



THE NUMBER ONE DODGE/CUMMINS TURBO DIESEL RESOURCE

RAM DIAGNOSTIC TROUBLE CODES

A WORD ABOUT THE TURBO DIESEL REGISTER

How did the Turbo Diesel Register get its start? First off, I'm an automotive enthusiast. An automotive enthusiast that was in search of a tow vehicle for my admittedly small collection of automobiles. As you can imagine, the search for the right tow vehicle took me in the direction of the Ram Turbo Diesel. My search was aided by the fact that my previous job was in the diesel engine profession as a Cummins distributor product support representative. Do I have a good knowledge of the Turbo Diesel engine? Well, maybe. I'll let you be the judge.

Back to the "story." As an automotive enthusiast, I am a member of a handful of car club/register type publications. In addition, I subscribe to just about every car and truck monthly publication in hopes that I can learn something more about my vehicles. The only vehicle I owned that didn't have its own club was the Turbo Diesel. The light goes on. Why not start a Turbo Diesel club? The light flickers. I know the immediate answer: not enough time, no money, and who would write the articles? Needless to say, the idea got put on the back burner. Another great idea, but...

Looking back, that was many long years ago. Prior to our first magazine (Fall '93) I took time to talk to other Turbo Diesel owners who wanted to know more about their truck and specifically the Cummins engine. At the time I knew the Turbo Diesel Register would work. I also knew it would be a lot of hard work With an up-front monetary investment and the commitment to publish the magazine.

Positive discussions With other club/register publishers and an unofficial "good luck" or two from the manufacturers, and well, I was still hesitant. Back to the all-important concerns: time, money and writing skills. Time? In the initial two-career-days it was nothing to stay up until 2:00 a.m. Money? What the heck, we took out a second mortgage. And writing skills? You've heard the saying, "if it is to be, it is up to me." Thus, we started the TDR way back in the summer of 1993.

Robert Patton TDR Editor

PS. We hope you'll learn something from the following collection of tips and Ram technical data. Please realize this booklet is just the "tip of the iceberg." The TDR and its members provide a wealth of information. How to join? Please fill-out and mail the order form or register on-line at www.turboDieselregister.com.

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An annual subscription to the Turbo Diesel Register is \$35.00 U.S. and \$45 Canadian/International.

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RAM DIAGNOSTIC TROUBLE CODES

How do I start this story?

Let's take a short look at our truck's 20+ year evolution. How many electrical controls were on a First Generation Turbo Diesel? Answer: none. If I'm not mistaken, we didn't see on board diagnostic (OBD) plug-in ports until the Second Generation trucks in 1996. (Or, was it 1998.5?) Regardless, today's truck owner and service technician would be lost without code-this-that-or-the-other.

How do you read these diagnostic trouble codes (DTCs)? What do all of the codes mean? How does one determine the severity of the code? How many codes does a Ram service technician have to deal With? How do you access and read the codes?

Great questions. To answer them I went to the TDR's web site and in the Member's Area I clicked on [Buyer's Guide](#). Then, starting on page 300 and continuing for 8 pages, there is an article titled "DTCs and You." The article was authored by yours truly; the TDR's Joe Donnelly and John Holmes; and television celebrity/TDR writer/ASME mechanic/lots of other titles (ask his wife Diana) Sam Memmolo.

Close reading of "DTCs and You" (see next page) will answer all of the above questions.

Well, it will almost answer almost all of your questions.

I say "answer almost all of your questions" because there are questions you don't know enough to know enough, to ask.

Did you follow that?

The point of this rambling: In late 2014 TDR writer Joe Donnelly sourced 25 additional pages of diagnostic trouble codes that are used in your Fourth Generation (2010-current) Ram truck. So, just like the evolution from zero codes in 1996 to the two pages of codes found in the [Buyer's Guide](#) article, we now have 25 pages of codes that a Ram technician can source on his diagnostic equipment.

In John Holmes' portion of the [Buyer's Guide](#) article (again, see next page) he covers the all-too-familiar "P" codes (powertrain) and he mentions "B" codes (body), "C" codes (chassis). Back then we only focused on the P codes. Joe Donnelly's 25 page update gives us P, Band codes as well as listings for "U," which deal with diagnostics with the truck's body control module/communications center. (Think anything from stereo speakers, to curtain air bag deployment, to "Frontal Squibs.")

If in need, I hope you take full advantage of this resource. I'm thankful that we have this data available for you. Thanks, TDR members and writers!

Robert Patton
TDR Staff

DTCs and You

A Collection of Articles by the TDR Staff

You have got to love abbreviations. What is a DTC?

Better yet, what is a CEL, a SES, or an MIL?

DTC: diagnostic trouble code

CEL: check engine light

SES: service engine soon light

MIL: malfunction indicator light

All four abbreviations mean the same, there is some kind of a problem under the hood. But, how much of a concern should the glowing red light (ha, yha a GRL?) be to you? And, how do you retrieve the trouble code and determine its meaning?

As is the case with most things related to the Dodge/Cummins Turbo Diesel truck, our membership group has "been there and done that." Therefore the following is a collection of articles that I've arranged in a sequence for the best understanding.

- Issue 51: Author Sam Memmolo gives us background information on DTCs.
- Issue 66: Author John Holmes tells us about the most common DTCs that dealership technicians encounter. This article also has a discussion about the severity, or lack thereof, of DTCs.
- Issue 55: Author Joe Donnelly discusses DTCs for '98.5 to 2007 vehicles.
- Issue 67: Editor Robert Patton gives the audience an update on DTCs for the '07.5 and newer 6.7-liter engine.

"DTCs and You," I am hopeful this collection of articles will shed some light (pun intended) on the subject. Seriously, tell your fellow Turbo Diesel owners about your new found understanding of codes and about the TDR magazine.

Robert Patton
TDR Staff

From Issue 51: WHAT DOES THE CODE MEAN?

by Sam Memmolo

DECODING YOUR WARNING LIGHT!

Recently the TDR's editor called me and asked me to explain the trouble code quandry that many of us will face as we drive computer controlled vehicles. The call was prompted by an owner that had purchased a 2003 Dodge Shop Manual but was bewildered by the omission of the diagnostic trouble codes from the book. As a benchmark I consulted a '99 manual and was only able to see the code numbers and their meanings. A call to a Dodge contact revealed that the purchase of an additional 2003 Powertrain book (at 1300 pages) would be necessary to access the codes, their meanings, probalby cause, and action descriptives. Wow, that book would be another \$40. Worth it? At 1300 pages the book offers troubleshooting tests to help the technician trace the cause of the diagnostic trouble code. This information was not available in the 10 pages of codes in the old '99 book. So the question goes back to the truck's owner, "How much do you want to know?"

I'll try and help you sort through the DTC dilemma. But, first let's take a quick trip back in time before there were electronic engine and powertrain management systems. From the automobile's beginning the internal combustion engine was fueled With a mixture of air and fuel.

With stricter environmental legislation (circa late '70s), the manufacturers realized that mechanical engine fuel and spark controls were not reliable or durable enough

to maintain the optimal 14.7:1 air fuel ratio, dubbed by engineers as stoichiometric. This 14.7:1 air fuel mixture is critical for proper operation of the Catalyst in gasoline-fueled engines.

With the advances in microprocessor reliability, manufacturers decided that using electronics to control fuel distribution and spark timing would provide more efficient engine operation over a longer period of time, and thereby lower tailpipe emissions and provide better fuel economy as well as increased Performance.

While electronic ignition provided a hotter, longer duration ignition spark at the plugs, it also dramatically reduced the need for periodic maintenance. Replacing points every 12 thousand miles or so became ancient history in a matter of a few years.

The early computer systems were basic, With very little intelligence, and provided little or no diagnostic functions. In 1981, GM introduced its first fully controlled system With diagnostic trouble codes. This was the GM or Computer Command Control system.

To alert the operator and the technician to a possible malfunction, a light on the instrument panel would illuminate. The first diagnostic trouble codes (DTCs) were now in place. The light initially read "Check Engine." That

was confusing, so now many read "Service Engine Soon." This can still be misleading, because the light can illuminate when there is a Transmission problem, a Suspension problem, and even A/C and heater malfunctions.

The trade calls these "malfunction indicator lights" (MIL). Most '95 and later vehicles are controlled by the second generation computer systems called "on-board diagnostics II," or OBD-II.

There are many codes in use now as compared to just a handful in the early systems. OBD-II systems have much greater diagnostic ability, and can even track misfires down to an individual Cylinder.

With this background information out of the way, let me suggest how the diagnostic trouble codes are of benefit to the "average Joe." First, just getting a scan tool and retrieving DTCs has never fixed a problem. Even if you have a reference manual that explains what the numerical codes mean, that is simply not enough to fix a car or truck. If it were, we would all be in much better shape.

If you experience a MIL illumination and/or a message in the Driver information panel, the first step is to perform a good visual inspection. Step two would be to retrieve the trouble code using a scan tool. Once you have the code and get the definition, you are now ready to start troubleshooting.

Let's take this example: you are driving along and everything is normal. Then the dreaded MIL illuminates. You determine that the oil is fine, the coolant is okay, no belts or hoses broken, and no obvious signs of a major vacuum leak or any other problem.

You get the scan tool out and it tells you the code number. You look in the service manual, and the code refers to a defective exhaust gas recirculation (EGR) Circuit.

Some would think that you could just replace the EGR valve, and bingo, the problem is solved. Not so easy!

The EGR or exhaust gas recirculation system is composed of several components: The EGR valve, the vacuum or electric source that supplies the energy to open and close (modulate) the valve, and the controls that allow the electricity or vacuum to flow to the valve. Some systems even have EGR Sensors.

Not yet convinced that it is a complicated system? Add to all of the above the Circuit in the microprocessor, the wiring and connections, the physical plugging up or carboning up of the EGR gas passages, and you have a treat in store when it comes to diagnosing the problem.

In order to properly diagnose and repair a problem signaled by the MIL's illumination, you will also need a diagnostic flow chart.

These diagnostic charts take you through a regimen of tests specific to the code. Step by step it directs you

through a procedure that should bring you to a diagnosis and pinpoint the problem. Then you can effectively perform the repairs needed.

Diagnostic charts will not fix every problem, but they will teach you a tremendous amount about how that particular Circuit works, and the possibilities of component Failure.

So, the only way to accurately and professionally diagnose and repair the malfunction, without shot-gunning it With expensive components (which often cannot be returned to the parts house or the dealer), is to have a decent scan tool With the capability to interface With your particular application, and the appropriate manual With the diagnostic flow charts.

You may also need some additional equipment, such as a good digital multimeter, a hand operated vacuum pump, and even a heat gun.

From the scenario I have presented using an automotive EGR problem as an example you can see that the answer to "How much do you want to know?" is as unique as each Turbo Diesel owner. The factory manuals are available (see Issue 50, page 51, and www.techauthority.com). The code number is easy to retrieve using the on-off-on-off-on technique that was described on page 10. There are affordable, good scanners available from Auto X-Ray and Actron. These devices are suitable for the do-it-yourselfer and work well. If you understand the system, follow the charts, and use a little common sense, you should be able to keep things humming yourself, and avoid the costly trips to the dealer.

Purchasing these tools, manuals, and electronic devices is not inexpensive, but when a club or a few owners get together and pool their resources, the cost becomes manageable. If you opt for an independent repair shop, be sure to question them as to what types of equipment and information systems they have in-house that apply to your vehicle. If they are not able to make you feel warm and fuzzy, be sure to check alternative shops.

Here are a few more tips.

The emission system warranty on most new vehicles (gasoline or Diesel) is 80,000 miles. You should read your Owner's Manual and emission warranty information to see just exactly what is covered. You will be very surprised!

The other thing to keep in mind is to either fix the problem or have the problem fixed at the first indication, before the problem becomes into a big deal. I promise you, if you drive it With the light on, you are asking for trouble.

Happy Motoring!

Sam Memmolo
TDR Writer

From Issue 66: **CODES, CAUSES AND CONCERNS**

by John Holmes

I got together With Dario Scafidi, one of Carson Dodge's top Diesel technicians, to try to outline the most common codes (out of the *hundreds* of them) that he and the other techs see frequently. The next question was whether it should be of concern to the owner or if you should not worry about it. One of the interesting things I ran into, from the technicians that had worked in other states, was how the frequency and type of code varies With different parts of the country. That makes sense because there can't be much greater contrast in environments than there is between our high desert location in Nevada and our Hill Country location in Texas. Altitude, temperature swings, humidity, fuel formulas, etc., all impact the vehicle's operation.

In general, if the check engine light is blinking, shut it down and get it directly to your dealer before doing further damage. If it stays on steady, better check it out and see if there's cause for concern. If it goes out after about five restarts, that generally indicates no reason for concern. (However, the code will still be stored in the PCM/ECM.)

The codes can (sort of) be deciphered as follows: P = Powertrain; B = Body; C = Chassis. On the second digit, it's either 0 = Standard or 1 = Manufacturer specific. Generally, the third digit breaks down this way: 1 = Emissions management; 2 = Injector Circuit; 3 = Ignition; 4 = Auxiliary emissions; 5 = Vehicle speed and idle control; 6 = Computer and output Circuit; 7 = Transmission.

The ones Dario highlighted on the 6.7-liter engines are:

P1451 - Diesel Particulate Filter System Performance (emissions - re-clean needed - maybe replace DPF);

P2000 - NOx Absorber Efficiency Below Threshold - Bank 1 (emissions - O2 Sensors);

P2002 - Diesel Particulate Filter Efficiency Below Threshold (emissions);

P200C - Diesel Particulate Filter Over Temperature - Bank 1 (emissions);

P200E - Catalyst System Over Temperature - Bank 1 (emissions);

P2463 - Diesel Particulate Filter - Soot Accumulation (DPF full, possible Regeneration or replacement).

As you can see, these all pertain to the emissions system and they should be checked right away to avoid expensive repairs or replacements. The other serious 6.7-liter code often seen is: P2262 - Turbocharger Boost Pressure Not Detected - Mechanical (flash, turbo clean or replacement).

Moving backward to the '03-'07 Third Generation, 5.9-liter, common rail Diesels:

P0148 - Fuel Delivery Error (restriction - fuel Filter, Transfer pump, injectors);

P0191 - Fuel Rail Pressure Sensor Circuit Performance (flash);

P0201 through P0206 - Fuel Injector 1 through 6 Circuit/Open (engine miss - electrical, valve cover gasket);

P0301 through P0306 - Cylinder 1 through 6 Misfire - (engine miss - mechanical);

P0606 - Internal Control Processor (PCM Failure - this one can also apply to the 6.7L);

P0341 - Camshaft Position Sensor Performance - Bank 1 Sensor 1 (Sensor, ECM, wiring or even a cam shaft).

The above items are important to get fixed, but P0514 - Battery Temperature Sensor Performance is a just a nuisance (flash). A flash will also take care of P0111 - Intake Air Temperature Sensor 1 Performance. An aftermarket Performance box can set these: P0335 and P0336 - Crankshaft Position Sensor Circuit and Performance (no fix - light will eventually go out). Some units like to set P0513 - Invalid Skim Key (vehicle runs fine). Watch out for P0628 - Low Voltage Detected at Lift Pump (generally means the pump is going out - sometimes shows up on the 24-valves too).

Again, trotting backwards to the '98.5-'02 Second Generation 24-valve engines:

P0216 - Injection Pump Timing Failure (bad news - may mean replacement - check Transfer pump VOLUME, not Pressure - fuel gauge can help prevent this);

P0234 - Turbo Boost Limit Exceeded (usually occurs With the use of a "boost elbow" on the turbo that comes With a power enhancement package - you'll have to live With it or go back to stock).

In the dealership, the technicians use a DRB III for trucks up through 2005. They use a StarScan, StarMobile or the new Witech for trucks 2006 and newer. These devices are specific Chrysler diagnostic tools and are pricey. Today the average owner can buy an aftermarket scan tool for a very reasonable price, although it won't be as sophisticated as those mentioned above. One example is the ScanGauge II that I wrote about in Issue 61, on page 88. However, that one does a whole bunch of things more than read and clear codes. Companies that make units of varying sophistication and pricing levels are: AutoXray; Actron; Equus Products, CarMD (check the Internet); and if you drop by Harbor Freight Tools you'll discover it's a good source for similar items. Any of the tool peddlers like Snap-On, Mac, Cornwell or Matco will also have similar types of scanners. Put this in your next letter to Santa.

John Holmes
TDR Writer

Editor's note: John's article on diagnostic trouble codes (DTCs) goes hand-in-hand With my article on DTCs in Issue 64, pages 46-49. In that article I listed the codes that are applicable for the 6.7-liter engine: how to retrieve the codes; how serious the code may be to you; and make it go away.

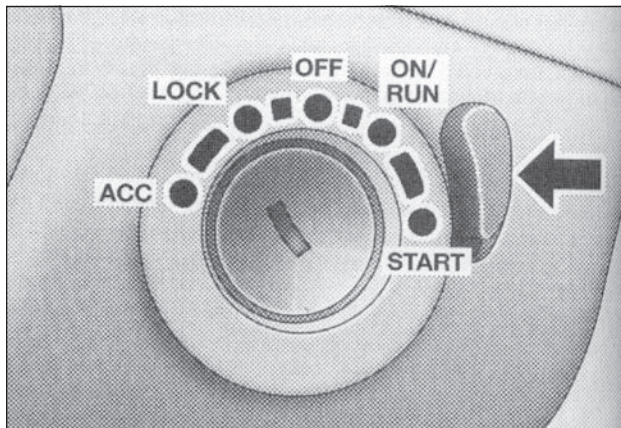
As a refresher, here is a reprint from Issue 64 on how to retrieve the DTCs.

What is an owner to do when you get the check engine light (CEL)/aka malfunction indicator light (MIL), or electronic throttle control (ETC) illumination on your dash? Better yet, what is the used truck owner, 10 years down the road, going to do? Can you say "black electrical tape?"

No, black electrical tape is not the answer. The answer is to find out what the dang-blasted DTC number is and look up its meaning. Then, make an informed decision about whether you will "drive thru" the diagnostic glitch or whether trouble looms on the horizon.

First, how do you retrieve the code? Internet myth has it that the codes cannot be brought-up on the '07.5 and newer trucks (some say since '06). On the flip-Side, internet research will show you how to pull up the codes on a photobucket video.

I'll save you the time finding the photobucket video. The technique is the same as it has been since 1994. (I think it is that long ago.) Here is a diagram from your owner's Manual so that we're using the same words.



Using Dodge's vernacular, here is the method:

- **Insert key**
- **Move it from Lock to Off, pause**
- **Move to On/Run**
- **Back to Off**
- **Move to On/Run**
- **Back to Off**
- **Move to On/Run and stop**

The three movements from Off to On/Run should be done in less than, say, 5-seconds.

