SETTING UP THE AUTRONIC E.C.U.

CYLINDER SELECTION

Switches 1 and 2 can be arranged by the user to give settings for 4, 6, 8 and 12 cylinder setting by following the coding arrangement on the facia board. Be careful to follow the printed lines from the code panel to the switches. Rotary engines and twin ignition V8 engines require 4 cylinder settings (see section - THINGS TO BE AWARE OF).

INJECTION TIME RANGE SWITCHES

Switches 3, 4 and 5 give 8 combinations of injection maximum on times varying from 4.5 ms. to 30 ms. Each range has a 20% overlap with the ranges preceding and subsequent to the one in operation.

SWITCH SEQUENCES

SWITCH NO.	3	4	5	
Range 1	OFF	OFF	OFF	LEANEST SETTING
2	ON	OFF	OFF	
3	OFF	ON	OFF	
4	ON	ON	OFF	
5	OFF	OFF	ON	
6	ON	OFF	ON	
7	OFF	ON	ON	
8	ON	ON	ON	RICHEST SETTING

To make a range setting change push rocker switches **gently** with screwdriver. It should be clearly understood that if the injectors used are too small in their flow capacity, they may be full on and not supply sufficient fuel to cater for the requirements of a modified engine. Most standard injectors as fitted by the motor manufacturer are sized to suit the H.P. output of that particular engine and have very little extra capacity at all. We can assist in injector sizing or injector supply.

INJECTOR TYPE (ELECTRICAL RESISTANCE VALUE) SWITCH NO. 6

Broadly most injectors can be classified as either high or low resistance types. We have provided for both types. Low value injectors of the 1 to 6 OHMS type would be controlled with the switch No. 6 in the OFF position while high value injectors of the 6 to 16 OHMS type would be controlled with switch No. 6 in the ON position.

A simple multimeter can determine the type of injector by measuring resistance across the two contact pins of the injector.

FUEL SUPPLY

It is most important that the following recommendations are adhered to for correct operation of the injection system.

If the system is being fitted to a vehicle not designed for fuel injection, it is highly probable that the fuel tank has no provision for the prevention of surge or slosh as the tank nears 1/3 or less capacity. This results in the high pressure pump being momentarily starved and therefore running dry during cornering and under acceleration. This situation will most certainly result in the engine cutting out when power is needed and the total destruction of the pump within a very short period, as they require continuous fuel flow for their speed regulation and internal cooling. This can be a very expensive problem. With the exception of some race vehicles, it is difficult to have the H.P. pump(s) mounted below the minimum tank level and drawing from the bottom of the tank thus we recommend the use of the following system:-

1. Construct a header tank typically 3 inches dia. (75 mm) and 4 inches high (100 mm) with two 3/8" O.D. pipes brazed or welded into the bottom and two one 3/8" O.D. pipes brazed or welded into the sides near the top. Material preferably aluminium but steel O.K. This header tank can be fire wall mounted or boot mounted but should be several inches above level of H.P. pump. This header tank is not under pressure other than the residual tank return line pressure drop, but welding must be checked for leaks.

2. Use either vehicles low pressure standard pump to lift from fuel tank via water separator/fuel filter to header tank into one of the bottom connections.

3. Draw off from other bottom connection to high pressure pump and then to engine fuel rail.

4. The fuel rail carries fuel to the injectors and is pressurised by the fuel regulator to 45-50 PSI. As the high pressure pump(s) should always be supplying in excess of maximum engine demand, the fuel not required by the engine is forced across the regulator and then directed to one of the top header tank connections to supplement the L.P. pump. The excess is then returned via the other top connection to the fuel tank.

Autronic will be in a position to supply header tanks and other fuel system components in the near future. In particular single rayon braid hose (SAE 100R5) hydraulic hose 250 PSI W.P. with high grade correct dia worm drive clips must be used. Screw fittings and hoses are obviously O.K. but do not use normal low pressure fuel hose under any circumstances as it is not designed for use at 50 P.S.I.

BEFORE FIRST START UP

CHECK FUEL SYSTEM FOR LEAKS

Disconnect brown 12V. pump supply and connect pumps (both low pressure and high pressure in turn) to battery supply. Run for 5 mins and check **all** threaded and push on connections for any leaks. Rectify and check again. Your thoroughness in this area could well determine your investment's life as well as your own.

E.C.U. CHECK

Plug in loom to E.C.U. Turn on ignition, both relays should close, one supplying power to the E.C.U., the other power to the fuel pump(s). After 3 seconds the pump relay should drop out. The red L.E.D.'s next to the fuel calibration adjustments should light up in order, giving a display of the value relative to the appropriate adjustment. This should step through each adjustment every 15 seconds until the cycle is complete, when it will repeat for as long as is required, only to be stopped by turning the ignition off or starting the engine.

SUGGESTED INITIAL START UP SETTINGS

1. Set switches 1 and 2 for cylinder number.
2. Set switches 3, 4 and 5 to ON, OFF, ON.
3. Set switch 6 to appropriate setting.
4. Turn on ignition switch. But do not start engine.
5. As and only when the red L.E.D. is illuminated adjust the calibration adjustment with a **small** screwdriver until the number 50 appears in the display panel. Set all the adjustments at this level. Depending on the injector size, these settings will allow the engine to both start and run, although it may be too rich. If much too rich, stop and reset switches 3, 4, and 5 back to OFF, OFF, ON which will effectively reduce fuel flow by approximately 20% and repeat engine run until rough setting has been achieved.

Setting fuel calibration for full load

Start the engine, and after any run in period, during which time the light load setting and the range may have to be adjusted, increase engine speed to 3000 R.P.M. (4000 RPM for a highly tuned engine) and **gradually** increase dynamometer load while watching the CO reading. Remember most CO meters have lag or delay period of up to and, in some cases, over 10 seconds. If the engine is very highly tuned you may not want to hold it for a long period but 5 seconds is long enough. Then back off and watch the CO meter and it will respond as the slug of gas produced while under load passes through the meter and is processed. Adjustment of the 4000 R.P.M. calibration can then be carried out and the same speed and load be again applied and the results checked.