



Air Currents



The Official Newsletter of Diablo Valley Radio Controllers

Werner Hoch's plane, DVRC 2017 Open House





President's Corner

It is now springtime and the weather is starting to warm up. Hopefully, conditions will continue to be favorable for flying.

By now, many of us have received their second shot of the Covid-19 vaccine and we look forward to getting back to some level of normality. I doubt that we will be removing the restriction of using face masks at the flying field any time soon, but wearing them has served us well and kept the pandemic infection away for most of us. We'll keep you posted if there are changes to any of the club pandemic restrictions.

I like to add informational articles within this column and this article, which is from RCflightschool.com, relates to maximizing the resolution of control surfaces. Many of you already know this, but it is always worth a refresher, even for those who have been in the sport of RC flying for many years.

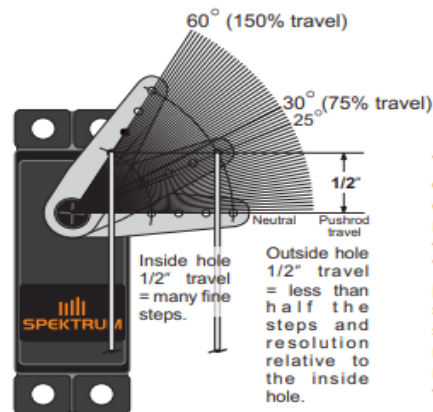


Maximum Control Surface Resolution for Precision Flying

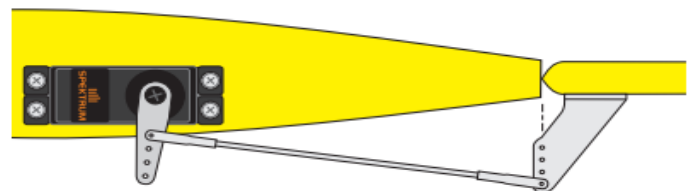
When possible, the ideal control hookup for smooth precision flying is to attach the pushrod to the hole closest to the center of the servo and the furthest out hole on the control horn to achieve maximum resolution and mechanical advantage (torque). Then, increase/decrease the radio percentages to achieve the recommended travel and ultimately the desired handling. If more travel is needed even after maxing the percentage in the radio, you'll have to sacrifice some resolution and mechanical advantage by moving out on the servo arm and/or closer to the control surface.

Explained: Servos are designed to move a certain number of incremental "steps" at 100% travel. Increasing and decreasing the travel percentage in the radio increases or decreases travel by adding or removing steps, yet the size of the steps remain the same. Connecting the pushrod closer to the center of the servo means that a higher travel percentage will have to be programmed into the radio due to the very small (fine) amount that each step is actually moving the pushrod, thus increasing the "resolution" of a given control surface travel.

On the other hand, achieving the same travel with the pushrod connected near the end of the servo arm will require a lower travel percentage in the radio, thus reducing resolution and causing a more coarse (abrupt) control surface movement for each incremental step that the servo arm moves. Of course, 3D pilots must sacrifice resolution in order to achieve the large travels necessary to perform extreme 3D stunts. Therefore, before attaching the pushrods, you'll have to decide whether the plane will be used primarily for 3D stunt flying or precision aerobatics. Once again, there's no in-the-middle and those who try to set up an airplane for both will end up with a plane that does neither as well as it could. While it's true that some exceptionally skilled pilots are able to fly precision with a 3D setup, it takes immense amounts of concentration and practice, with the slightest lapse in concentration immediately resulting in jerky flying.



The servo arm resolution is extremely fine close to the center of the servo, and more coarse (chunky) near the end of the servo arm. Thus, connecting the pushrod at the end of the servo arm results in a more sensitive/touchy control response, whereas connecting the pushrod closer to the center of the servo produces a smoother more precise control response and feel.



Maximum resolution and mechanical advantage is achieved with the pushrod attached to the hole closest to the servo and furthest out on the control horn. Just make sure that there isn't any binding near the travel limits with this arrangement.





