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「Parameter Setting」

- Basic
- Voltage
- Fuel 1
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■ Initial Setting

Base Engine Type		1JZ-GTE	
Crank Signal Type	TOYOTA1	Cam Signal Type	TOYOTA1
Number of Cylinders	6	Displacement	2500 [mL]
Type of Intake Air Volume Measurement		Intake Air Pressure	
AirFlow Type	OFF	AirFlow Axis Max. Value	100ps Range
Number of Injection	3	Main Injector Volume	500 [mL/min]
Number of Ignition	6	RPM Axis Max. Value	8000 rpm
Pressure Range	0.20 - 2.70 [x100kPa]	Target A/F Range	14.00 - 11.00
<input type="button" value="OK"/> <input type="button" value="CANCEL"/>			

A/F1	No Selection	A/F2	No Selection
Air Flow	No Selection		
Water Temp.	TOYOTA1		
Intake Air Temp.	No Selection	Intake Air Pressure	TOYOTA1
Fuel Temp.	No Selection	Fuel Pressure	No Selection
Oil Temp.	No Selection	Oil Pressure	No Selection
Exhaust Temp.	No Selection		
Other Temp. 1	No Selection	Other Pressure 1	No Selection
Other Temp. 2	No Selection	Other Pressure 2	No Selection
<input type="button" value="OK"/> <input type="button" value="CANCEL"/>			

Enter or select necessary items for the initial setting and conversion table setting. Basically, when the base engine is selected, Numbers for “Crank Signal Type”, “Number of Injection” and “Number of Ignition” are entered automatically. If number(s) should be changed, enter a proper value here.

* Important Points *

- For setting of NB8C, 「BP-ZE」 should be selected as a base engine, but, select 「NB#C」 for the crank signal type instead of 「MITSUBISHI」.
- If a number of the ignition and/or injection is changed from the stock specification, change the number under this initial setting. E.g. Change the number of injection to 6 from 3, change the number of ignition to 4 from 1.
- Calculate the injector volume considering the fuel pressure using the formula shown below:

$$\sqrt{\frac{\text{Fuel Pressure After Change}}{\text{Previous Fuel Pressure}}} \times \text{Injection Volume} = \text{Input Value}$$

Enter the value obtained from this formula to “Main Injector Volume.”

e.g.)

When using a 550cc injector, and changing the fuel pressure to 3.5kgf/cm² to 2.5kgf/cm².

$$\sqrt{\frac{3.5}{2.5}} \times 550 = \text{approx. 650}$$

Enter “650” to “Main Injector Volume.”

- For the pressure range setting, enter the target max boost pressure + 0.2K as the setting range. The main trim map (charging efficiency map) will be made properly within the setting range (Target boost press. + 0.2K).

Parameter Setting											
<ul style="list-style-type: none"> Basic Crankshaft/Camshaft Input Setting <ul style="list-style-type: none"> Voltage Throttle/Accel Pressure 	<h3>Throttle/Accel</h3> <table border="1"> <tr> <td>Throttle Parameter 1-1 PIN 20</td> <td>CLOSE</td> <td>395 [mV] <input type="button" value="GET"/></td> <td>OPEN</td> <td>3588 [mV] <input type="button" value="GET"/></td> </tr> <tr> <td></td> <td></td> <td>0.0 [%]</td> <td></td> <td>100.0 [%]</td> </tr> </table>	Throttle Parameter 1-1 PIN 20	CLOSE	395 [mV] <input type="button" value="GET"/>	OPEN	3588 [mV] <input type="button" value="GET"/>			0.0 [%]		100.0 [%]
Throttle Parameter 1-1 PIN 20	CLOSE	395 [mV] <input type="button" value="GET"/>	OPEN	3588 [mV] <input type="button" value="GET"/>							
		0.0 [%]		100.0 [%]							

After the initial setting, input the throttle position sensor's voltage value in Parameter Setting 1; then, the throttle parameter value is entered as shown above.

For a vehicle equipped with the electronic control throttle, the voltage of “OPEN” may not be entered. In this case, input the appropriate value of the voltage, and perform setting of “OPEN” voltage referring to the log data during the vehicle setting.

■ Injection Dead Time Map

The following is the invalid injection time main map.
Use a map according to the injector installed to the vehicle.

The screenshot shows the software interface with the 'Fuel Control' menu open. The 'Main Injector Dead Time' option is selected. Below the menu, a table of injector characteristics is displayed.

P/N	Injector Vol. (cc)	Type	Resistance	Connector		Injector Dead Time (μsec)					
				Shape	Color	8V	10V	12V	14V	16V	18V
1402-RN008	555	Side Feed	High	Round	Yellow	1795	1179	830	584	403	193
1402-RN009	740	Side Feed	High	Round	Red	1641	973	633	463	359	227
1402-RN010	600	Top Feed	Low	Square	Purple	1508	853	598	402	227	135
1402-RN011	480	Top Feed	High	Round	Purple	1972	1166	776	483	274	100
1402-RZ001	550	Top Feed	Low	Square	Purple	2364	1636	1273	909	545	545
1402-RZ002	680	Top Feed	Low	Square	Blue	2444	1704	1407	1111	815	815
1402-RA002	1000	Top Feed	Low	Round	Light Blue	2400	1800	1400	1100	1000	800

The invalid injection time map is consist of 3 maps; main, sub, and independent map.

To use a main injector, input the value to "Standard Injection Time."

To use twin injectors (for FD3S), input the characteristics of second injector's invalid injection time to "Sub Injector Dead Time." To control the third injector by Independent Map like for RX-8, input the data to "Independent Injector Dead Time."

■ Ignition Cut RPM Input

For a vehicle that CAT is NOT installed for a race, the RPM rev can be edited by entering RPM to Ignition Cut RPM.

*** Do not perform this setting for a vehicle equipped with CAT. Failure to do so may cause damage to the CAT.**

The screenshot shows the 'Ignition 2' parameter setting window. The 'Ignition Cut RPM' section is highlighted with a red box. The 'Normal' value is set to 20000 [rpm] and the 'Start' value is set to 20000 [rpm]. The 'Car Speed' is also set to 20000 [rpm].

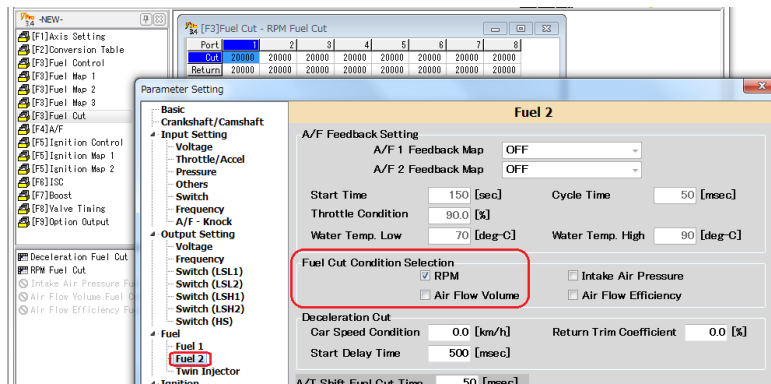
Other settings visible include:

- Ignition Cut (Start) Setting: Time Over Speed Pulse Number (10 [Count]), RPM Trim (0 [rpm]), Trim (0.0 [degree]), Hold Time (0 [msec]).
- Knock Integration Trim: Using (None-Use), Start Knock Integration (30000).
- Option Trim: X Axis, Y Axis, and Linked Condition settings for Option Trim 1 through 4.

Buttons at the bottom include PRINT, Comparison Parameter, CONNECTOR, SEND PARAMETER, OK, and CANCEL.

To determine the max RPM by ignition cut, input the set RPM to Normal Ignition Cut RPM.

■ Max RPM Setting by Fuel Cut



- For the maximum RPM setting by fuel cut, check "RPM" under Fuel Cut Condition Selection in Parameter Setting shown in the left. Input the rpm to execute and stop a fuel cut.

Port	1	2	3	4	5	6	7	8
Cut	6950	7000	6950	7000	6950	7000	0	0
Return	6800	6800	6800	6800	6800	6800	0	0

- For the car with CAT, check "RPM" under Fuel Cut Condition Selection in Parameter Setting.
- The fuel cut RPM of each port is determined in RPM Fuel Cut Map.
- The setting above shows that there is 50rpm difference in RPM at 6950rpm and 7000rpm for each port. This setting prevents a sudden fuel cut. Also, this setting is suggested as one method to improve driving feeling.

■ Intake Air Pressure Fuel Cut

- Fail-safe function that a cut is executed for each port depending on the boost pressure can be setup like a factory ECU. Use this function as necessary. Under the setting shown above, a fuel cut is executed when the boost pressure exceeds 1.5kg, and when the boost pressure is reduced to 1.15kg, the fuel injection is resumed.

[F3]Fuel Cut - Intake Air Pressure Fuel Cut

Port	1	2	3	4	5	6	7	8
Cut	1.30	1.32	1.33	1.30	1.32	1.33	12.60	12.60
Return	1.15	1.15	1.15	1.15	1.15	1.15	12.60	12.60

Parameter Setting

Fuel 2

A/F Feedback Setting

A/F 1 Feedback Map: OFF

A/F 2 Feedback Map: OFF

Start Time: 150 [sec] Cycle Time: 50 [msec]

Throttle Condition: 90.0 [%]

Water Temp. Low: 70 [deg-C] Water Temp. High: 90 [deg-C]

Fuel Cut Condition Selection

☐ RPM ☒ Intake Air Pressure

☐ Air Flow Volume ☐ Air Flow Efficiency

Deceleration Cut

Car Speed Condition: 0.0 [km/h] Return Trim Coefficient: 0.0 [%]

Start Delay Time: 500 [msec]

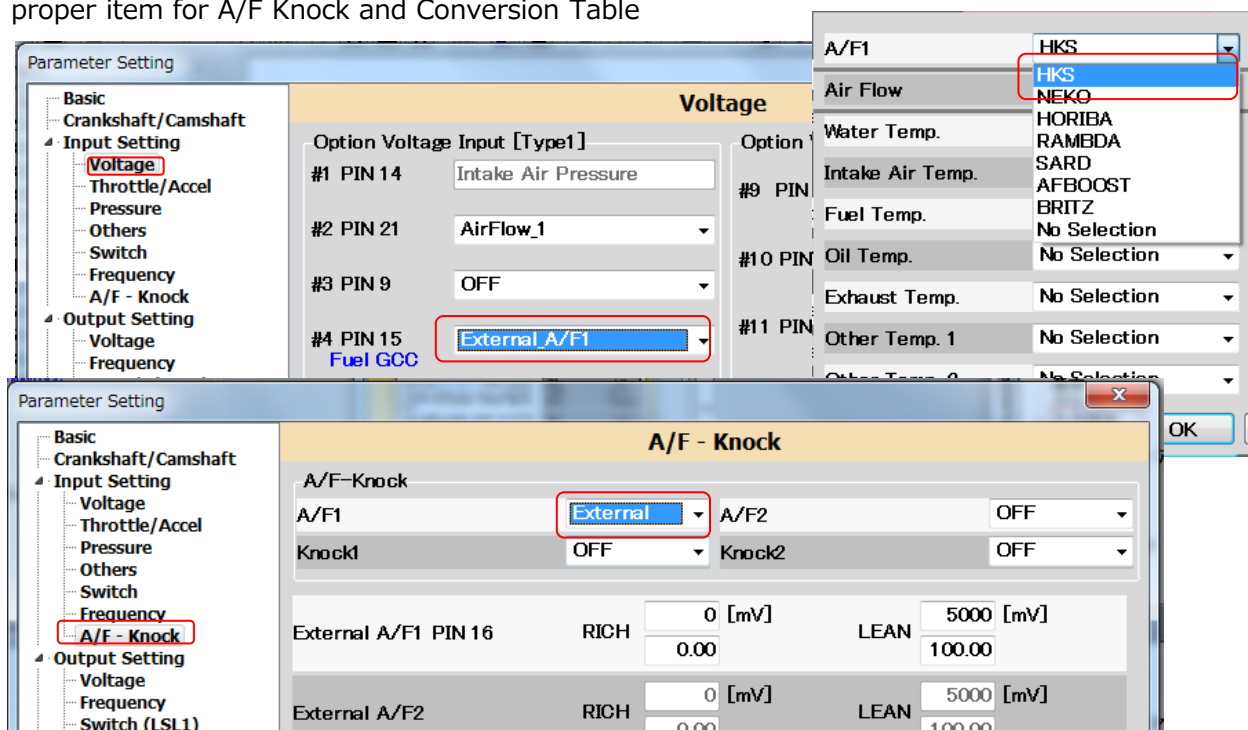
A/T Shift Fuel Cut Time: 50 [msec]

Option Trim

	X Axis	Y Axis	Linked Condition
Option Trim 1	OFF	OFF	Permanent
Option Trim 2	OFF	OFF	Permanent

■ A/F Meter Setting

For the A/F meter setting, select "External A/F1" to the voltage tab of Input Setting under Parameter Setting. Select a proper item for A/F Knock and Conversion Table Setting.



■ Before Starting Mapping: Troubleshooting

Engine does not start after cranking:

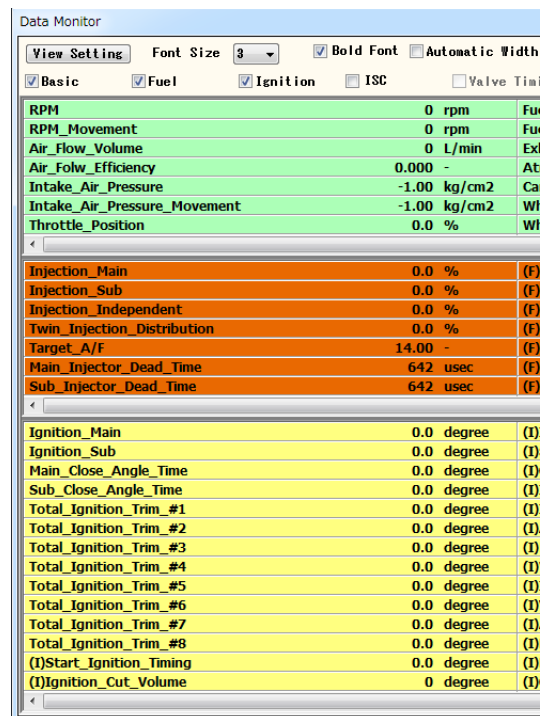
Check to see [Data Monitor](#) if the RPM is entered.

The RPM is entered when cranking is performed. If the RPM is not displayed, the engine does not start.

When the RPM is properly entered, the numerical value is displayed in "[Fuel Main](#)".

Also, "[Ignition Main](#)" should display the number of BTDC.

If the RPM is not entered, there may be a problem in a vehicle. Recheck the crank angle sensor, distributor, etc. Also, check the crank angle signal type of P/W.



