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Automotive Technology Changes.

# LBT-117
# MODE 6
# DOMESTIC

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"Before everything else, getting ready is the secret of success."
- Henry Ford

# Mode Six Diagnostics

So have you been through a good OBD II training class lately? If you are like most, you have probably just about over-dosed on them! There is one thing that you may have been referenced to while attending one of these classes however, ***Mode Six.***

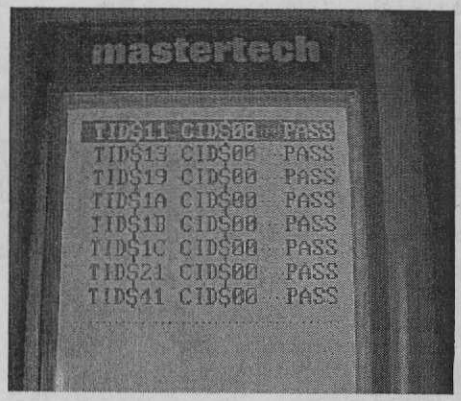
What is mode six? Better than that, why would we want to use mode six, and, even better yet, where can I get the mode six hexadecimal code abbreviations? You see, many people refer to mode six, than they just cut you loose without ever giving you that information. This is kind of like being dropped-off in a foreign country without having an understanding of their language. You feel angry and helpless. Refer to the sample graphic in the right hand column of this page to see a typical Mode six scan tool screen.

The latter part of this manual will give the mode six information as well as trouble code diagnostics for Ford, GM, and Chrysler products. We must first however explain what this stuff is all about.

I can think of no better way of understanding mode six than to first discuss the various 9 modes of OBD II.

SAE (Society of Automotive Engineers) document J1979 stated that there would be 9 modes of operation for ALL OBD II vehicles that both the EPA (Environmental Protection Agency) and the CARB (California Air Resources Board) have adopted.

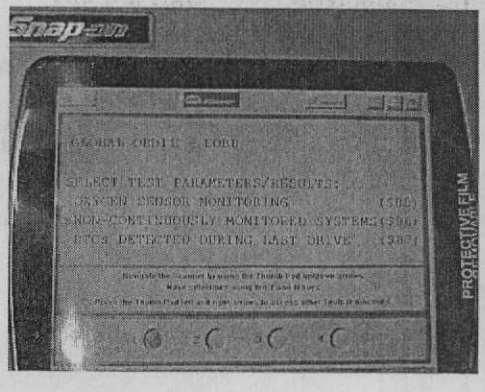
Those 9 modes of operation are as follows; ***Mode 1***- request current power train data (DataStream), ***Mode 2***- request freeze frame data, ***Mode 3***- Request diagnostic trouble codes, ***Mode 4***- Clear/reset DTCs, freeze frame data, and readiness status monitors for non-continuous monitors only, ***Mode 5***- request oxygen sensor monitor test results, ***Mode 6***- Request onboard monitoring test results for non-continuous monitored systems, ***Mode 7***- Request onboard monitoring test results for continuous monitored systems, ***Mode 8***- Request control of onboard systems (bi-directional) and ***Mode 9***- Module identification.




**MODE $06**

TID = Test Identification

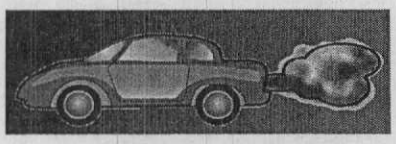
CID = Component Identification



We should state these regulations pertain to Global/Generic OBD II! This is very important to remember since ***some vehicles will not be able to display Mode six data on the factory or OEM side of their OBD II*** computer systems.

There may be a little confusion when trying to view these various modes of operation while using your scan tool. The modes are generally not listed by their hex code listings. They are usually listed by a short phrase such as data stream, trouble codes, other results, etc. Also it is important to note that not ALL scan tools can do all nine modes of operation (most can)! Be sure to check with the manufacturer before purchasing that new scan tool. ***Surprisingly enough the cheaper tools will do all nine modes.***

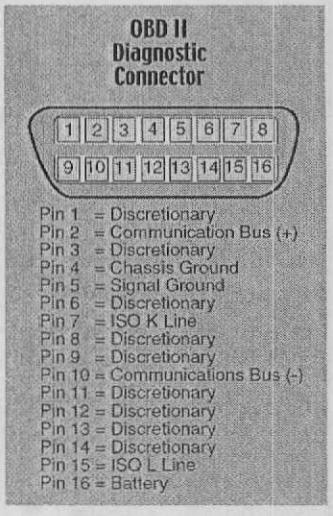
Why is it so important for us to master these various modes of operation? Quite simply, this is what ***MOST state emissions programs follow***. The typical state emissions program usually goes something like this.



The consumer will take their vehicle for an enhanced OBD II emissions test. The inspector will find the diagnostic connector and attach their generic scan tool software to it. They will check to see if there is any emissions related trouble codes stored. If there are than it will fail. The inspector will also be sure that the monitors have been tested and completed. This is where some states start to vary. Typically the states will allow up to two monitors not to have been completed yet. We should note that if there was originally a code stored, than a repair performed, than the MIL condition must be commanded off in order to pass the emissions test.

We strongly recommend you checking your current State's emissions program to become familiar with its workings. One example of using these modes to their fullest potential would be to use mode 4 to reset just the monitors you need to, instead of resetting all the monitors! The NGS scan tool can do this for example on certain Ford products. Remember, factory scan tools are great – however, they may not allow all the features needed to test/repair these emissions failures.

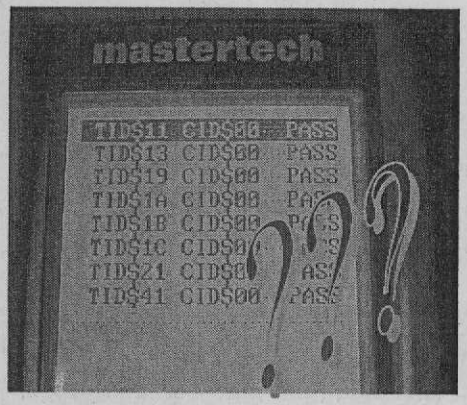
I will go on the record as saying that over 90% of all vehicles can be successfully repaired using just the generic side of OBD II. In fact, it makes perfect sense to use the generic side since that is what the emissions programs are using!




Alright, now that we have discussed some general housekeeping concerning mode six, it is time for us to

discuss what mode six is and more importantly, what can it do for you?

Mode six is basically a three-part process that a technician can use to not only repair a vehicle, but too drastically cut down the amount of time it takes to do so! So you may be asking yourself, why haven't I heard of this before or if I did, why isn't everybody using it? Well if you have ever pulled up a mode six screen than you already know the answer to this question.




## Hexadecimal Coding

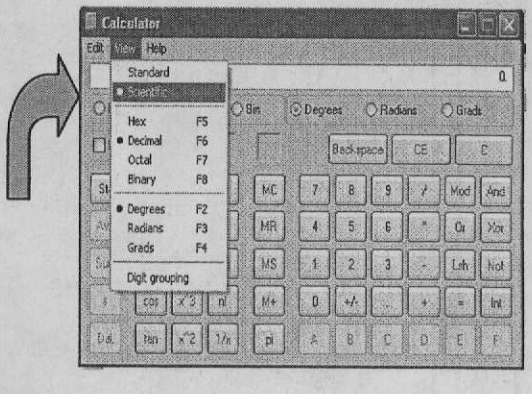
***Mode six is displayed in something called hexadecimal code.*** The prefix hex may lead you to believe the number 6 is involved, in all actuality the hexadecimal system as it applies to cars is a 16 digit system. The numbers 0-9 make up the first 10 digits and the Capital letters A-F comprise the last 6 digits. The hex system is used by most of the world in the math, science and computer industries; however the American numbering system is in decimals. The American system is also 16 places labeled 0-15. Refer to the chart in the right hand column of the page as an example.

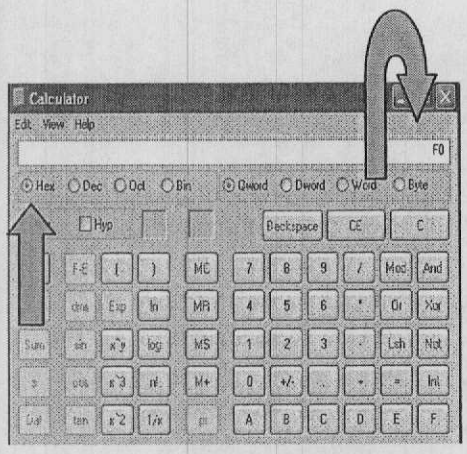
There is a complex mathematical equation that one can use to convert hexadecimal coding into something that we can use to repair the vehicle; however we have included many of the hexadecimal code meanings for the various domestic car lines for you throughout the rest of this manual.

| 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 |
|---|
| **Decimal** |
| 0 1 2 3 4 5 6 7 8 9 A B C D E F |
| **Hexadecimal Coding** |

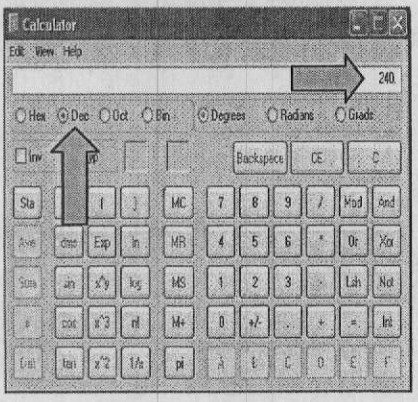
**Coding Chart**

So what happens if you have either a hexadecimal coding or a decimal coding and you want to convert it to the other? Simple use the windows calculator to type in the value you have and then click either hex or decimal buttons in the scientific view of windows calculator and viola!






1. Open windows calculator in ***scientific view*** mode.
2. Select ***"Hex"*** for hexadecimal button and type in value example "F0"
3. Select ***"Dec"*** for decimal and find the value to be "240"




***<u>Try not to let the hexademial coding confuse you too much! In all actuality, you will seldom need to convert anything while using mode $06!</u>***

Remember, Mode $06 is broken down into two sections: the TID (test identification) and the CID (component identification). The way I like to describe the TID is "What is the monitor?" The CID is explained as "what is the specific component within that monitor."

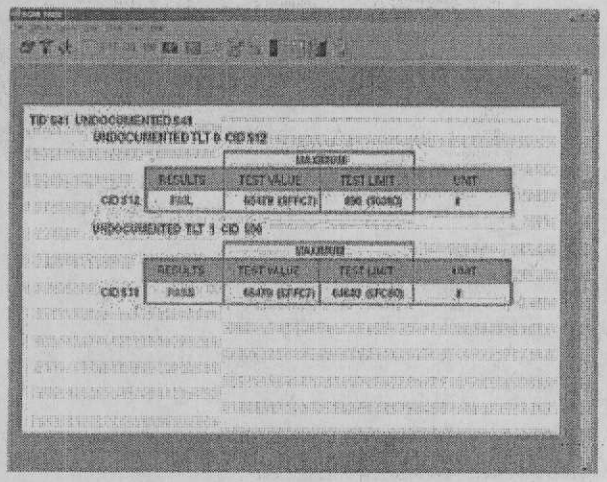
An analogy I like to use when explaining mode $06's hex coding is that it is like the US Postal Service. When you write a letter you will need to put and address and street name on the face of the envelope so the postman can correctly identify the house. Well The TID is like the street name, and the CID is like the specific house on that street.

While it is true that the TID's are commonly found in hex coding, this manual will identify the various monitors for you. We have also included a list of manufacturer's websites that you can use if you should find yourself faced with a TID that is not listed in the manual. <u>It is for this very reason that you will not have to convert hex coding to decimal coding.</u>

The CID's are often displayed on the scan tool as decimal values that will, at times, need to be converted using simple math such as multiplication/addition/division or subtraction. Keep a calculator handy to aid this process. An example of such a time is when converting Ford's TID $53 (misfire monitor). Let's say that you see the TID $53 and CID $01 is failing. You will look in the Ford section of this manual and identify this fault as a misfire on cylinder #1. You will then take the current value as displayed on your scan tool's screen and multiply that value by 0.000015 to get the percentage of misfire present from that cylinder as instructed to do so by this manual.

Let's take a look at a sample mode six case study in action.

Below we have a screen shot of an EASE Diagnostic software scan tool loaded on a laptop. We are viewing a mode six screen that is telling us everything we want to know to verify a repair on this vehicle quickly.



Our case vehicle is a 1999 Ford Explorer with a 4.0-liter engine. We are specifically looking at the **TID** (Test Identification) number $41 and **CID** (Component Identification) number $11. This vehicle had come to us with a disconnected DPFE pressure hose, which we replaced and we are now re-testing to verify the repair was a success. Hey this is all done without even leaving the driver's seat! Pretty cool huh? Well, that is assuming we know what we are looking at. Using the back pages of this manual we see that the TID $41refers to the EGR system, and the CID $11 refers specifically to the upstream DPFE hose. The test spec lists a pressure measurement (in H2O). In other words we are viewing a pressure unit of measurement.

Our manual informs us to take the current value of 66,479 and since it is greater than 32,767, it represents a negative value. We are then instructed to subtract 65,536 from this value, which gives us a new value of 943. We are then instructed to multiply this by 0.0078, which gives us a number of 7.3554 inches of H2O. We can then compare this to the max limit value as displayed on our scan tool's screen and we see that we are indeed passing this test. In other words, the vehicle has been repaired successfully!

Remember that this process will not be mandatory on all vehicles. Some vehicles will not force you to do anything with the CID values, simply read and compare them. This is a manufacturer design, not a mode $06 golden rule.

## ***The 3-Step Process***

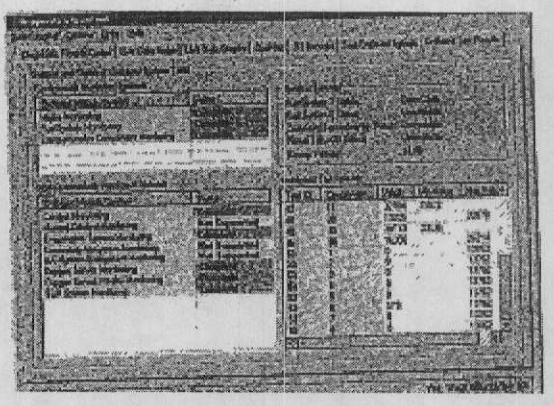
Let us go back to something we said earlier, ***"mode $06 is a three step process"***. **Step 1** of mode $06 allows us to see if a monitor is going to fail a test or if it has already failed a test. This is a lot like pending codes or the General Motors version called failure records. This in itself is a great time saver! Imagine not having to drive those long drive cycles anymore to see if a monitor is going to fail a test. This feature allows us to see if the PCM has run the first of the required two tests for a non-continuous monitor and see if it has passed or failed that test.

The **second part** of mode $06 is where we feel the main meat of the diagnosis is obtained. ***The second part not only tells you that we have indeed failed a monitor but what the component/parameter is that is causing the failure to occur.*** Hmm, imagine how cool this would be on say a P0440 trouble code. No more guessing what could be causing this code to set, instead see what component's circuit has been flagged by the PCM.

The **final step** of mode $06 diagnostics is that the vehicle will ***tell you the pass/fail criteria for the component it has flagged as being faulty!*** Wow, what a time saver this is. Imagine not having to look for specifications and also being able to be very confident that once the repair has been made that it should pass the monitor the next time the PCM runs the test. All we need to do is to make sure that the specifications now fall comfortably within their ranges.

Remember, you can use this information in conjunction with the *monitor's suspended* section of this manual to view the components of the monitors that were shut down as well. If they are falling within the ranges of passing, then you can most likely safely assume that the next time the PCM runs those monitors, they should pass. **No more comebacks with new codes after you have fixed the original code!**

Now that we have discussed Mode Six, let's take another look at an example of viewing the misfire monitor on a Ford product. ***That's right! Using Mode Six, we can view misfire monitors on Ford's.***



As you can see from the above picture, TID 51, which represents the misfire monitor on Ford products, and the corresponding CID of cylinder number 6, has a misfire count of 573! How many times could you have used this type of testing on those troublesome intermittent misfiring Ford's?

**QUIK TIPS**

When viewing the values in Mode Six you will have to use a little common sense or the reference materials provided to determine what the values are measured in. (Kpa, PSI, etc.)

When viewing Mode Six data, certain monitors may not be installed on the vehicle such as a heated catalyst monitor; if this is the case, their TID and CID status will report a failing status. Also certain components will need to have the engine running in order for them to report a passing status.

One last thing to remember, certain vehicles will erase the mode $06 data every-time the ignition is cycled off! Be sure to view it before cycling the key!

I think you will agree that this is powerful stuff. It will most likely take you a few times to grasp the concept of how to use mode six diagnostics, but once you have the concept down, I am sure you will find it a great asset to your diagnostic challenges.

We suggest that you try using mode $06 on about a half dozen vehicles that are not broke at first. Simply break something easy like causing a misfire on a Ford product and see if you understand the process of using the manual and the concept of Mode $06 in general.

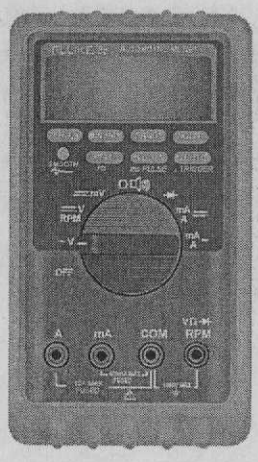
The later sections of this manual are divided into ***Chrysler, Ford*** and ***General Motors*** diagnostic trouble code help and ***mode six diagnostics***. We also included a short list of the various manufacturers' websites, which you can use for future Mode $06 information gathering. While some manufacturers will display their data for free on the Iatn (www.iatn.net), these websites often will charge for their usage. Fees can range form less than $20.00 to over $1,000.00 depending on your subscription.

## ***The Manual's P-0 Series DTC's Listings***

To use this manual to its fullest potential simply look up the mode six codes in the appropriate sections of the manuals and use the following formula to decipher the trouble code.

The first section, labeled "**how did this code set**", lists the driving conditions ***(enabling criteria)*** needed for the PCM to run the test. ***In other words, this is how you will have to drive the vehicle to get the monitor to run.***

The next section labeled "**why did this code set**," tells you what the PCM saw that caused the code to set. ***In other words, this is the same PID or parameter that you should have your voltmeter, lab scopes, scanners or whatever hooked to.***

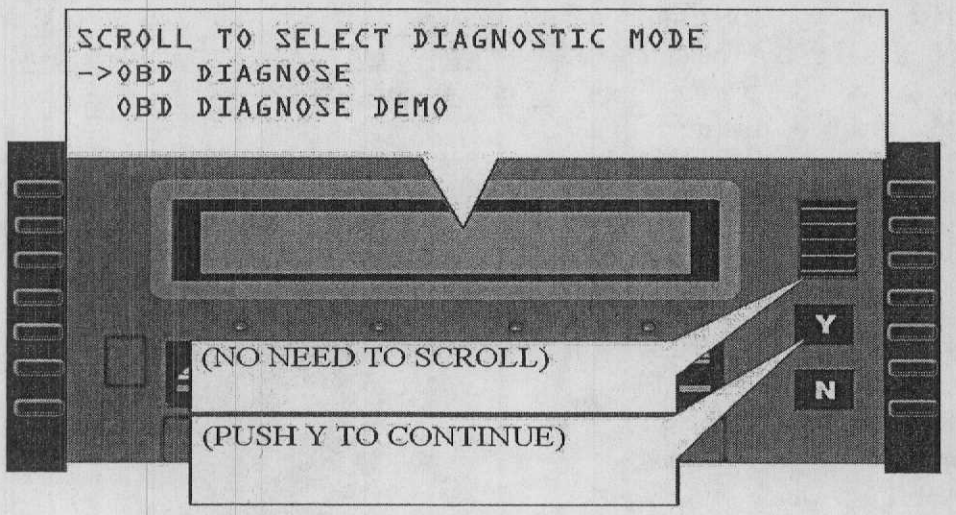



The next section labeled "**what you should look for**" can be used as a generic approach to diagnose and repair the vehicle. ***In other words, if this vehicle were in my repair shop these are the steps that I would take to diagnose this vehicle***. Remember, this is only a suggestion, if you feel your way works better than by all means do it your way.

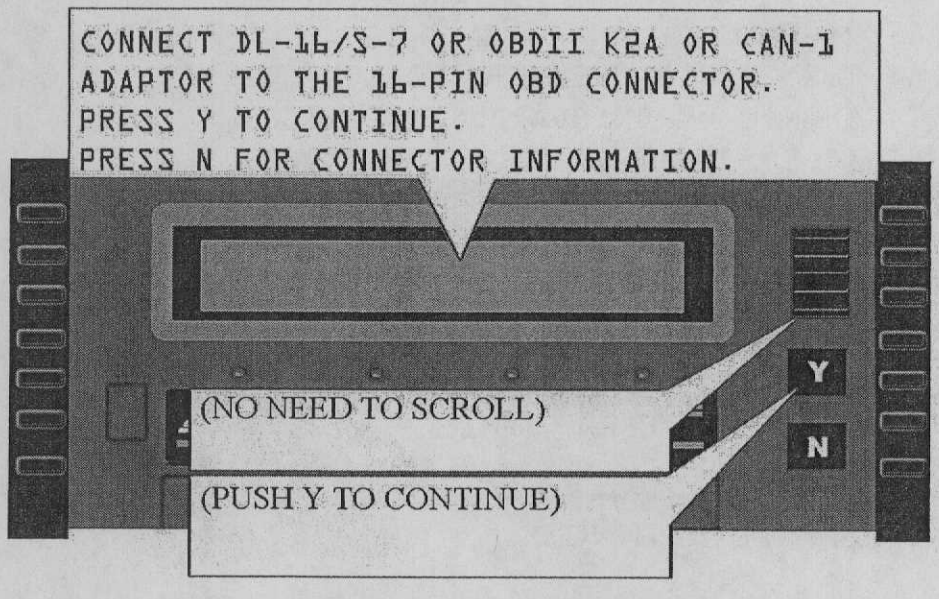
The final section is labeled "**monitors suspended**". This is for you to remember that there may be another code set after you repair the first trouble code. To nip this possibility in the butt, just make sure that the PCM passes not only the monitor that you feel you repaired but also all the monitors that are listed as being shut down as a result of that code being set.

# Accessing MODE $06 with the MT2500 Scanner

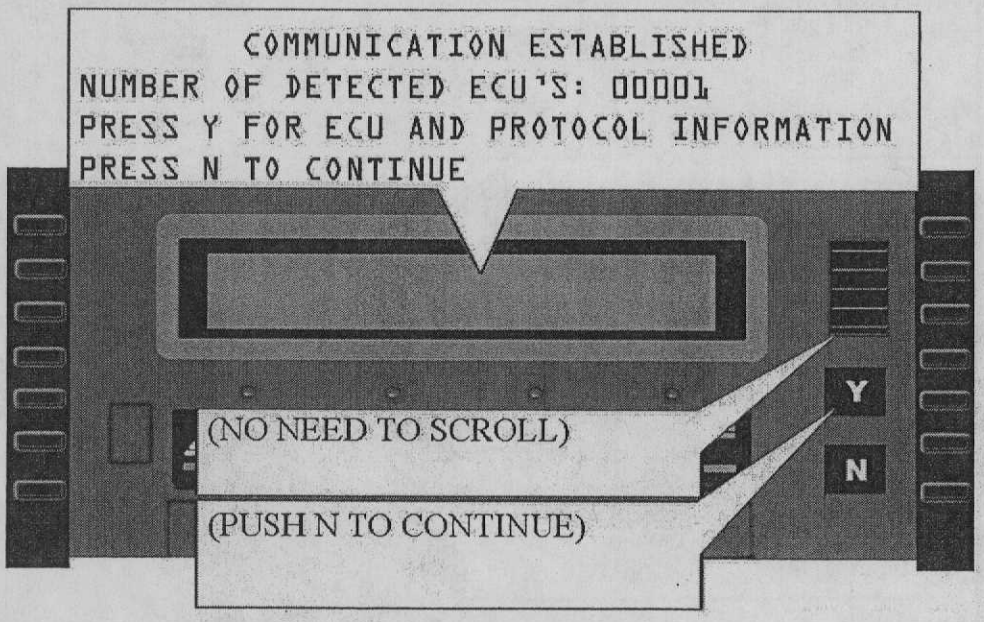
You will need one of two cartridges to access MODE $06 – the Global OBDII cartridge, or the updated black cartridges that Snap-On is currently using. After powering up the scan tool and plugging it into the OBDII connector, you will see the Generic OBDII – EOBD Diagnostics, and then select "Yes" to continue. You will then see the following screen:



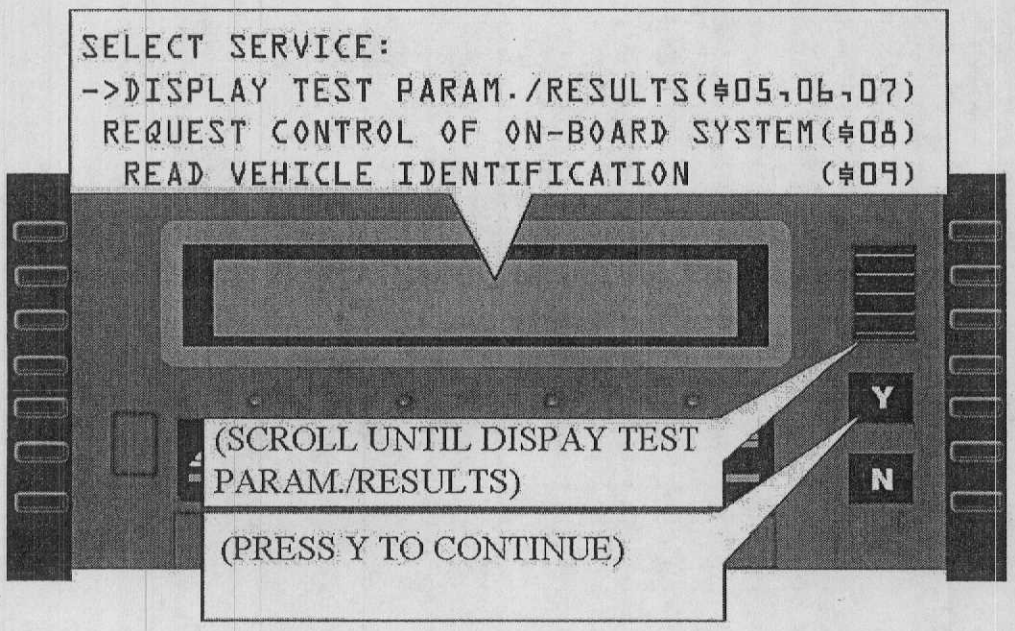

Select OBD Diagnose. You will then see the following:




Press "Y" to continue. Once communication is established, you will then see:

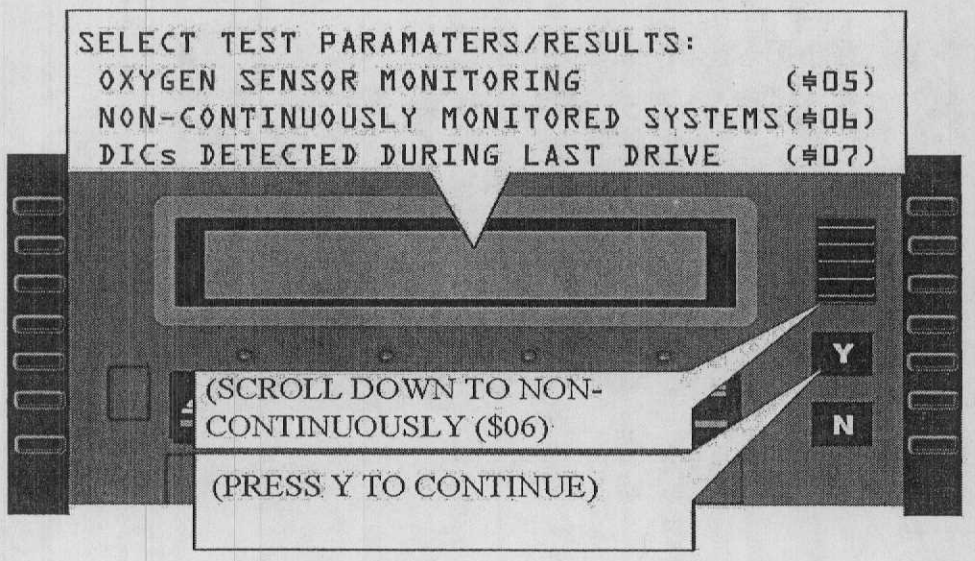



Press "N" to continue. You should then see:

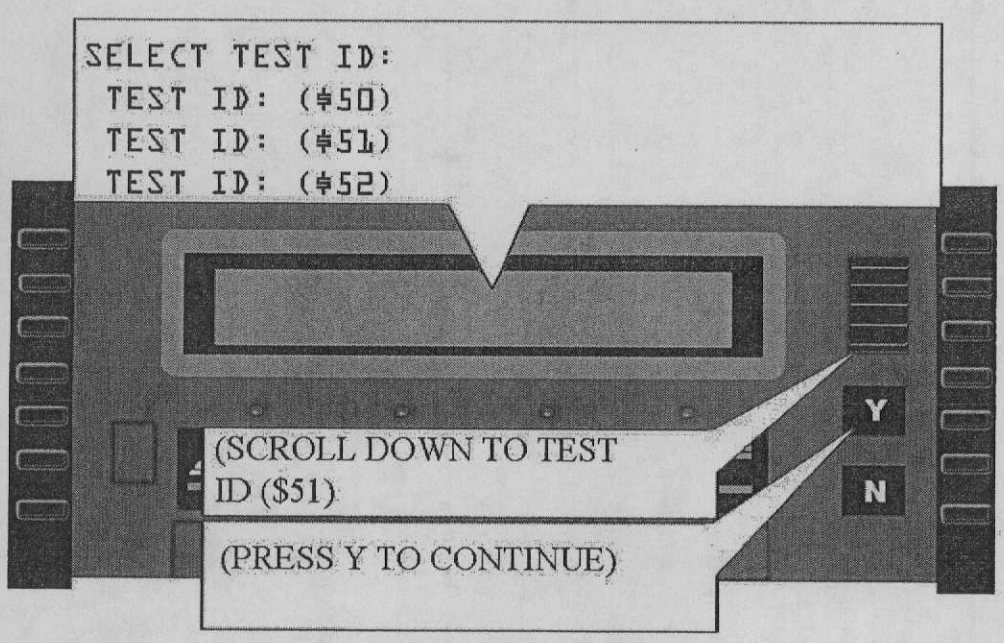



Scroll until Display Test Param./Results. Press "Y," and scroll to Non Cont. Monitoring Test Results and select.

