

diagnosis : measuring permanent current consumption

1 Fault detected

The vehicle battery becomes discharged if the vehicle is out of use for a short period.

2 Using the tool 4174-T

The tool can be used for

:

- the average current consumption of the vehicle's permanently supplied circuits, ignition off
-

N.B. : A pause before taking the readings enables the delayed activation of certain circuits to be ignored .
The cycle time corresponds to the duration of the reading.

2.1 Connecting the tool

The tool uses a direct supply from the vehicle battery.

The tool consists of an internal shunt which measures between the negative cable and the negative battery post.

CAUTION : To connect the tool, the negative battery terminal must be disconnected. This will cause the coded radio to lock.

If the vehicle is fitted with a PSA2 alarm, carry out the following operations

:

- close the bonnet catch or catches so that the alarm system "sees" the bonnet as closed (*)
- to prevent the PSA2 self-powered siren from sounding when the battery is disconnected, switch it off from under the bonnet using the ignition key
- close the windows to prevent the alarm from being triggered by the volumetric sensing

N.B. : (*) .

If a door, the boot or the bonnet are not "seen" as closed, the vehicle's permanent current consumption will increase by 10 mA.

Adjust the tool as described in paragraph 5.

N.B. : The tool memorises the last reading taken.

The pause (adjustable from 0 to 30 minutes) must not be less than 6 minutes.

The duration of the cycle (adjustable from 0 to 300 minutes) must be at least 5 minutes.

Without disconnecting the tool, hold the battery negative cable in contact with the negative battery post and carry out the following

:

- turn the ignition key to the accessory "+" position
- enter the radio code (according to equipment)
- switch the ignition on, then off
- get out of the vehicle and lock all the doors
- wait for the coded anti-theft to lock (red LED flashing in the keypad) (according to equipment)

Break the connection between the battery negative terminal and the vehicle negative terminal.

Measure the current consumption.

2.2 Measurement

For each measurement phase (pause and cycle), the time remaining is displayed in seconds.

During a measurement cycle, the tool takes readings every 0,1 seconds and displays the following values :
"I mini" << "I average" << "I maxi".

"I mini" :

corresponds to the minimum current recorded by the tool since the start of the cycle.

"I average" :

average of the readings taken since the start of the cycle.

"I maxi" :

corresponds to the maximum current recorded by the tool since the start of the cycle.

The tool's maximum current reading is 350 mA.

When the reading exceeds the maximum permissible for the tool

:

- the display "I maxi" flashes until the end of the cycle and then remains stuck at 350 mA
- the reading "I average" is incorrect
- the display flashes until the end of the measurement cycle

2.3 Readings completed

The readings are finished when the cycle time display shows 0.

Read off the values.

The following operations should be carried out

:

- vehicle with alarm :
without disconnecting the tool, hold the battery negative cable in contact with the negative battery post and carry out the following
- unlock the doors
- disconnect the tool 4174-T
- reconnect the battery
- enter the radio code (according to equipment)

CAUTION : Having disconnected the battery, certain ECUs (especially the fuel injection ECU) will need reinitialising.

3 Analysis of the results

Ignition off, the electrical consumption of the vehicle depends on the following :

- vehicle type
- equipment level
- accessories

3.1 Determining the theoretical current consumption

The following operations should be carried out :

- make a list of the circuits supplied with a direct "+" from the battery or from a fuse
- note the expected currents for each circuit on the list (see table of values)
- total the currents of each circuit to calculate the theoretical current consumption of the vehicle
- compare the theoretical consumption with the "I average" measured by the tool 4174-T

3.2 "I average" equal to or lower than the "maximum current I permitted"

The time required to discharge the battery depends on its state of charge at the moment of switching off.

The electrical consumption being within tolerance, check the battery condition and the charge rate.

3.3 "I average" > total permitted current consumption

As the tool takes global readings of the vehicle's current consumption, the circuits should be isolated one by one in order to identify the circuit at fault.

