



BMW N54 Aluminum Coolant Expansion Tank Relocation Kit Installation Guide



Proper service and repair procedures are vital to the safe, reliable operation of all motor vehicles as well as the personal safety of those performing the repairs. Standard safety procedures and precautions (including use of safety goggles and proper tools and equipment) should be followed at all times to eliminate the possibility of personal injury or improper service which could damage the vehicle or compromise its safety.

INTRODUCTION

Whether you plan to install a hotside intake onto your N54 equipped BMW, or you want to clean up the engine bay, our aluminum coolant expansion tank relocation kit is just what you need! This TIG welded 5052 aluminum tank maintains stock coolant capacity and expansion volume, and it features internal baffles which prevent air pockets from forming during aggressive driving. The tank utilizes an OE level sensor, bleeder screw, and coolant cap, and has an incorporated power steering reservoir mounting bracket.

To install this new expansion tank we will need to remove the stock one, route new upper and lower hoses, and install the coolant level sensor extension harness. Reference the illustration below, then let's get started!

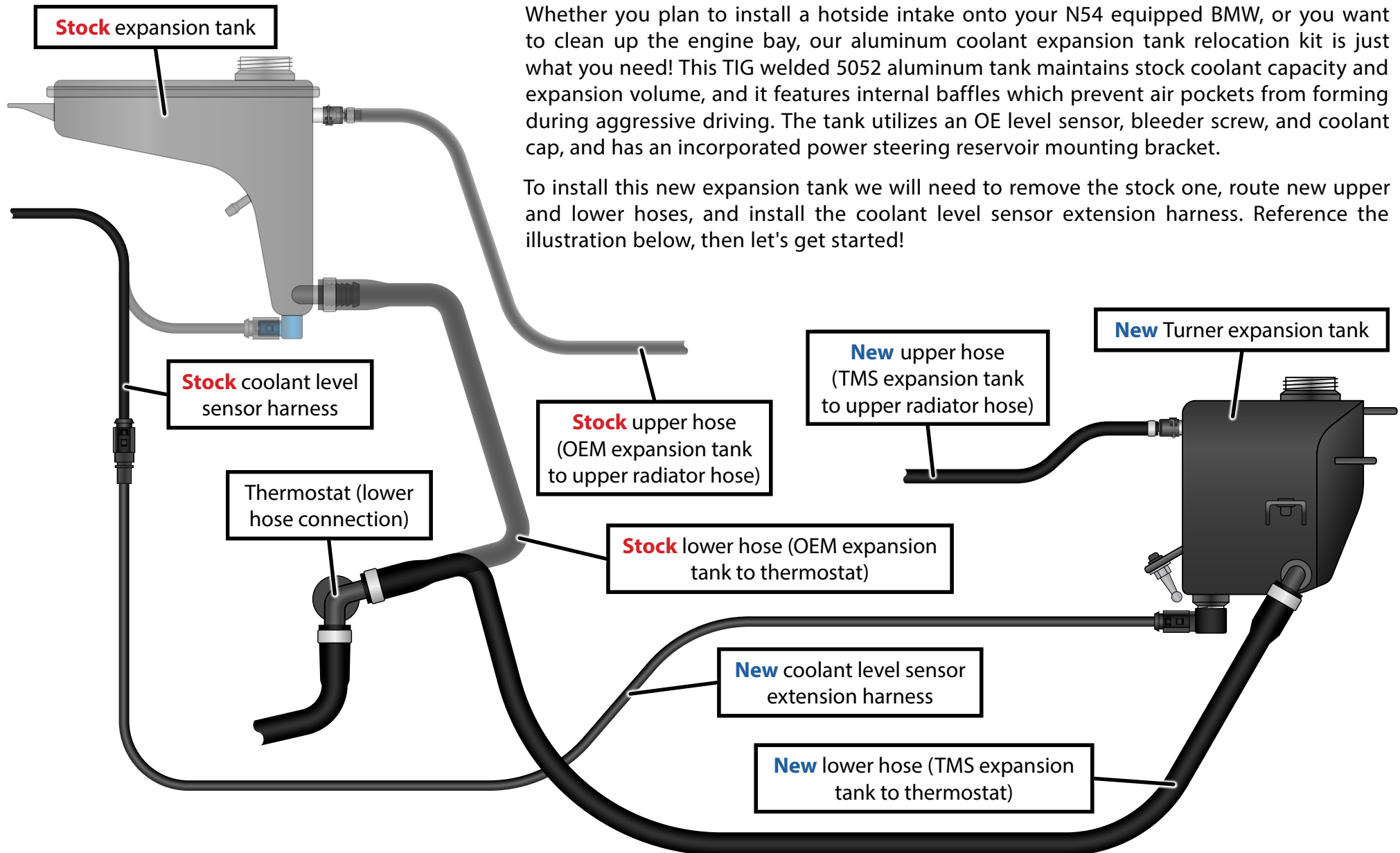
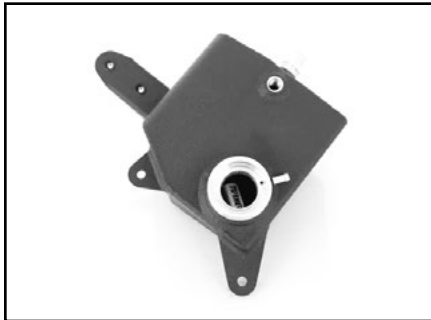


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KIT CONTENTS



Turner Aluminum Coolant
Expansion Tank - **QTY 1**



Expansion Tank
Cap - **QTY 1**



New Coolant Level Sensor - **QTY 1**



Coolant Level Sensor Extension
Harness - **QTY 1**



Coolant Bleeder
Screw - **QTY 1**



New Expansion Tank Upper Hose - **QTY 1**



New Expansion Tank Lower
Hose - **QTY 1**



Silicone Overflow
Hose - **QTY 1**

KIT CONTENTS (CONTINUED)



