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TheTroyness I changed a tire once...

Drives: UG '06 GTI

Join Date: Sep 2009

Location: Arkansas

Posts: 102

D1-22-2011, 06:23 AM

📳 Valve Cleaning DIY

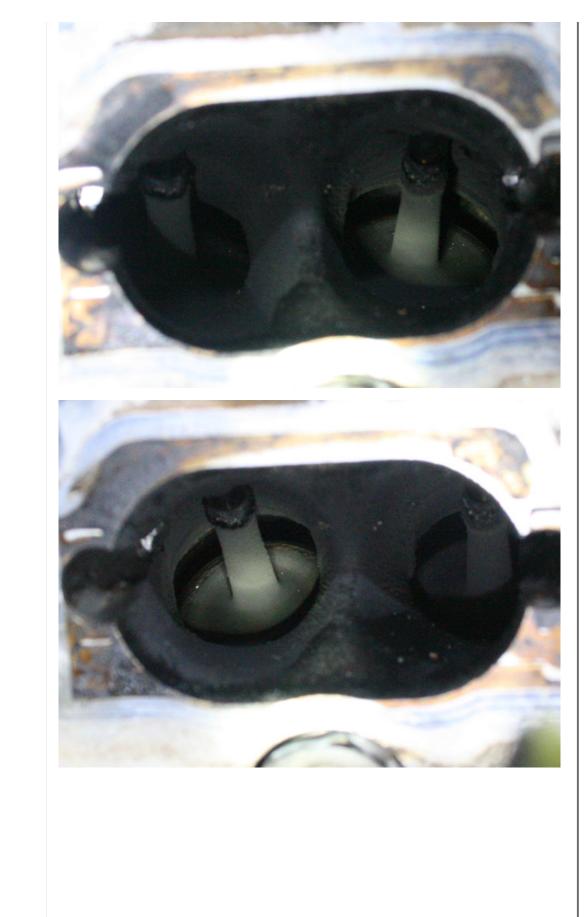
Valve Cleaning DIY

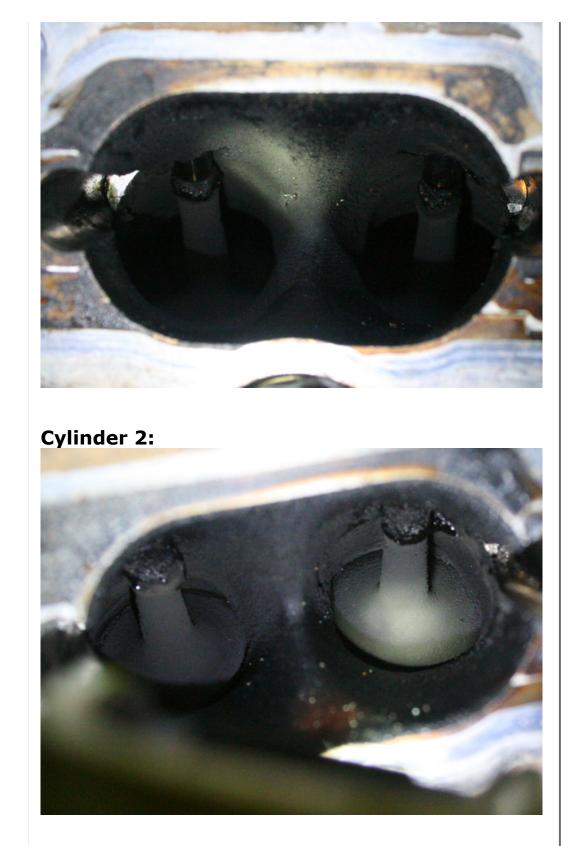
For a long time, I've been plagued by a misfire on cylinder 4. I got new coils (twice) and swapped my cyl 3 and 4 plugs to see if it stayed on cyl 4 (which it did) and even ran a tank of Techron hoping it was a dirty injector. I broke down and ordered a new injector, which will hopefully fix my problem once and for all. While I was at it, I replaced my intercooler with the S3 intercooler (my IC had a little hole in it so it was time to replace it). The following is a documentation of how I did it. It's really long so it will be broken up into sections.

