomagnetic Reference Field (IGRF). The IGRF is a mathematical model that describes the Earth’s main magnetic field and its annual rate of change. The database is updated approximately every 5 years via a software update. Failure to update this database could lead to erroneous heading information being displayed to the pilot.

If the G5 senses that the magnetic heading measurement is valid but possibly outside of the internal accuracy limits, the numeric heading is displayed in yellow.

If the GAD 29B fails, VFR will be displayed in amber text and GPSS will be displayed in amber text, if GPSS mode is selected.



Figure 1-11 GAD 29B Fail (Amber VFR)



Figure 1-12 GAD 29B Fail (Amber GPSS)

1.4.2 BACKLIGHT INTENSITY

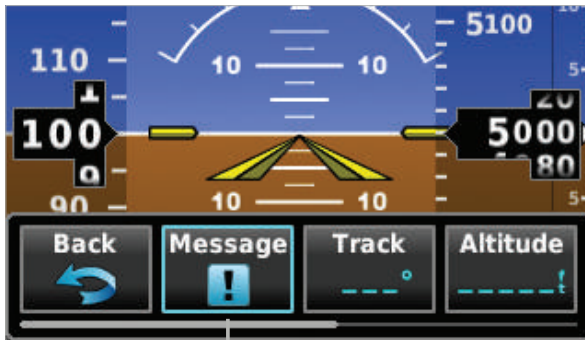
When set to Auto, the backlight is automatically adjusted according to ambient light conditions. When set to Manual, the backlight level is set by the pilot.

Adjusting backlight intensity:

- 1) While the unit is turned on, press the **Power** Button.
- 2) Turn the Knob to adjust the backlight intensity.
- 3) Press the Knob to close the backlight page.

Setting the backlight intensity to automatic:

- 1) While the unit is turned on, press the Power Button.
- 2) Press the **Power** Button again to select **Auto**.
- 3) Press the Knob to close the backlight page.



Message [!] Indication
Menu Option

Figure 1-18 Message [!] Menu Option (PFD Page)



Figure 1-19 Messages [!] Displayed (PFD Page)

1.6.1 SYSTEM MESSAGES

The following table describes G5 system messages that may appear. System messages are displayed in white text.

Table 1-2 System Messages

Message	Meaning
External Power Lost	Aircraft power has been removed from the G5.
Critical battery fault! Powering off	Battery has critical fault condition and the unit is about to power off to avoid damage to the battery.
Battery fault	Battery has a fault condition – unit needs service.
Battery charger fault	Battery charger has a fault condition – unit needs service.
Low battery	Battery charge level is low.
Hardware fault	Unit has a hardware fault – unit needs service.
Power supply fault	Unit power supply fault detected – unit needs service.
Unit temperature limit exceeded	Unit is too hot or too cold.
Network address conflict	Another G5 with the same address is detected on the network (most commonly a wiring error on one of the units).

Table 1-2 System Messages

Message	Meaning
Communication error	General communication error (most commonly appears in conjunction with Network Address Conflict message).
Factory calibration data invalid	Unit calibration data not valid – unit needs service.
Magnetic field model database out of date	Internal magnetic field database is out of date - software update required.
Magnetometer Hardware fault	The magnetometer has detected a fault – unit needs service. Heading data may not be available.
Using external GPS data	GPS data from another network LRU is being used. The unit's internal GPS receiver is enabled, but unable to establish a GPS fix.
Not receiving RS-232 data	The G5 is not receiving RS-232 data from the GPS navigator – system needs service.
Not receiving ARINC 429 data	The G5 is not receiving ARINC 429 data from the navigation source – system needs service.
GPS receiver fault	The G5 on-board GPS receiver has a fault.
ARINC 429 interface configuration error	The G5 ARINC 429 port is receiving information from an incorrect source – system needs service.
Software version mismatch	The G5 attitude indicator and the G5 HSI units have different software. Cross fill of baro, heading and altitude bugs is disabled.

SECTION 2 FLIGHT INSTRUMENTS

2.1 PFD PAGE

The G5 PFD Page displays a horizon, airspeed, attitude, altitude, vertical speed, heading, and course deviation information. The following flight instruments and supplemental flight data are displayed on the PFD Page.

