BMW M54 Valve Cover Gasket Replacement

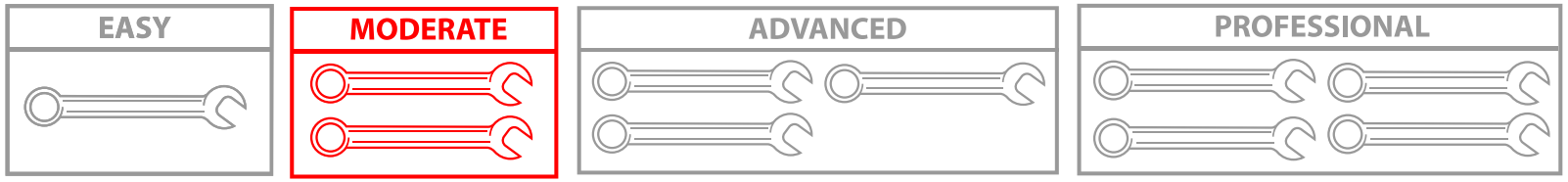
INTRODUCTION

BMW M54 Valve Cover Gasket Replacement

The M54 engine, produced by BMW from 2000 to 2006, saw wide use in 3, 5, X, and Z series cars. Over time, the engine gaskets may become hardened and deteriorate, losing their ability to keep the oil inside the engine. This deterioration is most common with the valve cover gasket, and replacing it is an important part of your vehicle's maintenance.

NOTE

Many valve cover gasket kits come complete with new cover nut sealing washers, however some kits do not include them. We recommend replacing the sealing washers and demonstrate it in this PDF. Be sure and order the correct kit for your car before beginning.



