

ESS TUNING



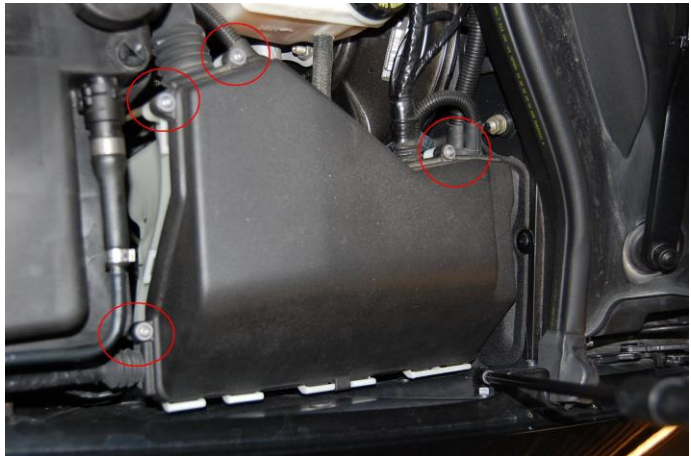
Installation Manual: **BMW Z4M VT1-445 and VT2-500 Systems.**

Step 1: Remove the negative battery connector.

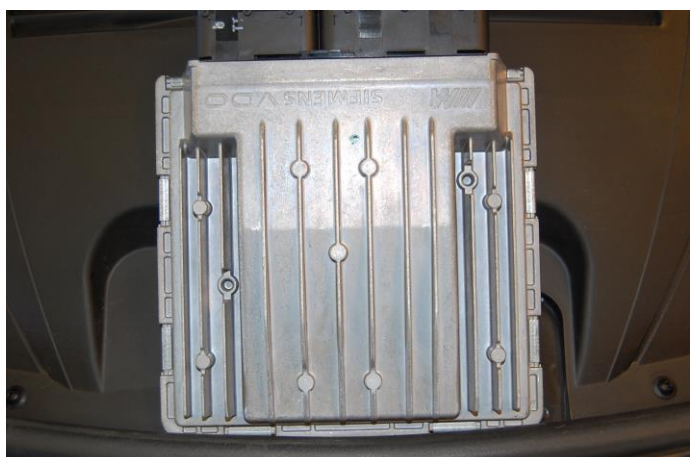
Step 2: Locate the black cover on top of the ECU box.



Step 3: Unbolt the 4 bolts holding the cover using a T20 torx driver and lift the cover aside.



Step 4: Remove the ECU and send it to ESS for reprogramming.



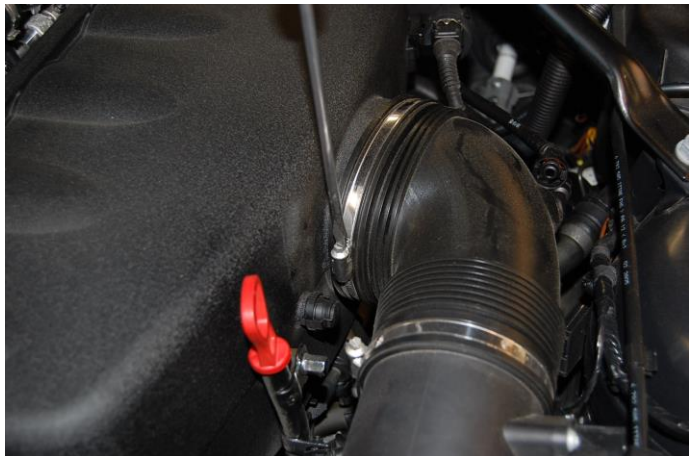
Step 5: Disconnect the electrical connection for the MAS air sensor.



Step 6: Disconnect the plastic tube coming from the brake booster line going into the inlet tube going from the mass air sensor to the inlet.



Step 7: Loosen the clamp holding the inlet tube to the intake using a flathead screw driver



Step 8: Lift the air filter box out of the car.



Step 9: Unclip the crankcase ventilation breather hose from the inlet manifold.



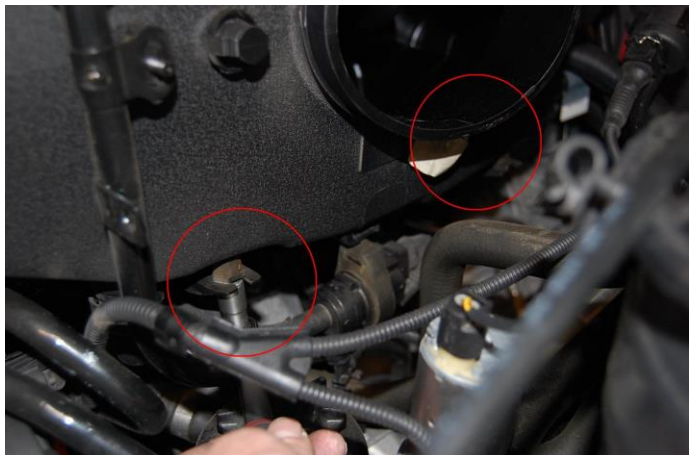
Step 10: Unbolt the bolt holding the dipstick tube to the inlet manifold using a 10 mm socket.



