



Pursuing the Ultimate in Engine Performance and Efficiency
HKS Company Limited

E05171-K00040-00
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Ver.3-1.01

NOTICE

Thank you for purchasing HKS VALCON.
For safe usage and understanding of functions of the product,
read operation and installation manuals before installation and use.

INSTALLATION

WARNING

- Do not use for an engine, which piston and valve contact in the camshaft variable range. The vehicle may be damaged.
- Temperature of adaptor (sold separately) will be high during operation. Do not locate it near flammable items. It may be cause of fire.

Option harness and adaptor, which are sold separately, are required for installation. Purchase proper harness and adaptor for the vehicle.

Universal harness is available for installation with bullet connectors and splices. Vehicle specified harnesses, which does not require any modification, are available for some vehicles.

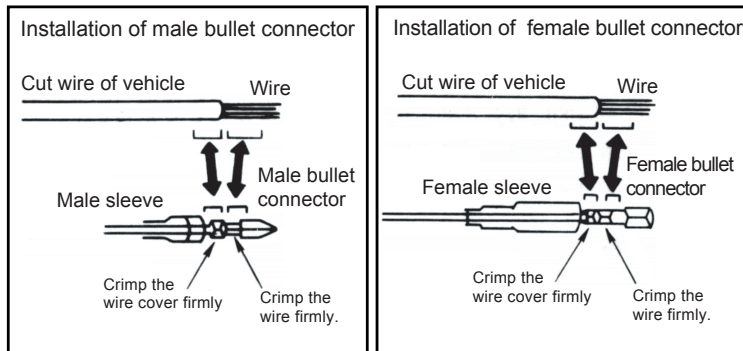
For vehicles that vehicle specified harness is not supplied for, install with universal harness.

1. Disconnecting the Battery Terminal

- (1) Disconnect the negative terminal from the battery.

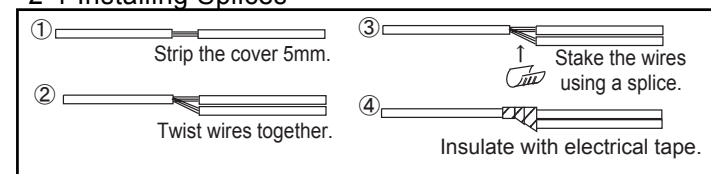
2. Wiring

2.1 Installation of bullet connector



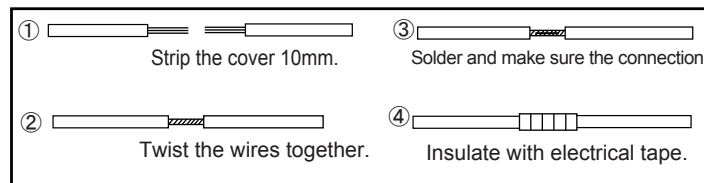
- ① Cut the wire.
- ② Strip the wire cover.
- ③ Insert wire to the sleeve of bullet connector.
- ④ Crimp the wire with the bullet connector.
- ⑤ Crimp the wire cover with the bullet connector.
- ⑥ Insulate the crimped portion with a sleeve.

2-1 Installing Splices



- ① Strip 5mm of the wire cover for wiring as shown above.
- ② Connect another wire to the uncovered portion, and twist the wires together.
- ③ Stake the twisted wires using a splice.
- ④ Cover the spliced wires with electrical tape to insulate.

2.3 How to solder for connection

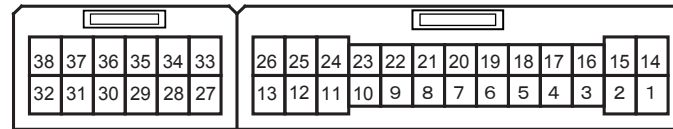


- ① Strip 10mm of the wire cover for wiring as shown above.
- ② Connect and twist the uncovered wires together.
- ③ Solder and make sure the connection.
- ④ Cover the spliced wires with electrical tape to insulate.

3. VALCON Input And Output Signal

3.1 Connectors of VALCON Unit

Figure of VALCON Unit connector from pin inserted side.