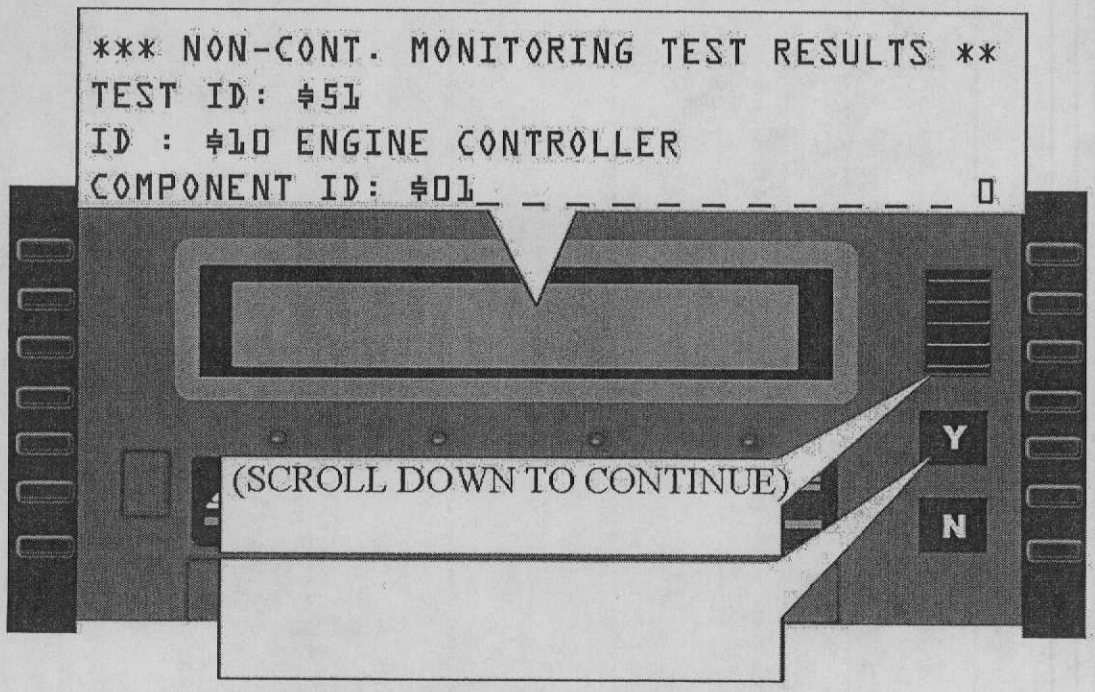
You will then see the following screen:




Scroll down to Non-Continuously ($06) and press "Y" to continue. The following display will appear:



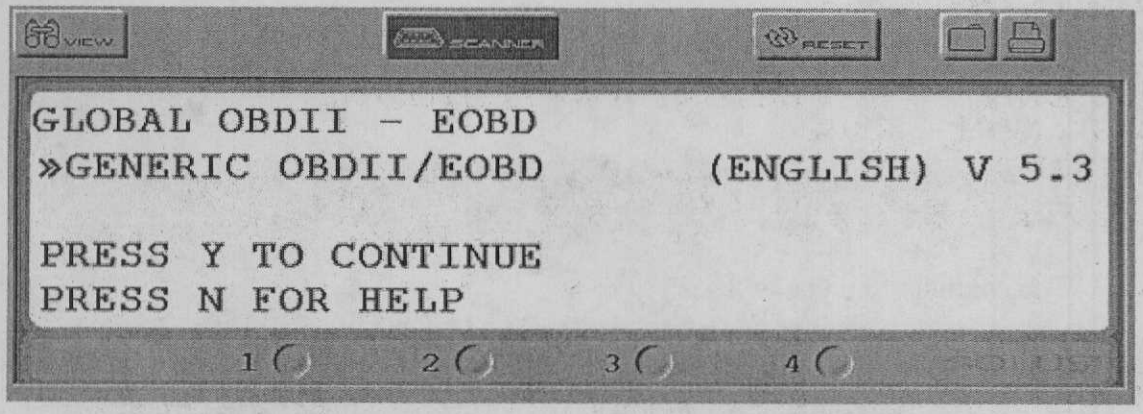

Scroll down to TEST ID ($51) and press "Y" to continue. You will then see:



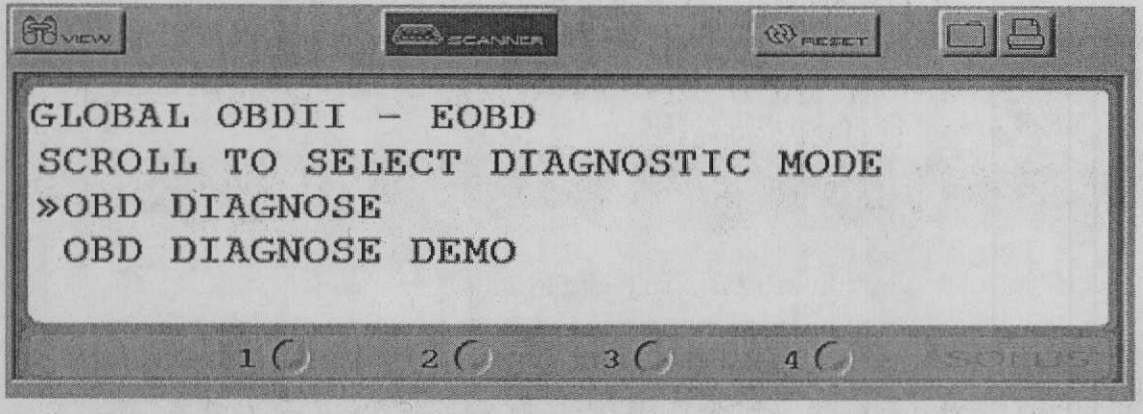
You are now accessing MODE $06 information. Scroll down to continue.

# Accessing MODE $06 with the SOLUS

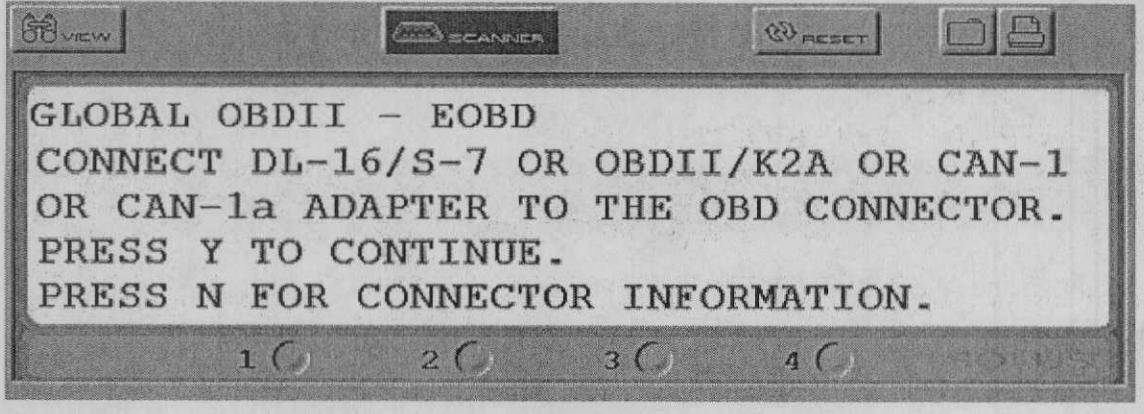
After powering up the scan tool and plugging it into the OBDII connector, the first thing you will do is hit the right Arrow key and then drop-down to the selection of Global OBD. Select the"Y" button, and once the software is loaded, you will then see the following screen:



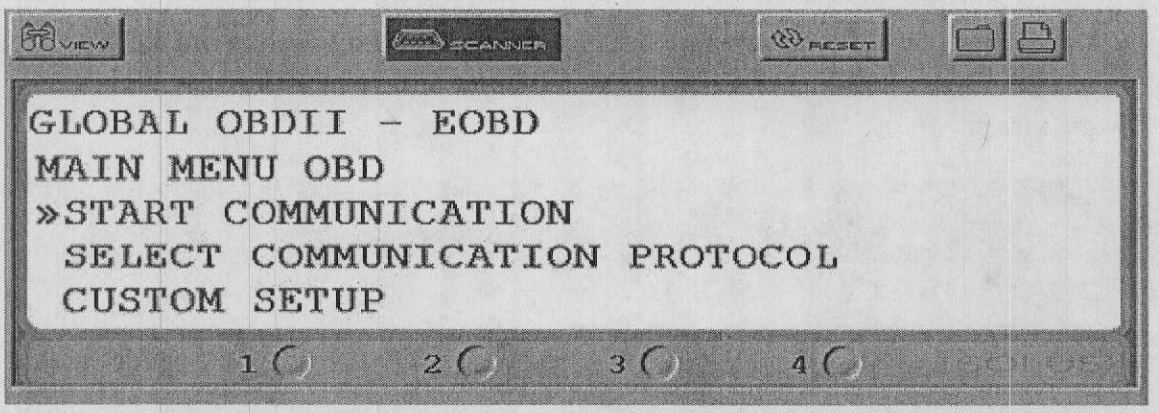

Select "Y" to continue and the following screen will appear:



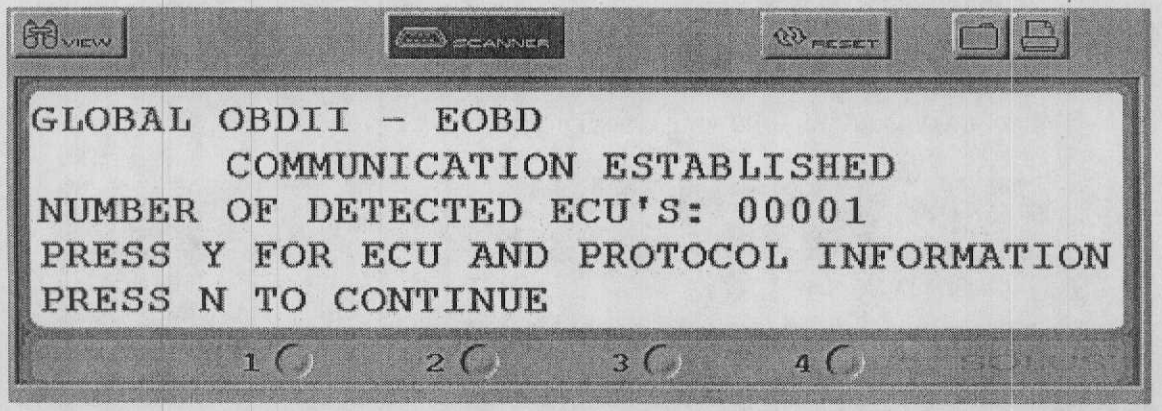

Press "Y" to continue. You will then see:



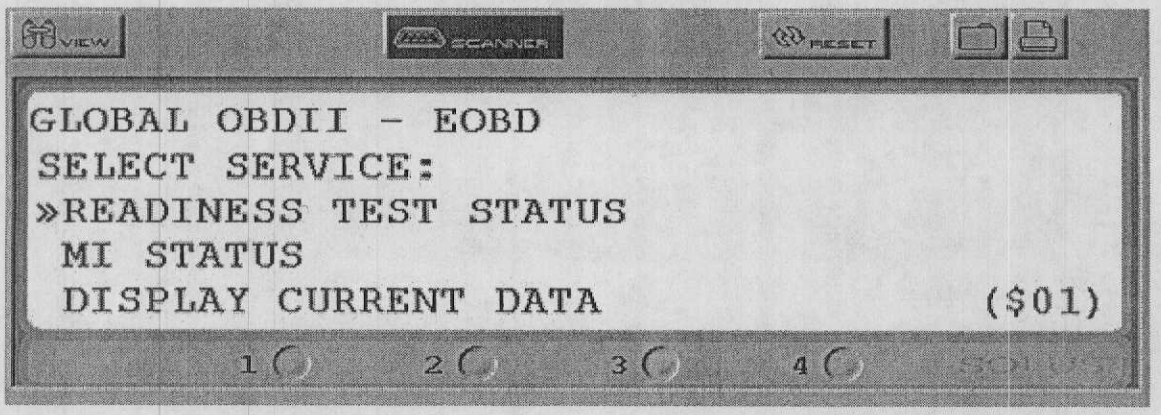
Press "Y" to continue. You will then see:



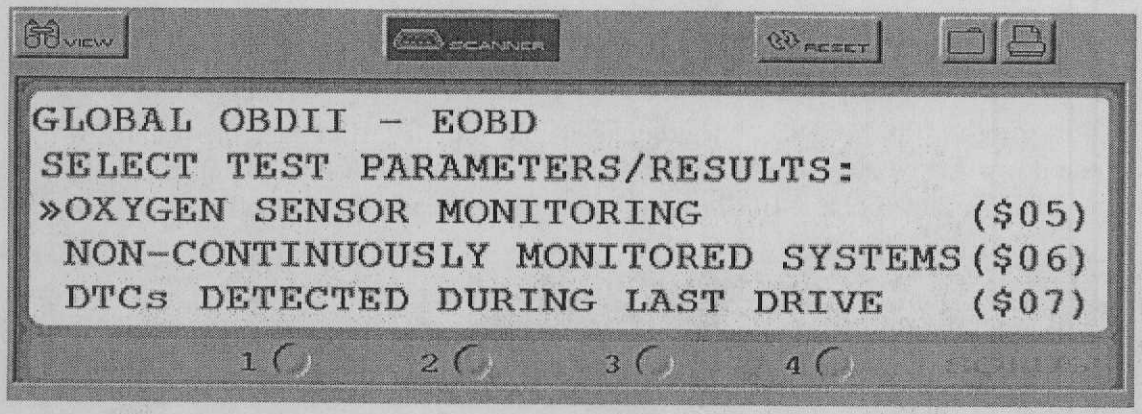

Press "Y" to continue, and you will see:



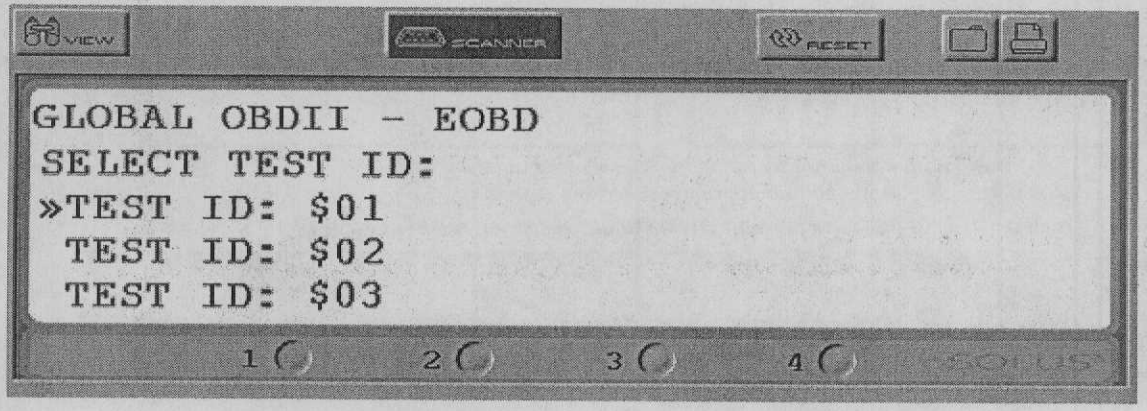

Select "N" to continue. You will then see the following screen:



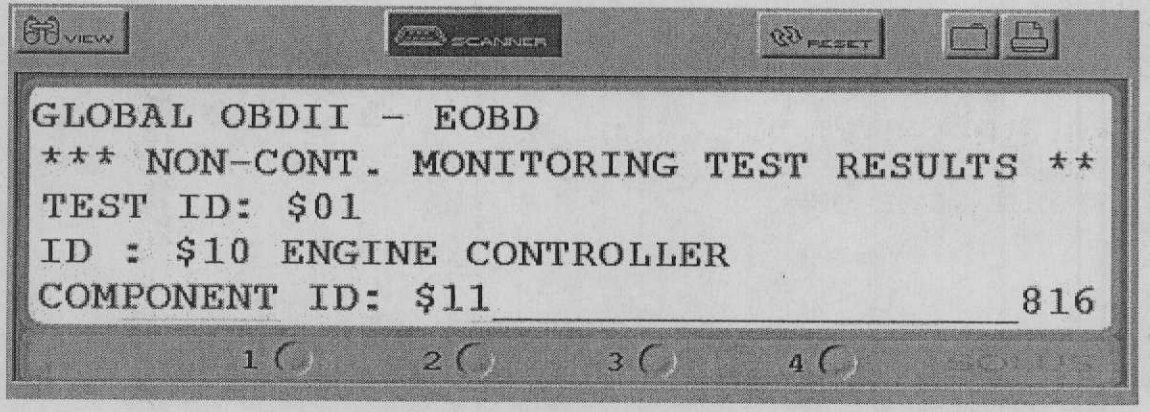

Scroll down and select Modes $05, $06 and $07 and press "Y." The following will appear:




Select MODE $06, NON-CONTINUOUSLY MONITORED SYSTEMS. You will then see:



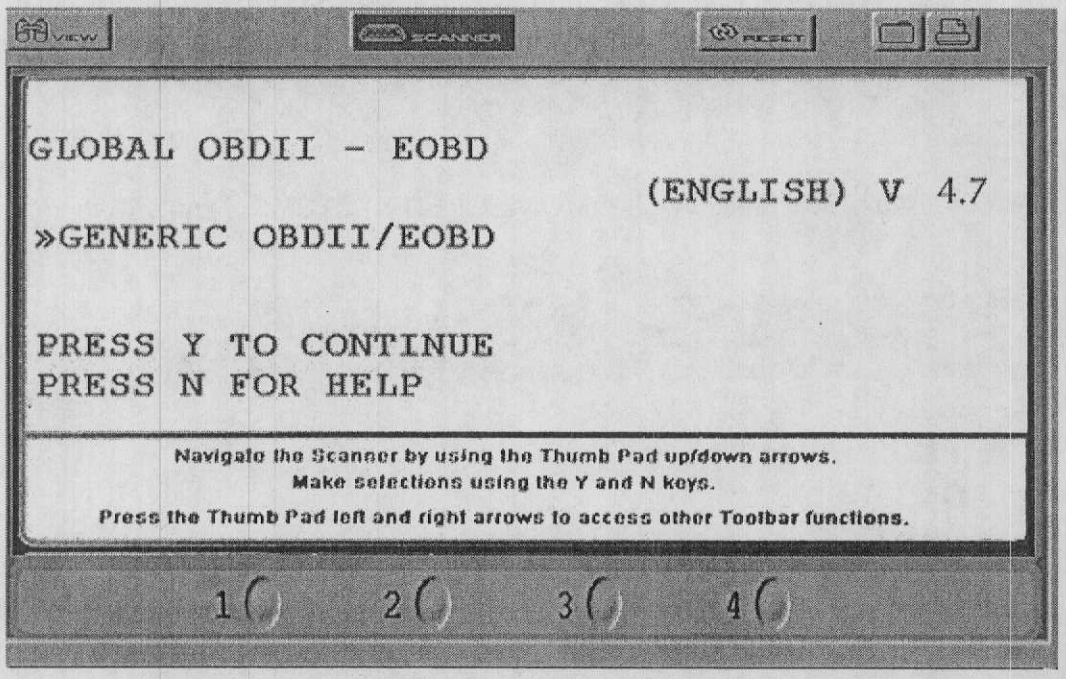

Select TID $01, and press "Y". You will now see:



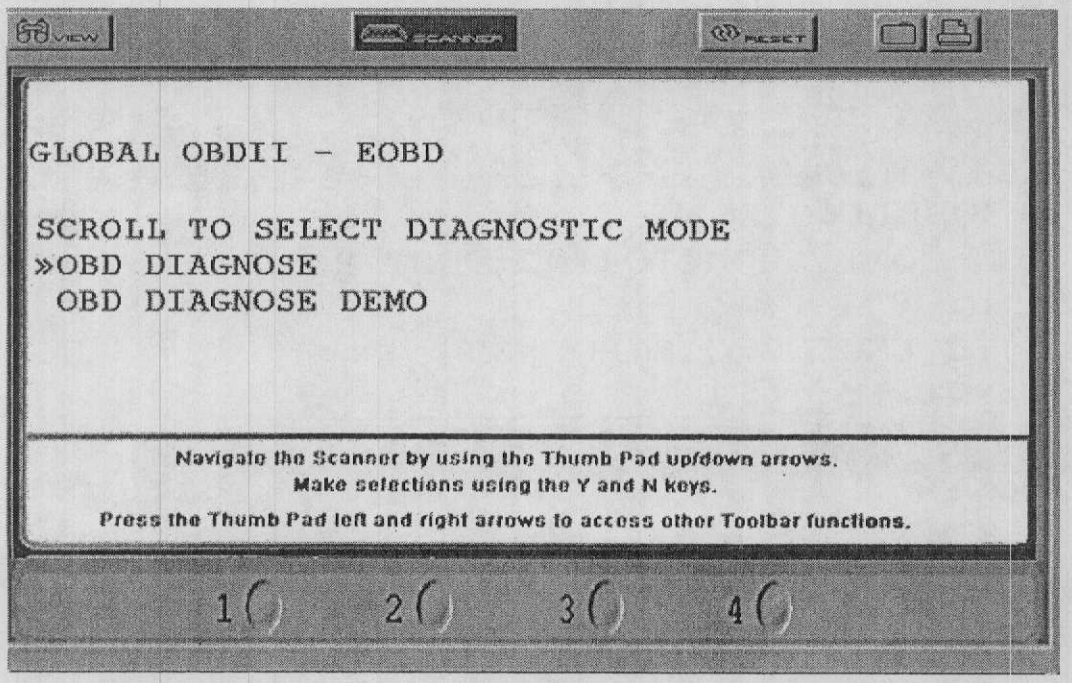

You are now accessing MODE $06 information. Scroll down to continue.

# Accessing MODE $06 with the MODIS

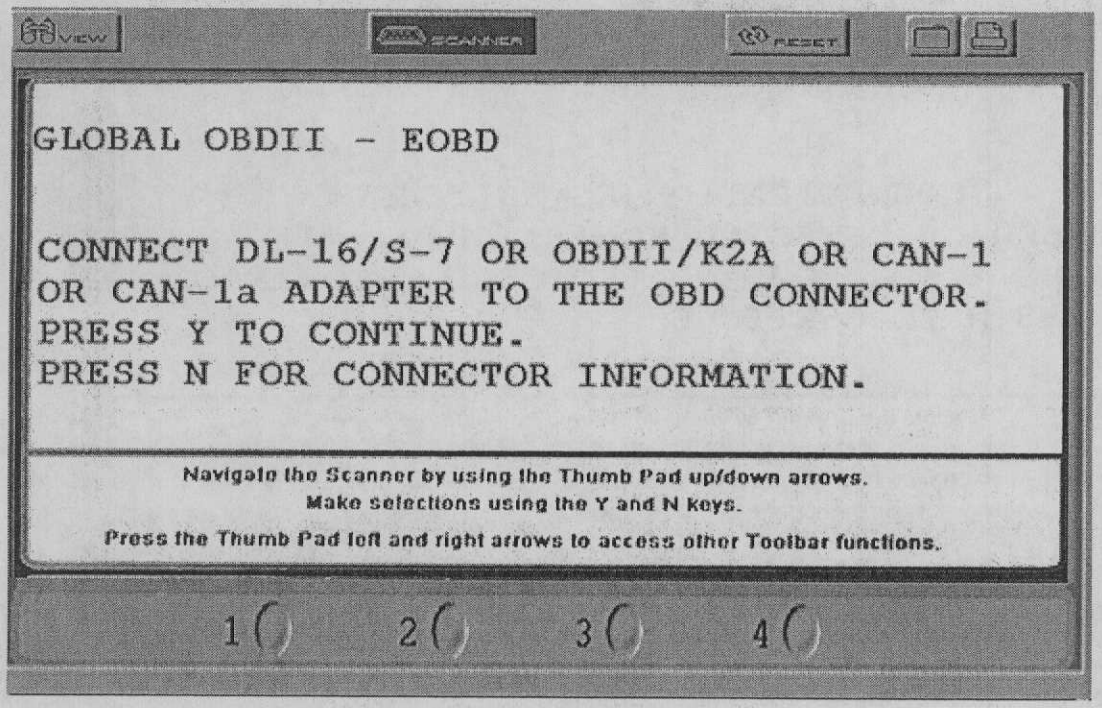
After powering up the MODIS and plugging it into the OBDII connector, scroll down using the down Arrow key to SCANNER and hit the right Arrow key to pull up Vehicle Comm.,. Then select Global OBDII and hit "Y." Once it connects you will see:



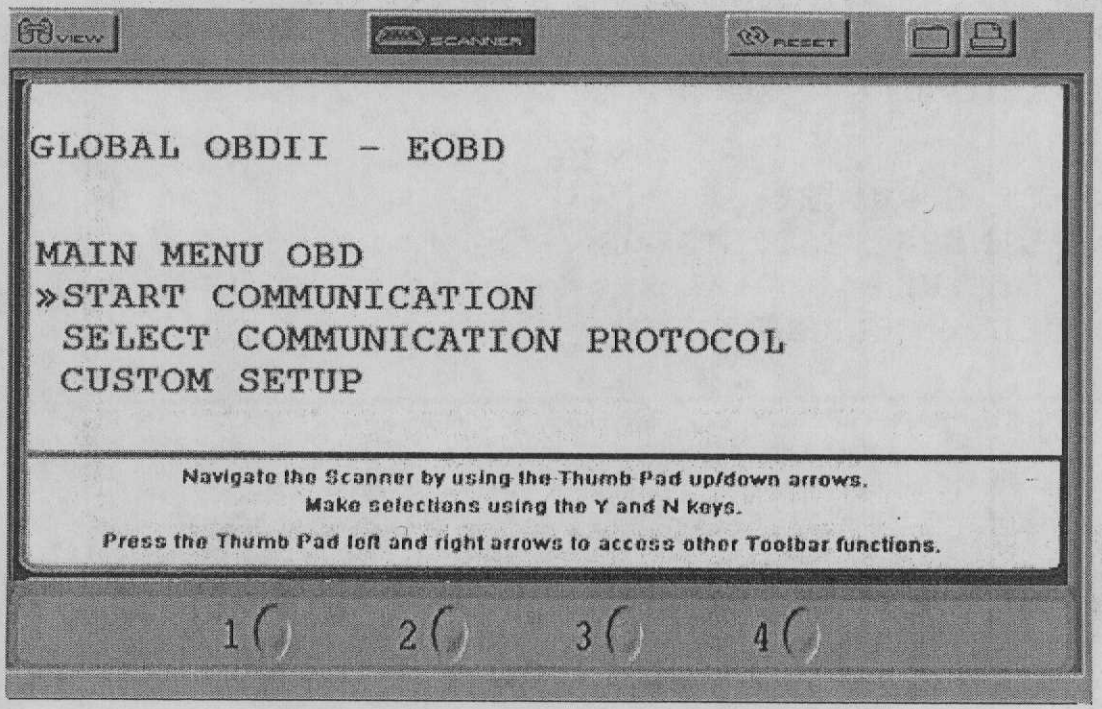

Select GENERIC OBDII and press "Y." You will then see:



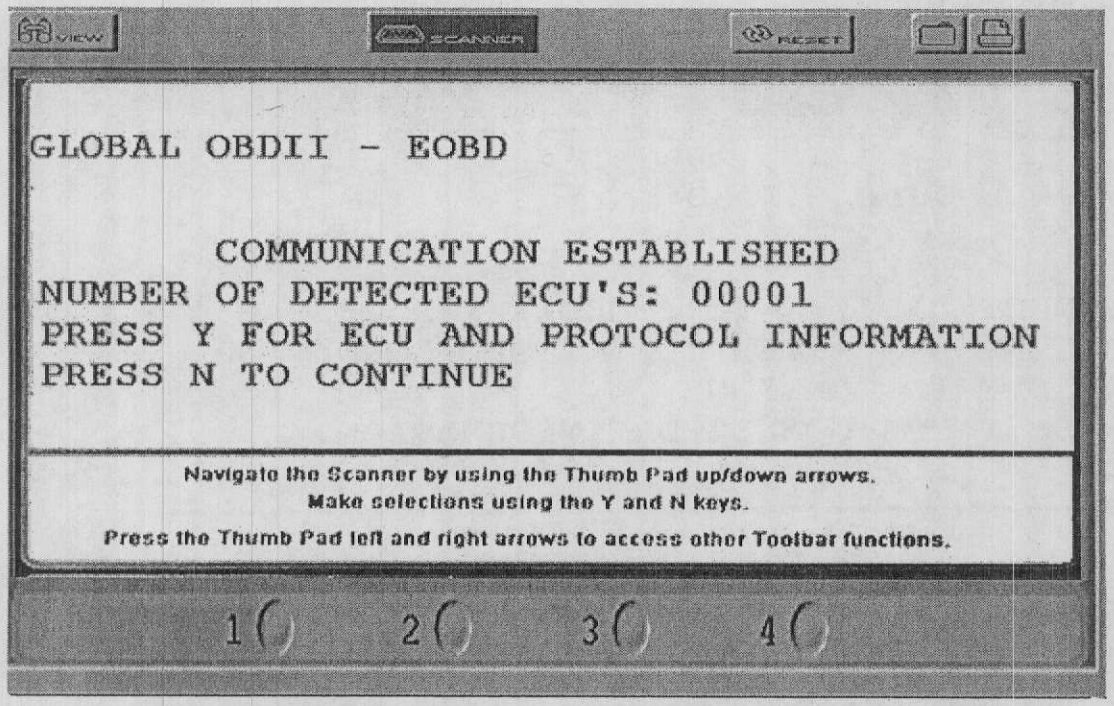
Select OBD DIAGNOSE and press "Y." The following will appear:



