

G1000[™]

*engine indication system
pilot's guide for the Diamond DA40*

Record of Revisions

Revision	Date of Revision	Revision Page Range	Description
A	05/31/05	7-1 – 7-7	Initial release.

7.1 INTRODUCTION

The G1000 Engine Indication System (EIS) is designed to provide gauges, bar graphs and numeric readouts of engine parameters to the pilot. The EIS is displayed on the left side of the MFD during normal operations.



NOTE: Refer to the System Overview for information regarding reversionary mode.

The EIS contains three distinct pages, which are accessed by the **ENGINE** softkey:

Engine Page

This is the default page, which displays all critical engine, fuel and electrical indicators.

Lean Page

The Lean Page provides engine leaning information and a user interface to perform engine leaning.

System Page

The System Page displays a numeric readout for the critical engine, fuel and electrical indicators.

7.2 ENGINE INDICATION SYSTEM

ENGINE PAGE

Atop all three pages are two round dial gauges (constant speed) or one round dial gauge (fixed pitch), each one with a white pointer and digital readout for manifold pressure (constant speed only) and revolutions per minute (RPM). Beneath those gauges are color-coded horizontal bar indicators with triangular pointers indicating fuel flow, cylinder head temperature (CHT), oil temperature, oil pressure, alternator amperage, bus voltage and fuel quantity. The pointer on the horizontal bar indicators appears in white, representing acceptable areas of operation. The pointer color changes to yellow or red upon exceeding areas of normal operation. The green band is indicative of normal areas of operation.

Manifold Pressure Gauge (Constant Speed)

The Manifold Pressure gauge displays the engine power in inches of mercury (in Hg).

- **White** (bottom of arc) – Below normal operating range.
- **Green** – Normal operating range.
- **White** (top of arc) – Above normal operating range.

Tachometer

The Tachometer displays propeller speed in revolutions per minute (RPM).

- **White** – Below normal flight operating range.
- **Green** – Normal flight operating range.
- **Red** – Propeller overspeed.

Fuel Flow GPH Indicator

The Fuel Flow indicator displays current fuel flow in gallons per hour (GPH). The Fuel Flow indicator ranges from 0 to 25.

- **Green** – Normal fuel flow.
- **Red** – Abnormal fuel flow.

CHT Indicator

The CHT (Cylinder Head Temperature) indicator displays the temperature of the hottest cylinder in degrees Fahrenheit. The number of the hottest cylinder appears in the triangular pointer.

- **Green** – Normal
- **Yellow** – Caution
- **Red** – Warning

Oil Temperature Indicator

The Oil Temperature indicator displays the engine oil temperature in degrees Fahrenheit.

- **Green** – Normal
- **Yellow** – Caution
- **Red** – Warning

Oil Pressure Indicator

The Oil Pressure indicator displays the pressure of the oil supplied to the engine in pounds per square inch (PSI).

- **Green** – Normal
- **Yellow** – Caution (low and high)
- **Red** – Warning (minimum and maximum)

Ammeter

The Ammeter displays the alternator load in amperes. The Ammeter ranges from 0 to 80. The green band is indicative of normal operation.

Voltmeter

The Voltmeter displays the primary bus voltage.

- **Green** – Normal
- **Yellow** – Caution
- **Red** – Warning

Fuel Qty GAL Indicator

The Fuel Quantity indicator displays the quantity of fuel in the tanks, in gallons. Two (2) triangular pointers labeled L (left) and R (right) indicate the number of gallons in each fuel tank.

- **Green** – Normal
- **Yellow** – Caution
- **Red** – Warning

Standard Tanks

The indicator ranges from 0 to 20 with tick marks at 5, 10 and 15 gallons. The Fuel Quantity Indicator only displays to 17 gallons per side when full.

Long Range Tanks

The indicator ranges from 0 to 25 with tick marks at 5, 10, 15 and 20 gallons. The Fuel Quantity Indicator only displays to 24 gallons per side when full.