26 pin connector (Wire colors of Universal Harness 1)

No.	Description	Color	Description
1	GND	Black	Control ground
2	GND	Green	Pressure sensor ground
▲3	NE-	Red/Black	Crankshaft angle signal -
▲4	G1 OUT	Orange/Black	Camshaft angle signal 1 output
▲5	G2 OUT	Blue/Black	Camshaft angle signal 2 output
▲6	G GND	Red/Green	Camshaft angle signal -
7	REV OUT	White	RPM signal output
8	OP OUT1	Brown	Voltage output 1 for data logger
9	OP OUT2	Orange	Voltage output 2 for data logger
10	SOL2 IN	Yellow/White	Solenoid 2 input
11	SOL2 OUT	Yellow/Black	Solenoid 2 output
12	SOL2 GND	Green/Black	Solenoid 2 ground
13	POWER GND	Black/White	Power ground
14	IG	Red	Ignition power supply
15	+5V	Yellow	5V power supply for pressure sensor
▲16	NE+	Gray	Crankshaft angle signal +
▲17	G1 IN	Orange/White	Camshaft angle signal 1 input
▲18	G2 IN	Blue/White	Camshaft angle signal 2 input
19	AFM/OP IN1	Purple	Air flow sensor input / Option input 1
20	BOOST/OP IN2	Blue	Pressure sensor input / Option input 2
21	THROTTLE	Pink	Throttle sensor input
22	WATER	Light Blue	Water temperature sensor input
23	SOL1 IN	Brown/White	Solenoid 1 input
24	SOL1 OUT	Brown/Black	Solenoid 1 output
25	SOL1 GND	Green/White	Solenoid 1 ground
26			Not used

12 pin connector (Wire colors of Universal Harness 2)

No.	Description	Color	Description
27	SOL4 GND	Green/Black	Solenoid 4 ground
28	SOL4 OUT	Yellow/Black	Solenoid 4 output
29	SOL4 IN	Yellow/White	Solenoid 4 input
30			Not used
▲31	G3 OUT	Orange/Black	Camshaft angle signal 3 output
▲32	G4 OUT	Blue/Black	Camshaft angle signal 4 output
33	SOL3 GND	Green/White	Solenoid 3 ground
34	SOL3 OUT	Brown/Black	Solenoid 3 output
35	SOL3 IN	Brown/White	Solenoid 3 input
36			Not used
▲37	G3 IN	Orange/White	Camshaft angle signal 3 input
▲38	G4 IN	Blue/White	Camshaft angle signal 4 input

Universal Harness 1L and 2L have shield wires for pins with ▲ mark.
Color of all shield wires are white. They have name of signals on the tip of wires.

3.2 Universal Harness 4 pin connector

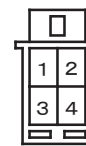


Figure of 4 pin connector of Universal Harness 1, 2 from pin inserted side.

4 pin connector (Wire colors of Universal Connector 1)

No.	Description	Color	Description
1	SOL1 IN	Brown/White	Solenoid 1 input
2	SOL2 IN	Yellow/White	Solenoid 2 input
3	SOL1	Brown/Red	Solenoid 1 Power Supply / Ground
4	SOL2	Yellow/Red	Solenoid 2 Power Supply / Ground

4 pin connector (Wire colors of Universal Connector 2)

No.	Description	Color	Description
1	SOL3 IN	Brown/White	Solenoid 1 input
2	SOL4 IN	Yellow/White	Solenoid 2 input
3	SOL3	Brown/Red	Solenoid 1 Power Supply / Ground
4	SOL4	Yellow/Red	Solenoid 2 Power Supply / Ground

3.3 Universal Harness Other wires

Universal Harness 1

No.	Description	Color	Description
	SOL1-2	Red/Yellow	Solenoid 1-2 Power Supply / Ground

