

This is a DIY for removal and replacement of the entire nine (9) hose set for the N52 engine in a 2006 325i. I would expect that this is applicable to both the 325i and 330i of 2006 model year and probably the 328i from 2007 on. The hose set I replaced was for a car without auxiliary heating; which I don't think was offered as standard equipment nor as an option for USA market cars. There are a few more hoses in the set for cars with auxiliary heating, but the basic procedure is the same.

That said, if you do not plan on keeping your car for a long time and high mileage, you probably do not need to replace the hoses as preventative maintenance. I replaced my hoses at 7 ½ years and 236,000 miles and my hoses were a bit dry on the outside without any cracks or ozone damage and still pliable, and inside they all still looked very good.

This is not a DIY for a novice do-it-yourselfer. You need a lot of special tools **and ideally have access to a two-post car lift.** In my opinion it would be very difficult to do this DIY without the aid of a lift (you have to raise the car too many times; however, if you have time and are a masochist, you can probably do it without a lift. A note on tools: You need a good set of automotive repair tools with complete sets of ¼-drive, 3/8-drive and ½ drive sockets and extensions and flex-joints, torx sockets, E-Torx sockets, and metric wrenches. I've tried to list the special tools not common to what a normal DIY'er may have in his tool box.

Parts needed:

| Drawing No. | Item No. | Description | P/N | MSRP | Tischer | Notes |
|-------------|----------|--|-------------------|----------|----------|--|
| 228 | 01 | HOSE F ENGINE INLET AND HEATER RADIATOR | 64219178427 | \$32.55 | \$26.04 | good P/N |
| 228 | 02 | HOSE F RADIATOR AND ENGINE RETURN | 64216951946 | \$41.95 | \$33.56 | good P/N |
| 283 | 03 | Pipe, engine supply-coolant pump | 11537535829 | \$120.03 | \$96.02 | good P/N - Kit w/ gasket & O-ring |
| 472 | 01 | Hose, thermostat-coolant pump | 11537521049 | \$34.57 | \$27.66 | good P/N |
| 472 | 07 | Hose, cylinder head-thermostat | 11537545890 | \$41.39 | \$33.11 | good P/N - Tischer multipart search said no part found, but has P/N separately |
| 472 | 17 | Hose from engine to radiator, top | 17127531579 | \$60.98 | \$48.78 | good P/N |
| 472 | 18 | Hose from radiator bottom - thermostat | 17127531581 | \$60.98 | \$48.78 | good P/N |
| 472 | 20 | Vent line for radiator, top | 17127618510 | \$37.22 | \$29.78 | good P/N - superceded part number |
| 472 | 23 | Line, heater return - thermostat, consisting of black plastic tube and rubber hose | 17127548223 | \$118.68 | \$94.94 | good P/N - Tischer multipart search said no part found, but has P/N separately |
| | | | Shipping handling | | \$26.95 | |
| | | | | | \$2.95 | |
| | | | Total | \$548.35 | \$468.57 | |

Additional Parts:

Hose Bracket ("space holder")- BMW P/N: 11537555977 \$4 (I got two just in case it broke in shipping)

Temperature Probe* - BMW P/N: 13621433077 \$32

*O-ring for temp probe if using the old one:

Danco. Its #31 product number 96745. The o.d. off the o-ring on the new sensor was 13.60mm and the O-rings from Danco had a 14.92mm o.d. \$2.44 for a pack of 10

Later on I will use the following designations in the text to identify each hose (Drawing Number-Item number):

228-01: Lower Heater Core - has BMW plastic connector

228-02: Upper Heater Core – has a spring clamp

283-03: Engine Block to Water Pump –hard steel pipe bolts to block and uses a hose clamp for other end

472-01: T-stat to Water Pump – U-shaped hose – uses hose clamps

472-07: Oil Filter Housing to T-stat – bolts to OFH and uses hose clamp on the T-stat

472-17: Top radiator hose to Oil Filter Housing – 228-01 and 472-20 (vent hose) attach to it.

