Honda Clone; fueled by producer-gas

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Jeff Davis
jeff0124@hughes.net

aka Puffergas

Good luck,

Jeff

Abstract: Conversion of a 6.5hp single cylinder Honda clone engine to producer-gas. Timing was advanced and a carburetor was fabricated. These are affordable engines popular with go-cart racers thus there is a pool of performance techniques easily available to tap.

Links:

Email
Youtube
Bioenergy

Photo 1

The gasoline fuel tank and carburetor was removed from the engine.

Timing Advance:

Remove sheet metal shroud. On Photo 1 is an arrow showing the direction to turn the flywheel nut in order to remove it.

Photo 2


Photo 3


Photo 4

The flywheel was removed with a pulley puller, there are special made pullers for this application (Photo 3). An eight degree timing advance key was purchased and installed in the direction showed in Photo 4.

Photo 5

Photo 6

Photo 7

Photo 8

Producer-gas Carburetor:

The inside diameter of the original gasoline carburetor was smaller then the intake manifold so a producer-gas carburetor was fabricated. Effort was made to blend all transitional lines into the “D” shape of the intake, see Photos 5, 6, 7 and 8.

Photo 9

Photo 10

Photo 11

Photo 12

You can use a mill to make the throttle shaft or a hacksaw and file to produce the slot for the butterfly. When using a hacksaw just make as many perpendicular slots as possible and then use a hand file to remove the remaining material. The shaft material that I used was from a discarded printer. The diameter slot at the left end of shaft, in Photo 11, was from the printer and later trimmed off. The diameter of the shaft is just under 0.250”.

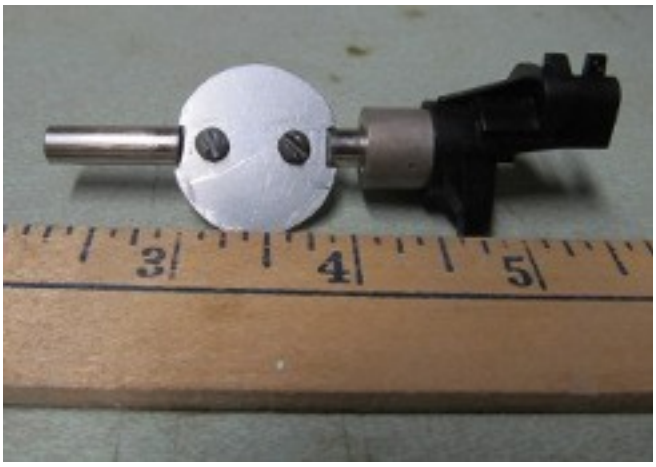

Photo 13

Photo 14

Photo 15

Photo 15

The butterfly was cut out of aluminum sheet metal and was a slightly stretched circle. The plastic lever from the original gasoline carburetor was installed on the new shaft.

The throttle shaft must turn freely in order for the governor to function. If you apply Loctite to the bolts that fasten the butterfly to the shaft don't use starting-fluid for starting because the starting-fluid will dissolve the loctite and end up in the throttle shaft bearing surfaces.

I cut the hole in the tee tubing with a hole saw and while drilling I noticed that the pilot bit started to drill into the other side of the tubing. I decided to continue the drilling operation and cap the hole with tape, maybe later there could be a use for it. The hole can be seen in Photo 15.

Photo 16

Photo 17

Photo 18

Photo 19

Another shaft and butterfly assembly was made for the air mixture. Cotter pins make nice shaft levers. See Photos 18, 19, 20 and 21. Gasoline fuel line makes nice spacers material. I used a larger diameter shaft here for two reasons. Firstly it's easer to machine. Secondly the air intake needs some resistance to start with thus possible making it easer to adjust.

Photo 20

Photo 21

Photo 22

Photo 23

At first I had difficulty starting this engine and noticed that it was inclined to flood out so the though of placing a tube into the hole, produced by the hole saw, and stopping just before the throttle butterfly struck me. The tube from a long stem lighter fit well, see Photos 22 and 23. I trimmed it off and wrapped tape around the end in order to limit it's travel into the carburetor. Photo 24 shows it installed into the carburetor. This noticeably helped with starting in the beginning but as issues get resolved this air tube will probably lose it's usefulness and be discarded.

I doubt that a tee design is prudent but there was a time restraint causing it's choice. Also an aluminum casting might be a better fabrication choice or possibly plastic injection.

 Photo 24	

So far this engine conversion runs better than expected.

To be continued.