Vari problemi di guidabilita' del mezzo

Drivability Problems: These fall several categories including engine hesitation, stumbling on acceleration, low speed cutting out or missing, high speed hesitation or surging, poor fuel economy.

Engine dies or stumbles on acceleration: Check spark plug wires with ohmmeter set on highest scale. Any wire above 30K ohms should be discarded. Check your sparkplugs and replace them if they are worn, where the electrode is burnt or rounded off. Check and replace the rotor and distributor cap if the electrodes are burnt and/or corroded. Check fuel pressure and correct any problems. Check all vacuum lines. check the air ducting to your throttle body, all gaskets on the intake that may introduce false air into the intake. Check map or maf sensor. With maf system, engine warmed and idling, gently tap on sensor, if the rpm's drop or the engine dies, replace the sensor. The map sensor can be checked by hooking up a analog (needle) voltmeter between ground and the map sensor wire. Set the scale to no higher than 12 or 15 volts. If you can get a scale to a maximum of 6 volts the better. With the engine off, the reading will be around 4.5V, depending on your altitude above sea level, with the engine warmed up and idling the reading should be around 1.5-2.0V. Rev the motor up, if the needle pegs the scale one way or the other, replace the sensor. If wiggling the wires peg the needle, inspect and repair the wiring to MAP sensor.

Another item to check is the tps. A easy way to check it, either on or off the vehicle, is with a sensor tester. Unplug the sensor connector and hook the sensor tester up according to the instructions. Observe the indicator lights. If they blink erratically, replace the sensor. You can do the same test with a analog meter, by hooking one lead to either the "A" or "C" terminal, and hooking the other lead to the center or "B" terminal. Move the throttle and observe the action of the needle. It should be smooth. It is erratic, replace the sensor. To set the tps to the correct value at idle, you will need a digital voltmeter. With the ignition on, engine not running, hook the black lead of meter to ground, back probe the blue wire on the tps connector, loosen the screws on the sensor just enough where you can move the sensor up or down. Set the reading to around 0.55V +/- 0.05 V. Now this assumes that the idle speed is correct. This has a indirect relation to the tps setting.

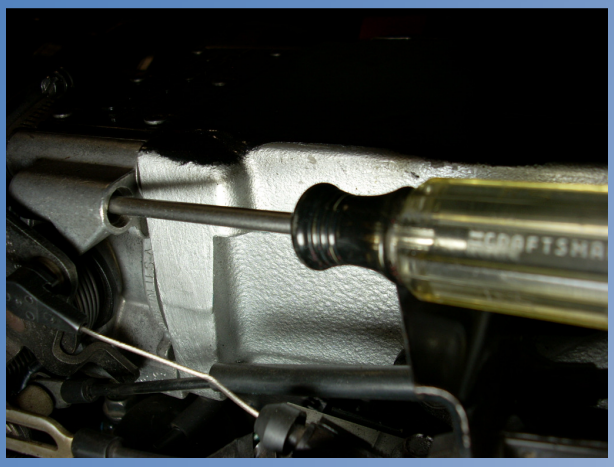
The correct idle speed is generally controlled by the ecm via the IAC. Before you can set the correct TPS setting, is is advisable to set the correct idle speed. And

before you can do this, you need to know that the ignition timing is set correctly. Lets take this order:

IGNITION TIMING: To set this, the engine must be fully warmed up, with the ecm already in close loop. To check this status, while the engine is running, jumper terminals "A" and "B" on the ALDL. While the engine is warming up, the O2 sensor status is being displayed. If the SES lamp is flashing rapidly, about 2 times a second, the ecm is in open loop. When the ecm goes closed loop, the flashing lamp will slow to about once a second. Once this achieved, you may want to wait a few more minutes of running time to get the coolant up to operating temperature. Be sure to remove the jumper from the ALDL before proceeding! Find the set timing connector in the main trunk of the tpi harness, with a tan/black wire. Unplug this connector, the engine now will be operating at actual (mechanical) timing. Hook your timing light up to its proper connections. Loosen the hold down tab on the distributor. Locate the timing tab on the timing cover. If it is difficult to see the marks, shut off the engine and make a mark with a highly visible fluorescent paint stick or even a "liquid paper" correction fluid. Do this on the mark on the timing cover. Most tpi equipped motors are set at 8 degrees before top dead center (BTDC). Check the manual for your specific engine size and mark accordingly. Mark the timing mark on the harmonic balancer the same way. Start the engine and let it warm up if it has been idle more than an hour. Now with the timing light, and the set timing connector disconnected, observe the location of the harmonic balancer mark in relation to the mark on the timing tab. Rotating the distributor clockwise will retard the timing, while counterclockwise will advance it. Move the distributor in the proper direction to achieve the timing marks to line up. Tighten the distributor hold down. Check the timing again, as it is possible for it to move. Correct it as necessary. After you are satisfied the timing is correct, connect the set timing connector. You will notice the engine will speed back up, this means the ecm has control over the timing now. The ecm will probably set a code related to timing, and turned on the SES lamp. This is normal. Just remove the ecm power fuse for at least 15 seconds, and reconnect. This will erase any trouble code stored.

