

# **DIGITAL** **OBD2** CAR READER

## **OWNER'S MANUAL**

**The Easiest  
And Best Way  
To Troubleshoot  
1996 and  
Newer OBD2  
Vehicles!**



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## LIMITED WARRANTY AND SERVICE PROCEDURES

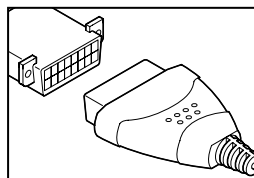
The Manufacturer warrants to the original purchaser that this unit is free of defects in materials and workmanship under normal use and maintenance for a period of one (1) year from the date of original purchase. If the unit fails within the one (1) year period, it will be repaired or replaced, at the Manufacturer's option, at no charge, when returned prepaid to the Technical Service Center with Proof of Purchase. The sales receipt may be used for this purpose. Installation labor is not covered under this warranty.

All replacement parts, whether new or re-manufactured, assume as their warranty period for only the remaining time of this warranty. This warranty does not apply to damage caused by improper use, accident, abuse, improper voltage, service, fire, flood, lightning, or other acts of God, or if the product was altered or repaired by anyone other than the Manufacturer's Technical Service Center. Consequential and incidental damages are not recoverable under this warranty. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state. No portion of this warranty may be copied or duplicated without the expressed written permission from the Manufacturer.

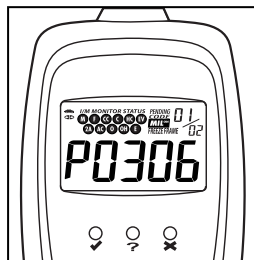
## ***Easy To Use . . . .***

- Connect the Car Reader to the vehicle's test connector.
- Turn the ignition key "On." DO NOT start the engine.
- The Car Reader will automatically link to the vehicle's computer.



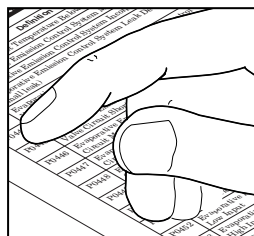
## ***Easy To View . . . .***

- The Car Reader retrieves stored codes and displays I/M Readiness status.
- Codes are displayed on the Car Reader's LCD display screen; I/M Readiness status is displayed by LED indicators.



## ***Easy To Define . . . .***

- Locate fault code(s) in the Fault Code Definition list.



### SAFETY FIRST!

This manual describes common test procedures used by experienced service technicians. Many test procedures require precautions to avoid accidents that can result in personal injury, and/or damage to your vehicle or test equipment. Always read your vehicle's service manual and follow its safety precautions before and during any test or service procedure. **ALWAYS** observe the following general safety precautions:



When an engine is running, it produces carbon monoxide, a toxic and poisonous gas. To prevent serious injury or death from carbon monoxide poisoning, operate the vehicle **ONLY** in a **well-ventilated** area.



To protect your eyes from propelled objects as well as hot or caustic liquids, **always** wear **approved** safety eye protection.



When an engine is running, many parts (such as the coolant fan, pulleys, fan belt etc.) turn at high speed. To avoid serious injury, always be aware of moving parts. Keep a safe distance from these parts as well as other potentially moving objects.



Engine parts become very hot when the engine is running. To prevent severe burns, avoid contact with hot engine parts.



Before starting an engine for testing or trouble-shooting, make sure the parking brake is engaged. Put the transmission in **park** (for automatic transmission) or **neutral** (for manual transmission). Block the drive wheels with suitable blocks.



Connecting or disconnecting test equipment when the ignition is **ON** can damage test equipment and the vehicle's electronic components. Turn the ignition **OFF** before connecting the Code Reader to or disconnecting the Code Reader from the vehicle's Data Link Connector (DLC).



To prevent damage to the on-board computer when taking vehicle electrical measurements, always use a digital multimeter with at least 10 megOhms of impedance.



The vehicle's battery produces highly flammable hydrogen gas. To prevent an explosion, keep all sparks, heated items and open flames away from the battery.



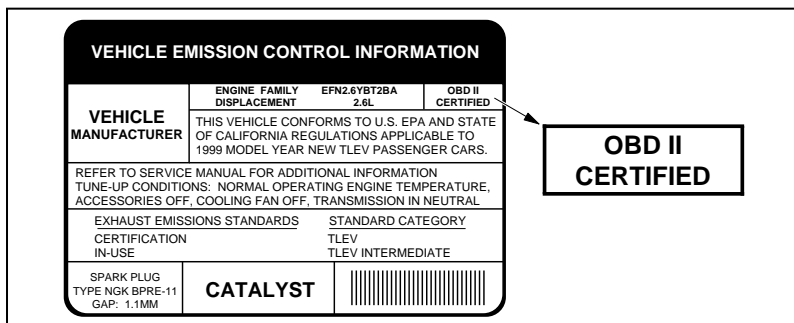
Don't wear loose clothing or jewelry when working on an engine. Loose clothing can become caught in the fan, pulleys, belts, etc. Jewelry is highly conductive, and can cause a severe burn if it makes contact between a power source and ground.

### VEHICLES COVERED

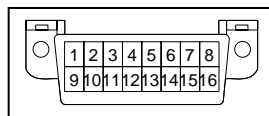
The Car Reader is designed to work on all OBD 2 compliant vehicles. All 1996 and newer vehicles (cars and light trucks) sold in the United States are OBD 2 compliant. This includes all Domestic, Asian and European vehicles.

Some 1994 and 1995 vehicles are OBD 2 compliant. To find out if a 1994 or 1995 vehicle is OBD 2 compliant, check the following:

1. **The Vehicle Emissions Control Information (VECI) Label.** This label is located under the hood or by the radiator of most vehicles. If the vehicle is OBD 2 compliant, the label will state “**OBD II Certified.**”



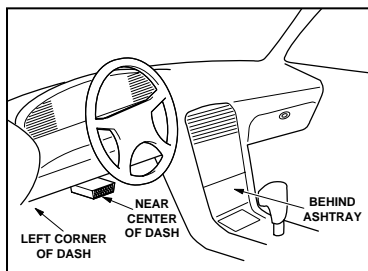
2. Government Regulations require that all OBD 2 compliant vehicles **must** have a “common” sixteen-pin **Data Link Connector (DLC)**.



*Some 1994 and 1995 vehicles have 16-pin connectors but are not OBD 2 compliant. Only those vehicles with a Vehicle Emissions Control Label stating “OBD II Certified” are OBD 2 compliant.*

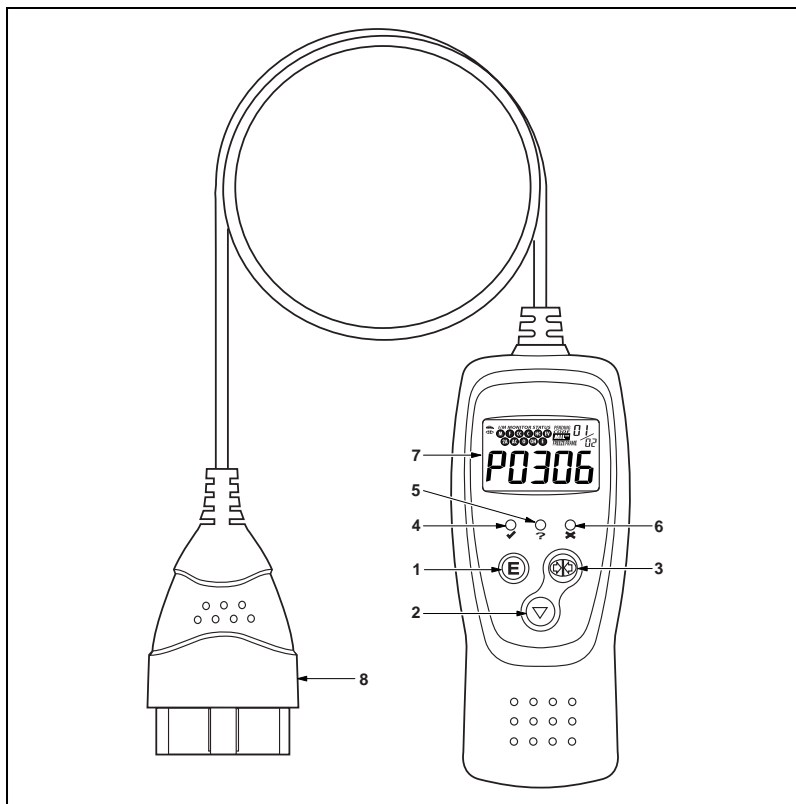
### Data Link Connector (DLC) Location

The 16-pin DLC is usually located under the instrument panel (dash), within 12 inches (300 mm) of center of the panel, on the driver's side of most vehicles. It should be easily accessible and visible from a kneeling position outside the vehicle with the door open.



*On some Asian and European vehicles the DLC is located behind the “ashtray” (the ashtray must be removed to access it) or on the far left corner of the dash. If the DLC cannot be located, consult the vehicle's service manual for the location.*

### CONTROLS AND INDICATORS



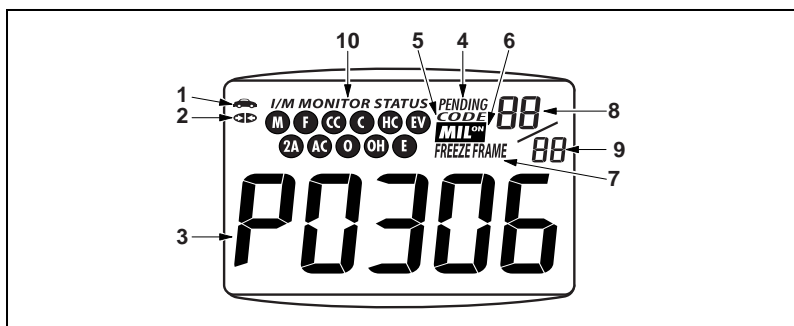
**Figure 1. Controls and Indicators**

See Figure 1 for the locations of items 1 through 9, below.

