Higher Living

First news for this new quarter is that two additional instructors have been added. Please welcome both Austin Bearden and Coley Whitley to the team. They will be full time instructors working at TTA and at HRJ.

We have made an adjustment to the positioning of two of our airplanes that you should know about. Piper Warrior N9626C, formerly based at KHRJ, has been moved to KTTA. If you enjoy flying Warrior N41669 then N9626C is an equivalent alternative. Both are fully IFR equipped, and both have always been very popular. If you don't see N9626C as an option for you to fly please contact your instructor and ask about it.

Also, after an unfortunately long absence we expect the return, very soon, of Piper Cherokee N720FL. It will live at KHRJ in place of the Warrior. You have probably already seen it available on the scheduler. N720FL is fully IFR equipped and will provide instrument training capability to our pilots at KHRJ.

This quarter of the year will probably move into a time when storms become more common in the afternoons, usually approaching from the west to southwest, so be sure you can safely return home, and not get stranded, if you fly.

Come fly with us.

- David Williams, Editor

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Contact Us

Phone: 919-897-8882

Schedule your next aviation adventure at www.ExecFT.com

Located in the FBO at 700 Rod Sullivan Road, Sanford, NC.

Airplane & Instructor Rates

Wet rate for rentals. Tax is included.

Cessna 172 N30617	$205/hr
Warrior N41669	$185/hr
Warrior N9626C	$180/hr
Cherokee N720FL	$165/hr
Cherokees N515DH, N711FL	$155/hr
Cessna 172 N3816Q	$170/hr
Instructor time	$50/hr
CFI/CFII training	$60/hr
Redbird TD2	$40/hr

Owner Maintenance

A great deal of the maintenance on EFTS airplanes is handled by aviation mechanics but there are also several jobs that can be done by owners. In this article we will review some of what an airplane owner can do. The regulations regarding this are in 14 CFR Part 43 Appendix A (c) Preventive Maintenance. An additional source is AC 43-12A Preventive Maintenance.

After any of the following work is performed it must be noted in the appropriate airplane log.

- Replace tires.
- Adding oil or air to landing gear strut.
- Replace safety wire or cotter keys.
- Replace bulbs, and light lenses of position and landing lights.
- Replace and clean spark plugs.
- Replace or recharge batteries.
- Make repairs to cowling if it can be done without removing the propeller.
- Make repairs to damaged fabric.
- Replace brake fluid.
- Interior cosmetic repairs.

That is a partial listing only. See the referenced CFR section for a comprehensive description of allowed work.

The work that an owner can do to their own airplane always stops short of major changes such as removing/replacing a propeller, servicing brake pads, adjusting or repairing controls for aerodynamic surfaces and most all engine repairs. If you own an airplane, you should make sure you understand what you can and can't work on.

What Makes an Airplane a TAA?

You have probably heard the abbreviation TAA used around airplanes and flight training. The term technically advanced airplane (TAA) has been in the aviation lexicon for several years.

Let's review what it means. The full explanation is in 61.129j.

A technically advanced airplane, or TAA, has an electronic primary flight display (Garmin G5), multifunction display (moving map GPS) and two-axis autopilot. Therefore, our Cessna 172 N30617 qualifies as TAA since it has those three items.

Aside from the convenience of having those items it is also important to note that you may use a technically advanced airplane to satisfy the flying requirements for a single engine Commercial Pilot certificate. It used to be that a retractable gear airplane was required but no more. If you are considering adding a Commercial certification, then you will want to fly at least 10 hours in an airplane equipped as a TAA prior to your checkride.

Don't confuse TAA with complex. A complex airplane includes flaps, an adjustable pitch propeller and retractable landing gear.

How Does a Primer Work?

The primer is a control we have all used but perhaps without knowing what it was doing. There are times when a primer is needed and other times when it isn't. Why is that?

When cold, a carbureted aircraft engine may not generate sufficient heat to vaporize the fuel in its cylinders, resulting in an engine that won't start. A manual fuel primer injects vaporized fuel directly into one or more of the engine's cylinders to aid in starting. The fuel isn't sent into the carburetor but instead bypasses it and goes directly into the cylinders. Also note that usually not all cylinders are connected to the primer, but just one or two of them.

