Injectronic

This system is primarily designed for installation on Pre 1975 model cars equipped with carburetors and simple ignition systems. It is not applicable to some computer-operated ignition systems or multi-ignition coil systems.

It can be installed on some vehicles with EFI, provided they have single ignition coils. If the system has a mass air flow meter, the water nozzle should be downstream to prevent water entering the mass air flow meter. In all cases, the nozzles must be upstream of the throttle body.

INSTALLATION INSTRUCTIONS

PART NO. 750 —
for Vehicles from 250 cu. in. or 3900cc through 500 cu. in. or 7800cc

TOOLS REQUIRED

¼" Electric Drill Motor with 5/16", 3/4" and 13/64" Twist Drills.
Two 7/16" End Wrenches, or one end wrench and socket, one 3/8" socket and ratchet; hammer, Center Punch, Screw Driver and Measuring Tape or Scale.

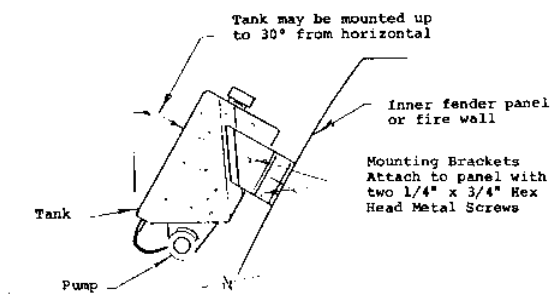
These are the basic tools required; however it may be convenient on some occasions to have other standard hand tools on hand as may be required for convenient installation.

IMPORTANT NOTE: Please read these instructions thoroughly and refer to Schematic Drawing and acquaint yourself with the various operations before the installation is attempted. It is necessary to have a basic knowledge of automotive engine and ignition systems to conveniently install this system. The installation procedure will be broken down into six areas, for simplification and ease. They are as follows:

1. Installation of Reservoir and Pump Assembly.
2. Installation of Nozzles, Orifices, and related hose installations.
3. Installation of Electronic Control and Vacuum Modulator.
4. Electrical and Vacuum Connections.
5. Testing and adjustment.
6. General operation and custom tuning for performance.
7. Trouble Shooting.

1. Installation of Reservoir and Pump Assembly

Before beginning installation of reservoir, thoroughly wash out and make sure there are no foreign objects inside. The reservoir and pump assembly should be located beneath the hood of the vehicle in some area of the engine compartment where it can be attached to either the firewall, inner fender panel, or front bulkhead section. In some vehicles, it is convenient to attach to the inner fender panels; however, they sometimes slope at a fairly steep angle. It is permissible to attach the tank at an angle, providing it does not exceed 30° from vertical. **See Drawing A.** The tank should also be mounted at least 6" from the nearest exhaust manifold or hot exhaust piping. It may be necessary to locate the tank in front of the radiator behind the grill section. In any case, it is extremely important that the top of the tank be no higher than the level of the discharge nozzle in the air cleaner or the carburetor; otherwise the nozzle will tend to siphon when the pump is not operational. Before locating the height of the tank, estimate the approximate height that the nozzle will be installed, either in the air cleaner or the carburetor, and mount the top of the tank at least 3", and preferably 6" lower than that estimated height. Once the correct mounting position is determined the tank bracket may be mounted directly to the firewall or fender well. Attach as required, by drilling two 5/16" diam. holes and mounting with the ¼" x ¾" long hex-head metal screws provided.

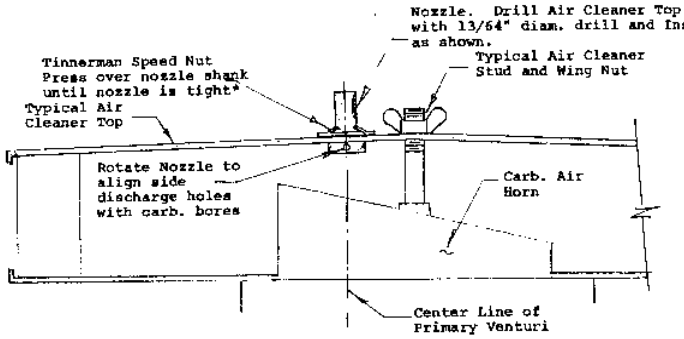


DRAWING A

Typical Mounting Showing Maximum Tilt of Tank

2. Nozzle and Orifice Installation

Three nozzles are provided in this kit for universal application. Most American automobiles that use a two barrel or four barrel carburetor will utilize a single two-outlet discharge nozzle. Automobiles that use a two barrel progressive carburetor, such as Pintos, Vegas, Toyotas and other imported vehicles will utilize the single discharge nozzle or nozzles. Some imported cars that utilize side draft carburetors will utilize two of the single discharge nozzles. We recommend, wherever possible, that these nozzles be installed in the air cleaner lid or top, or air cleaner covers, as it simplifies the installation and does not require drilling in the carburetor. **See Installation Drawing B.**

