The Dead Stick Flyer

Newsletter of Swan Harbor RC

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www.SwanHarborRC.com

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March 21, 2017 Meeting

New Business:

- ***Field Maintenance:***
  - ***We have purchased weed killer and fertilizer for the main field area. As soon as the weather improves we will apply it.***
  - ***We will be picking up the Mowers to perform their pre-season tune ups and service. The deck of the Zero Turn mower needs to be rebuilt and freshened up. Gary will do this maintenance at his home garage. The cost for both mowers will be less than $400.00 for parts.***
  - ***We will be contacting "Weeds, Inc." to get an estimate for spraying along our entrance road to keep the grass and weeds from coming up through the new road bed and eventually cracking it up. A little preventive maintenance goes a long way.***
  - ***We will be getting some mulch to freshen up the flower beds to keep weeds down. Dale will be planting some new flowers around some of the main poles and out at the road entrance to the field.***
  - ***Other than some of the routine annual maintenance, the field is in great shape and ready for the 2017 flying season. We should have a good year of flying ahead of us. Everyone come on out and Enjoy!***
- ***Spring Club Fun Fly:***
  - ***We have selected a date for the club's 2017 "Spring Fun Fly" which will be held on Saturday, June 10, 2017. The rain date will be the following Saturday, June 17, 2017. This year we will be having PIT Ham, PIT Beef, and BBQ Chicken with sides, condiments, and drinks. There will be a nominal charge for the food and drink. This should be a fun day of flying at the field so come on out and create some fun of your own!***

- ***Fall Club Picnic:***

  - ***We have also selected a date for the Club's Fall 2017 Picnic which will be held on Saturday, September 9, 2017 with a rain date of September 16, 2017. Details of the Picnic will be determined over the summer.***

- ***Protection from the Sun:***

  - ***The nature of our great RC Hobby dictates that we are out in the "Sun" while we fly our aircraft. We need be mindful and diligent about taking care of ourselves against the harmful rays of the sun. It is very important to apply sunscreen and wear hats to protect our head, neck and faces from sun burn and the problems that can cause down the road. Just friendly words of advice for our members.***

- ***A New Event called "The Baltimore Drone Prix":***

  - ***There is a new RC event occurring in Baltimore on Saturday, April 1, 2017 on Greenmount Ave in Baltimore City. Global Air Media and Open Works have announced the launch of the Baltimore Drone Racing League. The event will be held at 1400 Greenmount Ave, Baltimore, MD 21202 from 1:00pm to 4:00pm. For more information send an e-mail to info@globalairmedia.com.***

Tech Corner:

RC Gas Engines "Electronic Ignition Timing"

By Gary Gunter

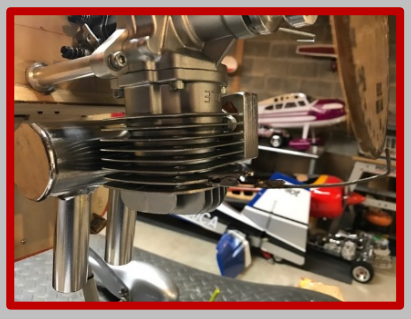
I thought I would do an article on properly setting the Electronic Ignition Timing on an RC gas engine like the ones we use in our planes. This is very straight forward and easy to do. I am doing this article on a 61cc DLE but it's the same for most RC Gas Engines.

DA (Desert Aircraft) RC Gas Engines are preset and some of the older magneto style engines use a rotating timing plate.

The reason for timing an engine is so that it will have the spark plug ignite the air/fuel mixture at the perfect time creating the most power from the engine's intake of air and fuel in the combustion chamber. Advanced timing, which is what we will be discussing here is like hunting birds with a gun. If you're going to shoot a bird, you have to aim in front of the bird so it flies into the shot by the time the shot actually gets there. The same thing goes for a gas engine. The time that it takes for the air/fuel charge to burn and start pushing the piston down is optimally when the piston is at TDC (Top Dead Center). At that moment, the full effects of cylinder pressures are realized from the burning air/fuel charge which is why timing is set to "X" number of degrees before TDC. (Note: Top Dead Center refers to the point at which the piston is at its highest point in the cylinder head nearest the spark plug.)

The effects of engine timing set too far advanced BTDC (Before Top Dead Center) means the spark plug fires and ignites the air/fuel charge at a point too early in the cycle and tries to push the piston back down before it has reached TDC. This causes extreme cylinder pressures and a dramatic rise in engine temperature, the effects of which are burned pistons, broken rings, and scored cylinders. Conversely, engine timing that is set too far retarded means the flame goes across the piston late in the cycle after the piston has started its downward movement, causing low power, unburnt gas, carbon buildup, and sticking rings. So it is important to get the timing correct so the engine runs optimally producing the most power from the air/fuel charge.

