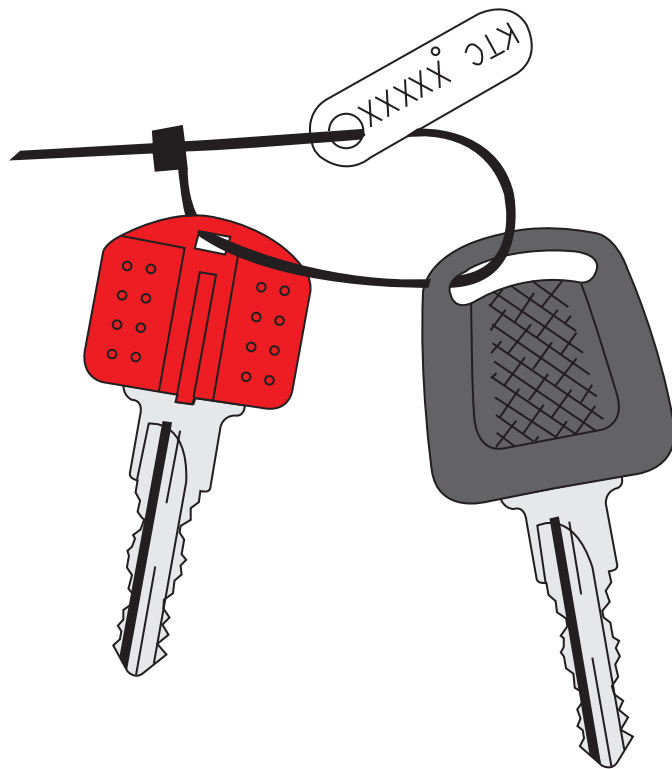
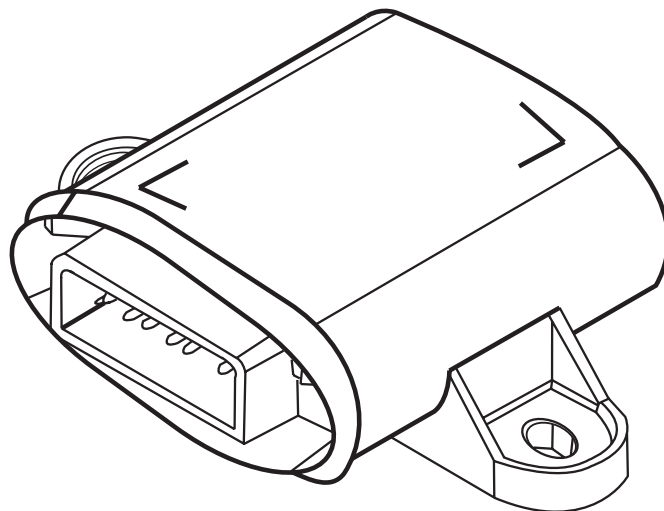


WORKSHOP DOCUMENTATION



**Anti theft with
transponder**

ACI - 100



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INTRODUCTION

❑ This new anti-theft ignition with integrated code through recognition of a transponder is of variable mapping type.

❑ This new unit has the same appearance for all vehicles.

❑ The advance curve depends on the type of vehicle in which the system is installed:

⇒ - 50 cc - 100 cc - 2 stroke

⇒ - 125 cc - 4 stroke

❑ A label stuck to the unit is to inform us of this advance curve and enables us to check that ACI 100 unit is suitable for that vehicle.

❑ This ignition system works without a specific ignition coil in the flywheel magneto or the alternator. It is powered by a continuous or rectified current:

⇒ - Either by the battery

⇒ - Or by the battery charge output of the rectifier regulator

❑ The new ACI 100 ignition unit facilitates the starting up of the vehicles for it only needs a minimum voltage to work, lower than that needed for other ignition systems.

❑ It is one of the elements that enables us to respect the future anti-pollution standards.

