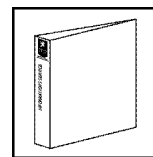


SALES DIVISION
NETWORK TECHNICAL INFORMATION

FLASH INFORMATION



ELYSTAR 50cc

CONFIDENTIAL

Subject: DIAGNOSTIC AID

Please find enclosed a document setting out some general information on troubleshooting Elystar 50 cc machines.

This document does not claim to cover all known or possible problems you may encounter on these machines. On the other hand, we have covered the most frequently occurring faults and how to remedy them.

You will find enclosed:

- Page 1 to 5: the diagnostic method and miscellaneous information.
- Page 6 to 14: the main known faults.

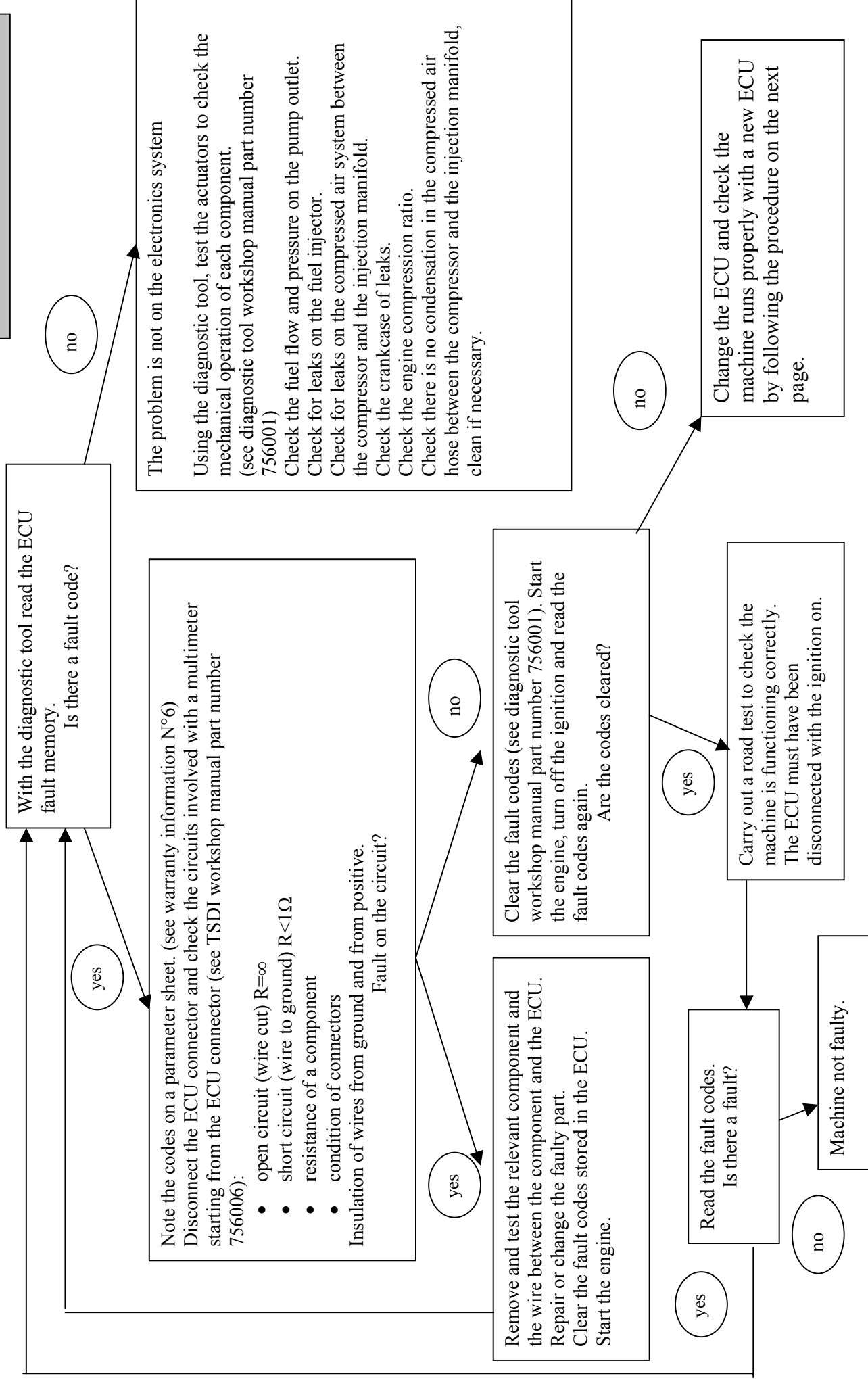
For the proper comprehension of this document, we must emphasise the absolute need to be fully familiar with the functioning principles of the TSDI 50 cc, which you will find in the workshop manuals you received in 2002.

This confidential document is strictly for use by the Peugeot Motorcycles network and must under no circumstances be duplicated or divulged under whatever form.