If the engine is warm or if the outside air temperature is warm, then priming may not be needed because the heat will allow the fuel entering the cylinders during a normal start to vaporize and ignite more easily. When cold this is when you may need to add the assistance of the primer to get a fine spray of fuel into the cylinder to aid in ignition.

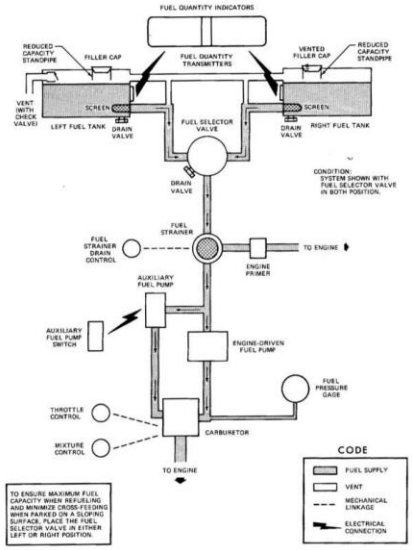


Figure 7-5. Fuel System

The reason that it can be hard to move a primer is because you are attempting to push fuel through small openings in the fuel lines. The fuel source for the primer is the fuel sump.

Any time you are starting an engine it isn't a bad idea to try it without priming first. It is possible to prime the engine too much and you end up with too much fuel and again the engine will not start.

Make sure to lock the primer into position before starting or flying the airplane. Not doing so will cause the engine to run rough.

Using the primer is a safer way to get fuel to a difficult to start engine. Pumping the throttle injects fuel into the carburetor rather than directly into the cylinders. Since the carburetor is located hanging on the bottom of the engine that fuel can pour out and potentially start a fire if there is a backfire through the carburetor when starting.

Pumping the throttle is only safe when also operating the starter therefore creating a vacuum through the carburetor to pull the fuel into the engine rather than out onto the ground.

I have noticed in my flying lifetime that every airplane seems to have a "personality" regarding the amount of priming that is appropriate when cold. Some get by with just a little and some seem to need way too much. I suspect the differences are caused by the varying efficiencies of the primers themselves. First go with the published recommendations for priming and ask around to learn what seems to work best with an individual airplane.

Eyes Out the Window

We tend to rely probably too much on the traffic displays shown by ADS-b. There are still airplanes which do not have ADS-b out and they can be invisible to our traffic displays. Also, ADS-b is not perfect, and I still see airplanes which were being displayed at one moment disappear only to reappear later.

Last year I was on short final with a student when a plane pulled out in front of us to take off. When I announced that we had to go around the pilot of the other plane said were weren't on ADS-b. Guess that means that we didn't exist. Truth is he wasn't listening to the radio, and he never looked

out the window or he would clearly have seen us.

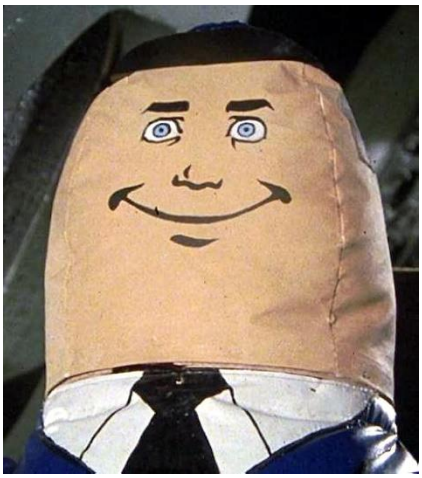
ADS-b traffic information is very valuable to us but don't completely bet your life on seeing everything or that everyone can see you. If you see an airplane on the display then it is most likely to be real, but you may not see other, very real, airplanes at the same time.

Please always use your eyes to keep a vigilant look out for other aircraft. This is extra important when in the traffic pattern and in takeoff and landings. A basic tenet of VFR flight is See and Avoid. "See and Avoid" is recognized as a method for avoiding collision when weather conditions permit and requires that pilots should actively search for potentially conflicting traffic, especially when operating in airspace when all traffic is not operating under the instructions of ATC. You can't see if you don't look.

For more information, please see AC 90-48D.

What Do the Buttons Actually do on the Garmin GFC 500 Autopilot?

