

Active Autowerke E46 M3 Supercharger Instructions



****WARNING****

INSTALLER MUST CHANGE FUEL FILTER BEFORE RUNNING WITH THE SUPERCHARGER INSTALLED. FAILURE MAY CAUSE A LEAN CONDITION RESULTING IN ENGINE FAILURE

Disassemble

1. Remove Front Under Panel by removing the seven 8mm hex screws



2. Remove Front bumper. On 11/01 and up models remove the four 8mm hex screws from under the car and one 8mm hex screw in the left and right fender well. Once screws are removed, (six in total) Grab bumper from each side and with a strong quick pull, the bumper should pop off. Disconnect the Fog lights and electrical connector. On 2001 models up to 10/01 there are two large reverse torx bolts that need to be removed from the bottom as well as the 6 8mm screws and then bumper will slide off. It is not necessary to pop it off



3. Remove Driver's side brake duct and trim off bump as shown



4. Remove Back Engine Cowl by first inserting a small flat head screwdriver between the wiring harness and the cowl and pulling up. This should separate the harness from the cowl



Then Remove the Cover and The Filter



Next Remove the Four Torx Head Screws and remove the cowl



5. Remove Air duct on top of radiator by removing the 4 plastic rivets



6. Remove Air box by removing the two 10mm bolts and loosening the clamp



7. Remove Drivers side Fan shield by removing the two plastic rivets. You will need to cut the shield around the radiator hose to remove it from the car. This shroud will not be re-used



8. Remove plastic shroud in front of electric fan by removing the remaining plastic rivets. This shroud will not be re-used



9. Remove electric fan by removing the four 13mm nuts and disconnecting the electrical connector



Then Remove the plastic shield in the upper corner. This piece will not be re-used





10. Remove Engine Fan with a 32mm wrench. The Fan is left hand thread so turn it clockwise to loosen it. You don't need to remove it from the car, just set it back against the radiator



- 11. Remove both the A/C and the Main Drive. The main drive belt will be replaced by the one supplied by AA for the supercharger
- 12. Remove Primary Belt Tensioner by removing the THREE 13mm bolts



13. Remove Intake Manifold by disconnecting the Crank Case Breather hose, Idle Control Valve, Jet Pump Fitting, Dipstick mount, Oil drain line and the two 10mm mounting nuts under the manifold. Then Remove the six clamps from the Throttle-Bodies



Hint: The Factory clamps can be removed my pinching them together where they overlap.

Then remove the Manifold Support Bracket by removing the 13mm bolt



14. Remove the upper and lower alternator bolts by popping the cover off the top idler pulley and removing the bolt. Then remove the lower bolt



15. Remove ECU By first removing the four 5mm Allen Head Bolts to remove the cover. Then Starting at the front release the 5 Black plugs on top of the ECU. Then Remove the ECU







16. Now you can package up your ECU and send it to Active Autowerke for Re-Programming

Installation

1. Install Check Valve in Fuel Purge Line. Locate Fuel Purge solenoid and cut line that runs to the vacuum rail. Install Check Valve so the Arrow points towards the Vacuum rail as shown below



2. Install idle control hose by cutting the excising hose as shown below. The other end of the hose will connect to the intake plenum later in the install



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3. Plug Fitting on top of Oil Pan using the supplied Plug. This is where the Oil Drain line from the intake manifold was connected





*** FOR SMG ONLY*this is located next to the SMG Pump



4. Install supplied Vacuum Line and tee by removing the factory vacuum hose connected the back of the fuel rail and install the supplied hose and tee as shown below. The long vacuum hose will later connect to the By-Pass valve. The shorter will connect to the second valve

Note

Make sure where the hard line connects to the soft rubber is tight. If loose, secure it with a little glue or a tie strap. This hard line goes to the factory fuel pressure regulator and it is important that this line remains connected!!!





