

From the President...



Well, finally some nice weather! It has been great to see you out at the field flying over the past week. Reminds me what a great club we have and what great members. I know that the long winter has us all needing to get outside and fly!

Well, the new expanded heli field/control line field is



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taking shape. That is exciting and soon we'll be having a rock party as we get ready to put down some grass seed. We completed a great split rail fence project for the park and it was wonderful to see so many Skymasters show up and help out. Great effort guys! In two weeks we have our <u>Field Work Day Sat. May 12</u> to get our field in shape from the ravages of winter and to do general maintenance and upkeep. We'll have a new sign in podium more conveniently located.

Also, this month coming VERY SOON is our <u>Spring Float Fly</u> at Trout Lake, just across the street (M-24) on <u>Sunday May 21</u>. There is also an instructor meeting on Wednesday May 23, at 6:00 p.m. This month also kicks off our weekly <u>Student Training on Wednesdays along with the potluck dinners</u> with the grill being fired up around 5:30 and we eat at 6:00 p.m.

I want to welcome all our new members and I look forward to meeting you.

It is another beautiful day at Skymasters!

Bos

Bob Chapdelaine

President, Skymasters RC



It is mostly dirt now, but watch the new heli / control line take shape this year!

Now some practical things at the field

- Always sign in upon arrival requirement of our lease with state!
- Always wear membership card visible, (especially when flying or in pit area) preferable on shirt or cap – visible so others can see your name etc.
- Don't run up engines for more than 1 or 2 minutes except at test stand or end flight stands.
- Always pull a frequency pin for anything other than 2.4GHz
- Always communicate take offs & landings
- No flying behind the Flight Line
- No solo flying by Students
- Only 5 aircraft in the air at one time 1 pilot per flight station

Front Cover

Steve Kretschmer's amazing creation for the "Wing It" competition sponsored by John Hoover and Flight Line Hobby. See this month's "some Assembly Required" column for construction and finishing details and page 11 of this issue for the rules if you have not seen them.

Paul Goelz photo



"Wing It" contest, design and build

My "Wing It" Wing design and construction

For this years build competition called "Wing It" John Hoover created a basic wing design as a starting point. The key rule in the competition is that the ribs from the base design must be used without modification and you must use all of the ribs from Johns wing design. With that in mind and considering my desire to do a biplane based on the Reno air racer named "Cobra" I needed to come up with a wing design that kept to the rules but also gave me a wing shape that would work with my version of a cobra.



Inspiration plane "cobra"

I also wanted to have an overall design that has a contemporary F3A pattern plane look. The past few articles outlined the design and construction of the fuselage. My overall objective was to have a plane with a wing loading in the 20 to 25oz/sq ft range. In addition I set a target weight of 7-1/2 to 8 lb. Doing the math I came up with a wing area around 850 square inches. This presented a big problem for a biplane design that would be using the "wing it" ribs. With those ribs I would have wound up with two very short wings which in turn would cause some problems with the double gull wing configuration of the Cobra. What I needed was a wing with a nar-

row cord so that I could get a biplane wing that looked right with the F3A fuselage style. Hmmmm what to do.... Ahah... what if I take the required ribs and set them at an angle in the plan view instead of parallel to the flight direction? That would give me quite a bit of flexibility in the resulting wing chord. Who says that the ribs have to be parallel to the fuselage anyway? With that Idea in mind I calculated an angle that would give me a biplane wing area of 850 square inches and a wing span of 48 in. It got a little complicates because of the gull wing shape and the additional fact that I wanted the bottom wing a little smaller than the upper wing. Now keep in mind I've never designed a biplane and I wanted to keep the calculation of the center of gravity simple so the wings would have the same taper ratio and the top and bottom wing spars will be aligned with each other in the top view. Also, I wanted to keep the spars at 90 degrees to the fuselage because I wanted to have 4 individual wing panels that plug into the fuselage and needed to keep the plug-in feature simple. I know, this is a little hard to visualize so stick with me and the pictures will show the details of the design and how the panels plug into the fuselage. Keep in mind that each wing panel will have a dihedral break to create the gull wing configuration and that the dihedral is opposite from the top to bottom wing. Furthermore the attachment design must allow for adjusting each wing panel dihedral, angle of attack and plan view sweep angle. Is your head hurting yet?? My brain was melting down trying to figure out how to do this. One thing going for me was that I anticipated some of this so in the design of the fuselage so I made the fuselage bottom parallel to the thrust line so I could use that for a wing alignment reference. The fact that John selected a flat bottom airfoil was a HUGE advantage when it came to aligning everything.

