The 2nd generation

EVC-S

ELECTRONIC VALVE CONTROLLER typeS

Instruction Manual

HKS

www.hks-power.co.jp

Pursuing the Ultimate in Engine Performance and Efficiency.
Produced by HKS Company Limited.

NOTICE

This manual assumes that you have and know how 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.

HKS

45003-AK015

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Ver.3-1.01
45003-AK015

INTRODUCTION

Read this instruction manual prior to installation to ensure safe and correct usage and optimal product performance.

PRODUCT	EVC-S2
USE	Boost Pressure Controller for Turbocharged Automobile Engine
APPLICATION	DC12V Negative Ground Vehicles
PART No.	45003-AK015
REMARKS	・A fuel controller (e.g. F-CON V Pro, F-CON iS, etc) is required to use this product. ・When installing this product on twin turbocharged vehicle or a vehicle using a 4mm hose line, a separate Hose Set is required. ・When the boost pressure is increased, the factory ECU may activate a fuel cut. To deactivate the fuel cut function, a unit such as the HKS FCD is required. When using an HKS FCD, a fuel controller must be used as additional fuel tuning.

The HKS EVC enables the adjustment of the boost setting from inside the vehicles cabin area.

This product was developed to improve engine output and was designed to be used for racing on a closed circuit, where this unit is highly effective. When the engine output is improved, water and/or oil temperature may rise, and insufficient oil pressure may occur. Always monitor these vital readings to obtain optimal engine performance.

If using this product on a public roads, follow all necessary laws, procedures and regulations for a tuned/modified vehicle.

●Compact Size・4 Separate Units
EVC-S includes 4 separate units: Display Unit, Control Unit, Boost Sensor, and Solenoid Valve.
Each unit is compact and easy to install in the engine bay and the interior.
Since the Boost Sensor is independent, hose routing does not need to run into the vehicles interior.

●Capable of controlling High Boost
EVC-S can control up to 250 kPa (36.0 PSI).

●Simple Boost Setting
Boost control is performed by inputting simple data into each of boost modes A, B, C, and D, achieving intuitive operability.

●Return Function
The boost setting returns to the factory setting when the power is turned off. On some vehicles, the boost value may be lower than the boost before installing the EVC-S.

●4 boost setting functionIndependent boost settings can be made for boost modes A, B, C, and D, so you can use them depending on the purpose.

●Warning Function
If the boost level exceeds the warning value, the unit will warn the user will an audible buzzer and visually on the display. The boost value will be lowered to the set value. This function protects the engine and turbocharger from excessive boost.

●After Image Display Function
When the boost changes from positive pressure to negative pressure, the maximum boost under positive pressure can be displayed for 3 seconds. This function can be turned off.

●Data Memory Function
Each setting value is saved in the internal memory; the saved values are retrievable even after the ignition is shut-off or the battery is disconnected.

●Exhaust Bypass Select Function
Can be used as swing valve type (internal wastegate/actuator) or poppet valve type (external wastegate) for a large capacity turbocharger.

●Boost Unit of Measure Select Function
The boost unit of measure is selectable between kPa and PSI.

●Data Lock Function
The setting data can be protected by a password to prevent unwanted or accidental changes.

●This manual indicates items you need to pay attention to in order to install this product safely and lists precautions to avoid any possible damage and/or accidents.
●For any missing, defective and/or damaged parts, contact your Authorized HKS Dealer.
●This product was developed for racing use. To use this product on the public road, follow the necessary laws, procedures and regulations for a tuned/modified vehicle.
●HKS will not be responsible for any damage caused by incorrect installation and/or use or use after modification and/or dismantling of this product.
●This product was designed based on installing it onto a factory vehicle or a vehicle using other HKS products. The performance and/or safety cannot be guaranteed if this product was installed onto other inapplicable vehicles.
●This product works only on vehicle with DC12V negative ground.
●The specifications of this product are subject to be changed without notice.
●This manual is subject to be revised without notice.
●This manual must be given to the end user after installation is complete.

INDEX

SAFETY PRECAUTION

Below are symbols used in this manual to highlight areas where.

⚠ WARNING –Risk of severe injury or death may result if warning is not acknowledged or followed.

⚠ CAUTION –Risk of injury to self, damage to vehicle or property may result if caution is not taken.

⚠ WARNING

- Make sure to work on the vehicle in a well-ventilated area to prevent possible explosion or fire.
- Do not mount the unit where it can distract driving.
- Do not install this product on a 24V vehicle. It is designed for use on a 12V vehicle.
- Make sure to remove the cable from the negative terminal of the battery to avoid possible damage to other electronics during installation.
- Make sure to hold connectors when removing them to avoid possible damage to other electronic parts caused by disconnections or by a short circuit.
- Stop using the product if any unusual conditions are noticed; it may cause a fire or an electrical shock. Consult an authorized dealer immediately.
- Do not operate the EVC-S2 while driving to avoid the possiblity of an accident.

⚠ CAUTION

- ●Do not install this product by yourself unless you know how to use the tools and equipment necessary to safely perform service operations on your vehicle.
- ●Do not modify, disassemble and/or remodel this product and any of its attached parts.
- ●Handle the parts with caution at all times.
- ●Avoid allowing oil and/or water from entering the unit. It may cause damage to the engine.
- ●Prior to installation, make sure that the engine bay temperature has cooled. Failure to let the engine cool can lead to severe burns.
- ●Select the appropriate exhaust bypass type. Selecting the wrong type may cause damage to the vehicle.
- ●Install the unit away from excessive heat or water to avoid possible malfunction and damage to the engine.
- ●Do not tie or bundle a vehicle fuel line with any of the other hoses and/or harnesses. It may cause severe damage to the vehicle.
- ●Make sure all connections and wiring are not disconnected, short circuited or incorrect. It may cause an electrical shock or damage to the vehicle.
- ●Use the provided splices and install them to the correct positions. If not, it may cause serious damage to the vehicle.
- ●Insert the vacuum filter and replace it at regular intervals. If not, it may cause damage to the vehicle.
- ●When installing the vacuum filter, make sure no oil or lubricants are existant to cause the hose to come off. If a hose comes off, it may cause damage to the vehicle.
- ●Replace the vacuum filter earlier than the regular interval if there is excessive build up. Dirt build up may cause an inability to control boost, which may cause damage to the engine.
- ●Install the air relief valve of the Valve Unit downward to avoid allowing oil and/or water from entering the valve. It may cause damage to the vehicle.

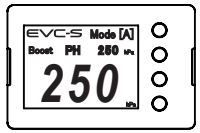
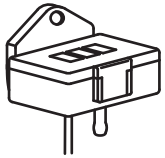
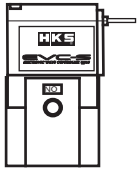
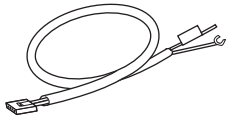
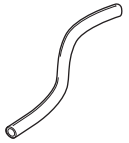
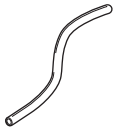
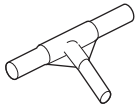
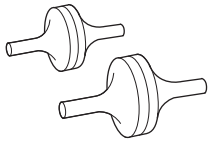
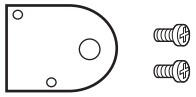
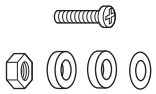
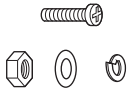
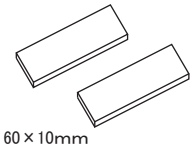
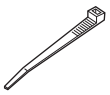
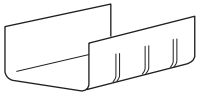
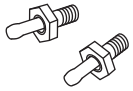
⚠ CAUTION

- ●Do not raise the boost excessively. It may cause damage to the engine and/or the turbocharger.
- ●The warning function must be activated to prevent any damage to the engine caused by over-boosting.
- ●Do not test the product on the vehicle on a public road.
- ●If this product or the vehicle does not perform properly, consult your authorized dealer immediately.
- ●Do not repair the product by yourself.
- ●If an unusual noise, smell and/or vibration is noticed, take the necessary measurements referring to the user's manual.
- ●Insulate wires left on the vehicle after removal of the product. It may cause damage to the electronic parts.

- ●Daily check-up of the vehicle must be done by the owner.
- ●This manual shows a typical installation. Actual installations may vary depending on the vehicle application.
- ●Refer to the factory manual when removing the factory parts.
- ●Make sure all connections and wiring are correct.
- ●Do not lose and/or damage any removed parts.
- ●Use the appropriate tools to tighten bolts and nuts with the correct torque specs to avoid damage.
- ●Make sure not to disconnect any wiring from the vehicle when installing the product.
- ●For a vehicle equipped with a boost control solenoid valve, remove the connector or hose to deactivate its function.
- ●There might be a dot that doesn't light and a dot that always lights in the display. This is due to the characteristic of the liquid crystal panel, and it is not mulfunction.

PART LIST

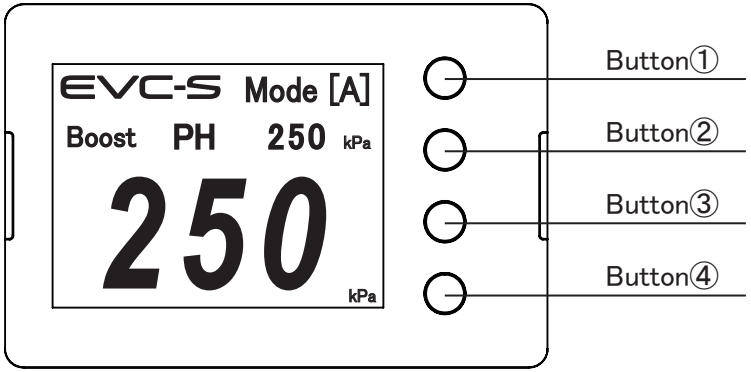
This product consists of the below-mentioned part. Please verify that all parts are in proper conditions before installation.