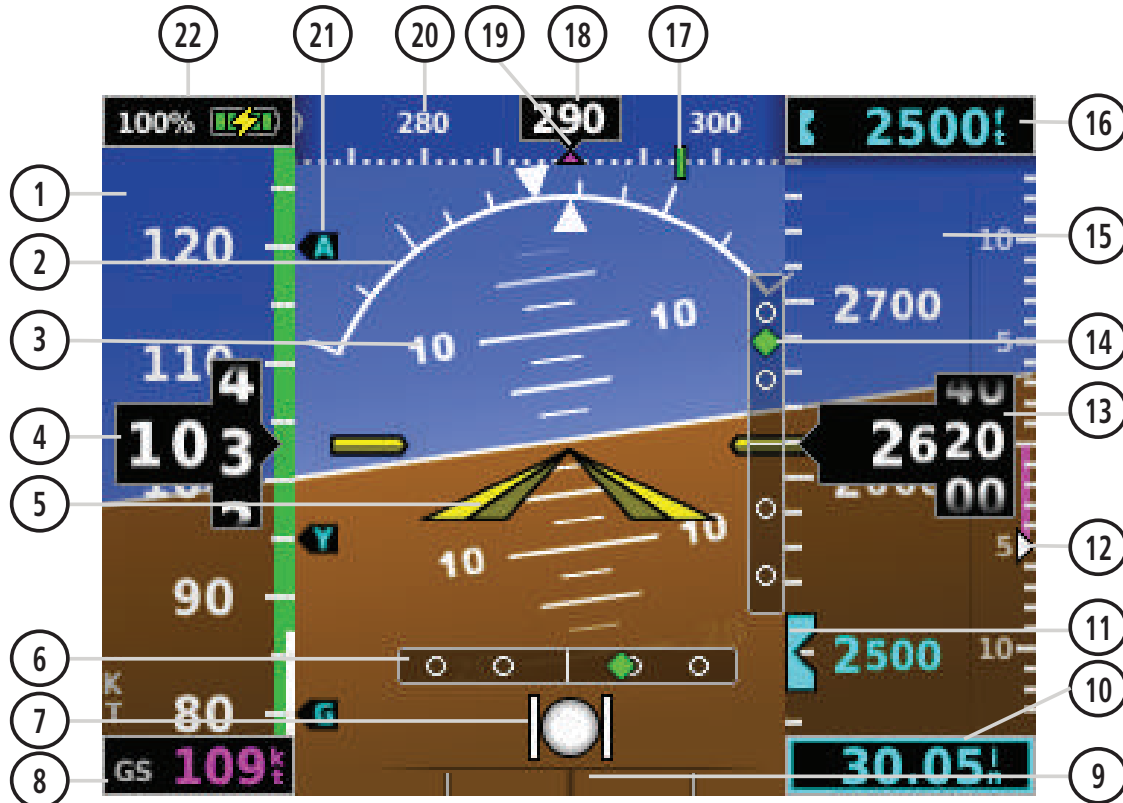


Figure 2-1 G5 PFD Flight Instruments

- | | | |
|-------------------------------------|---|--|
| ① <i>Airspeed Indicator</i> | ⑨ <i>Turn Rate Indicator</i> | ⑯ <i>Selected Altitude</i> |
| ② <i>Attitude Indicator</i> | ⑩ <i>Altimeter Barometric Setting</i> | ⑰ <i>Navigation Course</i> |
| ③ <i>Pitch Scale</i> | ⑪ <i>Selected Altitude Bug</i> | ⑱ <i>Current Heading or Ground Track</i> |
| ④ <i>Current Airspeed</i> | ⑫ <i>Vertical Speed Indicator</i> | ⑲ <i>Ground Track</i> |
| ⑤ <i>Aircraft Symbol</i> | ⑬ <i>Current Altitude</i> | ⑳ <i>Heading or Ground Track</i> |
| ⑥ <i>Course Deviation Indicator</i> | ⑭ <i>VNAV Indicator or Vertical Deviation Indicator</i> | ㉑ <i>Vspeed Reference</i> |
| ⑦ <i>Slip/Skid Indicator</i> | ⑮ <i>Altimeter</i> | ㉒ <i>Battery Status Indicator</i> |
| ⑧ <i>Ground Speed (GS)</i> | | |

2.1.1 AIRSPEED INDICATOR

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NOTE: The G5 Vspeed Reference values depend upon the aircraft's specific system configuration and may vary from the examples discussed in this section.

The Airspeed Indicator displays airspeed on a rolling number gauge using a moving tape. The numeric labels and major tick marks on the moving tape are marked at intervals of 10 knots. Speed indication starts at 30 knots, with 60 knots of airspeed viewable at any time. The actual airspeed is displayed inside the black pointer. The pointer remains black until reaching never-exceed speed (V_{NE}), at which point it turns red.