Setting Minimum airflow: First be sure that there is no deposits behind the throttle plates and in the IAC air bypass passage ways. This deposit or "coking" is a mixture of soot and oil that is part of the combustion process. In older engines, a significant is oil. If this deposit is enough, it will effectively choke off the air flow to the IAC, causing hesitation and stalling. The best way to clean this is to remove the throttle body from the intake, and using a can of brake cleaner, rags and cotton swabs. Clean in front and behind the throttle plates, remove the IAC and clean the pintle end and the passages on the throttle body. Once this clean, reinstall throttle body. To adjust the minimum air, you must first install a jumper on terminals "A" and "B" on the ALDL. Do this with the key on, engine off. Wait about 30 seconds or so. This will allow the IAC motor to fully extend and close off the air bypass. Without turning off the key, pull the connector off the IAC motor. Start the engine, it will be at the minimum speed set up. Set the appropriate idle speed specified for

your application found in your automotive manual. Now you can set the tps to the correct voltage.



Adjusting the idle speed for minimum air is down by turning the idle stop screw clockwise to increase idle speed, counter-clockwise to decrease the speed. The tool is a torx bit end.

Engine cuts out, misses at idle and low speed operation: These items must be checked to eliminate the source of the problem (1) Spark plugs, and wires (2) Distributor cap and rotor (3) Fuel pressure (4) Proximity of sensitive sensor wires to the sparkplug wires and coil wire (5) Injectors for clogged or sticking operation (6) Contaminated fuel (7) Mechanical condition of engine, which includes compression between cylinders, cam wear, lifters, springs and valves, timing chain and gears, broken or leaking vacuum lines and hoses. Like as been said, if you have put a TPI system on a tired engine, you are not going to be happy with it.

Engine lack power: If the engine seems it is not running at its potential, check these items: (1) Dirty air filter (2) Dirty fuel filter (3) Contaminated fuel (4) Fuel pressure too low (5) Restricted exhaust, or if you have installed these- catalytic converters (6) Bad egr valve-fails to close. (7) Accelerator cable not properly adjusted. (8) Charging system too low or too high- below 10V or above 16V. (9) Ignition system- spark plug wires, faulty coil, loose or missing ground wires from ecm, distributor cap and rotor (10) Timing not set to proper specs. (11) Engine mechanical problems- low compression, worn cam lifters and rest of valve train components.

Poor fuel economy: Look for these items that cause a drop in fuel mileage and a pinch in your wallet: (1) Tune up, yes its number 1 on the list. (2) Vacuum leaks (3) excessively high fuel pressure, leaky or clogged injectors (4) Exhaust pipe/catalytic converter restricted (5) Driving habits- jack rabbits starts can really drain the tank plus it is hard the engine over a period of time. (6) Engine in poor mechanical condition.

In this day and age, it makes since that a properly tuned and maintained vehicle not only saves you money, but also helps contribute to the air quality. Now, I know that some of you don't give a hoot about the air you and I must breathe, but consider this: The mandates for stricter emission compliance comes from the fact

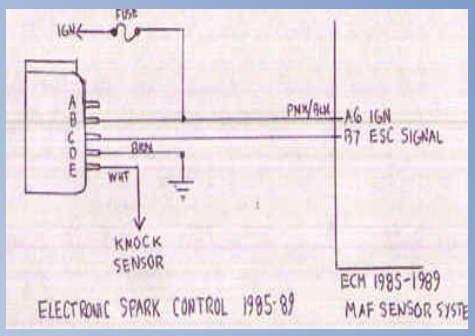
that the automobile has a part in contributing to a amount of pollutants in the air. The more people let there cars deteriorate, the amount of emissions that is put in the air goes up significantly. This is especially true of cars that are deliberately neglected, out of tune and with faulty catalytic converters. Multiply this by thousands or millions and you can see that it could be a major problem. How many times have you been behind a vehicle, that the exhaust smell is so bad, it is like you are sniffing the hose at a gas pump?, I think you can get the picture.