Read the codes where the truck's odometer shows total miles (not trip miles). Make note of the code(s) and continue your research as you look up the codes and their meanings.

The underlying question that neither John nor I have answered: "How serious is the code to the continuation of a trip to the convenience store or a cross-country journey?" The cop-out answer, "Mr. Turbo Diesel owner, it depends on the code and the nature of the problem." We do not know the answer.

My conclusion from Issue 64 remains the same...

What have we learned?

- In the future DTCs will continue in greater numbers and scope.
- You can retrieve DTCs using the "key trick."
- You have the codes listed in this magazine. Copy and carry them With you.
- You have a judgment decision to make should you encounter a DTC.
- If your problem is minor and does not reoccur the MIL light will turn off (foiur drive cycles) and the code will be cleared from OBD Memory (40 drive cycles).

Editor's Update and Final Thoughts

If you flipped to this text (as directed in the discussion about DTCs on page 53) you can see that I do not have any further updates about 5.9-liter or 6.7-liter engine derate or damage implications to share With you. Author Holmes and technician Scafidi presented a good article on what codes are most common. Collectively we're still looking for the answer(s) to how serious a code can be to the further operation of your truck. Today's conclusion is the same as it was in Issue 64: Each DTC has a unique meaning and each owner has to make a judgment call based on their situation, mechanical aptitude and tolerance for repair.

**Robert Patton
TDR Staff**

From Issue 66: FUTURE ECM COMPLEXITY AND CURRENT DIAGNOSTIC TROUBLE CODES

by Robert Patton

In Issue 63's "Blowin' in the Wind" column there were quotes from the trade publication Transportation Topics that discussed future Diesel emissions regulations. Titled "Ex-EPA Official Sees No New Rules on Diesel Exhaust Emissions After 2010," the article was examined for its meaning to the TDR audience. At the end of the quoted material from Transportation Topics I concluded the following: "In trying to interpret what the 'No New Rules' headline might actually mean for the 6.7-liter engine, I called one of my contacts at Cummins. What I took away from the phone exchange is the confident declaration that the engine is 'very well Positioned.' The emissions from the 6.7-liter engine are on par With gasoline engines—and the emissions horizon for gasoline is stable. Reassuring. Nevertheless, the current notice of proposed rule (NPR) making has a deadline of 2013. The 2013 rules will have Dodge and Cummins further continuing modifications to meet on-board diagnostics (OBD) requirements. The bottomline...more Sensors and greater ECM complexity as more engine parameters are monitored, controlled and reported through OBD read-outs. No rest for the weary."

Do you need further evidence of the greater ECM complexity and more items being monitored and reported?

Well you did not have to look any further than the summary of the latest technical service bulletin (TSB) 18-013-08 Revision A which was released in December and applies to all 6.7-liter engines produced prior to November 27, 2008. The summary was in Issue 63 on pages 38 and 39.

Did you miss the correlation of further diagnostics and the implementation of modifications on the 6.7-liter engine?

I'll save you from searching through your TDR library. Here is the text:

"Owners should also note that With the revised software of TSB 18-013-08 Revision A, a number of improvements have been made to the engine diagnostics. Performing this service bulletin completely will enable these diagnostic improvements.

- Improved Fuel Level Sensor diagnostics in the ECM.
- Improvement to the single diagnostic DTC P0148 - Fuel Delivery Error. This DTC is now addressed by the following two DTC diagnostics:
 - P1011 - Fuel Pump Delivery Pressure Too Low
 - P1012 - Fuel Pump Delivery Pressure Too High
- Creation of three new DTC's to address the inlet air temperature Sensor separate from the ambient air temperature Sensor. The new DTC's are:

P1191 - Inlet Air Temperature Sensor Rationality/Performance. This DTC enhances the current DTC P0071 - Inlet air Temp Sensor Rationality/Ambient Air Temperature Sensor Performance

P1192 - Inlet Air Temperature Sensor Too Low. This DTC enhances the current DTC P0072 - Inlet Air Temp Sensor Voltage Too Low

P1193 - Inlet Air Temperature Sensor Too High. This DTC enhances the current DTC P0073 - Inlet Air Temp Sensor Voltage Too High

- New ECM and CCN software that together will improve the customer understanding of the exhaust aftertreatment system messages that can be displayed on the overhead Electronic Vehicle Information Center (EVIC).
- Creation of a new DTC to address VGT actuator calibration event Failures separate from other VGT actuator communication faults for P0046. The new DTC is: P003A - Turbocharger Boost Control Module Position Exceeded Learning Limit."

6.7-Liter DTC Code Retrieval

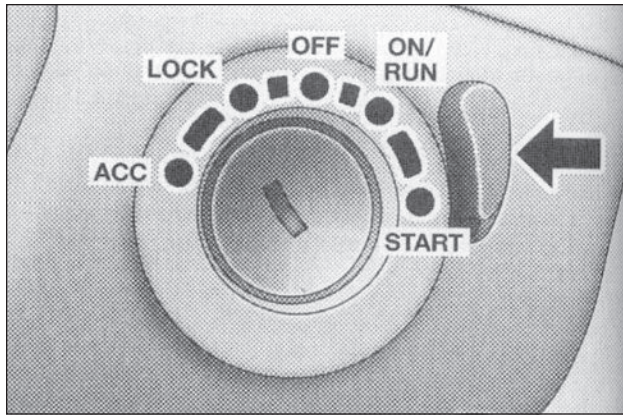
Okay, we have laid the ground work for your understanding of the engine and exhaust aftertreatment's current and future complexity.

What is an owner to do when you get the check engine light (CEL)/aka malfunction indicator light (MIL), or electronic throttle control (ETC) illumination on your dash? Better yet, what is the used truck owner, 10 years down the road, going to do? Can you say "black electrical tape?"

No, black electrical tape is not the answer. The answer is to find out what the dang-blasted DTC number is and look up its meaning. Then, make an informed decision about whether you will "drive thru" the diagnostic glitch or whether trouble looms on the horizon.

First, how do you retrieve the code? Internet myth has it that the codes cannot be brought-up on the '07.5 and newer trucks (some say since '06). On the flip-Side, internet research will show you how to pull up the codes on a photobucket video.

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- Move to On/Run and stop

The three movements from Off to On/Run should be done in less than, say, 5-seconds.

Read the codes where the truck's odometer shows total miles (not trip miles). Make note of the code(s) and continue your research With the TDR magazine in-hand.

What Do the Codes Mean

With apologies in advance to musician Chuck Berry ("No Particular Place to Go")

*Ridin' along in my Diesel truck
A code comes up, I'm outta luck.*

*What does it mean, well I don't know
Hoping the truck it doesn't slow.*

*I'll check it out when I get home
With no particular place to go.*

So, now I'm home and the computer is logged on to www.tdr1.com. My thanks to "Kilo" who posted the 6.7-liter engine code numbers and descriptions last October. The table:

P0016-Crankshaft/Camshaft Timing Misalignment - Bank 1 Sensor 1

P0031-O2 Sensor 1/1 Heater Circuit Low

P0037-O2 Sensor 1/2 Heater Circuit Low

P003A-Turbocharger Boost Control Module Position Exceeded Learning Limit

P0046-Turbocharger Boost Control Circuit Performance

P0049-Turbocharger Turbine Overspeed

P006E-Turbocharger Boost Control Module Supply Voltage Circuit Low

P006F-Turbocharger Boost Control Supply Voltage Circuit High

P0071 - Inlet Air Temp Sensor Rationality - ECM

P0071 - Ambient Air Temp Sensor Performance (TIPM)

P0072 - Inlet Air Temp Sensor Voltage Too Low - ECM

P0072 - Ambient Air Temp Sensor Circuit Low (TIPM)

P0073 - Inlet Air Temp Sensor Voltage Too High - ECM

P0073 - Ambient Air Temp Sensor Circuit High (TIPM)

P007C - Charge Air Cooler Temperature Sensor Circuit Low

P007D - Charge Air Cooler Temperature Sensor Circuit High

P007E - Charge Air Cooler Temperature Sensor Circuit Intermittent/erratic

P0087 - Fuel Rail Pressure Too Low

P0088 - Fuel Rail Pressure Too High

P00AF - Turbocharger Boost Control Module Performance

P0101 - Mass Air Flow Sensor "A" Circuit Performance

P0102 - Mass Air Flow Sensor "A" Circuit Low

P0103 - Mass Air Flow Sensor "A" Circuit High

P0106 - Manifold Absolute Pressure Sensor Performance

P0107 - Manifold Absolute Pressure Sensor Circuit Low

P0108 - Manifold Absolute Pressure Sensor Circuit High

P0111 - Intake Air Temperature Sensor 1 Performance

P0112 - Intake Air Temperature Sensor Circuit Low

P0113 - Intake Air Temperature Sensor 1 Circuit High

P0116 - Engine Coolant Temperature Sensor Performance

P0117 - Engine Coolant Temperature Sensor Circuit Low

P0118 - Engine Coolant Temperature Sensor Circuit High

P0128 - Thermostat Rationality

P0131 - O2 Sensor 1/1 Circuit Low

P0135 - O2 Sensor 1/1 Heater Performance

P0137 - O2 Sensor 1/2 Circuit Low

P0141 - O2 Sensor 1/2 Heater Performance

P0148 - Fuel Delivery Error

P0169 - Water In Fuel Detected For Too Long

P0191 - Fuel Rail Pressure Sensor Circuit Performance

P0192 - Fuel Pressure Sensor Low

P0193 - Fuel Pressure Sensor High

P0201 - Fuel Injector 1 Circuit/open

P0202 - Fuel Injector 2 Circuit/open

P0203 - Fuel Injector 3 Circuit/open

P0204 - Fuel Injector 4 Circuit/open

P0205 - Fuel Injector 5 Circuit/open

P0206 - Fuel Injector 6 Circuit/open

P0217 - Coolant Temperature Too High

P0219 - Engine Overspeed

P0251 - Injection Pump Fuel Valve Feedback

P0300 - Multiple Cylinder Misfire

P0335 - Crankshaft Position Sensor Circuit

P0336 - Crankshaft Position Sensor Performance

P0340 - Camshaft Position Sensor Circuit - Bank 1 Sensor 1

P0341 - Camshaft Position Sensor Performance - Bank 1 Sensor 1

P0381 - Wait-To-Start Lamp Inoperative

P0400 - EGR System Flow Malfunction

P0401 - EGR System Performance

P0402 - EGR Flow Excessive Detected
 P0403 - EGR Control Circuit/open
 P0404 - EGR Position Sensor Performance Diesel
 P0405 - EGR Position Sensor Circuit Low
 P040B - Exhaust Gas Recirculation Temperature Sensor 1 Circuit Performance
 P040C - Exhaust Gas Recirculation Temperature Sensor 1 Circuit Low
 P040D - Exhaust Gas Recirculation Temperature Sensor 1 Circuit High
 P0420 - Catalyst Efficiency Bank 1
 P042E - Exhaust Gas Recirculation Control Stuck Open
 P0461 - Fuel Level Sensor 1 Performance
 P0462 - Fuel Level Sensor 1 Circuit Low
 P0463 - Fuel Level Sensor 1 Circuit High
 P0471 - Exhaust Pressure Sensor 1 Performance
 P0472 - Exhaust Pressure Sensor 1 Low
 P0473 - Exhaust Pressure Sensor 1 High
 P0480 - Cooling Fan 1 Control Circuit/open
 P0483 - Cooling Fan Speed
 P0487 - EGR Airflow Throttle Control Circuit A Open
 P0488 - EGR Airflow Throttle Control Circuit Performance
 P0489 - EGR Control Circuit Low
 P0501 - Vehicle Speed Sensor 1 Performance
 P0505 - Engine Speed At Idle - Data Erratic, Intermittent or Incorrect
 P0513 - Invalid Skim Key
 P0514 - Battery Temperature Sensor Performance
 P0516 - Battery Temperature Sensor Circuit Low
 P0517 - Battery Temperature Sensor Circuit High
 P051B - Crankcase Pressure Sensor Circuit Range/Performance
 P051C - Crankcase Pressure Sensor Circuit Low
 P051D - Crankcase Pressure Sensor Circuit High
 P0521 - Engine Oil Pressure Sensor Performance
 P0524 - Engine Oil Pressure Too Low
 P0532 - A/C Pressure Sensor Circuit Low
 P0533 - A/C Pressure Sensor Circuit High
 P0541 - Intake Air Heater Control Circuit 1 Low
 P0542 - Intake Air Heater Control Circuit 1 High
 P0545 - Exhaust Gas Temperature Sensor Circuit Low - Bank 1 Sensor 1
 P0546 - Exhaust Gas Temperature Sensor Circuit High - Bank 1 Sensor 1
 P0562 - Battery Voltage Low
 P0563 - Battery Voltage High
 P0571 - Brake Switch 1 Performance
 P0572 - Brake Switch 1 Stuck On
 P0573 - Brake Switch 1 Stuck Off
 P0580 - Speed Control Switch 1 Circuit Low
 P0581 - Speed Control Switch 1 Circuit High
 P0585 - Speed Control Switch 1/2 Correlation
 P0592 - Speed Control Switch 2 Circuit Low
 P0593 - Speed Control Switch 2 Circuit High
 P0601 - Internal Memory Checksum Invalid
 P0604 - Internal Control Module Ram
 P0606 - Internal Control Processor
 P0607 - ECU Internal Performance
 P061A - ETC Level 2 Torque Performance
 P061C - ETC Level 2 Rpm Performance
 P0622 - Generator Field Control Circuit/open
 P0628 - Fuel Pump Control Circuit Low
 P0629 - Fuel Pump Control Circuit High
 P062C - ETC Level 2 Mph Performance
 P0630 - VIN Not Programmed In PCM
 P0633 - Skim Secret Key Not Stored In Pcm
 P063C - Generator Voltage Sense Low
 P063D - Generator Voltage Sense High
 P0642 - Sensor Reference Voltage 1 Circuit Low
 P0643 - Sensor Reference Voltage 1 Circuit High
 P0646 - A/C Control Circuit Low
 P0647 - A/C Control Circuit High
 P0652 - Sensor Reference Voltage 2 Low
 P0653 - Sensor Reference Voltage 2 High
 P065S - Generator System Performance
 P0698 - Sensor Reference Voltage 3 Circuit Low
 P0699 - Sensor Reference Voltage 3 Circuit High
 P06A4 - Sensor Reference Voltage 4 Circuit Low
 P06A5 - Sensor Reference Voltage 4 Circuit High
 P0700 - Transmission Control System (MIL Request)
 P0850 - Park/Neutral Switch Performance
 P1011 - Fuel Pump Delivery Pressure Too Low
 P1012 - Fuel Pump Delivery Pressure Too High
 P1191 - Inlet Air Temperature Sensor Rational/Performance
 P1192 - Inlet Air Temperature Sensor Low
 P1193 - Inlet Air Temperature Sensor High
 P113C - O2 Sensor Power Supply Circuit Performance
 P125A - Power Enable Control Circuit Low
 P125B - Power Enable Control Circuit High
 P1272 - A/C Clutch Control Circuit 2 Low (TIPM)
 P1273 - A/C Clutch Control Circuit 2 High (TIPM)
 P1274 - A/C Clutch Control Circuit 2 Open (TIPM)
 P1275 - A/C Clutch Control Circuit 2 Overcurrent (TIPM)
 P1277 - Starter Control Circuit 2 Low (TIPM)
 P1278 - Starter Control Circuit 2 High (TIPM)
 P1279 - Starter Control Circuit 2 Open (TIPM)
 P127A - Starter Control Circuit 2 Overcurrent (TIPM)
 P127C - Fuel Pump Control Circuit 2 Low (TIPM)
 P127D - Fuel Pump Control Circuit 2 High (TIPM)
 P127E - Fuel Pump Control Circuit 2 Open (TIPM)
 P127F - Fuel Pump Control Circuit 2 Overcurrent (TIPM)
 P141A - Exhaust Gas Temperature Sensor 1 And 2 Signals Swapped
 P144E - EGR Cooler Bypass Status Line Circuit Low
 P144F - EGR Cooler Bypass Status Line Circuit High
 P1451 - Diesel Particulate Filter System Performance

P1484 - Catalyst Overheat Detection
 P1506 - Crankcase Depression Regulator Valve Performance
 P1507 - Crankcase Filter Restriction
 P1508 - Crankcase Filter Restriction - Replace Filter
 P2000 - NO_x Absorber Efficiency Below Threshold - Bank 1
 P2002 - Diesel Particulate Filter Efficiency Below Threshold
 P200C - Diesel Particulate Filter Over Temperature - Bank 1
 P200E - Catalyst System Over Temperature - Bank 1
 P2032 - Exhaust Gas Temperature Sensor Circuit Low - Bank 1 Sensor 2
 P2033 - Exhaust Gas Temperature Sensor Circuit High - Bank 1 Sensor 2
 P2080 - Exhaust Gas Temp Sensor Circuit Performance - Bank 1 Sensor 1
 P2084 - Exhaust Gas Temp Sensor Circuit Performance - Bank 1 Sensor 2
 P2121 - Accelerator Pedal Position Sensor 1 Performance
 P2122 - Accelerator Pedal Position Sensor 1 Circuit Low
 P2123 - Accelerator Pedal Position Sensor 1 Circuit High
 P2127 - Accelerator Pedal Position Sensor 2 Circuit Low
 P2128 - Accelerator Pedal Position Sensor 2 Circuit High
 P2141 - EGR Airflow Throttle Control Circuit Low
 P2142 - EGR Airflow Throttle Control Circuit High
 P2227 - Barometric Pressure Sensor Rationality
 P2228 - Barometric Pressure Circuit Low
 P2229 - Barometric Pressure Circuit High
 P2262 - Turbocharger Boost Pressure Not Detected - Mechanical
 P2266 - Water In Fuel Sensor Circuit Low
 P2267 - Water In Fuel Sensor Circuit High
 P2269 - Water In Fuel Condition
 P2299 - Brake Pedal Position / Accelerator Pedal Position Incompatible
 P242B - Exhaust Gas Temp Sensor Circuit Performance - Bank 1 Sensor 3
 P242C - Exhaust Gas Temperature Sensor Circuit Low - Bank 1 Sensor 3
 P242D - Exhaust Gas Temperature Sensor Circuit High - Bank 1 Sensor 3
 P242F - Diesel Particulate Filter Restriction - Ash Accumulation
 P244A - Diesel Particulate Filter Differential Pressure Too Low
 P244D - Exhaust Temperature Too High For Particulate Filter Regeneration - Bank 1
 P2453 - Diesel Particulate Filter Pressure Sensor A Circuit Performance
 P2454 - Diesel Particulate Filter Pressure Sensor A Circuit - Low
 P2455 - Diesel Particulate Filter Pressure Sensor A Circuit - High
 P2457 - Exhaust Gas Recirculation Cooling System Performance
 P245A - EGR Cooler Bypass Control Circuit Open
 P245C - EGR Cooler Bypass Control Circuit Low
 P245D - EGR Cooler Bypass Control Circuit High

P2463 - Diesel Particulate Filter - Soot Accumulation
 P2503 - Charging System Output Low
 P2504 - Charging System Output High
 P2509 - ECM/PCM Power Input Signal Intermittent
 P254C - PTO Speed Selector Sensor Circuit Low
 P254D - PTO Speed Selector Sensor Circuit High
 P2579 - Turbocharger Speed Sensor Circuit Performance
 P2580 - Turbocharger Speed Sensor Circuit Low
 P2609 - Intake Air Heater System Performance
 P268C - Cylinder 1 Injector Data Incompatible
 P268D - Cylinder 2 Injector Data Incompatible
 P268E - Cylinder 3 Injector Data Incompatible
 P268F - Cylinder 4 Injector Data Incompatible
 P2690 - Cylinder 5 Injector Data Incompatible
 P2691 - Cylinder 6 Injector Data Incompatible
 P2a00 - O2 Sensor 1/1 Circuit Performance
 P2a01 - O2 Sensor 1/2 Circuit Performance

What is Next?

