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ORIGINAL ENGINE MANAGEMENT
2760 NW 63rd Court
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1-800-253-7864

Original Engine Management strives to offer our customers only the highest quality parts for the best value possible. In order to keep up with OE product changes, we have changed the end-cap design of the OF62 oil filter for 2007 to 2010 Mini Cooper applications. The previous design used a molded in place end-cap material. The new design uses a 30% glass filled Nylon molded end-cap and utilizes a high temperature adhesive, giving more rigidity and support to the cartridge. This improvement is being made as a running change beginning in May 2011.

OEM Part #OF62 UPGRADE

ON THE MOVE

ORIGINAL ENGINE MANAGEMENT

VOL. 4

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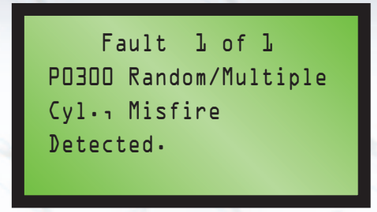
VOL. 4

ON THE MOVE

THE BIG PICTURE

For the modern automotive technician there are two distinct misfires, cylinder specific and general or random misfires which may illuminate the "check engine" light and store diagnostic trouble codes (DTC's) in the memory of the vehicles powertrain control module (PCM). The ignition system is typically the first place we would go to check for a failure based on a DTC being set for a cylinder specific reoccurring misfire. Here we have a great divide in strategy. Is the vehicle using a classical contact point set up, a single coil cap and rotor design, or is the vehicle equipped with the latest direct ignition coil on plug system. Within each of the three generalized categories there are a myriad of differences between manufacturers and even differences between the exact same model based on VIN code for what ignition system the vehicle is equipped with in some cases…thankfully that is a minority of the vehicles on the road today.

No matter how the spark is created or transmitted, one part in the process has remained constant in the world of gasoline powered vehicles, the spark plug. Much like the idea that something as simple as your tires are vitally important because they are the only part of the car that actually touches the road; the spark plug electrode is where the magic begins for the combustion process. Original Engine Management recommends replacement of spark plugs every time an ignition system repair is performed with those of the vehicle manufacturer's suggested construction material and design, for example using platinum long life plugs for vehicles which are equipped with them from the factory. Careful inspection of the secondary ignition system is highly recommended as well. Some helpful hints and key areas to look for problems within the secondary ignition system are discussed later in this edition of *On the Move*.

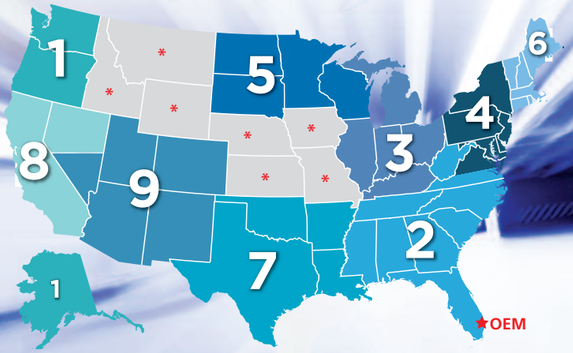


Misfires are not always a result of issues with the ignition system however. Fuel and air metering issues are often the culprit behind general and random misfire DTC's being set. Because both rich and lean conditions can lead to these types misfires, oxygen sensor and fuel trim DTC's or freeze frame data should be closely examined as well to facilitate the diagnosis of the vehicle. One quick check to make on the fuel system is to remove the vacuum line attached to the fuel pressure regulator. If there is gasoline in the line or the barb from the regulator is wet, the diaphragm seal has failed and fuel is not being correctly supplied to the fuel rail and injectors.

Continued on Page 2...

We Have America Covered!
See Sales Representative's Locations on Back Page

* Please call us directly at 1-800-253-7864 for more information should you not have an assigned sales representative.



THE BIG PICTURE (Cont.)

Incorrect air metering can be a contributing factor to misfires as well. The correct amount of air being drawn into the engine is critical to maintaining the stoichiometric ratio of 14.7 parts air to one part fuel by mass. There are two categories of failures which might affect this. First are those dealing with sensors and air metering devises such as Airflow meters (AFM's, MAF's, MAP's etc.) idle air control valves (IAC) and exhaust gas return valves (EGR). Second is physical damage or wear which causes unmetered air to enter the intake tract. Idle air control valves and exhaust return valves should be checked for proper operation when diagnosing a misfire and in most cases a malfunctioning air metering device or sensor would set a DTC of its own as well. Physical damage and vacuum leaks can range from the easily found (such as a badly cracked intake tube after the airflow meter) to the time consuming search for cracked EVAP system vacuum tubing or the replacement of a leaking intake manifold gasket.

