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NORMAL PROCEDURES

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SECTION 4

NORMAL PROCEDURES

4.1 GENERAL

This section describes the recommended procedures for the conduct of normal operations for the Tomahawk. All of the required (FAA regulations) procedures and those necessary for the operation of the airplane as determined by the operating and design features of the airplane are presented.

Normal procedures associated with those optional systems and equipment which require handbook supplements are provided by Section 9 (Supplements).

These procedures are provided to present a source of reference and review and to supply information on procedures which are not the same for all aircraft. Pilots should familiarize themselves with the procedures given in this section in order to become proficient in the normal operations of the airplane.

The first portion of this section consists of a short form check list which supplies an action sequence for normal operations with little emphasis on the operation of the systems.

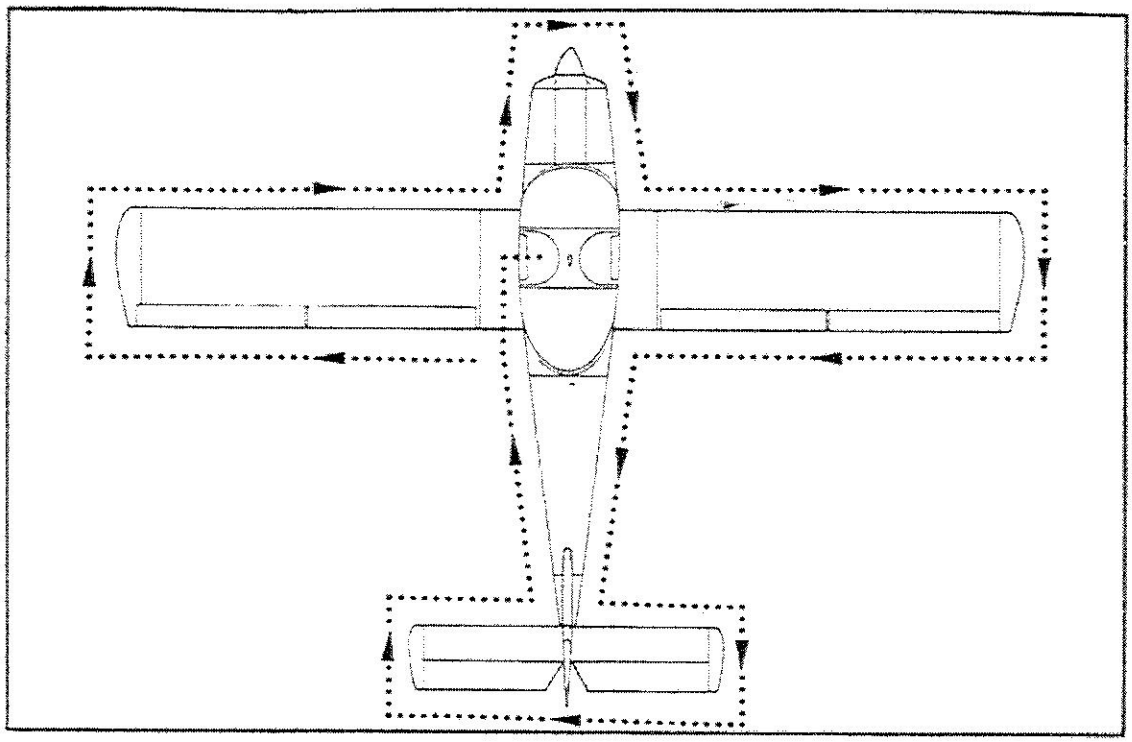
The remainder of the section is devoted to amplified normal procedures which provide detailed information and explanations of the procedures and how to perform them. This portion of the section is not intended for use as an in-flight reference due to the lengthy explanations. The short form check list should be used for this purpose.

4.3 AIRSPEEDS FOR SAFE OPERATIONS

The following airspeeds are those which are significant to the safe operation of the airplane. These figures are for standard airplanes flown at gross weight under standard conditions at sea level.

Performance for a specific airplane may vary from published figures depending upon the equipment installed, the condition of the engine, airplane and equipment, atmospheric conditions and piloting technique.

