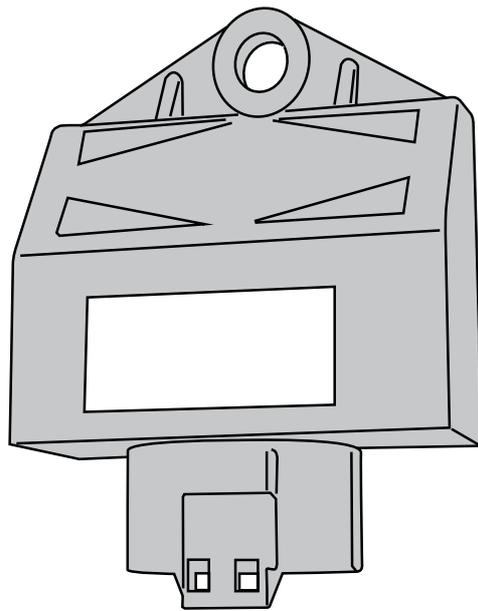


WORKSHOP MANUAL



**ECU-CONTROLLED CARBURETION SYSTEM
EURO 4
DELL'ORTO**

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Operating principle

The system controls the carburetion and the ignition.

Carburetion is corrected according to:

- Engine load.
- Engine temperature.
- Correction of the mixture strength based on the Lambda sensor values.
- Richness regulated by the volume of air in the idle circuit and the main circuit.

System advantages

Better control of the carburetion and ignition.

Meeting the requirements of the new anti-pollution standards.

Miscellaneous

If the ECU's power supply is less than 8 volts, the vehicle cannot start.

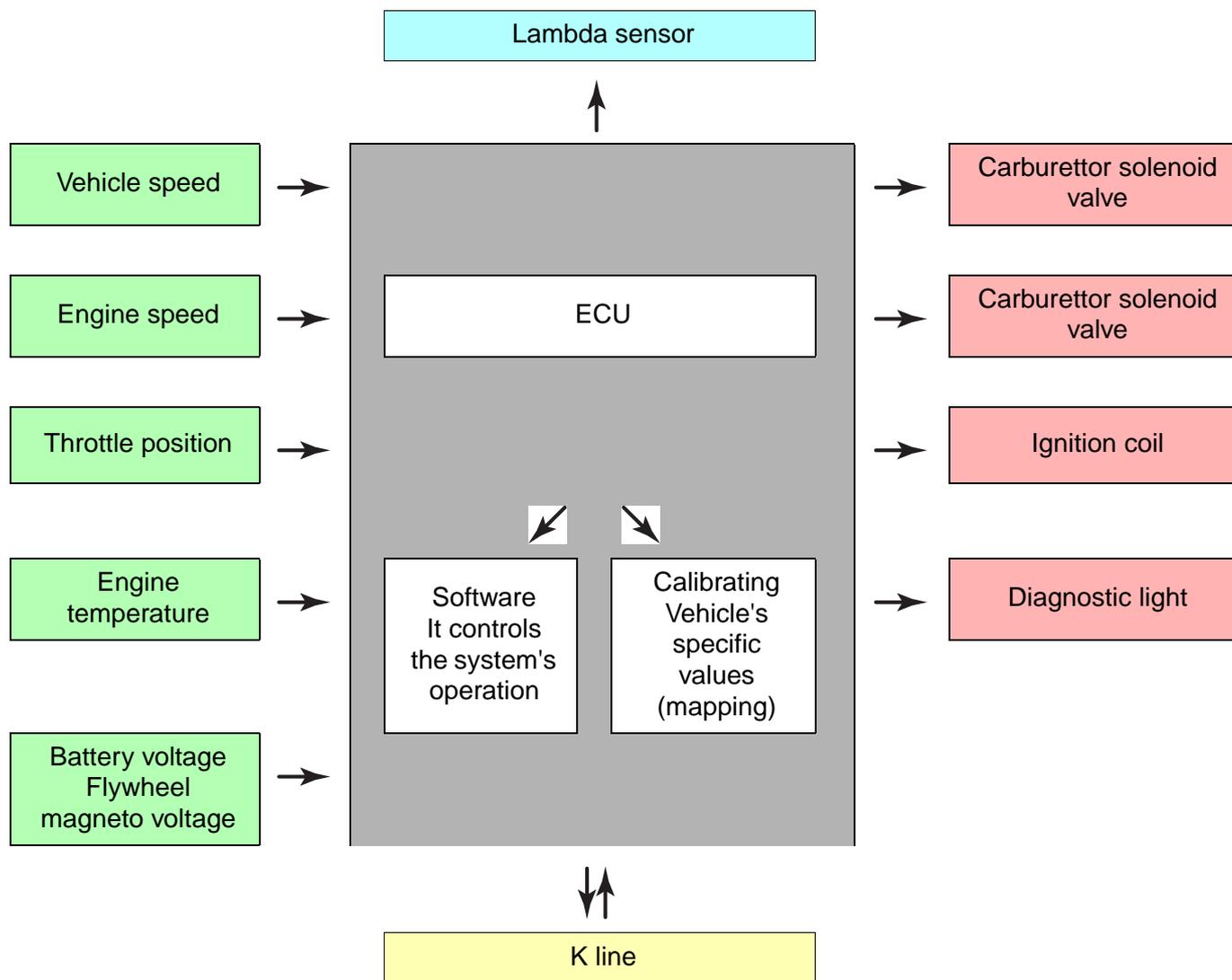
The engine high-temperature warning light goes on at 105°C.