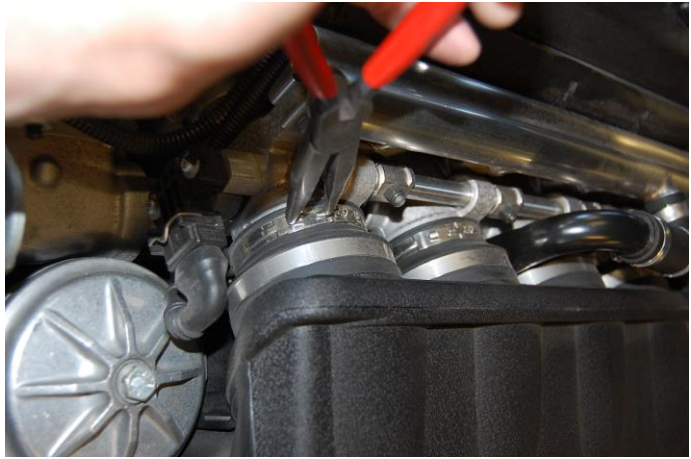
Step 11: Unclip the idle control valve hose from the underside of the manifold.



Step 12: Unbolt the two M6 bolts holding the manifold to the steel bracket on the underside of the manifold using a 10mm socket.



Step 13: Loosen the 6 clips holding the manifold to the throttle bodies.



Step 14: Lift the manifold up in the front and remove the oil drain hose on the underside of the manifold. Lift the manifold out of the car.



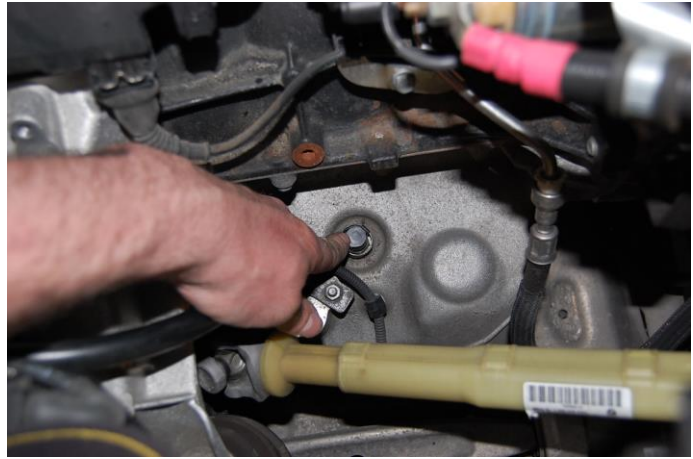
Step 15: Unbolt the M8 bolt holding the support bracket for the inlet manifold using a 13mm socket. Remove the bracket.



Step 16: Remove the oil drain hose from the side of the oil pan.



Step 17: Plug the hole using the supplied ESS plug.



Step 18: Unbolt the 7 bolts holding the front bumper on the top using a T30 Torx driver.

Step 19: Unbolt the 7 bolts holding the bumper on the underside using a 8mm socket.



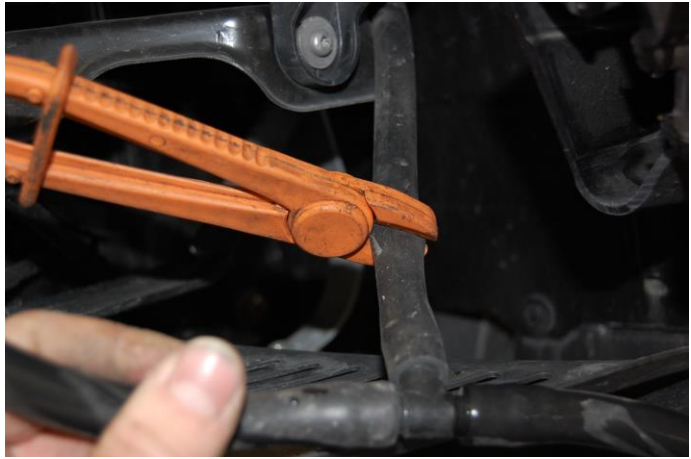
Step 20: Push the centre of the clip holding the inner fenders to the bumper.



Step 21: Push in and back to release the bumper on each side.



Step 22: Lift the bumper a little away from the car and block off the hose for the front headlight washers.



Step 23: Unclip the hose from each washer nozzle and lift the bumper aside.