			
1 Display Unt	2 Control Unit	3 Boost Sensor	4 Solenoid Valve
1	1	1	1
			
1.2m	2.5m	1.5m	1m
5 Powe Supply Harness	6 Valve Extension Harness	7 Display Harness	8 6mm Hose
1	1	1	1
			
1m	4-4-4mm	4mm ,6mm	6mm用
9 4mm Hose	10 T-Fitting	11 Vacuum Filter	12 Hose Clamp
1	1	6mm……4599-RA016 4mm……4599-RA017 1 Set	2
			
Bracket x 1 M4 Bolt x 2	M6 Bolt・Nut x 1 M6 Flat Washer x 1 M6 Rubber Washer x 2	M6 Bolt・Nut x 1 M6 Flat Washer x 1 M6 Loock Washer x 1	60×10mm
13 Valve Bracket Set	14 Valve Install Hardware	15 Boost Sensor Install Hardware	16 Double-sided Tape
1 Set	1 Set	1 Set	2
			
100mm			
17 Tie Wrap	18 Splice	19 Fitting	20 Instruction Manual
5	1	2	1

- Tools required for installation: Circuit Tester or Volt Meter, Screwdriver, Socket Wrench, Wire Cutters, Hose Cutters and Pliers.
- Retain all unused parts.

FEATURES and FUNCTIONS

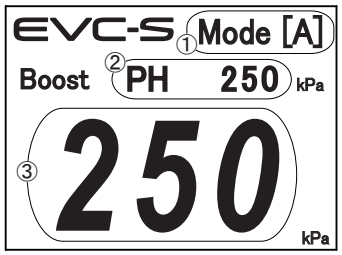
Display Unit



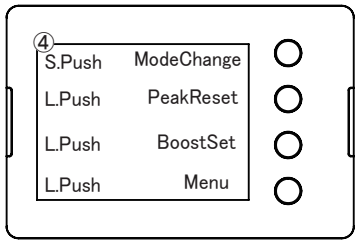
Name	Function
Button①	When the main screen is displayed, press briefly to switch between A, B, C, and D boost modes, and press and hold to switch EVC function on/off. When the EVC function is off, there is no control by EVC-S2 and the boost is normal. Each setting is used to determine selection items and values.
Button②	When the main screen is displayed, press and hold to reset the peak hold value, press briefly to display button information. When selecting an item for each setting, the selected item moves upward and the value changes in the positive direction.
Button③	When the main screen is displayed, press and hold to switch to boost set mode, press briefly to display button information. When selecting an item for each setting, the selected item moves downward and the value changes in the negative direction.
Button④	When the main screen is displayed, press and hold to switch to menu mode, press briefly to display button information. When in boost set mode, press briefly to switch to boost mode where settings can be changed. Press and hold in boost set mode, menu mode, or each setting mode to switch to the main screen display. Press briefly in each setting mode to switch to menu mode.
Button ①+②	When the main screen is displayed, press ① while quickly pressing ② to switch to circuit mode or scramble mode.

Display Unit

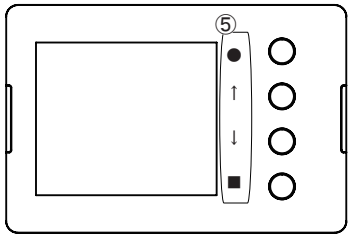
Main Screen



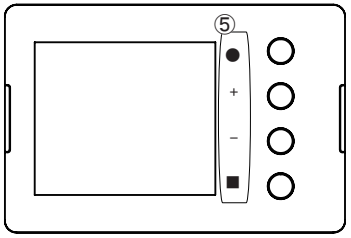
Button information screen



Button information screen
When selecting an item

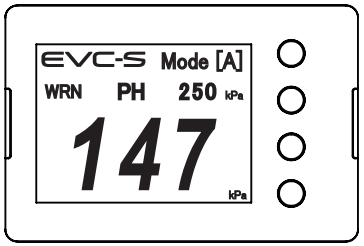


Button information screen
When changing settings



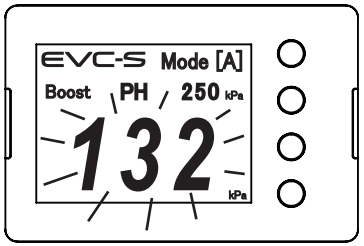
	Name	Function
①	Boost settings	Displays the current boost mode settings A to D, OFF.
②	Boost pressure peak hold value	Displays past maximum boost pressure.
③	Boost pressure	Displays the current boost pressure.
④	Button information	Displays the functions of each button when on the main screen. S.Push: Short press / L.Push: Long press Example: Press and hold button ④ to switch to the menu display screen.
⑤	Button information	Displays the function of each button when changing settings. ● : Decision ■ : Return ↑, ↓ : Move selection in the direction of the arrow +, − : Setting value plus/minus, function selection

Warning screen



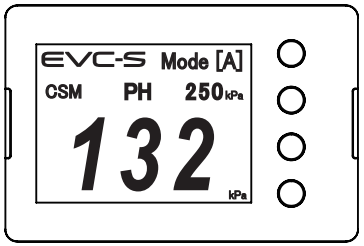
If the boost exceeds the warning setting value and the warning conditions are met, a warning will be activated and the boost will be controlled to be lowered by the set amount.
Also, WRN will be displayed flashing under the logo and a buzzer will sound.
The warning will be canceled when the boost pressure becomes 5 kPa or less.

After image screen



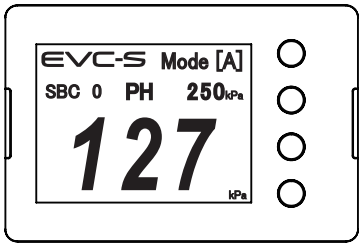
When boost pressure changes from positive pressure to negative pressure, the maximum boost pressure from positive pressure to negative pressure will be displayed blinking for 3 seconds.

Circuit mode screen



The EVC-S logo will turn red and CSM will be displayed below the logo.

Scramble mode screen



The EVC-S logo will turn red and SBC will be displayed below the logo.
While scrambling is in progress, the remaining scrambling time is displayed on the right side of the SBC and a buzzer sounds.

INSTALLATION

⚠ WARNING

●This product was designed to be used with vehicles using a DC12V negative ground. Do not use on a vehilce with a 24V ground.

●This manual shows a typical installation. Actual installation may vary depending on the vehicle application.

1. Removal of Battery Terminal

(1)Disconnect the negative terminal from the battery.

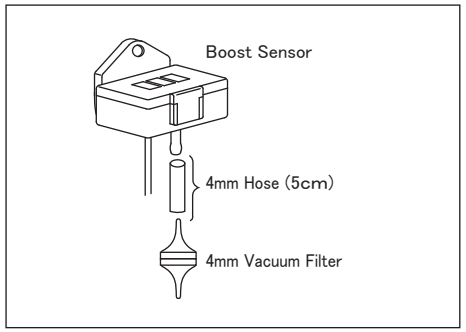
2. Hose Connection Layout

(1) Considering the hose and harness lengths, determine the appropriate mouning layout of Display Unit, Control Unit, Boost Senser, and Solenoid Valve.

ADVICE

・Leave some slack for the harness and hoses to avoid tension during engine movement.
・Do not install any components in high temperature areas.

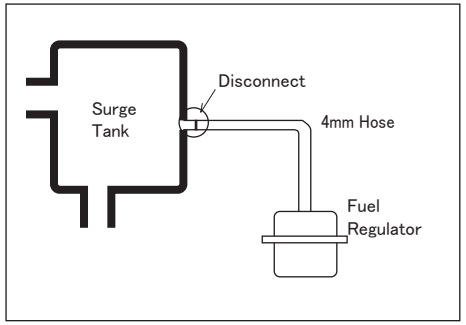
2. 1. Connecting the Boost Sensor



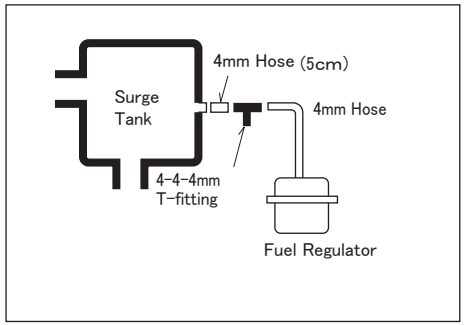
(1) Cut the Hose to 5cm in length and connect the cut hose to the 4mm Vacuum Filter as illustrated in the diagram.

NOTE

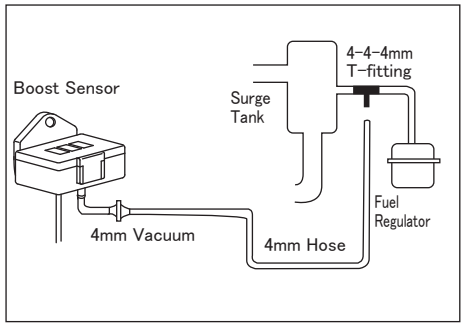
※Remove any oil and/or lubricants on or in the hose and Vacuum Filter.



(2) Disconnect the 4mm Hose Between the fuel regulator and surge tank from the surge tank side.



