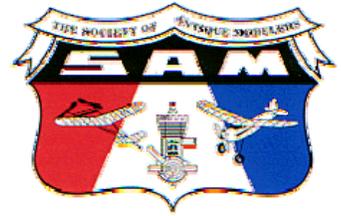


THE NEWSLETTER OF SAM 26, THE CENTRAL  
COAST CHAPTER OF THE SOCIETY OF ANTIQUE  
MODELERS. **EARLY AUGUST 2010 #248**



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**NEXT CHAPTER MEETING** will be at Dick Fischer's on August 18.

**BACK TO BASICS** will be the theme for this issue. As you may have noticed, this newsletter invests heavily in technical tidbits aimed at making us better fliers and less frequent repairers. Many will recognize some repeat information, while newer members and those who don't read or retain everything from these important documents will hopefully see all new and/or useful stuff. As Editor, I've found I retain things better when I laboriously type out, or copy and edit nuggets of wisdom. And we don't discriminate as to sources, so I'll borrow anything that looks useful from any source.

**DON BISHOP**, our local machinist has completed and ran his second scratch built engine. Don says, he just made it as another little plain Jane hobby project and wasn't trying for a powerhouse to propel him into the winner's circle at the next contest. But watch out for the next one.

**O&R 60 PROBLEM SOLVED:** I recently helped Jim Bierbauer set up a fuel tank on his O&R engine. Original O&R clear plastic tanks instantly start dissolving if methanol fuel is used. And those tanks are too small to get a full competitive engine run using methanol instead of gasoline. So an old 35mm plastic film canister became the tank. The engine started and ran fine for me on a test stand, and later for Jim at home. And it flew his ship nicely the next week.

But the following week it wouldn't start and keep running at the field. As is the custom, everyone gathered to take a guess at the problem and its solution. No luck, but the consensus was that it didn't seem to be drawing fuel. Jim took it home, disassembled the tank, and found the problem. The piece of flex fuel line that had been attached to the short spraybar was found lying in the bottom of the tank. So how did that happen?

Yours truly had installed a piece of silicone fuel line which is preferred for methanol. But Jim was using up some gasoline mix he had on hand. I was well aware of that, but didn't mentally connect the dots. The silicone, of course, isn't compatible with gasoline and after a week it had swelled up and dropped to the tank bottom. So a length of black neoprene tubing, which is compatible with gas or alcohol, was the fix.

**ED HAMLER** is back from the Euro-Champs, and finds no takers for the \$20 prize for the little rules contest. So we'll give all chapter members one last shot, at being the first with the answer or the 20 bucks stays in Ed's pocket. The question was what was the illegal entry in our spring contest and why? We'll narrow it down by posting the portion of the results where the answer lies. *Check the next page and get out your rule book if necessary.*

ANTIQUÉ	SHIP	SIZE	ENGINE	1	2	3	4	TOTAL
1. Rick Holman	Bomber	1220	McCoy 60	10:00	10:00			16:02 Flyoff
2 Bob Angel	Bomber	1206	McCoy 60	10:00	10:00			14:48 Flyoff
3. Ed Hamler	Airborn	810	Spitfire	10:00	9:50	10:00		13.06 Flyoff
4. Dave Lewis	Anderson Pylon	1488	S.T. 65	10:00	LOF	5:31		15:31
5. Phillip Stephens	Bomber	1206	McCoy 60	2:50	6:22			9:12
6. Bob Meyering	Bomber	1206	McCoy 60	1:21				1:21

**SPARK PLUG REMINDERS:** Our standard small plugs have ¼-32 threads. That's an uncommon NEF, or National Extra Fine. It looks like the more common ¼-28 thread, but you don't want to use a ¼-28 tap or die to do any re-threading or you'll mess things up.

NGK CM-6 plugs are popular and economical replacements for our larger 3/8-24 threaded plugs. But be aware that the CM-6's come with metric threads which must be re-threaded, or again, you can mess things up. Most but not everyone knew this, because I recently came across an engine that had a stock CM-6 plug forced in which had bugged both the engine's and the plug's threads, and in addition didn't quite seat and seal properly. Fortunately, re-threading straightened out both plug and engine. For anyone seeking more advanced methods of screwing up spark plugs, I can arrange private lessons.

**CHASING THREADS** is another term for re-threading and cleaning up existing threads. Whenever an engine is apart, it's a good idea to chase all threads. This usually removes a little metal along with accumulated gunk, but it saves threads from further damage. And you normally need to do it only once. Factory production taps and dies get worn before getting replaced and can end up not cutting threads as deeply and cleanly as they should. Hopefully your own taps and dies will not have been used on thousands of threads.