Step 24: Unbolt the 7 bolts using a 8mm socket holding the cover under the engine. Lift the cover aside.
ONLY ON VT2-500



Step 25: Unbolt the bolt holding the oil lines going to inner fender plastic using a 10mm socket. **ONLY ON VT2-500**



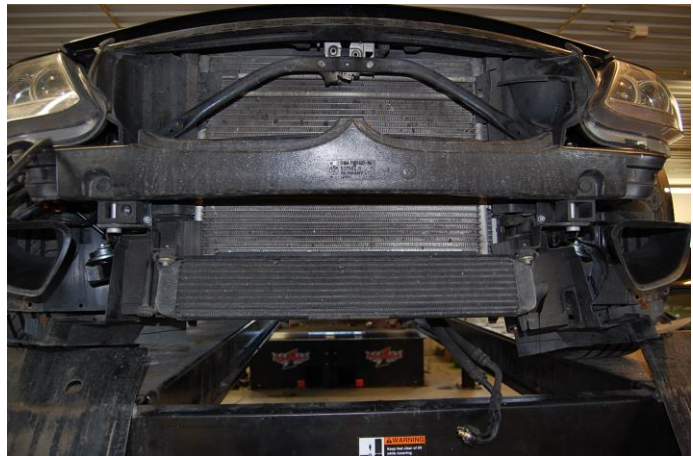
Step 26: Unbolt all the bolts holding the front part of the inner fender on each side. **ONLY ON VT2-500**



Step 27: Unbolt the bolt holding the oil lines to the front cooler using a 6 mm hexagon tool and drain the oil. **ONLY ON VT2-500**



Step 28: Unbolt the 4 bolts holding the front oil cooler element using a 5mm hexagon tool and a T50 torx socket and lift the oil cooler aside. **ONLY ON VT2-500**



Step 29: Remove the front part of the inner fenders on each side. **ONLY ON VT2-500**

Step 30: Remove Factory Oil Cooler lines. **ONLY ON VT2-500**

Step 31: Unbolt the two torx bolts holding the lock for the hood using a T30 torx driver. **ONLY ON VT2-500**



Step 32: Installed supplied ESS oil cooler and lines using the stock bolts. Connect the hoses to the oil adapter. Route the hoses and adapter in the way shown in the picture and secure the bolts. **ONLY ON VT2-500**



Step 33: Install the intercooler. Use the standard torx bolt that previously was holding the stock oil cooler. Adjust the cooler to center position. Do not secure the bolt fully at this moment. **ONLY ON VT2-500**



Step 34: Remove the belt for the air condition compressor using a 16 mm socket, Push the tensioner clockwise to release the tension on the spring.



Step 35: Unclip the plastic clip in front of the tensioner pulley for the main engine belt.



Step 36: Remove the belt using a 8mm hexagon tool on the centre bolt for the tensioner pulley. Push the tensioner pulley clockwise to release the tension.



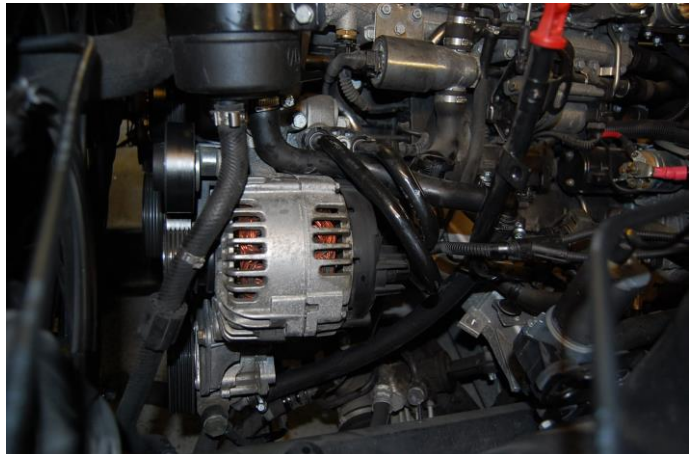
Step 37: Unclip the clamp holding the power steering hose from the tank to the power steering pump on the pump side and drain the fluid.



Step 38: Unbolt the two M8 bolts holding the power steering tank using a 13mm socket.



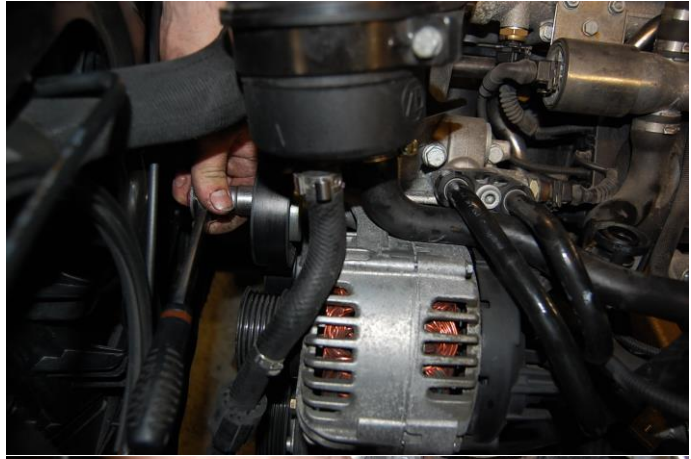
Step 39: Install the 400mm 5/8in hose with a 90degree angle in one end to on the inlet on the power steering pump and install the 90degree angle into the hose now coming from the power steering pump. Route the hose like it is shown in the pictures.