(3) Cut the 4mm Hose to 5cm in length and insert the insert the T-fitting as illustrated in the diagram.

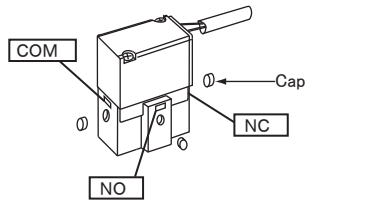


(4) Connect the T-fitting and 4mm Vacuum Filter using the remaining 4mm Hose as illustrated in the diagram.

NOTE

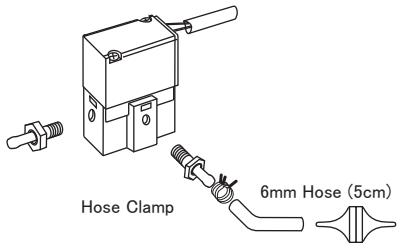
・Keep the 4mm Hose to a minimum langth.
・Remove any oil and/or iubricants on or in the hose and vacuum filter.
・Face the Boost Sensors fitting downward to prevent any oil and/or water from entering the sensor.

2. 2. Connecting the Solenoid Valve



(1) Remove the caps on the COM terminal, NO terminal, NO terminal, and NC terminal.

Swing Valve Type



Swing Valve Type

(2) Install the Fitting to the COM terminal and NO terminal.

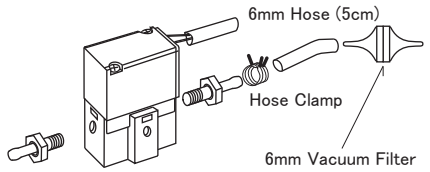
(3) Cut the 6mm Hose to 5cm in length, and connect the cut hose to the Fitting on the NO terminal and the 6mm Vacuum Filter.

NOTE

・Use a hose clamp to connect the hose to the fitting.

・Use Remove any oil and/or lubricants on or in the hose and vacuum filter.

Poppet valve Type



Poppet Valve Type

(2) Install the Fittings to the COM terminal and NC terminal.

(3) Cut the 6mm Hose to 5cm in length, and connect the cut hose to the 6mm Vacuum Filter.

NOTE

・Use a hose clamp to connect the hose to the fitting.

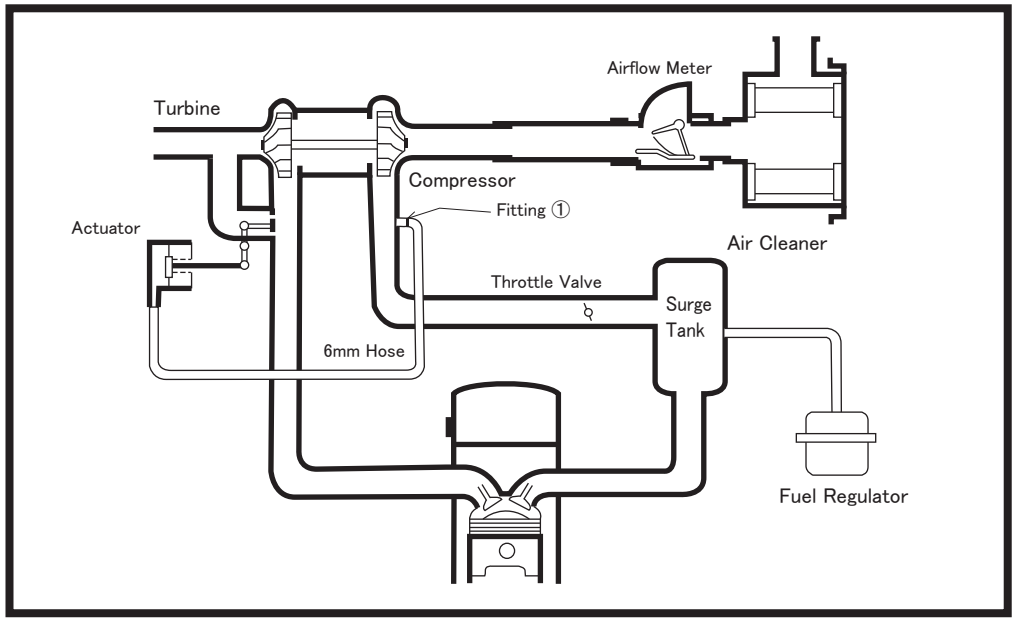
・Remove any oil and/or lubricants on or in the hose and vacuum filter.

(4) Refer to 2-4 to connect to the vehicle.

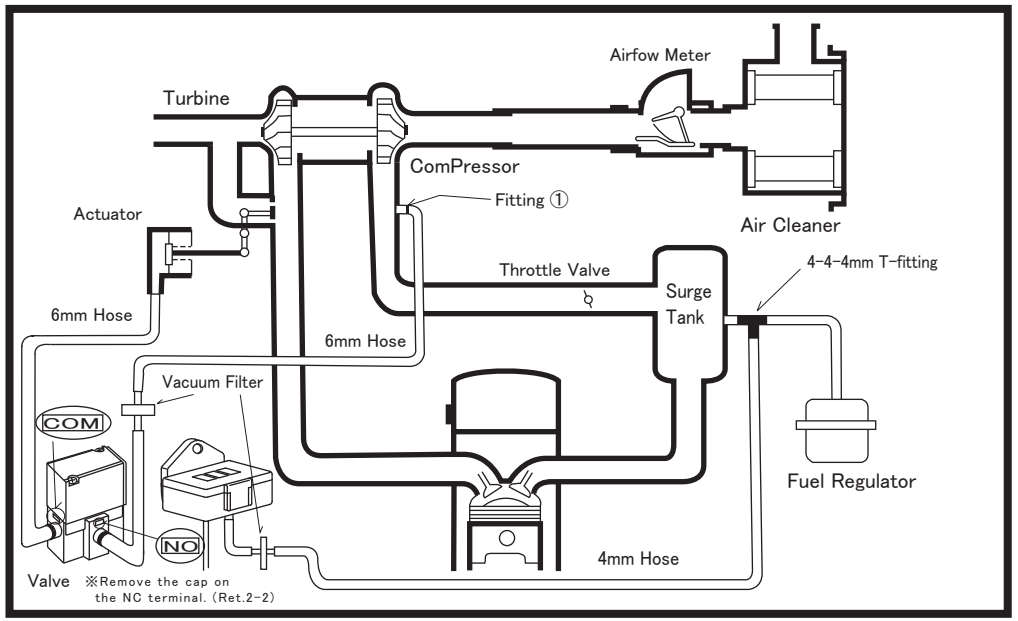
2. 3. Swing Valve Type

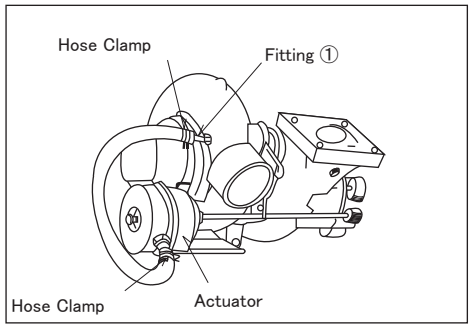
2. 3. 1. For Applications without a Boost Pressure Control Solenoid Valve

Before Installation (Factory Connection Layout)



After Installation

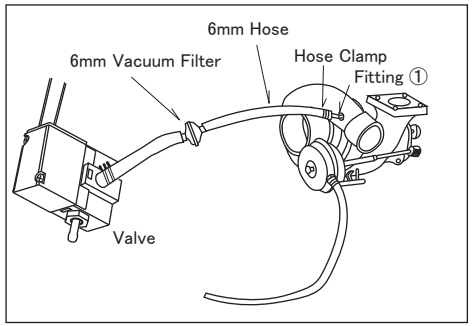




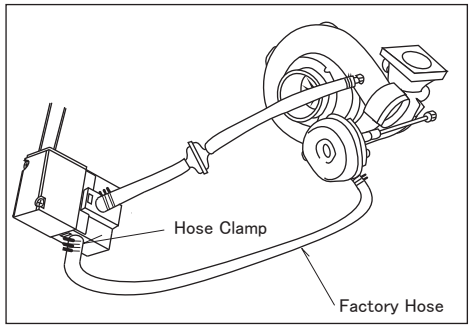
(1) Disconnect the hose connected to the actuator from fitting ① on the compressor side.

NOTE

・The position on the compressor side fitting ① may vary depending on the vehicle.
・Keep the removed factory hose clamp for later use.



(2) Connect the provided 6mm Hose to fitting ① and the 6mm Vacuum Filter on the NO terminal of the Solenoid Valve.



(3) Connect the factory hose from the actuator to the fitting on the COM terminal of the Solenoid Valve.

