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## Timing Advance Processor

**SCORPIO**

code 18CE 0001 1105 - 18CE00011106

Install the **SCORPIO** BRC timing advancer processor on the vehicles with the ignition system with external piloting module outside the engine ECU (see general wiring diagram).

### 1. General Information

BRC Gas Equipment spark timing advancers are suitable to modify the original ignition point (calculated for the correct petrol operation) and to adapt it to alternative fuels such as LPG or CNG having a slower combustion timing compared to petrol. The spark timing advancers make the ignition occur in advance with regards to the original timing.

With the installation of the spark timing advancer you will have:

- better performances while speeding up,
- less fuel consumption,
- reduction of possible backfires.

The spark advance is active only during LPG or CNG operation. During petrol one the original advance value is electronically set up again.

The spark advance is managed by a MICROCONTROLLER elaborating the original curve according to the parameters contained in the memory and other ones that can be externally modified. Adjustments are carried out through microswitches and trimmer.

From the outside we can intervene on:

- spark advance degree programming,
- TPS signal type,
- advance intervention threshold.

BRC spark timing advancers work with a feeding tension of 10 - 14 V and temperature range according to automotive standards. Moreover they meet 89/336/CEE and 95/54/CE norms for the electromagnetic compatibility.

### 2. Installation

Install the spark timing advancer as indicated in the general plan or specific wiring diagrams supplied by BRC.

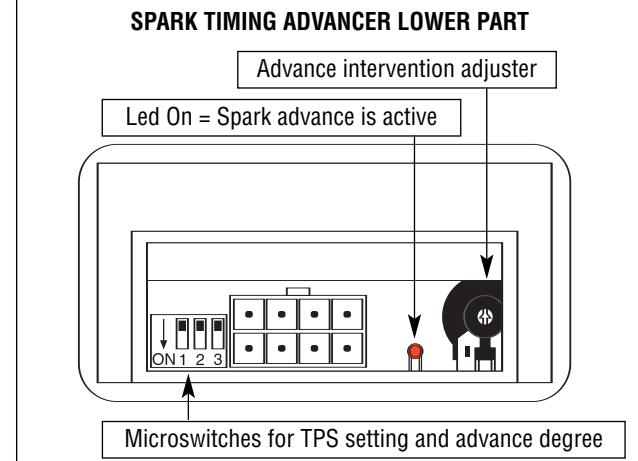
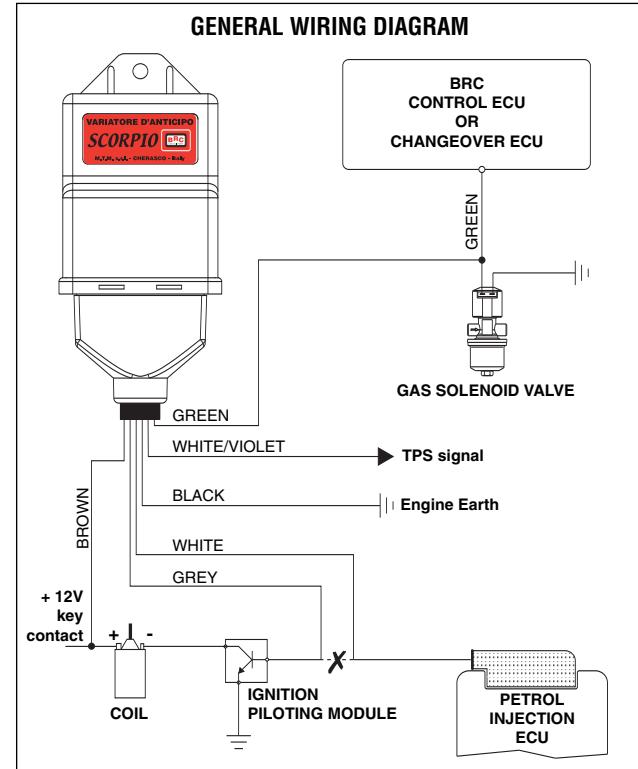
During the installation respect all the indications described on the paper or the specific wiring diagrams supplied by BRC.

### 3. TPS signal setting up

**SCORPIO** spark timing advancer is able to recognise analogic TPS with signals from 0 to 5 V and from 5 to 0 V. For other types of TPS, please refer to § 8 or contact the Technical Support dept.