Parameter Setting

Basic

Crankshaft/Camshaft

Input Setting

Voltage

Throttle/Accel

Pressure

Others

Switch

Frequency

A/F - Knock

Output Setting

Voltage

Frequency

Switch (LSL1)

Switch (LSL2)

Switch (LSH1)

Switch (LSH2)

Switch (HS)

Fuel

Fuel 1

Fuel 2

Twin Injector

Ignition

Ignition 1

Ignition 2

ISC

ISC

Other Control

Crankshaft/Camshaft

NE Input	<input type="radio"/> Magnetic <input checked="" type="radio"/> Optical	G1 Input	<input type="radio"/> Magnetic <input checked="" type="radio"/> Optical	G2 Input	<input type="radio"/> Magnetic <input checked="" type="radio"/> Optical
NE Pull-Up	<input type="radio"/> ON <input checked="" type="radio"/> OFF	G1 Pull-Up	<input type="radio"/> ON <input checked="" type="radio"/> OFF	G2 Pull-Up	<input type="radio"/> ON <input checked="" type="radio"/> OFF

NE Input Threshold	G1 Input Threshold	G2 Input Threshold
<input type="text" value="500"/> [r/min]	<input type="text" value="500"/> [r/min]	<input type="text" value="500"/> [r/min]

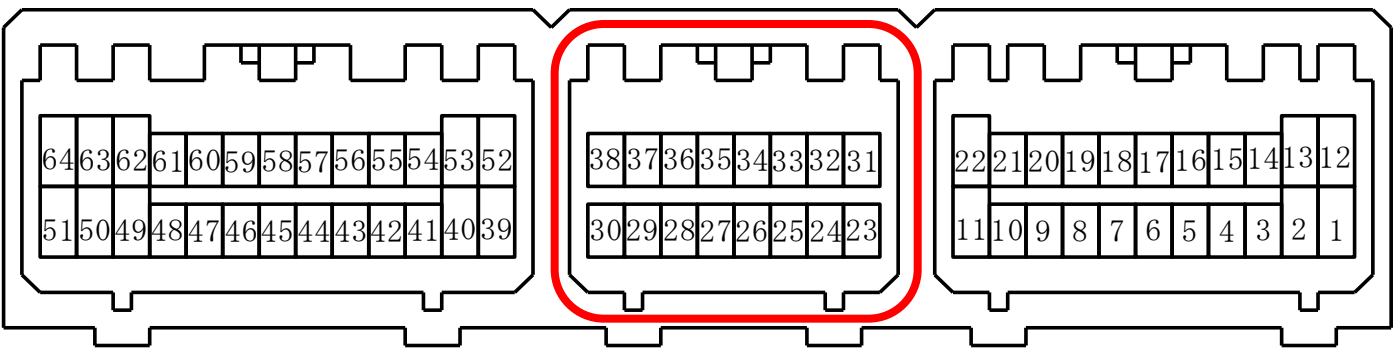
Determination Level

☐ 1000mV ☐ 800mV ☐ 600mV ☒ 400mV ☐ 200mV

NE(+) PIN 19 NE(-) PIN 8	G1(+) PIN 17 G1(-) PIN 6	G2(+) PIN 18 G2(-) PIN 7
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■ Setting of Crankshaft & Camshaft

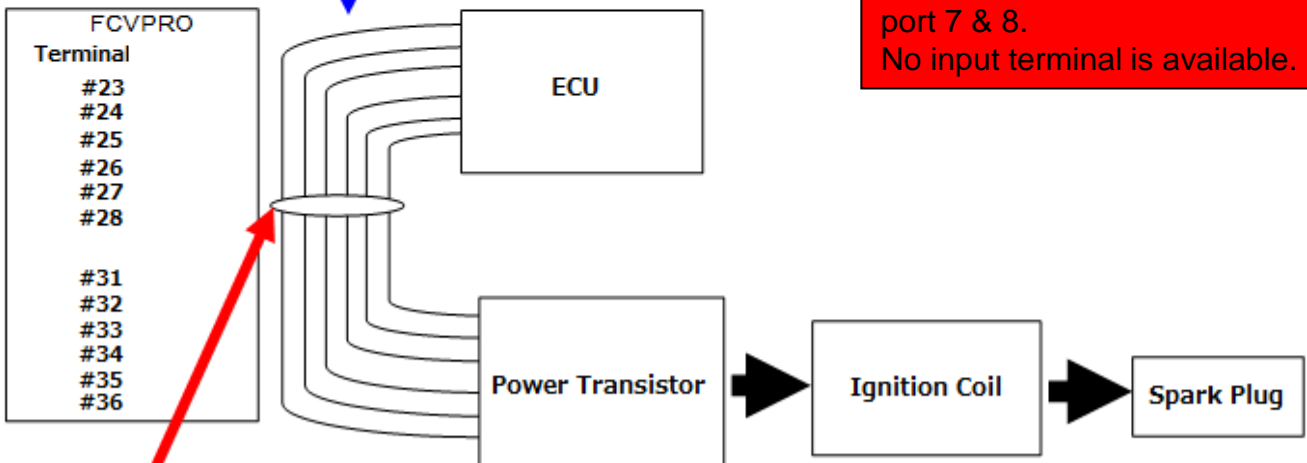
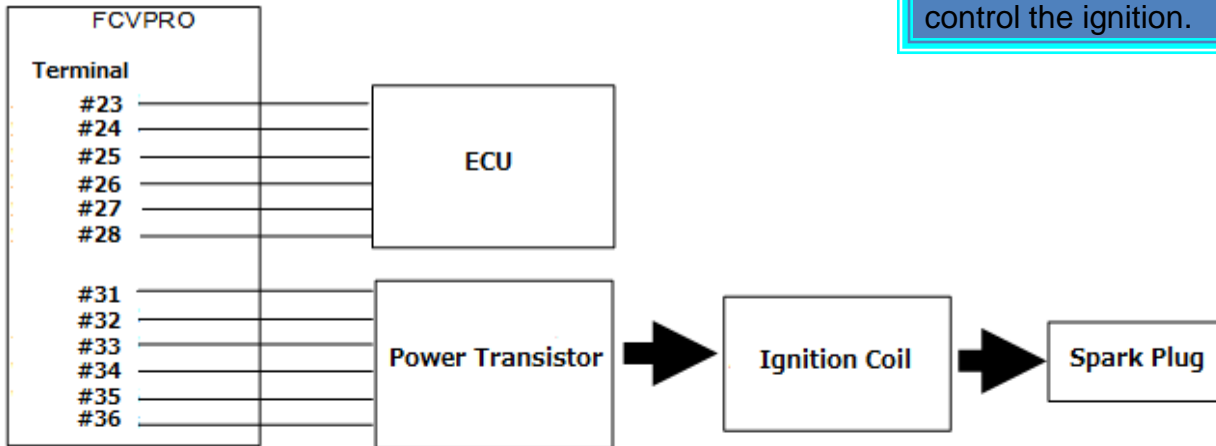
If the default settings of “Crank・Cam” under Parameter Setting shown above are changed, the engine does not start. Make sure there is no change on Pull-up referring to this page.



F-CON Pro

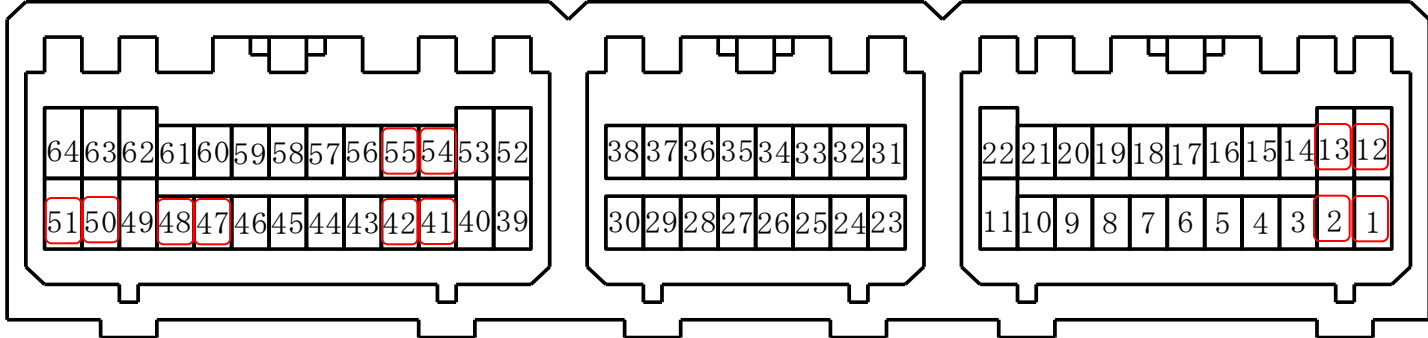
F-CON Pro

To figure out the cause of the trouble, let the stock ECU control the ignition.

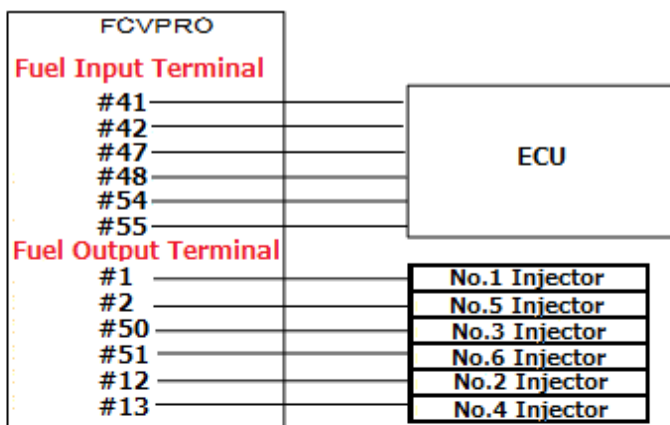


For 8-cylinder, the terminal #37 & 38 work as the ignition output port 7 & 8. No input terminal is available.

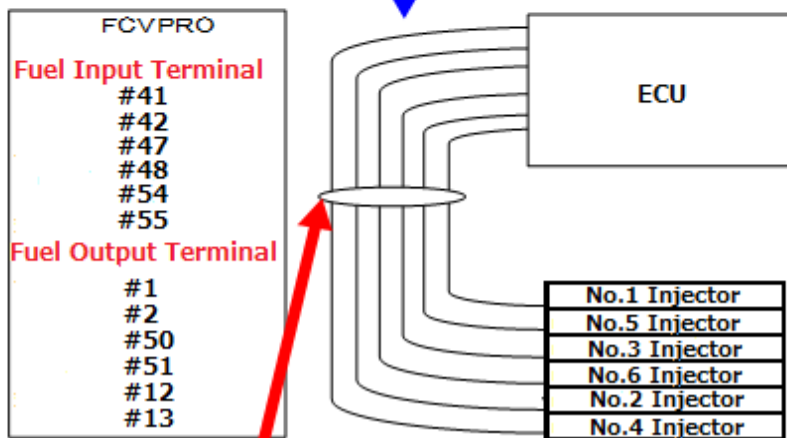
Connect #23 and #31, #24 and #32, #25 and #33, #26 and #34, #27 and #35, and #28 and #36 in a short circuit state without connecting to F-CON unit. This enables ECU to control the ignition output. Separating the ignition control from F-CON may be a clue to solve a problem.



F-CON V Pro
FUEL & INJECTION TROUBLE COMPUTER



F-CON V Pro
FUEL & INJECTION TROUBLE COMPUTER



To figure out the cause of the trouble, let the stock ECU control the fuel.

*NOTE

F-CON V Pro does not use the fuel input port. However, F-CON V Pro vehicle specific harness has a wire for the fuel input. This is because the harness is also applicable to F-CON iS.

For 8-cylinder, the 8-port injector output is equipped.

Connect #41 and #1, #42 and #2, #47 and #50, #48 and #51, #54 and #12, and #55 and 13 in a short circuit state without connecting to F-CON unit. This enables ECU to control the fuel injection. Separating the fuel injection control from F-CON may be a clue to solve a problem.

■ MAP determined to be valid @ starting an engine "Fuel Map"

■ Injection Time at Start

	-20	-10	0	10	20	30	40	50	60	70	80	90	100	110	120	130
1	123600	76000	34600	23550	16800	14880	12840	10920	8880	6960	4920	4920	4920	4920	4920	4920
2	123600	76000	34600	23550	16800	14880	12840	10920	8880	6960	4920	4920	4920	4920	4920	4920
3	123600	76000	34600	23550	16800	14880	12840	10920	8880	6960	4920	4920	4920	4920	4920	4920
4	123600	76000	34600	23550	16800	14880	12840	10920	8880	6960	4920	4920	4920	4920	4920	4920
5	123600	76000	34600	23550	16800	14880	12840	10920	8880	6960	4920	4920	4920	4920	4920	4920
6	123600	76000	34600	23550	16800	14880	12840	10920	8880	6960	4920	4920	4920	4920	4920	4920
7	123600	76000	34600	23550	16800	14880	12840	10920	8880	6960	4920	4920	4920	4920	4920	4920
8	123600	76000	34600	23550	16800	14880	12840	10920	8880	6960	4920	4920	4920	4920	4920	4920

Parameter Setting

Basic

Crankshaft/Camshaft

Input Setting

Voltage

Throttle/Accel

Pressure

Others

Switch

Frequency

A/F - Knock

Output Setting

Voltage

Frequency

Switch (LSL1)

Switch (LSL2)

Switch (LSH1)

Switch (LSH2)

Switch (HS)

Fuel

Fuel 1

Fuel 2

Twin Injector

Ignition

Ignition 1

Ignition 2

ISC

Other Control

Anti-Lag

Boost

Mapino Settings

Basic

Number of Cylinders 6 Displacement 2500 [mL]

Crank Signal Type TOYOTA1 Cam Signal Type TOYOTA1

Crank Offset Angle 0.0 [degree]

Crank Signal Sub Parameter 0

Type of Intake Air Volume Measurement Intake Air Pressure

Complete Combustion Judgement RPM 500 [r/min]

Engine Stall Judgement RPM 200 [r/min]

Scramble Trim Time 0 [msec] Power Holding Time 0 [sec]

Standard Power Supply Voltage 12000 [mV]

Fuel Cut Throttle 2.0 [%] Fuel Cut Accel Position 2.0 [%]

Throttle Tangent Calibration Sample Time 50 [msec]

A/T Shift Up/Down Throttle Condition 100.0 [%]

Output Function 1 LSH 11,12 Enabled

Output Function 2 LSH 1,2 Enabled

When the RPM exceeds "Complete combustion Judgement RPM" of Basic under Parameter Setting, the mode is changed to the standard driving mode. Until the RPM exceeds "Complete combustion Judgement RPM", the initial mode is valid; the map shown above is determined to be valid.

The initial injection time map is switched to the standard injection time map by "Complete combustion Judgement RPM" in the parameter shown above. Injection based on the number input to the initial injection time map is performed until 500rpm after cranking. For example, according to the map above, the simultaneous fuel injection by all cylinders is performed for "4920μsec" when the water temperature reaches to 80°C.

(In fact, the sum of the value input to Invalid Injection Time Map and Initial Injection Time Map is output.) There are some cases that the injection time of this map is too short to lead to the first combustion; therefore, a spark plug is fouled after several cranking. In this case, increase the number input to Initial Injection Time Map.

NOTE: The actual initial injection time is "Initial Injection Time + Invalid Injection Time"; therefore, proper Invalid Injection time must be input to Invalid Injection Time Map.

If the engine does not start at all, try some adjustment functions.

E.g. Change the first injection time in First Injection Time Map under Parameter. When the first injection time is set to "7000 μsec" as shown in Parameter shown in the right, the first injection is 7000μsec and second one is 4920μsec when the water temperature reaches 80°C.

Parameter Setting

Basic

Crankshaft/Camshaft

Input Setting

Voltage

Throttle/Accel

Pressure

Others

Switch

Frequency

A/F - Knock

Output Setting

Voltage

Frequency

Switch (LSL1)

Switch (LSL2)

Switch (LSH1)

Switch (LSH2)

Switch (HS)

Fuel

Fuel 1

Fuel 2

Twin Injector

Fuel Control Type

Port 1 Main x1

Port 2 Main x1

Port 3 Main x1

Port 4 Main x1

Port 5 Main x1

Port 6 Main x1

Port 7 OFF

Port 8 OFF

Injector Coefficient 12600000

Injector Volume Main 575 [mL/min]

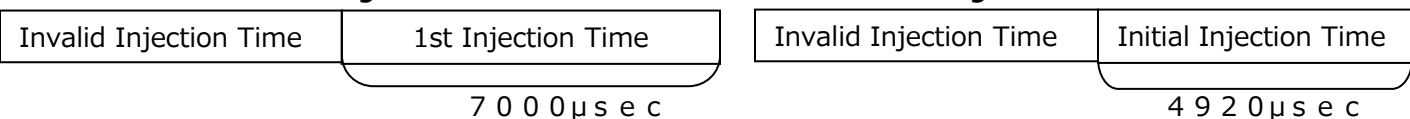
First Injection Time 7000 [μsec]

Air Conditioner Trim Trim Value 0.0 [%]

Engine RPM

1st Injection

2nd Injection



■ Use of Start Fuel Trim Map / Start Fuel Trim Time Map

■ Start Fuel Trim Map / Start Fuel Trim Time Map

These maps are located in “Fuel Map 3” under Map item.

Make sure to perform settings for the stable idling.

If hunting occurs during idling even the engine is started with First Injection Time Map, adjust Correction Time after Starting Engine Map shown below. Adjust the number in the map to maintain proper idling.