5. Install new Crank Case breather hose by first removing the Hard line from the Valve Cover. Then remove one of the elbows (you my need to cut the hardline with a razor blade) and Push on the supplied hose. Then reconnect the new hose with the elbow to the valve Cover.





Make sure where the hard line connects to the soft rubber is tight. If loose, secure it with a little glue or a tie strap. This hard line goes to the factory fuel pressure regulator and it is important that this line remains connected!!!

6. Install Fuel injectors and adapter by fist removing the electrical rail by prying it away from the injectors. Then remove the two 10mm bolts. Remove the Seven black retainer clips and finally remove the rail and injectors.



Next, using a cutoff wheel, trim the mounting points on the rail as shown



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Next install the two fuel rail mounting extension brackets so the threaded side of the bracket is sticking down



Next install the fuel rail adapter onto the fuel line using one of the factory black clips





Next install the six new injectors supplied with the kit. Remember to oil the O-ring before installing them. The new injectors do not require the retaining clip. Install the rail and injectors into the car and secure the fuel line to the rail using the factory retainer clip



Reinstall the two 6mm bolt to secure the fuel rail and reinstall the electrical rail making sure that all six injector are completely connected. Each one should click on

7. Install SC oil tank by first install mount bracket using the included 13mm bolt. Then Trim a V in the rubber grommet for the Oil line that runs to the Oil-Cooler. Next Trim a hole in the grommet when the ABS lines run. Then mount the Oil Tank using the supplied hex bolt



Then Route the Oil return line down and around the head light. Route the Oil Feed line around the back of the motor. Install the Oil line that runs from the SC to the Oil cooler through the radiator support





8. Trim and Reinstall Electric Fan by trimming 1" off the bottom back edge as shown below. Next take the two 13mm nuts and reinstall them on the top two studs backward to act as spacers. There should be about a ½ inch of threads still showing



Next reinstall the electric fan using the two supplied cap nuts for the top and the two factory nuts on the bottom studs. Reconnect the electrical connector on the fan shroud



The Fan Should now be slanted so the top is more forward than the bottom. This will allow space for the Intercooler

9. Install SC Oil Cooler using the supplied 6mm Bolts and nuts. Connect the Feed and Return lines



10. Trim Hood Grills to allow clearance for the Oil Cooler using an Air Saw or Cutoff Wheel



11. Relocate power steering bottle by first draining the power steering fluid. Next remove the two 13mm bolts. Then loosen the 10mm bolt and remove the mounting bracket. Replace the bracket with the one supplied in the kit. Next disconnect both lines from the bottle. Then remove the line that connects to the back of the pump.



Next Cut the other line that so that there is 8 $\frac{1}{2}$ inches of rubber hose remaining. Then connect the supplied hose to the power steering bottle as shown below



Mount Power Steering bracket to the frame rail using the supplied 6mm nuts. Finally connect the other end of the supplied line to back of the power steering pump and the end of the hose we cut earlier to the bottle. Mount the Bottle to the supplied bracket using supplied 8mm nuts. Refill Bottle with power steering fluid.



12. Install new belt tensioner by using the supplied bolt and the 20mm long factory bolt. The new tensioner only uses two bolts. Once installed pin the tensioner in the open position



- 13. Install the new 8 rib pulleys
 - A) Remove water pump pulley and replace with 8 rib pulley use new
 - 6x16mm bolts. Tighten to 8 ft lbs.
 - B) Remove crank pulley and replace using 8x30mm bolts, tightening to 18 ft lbs
 - C) Remove steering pump pulley and replace with deeper side facing out (AA logo), use back stock bolts and tighten to 18 ft-lbs
 - D) If you do not have a special tool to take of alternator pulley in the car you will have to remove alternator and take of pulley with air tools. Replace with 8-rib pulley and tighten with air tool
- 14. Install SC Bracket using the supplied bolts. The bracket bolts to alternator mounting points. **The longer of the two bolt goes in the bottom hole**





