

Project Overview

Vehicle Information: US Spec 2000 (05/99 build) 750iL (M73 V12)

This was my second teardown of the intake to correct leaking valve cover gaskets.

Tools Used/needed (Not an exhaustive list)

- 10mm Socket
- 8mm Socket
- 8mm Hexhead or starhead
- 10mm open ended wrench
- A least three 6 inch 3/8" extensions
- Flexible 3/8" extension
- Flexible 3/8" joint
- Magnetic wand
- A good torque wrench

Other

- Hylomar HPF Sealer
- New spark plugs (Recommended)
- New Crank Case Ventilation valves and boots (Recommended)
- BMW TIS (I do not recommend you undertake this without a copy of the TIS)
- Lots of latex gloves

Notes

Don't force anything. Things that break *will be* expensive.

Credits

- http://bmwe32.student.utwente.nl/sean750/V12_rough_idle/V12_QuickRoughIdleFix.htm
- <http://bimmerboard.com/forums/e38/>

Disclaimer

This document is based on my experience only and does not constitute a guide or how to on performing a valve cover replacement. You assume any and all liability for any work performed on your vehicle. If you don't know what you are doing, you probably shouldn't be doing it.

Contacting me

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Figure 1– starting point

Top side preparation

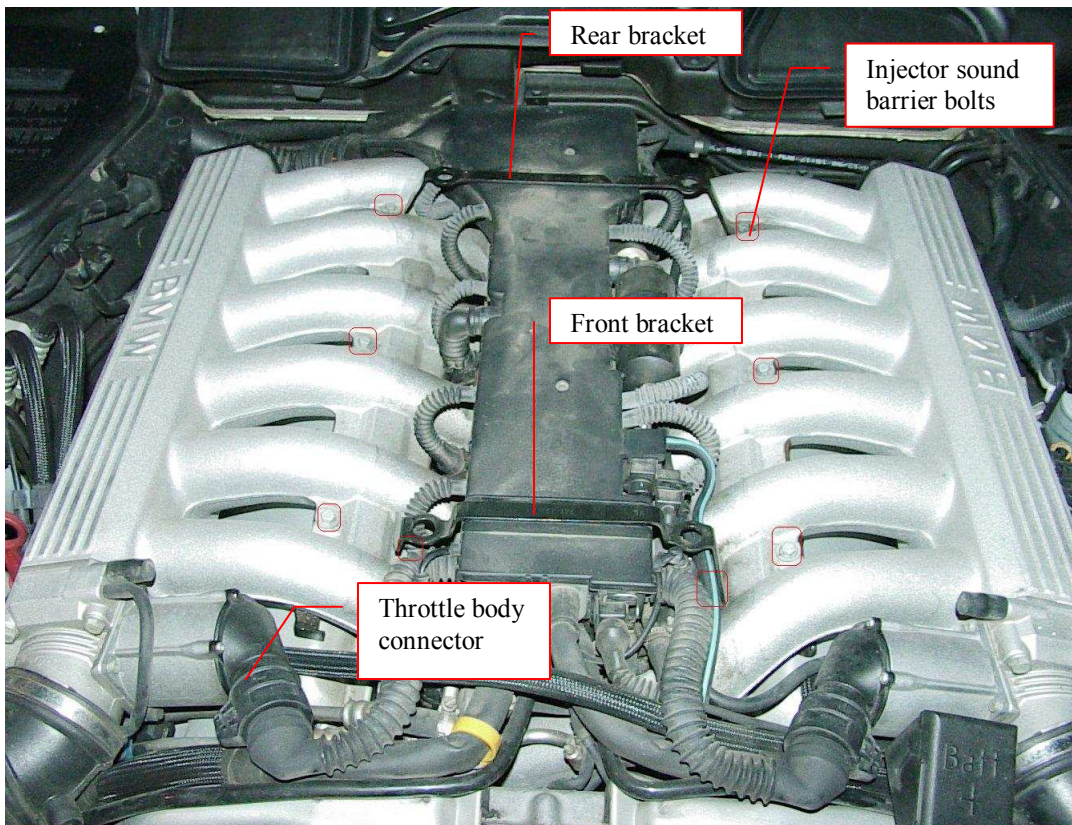


Figure 2

- Remove front and rear brackets
The front bracket requires the bolts to be removed (10mm)
The rear bracket only needs the bolts loosened (8mm)
- Loosen all of the support bolts for the injector sound barrier
Move each barrier by sliding it towards the vendors
- Remove the two throttle body electrical connectors
These “turn” counter clock-wise to loosen and remove
- Remove BATT+ connector box
This lifts straight-up and off the metal support bracket.
Careful: The plastic is brittle and breaks easily.
See:Detail Image 2– BATT+ connector removal
- Now is a good time to remove air intake hoses and air-cleaner boxes