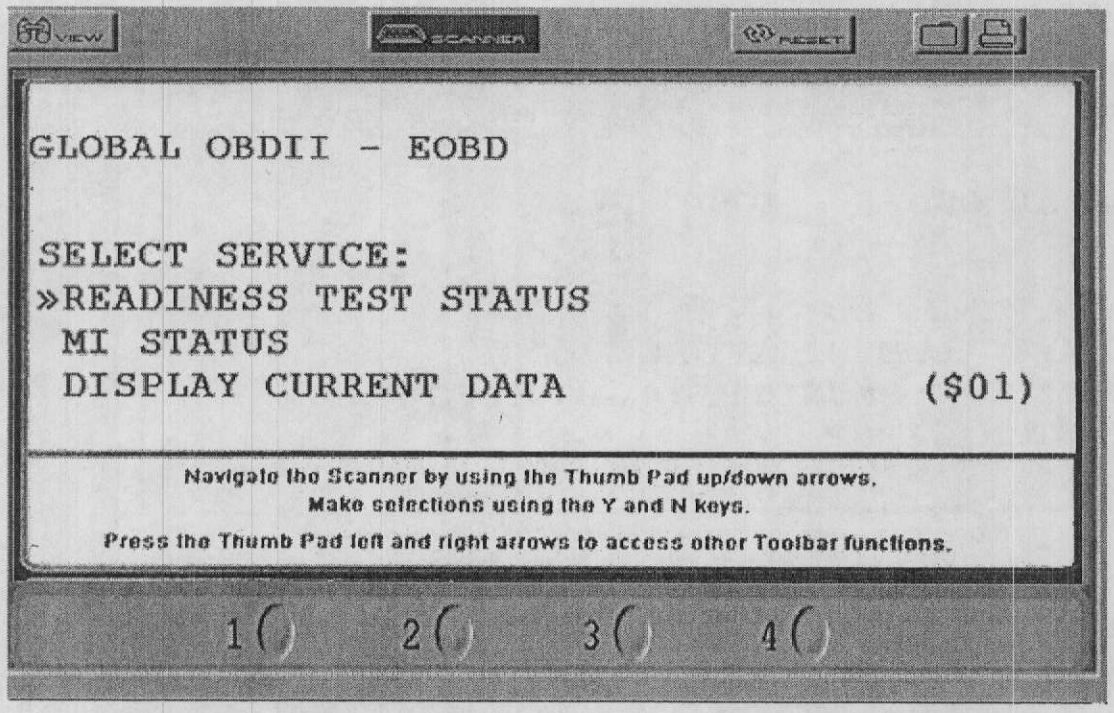

Connect the K2A and press "Y" to continue. You will see the following:



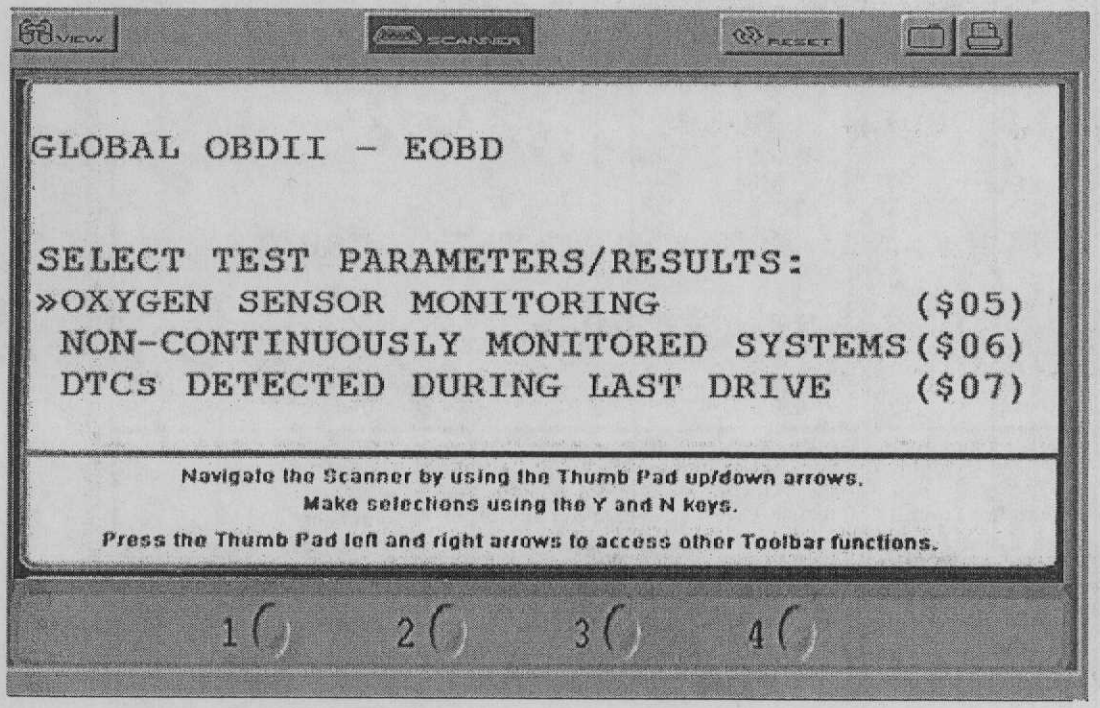

Select "START COMMUNICATION" and hit "Y." Once communication is established, you should see the following:



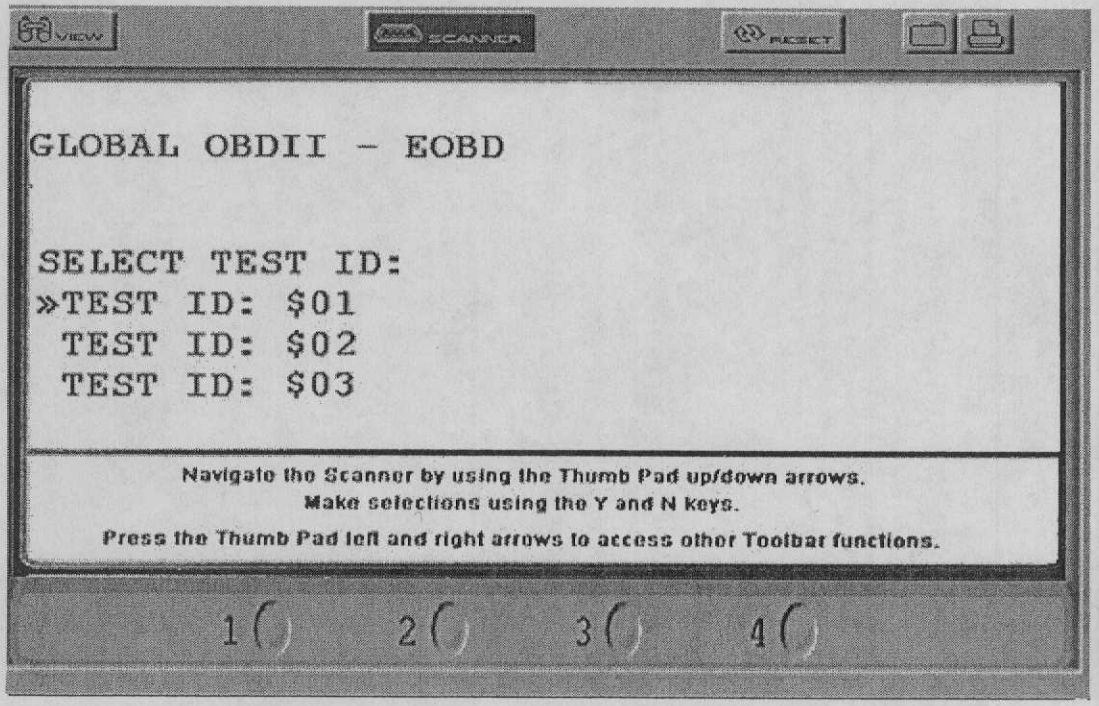

Hit "N" to continue, you will then start to see the 9 modes of OBDII:



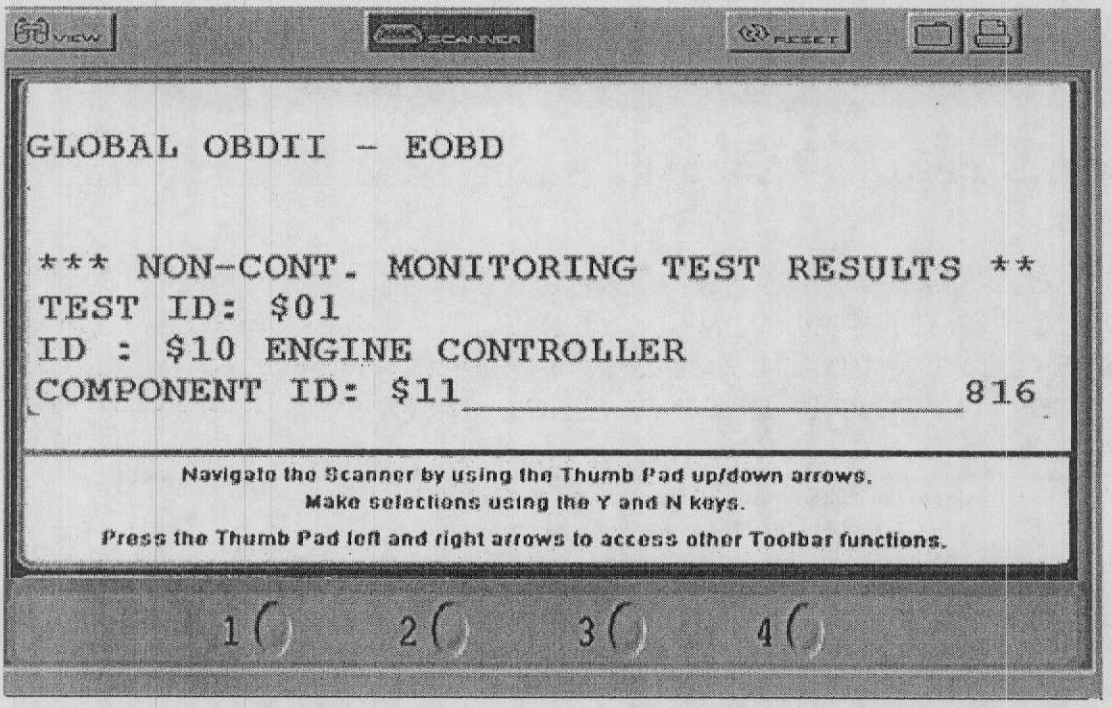

Scroll down to select MODES $06, $05, $07 and press "Y" to continue. You will see:




Scroll down and select MODE $06. The next screen will be:




Select TID $01 and press "Y." The next screen will be:

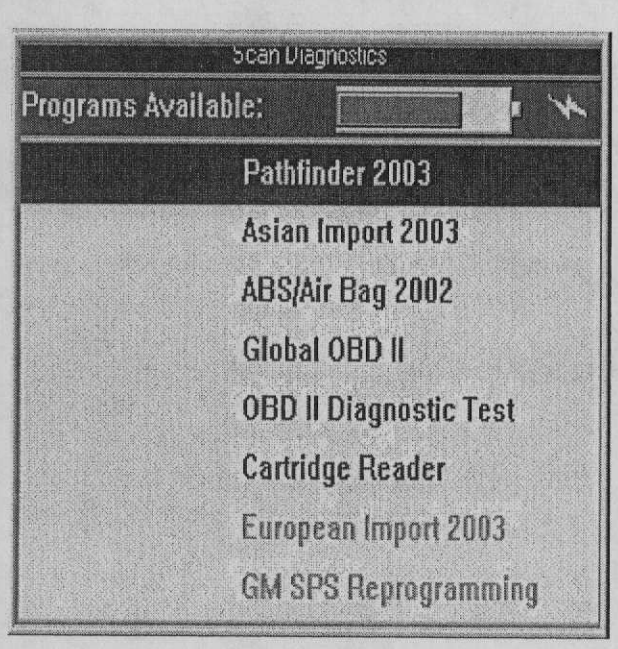



You are now accessing MODE $06 information.

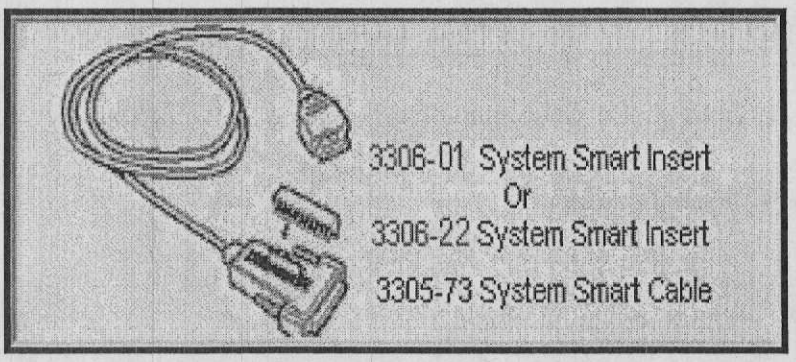
# Accessing Mode $06 with the Genisys

Upon powering up the Genisys, you will see the Application Manager screen below:

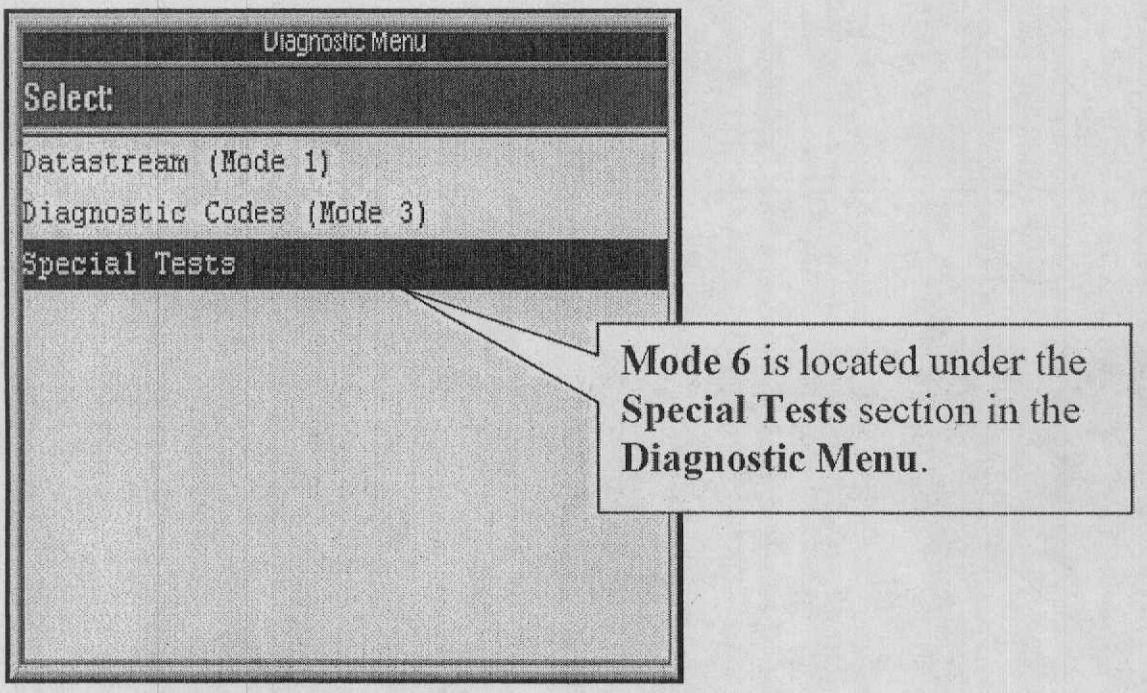

Press "Enter" to select Scan Diagnostics. You will then see:



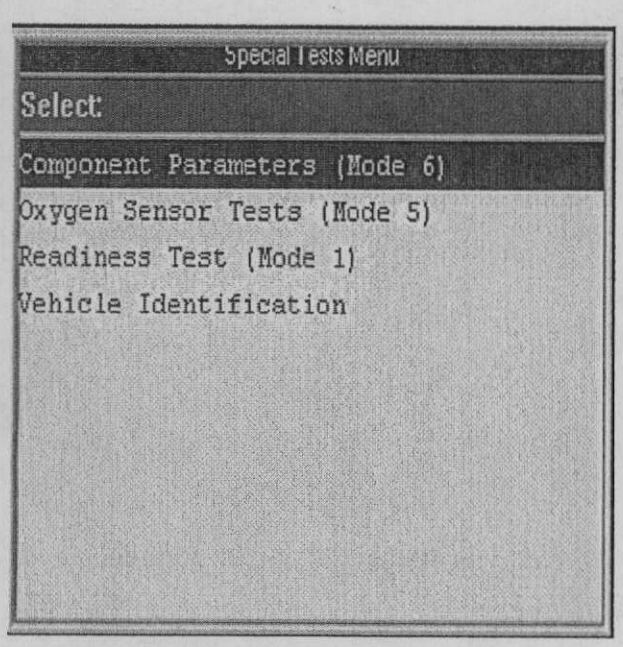

Use the down Arrow to select Global OBD II and press "Enter." The next screen will be:



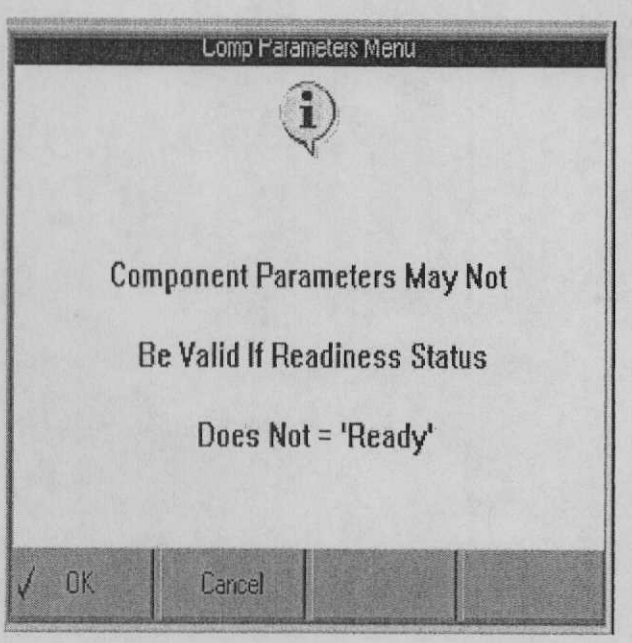

Choose your diagnostic cable and press "Enter." Once the interface is established, it will perform a quick test and then display Quick Test Results and readiness. Click "Enter" and you will then see:



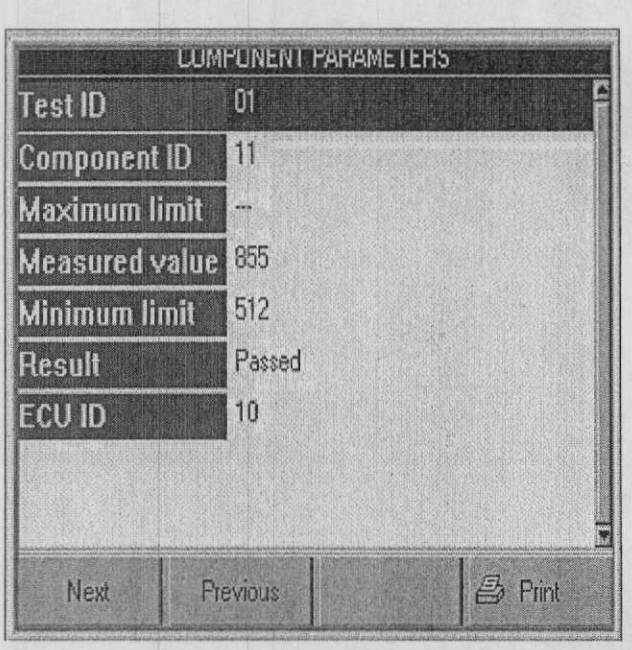

Highlight "Special Tests" and hit the "Enter" button. The next screen will be:




Highlight and select MODE 6 by pressing "Enter." The next screen will appear:



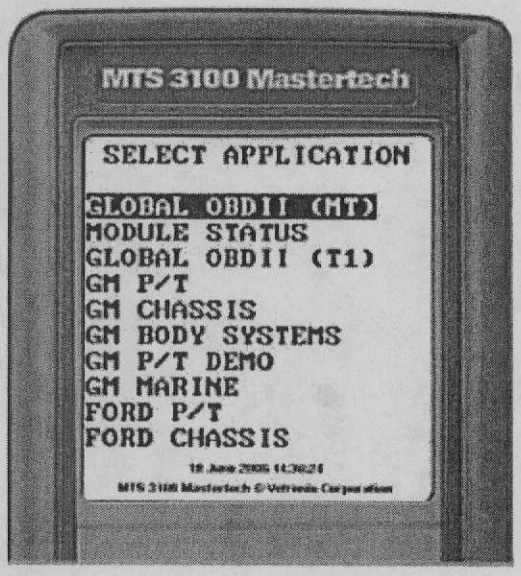

Hit the "OK" button and you will see the MODE 6 screen with Test ID and Component ID, plus Min / Max and current values on the screen:




You are now accessing MODE $06 information.

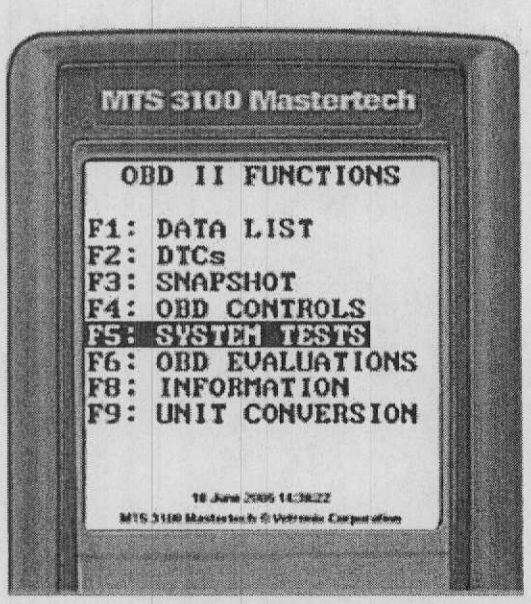
# Accessing Mode $06 with the MasterTech

After powering up the MasterTech, you will see the Main Menu; select F1 for SCANTEST. At the FUNCTION MENU, select F1 for SCANTEST again. The next screen you will see will be:




Select GLOBAL OBDII (MT) and press "ENTER." The following screen will appear:


Select F1 OBD II FUNCTIONS and press "ENTER." The next screen will be:




Select SYSTEM TESTS and press "ENTER." You will see the following:


Select F2 OTHER RESULTS and press "ENTER." The next screen will be:


Select TID information by simultaneously pressing star (*) and HELP. You will then see:


You are now accessing MODE $06 information.

# Chrysler

*** Special Note for Chrysler Vehicles ***

***Some Chryslers will show a designated value in their data – stream mode on the scan tool, be sure to view the actual voltage value from the sensor test menu on your scan tool.***

***As always, begin your diagnosis by looking at freeze frame data!***

***Remember to view the corresponding Mode Six information to aid in diagnostics.***

***Chrysler/Dodge/Jeep***

**PO100 : Volume airflow sensor circuit fault**
Vin F

***Enable Criteria {Monitor run conditions}***

1) Engine speeds higher then 500 RPM

***Why did the code set?***

1) The Task manager saw a VAF input of less the 3.5 herz for at least 4 seconds

***What should you look at?***

1) You will need to monitor the VAF signal to see if this condition is present and to verify the repair after you work is done. Be sure to check for mechanical restriction or binding and restricted or missing air cowls or tubes.

***Monitors suspended:***

None

**PO105: Baro sensor circuit fault**
Vin F

***Enable Criteria {Monitor run conditions}***

1) Battery voltage over 8 volts
2) Key on less then 1 minute

# Chrysler

***Why did code set?***

1) Task manager saw a voltage input of either greater then 4.3 volts or less then 200 milivolts for at least 5 seconds.

***What should you look at?***

1) Baro input to see if this condition is present and to verify repair after work is completed.

***Monitors Suspended:***

None

**PO106: Baro/Map out of range**

Vins AB/NS
3,B,J,L,R,T,X,Y,Z

***Enable Criteria {Monitor run conditions}***

1) Key on for less then 1 second
2) Engine speed less then 250 RPM

***Why did the code set?***

1) Task manager saw a MAP input of greater then .020 but less then 2.25 volts for more then 500 miliseconds.

***What should you look at?***

1) MAP input to verify if this condition is present and after vehicle is repaired, be sure that it is not. Pay close attention to the vacuum hose for proper routing and that both the hose and vacuum port are free from moisture and carbon restrictions. Also be sure that the engine is in sound mechanical condition. (at least 16inches of vacuum)

***Monitors Suspended:***

EVAP/Fuel {be sure to test these after successful repair}

**PO107: Map circuit voltage low**

Vins F,Y

***Enable Criteria {Monitor run conditions}***

1) Engine speed between 500-1500
2) TPS input less then 1.5 volts

***Why did the code set?***

1) Task manager detected a MAP input of less then .02 volts for at least 2 whole seconds.

***What should you look at?***

1) MAP input to both verify this condition and also to verify repair. Check for restrictions in hose keeping vacuum built up in hose.

***Monitors Suspended:***

EVAP Monitor/ O2 Heater/EGR

**PO107: MAP sensor circuit low voltage**
Vin all other
Cars

***Enable Criteria {Monitor run conditions}***

1) Engine speeds between 500-1500 RPM
2) TPS input less then 1 volt

***Why did the code set?***

1) Task manager saw a MAP input of less then 1 volt at startup or below .02 volts during engine running for at least 2 seconds.

***What should you look at?***

1) MAP voltage input to verify repair. Check for restriction in hose or nipple keeping vacuum on sensor.

***Monitors Suspended:***

Evap/Catalyst/EGR

# Chrysler

**PO107: MAP sensor circuit low voltage**
Vin all trucks

***Enable Criteria {Monitor run conditions}***

1) Engine speeds between 450-1450 RPM
2) TPS input less then 1 volt

***Why did the code set?***

1) Task manager saw a MAP input of less then 2.40 volts at time of start up or below 200 milivolts with engine running for at least 2 seconds.

***What should you look at?***

1) MAP input under these conditions, be sure to check for restrictions in hose.

***Monitors Suspended:***
EVAP/Catalyst/EGR

**PO108: MAP sensor circuit high voltage**
Vins F,Y

***Enable Criteria {Monitor run conditions}***

1) Engine speeds 400-1500 RPM
2) TPS less then 1.3 volts

***Why did this code set?***

1) Task manager detected a MAP input less then 4.5 volts for at least 2 seconds.

***What should you look at?***

1) MAP input during this condition and also after the repair. Be sure to check for vacuum supply problems due to engine mechanical conditions, supply hose problems or restricted ports due to carbon.

***Monitors Suspended:***

EVAP/EGR/O2 Heater

**PO108: MAP sensor circuit high voltage**
Vins 3, B, J,
L, R, T, X, Y

***Enable Criteria {Monitor run conditions}***

1) Engine speeds between 400-1450 RPM
2) Closed throttle

***Why did this code set?***

1) Task manager detected a MAP input over 4.6 volts for at least 1 second

***What should you look at?***

1) MAP input under this condition, be sure to check for vacuum supply problems such as hose restrictions and or engine mechanical problems.

***Monitors Suspended***:

EVAP/02 Heater/EGR

**PO108: MAP sensor circuit high voltage**
Vin other cars
Trucks

***Enable Criteria {Monitor run conditions}***

1) Engine speeds from 400-1500
2) TPS input less then 1 volt

***Why did the code set?***

1) Task manager detected a MAP input of greater then 4.5 volts with engine running for 2 seconds.

***What should you look at?***

1) MAP input while vehicle is running, check for vacuum supply problems such as engine mechanical condition, vacuum hose restrictions and or routing problems.

***Monitors Suspended:***

EVAP/02 Heater/EGR

**P0110: IAT Sensor circuit fault**
Vins F, Y

***Enable Criteria {Monitor run conditions}***

1) Key on for less then 60 seconds

***Why did the code set?***

1) Task manager detected an IAT input greater then 4.5 volts or less then .20 volts for at least 4 seconds.

***What should you look at?***

1) IAT input under these conditions, Check for harness problems for intermittent conditions, verify circuit integrity by shorting connector with key on while monitoring IAT input voltage on scan tool it should read in excess of 4.3 volts while shorted, with an open circuit it should read less then 100 milivolts.

