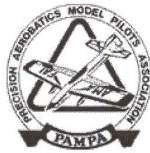


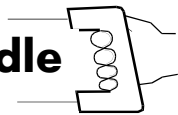
Circulator  
Howard Olson, Editor  
W14441 State Hwy 29  
Bowler, WI 54416



# Circlemasters Circulator

Newsletter of the Circlemasters Flying Club  
Milwaukee Wisconsin  
Academy of Model Aeronautics Chartered Club # 662  
January 2016 Volume 13 issue 2

## At The Handle



If you would like to contribute material, please submit to the address on the cover or contact me at (715) 697-8458 I may be reached via e-mail at [clmodman@wctc.net](mailto:clmodman@wctc.net)

### Ramblings from your Editor

Hello control line aficionados, it's back, another issue of the *Circulator* to put your U/C switch in the "ON" position. This month, I hope to have some things that interest you. Here's a biggie: Beginning on February 19th, model aircraft in the U. S. are supposed to be registered with the Federal Aviation Administration. Does this include C/L or "tethered models? I don't know and apparently no one else is too certain either. The latest info I have seems to indicate that "traditional" control liners and free flighters, i. e. without 2.4 gigahertz actuated features, are exempt, another source has ALL model aircraft requiring registration. Wonderful. How exactly would a terrorist fly a control line model into his chosen target? Apparently, in the era of big, fat, bloated government, none of the rule makers care to be troubled by facts, nor do they have the time to research the topic. The man is way too busy "serving" you in other ways, that 18 trillion dollar national debt isn't going to raise itself, you know. If some club member would like to get the latest info on this topic from the AMA, it would be a great benefit to your fellow club members at the February meeting, to know the current score.

On to other, happier topics. This month, I am beginning a series on simple modifications you can make to your good old two stroke model airplane engine to optimize its performance for throttled applications. Note that by performance I don't really mean making your old mill turn 20,000 revs and set some kind of personal speed record. ( Not that it isn't a good idea mind you. ) By performance here, I am referring to reliable throttled operation, no sputtering when you open her up, or idling until just before your bi-plane gets released for a mass fly, and then inexplicably croaking in front of all of the spectators at the Steam Show. I can just see your pit guy now, feverishly flipping the prop while other planes whiz overhead, making both of you look like idiots. You know the drill. At any rate, the old girl might also pick up a *few* RPM in the process. I offer you fair warning, this is a tinkering man's project, not well suited to plug and play style modeling.

Name That Plane is back again this month. Only a couple left for the winter, as another spring is coming up soon. As I stated before, rather than hand out trinkets to the monthly winners, I'm planning to give out a slightly larger prize in May, with the winner selected from all qualifying participants for the year. Don't get your hopes too high on this.

That will do it for this month. I hope you are building up a storm. You can never have too many models to start off the flying season with. Just ask Wayne.

See you in March, I will be suffering at work while **you are at the meeting.**

Bighow

***CIRCLE MASTERS FLYING CLUB***  
***Meeting Minutes for JANUARY 2016***

The first monthly meeting for 2016 was held at the Pauline Haas Public Library in Sussex, WI on Saturday January 2<sup>nd</sup>.

The meeting was brought to order by Pres. Greg at 1:00 PM. All members (8) were furnished copies of the latest newsletter as it had not been sent out via email as was usual. The minutes of the December meeting were approved as published.

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The Treasurers report was given by Ralph and his report was approved as presented.

**REPORTS & ANNOUNCEMENTS:** Wayne reported that he has submitted the necessary info on the forms downloaded from the AMA for re-chartering and insurance for the flying field.

**OLD BUSINESS:** Greg reminded the volunteers for the R/C Auction of start times and responsibilities. Greg also passed out quantities of the new club pamphlet. The pamphlet is a tri-fold type with info on the club for anyone interested in joining or observing our mastery of the circle. Pete confirmed that the club contest date will be June 5<sup>th</sup> and the location will once again be Mukwonago High School parking lot. A full description of events can be found in the PAMPA magazine. Flyers will be sent to all previous participants as well.