Removal: Drivers side wiring Loom

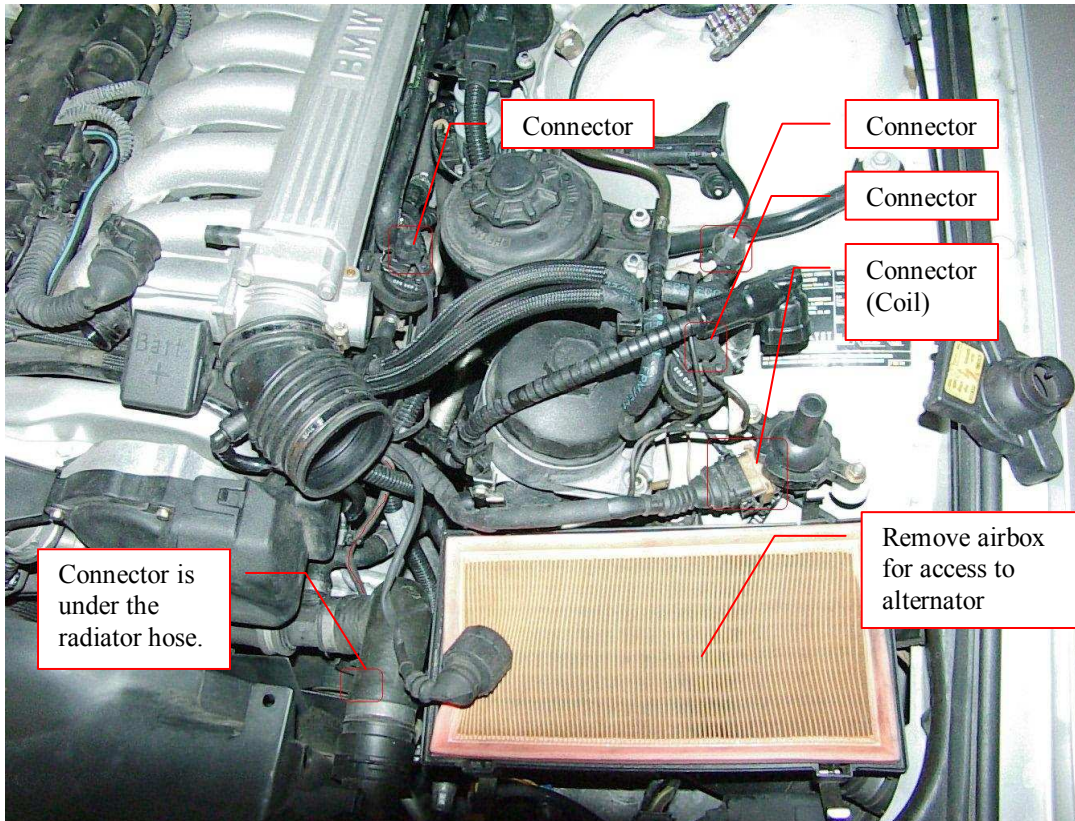


Figure 3

- Remove the marked connectors above
Five connectors in total to free to drivers side wiring loom
See: Detail Image 1 – Connector removal
- The ignition coil may have a wire tie holding the slide in place.
Cut the wire tie to remove connector
- The connector on the alternator is much easier to access once the airbox housing is removed.

WARNING: Mark or otherwise note which connector goes where. Several of these connectors are identical and interchangeable at the plug level. That does not mean the BMW computer thinks they are interchangeable. Getting them back in the right place is critical to your car running correctly!

Removal: Passenger side wiring loom

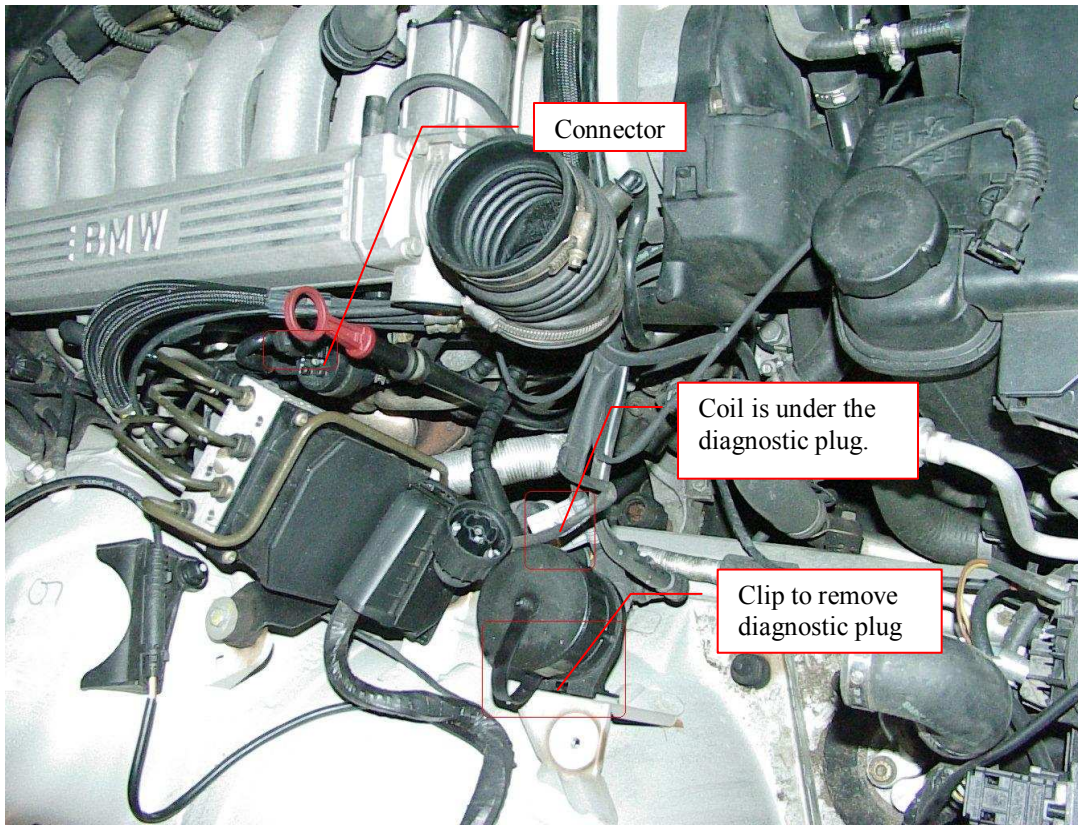


Figure 4

- Remove the connector just below the intake rail next to the oil dipstick
- Remove the diagnostic plug
This unclips via the small plastic tab on the backside of the plug
- Remove the plug to the coil
Located under the diagnostic plus
- The wiring harness has two connectors under the car.



