

GA8 for Dummies

...a survival guide for the rest of us.

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This document contains notes for flying the GA-8.

Note that if you print this web page, you will not get the help sections on the FM, DF, and Sat Phone because they're in a different file. Be sure to also print the [avionics](#) web page too.

NMWG: N614CP callsign **CAP Flight 9914**

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GA-8 SOP (Standard Operating Procedures)

Airspeeds and Power

- **Takeoff** - full throttle and 2700RPM, 22 gal/hr at 5000 ft (2 min max)
- **Climb** - 85K, at 1000 ft go to 25MP/full, 2500RPM, 18.6 gal/hr
- **Cruise** - 23MP/full, 2300RPM, 50 degrees ROP (rich of peak) EGT, approx 16 gal/hr and ~120kts TAS.
- **Data Acquisition** - 2100RPM, adjust throttle for 90K ground speed, use rudder/skidding turns to keep wings level
- **Descent** - just reduce throttle
- **Instrument Approach** (first notch of flaps)
 - Hold Altitude - 16MP, 2500RPM
 - ILS descent - 13MP, 2500RPM
 - non-precision descent - 11MP, 2500RPM
- **Landing** - 2500RPM in the pattern

After landing, mark the log with the fuel remaining if you don't fill it up. If you do refuel, fill to 66 gal for the next mission.

Suggestions

- **COMM2** - The recommendation is for pilot to always use COMM2 so that the copilot can have unrestricted access to the CNX80 for his tasks.

GA-8 Useful Stuff

- $V_x = 71K$ (as per checklist)
- $V_y = 78K$ (as per checklist)
- $V_{glide} = 68K - 78K$
- $V_{apr} = 15-MP/90K$ downwind, 71K full flaps on final
- $V_a = 121K$
- $V_{cruise} = 120Kts$
- 2 minute max on full throttle/full RPM. 25MP/2500 is max continuous

- Fuel 87.7 gal useable
- 75% power 25MP, 2500RPM, 16.7 GPH
- 65% power 23MP, 2350RPM, 13.7 GPH
-
- Nose gear 31-33psi
- Main gear 27-29psi
-
- Cycling the BUS-2 Master will reset the overvoltage relay.

General Notes

- **Archer plug** - is very fragile and vulnerable. If you look in the rear door, to the lower right, and the lower right of the baggage area, you'll see a small gray plug. This plug is essential to the Archer. Please be **very** careful when working in that area.
- **CG** - The plane has a large CG range, but the plane is long and large enough that it can be loaded outside the CG limit so be careful.
- **Compass** - can be off 15 degrees at idle, but less error at 2500RPM. Note that the DG is slaved so you shouldn't have to be too concerned about the compass.
- **Door AD** - On the rear door, the front rail slider on top tends to wear in frequent use. The AD requires inspecting the rails every 100 hrs, so it's a good idea to look at it on preflight.
- **Emergency Xmit** - If the intercom fails, you can select "Emerg" on the intercom (center toggle position), then plug a mic into the mic socket just above your knee, and use the PTT switch just to the right of the center radio stack (you can't really see it from the pilot seat).
- **Noise abatement** - The GA-8 at full 2700 RPM exceeds some noise limits, so avoid operating at full RPM wherever possible. Use 2500RPM maximum except for takeoff.
- **Oil dipstick** - has a U-shaped bracket on the top to help remove the dipstick. Pulling the bracket up helps you remove the dipstick. To replace the dipstick, this bracket **must** be

pushed down horizontal before pushing the dipstick home or the dipstick will not be secure and will leak.

- **Oil Level** - N614CP at least (if not others as well) seems to like a level of 7 Qts. Any more than that and it blows out until the level is 7 Qts. That level is a surprising amount below the max of 12 Qts, but still well above the minimum for safe flying (according to the AFM) of 2.9 Qts.
- **Seat Belt** - Make sure that the seat belt tail is not stuck in the door or else the door **will** come open in flight.
- **Tail tie-down** - a U-shaped metal piece in the baggage area. If you use a rope, you don't need it, but if you use a chain, using the bracket will keep the chain from scratching the plane's tail tie-down bracket.
- **Shutdown** - No need to pull the 3 breakers under the pilot's leg to keep from draining the battery anymore. But on preflight, if you see them pulled, just push them in.
- **Fueling the GA8** - When finished flying, refuel the plane to 66 gal. Not only will this keep fuel from dripping out of the vents, but it'll also allow the next mission to carry more weight.
- **Lean on Shutdown** - Make sure you park the plane with the mixture at idle-cutoff or fuel will drain on the ground.
- **Operating the Rear Door** - I've found it convenient to use two hands when operating the rear door on the outside. Put your left hand on the fairing that covers the runner that slides in the middle track. Put your right hand on the latch lever. Then push the door to the left or right.
- **Don't Pull Fuel Shutoff Valve in Flight** - As per Service Letter SL-GA8-2009-12, restricting fuel flow to the engine-driven fuel pump for as little as 30 seconds can damage the pump so pull it only in an emergency.
- **Leave the individual avionics turned on** when you shut everything down. The radio master will turn everything off without the need for using the individual power switches. I have seen problems with the CNX80 tuning when the CNX80 and the transponder don't power up within a few seconds of each other.