1. **ⓔ ERASE button** - Erases Diagnostic Trouble Codes (DTCs) and "Freeze Frame" data from your vehicle's computer, and resets Monitor status.
2. **▽ SCROLL button** - Scrolls the LCD display to view DTCs when more than one DTC is present.
3. **Ⓛ LINK button** - Links the Car Reader with the vehicle's PCM to retrieve DTCs from the computer's memory, and to view I/M Readiness Monitor status.
4. **✓ GREEN LED** - Indicates that all engine systems are running normally (all Monitors on the vehicle are active and performing their diagnostic testing, and no DTCs are present).
5. **? YELLOW LED** - Indicates there is a possible problem. A "Pending" DTC is present and/or some of the vehicle's emission monitors have not run their diagnostic testing.

6. **✕ RED LED** - Indicates there is a problem in one or more of the vehicle's systems. The red LED is also used to show that DTC(s) are present. DTCs are shown on the Car Reader's LCD display. In this case, the Multifunction Indicator ("Check Engine") lamp on the vehicle's instrument panel will light steady on.
7. **LCD Display** - Displays test results, Car Reader functions and Monitor status information. See **DISPLAY FUNCTIONS**, below, for details.
8. **CABLE** - Connects the Car Reader to the vehicle's Data Link Connector (DLC).

## DISPLAY FUNCTIONS



**Figure 2. Display Functions**

See Figure 2 for the locations of items 1 through 13, below.

1. **Vehicle icon** - Indicates whether or not the Car Reader is being properly powered through the vehicle's Data Link Connector (DLC). A visible icon indicates that the Car Reader is being powered through the vehicle's DLC connector.
2. **Link icon** - Indicates whether or not the Car Reader is communicating (linked) with the vehicle's on-board computer. When visible, the Car Reader is communicating with the computer. If the Link icon is not visible, the Car Reader is not communicating with the computer.
3. **DTC Display Area** - Displays the Diagnostic Trouble Code (DTC) number. Each fault is assigned a code number that is specific to that fault.
4. **Pending icon** - Indicates the currently displayed DTC is a "Pending" code.
5. **CODE icon** - Identifies the Code Number Sequence display area.
6. **MIL icon** - Indicates the status of the Malfunction Indicator Lamp (MIL). The MIL icon is visible only when a DTC has commanded the MIL on the vehicle's dashboard to light.
7. **FREEZE FRAME icon** - Indicates that "Freeze Frame" data has been stored in the vehicle's computer for the currently displayed DTC.

- 8. Code Number Sequence** - The Car Reader assigns a sequence number to each DTC that is present in the computer's memory, starting with "01." This helps keep track of the number of DTCs present in the computer's memory. Code number "01" is always the highest priority code, and the one for which "Freeze Frame" data has been stored.
- 9. Code Enumerator** - Indicates the total number of codes retrieved from the vehicle's computer.
- 10. Monitor icons** - Indicates which Monitors are supported by the vehicle under test, and whether or not the associated Monitor has run its diagnostic testing (Monitor status). When a Monitor icon is solid, it indicates that the associated Monitor has completed its diagnostic testing. When a Monitor icon is flashing, it indicates that the vehicle supports the associated Monitor, but the Monitor has not yet run its diagnostic testing.



*The I/M Monitor Status icons are associated with INSPECTION and MAINTENANCE (I/M) READINESS STATUS. Some states require that all vehicle Monitors have run and completed their diagnostic testing before a vehicle can be tested for Emissions (Smog Check). A maximum of eleven Monitors are used on OBD 2 systems. Not all vehicles support all eleven Monitors. When the Car Reader is linked to a vehicle, only the icons for Monitors that are supported by the vehicle under test are visible on the display.*

Following is a list of Monitor icons and their associated Monitors.

- |  |   |  |
|--|---|--|
|  | = | Misfire Monitor                                    |
|  | = | Fuel System Monitor                                |
|  | = | Comprehensive Component Monitor                    |
|  | = | Catalyst Monitor                                   |
|  | = | Heated Catalyst Monitor                            |
|  | = | Evaporative System Monitor                         |
|  | = | Secondary Air System Monitor                       |
|  | = | Air Conditioning System Refrigerant (R-12) Monitor |
|  | = | Oxygen Sensor Monitor                              |
|  | = | Oxygen Sensor Heater Monitor                       |
|  | = | Exhaust Gas Recirculation (EGR) Monitor            |



### BEFORE YOU BEGIN

Fix any known mechanical problems before performing any test. See your vehicle's service manual or a mechanic for more information. Check the following areas **before** starting any test:

- Check the engine oil, power steering fluid, transmission fluid (if applicable), engine coolant and other fluids for proper levels. Top off low fluid levels if needed.
- Make sure the air filter is clean and in good condition. Make sure all air filter ducts are properly connected. Check the air filter ducts for holes, rips or cracks.
- Make sure all engine belts are in good condition. Check for cracked, torn, brittle, loose or missing belts.
- Make sure mechanical linkages to engine sensors (throttle, gearshift position, transmission, etc.) are secure and properly connected. See your vehicle's service manual for locations.
- Check all rubber hoses (radiator) and steel hoses (vacuum/fuel) for leaks, cracks, blockage or other damage. Make sure all hoses are routed and connected properly.
- Make sure all spark plugs are clean and in good condition. Check for damaged, loose, disconnected or missing spark plug wires.
- Make sure the battery terminals are clean and tight. Check for corrosion or broken connections. Check for proper battery and charging system voltages.
- Check all electrical wiring and harnesses for proper connection. Make sure wire insulation is in good condition, and there are no bare wires.
- Make sure the engine is mechanically sound. If needed, perform a compression check, engine vacuum check, timing check (if applicable), etc.

### VEHICLE SERVICE MANUALS

Always refer to the manufacturer's service manual for your vehicle before performing any test or repair procedures. Contact your local car dealership, auto parts store or bookstore for availability of these manuals.

### CODE RETRIEVAL PROCEDURE

**Never** replace a part based only on the DTC definition. Each DTC has a set of testing procedures, instructions and flow charts that must be followed to confirm the location of the problem. This information is found in the vehicle's service manual. Always refer to the vehicle's service manual for detailed testing instructions.

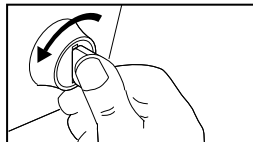


*Check your vehicle thoroughly before performing any test. See **Preparation for Testing** on page 7 for details.*



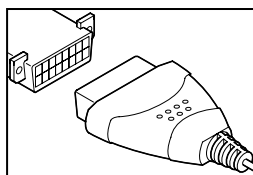
***ALWAYS** observe safety precautions whenever working on a vehicle. See **Safety Precautions** on page 2 for more information.*


1. Turn the ignition off.
2. Locate the vehicle's 16-pin Data Link Connector (DLC). See page 3 for connector location.
3. Connect the Car Reader's cable connector to the vehicle's DLC. The cable connector is keyed and will only fit one way.



- If you have problems connecting the cable connector to the DLC, rotate the connector 180° and try again.

If you still have problems, check the DLC on the vehicle and on the Car Reader. Refer to your vehicle's service manual to properly check the vehicle's DLC.

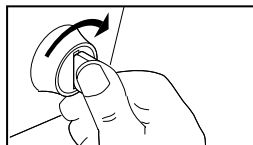


- After the Car Reader's test connector is properly connected to the vehicle's DLC, the Vehicle icon  should display to confirm a good power connection.

4. Turn the ignition on. **DO NOT** start the engine.
5. The Car Reader will automatically link to the vehicle's computer.

- The LCD display will show "rEAd." If the LCD display is blank, it indicates there is no power at the vehicle's DLC. Check your fuse panel and replace any burned-out fuses.

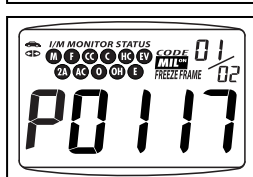
If replacing the fuse(s) does not correct the problem, see your vehicle's repair manual to locate the proper computer (PCM) fuse/circuit. Perform any necessary repairs before continuing.



- After 4-5 seconds, the Car Reader will **retrieve** and **display** any Diagnostic Trouble Codes that are in the vehicle's computer memory.



- If an error message (Err, Err1 or Err2) is shown on the Car Reader's LCD display, it indicates there is a communication problem. This means that the Car Reader is unable to communicate with the vehicle's computer. Do the following:



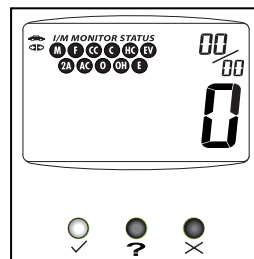
## CODE RETRIEVAL PROCEDURE

- Turn the ignition key off, wait 5 seconds and turn the key back on to reset the computer.
  - Make sure your vehicle is OBD 2 compliant. See VEHICLES COVERED on page 2 for vehicle compliance verification information.
6. Read and interpret the Diagnostic Trouble Codes using the LCD display and the green, yellow and red LEDs.



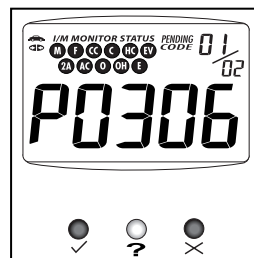
*The green, yellow and red LEDs are used (with the LCD display) as visual aids to make it easier for the user to determine engine system conditions.*

- **Green LED ✓** - Indicates that all engine systems are "OK" and running normally. All monitors on the vehicle are active and are performing their diagnostic testing, and no trouble codes are present. A zero will show on the Car Reader's LCD display for further confirmation.

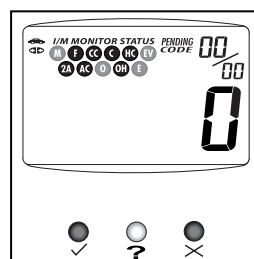


- **Yellow LED ?** - Indicates one of the following conditions:

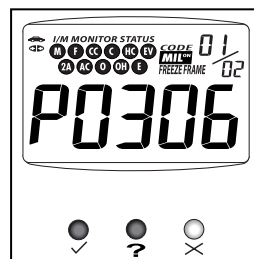
**PENDING CODE PRESENT** - If the yellow LED is lit, it may indicate the existence of a pending code. Check the Car Reader's LCD display for confirmation. A pending code is confirmed by the presence of a numeric code and the word PENDING on the Car Reader's LCD display. If no pending code is shown, the yellow LED indicates Monitor Status (see the following).