Figure 5 – Oil pan view from passenger side front

- The last two connections on the passengers side are located under the car
This requires removal of the plastic airflow pan
See: Detail Image 3
- These connectors free up the passenger side wiring harness

Wiring box additional connections

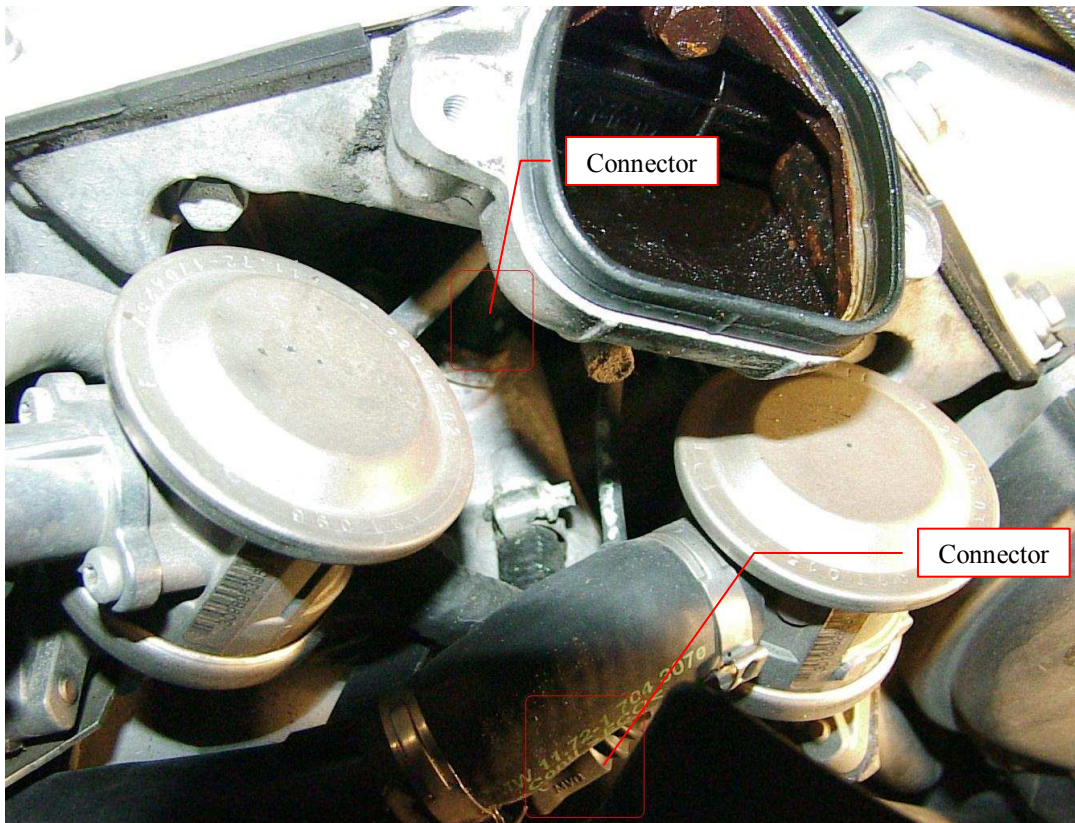
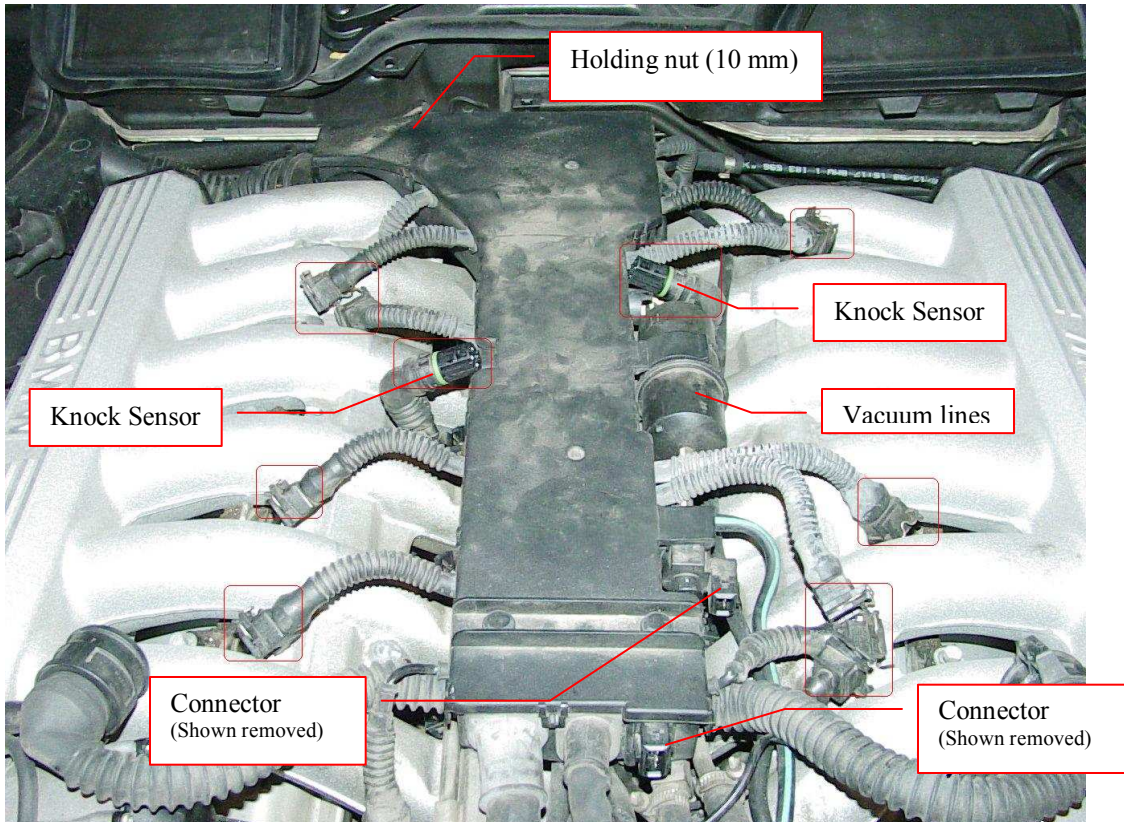


