



KNOX COUNTY RADIO CONTROL

June 2019 Newsletter

Knoxville TN AMA #594

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KCRC EXECUTIVE COMMITTEE

MEETING MINUTES

May 7, 2019

The KCRC Executive Committee met at 6:30 p.m. Tuesday May 7, 2019 at Cheddars Restaurant on Kingston Pike in Knoxville. Ed Dumas, Paul Funk, Michael Catlin, Randy Philipps, John Basalone, Rick Thompson, Denny Evans, and Roger Kroodsma were present. President Ed Dumas began the discussion, all of which was related to the new RC vehicle track at the KCRC field.

Ed presented an 8.5 x 11 draft flier that he prepared showing an aerial photo of the new track and providing general information about KCRC, directions to the field, and about the RC options of drones, helicopters, vehicles, and airplanes. This flier would be distributed by HobbyTown.

2019 Elected Officers

Pres.....Ed Dumas.....ed@eddumas.com

Vpres.....Paul Funk.....paulfunk24@gmail.com

Secretary.....Roger Kroodsma.....rogkroods@att.net

TreasurerMike Catlin.....catlimi2000@gmail.com

Executive Board

Randy Philipps.....randy@accessolutionsinc.com

John Basalone.....jrbfarm@yahoo.com

Safety Officer

Denny Evansevans9633@bellsouth.net

According to Michael, as he was talking with a county representative when paying a bill, he was told that KCRC is the only Knox County property where people are allowed to operate RC airplanes, drones, and vehicles. It was proposed that we suggest to the county that signs be posted directing people to KCRC, and also that we keep the county informed about our plans and activities. Ed will send Michael the email addresses of Knox County representatives.

Michael stated that KCRC now has 86 members including members emeritus and 64 paid members. It was decided to send an email to current and former (unpaid) members showing emeritus members and paid members. The club's Facebook page has additional members, whose requests for Facebook membership were reviewed by Michael and approved when appropriate.

Ed began a discussion of insurance options. AMA insurance provides coverage for any RC activity. This coverage is secondary, with each member's homeowners insurance being the primary coverage. AMA coverage is up to \$2 million for members operating at AMA sanctioned sites and up to \$1 million at non-sanctioned sites. There was concern that requiring AMA membership for people interested in operating only RC vehicles might discourage them from joining KCRC and that we should explore less expensive options. However, at least until anything better is found, new members will be required to join AMA. It was suggested that a waiver be put into the application forms (for both airplanes and cars/trucks) specifying that neither KCRC nor HobbyTown will be liable for any accidents.

Rick suggested that Michael check whether any paid club members have not renewed their AMA membership. Ed will forward AMA emails to Michael.

Two new possible logos for KCRC were drafted by Randy to show the addition of the RC vehicle option. One was selected and approved by voice vote.

Rules and guidelines for operating RC vehicles on the new track were discussed. A placard may be prepared for posting at the track. Parking to accommodate the track, the drone course, and the flight line was discussed.

The possibility of having HobbyTown distribute a coupon for a free introductory flight at KCRC was mentioned. AMA rules would apply.

Discussions concluded shortly after 9:30.

Respectfully submitted, Roger Kroodsma, KCRC Secretary....--Roger

Around the Field

Many of you have noticed the R/C car track on the South West corner of the site. John Basalone built the drivers stand and crews over several Saturdays laid out the track. The perimeter of the track is 4 inch drainage tubing staked into the ground. There are 2 patterns: One is simply a large rectangle with a jump in the driver's straightaway. The other is a winding course on the interior with several jumps. The track is intended to be a grass track for general unofficial racing and simply practice. For those of you who have a car (or are thinking about getting a car) check it out.



The other thing you might have noticed is that the helipad has been taken up. This is because the pad components blocked the sunlight, killed the grass beneath and the heavy winter rains caused the pad supports to wash out. The pad will be repaired shortly. Contact John Basalone if you wish to volunteer

Just when you thought the carpenter bees had gotten bad along came mosquitoes. It is suggested that you apply a liberal application of repellent. Maybe we should consider a few strategically placed "bat boxes" to keep the nasty things at bay.

