Installation Manual

P/N 601-0026/27 N54 Inlet System

Warning :

This installation is not recommended for a novice or the new guy in the shop. Use caution when installing not to damage any factory components or components included in this kit. If you are not experienced in working on cars we recommend taking this kit to your local BMW Performance shop for installation.

Note: Precision Raceworks holds no responsibility for any damage that occurs or laws that are broken in the installation or use of this kit. This kit is intended for off road purposes only.

N54 Turbo Inlet System Parts List

Qt y	Descript ion	Qty	Descript ion
2	Silicone Inlets	2	Inlet Clamps
2	Air Filters	1	PCV Elbow
2	Air Coup lings	2	PCV Clamps
1	Coolant hose	2	Long Bolt s
1	PCV hose	2	Short Bolts
1	Vacuum hose	2	Nuts
4	Filter Clamps	5	Zip Ties
4	Coolant Clamps	3	Tank Brackets
2	Coolant Couplings	1	Wire Harness

Precision Raceworks LLC
Magnolia, TX 77354
https://www.precisionraceworks.com
Sales@PrecisionRaceworks.com

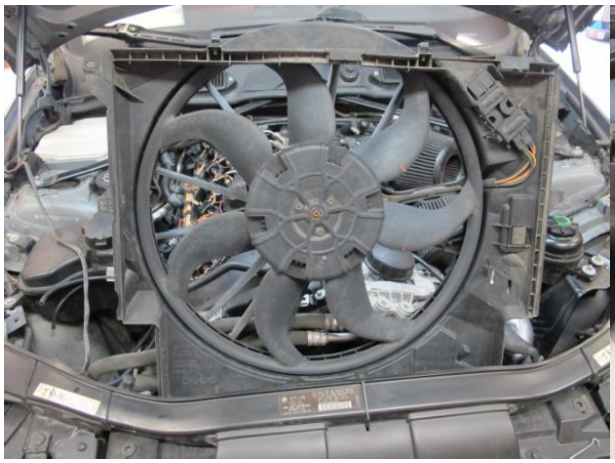
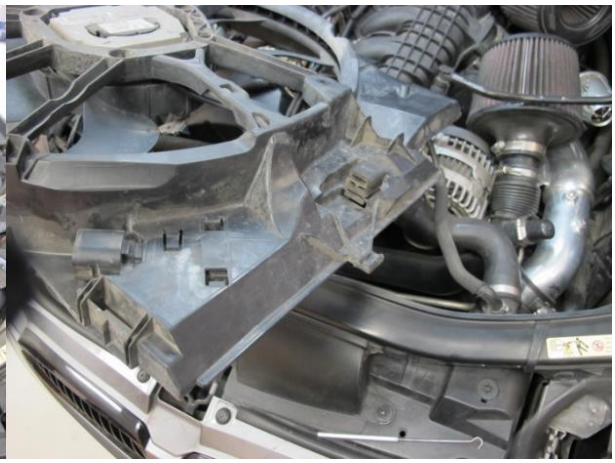
1. Start by removing stock air box and inlet feeding from above front bumper (or any aftermarket are filter system you might have).

2. Unplug radiator fan (plug is just behind top of bumper on drivers side close to headlight) by compressing the 2 clips (sometimes a screwdriver or pick tool helps). Once it is removed unclip it across top and lay it to side by coolant tank.

3. Remove the single torx screw on the passenger side top of fan shroud.

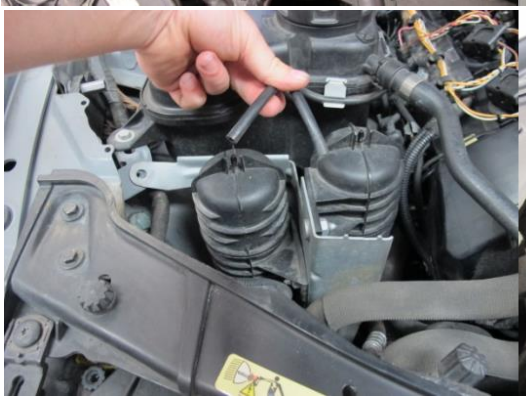
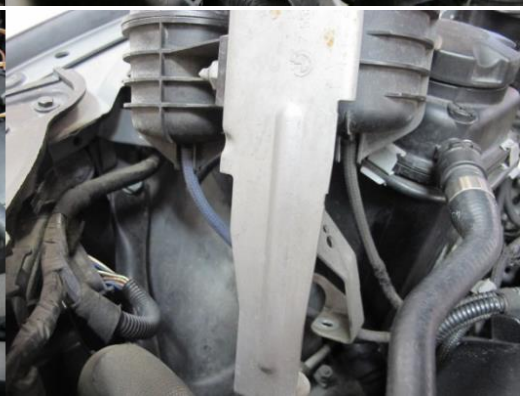
4. Jack the car up and place securely on jack stands (lift is recommended as it makes entire install much easier and safer but is not required).
5. Remove the belly pan from front and rear of car (it is held in place by 8mm bolts).
6. If your car is an automatic on the back side of the fan shroud will be the transmission cooler remove the screws securing it to the fan shroud.

7. Remove the fan shroud (look on the sides near top there are clips you push out with thumbs) it can be tricky to get past the fastener for piping coming up to charge pipe expect it to snag there and take your time working it past. Set fan aside in a safe location where it will not get stepped on.

