

Preflight Checklist

Before Mounting the Wing:

1. Make sure the screws that hold the servo arms are tight.
2. Check pushrod connections to servos. Are they tight?
3. Look at the battery pack and receiver. Have they come out of their protective foam wrapping? Are they firmly in place?
4. Check to make sure that all servo leads are tightly plugged in to the receiver.
5. Check the on/off switch. Is it secure?
6. Check fuel tank. Is it mounted firmly in place?
7. Inspect for cracks in the fuselage or any signs of fuel/oil leaks or stains.
8. Check your wing attachment system. If you use nylon bolts, make sure mounting blocks are securely glued to the fuselage. If you use rubber bands, are the retaining dowels cracked or bent? When mounting the wing use at least 12 rubber bands.

After mounting the wing:

1. Is the aileron servo wire sticking out from under the wing? Are any wires pinched?
2. Is the wing seated firmly in place and centered?
3. Look at all clevises and control horns. Clevises can come unsnapped (make sure you put a small piece of fuel tubing on the clevis). Are the control horns secure on each control surface?
4. Grab the vertical fin and wiggle it. Do the same to the stabilizer. Are they still firmly glued?
5. Tug gently on each aileron, on the elevator, and on the rudder. When you do this, look at the hinges. Are any of them starting to pull loose? Are any broken?
6. Check each wheel. Does it rotate smoothly? Is the wheel collar set screw tight?
7. Did your landing gear get bent the last time you landed? If so straighten it.
8. Walk a few paces to the front of the plane and look at it. Check for a crookedly mounted wing or other problems.
9. Check your receiver battery with your voltmeter. Check your transmitter battery meter. Be absolutely sure that both are in the "green zone" before you fly.

Engine Check:

1. Give the engine compartment the once-over. Is the throttle connection tight?
2. Check the engine mounting bolts. These take more vibration than most other components and can loosen quickly when the engine is running.
3. Check to make sure the muffler bolts are tight.
4. Pick up the plane and shake it gently side-to-side. You should be able to hear the klunk weight at the end of the fuel pickup in the tank as it moves from side-to-side. Klunks some times get wedged against one corner of the tank after a hard landing.
5. Disconnect the tank pressure line from the muffler and fill the tank. As you do, watch for leaks and cracks in the fuel line. Replace the tank pressure line to the muffler.

Control Check:

1. Get your frequency pin. (Look on the back of your transmitter)
2. Inspect your radio. Have the trims tabs moved since your last flying session?
3. Switch on your transmitter and receiver. Check to make sure your controls all move the proper direction! Stand behind your plane.

Elevator:

When you move the elevator stick toward you the elevator control surface should Move up.

When you move the elevator stick away from you the elevator control surface should Move down.

Ailerons:

When you move the aileron stick to the right the aileron control surface on the right should move up the aileron on the left should move down.

When you move the aileron stick to the left the aileron control surface on the left should move up the aileron on the right should move down.

Rudder:

When you move the rudder stick to the right the rudder control surface should move right.

When you move the rudder stick to the left the rudder control surface should move left.

Throttle:

When you move the throttle stick towards you the carburetor should close.

When you move the throttle stick away from you the carburetor should open.

Range Checking the Radio:

With your plane on the ground and the radio system on, fully collapse your transmitter antenna. This reduces the power output to a very low level. Now walk 50 feet from the plane, point the collapsed antenna directly at it. Move the sticks. If the control surfaces move it has passed the test; however, if you move the stick and there is no movement you, have a problem DO NOT FLY!!!

Your Preflight is complete.

Adjusting the Engine

The key to successfully running a model engine is learning to adjust the needle valves. The needle controls how much fuel/air the engine is receiving. Opening the needle valve (turning it counterclockwise) allows more fuel to flow into the carburetor, richening the mixture. Closing the needle valve (turning it clockwise) restricts the flow of fuel, leaning the mixture. You must learn to identify when the engine is getting too much fuel (running too rich) or too little fuel (running too lean).

Setting the main needle valve:

It's fairly easy so set the needle valve by "ear" using your ears to listen closely to the effect that your needle valve adjustments have on the engine. An engine that is running too rich sounds unsteady, like it is misfiring part of the time. This is often described as "4 cycling". In this condition, the engine is actually getting so much fuel that it is indeed misfiring every other time, causing it to run slow. As you lean out the mixture by closing the needle valve, the sound becomes steadier and the tone will rise as the rpm's increase. At its peak setting the engine will sound smooth and powerful. Eventually you will pass the ideal setting and go too lean, causing the engine's tone to slow down or "sag" from overheating. Running an engine too lean is the quickest way to ruin it! If you ever hear the engine start to sag while you are screwing in the needle valve, quickly turn it back out before the engine completely seizes up. For best results, you must learn to adjust the needle valve on the border between rich and lean to achieve satisfactory performance and long engine life. Never set the needle valve for exact peak rpm.

Always stay on the slightly rich side, because the engine will gradually lean out in the air as the tank empties.

Testing the needle valve setting:

Before every day of flying you should perform a simple test to check the needle valve setting. With the throttle wide open, point the nose of the airplane straight up and hold it there for 5-10 seconds if the engine runs steady and picks up a few rpm, you're ready to fly! But if the engine picks up rpm and then starts to sag, the setting is too lean and the needle valve needs to be opened slightly (turn the main needle valve counter clockwise). If on the other hand the engine has a big pick up in rpm, the setting is too rich and the needle valve needs to be closed slightly (turn main needle valve clockwise).

Setting the low end needle valve:

Getting a slow, reliable idle is probably the trickiest part of adjusting a model engine for flight. Rather than shooting for a super low idle, it's smarter to settle for a more dependable idle at a slightly higher rpm. Your throttle linkage should be adjusted so you can pull the throttle stick all the way back to a fast idle with no danger of the engine quitting. Then you can bring the throttle trim lever back a little at a time to more precisely set the idle speed you want.

Different engines have different means for adjusting the idle mixture. Some have another smaller needle valve on the opposite side (of the main needle valve), while others have a small air bleed screw to control the idle mixture. It's very important that you read your engine instructions to understand how your engine's carburetor is designed to work. Adjusting the idle mixture control is a little like setting the main needle valve; you have to listen carefully to the effect your adjustments have to the running engine.

Testing your idle setting:

Start your engine and run it at high speed for 30 seconds to warm it up. Then pull the throttle back to proper idle speed for 15-30 seconds and then quickly open the throttle. The engine should transition easily to high throttle.