M6x25mm Screw - **QTY 2**
(Expansion tank to chassis)



Small OD M6 Flat Washer - **QTY 2**
(Expansion tank to chassis)



M6x35mm Screw - **QTY 2**
(P/S reservoir to expansion tank)



Large OD M6 Flat Washer - **QTY 2**
(P/S reservoir to expansion tank)



5/16" Ball Stud - **QTY 1**
(Mounting ear on expansion tank)



5/16" Flat Washer - **QTY 1**
(Between ball stud & expansion tank)



Mounting Grommet - **QTY 1**
(Mounting ear on expansion tank)



11-20mm Hose Clamp - **QTY 1**
(Overflow hose to expansion tank)



17-32mm Hose Clamp - **QTY 2**
(Both ends of lower expansion tank hose)



20mm Female Hose Clip - **QTY 2**
(Secures lower expansion tank hose to the OEM water pipe)



20mm Male Hose Clip - **QTY 2**
(Secures lower expansion tank hose to the OEM water pipe)



5mm Thick M6 Spacer - **QTY 1**
(135i ONLY) - Expansion tank to chassis)

INSTALLATION NOTES

- **RH** refers to the *passenger side* of the vehicle.
- **LH** refers to the *driver side* of the vehicle.
- Always use the proper torque specifications.
- If applicable to this installation, torque specifications will be listed throughout the document and at the end as well.
- Please read all of these instructions and familiarize yourself with the complete process **BEFORE** you begin.

GENERAL PREPARATION AND SAFETY INFORMATION

Turner Motorsport cares about your health and safety, please read the following safety information. This information pertains to automotive service in general, and while it may not pertain to every job you do, please remember and share these important safety tips.

- Park your car in a safe, well lit, level area.
- Shut the engine off and remove the key from the ignition switch.
- Make sure any remote start devices are properly disabled.
- **ALWAYS** wear safety glasses.
- Make sure the parking brake is applied until the vehicle is safely lifted and supported.
- Whether lifting a vehicle using an automotive lift or a hydraulic jack, be sure and utilize the factory specified lift points.
- Lifting a vehicle in an incorrect location can cause damage to the suspension/running gear.
- **ALWAYS** support the vehicle with jack stands.
- **ALWAYS** read and follow all safety information and warnings for the equipment you are using.



NEVER get underneath a vehicle that is supported only by a jack, and **ALWAYS** make sure that the vehicle is securely supported on jack stands.

RELOCATING THE COOLANT EXPANSION TANK

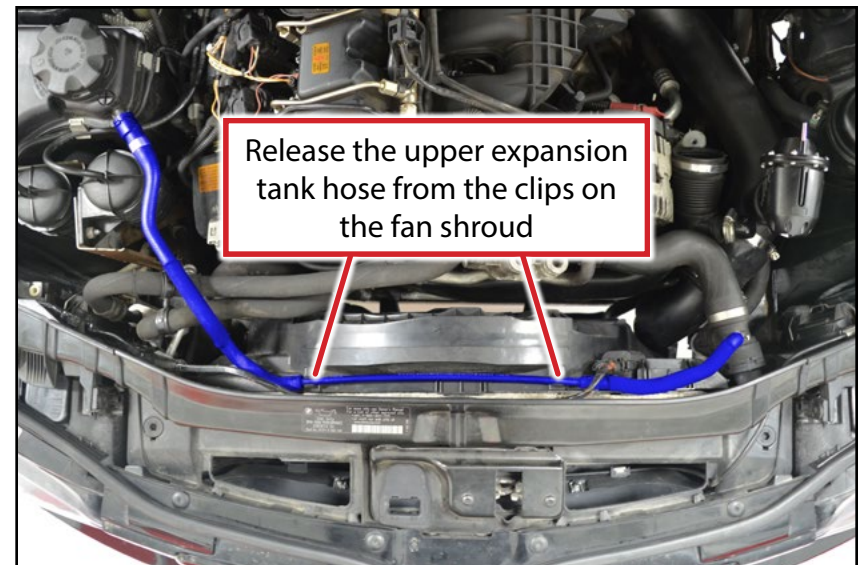
Step 1: 10mm Socket & Ratchet

Disconnect the negative battery terminal.



Step 2: Flat Blade Screwdriver

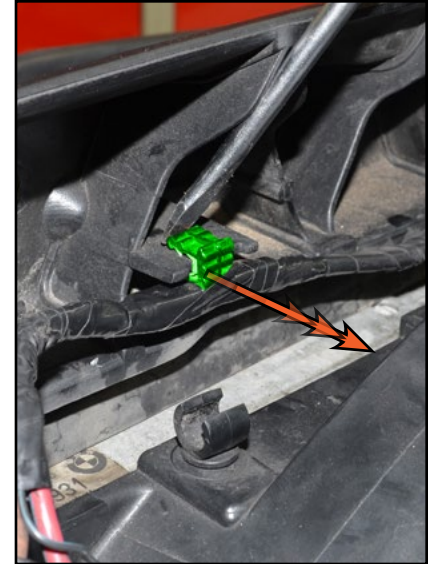
Release the upper expansion tank hose (highlighted in **BLUE**) from the clips along the top of the fan shroud.



RELOCATING THE COOLANT EXPANSION TANK

Step 3: Flat Head Screwdriver

Disconnect the fan shroud electrical connector (LH photo), then release the wiring harness clips from the core support (RH photo).