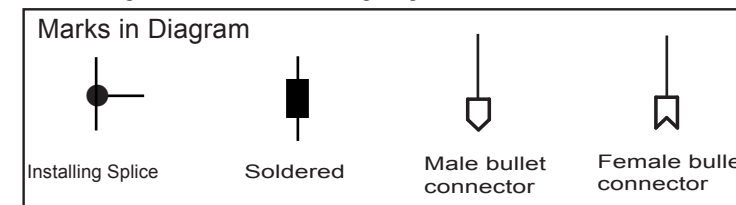
Universal Harness 2

No.	Description	Color	Description
	SOL3-4	Red/Yellow	Solenoid 3-4 Power Supply / Ground

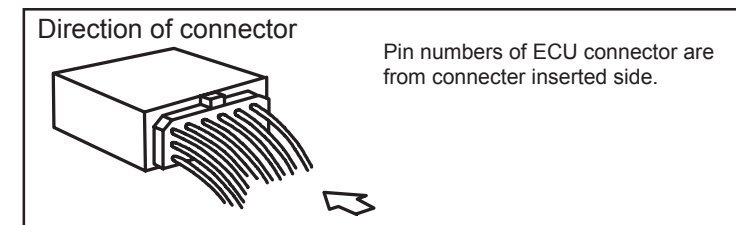
4. Wiring Diagram

4.1 Marks in Diagram

Following marks are used in wiring diagram.



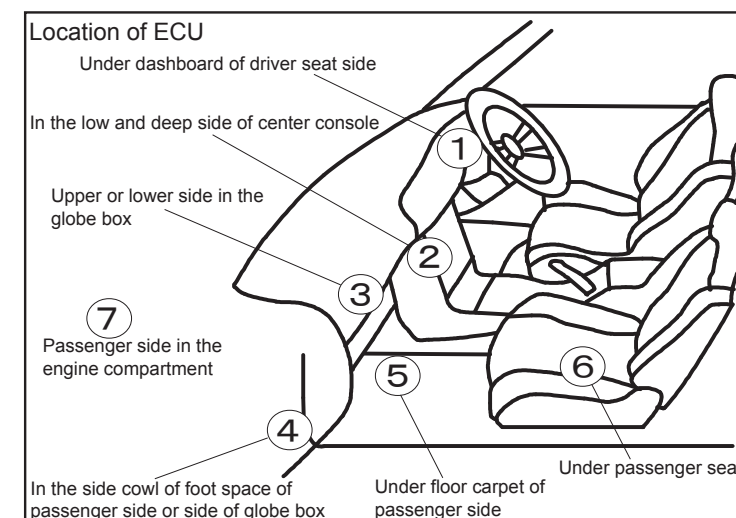
4.2 Diagram of connector



5. Location of ECU

Refer to the figure below to confirm location of the ECU.

For ECU Location Number, refer to the Location of ECU in the chart of vehicle specified wiring diagram.

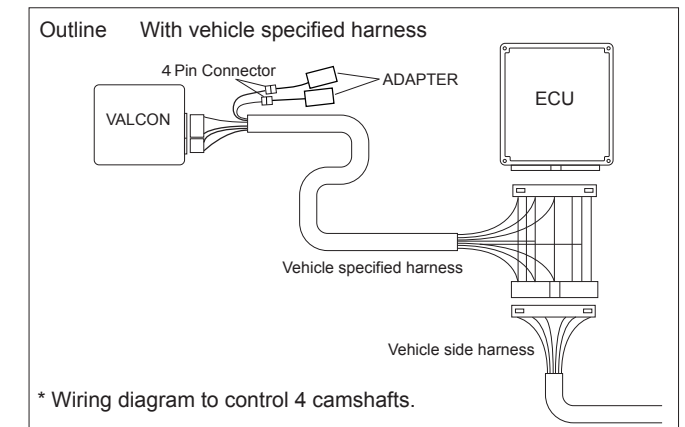


6. Wiring

For installation with universal harness, refer to vehicle specified wiring diagram with universal harness.