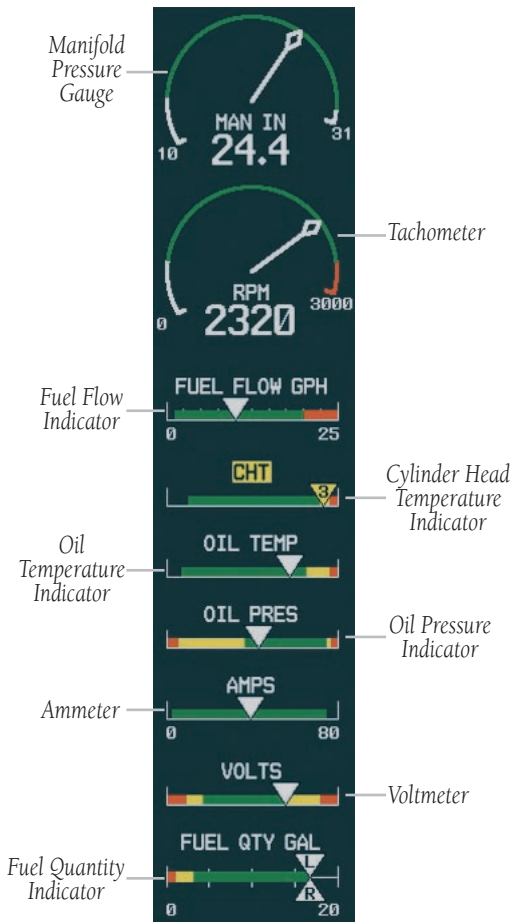


Figure 7.2.1 ENGINE Page (DA40 Constant Speed)

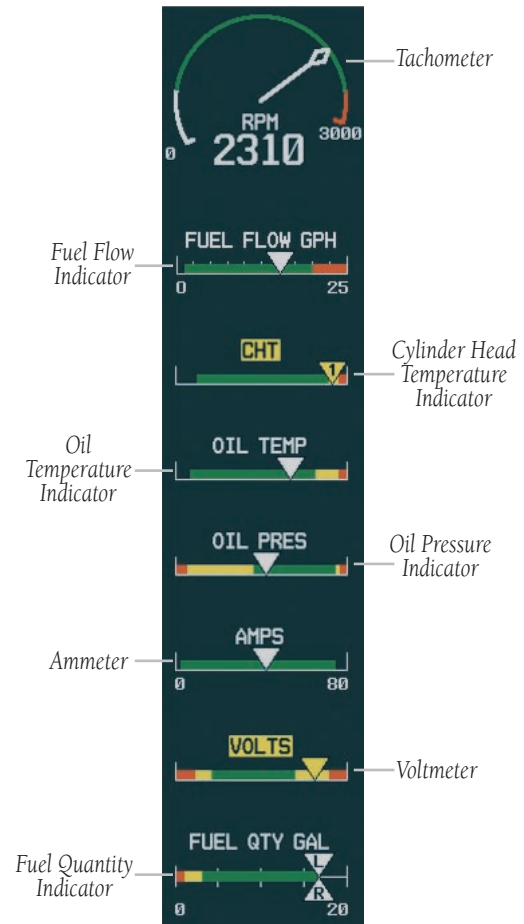


Figure 7.2.2 ENGINE Page (DA40 Fixed Pitch)

LEAN PAGE

The Lean Page is accessible by pressing the **LEAN** softkey. A digital readout for fuel flow resides below the tachometer. Beneath the fuel flow indication are bar graphs and numeric readouts for exhaust gas temperature (EGT), temperature from peak and cylinder head temperature (CHT) in degrees Fahrenheit. By default, the numeric readouts of the EGT and CHT are associated with the hottest cylinder and are graphically indicated in cyan (light blue). Color coding for the EGT and CHT bar graphs is listed below:

- **Cyan (light blue)** – Selected Cylinder (EGT and CHT)
- **White** – Normal (EGT and CHT)
- **Yellow** – Caution (CHT only)
- **Red** – Warning (CHT only)

Cylinder Select

The **CYL SLCT** softkey can be utilized to obtain information about a particular cylinder. The **CYL SLCT** softkey becomes disabled when:

- a particular cylinder turns yellow (caution) or red (warning)
- the temperature decreases and returns to normal, which is indicated by white on the bar graph
- the **ASSIST** softkey is pressed

The **CYL SLCT** softkey is available by pressing the **LEAN** softkey.

To monitor the desired cylinder(s):

1. From the Lean Page, press the **CYL SLCT** softkey to cycle through each cylinder and view the EGT and CHT.

Assist

The **ASSIST** softkey can be utilized to assist in the leaning process. When a cylinder peaks, its peak is represented by a hollow bar on the EGT bar graph. The EGT readout for the peaked cylinder, indicated in cyan (light blue), appears directly beneath the bar graph. The system automatically switches to the first peak obtained and displays the temperature deviation from peak in degrees Fahrenheit below the EGT readout.



NOTE: *The pilot should follow the engine manufacturer's recommended leaning procedures in the Aircraft Flight Manual (AFM).*

The **ASSIST** softkey is available by pressing the **LEAN** softkey.