Maximum engine speed is restricted by ignition cut-off.

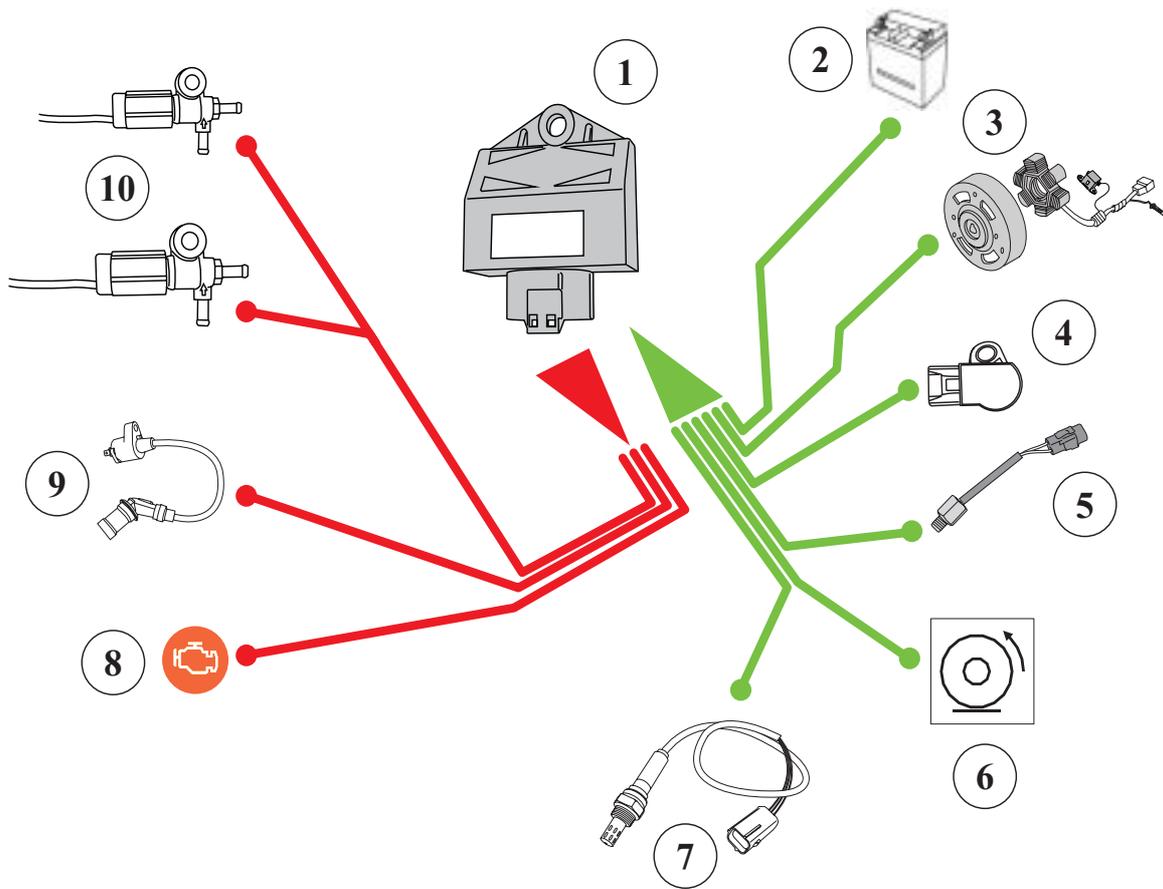
When the vehicle is on the centre stand and the rear wheel is turning alone, the MIL indicator light comes on due to lack of speed information from the front wheel. The indicator goes out when the ignition is switched back on.



