

Propellers

the air charge to leak into the oil. In any case, there isn't anything you can do about it in flight. You will have to revert to using the nonaccumulator unfeathering procedure for your aircraft.

Hartzell feathering propellers with counterweights or spring-assist use an air charge to help feather the prop. Low air charge is indicated during the preflight feathercheck and in flight by sluggish or slow RPM control, especially when reducing RPM. There also may be some difficulty in maintaining RPM, but before you curse the system, make sure you don't have creeping throttle or prop levers. Over the years I have watched countless students torque the control lever's friction locks as tight as they would go, then muscle the levers back and forth. Then, after the friction locks are completely worn out, they can't figure out why the controls creep by themselves.

Other indications of an air charge problem would be minor overspeed problems, particularly with rapid throttle application, poor RPM recovery under the same situation, and poor synchronization in the upper cruise speed range. If you are in flight when the problem occurs, reduce the throttle and airspeed until RPM control is regained. Be careful not to go below best single-engine, rate-of-climb speed for your aircraft. Once you have regained control, increase the throttle slowly to get as much power back as possible without returning to an overspeed condition.

Noncounterweighted models work essentially like McCauley systems. Oil pressure increases blade angle; centrifugal twisting movement on the blades decreases it. Counterweighted models use oil pressure to decrease blade angle and centrifugal force on the counterweights to increase it. Be particularly careful to watch for grease leaks near the propeller hub. Common causes are loose, missing, or defective zerk fittings, defective or loose blade-clamp seals, and overlubrication of blades. Have a mechanic check out any leaks.

The Compact Propeller version with a low air charge would experience improper constant-speed operation, overspeed, and a surge tendency. An excessive air charge would cause an inability to achieve maximum RPM and could cause the propeller to feather on the ground when the engine is shut down normally.

PREFLIGHT AND RUNUP

For all types of constant-speed propellers, check during preflight for oil and grease leaks near the blade shanks. Inspect the spinner for security. The spinner is typically not an optional item and must be in place for proper cooling airflow to occur. Look for excessive looseness of the blades, but realize that some play, called *blade shake*, is inherent in the design. Whenever working on or near the propeller, be certain the magnetos and master switch are off, the mixture is in cutoff, and avoid getting into the propeller arc. Always follow the POH preflight procedures. Should you discover your prop is suffering from reduced or lost air charge, use very gentle throttle movements to prevent potentially damaging prop-overspeed conditions.

Good procedures dictate that the pilot avoid runups on areas of gravel, stones, broken asphalt, or loose sand, for two reasons. First, debris in the runup area will cause prop