***Monitors suspended:***

EVAP/02 Heater

**PO112: IAT sensor circuit low voltage**
Vins F, Y

***Enable Criteria {Monitor run condition}***

1) Key on

***Why did this code set?***

1) Task manager detected an IAT input less then .2 volts for at least 3 seconds

***What should you look at?***

IAT input under these conditions, Check for harness problems for intermittent conditions, verify circuit integrity by shorting connector with key on while monitoring IAT input voltage on scan tool it should read in excess of 4.3 volts while shorted, with an open circuit it should read less then 100 milivolts

***Monitors Suspended:***

1) EVAP/02 Heater

**PO112: IAT sensor circuit voltage low**

Vins other cars

And trucks

***Enable Criteria {Monitor run conditions}***

1) Key on/Engine running

***Why did this code set?***

1) Task manager detected an IAT input of less the .200 volts for at least 3 seconds

***What should you look at?***

1) Pay attention to the IAT input voltage to verify if this condition is present before, during and after repair. Check for harness problems for intermittent conditions, verify circuit integrity by shorting connector with key on while monitoring IAT input voltage on scan tool it should read in excess of 4.3 volts while shorted, with an open circuit it should read less then 100 milivolts

***Monitors suspended***:

EVAP/02 Heater

**PO112: IAT circuit/sensor low voltage**

Vins c & diesels

***Enable criteria {Monitor run conditions}***

1) Engine running/idle

***Why did this code set?***

1) Task manager detected an IAT input voltage less the .500 volts for a period of greater then 3 seconds.

# Chrysler

***What should you look at?***

IAT input under these conditions, Check for harness problems for intermittent conditions, verify circuit integrity by shorting connector with key on while monitoring IAT input voltage on scan tool it should read in excess of 4.3 volts while shorted, with an open circuit it should read less then 100 millivolts.

***Monitors suspended:***

EVAP/02 Heater

**PO113: IAT sensor circuit voltage high**

Vins F, Y

***Enable criteria {Monitor run conditions}***

1) Key on

***Why did this code set?***

1) Task manager detected an IAT input of greater the 4.5 volts for longer then 3 seconds

***What should you look at?***

IAT input under these conditions, Check for harness problems for intermittent conditions, verify circuit integrity by shorting connector with key on while monitoring IAT input voltage on scan tool it should read in excess of 4.3 volts while shorted, with an open circuit it should read less then 100 milivolts

***Monitors suspended:***

EVAP/02 Heater

**PO113: IAT sensor/circuit voltage high**

Vins all other

Cars & trucks

***Enable criteria {Monitor run conditions}***

1) Engine must be running

***Why did this code set?***

1) Task manager saw a shorted reference voltage of 5 volts on the IAT input for longer then 3 seconds.

***What should you look at?***

IAT input under these conditions, Check for harness problems for intermittent conditions, verify circuit integrity by shorting connector with key on while monitoring IAT input voltage on scan tool it should read in excess of 4.3 volts while shorted, with an open circuit it should read less then 100 milivolts

***Monitors suspended:***

EVAP/02 Heater

**PO113: IAT sensor/circuit voltage high**

Vins diesel

***Enable criteria {Monitor run conditions}***

1) Engine must be running

***Why did this code set?***

1) Task manager saw an IAT input voltage of 5 volts (short) for at least 3 seconds.

***What should you look at?***

IAT input under these conditions, Check for harness problems for intermittent conditions, verify circuit integrity by shorting connector with key on while monitoring IAT input voltage on scan tool it should read in excess of 4.3 volts while shorted, with an open circuit it should read less then 100 millivolts.

# Chrysler

***Monitors suspended:***

EVAP

**PO115: ECT sensor/circuit fault**

Vins F,Y

***Enable criteria {Monitor run conditions}***

1) Key on less then 1 minute.

***Why did this code set?***

1) The Task manager saw a hard open condition on the ECT circuit of 200 millivolts or less or the task manager saw a hard short condition of 4.5 volts or more for at least 5 seconds or the ECT took more then 5 minutes to reach a temperature higher then 122 degrees.

***What should you look at?***

1) Monitor the ECT Voltage parameter for this condition to be present. Check circuit integrity by shorting the ECT harness and watching your scan tool to read a high voltage (4 volts or higher), then cause open condition while monitoring the scan tool, it should read less then 100 millivolts if harness/PCM are good. Also check operating temperature of engine with your infrared temperature gun, if too low/high suspect faulty thermostat/head gasket/cooling fan circuit.

***Monitors Suspended***

EVAP/02 Heater

**P0117: ECT Sensor/circuit low voltage**

All vins

***Monitor Run Conditions (Enable Criteria)***

1) Key On

***Why did this code set?***

1) The task manager saw an input voltage of less then half a volt to the PCM from the ECT sensor.

***What should you look at?***

Be sure to monitor the ECT input parameter from the data stream. Pay close attention to the connector and harness for intermittent problems. Also suspect possible moisture in the PCM connector. Monitor the ECT Voltage parameter for this condition to be present. Check circuit integrity by shorting the ECT harness and watching your scan tool to read a high voltage (4 volts or higher), then cause open condition while monitoring the scan tool, it should read less then 100 millivolts if harness/PCM are good. Also check operating temperature of engine with your infrared temperature gun, if too low/high suspect faulty thermostat/head gasket/cooling fan circuit.

***Monitors suspended:***

EVAP/O2 Heater

**P0118: ECT Sensor circuit high voltage**

All Vins

***Monitor run conditions (Enable Criteria)***

1) Key On

***Why did this code set?***

1) The task manager saw an ECT input of greater then 4.3 volts for longer then 3 seconds

***What should you look at?***

2) 1) Monitor the ECT Voltage parameter for this condition to be present. Check circuit integrity by shorting the ECT harness and watching your scan tool to read a high voltage (4 volts or higher), then cause open condition while monitoring the

scan tool, it should read less then 100 millivolts if harness/PCM are good. Also check operating temperature of engine with your infrared temperature gun, if too low/high suspect faulty thermostat/head gasket/cooling fan circuit.

***Monitors Suspended:***

EVAP/02 Heater

**P0120: TPS/Circuit Fault**

Vin F&Y

***Monitor Run conditions (Enable Criteria)***

1) Key on longer then 1 minute
2) Closed throttle

***Why did this code set?***

1) The task manager saw a TPS input of 2 volts or more for at least 4 seconds or a TPS input of 100 millivolts or less for 4 seconds.

***What should you look at?***

1) Monitor the TPS voltage on your scan tool for this condition. Pay close attention to ensure proper throttle opening and closing. Check for throttle coking. Monitor the TPS voltage while wiggling the harness and connectors for intermittent faulty connections. You can test the harness by shorting the reference to the signal return and also by hooking your volt meter up to the sensor ground lead and the reference terminals. Doing these steps should allow you to read reference voltage on both your scan tool as well as your volt meter if there is no circuit faults.

***Monitors suspended***:

EVAP/02 Heater

**P0121: TP voltage out of sync with MAP**

All Vins

***Monitor Run Conditions (Enable Criteria)***

1) Engine warm
2) Engine running
3) Vehicle speed greater then 25 MPH

***Why did this code set?***

1) Either the TPS input voltage was seen reading high (greater then 1.5 volts) while the engine was idling with a high MAP input. Or the TPS input was reading too low of voltage (less then .50 volts) while the vehicle was being driven at a speed greater then 25 MPH with the throttle opened slightly and a low MAP input voltage present. Both conditions would of have had to of been present for at least 4 seconds.

***What should you look at?***

1) Monitor the TPS circuit voltage under these conditions. If fault is present, be suspicious of faulty sensor and or circuit wiring.

***Monitors suspended:***

EVAP/02 Heater/Catalyst

**P0122: TP sensor/circuit low voltage**

Vins F&Y

***Monitor run conditions (Enable Criteria)***

1) Key on.

***Why did this code set?***

1) Task manager saw a TP voltage input of less the .250 volts for a period of at least 2 seconds.

# Chrysler

***What should you do?***

1) Monitor the TPS voltage on your scan tool for this condition. Pay close attention to ensure proper throttle opening and closing. Check for throttle coking. Monitor the TPS voltage while wiggling the harness and connectors for intermittent faulty connections. You can test the harness by shorting the reference to the signal return and also by hooking your volt meter up to the sensor ground lead and the reference terminals. Doing these steps should allow you to read reference voltage on both your scan tool as well as your volt meter if there is no circuit faults.

***Monitors suspended:***

EVAP/02 Heater

**P0122: TP sensor/circuit low voltage**

Vin 5,C,P,S,T,

W,X,Y,Z

***Monitor run conditions (Enable Criteria)***

1) Key On.

***Why did this code set?***

1) The task manager saw a TP voltage input of less then .100 volts for at least 1 second.

***What should you look at?***

1) Monitor the TPS voltage on your scan tool for this condition. Pay close attention to ensure proper throttle opening and closing. Check for throttle coking. Monitor the TPS voltage while wiggling the harness and connectors for intermittent faulty connections. You can test the harness by shorting the reference to the signal return and also by hooking your volt meter up to the sensor ground lead and the reference terminals. Doing these steps should allow you to read reference voltage on both your scan tool as well as your volt meter if there is no circuit faults. This would be a great thing to graph or plot using your scope or graphing meter!

***Monitors Suspended:***

# Chrysler

EVAP/02 Heater

**P0122: TP sensor/circuit low voltage**

All vins

***Monitor run conditions (Enable Criteria)***

1) Key on.

***Why did this code set?***

1) Task manager detected a throttle voltage input of less then .200 volts for at least .500 seconds.

***What should you look at?***

1) Monitor the TPS voltage on your scan tool for this condition. Pay close attention to ensure proper throttle opening and closing. Check for throttle coking. Monitor the TPS voltage while wiggling the harness and connectors for intermittent faulty connections. You can test the harness by shorting the reference to the signal return and also by hooking your volt meter up to the sensor ground lead and the reference terminals. Doing these steps should allow you to read reference voltage on both your scan tool as well as your volt meter if there is no circuit faults.

***Monitors Suspended:***

EVAP/O2 Heater

**P0123: TP sensor/circuit high voltage**

Vins F&Y

***Monitor run conditions (Enable criteria)***

1) Key on.

***Why did this code set?***

1) Task manager saw a voltage input of greater then 4.5 volts for at least 1 second

***What should you look at?***

1) Monitor the TPS voltage on your scan tool for this condition. Pay close attention to ensure proper throttle opening and closing. Check for throttle coking. Monitor the TPS voltage while wiggling the harness and connectors for intermittent faulty connections. You can test the harness by shorting the reference to the signal return and also by hooking your volt meter up to the sensor ground lead and the reference terminals. Doing these steps should allow you to read reference voltage on both your scan tool as well as your volt meter if there is no circuit faults.

***Monitors suspended:***

EVAP/02 Heater

**P0123: TP sensor/circuit high voltage**

All Vins

***Monitor run conditions (Enable Criteria)***

1) Key on.

***Why did this code set?***

1) Task manager detected a voltage input greater then 4.5 volts for at least .500 seconds.

***What should you look at?***

1) Monitor the TPS voltage on your scan tool for this condition. Pay close attention to ensure proper throttle opening and closing. Check for throttle coking. Monitor the TPS voltage while wiggling the harness and connectors for intermittent faulty connections. You can test the harness by shorting the reference to the signal return and also by hooking your volt meter up to the sensor ground lead and the reference terminals. Doing these steps should allow you to read reference voltage on both your scan tool as well as your volt meter if there is no circuit faults.

***Monitors suspended:***

EVAP/O2 Heater

**P0125: Operating temperature not reached**
Vin Y

***Monitor run conditions (Enable Criteria)***

1) Engine running for at least 10 minutes or longer.
2) No previous ECT codes recorded.

***Why did this code set?***

1) Task manager saw that the coolant temperature never reached a minimum reading of at least 176 degrees.

***What should you look at?***

1) Be sure to monitor this input for this condition. If condition is present suspect faulty thermostat, low coolant or faulty cooling fan operation. In colder climates, also suspect improper coolant/water mixture.

***Monitors suspended:***

EVAP

**P0125: Operating temperature not reached**
Vin F

***Monitor run conditions (Enable Criteria)***

1) Engine running for at least 10 minutes.
2) No previous ECT related codes recorded.
3) IAT input at normal range (30 degrees-130 degrees)
4) Engine speed greater then 2500 but less then 4,000 RPM.

***Why did this code set?***

1) Task manager did not see the coolant temperature reach a minimum of 176 degrees during these conditions.

***What should you look for?***

1) Be sure to monitor this input for this condition. If condition is present suspect faulty thermostat, low coolant or faulty cooling fan operation. In colder climates, also suspect improper coolant/water mixture.

***Monitors suspended:***

EVAP

**P0125: Operating temperature not reached**
Vins 3,B,J,L,
R,T,X,Y,Z

***Monitor run conditions (Enable criteria)***

1) Engine running 10 minutes or longer
2) No previous ECT codes detected

***Why did this code set?***

1) Task manager failed to see a temperature greater then 125 degrees after 15 minutes of operation.

***What should you look at?***

1) Be sure to monitor this input for this condition. If condition is present suspect faulty thermostat, low coolant or faulty cooling fan operation. In colder climates, also suspect improper coolant/water mixture.

***Monitors suspended:***

EVAP

**P0125: Failure to reach operating temperature**
All Vins

***Monitor run conditions (Enable Criteria)***

1) No previous ECT related codes recorded
2) Engine run time greater then 10 minutes

***Why did this code set?***

1) Task manager never detected a temperature greater then 135 degrees after run time had been achieved.

***What should you look at?***

1) Be sure to monitor this input for this condition. If condition is present suspect faulty thermostat, low coolant or faulty cooling fan operation. In colder climates, also suspect improper coolant/water mixture.

***Monitors suspended:***

EVAP

**P0130: HO2S1 circuit fault – Sensor 1 Bank 1**
Vins F&Y

***Monitor run condition (Enable Criteria)***

1) Closed Loop

***Why did this code set?***

1) Task manager detected an O2 switch time of greater the .100 milliseconds during the fuel system enrichen/enleanment test.

***What should you look for?***

1) You should look at the oxygen sensor wave form under the following scope setups/conditions. .200 volts per division and .200 seconds per division while the vehicle is running at 2,000 RPM. You should see vertical lines of less the .100 ms in length switching from rich to lean. If the response is too slow/lazy suspect a faulty sensor.

***Monitors suspended:***

EVAP/Catalyst

**PO131: HO2S1 shorted to ground – Sensor1 Bank 1**

Vins 3, B, J, L, R,
T, X, Y, Z

***Monitor run conditions (Enable Criteria)***

1) Key off with cool down cycle reached (typically 10 minutes)
2) Key on power up with ECT reading of less then 100 degrees

***Why did this code set?***

1) Task manager detected sensor voltage less then .150 MV prior to heater test for two consecutive key on testing conditions.

***What should you look for?***

1) You should monitor this signal under these conditions. This will typically prove to be a faulty sensor; however careful inspection of the circuit is warranted also. This is a great place to use your graphing meter! If insufficient supply voltage is found to be the problem suspect the ASD/heater relay.

***Monitors suspended:***

EVAP/Catalyst/02

**P0131: HO2S1 shorted to ground-Sensor 1, Bank 1**

All Vins

***Monitor run conditions (Enable Criteria)***

1) ECT at operating (180 degrees) temp.
2) Engine shut down
3) Cold start less then 98 degrees coolant reading.

***Why did this code set?***

1) Task manager detected an O2 reading of less the .150 MV for at least 28 seconds after engine startup under the listed enabling conditions.

***What should you look for?***

1) You should monitor this signal under these conditions. This will typically prove to be a faulty sensor; however careful inspection of the circuit is warranted also. This is a great place to use your graphing meter! If insufficient supply voltage is found to be the problem suspect the ASD/heater relay.

***Monitors Suspended:***

EVAP/O2/Catalyst

**P0132: HO2S1 shorted to voltage – Sensor 1 Bank 1**
Vins F&Y

***Monitor run conditions (Enable Criteria)***

1) Engine running

***Why did this code set?***

1) Task manager detected a sensor voltage of greater then 1.3 volts during all running conditions for at least 3 seconds.

***What should you look for?***

1) You should monitor this signal for this condition. Use your scope or graph this signal through the ALDL using your scan tool. If condition is found it will usually turn out to be a faulty O2 sensor. Unplug suspected sensor to see if voltage drops to bias voltage, if it does, replace O2 sensor, if still present suspect harness/PCM problem. Also check to be sure that fuel pressure is within specs and all fuel system components are good.

***Monitors Suspended:***

EVAP/Catalyst/O2

**PO132: HO2S1 shorted to voltage – Sensor 1 Bank 1**
Vins 3, B, J, L,
R, T, X, Y, Z

# Chrysler

***Monitor run conditions (Enable Criteria)***

1) Engine running for at least two minutes
2) ECT value greater then 170 degrees

***Why did this code set?***

1) Task manager saw sensor voltage greater then 1.2 volts

***What should you look for?***

1) 1) You should monitor this signal for this condition. Use your scope or graph this signal through the ALDL using your scan tool. If condition is found it will usually turn out to be a faulty O2 sensor. Unplug suspected sensor to see if voltage drops to bias voltage, if it does, replace O2 sensor, if still present suspect harness/PCM problem. Also check to be sure that fuel pressure is within specs and all fuel system components are good.

***Monitors suspended:***

EVAP/O2/Catalyst

**PO132: HO2S1 Shorted to voltage Sensor 1, Bank 1**
All Vins

***Monitor run conditions (Enable Criteria)***

1) Engine running for at least 4 minutes
2) Closed loop (180 degrees)

***Why did this code set?***

1) Task manager detected the sensor voltage to be greater then 1.3 volts

***What should you look for?***

1) 1) You should monitor this signal for this condition. Use your scope or graph this signal through the ALDL using your scan tool. If condition is found it will usually turn out to be a faulty O2 sensor. Unplug suspected sensor to see if voltage drops to bias voltage, if it does, replace O2 sensor, if still present suspect harness/PCM problem. Also check to be sure that fuel pressure is within specs and all fuel system components are good.

***Monitors Suspended:***

EVAP/Catalyst/O2

# Chrysler

**PO133: HO2S1 Slow to respond Sensor 1, Bank 1**
Vins F&Y

***Monitor run conditions (Enable Criteria)***

1) Engine run time of 3 minutes
2) Closed loop operation
3) Vehicle speed of 25 or greater MPH
4) A/C off
5) Return to idle speed pf 500-800 RPM

***Why did this code set?***

1) The task manager detected that the bank 1 sensor 1 voltage was too low (under 650mv) or the response time was too slow.

***What should you do?***

1) Perform the following tests under these conditions. Use your scope or graphing meter to measure the O2 sensor's voltage, try enriching the mixture by inducing a small amount of propane and seeing if this will allow the O2 sensor to read a higher voltage and or a quick response time. Be sure to look for vacuum and exhaust leaks as this may also cause this condition.

***Monitors suspended:***

Evap/Catalyst

**P0133: HO2S1 Slow responding Sensor 1 Bank 1**
Vins C, F, H, N
T, X, Y

***Monitor run conditions (Enable Criteria)***

1) Engine running at least 3 minutes.
2) Closed loop operation
3) Cruising at speeds over 20 MPH for at least 2 minutes.
4) Engine brought back to idle.

***Why did this code set?***

1) The task manager saw the O2 sensor switch from rich (over .650mv) to lean (under .350mv) too few of times.

***What should you look for?***

1) Perform the following tests under these conditions. Use your scope or graphing meter to measure the O2 sensor's voltage, try enriching the mixture by inducing a small amount of propane and seeing if this will allow the O2 sensor to read a higher voltage and or a quick response time. Be sure to look for vacuum and exhaust leaks as this may also cause this condition.

***Monitors Suspended:***

Evap/Catalyst

**P0133: HO2S1 Slow responding Sensor 1 Bank 1**
Vins 5, C, P, S,
T, W, X, Y, Z

***Monitor run conditions (Enable Criteria)***

1) Engine running for at least 3 minutes.
2) Closed loop operation.
3) Cruising at least 2 minutes over 10 mph.
4) Engine brought back to idle.

***Why did this code set?***

1) The Task Manager detected the O2 sensor switched from rich (650mv) to lean (250mv) too few of times.

***What should you do?***

1) Perform the following tests under these conditions. Use your scope or graphing meter to measure the O2 sensor's voltage, try enriching the mixture by inducing a small amount of propane and seeing if this will allow the O2 sensor to read a higher voltage and or a quick response time. Be sure to look for vacuum and exhaust leaks as this may also cause this condition.

***Monitors suspended:***

EVAP / Catalyst

**PO133: HO2S1 slow responding sensor 1 bank 1**
Vins:Vans
3, B, J, L,
R, T, X, Y, Z

***Monitor run conditions (Enable Criteria)***

1) Engine running at least 3 minutes.
2) Closed loop operation.
3) Cruising speed higher than 10 mph for at least a ½ minute.

4) Vehicle return to idle.

***Why did this code set?***

1) The Task Manager detected the O2 sensor switch from rich (600mv) to lean (350mv) too few of times.

***What should you do?***

1) Perform the following tests under these conditions. Use your scope or graphing meter to measure the O2 sensor's voltage, try enriching the mixture by inducing a small amount of propane and seeing if this will allow the O2 sensor to read a higher voltage and or a quick response time. Be sure to look for vacuum and exhaust leaks as this may also cause this condition.

***Monitors suspended:***

EVAP/ Catalyst

**PO134: HO2S1 stuck at center sensor 1 bank 1.**
Vins: F, Y

***Monitor run conditions (Enable Criteria)***

1) Engine running for at least 2 minutes.
2) Closed loop operation.

***Why did this code set?***

1) The Task Manager detected the O2 sensor voltage was stuck at mid range for at least 1.5 minutes.

***What should you do?***

1) Be sure to perform the following tests under these conditions. With scan tool connected and ignition on, disconnect O2 sensor harness and momentarily ground signal return wire using your body as a resistor, than momentarily apply power to the signal return wire via the O2 sensor connector, once again using your body as a resistor. Remember this test is done on the vehicle harness side of the connector not the sensor side. The scan tool should read close to 0 volts while grounded and approximately 1 volt while hooked to power through your body. If this happens, suspect faulty sensor, if this does not happen suspect faulty wiring or PCM.

***Monitors Suspended:***

EVAP/Catalyst

**P0134: H02S1 Stuck at center Sensor 1 bank 1**
Vins cars C, F,
H, N, T, X, Y

***Monitor run conditions (Enable Criteria)***

1) Engine running at least 2 minutes
2) Closed loop operation

***Why did this code set?***

1) Task manager detected that the 02 sensor was stuck at ½ volt for at least 1 minute.

***What should you look for?***

1) Be sure to perform the following tests under these conditions. With scan tool connected and ignition on, disconnect O2 sensor harness and momentarily ground signal return wire using your body as a resistor, than momentarily apply power to the signal return wire via the O2 sensor connector, once again using your body as a resistor. Remember this test is done on the vehicle harness side of the connector not the sensor side. The scan tool should read close to 0 volts while grounded and approximately 1 volt while hooked to power through your body if this happens, suspect faulty sensor. If this does not happen suspect faulty wiring or PCM.

***Monitors Suspended:***

EVAP/Catalyst

**P0134: H02S1 Stuck at center Sensor 1 bank 1**
Vins truck 3, B,
J, L, R, T, X, Y, Z

***Monitor run conditions (Enable Criteria)***

1) Engine running at least 2 minutes
2) Closed loop operations

***Why did this code set?***

1) Task manager detected that the 02 sensor voltage was stuck at ½ volt for at least 1.5 minutes.

***What should you look for?***

1) Be sure to perform the following tests under these conditions. With scan tool connected and ignition on, disconnect O2 sensor harness and momentarily ground signal return wire using your body as a resistor, than momentarily apply power to the signal return wire via the O2 sensor connector, once again using your body as

a resistor. Remember this test is done on the vehicle harness side of the connector not the sensor side. The scan tool should read close to 0 volts while grounded and approximately 1 volt while hooked to power through your body. If this happens, suspect faulty sensor, if this does not happen suspect faulty wiring or PCM.

***Monitors Suspended:***

EVAP/Catalyst

**P0135: H02S1 Heater fault Sensor 1 Bank 1**
Vin Y

***Monitor run conditions (Enable Criteria)***

1) Battery voltage at least 10 volts.
2) Key off for at least 5 seconds
3) Engine started

***Why did this code set?***

1) The task manager detected that the 02 Sensor voltage rose by greater then ½ volt within 2 minutes of the key being shut off while staying less then 1.5 volts.

***What should you look for?***

1) This will most likely require the 02 sensor to be replaced to cure this condition. Be sure to check for proper supply voltage to the heater element as well as a good ground for the circuit before replacing the sensor.

***Monitors suspended:***

EVAP/02/Catalyst

**P0135: H02S1 Heater fault Sensor1 Bank 1**
Vin F turbo

***Monitor run conditions (Enable Criteria)***

1) Key off for at least 10 minutes.

***Why did this code set?***

1) The task manager detected the 02 sensor's voltage was either higher or lower then expected during the 02 heater test.

***What should you look for?***

1) This will most likely require the 02 sensor to be replaced to cure this condition. Be sure to check for proper supply voltage to the heater element as well as a good ground for the circuit before replacing the sensor.

***Monitors Suspended:***

EVAP/02/Catalyst

**P0135: H02S1 Heater Fault Sensor 1, Bank 1**
Vins Vans 3, B, J,
L, R, T, X, Y, Z

***Monitor run conditions (Enable Criteria)***

1) Key off for at least 10 minutes after engine cool down.

***Why did this code set?***

1) The task manager detected no 02 sensor output voltage with the heater energized.

j

***What should you look for?***

1) This will most likely require the 02 sensor to be replaced to cure this condition. Be sure to check for proper supply voltage to the heater element as well as a good ground for the circuit before replacing the sensor.

***Monitors Suspended:***

EVAP/02/Catalyst

**P0135: H02S1 Heater fault Sensor1, Bank1**
All other vins

***Monitor run conditions (Enable Criteria)***

1) Cold engine startup.
2) Engine idling.
3) Operating temperature less then 150 degrees.

***Why did this code set?***

1) The task manager detected the 02 sensor's voltage was greater then 3 volts for a time period of ½ minute to 1.5 minutes.

***What should you do?***

1) This will most likely require the 02 sensor to be replaced to cure this condition. Be sure to check for proper supply voltage to the heater element as well as a good ground for the circuit before replacing the sensor.

***Monitors Suspended***:

EVAP/02/Catalyst

**P0136: H02S2 Circuit fault Sensor 2, Bank 1**
Vins F, Y

***Monitor run conditions (Enable Criteria)***

1) Engine on

***Why did this code set?***

1) The task manager detected an open circuit condition in the catalyst sensor's circuit.

***What should you look for?***

1) Inspect the 02 Harness connector to be sure that it is plugged in and all the connectors are clean and secure. Then jump the 02 heater lead of harness connector to the signal return lead of connector and see if proper voltage is read on scan tool. If so, suspect faulty connecter or sensor, if not perform wiggle test on harness working your way up towards the PCM. If harness is alright, suspect faulty PCM or main PCM connecter.

***Monitors Suspended:***

EVAP/Catalyst

**P0137: H02S2 Short to ground Sensor 2 Bank 1**
Vins cars C, F,
H, N, T, X

***Monitor run conditions (Enable Criteria)***

1) No engine related codes stored.
2) Key off with engine cooled down.
3) Cold engine started temperature under 100 degrees.

***Why did this code set?***

1) The task manager detected the catalyst sensor's voltage was less then .150 MV prior to running the heater monitor for this sensor. This indicates the bias voltage is being pulled low on a cold 02 sensor, typical of a short condition.

***What should you look for?***

1) This will typically be the result of a faulty sensor. While monitoring the catalyst signal voltage on your scan tool, try unplugging the Catalyst sensor harness and seeing if the voltage changes (goes up), if it does, suspect/replace catalyst sensor. If it stays low suspect faulty harness or PCM.

***Monitors suspended:***

EVAP/Catalyst

**P0137: H02S2 Sorted to ground Sensor 2 Bank 1**
Vins Trucks 5, C,
P, S, T, X, Y, Z

***Monitor run condition (Enable Criteria)***

1) No engine codes set.
2) Cold start up (below 75 degrees), after previous closed loop operation.

***Why did this code set?***

1) The task manager detected the catalyst sensor's voltage was less then .150 MV prior to running the heater monitor for this sensor. This indicates the bias voltage is being pulled low on a cold 02 sensor, typical of a short condition.

***What should you look for?***

1) This will typically be the result of a faulty sensor. While monitoring the catalyst signal voltage on your scan tool, try unplugging the Catalyst sensor harness and seeing if the voltage changes (goes up), if it does, suspect/replace catalyst sensor. If it stays low suspect faulty harness or PCM.

***Monitor Suspended:***

EVAP/Catalyst

**P0137: H02S1 Pre Cat 02 sensor shorted to ground**
California Truck
Vin W only

***Monitor run conditions (Enable Criteria)***

1) No engine codes set.
2) Cold start up (below 75 degrees), after previous closed loop operation.

***Why did this code set?***

1) The task manager detected the pre cat 02 sensor's voltage was less then .150 MV prior to running the heater monitor for this sensor. This indicates the bias voltage is being pulled low on a cold 02 sensor, typical of a short condition.

***What should you look for?***

1) This will typically be the result of a faulty sensor. While monitoring the pre catalyst 02 sensor's signal voltage on your scan tool, try unplugging the pre Catalyst 02 sensor's harness and seeing if the voltage changes (goes up), if it does, suspect/replace 02 sensor. If it stays low suspect faulty harness or PCM.

***Monitors Suspended:***

EVAP/02/Catalyst

**P0138: H02S2 Shorted to voltage sensor 2 bank 1**
Vins cars C, F,
H, N, T, X, Y

***Monitor run conditions (Enable Criteria)***

1) No engine codes present.
2) Engine running longer then 2 minutes.
3) Closed loop operation.

***Why did this code set?***

1) The task manager detected the catalyst sensor's voltage was greater the 1.2 volts for at least 3 seconds.

***What should you look for?***

1) Be sure to look for a shorted 02 sensor heater element. The easiest way to accomplish this is by simply verifying the condition is present at the time of your diagnosis, then simply unplug the sensor's connector and see if the voltage is returned to bias voltage. If it is then you will need to replace the catalyst sensor on this vehicle.

