



AMA Chapter #3798

Chino Valley Model Aviators

Official News Letter



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"To create an interest in, further the image of, and promote the hobby/sport of radio controlled aircraft"

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Thomas J. Jeffrey

Our Friend,
Our Fellow Flyer



1928 — 2016
We will miss
you Tom.

Support Our Local Hobby Shop



The Safeway Center
Prescott Valley, AZ

MAX & CINNIMON BANDY

THEY SUPPORT OUR CLUB

Please support them as well.

Rick Nichols "Stik" Dancing with the Moon



ANNUAL CLUB CHRISTMAS BANQUET



Our Club Christmas Banquet was held at the Centennial Club located at the Prescott Airport. We had an outstanding turnout of 56 members and spouses.

(See pages 7 & 8)



Field Chatter from CVMA President Michael Kidd: No Kidding!

Greetings Fellow Pilots

Well, if you did not attend our Christmas Banquet, you missed a great time. Rick Nichols did an awesome job as emcee, thanks Rick. I presented the Member of the year award to a very surprised **Bob Shanks**. Bob has worked tirelessly on the news letter for a long time. He also comes out to the field "to fly" but usually spends most of the time taking photos of pilots and their planes. Bob deserves this award and my thanks to

you Bob for your hard work and dedication.

I presented the \$500 gift from the club to the winner **Bob Noulin**. I counted, from my records, all the times a member attended a work party, signed up for club events, or put in hard work at the field, as well as bring a plane to the meeting for show and tell. Bob's name was drawn from the hat. Congratulations to Bob, and I thank all of you for the times you helped the club as well as attend club

events. Like all Christmas Banquets we had our White Elephant gift exchange and let me tell you it was a blast. As usual, Charlie Gates gift was stolen from him many times. However, it seems **Walt Findley** came in a close second. What a great time was had with this clubs awesome members and their wives. Thanks to everyone that attended.

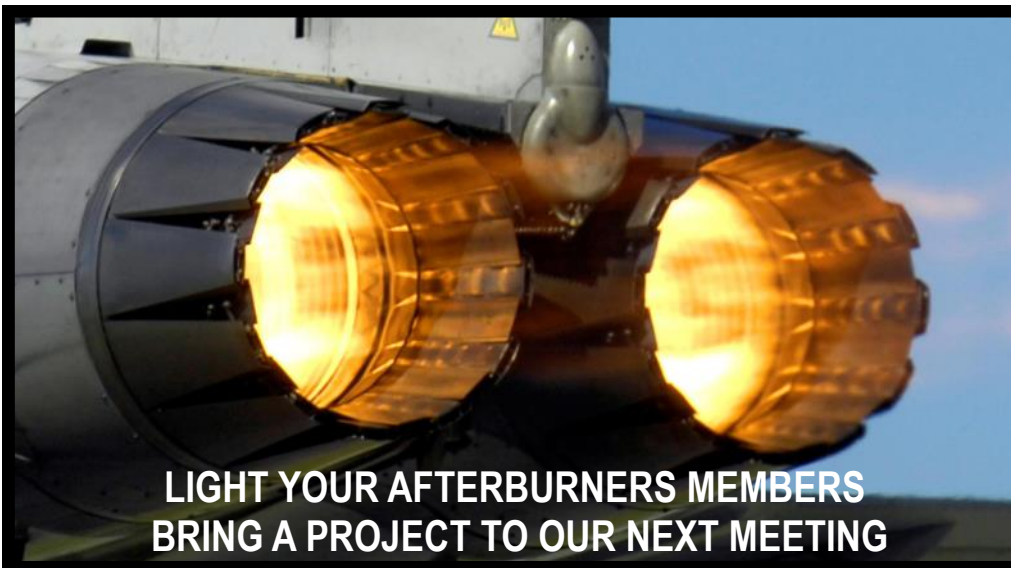
If you have not attended one of our Banquets, you should make it next year, you

will have a great time.

Soon we will be in a new year of fun and flying. The club currently has 130 members and I am sure everyone will renew for the 2017 flying year.