Okay, it is decision time. Let's say you've noted a "P0116 - Engine Coolant Temperature Sensor Performance," or P0071 - Inlet Air Temp Sensor Rationality - ECM." Are you going to "drive thru" the diagnostic glitch and feel comfortable that you'll not be stranded in Boondocks, New Mexico?

Were it my truck I would check the temperature of the engine for the P0116, and check for an air restriction to address P0071. Likely I would continue onward. But, as you can see by the different code definitions, there are some that will require your immediate attention. For that matter, the above P0116 and P0071 example that I would drive-thru may cause you too much alarm. If left unattended I've no doubt that the malfunction(s) will have other cause/effect consequences. But, driving thru a DTC and the malfunction indicator light (MIL) or electronic throttle control (ETC) is not something that has an easy yes or no answer. Ultimately it is your judgment call.

For help With that judgment call I looked up both the MIL and ETC meanings in my Owner's Manual. Unfortunately, the text is just as vague as my judgment call response.

"If this light comes on and remains on while driving, it suggests a potential engine control problem and the need for system service.

"Although your vehicle will usually be drivable and not need towing, see your dealer for service as soon as possible.

"CAUTION!

"Prolonged driving With the MIL on could cause damage to the engine control system. It also could affect fuel economy and drivability."

The Seriousness of the EVIC

Say what? Yes, "seriousness," I have made up a new entry in the Webster Dictionary. And EVIC was defined earlier as an acronym for the overhead electronic vehicle information center (EVIC).

If you will look back at Issue 63, pages 38-39, you will find TSB 18-013-08 Revision A dated 12/04/08 which describes a reflash for '07-'09 DH/D1 (that's Dodge-speak for 2500/3500 pickup) trucks.

If you will look at our summary of TSB 18-001-09 you will see that there is another reflash program for the 6.7-liter engine that is used in '07 - '09 DC/DM (Dodge-speak for 3500/4500/5500 Cab and Chassis) trucks.

These two TSB revisions use the overhead EVIC to warn the owner of "Do Not Pass Go/Do Not Collect \$200" messages that will disable the engine due to emissions related problems. For examples of these messages, see the Sidebar that we are reprinting from Issue 62.

All vehicles built after March 2008, or those fully updated per TSBs 18-013-08 and 18-001-09, have the software for the new messages that will appear on the EVIC should there be emissions problems.

The EVIC display of an impending engine problem is serious news and owners should take *immediate* corrective action at a Dodge dealership.

Make It Go Away

Will your DTC simply go away? Sure, that's what black electrical tape is used for. Seriously, look back at TDR Issue 61, page 88, and John Holmes' write-up on an inexpensive scan tool/monitor system. Purchase the Scan Gauge and clear the fault. It will work on automobiles too. Go to your local mechanic and clear the fault. Go to the auto parts store and clear the fault... Clear the fault, but does it reappear? Time for a trip to the Dodge dealership?

Will the DTC go away on its own? Perhaps. A look at the industry-wide guidelines for on board diagnostics (OBD) reveals that it takes four drive cycles of non-malfunction to turn off the MIL light, 40 cycles and the code is cleared from the OBD Memory.

Did it go away?

Conclusion

What have we learned?

- In the future DTCs will continue in greater numbers and scope.
- You can retrieve DTCs using the "key trick."
- You have the codes listed in this magazine. Copy and carry them with you.
- You have a judgment decision to make should you encounter a DTC.
- If your problem is minor and does not reoccur the MIL light will turn off and the code will be cleared from OBD Memory.

Robert Patton
TDR Staff

Notes on exhaust system Regeneration:

The ECM continuously monitors the level of particulates (soot) and other substances in the exhaust aftertreatment system. As needed, the ECM triggers a Regeneration to remove them. This is completely transparent to the Driver. There are no indicators on the instrument cluster or EVIC, and there is no difference in sound or feel of the engine. In other words, when things are operating as normal, as they do for the majority of owners, you will not know that a Regeneration is needed or in-process.

In rare cases, typically due to difficult drive cycles, a Regeneration may not be possible. In those cases, you may see a message on the overhead console (EVIC) regarding the aftertreatment system, stating either 'Catalyst FULL' or 'EXHAUST SYSTEM Regeneration REQUIRED NOW', depending on the level of software. As long as the percent-full message is less than 100%, the system can complete a Regeneration if you change your drive cycle to allow it to happen. The most effective drive cycle for Regeneration is highway cruise. Some trucks, depending on the level of software, will display 'Regeneration IN PROCESS' if your drive cycle has changed such that Regeneration has been started. Note that this message will occur only after the system has gotten full enough to display the 'EXHAUST SYSTEM Regeneration REQUIRED NOW', meaning you will not see it on every Regeneration.

A visit to your dealer is necessary only if a message regarding the exhaust aftertreatment system reading 'SEE DEALER' or 'SERVICE REQD' is displayed on the EVIC. In that case, getting the truck to the dealer sooner, rather than later, may prevent further damage to the system.

OBD-II DIAGNOSTIC TROUBLE CODES FOR 1998-UP TURBO DIESELS

by Joe Donnelly

As the editor mentioned, in the years since '98.5 we've covered a lot of ground in the evolution of diagnostic trouble codes. Who knows what the next 15 years will bring. Self-driving cars, anyone? I digress.

For 2014 here are the commonly used On-Board Diagnostic II Trouble Codes. They can be accessed on electronic odometers by cycling the key on-off-on-off-on.

- P0112 - Intake Air Temperature Sensor Voltage Low
- P0113 - Intake Air Temperature Sensor Voltage High
- P0117 - ECT Sensor Voltage Too Low
- P0118 - ECT Sensor Voltage Too High
- P0121 - Accelerator Pedal Position Sensor Signal Volts Do Not Agree w/Idle Validation Signal
- P0122 - Accelerator Pedal Position Sensor Signal Voltage Too Low
- P0123 - Accelerator Pedal Position Sensor Signal Voltage Too High
- P0125 - Engine Is Cold Too Long
- P0168 - Decreased Engine Performance Due To High Injection Pump Fuel Temperature
- P0177 - Water In Fuel Sensor Voltage Too Low
- P0181 - Fuel Injection Pump Failure
- P0215 - Fuel Injection Pump Control Circuit
- P0216 - Fuel Injection Pump Timing Failure
- P0217 - Decreased Engine Performance Due To Engine Overheating Condition
- P0219 - Camshaft Position Sensor Overspeed Signal
- P0222 - Idle Validation Signals Both Low
- P0223 - Idle Validation Signals Both High (Above 5 Volts)
- P0230 - Transfer pump Circuit Out Of Range
- P0232 - Fuel Shut-Off Voltage Too High
- P0234 - Turbo Boost Limit Exceeded
- P0236 - MAP Sensor Too High Too Long
- P0237 - MAP Sensor Voltage Too Low
- P0238 - MAP Sensor Voltage Too High
- P0251 - Fuel Injection Pump Mechanical Failure Fuel Valve Feedback Circuit
- P0253 - Fuel Injection Pump Fuel Valve Open Circuit
- P0254 - Fuel Injection Pump Fuel Valve Current Too High
- P0300 - Multiple Cylinder Misfire
- P0301 - Misfire Detected, Cylinder No. 1
- P0302 - Misfire Detected, Cylinder No. 2
- P0303 - Misfire Detected, Cylinder No. 3
- P0304 - Misfire Detected, Cylinder No. 4
- P0305 - Misfire Detected, Cylinder No. 5
- P0306 - Misfire Detected, Cylinder No. 6
- P0320 - No RPM Signal To PCM
- P0336 - Crankshaft Position Sensor Signal
- P0341 - Camshaft Position Sensor Signal
- P0370 - Fuel Injection Pump Speed/Position Sensor Signal Lost
- P0380 - Intake Air Heater Relay No. 1 Control Circuit
- P0381 - Wait To Start Lamp Inoperative
- P0382 - Intake Air Heater Relay No. 2 Control Circuit
- P0387 - Crankshaft Position Sensor Supply Voltage Too Low
- P0388 - Crankshaft Position Sensor Supply Voltage Too High
- P0400 - Exhaust Gas Recirculation (EGR) Flow Malfunction
- P0460 - Fuel Level Unit No Change Over Miles
- P0462 - Fuel Level Sending Unit Volts Too Low
- P0463 - Fuel Level Sending Unit Volts Too High
- P0500 - No Vehicle Speed Sensor Signal
- P0522 - Oil Pressure Voltage Too Low
- P0523 - Oil Pressure Voltage Too High
- P0524 - Oil Pressure Too Low
- P0545 - A/C Clutch Relay Circuit
- P0562 - Charging System Voltage Too Low
- P0563 - Charging System Voltage Too Low
- P0601 - PCM Internal Controller Failure
- P0622 - Alternator Field Improper Switching
- P0712 - Trans Temp Sensor Voltage Too Low
- P0713 - Trans Temp Sensor Voltage Too High
- P0720 - Low Output Speed Sensor RPM Above 15 MPH
- P0743 - TCC Solenoid/Trans Relay Circuits
- P0748 - Governor Pressure SOL/Control Trans Relay Circuits
- P0751 - OD Switch Pressed (Lo) For More Than 5 Minutes
- P0753 - Trans 3-4 Shift SOL/Trans Relay Circuits
- P1283 - Idle Select Signal Invalid
- P1284 - Fuel Injection Pump Battery Voltage Out Of Range
- P1285 - Fuel Injection Pump Controller Always On
- P1286 - Accelerator Pedal Position Sensor Supply Voltage Too High
- P1287 - Fuel Injection Pump Controller Supply Voltage Low
- P1291 - No Temperature Rise Seen From Intake Air Heaters
- P1295 - Accelerator Pedal Position Sensor Supply Voltage Too Low
- P1388 - Auto Shutdown (ASD) Relay Control Circuit
- P1389 - No Auto Shutdown (ASD) Relay Output Voltage at PCM
- P1475 - Aux. 5 Volt Output Too High
- P1488 - Aux. 5 Volt Output Too Low
- P1492 - Battery Temperature Sensor Voltage Too High
- P1493 - Battery Temperature Sensor Voltage Too Low
- P1594 - Charging System Voltage Too High
- P1595 - Speed Control Solenoid Circuits
- P1597 - Speed Control Switch Always Low
- P1682 - Charging System Voltage Too Low
- P1683 - Speed Control Power Relay Or Speed Control 12 Volt Driver Circuit
- P1688 - Internal Fuel Injection Pump Controller Failure
- P1689 - No Communication Between ECM & Injection Pump Module
- P1690 - Fuel injection pump CKP Sensor Does Not Agree With ECM CKP Sensor
- P1691 - Fuel Injection Pump Controller Calibration Failure
- P1693 - DTC Detected In ECM Or PCM
- P1694 - No CCD Messages Received From ECM
- P1698 - No CCD Messages Received From PCM
- P1740 - TCC Or OD Solenoid Performance
- P1756 - Governor Pressure Not Equal To Target At 15-20 PSI
- P1757 - Governor Pressure Above 3 PSI When Request is 0 PSI
- P1762 - Governor Pressure Sensor Offset Improper Voltage
- P1763 - Governor Pressure Sensor Voltage Too High
- P1764 - Governor Pressure Sensor Voltage Too Low
- P1765 - Trans 12 Volt Supply Relay Control Circuit
- P1899 - PNP Switch Failure

Amplifier (AMP), Base Diagnosis and Testing

- B1460-11 - Channel 1 Audio Speaker Output - Circuit Short-to-Ground
- B1460-12 - Channel 1 Audio Speaker Output - Circuit Short-to-Battery
- B1460-13 - Channel 1 Audio Speaker Output - Circuit Open
- B1460-92 - Channel 1 Audio Speaker Output - Performance or Incorrect Operation
- B1464-00 - Channel 1 Audio Speaker Output - Circuit Shorted Together
- B1465-11 - Channel 2 Audio Speaker Output - Circuit Short-to-Ground
- B1465-12 - Channel 2 Audio Speaker Output - Circuit Short-to-Battery
- B1465-13 - Channel 2 Audio Speaker Output - Circuit Open
- B1465-92 - Channel 2 Audio Speaker Output - Performance or Incorrect Operation
- B1469-00 - Channel 2 Audio Speaker Output - Circuit Shorted Together
- B146A-11 - Channel 3 Audio Speaker Output - Circuit Short-to-Ground
- B146A-12 - Channel 3 Audio Speaker Output - Circuit Short-to-Battery
- B146A-13 - Channel 3 Audio Speaker Output - Circuit Open
- B146A-92 - Channel 3 Audio Speaker Output - Performance or Incorrect Operation
- B146E-00 - Channel 3 Audio Speaker Output - Circuit Shorted Together
- B146F-11 - Channel 4 Audio Speaker Output - Circuit Short-to-Ground
- B146F-12 - Channel 4 Audio Speaker Output - Circuit Short-to-Battery
- B146F-13 - Channel 4 Audio Speaker Output - Circuit Open
- B146F-92 - Channel 4 Audio Speaker Output - Performance or Incorrect Operation
- B1473-00 - Channel 4 Audio Speaker Output - Circuit Shorted Together
- B1474-11 - Channel 5 Audio Speaker Output - Circuit Short-to-Ground
- B1474-12 - Channel 5 Audio Speaker Output - Circuit Short-to-Battery
- B1474-13 - Channel 5 Audio Speaker Output - Circuit Open
- B1474-92 - Channel 5 Audio Speaker Output - Performance or Incorrect Operation
- B1478-00 - Channel 5 Audio Speaker Output - Circuit Shorted Together
- B1479-11 - Channel 6 Audio Speaker Output - Circuit Short-to-Ground
- B1479-12 - Channel 6 Audio Speaker Output - Circuit Short-to-Battery
- B1479-13 - Channel 6 Audio Speaker Output - Circuit Open
- B1479-92 - Channel 6 Audio Speaker Output - Performance or Incorrect Operation
- B147D-00 - Channel 6 Audio Speaker Output - Circuit Shorted Together
- B147E-11 - Channel 7 Audio Speaker Output - Circuit Short-to-Ground
- B147E-12 - Channel 7 Audio Speaker Output - Circuit Short-to-Battery
- B147E-13 - Channel 7 Audio Speaker Output - Circuit Open
- B147E-92 - Channel 7 Audio Speaker Output - Performance or Incorrect Operation
- B1482-00 - Channel 7 Audio Speaker Output - Circuit Shorted Together
- B1483-11 - Channel 8 Audio Speaker Output - Circuit Short-to-Ground
- B1483-12 - Channel 8 Audio Speaker Output - Circuit Short-to-Battery
- B1483-13 - Channel 8 Audio Speaker Output - Circuit Open
- B1483-92 - Channel 8 Audio Speaker Output - Performance or Incorrect Operation
- B1487-00 - Channel 8 Audio Speaker Output - Circuit Shorted Together
- B1488-00 - Cabin EQ Mismatch Performance
- B14B9-11 - Channel 9 Audio Speaker Output - Circuit Short-to-Ground
- B14B9-12 - Channel 9 Audio Speaker Output - Circuit Short-to-Battery
- B14B9-13 - Channel 9 Audio Speaker Output - Circuit Open
- B14B9-2B - Channel 9 Audio Speaker Output - Wires Shorted Together
- B14B9-92 - Channel 9 Audio Speaker Output - Performance or Incorrect Operation
- B14BE-11 - Channel 10 Audio Speaker Output - Circuit Short-to-Ground
- B14BE-12 - Channel 10 Audio Speaker Output - Circuit Short-to-Battery
- B14BE-13 - Channel 10 Audio Speaker Output - Circuit Open
- B14BE-2B - Channel 10 Audio Speaker Output - Wires Shorted Together
- B14BE-92 - Channel 10 Audio Speaker Output - Performance or Incorrect Operation
- B14C3-11 - Channel 11 Audio Speaker Output - Circuit Short-to-Ground
- B14C3-12 - Channel 11 Audio Speaker Output - Circuit Short-to-Battery
- B14C3-13 - Channel 11 Audio Speaker Output - Circuit Open
- B14C3-2B - Channel 11 Audio Speaker Output - Wires Shorted Together
- B14C3-92 - Channel 11 Audio Speaker Output - Performance or Incorrect Operation
- B21DD-84 - System Voltage - Signal Below Allowable Range
- B21DD-85 - System Voltage - Signal Above Allowable Range
- B221F-00 - Amplifier Internal
- U0010-00 - CAN Interior Bus

U0011-00 - CAN Interior BUS Off Performance
U0140-00 - Lost Communication With Body Control Module
U0184-00 - Lost Communication With Radio Cluster, Instrument

Diagnosis and Testing

B1612-00 - Panel Illumination Control
B21DD-84 - System Voltage-Signal Below Allowable Range
B21DD-85 - System Voltage - Signal Voltage Above Allowable Range
B275B-00 - Airbag Telltale
U0001-00 - CAN C BUS
U0002-00 - CAN C BUS Off Performance
U0100-00 - Lost Communication With ECM/PCM
U0101-00 - Lost Communication With TCM
U0114-00 - Lost Communication With Final Drive Control Module
U0121-00 - Lost Communication With Anti-Lock Brake System (ABS) Control Module
U0127-00 - Lost Communication With Tire Pressure Monitor Module
U0132-00 - Lost Communication With Suspension Control Module
U0137-00 - Lost Communication With Trailer Brake Control Module
U0140-00 - Lost Communication With Body Control Module
U0151-00 - Lost Communication With Occupant Restraint Controller (ORC)
U0159-00 - Lost Communication With Parking Assist Control Module (PAM)
U0212-00 - Lost Communication With SCM
U11B9-00 - Lost Communication With RF HUB
U11E8-00 - Lost Communication With EPS Steering Torque Message
U1403-00 - Implausible Fuel Level Signal Received
U1491-00 - Implausible Fuel Level 2 Signal Receive Controller, Occupant Restraint (ORC) Diagnosis and Testing
B0001-11 - Driver Frontal Squib 1 Control-Circuit Short to Ground
B0001-12 - Driver Frontal Squib 1 Control - Circuit Short-to-Battery
B0001-13 - Driver Frontal Squib 1 Control-Circuit Open
B0001-2B - Driver Frontal Squib 1 Control-Wires Shorted Together
B0002-11 - Driver Frontal Squib 2 Control-Circuit Short to Ground
B0002-12 - Driver Frontal Squib 2 Control- Circuit Short-to-Battery
B0002-13 - Driver Frontal Squib 2 Control-Circuit Open
B0002-2B - Driver Frontal Squib 2 Control-Wires Shorted Together
B0010-11 - Passenger Frontal Squib 1 Control-Circuit Short-to-Ground
B0010-12 - Passenger Frontal Squib 1 Control-Circuit Short-to-Battery

