May 2018 Volume 29 Issue 5

TURBULATOR

Newsletter
of the Rio Rancho Radio Control Flying Club

AMA Club #2770

WATERMAN FIELD ELEVATION 5840 FEET 35° 17.2'N 106° 44.8'W

Indoor at the Star Center 30 Apr

PRESIDENTS CORNER

"Da Prez Sez"

It looks like Summer is on its way with the warm longer days, too bad the wind hasn't realized it is time to calm down. Saw some nice jets at Maloof Last Saturday, they were big took alog fo runway but did fly well. I was ipressed. Hope for some good weather next weekend with the first meeting at the field. See you at the field ! ! !

Coming Events

1. May 5th 10:00am at Waterman Field
2. Family Day Staruday Jun 9th 10am til ???

What do those Pesky Prop Numbers Mean?

The propeller is the component that puts a load on a power system. With the wrong prop you can damage your battery, ESC and motor. Think of the prop like the gears in a car. Some props are like first gear and the motor will have to work at high rpm to go slowly. If you have driven a 4X4 you will know that this gives you power to climb steep hills at low speed without stalling the engine. You could compare this to prop hanging a 3D model where power is more important than speed. On the other hand you might want to go fast. This will require a prop that is more like the top gear in a car. It doesn't have the power to take off and climb a steep hill at low speed, but once up to speed it can maintain that speed comfortably. The numbers on a prop, say 10X4, give you the diameter and pitch. In this case you would have a prop with a diameter of 10 inches and a pitch of 4. A 10X4 prop will give you more thrust at a lower speed like the 4X4 analogy above. If you swapped it for a 10X7 prop you would have a higher top speed, but your take off run would be longer. The extra load on the motor would also draw a higher Amperage.

Pitch and Pitch Speed

Pitch is the distance (normally expressed in inches) that the propeller "cuts" through the air in a single rotation assuming no slippage. To achieve pitch, the propeller blades are angled to move air to create thrust. The angle of the blade determines its pitch. Propeller blades are aerofoils, just like the flying surfaces on our models. When they have a higher angle of attack they create more lift. In the case of propellers, a higher angle of attack (pitch) at a given rpm will create greater thrust.

Pitch speed is the speed at which the propeller pulls through the air. It is calculated by looking at the pitch of the propeller, and the number of revolutions it performs in a unit of time. Pitch speed does not consider slippage, drag and other forces that may affect the aircraft.

With a high wing loading you need a higher air speed to stay in the air. A higher pitch speed means lower thrust > longer take off > high landing speed. You can get both thrust and high air speed but it will be at a weight penalty as the power needed to get thrust for a short take off will not be in proportion to the power needed to stay airborne.

Warbirds are an often examples of models with high power/high wingloading which are supposed to fly fast, and especially in glow to electric conversions you will need to take the wing loading into account.

Hotliners and F5b models are one of the most extreme examples of high power/high wingloading. The more extreme examples have such a high pitch speed a catapult is needed to get them airborne because of the square (16x16) or over square (16x17) props they use in order to get extreme high speed/climbs. In a perfect world (with zero airframe drag and 100% prop efficiency) you can calculate the speed of your model from RPM x pitch)/1056 = your speed in mph. For example 10000rpm x 7" pitch /1056 =66mph or 105.6 km/h.

Pitch speed isn't only about wing loading it's also about what you want to do with your model, as I wrote above about hotliners and F5b. With an already light model or of moderate weight you can determine the behaviour from the choice of prop > pitch speed. Without the need of changing anything (keeping the same amps) you can take a GWS Formosa II with a 10x5 from being a sporty low wing aerobatic trainer to a fast aerobatic plane with a 9x6. As a general rule 1" pitch relates to 1" of diameter, if you step up 1" in pitch you need to step down 1" in diameter to keep the same amp draw.

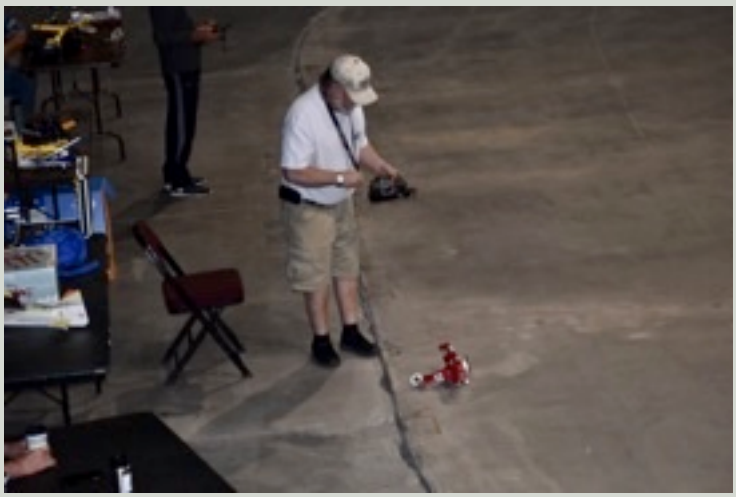
With more normal kind of planes we usually use a prop with the proportion of 1:2 i.e. 10x5, 11x5.5, 12x6 and so on as it is most effective (from what I heard). A High wing trainer could very well use a more square prop like 9x7 instead of 11x5.5, it'll still have a high lift and once airborne you can throttle down, the higher pitch will give it airspeed and you'll get long flying

times with low amps, perfect for photography or video.