***Monitors suspended:***

EVAP/Catalyst

**P0138: H02S2 Sensor2, Bank 1 Shorted to voltage**
Vins trucks 3, B, J,
L, R, T, X, Y, Z

***Monitor run conditions (Enable Criteria)***

1) No engine codes set.
2) Engine running longer then 2 minutes.
3) Closed loop operation.

***Why did this code set?***

1) The task manager detected the catalyst sensor voltage was greater then 1.2 volts for at least 3 seconds or more.

***What should you look for?***

1) Be sure to look for a shorted 02 sensor heater element. The easiest way to accomplish this is by simply verifying the condition is present at the time of your diagnosis, then simply unplug the sensor's connector and see if the voltage is returned to bias voltage. If it is then you will need to replace the catalyst sensor on this vehicle.

***Monitors Suspended:***

EVAP/Catalyst

**P0138: H02S1 Shorted to voltage Sensor 1, Bank 1**
Vin W
California truck only

***Monitor run condition (Enable Criteria)***

1) No engine codes present.
2) Engine running longer then 2 minutes
3) Warm Engine

***Why did this code set?***

1) The task manager detected a sensor voltage reading of greater then 1.2 volts for a period of at least 3 seconds.

***What should you look for?***

1) Be sure to look for a shorted 02 sensor heater element. The easiest way to accomplish this is by simply verifying the condition is present at the time of your diagnosis, then simply unplug the sensor's connector and see if the voltage is returned to bias voltage. If it is then you will need to replace the pre-cat 02 sensor on this vehicle.

***Monitors Suspended:***

EVAP/Catalyst

# Chrysler

**P0139: H02S2 Stuck at center Sensor2, Bank1**
Vins F, Y

***Monitor run conditions (Enable Criteria)***

1) No engine codes present.
2) Engine running longer then 2 minutes.
3) Warm engine (higher then 150 degrees)

***Why did this code set?***

1) The task manager detected that the catalyst sensor's voltage has been fixed at ½ volt for a period longer then 1.5 minutes.

***What should you look for?***

1) Be sure to perform the following tests under these conditions. With scan tool connected and ignition on, disconnect Catalyst sensor's harness and momentarily ground signal return wire using your body as a resistor, than momentarily apply power to the signal return wire via the Catalyst sensor's connector, once again using your body as a resistor. Remember this test is done on the vehicle harness side of the connector not the sensor side. The scan tool should read close to 0 volts while grounded and approximately 1 volt while hooked to power through your body. If this happens, suspect faulty sensor, if this does not happen suspect faulty wiring or PCM.

***Monitors Suspended:***

EVAP/Catalyst

**P0139: H02S1 Switching response slow from Sensor1, Bank 1**
Vin W
California truck only

***Monitor run condition (Enable Criteria)***

1) No engine codes present.
2) Engine temperature greater then 150 degrees.
3) Cruise speed higher then 10 MPH for at least 2 minutes.
4) Vehicle brought back to idle.

***Why did this code set?***

1) The task manager detected too few of switching from rich (600mv) to lean (300 MV) from the pre-cat 02 sensor.

***What should you look for?***

1) Perform the following tests under these conditions. Use your scope or graphing meter to measure the O2 sensor's voltage, try enriching the mixture by inducing a small amount of propane and seeing if this will allow the O2 sensor to read a higher voltage and or a quick response time. Be sure to look for vacuum and exhaust leaks as this may also cause this condition.

***Monitors Suspended:***

EVAP

**P0140: H02S2 Sensor 2, Bank 1 remains stuck at center**
Vins All other cars
And trucks

***Monitor run conditions (Enable Criteria)***

1) No engine codes present.
2) Engine running at least 2 minutes.
3) Closed loop operation.

***Why did this code set?***

1) The task manager detected that the catalyst sensor's voltage was fixed between .300 MV and .500 MV for at least ½ minute.

***What should you look for?***

1) Be sure to perform the following tests under these conditions. With scan tool connected and ignition on, disconnect Catalyst sensor's harness and momentarily ground signal return wire using your body as a resistor, than momentarily apply power to the signal return wire via the Catalyst sensor's connector, once again using your body as a resistor. Remember this test is done on the vehicle harness side of the connector not the sensor side. The scan tool should read close to 0 volts while grounded and approximately 1 volt while hooked to power through your body. If this happens, suspect faulty sensor, if this does not happen suspect faulty wiring or PCM.

***Monitors Suspended:***

EVAP/Catalyst

**PO141: H02S2 Heater fault Sensor2, Bank1**
Vins F, Y

***Monitor run conditions (Enable Criteria)***

1) No engine codes present.
2) Battery voltage higher then 10 volts.
3) Key off longer then 30 seconds.

***Why did this code set?***

1) The task manager detected that the Catalyst 02 Sensor voltage rose by greater then ½ volt within 2 minutes of the key being shut off while staying less then 1.5 volts.

***What should you look for?***

1) This will most likely require the catalyst 02 sensor to be replaced to cure this condition. Be sure to check for proper supply voltage to the heater element as well as a good ground for the circuit before replacing the sensor.

***Monitors Suspended:***

EVAP/Catalyst

**P0141: H02S2 Heater Fault Sensor2, Bank1**
Vins all other cars

***Monitor run conditions (Enable Criteria)***

1) No engine codes present.
2) Cold start up (under 95 degrees)
3) Engine idling with temperature below 150 degrees.

***Why did this code set?***

2) 1) The task manager detected the catalyst 02 sensor's voltage was greater then .3 MV volts for a time period of ½ minute to 1.5 minutes.

***What should you look for?***

1) This will most likely require the 02 sensor to be replaced to cure this condition. Be sure to check for proper supply voltage to the heater element as well as a good ground for the circuit before replacing the sensor. Also be sure to verify your diagnosis by unplugging the catalyst sensor's harness, the voltage reading on your scan tool should now read bias voltage.

***Monitors Suspended:***

EVAP/Catalyst

**P0141: H02S2 Heater circuit Fault Sensor2, Bank1**
Vins trucks 3,
B, J, L, R, T, X, Y, Z

***Monitor run conditions (Enable Criteria)***

1) No Engine codes present.
2) Key off for at least 10 minutes.

***Why did this code set?***

1) The task manager detected no catalyst sensor voltage after the heater had been energized.

***What should you look for?***

1) This will most likely require the 02 sensor to be replaced to cure this condition. Be sure to check for proper supply voltage to the heater element as well as a good ground for the circuit before replacing the sensor.

***Monitors Suspended:***

EVAP/Catalyst

**P0143: H02S2 Short to ground Sensor2, Bank1**
Vins trucks 5, C,
P, S, T, W, X, Y, Z

***Monitor run conditions (Enable Criteria)***

1) Warm engine shut down.
2) Coolant below 90 degrees
3) Engine start up.

***Why did this code set?***

1) The task manager detected low (below .200 MV) catalyst sensor voltage for at least 30 seconds before the heater monitor has been run.

***What should you look for?***

1) This is a common problem for both bad PCM's as well as faulty catalyst sensor. To test this circuit is to meat the above conditions and then while monitoring your scan tool, simply disconnect the catalyst sensor's harness. If the voltage returns to bias (approx. 5 volts) than you have a bad sensor, if it stays low, suspect PCM and harness.

***Monitors Suspended:***

EVAP/Catalyst

**P0144: H02S2 shorted to voltage Sensor2, Bank1**
Vins trucks 5, C, P,

# Chrysler

S, T, W, X, Y, Z

***Monitor run conditions (Enable Criteria)***

1) Engine running three minutes.
2) Closed loop operation.

***Why did this code set?***

1) The task manager detected the catalyst sensor's voltage was greater than 1 volt for longer than 3 seconds.

***What should you look for?***

1) This will usually be caused by a faulty sensor. Monitor this voltage with your scan tool with sensor harness disconnected. If voltage returns to bias (approx. ½ volt) then suspect sensor. If stays high, suspect PCM and harness.

***Monitors suspended:***

1) EVAP/Catalyst

**P0145: H02S2 Slow response Sensor2, Bank1**

Vins Trucks

5, C, P, S, T, W, X, Y, Z

***Monitor run conditions (Enable Criteria)***

1) Engine running 2 minutes.
2) Closed loop operation.
3) Cruise speeds 0-20mph for 2 minutes.
4) Returned to idle.

***Why did this code set?***

1) The task manager detected the catalyst sensor has switched rich (600 MV) to lean (300 MV) too few times.

***What should you look for?***

1) Drive the mixture rich and lean using propane enrichment while monitoring the catalyst sensor's voltage with your scope. The sensor voltage should switch within 100ms or les. If it takes longer, suspect faulty sensor or exhaust leak.

***Monitors suspended:***

EVAP

# Chrysler

**P0147: H02S2 Heater fault Sensor2, Bank1**
Vins trucks
5, C, P, S, T, W, X, Y, Z

***Monitor run conditions (Enable Criteria)***

1) Engine idle after cold start up.

***Why did this code set?***

1) The task manager detected a catalyst sensor voltage greater then 300mv for at least ½ minute to 1 ½ minute.

***What should you look for?***

1) This will usually be a bad sensor. Test by unplugging the sensor harness under the above conditions and see if voltage returns to normal (bias). If it does, suspect sensor if still high (300 MV or greater) suspect PCM/harness.

***Monitors suspended:***

EVAP/Catalyst

**P0151: H02S1 Shorted to ground Sensor1, Bank2**
Vins All Cars and trucks

*Monitor run condition (Enable Criteria)*

1) Previous warm engine shut down.
2) Cold engine (below 90 degrees) start up.

***Why did this code set?***

1) The task manager detected the 02 sensor voltage too low (below 150 MV) for at least ½ minute after start up.

***What should you look for?***

1) While monitoring the sensor voltage under the above conditions unplug the sensor harness. Voltage should now read bias (approx. ½ volt) if it does replace sensor. If voltage still reads low use your body as a resistor and touch a voltage source such as the positive battery cable with one hand and the sensor signal return wire with your other hand. Voltage should read approx. 1 volt if it doesn't suspect faulty harness or PCM.

***Monitors Suspended:***

EVAP/Catalyst

# Chrysler

**P0152: H02S1 shorted to voltage Sensor1, Bank2**
Vins All trucks and cars

***Monitor run conditions (Enable Criteria)***

1) Engine running for at least 2 minutes.
2) Coolant temperature over 175 degrees.

***Why did this code set?***

1) The task manager detected an 02 sensor voltage of greater than 1 volt for more than 2.5 seconds.

***What should you look for?***

1) Simply unplug the sensor connector while monitoring the voltage under the above conditions. Voltage should return to bias (approx .5 volts) if it does, replace sensor. If it stays high then you will have either a PCM or harness problem.

***Monitors suspended:***

EVAP/Catalyst

**P0153: H02S1 slow responding Sensor1, Bank2**
Vins all cars and trucks

***Monitor run conditions (Enable Criteria)***

1) Engine run time 2-3 minutes.
2) Closed loop operation.
3) Cruise speed of 10-20 mph for at least 2 minute.
4) Engine returned to idle.

***Why did this code set?***

1) The task manager detected the 02 sensor switched from rich (600mv) to lean (300mv) too few times.

***What should you look for?***

1) Drive the mixture rich and lean using propane enrichment while monitoring the oxygen sensor's voltage with your scope. The sensor voltage should switch within 100ms or les. If it takes longer, suspect faulty sensor or exhaust leak.

***Monitors Suspended:***

# Chrysler

EVAP

**P0154: H02S1 Voltage stuck at center Sensor1, Bank2**
Vins all trucks and vans

***Monitor run condition (Enable Criteria)***

1) Engine running longer than 2 minutes.
2) Coolant temp greater than 175 degrees.

***Why did this code set?***

1) The task manager detected that the sensor voltage was near ½ volt for at least 1 minute.

***What should you look for?***

1) Be sure to perform the following tests under these conditions. With scan tool connected and ignition on, disconnect O2 sensor harness and momentarily ground signal return wire using your body as a resistor, than momentarily apply power to the signal return wire via the O2 sensor connector, once again using your body as a resistor. Remember this test is done on the vehicle harness side of the connector not the sensor side. The scan tool should read close to 0 volts while grounded and approximately 1 volt while hooked to power through your body. if this happens suspect faulty sensor, If this does not happen suspect faulty wiring or PCM. This will usually be caused by a faulty sensor.

***Monitors Suspended:***

EVAP/Catalyst

**P0155: H02S1 Heater fault Sensor1, Bank2**
Vins All cars and trucks

***Monitor run conditions (Enable Criteria)***

1) Engine idle after cold start up.
2) Coolant below 125 degrees.

***Why did this code set?***

1) The task manager detected the 02 sensor voltage greater than 300mv for a period of ½ minute to 1 and ½ minute.

***What should you look for?***

1) This will usually be a bad sensor. Test by unplugging the sensor harness under the above conditions and see if voltage returns to normal (bias). If it does, suspect sensor if still high (300 MV or greater) suspect PCM/harness.

***Monitors Suspended:***

EVAP (most cars)

**P0157: H02S2 Shorted to ground Sensor2, Bank2**
Vins trucks vin W

***Monitor run condition (Enable Criteria)***

1) Ignition off for at least 10 minutes.

***Why did this code set?***

1) The task manager detected the catalyst sensor's voltage was too low (less then 200mv) below it had run the heater test for this sensor.

***What should you look for?***

1) This is a common problem for both bad PCM's as well as faulty catalyst sensor. To test this circuit, meet the above conditions and then while monitoring your scan tool, simply disconnect the catalyst sensor's harness. If the voltage returns to bias (approx.5 volts) than you have a bad sensor, if it stays low, suspect PCM and harness.

***Monitors Suspended:***

EVAP/Catalyst

**P0158: H02S2 Shorted to voltage Sensor2 Bank2**
Vins W

***Monitor run condition (Enable Criteria)***

1) Engine running longer than 2 minutes.
2) Coolant temperature greater than 175 degrees

***Why did this code set?***

1) The task manager detected the catalyst sensor voltage was greater than 1.25 volts for at least 3 seconds.

***What should you look for?***

1) This will usually be caused by a faulty sensor. Monitor this voltage with your scan tool with sensor harness disconnected. If voltage returns to bias (approx. ½ volt) then suspect sensor. If stays high, suspect PCM and harness.

***Monitors Suspended:***

EVAP

**P0160: H02S2 Voltage stuck at center Sensor2, Bank2**
Vins C, F, H, N, T, X, Y

***Monitor run conditions (Enable Criteria)***

1) Engine running longer than 2 minutes.
2) Closed loop operation.

***Why did this code set?***

1) The task manager detected the catalyst sensor's voltage remained from .35mv to .50mv for the entire driving trip. The task manager will try to pull the sensor's voltage to 5 volts for ½ minute to see if it is indeed stuck.

***What should you look for?***

1) Be sure to perform the following tests under these conditions. With scan tool connected and ignition on, disconnect Catalyst sensor's harness and momentarily ground signal return wire using your body as a resistor, than momentarily apply power to the signal return wire via the Catalyst sensor's connector, once again using your body as a resistor. Remember this test is done on the vehicle harness side of the connector not the sensor side. The scan tool should read close to 0 volts while grounded and approximately 1 volt while hooked to power through your body. If this happens, suspect faulty sensor, if this does not happen suspect faulty wiring or PCM.

***Monitors Suspended:***

EVAP

**P0161: H02S2 Heater fault Sensor2, Bank2**
Vins W

***Monitor run conditions (Enable Criteria)***

1) Engine idle after cold start up.
2) Coolant below 150 degrees

***Why did this code set?***

1) The task manager detected that the sensor voltage remained over 300 MV for at least 30-90 seconds.

***What should you look for?***

2) 1) This will most likely require the 02 sensor to be replaced to cure this condition. Be sure to check for proper supply voltage to the heater element as well as a good ground for the circuit before replacing the sensor. Also be sure to verify your diagnosis by unplugging the catalyst sensor's harness, the voltage reading on your scan tool should now read bias voltage.

***Monitors Suspended:***

EVAP/Catalyst

**P0170: Fuel trim fault Sensor1, Bank1**
Vins F&Y

***Monitor run conditions (Enable Criteria)***

1) Engine Running
2) Closed loop operation

***Why did this code set?***

1) The task manager detected the fuel compensation value exceeded the allowable limit for at least 10 seconds.

***What should you look for?***

1) This condition can be caused by either a lean condition or a rich condition. Suspect leaking/shorted injectors, vacuum leak, and fuel pressure out of range sensors such as ECT, MAP/MAF and IAT. Verify engine is in sound mechanical condition.

***Monitors suspended:***

NONE

**P0171: H02S1 is indicating fuel lean Sensor1, Bank1**
Vin F&Y

***Monitor run conditions (Enable Criteria)***

1) Engine running
2) Warm (over 175 degrees)
3) Closed loop operation

***Why did this code set?***

1) The task manager detected the long term fuel trim readings were at 25% and the short term readings were at 12% or greater for two consecutive trips.

***What should you look for?***

1) The most common fault for this code is a contaminated MAF wire. Be sure to inspect and clean this wire. This condition may also be caused by a vacuum leak, cross leaking EGR valve and or low fuel pressure. Try adding propane enrichment to see if value starts to drop. Test fuel pressure and volume. Use smoke machine or soapy water solution and 10 psi of compressed air in brake booster hose to help locate vacuum leaks. Exhaust leaks can also cause this code to set.

***Monitors suspended:***

NONE

**P0171: H02S1 Fuel lean sensor 1 bank 1**
Vins: Other cars and trucks

***Monitor run conditions (Enable Criteria)***

1) Warm engine (over 175 degrees)
2) Engine running
3) Closed loop operation

***Why did this code set?***

1) The task manager detected a long term fuel trim reading of 25% and a short term fuel reading of 12% or more for two trips.

***What should you do?***

1) The most common fault for this code is a contaminated MAF wire. Be sure to inspect and clean this wire. This condition may also be caused by a vacuum leak, cross leaking EGR valve and or low fuel pressure. Try adding propane enrichment to see if value starts to drop. Test fuel pressure and volume. Use smoke machine or soapy water solution and 10 psi of compressed air in brake booster hose to help locate vacuum leaks. Exhaust leaks can also cause this code to set.

***Monitor Suspended:***

None

# Chrysler

**P0171: Fuel lean Sensor1, Bank1**
Vins Vans 3,B,J,L,R,T,X,Y,Z

***Monitor run conditions (Enable Criteria)***

1) Warm engine (greater the 175 degrees)
2) Closed loop operation

***What should you look for?***

1) The most common fault for this code is a contaminated MAF wire. Be sure to inspect and clean this wire. This condition may also be caused by a vacuum leak, cross leaking EGR valve and or low fuel pressure. Try adding propane enrichment to see if value starts to drop. Test fuel pressure and volume. Use smoke machine or soapy water solution and 10 psi of compressed air in brake booster hose to help locate vacuum leaks. Exhaust leaks can also cause this code to set.

***Monitors suspended:***

None

**P0172: Fuel rich, Sensor 1, Bank 1**
Vins F&Y

***Monitor run conditions (Enable Criteria)***

1) Closed loop operation
2) Engine over 175 degrees

***Why did this code set?***

1) The task manager detected a long term fuel trim reading of negative 25% and a short term fuel trim reading of negative 7 % or greater for at least two trips.

***What should you look for?***

1) Once again, be sure to inspect the MAF wire. Check to be sure fuel pressure is within specs, the pressure regulator is sound, the injector resistance is within specs and that the engine is in sound mechanical condition.

***Monitors suspended:***

None

**P0172: H02S1 Fuel Rich Sensor1, Bank1**
Vins other cars and trucks

***Monitor run condition (Enable Criteria)***

1) Engine temperature at least 175 degrees
2) Engine running in closed loop

***Why did this code set?***

1) The task manager detected a long term fuel trim reading of negative 25% and a short term fuel trim reading of negative 7 % for two trips.

***What should you look for?***

1) Once again, be sure to inspect the MAF wire. Check to be sure fuel pressure is within specs, the pressure regulator is sound, the injector resistance is within specs and that the engine is in sound mechanical condition.

***Monitors suspended***

None

**P0172: H02S1 Fuel rich Sensor1, Bank1**
Vins vans 3, B, J, L, R, T, X, Y, Z

***Monitor run condition (Enable Criteria)***

1) Engine running in closed loop
2) Warm engine (over 175 degrees)

***Why did this code set?***

1) The task manager used the 02 and fuel trim readings to determine that the system was too rich for two trips.

***What should you do?***

1) Once again, be sure to inspect the MAF wire. Check to be sure fuel pressure is within specs, the pressure regulator is sound, the injector resistance is within specs and that the engine is in sound mechanical condition.

***Monitors suspended:***

None

**P0174: H02S1 Fuel lean Sensor1, Bank2**
Vin X

***Monitor run condition (Enable Criteria)***

1) Engine running in closed loop.

2) Altitude under 8,000 feet.

***Why did this code set?***

1) The task manager detected a lean condition for two consecutive trips. (Using fuel trim and 02 readings)

***What should you look for?***

1) The most common fault for this code is a leaking exhaust system or a contaminated MAF wire. Be sure to inspect this wire. This condition may also be caused by a vacuum leak, cross leaking EGR valve and or low fuel pressure. Try adding propane enrichment to see if value starts to drop. Test fuel pressure and volume. Use smoke machine or soapy water solution and 10 psi of compressed air in brake booster hose to help locate vacuum leaks.

***Monitors suspended:***

None

**P0175: H02S1 Fuel rich Sensor1, Bank2**
Vins X

***Monitor run conditions (Enable Criteria)***

1) Engine running in closed loop.
2) Altitude under 8,000 feet

***Why did this code set?***

1) The task manager detected a rich condition that was present for at least two trips. (Using fuel trim and 02 readings)

***What should you look for?***

1) Once again, be sure to inspect the MAF wire. Check to be sure fuel pressure is within specs, the pressure regulator is sound, the injector resistance is within specs and that the engine is in sound mechanical condition.

***Monitors suspended:***

None

**P0182: CNG temperature sensor voltage too low.**
Vins J, T

***Monitor run condition (Enable Criteria)***

1) Engine running.

***Why did this code set?***

1) The task manager detected a CNG temp sensor input of less than ½ volt.

***What should you look for?***

1) Unplug sensor and note reading on scan tool. The reading should read very cold approx. 20 below, now short terminals on sensor connector and the reading should go opposite. (very warm approx. 300 degrees) If the circuit tests good, measure resistance with a volt meter and compare to factory specs. This will vary according to the temperature of the engine so be sure to compare to a factory chart.

***Monitors suspended:***

EVAP

**P0183: CNG temperature sensor voltage high**
Vins J,T

***Monitor run conditions (Enable Criteria)***

1) Engine running.

***Why did this code set?***

1) The task manager detected a CNG voltage input of greater than 4.5 volts.

***What should you look for?***

1) Unplug sensor and note reading on scan tool. The reading should read very cold approx. 20 below, now short terminals on sensor connector and the reading should go opposite. (very warm approx. 300 degrees) If the circuit tests good, measure resistance with a volt meter and compare to factory specs. This will vary according to the temperature of the engine so be sure to compare to a factory chart.

***Monitors suspended:***

Evap

**P0201-204: Fuel injectors 1-4 control circuit fault**
Vin Y

***Monitor run condition (Enable Criteria)***

1) Engine running
2) Battery voltage over 12 volts.

***Why did this code set?***

1) The task manager detected no injector counter electromotive force for at least 3ms after the injector turned off.

***What should you look for?***

1) If this code does not accompany a misfire code then be very suspicious of a faulty injector or wiring problem. Be sure to test the injector resistance and also the voltage and current waveforms of the suspected injector. Check for known good readings and patterns against one of the other known good injectors. This will usually result in a faulty injector.

***Monitors suspended:***

EVAP

**P0201-204: Injector 1-4 circuit fault**
Vin F Turbo

***Monitor run condition (Enable Criteria)***

1) Engine running below 1,000 RPM
2) TPS voltage less than 1.5 volts.

***Why did this code set?***

1) The task manager detected no injector spike when injector is switched off.

***What should you look for?***

1) If this code does not accompany a misfire code then be very suspicious of a faulty injector or wiring problem. Be sure to test the injector resistance and also the voltage and current waveforms of the suspected injector. Check for known good readings and patterns against one of the other known good injectors. This will usually result in a faulty injector.

***Monitors suspended:***

EVAP

**P0201-2010: Injector numbers 1-10 circuit fault**
All other cars/trucks/vans

***Monitor run conditions (Enable Criteria)***

1) Battery over 12 volts
2) Engine running less than 3,000 RPM
3) Injector pulse width less than 10ms

***Why did this code set?***

1) The task manager detected no injector off spike.

***What should you look for?***

1) If this code does not accompany a misfire code then be very suspicious of a faulty injector or wiring problem. Be sure to test the injector resistance and also the voltage and current waveforms of the suspected injector. Check for known good readings and patterns against one of the other known good injectors. This will usually result in a faulty injector.

***Monitors suspended:***

EVAP

**P0300: Multiple Misfire detected**
Vins F, Y

***Monitor run conditions (Enable Criteria)***

1) No engine codes set.
2) MAP voltage steady/under 1.6 volts
3) Engine speeds from 2,200-2,800 RPM
4) Coolant over 175 degrees.

***Why did this code set?***

1) 200 RPM test: The task manager detected a misfire in more than 15% of the engines ignition cycles in less the 200 revolutions.
2) 1,000 RPM test: The task manager detected a misfire in more than 1.5% of the ignition cycles in less than 1,000 revolutions.

***What should you look for?***

1) This will most likely be caused by an ignition component failing, but keep in mind that it may also be caused by a vacuum leak, faulty injector/circuit, fuel pressure problem or an engine mechanical problem. If scan tool indicates long term fuel trim readings of 20% or more suspect lean condition (fuel pressure, EGR cross leakage, Vacuum leak etc.) Use vacuum gauge to aid in mechanical engine problem. If freeze frame info is indicating high engine load with low vehicle speed, suspect secondary leakage. Use ignition scope/lab scope to aid in secondary ignition diagnostics where available otherwise look at primary ignition. If your scan tool has the ability, use the

misfire counters and bi-directional cylinder shorting testes (injector balance, ignition coil) to aid in cylinder misfire diagnostics.

***Monitors suspended:***

EVAP/02/Catalyst

**P0300: Multiple misfire detected**
Vins trucks 5, C, P, S, T,
W, X, Y, Z

***Monitor run conditions (Enable Criteria)***

1) No engine codes set.
2) Crank learned.
3) Engine running less than 3,000 RPM

***Why did this code set?***

1) 1 Trip test: The task manager detected more than 10% misfire rate with at least 2 cylinders misfiring.
2) 2 trip test: The task manager detected more than a 2% misfire rate on at least 2 cylinders.

***What should you look for?***

1) 1) 1) This will most likely be caused by an ignition component failing, but keep in mind that it may also be caused by a vacuum leak, faulty injector/circuit, fuel pressure problem or an engine mechanical problem. If scan tool indicates long term fuel trim readings of 20% or more suspect lean condition (fuel pressure, EGR cross leakage, Vacuum leak etc.) Use vacuum gauge to aid in mechanical engine problem. If freeze frame info is indicating high engine load with low vehicle speed, suspect secondary leakage. Use ignition scope/lab scope to aid in secondary ignition diagnostics where available otherwise look at primary ignition. If your scan tool has the ability, use the misfire counters and bi-directional cylinder shorting testes (injector balance, ignition coil) to aid in cylinder misfire diagnostics.

***Monitors suspended:***
EVAP/02/Catalyst

**P0300: Multiple misfire detected**
Vins vans 3, B, J, L,
R, T, X, Y, Z

***Monitor run conditions (Enable Criteria)***

1) No engine codes set.
2) Engine less than 3,000 RPM
3) Crank learned.

***Why did this code set?***

1) 1 Trip test: The task manager detected over 10% misfire rate with at least two cylinders misfiring.
2) 2 Trip test: The task manager detected more then a 2% misfire rate with at least two cylinders misfiring.

***What should you look for?***

1) 1) 1) This will most likely be caused by an ignition component failing, but keep in mind that it may also be caused by a vacuum leak, faulty injector/circuit, fuel pressure problem or an engine mechanical problem. If scan tool indicates long term fuel trim readings of 20% or more suspect lean condition (fuel pressure, EGR cross leakage, Vacuum leak etc.) Use vacuum gauge to aid in mechanical engine problem. If freeze frame info is indicating high engine load with low vehicle speed, suspect secondary leakage. Use ignition scope/lab scope to aid in secondary ignition diagnostics where available otherwise look at primary ignition. If your scan tool has the ability, use the misfire counters and bi-directional cylinder shorting testes (injector balance, ignition coil) to aid in cylinder misfire diagnostics.

***Monitors suspended:***

EVAP/02 Catalyst

**P0300: Multiple misfire detected.**

All other vins

***Monitor run condition (Enable Criteria)***

1) No engine codes set.
2) Engine speed 3,000-3,500 RPM.
3) Crank learned

***Why did this code set?***

1) 1 Trip test: The task manager detected more than a 3-15% misfire rate with at least two cylinders misfiring.
2) 2 Trip test: The task manager detected more than a 3% misfire rate with at least two cylinders misfiring.

***What should you look for?***

1) 1) 1) This will most likely be caused by an ignition component failing, but keep in mind that it may also be caused by a vacuum leak, faulty injector/circuit, fuel pressure problem or an engine mechanical problem. If scan tool indicates long term fuel trim readings of 20% or more suspect lean condition (fuel pressure, EGR cross leakage, Vacuum leak etc.) Use vacuum gauge to aid in mechanical engine problem. If freeze frame info is indicating high engine load with low vehicle speed, suspect secondary leakage. Use ignition scope/lab scope to aid in secondary ignition diagnostics where available otherwise look at primary ignition. If your scan tool has the ability, use the misfire counters and bi-directional cylinder shorting testes (injector balance, ignition coil) to aid in cylinder misfire diagnostics.