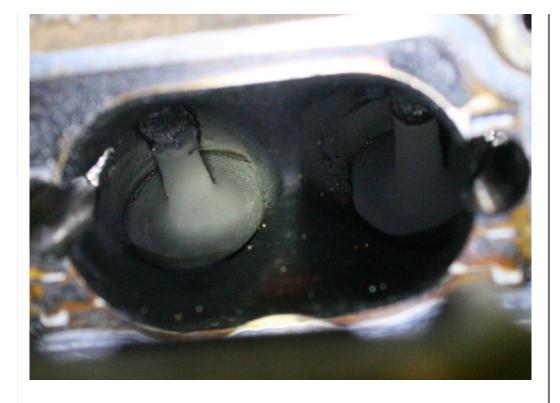
This was performed on a 2006 MKV GTI with about 67,000 miles on it, a BSH Competition catch can, noise pipe delete, and evil banjo bolt on the HPFP. I was winging it the whole way through this (neither APR's nor Stasis's instruction PDF documents would show the pictures on my Droid X for some reason that I'll have to look into, and it wasn't worth running back and forth to the computer), so there might be unnecessary steps. If there are, they didn't take long and I never ran into any real trouble, so who cares.

Before we start, here are some pictures of my valves before cleaning!

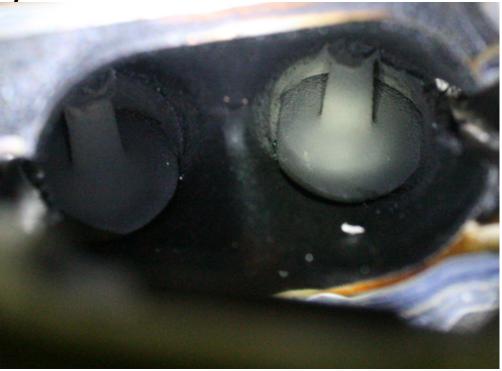
Cylinder 1:

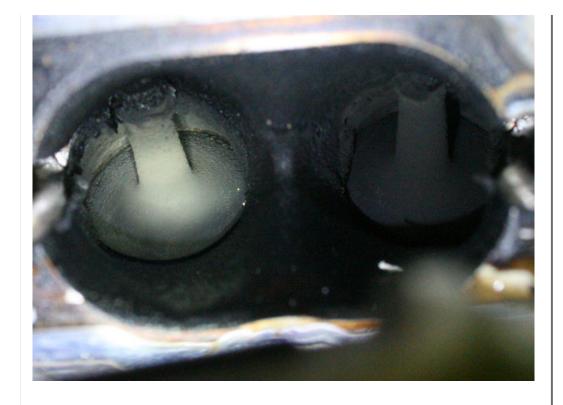




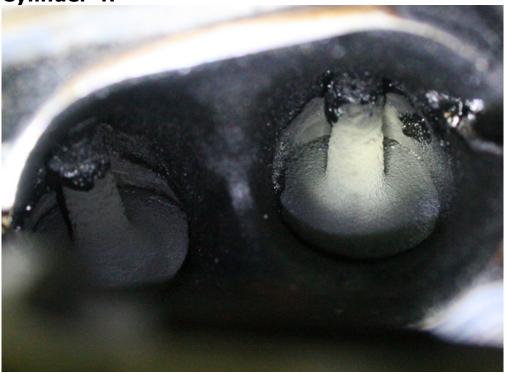


Cylinder 3:





Cylinder 4:



Now here's a picture of cylinder 1 after cleaning. I don't have pictures of the other cylinders after cleaning, but they all looked just like this. Pretty clean!

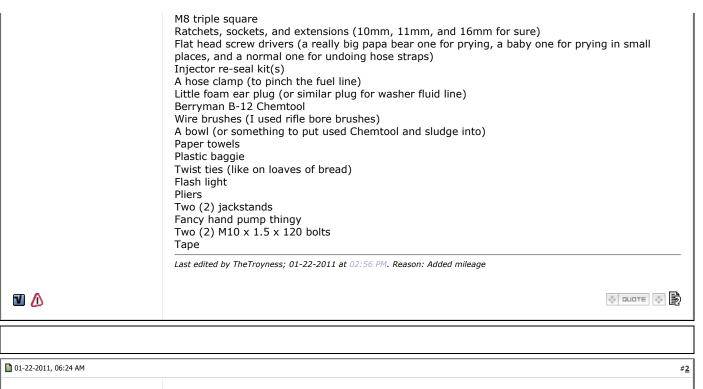


As you can see, things get worse from cylinder 1 to cylinder 4, just like staulkor reported seeing in his cleaning thread.