A color-coded (red, white, green, yellow, and red/white "barber pole") speed range strip is located on the moving tape. The colors denote flaps operating range, normal operating range, caution range, and never-exceed speed (V_{NE}). A red range is also present for low speed awareness.

The Airspeed Trend Vector is a vertical, magenta line, extending up or down on the airspeed scale, shown to the right of the color-coded speed range strip. The end of the trend vector corresponds to the predicted airspeed in 6 seconds if the current rate of acceleration is maintained. If the trend vector crosses V_{NE} , the text of the actual airspeed readout changes to yellow. The trend vector is absent if the speed remains constant or if any data needed to calculate airspeed is not available due to a system failure.

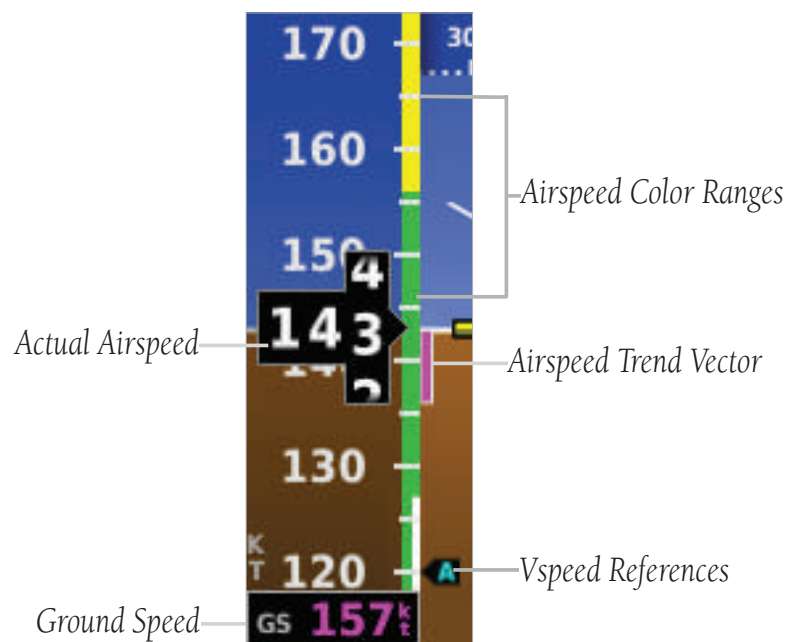


Figure 2-2 Airspeed Indicator

2.1.1.1 VSPEED REFERENCE

When airspeed is present, the configured Vs speeds are displayed at their respective locations to the right of the airspeed scale, otherwise the Vs speeds are displayed at the bottom of the airspeed indicator.

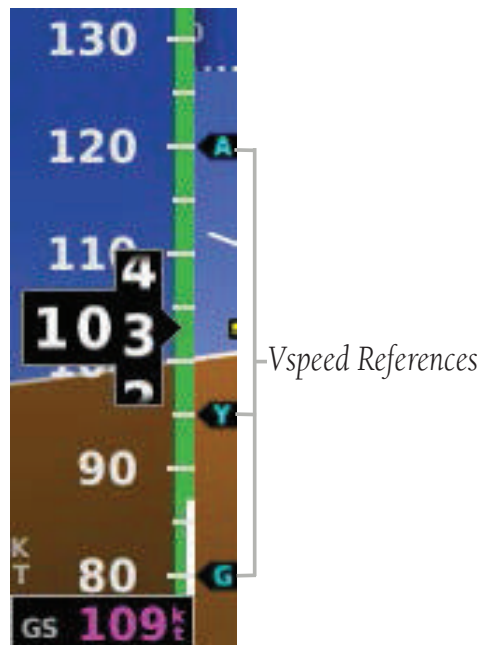


Figure 2-3 Vspeed References

2.1.2 ATTITUDE INDICATOR

Attitude information is displayed over a virtual blue sky and brown ground with a white horizon line. The Attitude Indicator displays the pitch (indicated by the yellow symbolic aircraft on the pitch scale), roll, and slip/skid information.

The horizon line is part of the pitch scale. Pitch markings occur at 2.5° intervals through all pitch ranges. Refer to the Installation Manual to configure the pitch scale.

The inverted white triangle indicates zero on the roll scale. Major tick marks at 30° and 60° and minor tick marks at 10°, 20°, and 45° are shown to the left and right of the zero. Angle of bank is indicated by the position of the pointer on the roll scale.