**NEW BUSINESS:** Don reported that he has been contacted by Marleen from the Town of Lisbon regarding participating in the Heritage Weekend in August and which day we would prefer. It was decided that Saturday August 6<sup>th</sup> would work out best thereby leaving Sunday as a rain date.

**WEB BUSINESS:** The web master was absent.

All business having been discussed, Greg asked for a motion to adjourn. It was moved and seconded to adjourn the meeting at 1:35 PM.

**SHOW AND TELL:** Mike showed his indoor stunt plane which he plans to fly at tomorrow's R/C Auction flying session.

Submitted by: Wayne M. Schmidt, Secretary

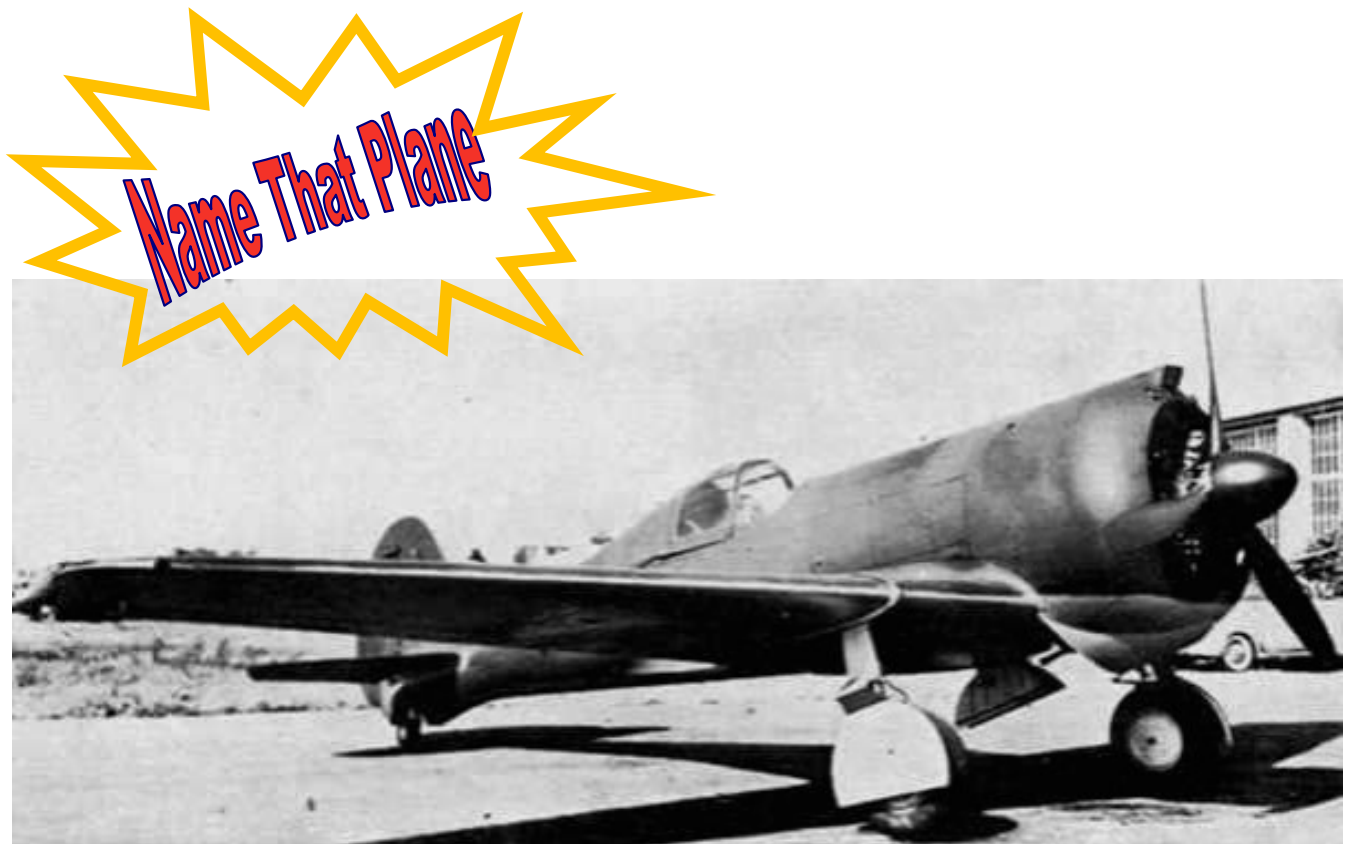
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# *Upcoming Events*    **Go to the meeting...or else**

