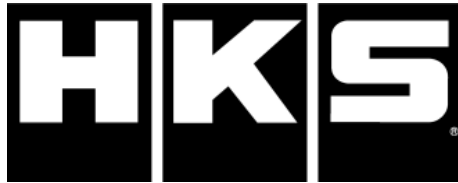


# SUPER FIRE RACING COIL PRO

## INSTRUCTION MANUAL



NAME OF PRODUCT	SUPER FIRE RACING COIL PRO
UASGE	Automotive parts
PART NUMBER	43005-AT002
MANUAL NUMBER	E05341-T42010-00
APPLICATION	TOYOTA MarkII、Chaser、Cresta (JZX100) TOYOTA MarkII、Verossa (JZX110) ※ Cannot be installed on vehicles equipped with 2JZ-GE、1JZ-GE、1G-FE、4S-FE、1JZ-FSE.
ENGINE	1JZ-GTE(VVT-i)
REMARKS	<ul style="list-style-type: none"> <li>•This instruction manual is for using F-CON V Pro 3.4 for the ECU. When using other ECUs, please refer to the instruction manual of the ECU to be used for installation and setting.</li> <li>•This Product was designed by a JDM vehicle and has not been tested with other market model yet.</li> <li>•This Product requires removal of-engine valley cover. Please make sure that ignition coils are Protected from water.</li> <li>•Use with HKS spark plug is recommended</li> </ul>

### REVISION OF MANUAL

Ver.	Date	Details
3-1.01	2021/4	1st Edition

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## NOTICE

This manual assumes that you have and know to use the tools and equipment necessary to safely perform service operations on your vehicle.

This manual assumes that you are familiar with typical automotive systems and basic service and repair Procedures. Do not attempt to carry out the operations shown in this manual unless these assumptions are correct.

Always have access to a factory repair manual. To avoid injury, follow the safety precautions contained in the factory repair manual.

## IN REGARD TO MANUAL AND PRODUCT

- This manual indicates items that require careful attention in order to install this Product safely, and lists precautions to avoid any possible damage and/or accidents.
- This Product was designed for and tested on a stock vehicle or a vehicle equipped with other HKS Products. Performance and/or safety cannot be guaranteed if this Product is installed onto other inapplicable vehicles.
- HKS will not be held responsible for any damage caused by faulty installation, mishandling, nor for damages caused by modifications to or dismantling of this Product.
- This specification of this Product are subject to change without notice.
- This manual is subject to be revised without notice
- This Product is designed for use in Japan only. It must not be used in any other country.

## SAFETY INSTRUCTIONS



**Warning** Indicates risk of serious injury and/or possible death.



**Caution** Indicates risk of serious injury or property damage.

## Parts List

No	Description	Qty	Remarks
1	JZ Ignition coil	6	
2	Ignition coil harness	1	Engine room
3	ECU coil harness	1	ECU
4	Coil Bracket	1	
5	Hexagon socket head cap screw	5	M6×16
6	Flange bolt	6	M6×25
7	Rosette washer	5	Red Anodized
8	Tie wrap	3	
9	Instruction manual	1	

### Separately purchased parts / recommended purchased parts

Some parts are required when installing SUPER FIRE RACING COIL PRO. If necessary, please purchase the following parts separately.

\* When controlling with F-CON V Pro 3.4 (hereinafter V Pro), a terminal set with a V Pro harness with serial number 2 is required. Please purchase in advance.

No.	Description	Qty	HKS Code No.	Remarks
1	TIMER HARNESS TT-7 or TT-8	1	4103-RT007 or 4103-RT008	Ignition coil for pulling in power. When you do not want to Process genuine wiring Please purchase.
2	V Pro Harness/Terminal Set	1	4299-RA009	For avoiding lighting of the check engine light. (2JZ first and second semester required)