Right now it has been real cold in the mornings but there have been lots of brave soles out flying. I have not been flying much, not because of the weather, well maybe a little. Been busy around the house mostly, but I will be out flying and making plans for a bit more much needed field improvements.

I will be bringing up some ideas after the first of the year. If your club membership expires end of December, you can send in your renewal to the P.O. box or bring to the next meeting. Your dues and participation are what keeps this club moving forward.



**LIGHT YOUR AFTERBURNERS MEMBERS
BRING A PROJECT TO OUR NEXT MEETING**

CAN YOU NAME THIS PLANE?



See Page 10

CVMA NEWSLETTER

Published Monthly



AMA Chapter # 3798

President — **Mike Kidd**

Vice President — **Terry Steiner**

Treasurer — **Don Crowe**

Secretary — **Bob Steffensen**

Safety Officer — **Charlie Gates**

At Large Members — **Randy Meathrell,
Jerry English,
Larry Parker,
Marc Robbins**

Newsletter Editor — **Bob Shanks**

Chief Flight Instructor — **Steve Shephard,
& Marc Robbins**

Can You Name This Club Member?



See Page 10 for answer.

MARK YOUR CALENDARS CVMA 2017 FLYING SCHEDULE

To Be Scheduled Soon!



Club meetings:
Third Wednesday of Each Month
Time: 7pm.
Prescott Airport Executive Building

Bob Shanks Named Winner of Club's "Jay Riddle Perpetual Trophy"

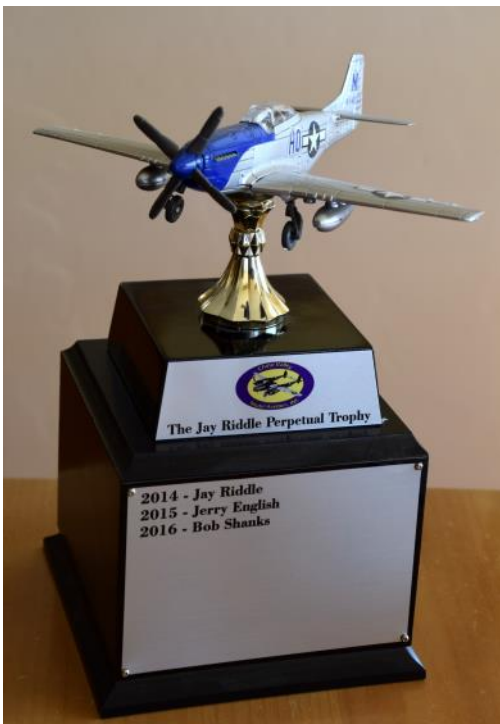
When you are the only editor of a news source it is difficult if not impossible to write about yourself. I try to stay behind the scenes to get information out to all members about our club's activities so I was shocked and didn't expect this trophy. I thank all club members and the board for your support. My philosophy is that this little newsletter "rag" should keep all members tied together in this great hobby.

This award was developed to honor [Jay Riddle](#) who has been such a great

supporter of our club in so many ways. The award is given every year to members who are active in support of the club and its members.

So I join a small group of folks dedicated to RC flying and our great Chino Valley Model Aviators group. This is my 10th year doing this newsletter. It keeps my wee brain warm.

*Thank You,
Bob Shanks*



Bob Noulin Wins Club's \$500 Raffle



Every time a member attends a work party, signs up for club events, or puts in hard work at the field, brings a plane to the meeting for show and tell, a ticket is made out for the year end drawing to win the \$500.

This year, **Bob Noulin's** name was drawn out of the hat, congratulations Bob, you are a superb supporter of our club.

A FEW NEWSLETTER FEATURED 2016 MEMBER MODELS



Dan Avilla's F-104

Our club has some great RC Pilots and models. Some of the models are ARF's, some kit built and some scratch built but what a year. Your editor picked just a few of the outstanding models featured in the pages of our newsletter. I emphasize, just a few are featured in this the last issue for 2016! Keep building members. We really have a great RC flying club.



Marc Robbins' DHC 24" WS Beaver.



