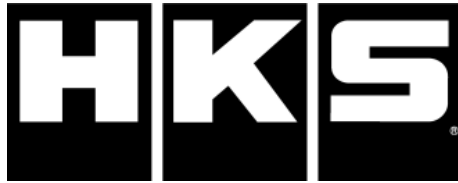


# SUPER FIRE RACING COIL PRO

## INSTRUCTION MANUAL



NAME OF PRODUCT	SUPER FIRE RACING COIL PRO
UASGE	Automotive parts
PART NUMBER	43005-AT001
MANUAL NUMBER	E05341-T43010-00
APPLICATION	<p>TOYOTA SUPRA(JZA80)、ARISTO(JZS161)            (Vehicles equipped with the following engine models)            ※ Cannot be installed on vehicles equipped with 2JZ-GE.            ※ Aristo (JZS147) needs to be bracketed because it interferes with the heater hose.</p>
ENGINE	2JZ-GTE
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 factory-spec 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.

SAFTY 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	6	M6×40
6	Hexagon high nut	6	
7	Hexagon nut with flange	6	
8	Rosette washer	7	Red Anodized
9	Hexagon socket head cap screw	7	M6×20
10	Tie wrap	3	
11	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	1	4103-RT007	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)
3	Carbon Timing Belt Cover 2JZ VVT-i	1	45999-AK028	Timing belt cover for preventing foreign matter from entering. (Only compatible with vehicles with VVT-i in the latter half of 2JZ)