Slip/skid is indicated by the location of the ball.



Figure 2-7 Ground Pointer Configuration

The Sky Pointer configuration displays the pitch ladder moving with the horizon, but the roll arc remains fixed and centered in the display. The roll pointer beneath the roll arc moves with the horizon and in the opposite direction of aircraft roll.



Figure 2-8 Sky Pointer Configuration

2.1.3 ALTIMETER

The Altimeter displays 400 feet of barometric altitude values at a time on a rolling number gauge using a moving tape. Numeric labels and major tick marks are shown at intervals of 100 feet. Minor tick marks are at intervals of 20 feet. The current altitude is displayed in the black pointer.

The Selected Altitude is displayed above the Altimeter in the box indicated by a selection bug symbol. A bug corresponding to this altitude is shown on the tape; if the Selected Altitude exceeds the range shown on the tape, the bug appears at the corresponding edge of the tape.

Setting the selected altitude:

Rotate the ALT SEL Knob on the GMC 507.

Or

- 1) Press the Knob to display the Menu.
- 2) Select **Altitude** and use the Knob to change the Selected Altitude.

Syncing to the current altitude:

Press the ALT SEL Knob on the GMC 507.

Or

- 1) Press the Knob to display the Menu.
- 2) Select **Altitude** and press and hold the Knob to sync the Selected Altitude to the current altitude

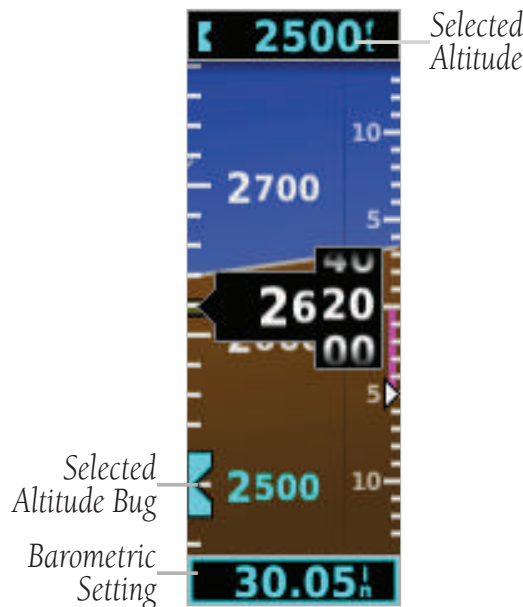


Figure 2-9 Altimeter

2.1.3.1 BAROMETRIC PRESSURE

The barometric pressure setting is displayed below the Altimeter in inches of mercury (Hg), hectopascals (hPa), or millibars (mb) when metric units are selected.

Selecting the altimeter barometric pressure setting:

Turn the Knob to set the barometric pressure.

2.1.3.2 ALTITUDE ALERTING

The Altitude Alerting function provides the pilot with a visual alert and tone (dependant on installation) when approaching the Selected Altitude. Whenever the Selected Altitude is changed, the Altitude Alerter is reset. The following will occur when approaching the Selected Altitude:

- Passing within 1,000 feet of the Selected Altitude, the Selected Altitude (shown above the Altimeter) flashes for 5 seconds.
- When the aircraft passes within 200 feet of the Selected Altitude, the Selected Altitude flashes for 5 seconds to indicate that the aircraft is approaching the selected altitude.
- After reaching the Selected Altitude, if the pilot flies outside the deviation band (± 200 Feet of the Selected Altitude), the Selected Altitude changes to yellow text on a black background, flashes for 5 seconds.

Deviation of ± 200 feet



Figure 2-10 Altitude Alerting Visual Annunciation

2.1.4 TURN RATE INDICATOR

The Turn Rate Indicator is located at the bottom of the PFD Page. Tick marks to the left and right of the displayed heading denote standard turn rates (3 deg/sec). A magenta Turn Rate Trend Vector shows the current turn rate. A standard-rate turn is shown on the indicator by the trend vector stopping at the standard turn rate tick mark.