Step 4: T25 Torx

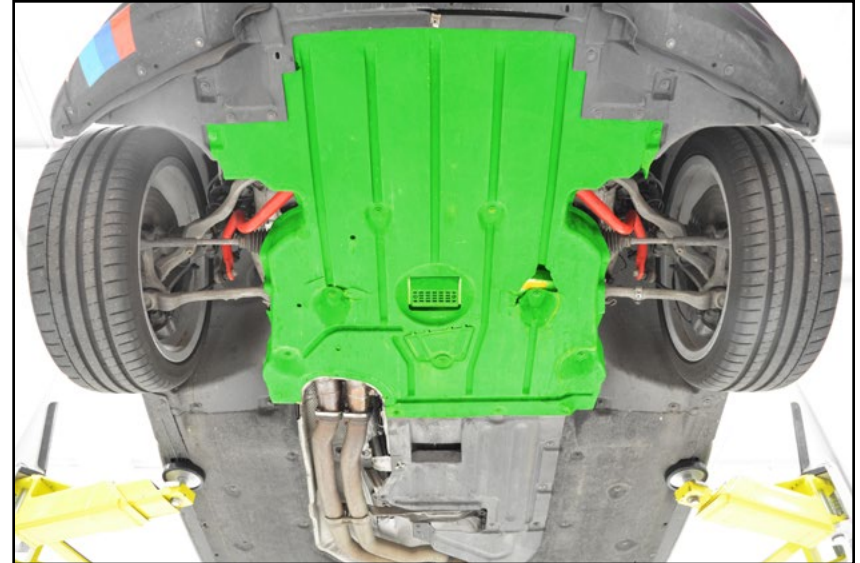
Remove the screw from the upper RH corner of the fan shroud.



RELOCATING THE COOLANT EXPANSION TANK

Step 5: 8mm Socket & Ratchet

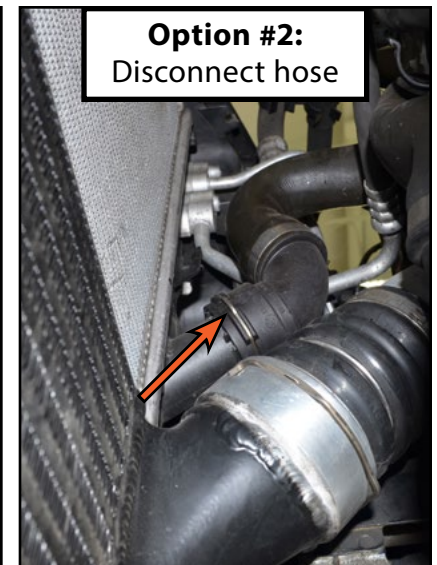
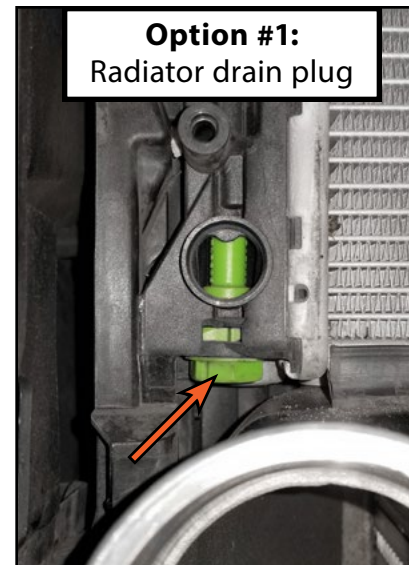
Remove the belly pan from the vehicle (highlighted in **GREEN**).



Step 6:

Now it's time to drain the coolant from the system. While we don't need to drain the entire system, we need to drain enough of it to remove the stock expansion tank and the hoses without making a mess.

Some models may have a drain plug on the radiator (shown in the LH photo), while others will require you to disconnect the lower radiator hose in order to drain the coolant (shown in the RH photo).



RELOCATING THE COOLANT EXPANSION TANK

Step 7: Flat Blade Screwdriver or Hose Pick

Disconnect the intercooler outlet coupler from the intercooler (LH photo), then slide it out as shown (RH photo).

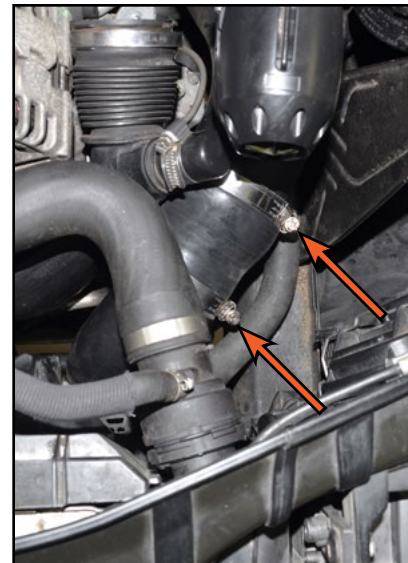


Step 8: Flat Blade Screwdriver or Hose Pick

Loosen the hose clamps on the intercooler outlet pipe (LH photo), then release the clip on throttle body charge pipe. Release the MAP sensor electrical connector, then remove the throttle body charge from the vehicle.



You have the option of removing the upper radiator hose at this point. It makes removing the fan shroud a bit easier, but it isn't absolutely necessary.



