

VALCON HARDWARE MANUAL

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HKS Co., Ltd.

REVISION RECORD

DATE	CONTENT
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NOTICE

Thank you for purchasing HKS VALCON.

This manual explains about functions and wiring of VALCON that is not mentioned in the operation manual and installation manual.

SAFETY INSTRUCTIONS

This manual shows dangerous level for users with the following marks.

WARNING Installer or user may be injured. Other items may be damaged (caused by this product [i.e.] Damage/fire of the vehicle.).
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WARNING

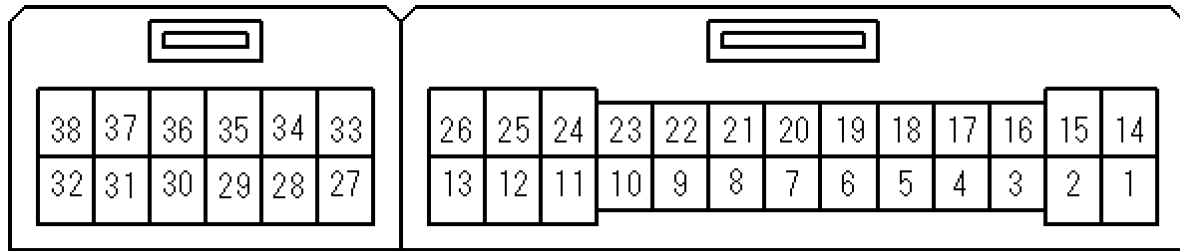
- For wiring, make sure the connection to prevent open circuit/short circuit/wrong connection. They may cause electric shock, damage/fire of vehicle.
- Do not use 5V power supply for Pressure Sensor for any other devices than HKS Option Pressure Sensor.

Otherwise, it does not work properly or engine may be damaged.

1. VALCON Input and Output Signal

1.1. Pin Layout.

Figure of VALCON Unit connector from pin inserted side.



26 pin connector (Wire colors of Universal Harness 1)

No	Name	Color	Description	No	Name	Color	Description
1	GND	Black	Control ground	14	IG	Red	Ignition power supply
2	GND	Green	Pressure sensor ground	15	+5V	Yellow	5V power supply for pressure sensor
▲3	NE-	Red/Black	Crankshaft angle signal -	▲16	NE+	Gray	Crankshaft angle signal +
▲4	G1 OUT	Orange/Black	Camshaft angle signal 1 output	▲17	G1 IN	Orange/White	Camshaft angle signal 1 input
▲5	G2 OUT	Blue/Black	Camshaft angle signal 2 output	▲18	G2 IN	Blue/White	Camshaft angle signal 2 input
▲6	G GND	Red/Green	Camshaft angle signal -	19	AFM/OP IN1	Purple	Air flow sensor input / Option input 1
7	REV OUT	White	RPM signal output	20	BOOST/OP2 IN	Blue	Pressure sensor input / Option input 2
8	OP OUT1	Brown	Voltage output 1 for data logger	21	THROTTLE	Pink	Throttle sensor input
9	OP OUT2	Orange	Voltage output 2 for data logger	22	WATER	Light Blue	Water temperature sensor input
10	SOL2 IN	Yellow/White	Solenoid 2 input	23	SOL1 IN	Brown/White	Solenoid 1 input
11	SOL2 OUT	Yellow/Black	Solenoid 2 output	24	SOL1 OUT	Brown/Black	Solenoid 1 output
12	SOL2 GND	Green/Black	Solenoid 2 ground	25	SOL1 GND	Green/White	Solenoid 1 ground
13	POWER GND	Black/White	Power ground	26			Not used

12 pin connector (Wire colors of Universal Harness 2)

No	Name	Color	Description	No	Name	Color	Description
27	SOL3 GND	Green/Black	Solenoid 4 ground	33	SOL3 GNED	Green/White	Solenoid 3 ground
28	SOL4 OUT	Yellow/Black	Solenoid 4 output	34	SOL3 OUT	Brown/Black	Solenoid 3 output
29	SOL4 IN	Yellow/White	Solenoid 4 input	35	SOL3 IN	Brown/White	Solenoid 3 input
30			Not used	36			Not used
▲31	G3 OUT	Orange/Black	Camshaft angle signal 3 output	▲37	G3 IN	Orange/White	Camshaft angle signal 3 input
▲32	G4 OUT	Blue/Black	Camshaft angle signal 4 output	▲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 is white. They have name of signals on the tip of wires.

