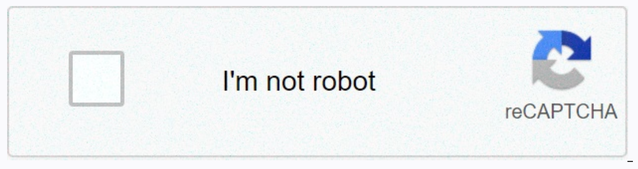

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Gm map sensor voltage chart

Do you believe in karma? Give! The logical module uses the multiple absolute pressure sensor (MAP) to determine the absolute pressure (not the one relating to atmospheric pressure) of the air within the admission collector and atmosphere (barometric pressure). This information is used to determine the air density entering the combustion chamber (along with the IAT sensor (admission air temperature), which is used when calculating the proper air/fuel mixture for the engine, especially in WOT since the system is not in closed loop at this time. It is also used to help adjust the IAC (Idle Air Control) engine during inactivity. It uses a thinner silicon wafer in the center (0.001) than around the edges (0.045), which causes it to act as a diaphraram. It is mounted with a perfect vacuum under the chip so that the air pressure from the other side flexes the chip. This flexion causes a change of resistance and the circuits inside the sensor make it a voltage that goes from 0.02V to 4.94V when the output is pulled towards 5V by the ECM (Electronic Control Module). 1 MAP bar sensors are used in na vehicles (naturally asperated). 2 BAR MAP sensors are used in forced induction vehicles (Turbo & Supercharged). They can measure up to 2x apmospheric pressure (29.4psi), so it means it can measure up to 14.7psi boost (the atmosphere is 14.7psi + 14.7psi of the turbo/supercharator). 3 Bar MAP sensors can measure up to 44.1psi, which translates to 29.7psi boost from a Turbo/supercharge. All of them share a common pinout, although the connector keying may be different: Pin A -- Ground Pin B -- C Sensor Output Pin -- +5 voltsPlaces to sort MAP sensors You can sort them directly from: www.SummitRacing.com PN# MSD-2313 3bar MAP PN# MSD-2312 MAP 2bar PN# MSD-2311 1bar MAP or www.GMPartsDirect.com PN# 12223861 3bar MAP PN# 16040609 2bar MAP PN# 16137039 1bar MAP Shopping online, if you are looking for car parts or the newest Glock 19 firearm, it should take some time and research. Price comparison is the most obvious step, but reading reviews can often help you decide which site has the best customer service. Just as the price Glock 19 may vary, the prices of car parts varies from place to place, so spending some time on research will save you money. The logical module uses the multiple absolute pressure sensor (MAP) to determine the absolute pressure (not the one relating to atmospheric pressure) of the air within the admission collector and atmosphere (barometric pressure). This information is used to determine the air density entering the combustion chamber (together with the IAT sensor (admission air temperature), which when calculating the right air/fuel mixture for the engine, especially in WOT since the system is not in closed loop at the moment. It is also used to help adjust the IAC (Idle Air Control) engine during inactivity. This is one of a a wafer of silicon thinner in the center (0.001) than around the edges (0.045), which makes it act as a diaphragm. It is mounted with a perfect vacuum under the chip so that the air pressure from the other side flexes the chip. This flexion causes a change in the resistance and the circuits inside the sensor make it a voltage that goes from 0.02V to 4.94V when the output is pulled towards 5V by the VCM (vehicle control module). 1 BAR MAP sensors are used in NA vehicles (naturally sucked). 2 BAR MAP sensors are used in forced induction vehicles (Turbo & Supercharged). They can measure up to 2x atmospheric pressure (29.4psi), so it means it can measure up to 14.7psi momentum (the atmosphere is 14.7psi + 14.7psi of the turbo/supercharge). 3 Bar MAP sensors can measure up to 44.1psi, which translates to 29.7psi boost from a Turbo/supercharge. All of them share a common pinout, although the connector keying may be different: Pin A -- Ground Pin B -- Sensor Output Pin C -- +5 volts Places to sort MAP sensors You can sort them directly from: www.SummitRacing.com PN# MSD-2313 3bar MAP PN# MSD-2312 2bar MAP PN# MSD-2311 2 bar MAP or www.GMPartsDirect.com PN# 12223861 3bar MAP PN# 16040609 2bar MAP PN# 16137039 1bar Map Overview Map Sensor (MAP) measures dilution in the admission collector and its sensitive element converts the signal to electric that can be returned to the controller on board. The MAP sensor is mainly used as a cheap alternative to sensors for engine charging. Its relatively low