(a) Best Rate of Climb Speed	70 KIAS
(b) Best Angle of Climb Speed	61 KIAS
(c) Turbulent Air Operating Speed (See CAUTION Subsection 2.3)	103 KIAS
(d) Maximum Flap Speed	89 KIAS
(e) Landing Final Approach Speed	
Full Flaps, 34° (Outboard Flow Strips Installed)	62 KIAS
Full Flaps, 34° (Outboard and Inboard Flow Strips Installed)	67 KIAS
(f) Maximum Demonstrated Crosswind Velocity	15 KTS



WALK-AROUND
Figure 4-1

4.5 NORMAL PROCEDURES CHECK LIST

PREFLIGHT CHECK

COCKPIT

Control wheel ..... release restraints
Ignition ..... OFF
Master switch ..... ON
Fuel quantity gauges ..... check
Alternator warning light ..... check
Master switch ..... OFF
Primary flight controls ..... proper operation
Flaps ..... proper operation
Static drain ..... drained
Windows ..... check clean
Baggage ..... stowed properly
Required papers ..... on board
Parking brake ..... set ON

LEFT WING

Surface condition ..... check
Flap and hinges ..... check
Aileron and hinges ..... check
Wing tip ..... check
Lights ..... check
Fuel cap ..... open
Fuel quantity and color ..... check
Fuel cap ..... close and secure
Fuel vent ..... open
Fuel tank sump ..... drain
Pitot head ..... unobstructed
Stall warning ..... check
Landing gear and tire ..... check
Brake block and disc ..... check
Chock and tie down ..... removed

NOSE SECTION

Fuel strainer ..... drain
General condition ..... check
Propeller and spinner ..... check
Air inlets ..... clear
Engine compartment ..... check
Oil ..... check quantity
Dipstick ..... properly seated
Hydraulic fluid level ..... check
Alternator belt ..... check tension
Cowling ..... closed and secure
Nose wheel tire ..... check
Nose gear strut ..... proper inflation (3 in. exposure)
Windshield ..... clean

RIGHT WING

Check as left wing.

FUSELAGE (RIGHT SIDE)

General condition ..... check
Antennas ..... check
Side and rear window ..... clean
Static vents ..... unobstructed

EMPENNAGE

General condition ..... check
Hinges and attachments ..... check
Tie down ..... removed

FUSELAGE (LEFT SIDE)

Check as right side.

BEFORE STARTING ENGINE

Cabin doors ..... closed and latched
Overhead latch ..... engaged
Seats ..... adjusted and locked
Seat belts and harnesses ..... fastened
Circuit breakers ..... in
Parking brake ..... set
Carburetor heat ..... full OFF
Fuel selector ..... desired tank

ENGINE START

STARTING ENGINE WHEN COLD

Prime ..... as required
On last priming stroke leave primer in out position.
Throttle ..... open 1/2 inch
Master switch ..... ON
Electric fuel pump ..... ON
Mixture ..... full RICH
Starter ..... engage
Primer ..... push in slowly
after engine start
Throttle ..... advance slightly
Oil pressure ..... check
Electric fuel pump ..... OFF
Fuel pressure ..... check
Primer ..... locked

STARTING ENGINE WHEN HOT

Throttle ..... cracked
Master switch ..... ON
Electric fuel pump ..... ON
Mixture ..... full RICH
Starter ..... engage
Throttle ..... adjust
Oil pressure ..... check
Electric fuel pump ..... OFF
Fuel pressure ..... check

STARTING ENGINE WHEN FLOODED

Throttle ..... open full
Master switch ..... ON
Electric fuel pump ..... OFF
Mixture ..... idle cut-off
Starter ..... engage
Mixture ..... advance
Throttle ..... retard
Oil pressure ..... check
Fuel pressure ..... check

STARTING WITH EXTERNAL POWER SOURCE*

Master switch ..... OFF
All electrical equipment ..... OFF
Terminals ..... connect
External power plug ..... insert in fuselage
Proceed with normal start:
Throttle ..... lowest possible RPM
External power plug ..... disconnect from fuselage
Master switch ..... ON - check ammeter
Oil pressure ..... check

