November Newsletter 2024

Welcome

Welcome to the November newsletter. In this month's newsletter…

We kick off with a concerning article from Kai Barnett about incorrect inspection, servicing, and parts used on a RotorSport gyro that has been brought to his attention. If you're a RotorSport owner, please read this article and check the inspection status of your hub bar and blade bolts.

One of our gyro instructors, Kai Maurer, has contributed this month with a case of rough running engines that has had heads scratching.

We have a story from one of our members, Ian Bristol, who tells us about a road trip and flying experience in America. If any of you have an interesting gyro related story you'd like to share then please get in touch with me.

Clive rose is back with his Rubber Side Down regular contribution with his own unique take on all things gyro from an instructors point of view. This month he draws our attention to the perils of excessive dissymmetry of lift.

There's a new Safety Sense guide from the CAA about mountain flying that we draw your attention to.

Did you know the BRA has a calendar with all our events and others that you might be interested in it? You can find it in the Events section of our website. Click on the Events Calendar button. Lawrence and Alan from the BRA committee have a handy hint how to add this to your Google or Outlook calendar.

And finally, we finish on a news of an event for next year to add to your calendar.

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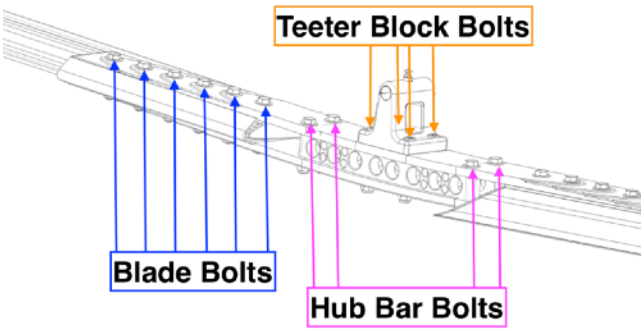
AAIB release report on the Cavalon accident in Scotland

On the fourth anniversary of the tragic Cavalon crash in Scotland, the AAIB have released their report. The BRA would like to acknowledge the release of this report and pass on our condolences to the friends and family of the pilot. Our thoughts are with them at this time. The BRA will release any safety advice for pilots that stems from the report in in a future newsletter.

Incorrect inspection, servicing, and parts on a RotorSport

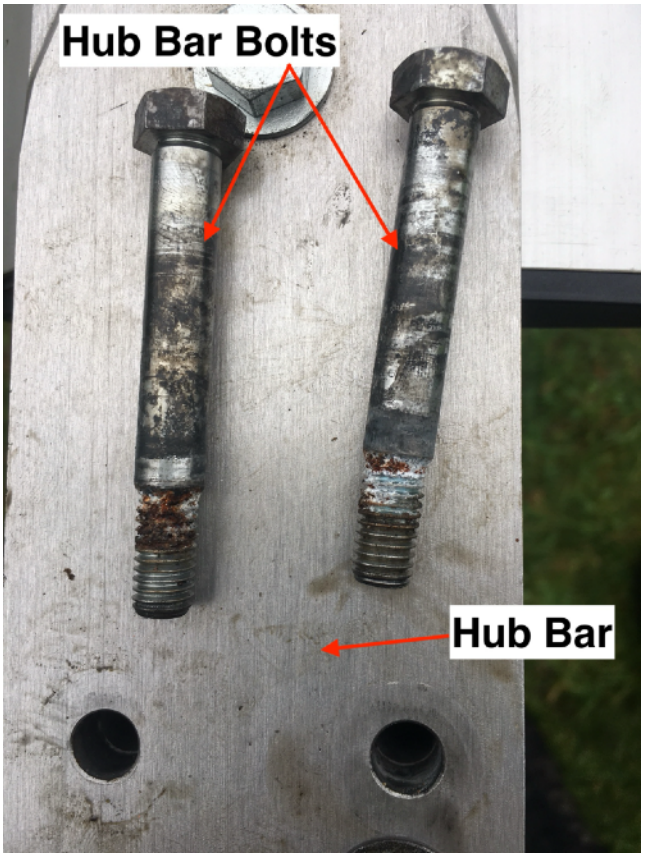
By Kai Barnett, BRA Chairman

At the end of January 2022 the CAA released MPD-2022-002 for the inspection of rotor blades and hub bar bolts on AutoGyro rotor systems. This MPD references SB-144 and SIL-028 Iss1 on how to carry this out. AutoGyro/ RotorSport had updated their service schedules earlier to include the new inspection timings.



