

Important Things Beginners Must Know

Here we include some points beginners should know and all club members should practice.

Safety! Safety! Safety! The time we spend at the flying field is intended to be fun, right? From the time we pull into the parking lot until the time we pack up to leave, the only thing on our minds is to enjoy the time away from our troubles. Nobody likes going to out to the field only to be bombarded with a bunch of rules and regulations. And of course, no one likes to be yelled at for doing something wrong. We all want to go about the business of having fun.

Unfortunately, our hobby can be a dangerous one. As flyers, we must all treat the hobby with respect and acknowledge the potential for danger. There are numerous times when what one flyer thinks is safe and acceptable will be totally rejected by other flyers on the flight line. We've all heard and seen what happens when a fellow flyer steps out of line. It isn't a pretty sight.

Truly, no intelligent flyer will intentionally do something to cause an accident. It is only when one flyer or another makes an unintentional mistake that accidents can occur. While beginners bear the brunt of the silliest mistakes, even experienced pilots have been guilty of unwittingly breaking safety related rules.

Frequency Control – Two types of radio frequency transmission are commonly used for model aircraft: The older of the two is on a frequency band where the FCC has allotted over 50 frequencies to model aircraft using 72 MHz radios. These frequencies are given numbers, ranging from about 11 to 60 one of these will be marked on the transmitter and receiver. In theory, this means that over fifty planes could be flying at the same time using these radios! *Note: If one flyer turns a 72 MHz transmitter on when another on the same frequency is flying, the pilot of the plane in the air will lose control of the plane. This is why most clubs use some form of frequency control.*

More recent radio systems are on a 2.4 GHz frequency band and do not interfere with other transmitters using this or the 72 MHz system.

Before you are allowed to turn on your transmitter, you must place your membership or AMA card in the corresponding frequency number slot in the frequency control board this applies to both 2.4GHz and 72MHz radio systems.

If you are using a 72MHz radios: take possession of the pin for that frequency. NEVER turn on your transmitter without your frequency pin - This gives you control of the frequency and no one else on your frequency can turn on their transmitter.

Your Instructor will go over the rules of frequency control in detail. Be sure you understand how the procedure works!

In practical application at a flying site, when more than six or seven planes are in the air at the same time, it can be quite distracting to the flyers (mid-air collisions do happen). For this reason, our club limits the number of planes that can be in the air at the same time to 5 airplanes.

Safety in the pit area

While most of the rules relating to pit safety may seem to be nothing more than common sense, you'd be surprised at the number of pilots who break these rules.

Hold on to, or tether your plane whenever the engine is running - NEVER, repeat NEVER let go of an airplane with its engine running until it is ready for taxi out. Always keep it under complete control. And always treat an airplane with the engine running as if the radio is going to fail at any moment. We highly recommend the use of hold-down devices that ensure that the airplane cannot move until the flyer is ready to move out to the flight line.

When you are ready to bring your airplane out to the flight line, taxi to the nearest taxiway by the most direct route, NEVER taxi all the way through the pits to the flight line! In the same

manner, after landing, Kill you engine before entering the pits and carry your airplane back to the pit area.

Never get any body parts in line with the propeller of a running engine - A propeller rotating at 10,000 to 20,000 RPM carries a great deal of centrifugal force. The most dangerous position to be in near a running engine is directly in line with the prop. A piece of dirt attached to the prop during a hard landing will usually be thrown from the prop. Or, if the propeller is fractured in any way, an injury could occur if the propeller shatters. Once the engine is started, ALWAYS stand behind the airplane.

Make needle valve adjustments from behind the airplane - Once your engine is running, if adjustments must be made to the needle valve, be sure to get yourself into a convenient and safe position from which to make the adjustments. If you are behind the airplane, you can easily hang on to it with one hand while you adjust the needle valve with the other.

Use a glove, chicken stick, or electric starter - Especially for beginners just getting started with RC, until you really get to know your engine, exercise extra caution when starting your engine. A flooded engine can really bite you if you use your bare finger to start it.

Safety in the Air

These rules apply from the time you enter the flight line until the time you carry your airplane back to the pit area.

Be sure you know which runway is in use - Especially on calm days, flyers have a tendency of taking off in all directions. All flyers should be positioned on the downwind-West side of the active runway. Wind conditions shall determine the active runway. In light wind conditions, the first pilot may choose the runway; all others must honor this choice. In changing wind conditions, all current flyers may change the active runway by consensus. Before going out to fly, be sure you know which way everyone is taking off and landing. If in doubt, ask.

Call your take-offs and landings - The more informed you keep other pilots, the safer flyer you'll be. Someone may have called a landing without your hearing it. If you call your landing loudly, another flyer will be sure to alert you that someone else has already called a landing.

Priorities

Here is a list of the basic rights-of-way for the flying field in the order of most importance.

