

# Middle Point R/C Flyers



## July 2018 Newsletter

### Upcoming Events:

- August 2 – Membership Meeting @ O’Charley’s
- August 11 – National Model Aviation Day Charity Fly-Antioch TN
- August 24-25 – MTRCCA Fall Fly-In – Dickson Airport
- September 6 – Membership Meeting @ O’Charley’s
- October 4 – Membership Meeting @ O’Charley’s
- November 1 – Membership Meeting @ O’Charley’s
- November 3 – MTRCCA Swap Meet – Antioch, TN
- December 7 – Membership Meeting @ O’Charley’s
- January 3, 2019 – Membership Meeting @ O’Charley’s
- February 7 – Membership Meeting
- March 7 – Membership Meeting @ O’Charley’s

### Prez Sez:

Wow, more than half of the year is already behind us. Time sure is “flying” by. The good news is that there is still a lot of good flying weather and long days ahead of us.

The venue for our club’s National Model Aviation Day Fly-In for Charity has been changed to the Middle TN R/C Society’s club field at the Cane Ridge Park in Antioch. The board decided that this was best considering the erosion issues that we are experiencing at our field. If we can’t provide a great venue for our guests then it is best that we don’t hold any events until everything is worked out satisfactorily. There’s always next year. Since the event is co-sponsored by Cane Ridge, it wasn’t a problem to change the venue. Thanks goes out to their members for supporting this change. Despite the change in location our club will still provide the manpower and will absorb the cost of concessions for the event. We will run concessions and registration. This is the least that we can do since Cane Ridge has provided most of the manpower in years past. As we near the event date we will be asking for volunteers. Your help is appreciated. More important than volunteers is our having a good turnout for the event to help support disabled veterans. Please make the effort to attend, if only to purchase lunch. There is a flyer for this event later in the Newsletter.

It looks like we are pretty close to being able to install the solar panels for the solar charging station. Everything else is checking out and working well. Afterward, we will install the permanent solar batteries and then we will be done with this project.

Continued...

<https://www.facebook.com/groups/mprcf/>

[www.mprcf.com](http://www.mprcf.com)

## July Meeting Minutes:

The meeting, held at the field, was called to order by Dan W. @ 6:10pm. There were 12 members present. There were no guests.

The June meeting minutes were accepted as published in the Newsletter.

The June Treasurer's report was read and accepted.

There was 1 new member added since the last meeting.

Old Business:

### Upcoming local events:

- National Model Aviation Day Fly-In – August 11 – ~~Club Field~~ (changed to Cane Ridge Club Field)
- Association Fall Fly-In – August 24-26 – Dixon Airport
- Tullahoma Warbird Fly-In – July 14-15
- Tullahoma Electric Fly-In – July 21-22

### Association Fellowship Fly-In:

Good day, good flying and good fellowship. Light on MPRCF members attending.

Continued...

## Prez Sez (cont.):

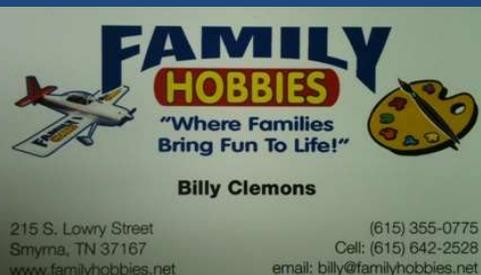
Due to foul weather we were unable to host the residents of the Tennessee State Veterans Home in Murfreesboro for a day of flying, show-and-tell, and education as planned for June 27. In conjunction with the Veterans Home it was decided that we would reschedule this program for the fall when the temperatures will be lower. Thanks to everyone who had planned to volunteer their time for this event. We had quite a large group of volunteers lined-up which certainly shows the level of respect that we have for our veterans and their families.

