

N43451 - Items to Cover for Aircraft Checkout & Helpful Tips

**** Prior to your first flight in this aircraft, you must read the POH ****

This document supplements but does not replace the official POH. In the event of any conflict, the POH governs.

Preflight:

Normal oil level: 9 qts. Minimum of 8 qts, max of 10 qts

Tire Pressures: Nose 28-30, Mains 35-40

Fuel: Tip Tanks Full (17 gal), Main Tanks Fill to Tabs (18 gal)

Fuel system drains (4 sumps + lowest point drain lever behind copilot seat)

Baggage Door operation

- Be **very** careful not to let the baggage door fall, and never try to close the baggage door without first opening the latch. The latch must be manually opened before closing.

Two alternators: One for Air Conditioner (Thicker belt), one for Alternator (Thinner belt)

Weight and balance/ballast: This aircraft is nose heavy.

- With only the two front seats occupied, might be forward of CG limit.
- Owner has provided 2 Red cases with 2x 25lb dumbbells in each case. You may adjust weights as needed.
- Please put the dumbbells on the shelf in the hangar when not in use. Stacked correctly, the lid DOES lock shut in the red containers.
- Do not place loose dumbbells in the baggage area — they will roll around and may damage the bulkhead. Always use the provided red containers.

Air conditioning ops – Read POH*

- Demonstrate the scoop lowering (master on, fan on low, AC switch on).
- FAN only recirculates air in cabin. FAN can be ON at any time of flight. FAN does NOT lower the Scoop
- Air Conditioner Switch (Blue) MUST be off for takeoff and landing.
- Ground operations needs air flow (1,000 RPM) to cool coils.
- Expect a 5–10 mph reduction in cruise airspeed when the A/C scoop is deployed.
- Leaving FAN on, and turning AC Switch OFF will RAISE the scoop.

Air Flow

- There are 4 total floor fresh air intake/vents – front and middle rows
- The rear row passengers do **not** have individual fresh air vents per Piper’s design...
- You must have the “FAN” ON for the rear most passengers to get air movement
- The FAN recirculates air from the rear baggage compartment area and through the circling air flow ducts
- The FAN must be in the ON switch for the Air Conditioner to be turned on
- The back row does receive warm air from the floor when the cabin heat is on

Pilot Seat Operation

- The pilot seat has a pressurized air tube to raise and lower the seat
- The RED knob can be pressed toward the rear of the aircraft and this presses a button on the air canister to raise the seat (if empty) or lower the seat (if occupied)
- **NOTE** – if you lower the seat ALL the way down, the red knob may interfere with the seat slider latch and can unintentionally lift the slider latch up, meaning the seat may not be “locked in place” forward/back and the seat may move backwards when you don’t want it to (when applying power). Avoid this by being sure you’re not ALL the way down.
- Raising and lowering the seat may be difficult until you get used to the mechanism.

Passenger Seat Operation

- There are 2 round levers in back of the co-pilot seat just below the head rest. Press these levers outward (away from the center of the seat) to either fold the seat forward or move the seat forward.

“Jet Shades”

- This aircraft has custom cut Jet Shades to help keep the cabin cooler. The cabin is noticeable 10-15 degrees cooler in the summer.
- Please do NOT attempt to remove the jet shades from the windows. It is VERY hard to get them back in properly.
- The jet shades in the front window is just propped in by tension, if they slide or fall, please inform the owner and we’ll fix it.
- Please take care of these – they’re expensive.
- Flying at night is no issue with these remaining in.

Cover Alternate Air lever (To the right of the throttle quadrant)

- This is only used if engine runs rough in the air

- It just opens a flap to allow unfiltered air to enter the engine
- Do not open this while on the ground
- It would be abnormal to ever open the Alternate Air lever unless you have a suspected engine problem in flight.
- *This may be in a similar location to “carb heat” from other club airplanes, but please be sure to know, this is NOT carb heat and not to be Opened unless as noted above or POH.*

When having 7 people in the airplane

- There is an audio splitter cable behind the pilot’s seat in the pocket. Please return to this location when it is not in use. This allows for the middle seat to be able to hear and talk as well

Wing Nav Lights (red and green)

- These are turned by a dimmer switch to the right of the throttle quadrant
- ALL exterior lights are LEDs, please fly with lights ON unless not desired
- Just switching the “NAV Lights and panel” dimmer switch on will set the wing nav lights to ON, and then increasing will brighten the panel lights.
- I recommend to fly with the switch just above on (wingtips on, panel lights dim) at all times.

