EGT SYSTEM: After installation, conduct a calibration or functional check on the system as follows:

**EGT**
(a) Calibration check: Use Alcor® EGT System Tester (see Alcor® Operators Manual).
(b) Functional check: Run aircraft engine at normal run-up R.P.M. Lean engine until you observe pointer movement,
or (c) Initial in-flight calibration: After a functional check, EGT system can be calibrated (fine tuned) to the engine/aircraft on the initial flight (and any subsequent flights) by In-Flight System Calibration Section.

**CHT & TIT**
(a) Calibration check: Indicators factory calibrated by Alcor® should not need calibration. To verify accuracy, use Alcor® System Test equipment to perform system calibration (see Alcor® Operators Manual).
(b) Functional check: Run aircraft engine at normal run-up R.P.M. Lean engine until you observe pointer movement.

CAUTION: If CHT or TIT pointer does not move, the system must be made operational before flight, if required instrumentance for the aircraft's minimum equipment list.

Should the system not work correctly, see Troubleshooting Section in these instructions.

**IN-FLIGHT SYSTEM CALIBRATION**: In-flight calibration allows you to “fine tune” the indicator to the engine. Relative readings can be calibrated in-flight. Calibration begins with establishing the altitude which allows cruise power (65%) at full throttle operation. (For turbocharged engines with automatic widegast control, use an altitude of about 6000 feet and above sea level and establish 65% power). Indicate temperature so that “peak EGT” occurs at the asterisk (*) or 4/5 scale as follows:

- **Step 1.** Lean mixture slow enough for pointer to follow.
- **Step 2.** EGT will first increase and then decrease. The point of maximum deflection is “Peak EGT”. Adjust mixture to “Peak EGT”.
- **Step 3.** Use the calibration screw (see Figure 2) on front of EGT to adjust the needle to the asterisk (*), with the Alcor® screwdriver provided.

NOTE: This becomes the reference temperature for desired mixture control. The EGT is now calibrated.

**CAUTION**: Two important guidelines that should normally be observed when setting mixture control based on EGT are:

1. Avoid leaning the mixture to “Peak EGT” above normal cruise power setting.
2. Never exceed TIT or CHT limitations - they limit EGT. (Sometimes it will be necessary to operate rich of peak in order to keep CHT or TIT within safe limits.)

Recheck reference temperature from time to time but only at the same power and altitude determined above. A check within +/- 2.5°F, one small division, or +/- 0.12% is considered good EGT readings may change slightly with time due to exhaust damper build-up on the probe, or internal resistance changes. EGT readings will change with power, altitude, and OAT changes.

There is no in-flight calibration for CHT or TIT. All calibration is done by Alcor® or with an Alcor®. Do not adjust CHT or TIT calibration screw unless you have the proper calibration equipment.

**EGT SYSTEM**: Peak EGT is the key to the EGT method of mixture control. The EGT system is designed to help provide more economical flight and identify engine malfunctions. The desired fuel-air mixture for maximum range at cruise power, up to 65%, is determined by observing peak EGT as presented on the indicator. A probe, positioned in the exhaust port near the exhaust valve, senses the exhaust gas temperature and generates electrical energy (thousands of a volt). The EGT indicator measures this voltage and the pointer moves to indicate the exhaust gas temperature which is read by the pilot. At full rich mixture excess fuel is not burned and results in a lower combustion temperature. As the mixture is leaned, the amount of excess fuel is reduced and the exhaust gas temperature increases. At the point where there is complete burning of the fuel and air mixture “Peak EGT” exists (no excess fuel or air). “Peak EGT” is observed noting indicated temperature starting to drop. This means air is being leaned. Lean of “Peak EGT” results in excess air after combustion and it also results in a lower exhaust gas temperature. EGT systems are generally calibrated so that at cruise power, “Peak EGT” will occur near the asterisk (*), used as a reference (see In-Flight System Calibration Section for these instructions).

**TAKEOFF AND CLIMB (after calibration):**
- For takeoff and climb, mixture setting is generally 100°F below (rich) reference temperature, (*). For highly supercharged engines such as IGSO-540, about 150°F to 200°F below reference temperature is normal.
- Let Cylinder Head Temperature and/or Turbine Inlet Temperature dictate; i.e., enrich mixture and/or increased airspeed to keep CHT and/or TIT within limits, preferably not over 400°F (or red line when applicable) for CHT, and not over 1650°F (or red line when applicable) for TIT. See Airplane Flight Manual for specific temperature limits.

