

FLUGFÉLAGIÐ GEIRFUGL

Leiðbeiningarefni fyrir notkun á

Garmin G5



G5 Electronic Flight Instrument (ADI)



G5 Electronic Flight Instrument (HSI)

Power Button		Press to turn unit ON. Press and hold for 5 seconds to turn unit OFF. Once on, press to adjust the backlight and display the battery status indicator.
microSD Card Slot		Insert microSD card to update software and log data.
Knob	Press	Press to access the Menu From the Menu, press to select the desired menu item. Press to accept the displayed value when editing numeric data or selecting from a list.
	Turn	From the Main Menu, turn the Knob to move the cursor to the desired menu item. For the ADI, rotate to adjust the barometric setting. For the HSI, rotate to adjust the heading or track bug. Turn to select the desired value when editing numeric data or selecting from a list.



G5 PFD Flight Instruments

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

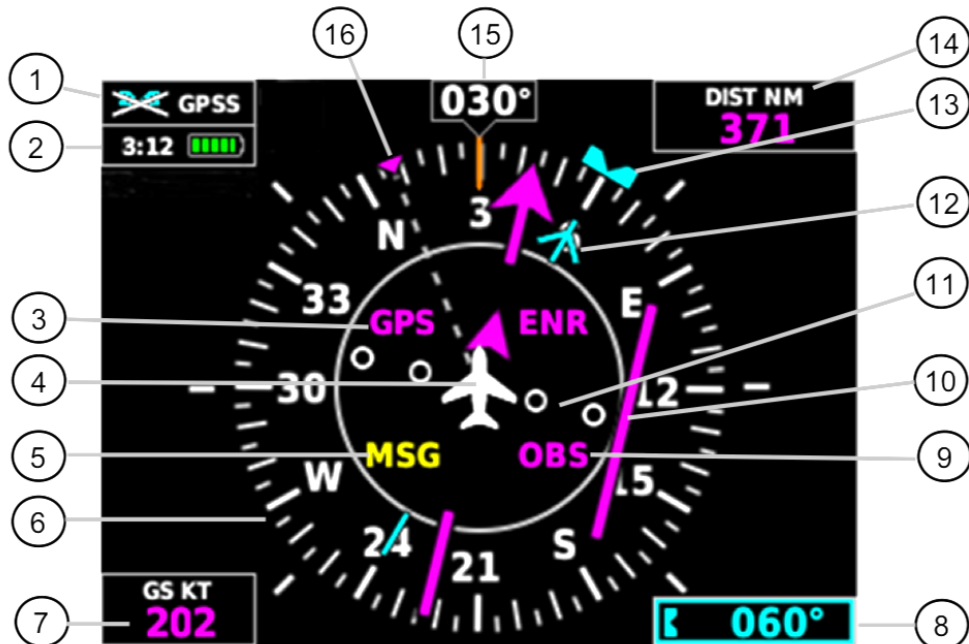
When a G5 function fails, a large red 'X' is displayed over the instrument(s) or data experiencing the failure. Upon G5 power-up, certain instruments remain invalid as equipment begins to initialize. All instruments should be operational within one minute of power-up. If any instrument remains flagged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



G5 ADI Failure Indications



G5 HSI Failure Indications



Horizontal Situation Indicator (HSI)

- | | |
|----------------------------|------------------------------------|
| ① GPS Steering Indicator | ⑨ OBS Annunciator |
| ② Battery Status Indicator | ⑩ Course Deviation Indicator (CDI) |
| ③ Navigation Source | ⑪ GPS CDI Scale |
| ④ Aircraft Symbol | ⑫ Bearing Pointer |
| ⑤ Navigator Messages | ⑬ Heading Bug |
| ⑥ Rotating Compass Rose | ⑭ Distance to Waypoint |
| ⑦ Ground Speed (GS) | ⑮ Current Heading |
| ⑧ Selected Heading | ⑯ Current Ground Track Indicator |

③ Nav Source Annunciations				⑪ GPS CDI Scale Annunciations		
GPS/ GPS1/ GPS2	VLOC/ VLOC1/ VLOC2	VOR/ VOR1 VOR2	LOC/ LOC1/ LOC2	LP	LPV	LNAV
				LNAV/VNAV	LNAV+V	APR
				TERM	ENR	OCN
⑤ Navigator Messages Annunciations						
LOI	Loss of GPS Integrity			MSG	Pending Nav Message	
DR	GPS Dead-Reckoning Mode			WPT	Waypoint Arrival	

Backlight intensity settings

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.

3.2 Menu

Press the Knob to access the G5 Menu. Navigate the menu by rotating the Knob and make selections by pressing the Knob.



PFD Page Menu



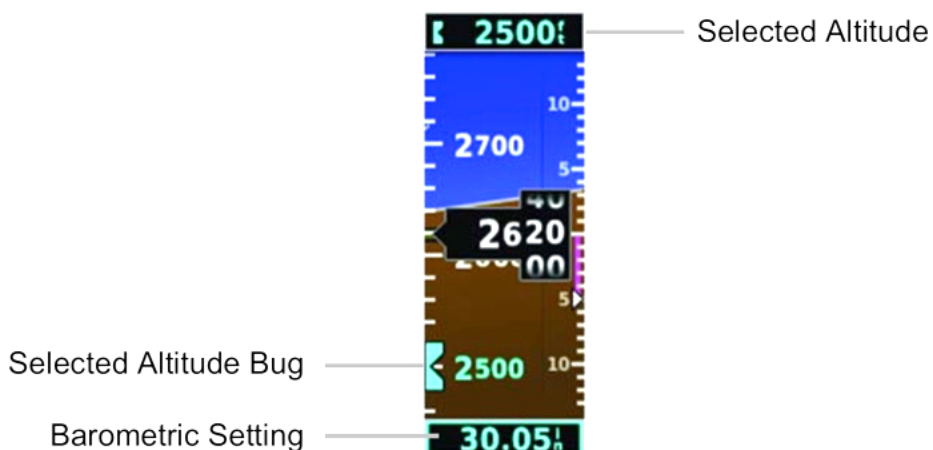
HSI Page Menu

Setting the selected altitude:

- 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:

- 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.



3.3.5 Barometric Pressure

The barometric pressure setting is displayed below the Altimeter in inches of mercury (in Hg).

Selecting the altimeter barometric pressure setting:

Turn the Knob to set the barometric pressure.

3.3.8 Heading/Ground Track

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. Heading is displayed if a G5 HSI is installed and magnetometer data is available; otherwise, Track is displayed. The current track is represented by a magenta triangle. The Heading/Ground Track Tape also displays the navigation course.