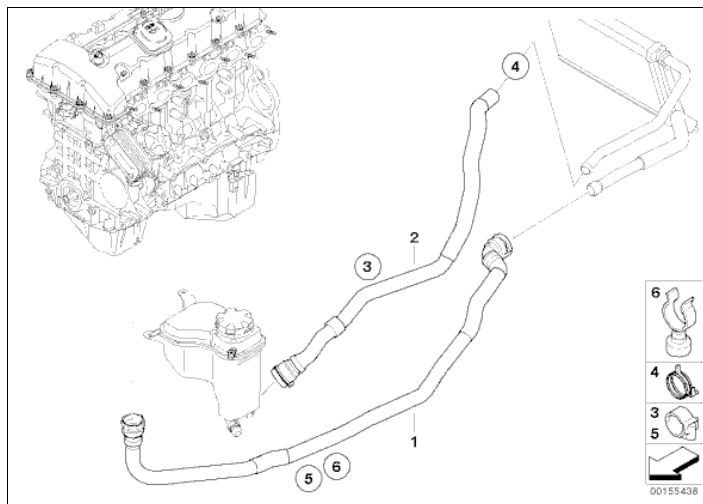
472-18: Bottom radiator hose to T-stat – has coolant temp probe in it and uses BMW plastic connectors

472-20: Vent line from coolant reservoir to top radiator hose – uses plastic connector and small clamp

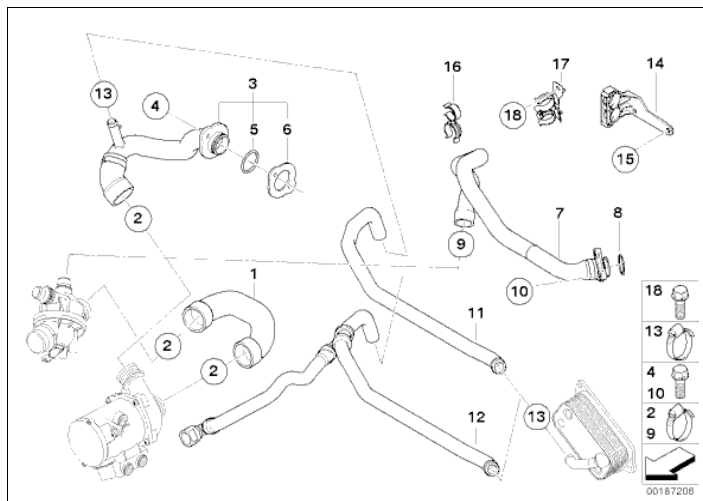
472-23: Heater Return line to T-stat and reservoir - this is the plastic hose along the frame member.

Hose Drawings:

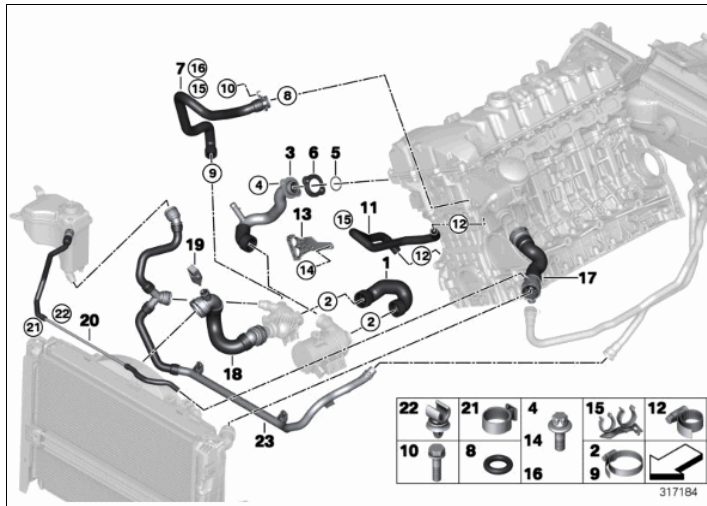
Dwg 228 – Heater Hoses (Images from realOEM.com. BMW sourced – Used without permission)



Dwg 283 – Some of the coolant hoses



Dwg 472 – Complete set of hoses



Special Tools needed:

- Two-post car lift (or floorjack, and 4 jackstands)
- ¼ drive ratchet, various ¼-drive extensions (10 inch is required), ¼-drive flex joint, and 6MM through 12MM sockets
- Automotive mechanic dental pick and box cutter (for the hoses)
- E-Torx E6, E8 and E18 sockets (or 9/16, 12-point, ½ drive socket)
- T-25 Torx socket, T-25 nut driver, and T-25 L-shape wrench
- ½ -drive Torque wrench and 3 inch ½-drive extension
- 20MM and 22MM open-end wrench.
- Various Flat-head screw drivers, long-shaft for prying (or similar tool) - I use a snap-on trim button removal tool in most cases
- Flashlights (I recommend a mini Maglight LED), drop lights, blue paper shop towels at least two rolls, and red mechanics rags (I buy them by the bag full)