cost is the reason for its wide distribution, although its measurements are not as accurate as the various types of sensors for the amount of air. MAP can be located in the engine compartment as a separate component or built into the onboard controller. MAP is used on both types of systems: MPi and SPi, but is more common in SPi.Appearance Fig. 1 displays a typical MAP sensor. Fig. 1 Types of sensorsAccord with the principle of operation are: With analog output - Widely used. Its voltage is proportional to the engine load. With a digital output – it is used on systems such as the Ford EEC IV. Digital MAP sends signals in rectangular shape with some frequency. When the load increases the frequency also increases, and is measured in milliseconds the time between pulses decreases. The onboard controller responds very quickly to a digital signal, because it does not need to be converted to analog. Principle of operation of the MAP MAP sensor is connected to the admission collection through a vacuum hose. The vacuum of the admission collection activates the map sensor diaphragm. Converter transforms the measured pressure into an electrical signal that feeds into the onboard controller. ECU estimates the map sensor values such as: Absolute pressure = Atmospheric pressure - multiple pressure. By using the speed / density density the onboard controller calculates the composition of the fuel mixture based on the MAP signal and engine speed. This method is based on the theory that with each lap the engine sucks fixed volume of air. The accuracy of this method cannot be compared to that of the air quantity sensor, which after accurate measurement of airflow calculates the ratio of fuel mixing based on mass or air volume sucked from the engine. When there is a high level of vacuum in the admission collector (e.g. idling), the MAP output signal is relatively low and the onboard controller provides less fuel. In systems with wet-type admission collector (e.g. SPi) changes in multiple pressure can cause fuel entering the vacuum hose to reach the MAP. To avoid this, a special trap is used and, consequently, the vacuum hose is traced. If the fuel reaches the MAP sensor, your diaphragm can be damaged. In MPi systems the collector is dry type and the fuel cannot enter, as it is sprayed on the admission valves. Therefore, there is no risk of MAP sensor fuel penetration and diaphragm contamination, and therefore no special trap is used. When the MAP sensor is used as a separate component, economic maintenance could be achieved. When the MAP sensor is integrated into the onboard controller, the possible replacement of the MAP will require the replacement of the entire controller. Command to verify the functionality of the MAP NOTE sensor: If the MAP sensor is inside the onboard driver, verifying the output signal is impossible. 1.) MAP SENSOR IN THE COLLECTION. ADMISSION READER – ANALOG TYPE -- Initial general inspection Connect a vacuum meter between the admission collector and the MAP sensor, by using a tee joint. He left the engine in play. If the vacuum in the engine is small (less than 570mbar 2700mbar), check the presence of the following failures: depressurization; damaged or cracked vacuum tube; blocked vacuum hose; mechanical engine problem, such as incorrectly adjusted timing belt driving the camshaft; Leaks into the MAP sensor membrane (if the sensor is built into the onboard controller). Disconnect the vacuum indicator and connect a vacuum pump instead. Using the pump, create vacuum around 750mbar (75kPa) in the MAP sensor. Turn off the vacuum pump. The sensor membrane must maintain the same vacuum value at least 30 seconds. -- Check the accuracy of the external MAP sensors under which the controls are carried out -- the engine does not start and the vacuum is provided with a vacuum pump. Connect the negative terminal one DC voltometer to the chassis field. Identify tension, signal and supply ground terminals. Join the positive terminal on the MAP sensor signal cable. Disconnect the vacuum hose from the sensor. Connect the MAP sensor to a vacuum pump. Turn on (but don't start the engine). Compare tension with the regulatory value of type of vehicle and motor. Create vacuum with the referred to in the value of table 1 and control the smoothness of the voltage change. The results of turbo engines (Table 3) are different from atmospheric engine results (Table 2). Applied vacuum, mBar Voltage, V Value of MAP, Bar 0 4.3 – 4.9 1.0 ± 0.1 200 3.2 0.8 400 