EXPANDED NORMAL PROCEDURES CHECKLISTS

For Instructional Use Only

V/R AIRCRAFT ACCEPTANCE

This is a VERBAL RESPONSE checklist. Only the pilot completing the checklist needs to verbalize the item and the response.

The purpose of the Aircraft Acceptance checklist is to ensure the general airworthiness of the aircraft. This checklist must be completed on the First Flight of the day or when the Pilot in Command changes. It may also be conducted at any other time at the discretion of the Pilot in Command. The Pilot in Command will ensure the required checks are completed.

Maintenance Status……..……...CHECKED

Check the maintenance status of the aircraft in the aircraft clipboard. Ensure that all inspections have been completed and that none of the hour or calendar limits will be exceeded during your proposed flight or flights. Check the Discrepancy Report and ensure that there are no open discrepancies. Review previous discrepancies to assist you in conducting the preflight inspection and the flight. Consult with Dispatch and Maintenance to resolve any questions or concerns.

Aircraft Surfaces……...……...CLEAR

Walk around the aircraft and visually check the surfaces for frost, ice, snow or other debris. Make sure all contamination is removed from the aircraft prior to proceeding.

Windows……..……..CLEAN

Visually inspect all the windows for cleanliness. Remove any dirt or bugs by utilizing proper approved plastic window cleaning solutions. Do NOT use cleaning solutions with ammonia or alcohol bases. Use a soft, clean cloth for removal of the cleaning solution and dirt.

Emergency & Safety Equipment……..……CHECKED

Inspect the aircraft to ensure the required emergency equipment is onboard. This includes ELT, fire extinguisher (if installed), flashlights (if required), and appropriate publications including the POH and Sunrise Aviation Emergency Checklist.

Hobbs Meter……...…….....RECORDED

Verify that the reading on the Hobbs Meter matches the previously recorded Hobbs Meter time in the dispatch paperwork. Report any discrepancies PRIOR to departure to Dispatch.

Tachometer Time……RECORDED

Verify that the Tachometer time matches the previously recorded Tachometer time. The time in service tachometer may be located in the engine compartment. Report any discrepancies PRIOR to departure to Dispatch.

Aircraft Documents……...CHECKED

Ensure that the Airworthiness Certificate, Aircraft Registration, FCC Radio Station Permit (International flights only) and Operation Limitations including current Weight and Balance information in the approved flight manual or Pilot's Operating Handbook are in the aircraft. Additionally, check for personal possession of Pilot and current Medical Certificates as well as acceptable government issued ID such as a driver's license.

Checklist……..……....COMPLETE

N/R EXPANDED PREFLIGHT INSPECTION

This is a NO-REPONSE checklist. No verbal response is required in the cockpit.

It is impossible to create a list that would cover all the items that might be checked during a Preflight Inspection. The inspection should begin as you approach the airplane. Does anything appear unusual? Are the wings or empennage contaminated with frost or ice? Remove Pitot Heat cover and Rudder Gust Lock (if installed). The Preflight Inspection list includes items normally checked. However, the pilot should be completely familiar with the aircraft *POH* including the sections on *Description and Operation of the Airplane and its Systems* (Section 7) and *Airplane Handling, Servicing and Maintenance* (Section 8) in addition to the *Amplified Normal Procedures portion* of Section 4. For the PA28-161, the Preflight Inspection is begun inside the cabin. After exiting the door, the Cadet and Warrior inspection normally proceeds to the right wing and continues in a counter-clockwise direction. An illustration of the inspection path can be found in the POH on page 4-3. A complete Preflight Inspection is conducted prior to the first flight of the day and whenever the Pilot in Command changes. A walk-around will be conducted during turnarounds in accordance with the Preflight Inspection Checklist and Sunrise Aviation *Safety Procedures and Practices*.

Control Restraints……REMOVE

While starting the preflight preparation, ensure that the seat belt securing the control wheel and the rudder gust lock (if installed) is removed. The rudder gust lock is a wood board located on the two sides of the vertical stabilizer and held on by a bolt and screw assembly.

Pitot Cover ……..……..REMOVE

Ensure that you have removed the pitot tub cover and secured it inside the aircraft.

CABIN

Aircraft Acceptance Check……..……..COMPLETE

Ensure that you have completed the Aircraft Acceptance Checklist.

Parking Brake……..……SET

Pull back on the brake lever and depress the knob to secure the parking brake. To release, pull back on the brake handle to release the catch mechanism and allow the handle to swing forward. When releasing the parking brake, do not hold the locking knob down.

Ignition Switch……...……..OFF

Verify the ignition switch is OFF. The ignition and starter operation is controlled by a rotary type switch located on the left switch and control panel. The switch is labeled clockwise, OFF, R, L, BOTH, and START. R indicates the right magneto and L indicates the left magneto. The key should not be put in the ignition switch until you are ready for actual engine start. Gently place the key on top of the top of the instrument panel so that it will be visible to anyone approaching the airplane and will be a confirmation that you are not about to start the engine. To prevent damage to the inside of the windshield, no other objects like headsets or kneeboards should be placed on the top of the instrument panel.

Circuit Breakers……..…..CHECKED

Verify the circuit breakers are all in. If one of the circuit breakers is out, it could indicate a malfunction of the connected equipment or a wiring fault. Most of the electrical circuits in this airplane are protected by "push-to-reset" circuit breakers mounted on the lower right side of the instrument panel. If any circuit breakers are "popped" it will be further out than the others. These circuit breakers "pop" upon detection of a fault. If a circuit breaker is out, consult with maintenance before deciding whether to reset. Resetting a circuit breaker may create a more adverse situation. Never reset a circuit breaker more than once after it "pops".

Avionics Master Switch or Radios……...……OFF

Verify that the Avionics Master Switch in the down (OFF) position in the Warrior or in a Cadet with an Avionics Master Switch installed. In an aircraft with an Avionics Master Switch, you should not turn off the individual radios. In Cadets without an Avionics Master Switch, verify that the individual radios are turned off (intercom, nav/com, GPS, and transponder).

Alternate Static Source…….…….CHECKED/OFF

Verify that the Alternate Static Source valve is in (OFF) position. The handle should be parallel to the instrument panel. Pull it aft to open the Alternate Static Source. Ensure that the valve goes back to the OFF position. The Alternate Static Source is used when the normal static source is blocked or when erroneous instrument (airspeed, altimeter, & VSI) readings are suspected due to water or ice in the line going to the normal static source. The alternate static source valve is located below the left side of the instrument panel. The alternate static source opens behind the panel inside the aircraft where the pressure is lower than outside. The altimeter error with the alternated static source on will be less than 50 feet unless otherwise placarded.

Pitot & Static Drains……...DRAIN/CLOSE

The Pitot and Static Drains are located inside the cabin in front of the pilot's seat near the floor when that seat is in the full AFT position. Push each drain individually being careful not to cover the hole in the middle of the ring. Use two fingers, one on each side of the ring. Make sure the drain pops back into the normal position after use.

Battery Master Switch……..…….ON

Place the Master Switch in the up (ON) position. The Master Switch is a red rocker switch labeled MASTER. Just prior to "Master Switch - Off", exit the airplane to visually verify actual fuel level, external lights are operational, and the pitot heat (if installed) is operational. Remember the Pitot Mast will be HOT with the Pitot Heat ON.

Fuel Gauges……..……..……....……CHECK

Verify that the Fuel Gauges indicate a fuel level sufficient for the flight and as expected. If the fuel level is full, the gauges should accurately measure that level. Fuel Level must be confirmed during the walk-around inspection. After visually checking the actual fuel level, call Dispatch to order any additional fuel required for the flight. See the Sunrise Aviation *Safety Procedures and Practices manual* for guidance on minimum fuel requirements.

Turn Coordinator ……..…….....……CHECK

Verify that the turn coordinator is on by checking the on/off indicator which shows RED when the instrument is off. No red indicator showing means the turn coordinator is on.

Annunciator Panel …….…….……CHECK

Check the annunciator panel above the flight instruments to ensure all three indicators (from the left – VAC/Vacuum, ALT/Alternator and OIL/Oil Pressure) are illuminated in the Cadet or four lit (LOW BUS VOLTAGE, PITOT HEAT OFF/INOP, ALTERNATOR INOP, AND OIL PRESSURE) illuminated in the Warrior.