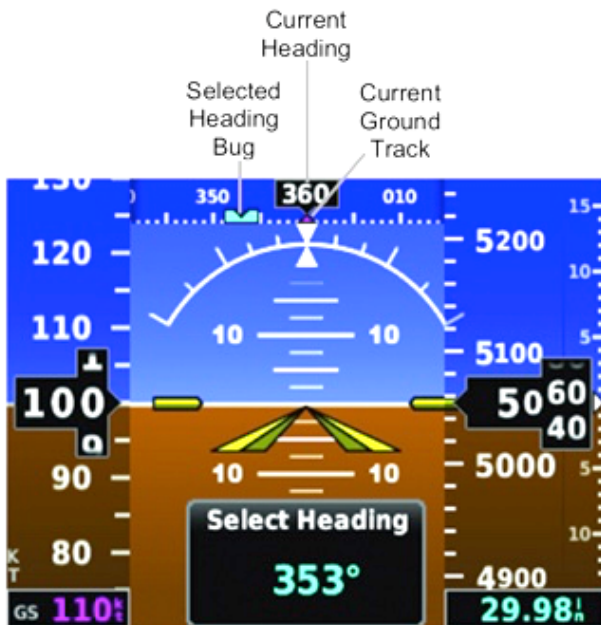
When displaying Selected Heading, a light blue bug on the tape corresponds to the selected heading. When displaying Ground Track, a magenta bug is displayed on the tape.

Adjusting the selected heading or ground track:

- 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:

- 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.



Selected Heading



Selected Ground Track

3.4.1 Bearing Pointer

A bearing pointer can be displayed on the HSI for NAV (VOR) and GPS sources. The bearing pointer is cyan. The bearing pointer never overrides the CDI and is visually separated from the CDI by a white ring (shown when the bearing pointer is selected but not necessarily visible due to data unavailability).



GPS Source Bearing Pointer



VOR Source Bearing Pointer

Enabling/disabling the bearing pointer:

- 1) From the HSI Page, press the Knob to display the Menu.
- 2) Turn the Knob to highlight **Setup**.
- 3) Press the Knob and turn to highlight the Bearing Pointer field.



Setup Menu



Bearing Pointer Field

- 4) Press the Knob and turn to select bearing point source: **None**, **GPS** or **VLOC**, as desired.



Bearing Pointer Source Options

3.4.2 Heading/Ground Track

The Selected Heading or Ground Track is shown to the right of the HSI. The cyan bug (heading) or magenta bug (ground track) on the compass rose corresponds to the Selected Heading or Ground Track. Heading is displayed if magnetometer data is available; otherwise, Ground Track is displayed.

Adjusting the selected heading or ground track from the HSI page:

Turn the Knob to adjust the selected heading or ground track.

Syncing to the current heading or ground track from the HSI page:

Press and hold the Knob to sync to the current heading or ground track.



Selected Heading



Selected Ground Track

3.6 Navigation

The G5 will only display data from the #1 navigation source. If the navigation source is a GNS/GTN unit, both GPS and VLOC data can be displayed.

3.6.1 Course Deviation Indicator (CDI)

The PFD Page displays the Course Deviation Indicator (CDI) above the slip/skid indicator. The HSI contains a Course Deviation Indicator (CDI) with a Course Pointer. The course pointer (GPS or VLOC) points in the direction of the selected course.

The Course Deviation Indicator (CDI) moves left or right along a lateral deviation scale to display aircraft position relative to the course. If the course deviation data is not valid, the CDI is not displayed.

The CDI is capable of displaying two sources of navigation: GPS or NAV (VOR, localizer). Color indicates the current navigation source: magenta (for GPS) or green (for VOR and LOC). The full-scale limits for the CDI are defined by a GPS-derived distance when coupled to GPS. When coupled to a VOR or localizer (LOC), the CDI has the same angular limits as a mechanical CDI.

Changing the navigation source (GPS, VOR, LOC, or VLOC):

Use the #1 external navigator to toggle between GPS and VOR/LOC source types.



Course Deviation Indicator (PFD Page)

Course Deviation Indicator

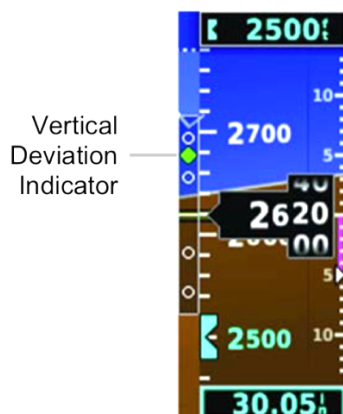


Course Deviation Indicator (HSI Page)

Course Deviation Indicator

3.6.2 Vertical Deviation (Glideslope) Indicator - ILS Source

The Vertical Deviation (Glideslope) Indicator (VDI) appears to the left of the altimeter (PFD page) and to the right of the compass rose (HSI page) whenever an ILS frequency is tuned in the active NAV field of an external navigator. A green diamond acts as the VDI, like a glideslope needle on a conventional indicator. If a localizer frequency is tuned and there is no glideslope signal, "NO GS" is annunciated.



Vertical Deviation Indicator
(Glideslope ILS Source)
(PFD Page)

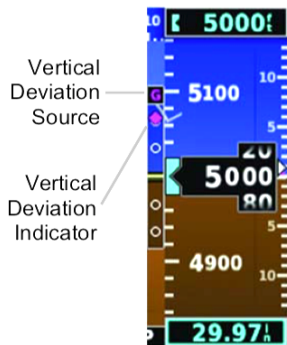


Vertical Deviation Indicator
(Glideslope ILS Source)
(HSI Page)

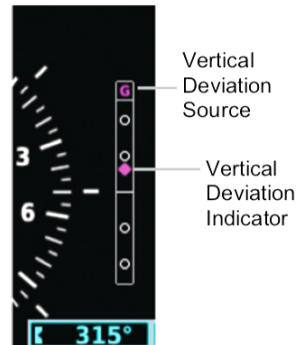
Vertical Deviation Indicator

3.6.3 Vertical Deviation (Glidepath) Indicator - GPS Source

The Vertical Deviation (Glidepath) Indicator (VDI) also appears to the left of the altimeter (PFD page) and to the right of the compass rose (HSI page) during a GPS approach. The glidepath is analogous to the glideslope for GPS approaches supporting WAAS vertical guidance (LNAV+V, L/VNAV, LPV). The Glidepath Indicator appears on the G5 as a magenta diamond. If the approach type downgrades past the final approach fix (FAF), "NO GP" is annunciated.



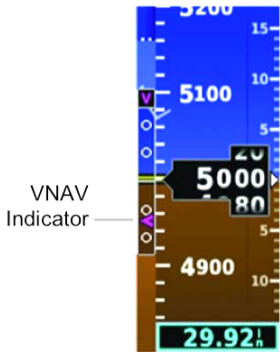
Vertical Deviation Indicator
(Glidepath GPS Source)
(PFD Page)



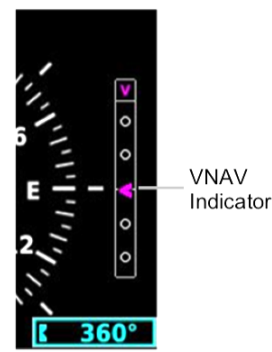
Vertical Deviation Indicator
(Glidepath GPS Source)
(HSI Page)

3.6.4 VNAV Indicator

The magenta chevron (VNAV Indicator) to the left of the altimeter (PFD page) and to the right of the compass rose (HSI page) on the Vertical Deviation Scale displays the VNAV profile.



VNAV Indicator
(PFD Page)



VNAV Indicator
(HSI Page)

3.6.5 Course Selection

When the G5 is receiving VOR or LOC data, a **Course** menu option is displayed.

Setting the course for a VOR or localizer:

- 1) From the HSI Page, press the Knob to display the Menu.
- 2) Select **Course** and use the Knob to adjust the course.