B0010-13 - Passenger Frontal Squib 1 Control- Circuit Open
B0010-2B - Passenger Frontal Squib 1 Control-Wires Shorted Together
B0011-11 - Passenger Frontal Squib 2 Control-Circuit Short-to-Ground
B0011-12 - Passenger Frontal Squib 2 Control-Circuit Short-to-Battery
B0011-13 - Passenger Frontal Squib 2 Control-Circuit Open
B0011-2B - Passenger Frontal Squib 2 Control-Circuit Wires Shorted Together
B0020-11 - Left-Side-Seat-Deployment-Squib-Short-to-Ground
B0020-12 - Left-Side-Seat-Deployment-Squib-Short-to-Battery
B0020-13 - Left-Side-Seat-Deployment-Squib-Circuit-Open
B0020-2B - Left-Side-Seat-Deployment-Squib-Circuits-Short-Together
B0021-11 - Left Curtain Deployment Squib1-Circuit Short-to-Ground
B0021-12 - Left Curtain Deployment Squib1-Circuit Short-to-Battery
B0021-13 - Left Curtain Deployment Squib 1-Circuit Open
B0021-2B - Left Curtain Deployment Squib 1-Wires Shorted Together
B0028-11 - Right-Side-Seat-Deployment-Squib-Short-to-Ground
B0028-12 - Right-Side-Seat-Deployment-Squib-Short-to-Battery
B0028-13 - Right-Side-Seat-Deployment-Squib-Open-Circuit
B0028-2B - Right-Side-Seat-Deployment-Squib-Short-Together
B0029-11 - Right Curtain Deployment Squib 1-Circuit Short to Ground
B0029-12 - Right Curtain Deployment Squib 1-Circuit Short-to-Battery
B0029-13 - Right Curtain Deployment Squib 1-Circuit Open
B0029-2B - Right Curtain Deployment Squib 1-Wires Shorted Together
B0050-11 - Driver Seatbelt Sensor-Circuit Short-to-Ground
B0050-12 - Driver Seatbelt Sensor-Circuit Short to Battery
B0050-13 - Driver Seatbelt Sensor-Circuit Open
B0050-2B - Driver Seatbelt Sensor - Wires Shorted Together
B0052-11 - Passenger Seatbelt Sensor - Circuit Short-to-Ground
B0052-12 - Passenger Seatbelt Sensor - Circuit Short-to-Battery
B0052-13 - Passenger Seatbelt Sensor - Circuit Open
B0052-2B - Passenger Seatbelt Sensor - Circuits Shorted Together
B007E-11 - Driver Seatbelt Retractor Pretensioner Deployment Control - Circuit Short-to-Ground

B007E-12 - Driver Seatbelt Retractor Pretensioner Deployment Control - Circuit Short-to-Battery
 B007E-13 - Driver Seatbelt Retractor Pretensioner Deployment Control - Circuit Open
 B007E-2B - Driver Seatbelt Retractor Pretensioner Deployment Control - Circuits Shorted Together
 B007F-11 - Passenger Seatbelt Retractor Pretensioner Deployment Control - Circuit Short-to-Ground
 B007F-12 - Passenger Seatbelt Retractor Pretensioner Deployment Control - Circuit Short-to-Battery
 B007F-13 - Passenger Seatbelt Retractor Pretensioner Deployment Control - Circuit Open
 B007F-2B - Passenger Seatbelt Retractor Pretensioner Deployment Control - Wires Shorted Together
 B0090-11 - Left Frontal Acceleration Sensor - Circuit Short-to-Ground
 B0090-12 - Left Frontal Acceleration Sensor - Circuit Short-to-Battery
 B0090-49 - Left Frontal Acceleration Sensor - Internal Electronic Failure
 B0090-87 - Left Frontal Acceleration Sensor -Missing Message
 B0095-11 - Right Frontal Acceleration Sensor - Circuit Short-to-Ground
 B0095-12 - Right Frontal Acceleration Sensor - Circuit Short-to-Battery
 B0095-49 - Right Frontal Acceleration Sensor - Internal Electronic Failure
 B0095-87 - Right Frontal Acceleration Sensor -Missing Message
 B0099-96 - Roll Over Sensor - Component Internal Failure
 B212C-13 - Ignition RUN/START Input - Circuit Open
 B212C-16 - Ignition RUN/START Input - Circuit Voltage Below Threshold
 B212C-17 - Ignition RUN/START Input - Circuit Voltage Above Threshold
 B212D-13 - Ignition-Run-Only-Input-Circuit
 B212D-16 - Ignition Run-Only Input - Circuit Voltage Below Threshold
 B212D-17 - Ignition Run-Only Input - Circuit Voltage Above Threshold
 B21DD-16 - System Voltage - Circuit Voltage Below Threshold
 B21DD-17 - System Voltage - Circuit Voltage Above Threshold
 B2207-00 - Occupant Restraint Controller Internal 1
 B2208-00 - Occupant Restraint Controller Internal 2
 B220B-00 - Occupant Restraint Controller Firing Stored Energy
 B222A-00 - Vehicle Line Mismatch
 B223B-00 - Vehicle Configuration Mismatch
 B2255 - Occupant Restraint Controller Roll Over Feature Disabled
 B2722-00 - ORC Unlocked - All Deployment Disabled
 B2734-12 - Passenger Occupant Detection Sensor-Short-to-Battery
 B2734-13 - Passenger Occupant Detection Sensor - Circuit Open
 B274C-11 - Driver Side Seat Thorax Squib 1 Control - Circuit Short-to-Ground
 B274C-12 - Driver Side Seat Thorax Squib 1 Control - Circuit Short-to-Battery
 B274C-13 - Driver Side Seat Thorax Squib 1 Control - Circuit Open
 B274C-2B - Driver Side Seat Thorax Squib 1 Control - Wires Shorted Together
 B274D-11 - Passenger Side Seat Thorax Squib 1 Control - Circuit Short-to-Ground
 B274D-12 - Passenger Side Seat Thorax Squib 1 Control - Circuit Short-to-Battery
 B274D-13 - Passenger Side Seat Thorax Squib 1 Control - Circuit Open
 B274D-2B - Passenger Side Seat Thorax Squib 1 Control - Wires Shorted Together
 B2761-11 - Left B-Pillar Impact Acceleration Sensor - Circuit Short-to-Ground
 B2761-12 - Left B-Pillar Impact Acceleration Sensor - Circuit Short-to-Battery
 B2761-49 - Left B-Pillar Impact Acceleration Sensor - Internal Electronic Failure
 B2761-87 - Left B-Pillar Impact Acceleration Sensor - Missing Message
 B2762-11 - Left C-Pillar Impact Acceleration Sensor - Circuit Short-to-Ground
 B2762-12 - Left C-Pillar Impact Acceleration Sensor - Circuit Short-to-Battery
 B2762-49 - Left C-Pillar Impact Acceleration Sensor - Internal Electronic Failure
 B2762-87 - Left C-Pillar Impact Acceleration Sensor - Missing Message
 B2764-11 - Right B-Pillar Impact Acceleration Sensor - Circuit Short-to-Ground
 B2764-12 - Right B-Pillar Impact Acceleration Sensor - Circuit Short-to-Battery
 B2764-49 - Right B-Pillar Impact Acceleration Sensor - Internal Electronic Failure
 B2764-87 - Right B-Pillar Impact Acceleration Sensor - Missing Message
 B2765-11 - Right C-Pillar Impact Acceleration Sensor - Circuit Short-to-Ground
 B2765-12 - Right C-Pillar Impact Acceleration Sensor - Circuit Short-to-Battery
 B2765-49 - Right C-Pillar Impact Acceleration Sensor - Internal Electronic Failure
 B2765-87 - Right C-Pillar Impact Acceleration Sensor - Missing Message
 B2767-11 - Left Impact Pressure Sensor - Circuit Short-to-Ground
 B2767-12 - Left Impact Pressure Sensor - Circuit Short-to-Battery
 B2767-49 - Left Impact Pressure Sensor - Internal Electronic Failure
 B2767-87 - Left Impact Pressure Sensor - Missing Message
 B2768-11 - Right Impact Pressure Sensor - Circuit Short-to-Ground
 B2768-12 - Right Impact Pressure Sensor - Circuit Short-to-Battery

B2768-49 - Right Impact Pressure Sensor - Internal Electronic Failure
 B2768-87 - Right Impact Pressure Sensor - Missing Message
 C10CC-00 - ESC Sensors
 U0002-00 - CAN C BUS Off Performance
 U0121-00 - Lost Communication With Anti-Lock Brake System (ABS) Control Module
 U0140-00 - Lost Communication With Body Control Module
 U142A-00 - Implausible PRNDL Signal Received
 U1110-00 - Lost Vehicle Speed Message
 U1415-00 - Implausible/Missing Vehicle Configuration

**Data Standard Procedure
 HVAC Diagnosis and Testing**

B1030-11 - Evaporator Temperature Sensor - Circuit Short-to-Ground
 B1030-12 - Evaporator Temperature Sensor - Circuit Short-to-Battery
 B1058-11 - Recirculation Door Control Circuit - Short-to-Ground
 B1058-12 - Recirculation Door Control Circuit-Short-to-Battery
 B1058-13 - Recirculation Door Control Circuit-Open
 B1058-92 - Recirculation Door Control Performance or Incorrect Operation
 B105C-00 - Recirculation Door Travel Range Too Small
 B105D-00 - Recirculation Door Travel Range Too Large
 B10B2-00 - A/C Cooldown Test Performance
 B10EB-12 - Blower Motor Control Circuit-Short-to-Battery
 B10EB-14 - Blower Motor Control Circuit-Short-to-Ground or Open
 B1107-11 - Cabin Temperature Sensor 1 - Circuit Short-to-Ground
 B1107-12 - Cabin Temperature Sensor 1 Circuit-Short-to-Battery
 B11C2-11 - Front Mode Door-1 Control Circuit-Short-to-Ground
 B11C2-12 - Front Mode Door-1 Control Circuit-Short-to-Battery
 B11C2-13 - Front Mode Door-1 Control Circuit-Open
 B11C2-92 - Front Mode Door-1 Control Performance or Incorrect Operation
 B11C3-00 - Front Mode Door 1 Travel Range Too Small
 B11C4-00 - Front Mode Door 1 Travel Range Too Large
 B11C5-11 - Front Mode Door-2 Control Circuit-Short-to-Ground
 B11C5-12 - Front Mode Door-2 Control Circuit-Short-to-Battery
 B11C5-13 - Front Mode Door-2 Control Circuit-Open
 B11C5-92 - Front Mode Door-2 Control-Performance or Incorrect Operation
 B11C6-00 - Front Mode Door-2 Travel Range Too Small
 B11C7-00 - Front Mode Door-2 Travel Range Too Large
 B11C8-11 - Right Temperature Door Control Circuit-Short-to-Ground

B11C8-12 - Right Temperature Door Control Circuit-Short-to-Battery
 B11C8-13 - Right Temperature Door Control Circuit-Open
 B11C8-92 - Right Temperature Door Control Performance Incorrect Operation
 B11C9-00 - Right Temperature Door Travel Too Small
 B11CA-00 - Right Temperature Door Travel Too Large
 B11CB-11 - Main/Left Temperature Door Control Circuit-Short-to-Ground
 B11CB-12 - Main/Left Temperature Door Control Circuit-Short-to-Battery
 B11CB-13 - Main/Left Temperature Door Control Circuit-Open
 B11CB-92 - Main/Left Temperature Door Control Performance or Incorrect Operation
 B11CC-00 - Main/Left Temperature Door Travel Too Small
 B11CD-00 - Main/Left Temperature Door Travel Too Large
 B11D3-00 - A/C Cooldown Test Performance - Compressor Not Engaged
 B11D5-00 - A/C Cooldown Test Performance - Evap Temp Sensor Error
 B11FC-11 - Blend Air Sensor Circuit-Short-to-Ground
 B11FC-12 - Blend Air Sensor Short-to-Battery
 B11FE-11 - Variable A/C Compressor Control - Circuit Short-to-Ground
 B11FE-12 - Variable A/C Compressor Control - Circuit Short-to-Battery
 B11FE-13 - Variable A/C Compressor Control - Circuit Open
 B1600-11 - Left Solar Sensor Circuit - Short-to-Ground
 B1600-12 - Left Solar Sensor - Circuit Short-to-Battery
 B1600-92 - Left Solar Sensor-Performance or Incorrect Operation
 B1603-11 - Right Solar Sensor - Circuit Short-to-Ground
 B1603-12 - Right Solar Sensor - Circuit Short-to-Battery
 B1603-92 - Right Solar Sensor-Performance or Incorrect Operation
 B160F-11 - Twilight/Ambient Light Sensor Input - Circuit Short-to-Ground
 B160F-12 - Twilight/Ambient Light Sensor - Circuit Short-to-Battery
 B160F-92 - Twilight/Ambient Light Sensor Input-Performance or Incorrect Operation
 B210A-84 - System Voltage Low - Signal Below Allowable Range
 B210B-85 - System Voltage High - Signal Above Allowable Range
 B210D-84 - Battery Voltage Low - Signal Below Allowable Range
 B210E-85 - Battery Voltage High-Signal Above Allowable Range
 B222A-00 - Vehicle Line Mismatch
 U0140-00 - Lost Communication With Body Control Module
 U0184-00 - Lost Communication With Radio
 U11B8-00 - Lost Communication With Integrated Center Stack (ICS)

**Standard Procedure
Module, Antilock Brake (ABS)
Diagnosis and Testing**

- B1783-01 - Stop Lamp Control - General Electrical Failure
- C0020-01 - ABS Pump Motor Control - General Electrical Failure
- C0020-16 - ABS Pump Motor Control - Circuit Voltage Below Threshold
- C0020-1C - ABS Pump Motor Control - Circuit Voltage Out of Range
- C0031-1D - Left Front Wheel Speed Sensor - Circuit Current Out of Range
- C0031-2F - Left Front Wheel Speed Sensor - Signal Erratic
- C0031-62 - Left Front Wheel Speed Sensor - Signal Compare Failure
- C0034-1D - Right Front Wheel Speed Sensor - Circuit Current Out of Range
- C0034-2F - Right Front Wheel Speed Sensor - Signal Erratic
- C0034-62 - Right Front Wheel Speed Sensor - Signal Compare Failure
- C0037-1D - Left Rear Wheel Speed Sensor - Current Out of Range
- C0037-2F - Left Rear Wheel Speed Sensor - Signal Erratic
- C0037-62 - Left Rear Wheel Speed Sensor - Signal Compare Failure
- C003A-1D - Right Rear Wheel Speed Sensor - Circuit Current Out of Range
- C003A-2F - Right Rear Wheel Speed Sensor - Signal Erratic
- C003A-62 - Right Rear Wheel Speed Sensor - Signal Compare Failure
- C0042-11 - Brake Pedal Position Sensor - Circuit Short-to-Ground
- C0042-12 - Brake Pedal Position Sensor - Circuit Short-to-Battery
- C0042-28 - Brake Pedal Position Sensor - Signal Bias Level Out of Range / Zero Adjustment Failure
- C0042-2F - Brake Pedal Position Sensor - Signal Erratic
- C0042-54 - Brake Pedal Position Sensor - Missing Calibration
- C0042-62 - Brake Pedal Position Sensor - Signal Compare Failure
- C0044-01 - Brake Pressure Sensor 1 - General Electrical Failure
- C0044-1F - Brake Pressure Sensor 1 - Circuit Intermittent
- C0044-28 - Brake Pressure Sensor 1 - Signal Bias Level Out of Range / Zero Adjustment Failure
- C0044-62 - Brake Pressure Sensor 1 - Signal Compare Failure
- C0044-64 - Brake Pressure Sensor 1 - Signal Plausibility Failure
- C0049-7B - Brake Fluid - Low Fluid Level
- C0051-22 - Steering Wheel Position Sensor - Signal Amplitude > Maximum
- C0051-2F - Steering Wheel Position Sensor - Signal Erratic
- C0051-28 - Steering Wheel Position Sensor - Signal Bias Level Out of Range / Zero Adjustment Failure
- C0051-49 - Steering Wheel Position Sensor - Internal Electronic Failure
- C0051-62 - Steering Wheel Position Sensor - Signal Compare Failure
- C006A-28 - Multi-Axis Acceleration Sensor - Signal Bias Level Out of Range / Zero Adjustment Failure
- C006A-2F - Multi-Axis Acceleration Sensor - Signal Erratic
- C006A-49 - Multi-Axis Acceleration Sensor - Internal Electronic Failure
- C006A-54 - Multi-Axis Acceleration Sensor - Missing Calibration
- C006A-62 - Multi-Axis Acceleration Sensor - Signal Compare Failure
- C006C-9A - Stability System - Component or System Operating Conditions
- C0078-86 - Tire Diameter - Signal Invalid
- C107B-62 - Wheel Speed Comparative Performance - Signal Compare Failure
- C1086-4B - ABS System Control Too Long-Over Temperature
- C121C-00 - Torque Request Signal Denied
- C1223-01 - Brake Pedal Travel Sensor Supply - General Electrical Failure
- C1239-00 - Emission Rolls TestActive
- C123B-4B - ESP System Control Too Long - Over Temperature
- C2100-16 - Battery Voltage Low - Circuit Voltage Below Threshold
- C2101-17 - Battery Voltage High - Circuit Voltage Above Threshold
- C211B-92 - Ignition RUN/START Input Circuit - Performance or Incorrect Operation
- C212A-16 - System Voltage Low - Circuit Voltage Below Threshold
- C212A-17 - System Voltage High - Circuit Voltage Above Threshold
- C2200-41 - Anti-Lock Brake Module Internal - General Checksum Failure
- C2200-44 - Anti-Lock Brake Module Internal - Data Memory Failure
- C2200-45 - Anti-Lock Brake Module Internal - Program Memory Failure
- C2200-47 - Anti-Lock Brake Module Internal - Watchdog / Safety AuC Failure
- C2200-48 - Anti-Lock Brake Module Internal - Supervision Software Failure
- C2200-49 - Anti-Lock Brake Module Internal - Internal Electronic Failure
- C2202-00 - Original VIN Mismatch / Missing
- C2206-00 - Vehicle Configuration Mismatch
- U0002-88 - CAN C BUS Off Performance - BUS Off
- U0100-00 - Lost Communication With ECM/PCM
- U0101-00 - Lost Communication With TCM
- U0102-00 - Lost Communication With Transfer Case Control Module / AWD

