

# SHUTTING

# D O W N

# THE GIPSY MAJOR

Everyone who flies a Tiger Moth should be well versed in the familiar, time-worn rituals of starting the old girl, but perhaps the same sort of rote emphasis has not been placed on the equally important rites of shutting her down.

As with starting, the final steps of shutting down a Tiger Moth are somewhat different from those of its modern counterparts, where pulling the mixture knob to idle cut-off produces the desired silence relatively fuss free. Tiger Moths need extra care however, as there are hazards lurking for the unwary.

Having taxied to the shutdown spot and with the engine running at 900-1,000 rpm, first it is time for the dead-cut check. As with all aircraft, that is when each magneto is switched off and on separately to confirm that the other is working. The point of the dead cut check is primarily for the discovery of any magneto problem *then*, rather than finding it prior to run-up before the next flight, or perhaps, in the case of the impulse magneto, finding it only after hours of fruitless swinging.

Next comes the live cut check, which assumes far greater importance in shutting down the Tiger Moth. The live cut consists of switching both magnetos momentarily off together, then on again before executing the actual shutdown. The reason for this is that if one of the earthing leads has fallen off in flight, then flicking the switches off as you ram the throttle wide will produce anything but the expected peace and tranquillity.

It is important to note that the individual magneto dead cut check will not necessarily make a live magneto obvious, because at the low rpm at which the dead cut is carried out the slight rpm drop may go unnoticed by the pilot. Listening for the live cut implants firmly in the pilot's consciousness that the engine will die on cue when required. It is all too easy to shut down on automatic pilot after a wonderful cloud-cavorting flight, with reactions suitably lulled and unable swiftly to deal with an engine roaring unexpectedly and rapidly to full power.

This happened to a pilot in a Tiger Moth and but for the sprightly action of a



An instructor who has expressed concern about the lack of knowledge of some newer pilots in the lore of flying vintage aeroplanes, New Zealand flying instructor MARTIN BURDAN is working on a handbook to cover Tiger Moth operations. As a preview, Martin's notes on shutting down a Gipsy Major engine are reprinted with acknowledgement to TIGER RAG, newsletter of the Tiger Moth Club of New Zealand.

bystander grabbing the wing to redirect the propeller's murderous intent, probably would have dismantled three people along with inflicting carnivorous activity upon one of its stablemates. Relax, as they say, only when the hangar door is closed. And make that before, rather than after, the Tiger Moth has bolted.

Following a satisfactory live cut check, and after cooling down the engine at idle for a short time, increase the rpm to about 700. This provides more propeller momentum, thus allowing the pistons to draw a greater volume of air into the cylinders when the



*Relax only when the hangar door is closed.*

*Above. Gipsy engines should be shut down against an acknowledged procedure rather than just flipping the switches and walking away. (Darryl Cott).*

engine is shut down than would be the case at idle. The air drawn in cools any carbon hot spots on the piston or cylinder head which might cause running on or backfiring. Backfiring is best avoided, not being overly healthy for the magnetos.

The next safety step is to treat the 'switches off-throttle wide' process as two distinct and separate events. This further ensures that the engine cut has registered with the pilot before the throttle is opened.

Once the switches have been turned off, the throttle should be smoothly opened, reaching wide before the propeller stops turning. Opening the throttle wide enables the pistons to draw the maximum gulp of cool air into the cylinders.

It always pays, when operating a machinery that can bite, to have at least one safety option or bolt hole should the unexpected occur. Closing the throttle once the propeller has stopped turning lessens any potential subsequent danger should the propeller be turned with the magneto circuit not earthed for any reason.

Consider the following real incident. Pilot number one shuts down the engine and leaves the throttle wide. Soon afterwards, along comes pilot number two who, noting the warm engine, elects to hot start without priming. Standing on the tyre and reaching into the front cockpit, he confirms that the throttle is set by putting his hand on it and taking a look.

So far so good. He flicks the switches up, swings the propeller and the engine roars enthusiastically into full-powered life, followed pretty soon after by splintering noises and silence.

Closer investigation reveals the throttle wide (and out of sight when peering from the front), but the mixture lever (masquerading as a throttle) well and truly set back in its correct position.

Back to our discovery (the less exciting way) that a magneto refuses to die. What do

we do? Turning off the fuel and patiently waiting for the carburettor to drain should do the trick. Take care not to be too enthusiastic about opening the throttle at the first splutter, though, as the supply of the last drops of fuel may be uneven. The combination of a wide throttle and a sudden glob of fuel may be enough to hurl the propeller erratically to high rpm.

However, turning off the fuel does not always work as I once found out, sitting there with both switches off but the engine still ticking over merrily as the result of an earth wire dangling tauntingly out of reach of the magneto. With the fuel cock in the off posi-

tion and having waited well beyond a reasonable time for the carburettor to drain, I gradually concluded (lacking any other possibilities to eliminate) that with this particular fuel cock, 'off' was in name only.

Thoughts of increasing rpm to use fuel faster than it was getting by the partially closed cock brought to mind the fact that the gravity system in a Tiger Moth will deliver many times the maximum number of gallons per hour required, and even with the Gipsy Major bellowing at full power such a tack would be unlikely to produce the much wanted silence. Looking at the fuel gauge pip bobbing eagerly at the three quarter mark, a fleet-

ing thought of waiting for the tank to run dry also quickly evaporated.

Only one thing for it: leave both magnetos off, engine at idle, get out, sidle gingerly along the wing leading edge, lift the port cowl (feeling very alert to the hedge trimmer uncomfortably close to my left ear) and touch the recalcitrant wire to the magneto. Ahhh. Obedient silence at last.

And even after a session of aerobatics, there was the offending earth wire nut lodged snugly between the firewall and the oil return pipe. It got replaced tightly with thoughts of a better pre-flight check next time.