SYNOPTICS

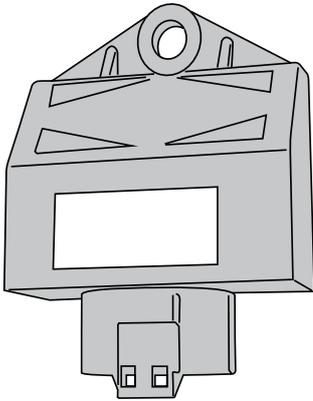


GENERAL VIEW



- | | |
|--------------------------------|------------------------|
| 1. ECU | 7. Lambda sensor |
| 2. Battery | 8. Diagnostic light |
| 3. Engine speed sensor | 9. HT coil |
| 4. Throttle position sensor | 10. Air solenoid valve |
| 5. Engine temperature sensor | |
| 6. Vehicle speed (Speedometer) | |



DETAILED DESCRIPTION OF COMPONENTS**■ ECU**

According to the engine speed(measured by the engine speed sensor), to the engine temperature(measured by the temperature sensor), and to vehicle speed (measured by the speed sensor),the proportion of fuel is calculated by the ECU which determines the mixture strength which is required for the engine's good operating efficiency.

This mixture strength varies according to the control time of the air solenoid valve.

The air going through the air solenoid valve is added in the carburettor, inside the emulsion tube.

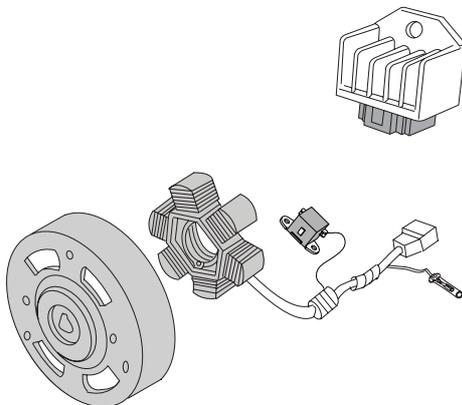
The injection ECU also controls the ignition system thanks to the information provided.

Maximum engine speed is restricted by ignition cut-off.

- Connection: 18 pins.
- Operating voltage: Between 8 and 14.7 volts.
- Protection against over voltage up to 24 volts.



To avoid any risk of damaging the ECU, the ECU or the components of the circuit must never be disconnected when the vehicle is under power.

■ Current generator

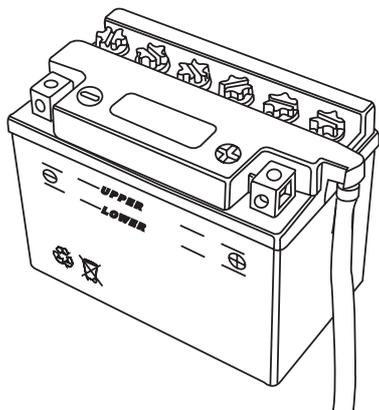
- Power: 100 W/5000 tr/mn.

The current generator supplies electricity to the vehicle and recharges its battery. It delivers alternating current which is transformed to direct current by the voltage regulator.

When the battery is low, the engine can be started using the kick starter. The generator supplies sufficient minimum voltage for the system to operate.

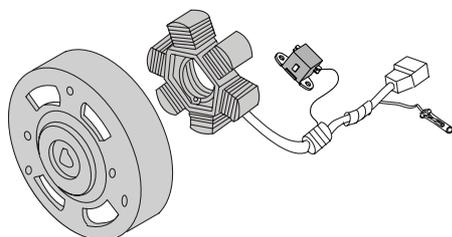


■ Battery



The battery is essential for the operation of the system.
The minimum battery voltage necessary for the ECU to function is 8 volts.