***Monitors suspended:***
EVAP/02/Catalyst

**P0301-304: Cylinder numbers 1-4 misfire detected**
Vins F, Y

***Monitor run condition (Enable Criteria)***

1) No engine codes set.
2) Engine speeds 2,000-2,500 RPM
3) MAP input less than 1.6 volts
4) Warm engine (over 175 degrees)
5) Vehicle speed less than 5 MPH

***Why did this code set?***

1) 200 RPM test: The task manager detected a misfire occurred in more than 15 % of engine cycles in less than 200 revolutions.
2) 1,000 RPM test: The task manager detected a misfire occurred in over 1.5% of engine cycles in less than a 1,000 revolution period.

***What should you look for?***

1) This will most likely be caused by an ignition component failing, but keep in mind that it may also be caused by a vacuum leak, faulty injector/circuit, fuel pressure problem or an engine mechanical problem. If scan tool indicates long term fuel trim readings of 20% or more suspect lean condition (fuel pressure, EGR cross leakage, Vacuum leak etc.) Use vacuum gauge to aid in mechanical engine problem. If freeze frame info is indicating high engine load with low vehicle speed, suspect secondary leakage. Use ignition scope/lab scope to aid in secondary ignition diagnostics where available otherwise look at primary ignition. If your scan tool has the ability, use the misfire counters and bi-directional cylinder shorting testes (injector balance, ignition coil) to aid in cylinder misfire diagnostics.

***Monitors suspended:***
EVAP/02/Catalyst

**P0301-310: Engine cylinders 1-10 misfire detected.**
All other vehicles

***Monitor run conditions (Enable Criteria)***

1) No engine codes set.
2) Crank learned
3) Engine speed less than 3,000 RPM

***Why did this code set?***

1) 1 trip test: The task manager recorded more than a 3-14% misfire rate.
2) 2 trip test: The task manager detected more than a 3% misfire rate.

***What should you look for?***

1) This will most likely be caused by an ignition component failing, but keep in mind that it may also be caused by a vacuum leak, faulty injector/circuit, fuel pressure problem or an engine mechanical problem. If scan tool indicates long term fuel trim readings of 20% or more suspect lean condition (fuel pressure, EGR cross leakage, Vacuum leak etc.) Use vacuum gauge to aid in mechanical engine problem. If freeze frame info is indicating high engine load with low vehicle speed, suspect secondary leakage. Use ignition scope/lab scope to aid in secondary ignition diagnostics where available otherwise look at primary ignition. If your scan tool has the ability, use the misfire counters and bi-directional cylinder shorting testes (injector balance, ignition coil) to aid in cylinder misfire diagnostics.

***Monitors suspended:***
EVAP/02/Catalyst

**P0325: number 1 Knock sensor circuit fault.**
Vins Y

***Monitor run conditions (Enable Criteria)***

1) Engine Running.

***Why did this code set?***

1) The task manager detected an open knock sensor circuit or an input voltage of greater than 5 volts.

***What should you look for?***

1) This will usually result in a circuit problem. Be sure to inspect the circuit for any previous nearby work. Make sure the sensor is connected! Try unplugging the sensor while monitoring scan tool for voltage to change.

***Monitors suspended:***
EVAP

**P0325: Number 1 knock sensor circuit failure.**
Vins F

***Monitor run conditions (Enable Criteria)***

1) Engine running longer than 1 minute.
2) Engine speed greater than 2,000 RPM

***Why did this code set?***

1) The task manager detected the change in knock sensor voltage (each ½ revolution of crank sensor) was less than .06mv for 200 consecutive times.

***What should you look for?***

1) This will typically prove to be a disconnected sensor or a faulty sensor. Perform visual inspection of knock sensor circuit. Tap on intake manifold with a punch while monitoring scan tool for the sensor voltage to change. It should change.

# Chrysler

***Monitors suspended:***
EVAP

**P0335: Crankshaft Position Sensor/Circuit Fault**
Vin Y

***Monitor run condition (Enable Criteria)***

1) Start engine

***Why did this code set?***

1) The task manager detected no peak to peak voltage signals present from Crank sensor circuit for at least two seconds.

***What should you look for?***

1) Closely inspect harness and connector for signs of trouble. Measure sensor for proper resistance value.

***Monitors suspended:***

EVAP/Misfire/02/Catalyst

**P0335: Crankshaft position sensor/circuit fault**
Vin F

***Monitor run condition (Enable Criteria)***

1) Engine cranking

***Why did this code set?***

1) The task manager detected no peak to peak voltage signals present from Crank sensor circuit for at least four seconds.

***What should you look for?***

1) Closely inspect harness and connector for signs of trouble. Measure sensor for proper resistance value.

***Monitors suspended:***

EVAP/Misfire/02/Catalyst

# Chrysler

**P0340: No camshaft synchronization signal to PCM**
Vin Y

***Monitor run conditions (Enable Criteria)***

1) Good Crank sensor signal present
2) Engine cranking

***Why did the code set?***

1) The task manager detected no camshaft peak to peak voltage signals present for at least two seconds.

***What should you look for?***

1) Closely inspect harness and connector for signs of trouble. Measure sensor for proper resistance value.

***Monitors suspended:***

EVAP

**P0340: No camshaft synchronization signal present to PCM**
Vin F

***Monitor run conditions (Enable Criteria)***

1) Good Crank sensor signal present
2) Engine cranking

***Why did the code set?***

1) The task manager detected no camshaft peak to peak voltage signals present for at least four seconds.

***What should you look for?***

1) Closely inspect harness and connector for signs of trouble. Measure sensor for proper resistance value.

***Monitors suspended:***

EVAP

**P0340: No camshaft synchronization signal present to PCM**
Vins 3, B, J, L, R, T, X, Y, Z

***Monitor run conditions (Enable Criteria)***

1) Good Crank sensor signal present with at least 64 peak to peak voltage toggles present.
2) Engine cranking

***Why did the code set?***

1) The task manager detected no camshaft peak to peak voltage signals present for at least two seconds.

***What should you look for?***

1) Closely inspect harness and connector for signs of trouble. Measure sensor for proper resistance value.

***Monitors suspended:***

EVAP

**P0340: No camshaft synchronization signal present to PCM**
Vins All other cars and trucks

***Monitor run conditions (Enable Criteria)***

1) Good Crank sensor signal present with at least 32 peak to peak voltage toggles present.
2) Engine cranking

***Why did the code set?***

1) The task manager detected no camshaft peak to peak voltage signals present for at least two seconds.

***What should you look for?***

1) Closely inspect harness and connector for signs of trouble. Measure sensor for proper resistance value.

***Monitors suspended:***

EVAP

**P0351: Primary circuit fault ignition coil 1**
Vins F, Y

***Monitor run conditions (Enable Criteria)***

1) Battery voltage over 10 volts

2) Engine running less then 4500 RPM

***Why did this code set?***

1) The task manager detected the primary circuit peak current was not achieved with the maximum dwell given.

***What should you look for?***

1) Coil primary resistance should measure less then 2 ohms.
2) Check primary voltage supply harness/connectors for any problems.
3) Inspect secondary towers for signs of arcing
4) Verify proper operation of ignition module with voltage / amperage waveforms.

***Monitors suspended:***

EVAP

**P0351: Primary circuit fault ignition coil 1**
Vins all other vehicles

***Monitor run conditions (Enable Criteria)***

1) Battery voltage over 12 volts while running
2) Engine running less then 2000 RPM
3) Ignition coil not in dwell period when being checked

***Why did this code set?***

1) The task manager detected the primary circuit peak current was not achieved with the 2.5ms of dwell time given.

***What should you look for?***

1) Coil primary resistance should measure less then 2 ohms.
2) Check primary voltage supply harness/connectors for any problems.
3) Inspect secondary towers for signs of arcing
4) Verify proper operation of ignition module with voltage / amperage waveforms.

***Monitors suspended:***

EVAP

**P0352: Ignition coil 2 primary circuit fault**
Vins F,Y

***Monitor run conditions (Enable Criteria)***

1) Battery voltage over 10 volts
2) Engine running less then 4500 RPM

***Why did this code set?***

1) The task manager detected the primary circuit peak current was not achieved with the maximum dwell given for a period of 3 seconds.

***What should you look for?***

1) Coil primary resistance should measure less then 2 ohms.
2) Check primary voltage supply harness/connectors for any problems.
3) Inspect secondary towers for signs of arcing
4) Verify proper operation of ignition module with voltage / amperage waveforms.

***Monitors suspended:***

EVAP

**P0352: Ignition coil 2 primary circuit fault**
Vins all other vehicles

***Monitor run conditions (Enable Criteria)***

1) Battery voltage over 12 volts with engine running
2) Engine running less then 2000 RPM
3) Coil not in dwell period when tested

***Why did this code set?***

1) The task manager detected the primary circuit peak current was not achieved with 2.5ms of dwell time given.

***What should you look for?***

1) Coil primary resistance

***Monitors suspended:***

EVAP

**P0353: Ignition coil 3 primary circuit fault**
Vins all cars and trucks

***Monitor run conditions (Enable Criteria)***

1) Battery voltage over 12 volts with engine running
2) Engine running less then 2000 RPM
3) Coil not in dwell period when tested

***Why did this code set?***

1) The task manager detected the primary circuit peak current was not achieved with 2.5ms of dwell time given.

***What should you look for?***

1) Coil primary resistance should measure less then 2 ohms.
2) Check primary voltage supply harness/connectors for any problems.
3) Inspect secondary towers for signs of arcing
4) Verify proper operation of ignition module with voltage / amperage waveforms.

***Monitors suspended:***

EVAP

**P0400: EGR system fault**
Vin F

***Monitor run conditions (Enable Criteria)***

1) Engine running longer than 3 minutes
2) Closed loop operation
3) Coolant greater than 175 degrees
4) Off idle
5) MAP input voltage range from 1.80 volts to 2.75 volts
6) TPS input voltage from .60 volts to 1.75 volts
7) Vehicle speed greater then 3 MPH
8) EGR Test activated

***Why did the code set?***

The task manager detected too little EGR gas flow with the EGR purge solenoid switched from off to on.

***What should you look for?***

1) Verify purge solenoid is switching properly. You can use your scan tool to activate this manually in actuator test mode.
2) Check EGR passages for signs of restriction, if found clean passages with small wire like welding rod or a speedometer cable and an electric drill.

3) Verify valve assembly is good.

***Monitors suspended:***
EVAP

**PO401: EGR System fault**
Vin Y

***Monitor run conditions (Enable Criteria)***

1) Engine running longer than 3 minutes
2) Closed loop operation
3) Coolant greater than 175 degrees
4) Engine speed from 1900 to 2400 RPM
5) MAP input voltage range from 1.80 volts to 2.75 volts
6) TPS input voltage from .60 volts to 1.75 volts
7) Vehicle speed greater then 3 MPH
8) Short term fuel compensating value less then positive 5%
9) EGR Test activated

***Why did the code set?***

The task manager detected a measured change in short term fuel compensation value shift of less than 7.4% or more than 20%

***What should you look for?***

1) Verify purge solenoid is switching properly. You can use your scan tool to activate this manually in actuator test mode.
2) Check EGR passages for signs of restriction, if found clean passages with small wire like welding rod or a speedometer cable and an electric drill.
3) Verify valve assembly is good.

***Monitors suspended:***
EVAP

**PO401: EGR System fault**
Vin all other vehicles

***Monitor run conditions (Enable Criteria)***

1) Engine speeds from1900 to 2400 RPM
2) Closed loop operation
3) ECT higher than 175 degrees
4) Off idle
5) MAP in mid-range
6) Vehicle speed greater then 3 MPH

# Chrysler

***Why did this code set?***

1) The task manager detected a measured change in short-term fuel compensation value of less than 7% or greater than 20% during the EGR flow rate test.

***What should you look for?***

1) Verify purge solenoid is switching properly. You can use your scan tool to activate this manually in actuator test mode.
2) Check EGR passages for signs of restriction, if found clean passages with small wire like welding rod or a speedometer cable and an electric drill.
3) Verify valve assembly is good.

***Monitors suspended:***

EVAP

**P0403: EGR Solenoid/Circuit fault**
Vins F, Y

***Monitor run conditions (Enable Criteria)***

1) Engine running
2) Battery voltage over 10 volts

***Why did this code set?***

1) The task manager detected an open or short in the EGR solenoid control circuit for a period of at least 3 seconds.

***What should you do?***

1) Check EGR solenoid for proper resistance (approx. 40-80 ohms)
2) Check wiring to EGR solenoid and connector.

***Monitors suspended:***

EVAP/EGR

**P0403: EGR solenoid circuit fault**
Vins all other vehicles

***Monitor run conditions (Enable Criteria)***

1) Engine running
2) Battery voltage over 10 volts

***Why did this code set?***

1) The task manager detected the EGR control circuit was not in the correct state when commanded to operate by the PCM. This condition was present for at least 3 seconds

***What should you do?***

1) Check EGR solenoid for proper resistance (approx. 40-80 ohms)
Check wiring to EGR solenoid and connector

***Monitors suspended:***

EVAP/EGR

**P0411: Incorrect amount of secondary air**
Vins Y

***Monitor run condition (Enable Criteria)***

1) Battery voltage greater than 10 volts
2) Engine running

***Why did this code set?***

1) The task manager detected that the AIR solenoid circuit was not in its proper state when commanded on by the PCM.

***What should you look for?***

1) Check AIR solenoid resistance ( Approx. 30-40 ohms )
2) Check for proper wiring and connector conditions at solenoid
3) Check for proper vacuum hose routing.

***Monitors suspended:***

EVAP

**P0412: Secondary AIR solenoid circuit fault**
Vin Y

***Monitor run conditions (Enable Criteria)***

1) Battery voltage greater than 10 volts
2) Engine running

***Why did this code set?***

1) The task manager detected that the AIR solenoid circuit was not in its proper state when commanded on by the PCM.

***What should you look for?***

1) Check AIR solenoid resistance (Approx. 30-40 ohms)
2) Check for proper wiring and connector conditions at solenoid
3) Check for proper vacuum hose routing.

***Monitors suspended:***

EVAP

**P0420: Catalyst efficiency below acceptable levels Sensor2, Bank1**
Vins F, Y

***Monitor run conditions (Enable Criteria)***

1) Engine running for at least three minutes.
2) Closed loop operation
3) Coolant temperature greater than 150 degrees

***Why did this code set?***

1) The task manager detected that the catalyst sensor's switch rate was too close to that of the o2 sensor's switch rate.

***What should you do?***

1) Use your scope or the graphing ability built into your scan tool to monitor both of these signals. This will usually result in a bad catalytic converter. Try injecting some propane into the throttle intake and watch the two sensor's response. If it is identical then the converter will need to be replaced. If converter is found to be bad, be sure to check the ignition system and emissions levels after new converter is installed. We don't want to kill the new converter.

***Monitors suspended:***

EVAP

**P0420: Catalyst efficiency below acceptable levels Sensor2, Bank 1**
Vins 3, B, J, L, R, T, X, Y, Z

***Monitor run conditions (Enable Criteria)***

1) Engine running in closed loop operation for at least three minutes.
2) Coolant temperature greater than 150 degrees

3) Throttle open
4) Engine speeds from 1200-1700 RPM
5) Vehicle speed over 10 MPH
6) MAP input voltage at 1.5 to 2.0 volts

***Why did this code set?***

1) The task manager detected that the catalyst's sensors switch rate reached at least 70% of the O2 sensor's switch rate.

***What should you do?***

1) Use your scope or the graphing ability built into your scan tool to monitor both of these signals. This will usually result in a bad catalytic converter. Try injecting some propane into the throttle intake and watch the two sensor's response. If it is identical then the converter will need to be replaced. If converter is found to be bad, be sure to check the ignition system and emissions levels after new converter is installed. We don't want to kill the new converter.

***Monitors suspended:***

EVAP

**P0420: Catalyst efficiency below acceptable limit Sensor2, Bank1**
Vins all other vehicles

***Monitor run conditions (Enable Criteria)***

1) Engine running in closed loop operation for at least three minutes.
2) Coolant temperature greater than 150 degrees
3) Throttle open
4) Engine speeds from 1200-1700 RPM
5) Vehicle speed over 20 MPH
6) MAP input voltage at 1.5 to 2.0 volts

***Why did this code set?***

1) The task manager detected that the catalyst's sensors switch rate reached at least 70% of the O2 sensor's switch rate.

***What should you do?***

1) Use your scope or the graphing ability built into your scan tool to monitor both of these signals. This will usually result in a bad catalytic converter. Try injecting some propane into the throttle intake and watch the two sensor's response. If it is identical then the converter will need to be replaced. If converter is found to be bad, be sure to

check the ignition system and emissions levels after new converter is installed. We don't want to kill the new converter.

***Monitors suspended:***

EVAP

**P0422: Catalyst efficiency fault Sensor 2 bank 1**
Vin F, Y

***Monitor run condition (Enabling Criteria)***

1) Engine running in closed loop (above 175 degrees)
2) Vehicle speed over 20 MOH
3) Engine speed from 1200-2500 (2 minutes)
4) MAP from 1.5-2.5 volts

***Why did this code set?***

1) The task manager detected that the catalyst sensor's switching rate reached at least 70% of the O2 sensor's switching rate.

***What should you look for?***

1) Use your scope or the graphing ability built into your scan tool to monitor both of these signals. This will usually result in a bad catalytic converter or a faulty sensor. Try injecting some propane into the throttle intake and watch the two sensor's response. If it is identical then the converter will need to be replaced. If converter is found to be bad, be sure to check the ignition system and emissions levels after new converter is installed. We don't want to kill the new converter.

***Monitors suspended:***

EVAP

**P0422: Catalyst efficiency fault Sensor 2, Bank 1**
Vins C, F, H, N, T, X, Y

***Monitor run conditions (Enable Criteria)***

1) Engine running in closed loop
2) Coolant greater than 150 degrees
3) Engine speed from 1200-1700 RPM (3 minutes)
4) Vehicle speed greater than 20 MPH
5) MAP voltage from1.5 to 2.0 volts

***Why did this code set?***

1) The task manager detected that the catalyst sensor's switching rate reached at least 70% of the O2 sensor's switching rate.

***What should you look for?***

1) Use your scope or the graphing ability built into your scan tool to monitor both of these signals. This will usually result in a bad catalytic converter or a faulty sensor. Try injecting some propane into the throttle intake and watch the two sensor's response. If it is identical then the converter will need to be replaced. If converter is found to be bad, be sure to check the ignition system and emissions levels after new converter is installed. We don't want to kill the new converter.

***Monitors suspended:***

EVAP

**P0432: Catalyst efficiency fault Sensor 2 Bank 2**
Vins all cars and trucks

***Monitor run conditions (Enable Criteria)***

1) Closed loop operation for three minutes run time
2) Coolant greater than 150 degrees
3) Vehicle speed greater than 20 MPH
4) Engine RPM 1200-1700
5) MAP range 10-15hg

***Why did this code set?***

1) The task manager detected that the catalyst sensor switched rich to lean too often. It should stay lean the majority amount of time.

***What should you look for?***

1) Use your scope or the graphing ability built into your scan tool to monitor the catalyst sensor's signal. This will usually result in a bad catalytic converter. Try injecting some propane into the throttle intake and watch the sensor's response. If it responds to the rich mixture try making the mixture lean by making a vacuum leak. If the sensor's response is to quickly switch lean, then you are most likely dealing with a bad converter. If the converter is found to be bad, be sure to check the ignition system and emissions levels after new converter is installed. We don't want to kill the new converter.

***Monitors suspended:***

EVAP

# Chrysler

**P0440: Evaporative purge system fault**

***Monitor run conditions (Enable Criteria)***

1) Engine warm
2) EVAP solenoid commanded to open and close

***Why did this code set?***

1) The task manager detected the changes in fuel trim values and the IAC motor position was below its pre-determined range.

***What should you look for?***

1) We are most likely dealing with a leak in the system. You can perform a purge solenoid resistance test first if you would like to rule that out as a possibility. (it should measure 45-80 ohms). You can use your scan tool to command the solenoid to open and close. Use a smoke machine or a hand vacuum pump to help locate leak. Remember there are several other components in this system besides the gas cap, but that could also be the problem.

***Monitors suspended:***

None

**P0441: Evap purge flow monitor fault**
Vins All

***Monitor run conditions (Enable Criteria)***

1) Closed loop operation.
2) Coolant greater than 175 degrees.
3) Engine idling for 2 minutes.
4) MAP under 15.7 hg
5) Altitude less than 8000 feet
6) Low fuel light off

***Why did this code set?***

1) The task manager's EVAP monitor detected that there was no air flow through the EVAP system.

***What should you look for?***

1) Be sure to inspect all the hoses for cracks and also make sure that they are all connected properly. Try blowing through the hoses one by one to check for restrictions. Check the vacuum port on Throttle body for restrictions. Use your

smoke machine to aid in faster diagnosis of leaks. Check electrical integrity of solenoid/circuit to be sure that it is capable of activation.

***Monitors suspended:***

None

**P0442: EVAP system small leak detected**
Vins All

***Monitor run conditions (Enable Criteria)***

1) Cold start-up
2) BTS from 40-90 degrees
3) ECT within 10 degrees of BTS reading

***Why did this code set?***

1) The task manager detected a leak between .40" and .80" present while performing the EVAP leak detection test.

***What should you look for?***

1) Use your smoke machine to aid in the diagnosis of the leak. If no smoke machine is available, use your propane cylinder and an audible A/C leak detector.

***Monitors suspended:***

None

**P0443: EVAP purge solenoid circuit fault**
Vin Y

***Monitor run conditions (Enable Criteria)***

1) Key on
2) Battery voltage over 10 Volts

***Why did this code set?***

1) The task manager detected an open or a short in the EVAP solenoid/circuit for at least 3 seconds.

***What should you look for?***

1) Test the solenoid resistance (40-80 ohms)
2) Test harness and perform wiggle test if necessary.
3) This will usually be caused by a faulty solenoid.

***Monitors suspended:***

None

**P0443: EVAP purge solenoid circuit fault**
Vin F turbo

***Monitor run conditions (Enable Criteria)***

1) Engine running
2) EVAP solenoid switched from off to on.

***Why did this code set?***

1) The task manager detected no current flow through the EVAP solenoid's coil. This condition lasted at least 4 seconds.

***What should you look for?***

1) This will usually result in replacing the solenoid. Measure the solenoid's resistance it should be between 40-80 ohms. Test for available voltage and ground to solenoid. Perform wiggle test on harness if necessary.

***Monitors suspended:***

None

**P0443: EVAP purge solenoid circuit fault**
Vins C, F, H, N, T, X, Y

***Monitor run condition (Enable Criteria)***

1) Engine running
2) Not in limp mode Engine not shut down
3) 1 second time elapsed since last EVAP test ran

***Why did this code set?***

1) The task manager detected that it was unable to switch the state of the solenoid for at least 3 seconds.

***What should you look for?***

1) Inspect harness and perform wiggle test. Measure solenoid resistance 40-80 ohms. Check for proper supply voltage and ground to solenoid. Check to be sure PCM is capable of supplying ground.

# Chrysler

***Monitors suspended:***

None

**P0455: Large leak detected in the EVAP leak monitor**
Vins All vehicles

***Monitor run conditions (Enable Criteria)***

1) Cold engine start-up
2) BTS ambient form 40-90 degrees
3) ECT within 10 degrees of the BTS

***Why did this code set?***

1) The task manager detected an EVAP leak greater than .80" during the EVAP leak test.

***What should you look for?***

1) Use your smoke machine to aid in diagnosing this large leak. Perform close visual inspection of all hoses and fittings for signs of cracks or looseness. Make sure all hoses are attached correctly.

***Monitor suspended:***

None

**P0500: Vehicle speed sensor circuit fault**
Vin Y

***Monitor run condition (Enable Criteria)***

1) Engine running with closed throttle switch off
2) Engine speed 3,000 RPM or greater
3) Engine at high load conditions

***Why did this code set?***

1) The task manager detected no VSS input change for at least 4 seconds

***What should you look for?***

1) Check the sensor resistance, this will usually prove to be the result of this code. Inspect harness and connector for signs of troubles. Perform a wiggle test on harness if necessary. If all above check out, perform scope check on sensor and check for proper output amplitude

# Chrysler

***Monitors suspended:***

EVAP

**P0500: Vehicle speed sensor circuit fault.**
Vin F turbo

***Monitor run conditions (Enable Criteria)***

1) Engine running longer than 31 seconds
2) Coolant greater than 175 degrees
3) Transmission in drive
4) Brakes off
5) Engine speed 1800 RPM or greater
6) Throttle valve open

***Why did this code set?***

1) The task manager detected a speed input of less than 1 MPH for at least 10 seconds.

***What should you look for?***

1) Check the sensor resistance, this will usually prove to be the result of this code. Inspect harness and connector for signs of troubles. Perform a wiggle test on harness if necessary. If all above check out, perform scope check on sensor and check for proper output amplitude. Also, check sensor tip for foreign debris.

***Monitors suspended:***

EVAP

**P0500: Vehicle speed sensor circuit fault**
Vins 3, B, J, L, R, T, X, Y, Z

***Monitor run conditions (Enable Criteria)***

1) Engine running longer than 31 seconds
2) Vehicle in drive
3) Coolant temperature greater than 120 degrees
4) Brakes not applied
5) Engine speed greater than 1800 RPM
6) MAP vacuum less than 11" hg

***Why did this code set?***

1) The task manager detected no vehicle speed input for greater than 6 seconds.

***What should you look for?***

1) Check the sensor resistance, this will usually prove to be the result of this code. Inspect harness and connector for signs of troubles. Perform a wiggle test on harness if necessary. If all above check out, perform scope check on sensor and check for proper output amplitude.

***Monitors suspended:***

EVAP

**P0500: Vehicle speed sensor circuit fault**
Vins

All other vehicles

***Monitor run conditions (Enable Criteria)***

1) Engine running longer than 31 seconds
2) Vehicle in drive
3) Coolant temperature greater than 120 degrees
4) Brakes not applied
5) Engine speed greater than 1800 RPM
6) MAP vacuum less than 11" hg

***Why did this code set?***

1) The task manager detected no vehicle speed input for greater than 11seconds.

***What should you look for?***

1) Check the sensor resistance, this will usually prove to be the result of this code. Inspect harness and connector for signs of troubles. Perform a wiggle test on harness if necessary. If all above check out, perform scope check on sensor and check for proper output amplitude.

***Monitors suspended:***

EVAP

**P0505: IAC Motor circuit fault**
Vin Y

***Monitor run condition (Enable Criteria)***

1) Key on

2) Battery voltage greater than 10 volts

***Why did this code set?***

1) The task manager detected an open or short condition present in an IAC motor circuit for at least 3 seconds

***What should you look for?***

1) Use your IAC noid light tester to aid in diagnosis of this system. Watch for LED's to toggle from red to green for proper confirmation of the PCM CIRCUIT. If the circuit from the PCM checks out, try manually activating the valve with your scan tool under ATM tests. If it doesn't move, replace valve.

***Monitors suspended:***

EVAP/Misfire/Fuel

**P0505: IAC motor system fault**
Vin F

***Monitor run conditions (Enable Criteria)***

1) Engine running
2) Warm engine

***Why did this code set?***

1) The task manager detected that the target idle speed and actual idle speed was out of acceptable limits.

***What should you look for?***

1) Use your IAC noid light tester to aid in diagnosis of this system. Watch for LED's to toggle from red to green for proper confirmation of the PCM CIRCUIT. If the circuit from the PCM checks out, try manually activating the valve with your scan tool under ATM tests. If it doesn't move, replace valve.

***Monitors suspended:***

EVAP/Fuel/Misfire

**P0505: IAC motor system fault**
Vins
All other vehicles

***Monitor run conditions (Enable Criteria)***

1) Key on
2) Battery voltage greater than 10 volts
3) IAC motor activated

***Why did this code set?***

1) The task manager detected a shorted or open condition present on 1 of the four IAC driver circuits.

***What should you look for?***

1) 1) Use your IAC noid light tester to aid in diagnosis of this system. Watch for LED's to toggle from red to green for proper confirmation of the PCM CIRCUIT.
   If the circuit from the PCM checks out, try manually activating the valve with your scan tool under ATM tests. If it doesn't move, replace valve.

***Monitors suspended:***

EVAP/Misfire/Fuel

**P0551: Power steering pressure switch fault**
Vins
All vehicles

***Monitor run conditions (Enable Criteria)***

1) Vehicle speed greater than 50 MPH

***Why did this code set?***

1) The task manager detected a switch-high input for at least 30 seconds.

***What should you look for?***

1) Monitor your scan tool under these conditions watching for the power steering input to read high. Unplug sensor and duplicate the driving conditions again. The signal should read low. If it does, suspect faulty switch. Remember a restricted power steering return line or overfull pump reservoir could also be a cause for this type of code.

***Monitors suspended:***

None

**P0600: PCM fault, SPI communications**
Vins All cars and trucks

***Monitor run conditions (Enable Criteria)***

1) Key on

***Why did this code set?***

1) The task manager detected the serial communications failed inside the computer at least 9 times.

***What should you do?***

1) Check all powers and grounds to the PCM first. (including fuses, especially on jeeps) Next perform a continuity check of all the input and output lines from PCM to their respective components. Finally check for any shorted output devices.

***Monitors suspended:***

All

**P0601: Internal PCM SPI communications fault**
Vins ALL

***Monitor run conditions (Enable Criteria)***

1) Key on

***Why did this code set?***

1) The task manager detected the serial communications failed inside the computer at least 9 times.

***What should you do?***

1) Check all powers and grounds to the PCM first. (including fuses, especially on jeeps) Next perform a continuity check of all the input and output lines from PCM to their respective components. Finally check for any shorted output devices.

***Monitors suspended:***

All

**P0605: PCM SPI communications fault**
Vins Y

***Monitor run conditions (Enable Criteria)***

1) Key on

***Why did this code set?***

1) The task manager detected the serial communications failed inside the computer at least 9 times.

