

April 2017



President's Message

Hello Everyone:

Well, we have permission to have our meeting at SAIT for the next chapter meeting. We will meet at the same time as usual, 6:30PM, and have our meal at normal time as well. I think to assist Andrew, we should get our names in for a count so we can plan to have enough food. I expect that there will be several students there. We will probably get a tour or a presentation but we will have time for a discussion with the students as well. We may be asked to leave at 9 pm so will start on time if we can. The address is:

Southern Alberta Institute of Technology
Art Smith Aero Centre Campus
1916 McCall Landing NE T2E 9B5

Well I have a small safety tip for this month: I was out on a CASARA flight the other day and the wind was from 200 deg at 20 knots and forecast to get stronger by the evening. We had a great flight, and things went a little slower than planned, and went to my place where the winds were at least 40 knots 90 degrees to my runway. Always plan ahead for this type of thing and since we did not have enough rudder to land on the normal runway we circled and landed on the runway on a heading of 200 ending up about 150' past the west side of the runway. Quite fun since at some times of the year I have 360 degrees of runway, but not all the time. Always have an out.

Soren Christiansen
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WAYPOINTS

Vice President's Message

The Effect of Actual Gross Weight on Key Airspeeds

Have you ever flown an empty Cessna 172 to a landing, using the book airspeeds precisely, and wondered why the aircraft seemed to float and float before finally touching down. Obviously you could have flown the aircraft more slowly for the approach and landing, but how much slower would be safe? Aircraft flight manuals usually provide climb and approach speeds only for maximum gross weight, but give nothing for lighter weights. Some manuals show how stall speeds vary with weight, but this is not common. So how can you figure out how much you can safely reduce climb and approach speeds, and other speeds related to angle of attack, when flying at less than maximum gross weight?

It turns out there is a relatively easy way to do this. If you recall, the formula for lift is:

$$L = W = \frac{1}{2} C_L \rho V^2 S$$

Where:

L is the lift force, equal to the weight of the aircraft W

C_L is the lift coefficient, which is a function of the angle of attack

ρ is the air density

V is the indicated airspeed, and

S is the wing area

If we want to see how an approach speed, for example, would change with aircraft weight, then we assume that C_L , ρ and S remain constant. This is a reasonable assumption, as the wing area doesn't change, you want an airspeed that will give the same angle of attack as the maximum gross weight book airspeed will give, and we will assume the same air density for both cases. Therefore, we can state that:

$W/V^2 = \text{a constant, or:}$

$$W_{\text{actual}}/V_{\text{actual}}^2 = W_{\text{max gross}}/V_{\text{max gross}}^2$$

Rearranging:

$$V_{\text{actual}}^2 = (W_{\text{actual}}/ W_{\text{max gross}}) \times V_{\text{max gross}}^2$$

Or:

$$V_{\text{actual}} = V_{\text{max gross}} \times \text{SQRT}(W_{\text{actual}}/ W_{\text{max gross}})$$

Therefore, if you calculate the actual gross weight for your flight, divide it by the book maximum gross weight, and take the square root of that ratio, you multiply the result by the book climb and approach speeds to adjust them for the lighter weight.

If this sounds intimidating, there is an easier way to do this. Once you have calculated your actual gross weight for the flight, calculate what percentage under maximum gross weight you are. Then reduce speeds by half the percentage under gross. For example, if you are 10% under gross, you can reduce your climb and approach speeds by 5%. This rule of thumb gives almost exactly the same results as the above, and can be done more easily in your head. I have done this for years when flying light, and it gives much improved landing and climb performance. Keep in mind, however, that engine cooling could be affected by lower climb speeds, so use caution in lowering your climb speeds by much.

Fly safely everyone,

John

WAYPOINTS

Newsletter of the EAA Chapter 1410
High River, Alberta, Canada

www.eaahighriver.org

Who We Are

We are an enthusiastic group of like-minded individuals from various backgrounds who share a passion for recreational aviation in Southern Alberta and we offer the chance to meet others who combine fun with learning.

FOR SALE

Aviation items for sale call Ted Burgoin 403 852-6424 or email <burgted@gmail.com>

Lycoming O-320 150 hp first time run out removed from C172 in 1995, 1 mag, no starter \$2500 obo

Piper Tri Pacer fuselage and tail sections offers?

Pitts S1c 180 hp Lycoming wings removed TTSN 500 hrs, engine TTSN 700 hrs, symmetrical wing kit partially completed nicely built \$30,000 obo

Cassutt racer wing structure less ply covering c/w Cassutt plans \$300 obo

How to Join Our Chapter

Attend our next chapter meeting. Ask for anyone and they will be pleased to help. All the required forms will be made available for you to fill out. You must be a current member of EAA International, so please have your EAA membership number. If you are not a member, you can join EAA at the meeting.

Contact us by post at
EAA Chapter 1410
Box 5280, High River, Alberta T1V 1M4
Or by email at
president@eaahighriver.org

For registration forms contact the treasurer (see the list of the executive below).

Please update your web member profiles

On our web site, in the member's section, there are many pictures and profiles that are quite dated (aluminum parts which are now beautiful flying machines). The updates should be sent to the webmaster (webmaster@eaahighriver.org) Please supply: Name, project or aircraft, facts about your project and area of aviation interest.

EAA1410 2013 Executive

President	Soren Christiansen	president@eaahighriver.org
Vice President	John Mader	vicepresident@eaahighriver.org
Treasurer	Vance Lucas	treasurer@eaahighriver.org
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