Step 40: Remove the plastic cover on the outside of the upper idler pulley (top alternator bolt) using a flathead screwdriver.



Step 41: Unbolt the two bolts holding the alternator using a 16mm socket wrench.

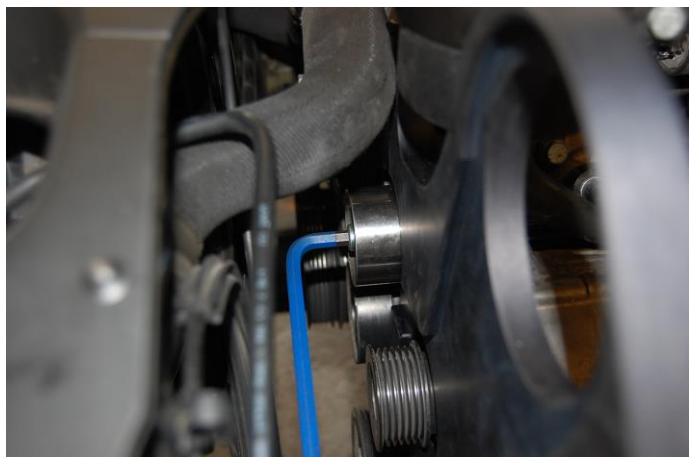


Step 42: Remove the nut holding the left engine mount using a 16mm socket wrench. To get the lower bolt for the supercharger bracket installed the engine will need to be lifted on this side.



Step 43: Jack the engine a little up on the left side using a floor jack. This is done to make it possible to install the lower bolt for the main supercharger bracket.

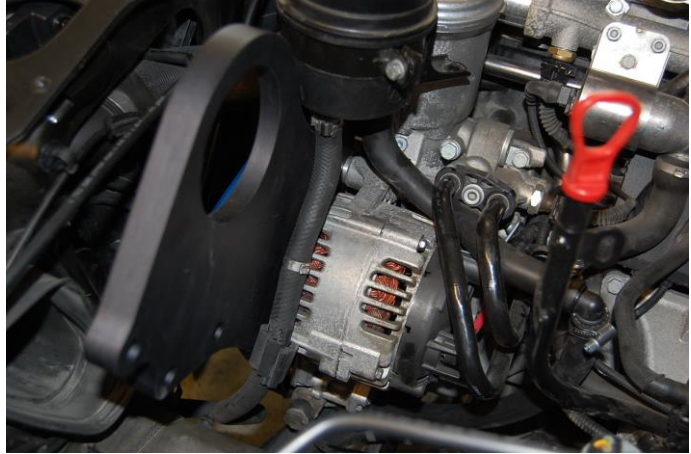
Step 44: Install the main bracket. The long spacer goes on the bottom bolt between the bracket and the alternator. On the top bolt you install 1 idle pulley with spacer and the short distance spacer between the bracket and the alternator. Secure the bolts using a 8 mm hexagon tool.



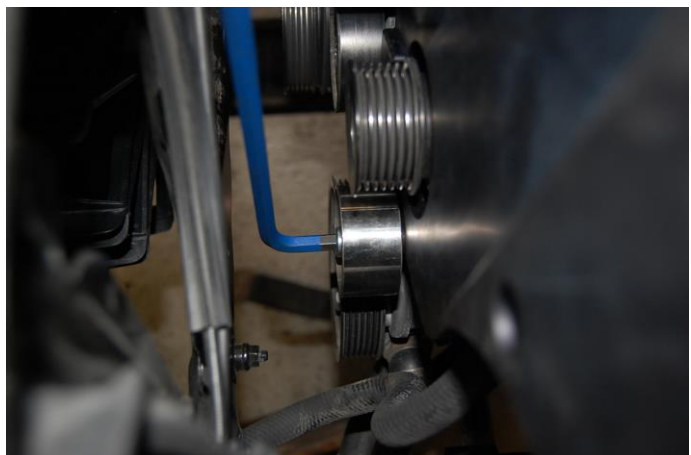
Step 45: Drop the engine back into the engine mounting and secure the nut.



Step 46: Install the power steering tank bracket in the top mounting point on the bracket. Use one of the stock bolts to secure it.