WARM-UP

Throttle ..... 800 to 1200 RPM

*Optional equipment

TAXIING

Radios	ON
Taxi area	clear
Brakes	check
Steering	check

GROUND CHECK

Brakes	set
Throttle	1800 RPM
Magnetos	max. drop 175 RPM - max. diff. 50 RPM
Vacuum	5.0" Hg ± .1
Oil temp	check
Oil pressure	check
Carburetor heat	check
Throttle	retard
Magnetos	check grounding at low RPM, then set to BOTH

BEFORE TAKEOFF

Master switch	check ON
Flight instruments	check
Fuel selector	proper tank
Mixture	set
Electric fuel pump	ON
Carburetor heat	OFF
Engine gauges	check
Static source	normal
Seats	securely latched in track
Seat backs	erect
Belts/harness	fastened
Empty seat	seat belt snugly fastened
Flaps	set
Trim tab	set
Controls	free
Doors	closed and latched
Overhead latch	engaged

TAKEOFF

NORMAL

Flaps.....set
Tab.....set
Accelerate to 53 KIAS.
Control Wheel.....back pressure to rotate to climb attitude

SHORT FIELD. OBSTACLE CLEARANCE

Flaps.....21° (first notch)
Accelerate to 53 KIAS.
Control wheel.....back pressure to rotate to climb attitude
Accelerate to 61 KIAS until obstacle clearance.
Accelerate to 70 KIAS, after obstacle is cleared.
Flaps.....retract slowly

SHORT FIELD. NO OBSTACLE

Flaps.....21° (first notch)
Accelerate to 53 KIAS.
Control wheel.....back pressure to rotate to climb attitude
After breaking ground accelerate to best rate of climb speed 70 KIAS.
Flaps.....retract slowly

SOFT FIELD, OBSTACLE CLEARANCE

Flaps.....21° (first notch)
Accelerate and lift off nose gear as soon as possible.
Lift off at lowest possible airspeed.
Accelerate just above ground to 61 KIAS to climb past obstacle height.
Continue climbing while accelerating to best rate of climb speed, 70 KIAS.
Flaps.....slowly retract

SOFT FIELD, NO OBSTACLE

Flaps.....21° (first notch)
Accelerate and lift off nose gear as soon as possible.
Lift off at lowest possible airspeed.
Accelerate just above ground to best rate of climb speed, 70 KIAS.
Flaps.....slowly retract

CLIMB

Best rate (flaps up) ..... 70 KIAS
Best angle (flaps up) ..... 61 KIAS
Electrical fuel pump ..... OFF at desired altitude

CRUISING

Reference performance charts and Avco-Lycoming Operator's Manual.
Normal max power 75%
Power ..... set per power table
Mixture ..... adjust

APPROACH AND LANDING

Fuel selector ..... proper tank
Seat backs ..... erect
Belts/harness ..... fasten
Electric fuel pump ..... ON
Mixture ..... set
Flaps ..... set - 89 KIAS max
Trim to 70 KIAS.
Final approach speed
Full flaps (Outboard Flow Strips Installed) ..... 62 KIAS
Full flaps (Outboard and Inboard Flow Strips Installed) ..... 67 KIAS

STOPPING ENGINE

Flaps ..... retract
Electric fuel pump ..... OFF
Radios ..... OFF
Throttle ..... full aft
Mixture ..... idle cut-off
Magnetos ..... OFF
Master switch ..... OFF

PARKING

Parking brake	set
Control wheel	secured with belts
Flaps	full up
Wheel chocks	in place
Tie downs	secure

4.7 AMPLIFIED NORMAL PROCEDURES (GENERAL)

The following paragraphs are provided to supply detailed information and explanations of the normal procedures necessary for the safe operation of the airplane.

4.9 PREFLIGHT CHECK

The airplane should be given a thorough preflight and walk-around check. The preflight should include a check of the airplane's operational status, computation of weight and C.G. limits, takeoff distance and in-flight performance. A weather briefing should be obtained for the intended flight path, and any other factors relating to a safe flight should be checked before takeoff.

COCKPIT

Upon entering the cockpit, release any restraints securing the control wheel. Check that the ignition switch is OFF, that the throttle is closed, and that the mixture control is in idle cut-off. Then turn the master switch ON. Check the fuel quantity gauges for sufficient fuel. Check that the alternator warning light illuminates. After completing these checks, turn the master switch OFF.