- 1) Dead stick landings** - When an airplane's engine dies, the airplane is going to come down no matter what. The flyer with the dead stick must yell ``DEAD STICK!" immediately. Anyone on the field must know an airplane is coming down in order to stay out of its way. A flyer with a dead engine has the highest priority. ALL other flyers must give the right of way (including any that have already called their landing).
- 2) A person on the field** - Whenever a person goes onto the field to retrieve an airplane, they MUST call (very loudly) ``ON THE FIELD!" This person has the right to safely retrieve their airplane. While ANYONE is on the field, no taking offs, landings, or low passes are allowed. The only exception to this rule is a dead stick landing. Once the person re-enters the pit area, they must alert all flyers with the call ``FIELD'S CLEAR!" If you are the person retrieving your plane, be sure to take the shortest route off the field to help others who may wish to land.
- 3) A flyer calling a landing** - The first flyer who calls a landing has the right to land. Some flyers have tried to hurry their take off to beat the airplane landing. However, if the engine stalls, an airplane will be sitting in the middle of the field while another airplane lands!
- 4) A flyer ready to take off** - Notice that take-offs get the lowest priority. At times a flyer may have to wait for several minutes while other pilots land and retrieve their airplanes.

The Basics of Glow-Fueled Engine Tuning

The following are the most basic considerations when making adjustments on your new Glow engine. While there are many potential problems that can cause similar symptoms, and while each flyer has his own way of doing things, we will do our best to acquaint you with proven ways of handling the most common problems a beginner faces.

A good running engine is a novice flyer's best friend! Nothing is more frustrating than trying to learn how to fly with a poorly performing engine. You can't get much quality stick time if your engine is constantly quitting in the air. And, when you eventually begin setting up for landings, it will be critical that the engine responds properly. If the engine dies close to the ground, it will soon be there.

Fuel draw problems The biggest cause of a poor running engine has to do with how the fuel tank is mounted in the airplane. As the instructions that come with your airplane and engine say, the fuel tank **MUST** be mounted at the same level as the engine's drive shaft. Ideally, the middle of your fuel tank will be in line with your drive shaft when viewed from the side. If there must be a variance, try to keep the fuel tank mounted on the high side of center. If mounted too low, the engine will have problems lifting the fuel to the carburetor and tend to run lean. However, if mounted too high, the same problem will exist with inverted flight

Kinks in the fuel line **MUST** be eliminated. Any kink or sharp bend will limit fuel draw. Be sure you drill the fuel line holes in the firewall are large enough for your fuel lines. If you have to force the fuel line through the hole, the hole is not big enough! Be sure the "clunk" line within the tank can extend to the bottom of the tank without closing off the clunk. If this line is too long, the clunk hole may be pressed against the back of the tank. Keep the fuel line and muffler line as short as possible so as not to impede fuel flow.

Mechanical and Electrical Problems. New engines are notorious for going through glow plugs quickly. This is predominantly because

new engines are commonly run quite rich to ensure a good break-in. However, as you begin leaning out your new engine to gain performance, the glow plug problem should go away. If it does not, check your head bolts. Loose head bolts will cause also cause premature wear to your glow plug.

Your carburetor must be connected to the engine so that no air can leak from the bottom of the carburetor seal. If you remove your carburetor for cleaning, be sure to seal the bottom properly before tightening. Most carburetors have a rubber seal that must be compressed before the carburetor hold down screws can be tightened. In the same way, the crankcase bolts must also be tight, as must be the engine mounting screws.

Breaking in a new engine No matter what the engine manufacturer says, it is **ALWAYS** best to break in a new engine. Breaking in will ensure that internal engine parts wear into position properly, while not under a great deal of load. While you can break a new engine in while it is mounted to your airplane, many flyers like to perform the break in procedure on a test stand.

Either way, keep the engine running cackling rich during the first stages of the break in procedure. At full throttle, keep the needle valve well open to ensure that the engine never comes close to peaking out. As the fuel tank empties, be ready to stop the engine to keep it from leaning out. We recommend running about two to three tanks full of fuel through the engine in this manner.

The second step to breaking in a new engine is to begin leaning it out. Start the engine again and slowly turn in (CW) the high-end needle valve. As you do, the engine will begin to accelerate. Don't peak it out yet. Just get it running faster, a little at a time. As you do this, start manipulating the throttle to let the engine run at various throttle settings for 10-20 seconds at a time.

Finally, the engine is ready to peak out. With the engine running, continue turning the needle valve in (CW) until the engine peaks. To tell if it

has peaked, lightly squeeze the fuel line. If the engine accelerates more, go another click of the needle valve in. Squeeze the fuel line again. Continue until the engine has peaked. You will know this point because the engine will die rather than peak further when the fuel line is squeezed. From this point, back off (turn CCW) the needle valve ABOUT TWO TO THREE CLICKS making it slightly richer. Keep in mind that any engine will have the tendency to lean out in the air. Backing off a little on the ground will keep the engine from becoming too lean in the air.

We cannot stress enough the importance of keeping a new engine running on the rich side. Admittedly, there are times when an airplane (even a trainer) is somewhat underpowered and the engine must be peaked out to its maximum before the plane can even be flown. However, in most cases, there is ABSOLUTELY NO REASON to peak out an engine to the max, even after break in.