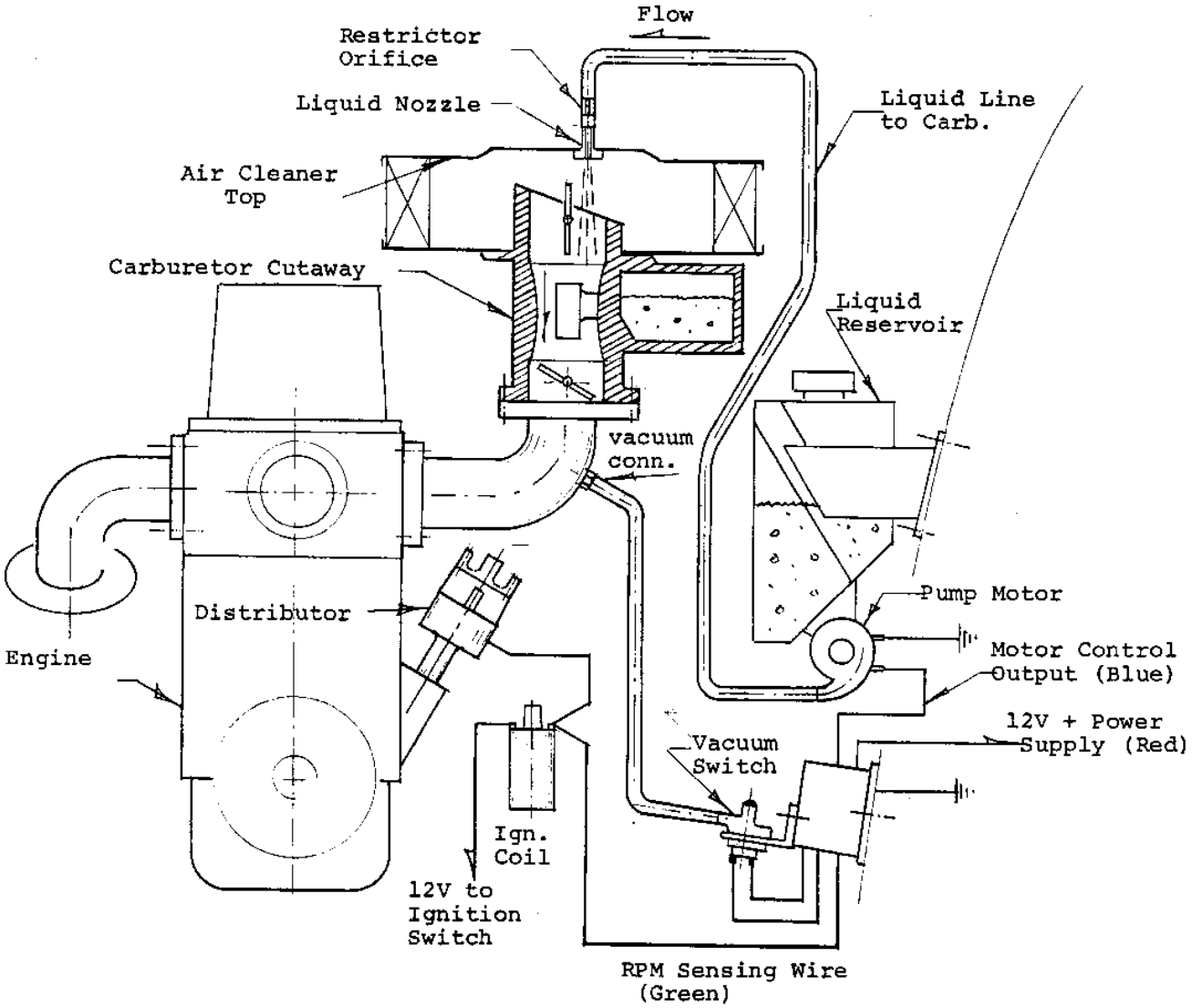


DRAWING B - TYPICAL NOZZLE INSTALLATION IN AIR CLEANER ON DOWNDRAFT CARBURETOR ENGINES

*A 3/8" socket can be used as a tool to push on the Tinnerman nut. Place the bottom of the nozzle against a solid object then push the nut over the shank of the nozzle. Place the socket against the nut and push or tap into place until tight.