The following operations should be carried out :

- vehicle with alarm :

check that the door state checking function is operating correctly

- disconnect where possible, any supplementary accessory systems which have been fitted to the vehicle (telephone, alarm or electrical accessory) ;

then repeat the current readings and compare the results

- ;

then measure again

- compare the theoretical consumption with the "I average" measured by the tool 4174-T
- refit the fuses

If the reading is within tolerance, the circuit at fault is one of those controlled by the fuses.

The following operations should be carried out

:

- disconnect the components one by one
- take the readings again for each component disconnected

The difference between the "I average" readings gives the current consumption of the disconnected component.

If the components themselves are not at fault, check the connections and the insulation of the wiring.

4 Table of values

Vehicle.	XM.	XANTIA.	ZX.	AX.
Total permitted current consumption.	36 mA.	30 mA.	27 mA.	24 mA.

Vehicle.	SAXO.	SYNERGIE.	DISPATCH.
Total permitted current consumption.	24 mA.	32 mA.	24 mA.

Vehicle.		XM.	XANTIA.	ZX.	AX.
Electrical equipment.		"I average".			
Clock.		2 mA.	1 mA.	3 mA.	3 mA.
Trip computer.		3 mA.	X.	X.	X.
Coolant temperature control unit.		0 mA.	0,5 mA (after 6 minutes).	0,5 mA (after 6 minutes).	0,5 mA (after 6 minutes).
PSA2 alarm.	Alarm control unit.	5 mA.	5 mA.	5 mA.	X.
	Alarm siren.	0,5 mA.	0,5 mA.	0,5 mA.	X.
	Alarm LED.	3 mA.	3 mA.	3 mA.	X.
Central locking unit.		1 mA.	1 mA.	2 mA.	3 mA.

Infra red receiver (plip) : central locking.	6 mA.	6 mA.	3 mA.	3 mA.
Deadlocking unit.	1,5 mA.	1,5 mA.	X.	X.
Infra red receiver (plip) : deadlocks.	1 mA.	1 mA.	X.	X.
Electric window anti-pinch motor.	1 mA.	X.	X.	X.
Radio equipment (factory fitted).	3 mA.	2 mA.	3 mA.	3 mA.
Compact disc interface.	2 mA.	2 mA.	X.	X.
ADC keypad.	2,5 mA.	2,5 mA.	2,5 mA.	X.
Injection ECU.	2 mA.	2,5 mA.	1 mA.	2 mA.
Hydractive ECU.	1 mA.	1 mA.	X.	X.
Multiplexing (refer to the No.te).		X.	X.	X.

N.B. : The alarm and deadlock functions are handled by the multiplexing.

Vehicle.		SAXO.	SYNERGIE.	DISPATCH.
Electrical equipment.		"I average".		
Clock.		0,5 mA.		
Trip computer.		X.	3 mA.	X.
Coolant temperature control unit.		0,5 mA (after 6 minutes).	0,5 mA (after 6 minutes).	0,5 mA (after 6 minutes).
PSA alarm.	Alarm control unit.	5 mA.	5 mA.	5 mA.
	Alarm siren.	0,5 mA.	0,5 mA.	0,5 mA.
	Alarm LED.	3 mA.	3 mA.	3 mA.
Central locking unit.		0,5 mA.	1 mA.	1 mA.
Infra red receiver (plip) : central locking.		3 mA.	6 mA.	6 mA.
Deadlocking unit.		X.	1,5 mA.	X.
Infra red receiver (plip) : deadlocks.		X.	1 mA.	X.
Radio equipment (factory fitted).		3,5 mA.	3,5 mA.	X.
Compact disc interface.			2 mA.	X.
ADC keypad.		2,5 mA.	2,5 mA.	2,5 mA.
Injection ECU.		1,5 mA.	2,5 mA.	2,5 mA.
Air conditioning.		0 mA.		

5 Adjustments

When electrically supplied, the tool displays "SEEM Comper".

Access to the different functions of the tool is achieved by pressing the "+" or "-" buttons.