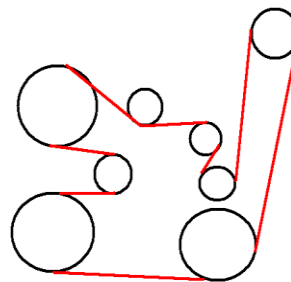
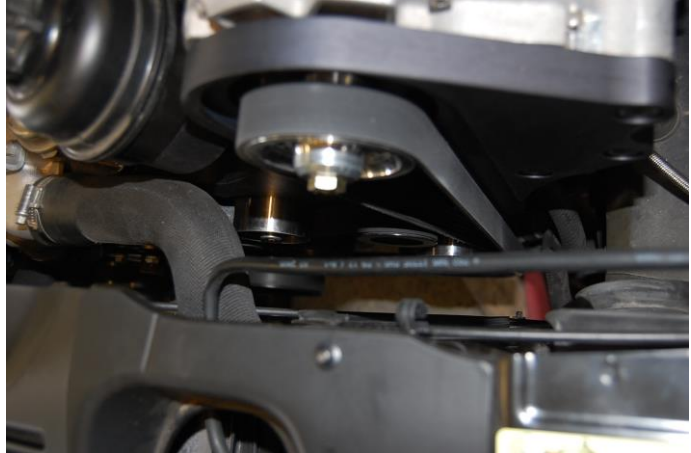
Step 47: Install the second idler pulley in the threaded hole at the bottom of the bracket. Remember the spacer between the bracket and the pulley. Secure the bolt using a 8mm hexagon tool.



Step 48: Install the supercharger to the main bracket. Use the supplied 3 x M12x35mm bolts. Secure the bolts using a 10mm hexagon tool.



Step 49: Install the supplied ESS belt according to the picture/diagram and reinstall the plastic cover on the tensioner pulley.



Step 50: Reinstall the air condition belt.



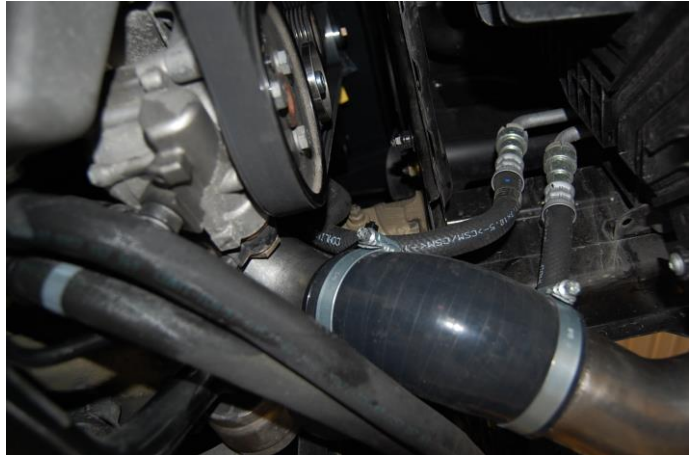
Step 51: Remove the bracket holding the power steering hoses using a 13 mm socket. **ONLY ON VT2-500**



Step 52: Install the supplied pressure tube from the supercharger to the inlet on the front mount intercooler. Make sure you have clearance towards the belt and the chassis of the car. Secure the clamp using a 7mm socket. **ONLY ON VT2-500**



Step 53: Secure the power steering hoses using supplied tie wraps. Make sure it does not conflict with the belt.



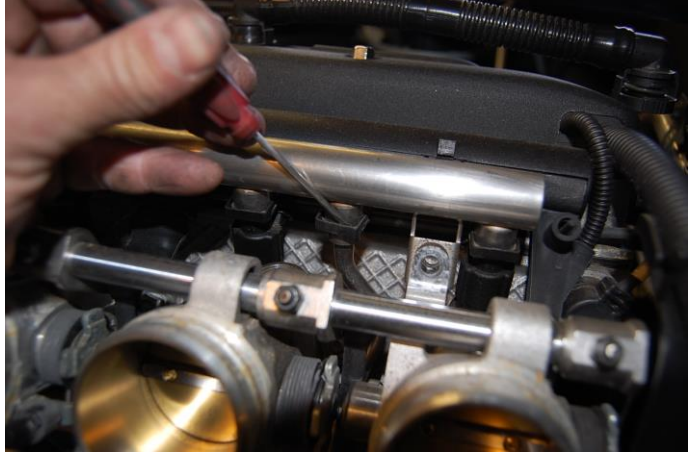
Step 54: Unbolt the two M6 bolts holding the fuel rail using a 10mm socket.



Step 55: Unclip the idle control valve hose from the vacuum rail and lift the rail aside.



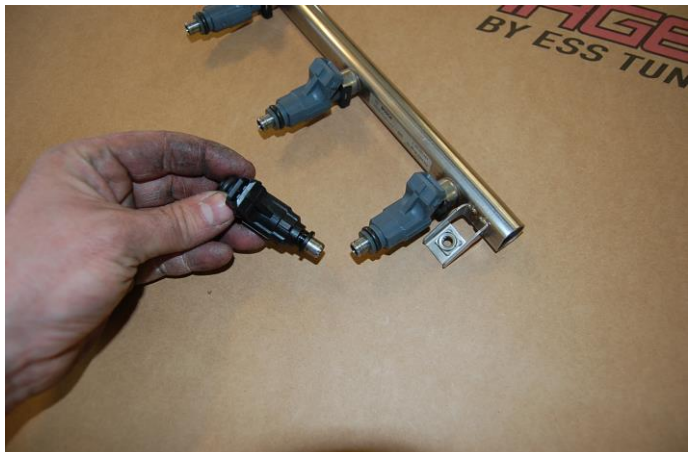
Step 56: Remove the clip holding the fuel rail to the fuel line.