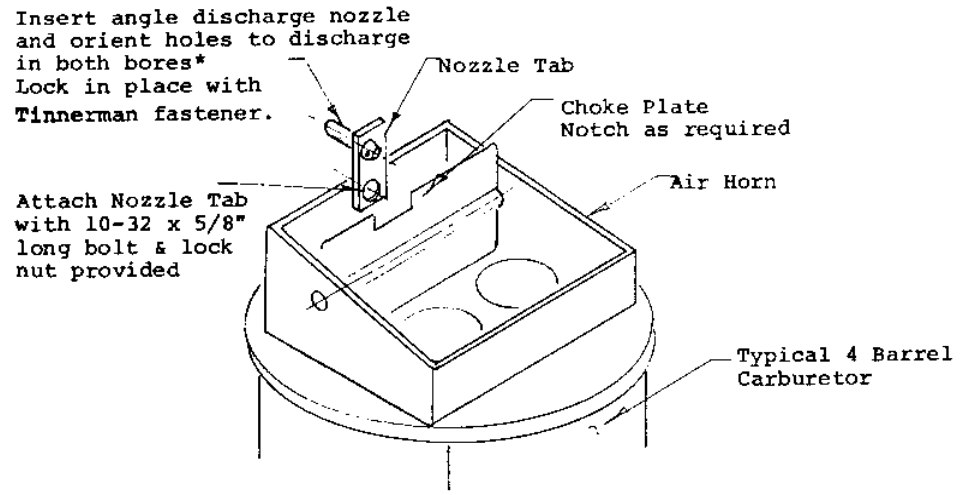
Due to the large variety of air cleaner tops and covers, it is impossible to detail the exact installation. However, the installation drawing shows the basic principle utilized. On vehicles that have less than 1¼" clearance between the hood and air cleaner top, it may be necessary to use an alternate nozzle location, such as the carburetor air horn. **See Drawing C.** If the particular vehicle involved has a two barrel progressive or four barrel progressive carburetor, the nozzle should always be located over the primary bore or bores, that is, the throttle bores that open first when the accelerator is depressed.

If the vehicle uses dual side draft or any type of dual carburetor, the two single orifice nozzles should be installed in the air cleaners directly above the venturi. The two nozzles are then joined with one of the plastic tees provided. Carefully install the nozzle, making sure no foreign matter enters the air cleaner or carburetor. After the nozzle has been installed and before the hose is attached to the nozzle projection, it will be necessary to select the proper orifice size for your particular engine. Refer to the chart below. Select the proper orifice, and locate the end of the orifice that has the small hole. This should enter the hose first, and the entire orifice should be pushed into the hose approximately 1". It may be



INJECTRONIC SCHEMATIC

necessary to take a small screw driver or other instrument in order to slide the orifice into the hose. Once this has been installed, slip the hose over the projection on the previously installed nozzle. This hose can now be routed over to the discharge on the pump motor. Route conveniently across the engine, and cut to length as required. Keep away from hot exhaust manifolds or piping. The remainder of the hose will be used later for the vacuum connection. If dual nozzles are to be used, the orifice should be installed up-stream of the plastic tee connector.



DRAWING C - ALTERNATE NOZZLE LOCATION

*If 2 Barrel Progressive Carburetor, use single bore nozzle direct into primary bore.

ORIFICE SIZE TO CID

Engine Size	Identification	Size
73 to 121 CID	plain	.018" diam.
121 to 160 CID	1 groove	.021" diam.
160 to 250 CID	2 groove	.025" diam.
250 to 350 CID	3 groove	.0292" diam.
350 to 500 CID	4 groove	.033" diam.