***What should you do?***

1) Check all powers and grounds to the PCM first. (including fuses, especially on jeeps) Next perform a continuity check of all the input and output lines from PCM to their respective components. Finally check for any shorted output devices.

***Monitors suspended:***

All

**P0700: Transaxle control system fault**
Vins All vehicles using EATX transaxle

***Monitor run conditions (Enable Criteria)***

1) Engine running

***Why did this code set?***

1) The task manager received a TCM control fault trouble code.

***What should you look for?***

1) Check all powers and grounds to the TCM first. (including fuses, especially on jeeps) Next perform a continuity check of all the input and output lines from TCM to their respective components. Finally check for any shorted output devices. (Solenoids in transaxle)

***Monitors suspended:***

None

**P0700: Transaxle control system fault.**
Vins F turbo

***Monitor run conditions (Enable Criteria)***

1) Engine running

***Why did this code set?***

1) The task manager received a TCM control fault trouble code.

***What should you look for?***

1) Check all powers and grounds to the TCM first. (including fuses, especially on jeeps) Next perform a continuity check of all the input and output lines from TCM to their respective components. Finally check for any shorted output devices. (Solenoids in transaxle)

***Monitors suspended:***

None

**P0703: Brake switch circuit fault**
Vins All vehicle

***Monitor run conditions (Enable Criteria)***

1) Key on
2) Engine Running

***Why did this code set?***

1) The task manager did not detect a brake switch signal during the drive cycle.

***What should you do?***

1) Check brake switch with volt meter for proper operation. If good, check brake sense lead to PCM for continuity. This will usually be caused by a faulty brake switch, however in VERY rare cases it may be caused by a bad wire to the PCM or a bad PCM.

***Monitors suspended:***

None

**P0711: No transmission temp sensor increase after startup**
Vins All vehicles

***Monitor run conditions (Enable Criteria)***

1) Key on
2) Transmission temperature hot

***Why did this code set?***

1) The task manager detected that there was no transmission temperature sensor increase of at least 15 degrees for at least 10 minutes of operation after start up.

***What should you look for?***

1) This will usually result in either a faulty sensor or wiring problem. Check sensor's resistance and perform a close visual and electrical check of the sensor's harness.

***Monitors suspended:***

None

**P0712: Transmission temperature sensor's voltage low**
Vins All vehicles

***Monitor run conditions (Enable Criteria)***

1) Key on

***Why did this code set?***

1) The task manager detected the temp sensor voltage was less than 1.50 volts for at least 2 seconds.

***What should you look for?***

1) Check sensor resistance for proper range. Check for adequate supply voltage to sensor.

***Monitors suspended:***

None

**P0713: Transmission temperature sensor's voltage too high**
Vins All vehicles

***Monitor run conditions (Enable Criteria)***

1) Key on

***Why did this code set?***

1) The PCM detected the trans temp sensor's voltage was over 3.50 volts for at least 2 seconds.

***What should you do?***

1) Check sensor resistance for proper range. Check for adequate supply voltage to sensor.

***Monitor runs conditions:***

# Chrysler

None

**P0740: Torque converter clutch circuit fault**
Vins All vehicles

***Monitor run conditions (Enable Criteria)***

1) No engine or transmission codes set
2) Vehicle speed under 70 MPH
3) Transmission in 3rd gear
4) TCC unlocked for at least 10 seconds
5) Throttle open to 30 %
6) TCC locked for 5 seconds

***Why did this code set?***

1) The PCM detected no RPM drop with TCC engaged.

***What should you look for?***

1) Check the TCC solenoid for proper operation. This will usually be the reason for the code being set.

***Monitors suspended:***

None

**P0743: Torque converter clutch solenoid circuit fault**
Vins all

***Monitor run conditions (Enable Criteria)***

1) Key on

***Why did this code set?***

1) The task manager detected an open or short condition in the solenoid circuit.

***What should you look for?***

1) test the TCC solenoid's operation with your scan tool's bi-directional tests. Also be sure to check for proper supply voltage and grounds to the solenoid. This will usually result in having to have the solenoid replaced.

***Monitors suspended:***

None

# Chrysler

**P0748: Governor pressure solenoid/circuit fault**
Vins 5, C, P, S, T, W, X, Y, Z

***Monitor run conditions (Enable Criteria)***

1) Battery voltage greater than 10 volts
2) Transmission relay energized

***Why did this code set?***

1) The task manager detected the current state of the pressure solenoid's output port was out of range.

***What should you look for?***

1) Test the solenoid for proper operation with your scan tool's bi-directional tests. Also inspect the solenoids circuit for proper voltage supply and ground.

***Monitors suspended:***

None

**P0753: 3-4 shift solenoid/circuit fault**
Vins 5, C, P, S, T, W, X, Y, Z

***Monitor run conditions (Enable Criteria)***

1) Key On

***Why did this code set?***

1) The task manager detected an open or short circuit in the 3-4 solenoid/ circuit for at least 5 seconds.

***What should you look for?***

1) If a short condition was present, there should be a blown fuse. If an open condition was present, use your scan tool's bi-directional tests to manually operate the solenoid. If it does not work, suspect a faulty solenoid (most likely) if it does work, suspect a circuit fault.

***Monitors suspended:***

None

**P0783: 3-4 Solenoids, No RPM drop**
Vins 5, C, P, S, T, W, X, Y, Z

***Monitor run conditions (Enable Criteria)***

1) Key On

***Why did this code set?***

1) The task manager detected an open or short condition due to the fact that it saw no RPM drop when 3-4 shift was applied.

***What should you look for?***

1) If a short condition was present, there should be a blown fuse. If an open condition was present, use your scan tool's bi-directional tests to manually operate the solenoid. If it does not work, suspect a faulty solenoid (most likely) if it does work, suspect a circuit fault.

***Monitor suspended:***

None

**P1289: Manifold tuning valve solenoid/circuit fault**
Vins Cars

***Monitor run conditions ( Enable Criteria):***

1) Engine running

***Why did this code set?***

1) The task manager detected the manifold tuning valve was not functioning correctly.

***What should you look for?***

1) Use your scan tool's actuator test menu to command operation of the valve. Watch for proper operation and check for applied signal to the valve. If valve does not respond and signals look good, replace valve.

***Monitors suspended:***

None.

**P1291: No temperature rise from intake heaters**
Vins all

***Monitor run conditions (Enable Criteria)***

1) Engine running

***Why did this code set?***

1) The task manager detected no intake temperature rise from heaters

***What should you look for?***

1) Check for proper voltage on heater circuit with key on and heaters applied. If not present suspect blown fuse, if present the heaters will most likely prove to be defective.

***Monitors suspended:***

None

**P1292: Compressed Gas sensor voltage too high**
Vin J, T trucks

***Monitor run conditions (Enable Criteria)***

1) Key on

***Why did this code set?***

1) The task manager detected a fuel pressure sensor input of greater than 4.5 volts.

***What should you look for?***

1) Unplug sensor and see if voltage returns to below 100 MV. If it doesn't repair faulty wiring. If it does suspect faulty sensor or out of range fuel pressure.

***Monitors suspended:***

None

**P1293: Compressed gas sensor voltage too low**
Vins J, T trucks

***Monitor run conditions (Enable Criteria)***

1) Key on

***Why did this code set?***

1) The task manager detected a fuel pressure sensor input voltage of less than .50 volts.

***What should you look for?***

1) Unplug sensor and jump signal reference voltage to signal return in harness. Voltage on scan tool should read high (close to 5 volts). If it doesn't, repair faulty wiring. If it does suspect faulty sensor or out of range fuel pressure.

***Monitors suspended:***

None

**P1294: Engine target speed not reached**
Vins F&Y

***Monitor run conditions (Enable Criteria)***

1) Engine idling
2) No codes set

***Why did this code set?***

1) The task manager detected the engine idle was out of its intended speed for at least 3 seconds.

***What should you look for?***

1) Check for all the basic reasons why an engine could be idling incorrectly ie. Vacuum leaks, throttle coking, improper base idle speed set procedure.

***Monitors suspended:***

EVAP

**P1294: Engine target idle speed out of range**
Vins 3, B, J, L, R, T, X, Y, Z

***Monitor run conditions (Enable Criteria)***

1) Coolant greater than 150 degrees
2) Engine idle in drive
3) No codes set

***Why did this code set?***

1) The task manager detected the engine speed was out of range by at least 200 RPM for a period of 20 seconds or longer.

***What should you look for?***

1) Check for all the basic reasons why an engine could be idling incorrectly i.e. Vacuum leaks, throttle coking, improper base idle speed set procedure.

***Monitors suspended:***

EVAP

**P1294: Engine idle speed not reached**
Vins All other cars and trucks

***Monitor run conditions (Enable Criteria)***

1) Coolant greater than 150 degrees
2) Engine idle in drive
2) No codes set

***Why did this code set?***

1) The task manager detected the engine speed was out of range by at least 200 RPM for a period of 3 seconds or longer.

***What should you look for?***

1) Check for all the basic reasons why an engine could be idling incorrectly i.e. Vacuum leaks, throttle coking, improper base idle speed set procedure.

***Monitors suspended:***

EVAP

**P1296: 5 volt reference to MAP missing**
Vins All cars and trucks

***Monitor run conditions (Enable Criteria)***

1) Key on

***Why did this code set?***

1) The task manager detected the MAP signal wire was below 2 volts

***What should you look for?***

1) Unplug sensor and test for available 5 volt reference with a multi-meter. If present jump reference to signal return and read voltage on scan tool, it should read reference voltage. If it doesn't repair faulty wiring if it does replace MAP sensor. If 5 volt reference was not present, check the TPS harness, if no voltage there either, suspect shorted component or faulty PCM. Give sensor harness a close visual inspection also.

# Chrysler

***Monitors suspended:***

EVAP/Misfire/Fuel/O2

# Chrysler Mode $06

## Chrysler Mode Six Data:

***Computer ID numbers:***

***ISO9141 communications***
$40 = SBEC Engine controller
$41 = EATX Transmission controller
$D1 = JTEC Engine controller
$15 = Cummins Diesel Engine controller
$15 = Bosch Diesel Engine controller
$18 = Asia Transmission controller

***SAEJ1850 Communications***
$10 = SBEC Engine controller
$18 = EATX Transmission controller
$ 01 = JTEC engine and transmission controller
$ 10 JETEC engine controller only
$ 18 = JTEC transmission controller only

***Monitors controlled by mode six ( non continuous)***
Upstream O2 monitor
Downstream O2 monitor
O2 Heater monitor
Catalyst monitor
Catalyst slow response monitor
EGR monitor
Purge flow monitor
Evaporative purge monitor

### Upstream O2 monitor:

The O2 monitor tests this device with two tests. They call these tests the Big slopes test and the half cycles test. The big slopes test will test the sensor for the degradation of its amplitude (voltage). The half cycles test is testing for the sensor's switching from threshold voltage rate. (frequency)

Half Cycles:
Test ID: $11 O2-S1-B1 failed
Component ID: $ 80 Minimum limit (failed)

- $FF: means that the PCM passed this monitor on only one of the two possible tests. This happened too quickly for the computer to run the other test.

Big Slope :
Test ID: $ 13 02-S1-B1 failed
Component ID: $ 80 Minimum limit (failed)

- If the component ID is displaying a $80 then this monitor has failed this test!
- If the test has passed then the actual PID data will be displayed in its place!
- Only 1 of these tests are needed to pass the monitor!

### Downstream O2 monitor:

The PCM will monitor the downstream sensor/s for degradation that results in a reduced output from the sensor. In order to pass this monitor the PCM must see the voltage switch high and low in accordance to the voltage threshold only once. This is a non intrusive test first, then becomes intrusive( PCM drives mixture rich/lean) if this condition is not able to be met on its own.

***If this monitor passes:*** An actual sensor voltage value will be displayed.
***If this monitor fails:*** The pcm will display which threshold it was unable to achieve. (Rich or lean)

Test ID: $16 (O2 sensor ½ minimum voltage) failed
Component ID: $00 (maximum limit) failed

Test ID: $ 17 (O2 sensor ½ maximum voltage) failed
Component ID: $80 (minimum limit) failed

### O2 Heater Monitor:

***This monitor requires several exact conditions to be met before the key off cycle.*** **Chrysler will test this monitor after the vehicle is shut down. This monitor is broken down into 5 steps.**

**Step 1)** PCM initializes timers and biases O2 sensors.
**Step 2)** Allows for a time period to pass to help dissapate current exhaust gasses. (voltage drop must be present for continuation to next step.)
**Step 3)** Awaits for the sensors to cool down. (usually about 10 minutes)
**Step 4)** PCM turns on heaters and monitors for initial voltage drop.
**Step 5)** PCM monitors voltage drop over time as heaters warm up.

- This monitor will pass in one of two ways. First the O2 voltage is ampled every 1.5 seconds, if the voltage consistantly drops at each 1.5 second interval, then the PCM will pass this monitor.
- The second way for this monitor to pass is if the voltage has increased greater than half a volt, the PCM will pass this monitor.
- ***If this monitor passes***, the PID information will read actual sensor voltage and the other associated result will read $00FF. ***This signals a fast pass***.

Test ID: $19 (O2 S1-B1 hot trend counter) failed
Component ID: $80 (minimum limit) failed
Test ID: $1B (o2 heater S1-B1 delta voltage) failed

# Chrysler Mode $06

## Catalyst Monitor

The catalyst compares the downstream sensor's frequency to the upstream sensor. A perfect catalyst would have a ratio of zero (no downstream switching occurring) A defective catalyst would have a ratio of 1. (one downstream switch for every upstraeam switch.) This monitor will will store the test results and frequency ratio regarding the last two tests that the PCM has run on this monitor.

Test ID: = $ 21 ( Catalyst sensor has 1 to 1 switch ratio) failed
Component ID: $ 00 ( Maximum limit) failed

## Catalyst System Monitor – Slow O2 Sensor Response

This part of the catalyst monitor tests the switching frequency of the downstream sensor to the fron sensor to determine if the O2 sensor should be failed due to slow O2 responsiveness. The monitor will allow the scan tool to display the last test's O2 switch counts as the test results.

Test ID: = $15 (catalyst monitor slow O2 sensor 1 to 1 counter) failed
Component ID: = $80 = (minimum limit) failed

## EGR Monitor

This monitor will test the EGR by momentarily turning off the EGR solenoid under steady state cruise conditions and monitoring the O2 fuel controller fuel compensation. We are basically looking for a lean shift in O2 controller feed back factor to determine if this test has passed or failed.

Test ID : = $41 ( EGR system monitor fuel correction) failed
Component ID: = $ 80 (minimum limit) and $ 00 (maximum limit) failed

## Evaporative System Monitor

A vacuum motor with a control valve runs to create a test pressure in the evap system of approximately 7" of water. The PCM measures pump run time to see if there is a leak. If it runs too short of a period then the PCM assumes a restriction is present. If the pump runs too long of a period then the PCM assumes that there is a leak.

Test ID: = $61 (evaporative purge system monitor LDP avg. Period) fail
Component ID: = $80 (minumum limit) fail

# Chrysler Mode $06

Purge Flow Monitor

This monitor is used on less strict evaporative systems to identify the ability of purge flow throughout the system by a measurement of change in IAC stepper motor position, engine speed or the average O2 controller. This monitor can be tested under various engine operating conditions including idle.

***If this monitor passes***, the PCM will display a $00FF and the rest of the components will no longer run due to the passing result.
***If this monitor fails***, The PCM will store the rest of the failing results for all the other components in the system. The monitor chose to fail this test from inputs of AIS, O2 and RPM inputs.

Test ID: = $51 (purge flow system IAC shift) fail
Component ID: = $80 (minimum limit) fail

Test ID: = $52 ( purge flow system fuel shift) fail
Component ID: = $80 (mnimum limit) fail

Test ID: $ 53 (purge flow system RPM shift) fail
Component ID: $ 80 (minimum limit) fail

# General Motors

## * General Motors Vehicles *

*As always, begin your diagnosis by looking at freeze frame data!*

*Remember to view the corresponding Mode Six information to aid in diagnostics.*

### *General Motors*

**PO100 : Volume airflow sensor circuit fault**

### *Enable Criteria {Monitor run conditions}*

1) Engine speeds higher then 500 RPM

### *Why did the code set?*

1) The Task manager saw a VAF input of less than a specified minimum amount for 1 second.

### *What should you look at?*

1) You will need to monitor the VAF signal to see if this condition is present and to verify the repair after you work is done. Be sure to check for mechanical restriction or binding and restricted or missing air cowls or tubes.

### *Monitors suspended:*

None

**P0101: MAF circuit fault**

### Enable criteria {monitor run conditions}

Engine running

### Why did code set?

PCM detected no MAF input for 2 seconds

### What should you look at?

Attach volt meter or view scan tool readings pertaining to MAF output signal wire. If no signal present verify that signal power and ground is present at MAF.

# General Motors

**Monitors suspended:**
EVAP, Fuel

**P0101: MAF sensor performance conditions**

**Enable Criteria{Monitor run conditions}**
No MAP or TPS codes present, engine running, throttle angle steady, EGR stable and under 50%.

**Why did this code set?**
PCM detected the MAF value increased significantly with no change in engine load. Condition met for 10-20 seconds.

**What should you look for?**
View scan tool MAF PID and verify condition present. If present check for vacuum leaks or torn air intake hoses, slightly tap on MAF to see if this effects change in values.

**Monitors suspended:**
EVAP , Fuel, EGR

**P0101: MAF sensor performance code conditions**

**Enable criteria {Monitor run conditions}**
No other codes set, engine on, Throttle stable , EGR less than 75 %.

**Why did this code set?**
PCM detected the MAF signal did not reach a pre-set value based on BARO input and engine speed inputs, conditions met for 5 seconds.

**What should you look for?**
View MAF and Baro inputs with scan tool.

**Monitors suspended:**
EVAP, Fuel

**P0101: MAF sensor performance code**

**Enable criteria{Monitor run conditions}:**
No engine codes set, engine speed from 500-2800 RPM, Throttle angle less than 50%, MAP greater than 40 kpa.

**Why did this code set?**
PCM detected the Actual MAF input did not match the calculated MAF input.

**What should you do?**

View MAF input on scan tool under listed conditions and compare the readings to the MAF sensor specifications chart found in Mitchell or Alldata, check for vacuum leaks and or torn air inlet hoses and contaminated MAF hot wires.

**Monitors suspended:**

EVAP, Fuel

**P0101: MAF sensor circuit fault:**

**Enable criteria {monitor run conditions}:**

No engine code set, Closed loop enabled, Purge less than 99 %, Throttle angle under 50%, Traction control not active, Egr pintle position less than 240 counts, MAP under 5 kpa.

**Why did this code set?**

PCM detected a large difference between actual MAF and calculated MAF.

**What should you do?**

View MAF input on scan tool under listed conditions and compare the readings to the MAF sensor specifications chart found in Mitchell or Alldata, check for vacuum leaks and or torn air inlet hoses and contaminated MAF hot wires.

**Monitors suspended:**

EVAP, Fuel

**P0101: MAF sensor code conditions**

**Enable criteria{monitor run conditions}:**

No engine codes set, engine on, EVAP under 99%, EGR duty cycle under 90%, EGR pintle and throttle angle under 90%, engine vacuum less than 90kpa, all conditions present for 2 seconds.

**Why did this code set?**

PCM detected a MAF input change more than calculated value.

**What should you look for?**

View MAF input on scan tool under listed conditions and compare the readings to the MAF sensor specifications chart found in Mitchell or Alldata, check for vacuum leaks and or torn air inlet hoses and contaminated MAF hot wires.

**Monitors suspended:**

EVAP,Fuel

# General Motors

**P0102: MAF sensor low frequency condition**

**Enable criteria {monitor run conditions}:**

Engine running, Throttle less than 50%

**Why did this code set?**

PCM detected a MAF input of less than 1150 HZ for more than 500ms with 100 3X reference periods.

**What should you look for?**

View MAF input on scan tool under listed conditions and compare the readings to the MAF sensor specifications chart found in Mitchell or Alldata, check for vacuum leaks and or torn air inlet hoses and contaminated MAF hot wires.

**Monitors suspended:**

EVAP, Fuel

**P0102: MAF sensor low frequency condition**

**Enable criteria {monitor run conditions}**

Engine on, throttle less than 75% (VIN M)

**Why did this code set?**

PCM detected a MAF input of less than 1200hz for 1-3 seconds.

**What should you look for?**

View MAF input on scan tool under listed conditions and compare the readings to the MAF sensor specifications chart found in Mitchell or Alldata, check for vacuum leaks and or torn air inlet hoses and contaminated MAF hot wires.

**Monitors suspended:**

EVAP, Fuel

**P0102: MAF sensor low frequency condition**

**Enable criteria {monitor run conditions}**

Engine on

**Why did this code set?**

PCM detected a MAF input of less than 3.9 gm/s for 1 second

# General Motors

What should you look for?

**PO105: Baro sensor circuit fault**

*Enable Criteria {Monitor run conditions}*

1) Battery voltage over 8 volts
2) Key on less then 1 minute

*Why did code set?*

1) Task manager saw a voltage input of either greater then 4.3 volts or less then 200 milivolts for at least 5 seconds.

*What should you look at?*

1) Baro input to see if this condition is present and to verify repair after work is completed.

*Monitors Suspended:*

None

**PO106: Baro/Map out of range**

*Enable Criteria {Monitor run conditions}*

1) Key on for less then 1 second
2) Engine speed less then 250 RPM

*Why did the code set?*

1) Task manager saw a MAP input of greater then .020 but less then 2.25 volts for more then 500 miliseconds.

*What should you look at?*

1) MAP input to verify if this condition is present and after vehicle is repaired, be sure that it is not. Pay close attention to the vacuum hose for proper routing and that both the hose and vacuum port are free from moisture and carbon restrictions.

Also be sure that the engine is in sound mechanical condition. (at least 16inches of vacuum)

***Monitors Suspended:***

EVAP/Fuel { be sure to test these after successful repair }

**PO107: Map circuit voltage low**

***Enable Criteria {Monitor run conditions}***

1) Engine speed between 500-1500
2) TPS input less then 1.5 volts

***Why did the code set?***

1) Task manager detected a MAP input of less then .02 volts for at least 2 whole seconds.

***What should you look at?***

1) MAP input to both verify this condition and also to verify repair. Check for restrictions in hose keeping vacuum built up in hose.

***Monitors Suspended:***

EVAP Monitor/ O2 Heater/EGR

**PO107: MAP sensor circuit low voltage**

***Enable Criteria {Monitor run conditions}***

1) Engine speeds between 500-1500 RPM
2) TPS input less then 1 volt

***Why did the code set?***

1) Task manager saw a MAP input of less then 1 volt at startup or below .02 volts during engine running for at least 2 seconds.

***What should you look at?***

1) MAP voltage input to verify repair, Check for restriction in hose or nipple keeping vacuum on sensor.

***Monitors Suspended:***

Evap/Catalyst/EGR

**PO107: MAP sensor circuit low voltage**

***Enable Criteria {Monitor run conditions}***

1) Engine speeds between 450-1450 RPM
2) TPS input less then 1 volt

***Why did the code set?***

1) Task manager saw a MAP input of less then 2.40 volts at time of start up or below 200 milivolts with engine running for at least 2 seconds.

***What should you look at?***

1) MAP input under these conditions, be sure to check for restrictions in hose.

***Monitors Suspended:***
EVAP/Catalyst/EGR

**PO108: MAP sensor circuit high voltage**

***Monitor run conditions***

1) Engine speeds 400-1500 RPM
2) TPS less then 1.3 volts

***Why did this code set?***

1) Task manager detected a MAP input less then 4.5 volts for at least 2 seconds.

***What should you look at?***

1) MAP input during this condition and also after the repair. Be sure to check for vacuum supply problems due to engine mechanical conditions , supply hose problems or restricted ports due to carbon.

***Monitors Suspended:***

EVAP/EGR/O2 Heater

**PO108: MAP sensor circuit high voltage**

***Enable Criteria {Monitor run conditions}***

1) Engine speeds between 400-1450 RPM
2) Closed throttle

***Why did this code set?***

1) Task manager detected a MAP input over 4.6 volts for at least 1 second

***What should you look at?***

1) MAP input under this condition, be sure to check for vacuum supply problems such as hose restrictions and or engine mechanical problems.

***Monitors Suspended***:

EVAP/02 Heater/EGR

**PO108: MAP sensor circuit high voltage**

***Enable Criteria {Monitor run conditions}***

1) Engine speeds from 400-1500
2) TPS input less then 1 volt

***Why did the code set?***

1) Task manager detected a MAP input of greater then 4.5 volts with engine running for 2 seconds.

***What should you look at?***

1) MAP input while vehicle is running, check for vacuum supply problems such as engine mechanical condition, vacuum hose restrictions and or routing problems..

***Monitors Suspended:***

# General Motors

EVAP/02 Heater/EGR

**P0110: IAT Sensor circuit fault**

***Enable Criteria {Monitor run conditions}***

1) Key on for less then 60 seconds

***Why did the code set?***

1) Task manager detected an IAT input greater then 4.5 volts or less then .20 volts for at least 4 seconds.

***What should you look at?***

1) IAT input under these conditions, Check for harness problems for intermittent conditions, verify circuit integrity by shorting connector with key on while monitoring IAT input voltage on scan tool it should read in excess of 4.3 volts while shorted, with an open circuit it should read less then 100 milivolts.

***Monitors suspended:***

EVAP/02 Heater

**PO112: IAT sensor circuit low voltage**

***Enable Criteria {Monitor run condition}***

1) Key on

***Why did this code set?***

1) Task manager detected an IAT input less then .2 volts for at least 3 seconds

***What should you look at?***

IAT input under these conditions, Check for harness problems for intermittent conditions, verify circuit integrity by shorting connector with key on while monitoring IAT input voltage on scan tool it should read in excess of 4.3 volts while shorted, with an open circuit it should read less then 100 milivolts

***Monitors Suspended:***

1) EVAP/02 Heater

# General Motors

**PO112: IAT sensor circuit voltage low**

***Enable Criteria {Monitor run conditions}***

1) Key on/Engine running

***Why did this code set?***

1) Task manager detected an IAT input of less the .200 volts for at least 3 seconds

***What should you look at?***

1) Pay attention to the IAT input voltage to verify if this condition is present before, during and after repair. Check for harness problems for intermittent conditions, verify circuit integrity by shorting connector with key on while monitoring IAT input voltage on scan tool it should read in excess of 4.3 volts while shorted, with an open circuit it should read less then 100 milivolts

***Monitors suspended***:

EVAP/02 Heater

**PO112: IAT circuit/sensor low voltage**

***Enable criteria {Monitor run conditions}***

1) Engine running/idle

***Why did this code set?***

1) Task manager detected an IAT input voltage less the .500 volts for a period of greater then 3 seconds.

# General Motors

***What should you look at?***

IAT input under these conditions, Check for harness problems for intermittent conditions, verify circuit integrity by shorting connector with key on while monitoring IAT input voltage on scan tool it should read in excess of 4.3 volts while shorted, with an open circuit it should read less then 100 milivolts

***Monitors suspended:***

EVAP/02 Heater

**PO113: IAT sensor circuit voltage high**

***Enable criteria {Monitor run conditions}***

1) Key on

***Why did this code set?***

1) Task manager detected an IAT input of greater the 4.5 volts for longer then 3 seconds

***What should you look at?***

IAT input under these conditions, Check for harness problems for intermittent conditions, verify circuit integrity by shorting connector with key on while monitoring IAT input voltage on scan tool it should read in excess of 4.3 volts while shorted, with an open circuit it should read less then 100 milivolts

***Monitors suspended:***

EVAP/02 Heater

**PO113: IAT sensor/circuit voltage high**

***Enable criteria {Monitor run conditions}***

1) Engine must be running

***Why did this code set?***

1) Task manager saw a shorted reference voltage of 5 volts on the IAT input for longer then 3 seconds.

***What should you look at?***

IAT input under these conditions, Check for harness problems for intermittent conditions, verify circuit integrity by shorting connector with key on while monitoring IAT input voltage on scan tool it should read in excess of 4.3 volts while shorted, with an open circuit it should read less then 100 milivolts

***Monitors suspended:***

EVAP/02 Heater

**PO113: IAT sensor/circuit voltage high**

***Enable criteria {Monitor run conditions}***

1) Engine must be running

***Why did this code set?***

1) Task manager saw a IAT input voltage of 5 volts (short) for at least 3 seconds.

***What should you look at?***

IAT input under these conditions, Check for harness problems for intermittent conditions, verify circuit integrity by shorting connector with key on while monitoring IAT input voltage on scan tool it should read in excess of 4.3 volts while shorted, with an open circuit it should read less then 100 milivolts

***Monitors suspended:***

EVAP

# General Motors

**PO115: ECT sensor/circuit fault**

***Enable criteria {Monitor run conditions}***

1) Key on less then 1 minute.

***Why did this code set?***

1) The Task manager saw a hard open condition on the ECT circuit of 200 milivolts or less or the task manager saw a hard short condition of 4.5 volts or more for at least 5 seconds or the ECT took more then 5 minutes to reach a temperature higher then 122 degrees.

***What should you look at?***

1) Monitor the ECT Voltage parameter for this condition to be present. Check circuit integrity by shorting the ECT harness and watching your scan tool to read a high voltage (4 volts or higher) , then cause open condition while monitoring the scan tool, it should read less then 100 milivolts if harness/PCM are good. Also check operating temperature of engine with your infrared temperature gun, if too low/high suspect faulty thermostat/head gasket/cooling fan circuit.

***Monitors Suspended***

EVAP/02 Heater

**P0117: ECT Sensor/circuit low voltage**

***Monitor Run Conditions (Enable Criteria)***

1) Key On

***Why did this code set?***

1) The task manager saw an input voltage of less then half a volt to the PCM from the ECT sensor.