Hot Start

The GA8 (at least N612CP) seems to have fuel vaporization problems when you start it with the engine still hot from a previous flight. Something a little simpler might work, I don't know, but this works for me:

- Full throttle
- Mixture cutoff
- Crank until it fires
- If it doesn't fire, mixture rich, prime with fuel pump for a few seconds, then start this list again.
- Mixture to approximate idle-lean position
- Throttle to idle
- Fuel Pump On
- After 10 seconds or so, turn the fuel pump off

- Then, if the engine starts to die, flip the fuel pump on again for another 10 seconds or so, then turn it off.
- Repeat the last step until the engine stays lit.

Archer Notes

For more detailed information, see also National's Archer Policy Memo at http://level2.cap.gov/documents/2008_06_05_ARCHER.pdf.

The most experienced crewmember (no matter what his duty is for the flight) should be designated as the Mission Commander to have the responsibility for the overall success of the mission. But the PIC is still the ultimate authority for the safety of the flight.

The crew should consist of 4 people. Their "callsigns" are:

- "Pilot" - flies the plane as directed
- "Co" - co-pilot communicates and scans for traffic
- "Track" - directs the pilot during the data acquisition phase
- "Archer" - operates the Archer equipment

The PIC should challenge and expect a response from each position with "seats and seatbelts and doors". This not only ensures that the seats, seatbelts, and doors are secure, but also that the intercom is operating in all positions. Do not go to the next Item until every person has responded to these challenges.

Standard Tracker to Pilot calls

The Tracker is watching a screen displaying ground speed and AGL altitude, whereas the pilot is watching instruments displaying airspeed and MSL altitude. Thus, the Tracker should communicate *differences* between the actual and target altitudes so the pilot can adjust accordingly.

- TURNS- Give type of turn and amount, i.e., *Rudder right two* for a skidding turn to the right two degrees
- AIRSPEED- Give the change required in knots, i.e., *Increase (or Decrease) speed 5*.
- ALTITUDE- Give the change required in feet, i.e., *Climb (or Descend) 300*

Remember when flying an acquisition run, you should not be navigating the plane. You should be allowing the tracker to tell you where he wants you to fly as indicated by the Archer equipment.

And, of course, remember that somebody needs to be looking out the window for traffic avoidance.

Archer Initial Calibration Procedure

When the Archer is powered on, it needs to be calibrated. The plane needs to be stationary for complete calibration, and so this calibration needs to be done on the ground.

- Point the plane in a cardinal **true** direction (convenient for the Archer operator). For instance...

Location	Deviation	Plane Mag Heading	Results in True Heading
Albuquerque NM	11 degrees East	259 degrees	270 degrees
Pensacola FL	2 degrees West	272 degrees	270 degrees

- Tell the Archer operator the true heading.
- Wait until the Archer operator says the calibration procedure is complete (approximately four minutes).
- When requested, tell the Archer operator the latitude and longitude displayed on your GPS so he can verify that his Archer display shows the same latitude and longitude.

JPI FuelScan-450 - fuel totalizer

At Power Up

The panel should say **Fill?n?**, then do one of the following. If you:

- added no fuel:
 - hit **Step** to accept.
- topped off:
 - hit **Auto**, see fuel capacity, then **Step** to accept.
- added (or removed) some fuel:
 - Hit **Auto** until you see **Add Fuel**
 - Hit **Step** until you see zero (amount you're adding or subtracting).
 - To INcrease fuel (add gallons to what's there): Hold Auto
 - To DEcrease fuel (subtract gallons from what's there): Tap Auto
 - When done, hit **Step** to accept.

After Power Up

- Use **Step** to cycle thru the display:
 - USD - fuel used (hold **Auto** key 3 seconds to clear)
 - REM - fuel remaining
 - H.M.- Time left to empty
 - REQ - fuel required to destination GPS waypoint
 - RES - fuel remaining at destination GPS waypoint
 - NMPG - Nautical miles per gallon
- Hold **Step** and **Auto** simultaneously to start as though from power up. This gets you to the customize screen. Then to get to the normal startup, hit **Auto** and then **Step**. If you

don't hit Auto before Step, you get into the customization area which you don't want to change. Keep stepping until you get out of it.

Note that the REQ/RES display can be changed in the setup between "next waypoint" and "destination waypoint". Currently we have it set as described above.

Setup

The setup data for N612CP is:

- Rate - 3
- K = 29.6
- Accum Fuel - Y
- GPS - 3
- Dim - 14

M877 Clock

This section describes the chronometer

There are 4 modes designated by a "blip" just above the labels on the screen. The mode is selected by pushing the left **SEL** button.

Using the clock

- GMT - GMT time.
- LT - Local time. Note that you can't set the minutes.
- FT - Flight time (counts up).
 - Alarm mode - You can set a desired flight time. When the flight time is reached, the display flashes.
 - Reset - Hold down the CTL key for 3 seconds and flight time will be zero'ed.
- ET - Elapsed time (countdown) - Begin countdown by pushing CTL. At zero, it starts counting up.

Setting the clock

In all modes, to set a number do the following:

- Hold the SEL and CTL buttons simultaneously to enter the set mode.
- Change the value of the flashing digit with CTL.
- Move to the next digit with SEL.
- When you hit SEL after setting the last digit, you'll exit set mode.

Service Bulletin and AD Information

You can find list of GA-8 Service Bulletins at <http://www.gippsaero.com/ZoneID=207.htm>.

You can find a list of ADs at [http://www.airweb.faa.gov/Regulatory and Guidance Library/rgAD.nsf/MainFrame?OpenFrameSet](http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgAD.nsf/MainFrame?OpenFrameSet), then navigate as follows:

- Current ADs
- By Make
- "G"
- Gippsland
- GA8