Ok, lets get the ball rolling with the DIY and stuff!

Things I used:

Torx bits (I used T25, T27, T30, and T40 I'm pretty sure) M10 triple-square w/4" shaft length



Outline of Steps

TheTroyness I changed a tire once...

Drives: UG '06 GTI Join Date: Sep 2009 Location: Arkansas Posts: 102

Outline of steps:

Note: While it is not necessary to remove the belly pan, front bumper, and lock carrier, it is highly recommended.

Remove belly pan, front bumper, and "lock carrier" then support radiator and friends with jackstands.

Disconnect a billion electrical connectors. The best way to do this is do unplug everything you can find around the intake manifold and fuel pump, and when it comes time to pull off the intake manifold, do so slowly and check for any remaining connectors. Pay attention to how many plugs you disconnect and make sure that's how many you reconnect when you're done!

Remove oil dipstick and tube, bleed fuel pump and disconnect two lines on the bottom of fuel pump, disconnect vacuum hose and fuel line (pinch the line first!) from the metal lines on top of the intake manifold, detach bendy vacuum line from intake manifold, remove catch can (drain it first) or stock PCV grief and failure device, undo breather hose from valve cover, undo vacuum hose on the driver side of the block (near the end of the cams), remove vacuum hose from the driver side of the intake manifold (the short hose that goes to the 4-way connection and a bunch of other crap), and remove the throttle pipe (that thing between the radiator fans and the block that goes up to the throttle body).

Remove five (5) T-30 bolts on the top of the manifold and two (2) on the bottom, two M6 nuts on the bottom of manifold, and remove the M10 triple-square Satan bolt.

Place paper towels under intake manifold to catch draining fuel and pull off intake manifold.

Cover injectors (if any came out with the manifold, put them back in after resealing them), remove metal spacer tray things from the valves, and pour some B-12 Chemtool into the closed valves. Let it soak. Use wire brush to scrub stuff carefully. Remove liquid with fancy hand pump thingy (or lots and lots of paper towels) and wipe out valves with paper towels.

Crank engine using the nut on the crank pulley. Clean remaining valve(s).

	Reassemble.
	Open and close driver side door/turn ignition on and off (without actually starting the car) to prime the fuel pump.
	Start car.
	Rejoice.
	Have a beer.
	Last edited by TheTroyness; 05-17-2012 at 03:33 PM.
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01-22-2011, 06:25 AM	#

Disassembly

TheTroyness I changed a tire once...

Drives: UG '06 GTI Join Date: Sep 2009

Location: Arkansas

Posts: 102

Detail of steps:

Note: The pictures were not taken in any sort of order. Don't get confused if you disconnect something, and two steps later in a picture you see it is still connected.

Note: While it is not necessary to remove the belly pan, front bumper, and lock carrier, it is highly recommended.

Disconnect the battery. This will take the 10mm and 11mm sockets.

Remove the belly pan and front bumper. It consists of a bunch of T25 screws under the car and in the tire wells. You also have to take out the center grille. Two screws on top and two in the honeycomb (phillips head, I think, but I haven't had those screws in a long time so I don't know for sure) at the bottom. Pull off the passenger side of the bumper first just enough to reach in there and disconnect the washer fluid line and plug the pump with a foam ear plug.



Unplug the fogs and side markers. Also, unplug the fog light wiring harness. It's that plug dangling above the fog and sidemarker wires in the picture. To find it, follow the fog light wires up into the engine compartment on the driver's side.