Upcoming Events (weather permitting)

DAY	DATE	TIME	EVENT
Saturday	4/3/2021	9am	Work Party (first Sat of each month)
Saturday	4/10/2021	9:45am	General Club Meeting (outside, in the pits)
Saturday	5/1/2021	9am	Work Party (first Sat of each month)
Saturday	6/5/2021	9am	Work Party (first Sat of each month)

The Woodland Davis Aeromodelers have invited DVRC to attend their Annual Event, *Wings of Victory*, taking place on June 25-27. See last page of the newsletter for an event flyer.

Notes From The Membership Coordinator

We have a 2021 Year to Date total of 72 active members. For new members, and I was a new member three years ago, what actually is needed to become a full member.

First of all, the dues must be paid and preferably before December 31st of each year. Pay after that, it will incur another \$20 fee. Of equal importance is to have an up to date AMA membership. This AMA membership information must be received with payment or very shortly thereafter. We then mail your membership card.



A small project we have started is to find out why members have not renewed for this year. What are the reasons a current member may not renew? Has COVID-19 and loss of employment prevented payment? Are there other reasons? We have found 2 older members have moved away. One member had graduated to large "real" scale planes and is getting his private pilot's license. If anyone knows why a member is not rejoining, please let me know so that we can understand the "why".

Gordon LaPorte, DVRC Membership Chairman



Notes From The Safety Officer

The weather should start to improve and warm up some. With warmer temperatures the snake population is going to reappear. Watch where you step and look around when retrieving a downed aircraft out in the field beyond the west fence.

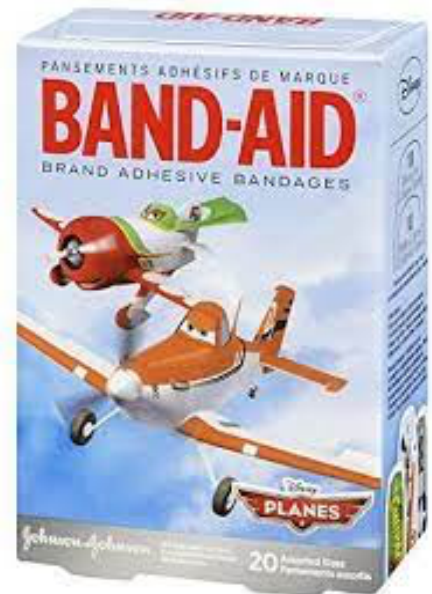
We continue to be injury free due to the attentiveness of our members. Our safety procedures are sound and designed to minimize the risk of accidents. When you see something unsafe say something, in so doing you are helping us stay safe.

OK, in the last newsletter I explained the procedure to be followed for performing a "high speed fly by" over the runway. The matter of "high speed fly by" has been revisited by our Board of Directors. In the interest of safety, the Board has decided to no longer allow "high speed fly by" maneuvers over the runway. So, the bottom line is, only take offs, landings and normal approaches are allowed over the runway, e.g., east of the west fence.

I hope to see you at the field, enjoying this wonderful hobby of ours. Do not forget we are still social distancing and wearing masks.

Until next time, happy landings and be safe.

Ron Penn, DVRC Safety Officer



Notes From The Field Manager

The city of Pittsburg delivered a truckload of soil/fill so that we can rebuild a berm at the far southside of the runway. This berm should prevent further erosion at the runway edge, which has occurred as a result of improper drainage of water during high rain periods. We also hope to complete this berm at the next work party on Saturday, April 3rd, 9am (weather permitting).

Ron Williams, DVRC Field Manager



Member Contributed Content

Recommendations For New Aircraft Setup

by Nigel Watson

I found the following recommendations in one of my model magazines a few years ago and the advice is still good. It is also consistent with the article in the President's Corner with respect to maximizing the resolution of control surfaces. You should try these recommendations when setting up a new aircraft/radio system.