DESCRIPTION OF THE SYSTEM

- The transponder electronic immobiliser is an anti-theft system which prevents starting the vehicle if an electronic code is not supplied to the immobiliser unit.
- This electronic code is given by a transponder located in the body of the ignition key and does not require any specific operation by the user.
- The system consists of:
 - A transponder (integrated into the ignition key)
 - An antenna (located around the key contact switch)
 - An ACI 100 ignition unit
 - An LED (located in the instrument panel), as a deterrent function and for diagnosis.

OPERATING PRINCIPLE

- The ACI 100 unit generates an electromagnetic field transmitted to the transponder via an antenna situated around key contact switch. It receives the transponder code from the key and after recognising this code authorises the ignition of the engine.
- When the system is on stand by (ignition off) a flashing warning light (LED) on the instrument panel serves as a deterrent function. However, to minimise battery discharging, this warning light goes out after 48 hours whilst the electronic immobiliser system remains active. Disconnection of the battery, even over a long period of time, does not deactivate the system.

LIGHTING OF THE LED during NORMAL use

HHHHHHHH
one FLASH per second

Black ignition
key

H
light for 0.5 seconds then extinguished

MEMORISATION OF THE SYSTEM

- The two ignition keys delivered with the vehicles are memorised at the factory onto the ACI 100 unit (*a red key, the master key, is used for programming and a black key*).
- The procedure for memorising the keys enables the immobiliser unit to learn and to memorise the transponder code of the different keys.
- The number of keys that can be memorised is:
 - Minimum **2** (including Master key)
 - Maximum **3** (including Master key)
- The master key (red key) is the first key used in the memorisation process. It becomes a specific key as it enables the memorised black keys to be programmed or erased. It is impossible to deprogramme this master key.
- After memorisation and as a security measure, **the master key must be kept by the owner in a safe place**, and must not remain in the vehicle.

PROCEDURE FOR MEMORISING THE KEYS

(FOR A NEW ACI 100 UNIT)

1. Using the master key, put the ignition to ON, as soon as the LED on the instrument panel lights up, turn off the ignition.

The ACI 100 immobiliser unit recognises the transponder of the red key and records it as the transponder of the FUTURE master key.

2. Within a maximum 15 second time period, after having turned off the ignition with the red key, carry out the operation again with a black key.

(put the ignition to ON, as soon as the LED lights up, turn ignition off).

Repeat the operation as many times as there are black keys to be memorised.

(2 maximum) within a time period no greater than 15 seconds between each key.

3. Still within a maximum time limit of 15 seconds, after turning off the ignition with the last black key to be memorised, use the red key to turn the ignition ON then turn this off as soon as the LED lights up.

The ACI 100 immobiliser unit recognises the transponder recorded in the first passage 1.

- It is this second insertion of the red key that records its transponder as MASTER.

- This operation validates the procedure for memorising keys. If this last operation is not carried out within the 15 second time limit, the procedure is halted and has to be restarted from the beginning.

- This procedure definitively links the master key and the ACI 100 unit without the possibility of deprogramming.

CHECKING MEMORISATION

Wait for at least 5 seconds after having turned off the ignition with the master key. Using the master key, switch the ignition on, the LED on the instrument panel comes on for half a second followed by a certain number of flashes. The number of flashes indicates the number of keys memorised including the master key (red key): (2 memorised keys = 2 flashes).

HHHH
flashes

Red key

H
0.5 sec

HH
flashes

**THIS PROCEDURE IS CARRIED OUT AT THE FACTORY FOR
ALL VEHICLES. YOU DO NOT HAVE TO DO THIS ON THE
VEHICLES THAT WE DELIVER TO YOU.
YOU ONLY HAVE TO CARRY OUT THIS OPERATION ON
THE ACI 100 UNITS DELIVERED AS SPARE PARTS**

ERASING THE KEYS FROM MEMORY

1. It is impossible to erase the red key from memory.

2. Erasing the black key from memory can only be done with the memorisation of another black key.

SPECIFIC INSTRUCTIONS

1. LOSS OR DESTRUCTION OF THE MASTER KEY (*red key*)

Loss or destruction of the master key makes memorisation or erasing black keys from the memory impossible. The ACI 100 immobiliser unit will enable the vehicle to be started using the black keys memorised but with the risk of the vehicle being stolen using the master key in the event of it being lost. In order to make the system safe again, it is compulsory to replace the ignition switch and the ACI 100 immobiliser unit.