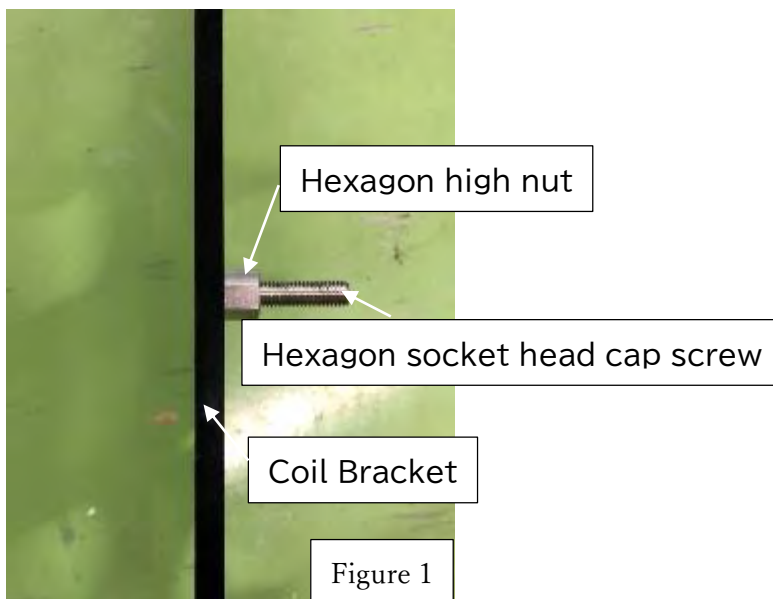
# 1. Installation



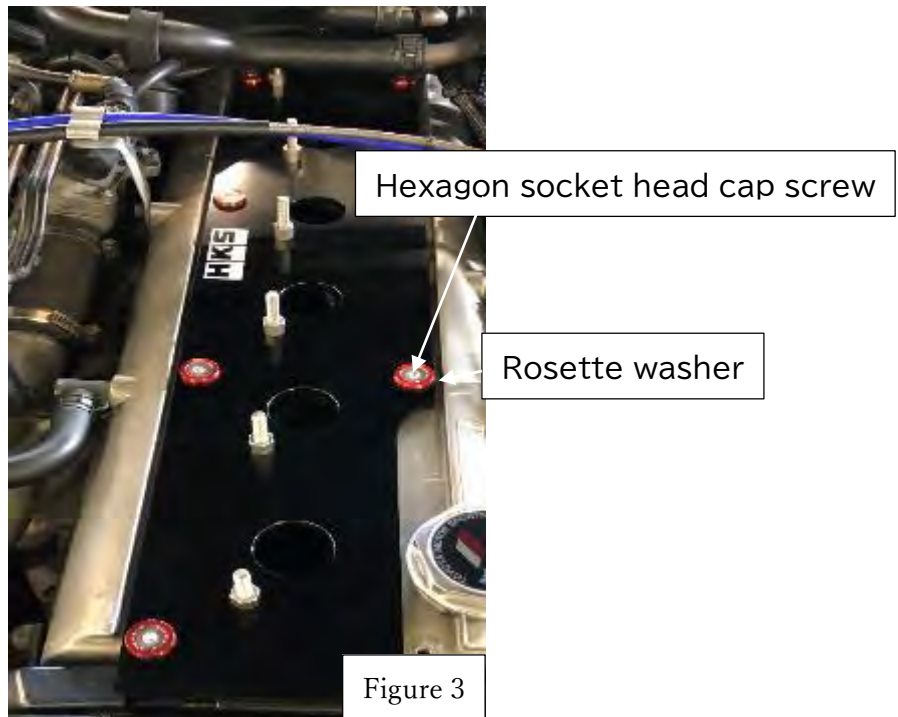
## Caution

- 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 genuine ignition coil. If you want to leave the wiring of the genuine ignition coil on the vehicle body side, waterproof each connector. When removing the wiring of the genuine ignition coil, insulate the wiring.  
For water Proof / insulation treatment, use heat-resistant materials that can be used in the engine room.
- (4) Attach the hexagon socket head cap screw (M6 x 40) and hexagon high nut to the coil bracket. (Tightening torque  $11.3 \pm 1.2 \text{ N}\cdot\text{m}$ ) (Figure 1)  
For JZA80 Supra (early and late), the ignition coil No. 6 is close to the heater hose and there is a risk of interference, so change the fixing position of the No. 6 hexagon socket head cap screw (M6 x 40) and hexagon high nut. (Figure 2)



- (5) Temporarily attach the coil bracket to the engine head with a rosette washer and a flat head bolt (M6 x 20) with a hexagon socket. (Figure 3)



- (6) Install the ignition coil. At this time, attach the plug gap rubber straight to the plug terminal.

- (7) Secure the ignition coil with a flanged nut.

(Tightening torque  $7.0 \pm 0.7 \text{ N}\cdot\text{m}$ )(Figure 4)

After that, attach the hexagon socket head cap screw (M6 x 20) temporarily attached in step (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 5)



## 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 6.

※ Aristo also recommends the same position.



Figure 6

(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 7)