Construction

I decided to start the construction as if each wing was going to be a typical 2 piece wing. So I did a simple draw-

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ing showing the spars, leading edge and trailing edge angles for a simple tapered wing. I set the leading edge, lower leading edge sheeting, lower spar and lower trailing edge sheeting in place on the drawing. The ribs are then placed at an angle to fit. This automatically created the taper and chord length I was looking for.



Angled ribs to reduce wing chord

To make the wing panel into a gull configuration there will be a dihedral break about 6" from the root. I fabricate a false rib that will be positioned at the dihedral break to support the center sheeting.



False rib

Not shown is another rib that will be the root rib between the inner and outer panels. This rib is not at an angle like the others and is thus not the same airfoil. To make it I cut a balsa rectangle and notched it for the spars. I used a piece of piano wire that was sharpened to mark the shape of the modified airfoil. To do this I rested the wire across the tops of the angled ribs but parallel to the spar and made prick marks on the rectangular blank. I then cut along the prick marked shape to create the root rib. Next I finish sheeting the top and bottom surfaces like the "wing it" drawing. I now have a wing panel of the desired chord length and half span. I now make the remaining 3 panels using the same technique. My design calls for the gull wing panel to intersect the fuselage at a 30 degree angle and the outer portion of the gull wing panel will be at 0 degrees (no dihedral).

To make the dihedral break I used my table saw. I set the mitre gauge at the trailing edge angle and trim the root end of the panel to true it up at 90 degrees to the spars. I then set the fence for a 6 " cut. I then cut through the wing where the gull break will be. It takes 2 cuts at 15 degrees to create the desired 30 degree gull angle.



Cutting the gull angle on a table saw

When you are doing these cuts keep in mind that each of the 4 panels are different since the upper wing has the gull angle going up and the lower wing has the gull angle is going down. And of course there is a right and left panel. Be really careful and think through each cut. A mistake here cannot be fixed. Making the cuts on a table saw results in the outer and inner panels having a perfect fit at the gull break. I made a 1/4" dihedral brace to fit between the upper and lower spars and installed them when I butt glued the panels together.



Outer and inner wing panel being joined

Note in the picture that I use a 30 degree wedge to support the inner panel while I double check that the bottom edge of the root rib is parallel to the work surface.

The wing panels will plug into the fuselage. Sadly because of the 30 degree angle we can't use the typical tubular joiner. In this case we will use an aluminum "hockey stick" shaped blade cut with the 30 degree an-

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gle so that the blade will go straight into the fuselage. The aluminum hockey sticks for the left and right panels will each go completely across the width of the fuselage and will slide past one another when they enter the support structure. But first we need to make 4 identical aluminum hockey sticks. I use my table saw to cut the pieces. I use an old carbide blade when I cut aluminum. It works great. Use clamps to hold the aluminum and cut slowly. If you are not totally comfortable with your doing this have these made in a machine shop.



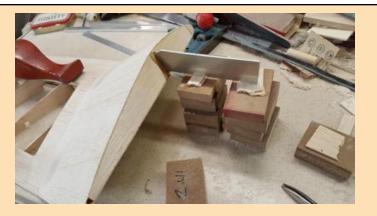
Cutting aluminum wing blades.

Next I made a 1/4" plywood plate that fits between the upper and lower spars at the root end of each panel. I drill the aluminum blades and plywood plates for two #4-40 bolts. When you are done the aluminum pieces and plywood plates will look like this.



Aluminum wing joiners

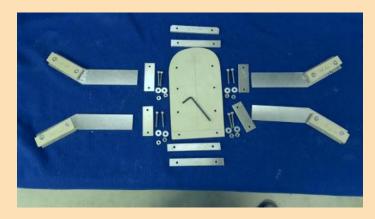
The aluminum joiners and plywood plates will be joined with JB Weld epoxy and the 4-40 bolts. Note that the aluminum joiners are wider than the spar spacing so that when they are assembled to the wing panel they will "self align with the front of the wing spars. The plywood plates will align with the space between the spars. I used JB weld again to bond the supports to the wing spars. The JB weld is a very slow cure very strong epoxy. The slow cure gives you time to do the assembly and triple check the proper alignment (CRITICAL).