8. Remove vacuum canisters (we recommend cutting the vacuum hose close to the canisters as the plastic nipples break off very easily and you will be replacing the hose with supplied vacuum hose anyways) Start by cutting the top two vacuum hoses about 1/2" from the end. Then unbolt the 3 bolt points for the bracket the canisters are attached to holding the bracket to the chassis of the car. Once this is done you can lift up enough to cut the other ends about 1/2" from the end as well. Set canisters aside for later.



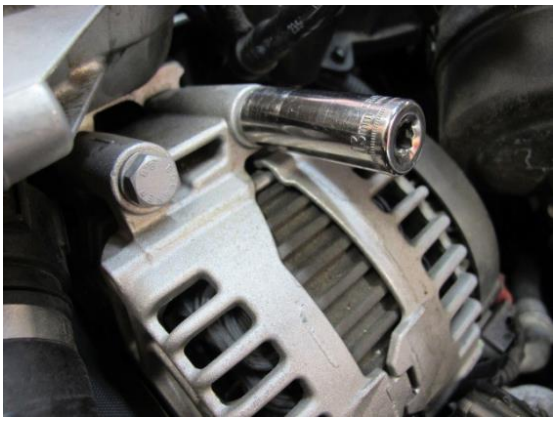



9. Prepping coolant tank for removal (you can drain full system at radiator for a little less mess but in our experience people always end up with some mess on the floor so we typically recommend draining less coolant but if you would like to drain full system now is the time). Unscrew the 2 bolts holding the coolant tank in but do not remove tank just yet.

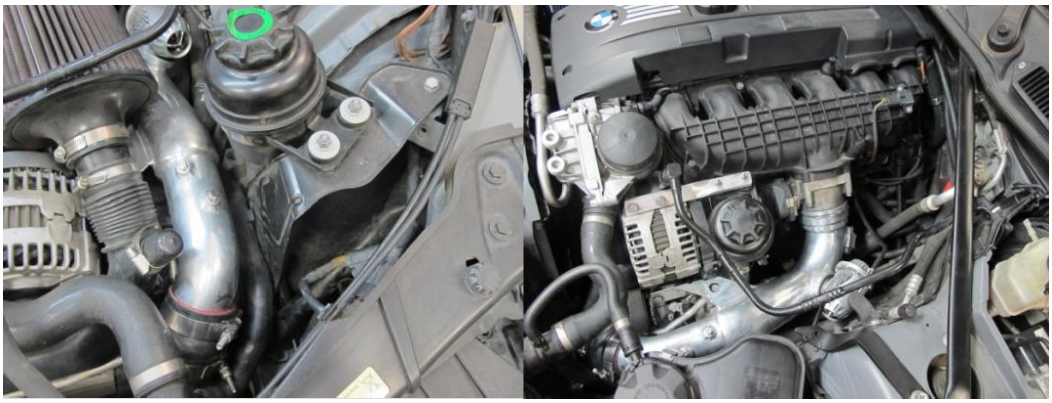
10. Remove coolant tank (If you have a vacuum system for removing coolant you can vacuum the tank out for cleanest method). For those who don't have vacuum the best method found is pinch both hoses (bottom hose and top hose) shut with hose pinch tools. Now remove the top hose it will make a small mess but not bad. Now pull the tank loose from the car if you haven't already. On the bottom side closest to strut tower you will find a plug for the coolant level sensor unplug this wire now. With the tank loose remove the lower hose and if you quickly tilt the tank back you will lose very little coolant. You can sit the tank on it's back and keep the coolant in it but we recommend using a couple plastic solo cups if you want to reuse the coolant or simply disposing of the coolant in the tank so it is empty and ready for install later on.

11. Remove the charge pipe it is held in place by the clip at the throttle body and a hose clamp. Be careful not to damage the sensor on the charge pipe it is recommended to use a pick tool to help remove it. (Depending on what charge pipe you have it might also be held in place by an insulated torx screw next to the alternator remove this as well if yours has one)

12. Remove the two 13mm bolts on top of the alternator. This is where the twisted bracket with 4 holes goes. One end has larger holes then the other, this side goes to the alternator.



13. Remove the power steering reservoir (two nuts) and unclip lines from frame rail. Using these two nuts and the longer bolts that came with your kit mount the reservoir to the bracket you just installed to the alternator (Reservoir can be mounted on top or below the bracket depending on your charge pipe just ensure the hose does not kink).