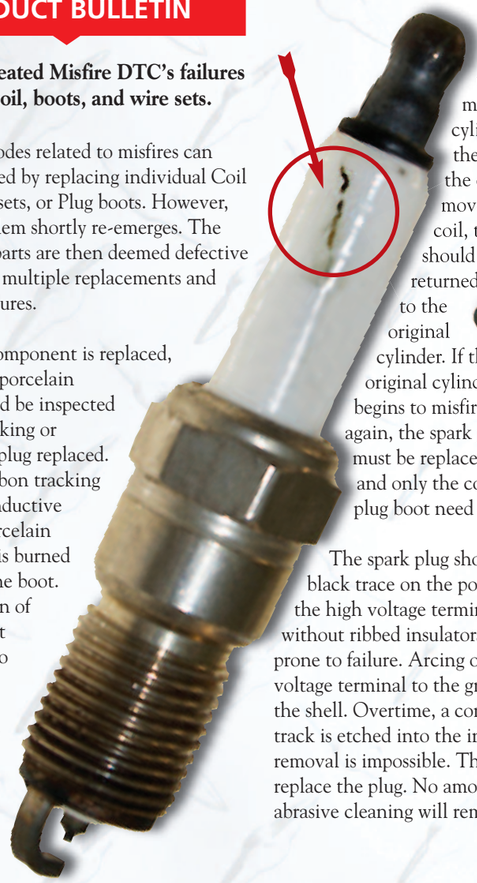
In closing, when diagnosing a misfire of any kind and choosing a course of action to repair- take a step back and look at the big picture. What could have caused the coil to fail? A failed driver in the PCM perhaps? What keeps setting a DTC for the idle air controller? Maybe the port to the intake manifold is clogged and the vehicle needs an induction cleaning and throttle body service. Consider what might have been damaged by the misfire condition, the extremely high secondary voltage of a coil may find a new and unwanted path to ground if a plug has fouled. Keep in mind that misfires can be caused by an upset in the balance of any of the three conditions required for combustion- proper air / fuel mixture, compression, and ignition. Within these three requirements consider the DTC's present to lead you to the necessary, correct, and complete repair.

PRODUCT BULLETIN

Subject: Repeated Misfire DTC's failures of COP coil, boots, and wire sets.

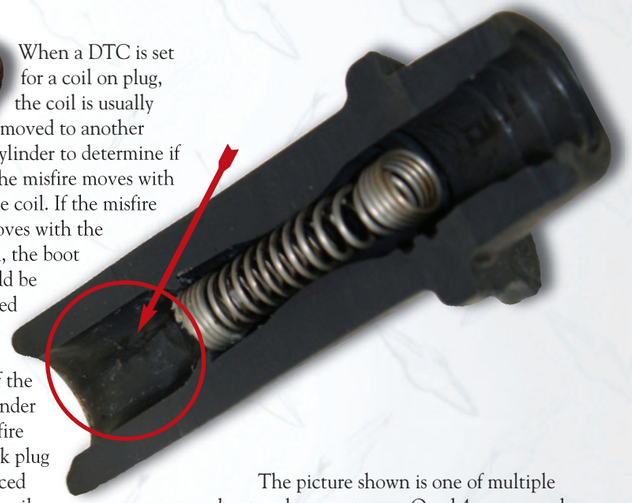
Stored DTC codes related to misfires can usually be solved by replacing individual Coil on plugs, wire sets, or Plug boots. However, often the problem shortly re-emerges. The replacements parts are then deemed defective by design after multiple replacements and subsequent failures.

Whenever a component is replaced, the spark plug porcelain insulator should be inspected for carbon tracking or preferably the plug replaced. Over time, carbon tracking will burn a conductive path in the porcelain which in turn is burned into the silicone boot. The application of dielectric "boot grease" will also help prevent future failures when both the new boot and spark plug are replaced.



When a DTC is set for a coil on plug, the coil is usually moved to another cylinder to determine if the misfire moves with the coil. If the misfire moves with the coil, the boot should be returned to the original cylinder. If the original cylinder begins to misfire again, the spark plug must be replaced and only the coil on plug boot need be replaced.