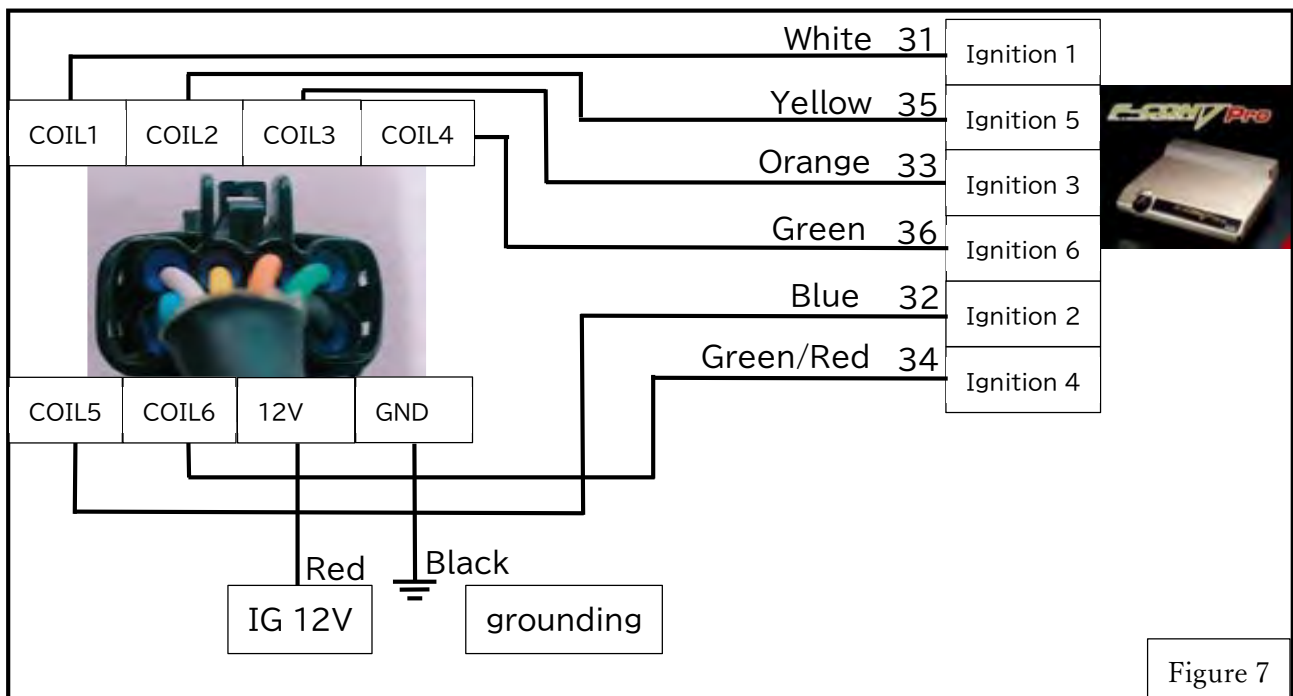


Figure 7



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#6
12V	red			IG12V		-
GND	black			gronding		-

※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. (Fig. 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.

HKS Turbo Timer Harness TT-7 (4103-RT007) This is a view of the coupler from the terminal insertion side.

The pin location of IG 12V is number 6. (Figure 8)

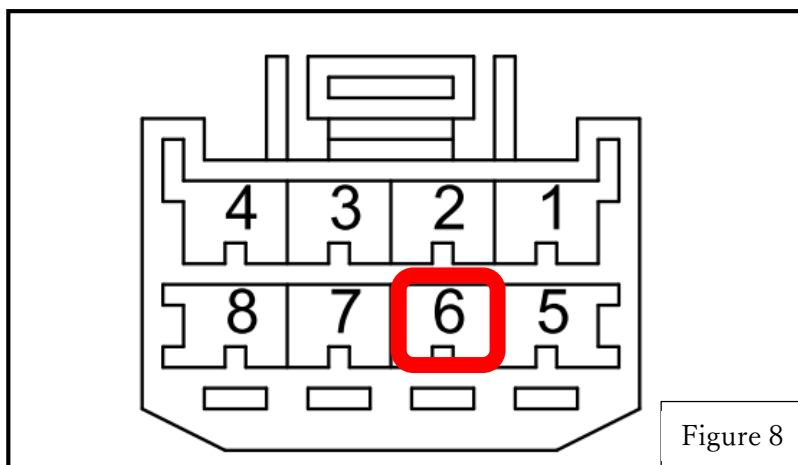


Figure 8

※If you use the HKS Turbo Timer Harness TT-7 (4103-RT007) (sold separately), you can wire the 12V line (maintenance manual IG2) without Processing the genuine wiring.





## 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 genuine 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 genuine ECU of each car.

JZA80 Supra early model, JZS147 Aristo (Figure 9)

(This is a view of the V Pro harness connector connected to the genuine ECU from the terminal insertion side.)

A6 is the check engine light line.

