

PHOENIX FLYERS, INC.

Comanche N9014P

Handbook

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INTRODUCTION

The Comanche, N9014P, is truly a joy to fly. It is the fastest airplane with the greatest useful load in the fleet. With two auxiliary fuel tanks the Comanche's endurance can exceed that of most passengers' need for bio-breaks. The Garmin 430 GPS is coupled to an S-Tec autopilot with altitude hold. You may program an entire flight plan into the GPS and let this system take you to your destination.

There are major differences in the Comanche compared to most other planes. The two most major differences are the fuel system and non-standard panel layout.

This club handbook does provide information to all club members who are preparing for primary checkout as well as review for those already experienced in the Comanche. This handbook points out the non-standard differences with most other airplanes. It also offers other information for a better understanding of this airplane's uniqueness.

This handbook does not replace the Pilot's Operating Handbook (POH), the Phoenix Flyers Operation Manual or By-Laws. It is not going to describe how anything works on this airplane – for that you are referred to the manufacturer's resource material for the operation of that equipment and your flight instructor.

If any discrepancy or difference is found between this handbook and the Pilot's Operating Handbook (POH), the airplane or aftermarket product POH takes precedence. Please inform the club directors of any errors found this document and recommendations for improvement.

PANEL



Figure 1, Full Panel

At first glance it is obvious this is a non-standard panel. Here are the main differences:

1. The layout is neither “six-pack” nor basic “T”.
2. The outer dial of the airspeed indicator is in MPH.
3. There are no pedal (or toe) brakes on the right side.
4. The engine controls are mixture, throttle and prop instead of the usual throttle, prop, and mixture configuration. The prop knob is black instead of blue.
5. Right of the prop knob is the “ALT AIR” knob. Underneath “ALT AIR” is the 3 position flap control. Up retracts the flaps, down extends the flaps and middle is off. When up or down, the flap motor will drive the flaps until the switch is centered or the flaps are limited. There are no detents or “notches” of flaps. In other words, if the flap lever is left up or down the flaps travel to full retraction or extension.
6. There are 4 switches on the left yoke (explained later).
7. All panel switches are toggle (not rocker type) and there is only one toggle for the master. There is no master for “BAT” and “ALT”.
8. There is only one fuel gage for 4 fuel tanks that displays the selected tank.

The two receptacles on the far left are for the pilot's headset and right of those is one panel of 5 circuit breakers. Above the rudder pedals and on the bottom edge of the instrument panel is the second bank of circuit breakers. These are not visible to the pilot when the seat is adjusted for flying.

The switches, left to right, are master, strobe, Nav panel lights rheostat, landing light left, landing light right, fuel boost pump, beacon, and pitot heat.

The parking brake is obscured by coiled cables in the above photo. It is located immediately below the yoke shaft. Figure 4, Parking Brake, shows the instructions placarded above the pull handle.



Figure 4, Parking Brake

CENTER PANEL

The audio panel is a modern push button type found on most late model aircraft.

The Garmin 430 is an advanced GPS coupled to the autopilot. Knowledge of this system is paramount to operating the Comanche. Garmin provides an excellent free simulator downloadable from their website, www.garmin.com. Other downloads from Garmin include a self study curriculum and current operations manual.

Nav 2 is a familiar King radio followed by a King DME and ADF. A side benefit of the ADF is a clock (presently displaying “:26” seconds). Cycling power on the ADF resets the clock and can be used to time the duration of a flight or other timing functions. Below the ADF is a late model digital transponder.

At the bottom of Figure 5, Center Stack is the avionics master switch. Do not confuse it with the “DME Remote Channel Nav 1/Nav 2” switch seen just left of “N9014P”. The avionics master switch is below “N9014P” and right of the “ALT AIR” knob.



Figure 5, Center Stack

The gear wheel knob is typical. The indicators are a single green light to indicate gear extended and an amber light for retracted. In this photo the green extended light is illuminated. In directed sunlight you may have to provide shade to ensure either light is in the desired state.