Basic Procedure:

- 1) Lift car to gain access to the underside of it.
- 2) Underneath Items: Remove engine splash shield, radiator shield, mid under panel under the transmission, brake/fuel hose guard, and temporarily move the powersteering hoses out of the way
- 3) Drain coolant
- 4) In Engine bay: Remove cabin air filter housing, engine cover, air box, intake hose elbow, radiator, and cooling fan
- 5) Remove all the hoses – I'll go in detail for each one
- 6) Install the new hoses – I'll recommend the order of re-installation
- 7) Re-install radiator and fan
- 8) Reinstall cabin air filter housing, engine cover, air box, intake hose elbow
- 9) Refill and bleed the cooling system
- 10) Reinstall fuel hose guard, radiator shield, and engine splash shield

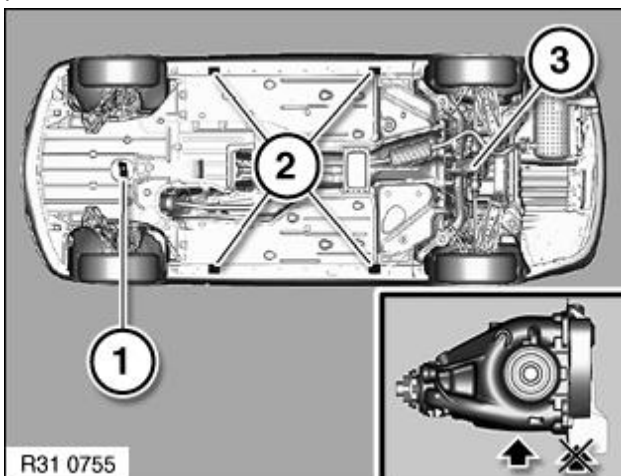
Notes:

- When I use the term 10MM bolt I am referring to the size of the fastener head not the real size of the bolt (shank).
- Also, you are dealing with plastic parts that due to age can become brittle and break easily.
- Nomenclature: Left-side means Driver's side of the car; right-side means passenger side.
- You should remove all the stuff I suggest so you have more room to work. It only takes a few minutes to remove everything (except the cabin airfilter)
- Removal of the cut ends of the upper and lower radiator hoses:

I had to hold down my radiator to my work bench with a 1x1 wood bracket and use the bracket with two big flat-blade screw drivers to pop off the large BMW Clamp ends (from the cut off hoses). I recommend you do the same because the hose end could not be removed from the radiator when it was mounted in the car. If you are installing a new radiator you obviously can skip this step.

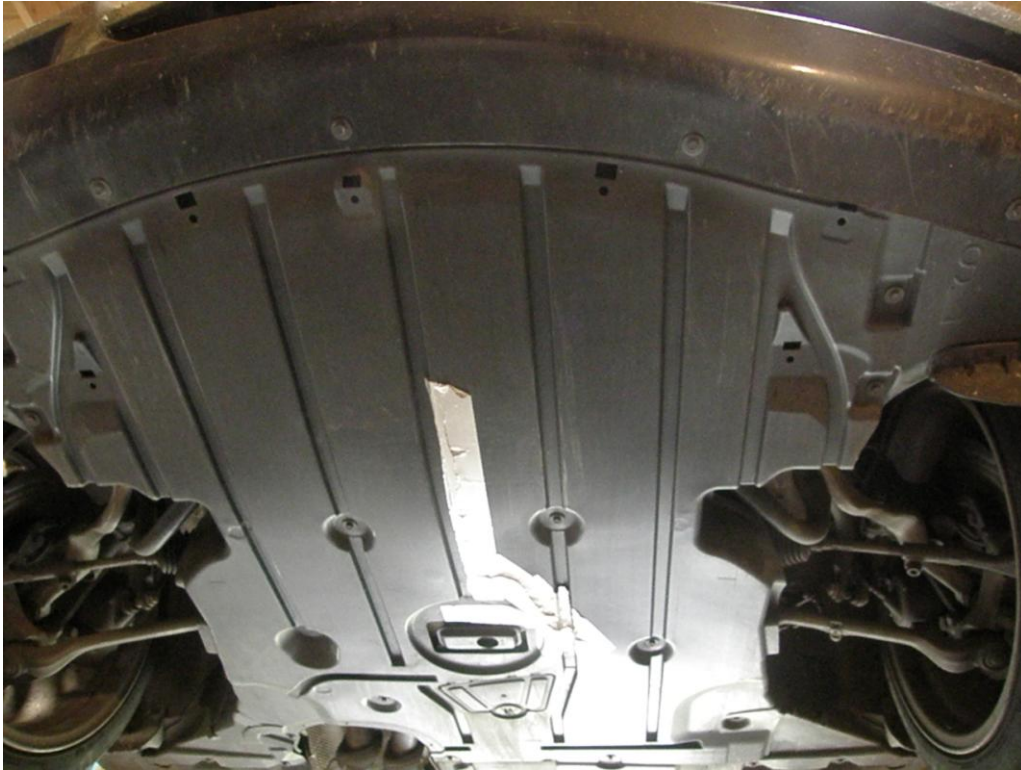
SPECIFIC INSTRUCTIONS:

1. **If you'll use Jackstands: Lift Car onto Jackstands.** Make sure the car is sturdily placed on jackstands and level. There is a front-center jack point (1) and a rear-center jack point (3) (the cast iron differential housing). Engage the parking brake. Lift the car up frontend first and place jackstands under the two front lift-points locations (2) noted below. Then lift the rear end using the diff and place the other two stands at the rear lift-points.



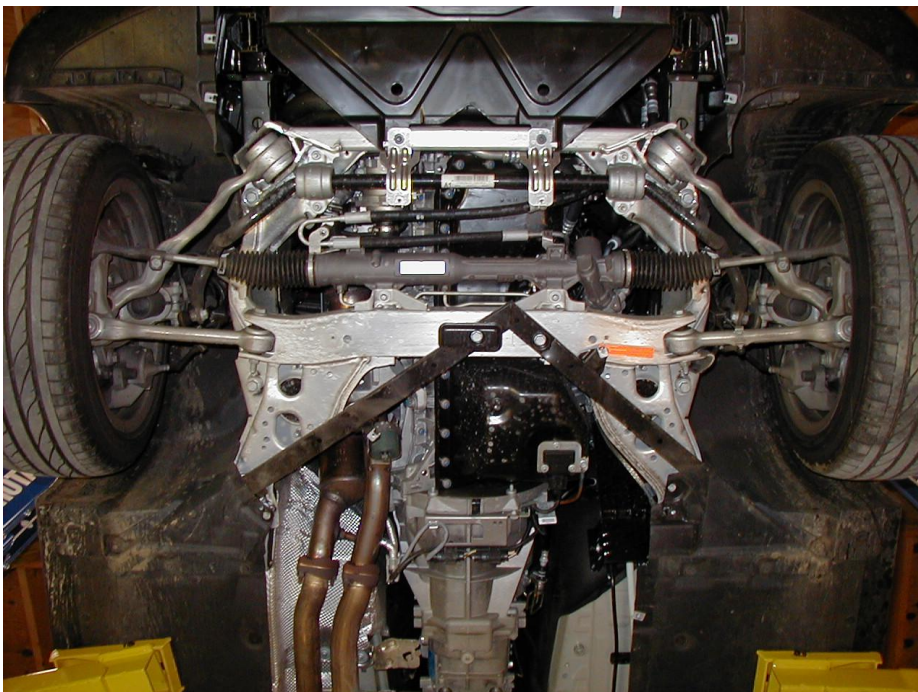
*BMW image used without permission

2. **Remove Underneath Items:**
Engine Splash Shield. The splash shield is attached to the chassis with 16ea. 8MM-head screws. Remove the screws and the shield slips from out of the front bump cover. (Nice tape job – LOL).



- a. There are three (3) 8MM-headed screws holding the shield to the bumper cover. Four (4) screws along the back edge of the shield. Two (2) are on the sides near the front (four total) close together on each side near the front. The remaining five (5) are in the center of the shield. Remove the outer-edges screws first then the center-located screws and hold the panel for the last two; it will drop down quickly and surprise you once the last screw is released. Careful.

