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HMP 1-B

Model: 0120.04

Rev doc: 00

Electronic throttle tester

Users Manual

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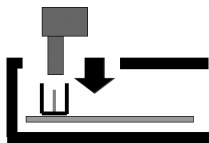
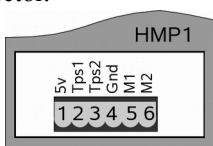
Connecting power supply

The device need for work 12Vdc continuous. Become with 2 cocodriles to allow connect to car battery.

DO NOT USE battery chargers without a car battery.

Connecting terminal block

Once you choose the appropriate cable you must plug in the rear connector.



Selecting test type

When you plug the power supply (12v) you will see the principal menu on screen.



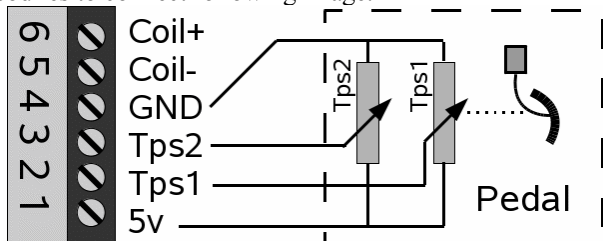
Using The keys “+” and “-” you can choose the right test between the following list:

- 1)Throttle (electronic accelerators)
- 2) Pedal (electronic pedal)
- 3) TPS (Throttle Position Sensor)
- 4) Battery (battery state analysis)
- 5) MAP-Hz (based in frequency)
- 6) MAP-An (based in voltage)
- 7)Lambda (narrow type)

When you see into the screen the right test, press OK.

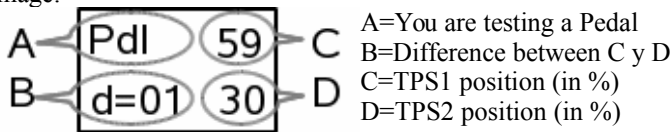
Electronic Pedal test

Connect the pedal using the right connector or use the crocodiles to connect following image.



After that you must press “+” and “-” keys until you see PEDAL on screen, and press “OK”.

Now on the screen you will see 4 informations like the bellow image:



To test it, always with the engine off, press slowly up to reach full press. Avoid fast movements.

If the pedal works correctly the TPS1 will show the double that TPS2 ($C = D * 2$). The maximum difference reached between the ideal and the real you can see in the zone marked a zone B on screen.

In the sample on image you can see that TPS2 show 30, so $30 * 2 = 60$ and the TPS1 show 59. This say that you are seeing a difference of 1% respect the ideal (60% vs 59%)

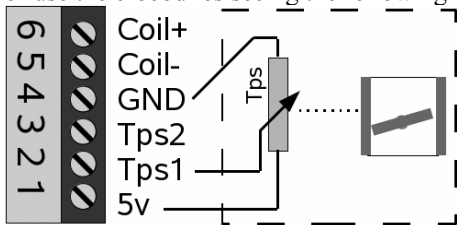
The max difference tolerated by the ECU change from car to car, but generally is accepted up to 5% of difference.

Pressing the OK Button, you will come back to the principal menu to perform another test.

TPS test

In the principal menu, press the keys “+” or “-” until you see TPS on the screen, and press OK button.

After that plugging the TPS using the right the appropriated connector, or use the crocodiles seeing the following diagram.



Move slowly the throttle. If the sensor works fine you will see that the TPS1 indicator grow continuously and slowly without peaks.

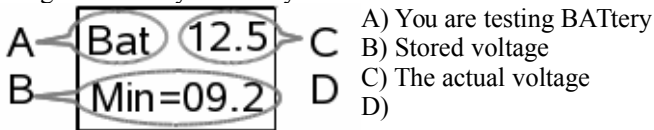
Pressing “OK” button you will return to the principal menu.

Battery test

Into the principal menu, press the “+” or “-” keys until you see BATTERY into screen.

The battery meter can measure the voltage from 8 up to 15.3 Volts. With lower voltages you will see wrong values, and with upper voltages you will see 15.3 V as fixed number.

The HMP1 measure the actual voltage from battery more than 10 times at second. Also reminder the minimum and maximum voltage reached by the car system..



If you press “-” key the B will show the minimum stored

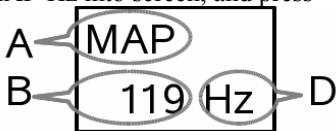
If you press “+” key the B will show the maximum stored

If you press “OK” you will see a little report with minimum and maximum, after that the HMP1 go to the principal menu.