- U0104-00 - Lost Communication With Cruise Control Module
 - U0125-00 - Lost Communication With Dynamics Sensor
 - U0126-00 - Lost Communication With Steering Angle Sensor
 - U0132-00 - Lost Communication With Suspension Control Module
 - U0140-00 - Lost Communication With Body Control Module
 - U0151-00 - Lost Communication With Occupant Restraint Controller (ORC)
 - U0401-00 - Implausible Data Received From ECM/PCM
 - U0402-00 - Implausible Data Received From TCM
 - U0403-00 - Implausible Data Received From T-Case
 - U0422-00 - Implausible Data Received From Body Control Module
 - U0429-00 - Implausible Data Received From SCM
 - U0432-00 - Invalid Data Received From Multi-Axis Acceleration Sensor Module
 - U1003-88 - ESP CAN C BUS Performance - BUS Off
 - U140E-00 - Implausible Vehicle Configuration Data Received
- Standard Procedure
Module, Body Control (BCM)
Diagnosis and Testing**
- B1208-11 - Anti-Theft Indicator - Circuit Short-to-Ground
 - B1208-15 - Anti-Theft Indicator - Circuit Short-to-Battery or Open
 - B1609-11 - Panel Dimmer Input - Circuit Short-to-Ground
 - B1609-15 - Panel Dimmer Input - Circuit Short-to-Battery or Open
 - B161E-11 - Reading Lamp Control - Circuit Short-to-Ground
 - B1626-11 - Cargo Lamp Control - Circuit Short-to-Ground
 - B162A-11 - Left Low Beam Control - Circuit Short-to-Ground - Base
 - B162A-11 - Left Low Beam Control - Circuit Short-to-Ground - Premium
 - B162A-15 - Left Low Beam Control - Circuit Short-to-Battery or Open - Base
 - B162A-15 - Left Low Beam Control - Circuit Short-to-Battery or Open - Premium
 - B162E-11 - Right Low Beam Control - Circuit Short-to-Ground - Base
 - B162E-11 - Right Low Beam Control - Circuit Short-to-Ground - Premium
 - B162E-15 - Right Low Beam Control - Circuit Short-to-Battery or Open - Base
 - B162E-15 - Right Low Beam Control - Circuit Short-to-Battery or Open - Premium
 - B1632-11 - Left High Beam Control - Circuit Short-to-Ground - Base
 - B1632-11 - Left High Beam Control - Circuit Short-to-Ground - Premium
 - B1632-15 - Left High Beam Control - Circuit Short-to-Battery or Open - Base
 - B1632-15 - Left High Beam Control - Circuit Short-to-Battery or Open - Premium
 - B1636-11 - Right High Beam Control - Circuit Short-to-Ground - Base
 - B1636-11 - Right High Beam Control - Circuit Short-to-Ground - Premium
 - B1636-15 - Right High Beam Control - Circuit Short-to-Battery or Open - Base
 - B1636-15 - Right High Beam Control - Circuit Short-to-Battery or Open - Premium
 - B163A-11 - Front Left Turn Lamp Control - Circuit Short-to-Ground - Base
 - B163A-11 - Front Left Turn Lamp Control - Circuit Short-to-Ground - Premium
 - B163A-15 - Front Left Turn Lamp Control - Circuit Short-to-Battery or Open - Base
 - B163A-15 - Front Left Turn Lamp Control - Circuit Short-to-Battery or Open - Premium
 - B163E-11 - Front Right Turn Lamp Control - Circuit Short-to-Ground - Base
 - B163E-11 - Front Right Turn Lamp Control - Circuit Short-to-Ground - Premium
 - B163E-15 - Front Right Turn Lamp Control - Circuit Short-to-Battery or Open - Base
 - B163E-15 - Front Right Turn Lamp Control - Circuit Short-to-Battery or Open - Premium
 - B1642-11 - Rear Left Turn Lamp Control - Circuit Short-to-Ground
 - B1642-15 - Rear Left Turn Lamp Control - Circuit Short-to-Battery or Open
 - B1646-11 - Rear Right Turn Lamp Control - Circuit Short-to-Ground
 - B1646-15 - Rear Right Turn Lamp Control - Circuit Short-to-Battery or Open
 - B168E-2A - Front Fog Lamp Switch - Stuck
 - B169B-2A - Cargo Lamp Switch - Stuck
 - B16AB-11 - Trunk Lamp Control - Circuit Short-to-Ground
 - B16AB-15 - Trunk Lamp Control - Circuit Short-to-Battery or Open
 - B16AF-11 - Left Stop Lamp Control - Circuit Short-to-Ground - Base
 - B16AF-11 - Left Stop Lamp Control - Circuit Short-to-Ground - Premium
 - B16AF-15 - Left Stop Lamp Control - Circuit Short-to-Battery or Open - Base
 - B16AF-15 - Left Stop Lamp Control - Circuit Short-to-Battery or Open - Premium
 - B16B3-11 - Right Stop Lamp Control - Circuit Short-to-Ground - Base
 - B16B3-11 - Right Stop Lamp Control - Circuit Short-to-Ground - Premium
 - B16B3-15 - Right Stop Lamp Control - Circuit Short-to-Battery or Open - Base
 - B16B3-15 - Right Stop Lamp Control - Circuit Short-to-Battery or Open - Premium
 - B16B7-11 - Center Stop Lamp Control - Circuit Short-to-Ground
 - B16B7-15 - Center Stop Lamp Control - Circuit Short-to-Battery or Open
 - B16BF-11 - Front Left Sidemarkers Lamp Control - Circuit Short-to-Ground

B16BF-15 - Front Left Sidemarkers Lamp Control - Circuit Short-to-Battery or Open

B16C3-11 - Front Right Sidemarkers Lamp Control - Circuit Short-to-Ground

B16C3-15 - Front Right Sidemarkers Lamp Control - Circuit Short-to-Battery or Open

B16CF-11 - Left DRL Lamp Control - Circuit Short-to-Ground

B16CF-15 - Left DRL Lamp Control - Circuit Short to Battery or Open

B16D3-11 - Right DRL Lamp Control - Circuit Short-to-Ground

B16D3-15 - Right DRL Lamp Control - Circuit Short-to-Battery or Open

B16D7-11 - Left Taillamp 1 Control - Circuit Short-to-Ground - Base

B16D7-11 - Left Taillamp 1 Control - Circuit Short-to-Ground - Premium

B16D7-15 - Left Taillamp 1 Control - Circuit Short to Battery or Open - Base

B16D7-15 - Left Taillamp 1 Control - Circuit Short to Battery or Open - Premium

B16DF-11 - Right Taillamp 1 Control - Circuit Short-to-Ground - Base

B16DF-11 - Right Taillamp 1 Control - Circuit Short-to-Ground - Premium

B16DF-15 - Right Taillamp 1 Control - Circuit Short-to-Battery or Open - Base

B16DF-15 - Right Taillamp 1 Control - Circuit Short-to-Battery or Open - Premium

B16E7-11 - License Plate Lamp Control - Circuit Short-to-Ground

B16E7-15 - License Plate Lamp Control - Circuit Short-to-Battery or Open

B16F7-11 - Front Left Fog Lamp Control - Circuit Short-to-Ground

B16F7-15 - Front Left Fog Lamp Control - Circuit Short-to-Battery or Open

B16FB-11 - Front Right Fog Lamp Control - Circuit Short-to-Ground

B16FB-15 - Front Right Fog Lamp Control - Circuit Short-to-Battery or Open

B1707-11 - Left Reverse Lamp Control - Circuit Short-to-Ground - Base

B1707-11 - Left Reverse Lamp Control - Circuit Short-to-Ground - Premium

B1707-15 - Left Reverse Lamp Control - Circuit Short-to-Battery or Open - Base

B1707-15 - Left Reverse Lamp Control - Circuit Short-to-Battery or Open - Premium

B170B-11 - Right Reverse Lamp Control - Circuit Short-to-Ground - Base

B170B-11 - Right Reverse Lamp Control - Circuit Short-to-Ground - Premium

B170B-15 - Right Reverse Lamp Control - Circuit Short-to-Battery or Open - Base

B170B-15 - Right Reverse Lamp Control - Circuit Short-to-Battery or Open - Premium

B1751-11 - Courtesy Lamp Control - Circuit Short-to-Ground

B177A-11 - Left Front Lamp Diagnostic Line - Circuit Short-to-Ground

B177B-11 - Right Front Lamp Diagnostic Line - Circuit Short-to-Ground

B178E-11 - HeadLamp Switch Input - Circuit Short-to-Ground

B178E-15 - HeadLamp Switch Input - Circuit Short-to-Battery or Open

B1792-11 - Left Rear Lamp Diagnostic Line - Circuit Short-to-Ground

B1793-11 - Right Rear Lamp Diagnostic Line - Circuit Short-to-Ground

B17A5-11 - HALO Lamps Control - Circuit Short-to-Ground

B17AD-12 - Rear Left Trailer Turn Lamp Control - Circuit Short-to-Battery

B17B1-12 - Rear Right Trailer Turn Lamp Control - Circuit Short-to-Battery

B17C5-12 - Trailer ToW Reverse Lamp Control - Circuit Short-to-Battery

B17F3-00 - Auto High Beam System Aim

B17F6-12 - Trailer Taillamp Control - Circuit Short-to-Battery

B17FB-00 - Auto High Beam Camera View Blocked

B1800-11 - Driver Door Lock/Unlock Switch-Circuit Short-to-Ground

B1800-2A - Driver Door Lock/Unlock Switch - Stuck

B1805-11 - Passenger Door Lock/Unlock Switch-Circuit Short-to-Ground

B1805-2A - Passenger Door Lock/Unlock Switch-Stuck

B181E-13 - Hood Ajar Input - Circuit Open

B182C-11 - All Door Lock Control - Circuit Short-to-Ground

B182C-12 - All Door Lock Control - Circuit Short-to-Battery

B182C-13 - All Door Lock Control - Circuit Open

B1830-11 - All Doors Unlock Control - Circuit Short-to-Ground

B1830-12 - All Doors Unlock Control - Circuit Short-to-Battery

B1830-13 - All Doors Unlock Control - Circuit Open

B1D4E-11 - Adjustable Pedal Inhibit - Circuit Short-to-Ground

B1D4E-15 - Adjustable Pedal Inhibit - Circuit Short-to-Battery or Open

B1E72-11 - Power Inverter EnableE Control - Circuit Short-to-Ground

B1F07-00 - Auxiliary Switch Bank Module Internal

B1F08-00 - Terrain Switch Bank Module Internal

B2103-11 - Ignition RUN/START 1 Control - Circuit Short-to-Ground

B2103-15 - Ignition RUN/START 1 Control - Circuit Short-to-Battery or Open

B2119-11 - Ignition RUN/ACC/SPAD Control - Circuit Short-to-Ground

B2119-15 - Ignition RUN/ACC/SPAD Control - Circuit Short-to-Battery or Open

B2121-11 - Ignition RUN Control 1 - Circuit Short-to-Ground
 B2121-15 - Ignition RUN Control 1 - Circuit Short To Battery or Open
 B212E-11 - Ignition RUN/ACC Control - Circuit Short-to-Ground
 B212E-15 - Ignition RUN/ACC Control - Circuit Short-to-Battery or Open
 B2183-11 - Ignition Unlock RUN/START Control - Circuit Short-to-Ground
 B2193-00 - Intelligent Battery Sensor Internal
 B2199-16 - Battery Voltage - Circuit Voltage Below Threshold
 B2199-17 - Battery Voltage - Circuit Voltage Above Threshold
 B21F7-11 - Electronic Shifter Power Supply - Circuit Short-to-Ground
 B21F8-13 - Exterior Lighting Power Supply Input 1 - Circuit Open
 B21F9-13 - Exterior Lighting Power Supply Input 2 - Circuit Open
 B2206-00 - Current VIN Missing / Mismatch
 B2211-00 - Light Rain Sensor Module Initialization Performance
 B2216-00 - Central Gateway Internal
 B221D-00 - Rain Sensor Module (RSM) Internal
 B222C-00 - Vehicle Configuration Not Programmed
 B223A-00 - Auto High Beam ECU Internal
 B225C-00 - Compass Module Internal
 B2298-00 - Rain Sensor Over Temperature
 B2299-00 - Rear Camera Module Internal
 B2303-11 - Wiper Park Switch Input - Circuit Short-to-Ground
 B2303-13 - Wiper Park Switch Input - Circuit Open
 B2312-11 - Wiper ON/OFF Control - Circuit Short-to-Ground
 B2312-15 - Wiper ON/OFF Control - Circuit Short-to-Battery or Open
 B2316-11 - Wiper High/Low Control - Circuit Short-to-Ground
 B2316-15 - Wiper High/Low Control - Circuit Short-to-Battery or Open
 B2335-11 - Horn Control - Circuit Short-to-Ground
 B2335-15 - Horn Control - Circuit Short-to-Battery or Open
 B233D-11 - Front/Rear Washer Motor (+) Control - Circuit Short-to-Ground
 B23AA-00 - Implausible Data Received From Rain Sensor
 B23B6-13 - Autostick/ERS Switch - Circuit Open
 B23B6-1C - Autostick/ERS Switch - Circuit Voltage Out of Range
 B23B6-2A - Autostick/ERS Switch - Stuck
 B23B8-2A - Brake Pedal Switch - Stuck
 B2854-00 - Implausible Data Received From AHBM
 B286D-11 - Left Front Snowplow Turn Lamp - Circuit Short-to-Ground
 B286E-11 - Right Front Snowplow Turn Lamp - Circuit Short-to-Ground
 B287D-12 - Snowplow Park Lamp Control - Circuit Short-to-Battery
 B2885-11 - Truck Bed Topper Stop Lamp - Circuit Short-to-Ground
 C1006-13 - Brake Fluid Level Input - Circuit Open
 C1403-11 - Transfer Case Range Position Sensor-Circuit Short-to-Ground
 C1403-13 - Transfer Case Range Position Sensor-Circuit Open
 P0070-11 - Ambient Air Temperature Sensor Circuit - Circuit Short-to-Ground
 P0070-15 - Ambient Air Temperature Sensor Circuit - Circuit Short-to-Battery or Open
 P0460-11 - Fuel Level Sensor 1 - Circuit Short-to-Ground
 P0460-15 - Fuel Level Sensor 1 - Circuit Short-to-Battery or Open
 P0853-00 - Overdrive-Tow Switch Input Circuit Stuck
 P0928-11 - BTSI Control - Circuit Short-to-Ground
 P1276-11 - Starter Control 2 - Circuit Short-to-Ground
 P1276-15 - Starter Control 2 - Circuit Short-to-Battery or Open
 P2688-00 - Fuel Supply Heater Control Circuit Low
 P2689-00 - Fuel Supply Heater Control Circuit High
 U0002-00 - CAN C BUS Off Performance
 U0010-00 - CAN Interior BUS
 U0011-00 - CAN Interior BUS Off Performance
 U0100-00 - Lost Communication With ECM/PCM
 U0101-00 - Lost Communication With TCM
 U0121-00 - Lost Communication With Anti-Lock Brake System (ABS) Control Module
 U0137-00 - Lost Communication With Trailer Brake Control Module
 U0143-00 - Lost Communication With Multi-Purpose Module
 U0151-00 - Lost Communication With Occupant Restraint Controller (ORC)
 U0155-00 - Lost Communication With Cluster/CCN
 U0161-00 - Lost Communication With Compass Module
 U0164-00 - Lost Communication With HVAC Control Module
 U0199-00 - Lost Communication With Driver Door Module
 U0200-00 - Lost Communication With Passenger Door Module
 U0212-00 - Lost Communication With SCM
 U0231-00 - Lost Communication With Light Rain Sensing Module
 U0241-00 - Lost Communication With AutoHigh Beam Headlamp Control Module
 U0264-00 - Lost Communication With Camera Module - Rear
 U1008-00 - LIN 1 BUS
 U1009-00 - LIN 2 BUS
 U112C-00 - Lost Communication With Transfer Case Switch Bank Module

U112D-00 - Lost Communication With EVIC Steering Wheel SwitchES
 U113B-00 - Lost Communication With Switch Bank Module
 U113E-00 - Lost Communication With Intelligent Battery Sensor
 U11B9-00 - Lost Communication With RF Hub
 U1207-00 - Lost Communication With TERRAIN Switch Bank Module
 U1433-23 - Implausible Ignition Switch Status Message Received - Signal Stuck Low
 U1433-24 - Implausible Ignition Switch Status Message Received - Signal Stuck High

**Standard Procedure
 Module, Driver Door (DDM), (DMFL/R)
 Diagnosis and Testing**

B173D-11 - Mirror Signal Lamp Control - Circuit Short-to-Ground
 B173D-12 - Mirror Signal Lamp Control - Circuit Short-to-Battery
 B173D-13 - Mirror Signal Lamp Control - Circuit Open
 B18B5-00 - Master Switch - Front Left Window Switch - Stuck
 B18B6-00 - Master Switch - Front Right Window Switch - Stuck
 B18B7-00 - Master Switch - Rear Left Window Switch - Stuck
 B18B8-00 - Master Switch - Rear Right Window Switch - Stuck
 B18BA-11 - Window Control - Circuit Short-to-Ground
 B18BA-12 - Window Control - Circuit Short-to-Battery
 B18BA-13 - Window Control - Circuit Open
 B18BA-4B - Window Control - Over Temperature
 B1D00-2A - Mirror Fold Switch Input - Stuck
 B1D04-2A - Mirror Adjust Switch Input - Stuck
 B1D4A-2A - Memory Switch Input - Stuck
 B1DD0-11 - Mirror Heater Control - Circuit Short-to-Ground
 B1DD0-15 - Mirror Heater Control - Circuit Short-to-Battery or Open
 B1E64-00 - Left Mirror Select Switch - Stuck
 B1E65-00 - Right Mirror Select Switch - Stuck
 B1F02-11 - Mirror Vertical Motor Control - Circuit Short-to-Ground
 B1F02-12 - Mirror Vertical Motor Control - Circuit Short-to-Battery
 B1F02-13 - Mirror Vertical Motor Control - Circuit Open
 B1F03-11 - Mirror Horizontal Motor Control - Circuit Short-to-Ground
 B1F03-12 - Mirror Horizontal Motor Control - Circuit Short-to-Battery
 B1F03-13 - Mirror Horizontal Motor Control - Circuit Open
 B1F04-11 - Mirror Fold Control - Circuit Short-to-Ground
 B1F04-15 - Mirror Fold Control - Circuit Short-to-Battery or Open
 B1F05-11 - Electrochromatic Mirror Control Circuit-Circuit Short-to-Ground