For the TPS type setting up please follow these steps:

- 1) switch the dashboard off;



- 2) select the TPS type by using the microswitch 1 (if necessary);
  - 3) switch the dashboard on again.
- P.S. if the dashboard is not switched off the variations on the microswitch 1 are not acquired and it is necessary to switch the dashboard off and then on again.

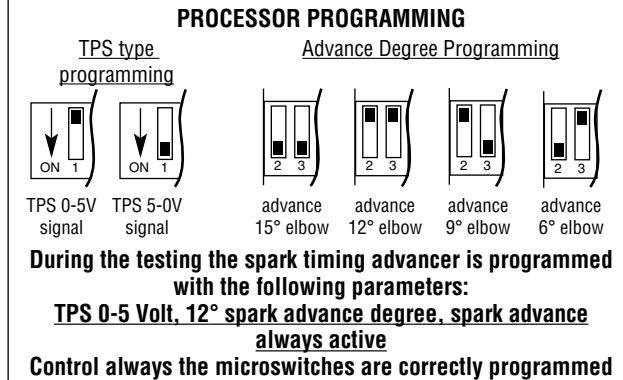
### 4. Spark advance degree programming

It is possible to modify the value of the advance degree by using the microswitches 2 and 3.

It is possible to intervene on these settings also using a spark timing advancer that is active during the gas operation.

### 5. How and when disconnect the spark advance

On some vehicles it is better to disconnect the spark advance during deceleration and idling phase to avoid irregular operations. The spark advance is anyway needed during speeding up to improve performances, consumption and reduce the backfire danger. The use of **SCORPIO** spark timing advancer can allow to switch on or off automatically the spark advance by connecting the White/Violet wire from the spark timing advancer to the throttle body potentiometer signal.



During the testing the spark timing advancer is programmed with the following parameters:

**TPS 0-5 Volt, 12° spark advance degree, spark advance always active**

Control always the microswitches are correctly programmed

### 6. Spark advance switching on setting

The throttle body potentiometer idling signal has not always the same value and for this reason inside the spark timing advancer we have a setting for the switching on value setting.

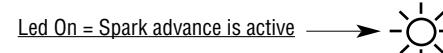
Acting on the spark advance switching on adjuster as follow does the setting up:

- 1) control the adjuster is completely turned anticlockwise;
- 2) with the engine at idling start to turn the adjuster clockwise till the LED switch off (spark advance switched off);
- 3) in this way, when speeding up, the LED on the spark timing advancer switches on and then off when decelerating.

P.S. Do not carry out the "spark advance switching on setting" if the White/Violet wire is not connected.

### 7. How to know if the spark advance is active

The spark timing advancer is active if the LED is fixed on. In this case the system uses the advance degree calculated by the microcontroller.



When the LED is off the spark advance is not active. This usually happens during petrol operation but also during gas one if the spark advance has

been disabled in such conditions.

### 8. Operation without TPS signal

For vehicles where there is not one of the above-indicated TPS signals or if you want to have the spark advance always operative, follow these steps:

- 1) switch the dashboard off;
- 2) insulate the not used White/Violet wire;
- 3) switch the microswitch to "TPS 0-5 signal" position (default position);
- 4) start the engine again.

P.S. for this setting the adjuster position does not effect the spark timing advancer operation.

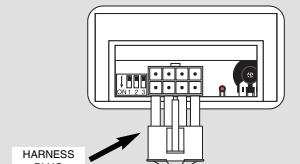
#### WARNING:

- We strongly suggest you to place the spark timing advancer far from possible water infiltration or heat sources (exhaust manifolds).
- Do not place the Spark timing advancers near high tension cables.
- Carry out good electrical connections by performing duly insulated welding and avoiding to use "crimp connectors".
- Inform the customer that in case of damage the spark timing advancers have an EMERGENCY connector allowing to exclude their operation and to restore the original connections.
- For safety and warranty reasons do not open the spark timing advancer box for any reasons.
- M.T.M. srl declines all responsibilities for damages to persons/things caused by the tampering or improper use of the product. The intervention of not-authorised persons also involves the warranty loss.
- Before installing the spark timing advancer control that:
  - the ignition system is in perfect conditions (sparkling plugs, coil, high tension cables),
  - the spark advance is the original one.

#### EMERGENCY CONNECTOR

The harness plug is introduced into the Processor ECU connector. To exclude the Processor it is sufficient to unplug the harness and to plug the EMERGENCY CONNECTOR.

#### NORMAL RUNNING



#### EMERGENCY RUNNING