Figure 6, Gear Lever

RIGHT PANEL

Notice in particular that the tachometer is on the far upper right of the panel (please excuse the flare from the flash). The glare shield blocks the view to the upper region of the tachometer as viewed from the pilot's seat. Setting the RPM, therefore, is a heads-down process. RPM is normally set on the departure leg following take-off so please use caution.



Figure 7, Right Panel

There is only one fuel quantity indicator on the right panel (below the tachometer). This indicator displays fuel for the selected tank. To view fuel quantity for other fuel tanks (see Figure 8, Fuel Selector Valve, below) simply depress the red push button for the tank of interest.



Figure 8, Fuel Selector Valve

Auxiliary tanks are for use in level flight only and remember, always, fuel gages by design are accurate only when empty (AC 29.1583, § 29.1583 (Amendment 29-24) OPERATING LIMITATIONS, b, (9)). And, one more word of caution – do not run a tank dry.

Emergency Gear Extension

Located on the floor immediately to the right of the pilot's seat and forward of the fuel selector valve is the emergency gear extension plate. As seen in Figure 9, Cover Plate, Emergency Gear, it is clearly marked. This plate is not fastened to the floor and may shift in turbulence or maneuver flight.

The backside of the emergency gear cover plate (Figure 10, Cover Plate, Emergency Gear, back side) has the complete set of instructions for manual gear extension. Now is the time to become familiar with these instructions, not when you need them for real!



Figure 9, Cover Plate, Emergency Gear, front side



Figure 10, Cover Plate, Emergency Gear, back side

ENVIRONMENTAL CONTROLS

The environmental controls are located on the far right at the base of the instrument panel. "Off" for all 4 controls is full right. The controls are, from top to bottom, "AIR LT", "AIR RT", "HEAT" and "DEF". The operation of these controls is similar to many automobile controls.



Figure 11, Environmental Controls

NOSE TRIM



Figure 12, Nose Trim

In Figure 12, Nose Trim, the nose of the airplane is the bottom of the photograph. This figure is as the pilot views it from the pilot's seat looking at the ceiling. Clockwise rotation of the handle trims for nose up (right hand rule: make a fist with right hand with thumb out, turn handle in direction of fingers and nose goes in the direction of the thumb). Pressing the nose trim switch down on the control yoke also trims for nose up (trust me, it's intuitive) and vice versa. The horizontal needle in the trim indicator moves fore and aft to indicate trim condition. Notice the needle is slightly nose up from the neutral, or takeoff, position in this photograph.

POWER SETTINGS

Power settings are posted on the pilot's visor. Rotate the visor down as to provide shade from the sun and see the power setting chart. Note this chart does not provide fuel flow settings. See Figure 13, Power Settings:

Power Setting Table - Lycoming Model IO-540-D, 260 HP Engine															
Press. Altitude Feet	Std Alt	Temp °F	143 HP - 55% Rated				169 HP - 65% Rated				195 HP - 75% Rated				Press. Altitude Feet
			RPM and Manifold Pressure				RPM and Manifold Pressure				RPM and Manifold Pressure				
			2100	2200	2300	2400	2100	2200	2300	2400	2100	2200	2300	2400	
SL	59	22.3	21.5	20.7	19.8	25.3	24.1	23.2	22.2	26.9	25.8	24.8	24.0	SL	
1,000	55	22.1	21.3	20.5	19.6	25.1	23.9	22.9	22.0	26.6	25.5	24.5	23.7	1,000	
2,000	52	21.9	21.0	20.3	19.4	24.8	23.6	22.7	21.8	26.3	25.3	24.3	23.5	2,000	
3,000	48	21.7	20.8	20.0	19.2	24.5	23.4	22.5	21.6	26.0	25.0	24.0	23.2	3,000	
4,000	45	21.4	20.6	19.8	19.0	24.2	23.1	22.2	21.4	25.7	24.7	23.8	22.9	4,000	
5,000	41	21.2	20.3	19.6	18.8	24.0	22.9	22.0	21.1	25.4	24.4	23.5	22.7	5,000	
6,000	38	21.0	20.1	19.4	18.6	23.7	22.6	21.7	20.9	24.1	23.3	22.4	21.6	6,000	
7,000	34	20.7	19.9	19.1	18.4	23.5	22.4	21.5	20.7	23.0	22.2	21.4	20.6	7,000	
8,000	31	20.5	19.6	18.9	18.2	23.3	22.1	21.2	20.5	22.8	21.9	21.1	20.3	8,000	
9,000	27	20.3	19.4	18.7	18.0	23.1	21.9	21.0	20.3	22.6	21.7	20.9	20.1	9,000	
10,000	23	20.0	19.2	18.5	17.7	22.9	21.7	20.8	20.1	22.4	21.5	20.7	19.9	10,000	
11,000	19	19.8	18.9	18.2	17.5	22.7	21.5	20.6	19.9	22.2	21.3	20.5	19.7	11,000	
12,000	16	19.6	18.7	18.0	17.3	22.5	21.3	20.4	19.7	22.0	21.1	20.3	19.5	12,000	
13,000	12	19.4	18.5	17.8	17.1	22.3	21.1	20.2	19.5	21.8	20.9	20.1	19.3	13,000	
14,000	9	19.2	18.3	17.6	16.9	22.1	20.9	20.0	19.3	21.6	20.7	19.9	19.1	14,000	
15,000	5	19.0	18.1	17.4	16.7	21.9	20.7	19.8	19.1	21.4	20.5	19.7	18.9	15,000	

To maintain constant power, correct manifold pressure approximately 0.17" Hg for each 10° F variation in carburetor air temperature from standard altitude temperatures. Add manifold pressure for air temperatures above standard; subtract for temperatures below standard.

Figure 13, Power Settings

PREFLIGHT

Preflight is mostly typical with some exceptions:

1. The cockpit door has a catch to hold it open. If the door does not stay open, there is an easy fix. Look for a spring wire in the channel of the member that is supposed to hold the door open (at the base of the door extending to the doorway). This wire is out of the channel and probably gouging the rubber door seal. Simply move the wire back into the channel and the door will now stay open. After you do it once, you don't have to look underneath anymore. It's easy.
2. There is only one fuel drain outlet located centered on the belly well aft of the firewall. Normal fuel sampling devices don't work. Please use an adequate container to catch the drained fuel. Open the hinged access door located just aft of the fuel selector valve and move the quick drain valve handle to full aft position (Figure 14, Fuel Sampling). Change the fuel selector to the opposite cell and repeat the process for all 4 tanks. Allow enough fuel to flow to clear lines as well as the strainer. When done, inspect the fuel samples for bottom sediment and water. Properly dispose of the fuel (NOT BACK INTO THE FUEL TANKS, reference "ALL ABOUT FUEL" - FAA-P-8740-35A).



Figure 14, Fuel Sampling

3. The reed (stall warning) switch on the left wing cannot be activated and the panel stall light viewed at the same time by one person. Use a passenger to help out.
4. The cargo door must be FIRMLY closed. Sometimes it just looks closed and on recent flights the cargo door partially opened in flight to the second catch. Completely and properly secure this door then preflight from the inside by pushing firmly outward at the bottom of the door.
5. Pay particular attention to the wing flap operation and mechanisms during preflight. Look for hesitation or "chattering" during retraction of either flap. Occasionally one flap will not retract during flight. If you experience a roll during flap retraction, extend the flaps until the roll ceases, then retract again. If you are unable to fully retract either flap, extend the other to eliminate roll, reduce power as necessary for cooling and land as soon as practical. Keep an eye on cylinder head and oil temperatures. Contact the club maintenance officer.