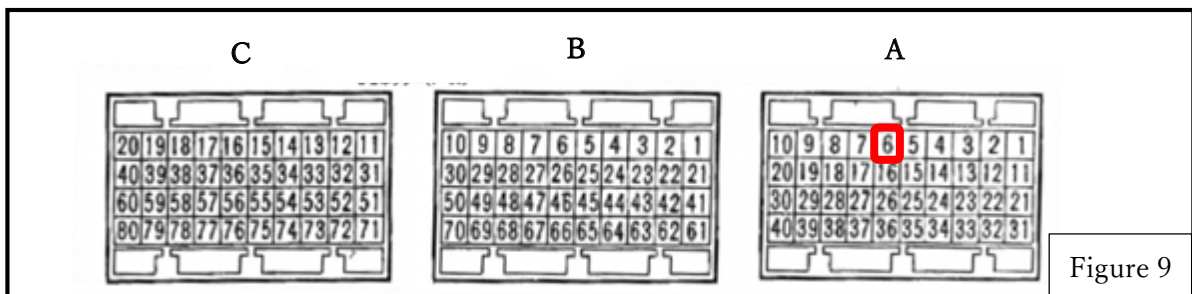


Figure 9

JZA80 Supra Late model / JZS161 Aristo (Figure 10)

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

E6 is the check engine light line.

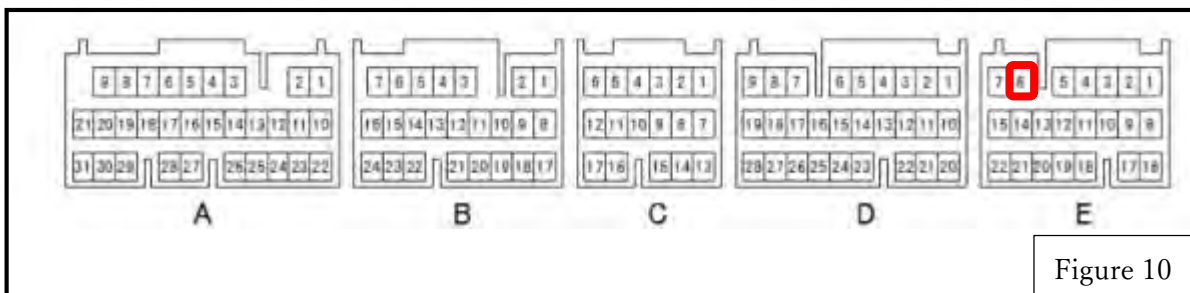


Figure 10

- ② Disconnect the check engine light wiring connected to the genuine 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)

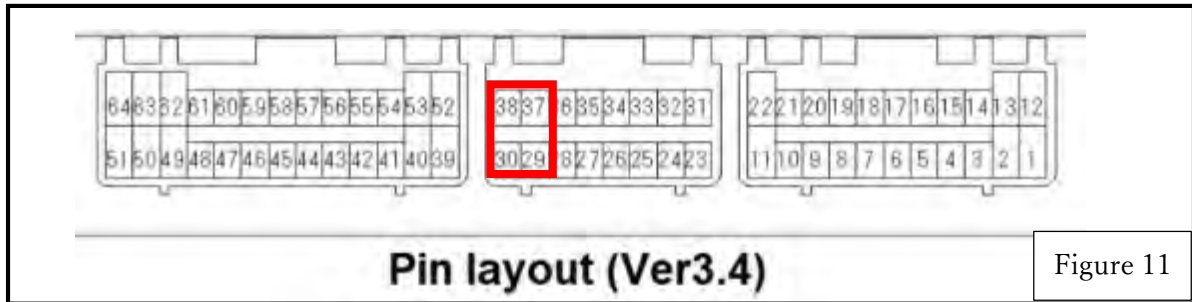


Figure 11

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).