**MONITOR STATUS** - If the Car Reader's LCD display shows a zero (indicating there are no DTCs present in the vehicle's computer), but the yellow LED is lit, it indicates a "Monitor Has Not Run" status. This means that some of the Monitors on the vehicle have not yet finished their diagnostic self-testing. This condition is confirmed by one or more **blinking** Monitor icons on the LCD display. A **blinking** Monitor icon means the Monitor has not yet run and finished its diagnostic self-testing. All Monitor icons that are **solid** have completed their diagnostic self-testing.



- **Red LED X** - Indicates there is a problem with one or more of the vehicle's systems. The red LED is also used to show that DTC(s) are present (displayed on the Car Reader's LCD display). In this case, the Multifunction Indicator (Check Engine) lamp on the vehicle's instrument panel will light steady on.







The Car Reader will automatically re-link to the vehicle's computer every 15 seconds to refresh the data being retrieved. When data is being refreshed, a single beep will sound, and "rEAd" will be shown on the LCD display for 5-6 seconds. The Car Reader will then beep twice and return to displaying codes. This action repeats as long as the Car Reader is in communication with the vehicle's computer.



The Car Reader will display a code only if codes are present in the vehicle's computer memory. If no codes are present, a "0" will be displayed.

7. If more than one code is present, press and release the **SCROLL**  button, as necessary, to display additional codes.

- Whenever the **SCROLL** function is used to view additional codes, the Car Reader's communication link with the vehicle's computer disconnects. To re-establish communication, press the **LINK**  button again.

Refer to page 14 for Diagnostic Trouble Code definitions. Match the retrieved DTC(s) with those listed. Read the associated definition(s), and see the vehicle's service manual for further evaluation.

## ERASING DIAGNOSTIC TROUBLE CODES (DTCs)



**When the Car Reader's ERASE function is used to erase the DTCs from the vehicle's on-board computer, "Freeze Frame" data and manufacturer-specific enhanced data are also erased.**

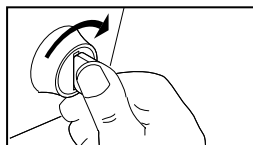
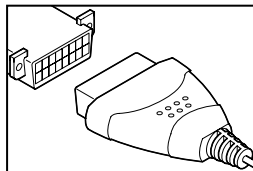
If you plan to take the vehicle to a Service Center for repair, **DO NOT** erase the codes from the vehicle's computer. If the codes are erased, valuable information that might help the technician troubleshoot the problem will also be erased.

Erase DTCs from the computer's memory as follows:





**When DTCs are erased from the vehicle's computer memory, the I/M Readiness Monitor Status program resets status of all the Monitors to a not run "flashing" condition. To set all of the Monitors to a DONE status, an OBD 2 Drive Cycle must be performed. Refer to your vehicle's service manual for information on how to perform an OBD 2 Drive Cycle for the vehicle under test.**


1. If not connected already, connect the Car Reader to the vehicle's DLC. (If the Car Reader is already connected and linked to the vehicle's computer, proceed directly to step 4. If not, continue to step 2.)
2. Turn the ignition on. **DO NOT** start the engine. The Car Reader will automatically link to the vehicle's computer.

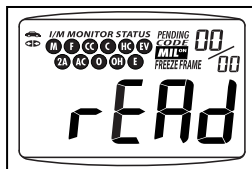
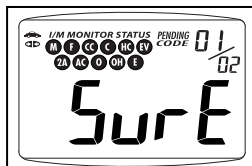


## ERASING DIAGNOSTIC TROUBLE CODES (DTCs)

3. Press and release the Car Reader's **ERASE**  button. The LCD display will indicate "SurE" for your confirmation.

- If you change your mind and do not wish to erase the codes, press the **LINK**  button to return to the code retrieval function.

- If you wish to continue, press the **ERASE**  button again. When all retrievable information, including DTCs, has been cleared from the computer's memory, the Car Reader will re-link to the vehicle's computer, and the LCD display will show "rEAd."



*Erasing DTCs does not fix the problem(s) that caused the code(s) to be set. If proper repairs to correct the problem that caused the code(s) to be set are not made, the code(s) will appear again (and the check engine light will illuminate) as soon as the vehicle is driven long enough for its Monitors to complete their testing.*

### DIAGNOSTIC TROUBLE CODE DEFINITIONS

Diagnostic Trouble Codes (DTCs) are meant to guide you to the proper service procedure in the vehicle's service manual. **DO NOT** replace parts based only on DTCs without first consulting the vehicle's service manual for proper testing procedures for that particular system, circuit or component.

DTCs are alphanumeric codes that are used to identify a problem that is present in any of the systems that are monitored by the on-board computer (PCM). Each trouble code has an assigned message that identifies the circuit, component or system area where the problem was found.

OBD 2 diagnostic trouble codes are made up of five characters:

- The 1st character is a **letter**. It identifies the "main system" where the fault occurred (Body, Chassis, Powertrain, or Network).
- The 2nd character is a **numeric digit**. It identifies the "type" of code (Generic or Manufacturer-Specific).



**Generic DTCs** are codes that are used by all vehicle manufacturers. The standards for generic DTCs, as well as their definitions, are set by the Society of Automotive Engineers (SAE).

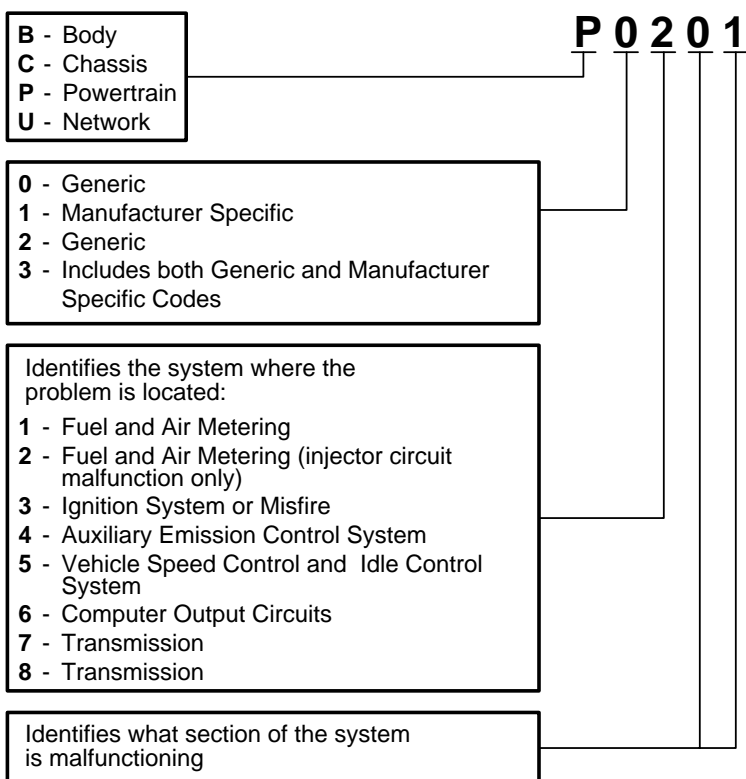
**Manufacturer-Specific DTCs** are codes that are controlled by the vehicle manufacturer. The Federal Government does not require manufacturer-specific codes in order to comply with the new OBD 2 emissions standards. However, manufacturers are free to expand beyond the required codes to make their systems easier to diagnose.

- The 3rd character is a **numeric digit**. It identifies the specific system or subsystem where the problem is located.
- The 4th and 5th characters are **numeric digits**. They identify the section of the system that is malfunctioning.

This section provides the most complete list of "Generic" DTC definitions available at the time of publication. OBD 2 is an evolving system; new codes and definitions are added as the system grows. **ALWAYS** check your vehicle's service manual for code definitions that are not listed here, or for "Manufacturer-Specific" DTC definitions.

### OBD 2 DTC EXAMPLE

P0201 - Injector Circuit Malfunction, Cylinder 1



<b>Code</b>	<b>Definition</b>
<b>P0010</b>	"A" Camshaft Position - Actuator Circuit (Bank 1)
<b>P0011</b>	"A" Camshaft Position - Timing Over-Advanced or System Performance (Bank 1)
<b>P0012</b>	"A" Camshaft Position - Timing Over-Retarded (Bank 1)
<b>P0013</b>	"B" Camshaft Position - Actuator Circuit (Bank 1)
<b>P0014</b>	"B" Camshaft Position - Timing Over-Advanced or System Performance (Bank 1)
<b>P0015</b>	"B" Camshaft Position - Timing Over-Retarded (Bank 1)
<b>P0020</b>	"A" Camshaft Position - Actuator Circuit (Bank 2)
<b>P0021</b>	"A" Camshaft Position - Timing Over-Advanced or System Performance (Bank 2)
<b>P0022</b>	"A" Camshaft Position - Timing Over-Retarded (Bank 2)
<b>P0023</b>	"B" Camshaft Position - Actuator Circuit (Bank 2)
<b>P0024</b>	"B" Camshaft Position - Timing Over-Advanced or System Performance (Bank 2)
<b>P0025</b>	"B" Camshaft Position - Timing Over-Retarded (Bank 2)
<b>P0030</b>	HO2S Heater Control Circuit (Bank 1 Sensor 1)
<b>P0031</b>	HO2S Heater Control Circuit Low (Bank 1 Sensor 1)
<b>P0032</b>	HO2S Heater Control Circuit High (Bank 1 Sensor 1)
<b>P0033</b>	Turbo Charger Bypass Valve Control Circuit
<b>P0034</b>	Turbo Charger Bypass Valve Control Circuit Low
<b>P0035</b>	Turbo Charger Bypass Valve Control Circuit High
<b>P0036</b>	HO2S Heater Control Circuit (Bank 1 Sensor 2)
<b>P0037</b>	HO2S Heater Control Circuit Low (Bank 1 Sensor 2)
<b>P0038</b>	HO2S Heater Control Circuit High (Bank 1 Sensor 2)
<b>P0042</b>	HO2S Heater Control Circuit (Bank 1 Sensor 3)
<b>P0043</b>	HO2S Heater Control Circuit Low (Bank 1 Sensor 3)
<b>P0044</b>	HO2S Heater Control Circuit High (Bank 1 Sensor 3)
<b>P0050</b>	HO2S Heater Control Circuit (Bank 2 Sensor 1)
<b>P0051</b>	HO2S Heater Control Circuit Low (Bank 2 Sensor 1)
<b>P0052</b>	HO2S Heater Control Circuit High (Bank 2 Sensor 1)
<b>P0056</b>	HO2S Heater Control Circuit (Bank 2 Sensor 2)
<b>P0057</b>	HO2S Heater Control Circuit Low (Bank 2 Sensor 2)
<b>P0058</b>	HO2S Heater Control Circuit High (Bank 2 Sensor 2)
<b>P0062</b>	HO2S Heater Control Circuit (Bank 2 Sensor 3)
<b>P0063</b>	HO2S Heater Control Circuit Low (Bank 2 Sensor 3)
<b>P0064</b>	HO2S Heater Control Circuit High (Bank 2 Sensor 3)
<b>P0065</b>	Air Assisted Injector Control Range/Performance
<b>P0066</b>	Air Assisted Injector Control Circuit or Circuit Low
<b>P0067</b>	Air Assisted Injector Control Circuit High
<b>P0070</b>	Ambient Air Temperature Sensor Circuit
<b>P0071</b>	Ambient Air Temperature Sensor Range/Performance
<b>P0072</b>	Ambient Air Temperature Sensor Circuit Low Input
<b>P0073</b>	Ambient Air Temperature Sensor Circuit High Input
<b>P0074</b>	Ambient Air Temperature Sensor Circuit Intermittent
<b>P0075</b>	Intake Valve Control Solenoid Circuit (Bank 1)