Avionics

G5 ADI and HSI - See Garmin manual

- G5s Display GPS Data Only (Magenta Line). There is no data feed to NAV 1 or NAV 2 radios to G5s or GFC500 Autopilot. NO ILS Approach Data to the G5s.
- Use the CDI instrument for ILS approaches tied to NAV 1
- NAV 2 is currently 15 degree variance. CDI tied to NAV 2 marked INOP for now.

Garmin 175 GPS NAV – See Garmin manual and mobile simulator

- ADSB is shown on the GPS 175 and shared via Bluetooth
- Bluetooth can be in pairing mode by accessing System>Connex and pairing mode indicate on when on this page of the GPS

GFC500 Autopilot

- White Vs Green Text
- Set and ALWAYS Verify
- Pre Takeoff Check of Autopilot (Lateral Mode, Altitude, IAS Climb)
- Flight Director

- Go Around Button (left of throttle quadrant)
- Autopilot is not tied to throttles
- Autopilot will fly RNAV approaches and Visual approaches (from GPS)
- Autopilot will NOT fly ILS approaches
- VNAV button is NA for this aircraft (used in STARs). This autopilot WILL* fly vertical glide path on RNAV approaches.
- Electronic Stability & Protection (ESP) – know what it is and how to disable it if desired
- Autopilot Pre-takeoff settings and Briefing
 - o Set Desired Lateral Mode (Likely Pitch or HDG)
 - o Set Desired Altitude
 - o Set IAS for climbout (Cruise Climb at 115) Use up/down knobs to adjust speed
- Rule of Thumb for when to use IAS or VS for vertical modes
 - o Use IAS for Climb (button is on top)
 - o Use VS for decent (button is on the bottom)
- The VNAV button isn't configured in this autopilot. Ignore it and pretend it's not there
- Know where the autopilot circuit breaker is in case of abnormal autopilot behavior
- REQUIRED Autopilot VIDEOS
 - o Tutorial 1 - <https://www.youtube.com/watch?v=nQMWC5Aq1JM>
 - o Tutorial 2 - <https://www.youtube.com/watch?v=8CAVmxbyMco>

JPI Engine Monitor

- Max Temps 400 CHT and 1400 EGT
- Always fly rich of peak (lean out just enough to get good temps then give it a little push forward)

Fuel Flow Indicator (different than other Cherokee 6)

- Climb out all three forward (MP, Prop, Mixture)
- At 1,000 ft, 25" / 2500 RPM / Lean Mixture to Top of 75% Fuel Flow (this will usually give correct temps on climb out. Enrich mixture a bit if needed for cooler temps for climb)
- Cruise Power of 23" 2400 RPM and Mixture at 16.5 GPH will be the normal sweet spot for temps

Fuel Gauge and Fuel Level Monitoring

- This aircraft DOES NOT have a fuel totalizer (yet, it's on the list to upgrade..)

- This means you need to manually keep track of fuel used in each tank. Here are some tips:
 - o In the GPS 175
 - Use the FUEL Planning button at the beginning of each flight. You can put in the total fuel and GPH. This is estimated and will calculate estimated endurance during the flight and fuel remaining. It is NOT tracking actual fuel used.
 - There is a Countdown Timer called “Fuel” – I highly recommend to use this timer as it will flash “MSG” on G5s and GPS when the timer is up to switch fuel tanks.
- The fuel gauges are aging but remain reasonably accurate when tanks are below 10 gallons.
- There is a fuel level “straw” to be kept in the plane for all flights. The standard storage location is in the copilot seat pocket with the fuel strainer. You can use the straw for the MAIN tanks to determine fuel level.
- Fuel burn formula is → “Fuel Flow GPH / 60 = Gal Per Minute”
- Write down how much fuel each tank has for each flight, and keep track of start time, switched time, and fuel remaining for each tank during the flight.
 - o The worst feeling in the world is not knowing if you’ll have enough fuel to get to your destination. When in doubt, make a fuel stop.