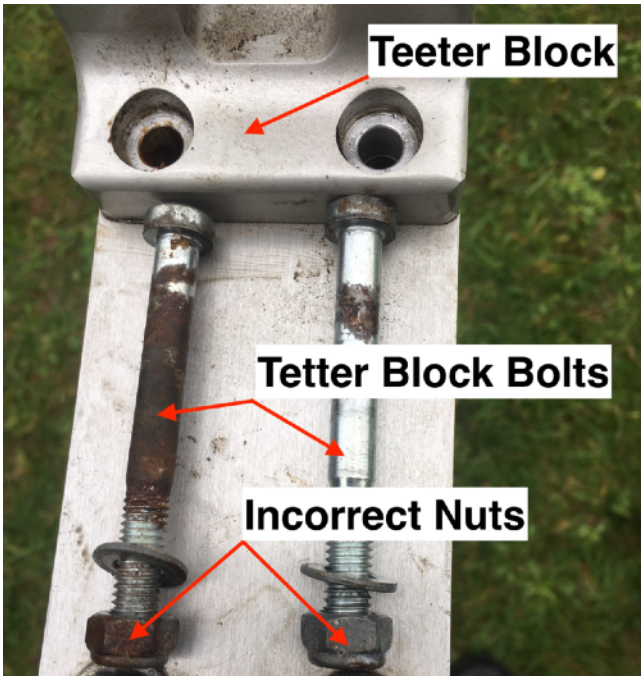
The different bolts this article refers to

It has been brought to my attention that there may be instances where there inspection may not have been carried out correctly. The photos below are from an aircraft which had the MPD inspection carried out and the paperwork sent to the CAA in February 2022. However it can be clearly seen that the hub bar bolts were not removed and inspected. The next inspection for this rotor system was as per the schedule, February 2024, but once again the hub bar bolts were not inspected. It was noted that there was corrosion found in in the blade bolts and as a result they were all changed.

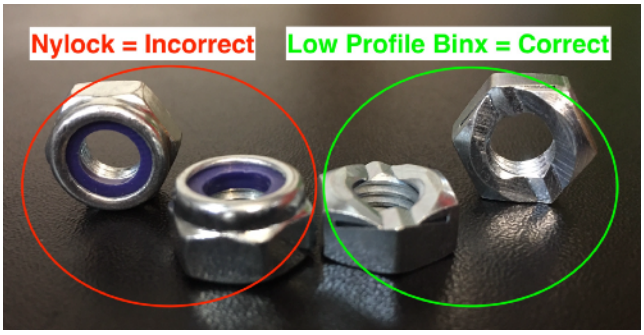


Hub bar bolts showing corrosion

Furthermore, the eagle eyed among you will have noticed that this is an RS 2 rotor. The images below show Nylock nuts on the teeter block bolts. These should be low profile Binx nuts as specified by the Aircraft Maintenance Manual. This suggests that the owner and inspector failed to notice at every annual since 2016 at least.



Teeter block bolts showing corrosion and incorrect nuts fitted. See below for correct nuts



Teeter block nuts must be Low Profile Binx nuts!

If you fly with AutoGyro rotors please double check the inspection status of your hub bar and blade bolts.

The ongoing Rotax Engine, Fuel or Parts conundrum

By Kai Maurer FI(G)/FE(G)

Several pilots have encountered rough running Rotax engines over the last few months and it has been difficult to ascertain what exactly caused those issues. Problems ranged from having a rough running engine at around 3000rpm, to not getting full power, where engine power would not exceed 4500rpm. All those affected aircraft operated 912ULS engines using MOGAS as approved by the manufacturer, and the fuel used was sourced from different reputable filling stations (different counties in some cases). Indeed, as it happens, there were three separate Gyroplanes and a Sting Aircraft that had similar problems earlier this year at around the same time. These issues would arise in the air suddenly (sometimes on climb-out / take-off), on the ground before take-off, or even after having started up the engine before moving off – there is no one-way or specific pattern leading to the issue arising.

Upon having the Aircraft thoroughly checked over by the engineering department, there was no definitive and clear answer as to why this had happened, but it did point toward a fuel problem. In fact, heads were scratched and opinions divided as to the possible causes, while online forums/discussions were debating the subject of vapour lock. However, online discussions are exactly just that, unsubstantiated views missing substantial guidance and reasoning from manufacturers. At present there is no advice from ROTAX, there is no guidance from the aircraft manufacturer, there is also no clear knowledge as to the consistency of the fuel or if the fuel content had changed (winter/summer) in any way and how. Everyone was stumped which led the engineering department having to check everything. Fuel was drained from the tanks and the bottom of the tank was found to have some residue, slime or other substance, presumably from the fuel content. However, even with this substance, it was questioned as to how this could affect the engine, as the fuel travelled through at least two separate fuel filters. The fuel pipes were flushed out, carburettors were cleaned, checked and re-balanced, fuel filters replaced, various other

parts were examined and changed to be safe, and it would all be put back together. Ultimately, we have learned that until the tanks were completely drained of fuel and the sediment flushed, cleaning the carbs and changing filters made little difference.