BASIC SKILLS REQUIRED

SOME EXPERIENCE RECOMMENDED

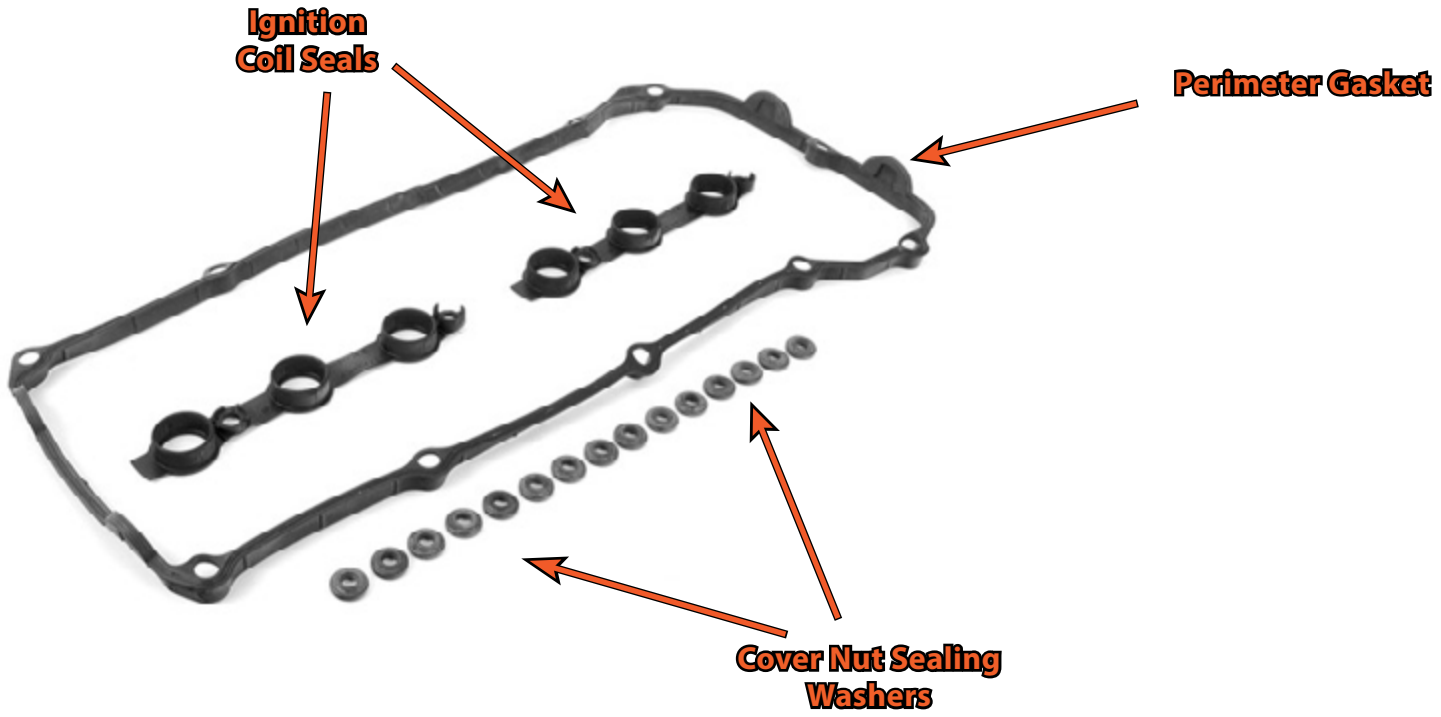
ADVANCED SKILLS & EXPERIENCE REQUIRED

PROFESSIONAL SKILLS & SPECIALTY TOOLS REQUIRED

Replacing the valve cover gasket on your BMW M54 engine is a routine project that can be completed in a few hours. These step by step instructions will provide you with a smooth, trouble free installation, and solve one of the most common oil leaks on an M54. Before you begin, read and familiarize yourself with these instructions and make sure you have all the required tools on hand. Thank you for purchasing a valve cover gasket from ECS Tuning. We appreciate your business!

TABLE OF CONTENTS

VALVE COVER GASKET KIT CONTENTS



NOTE

Many valve cover gasket kits come complete with new cover nut sealing washers, however some kits do not include them. We recommend replacing the sealing washers and demonstrate it in this PDF. Be sure and order the correct kit for your car before beginning.

REQUIRED TOOLS

Note: The tools required for each step will be listed by the step number throughout these instructions.

We recommend that you have a complete selection of tools and equipment necessary for automotive repair. Below is a list of the tools we used to install the BMW M54 Valve Cover Gasket. Additional tools may be required for any issues that arise during installation such as rust, corrosion, or broken and stripped fasteners.

- Torx Bit Sockets: T30 ..... Available at ecstuning.com ..... ES#11418
- Flat Blade Screwdriver(s) ..... Available at ecstuning.com ..... ES#2225921
- 1/4" Drive Sockets: 8mm, 10mm Deep
- 3/8" Drive Ratchet, Extensions
- 1/4" Drive Ratchet, Extensions

SHOP SUPPLIES AND MATERIALS

- Hand Cleaner/Degreaser ..... Available at ecstuning.com ..... ES#2167336
- Silicone Gasket Sealant ..... Available at ecstuning.com ..... ES#11836
- Aerosol Brake Cleaner ..... Available at your local auto parts store
- Shop Rags ..... Available at your local auto parts store
- Aerosol Spray Lubricant/Penetrating Oil ..... Available at your local auto parts store

INSTALLATION NOTES

- RH refers to the passenger side of the vehicle.
- LH refers to the driver side of the vehicle.
- Always use the proper torque specifications.
- If applicable to this installation, torque specifications will be listed throughout the document and at the end as well.
- Please read all of these instructions and familiarize yourself with the complete process before you begin.

GENERAL PREPARATION AND SAFETY INFORMATION

ECS Tuning cares about your health and safety. Please read the following safety information. This information pertains to automotive service in general, and while it may not pertain to every job you do, please remember and share these important safety tips.

- Park your car in a safe, well lit, level area.
- Shut the engine off and remove the key from the ignition switch.
- Make sure any remote start devices are properly disabled.
- Always wear safety glasses.
- Make sure the parking brake is applied until the vehicle is safely lifted and supported.
- If using an automotive lift, be sure and utilize the factory specified lift points. Lifting a vehicle in an incorrect location can cause damage to the suspension/running gear.
- When lifting a vehicle using a jack, always utilize the factory specified lift points. Lifting a vehicle in an incorrect location can cause damage to the suspension/running gear. Always support the vehicle with jack stands.
- Always read and follow all safety information and warnings for the equipment you are using.