Code	Definition
<b>P0076</b>	Intake Valve Control Solenoid Circuit Low (Bank 1)
<b>P0077</b>	Intake Valve Control Solenoid Circuit High (Bank 1)
<b>P0078</b>	Exhaust Valve Control Solenoid Circuit (Bank 1)
<b>P0079</b>	Exhaust Valve Control Solenoid Circuit Low (Bank 1)
<b>P0080</b>	Exhaust Valve Control Solenoid Circuit High (Bank 1)
<b>P0081</b>	Intake Valve Control Solenoid Circuit (Bank 2)
<b>P0082</b>	Intake Valve Control Solenoid Circuit Low (Bank 2)
<b>P0083</b>	Intake Valve Control Solenoid Circuit High (Bank 2)
<b>P0084</b>	Exhaust Valve Control Solenoid Circuit (Bank 2)
<b>P0085</b>	Exhaust Valve Control Solenoid Circuit Low (Bank 2)
<b>P0086</b>	Exhaust Valve Control Solenoid Circuit High (Bank 2)
<b>P0100</b>	Mass or Volume Air Flow Circuit Malfunction
<b>P0101</b>	Mass or Volume Circuit Range Performance Problem
<b>P0102</b>	Mass or Volume Circuit Low Input
<b>P0103</b>	Mass or Volume Circuit High Input
<b>P0104</b>	Mass or Volume Circuit Intermittent
<b>P0105</b>	Manifold Absolute Pressure/Barometric Pressure Circuit Malfunction
<b>P0106</b>	Manifold Absolute Pressure/Barometric Pressure Circuit Range/Performance Problem
<b>P0107</b>	Manifold Absolute Pressure/Barometric Pressure Circuit Low Input
<b>P0108</b>	Manifold Absolute Pressure/Barometric Pressure Circuit High Input
<b>P0109</b>	Manifold Absolute Pressure/Barometric Pressure Circuit Intermittent
<b>P0110</b>	Intake Air Temperature Circuit Malfunction
<b>P0111</b>	Intake Air Temperature Circuit Range/Performance Problem
<b>P0112</b>	Intake Air Temperature Circuit Low Input
<b>P0113</b>	Intake Air Temperature Circuit High Input
<b>P0114</b>	Intake Air Temperature Circuit Intermittent
<b>P0115</b>	Engine Coolant Temperature Circuit Malfunction
<b>P0116</b>	Engine Coolant Temperature Circuit Range/Performance Problem
<b>P0117</b>	Engine Coolant Temperature Circuit Low Input
<b>P0118</b>	Engine Coolant Temperature Circuit High Input
<b>P0119</b>	Engine Coolant Temperature Circuit Intermittent
<b>P0120</b>	Throttle/Pedal Position Sensor/Switch A Circuit Malfunction
<b>P0121</b>	Throttle/Pedal Position Sensor/Switch A Circuit Range/Performance Problem
<b>P0122</b>	Throttle/Pedal Position Sensor/Switch A Circuit Low Input
<b>P0123</b>	Throttle/Pedal Position Sensor/Switch A Circuit High Input
<b>P0124</b>	Throttle/Pedal Position Sensor/Switch A Circuit Intermittent
<b>P0125</b>	Insufficient Coolant Temperature for Closed Loop Fuel Control
<b>P0126</b>	Insufficient Coolant Temperature for Stable Operation
<b>P0127</b>	Intake Air Temperature Too High
<b>P0128</b>	Coolant Thermostat (Coolant Temperature Below Thermostat Regulating Temperature)

Code	Definition
<b>P0130</b>	O2 Sensor Circuit Malfunction (Bank 1 Sensor 1)
<b>P0131</b>	O2 Sensor Circuit Low Voltage (Bank 1 Sensor 1)
<b>P0132</b>	O2 Sensor Circuit High Voltage (Bank 1 Sensor 1)
<b>P0133</b>	O2 Sensor Circuit Slow Response (Bank 1 Sensor 1)
<b>P0134</b>	O2 Sensor Circuit No Activity Detected (Bank 1 Sensor 1)
<b>P0135</b>	O2 Sensor Heater Circuit Malfunction (Bank 1 Sensor 1)
<b>P0136</b>	O2 Sensor Circuit Malfunction (Bank 1 Sensor 2)
<b>P0137</b>	O2 Sensor Circuit Low Voltage (Bank 1 Sensor 2)
<b>P0138</b>	O2 Sensor Circuit High Voltage (Bank 1 Sensor 2)
<b>P0139</b>	O2 Sensor Circuit Slow Response (Bank 1 Sensor 2)
<b>P0140</b>	O2 Sensor Circuit No Activity Detected (Bank 1 Sensor 2)
<b>P0141</b>	O2 Sensor Heater Circuit Malfunction (Bank 1 Sensor 2)
<b>P0142</b>	O2 Sensor Circuit Malfunction (Bank 1 Sensor 3)
<b>P0143</b>	O2 Sensor Circuit Low Voltage (Bank 1 Sensor 3)
<b>P0144</b>	O2 Sensor Circuit High Voltage (Bank 1 Sensor 3)
<b>P0145</b>	O2 Sensor Circuit Slow Response (Bank 1 Sensor 3)
<b>P0146</b>	O2 Sensor Circuit No Activity Detected (Bank 1 Sensor 3)
<b>P0147</b>	O2 Sensor Heater Circuit Malfunction (Bank 1 Sensor 3)
<b>P0148</b>	Fuel Delivery Err
<b>P0149</b>	Fuel Timing Err
<b>P0150</b>	O2 Sensor Circuit Malfunction (Bank 2 Sensor 1)
<b>P0151</b>	O2 Sensor Circuit Low Voltage (Bank 2 Sensor 1)
<b>P0152</b>	O2 Sensor Circuit High Voltage (Bank 2 Sensor 1)
<b>P0153</b>	O2 Sensor Circuit Slow Response (Bank 2 Sensor 1)
<b>P0154</b>	O2 Sensor Circuit No Activity Detected (Bank 2 Sensor 1)
<b>P0155</b>	O2 Sensor Heater Circuit Malfunction (Bank 2 Sensor 1)
<b>P0156</b>	O2 Sensor Circuit Malfunction (Bank 2 Sensor 2)
<b>P0157</b>	O2 Sensor Circuit Low Voltage (Bank 2 Sensor 2)
<b>P0158</b>	O2 Sensor Circuit High Voltage (Bank 2 Sensor 2)
<b>P0159</b>	O2 Sensor Circuit Slow Response (Bank 2 Sensor 2)
<b>P0160</b>	O2 Sensor Circuit No Activity Detected (Bank 2 Sensor 2)
<b>P0161</b>	O2 Sensor Heater Circuit Malfunction (Bank 2 Sensor 2)
<b>P0162</b>	O2 Sensor Circuit Malfunction (Bank 2 Sensor 3)
<b>P0163</b>	O2 Sensor Circuit Low Voltage (Bank 2 Sensor 3)
<b>P0164</b>	O2 Sensor Circuit High Voltage (Bank 2 Sensor 3)
<b>P0165</b>	O2 Sensor Circuit Slow Response (Bank 2 Sensor 3)
<b>P0166</b>	O2 Sensor Circuit No Activity Detected (Bank 2 Sensor 3)
<b>P0167</b>	O2 Sensor Heater Circuit Malfunction (Bank 2 Sensor 3)
<b>P0168</b>	Fuel Temperature Too High
<b>P0169</b>	Incorrect Fuel Composition
<b>P0170</b>	Fuel Trim Malfunction (Bank 1)
<b>P0171</b>	System too Lean (Bank 1)