What remains very concerning is the fact that this stays as an unknown problem which does not have an exact procedure to fix it. Not knowing if the issue has been completely resolved and may potentially re-occur at some inopportune moment, clearly influences any pilot's confidence in the aircraft. Currently, it appears that the only thing that can be done are routine actions. We do not know if and how the fuel consistency of MOGAS has changed, nor do we know if this is affecting the hoses or other parts of the engine in the short, or long term. These issues are particularly pressing where instruction is taking place, or solo students are flying. To understand this conundrum better, it is hoped that this article will provide a platform for discussion so that these problems can be addressed by both the manufacturer of the aircraft and the engine, and perhaps also the regulator.

Road Trip USA 2024

By Ian Bristol

This is a story about a road trip my son and myself did this year. We started in Minneapolis, Minnesota, renting a car there as it was easier to return our rental car in the US. The trip took us up into Canada first to see three farmers who had emigrated from the UK over the years gone by, with a day on each farm, with tours and hospitality and reminisced over old times.

Once we had finished that planned part of the tour we crossed back into Montana from Saskatchewan. At the border post we were held for about twenty minutes as there was not another soul about apart from the border guard who spent more time chatting about various subjects and a good place to stay that night.

Our routine developed that each afternoon, when we were able get an internet signal, we then searched for the hotels in the next town looking at reviews and prices and would then pick a hotel and book online. One night we did just walk in and book at the desk but found that was dearer than online, so didn't do that again. Out of the motels and hotels stopped at, eighty percent were good, and the remainder were satisfactory. Our routine developed into having the included (usually) breakfast, which was fairly light, a snack mid-day, then if possible, out at night to a local restaurant or bar for supper, where we would meet a few locals to have chats with.

Our travels went from Canada and North Dakota, to South Dakota, where we arrived at Mount Rushmore. Now for the first flying bit; "Black Hills Helicopters, Inc" was visited and flight booked for the next day. In a Robinson R44 we got to see the Presidents heads, and if Trump gets in where he would try to have his carved (not), and the surrounding Black Hills with views as far as Rapid City.

From South Dakota we headed into Wyoming to Yellowstone and watched the Old Faithful Geyser blow.

It was going around the switchbacks in the mountains that we noticed the CV joint on our rental was stating to knock, so we formed a plan to head up to Bozeman in Montana which was the nearest depot of our car rental company, who then swapped our car for a people carrier which was not very nice. Luckily they said if we went back next day they would swap it for an SUV type, which is what we had originally. After spending two days around Livingston, Montana, we had a solid drive through Idaho, across Oregon, and then to California where we stayed near the Redwood forests, which my son described as 'humbling'.

The last part of our trip, which was nearing two weeks, ended up north of San Francisco in a town called Petaluma.

We phoned Cierva the day before to see if they would be willing to do a flight. My email I sent before we left had not been answered. They were more than helpful on the phone, explaining they are more into aircraft sales and training rather than the tourist treadmill. After I explained I had had training on Gyro's with Steve Boxal at Popham and Kevin Robinson in Portugal. This seemed to help pave the way; they were happy to ask their C.F.A. Kent Farney if he was willing to take us for a flight. We got two flight s booked for the next day at 1500.

My Son Decided that I should go first, so after that we had a pre-flight briefing and look around the Cavalon.

Take off was lovely and smooth as it's a typical US airfield with nice, wide, long asphalt runways. We headed south down the Petaluma River from 30ft to 150ft. After a short while we then climbed to go over the hills more directly to the Golden Gate Bridge. As we gained altitude we could see the bay was fogged in so after trying to fly under it to see the bridge we gave up and climbed away and proceeded up the Pacific Coast until we banked east and headed for Petaluma a/p. Kent let me fly most of the time except when I wanted to take photos, although I did let myself down when I got out of shape coming into land and Ken took over. It did surprise me how much of my training came back to me as it had been a few years since I last flew.

Luckily, by the time we changed pilots and David went to S.F. bay the fog had cleared; he managed to fly around Alcatraz, over Fisherman's Wharf, above the Golden Gate Bridge, and back to Petaluma a.p.

I can thoroughly recommend this as a trip of a lifetime. I have driven trucks from Texas to Montana so knew some of the areas we drove. For father and son trip it was great, though I would have liked to find more places flying Gyros, but they are not as common over there as I expected. The total mileage was between 3,500 to 4,000 miles over two weeks. Many thanks to Cierva Aviation who certainly made our trip.

