
Downie On 'Carb' Heat

EDITOR'S NOTE: While preparing his article on terrain flying, Author Don Downie decided carburetor heat and leaning the engine were two things that the pilotage flyer should know. His views on these two subjects are given here.

As more and more new birds come out with fuel-injected powerplants, carburetor icing problems decline. However, when there's an easy-to-start carbureted engine up in front of you, there's always the possibility of icing. (I had a C-47B engine ice up one day at 80°F over the equator because of the venturi action of the carburetor intake.) So, the pilot should be alert for loss of performance, both due to ice in the engine intake system and also on the airframe.

A time-proven procedure for use of carburetor heat is: Pull it *all* on to clear an ice jam. Then you can taper off as required. Frequently a little carburetor heat is much worse than none at all. In flying at altitude, adding carburetor heat richens the mixture and will make the engine run rough, but not rough enough to shake the ice out of the system. If your powerplant roughens up with the application of carb heat, lean the mixture until it smooths out. Then be prepared to re-enrich the mixture as heat is reduced.

Some forgetful pilots carry a clothespin snapped over their mixture control as a reminder. Every time they lean the mixture, they put the clothespin on the throttle to remind them to richen the mixture as required before landing. Sure, it's on that check list you use before every landing—don't you?—but this is a simple backup system.

If you suspect icing conditions and have a non-fuel-injected (carburetor) powerplant, make your complete runup with full carburetor heat or alternate air source. Then turn off the heat, adjust the mixture by leaning for maximum power, reapply heat briefly to clear out any ice that may have formed, and close the carburetor heat for actual take-off. Since FAA requirements call for a 90°F temperature rise at 30°F with full heat applied, this heat would rob the engine of about 20% of its power. Even on a "normal" 23°F day at 10,000 feet, you can pull only about 60% power. Take away that 20% for carburetor heat and you're down to 48% of power and really sagging on takeoff. Fuel-injected engines do not have the icing problems, but they should be leaned for maximum power before takeoff, just as the carburetor type.

When carb heat is applied at a high-altitude field prior to landing, don't be surprised when the engine begins to complain, buck, and run rough. Simply lean out the mixture control and things will smooth right up again, since carb heat automatically causes a rich fuel-air mixture. □