You'll notice increased smoothness during assembly after re-threading. Torqueing head bolts and others is more accurate. Sometimes guys have trouble installing props on engines having fairly smooth drive washers. The nuts don't want to tighten properly and the prop keeps slipping. That can usually be cured by re-threading the prop shaft and nut, which reduces the friction causing the problem.

**FUELS:** SAM rules allow either gasoline based or methanol (an alcohol) based fuels in our old sparkers. Some stick to the old gas 'n oil fuels because they like the odor, but there are also advantages. For Texaco, gasoline gives much better fuel mileage than alcohol. It's compatible with the old plastic tanks, while alcohol isn't. And gas mix is much cheaper.

Drawbacks are that gas usually gives less power and runs hotter than methanol. And it doesn't mix properly with straight castor oil. Finding that original 70W conventional motor oil is not always easy, but usually 60W is available in Harley motorcycle shops and is an OK substitute. Blends of castor/synthetic are available in most cycle shops, and are usually miscible with either gas or alcohol. Castor oil is made compatible with gasoline through a cooking process called polymerization, which also reduces its' viscosity. But when using castor with methanol say, an old Brown Junior, the original thicker non-polymerized castor is probably a better choice. Sig brand castor, for one, is the thicker non-polymerized type.

**METHANOL** is the fuel many use for sparkers for all but fuel allotment events. Methanol runs our old engines cooler and stronger, but requires a bigger tank, and will melt the old plastic ones. Rarely, I've had to enlarge the gasoline spraybar outlet hole a number drill size or two. You can buy it as FAI mix, which means just methanol and lube; no nitro as required by our rules. If you mix your own, methanol is available from model fuel distributors, regular (auto) fuel distributors, hot rod shops, and at drag races. Nitromethane is allowed in RC glow engines (only) and can often be found in some of those same places. Regular 60 or 70W motor oil doesn't mix with methanol, so use castor oil or a synthetic/castor blend.

**NO FOLDING WINGS!** The usual failure mode for wings folding under extreme stress is that the upper spar(s) collapse. The bottom spars failing first under tension is rare. So carbon strips on the bottom or the top will do little good. Better is the use of beefier top spars including use of spruce or beefier balsa for top spars. That also keeps the purist crowd happier.

**COMPUTER RADIOS** can be a blessing or a pain in the aaa-neck. For those ships that try to loop under power, you can program a computer tranny to drop the elevators slightly at high throttle and raise them back to glide position at low throttle/shutoff. Of course we used to just do that by sliding the trim switch, back when we had real sliding trim switches.

But computers have introduced several new ways to help you crash, as we've reported often in our "computer crash of the month" series. The #1 favorite is having the wrong model number programmed in. Before computers we learned to manually set up each ship's control system properly in the first place, rather than rely on electronics to do it for us. After a recent episode of this problem I've started keeping a clothespin on the right control stick between flying sessions. Marked on the pin is "Model #?"

I almost crashed on a cold day wearing gloves when the glove pressed on the rudder trim. Unlike the limited travel of slide trims, the computer's trim button will just keep driving a servo all the way to the stops.

Don't use the computer kill switch to shut down your ignition system. When you release the switch, it can cook a coil.

Modern radios seem to be related to porcupines with all of their little toggle snap switches. It's impossible to keep track of all of them, so make sure each little unused switch is set to change nothing when they are accidentally clicked. For our type flying, most of them are unused. Radio makers should make them threaded and removable.

Many interference problems go unrecognized since their small twitching effect on controls is subtle. But they can still be the source of ignition stutter. Spread spectrum (2.4 GHz) radios have cured lots of spark ignition interference problems.

**NEEDLE VALVE ASSEMBLIES** on some old sparkers are sloppy, or missing and hard to replace. The OS 15 CL NV assembly fits the O&R SV engines perfectly and adjusts with good precision. Tower Hobbies stocks these as part L5CR4702 @ about \$13 each. Oddly enough the OS 10 spraybar is fatter and would require the O&R intake tube to be drilled larger.

**DOPE SUBSTITUTE:** Across the internet came a question asking what could be used as a substitute for dope when he ran out during a project. An answer came across that cut up ping pong balls dissolved in acetone would work. Some jokester immediately replied that he seen a couple of ping pongs running across his yard lately, but he didn't have the heart to shoot them.