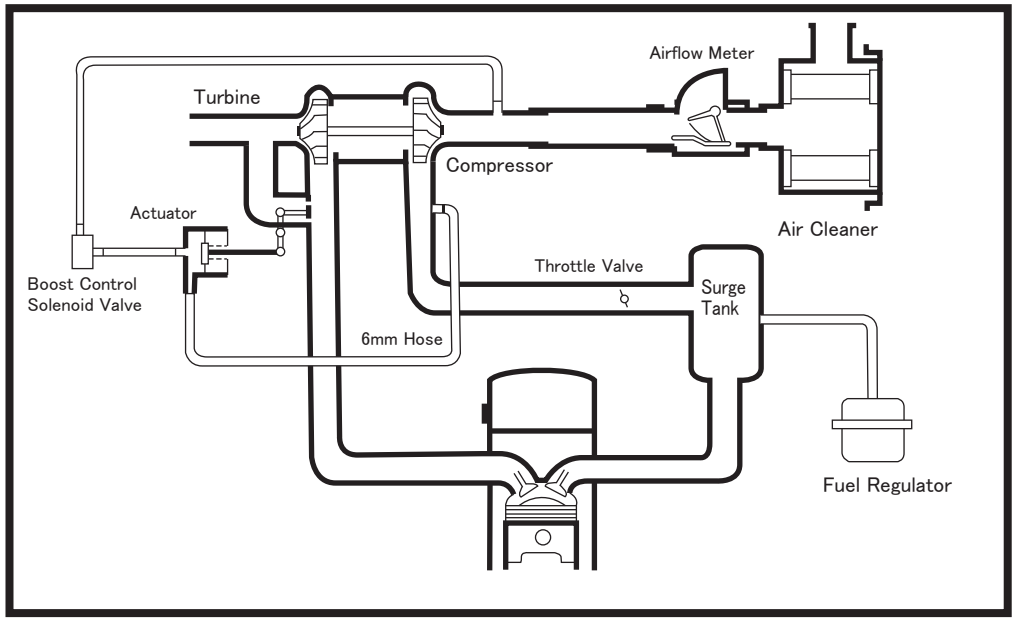
NOTE

・Remove any oil and/or lubricants on or in the hose and vacuum filter.
・Use hose clamps when connecting the 6mm Hose to the 6mm fitting.
・Depending on the vehicle, the factory hose may not be long enough to connect from the actuator to the Solenoid Valve. In this case, we apologize for the inconvenience, but please purchase an 6mm hose separately before use.

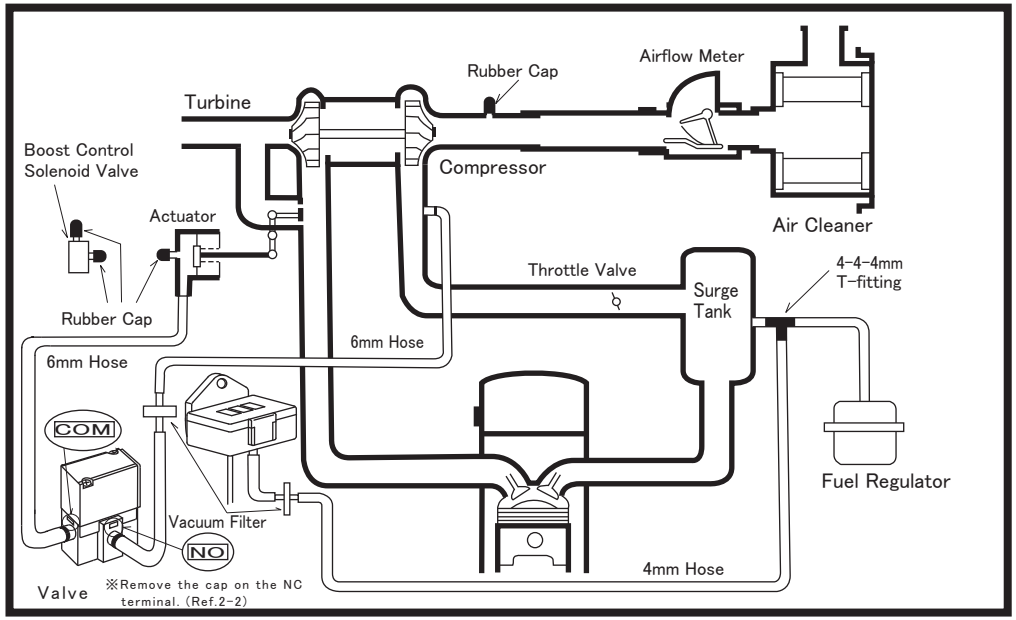
2. 3. 2. For Applications with a Boost Pressurs Control Solenoid Valve 1

●For vehicles equipped with aboost pressure control solenoid valve, disconnect the connector and hose to deactivate this function.

Before Installation (Factory Connection Layout)



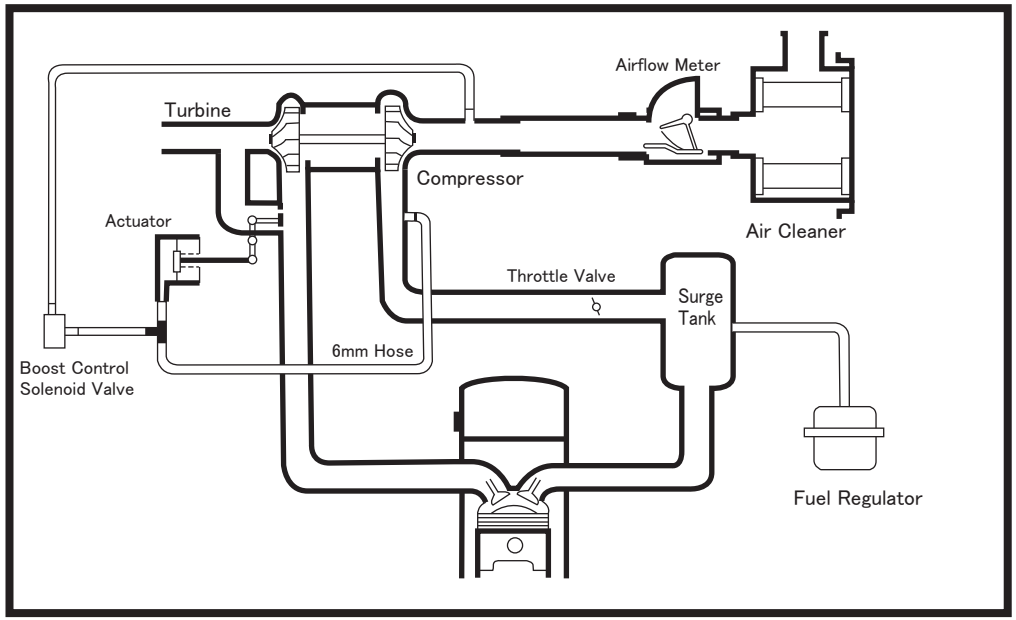
After Installation



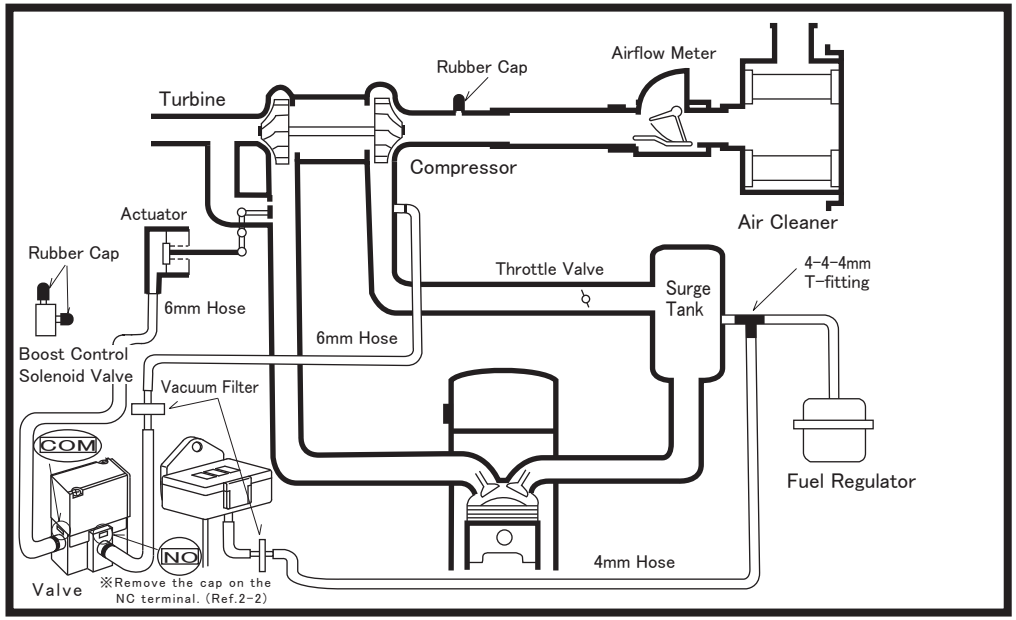
2. 3. 3. For Applications with a Boost Pressurs Control Solenoid Valve 2

●For vehicles equipped with aboost pressure control solenoid valve, disconnect the connector and hose to deactivate this function.