Avionics Master Switch (if installed) ……..…….....ON

Place the Avionics Master Switch in the up (ON) position. If the aircraft has a Backup Avionics Master Switch it should be OFF.

Avionics Cooling Fan (if installed)…….……...CHECK

Listen for the avionics cooling fan(s) to come on as you turn on the avionics master switch. Avionics Cooling Fans may not be installed in some of the Cadets.

Avionics Master Switch…….…….……OFF

Place the Avionics Master Switch in the down (OFF) position.

Pitot Heat…….……....ON/CHECK

If the flight is IFR, turn on the Pitot Heat prior to exiting the aircraft for the light check. Briefly touch the pitot mast to ensure that it is heating up. Do not touch if the pitot heat has been on for more than a minute. CAUTION: the Pitot Mast will become HOT when the Pitot Heat is turned ON. With the exception of this test, the pitot heat should not be left on while on the ground to prevent overheating the element and surrounding area. When re-entering the cabin, ensure that all electrical switches (except the beacon/strobe) including the pitot heat are off to prevent further drain on the battery.

Exterior / Cockpit Lights……..……..…ON/CHECK

If the flight is at night or reduced light conditions, ensure that the interior lights operate. In the Cadet there are two switches (switch lights and panel lights) and in the Warrior there are three. These switches are located between the pilot's control wheel and the engine instruments.

All exterior lights are controlled by rocker switches adjacent to the Battery Master Switch and Alternator Switch. The switches are ON in the up position and OFF in the down position. Turn on the beacon/strobe (or verify that it is already on), the navigation (position) lights, strobe lights, the landing light and taxi light (if installed), and recognition light (if installed). Exit the aircraft to visually check that all lights are on as selected. Have maintenance replace any required lights prior to the flight or otherwise comply with 14 CFR Part 91.213 and all other regulations.

Stall Warning Horn……..CHECK

While outside the aircraft checking the lights and pitot heat, momentarily raise the stall warning lift detector on the left wing and listen for the continuous sound of the stall horn. Release the vane and the stall horn should stop.

Pitot Heat…….…….OFF

Turn the Pitot Heat switch off.

Exterior/Cockpit Lights…….…….OFF

Turn the Cockpit Lights and the Exterior Lights Off except for the Beacon/Strobe.

Trim (2)……...…….……..SET

Make sure the stabilator trim tab is positioned properly in the neutral position for takeoff. The trim wheel is located between the two front seats on the floor. Verify that the rudder trim is set to the neutral position. The rudder trim is located to the left of the co-pilot's rudder pedals near the floor.

Battery Master Switch……OFF

Place the Master Switch in the down (OFF) position.

Fuel Selector……..CHECK

Set the check the operation of the Fuel Selector Control by first selecting the OFF position (press the detent down with the forefinger of your left hand while pulling the control handle in a counter clockwise position. The reset the Fuel Selector Control to either the Left or Right tank while ensuring that the handle moves smoothly to each position. You do not need to hold the detent down when moving the handle from OFF to Left or Right.

Flaps……..……EXTEND 40 DEGREES

Place the flap handle in the full down (40°) position. Verify that both Flaps are in the full down position. The flap handle is located between the two front seats. To lower the flaps pull the handle one 3 clicks up to get to the 40° position. The other intermediate positions are 10°and 25°.

Exit the aircraft to begin the preflight inspection.

RIGHT WING

Flap, Aileron, Hinges & Wicks…….……CHECKED

Visually inspect the flap, aileron, and trailing edge of the right wing for any damage, security, and freedom of movement. Check the flap control rod to ensure no binding is present. When checking the movement of the aileron, ensure no one is in the cockpit, or under the left (opposite) aileron while moving. Look at the control wheel to observe expected movement when the aileron is moved. Look to the other aileron for opposite movement. Check the aileron hinges for security. Check the aileron control rod to ensure no binding is present. Remove any ice, frost, or snow, or other contamination from the control surfaces prior to flight. Check Static Wicks if installed.

Wing Tip and Lights……..…...CHECKED

Check the position lights and the strobe light (if installed) to determine that they are secure and that there are no cracks or damage to them. Also check the surface of the wing tip to make sure there are no cracks or dents. Older cracks may have been fixed by use of a stop drill hole to prevent further propagation. Report any new cracks or damage to maintenance or whenever you have a question about previous repairs.

Leading Edge…….……CHECKED

Check the leading edge of the wing to determine there are no dents or cracks on the airframe. Check the security of the stall strip. Ensure that all inspection panels are properly secured with screws. Check for any fuel leakage by observing any liquid leaking or blue streaks indicating a previous leak.

Fuel System Vent ….……..…….……CLEAR

Check the fuel system vent tube for any blockage from mud, insects or other causes. If blockage is observed, consult with maintenance.

Tie-Down…….…….REMOVED

Remove the tie-down and secure the tie-down rope.

Strut, Tire & Brake……..……CHECKED

Visually inspect the strut, tire, and wheel assembly for wear, damage, missing hardware, or hydraulic leaks. Main oleos should be extended approximately 4.5" under no load. No cords should be visible on tires. Inspect brake pads for wear. Call maintenance for guidance on repair/replacement when necessary. Remove any ice, snow, or dirt from the wheel, tire, and brake prior to flight. Inspect for proper tire inflation: 24 psi.

Fresh Air Inlet …… ……...CLEAR

Verify there is no dust or dirt or other blockage in the fresh air inlet which is located on the leading edge of the wing.

Fuel Tank Sump……..…… ……..……..DRAIN

Before each flight and especially before the first flight of the day or after refueling, drain a sufficient amount of fuel into a fuel sampler from the wing drain to check for contamination and proper grade of fuel. Use an approved fuel strainer. 100LL should appear BLUE in the strainer. A clear color may indicate a mixture of fuel grades or possibly incorrect fuel. Avgas should smell like gasoline. Jet or diesel fuel will smell oily and leave an oily residue on your fingers. Place uncontaminated fuel back in the fuel tank. Place contaminated fuel in receptacle designed to hold contaminated fuel. Do NOT pour fuel on the ground. If a small amount of water is detected in the fuel (water is heavier than avgas and will appear as a bubble at the bottom of the strainer), dump the contaminated fuel as mentioned above (or use an approved straining device such as a GATS jar) and repeat until a clear sample is received. In the event of water contamination beyond a small amount, consult with maintenance. Do not fly the airplane if any visible water contamination is observed or suspected. Dirt or metal contamination will appear as dark or brown colors. Verify that the fuel drain is closed and not leaking fuel. Visually inspect around the drain for fuel leaks usually detectable by the blue residue from the 100LL fuel.

Fuel Level & Cap…….……..CHECKED/SECURE

Check the fuel level in the tank by visually looking at the level to determine how much is actually in the tanks. The bottom edge of the indicator tab indicates 17 gals of usable fuel in each tank. Use a fuel gauge for a more precise recording of the fuel level if not full or at the tabs. Do NOT depart with tanks less than ½ full even for a local flight (see *Sunrise Aviation Safety Procedures and Practices Manual* for guidance). The fuel cap should be placed in the secured position (aligned for the least wind resistance).

NOSE

Fuel & Oil ……..……CHECK FOR LEAKS

Check around the cowling and under the nose of the aircraft for any signs of leaked fuel or oil. Look for build up of fuel or oil dripping from the aircraft. Also check the ground for puddles of fuel or oil. If you suspect a leak, seek assistance from an instructor or maintenance personnel.

Engine (Right and Left Side)……..CHECK

Open both the right side of the engine cowling and the left side of the engine cowling and inspect for damage, oil leaks, chafing, and anomalies including the following systems: Battery, Magnetos, Vacuum Pump, Engine Driven Fuel Pump, Spark Plug Harness, Exhaust System, Carburetor Heat, Cabin Heater Shroud, Cylinders, Rocker Arm Covers, Baffle Seals, Engine Mounts, Shimmy Dampener, Nose Wheel Steering linkage, and Electric Fuel Pump. Check the brake reservoir on the left side of the firewall at the top for the proper of amount of hydraulic fluid. Call maintenance if brake fluid is low or if any other anomalies are observed.