Surging at cruise: When you are cruising down the road with a steady foot on the throttle and the engine acts like it has a slight bucking or "shake", check for a vacuum leak, restricted fuel lines and filter, surging fuel pressure, and problems with the ignition system.

Engine dieseling after ignition shut off: Check for leaking injectors, including the cold start injector, if so equipped. A defective canister purge system. Also a rupture fuel regulator diaphragm that is allowing fuel to be sucked in through the vacuum line.

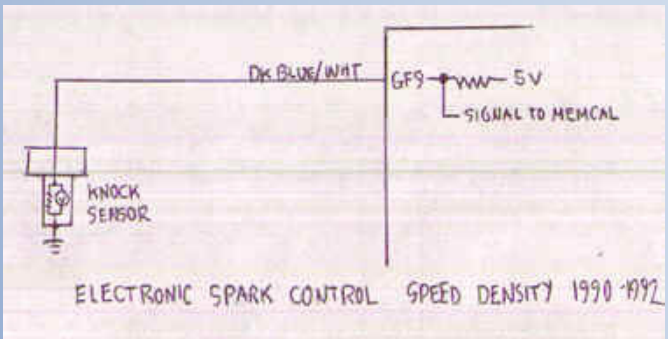
Knocking or pinging under acceleration: Check for the following items: An overheated engine, egr valve not opening, or the esc module, and knock sensor inoperative. The knock sensor is a special device that is like a electronic microphone, specially tuned to hear the distinct sound of knocking or pinging. This symptom is usually caused by the fuel in the combustion chamber being ignited before the piston reaches close to top of its stroke. This "preigintion" is trying to drive the piston back down, while the crankshaft is trying to get it in it proper ignition point. These extremely advanced predetonation is what causes holes to eventually to be burnt in the top of pistons, and a host of other problems, including cylinder head and valve damage.

What the knock sensor does is listen for this happening, based on the parameters that are programmed in the prom. When the knocking is detected, the ecm will back the timing off 3-4 degrees per second until the knocking goes away, and then slowly advanced the timing until it is detected again, and then back off the timing and keep the it there, and remains at that setting until the engine load or throttle position changes. Usually, if there is a fault in the esc system, the ecm will set a code 43. There two different types of systems used. One for MAF and one for speed density. The knock sensors will not interchange between the two. Also the speed density knock sensor detection is controlled by an internal program in the memcal and is specific to a particular engine calibration.