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February Meeting: Saturday February 6th, Pauline Haass Public Library N64 W23820 Main St, Sussex, WI. Meeting at 1:00PM Entertainment and Fellowship at 12:00 noon.

March Meeting: Saturday March 5th, Pauline Haass Public Library N64 W23820 Main St, Sussex, WI. Meeting at 1:00PM Entertainment and Fellowship at 12:00 noon.



Is it Japanese? How about Italian? I'll never tell! Good Luck.

# A SIMPLE ENGINE MOD PROJECT

## FOR THE GUY WHO CAN'T LEAVE WELL ENOUGH ALONE

Let's talk about mixing it up. No, not on the dance floor or in a street fight. What we want to mix up is fuel and air. If you like to work on model engines, this relatively simple project might be for you. There's nothing too exotic here, the stuff we are dealing with would likely be in use by your average sport flying control line guy. You might even find it rewarding, when your favorite engine purrs like a kitten and roars like a lion when you move the throttle. The engine I chose for this do-it-yourselfer is the always popular O. S. FP40. Everyone has one of these engines, and they are known for their reliability. The FP was the beginner's and low key sport flying engine in the O. S. line up. As such, the price tag was kept reasonable by utilizing a bushed crankshaft and an economical, single needle carburetor. The newer LA series of engines was nearly identical in function, wrapped in a more space age looking exterior. I may as well lay it on you straight, I hate single needle carbs. The single needle, or "air bleed" carb uses one mixture adjusting device to control the flow of fuel into your engine, no matter if it's screaming at WOT or attempting to tick over at idle. The single needle adjustment, must by its nature, be a compromise. The little air bleed hole with its adjustable opening tries to help out by letting in more or less air at idle, so the engine has a fighting chance to keep running while having access to the same amount of fuel it would see if running full tilt. Not ideal. The end result is that your beloved FP40 suffers with a lagging throttle response and possibly a short lived idle as the engine is free to draw in extra fuel, unless the air bleed screw is in perfect adjustment. Another downfall of the stock carb is the limit they place on top end operation. One way to force a model engine to behave, is to run it with a smaller bore in the carburetor. The small opening allows for less air to get in, creating more consistent fuel draw, but also choking off potential power when the throttle is opened. Take a look at most Enya engines. They use air bleeders on many of their power plants, even the high end variants. What else do you see? Typically a very well made carb, but with a bore considerably smaller than competing engines would have. That being said, Enya makes the best single needle carbs around.



Here is our stock FP40 complete with budget carburetor and standard dustbin style muffler. What can we do to take it up a notch?

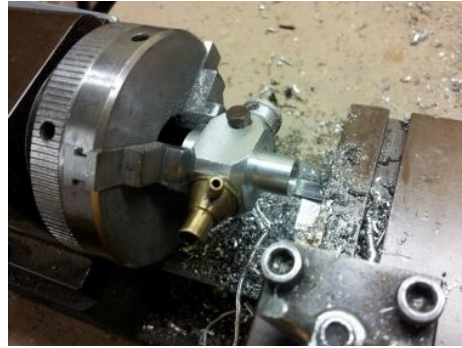


Here's the el-cheapo carb. The arrow points to the air bleed hole that hopefully lets in enough air to keep her runnin' at idle.