Never get underneath a vehicle that is supported only by a jack. Always make sure that the vehicle is securely supported on jack stands.

VALVE COVER GASKET REPLACEMENT

Step 1:

Park the car in a safe, well lit area and open the hood. Place a protective cover over the front of the vehicle.

NOTE

We are using an E46 to demonstrate the valve cover gasket replacement. Some details may differ slightly depending on model year and options.

Step 2:

Locate the three spring clips on top of the microfilter housing cover.

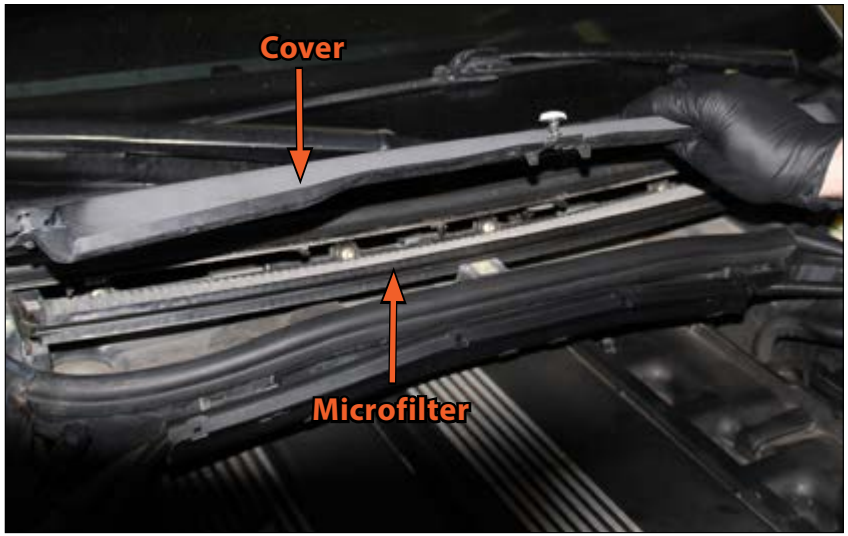
VALVE COVER GASKET REPLACEMENT

Step 3:

Turn each spring clip 1/4 turn counter clockwise, and they will release and pop up as shown in the picture.

Step 4:

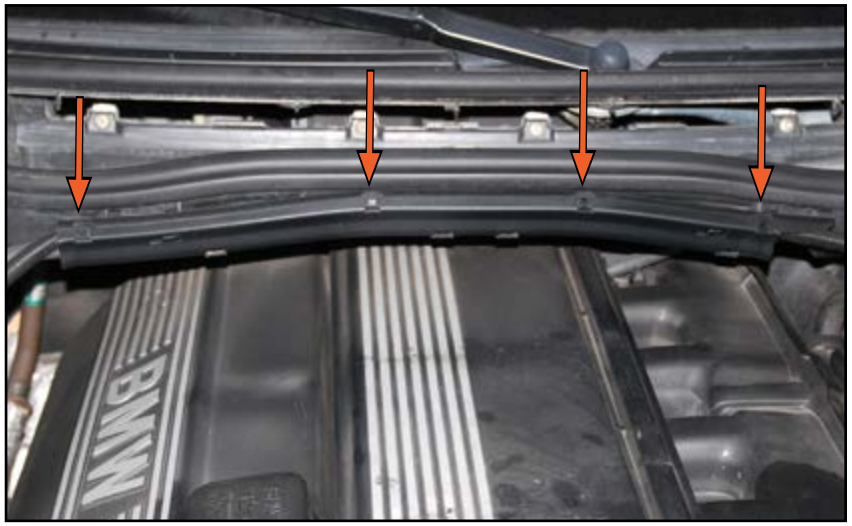
Lift off the microfilter housing cover, then lift out the microfilter.



VALVE COVER GASKET REPLACEMENT

Step 5:

Locate the four tabs on the top of the wiring harness channel cover.