Here's where you'll be working:



Radiator Shield: It has two 8mm bolts that hold two aluminum brackets, remove those. Then it has two clips that attach to the cross member, gently pull down on these, then it just slides rearward. The aluminum brackets locate two of the screws for the engine splash shield; make a note how they are installed – radiator shield clips in place first, then the brackets go back on bolted back into place.

Mid Under Panel: Five 8MM-head screws attach the mid panel to the chassis. Then there is a slot-clip to release. Remove the 5 screws then rotate the panel about 80 degrees counter clockwise (backend of panel rotates to the passenger side).

Brake/Fuel Hose Guard: Three 10MM stamped-steel nuts attach the guard to the chassis. Two nuts are on the outside brackets and screw onto studs on the frame rail. The third nut is hidden above the bottom of the guard in the middle between the locations of the other two nuts. You need a flashlight (to see it) and ¼-drive with 6 inch extension to get to it.

Powesteering Hoses and Bracket: You need just to move the hoses and their mounting bracket out of the way. At the metal U, there is a rubber isolator. Hold the bottom of the isolator with a 20MM open-end wrench to hold the isolator and remove the 10MM nut. Two 10MM bolts attach the bracket to the steering rack.

3. Drain the Coolant.

- a. Remove the coolant reservoir cap.
- b. Just for good measure, open the coolant reservoir bleed screw (it is the cross-headed button next to the cap where the overflow hose comes in to the reservoir).
- c. Place a catchpan under the left side of the radiator and open and remove the blue plastic radiator coolant drain screw on the left side of the radiator. You need only to remove the blue screw (it threads into a white nut – don't remove the nut!). (Some cars have two drain screws, one on each side of the radiator)
- d. Let coolant drain. It takes about 10 minutes or a bit longer. You can get more coolant out by squeezing the lower radiator hose on the right side of the radiator.

4. Remove Engine bay Items:

Cabin Air Filter Housing:

1. You have to be careful with the various plastic parts of the cowl. They all snap in place in various form or fashion and can easily be broken if not handled properly. The steps are:
 - a. Remove the cabin air filter. The cabin air filter is located on top of the cowl in front of windshield under the hood. (6 screws hold it in place). Be careful not to drop the screws down the various openings around the cowl.
 - b. Pull the black plastic covers covering the brake fluid reservoir and the one on the opposite side of the cowl left side i.e. passenger side of the cowl. There are two plastic tabs, one on the front and one at the rear of the cover (use the dental pick again) to pop up and little rubber thumb-tabs to pull out. Look at the covers closely to see how they fit in with the various rubber covers tied to them.
 - c. On the right side there is an air-pollutant sensor and wire to remove, and the washer fluid hose is connected to the underside of the black plastic cover when you remove the cover. The wire is

clipped to small tabs on the cowling, pull straight up on the clips and move it to the side. The tube is attached the same way but on the underside of the cover. Remove the cover, turn it over and pull the tube off.

- d. There are three wire looms that are connected to the cowling. Each sits in a carrier that is snapped to the front of the cowling. Two are run through the flat-covered carrier hanging on the front of the cowling, the second carrier holding the third wire is behind the front carrier in a tube-shaped carrier. To remove the front carrier:
 - i. Snap up on the front of the long flat cover (you'll see three tabs) and remove it (it is hinged at the back).
 - ii. There is enough slack to gently pull the wires out of the carrier lower-half. Pull the wires out and let them lay on the engine. Then remove the lower carrier half by pulling out frontwards on the three lock-tabs on the face of the cowling. Just take a few minutes to study this piece and see how it comes apart.
 - iii. The third wire loom sits in a separate carrier behind the one you just removed. It is tube-shaped made of two pieces hinged together and snaps apart, and then it unsnaps from the cowling. Open the carrier up (it stays together, just unsnapped) pull the wire out and then pull the carrier straight out. Again, look at it closely to see how it snaps in place before you try to take it apart.
- e. There are two small 8MM bolts that hold the cowling in place. The bolts are located at the front of the cowling near the fenders, where you removed the black plastic covers from earlier. They are small and black and hard to notice unless you look closely. Remove them. Gently pull up on the front of the cowling an inch or two and then pull it forward.