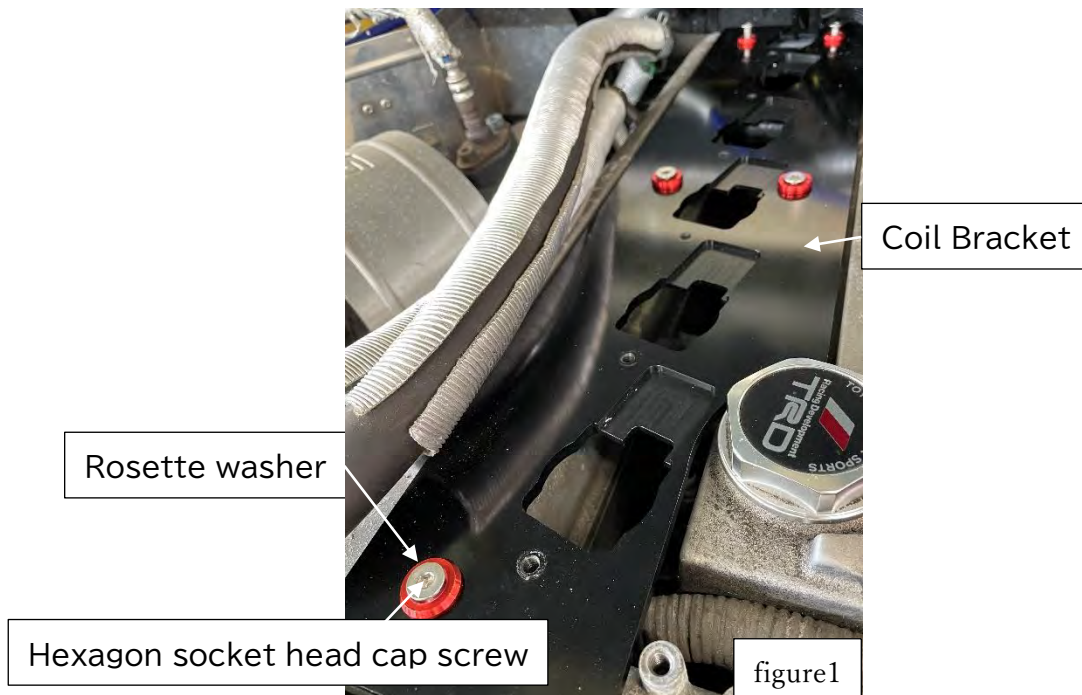
# 1. Installation



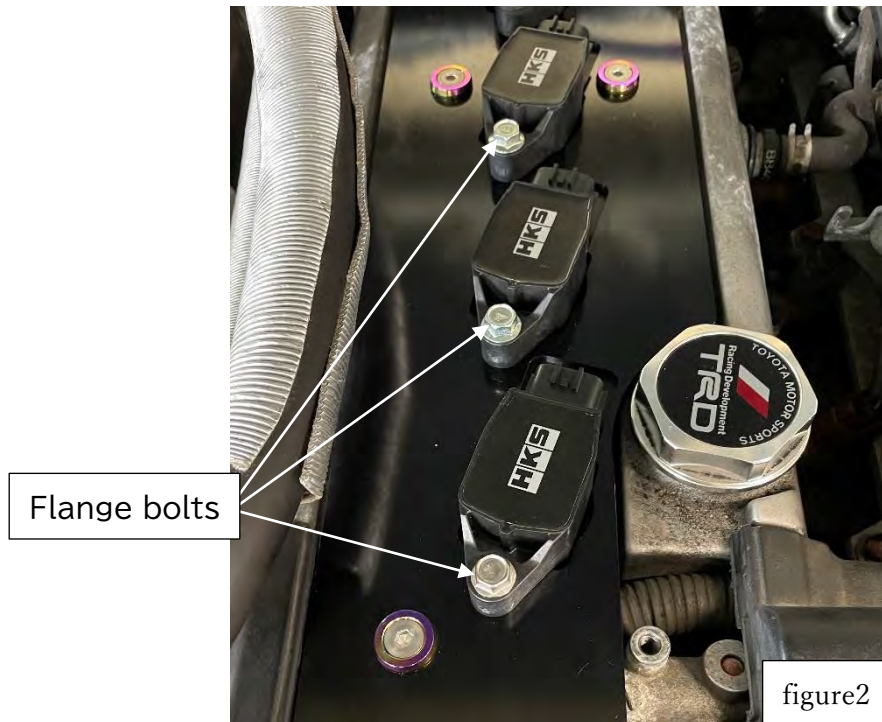
## Caution

- Be sure to perform the work according to the service manual and the instructions issued by the manufacturer.
  - Make sure to insulate the wiring of the genuine ignition coil and waterproof the connector.
- If you neglect to insulate and waterproof the connector, the ECU may be damaged.

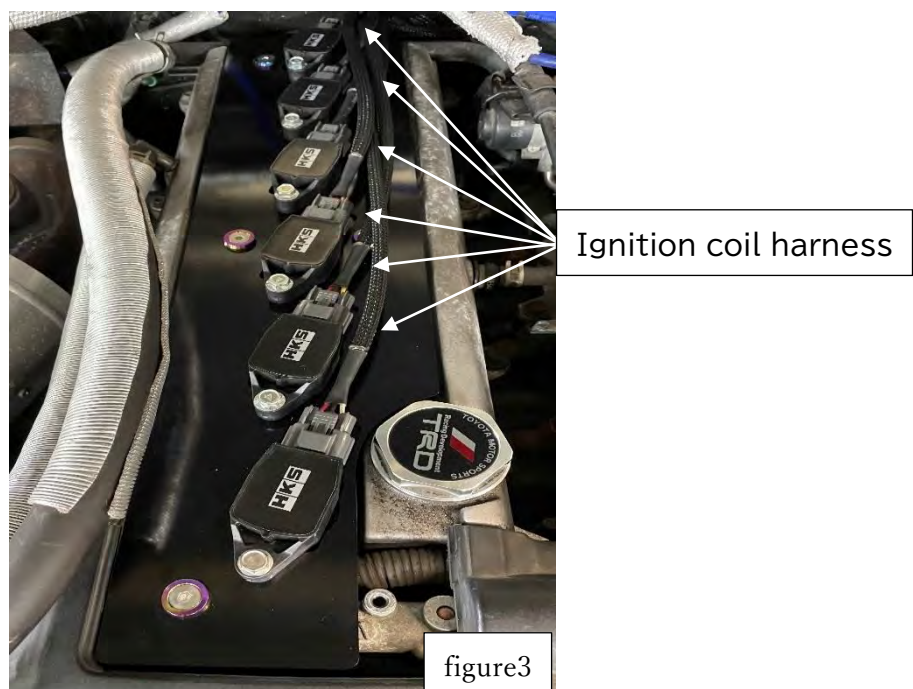
- (1) Disconnect the cable terminal from the negative terminal of the battery.
- (2) Disconnect the Ignition coil.
- (3) We will Process the wiring of the stock ignition coil. If you want to leave the wiring of it on the vehicle body side, waterproof each connector. When removing the wiring of it, insulate the wiring.  
For water Proof / insulation treatment, use heat-resistant materials that can be used in the engine room.
- (4) Temporarily fix the hexagon socket head cap screw (M6 x 16) and hexagon high nut to the coil bracket. (Figure 1)



- (5) Install the ignition coil. At this time, attach the plug gap rubber straight to the plug terminal.
- (6) Fix the ignition coil with flange bolts. (Figure 2)(Tightening torque  $7.0\pm 0.7\text{N}\cdot\text{m}$ )  
 Fix the hexagon socket head cap screw (M6 x 16) temporarily fixed in (4).  
 (Tightening torque  $8.3\pm 0.9\text{N}\cdot\text{m}$ )



- (8) Attach the ignition coil harness to the ignition coil. The one with the shortest harness is the bulkhead side of the vehicle. Insert it firmly until the connector clicks. (Figure 3)