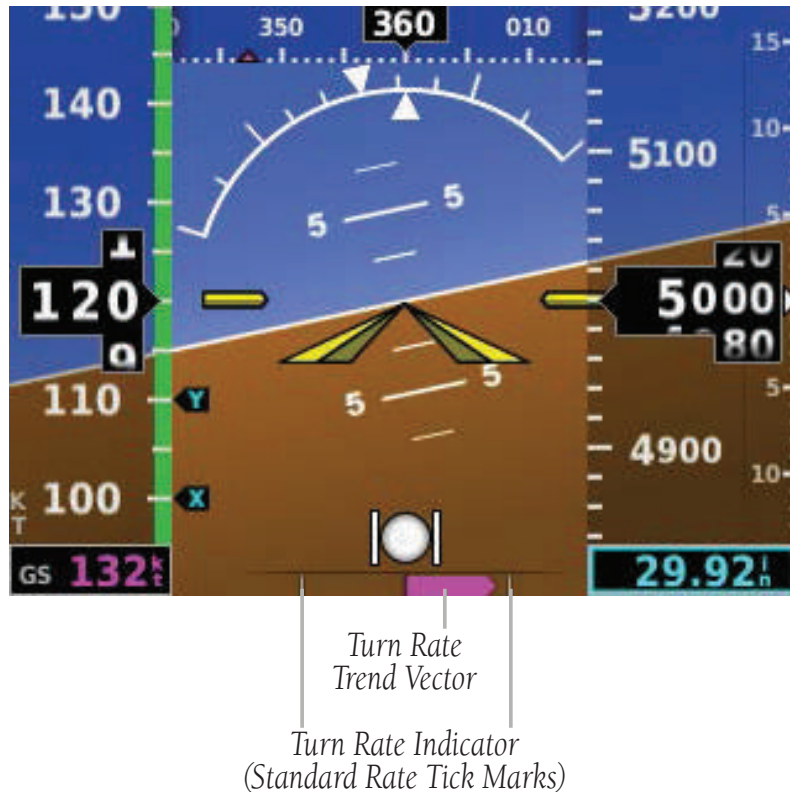


Figure 2-11 Turn Rate Indicator

2.1.5 HEADING/GROUND TRACK (PFD PAGE)



NOTE: Heading is displayed if magnetometer data is available from a magnetometer via the CAN network. Otherwise, Ground Track is displayed.

A Heading/Ground Track Tape is displayed at the top of the PFD Page and displays numeric labels every 10°. Major tick marks are at 5° intervals and minor tick marks at 1° intervals. The current track is represented by a magenta triangle. The Heading/Ground Track Tape also displays the navigation course.

When displaying the Selected Heading, a light blue bug on the tape corresponds to the Selected Heading. When displaying Ground Track, a magenta bug is displayed on the tape. The heading bug turns hollow when GPSS is selected.

Adjusting the selected heading or ground track:

Use the HDG Knob on the GMC 507.

Or

- 1) Press the Knob to display the Menu.
- 2) Select **Heading** or **Track** and use the Knob to change the Selected Heading or Track.

Syncing to the current heading or ground track:

Press the HDG Knob on the GMC 507.

Or

- 1) Press the Knob to display the Menu.
- 2) Select **Heading** or **Track** and press and hold the Knob to sync the selected heading or ground track to the current heading or ground track.