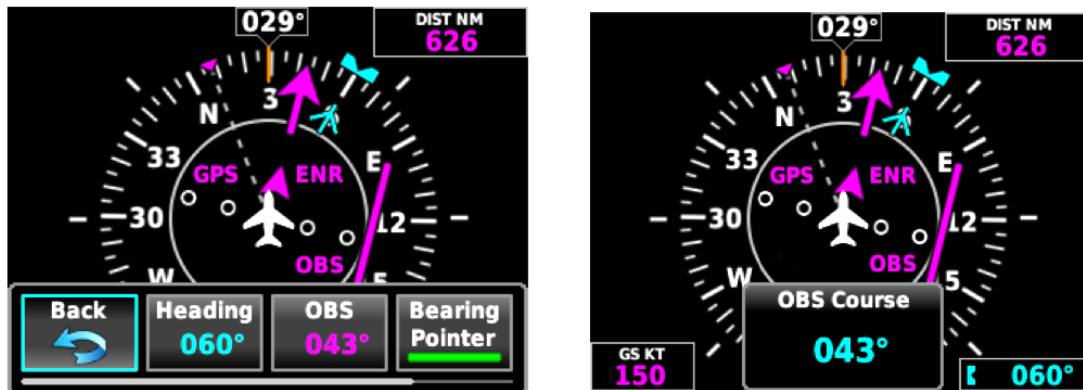
Course on HSI Page

3.6.6 OBS Selection

When OBS is activated on the navigator, an **OBS** menu option is displayed.

Setting the OBS:

- 1) From the HSI Page, press the Knob to display the Menu.
- 2) Select **OBS** and use the Knob to adjust the OBS (course).



OBS on HSI Page

4 SYSTEM MESSAGES

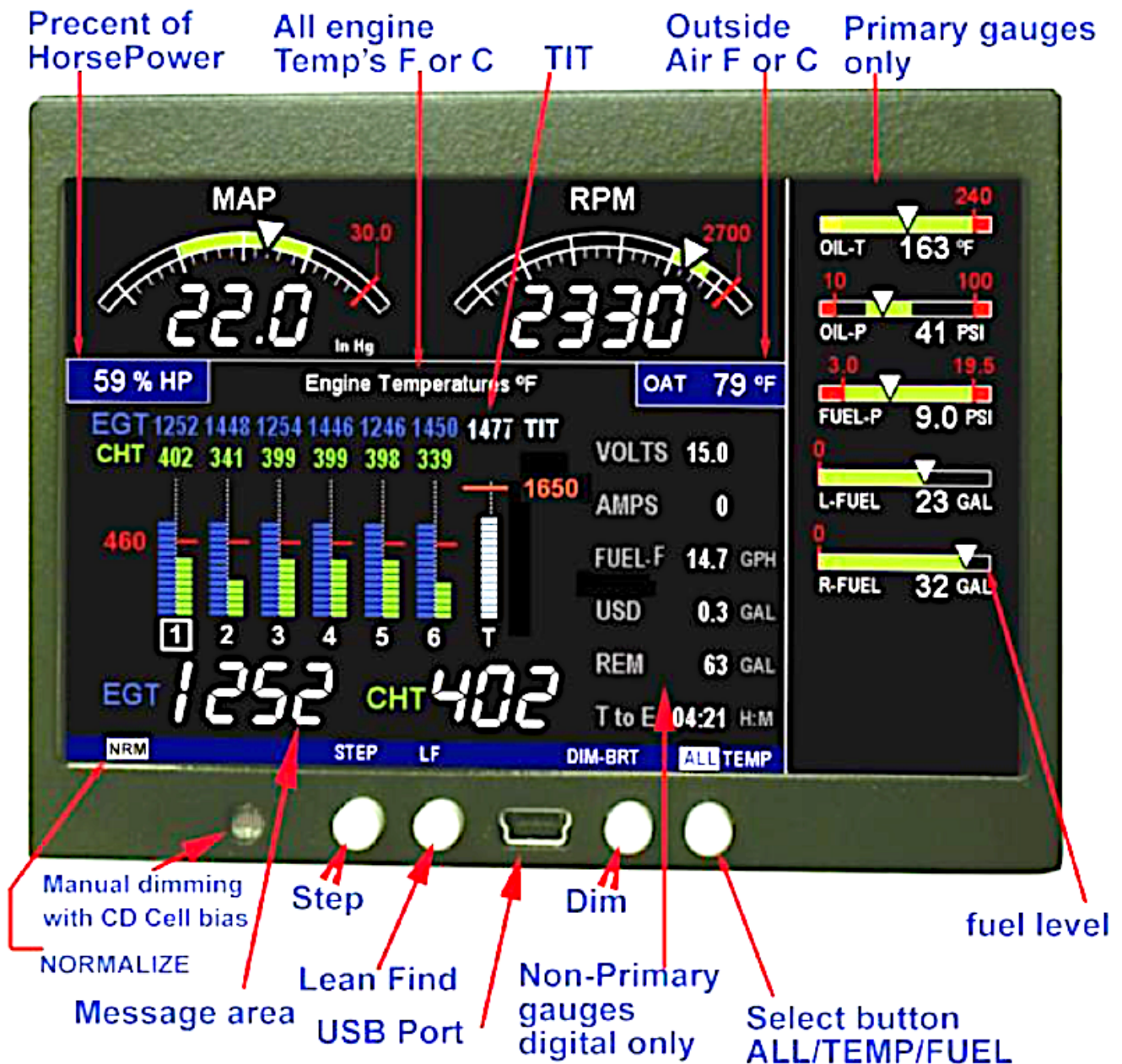
The following table shows G5 system messages that may appear along the bottom of the display. These messages remain while the condition persists or until cleared by pressing the knob.

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 - contact Garmin if it persists.
Battery charger fault	Battery charger has a fault condition - contact Garmin if it persists.
Low battery	Battery charge level is low
Hardware fault	Unit has a hardware fault - contact Garmin for service
Power supply fault	Unit power supply fault detected - contact Garmin for service if it persists
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)
Communication error	General communication error (most commonly appears in conjunction with Network Address Conflict message)
Factory calibration data invalid	Unit calibration data not valid - return to Garmin
Magnetic field model database out of date	Internal magnetic field database is out of date - software update required
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

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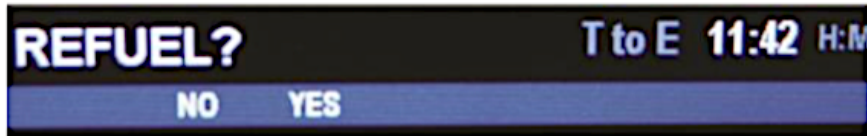
J.P. Instruments EDM900



Start Up Fuel

On power-up, you will be prompted to enter any fuel you might have added to the aircraft (this process updates the **REM** and **USD** values).

