Installation Instructions

ELECTRONIC VALVE CONTROLLER IV

(EVC IV)
PART # 4503-RA006

NOTICE

Read this entire manual to understand how the EVC IV functions before beginning the installation process. Do not attempt to install or adjust the EVC IV without thorough knowledge of how this unit works. This manual assumes that you have the knowledge in the operation of tools and equipment that are necessary to safely perform service operations on your vehicle. This manual also assumes that you are familiar with typical automotive systems and basic service and repair procedures. Always have access to a factory repair manual as some of the procedures and specifications required for the proper installation of this product may be referenced to the factory repair manual. To avoid the risk of personal injury, follow the lifting, supporting, and safety precautions contained in the factory repair manual.

USER NOTES

· The EVC IV can be used on both internal and external wastegate type turbochargers.

· The EVC IV is not capable of reaching boost levels lower than stock (OEM) levels.

· The EVC IV will maintain it's programming even if the vehicle's battery is disconnected or the head unit is unplugged.

· The serial numbers must match on the controller and the stepping motor in order for the unit to function properly.

· The EVC IV is a sensitive electronic component and must be handled with extreme care. Miswiring or shock will damage the unit. Do not place near extreme heat, water, or areas prone to dirt and dust.

· Most factory turbocharged vehicles come equipped with a secondary boost limiting system (fuel-cut system or pop-off valve) to safeguard against wastegate failure. Due to this, the EVC IV alone will not be able to raise the boost pressure beyond the point of the factory limit. If this condition occurs, consult your HKS distributor for information regarding products that can assist in this situation (HKS Fuel Cut Defencer, HKS Vein Pressure Converter, HKS Programmed Fuel Computer, etc.).

· If the vehicle has a fuel cut defense system such as the HKS FCD, make certain that the vehicle's boost pressure is not raised excessively, as this will lead to engine and/or turbocharger damage. HKS will not warranty any damage caused be excessive boost levels.

· Make sure the vehicle has a proper fuel management system that can handle higher boost pressures than stock (OEM) levels. HKS will not warranty damage caused by improper fuel management (lean air/fuel ratio).

· The EVC IV cannot control boost pressure above the maximum efficiency point of the turbocharger. Boost pressure drop at high rpm may not be totally eliminated. The EVC IV will not be able to compensate for pressure loss due to turbocharger sizing. Boost creep or boost spikes due to inadequate wastegate flow capacity, lean air/fuel ratio, poor compressor design, or excessive backpressure may not be fully alleviated.

· Increasing the boost pressure will also increase the intake air temperature. If the intake air pressure exceeds 220 degrees Fahrenheit (100 deg. Celsius), performance increases may be minimal and detonation may occur.

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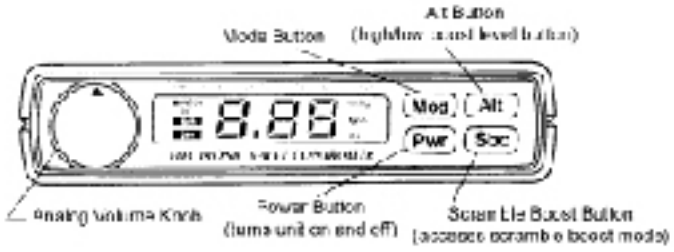
· For best performance and to safeguard against detonation, always use the highest octane gasoline available (92-octane minimum).

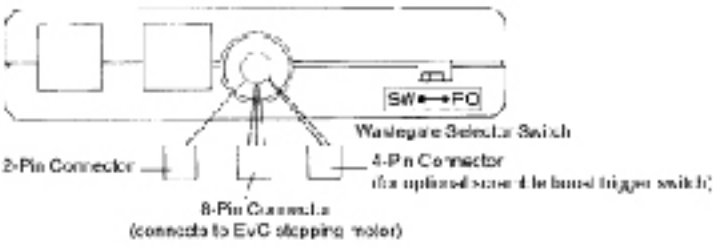
· Do not rely on the factory boost meter (if equipped) when adjusting the maximum boost pressure. Install an HKS auxiliary boost pressure meter to monitor manifold boost pressure levels.

· The utilization of an HKS exhaust gas temperature (EGT) meter is recommended to monitor engine conditions (rich or lean air/fuel ratios).

· Mount the EVC IV control unit and harness away from high-power two-way radios, mobile phones, and their respective antenna cables to prevent malfunction of the EVC IV unit.