3. Installation of Electronic Control and Vacuum Modulator

Locate the electronic motor control. At this point it will be necessary to calibrate the controller for the number of cylinders your vehicle has. Hold the motor controller in your hand with the open back toward you and the vacuum switch on the left side. On the left side of the circuit board you will find a small electrical resistor. This resistor is color coded with the following color bands: blue, grey, orange, and gold. I. With this resistor in place the unit is calibrated for use on 8 cylinder engines. If your engine is other than 6 cylinder, proceed as follows:

The resistor is inserted and held in place on the circuit board in a spring loaded plug. The resistor can be withdrawn from the plug and another resistor of the proper value inserted in its place. To prevent it from becoming dislodged, a small wire is bent over the top of it to hold it into position. Bend the wire back out of position and withdraw the resistor with your fingers or with a small pair of pliers. Only light pressure will be required. **See Drawing D.** Locate the two additional resistors of different values supplied in the kit.

On the chart below, select the proper color coded resistor and insert into position in the plug. It makes no difference which direction the resistor is inserted. Carefully bend the retaining wire back over the plastic portion of the resistor to hold it in place. The unit will now be properly calibrated for the engine with the sumber of cylinders you have selected.

RESISTOR CHART:

	Color Band Code
4 cyl. eng.	Brown, Orange, Yellow, Gold.
6 cyl. eng.	White, Brown, Orange, Gold.
8 cyl. eng.	Blue, Grey, Orange, Gold.

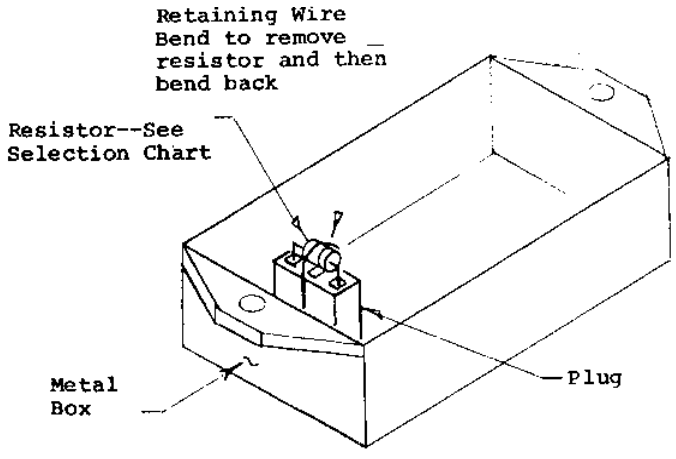
IMPORTANT NOTE: If your resistor is inadvertently lost or damaged, additional resistors can be purchased from your local radio or electronic supply store. These resistors have the following electrical values:

4 cylinder — 130K, ¼ Watt, 5%
6 cylinder — 91K, ¼ Watt, 5%
8 cylinder — 68K, ¼ Watt, 5%

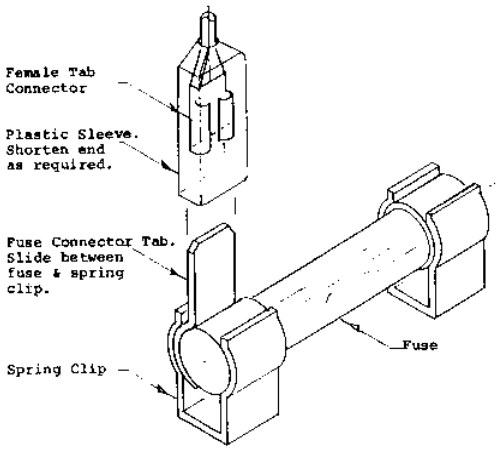
Locate a convenient place on the firewall or inner fender where the vacuum switch and electronic controller can be installed. If convenient, locate adjacent to the reservoir and pump assembly.

IMPORTANT NOTE: As this electronic motor controller contains many integrated circuits, transistors, etc., great care should be taken that it is not located in close proximity to hot engine parts, at least 12" from any exhaust manifolds, and preferably it should be near the front of the engine compartment to avoid unnecessary heat. (Although it is designed for typical heat loads beneath the engine compartment). Also keep in mind that on some cars air conditioning coils and piping may be located behind sheet metal firewalls. Determine their location before drilling to prevent inadvertently drilling into them.

Once a position has been located, mount by drilling two ¾" diameter holes and attaching with two #10 x ¾" long sheet metal screws provided. The electrical connections can now be made into your vehicle and to the pump motor.



