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SECTION 4 - NORMAL PROCEDURES

1. Pre-flight Procedures

Before each flight, ensure that weight and CG are within the specified limits (e.g. by using loading diagram).

DETERMINATION OF CG FOR A GIVEN LOAD

Method 1 Use the makers loading diagram

IMPORTANT Ensure that the origin corresponds to the last weighing sheet.

Method 2 Carry out normal calculations of moments using following lever arms :

Front passengers	16.1"
Rear seat	46.8"
Rear fuel tank	44.1"
Baggage	74.8"

EXAMPLE OF CG CALCULATIONS

Aircraft weight empty = 1130 lbs.

CG of aircraft empty = 12.4" (= 18 %)

Moment empty = 1130 x 12.4 = 14012 inch.lbs

Front passengers	= 340 x 16.1	= 5474 inch.lbs
Rear passengers	= 220 x 46.8	= 10296 inch.lbs
Fuel (rear tank)	= 176 x 44.1	= 7761 inch.lbs
Baggage	= 44 x 74.8	= 3291 inch.lbs

Sum of weights and moments	= 1910 lbs	40834 inch.lbs
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CG at above load	= $\frac{40834}{1910}$	= 21.4" (31.7%)
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The CG is therefore within limits and the total weight less than the maximum.

2. PRE FLIGHT CHECKS

- (1) Select Battery switch ON  
Check fuel gauge readings  
Select battery switch OFF  
Check - Magnetos OFF  
      - Fuel cock OPEN  
      Mixture weak
- (2) Before first flight daily and after each  
refuelling (allow fuel to settle) operate  
fuel drain cocks (see fig. 1.14)  
Check - Filler caps secure  
      - Tank vent pipes unobstructed  
      - Static vents unobstructed
- (3) Check - tail unit for condition  
      - tab (hinges free)  
      - rudder hinges
- (4) Check condition of flaps and hinges. Ensure  
that, when retracted, flaps are in contact  
with the stops.
- (5) Check aileron hinges  
Remove mooring ropes and towing arm, if  
applicable.

(6) Check condition of main landing gear

- Check that remaining oleo leg stroke is at least 2.75"  
(The top of the wheel fairing must be below the check hole in the fixed fairing when the aircraft is empty with any given amount of fuel in the tank). If not, inflate the oleoleg (pressures indicated on landing leg - or see page 1.4)

(7) - Check canopy for cleanliness

(8) Check oil level - do not fly with less than 4 quarts

Fill up when making a long flight

Check state of propeller, spinner and air baffles

Check air intake for condition and cleanliness.

Check security of exhaust pipes

Drain main filter

If necessary, remove and clean the air filter

Close and lock oil inspection panel

Check security of upper engine cowling (Dzus)

Carry out complete pre-flight checks before first flight of each day. Subsequently, only control surfaces need be checked.

Before entering cabin, check security of baggage.

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### 3. CHECKS BEFORE ENGINE STARTING

Adjust and lock seats and safety belts

Lock all cabin doors

Check flying controls

Parking brake ON (White pointer to 12 o'clock)

Select battery switch ON

Set tab control to neutral

Select mixture fully rich (IN)

Check carb heater OFF (IN)

Select FUEL ON

Retract flaps.

4. ENGINE STARTING

Electrical Pump ON

When the pulses slow down, open throttle twice fully to actuate injection pump.

Close throttle

Select battery and alternator ON

LH Magneto switch ON

Operate starter button

Contact on BOTH Magnetos

Allow the engine to run at allow an RPM as possible (especially when cold) at a speed where no vibrations are felt.

Successive explosions followed by puffs of black smoke indicate a flooded engine. In this case, switch off the ignition, open the throttle fully, turn the engine over on the starter (about a dozen times) to blow out excess fuel.

Then proceed as for normal start, but without priming.

In cold weather, additional priming may be necessary.

As soon as engine starts to fire regularly, open up throttle slightly to keep it running.

In very cold weather, turn propeller by hand first, then proceed as above.

NOTE : Allow starter to cool between starting attempts ; to prevent burning of windings.

### 5. TAXYING

Brakes ON - Open throttle slightly to depress nose (to unlock nosewheel)

Brakes OFF

Taxy slowly to avoid harsh braking.

Best engine speed for cooling when stopped =  
1200 RPM

Avoid excessive use of rudders when taxiing in a straight line.

Turns should always be carried out at a low taxiing speed

To turn tightly at low speed, apply full rudder to actuate brakes

When taxiing in a strong cross-wind, move the stick into wind to improve control of the aircraft.

Taxy very slowly over stoney ground, to prevent stones being thrown against propeller blades, wheel spats and tailplane.

NOTE : Since engine cooling rates are intended to cope with flight conditions, avoid overheating the engine during ground running, especially during engine checks.