Oil Level & Dipstick……CHECKED/SECURE

Check the engine oil level with the dipstick located at the rear of the engine on the right ride. According to Sunrise Aviation policy, the engine should not be operated on less than 6 quarts of oil. The engine oil level when full is 8 quarts. Sunrise Aviation uses a variety of oil types depending on the aircraft and engine time. During the initial break-in period for the engine, mineral oil will be used. Otherwise, ashless dispersant oil either single grade or multi-grade might be used. Whenever you need to add oil on the ramp, request assistance from an instructor or maintenance personnel. Secure the dipstick after use but do not overtighten.

Right Cowling Latches……...SECURE

Close the right side cowling and secure the latches first by ensuring the latch goes UNDER the catch and then by twisting the outside catch. The catch will be parallel with the ground when properly closed.

Air Inlets, Carb Intake……CLEAR

Inspect the air inlet located on the right side of the nose. The inlet should be clear of any objects that would restrict any air from entering the induction system. Check the engine air inlets on either side of the propeller for obstructions. As you are facing the propeller, check on the left side for proper tension of the alternator belt. On the right side, check the cowling opening for the starter.

Exhaust……...CHECK

Look below the engine cowling to inspect the exhaust pipes for damage or cracks. CAUTION, the exhaust will be HOT if the plane has been recently flown.

Propeller & Spinner……CHECKED

Ensure that the ignition is still off by observing that the ignition key is still on top of the instrument panel. The pilot should visually look at the spinner to determine it is secure and free from cracks. Any cracks or missing screws should be reported immediately to maintenance. Inspect the propeller for security by placing your hands at the inside of the propeller blades on opposite sides of the spinner and gently pulling forward. Always assume that the engine might start whenever you touch the propeller so keep your body away from the propeller's arc. Visually inspect the leading and trailing edges of both propeller blades for any nicks. Run your hands along the leading and trailing edges remembering that any nicks might include sharp edges that could cut your hand so be careful. Report any nicks not previously dressed to maintenance prior to any flight.

Alternator Belt……CHECKED

Check the belt for proper tension. You will find the alternator belt by placing your hand on the left side of spinner as you are facing the airplane and reaching into the engine compartment.

Landing Light ……CHECKED

Inspect the landing light and taxi light (if installed) for security.

Left Cowling Latches……...SECURE

Close the left side cowling and secure the latches first by ensuring the latch goes UNDER the catch and then by twisting the outside catch. The catch will be parallel with the ground when properly closed.

Nose Wheel & Strut……CHECKED

Visually inspect the nose wheel and strut assembly. Start from the top and work down the assembly. Check the nose wheel strut for proper inflation. The strut serves as a shock absorber which is composed of air and oil. Proper inflation should be about 3.25" on the strut. Check the security of the wheel. Check the tire for proper inflation and wear. Recommended tire pressure is 30 PSI. In cold weather climates, you will also need to ensure that the crankcase breather tube is free of ice or snow.

Fuel Drain…… ……..……..……DRAIN

Take a fuel sample from the drain located on the left side of the engine cowling. Inspect that sample as noted previously. This drain is located at the fuel strainer (fuel filter).

Nose Chock ……..……..REMOVED

Ensure that you have removed the chock from the nose wheel and secure them in the aircraft.

LEFT WING

Fresh Air Inlet……..……CLEAR

Determine there is no dirt or blockage in the fresh air inlet. The fresh air inlet is located on the leading edge of the wing close to the fuselage.

Fuel Tank Sump……..…… ……..……..DRAIN

Before each flight and especially before the first flight of the day or after refueling, drain a sufficient amount of fuel into a fuel sampler from the wing drain to check for contamination and proper grade of fuel. Use an approved fuel strainer. 100LL should appear BLUE in the strainer. A clear color may indicate a mixture of fuel grades or possibly incorrect fuel. Avgas should smell like gasoline. Jet or diesel fuel will smell oily and leave an oily residue on your fingers. Place uncontaminated fuel back in the fuel tank. Place contaminated fuel in receptacle designed to hold contaminated fuel. Do NOT pour fuel on the ground. If a small amount of water is detected in the fuel (water is heavier than avgas and will appear as a bubble at the bottom of the strainer), dump the contaminated fuel as mentioned above (or use an approved straining device such as a GATS jar) and repeat until a clear sample is received. In the event of water contamination beyond a small amount, consult with maintenance. Do not fly the airplane if any visible water contamination is observed or suspected. Dirt or metal contamination will appear as dark or brown colors. Verify that the fuel drain is closed and not leaking fuel. Visually inspect around the drain for fuel leaks usually detectable by the blue residue from the 100LL fuel.

Fuel Level & Cap……..……..CHECKED/SECURE.

Check the fuel level in the tank by visually looking at the level to determine how much is actually in the tanks. The bottom edge of the indicator tab indicates 17 gals of usable fuel in each tank. Use a fuel gauge for a more precise recording of the fuel level if not full or at the tabs. Do NOT depart with tanks less than ½ full even for a local flight (see *Sunrise Aviation Safety Procedures and Practices Manual* for guidance). The fuel cap should be placed in the secured position (aligned for the least wind resistance).

Strut, Tire & Brake……..……CHECKED

Visually inspect the strut, tire, and wheel assembly for wear, damage, missing hardware, or hydraulic leaks. Main oleos should be extended approximately 4.5" under no load. No cords should be visible on tires. Inspect brake pads for wear. Call maintenance for guidance on repair/replacement when necessary. Remove any ice, snow, or dirt from the wheel, tire, and brake prior to flight. Inspect for proper tire inflation: 24 psi.

Tie-Down…….……REMOVED

Remove the tie-down and secure the tie-down rope.

Fuel System Vent ….……..…….……CLEAR

Check the fuel system vent tube for any blockage from mud, insects or other causes. If blockage is observed, consult with maintenance.

Pitot/Static Head…..……..……..CHECKED

Check Pitot/Static Head (Mast) for damage or blockage. Remove any pitot cover. Check the three holes: pitot (facing forward), drain (under) and static opening (back).

Leading Edge…….……CHECKED

Check the leading edge of the wing to determine there are no dents or cracks on the airframe. Check the security of the stall strip. Ensure that all inspection panels are properly secured with screws. Check for any fuel leakage by observing any liquid leaking or blue streaks indicating a previous leak.

Wing Tip & Lights…….……...CHECKED

Check the position lights and the strobe light (if installed) to determine that they are secure and that there are no cracks or damage to them. Also check the surface of the wing tip to make sure there are no cracks or dents. Older cracks may have been fixed by use of a stop drill hole to prevent further propagation. Report any new cracks or damage to maintenance or whenever have a question about previous repairs.

Flap, Aileron, Hinges & Wicks…….……CHECKED

Visually inspect the flap, aileron, and trailing edge of the right wing for any damage, security, and freedom of movement. Check the flap control rod to ensure no binding is present. When checking the movement of the aileron, ensure no one is in the cockpit, or under the right (opposite) aileron while moving. Look at the control wheel to observe expected movement when the aileron is moved. Look to the other aileron for opposite movement. Check the aileron hinges for security. Check the aileron control rod to ensure no binding is present. Remove any ice, frost, or snow, or other contamination from the control surfaces prior to flight. Check Static Wicks if installed.

FUSELAGE / EMPENNAGE

Antennas…….……..…CHECKED

Verify the antennas are upright and attached correctly to the aircraft. The Communication antennas are located on the top of the fuselage right behind where the pilot and passenger are seated. The ELT antenna is located on the back part of the fuselage in front of the empennage. The VOR/LOC antenna is located on top of the vertical stabilizer. On IFR aircraft, various other antennas may be attached. Consult with a flight instructor for assistance identifying these additional antennas. Report any damage immediately to maintenance. Some Cadets may also have a flashing beacon/strobe light on the belly. Inspect the lights for damage and security.

Stabilator, Trim Tab & Rudder……..……..……CHECKED

Check for full freedom of movement for both the Stabilator and trim tab. Check for security of the stabilator, trim tab, and rudder including all hardware. Check for cracks or other possible damage. Check Trim Tab for security. Make sure any ice, frost, or snow is removed from any control surfaces prior to flight.

Tie Down……..…….REMOVED

Disconnect the tie-down and secure the tie-down rope. Visually inspect the Tie Down Hook and surrounding area for damage. Report any new damage to Maintenance and have inspected and/or repaired prior to flight. While under the airplane, inspect the fuselage for damage and antennas for security.

