



2-Stroke Engine Break-In

After completing the engine installation, be sure all fluids have been filled (coolant, transmission oil, etc.). Before starting a freshly rebuilt or new engine it is strongly recommended that you perform the following. Failure to perform any part of this break-in procedure may result in engine damage and/or poor engine performance.

Pre-Start Inspection:

1. Air Delivery:
 - a. Clean Air Box.
 - b. Inspect air delivery frame tubes & hoses.
 - c. Freshly serviced Air filter(s).
 - i. Pre-Filters.
2. Carburetion: (Follow article Carburetor Theory 101 / Re-Jetting)
 - a. Thoroughly clean and inspect your carburetor(s) (re-build if necessary)
 - i. Float bowl
 - ii. Float(s)
 - iii. Pilot Jet
 - iv. Main Jet
 - v. Needle & Needle Jet
 - vi. Slider condition
 1. Heavy scratches or wear patterns that would hang up operation Replace
 - vii. Cable(s)
3. Cooling:
 - a. Inspect and if necessary replace all radiator Hoses
 - b. Thoroughly flush and clean radiator(s)
 - c. Pressure test coolant system once installed
4. Fuel System:
 - a. Thoroughly flush and clean your fuel tank.
 - b. Inspect and clean Petcock and strainer
 - c. Replace all fuel lines.
5. Fresh Fuel & Pre-mix mixture. (With high compression must use 106 octane minimum)
6. Exhaust:
 - a. Clean input neck of residue & replace any ring clips, O'Rings or gaskets.
 - b. Must Re-Pack Silencers. (If ever used)
7. Ignition System:
 - a. Inspect all components.
 - b. Set timing to stock specifications.
 - c. New Spark Plug(s)
8. Intake System:
 - a. Closely inspect rubber intake boot(s) for any abrasions or holes.
 1. Hold up to light and inspect.
 - b. Inspect Reed Valve and Reed Petals, replace if necessary.
9. Transmission:

- a. Fill with appropriate SAE recommended oil.
- b. Inspect for any leaks

10. Tires:

- a. DO NOT USE PADDLE TIRES,
- b. Properly inflate all tires

Once the above steps have been completed, start your engine and follow the break-in procedure. Make sure you log all current engine specifications and settings especially carburetion. Keeping a log of base-line setup is critical when Re-jetting becomes necessary not to mention a maintenance record.

IDLE BREAK-IN (4-Idle periods, 4-Cool down periods)

IDLE PROCEDURE:

Start engine and let idle with a fan blowing on the radiator allowing for proper cooling conditions and without any load on the engine. Idle Engine for approximately 15 minutes. If may be necessary to slightly rev your engine in maintaining an idle while adjusting carburetion. **DO NOT REV YOUR ENGINE!!!**

During break in pay attention to:

1. Engine Performance:
 - a. Idle condition:
 - i. Adjust for proper idle RPM; do not allow the engine to labor in low RPM.
 - ii. Adjust Air Bypass screw appropriately to achieve a smooth idle circuit.
 1. Normally 1-1/2 to 2 turns out.
 - b. Engine Temperature should be warm to the touch during idle break-in. If possible use infrared temperature gage for monitoring.
 - c. Any extreme rough idling or shaking engine conditions **MUST** be resolved.
 - i. Inspect Carburetion:
 1. Synchronize if necessary (Banshee)
 2. Check for vacuum leak (spray carburetor cleaner in areas noticing RPM change and engine running smoother).
 - a. Intake manifolds.
 - b. Reed valve.
 - c. Gaskets.
 - ii. Inspect Reed Valves:
 1. Damage.
 2. Reed Petal Condition.
 3. Reed Petal Alignment.
2. Check for exhaust leaks and correct.
3. Check for ANY LEAK Oil or Air and correct.

COOL DOWN:

Shut engine off and turn off fuel. Allow the engine to cool down for a minimum of 30 minutes. Let fan continue to blow on engine.

1. Inspect coolant level and over flow
2. Inspect oil level
3. Inspect exhaust for leaks

*****REPEAT BOTH IDLE AND COOL DOWN PROCEDURES AS INDICATED**

Repeat both Idle and Cool Down Procedures while following the interval modifications below:

4th Idle Interval, slightly ramp Up RPM taken notice to engine performance and adjusting for any conditions. Give several short small revs allowing the engine to recover at idle. Make any carburetor adjustments as necessary and retest.

Riding Break-In (6-Riding periods, 6-Cool down periods)

RIDING PROCEDURE:

1. RIDE: Ride machine for 15 minutes; make sure to vary your RPM range
2. Shift easily through gears 1-3 only.
3. NEVER Over-Rev your engine.
4. Ride at 30 Percent of your normal riding pace.
5. Be careful not to put any unnecessary load on your engine
 - a. Loading up in any gear.
 - b. Going up any hill or incline.
 - c. Low tire pressure.

During Ride Break-In pay attention to:

4. Engine Performance:
 - a. Idle condition:
 - i. Adjust for proper idle RPM; do not allow the engine to labor in low RPM.
 - ii. Adjust Air Bypass screw appropriately to achieve a smooth idle circuit.
 1. Normally 1-1/2 to 2 turns out.
 - b. Throttle Response:
 - i. Re-Jet Carburetor to achieve smooth engine operation (see Carburetor Theory & Re-Jetting)
 - c. Engine Temperature should achieve operational temperature and hot to the touch during idle break-in. If possible use infrared temperature gage for monitoring.
 - d. Any extreme rough idling or shaking engine conditions MUST be resolved.
 - i. Inspect Carburetion:
 1. Synchronize if necessary (Banshee)
 2. Check for vacuum leak (spray carburetor cleaner in areas noticing RPM change and engine running smoother).
 - a. Intake manifolds.
 - b. Reed valve.
 - c. Gaskets.
 - ii. Inspect Reed Valves:
 1. Damage.
 2. Reed Petal Condition.
 3. Reed Petal Alignment.
5. Check for exhaust leaks and correct.
6. Check for ANY LEAK Oil or Air and correct.

COOL DOWN:

Shut engine off and turn off fuel. Allow the engine to cool down for a minimum of 30 minutes. Let fan continue to blow on engine.

4. Inspect coolant level and over flow
5. Inspect oil level
6. Inspect exhaust for leaks

After 1st Riding Break-In you MUST Re-Torque:

1. Cylinder Head bolts
2. Cylinder Base bolts (Inspect for ANY leaks)
3. Side Covers
4. Engine mounts
5. Exhaust mounts

REPEAT BOTH RIDING AND COOL DOWN STEPS:

Repeat both the Riding and Cool Down Procedures while following the interval modifications below:

2nd RIDE INTERVAL: Repeat initial riding procedure increase riding demands to 40% of your normal pace using only 1st – 3rd gears.

3rd RIDE INTERVAL: Repeat initial riding procedure increase riding demands to 60% of your normal pace using 1st – 4th gears.

4th RIDE INTERVAL: Repeat initial riding procedure increase riding demands to 70% of your normal pace using 1st – 4th gears.

5th RIDE INTERVAL: Repeat initial riding procedure increase riding demands to 80% of your normal pace using all gears but not wide open throttle.

6th RIDE INTERVAL: Repeat initial riding procedure increase riding demands to 90% of your normal pace using all gears but not wide open throttle.

Break-in period is now complete, however your engine will continue to increase in performance perhaps for another 10 hours of use and proper specifications are maintained.

1. Confirm that carburetion jetting is correct.
2. Replace Spark Plug(s).
3. Adjust gearing if necessary
4. Perform a complete safety inspection.
5. Install desired tires.