Figure 6

- Remove the oil fill cover and oil drip plate by prying it away from the front of the engine
See: Detail Image 4 – Oil drip catch
- Unclip the two connectors located under the oil entry spout
- The first connector (shown above under the coolant hose) is a standard clip.
To undo, see: Detail Image 1 – Connector removal
- The connector under the oil spout is more difficult.
The easiest method seems to be a flat blade screwdriver between the receptacle and the plug. Slowly (carefully) twist flat blade to pry the connector off.



- Disconnect the fuel injector connectors.
This works best with a long, narrow flat blade screw driver. Push the holding ping gently toward the connector and gently pull up.
See: Detail Image 1 – Connector removal
- Disconnect knock sensor plugs.
A small flat blade screwdriver can be used to (carefully) pry the connectors apart.
- Remove the holding nut located near the firewall on the passenger side.
This requires a flexible extension.
- Remove other connectors as necessary.
These may be in various locations depending on your build date.
- Pull the vacuum lines away from the wiring box



Figure 7

- Loosen/unbolt the vacuum valve (2) and holder. This is bolted (2 bolts) to the auto-level/power steering reservoir
NOTE: This is required to free the two vacuum lines (shown in Figure 7). These two vacuum lines are connected to the underside of each intake manifold. Disconnecting them from the valves will make it much easier to remove the manifolds.
- The wiring box is now free. Push (carefully) back toward firewall and lift the front upwards. Secure to hood.

Fuel Rail Removal

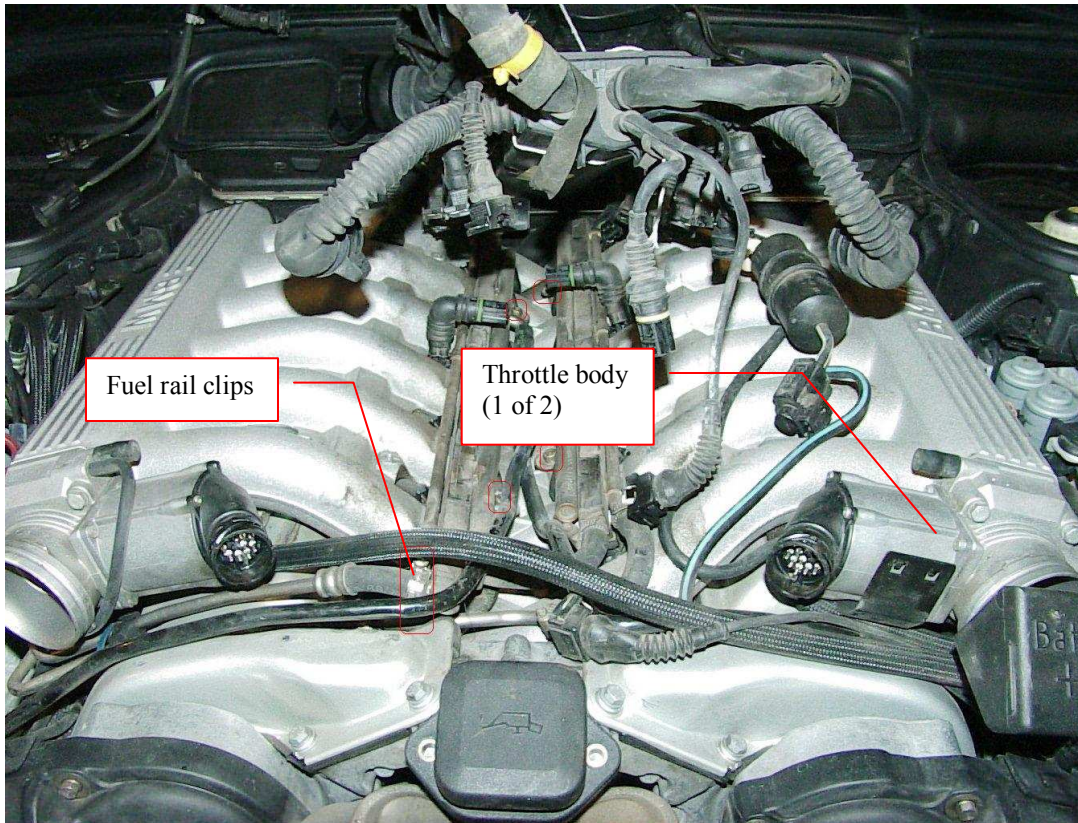


Figure 8

- Loosen and disconnect the inbound/outbound fuel lines (two) by loosening the fuel rail clips.
- Remove the hex bolts (4) from the fuel rails.
- Carefully pry the two fuel rails out. The rails can be removed together.
NOTE: Once the hex bolts are removed, the rails are held in place by the rubber O-rings sealing the injectors to the intake manifold carefully pry at various points on the two rails. It takes a little upward force to get the injector seals to break loose.