We have received very poor turnout for the by-law vote. Remember, the change to the by-laws requires a majority vote of the voting members so the direction of the club can be determined by only a few members. If you haven't voted please cast your vote by email (catlimi2000@gmail.com) or by mail to KCRC c/o Michael Catlin, 6812 Adrian Rd. Knoxville, Tn 37918.

June Article

With all the talk about Boeing's 737 problems I thought I would write something up about stabilators. Conventional aircraft have a smaller wing in the back called a stabilizer and by interacting with the downward pitching moment of the main wing and aircraft center of gravity it keeps the aircraft flying level. I realize this is pretty elementary to us but we rarely see a model equipped with a stabilator.

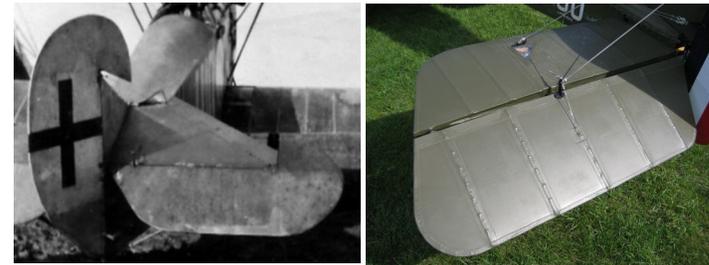
What is a stabilator? It is very much like a stabilizer and serves the same function but in its purest form it does not have an elevator or any movable portion. It controls the aircraft pitch by pivoting around its neutral axis, or the location where it does not want to pitch up or down. By removing the need for a hinge gap and hinges it reduces drag.

The Wright Flier had a stabilator. That bi-plane thing in front of the pilot controlled the aircraft in pitch and was all moving but as soon as Glenn Curtis got into the act and other airplane designers tried to break the Wright's patents the stabilizing control surface moved to the back and began sporting an elevator.



The Eggapolusa event was well attended by club members and provided an interesting showing of our hobby to the hundreds that attended. I noticed an interesting 'social phenomenon'. We got far, far more boys looking at our airplanes than girls and these were not children old enough to be 'socially programmed', but children 4 to 8 years old. Funny how that works...

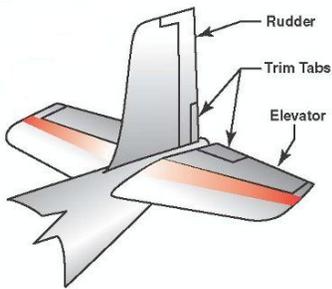
The KCRC Facebook group got a large influx of members in the past month primarily from the recommendation of several car groups. We currently have 164 members which is double the club's current membership! And the not so funny part is, as of last count, only 20 KCRC members are in the group.



It works for non horizontal tail surfaces too.

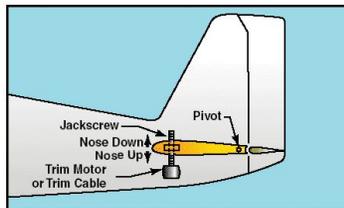
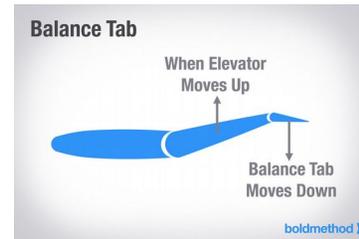


An elevator naturally wants to trail or align itself with the stabilizer and the force to deflect this elevator gives the pilot some “feel” as to how much back pressure or forward pressure is being applied. In fact there are specifications as to the amount of pounds to achieve a certain amount of “G’s” the pilot is feeling. Some fighters required considerable strength to achieve maximum turning “G’s”. But, this force is related to the balance of the aircraft and if the pilot needs to push or pull the entire flight it would be very tiring. So enter the trim tab.

