

STARTING THE ENGINE.

- (1) Carburetor Heat -- Cold.
- (2) Mixture -- Rich.
- (3) Primer -- As required.
- (4) Ignition Switch -- "BOTH."
- (5) Throttle -- Open 1/8".
- (6) Propeller Area -- Clear.
- (7) Starter -- Engage.

BEFORE TAKE-OFF.

- (1) Throttle Setting -- 1600 RPM.
- (2) Engine Instruments -- Within green arc and generator light out.
- (3) Magnetos -- Check (75 RPM maximum differential between magnetos).
- (4) Carburetor Heat -- Check.
- (5) Flight Controls -- Check.
- (6) Trim Tab -- "TAKE-OFF" setting.
- (7) Cabin Doors -- Closed and locked.
- (8) Flight Instruments and Radios -- Set.

TAKE-OFF.

NORMAL TAKE-OFF.

- (1) Wing Flaps -- 0°
- (2) Carburetor Heat -- Cold.
- (3) Power -- Full throttle (applied smoothly).
- (4) Elevator Control -- Lift nosewheel at 60 MPH.
- (5) Climb Speed -- 85 MPH.

MAXIMUM PERFORMANCE TAKE-OFF.

- (1) Wing Flaps -- 0°
- (2) Carburetor Heat -- Cold.

TAKE-OFF.

POWER CHECK.

It is important to check full-throttle engine operation early in the take-off run. Any signs of rough engine operation or sluggish engine acceleration is good cause for discontinuing the take-off. If this occurs, you are justified in making a thorough full-throttle, static runup before another take-off is attempted.

Full-throttle runups over loose gravel are especially harmful to propeller tips. When take-offs must be made over a gravel surface, it is very important that the throttle be advanced slowly. This allows the airplane to start rolling before high RPM is developed, and the gravel will be blown back of the propeller rather than pulled into it. When unavoidable small dents appear in the propeller blades, they should be immediately corrected as described in Section IV under propeller care.

Prior to take-off from fields above 5000 feet elevation, the mixture should be leaned to give maximum RPM in a full-throttle, static runup.

WING FLAP SETTINGS.

Normal and obstacle clearance take-offs are performed with wing flaps up. The use of 10° flaps will shorten the ground run approximately 10%, but this advantage is lost in the climb to a 50-foot obstacle. Therefore, the use of 10° flap is reserved for minimum ground runs or for take-off from soft or rough fields with no obstacles ahead.

If 10° of flaps are used in ground runs, it is preferable to leave them extended rather than retract them in the climb to the obstacle. The exception to this rule would be in a high altitude take-off in hot weather where climb would be marginal with flaps 10°.

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Flap deflections of 30° to 40° are not recommended at any time for take-off.

PERFORMANCE CHARTS.

Consult the take-off chart in Section V for take-off distances under various gross weight, altitude, and headwind conditions.