

tech article

smooth out your idle

There have been several excellent articles written in the Xpress concerning low-speed or idling problems and the solutions found to work best. But I've recently uncovered a new problem that I don't believe has been previously diagnosed.

It pertains to carburetors that have sat for a long time and don't want to idle smoothly. To make this story short, I'll explain that the two sets of carbs I had the same problem with were "Brand New" school bike units that were never disassembled or tampered with. I completely overhauled them by cleaning all passages (including low-speed jets), setting float levels and confirming that jet sizes, slides, needles and pilot screw settings were correct.

But once installed on the engine, it idled well for the first few miles of my test ride and never idled smoothly again. Cruising, revving, shifting through gears were all excellent. It just wouldn't idle! After several disassemblies and measurements I couldn't find anything wrong with the carbs. But I did notice that the float levels were constantly changing. So here's what I found and what you should check for when rebuilding carbs that have sat for a long time or are gummed up with evaporated gasoline.

A. Because the carbs were new, I never replaced the float needles. When I bench-tested them with gasoline, there were no leaks or flooded floats, so I assumed everything was OK. Also, the spring-loaded float needle pins were free and snapped back when I depressed them with a small screwdriver. So, with all adjustments correct, and no fuel coming out the overflow, what could be wrong? First, a little understanding of how Honda designed the float needle.

B. Older designs had the float making contact directly with the float needle. The more modern designs isolate the float needle by inserting a spring into the center of the needle, attaching a pin to the spring, and then crimping the entire assembly so that it cannot fall out (see the illustration). This spring-activated design is excellent for motorcycles and other equipment that sees harsh treatment, or, as in the case of motorcycles, are unable to isolate their engines and components from harsh bumps and vibration. The spring provides some "Give" and prevents

the needle from being stuck in the needle valve hole while isolating it slightly from the ever-changing fuel levels caused by normal riding on bumpy roads. Honda and the other Japanese manufacturers have done an excellent job of fine-tuning the design evolutions of their bikes and this is a perfect example of just how far they will go to insure our happiness. That is, until the spring fails!

C. Here's the problem. With the correct spring tension, the float needle will be able to rise in direct relationship to the fuel's force against the float.

As the float goes up, so does the needle, until it reaches its correct height and shuts off the fuel. But the spring must have the correct tension in order to exert sufficient force against the needle. Otherwise the spring will slowly collapse and allow the float to continue rising and, thus, allowing more fuel into the bowl until the float fully compresses the spring and the fuel is finally shut off. The result is a float bowl that doesn't quite overflow into the rubber tube, but does alter fuel delivery at idle. This is an easy problem to feel and hear, but very difficult to identify when the carbs are opened up for inspection.

D. But shouldn't this "Spring Problem" show itself during the rebuild or float setting? Not always. Remember that Honda says to adjust the float level when the carbs are tilted only far enough for the float adjusting tab to just come in contact with the needle pin. But you can see now that adjusting the floats this way doesn't take into consideration any weakening of the springs. I suggest that you turn the carbs completely up-side-down when adjusting float levels.

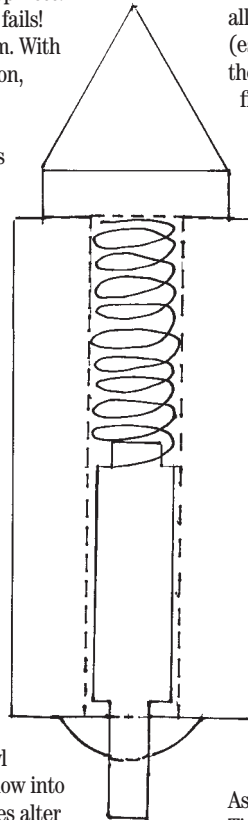
A second reason for the slow deterioration of the spring tension is probably that the cavity inside the float needle still contained the sticky remains of the evaporated fuel. Once the gasoline began passing through the valve, the spring and its internal area were cleaned, thus leaving only the weakened spring to try and close the float needle. So now you understand how a perfectly good looking set of carbs can be rebuilt, adjusted and run for a short time with no problems but develop idle fluctuations later.

E. How can you identify weak springs? This is what I do, and so far it has worked. When all the other carb work is completed (especially, clearing the low-speed jet) turn them over as if you were going to adjust the float level. Press down on each of the floats with your finger and release them. First see if all the floats bounce up at the same speed. If some seem lazier than others, these are definitely no good and the float needles should be replaced. A float with a new, or good, float needle will bounce up quite quickly and continue to bounce 3-4 times after you have released it. If the float rises slowly, or moves upward without bouncing, the spring is weak. Replace it. Once you see the rebound action of a new float needle, you'll know the difference.

CONCLUSION

Although I've only found weak float needle springs on carbs that have not been used for years, I'm sure that time and miles could also create the same problem. So if everything else you've tried doesn't solve your rough idle, take a good look at those tiny little springs hiding in the carbs.

As always, call anytime.
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