

Subject: Re: [c-a] Pee Factor

Date: Sat, 10 Jul 1999 16:59:54 -0400

From: jbullens <jbullens@mciworld.com>

To: PHIL CHASE <philchas@rely.net>, canard-aviators@canard.com

[The Canard Aviators's Mailing list]

Greetings Phil, I do not want to start an argument but I also have an opinion about "P" factor.

Three things effect our airplanes, (don't confuse with 4 forces which is an entirely different animal).

Gyroscopic forces act on all spinning disks and is more pronounced as the mass (weight) of the disk increases. Gyroscopic forces are most evident on tail wheel aircraft which take off at a high angle of attack and are rotated to the level attitude for reduced drag and speed gain. It is always there but not as large a factor with any nose wheel aircraft in our weight and engine size, no matter where the engine is located.

The "Vortex" you speak about will only affect aircraft that have a propeller in front with a large wetted area behind it such as a large fuselage or fin/rudder. Again not a factor or affecting airplanes with engines in the rear. Spinners are not large enough to effect us.

Torque is the resistance to the turning moment of the engine and is opposite to the direction of rotation but our little engines do not produce the twisting moment that would effect the performance of our airplanes. Mustang's and Corsairs and other firebreathing, high HP large heavy prop single engine airplanes had this problem due to the mass (gyroscopic effect) of the prop and the twisting moment (torque) of the very powerful engines used to pro-pell these beasts.

Now the biggie..lol argument time..

Prop or "P" factor is basically the different biting ability or amount of thrust any propeller blade will produce no matter how many blades a prop has. This difference in thrust is caused by blade angle of attack differences to the on coming wind usually caused by sticking our nose up for rotation to takeoff or climb.

The down turning blade on all props, no matter where it is located, no matter where it is American left turning engines or European right turning engines see's a greater angle of attack to the oncoming wind and therefore will product more blade lift translated to thrust than the upgoing blade on all props. This blade difference in thrust "P" factor DOES affect our rear engine airplanes. "P" factor and a little help from torque is what caused the famous WW II, wing roll on take off or go around in Mustang's and Corsair's. Where the airplane was piloted by low time transition pilots with poor rudder skills and the airplane would roll over before it had enough airflow over the ailerons to counteract the roll and thus sadly the airplane and pilot would be lost.

Understand "P" factor is non-existent when the airplane is in level flight unless the thrust line is really offset severely.

While we are in free ground school, I'd like to set another common misconception straight. Adverse Yaw.

Imagine drag as a big hand that would push the wing tip backwards everytime you dropped an aileron to raise the wing to bank. The greater the bank or aileron deflection the larger the hand or push backwards only on the wing that is going up for the bank. This is the reason for a rudder folks. The way I try to teach rudder usage is for my students to stick there thumb up while holding the control stick or wheel and this thumb always points to the rudder or foot you would use. Think about it.

N23BP

-----Original Message-----

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>From: PHIL CHASE (by way of Doug Hurd) <philchas@rely.net>

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