Baggage Compartment ……INSPECT

Verify that items placed in the baggage compartment are properly secured and they do not exceed the maximum weight limitations for the Baggage Area (50 lbs in the Cadet and 200 lbs. in the Warrior).

Bag. Door (if installed)…….……...….CLOSED/LOCKED

Only the Warrior has a Baggage Door. If installed, close the baggage compartment door and ensure it is fully latched. Lock the latch by using the airplane's key.

Checklist……..……..COMPLETE

C/R BEFORE STARTING ENGINE

This is a CHALLENGE AND RESPONSE checklist. This checklist must be performed by both crewmembers when applicable.

A/C ACCEPTANCE CHECK……...….COMPLETE

Verify that all the items in the aircraft acceptance check were completed properly.

PREFLIGHT INSPECTION……..COMPLETE

Verify that all of the items in the preflight inspection were checked and ready for flight.

PASSENGER BRIEFING…….……..COMPLETE

The pilot must brief the passengers on how to use and operate their seatbelts, how to use and operate the door (emergency exit), any emergency equipment on board (if applicable), and what to do if an emergency happens. If two pilots are present, the briefing should also include positive exchange of flight controls, keeping vigilant for other traffic, and any other safety considerations for a flight. Below is an example of that Passenger Briefing. Students may find it convenient to bring a copy of this briefing along during the first few flights.

- This is a non-smoking flight.
- Keep your seat belt fastened during the entire flight and the shoulder harness fastened for takeoff and landing.
- To fasten the seat belt; place the metal tip into the buckle. Adjust the lap belt by pulling on the loose end of the belt. Attach the shoulder harness to the lap belt by placing the "V" over the knob and pulling until you hear a "click".
- Do not open the door in flight unless directed to do so.
- Do not interfere with the flight controls unless a positive exchange of flight controls is used. If the controls are exchanged, the following will be stated. "You have the flight controls. I have the flight controls. You have the flight controls."
- There are two vents for fresh air for front passengers. One vent is located just above the floor on the left side of the front seat and the other at the same position on the right side. There are also overhead vents. For cabin air while still on the ground, turn on the fan. The switch for the fan is located on the right side of the instrument panel.
- If you need cabin heat, the control is on the right side of the instrument panel.
- In case of an emergency landing, exit the airplane as soon as possible after the plane comes to a complete rest. The door on the right side is usually the best exit. The door has two latches. Unlatch the top latch first by rotating it forward then unlatch the other latch by pulling the handle up. Ensure both latches on the door are closed prior to takeoff.
- If you feel sick or uncomfortable please let me know.
- Any questions?

PARKING BRAKES ….……..……..……..SET

Pull back on the brake lever and depress the knob to secure the parking brake. To release, pull back on the brake handle to release the catch mechanism and allow the handle to swing forward. When releasing the parking brake, do not hold the locking knob down.

FLAPS……...……..……RETRACTED

Retract (raise) the flaps to 0° by pressing on the knob at the end of the flap handle and gently lowering the handle to the floor. In a tail wind situation, the flaps may momentarily stick down but will release once the wind ceases or as taxi begins.

SEATS BELTS & HARNESS……..……CHECKED

Visually verify that all seat belts and shoulder harnesses are fastened properly including your own.

CIRCUIT BREAKERS……..…CHECKED/IN

Verify the circuit breakers are all in. If one of the circuit breakers is out, it could indicate a malfunction of the connected equipment or a wiring fault. Most of the electrical circuits in this airplane are protected by "push-to-reset" circuit breakers mounted on the lower right side of the instrument panel. If any circuit breakers are "popped" it will be further out than the others. These circuit breakers "pop" upon detection of a fault. If a circuit breaker is out, consult with maintenance before deciding whether to reset. Resetting a circuit breaker may create a more adverse situation. Never reset a circuit breaker more than once after it "pops".

AVIONICS MASTER SWITCH/RADIOS……..……OFF

Ensure that the Avionics Master Switch (if installed) is in the down (OFF) position or if not, all the radios are individually off. When an Avionics Master Switch is installed you do not need to turn off the individual radios.

CARBURETOR HEAT……..……OFF

Visually check the Carburetor Heat selector and ensure it is in the up (OFF/COLD) position.

FUEL SELECTOR ……..……LOWEST TANK

Ensure that the Fuel Selector is set to the lowest tank. If both are full, pick one and change the tank selection after engine start.

BEACON OR STROBE……..ON

Turn on the beacon or verify that the beacon/strobe rocker switch is "ON" (up position).

CHECKLIST……COMPLETE

C/R STARTING ENGINE

This is a CHALLENGE AND RESPONSE checklist.

THROTTLE……..……OPEN ¼ INCH

For a normal start, the throttle should be open about ¼ inch. To accomplish this, pull the throttle fully aft and then move forward approximately ¼ inch. For all engine starts other than normal, consult the POH. Do not pump the throttle without the propeller turning.

BATTERY MASTER SWITCH……..……ON

Turn the battery master switch ON.

ALTERNATOR SWITCH……..……ON

Turn the Alternator Switch (ALT) located next to the Battery Master Switch ON.

ELECTRIC FUEL PUMP……..……ON

Turn the Electric Fuel Pump ON.

MIXTURE……..……...FULL RICH

Move the red mixture control full forward to the full rich position.

PRIMER (IF INSTALLED)……...……AS REQUIRED

Do not use the primer (if installed) unless the plane fails to start during the first attempt (5 to 10 seconds max.). Cadets may have a manual primer located to the left of the throttle quadrant. Ensure primer is pushed in and locked after use.. The Warrior has an electric primer located to the left of the pilot's control wheel. Consult POH for Hot Start or Flooded Start procedures.

BRAKES……..HOLD

Ensure the parking brake is still engaged. The brakes must be applied/engaged before the engine starts so the airplane will not roll forward when the engine is operating on the ground. Depress the top portion of each rudder pedal to engage the brakes manually. When two pilots are in the plane, both pilots should hold the brakes. If one pilot gets distracted in the cockpit such as to adjust the seat or retrieve an item from the baggage compartment, ensure the other continues to hold the brakes. Use the proper exchange of flight control technique.

PROPELLER AREA……CLEAR

Before starting the engine, loudly yell clear prop with the window or door open so people walking around the ramp know that the aircraft is starting and can remain a safe distance from the airplane. Visually look in all quadrants (left, center, & right) to ensure all other personnel on the ground are clear.

IGNITION SWITCH……START

The Pilot in the left seat will need the key to crank the engine. Turn the key clockwise past the "both" position to initiate engine start. The pilot must continue to crank the engine through several revolutions. As soon as the engine starts, release the key and the ignition will return to the "both" position. If the engine fails to start after several seconds of cranking (max. 10 seconds), release the key. Do not use the starter for more than 10 seconds without allowing a "cool-down" period. Upon attempting a new start, consider whether the engine needs additional priming or is actually flooded. Consult the POH for hot or flooded starts. If the engine does not start upon the second or third attempt, seek maintenance assistance to prevent running down the battery charge and overheating the starter.

THROTTLE (1000 RPM)……...……...SET

As the engine starts, slowly adjust the throttle as required to maintain 1000 RPM or less. You may have to adjust the throttle several times as the engine warms up to maintain rpms in this range. In colder temperatures, you will likely need to leave the throttle at 1000 rpm or even slightly higher (max. 1200) to prevent the engine from quitting at a lower setting until the engine warms up.

OIL PRESSURE…….……CHECKED

Once the engine starts, the pilot needs to check the oil pressure gauge. After starting, if the oil pressure gauge does not begin to show pressure within 30 seconds in the summertime and about twice that long in very cold weather, stop the engine and investigate. Lack of oil pressure can cause serious engine damage. Minimum idling oil pressure is 25 PSI (lower red line). The maximum oil pressure is 115 PSI (upper red line).

ELECTRIC FUEL PUMP…….……..……OFF

Turn the Electric Fuel Pump OFF. If the engine quits, shutdown and consult with maintenance as the engine driven fuel pump may not be operating properly.

MIXTURE…….....LEAN

Lean the mixture by pulling the mixture control slowly about one inch aft. If the engine RPM reduces enrichen until you get a smooth running engine. Readjust throttle for 1000 rpm if necessary.