John Stewarts' gas powered Sopwith Pup



Dennis O'Connor's gas powered P-47



Randy Meathrell's EDF Stealth F-117



Ray Stone's 50" 1911 Curtiss

MORE OUTSTANDING MEMBER MODELS FROM 2016



Ray Stone's 1911 Curtiss



Dan Avilla's turbine powered F-104



Chuck Colwell's 1966 RC Modeler's 92" WS Omen.



Dan Avilla's turbine powered F-100.



Shel Lebach's Electric Ducted Fan "Viper".



Chris Myhre's 43" WS electric P-40.



CVMA Hosts 12 Veterans from VA Hospital



Dane O'Brien demonstrates 3D flying.

Saturday November 19 was a day devoted to 12 super veterans from the Prescott VA Hospital. The hospital serves 26,000 veterans and all of northern Arizona. Our club helped almost all of them fly on a buddy box with **Randy Meathrell** as instructor as well as having them fly the two simulators we had set up under the cabana.

We also served them lunch of hot dogs on our grill with all the fixings before they departed at noon. We owe a lot to these veterans. A big thank you to all members who attended and helped with this special event for our local veterans.



Photo by Marc Robbins

A group of four veterans in wheel chairs are lined up in the pits checking out the flying activities with a front row seat.



The flight line was crowded with spectators.

Photo by Marc Robbins



Veterans **Kirk Harris** and **Darryl Norberto** right get some simulator time. Rick gives suggestions as VA therapist and veteran **Cory Gurule** watches.



Gregorio Oliva, a WWII veteran, is on the buddy box as Randy instructs as he flies. Veteran **James Young** watches waiting his turn.



Veterans watching the flight line action.



Hot dog lunch preparations.

Basic Knowledge for Installing Electric Motors

By Randy Meathrell

This article was first published in our newsletter a few years ago. We felt it was time for a second look at this data since we have so many new members and many others trying to fly electric for the first time or want to fly both electric and liquid fuel planes.

Your editor printed the page from that first run and has it in a plastic insert taped to one of his workshop cabinets as a guide. Randy Meathrell did a really good job of boiling a lot of confusing information into something all modelers can understand. (Editor)

So how do you figure out what electric motor to use on your latest flying creation? Let's see if I can help you pick the right motor. First I need to define a few things to help in selecting the right motor.

The measure of energy we will use is the WATT. **A Watt is a derived unit of power, with 1 horsepower = 746 Watts.**

To determine the best motor for any RC airplane one needs to determine what you want the plane to be able to do. **Study the graphs at the right for some general guidelines.**

With this information we can determine what type motor to use. As an example, a .40 size nitro sport engine **generates (.40 Cubic Inch X 1250 Watts/Ci=500Watts)** A typical 40 size nitro size trainer weights 6 pounds. If you do the math it shows a power loading of 83 Watts per pound; a MILD acrobatic airplane. Therefore a 500 Watt electric motor will fly the .40 sized trainer the same as a .40 nitro motor.

The WATT is the magic way to size a motor to your airplane.

If your motor does not list Watts in its description, you can determine the Watts rating following this simple equation. **(WATTS=Voltage X Amperage)** These values also help in selecting an Electron Speed Controller (ESC) and battery for your model.

A HIMAX specification sheet for a 500 Watt motor shows it drawing 48 Amps using a 12X6 electric propellor on a 6 cell battery. This indicates the motor requires an ESC of around 60 Amps for your 40 size trainer.

Most motor manufacturers now list the needed specifications for their motors, if not perhaps you should choose a manufacturer who does list all motor specifications. If you still need help selecting the proper motor for your model I will be glad to help.