Step 6:

Using your thumb or finger, gently pull on each tab to release it. Pivot the harness channel cover downward, unhook it from the bottom and remove it.

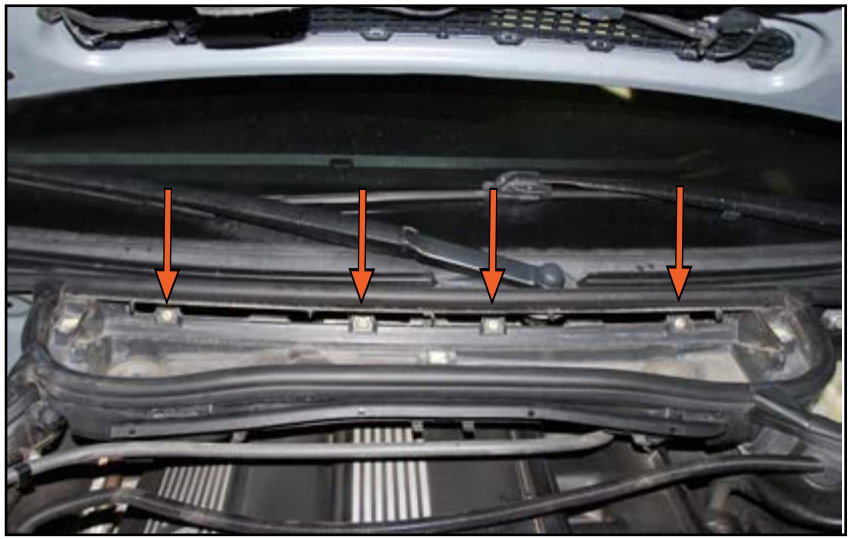
VALVE COVER GASKET REPLACEMENT

Step 7:

Pull the wiring harness and battery cable out of the harness channel.

Step 8: T30 Torx Bit Socket

Remove the four securing bolts for the microfilter housing.



VALVE COVER GASKET REPLACEMENT

Step 9:

Lift the microfilter housing off of the cowl.

Step 10: Small Flat Blade Screwdriver

Remove the two access caps on the upper intake trim and two on the valve cover trim by gently prying them out.

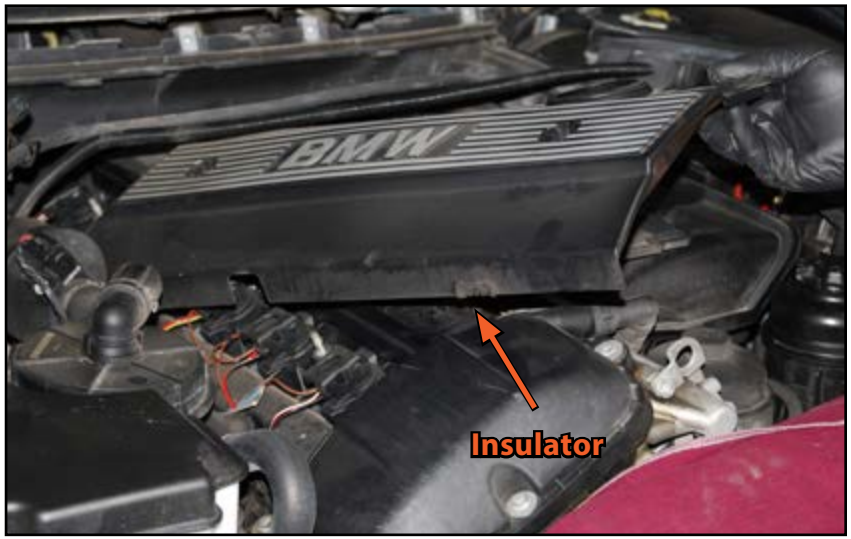
VALVE COVER GASKET REPLACEMENT

Step 11: 10mm socket, 1/4" Ratchet, Extension

Remove the two bolts securing the upper intake trim and remove it.