To select the Assist function:

1. From the Lean Page, press the **ASSIST** softkey to identify the peak.

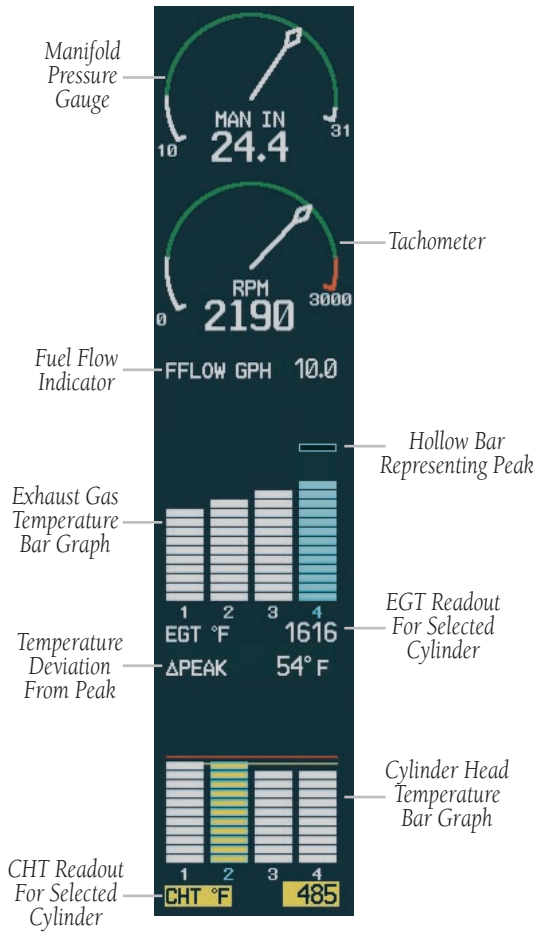


Figure 7.2.3 LEAN Page (DA40 Constant Speed)

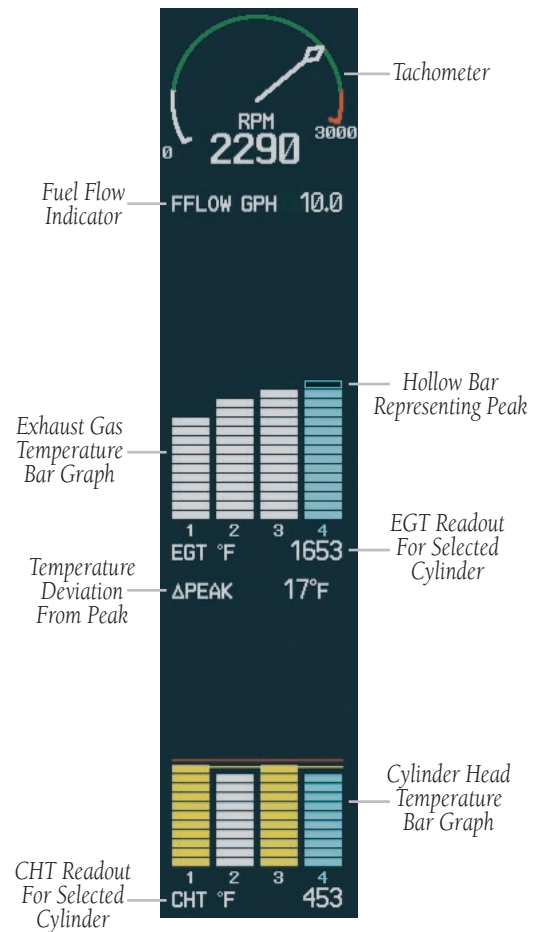


Figure 7.2.4 LEAN Page (DA40 Fixed Pitch)

SYSTEM PAGE

The System Page is accessible by pressing the **SYSTEM** softkey. The readouts on this page are separated into two categories: System and Fuel Calculation. Beneath the Tachometer are numeric readouts for oil temperature, oil pressure, voltage, amperes and fuel flow. Below the fuel flow are numeric readouts for gallons remaining, gallons used, endurance, and range in nautical miles.

The fuel calculation portion of the System Page is based on the fuel flow totalizer and displays the following:

- **GAL REM** – Current fuel remaining in gallons as set by the pilot and adjusted for fuel burn since last set.
- **GAL USED** – Quantity of fuel used in gallons.
- **ENDUR** – Flight time remaining with fuel onboard (HH:MM when more than an hour remains).
- **RANGE NM** – Aircraft range in nautical miles.



NOTE: Fuel calculations do not use the aircraft fuel quantity indicators and are calculated from the last time the fuel was reset.



