

**1969 BUYERS' GUIDE**

# **MODERN CYCLE**

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**THE GARDNER  
CARBURETOR**

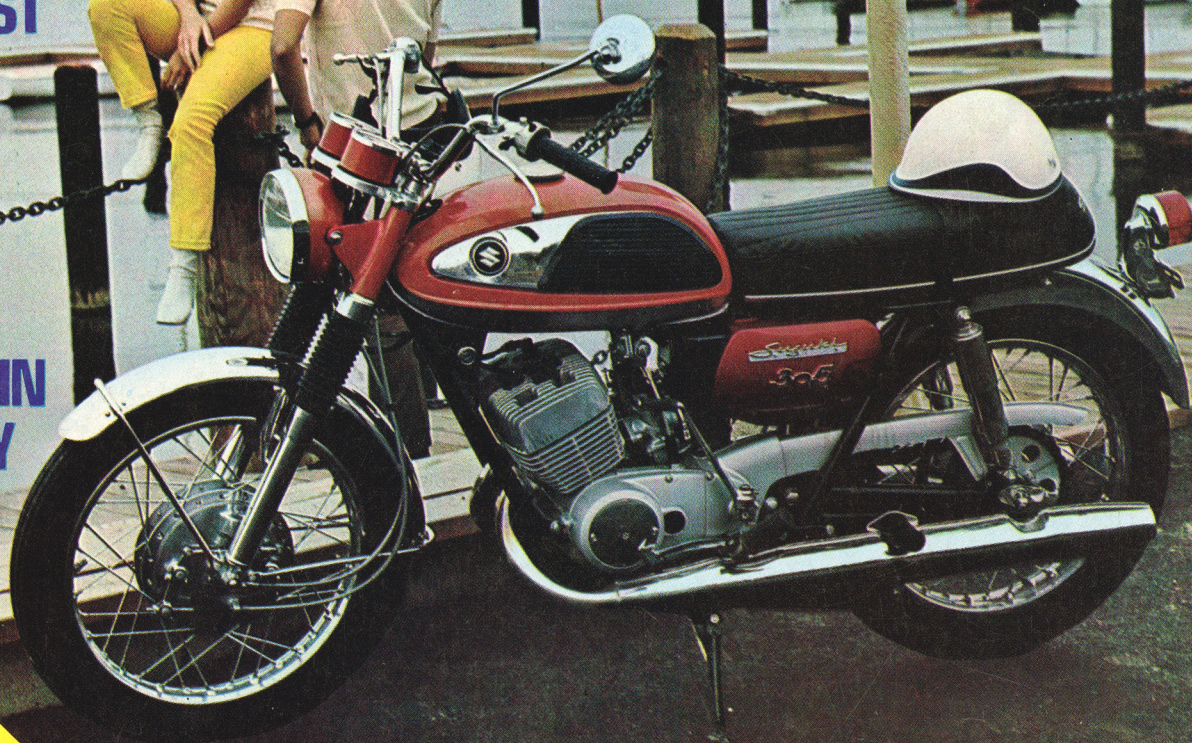
**TRIUMPH  
TROPHY  
500 TEST**

**SUZUKI 305  
RAIDER TEST**

**OSSA  
WILDFIRE  
SS TEST**

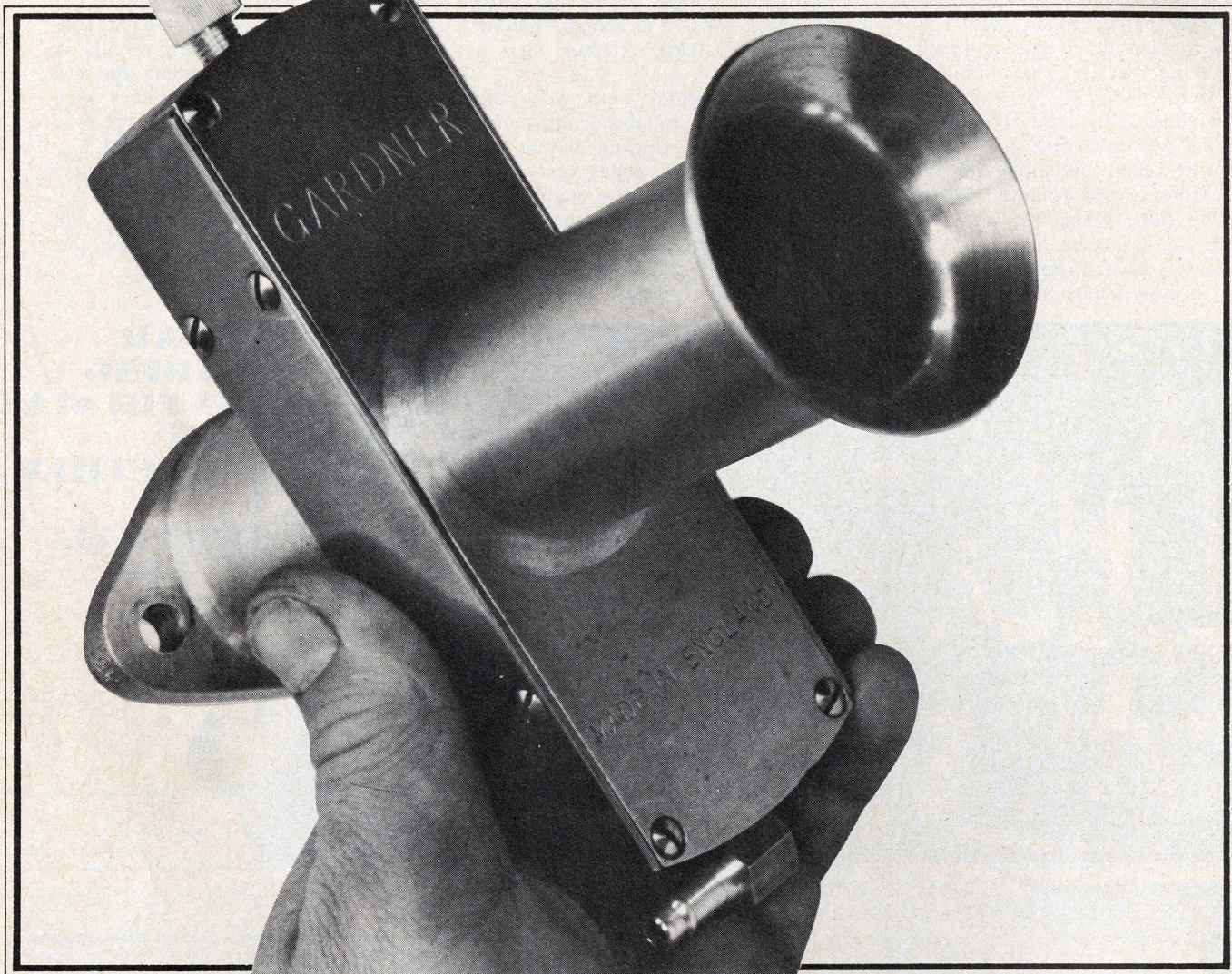
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BIOGRAPHY**

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# WHAT'S THAT SILVER BOX, MISTER?



text and photos by Bob Braverman

For awhile it looked like the Japanese were going to do everyone in the eye when it came to carburetor design and manufacture. Up to the early sixties the English pretty well dominated the carburetor scene. The Amal carbs were as much a part of the cycle scene as handlebars. Then the Japanese moved in and showed us all just how lovely life can be with an oriental gassifier. Suddenly the Amal wasn't the hot setup anymore. The Japanese carburetors were far less sensi-

tive to climactic conditions than the units from G.B. Even in racing circles the Japanese carburetors have proven superior in most cases. One of the hottest (if not THE hottest) production racer is the Yamaha TD1C, and this bike comes equipped with two 27mm carburetors that are about as sensitive as a stone ax. Matter of fact these carburetors rather spoil you. Honda CR series engines likewise had a really neat set of carburetors that required little, if any, fiddling to get the maximum performance from the engines.