Fuel system proper use/sequencing

- Fill and use per POH (Fill Tips first, use mains first)
- Proper final fuel for the club will be Full Tip Tanks, Main Tanks filled to the Tabs
- When using Tip Tanks, a variance greater than 15 minutes WILL cause a noticeable flight controls issue. The autopilot will mask this issue.
 - o Do **not** allow more than a 15-minute imbalance between tip tanks. Larger imbalances will create noticeable lateral control issues, especially for landing. The use of autopilot will mask this issue.
- Recommended sequence of fuel ops is:
 - o Use Mains till 3-5 gals remaining
 - o Use Tips 15 minute differences (15, 30, 30, 15)
- Plan Ahead, and DO NOT SWITCH FUEL tanks at lower altitudes unless absolutely necessary
- Fuel injected system does require the fuel pump to be on during Hot Engine ops and for hot and cold starts
- Cold Start, follow checklist
- Hot Start (Do this trick, and it will start right up every time)

- The IO-540 engines can be tough to start when hot. Follow this procedure for hot engine starts (shut down for less than an hour) and it will start every time.
- Mixture Cutoff
- Prop High RPM
- Throttle full forward
- Master On
- Circuit Breakers Check
- Fuel Pump On
- Mixture rich briefly (checking to ensure there is fuel flow indication – 1 or 2 seconds)
- Mixture idle
- Leave the fuel pump on with the mixture at cutoff and the throttle fully open for 10–15 seconds.
 - This removes any fuel vapor from the lines removing vapor lock
- Prop area clear
- Mags Start
- When engine starts, Mixture rich then immediately reduce throttle to half inch open (1,000 RPM)
- If this doesn't work, follow Flooded engine checklist. *The trick is to have mixture on cutoff, and leave throttle fuel forward for about 10 seconds while fuel pump is on before attempting start. This will cycle the fuel through the cylinders removing vapor lock.*

Flight Ops

BEFORE GETTING INTO THE AIRPLANE

- Do a 360 degree walk around.
- Ask yourself: does the airplane appear ready to fly? Check struts, tires, doors, tow bar removal, and look for any dents or abnormalities on the wings.
- **Every. Single. Time.**

After a couple minutes of engine warm up, please lean the mixture knob to be between the “R and the E” on the throttle quadrant.

- If it's really hot, the fuel pump will need to be on and you may need to keep it more rich to keep the engine cool.

Departure flap setting (normal is 10 degrees)

A Safe Flow that should be memorized is the ‘T’

- Start to your right on the floor

- Trim
 - Flaps
 - Fuel Tank
- Then go all the way to the right and work your way to the left*
- Air Conditioner: **OFF** for takeoff and landing (blue switch). The fan may remain on.
 - All power levers forward (except in high density altitude)
 - All switches on (except for Pitot Heat as needed)
 - Window shut
 - **This flow should be done before EVERY takeoff and EVERY landing and does not replace a checklist**

Takeoff Power, Climb Power to 1,000 ft AGL, Cruise Power

- Climb out all three forward (MP, Prop, Mixture (unless high density alt then lean mixture to max power)
- The Prop Knob is VERY sensitive. Takes some getting used to for reducing RPMs smoothly.
- Lycoming manual restricts full RPM time limit to 5 minutes. Pull the Prop lever slightly back after takeoff (2650 RPM).
- At 1,000 ft, 25" / 2500 RPM / Lean Mixture to 20 GPH Fuel Flow
 - o This will usually give correct temps on climb out. Enrich mixture a bit if needed for cooler temps for climb
- Cruise Power"
 - o 21.5" MP – 2100 RPM – 14.2 GPH – 55%
 - o 22.5" MP – 2300 RPM – 16.1 GPH – 65%
 - o 24.4" MP – 2400 RPM – 18.0 GPH – 75%

