The Leading Edge

Monthly Newsletter of the Kitchener-Waterloo RAA

- December 2022 -

While we were enjoying the KWRAA Christmas Party, Flair Airlines and the staff at CYKF were dealing with an aircraft that had overrun the end of runway 26. Earlier that day, Flair Airlines Boeing 737-86J C-FFLC had departed YVR on Thursday evening and had an uneventful flight until it overran the runway and got stuck in soft ground past the runway end. There were no reports of injuries among the 134 passengers and 6 crew members. For those of us who have experienced an accident or incident that damaged our aircraft over the last few years, it is at least a small consolation knowing that it can happen even to the professional pilots.

President's Message

As we say goodbye to another flying season, some of us will celebrate another year of great flying, while others face challenges in getting our aircraft back in the air before the 2023 flying season.

Every time one of our members has an accident, we all feel the pain. The camaraderie shared in our small but dedicated group of pilots and builders, results in an empathetic response whenever an unfortunate event occurs to one of the others in the group. We all recognize the enormous amount of work required to restore an aircraft after any accident, large or small, and fear for the ability of the member involved to shake it off and continue flying. Having been there myself, I know it is not easy and certainly not enviable.

It has been said that if you fly long enough, everyone will experience an accident or incident with their aircraft. We all hope that if and when it happens to us, that it doesn't end our flying… or worse. That said, being a part of a close-knit group like KWRAA makes it easier when it does happen. The understanding and encouragement we receive from other members makes a huge difference in personal recovery and rebuilding of our aircraft. Continue to offer words of encouragement and support to help keep KWRAA great!

This month's newsletter has some pictures of the Christmas Party and an update on my amphibious gear position indicator system.

2023 is going to be a great year for KWRAA!

- Dan

KWRAA 2022 Christmas Party

The KWRAA Christmas Party was held on November 25, 2022 in the Runways Café at CYKF. 25 people attended this year.

Prior to the meal, guests visited and mingled.

Mike and Tom surprised Mac with a little belly dance to lighten the mood.

David Wood received the Holy Golly Award for ongoing support of chapter activities.

Tom Shupe received the Larry Edwards Award as a friend and ongoing supporter of KWRAA.

Mac McCulloch received the new 'Joie de Vivre' Award in recognition of his ongoing efforts to ensure everyone else enjoys the fly-ins and parties he arranges on behalf of KWRAA.

After awarding the Gunter Malich memorial "Joie de Vivre" award to Mac, I performed the classic Gunter move.

Lee Coulman received the new 'President's Excellence Award' to recognize the work he has done to support the mission, vision and values of KWRAA.

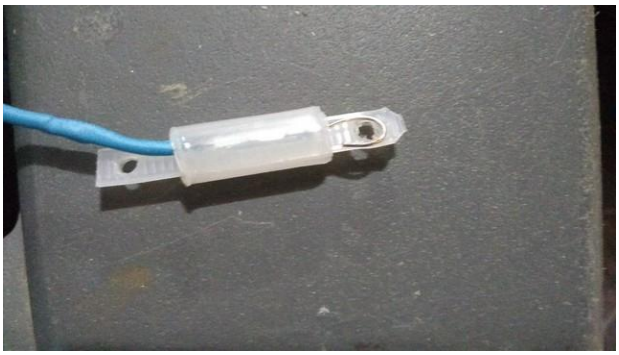
The annual gift draw followed the dinner and awards ceremony.

Amphib Float Gear Position Indicator System

(Update)

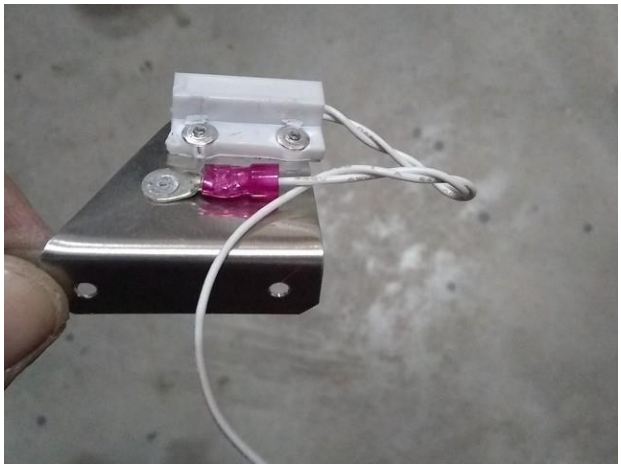
In February of 2022, I wrote an article in 'The Leading Edge' newsletter describing a float gear position indicator system I was working on, but later found a number of small issues with the original design. This update shows the changes I made and how I eventually installed the components on the floats. I will also give you my impression of how well it works since I have several months of experience with it now.

