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How to lean a High Performance Engine by: Performance Engines.

Climb out full rich, full power to 6,000 feet (make sure all engine parameters are within the correct temperature tolerances).
Make sure you select a somewhat desolate area. (So you do not have to worry about traffic that much).
Preferably pick a day with little wind at your altitude.
Engage your autopilot on a heading.
Set up for 65% or less power. Suggest: 2400 rpm at 24"
Make sure you keep a log of all this.

A. Select Cylinder #1 EGT on your engine analyzer.

B. Cut the mixture back one turn at a time and WAIT until the EGT raises to a stabilized temperature (do not continue leaning until the temperature is stabilized). The EGT will rise and subsequently stabilize with each turn of cut back on the mixture.

C. Continue to cut back the mixture as stated in paragraph B until you see the EGT stop climbing and start to drop.

D. Immediately note the highest temperature attainable and corresponding fuel flow at which Cylinder 1 stopped climbing and started descending. This cylinder has reached its highest temperature attainable (***PEAK EGT***).

E. Go to full rich.

F. Select EGT cylinder #2.

G. Wait for a stabilized temperature on your EGT cylinder #2.

H. Repeat paragraphs A through E. on cylinders 2, 3, 4, 5, and 6.

Now you have established the PEAK EGT for each cylinder. Each aircraft will vary, especially experimentals.

Now select the cylinder that peaked at the lowest temperature. This is the ***CRITICAL*** cylinder.

Let's suppose (*and this is only a supposition*) that the cylinder that peaked at the lowest temperature was cylinder #5 at 1375° degrees F.

This means:

A. Your critical cylinder is #5, and..

B. For any cruise power setting (up to 75%) the EGT should be 100° F cool of this critical cylinders peak EGT. Given the aforementioned all other cylinders will be richer and therefore within a safe operating margin.

3. For any higher power setting (i.e. take off), the EGT should be 150° to 200° degrees F. richer (cooler) of peak than established for the critical cylinder. If your engine's set up can not achieve these temperatures you will have to change the fuel flow.

By adhering to these policies you can extend the TBO of your engine.

Performance Engines does not recommend running your engine lean of peak (LOP) if the power setting is above 65% power. Furthermore, running LOP in excess of 65% will void your warranty. (Lycoming engines may not be operated lean of peak per the manufacturers' recommendations.).

Please remember that to run lean of peak your aircraft must be equipped with an engine analyzer that has downloading capability.

Operation of a Performance Engine lean of peak without a downloadable engine analyzer will void your warranty.