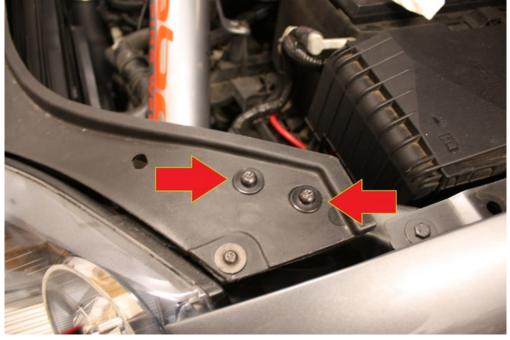
On both sides of the car, unplug the headlights, airbag sensor things, and then the hood latch sensor on the passenger side by the other plugs.



Disconnect the hood latch popping cable right above the driver side headlight. If this is the first time you've done it, it will be pretty hard. Use a screw driver to pry up on the side.



Remove the 2 torx bolts on the top of the lock carrier on both sides (above the headlights). They're T30 bolts. Don't remove the screws for the headlights.



Remove the headlight supports by taking out two screws on each one (T25 screws, locations are marked by red arrows in pictures 1 and after removal in picture 2). Then remove screw behind each headlight support that holds the radiator and friends to the lock carrier (T30 screws, location marked by green arrow in picture 2).



Remove the top outer bolt on each side of the metal bumper (16mm socket). Replace each of these bolts with the M10 x 1.5×120 bolts (red arrow). Remove the remaining three (3) bolts on each side (green arrows).



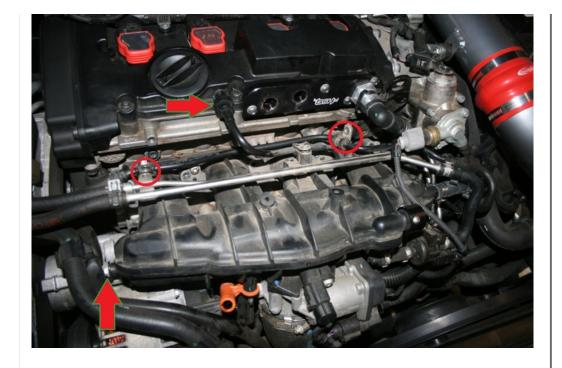
Now slide out the lock carrier and separate the radiator and friends from the lock carrier and place on jack stands. Take out the long M10 bolts and move the lock carrier out of the way. You might find it helpful to disconnect the intercooler hoses. You might even consider removing the intercooler entirely.



Go ahead and unplug this sneaky little sensor. That's on the driver side of the intake manifold

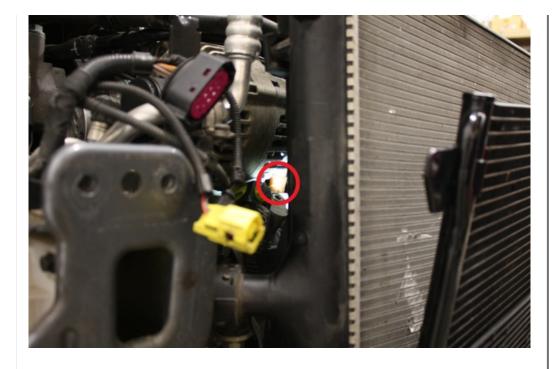


Next, I removed my catch can and plugged the holes with paper towels. If you have the stock PCV setup, I don't know just how in the way it is, but I do know that you'll have to disconnect some hoses. Also, unplug the breather hose to the left of the PCV/catch can area. Also also, remove the nut holding the coolant line to the left of the intake manifold. Now take out the circled T30 bolts.



Pull the oil dipstick out. Remove the M6 nut holding the coolant line support to the bottom of the dipstick tube. Push the support bracket off the peg. Using a 4mm wrench or socket, unscrew the peg securing the dipstick tube to the manifold. Now yank out the dipstick tube. It is secured using some plastic clip and an oring. It is a serious PITA to get out. I had to have one person pull on the top while I took the big pappa bear flat head screw driver and pried on the bottom of the tube. Once it's out, plug the hole with a paper towel, if you can get to it.





Unplug the circled sensors and disconnect the circled vacuum hoses. Take off the black cap on the fuel pump that covers the bleed valve. Place a rag under the bleed valve and use a flat head screw driver to bleed the fuel pump. A tiny bit of fuel will spurt out, so don't be smoking, near an open flame, or on fire when you do this. In fact, don't do any of this if you are smoking, near an open flame, or on fire. If you are on fire, you have more pressing matters to attend to.



