



[Fi System Electronic Control Unit -- Getting Started]

Thank you very much for purchasing "Fi" system full kit. The following texts explain a flow from attachment to starting the engine.

[Attachment and adjustment of ECU]

- (1) ECU and wiring (harness) are attached in vehicles.
*Please refer to "guidance of harness connection".
*Please attach a power supply wire through a fuse.
- (2) You turn on the ignition switch. If there is no problem in attachment of harness, ECU drives a pump by intermittence, and turn on lamp of a dial controller, when preparation is completed.
- (3) If you give rotation to engine by the starter or the kick pedal, the signal for fuel injection will be generated by "Signal Interface Unit" from an ignition signal. When this signal is inputted into ECU, the lamp of a dial controller will repeat ON and OFF for every input. When a lamp does not light up, ignition is not carried out or ECU has not received the signal.
- (4) If the check of a signal is completed, the throttle sensor of a throttle body will be adjusted, and an injection setup in ECU will be adjusted to injector capacity. Please install SettingWorkbench (SWB) in a personal computer and connect with ECU by the communication cable. Please start SWB and read an injection setup from ECU. (Please save a setup at a file before changing a setup. Then, you can redo from the beginning later.)

Your Throttle Body : Diameter _____ mm : injector capacity _____ cc/min *1

How to adjust a throttle sensor is explained in the chapter of "adjustment of the hardware at the time of attachment" in a manual. Throttle sensor range is "1 - 254" digit at a throttle body with the bore diameter of 26mm. Please make a throttle full open, after loosening the attachment screw of a throttle sensor. Since the reading on a "Data Monitor(SWB)" (leftmost display value) is a digit value of a throttle sensor, please rotate a sensor to a body so that this may be set to "254" digit.(with holding throttle full open.)



- (5) The injector capacity is recorded in ECU. An injection setup needs to be adjusted, when the injector capacity of your throttle body differs from this, and when the engine displacement volume of the injection control map currently recorded differs from that of your vehicles. The whole injection map is multiplied by the numerical value which is calculated by the following formulas.

Specification of **your "ECU" map**.

<u>Injector Capacity</u>	<u>cc/min *3</u>	<u>Displacement</u>	<u>cc *2</u>
<u>Spec</u>			

Value A = Injector Capacity in "ECU" *3 / Injector Capacity of Your Throttle Body *1

Value B = Your Engine Displacement / Displacement of "ECU" map spec.*2

Value (for multiply) = ValueA X Value B

How to multiply the whole injection map and the value is explained in the chapter of "**Edit Basic Injection Time Settings**" - "**(B) Multiplying "Gain" to every domain**" in a manual.

[Starting Engine]

- (1) Let's start the engine. Please check that fuel pressure is the 2.5 kgf/cm² neighborhood and that the lamp has repeated lighting and putting out lights for every signal input.
- (2) Does your engine start?
If Setting is "Rich" or "Lean", Engine will not start easily. Please turn a dial of "Dial Controller" (to rich side or lean side) and re-challenge.
* If air is contained into fuel piping, it will not start easily. Please remove the air in piping.
- (3) Please turn a dial to rich or lean at the time of "idle". Air By Fuel Ratio is the 12 neighborhoods when engine rotation speed rises most. Please adjust an "idle" rotation speed by the idol screw of a throttle body(Air) and SWB(Fuel).
- (4) Here, it becomes the work which changes an injection setup according to your engine. If the engine spec of the map in ECU is close to that of your engine, an injection setup will be correct in general also at a running. Engine will become better and better if the injection map is set finely. The injection time at power comes out most is looked for to every rotation speed and Throttle degree domain, by changing a dial value of "DialController" . This will become very easy if you use "air by fuel ratio meter".
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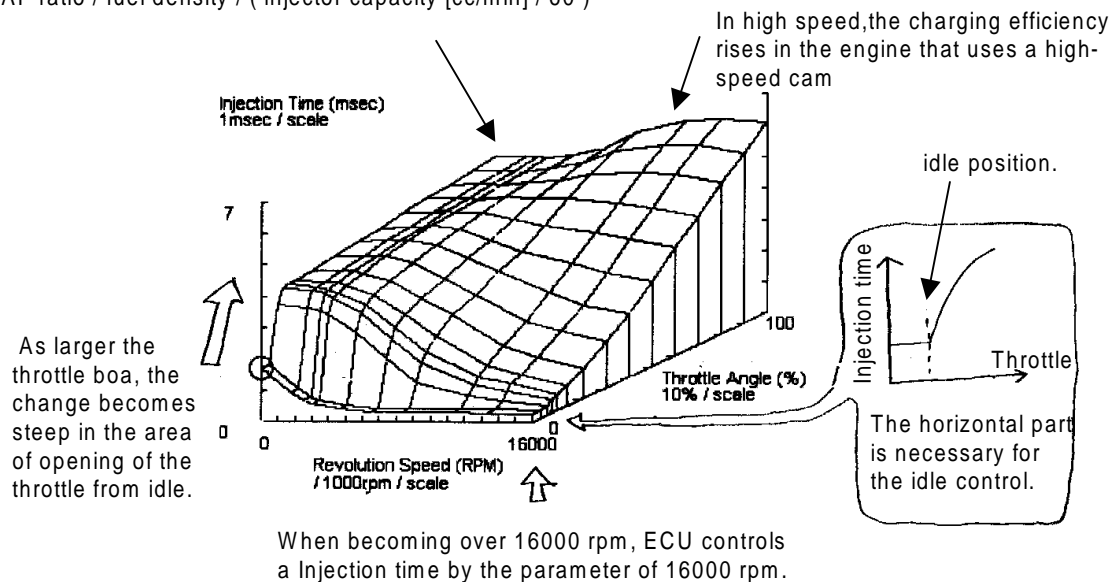


[About Control Method]

In standard "Alpha-N" version, ECU controls a injection time according to the intake air volume estimated with two parameters, "the open angle of throttle" and "engine speed". In the version of "alpha-N", the response of the engine is better than other versions. However, the control of this version needs the adjustment of the map when there are a secular distortion and a condition change, compared with the control of the type that measures the amount of air directly. We also have ECU that controls the following types.

- * D-Jetronic (Speed Density Type,normal,turbo)
- * Alpha-N with Boost Compensation

$$\text{Injection Time(WOT) [sec]} = \frac{\text{air charging efficiency [\%]} / 100 * \text{engine displacement [cc]} * \text{air density}}{\text{AF ratio} / \text{fuel density} / (\text{injector capacity [cc/min]} / 60)}$$



If you have any question, please contact us by e-mail.

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