Before Installation (Factory Connection Layout)



After Installation

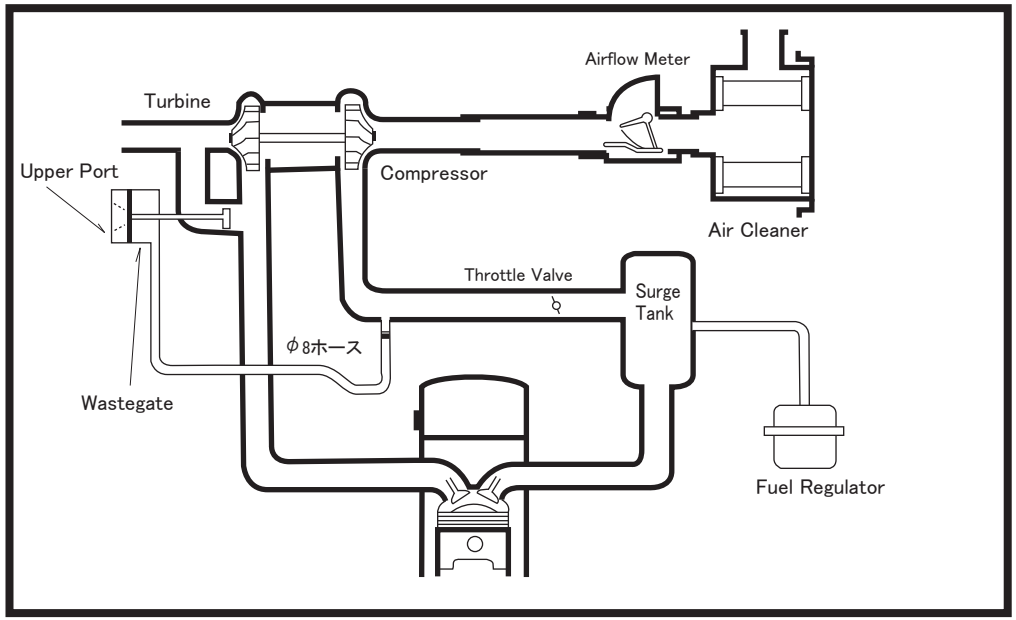


45003-AK015

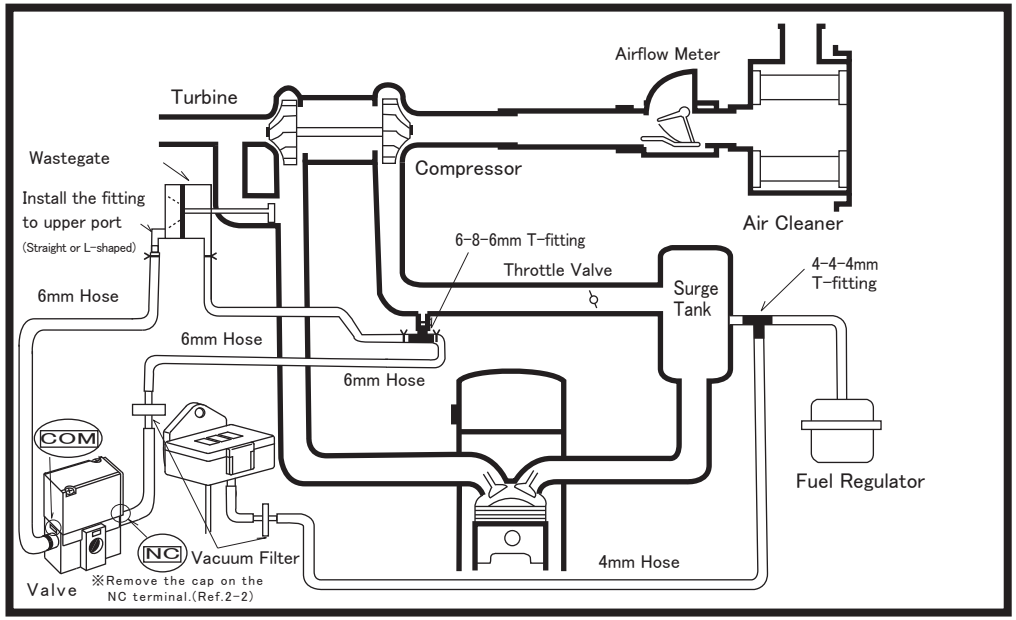
2. 4. Poppet Valve Type

●When installing on a poppet valve car, 6mm Hose, 8mm Hose, 6mm Hose Clamp, 8mm Hose Clamp, 6-8-6mm T-Fitting, 6mm Fitting(straight or L- Shaped) are required separately.

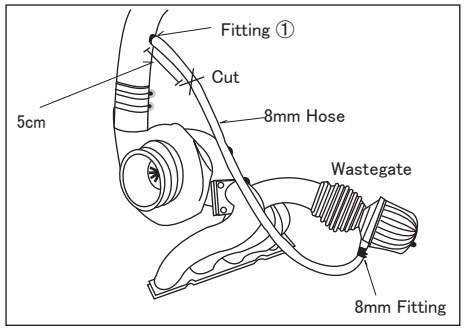
Before Installation



After Installation



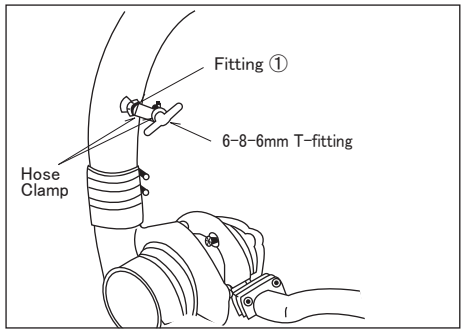
45003-AK015



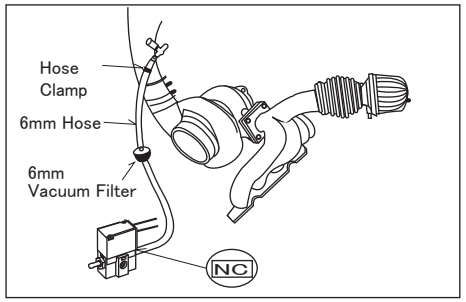
(1) Cut the 8mm hose 5cm from the compressor's fitting ①. Remove the remaining 8mm hose and fitting form the wastegate.

NOTE

※The position of fitting ① on the compressor may vary depending on the vehicle.



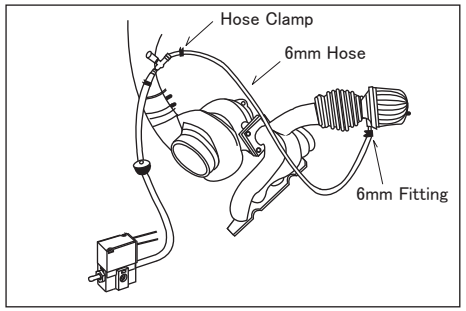
(2) Install the 6-8-6mm T-fitting using the 8mm Hose Clamp.



(3) Connect the T-fitting with the 6mm vacuum filter to the NC terminal fitting using the 6mm hose.

ADVICE

※Remove any oil and/or lubricants on or in the hose and vacuum filter.



(4) Remove the 8mm fitting from the wastegate, and install the 6mm fitting (straight or L-shaped) included in the Poppet Valve Hose Set.

(5) connect the T-fitting to the wastegate using the provided 6mm hose.

NOTE

※Use hose clamps when connecting hoses to fittings.

3. Wiring

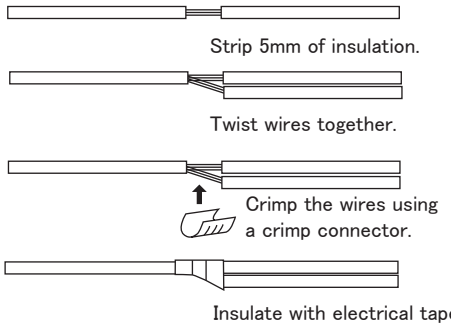
3. 1. Installing the Crimp Connectors

(1) Strip about 5mm of wire insulation.

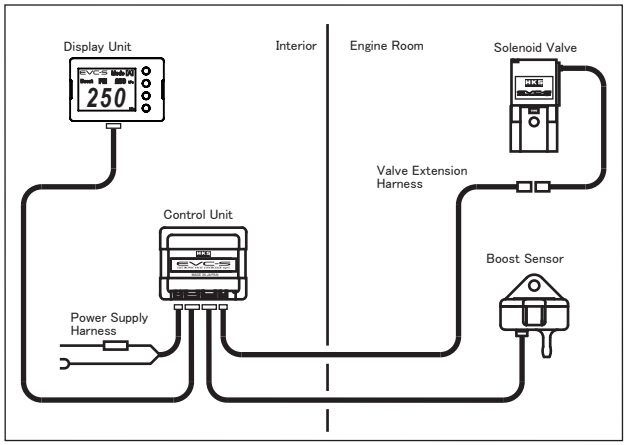
(2) Connect another wire to the uncovered portion by twisting the wires together.

(3) Crimp the twisted wires using a crimp connnector.

(4) Cover the crimp connector and with electrical tape to insulate.



3. 2. Wiring



(1) Connect the Solenoid Valve to the Valve Extension Harness. Pull the Valve Extension Harness and the harness connected to the Boost Sensor from the engine compartment into the vehicle's interior.
(2) Connect the Valve Extension Harness and the Boost Sensor to the Control Unit.
(3) Connect the display unit and display harness, and the display harness and control unit.
(4) Connect the Power Supply Harness.
Connect the red wire of the Power Supply Harness to a 12V IG (ignition) using a crimp connector.
a) Reconnect the negative cable to the battery.
b) Turn the ignition on to find the 12V IG wire using a voltage meter.
c) Disconnect the negative cable from the battery.
(5) Connect the black wire of the power harness to body ground.

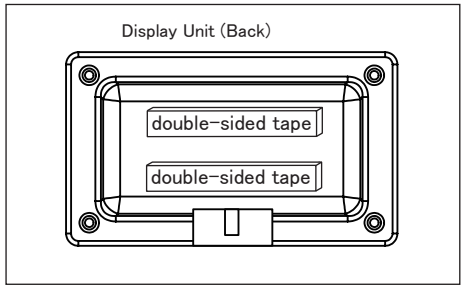
ADVICE

※ Remove any paint and/or rust from the surface where the ground the wire is connected.

(6) Connect the power Supply harness to the Control Unit.