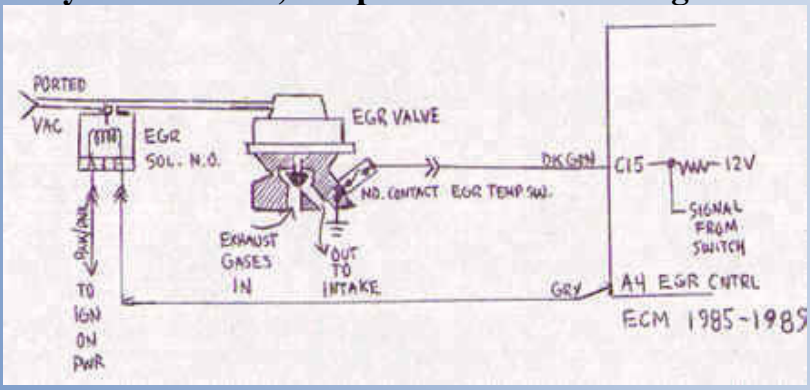


The diagram above shows the schematic of the esc system used on the MAF equipped cars. Pin "C" is the one that carries the signal back to ecm when it detects detonation. Make sure that pin "B" has 12V to it, and pin "D" is secured to provide a good ground for the module. Pin 'E" is the wire that comes from the knock sensor itself. Check all these connections to make sure they are tight, and that none or shorted or open. The knock sensor can be tested either of two ways. The easiest way is to start the engine, let it warm up. Hook up your timing light. With a small ball peen hammer, lightly tap the exhaust manifold on the passenger side, while observing the movement of the timing mark. If it backs off while you're tapping and then goes back to initial timing when you stop, you can say the esc system is doing its job. The second way, just involves checking the system when it fails this test. First check the knock sensor. You can do this without having to pull the sensor, by disconnecting the esc module connector, and hooking the yellow clip end of your sensor tester to the pin "e" on the connector that goes back to the sensor. Hook the black clip to a solid ground point, you can use pin "D" to check for a faulty ground, or use a solid connection ground in the engine compartment. With your tester set up according to the instructions, tap the exhaust manifold. The light should flash, with every tap. If it does not, double check your connections and the instruction manual to make sure you have the right set up. Check Pin "C" with a digital or analog meter, while performing the "tap" test. Make sure the ignition is "on" to supply voltage to pin "B". Pin "C" should have voltage on it, unless knocking is detected, then it will go low. If the knock sensor passes the first test, but fails this test, suspect the esc module is bad. This test, however, assumes that you have already check the wire from pin "C" to ecm terminal B7 for continuity.

For speed density systems, the test is different. Disconnect the wire to the sensor. Check for voltage with the red lead on sensor wire, the black lead hooked to ground. Set your meter to the scale that is closest to 5V. If there is 5V on this wire, replace the sensor. If there is no voltage inspect the wire to the ecm for a short or ground. If wire checks out, check memcal, memcal connections to ecm and the ecm itself.



Another problem that can cause knocking is a faulty egr valve, egr valve solenoid, leaky vacuum line, or open or shorted wiring.



Usually, if there is a problem with the egr system, a code 32 will normally be set. This can be caused by a faulty egr, egr control solenoid, egr temperature switch, opened or shorted wiring to all the related components.

You can check the egr temperature switch circuit by hooking up a digital meter to ecm pin C15. There should be 12V at this connection. Test drive the vehicle while observing the voltmeter. When the egr is commanded to open the voltage will drop to zero. If this does not happen, check the continuity of the wire from the ecm to the egr switch connector, with it disconnected, if the wire checks out, replace the egr temp. switch.

You can check the egr valve for proper operation by starting the engine, letting it warm up. Pull the vacuum line to the egr valve, and hook up a hand vacuum pump going to the valve and apply vacuum. If the egr is working properly, it will open up, and stall the engine, or at least cause the idle to drop. The egr is working at this point. Hook the vacuum line back up. back probe the gray wire on the egr solenoid connector and ground the wire to a good ground. If the solenoid valve works, it will do the same as the vacuum test. This test assures that the solenoid is functioning. if any component fails the test, replace it.

Surging or "hunting" idle speed: You can check for this by eliminating if the IAC control is at fault or not. Start the engine and allow it to warm up. By jumping a 10K (10,000) ohm resistor between ALDL terminals "A" and "B", the ecm will fix the IAC position, ignoring the internal timer, and be forced to go into closed loop, and set the idle speed to around 1000 rpm. If the idle speed still continues to

fluctuate, you'll have other items to check out.(1) Check for throttle cable binding or sticking (2) Broken or loose motor mounts (3) Problems with charging systems (4) Defective electrical components, such as a defective or misadjusted park/neutral switch, bad tps sensor, bad ground connections. (5) Vacuum leaks, bad PCV valve- this can be checked by pulling the PCV from the valve cover, leaving it connected the vacuum hose to the intake. Place your thumb over the end of the valve, if the idle speed quits surging, replace the valve., defective vapor control system, leaky egr valve through base gasket (6) Fuel pressure fluctuation (7) A/C compressor clutch malfunction- with A/C on (8) uneven compression between cylinders, or other mechanical problems.

SAFETY-SAFETY-SAFETY!!!!

Working on your vehicle should routine and safe. Under no circumstances put your life or limb on jeopardy. A moments lack of attention could result in property damage and injuries. Although the potential for minor accidents will always exist, use caution and common sense to minimize the risks involved working on anything mechanical. Don't ever take safety for granted. Here is the list of do's and don'ts.

DON'TS!!!!

Don't ever run vehicles' engine in a enclosed area, EVER! Carbon Monoxide builds up quickly and will kill you!

Don't rely on a bumper jack to work under a vehicle, always use approved jackstands to support the weight of the vehicle. Place them under the recommended support points.