Step One: Crank Up Your Transmitter!

In your transmitter, start with at least 125%, and up to 150% travel on all throws—even the throttle! Using less reduces system resolution and torque.

Step Two: Read the Manual for Your Aircraft

Always start with the manufacturer's recommended throws for your aircraft's control surfaces. In fact, start with a little less—never more. More gets you into trouble, not out of trouble. The difference between full optimization and "it works fairly well" is not subtle.

Step three: Use the Longest Horns

Use the best, longest, and stiffest control horn on every control surface. If you need more throw, do not go "in" at the control horn; always go "out" at the servo horn, even if it means buying new servo arms.

Step Four: Dual Rates and Expo Settings

Start with three rates: 100 percent high, 70 percent medium, and 55 percent low. I use the same settings on aileron, elevator, and rudder.

With expo, the idea is to make the controls feel softer around neutral. Some manufacturers use negative values, some use positive. If you are not sure, use a high number, such as 90 percent, to see which gives you soft centering.

Here is where setup becomes a little tricky. Higher rates need higher expo values. For a start, try using 50 percent expo on high rates, 33 percent expo on medium, and 25 percent expo on low.

Helpful hint: Move the stick about 25 percent and cycle through the three rates. There should be almost no movement on the control surfaces. Doing this will give you the same feel of the airplane around neutral on all three rates. When you go past that stick deflection, you will get that selected rate.





Crabbing and Sideslip for Crosswind Situations

by Nigel Watson

As you know, many times throughout the year, DVRC is afflicted with crosswinds from the east or the west of the runway. These crosswinds tend to ground many of our pilots when crosswind speeds are above 5 mph. If you learn to fly in crosswinds, you will enjoy more time flying at DVRC. Now, I'm not suggesting all levels of crosswind are flyable, and some aircraft are better suited to flying in crosswinds than others. But if you choose to fly a good all-weather plane like a Big Stick, or similar, you will have a stable platform from which to learn.



Some pilots actually don't mind flying in crosswinds, and some downright enjoy it. You might also consider adding a 3-axis Gyro to your aircraft to help stabilize your aircraft while taking-off and landing. Gyros help reduce the pilot workload while you learn to land using the Crabbing and Sideslip techniques.

When there's a lot of crosswind on the runway, pilots can choose to stay grounded or wait for conditions to improve. Learning to fly in crosswinds can be mastered thanks to two skills called crabbing and slipping that make even landings that seem dangerous, a piece of cake for a seasoned pilot.

To 'crab' is to point the nose of the plane into the wind, either to the right or the left. The plane flies sideways, similar to how a crab walks. When the plane is at one to two feet from the ground, and before the flare, the rudder should be used to swing the fuselage back parallel with the runway. Then use the ailerons to lower the windward side wing slightly to improve control and directionality.

Understanding how to combat the effects of a crosswind on the aircraft, wind direction and the fundamentals of flying are all essential to making successful crosswind landings.

How To Correct For Crosswind Drift

The principle behind combating a crosswind drift is simple; heading towards the left (for example), while the wind pushes to the right will result in the aircraft moving straight ahead. There are two basic methods pilots apply when correcting for drift during a crosswind approach and landing, the 'Crab' and the 'Sideslip'.



The Crab Technique



An aircraft is said to 'crab' when it is pointing in one direction but moving in another. In this case, in order to compensate for the crosswind and keep heading straight, it is necessary to point the aircraft's nose into the wind using a combination of the ailerons and a little rudder.

This method is used to direct the aircraft for the approach and all the way up the runway, however, just as it is about to touch down, it is necessary to align the fuselage parallel to the runway, primarily

using the rudder and also a touch of aileron to keep the wings level.

The Sideslip Technique



The Sideslip or Wing Low method as it is sometimes known, involves banking the aircraft in the direction of the crosswind using the ailerons. The aircraft then slips sideways into the wind but the slippage is counteracted by the sideways pressure from the cross wind.