Engine Cover:

Now you can remove the engine cover. Release the five (5) quarter-turn torx-head bolts and remove the engine cover. Lift it up then out and forward to the driver's side. The screws are not retained in the cover and you can lose them (you'll think they are retained, but they are not).

Air Box, Air Intake Snorkel and Intake hose elbow:

1. Remove the two T20 torx screws attaching the snorkel to the core support. Pull the snorkel away from the core support and separate it from the airbox by prying on the nubs on each side.
2. Unplug the MAF sensor and release the hose clamp attaching the air intake from the backside of the airbox. Pull off the air tube from the air box.
3. Remove the two 10MM bolts along the fender-framerail and lift the airbox out of place. Make sure the rubber isolator (it looks like a half-round rubber plug stays with the stud it sits on on the lower framerail; it can sometimes stick to the bottom of the airbox housing and you may lose it.
4. Loosen the hose clamp on the intake elbow near the intake manifold and pull off the elbow.

Cooling Fan:

The fan comes out as a whole unit. It is secured with one silver-colored T-25 Torx screw on the right and a thumb clip on the left side. It sits on plastic mounts on the bottom of the radiator.

1. Remove the silver-colored torx screw on the upper right side corner of the fan unit.

2. Remove the temperature sensor electrical connector on the lower radiator hose. Push the wire clip in and pull the connector straight back. The wire to the temp probe is tied to the radiator fan with a zip-tie. Cut the zip tie and move the temp probe wire out of the way.



3. Remove the electrical connector for the fan motor it; it is on the left-side of the unit next to the fan motor.
4. Move the small tube that is part of the coolant over-flow hose; it snaps in mounts on the radiator.
5. Move the electrical harness out of the way. It mounted along the water tube.
6. Look for the thumb tab on the left side of the unit (about half-way) down. Push it in and pull up on the whole fan unit.
7. Move the unit back and to the left to clear the lower radiator hose, and then pull the whole unit up and out.

Radiator

The radiator is secured by two silver-colored T-25Torx screws located at the top right and top left of the radiator. It just sits in mounts at the bottom and comes out as a whole unit.

1. Cut the upper and lower radiator hoses as close to their connectors on the radiator as possible. Yes cut the hoses (you are replacing them anyway) because if there is any age on the hoses, they will probably not release from the radiator. You can try to release them, but I doubt they will come off, so just save yourself a lot of time and just cut the hoses.
2. Remove the two T-25 Torx screws on the upper right and left side corners of the unit.
3. Pull the top of the radiator toward the engine and then just pull it up and out. Easy peezy.

5. Remove All the Hoses:

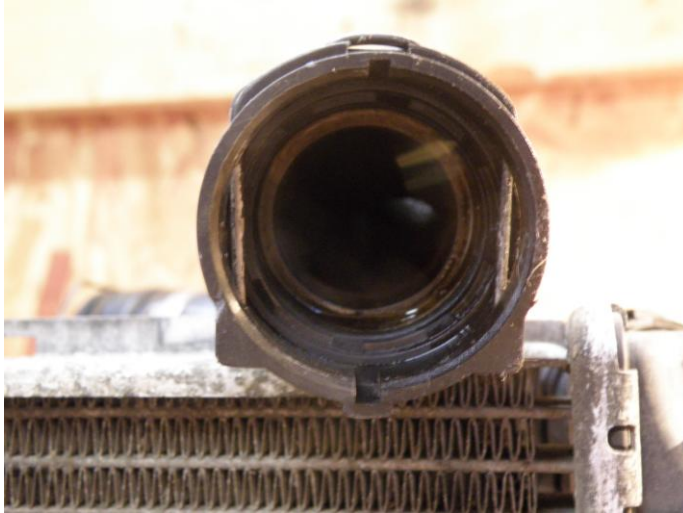
The cooling system uses three different types of hose connections: (A) Regular worm-gear hose clamp (German “Wruth” clamps for our BMWs), (B) Spring Clamp, (C) one-time compression clamp, and (D) *the BMW Clamp* (plastic hose attachment - the marvel of over engineering!). The Wruth clamps should all be reusable. You’ll need a small new Wruth clamp ($\frac{3}{4}$ diameter) to replace the compression clamp on the vent hose.