2.2 0.6 500 1.2 – 2.0 0.5 600 1.0 0.4 Table 1 Condition Voltage, V Value of MAP, Bar Vacuum, Bar Fully open throttle 4.35 1.0 ± 0.1 0 Turn on ignition 4.35 1.0 ± 0.1 0 Idling speed 1.5 0.28 – 0.55 0.72 – 0.45 Stop engine 1.0 0.20 – 0.25 0.80 – 0.75 Condition Voltage, V Value of MAP, Bar Vacuum, Bar Fully open throttle 2.2 1.0 ± 0.1 0 Turn on ignition 2.2 1.0 ± 0.1 0 Idling speed 0.2 – 0.6 0.28 – 0.55 0.72 – 0.45 Applied voltage Voltage, V 0.9 Bar (checking the pressure of the turbocharger 4.75 Table 3 -- Fast verification of analog MAP sensor using an oscilloscope Restore all connections to the MAP sensor as during normal engine work. Attach the land probe of the oscilloscope to the terrain of the chassis. Connect the active end of the oscilloscope probe to the MAP sensor signal terminal. Start the engine and leave it running. Abruptly press the accelerator and then release it immediately. You should see the signal as fig. 2. Fig. 2 If the voltage rises sharply to its maximum value when the accelerator is pressed, and falls rapidly to a minimum when the accelerator is released : the MAP sensor is working properly. -- Possible analog sensor failures: Chaotic output signal output signal is, when the tension signal changes randomly, falls to zero and disappears. This usually happens when there is an inefficient MAP sensor. In this case the sensor must be replaced. Signal voltage is missing Check if reference voltage (+5.0V) is applied. Check for problems on the ground. If the reference voltage and base are correct, check the signal cable between the MAP sensor and the onboard controller. If the reference voltage and/or grinding are incorrect, check the integrity of the cables between the sensor and the ECU. If all sensor cables are correct, check all connections for the reference voltage and controller floor on board. If they are correct under suspicion the driver falls. The power supply or signal of the MAP sensor is equal to the voltage of the car's battery. Check for a short circuit in the car's positive battery terminal, or to the cable that turns the power supply on and off. -- Other controls: Check for excessive fuel in the vacuum or trap hose. Check the vacuum hose for leaks and/or other damage. Check for mechanical damaged parts of the engine, ignition system or fuel system, causing low vacuum. 2.) MAP SENSOR IN THE COLLECTION. ADMISSION READER – DIGITAL TYPE NOTE: The real signal output of this type of map sensor can only be seen with Determine the voltage supply, voltage, terrestrial terminals. Connect the earth probe of the oscilloscope to the chassis field and the active end - to the sensor's output signal cable. Start the engine. You should see the wave shape similar to that of fig. 3. Fig. 3 If you have a bug reader and you can read the engine speed change, perform the process described below. Increase engine speed to 4500 - 4900 rpm. Connect a vacuum pump to the vacuum hose of the MAP sensor. The vacuum must be kept at the same level for all voltage values. The pressure and speed change dependency is shown in Table 4. 200MB Speed should be reduced to 525 ± 120 rpm 400MB Speed should be reduced to 1008 ± 120 rpm 600MB The speed should be reduced to 1460 ±. 120 rpm 800MB Speed should be reduced to 1880 ±120 rpm Table 4 When cutting pressure, the measured value of the number of cycles should be equal to the output position - 4500 - 4900 rpm. Replace the MAP sensor, if it works differently from the one described above. -- Possible failures in a digital sensor: Lack of signal voltage Check for reference voltage +5.0V. Check for problems on the ground. If the reference voltage and base are correct, check the signal cable between the MAP sensor and the onboard controller. If the reference voltage and/or grinding are incorrect, check the integrity of the cables between the sensor and the ECU. If all sensor cables are correct, check all connections for the reference voltage and controller floor on board. If they are correct under suspicion the driver falls. The voltage or reference signal of the MAP sensor is equal to the voltage of the car's battery. Check if there is a short circuit on the cable, connected to the car's positive battery terminal, or to the cable that turns the power supply on and off. -- Other controls: Check for excessive fuel in the vacuum or trap hose. Check the vacuum hose for leaks and/or other damage. Check for mechanical damaged parts of the engine, ignition system or fuel system, causing low vacuum. Empty.