Step 57: Lift the fuel rail up and disconnect the electrical connections using a small flathead screwdriver.



Step 58: Remove the lower o ring from the stock injector and install it on the new supplied ESS injector.



Step 59: Drill the two holes holding the fuel rail to 8 mm. Cover up all holes on the engine make sure you do not get any particles into the fuel system or intake.



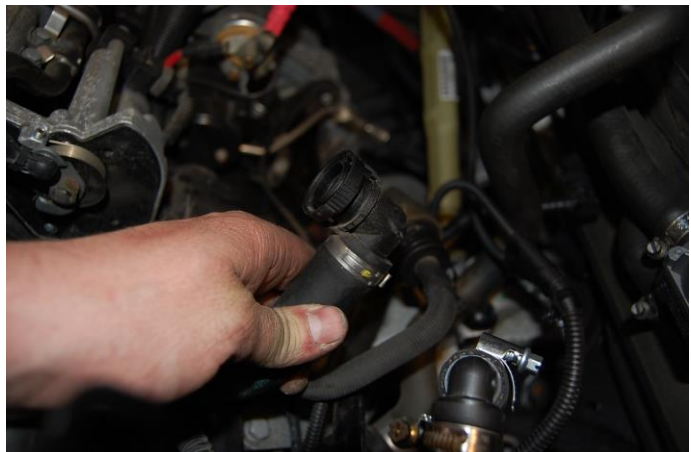
Step 60: Change the injectors and reinstall the fuel rail, fuel line and vacuum rail. Make sure all the electrical connections are ok. Use silicone spray on the o rings to make the install easier.



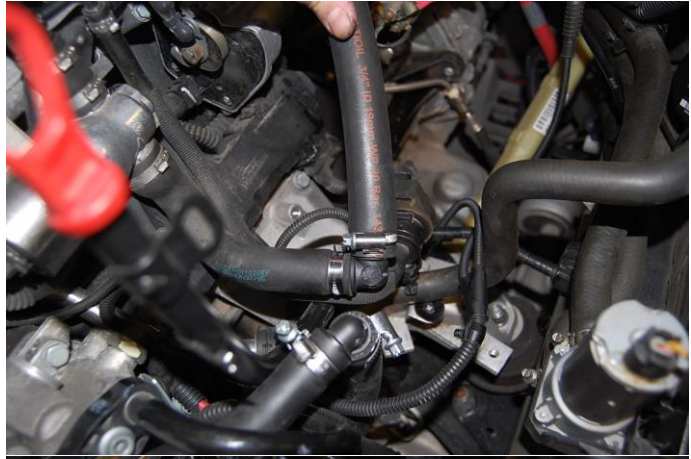
Step 61: Remove the plastic clip holding the water hose.



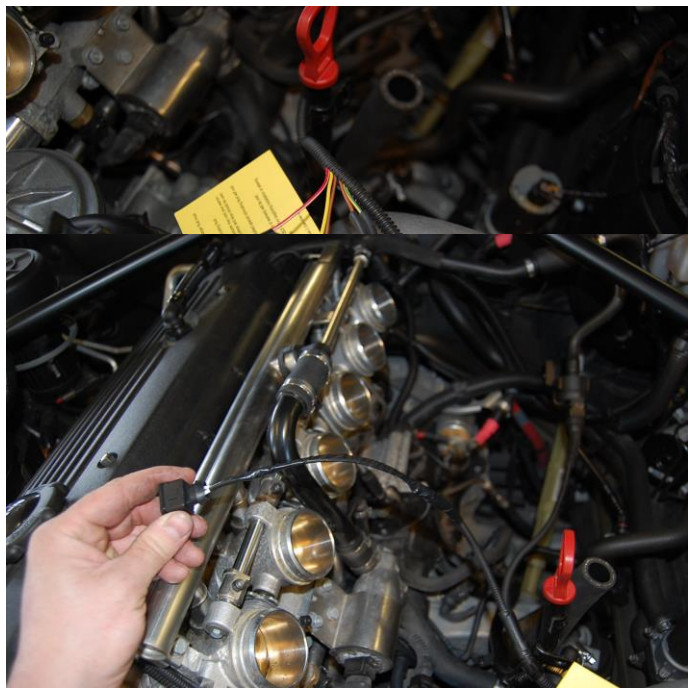
Step 62: Remove the plastic quick connector located on the idle control valve hose.



Step 63: Install the supplied 190mm 3/4in hose using supplied clamps.