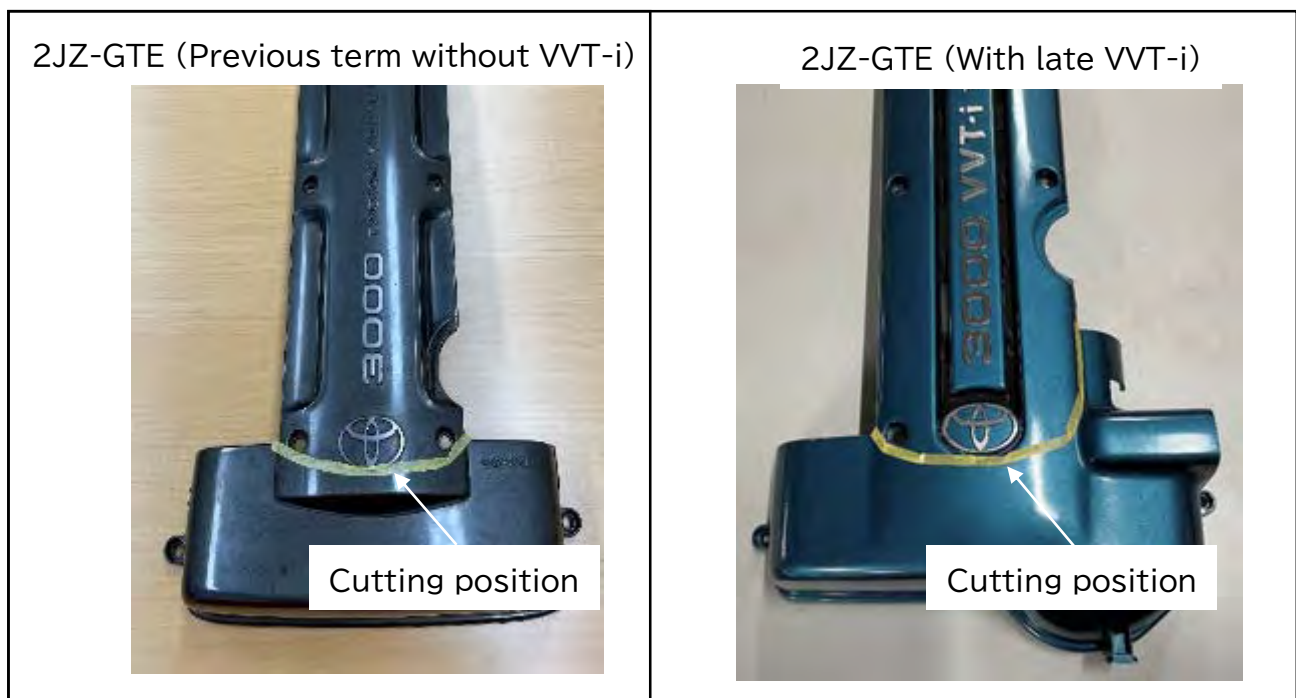
- (12) Connect the harness on the engine room side and the harness on the ECU side. Make sure that each harness is not pulled too much and that each connector is fully inserted. Also, if necessary, fasten the harness with a tie wrap.

- (13) If necessary, cut off the genuine timing belt cover and attach it to prevent foreign matter from entering the timing belt.

For vehicles with 2JZ-GTE VVT-i, use the Carbon Timing Belt Cover 2JZ VVT-i (45999-AK028) in Section 3 of [Separately Purchased Parts / Recommended Purchased Parts] on page 2 of this manual.

You can prevent foreign matter from entering the timing belt.

When cutting the genuine cover, refer to the following. The following cutting positions are just examples, so please cut according to the engine of the actual vehicle.



- (14) Make sure that the installation work 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