So just when it seemed that British

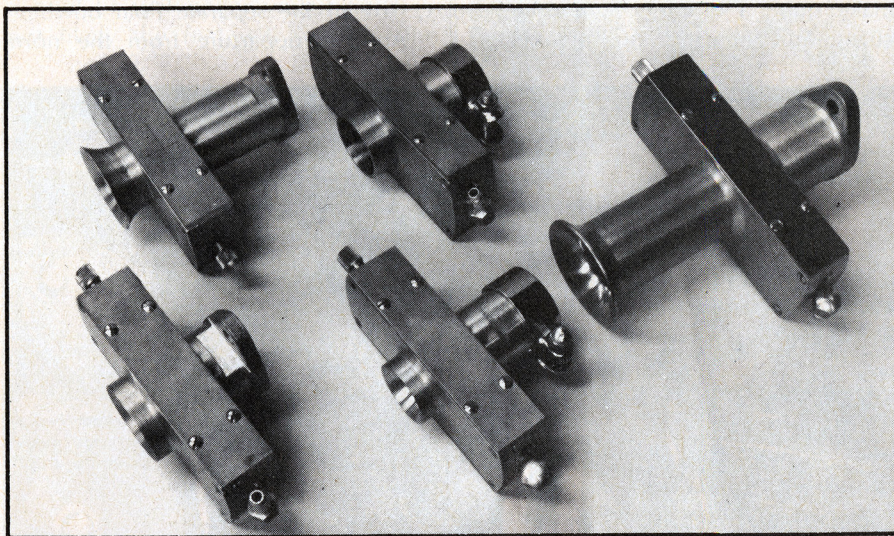
carburetor manufacturers were coming out second best, along came a chap by the name of Ron Gardner. Gardner, it seems, has a rather unorthodox approach to solving this business of providing the engine with the proper fuel/air mixture. If you own a motorcycle, other than a few special cases, the carburetor is a conventional slide type that uses a round slide to control

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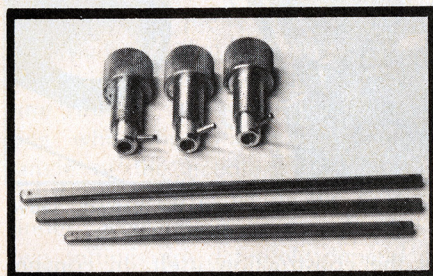


the amount of air entering the intake tract. Also present is a needle mounted to the slide, the end of which is tapered and fits in a needle jet. At the bottom of the needle jet is the main jet. Also incorporated is a float system that keeps a level of fuel at

the proper height at all times, (or it should anyway.) Then of course we have a separate idle, or low speed system. Then to complicate things further, there is a cutaway portion on the portion of the slide that faces away from the engine. This controls the



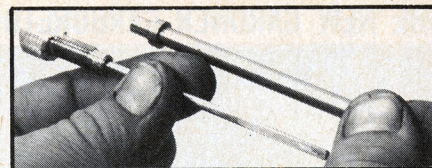
This gives you an idea of the wide variety of shapes and sizes this carburetor comes in.



The needles and adjusters are available in a wide range and this makes the job of tuning a much easier task.

mixture at low speeds. There are other things involved in the standard carburetor, but we won't go into them now because this would only take a lot of space and just complicate things.

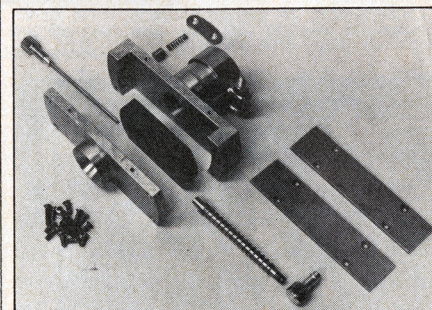
Ron Gardner it seems has taken the majority of carburetion headaches and come up with a contrivance that is not only far simpler, but also far superior. Case in point: We took two brand new Hodaka's. They were set up identically and road tested. One it seemed, was slightly faster than the other. Nothing could be found to equalize the machines exactly. So, the slower one was fitted with a 25mm Gardner unit, and now the slower one actually was faster than the other Hodaka. Both the acceleration and top end were better. Another side effect that was affected was the improved middle range throttle response. We could slow the machine down in second gear to where it took a good deal of effort to balance the bike, then turn on the throttle and the bike would again accelerate without any spitting back or misfiring. I realize this



Heart of the system is the needle and jet tube. Note that the needle is tapered only on one side. See text.

is a rather harsh way to illustrate throttle response, but it did prove one thing. Even though the Gardner unit was 5mm larger than the stock Hodaka unit, it did a better job throughout the entire RPM range.

