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MARCH 14, 2010

NUMBER 18

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Bing Ultralight Carburetors

(Article #5 in a series we are presenting on Bing Carburetors)

Carburetor Tuning: The following information is presented on the assumption that all is well with your machine—spark plug of the specified heat range and correctly gapped, specified air filter installed (and clean), ignition settings as specified, factory installed exhaust system, and no air leaks in the intake or exhaust tracts. One last word of advice before we embark on this venture into the unknown—do not expect the carburetor to pry loose any more power than your engine is capable of producing. The Bing Carburetor is a precision-designed instrument, and is quite capable of maximizing to-the-limit, all available energy lurking within your machine.

Pre-Tuning Checklist: We cannot overemphasize the need to verify that all carburetor components are “as specified”. This information can be found in the Bing Carburetor Aircraft Tuning & Parts manual on page 1-4. If you find a component is not “as specified” check your owner’s manual, as the factory may have made late changes to the carburetor after it was supplied to them by Bing. In addition to all components being “as specified” (prior to tuning) have: 1. Needles at the proper height (clip position). 2. Idle Air Adjusting Screws turned lightly in against their seat—then backed out (CCW) the specified amount of rotation. Inspect the tips for concentricity with respect to wear. A tip with noticeable indentation will prevent fine regulation of your idle air/fuel mixture, and make carburetor “balancing” next to impossible. 3. Idle Speed Adjusting Screws backed completely off the throttle—**CAREFULLY** counting the required number of turns. If the number differs between carburetors, you can be sure that your idle system was improperly set. It is quite possible to have one carburetor throttle valve open farther than the other carburetors yet have normally appearing idle from both cylinders. This is because of the overlapping influence of the idle air and idle speed settings. Mis-adjusting cables have a similar over-lapping effect. 4. New Rubber O Rings on Idle Air Screw and Top (on the CV Carb, the Idle Jet, Main Jet Stock, Throttle Shaft, and Start Valve).

Mixture Transition System: We will explain this system first, as it is the easiest of all to tune—reason being, you cannot tune it. It has not tunable components, yet it is the one that determines how our carburetor reacts as it makes many transitions through its various stages: starting-to-idle-part-load (or needle control) and Part-load-to-full power and then all the way back in reverse sequence. All of these transition stages are totally dependent upon how close we have tuned the areas just below and above where the transition occurs. In other words we cannot tune “just the idle” and “Just the part load”—we have to make certain that we select components that overlap one another—but not too much! Anyone can make an engine idle, accelerate, and pull G’s at full step—it’s the “artist” who can bring about smooth unhesitating performance zero-to-flat-out.

Fuel Level: The fuel stands higher in the metering tube than in the float chamber. The highest level in the metering tube is the result of pressure differential between the higher atmospheric pressure in the float chamber pushing against lower pressure in the metering tube when the engine is running and partial vacuum exists in the venturi. For a given constant RPM, metering tube fuel level is totally dependant upon float chamber fuel level—as determined by our float adjustment setting. If the level in the metering tube is too high, fuel will exit into the venturi at a much lower air velocity, resulting in the air/fuel mixture becoming enriched before it is supposed to—as in the low middle-to-higher RPM range. A too low fuel level results in just the opposite. As fuel metering jets and jet needles also affect the above discharge rates, it is imperative that an exact pre-determined fuel level is maintained. If you find that a different fuel level improves performance or economy, rest assured that you’re jetting is improperly set. **NOTE: A WORN FLOAT NEEDLE WILL NOT REUGLATE FUEL HEIGHT—NO MATTER WHERE YOU SET FLOATS.**

Stayed tuned for the continuation of the Bing carburetor in next month’s newsletter.

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