DRAWING D - TIMING RESISTOR INSTALLATION



DRAWING E - FUSE CONNECTOR TAB

4. Electrical and Vacuum Connections

(a) Installation of red wire (+) to power supply

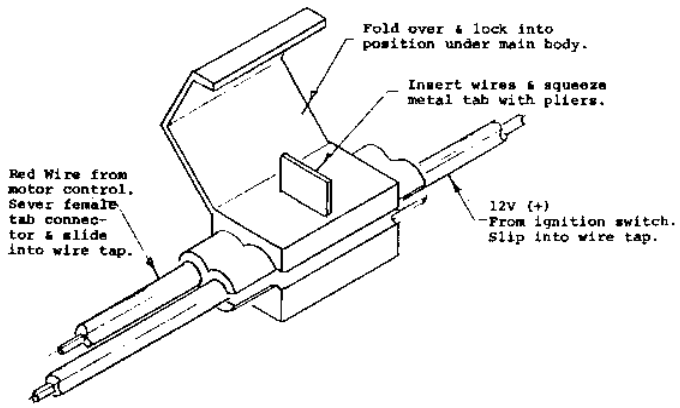
This wire must be connected into 12 volts positive power supply that is controlled by the ignition switch. We have provided two connections for this purpose. One is a fuse box connector tab, the other is an inline wire-type splice connector. If your particular model vehicle has a convenient fuse box, either in the engine compartment or beneath the dash board, connection can be made there.

(1) Use of the fuse connector tab

It will be necessary to locate a fuse that is on a circuit with the ignition switch, that is when the ignition switch is turned to run position, power will flow. If such a fuse can be located, the fuse connector tab can be installed on that fuse and power taken from that point. **Refer to Drawing E.**

(2) Use of female tab connector

The female tab connector can be attached directly to the terminal box on automobiles that have an accessory connection that is connected into the ignition switch, generally indicated with letters IGN. If one of these is located on your fuse box, but is in use, you can use the alternate method of connection, the wire tap. Cut the tab connector off the end of the red wire, and install the tap as shown in **Drawing F.** Under no circumstances should the



DRAWING F - WIRE TAP

power be taken off the positive wire that goes to the ignition coil, as this is generally a ballast wire, and will give you only 6 volts. If you have difficulty locating 12 volts that is controlled by the ignition switch, rather than risk improper hook up, visit your nearest automobile dealer or electrical shop for advice on where to attach this important wire.

(b) Connection to the ground

The black ground wire can be connected to any part of the chassis, as required to make a positive ground. Many vehicles have other ground connections, by the horn or other electrical devices, and these connecting screws can be loosened and the ground eye put beneath them. As the electronic controller must be grounded, so must one wire to the injection pump. If convenient, both of these ground connections can be made with one screw or bolt. It is extremely important that these connections are tight. Use the star type lock washer provided to provide good contact.

(c) Connection of the Green RPM Sensing Wire into the Points Wire or Ignition System Circuits

Due to the large variety of ignition systems available today both as original equipment and aftermarket add-on components, it is difficult to specifically indicate the exact point at which the green sensing wire should be attached. However, in 90% of the cases with either standard ignition coil, capacity discharge, or breakerless systems, the green wire will be attached to the negative coil stud. To make this connection proceed as follows:

Locate the ignition distributor on the engine. From the distributor there will be one small wire that goes over to the ignition coil. Trace this wire, and at the point where it connects at the ignition coil will be the position that the green wire should be attached. If the car is equipped with an aftermarket add-on capacity discharge unit, the wire should be attached at the point where this wire from the distributor joins the capacity discharge wiring. Exceptions to this are as follows:

(1) Delco H.E.I. System, General Motors vehicles. These ignition systems provide a connection on the distributor cap on V8 and V6 cylinder models. This connection is marked with the letters TACH. On 4 and 6 cylinder in line models this connector module is remote mounted from the distributor cap. If the vehicle has Tachs connected into this terminal, it will be necessary to splice the line at this point to connect the green sense wire.

(2) Ford Breakerless Systems, all late model Ford vehicles. Connect the green wire at the ignition coil at the connection labeled TACH.

(3) On Chrysler Corp. products and American Motors products with the electronic ignitions, the green wire will be connected to the negative coil stud.

See Drawing G which will help you identify and make the connection. When the unit is fully installed, and you test for confirmation of operation in Paragraph 5, should the unit not operate, the following procedure should be followed:

(1) Remove the water discharge hose from the nozzle and tape or secure into position so the water flow can be observed.