OPTIONAL

You may choose to remove the throttle body assembly at this point. This may make it easier to handle the vacuum lines attached underneath each. I didn't remove them during this teardown.

Intake Removal

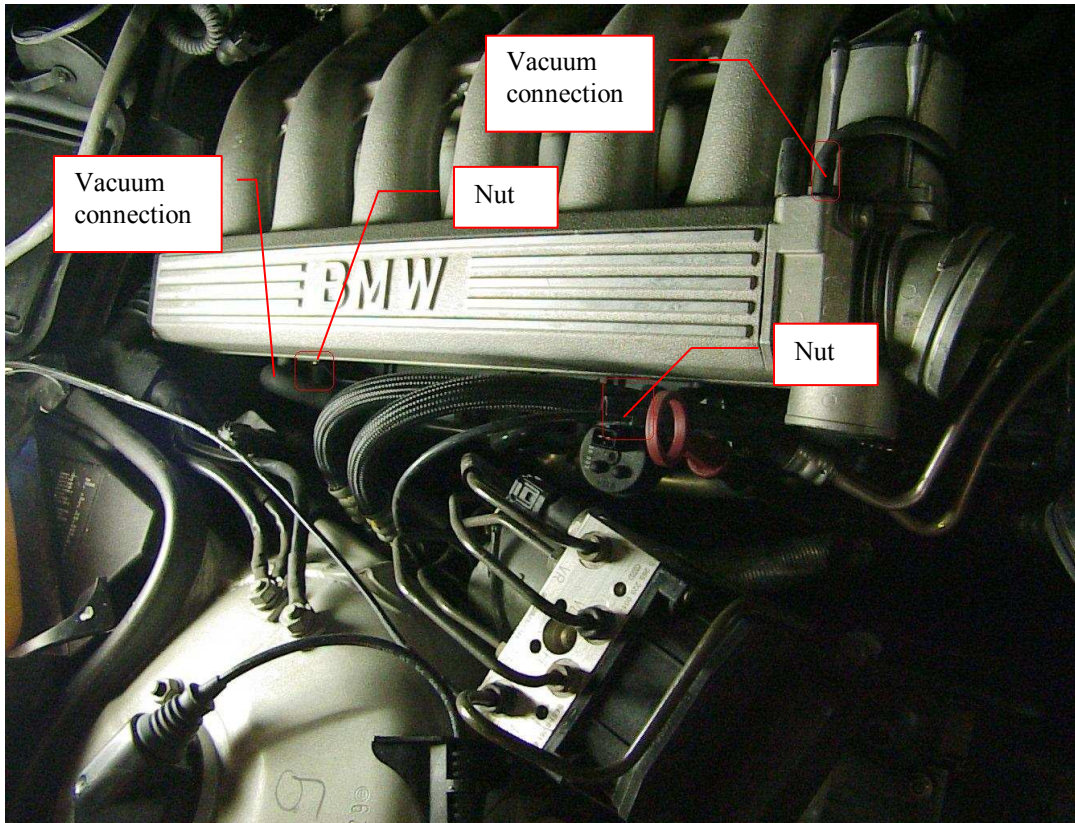


Figure 9

- Remove the two nuts.
These hold the ignition wiring harness and vacuum line routing clips to the intake. Pull the tabs off the bolts once the nuts are removed
- Remove the two vacuum connections
NOTE: The rear vacuum connection may be easier to remove once the intake is loosened and partially removed.