The EDM will flash **REFUEL?** . If you didn't add any fuel, simply tap **NO** to quit, otherwise tap **YES** to pick one of the three quickset choices below:



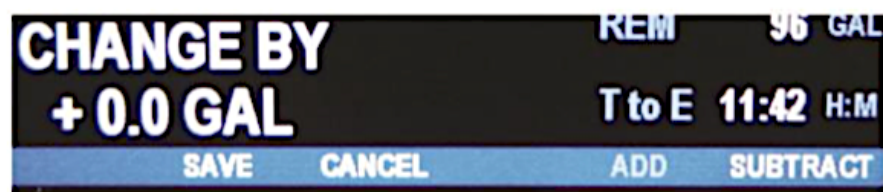
If you say YES then you will see **Fuel onboard**, if you have **Aux tanks** you will see TWO choices like in the example 76 GAL Main and Main + Aux = 96GAL. You pick the one you want to enter.



Upon making a choice you will see your choice as **Initial Fuel**



If you tap **ADD SUBTRACT** then you can add say 10 gallons

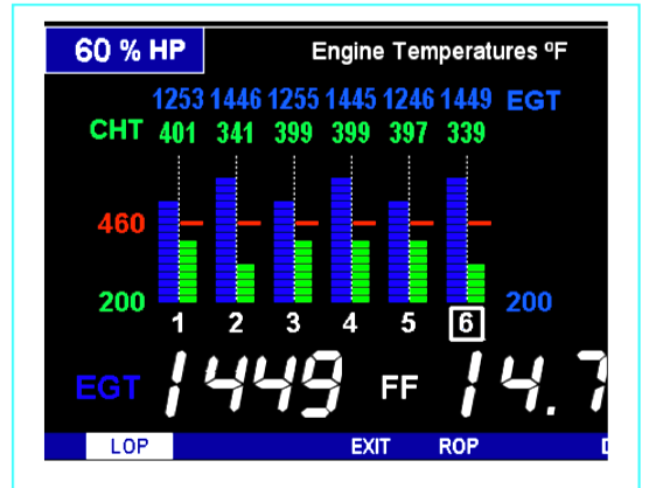


NOTE: If you forgot to perform your EDM REFUEL before starting the engine, it can still be performed. The EDM will automatically subtract any burned fuel from the value you choose. Go to Program mode and the first item is REFUEL

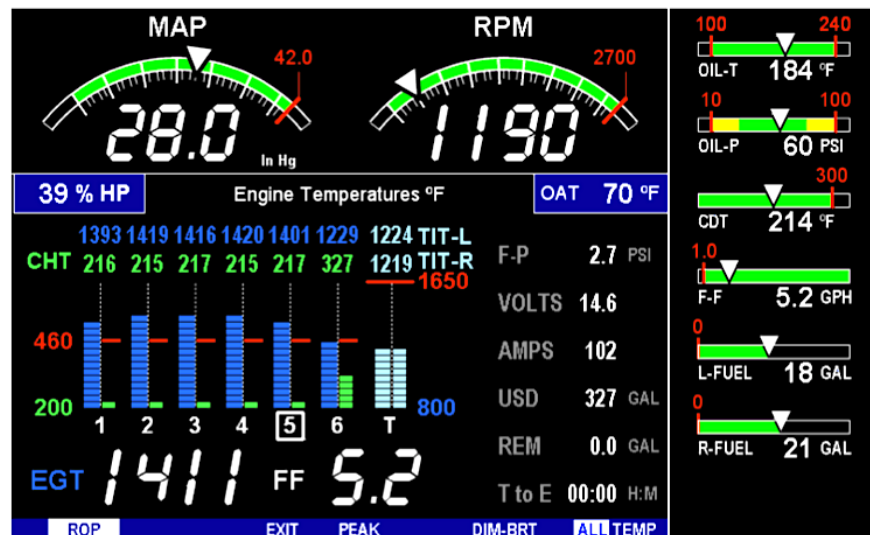
You are responsible for ensuring that your usage of the REFUEL feature results in the EDM's REM parameter showing the correct amount of usable fuel remaining onboard the aircraft.

LeanFind Basics

Simply pre-lean, tap the **LF** button (Lean Find) and begin leaning. The EDM will assist you in finding the first cylinder to peak. This example is for Rich of Peak, ROP. See page 26 for a more detailed description of leaning. Press LOP to exit the ROP mode and enter the LOP mode.



1. Establish cruise at approximately 65 to 75% power and pre-lean the mixture to 50°F estimated rich of peak EGT on any cylinder.
2. Wait about 30 seconds, then tap the **LF** button.
3. Begin leaning the mixture smoothly *without stopping*. Turn a Vernier about ¼ turn per second; retract a non-Vernier or quadrant lever so that EGT rises about 10°F per second.
4. Stop leaning when you see *LEANEST* for two seconds, followed by— for example— EGT1449 FF14.7 The left number is the current temperature of the first EGT to peak and the right number is the current fuel flow.
5. Now tap the **PEAK** button to display the EGT difference from peak which is very useful for setting desired degrees below peak.
6. Slowly enrich the mixture noting that the EGT difference diminishes as EGT climbs back to peak, followed by it going minus again. Stop enriching at the desired EGT difference (such as 'EGT -75').
7. You can also see what the peak EGT was by holding the **PEAK** button.
8. Tap **STEP** to exit the Lean Find Mode.



Section 2 - Interpreting Data

Operation for each Phase of Flight

(Worth adding to your run-up checklist)



Engine Run-Up

Suggested setup:

- Set engine to run-up RPM

Normalize view:

- Manual mode

Verify:

- Uniform rise of about 50°F in all EGTs in single magneto operation.
- Uniform rise of EGTs with application of the mixture control.

Be alert for:

- unusually low voltage (less than nominal battery voltage)
- cold OIL and normal oil pressure
- abnormally high CHT
- Large drop in EGT on one cylinder in single magneto operation—may be fouled spark plug.



Take-Off, Climb, and Full Throttle Operations

Suggested setup:

- Standard view
- Automatic mode

Verify:

- EGTs and CHTs consistent with past climbs. EGTs should be in the 1100 to 1300°F range (100° to 300°F cooler than cruise) due to fuel cooling.

Be alert for:

- High EGT in one cylinder, 300°F above the others may indicate plugged injector or leaking manifold gasket on a carbureted engine. At high density altitude an overly rich mixture can significantly reduce engine power.
- If all EGT columns go off scale to the top of the column, be sure you are not in Normalize view, as indicated by the symbol NRM above the Scanner® section.



Cruise

After the engine is warmed up, use Lean Find to lean the mixture.

Suggested setup:

- Normalize view
- Automatic mode

Be alert for:

- Uneven EGTs (injected engines). Make fine adjustments to throttle, then RPM, then mixture to level the display columns.
- Abnormal patterns of EGTs and CHT. (see *Engine Diagnosis Chart* on page 16).



Descent

Suggested setup:


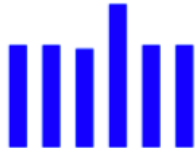
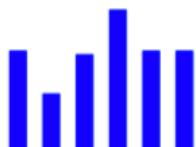
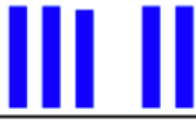

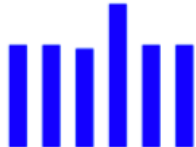



- Standard view
- Manual mode

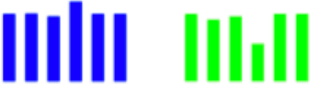
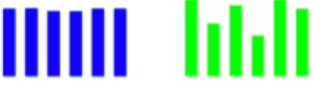

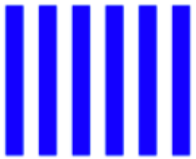
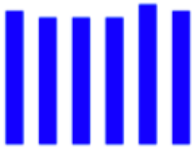
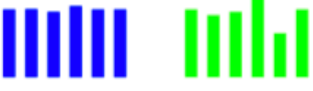
Be alert for:

- CLD: shock cooling alarm is set to -60°F . Average cool rates of $-40^{\circ}\text{F/minute}$ to $-50^{\circ}\text{F/minute}$ are normal, depending on the engine size.