It is important to note that as the aircraft banks it will automatically want to turn in that direction. Therefore, sufficient use of the opposite rudder is necessary to counteract this. The aircraft can be flown in this way for the approach

and up the runway. The lower speeds of the flare will increase the need for more rudder and ailerons and the upwind wheel(s) will touchdown first followed by the downwind then the nose wheels.

Touching down one wheel at a time facilitates correct alignment with the runway throughout the landing process. Don't forget to relax the rudder when the nose wheel touches down to prevent veering off toward the downwind side of the runway.



Which Method Should You Choose?

When faced with making a safe and comfortable crosswind landing, many pilots prefer to use a combination of the two methods - the Crab for the majority of the approach while reverting to the Sideslip in the final moments before landing. My belief is that solely using the Sideslip method all the way through the approach and landing is much more taxing on the pilot and the aircraft, than the combination of crab followed by side slipping prior to the flare.

The After Landing Rollout

Whether you use the Crab or Sideslip method (or a combination of both) to touch down, there is still more to be done once you are on the ground to prevent the aircraft from turning or spinning under the wind pressure from the side.

It is necessary to carefully add full up aileron deflection on the windward side while using the rudder to stay on centerline throughout the entire rollout. Keeping the ailerons fully into the wind prevents the upwind wing from lifting, and it's much easier to maintain control of the aircraft.

RC Video

I have included a link to a YouTube video of an RC aircraft from a simulator program to further explain the issue.

Flying in crosswinds can be challenging, but it can also be fun and it will extend your flying calendar at DVRC. Initially, try take-offs and landings on your flight simulator, if you have one, and progressively increase the speed of the runway crosswind.

<https://www.bing.com/videos/search?q=Crosswind+landing+rc+aircraft&docid=608046320480354811&mid=1C93BEC619F3DD0C2A5A1C93BEC619F3DD0C2A5A&view=detail&FORM=VIRE>



**Back After a Break**

Don McKinney

DVRC Member Don McKinney Writes: "I just got back into flying about a year ago after a decade and a half break and have really been enjoying the larger EDFs available now."

Don was at the field recently and greased the landing on his SU35 (left in photo). Don said it best on our DVRC Facebook group: "I have never been happier with a landing in my life!! And you got it on video!! NICE!"

If you want to see the landing and a demonstration of the SU35's thrust vectoring, check it out on our DVRC Facebook page!





Maiden Flight of PT-17 Stearman

by Nigel Watson

After 8 months of building, the PT-17 Stearman, which I purchased at our DVRC Silent Auction last year, is now finished and have just flown her maiden flight.

The specs are that it is 1/6 scale at 64 $\frac{1}{2}$ " wingspan and she weighed in at 10lb 9oz including 2 x 4S 3850mAh 60C LiPo batteries, connected in series (8S).

The motor is a Turnigy PropdriveV2 5060-380Kv with a Turnigy Plush 32, 120A HV ESC w/BEC. This combination with batteries develops a Static Thrust of just over 15 lbs. with an APC 15x8E prop at the front, spinning at 9480 RPM.

Nigel notes that the picture on the left was taken after the maiden. Amazing work!



Here's a frame from the video of Nigel's maiden flight, inches before the touchdown. Beautiful landing!

You can see the entire maiden flight video by going here <https://youtu.be/DqD1n5ofFA8>

Using "eCalc" to Determine Electric Setup by Ray Simon with contributions from Grant Angrove

Getting an ARF, kit, glow conversion, or scratch built electric plane in the air requires a power system that works for the plane and your flying style. Even if the motor/ESC/battery are within operating specifications the wrong prop may stall (pitch too high) or move air below minimum speed (pitch too low). Prop diameter is yet another variable.

Some motor manufacturers provide performance charts of different propellers which helps solve part of the problem. But it still leaves a lot to figure out on your own.