A peek at the disassembled photo of the carburetor will illustrate just how simple the Gardner is. The heart of the whole system is the needle and



Here's an average Gardner unit disassembled. Insides are all the same for all models, except for bore size, needle and jet tube.

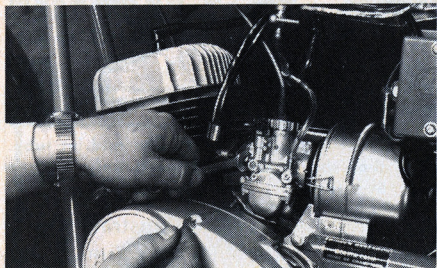
jet tube. This needle and jet tube are quite similar to the needle and needle jet found in the conventional carburetor, except for one major difference. And herein lies the crux of the whole scheme. The one big difference is the needle itself. Instead of tapering the needle in a conventional manner, the Gardner needle has a taper ground only on one side of the needle. This one needle controls everything. Or it would be more correct to say this one taper controls the whole ball of wax — low end, midrange and top end.

The carburetor can be leaned or richened by either raising or lowering the needle in a conventional manner. But there are other factors that come





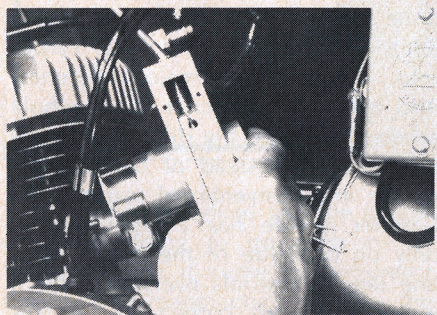
## THE NEW GARDNER CARBURETOR IS THE ULTIMATE IN SIMPLICITY, AND PERFORMANCE.



To install our test carburetor it was necessary to remove the stock unit and disconnect the cables.

into play here. By rotating the taper in toward the engine richens it, while turning the taper out toward the open end leans the mixture. Of course the vertical placement of the needle makes a difference. In other words, just how high or low the needle is in the jet tube. So now you see that not only do you have an adjustment up and down, but also a rotational adjustment.

Neither is more important than the other. They work together. To make things as simple as possible for the amateur tuner, you can get any type of adjuster you need. The adjuster is the knob that the needle is attached to. There is a flat cut on one side, and a spring loaded ball against this flat won't allow the needle to turn, unless you turn it yourself. This assures