4. Mounting of Components

4. 1. Mounting of the Display Unit

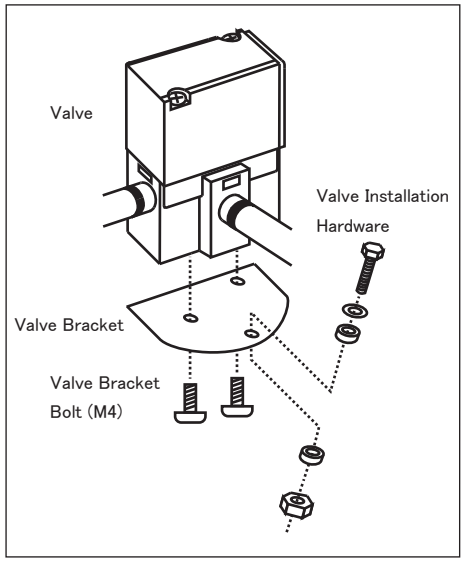


(1) Remove any dirt, dust and/or oil from the mounting surface for the Display unit.
(2) Mount the Display Unit using the double-sided tape.

ADVICE

※Mount the Display Unit in a position lower than eye level, or tilted downward for best visibility.

4. 2. Mounting the Solenoid Valve

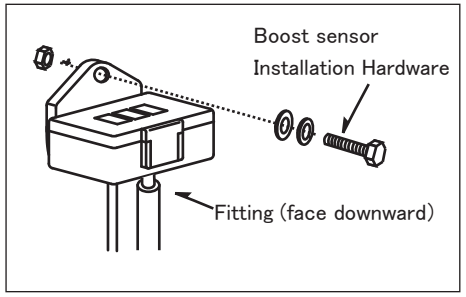


(1) Install the Valve Bracket to the Solenoid Valve using the M4 bolts from the Valve Bracket Set.
(2) Secure the Valve Bracket and the Solenoid Valve to the vehicle using the Valve Installation Hardware.

⚠ CAUTION

Install the Solenoid Valve away from excessive heat or water/moisture to avoid damage the valve.

4. 3. Mounting the Boost Sensor



(1) Secure the Sensor to the vehicle using the Boost Sensor Installation Hardware.

(2) When securing the Boost Sensor, make sure the fitting faces downward as shown in the diagram.

4. 4. Securing Hoses and Harnesses

(1) Secure hoses and harnesses using the provided Tie Wraps.

ADVICE

※Leave some slack for the harnesses and hoses to avoid tension during enging movement.

5. After Installation

(1) Reinstall all removed factory parts.
(2) Reconnect the negative cable to the battery.

CONFIRMATION AFTER INSTALLATION

Check the following after the installation process is complete.

1. Check following after the installation process is complete.

ITEMS TO CHECK	確認
Make sure hoses are routed and connnected correctly.	
Make sure hoses are not loosened.	
Make sure hoses are not damaged.	
Make sure hose clamps are tightened.	
Make sure all bolts and nuts are tightened securely.	
Make sure all installed components do not come in countact with any other parts.	
Make sure all installed parts are properly secured.	
Make sure wiring is done correctly.	
Make sure crimp connectors are connected securely.	
Make sure proper crimp connectors are used and crimped securely.	
Make sure the installed parts are mounted securely and do not interfere with driving.	
Make sure the negative cable terminal is securely attached to the battery.	
Make sure the boost pressure control solenoid valve is deactivated.	

2. Start the engine and check the following

ADVICE

※Do not raise the engine RPM right after the engine is started. (Let it idle.)

ITEMS TO CHECK	確認
Make sure air is not leaking.	
Make sure the RPM rises smoothly after revving the engine 2-3 times while in neutral.	
Make sure the installed parts do not come in contact with any other parts.	
Make sure there is no excessive stress on hoses and/or harnesses.	
Make sure all installed parts have not loosened after stopping the engine.	

OPERATION

1. Boost Control Overview

When you turn on the vehicle's ignition switch, if the control mode was in control off mode when you last turned off the ignition switch, it will go into control off mode. Otherwise, it will be in control on mode.

In control on mode, four boosts can be set: boost modes A to D.Other modes include circuit mode, scramble mode, and warning mode.

1. 1. Control On Mode

Boost control is performed based on the offset, response, overboost, and sampling values set for each boost mode A to D.

1. 2. Circuit Mode

Each time you press any button for a short time, the boost mode that was selected just before entering circuit mode and the boost mode set in Mode Select in the scramble settings will alternate.

1. 3. Scramble Mode

Each time you press any button for a short time, the boost mode that was selected just before entering scramble mode and the boost mode set in Mode Select in the scramble settings will switch for the set time.

1. 4. Warning Mode

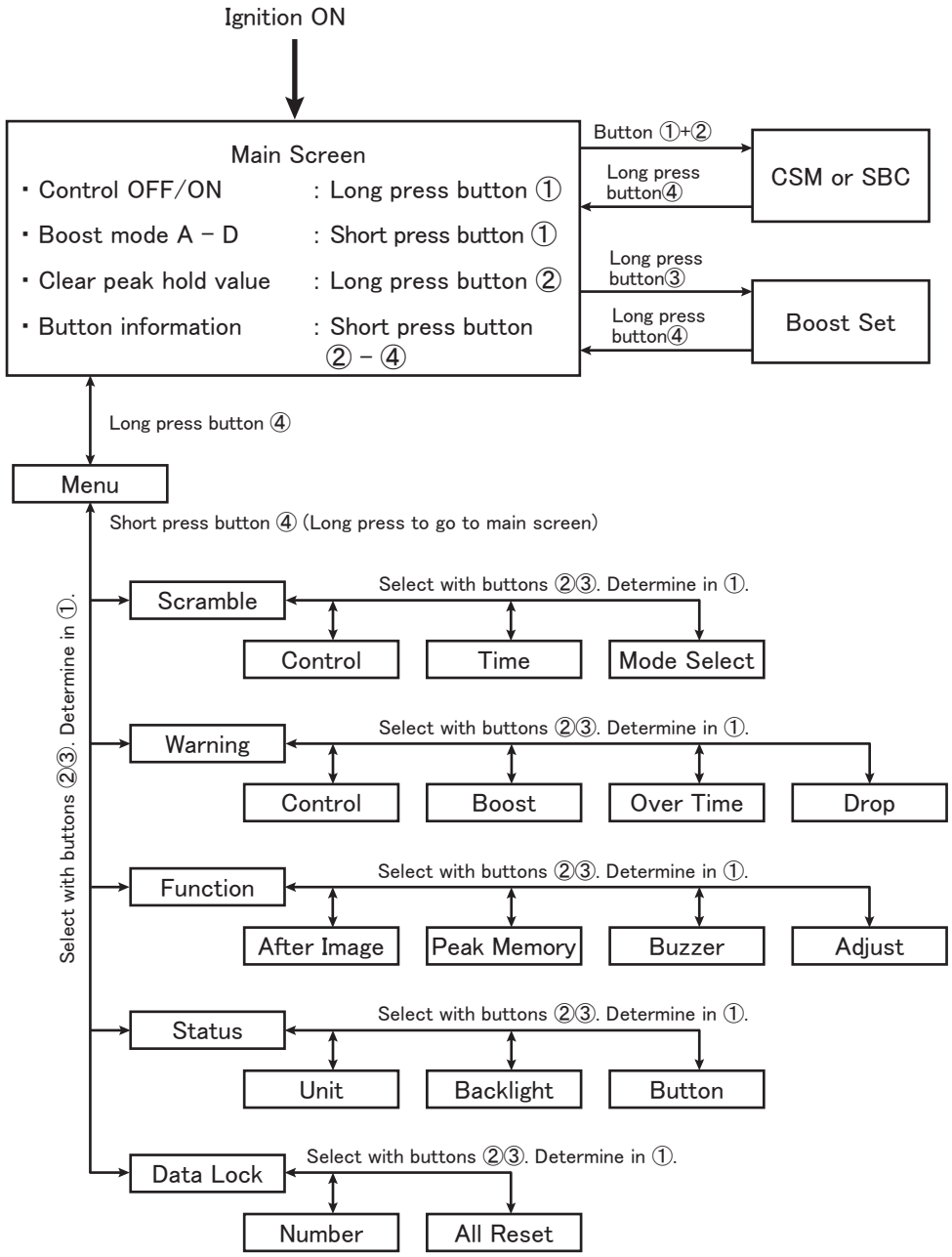
When the boost exceeds the warning setting value and the warning conditions are met, the system enters warning mode and reduces the boost pressure based on the setting.

The warning will be canceled when the boost pressure becomes 5 kPa or less.

1. 5. Control Off Mode

It is a normal boost without being controlled by EVC-S2.

2. Operation Overview Diagram



45003-AK015

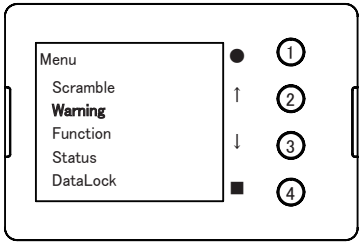
3. Basic Operation

Settings for each setting item can be changed using common basic operations. For setting items that require some different operations, the operations are explained in the settings for each item. The function of each button is displayed to the left of the button.

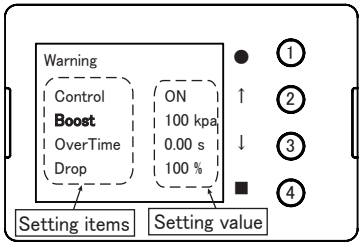
●: Confirm , ■: Return , ↑ ↓: Move selection in the direction of the arrow

+, −: Increase/decrease setting value (function selection)

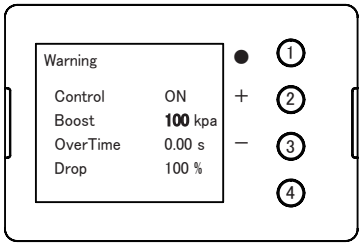
We will explain the basic operations using Warning settings as an example.