AMMETER…….CHECKED

Visually check the ammeter for proper operation of the alternator. The ammeter indicates the electrical load on the alternator in amperes. At this point, since most of the electrical items are off, the ammeter will indicate the charging rate of the battery. If the ammeter is showing an excessive amount of charging, the starter may still be engaged. If excessive charge is indicated, shutdown the engine and investigate.

NAVIGATION LIGHTS ……..….AS REQUIRED

For operations between sunset and sunrise, Navigation Lights (position lights) are required to be ON (up position). Other times, they can remain OFF.

AVIONICS MASTER SWITCH/RADIOS…….……ON

Place the Avionics Master Switch (if installed) in the ON (up) position and/or turn on all the radios and set the volumes to a comfortable level. Test and set the squelch level if it is manually adjustable. Test and set the intercom volume and intercom squelch to a comfortable level if two pilots are present.

CIRCUIT BREAKERS……..…CHECKED

Verify the circuit breakers are all in. If one of the circuit breakers is out, it could indicate a malfunction of the connected equipment or a wiring fault. Most of the electrical circuits in this airplane are protected by "push-to-reset" circuit breakers mounted on the lower right side of the instrument panel. If any circuit breakers are "popped" it will be further out than the others. These circuit breakers "pop" upon detection of a fault. If a circuit breaker is out, consult with maintenance before deciding whether to reset. Resetting a circuit breaker may create a more adverse situation. Never reset a circuit breaker more than once after it "pops". .

TRANSPONDER ……...……..……ALT & CHECKED

Test the transponder by rotating the on/off selector to the test position and observing the reply light is on. Leave the transponder in the ALT position during taxi. The transponder code should be set to 1200 for VFR flight unless another code has already been assigned for the flight. The Garmin transponders are self-testing-check for proper operation.

RADIOS……..…...SET & CHECKED

In aircraft equipped with a GPS, verify expiration date of the data card. In aircraft with an HSI, verify the conformity of the HSI with the GPS. Set GPS to local airport or enter Flight Plan.

Set the radio frequencies (both navigation and communication) to appropriate frequencies for the airport and intended flight. If at an airport with an ATIS or other automated weather broadcast, listen to that information now and copy for later recall. If at KOMN, call Sunrise Dispatch (123.05) and ramp out.

CHECKLIST…….……...COMPLETE

C/R BEFORE TAXI

This is a CHALLENGE AND RESPONSE checklist.

FLIGHT INSTRUMENTS…….…….SET / CHECKED

Before taxiing, verify that the flight instruments are operational and set. The attitude indicator should be erect with the miniature airplane aligned with the artificial horizon (allow up to 5 minutes for the attitude indicator to be completely aligned with the horizon). Set the heading indicator to the current magnetic heading by observing the magnetic compass. Verify that the magnetic compass is full of fluid, floating freely, and not leaking. Set the altimeter to the current altimeter setting as received on the automated weather broadcast or set to field elevation. After setting the altimeter to the current altimeter setting, the altimeter should read within 75 feet of actual elevation at your location. Check the vertical speed indicator (VSI) for any variation from zero and note that as the zero setting. The airspeed indicator should read zero unless a significant headwind is present. The ball in the turn coordinator's inclinometer should be centered unless the airplane is on a slope. Ensure that the turn coordinator indicator shows that it is on.

NAV OR GPS (IF INSTALLED) ...……..…….…SET

If the airplane has a GPS, verify that it is in the proper mode for the first leg of the flight (GPS or NAV) with the proper course/frequency set. Check flight plan in GPS if appropriate. If no GPS is installed, set VOR to appropriate frequency along route and set initial course (if applicable). Ensure all radios both nav and com are set to appropriate frequencies including standby frequencies.

TAXI BRIEFING……..……..COMPLETE

A taxi diagram is required for all airports. If at an airport with an operating control tower, call Ground Control for taxi clearance. Write down that clearance for later recall. Read back all clearances including crossing restrictions. If actual taxi is delayed for too long, call ground control again and report the delay. If two pilots are present, both must have a taxi diagram. The Flying Pilot will brief the other pilot (PNF) on the taxi route assigned and any other safety considerations prior to aircraft movement. If at an uncontrolled airport, announce your intentions on the CTAF (Common Traffic Advisory Frequency).

LIGHTS……....AS REQUIRED

Set the lights as required by the conditions (day or night). During the day, the pilot should verify that the beacon is on prior to taxi. At night, the pilot should also select the landing or taxi light (if installed) and position (NAV) lights. If the only anti-collision light installed is a white strobe light, leave off at night whenever in the vicinity of other aircraft, vehicles, or people on the ground to prevent creating a distraction or affecting the night vision of others. Turn back on when clear. Turn on all lights as appropriate prior to takeoff.

FUEL SELECTOR…….….FULLEST TANK

Set the Fuel Selector to the Fullest Tank. If both were full at engine start, select the other tank to verify both will work in flight. Turn on the Electric Fuel Pump prior to switching tanks and then turn off while noting the fuel pressure. To ensure continuous flow of fuel, do not switch fuel tanks immediately prior to takeoff.

TAXI AREA……..……CLEAR

Before taxi, the pilot (or both pilots if present) must visually check to make sure that the area is clear for taxiing. Observe left, center and right and listen for other radio calls that might indicate another aircraft is also ready for taxi or possibly already taxiing in your area. Continued vigilance during taxi should be observed. In confined areas, remember that even remaining on the taxiway centerline may not ensure clearance with other aircraft or obstacles. If at a controlled airport, **DO YOU HAVE A TAXI CLEARANCE?**

BRAKES……..…….RELEASE/TEST

Release the parking brake by pulling the brake lever toward you (do not depress the knob) and gently return the handle to the neutral position. Ensure that both pilots (if a dual flight) have engaged the toe brakes prior to releasing the parking brake. If the airplane does not move forward after slight application of power, check that the tie downs are released and that the chocks were removed. Shutdown the airplane prior to exiting to investigate. Do not try to break free by adding excessive power.

CHECKLIST……...…….COMPLETE

C/R TAXI CHECK

This is a CHALLENGE AND RESPONSE checklist.

BRAKES & STEERING……....CHECKED

Check the operation of the brakes by releasing the brakes, allowing the plane to move forward a small distance, and then gently depressing the brakes. It is not necessary to "slam" on the brakes. If done properly, this brake check would be barely perceptible to a passenger onboard. If two pilots are present, both should check for normal operation of the brakes on each side remembering to use proper exchange of control technique. Observe while taxiing that steering is operating normally. Use full rudder prior to engaging the brake on any one side for turning. Be careful not to "drag" the brakes while taxiing. Set the throttle to a setting low enough to ensure you do not have to use excessive braking.

INSTRUMENTS……..……CHECKED

Scan the instruments to verify they are operating correctly. Prior to IFR flight, the instrument cockpit check is especially important. However, even for VFR flight it is recommended that the pilot do a complete instrument cockpit check prior to flight. Some instruments will need to be observed while turning.

Here is an example:

- Magnetic Compass: turning freely and aligned with known headings
- Airspeed Indicator: zero indication
- Attitude Indicator: no more than 5° of bank during turns
- Altimeter: set to altimeter setting or field elevation and within 75 ft. of known elevation
- Vertical Speed Indicator (VSI): zero or note current reading as zero setting
- Heading Indicator: set to correct compass heading and indicating properly during turns
- Turn coordinator: no flag, miniature airplane turns in proper direction with turns, ball to the outside during turns
- Clock: set and working

CHECKLIST……..….COMPLETE

C/R BEFORE TAKEOFF

This is a CHALLENGE AND RESPONSE checklist. It is completed in segments. Once you get to a line, complete the checklist items "above the line."

PARKING BRAKE…….……SET

Where possible, align the aircraft such that whatever wind is present will help to cool the engine during run up (nose of aircraft into the wind). Be mindful of where the prop blast is aimed. Do not perform the run up with the propeller sending debris into any nearby aircraft or others around you.

Pull back on the brake lever and depress the knob to secure the parking brake. To release, pull back on the brake handle without holding the knob to release the catch mechanism and allow the handle to swing forward.