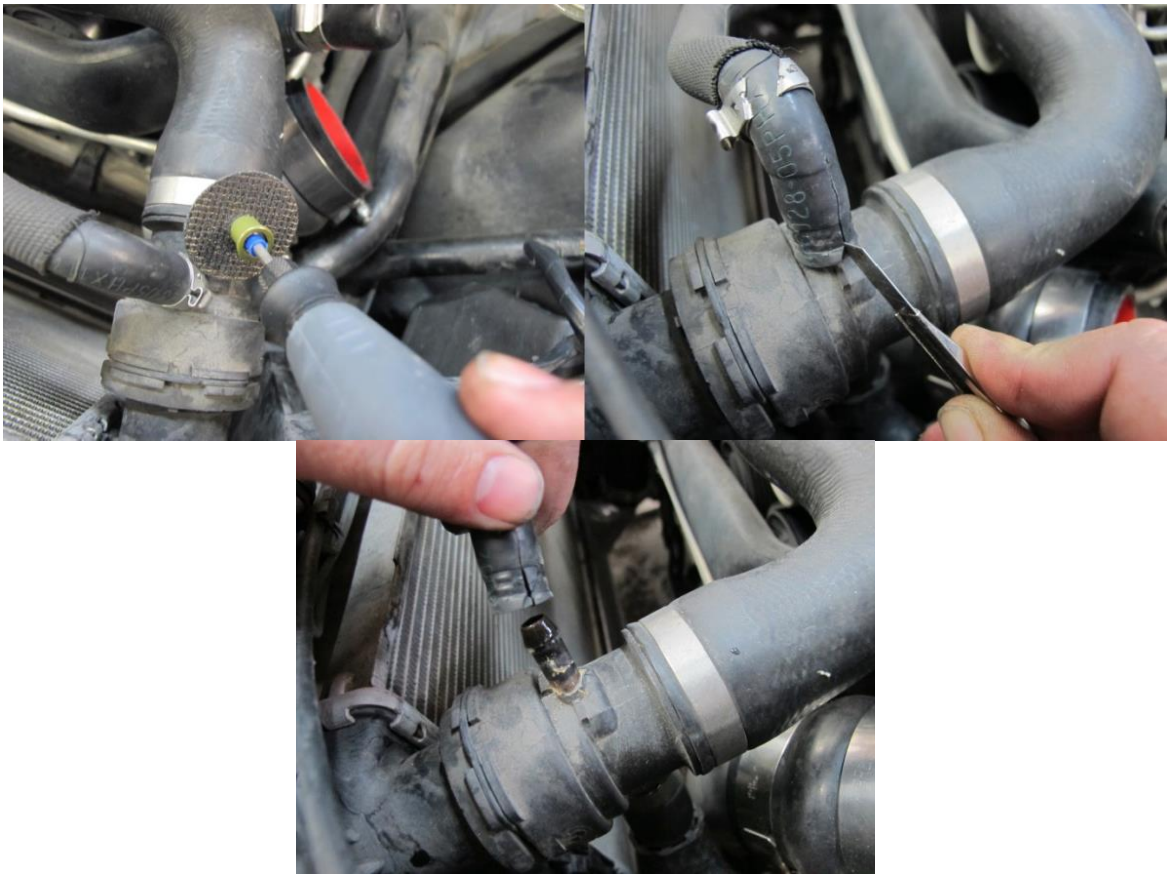


14. Remove the bracket that previously held the power steering reservoir and set it aside it won't be needed anymore. The bracket is held with 3 bolts two on frame rail 1 by fender.

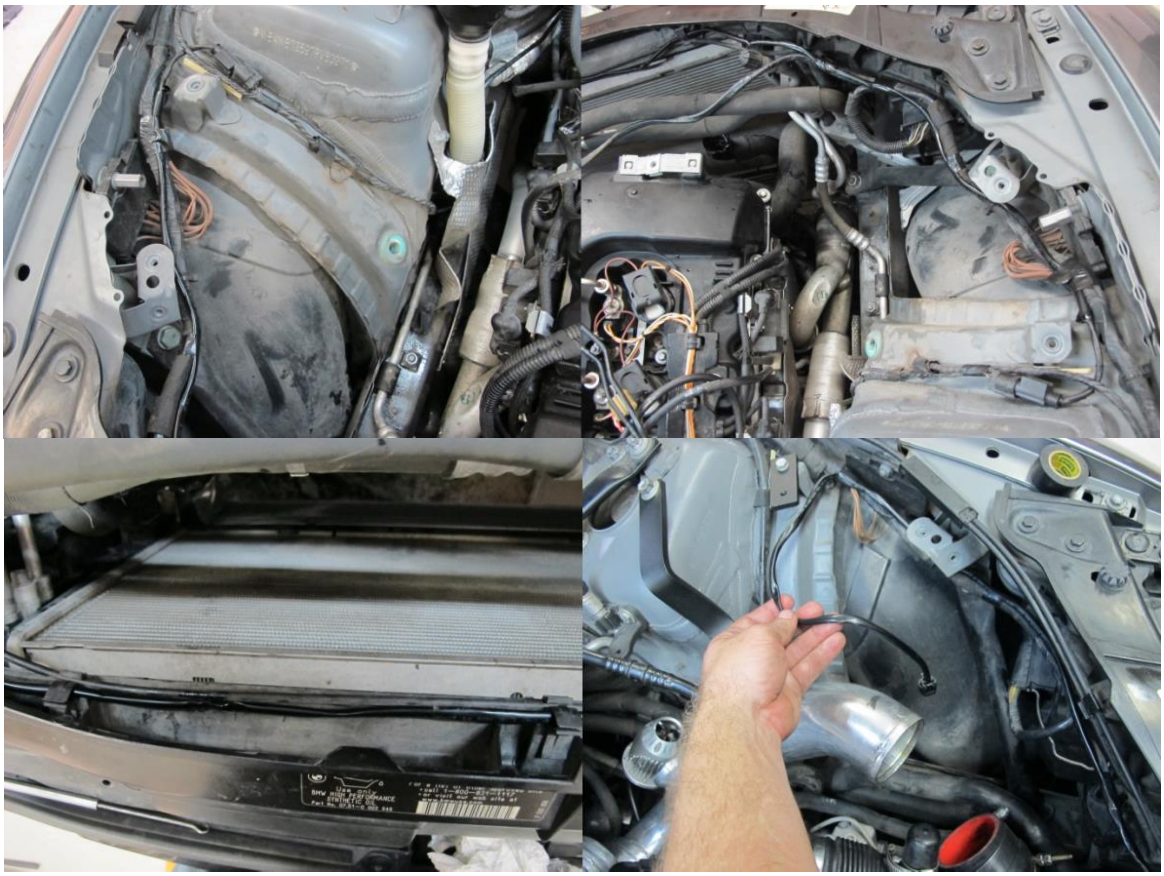
15. Remove the nut on top of strut tower closest to front of car (DO NOT REMOVE CENTER NUT). Now install the S shaped bracket the end with the triangle goes at the bottom loosely install the nut on the bolt. To the right of this bracket is a threaded hole use one of the bolts removed from coolant tank and bolt the short flat bracket here but do not tighten.

