



# TASK



September 2020, Vol.36 No.3

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## From The Editor's Desk

It's September 2020 and another challenging season of outdoor flying is slowly winding down! Where does the time go? We had a nice start to the season, then the hot humid weather descended on the area mid to late June and it just never let up! In July, we were prevented from using the field for fear of damaging the sod for about two weeks.

It was our first season with Covid-19 isolation protocols in place. At first, it was a little stressful being at the field until the province increased the number of participants from 5 to 10. (editor's note: we are now allowed to have up to 100 people at our events!) The new pit area setup located behind each vehicle, with a space to allow vehicles to pass, seemed to work out well.

Thanks to President Andy's encouragement and leadership, I was able to experience the excitement of slope soaring (see my report!) and thus far have been able to get to the Haldibrook field for a least 11 outings! As usual, the winds have been strong and variable all season, which can make setting up and launching hi-starts a challenge. Fortunately, we also have electric launched planes which are more adaptable to changing wind directions.

I did have my share of carnage at the field but I managed to keep it to a minimum. I also signed up two of my grandsons with MAAC and also with our club. As members, we have to plant the seed early in order to have another generation of r/c flyers in the future!

It certainly has been a pleasant experience getting out flying with our fellow pilots and meeting recent new members...it has given me a sense of near normalcy since our Covid-19 social restrictions took effect.

So, how was your flying season? Cheers!

Lyle Jeakins, TASK Editor



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## President's Message – Andy Meysner

Since I wrote the last President's message for Task, from our pastime point of view, the situation has not been as dire as it might have been given the pandemic. So here is the good news.

We started the flying season at Westover on May 24. It was a terrific slope conditions day and I counted 9 members there, although not all at the same time. I believe we had a few members who had not flown at the slope before and it looked as if they were having great success. Westover is under utilized and it is very encouraging to see more members enjoying slope soaring. On a later day at Westover I had some success with the KF airfoil Crossbow that we are considering as a club workshop build next winter, so stay tuned on that.

We started flying at Haldibrook Rd. on May 31 and since then, I haven't counted in the logbook, but there seems to have been at least 19 sessions there. We've had good turnouts on some days with a dozen or more members present.

Several SOGGI members are also members of the Canadian Model Aerotow Society (CMAS) who this year are flying out of the Springdale field West of Hagersville. We do a small amount of aerotow at SOGGI, although of course we are limited to an electric tug. I'd like to encourage more members to give aerotow a try and facilitate more contact and flying between the two clubs.

Given the pandemic situation the Executive have decided not to hold any field events, contests or otherwise, this year. We have not yet decided whether it will be appropriate to meet at Rockton over the Fall and Winter. But if we decide not to, we expect we'll hold Zoom video-conference meetings.

Lyle (for all of us) welcomes our new members below, and their participation will certainly strengthen our club.

Please stay safe,

Andy

## Thoughts For The Day:

*"The greatest glory in living lies not in never falling, but in rising every time we fall." -Nelson Mandela*

*"In the end, it's not the years in your life that count. It's the life in your years." -Abraham Lincoln*

## Welcome New Members:

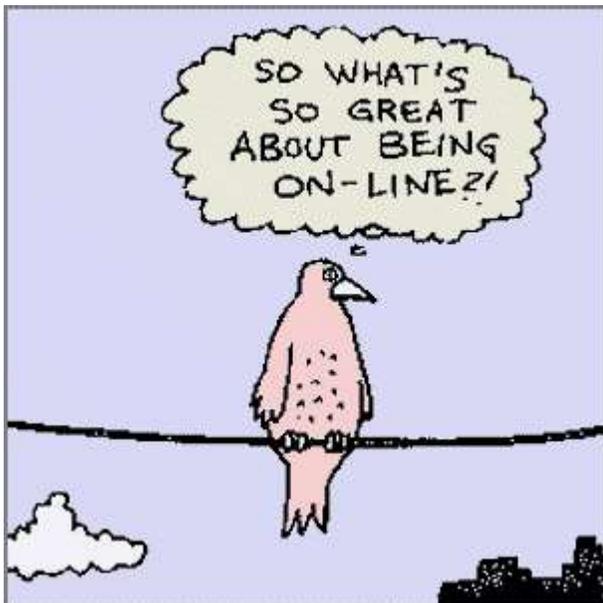
Since the last newsletter, our club has acquired six new members! **Sam Dougherty**, from Waterloo, **Craig Skinner** and **Tom Lokody** from Guelph, **George Steinke** from Toronto and my two grandsons, **Nelson & Matthew Gzik**, who live on the Hamilton East Mountain. Last March, **Joe Sommers** from Kitchener, attended our general meeting and subsequently joined the club as well. Welcome aboard to All!