Engine Diagnosis Chart

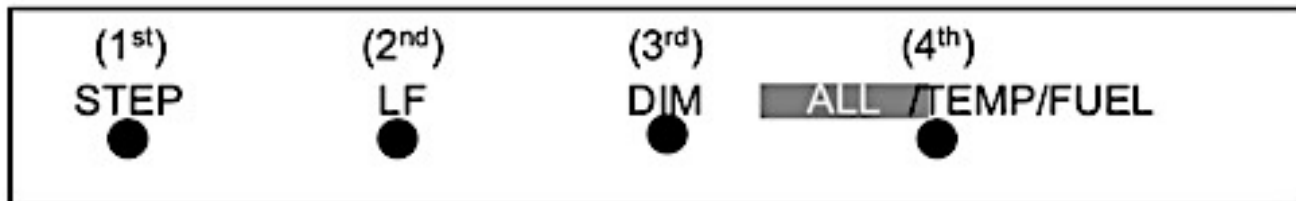
The following chart will help you diagnose engine problems in your aircraft.

<i>Display</i>	<i>Symptom</i>	<i>Probable Cause</i>	<i>Recommended Action</i>
	TIT ~100° higher than EGTs	This is normal	
	75° to 100° EGT rise for one cylinder during flight	Spark plug not firing due to fouling, faulty plug, wire or distributor.	Enrich mixture to return EGT to normal. Have plugs checked.
	EGT Increase or decrease after ignition maintenance	Improper timing: high EGT → retarded ignition; low EGT → advanced ignition.	Check EGT for each magneto to determine any uneven timing.
	Loss of EGT for one cylinder. Engine rough	Stuck valve. Other cylinders are okay.	Have valve train checked.
	Loss of EGT for one cylinder; <i>no digital EGT</i>	Failed probe or failed wire harness.	Swap probes to determine if probe or wire harness is bad.
	Decrease in EGT for one cylinder	Intake valve not opening fully; faulty valve lifter.	Have valve lifter or rocker arm checked.
	Increase in DIF at low RPM	Low compression (blow by) in cylinder	Check compression.
	EGT and CHT not uniform	Normal for carbureted engines. Dirty fuel injectors or fouled plugs.	Check injectors and plugs.
	Decrease in EGT for all cylinders	Decrease in airflow into the induction system. Carb or induction ice.	Check for change in manifold pressure.

<i>Display</i>	<i>Symptom</i>	<i>Probable Cause</i>	<i>Recommended Action</i>
	Slow rise in EGT. Low CHT	Burned exhaust valve. CHT is low due to low power output.	Have compression checked.
	High CHT on cylinders on one side of engine	Obstruction under cowling.	Check for improper installed baffling, cowl flap misalignment or bird nests.
	Rapid rise in CHT of one cylinder	Detonation.	Reduce power.
	Sudden off scale rise for any or all cylinders	Pre-ignition Normalize view or failed probe	Full rich and reduce power. Change to Standard view Check probe.
(no picture)	Loss of peak EGT	Poor ignition or vapor in fuel injection system.	Have magneto tested.
(no picture)	Decrease in peak or flat EGT response to leaning process	Detonation. Usually the result of 80 Octane fuel in 100 Octane engine.	Enrich mixture, reduce power and re-lean mixture. Repeat to find power setting where normal peak is obtained or run rich.
	Below 10,000 ft. full throttle causes EGTs to rise	Weak or defective mechanical fuel pump.	Apply boost pump. If EGTs drop, replace fuel pump.
	CHT more than 500°, EGT normal. Adjacent EGT may be low	Leaking exhaust gasket blowing on CHT probe.	Look for white powder around cylinder to determine leak area.

Control Buttons

Four operating buttons control all functions of the EDM. These buttons may change labels depending on the current operating mode of the EDM. The term *tap* is used to denote pressing a button momentarily. The term *hold* is used to denote pressing and holding a button for five seconds or longer. Button layout is shown below:



1st Button

- In the Automatic mode, *tapping* the **STEP** button stops Scanner auto-sequencing and changes to Manual mode. Each *tap* of the **STEP** button then displays the next measurement in the sequence. Holding the **STEP** button sequences in reverse order.
- In the Lean Find mode tapping the **EXIT** button will terminate the Lean Find mode and change to the Automatic mode.
- In the Program mode tapping the **NEXT** button will advance to the next item.

2nd Button

- In Automatic or Manual modes, tapping the **LF** button will activate the Lean Find mode.
- In the LF mode holding the **LF** button after peak EGT is found will display the peak EGT.
- In Automatic or Manual modes holding the **LF** button for three seconds will toggle between Standard and Normalize (NRM) views.
- In the programming mode, tapping the **PLUS** or **MINUS** button will allow you to edit a parameter value.
- Holding **LF** during power up will display the primary alarm limits after the self-test is complete.

1st and 2nd Buttons

- Holding both the **STEP** and **LF** buttons simultaneously for five seconds will enter the pilot programming mode.
- Just after entering Lean Find Mode (but before any EGT has risen), holding both First and Second buttons for five seconds will toggle between LOP or ROP leaning modes.
- Tapping both the **STEP** and **LF** buttons simultaneously in Manual mode toggles to 'include' or 'exclude' the displayed non-primary measurement from the Automatic mode only. The excluded measurement will show up in the manual mode.

3rd Button

- Tapping **DIM** (brightness decreases) or holding **DIM** (brightness increases) allows decrease or increase brightness respectively.

2nd and 3rd Buttons

- Holding both the **LF** and **DIM** buttons simultaneously will display the Hobbs readings. Tap button labeled **NEXT** to see additional information screens.

4th Button (ALL/TEMP/FUEL)

- Select what is shown during Scanner auto-sequence. Choices are **ALL**, **TEMP** or **FUEL**. Highlighted one is what is active.

Normalize / Standard View

To toggle between Standard and the Normalize views, hold the **LF** button for three seconds until the **NRM** icon toggles on or off. Note: Normalize cannot be activated while in Lean Find mode.

- **Standard view** (when the **NRM** icon is *not* lit): the EGT top of the columns represent absolute temperature.
- **Normalize view** (when the **NRM** icon is lighted): When you change to the Normalize view, all EGT columns are initially normalized to the mid-point for deviation trend analysis. Any changes are shown as an increase or decrease relative to the mid-point, thus giving an instantaneous indication that an EGT has deviated. You normally use normalize in level cruise, but it is also useful during steady state run-ups. Note: A common misapplication is to be in the Normalize view and then change power setting. This causes all columns to go off scale, high or low. Select Standard view before changing power or altitude.

Dimming the Display

Automatic dimming is provided to the panel display. You can manually adjust brightness by tapping the DIM button. You will see **DIM BRT.** Holding **DIM** lowers brightness or holding **BRT** increase brightness. The percentage of brightness is displayed in the message area.