Aluminum support being installed

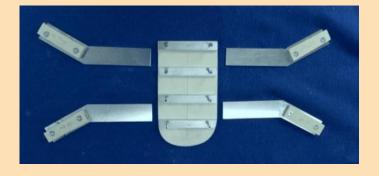
Note in the picture above that I have used blocks and shims to get the support at the correct height and parallel to the work surface. Do this step for all four wing panels.

Next we need a receiver inside of the fuselage to accept the support blades when the wings are mounted to the fuselage. The receiver assembly consists of a 1/8" plywood bulkhead, (4) 3/16" aluminum bars that are bolted to the bulkhead and (4) straps to keep the wing support blades in the receiver.



Wing receiver components

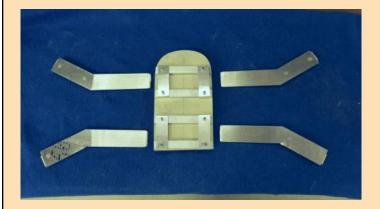
This may be confusing to understand how it is supposed to work so the following pictures should make it crystal clear.



Bulkhead with guide bars in place

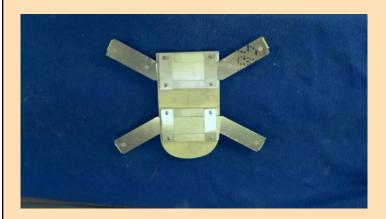
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The above picture shows the bulkhead with the guide bars in place. The guide bars are bolted and epoxied to the plywood bulkhead. The wing support blades are shown with the plywood plates installed,



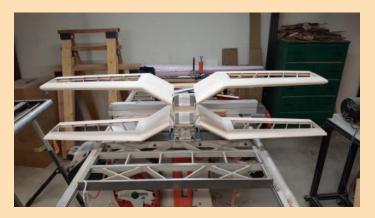
Support blade retainers installed

Above we see the support blade retainers installed. These aluminum strips guide the support blades as the wings are slid into the fuselage. They also help to keep the support blades from popping out of the receiver in flight. They use the same bolts as the guide bars.



Support blades engaged in the guides

The fit between the blades and guides is very important. When you make the blades use a digital caliper and measure the vertical width at both ends. Use a fine file to make the dimensions the same for each pair of blades. You want to be around +-.002" or so. Not too tough to achieve that accuracy. Any slop in the fit between the blades and the receiver bars results in wing "wiggle" at the wing tip. In a biplane you can deal with a little slop by adjusting the inter plane struts to tighten things up.



Wing panels attached to the receiver

Here is the full assembly of the wing panels and the receiver bulkhead before the bulkhead is installed in the fuselage. When the bulkhead is installed you must carefully fixture the fuselage to its 0 degree attitude so you can locate the anti rotation pins for the desired wing angle of attack. In this case I set the flat bottom of the wing panels parallel to the (0 degree) thrust line. The wing attachment design took a lot of thought and a little fiddling to get right but seems to do a good job. The wings are very easy to mount and remove which was one of the primary objectives.



Close-up of the wing blade receiver

The picture above shows a close-up of the receiver with the wings attached.