<b>Code</b>	<b>Definition</b>
<b>P0172</b>	System too Rich (Bank 1)
<b>P0173</b>	Fuel Trim Malfunction (Bank 2)
<b>P0174</b>	System too Lean (Bank 2)
<b>P0175</b>	System too Rich (Bank 2)
<b>P0176</b>	Fuel Composition Sensor Circuit Malfunction
<b>P0177</b>	Fuel Composition Sensor Circuit Range/Performance
<b>P0178</b>	Fuel Composition Sensor Circuit Low Input
<b>P0179</b>	Fuel Composition Sensor Circuit High Input
<b>P0180</b>	Fuel Temperature Sensor A Circuit Malfunction
<b>P0181</b>	Fuel Temperature Sensor A Circuit Range/Performance
<b>P0182</b>	Fuel Temperature Sensor A Circuit Low Input
<b>P0183</b>	Fuel Temperature Sensor A Circuit High Input
<b>P0184</b>	Fuel Temperature Sensor A Circuit Intermittent
<b>P0185</b>	Fuel Temperature Sensor B Circuit Malfunction
<b>P0186</b>	Fuel Temperature Sensor B Circuit Range/Performance
<b>P0187</b>	Fuel Temperature Sensor B Circuit Low Input
<b>P0188</b>	Fuel Temperature Sensor B Circuit High Input
<b>P0189</b>	Fuel Temperature Sensor B Circuit Intermittent
<b>P0190</b>	Fuel Rail Pressure Sensor Circuit Malfunction
<b>P0191</b>	Fuel Rail Pressure Sensor Circuit Range/Performance
<b>P0192</b>	Fuel Rail Pressure Sensor Circuit Low Input
<b>P0193</b>	Fuel Rail Pressure Sensor Circuit High Input
<b>P0194</b>	Fuel Rail Pressure Sensor Circuit Intermittent
<b>P0195</b>	Engine Oil Temperature Sensor Malfunction
<b>P0196</b>	Engine Oil Temperature Sensor Range/Performance
<b>P0197</b>	Engine Oil Temperature Sensor Low
<b>P0198</b>	Engine Oil Temperature Sensor High
<b>P0199</b>	Engine Oil Temperature Sensor Intermittent
<b>P0200</b>	Injector Circuit Malfunction
<b>P0201</b>	Injector Circuit Malfunction - Cylinder 1
<b>P0202</b>	Injector Circuit Malfunction - Cylinder 2
<b>P0203</b>	Injector Circuit Malfunction - Cylinder 3
<b>P0204</b>	Injector Circuit Malfunction - Cylinder 4
<b>P0205</b>	Injector Circuit Malfunction - Cylinder 5
<b>P0206</b>	Injector Circuit Malfunction - Cylinder 6
<b>P0207</b>	Injector Circuit Malfunction - Cylinder 7
<b>P0208</b>	Injector Circuit Malfunction - Cylinder 8
<b>P0209</b>	Injector Circuit Malfunction - Cylinder 9
<b>P0210</b>	Injector Circuit Malfunction - Cylinder 10
<b>P0211</b>	Injector Circuit Malfunction - Cylinder 11
<b>P0212</b>	Injector Circuit Malfunction - Cylinder 12
<b>P0213</b>	Cold Start Injector 1 Malfunction

<b>Code</b>	<b>Definition</b>
<b>P0214</b>	Cold Start Injector 2 Malfunction
<b>P0215</b>	Engine Shutoff Solenoid Malfunction
<b>P0216</b>	Injection Timing Control Circuit Malfunction
<b>P0217</b>	Engine Overtemp Condition
<b>P0218</b>	Transmission Over Temperature Condition
<b>P0219</b>	Engine Overspeed Condition
<b>P0220</b>	Throttle/Pedal Position Sensor/Switch B Circuit Malfunction
<b>P0221</b>	Throttle/Pedal Position Sensor/Switch B Circuit Range/Performance Problem
<b>P0222</b>	Throttle/Pedal Position Sensor/Switch B Circuit Low Input
<b>P0223</b>	Throttle/Pedal Position Sensor/Switch B Circuit High Input
<b>P0224</b>	Throttle/Pedal Position Sensor/Switch B Circuit Intermittent
<b>P0225</b>	Throttle/Pedal Position Sensor/Switch C Circuit Malfunction
<b>P0226</b>	Throttle/Pedal Position Sensor/Switch C Circuit Range/Performance Problem
<b>P0227</b>	Throttle/Pedal Position Sensor/Switch C Circuit Low Input
<b>P0228</b>	Throttle/Pedal Position Sensor/Switch C Circuit High Input
<b>P0229</b>	Throttle/Pedal Position Sensor/Switch C Circuit Intermittent
<b>P0230</b>	Fuel Pump Primary Circuit Malfunction
<b>P0231</b>	Fuel Pump Secondary Circuit Low
<b>P0232</b>	Fuel Pump Secondary Circuit High
<b>P0233</b>	Fuel Pump Secondary Circuit Intermittent
<b>P0234</b>	Engine Overboost Condition
<b>P0235</b>	Turbocharger Boost Sensor A Circuit Malfunction
<b>P0236</b>	Turbocharger Boost Sensor A Circuit Range/Performance
<b>P0237</b>	Turbocharger Boost Sensor A Circuit Low
<b>P0238</b>	Turbocharger Boost Sensor A Circuit High
<b>P0239</b>	Turbocharger Boost Sensor B Circuit Malfunction
<b>P0240</b>	Turbocharger Boost Sensor B Circuit Range/Performance
<b>P0241</b>	Turbocharger Boost Sensor B Circuit Low
<b>P0242</b>	Turbocharger Boost Sensor B Circuit High
<b>P0243</b>	Turbocharger Wastegate Solenoid A Malfunction
<b>P0244</b>	Turbocharger Wastegate Solenoid A Range/Performance
<b>P0245</b>	Turbocharger Wastegate Solenoid A Low
<b>P0246</b>	Turbocharger Wastegate Solenoid A High
<b>P0247</b>	Turbocharger Wastegate Solenoid B Malfunction
<b>P0248</b>	Turbocharger Wastegate Solenoid B Range/Performance
<b>P0249</b>	Turbocharger Wastegate Solenoid B Low
<b>P0250</b>	Turbocharger Wastegate Solenoid B High
<b>P0251</b>	Injection Pump A Rotor/Cam Malfunction
<b>P0252</b>	Injection Pump A Rotor/Cam Range/Performance
<b>P0253</b>	Injection Pump A Rotor/Cam Low
<b>P0254</b>	Injection Pump A Rotor/Cam High
<b>P0255</b>	Injection Pump A Rotor/Cam Intermitted

<b>Code</b>	<b>Definition</b>
<b>P0256</b>	Injection Pump B Rotor/Cam Malfunction
<b>P0257</b>	Injection Pump B Rotor/Cam Range/Performance
<b>P0258</b>	Injection Pump B Rotor/Cam Low
<b>P0259</b>	Injection Pump B Rotor/Cam High
<b>P0260</b>	Injection Pump B Rotor/Cam Intermitted
<b>P0261</b>	Cylinder 1 Injector Circuit Low
<b>P0262</b>	Cylinder 1 Injector Circuit High
<b>P0263</b>	Cylinder 1 Contribution/Balance Fault
<b>P0264</b>	Cylinder 2 Injector Circuit Low
<b>P0265</b>	Cylinder 2 Injector Circuit High
<b>P0266</b>	Cylinder 2 Contribution/Balance Fault
<b>P0267</b>	Cylinder 3 Injector Circuit Low
<b>P0268</b>	Cylinder 3 Injector Circuit High
<b>P0269</b>	Cylinder 3 Contribution/Balance Fault
<b>P0270</b>	Cylinder 4 Injector Circuit Low
<b>P0271</b>	Cylinder 4 Injector Circuit High
<b>P0272</b>	Cylinder 4 Contribution/Balance Fault
<b>P0273</b>	Cylinder 5 Injector Circuit Low
<b>P0274</b>	Cylinder 5 Injector Circuit High
<b>P0275</b>	Cylinder 5 Contribution/Balance Fault
<b>P0276</b>	Cylinder 6 Injector Circuit Low
<b>P0277</b>	Cylinder 6 Injector Circuit High
<b>P0278</b>	Cylinder 6 Contribution/Balance Fault
<b>P0279</b>	Cylinder 7 Injector Circuit Low
<b>P0280</b>	Cylinder 7 Injector Circuit High
<b>P0281</b>	Cylinder 7 Contribution/Balance Fault
<b>P0282</b>	Cylinder 8 Injector Circuit Low
<b>P0283</b>	Cylinder 8 Injector Circuit High
<b>P0284</b>	Cylinder 8 Contribution/Balance Fault
<b>P0285</b>	Cylinder 9 Injector Circuit Low
<b>P0286</b>	Cylinder 9 Injector Circuit High
<b>P0287</b>	Cylinder 9 Contribution/Balance Fault
<b>P0288</b>	Cylinder 10 Injector Circuit Low
<b>P0289</b>	Cylinder 10 Injector Circuit High
<b>P0290</b>	Cylinder 10 Contribution/Balance Fault
<b>P0291</b>	Cylinder 11 Injector Circuit Low
<b>P0292</b>	Cylinder 11 Injector Circuit High
<b>P0293</b>	Cylinder 11 Contribution/Balance Fault
<b>P0294</b>	Cylinder 12 Injector Circuit Low
<b>P0295</b>	Cylinder 12 Injector Circuit High
<b>P0296</b>	Cylinder 12 Contribution/Balance Fault
<b>P0298</b>	Engine Oil Over Temperature