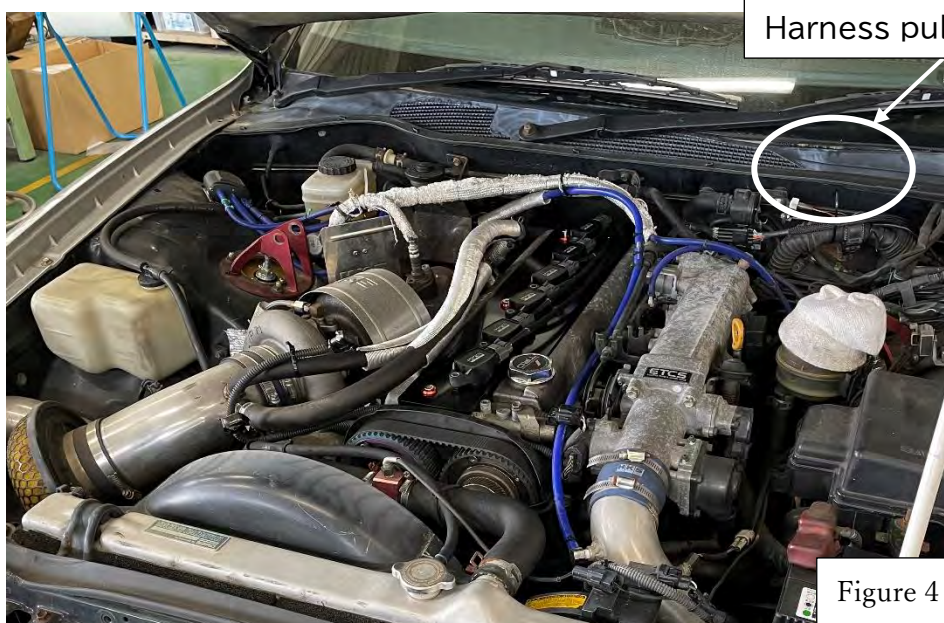




## Caution

- Please note that if you pull the wiring strongly when pulling the harness on the ECU side into the car, there is a risk of disconnection.
- After pulling in the wiring, waterproof the grommet part where the wiring is pulled in. It may cause water to enter the car or cause an offensive odor.

- (9) Pull the harness on the ECU side (parts list serial number 3) into the car. The recommended pull-in position is the position circled in Figure 4



(10) Please wire the after-sales ECU / vehicle referring to the figure below.  
 Refer to the following for wiring the harness on the ECU side to V Pro. (Figure 5)

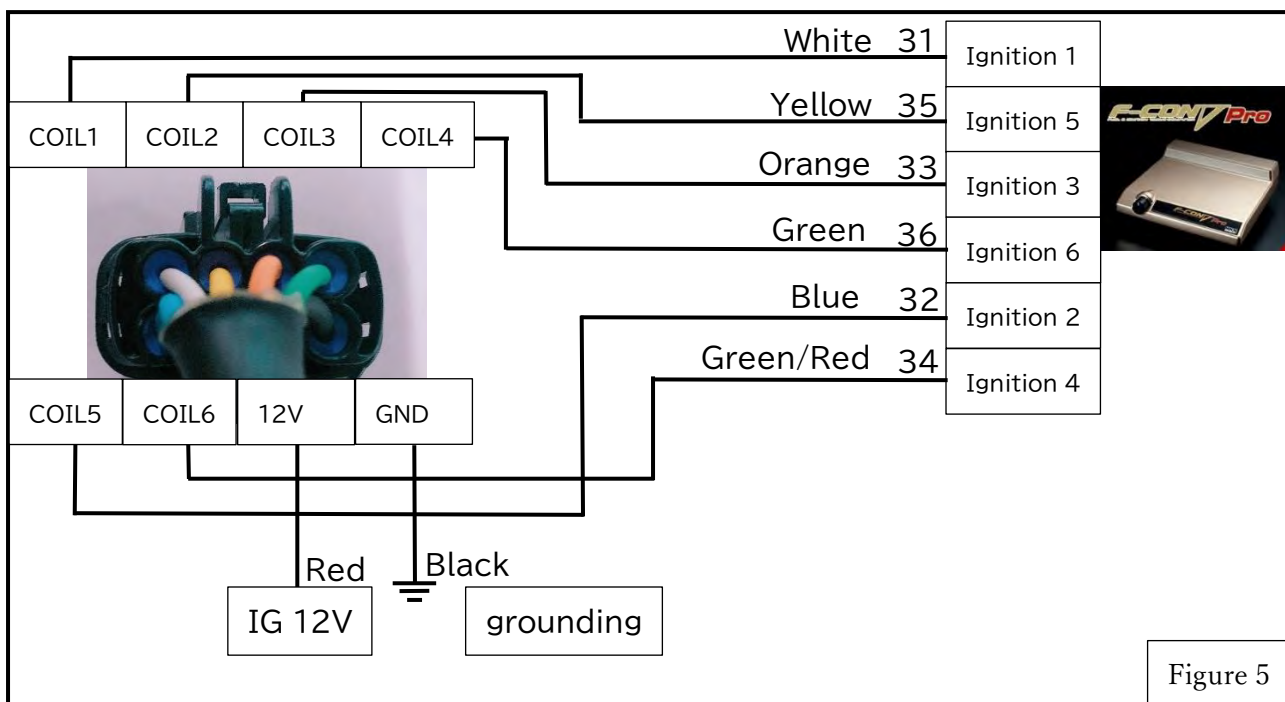


Figure 5

Table 1 Wiring table of the harness on the ECU side to V Pro

Wiring name	Wiring color	Cylinder number	Firing order	Wiring destination	V pro Pin number	Detail
COIL1	white	1	1	ignition 1	31	ignition output#1
COIL2	yellow	2	5	ignition 5	35	ignition output#5
COIL3	orange	3	3	ignition 3	33	ignition output#3
COIL4	green	4	6	ignition 6	36	ignition output#6
COIL5	blue	5	2	ignition 2	32	ignition output#2
COIL6	green/red	6	4	ignition 4	34	ignition output#4
12V	red	-	-	IG12V	-	-
GND	black	-	-	grounding	-	-

※In the case of a car with VVT-i, there are only three V Pro terminals for ignition output due to the simultaneous ignition method. The HKS coil ignition system uses an independent ignition system, so three V Pro terminals are missing. Please purchase the terminal set with VPro harness (4299-RA009) separately.

The key switch connector (Toyota Maintenance Manual IG2) at the foot of the driver's seat is recommended for the wiring position of the 12V line.

The terminal position of the 12V line (maintenance manual IG2) of the key switch connector is the red circle. (Figure. 8,9)

It is a view from the terminal insertion side.

Be sure to check the connector position and pin location on the wiring diagram /

maintenance manual.

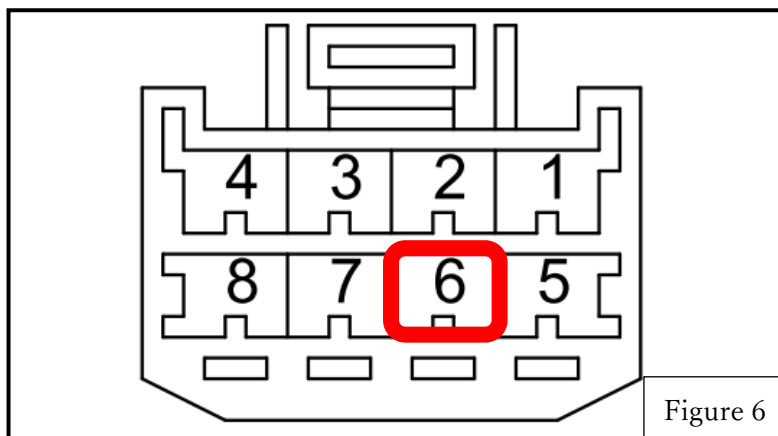
Alternatively, use the optional timer harness TT-7 (4103-RT007), TT-8 (4103-RT009).