The pilot needs to also hold the toe brakes before continuing the before takeoff check to make sure the airplane will not move forward on run up. If two pilots are present, both should hold the brakes during the run-up. Watch for creeping forward during run-up. If observed, reduce power and reset parking brake, or if parking brake is malfunctioning, just hold the toe brakes.

SEATBACKS/SEAT BELTS……UPRIGHT/SECURE

Ensure the Seatbacks are set in the upright position and positioned properly for full rudder inputs while not being too far forward for comfort and movement of the control wheel. Ensure the seat is properly secured after any adjustments have been made.

Visually verify (again) that all seat belts and shoulder harnesses are fastened properly including your own.

FLIGHT INSTRUMENTS……..……..……..CHECK/SET

Verify again that the flight instruments are reading accurately. Recheck the heading indicator is set to the compass heading, the altimeter is set to the proper altimeter setting or field elevation, and the attitude indicator is functioning and set to level flight. If taxi has been delayed, recheck ATIS or AWOS for current information.

FUEL QUANTITY……..……CHECK

Ensure that the Fuel Quantity Gauges still display the proper amount of fuel for the flight.

FLIGHT CONTROLS……..FREE AND CORRECT

Verify that the stabilator, ailerons and rudder are operating normally. One recommended procedure to check the flight controls is to utilize a "box pattern" to ensure the flight controls are free and correct through the full range of movement. Pull the control wheel all the way back (aft) and observe visually that the stabilator is in the up position. Turn the control wheel to the left and visually observe that the left aileron is the up position and the right aileron is in the down position. Push the control wheel all the way forward and visually observe that the elevators are now in the down position. While holding the control wheel forward, turn the control wheel completely to the right and observe that the right aileron is up and the left aileron is down. While holding the control wheel turned to the right, pull the control wheel fully back (aft) and again observe that the stabilator has moved to the up position. Neutralize the control wheel. Observe during the entire movement of the control wheel whether there is any binding or restriction of movement. If any is present, seek maintenance assistance prior to flight.

During the first few flights, you may also find it convenient to use the "thumbs up" method while checking the ailerons. Place both hands on the control wheel with each thumb up. When you turn the control wheel in each direction the top thumb will point to the aileron that should be in the up position. The other aileron should, therefore, be down.

Continue to hold both brakes during all of these checks.

FUEL SELECTOR ……..……FULLEST TANK

Verify that you have selected the fullest tank. If necessary to change tanks, turn on the Electric Fuel Pump and set the Fuel Selector to the FULLEST TANK. Turn off the Electric Fuel Pump.

TRIM……...…….……TAKEOFF

Check that the stabilator trim is set for takeoff (neutral). Ensure that the rudder trim is set in the neutral position for takeoff.

Complete the checklist verification for BEFORE TAKEOFF ABOVE THE LINE *NOW*.

ENGINE CHECK

MIXTURE……...RICH

Before doing the run-up at 2000 RPM, the mixture needs to be set in the full rich (forward) position.

THROTTLE……..……....2000 RPM

Check the oil temperature gauge to ensure that the temperature is in the green arc (100°F to 245°F). Typically, the taxi time is more than sufficient for the oil temperature to reach normal settings. In our more typical warmer temperatures, precautions should be made to keep ground time to a minimum to avoid over heating the engine. Advance the throttle to 2000 RPM. The power should advance smoothly. Adjust the friction lock to hold that RPM setting. Hold the brakes and look outside to make sure the airplane is not moving forward. Continue during the entire run-up to check for forward aircraft movement. Reduce the power and reset the parking brake if necessary. Refer to the POH for cold weather operations and proper oil temperature.

SUCTION GAUGE (IF INSTALLED)……...…….……CHECKED

Check the suction gauge to make sure it is reading correctly and the vacuum system is working properly. The suction gage is located on the far right side of the instrument panel near the top of the panel. The normal operating range is 4.8 to 5.2 in. HG. A suction reading below this range may indicate a system malfunction or improper adjustment, and in this case, maintenance assistance should be requested. At power settings lower than 2000 RPM the suction gauge may show readings on the low end of the normal range and this is acceptable.

The new Warrior does not have a vacuum system and, therefore, does not have a suction gauge.

ENGINE GAUGES & AMMETER……...……...CHECKED

Verify the engine gauges and the ammeter are reading normal (within the green arcs).

- oil pressure (25 to 115 PSI which is the range of the green arc)
- oil temperature (100°F to 245°F which is the range of the green arc). In extremely cold temperatures, consult the POH for additional guidance.
- Ammeter (normal range). If showing no indication, check the Alternator annunciator. If alternator has failed, consult with maintenance.

ANNUNCIATOR PANEL……..……...CHECKED

All annunciator lights should be out. Press to test that all the annunciator lights are operating.

MAGNETOS……...…….CHECKED (175/50)

The pilot must check both the left and right magnetos to make sure both are working normally. Test the right magneto first by turning the ignition switch two clicks to the left and observing the drop in RPM while on just the RIGHT magneto. Do this slowly to avoid actually inadvertently shutting the ignition off. Turn the ignition switch back two clicks to the right and observe normal, 2000 RPM in the BOTH position. Adjust the throttle as necessary to get 2000 RPM again. Turn the ignition switch one click to the left and observe the drop in RPM on just the LEFT magneto. Return the switch to BOTH and you should again observe 2000 RPM. RPM drop should not exceed 175 RPM on either magneto or show greater than 50 RPM differential between magnetos. An absence of an RPM drop on any magneto may be indication of faulty grounding of one side of the ignition system and reason for return to maintenance. If an excessive drop in RPM is observed while checking an individual magneto along with a rough running engine, you may have spark plug fouling. You may attempt to clear the fouled plug(s) by increasing RPM to 2200 RPM and leaning the mixture. Run the engine in this configuration for no longer than 45 seconds and redo the magneto check. Continue to observe maximum oil temperature readings and discontinue if the engine reaches red line. If the RPMs continue to drop below acceptable limits after the single attempt at clearing the fouled plugs, return the aircraft to the ramp and seek maintenance assistance.

CARB HEAT……...……..……..……...CHECK

Turn the carburetor heat on by moving the Carb Heat lever down to the on (hot) position. Observe a small drop in engine rpm. Leave Carb Heat on until you complete the Idle check. Do not run the engine for prolonged periods on the ground with the Carb Heat on as the air is unfiltered.

IDLE……..……..……...CHECKED

Adjust the throttle to idle by slowly reducing the power to its lowest setting (fully aft). The engine should continue to run. If the engine quits, return the aircraft to the ramp and seek maintenance assistance.

THROTTLE (1000 RPM)……...……..……...SET

Set the throttle to 800-1000 RPM.

MIXTURE……LEAN

Once the run-up is done, lean out the mixture again for continued taxi.

- **Complete checklist verification for ENGINE CHECK *NOW*.**

AFTER ENGINE CHECK

RADIOS & GPS (IF INSTALLED)…...……SET

Change Radio frequencies from ground to tower with Departure on standby as necessary. Remain on the CTAF at an uncontrolled airport. Verify again that all radios (Com, Nav, GPS, and transponder) are properly set. Set the GPS (if installed) to GPS or VLOC as required for the initial navigation.

INSTRUMENTS/STBY INSTRUMENTS…….……...SET

Check each of the flight instruments again and reset as necessary.

In the Warrior with G500, set the standby flight instruments.

WINDOW & DOOR……...……...CLOSED/LATCHED

Close and latch the pilot's side window and close and latch (2 latches) the door. Ensure the door is latched by placing pressure next to the two latches.

DEPARTURE BRIEFING…….….COMPLETE

Prior to takeoff, the Pilot Flying must brief other crew members regarding the flight. This briefing should include emergency procedures in case of engine failure, initial routing and altitude, and any weather or other special safety considerations. After briefing the crewmember (if present) notify any passenger (if present) that you are about to takeoff.

Below is an example of a Departure Briefing (change for actual flight conditions):

This will be a normal (or short/soft field takeoff). Our rotation speed will be 47 KIAS. Our initial climb speed will be 52 KIAS. Vx is 63 and Vy is 79. Our destination today is Gainesville Regional airport..