***What should you look at?***

Be sure to monitor the ECT input parameter from the data stream. Pay close attention to the connector and harness for intermittent problems. Also suspect possible moisture in the PCM connector. Monitor the ECT Voltage parameter for this condition to be present. Check circuit integrity by shorting the ECT harness and watching your scan tool to read a high voltage (4 volts or higher) , then cause open condition while monitoring the scan tool, it should read less then 100 milivolts if harness/PCM are good. Also check operating temperature of engine with your infrared temperature gun, if too low/high suspect faulty thermostat/head gasket/cooling fan circuit.

***Monitors suspended:***

EVAP/O2 Heater

**P0118: ECT Sensor circuit high voltage**

***Monitor run conditions (Enable Criteria)***

1) Key On

***Why did this code set?***

1) The task manager saw an ECT input of greater then 4.3 volts for longer then 3 seconds

***What should you look at?***

2) 1) Monitor the ECT Voltage parameter for this condition to be present. Check circuit integrity by shorting the ECT harness and watching your scan tool to read a high voltage (4 volts or higher) , then cause open condition while monitoring the

scan tool, it should read less then 100 milivolts if harness/PCM are good. Also check operating temperature of engine with your infrared temperature gun, if too low/high suspect faulty thermostat/head gasket/cooling fan circuit.

***Monitors Suspended:***

EVAP/02 Heater

**P0120: TPS/Circuit Fault**

***Monitor Run conditions (Enable Criteria)***

1) Key on longer then 1 minute
2) Closed throttle

***Why did this code set?***

1) The task manager saw a TPS input of 2 volts or more for at least 4 seconds or a TPS input of 100 millivolts or less for 4 seconds.

***What should you look at?***

1) Monitor the TPS voltage on your scan tool for this condition. Pay close attention to ensure proper throttle opening and closing. Check for throttle coking. Monitor the TPS voltage while wiggling the harness and connectors for intermittent faulty connections. You can test the harness by shorting the reference to the signal return and also by hooking your volt meter up to the sensor ground lead and the reference terminals. Doing these steps should allow you to read reference voltage on both your scan tool as well as your volt meter if there is no circuit faults.

***Monitors suspended***:

EVAP/02 Heater

# General Motors

**P0121: TP voltage out of sync with MAP**

***Monitor Run Conditions (Enable Criteria)***

1) Engine warm
2) Engine running
3) Vehicle speed greater then 25 MPH

***Why did this code set?***

1) either the TPS input voltage was seen reading high (greater then 1.5 volts) while the engine was idling with a high MAP input. Or the TPS input was reading too low of voltage (less then .50 volts) while the vehicle was being driven at a speed greater then 25 MPH with the throttle opened slightly and a low MAP input voltage present. Both conditions would of have had to of been present for at least 4 seconds.

***What should you look at?***

1) Monitor the TPS circuit voltage under these conditions. If fault is present, be suspicious of faulty sensor and or circuit wiring.

***Monitors suspended:***

EVAP/02 Heater/Catalyst

**P0122: TP sensor/circuit low voltage**

***Monitor run conditions (Enable Criteria)***

1) Key on.

# General Motors

***Why did this code set?***

1) Task manager saw a TP voltage input of less the .250 volts for a period of at least 2 seconds.

***What should you do?***

1) Monitor the TPS voltage on your scan tool for this condition. Pay close attention to ensure proper throttle opening and closing. Check for throttle coking. Monitor the TPS voltage while wiggling the harness and connectors for intermittent faulty connections. You can test the harness by shorting the reference to the signal return and also by hooking your volt meter up to the sensor ground lead and the reference terminals. Doing these steps should allow you to read reference voltage on both your scan tool as well as your volt meter if there is no circuit faults.

***Monitors suspended:***

EVAP/02 Heater

**P0122: TP sensor/circuit low voltage**

***Monitor run conditions (Enable Criteria)***

1) Key On.

***Why did this code set?***

1) The task manager saw a TP voltage input of less then .100 volts for at least 1 second.

***What should you look at?***

1) Monitor the TPS voltage on your scan tool for this condition. Pay close attention to ensure proper throttle opening and closing. Check for throttle coking. Monitor the TPS voltage while wiggling the harness and connectors for intermittent faulty connections. You can test the harness by shorting the reference to the signal return and also by hooking your volt meter up to the sensor ground lead and the reference terminals. Doing these steps should allow you to read reference voltage on both your scan tool as well as your volt meter if there is no circuit faults. This would be a great thing to graph or plot using your scope or graphing meter!

***Monitors Suspended:***

EVAP/02 Heater

**P0122: TP sensor/circuit low voltage**

***Monitor run conditions (Enable Criteria)***

1) Key on.

***Why did this code set?***

1) Task manager detected a throttle voltage input of less then .200 volts for at least .500 seconds.

***What should you look at?***

1) Monitor the TPS voltage on your scan tool for this condition. Pay close attention to ensure proper throttle opening and closing. Check for throttle coking. Monitor the TPS voltage while wiggling the harness and connectors for intermittent faulty connections. You can test the harness by shorting the reference to the signal return and also by hooking your volt meter up to the sensor ground lead and the reference terminals. Doing these steps should allow you to read reference voltage on both your scan tool as well as your volt meter if there is no circuit faults.

***Monitors Suspended:***

EVAP/O2 Heater

**P0123: TP sensor/circuit high voltage**

***Monitor run conditions (Enable criteria)***

1) Key on.

***Why did this code set?***

1) Task manager saw a voltage input of greater then 4.5 volts for at least 1 second

***What should you look at?***

1) Monitor the TPS voltage on your scan tool for this condition. Pay close attention to ensure proper throttle opening and closing. Check for throttle coking. Monitor the TPS voltage while wiggling the harness and connectors for intermittent faulty connections. You can test the harness by shorting the reference to the signal return and also by hooking your volt meter up to the sensor ground lead and the reference terminals. Doing these steps should allow you to read reference voltage on both your scan tool as well as your volt meter if there is no circuit faults.

***Monitors suspended:***

EVAP/02 Heater

**P0123: TP sensor/circuit high voltage**

***Monitor run conditions (Enable Criteria)***

1) Key on.

***Why did this code set?***

1) Task manager detected a voltage input greater then 4.5 volts for at least .500 seconds.

***What should you look at?***

1) Monitor the TPS voltage on your scan tool for this condition. Pay close attention to ensure proper throttle opening and closing. Check for throttle coking. Monitor the TPS voltage while wiggling the harness and connectors for intermittent faulty connections. You can test the harness by shorting the reference to the signal return and also by hooking your volt meter up to the sensor ground lead and the reference terminals. Doing these steps should allow you to read reference voltage on both your scan tool as well as your volt meter if there is no circuit faults.

***Monitors suspended:***

EVAP/O2 Heater

**P0125: Operating temperature not reached**

***Monitor run conditions (Enable Criteria)***

1) Engine running for at least 10 minutes or longer.
2) No previous ECT codes recorded.

***Why did this code set?***

1) Task manager saw that the coolant temperature never reached a minimum reading of at least 176 degrees.

***What should you look at?***

1) Be sure to monitor this input for this condition. If condition is present suspect faulty thermostat, low coolant or faulty cooling fan operation. In colder climates, also suspect improper coolant/water mixture.

***Monitors suspended:***

EVAP

**P0125: Operating temperature not reached**

***Monitor run conditions (Enable Criteria)***

1) Engine running for at least 10 minutes.
2) No previous ECT related codes recorded.
3) IAT input at normal range (30 degrees-130 degrees)
4) Engine speed greater then 2500 but less then 4,000 RPM.

***Why did this code set?***

1) Task manager did not see the coolant temperature reach a minimum of 176 degrees during these conditions.

***What should you look for?***

1) Be sure to monitor this input for this condition. If condition is present suspect faulty thermostat, low coolant or faulty cooling fan operation. In colder climates, also suspect improper coolant/water mixture.

***Monitors suspended:***

EVAP

# General Motors

**P0125: Operating temperature not reached**

***Monitor run conditions (Enable criteria)***

1) Engine running 10 minutes or longer
2) No previous ECT codes detected

***Why did this code set?***

1) Task manager failed to see a temperature greater then 125 degrees after 15 minutes of operation.

***What should you look at?***

1) Be sure to monitor this input for this condition. If condition is present suspect faulty thermostat, low coolant or faulty cooling fan operation. In colder climates, also suspect improper coolant/water mixture.

***Monitors suspended:***

EVAP

**P0125: Failure to reach operating temperature**

***Monitor run conditions (Enable Criteria)***

1) No previous ECT related codes recorded
2) Engine run time greater then 10 minutes

***Why did this code set?***

1) Task manager never detected a temperature greater then 135 degrees after run time had been achieved.

***What should you look at?***

1) Be sure to monitor this input for this condition. If condition is present suspect faulty thermostat, low coolant or faulty cooling fan operation. In colder climates, also suspect improper coolant/water mixture.

***Monitors suspended:***

EVAP

**P0130: HO2S1 circuit fault – Sensor 1 Bank 1**

***Monitor run condition (Enable Criteria)***

1) Closed Loop

***Why did this code set?***

1) Task manager detected an O2 switch time of greater the .100 miliseconds during the fuel system enrichen/enleanment test.

***What should you look for?***

1) You should look at the oxygen sensor wave form under the following scope setups/conditions. .200 volts per division and .200 seconds per division while the vehicle is running at 2,000 RPM. You should see vertical lines of less the .100 ms in length switching from rich to lean. If the response is too slow/lazy suspect a faulty sensor.

***Monitors suspended:***

EVAP/Catalyst

**PO131: HO2S1 shorted to ground – Sensor1 Bank 1**

***Monitor run conditions (Enable Criteria)***

1) Key off with cool down cycle reached (typically 10 minutes)
2) Key on power up with ECT reading of less then 100 degrees

***Why did this code set?***

1) Task manager detected sensor voltage less then .150 mv prior to heater test for two consecutive key on testing conditions.

***What should you look for?***

1) You should monitor this signal under these conditions. This will typically prove to be a faulty sensor , however careful inspection of the circuit is warranted also. This is a great place to use your graphing meter! If insufficient supply voltage is found to be the problem suspect the ASD/heater relay.

***Monitors suspended:***

EVAP/Catalyst/02

**P0131: HO2S1 shorted to ground-Sensor 1, Bank 1**

***Monitor run conditions (Enable Criteria)***

1) ECT at operating (180 degrees) temp.

2) Engine shut down
3) Cold start less then 98 degrees coolant reading.

***Why did this code set?***

1) Task manager detected an O2 reading of less the .150 mv for at least 28 seconds after engine startup under the listed enabling conditions.

***What should you look for?***

1) You should monitor this signal under these conditions. This will typically prove to be a faulty sensor , however careful inspection of the circuit is warranted also. This is a great place to use your graphing meter! If insufficient supply voltage is found to be the problem suspect the ASD/heater relay.

***Monitors Suspended:***

EVAP/O2/Catalyst

**P0132: HO2S1 shorted to voltage – Sensor 1 Bank 1**

***Monitor run conditions (Enable Criteria)***

1) Engine running

***Why did this code set?***

1) Task manager detected a sensor voltage of greater then 1.3 volts during all running conditions for at least 3 seconds.

***What should you look for?***

1)You should monitor this signal for this condition. Use your scope or graph this signal through the ALDL using your scan tool. If condition is found it will usually turn out to be a faulty O2 sensor. Unplug suspected sensor to see if voltage drops to bias voltage , if it does, replace O2 sensor, if still present suspect harness/PCM problem. Also check to be sure that fuel pressure is within specs and all fuel system components are good.

***Monitors Suspended:***

EVAP/Catalyst/O2

**PO132: HO2S1 shorted to voltage – Sensor 1 Bank 1**

***Monitor run conditions (Enable Criteria)***

1) Engine running for at least two minutes
2) ECT value greater then 170 degrees

***Why did this code set?***

1) Task manager saw sensor voltage greater then 1.2 volts

***What should you look for?***

1) 1)You should monitor this signal for this condition. Use your scope or graph this signal through the ALDL using your scan tool. If condition is found it will usually turn out to be a faulty O2 sensor. Unplug suspected sensor to see if voltage drops to bias voltage , if it does, replace O2 sensor, if still present suspect harness/PCM problem. Also check to be sure that fuel pressure is within specs and all fuel system components are good.

***Monitors suspended:***

EVAP/O2/Catalyst

**PO132: HO2S1 Shorted to voltage Sensor 1, Bank 1**

***Monitor run conditions (Enable Criteria)***

1) Engine running for at least 4 minutes
2) Closed loop (180 degrees)

***Why did this code set?***

1) Task manager detected the sensor voltage to be greater then 1.3 volts

***What should you look for?***

1) 1) You should monitor this signal for this condition. Use your scope or graph this signal through the ALDL using your scan tool. If condition is found it will usually turn out to be a faulty O2 sensor. Unplug suspected sensor to see if voltage drops to bias voltage , if it does, replace O2 sensor, if still present suspect harness/PCM problem. Also check to be sure that fuel pressure is within specs and all fuel system components are good.

***Monitors Suspended:***

EVAP/Catalyst/O2

**PO133: HO2S1 Slow to respond Sensor 1, Bank 1**

***Monitor run conditions (Enable Criteria)***

1) Engine run time of 3 minutes

2) Closed loop operation
3) Vehicle speed of 25 or greater MPH
4) A/C off
5) Return to idle speed pf 500-800 RPM

***Why did this code set?***

1) The task manager detected that the bank 1 sensor 1 voltage was too low (under 650mv) or the response time was too slow.

***What should you do?***

1) Perform the following tests under these conditions. Use your scope or graphing meter to measure the O2 sensor's voltage, try enriching the mixture by inducing a small amount of propane and seeing if this will allow the O2 sensor to read a higher voltage and or a quick response time. Be sure to look for vacuum and exhaust leaks as this may also cause this condition.

***Monitors suspended:***

Evap/Catalyst

**P0133: HO2S1 Slow responding Sensor 1 Bank 1**

***Monitor run conditions (Enable Criteria)***

1) Engine running at least 3 minutes.
2) Closed loop operation
3) Cruising at speeds over 20 MPH for at least 2 minutes.
4) Engine brought back to idle.

***Why did this code set?***

1) The task manager saw the O2 sensor switch from rich(over .650mv) to lean (under .350mv) too few of times.

***What should you look for?***

1) Perform the following tests under these conditions. Use your scope or graphing meter to measure the O2 sensor's voltage, try enriching the mixture by inducing a small amount of propane and seeing if this will allow the O2 sensor to read a higher voltage and or a quick response time. Be sure to look for vacuum and exhaust leaks as this may also cause this condition.

***Monitors Suspended:***

Evap/Catalyst

**P0133: HO2S1 Slow responding Sensor 1 Bank 1**

***Monitor run conditions (Enable Criteria)***

1) Engine running for at least 3 minutes.
2) Closed loop operation.
3) Cruising at least 2 minutes over 10 mph.
4) Engine brought back to idle.

***Why did this code set?***

1) The Task Manager detected the O2 sensor switched from rich (650mv) to lean (250mv) too few of times.

***What should you do?***

1) Perform the following tests under these conditions. Use your scope or graphing meter to measure the O2 sensor's voltage, try enriching the mixture by inducing a small amount of propane and seeing if this will allow the O2 sensor to read a higher voltage and or a quick response time. Be sure to look for vacuum and exhaust leaks as this may also cause this condition.

***Monitors suspended:***

EVAP / Catalyst

**PO133: HO2S1 slow responding sensor 1 bank 1**

***Monitor run conditions (Enable Criteria)***

1) Engine running at least 3 minutes.
2) Closed loop operation.
3) Cruising speed higher than 10 mph for at least a ½ minute.
4) Vehicle return to idle.

***Why did this code set?***

1) The Task Manager detected the O2 sensor switch from rich (600mv) to lean (350mv) too few of times.

***What should you do?***

1) Perform the following tests under these conditions. Use your scope or graphing meter to measure the O2 sensor's voltage, try enriching the mixture by inducing a small amount of propane and seeing if this will allow the O2 sensor to read a higher voltage and or a quick response time. Be sure to look for vacuum and exhaust leaks as this may also cause this condition.

# General Motors

***Monitors suspended:***

EVAP/ Catalyst

**PO134: HO2S1 stuck at center sensor 1 bank 1.**

***Monitor run conditions (Enable Criteria)***

1) Engine running for at least 2 minutes.
2) Closed loop operation.

***Why did this code set?***

1) The Task Manager detected the O2 sensor voltage was stuck at mid range for a least 1.5 minutes.

***What should you do?***

1) Be sure to perform the following tests under these conditions. With scan tool connected and ignition on, disconnect O2 sensor harness and momentarily ground signal return wire using your body as a resistor, than momentarily apply power to the signal return wire via the O2 sensor connector, once again using your body as a resistor. Remember this test is done on the vehicle harness side of the connector not the sensor side. The scan tool should read close to 0 volts while grounded and approximately 1 volt while hooked to power through your body if this happens suspect faulty sensor, if this does not happen suspect faulty wiring or PCM.

***Monitors Suspended:***

EVAP/Catalyst

**P0134: H02S1 Stuck at center Sensor 1 bank 1**

***Monitor run conditions (Enable Criteria)***

1) Engine running at least 2 minutes
2) Closed loop operation

***Why did this code set?***

1) Task manager detected that the 02 sensor was stuck at ½ volt for at least 1 minute.

***What should you look for?***

1) Be sure to perform the following tests under these conditions. With scan tool connected and ignition on, disconnect O2 sensor harness and momentarily ground signal return wire using your body as a resistor, than momentarily apply power to

the signal return wire via the O2 sensor connector, once again using your body as a resistor. Remember this test is done on the vehicle harness side of the connector not the sensor side. The scan tool should read close to 0 volts while grounded and approximately 1 volt while hooked to power through your body if this happens suspect faulty sensor, if this does not happen suspect faulty wiring or PCM.

***Monitors Suspended:***

EVAP/Catalyst

**P0134: H02S1 Stuck at center Sensor 1 bank 1**

***Monitor run conditions (Enable Criteria)***

1) Engine running at least 2 minutes
2) Closed loop operations

***Why did this code set?***

1) Task manager detected that the 02 sensor voltage was stuck at ½ volt for at least 1.5 minutes.

***What should you look for?***

1) Be sure to perform the following tests under these conditions. With scan tool connected and ignition on, disconnect O2 sensor harness and momentarily ground signal return wire using your body as a resistor, than momentarily apply power to the signal return wire via the O2 sensor connector, once again using your body as a resistor. Remember this test is done on the vehicle harness side of the connector not the sensor side. The scan tool should read close to 0 volts while grounded and approximately 1 volt while hooked to power through your body if this happens suspect faulty sensor, if this does not happen suspect faulty wiring or PCM.

***Monitors Suspended:***

EVAP/Catalyst

**P0135: H02S1 Heater fault Sensor 1 Bank 1**

***Monitor run conditions (Enable Criteria)***

1) Battery voltage at least 10 volts.
2) Key off for at least 5 seconds
3) Engine started

***Why did this code set?***

1) The task manager detected that the 02 Sensor voltage rose by greater then ½ volt within 2 minutes of the key being shut off while staying less then 1.5 volts.

***What should you look for?***

1) This will most likely require the 02 sensor to be replaced to cure this condition. Be sure to check for proper supply voltage to the heater element as well as a good ground for the circuit before replacing the sensor.

***Monitors suspended:***

EVAP/02/Catalyst

**P0135: H02S1 Heater fault Sensor1 Bank 1**

***Monitor run conditions (Enable Criteria)***

1) Key off for at least 10 minutes.

***Why did this code set?***

1) The task manager detected the 02 sensor's voltage was either higher or lower then expected during the 02 heater test.

***What should you look for?***

1) This will most likely require the 02 sensor to be replaced to cure this condition. Be sure to check for proper supply voltage to the heater element as well as a good ground for the circuit before replacing the sensor.

***Monitors Suspended:***

EVAP/02/Catalyst

**P0135: H02S1 Heater Fault Sensor 1, Bank 1**

***Monitor run conditions (Enable Criteria)***

1) Key off for at least 10 minutes after engine cool down.

***Why did this code set?***

1) The task manager detected no 02 sensor output voltage with the heater energized.

***What should you look for?***

1) This will most likely require the 02 sensor to be replaced to cure this condition. Be sure to check for proper supply voltage to the heater element as well as a good ground for the circuit before replacing the sensor.

***Monitors Suspended:***

EVAP/02/Catalyst

**P0135: H02S1 Heater fault Sensor1, Bank1**

***Monitor run conditions (Enable Criteria)***

1) Cold engine startup.
2) Engine idling.
3) Operating temperature less then 150 degrees.

***Why did this code set?***

1) The task manager detected the 02 sensor's voltage was greater then 3 volts for a time period of ½ minute to 1.5 minutes.

***What should you do?***

1) This will most likely require the 02 sensor to be replaced to cure this condition. Be sure to check for proper supply voltage to the heater element as well as a good ground for the circuit before replacing the sensor.

***Monitors Suspended:***

EVAP/02/Catalyst

**P0136: H02S2 Circuit fault Sensor 2, Bank 1**

***Monitor run conditions (Enable Criteria)***

1) Engine on

***Why did this code set?***

1) The task manager detected an open circuit condition in the catalyst sensor's circuit.

# General Motors

***What should you look for?***

1)Inspect the 02 Harness connector to be sure that is plugged in and all the connectors are clean and secure. Then jump the 02 heater lead of harness connector to the signal return lead of connector and see if proper voltage is read on scan tool. If so, suspect faulty connecter or sensor, if not perform wiggle test on harness working your way up towards the PCM. If harness is alright, suspect faulty PCM or main PCM connecter.

***Monitors Suspended:***

EVAP/Catalyst

**P0137: H02S2 Short to ground Sensor 2 Bank 1**

***Monitor run conditions (Enable Criteria)***

1). No engine related codes stored.
2) Key off with engine cooled down.
3) Cold engine started temperature under 100 degrees.

***Why did this code set?***

1) The task manager detected the catalyst sensor's voltage was less then .150 mv prior to running the heater monitor for this sensor. This indicates the bias voltage is being pulled low on a cold 02 sensor, typical of a short condition.

***What should you look for?***

1) This will typically be the result of a faulty sensor. While monitoring the catalyst signal voltage on your scan tool, try unplugging the Catalyst sensor harness and seeing if the voltage changes (goes up), if it does, suspect/replace catalyst sensor. If it stays low suspect faulty harness or PCM.

***Monitors suspended:***

EVAP/Catalyst

**P0137: H02S2 Sorted to ground Sensor 2 Bank 1**

***Monitor run condition (Enable Criteria)***

1) No engine codes set.
2) Cold start up (below 75 degrees), after previous closed loop operation.

***Why did this code set?***

1) The task manager detected the catalyst sensor's voltage was less then .150 mv prior to running the heater monitor for this sensor. This indicates the bias voltage is being pulled low on a cold 02 sensor, typical of a short condition.

***What should you look for?***

1) This will typically be the result of a faulty sensor. While monitoring the catalyst signal voltage on your scan tool, try unplugging the Catalyst sensor harness and seeing if the voltage changes (goes up), if it does, suspect/replace catalyst sensor. If it stays low suspect faulty harness or PCM.

***Monitor Suspended:***

EVAP/Catalyst

**P0137: H02S1 Pre Cat 02 sensor shorted to ground**

***Monitor run conditions (Enable Criteria)***

1) No engine codes set.
2) Cold start up (below 75 degrees), after previous closed loop operation.

***Why did this code set?***

1) The task manager detected the pre cat 02 sensor's voltage was less then .150 mv prior to running the heater monitor for this sensor. This indicates the bias voltage is being pulled low on a cold 02 sensor, typical of a short condition.

***What should you look for?***

1) This will typically be the result of a faulty sensor. While monitoring the pre catalyst 02 sensor's signal voltage on your scan tool, try unplugging the pre Catalyst 02 sensor's harness and seeing if the voltage changes (goes up), if it does, suspect/replace 02 sensor. If it stays low suspect faulty harness or PCM.

***Monitors Suspended:***

EVAP/02/Catalyst

**P0138: H02S2 Shorted to voltage sensor 2 bank 1**

***Monitor run conditions (Enable Criteria)***

1) No engine codes present.
2) Engine running longer then 2 minutes.
3) Closed loop operation.

# General Motors

***Why did this code set?***

1) The task manager detected the catalyst sensor's voltage was greater the 1.2 volts for at least 3 seconds.

***What should you look for?***

1) Be sure to look for a shorted 02 sensor heater element. The easiest way to accomplish this is by simply verifying the condition is present at the time of your diagnosis, then simply unplug the sensor's connector and see if the voltage is returned to bias voltage. If it is then you will need to replace the catalyst sensor on this vehicle.

***Monitors suspended:***

EVAP/Catalyst

**P0138: H02S2 Sensor2, Bank 1 Shorted to voltage**

***Monitor run conditions (Enable Criteria)***

1) No engine codes set.
2) Engine running longer then 2 minutes.
3) Closed loop operation.

***Why did this code set?***

1) The task manager detected the catalyst sensor voltage was greater then 1.2 volts for at least 3 seconds or more.

***What should you look for?***

1) Be sure to look for a shorted 02 sensor heater element. The easiest way to accomplish this is by simply verifying the condition is present at the time of your diagnosis, then simply unplug the sensor's connector and see if the voltage is returned to bias voltage. If it is then you will need to replace the catalyst sensor on this vehicle.

***Monitors Suspended:***

EVAP/Catalyst

**P0138: H02S1 Shorted to voltage Sensor 1, Bank 1**

***Monitor run condition (Enable Criteria)***

1) No engine codes present.

2) Engine running longer then 2 minutes
3) Warm Engine

***Why did this code set?***

1) The task manager detected a sensor voltage reading of greater then 1.2 volts for a period of at least 3 seconds.

***What should you look for?***

1) Be sure to look for a shorted 02 sensor heater element. The easiest way to accomplish this is by simply verifying the condition is present at the time of your diagnosis, then simply unplug the sensor's connector and see if the voltage is returned to bias voltage. If it is then you will need to replace the pre-cat 02 sensor on this vehicle.

***Monitors Suspended:***

EVAP/Catalyst

**P0139: H02S2 Stuck at center Sensor2, Bank1**

***Monitor run conditions (Enable Criteria)***

1) No engine codes present.
2) Engine running longer then 2 minutes.
3) Warm engine (higher then 150 degrees)

***Why did this code set?***

1) The task manager detected that the catalyst sensor's voltage has been fixed at ½ volt for a period longer then 1.5 minutes.

***What should you look for?***

1) Be sure to perform the following tests under these conditions. With scan tool connected and ignition on, disconnect Catalyst sensor's harness and momentarily ground signal return wire using your body as a resistor, than momentarily apply power to the signal return wire via the Catalyst sensor's connector, once again using your body as a resistor. Remember this test is done on the vehicle harness side of the connector not the sensor side. The scan tool should read close to 0 volts while grounded and approximately 1 volt while hooked to power through your body if this happens suspect faulty sensor, if this does not happen suspect faulty wiring or PCM.

***Monitors Suspended:***

EVAP/Catalyst

**P0139: H02S1 Switching response slow from Sensor1, Bank 1**

***Monitor run condition (Enable Criteria)***

1) No engine codes present.
2) Engine temperature greater then 150 degrees.
3) Cruise speed higher then 10 MPH for at least 2 minutes.
4) Vehicle brought back to idle.

***Why did this code set?***

1) The task manager detected too few of switching from rich (600mv) to lean (300 mv) from the pre-cat 02 sensor.

***What should you look for?***

1) Perform the following tests under these conditions. Use your scope or graphing meter to measure the O2 sensor's voltage, try enriching the mixture by inducing a small amount of propane and seeing if this will allow the O2 sensor to read a higher voltage and or a quick response time. Be sure to look for vacuum and exhaust leaks as this may also cause this condition.

***Monitors Suspended:***

EVAP

**P0140: H02S2 Sensor 2, Bank 1 remains stuck at center**

***Monitor run conditions (Enable Criteria)***

1) No engine codes present.
2) Engine running at least 2 minutes.
3) Closed loop operation.

***Why did this code set?***

1) The task manager detected that the catalyst sensor's voltage was fixed between .300 mv and .500 mv for at least ½ minute.

***What should you look for?***

1) Be sure to perform the following tests under these conditions. With scan tool connected and ignition on, disconnect Catalyst sensor's harness and momentarily ground signal return wire using your body as a resistor, than momentarily apply power to the signal return wire via the Catalyst sensor's connector, once again using your body as a resistor. Remember this test is done on the vehicle harness side of the connector not the sensor side. The scan tool should read close to 0 volts while

grounded and approximately 1 volt while hooked to power through your body if this happens suspect faulty sensor, if this does not happen suspect faulty wiring or PCM.

***Monitors Suspended:***

EVAP/Catalyst

**PO141: H02S2 Heater fault Sensor2, Bank1**

***Monitor run conditions (Enable Criteria)***

1) No engine codes present.
2) Battery voltage higher then 10 volts.
3) Key off longer then 30 seconds.

***Why did this code set?***

1) The task manager detected that the Catalyst 02 Sensor voltage rose by greater then ½ volt within 2 minutes of the key being shut off while staying less then 1.5 volts.

***What should you look for?***

1) This will most likely require the catalyst 02 sensor to be replaced to cure this condition. Be sure to check for proper supply voltage to the heater element as well as a good ground for the circuit before replacing the sensor.

***Monitors Suspended:***

EVAP/Catalyst

**P0141: H02S2 Heater Fault Sensor2, Bank1**

***Monitor run conditions (Enable Criteria)***

1) No engine codes present.
2) Cold start up (under 95 degrees)
3) Engine idling with temperature below 150 degrees.

***Why did this code set?***

2) 1) The task manager detected the catalyst 02 sensor's voltage was greater then .3 mv volts for a time period of ½ minute to 1.5 minutes.