Wings installed in the fuselage

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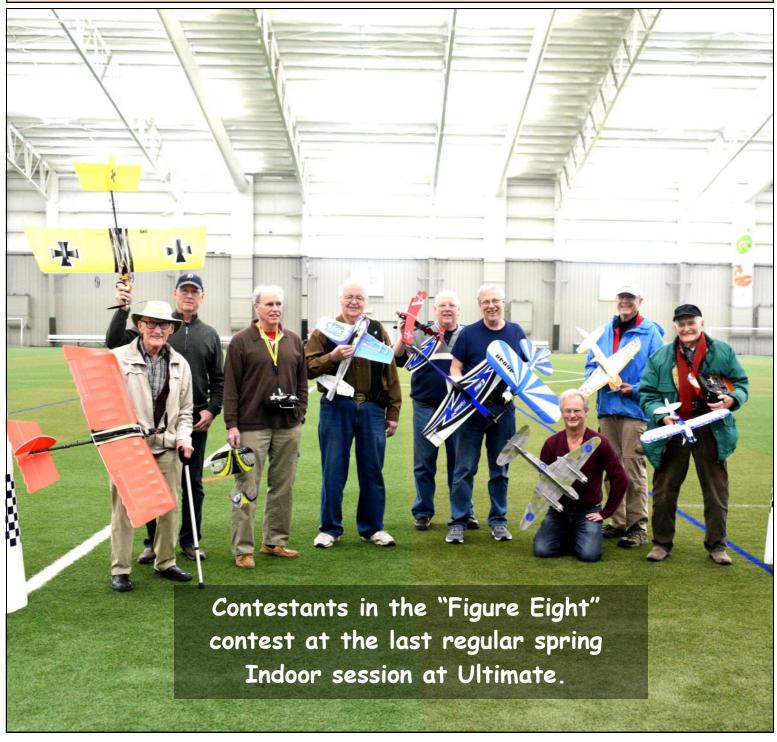
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The receiver bulkhead was dry fit in the fuselage through the lower hatch and squared to the 0 degree thrust line. Slots were cut in the fuselage sides to allow the wing support blades to side into the receiver assembly. Holes were then drilled for the anti rotation pins in the wing panels. After a final check on the alignments epoxy the bulkhead in place. At this point I'll call this project done. Whew!

Next month we will finish the plane with the construc-

tion and installation of the tail feathers, covering the wings and tail, making the landing gear, and painting the model. For the paint job I will be using a technique I've never done before so stay tuned for a bit of R&D.

Steve Kretschmer



Last Indoor Flying for the 2018 season!

Click anywhere in the collage to view the entire photo album on the Skymasters web

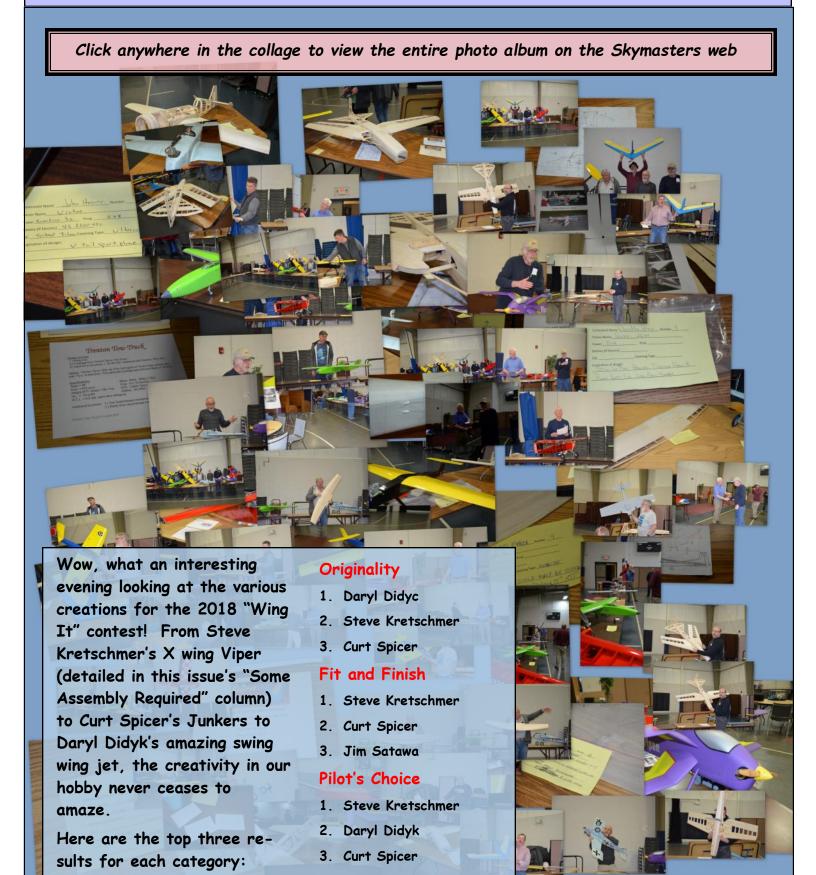
The Skywriter, May, 2018, page 8

Bald Mountain Involvement Day

Click anywhere in the collage to view the entire photo album on the Skymasters web



"Wing It" contest judging



Flightline Hobby "Wing-it" Design Contest 2017/18

Goal:

To create a fun design and building event that allows modeler creativity. This event can be very simple from building a basic square body trainer type high wing model (Newer builders) or the contestant can design a more elaborate airframe to reflect a different model. Example P-51, F-86 etc...