Coming up next month, during the weekend of August 24-26, is the big Association Fall Fly-In at the Dickson County Municipal Airport. Remember, this is our event too since we are a member club of the Association; so lets all go and have a good time. The venue for this event is great. There is a 1,000+ foot taxiway available to us and plenty of pit/camping area. Overnight camping is permitted and many folks camp-out for the weekend. There will be some great door prizes available including two grand prizes: a 1-hour flight lesson in a Cessna 172 and a one-day pass, including lunch, to the Beechcraft Museum's Beech Party in Tullahoma. You needn't fly at this event if you don't want. Just hanging with a great group of people is a good enough reason to come to the Fly-In. Plus, there's no price of admission to watch. If you plan to fly you should register in advance. You can save 25% on your landing fee. The advance registration system is open at: [http://www.mtrcca.org/MTRCCA/Fall Air Show Registration %26 Information.html](http://www.mtrcca.org/MTRCCA/Fall_Air_Show_Registration_%26_Information.html). You don't need to register in advance, but who doesn't love a 25% savings?

At the July meeting the members decided that we would go back to O'Charley's Restaurant, located on Memorial Blvd., for our meetings. Could it be that the sweltering temperatures had something to do with it? I hope to see you at the next meeting coming up on August 2.

Well...that's it for this month.

Dan



## July Meeting Minutes (cont.):

### Field Development/Maintenance:

#### Completed since last meeting:

- Installed first aid box outside
- Painted container top
- Fix drainage at the entrance
- Sprayed weeds – need members to spray as needed. Roundup mix and concentrate in container

#### Remaining:

- Remove remaining stumps in runway
- Remove rocks and other debris in east runway perimeter
- Add “X” to runway ends (do after erosion control is complete)
- Install giant scale starting stations
- Install sign with field’s address and emergency responder phone numbers; Dick T. to have sign made after details are finalized – maybe have an exterior waterproof display case? Include AMA Safety Code within?
- Fix Runway area erosion and seed (\$2,500 budget left)
- Add rock to entrance and carport area
- Relocate pilot stations
- Mount fire extinguisher somewhere outside
- Paint rest of container

### Airplane Setup for Gerry R.:

Have an e-Flite 1.2m BNF T-28 with three batteries and charger. Will be presented at the next meeting if Gerry is available.

### Charging Station:

Batteries and all electronics have been purchased. Charging shelf with electronics has been installed. The battery cooling system is installed. The system needs to be tested then the solar panels will be installed and connected. Then the temporary batteries will be replaced with the solar batteries.

### TN Veteran’s Home Presentation/Field Visit:

We had planned to host the TN Veteran’s Home residents on June 27 but due to bad weather it was canceled. The Home wants to hold off rescheduling until the fall when the temperatures are lower. Thanks to everyone who had volunteered to help. Dick T. and Richard R. to coordinate the rescheduled event.

**Continued...**

## **July Meeting Minutes (cont.):**

### Carport and Container Lighting:

Tim D. volunteered to evaluate the use of LED strip lighting for both applications.

### NMAD Charity:

It was decided, in consult with the Cane Ridge Club, that the DAV would be the charity for this year's event.

### New Business:

#### August Meeting Location:

The August meeting will be held at O'Charley's Restaurant.

Meeting adjourned at 7:38pm.