15.Install SC bracket brace by first removing the 8mm bolt in the oil filter housing. Then install the brace using the supplied bolts. The other end will attach to the SC later





16. Connect SC Oil lines. The inlet is the bigger connection on the drivers side. Make sure you don't reverse the oil lines

17. Install Super Charger using the 3 supplied allen head bolts. Install SC so the Oil feed and drain connections are on the bottom



18. Install the three Idler Pulleys on the SC bracket using the supplied hardware. Make sure the shoulder on the spacer is facing the pulley. The upper pulley goes in the upper hole as shown in the following picture





19. Install the Air filter adapter to the back of the supercharger using the supplied allen headed bolts. **Orientate it so the breather hose faces down**.

Next attach the Crank Case breather to the adapter



20. Attach the Supercharger brace to the supercharger using the supplied nut ***** Only tighten the turn buckle enough to take the slack. ***** ***** Over tighten the brace can bend the bracket ******



21. Fill S/C Oil tank with supplied fluid. Fill the tank all the way. Once you start the motor, you will need to add the rest of the bottle. It should take almost the entire bottle



22. Install new main drive belt by following the routing diagram below. Then reinstall the A/C belt



23. Reinstall Mechanical Fan. Remember it's left hand thread so spin it counter-clockwise to reinstall it



24. Trim the left and right brake duct supports as shown below

Before



After

25. Adjust Power steering Hose by bending it up towards the alternator. This will allow additional clearance for the #5 pipe later



26. Rotate the oil cooler lines up to make room for the #4 Pipe by loosening the bolt and repositioning the lines.



27. Install #3 Pipe and 90 degree hose onto supercharger. Leave the hose clamps loose until you have the intercooler install an adjusted. **NOTE This pipe will have a dent in it. This is normal. It is there for extra clearance for the belt.



28. Install lower pipe support bracket by first removing the 8mm bolt of the on the bottom of the A/C compressor mount. Then install the pipe support bracket





Next Install the other pipe support bracket using the supplied 8mm bolt. On some car there will already be a bolt in this hole. Just reuse the factory bolt



29. Install #4 Pipe by slipping two hose clamps over the pipe and securing them to the two lower pipe supports



30. Install 2.5" Elbow onto the end of the #4 Pipe



31. Install #5 Pipe onto end of 2.5" Elbow



32. Trim off the bolt sticking out of the drivers side shock tower using an air-saw or cutoff wheel



33. Install Intercooler brackets by first drilling out the bottom hole then insert the supplied bolts and washer from the back side then install the brackets. Leave the nuts loose until you get everything lined up.



34. Install Intercooler using the supplied 8mm bolts. Check for clearance between the electric fan. You should have about 5-10mm of clearance.



35. Install Intake Manifold onto to the throttle bodies. Make sure the hose clamps do not interfere with the throttle linkage. You may need to bend the dipstick slightly and attach using the supplied bracket. Connect the Idle valve hose to the underside of the manifold

** SMG ONLY **

Remove the SMG hose from the SMG pump by pushing down on the red ring, then pull up on the hose. Using a razor blade cut the hard line off of the connector and attach it to the new bottle and hose





36. Connect the vacuum line from the vacuum rail to the port that faces down on the black part of the by-pass valve.

The port on the top that faces back towards the windshield is left open.

Then connect the other vacuum line to the second blow off valve located under the intake manifold. Connect this valve the same as the first



37. Install the Air Temp Sensor harness by first cutting the plug off the factory harness. Then install harness by connecting the Yellow/Blue wire to one of the wires in the supplied harness and the Brown/Orange to the other wire in the supplied harness. It does not matter which You connect to in the supplies harness. You will NOT use the solid Yellow, Red/White, and Red/Green. This will connect to the Air Temp sensor later in the install



38. Install the Ram Air pipe by first enlarging the hole in the drivers side brake duct to 3.5". You can use the pipe as a template. Then Bolt the pipe in using the supplied hardware





39. Install the other piece of the ram air pipe and connect with the silicone hose. Next connect the electrical connector to the air temp sensor.