## Club Secretary:

Unfortunately, long time member and former past president of SOGGI Ray Munro, has many other commitments, causing him to be unable to continue as club secretary. We wish him well with his future endeavours and hope that if things settle down for him, that he will rejoin our merry band of sail-plane enthusiasts in the near future.

Past club secretary, Terry Dawson has graciously offered to take this important position back on! **On behalf of the club, thank you Terry!**

## Humour:



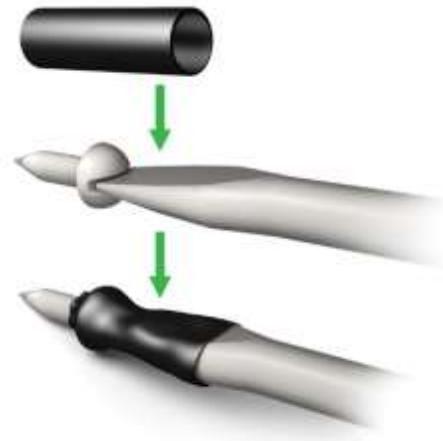
That's a good boy! Just like Daddy!

***Hobby Hacks:***



*How many times have you tried to cut off a piece of wire or carbon rod only to have the cut off piece go flying through the air, never to be found again! This is such a simple solution, try it out next time.*

*Having a difficult time getting a screw inserted in a tight space? Try this hack....*



## A Day At the Slopes: by Lyle Jeakins

It's the morning of Sunday, May 24th, 2020. Most of us have been "cooped" up in our own personal bubbles now for some 12 weeks already! Thanks to the Covid-19 situation. We are becoming quite stir crazy and flight sims just aren't cutting it anymore!

Just last week, President Andy Meysner was able to obtain permission from Hamilton Conservation Authority, to fly at our Westover Slope soaring site. That got the adrenaline pumping and we have been waiting patiently for suitable conditions ever since.

Because it's May, the weather is really unstable and predictions are seldom accurate. With this thought in mind, a decision was made to venture out this morning for our first flight of the season. Unfortunately, the predictions were changing by the hour!

When I woke up at 6 am. I looked out the window.....nice and calm....nary a cloud in sight! Hmmm....I decided to post on our SOGGi message board that I was going and followed that up with a notice to the HCA. I wasn't sure what to bring but settled on my trusty 2M Radian Pro with the prop tied down and my 2M Fling. Everything was checked out the night before and the flight batteries plus the transmitter batteries were charged and ready to go.

I was the first to arrive at the church parking lot near the bottom of the hill at 9:30 am. It was a gorgeous day and the wind was just starting to pick up from the south west. Then Terry Kovak arrived, followed by Rob Nelson. Soon we were trudging up "Cardiac Hill" with all our gear. By the time we got to the summit, the winds were really starting to pick up and I estimated they were about 15-20 kms/hr from the south east.





I decided to try my 2M Fling and I have to tell you I was nervous as a kitten having never slope soared before! Finally, the battery was hooked up, and I waggled the rudder....good to go! I could feel the ever increasing winds trying to lift the Fling right out of my hand. I gave it a gentle launch and some up elevator and it promptly dove straight into the side of the hill! Upon a closer inspection, I found the elevator servo was reversed! Doh! What a rookie mistake! Never too old to screw up! Lol! I got the servo reversed and once more gently threw the wee beast into the air.

What a lovely sight to see that sailplane just move slowly forward and up in a sort of slow motion hover! Then it started to veer downwind and the fun began! It must have been the adrenaline because I was waaaay over controlling! Eventually, I got the hang of it making sure to always turn away from the slope and enjoyed a good 45 minute flight.

After a wee break, I threw the Fling back into the fray and enjoyed another 30 plus minutes of soaring back and forth along the south side of the slope.