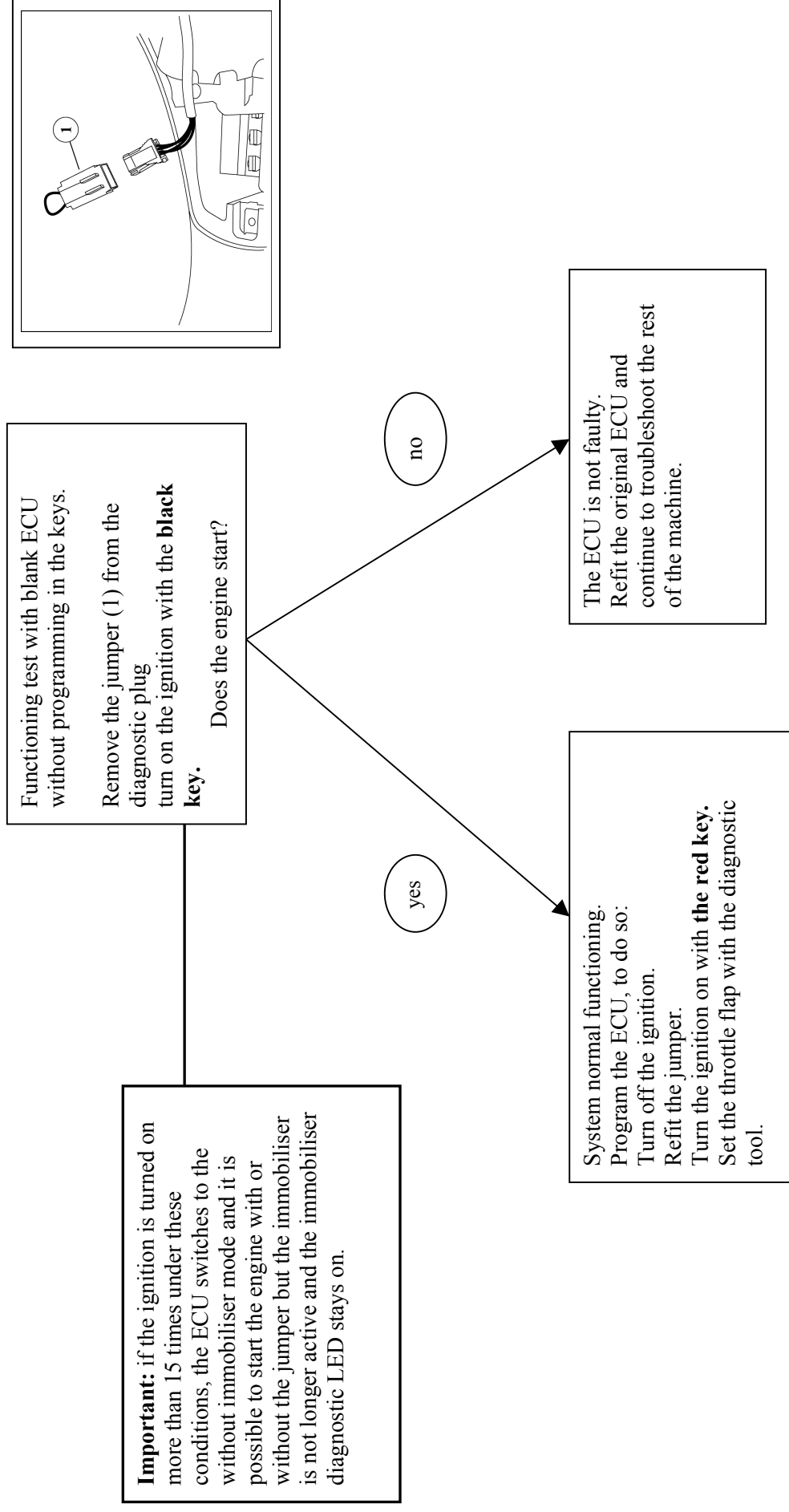
A similar document for the Elystar 125cc-150cc has also been drawn up.

We hope that this information will enable you to work more quickly and efficiently on your customers' machines.

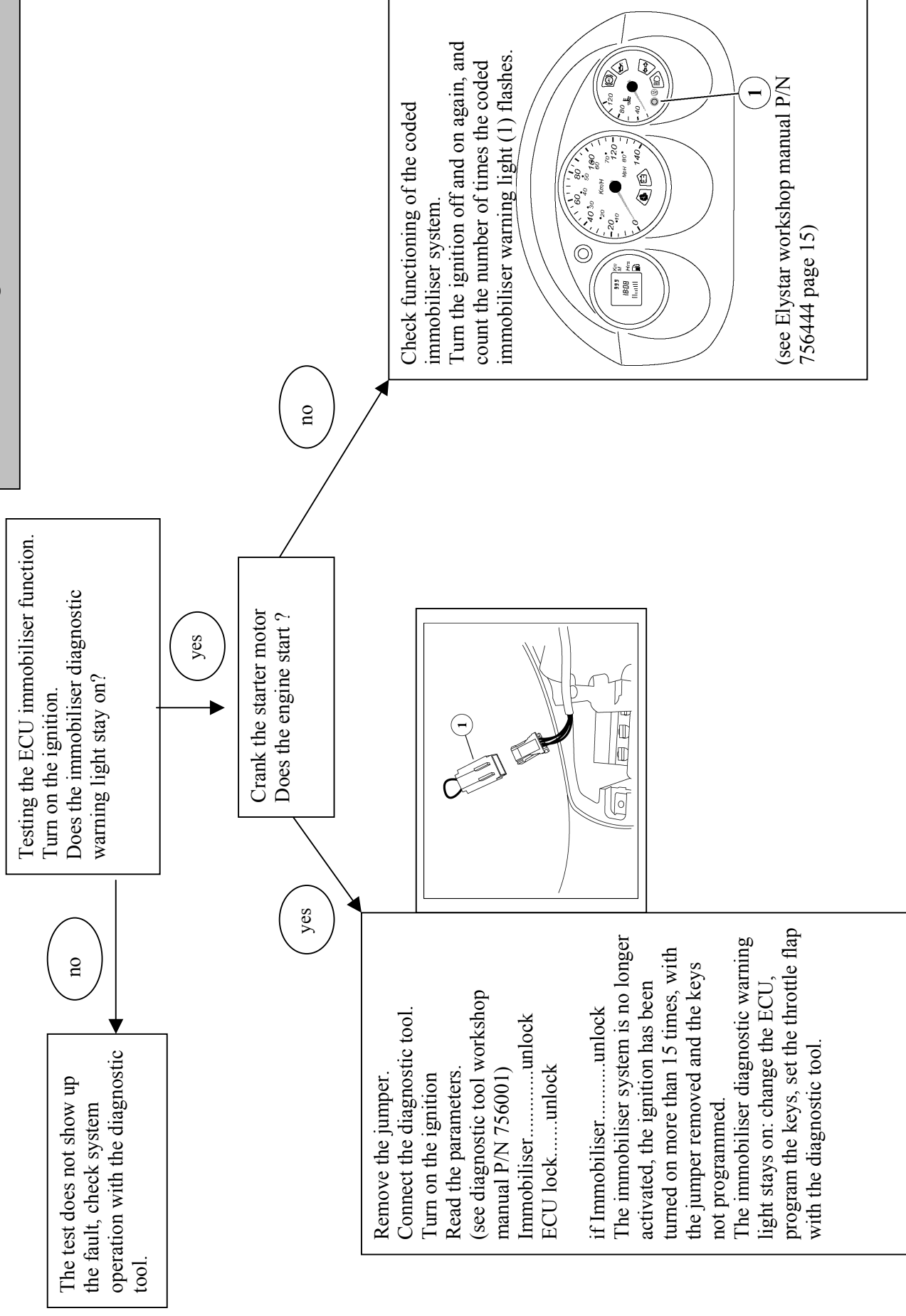
| | Dealership | Spare parts | Mechanic 1 | Mechanic 2 | Mechanic 3 |
|-----------|------------|-------------|------------|------------|------------|
| Signature | | | | | |