The contest "wing-it pack" will be available at Flightline Hobby for \$24.99. In the Pack you will get laser cut ribs and sub leading edge set (Quality cut by Mark at Retro RC), full scale plan sheet, Laser picture disk of the wing being built as well as a printed instruction sheet of the wing being built.



Wing ribs need to be left alone and used in their entirety. You may vary the spar slot if needed. You cannot increase or decrease the thickness of the ribs or change their chord width. To allow different wing tips or wing designs there will be a wingspan maximum of 70" 56" is stock. No minimum span. It is OK to sheet the wing, add more wings, add more of you own ribs as long as all of the original, unmodified ribs are used.

The fuselage, tail, and control surfaces can be manipulated into any shape. Power plant can be any type: Electric, Glow, Fusion powered etc... You will need to design in a bomb drop mechanism (No fusion there please) for one of the contest events later.

All the contestants will meet in March/April (Date announced later) to share in their completed models. Each contestant will give a brief presentation of their models and its unique properties. Then the contestants will judge each other (anonymous). Models will be judged on the following:

#1 Fit and finishes Scores: 1 need a bit of work to 5 Wow is your name Davinci?

#2 Uniqueness Scores: 1 ARF Fuselage to 5 wow; that is really a neat model.

Also a prize for first time kit builders.

Flightline will donate the prizes in gift certificates. Feel Free to contact me (John Hoover AMA 5429) 248-814-8359 at the store if you have questions or need help with the design or building of your model. My goal is to get a few modelers to glue some stuff together and have some fun. Building your own model will make you think about many things, both in its design and construction. I won't build or design your plane but I love this part of the hobby and will gladly help you carry it out based on your ideas.

We will have at least one flying event later in the season as well. Skymasters and PMAC have expressed interest in contests using this plane.

Stay tuned! John







Five Minutes on Safety

Random Thoughts

Range check

• It is a good idea (that many of us ignore) to do a range check before each new flying session.

A known good radio system can fail, and you never know when that might happen.

Prop safety

- ALWAYS treat the propeller on an electric aircraft like a loaded gun whenever the battery is connected.
- ALWAYS treat the propeller on a fuel powered aircraft with extreme respect when the engine
 is running. Take extra time to think it through when making any needle valve or engine adjustments with the engine running.
- ALWAYS make sure that any cords or cable (like remote glow starters and starter power cords) are well clear before starting the engine.

Throttle Hold switch

- ALWAYS program, understand and USE a throttle hold switch on your transmitter if the transmitter includes that function. A THROTTLE HOLD switch is different than a THROT-TLE KILL switch and is useful on both fuel powered and electric aircraft.
- The THROTTLE HOLD switch locks the throttle channel to idle (fuel powered) or zero throttle (electric) and prevents the throttle from advancing unless the switch is placed in the "non-hold" position.

Battery disconnect

 Electric aircraft are MUCH safer if they are equipped with a master battery disconnect switch, accessible from the outside of the aircraft with all hatches closed / in place. The disconnect usually takes the form of a shorting plug that can be seen and when NOT inserted, you know for sure that the motor is disabled. This is even more important if the battery plug is not easily accessible in an emergency.

Taxi safely

It is good practice when taxiing not to aim directly at an opening between flight stations.
 When taxiing back to the pits, I angle towards a flight station until I get close and then I taxi parallel to the flightline until I reach the opening where I am standing. While still aiming east or west (ie., NOT towards the pits) I shut the motor down and then carry or tail walk the aircraft back to the pits.

Help Wanted at Skymasters

Website Content Editor Updater

Looking for a club member who can keep our club website calendar and website events updated. Required Pittle skill getting around but most of it is auto-



mated. Training provided and most of the information is provided for you to add to the site. Those are interested let Bob, club president or Greg, webmaster know. Email: president@skymasters.org or webmasters@skymasters.org. Thanks!