40. Trim Bumper and Bumper Grill for clearance around the Intercooler. Remove the black plastic grill and trim off the back lip as shown below



Next trim the bumper cover using the supplied template as shown below



*** 2001 Models Only up to 10/01 ***

Remove the Aluminum support from the bumper skin by punching out the plastic rivets. Then using the supplied template, trim the bottom of the support as shown





Trim off the upper tabs on the bumper cover then reattach the aluminum support to the bumper cover using the supplied plastic rivets



41. Install the **Radiator Support brace** by first removing the stock remove rubber screw with13mm wrench. The rubber plug holds radiator in place. The plug needs to be separated and only half reinstalled



42. Screw the plug back in upside down



43. Slide bracket behind overflow hose. Slide bracket over till it aligns with square hole





44. Install 6mm bolt, nut and washer. Use the nut and washer underneath the bracket. Compress in the radiator as far as it will go and tighten nut and bolt. This should give adequate space between hose and pulley



45. Remove and Plug the jet Pump hose. This is located near the brake booster. Install the supplied 3/8 vacuum plug



- 46. Tighten intercooler mounting brackets. Check all intercooler pipe hose-clamps for proper torque
- 47. Reinstall Bumper and connect the electrical connections.
- 48. Re-install and tighten fan clutch
- 49. Reinstall Rear engine cowl and A/C micro filter
- 50. Reinstall front air duct. Rivet or screw the two pieces together as shown



51. Install the Active Autowerke Plaque. (We recommend Epoxy or J.B. Weld)



52. Re-install your reprogrammed DME

53. ***** You must clear the DME ADAPTIONS before driving the car hard ***

You can have this done at any BMW service center or a independent shop that has BMW diagnostic equipment (such as a GT1 or Autologic)

54. *** SMG Only ***

Look inside the supplied tank and notice the allen head screw. Pour in about 2 ounces of fluid.

- Step 1: Turn the key to the on position and place the gear selector R. You should here the SMG Pump run.
- Step 2: When the Pump shuts off, check the level in the tank. If you can see the Allen head bolt you need to add more fluid.
- Step 3: Turn the key off for a minute then repeat step one and two

Add fluid in small amounts. You don't want to over fill the tank.

- . We also suggest after the first test drive, let the car sit for about an hour then recheck the level by repeating the steps above.
- 55. Before you start the motor.
 - 1. Make sure you have refilled the Power Steering bottle
 - 2. Check the Supercharge Oil tank and make sure there it is at least half full

Start motor

- 1. Check to make sure that the oil level starts to decline in the tank
- 2. Add SC oil so that the oil tank never gets empty
- 3. Make sure the oil is returning to the tank
- 4. Keep the RPM stable at 2000 rpm for about 30 seconds
- 5. Shut off engine
- 6. Screw the oil level gauge (Cap) back into the tank then remove again to check level.



INSTRUCTIONS

Methanol - Water Injection

BMW E36 with M50 engine 1992-1999 BMW E46 including E46 M3

NOTE: Active Autowerke HOLDS NO RESPONSIBILITY FOR ANY DAMAGE THAT RESULTS FROM THE MISUSE OF THIS PRODUCT

Reservoir Mounting:

Mounted AA W/A Reservoir above existing battery tray



Trunk mat removed & hose with wiring installed

The reservoir tank and pump are mounted inside the trunk of the car using a self contained bracket/battery tray that will replace the existing tray. The AA kit is mounted on a new tray so no drilling or cutting is needed.

Remove existing battery tray and trunk floor mat. Install the reservoir with new tray into the existing space. Route the hose and wiring (Hose has the ground wire from the controller and a 6mm tube) under the right shock covering. Use tie straps to keep the wiring uniformed to the hose.