If the engine fails prior to liftoff, I will reduce power and stop on the remaining runway. If the engine fails after liftoff and prior to 1000 ft AGL, I will maintain aircraft control, establish pitch attitude for 73 KIAS and land straight ahead using shallow turns as necessary to avoid obstacles. If the engine fails at or above 1000 ft AGL, I will establish a pitch attitude for 73 KIAS, select the most suitable landing site, and head for that site, including the possibility of returning to the airport.

We expect to takeoff Rwy 8 and then depart the local area to the northwest. After clearing Class D & C airspace as observed by prominent landmarks (or GPS), I will climb to my final cruise altitude of 4500 feet. Our initial on-course heading is 300°. I have set a course matching that in the #1 Indicator which is set on 300° and OMN VOR frequency 112.6. We will open the flight plan on 112.4 and then call DAB Approach Control for flight following on 125.8. The weather today is VFR with no significant clouds and no forecasted turbulence. Any questions?

At Ormond Beach, the flight plan may also be activated with St. Pete Radio prior to departure on frequency 122.4.

If the flight is being conducted under IFR, additional briefing items should include assigned altitudes, departure procedures, assigned routes, clearance limits, transponder code, etc.

Departure Briefings done on additional takeoffs on the same day with the same crew and in the same aircraft may omit portions of the briefing (such as the emergency procedures) that have not changed since the last Departure Briefing by stating "as previously briefed."

PARKING BRAKE……..……..RELEASE

Release the Parking Brake while maintaining pressure on the toe brakes.

Checklist……....COMPLETE

V/R LINE UP

This is a VERBAL RESPONSE checklist. Only the pilot completing the checklist needs to verbalize the item and the response.

Flaps (0-25 degrees)……....SET/CHECKED

Verify the type of takeoff being conducted (normal, short, or soft). For a normal takeoff, flaps are set at 0°. For a short field or soft field takeoff, flaps are normally set at 25° (second notch).

Heading Indicator and Compass……..……..CHECKED

Check again that the heading indicator is aligned with the magnetic compass. If a heading bug is installed, verify that it is set for the runway of intended use.

- **Complete checklist verification for LINE UP ABOVE THE LINE.**

AFTER CLEARED ONTO RUNWAY

Pilots desiring more time to complete the following items prior to takeoff (particularly new student pilots and when not using the crew concept) may accomplish them prior to being cleared onto the runway. Students practicing a crew environment should follow the checklist as written.

Mixture……..…...……SET

Adjust the mixture control to the RICH position or if at a high density altitude (above 3000 ft) lean the mixture for maximum RPM at full power.

Electric Fuel Pump……..……..……ON

Turn the electric fuel pump ON.

Landing Light & Strobes...…….……..ON

Turn the landing light ON for takeoff. If the strobe lights (if equipped) are not yet turned on, turn them on as well. The beacon should remain on. Turn on the Recognition Lights (if installed).

Navigation Lights……AS REQUIRED

The navigation lights must be on from sunset to sunrise. If close to sunset, turn the navigation lights on now.

Time Off……...…NOTE

Once cleared for takeoff and prior to moving forward, the pilot needs to make a written note of the time off. If unable, make a mental note of the time off and record when safe to do so.

Checklist……....COMPLETE

V/R CLIMB

This is a VERBAL RESPONSE checklist. Only the pilot completing the checklist needs to verbalize the item and the response.

- For a normal or short-field takeoff, lift the nose wheel at the computed speed.

Flaps …….RETRACT

After takeoff when the airspeed reaches 63 KIAS and at a safe altitude above and past any obstacles, retract the flaps in increments first going to 10°and then flaps fully retracted. Adjust pitch as the flaps retract to maintain proper airspeed.

Electric Fuel Pump……OFF/CHECK PRESSURE

No lower than 1,000’ AGL, turn the electric fuel pump off while leaving your hand on the switch. Observe the fuel pressure gauge and listen for a change in engine RPM that might indicate that the engine driven fuel pump had failed. Turn the Electric Fuel Pump back on with any negative indications. Normal fuel pressure range: .5 to 8 PSI. While remaining in the traffic pattern, leave the fuel pump continuously on.

Airspeed……..…..……63-87 KIAS

At a safe altitude, pitch to the selected climb speed appropriate for the conditions. Normal initial climb speed is 63 (Vx) to 79 (Vy) KIAS. Enroute climb is 87 KIAS. These speeds should be planned prior to the flight. Best rate of climb at sea level at gross weight is 79 KIAS. Select best angle of climb if obstacles are present: 63 KIAS. Extended climbs at speeds lower than best rate of climb speed should be of short duration to improve engine cooling. Continue to monitor engine gauges during the climb especially if best rate of climb or slower airspeeds are needed. Adjust climb speed for density altitude as necessary.

Checklist……....COMPLETE

V/R CRUISE

This is a VERBAL RESPONSE checklist. Only the pilot completing the checklist needs to verbalize the item and the response.

Throttle (75% power or less)……..SET

Normal cruising is performed between 55% and 75%. Upon reaching the designated altitude, pitch for cruise attitude, allow the airspeed to accelerate to normal cruising speed, and then select the predetermined cruise power setting. Do not exceed 2700 RPM. For flight training activities, a cruise setting at 2300 RPM which will result in about 90 KIAS is recommended.

Mixture……..……..……..…….LEAN

After leveling off and setting cruise power, the pilot needs to lean the mixture. When cruising at 75% power or less, including when below 3000', to achieve the recommended lean mixture fuel consumption figures in the POH, the mixture should be leaned. To lean for Best Power cruise performance place the mixture control full forward and set the throttle slightly below (approximately 35 RPM) the desired cruise power setting and lean the mixture to peak RPM. Adjust the throttle, if necessary, for final RPM setting. For Best Economy cruise, set the mixture and throttle full forward, taking care not to exceed 2700 RPM, then begin leaning the mixture. Continue leaning until the desired cruise engine RPM is reached. CAUTION: Do not exceed 75% power with this Best Economy leaning procedure. See POH for more information. Use Recommended Lean mixture when cruising to and from the practice areas.

Trim……..SET

After leveling off, the pilot should trim the aircraft to level flight. As the plane accelerates, the trim will need to be adjusted again for level flight. All control forces should be trimmed off so the airplane maintains level flight even if the pilot's attention is diverted. Adjust the trim again whenever any power changes are made.

Landing Light & Recog Light……..OFF

The landing light switch and the recognition light switch should be placed in the OFF position.

Heading Indicator/Compass……..CHECKED

Check that the heading indicator is still aligned with the magnetic compass. A good rule of thumb is to check it again every 15 minutes in flight. If the HI is precessing, you may have to check it more often.

Fuel Tanks……..…….SWITCH

Establish a system to ensure that fuel is burned evenly from each tank and that neither is run dry. Piper recommends running the first tank for one hour after takeoff, the next for 2 hours, and the final for approximately and hour and half until landing. Some pilots like to change tanks more frequently and do so every 30 minutes. Whichever method you chose, make note of each tank change so you can keep track of the fuel usage in each one. Remember to turn on the Electric Fuel Pump prior to changing fuel tanks.

Checklist……..……..COMPLETE

V/R DESCENT

This is a VERBAL RESPONSE checklist. Only the pilot completing the checklist needs to verbalize the item and the response.

Carburetor Heat……..……AS REQUIRED

Select Carburetor Heat On (hot) whenever you suspect or observe carburetor icing to be a problem.

Power……..…….....……SET

Set a proper power reduction for the descent to achieve approximately the same airspeed while in cruise. This will help the engine to keep the cylinder head temperature unchanged. Avoid long power off descents if possible.

Mixture……..…….....…….ADJUST

As you make your descent from cruising altitude, gradually richen the mixture. Once below 3000 feet, mixture can be set to full rich if descent is made to a landing.

Radios…….……..……SET

Prior to arrival, listen to the ATIS or AWOS and begin preparing for the arrival. Set both Com, Nav, and GPS. If IFR, brief the approach. If VFR, brief the expected arrival procedure and runway in use. Contact Approach Control and Tower as required.

Altimeter……..…….....……..SET

Set the altimeter to the current altimeter setting as received on the automated weather broadcast.

Nav/GPS Switch…….…….....……SET

Depending on how you are Navigating to your destination, make sure the GPS is set for either GPS or VLOC. If using VOR navigation, select proper VOR frequency and course.