Club Email System Notice

We have a great club email system. Just an FYI, when you have something to sell or list for sale (or looking for something) please use the

"classifieds@skymasters.org". I encourage use of this email mail list system. Our member to member email address "members@skymasters.org" is for general communications between our members. We have several other great email addresses (actually many) such as the "indoorfly@skymasters.org", floatfly@skymasters.org, and many other email lists that you may be on by default. For a complete list, click this link (you will need to log in with your Skymasters credentials to view the addresses). Each mail list has a specific purpose for our very active club and you'll see that the emails that come as official club communications, i.e. club leadership, event directors or club officers, etc. are marked that way... either way you have control over the emails you receive or don't want to receive... by going to your member profile in your Skymasters Profile and "edit my profile" and then "Edit Email Subscriptions/Options: I would really advise you to NOT change these unless there is some problem. Email is the primary way we communicate what is happening in our club! NOTE: to communicate TO the club you must use the email address you registered with on the site. Also, it is great when you log into the Skymasters website too! www.skymasters.org.



2018

Keith Shaw Birthday Bash Fly-in

Sponsor: BALSA BUTCHERS Quincy, Michigan

Site: Balsa Butcher R/C flying Field - Quincy, Michigan

AMA Sanction# 18/511



8am to 5pm Saturday June 2nd

Enjoy the day with the
"Pioneering Master of Electric Flight"

Open Electric Flying with
"Special Guest of Honor theme"

Dave Grife C.D. Phone# 517-279-8445 email: grifesd@yahoo.com Or visit: theampeer.org

Directions: from downtown Quincy take US-12 East to 2nd gravel road (Clizbe Rd)

Turn south on Clizbe Rd I mile then turn right into drive.

No Landing Fee

Donations for field maintenance & lunch

Quincy is on M12, east of Coldwater.

Google Maps link to field location



2018 CLUB EVENTS

SKYMASTERS RC CLUB – LAKE ORION, MI



April 2018

Saturday April 21 — Involvement Day — Bald Mountain

May 2018

Saturday May 12 – Field Opening/Work Day – Scripps Road Flying Field; Lake Orion

Sunday May 20 — Chet Brady - Spring Float Fly – Bald Mountain Trout Lake; Lake Orion

Wednesday May 30 - Student Flight Training & Potluck begins - Scripps Road Flying Field; LO

June 2018

Saturday June 9 — Night Fly (evening) — Scripps Road Flying Field; Lake Orion

Sunday Jun 10 – Electric Fly – Scripps Road Flying Field; Lake Orion

Saturday June 16 — Control Line Fly In — Scripps Road Flying Field; Lake Orion

July 2018

Saturday July 14 – Open House Air Show 2018 - Recreation 101 – Scripps Road Flying Field

Saturday July 28 – Flightline Wing It Contest Fly – Scripps Road Flying Field; Lake Orion

August 2018

Sunday August 5—Warbirds and Scale Fly In - Scripps Road Flying Field; Lake Orion

Sunday August 12 - OCIA Airshow & Open House at Pontiac Oakland International Airport

Sunday August 19—<u>Corn Roast and Top Gun Flying</u> - Scripps Road Flying Field; Lake Orion

September 2018

Sat. - Sun. September 8-9 - Midwest Regional Float Fly - Seven Lakes State Park Rec. Area, Holly

Saturday September 22- **Skymasters Fun Fly** - Scripps Road Flying Field; Lake Orion

October 2018

Indoor Flying Season Begins - Ultimate Soccer Arenas; Auburn Hills

December 2018

Christmas Party – Orion Center; Lake Orion

Monday December 31—Krazy Snow Fly - Scripps Road Flying Field; Lake Orion

all dates subject to change - PLEASE always consult current information on website: www.skymasters.org

12-11-17 approved eoc Skymasters - 2018 EOC Approved

Skymasters 2017-2018

Club Meetings

Orion Center - 1335 Joslyn Rd, Lake Orion, MI 48360 - Room A

2nd & 4th Thursdays of Month – 6:45 – 8:45 p.m.

October 2017

12th - Club Meeting - Scripps Field

26th - Club Meeting - orion Center

<u>November</u>

9th - Club Meeting - Orion Center - (financial Review & Elections)

December 2017

14th - Club Meeting - Orion Center - (Christmas Party)

<u>January 2018</u>

11th - Club Meeting - Orion Center

25th - Club Meeting - orion Center

February 2018

8th - Club Meeting - Orion Center

22nd - Club Meeting - orion Center

March 2018

8th - Club Meeting - Orion Center

22nd - Club Meeting - orion Center



ON THE WING

Skymasters Breakfast

(Everyone is welcome)

First and Third Monday of each month through the summer... and beyond!