**CRUISE:**
- For cruise flight, determine “Peak EGT” for each flight, and for any change in flight conditions (altitude and power setting).
- Establish desired cruise altitude and power. Identify “Peak EGT” by observing the indicator peak. Then enrich the EGT by 50°F or more. This is intended to keep any unmonitored cylinder from operating lean of peak. Operation of any cylinder on the lean side of its peak should be avoided.

**LIMITATIONS**
1. Enrich mixture to drop EGT about 50°F below cruise temperature before reducing power.
2. While descending, continue to enrich mixture to keep EGT at peak or 55°F below (rich of peak).
3. D福建 prolonged desen, maintain sufficient power to keep EGT 50°F to 100°F below (rich of peak) for cruising. This will assist in keeping engine(s) temperature above minimums and prevent over-cooling.

**CAUTION: CHOT SHOULD NEVER EXCEED LIMITATIONS in Airplane Flight/Operations Manual.**

**TIT SYSTEM:** The TIT system provides indication to prevent engine damage due to exceeding Cylinder Head Temperature limitations and can assist the pilot in detecting engine malfunction and prevent potential engine damage due to the elevated TIT system.

**CAUTION: TIT SHOULD NEVER EXCEED LIMITATIONS in Airplane Flight/Operations Manual.**

**NOTE:** Single probe EGT systems can sense EGT for only one cylinder. Since different cylinders may become the “leanest cylinder” as flight conditions change, the EGT indicator may not be monitoring the temperature of the least heated cylinder. Therefore, the EGT is enriched by a safety factor of 50 to 100°F in case there is a cylinder that is leaner than the cylinder being monitored. Combrand Analyser systems (systems providing probes in all cylinders) allow monitoring of all cylinders, permitting operating the engine closer to peak EGT. This provides a substantial fuel savings (1 to 2 gallons per hour) in addition to allowing engine malfunctions to be identified in their early stages.

**CHT SYSTEM:** Whenever a system is in question as to its proper functioning, it should be checked with an Alcor® EGT (TIT) or CHT System Tester. Refer to Alcor®’s “EGT AND COMBUSTION ANALYSIS IN A NUTSHELL” for further information on EGT mixture control and combustion analysis.
TROUBLESHOOTING:

If the indicator pointer does not move as intended, check the following:

- Check the connections between the probe and lead wire and between the lead wire and indicator. They should be clean and tight.
- Make certain there are no shorts between two connectors, or from any connector to airframe ground. Alcor probes are grounded at the probe tip.
- Check continuity of circuit from probe to indicator. For EGT/TIT the red lead wire should be continuous from probe to indicator (same for yellow lead). For CHT the black wire should be continuous from the probe to the indicator (same for yellow). There should be no open connections or breaks in the wires.
- System can be checked for correct wiring by inputting a millivolt signal (using an Alcal or heating probe (propane torch for EGT and TIT, cigarette lighter for CHT) and observing indicator pointer movement.
- Probe loop resistance should be approximately 0.8 ohms for EGT, and .24 ohms for CHT. Ensure reading is not erratic when wiggling probe wire back and forth.
- If pointer seems to stick, bind or jump (movement friction, foreign material, or pointer hits glass or dial), then return indicator to Alcor for repair.
- Check probe, lead and indicator polarity by reversing lead connections at indicator end, then at probe. If pointer moves, the polarity is reversed; therefore, return probe, lead and/or indicator (whichever one(s) with reversed polarity) to place of purchase or to Alcor. Red = Negative
- Off scale readings (high) can be caused by an induced voltage - make sure leads are isolated from high voltage sources such as alternators and strobe lights.

WARRANTY INFORMATION

Please refer to Alcor's website, call, or e-mail for troubleshooting tips before returning a possibly defective product to Alcor.

Alcor Inc. warrants all parts in your new Alcor product to be free from defects in material and workmanship under normal use. Our obligation under this warranty is limited to repair or exchange of any defective part of this unit if the part is returned, transportation prepaid, within THREE YEARS from the date of manufacture. The replacement parts carry a warranty for the balance of the period of warranty. Under this warranty, Alcor is not responsible for any service charges, including removal and reinstallation or any other consequential damages.

This warranty is void on any product which has been subjected to misuse, accident, negligent damage, repaired by anyone other than the Alcor Repair Department, or damaged in transit handling. If in the opinion of Alcor, the product's serial number or inspection date label have been altered or defaced, the warranty is void.

This warranty is in lieu of all other warranties expressed or implied and all other obligations on Alcor's part, and it neither assumes nor authorizes any other person to assume for Alcor any other liability in connection with the sale of Alcor products.

Should the product covered by this warranty fail to operate properly contact Alcor Customer Support at 1/800-FLI-SAFE (1/800-354-7233) or support@alcorinc.com