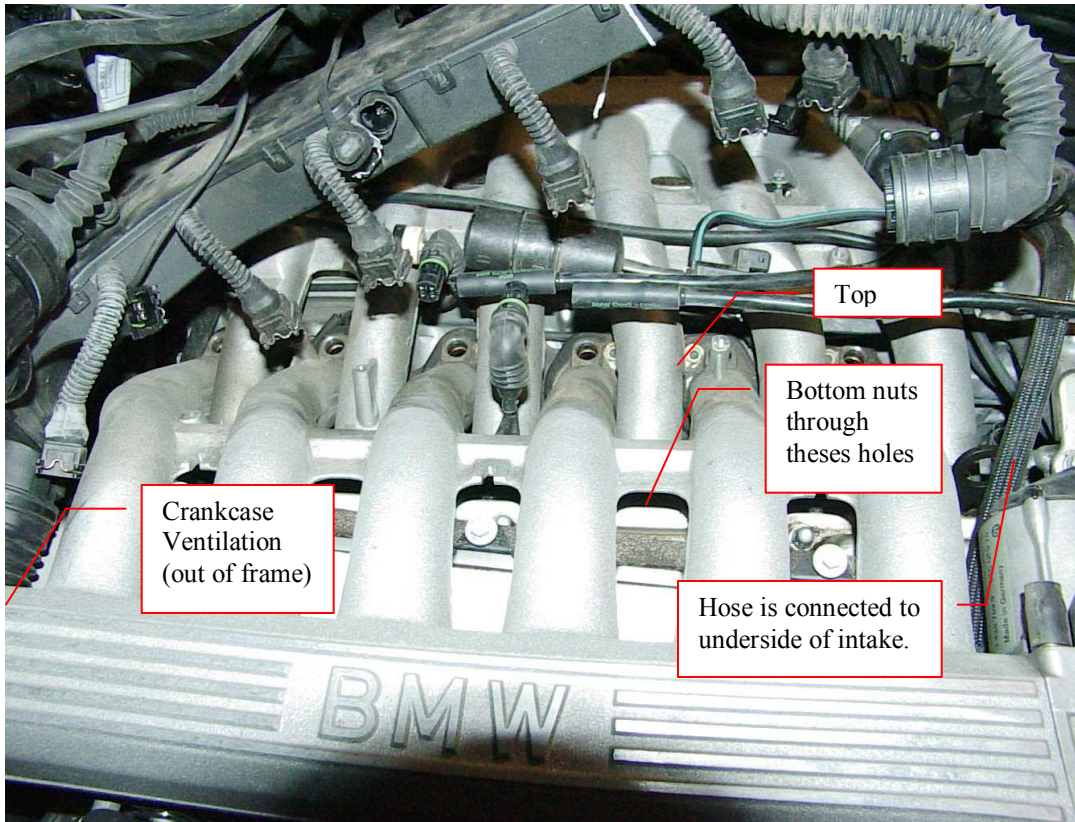


Figure 10

- Remove the upper and lower nuts (10mm)
Upper nuts are fairly easy to reach
Lower nuts require at least 14" of 1/4" extension and a flexible attachment

NOTE: There is no easy way to remove the lower nuts. This process takes time and patience. Use a magnetic wand and/or magnetic socket to prevent nut loss when removing

- Carefully remove the intake by pulling out and up.
This takes some care and patience as there is a vacuum hose connected to the underside and there is very little room to work in.

NOTE: Be aware the crankcase ventilation valve is mounted on the rear of the intake and is also connected to the valve cover. The seal should break when the intake is lifted up and out.

See: Detail Image 5 – Removed intake manifold

See: Detail Image 6 – Engine without intake manifolds

- Repeat process for other side of engine.

Valve Cover Removal

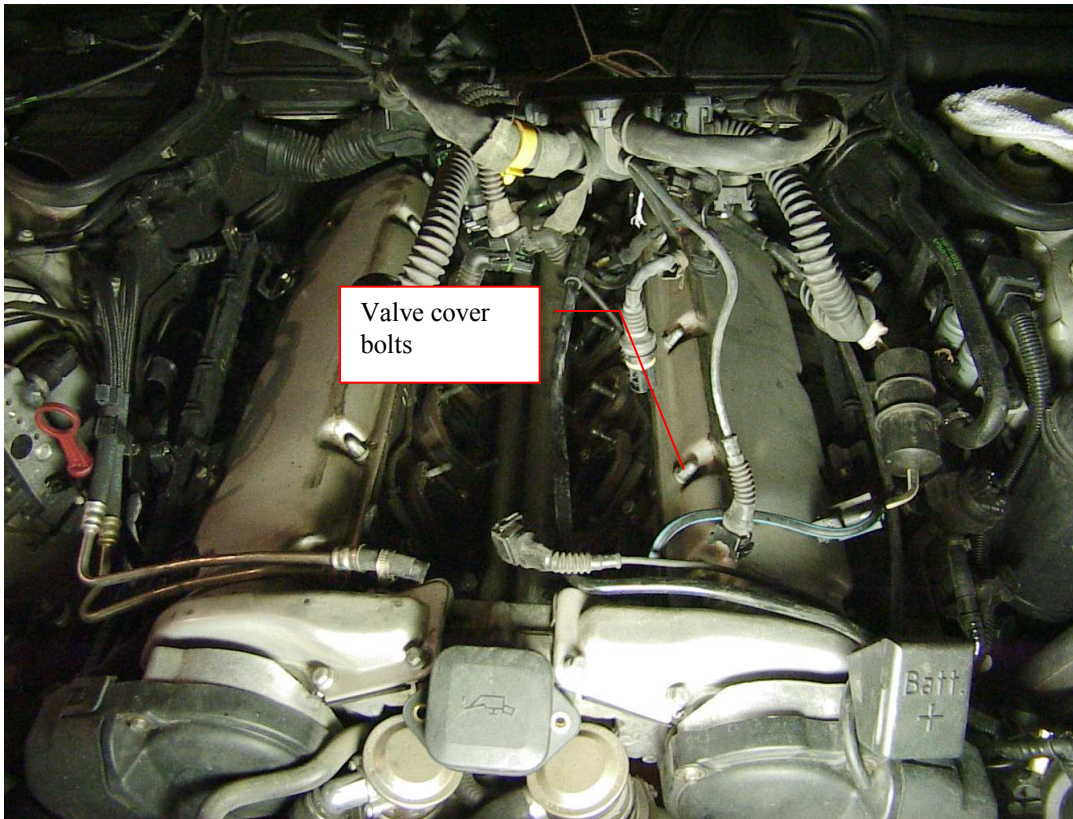


Figure 11

- Remove valve cover nuts to remove valve covers.

The Oil Leak

Once under the intake manifold, I discovered the leak was not the valve cover gaskets (a darn good thing as I had replaced them about 6 months prior to this project due to an oil leak). The oil leak was from the driver's side Crank Case Ventilation valve boot. This boot carries up the valve covers to the actual CCV valve. I must have damaged it during my last teardown exercise.