Water Temp.	-20	-10	0	10	20	30	40	50	60	70	80	90	100	110	120	130
Trim Value	38.0	35.0	32.0	29.0	26.0	23.0	20.0	17.0	14.0	11.0	8.0	5.0	5.0	5.0	5.0	5.0

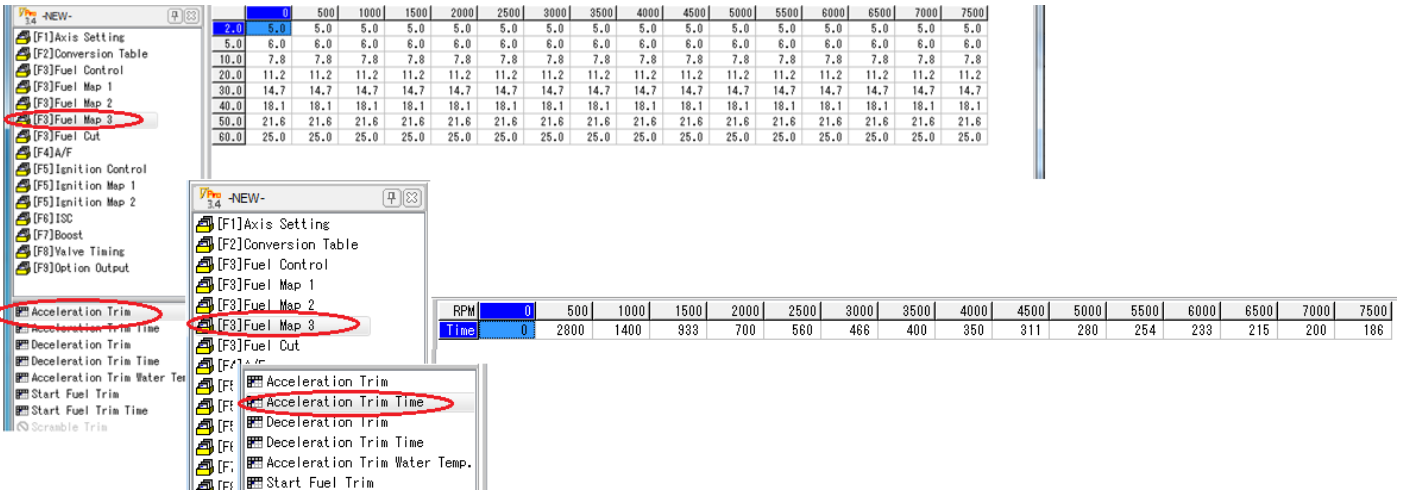
Correction Time after Starting Engine Map shown below is set to execute the correction set in Correction Value after Starting Engine Map for 10 seconds. If idling is properly done for 10 seconds after an engine is started, but, hunting occurs after 11 seconds, and an engine stall occurs, enter "30" to Correction Time after Starting Engine Map, etc. to solve a problem.

If engine stall and/or hunting cannot be prevented, check and change Standard Injection Time Map and/or Main Correction Map.

[illegible]

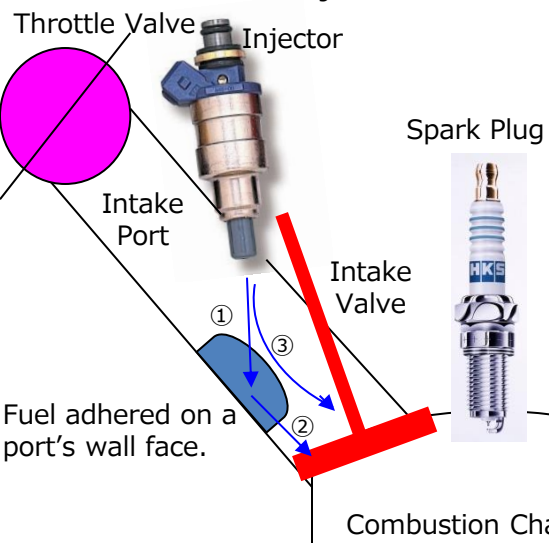
■ Acceleration Trim Map

Acceleration Trim map is under Fuel Map 3. The period of acceleration trim is set under Acceleration Trim Time.



Activate Non Phase Injection Time map shown in the previous page to avoid the initial lean spike. To resolve the continued lean condition, use Acceleration Trim map. Set the period of the acceleration trim time using Acceleration Trim Time map shown above. For example, when Acceleration Trim Time is 200msec under 7000rpm, the acceleration trim gradually becomes zero at 200msec after the rpm reaches 7000rpm.

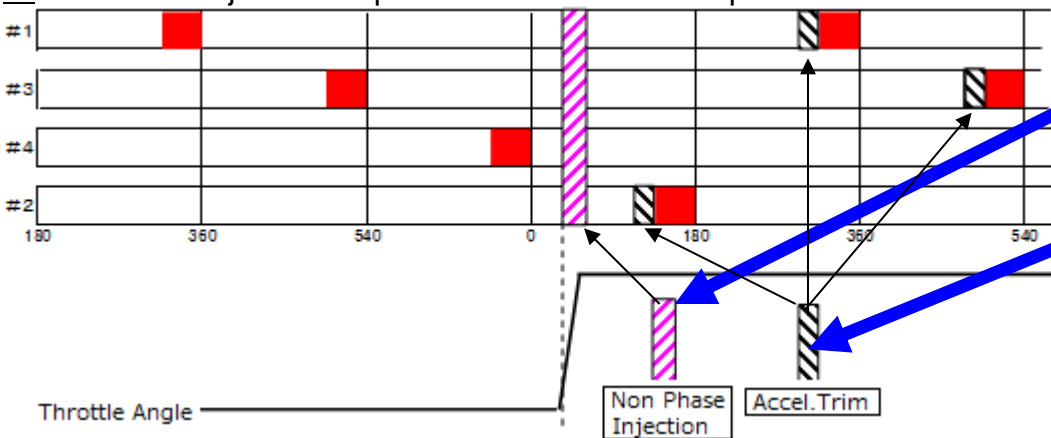
■How Non Phase Injection Time & Acceleration Trim Work



Not all fuel injected from an injector goes to the cylinder. A certain amount of fuel is adhered to the port's wall surface; then, a part of the fuel on the port's wall surface is taken into the cylinder later when the throttle opens next time. Non Phase Injection and Acceleration Trim are required to compensate these fuel shortage amounts.

When Non Phase Injection Map is activated, the amount of fuel adhered to the port surface (①) and fuel taken into the combustion chamber (②) is compensated so the lean condition occurs inside the combustion chamber when the throttle is on can be avoided. The lean condition continued afterward can be avoided by activating Acceleration Trim Map making the combustion chamber rich condition.

■Non Phase Injection Map & Acceleration Trim Map



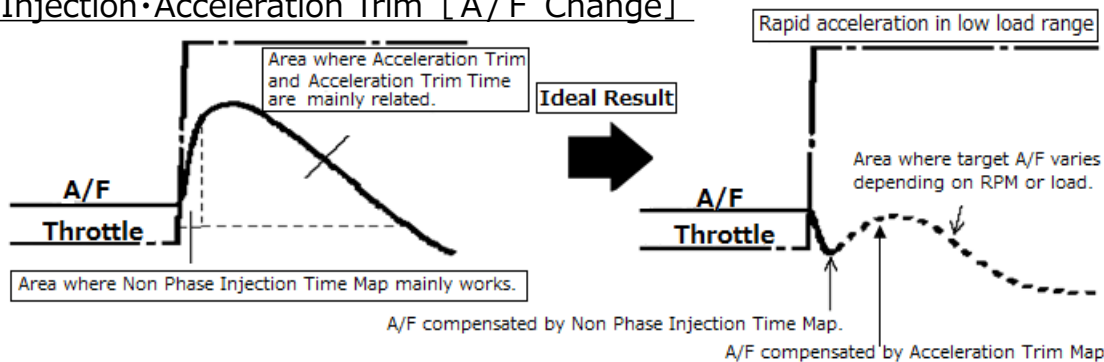
•Non Phase Injection Map

Regardless of the injection sequence, fuel is injected to all ports only once so the amount of fuel adhered to the port surface is compensated to avoid the lean spike.

•Acceleration Trim Map

Fuel is increased using this map to avoid the lean condition may be continued after the lean spike is avoided.

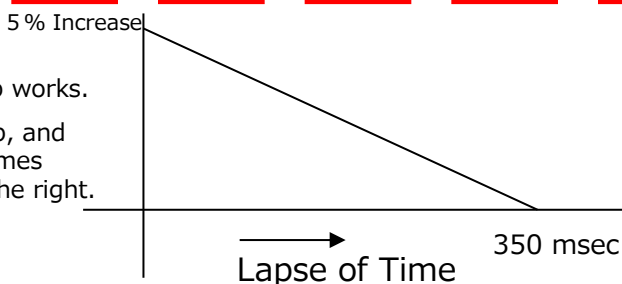
■Non Phase Injection·Acceleration Trim [A/F Change]



■Acceleration Trim Map

The diagram on the right shows how Acceleration Trim Map works.

When 5 % fuel increase is entered to Acceleration Trim Map, and Acceleration Trim Time is 350 msec, the fuel increase becomes gradually zero after 350msec as shown in the diagram on the right.



■ Standard Injection Timing Map

	1	2	3	4	5	6	7	8
Port1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Port2	480.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Port3	240.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Port4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Port5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Port6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Port7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Port8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Below the table, a list of injection timing options is shown, with 'Standard Injection Timing' circled in red.

- Standard Injection Time
- Injection Time at Start
- None Phase Injection Time
- Independent Injection Time
- Main Injector Dead Time
- Sub Injector Dead Time
- Independent Injector Dead Time
- Standard Injection Timing
- Injection Timing

Based on Fuel Control Type in Fuel 1 under Parameter Setting, enter values to Standard Injection Timing Map to determine the injection timing.

Standard Injection Timing is the compression top dead center angle of each port (cylinder) based on the crankshaft's angle (1 cycle=720°).

F-CON V Pro calculates the injection timing based on the values entered to Standard Injection Timing Map.

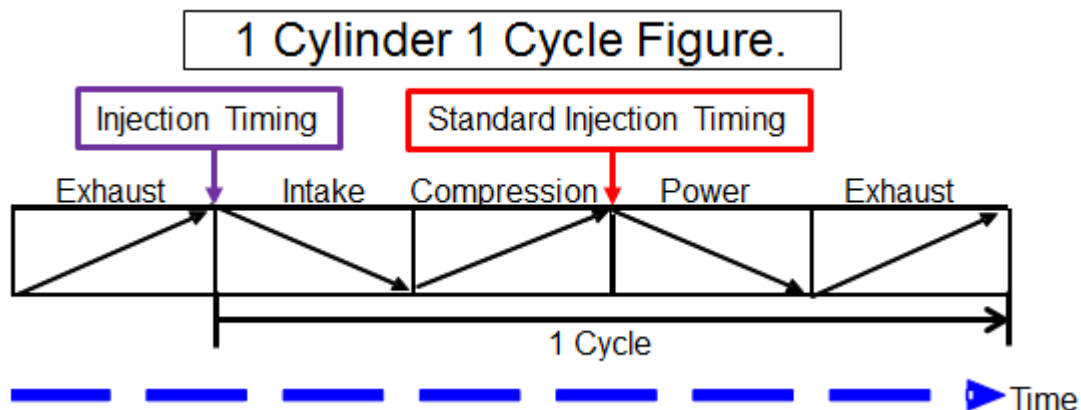
When to finish injection before each port reaches to TDC angle is determined by entering degrees to Injection Timing Map.

※Diagram below shows the how Injection Timing works.

“Fuel Control Type” in Fuel 1

Select a fuel control type from “Main”, “Sub”, and “Independent” for each port in Fuel 1 under Parameter Setting.

“Main x 1” is for the sequential injection which injects one time per cycle. “Main x 2” is for the simultaneous injection which injects twice per cycle. For a sub-injector, select “Sub x 1” for one injection per cycle, etc. Select “Independent” when additional injectors are installed so injection is controlled by a map besides main or sub injectors.

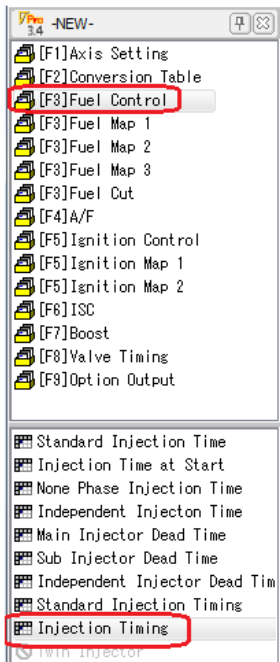


■ Injection Timing Map

In Injection Timing Map, the timing of the injection end can be determined.

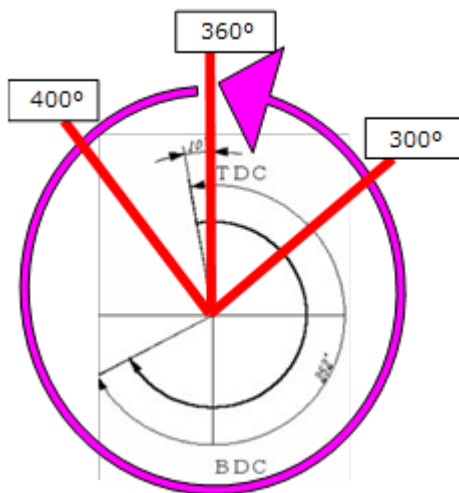
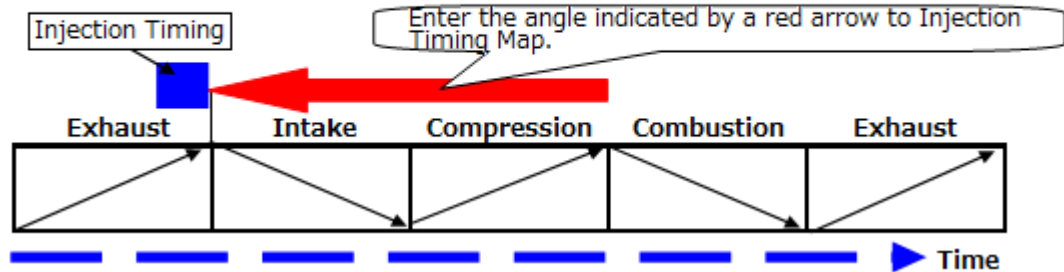
The map below shows that the injection ends at the angle 360 degree before the TDC.

The valve timing chart below explains about this setting.



	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500
0.20	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
0.36	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
0.51	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
0.67	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
0.83	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
0.98	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
1.14	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
1.29	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
1.45	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
1.61	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
1.76	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
1.92	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
2.07	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
2.23	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
2.39	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
2.54	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0

In the following 4-cycle chart, when the ignition timing is set to 360°, the injection ends at the beginning of intake and end of exhaust.



The angle set to Ignition Timing falls into the timing the valve overlap occurs. When the valve timing is changed due to replacement of camshafts or variable valve timing system, adjusting the injection timing according to the valve timing enables the injection to be ended at the timing considering the valve overlap.

The chart on the left side shows when the angle is set to 400°, the injection ends on an advanced side (to a leftward direction), and when the angle is set to 300°, the injection ends on a delay side (to a rightward direction).