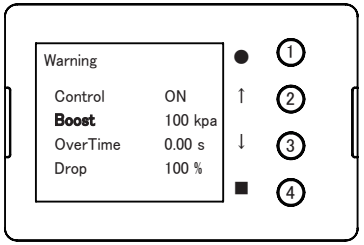
(1) If you press and hold button ④ on the main screen display, the menu screen will be displayed.
Press ② and ③ so that Warning is displayed in yellow.
Press button ① to confirm. Move to the warning setting screen.



(2) On each setting screen, the setting items are displayed on the left side, and the setting values (setting status) of each item are displayed on the right side.
Press buttons ② and ③ to select the item whose setting value you want to change.
Once you have selected the item, press button ① to confirm.
The setting value displayed to the right of the selected item will be displayed in yellow.



(3) Press buttons ② and ③ to increase or decrease the value displayed in yellow (setting change).
Press buttons ② and ③ to change to the desired value.
After changing to the desired value, press button ① to confirm.
Setting items whose values have been changed are displayed in yellow.



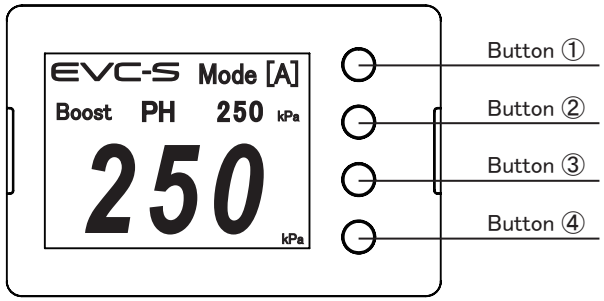
(4) If you want to change other setting values, repeat selecting the setting item and changing the setting value.

(5) When you have finished changing the settings, press button ④ to move to the Menu screen or main screen.
- Short press button ④ : Move to Menu screen
- Long press button ④ : Move to Main screen

When moving from each screen, the setting value saving operation starts and the saving is completed when the boost is in a negative pressure state.

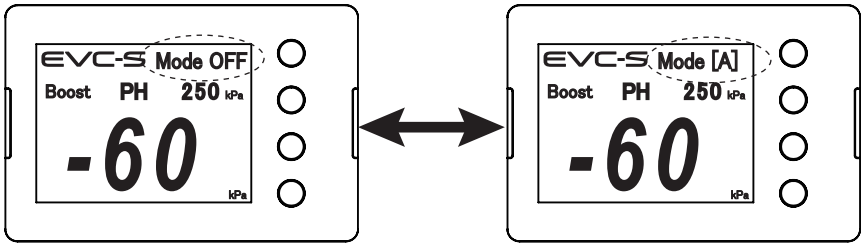
45003-AK015

4. Main Screen Operation



4. 1. EVC-2 Function Switching

When the main screen is displayed, press and hold button ① to switch the EVC function ON/OFF.
When the EVC function is OFF, the boost will be normal without being controlled by EVC-S2.



4. 2. Switching Boost Mode

When the main screen is displayed, short press button ① to switch the boost mode from A→B→C→D→A.

4. 3. Peak Hold Value Reset

When the main screen is displayed, press and hold button ② to reset the peak hold value.

4. 4. Switch to Boost Set Screen

When the main screen is displayed, press and hold button ③ to switch to the boost set screen.

4. 5. Switch to Menu Screen

When the main screen is displayed, press and hold button ④ to switch to the menu screen.

4. 6. Switching to Circuit Mode and Scramble Mode Screen

When on the circuit mode or scramble mode screen, press and hold button ④ to switch to the main screen.

Simple Setting

Read the operational instruction form Section 1 “Boost Control Overview” before carrying out the following simple boost settings.

1. Enter the boost value slightly higher then the actual target boost setting.

ADVICE Even if boost increases excessively, the Warning Function activates to decrease the boost to the set Drop Value (Ref. P.) to avoid damage to enging or turbo.

2. Enter the target boost value as the Off Set Value.

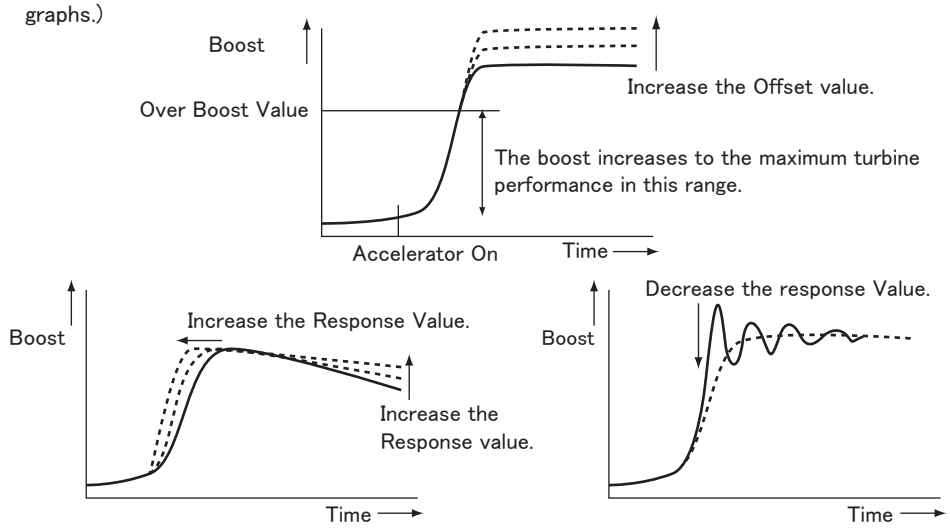
⚠ CAUTION Change this value in small increments.
If the value is changed drastically, the boost may increase excessively causing damage to the engine or turbo.

3. Edit the Over Boost Value until the boost does not overshoot, or stays within the Off Set Value to increase the boost smoothly.

4. Increase the Response Value for better response and to prevent the boost from dropping at high engine RPM.
Make sure the appropriate value is entered as the Response Value.
If the response value is too high, it may cause unstable boost.

ADVICE If a higher Response Value is entered and the actual boost is lower then 100kPa, the boost tends to increase. If a higher Response Value is entered and the actual boost is higher than 100kPa, the boost tends to decreaes. When editing the Response Value, the Off Set Value must be adjusted accordingly.

※Refer to graphs below for setting.
(The boost changes as the dotted line shows when the settings are changed as described in the graphs.)

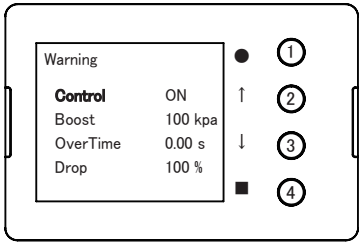


5. Setting

5. 1. Warning settings

Configure warning function settings.

- Control : Setting range OFF ↔ ON (default value ON)
  If set to OFF, the warning will not operate.
  When turned ON, a warning will be activated according to the settings.
- Boost : Setting range 0 to 250 kPa (default value 100 kPa)
  Set the boost value at which the warning is activated.
- Over Time : Setting range 0.00 to 2.50 s (default value 0.00 s)
  Set the grace period before the warning is activated.
- Drop : Setting range 0 to 100% (default value 100%)
  While the warning is activated, control is performed using the value obtained by subtracting the Drop value from the valve control value.

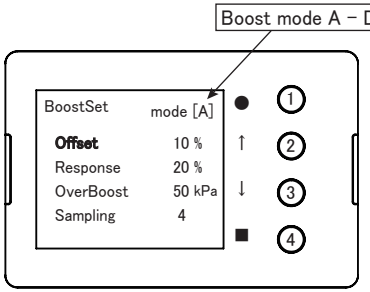


Select Warning from the menu screen to switch to the warning screen.
Change the setting value by referring to the basic difference operation.
When you have finished changing the settings, press button ④ briefly while the items on the left are displayed in yellow to switch to the menu screen. Press and hold button ④ to switch to the main screen.

5. 2. Boost settings

Make basic settings for controlling boost.

- Offset : Setting range 0 to 100% (Initial value 10%)
  Increasing the value will increase the boost, decreasing it will decrease the boost.
- Response : Setting range 0 to 100% (initial value 20%)
  Increasing the value will cause the boost to rise faster, making overshoot and hunting more likely.
  If you reduce the value, the rise of boost will be delayed and overshoot and hunting will be less likely to occur.
- Over Boost : Setting range 0 to 250 kPa (initial value 50 kPa)
  The valve becomes the boost that starts boost control. Until the set value is reached, the pressure to the actuator is 0 kPa, and the boost builds up at maximum turbine performance.
  Increasing the value will give a better start-up than increasing the Response value, allowing you to reach the target boost faster.
  If the value is too close to the target boost, overshoot is likely to occur.
- Sampling : Setting range 1 to 5 (default value 4)
  Normally there is no need to change it, but if the boost is unstable due to hunting etc., please change the setting.

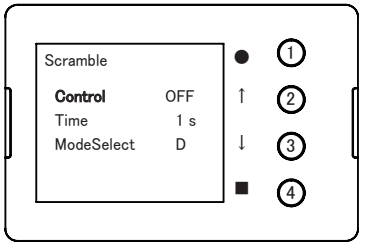


While the main screen is displayed, press and hold button ③ to switch to the boost set screen.
Press button ④ briefly to select the boost mode A to D whose settings you want to change.
Change the setting value by referring to the basic difference operation.
When you have finished changing the settings, press and hold button ④ while the items on the left are displayed in yellow to switch to the main screen.