(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

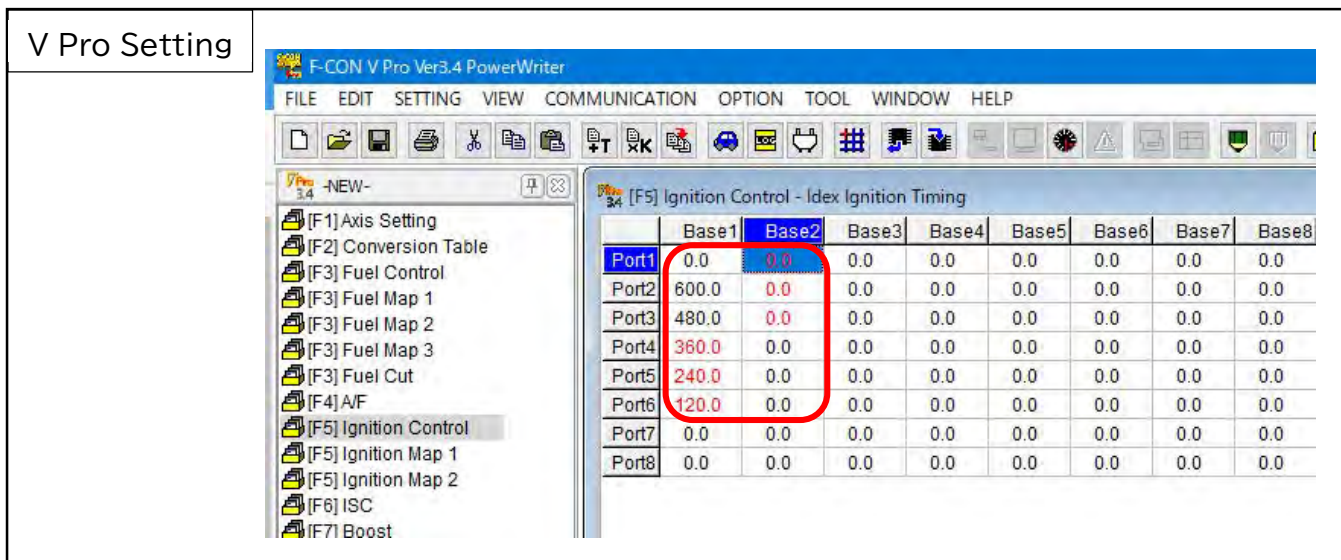
[ How to use 1  
Please make  
"Output Func  
page.



Ignition reference timing of the ignition control map to change

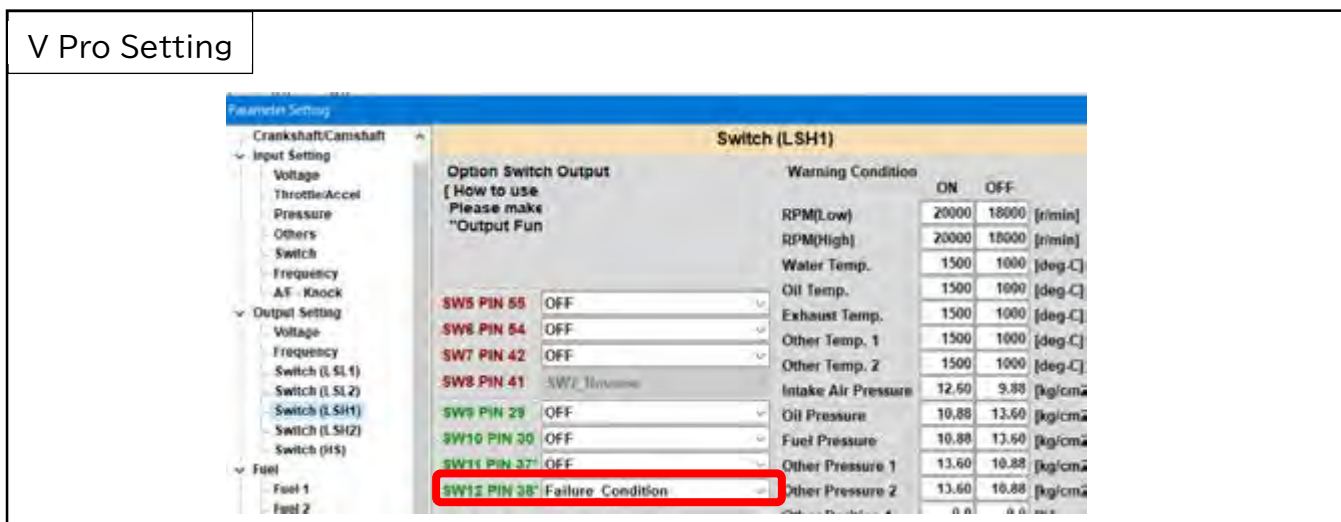
Criterion 1: Port 1, Port 2, Port 3, Port 4, Port 5, Port 6 = 0,600,480,360,240,120

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 2 of (11)

Select the content as "Failure Condition" of LSH1 in the parameter settings.