If you can use it, you can wire 12V line (IG2 of Toyota wiring diagram collection) without processing genuine wiring.

① MarkII, Chaser, Cresta (JZX100)

This is a view of the connector of the timer harness TT-7 (4103-RT007) for each model from the terminal insertion side.

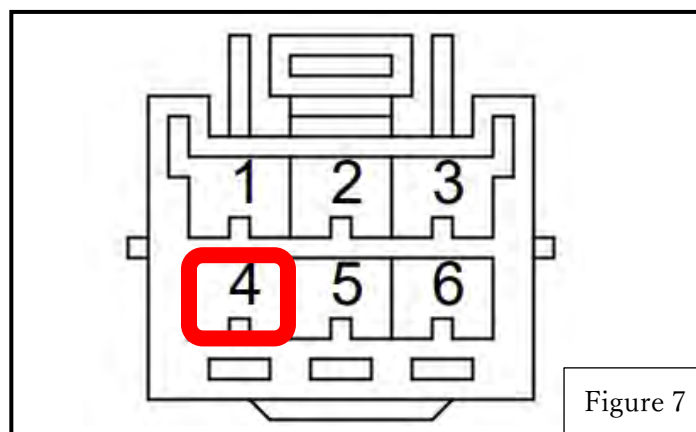
The pin location of IG 12V is number 6. (Figure. 6)



② MarkII (JZX110)※Verossa cannot be used.

This is a view of the connector of the timer harness TT-8 (4103-RT008) for each model from the terminal insertion side.

The pin location of IG 12V is number 4. (Figure. 7)







## Caution

- Do not connect the 12V line of the harness on the ECU side to the 12V line (terminal numbers 49,62) connected to the V Pro. It is expected that a voltage drop will occur and the V Pro will not operate normally.
- When extending a 12V wire, use a wire with an allowable current of 15A or more (conductor size 1.25sq is recommended). When connecting the wiring, be careful of poor contact.

(11) Since the stock igniter is not used, the check engine light lights up.  
Avoid lighting the check engine light by the following method.

- ① Check the position of the check engine light line of the stock ECU of each car.

Mark II, Chaser, Cresta (JZX100) (Figure. 8)

(This is a view from the terminal insertion side.)

C-3 in Fig. 7 is the engine check lamp signal line.

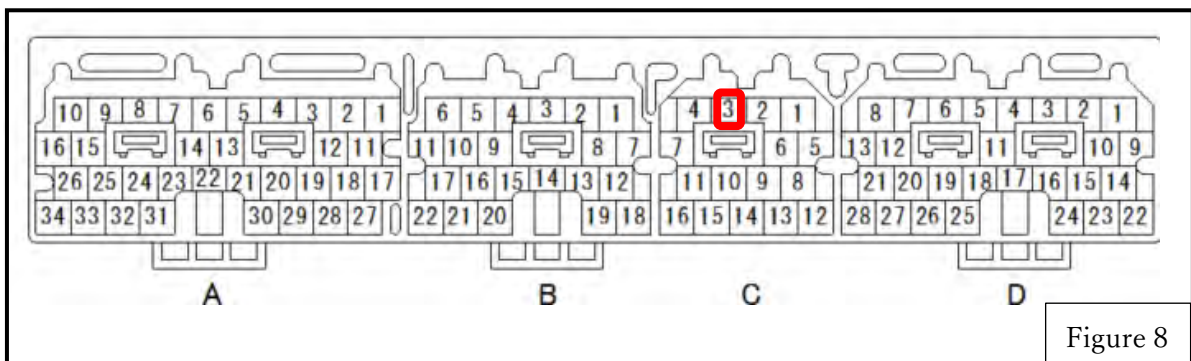


Figure 8

Mark II, Verossa (JZX110) (Fig. 9)

(This is a view from the terminal insertion side.)

E-6 in Fig. 8 is the engine check lamp signal line.

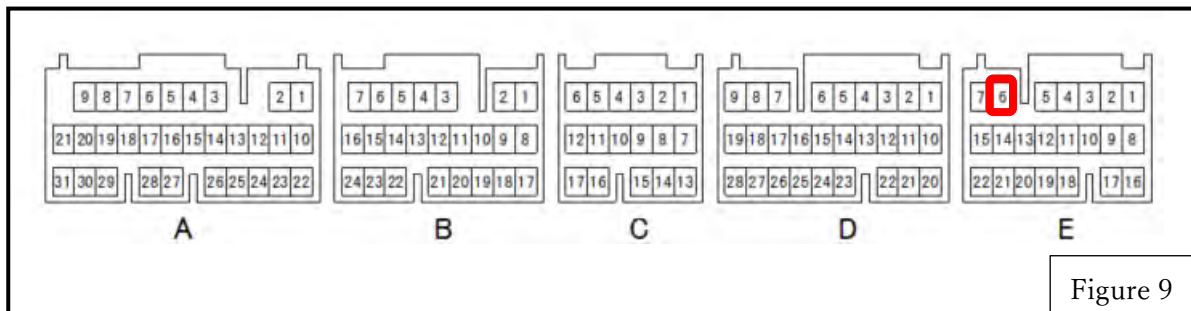


Figure 9

- ② Disconnect the check engine light wiring connected to the stock ECU, and connect the wiring on the vehicle side to one of the terminals of V Pro's OPT switch output LSH (terminal number 29,30,37,38). Insulate the wiring on the ECU side. (Figure 11)