RELOCATING THE COOLANT EXPANSION TANK

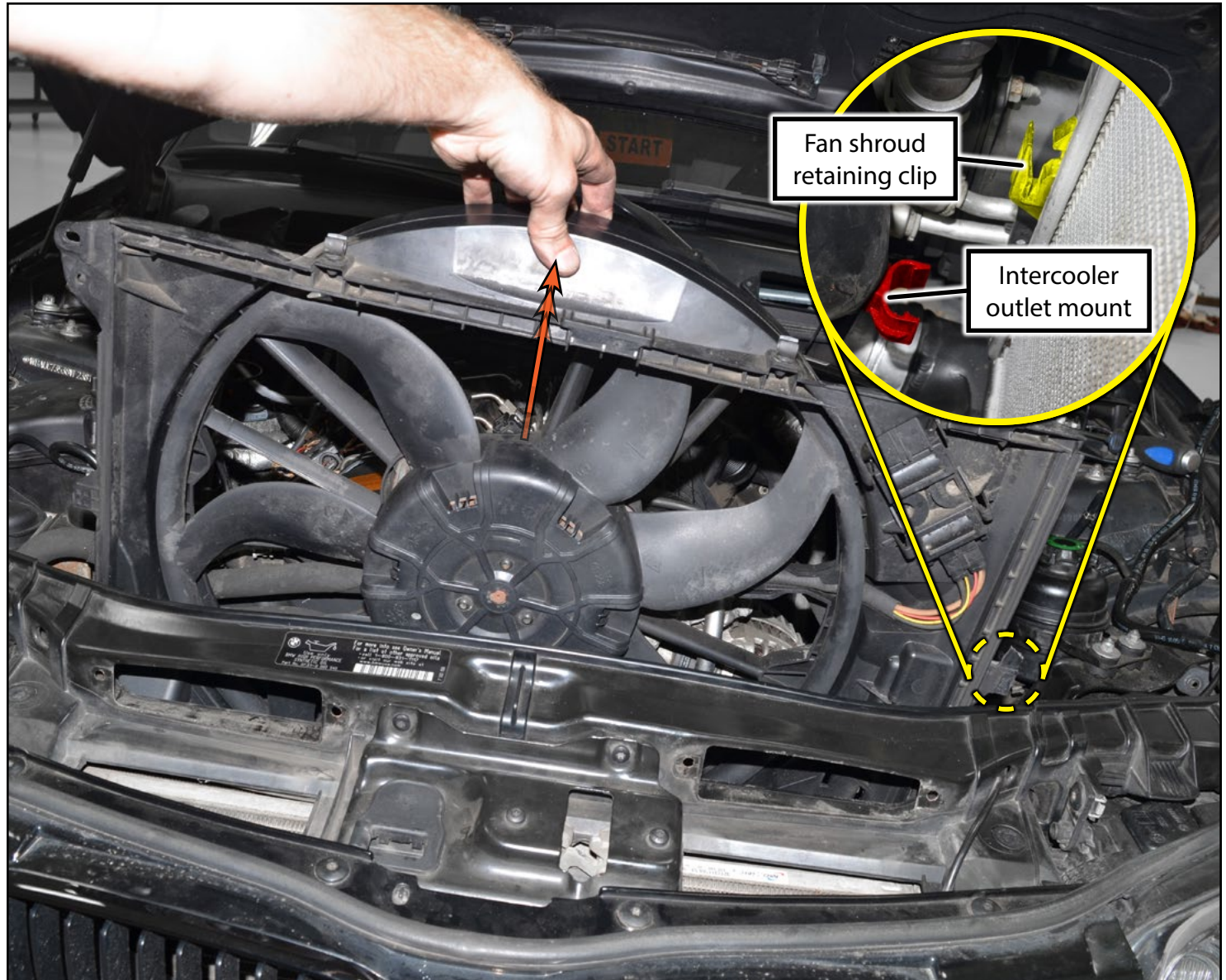
Step 9:

Now it's time to remove the fan shroud, this part takes a bit of patience.

There is a single tab on the LH (driver's) side of the fan shroud which locks into a slot on the radiator (highlighted in **YELLOW** in the inset photo). You want to **CAREFULLY** pry on the tab with a screwdriver while you start to lift the fan shroud upward. This tab can be quite brittle, so be gentle.

There is also a rubber bushing on the fan shroud which slides into the intercooler outlet mount (highlighted in **RED** in the inset photo). Be careful not to break off the mount or the bushing.

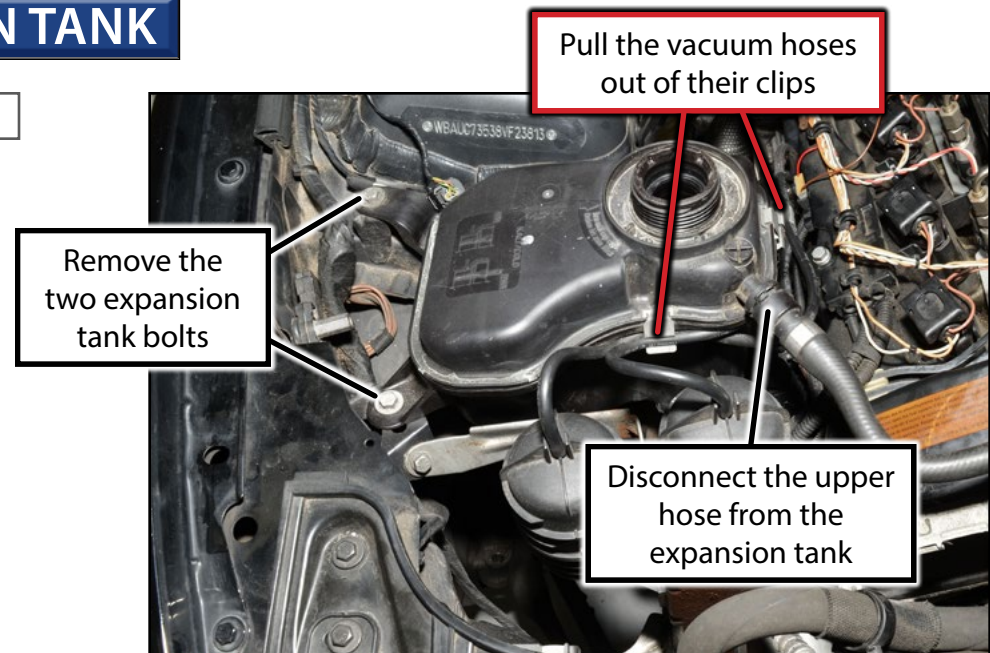
Lift the fan shroud out of the engine bay and set it aside.