6.1 Wiring diagram with vehicle specified harness

(1) Wiring Outline



(2) Wiring

- ① Refer to "5. Location of ECU" and make sure the location.
- ② Disconnect vehicle harness from ECU.
 - In case vehicle harness is fixed to ECU with bolts, loosen the bolts completely to remove the harness.
- ③ Connect vehicle specified harness (sold separately) between ECU and vehicle harness.
 - Make sure that connectors are locked firmly. Otherwise, it may cause connection problem.
 - For connectors to be fixed with bolts, ensure that both ends of connectors are fixed properly after tightening bolts.
- ④ Connect VALCON and vehicle specified harness.(P1 × 1)
 - Connector 2 (12 pin) is not included in vehicle specified harness if number of control camshafts is less. In this case, connect Connector 1 only.
- ⑤ Connect Adaptor (Sold separately) to 4 pin connector of vehicle specified harness.
 - If vehicle specified harness has two 4 pin connectors, 2 adaptors are required.

WARNING

- Temperature of adaptor (sold separately) will be high during operation. Do not locate it near flammable items. It may be cause of fire.

7. Mounting the Unit

- (1) Decide mounting position of VALCON with consideration of length of the harness.
- (2) Fix harness with tie wraps. (P7)

8. Complete the Installation

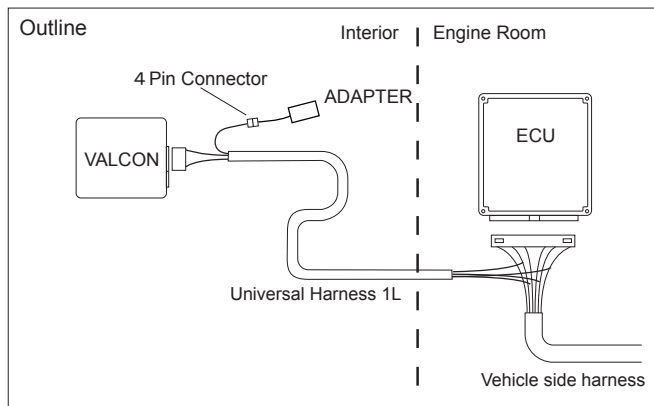
- (1) Reinstall all removed factory parts.
- (2) Reconnect the negative terminal to the battery.

Lancer Evolution X

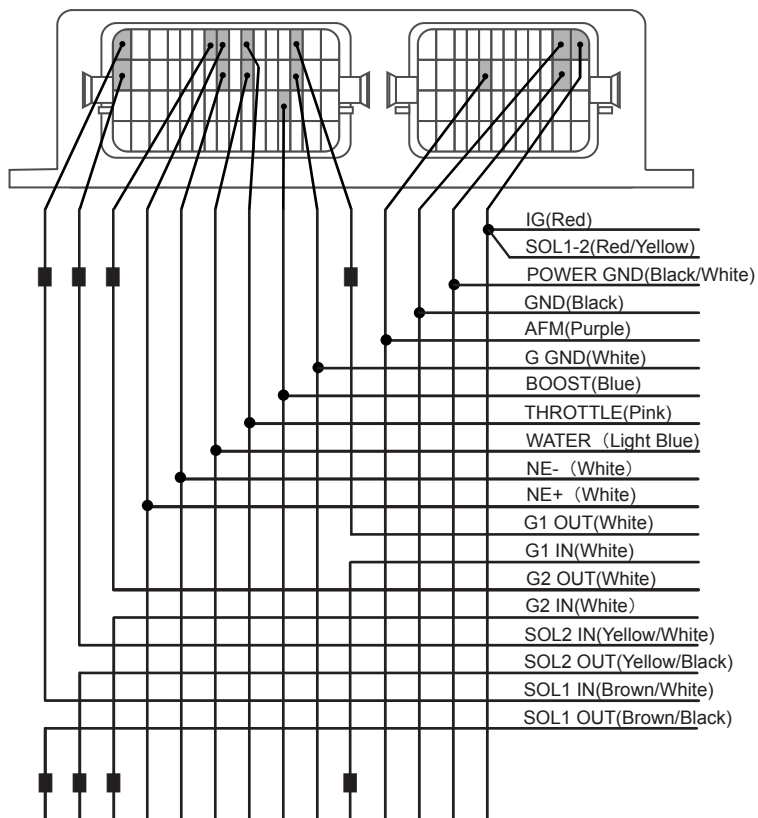
VEHICLE	YEAR	MODEL	ENGINE	Number of adaptor	HARNESS		Location of ECU
					Universal harness	Vehicle specified harness	
Lancer Evolution X(5MT)	'07.10 -	CZ4A	4B11	1	1 L	-	⑦

Vehicle specified harness is not available for LANCER EVOLUTION X. Refer to the wiring diagram below and connect with Universal Harness 1L.