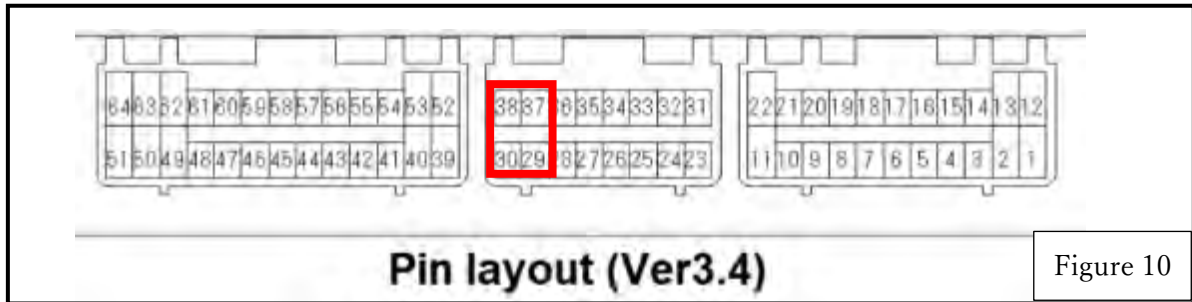


Figure 10

Pin	Details	Pin	Details
23	Option Voltage Input #11 [Type2]	31	Ignition output #1
24	Option Voltage Input #12 [Type2]	32	Ignition output #2
25	Option Switch Input #1	33	Ignition output #3
26	Option Switch Input #2	34	Ignition output #4
27	Option Switch Input #3	35	Ignition output #5
28	Option Switch Input #4	36	Ignition output #6
29	Option Switch Output (LSH) SW9	37	Option Switch Output (LSH) SW11/Ignition output #7
30	Option Switch Output (LSH) SW10	38	Option Switch Output (LSH) SW12/Ignition output #8

※ V Pro terminal numbers 29,30,37,38 do not have terminals, so terminal set with V Pro harness (4299-RA009).

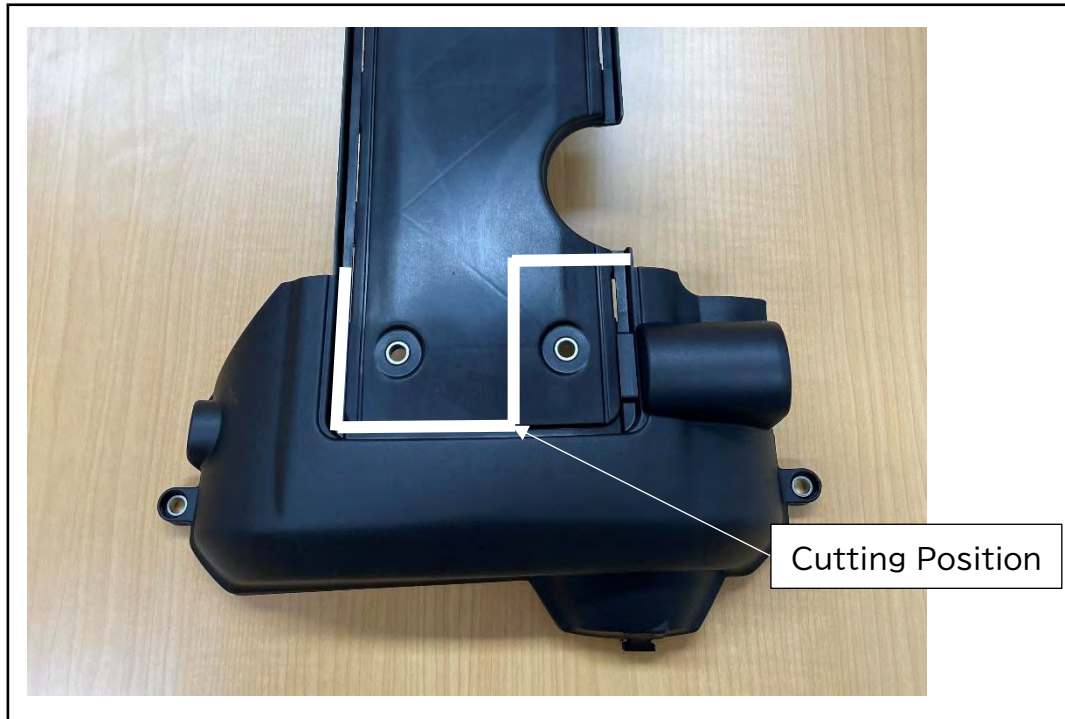
- (12) Connect the harness on the engine room side and the harness on the ECU side. Make sure that each harness is not pulled too much and that each connector is fully inserted. Also, if necessary, fasten the harness with a tie wrap.

 **Caution**

•Make sure that each harness is not pulled excessively and that each connector is fully inserted.

- (13) Process and attach a stock timing belt cover to protect chemicals and debris any unwanted objects that could otherwise freely enter the system

When processing the stock timing belt cover, please refer to the example below. The example are just an examples, so please process according to the engine of your vehicle.



- (14) Make sure that the installation process is correct, and then install the negative terminal of the battery.

## 2. Dwell Time (Recommendation) & F-CON setting



### Caution

- Be sure to set the dwell time with a specialist and check that the engine is properly controlled. There is a risk of misfire.
- Do not set a value greater than the recommended dwell time. The ignition coil may be damaged.

(1) Set the IG signal voltage of the engine ECU to 5V.

For an ECU whose IG signal voltage cannot be adjusted, check with the manufacturer of the ECU to see what V control the signal voltage is. Those that are not controlled by 5V cannot be used.

V Pro Setting

The screenshot shows the 'Parameter Setting' window for 'Ignition 1'. The left sidebar lists various settings categories like Crankshaft/Camshaft, Input Setting, Output Setting, Fuel, and Ignition. The main area is titled 'Ignition 1' and contains several sub-sections: 'Ignition Control Type' (Ports 1-6, all set to 'Main x1'), 'Ignition Group Distribution' (Ports 1-6, all set to 'Group1'), 'Ignition Control Voltage' (radio buttons for 5V and 12V, with 5V selected and circled in red), 'Ignition Control Logic' (radio buttons for Normal and Reverse, with Normal selected), 'Start Ignition Timing' (0.0 [BTDC]), 'Deceleration Fuel Cut Time Out Coefficient' (0.0 [%]), and two trim tables for 'Air Conditioner Trim' and 'Load 1 Trim', both with Trim Value 0.0 [degree] and Decrement Coefficient 100 [%].

(2) Set the dwell time (energization time) for each engine speed by referring to the recommended values below.

For general-purpose ECU

Engine RPM[rpm]	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500	8000
Dwell time[ $\mu$ sec]	4000	4000	4000	4000	4000	4000	3700	3600	3600	3600	3600	3600	3600	3600	3600	3600	3600

V Pro Setting

[F5] Ignition Control - Main Close Angle Time																
RPM	0	500	1000	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000	6500	7000	7500
Time	4000	4000	4000	4000	4000	4000	3700	3600	3600	3600	3600	3600	3600	3600	3600	3600

 **Caution**

Set the dwell time according to the specifications and characteristics of each engine.