<b>Code</b>	<b>Definition</b>
<b>P0300</b>	Random/Multiple Cylinder Misfire Detected
<b>P0301</b>	Cylinder 1 Misfire Detected
<b>P0302</b>	Cylinder 2 Misfire Detected
<b>P0303</b>	Cylinder 3 Misfire Detected
<b>P0304</b>	Cylinder 4 Misfire Detected
<b>P0305</b>	Cylinder 5 Misfire Detected
<b>P0306</b>	Cylinder 6 Misfire Detected
<b>P0307</b>	Cylinder 7 Misfire Detected
<b>P0308</b>	Cylinder 8 Misfire Detected
<b>P0309</b>	Cylinder 9 Misfire Detected
<b>P0310</b>	Cylinder 10 Misfire Detected
<b>P0311</b>	Cylinder 11 Misfire Detected
<b>P0312</b>	Cylinder 12 Misfire Detected
<b>P0313</b>	Misfire Detected with Low Fuel
<b>P0314</b>	Single Cylinder Misfire (Cylinder not specified)
<b>P0320</b>	Ignition/Distributor Engine Speed Input Circuit Malfunction
<b>P0321</b>	Ignition/Distributor Engine Speed Input Circuit Range/Performance
<b>P0322</b>	Ignition/Distributor Engine Speed Input Circuit No Signal
<b>P0323</b>	Ignition/Distributor Engine Speed Input Circuit Intermittent
<b>P0324</b>	Knock Control System Error
<b>P0325</b>	Knock Sensor 1 Circuit Malfunction (Bank 1 or Single Sensor)
<b>P0326</b>	Knock Sensor 1 Circuit Range/Performance (Bank 1 or Single Sensor)
<b>P0327</b>	Knock Sensor 1 Circuit Low Input (Bank 1 or Single Sensor)
<b>P0328</b>	Knock Sensor 1 Circuit High Input (Bank 1 or Single Sensor)
<b>P0329</b>	Knock Sensor 1 Circuit Intermittent (Bank 1 or Single Sensor)
<b>P0330</b>	Knock Sensor 2 Circuit Malfunction (Bank 2)
<b>P0331</b>	Knock Sensor 2 Circuit Range/Performance (Bank 2)
<b>P0332</b>	Knock Sensor 2 Circuit Low Input (Bank 2)
<b>P0333</b>	Knock Sensor 2 Circuit High Input (Bank 2)
<b>P0334</b>	Knock Sensor 2 Circuit Intermittent (Bank 2)
<b>P0335</b>	Crankshaft Position Sensor A Circuit Malfunction
<b>P0336</b>	Crankshaft Position Sensor A Circuit Range/Performance
<b>P0337</b>	Crankshaft Position Sensor A Circuit Low Input
<b>P0338</b>	Crankshaft Position Sensor A Circuit High Input
<b>P0339</b>	Crankshaft Position Sensor A Circuit Intermittent
<b>P0340</b>	Camshaft Position Sensor Circuit Malfunction
<b>P0341</b>	Camshaft Position Sensor Circuit Range/Performance
<b>P0342</b>	Camshaft Position Sensor Circuit Low Input
<b>P0343</b>	Camshaft Position Sensor Circuit High Input
<b>P0344</b>	Camshaft Position Sensor Circuit Intermittent
<b>P0345</b>	Camshaft Position Sensor "A" Circuit (Bank 2)
<b>P0346</b>	Camshaft Position Sensor "A" Circuit Range/Performance (Bank 2)

<b>Code</b>	<b>Definition</b>
<b>P0347</b>	Camshaft Position Sensor "A" Circuit Low Input (Bank 2)
<b>P0348</b>	Camshaft Position Sensor "A" Circuit High Input (Bank 2)
<b>P0349</b>	Camshaft Position Sensor "A" Circuit Intermittent (Bank 2)
<b>P0350</b>	Ignition Coil Primary/Secondary Circuit Malfunction
<b>P0351</b>	Ignition Coil A Primary/Secondary Circuit Malfunction
<b>P0352</b>	Ignition Coil B Primary/Secondary Circuit Malfunction
<b>P0353</b>	Ignition Coil C Primary/Secondary Circuit Malfunction
<b>P0354</b>	Ignition Coil D Primary/Secondary Circuit Malfunction
<b>P0355</b>	Ignition Coil E Primary/Secondary Circuit Malfunction
<b>P0356</b>	Ignition Coil F Primary/Secondary Circuit Malfunction
<b>P0357</b>	Ignition Coil G Primary/Secondary Circuit Malfunction
<b>P0358</b>	Ignition Coil H Primary/Secondary Circuit Malfunction
<b>P0359</b>	Ignition Coil I Primary/Secondary Circuit Malfunction
<b>P0360</b>	Ignition Coil J Primary/Secondary Circuit Malfunction
<b>P0361</b>	Ignition Coil K Primary/Secondary Circuit Malfunction
<b>P0362</b>	Ignition Coil L Primary/Secondary Circuit Malfunction
<b>P0365</b>	Camshaft Position Sensor "B" Circuit (Bank 1)
<b>P0366</b>	Camshaft Position Sensor "B" Circuit Range/Performance (Bank 1)
<b>P0367</b>	Camshaft Position Sensor "B" Circuit Low Input (Bank 1)
<b>P0368</b>	Camshaft Position Sensor "B" Circuit High Input (Bank 1)
<b>P0369</b>	Camshaft Position Sensor "B" Circuit Intermittent (Bank 1)
<b>P0370</b>	Timing Reference High Resolution Signal A Malfunction
<b>P0371</b>	Timing Reference High Resolution Signal A Too Many Pulses
<b>P0372</b>	Timing Reference High Resolution Signal A Too Few Pulses
<b>P0373</b>	Timing Reference High Resolution Signal A Intermittent/Erratic Pulses
<b>P0374</b>	Timing Reference High Resolution Signal A No Pulses
<b>P0375</b>	Timing Reference High Resolution Signal B Malfunction
<b>P0376</b>	Timing Reference High Resolution Signal B Too Many Pulses
<b>P0377</b>	Timing Reference High Resolution Signal B Too Few Pulses
<b>P0378</b>	Timing Reference High Resolution Signal B Intermittent/Erratic Pulses
<b>P0379</b>	Timing Reference High Resolution Signal B No Pulses
<b>P0380</b>	Glow Plug/Heater Circuit Malfunction
<b>P0381</b>	Glow Plug/Heater Indicator Circuit Malfunction
<b>P0382</b>	Glow Plug/Heater Circuit "B" Malfunction
<b>P0385</b>	Crankshaft Position Sensor B Circuit Malfunction
<b>P0386</b>	Crankshaft Position Sensor B Circuit Range/Performance
<b>P0387</b>	Crankshaft Position Sensor B Circuit Low Input
<b>P0388</b>	Crankshaft Position Sensor B Circuit High Input
<b>P0389</b>	Crankshaft Position Sensor B Circuit Intermittent
<b>P0390</b>	Camshaft Position Sensor "B" Circuit (Bank 2)
<b>P0391</b>	Camshaft Position Sensor "B" Circuit Range/Performance (Bank 2)
<b>P0392</b>	Camshaft Position Sensor "B" Circuit Low Input (Bank 2)

<b>Code</b>	<b>Definition</b>
<b>P0393</b>	Camshaft Position Sensor "B" Circuit High Input (Bank 2)
<b>P0394</b>	Camshaft Position Sensor "B" Circuit Intermittent (Bank 2)
<b>P0400</b>	Exhaust Gas Recirculation Flow Malfunction
<b>P0401</b>	Exhaust Gas Recirculation Flow Insufficient Detected
<b>P0402</b>	Exhaust Gas Recirculation Flow Excessive Detected
<b>P0403</b>	Exhaust Gas Recirculation Circuit Malfunction
<b>P0404</b>	Exhaust Gas Recirculation Circuit Range/Performance
<b>P0405</b>	Exhaust Gas Recirculation Sensor A Circuit Low
<b>P0406</b>	Exhaust Gas Recirculation Sensor A Circuit High
<b>P0407</b>	Exhaust Gas Recirculation Sensor B Circuit Low
<b>P0408</b>	Exhaust Gas Recirculation Sensor B Circuit High
<b>P0409</b>	Exhaust Gas Recirculation Sensor "A" Circuit
<b>P0410</b>	Secondary Air Injection System Malfunction
<b>P0411</b>	Secondary Air Injection System Incorrect Flow Detected
<b>P0412</b>	Secondary Air Injection System Switching Valve A Circuit Malfunction
<b>P0413</b>	Secondary Air Injection System Switching Valve A Circuit Open
<b>P0414</b>	Secondary Air Injection System Switching Valve A Circuit Shorted
<b>P0415</b>	Secondary Air Injection System Switching Valve B Circuit Malfunction
<b>P0416</b>	Secondary Air Injection System Switching Valve B Circuit Open
<b>P0417</b>	Secondary Air Injection System Switching Valve B Circuit Shorted
<b>P0418</b>	Secondary Air Injection System Relay "A" Circuit Malfunction
<b>P0419</b>	Secondary Air Injection System Relay "B" Circuit Malfunction
<b>P0420</b>	Catalyst System Efficiency Below Threshold (Bank 1)
<b>P0421</b>	Warm Up Catalyst Efficiency Below Threshold (Bank 1)
<b>P0422</b>	Main Catalyst Efficiency Below Threshold (Bank 1)
<b>P0423</b>	Heated Catalyst Efficiency Below Threshold (Bank 1)
<b>P0424</b>	Heated Catalyst Temperature Below Threshold (Bank 1)
<b>P0425</b>	Catalyst Temperature Sensor (Bank 1)
<b>P0426</b>	Catalyst Temperature Sensor Range/Performance (Bank 1)
<b>P0427</b>	Catalyst Temperature Sensor Low Input (Bank 1)
<b>P0428</b>	Catalyst Temperature Sensor High Input (Bank 1)
<b>P0429</b>	Catalyst Heater Control Circuit (Bank 1)
<b>P0430</b>	Catalyst System Efficiency Below Threshold (Bank 2)
<b>P0431</b>	Warm Up Catalyst Efficiency Below Threshold (Bank 2)
<b>P0432</b>	Main Catalyst Efficiency Below Threshold (Bank 2)
<b>P0433</b>	Heated Catalyst Efficiency Below Threshold (Bank 2)
<b>P0434</b>	Heated Catalyst Temperature Below Threshold (Bank 2)
<b>P0435</b>	Catalyst Temperature Sensor (Bank 2)
<b>P0436</b>	Catalyst Temperature Sensor Range/Performance (Bank 2)
<b>P0437</b>	Catalyst Temperature Sensor Low Input (Bank 2)
<b>P0438</b>	Catalyst Temperature Sensor High Input (Bank 2)
<b>P0439</b>	Catalyst Heater Control Circuit (Bank 2)