See: Detail Image 7 – The cause of the oil leak

Putting it all back together

This is pretty much “reverse the steps above”.

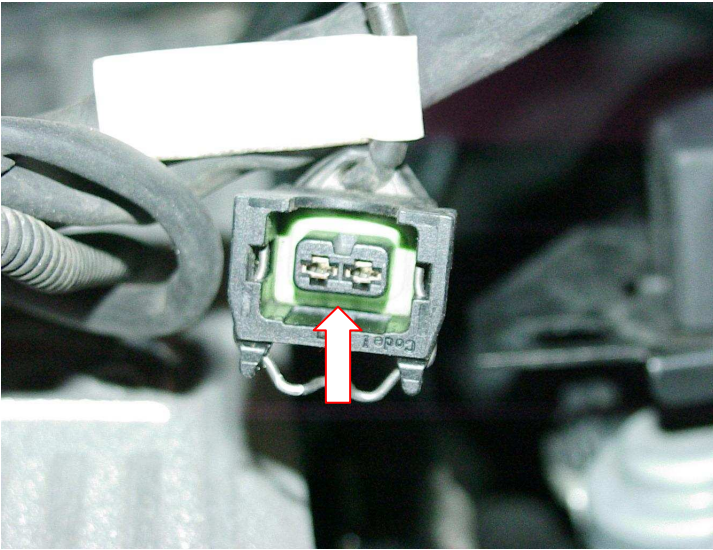
Again, the hardest part is putting the nuts back on for the intake manifold. A magnetic wand to start the nut seems to be the easiest method. This simply takes time and patience.

Coat all seals with Hylomar HPF sealer

Torque settings used for my vehicle

Intake Manifold nuts (Manifold to gasket)	7 – 8 ft/lbs
Manifold gasket to head (If you removed)	11-12 ft/lbs
Valve Covers Nuts	7 – 8 ft/lbs (Recommend loctite blue)
Sparkplugs (If you removed)	16 ft/lbs
Most other nuts	7-8 ft/lbs (See your TIS for specifics)

Detail Images



Detail Image 1 – Connector removal

- Push the metal clip towards the plug.

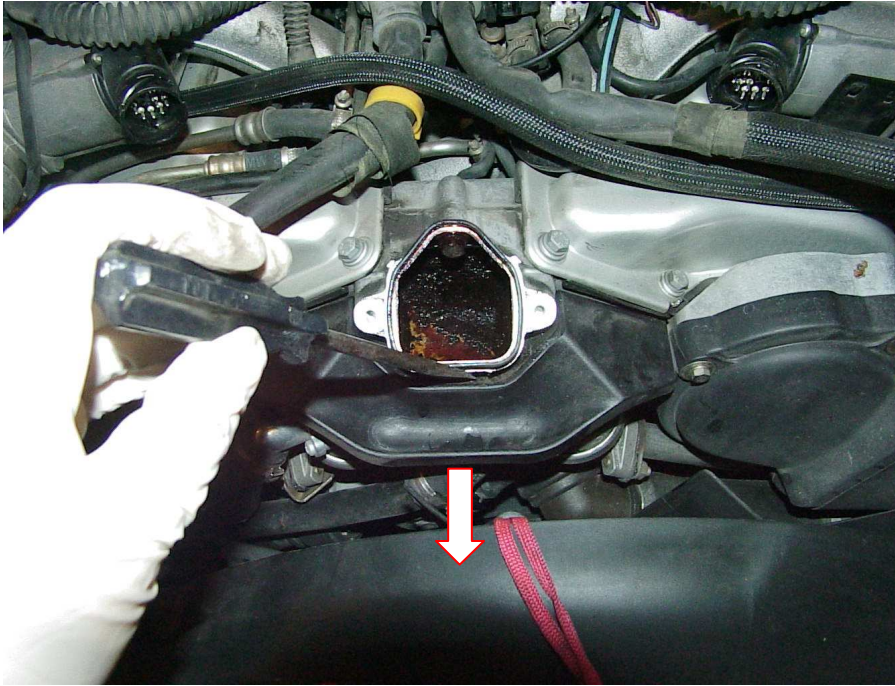


Detail Image 2– BATT+ connector removal



Detail Image 3 – Engine pan

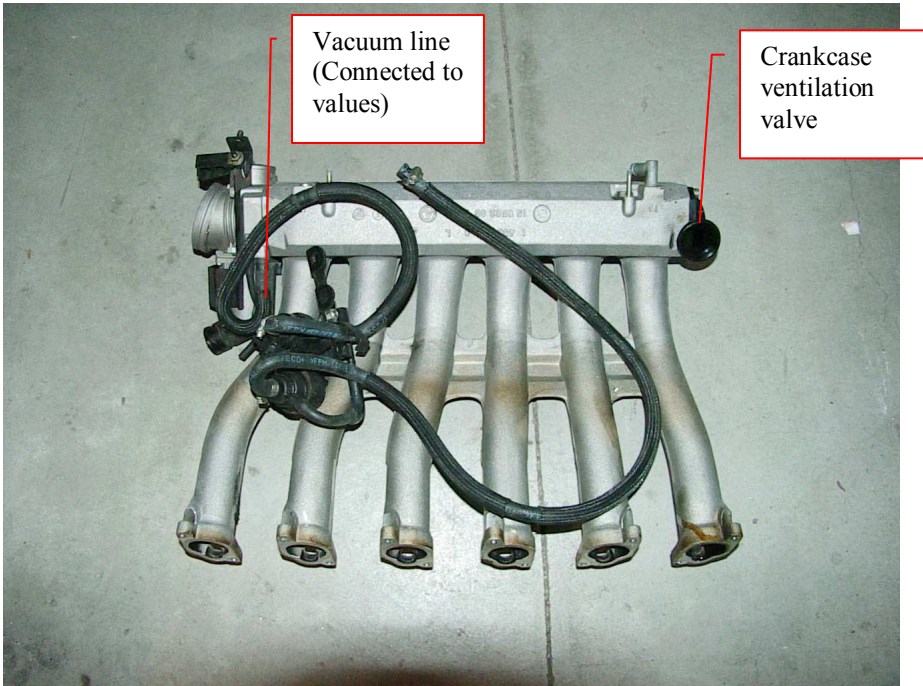
- Each screw requires about one turn to loosen.
NOTE: screws do not need to be removed from the plastic pan.
Push the pan toward back of car to unclip and remove.