(3) The recommended dwell time (energization time) for each power supply voltage is as follows. (Reference rotation speed 3600 rpm, reference voltage 13 V)

Voltage[V]	8.0	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0
Correction ratio[%]	200	195	181	145	114	100	89	81	73

V Pro Setting

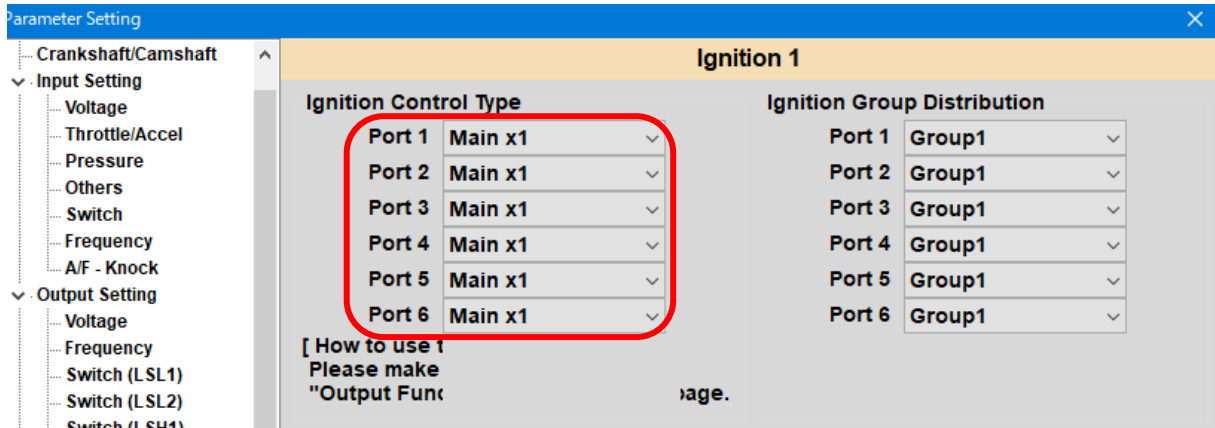
•In the case of F-CON, the “Main Close Angle Time Trim” has to follow below.

[F5] Ignition Map 1 - Main Close Angle Time Trim																
Voltage	8.0	9.0	9.5	10.0	10.5	11.0	11.5	12.0	12.5	13.0	13.5	14.0	14.5	15.0	15.5	16.0
Trim Value	100.0	95.0	88.0	81.0	63.0	45.0	29.5	14.0	7.0	0.0	-5.5	-11.0	-15.0	-19.0	-23.0	-27.0

(4) Simultaneous ignition method (group ignition method) About car ignition setting  
 If the genuine ignition method is the simultaneous ignition method, you need to change the setting of your after-sales ECU to the independent ignition method.

V Pro Setting

Set ignition 1 of the ignition output setting of the parameter setting as follows.



Parameter Setting

**Ignition 1**

**Ignition 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

**Ignition Group Distribution**

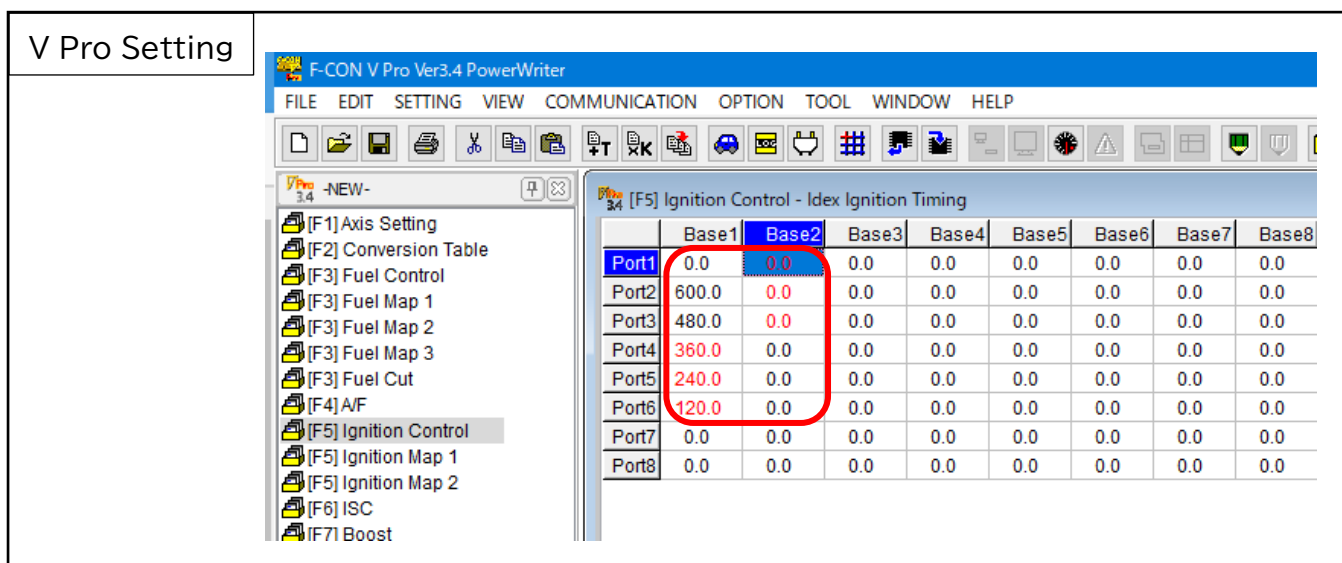
Port 1	Group1
Port 2	Group1
Port 3	Group1
Port 4	Group1
Port 5	Group1
Port 6	Group1

[ How to use 1  
Please make  
"Output Func  
page.