E46 M3 grommet in back. Open hole in grommet and fish hose through.



Locate trunk rubber grommet (E36)and install hose with wire running towards the front

E36 Remove the rubber grommet from the floor. You will see a small round indentation in the middle of the grommet; use a drill of approximately $\frac{1}{2}$ " to open up this hole. Route the hose through here with the wires. Open up the hole so that the hose and wires slide through easily.

Use similar application for E46 non M cars.



The AA Alcohol/Water injection reservoir Pre mounted on factory battery tray.

The AA Alcohol/Water injection reservoir and pump mounted on a factory battery tray. Floor mat is re-installed with hose running towards the front of the car.

NOTE:

Connect RED (+) wire to the positive battery terminal. Do not connect BLACK to NEG (-)



Use the Black check valve to connect the pump assembly to the 6mm plastic hose in the harness that was installed to the front of the car.

ARROW ON THE CHECK VALVE MUST POINT TOWARDS THE NOZZLE.

CHECK VALVE



There is a fuse for the W/A system. The fuse-holder is located inline on the positive lead, on the underside of the W/A Battery tray. It uses a 15 amp fuse.

Fuse holder under W/A tray

Under car Hose and Wiring Installation: E36



Water hose runs to the left of the diff & down

Route the hose and wiring down and to the driver's side of the differential carrier making sure that it is clear from the driveshaft, continue routing it so that it passes under the fuel tank and tank strap.



Hose now leaves the trunk grommet and runs on top of the diff carrier. It then runs down the left side of the diff and continue under the car along the fuel lines.

Hose exiting the grommet under the trunk



Hose exiting under fuel tank & going forward



Another view of hose routed under the car

Continue routing it so that it passes under the fuel tank and tank strap. Tie strap the hose and wires to the tank strap, continue routing the hose along the rear of the undercarriage to the left most steel piping. Route it along the pipe and tie strap at 6" intervals to prevent any sagging of the hose. Make sure that the hose and wires are not kinked at any time during the installation.

Hose is tie strapped every 6" to prevent kinks. Remove the metal heat shield that covers the fuel filter and continue routing the hose along the pipe beyond the metal cover, reinstall the metal cover, as the hose and wire comes towards the front of the car.



Wiring harness routed & clearing the steering shaft

Watch the wire harness as it comes up into the engine bay area, route it so that it pass along the side of the frame and clears adequately the steering shaft. Tie strap accordingly and continue routing so that it exits into the engine bay just in front of the fuse box and to the rear of the shock tower.

Tie strapping to a Power Steering hose may be necessary.



Tank wiring entering engine bay area (E36)

The hose will have an Orange wire and 6mm tubing.

Install the On & Off switch with pump controller. The

GREEN or YELLOW wire (from the switch) needs to be connected to the ignition circuit (Switched power) It will have to be routed through the firewall grommet towards the steering column. We recommend having it run through the fuse box using the grommet supplied by BMW. This is where the main factory wiring harness passes through the fuse box.



Controller uses 4 main wires. RED to constant power. YELLOW wire from controller is connected to other side of the On & Off switch, which should source power from ignition. BLACK wire to suitable body ground. ORANGE wire from back of car to the ORANGE wire from the controller. This sends ground to the pump to operate.

ENGINE BAY INSTALLATION:



Mount ON/OFF switch in a suitable location. Away from water. Can be mounted with or without universal bracket.



E46 M3 ECU box on the driver's side of the car can be used to store controller. Ignition and constant power can also be sourced in here.



ALWAYS TEST POWER SOURES WITH MULTIMETER.

This is switched power from the ignition. Route yellow wire from controller to ON/OFF switch outside the box and then connect other leg (Yellow also) of ON/OFF to this Red(switched power) wire. ON/OFF switch provided in case system needs to be disarmed in winter. **E46 M3 only**



Connect Red wire from controller to constant power to keep controller memory. **E46 M3 only.**



Mount BLACK ground wire from controller to ground lug on fire wall.