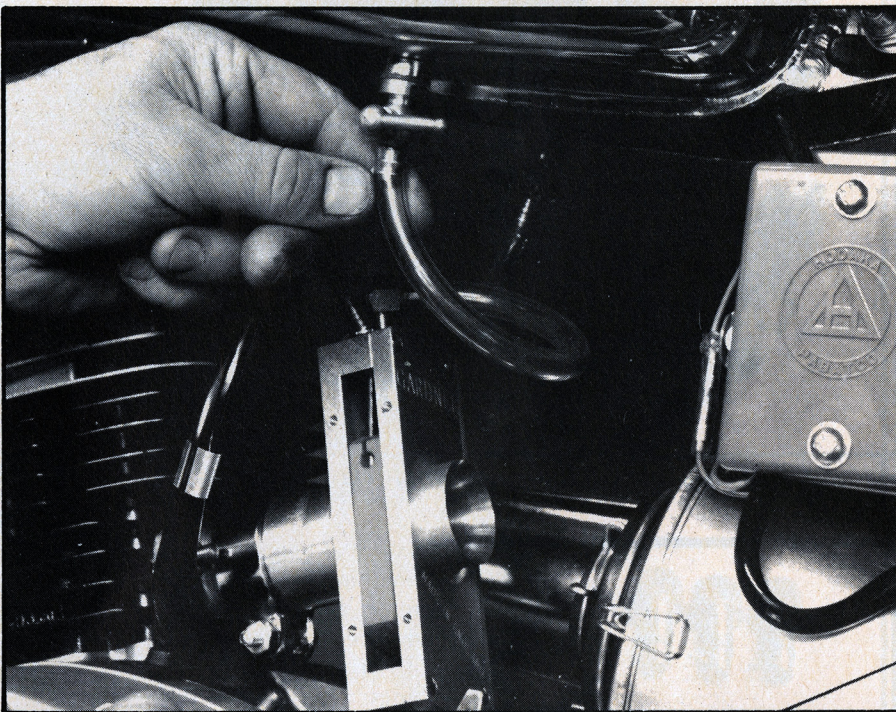


Remove the right side cover and connect up the throttle cable. The choke cable was not needed at all.

you that the angle of the needle will never vary. No matter how many turns you take up or down, the needle always stays at the same angle if the ball is against the flat. If you want to change the angle (a few degrees can make quite a difference) you merely change the adjuster, not the needle.

concrete indication that this condition does exist. My opinion is that the separate float is not needed. I find it rather interesting that in the case of scramblers and moto cross machines there is no mention made of the necessity of the separate float bowl.

Another departure from the norm



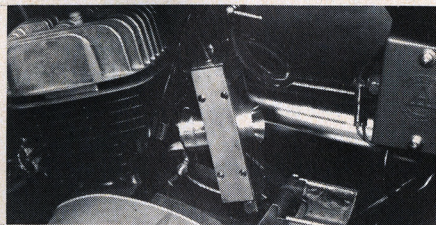
Next hook up a piece of flexible fuel line between the carburetor and the petcock. Leave plenty of slack.

Of course you could change this too, since there is a wide range of needles available also.

In case it hasn't occurred to you by now, there is one other large advantage to this system. There is no float system needed. In other words, you can run a line directly from the fuel petcock to the jet tube. No float valves or adjustments to worry about. To the touring bike rider this may not seem like a big deal, but to the competition oriented rider this is a very big deal indeed. Gardner feels there may be a problem in a road racer, so here he feels the addition of a separate float would be worth trying. The reason for the separate float is not a level problem, but the possibility of a change of pressure. There is more pressure at the carburetor when the tank is full, and less when the tank is low. But so far there has been no

is the construction itself. In conventional carburetors the slide and needle move up and down and the jet stays fixed. Not quite so with the Gardner. The slide (which is flat instead of round) moves up and down, but the needle does not. The jet tube, which is attached to the slide moves.

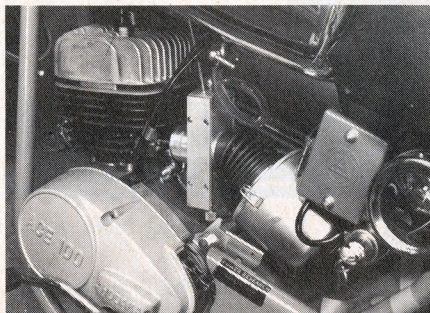
Because there is no float system,



Replace the right hand cover and tighten up the clamp ring onto the specially made manifold. Manifold could easily be made at home.



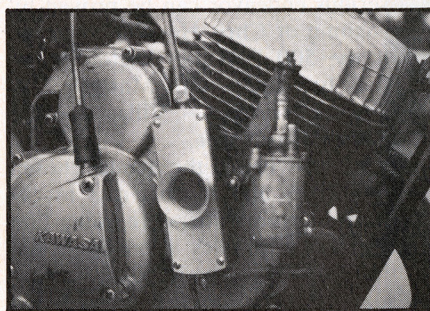
the carburetors can be mounted at any attitude, even upside down, with perfect results. However, because there is no float valve, the petcock should be shut off when the engine is not running. Failure to do so will mean a pool of fuel under your bike. It is not likely the fuel will run into the