Procedure for functioning test with blank ECU.



Procedure for testing the ECU immobiliser function.



Wire colour coding:

| Ref n° | Colour |
|---------|--------------|
| BA : | White |
| BA-BE : | White/Blue |
| BA-NR : | White/Black |
| BC : | Light blue |
| BE : | Blue |
| GR : | Grey |
| JN : | Yellow |
| JN-BA : | Yellow/White |
| JN-BE : | Yellow/Blue |
| JN-NR : | Yellow/Black |
| JN-VE : | Yellow/Green |
| MC : | Light brown |
| MR : | Brown |
| MR-BA : | Brown/White |
| NR : | Black |
| OR : | Orange |
| RG : | Red |
| RG-BA : | Red/White |
| RG-JN : | Red/Yellow |
| RG-NR : | Red/Black |
| RS : | Pink |
| VC : | Light Green |
| VE : | Green |
| VE-NR : | Green/Black |
| VI : | Mauve |

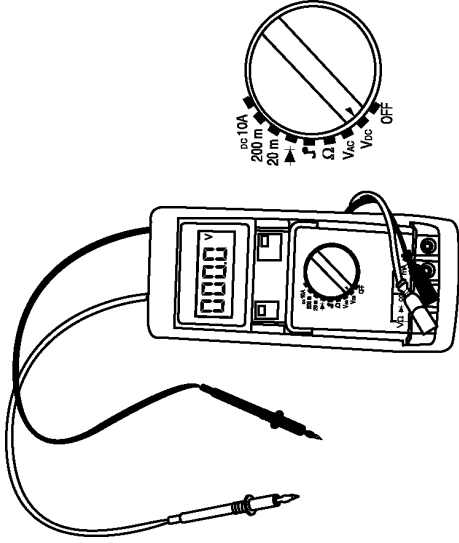
Service documentation available on the subject:

| Description | Internal |
|--|----------|
| 50 cc injection engine | 756011 |
| Elystar Manual | 756444 |
| TSDI 2-stroke injection system | 756006 |
| EFI 4-stroke injection system | 756429 |
| ABS/PBS braking system | 756419 |
| Using the diagnostic tool | 756001 |
| Electrical tests | 755710 |
| Electricity | 754279 |
| Elystar 50cc TSDI technical data | 756481 |
| Elystar 125cc-150cc EFI technical data | 756486 |

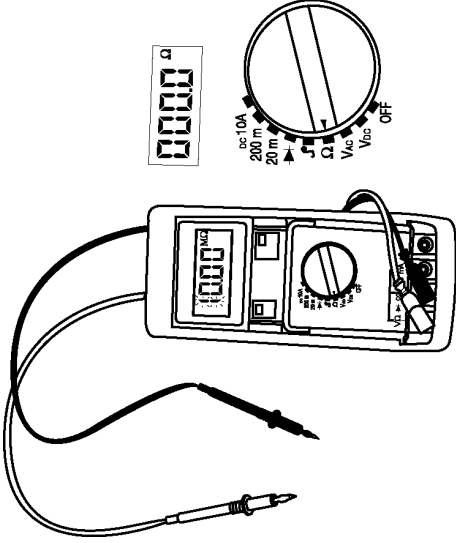
Refresher on the use of a multimeter:

(see electrical tests workshop manual part number 755710)

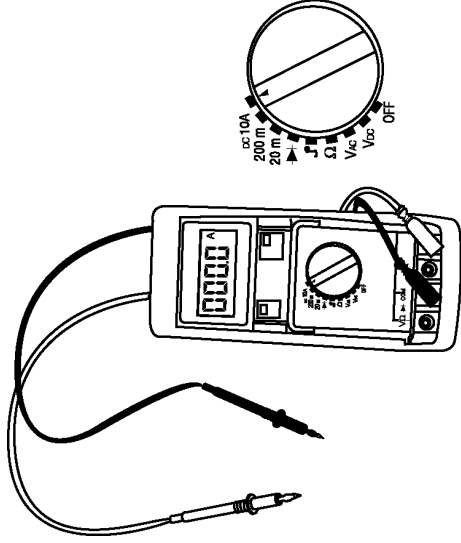
1. A direct current voltage measurement is taken with a multimeter set to the direct volts position **VDC** ≡ the red wire to the positive, the black wire to the negative. The tool must be connected in parallel on the circuit being measured.