# Photos from Field July '18



## Club Meeting !

August 2<sup>nd</sup> 6:00 PM @O'Charley's

# Field Improvements July '18



# Middle TN R/C Society Middle Point R/C Flyers

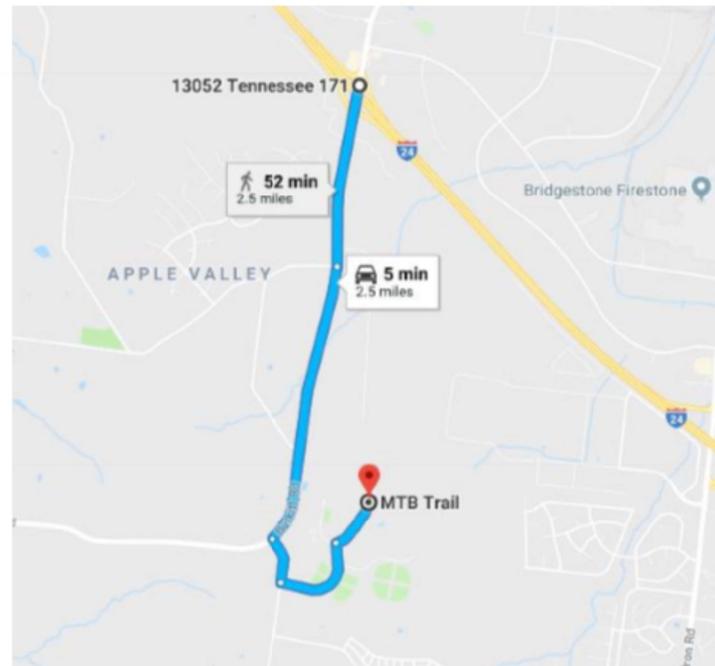


## Antioch, TN Saturday, August 11



# Model Aviation Day Charity Fly-In

**Open to fixed-wing, rotor-wing, or multi-rotor.**



- All proceeds donated to the Disabled American Veterans (DAV)
- Landing fee - \$15
- Open to any aircraft – fixed-wing; rotor-wing; multi-rotor
- Pilots' meeting 9:00 am
- Concessions available (all sales to charity)
- AMA Membership is required for all pilots
- Spectators welcome. Free admission

#### **Directions:**

**From I-24:** I-24 exit 62 for Old Hickory Blvd./TN-171. West on Old Hickory Blvd. for 0.6 miles. Keep straight onto Burkitt Road for 1.1 miles. Turn left onto Battle Road. In 0.1 miles turn left into Cane Ridge Park. Follow the park signs to the model airplane field.

**For more information:** Dan Wandel (615) 439-8554 (please leave message) [mprcflyers@gmail.com](mailto:mprcflyers@gmail.com)

MIDDLE TENNESSEE R/C CLUBS ASSOCIATION

## 13th Annual FALL Fly-in

25 & 26 Aug. 2018

Dickson County Municipal Airport

2372 Sylvia Rd Dickson, TN



This event is for **ALL AMA Member Pilots** and All AMA Safety Code compliant R/C Models Including Turbines

Electric, Gas or Glow - all are Welcome.

**Foamies To Giant Scale! Primitive Overnight camping**

- \$20 Landing Fee
- Great Door Prizes
- Food Truck Concessions
- Registration @ 7:30 - Pilot's Meeting @ 9:00
- Register / pay On Line [mtrcca.org](http://mtrcca.org)
- Contact Dick Tonan For Additional Info [dtonan@mac.com](mailto:dtonan@mac.com)

# Article

## 2-Stroke Glow Engine Basics

[Model Airplane News](#)



Two-stroke glow engines are by far the most popular engines used to power RC model airplanes. They are relatively inexpensive for the power they produce, they are easy to start, run and maintain, and once you learn how to properly take care of them they will last for many years. Let's take a closer look.

### WHAT SIZE?

All model kits and ARFs have a recommended engine size range. Typically, this will be something like .25 to .32, or .40 to .60, etc. You should choose an engine that is within this range, and for better climb performance you should pick an engine closer to the higher side of the range. When it comes to choosing a propeller for your engine, you should also follow the recommendations found in the engine's operation guide.

### ENGINE SPEAK

If you have never owned or run a 2-stroke engine then some of the terminology needs to be explained. Here's a glossary of 2-stroke engine terms:

**ABC:** refers to the materials that make up the engine's piston and sleeve; an aluminum piston (A), fitted into a brass sleeve (B), that has been chrome plated (C). An AAC engine is one with an aluminum engine fitted into an aluminum sleeve that has been chrome plated.

**Case:** the engine's main body. Most are cast in one or two parts from aluminum, though some specialty engines are made from fully-machined aluminum stock.

**Connecting rod:** also referred to as a conrod, this is the part of the engine that connects the piston to the crankshaft. The conrod has bushings at each end and is connected to the piston with the wrist pin (top end) and is connected to the crankshaft with the crank pin (bottom end).

**Cylinder head:** the top part of the engine usually bolted into place with either four or six bolts or screws. A threaded hole in its center is where the glow plug is installed. The underside of the cylinder head is machined to form the top of the combustion chamber.

**Ports:** openings and channels machined into the sleeve and engine case that allow the transfer of the air/fuel mixture from the engine case into the combustion chamber and, after combustion, out through the exhaust.

**Sleeve:** the cylinder's internal lining or liner. A tubular, brass structure that houses and guides the piston, the sleeve has a flat rim flange that fits between the engine case and cylinder head to hold it in place. Port openings are machined in the side of the sleeves that align with the transfer channels in the engine case.

