

TECHNICAL NEWSLETTER

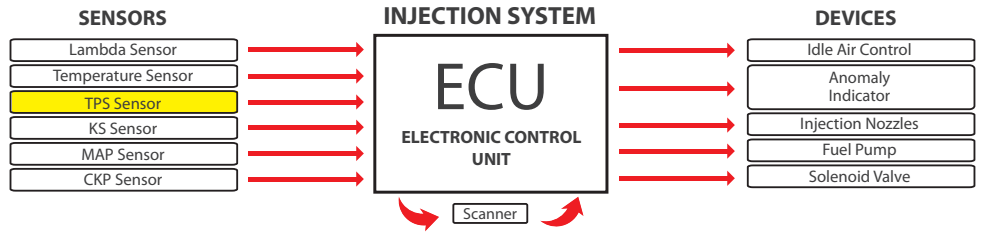
Throttle Position Sensor (TPS)



Worldwide Exporter
of Automotive Technology

ELECTRONIC CONTROL UNIT (ECU):

Through the sensors, the ECU monitors the system operation all the time and, through the actuators, it corrects its operation.



CONCEPT:

With a new technology, the DS Throttle Position Sensor has an electronic sensor that keeps the product free from corrosion, wear, and misuse problems, ensuring greater accuracy, repeatability, and durability.

LOCATION:

The TPS is usually fixed in the throttle body axis by two bolts, but can also be snapped-in.

PRINCIPLE:

The Throttle Position Sensor is used to monitor the accelerator position in an internal combustion engine. The sensor is intended to inform the accelerator throttle position. Through the TPS, the Electronic Control Unit (ECU) obtains instantaneous information about the throttle position, which allows the central unit to identify the power required by the driver. This information will be used to help the calculation of the injection timing and ignition timing, among other operating strategies.

HOW TO TEST:



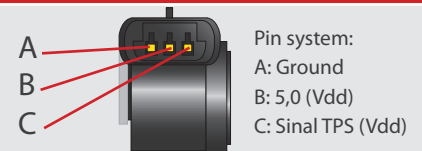
ATTENTION

The DS TPS is electronic, i.e., it does not have resistive track. Thus, **THE RESISTANCE CANNOT BE TESTED.** This sensor shall be tested as follows.

How to test the Throttle Position Sensor of a Palio 1.0 8V?

1 – Check the sensor supply

- Put the key on run;
- Disconnect the TPS wiring harness;
- Adjust the multimeter to the VDC scale;
- Insert the test leads into terminals A(1) and B(2);
- The voltage verified should be around 5 volts.



2 – Analyze the TPS sensor sign

- Fit the wiring harness into the sensor again;
- Still with the multimeter at the VDC scale and the ignition on, check the voltage in terminals A(1) or engine block and C(3);
- The voltage read should be within the range of the table below.

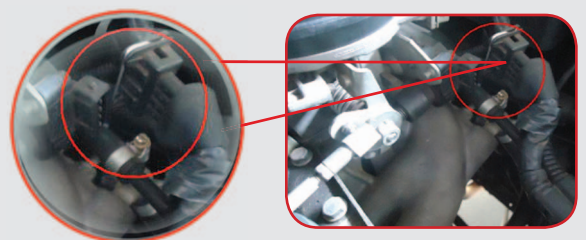
Situation	Closed Throttle Plate (stop)	Open Throttle Plate (total acceleration)
Screwed to the Throttle Body Injection (TBI)	0.55 to 0.75 volts	4.30 to 4.70 volts
Removed from the TBI	0.10 to 0.25 volts	4.70 to 5.00 volts

PROCEDURE TO REPLACE THE THROTTLE POSITION SENSOR (TPS)

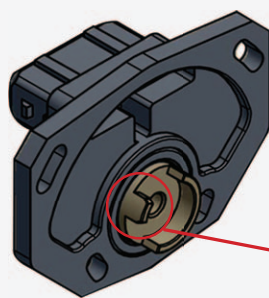
Step 1: Remove the defective TPS.