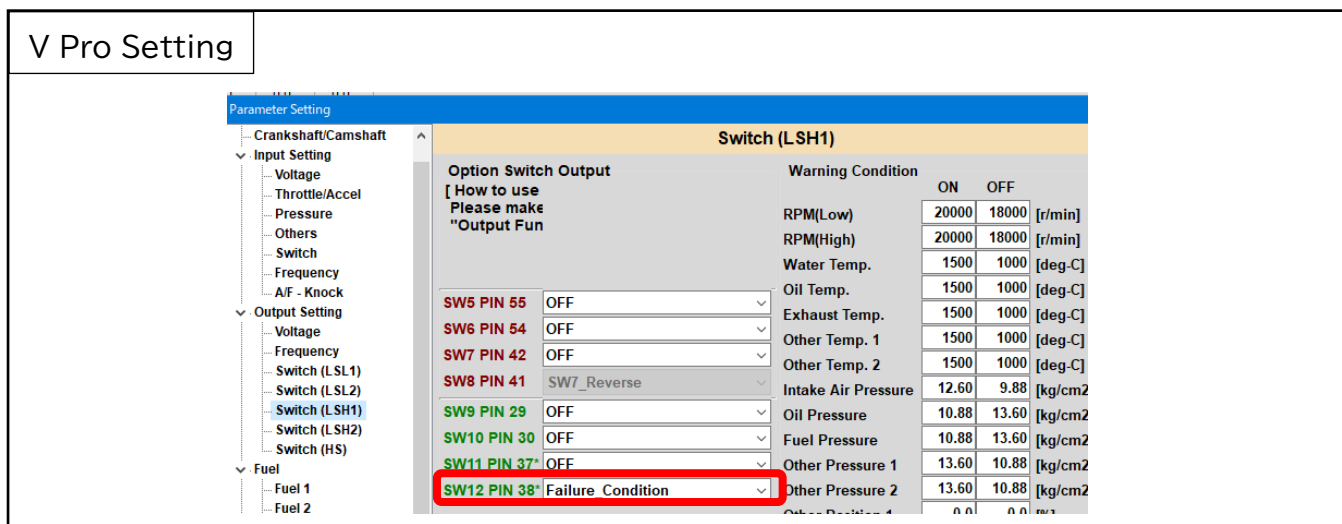
Ignition reference timing of the ignition control map to change

Criterion 1: Port 1, Port 2, Port 3, Port 4, Port 5, Port 6 = 0,600,480,360,240,120

Criterion 2: Port 1, Port 2, Port 3, Port 4, Port 5, Port 6 = 0,0,0,0,0,0



- (5) Of the terminals selected with PIN29,30,37,38 used in the wiring to avoid lighting the check engine light in (1)-②  
 Select the content as "Failure Condition" of LSH1 in the parameter settings.

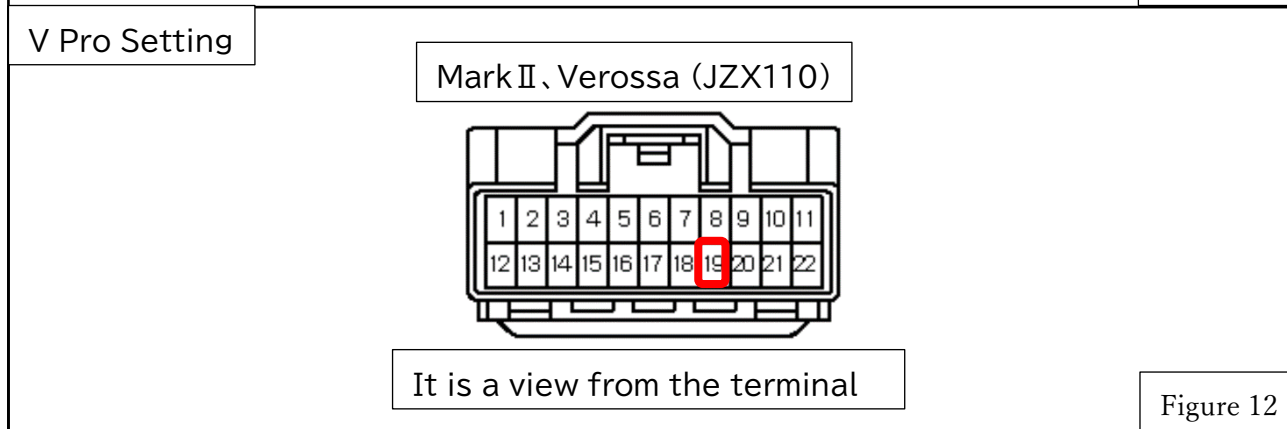
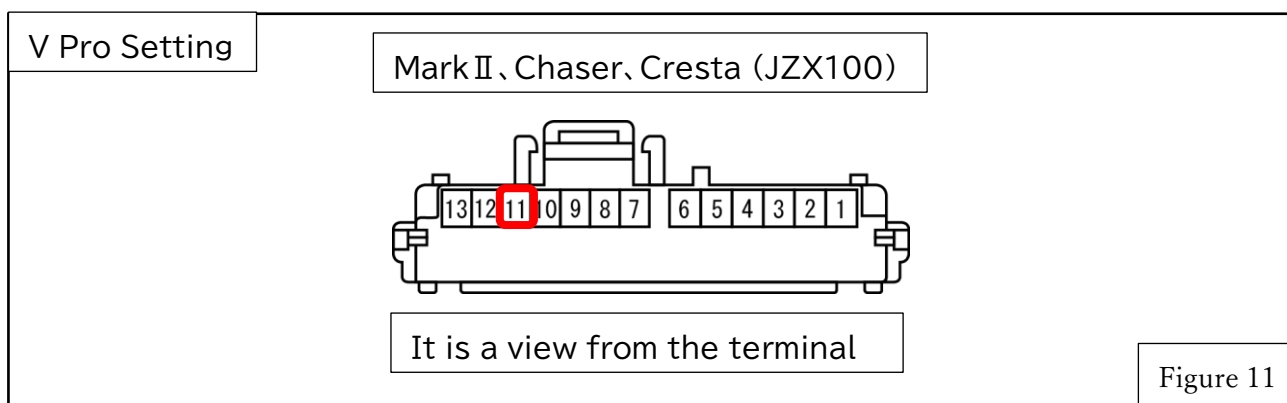
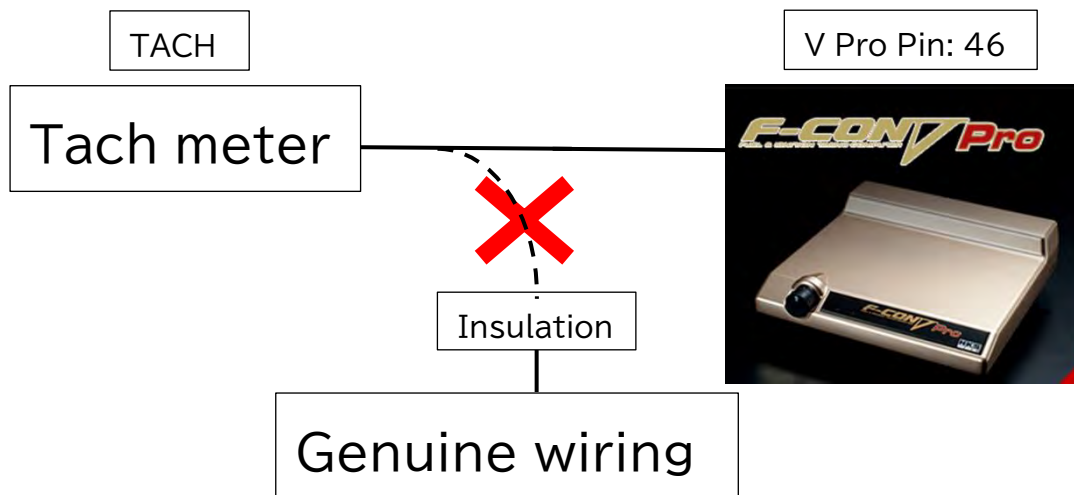