CONTROL UNIT DIAGRAM





INSTALLATION

1. Disconnect the negative battery cable from the battery.
2. EVC stepping motor installation

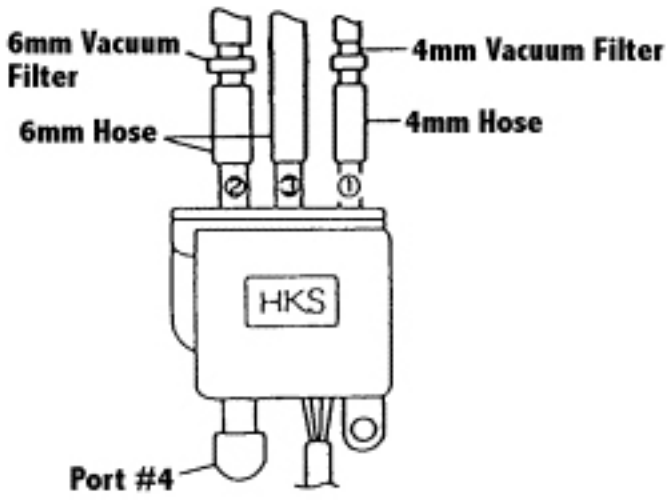
· Determine an ideal mounting location for the stepping motor.

· Mount the stepping motor to the chassis using the hardware provided with this kit.

· Do not install the stepping motor close to the exhaust manifold or any area of high temperature.

· Do not install the stepping motor where it will be exposed to water or moisture.

· Ports 1, 2, and 3 must face upward with port number 4 pointing down.



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· Lengths on all hoses must be kept as short as possible.

3. Vacuum Filter Installation-

· Install vacuum filters per diagram to the right. Make sure the filters are within 10cm (3.9") length from the stepping motor.

· The 6mm vacuum filter should be installed with the short side facing the stepping motor.

· Inspect the filters every 3000 miles. They must be clean for the EVC to function correctly. If the filter is contaminated or dirty, replace with a new one. Do not attempt to clean the vacuum filter. If the filters frequently need replacement, relocating the pressure source may solve the problem.

4. Connect the red wire (2-pin harness) from the EVC to a 12-volt ignition source. Utilizing a voltmeter, find a wire that receives at least 12 volts with the key in the "IGNITION" position.

5. Connect the black wire (2-pin harness) from the EVC to a chassis ground. Make sure there is no paint or rust on the ground surface. If there is, sand the surface until bare metal is exposed.

· Determine if the vehicle is equipped with an internal wastegate (single port actuator) or an external wastegate, or dual port actuator, then proceed to the corresponding installation instructions.

INTERNAL WASTEGATE (SINGLE PORT ACTUATOR) INSTALLATION INSTRUCTIONS

Port #1- Connect to an uninterrupted intake manifold pressure source after the throttle body such as a compressor bypass signal line using the 4mm hose.

· Do not connect port #1 to the line that operates the fuel pressure regulator unless the supplemental instructions tell you to do so.

· This hose should be as short as possible and should not exceed 100cm (3'4").

· Install the 4mm vacuum filter within 10cm(3.9") of port #1 on the EVC stepping motor.

Port #2- Connect to a source of pressurized air such as a turbocharger compressor housing (discharge side) or compressor outlet pipe (before the intercooler) using the 6mm hose.

· This hose should be as short as possible and should not exceed 100cm (3'4").

· Install the 6mm vacuum filter within 10cm (3.9") of port #2 on the EVC stepping motor.