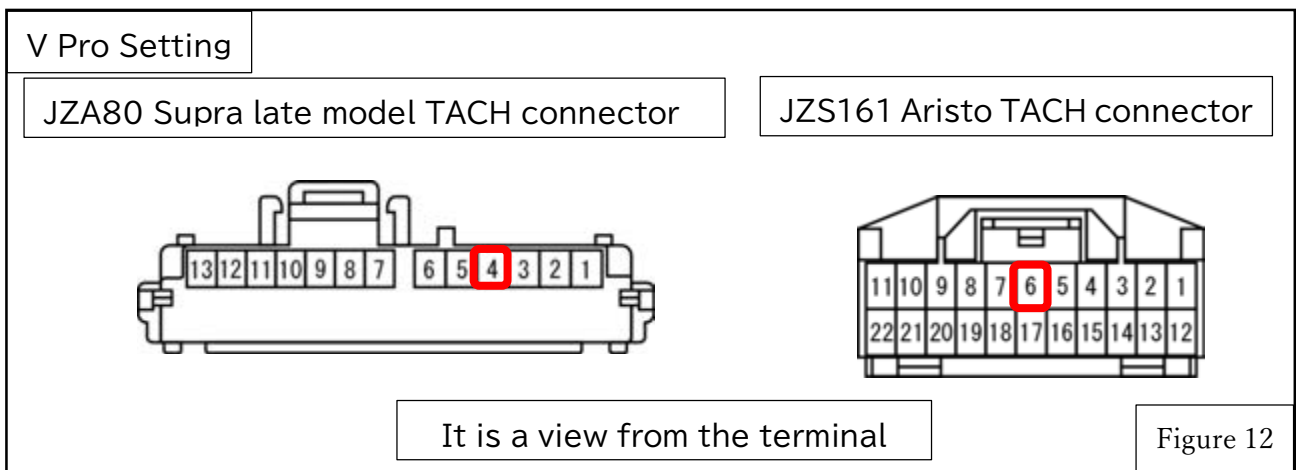
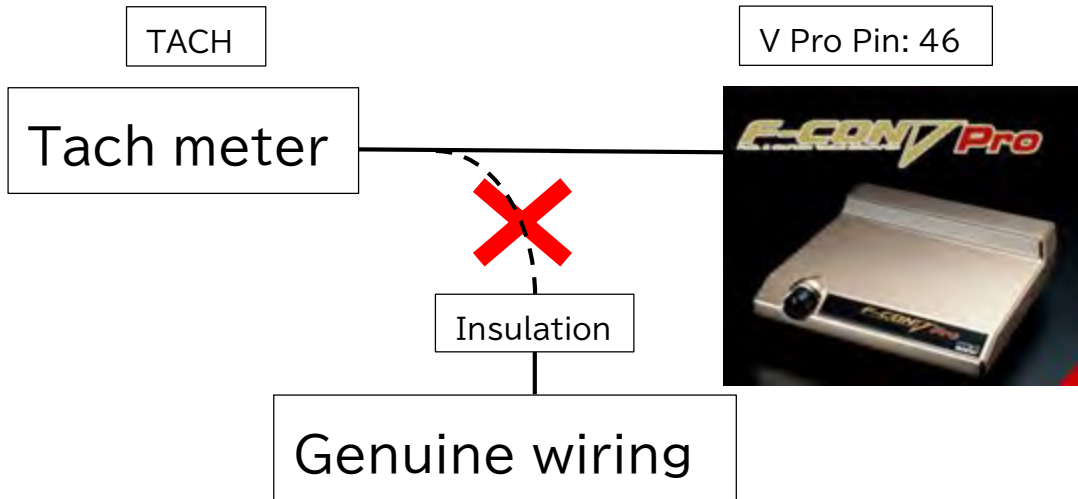