■ Independent Injection Timing Map

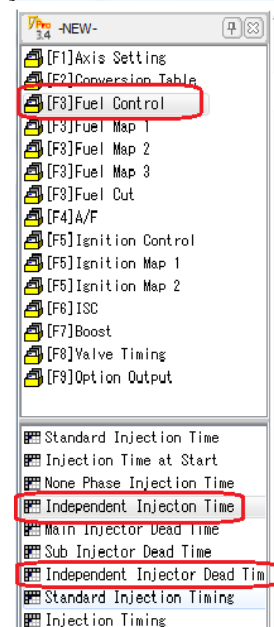
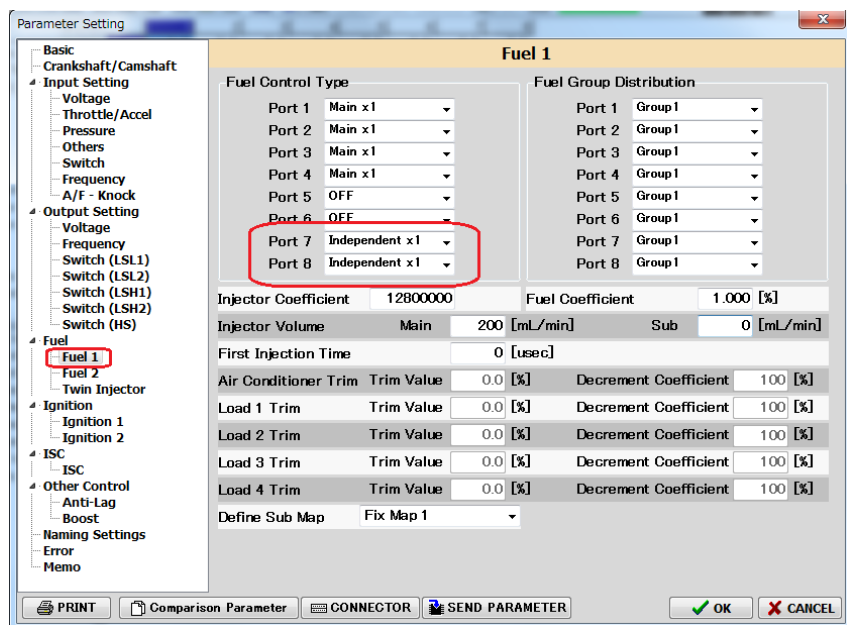
When additional injectors are installed, injection is controlled by an independent map besides main or sub injectors.

To control the injector independently, use Independent Injection Map. This map is usable for Mazda RX-8 or when additional injectors are installed. To use this map, select "Independent" for Fuel Control Type in Fuel 1 under Parameter Setting.

The setting shown on the left shows that "Independent" is selected for the injection output # 7 and 8 (F-CON terminal 63 and 64) to control these ports independently.

After selecting "Independent" as Fuel Control Type, enter Independent Injector Dead Time of the injectors to make Independent Injection Time Map.

Under Independent Injection Time Map, fuel is injected for a set time regardless of Standard Injection Timing and Injection Timing; therefore, the fuel injection amount for the independent injection is not required to set.

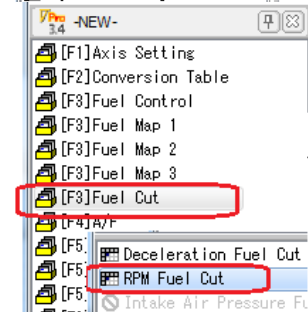


Independent Injector Dead Time

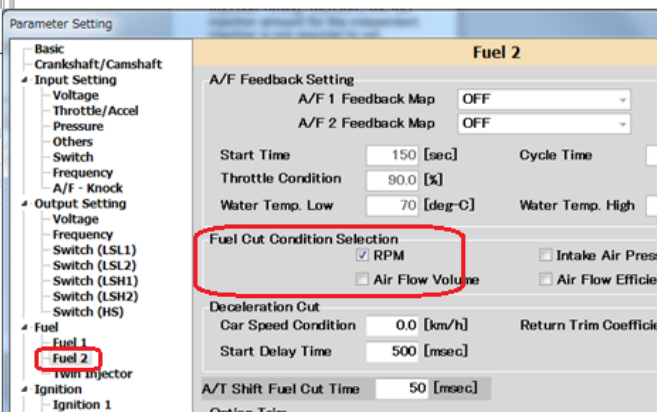
Voltage	5.0	6.0	7.0	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0	18.0	19.0	20.0
Time	5000	4000	3000	2000	1625	1250	1100	950	825	700	650	600	550	500	450	400

Independent Injection Time

	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500
0.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.51	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.83	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0.98	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.29	0	0	0	0	0	0	0	0	91	183	274	365	457	548	639	730
1.45	0	0	0	0	0	0	0	0	183	365	548	731	913	1096	1278	1461
1.61	0	0	0	0	0	0	0	0	272	543	815	1086	1357	1629	1900	2172
1.76	0	0	0	0	0	0	0	0	363	726	1089	1451	1814	2177	2539	2902
1.92	0	0	0	0	0	0	0	0	454	908	1362	1817	2270	2724	3179	3633
2.07	0	0	0	0	0	0	0	0	545	1091	1636	2182	2727	3272	3818	4363
2.23	0	0	0	0	0	0	0	0	637	1274	1910	2547	3183	3820	4457	5094
2.39	0	0	0	0	0	0	0	0	726	1451	2177	2903	3627	4353	5079	5805
2.54	0	0	0	0	0	0	0	0	817	1634	2451	3268	4084	4901	5718	6535



Port	1	2	3	4	5	6	7	8
Cut	20000	20000	20000	20000	20000	20000	20000	20000
Return	20000	20000	20000	20000	20000	20000	20000	20000



■ To determine the max rpm by a rev limiter using Independent Injection Time Map, check "RPM" in Fuel 2 under Parameter Setting, and enter the max rpm to both "Cut" and "Return" of the port of the independent injection in RPM Fuel Cut map under Fuel Cut. Without entering the max rpm, injection won't be performed independently because rev limiter functions at 0 rpm.

[illegible]

For a turbo-engine, when making a new file, set the pressure range to be +0.2kg of the max boost pressure to make Fuel Trim Map automatically; this map provides the most efficient filling of air-fuel mixture to cylinders at the maximum boost pressure.

The map on the left shows that at the maximum boost setting is 2.54kg and -0.8kg maximum negative pressure, the filling efficiency is 58% less than the most efficient filling ratio. (Because the throttle valve is closed, air cannot be taken in.)

Perform this setting properly so the time for setting can be shortened.

[illegible]

■ Main Trim Map

■ Throttle Trim Map

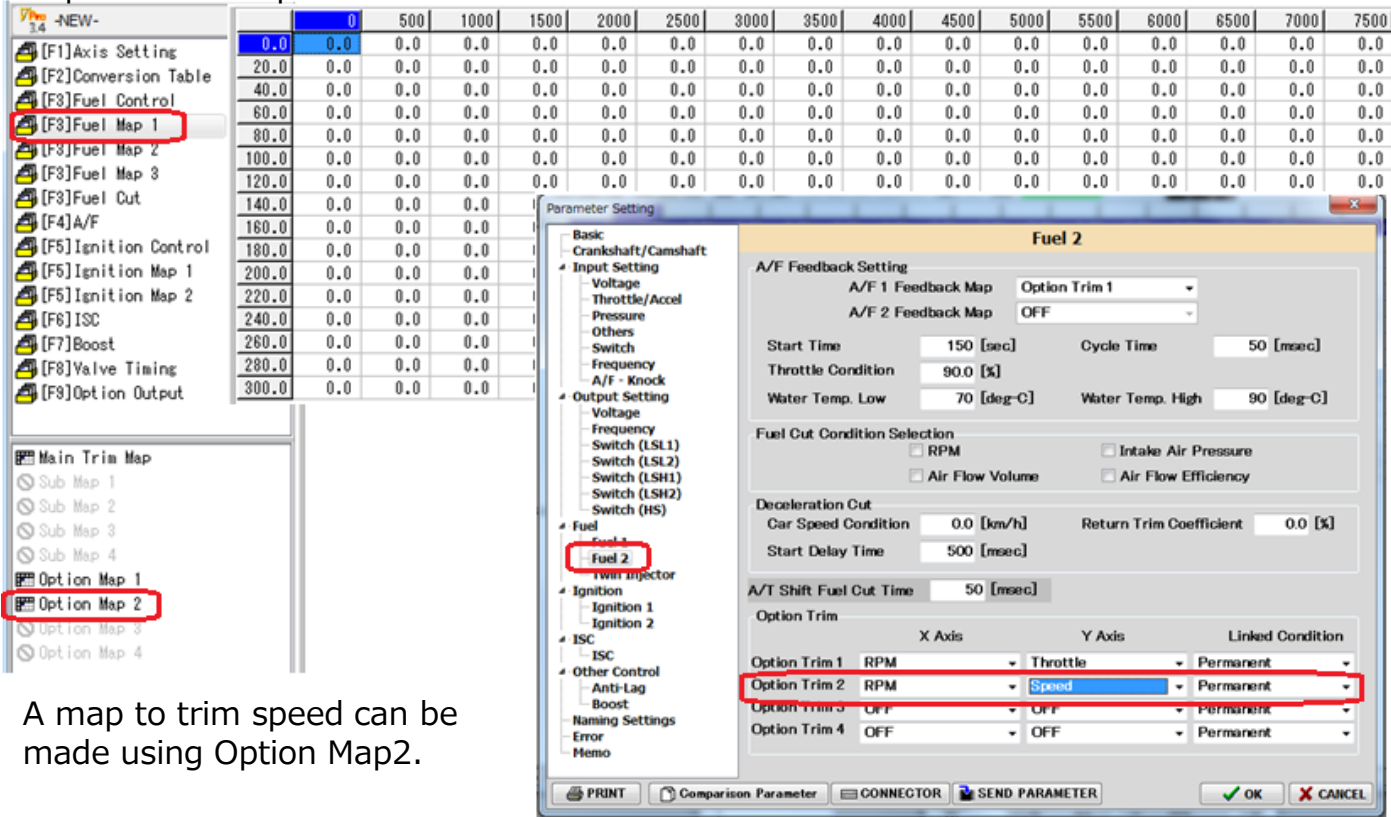
To make a map for throttle trim, select "RPM" for X-axis of Option Trim 1 and "Throttle" for Y-axis.

Vehicles like Skyline GT-R, Pulsar GTI-R, Levin/Trueno AE101/111, etc. are equipped with throttle valves independent by each port. To perform setting by D-jetro, it is required to prepare the throttle map. Since the pressure fluctuation inside the intake port is extremely low, the same amount of load is recognized even under a different throttle angle resulting in an improper fuel injection. To avoid this symptom, the following map to trim the fuel amount for each throttle angle is useful.

A/F feedback data can be reflected to Option Map 1 (throttle trim map) if necessary.

	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3
15.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5
20.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.6	0.6	0.7	0.7	0.8
25.0	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.7	0.8	0.9	1.0	1.1
30.0	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3
35.0	0.0	0.0	0.0	0.1	0.3	0.4	0.5	0.6	0.7	0.8	1.0	1.1	1.2	1.3	1.5	1.6
40.0	0.0	0.0	0.0	0.1	0.3	0.4	0.5	0.7	0.8	1.0	1.1	1.3	1.4	1.5	1.7	1.8
45.0	0.0	0.0	0.0	0.2	0.3	0.5	0.6	0.8	1.0	1.1	1.3	1.5	1.6	1.8	1.9	2.1
50.0	0.0	0.0	0.0	0.2	0.4	0.6	0.7	0.9	1.1	1.3	1.5	1.7	1.8	2.0	2.2	2.4
60.0	0.0	0.0	0.0	0.2	0.5	0.7	0.9	1.1	1.3	1.6	1.8	2.0	2.2	2.4	2.7	2.9
70.0	0.0	0.0	0.0	0.3	0.5	0.8	1.0	1.3	1.6	1.8	2.1	2.4	2.6	2.9	3.1	3.4
80.0	0.0	0.0	0.0	0.3	0.6	0.9	1.2	1.5	1.8	2.1	2.4	2.8	3.0	3.3	3.6	3.9
90.0	0.0	0.0	0.0	0.4	0.7	1.1	1.3	1.7	2.1	2.4	2.8	3.1	3.4	3.8	4.1	4.5
100.0	0.0	0.0	0.0	0.4	0.8	1.2	1.5	1.9	2.3	2.7	3.1	3.5	3.8	4.2	4.6	5.0

■ Speed Trim Map



The main window shows a table of fuel map values. The columns represent engine speed (RPM) from 0 to 7500 in increments of 500. The rows represent throttle position (A/F) from 0.0 to 300.0 in increments of 20.0. The values are mostly 0.0, indicating a baseline fuel map.

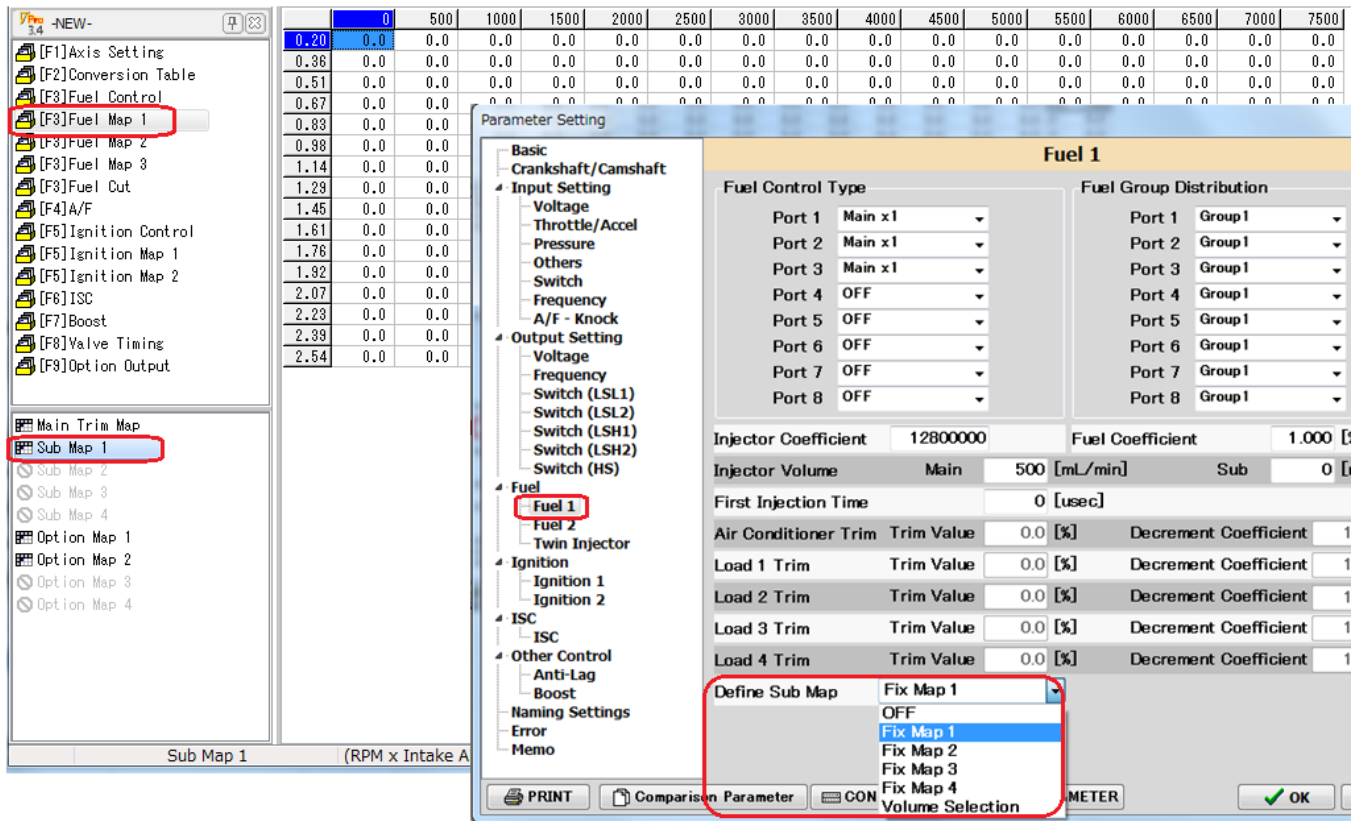
The 'Parameter Setting' dialog is open, showing the 'Fuel 2' map selected. The 'A/F Feedback Setting' section shows 'A/F 1 Feedback Map' set to 'Option Trim 1' and 'A/F 2 Feedback Map' set to 'OFF'. The 'Deceleration Cut' section shows 'Car Speed Condition' set to 0.0 [km/h] and 'Return Trim Coefficient' set to 0.0 [%]. The 'Option Trim' section shows 'Option Trim 2' set to 'RPM' and 'Speed'.

A map to trim speed can be made using Option Map 2.

↑ A/F feedback data can be reflected to Option Map 2 (speed trim map) if necessary.