1. Wiring Outline

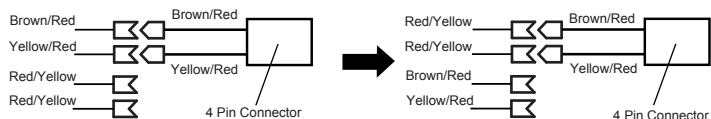


2. Wiring Diagram



3. Wiring

- (1) Set Universal Harness 1L from cabin to engine compartment or from engine compartment to cabin.
- (2) Refer to "5. Location of ECU" and make sure the location.
- (3) Refer to the wiring diagram and connect with splice or solder. (P2 × 10)
 - If hand tool to clamp splice is not available, clamp with needle nose pliers and solder the splice and the wire. Then, make sure that the wire does not come out from the splice.
- (4) Insulate the connected portions with tape to prevent short circuit.
- (5) Remove bullet connectors of Brown/Red wire and Yellow/Red wire from 4 pin connector of Universal Harness. Connect bullet connectors of Brown/Red wire and Red/Yellow wire. Connect Yellow/Red wire and Red/Yellow Wire.



- (6) Insulate unused wires with tape to prevent short circuit.
- (7) Connect 26 pin connector of Universal Harness to VALCON unit. (P1 × 1)
- (8) Connect adaptor to 4 pin connector of Universal Harness 1L.

WARNING

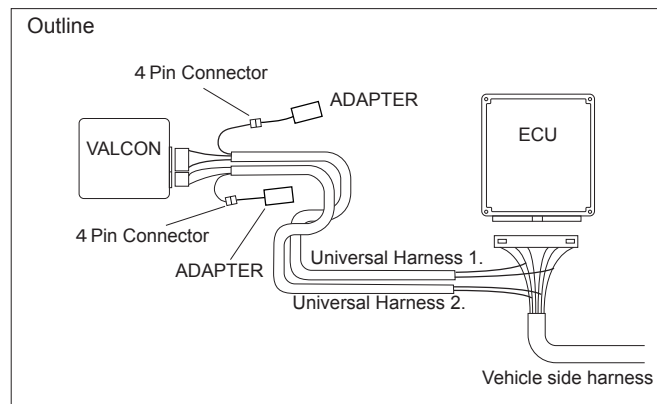
- Temperature of adaptor (sold separately) will be high during operation. Do not locate it near flammable items. It may be cause of fire.