So now what? Our stout FP40 deserves better, so let's replace that lousy carb. What you need here is a proper two needle carb. The two needle carb functions by having separate needle valves for high and low speed operation. As the throttle opens, the spray bar in the center of the throttle shifts to take the fuel metering task away from the low speed needle and on to the high speed, which primarily controls fuel mixture at only wide open, or nearly open throttle settings. This way, the engine only has available to it, the amount of fuel required to run at the corresponding throttle position, not all or nuthin' fuel metering as you get with the single needle. Now the challenge is to find a two needle carb that will work on our FP. The FP series engines have a pretty small throat cast into the crankcase compared to comparable engines. That limits our carb choices considerably. O. S. used to make some really excellent carbs for .40 sized engines. The 4D carburetor is still one of my all time favorites. 4Ds were supplied on the FSR line of engines back in the 70s and 80s but are still found at swap meets and on ebay. Trouble is, they just won't fit the small throat on the FP. Webra TN carbs, on the other hand, can be made to work quite nicely. The carb I am speaking of came installed on the Webra .32 to .36 sized engines in the "speed" line. So, get a hold of one of these Webra gems and you are all set, right? Well, almost. Even the Webra engines with their smaller displacement have a larger throat diameter than the FP40, but we can make it work. If you have a lathe to use, it's no sweat to turn down the TN carb body to fit snugly into the FP's measly mounting hole. No lathe? Use the tried method of chucking the TN carb body into a drill press and reducing the diameter with a file and emery cloth to achieve a good fit. Be careful, take off too much material and your carb is likely ruined.

Another problem if you get a bit file happy, is that the TN body will be getting mighty thin. Take your time and test fit often. You want to remove only the minimum amount of material to allow for a snug fit. As a last resort. You could just hand file the TN carb to fit and seal up the joint with the crankcase by other means to exclude air leakage. No air leaking past the carburetor is absolutely critical if you want consistent engine runs.

Here is our Webra TN 2 carburetor being turned to fit the FP40. Note that there isn't a lot of metal left after turning down, so don't overdo it. Notice how I always clean up the shavings from one lathe project before proceeding to the next? Yeah right! You wouldn't get that pile of metal chips if you did a hundred of these mods.



So now you have a nice fitting carburetor for your FP40 project. How are you going to hold it into the crankcase throat? One way to mount the carb is with set screws in the crankcase throat. The original air bleeder was held in by screws passing through the crankcase casting and threaded into holes in the old carb body. Won't work so good with the Webra carb, the remaining metal is too thin. Instead, put your modified TN carb in place, mark through the holes from the original mounting screws in the case with a sharpie marker. Take a drill and lightly dimple the carb body on the marks you just made. Unfortunately you will need to drill and tap the crankcase mounting holes so you can use set screws to obtain a good friction hold on your modified carb body to keep it in place. Don't overtighten the set screws! Overtightening will collapse the carb body you just carefully altered to fit. An alternative method of mounting the new carb is by simply gluing it into the mounting throat in the crankcase with JB Weld epoxy. I know it sounds like a hack job method, but it works extremely well and looks pretty good too. I have used this method and can attest to its effectiveness. Just be sure to prep the mating surfaces by scuffing lightly and then thoroughly cleaning them with acetone, or better yet, MEK to ensure they are free of oil. Then glue the carb in, not too much JB Weld, you don't want it fouling up the opening in the case! Make certain the carb is in straight, you can get it out again with heat after it cures, but it's a messy process. Do it right the first time. The JB Weld method can also help you out if you went a little nuts with removing metal from the carb body. Nobody else has to know you didn't do an awesome job on the carb, glue it in and that's it!

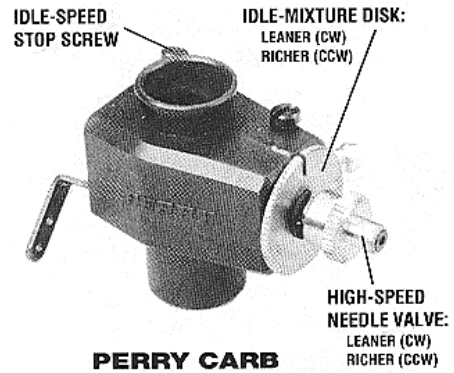


Here's the FP40 project engine resplendent with it's new Webra TN2 carburetor. This one is held in with 8-32 set screws and not JB Weld, but either method works well. What's with that black muffler? That's not stock. More on that in a later installment. There's a snazzy spinner nut in place of the plain old prop washer and nut too.