Pictures from a E36 Use similar method for E46 323,325,328,330.

Remove the under dash panel on the driver's side to remove the knee bolster. The green wire can now be pulled through the firewall grommet.





By Pass valve with vacuum hose with controller vacuum line "T" in.

Locate the ignition key wires just below the ignition switch. You should see a white plastic plug with a RED VIOLET, GREEN wires.

Locate the green wire; this is the wire that you will be jumping onto for power to turn on the system.

Use the supplied jumper and piggy back this wire; connect it to the (Green or Yellow from the ON/OFF switch) THIS CONCLUDES THE WIRING INSIDE THE CABIN.

If you have an S/C car, there will be a By Pass Valve. Locate the by-pass valve, remove the vacuum hose and install the supplied vacuum hose with "T" connect. Now connect the vacuum line from the "T" to the vacuum line on the controller box. E46 M3 super charged cars can be "T"d into the line leaving the nipple on the Black part of the BOV.

VACUUM SOURCE MUST BE AFTER OR DOWNSTREAM OF THE THROTTLE PLATE.



Mark a spot on the discharge pipe from the S/C where the nozzle will be installed as per photo shown. (Housing and nozzle). Thin pipes will need an embossment to be welded on. Remove the pipe and take to the workbench. Drill the pipe with a drill bit (21/64) and use the supplied tap (1/8 27 NPT) to make the threads.

Some pipes supplied with kits will be pre drilled.

Install the supplied nozzle.







Nozzle can be changed or cleaned by unscrewing it from housing.

Do not over tighten. The screen only needs to be snug. The nylon washer between the nozzle and the housing is reusable.

Nozzle size: Dot mark 1 Dot 130cc/min 2 Dot 315 cc/min 3 Dot 550 cc/min

WIRING DIAGRAM



Variable controller optional wiring.

Pump: Red wire to battery positive. Black wire to Orange wire on controller.

Pump controller: Black to ground. Yellow to ON/Off switch then to switched 12 volts (+). Red to constant 12 volts (+)

Fluid level Switch: Brown and White wires on controller (polarity unimportant) WIRES WILL BE JOINED IN ABSENCE OF LEVEL SWITCH.

- LED: Grey controller wire to LED light then to battery positive. Mount LED in cockpit if the pump is off and no errors the LED will be off. If there are no errors and the pump is running the LED will vary with the pump speed. Errors will be indicated with a flashing LED.
- ARM Switch: Yellow wire connects to an ARM (on/off) switch from (Ignition) system active with 12 volts (+).
- Boost Safe: (optional) Green wires for timing retard or boost dump solenoid (1.7a Max)

Pressure signal: (optional) Blue wire 0-5vdc (.328v= 0psig, 5vdc= 38psig).

Error Checking

Boost safe output is enabled once a system error is encountered. The controller LED or the cockpit LED will flash, indicating the error with the highest priority, on the list.

- Pump Driver Open: LED will flash a count of 2 and repeat. Open circuit between battery and pump.
- Pump Driver Shorted: LED will flash a count of 3 and repeat. Current exceeding 15A. Driver will shut down and try to restart every second till short is fixed.
- Battery Voltage out side parameters: LED will flash a count of 4 and repeat. Range is below 8.5v and above 16v. Driver will shut down till voltage returns within the parameter.

Short Circuit: Slight buzzing from the pump.

MAINTENANCE	
Nozzle and Holder	Disassemble nozzle and holder periodically and clean any debris from strainer.
Tank and Pump	Wash tank out if there is signs of contamination.
Car Trunk	Methanol is highly corrosive; any spillage in trunk must be washed out with fresh water immediately.

MIXTURE RECOMMENDATIONS:

Ratio of Methanol to water must be no more than 49% Methanol to 51% Distilled water.