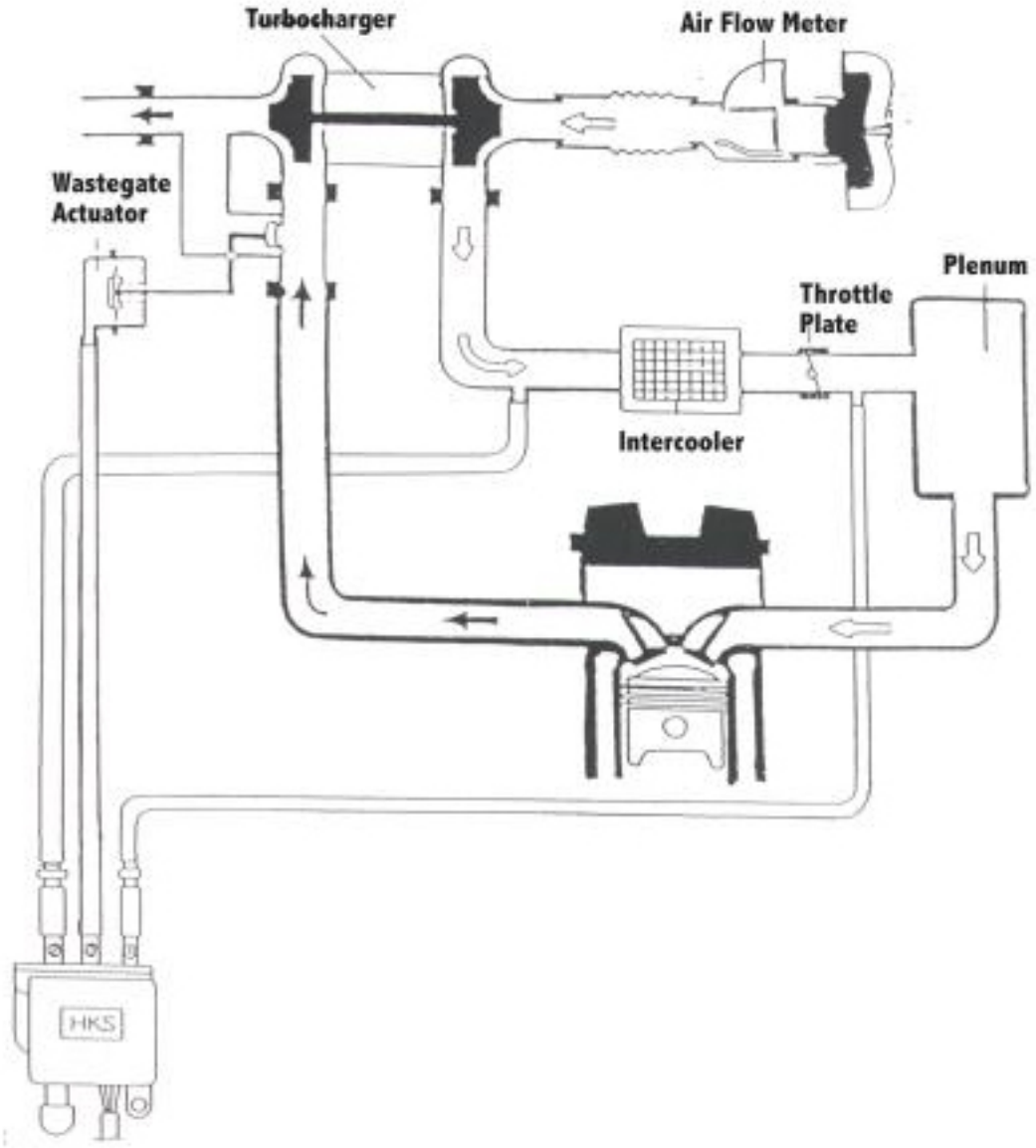
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Port #3- Connect to the port on the wastegate actuator.

· This hose should be as short as possible and should not exceed 100cm (3'4").



EXTERNAL WASTEGATE/DUAL PORT ACTUATOR INSTALLATION INSTRUCTIONS

Port #1- Connect to an uninterrupted intake manifold pressure source after the throttle body such as a compressor bypass signal line using the 4mm hose.

· Do not connect port #1 to the line that operates the fuel pressure regulator unless the supplemental instructions tell you to do so.

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· This hose should be as short as possible and should not exceed 100cm (3'4").

· Install the 4mm vacuum filter within 10cm (3.9") of port #1 on the EVC stepping motor.

Port #2- Connect to a source of pressurized air such as the turbocharger compressor housing (discharge side) or compressor outlet pipe (before the intercooler) using the 6mm hose. Use the tee fitting supplied with this kit to connect a pressure line to the secondary port on the wastegate actuator.