(rmeathrell@aol.com)



Electric Power

Gentle Rise Off Ground (ROG)	= 50 Watts/Lb of airplane
Mild Acrobatics	= 75 Watts/Lb of Airplane
Aggressive Acrobatics	= 100 Watts/Lb of Airplane
3D or High Speed	= 150 Watts/Lb of Airplane

Nitro Power *Cubic Inch Displacement

Sport 2 or 4 cycle nitro engine	= 1250 Watts/Cubic inch*
Ball Bearing 2 cycle nitro engine	= 1500 Watts/Cubic Inch
High performance 2 or 4 cycle	= 1800 Watts/Cubic Inch
Racing/Ducted Fan engine	= 4000 Watts/Cubic Inch

.40 Sized Trainer

40 cubic inch X 1250 Watts/cubic inch	= 500 Watts
Typical .40 Trainer	= 6 pounds
Power Loading = 83Watts/pound	= Mild Aerobatics

HIMAX Brushless Out-runner Motor

.40 Sport	is approximately 500 Watts (HC3528-1000)
Lipo 3S (3cells) 2P	has 6 cells = 4400 Milliamps
Prop—APC Electric 12X6	
ESC (Speed Control)	- 60 Amps = about 10 mins. flight time

Wattage

Motor will run on a 2 or 3 cell Lipo battery
Motor recommendations—10Amps continuous 3S=11.1 V
2Cell=7.4 Volts
Volts X Amps=Watts so 7.4 X 10 = 74 Watts
11.1 volts X 10 = 111 Watts

Full Size Aircraft Power Loadings 1 HP = 746 Watts

Piper Cub	- 65 Horse Power, 1,220 pounds, - 40Watts/lb
B-17	- 48000 Horse Power, 65,000lbs - 55W/lb
Pitts Special	- 260 Horse Power, 1,626lbs—120W/lb
Spitfire	- 1,440 horse Power, 5,000lbs 215 W/lb

Christmas Party



The facility at the Centennial Club located at the Prescott Airport. Our Master of Ceremonies was **Rick Nichols** with President **Mike Kidd** assisting. All photos below are left to right.



Jolyne Nichols, and Mike & Pam Kidd.



President Mike Kidd and Rick Nichols checking the Christmas list twice.



Martha O'Connor, Lynne and Don Crowe, Marc Robbins and Dennis O'Connor.



Cindi Shanks, Larry & Marcia Parker, and Bob and Phyllis Steffensen.



Mr. & Mrs Daebelliehn, Richard & Peggy Voner and Charlie & Connie Gates.



Jay Riddle, Jerry & Annette Gill, Dan & Coleen Avilla, with son Chad Avilla.



Carol & Randy Meathrell, John Walker, Barb Riddle and Don and Pam Furgeson.



Lou Yanni, Bob Noulin, Allan & Jane Holland and Chuck & Bernie Colwell.



Judy & Tom Wells, Walt & Marcia Findlay and Jerry and Mary Mitchell.



Steve & Therese Shephard, Ken & Kathy Shephard and Jerry & Joyce English.



Diana Van Elburg-Obler with son Eric, Mark & Maureen Johnson, and Len and Carol Brown.



CVMA 2016 FIELD "BLOOPER" AWARDS



Rick Nichols keeps tabs on member "blooper" happenings and a few good works awards too, given out at our banquet.



Walt Findlay, Amelia Earhart Award, a founding club member and for being around to witness Amelia Earhart's disappearance.



Mark Robbins, Cold Day in Hell Award, he is an expert flyer and he finally crashed a plane !



Don Ferguson, thank you for 2 years as Activities Director



Mr. and Mrs. Allan Holland, the Mr. AMA Mrs. Santa Claus Award, we never see Allan at the field just at the Christmas party!



Randy Meathrell, Finding Dory Award he has forgotten his transmitter a number of times when coming out to the field to fly!!



Steve Shephard, Earthmover Award for getting his truck stuck at the field and **Mr. and Mrs. Steve Shephard** the Mr. and Mrs. Hospitality Award for hosting area VA hospital veterans.



Larry Parker, Engineering Award. He had the wrong props on his twin, all it did was spin around the runway.



Charlie Gates, the Lucy Ricardo & Mr. Rolodex Awards. As safety officer setting a bad example with a prop cut on his finger and for carrying all the emergency numbers in his fat wallet!



Mr. and Mrs. Chuck Colwell, Thank you award for all the help to the club over the years.



Bob Shanks, Jimmy Olsen journalism Award, for the newsletter.



Don Crowe, \$50 for his Show and Tell work for our monthly meetings.



Name that Plane: VTOL Dornier DO-31



A view of from inside the cockpit.