Memorize all V-Speeds (See V-Speed Document and Checklist)

JPI Engine Monitor

- Max Temps 400 CHT and 1400 EGT
- Always rich of peak (lean out just enough to get good temps)

Typical pattern speeds/power settings

- Downwind – 110mph
- Base – 100mph
- Long final – 90-100mph
- Landing assured (normal) – 82mph
- Landing assured (short field) - 73mph
- No-flap landing – 92mph

Power off 180 approach

- Best glide – 100mph
- Stay close in/drops like a rock

Cold weather ops

- Engine is warm enough for take-off when the throttle can be opened without the engine faltering. Lycoming recommends preheat for temperatures at and below 10 deg F.
- An engine pre-heater will always be plugged in after each flight (even with a hot engine) when lows are below 50 degrees.
- Engine heater (Yellow rectangle) sits comfortably just inside the cowling and can be held in with the cowling plugs. The heater does not get any hotter than 75 degrees, so no concern for over heating. When in doubt, plug in the heater after the flight.

Hot weather ops

- It is normal to have to have the fuel pump on during ground operations in hot weather to have a stable fuel pressure reading. During runup, test the engine with fuel pump off then the fuel pump may have to be turned back on to remain solid fuel pressure)

Once in hangar, install chocks, plugs, and battery charger (nose compartment). Do not shut the front baggage door on the battery charger cable (it will damage the power cable).

N43451 Student / Instructor Checkout Checklist

Have this sheet printed and hand it to your instructor for the checkout

Instructor, check off all items as part of the Aircraft Checkout

1. Ensure all items are pre-briefed on the ground from the list above about this aircraft
2. Ensure member has read the POH – discuss any questions

Preflight Specific Items

3. Battery Charger and Baggage Door
4. Engine Pre-Heater placement and usage
5. Oil Level (8-10)
6. Baggage Door Operation
7. Air Conditioner Scoop Operation
8. Fueling instructions (tips/mains)
9. Manual fuel calculation plan, timers, planning
10. Walk Around Before Entering the Aircraft. **Every. Single. Time.**

Flight Ops Specific Items

11. Checklist Usage
12. Cold Start procedure
13. Hot Start procedure
14. Lean on taxi
15. Fuel pump/fuel pressure with cold/hot ops discussion
16. 'T' Flow for pre-takeoff and pre-landing
17. Autopilot
 - a. Pre-takeoff
 - b. Climbs
 - c. Descents
 - d. LVL button
 - e. Approaches
 - f. Go Around Button & Resulting Action
 - g. Flight Director
 - h. ESP (unusual attitudes above 3,000 AGL) and see how ESP reacts
 - i. Discuss getting behind the airplane with this autopilot
 - j. Autopilot Circuit Breaker Location
18. Air Conditioner Operations in Flight – Demonstrate performance hit in cruise speed
19. Fuel calculations and fuel management

- 20. Power off 180 (to demonstrate sink rate)
- 21. All other ACS Private and Commercial Maneuvers as needed
 - a. Be cautious of engine temps/shock for emergency descent procedure

Putting Aircraft Away Specific Items

- 22. Only a 45 Degree Turn with Fence at Denton next to T-hangars
- 23. Hangar Rash importance / Video Cameras
- 24. Awareness of flaps and t-hangar posts position and nose cone to hangar door
- 25. Battery charger / don't close front baggage door on cable
- 26. Engine heater when lows are 50 or below / OK to put inside of hot cowling
 - a. Be VERY careful of placement – do not force. There are thin fuel lines on top of the cylinders that can break
 - b. Set gently in the cowling, hold in place with cowl plugs/covers
 - c. Use provided blanket on shelf if below freezing over cowling
- 27. White Cotton for Windshield, microfiber for wings/cowling
 - a. Microfiber can scratch windshield