2. Option Pressure Sensor

2.1. Option Pressure Sensor

Factory diagram is for stock pressure sensor. If it is operated higher boost level than the range of stock pressure sensor, use Option Pressure Sensor (Super Wide Range).

Option Pressure Sensor (Super Wide Range) has pressure range for 13.3 - 400kPa.

To use Option Pressure Sensor (Super Wide Range), refer to 2.2 Wiring Diagram and connect using Option Pressure Sensor Harness (Super Wide Range).

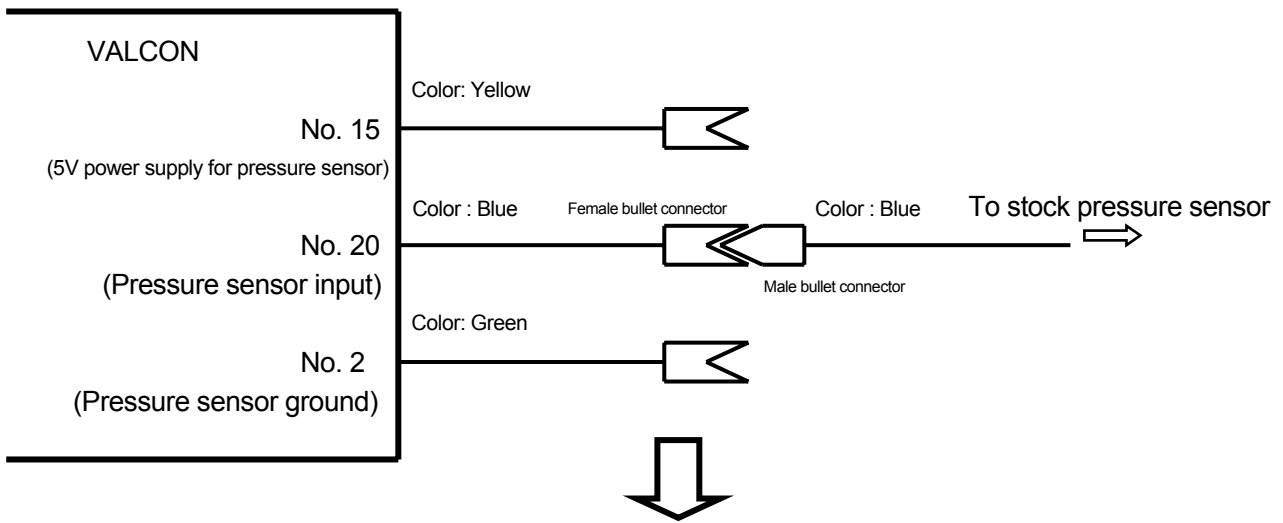
After wiring connection, set Pressure sensor type with VALCON EasyWriter.

<Required item>

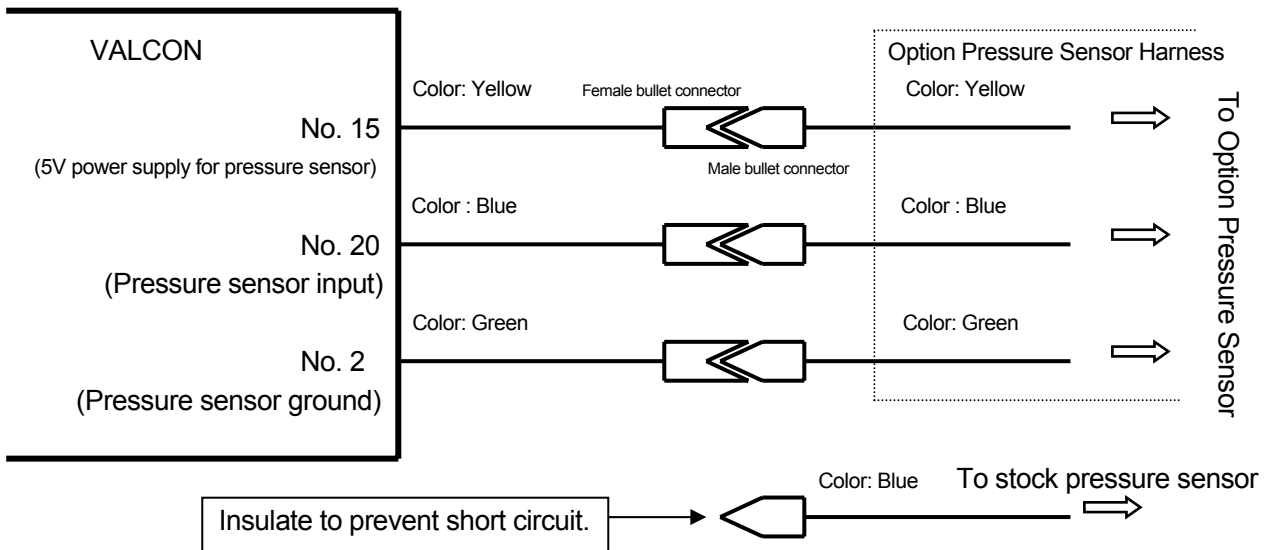
Name	Code No.
Option Pressure Sensor (Super Wide Range)	4299-RA008
Option Pressure Sensor Harness (Super Wide Range)	4299-RA015