Due to the present Covid restrictions, other members were showing up so Rob Nelson headed out early, followed by yours truly, to give others a chance to fly. In the end, President Andy indicated 9 members came to the slope to fly during the morning, the most he as ever seen there!

Just a perfect day and I will never forget the sight of five various sized sailplanes zipping back and forth without somehow hitting each other!

My 2-channel 2m Fling flew surprisingly well especially considering later on when I got it back home and found it was extremely nose heavy!! Doh!

## Servo Torque Calculator: by Andy Meysner

### Determining Servo Torque Requirements

(or something I did to occupy myself during the pandemic lockdown) Andy Meysner

Have you ever had a concern whether the torque capability of the servos you choose for a given model is adequate? If we are building a model from a kit or an ARF, quite often there will be recommended servos to use with a consequent stated torque capability. If you do not want to use the recommended servos you can always choose something different and use the recommended servo as a guide for the torque required. But what if you are building something from scratch that does not have something similar to compare with to determine the torque required?

There are Servo Torque Calculators on the web at:

<https://www.radiocontrolinfo.com/information/rc-calculators/rc-airplane-calculator/#Torque>

and by Chuck Gadd, at: <http://www.mnbigbirds.com/Servo%20Torque%20Calculator.htm>

There is no means of verifying the first calculator above as it is form driven. Chuck Gadd's formula however, although it combines the drag coefficient, the air density, numerals and several unit conversion factors into one constant, does provide enough of a basis for verification. I spent my working life in an industry where one does not take anything for granted unless it is verified to the nth degree. So I set about developing my own formula for comparison.

If you are interested in the development of the formula, it is given in an Appendix to this issue of TASK. The formula is as follows:

$$T_s = \frac{C_d \rho V^2 L C^2 \sin ah \tan ah}{4 \tan as}$$

Where:

- $T_s$  is the servo torque required in Newton-meters
- $C_d$  is the drag coefficient of the control surface at its greatest deflection. I suggest take this as 1.0, except for a long aspect ratio flap at rotations greater than 60°. The rationale for  $C_d$  values is given in the Appendix.
- $\rho$  is the air density in kg/m<sup>3</sup> Take this as 1.2 kg/m<sup>3</sup>. This is conservative for where SOGGI flies.
- $V$  is the airspeed in meters/second
- $L$  is the control surface length in meters
- $C$  is the control surface chord in meters
- $ah$  is the rotation angle of the control surface from neutral in degrees
- $as$  is the rotation angle of the servo arm in degrees measured from the servo arm position at 90° to the pushrod

Servo torque is usually specified in oz-in or kg-cm. To obtain the torque in oz-in or kg-cm, multiply the result in N-m by 141.6 or 10.2 respectively.

$$Ts \text{ (oz-in )} = Ts \text{ (N-m)} \times 141.6$$

$$Ts \text{ (kg-cm)} = Ts \text{ (N-m)} \times 10.2$$

If you use an air density of 1.2 kg/m<sup>3</sup> and a drag coefficient of 1.0, the formula above gives an identical result to Chuck Gadd's formula, and a result about 5% lower than the calculator on the first website above.

For anyone who wants to use it, I have a spreadsheet for the above formula. The spreadsheet is very useful as it enables one to quickly vary parameters for different airspeeds, control surface geometries, servo and surface rotations, to obtain servo torque required. The spreadsheet also enables unit conversions for units commonly used for control surface dimensions and airspeed.