2. Resistance is measured with the multimeter set to the **Ω** position. If the circuit is cut, the display shows 1000 and flashes, if the circuit is short-circuited, the display shows <1Ω.



3. Current is measured with the multimeter to the DC 10A min. position, with the tool connected in series on the circuit being measured.



Various reminders :

Never disconnect the ECU with the ignition on

All tests must be carried out on the injection ECU connector on the wire side in order not to damage the terminals.

When preparing a new machine

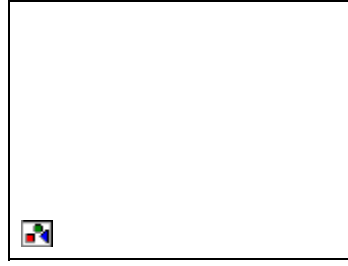
- charge the battery for at least 2 hours before handing the machine over to the customer.
- check there are no fault codes in the ECU memory.

An ECU fitted to one machine cannot be fitted to another. The key codes are recorded in the injection ECU memory.

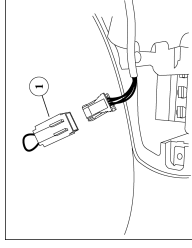
When disconnecting the injection ECU connector:

- do not pull from right to left
- do not pull downwards but along the ECU axis to avoid damaging the terminals.

Elystar 50cc diagnostic procedures



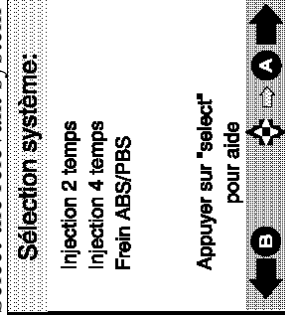
Connecting the diagnostic tool:
Turn on the ignition.



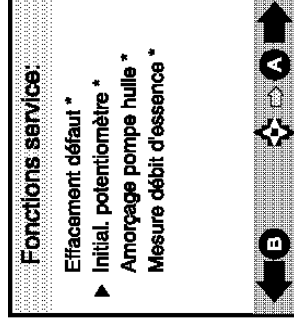
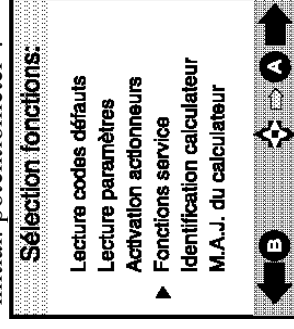
Remove the jumper (1).

Connect the diagnostic tool to the diagnostic plug in the battery cover.

Select the relevant system when using the diagnostic tool.



To set the potentiometer, select "service functions" then "initial potentiometer".

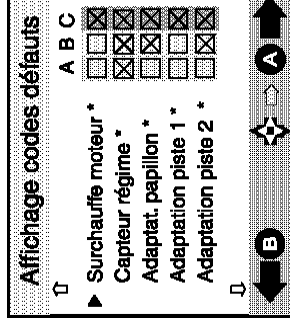


The fault codes are shown with a priority code representing the type of fault recorded:

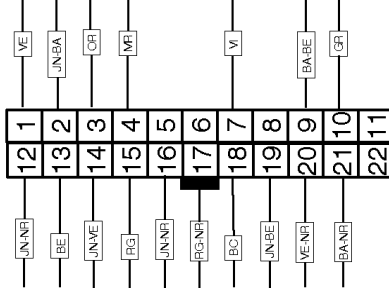
A= permanent fault

B= intermittent fault appeared and disappeared since the ignition was last turned on

C= intermittent fault appeared and disappeared since the memories were last cleared



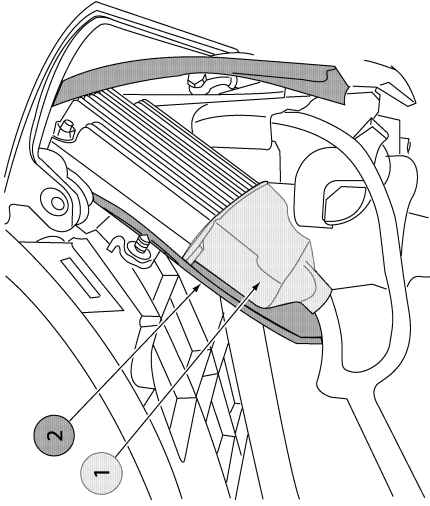
| | | |
|----|-------|-----------------------------|
| 12 | JN-NR | Ignition coil control |
| 13 | BE | Air injector control |
| 14 | JN-VE | Fuel pump control |
| 15 | RG | Battery positive power F15A |
| 16 | JN-NR | -5V power to sensors |
| 17 | RG-NR | Ignition on power F7.5A |
| 18 | BC | +5V power to sensors |
| 19 | JN-BE | Engine speed sensor |
| 20 | VE-NR | Engine speed sensor |
| 21 | BA-NR | Diagnostic plug |
| 22 | | Not connected |