NOTE: Refer to the Aircraft Flight Manual (AFM) for limitations.

Located at the bottom of the page is a numeric readout for total time in service, which is displayed in hours.

- **TTL TIME IN SVC** – Displays the total flight hours and is activated when the aircraft becomes airborne.

If desired, the pilot can utilize the **DEC FUEL**, **INC FUEL** and **RST FUEL** softkeys to adjust the amount of fuel remaining for totalizer calculations.

The second-level softkeys are available by pressing the **SYSTEM** softkey:

- **DEC FUEL** – Decreases totalizer based fuel quantity remaining in one gallon increments.
- **INC FUEL** – Increases totalizer based fuel quantity remaining in one gallon increments.
- **RST FUEL** – Reset totalizer based fuel quantity remaining relative to the aircraft fuel capacity. Performing the fuel reset also sets the GAL USED display to zero.

To decrease the fuel totalizer quantity:

1. From the System Page, press the **DEC FUEL** softkey to obtain the desired number of gallons remaining.

To increase the fuel totalizer quantity:

1. From the System Page, press the **INC FUEL** softkey to obtain the desired number of gallons remaining.

To reset the fuel totalizer:

1. From the System Page, press the **RST FUEL** softkey. This also resets the GAL USED to zero.

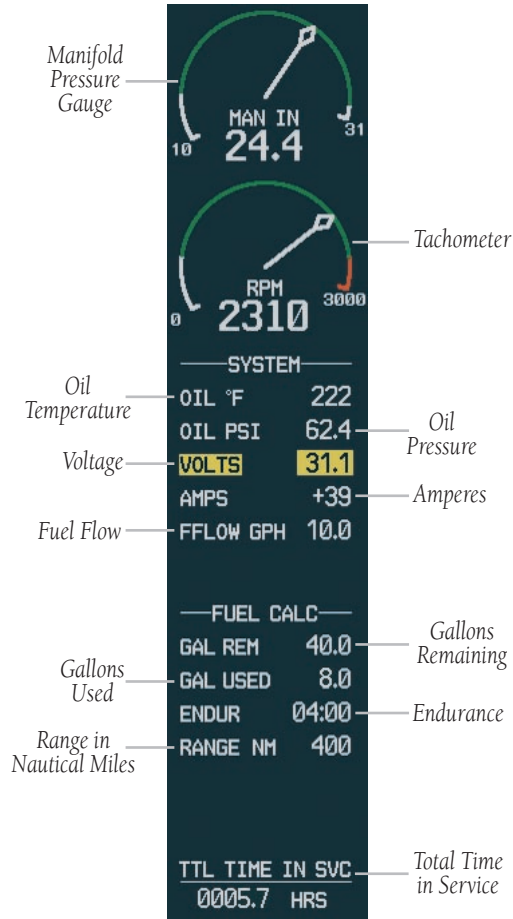


Figure 7.2.5 SYSTEM Page (DA40 Constant Speed)

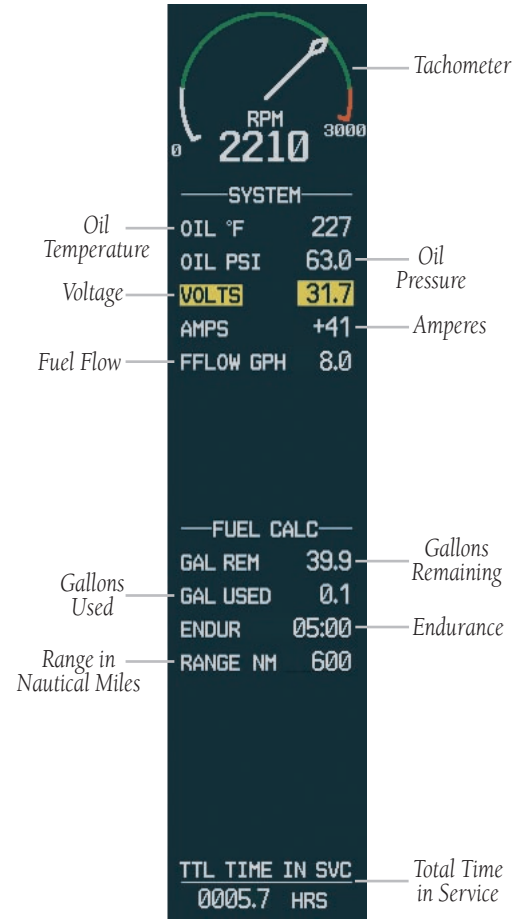


Figure 7.2.6 SYSTEM Page (DA40 Fixed Pitch)



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