First, I have to admit that I spent far too much time trying to create a very light magnetic reed switch assembly when I bought the original ones. It created several issues including, fragility, mount-ability, and reliability. Here is a photo of my original design.



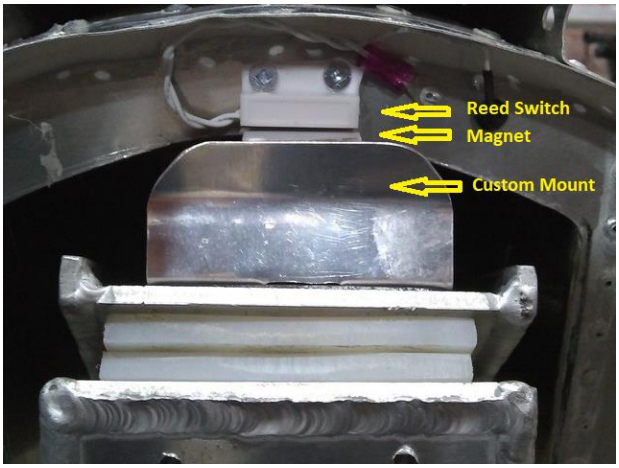
After several attempts to get these to work reliably, I decided to look for a ready-made solution. Only marginally heavier, were the magnetic reed switches used for door and window security switches. These were available in 2 sizes so after experiencing the fragility of smaller components, I ordered some of the larger ones.

The security reed switches come in a set of an enclosed magnet and an enclosed magnetically operated switch. I ordered them from Amazon in small batches of 5 sets of each. I needed 8 sets, so this gave me a couple of spares. The switches come with double sided tape, which may work well in security systems where the mounting is done in dry locations inside a window or door, but certainly not desirable for my intended use as gear position indicators on amphibious aircraft floats.



Mounting was done using small brackets and rivets to secure the reed switch to the bracket, the ground wire to the bracket or float, and the bracket to the floats. When possible, I mounted the reed switch directly to the float to increase reliability. I could not get my riveter into a couple of places so I temporarily used screws to hold the switches in place. This allowed me to move forward with testing. I will figure out a way to get them riveted or replace the screws with small stainless steel bolts and nuts during final assembly.

The magnet half of the assembly was mounted on the float gear using a small bracket that holds it in position near the reed switch when the gear is fully retracted. These had to be custom made to get the bracket to line up properly on each float. I also made small brackets to hold the switches and magnets into correct position on the rear wheel assemblies.



The completed 'gear up' assembly is shown above. When the reed switch is activated by the close proximity of the magnet, the indicator light for that wheel lights up blue to indicate full up position. (Blue sky or blue water)