■ Usage example of Sub Map

Determine the sub map to use by selecting the sub map number for "Define Sub Map" under Fuel1 of Parameter Setting.



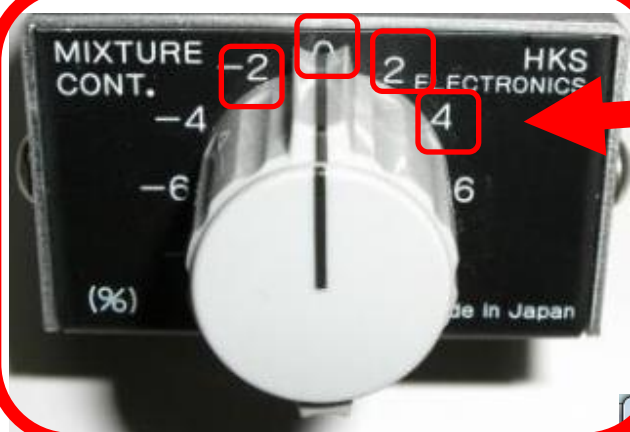
The main window shows a table of fuel map values. The columns represent engine speed (RPM) from 0 to 7500 in increments of 500. The rows represent throttle position (A/F) from 0.0 to 300.0 in increments of 20.0. The values are mostly 0.0, indicating a baseline fuel map.

The 'Parameter Setting' dialog is open, showing the 'Fuel 1' map selected. The 'Fuel Control Type' section shows 'Port 1' through 'Port 8' set to 'Main x1' or 'OFF'. The 'Fuel Group Distribution' section shows 'Port 1' through 'Port 8' set to 'Group1'. The 'Define Sub Map' section shows 'Fix Map 1' selected.

■ Usage example of Sub Map – Switching Sub Map by Mixture Controller

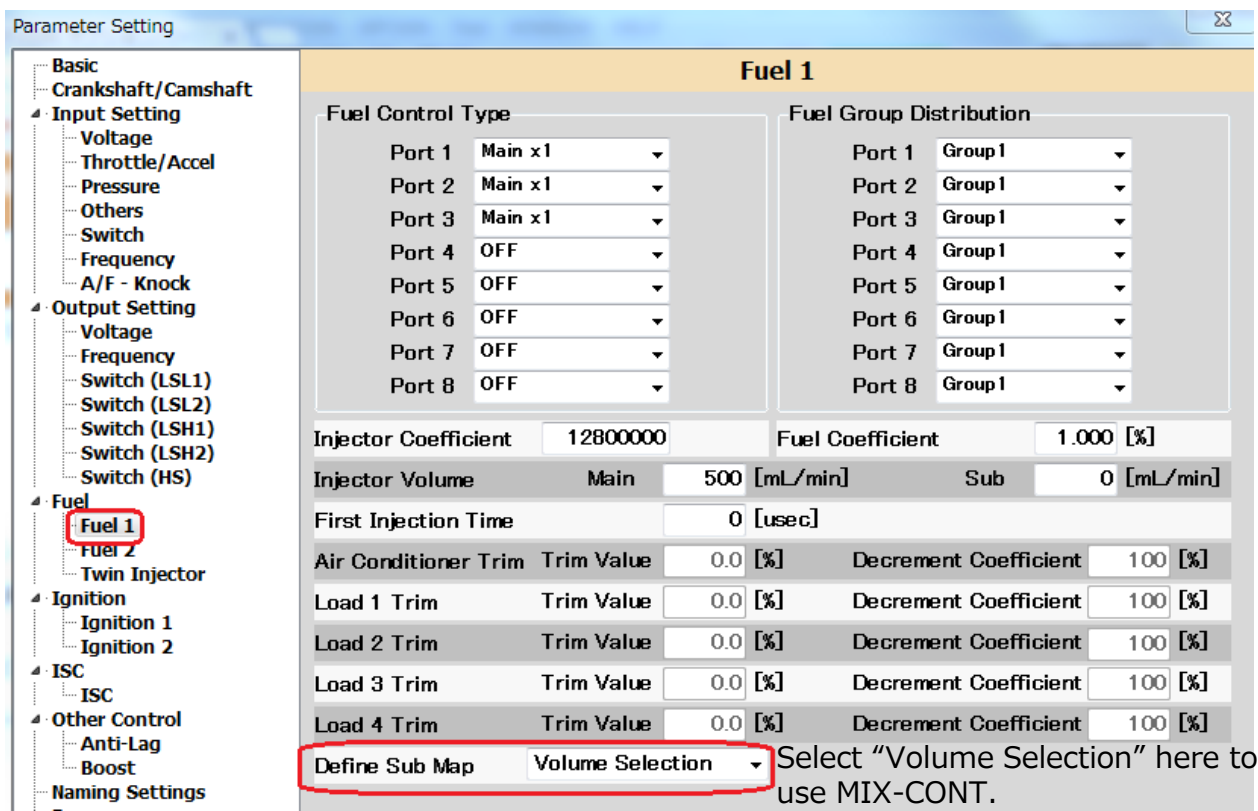
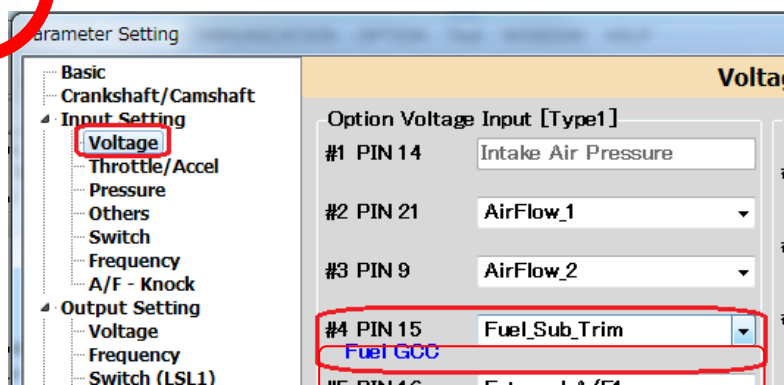
Sub Maps can be switched using Mixture Controller. To use Mixture Controller to switch Sub Maps, select “Fuel Sub Trim” for the terminal Mixture Controller is connected in Voltage of Input Setting under Parameter Setting. (See #4 PIN 15 Fuel GCC of Parameter Setting shown below.) Also, select “Volume Selection” for Define Sub Map in Fuel 1 under Parameter Setting.

The following shows which volume number is set to which Sub Map number:

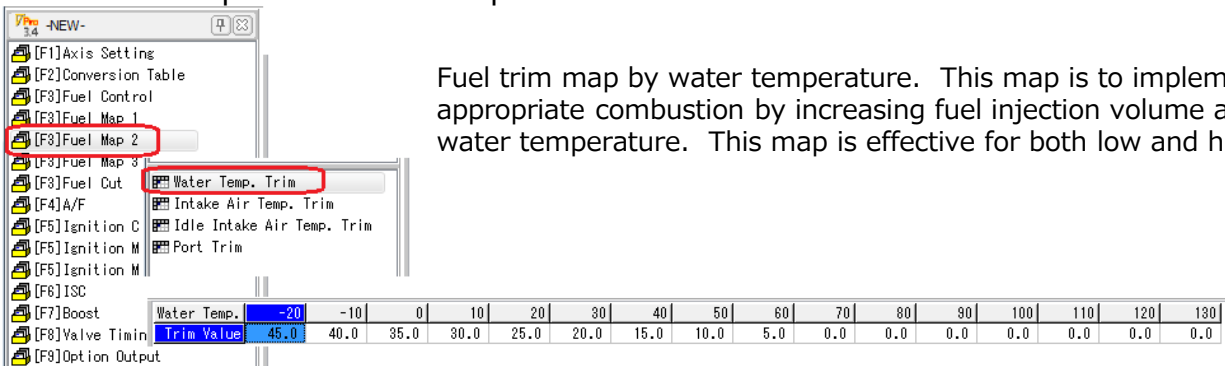


Volume	Sub Map
-2	Sub Map 1
0	Sub Map 2
+2	Sub Map 3
+4	Sub Map 4

■ To Switch Sub Map by MIX-CONT.
Select “Volume Selection” for Define Sub Map in Fuel 1 under Parameter Setting.
Switch Sub Map 1 to 4 by selecting the volume number of Mixture Controller.

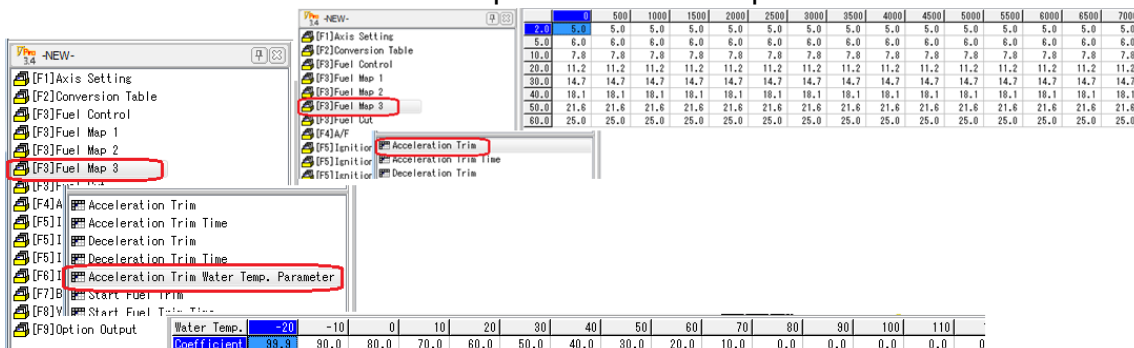


■ Water Temperature Trim Map



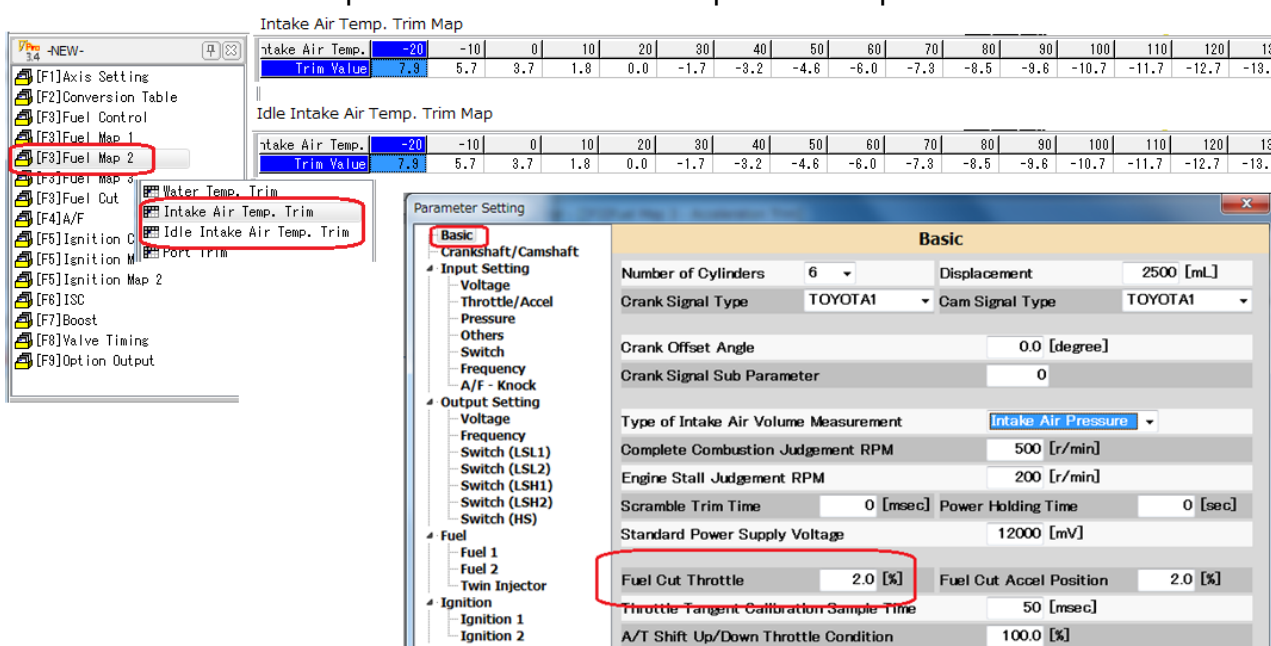
Fuel trim map by water temperature. This map is to implement appropriate combustion by increasing fuel injection volume at low water temperature. This map is effective for both low and high load.

■ Acceleration Trim Water Temp. Parameter Map



When accelerating while the water temperature is low, the fuel volume becomes low. To compensate the low fuel volume, Acceleration Trim Water Temp. Parameter Map is effective. The increase amount coefficient of this map is added to the volume input to Acceleration Trim Map to maintain acceleration.

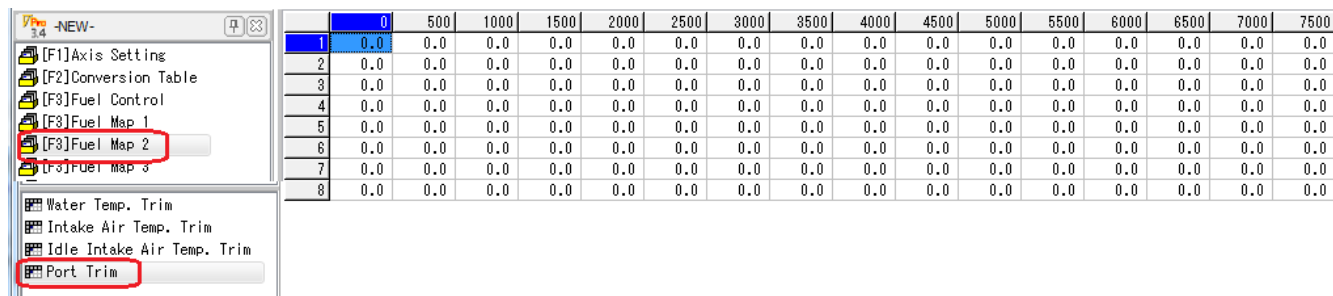
■ Idle Intake Air Temp. Trim · Intake Air Temp. Trim Map



Intake Air Temp. Trim Map and Idle Intake Air Temp. Trim Map adjust the A/F to an appropriate level by measuring the intake air temperature and trimming the fuel according to the air density change. Idle Intake Air Temp. Trim Map becomes effective when Fuel Cut Throttle in Basic under Parameter Setting is less than the set percentage (2% in Parameter shown above.) Intake Air Temp. Trim Map becomes effective when Fuel Cut Throttle is more than the set percentage.

Note... When HKS intake air temp sensor is installed to the intake manifold, because the sensor detects the heat from the intake manifold and/or engine bay temperature, the decrease correction of the fuel in a high temp area of Idle Intake Air Map is performed and the hunting is caused. In this case, adjustment of a Map or relocation of the intake air temp sensor is required.

■ Port Trim Map



	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

E.g.) Skyline GT-R (RB26DETT) 「6-cylinder Sequential Injection」

If the spark plug of #6 cylinder is abnormally burnt after vehicle setting after setting is done, unbalanced intake air distribution is assumed. To correct this symptom, use Port Trim Map and increase the fuel in the area higher than 6000rpm by 5%.

Port Sequence:

- Port 1 = 1st cylinder ■ Port 2 = 5th cylinder ■ Port 3 = 3rd cylinder ■ Port 4 = 6th cylinder
- Port 5 = 2nd cylinder ■ Port 6 = 4th cylinder

* Port Trim Map does not perform correction by the load (only by RPM).