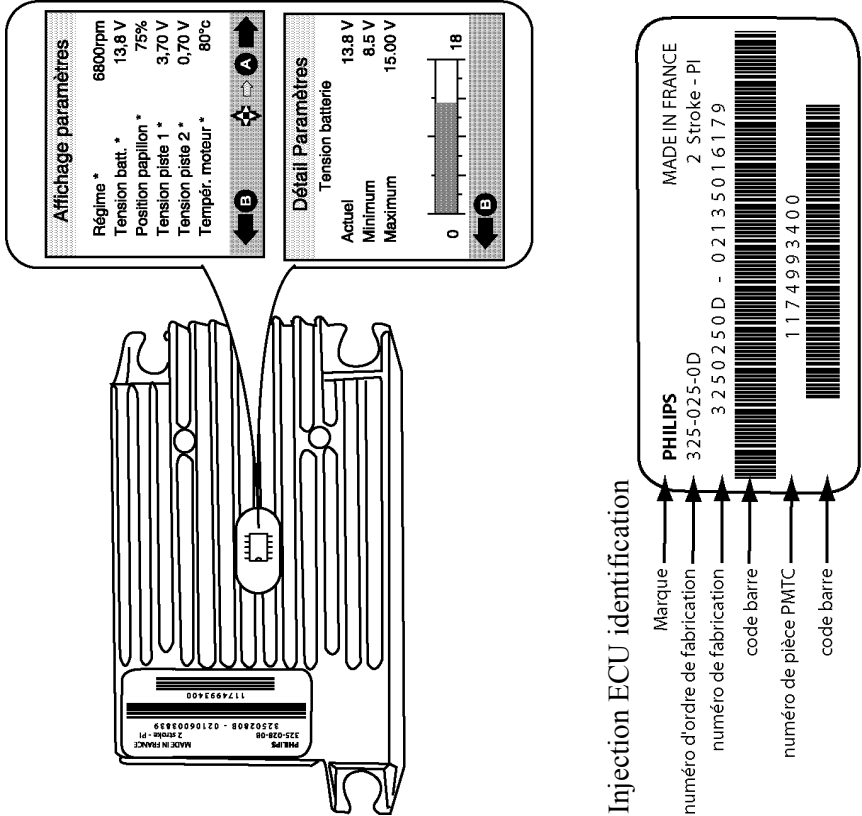
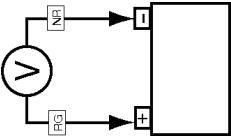
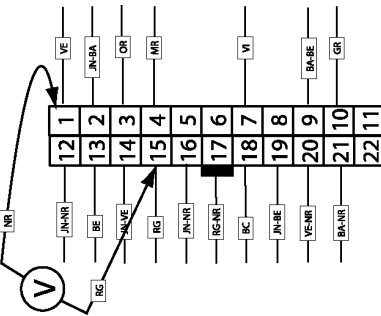


rear view of
ECU connector

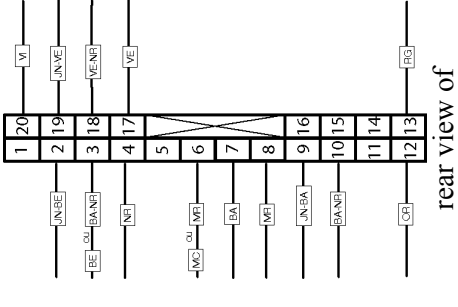
Reminder :

- all of the components receive their positive power supply through the 15A fuse and are operated through earthing in the ECU
- the sensors powered with 5V by the ECU are those of the throttle potentiometer.

| Problem | Checks | Operation |
|--|---|---|
| <p>After driving in heavy rain:</p> <ul style="list-style-type: none"> • Various machine running faults. • Injection diagnostic light on <p><u>Cause:</u> water ingress into ECU connector</p> |  <p>(1) connector cover (2) Flap part number 761640</p> | <p>Unplug the ECU connector.</p> <p>If there is water in it, remove the injection ECU and dry it.</p> <p>Dry the injection ECU connector and grease with special electrical terminal grease (non-conductive Esso 3106 available from Automobiles Peugeot part number: 973568).</p> <p>Refit the cover (1) correctly.</p> <p>Fit an ECU protective flap (2) see XAL-XAM campaign.</p> <p>If after drying the faults cannot be cleared, change the ECU.</p> <p><u>Production change:</u> Injection ECU connector fitted with grease as from: 18/11/2002 VIN N° VGAG1AA1000203450 Fitting of protective flap to injection ECU bracket as from: 13/12/2002 VIN N° VGAG1AA1000300074</p> |

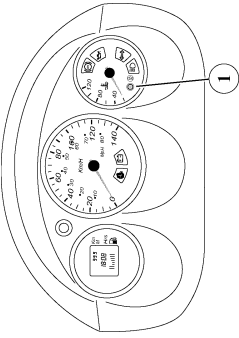
| Problem | Checks | Operation |
|--|---|---|
| <p>Diagnostic light on</p> <p>Cause: ECU fault</p> | <p>Fault code displayed: battery voltage fault</p> <p>With the diagnostic tool, check the voltage detected by the ECU (Ucalcul).</p> <div></div> <p>Injection ECU identification</p> <ul style="list-style-type: none">Marque → PHILIPSnuméro d'ordre de fabrication → 325-025-0Dnuméro de fabrication → 3 250 250 D - 0 21 3 5 0 1 6 1 7 9code barre → 1 1 7 4 9 9 3 4 0 0numéro de pièce PMTC →code barre → | <div></div> <p>Using a multimeter, check the actual battery voltage (Ubatt) (battery connected)</p> <p>If Ubatt shows >12.5V and Ucalcul incorrect, then:</p> <p>Check the injection ECU power supply voltage. With the connector connected and ignition on, Uconnect, is measured on the ECU connector between terminals 1 and 15.</p> <div></div> <p>if Uconnect is incorrect < Ubatt, test the wiring harness</p> <p>if Uconnect is good = Ubatt, change the ECU</p> <p>Production change:</p> <p>ECUs affected: manufactured by Philips</p> <p>ECUs under warranty:</p> <p>As from manufacturing order n° 325-026-0C the letter must be later than C</p> |