There are two tools needed to properly set the engine's timing, a small screw driver and a degree wheel. I made mine from an image I downloaded off the web of a protractor, cut it out and glued it to a piece of plywood and drilled a hole in the base so it can be slid onto the crankshaft and you're in business. You will also need some kind of pointer to let you know where you're looking at the timing mark. I made mine from a piece of wire soldered onto an alligator clip so it will attach to the cylinder fins.



The first thing to do is remove the spark plug and find TDC of the piston. Remember, TDC is the furthest a piston will travel upward in the cylinder.

This can be done in two ways:

1) With a TDC tool, which can be made from an old spark plug with the insides knocked out and a nail soldered to the inside of the threaded portion of the plug extending about ¾ of an inch. Place a degree wheel on the crankshaft of the engine and put the pointer so it looks at the degree wheel, and with the tool inserted in the cylinder rotate the engine until the piston makes contact with the tool and the crankshaft stops rotating. Center the degree wheel to 0 at this point. Rotate the engine in the opposite direction and note where the crankshaft stops. For example, if you centered the degree wheel at zero and rotated the engine in the opposite direction and it stopped at 20 degrees. Split that distance in half and move the degree wheel to zero. That is TDC. Remove the TDC tool.

2) Or, with a small screw driver put it in the spark plug hole while bringing the piston all the way up to TDC slightly rotating the crankshaft back and forth finding the point at which the piston does not move up and down any more. Notice the crank will still have a little "rock over" which is about 20 degrees of movement at top dead center. The crankshaft will have a little movement but the piston is really at TDC and the connecting rod is making a transition from coming all the way up to starting to go back down. <u>The crankshaft moves but the piston does not</u>. It takes a bit of fines to feel this middle point and get the crankshaft positioned properly at TDC. I close my eyes and just feel it and almost always can come within one degree of TDC.

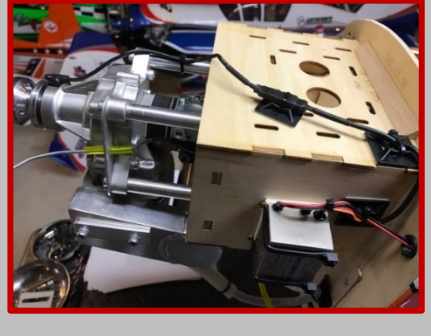
Once TDC is established. Put the spark plug into the plug cap and properly re-seat it. With the ignition turned on, rotate the crankshaft around about 75 degrees from TDC and then rotate the shaft in a normal rotation direction up to the 28-30 degree mark and you should hear an audible click from the spark plug or see the spark plug fire. Sometimes it is very hard to see the spark fire unless it's dark. Do this several times to find the exact point at which it fires. A properly set timing should be around 28-30 degrees before TDC. If it fires at 35 degrees, or higher, it is too far advanced. Loosen the screws holding the Hall Sensor, (nothing more than a magnetic on-off switch) which has slots for adjustment, and move the Hall Sensor in the same direction as normal rotation to retard the timing. If it is firing late or retarded, it should be moved in the opposite rotation to the advance timing.

This only works for engines with slotted hall sensors like DLE, Zenoah, and RCG engines. It will not work on DA engines as they have preprogrammed timing maps and they also will not put out a spark until the engine sees 150 rpm, (basically the speed it is while flipping a prop manually). Do not be overly concerned if you can't get it perfect, the slotted Hall sensor does not have enough variation in the adjustment to harm the engine. Only about 3-4 degrees.

Some of the other pictures are of proper plug to cap seating and other components of a typical capacitive discharge ignition system. As much as I like DLE engines, the spark plugs that come with them are guaranteed to fail prematurely. Replace them with an NGK CM-6 or Nippon Denso plugs. Always make sure your wiring is tied down to something, i.e. Zip-Ties or sticky back hold downs.

Never rotate a gas engine with the <u>ignition system on and no plug</u> in the plug holder. This will cause the capacitor inside the ignition box to discharge and burn out. The metal casing around the plug wire is the ground for the system.

Everyone knows how much vibration is in these gas engines and any chance for something to vibrate against something else will cause high friction wear in short order and cause a short or an open circuit. Also make sure the plug wire does not come into contact with any other piece of metal. This will cause wear and even worse radio interference. A piece of silicone tubing works good to insulate around mufflers. See the following pictures for reference.