MORE THAN 50% METHANOL IS FLAMABLE. METHONAL IS HIGHLY CORROSIVE

Ratio of Alcohol (Isopropyl 70%) is 80% distilled water to 20% Alcohol (1 Gal water to 1 quart Alcohol)

Use only distilled water if mixing **PRIMING AND TESTING THE SYSTEM:**

This must be carried out before testing anything else on the system.

A) Turn on ignition switch to position #2 without starting the engine.

B) Mix the water / Methanol as per the recommended ratios (49% Methonal/51% Water) or used pre mixed (supplied by many manufacturers) fill the tank.

C) With the nozzle pointed into a container, press and hold the system test button. The pump should start to run slowly, reaching maximum speed in approx 7 seconds. This should also purge the air out of the line, and show up any possible leaks. In cases where the system will not prime (air trapped between pick up and check valve), you will have to release the plastic line from the inlet of the check valve and then run the pump, once the liquid starts to flow push the line back into the check valve (make sure hose is all the way into check valve)

D) Active will usually set the start PSI value depending on the nozzle and application been used. (Usually 50% of the Max boost). If this is a custom application it is suggested that tuning is started with the smallest nozzle and a start PSI of 25%, and work your way up.

Full PSI is the pressure desired when the pump is at full speed.

Active Autowerke Kits will come preset depending on the (SC) kit and application (Model).

WARNING

Running the system below half tank could cause cavitation under heavy cornering (track conditions) which could cause the pump to loose it's prime.

WARRANTTY

Active Autowerke (AA) will warrant the parts of the Methanol /Alcohol Water Injection kit for a period of 12 months unlimited mileage from the date of purchase. Parts that fail within the 12 month period will be replaced or repaired after it is determined by AA that the product has failed due to defective material or workmanship. In no event shall such warranty exceed the original purchase price and is limited to repair or replacement of the AA part. AA will not be responsible for any consequential, incidential or special costs incurred due to failure of the product, improper installation, abuse, accident or misuse. Unauthorized repairs, alterations and use of more than 50% Methanol concentration will void the warranty.

AA is not responsible for electronic products (controller) that are incorrectly wired or installed, and therefore cause damage to the controller box or the cars electrical system.

Warranty is not transferable and must be transportation paid to AA with proof of purchase.

Return Authorization number (RA#) required.



Active Autowerke E46M3 HKS-GTS8550 Level 2 Fuel System

This fuel system is designed for the Active Autowerke Level 2 – HKS equipped GTS8550 supercharger system. We recommend a professional technician to perform the installation.

Description:

The fuel system was developed to allow the E46M3 to produce 600 + HP where the stock fuel system was deemed inadequate, the stock fuel system lacked the following:

 Maintaining the 5 bar fuel pressure with the stock fuel pump above 9 psi of boost pressure
Volume necessary due to the pump and fuel line combination

A new designed fuel system with larger fuel line diameter and a second in line fuel pump was necessary to support the target HP without raising the fuel temperature. The new fuel system has the following parts for a semi-bolt on installation. The fuel system consists of:

1) New larger size AN-6 bulkhead fitting at original fuel pump cover

2) Larger flowing fuel line from original fuel pump AN-6

3) New in-line high flowing 255L/hr. fuel pump

4) New in –line high flow AN-6 fuel filter with replaceable 10 micron filter element

5) New adjustable fuel pressure regulator with mounted fuel pressure gauge

6) New fuel rail designed to support the new power developed by the supercharger

7) Various support brackets and AN-6 fittings

Instructions:

1) Dis-connect the battery

2) Remove the rear seat base by pushing backwards and lifting at the same time, remove the seat base and store aside.

3) Locate the fuel pump access cover and remove it (4 X 10 mm head nuts) 4) Remove the fuel pump quick disconnect fitting

5) Dis-connect the fuel pump/fuel gauge electrical connection

6) Take a blunt punch or flat blade screwdriver and hammer and slowly remove the pump cover access hole cover by taping the large black nut, remove in a anticlockwise direction. Pull the pump housing / bulkhead in one piece.