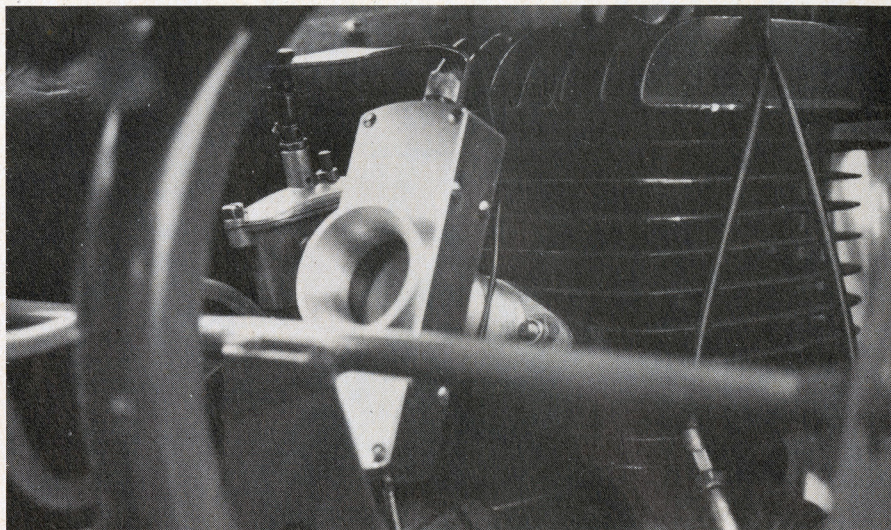
A fork boot serves as a flexible coupling between the carburetor and stock air cleaner. That's all there is to it.

engine, but it will drip out on the ground.

As mentioned before, the needle and jet tube is pretty much the whole bit. You'll find that the vertical adjustment (up and down) controls the mixture strength at a steady throttle setting, while the rotational adjustment (angle of the needle in relation to the intake tract) governs the mixture under acceleration. Although these two settings are definitely dependant on one another, you can get any combination you want with different needles and adjusters. When you purchase



A pair of units were installed on a Kawasaki 350 G.P. machine with excellent results. Carburetion is cleaner throughout entire RPM range.



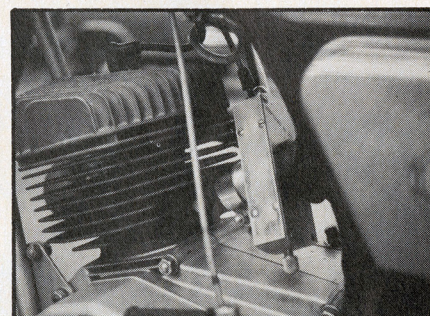
Another G.P. bike to receive the advantages of the Gardner unit was this Greeves Silverstone. Bike now has a wider power range and more horsepower.

one of these carburetors for a specific machine, the proper needle and adjuster is already installed. But if you choose to put the carburetor on another machine you need only change one or two parts.

These carburetors have been installed on a wide range of machines and the author has personally ridden a late model Bultaco Pur Sang with one of the instruments installed. Not only was the machine faster, but the mid-range throttle response was considerably improved. The power range is also increased which made riding the bike much easier. Other bikes to get the Gardner treatment were a Penton, Greeves road racer, Norton Manx, Kawasaki production road racer (350), and a 250 scrambler. In every case the entire power range was cleaned up and made larger.

This carburetor is the first one to come along in a long time that actually will do all the maker claims for it — and then some. Just this one addition to any competition machine should make quite a difference. Power Research is the U.S.A. distributor for these items, and any further information can be obtained from them. The address is 269 Orange Avenue, Goleta, California. The price? They average about fifty bucks per copy.

These carburetors are made in various sizes according to the engine they will be installed on. Matter of fact, Gardner now has a large order for units to be installed on model engines, so you can see that size is no problem in manufacturing. Because of the nature of the design they can be



This Sachs engine in the Penton was improved considerably with a Gardner carburetor also. Standard air cleaner is used.

made to fit just about any size bike. All they have to know is the bike it is going on — and that's it. The only real drawback to the whole thing is that you must shut the fuel off when the engine isn't running. But, that's a very small price to pay for the performance boost you get. ★