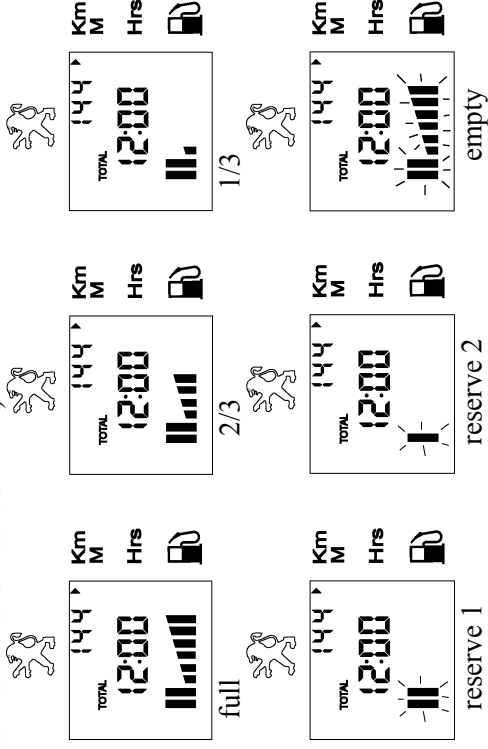
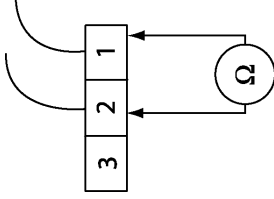
| | | |
|----|-------------|---------------------------------|
| 1 | | Not connected |
| 2 | JN-BE | Headlight warning light |
| 3 | BA-NR ou BE | Oil level low |
| 4 | NR | Ignition on power F7.5A |
| 5 | | Not connected |
| 6 | MR ou MC | Sidelights power supply |
| 7 | BA | Coded immobiliser warning light |
| 8 | MR | Injection diagnostic light |
| 9 | JN-BA | Fuel gauge |
| 10 | BA-NR | Machine speed sensor |
| 11 | | Not connected |
| 12 | OR | Machine speed sensor |

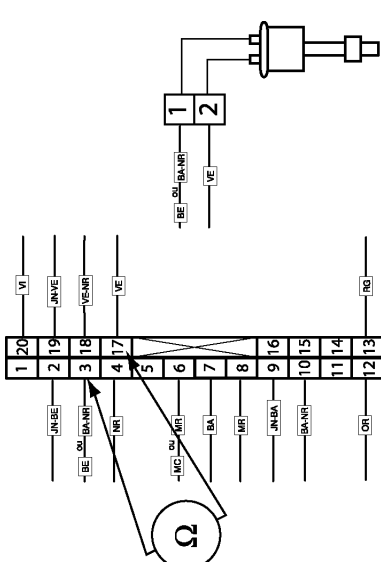
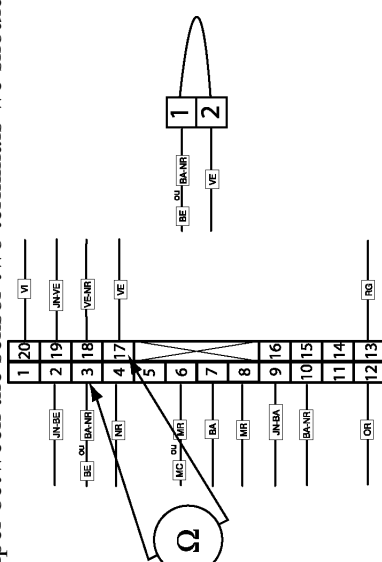


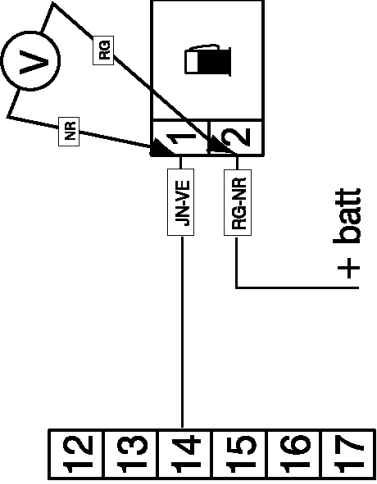
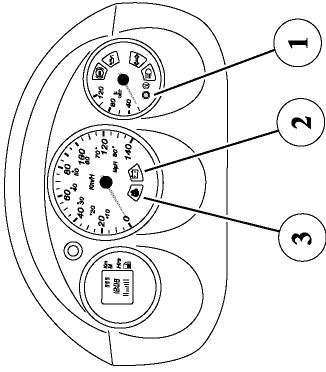
rear view of
instrument cluster connector

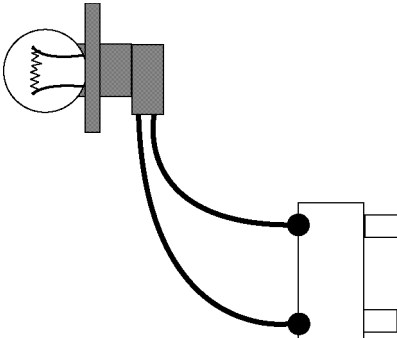
| | | |
|----|-------|-----------------------------|
| 20 | VI | Direction indicator unit |
| 19 | JN-VE | Fuel gauge |
| 18 | VE-NR | Machine speed sensor |
| 17 | VE | Instrument cluster earth |
| | | |
| | | |
| | | |
| 16 | | Not connected |
| 15 | | Not connected |
| 14 | | Not connected |
| 13 | RG | Battery positive power F15A |