## ENGINE ASSEMBLY



With most engines, the case usually has three parts: the front housing that houses the crankshaft and main bearings, the crankcase that is the main case that the cylinder is attached to, and the back plate that seals the back of the engine. It is usually held in place with four bolts or screws and can be sealed with either a thin gasket or an internal O-ring.

The crankcase is supported in the front housing with a large rear bearing and a smaller front bearing. In less expensive engines, solid bronze bushings can be used in place of the ball bearings. A prop nut and a thrust washer hold the prop securely to the front end of the crankshaft and at the rear is a large counter-weighted web and crankpin used to connect the crankshaft to the conrod. The conrod is attached to the piston with the wrist pin and the piston fits within the sleeve, which fits into and is supported by the cylinder part of the engine case. The head fits on top of the sleeve and the space between the top of the piston and the bottom of the head forms the combustion chamber.

Depending on the design of the engine, the piston can be sealed with either a piston ring that fits between the piston and the sleeve, or the piston can be sealed with a slight taper (smaller at the top) in the sleeve. This is how an ABC engine is set up.

**The piston is connected to the connecting rod with the wrist pin. A spring wire clip holds the wrist pin within the piston body.**

## **CARBURETOR**

The engine's power is controlled by its carburetor. The carburetor is made up of the main body, the throttle barrel, the high-end and low-end needle valve assembly, the spray bar and the venturi. Air enters the carburetor through the venturi opening and the amount of air is controlled by the rotating throttle barrel. A throttle arm is attached to the barrel so it can be rotated open and closed by the throttle linkage and servo.

The fuel enters the venturi through the high-end (main) needle valve and it sprays into the venturi through a hole in the side of the spray bar. By turning the main needle valve in (clockwise) you lean out the fuel air mixture by lessening the amount of fuel relative to the air. By turning it counterclockwise you richen the mixture by letting more fuel flow in. The low-end (idle) needle valve is usually located at the center of the carburetor's throttle arm and it adjusts the mixture while the engine is operating at idle to about throttle.

It may require a thin screwdriver to adjust.

## **GLOW PLUG**

The glow plug is used to ignite the fuel mixture within the combustion chamber. The glow plug has a 10-28 thread and it screws into place in the hole in the center of the engine head. In the middle of the glow plug is a coiled element made of platinum wire. The glow plug is first energized with a 1.2V glow driver battery, and then the compression of the fuel mixture and the heat generated by that compression causes the glow plug to ignite the fuel charge, much like how a diesel truck engine operates. Once the engine is started and warms up for a little while, remove the glow driver battery and the engine will continue to run. Catalytic action between the methanol fuel and the platinum in the glow plug element as well as the engine heat keep the element glowing once it has been lit with the starting battery.

## **BASIC 2-STROKE ENGINE OPERATION**

A 2-stroke engine makes one revolution for every power cycle. As the piston moves upward in the sleeve, it compresses a fresh charge of fuel/air mixture. The compression heats up the fuel mixture and is ignited by the glow plug. As the piston travels upward it also creates a negative pressure zone in the crankcase below the piston. This draws air and fuel into the crankcase from the carburetor and into the intake port. The intake port is machined in the side of the crankshaft and it lines up with the carburetor's venturi and it opens up to the hollow center of the crankshaft. The air and fuel travel through the hollow crankshaft to enter the crankcase.

As the piston travels downward after the fuel mixture is combusted, the con rod turns the crankshaft and this closes the intake port. The piston continues downward and starts to compress the new charge of fuel mixture. When the piston passes a bypass port this opens the port to allow the compressed mixture to flow up the transfer channel between the engine case and the sleeve. This happens just as the spent fuel mixture charge exits the exhaust port. The piston goes back up and closes the exhaust port and starts to compress the new fuel mixture charge thus opening the intake port so another new fuel mixture charge can enter the engine and start the cycle all over again. A complete power cycle requires 2-strokes of the piston in the sleeve.

## ENGINE STARTING AND BREAK-IN



Don't just bolt a brand-new engine into the airplane and go flying. To produce maximum power, a fresh-out-of-the-box engine needs some special handling. The piston and the sleeve need to be gradually fitted together for a precise fit. This procedure is known as "breaking in." If you don't take the time to break-in your engine, excessive heat built up from friction can cause internal damage and the piston and sleeve will never seal properly.

