



OBDII - Readiness Supplement

Utah County has been testing OBDII vehicles for over ten years and the majority of our technical calls are still regarding readiness monitors not setting. Whether from a vehicle owner or a certified technician, the issue is usually the same:” I’ve driven this car XXX miles (anywhere from 200-2000 miles), and I still can’t get these monitors to set to ready.”

Typically, if a vehicle has been driven that many miles and the monitors still won’t run then there is a problem with the vehicle that is **preventing** the monitors from running. Details regarding some of the problems that might cause this scenario are then discussed with the caller.

Note: As the manufacturers were learning this new system some of the early (96-2000) OBDII vehicles had some real issues regarding monitor readiness. However, by 2001 most of the vehicle manufactures made corrections so that these vehicles will typically run the monitors in 20-40 miles, sometime less.

Listed below are some of the commonly overlooked problems that prevent a vehicle from running readiness monitors. If the car has been driven over 100 miles and it’s still not ready don’t just tell the customer to drive additional miles. Chances are, driving more miles will do nothing but frustrate your customer. Take the time to diagnose and fix the problem. Your customer will appreciate the effort and it may result in additional work and a customer for life.

1. **Battery voltage to the Keep Alive Memory.** The PCM must have a good 12V unswitched power source in order to retain readiness status after the key is turned off. A bad fuse or broken wire may cause the PCM to reset when the key is turned off. This would result is a clean slate the next time the car is started.

TIP: If you compare multiple test results and notice some monitors change from “ready” to “not ready” between tests this would indicate a problem with the “keep alive” memory circuit. Battery condition, battery terminal condition or someone clearing codes could also cause this.

2. **ECT out of range.** Engine coolant temperature is critical to all of the monitor drive cycles. Modern engines typically operate in the 195°- 205° range for maximum efficiency and lowest emissions. Manufacturers typically require a minimum of 170° to run several monitors.

TIP: Checking ECT in the service bay is not good enough. The vehicle may run at 180°+ in your shop but you must drive the vehicle on the highway to determine if the vehicle is maintaining proper ECT and staying in closed loop. Don’t rely on the cars temp gauge. For proper diagnosis you must plug in your scan tool to see what the computer is seeing.

3. **IAT out of range.** Intake air temperature is another critical sensor for several drive cycles. A faulty IAT sensor may not set any code but may prevent the EVAP and CAT monitors from running.

TIP: Be suspicious if you see an aftermarket cold air intake installed on the vehicle . Some of these air boxes don’t have a provision for the IAT sensor which results in the sensor being tucked into the fender well or loom. If it is a true “cold air intake” and the sensor is installed, the air surrounding the air filter may never get above the required threshold for a monitor to run (especially during winter)

(Over)

4. **VSS out of range.** The PCM must know how fast the vehicle is traveling in order to run many of the monitors. A faulty vehicle speed sensor may or may not set a code. Again, a scan tool is absolutely necessary in order to see what the PCM sees and diagnose the problem.

TIP: Does the speedometer work? Some manufacturers use the speedometer for double duty. If the vehicle speed sensor is in the dash cluster and the speedometer doesn't work it stands to reason that the PCM isn't receiving vehicle speed. Some vehicles have more than one speed sensor, use your scan tool to verify proper VSS inputs.

5. **MAF failure within range.** A mass air flow sensor that is outside its operating range will in most cases set a code and turn on the light. However, a MAF that is fixed or slow to respond at a value within range may not set a code but will prevent readiness monitors from running. Air flow is one of the inputs that the PCM uses to determine engine load and engine load is used for enable criteria as well as transmission pressures and shift points.

*TIP: There are some air flow sensors that you should **not** use carb cleaner on. Using the wrong cleaning procedure will damage the sensor and cause driveability issues but may not set a trouble code.*

6. **MAP failure within range.** A manifold absolute pressure sensor that is outside its operating range will in most cases set a code and turn on the light. However, a MAP that is fixed or slow to respond at a value within range may not set a code but will prevent readiness monitors from running. Manifold pressure is one of the inputs that the PCM uses to determine engine load and engine load is used for enable criteria on some monitors.

TIP: If the MAP sensor has a vacuum hose attaching it to the intake manifold take the extra time to inspect or replace this hose. Over time these hoses can get soft and collapse or get brittle and crack. If the MAP sensor is directly attached to the intake manifold make sure the intake port is not restricted.

7. **Oxygen sensor failure within range.** The oxygen sensor may be operating within range but may also be lazy. This operation may not be bad enough to set a DTC but may prevent the O₂, CAT and EGR monitors from running.

TIP: If someone else has replaced the O₂ sensor don't automatically assume that it's the correct sensor. There are many O₂ sensors that look alike, fit and may plug into the harness but that doesn't make them the correct sensor. Double check the part number of the sensor and replace it with a known correct part if you have any doubt.

8. **Pending DTC's.** If readiness will not set quickly, there may be a defect present which will set a DTC after another trip. Readiness sets fairly quickly on vehicles without defects. However, a computer trying to confirm a system defect automatically lengthens the monitoring process. This procedure may keep readiness for certain other monitors from setting until the defect is confirmed.

TIP: Take the necessary time to learn the capabilities of your scan tool. There is a lot of information you can see in the data stream and knowing how to interpret it gives you a head start on proper diagnosis.

General TIP: OBDII mode \$06 data can be invaluable in diagnosing OBDII failures and readiness issues. Not all scan tools have the capability to read Mode \$06 data. If your scanner has this data available take the necessary time to learn how to use it. Understanding and using mode \$06 data will make OBDII repairs much easier and much more effective.