Step 12: 10mm socket, 1/4" Ratchet, Extension

Remove the two bolts securing the valve cover trim, remove the oil cap, then lift the valve cover trim off and set it aside.



TECH TIP

There are four rubber insulators (one at each corner) of the valve cover trim. These have a tendency to fall off. Be sure to account for each one and re install them on the valve cover trim as necessary.

VALVE COVER GASKET REPLACEMENT

Step 13:

Detach the crank vent tube by squeezing the retainer tabs together and pulling it off the valve cover.

Step 14:

Pull up the connector lock on the #1 ignition coil so that it pivots upward 90 degrees. The electrical connector will be released, and when pulled gently, it will now slide out easily. Continue in the same manner with the remaining ignition coils.

VALVE COVER GASKET REPLACEMENT

Step 15:

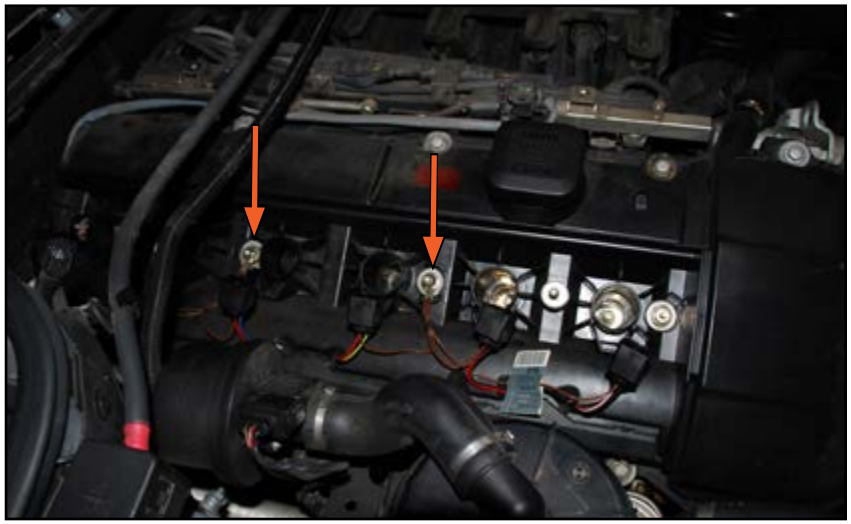
Remove each ignition coil (these are not fastened and pull straight out).

TECH TIP

The connector lock on each coil doubles as a pull tab to remove the coils.

Step 16: 8mm socket, 1/4" Ratchet, Extension

Disconnect the two ground wires for the ignition coil wiring harness.



CAUTION

Failure to re-connect the ground wires during installation will cause damage to the ignition system.

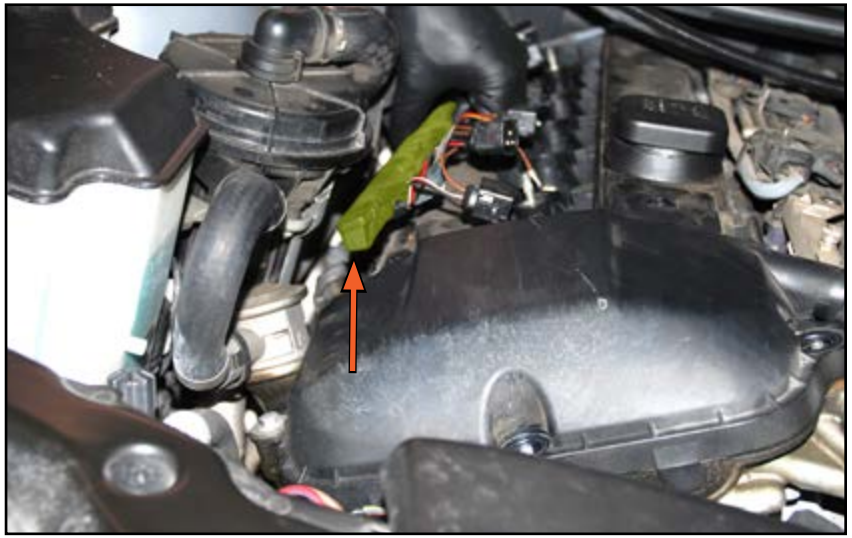
VALVE COVER GASKET REPLACEMENT

Step 17:

The oxygen sensor harnesses are held in place along the rear edge and lower rear corner of the valve cover. Pull them up out of the retaining clips.