In cold and damp weather, apply carb. heater for taxiing and pre-take-off checks.

DO NOT FORGET TO SELECT OFF FOR TAKE-OFF

#### 6. CHECKS BEFORE TAKE-OFF

If necessary, warm up engine at 1200 RPM

Do not carry out a ground run

Check magnetos individually at 1800 RPM  
(Max RPM drop = 125 between 1 and 2 and 1+2)

Check for dead-cut around 1000 RPM

Check instruments and radio equipment

Carry out VITAL ACTIONS.

#### 7. TAKE-OFF

Carb. heater and Mixture controls FULLY IN

Open throttle fully and gently

Check engine RPM (2200 MIN)

If RPM less than 2200, abandon take-off and have the engine checked.



To maintain a straight run, keep weight on the nosewheel  
Make a clean rotation at 50-54 KTS (57-62mph)  
Level off to gain speed  
Start climbing at : 65 KTS (75 mph)

TAKE OFF IN CROSSWIND (MAX COMPONENT 22 KTS)

Use ailerons to decrease lateral disturbance effects of crosswind.  
Accelerate to a higher take-off speed than normal.  
Rotate cleanly to avoid sinking back on after lift-off.  
Once airborne, turn into wind to correct for drift.

8. CLIMB

Obstacle Clearance

Best climb angle with take-off flap selected is at 70 KTS ( 80 mph )

Normal climb

Retract flaps

Full throttle, accelerate to : 80KTS (92mph)

Adjust elevator trim tab

Switch off electric pump

NOTE : Steep angle climb must be of short duration to avoid engine overheating.

The last 2.2 IG in the main tank (rear) are unusable in the climb.

## 9. CRUISE

Use throttle to adjust engine speed to give required power.

Adjust elevator trim tab

Adjust mixture control manually. Lean progressively until engine starts to run rough, then richen just sufficiently to restore smooth running.

The mixture must be adjusted after each change of engine RPM or of altitude.

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### CRUISE ALTITUDE

To maintain constant power, the throttle must be progressively opened as height is increased. (See SECTION 5 - PERFORMANCE DATA)

There are no mechanical disadvantages in using a so-called 'fast' cruise engine speed close to, but less than max. engine speeds :

- 2700 RPM  
provides power is, itself, lower than or equal to 75 %

#### 10. DESCENT

Always apply carb. heater : engine idling  
Reduce speed, Adjust elevator tab  
Mixture fully RICH  
Emergency electrical fuel pump ON  
When speed falls below 92KTS-106 MPH, select flaps as required.  
Re-adjust elevator tab.

NOTE : During prolonged descent, increase RPM from time to time to maintain correct engine temperature.

#### 11. LANDING

Approach speed ( $V_i = 1.3$  times stalling speed)

62 KTS (71 MPH) at 2205 LBS  
Carb. heater fully ON and LOCKED  
Mixture FULLY RICH

Watch the airspeed (especially in strong winds)

Flare-out progressively.

ABORTED LANDING

Throttle may be opened fully in all configurations.

Select carb. heater OFF (IN)

Select flaps to TAKE-OFF as soon as possible.

LANDING IN CROSS WINDS (Max. component 22 KTS)

Approach with wings level, correcting for drift by "crabbing", or with one wing low (into wind) or by a combination of these two.

Level wings just before touch-down.

Maintain a straight course by use of rudder and with ailerons (stick into wind).

12. AFTER LANDING CHECKS

Retract flaps before taxiing

When stopped, lower flaps to prevent damage by passengers leaving the aircraft

Handbrake ON

Engine speed 1200 RPM

Check each magneto in turn

Select mixture fully WEAK to choke engine

Switch off ignition

Switch off battery

Turn off fuel

Place chocks under main wheels

13. GROUND MANOEUVRES

Use the nosewheel steering bar

Rear loading will cause nosewheel to lock. To replease it, push tail up or pull nose down to depress nosewheel leg.

NOTE : Too great a steering angle on the nose-wheel will actuate the brakes on one of the main wheels.

14. TETHERING

Tail to wind

Lock the control column with a safety belt

Tether the aircraft by means of the two rings provided under the wings and one at the rear of the fuselage.

DO NOT APPLY THE WHEELS BRAKES

PLACE CHOCKS AGAINST THE WHEELS

Fit Canopy Cover.

15. PRECAUTIONS DURING PROLONGED PARKING

Without a canopy cover, the sun's rays will cause mottling of the Plexiglass

If the aircraft is not to be used for a certain period, keep it in a clean condition.

A SMALL EFFORT WILL ALWAYS PAY OFF

Turn the propeller by hand several times at least every twoweeks to lubricate the internal parts of the engine.

FULL FUEL TANKS PREVENT INTERNAL CONDENSATION