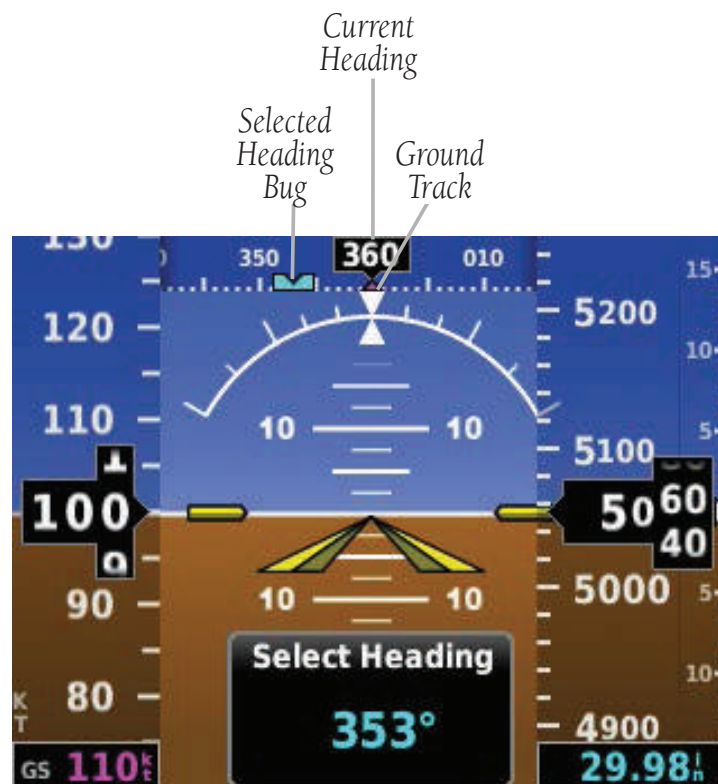


Figure 2-12 PFD Page - Selected Heading

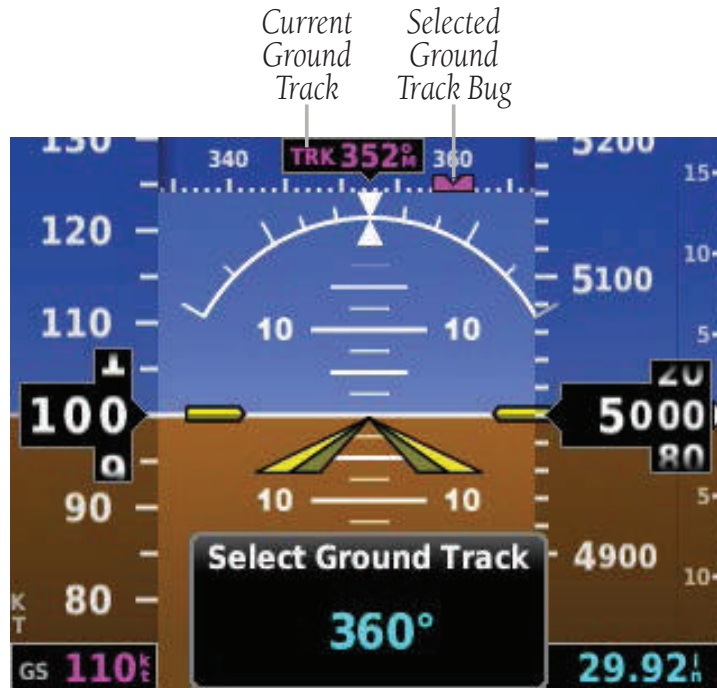


Figure 2-13 PFD Page - Selected Ground Track

2.1.6 VERTICAL SPEED INDICATOR (VSI)

The Vertical Speed Indicator displays the aircraft vertical speed using a non-moving tape with minor tick marks every 100 feet. The current vertical speed is displayed using a white arrow along the tape.

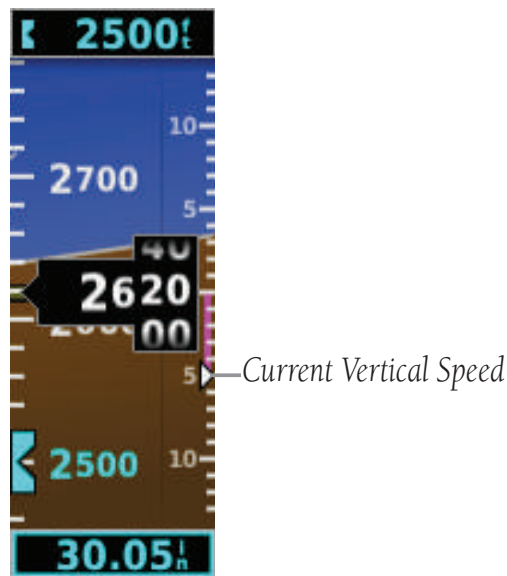


Figure 2-14 Vertical Speed Indicator

2.1.7 BATTERY STATUS INDICATOR

When the G5 is powered by the aircraft electrical bus, the battery status indicator can be displayed by pressing the G5 power button. When the G5 is powered by the battery, the battery status indicator is displayed automatically. This indicator shows the estimated percent charge of the battery. After about one minute on battery power, the indicator shows the estimated time (in hours and minutes) until the battery is empty. The current charge level of the battery is indicated by the filled-in portion of the battery icon. The battery icon turns yellow or red to indicate a low-battery condition




3:15		41%-100%
1:31		21%-40%
0:38		0%-20%

The battery is required for the G5 unit installed as an attitude display indicator (ADI) and is optional for the G5 unit installed as a horizontal situation indicator (HSI)

When the G5 is connected to external power and the battery is being charged, a lightning bolt symbol appears over the battery icon.



Other battery indications:

-  Battery charger hardware fault, or temperature too high/low to safely charge the battery. The system is running on external power but cannot charge the battery.
-  Battery fault.
-  Battery is not present (appears only when the battery status field has been configured to always appear).

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