Frequency based MAP test

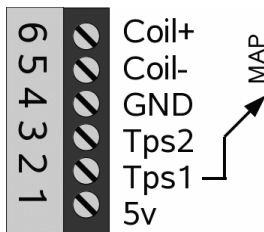
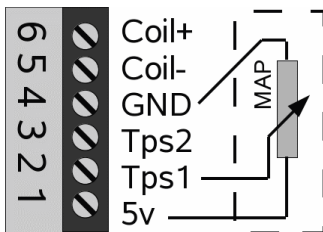
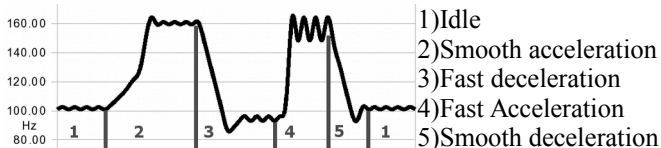
Only you can test the the sensors that require 5v of power supply and give 5v of output pulses. The HMP can measure frequencies between 15Hz and 255Hz.

Into the principal menu, press the “+” or “-” keys until you see MAP-Hz into screen, and press “OK”.



- A) You are testing a MAP
- B) Actual frequency
- C)
- D) Unit of measure: Hertz

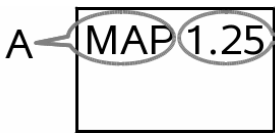
Changing the engine operating regime, you must see values similar to the next chart:



Analog MAP test

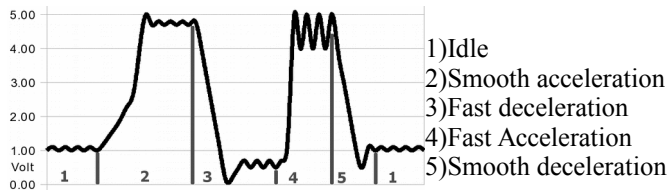
Only you can test MAP sensors with 5V of power supply and analog output between 0 to 5v. Greater voltages will damage HMP.

Into the principal menu, press the “+” or “-” keys until you see MAP-Hz into screen, and press “OK”.



- A) You are testing a MAP
- B)
- C) Incoming Voltage
- D)

Changing the engine operating regime, you must see values similar to the next chart:



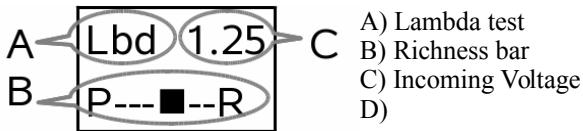
- 1) Idle
- 2) Smooth acceleration
- 3) Fast deceleration
- 4) Fast Acceleration
- 5) Smooth deceleration

Some MAP have different voltages, and the electrical connection is the same to the digital MAP

Oxygen sensor test (Lambda)

Is possible measure oxygen sensor that have an output between 0-5v. The bottom bar will move from 0 to 1v, the voltage must be income in pin of TSP1.

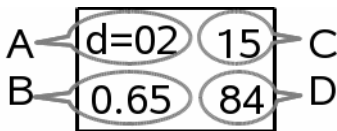
Into the principal menu, press the “+” or “-” keys until you see MAP-Hz into screen, and press “OK”.



Testing of electronic throttle

- 1) THE ENGINE MUST BE STOPPED. The engine can be damaged if is over accelerated moving the butterfly manually.
- 2) Choose the appropriate cable, check the connections, specially the coil connection in the cable A & cable B.
- 3) Plug 12Vdc and throttle body and choose “throttle” on the menu, then press ”OK”.

Into the screen you will see 4 informations similar to the image:



A=Max Difference
B=Motor Coil current
C=TPS1 position (in %)
D=TPS2 position (in %)

- 4) Using “+” and “-” move the butterfly from min to max opening. If you press both the butterfly will move alone.

The HMP1 will check the consistency between TPS1 & TPS2 and will show the difference between ideal measure and real measure. This is the most important data that ECU look.

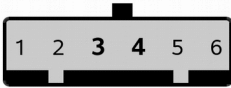
The max difference tolerated by the ECU is different form car to car but generally is acceptable a value under 5%.

Choosing the right cable

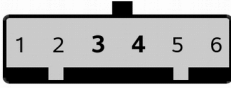
Before test any throttle body, the first is choose the right cable. For this you must search in the following list, not only the right form, also must check right connections.

This images are front view, seeing the throttle body.


A) Bosch 0280750085

Peugeot 307/Citroen C3,C4	Pin	Func.	Pin	Func.
	1	Coil+	4	TPS2
	2	Coil-	5	5V
	3	GND	6	TPS1

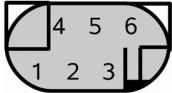
B) Magnetti Marelli 44SMG2

Siena/Palio RST II 1.8	Pin	Func.	Pin	Func.
	1	GND	4	Coil+
	2	TPS1	5	5V
	3	Coil-	6	TPS2

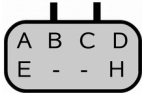
C) Magnetti Marelli 44SMF8/36SMF7 - Bosch 032133062 Siemens VDO 022133062 / 408238329001 / 036133062P

Fiat Palio/Siena 1.4,1.0 - VW Fox/Gol/Golf /Polo/Bora/ - Audi	Pin	Func.	Pin	Func.
	1	TPS1	4	TPS2
	2	5V	5	Coil+
	3	Coil-	6	GND