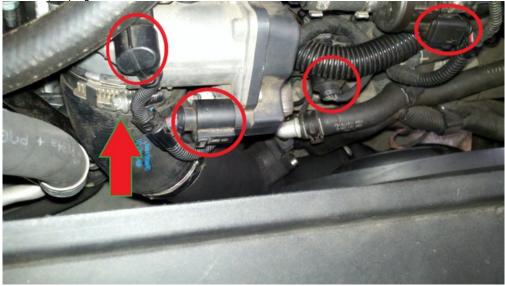
Now you need to disconnect the two fuel lines going into the bottom of the HPFP. If you are lucky, you will have the rubber line in the back and this will be cake. If you are like me, you have the evil little banjo bolt. I think you can use a 17mm wrench to get the first line off (I used a crescent wrench cause I had one right by me). The banjo bolt will take the M8 triple square. You can do it with a torx bit, but if you have the triple square, use it. Make sure you have a rag or some paper towels under the pump, because it will leak some fuel.

Now scamper on over to the passenger side of the car with your choice of hose pinching tool. There are three lines passing over the top of the intake manifold. One is plastic and two are metal. The middle line is the fuel line. Pinch this line. In the picture, you can see where I pinched the line. After taking the picture, I moved the pinch up to where the arrow is pointing so it would be out of the way. Now, using some pliers, loosen the spring clamps on the metal lines and move them down the hoses all nice and out of the way and stuff. Now wiggle those hoses off the metal lines. You can move the spring clamp on the plastic line and try to get the hose off the plastic line, but I couldn't do it. If you manage to do it, good for you! If not, you undid the bolts securing that line to the manifold, so you can just move that line out of the way without disconnecting it. That's what I did.

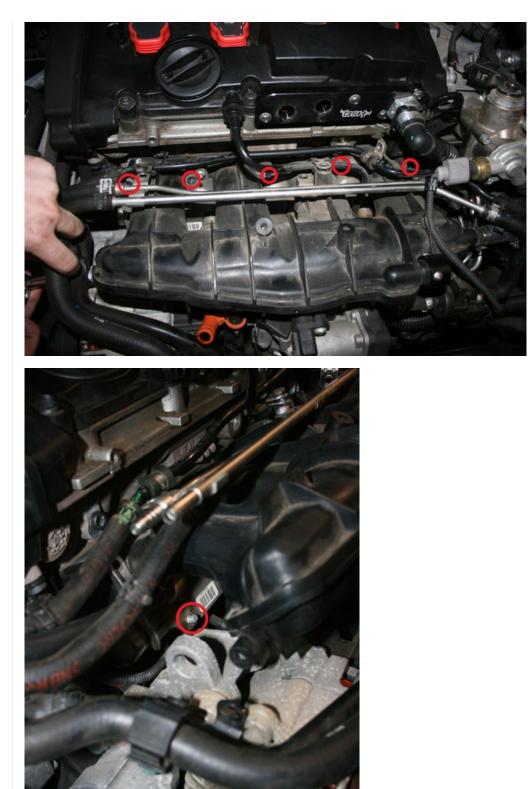
?



You're going to need to remove the throttle pipe. To do so, loosen the hose clamp connecting the throttle body hose to the throttle body. Undo the bolt securing the throttle pipe. Unplug the sensor in the pipe. Disconnect the intercooler hose, if you haven't done so already. Now yank it out! Also, unplug the circled sensors.



Now you get to undo the nuts and bolts holding the manifold to the block! Start by taking out the five T30 bolts on the top. There are two more T30 bolts under cylinders 2 and 3. There are grooves in the bottom of the intake manifold that will give you a straight shot to them using an extension. Under cylinders 1 and 4, you will find two M6 nuts that need to be removed, as well.



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Now the infamous M10 triple square! Here are the best pictures I could take to describe where it is. Figure it out.