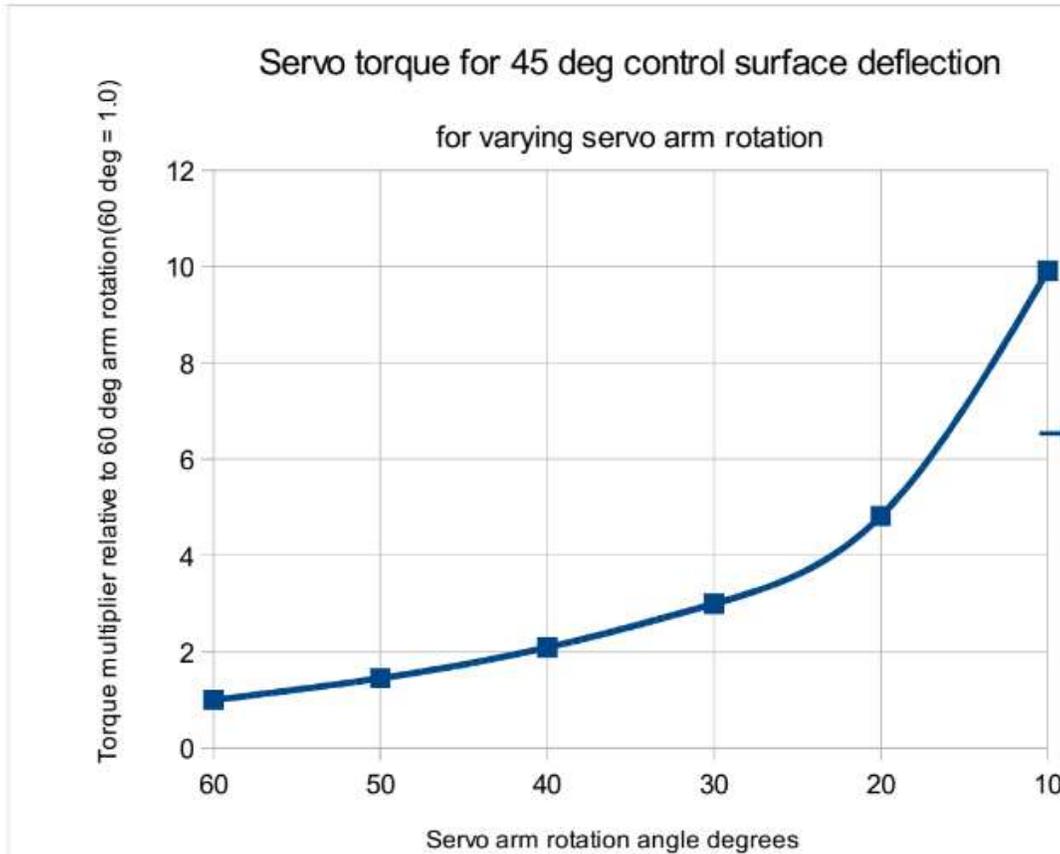
Typically the servo torque recommended by model manufacturers is higher than would be determined using the above formula, which is expected.

The formula does not allow for friction between the pushrod and mating parts, or at the hinge. Although any friction is typically very small, the servo torque available should nevertheless allow for some margin above that calculated.

Here are some tips for optimizing servo torque and control surface movement:

- For control surfaces that move approximately equal distances either side of neutral, the servo arm should be at 90° to the pushrod at the neutral position. And the control surface horn hole should be as close as possible to 90° to the control surface at the hinge line.
- For control surfaces that move predominately in one direction, e.g. flaps, optimize the servo arm position so that it is at 90° to the pushrod at half of the control surface movement. This maximizes the rotation of the servo arm and minimizes the torque required.
- If you need to reduce the torque required for a given control surface movement, shorten the servo arm relative to the control horn, i.e. servo arm rotation angle is high relative to horn rotation angle. Although this is at a penalty of reduced control surface movement for a given servo arm rotation, it will save battery power. Set up your servo to control surface linkage arrangement to maximize servo arm movement if this still enables you to achieve the desired control surface movement.
- If you need a larger control surface movement lengthen the servo arm relative to the control horn, i.e. servo arm rotation angle is low relative to horn rotation angle. But this is at a penalty of higher servo torque required.

The bottom line is; for a given control surface movement, the larger the servo arm rotation angle (i.e. the shorter the servo arm relative to the horn length) the lower the servo torque required. This is illustrated in the graph below. This assumes a 45° control surface deflection and shows the increase in servo torque required for reducing servo arm rotation relative to a 60° arm rotation. If the servo arm rotation is decreased from 60° to 40°, the torque required doubles. If the arm rotation is decreased to 10°, the torque required is nearly 10 times higher.



Send Andy an email if you want a copy of the servo torque calculator spreadsheet.

## Identification & Failsafe:

One of our club members had the unfortunate experience this summer of losing a valuable sailplane. This incident brings to mind the importance of having a proper identification label prominently displayed on all our planes. This is a requirement not only from our own club rules and regulations, but is also required by the ministry. I thought I was in compliance but when I checked my Spectra....no identification label!! Wowzers! How did I miss that? I promptly applied the label and covered it with clear tape to protect it. My bad! : )

The other matter of setting up Failsafe conditions was also discussed. My Futaba system had a separate menu and it was really easy to dial in the amount of rudder, aileron or elevator movement, then turn of the transmitter to confirm if the amount of deflection was sufficient.