2. LOSS OR DESTRUCTION OF THE BLACK KEY

In the case of a black key being lost it is impossible to erase it from memory without possessing another black key as it is obligatory for memorisation to consist of a black key as well as the master key. In order to neutralise the lost key, a blank key has to be ordered from our Spare Parts Service under the reference 753067, then after having reproduced the shape of the key onto the specific blank have the new key memorised. This will rule out the possibility of the vehicle being started using the lost key.

3. REPLACING THE KEY CONTACT SWITCH

Replace the key contact switch. Remove the transponder delivered with the new master key (red key) and replace it with the transponder fitted in the previous master key. Carry out the memorisation procedure for the keys so that the immobiliser unit can memorise the new black key.

4. REPLACING THE ACI 100 IMMOBILISER UNIT

If the immobiliser unit is defective it is possible to replace it with a new and blank unit (*not coded*). It is not possible to use a unit from another vehicle for testing (*unit coded*).

YOU SHOULD CHECK THAT THE IGNITION WORKS AT 2000 rpm BEFORE PROGRAMMING IT !

The programming of the keys is actually irreversible and should only be carried out when it is certain that it is the ACI 100 unit that is defective.

Programme the new unit by carrying out the key memorisation procedure (previous chapter).

PRECAUTIONS FOR USE

The existence of an interference suppresser (5K Ω resistance) is compulsory in order for the system to function.

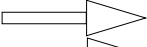

FAULT FINDING ON THE ACI 100 IGNITION SYSTEM

PRINCIPLE OF FAULT FINDING

□The principle is identical to fault finding on a conventional ignition with in addition, diagnostic possibilities given by the lighting up of an LED on the instrument panel.

WHAT TO DO IN THE EVENT OF A FAULT

1. CHECK THAT A SPARK IS PRODUCED BY THE SPARK PLUG

- a) If spark is present  the problem does not concern the ignition
b) If there is no spark  the problem does concern the ignition

2. CHECK THE LED DIAGNOSIS

a) The LED shows diagnosis

Refer to the **TRANSPONDER LED DIAGNOSIS** table (page 7)

b) The LED does not function

Check its wiring connections on the instrument panel:

- Red wire : supply + 12V permanent supply
- Blue wire : connection to the ACI 100 ignition unit terminal (6)

Check the LED: connect a 12V supply to the instrument panel in place of the red and blue wires (Do not connect the LED alone to the 12V supply. The presence of two protective resistors is compulsory).

c) The LED does not supply a diagnosis:

First of all check the standard causes of a fault in the ignition system:

- Interruption in wiring
- Components (spark plugs, interference suppresser, coils, flywheel...)
- Lastly check the specific ACI 100 ignition components

WARNING

□When replacing an ACI 100 ignition unit it is essential to check that the ignition is turning, when idle at (2000 rpm) before going ahead with the key memorisation procedure. **The procedure for memorising the keys creates a definitive link between the ACI 100 unit and the master key, which makes it impossible to use them separately.**

DIAGNOSIS BASED ON TRANSPONDER LED

1. LIGHTING UP OF LED WITHOUT THE IGNITION KEY

A succession of one flash per second indicates that the vehicle is protected against theft. (If the unit is programmed).

H H H H (representation of flashes)

This deterrent function is operational for 48 hours after switching off the ignition.

After 48 hours the LED goes out to avoid discharging the battery, but the immobiliser system remains active.

Even in the case of the battery being disconnected the system remains active.

Upon reconnection of the battery the memorised keys will allow the car to be started, however long the period of disconnection.

2. LIGHTING UP OF LED WHEN TURNING ON IGNITION WITH MASTER KEY.

H

0.5 sec

H H

flashes

Lighting up for 0.5 sec followed by a certain number of flashes indicates the number of keys programmed (including the master key) 2 flashes according to the original configuration.