Now there are some wires you need to unplug under the intake manifold. Below is a picture of the wiring harness. Before you read this section and get all antsy in your pantsy, go ahead and put some rags or paper towels under the fuel rail, which is directly below the intake manifold itself. Basically, just put some rags under the manifold. When you start pulling out the manifold, if injectors stay in the block, some fuel will pour out of the rail.

Now back to the wires. You have a few options that more or less depend on what happens when you start pulling out the manifold. If you start pulling the manifold out and all the injectors stay in the block, then you can unplug the wire circled in green and you should be good. Honestly, it's fairly accessible, so you might want to just unplug it before you start pulling the manifold to just get it out of the way.

Anyways, if all the injectors come out with the manifold, then unplug the wires circled in red. If some stay in the block and some come out with the manifold, then you'll probably want to unplug the wires circled in red as well as the wires leading to the injectors stuck in the block. It's extremely difficult to unplug injectors stuck in the manifold, because the clips are up against the manifold.



I'm pretty sure that will have you covered, but just in case, proceed with caution and go nice and slow-like.

Last edited by TheTroyness; 08-30-2012 at 02:11 AM. Reason: Found an image with a broken link! OH NOES!

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#**4**

🗋 01-22-2011, 06:26 AM

Cleaning and Reassembly



TheTroyness I changed a tire once...

Drives: UG '06 GTI Join Date: Sep 2009 Location: Arkansas Posts: 102 CLEANING/REASSEMBLY

Ok, go ahead and take out the manifold. Pull out the divider things in the valves. Figure out which valves are open and put some paper towels in the hole. Don't put them all the way in there and try to plug the actual holes the valves close! Here's a picture of an open valve!



Now take the plastic baggy and cut decent sized pieces out of it. Cover the ends of the injectors and wrap twist-ties around the plastic behind the blue o-rings to keep it on there and kinda seal it off a bit. Now lay some paper towels or shop towels over the injectors. Do your best to keep the towels up against the block when you're cleaning so crap doesn't fall down on the injectors and stuff. *NOTE: This picture was taken after cleaning, so it WON'T look this clean.*



If you have injectors in the intake manifold, pull them out, reseal them (if you don't have new resealing kits, then you can just carefully put them back in the block and hope for the best), and put them back in the block. You might consider vacuuming out the hole the injector(s) go into. Mine had some dirt or something in there. Below is a picture of a properly resealed and ready-to-be-reseated injector.

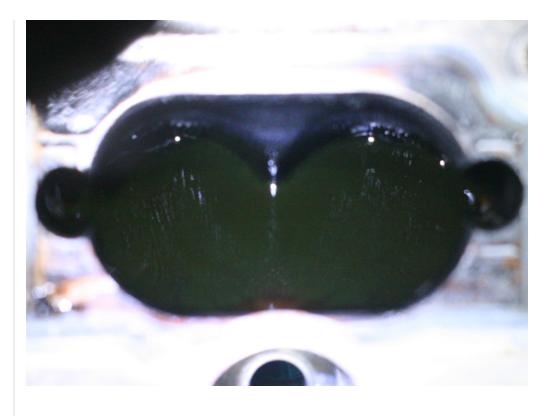


Now pour some Chemtool into the closed valves. MAKE REAAAAAL SURE THOSE VALVES ARE CLOSED!! Let it soak for a bit. Now take your wire brushes and gently scrub away! Using a handy-dandy hand pump thing, suck the Chemtool out and squirt it into a bowl or something. You might consider trying to scrape out some of the loose gunk. Keep doing this and working away at it using whatever techniques or hand crafted tools and things of the like to get all that nasty stuff out. It's really not that hard with the proper supplies, but it can be fairly time consuming.

Here is a picture of the handy dandy hand pump thing. It consists of an empty bottle of Penzoil gear lube and the nozzle tip thing off some canned foam insulation.



And the valves full of Chemtool.



Sea Foam is thicker than the Chemtool and will do a better job of suspending the gunk in it so it will be easier to get out. You may consider using the Chemtool to loosen the stuff up and get it off the valves and such, and then use Sea Foam to rinse it all out. When you're done, you can use compressed air to blow out the valves. Hold a rag over the valve before you start to blow away. Compressed air is optional, though.