<b>Code</b>	<b>Definition</b>
<b>P0440</b>	Evaporative Emission Control System Malfunction
<b>P0441</b>	Evaporative Emission Control System Incorrect Purge Flow
<b>P0442</b>	Evaporative Emission Control System Leak Detected (small leak)
<b>P0443</b>	Evaporative Emission Control System Purge Control Valve Circuit Malfunction
<b>P0444</b>	Evaporative Emission Control System Purge Control Valve Circuit Open
<b>P0445</b>	Evaporative Emission Control System Purge Control Valve Circuit Shorted
<b>P0446</b>	Evaporative Emission Control System Vent Control Circuit Malfunction
<b>P0447</b>	Evaporative Emission Control System Vent Control Open
<b>P0448</b>	Evaporative Emission Control System Vent Control Circuit Shorted
<b>P0449</b>	Evaporative Emission Control System Vent Valve/Solenoid Circuit Malfunction
<b>P0450</b>	Evaporative Emission Control System Pressure Sensor Malfunction
<b>P0451</b>	Evaporative Emission Control System Pressure Sensor Range/Performance
<b>P0452</b>	Evaporative Emission Control System Pressure Sensor Low Input
<b>P0453</b>	Evaporative Emission Control System Pressure Sensor High Input
<b>P0454</b>	Evaporative Emission Control System Pressure Sensor Intermittent
<b>P0455</b>	Evaporative Emission Control System Leak Detected (gross leak)
<b>P0456</b>	Evaporative Emission Control System Leak Detected (very small leak)
<b>P0457</b>	Evaporative Emission Control System Leak Detected (fuel cap loose/off)
<b>P0460</b>	Fuel Level Sensor Circuit Malfunction
<b>P0461</b>	Fuel Level Sensor Circuit Range/Performance
<b>P0462</b>	Fuel Level Sensor Circuit Low Input
<b>P0463</b>	Fuel Level Sensor Circuit High Input
<b>P0464</b>	Fuel Level Sensor Circuit Intermittent
<b>P0465</b>	Purge Flow Sensor Circuit Malfunction
<b>P0466</b>	Purge Flow Sensor Circuit Range/Performance
<b>P0467</b>	Purge Flow Sensor Circuit Low Input
<b>P0468</b>	Purge Flow Sensor Circuit High Input
<b>P0469</b>	Purge Flow Sensor Circuit Intermittent
<b>P0470</b>	Exhaust Pressure Sensor Malfunction
<b>P0471</b>	Exhaust Pressure Sensor Range/Performance
<b>P0472</b>	Exhaust Pressure Sensor Low
<b>P0473</b>	Exhaust Pressure Sensor High
<b>P0474</b>	Exhaust Pressure Sensor Intermittent
<b>P0475</b>	Exhaust Pressure Control Valve Malfunction
<b>P0476</b>	Exhaust Pressure Control Valve Range/Performance
<b>P0477</b>	Exhaust Pressure Control Valve Low
<b>P0478</b>	Exhaust Pressure Control Valve High
<b>P0479</b>	Exhaust Pressure Control Valve Intermittent
<b>P0480</b>	Cooling Fan 1 Control Circuit Malfunction
<b>P0481</b>	Cooling Fan 2 Control Circuit Malfunction
<b>P0482</b>	Cooling Fan 3 Control Circuit Malfunction
<b>P0483</b>	Cooling Fan Rationality Check Malfunction

<b>Code</b>	<b>Definition</b>
<b>P0484</b>	Cooling Fan Circuit Over Current
<b>P0485</b>	Cooling Fan Power/Ground Circuit Malfunction
<b>P0486</b>	Exhaust Gas Recirculation Sensor "B" Circuit
<b>P0487</b>	Exhaust Gas Recirculation Throttle Position Control Circuit
<b>P0488</b>	Exhaust Gas Recirculation Throttle Position Control Range/Performance
<b>P0491</b>	Secondary Air Injection System (Bank 1)
<b>P0492</b>	Secondary Air Injection System (Bank 2)
<b>P0500</b>	Vehicle Speed Sensor Malfunction
<b>P0501</b>	Vehicle Speed Sensor Range/Performance
<b>P0502</b>	Vehicle Speed Sensor Circuit Low Input
<b>P0503</b>	Vehicle Speed Sensor Intermittent/Erratic/High
<b>P0505</b>	Idle Control System Malfunction
<b>P0506</b>	Idle Control System RPM Lower Than Expected
<b>P0507</b>	Idle Control System RPM Higher Than Expected
<b>P0508</b>	Idle Control System Circuit Low
<b>P0509</b>	Idle Control System Circuit High
<b>P0510</b>	Closed Throttle Position Switch Malfunction
<b>P0512</b>	Starter Request Circuit
<b>P0513</b>	Incorrect Immobilizer Key ("Immobilizer" pending SAE J1930 approval)
<b>P0515</b>	Battery Temperature Sensor Circuit
<b>P0516</b>	Battery Temperature Sensor Circuit Low
<b>P0517</b>	Battery Temperature Sensor Circuit High
<b>P0520</b>	Engine Oil Pressure/Switch Circuit Malfunction
<b>P0521</b>	Engine Oil Pressure/Switch Range/Performance
<b>P0522</b>	Engine Oil Pressure/Switch Low Voltage
<b>P0523</b>	Engine Oil Pressure/Switch High Voltage
<b>P0524</b>	Engine Oil Pressure Too Low
<b>P0530</b>	A/C Refrigerant Pressure Sensor Circuit Malfunction
<b>P0531</b>	A/C Refrigerant Pressure Sensor Circuit Range/Performance
<b>P0532</b>	A/C Refrigerant Pressure Sensor Circuit Low Input
<b>P0533</b>	A/C Refrigerant Pressure Sensor Circuit High Input
<b>P0534</b>	Air Conditioner Refrigerant Charge Loss
<b>P0540</b>	Intake Air Heater Circuit
<b>P0541</b>	Intake Air Heater Circuit Low
<b>P0542</b>	Intake Air Heater Circuit High
<b>P0544</b>	Exhaust Gas Temperature Sensor Circuit (Bank 1)
<b>P0545</b>	Exhaust Gas Temperature Sensor Circuit Low (Bank 1)
<b>P0546</b>	Exhaust Gas Temperature Sensor Circuit High (Bank 1)
<b>P0547</b>	Exhaust Gas Temperature Sensor Circuit (Bank 2)
<b>P0548</b>	Exhaust Gas Temperature Sensor Circuit Low (Bank 2)
<b>P0549</b>	Exhaust Gas Temperature Sensor Circuit High (Bank 2)
<b>P0550</b>	Power Steering Pressure Sensor Circuit Malfunction

<b>Code</b>	<b>Definition</b>
<b>P0551</b>	Power Steering Pressure Sensor Circuit Range/Performance
<b>P0552</b>	Power Steering Pressure Sensor Circuit Low Input
<b>P0553</b>	Power Steering Pressure Sensor Circuit High Input
<b>P0554</b>	Power Steering Pressure Sensor Circuit Intermittent
<b>P0560</b>	System Voltage Malfunction
<b>P0561</b>	System Voltage Unstable
<b>P0562</b>	System Voltage Low
<b>P0563</b>	System Voltage High
<b>P0564</b>	Cruise Control Multi-Function Input Signal
<b>P0565</b>	Cruise Control On Signal Malfunction
<b>P0566</b>	Cruise Control Off Signal Malfunction
<b>P0567</b>	Cruise Control Resume Signal Malfunction
<b>P0568</b>	Cruise Control Set Signal Malfunction
<b>P0569</b>	Cruise Control Coast Signal Malfunction
<b>P0570</b>	Cruise Control Accel Signal Malfunction
<b>P0571</b>	Cruise Control/Brake Switch A Circuit Malfunction
<b>P0572</b>	Cruise Control/Brake Switch A Circuit Low
<b>P0573</b>	Cruise Control/Brake Switch A Circuit High
<b>P0574</b>	Cruise Control System - Vehicle Speed Too High
<b>P0575</b>	Cruise Control Input Circuit
<b>P0576</b>	Cruise Control Input Circuit Low
<b>P0577</b>	Cruise Control Input Circuit High
<b>P0578- P0580</b>	Reserved for Cruise Control Codes
<b>P0600</b>	Serial Communication Link Malfunction
<b>P0601</b>	Internal Control Module Memory Check Sum Error
<b>P0602</b>	Control Module Programming Error
<b>P0603</b>	Internal Control Module Keep Alive Memory (KAM) Error
<b>P0604</b>	Internal Control Module Random Access Memory (RAM) Error
<b>P0605</b>	Internal Control Module Read Only Memory (ROM) Error
<b>P0606</b>	PCM Processor Fault
<b>P0607</b>	Control Module Performance
<b>P0608</b>	Control Module VSS Output "A" Malfunction
<b>P0609</b>	Control Module VSS Output "B" Malfunction
<b>P0610</b>	Control Module Vehicle Options Error
<b>P0615</b>	Starter Relay Circuit
<b>P0616</b>	Starter Relay Circuit Low
<b>P0617</b>	Starter Relay Circuit High
<b>P0618</b>	Alternative Fuel Control Module KAM Error
<b>P0619</b>	Alternative Fuel Control Module RAM/ROM Error
<b>P0620</b>	Generator Control Circuit Malfunction
<b>P0621</b>	Generator Lamp "L" Control Circuit Malfunction

# DTC Definitions

P0622 - P0715

Code	Definition
P0622	Generator Field "F" Control Circuit Malfunction
P0623	Generator Lamp Control Circuit
P0624	Fuel Cap Lamp Control Circuit
P0630	VIN Not Programmed or Mismatch - ECM/PCM
P0631	VIN Not Programmed or Mismatch - TCM
P0635	Power Steering Control Circuit
P0636	Power Steering Control Circuit Low
P0637	Power Steering Control Circuit High
P0638	Throttle Actuator Control Range/Performance (Bank 1)
P0639	Throttle Actuator Control Range/Performance (Bank 2)
P0640	Intake Air Heater Control Circuit
P0645	A/C Clutch Relay Control Circuit
P0646	A/C Clutch Relay Control Circuit Low
P0647	A/C Clutch Relay Control Circuit High
P0648	Immobilizer Lamp Control Circuit ("Immobilizer" pending SAE J1930 approval)
P0649	Speed Control Lamp Control Circuit
P0650	Malfunction Indicator Lamp (MIL) Control Circuit Malfunction
P0654	Engine RPM Output Circuit Malfunction
P0655	Engine Hot Lamp Output Control Circuit Malfunction
P0656	Fuel Level Output Circuit Malfunction
P0660	Intake Manifold Tuning Valve Control Circuit (Bank 1)
P0661	Intake Manifold Tuning Valve Control Circuit Low (Bank 1)
P0662	Intake Manifold Tuning Valve Control Circuit High (Bank 1)
P0663	Intake Manifold Tuning Valve Control Circuit (Bank 2)
P0664	Intake Manifold Tuning Valve Control Circuit Low (Bank 2)
P0665	Intake Manifold Tuning Valve Control Circuit High (Bank 2)
P0700	Transmission Control System Malfunction
P0701	Transmission Control System Range/Performance
P0702	Transmission Control System Electrical
P0703	Torque Converter/Brake Switch B Circuit Malfunction
P0704	Clutch Switch Input Circuit Malfunction
P0705	Transmission Range Sensor Circuit Malfunction (PRNDL Input)
P0706	Transmission Range Sensor Circuit Range/Performance
P0707	Transmission Range Sensor Circuit Low Input
P0708	Transmission Range Sensor Circuit High Input
P0709	Transmission Range Sensor Circuit Intermittent
P0710	Transmission Fluid Temperature Sensor Circuit Malfunction
P0711	Transmission Fluid Temperature Sensor Circuit Range/Performance
P0712	Transmission Fluid Temperature Sensor Circuit Low Input
P0713	Transmission Fluid Temperature Sensor Circuit High Input
P0714	Transmission Fluid Temperature Sensor Circuit Intermittent
P0715	Input/Turbine Speed Sensor Circuit Malfunction