The number of flashes (2 minimum – 3 maximum) corresponds to the number of keys programmed.

—
2 sec

A single lighting up of LED for 2 seconds indicates that the unit is not programmed (to turn at 2000rpm maximum).

3. LIGHTING UP OF LED WHEN TURNING ON THE IGNITION WITH ONE BLACK KEY

The lighting up of the LED using a black key consists of three successive phases when turning on the ignition:

Phase 1 : gives information on the state of the system

—

2 sec

= ACI 100 not programmed (key not memorised)

H

0.5 sec

= ACI 100 programmed

Phase 2: gives information concerning the diagnosis.

H H

No lighting up
0.5 secs

= No fault detected on the transponder system.

= 2 to 3 lighting ups of 0.5 sec: fault detected

(see fault finding table page 8).

Phase 3 : gives information concerning authorisation to start

No lighting up





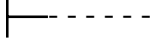

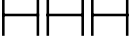
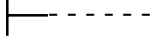
= Ignition authorised

—

Permanent lighting up

= Allumage non autorisé,
(see fault finding table page 8).

FAULT FINDING TABLE FOR THE ACI 100

BLACK KEY: IGNITION ON POSITION				
LIGHTING UP PHASE OF THE LED			INDICATIONS	COMMENTS
PHASE 1	PHASE 2	PHASE 3		
 2sec			ACI 100 not programmed	<ul style="list-style-type: none"> - Turns at 2000 rpm maximum - Carry out a memorisation procedure for the keys.
 0.5sec			ACI 100 programmed	<ul style="list-style-type: none"> - No faults found, starting up possible. - If starting up impossible, see standard causes of defective ignition (wiring, spark plug, coil etc).
 0.5sec	 2 X 0.5sec	 permanent	Transponder not recognised	<ul style="list-style-type: none"> - Antenna disconnected or break in the circuit. Check the resistance of the antenna which must be at 17 ohms at the terminals of the small connector. - Key without transponder (<i>try another key, for example the Master Key, replace the key if necessary</i>).
 0.5sec	 3 X 0.5sec	 permanent	Transponder not authorised	<ul style="list-style-type: none"> - Black key not programmed, carry out programming procedure. - Black key defective, replace the key and carry out programming procedure. - ACI 100 from another vehicle.

CHECKING THE IMMOBOLISER UNIT

VEHICLE ACI 100 UNIT

ENGINE DOES NOT START

CHECK THE STANDARD CAUSES OF A DEFECTIVE IGNITION UNIT
starter motor, fuse(s), spark plug, spark plug wiring, HT coil, interference suppresser, cut wire, electrical connections, sensor, flywheel magneto, key contact switch....

ENGINE DOES NOT START

TEST NEW ACI 100 (*uncoded*)