B1F05-12 - Electrochromatic Mirror Control Circuit-Circuit Short-to-Battery
 B1F05-13 - Electrochromatic Mirror Control Circuit-Circuit Open
 B1F06-12 - Mirror Control Sensor Position Circuit - Circuit Short-to-Battery
 B1F06-14 - Mirror Control Sensor Position Circuit - Circuit Short-to-Ground or Open
 B210C-16 - Battery Voltage Input - Circuit Voltage Below Threshold
 B210C-17 - Battery Voltage Input - Circuit Voltage Above Threshold
 B21DD-84 - System Voltage - Signal Below Allowable Range
 B21DD-85 - System Voltage - Signal Voltage Above Allowable Range
 B224F-54 - Door Module Internal - Missing Calibration
 B224F-96 - Door Module Internal - Component Internal Failure
 B25AF-2A - Door Lock/Unlock Switch - Stuck
 B25B0-31 - Window Position Sensor - No Signal
 B25B1-11 - Window Position Sensor Power Supply - Circuit Short-to-Ground
 B2860-11 - Door Ambient Light Control - Circuit Short-to-Ground
 B2860-15 - Door Ambient Light Control - Circuit Short-to-Battery or Open
 B2861-11 - Mirror Approach Light Control - Circuit Short-to-Ground
 B2861-15 - Mirror Approach Light Control - Circuit Short-to-Battery or Open
 U0010-00 - CAN Interior BUS
 U0018-00 - CAN Interior BUS (-) Shorted-to-BUS (+)
 U0037-11 - LIN BUS - Circuit Short-to-Ground
 U0140-00 - Lost Communication With Body Control Module
 U0164-00 - Lost Communication With HVAC Control Module
 U113D-00 - Lost Communication With Master Power Window Switch
 U0232-00 - Lost Communication With Blind Spot Detection Module

**Module, Drivetrain Control (DTCM)
 Diagnosis and Testing**

C1078 - Tire Revolutions Range Performance
 C1404 - Transfer Case Range Position Sensor Circuit Low
 C1405 - Transfer Case Range Position Sensor Circuit High
 C1407 - Transfer Case Brake Control Circuit Low
 C1408 - Transfer Case Brake Control Circuit High
 C140A - Transfer Case Motor Performance
 C140D - Transfer Case Motor Control Circuit Open
 C140E - Transfer Case Motor Blocked
 C1415 - Transfer Case Motor Current Performance
 C1444 - Transfer Case Motor Overuse
 C1456 - AWD Clutch Power Control Circuit Low
 C1457 - AWD Clutch Power Control Circuit High

C145D - AWD Clutch Power /Return Control Circuit Open
 C1464 - Front Axle Disconnect Control Circuit Low
 C1465 - Front Axle Disconnect Control Circuit High
 C1472 - Transfer Case Clutch Control Circuit Performance
 C1477 - Transfer Case Clutch Over Temperature
 C147B - Front Axle Disconnect Sensor Circuit Performance
 C147C - Front Axle Disconnect Power Circuit Low
 C147D - Front Axle Disconnect Power Supply Circuit High
 C1480 - Transfer Case Range Digital Position Sensor Performance
 C2100 - Battery Voltage Low
 C2101 - Battery Voltage High
 C2111 - Sensor Supply 1 Voltage Circuit Low
 C2112 - Sensor Supply 1 Voltage Circuit High
 C2201 - FDCM/DTCM Internal
 U0001 - CAN C BUS
 U0100 - Lost Communication With ECM/PCM
 U0101 - Lost Communication With TCM
 U0121 - Lost Communication With Anti-Lock Brake Module
 U0140 - Lost Communication With Body Control Module
 U0401 - Implausible Data Received From ECM/PCM
 U0402 - Implausible Data Received From TCM
 U0415 - Implausible Data Received From ABS
 U0422 - Implausible Data Received From Body Control Module
 U0429 - Implausible Data Received From SCM (SAS)

Standard Procedure
Module, External Disc
Module, Heated Seat (HSM)
Diagnosis and Testing

B10C4-11 - Heated Steering Wheel Control - Circuit Short-to-Ground
 B10C4-12 - Heated Steering Wheel Control - Circuit Short-to-Battery
 B10C4-13 - Heated Steering Wheel Control - Circuit Open
 B1148-2A - Left Rear Heated Seat Switch - Stuck
 B114D-2A - Right Rear Heated Seat Switch - Stuck
 B11C1-13 - Steering Wheel Heater Power Supply - Circuit Open
 B11DC-13 - Rear Heated Seats Power Supply - Circuit Open
 B1E99-11 - Front Left Heater Control Circuit - Circuit Short-to-Ground
 B1E99-12 - Front Left Heater Control Circuit - Circuit Short-to-Battery
 B1E99-13 - Front Left Heater Control Circuit - Circuit Open
 B1E99-1E - Front Left Heater Control Circuit - Circuit Resistance Out of Range
 B1E9A-11 - Front Right Heater Control Circuit - Circuit Short-to-Ground
 B1E9A-12 - Front Right Heater Control Circuit - Circuit Short-to-Battery
 B1E9A-13 - Front Right Heater Control Circuit - Circuit Open
 B1E9A-1E - Front Right Heater Control Circuit - Circuit Resistance Out of Range
 B1E9B-11 - Rear Left Heater Control Circuit - Circuit Short-to-Ground
 B1E9B-12 - Rear Left Heater Control Circuit - Circuit Short-to-Battery
 B1E9B-13 - Rear Left Heater Control Circuit - Circuit Open
 B1E9B-1E - Rear Left Heater Control Circuit - Circuit Resistance Out of Range
 B1E9C-11 - Rear Right Heater Control Circuit - Circuit Short-to-Ground
 B1E9C-12 - Rear Right Heater Control Circuit - Circuit Short-to-Battery
 B1E9C-13 - Rear Right Heater Control Circuit - Circuit Open
 B1E9C-1E - Rear Right Heater Control Circuit - Circuit Resistance Out of Range
 B1E9D-11 - Front Left Vent Control Circuit - Circuit Short-to-Ground
 B1E9D-12 - Front Left Vent Control Circuit - Circuit Short-to-Battery
 B1E9D-13 - Front Left Vent Control Circuit - Circuit Open
 B1E9E-11 - Front Right Vent Control Circuit - Circuit Short-to-Ground
 B1E9E-12 - Front Right Vent Control Circuit - Circuit Short-to-Battery
 B1E9E-13 - Front Right Vent Control Circuit - Circuit Open
 B1EB1-1A - Front Left Seat Heater Sensor - Circuit Resistance Below Threshold
 B1EB1-1B - Front Left Seat Heater Sensor - Circuit Resistance Above Threshold
 B1EB2-1A - Front Right Seat Heater Sensor - Circuit Resistance Below Threshold
 B1EB2-1B - Front Right Seat Heater Sensor - Circuit Resistance Above Threshold
 B1EB3-1A - Rear Left Seat Heater Sensor - Circuit Resistance Below Threshold
 B1EB3-1B - Rear Left Seat Heater Sensor - Circuit Resistance Above Threshold
 B1EB4-1A - Rear Right Seat Heater Sensor - Circuit Resistance Below Threshold
 B1EB4-1B - Rear Right Seat Heater Sensor - Circuit Resistance Above Threshold
 B210C-17 - Battery Voltage Input - Circuit Voltage Above Threshold
 B210C-18 - Battery Voltage Input - Under Current
 B21DD-84 - System Voltage - Signal Below Allowable Range
 B21DD-85 - System Voltage - Signal Above Allowable Range
 B221A-00 - (HSM) Heated Seat Module Internal
 U0011-00 - CAN Interior BUS Off Performance
 U0140-00 - Lost Communication With Body Control Module
 U1446-00 - Implausible Heated Steering Wheel Temperature Message Received

**Module, Integrated Center Stack/Screen
Diagnosis and Testing**

- B156E-96 - Intergrated Center Stack (ICS)-Component Internal Failure
- B157F-2A - Intergrated Center Stack Button - Stuck
- B210D-16 - Battery Voltage Low - Circuit Below Threshold
- B210E-17 - Battery Voltage High - Circuit Voltage Above Threshold
- U0010-00 - CAN Interior BUS
- U0011-00 - CAN Interior BUS OFF Performance
- U0140-00 - Lost Communication With Body Control Module
- U0164 - Lost Communication With HVAC Control
- U0184-00 - Lost Communication With Radio

**Module, Integrated Trailer Brake (ITBM)
Diagnosis and Testing**

- C10C5-92 - Electronic Trailer Brake Accelerometer - Performance or Incorrect Operation
- C10C6-92 - Electronic Trailer Brake Manual Lever – Performance or Incorrect Operation
- C10C7-00 - Electronic Trailer Brake Control Output
- C10C7-11 - Electronic Trailer Brake Control Output - Circuit Short-to-Ground
- C10C7-12 - Electronic Trailer Brake Control Output - Circuit Short-to-Battery
- C10C7-19 - Electronic Trailer Brake Control Output - Overcurrent
- C10C9-00 - Electronic Trailer Brake Manual Lever Failsafe Circuit
- C10CA-2A - ITBM Adjustment Switch - Stuck
- C2129-16 - Battery Voltage - Circuit Voltage Below Threshold
- C2129-17 - Battery Voltage - Circuit Voltage Above Threshold
- C2213-00 - Trailer Brake Module Internal
- C2213-42 - Trailer Brake Module Internal-General Memory Failure
- C2214-00 - ITBM not Calibrated
- U0001-00 - CAN C BUS
- U0100-00 - Lost Communication With ECM/PCM
- U0121-00 - Lost Communication With Anti-Lock Brake System (ABS) Control Module
- U0140-00 - Lost Communication With Body Control Module
- U0155-00 - Lost Communication With Cluster/CCN
- U0401-00 - Implausible Data Received From ECM/PCM
- U0415-00 - Implausible Data Received From ABS
- U0422-00 - Implausible Data Received From Body Control Module
- U0423-00 - Implausible Data Received From Cluster/CCN
- U11B9-00 - Lost Communication With RF HUB
- U1601-00 - ECU Application Software Code 1 Missing or Corrupted

**Standard Procedure
Module, Memory Seat (MSMD)
Diagnosis and Testing**

- B1D5B-00 - Adjustable Pedal Switch Circuit Performance
- B1D5C-23 - Adjustable Pedal Switch Circuit Stuck Forward - Signal Stuck Low
- B1D5D-23 - Adjustable Pedal Switch Circuit Stuck Rearward - Signal Stuck Low
- B1D5E-13 - Power Seat Switch - Circuit Open
- B1D62-2A - Power Seat Switch Stuck
- B1D67-00 - Adjustable Pedal Control Circuit Performance
- B1D6B-11 - Seat Horizontal Position Sensor - Circuit Short-to-Ground
- B1D6B-12 - Seat Horizontal Position Sensor - Circuit Short-to-Battery
- B1D6F-11 - Seat Front Vertical Position Sensor - Circuit Short-to-Ground
- B1D6F-12 - Seat Front Vertical Position Sensor - Circuit Short-to-Battery
- B1D73-11 - Seat Rear Vertical Position Sensor - Circuit Short-to-Ground
- B1D73-12 - Seat Rear Vertical Position Sensor - Circuit Short-to-Battery
- B1D77-11 - Seat Recliner Position Sensor - Circuit Short-to-Ground
- B1D77-12 - Seat Recliner Position Sensor - Circuit Short-to-Battery
- B1D7B-00 - Seat Horizontal Motor Control Circuit Performance
- B1D7F-00 - Seat Front Vertical Motor Control Circuit Performance
- B1D83-00 - Seat Rear Vertical Motor Control Circuit Performance
- B1D87-00 - Seat Backrest Motor Control - Circuit Performance
- B1D9B-54 - Seat Horizontal Front Stop Not Learned-Missing Calibration
- B1ED1-11 - Adjustable Pedal Sensor - Circuit Short-to-Ground
- B1ED1-12 - Adjustable Pedal Sensor-Circuit Short-to-Battery
- B210A-84 - System Voltage Low - Signal Below Allowable Range
- B210B-85 - System Voltage High - Signal Above Allowable Range
- B210D-21 - Battery Voltage Low - Signal Amplitude < Minimum
- B210E-22 - Battery Voltage High - Signal Amplitude > Maximum
- B221C-42 - (MSM) Memory Seat Module Internal-General Memory Failure
- U0011-00 - CAN Interior BUS Off Performance
- U0013-00 - CAN Interior BUS (+) Circuit Low
- U0014-00 - CAN Interior BUS (+) Circuit High
- U0016-00 - CAN Interior BUS (-) Circuit Low
- U0017-00 - CAN Interior BUS (-) Circuit High
- U0140-00 - Lost Communication With Body Control Module
- U0199-00 - Lost Communication With Driver Door Module

**Standard Procedure
Module, Park Assist (PTS/PAM)
Diagnosis and Testing**

B1295-11 - PTS Sensor 8 - Circuit Short-to-Ground
B1295-12 - PTS Sensor 8 - Circuit Short-to-Battery
B1295-25 - PTS Sensor 8 - Signal Shape / Waveform Failure
B1295-92 - PTS Sensor 8 - Performance or Incorrect Operation
B1296-11 - PTS Sensor 9 - Circuit Short-to-Ground
B1296-12 - PTS Sensor 9 - Circuit Short-to-Battery
B1296-25 - PTS Sensor 9 - Signal Shape / Waveform Failure
B1296-92 - PTS Sensor 9 - Performance or Incorrect Operation
B1297-11 - PTS Sensor 10 - Circuit Short-to-Ground
B1297-12 - PTS Sensor 10 - Circuit Short-to-Battery
B1297-25 - PTS Sensor 10 - Signal Shape / Waveform Failure
B1297-92 - PTS Sensor 10 - Performance or Incorrect Operation
B1298-11 - PTS Sensor 11 - Circuit Short-to-Ground
B1298-12 - PTS Sensor 11 - Circuit Short-to-Battery
B1298-25 - PTS Sensor 11 - Signal Shape / Waveform Failure
B1298-92 - PTS Sensor 11 - Performance or Incorrect Operation
B210C-16 - Battery Voltage Input-Circuit Voltage Below Threshold
B210C-17 - Battery Voltage Input-Circuit Voltage Above Threshold
B2128-16 - Sensor Supply Voltage-Circuit Voltage Below Threshold
B2128-17 - Sensor Supply Voltage-Circuit Voltage Above Threshold
B21DD-16 - System Voltage - Circuit Voltage Below Threshold
B21DD-17 - System Voltage - Circuit Voltage Above Threshold
B222A-00 - Vehicle Line Mismatch
B2232-00 - (PTS) Parktronics Internal
U0001-00 - CAN C BUS
U0100-00 - Lost Communication With ECM/PCM
U0121-00 - Lost Communication With Anti-Lock Brake System (ABS) Control Module
U0140-00 - Lost Communication With Body Control Module
U0155-00 - Lost Communication With Cluster/CCN
U0401-00 - Implausible Data Received From ECM/PCM
U0418-00 - Implausible Data Received From Brake System Control Module
U0422-00 - Implausible Data Received From Body Control Module
U0423-00 - Implausible Data Received From Cluster/CCN

**Module, Passenger Door (PDM), (DMFL/R)
Diagnosis and Testing**

B173D-11 - Mirror Signal Lamp Control - Circuit Short-to-Ground
B173D-12 - Mirror Signal Lamp Control - Circuit Short-to-Battery
B173D-13 - Mirror Signal Lamp Control - Circuit Open
B18BA-11 - Window Control - Circuit Short-to-Ground
B18BA-12 - Window Control - Circuit Short-to-Battery
B18BA-13 - Window Control - Circuit Open
B18BA-4B - Window Control - Over Temperature
B18E6-2A - Window Switch - Stuck
B1DD0-11 - Mirror Heater Control - Circuit Short-to-Ground
B1DD0-15 - Mirror Heater Control - Circuit Short-to-Battery or Open
B1F02-11 - Mirror Vertical Motor Control - Circuit Short to-Ground
B1F02-12 - Mirror Vertical Motor Control - Circuit Short to Battery
B1F02-13 - Mirror Vertical Motor Control - Circuit Open
B1F03-11 - Mirror Horizontal Motor Control - Circuit Short-to-Ground
B1F03-12 - Mirror Horizontal Motor Control - Circuit Short-to-Battery
B1F03-13 - Mirror Horizontal Motor Control - Circuit Open
B1F04-11 - Mirror Fold Control - Circuit Short-to-Ground
B1F04-15 - Mirror Fold Control - Circuit Short-to-Battery or Open
B1F05-11 - Electrochromatic Mirror Control Circuit-Circuit Short-to-Ground
B1F05-12 - Electrochromatic Mirror Control Circuit-Circuit Short-to-Battery
B1F05-13 - Electrochromatic Mirror Control Circuit-Circuit Open
B1F06-12 - Mirror Control Sensor Position Circuit - Circuit Short-to-Battery
B1F06-14 - Mirror Control Sensor Position Circuit - Circuit Short-to-Ground or Open
B210C-16 - Battery Voltage Input - Circuit Voltage Below Threshold
B210C-17 - Battery Voltage Input - Circuit Voltage Above Threshold
B21DD-84 - System Voltage - Signal Below Allowable Range
B21DD-85 - System Voltage - Signal Above Allowable Range
B224F-54 - Door Module Internal - Missing Calibration
B224F-96 - Door Module Internal - Component Internal Failure
B25AF-2A - Door Lock/Unlock Switch - Stuck
B25B0-31 - Window Position Sensor - No Signal
B25B1-11 - Window Position Sensor Power Supply - Circuit Short-to-Ground
B285E-11 - Window Switch Backlighting - Circuit Short to Ground
B2860-11 - Door Ambient Light Control - Circuit Short to Ground

B2860-15 - Door Ambient Light Control - Circuit Short to Battery or Open
 B2861-11 - Mirror Approach Light Control - Circuit Short-to-Ground
 B2861-15 - Mirror Approach Light Control - Circuit Short-to-Battery or Open
 U0010-00 - CAN Interior BUS
 U0018-00 - CAN Interior BUS (-) Shorted-to-BUS (+)
 U0140-00 - Lost Communication With Body Control Module
 U0164-00 - Lost Communication With HVAC Control Module
 U0199-00 - Lost Communication With Driver Door Module
 U0232-00 - Lost Communication With Blind Spot Detection Module