RELOCATING THE COOLANT EXPANSION TANK

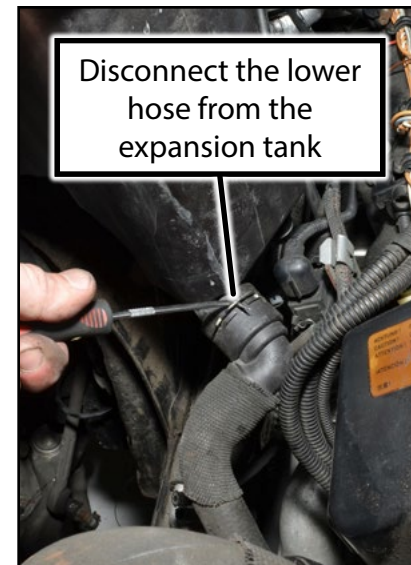
Step 10: 10mm Socket & Ratchet

Pull the vacuum hoses out of the clips on the expansion tank. Disconnect the upper hose from the expansion tank. Remove the two bolts from the expansion tank.



Step 11: Small Flat Blade Screwdriver or Hose Pick

Disconnect the lower hose from the expansion tank (LH photo). Lift the expansion tank up slightly to access the coolant level sensor underneath (RH photo). Disconnect the coolant level sensor and remove the expansion tank from the engine bay.



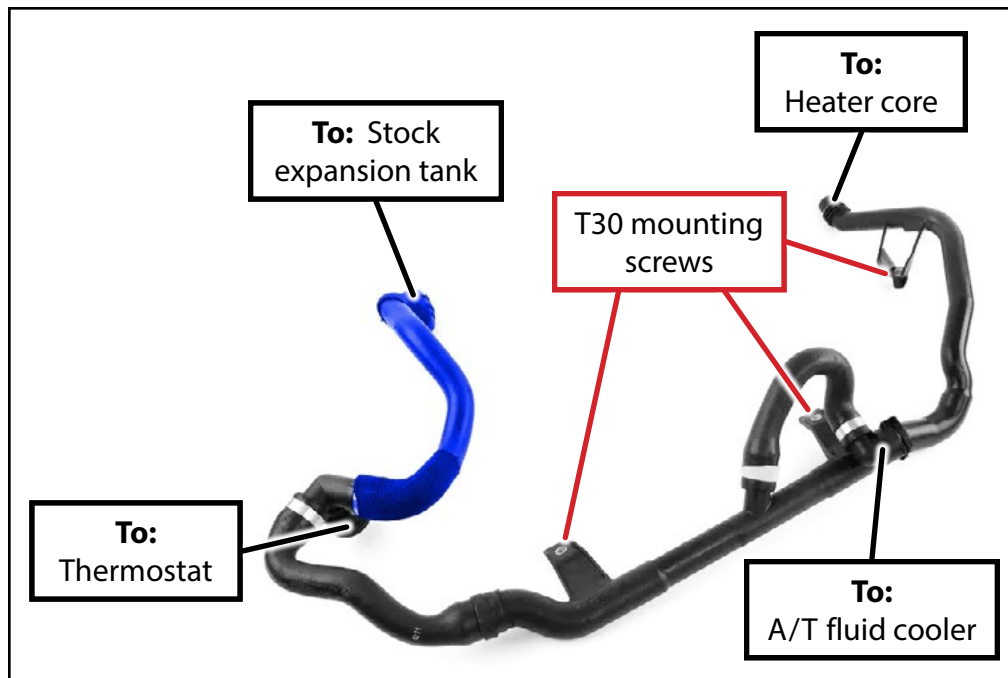
RELOCATING THE COOLANT EXPANSION TANK

Step 12: Cut Off Wheel (to cut the clamp), or Flat Head Screwdriver (to remove the clamp)

Now it's time to remove the lower hose from the expansion tank. This hose runs from the bottom of the expansion tank down to the coolant pipe connection at the front of the thermostat (we've highlighted this hose in **BLUE** in the photos on the right). We will be replacing this hose with a new extended hose which will route across the vehicle to the relocated expansion tank.

Depending on the production date of your vehicle, you will find either a worm-drive hose clamp, or a solid band clamp at this connection. If you find a solid band clamp you will need to cut it off in order to release the hose. This step can be performed with the hose assembly still in the vehicle, but it is significantly easier to do with it removed from the engine bay. If you decide to remove the hose assembly you will need to release it from the thermostat and heater hose, then remove the three T30 screws which secure it into place. Note the location of the additional cooler hose for vehicles with automatic transmissions.

Once the hose clamp has been released, remove the lower expansion tank hose from the vehicle and continue to the next page.



RELOCATING THE COOLANT EXPANSION TANK

Step 13: Flat Head Screwdriver

The new lower expansion tank hose has a pre-formed 90° bend in one end, this is the side which will connect to the front of the thermostat using one of the included 17-32mm hose clamps. Route the new hose along the engine bay as shown below, using the two included hose separators to mount it to the OE coolant pipe assembly. Route the hose over toward the power steering reservoir, but leave it disconnected for now.

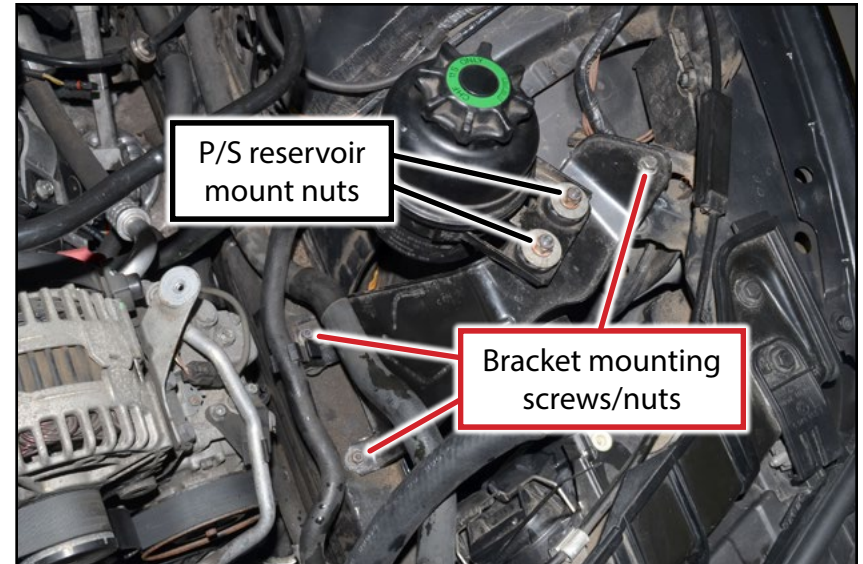
NOTE: We will need to trim this hose to length later on in the install.