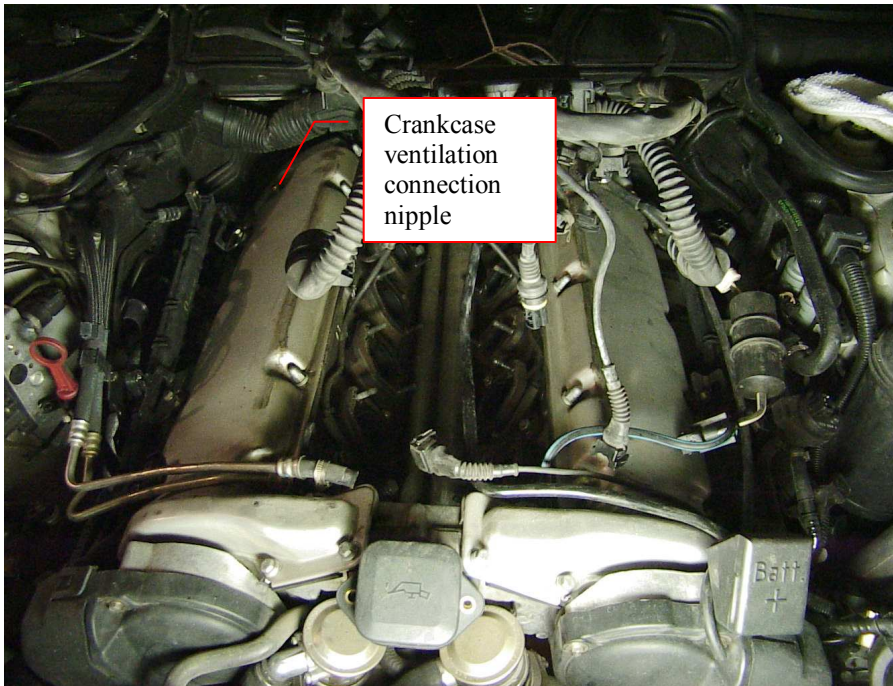
Detail Image 4 – Oil drip catch

- The oil catch unclips (with a little help)
Use a flathead screwdriver to carefully pry the catch pan out.

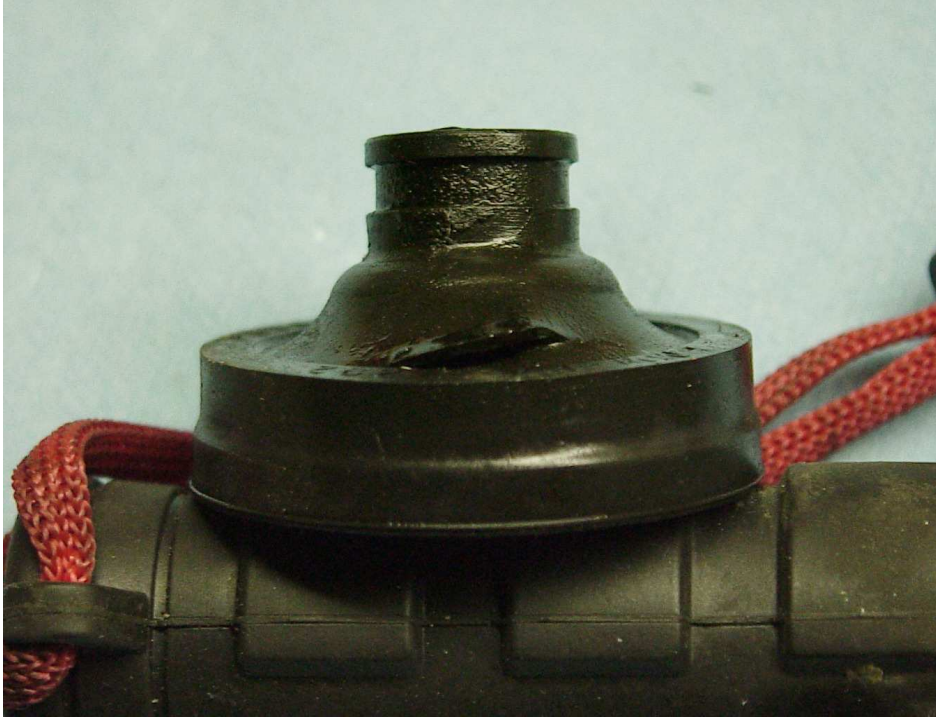
NOTE: do not hit the fan blade when removing. Damage to the fan blade could result in the infamous “exploding fan” problem.



Detail Image 5 – Removed intake manifold



Detail Image 6 – Engine without intake manifolds



Detail Image 7 – The cause of the oil leak