Step 18:

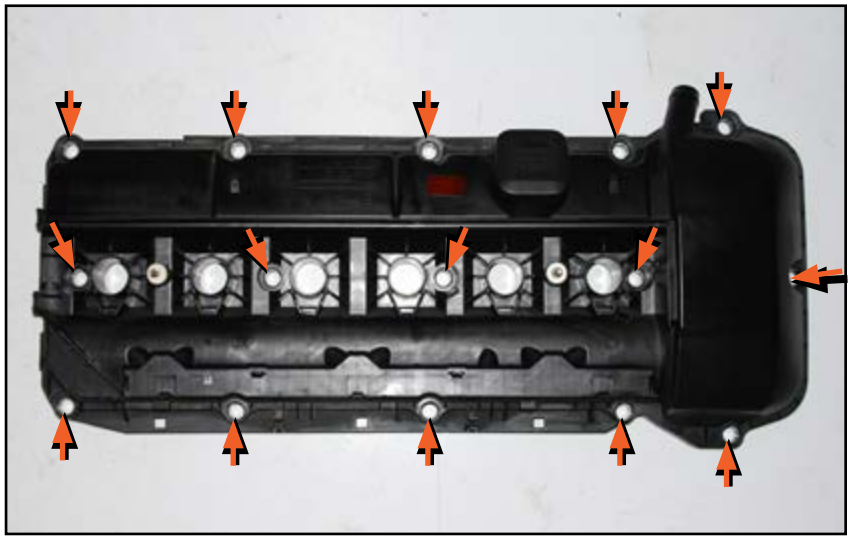
Detach the ignition coil wiring harness from the hook-type clips on the valve cover by grasping the harness cover and pulling up at each attachment point. Move the harness to the side.



VALVE COVER GASKET REPLACEMENT

Step 19: 10mm Deep Socket, 1/4" Ratchet, Extension

Remove the 11 nuts around the perimeter of the valve cover, and four nuts w/integrated studs from the center of the cover.



NOTE

The valve cover is shown removed from the vehicle for clarity.

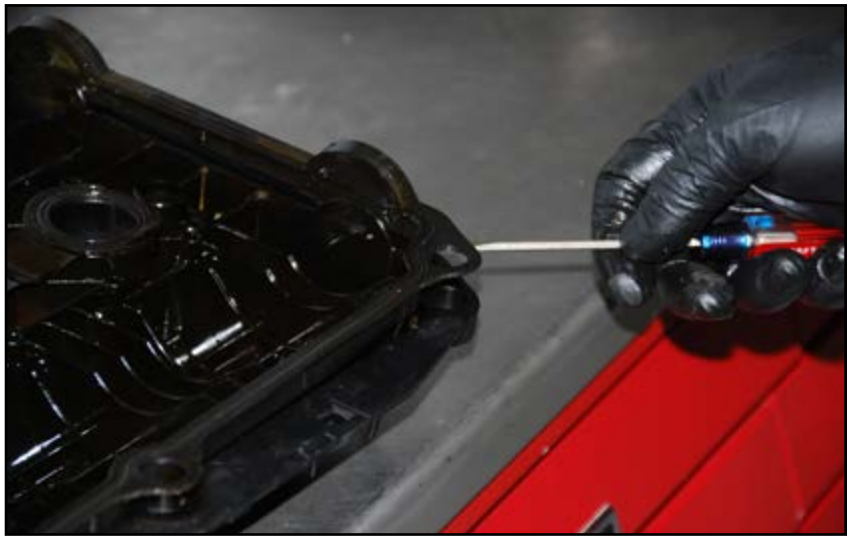
Step 20:

Lift the valve cover up and off of the cylinder head.

VALVE COVER GASKET REPLACEMENT

Step 21:

Remove the old gaskets from the valve cover.