How To Remove the BMW Clamp

These things are a total pain in the ass. Pull up on the metal spring clip until it locks open. They are indexed, so you cannot twist them to break the tension of the connector; you can only wiggle them side-

to-side and up-and down to break the tension while pulling straight back from the male side of the connection. PITFA. If you can't get them off, just cut the hose some inches back of the connector (so you have something to grab on to) and then try to pull off. (Do not keep a baseball bat around when you do this because you may just start beating on your own car!)

Indexing of BMW Clamps:



Removal of the cut ends of the upper and lower radiator hoses:

I had to hold down my radiator to my work bench with a 1x1 wood bracket and use the bracket with two big flat-blade screw drivers to pop off the large BMW Clamp ends (from the cut off hoses). I recommend you do the same because the hose end could not be removed from the radiator when it was mounted in the car. If you are installing a new radiator you obviously can skip this step.



Order of removal/instructions:

- a. 472-17 - Top radiator hose to Oil Filter Housing (OFH):
Hoses 228-01 (heater hose) and 472-20 (vent hose) attach to the connector at the radiator side. As directed before, just cut this hose to ease removal. Cut the small compression clamp on the vent hose (472-20) and pull off nipple. On the underside of the connector release the BMW Clamp for hose 228-01 and wiggle off. Then release the BMW Clamp on the OFH side and wiggle off.
- b. 472-18 - Bottom radiator hose to T-stat (has coolant temp probe in it at the radiator side – the probe will be unplugged already). Cut this hose too (as previously directed). Release the spring clip on the T-stat side and wiggle the BMW Clamp off. When reinstalling use the new temperature probe in the new hose.
- c. 283-03 - Engine Block to Water Pump –bolts to block and uses a hose clamp for other end: You will need to use a 1/4 drive ratchet and at least an 18 inch extension bar and 1/4 –drive u-joint (flex joint) to remove the bolts (E-10 E-Torx) for the hard steel pipe side. You need to fish up through the steering rack and engine mount to get to the bolts. The bottom bolt is easy, the top is a bit harder. These bolts do not take much tightening torque so they remove very easily.
- d. 472-01 - T-stat to Water Pump U-shaped hose: Release hose clamps on T-stat and water pump and pry off.
- e. 472-07 - Oil Filter Housing to T-stat: Remove the three (3) 10MM bolts on the OFH side and pull hose out of OFH. Loosen clamp on T-stat side and pry off hose bib. There are two plastic brackets on the front of the engine that hold the hose in place. One is a closed clamp that snaps open – use pick or small screw driver here. The other bracket is an open “C” bracket. It will probably break when you pull the hose out of it. I’ve instructed to buy a new clamp for this one so use the new clamp when reinstalling. It bolts to the cylinderhead using an E-10 screw.
- f. 472-20 - Vent line from coolant reservoir to top radiator hose: This already disconnected from the top radiator hose. On the coolant reservoir side release the BMW Clamp and wiggle off. This one is easy.
- g. 472-23 - Heater Return line to T-stat and reservoir: This is the rubber/plastic hose that runs along the front frame crossmember and connects to three (3) different places, the bottom of the reservoir, the T-stat, and the end of the lower heater core hose (228-01). Disconnect the three

(3) BMW Clamps at the reservoir, T-stat, and heater hose. Three (T-30 Torx bolts locate the plastic section of the hose to the frame. Two are on the crossmember in front of the engine, the third screw is on the left side under the powersteering pump. All are best accessed from the top using an extension bar. You may need a L-shaped Trox wrench This hose can be problematic to get out. The left-side bracket can get caught up in the frame and powersteering hose. You may need to loosen the banjo bolt on the powersteering hose and move the hose a bit to make clearance for the water hose bracket. Once that's all done it comes right out.

- h. 228-02 - Upper Heater Core hose: On the heat core side it has a spring clamp that should snap open and stay open if you squeeze it far enough. It's a tight space to get to. Use regular plyers to open the clamp and slide it down the hose a bit. The hose is mounted in little bracket on the frame rail. Remove it from the brackets (they clip open). Then use a box cutter and slit the hose end to peel it off the heater core hose bib. The bib is aluminum, so don't cut too deep. Pry the hose end off and remove the hose.



- i. 228-01 - Lower Heater Core hose: This has female BMW plastic connector on the heater core side. It is already disconnected on from the radiator hose. To remove it from the heater core, release the BMW Clamp. The spring clip is on the bottom of the connector and pulls down. It is difficult to reach from the top, but can be reached from the underside as long as the fuel/brake hose guard is removed. Good news here is since the BMW Clamp mounts to the aluminum hose bib at the heater core, it comes off very easily. Wiggle and pull it off the heater core.