Step 64: Cut the wires going to the mass air sensor connection about 2in (5cm) from the connector. Connect the wires for the temp sensor connector to the yellow with blue line and brown with orange line wires. Solder the connections and isolate using heat shrink. Isolate the ends on the other wires and isolate the whole cable all the way to the temp sensor connector.



Step 65: Install the new supplied manifold. Use the supplied clamps. Make sure the clamps does not conflict with the throttle body operation.



Step 66: Connect the connector for the temp sensor.



Step 67: Connect the 3/4in hose from the idle control valve to the outlet on the manifold. Secure the clamp.



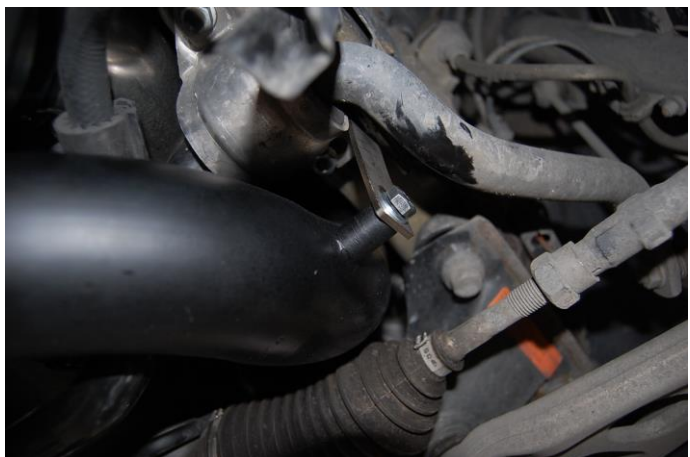
Step 68: Install the bracket for the dipstick tube using supplied bolts.



Step 69: Pull the rubber cap from the vacuum outlet on the back of the vacuum rail and connect the vacuum hose from the bypass valve. Secure the hose using a tie wrap.



Step 70: Install the supplied pressure tubes from the intercooler to the inlet manifold. Secure the tube using the supplied bracket. Secure the clamps once everything is adjusted. **ONLY ON VT2-500**



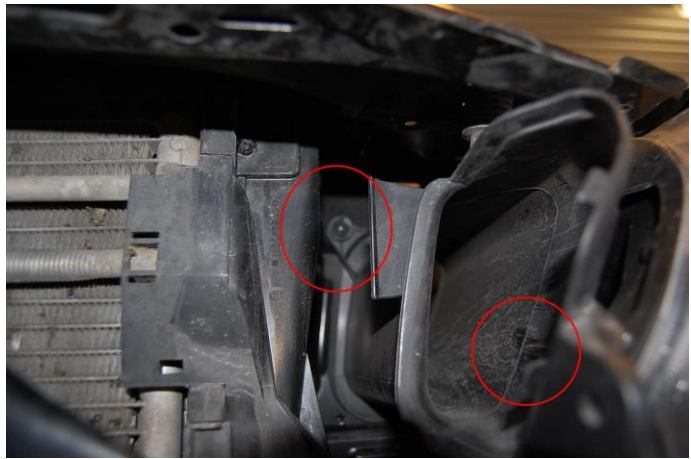
Step 71: Secure the bolts holding the front mounted intercooler. **ONLY ON VT2-500**



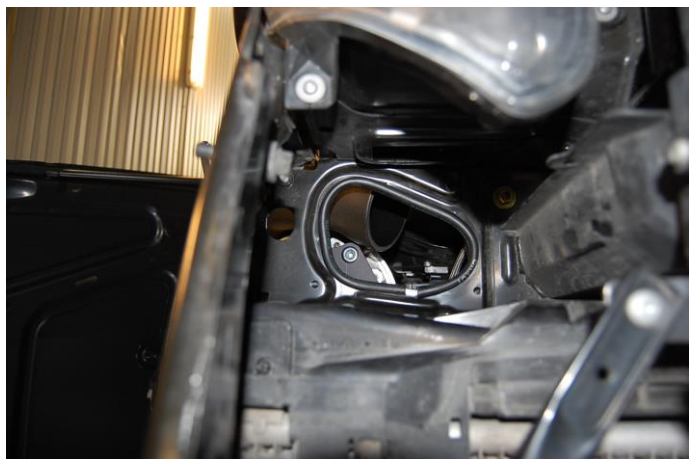
Step 72: Remove the clip holding the front part of the air duct for the air filter. Unbolt the two bolts holding the plastic cover around the air duct. Remove the plastic.



Step 73: Locate the two plastic clips holding the air duct and remove them. Pull the air duct out.



Step 74: Remove the rubber gasket and install the supplied ESS weather strip around the hole.



Step 75: Install the air filter with 3.5 inch flex hose through the hole. It is very tight to get the air filter into position.



Step 76: Install the supplied ESS plastic inlet tube. Adjust the clearance towards the inner fender and secure the clamps.



Step 77: Cut the plastic hose loose from quick connector on top of the valve cover. Install the supplied 700mm 5/8in hose from the connector on top of the cover and to the inlet on the inlet plastic tube for the supercharger.