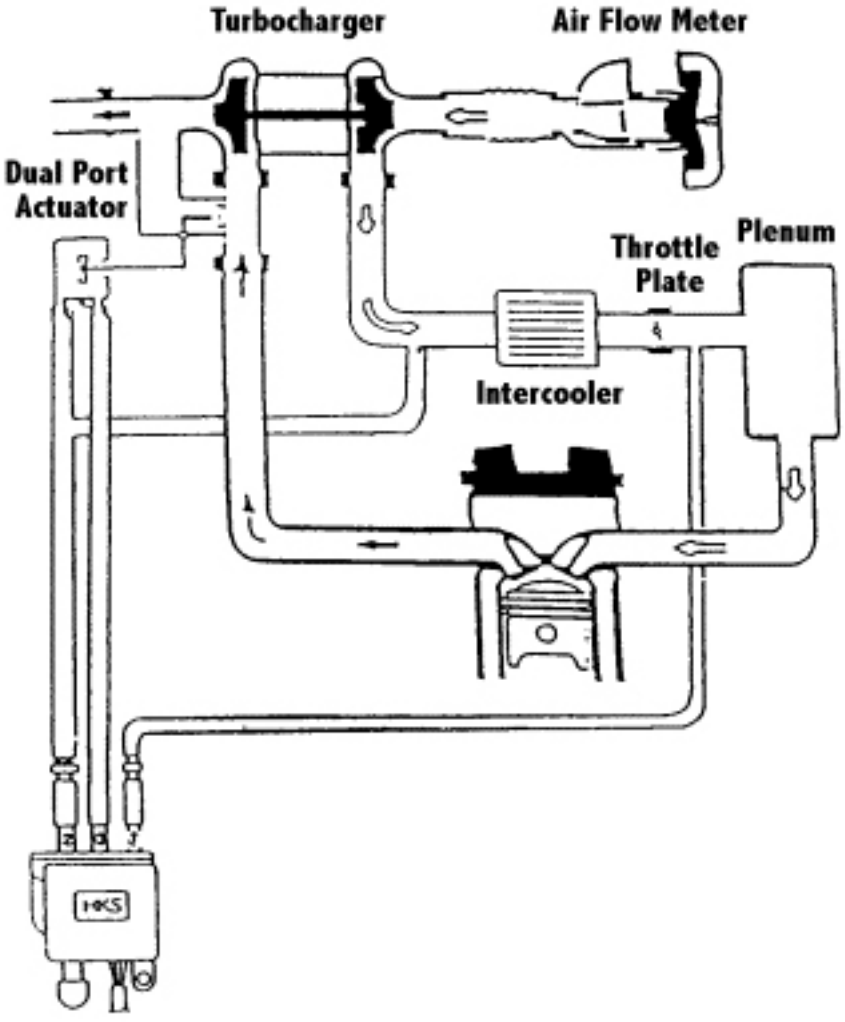
· Both lines should be as short as possible and should not exceed 100cm (3'4").

· Install the 6mm vacuum filter within 10cm (3.9") of port #3 on the EVC stepping motor.

Port #3- Connect to the port on the wastegate actuator.

· This hose should be as short as possible and should not exceed 100cm (3'4").