Let's look at a very helpful piece of equipment and see what it can do for you. If the picture below is the first type of autopilot that comes to mind, then please read on.



Different autopilots have slightly different controls placed in different configurations but most all perform the same set of functions. Some autopilots can control one but not two axis of the airplane. A single-axis autopilot controls an aircraft in the roll axis (the ailerons) only and ignores altitude. A two-axis autopilot control and aircraft in the pitch axis as well as roll. Therefore, providing for left, right, up, and down control. There are also three-axis autopilots which add the control of yaw (rudder) but few small airplanes have a need for that. Remember that control of the throttle remains up to you so if you ask your autopilot to climb you will have to add the corresponding amount of throttle and the opposite for descent.

Specifically, we will be looking at the two-axis Garmin GFC500 Autopilot located in our Cessna C172 N30617.

The autopilot control is divided into three sections referred to as, from left to right, lateral modes, autopilot status and vertical modes sections. In the lateral modes section is a rotary control for setting a heading and buttons labeled HDG, APR, NAV, and TRK. In the autopilot status section are buttons labeled AP, LVL, FD and YD. On the right, in the vertical modes section, is a vertical rotary control for up, down and a turn able knob for selecting desired altitude. Also, there are four buttons labeled IAS, VNAV, VS and ALT.

Let's go back and work through each of those sections in more detail and discuss when each function could be used.

Lateral Modes

HGS/TRK knob – Rotate this to change your heading left or right to a specific compass degree if HDG is selected. Also use this to select a desired ground track if TRK has been selected.

HDG – Press this button to cause the autopilot to follow the heading bug which you can set on the Garmin G5. By moving the G5 heading bug your airplane heading will follow. Turns will be at standard rate.

APR – Press this button to cause the autopilot to follow an instrument approach selected in the GPS. You should be established on the approach prior to selecting the button. APR will begin a descent at the appropriate time. You will need a hand on the throttle to adjust your airspeed.

NAV – Press this button to follow a course set in the GPS. This will follow a route or a VOR radial. It will follow an RNAV approach but will not cause a descent at glide slope intercept.

TRK – This button causes the airplane to track a desired course. It is different from HDG in that it follows a ground track rather than just a selected heading. So in a sense it is compensating for wind.

Autopilot Status

AP – This is the activation button for the autopilot. Press this to turn the unit on or off.

LVL – Press this to level the airplane in both pitch and roll. It will prevent the airplane from turning and will simply hold wings and altitude both level. Can save your life if you become disoriented.

FD – This turns the flight director on and off. This doesn't act to automatically follow a course, but it provides a graphical depiction of how you should be flying via the G5 by adding command bars to the attitude indicator.

YD – Press this to activate the Yaw Damper function. Helps to hold the airplane straight in gusty conditions. This is an optional item and may or may not be available in the airplane you fly.

Vertical Modes

DN/UP – Rotate this control to increase or decrease the rate of climb or descent.

IAS – Press to select an airspeed target for the plane to fly.

VNAV – Press this to activate a descent function that will follow a required descent path on an instrument approach. You can use VNAV to descend to the charted altitudes along the intermediate legs of an instrument approach until you reach the final approach fix. The descent rate that this option uses by default can be set.

VS – Press to select a rate of climb or descent in hundreds of feet per minute.

ALT – Press to set and then hold a selected altitude. The altitude is set with the ALT SEL rotary control.

Any time you are using an autopilot you must still monitor the path of your airplane. You may have made an incorrect setting, or the autopilot may malfunction therefore placing you into a hazardous attitude.

DISENGAGING the autopilot can be accomplished in any of the following ways.

- Press the red round button on the control yoke.
- Press the AP button on the autopilot.
- Pull the circuit breaker.

There are also some flight conditions that will cause the autopilot to disengage itself so be watchful of the progress of your flight.

Before actual use be sure to review the Garmin GFC500 manual located in our web site library. Also make sure to practice using an autopilot in VFR conditions until you are very comfortable with the options, and you know what to expect in each mode of operation. Flying IFR isn't the time to experiment.

Question of the Quarter

What percentage of the world's population has even been on an airplane?

Answer:

About 5%. Additionally, about 0.1%, that's 1/10 of 1 percent, of the U.S. population can fly an airplane.

You just learned something new.