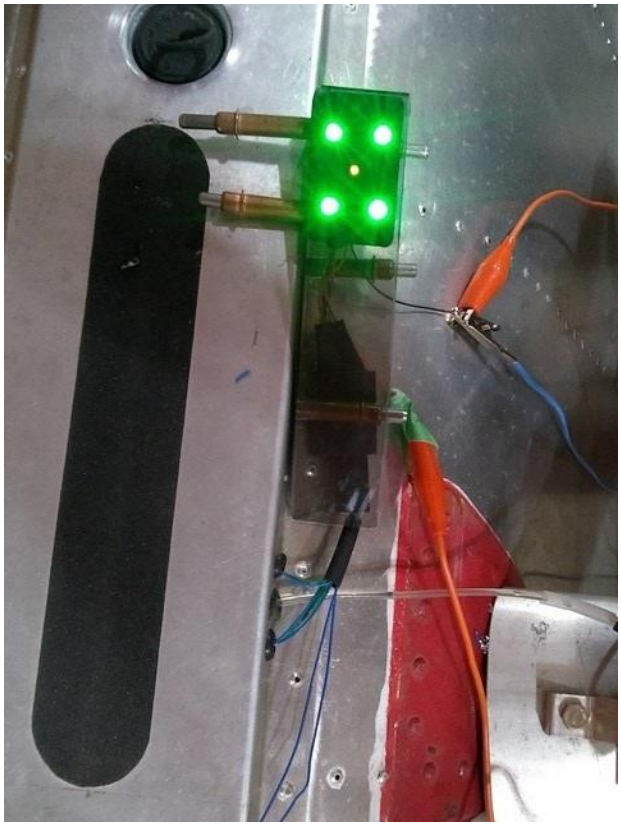
When the gear begins to lower, the light goes out, indicating that it is neither full up nor full down. Once it reaches the full down position, a second set of magnet and reed switches activates lighting up a green LED indicator, showing that the wheel has reached the full down position. Once all 4 have reached their respective full down positions, all 4 green LEDs are lighted up indicating it is safe to land on the ground.

Most of the photos in this article were taken while I was mounting and testing the system. As such, there are things like clip leads and other temporary measures shown. I found these quite helpful to use as I mounted and tested each set of reed switches and magnets as well as when I completed the final wiring of the reed switches since it allowed me to check each one before I soldered each wire.

Since I was doing all of the wiring before the floats were even mounted on the aircraft, I was able to use a standard 9 volt battery to check out the indicator lights as I made each connection without having to supply 12 volts from the aircraft.

If you remember from my original article, my main motivation for mounting the indicator lights on the floats themselves was to minimize the complexity when doing the changeover from wheels to floats in the spring and back to wheels in the fall. I found the position on the left float that was easiest to see and clear of where I would be stepping on the floats.

By mounting everything on the floats, there is only one power wire that needs to be connected to the aircraft. The ground connection is supplied through the aircraft fuselage, float mounting struts and bolts. Wiring for each of the reed switches was done with colour-coded tefzel wires; blue wires for up position and green wires for down. Wires were run through the walkway of the floats using rubber grommets to prevent chaffing and shorting of the wires to the aluminum floats. I then added a Lexan shield to reduce water spray and rain infiltration to the electronics.



Once the wiring was completed and tested to ensure proper operation as the wheels were cycled up and down, the clecoes were replaced with rivets to fasten the indicator assembly to the floats.

After a season of operation now, I can report that I am very pleased with the way the system works. The lights operate as soon as the avionics switch is turned on in the cockpit. The LEDs are quite bright and visible in all lighting conditions. I give it two thumbs up!

Upcoming Events in 2023: (Highlighted lines are KWRAA Events*)

January 12	-	January Meeting at 7:30 in the Cadet building at CYKF
February 9	-	February Meeting at 7:30 in the Cadet building at CYKF
March 9	-	March Meeting at 7:30 in the Cadet building at CYKF
Mar 28–Apr 2	-	Sun-n-Fun 2023
April 13	-	April Meeting at 7:30 in the Cadet building at CYKF
May 11	-	May Meeting at 7:30 in the Cadet building at CYKF
June	-	KWRAA Fly-Ins - TBD
July	-	KWRAA Fly-Ins - TBD
July 24-July 30	-	Oshkosh Air Venture 2023
August	-	KWRAA Fly-Ins - TBD
August 18-20	-	UPAC Convention 2023
September 14	-	September Meeting at 7:30 in the Cadet building at CYKF
October 12	-	October Meeting at 7:30 in the Cadet building at CYKF
November 9	-	November Meeting at 7:30 in the Cadet building at CYKF
November 24	-	KWRAA Christmas Party – Details to follow later in 2023

* KWRAA events are fly-in and/or drive-in.

KWRAA Executive Contact Information:
Due to an increase in spam emails, please reach out to me directly for the latest contact information for the KWRAA Executive members. Thank you, Dan Oldridge (519) 651-0651.