Section 4 - Operating Modes

The EDM has four basic operating modes: *Automatic*, *Manual*, *Program* and *Lean Find*. Lean Find is described in the next section; Program mode is described on page 41, '. When you first turn on the power the EDM starts in the Manual mode, but will enter the Automatic mode after a few minutes. The Automatic mode provides you with engine monitoring information for the majority of flight conditions. To optimize the mixture, use the Lean Find mode. To display specific parameters, use the Manual mode. In either Automatic or Manual modes, the display always shows the Scanner bar graphs for EGT and CHT for each cylinder and TIT (if so equipped) with the temperatures above the columns except in the vertical mode only the CHT temperatures are shown.

Automatic Mode

To activate Automatic Scanner Mode, just tap the LF button, then tap the STEP button. In the Automatic mode the EDM changes which measurement is displayed every four seconds (factory default is 'Auto Scan Rate 4'), however you can change this rate in the Program Mode. A setting of zero disables auto scanning altogether. The order of automatic scan if the switch is in the **ALL MODE**: EGT/CHT, TIT, CLD, DIFF, CDT, OIL-T, REM, T to E, GPH, USD, AMP, Volts, OIL-P, and Fuel-P.

Some non-primary measurements can be excluded from the *Automatic mode*: tap STEP to enter the Manual mode. Tap STEP repeatedly to index to the measurement you want to exclude. Then tap both the STEP and LF buttons simultaneously. Excluded measurements display a decimal point before the measurement name. For example:

Included: 1540 CDT Excluded: 1540 •CDT

Tapping the STEP and LF buttons simultaneously will toggle back and forth between *include* and *exclude*. Note: All measurements are always checked for alarm conditions every second.

- Every time you turn on the EDM, all measurements are reset to be *included*.
- All installed measurements are always displayed in the Manual mode. Exclusion only applies to the Automatic mode.

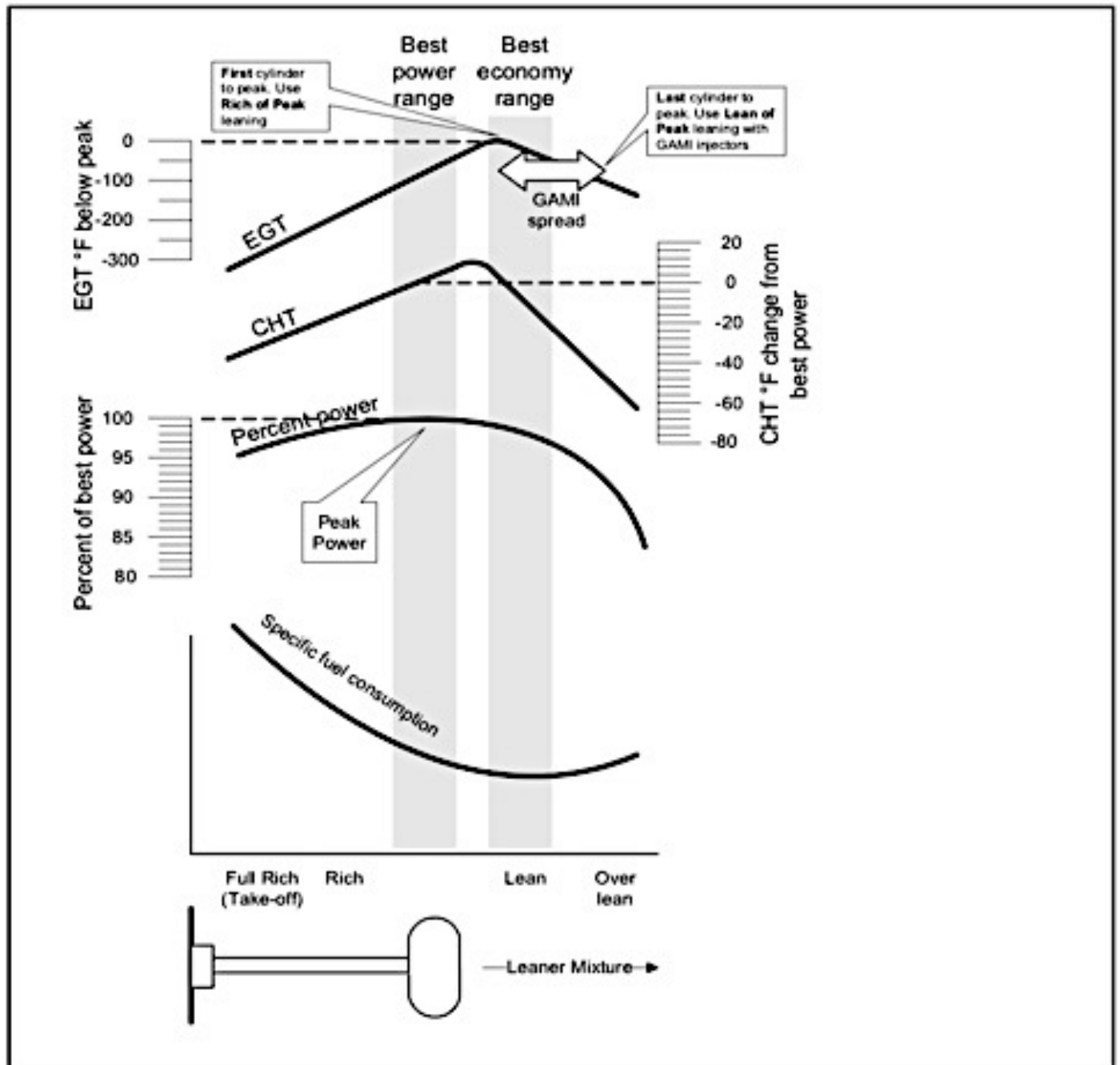
Manual Mode

To activate Manual Mode, just tap the STEP button. Use the Manual mode when you want to lock on one specific measurement such as shock cooling during descent, or your hottest CHT during climbs. To select the desired parameter, tap the STEP button until it appears. To return to the Automatic mode, tap the LF button and then tap the STEP button. You may completely disable the Automatic mode by setting zero for 'Auto Scan Rate 4'. See Pilot Programming.

Scan Sequence Example

<i>Measurement</i>	<i>EXAMPLE</i>	<i>COMMENTS</i>
EGT, CHT	EGT 1354 CHT 335	Square indicates the cylinder being viewed
TIT	1370 TIT	Turbine Inlet Temperature # 1
Shock Cooling	-30 CLD	Square indicates fastest cooling cylinder
Compressor Discharge Temperature	300 CDT	Temperature into intercooler
Induction Air Temperature	125 IAT	Temperature out of the intercooler
Carburetor Temperature	-22 CRB	(Not available when CDT is installed)
Difference between hottest and coldest EGT	80 DIF	Square indicates most widely deviating cylinder
Fuel Remaining	Est. REM XX GAL	In gallons, liters, pounds or kilograms
Fuel required to next GPS WP or Destination at present power	WP REQ XX GAL	Present with GPS interface, valid signal and way point
Fuel Reserve at next GPS WP or Destination	Est. WP REM XX GAL	Present with GPS interface, valid signal and way point
Nautical Miles per Gal	ECON XX.X MPG	Present with GPS interface and valid signal. MPK, MPL, MPP for dif units
Time to Empty	Est. T to E XX:XX H:M	Hours: minutes calculated remaining at current fuel burn.
Total Fuel Used	USD X.X GAL	Since last refueling or trip total.