RELOCATING THE COOLANT EXPANSION TANK

Step 14: 10mm Socket & Ratchet

Remove the two 10mm nuts which secure the power steering reservoir to the bracket, then swing the reservoir back and out of the way. Remove the single 10mm bolt and the two 10mm nuts from the bracket, then remove the bracket from the engine bay.



Step 15:

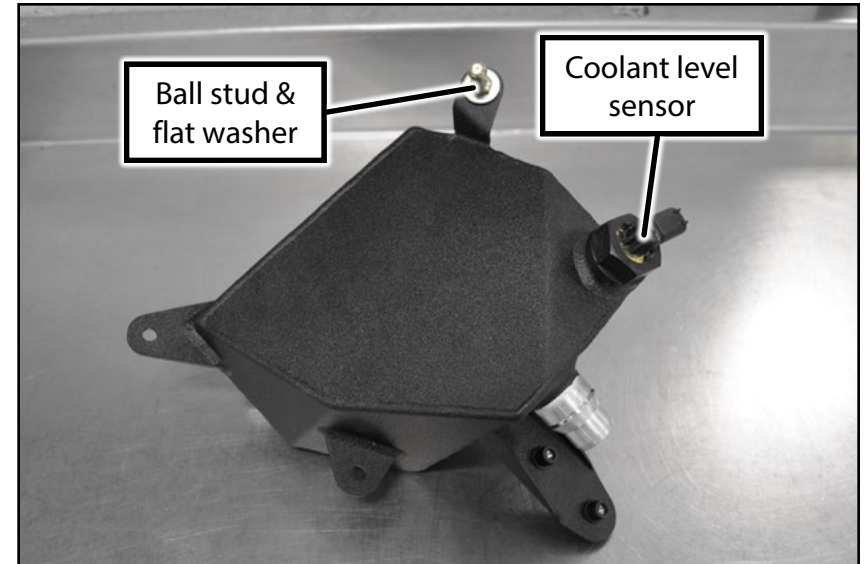
Install the provided mounting grommet into the empty hole in the LH shock tower as shown in the photo.



RELOCATING THE COOLANT EXPANSION TANK

Step 16:

Install the provided ball stud and flat washer into the lower mounting ear on the new expansion tank, then install the provided coolant level sensor. Be mindful of which direction the coolant level sensor will face once it's installed into the engine bay, make sure it will be accessible when you need to plug in the extension harness later on.

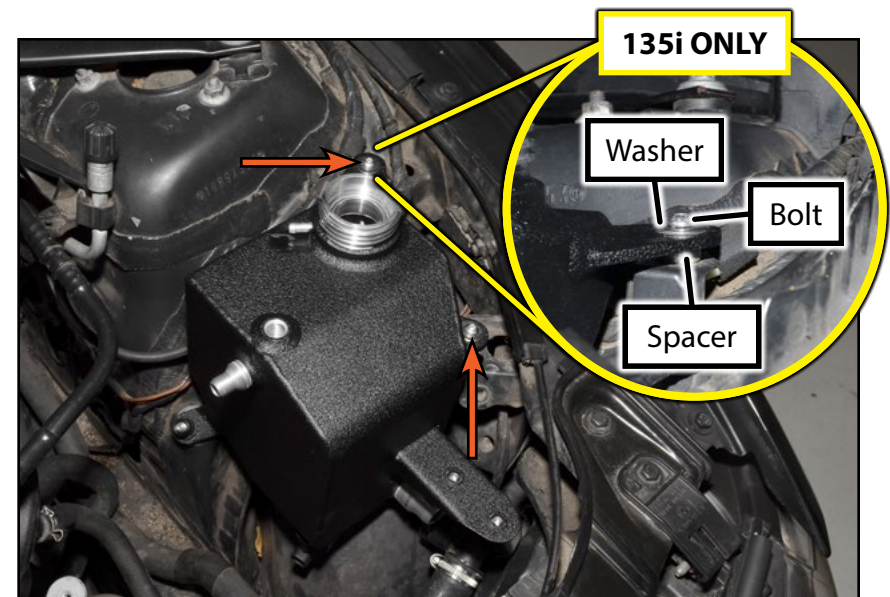


Step 17: 4mm Hex (Allen)

Install the new expansion tank into place. We've found it best to pop the ball stud into the grommet first, then thread in the provided M6x25mm screws and flat washers through the two mounting ears.



If you have an E8x 135i you will need to install a 5mm thick aluminum spacer in the rearmost mounting location as shown in the inset photo (this is included in 135i kits).



RELOCATING THE COOLANT EXPANSION TANK

Step 18: Flat Head Screwdriver

The new lower expansion tank hose needs to reach the fitting on the front of the expansion tank, once you are satisfied with the way it routes to the tank you can trim it to length. Transfer the 90° plastic fitting from the original hose to the straight end of the new lower expansion tank hose and secure it with one of the provided 17-32mm hose clamps.

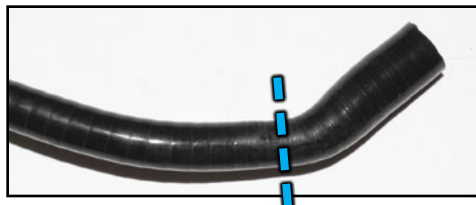
Push the 90° plastic fitting on the new lower hose into place until the locking ring "snaps" into place. Give it a quick tug to ensure that it is properly seated.