■ Engine speed



The ECU uses the pick-up to calculate the engine speed and the spark advance.

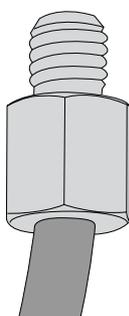
Connection:

- Pin 1: To ECU pin 5.

Check: $R = 110 \pm 10\% \Omega$

Air-gap: 0.6 mm

■ Engine temperature sensor



Negative temperature coefficient thermistor (CTN).

Connection:

- Pin 1: To ECU pin 2.
- Pin 2: To ECU pin 13.

- Check: $R = 125 \pm 10\% \text{ k}\Omega$ at 25°C

■ Vehicle speed



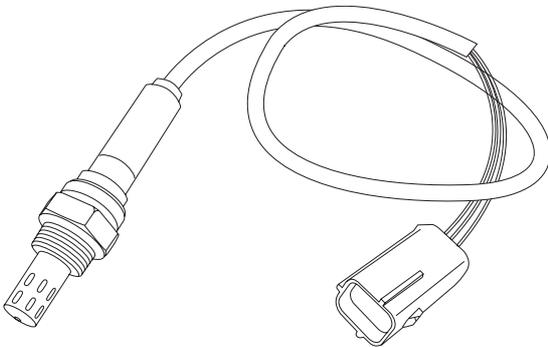
The speed information is sent by the instrument panel.

- To ECU pin 6.



When the vehicle is on the centre stand and the rear wheel is turning alone, the MIL indicator light comes on due to lack of speed information from the front wheel. The indicator goes out when the ignition is switched back on.

■ Lambda sensor



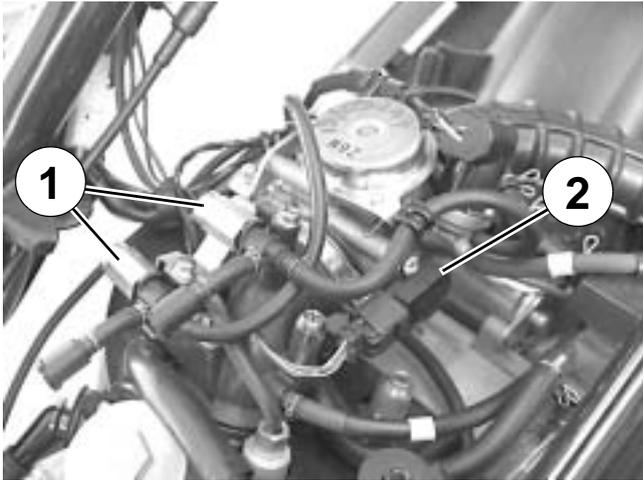
The oxygen sensor allows you to adapt the mixture strength in order to lower the amount of exhaust pollutants.

Connection:

- Pin 1: To ECU pin 2.
- Pin 2: To ECU pin 3.

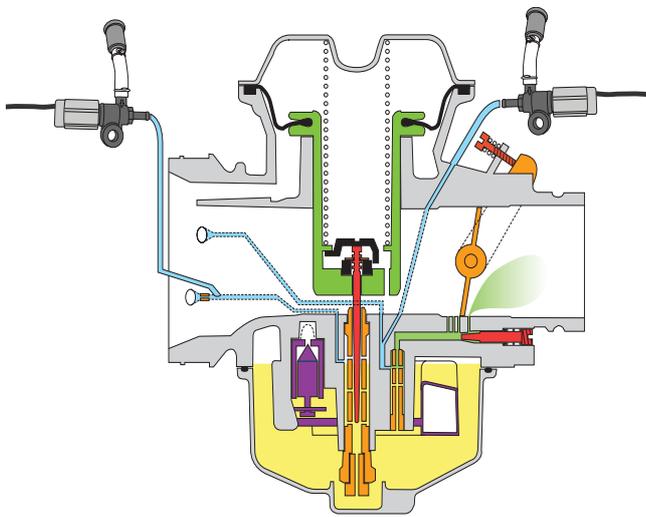


■ **Carburettor.**



Including:

1. The air solenoid valves.
2. The throttle position sensor.



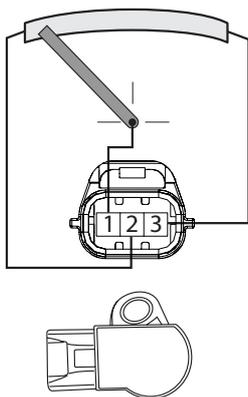
Air solenoid valve

Controlled simultaneously by the ECU, they control the air-fuel mixture strength by adding air into the mixture circuit and the main circuit according to the engine needs.