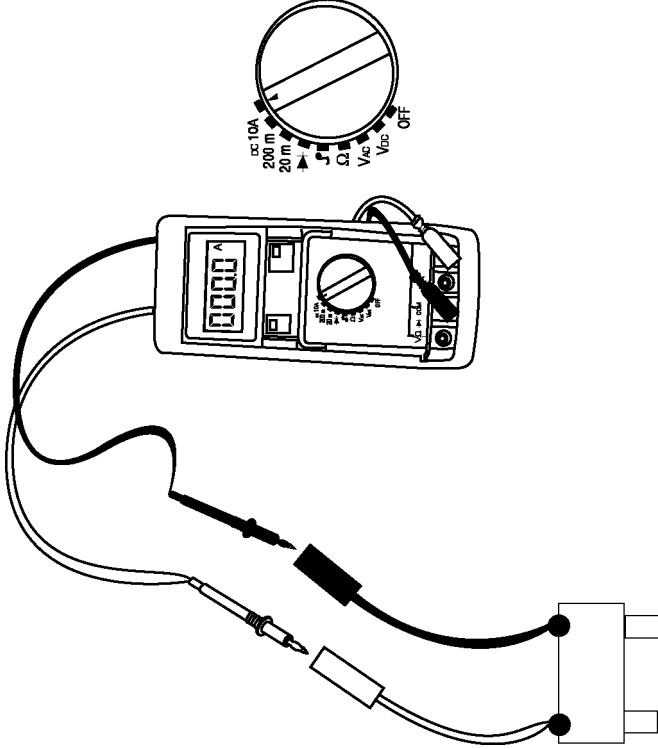
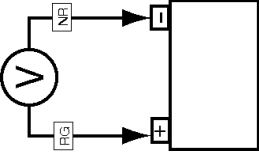
| Problem | Checks | Operation |
|--|--------|---|
| The coded immobiliser LED stays on and the machine starts Cause: Coded immobiliser function neutralised in the injection ECU. | | Carry out the "Test of the ECU immobiliser function" (see page 3) to confirm that it is no longer active. In case of confirmation, change the injection ECU and turn on the ignition with the red key to program in the key codes then set the throttle flap with the diagnostic tool ("service functions" - "initial potentiometer"). Start the machine, the coded immobiliser light (1) should go off.  |
| | | <u>Production change:</u> This function is necessary for machines without a coded immobiliser, no production change necessary. |

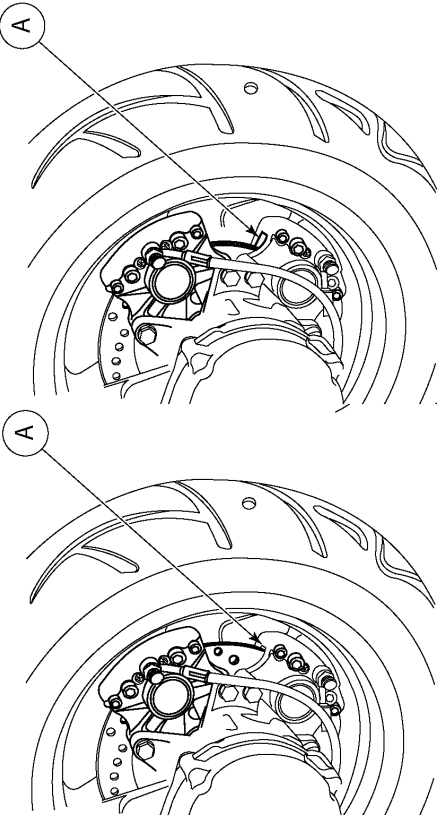
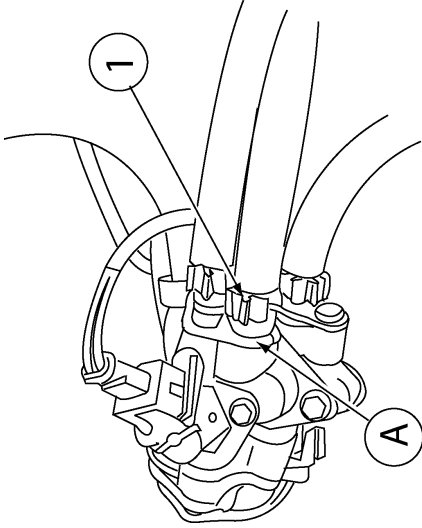
| Problem | Checks | Operation |
|---|--|---|
| Malfunction in instrument cluster, no speed reading, or no display at all. <u>Cause:</u> bad contact or cluster connector badly fitted or cluster quality. | | Check the instrument cluster connector is properly clipped on. Check correct positioning of wires (the right colour to the right terminal) and each wire is properly clipped into the connector. If all is correct, change the instrument cluster. <u>Production change:</u> Instrument cluster modified as from 15/07/02 VIN N°: VGAG1AA1000201926 |
| Fuel level reading fault <u>Cause:</u> inversion of wires or cluster quality. | <p>Check that the speedo is functioning correctly <u>Reminder:</u> The fuel level is only updated when the machine is driving (speed signal) or when the ignition is turned off and on again (See manual and method N° 14)</p>  | <p>Check the correct position of the wires in the instrument cluster connector (see diagram page 6). Check the correct position of the wires in the fuel gauge connector, 3-pin connector, yellow-green wire in middle terminal 2, yellow-white wire in terminal 1, and terminal 3 unused.</p>  <p>Using an ohmmeter, check that the gauge resistance varies with the position of the float. (full 10 Ω empty 90 Ω approx) Test the continuity of the two wires between the gauge and the instrument cluster If all is correct, change the instrument cluster.</p> <p><u>Production change:</u> Harness manufacture warranty since 25/07/02 Cluster changed since 15/07/02 VIN N°: VGAG1AA1000202245</p> |