IMPREZA Sti

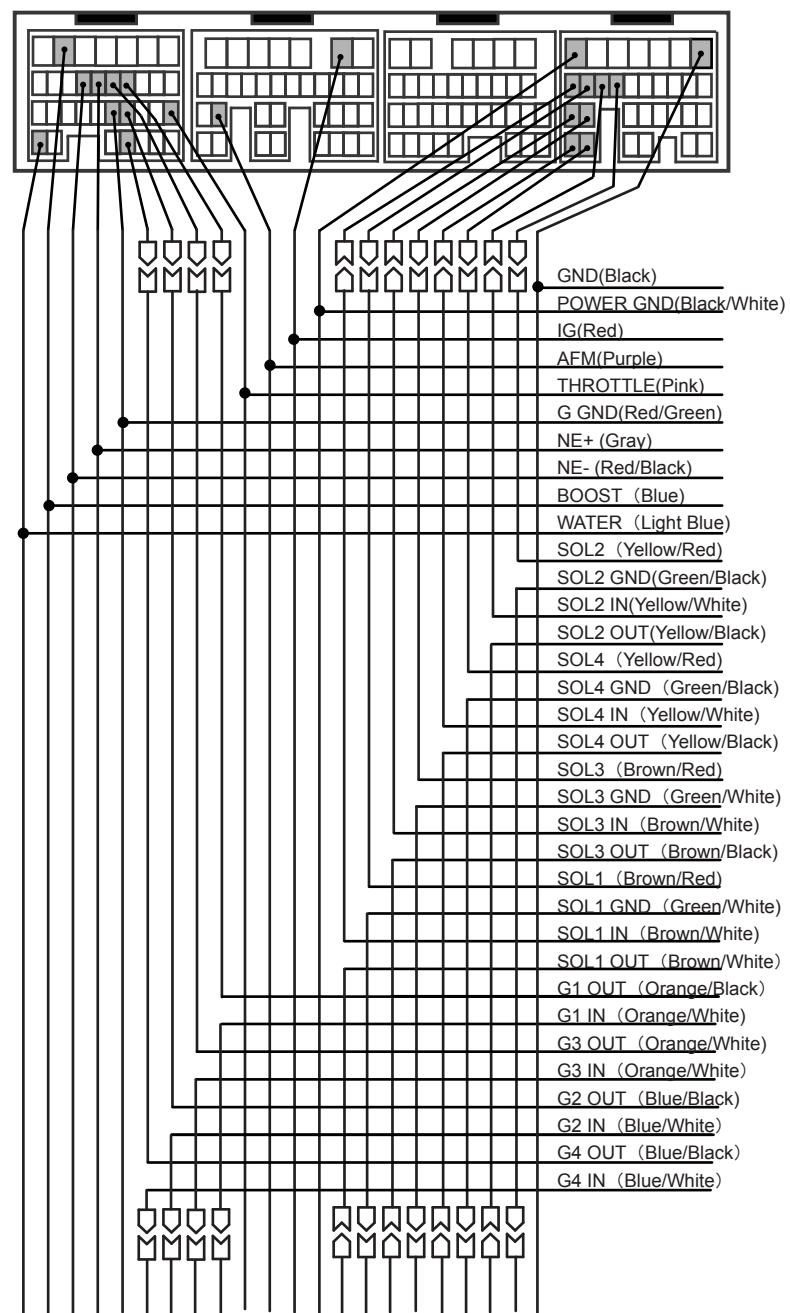
VEHICLE	YEAR	MODEL	ENGINE	Number of adaptor	HARNESS		Location of ECU
					Universal harness	Vehicle specified harness	
IMPREZA Sti	'07.10 -	GRB	EJ20	2	1, 2	FV2-1	⑤

Vehicle Specified Harness (FV-2-1) is available for IMPREZA STI. To use vehicle specified harness, refer to "6.1 Connection with Vehicle Specified Harness" and connect the harness. In case using Universal Harness 1 and Universal Harness 2, refer to the following harness diagram.

1. Wiring Outline

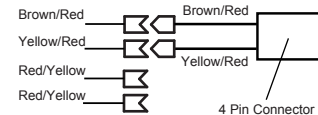


2. Wiring Diagram



3. Wiring

- (1) Refer to "5. Location of ECU" and make sure the location.
- (2) Refer to the wiring diagram and connect with splice or bullet connector. (P2 × 10, P3 × 12, P4 × 12, P5 × 12, P6 × 12)
 - If hand tool to clamp splice is not available, clamp with needle nose pliers and solder the splice and the wire. Then, make sure that the wire does not come out from the splice.
- (3) Insulate the connected portions with tape to prevent short circuit.
- (4) Make sure that Brown/Red wire and Brown/Red wire of 4 pin connector from Universal Harness 1 and Universal Harness 2 are connected. Make sure Yellow/Red wire and Yellow/Red wire are connected.
 - If connection is not correct, connect as shown below.



- (5) Insulate unused wires with tape to prevent short circuit.
- (6) Connect 26 pin connector of Universal Harness 1 and 12 pin connector of Universal Harness 2 to VALCON unit. (P1 × 1)
- (7) Connect adaptor to 4 pin connector of Universal Harness 1 and Universal Harness 2.

WARNING

- Temperature of adaptor (sold separately) will be high during operation. Do not locate it near flammable items. It may be cause of fire.