Step 2: Turn on the ignition and observe that, without the TPS, the Idle Air Control - IAC is going to move back and forward to a pre-determined position.

Step 3: Unplug the harness of the IAC, as this will cause it to maintain the position.

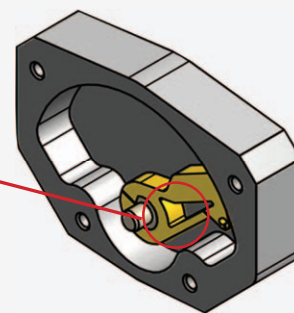


Step 4: Install the new TPS being careful to correctly fit the sensor rotor in the center of the throttle body spindle lever.



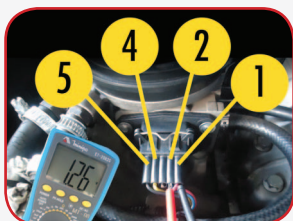
Throttle body spindle lever

TPS rotor



Step 5: Fit the screw in the center of the adjustment slot and only touch, leaving the TPS free for later adjustment.

Step 6: Stick the multimeter on the ground wire (terminal 1) and in terminal 2 jack and do the reading.



Is the resulting value between 1.1 to 1.2 volts?

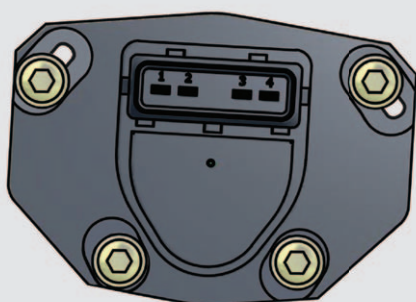
If so, go to step 8.

If not, go to the adjustment of Step 7.

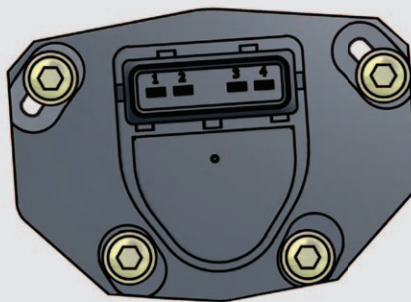
Note: higher than 1.2 volts the idle oscillates
lower than 1.1 volts high idle

Step 7: Adjust the TPS position turning clockwise to increase the voltage or counterclockwise to reduce it.

CLOCKWISE
it increases the output voltage



COUNTERCLOCKWISE
it reduces the output voltage



Step 8: When the position is right, tighten the screws.

Step 9: Turn the key off, plug the harness of the IAC back and start the engine. The engine should go up to around 1300 rpm and then down until it stabilizes around 900 to 1.000 rpm, depending on the engine temperature.



WARNING:

The operator should be careful, as there are some models physically similar, but with an inverted rotation.

Black rotor => clockwise

Grey rotor => counterclockwise

The TPS may be damaged if it is mounted on a different throttle plate body.

Some procedure errors may induce the operator to make this mistake. For this reason, you should be careful about:

- Incorrect fixation of the sensor;
- Mistaken model application;
- Defective electric wiring harness;
- Change in the throttle plate stop screw.

What are the effects of a bad TPS?

The most common defects caused by failures in the Throttle Position Sensor circuit are:

- High idle (engine accelerating) or oscillating: Sensor sending high voltage with the throttle plate closed. In some cases, this defect is intermittent. It may be caused by failures in the sensor itself or tampering with the throttle plate stop screw.
- Low idle (engine "dies" when slowing down): Sensor sending low voltage with the throttle plate closed. It may be caused by failures in the sensor itself or tampering with the throttle plate stop screw.
- Engine failing ("failures" during accelerations): Interruptions in the resistive track of the TPS;
- Low-performance engine: the tension sent by the sensor when the throttle plate is fully closed is correct. But the tension sent by the sensor when the throttle plate is fully open is low.



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