

- April 2015 -



Our April meeting of KWRAA saw a couple of new members and a couple of visitors. Richard Carothers, President of COPA 26 – Breslau Flyers attended the meeting and extended an offer to our members. See below for details.

President's Message

I wish to thank Lee Coulman again for his presentation to our chapter at the April meeting. Lee filled us in on some interesting issues currently facing pilots and aircraft owners regarding operations and maintenance of avionics and radio systems.

For any of us waiting to make a decision on transponders, it seems that "wait and see" is the only position one can take if you believe the cost is too high to jump in right now. It appears there are some manufacturers that are beginning to combine more technologies into single packages to add more value to your avionics purchase and prices may come down.

Although the mandatory requirement for the use of ADS-B in controlled airspace is driving the technology forward in the USA, Canada is moving toward a satellite-based system called AIREON, which uses similar technology in a different way. It will be interesting to see what this will mean to all of us flying in Canada and what TC will eventually require and legislate here.

Thank you also to Richard Carothers of COPA 26, who joined us and offered to share a meeting with us in May. COPA will be doing a presentation on cross-border flights, which is a topic we have been considering. Hopefully, we will see a good turnout of RAA members to take advantage of this generous offer from Richard and COPA 26. The meeting will be on **Tuesday, May 12 at 7:00** in lieu of our regular meeting the previous night.

Also, thanks to Gary Walsh for this month's article in the newsletter. You will likely see it in a couple of months in the Recreational Flyer.

On a personal note, C-FDEP is back in the air for another season of flying and has 5 more hours on the Hobbs meter this week. I look forward to seeing everyone at the summer fly-ins and joining our friends at COPA on a couple of their fly-outs too.

2015 is going to be a great year for KWRAA!

- Dan

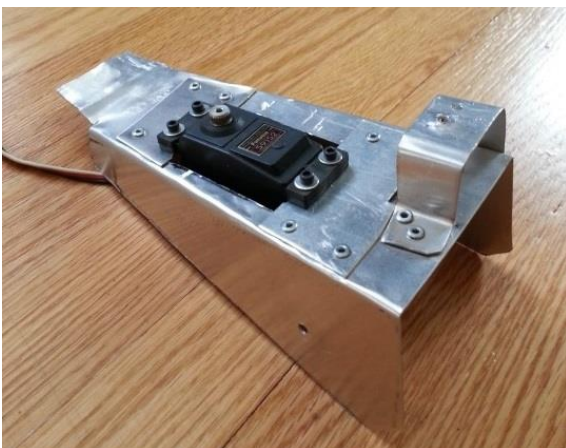
DIY Elevator Trim Control – by Gary Walsh

I fly a Kitfox IV on amphibious floats. The airplane came with a manual elevator trim system. This consisted of a lever in the cockpit that would control the trim tab using a Bowden cable, which is basically a piano wire that runs inside of a flexible metal casing from the lever to a horn on the trim tab. Although the trim sort of worked when I first got the plane, it became a constant effort to try and keep it from seizing up. For the last several years it has been seized and I have used the flaperons to trim the airplane for pitch in flight.

One of my winter projects this year was to fix the trim once and for all. I tried all sorts of cable combinations but the 17 foot cable run and tight turns necessary to reach the elevator meant I could never get a cable that operated freely. I finally looked towards an electric trim assembly. The problem was the cost of the off-the-shelf units. North of \$400 is not uncommon, and these units mount directly on the elevator, which on a seaplane is more often wet than dry.

For years I have built and flown RC models, and I knew I could use a 1/4 scale RC model servo to do the job. I wanted to use the existing cable routing that was inside of the fabric of the elevator, with the servo mounted inside of the fuselage to keep it dry and keep drag to a minimum.

I built a housing out of aluminum to mount the servo. This was secured using the existing tabs and screws used to hold on the fairing that closes the gap between the elevator and the fuselage.



Even though the cable run from the servo to the elevator trim was only a foot and a half long, the “S” turn meant a Bowden cable had a lot of friction. I ended up buying a plastic pushrod used for RC planes. It could handle the bends and still provide smooth operation, with the added benefit of being plastic so it would never corrode. Music wire screws into the ends of the plastic pushrod and hardware was purchased to attach to the control arm on the servo. The key to this was to anchor the two ends of the cable so they would not move. I used structural epoxy to attach a short piece of steel tube to the plastic tube and clamps that would grip the steel tube and hold it secure.

To control the servo I bought a small servo tester. This is basically a potentiometer that would control the servo from the cockpit. These run on 4.5 volts so I bought a voltage regulator, again something designed for RC models and available off the shelf at the hobby shop, that would step down the 12 volt supply for the plane down to 4.5 volts.



I tried several servos. The first was a large HITEC designed for sail boats. It had a ton of torque, but it turned out to have 140 degrees of rotation, which made the adjustment too sensitive. I went to a more traditional 1/4 scale HITEC servo with only 60 degrees of travel, but I still found it quite sensitive and difficult to adjust.

The Leading Edge

I managed to find a HITECH HS-5735MG servo that was programmable, so you could set the speed, center and end points for the servo using a small external box. These were popular before the transmitters came out with these capabilities. Once set the servo could be hooked up to the servo tester box and the settings would remain. It worked awesome. I found tweaking the servo took a lot of time to get the throws right, and the programmable features were very handy.