**Module, Powertrain Control (PCM), 68RFE
 Diagnosis and Testing**

P0218 - Transmission High Temperature Operation Activated
 P0562 - Battery/System Voltage Low
 P0602 - Control Module Programming Error/Not Programmed
 P0604 - Internal Control Module RAM
 P0613 - Internal TCM
 P0706 - Transmission Range Sensor Rationality
 P0711 - Transmission Temperature Sensor Performance
 P0712 - Transmission Temperature Sensor Low
 P0713 - Transmission Temperature Sensor High
 P0714 - Transmission Temperature Sensor Intermittent
 P0716 - Input Speed Sensor 1 Circuit Performance
 P0721 - Output Speed Sensor Circuit Performance
 P0729 - Gear Ratio Error In 6th
 P0731 - Gear Ratio Error In 1st
 P0732 - Gear Ratio Error In 2nd
 P0733 - Gear Ratio Error In 3rd
 P0734 - Gear Ratio Error In 4th
 P0735 - Gear Ratio Error In 5th
 P0736 - Gear Ratio Error In Reverse
 P0740 - TCC Out of Range
 P0750 - LR Solenoid Circuit
 P0755 - 2C Solenoid Circuit
 P0765 - UD Solenoid Circuit
 P0770 - 4C Solenoid Circuit
 P0841 - LR Pressure Switch Rationality
 P0845 - 2C Hydraulic Pressure Test
 P0846 - 2C Pressure Switch Rationality
 P0868 - Line Pressure Low
 P0869 - Line Pressure High
 P0870 - OD Hydraulic Pressure Test
 P0871 - OD Pressure Switch Rationality
 P0875 - UD Hydraulic Pressure Test
 P0876 - UD Pressure Switch Rationality
 P0882 - TCM Power Input Low
 P0883 - TCM Power Input High

P0884 - Power UP AT Speed
 P0890 - Switched Battery
 P0933 - Hydraulic Pressure Sensor Range/Performance
 P0934 - Line Pressure Sensor Circuit Low
 P0935 - Line Pressure Sensor Circuit High
 P0944 - Loss of Hydraulic Pump Prime
 P0987 - 4C Hydraulic Pressure Test
 P0988 - 4C Pressure Switch Rationality
 P1715 - Restricted Manual Valve In T3 Range
 P1775 - Solenoid Switch Valve Latched In TCC Position
 P1776 - Solenoid Switch Valve Latched In LR Position
 P1794 - Speed Sensor Ground Error
 P2700 - Inadequate Element Volume LR
 P2701 - Inadequate Element Volume 2C
 P2702 - Inadequate Element Volume OD
 P2703 - Inadequate Element Volume UD
 P2704 - Inadequate Element Volume 4C
 P2706 - MS Solenoid Circuit
 U0002-00 CAN C BUS Off Performance
 U0100-00 - Lost Communication With ECM/PCM
 U0121-00 - Lost Communication With Anti-Lock Brake System (ABS) Control Module
 U0140-00 - Lost Communication With Body Control Module
 U1449 - Implausible ERS Message Received

**Standard Procedure
 Module, Powertrain Control (PCM), 6.7L Diesel
 Diagnosis and Testing**

P0008 - Engine Position System Performance
 P000F - Fuel System Over Pressure Relief Valve Activated
 P0016 - Crankshaft/Camshaft Timing Misalignment - Bank 1 Sensor 1
 P003A - Turbocharger Boost Control Module Position Exceeded Learning Limit
 P0046 - Turbocharger Boost Control Circuit Performance
 P0049 - Turbocharger Turbine Overspeed
 P006E - Turbocharger Boost Control Supply Voltage Circuit Low
 P006F - Turbocharger Boost Control Supply Voltage Circuit High
 P0071 - Ambient Air Temperature Sensor Performance
 P0072 - Ambient Air Temperature Sensor Circuit Low
 P0073 - Ambient Air Temperature Sensor Circuit High
 P007B - Charge Air Cooler Temperature Sensor Circuit Performance
 P007C - Charge Air Cooler Temperature Sensor Circuit Low
 P007D - Charge Air Cooler Temperature Sensor Circuit High
 P0087 - Fuel Rail Pressure Too Low
 P0088 - Fuel Rail Pressure Too High - Bank 1
 P008A - Low Pressure Fuel System Pressure - Too Low
 P0093 - Fuel System Leak Detected - Large Leak

P00AF - Turbocharger Boost Control Module Performance
 P0101 - Mass Air Flow Sensor "A" Circuit Performance
 P0102 - Mass Air Flow Sensor "A" Circuit Low
 P0103 - Mass Air Flow Sensor "A" Circuit High
 P0106 - Manifold Absolute Pressure Sensor Performance
 P0107 - Manifold Absolute Pressure Sensor Circuit Low
 P0108 - Manifold Absolute Pressure Sensor Circuit High
 P0111 - Intake Air Temperature Sensor 1 Performance
 P0112 - Intake Air Temperature Sensor 1 Circuit Low
 P0113 - Intake Air Temperature Sensor 1 Circuit High
 P0116 - Engine Coolant Temperature Sensor Performance
 P0117 - Engine Coolant Temperature Sensor Circuit Low
 P0118 - Engine Coolant Temperature Sensor 1 Circuit High
 P0128 - Thermostat Rationality
 P0169 - Water-in-Fuel Detected For Too Long
 P0191 - Fuel Rail Pressure Sensor Circuit Performance
 P0192 - Fuel Pressure Sensor Low
 P0193 - Fuel Pressure Sensor High
 P0201 - Fuel Injector 1 Circuit/Open
 P0202 - Fuel Injector 2 Circuit/Open
 P0203 - Fuel Injector 3 Circuit/Open
 P0204 - Fuel Injector 4 Circuit/Open
 P0205 - Fuel Injector 5 Circuit/Open
 P0206 - Fuel Injector 6 Circuit/Open
 P020A - Fuel Injector 1 Performance
 P020B - Fuel Injector 2 Performance
 P020C - Fuel Injector 3 Performance
 P020D - Fuel Injector 4 Performance
 P020E - Fuel Injector 5 Performance
 P020F - Fuel Injector 6 Performance
 P0217 - Coolant Temperature Too High
 P0219 - Engine Overspeed
 P0234 - Turbocharger Overboost Condition
 P0253 - Injection Pump Fuel Control Circuit Low
 P0254 - Injection Pump Fuel Control Circuit High
 P0255 - Injection Pump Fuel Control Circuit Performance
 P026A - Charge Air Cooler Efficiency Below Threshold
 P026B - Injection Timing Performance
 P0299 - Manifold Pressure Sensor Out of Range Low
 P02E1 - Diesel Intake Air Flow Control Performance
 P02E2 - Diesel Intake Air Flow Control Circuit Low
 P02E3 - Diesel Intake Air Flow Control Circuit High
 P02E7 - Diesel Intake Air Flow Position Sensor Performance
 P02E8 - Diesel Intake Air Flow Position Sensor Circuit Low
 P02E9 - Diesel Intake Air Flow Position Sensor Circuit High
 P0300 - Multiple Cylinder Misfire
 P0301 - Cylinder 1 Misfire
 P0302 - Cylinder 2 Misfire
 P0303 - Cylinder 3 Misfire
 P0304 - Cylinder 4 Misfire
 P0305 - Cylinder 5 Misfire
 P0306 - Cylinder 6 Misfire
 P0335 - Crankshaft Position Sensor Circuit
 P0336 - Crankshaft Position Sensor Performance
 P0340 - Camshaft Position Sensor Circuit - Bank 1 Sensor 1
 P0341 - Camshaft Position Sensor Performance - Bank 1 Sensor 1
 P0401 - EGR System Performance
 P0402 - EGR Flow Excessive Detected
 P0403 - EGR Control Circuit/Open
 P0404 - EGR Control Circuit Performance
 P0405 - EGR Position Sensor Circuit Low
 P040B - Exhaust Gas Recirculation Temperature Sensor "A" Circuit Performance
 P040C - Exhaust Gas Recirculation Temperature Sensor "A" Circuit Low
 P040D - Exhaust Gas Recirculation Temperature Sensor "A" Circuit High
 P0420 - Catalyst Efficiency Below Threshold
 P0422 - Main Catalyst Efficiency Below Threshold Bank 1
 P0461 - Fuel Level Sensor 1 Performance
 P0462 - Fuel Level Sensor 1 Circuit Low
 P0463 - Fuel Level Sensor 1 Circuit High
 P046C - EGR Position Sensor Circuit Performance
 P0471 - Exhaust Pressure Sensor 1 Performance
 P0472 - Exhaust Pressure Sensor 1 Low
 P0473 - Exhaust Pressure Sensor 1 High
 P0489 - EGR Control Circuit Low
 P049D - EGR Control Position Exceeded Learning Limit
 P04DB - Crankcase Ventilation System Disconnected
 P04E2 - Crankcase Ventilation Hose Connection Sensor Circuit Low
 P04E3 - Crankcase Ventilation Hose Connection Sensor Circuit High
 P04E4 - Crankcase Ventilation Hose Connection Sensor Circuit Intermittent/Erratic
 P0501 - Vehicle Speed Sensor 1 Performance
 P0506 - Idle Control System RPM - Lower Than Expected
 P0507 - Idle Control System RPM - Higher Than Expected
 P050E - Cold Start Engine Exhaust Temperature Too Low
 P0513 - Invalid Skim Key
 P051B - Crankcase Pressure Sensor Circuit Range/Performance
 P051C - Crankcase Pressure Sensor Circuit Low
 P051D - Crankcase Pressure Sensor Circuit High
 P0521 - Engine Oil Pressure Sensor Performance
 P0524 - Engine Oil Pressure Sensor Circuit Low
 P0532 - A/C Pressure Sensor Circuit Low
 P0533 - A/C Pressure Sensor Circuit High
 P0541 - Intake Air Heater Control Circuit 1 Low

P0542 - Intake Air Heater Control Circuit 1 High
 P0544 - Exhaust Gas Temperature Sensor Circuit - Bank 1 Sensor 1
 P0545 - Exhaust Gas Temperature Sensor Circuit Low - Bank 1 Sensor 1
 P0546 - Exhaust Gas Temperature Sensor Circuit High - Bank 1 Sensor 1
 P054E - Idle Control System - Fuel Quantity Lower Than Expected
 P054F - Idle Control System - Fuel Quantity Higher Than Expected
 P0562 - Battery/System Voltage Low
 P0563 - Battery/System Voltage High
 P0571 - Brake Switch 1 Performance
 P0572 - Brake Switch 1 Stuck On
 P0573 - Brake Switch 1 Stuck Off
 P0601 - Internal Memory Checksum Error
 P0604 - Internal Control Module RAM Error
 P0606 - Internal Control Processor
 P0607 - ECU Internal Performance
 P061A - Level 2 Torque Performance
 P061C - ETC Level 2 RPM Performance
 P0625 - Generator Field Control Circuit Low
 P0626 - Generator Field Control Circuit High
 P0628 - Fuel Pump Control Circuit Low
 P0629 - Fuel Pump Control Circuit High
 P062C - ETC Level 2 MPH Performance
 P0630 - VIN Not Programmed in PCM
 P0633 - Skim Secret Key Not Stored in PCM
 P063C - Generator Voltage Sense Low
 P063D - Generator Voltage Sense High
 P0642 - Sensor Reference Voltage 1 Circuit Low
 P0643 - Sensor Reference Voltage 1 Circuit High
 P0646 - A/C Control Circuit Low
 P0647 - A/C Control Circuit High
 P064F - Unauthorized Software/Calibration Detected
 P0652 - Sensor Reference Voltage 2 Low
 P0653 - Sensor Reference Voltage 2 High
 P065A - Generator Performance
 P0658 - Control Supply Voltage Circuit Low
 P0686 - ECM Main Control Circuit Low
 P0687 - ECM Main Control Circuit High
 P0691 - Cooling Fan 1 Control Circuit Low
 P0692 - Cooling Fan 1 Control Circuit High
 P0698 - Sensor Reference Voltage 3 Circuit Low
 P0699 - Sensor Reference Voltage 3 Circuit High
 P06A4 - Sensor Reference Voltage 4 Circuit Low
 P06A5 - Sensor Reference Voltage 4 Circuit High
 P06D3 - Sensor Reference Voltage 5 Circuit Low
 P06D4 - Sensor Reference Voltage 5 Circuit High
 P06D7 - Sensor Reference Voltage 6 Circuit Low
 P06D8 - Sensor Reference Voltage 6 Circuit High
 P0850 - Park/Neutral Switch Performance
 P1123 - PTO System Performance
 P1191 - Inlet Air Temperature Sensor Rational/Performance
 P1192 - Inlet Air Temperature Sensor Circuit Low
 P1193 - Inlet Air Temperature Sensor Circuit High
 P1207 - Generator 2 Control Circuit Open
 P1208 - Generator 2 Control Circuit Short-to-Ground
 P1209 - Generator 2 Control Circuit Short-to-Battery
 P1211 - Generator 2 Control Circuit Erratic
 P1240 - Generator 2 Voltage Sensor Circuit Short-to-Ground
 P1241 - Generator 2 Voltage Sensor Circuit Short -to-Battery
 P1242 - Generator 2 System Performance
 P125A - Power Enable Control Circuit Low
 P1451 - Diesel Particulate Filter System Performance
 P1473 - Intake Air Diverter Valve Circuit Shorted-to-Ground
 P1474 - Intake Air Diverter Valve Circuit Shorted-to-Battery
 P1475 - Intake Air Diverter Valve Out of Calibration/ Missing Calibration
 P1477 - Intake Air Diverter Valve Position Sensor Circuit Shorted-to-Ground
 P1478 - Intake Air Diverter Valve Position Sensor Circuit Shorted-to-Battery
 P1484 - Catalyst Overheat Detection
 P1507 - Crankcase Filter Restriction
 P1644 - Incorrect Variant Configuration
 P1C54 - SCR NOx Catalyst Missing
 P1C55 - NOx Sensor Intermittent - Bank 1 Sensor 1
 P1C70 - SCR Error Detected - Engine Disabled
 P1CEF - Cold Climate Turbo Protection Engine De-Rate Mode
 P1E1C - Reductant System Wake Up Circuit High
 P2002 - Diesel Particulate Filter Efficiency Below Threshold
 P200C - Diesel Particulate Filter Over Temperature - Bank 1
 P200E - Catalyst System Over Temperature (Bank 1)
 P202B - Reductant Tank Heater Control Circuit Low
 P202C - Reductant Tank Heater Control Circuit High
 P202E - (Diesel Exhaust Fluid) Reductant Injector Performance
 P2031 - Exhaust Gas Temperature Sensor Circuit - Bank 1 Sensor 2
 P2032 - Exhaust Gas Temperature Sensor Circuit Low-Bank 1 Sensor 2
 P2033 - Exhaust Gas Temperature Sensor Circuit High - Bank 1 Sensor 2
 P203B - Reductant Level Sensor 1 Circuit Performance
 P203C - (Diesel Exhaust Fluid) Reductant Level Sensor Circuit Low
 P203D - (Diesel Exhaust Fluid) Reductant Level Sensor Circuit High
 P203F - (Diesel Exhaust Fluid) Reductant Level Too Low
 P2048 - (Diesel Exhaust Fluid) Reductant Injector Circuit Low

P204A - (Diesel Exhaust Fluid) Reductant Pressure Sensor Circuit

P204C - (Diesel Exhaust Fluid) Reductant Pressure Sensor Circuit Low

P204D - (Diesel Exhaust Fluid) Reductant Pressure Sensor Circuit High

P204F - Reductant System Performance Bank 1

P205C - (Diesel Exhaust Fluid) Reductant Tank Temperature Sensor Circuit Low

P205D - (Diesel Exhaust Fluid) Reductant Tank Temperature Sensor Circuit High

P205E - (Diesel Exhaust Fluid) Reductant Tank Temperature Sensor Circuit Intermittent

P207F - Reductant Quality Performance

P2080 - Exhaust Gas Temp Sensor Circuit Performance - Bank 1 Sensor 1

P208A - (Diesel Exhaust Fluid) Reductant Pump Control Circuit Open

P208C - (Diesel Exhaust Fluid) Reductant Pump Control Circuit Low

P208D - (Diesel Exhaust Fluid) Reductant Pump Control Circuit High

P209F - (Diesel Exhaust Fluid) Reductant Tank Heater Control Circuit Performance

P20B7 - (Diesel Exhaust Fluid) Reductant Pump Heater Control Circuit Low

P20B8 - (Diesel Exhaust Fluid) Reductant Pump Heater Control Circuit High

P20B9 - Reductant Heater "A" Control Circuit/Open

P20BB - Reductant Heater "A" Control Circuit Low

P20BC - Reductant Heater "A" Control Circuit High

P20E8 - (Diesel Exhaust Fluid) Reductant Pressure Too Low

P20E9 - (Diesel Exhaust Fluid) Reductant Pressure Too High

P20EE - SCR NOx Catalyst Efficiency Below Threshold - Bank 1

P2121 - Accelerator Pedal Position Sensor 1 Performance

P2122 - Accelerator Pedal Position Sensor 1 Circuit Low

P2123 - Accelerator Pedal Position Sensor 1 Circuit High

P2127 - Accelerator Pedal Position Sensor 2 Circuit Low

P2128 - Accelerator Pedal Position Sensor 2 Circuit High

P214A - SCR NOx Catalyst Inlet Temperature Too High

P214B - SCR NOx Catalyst Inlet Temperature Too High During Particulate Filter RegeneRation

P214C - SCR NOx Catalyst Outlet Temperature Too High

P214D - SCR NOx Catalyst Outlet Temperature Too High During Particulate Filter RegeneRation