"As a rule of thumb, you want to have a static pitch speed within the 2.5 to 3 times the stall speed. So if your plane stalls at 15 mph in level flight you would like a static pitch speed between 37.5 to 45 mph.

For a particular motor, I know from testing that with a 12x6" propeller the motor is running at 7165 RPM. Each revolution pulls the plane forward 6". So my plane would be making 6" x 7165 RPM or 42,990 inches per minute. Dividing by 12" gives me 3,582.5 feet per minute. Multiplying my 60 minutes gives me 214,950 feet per hour. Dividing by 5280 feet gives me 40.7 miles per hour. The plane I has a calculated stall speed of 14 mph. 40.7 divided by 14 equals 2.9. This ratio falls within the desired 2.5 to 3 ratio of pitch speed to stall speed, which is good!

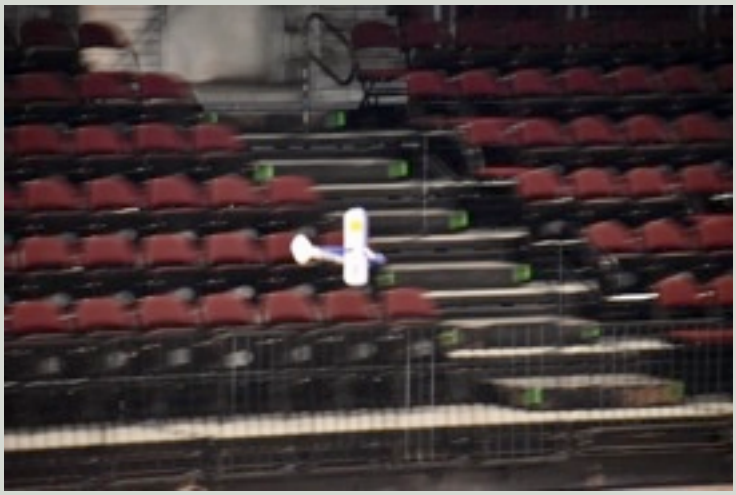
To select a motor you may have to work back-wards from prop diameter. The plane I have can take a 12" prop. I like to get the largest diameter prop that will fit."



Field Clean Up

We held the Field Clean Up on the 21st of April. Seven(7) club members were present for the work. It took a little less than an hour to clear the cable of dirt and debris. Thanks to Ken French, Robin Tuchler, Ken Carpenter, Jesse Zamora, Mike Wells, Tom Maier and Don McClelland. Below is a picture of the guys.

Field Clean up Work Crew Ken French, Robin Tuchler, Ken Carpenter, Jesse Zamora, Mike Wells, Tom Maier



MEETING MINUTES

Minutes from the April 2018 Club Meeting

The meeting was called to order @ 7:05pm with 10 members present.

The Minutes were accepted as published.

The Treasurers report was accepted as presented.

Membership Report: 38 2018 members

Field Report: 1. The gate to the field has been repaired by Barrows Fencing. Jeff Barrows donated the repair to the club. (If you have any fencing or welding work to be done please support Jeff. http://www.barrowsservices.com)

2. We will hold a work party at the field to clean the debris from under the steel cable if weather permits on the 14th of Feb at 0900.(ed note: due to weather the work party was delayed until the 21st)

Safety: No issues noted. Conditions of high wind persist at the field.

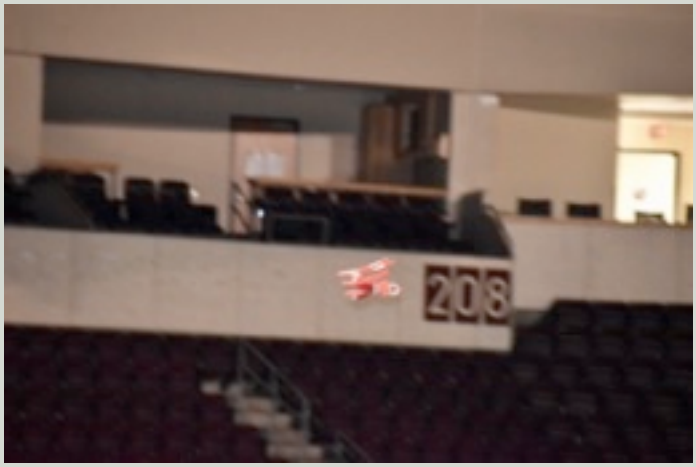
Unfinished Business: None.

New Business: 1. There was discussion and a vote on when to hold our annual Family Day. The date voted on was Saturday June 9th starting at 10am.

2. There was a discussion on holding the May meeting at the field starting at 10am.

3. There was a discussion on the annual Christmas party to start planning. We will not be able to rent the same hall we have had the party for the past 2 years. There was a discussion on other possibilities. The two that are narrowed down to are a party hall in Bernalillo across from the Range Cafe. At this facility we will cater the party as we have in the past. The Cost for the facility would be in the neighborhood of $400. The 2nd venue is the Hong Kong Buffet on coors bypass across from Cottonwood Mall. Cost for the buffet would be approximately $12/person with no cost for the room. We need to make a decision at the next meeting to assure we can get a good date.

The Meeting adjourned at 7:40pm



Turbulator:

Editor Don McClelland

We are always looking for articles, pictures and your input!

For comments, or suggestions Please Email Don at macmoke1@gmail.com

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RIO RANCHO RC CLUB

AMA Charter #2770

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Next Club Meeting

May 5th 10:00am at Waterman Field