**SCHNUERLE ENGINE I.D.:** I've been asked by OT fliers more than once if a certain engine was a Schnuerle or a cross flow. Here are the differences.



This Rossi cross flow is identified by that one big bulgy bypass directly opposite the exhaust port. We're talking about the area on which the name and lettering is cast in.

Bypasses let the intake charge flow up from the crankcase to the combustion chamber. Not all are this pronounced.



This Moki Schnuerle has three bypasses. The larger one is in the same place on the left side as the engine above. There are also two extra bypasses called boost ports fore and aft. The forward one is visible in the picture. The main bypass on a Schnuerle doesn't shift if the exhaust direction shifts. That's because the main bypass entry would be partly masked by the crank web. The boost port intakes sit higher in the sleeve and are above the crank web.

Almost all modern glow engines are Schnuerle ported. And since they run stronger, SAM rules give the cross flows an advantage with longer run times. I believe the rules did a pretty good job of matching them up as long as you have one of the better running cross flow engines, such as a Super Tigre Fox combat etc., or just about any 1960's or later control line racing engine such as K&B or Fox.

**SPEED 400** event motors are limited to the inexpensive German Graupner Speed 400 brushed motor. Guys flying the event are sometimes having a hard time finding them. That's probably because the electric business has turned into a big airplane, big bucks industry and few dealers want to bother with the small change stuff. Also few brushed motors are being used. But you can Google Graupner USA or phone 941-925-9653, who stock the S400 motors at just \$11.45 each. This came thanks to our Downers Grove Illinois member Jack Hiner.

**TANDY WALKER**, our member from Arlington Texas, built a 300 Sq. Inch Cloudster for the S400 event, aiming for this years SAM Champs. He did his usual good job of thoroughly recording every construction step with photos and highly detailed narrative. His builds are stored on the official SAM web site and would be particularly useful for anyone starting in the hobby. Tandy also records his test flights. Unfortunately the Cloudster was a fly away during the first day's tests. It was found a week later across town badly damaged.

However, his documentation was not to be wasted, as he decided to jump right in and build another. Tandy was able to salvage some un-damaged parts from the original. So the re-build was completed in short order and one of the successful test flights is shown below.

Tandy has also recorded every step of his several other models for this year's Champs, including the arrangements and packing of them in his van for Muncie. Now we'll watch the results and see if he wins an overall championship. If so we'll have a complete historical record of the whole affair, probably including some of the goings on at Muncie. Go Tandy!

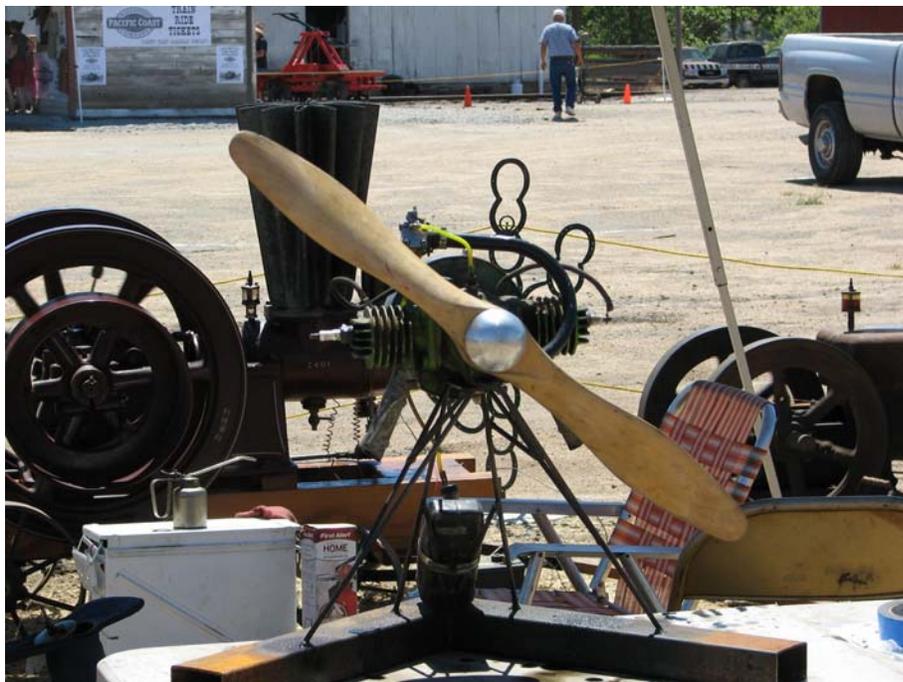


Since we're showing construction progress, we'll start tracking the Bierbauer/Fischer build of the Custom Cavalier. But don't expect quite as much detail as Tandy gives us.