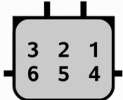
D) Bosch 0280750137

Fiat Punto / Viper / Dodge RAM	Pin	Func.	Pin	Func.
	1	Coil+	4	Coil-
	2	GND	5	TPS2
	3	5V	6	TPS1

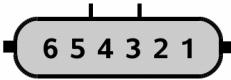
E) Delphi-GM 93397800/94705389/24579418

Chevrolet Corsa/Meriva/Montana 1.4/1.8	Pin	Func.	Pin	Func.
	A	5V	D	GND
	B	TPS2	E	Coil+
	C	TPS1	H	Coil-

F) Hitachi SERA576

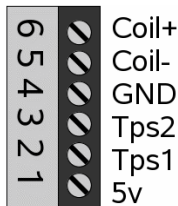
Nissan 350z	Pin	Func.	Pin	Func.
Unconfirmed Pinout 	1	5V	4	TPS1
	2	TPS2	5	GND
	3	Coil-	6	Coil+

G) Toyota 2230-22041

Toyota corolla	Pin	Func.	Pin	Func.
	1	Coil1	4	TPS2
	2	Coil2	5	5V
	3	GND	6	TPS1

New cables

In the future you will add new connectors. So you will need know about device connections looking the image.



Report on screen

After moving the butterfly from extreme to extreme, the device have all information to show the test result.

Press the button "OK".

TYPE: Formula used to the throttle or pedal tested.

TPS1: integrity report of TPS1 with following data, 3 data are shown: Minimum Value, Maximum value, and track integrity.



TPS2: same as TPS1.

Diffmax: The TPS1 y el TPS2 have a relationship (different according the car). The Diffmax is the maximum error between ideal relation of TPS1 & TPS2 and measured values in both sensors. Normally this values are below 3%.

Imax: Is the max current used to move the motor. This parameter allow discard short circuits and body overheating.

Rtps: Consumption (in mA) of sensors.

Hard: is the amount energy required for the smallest movement.

A higher value indicate a bigger dirty.

Result: Is the analysis result and will show: GOOD, if the diff max is lower to 4%. REGULAR, if the diff is between 5 y 6%. BAD if the difference is inadcuated and can cause troubles.

When the report end, the HMP1 come back to select menu for a new test.

Determining common fails

-The coil have consumption, but the butterfly didn't move.

Exhausted gears.

-The difference between TPS1&TPS2 is more than 5%.

TPS dirty or exhausted.

-The movement is not smooth.

Suciedad, o engranaje dañado

-The throttle body is ok, but the car have idle problems.

Dirty in the closing point, normally dust is accumulated between the butterfly and the venturi. Clean with dirty cloth.



Most common trouble solutions

The device does not power up.

- Verify the right connection to 12V.

The butterfly close and the screen show "Short Error".

-A short circuit is detected. The system will stay freezed until you push OK button.

The butterfly close and the screen show "Fuse Error".

-The internal fuse is opened due coil consumption excess. Wait few minutes and press OK button. The fuse is automatically restored.

The HMP1 show UNKNOWN type.

-TPS1 & TPS2 are bad connected

-TPS1 or TPS2 is damaged.

-Throttle works but have a relationship different than: $T1+T2=100$, x2, and Toyota.

Short circuit protection

The device have an over consumption protection that abort the test and show on screen until you press the "OK" button.



The device can be damaged in short circuits, and this damages will void the warranty.

General Warnings

-Do not wet the device, do not use chemicals to clean. Only a slightly damp cloth.

-This device must do not enter in touch with hydrocarbons. (Oil, Gas, Diesel, alcohol, etc etc etc)

-Do not connect the device to any voltage different to 12V.

-Do not plug more than one throttle body at once.

Note: The content of this manual can be changed in any moment without notice. ---- SCHdev take all rights to make the all changes that consider convenient to the manual and product with the end to improve.

Note 2: All mentioned trademarks in this manual are propriety of their respective owners and only are mentioned with the only idea that the customer identify correctly the components.

Warranty conditions

-General condition of warranty

SCHdev, warrant the right working of this product.

The warranty is for the following 3 (three) months starting in the purchase date, this cover the materials and had handwork defects.

If while warranty is running, the device fail, SCHdev will repair the product. The repair work is done into SCHdev placement and the shipping cost will be charged to the customer.

All accessories that not are manufactured by SCHdev, the warranty are kepted by the respective providers.

This warranty is the only given by SCHdev, so any other claim are excluded.

- Conditions

The warranty only will be recognized with the presentation of this certificate with the date of purchase, or the bill of purchase. The present warranty only will work with the customer that are at day with the payments.

- Execution of warranty

1.- Periodic controls, maintenance, reparations, and pieces substitutions of pieces or spare parts as result of normal usage.

2.- Any malfunction due bad usage, shocks, or usage out of specifications and any defect not produced by defect of construction.

3.- Product, installed, modified, repaired, mounted or handled by personal unauthorized by SCHdev.

4.- Accidents due to force major or other causes (water, fire, lightning, electromagnetic fields, etc.) that do not depend SCHdev.

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