P21C4 - (Diesel Exhaust Fluid) Reductant Line Heater Relay Control Circuit High

P21CB - Reductant Control Module Supply Voltage Low

P21CC - Reductant Control Module Suiupply Voltage High

P2201 - Aftertreatment NOx Sensor Circuit Performance - Bank 1 Sensor 1

P2202 - NOx Sensor 1 Circuit Low

P2209 - NOx Sensor 1 Heater Sense Circuit Performance

P220A - NOx-Sensor-Supply-Circuit-Performance-Bank- 1 Sensor 1

P220B - NOx Sensor Supply Circuit Performance - Bank 1 Sensor 2

P2227 - Barometric Pressure Circuit Performance

P2228 - Barometric Pressure Circuit Low

P2229 - Barometric Pressure Circuit High

P2262 - Turbocharger Boost Pressure Not Detected - Mechanical

P2263 - Turbo Boost System Performance

P2266 - Water-in-Fuel Sensor Circuit Low

P2267 - Water-in-Fuel Sensor Circuit High

P2269 - Water-in-Fuel Condition

P226B - Turbocharger Boost Pressure Not Responding

P226C - Turbocharger Boost Control "A" Slow Response

P2280 - Air Flow Restriction / Leak Between Air Cleaner and MAF

P2281 - Leak Between MAF and Throttle Body

P2299 - Brake Pedal Position / Accelerator Pedal Position Incompatible

P229E - NOx Sensor Circuit - Bank 1 Sensor 2

P229F - Aftertreatment NOx Sensor Circuit Performance - Bank 1 Sensor 2

P22A7 - NOx Sensor Heater Circuit Performance - Bank 1 Sensor 2

P242B - Exhaust Gas Temp Sensor Circuit Performance - Bank 1 Sensor 3

P242C - Exhaust Gas Temperature Sensor Circuit Low- Bank 1 Sensor 3

P242D - Exhaust Gas Temperature Sensor Circuit High - Bank 1 Sensor 3

P242F - Diesel Particulate Filter Restriction - Ash Accumulation

P244A - Diesel Particulate Filter Differential Pressure Too Low

P244D - Exhaust Temperature Too High For Particulate Filter RegeneRation

P2453 - Diesel Particulate Filter Pressure Sensor A Circuit Performance

P2454 - Diesel Particulate Filter Pressure Sensor A Circuit Low

P2455 - Diesel Particulate Filter Pressure Sensor A Circuit High

P2456 - Diesel Particulate Filter Pressure Sensor 1 Circuit Intermittent/Erratic

P2457 - Exhaust Gas Recirculation Cooling System Performance

P2459 - Diesel Particulate Filter Regeneration Too Frequent

P245A - EGR Cooler Bypass Control Circuit/Open

P245C - EGR Cooler Bypass Control Circuit Low

P245D - EGR Cooler Bypass Control Circuit High

P2463 - Diesel Particulate Filter - Soot Accumulation

P2470 - Exhaust Gas Temperature Sensor Circuit Low - Bank 1 Sensor 4

P2471 - Exhaust Gas Temperature Sensor Circuit High - Bank 1 Sensor 4

P2472 - Exhaust Gas Temperature Sensor Circuit Intermittent/Erratic - Bank 1 Sensor 4
P2481 - Exhaust Gas Temperature Sensor Circuit Low - Bank 1 Sensor 5
P2482 - Exhaust Gas Temperature Sensor Circuit High - Bank 1 Sensor 5
P2483 - Exhaust Gas Temperature Sensor Circuit Performance - Bank 1 Sensor 5
P2493 - EGR Cooler Bypass Bank 1 Position Sensor Circuit Performance
P2494 - EGR Cooler Bypass Bank 1 Position Sensor Circuit Low
P2495 - EGR Cooler Bypass Bank 1 Position Sensor Circuit High
P249E - Closed Loop SCR Reductant Injection Control at Limit - Flow Too High
P24A0 - Closed Loop DPF Regeneration Control at Limit - Temperature Too Low
P24A2 - Diesel Particulate Filter Regeneration Incomplete - Bank 1
P24A5 - EGR Cooler Bypass Bank 1 Control Stuck
P24E1 - Ammonia Sensor Circuit
P24E2 - Ammonia Sensor Circuit Performance
P24E7 - Ammonia Sensor Heater Circuit Low
P24E8 - Ammonia Sensor Heater Circuit High
P24E9 - Ammonia Sensor Heater Circuit Performance
P24EA - Ammonia Sensor Supply Voltage Circuit
P24ED - Ammonia Sensor Calibration Memory
P24EE - Ammonia Sensor Processor Performance
P2503 - Charging System Output Low
P2504 - Charging System Output High
P2509 - PCM/PCM Power Input Signal Intermittent
P2560 - Engine Coolant Level Low
P2563 - Turbocharger Boost Control Position Sensor Performance
P2579 - Turbocharger Speed Sensor Circuit Performance
P2580 - Turbocharger Speed Sensor Circuit Low
P2609 - Intake Air Heater System Performance
P262D - Sensor Reference Voltage 7 Circuit Low
P262E - Sensor Reference Voltage 7 Circuit High
P2BA7 - NOx Exceedence - Empty Reagent Tank
P2BAC - NOx Exceedence - Deactivation of EGR
U0001 - CAN C BUS
U0101 - Lost Communication With TCM
U0102 - Lost Communication With Transfer Case Control Module / AWD
U010C - Lost Communication With Turbocharger/Supercharger Control Module
U010E - Lost Communication With Diesel Exhaust Fluid Control Unit
U0121 - Lost Communication With Anti-Lock Brake Module
U0140 - Lost Communication With Body Control Module
U0141 - Lost Communication With IPM (FCM/TIPM)
U0151 - Lost Communication With Occupant Restraint Controller (ORC)
U0155-00 - Lost Communication With Cluster/CCN

U0212 - Lost Communication With SCM
U029D - Lost Communication With NOx Sensor A
U029E - Lost Communication With NOx Sensor B
U040F - Invalid Data Received From Reductant Control Module
U059E - Invalid Data Received From NOx Sensor A
U059F - Invalid Data Received From NOx Sensor B
U05A5 - Implausible Data Received From Ammonia Sensor
U110E - Lost Ambient Temperature Message
U113E - Lost Communication With Intelligent Battery Sensor
U11B9 - Lost Communication With RF Hub
U11C1 - Reductant Control Module Received Implausible Data From ECM/PCM
U12A4 - Lost Communication With Ammonia Sensor
U1403 - Implausible Fuel Level Signal Received
U1412 - Implausible Vehicle Speed Signal Received
U1421 - Implausible Ignition Key Off Time Received
U1601 - ECU Application Software Code 1 Missing or Corrupted
U3017 - Control Module Timer/Clock Performance

**Standard Procedure Module,
Radio Frequency (RF Hub)
Diagnosis and Testing Standard Procedure
Module, Steering Control (SCM)
Module, Tire Pressure (TPM)
Module, Transmission Control (TCM), AS69RC
Diagnosis and Testing**

C1400-00 - Transfer Case Range Select Switch
P0602-00 - Control Module Programming Error - Not Programmed
P0607-00 - ECU Internal Performance
P0702-00 - Transmission Control System Electrical
P0706-00 - Transmission Range Sensor Performance
P0708-00 - Transmission Range Sensor A Circuit High
P0711-00 - Transmission Fluid Temperature Sensor A Circuit Range-Performance
P0712-00 - Transmission Fluid Temperature Sensor A Circuit Low
P0713-00 - Transmission Fluid Temperature Sensor A Circuit High
P0716-00 - Input Shaft Speed Sensor 1 Performance
P0717-00 - Input Shaft Speed Sensor 1 Circuit No Signal
P0721-00 - Output Shaft Speed Sensor Circuit Performance
P0722-00 - Output Shaft Speed Sensor Circuit No Signal
P0729-00 - Gear 6 Shift Incorrect Ratio
P0731-00 - Gear 1 Shift Incorrect Ratio
P0732-00 - Gear 2 Shift Incorrect Ratio
P0733-00 - Gear 3 Shift Incorrect Ratio
P0734-00 - Gear 4 Shift Incorrect Ratio
P0735-00 - Gear 5 Shift Incorrect Ratio
P0736-00 - Gear Ratio Error In Reverse
P0777-00 - Pressure Control Solenoid B Stuck On
P077C-00 - Output Shaft Speed Sensor Circuit Low

P077D-00 - Output Shaft Speed Sensor Circuit High
P07BF-00 - Input-Turbine Shaft Speed Sensor 1 Circuit Low
P07C0-00 - Input-Turbine Shaft Speed Sensor 1 Circuit High
P0868-00 - Transmission Fluid Pressure Low
P0869-00 - Transmission Fluid Pressure High
P0919-00 - Gear Shift Position Control Error
P0961-00 - Pressure Control Solenoid 1 Control Circuit Performance
P0962-00 - Pressure Control Solenoid 1 Control Circuit Low
P0963-00 - Pressure Control Solenoid 1 Control Circuit High
P0965-00 - Pressure Control Solenoid 2 Control Circuit Range-Performance
P0966-00 - Pressure Control Solenoid 2 Control Circuit Low
P0967-00 - Pressure Control Solenoid 2 Control Circuit High
P0969-00 - Pressure Control Solenoid 3 Control Circuit Performance
P0970-00 - Pressure Control Solenoid 3 Control Circuit Low
P0971-00 - Pressure Control Solenoid 3 Control Circuit High
P0973-00 - Shift Solenoid 1 Control Circuit Low
P0974-00 - Shift Solenoid 1 Control Circuit High
P1679-00 - Calibration Not Learned
P1720-00 - Output Speed Sensor-Wheel Speed Rationality
P1731-00 - Incorrect Gear Engaged
P253D-00 - PTO Sense Circuit High
P2719-00 - Pressure Control Solenoid 4 Control Circuit Range-Performance
P2720-00 - Pressure Control Solenoid 4 Control Circuit Low
P2721-00 - Pressure Control Solenoid 4 Control Circuit High
P2728-00 - Pressure Control Solenoid 5 Control Circuit Performance
P2729-00 - Pressure Control Solenoid 5 Control Circuit Low
P2730-00 - Pressure Control Solenoid 5 Control Circuit High
P2737-00 - Pressure Control Solenoid 6 Control Circuit Performance
P2738-00 - Pressure Control Solenoid 6 Control Circuit Low
P2739-00 - Pressure Control Solenoid 6 Control Circuit High
P2741-00 - Transmission Fluid Temperature Sensor 2 Performance
P2742-00 - Transmission Fluid Temperature Sensor 2 Circuit Low
P2743-00 - Transmission Fluid Temperature Sensor 2 Circuit High
P2757-00 - TCC Pressure Control Solenoid Control Circuit Performance
P2762-00 - Torque Converter Clutch Pressure Control Solenoid Control Circuit Range-Performance
P2763-00 - Torque Converter Clutch Pressure Control Solenoid Control Circuit High
P2764-00 - Torque Converter Clutch Pressure Control Solenoid Control Circuit Low
P2803-00 - Transmission Range Sensor B Circuit High
U0001-00 - CAN C BUS
U0100-00 - Lost Communication With ECM/PCM
U0102-00 - Lost Communication With Transfer Case Control Module / AWD
U0121-00 - Lost Communication With Anti-Lock Brake System (ABS) Control Module
U0140-00 - Lost Communication With Body Control Module
U0155-00 - Lost Communication With Cluster/CCN
U0401-00 - Implausible Data Received From ECM-PCM
U0415-00 - Implausible Data Received From ABS
U0465-00 - Implausible Data Received From PTO
U1111-00 - Lost Odometer Message
U1400-00 - Implausible TPS Signal Received
U1401-00 - Implausible Engine Speed Signal Received
U1402-00 - Implausible Engine Temperature Signal Received
U1407-00 - Implausible Engine Torque Request Signal Received
U1408-00 - Implausible Brake Signal Received
U140D-00 - Implausible Wheel Speed SignalS Received
U1415-00 - Implausible-Missing Vehicle Configuration Data
U1420-00 - Implausible Electronic Gear Select Signal Received
U1424-00 - Implausible Engine Torque Signal Received
U1439-00 - Implausible-Missing Programmed Axle Ratio
U1440-00 - Implausible Transfer Case Ratio High Received
U1441-00 - Implausible Transfer Case Ratio Low Received

**Module, Vehicle System Interface (VSIM)
Diagnosis and Testing**

B1693 - Accessory Dimming Control Circuit Low
B1694 - Accessory Dimming Control Circuit High
B17CF - Emergency Flashing Lamp Request 1 Circuit High
B17D2 - Emergency Flashing Lamp Request 2 Circuit High
B1A5B - Panic Alarm Mute Request Circuit High
B1A5D - Panic Alarm Activation Status Output Circuit Low
B1A5E - Panic Alarm Activation Status Output Circuit High
B1CC1 - Deployment Notification Output Circuit Low
B1CC2 - Deployment Notification Output Circuit High
B210D - Battery Voltage Low
B210E - Battery Voltage High
B237F - Horn Mute Request Circuit High

B2384 - Horn Switch Output Circuit Low
 B2385 - Horn Switch Output Circuit High
 B271F - Frontal Impact Output Circuit Low
 B2720 - Frontal Impact Output Circuit High
 P1462 - Fuel Level Output Circuit Low
 P1463 - Fuel Level Output Circuit High
 P164A - MIL Output Circuit Low
 P164B - MIL Output Circuit High
 P170C - Engine RPM Output Circuit Low
 P170D - Engine RPM Output Circuit High
 U0140 - Lost Communication With Body Control Module
 U0155 - Lost Communication With Cluster/CCN
 U0164 - Lost Communication With HVAC Control Module
 U0199 - Lost Communication With Driver Door Module
 U0200 - Lost Communication With Passenger Door Module
 U0208 - Lost Communication With Heated Seat Control Module
 U0209 - Lost Communication With Memory Seat Control Module

Radio Diagnosis and Testing

B1400-11 - Front Left Audio Speaker Output - Circuit Short-to-Ground - Base
 B1400-11 - Front Left Audio Speaker Output - Circuit Short-to-Ground - Premium
 B1400-12 - Front Left Audio Speaker Output - Circuit Short-to-Battery - Base
 B1400-12 - Front Left Audio Speaker Output - Circuit Short-to-Battery - Premium
 B1400-13 - Front Left Audio Speaker Output - Circuit Open - Base
 B1400-13 - Front Left Audio Speaker Output - Circuit Open - Premium
 B1400-1A - Front Left Audio Speaker Output - Circuit Resistance Below Threshold - Base
 B1400-1A - Front Left Audio Speaker Output - Circuit Resistance Below Threshold - Premium
 B1400-92 - Front Left Audio Speaker Output - Performance or Incorrect Operation
 B1404-11 - Front Right Audio Speaker Output - Circuit Short-to-Ground - Base
 B1404-11 - Front Right Audio Speaker Output - Circuit Short-to-Ground - Premium
 B1404-12 - Front Right Audio Speaker Output - Circuit Short-to-Battery - Base
 B1404-12 - Front Right Audio Speaker Output - Circuit Short-to-Battery - Premium
 B1404-13 - Front Right Audio Speaker Output - Circuit Open - Base
 B1404-13 - Front Right Audio Speaker Output - Circuit Open - Premium
 B1404-1A - Front Right Audio Speaker Output - Circuit Resistance Below Threshold - Base
 B1404-1A - Front Right Audio Speaker Output - Circuit Resistance Below Threshold - Premium
 B1404-92 - Front Right Audio Speaker Output - Performance or Incorrect Operation

B1408-11 - Rear Left Audio Speaker Output - Circuit Short-to-Ground - Base
 B1408-11 - Rear Left Audio Speaker Output - Circuit Short-to-Ground - Premium
 B1408-12 - Rear Left Audio Speaker Output - Circuit Short-to-Battery- Base
 B1408-12 - Rear Left Audio Speaker Output - Circuit Short-to-Battery- Premium
 B1408-13 - Rear Left Audio Speaker Output - Circuit Open- Base
 B1408-13 - Rear Left Audio Speaker Output - Circuit Open - Premium
 B1408-1A - Rear Left Audio Speaker Output - Circuit Resistance Below Threshold- Base
 B1408-1A - Rear Left Audio Speaker Output - Circuit Resistance Below Threshold - Premium
 B1408-92 - Rear Left Audio Speaker Output - Performance or Incorrect Operation
 B140C-11 - Rear Right Audio Speaker Output - Circuit Short-to-Ground- Base
 B140C-11 - Rear Right Audio Speaker Output - Circuit Short-to-Ground - Premium
 B140C-12 - Rear Right Audio Speaker Output - Circuit Short-to-Battery- Base
 B140C-12 - Rear Right Audio Speaker Output - Circuit Short-to-Battery - Premium
 B140C-13 - Rear Right Audio Speaker Output - Circuit Open - Base
 B140C-13 - Rear Right Audio Speaker Output - Circuit Open - Premium
 B140C-1A - Rear Right Audio Speaker Output - Circuit Resistance Below Threshold - Base
 B140C-1A - Rear Right Audio Speaker Output - Circuit Resistance Below Threshold - Premium
 B140C-92 - Rear Right Audio Speaker Output - Performance or Incorrect Operation
 B142A-4B - Radio Unit High Temperature - Over Temperature
 B143A-11 - Microphone 1 - Circuit Short-to-Ground
 B143A-12 - Microphone 1 - Circuit Short-to-Battery
 B143A-13 - Microphone 1 - Circuit Open
 B143A-1A - Microphone 1 - Circuit Resistance Below Threshold
 B143D-11 - Microphone 2 - Circuit Short-to-Ground
 B143D-12 - Microphone 2 - Circuit Short-to-Battery
 B143D-13 - Microphone 2 - Circuit Open
 B143D-1A - Microphone 2 - Circuit Resistance Below Threshold
 B1488-00 - Cabin EQ Mismatch Performance
 B14DA-2A - Head Unit Button - Stuck
 B1560-11 - Cellular Antenna 1 - Circuit Short-to-Ground
 B1560-13 - Cellular Antenna 1 - Circuit Open
 B1562-11 - GPS Antenna - Circuit Short-to-Ground
 B1562-12 - GPS Antenna-Circuit Short-to-Battery
 B1562-13 - GPS Antenna - Circuit Open
 B1562-1A - GPS Antenna-Circuit Resistance Below Threshold
 B156B-13 - Satellite Radio Antenna - Circuit Open

B156B-1A - Satellite Radio Antenna - Circuit Resistance Below Threshold
B1570-19 - USB Communication - Overcurrent
B1577-13 - Universal Consumer Interface (UCI) - Circuit Open
B1578-13 - Audio Antenna - Circuit Open
B1578-1A - Audio Antenna - Circuit Resistance Below Threshold
B210A-16 - System Voltage Low - Circuit Voltage Below Threshold
B210B-17 - System Voltage High - Circuit Voltage Above Threshold
B221E-00 - Radio Internal
B222C-00 - Vehicle Configuration Not Programmed
B223B-00 - Vehicle Configuration Mismatch
B2206-00 - Current VIN Missing / Mismatch
U0002-00 - CAN C BUS Off Performance
U0010-00 - CAN Interior BUS
U0011-00 - CAN Interior BUS Off Performance
U0100 - Lost Communication With ECM/PCM
U0101 - Lost Communication With TCM
U0121 - Lost Communication With Anti-Lock Brake Module
U0140-00 - Lost Communication With Body Control Module
U0143-00 - Lost Communication With Multi-Purpose Module
U0151-00 - Lost Communication With Occupant Restraint Controller (ORC)
U0155-00 - Lost Communication With Cluster/CCN
U0186-00 - Lost Communication With Audio Amplifier
U0199-00 - Lost Communication With Driver Door Module
U0200-00 - Lost Communication With Passenger Door Module
U0208-00 - Lost Communication With Heated Seat Control Module
U0209-00 - Lost Communication With Memory Seat Control Module
U0232-00 - Lost Communication With Blind Spot Detection Module