The last touch was a kill switch that could be used to cut the power to the unit. I have had RC planes crash when the servo failed and buried itself at one end of the travel. These 1/4 scale servos are strong, and I did not want to get into a situation where the servo tab could fail and deflect the trim tab to the point where it could overpower the elevator. Killing the power means the airflow could return the trim tab to a near neutral position.

The servo tester costs around \$35 at the local hobby shop and is mounted in the cockpit. You can get them for as little as \$5 but I wanted a solid case and no fancy features so I settled with a more expensive one. The servo

was bought used for \$20. The plastic pushrod was about \$7 and the voltage regulator something like \$15. Maybe another \$20 for odds and ends like wire, push rod ends and epoxy. So, it ended up costing less than \$100 for the whole job.



This is something I have posted for general interest. I make no guarantees that it will work for you. There are safety implications and unless you have experience with RC models and know what you are doing I would recommend that you go with a simple cable assembly.

Gary Walsh

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Check out these YouTube clips if you want to see the assembly in action.

[Part 1 https://youtu.be/EMludjUOLdQ](https://youtu.be/EMludjUOLdQ)

[Part 2 https://www.youtube.com/watch?v=WjpGHGtFqcl](https://www.youtube.com/watch?v=WjpGHGtFqcl)

An Important Note Regarding the April Meeting...

As a follow up to Lee's excellent presentation at the April meeting, I have included an attachment in the same email this is sent with. It contains the remainder of the information from the NavCan meeting that he attended in Toronto with Gary Wolf last month. There was far too much information to try to squeeze into this little newsletter, so be sure to take time to open and read it, especially if you missed the last meeting. The text in red was in last month's Leading Edge newsletter, the black text was not.

What's happening in May?

Join us at **7:00 on May 12, 2015** at the Waterloo Wellington Flight Centre as we join COPA Flight 26 – Breslau Flyers for an interesting presentation on cross-border flights.

We hope this will be the first of several shared experiences with our COPA counterparts.

Put it in your calendar now... and be there!

Upcoming Events in 2015: (Highlighted lines are KWRAA Events*)

May 12	-	May Meeting at 7:00 in the Waterloo Wellington Flight Centre (upstairs)
June 6	-	London/St.Thomas RAA Fly-in Warren Field, Mt. Brydges, 10am to 3pm
June 20	-	KWRAA Fly-In at Cam Woods in West Montrose
July 18	-	KWRAA Fly-In at MacPat Field in Arthur
July 20-26	-	Air Venture Oshkosh in Wisconsin
August 1	-	KWRAA Fly-In at CPR3 (New location being considered - TBA)
August 14-16	-	UPAC Convention – Lubitz Field, Plattsville ON
Aug 22	-	KWRAA Fly-In at Roth Field (Between Pike lake and Mount Forest)
August 21 to Sept 7	-	Canadian International Air Show – CNE Grounds
September 14	-	September Meeting at 7:30 in the Cadet building at CYKF
October 19	-	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 27ish	-	KWRAA Christmas Party in lieu of a December meeting

* KWRAA events are fly-in and/or drive-in (Please advise the host in advance if you plan to attend whenever possible.)

Please Note: If you know of other fly-ins or planned fly-outs you would like to see listed here for the rest of the chapter to know about, please forward them for inclusion in the next newsletter.

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Classifieds:

Mustang II plans and parts for sale... partially completed. \$6000 OBO.

I also have a number of parts I am willing to sell separately including some aluminum sheet metal in various thicknesses, rudder pedals and a number of other small parts. Please contact me for more information. (519) 745-6463

John Valenta, 422 Lancaster St. W. Apt. 10, Kitchener ON

Editor's Note: John was unable to provide the detailed list at time of publishing this newsletter

The Leading Edge

As mentioned at the April meeting, one of our own members has offered the chapter a project if we are interested in building an airplane as a group. The project is a partially completed Zenith CH-601 that has the following:

- Rudder is done
- Stabilizer started
- Tricycle gear
- Long range tanks
- Converted Corvair Engine

and requires the following:

- Spar update components required
- Instruments
- Avionics
- Propeller
- Possibly carburetor required as well.

This is not a fast build kit with predrilled skins, so it will require a lot of positioning and drilling of components prior to assembly. It will take a long time to build, so if we accept this generous offer, we will require a place to build it where members can have access, where adequate tools and resources are available or close by, and in a fairly central location.

Also consider the long term implications to accepting this offer as a project for the chapter...

Some of the Pros:

- More member involvement, especially by those with a project currently
- Learning opportunities as builders/members work together
- Having a club-owned aircraft when completed
- Opportunity for those without a personal aircraft or unserviceable craft to be able to fly
- Garner interest from outside the chapter (new members) and help to further our vision

Some of the Cons:

- We will need a place to house the airplane during and after the build
- We will need insurance on it (at least liability)
- We will need a means of controlling, monitoring, and regulating its use
- We will need to put rules in place to prevent misuse or overuse by a single member

There are likely dozens of other pro and cons, but this is just food for thought.

We need your input on the issue! (Contact an Executive member to discuss your ideas)

Reminder: If you haven't paid your 2015 KW-RAA Chapter dues, pay Mike at the May meeting!

Also: We are looking for stories and information for the newsletter to keep our members informed of what's going on elsewhere inside and outside the local chapter. Please consider sending me something to share with the members. Thanks, Dan.

Our next meeting is at 7:00 on Tuesday, May 12, 2015 in the Waterloo Wellington Flight Centre.

Please plan on being there... and bring a friend who has an interest in aviation.