16. **BE VERY CAREFUL ON THIS STEP**!

Follow the upper hose went to the coolant tank back to where it connects on drivers side of radiator on top of a plastic section of hose. This nipple breaks very easy as the plastic gets brittle. We recommend taking a drimmel or similar tool and cutting the metal clamp and not prying on the clamp to remove it. Once this is done take a sharp razor and cut a slit down the side of the hose and nipple. Take the razor blade or pick tool and carefully open up this cut to pull the rubber hose away from the nipple. Once this is done remove the hose from the car and set aside for later use.



17. Take out the supplied wire harness and plug it in to the plug that was plugged into bottom of coolant tank for sensor. Here you will route it up the factory wiring (we recommend using some electrical tape every 3-5" to secure to factory harness but is not required). Follow the factory harness behind the headlight and to top side of radiator. You clip the harness in the same clips that hold the power wire to the fan (you removed this wire earlier). Continue the wiring across driver's headlight and then back down similar to how it was on the passenger side.



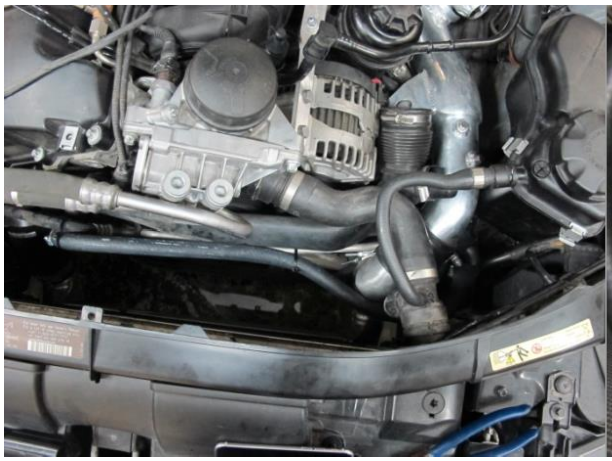
18. Reinstall the charge pipe ensuring the clip on throttle body is holding well, plug in sensor and tighten hose clamp good and tight.

19. Prepping coolant tank for install - Here you have 2 options, you can install the supplied coolant hose directly over the nipple of the coolant tank and clap with supplied hose clamp or you can reuse the stock O-ring & elbow fitting. We prefer the fit and finish of the stock fitting. To do this you will need to use a drimmel to cut the bottom tab off the coolant tank flush. This tab was designed to ensure you could not install the fitting backwards which is exactly what we want to do. (Skip this step if you want to connect directly to tank with coolant hose and discard stock fitting.)

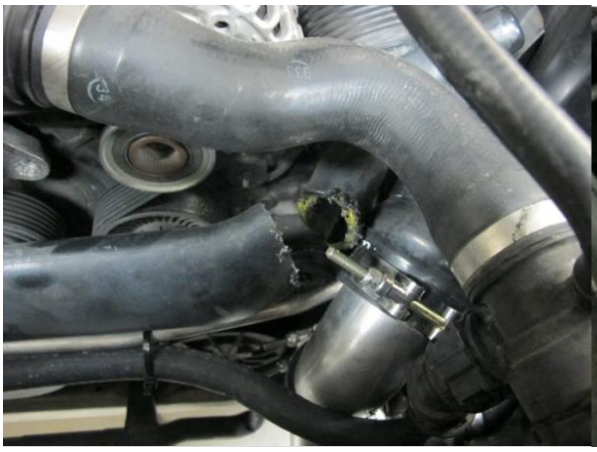
20. Extending larger coolant hose - Locate the 2 brass fittings and 4 smaller hose clamps. Now you will be cutting the coolant hose about 5 inches from the end that previously fastened to the bottom of the coolant tank. This will be a bit messy so clamp off if you can if not then place a tray under car to catch the mess. Once line is cut use one of the supplied brass fittings to connect the supplied hose to the existing hose in the car. Put your clamp on this section of hose a foot or two from where you spliced it and set the hose over where the coolant tank was on passenger side. Set the 5 inch section of hose you removed and it's fastener off to the side for later use.

21. Correcting length on upper coolant tank line - Take the upper line previously removed and remove the entire plastic section cut the rubber hose to length and reuse the spring style clamp to hold in place. Remember it is better to start with the hose to long and trim as needed then to cut too short. Use pictures from the next step for reference of what hose should look like and appropriate length.