With other systems it can be different. Spektrum requires that you bind your receiver and transmitter while holding your control sticks at the desired amount. I think the problem is we get lazy and think, oh well....I will never lose contact with my plane and don't bother to set it up. Well, as we have seen, it can happen to the best of us! I urge you make sure all your planes have some form of failsafe set up. I usually have it set up with a slight left turn and a "titch" of down elevator. Even with that set up, if there is a strong wind or thermals, it can still travel quite far.

There is a bright side to this story as the member's plane was miraculously found quite by accident by another member of our club some 11 kms from where it was launched!!

## Member Spotlight:

### Biography of Richard (Dick) Colley

Dick was born in England in 1941, right in the midst of WW2! His two older brothers were not old enough to join the army but were old enough to join the Territorials (the T.A's. or Territorial Army, aka Dad's Army). Black outs, air raids and food rationing was the order of the day.

Dick was educated at Brewood Grammar School located in South Staffordshire, England (Est.1553) and graduated with 3 "A" & 9 "O" levels. He was awarded the Cooper Prize for Science and Mathematics! In 1966, Dick attained the "Higher National Certificate" (HNC) in Electrical Engineering.



His early employment led him to English Electric Stafford and later, Rolls- Royce Engine test beds in Derby. In 1970, Dick emigrated to Canada and began working at Westinghouse in Hamilton. Dick raised two daughters, who now live in Niagara Falls and Caithness, Scotland. He has seven grandchildren and six great-grandchildren.

Dick became interested in r/c in 1995 when a fellow worker by the name of Rob Campbell who was a SOGGI member, suggested he take up the challenge of flying remote control electric planes. He joined our club that year and his friend Rob helped him acquire his first sailplane plane which was an Astro-Flight Challenger. At that time, SOGGI was one of the few clubs that would allow electrically driven planes.

Like most of the long standing members, Dick says he owns too many planes! :) His current list includes, an Oly 650, Oly II, Windfree, Spirit, Spirit 120, Gentle Lady, Thermal Queen, Riser 100, Algebra 2.5M, Sagitta 900, Sagitta XC, Alpina 4001, all of which are line launched. His list of electrically driven sailplanes includes a UMX Micro-Radian, Ascent and a V-tailed, Magellan E XL. Scale planes include an ASH-26, Minemoa, Grunau Baby II (of which he owns two), an Orlice Towplane and two 1/4 scale Piper Cubs.

As mentioned, his first plane was the Astro Flight Challenger with a 72" wingspan, an 05 Cobalt geared motor swinging an 11" x 7" prop. His first r/c radio was a Futaba AM Wideband transmitter on channel 54 and an AM receiver/speed controller, all driven by 7 & 8 cell Nicad 800 Mah battery packs.

Dick says his favourite plane to fly at the moment is his Sig Ninja, which is a blast to fly on our Westover hill. His 1/5 scale Minimoa is also an elegant flyer with a commanding presence. And finally, his little UMX Radian that is easily transported, quick to set up and totally fun to fly! Dick says the little Radian can be flown when extreme conditions ground the other ones.

Dick considers himself to be a builder and a flier, having scratch built many sailplanes over the years. He has many hours of stick time on many different styles of planes. For newer members reading this, Dick had been SOGGI's flight instructor for many years!

Most of his r/c supplies are purchased in all the local hobby shops including Skycraft, Great Hobbies, Hobby Hobby and Paris Junction. He has picked up his collection of planes from swap meets, other members and sometimes Icare RC in Quebec.

Dick also belongs to **CMAS** (Canadian Model Aerotow Society), **GNATS** where he flies on a sod farm near Lowbanks, Ontario, because it's closer to his new home in Niagara Falls.

Dick feels that SOGGI is probably the best and most involving RC Sailplane flying club in the region.

Well, now you know a lot more about long time member, Dick Colley! When you get the chance to see him on the field, don't be a stranger!

Respectfully submitted, Lyle Jeakins

SOGGI TASK Editor



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