Step 19:

You will need to remove one of the flared ends from the silicone overflow hose to connect it to the expansion tank (shown below).

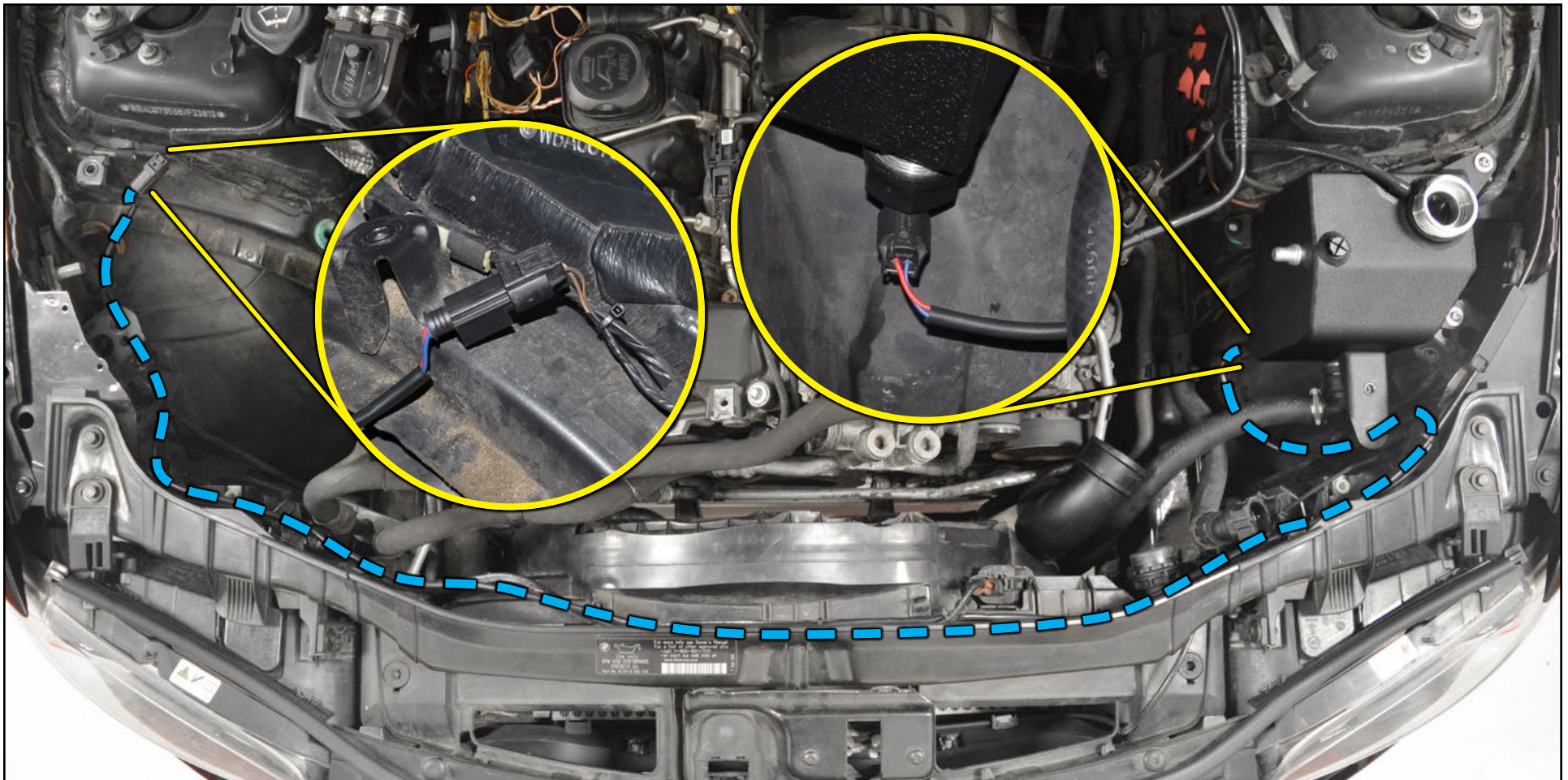
Route the hose from the nipple on the expansion tank to your desired location in the engine bay, secure it to the expansion tank with the 11-20mm hose clamp (not shown). You can see we chose to run it into the LH fender-well during our install, this allowed us to zip-tie it to a brake line. The overall length of the hose can also be trimmed if needed.



RELOCATING THE COOLANT EXPANSION TANK

Step 20:

Reinstall the fan shroud and the intercooler outlet. Route the coolant level sensor extension harness from the OE connector on the RH shock tower across the fan shroud and over to the new expansion tank. Connect the harness on both ends, and be sure secure it into place along the way with zip-ties.



RELOCATING THE COOLANT EXPANSION TANK

Step 21:

Cut the clamp off of the upper expansion tank hose where it connects to the upper radiator hose, then remove it from the engine bay (top photo).

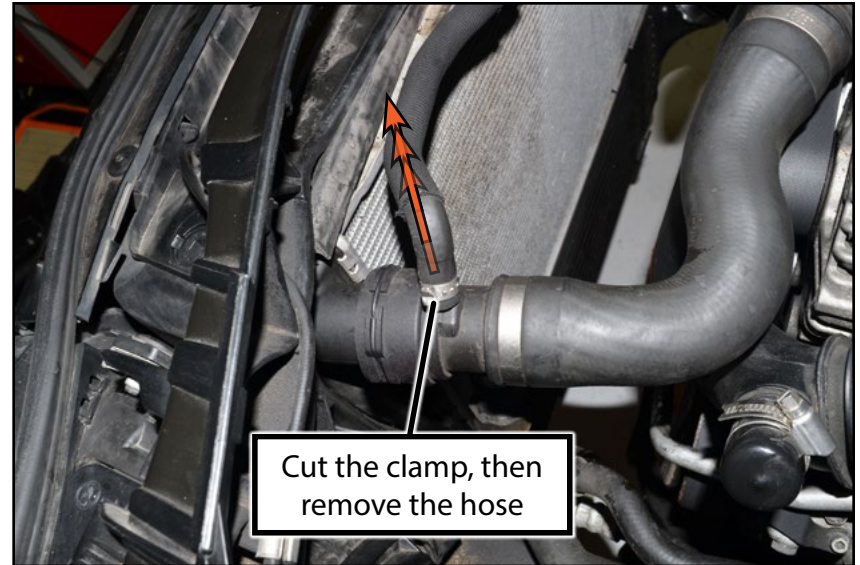
Install the new upper expansion tank hose between the upper radiator hose and the upper hose connection on the new expansion tank (bottom photo). Now it's time to reassemble everything else in the reverse order of removal:

Install the power steering reservoir onto the mounting ear on the relocated expansion tank.