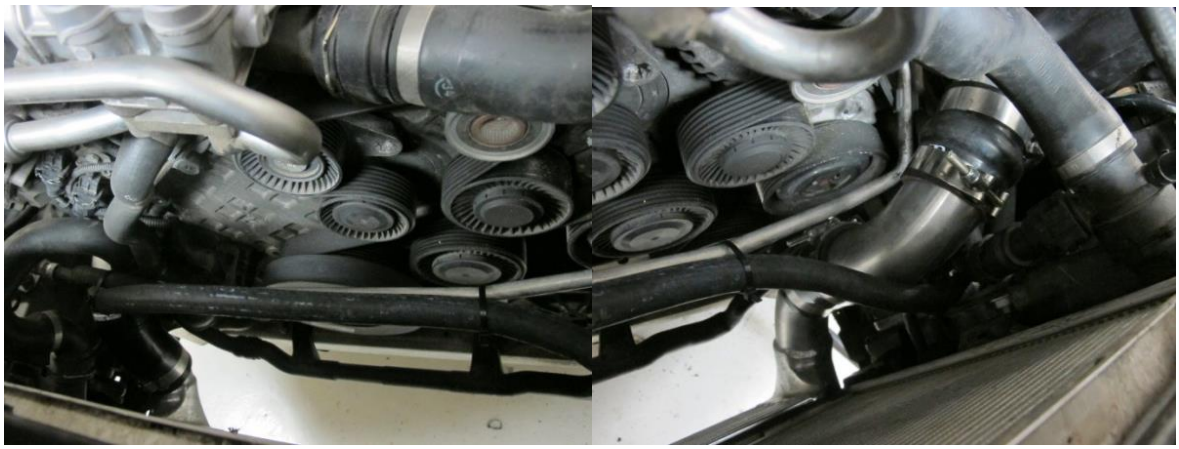
22. Install the Coolant tank - Now with all brackets in place and the wiring ran you can install the coolant tank. Use the shorter 2 bolts and nuts supplied to secure the tank to the brackets installed earlier by strut tower. It is recommended not to tighten these until after everything else on the top side is complete.



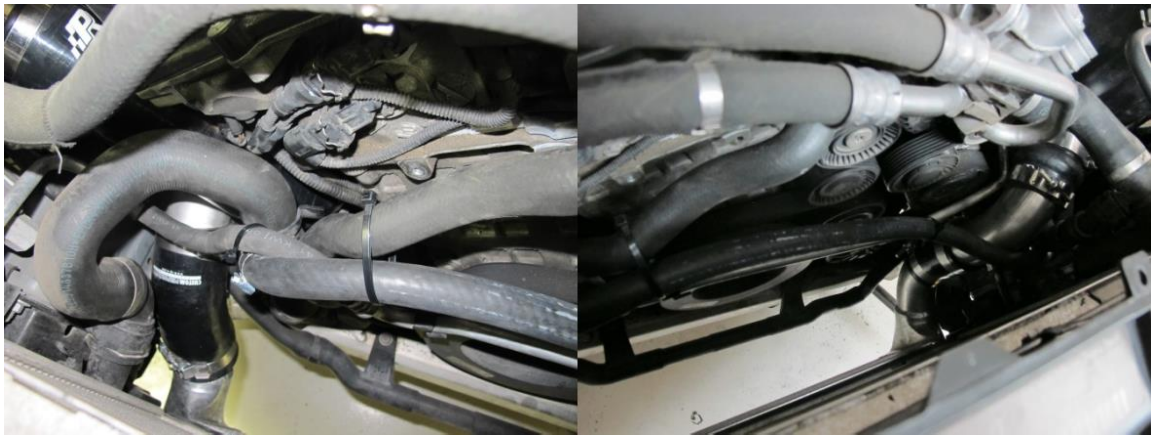

23. Remove front inlet - Remove the 2 large torx on the front of the motor this should make the front inlet very loose. Make sure any hoses or lines that were clamped to it are removed as well. Now you can remove the front inlet being very careful not to damage the radiator. We recommend using a body saw or similar tool to cut the inlet making it easier to remove from the car. This is not required but can make things easier. Once the two large torx are removed and the end is cut as shown in the image below the inlet can be removed. Take your time working around the hoses and such in front of the turbo and disconnect any plastic clips holding hoses that are in your way remembering to install them once removed. (Note: Make sure to vacuum out the plastic that got in the turbo later when we vacuum out the rear turbo, you can do it now just to make sure you do not forget)




24. Route the coolant hose you just removed along the metal line the runs across the motor. Cut the excess hose making the hose the correct length once you add the 5" section with fitting previously removed. You can install brass fitting and hose clamp on 5" side so you can easily slip on and see how much length needs to be removed from the supplied hose.



25. Double check all hose clamps are tight and attach fitting to coolant tank if you have not done so. Now is also a good time to use supplied zip ties to secure coolant hose to metal line on front of motor ensuring it will not make contact with the belts. Take note of how the hose clamps are turned to gain maximum clearance.



26. Tighten everything - Go back and tighten all fasteners you are done relocating the coolant tank.

27. Remove all tools and obstructions from closing hood. Now carefully lower the hood and watch for clearances. We want to make sure the hood closes without making contact with the top of the coolant tank. **DO NOT SLAM HOOD SHUT**! Once you are happy with how hood closes and can see it is not pushing on the metal under the hood you can move on to the inlets portion of the install.

28. Move Steering rack - To remove the downpipes it is much easier if you remove the bolts holding the steering rack in place and let the rack swing down. Do not try to remove any of the bolts to the line or rack itself without a wrench on the back side same goes for tightening later.

