Here is a quick look at a LOP checklist. Please note the engine is set up with a high TO fuel flow to facilitate cylinder cooling. Because of this the pilot needs to modify ground ops to minimize plug fouling. This is an abbreviated version and is not intended to be a full explanation nor pilot checklist.

After Start Up and Ground Ops

- Lean aggressively. This helps minimize fouling plugs and reminds you to enrichen on TO

Prior to Take Off

- typical mag checks are not much value. The first flight of the day you can run up RPMs to 1700, cycle the prop once, then place the engine monitor in "normalize" mode. Check the Right mag then watch the EGT indicators on the EDM 700. All should rise, then go to the left mag, egts should continue to rise (no need to cycle through both) then back to both. A fouled plug will be indicated by a dropping EGT.
- VERY IMPORTANT- PUSH THE MIXTURE TO FULL FORWARD PRIOR TO TAKEOFF, Throttle, Rpms and mixture should be full forward (unless operating at High alt. fields)

Climb Profile

- Simple formula, WOT and 2700 RPMs to cruise altitude. Fuel Flow should be maximum until about 3,000 ft then start leaning (this needs to be modified at high altitude airports and in some cases where max power is a necessity for terrain and obstruction avoidance). Use altitude leaning guidelines on the factory FF guage above 3,000 feet altitude. Your goal is to keep EGTs between 1250 and 1320 during climb.
- Climb at 120 to 130 knots with cowls open

Upon reaching Cruise altitude

- Do nothing, then do nothing some more. Let the aircraft get up to full speed. This will take a couple of minutes.
- Close the cowl flaps
- reduce the RPMs to 2500 (unless you're in go far mode)
- Do the BMP (Big Mixture Pull), The higher altitude you're at the lower the FF but 14 gph or 13 gph will be a good place to start the first time. Note that above 6,000 or below 65% HP there is nothing that you can do to hurt the engine but flying LOP will save gas, result in cooler CHTs and provide for a cleaner engine.
- Note-Degrees LOP varies with altitude (why because O2 varies with altitude)

Procedure for cruising LOP (lean of peak or LOP)

- Note - you'll only need to do this one time at different altitudes to get an idea of the Fuel flows you will need. Then on subsequent flights just set the FF. (will vary with different rpms)
- Do the BMP to the Lean side of peak. Slowly, very slowly (no that's too fast) enrichen the mixture until the first cylinder EGT (likely to be #4) peaks on the EDM 700. Note the EGT temp. Then lean mixture until you are 70 degrees LOP if below 6,000. If at 7,000 to 9,000 you will want to be about 40 degrees LOP. There is no need to be any further LOP. Above 9,000 you will likely want to be close to peak EGT.

Note, I could write a book on the physics of leaning but please go to the APS class. They will teach you all of this and also how to use your engine monitor. The Engine monitor can save your life one day. Please take the class.

- At LOP cruise you may feel a little roughness which is completely normal (its called cycle to cycle variability). You can always enrichen 0.1 or 0.2 gph to get a smoother ride. Leaner means less fuel. If you choose to fly at a lower RPM 2400 or 2300, fuel flows will be lower, because you are pumping less air into the jugs)

Descent

- Generally in the Normally Aspirated A36, I leave the throttle at WOT and descend no more than 500 fpm unless flight ops dictate. As you descend you will feel a little roughness, because the lower you go the leaner the mixture or the further LOP. Increase FF .1 or .2 gph to keep the engine running smoothly. As you get below 5,000 or 6,000 you will need to start reducing the Throttle. (Bill stay out of the yellow arc!)
- Leave the RPMs set at cruise (2500, etc)
- Do not go to full rich on approach, leave everything as is and use the Throttle to adjust airspeed.
- In the event a go around is necessary you can push everything forward then.

Back on the Ground

- leave everything as is until exiting the runway
- open cowls, raise flaps, leave the mixture leaned (remember we always lean for ground ops)
- I generally set my pitch trim to about 3 degrees so I'll be ready for the next flight.

Final Thoughts

- **It's your airplane and you can fly it anyway you want. If flying ROP then please make sure you're at least 100 degrees Rich of Peak). I fly ROP if doing maneuvers, during climb etc., otherwise I'm LOP.**
- **With the higher TO Fuel flows you've already solved the bulk of the CHT heating problems. The CHT high temp warning on the EDM 700 is set to 390 degrees. If a column starts blinking then you're above 390 and I suggest increasing airspeed to cool the CHTs. I like to keep mine below 380 degrees and very rarely see anything above 360 degrees even in climb. If you see one above 400 then that's a problem that requires action.**
- **Think of Cylinders as accessories on an engine. They are designed to be removed, rebuilt and replaced.**
- **Please take the APS class!**