The following depicts the power, mixture and temperature relationships.



Rich of Peak leaning is as simple as:

- A. Pre-lean your mixture.
- B. Tap the LF button (verify *ROP* appears).
- C. Lean mixture until *LEANEST* flashes (peak found).
- D. Enrichen to the desired value 'Rich Of Peak'.

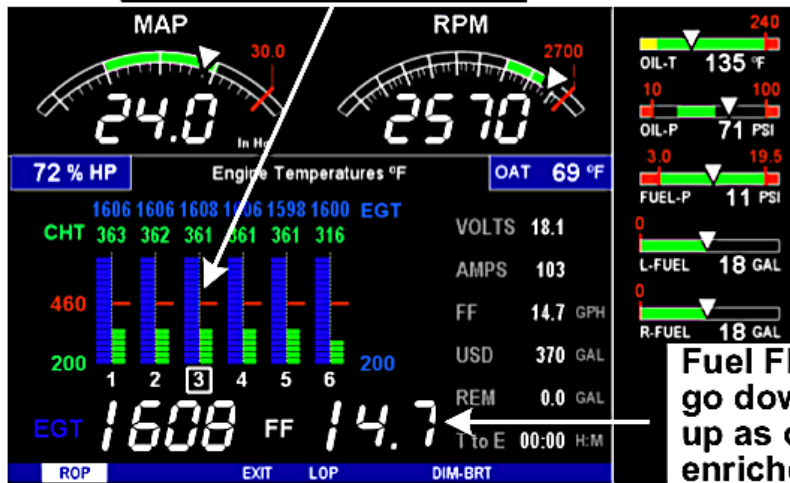
R	Procedure	Scanner Example	Comments
1	Establish cruise at 65 to 75% power.		
2	Pre-lean the mixture to 50°F estimated rich of peak on any EGT: _____°F.	EGT 1490 CHT 370	* See 'Pre-leaning' page 31.
3	Wait one minute		Let engine stabilize.
4	Tap the LF button	ROP	Start Lean Find (if <i>LOP</i> appears hold STEP & LF until <i>ROP</i> appears)
5	Lean the mixture at approx. 10°/second <i>without</i> pausing.	EGT 1520 FF 13.8	Flashing cylinder I.D. box identifies that EGT increased at least 15°F. EDM is now looking for first EGT to peak.
6	Stop leaning when a column begins flashing. You will see <i>LEANEST</i> for one second, followed by:	EGT 1545 FF 12.4	Flashing cylinder I.D. box <i>AND</i> its column indicates leanest cylinder. Due to thermal inertia this will usually be about -15°F down the lean side of peak.
7	If you hold PEAK, the values of EGT and FF when peak was found are displayed.	EGT ↑1560 FF 12.9	Captured peak EGT value and peak FF are displayed.
8	If you tap PEAK, the difference from peak EGT is shown. Tap again to return to the peaked EGT value.	EGT Δ -90 FF 13.4	A useful mode for setting mixture the desired degrees rich of peak - no math required! NOTE: Unit remembers view last used.
9	Slowly enrich the mixture noting that EGT is returning to peak. Stop enriching at the desired EGT. 'Peak': best Econ. 'ROP' target: best power.	EGT 1560 FF 12.9 EGT 1460 FF 13.6 (100° RICH OF PEAK)	

Lean of Peak leaning is as simple as:

- A. Pre-lean your mixture.
- B. Tap the LF button (verify *LOP* appears).
- C. Lean mixture until *RICHEST* flashes (peak found).
- D. Enrichen to the desired value 'Lean Of Peak'.

L	Procedure	Scanner Example	Comments
1	Establish cruise at 65 to 75% power.		
2	Pre-lean the mixture to 50°F estimated rich of peak on any EGT: _____°F.	EGT 1490 CHT 370	* See 'Pre-leaning' page 31.
3	Wait one minute		Let engine stabilize.
4	Tap the LF button	LOP	Start Lean Find (if <i>ROP</i> appears, hold STEP & LF until <i>LOP</i> appears)
5	Lean the mixture at approx. 10°/second <i>without</i> pausing. (cylinder I.D. box flashes when a EGT rises 15°F)	EGT 1520 FF 13.8	Flashing cylinder I.D. box identifies the hottest EGT and that an EGT has increased at least 15°F which arms the EDM to now look for first EGT to peak.
6	After the first EGT peaks, you will see LEANEST for one second and bars coming from the top down. Continue leaning.	EGTΔ -17 FF 12.4	When bars come from the top down, the cylinder I.D. box identifies the first EGT that peaked (leanest). Continue leaning.
7	When RICHEST appears, fine tune the delta EGT to the desired degrees below 'Peak' (Lean of peak).	EGTΔ -45 FF 11.6	
8	If you hold PEAK, the peak EGT recorded will be displayed along with FF spread.	EGT↑ 1560 FFΔ 0.6	Captured peak EGT value and the FF spread between richest and leanest cylinders.

Column of Leanest cylinder flashes indicating the first EGT to peak.



Fuel Flow will go down then up as one enriches mixture

You are leaning to Rich of Peak

If you want to lean Lean of Peak press button.

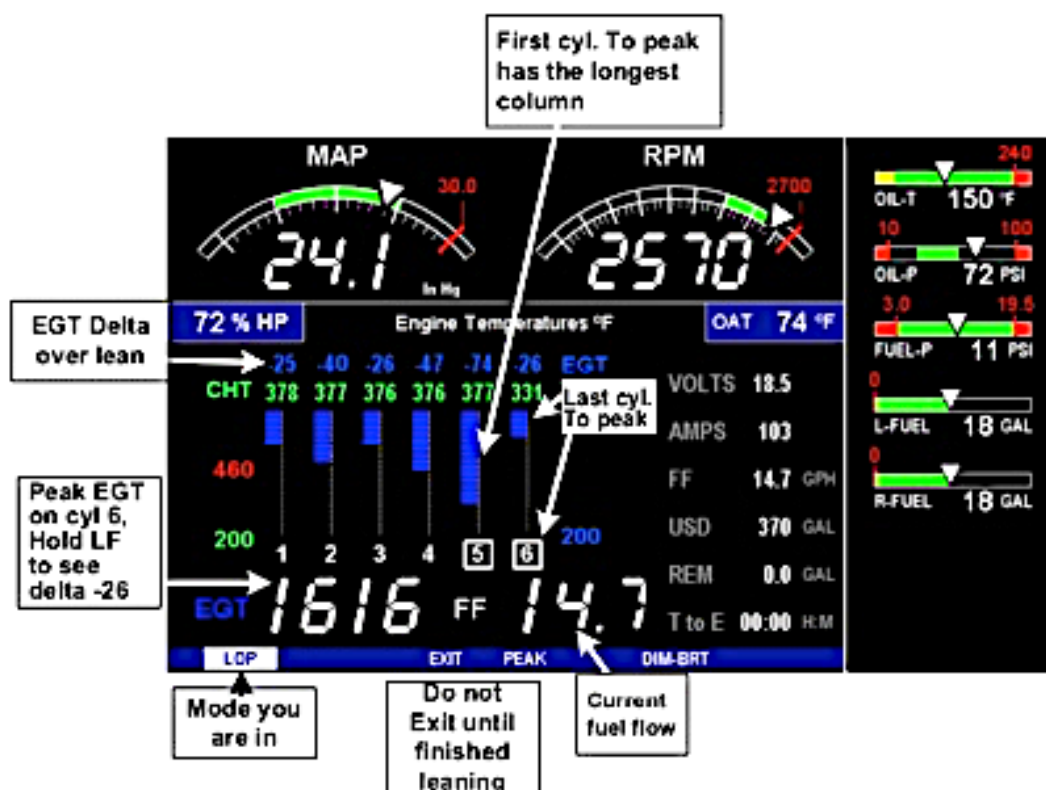
Leaning Rich Of Peak (ROP) Detection: Eventually, one cylinder will reach peak before any of the other cylinders. The EDM will determine this automatically. The EDM will indicate success in finding a peak by displaying the word **LEANEST** for two seconds and flashing its corresponding Cylinder column. The *Scanner*® Information Area will also display the current value for the EGT on the left, and the fuel flow value on the right, for final adjustment of the mixture, do not exit until the leaning process is complete. The peak EGT value and Fuel Flow value encountered during leaning is remembered by the EDM and can be displayed by holding the PEAK button during Lean Find Mode.