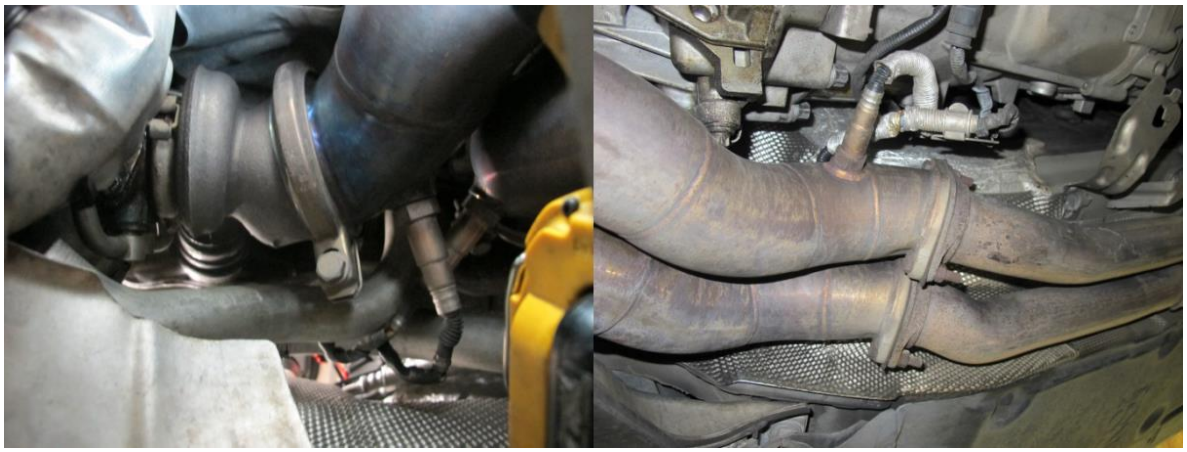
29. Moving Heat Shield – A common tip when doing downpipes is to temporarily bend back the heat shield some to gain more access to the turbo and front oxygen sensors. Once the steering rack is moved forward you should be able to easily push the heat shield up.

30. Removing Front o2 sensors - The front O2 sensor should have a black sleeve and the rear should have a gray sleeve. Before removing ensure this is the color pattern of yours if not make a note of the colors or use painters tape and a sharpie to remember location. Using a 7/8" wrench break both sensors loose then remove (should be able to turn by hand).

31. Disconnect rear o2 sensors - For the rear sensors we do not remove them from the downpipes. Instead pay attention to the colors again and make sure the downpipe off the front turbo has black wiring and rear has gray wiring (note if different). Unplug both sensors as seen in the image below and make sure they are no longer connected by any clips.

32. Remove the small brackets - Remove the two small brackets close to the transmission that held part of the plastic underbelly these are held in place with 8mm bolts.

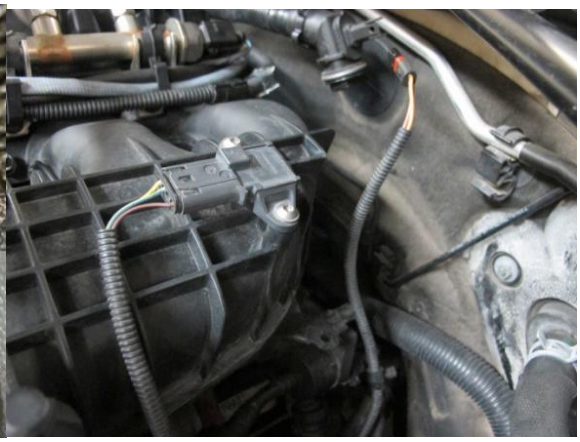
33. Disconnecting Downpipes - Loosen the clamp connection at both turbos using a 13mm wrench. Once loosened move on to the exhaust connection. Here you will remove the 4 bolts (typically 12mm but can change based on downpipes you have and supplied hardware). PB blaster or an impact can help on stubborn exhaust bolts.



34. Remove exhaust bracket - This step is optional but many find it is easier to remove the downpipes from the car if the brace is removed. For this step you will need an E10 Torx socket. The downpipes should now be easily removed from the car.

35. Disconnect PCV heater - Unclip the PCV heater from rear inlet and remove, if it difficult remove the hose to the valve cover and unplug the harness and remove later once out of the car.

36. Remove rear inlet - Using a body saw or similar tool cut the factory inlet so that it will be straight to pull out from top side. The 90 degree bend it currently has will prevent it from sliding between firewall and motor. Go to top side and take a pry bar and dead blow hammer and use locate the plastic tab that secures the inlet to the motor with the same 2 torx that were on the front. It is not possible to remove these without lowering motor out of car so using the pry bar and hammer to break the tabs free is best option. Once done the inlet should slide completely out when pulled on.



37. Clean out turbo - Now with the upper portion of inlet removed, remove the piece cut off earlier if it did not fall off on its own. Take a shop vacuum and take your time to vacuum up all of the plastic bits around the turbo as well as spending some time with vacuum over the turbo inlet so you get all plastic bits. This is important! Make sure you get all of the plastic bits out of the turbo itself a good shop vac will make the turbo spin and will remove all plastic easily. Repeat the same steps for the front turbo cleaning in and around the turbo to ensure nothing will get in the turbo.