Exercise the controls through their full travel and lower and raise the flaps to check for proper operation. The static drain valve on the lower left sidepanel should be opened and drained. Check for unobstructed visibility and clean windows. See that the baggage is stowed properly and tied down. Make sure that all necessary charts and papers are on board and in order. Before leaving the cockpit for the external check, set the parking brake.

LEFT WING

Check that the wings and control surfaces are free of snow, ice, frost or any other foreign matter. Check for damage and loose screws or rivets. Check the control surfaces and hinges for damage and operational interference. Check the wing tip and lights for damage.

Open the fuel cap and visually check the fuel for color and quantity. Replace the fuel cap securely after the check is complete. Be sure that the fuel tank vent is unobstructed. Using the underwing fuel tank drain, drain sufficient fuel from the tank to ensure the removal of contaminants. It is

recommended that drained fuel be collected in a suitable container, examined, and then discarded. After this procedure be sure that the drain valve is closed and that fuel is not dripping.

CAUTION

When draining any amount of fuel, care should be taken that no fire hazard exists before starting engine.

If a pitot head cover has been attached, remove it, and ensure that the holes are open and unobstructed. Check that the stall warning lift detector moves freely.

Check the landing gear. The strut should be sound and securely attached. Brake blocks and discs should show no signs of damage or excessive wear, and the brake line should be securely attached and show no signs of leakage. The tire should not be damaged or excessively worn and should be properly inflated. Proper inflation is 30 psi for aircraft equipped with 6.00 x 6 main wheels and 26 psi for 5.00 x 5. If chocks or tie-downs have been employed, they should be removed before any attempt is made to move the airplane.

NOSE SECTION

Drain and examine fuel from the fuel strainer on the left side of the nose section. The fuel strainer should be drained twice, once with the fuel selector valve on each tank setting. Check the general condition of the nose section and look for suspicious oil or fluid leakage. The propeller and spinner should be checked for detrimental nicks, cracks, dents or other defects. Check the engine breather tube for obstructions. Check all openings and air inlets for debris, bird nests or other obstructions.

Open each side of the engine cowling. Wires and lines should be attached securely. The engine should be relatively clean, as grease and dirt in the engine compartment not only hinder examination and service but also present a fire hazard. Check the oil level, then replace the dipstick, ensuring that it is firmly seated. Check the hydraulic fluid level and replace and secure the cap. Check the condition and tension of the alternator belt. Check the oil filter cooling ducts for obstructions. Close and latch the cowling securely.

Check the condition of the nose wheel tire. Proper inflation is 30 psi for aircraft equipped with a 6.00 x 6 nose wheel and 26 psi for a 5.00 x 5. The

nose gear strut should show no sign of fluid leakage and should be inflated to show 3 inches of strut exposure. Clean and check the windshield. Remove the nose wheel chock if one has been employed.

RIGHT WING

Check the right wing using the same procedure as performed on the left wing.

FUSELAGE (RIGHT SIDE)

Check the general condition of the fuselage. Check that all antenna access panels are in place and securely attached. Be sure that the side and rear windows are clean. Check that the openings in the static pad are clean and unobstructed.

EMPENNAGE

Surfaces of the empennage should be examined for damage and operational interference. Check all visible and accessible hinges and attachments. Remove the tie-down if one has been employed.

FUSELAGE (LEFT SIDE)

Check the left side of the fuselage using the same procedure as performed on the right.

When the stall warning device and the optional pitot heat and navigation lights, if installed, are to be checked for proper functioning, turn ON the master switch and the appropriate electrical switches. Visually confirm that exterior lights are operational. Lift the stall detector on the left wing and observe that the warning horn sounds. Check the pitot heat by carefully feeling the pitot head. Use caution as the head can become extremely hot. When these checks are complete, return the master switch and the electrical switches to their OFF positions.

4.11 BEFORE STARTING ENGINE

After entering the cockpit and before starting the engine, close and latch both cabin doors, securing the main latch first, and then engaging the overhead latch. If a door is to be left open, in warm weather for example, the latching procedure must be completed before takeoff.