- ***What are Members Working On?***
  - ***Building a new aircraft, assembling an ARF, working on an old reliable***
    - ***We'd love to hear what you are working on. Send us some information and a couple pics of your project and we'll post it in the monthly Newsletter.***
    - ***Send your emails to: ronlazzeri@verizon.net.***

- ***Off-Season Aircraft Maintenance***

  Winter months are a good time to get your RC Aircraft ready for the new flying season. Here are some general tips you can add to your Checklist……

  - ***General Inspection:***
    - ***Perform a thorough inspection of your aircraft. Look it over. Turn it upside down. Look inside. Take the cowl off. Look for issues. You get the idea.***
  - ***Batteries & Chargers:***
    - ***Check and test your batteries where possible. Are the batteries accepting a full charge? How old are they? Batteries usually start to fail at the 3-4 year mark. For LIPO's, are they swollen or puffed? It could be a sign of a failure looming even though they still work. Replace any batteries you determine are subject to failure and do yourself a favor and avoid a problem in the air.***
    - ***Check your battery chargers. Are you charging your batteries at the correct charge rates? Check the charger's owner's manual, website, or with someone in the Club you're confident can help validate your process.***

  - ***Loose Parts:***
    - ***Check for loose bolts, screws, covering and other essential gear. Use a small amount of Lock Tite to keep bolts from coming loose from vibration. Repair any torn or loose covering as it will only get bigger and eventually cause a problem you do not want.***
  - ***Servos:***
    - ***Check the servos. Turn the TX & RX on and move the sticks on the transmitter in all directions (with the engine off, please!). Listen and look for servos that bind or slip during their travel. It may be a sign of worn gears and the servo may need replacing.***
  - ***Propellers:***
    - ***Check the Props. Are they nicked, cracked or out of balance? This can cause extra vibration and wear out the engine bearings and shake the airframe causing unwanted issues. Clean the Props, balance the props or replace them.***
  - ***Transmitters:***
    - ***Check your transmitter. Is it "Binding" correctly with the on-board receiver of the aircraft? Follow the manufacturer's procedures for this step. Actually, this is a good practice to be followed routinely during the flying season as well.***
    - ***Check the trim settings and any other settings to fix any quirky flying tendencies you may recall from your last flights with that plane. Be sure to check them again after flying the aircraft at the field.***
  - ***Aircraft Balance:***
    - ***Check the aircraft's balance. Was it flying tail heavy or nose heavy? Things can change so it is a good idea to check the aircraft's balance to be sure it is flying as best it can. It can be difficult or frustrating to fly an aircraft that is out of balance and could also be a challenge to land easily.***

- ***Plugs:***
  - ***Check the spark plugs or glow plugs depending on whether it is a gasser or glow fuel burner. They can become fouled if your engine's HS & LS settings are off. If questionable, you may want to check your engine's settings when at the field next. There are various visual indications of a spark plug's performance based on the carburetor's settings, but generally a medium light tan color on the plug's electrode is a good indication of a good HS & LS setting. Replace the plugs if they look fouled or are heavily coated with carbon.***
- ***Fuel:***
  - ***Check your fuel. Using fresh fuel is always a good practice. It will allow the engine to run at its best performance assuming it is properly tuned.***
  - ***As always use a good oil for gas/oil mix 2 stroke engines. Check the oil mix ratios in your fuel. Engines do not run well on a lean oil mix and can overheat. Check the manufacturer's recommendations.***

- ***Clean It Up:***
  - ***Give the aircraft a good cleaning. A lot of times we just give it a swift cleaning just to get it in the car to go home from the field. Make it look good as well.***

- ***Retire It or Spruce It Up?***
  - ***Do you have a plane sitting in the corner that you are deciding whether to retire it or not? Well, now is a good time to spruce it up. Maybe some new covering or a new engine can put life back into one of your old favorites. Only you can decide but I'll bet you'll love it at the field!***

- ***Need Help Flying? Are you new or returning to the RC Hobby?***
  - ***Come to our monthly club meetings – meet some of our "RC Pilots"***
  - ***Get a computer based "RC Flight Simulator"***
  - ***Line up some assistance for the 2017 flying season***
  - ***Start with the right aircraft to be successful***
  - ***Best advice….Don't be afraid to ask for help!!***

Member PICs:

Anyone remember this?

Can you guess the year, the operator, and the make of this high-tech lawn tractor?

Photo supplied by Steve Snyder

Here are some PICs from a day at the field Saturday, February 18, 2017. The weather was really nice and everyone enjoyed getting outdoors.


NR 718V

Upcoming Events and General Information:

Newsletter:

To receive the Swan Harbor RC Newsletter by email, please send a request to: sslotnick@mac.com.

Photos:

Anyone who would like to have new photos appear in the slideshow, the photo gallery, or Newsletter is encouraged to send their photos to Stephen Slotnick at sslotnick@mac.com and he will add them as soon as he can.

Next Club Meeting:

The next club meeting will be held at Wendy's on Tuesday, April 11, 2017 at 7:00pm. The Wendy's in Bel Air is located at 1604 Conowingo Road, Bel Air, MD.

Interest in Joining the Club:

Please see the instructions on the Swan Harbor RC website www.SwanHarborRC.com under the heading "How to Join." Additional membership information or questions can be obtained from Steve Snyder at (443) 243-4324 or email: snyder800@gmail.com.