(2) Pull the vacuum line from the vacuum modulator and plug the vacuum line.

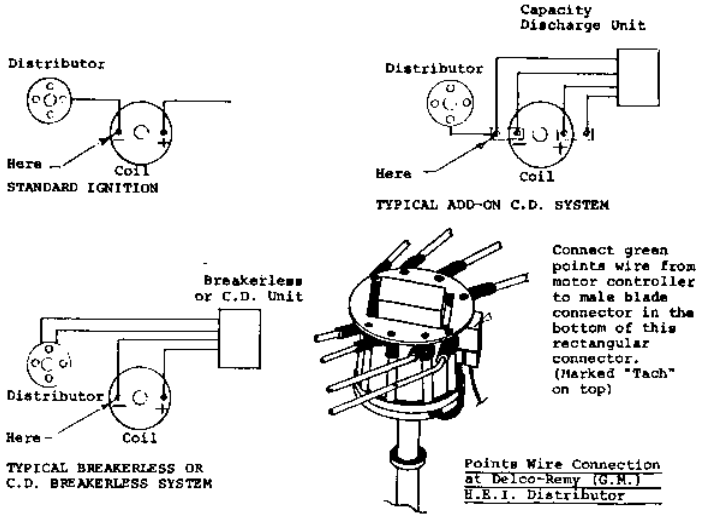
(3) Remove the green sensing wire from where it was installed, and reinstall on the opposite side of the coil, or if equipped with capacity discharge, at any point or connection where the capacity discharge unit is connected into the ignition system or ignition coil. Locate the wire in the new location and then start the engine and bring it up to at least 3000 rpm. If no water flows, the connection is still not correct. Relocate to another coil terminal or wire, and repeat the above test. Proceed until the unit operates. If the unit fails to operate, refer to Paragraph 8, Trouble Shooting.

(d) Installation of Blue Positive or (+) Motor Power Lead

This lead should be connected into the male tab connector on the blue wire at the motor, and the black wire at the motor should be connected into the black ground wire provided. Ground as indicated earlier in the instructions. It is extremely important that a good ground connection is made at the battery post and battery ground cable. Check for tightness. If ground is questionable, remove cables, clean posts and cables, and reinstall.

(e) Vacuum Modulator Connections

Locate the remaining small diameter vacuum hose and slide one end of it over the vacuum modulator, the other end of the hose will be connected into one of the existing vacuum lines that attaches into the intake manifold. **IMPORTANT NOTE:** On late model vehicles with emission controls, there are usually a great many vacuum hoses running throughout the engine compartment. Some of these hoses are connected to spark port vacuum, that is there is no vacuum at the idle position. The vacuum connection should never be made into this hose. The proper connection is into an existing capped projection on the intake manifold, or carburetor, and if your vehicle has no existing cap connection, locate a vacuum line which originates directly from the intake manifold. Cut this line and install the T provided. To double check that you have the proper vacuum line, start the engine, and with the engine idling hold your finger over the connection. If vacuum is present, you have the correct



DRAWING G - GREEN R.P.M. SENSING WIRE CONNECTION

connection. Cut the hose to length as required, and route the vacuum hose through the engine compartment, making sure it does not come in contact with any exhaust manifold surfaces.

Check all electrical, mechanical and vacuum connections for accuracy, tightness, leakage, etc., and make sure no wires or hoses are in contact with any of the manifold or exhaust pipe surfaces on the engine. Fill the reservoir with water, and your Injectronic Unit will now be operative. If you wish to confirm its operation, this can be done as detailed below.

5. Confirmation and Testing of Operation

The electrical and pump function can be tested as follows: remove the water supply hose from the air cleaner connection or carburetor connection, and tape into position on the fender so when you speed the engine up you will be able to observe water flow from the hose. Disconnect the vacuum supply line from the vacuum modulator and plug the end with a small bolt, screw or pencil. Start the engine, and slowly bring the engine up to speed. At approximately 1800 engine rpm on the tachometer, or if you have no tachometer, you will have to estimate the engine rpm from experience; the pump should come on and pump a low volume of water. Speed the engine up slowly through the rpm range until approximately 4000 or 5000 rpm is reached. As the engine speeds up, the flow of water will increase. This confirms the electronic and pump operation. Unplug the vacuum line and reinstall into position. If unit does not operate properly, see section entitled "Trouble Shooting."