- Check: $R = 75 \pm 20\% \Omega$

Solenoid valve air filter

- To be replaced once every 5000 km.
- If the filter is clogged, the mixture will be too rich.



Throttle position sensor

Connection:

- Pin 1: To ECU pin 4.
- Pin 2: To ECU pin 2.
- Pin 3: To ECU pin 10.

Check (Rest position):

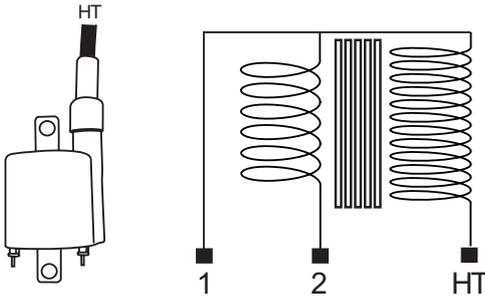
- Between terminals 1 and 2: $R = 0.84 \pm 10\% k\Omega$.
- Between terminals 1 and 3: $R = 4.9 \pm 10\% k\Omega$.
- Between terminals 2 and 3: $R = 5.42 \pm 10\% k\Omega$.



As the position sensor is set in the factory, do not remove it from the carburettor.



■ Ignition coil



Connection:

- Pin 1: To ECU pin 18.
- Pin 2: + Battery.

Check:

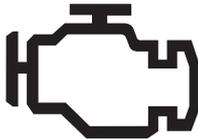
- Primary winding: 1 and 2: $R = 2.4 \pm 10\% \Omega$.
- Secondary coil: 1 and HT: $R = 9.75 \pm 10\% \text{ k}\Omega$ (Without suppressor).

The ECU controls ignition. It uses the speed sensor to determine the ignition point.

It calculates ignition-spark advance based on parameters such as engine load, RPM, temperature, etc..

A dwell time (coil charging time) correction is applied based on the battery voltage.

■ Diagnostic light



A diagnostic light informs the driver of a fault.

Fault reading is carried out by "reading" the diagnostic warning light flashes.

Only one fault code is indicated during the test.

Connection:

- To ECU pin 16



When the ignition is switched on, the diagnostic light goes on to check its operation.