The spark plug shown has a noticeable black trace on the porcelain just below the high voltage terminal. Spark plugs without ribbed insulators are especially prone to failure. Arcing occurs from the high voltage terminal to the grounded hex base of the shell. Overtime, a conductive carbon track is etched into the insulator and removal is impossible. The only option is to replace the plug. No amount of solvent or abrasive cleaning will remove the tracking.



The picture shown is one of multiple boot replacements on a Quad 4 motor used on the companion plug pictured with the carbon track circled. Often the new boots fixed the problem for a week or less. When the misfire DTC returned the boot was replaced over and over. Needless to say, the customer was very unhappy and the shop ate the time.

The final solution was to replace the boot, install a new spark plug, and liberally apply dielectric grease. It has been many months and the satisfied customer has not complained of any problems since.

ASK AL

[Paraphrased inquiries from phone calls, e-mails and website inquiries received by the Product Department at Original Engine Management]

[A recent phone call]
Installer Frank: "Al, a customer with a '03 Town & Country came in with a burned out Blower Motor Resistor. I replaced it with an OEM Brand BMR20, and it seemed to fix the problem. 11 days later the customer returned again with no blower function. The BMR had again had burned out. They insisted I install a genuine Chrysler part, which I did, but 10 days later here they are back in my shop again, with the BMR smoked. They want me to "fix it right" this time. What could cause 3 BMR's to burn out in less than 3 weeks?"

Al: "Frank, a few things can be checked right away before pulling the blower assembly."

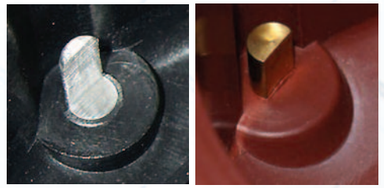
"First, since a BMR failure generates a whole lot of heat, when you remove the old BMR always check the connecting plug and wiring. Although the plug may not have been the cause of the first failure, it can easily be damaged by the heat of a BMR failure and should be replaced if there is any sign of damage. A damaged plug/wiring can cause the next (and next) failure. It is not a bad Idea to make this replacement a standard part of performing a BMR replacement."

"Second, check the Cabin Air Filter and replace if dirty or if it has not been replaced in a long while. This check is needed because the BMR operates by dissipating energy, in the form of waste heat, which is carried away by the flow of air within the HVAC duct where the BMR is located. If there is not enough air flowing due to a plugged Cabin Air Filter, the BMR sits and cooks itself to the point of failure. While you are at it, check all inlets to the HVAC system, internal and outside air inlets, for obstruction which might be blocking the flow of air past the BMR. Checking and replacing the Cabin Air Filter and HVAC ducting should also become a routine for any BMR replacement work."

"If either or both of these items, the BMR plug/wiring and Cabin Air Filter/air inlets are repaired due to defects/plugging, it may have been the failure mode, but…."

"Lastly, with a new BMR in place, and the Cabin Air Filter removed from its housing, run the blower at all speeds and check the amp draw and compare to specs for the unit. If the blower is drawing more power than is normal for its operation, the excess power draw may be generating the failure of the BMR's. After making sure there are no problems with grounding or wiring, replacement of the blower is then your final solution."

[A recent web inquiry]
What is the difference in Distributor Caps that have what look like solid SP wire connector posts that have been machined inside and those that have just a blade sticking through the inside of the cap?



Cut *(left)* **& Molded Terminals**

Al: These two styles of manufacture are essentially equal. With any cap it is important to insure a true concentric circle from the center for the Rotor to spin in and have the coil's charge jump to the terminals. When distributor caps first came into being, most were molded with the terminals installed in the mold prior to injecting the plastic. Then it is set up into a metal cutting lathe and the terminals machined to the correct radius. This is a fairly expensive step and requires a skilled person to perform this operation. As molding methods improved and as-molded accuracy became the norm, many caps, when being re-tooled, started using a molded part that had sleeves and slots for the stamped terminals to go into. A tight fit on the round shaft insures a water tight terminal, and a very accurately molded slot at the interior allows the flat stamped end to be positioned a just the right radius for the design. Molding speed of the plastic part increased because no parts had to be hand inserted into the mold, and a factory worker could insert the terminals quickly and accurately without needing a machinist's skills.