2.2. Wiring Diagram

Factory Wiring Diagram



Wiring Diagram with Option Pressure Sensor



3. External Input Signal Control

3.1. External Input Signal Control

VALCON can be controlled by external input voltage signal for 0 - 5V.

Since signal input is common, in order to control intake camshaft with external input, air flow sensor signal cannot be input. In order to control exhaust camshaft with external input, pressure sensor signal cannot be input.

Refer to 3.2 wiring Diagram and connect wire of external input signal for intake side and exhaust side. For intake camshaft control with external 0-5V input, connect to Option Input 1 (Pin No. 19).

For exhaust camshaft control with external 0-5V input, connect to Option Input 2 (Pin No. 20).

After connection, set for external input signal control with VALCON EasyWriter.

Target Valve Timing will be 0V at 150° Crankshaft Angle and 5V at 50° Crankshaft Angle.

Voltage for target valve timing can be calculated with the following calculation formula.

$$\text{Input voltage (V)} = (150 - \text{Target Valve Timing}) \times 0.05$$

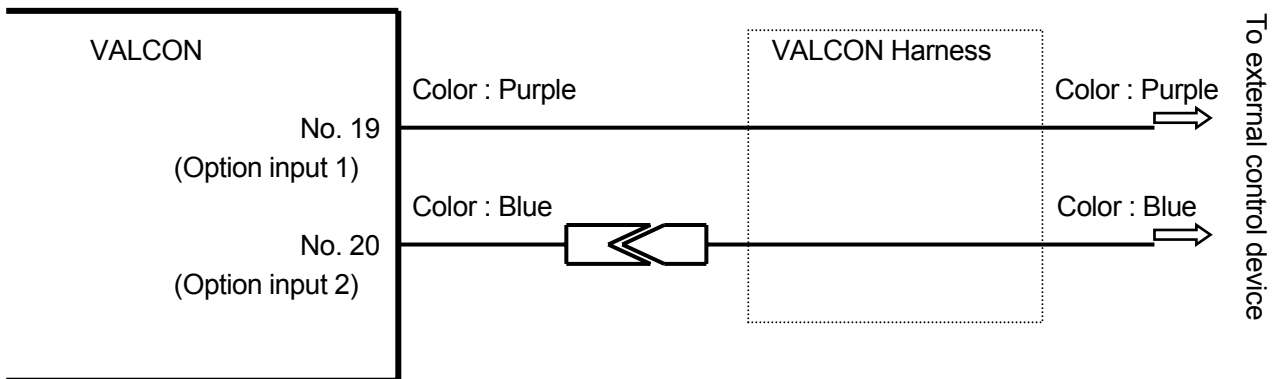
i.e.) To set valve timing at 120° Crankshaft Angle.

$$1.5 = (150 - 120) \times 0.05$$

If 1.5V is input as external control signal, valve timing will be 120° Crankshaft Signal.

3.2. Wiring Diagram

Wiring connection of external signal input (Universal Harness 1, 1L)



Wiring connection of external signal input (Vehicle Specified Harness)