DIAGNOSTIC

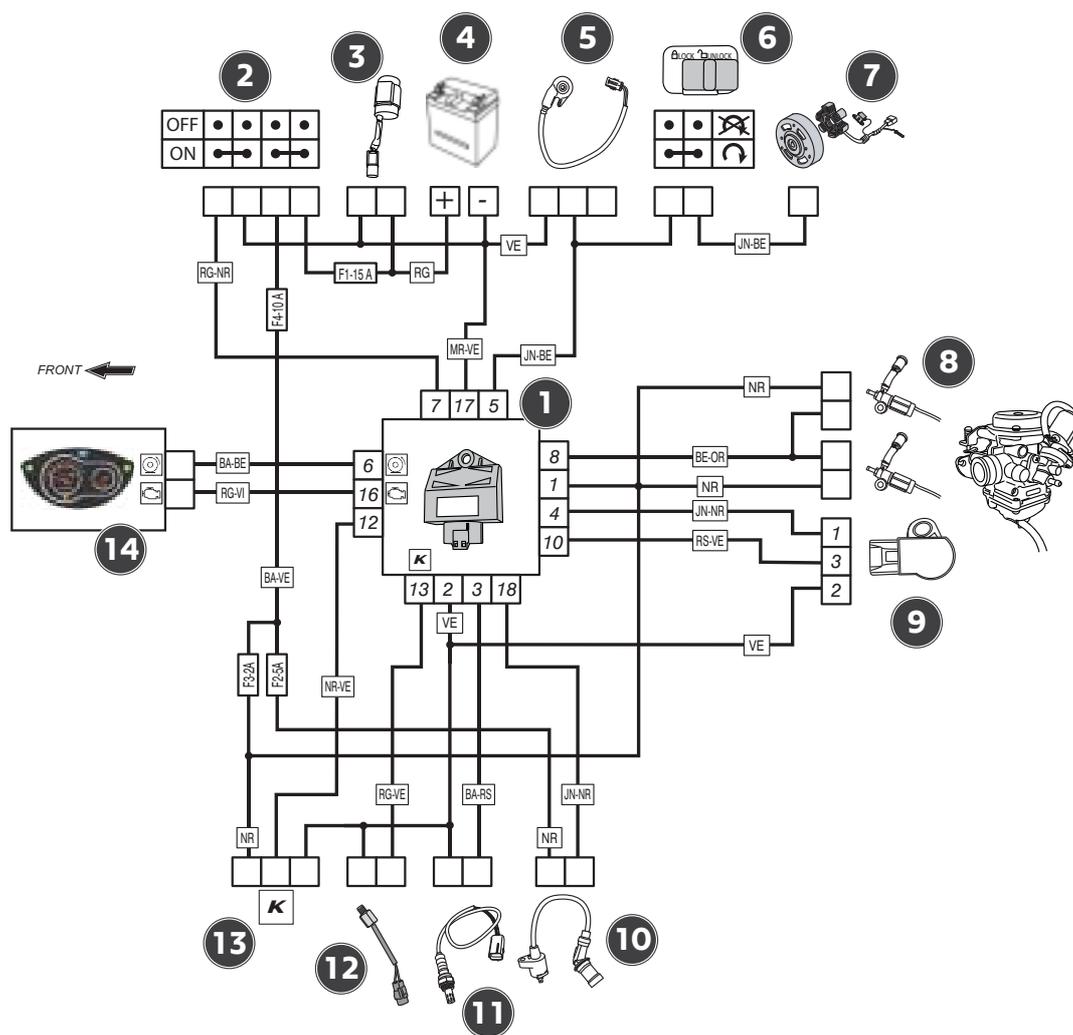
Faults	Fault codes The indicator lights blinks	Cause
Throttle position sensor	1 Flashing	Throttle potentiometer circuit fault. <ul style="list-style-type: none"> - Short-circuit to the plus - Short-circuit to the earth Check the electrical circuit of the throttle potentiometer (Rest position): <ul style="list-style-type: none"> - Between terminals 1 and 2: $R = 0.84 \pm 10\% \text{ k}\Omega$. - Between terminals 1 and 3: $R = 4.9 \pm 10\% \text{ k}\Omega$. - Between terminals 2 and 3: $R = 5.42 \pm 10\% \text{ k}\Omega$.
Air solenoid valve	2 Flashing	Air solenoid valve fault <ul style="list-style-type: none"> - Short-circuit to the plus - Short-circuit to the earth Check the solenoid valve electrical circuit: $R = 75 \pm 20\% \Omega$
Engine temperature sensor	3 Flashing	Temperature sensor fault <ul style="list-style-type: none"> - Short-circuit to the plus - Short-circuit to the earth Check the temperature sensor electrical circuit: $R = 125 \pm 10\% \text{ k}\Omega$ at 25°C
Lambda sensor	4 Flashing	the Lambda sensor is defective <ul style="list-style-type: none"> - Short-circuit to the plus - Short-circuit to the earth Faulty lambda sensor circuit.
Speed sensor	6 Flashing	Speed sensor signal fault <ul style="list-style-type: none"> - Short-circuit to the plus - Short-circuit to the earth



Only one fault code is indicated during the test.



WIRING DIAGRAM



- | | |
|------------------------|-------------------------------|
| 1. ECU | 8. Air solenoid valve |
| 2. Ignition switch | 9. Throttle position sensor |
| 3. Capacitor | 10. HT coil |
| 4. Battery | 11. Lambda sensor |
| 5. Kickstand switch | 12. Engine temperature sensor |
| 6. Circuit breaker | 13. K line |
| 7. Engine speed sensor | 14. Diagnostic light |





OFFICIAL PARTNERS

P/N MA0062

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