First, install a new glow plug (the proper length and type is indicated in your engine's instruction manual), tighten it with your fingers then tighten it down about 1/4 turn with a glow plug wrench. Connect the fuel lines to the carburetor and fill the tank with fresh glow fuel. Use fuel with the same nitro content (typically 10 to 15 percent) that you plan to run the engine with and be sure your fuel contains at least 18 percent lubricating oil. Install the recommended prop and prop washer then tighten the prop nut with a 6-inch adjustable wrench. Close the main needle valve completely by turning it clockwise, and then open it about four full turns counterclockwise. Open the throttle fully then prime the engine by placing your thumb over the carburetor opening and flipping the prop several times. Continue until you see fuel flow through the fuel line and into the carburetor.

Close the throttle to about 1/4, attach a glow driver battery to the glow plug and use an electric starter to turn the engine over. Don't use your fingers; if you don't have an electric starter then use a "chicken stick" available from the hobby shop. Once the engine starts, let it warm up a little then open the throttle fully and let it run with a very rich needle setting for about 5 to 7 minutes, and then shut the engine down and let it cool off for 10 to 15 minutes. Repeat this process several times while gradually leaning out the needle-valve mixture a few clicks each time. Don't run your engine at full throttle with a lean setting until you've run at least six to eight tanks of fuel through the engine.

A properly broken-in engine will run consistently without overheating and will transition smoothly from idle to full power. Try to avoid the temptation of leaning your engine to get every last ounce of power. This leads to overheating. It is always better to adjust your model for peak rpm (using a good digital tachometer), and then backing down the main needle to richen the mixture until you lose about 200rpm.

Basic support equipment: Nitro fuel and fuel pump, electric starter, glow driver batteries, a digital tachometer, spark glow plug, glow-plug wrench, assorted ball drivers and screwdrivers. An extra prop or two also come in handy. A Slimline Nitro Power Station is also shown.



## BASIC ENGINE/PROP COMBINATIONS

ENGINE SIZE	RECOMMENDED PROP
.049	5×4, 6×3, 7×3
.09	7×4, 7×6
.15-.19	8×6, 9×4
.20-.25	8×5, 8×6, 9×5
.30	9×6, 10×5
.35	9×6, 10×5, 11×4
.40	9×8, 10×6, 11×5
.45	10×6, 10×7, 11×5, 11×6
.50	10×8, 11×6, 12×8
.60	11×6, 11×8, 12×6
.75	11×8, 12×8, 13×6, 14×4 12×6
.80	12×8, 13×6, 14×4, 14×5
.90	13×8, 14×6, 15×6, 16×5
1.08	15×8, 18×5, 16×6
1.20	16×8, 16×10, 18×6
1.50	18×6, 18×8, 20×6
1.80	18×8, 18×10, 20×6, 20×8
2.00	18×10, 20×6, 20×10, 20×8, 22×6

## LOW-END NEEDLE VALVE

It is also very important to adjust your engine's low-end (idle) needle valve so your engine will operate smoothly and consistently while at idle. A properly set low-end needle valve allows the engine to transition smoothly from idle up to full power. If the engine hesitates and dies when you open the throttle, the low end is too lean. If the engine burbles, coughs and has a rough transition, the low-end needle is too rich. Make your adjustments by 1/8 turns at a time until your engine operates smoothly and consistently.

## CARE AND MAINTENANCE

Here's a list of things to do to keep your engine happy:

- Use fresh, clean fuel.
- Install a fuel filter in your engine's fuel system and in your fuel container.
- At the end of the day, empty your fuel tank and run the last bit of fuel out of the tank by starting and running the engine.
- Never leave fuel in the tank for extended periods.
- Use an after-run oil after the last flight of the day and before you store your engine for an extended period of time. Add a few drops down the carburetor and remove the glow plug so you can add a few drops into the piston and sleeve assembly.
- Always balance your propellers and lightly sand the leading and trailing edges to remove any sharp flashing.
- Never use a nicked or damaged propeller.
- If all of a sudden your engine won't start up readily, replace the glow plug.

Flying model airplanes powered with 2-stroke glow engines is exciting and very satisfying. Once you learn how to operate and properly maintain these impressive compact model powerplants they'll continue to earn their keep for many years to come. They are a very good investment and can be used to power several different planes.

Updated: July 5, 2018 — 12:22 PM