Don't try to loosen very tight fasteners while vehicle is on jackstands, chock the wheels to prevent vehicle from rocking.

Don't smoke around or in the work area, especially while working on fuel system and its components.

Don't work in area that is enclosed where a pilot light from a water heater or gas dryer may ignite vapors from working on fuel system.

Don't use power tools which have broken casings, or frayed, damaged power cords. Use the proper outlet and plug in, and is properly grounded.

Don't start vehicle unless the transmission is in park or neutral, with the parking brake set

Don't drain engine oil or transmission fluids while hot, unless you have taken the necessary precautions to keep you from being scalded by hot liquid.

Don't weld around battery or fuel system components. You must disconnect battery from vehicle electrical to prevent damage to ecm and all other electronic equipment, including your expensive stereo !

Don't touch engine or any part of exhaust system until it has cooled enough to prevent burns.

Don't attempt whatsoever to siphon any liquids such as gasoline, oil, antifreeze or brake fluid by mouth. Always use a special tool made to move liquids form one container to another. Do not allow these liquids to remain on your skin, wash off immediately.

Don't remove radiator cap on a hot engine, let it cool first. Then out rag over cap and open slowly.

Don't inhale brake lining dust, or use air pressure to blow it off in a enclosed area. Use approved brake cleaner spray to wash off brake dust from brake components.

Don't allow oil, grease or other liquids to remain on floor where they can be a slip hazard. Wipe up all spills immediately.

Don't allow animals and children in to work area.

Don't wear loose clothing, tuck in shirts, remove ties. Keep long hair pulled back out of way to keep from creating a hazard.

Don't attempt to lift a heavy item by yourself, get help. Injuring your back may result in a permanent disability.

Don't use worn out or broken tools to do the job. You risk not only injury to yourself, but also damaging components.

Don't rush or take short cuts to finish job. It will end costing you more money and time, not to mention aggravation.

DO'S

Do wear eye protection and hearing protection while using power tools such as drills, grinders, and air tools such as pneumatic hammers. And while working under a vehicle.

Do make sure that any lift and hoist you are using is rated beyond the weight of the load your lifting.

Do keep all chemicals and fluids tightly capped and in their proper container.

Do keep a fire extinguisher approved for the job. The best is a use a A-B-C extinguisher.

Do keep the work area ventilated when welding or working on fuel system.

Do disconnect the negative (-) side of battery before working on electrical components, and when arc welding on vehicle.

Do buy high quality tools to do your job. Cheap tools will gall and break, possibly damaging components. The money you waste on cheap tools could have better been applied to better quality tools, which will last much longer and give better service.

Do use common sense, seek advice from professionals.

Regular Maintenance:

It can't be said enough, regular maintenance schedule will keep your engine running in top form for many years to come. Neglect it and you will pay in terms of not only money, but also the inconvenience that will be more than just a passing nuisance.

Proper maintenance means just more than oil changes and tune ups. It also includes inspecting and replacing items such as hoses, belts, vacuum lines. And paying attention to noises, leaks and rattles. Here is a chart of suggested intervals.

Every 250 miles or weekly, whichever comes first.	Check the following fluid levels: oil, engine coolant, windshield washer fluid level, battery water level (if it has removal caps), tires for proper pressure and uneven wear. Check automatic transmission level, power steering fluid level.
Every 3000 miles or 3 months, which ever comes first.	Change oil and oil filter. Check cooling system items, such as hoses and clamps for tightness. Check engine accessory drive belts for wear and tightness. Check fuel lines and clamps for tightness. Check brake fluid level. Check manual transmission fluid level. Check air filter and PCV valve.
Every 6000 miles or 6 months, which ever comes first.	Lubricate front end grease zerts. Check the exhaust system for tightness and leaks, repair immediately. Check suspension and steering system. Rotate tires.
Every 12000 miles or yearly, which ever comes first.	Rotate tires. Check all the hoses and belts for any signs of deterioration, replace them. Replace fuel filter. Check the sparkplug wires and sparkplugs, replace if they show signs of year. Check entire brake system, pads, brake lines for wear. repack wheel bearings. Check hose clamps for tightness.

	Check wiring harness for signs of problems, replace.
Every 24000 miles or two years, which ever comes first,	Flush and refill cooling system, replace thermostat. Drain and refill automatic transmission fluid. Check crankcase ventilation system, replace PCV valve.

These should be a general guideline, a minimum at the very least.