Getting Acquainted

Now that you have some idea of how the spinning things on top are going to behave, it's time to familiarise yourself with the powered gyrocopter. In Britain today, no matter what name a machine is disguised under, your single-seat gyro will basically be a Bensen, a modified Bensen, or a Bensen with bits added. Such is progress.

My own pride and joy is plans built Cricket G-BVDJ. With Chris making the precision stuff and me doing the rest, Delta-J took us some fourteen months to build up to flying stage. She wears a 65hp Rotax 582 engine with twin carbs and CDI: E type gearbox with electric and manual starters: 52" four bladed composite - propeller: 22 foot *Dragon Wing* rotor blades, and a Wunderlich pre-rotator (or *spin up*). The parking brake is drum type and fitted to the nose wheel only. Control stick is a welded one piece fork, operated on a single pivot. Fuel capacity is 35 litres giving us a safe range of 90 minutes. The hands on experience of construction gave me an advantage in that I was already well familiar with my machine when it came to training.

Having been through the fixed-wing mill where the importance of good **pre-flight checks** were drummed into me from the very beginning, I naturally apply the same values to the gyrocopter**. If anything is likely to drop off, it's better to find out *before* the expensive equipment starts whizzing around:** a loose nut pinging through the propeller can cause a surprising amount of damage. It's also plain stupid to risk a forced landing through some defect that could have been found before take off.

The first job of the day should be a thorough pre-flight inspection – even if you're only going two-wheel-balancing. There are no checklists as such, and as no two gyro's are exactly the same, make up your own list to suit your machine and get into the habit of going through it before the first flight of the day, until it becomes second nature.

My routine with Delta-J starts at the pitot tube in the nose, and works all the way around going anti-clockwise to finish back at the pitot tube again. I've tried to set it down here (along with a few tips) as a guide which can be adapted to suit other machines. As I work through the list, I don't just visually check the machine, but **physically test each part** for slackness or insecurity – the nuts may look tight, but are they? **Don't just use your eyes;** do a Braille check as well, for sometimes fingers can 'see' what the eye may have missed.

For inaccessible places, I've painted alignment or 'creep' marks on the nuts which will give visible indication of any movement. A secondary visual check is the number

of bolt threads showing through the head of the nut – **a minimum of one and a half threads** is said to be '**in safety**.'

When checking throttle operation, listen to the clunk of the carburettor slides reaching their limits as you open and close the throttle. Make sure that both slides have clunked shut when leaving the throttle closed. I once saw a friend carried off helplessly by his runaway microlight after the carb slide got stuck: he had closed the throttle to start the engine, but the slide was still open and the engine fired on full power. Luckily he was unhurt – but the machine was wrecked.

My control stick check goes like this. Hold the rotor tie loosely so that the blades can move without swinging round and hitting anything: put the stick through a box sequence (forward, right, back, left and forward), then again the opposite way, watching the rotor head as you do so to ensure that stick and head movements are synchronised. Feel that the stick moves smoothly and without restriction. If it moves slightly before the head does, that's an indication that something is beginning to wear, and requires attention before it becomes excessive.

On the rotor head, I look for signs of wear in the teeter block by bracing a thumb under each side of the hub bar and pushing upwards against it. If the teeter bolt is snug in the block as it should be, then there won't be any movement. If the bolt hole is beginning to wear, you will be able to lift the block slightly up against the teeter bolt by pushing up the hub bar. Also check for sideways play between the teeter block and the pillow blocks by trying to slide the hub bar left and right along the teeter bolt. **If you aren't sure of the result, ask your instructor. Take no chances with the rotor head.**

Have a good look at the rotor blades. Check the skins for signs of delaminating, or loosened rivets. Tap along the underside near the leading edge of each blade with a coin and get used to the sound, so that you'll know the difference should a hollow ring occur one day – a sign of something coming undone. Again **if in doubt, ask.**

As with all Rotax wearing Crickets, Delta-J rests on her nose wheel (as opposed to the Bensens and VW Crickets which sit back on their tails) so to check for any play in the nose wheel assembly I have to tip her up to take the weight off it. I learnt this the hard way.

Someone who thought he was being helpful insisted on changing the main vertical bolt through the keel tube (which the whole front wheel unit pivots on) after we saw this component fail on another Cricket. To keep him happy I let him replace the bolt, checking it when he'd finished – but with the nose wheel on the ground. Of course I couldn't feel any play: the weight of the machine was pressing on it and keeping it solid. I'm ashamed to say that I flew for several months with a wobbly wheel, until it was discovered by my inspector during a permit renewal check. When he tipped the machine back onto the tail, the whole nose wheel assembly dangled from the keel tube by quarter of an inch slack! I was horrified that I could have missed such an appalling defect, and had been very lucky that it hadn't caused more serious damage. The new bolt fitted loosely was actually more dangerous than the original bolt. ***If it ain't broke don't fix.*** Be particular about who you let touch your machine, even if they claim to have years of experience: unless you've seen them in action or their competence is well known and accepted by other pilots, then politely keep them at bay – no matter how good their intentions.

Locking wire is something else that shouldn't be taken for granted, especially if you have used double lock like I do, with two lengths of wire twisted together instead of a single strand. Because this is more rigid the wire tends to hold its position even when broken, so although a break won't always be obvious to the eye, a Braille check will reveal it.

Once I've given Delta-J a good pre-flight before our first trip of the day, I'm then happy to precede any subsequent flights with a quick 'once over' – providing that nothing has happened which may warrant a closer inspection, such as a heavy

landing (it has been known!). Before every flight though, **always check the fuel level.**

When I'm ready to go, I make sure that my machine is parked out of range of anything that could be damaged by prop' wash, and clear of obstacles so the rotors can spin up safely. Remove any stones from the ground near the propeller to prevent them being sucked into the blades when the engine is running. Finally, I check myself before starting up. Any pencils, loose change, kitchen sink etc. are safely fastened inside my flight suit, and all external pockets empty or zipped up. If I'm carrying a map and radio then obviously they must be secured as well, and radio leads tucked away from the flight controls. ***If it can fall out - nail it down!***

The following pages may look like a lot of work, but a thorough first check of the day takes me an average of ten minutes, and the more you do it the easier it'll become and the better you will get to know your gyrocopter. Don't be tempted to rush the checks: ten minutes work on the ground equals safety (and peace of mind) in the air.

'THE OFFICE'

Delta-J from the pilot's seat. Throttle and spin up levers on the left: control stick centre: rudder pedals up front. Not visible are the choke and inflight trim controls down on the left, and parking brake lever under the seat frame.
The instrument panel consists of airspeed indicator (top left): turn & slip indicator (top centre): altimeter (top right): engine RPM (middle centre): engine coolant temperature (bottom centre), and a compass mounted above on the windscreen.