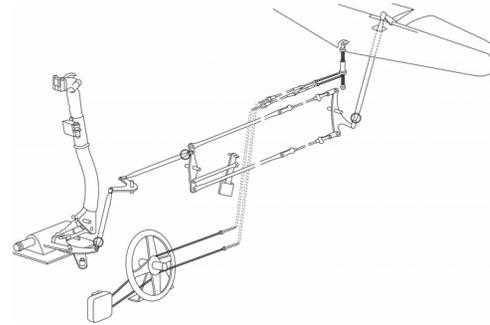


A trim tab is a smaller version of the elevator mounted on the aft edge of the elevator and when deflected pushes the elevator out of its trailing position and removes the force that the pilot has to apply to cruise straight and level.

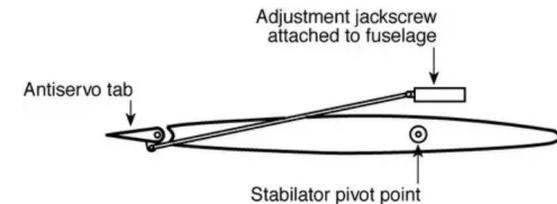
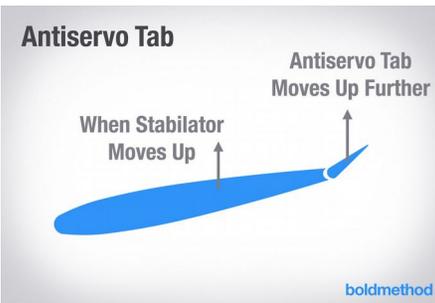
Or in the case of some aircraft the whole stabilizer is moved and this is generally done by the use of a jack screw due to the force required to hold it in position.



The next images show the system used in the Bf-109 to move the stabilizer. Due to the amount of force to actuate the system the trim wheels are large and are positioned to allow the pilot to apply a large amount of turning force.



Now let's get back to stabilators. If we mount the horizontal control surface where there is no force required to deflect it (the neutral axis) then the pilot will need to exert very little force. But what about generating the “feel” needed to control the aircraft? Enter the anti-servo tab.



antiservo tab

The anti-servo tab is configured to deflect in the same direction as the stabilator movement. The more the stabilator deflects the more force generated opposing that deflection. The mechanism can also provide trim force. Pretty much the perfect system. Except... The control surface needs to deflect a lot to generate large aircraft pitching motion and like any wing it will stall if deflected too far.

Imagine having the stabilator stall while trying to land. From nose up to nose down in quick order. While there are some general aviation aircraft that do have stabilators most of these have a limited range of motion and CG restrictions. To increase the allowed CG travel some even have high lift devices incorporated.

One of the uses for stabilators is the need to control an aircraft at supersonic speed. Regular hinged control surfaces 'lock up' at transsonic and supersonic speeds due to the formation of shock waves. An all moving stabilator works at all speeds. The control surface visible in X-1 pictures is actually an anti-servo tab.



The Bell X-1 achieved supersonic flight on Oct 14, 1947 but how was a guarded secret. The secret was leaked to Aviation Week and the story was published Dec. 22, 1947

Now back to models.

Why put a stabilator on a model aircraft? There is no good reason except for a scale model or a high performance sailplane that needs absolute minimum drag. Sailplanes like this usually have a long control horn to act as a throw reducer, reducing the 60 degree servo throw to 10 degrees (or less). This control horn is often buried in the vertical tail or in a deep fuselage. Control 'slop' is another reason a stabilator is rarely used. Having the control surface jump around due to slop in the linkage makes for poor control. To counter this a large control horn is necessary as are used in gliders.

Since there is no need to provide 'feel' to the RC pilot (at least not yet) an anti-servo tab is unnecessary. If modeling an aircraft that has stabilators and need absolute accuracy a great deal of precision will need to be achieved to prevent 'slop' the control system that could lead to flutter and until models begin to go transonic there will be no need to design all flying control surfaces to counter the effect of shockwaves.



If one is willing to experiment then I have an idea, mount a course jack screw in place of a servo horn and position a jack nut so that it moves the control surface the amount required.

But, I'll leave that as an exercise for the student.

Up Coming Events

CUB FUN FLY June 1st 9:00 am

KCRC General Meeting June 11, 7:00 PM at the field

Don't forget to vote for the club by-law changes before the general meeting.