Fuel Selector……..FULLEST TANK

Turn on the Electric Fuel Pump. Set the Fuel Selector to the Fullest Tank.

Checklist……..……..…..COMPLETE

C/R BEFORE LANDING

This is a CHALLENGE AND RESPONSE checklist.

SEAT BACKS…….....…….UPRIGHT

Ensure the Seat Backs are set upright and positioned properly for full rudder inputs. Also ensure the seat is properly secured after adjustments have been made.

SEATS BELTS & HARNESS……CHECKED

Check your own seat belt and shoulder harness and ensure it is still secure and remind your passengers to do the same.

LANDING LIGHT & RECOG LIGHT..……..…….ON

Turn on the landing light and recognition light prior to getting close to the airport even during daytime conditions. Use of the landing light and recognition lights increases the chances other pilots will see you especially in head on situations or while you are on final approach.

ELECTRIC FUEL PUMP……..……..…ON

Turn on the electric fuel pump and leave it on until after landing.

FUEL SELECTOR……..FULLEST TANK

Once again, check to ensure that the Fullest Tank is selected. Turn on the Electric Fuel Pump prior to making any changes. Leave the Fuel Pump ON.

MIXTURE……RICH

Set the mixture to the full rich position prior to landing (below 3000') and prior to any increase in power beyond the cruise setting at lower altitudes.

APPROACH SPEED……...SET

Maintain proper pitch, power, and configuration to attain appropriate airspeeds for flying the traffic pattern and landing. Do not put the flaps down unless airspeed is at or below 103 KIAS. With the flaps down, the manufacturer recommends setting the trim at 70 KIAS on final approach and short final at 63 to 65 KIAS. In gusty conditions, consider adding airspeed on final and even reducing the flap setting. Increase final approach airspeed by ½ the gust factor. Consult the *Sunrise Aviation PA28-161 Maneuvers Manual* for more information on calculating gust factor. For a short field landing, use 63 KIAS and full flaps on final approach with whatever adjustments are needed for gusty wind conditions.

CHECKLIST……....COMPLETE

C/R GO AROUND

This is a CHALLENGE AND RESPONSE checklist. The manufacturer calls this checklist the "Balked Landing."

THROTTLE……FULL

Apply full power (full open throttle) as the first step in executing a go around. Remember that announcing the go around or missed approach is important, BUT communication only should happen after the airplane is climbing, in a safe attitude, and at a safe altitude, unless two pilots are present and PF and PNF duties have been clearly established regarding flying duties vs. communication responsibilities.

FLAPS……RETRACT TO 25°

If flaps are fully extended (40°), reduce the flaps immediately to 25° to attain a climb configuration. If flaps are already set at 20°, 10°, or 0°, leave the flaps in that configuration until attaining a safe airspeed and altitude.

CARBURETOR HEAT……OFF

Turn the Carburetor Heat OFF by moving the lever up to the OFF/Cold position.

AIRSPEED……63 KIAS

Select a pitch attitude that will maintain 63 KIAS with the current flap setting (25° or less) at full power. Verify airspeed at 63 KIAS.

CLIMB RATE……POSITIVE

Establish a positive climb rate at Vx (63 KIAS) or above. Maintain 63 KIAS until obstacles are cleared then accelerate to Vy (79 KIAS).

FLAPS……10° THEN 0°

At a safe altitude, and upon reaching a safe airspeed (63 KIAS or higher) with a positive rate of climb indicated by the Vertical Speed Indicator, retract the flaps to 10°. Upon reaching 63 KIAS and a safe altitude, fully retract the flaps. Adjust pitch and trim to maintain proper attitude and airspeed as the flap settings are changed. Pitch for best rate of climb airspeed (79 KIAS at SL) if no obstacles are ahead and then follow normal traffic pattern or departure procedures.

CHECKLIST……..COMPLETE

V/R AFTER LANDING

This is a VERBAL RESPONSE checklist. Only the pilot completing the checklist needs to verbalize the item and the response.

Brakes……..……...APPLY

Apply the brakes as necessary after landing consistent with safety and after exiting the active runway. Make sure that you are completely off the runway and past any hold short lines and clear of any taxiing traffic before stopping. After stopping, continue with the after landing checklist. Make a radio call as necessary after clearing the runway. At an airport with an active control tower, do not switch to ground control until told to do so by the Tower.

Time On……NOTE

Make a written note of the time that you landed.

External Lights……..…..AS REQUIRED

Turn off the landing light in daytime. Switch to the taxi light at night (if installed). Strobe lights can also be turned off at this time unless they are the only anti-collision light system. Be aware of the affect of your lights on other aircraft while stopped or taxiing. Turn off the recognition lights. A sure sign that an after landing checklist was NOT used is an aircraft taxiing to the ramp in the daytime with the landing light on!

Throttle (1000 RPM or less)……...……SET

Set the throttle to 800 to 1000 RPM. Adjust the throttle as necessary during taxi to minimize braking.

Carburetor Heat……...……..…OFF

If the carburetor heat was used for the approach and landing, turn it off (up/cold) now. Leaving the carburetor heat on during taxi will allow unfiltered air to enter the induction system.

Mixture……..LEAN

Lean the mixture as previously described.

Electric Fuel Pump……...……..…OFF

Turn off the electric fuel pump.

Flaps……..RETRACT

Retract the flaps smoothly to the zero degree position.

Checklist……COMPLETE

V/R PARKING

This is a VERBAL RESPONSE checklist. Only the pilot completing the checklist needs to verbalize the item and the response.

Parking Brake…...……...……SET

Set the parking brake and hold the toe brakes while completing this checklist. Release the parking brake before exiting the aircraft so that it can be towed or pushed back. If on uneven ground, ensure that the aircraft is chocked prior to brake release.

Avionics Master or Radios……..……...……OFF

If the aircraft is equipped with an Avionics Master, turn it OFF now but leave the individual radios on. If the aircraft does not have an Avionics Master, turn off each radio individually.

Transponder……OFF

The switch on the transponder should be switched to off.

Electrical Equipment and Lights……..……..……...OFF

Turn the lights, and any other electrical equipment off. You should leave the beacon/strobe on.

Throttle……..……...……IDLE

Set the throttle to IDLE.

Ignition Switch……..……...TEST/OFF

Quickly switch from the on position to the off position to check the engine begins to shut off. If it continues to run when switching to off, the aircraft must be squawked and reported to maintenance. Turn the ignition switch to the off position. Remove the key and return the key with the dispatch documents.

Mixture……..……...IDLE CUT OFF

Pull back on the mixture control to the idle cut off position. Wait until the propeller completely stops before proceeding to the next item on the checklist. If the engine windmills, then open the throttle slowly until it stops. If there is no change to the RPM when bringing back the mixture, shut the engine off with the ignition and report the problem to maintenance.

Alternator Switch……...……OFF

Turn the alternator switch off.

Battery Master Switch……..……..……OFF

Turn the battery master switch off.

Brakes……...…….RELEASE

Release the parking brake and release the toe brakes by releasing the pressure on the rudder pedals. Watch for aircraft movement and be ready to hold the brakes until chocks are inserted.

Control Restraints……..…...…..SECURE

Secure the lap belt around the control wheel and secure in position with the buckle to prevent the controls from moving. Do not overtighten.

Hobbs Meter…….....RECORDED

Record the time from the Hobbs Meter on the Tach Sheet. If any portion of the time in tenths is showing the next highest number, put down the higher number.

Tachometer Time……...…..RECORDED

Record the time from the Tachometer on the Tach Sheet. Remember that some of the Cadets have a Time in Service meter in the Engine compartment. Check this time against any maintenance due times and alert Dispatch or Maintenance if times are close. Though 100 hour times are allowed to be exceeded by up to 10 hours under certain circumstances, Airworthiness Directive times may not be exceeded unless operating under a Special Flight Permit. As noted previously, the "Tachometer" Time or Time in Service meter in some Cadets may be located in the engine compartment, left side, near the brake reservoir.

Tie Downs & Chocks……..…..SECURED

Secure all three of the tie-downs. Do not leave the aircraft unless either the tie downs are secure or the wheels are chocked (light winds only). Read the Sunrise Aviation *Safety Procedures and Practices Manual* for more guidance on tie downs, chocks, and winds. Make sure all doors and windows are closed.

Checklist……...…COMPLETE