<b>Code</b>	<b>Definition</b>
<b>P0716</b>	Input/Turbine Speed Sensor Circuit Range/Performance
<b>P0717</b>	Input/Turbine Speed Sensor Circuit No Signal
<b>P0718</b>	Input/Turbine Speed Sensor Circuit Intermittent
<b>P0719</b>	Torque Converter/Brake Switch B Circuit Low
<b>P0720</b>	Output Speed Sensor Circuit Malfunction
<b>P0721</b>	Output Speed Sensor Circuit Range/Performance
<b>P0722</b>	Output Speed Sensor Circuit No Signal
<b>P0723</b>	Output Speed Sensor Circuit Intermittent
<b>P0724</b>	Torque Converter/Brake Switch B Circuit High
<b>P0725</b>	Engine Speed Input Circuit Malfunction
<b>P0726</b>	Engine Speed Input Circuit Range/Performance
<b>P0727</b>	Engine Speed Input Circuit No Signal
<b>P0728</b>	Engine Speed Input Circuit Intermittent
<b>P0730</b>	Incorrect Gear Ratio
<b>P0731</b>	Gear 1 Incorrect Ratio
<b>P0732</b>	Gear 2 Incorrect Ratio
<b>P0733</b>	Gear 3 Incorrect Ratio
<b>P0734</b>	Gear 4 Incorrect Ratio
<b>P0735</b>	Gear 5 Incorrect Ratio
<b>P0736</b>	Reverse Incorrect Ratio
<b>P0737</b>	TCM Engine Speed Output Circuit
<b>P0738</b>	TCM Engine Speed Output Circuit Low
<b>P0739</b>	TCM Engine Speed Output Circuit High
<b>P0740</b>	Torque Converter Clutch Circuit Malfunction
<b>P0741</b>	Torque Converter Clutch Circuit Performance or Stuck Off
<b>P0742</b>	Torque Converter Clutch Circuit Stuck On
<b>P0743</b>	Torque Converter Clutch Circuit Electrical
<b>P0744</b>	Torque Converter Clutch Circuit Intermittent
<b>P0745</b>	Pressure Control Solenoid Malfunction
<b>P0746</b>	Pressure Control Solenoid Performance or Stuck Off
<b>P0747</b>	Pressure Control Solenoid Stuck On
<b>P0748</b>	Pressure Control Solenoid Electrical
<b>P0749</b>	Pressure Control Solenoid Intermittent
<b>P0750</b>	Shift Solenoid A Malfunction
<b>P0751</b>	Shift Solenoid A Performance or Stuck Off
<b>P0752</b>	Shift Solenoid A Stuck On
<b>P0753</b>	Shift Solenoid A Electrical
<b>P0754</b>	Shift Solenoid A Intermittent
<b>P0755</b>	Shift Solenoid B Malfunction
<b>P0756</b>	Shift Solenoid B Performance or Stuck Off
<b>P0757</b>	Shift Solenoid B Stuck On
<b>P0758</b>	Shift Solenoid B Electrical

<b>Code</b>	<b>Definition</b>
<b>P0759</b>	Shift Solenoid B Intermittent
<b>P0760</b>	Shift Solenoid C Malfunction
<b>P0761</b>	Shift Solenoid C Performance or Stuck Off
<b>P0762</b>	Shift Solenoid C Stuck On
<b>P0763</b>	Shift Solenoid C Electrical
<b>P0764</b>	Shift Solenoid C Intermittent
<b>P0765</b>	Shift Solenoid D Malfunction
<b>P0766</b>	Shift Solenoid D Performance or Stuck Off
<b>P0767</b>	Shift Solenoid D Stuck On
<b>P0768</b>	Shift Solenoid D Electrical
<b>P0769</b>	Shift Solenoid D Intermittent
<b>P0770</b>	Shift Solenoid E Malfunction
<b>P0771</b>	Shift Solenoid E Performance or Stuck Off
<b>P0772</b>	Shift Solenoid E Stuck On
<b>P0773</b>	Shift Solenoid E Electrical
<b>P0774</b>	Shift Solenoid E Intermittent
<b>P0775</b>	Pressure Control Solenoid "B"
<b>P0776</b>	Pressure Control Solenoid "B" Performance or Stuck Off
<b>P0777</b>	Pressure Control Solenoid "B" Stuck On
<b>P0778</b>	Pressure Control Solenoid "B" Electrical
<b>P0779</b>	Pressure Control Solenoid "B" Intermittent
<b>P0780</b>	Shift Malfunction
<b>P0781</b>	1-2 Shift Malfunction
<b>P0782</b>	2-3 Shift Malfunction
<b>P0783</b>	3-4 Shift Malfunction
<b>P0784</b>	4-5 Shift Malfunction
<b>P0785</b>	Shift/Timing Solenoid Malfunction
<b>P0786</b>	Shift/Timing Solenoid Range/Performance
<b>P0787</b>	Shift/Timing Solenoid Low
<b>P0788</b>	Shift/Timing Solenoid High
<b>P0789</b>	Shift/Timing Solenoid Intermittent
<b>P0790</b>	Normal/Performance Switch Circuit Malfunction
<b>P0791</b>	Intermediate Shaft Speed Sensor Circuit
<b>P0792</b>	Intermediate Shaft Speed Sensor Circuit Range/Performance
<b>P0793</b>	Intermediate Shaft Speed Sensor Circuit No Signal
<b>P0794</b>	Intermediate Shaft Speed Sensor Circuit Intermittent
<b>P0795</b>	Pressure Control Solenoid "C"
<b>P0796</b>	Pressure Control Solenoid "C" Performance or Stuck Off
<b>P0797</b>	Pressure Control Solenoid "C" Stuck On
<b>P0798</b>	Pressure Control Solenoid "C" Electrical
<b>P0799</b>	Pressure Control Solenoid "C" Intermittent
<b>P0801</b>	Reverse Inhibit Control Circuit Malfunction

<b>Code</b>	<b>Definition</b>
<b>P0803</b>	1-4 Upshift (Skip Shift) Solenoid Control Circuit Malfunction
<b>P0804</b>	1-4 Upshift (Skip Shift) Lamp Control Circuit Malfunction
<b>P0805</b>	Clutch Position Sensor Circuit
<b>P0806</b>	Clutch Position Sensor Circuit Range/Performance
<b>P0807</b>	Clutch Position Sensor Circuit Low
<b>P0808</b>	Clutch Position Sensor Circuit High
<b>P0809</b>	Clutch Position Sensor Circuit Intermittent
<b>P0810</b>	Clutch Position Control Error
<b>P0811</b>	Excessive Clutch Slippage
<b>P0812</b>	Reverse Input Circuit
<b>P0813</b>	Reverse Output Circuit
<b>P0814</b>	Transmission Range Display Circuit
<b>P0815</b>	Upshift Switch Circuit
<b>P0816</b>	Downshift Switch Circuit
<b>P0817</b>	Starter Disable Circuit
<b>P0818</b>	Driveline Disconnect Switch Input Circuit
<b>P0820</b>	Gear Lever X-Y Position Sensor Circuit
<b>P0821</b>	Gear Lever X Position Circuit
<b>P0822</b>	Gear Lever Y Position Circuit
<b>P0823</b>	Gear Lever X Position Circuit Intermittent
<b>P0824</b>	Gear Lever Y Position Circuit Intermittent
<b>P0825</b>	Gear Lever Push-Pull Switch (Shift Anticipate)
<b>P0830</b>	Clutch Pedal Switch "A" Circuit
<b>P0831</b>	Clutch Pedal Switch "A" Circuit Low
<b>P0832</b>	Clutch Pedal Switch "A" Circuit High
<b>P0833</b>	Clutch Pedal Switch "B" Circuit
<b>P0834</b>	Clutch Pedal Switch "B" Circuit Low
<b>P0835</b>	Clutch Pedal Switch "B" Circuit High
<b>P0836</b>	Four Wheel Drive (4WD) Switch Circuit
<b>P0837</b>	Four Wheel Drive (4WD) Switch Circuit Range/Performance
<b>P0838</b>	Four Wheel Drive (4WD) Switch Circuit Low
<b>P0839</b>	Four Wheel Drive (4WD) Switch Circuit High
<b>P0840</b>	Transmission Fluid Pressure Sensor/Switch "A" Circuit
<b>P0841</b>	Transmission Fluid Pressure Sensor/Switch "A" Circuit Range/Performance
<b>P0842</b>	Transmission Fluid Pressure Sensor/Switch "A" Circuit Low
<b>P0843</b>	Transmission Fluid Pressure Sensor/Switch "A" Circuit High
<b>P0844</b>	Transmission Fluid Pressure Sensor/Switch "A" Circuit Intermittent
<b>P0845</b>	Transmission Fluid Pressure Sensor/Switch "B" Circuit
<b>P0846</b>	Transmission Fluid Pressure Sensor/Switch "B" Circuit Range/Performance
<b>P0847</b>	Transmission Fluid Pressure Sensor/Switch "B" Circuit Low
<b>P0848</b>	Transmission Fluid Pressure Sensor/Switch "B" Circuit High
<b>P0849</b>	Transmission Fluid Pressure Sensor/Switch "B" Circuit Intermittent