5. 3. Scramble settings

Configure the scramble function.

- Control : Setting range OFF ↔ ON (default value OFF)
  If you turn it off and switch to scramble mode, it will become circuit mode.
  If you turn it ON and enter scramble mode, scramble operation will be performed according to the settings.
- Time : Setting range: 1 to 60 s (default value 1 s)
  Set the duration of scramble operation.
- ModeSelect : Setting range A to D (initial value D)
  Set the boost mode that changes when scramble is activated.

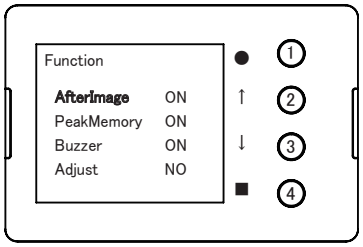


Select Warning from the menu screen to switch to the warning screen.
Change the setting value by referring to the basic difference operation.
When you have finished changing the settings, press button ④ briefly while the items on the left are displayed in yellow to switch to the menu screen. Press and hold button ④ to switch to the main screen.

5. 4. Function settings

Configure function settings.

- After Image : Setting range OFF ↔ ON (default value OFF)
  When set to OFF, the after image will not be displayed.
  When turned ON, the after image will be displayed.
- Peak Memory : Setting range OFF ↔ ON (default value ON)
  When set to OFF, the peak hold value will not be memorized.
- Buzzer : Setting range OFF ↔ ON (default value ON)
  When set to OFF, the buzzer will not sound except for warnings and scramble operations.
- Adjust : Setting range NO ↔ YES (default value NO)
  If you select YES and press and hold button ①, the zero point adjustment of the pressure sensor will be performed.
  When performing zero point adjustment, do so with the ignition on and the engine not started.

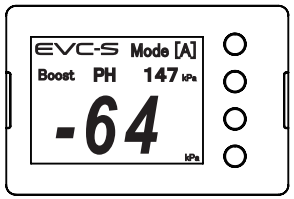


Select Function from the menu screen to switch to the function screen.
Change the setting value by referring to the basic difference operation.
(For Adjust operation, press and hold button ①)
When you have finished changing the settings, press button ④ briefly while the items on the left are displayed in yellow to switch to the menu screen. Press and hold button ④ to switch to the main screen.

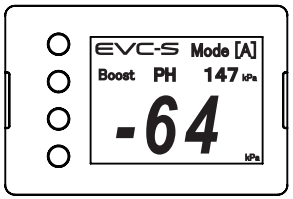
5. 5. Status settings

Configure the status.

- Unit : Setting range kPa ↔ PSI (initial value kPa)
  When set to kPa, the pressure unit is displayed in kPa.
  When set to PSI, the pressure unit will be displayed in PSI.
- Backlight : Setting range: 0 to 100% (default value 100%)
  Set the brightness of the display screen.
- Button : Setting range RIGHT ↔ LEFT (default value RIGHT)
  Set the button position to the left or right. (upside down)

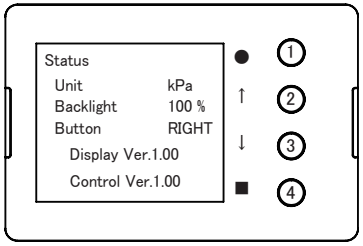


Display when button position is RIGHT



Display when button position is LEFT

Show program version.
Display Ver. : Displays the program version of the display unit.
Control Ver : Displays the program version of the control unit.

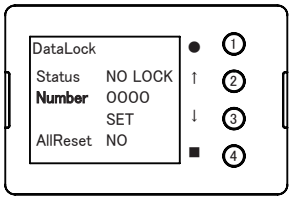


Select Status from the menu screen to switch to the warning screen.
Change the setting value by referring to the basic difference operation.
When you have finished changing the settings, press button ④ briefly while the items on the left are displayed in yellow to switch to the menu screen. Press and hold button ④ to switch to the main screen.

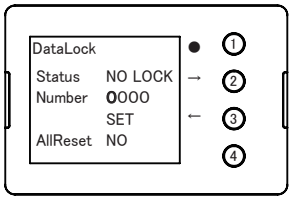
5. 6. Data lock settings

You can display and set the data lock status and perform an all reset to return all settings to their initial values.

- Status : Lock status display
  NO LOCK : Not locked.
  LOCK : Locked. Boost settings, warning settings, and scramble settings cannot be made.
- Number : You can set and release data lock.
  Data lock settings



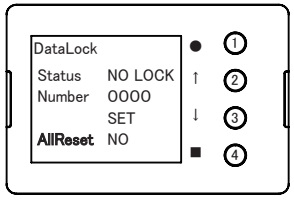
Select Number and press button ①.
The fourth digit of the number on the right side of the number will be displayed in yellow.



Select the number you want to change using buttons ② and ③ and press button ①.
The selected number will flash.
Use buttons ② and ③ to set numbers 0 to 9, and press button ① to confirm. (0000 cannot be set)
Set the desired lock number for the other digits in the same way.
When you have finished setting the desired lock number, select SET with buttons ② and ③ and press and hold button ①.
The lock number is set and the status display changes to LOCK.

Data unlock setting
Display the lock number you set in the same way as the data lock procedure, select SET, and press and hold button ①.
If it matches the set lock number, the lock will be released and the status display will change to NO LOCK.

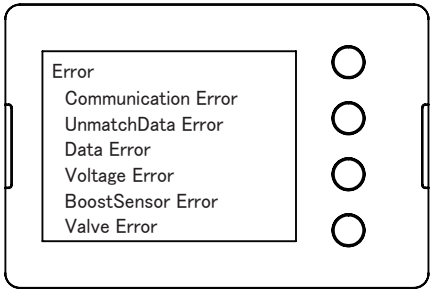
- AllReset : Return all settings to their default values. (Data lock will also be released)



Select AllReset and press button ①.
NO on the right side of AllReset will be displayed in yellow.
Change from NO to YES using buttons ② and ③, then press and hold button ①.
The settings will be reset and the display will switch to the main screen.

ERROR INDICATION

EVC-S2 has a self-diagnosis function, and if an abnormality is detected, an error will be displayed on the display and the boost will be lowered to normal.
Check the error display and then turn off the ignition.
Perform inspection according to the error message, repair any abnormalities, and confirm that there are no problems before turning on the ignition.



Error Display	Error Contents	Inspection Items
Communication Error	Communication error	Display harness disconnection or poor contact
UnmatchData Error	Save data error	Check and reset settings or AllReset
Data Error	Communication data error	Display harness disconnection or poor contact
Voltage Error	Power supply voltage error	Check battery voltage and power harness
BoostSensor Error	Boost sensor error	Boost sensor wiring
Valve Error	Solenoid valve error	Solenoid valve wiring

OPTIONAL PARTS LIST

The list below are optional parts for the EVC-S2.
Use any of the following parts if necessary for installation.

No.	Part No.	Description	Remarks
1	4599-RA009	Hose Set for Twin Turbochargers	To install EVC-S2 with Twin T/C.
2	4599-RA010	4mm Hose Set	To install EVC-S2 using 4mm hose.
3	4599-RA017	4mm Vacuum Filter	
4	4599-RA016	6mm Vacuum Filter	
5	53002-AK001	Display Stand	

MAINTENANCE

⚠ CAUTION

- Consult a professional to carry out operations not shown in this manual.
- Replace the vacuum filter more frequently if excessive dirt build-up is noticed. This will prevent the filter from being blocked by dirt which may cause damage to the engine.

・Inspect and maintain the vehicle daily for optimal performance.
・Clean your hands and remove dirt and oil before handling this product. This will help prevent damage to the case.
・When cleaning this product, do not use solvents such as alcohol, thinner, benzene, glass cleaner, and oil. Wipe off dirt with a dry soft cloth.
・If dirt builds up in a vacuum filter extremely early, change the location of the hose on the enging. If changing the hose location does not improve the dirt build-up, there may be an issue with the engine. Consult a professional.

TROUBLESHOOTING

If this product is not functioning properly, make sure all wiring and/or hose routing is connected properly and refer to the symptoms described below.

SYMPTOM	CAUSE	SOLUTION
The unit does not turn on.	Bad connection.	Connect the crimp connector securely.
	Fuse is blown.	Replace the fuse and make sure the harness is not shorted.
	Ground is disconnected or bad.	Remove paint or rust from the grounding point.
Error Number appears.	Refer to error section.	Refer to error section.
Boost is unstable. Boost does not increase.	Actuator incapacity Insufficent valve area/stroke. Insufficient turbo output capacity.	Check the actuator characteristics and adjust accordingly (if applicable). Reset all values within capable setting range.
Boost control malfunction.	Incorrect settings.	Reset and re-enter all data.
	Incorrect hose connections.	Make sure that the piping matches the exhaust bypass valve.
	Hose(s) are disconnected or cut.	Check hose, replace if necessary.
	Dirt buildup in the vacuum filter.	Replace the vacuum filter.
Boost increases excessively.	Incorrect matching of Rrsponse or Overboost Value.	Input a smaller number than the current Response or Overboost Value.
Warning function is activated.	Warning set value is lower than set boost.	Increase the warning setting value or lower the setting boost.
Settings cannot be changed.	Data Lock is on.	Turn off the Data Lock.

PRODUCT SPECIFICATIONS

●Operating Voltage ····· DC11～16V
●Controllable Boost Pressure ····· Up to 250 kPa(36 PSI)
●Ooeratung Temperature
Display Unit ····· -10℃～70℃
Valve ····· -20℃～80℃
●Maximum Electrical Power Consumption ····· 8.0 W