Once you have all the closed valves cleaned out and stuff, plug them with paper towels and use a 19mm socket to turn the crank until the open valves are closed. Here's a picture of a socket wrench on the crank nut.



Do the cleaning procedure on the newly closed valves.

Soak the divider things in some Chemtool and wire-brush them clean.

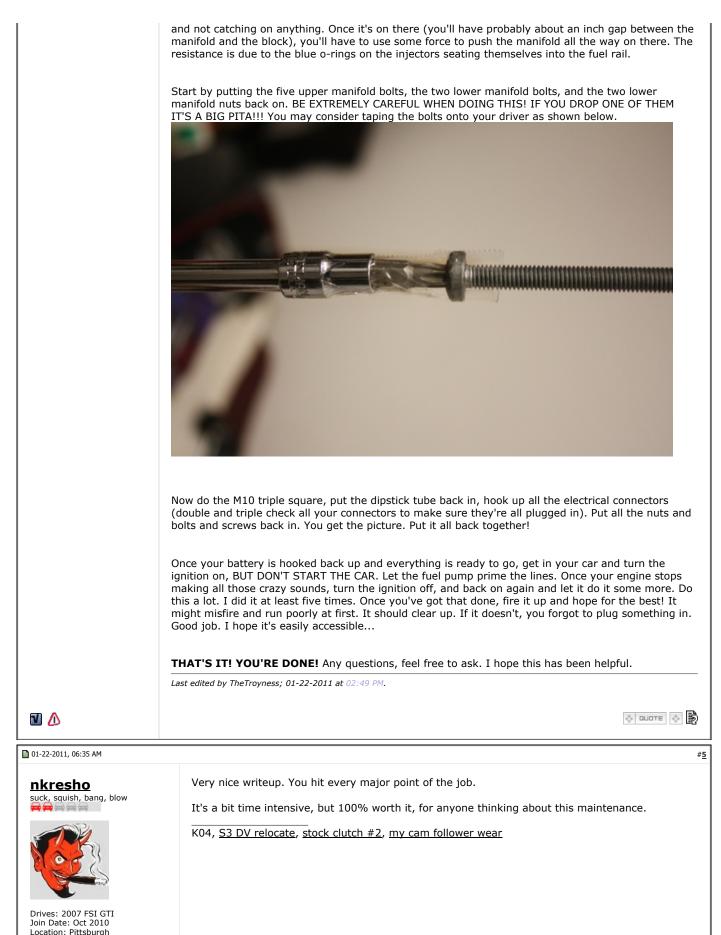


When you're ready to start reassembly, pull out all the paper towels and put the divider things back in. Remove the plastic baggy pieces from the injectors. Make sure they all have their blue o-rings (some may have been stuck in the fuel rail on the intake manifold). If then wiring harness is still plugged into the intake manifold, take it off so you can plug it into the injectors, the plug on the passenger side of the block, and the two under where the manifold would be. You just need to make sure all the plugs circled in red from the disassembly section are plugged back in.

Start to put the manifold back on. Be gentle! There are pegs under cylinders 1 and 4 that need to line up (the pegs onto which the M6 nuts threaded onto). You can't really see the peg under cylinder 4, but if you get the cylinder 1 peg in, you can just eye-ball the manifold to make sure it's level, and you should be good.