■ Deceleration Trim Map

NEW-

- [F1]Axis Setting
- [F2]Conversion Table
- [F3]Fuel Control
- [F3]Fuel Map 1
- [F3]Fuel Map 2
- [F3]Fuel Map 3
- [F3]Fuel Cut
- [F4]A/F
- [F5]Ignition Control
- [F6]Ignition Map 1
- [F6]Ignition Map 2
- [F6]ISC
- [F7]Boost
- [F8]Valve Timing
- [F9]Option Output

- Acceleration Trim
- Acceleration Trim Time
- Deceleration Trim
- Deceleration Trim Time
- Acceleration Trim Water Temp.
- Start Fuel Trim

Deceleration Trim Map

	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500
-2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-40.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-60.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Deceleration Trim Time Map

RPM	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500
Time	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Parameter Setting

Basic

Crankshaft/Camshaft

- Input Setting
 - Voltage
 - Throttle/Accel
 - Pressure
 - Others
 - Switch
 - Frequency
 - A/F - Knock
- Output Setting
 - Voltage
 - Frequency
 - Switch (LS1)
 - Switch (LS2)
 - Switch (LSH1)
 - Switch (LSH2)
 - Switch (HS)
- Fuel
 - Fuel 1
 - Fuel 2
 - Twin Injector
- Ignition
 - Ignition 1
 - Ignition 2
- ISC
- Other Control
 - Anti-Lag
 - Boost

Basic

Number of Cylinders: 6 Displacement: 2500 [mL]

Crank Signal Type: TOYOTA1 Cam Signal Type: TOYOTA1

Crank Offset Angle: 0.0 [degree]

Crank Signal Sub Parameter: 0

Type of Intake Air Volume Measurement: Intake Air Pressure

Complete Combustion Judgement RPM: 500 [r/min]

Engine Stall Judgement RPM: 200 [r/min]

Scramble Trim Time: 0 [msec] Power Holding Time: 0 [sec]

Standard Power Supply Voltage: 12000 [mV]

Fuel Cut Throttle: 2.0 [%] Fuel Cut Accel Position: 2.0 [%]

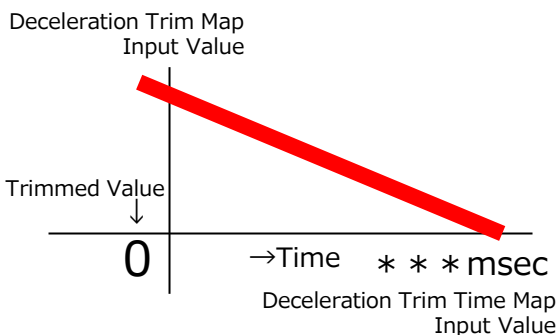
Throttle Tangent Calibration Sample Time: 50 [msec]

A/T Shift Up/Down Throttle Condition: 100.0 [%]

0.0 to 100.0

Output Function 1: LSH1,12 Enabled

Output Function 2: LSH1,2 Enabled



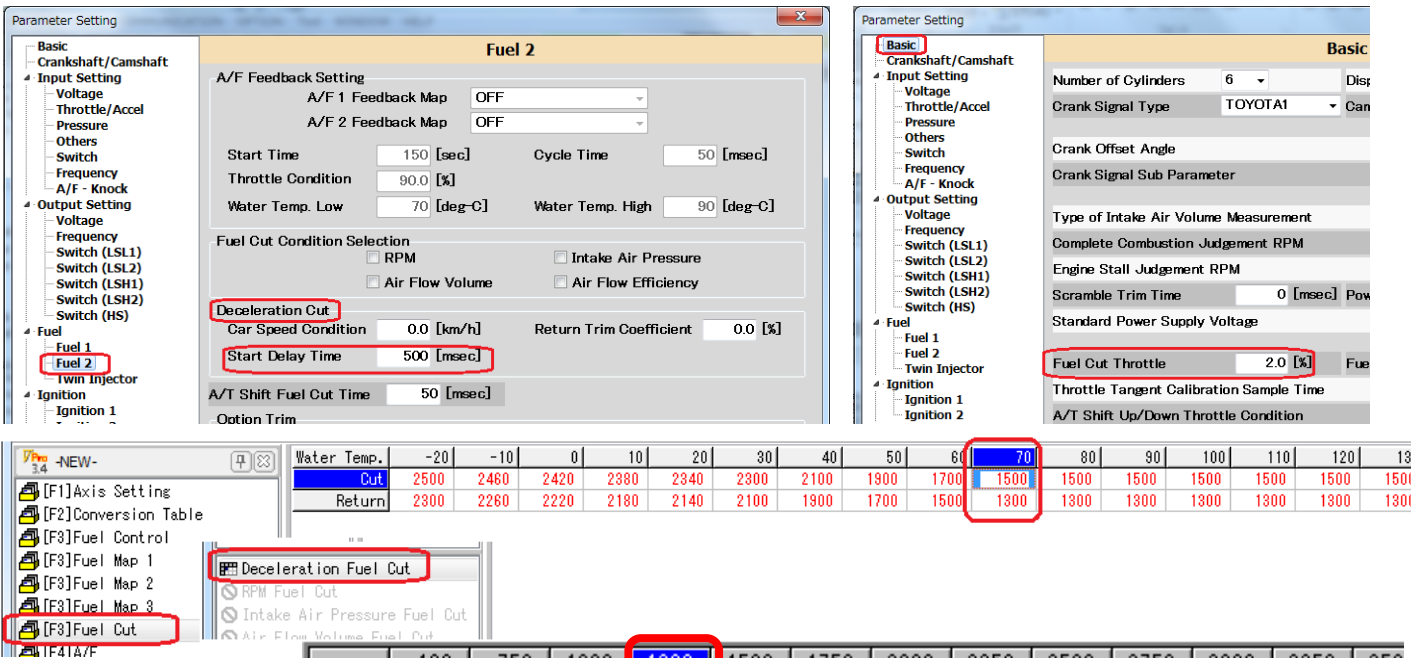
This map is not frequently used. The map is activated when the throttle angle decreases during “Throttle Tangent Calibration Sample Time” under Parameter Setting.

For example, “Throttle Tangent Calibration Sample Time” is set to [50msec] as shown above. When accelerating to 3000rpm from idling, and the rpm dropped rapidly within a set time, the fuel is compensated in accordance with Deceleration Trim Map.

The compensated fuel volume is decreased gradually so it becomes “0” after the time set under Deceleration Trim Time. It is not assumed that the throttle angle becomes 0; therefore, the map is activated when the throttle angle suddenly changes to 20% from 80%.

This map may be useful to prevent after fire when setting is done using the L-Jetronic.

Deceleration Fuel Cut Map



Fuel Control
Std. Injection Time
Map

	100	750	1000	1300	1500	1750	2000	2250	2500	2750	3000	3250	350
-0.80	480	480	480	484	486	486	486	486	486	486	486	486	46
-0.73	753	753	753	761	767	767	767	767	767	767	767	767	76
-0.67	985	985	985	995	1004	1004	1004	1004	1004	1004	1004	1004	100
-0.60	1252	1252	1252	1266	1278	1278	1278	1278	1278	1278	1278	1278	127
-0.53	1539	1539	1539	1557	1572	1572	1572	1572	1572	1572	1572	1572	157
-0.47	1783	1783	1783	1803	1823	1823	1823	1823	1823	1823	1823	1823	182
-0.40	2116	2116	2116	2116	2116	2116	2116	2116	2116	2116	2116	2116	211
-0.33	2477	2477	2477	2477	2477	2477	2477	2477	2477	2477	2477	2477	247
-0.27	2788	2788	2788	2788	2788	2788	2788	2788	2788	2788	2788	2788	278
-0.20	3156	3156	3156	3156	3156	3156	3156	3156	3156	3156	3156	3156	315
-0.13	3542	3551	3594	3594	3594	3594	3594	3559	3594	3594	3594	3594	359
-0.07	3884	3901	3910	3927	3927	3918	3884	3884	3901	3935	3970	3970	391
0.00	4283	4283	4283	4283	4283	4476	4476	4476	4512	4548	4411	4411	441
0.03	4984	4984	4984	4984	4984	5055	5082	5064	5037	5055	4991	4982	491
0.18	5072	5072	5072	5079	5106	5456	5456	5665	5665	5665	5665	5665	566
0.27	5072	5072	5072	5079	5106	5677	5677	5677	5677	5677	5677	5677	624

This map is to set the deceleration fuel cut conditions.

For example, the conditions set in the map shown above are as follows:

- Fuel cut begins at 1500rpm when the water temperature reaches 70℃.
- Fuel cut stops (returns to normal injection) at 1300rpm.
- Fuel Cut Throttle of Basic under Parameter Setting is set to "2%".
- Deceleration fuel cut's start delay time is set to 500msec.

Under these conditions, when the throttle is off (less than 2% of the throttle angle) after the engine rpm is raised more than 1500rpm with the throttle angle 2% or more, Deceleration Fuel Cut begins after 500msec after the throttle is off. Once the engine rpm drops to 1300rpm, the fuel injection is performed in accordance with Standard Injection Time map until the engine idling.

With the Standard Injection Time Map shown above, when the throttle is off (less than 2% of the throttle angle) after the engine rpm is raised more than 3250rpm with the throttle angle 2% or more, Deceleration Fuel Cut begins after 500msec; The fuel injection time becomes 0 μsec. (This improves the engine brake performance, prevents the after fire, and improves the fuel consumption.)

Make sure to set a proper injection time so the engine can turn into idling without an engine stall after the fuel cut. (The output when the fuel injector is returned to the standard injection is the sum of the input values of Injector Dead Time map and Standard Injection Time map.)

Deceleration Fuel Cut Map

Blind Spot

[Note for Mapping]

Deceleration Cut
Car Speed Condition 0.0 [km/h] Return Trim Coefficient 0.0 [%]

Deceleration Fuel Cut Time Out Coefficient 100.0 [%]

Parameter • Fuel 2

Parameter • Ignition 1

Fuel Control
Std. Injection Time
Map

	100	750	1000	1300	1500	1750	2000	2250	2500	2750	3000	3250	350
-0.80	480	480	480	484	486	486	486	486	486	486	486	486	46
-0.73	753	753	753	761	767	767	767	767	767	767	767	767	76
-0.67	985	985	985	995	1004	1004	1004	1004	1004	1004	1004	1004	100
-0.60	1252	1252	1252	1266	1278	1278	1278	1278	1278	1278	1278	1278	127
-0.53	1539	1539	1539	1557	1572	1572	1572	1572	1572	1572	1572	1572	157
-0.47	1783	1783	1783	1803	1823	1823	1823	1823	1823	1823	1823	1823	182
-0.40	2116	2116	2116	2116	2116	2116	2116	2116	2116	2116	2116	2116	211
-0.33	2477	2477	2477	2477	2477	2477	2477	2477	2477	2477	2477	2477	247
-0.27	2788	2788	2788	2788	2788	2788	2788	2788	2788	2788	2788	2788	278
-0.20	3156	3156	3156	3156	3156	3156	3156	3156	3156	3156	3156	3156	315
-0.13	3542	3551	3594	3594	3594	3594	3594	3594	3594	3594	3594	3594	359
-0.07	3884	3901	3910	3910	3927	3918	3884	3884	3901	3935	3970	3970	391
0.00	4283	4283	4283	4283	4283	4476	4476	4476	4512	4548	4411	4411	441
0.09	4984	4984	4984	4984	4984	5055	5082	5064	5037	5055	4991	4982	491
0.18	5072	5072	5072	5079	5079	5456	5456	5665	5665	5665	5665	5665	566
0.27	5072	5072	5072	5079	5106	5079	5079	5079	5079	5079	5079	5079	507

Ignition Control
Ignition Main Map

	100	750	1000	1300	1500	1750	2000	2250	2500	2750	3000	3250	350
-0.80	20	20	20	21	25	27	28	30	32	34	35	35	31
-0.73	20	20	20	21	25	28	29	35	39	39	35	35	31
-0.67	20	20	20	22	25	28	29	35	39	39	40	42	41
-0.60	20	20	20	23	25	26	27	35	39	39	39	42	41
-0.53	20	20	22	24	26	28	27	33	37	37	37	38	31
-0.47	21	21	21	24	28	28	29	34	37	39	39	38	31
-0.40	22	22	22	24	26	30	32	33	37	37	37	35	31
-0.33	22	22	22	24	26	30	32	34	36	36	37	35	31
-0.27	23	23	23	24	26	35	38	37	38	39	37	36	31
-0.20	24	24	24	25	27	35	38	40	37	37	37	38	31
-0.13	24	24	24	26	30	32	34	36	37	37	37	39	31
-0.07	24	24	24	26	28	31	34	36	35	37	36	38	31
0.00	24	24	24	26	26	30	33	33	34	35	35	35	31
0.09	25	25	25	25	24	25	25	31	31	34	35	35	31
0.18	25	25	25	24	22	25	24	25	29	31	33	35	31
0.27	25	25	25	23	21	24	24	24	25	29	30	33	31

Practically, Idle
Ignition Main map
becomes effective

As explained in a previous page, when the throttle is off (less than 2% of the throttle angle) after the engine rpm is raised more than 3250rpm with the throttle angle 2% or more; then, when the engine rpm is dropped to 1300rpm, Standard Ignition Time map and Ignition Main map are recognized.

(Actually, Idle Ignition Main map becomes effective. = The reason will be explained later.)

The fuel injection time and ignition timing are adjusted based on Return Trim Coefficient of Fuel 2 and Deceleration Fuel Cut Time Out Coefficient of Ignition 1 under Parameter Setting.

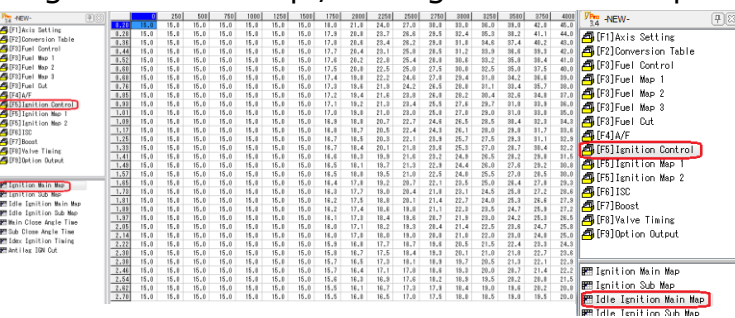
With the maps shown above, the injection time is 484μsec at 1300rpm. If Return Trim Coefficient is set to 0%, the injection returns to the standard injection without any fuel increase. If Return Trim Coefficient is set to between +/- 100%, the fuel injection amount is increased or decreased before returning to the standard injection. The ignition is returned to the standard timing at BTDC21° and 1300rpm. If Deceleration Fuel Cut Time Coefficient is set to 100%, the advance angle correction is done before returning to the standard ignition timing, If Deceleration Fuel Cut Time Coefficient is set to -100%, the retarded angle correction is done before returning to the standard ignition timing.

If the values (rpm) input to Deceleration Fuel Cut map are too high, even the throttle angle becomes more than Fuel Cut Throttle angle, Deceleration Fuel Cut does not work unless the engine rpm reaches the value input to the map; therefore, a fuel cut is not executed. It causes non-combusted gasoline to go to the exhaust leading after fire.

Also, if the values (rpm) input to Deceleration Fuel Cut map are too low, the fuel injection timing and engine rpm are too late; therefore, it causes failures such as engine stalling.

If the values for Cut and Return are too close, fuel cut and standard injection are repeated causing the generation of jerky vibration during driving.

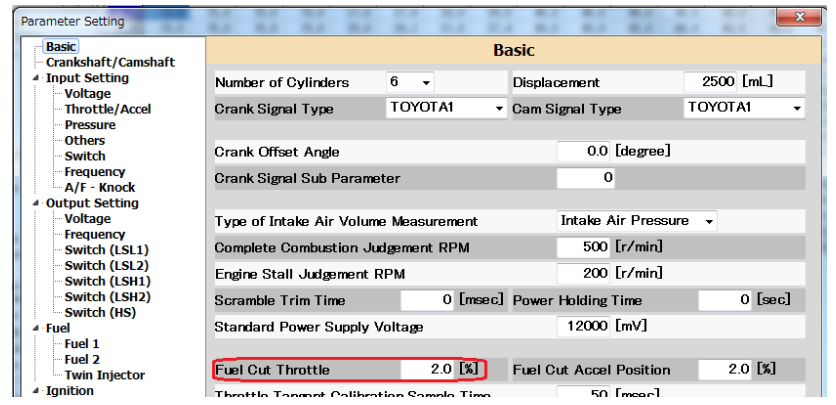
■ Ignition Main Map / Idle Ignition Main Map



Effective ignition map is changed depending on Fuel Cut Throttle angle.