External Wastegate

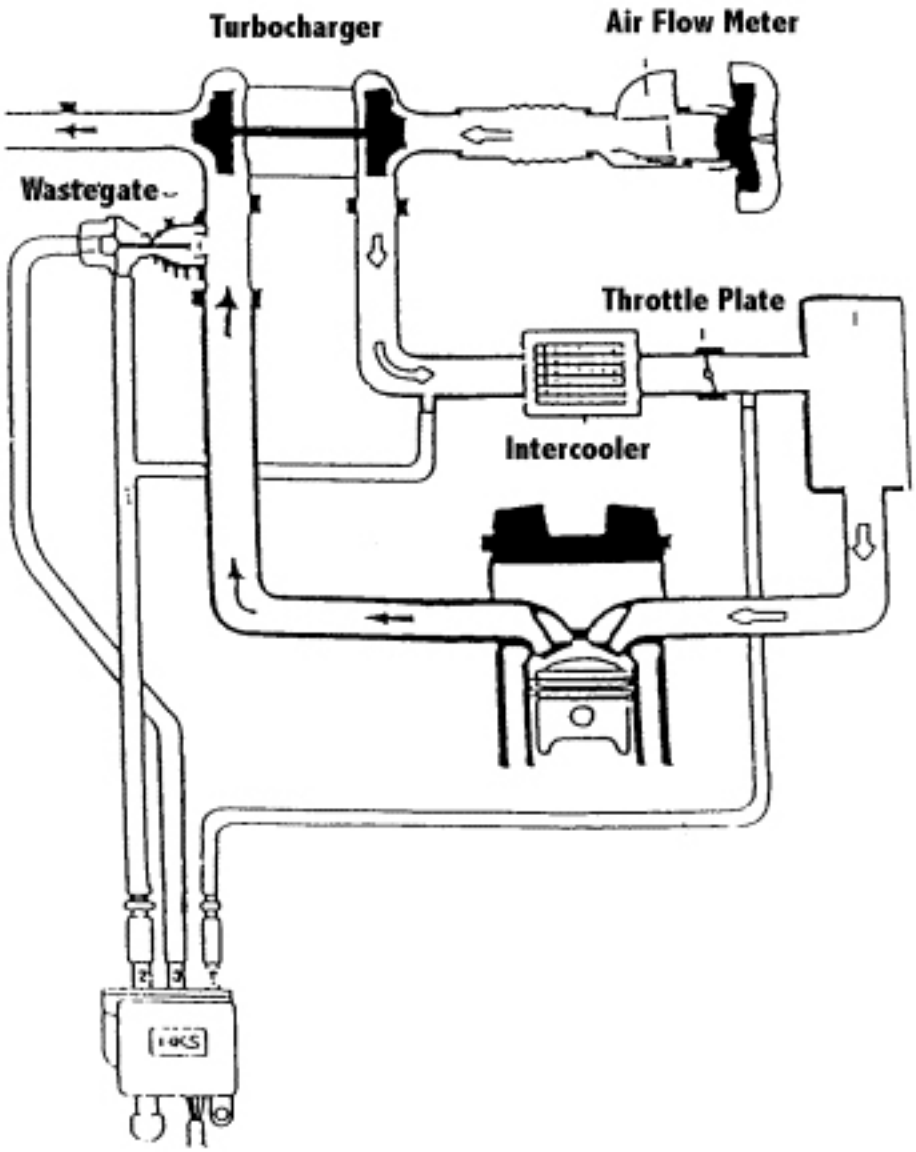


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Dual Port Actuator



TROUBLESHOOTING

Note: If at any time the EVC does not reset or readjust, make sure the unit is not locked in "INHIBIT" mode (see setup instructions).

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EVC Control Unit Will Not Illuminate:

· Power Connection- There must be a constant 12-volt power source under all conditions with the ignition "ON".

· Ground Connection- In some cases, paint, rust, or a loose bolt will cause a bad ground.

· Electronic Splice Connector- Visually from the outside, wire connections may look good. In some cases, the wires are not making contact inside the connector. Check the wires at both ends with a voltmeter to ensure continuity.

EVC Will Not Control Boost:

· Make sure the SW<>PO switch on the back of the unit is in the correct position.

· Check the hose connections to ports 2 & 3 on the EVC stepping motor. EVC III, IV, and EZ stepping motors differ from EVC I and II stepping motors (see installation diagrams).

· Check for continuity at each wire on the 8-pin harness for possible breaks in a wire. If the pins on the main harness were disconnected while running the harness through the firewall, make sure that the wire colors match the EVC control unit plug.

Vehicle Is Not Building Enough Boost (Underboosting):

· Make sure the stock boost solenoid is disconnected.

· Check for possible improper adjustment of the EVC unit. Read the manual again to verify that you are following the correct procedure.

· The vacuum filters (4 & 6mm) may be clogged or dirty.

NOTE: With additional engine modifications, you must update the self-learning data (The unit must be reset and the learning mode must be implemented once again).

Vehicle Is Building Too Much Boost:

· Verify that there are no leaks in the hoses, and that all connections are tight. Check for hose damage such as pinholes or tears.

· Make sure the vacuum filters (4 & 6mm) are not cracked.

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· Wastegate valve may be too small or actuator may be too weak.

· Turbocharger capacity may be too small (In this case, the boost curve will drop off during high rpm compared to the factory boost curve).

NOTE: With additional engine modifications, you must update the self-learning data (The unit must be reset and the learning mode must be implemented once again).

PARTS LIST

Quantity	Description	Comments
1	Controller Unit	
1	Stepping Motor	
1	8-Pin Harness	L=2750mm (108")
1	2-Pin Harness	L=1524mm (60")
1	4mm Hose	L=1015mm (40")
1	6mm Hose	L=1015mm (40")
1	Tee Fitting	4x4x4mm
1	Vacuum Filter	4mm
1	Vacuum Filter	6mm
1	Spring Clamp	6mm
1	Splice Connector	
1	Double-Sided Tape	
5	Tie Wraps	L=100mm (4")
3	Tie Wraps	L=200mm (8")
1	Stepping Motor Hardware Set	