This type of carb swap can be accomplished on nearly any engine. There are a few things to avoid. First off, don't succumb to the temptation to install a carb with a much larger bore than the original, to gain more revs. You will only cause yourself pain. Installing a much bigger carb can result in poor fuel draw, or no draw at all without pressure. With a moderate upsze, you might get away with just muffler pressure to keep the nitro flowing. Jett brand engines are famous for having a carburetor bore sized so they run great on muffler pressure, but not on suction alone. You don't want to get into operating with crankcase pressure with a throttle unless you fly carrier, it can be a beast to get such a system to work reliably. Another situation to avoid, is going the other way and under sizing the new carb on your project. Too small of a carburetor will usually run ok, but the engine will be restrained from making all of its potential power output. If you order a Perry brand carb to fit your engine, they always seem to be undersized for the application at hand.

I personally am not a fan of Perry carbs anyway. Sure, they can be made to work and work well, but it just isn't worth the hassle. These contraptions use a different method to separate high and low speed operation that seems unnecessarily complex. It's just easier to use a conventional unit.

Here's the Perry carb. They must work, they are still being made. I have seen a lot more guys swear at them than swear by them, so I use more straightforward designs..



If you are ready to try your own engine mod project, just about any engine will do as a starting point. Sometimes you can get a surprising increase in performance from a simple parts swap. The MVVS .40 on my bi-plane is my all time favorite sport flying engine. This engine actually has a carb fitted that came off of a Norvel .40 a few years ago. This combo was made to be together. The Norvel engine was a hopeless piece of junk. When it warmed up, the piston/cylinder fit would disappear and it would just quit. What a pile. The Norvel carb is another story. The MVVS runs so beautifully with this carb that it's a joy to operate. This engine will idle smoothly all day and still tear up the sky when you open her up. Backing off the throttle results in a ringing sound similar to a finely tuned Japanese motocross motorcycle in miniature, letting you know it's happy. So, try a project like this one, you might find you have a winner too.

This rather long winded article isn't over yet. After I can get out and run the project engine, I plan to get some performance numbers so we can compare them to the stock configuration. There's more mods in store for the FP also, so stay tuned.



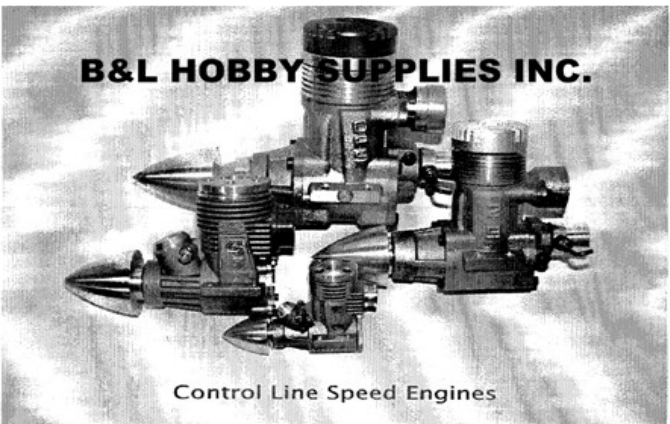
Here's the MVVS .40 with a Norvel carb installed. A superior carburetor from an otherwise terrible engine really works great on the MVVS. You never know what works until you try it!

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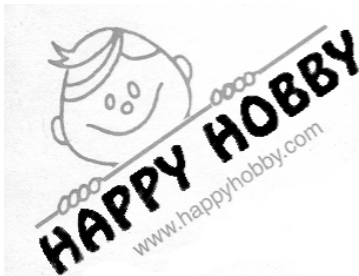
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