If the throttle angle is less than Fuel Cut Throttle angle, 2% in Parameter Setting shown on the right, both maps are effective even not during the engine idling.

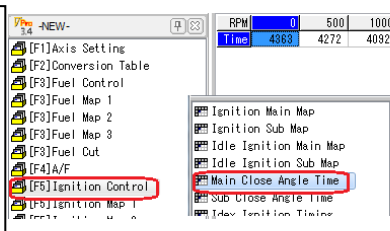
These maps are effective during engine brake, and even for those high engine rpm in the map.



This map is to set the conduction time to the ignition coil.

Make sure to input proper value to avoid damage to a damage to the ignition coil.

Main Close Time Map can extend the time when the power supply voltage is dropped; however, make sure to prevent the power supply voltage drop by adjusting the vehicle conditions.

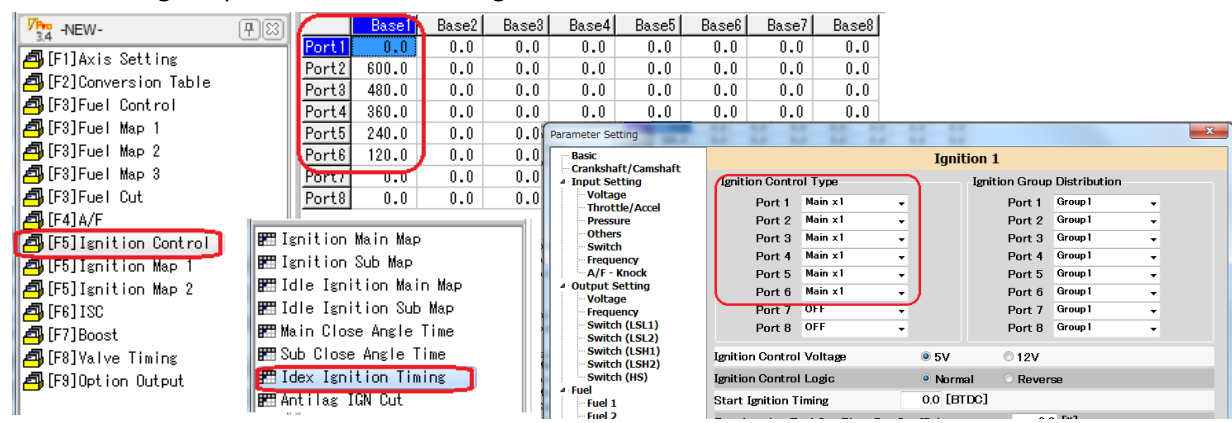


■ Main Close Angle Time Map

This map is to set the conduction time to the ignition coil.

■ Index Ignition Timing Map

This map is the timing map of ignition output signal based on Ignition Control Type of Ignition 1 under Parameter Setting. This map actually controls the ignition retard and advance by the values of Standard Ignition Timing map based on the timing shown below:



Like Standard Injection Timing map, it is required to set the compression top dead center (TDC) of 720°(one cycle) to each port. Ignition Main Map works based on the angle set to this map. Mapping is not required except for special cases.

■ Throttle Trim Map

The screenshot shows the software interface with the Throttle Trim Map and the Ignition 2 parameter settings. The Throttle Trim Map is a table with columns for RPM (0 to 7500) and rows for throttle angle (0.0 to 100.0). The Ignition 2 parameter settings are shown in the right panel, with the Option Trim section highlighted.

Throttle Angle	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
45.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
55.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
90.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Parameter Setting

Basic

Crankshaft/Camshaft

Input Setting

Voltage

Throttle/Accel

Pressure

Others

Switch

Frequency

A/F - Knock

Output Setting

Voltage

Frequency

Switch (LSL1)

Switch (LSL2)

Switch (LSH1)

Switch (LSH2)

Switch (HS)

Fuel

Fuel 1

Fuel 2

Twin Injector

Ignition

Ignition 1

Ignition 2

ISC

Other Control

Anti-Lag

Boost

Naming Settings

Error

Memo

Ignition 2

Ignition Cut RPM

Normal 20000 [rpm]

Car Speed 20000 [rpm]

Start 20000 [rpm]

Ignition Cut (Start) Setting

Time Over Speed Pulse Number 10 [Count]

RPM Trim 0 [rpm]

Trim 0.0 [degree]

Hold Time 0 [msec]

Knock Integration Trim

Using ☒ None-Use ☐ Use

Start Knock Integration 30000

Option Trim

	X Axis	Y Axis	Linked Condition
Option Trim 1	RPM	Throttle	Permanent
Option Trim 2	OFF	OFF	Permanent
Option Trim 3	OFF	OFF	Permanent
Option Trim 4	OFF	OFF	Permanent

PRINT Comparison Parameter CONNECTOR SEND PARAMETER OK CANCEL

To use the throttle trim map for the ignition timing, Option Trim of Ignition 2 under Parameter Setting must be set up. This map is to trim the ignition based on the throttle angle and engine rpm. The ignition timing is delayed or advanced to the standard ignition timing.

■ Water Temperature Trim Map

This map is to adjust the ignition timing based on the water temperature.

Water Temp.	-20	-10	0	10	20	30	40	50	60	70	80	90	100	110	120	130
Trim Value	5.0	5.0	5.0	5.0	4.0	3.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

With the map shown above, the ignition timing is advanced until the water temperature reaches 50°C. NOTE: This map is constantly effective even during high speed driving.

■ Intake Air Temperature Map

This map is to adjust the ignition timing based on the intake air temperature.

	-20	-10	0	10	20	30	40	50	60	70	80	90	100	110	120	130
0.20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.67	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.83	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.98	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.76	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.92	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.07	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

This map is to adjust the ignition timing by the intake air temperature and pressure. If the intake air temperature exceed 70°C, the ignition timing can be delayed with this map, but it is recommended to improve the vehicle's conditions by upgrading the intercooler, etc. High intake air temperature may induce knocking due to the difference in air density, which is hazardous to a vehicle.

Speed Trim Map

The screenshot shows the software interface with the 'Speed Trim Map' selected in the left sidebar. The main window displays a table of values for the Speed Trim Map. The 'Parameter Setting' dialog is open, showing the 'Ignition 2' settings. The 'Option Trim' section is highlighted, showing the configuration for the Speed Trim Map.

	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500
0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
200.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
220.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
280.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Parameter Setting

Basic
Crankshaft/Camshaft

Input Setting
Voltage
Throttle/Accel
Pressure
Others
Switch
Frequency
A/F - Knock

Output Setting
Voltage
Frequency
Switch (LSL1)
Switch (LSL2)
Switch (LSH1)
Switch (LSH2)
Switch (HS)

Fuel
Fuel 1
Fuel 2
Twin Injector

Ignition
Ignition 1
Ignition 2
ISC
ISC
Other Control
Anti-Lag
Boost

Naming Settings
Error
Memo

Ignition 2

Ignition Cut RPM
Normal 20000 [rpm]
Start 20000 [rpm]
Car Speed 20000 [rpm]

Ignition Cut (Start) Setting
Time Over Speed Pulse Number 10 [Count]
RPM Trim 0 [rpm]
Trim 0.0 [degree]
Hold Time 0 [msec]

Knock Integration Trim
Using ☒ None-Use ☐ Use
Start Knock Integration 30000

Option Trim

	X Axis	Y Axis	Linked Condition
Option Trim 1	RPM	Speed	Permanent
Option Trim 2	OFF	OFF	Permanent
Option Trim 3	OFF	OFF	Permanent
Option Trim 4	OFF	OFF	Permanent

To use the ignition timing map based on the vehicle speed, select "RPM" for X-axis and "Speed" for Y-axis of Option Trim of Ignition 2 under Parameter Setting as shown above.

The screenshot shows the software interface with the 'Port Trim Map' selected in the left sidebar. The main window displays a table of values for the Port Trim Map.

	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500
1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Port Trim Map

The ignition can be trimmed by each port. Use this map as required.

The screenshot shows the software interface with the 'Acceleration Trim Map' selected in the left sidebar. The main window displays a table of values for the Acceleration Trim Map.

	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500
2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Acceleration Trim Time Map

RPM	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500
Time	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Acceleration Trim

Acceleration Trim Map can be also used for the ignition timing adjustment like the fuel injection adjustment.

A/T Shift Down Judgement RPM Movement

RPM	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500
RPM Movement	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500

A/T Shift Up Judgement RPM Movement

RPM	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500
RPM Movement	0	-500	-1000	-1500	-2000	-2500	-3000	-3500	-4000	-4500	-5000	-5500	-6000	-6500	-7000	-7500

■AT Shift Retard (Ignition)

This map is to avoid knocking when increasing a turbo engine /automatic transmission vehicle's boost by EVC or a similar device, and shifting up a gear with the throttle wide open during high engine rpm and high load. This map avoids knocking that may occur when shifting down a gear. The maps shown below are for AT shift retard during shifting-up.

To avoid knocking that occurs when shifting up a gear of automatic transmission, A/T Shift Down Judgement RPM Movement map is required. This map is to recognize the engine rpm drop. Enter the engine rpm that can be recognize the engine rpm drop referring to the data log and/or data monitor. Also, enter a throttle full opening angle to of "A/T Shift Up/Down Throttle Condition" Basic under Parameter Setting. For example, 70% - 70% of the throttle full opening angle is recognized as a full opening angle.

A/T Shift Trim

RPM	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500
Trim Value	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

A/T Shift Trim Time

RPM	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500
Time	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

■ Enter trim values to the cell under the rpm that gear shift retard is required. Also, enter the trim time. The trim time is decay time.

■AT Shift Cut (Fuel)

If the unwanted impact occurs when shifting a gear of automatic transmission, A/T Shift Cut is effective. Enter 50[msec] to A/T Shift Cut to perform fuel cut for 0.05 second to reduce the impact occurs during shifting a gear.

■ Parameter Setting - Basic

Basic			
Number of Cylinders	6	Displacement	2500 [mL]
Crank Signal Type	TOYOTA1	Cam Signal Type	TOYOTA1
Crank Offset Angle	0.0 [degree]		
Crank Signal Sub Parameter	0		
Type of Intake Air Volume Measurement	Intake Air Pressure		
Complete Combustion Judgement RPM	500 [r/min]		
Engine Stall Judgement RPM	200 [r/min]		
Scramble Trim Time	0 [msec]	Power Holding Time	0 [sec]
Standard Power Supply Voltage	12000 [mV]		
Fuel Cut Throttle	2.0 [%]	Fuel Cut Accel Position	2.0 [%]
Throttle Tangent Calibration Sample Time	50 [msec]		
A/T Shift Up/Down Throttle Condition	100.0 [%]		
Output Function 1	LSH 11,12 Enabled		
Output Function 2	LSH 1,2 Enabled		

- **Crank & Cam Signal Type:** Usually appropriate signal type is entered after selecting the base engine except for special cases such as NB#C or AE86.
- **Crank Offset Angle:** The initial crank angle is adjusted on the computer. Default setting is "0".
- **Crank Signal Sub Parameter:** This item is required for cylinder discrimination when Crank Signal Type is "NISSAN1"; otherwise, this item is not required to set. 6-cylinder=22°, 4-cylinder=14°, 4-cylinder distributor=8°. For overrun prevention for Nissan, add or subtract "1" after modifying the switch wiring.
- **Type of Intake Air Volume Measurement:** Load is measured based on the type selected for this item. (The vertical axis of a map is determined.)
- **Complete Combustion Judgement RPM:** The engine rpm increase during cranking is monitored, and operation mode is switched between the engine start and standard driving based on the input RPM.
- **Engine Stall Judgement RPM:** When the rpm drops from the standard driving mode, the operation mode is switched.
- **Scramble Trim Time:** The operation time of scramble correction.
- **Power Holding Time:** Power source for F-CON Vpro or ECU relay is kept by a constant power supply for the set time after ignition is off.
- **Fuel Cut Throttle & Fuel Cut Accel Position:** Maps become effective or not based on this throttle angle. The standard value to input is "2.0". Make sure to enter a proper value. If "0" is entered, the deceleration fuel cut cannot be performed, and other malfunctions may occur. For an electronic control throttle vehicle, if Deceleration Fuel Cut Map cannot be activated when the throttle angle is less than Fuel Cut Throttle angle (accelerator opening angle is 0%, but throttle motor opening angle is 3% or more), entering an accelerator position signal enables Fuel Cut Accel Position so the deceleration fuel cut can be performed.
- **Throttle Tangent Calibration Sample Time:** The throttle variation is recognized based on the set period. The set period is the sampling time to determine the throttle variation for Non Phase Injection Time map or Acceleration Trim map.
- **A/T Shift Up/Down Throttle Condition:** Acceleration condition of AT vehicle is defined. Refer to AT Shift on page 28.
- **Output Function 1:** Select LSH11/12 (ground control) or Ignition Port 7/8. (Terminal No.37/38)
- **Output Function 2:** Select LSH1/2 (ground control) or Voltage Output 3/4. (Terminal No.43/44)

■ Parameter Setting - Voltage

There are 3 types of voltage input setup. The items available for each type are shown below. Refer to the manual of hardware and software for more details.

Parameter Setting

Basic

Crankshaft/Camshaft

Input Setting

Voltage

Throttle/Accel

Pressure

Others

Switch

Frequency

A/F - Knock

Output Setting

Voltage

Frequency

Switch (LSL1)

Switch (LSL2)

Switch (LSH1)

Switch (LSH2)

Switch (HS)

Fuel

Fuel 1

Fuel 2

Twin Injector

Ignition

Ignition 1

Ignition 2

ISC

ISC

Other Control

Anti-Lag

Boost

Naming Settings

Error

Memo

Voltage

Option Voltage Input [Type1]

#1 PIN 14Intake Air Pressure

#2 PIN 21AirFlow_1

#3 PIN 9OFF

#4 PIN 15OFF

Fuel GCC

#5 PIN 16OFF

Ignition GCC

Air Flow TypeOFF

Option Voltage Input [Type2]

#9 PIN 52Pull-UpWater Temp.

#10 PIN 39Pull-UpIntake Air Temp.

#11 PIN 23Pull-UpOFF

#12 PIN 24Pull-UpOFF

Option Voltage Input [Type3]

#15 PIN 20Throttle1_1

#16 PIN 61OFF

Option Voltage Input [Type1]

#1 PIN 14Intake Air Pressure

#2 PIN 21AirFlow_1

#3 PIN 9OFF

OFF

#4 PIN 15AirFlow_1

AirFlow_2

Fuel_Pressure

Oil_Pressure

Atmosphere_Pressure

Other_Pressure_1

Other_Pressure_2

External_A/F1

External_A/F2

External_Knock1

External_Knock2

O2_1

O2_2

Fuel_Trim

Ignition_Trim

Fuel_Sub_Trim

Ignition_Sub_Trim

Ignition_Cut_RPM

Fuel_Gauge

PTO

Air Flow Type

Option Voltage Input [Type2]

#9 PIN 52Pull-UpWater Temp.

#10 PIN 39Pull-UpIntake Air Temp.

#11 PIN 23Pull-UpOFF

#12 PIN 24Pull-UpOFF

OFF

Fuel_Temp.

Oil_Temp.

Exhaust_Temp.

Other_Temp_1

Other_Temp_2

Fuel_Trim

Ignition_Trim

Fuel_Sub_Trim

Ignition_Sub_Trim

Ignition_Cut_RPM

Fuel_Gauge

PTO

STEP_Motor_Position

Option Voltage

#15 PIN 20Ignition_Sub_Trim

#16 PIN 61Ignition_Cut_RPM

Fuel_Gauge

PTO

STEP_Motor_Position

Option Voltage Input [Type3]

#15 PIN 20Throttle1_1

#16 PIN 61OFF

OFF

Throttle1_2

Throttle2_1

Throttle2_2

Accel_1

Accel_2

Other_Position_1

Other_Position_2

Fuel_Trim

Ignition_Trim

Fuel_Sub_Trim

Ignition_Sub_Trim

Ignition_Cut_RPM

Fuel_Gauge

PTO

STEP_Motor_Position

■ **Parameter Setting – Fuel 1**
 Basic setting for fuel control. Fuel control by input load should be set in this menu.
 For the V-shaped engines, use “Fuel Group Distribution” to control fuel for each bank.