TECH TIP

The gaskets are pressed into grooves in the valve cover, and they've usually become hardened and sometimes adhered to the mounting surface. Use a small screwdriver or pick tool to pry the gasket out, making sure to remove all of the material from the grooves.

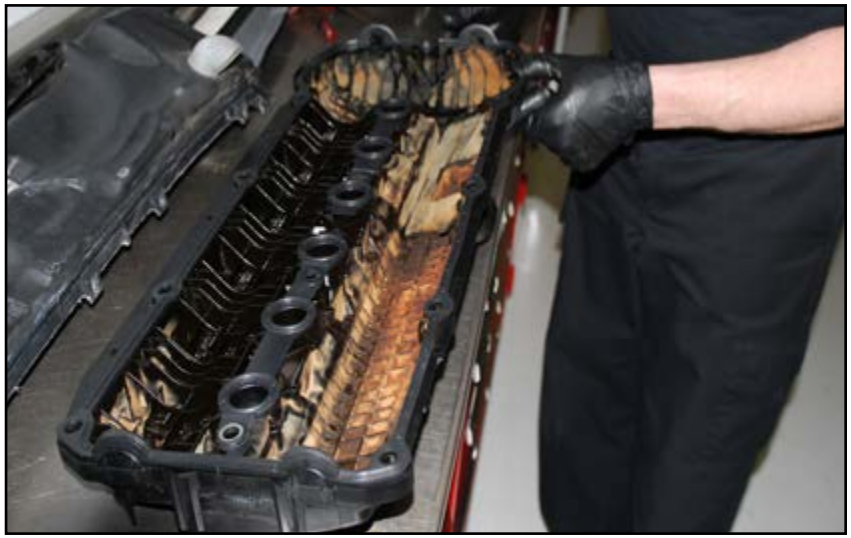
Step 22:

Thoroughly clean the the valve cover, inside and out, with a suitable solvent.

VALVE COVER GASKET REPLACEMENT

Step 23:

Press the new gaskets into the corresponding grooves on the valve cover.



Step 24:

Check the alignment of the coil seals. This kit contains gaskets with tabs that align facing each other toward the center of the valve cover. Some gaskets may not have these tabs on them, but always make sure the coil seals are properly lined up and seated.

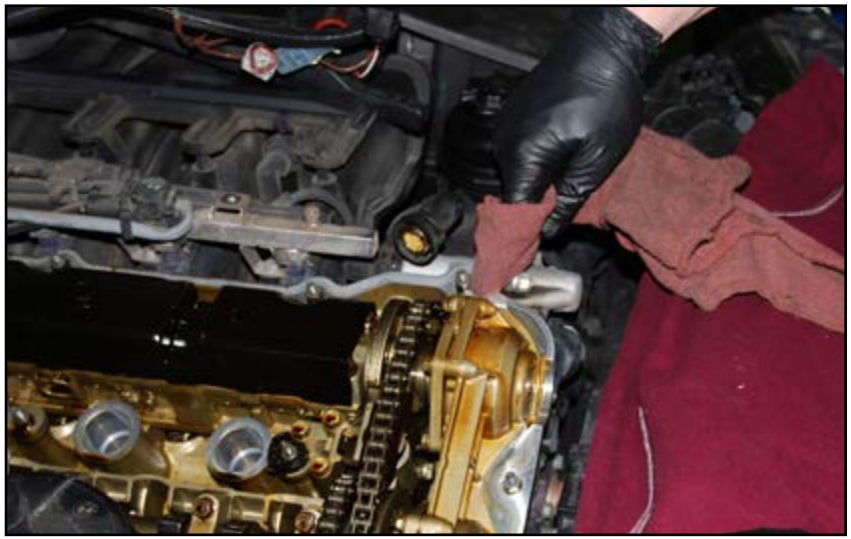
VALVE COVER GASKET REPLACEMENT

Step 25: Small Flat Blade Screwdriver

Pry off the old, then install the new sealing washers onto the valve cover mounting nuts.