For example, if you are flying a 40 size Avistar with an O.S. Max .46, your plane is highly overpowered. The engine could be running quite rich and still pull the plane nicely. If your plane is overpowered, why not run the engine a little rich to ensure that the engine properly breaks in?

Tuning the engine's low end (idle) Most high performance model airplane engines have two needle valves. The needle valve we have been talking about to this point is the high-end needle valve. This needle valve controls the high throttle setting and functions basically the same for ALL model airplane engines. Turning it in (CW) leans the engine and turning it out (CCW) richens the engine.

However, the low-end needle valve may vary from one engine to the next. For most engines, the low-end needle valve functions the same as the high-end needle valve. Turning it in (CW) leans the low end and turning it out (CCW) richens the low end.

Keep in mind however, that certain air-bleed carburetor configurations found on sleeve-bearing engines are just the opposite. The O.S. FP series engines are one example. Before you can adjust your engine's low end, you MUST know which way is which! (Consult your owner's manual or asks an experienced flyer.)

Most engine instructions specify a starting mechanical setting for this needle valve. With the low-end needle set at the recommended starting point, the engine will run at idle, quickly advance the throttle and listen. At this point, probably the engine will cackle up to its maximum speed. This indicates that the low end is too rich. Lean out the low-end needle valve by about 1/8 of a turn and try again. If you go too far, and the engine's low-end needle valve setting is too lean, the engine will bog down and possibly die when you try to advance the throttle.

Be aware that you may be fooled at this point. Since an engine consumes fuel at a very slow rate when at idle, if you are too quick to make changes, the engine may be under the influence of the last idle adjustment as you increase the throttle. Repeat the throttle advance and slow down several times to confirm the setting. If in question, squeeze the fuel line slightly to force the engine to use up the residue fuel. Eventually, by repeating the above procedure, the engine will respond quickly and accurately to your every throttle command.

What if nothing works? - Though the techniques given here should handle 90% of all engine problems, there are possible problems that affect an engine's performance that have nothing to do with tuning. If you find that no matter what you do, you cannot get the engine to run properly, by all means, ask for help. Surely one of the experienced flyers in the pit area will be more than willing to help you.

Field Rules and Courtesies

Unlike other fields our flying stations are adjacent to the active runway. To cleanly communicate with one another while using our field, and to ensure we don't infringe on each other's activities, there are specific rules and courtesies that must be followed for all of us who use this facility. These are posted at the field and reprinted below to allow those new to our field to study them. Please ask questions if you don't understand any of these important aspects of using the facility.

Field Operational Courtesies

1. Please use a timer to limit flights to ten minutes.
2. Please prepare your aircraft for flight while awaiting the frequency pin.
3. Please turn your transmitter off and return the frequency pin to the board immediately after concluding a flight.
4. Please use the taxiways as a means of entering or exiting the active runway.
5. Airborne planes enjoy the right-of-way over planes on the ground. Pilots wishing to take off shall obtain verbal OKAY from flying pilots *before* entering the runway.
6. Please taxi beyond the position of pilots beside the active runway before accelerating for takeoff.
7. Please stand back 10 feet from the active runway while flying.
8. Please announce to adjacent pilots, in advance, any low level maneuver on, or directly above, the runway to avoid surprises or conflicts (landings, low passes, touch and go, bomb drop, etc.).
9. Please give aircraft in distress a landing priority, and allow the pilot any landing area in which he feels comfortable.
10. Please limit low-level and runway maneuvers according to the number of active aircraft.

Field Operational Rules

1. Only Radio-Controlled aircraft may be operated from this facility.
2. All radio equipment must comply with FCC regulations,
3. Transmitters may not be turned on until the appropriate frequency is reserved by placing the flyer's club card or AMA card in the pocket on the frequency board, and obtaining the frequency pin.
4. Every member is responsible for complying with, and enforcing, club rules.
5. All flyers and their guests must be current members of AMA and be able to supply proof of membership.
6. Guests may use the field on a limited basis provided they are in the company of a current club member. In such cases the hosting member is responsible for enforcing club rules.
7. Mufflers are required for all engines larger than .15 cu. in.
8. No alcoholic beverages are allowed at this facility.
9. No spectators are allowed beyond the safety fence.
10. Wind conditions shall determine the active runway. In light wind conditions, the first pilot may choose the runway; in changing wind conditions all current flyers may change the active runway by consensus.

Field Operational Rules (continued)

11. AMA safety rules shall be observed and enforced. All pilots shall maintain a safe distance between their aircraft and other pilots on the flight line.
12. No flying is permitted before 8:00 am. Restricted airspace includes: over the pit area, anywhere near homes in the proximity of the field, and beyond the power lines south of the field.
13. Flights should be limited to ten minutes duration.
14. Helicopters must follow the same rules as fixed-wing aircraft, and may not be hovered in, or over, the pit area. They must be carried to and from an active runway.
15. All flyers are to position themselves near the downwind end and on the west side of the active runway. A reasonable distance should be maintained between all pilots.