Parameter Setting

Fuel 1

Fuel Control Type

Port 1	Main x1
Port 2	Main x1
Port 3	Main x1
Port 4	Main x1
Port 5	OFF
Port 6	OFF
Port 7	OFF
Port 8	OFF

Fuel Group Distribution

Port 1	Group1
Port 2	Group1
Port 3	Group1
Port 4	Group1
Port 5	Group1
Port 6	Group1
Port 7	Group1
Port 8	Group1

Injector Coefficient: 12800000 Fuel Coefficient: 1.000 [%]
 Injector Volume: Main 500 [mL/min] Sub 0 [mL/min]
 First Injection Time: 0 [usec]
 Air Conditioner Trim: Trim Value 0.0 [%] Decrement Coefficient 100 [%]
 Load 1 Trim: Trim Value 0.0 [%] Decrement Coefficient 100 [%]
 Load 2 Trim: Trim Value 0.0 [%] Decrement Coefficient 100 [%]
 Load 3 Trim: Trim Value 0.0 [%] Decrement Coefficient 100 [%]
 Load 4 Trim: Trim Value 0.0 [%] Decrement Coefficient 100 [%]
 Define Sub Map: OFF

■ **Fuel Control Type Port 1 – 8:** in Fuel 1 shown above, “Main x 1” is selected for Port 1 to 4; this setting is for 4-cylinder sequential injection. Fuel is injected once during one cycle (720°). If “Main x 2” is selected under simultaneous injection, fuel is injected twice during one cycle (720°). The number of fuel injection per cycle is determined depending on which mode or map is effective, the twin injector mode or Independent Injection Map for “Sub x #” and “Independent x #” as well.

■ **Injector Coefficient:** Fuel injection amount for L-Jetronic is determined. Default value is 12800000; increasing this value increases the fuel volume.

■ **Air Conditioner Trim•Load Trim 1, 2, 3, 4:** Refer to the relevant sections explain these items in this document.

■ **Define Sub Map:** Select and fix a sup map to use if necessary. To use a map that uses MIX-CONT, select “Volume Selection”.

■ **Fuel Group Distribution:** Select “Group 1” or “Group 2” to trim values by a group.

■ Group Trim (Fuel)

Group Trim is performed for the map made as “Group 1 Trim” and “Group 2 Trim” under Fuel Map 3.

Group 1 Trim

	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500
0.20	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.36	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.51	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.67	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.83	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
0.98	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.14	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.29	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.45	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.61	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.76	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1.92	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.07	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.39	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2.54	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Group 2 Trim

	0	500	600
0.20	0.0	0.0	0.0
0.36	0.0	0.0	0.0
0.51	0.0	0.0	0.0
0.67	0.0	0.0	0.0
0.83	0.0	0.0	0.0
0.98	0.0	0.0	0.0
1.14	0.0	0.0	0.0
1.29	0.0	0.0	0.0
1.45	0.0	0.0	0.0
1.61	0.0	0.0	0.0
1.76	0.0	0.0	0.0
1.92	0.0	0.0	0.0
2.07	0.0	0.0	0.0
2.23	0.0	0.0	0.0
2.39	0.0	0.0	0.0
2.54	0.0	0.0	0.0

Parameter Setting

Fuel 1

Fuel Control Type

Port 1	Main x1
Port 2	Main x1
Port 3	Main x1
Port 4	Main x1
Port 5	Main x1
Port 6	Main x1
Port 7	OFF
Port 8	OFF

Fuel Group Distribution

Port 1	Group1
Port 2	Group1
Port 3	Group1
Port 4	Group1
Port 5	Group2
Port 6	Group2
Port 7	Group1
Port 8	Group1

Injector Coefficient: 12800000 Fuel Coefficient: 1.000 [%]
 Injector Volume: Main 500 [mL/min] Sub 0 [mL/min]
 First Injection Time: 0 [usec]
 Air Conditioner Trim: Trim Value 0.0 [%] Decrement Coefficient 100 [%]
 Load 1 Trim: Trim Value 0.0 [%] Decrement Coefficient 100 [%]
 Load 2 Trim: Trim Value 0.0 [%] Decrement Coefficient 100 [%]
 Load 3 Trim: Trim Value 0.0 [%] Decrement Coefficient 100 [%]
 Load 4 Trim: Trim Value 0.0 [%] Decrement Coefficient 100 [%]
 Define Sub Map: OFF

Parameter Setting

Fuel 2

A/F Feedback Setting

A/F 1 Feedback Map: **Main Trim**

A/F 2 Feedback Map: **OFF**

Start Time: **150** [sec] Cycle Time: **50** [msec]

Throttle Condition: **90.0** [%]

Water Temp. Low: **70** [deg-C] Water Temp. High: **90** [deg-C]

Fuel Cut Condition Selection

☐ RPM ☐ Intake Air Pressure

☐ Air Flow Volume ☐ Air Flow Efficiency

■ A/F 1 Feedback Map: Select a map to reflect data when fuel is adjusted to make the measured A/F closer to a target A/F by the A/F feedback.

■ A/F 2 Feedback Map: Select a map to reflect the fuel trim value from the second system of the V-type engine.

■ A/F Start Time: Set the warm-up time. A/F feedback is not performed during the warm-up time.

■ A/F Cycle Time: Set a period of time to monitor the A/F value change.

■ A/F Throttle Condition: Set the throttle opening angle. A/F feedback is performed when the throttle angle is less than the set angle. For example, under Throttle Condition shown above, A/F feedback won't be performed when the throttle angle is 100%(more than 90%).

■ A/F Water Temp. Low / High: A/F feedback is performed between the set water temperatures. Under the setting shown above, A/F feedback is performed between 70°C and 90°C.

A/F Feedback Flag		0	250	500	750	1000	1250	1500	1750	2000	2250	2500	2750	3000	3250	3500	3750	4000	4250
[F1]Axis Setting	0.20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[F2]Conversion Table	0.28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[F3]Fuel Control	0.36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[F3]Fuel Map 1	0.44	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[F3]Fuel Map 2	0.52	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[F3]Fuel Map 3	0.60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[F3]Fuel Cut	0.68	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[F4]A/F	0.76	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[F5]Ignition Control	0.85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[F5]Ignition Map 1	0.93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[F5]Ignition Map 2	1.01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[F6]ISC	1.09	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[F7]Boost	1.17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[F8]Valve Timing	1.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
[F9]Option Output	1.33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A/F Map	1.41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A/F Feedback Flag	1.49	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A/F Feedback Trim 1	1.57	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A/F Feedback Trim 2	1.65	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A/F Short Term Feedback Trim	1.73	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A/F Short Term Feedback Trim	1.81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A/F Feedback Trim MAX	1.89	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A/F Feedback Swing Coefficient	2.05	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A/F Feedback Swing Cycle	2.14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2.22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2.30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2.38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2.46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2.54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	2.62	0	0	0	0	0													

■ Parameter Setting – Ignition 1

Basic setting for the ignition control.

Ignition trim control by the load input should be set in this menu.

For the V-shaped engines, use “Fuel Group Distribution” to control fuel for each bank.

■ Ignition Control Type Port 1 – 8: Ignition 1 shown above is for 6-cylinder sequential ignition condition. “Main x 1” is selected for Port 1 to 6; under this setting, ignition is done once during one cycle (720°). For the simultaneous injection or group ignition system, select “Main x 2” to ignite twice during one cycle (720°). For 4-cylinder or distributor equipped engine, select “Main x 4” for Port 1.

■ Ignition Control Voltage: Set the control voltage for the ignitor equipped with a vehicle.

■ Ignition Control Logic: Select “Normal” except for some vehicles (HONDA, etc.).

■ Start Ignition Timing: Enter “0”. If any value is entered, the ignition occurs less than Complete Combustion Judgement RPM according to the value entered here.

■ Air Conditioner Trim•Load 1,2,3,4 Trim: Refer to the section in this document explains these items.

■ Define Sub Map: Refer to the section in this document explains these items.

■ Group Trim (Ignition)

Group Trim is performed for the map made as “Group 1 Trim” and “Group 2 Trim” under Ignition Map 2.

	0	500	1000	1500	2000
0.20	0.0	0.0	0.0	0.0	0.0
0.36	0.0	0.0	0.0	0.0	0.0
0.51	0.0	0.0	0.0	0.0	0.0
0.67	0.0	0.0	0.0	0.0	0.0
0.83	0.0	0.0	0.0	0.0	0.0
0.98	0.0	0.0	0.0	0.0	0.0
1.14	0.0	0.0	0.0	0.0	0.0
1.29	0.0	0.0	0.0	0.0	0.0

	0	500	1000	1500	2000
0.20	0.0	0.0	0.0	0.0	0.0
0.36	0.0	0.0	0.0	0.0	0.0
0.51	0.0	0.0	0.0	0.0	0.0
0.67	0.0	0.0	0.0	0.0	0.0
0.83	0.0	0.0	0.0	0.0	0.0
0.98	0.0	0.0	0.0	0.0	0.0
1.14	0.0	0.0	0.0	0.0	0.0
1.29	0.0	0.0	0.0	0.0	0.0

Parameter Setting

Basic
 Crankshaft/Camshaft
Input Setting
 Voltage
 Throttle/Accel
 Pressure
 Others
 Switch
 Frequency
 A/F - Knock
Output Setting
 Voltage
 Frequency
 Switch (LSL1)
 Switch (LSL2)
 Switch (LSH1)
 Switch (LSH2)
 Switch (HS)
Fuel
 Fuel 1
 Fuel 2
 Twin Injector
Ignition
 Ignition 1
Ignition 2
ISC
 ISC
Other Control
 Anti-Lag
 Boost
Naming Settings
 Error
 Memo

Ignition 2

Ignition Cut RPM

Normal 20000 [rpm] Car Speed 20000 [rpm]
 Start 20000 [rpm]

Ignition Cut (Start) Setting

Time Over Speed Pulse Number 10 [Count]
 RPM Trim 0 [rpm]
 Trim 0.0 [degree]
 Hold Time 0 [msec]

Knock Integration Trim

Using ☒ None-Use ☐ Use
 Start Knock Integration 30000

Option Trim

	X Axis	Y Axis	Linked Condition
Option Trim 1	RPM	Speed	Permanent
Option Trim 2	OFF	OFF	Permanent
Option Trim 3	OFF	OFF	Permanent
Option Trim 4	OFF	OFF	Permanent

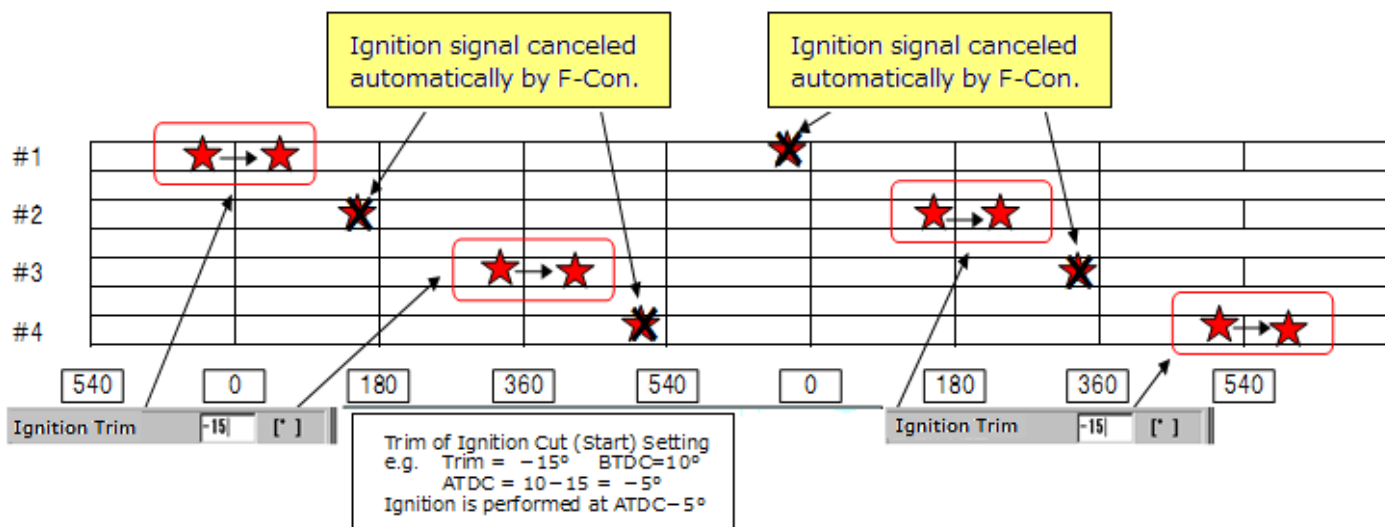
Parameter Setting - Ignition 2

Setting for the ignition cut rpm and option trim should be set in this menu

- Ignition Cut RPM - Normal: The max rpm (ignition REV) under the normal driving mode.
- Ignition Cut RPM - Car Speed: RPM to fix when the optional switch for the ignition cut speed is on.
- Ignition Cut RPM - Start: The max rpm to fix when PROSTART function is activated.

Ignition Cut (Start) Setting

- Time Over Speed Pulse Number: Under PROSTART mode, the ignition cut continues if the speed pulse number is less than the number set here. 10 count = $\approx 10\text{km}(\text{speed}) \rightarrow$ the ignition is returned to the standard.
- Trim: See the diagram below:
- Hold Time: Time period of ignition cut activated while the ignition conditions are not meeting Ignition Cut (Start) Setting conditions, and Hold Time is entered.
- Option Trim 1/2/3/4: Refer to the section in this document explains these items.



■ Parameter Setting - Twin Injector

Select a Twin Injector Mode to control the primary and secondary injector.

The screenshot shows the 'Parameter Setting' window for a 'Twin Injector'. The 'Twin Injector Mode' is set to 'Automatic Distribution'. The 'Twin Injector Trim' is 0.0 [%]. The 'Twin Injector Start RPM' is 20000 [rpm]. The 'Twin Injector Return RPM' is 20000 [rpm]. The 'Twin Injector Start Min. Injection Time' is 30000 [usec]. The 'Twin Injector Return Min. Injection Time' is 30000 [usec]. The 'Twin Injector Change Trim' is 0.0 [%]. The 'Decrement Coefficient' is 0 [%].

	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500
0.20	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
0.36	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
0.51	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
0.67	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
0.83	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
0.98	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
1.14	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
1.29	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
1.45	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
1.61	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
1.76	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
1.92	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
2.07	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
2.23	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
2.39	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0
2.54	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0	360.0

■ Sub injector's volume must be entered to "Sub" of Injector Volume in Fuel 1 under Parameter Setting.

- Twin Injector Mode: Select the operation mode for Fuel Control Type's each Port that "Sub x #" is selected in Fuel 1 under Parameter Setting for FC3S or FD3S. Parameter Setting shown above selected "Automatic Distribution" that injection is performed by 50% from main injector and another 50% from sub injector after the sub injector works first.
- Twin Injector Start RPM: Sub injector starts injection when the rpm exceed the rpm set here.
- Twin Injector Return RPM: Injection is done only by main injector when the rpm is less than the rpm set here.
- Twin Injector Start Min Injection Time: If 2500(μsec) is entered here, injection takes place from the address of 5000(μsec) or higher in Standard Injection map. Injection is distributed into 50% from main injector and 50% from sub injector; therefore, the total becomes 5000μsec.
- Twin Injector Return Min Injection Time: If 2000(μsec) is entered here, the control mode is returned to a main injector under the address of 4000 (μsec) or less in Standard Injection Time map. During actual driving, as the throttle is off, Deceleration Fuel Cut mode is activated, and the fuel injection time becomes 0μsec; therefore, the sub injector stops its operation.
- Twin Injector Trim: When the imbalance of air-fuel ratios occurs after the injector type is changed to twin injector, the fuel amount is increased or decreased by Twin Injector Trim.
- Twin Injector Change Trim: When the sub injector begins operation, Trim Value suppresses the imbalance of an air-fuel ratio that may occur during the injector type is being changed to twin from single. Decrement Coefficient is to set the trim time. The trim time can be made longer when Decrement Coefficient is smaller, and vice versa.