

More on the Keihin Aircut Valve

There seems to still be confusion on the 'net, despite this subject being long documented. It's possible I was the first to publicly address it (all the initial mentions on vintage Honda forums are mine), but Honda actually originated the procedure in a racing service bulletin for their 900F based road racing parts kits. So the procedure, namely, defeating the factory Keihin carburetor aircut (or air cutoff) system, is at least that old, and is quasi-officially factory-sanctioned. This article is by way of clarifying and justifying the procedure.

The aircut valve's job is to momentarily block the air side of the idle circuit (its air bleed, in other words) to make conditions for exhaust afterburn less likely. To eliminate popping on decel. A more complete description is found in my article, [Keihin Idle Circuits White Paper](#). The aircut system is actually integral to the idle circuit, the most complex circuit in any 70s-80s Keihin carburetor. As such, you can find out a lot about the aircut system and what it does by reading my article. While the title of "white paper" may be a misnomer, the content of the article is nonetheless pertinent and accurate, and educational, so [give it a look](#).

The first misunderstanding that needs busting is why to defeat the valve. What's the benefit? The benefit is simply to avoid the delicate, oft-failing valve from its being a future maintenance concern. Not to mention, cost. (A GL1100 or 70s-80s DOHC inline four can cost more than \$100 in just aircut valve diaphragms.) A failed aircut diaphragm will pass fuel across the vacuum barrier and directly from the idle jet into the carburetor bore, resulting in gross richness at idle and low speeds. A diaphragm is failed by merely having a crease in it, which in short order will become a hole, as the very active valve opens and closes each time the throttles are opened. What's worse, all replacement aircut diaphragms are inferior to the (unfortunately unavailable) factory original because they are made cheaper and thus are more prone to failing.

So defeating the aircut is preemptive maintenance. That's it. There is no performance advantage, or disadvantage. Defeating the aircut does not solve any problems, or create any. The procedure does not change mixture strength in the idle circuit, or any other circuit. It does not require a compensation elsewhere in the carburetor (at least none you shouldn't have already done irrespective of the procedure). Don't look to an aircut defeat to correct a poor idle, that problem is due to many other possible issues. Don't look to it to improve fuel economy. Don't expect it solve anything at all. It won't. It can't. It isn't meant to.

Bypassing the system is as simple as blocking off the vacuum source, the valve's trigger. Do this by substituting a solid piece of rubber in place of the tiny o-ring at the vacuum port. Leave the diaphragm in place even if failed, as in all cases it serves as a gasket for the aircut valve cover, and in some cases is also needed to keep the aircut valve open.

Did you notice the difference here? Keihin carbs have two kinds of aircut valves. This is the other thing that needs clarifying. The two types are piston-valve and trap door. U.S. model 70s-80s DOHC fours, the CX500, GL1100, and a few others, are all piston valve type. If it weren't for the need for a cover gasket, this type would allow removal of the diaphragm altogether during

defeating. The other type, the trapdoor, found on the CBX, GL1000, GL1200, and many Euro model 70s-80s DOHC fours, requires the diaphragm be left in place to keep the trapdoor in its passive, open state.

Lastly, and amazingly, one Internet source describes the aircut valve as "extremely important to starting [not] and idling" and "when dysfunctional [responsible for] severe engine damage or failure, preignition, head gasket failure, blued exhaust pipes," and more. Really? Reading this indictment of the poor little aircut valve, one has to wonder why venereal disease was left out of the list! Incredible! The truth is, when the aircut diaphragm fails, the worst it can do is introduce too much fuel at idle and low speeds, ultimately affecting only the idle and spark plug life. As for leanness, unless the vacuum port o-ring is lost or the hose (on the GL1000) is punctured or removed, engine overheating is not even a possibility, and then only a remote one. You would stop riding the bike for its inability to idle long before you would do any damage to the engine. The aircut valve just isn't that important a part.

Nor is it even a necessary one, as my [Keihin Idle Circuit](#) article (one final plug...) points out. So, to recap, defeat the aircut valve only to save the hassle and expense of future repairs. Don't do it to solve a performance problem, it won't. It doesn't screw anything up. It doesn't add anything or take anything away. And it does not by itself necessitate any other changes to the carburetor. And it's not a time bomb.

The motorcycle project by [Mike Nixon](#)