Finalizing the Rich Of Peak Mixture: You may now enrich the mixture to operate at peak or continue enriching to a value of your choice (typically between 50 to 100° rich of peak for best power), consistent with the procedures defined in your aircraft and/or engine manual. Because during the leaning process the mixture control was not stopped at the exact time the column flashed the value shown will be 5 to 10 degrees on the lean side. So as the mixture is enriched the temperature will go up to peak and then down as the mixture is enriched further. Note: tap PEAK to see the current difference from the peak temperature. This is handy for finalizing mixture. Tapping EXIT exits the lean find mode and automatic scanning resumes.

Leaning Lean Of Peak (LOP) Detection: Note: This mode should only be used when your engine is equipped with balanced fuel injectors or you have a DIF value of around 80 degrees. When using the Lean of Peak mode, you lean until *all* EGTs decrease slightly below their respective peaks. The EDM has automatic peak detection and will sequentially indicate leaning progress. When the first EGT peaks, the word **LEANEST** appears and the cylinder I.D. box highlights the cylinder number. Each column successively drops as leaning continues. When the last column drops (last EGT peaks), **RICHEST** appears and its respective column flashes momentarily. The last EGT to peak is the one you will use when setting the final mixture.

Finalizing the Lean Of Peak Mixture: The Scanner® Information Area displays the degrees below peak for the last (or richest) EGT to peak, giving you precise information necessary in setting the final mixture. Adjust the mixture to achieve the desired value below peak (using the digital EGT readout) or before engine roughness occurs. Caution: do not lean to the point where the engine runs rough. Note: the peak EGT value encountered during leaning can be recalled by holding the PEAK button. Do not exit until finished or all values will be lost. Tapping STEP exits the lean find mode and automatic scanning resumes.

Peak Detected - Lean Of Peak Mode LOP



Common Misapplications

Some of the more common misapplications made by first-time EDM users are presented here in an attempt to help you avoid similar problems.

<i>Problem</i>	<i>Situation</i>	<i>Corrective action</i>
Lean Find finds a 'peak' too soon.	Failure to pre-lean before performing Lean Find or you stopped leaning.	<ul style="list-style-type: none">• Follow the pre-lean procedure page 29.
	Leaning too slowly.	<ul style="list-style-type: none">• Lean more quickly.
Peak not found	Lean Find not activated or you stopped leaning.	<ul style="list-style-type: none">• Lean at the speed of approximately 10°F per second.
Off-scale EGT bars, too high or low	You forgot that you set the EDM in the Normalize view and later notice that the EGT bars go off-scale.	<ul style="list-style-type: none">• The higher sensitivity (10° per segment) of the Normalize view can quickly go too high or low off-scale with only small changes in EGT.
First cylinder to peak is not the hottest	This is normal. The first cylinder to peak is not necessarily the hottest.	<ul style="list-style-type: none">• None
EGT rises during single magneto check	This is normal, due to incomplete combustion persisting longer.	<ul style="list-style-type: none">• None
EGT not uniform during low power operation	This is normal. Fuel and air distribution is not optimal at low power settings.	<ul style="list-style-type: none">• None
No display of %HP	FF, MAP, RPM, OAT not reading or not equipped	<ul style="list-style-type: none">• FF, RPM, OAT, MAP required for %HP

Scanner® Information Area

The Scanner® Information Area provides expanded information in the form of alpha-numeric messages, parameters and calculations. In Auto-Scan, parameters will 'scan by' once every 4 seconds (default). This rate can be changed in Pilot Programming Mode. Tap the STEP button for 'Manual' selection of any parameter. Parameters for the installed options will be displayed. To start the automatic scan tap LF and then STEP.

DISPLAY	PARAMETER	DESCRIPTION
EGT 1436 CHT 382	EGT/CHT	Shows successive pairs of EGT & CHT per STEP tap.
TIT 1580 °F	TIT	Single Turbine Inlet Temp.
TIT-L and -R 1490 °F	TIT-L, TIT -R	Two Turbine Inlet Temp. Left and Right engine side
Oil-T 204 °F	OIL TEMP	Oil temperature in degrees F
Oil-P 64 PSI	OIL PRES	Oil pressure in psi
F-P16 PSI	FUEL PRES.	Fuel pressure in psi
F-F 2.7GPH	FUEL FLOW	Fuel flow in GPH
CLD 75 °F	SHOCK COOL	CHT cooling rate (deg/min)
VOLTS 13.9	BATTERY	Battery/Bus voltage
AMPS -6	Amperage	Set up per the specific aircraft
OAT 23 °F	OAT	Outside air temperature F or C
DIF 40 °F	DIF	Hottest minus coldest EGT
CRB 56 °F	CRB	Carburetor Air Temp (only allowed if IAT not present)
CDT 145 °F	CDT	Compressor Discharge Temp (only allowed if CRB not present)
IAT 105 °F	IAT	Induction Air Temp
Est. REM 68.0 GAL	FUEL REMAINING	Calculated fuel remaining on board based on what the pilot put in as maximum.
WP REQ 12.7 GAL	FUEL REQUIRED	Calculated fuel required to reach waypoint or destination (GPS interface must be corrected)
Est. WP REM 63 GAL	FUEL RESERVE	Calculated fuel reserve at waypoint (GPS interface must be correct)
ECON 9.8 MPG	Nautical MILES PER GALLON	Calculated fuel miles per units (GPS interface required)
EST. T to E 04:32 H:M	Estimated Time to Empty	Calculated time remaining to fuel exhaustion in Hours and Minutes at present power.
GPH 15.0 GPH	FUEL FLOW RATE	Actual fuel flow rate in Gallons per hour
USD 7.2 GAL	FUEL USED	Actual fuel used by the engine
FUEL-P 64 PSI	FUEL PRES	Fuel pressure in PSI