After completing the settings, check that the check engine light lights up when the IG is on and that the check engine light turns off when the engine starts. If the check engine light does not go out after starting the engine, it is possible that there is a wiring error or an error code remains on the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

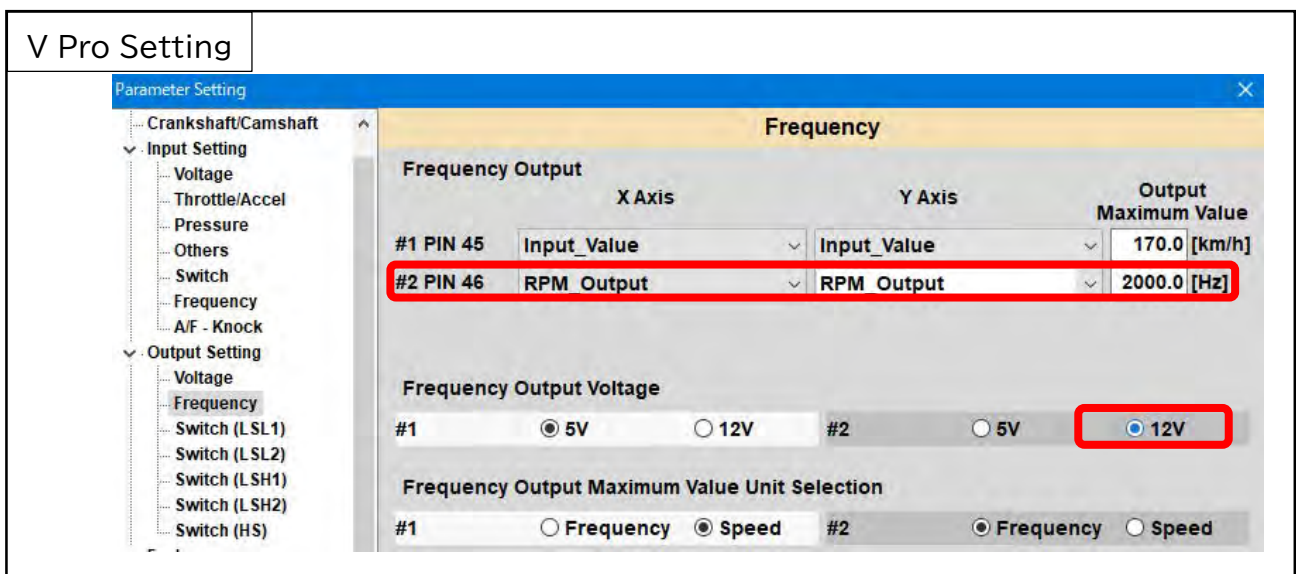
If the V Pro error code remains, check the wiring inside the error code and take a Propriate action.

(6) About vehicles where the tachometer does not move

It is possible to move 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 all installed components and harnesses do not come in contact with other parts.	
Make sure two O-RINGS are attached.	
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.	



#### 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.	
Make sure harness is not strongly twisted.	
Make sure are not made interference sounds.	



#### Caution

- To be routed the harness away from any other parts such as the hood, sharp edges, and pipes, etc.

## 5. Troubleshooting

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

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 dealer/distributor in your area.

## 6. Operation



### **Warning**

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

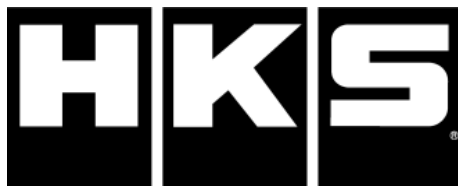
●In case of accident or other issue, do not try to solve the issue and contact HKS authorized dealer/distributor.

●If you experience any abnormal 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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