The tool has the following functions

:

- T.CYCLE :
adjusting the cycle time
- T.PAUSE :
adjusting the delay before the readings are taken
- PRINT :
print the last reading
- LANGUAGE :
choice of language
- INFORMATION :
SEEM address

N.B. : A pause of 6 minutes allows the readings to begin once the post-cooling function has terminated.

When the text corresponding to the desired function is displayed, press the " " button to authorise a modification.

A second line appears with the value to be corrected.

The value on the second line can be modified by pressing the "+" or "-" buttons.

When the desired value is displayed, press the " " button to confirm the new figure.

The "RETURN" button switches back to the "SEEM Comper" screen from which the " " button will activate the measurement cycle.

The measurement cycle can be interrupted by pressing the "RETURN" button.

To reactivate the measurement cycle, press the " " button.

To modify the parameters, press the "+" button.

6 Print the last reading

The tool memorises the last reading taken.

The printer is on a parallel port.

Follow the procedure described in the tool's instruction manual.

The printed document provides the following information

:

- duration of the pause before the readings are taken

- duration of the measurements
- MINI current
- AVERAGE current
- MAXI current
- a warning when the readings are distorted by a high current value > 350 mA

7 Example

Checking a vehicle XM V6/24.

From the table of values and as a function of the vehicle's electrical equipment, calculate the theoretical current consumption of the vehicle

:

- trip computer :
3 mA
- PSA alarm :
8,5 mA
- deadlocks :
1,5 mA
- infra red receiver (plip) :
1 mA
- electric window anti-pinch motor :
1 mA
- radio equipment (factory fitted) :
3 mA
- ADC keypad :
2,5 mA
- injection ECU :
2 mA
- hydractive ECU :
1 mA

Total the currents of each circuit to calculate the theoretical current consumption of the vehicle :
23,5 mA.

Connect the tool refer to section 2.1.

Activate the measurement procedure.

Results of the measurements :

23 << 27 << 57.

The average theoretical current measured is from 27 mA to 23,5 mA which is below the maximum permitted consumption.

(shunt and F34) .

Only the ADC keypad remains supplied (battery direct "+").

Results of the measurements :

1 << 3 << 10.

The average current measured is 3 mA for circuits with a direct battery "+" supply.

Refit the fuses.

To measure the individual current consumption of a circuit, repeat the current reading procedure with the component disconnected.

Example :

injection ECU current consumption.

Disconnect the injection ECU.

Activate the measurement procedure.

Results of the measurements :

21 << 25 << 55.

The average theoretical current measured is from 25 mA to 27 mA which is below the maximum permitted consumption :

injection ECU current consumption =
2 mA.

CAUTION : Having disconnected the battery, certain ECUs (especially the fuel injection ECU) will need reinitialising.

PSA alarm.

The following operations should be carried out

:

- switch the alarm back into service (key PSA2)
- release the bonnet catches from the locked position

Injection ECU FENIX 4.

The following operations should be carried out

:

- run the engine until the cooling fans cut in and out
- read and erase the possible faults memorised by the ECU
- switch off the ignition
- disconnect then reconnect the ECU
- electrical devices switched off ;
switch on the ignition for 10 seconds
- start the engine and allow it to idle (do not accelerate) (in the case of an automatic gearbox, select the " D "

position and press the brake pedal firmly to immobilise the vehicle)

- check the idle position of the butterfly using the parameter function of your diagnostic equipment
- road test the vehicle for 15 minutes using various engine speeds especially those in the range of 2500-3500 r.p.m. .

Use both the phases of idling and of full throttle (typical urban driving)

- reading the fault codes

Electric window anti-pinch motor.

The following operations should be carried out

:

- switch on the ignition
- lower the window to the midway position
-
-
- check that the window mechanism is initialised :
the one-touch window switches should open and close the window fully

Radio PHILIPS 4040.

The following operations should be carried out

:

- switch on the ignition
- press button 1
- press the vertical arrows to obtain the first digit of the code then validate with the 1 button
-
- the audio system is unlocked once the final figure of the code is validated