Rubber side down

By Clive Rose, BRA Safety And Training

You line-up for take-off. Beautiful sunny day. 15 knot headwind straight down the runway. Fantastic! Stick fully forward as you start to pre-rotate but within a couple of seconds the stick is banging your left knee each time the blade comes round. What's that all about then? Don't all rush at once…

Bravo! to the old guy at the back. It's Excessive Dissymmetry of Lift. Lots of lift from the right (advancing) blade, very little from the left (retreating) blade. The advancing blade teeters up as it comes past you, the retreating blade teeters down. The stick bangs your left knee because the blades are hitting their teeter stops with each rotation, retreating from the wind.

It used to bug me, until Phil Harwood suggested I try stick fully forward AND to the right during this initial phase of pre-rotation. As each blade passes over the tail and advances into wind, it now does so with a reduced angle of attack. The blades are generating similar levels of lift and teetering without touching the stops, just as they do in-flight. Less Dissymmetry, less teetering, no stick shaking as rotor rpm builds. If it happens now, it's a gentle reminder I have the stick in the wrong position.

By 100rrpm you can centre the stick because, unless you're taking off in a gale (don't!), the blades are now "teetering to equality" well within the limits of the stops.

If you pause on the runway for any reason (ATC instruction, another aircraft, distraction, you need the loo!) be sure to complete your pre-rotation before you continue to take off.

When you're ready:

1. Check and verify rotor speed is correct
2. Release pre-rotator
3. Stick all the way back
4. Release hand brake
5. Add power and check engine rpm/MAP is correct

If you find yourself accelerating down the runway with the stick forward, reduce power to idle, slow the aircraft, vacate the runway and grab a cuppa. Many a gyro has been wrecked by bringing the stick back 100m down the runway as you accelerate like a rocket with the stick forward. Rotor rpm has decayed and you do not want to introduce you a higher wind speed to your slowing blades. The v-squared

part of the lift equation is braced to open the door to his old mate Dissymmetry. The advancing blade may not be ready to launch you into the air, but it's certainly ready to smack its oppo – the retreating blade – first, against its teeter stop; and then into the prop and the empennage. Best avoided.

Dissymmetry of Lift has even more serious consequences in-flight at high speed where this phenomenon used to be called Retreating Blade Stall. The authorized VNE for UK Gyros is mandated not just to protect us from any pitch divergence, but also from potentially fatal high-speed Dissymmetry. It's there, waiting to bite you. Stay well away!

Keep it safe. And always keep it Rubber Side Down.

New CAA Safety Sense publication

The CAA have published a new safety sense guide on mountain flying. You can click on the image below to download it.

If you're considering flying in the mountains, then we'd strongly suggest you get a lesson from an instructor who regularly flies in these areas, such a Chris Jones in Kirkbride, or the guys at Highland Aviation in Inverness.

Adding the BRA calendar events into your own Google or Outlook calendar

By Lawrence Spiller, BRA Membership Secretary, And Allan Mackey, BRA Committee Member

For those of you with a Google or Outlook calendar, you can link to the BRA calendar so that events in it will also populate into your own calendar.

Google:

- Copy this URL: https://export.calendar.online/ics/3368771/7e691da21ebcd00a19e8/sports.ics?past_months=3&future_months=36
- In Google Calendar, ensure the left pane is visible
- Click the + symbol at the end of "Other calendars",
- Select "From URL" and paste in the above URL and click the highlighted button "Add calendar"

Outlook:

- Copy this URL: https://export.calendar.online/ics/3368771/7e691da21ebcd00a19e8/sports.ics?past_months=3&future_months=36
- Right Click "Other Calendars"
- Select Add, From Internet and paste in the above link.

New event added at Deenethorpe

By Steve Paffett, BRA Events Coordinator

I have paid a deposit for use of Deenethorpe for a fly-in and camp on the weekend of 5th -

6th of April. The BRA sponsored event for members is Free. As many circuits as you like and camping are all free. Mogas is available in 20ltr cans at cost. We will also have exclusive use of the Marquee. Great venue and plenty of time to get it in your diary.

Upcoming events:

You can find the BRA calendar which details all our events, and many others you might be interested on our website. You can find in in the Events section of our website. Click on the Events Calendar button.

If you have any events you'd like added to our calendar, then please feel free to send an email to: events@britishrotorcraftassociation.co.uk

Keep checking back as we'll soon be adding new official BRA events for 2025!

Deenethorpe Fly-In And Camp
April 5 - 6

Fly-in and camp at this gyro friendly airfield with a huge runway. Toilets and cafe on site. The BRA sponsored event for members is Free. As many circuits as you like and camping are all free. Mogas is available in 20ltr cans at cost. We will also have exclusive use of the Marquee. Great venue and plenty of time to get it in your diary.

For Sale:

Got a gyro to sell? Or maybe a gyro related item? You can contact the newsletter editor, and they will publish your advert for one issue in the BRA newsletter: ed@britishrotorcraftassociation.co.uk