Red Olive restaurant
In the strip mall on Walton
across from Crittenton Hospital
Rochester MI



Skymasters Student Night and Pot Luck Every Wednesday at the field (beginning May 30th). Flying & instruction any time but we eat at 6PM



For those participating we ask that you:

- Bring something for the grill enough to at least feed you and your guests
- Bring a dish to pass (see notes below)
- Bring your own (non-alcoholic) beverage

We eat at 6pm - rain or shine! The potluck is sustained by those participating, with no expense to the club.

Something for the grill:

The obvious choices are burgers, sausages/brats and hotdogs - but other alternatives are welcome. If you bring it - we will cook it! Already this year we have cooked pork tenderloin and chops, salmon, venison burgers and more.

Don't forget the buns if appropriate for your contribution!

We start cooking about 5:30 - having grill items available by then helps us get everything ready on time.

Dish to pass: Don't know what to bring? Each week a board will be up listing supplies needed - from plates to condiments, charcoal, etc. Pick one of the needed items to bring instead!

Not one to cook? A quick stop at local supermarket deli for a side salad, or bakery for dessert always works.

May 2018

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2 Float Fly 9AM Addison Oaks	3	4	5 Saturday Breakfast 8:30AM Iris Café
6	7 Skymasters Breakfast 9AM Red Olive, Rochester Hills	8	9 Float Fly 9AM Addison Oaks	10	11	12 Saturday Breakfast 8:30AM Iris Café Skymasters Work Day 9:30AM Scripps Field
13	14	15	16 Float Fly 9AM Addison Oaks	17	18	19 Saturday Breakfast 8:30AM Iris Café
20 Chet Brady Float Fly 10AM	Skymasters Breakfast 9AM Red Olive, Rochester Hills	22	23 Float Fly 9AM Addison Oaks	24	25	26 Saturday Breakfast 8:30AM Iris Café
27 John's Jet Jamboree 3PM—7PM PMAC	28	29	30 Float Fly 9AM Addison Oaks Student Night and Pot Luck begins Scripps Field	31		

Skymasters Information...

The Skymasters field is located in Lake Orion, within the Bald Mountain Recreational Area on Scripps Road, between M24 and Joslyn (see map). A recreation passport or sticker is required and can be obtained from the Park Headquarters located on Greenshield Road or you can check the box on your tab renewal for a "Recreational Passport".

Flying hours:

QUIET ELECTRICS ONLY from 8AM to 10AM and 8PM to 10PM. The noise limit is 80dBa at ten feet. Regular flying is permitted between 10 AM to 8 PM. The noise limit is 94 dBa at 10 feet. These noise limits are enforced.

Student Instruction & Pot Luck Every Wednesday, May through September. Flying any time but we eat at 6:00 p.m. - rain or shine, literally! For those participating we ask that you bring something for the grill enough to feed (at least) you and
your guests -OR- bring a dish to
pass -OR- bring your own (nonalcoholic) beverage. <u>Something for</u>
the grill: The obvious choices are
burgers, sausages/brats and hotdogs
- but other alternatives are welcome.
If you bring it we will cook it! We've
cooked pork tenderloin and chops,
salmon, venison burgers, steaks and
more. Don't forget the buns.

We start cooking about 5:30 p.m. - having grill items by then helps us get everything ready on time.

Potluck dish to pass: Don't know what to bring, working late? Each week we'll let you know what is needed for the next week from plates to condiments, charcoal, etc. Pick one of the needed items to bring instead! Not one to cook? A quick stop at local supermarket deli

for a side salad, or bakery for dessert always works!

From June through August, club meetings are held at the field, on the second and fourth Wednesday of the month at 8 PM. A great chance to fly and socialize. Winter meetings (September through May) are held at the Orion Center, 1335 Joslyn, in Lake Orion. Bring a model for Show and Tell, enjoy coffee and donuts and listen to the speaker of the evening.

The Skywriter newsletter is available online at the Skymasters web site and is free to all. It may also be printed from the web site if desired. All contributions are welcome. Please send photos and articles to newsletter@skymasters.org If you know of anyone who may be interested in R/C Aviation, please give them a link to this newsletter or give them a copy of an AMA magazine. It may spark their interest!