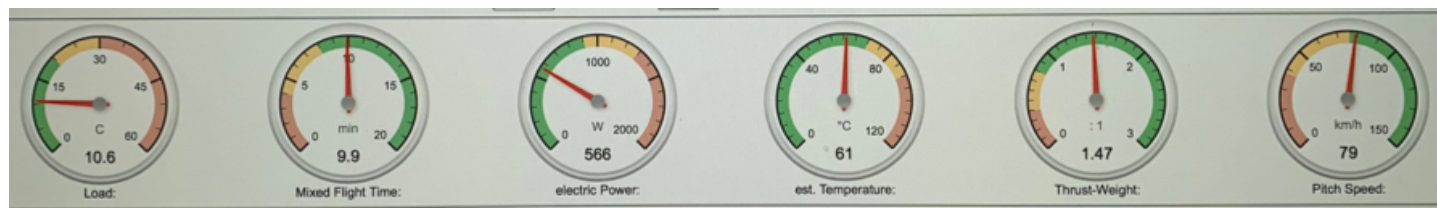
Fortunately there's an on-line tool called eCalc which helps design power systems and estimate their performance including watts, amps, thrust, prop, flight time and more.

If you already have a motor and ESC then eCalc can help you determine what prop and battery combinations you should use.

Alternatively, if you want to design a power system around your plane, enter your specs including wing loading, flying style, and desired flight duration. eCalc will produce a list of best-fit power. Each power system will specify the brand & model of the motor and also include min current, prop, and battery. eCalc has the specs for hundreds commonly available motors from many manufacturers.

One of our members, Grant Angrove, was designing a power system for his Tower SBach 3D plane. Tower recommends the Rimfire 32 800kV motor. Grant wanted to use the PropDrive 650kV motor that he already had. But how to know which prop, battery, and ESC would give him the performance he wanted? Grant was pointed to eCalc by Nigel Watson who uses it for his own glow-to-electric conversions.

Below is a screen shot of the estimated performance of the PropDrive motor, a 14x7 prop, 75Amp ESC, and 4S 4000mAh battery. eCalc estimates about a 10min flight time and nearly 1.5 thrust/weight ratio.



Grant was pleased to spec out a power system estimated to work with his plane and use a motor out of his current inventory rather than buying a pricy Rimfire 32.

On the previous page is Grant's SBach with the PropDrive setup.



You can try eCalc with limited functionality for free by going to <https://www.ecalc.ch>. The cost for a fully functioning version is \$5.45 for one month or \$13.95 for a year.

It's worth noting that the manufacturer of Hacker motors licenses a version of eCalc and places a link to it on the Hacker website. This "Hacker Motor version" is free. It only allows you to select Hacker motors - otherwise it is fully functional allowing you to select battery, ESC, and prop. It's a great endorsement for eCalc that Hacker trusts it to help their customers select the right Hacker motor for their application. You can try it by going to <https://ecalc.ch/motorcalc.php?usahacker>

A note from the newsletter editor: *Thanks everyone for sending in your articles, or letting me know about articles that you will be sending soon. I get the most positive feedback on the newsletter's member contributed content. It's never too early to send me your article. Thank you! - Ray Simon*

New and News

Did you know that our chapter has its very own Facebook group?

I log into Facebook so seldom that I once saw a Facebook message from my old college roommate who wanted to meet while he was visiting the Bay Area from my home state of Ohio. Unfortunately the message was 18 months old before I saw it! (I told him to call me next time...)

BUT, now that I know DVRC has its own Facebook group where I can see pictures of who was at the field and videos of flights and interesting news, I actually look forward to checking in a couple of times a week to keep up with the discussion.

Here's a pic of our club's page! Just like any other social group, the more people join and participate, the more fun it will be for everyone. Check it out!



Group by DVRC

DVRC

Public group · 39 members



+ Invite



DVRC Contacts

President: Nigel Watson; (925) 229-2336; Resolves questions on bylaws, policy, etc. Contact the president to get items put on meeting agenda.