See pictures below:





7) Raise the car and remove all fuel lines except the return fuel line between the OE fuel pressure regulator and the fuel tank, filter and feed line from regulator/filter to engine bay. Remove hard metal fuel lines as well. See picture below showing the lines removed from the vehicle:



8) Take the bulkhead/pump assembly and remove the plastic flexible fuel line from the fuel pump, the line is pushed on and can be removed if you carefully twist it while pulling, tie the

line as shown. Note: do not remove the fuel line from the bulkhead, remove it from the pump outlet only!! See the picture below:



9) Use the pictures below to locate the position to drill a new hole for the new fuel line bulkhead fitting, install the supplied 90 degree AN-6 bulkhead fitting, we recommend to use an epoxy resin to seal the fitting, epoxy such as JB Quik (sold under the JB weld brand) is a good reliable epoxy that will cure in a few hours, connect the new hose to the factory fuel pump with the hose clamp supplied, tighten the fitting against the bulkhead fitting:





10) You are now ready to install the newly modified pump assembly with the new bulkhead attached. Install the pump in the reverse order, make sure that the rubber gasket is securely seated. Install the original fuel line fitting on the old bulkhead and cap off with cap supplied. You are now ready to install the fuel line from the OE pump down to the second fuel pump which will be mounted to the underside of the vehicle.



11) Locate the supplied fuel line that connects from the OE fuel pump to the new in line fuel pump, feed the fuel line in the same routing as the OE fuel line and secure to the underside of the vehicle as shown in the picture below:





- 12) Locate the supplied in line fuel pump and mount to the underside of the vehicle as shown, you must drill 2 holes to allow the clamp brackets to be used to support the new pump
- 13) Take the OE fuel filter and remove the rubber sleeve that holds the filter. Cut it to length and slide it on to the new filter, mount the filter in the OE bracket as shown.







14) After mounting the filter in place connect the supplied fuel line and route it to the engine bay to the new location of the supplied adjustable fuel pressure regulator, below is the picture of the new fuel pressure regulator mounted



- 15) Connect the supply fuel line from the fuel filter to the regulator on the rear side fitting and tighten.
- 16) Install the new fuel rail with the supplied fuel injectors, make sure you use motor oil to lubricate the O-rings on the fuel injectors before installing them into the intake manifold and fuel rail. See picture of fuel rail mounted.
- 17) Install fuel line from the front of the regulator to the fuel rail, tighten fittings.



18) Locate the supplied fuel return line and route it from the fuel pressure regulator down under the vehicle to the location of the OE fuel return line. Connect the return fitting at the base of the regulator and tighten it, then connect the OE fuel return line using the supplied brass fitting, see the picture below.



- 19) Route the electrical wire from the in line fuel pump and route it along the fuel line back up into the OE fuel pump wiring under the rear seat. Connect the wires so that they piggyback the OE wires. The in line pump will follow the variable voltage with the OE pump by way of the fuel pump module.
- 20) This concludes the installation of the fuel system. Re-connect the battery and locate the fuel pump relay module (located in the rear of the car near the right rear shock tower). Bridge the fuel pump relay module wires to run the pumps. Do not start the vehicle as yet. Adjust the fuel pressure at the regulator by turning the adjustment screw on top of the regulator, set the pressure to ~51-52 psi. Check for fuel leaks. If all is OK then un-bridge the fuel relay module wires and install the module. Re-install the pump access cover, seat and all trim.
- 21) Start the vehicle and check the fuel pressure gauge, you should see ~ 42-43 psi with the vacuum line connected to the fuel pressure regulator, if not adjust until you have that pressure. Lock the adjustment nut.

Below is a schematic diagram of the fuel system layout for reference. If you have questions, please email or call us during business hours. www.activeautowerke.com

This concludes the installation.