Step 78: Install the 38mm 90 degree hose from the bypass valve to the inlet on the plastic inlet tube. Secure the clamps.



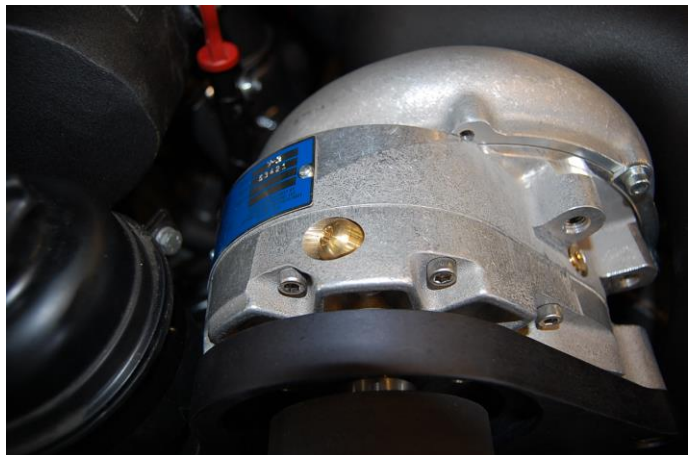
Step 79: Cut the plastic tube going into the brake booster line and pull it off.
Install the supplied ESS hose from the brake booster outlet to the inlet on the plastic inlet tube for the supercharger.



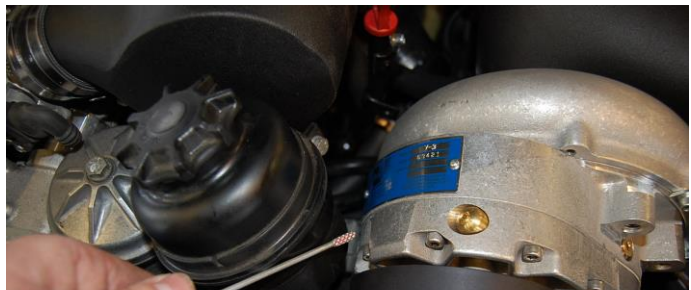
Step 80: Secure wires and hose using supplied ESS tie wraps.



Step 81: Change the transport plug on top of the supercharger with the breather plug.



Step 82: Check the oil level in the supercharger using the dipstick tube. There is most likely to much oil in the charger. Adjust the level by draining out of the drain hose until the oil level is at max on the dipstick.



Step 83: Secure the drain hose using supplied tie wraps.



Step 84: Cut the plastic inner fender to make room for the pressure tubes and oil lines for the oil cooler and reinstall them using standard bolts.
ONLY ON VT2-500



Step 85: Fill the power steering reservoir with correct oil.

Step 86: Check the oil level on the car and refill. Remember that some oil was spilled when the oil cooler was installed.

Step 87: Reinstall the programmed ECU.

Step 88: Start the car and let it idle. Check for leaks around the oil cooler. If everything looks ok let the car idle for 20 minutes.

Step 89: Install the front bumper.



Step 90: Reinstall the cover under the engine.



Test drive the vehicle for a few miles under normal driving conditions, listen for any noises, vibrations or anything that does not seem normal. The supercharger makes a little noise at idle which is normal. Drive the car soft for the first 320km/200miles to break it in.

For additional technical support please contact:

Email: Support@esstuning.com

Phone: 004741558555

The V3 Supercharger Synthetic Lubricate should be changed every 7500miles/12000km.

The oil can be bought directly from Vortech at: www.vortechsuperchargers.com

We have included the maintenance guide for the V3 here:

V-3 LUBRICANT



This special fluid is required for proper maintenance of the V-3 supercharger. Use of any other fluid will void the warranty and may cause component failure.

Fluid Level Checking Procedure

1. Ensure that the .06" copper sealing washer is located on the dipstick base.
2. Thread the clean dipstick into the unit until it seats.
3. Once the dipstick has seated, remove the dipstick from the unit. Fluid should register in the crosshatched area on the dipstick.
4. DO NOT OVERFILL!! Drain excess fluid from the unit if it is above the maximum level on the dipstick.

V-3 Maintenance Notes

1. Check the supercharger fluid level using the dipstick at least every 2,500 miles.
2. Initial supercharger fluid change must be performed at 2,500 miles. The supercharger fluid must then be changed at least every 7,500 miles.
 1. Drain the fluid, re-fill the unit only with 4 oz. of Vortech supplied lubricating fluid.
 2. Confirm proper oil level using the dipstick. DO NOT OVERFILL.

Z4M VT1 and VT2 Troubleshooting

-Always check and make sure no error codes are present.

-Do not use any other fuel pump than OEM.

-If you have any running issues and no error codes present, replace spark plugs and coils.

-Do NOT use any kind of stepped headers, this ruins the wideband O2 feedback signal and the car will have driveability issues.

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