38. Prepping rear inlet - Located the longer inlet tube that came in your kit the Precision Raceworks logo will be at the front of the car once installed. To make things much easier you will want to lube up the inlet tube. We recommend using dawn soap as it can be rinsed off later easily leaving a nice clean inlet as well as other clean parts in engine bay. If no soap is available however you can use grease but this is not our recommended method. Lube up from just past the PCV bung all the way till about 3 inches from the back end of inlet tube. (Note: If using soap you will need to work quickly it will dry fairly fast)

39. Inserting rear inlet - Now with the tube lubed up stand on the top side and look at the largest opening to back left side of engine. This is where you will want to pass the inlet tube through. You will need to come from the top and push the tube to this opening and also push back from the front (this sounds harder then it really is). Once you get it started you can go under the car and pull it the rest of the way down. (Tip – bend the 90 at the top of the tube out straight when installing by holding it in this position until it is inserted into opening in rear of engine bay next to turbo)



40. Connecting rear inlet - Now with the rear inlet down beside the waste gate put the hose clamp on so that the screw portion will not interfere with turbo and can be tightened with a nut driver. Once this is done you will pick the inlet up over the waste gate and oil line and push over the turbo inlet flange.

41. Tightening the rear inlet - Ensure the silicone hose is fully seated all the way around the turbo and bottomed out and tighten the hose clamp. USE A SOCKET OR NUT DRIVER NOT A SCREWDRIVER YOU WANT THINGS TIGHT. Wiggle and pull on inlet to make sure you have it installed completely if it comes off check and see if you got soap on either the turbo inlet or on the inside of the silicone hose and repeat. (Note: getting the rear inlet on can take a few tries, be patient and make sure you have it on tight and correctly as you do not want it coming off later down the road)

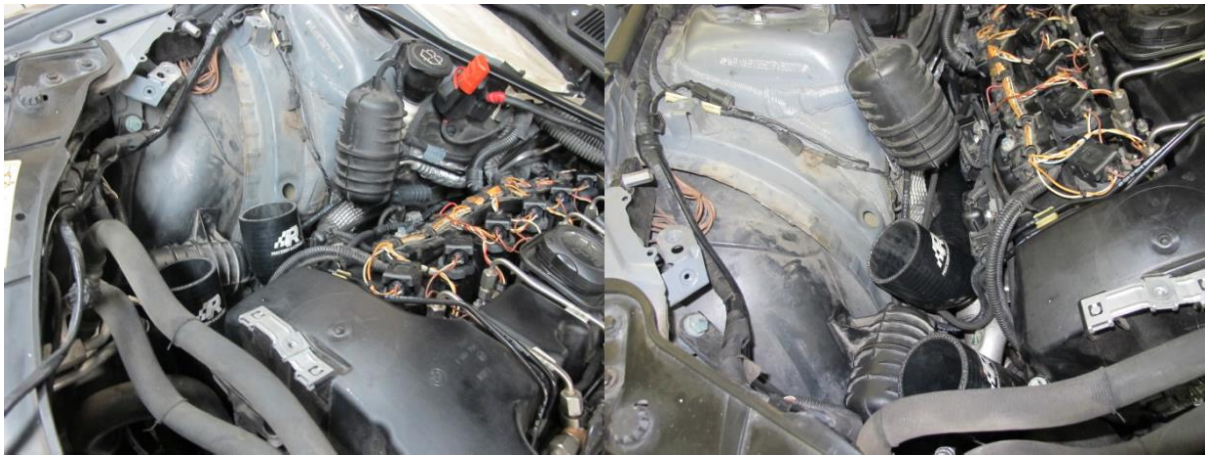
TIP: A flat head screwdriver can be used to hold the hose clamp against turbo while tightening to ensure it does not walk off the turbo as tightening. (Second pair of hands helps)

42. Connecting PCV return - Using a heat gun, heat up an end of the 1" hose and push the hose over the PCV heater that previously was installed in the factory inlet. The hose should be pushed until it is up over the factory O-ring in the heater and up to the electrical connection. Additional length is provided to help those with catch cans to allow the U to be cut off the catch can hose and provide a straighter free flowing path. The other side of the PCV heater will then connect back to the factory connection as before or to your catch can system.


43. Install PCV return line - Locate the supplied 1" elbow and push it firmly into the supplied 1" hose and then into the long inlet tube just installed. This fitting should be installed until there are no visible ribs left. The PCV hose should route to the back of the motor and over to the area the PCV heater was located when it was removed earlier. Once the Hose is routed and the other end of the heater is connected to the factory connector or catch can the wire harness can be connected.

44. Install front inlet - Locate the shorter silicone inlet tube provide and hose clamp. Put the hose clamp on the end of the tube tightening enough for friction to keep it from moving easily. Work this inlet down to the turbo often it is easiest to come in at an angle (see photo below). There is a large bolt head here you might need to push the silicone in some to get firmly seated on turbo. Once the inlet tube is seated firmly against the turbo tighten the hose clamp firmly with a socket wrench and extension or nut driver with extension. (Note: The silicone inlet will touch the head of the large bolt once fully installed)


45. Relocate vacuum canisters – The vacuum canisters can be relocated anywhere the installer desires. We include enough vacuum line for our preferred location which is both easy for the installer and functional. More stealth methods have been done placing canisters behind the front bumper cover or under headlights (these methods will require additional vacuum line but are acceptable). To install with our preferred method first remove the factory vacuum hose from both solenoids that went to the canisters and both supply lines on top of the valve cover. Remove the bolt on the passenger strut tower next to the washer fluid reservoir and using this stud and nut mount one of the vacuum canisters (note install the one that sits lower in the engine bay when mounted to the stud). Using the supplied vacuum line cut to length and connect this canister to the rear solenoid and rear supply line. Now lay the other canister as seen in the image below and cut and connect the supplied vacuum line to this canister, solenoid, & supply line. Securing this canister is not required as the filters and inlets will hold it in place once install is complete.