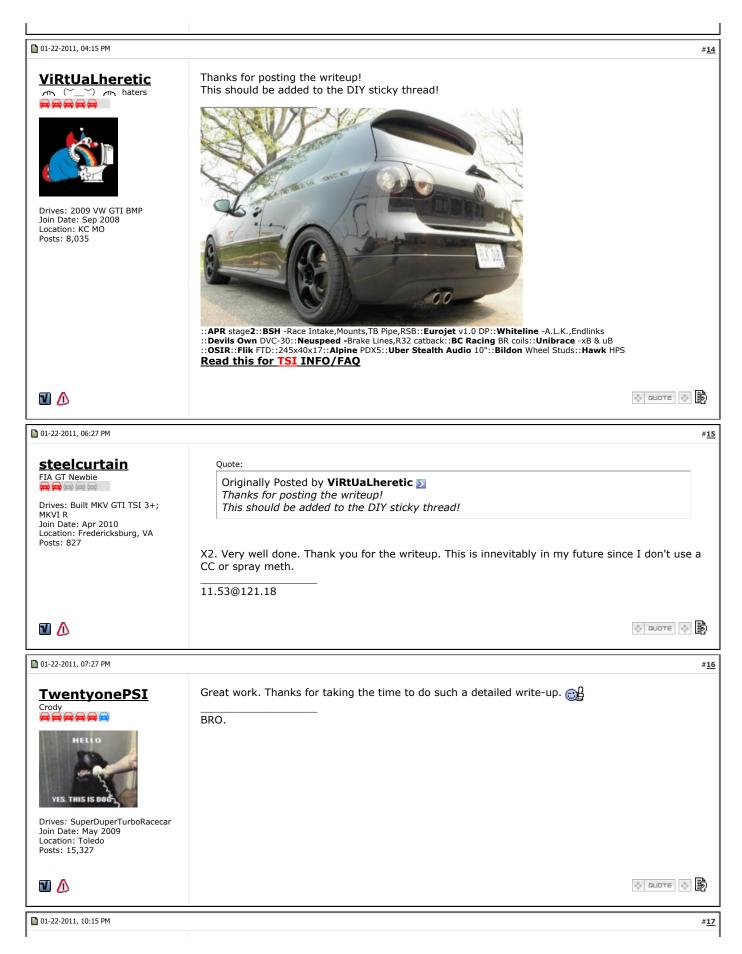
If you are having trouble, make sure the support bar that the M10 triple square secures is straight



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jdiaz Noob	Thank you for putting this together!			
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Drives: 08 GTI Join Date: Aug 2008	1970 Westy			
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panda_man22 FIA GT Champion	how much different is this job on a TSI?			
Drives: MKV White 4 door Join Date: Jun 2008				
Location: Ottawa, Canada Posts: 1,054				
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	how much different is this job on a TSI?			

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The Fed Old Guys Rule Trives: 2007 GTI DSG APR S1 Join Date: Oct 2008 Location: Tampa Bay Posts: 7,866	Do you HAVE to remove the bumper?
1	🐟 ΒΤΟLΟ 📎
01-23-2011, 01:30 AM	# <u>18</u>
20GLIO8 Put em on the glass For the second	Quote: Originally Posted by The Fed ∑ Do you HAVE to remove the bumper? First thing I asked myself while reading this. Good write up tho Quote: Quote: Originally Posted by pitbull592 ∑ Wheel gap is like vagina, the more fingers you can stick in the worse it gets ≥ 2008 PG GLI
01-23-2011, 02:36 AM	Revo 2+ - 13.314@ 104.23 Eurodyne??
Characteristic of the second	Quote: Originally Posted by The Fed Do you HAVE to remove the bumper? That's actually a great question that I was going to include in my initial write up but forgot. You don't have to remove the bumper. I removed my bumper because I was also installing the S3 intercooler. However, I planned to do the S3 install and the valve cleaning at the same time because I knew I wanted to take my bumper off for the cleaning. I don't have anything to put on the front end of my car to protect it from damage from me leaning all over it and working with extremely destructive chemicals over it. By taking off the bumper, I also had MUCH better access to some of the hard-to-get bolts and such (like the M10 triplesquare for the manifold support). Also, being able to pull the top of the radiator back slightly made removing the manifold support). Also, being able to radiator for the dama from mot having to work around the fixed radiator and having to be as careful to not mess up the front end of my car. In short, while it is not necessary to remove the bumper, I feel like it is absolutely worth the extra half hour, at the most. I should also note that the long bolts for sliding out the lock carrier aren't necessary. I'm undecided if they made things easier. T'll edit the DIY to reflect this reply.
■ 01-23-2011, 09:39 AM <u>The Fed</u>	#20 The reason I asked is, the dealer more or less said they would like to clean my valves. I'm going
Old Guys Rule	to take it in tomorrow to try to diagnose misfires. Could really be almost anything. It was a couple of months ago that they replaced the valve cover gasket, maybe something came loose. If not, it

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All times are GMT -4. The time now is 10:53 PM.

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