REVOLUTION ENGINES OWNERS MANUAL

GENERAL INFORMATION

WARRANTY CARD: Warranty on your new Revolution engine will be voided if you fail to return the warranty card directly to our office. Please fill out the card using a ballpoint pen. Send card to our factory authorized service center: BJ'S Model Engine Service, 51 Hillside Drive, Beacon Falls, CT 06403

UNPACKING: Inspect the engine for shipping damage. If any is found, call the dealer or factory so we can file the claims with the shipping company. **Do not return** the engine without specific instructions from the dealer or factory.

BREAK IN: Your engine is ready to fly. Bench running is not required. However, it is always a good idea to run an engine before installation to avoid surprises. With the Nikasil coating and precision manufacturing, this engine will only need 5-10 hours for a complete run-in. The rpm will increase slightly during this time.

INSTALLATION: The engine can be mounted to the firewall by modifying the wall to accommodate the carburetor and muffler. Alternatively, the Revolution engine mount can be purchased separately to simplify the installation. The throttle return springs are left in place to ensure the engine does not speed excessively during loss of servo control. You may unhook the return spring after you have connected it to the throttle servo, **but do not remove the return spring**; it acts as a spacer for the butterfly. Removing the return spring will cause the butterfly plate to work loose, which will then be ingested by the engine. This will **void** the warranty!

The ignition battery switch becomes the engine kill switch and should be mounted externally, near the cowl, at least twelve inches from the receiver. When mounting the propeller, the tips should be at 1:00 to 2:00 o'clock and 7:00 to 8:00 o'clock at the start of the compression stroke. The engine rotates counter clockwise. You have purchased an air-cooled engine and it is your responsibility to cool it properly. In some installations, the use of baffles may be necessary.

FUEL TANK: These engines consume between 1 to 1-1/2 ounces of fuel per minute. Therefore, a 20-ounce or larger tank is recommended. The engines are equipped with a diaphragm pump carburetor making tank location not critical relative to the carburetors fuel entry position. Place the tank on or near the aircraft's center of gravity (CG) if possible, to maintain the aircraft trim during the changing fuel tank level.

FUEL: Use high-octane gasoline with a good quality 2-cycle oil. Only high quality synthetic oils such as Amsoil, Klotz or Castrol's Syntec should be used. The recommended fuel mixture ratios from the manufacturers are generally from 50:1 to 100:1. We do not recommend using more oil than 40:1, as it will cause excessive carbon build-up. Damage caused by fuel additives, such as nitro, are not covered under this warranty and the use of these additives will **void** the warranty.

PROPELLER: Engine RPM should be kept between 6000 and 7500 RPM (static) for best torque. Keep in mind that the tip speed of the propeller can easily exceed the speed of sound (the speed of sound at sea level is 738 MPH), which will dramatically affect the prop efficiency, causing excessive vibration and prop failure. A 20" diameter prop turning 7800 RPM has a tip speed of 572 MPH. Crankshaft threads should be wiped clean before and after mounting the prop. It is a good idea to put a small amount of lubricant on the threads.

STARTING:

1. Fill the tank with fresh, filtered fuel.
2. Have a friend hold the aircraft or secure the aircraft to a stationary object or other suitable apparatus if help is not available. **Never** fly alone!
3. Close the choke. Set the throttle position to fast idle.
4. Turn on the ignition switch.
5. With a electric starter or chicken stick, **not your fingers** begin flipping the prop through its compression stroke until the engine fires. It should not continue to run with choke closed.
6. Open the choke and continue flipping the prop counter clockwise. The engine should start in less than 5 flips. Maintain a fast idle for at least 60 seconds, then accelerate the engine and check for good response.

Warning! Never start the engine with the throttle fully open.

CARBURETOR ADJUSTMENT: Each Revolution engine is test run prior to shipment. The carburetor is set for optimum performance and no adjustments should be necessary except at unusual locations, e.g. high altitude areas. Upon advancing the throttle, the engine should response well. If the engine hesitates, richen the low speed mixture by opening the low speed screw 1/16 turn (counter-clockwise). Recheck the engine response by advancing the throttle. The idle mixture screw should be 1¼ to 1½ turns open. The high-speed mixture screw should be 1½ to1¾ turns open. The high-speed mixture setting is adjusted for maximum RPM with a tachometer. Set it 1/16 turn further open from the optimum for the run-in period. Do not force the mixture screws when closing against the seat. If the high-speed mixture setting is too lean it will overheat the engine, which may cause permanent damage.

Tip: *For minimum engine vibration at idle, set the low speed mixture to as lean as the engine response will allow or when starting becomes difficult due to too lean an idle fuel mixture. Allow the engine to warm-up at idle speed before adjusting.*

ENGINE TIMING: The ignition module will automatically advance the spark timing as the engine rpm is increased. For startup, the timing is at 0° to avoid kickback of the engine when the prop is spun.

CARBURETOR CARE: From time to time your carburetor screen will need to be cleaned. This can be accomplished without removing the carburetor. The screen is located under the single bolt and cap at the gas inlet. First clean the outside of the carburetor, then remove the cover near the gas inlet and take out the screen. Wash the screen with clean gasoline and blow with compressed air. Replace the screen. **Never** run the engine without the screen in place. Check the choke and throttle plates for tightness. **Do not** disassemble butterfly shafts. The screws are flared and disassembly will weaken shafts causing ingestion of parts and **voiding** the warranty**.** The diaphragm, which pumps the fuel, will stiffen over time and reduce the carburetor performance. Change the diaphragm every two years.

MAINTENANCE: Your new Revolution engine will be, practically, maintenance free for several seasons. We do recommend a crank pin needle bearing replacement every time you have a prop strike or aerial crash. Maintenance of these bearings should be considered every 200 to 300 flying hours. Periodically check the sensor and ignition leads for chaffing.