46. Install air filters - Using the supplied aluminum couplers and hose clamps install the air filters so that none of the aluminum tube is visible. Once again tighten all hose clamps using nut driver.

For Reassembly of the car previous images should be used for reference

1 Reinstall radiator fan - Slide radiator fan back into car until it snaps back into the clips (it can be difficult to get past bracket for tube coming up from inter cooler to charge pipe but be patient it will go). Replace the screw in corner on passenger side, plug the wiring back in, and reinstall transmission cooler if removed.

2. Fill tank and run bleed procedure - At this point we recommend filling the coolant tank and running the factory bleed procedure. While this runs you can work on installing the down pipes saving time. Run the bleed procedure twice topping off coolant tank each time it is complete.

Bleed procedure – Remove the cap from the coolant reservoir
Insert key fob, press Start until gauge cluster is fully on
Turn both Drivers & Passengers temperature to maximum setting
Manually adjust the fan speed to the lowest setting (not off)
Press & hold gas pedal down all the way for 10 seconds
Go to coolant tank and listen for noise
Add coolant to tank as level goes down until it stays at maximum level

3. Installing the rear downpipe - Take both clamp connectors previously removed from the turbo's and hang loosely over the flange. Position the rear downpipe as it was when removed from the car getting the flange on turbo and downpipe to roughly match up. Ensure the V clamp is over both sides of the flange and downpipe then insert the bolt and tighten enough to hold downpipe in place. Insert the bolts and gasket for the exhaust and start the nuts.

4. Installing front downpipe - Repeat the previous steps above done for installing the rear down pipe as they are installed in the same manor.

5. Install hanger bracket - Using the required torx install the bolt and hanger bracket if previously removed to help pull the exhaust up tight.

6. Tighten up exhaust – Once the downpipes have all bolts installed and the hanger is in place check to be sure the downpipes are not touching each other or any other part of the car (loosen and adjust as needed if they are touching anything as they will rattle). Once everything is clear and nothing is touching you can tighten all bolts connecting to the downpipes, flanges, and exhaust previously removed.

7. Connect rear o2 sensors - Plug the rear o2 sensors back into their appropriate plugs. Use the notes you made earlier if your colors were different than the standard color. For standard wiring reference removal step of this document for images of how the o2 sensor wiring and plugs should be installed.

8. Install front o2 sensors - Apply anti seize to the threads of the o2 sensor (do not get on the sensor itself). Twist the o2 sensor a few times so that the wire will untwist as you screw into the holes. Install and tighten the o2 sensors in the same order they were removed. See removal section of this document for images and information on proper location.

9. Heat shield – Reinstall the heat shield below the front turbo if removed, if you pushed heat shield up to gain access instead of removal pull the heat shield back into the original location.

10. Steering Rack – Reinstall the steering rack and cooling line using bolts and hardware removed earlier. Ensure that when installing the cooling line a backup wrench is used and the rubber vibration isolator is not twisted or damaged.

11. Install any plastic under panels, engine covers, cowel covers, or other cosmetic panels removed.

Factory items that should be left over after install

1. Vacuum Canister mounting bracket
2. Power steering reservoir bracket
3. Old inlets and pieces
4. Old factory or aftermarket air filter system
5. Fresh air inlet tube removed in step 1 of this document

Before

After

12 Month Limited Warranty

Precision Raceworks, LLC warrants to the consumer that all Precision Raceworks products will be free from defects in material and workmanship for a period of twelve (12) months from date of the original purchase. Products that fail within this 12 month warranty period will be repaired or replaced at Precision Raceworks discretion, when determined by Precision Raceworks that the product failed due to defects in material or workmanship.

This warranty is limited to only the repair or replacement of the Precision Raceworks part. In no event shall this warranty exceed the original purchase price of the Precision Raceworks part nor shall Precision Raceworks be responsible for special, incidental or consequential damages or cost incurred due to the failure of this product.

Warranty claims to Precision Raceworks must be transportation prepaid and accompanied with dated proof of purchase. This warranty applies only to the original purchaser of product and is non-transferable. All implied warranties shall be limited in duration to the said 12 month warranty period. Improper use or installation, accident, abuse, unauthorized repairs or alterations voids this warranty.

A Precision Raceworks Warranty Claim Form Must Accompany All Warranty Claims. Products returned to Precision Raceworks with no Return Goods Authorization and or No Warranty Claim Form may be rejected and returned to sender. Precision Raceworks disclaims any liability for consequential damages due to breach of any written or implied warranty on all products manufactured by Precision Raceworks. Warranty returns will only be accepted by Precision Raceworks when accompanied by a valid Return Goods Authorization (RGA) number. Credit for defective products will be issued pending inspection. Product must be received by Precision Raceworks within 30 days of the date RGA was issued.

Please note that before we can issue an RGA for any product, it is first necessary for the installer or end user to contact us at Support@PrecisionRaceworks.com to discuss the problem. Most issues can be solved through email or over the phone. Under no circumstances should a product be returned or RGA requested before the above process transpires.

A PRECISION RACEWORKS WARRANTY CLAIM FORM MUST ACCOMPANY ALL ELECTRONICS WARRANTY CLAIMS. Precision Raceworks Products returned to Precision Raceworks with no RGA and or No Warranty Claim Form may be rejected and returned to sender.

A copy of the Precision Raceworks Warranty Claim Form can be obtained by sending a request for the form to Support@PrecisionRaceworks.com .