Vice President: Steve Anderson; (925) 672-7352; If President is not available, same as above. Solicits items for and plans meeting program.

Secretary: Doug Schramm; (650) 222-8060; AMA dealings, keeps DVRC forms, records, correspondence. Takes minutes at board meetings and monthly membership meetings.

Treasurer: Mel Nash; (925) 597-8142; Collects dues, special assessments, other revenues. Pays expenses. Keeps financial records.

Board Members: All Officers listed above plus: Bill Selling, Gene Aughtry, Werner Hoch, Gordon Laporte, Marshall St. John

Membership Coordinator: Gordon LaPorte; (925) 997-0709; Maintains membership Manual. Sends out new member packages when requested and processes new members.

Field Manager: Ron Williams; (925) 375-1494

Safety Officer: Ron Penn; (925) 383-3232

Newsletter Editor: Ray Simon; (415) 310-3041; Publishes newsletters, solicits articles and other material.

Raffle: Allen Fleurey (925) 291-6459; Manages raffle program, selects prizes, etc.

Contact DVRC - PO Box 9411, Pittsburg, CA, 94565



Woodland Davis Aeromodelers

is celebrating the

27th WINGS OF VICTORY

June 25-27 2021



TBF AVENGER
Torpedo Bomber
(Kellogg Kit)

Aircraft must be in appropriate warbird colors

Open flying after Noon Sunday

60 x 600' petro-mat runway with 25 x 600' grass runway alongside

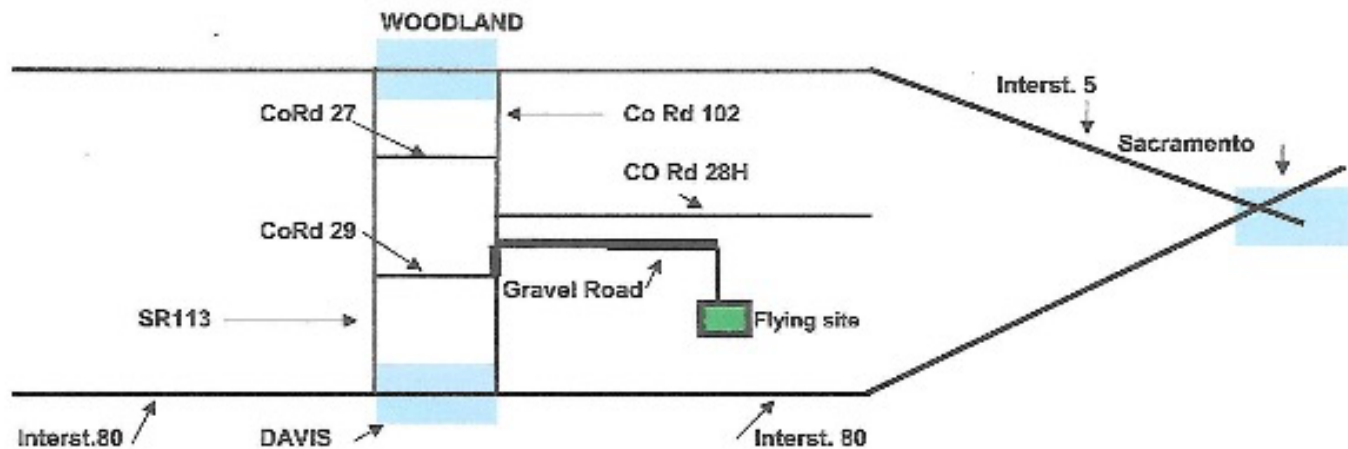
Camping and RVs allowed... No Hook-ups
Restrooms and Snack shack on site

Registration for the 3 day event is \$25
includes free Hamburger or Hot Dog

Electric A/C OK
Must be ROG capable

CD for the event: Monty Welch
cell phone 707-365-8878

No raffle-No trophies
Just come and fly



For more info:
Email Monty Welch at Loon12@aol.com

WDA website: www.wdarc.org