Here's one of the only two Do 31s in existence on display at the Deutsches Aviation Museum near Munich.

The Dornier Do 31 was a West German experimental Vertical Take Off and Landing (VTOL) jet transport built by Dornier in the 1960s. The Do 31 was designed to meet a NATO specification (NBMR-4) for a tactical support aircraft for the EWR VJ 101 VTOL strike aircraft designed under the NATO contract of BMR-3. The project was cancelled in 1970 owing to high costs, technical problems and a change of requirement.

Design and development

In the early 1960s, the German Air Force became increasingly concerned that its airfields were vulnerable to air attack from Eastern Bloc forces and actively researched the possibility of dispersed operations which included flying from Autobahnen but required aircraft with STOVL capabilities. Part of these trials involved the modification of German F-104 Starfighters to be rocket-launched from stationary ramps in what became known as the ZELL program. The Starfighters were to be recovered to short strips using aircraft carrier-type arresting gear. The Do 31 was intended to use the same strips as forward operating bases.

When the high cost, technical and logistical difficulties were realized, the German Air Force ceased trials involving VTOL aircraft such as the Do 31, VJ101, and the later VFW VAK 191B which resulted in the cancellation of these projects and further use of these aircraft was limited to research purposes only.

Initial designs incorporated a Bristol Pegasus [note vectored-thrust turbofan in each of the two inboard nacelles and four Rolls-Royce RB162 lift engines in each of the outer nacelles. It was planned to dispense with the outer nacelles and their engines when larger RB153 turbopans (of approximately 5,000 lbf (22 kN) thrust) became available. By mounting the engines in pods, the fuselage could provide a capacious hold with a rear loading ramp.

In all, three test prototypes were built, these being E1, E2 and E3 - the "E" indicating (Experimental). E1 was powered only by the Pegasus engines, and was designed to test horizontal flight. E2 was a static test airframe, and did not fly. E3 had both Pegasus and RB162 lift engines installed, and was designed to test the vertical flight mode. The first prototype (E1) first flew on 10 February 1967 with just the two Pegasus engines. The third prototype (E3) flew in July 1967 with all ten engines fitted. The first hovering flight took place on 22 November 1967. Full forward and backward transitions were made in December 1967.

The Do 31 established several Fédération Aéronautique Internationale (FAI) world records during its ferry flight to the 1969 Paris Air Show

It was the first, and so far only, vertical takeoff jet transport ever built. The project was cancelled in April 1970, although it made its final public flight on 4 May 1970 during the ILA in Hanover. One of the factors that led to the cancellation was the large drag and weight of the lift engine pods which reduced the useful payload and range compared to conventional transport aircraft.

To cope with the complex and fast computations necessary for vertical takeoff, the Do 31 was equipped with a Dornier DO-960 hybrid computer.

Survivors

Do 31 E3 on display at the Deutsches Museum Flugwerft Schleissheim. Both flying prototypes have been preserved in Germany, the fate and current location of the non-flying testbed (E2) is not known. Dornier Do 31 E1, D-9530, is preserved and displayed at the Dornier Museum Friedrichshafen.

Dornier Do 31 E3, D-9531, was initially put into storage at Oberpfaffenhofen, then for several years on display in the open in the courtyard of the Deutsches Museum in Munich and after restoration is now on display at the Deutsches Museum Flugwerft Schleissheim at Oberschleissheim near Munich.

(Data from Wikipedia)

Member on page 3 is [Randy Meathrell](#) in Vietnam.
Thank you for your service Randy!

Understanding Propellers: A Very Brief Introduction

By Chuck Hebestreit, Flagstaff, AZ



Editors Note: Chuck has flown with us but sadly he passed away in July. His complete article is long and quite technical, contact me for all of it.

Propellers are one of the most common components in the tool box of most model pilots. Most of us have 3 or 4 spares per airplane. After one has been flying models for a few years, you could expect to see 20 or 30 or more propellers in boxes all around the shop. We all know they have a diameter and pitch and it would seem that is all there is to them. After all, what else is there? I have spent the last seven years studying propellers and found that there is plenty to know. My friend and mentor Fred Sattler has spent countless hours patiently explaining all things aerodynamic and encouraging me to read and experiment. Fred is the Guru of giant scale pylon racing and is a well-known and extremely successful propeller and airplane designer. I have been blessed to have his friendship and guidance. I'll do my best to condense the information as I understand it and explain it here.