After completing the settings, check that the check engine light lights up when the IG is on and that the check engine light turns off when the engine starts. If the check engine light does not indicated after starting the engine, it is possible that there is a wiring error or an error code remains on the V Pro.

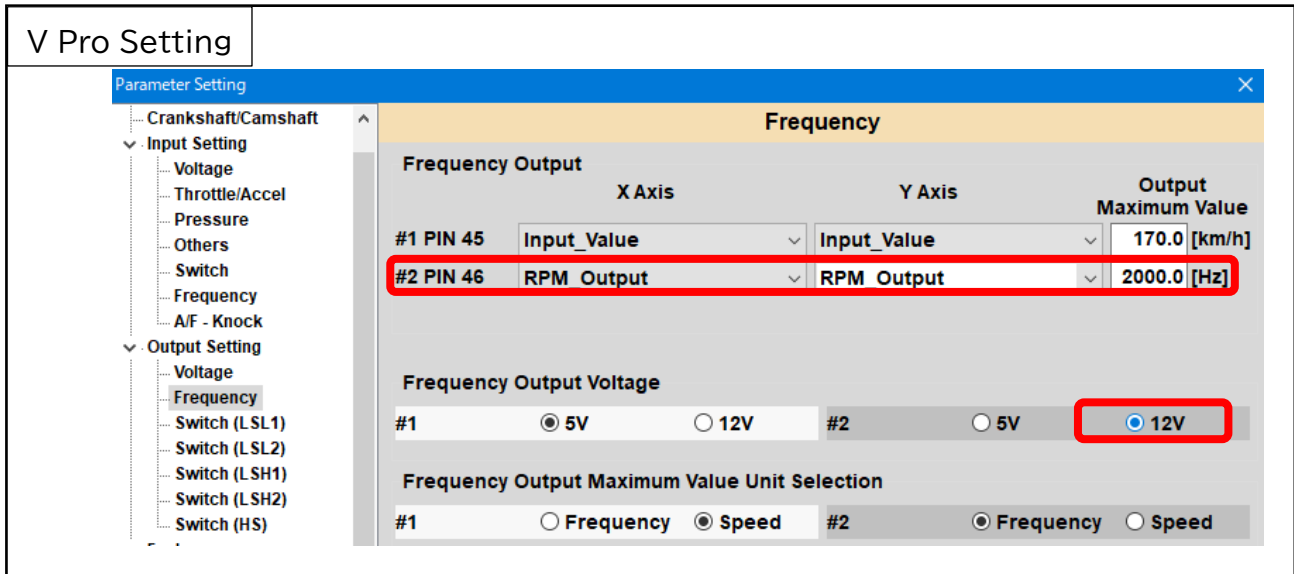
If the V Pro error code remains, check the wiring inside the error code and take appropriate action.

(6) About vehicles where the tachometer does not work

It is possible to work the tachometer by the frequency output of the parameter setting of V Pro. Insert a new terminal into V Pro terminal No. 46, connect it to the vehicle tachometer from No. 46 (wiring diagram TACH), and set the V Pro setting to rotary output. (Figure 12)



Set PIN46 of [Parameter setting]-[Output setting]-[Frequency] as follows.



For ECUs other than V Pro

Determine the ignition reference timing by referring to the wiring work in (10).

If you have any questions, please contact the manufacturer of your ECU.

### 3. The checklist before starting the engine

Description	Check
Make sure ignition coils are plugged.	
Make sure connectors and harnesses are routed and connected Properly.	
Make sure bracket is fixed.	
Make sure there excessive tension or slack in the harness.	
Make sure various insulation treatments properly performed.	
Make sure there are no tools in the engine room.	
Make sure reconnect the negative cable onto the battery.	
Make sure that all bolts and nuts are tightened.	
Make sure the ECU settings such as dwell time appropriate.	



#### Caution

- Incomplete installation of connectors/harnesses may indicate the check engine light.
- Use without setting may lead to engine damage/failure.



## 4. The checklist after starting the engine

Description	Check
Make sure all installed components and harnesses do not come in contact with other parts.	



### Caution

·If the harness are interfering with something, it will lead to a broke the harness.

## 5. Troubleshooting

○If this product is not working Properly, check the list below and take necessary work.

Symptoms	Cause	Measurements
<ul style="list-style-type: none"> <li>·Engine does not start</li> <li>·Unstable idling</li> </ul>	Spark plugs did not completely installed. Coil is not inserted Properly. Harness is not connected. Plug is passed its lifespan. Grounding Issue.	<ul style="list-style-type: none"> <li>·Make sure connector</li> <li>·Make sure plug and ignition coil</li> <li>·Check engine ground.</li> </ul>
Misfire under high rpm, heavy load.	Plug is not inserted Properly. Coil is not inserted Properly. Plug is passed its lifespan.	<ul style="list-style-type: none"> <li>·Make sure connector</li> <li>·Make sure plug and ignition coil</li> </ul>

If the above guidelines doesn't solve the issue, please contact a HKS authorized distributor/dealer where you purchased.

## 6. Operation



### Warning

- If the vehicle gets damaged, have the repairs performed by a professional.
- If you experience any noises, scents, or vibrations from the vehicle while driving, reference the factory service manual.

- In case of accident or other issue, do not try to solve the issue and contact HKS authorized distributor/dealer.
- If you experience any noises, scents, or vibrations from the vehicle while driving, reference the factory service manual.

## 7. After-sales service

For inquiries about this Product, please contact a Professional dealer or the store where you purchased the Product.

Contractor	
Phone number	
Person in charge name	
Customer name	





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