| Problem | Checks | Operation |
|---|---|--|
| Speedo needle does not return to zero <u>Cause:</u> cluster quality | | Change instrument cluster <u>Production change:</u> Instrument cluster modified as from 15/07/02 VIN N°: VGAG1AA1000201926 |
| No speedo reading and oil light comes on intermittently <u>Cause:</u> inversion of the two white-black wires | <p>With the instrument cluster connector disconnected test the resistances between:</p> <p>Green wire terminal 17 and white-black wire terminal 3 (oil level low)</p> <p>When the oil level low sensor is disconnected we should have $R = \infty$.</p>  <p>By fitting a jumper between the sensor two terminals we should have $R < 1\Omega$</p>  <p>If these values are incorrect, carry out the same test for the white-black wire of terminal 10 (speed sensor)</p> | <p>After determining which wire is for the oil level low and which wire is for the speed sensor:</p> <p>Fit the oil level low wire to terminal 3 and the speed sensor wire to terminal 10</p> <p><u>Production change:</u> The oil level low white-black wire has been replaced by a blue wire since 01/2003</p> |

| Problem | Checks | intervention |
|--|--|---|
| <p>Engine does not start. Engine difficult to start Engine will not idle.</p> <p><u>Cause:</u> plastic particles in fuel tank.</p> | <p>When the ignition is turned on, the fuel pump should run for a few seconds.</p>  | <p>If the pump does not work, check its electrical power supply. When the ignition is turned on, measure the battery voltage on the pump connector.</p> <p>Ensure that the air/fuel hoses are not pinched or folded. Check there is no fuel seepage from the injection manifold hose. Check there are no leaks on the pressurised air circuit between the compressor and the injection manifold. If the pump is working check that it is providing enough pressure (the pump outlet fuel feed hose must be hard when the pump is working). Change the pump if necessary.</p> <p><u>Production change:</u> Clean fuel tank warranty since 12/02. VIN N°: VGAG1AA1000300062</p> |
| <p>Battery charge light on</p> <p><u>Cause:</u> battery is flat</p> | <p>The battery charge warning light comes on if the battery voltage drops below 11.7 volts. The injection diagnostic warning light comes on, and a battery voltage fault is memorised if the battery voltage drops to under 8.5 volts.</p>  <p>1 coded immobiliser warning light 2 charging circuit warning light. 3 injection system warning light.</p> | <p>Check that battery voltage, which should be over 12.5 volts.</p> <p>Recharge the battery. With the diagnostic tool, Test the charging circuit. The charge voltage must be between 14 and 15 volts. Reminder: when preparing a new machine, the battery must be on charge for at least 2 hours before handing over the machine to the customer.</p> |

| Problem | Checks | Operation |
|--|--|--|
| 7.5A or 15A fuse blown <u>Cause:</u> short-circuit on a component or on the harness | <p>Change the blown fuse using the tool below (made locally)</p>  <p>Make the above tool by using a blown fuse and solder on two wires supplying a 12 V 10 W bulb.</p> <p>If the bulb does not light, there is no short-circuit and the fuse should not blow.</p> <p>If the bulb lights, there is a short-circuit on the harness.</p> | <p>Connect the tool in place of the blown fuse.</p> <p>Disconnect the circuit components one by one until the bulb goes off. When the bulb goes off, it means it is the disconnected component or its wiring which is faulty.</p> <p>Test the component and the relevant harness insulation.</p> <p>If all the components are disconnected and the bulb stays lit, then it is the harness itself which is short-circuiting.</p> <p>Check fitting of the harness (wear against the frame or securing lug, etc.)</p> |

| Problem | Checks | Operation |
|---|---|--|
| <p>Battery discharged after 1 or 2 days.</p> <p><u>Causes:</u></p> <ul style="list-style-type: none">• Current drain on a component• Charging circuit faulty |  <p>Take care when measuring that the current is not greater than the multimeter capacity.</p> | <p>Check the battery voltage, which should be over 12.5 volts</p>  <p>Recharge the battery.</p> <p>Test the charging circuit, the charging voltage must be between 14 and 15 volts</p> <p>Reminder: when preparing a new machine, the battery must be on charge for at least 2 hours before handing over the machine to the customer.</p> <p>Connect the tool opposite in place of the 15A fuse.</p> <p>With the ignition off: The power consumption must not exceed 20mA</p> <p>If the power consumption is over 20 mA disconnect the components permanently powered from the battery positive until the one drawing the current is found. Test the component and its electrical circuit, repair it or change it if necessary.</p> |

| Problem | Checks | Operation |
|---|---|---|
| <p>Rear brake pads wear excessively quickly</p> <p><u>Cause:</u> brake disc out of specification.</p> | <p>Check the gap between the disc and the caliper</p> <p>If over 5 mm, the disc is out of specification</p> <p>If under 5 mm, the disc is to specification</p>  | <p>Change the rear disc and the brake pads as per the XAJ-XAK campaign.</p> |
| <p>Fuel seepage on injection manifold hose</p> <p><u>Cause:</u> incorrect clip</p> | <p>After turning on the ignition (pressurisation of the fuel system) check for leaks on the fuel system around the injection manifold at (A).</p>  | <p>If there is a leak, change the clip (1) and fit a special clip, part number: 749644 as per the XAL campaign.</p> |