6. General Operation and Custom Tuning for Performance

The vacuum modulator is factory set to come on at medium to high engine loads. It is factory set at 5" H.G. vacuum. Under most driving conditions, this is the proper setting to give economical water usage, as well as deter detonation, knocking and give general improvement in power and economy. If your partilular vehicle still experiences pinging or knocking before the water begins to flow, the vacuum switch can be adjusted to different settings. We do not generally recommend this, as it is an extremely sensitive setting, and unless a very accurate sensitive vacuum gauge is available, it may be difficult to return it to its original setting of 5" H.G.

If you want to change the adjustment of the switch, proceed as follows:

Mark the position of the sliot in the adjusting screw on top of the switch.

To adjust to get the unit to come on at less engine load (less throttle opening) turn the screw up, which is counter clockwise when viewed from the top.

1 turn = 5.4"hg
2 turns= 6.2"hg
3 turns= 6.7"hg
4 turns= 7.4"hg
5 turns= 8.1"hg
6 turns= 8.4"hg

At approximately 6-1/2 turns, the screw will come out. If this occurs and the spring comes out, reinstall the spring with the black cap on the spring up. Turning the screw up will increase the water usage. You may choose to offset this by using one size smaller resister in the water supply hose.

If you experience excessive water consumption and have no ping, you may wish to adjust the switch to require more throttle or higher engine load to turn it on. In that case, turn the screw down, or clockwise.

1 turn= 3.9"hg
2 turns= 3.0"hg

We do not recommend turning down any more than 2 turns as it would require nearly wide open throttle to turn the unit on.

By installing the Injectronic System, you will gain additional power and economy with no further modifications of the engine. For vehicles that are operated off the road only, such as 4-wheel drive off the road vehicles, or drag race automobiles, additional performance and economy can be gained by advancing the spark timing. Since the injection of fluid or water into the engine has the effect of increasing the octane rating of the fuel by between six and ten points of octane, additional spark can be utilized. We would suggest advancing the spark approximately 5°, and experimenting until optimum performance is achieved. On some engines the spark can be advanced as much as 10° over stock setting. These changes should be made only on off the road vehicles, as Federal and State laws prohibit modification of the timing on vehicles operating on the street.

7. Trouble Shooting

If the pump motor does not run, check the following:

(1) Is the unit properly grounded? Double check ground connection for tightness.

(2) Is the unit properly wired? Double check wiring.

(3) Is the Green Sensing Wire properly connected? If everything has been checked, and unit does not operate, it may be that the Sensing Wire is improperly connected. Try alternate connection points, if any, as indicated in Paragraph 4, Section C.

(4) Is cylinder calibration resistor properly installed for correct number of cylinders, and is it making proper contact? Check for tightness and proper selection. See Paragraph 3.

(5) Does the unit have power? Check fuse and if possible verify 12V connection with a volt meter or some type of tester. If nothing else is available, use a 12V light bulb. Use only 3 amp fuses #AGC-3.

(6) If motor runs, but no water comes from nozzle, check for clogged hose or nozzle.

(7) If motor and pump operate when ignition switch is turned on and engine is not running, check the wiring. If all wiring is correct, return unit to factory for inspection.

(8) If unit has excessive water consumption or lack of adequate water consumption, check vacuum switch setting. Refer to Paragraph 6.

IMPORTANT NOTES:

1. We recommend that the water reservoir be kept full or filled each time you purchase gasoline, so you can receive continued benefits of liquid injection. However, if you allow the reservoir to go dry, no injury will result to the pump. We do not recommend however, operating the unit for extended periods without water.

2. In cold weather climate when the temperature reaches 32°F, the water in the reservoir will freeze. To operate the Injectronic in sub-freezing weather, we recommend a mixture of water and methanol, or ethyl alcohol mixed approximately one part alcohol to two parts water. This will give anti-freeze protection down to approximately —22°F.

3. *Fluid Consumption* — Depending upon driving style, terrain covered, speed, vacuum switch setting, orifice selection, and engine size, fluid consumption will vary from as much as one tank of water or more per tank of gasoline to two to three tanks of gasoline per tank of water. Under certain conditions such as pulling a steep hill for an extended period of time, it would be possible for the pump motor to come on and pump the reservoir down in a matter of minutes. Experience will teach you how frequently you should refill the reservoir for various driving conditions and terrain.

Under conditions of heavy usage, you may elect to fabricate a larger reservoir that would give you extended fluid range.

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