Reinstall the throttle body charge pipe.

Reinstall the belly pan.

Reconnect the negative (-) battery terminal.



BLEEDING THE COOLING SYSTEM

Step 1:

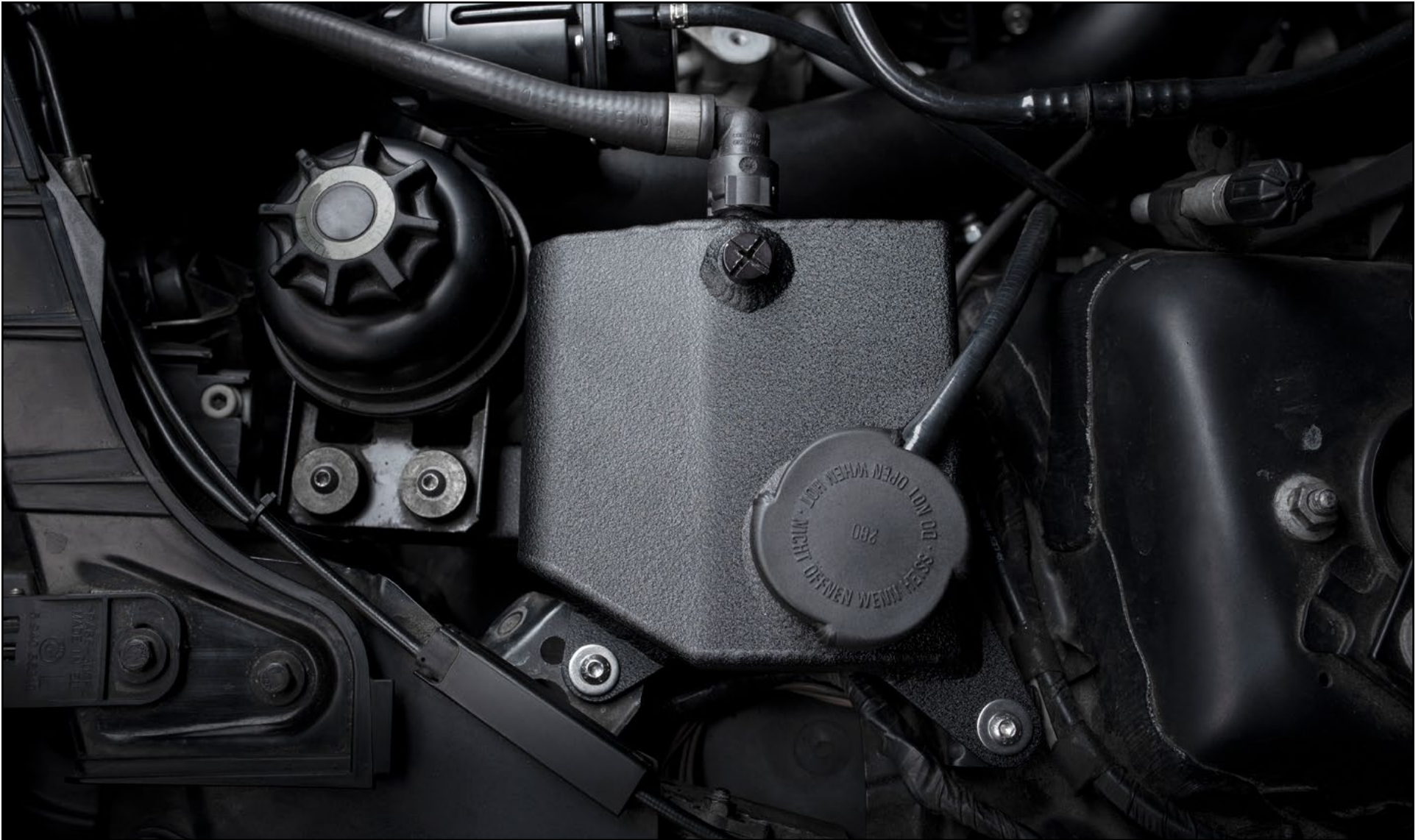
Bleeding procedure:

1. Ensure that the expansion tank bleeder screw and the cap are both tightened down.
2. Connect a battery charger.
3. Switch the ignition to ON (**engine OFF**).
4. Set the temperature controls to the highest setting (~84° F).
5. Set the blower speed to the lowest setting.
6. Press and hold the accelerator pedal to the floor for 10-12 seconds. This will activate the electric coolant pump.
7. The coolant pump will cycle on and off for 12 minutes, **this is normal**.
8. After 12 minutes have passed the coolant pump you can turn the ignition to OFF.
9. Disconnect the battery charger.
10. Return the climate controls to their previous settings.
11. Check and top up the coolant level.
 - The Turner logo inside the tank serves as the fill gauge. Once the coolant rises up to the logo plate it is full.
 - Coolant level is only to be adjusted when the engine is **COLD**, and when the vehicle is sitting on a level surface.



Your N54 Turner Aluminum Coolant Expansion Tank Relocation Kit installation is complete!

Your N54 Coolant Expansion Tank Relocation Kit installation is complete!



These instructions are provided as a courtesy by Turner Motorsport

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