



## WH171 Loom Instructions.

The WH171 is intended to help C400 series ecu installers to create a tailored harness for a particular vehicle or application. We have identified that most vehicle builders do not have access to the correct tools to assemble the 20 way connector used on the C400 series ecu which can cause problems when modifying our standard harness or making up their own. The WH171 provides a pre-assembled 20 way connector with a complete set of flying leads that can be cut to length and terminated with standard automotive connectors using generally available tools.

Rather than just provide 20 wires we have tried to cater within the harness for the most common uses on the vehicle. Where appropriate 1,2 or 3 wires may be linked. For security the harness is sleeved at the main connector point for 200mm. The individual wires are identified at two locations along their length with the pin number to which they are connected in the 20 way connector. Using the ECU pinout diagram for your ecu you can determine the function for each wire.

As a guide for first time harness assemblers what follows is a more comprehensive description for expected connection and how they would be expected to be wired into the harness. Where possible examples are given for Lumenition parts or those commonly used.

### Main Supply

Pin 1, White

This is the 12v main supply for the ECU and should come from an ignition switched source. For convenience we have provided two high current wires and one low. The wire 1A should be connected to the supply source such as the fusebox or main relay. The wire 1 can be used to supply items such as the fuel pump relay or upshift device. The wire 1B can be used to supply a 12v feed to the injectors.

### Main Gnd.

Pin 19/20, Black

This is the main negative earth connection for the system. The two high current wires 19 and 20 should be taken back to the battery earth or a secure chassis earth point. The wire marked 20 is a low current feed for the trigger input of the Lumenition CEMs, screens and low current devices.

### Sensor Gnd.

Pin 8, Black/Green

This is a separate earth voltage connection wire from the ecu that allows the low signal sensors to be supplied with a clean 0 volt signal. These wires 8, 8A, 8B and BC should be used only for the reference earth connections to engine sensors such as temperature and throttle position. Three wires are provided to allow easy distribution to various positions on the vehicle.

### Sensor Supply

Pin 7, Green/Red

This is a connection to provide a stable low voltage supply to those sensors that require a 5v power source. The most common sensors that will require this connection are the engine load sensors, throttle position and manifold pressure. Two wires are provided, 7 and 7A.

## ECU Inputs

### Engine Pickup

Pin 9/10, Purple and Blue

These two wires are formed as a twisted pair for use on crank position sensors (HDR). Wire 9 (Purple) is connected to the negative output from the sensor. Wire 10 (Blue) is connected to the positive or signal output of the sensor. Correct identification of the polarity of your chosen sensor is very important for proper ecu operation. If a distributor pickup (LDR) is being used then wire 10 is the trigger signal and wire 9 provides the power supply for the sensor.

Throttle Position Signal.

Pin 4, Thick White Coaxial Screened

The signal from the throttle position sensor is connected to wire 4. Wire 4 is a coaxial shielded wire and you must ensure that only the centre conductor is terminated when making your connection. The outer screen can be cut back and left unterminated. The throttle position sensor will have three connections and wires 7 and 8 provide these as detailed above.

Manifold Pressure Signal.

Pin 6, Black/Red

The signal from a 0 to 5v manifold pressure sensor can be connected to wire 6. The sensor will have three connections and wires 7A and 8A provide for these as detailed above.

Engine Coolant Temperature.

Pin 2, Green/Blue

A resistive engine temperature sensor can be connected to wire 2. The second connection for the sensor is a ground reference and uses wire 8B and/or 8C as detailed above. Temperature sensors are not generally polarity sensitive and can be connected either way round.

Air Inlet Temperature.

Pin 3, Black/Blue

A resistive engine temperature sensor can be connected to wire 2. The second connection for the sensor is a ground reference and uses wire 8B and/or 8C as detailed above. Temperature sensors are not generally polarity sensitive and can be connected either way round.

EGO Sensor.

Pin 5, Purple/Black

A standard 0 to 1v exhaust gas oxygen sensor signal can be connected on wire 5. Depending upon the sensor used there may be 1, 3 or 4 wires from the sensor. The 3 and 4 wire sensors will have two heater leads that can be connected to a relay switched 12v and earth. The 4 wire sensor will have a signal reference ground lead that should be connected to sensor gnd, wire 8 as detailed above.

## **ECU Outputs**

Fuel Pump Relay.

Pin 13, Blue/Yellow

Wire 13 provides a switch to earth output to drive a fuel pump relay. The other side of the activating coil on the relay should be fed from an ignition switched 12v supply.

Ignition Amplifiers (CEM units)

Pin 11/12 (18), White/Yellow, White/Blue (Yellow/Blue)

The external Lumenition CEM ignition drivers are triggered from wires 11, 12 and maybe 18. For distributor pickup systems (LDR) only wire 12 is used to trigger the single CEM. For crank pickup (HDR) distributorless operation wires 12, 11 and 18 are used for CEM A, B and C respectively.

If you are using a crank pickup but intend to retain the distributor for HT then the relevant wires should be joined and connected to the trigger input of the single CEM.

Fuel Injectors

Pin 15/16/17/18, Yellow/Red, Yellow/Purple, Yellow/Green, Yellow/Blue

Up to 8 injectors may be connected using the four wires 15,16,17 and 18. The second connection for each injector should be wired to a 12v supply from the vehicle. The wire marked 1B can be used to provide ignition switched supply if the source chosen for 1A has a suitable current capacity. Paired injectors are wired in parallel with one connection to supply voltage and the other to the appropriate ECU pin. The ECU pinout in the user manual shows the correspondence for A, B and C. The injector pairs for cylinders should be matched to the ignition firing for A, B and C dependent upon the firing order of the engine.

Wiring for Lumenition Sensors and parts.

Lumenition Part	Pin	WH171 Wire
CET150, Optical Trigger	1 2 3	9, Purple 20, Black 10, Blue
CPS001, Crank Trigger	1 2	10, Blue 9, Purple
TPS001, Throttle Position Sensor	1 2 3	4, Screened White 7, Green/Red 8, Black/Green
WTS001, Coolant Temperature Sensor	1 2	2, Green/Blue 8, Black/Green
ATS001, Air Inlet Temperature Sensor	1 2	3, Black/Blue 8, Black/Green
HEG001, Exhaust Gas Oxygen Sensor	1 2 3	5, Purple/Black 12v Supply Earth
CEMA, Performance Ignition Module For coil 1-4 on distributorless 4 For coil 1-6 on distributorless 6*	1 2 3	No Connection 20, Black 12, White/Blue
CEMB, Performance Ignition Module For coil 2-3 on distributorless 4 For coil 2-5 on distributorless 6*	1 2 3	No Connection 20, Black 11, White/Yellow
CEMC, Performance Ignition Module For coil 3-4 on distributorless 6*	1 2 3	No Connection 20, Black 18, Yellow/Blue
INJ00x, Fuel Injector Cylinder matching dependent upon firing order. C451 wiring not critical as all injectors fire simultaneously	1 2	15, 16, 17, 18 1, White

\*Note: Ignition pairing is dependent upon firing order, example given is for straight six with firing order 1,5,3,6,2,4.