

length, if desired. While taxiing, the steerable tailwheel should be used for making normal turns and the pilot's feet kept off the brake pedals to avoid unnecessary wear on the brakes.

When beginning to taxi, the brakes should be tested immediately for proper operation. This is done by first applying power to start the airplane moving slowly forward, then retarding the throttle and simultaneously applying pressure smoothly to both brakes. If braking action is unsatisfactory, the engine should be shut down immediately.

To turn the airplane on the ground, the pilot should apply rudder in the desired direction of turn and use whatever power or brake necessary to control the taxi speed. At very low taxi speeds, directional response is sluggish as surface friction acting on the tailwheel inhibits inputs through the steering springs. At normal taxi speeds, rudder inputs alone should be sufficient to start and stop most turns. During taxi, the AOA built in to the structure gives control placement added importance when compared to nosewheel models.

When taxiing in a quartering headwind, the upwind wing can easily be lifted by gusting or strong winds unless ailerons are positioned to "kill" lift on that side (stick held into the wind). At the same time, elevator should be held full back to add downward pressure to the tailwheel assembly and improve tailwheel steering response. This is standard control positioning for both nosewheel and tailwheel airplanes, so the difference lies only in the added tailwheel vulnerability created by the fuselage pitch attitude.

When taxiing with a quartering tailwind, this fuselage angle reduces the tendency of the wind to lift either wing. Nevertheless, the basic vulnerability to surface winds common to all tailwheel airplanes makes it essential to be aware of wind direction at all times, so holding the stick away from the cross wind is good practice (left aileron in a right quartering tailwind).

Elevator positioning in tailwinds is a bit more complex. Standard teaching tends to recommend full forward stick in any degree of tailwind, arguing that a tailwind striking the elevator when it is deflected full down increases downward pressure on the tailwheel assembly and increases directional control. Equally important, if the elevator were to remain deflected up, a strong tailwind can get under the control surface and lift the tail with unfortunate consequences for the propeller and engine.

While stick-forward positioning is essential in strong tailwinds, it is not likely to be an appropriate response when winds are light. The propeller wash in even lightly-powered airplanes is usually strong enough to overcome the effects

of light tailwinds, producing a net headwind over the tail. This in turn suggests that back stick, not forward, does the most to help with directional control. If in doubt, it is best to sample the wind as you taxi and position the elevator where it will do the most good.

## **Weathervaning**

Tailwheel airplanes have an exaggerated tendency to weathervane, or turn into the wind, when operated on the ground in crosswinds. This tendency is greatest when taxiing with a direct crosswind, a factor that makes maintaining directional control more difficult, sometimes requiring use of the brakes when tailwheel steering alone proves inadequate to counteract the weathervane effect.

## **Visibility**

In the normal nose-high attitude, the engine cowling may be high enough to restrict the pilot's vision of the area directly ahead of the airplane while on the ground. Consequently, objects directly ahead are difficult, if not impossible, to see. In aircraft that are completely blind ahead, all taxi movements should be started with a small turn to ensure no other plane or ground vehicle has positioned itself directly under the nose while the pilot's attention was distracted with getting ready to takeoff. In taxiing such an airplane, the pilot should alternately turn the nose from one side to the other (zigzag) or make a series of short S-turns. This should be done slowly, smoothly, positively, and cautiously.

## **Directional Control**

After absorbing all the information presented to this point, the transitioning pilot may conclude that the best approach to maintaining directional control is to limit rudder inputs from fear of overcontrolling. Although intuitive, this is an incorrect assumption: the disadvantages built in to the tailwheel design sometimes require vigorous rudder inputs to maintain or retain directional control. The best approach is to understand the fact that tailwheel aircraft are not damaged from the use of too much rudder, but rather from rudder inputs held for too long.

## **Normal Takeoff Roll**

Wing flaps should be lowered prior to takeoff if recommended by the manufacturer. After taxiing onto the runway, the airplane should be aligned with the intended takeoff direction, and the tailwheel positioned straight or centered. In airplanes equipped with a locking device, the tailwheel should be locked in the centered position. After releasing the brakes, the throttle should be smoothly and continuously advanced to takeoff power. At all times on the takeoff roll, care must be taken to avoid applying brake pressure.