Step 26:

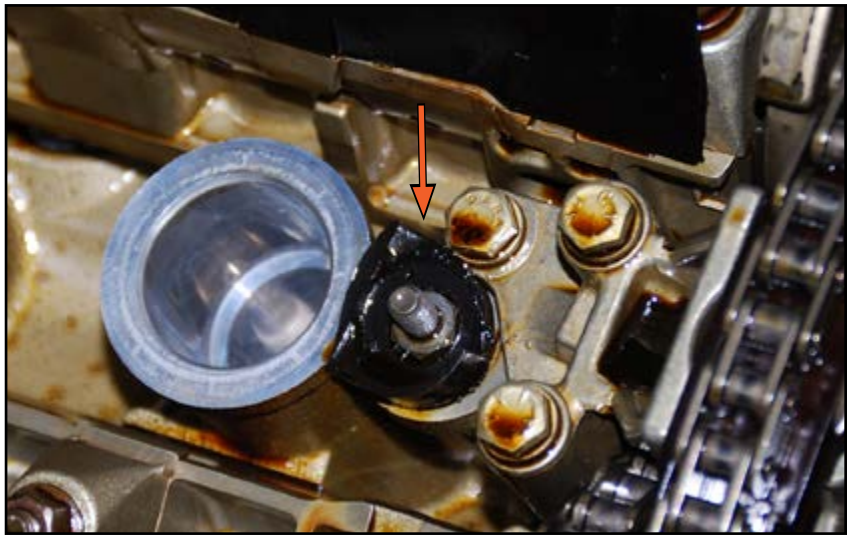
Thoroughly clean the gasket mating surface on the cylinder head with a clean, lint free rag.



VALVE COVER GASKET REPLACEMENT

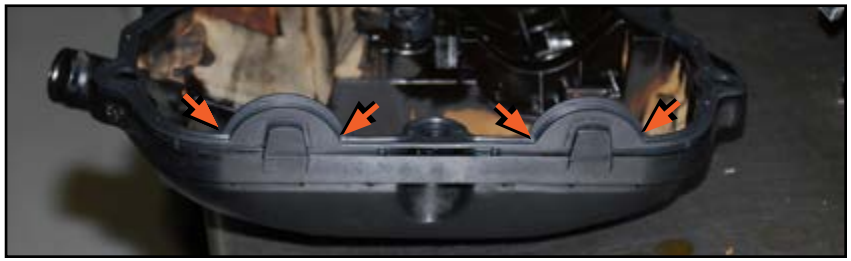
Step 27:

Make sure that all remnants of the former gasket are removed from the mating surface area. For example, this photo shows part of the center gasket that remained after the valve cover was removed.



Step 28:

On both ends of the valve cover, apply a small amount of silicone sealant to the gasket at the corners of each half moon cut-out section, as indicated by the arrows.



Re installation of the valve cover is the reverse of removal, but for convenience and accuracy, we have provided this checklist.

- [ ] Install the valve cover and fasteners. Torque the fasteners to 10Nm (89 in-lbs.)
- [ ] Attach the ignition coil wiring harness and oxygen sensor wires to the valve cover.
- [ ] Attach the ground wires for the ignition coil wiring harness to the valve cover.
- [ ] Install the ignition coils.
- [ ] Plug in the electrical connectors for the ignition coils and push down the locking mechanisms.
- [ ] Attach the crank vent hose.
- [ ] Install the valve cover trim and oil cap, then install the intake trim.
- [ ] Install the microfilter housing.
- [ ] Attach the battery cable and wiring harness to the harness channel.
- [ ] Install the wiring harness channel cover.
- [ ] Install the microfilter.
- [ ] Attach the cover for the microfilter housing and engage the spring clips.

Your Valve Cover Gasket installation is complete!

These instructions are provided as a courtesy by ECS Tuning.

Proper service and repair procedures are vital to the safe, reliable operation of all motor vehicles as well as the personal safety of those performing the repairs. Standard safety procedures and precautions (including use of safety goggles and proper tools and equipment) should be followed at all times to eliminate the possibility of personal injury or improper service which could damage the vehicle or compromise its safety.