Most people have heard of the Wright Brothers and that they invented the airplane. Their real contribution to powered flight is the propeller. The following quote was provided to me by Fred Sattler.

"...nothing about a propeller, or the medium in which it acts, stands still for a moment. The thrust depends upon the speed and the angle at which the blade strikes the air; the angle at which the blade strikes the air depends upon the speed at which the propeller is turning, the speed the machine is travelling forward and the speed at which the air is slipping backward. The slip of the air backwards depends upon the thrust exerted by the propeller, and the amount of air acted upon. When any one of these changes, it changes all the rest, as they are all interdependent upon one another. But these are only a few of the many factors that must be considered and determined in calculating and designing propellers. Our minds became so obsessed with it that we could do little other work." -- Orville Wright

See what I mean? There is plenty to think about. The Wright brothers pretty much covered all the points here. They were able to understand that a propeller is a dynamic device whose output or efficiency is dependent on forward speed which is affected by rpm, power available and drag which is affected by air density which is affected by temperature. Over a hundred years ago, with no internet or google, they built a wind tunnel to test their theories. Today we just buy another prop without thinking much about them. I am humbled by their invention. Today, we make minor incremental improvements for specific cases with the aid of super computers.

Generalizations:

Over the past hundred plus years we have learned to use math to help predict a propellers performance. The model propellers we use, as well as the majority of full size propellers are a compromise device that works very well within an intended range. The model industry has so many choices available that we can find something that works nearly perfect. With a little math we can predict what propeller we would want to start with. Let's first explore some of the variables to help understand the math. Diameter affects static thrust the most. Pitch affects static thrust the least. Blade area affects motor load the most. RPM affects the results of blade area, diameter and pitch. Blade area, diameter and pitch all effect the resultant RPM.

Propeller modifications

No propeller is exactly designed and perfectly manufactured for all conditions of all airplanes. There are some that are very close to the needs of most pilots for a given airplane, engine, pilot skill, weather conditions and altitude. Minor modifications can be made to optimize a propeller for the conditions of the flight. It can be fun and personally rewarding. In racing we find the engine/prop guy with a box of props with minor differences in diameter, blade width, tip shape and pitch. The weather conditions will change enough from morning to afternoon to make a prop change. I have several props that look identical but are actually modified in 1/32" increments in diameter. I have some with a minor chord change in small local areas and a few with minor pitch changes in local areas. Modifying your favorite propeller just to see what happens is probably a bad idea.

You can make a propeller incredibly unsafe with very little effort. Thinning out the blade is always a bad idea. The blades need the thickness to handle the transfer of power from the engine/motor. If an airplane is hovering the entire weight of the airplane is suspended from the prop. If the airplane is going 80 MPH the prop has to pull the weight of the airplane to that speed so strength is extremely important. Minor changes in diameter are the most common. Lots of pilots make inadvertent diameter changes with a poor landing. A minor sanding to the tips followed by a re-balance and its good as new. We can do the same thing intentionally as well. Minor chord (width) changes can be made by removing small amounts in local areas along the trailing edge. If you have a propeller that doesn't seem to turn up in RPM the way you'd like or you just bought one that is too big in diameter it can probably be trimmed. Hollow carbon fiber propellers are an exception.

Trimming the tips of a hollow prop opens the ends and destroys the strength of the propeller. It should be left to someone with a great degree of composite knowledge. If you did it wrong you could lose an expensive airplane, hurt yourself or someone else. It just isn't worth it. A wood prop and some other solid propellers are a great and cheap canvas on which to do minor experiments. Some of the injection molded propellers can be warmed up in boiling water and twisted to change pitch. We make changes all the time to our models by changing the rudder shape or different wing tips and even spinner changes etc. Modifying a propeller can be the same but isn't for everyone and shouldn't be tried by everyone. It can be loads of fun but [Know your limits!](#)