Here's Jim Bierbauer with the start of the Custom Cavalier in front of Dick Fischer's garage.



This joint project is to use an OK twin and possibly an alternate Forster 99 for power.



Here's an opposed twin I saw last month at a big convention of "hit and miss" engine guys. That prop is about two feet in diameter, and the engine looked too old and gutless for a man carrying ultra light, but too big for a giant scale ship. It took a while to find the owner, but I had to know. It turns out to be an old Maytag washing machine engine with a hand carved prop.



Van Wilson, our chapter member from Willow Alaska sent a batch of photos of their “Sorta old time contest” held a couple of months back.

That’s a pretty good turnout for a group that probably has some distance to travel to get together. It looks like the spring thaw was well underway.



And panning over to the right we get a view of the pits and a corner of one of the host’s buildings.

Van and his lady friend “ Lady Beth” are both enthusiastic modelers who showed up at the ’07 SAM Champs and vowed to return to future champs with models to fly .

**ELECTRIC MOTOR HAZARDS:** There are a number of those and they are real. E motors can suddenly start up under a number of conditions. I’d read the warnings and was careful about always removing the prop as recommended when installing, setting, or removing motors, batteries, etc. But a near accident still occurred one day when I’d received a new motor. With no prop on, I turned it on at the workbench. Brain fade had failed to remind me that the case of an *outrunner* motor is the rotating part. It was startling and it quickly wound up the cords, but I got it shut down before any real disaster struck.

**LITHIUM-POLYMER BATTERIES**, abbreviated as Li-Pos are also hazardous. Mike Myers had a battery fire, (Ref: P 84, July 2010 Model Aviation) but fortunately he had the battery in one of the ceramic jars made just for the purpose. On the next page Canadian Roy Bourke describes why you don’t want to go too much oversize on a speed controller.

## Over-Current Protection in Brushless Motors

**Roy Bourke**  
**MAAC 204L**

Section 6.1 of the MAAC Safety Code recommends that all electric aircraft be properly fused “between the motor and the first connector when using a BEC system. Units that have separate power to the radio may prefer to fuse between the battery and the connector.” This regulation is currently under review and will likely be amended somewhat in future revisions of the Safety Code

Obviously the original regulation was drafted without too much regard for the newer brushless motor types because, how do you fuse a 3-phase motor/controller system?? Putting a single fuse in one of the 3 lines to the motor just doesn't cut it!! Blowing a single fuse will disable two of the phases, but the motor will still run, or try to run, on the remaining phase. And putting a fuse in all three lines wouldn't cut all power to the motor unless two of the fuses blew simultaneously. One could of course fuse one of the power lines from the battery to the speed controller but this should not be done unless the radio receiver has its own separate battery, because blowing this fuse will disable a BEC system in the speed controller.

Fortunately, most electronic speed controllers already have some form of fusing, either a thermal cut-off or over current protection. Castle Creations, and possibly some other ESC suppliers go one step further and give the user a bit of programming control over the sensitivity of this over current cut-off, but not much control of the level itself. The cut-off level for over-current is usually based on the normal current rating of the controller, and most controllers are designed to allow a temporary surge of current over the rated current draw for continuous operation. (For example, the Phoenix 80 controller will pass 80 Amps continuous and 120 Amps surge).

So if we are using a BEC, essentially we are relying on the speed controller to provide us with this safety fusing. But just as we must carefully select an appropriate fuse size for a brushed motor, we need to select an appropriate controller size for a brushless motor. Yes, an 80A speed controller will control the speed of a motor that is designed to run on a maximum of 25 Amps. But what if a short develops in that motor, or if something stops the prop from turning and/or the motor shaft locks up while the speed controller is calling for maximum speed (after a crash for example)? How much current will the motor draw? Probably a high enough level to blow the motor, and maybe even a high enough level to cause the LiPo battery pack to explode. (Have you ever seen one explode? Check out the videos at <http://www.utahflyers.org>). But the 80A speed controller won't cut power until the current level is well above 120 Amps !!

So, if you are using a controller with BEC, this just underlines the importance of matching the size of a speed controller to the current capability of the motor. Admittedly it is tempting to use a larger speed controller than is needed, to make sure that the speed controller stays cool and is never overloaded, and may be useful for a larger motor in a future aircraft. But the downside is that you may be creating a potentially dangerous over-fused and under-protected condition for the rest of the power system.