ENGINE STARTS

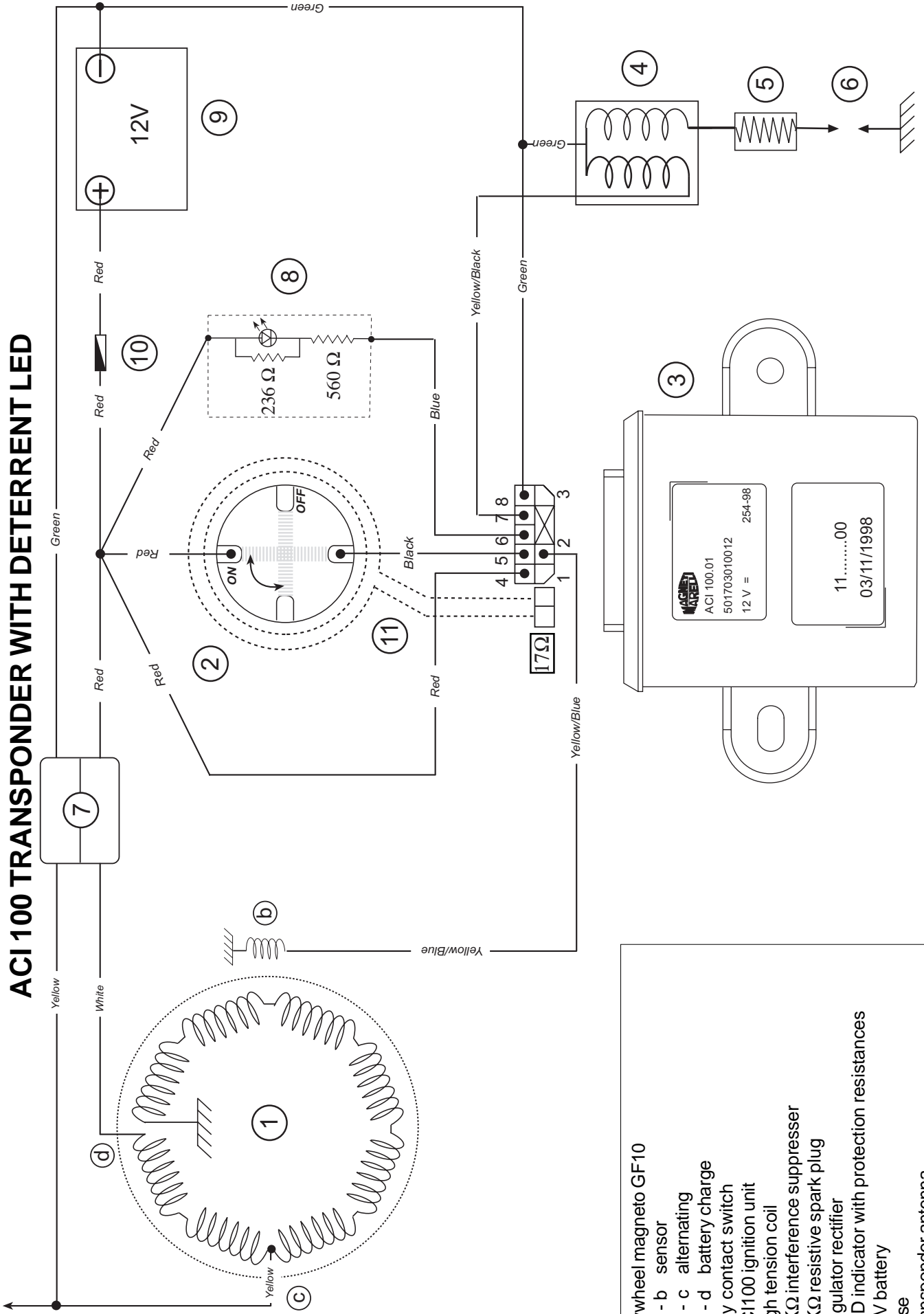
Maxi 2000 rpm
Carry out key memorisation procedure
(page 4)

ENGINE DOES NOT START

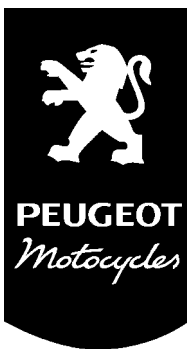
- REMOVE THE NEW ACI 100 UNIT
- REFIT THE VEHICLE'S ACI 100 UNIT

- LOOK FOR THE CAUSE OF THE
FAULT OUTSIDE OF THE
TRANSPONDER SYSTEM

BLOCK DIAGRAM ACI 100 TRANSPONDER WITH DETERRENT LED



- 1 Flywheel magneto GF10
- b sensor
- c alternating
- d battery charge
- 2 Key contact switch
- 3 ACI100 ignition unit
- 4 High tension coil
- 5 5 KΩ interference suppressor
- 6 5 KΩ resistive spark plug
- 7 Regulator rectifier
- 8 LED indicator with protection resistances
- 9 12V battery
- Fuse
- 11 Transponder antenna



recommends



In the aim of constant improvement, Peugeot Motorcycles reserves the right to modify, delete or add to the references mentioned.
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