If you do insist on using an oversized controller, the safest way is to appropriately fuse the battery line to the controller and install separate power for the receiver and servos (Hint: The two-bladed automotive fuses sold at auto parts stores can serve nicely as drive-system arming switches as well as fuses)

2010 SAM 30 LOREN SCHMIDT MEMORIAL ANNUAL CONTEST – SCHMIDT RANCH  
 JULY 24-25

**BROWN JR LER**

1) Gary Leopold	Polly	11:25	--	--		11:25
2) Jake Chichilitti	Buccaneer Std	5:04	7:31	6:19		7:31

**OHLSSON SIDEPORT**

1) Jake Chichilitti	R/C-1	6:29	5:30	7:00	5:29	13:29
2) Gary Leopold	Miss America	3:17	7:00	4:06	--	11:06
3) Dave Lewis	Bomber	3:02	2:37	2:19	--	5:39

**A GLOW/IGNITION COMBINED**

1) Dave Lewis	Bomber/ST 19	2:24	7:00	7:00	--	14:00
2) Jake Chichilitti	Playboy Jr/Elfin	3:59	3:31	:25	--	7:3

**B GLOW/IGNITION COMBINED**

1) Bill Copeland	Bomber/OS 25	3:35	8:00	5:46	7:25	15:25
2) Dave Lewis	Bomber/K&B 3.5	5:45	8:00	5:50	--	13:50
3) Bob Covolo	Bomber/ST 29	2:07	5:26	5:11	2:28	10:37
4) Joe Poco	Bomber/OS 25	2:45	4:21	4:19	3:12	8:40

**C GLOW/IGNITION**

1) Stan Lane	Anderson/??	8:08	8:45	9:00	--	17:45
2) Jake Chichilitti	Dallaire/ST 60	3:38	4:13	--	--	7:51
3) Dave Lewis	Bomber/K&B 40	3:36	--	--	--	3:36

**TEXACO GLOW/IGNITION COMBINED**

1) Dave Lewis	Bomber/OS 60 4-S	16:14	--	--		16:14
2) Bob Von Kinsky	Record Breaker/OS 4-S	9:56	14:10	12:57		14:10

**½ A TEXACO**

1) Don Bekins	Playboy	10:52	11:27	--		22:19
2) Mike Clancy	Playboy	10:27	8:56	10:32		20:59
3) Jake Chichilitti	Baby Playboy	9:06	7:41	8:07		17:13
4) Stan Lane	Anderson Pylon	6:28	LOF	--		6:28

## 1/2 A SCALE

1) Cecil Cutbirth	Curtis Robin	6:15	--	--	6:15
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## ANTIQUA COMBINED

1) Dave Lewis	Anderson/ST 65	10:00	--	--	10:00
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## FOXACOY

1) Bob Covalo	Bomber/McCoy 35	7:00	5:52	4:31	5:41	12:52
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## SPEED 400 LMR

1) Jack Albrecht	Bomber??	10:00	10:00	--	20:00
2) Mike Clancy	Kerswap	7:15	8:50	8:48	17:30
3) Steve Roselle	Dallaire	8:11	8:09	--	16:20
4) Dave Lewis	Bomber	6:17	7:33	--	13:50

## SPIRIT OF SAM CONCOURS

1) Jake Chichilitti	Taylor E-2	(coin toss)
2) Cecil Cutbirth	Curtis Robin	

Lots of sunshine and both days had temps in the 90ies but the stiff breeze had a cooling effect. A couple planes were driven off the field by the wind but I believe both were recovered intact. Only one crash that I know of, a nice Playboy Jr/ Elfin.

Pretty good turnout; I have only 13 scorecards but I saw about 21 signatures on the AMA sheet.

As always the fliers and friends were royally hosted by Miriam Schmidt. The food was very good and there was quite a variety too.

On Sunday, at the Contestant's Meeting, it was decided (unanimously I believe) to end the contest at 12 Noon since the wind was very strong at the time. However, the wind slacked off and there was good flying the rest of the morning, not calm but very flyable.

It was a good contest over all. The Champion Points Trophy went to Dave Lewis closely followed by Jake Chichilitti.

**THE FINAL WORD:** One last repeat item. Most ships fly better with varying degrees of **washout** to prevent tip stalling. And RC ships need to have no difference in warpage between right and left wings. Washout means the rear of each wing tip is raised slightly. Corrections are made on iron on coverings by heating and twisting the wings. The best way of doing this is with a hot air popcorn popper with the top removed. With microwave popcorn popular, these poppers are hard to find, except at thrift stores.

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