6. Reinstall the Hoses:

Okay, so all the hoses are now out. Installation is in the reverse order of removal. No tricks here, just start reinstalling the hoses. For the lower heater hose (228-01), you'll need to wait to connect the opposite end to the upper radiator hose once the radiator is re-installed. Make sure you connect the upper heater hose to the Heater Return Line (472-23). And make sure you reconnect the Vent hose (472-20) to the upper radiator hose once the radiator and hose are back in place.

7. Reinstall the Radiator and Cooling Fan:

Just a few notes. I suggest installing the radiator side hoses on the radiator when it is out of the car to make it easier. Install A NEW temperature probe in the lower hose. I tried to reuse mine but it leaks

because the o-ring flat-spots. BMW does not spec the o-ring as a replaceable part, but fellow poster scotty-miller provided the specs on o-rings that worked for him:

Outer diameter- 9/16"

Inner diameter- 5/16" x 1/8"

Sourced from a company called Danco. Its #31 product number 96745. The o.d. of the o-ring on the new sensor was 13.60mm and the O-rings from Danco had a 14.92mm o.d. \$2.44 for a pack of 10

I had to go back in and re-drain the system and install a new temp prob. My advice is spend the \$23 for a new temp probe. Both scotty-miller and I broke one of the tabs off the temp probe; me on the old one, Scotty on the new one (he re-installed his old one). Thanks for the info Bro!

8. Reinstall cabin air filter housing, engine cover, air box, intake hose elbow:

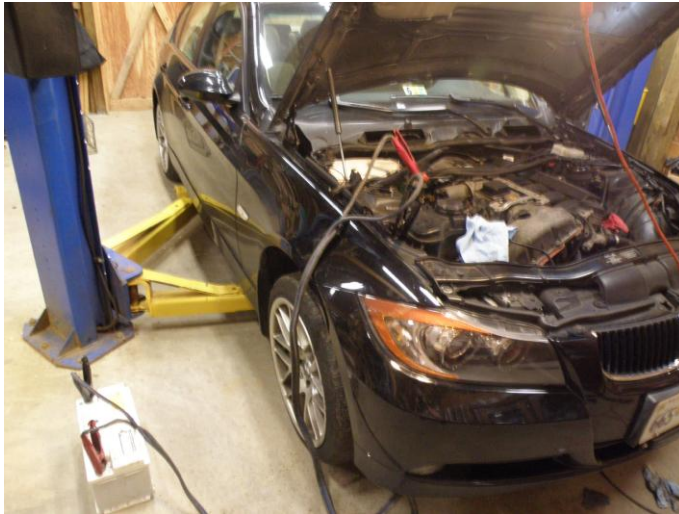
All Just reverse of removal in the reverse order . Make sure you plug the MAF sensor back in or you'll have to clear the engine code...

9. Refill and bleed the cooling system

- 1) Reinstall the blue radiator drain screw.
- 2) If you didn't open the bleed screw on the coolant reservoir, open it now (about 4 turns)
- 3) Slowly fill the system with a premixed 50/50% mix of BMW coolant and distilled water.
- 4) Fill the reservoir all the way up to the bottom of the filler neck. The bleed screw will bleed air as it gets trapped in the reservoir. Keep filling until the bleed screw is passing coolant with no bubbles in it. (Keep a paper towel handy to soak up the coolant coming out of the bleed screw).
- 5) Close the bleed screw.
- 6) Once the reservoir (system) is full (it will take almost two gallons of antifreeze) fully close the reservoir cap.

Venting Procedure (to get the trapped air out of the system):

- 7) Insert the key into the dash slot and hit the starter button (but don't start the engine – e.g. keep your foot off the brake/clutch).
- 8) When the ignition is on, set the heater to the highest temp (84 deg.) and set the fan on low.
- 9) Hold down the accelerator pedal for 10 seconds then release. This activates the water pump and it will cycle for 12 minutes (note the time you start because it takes 12 minutes, no more no less and if you don't time it you'll sit there guessing if it is finished) to vent all the trapped air into the coolant reservoir (it sounds like a mini washing machine). Note: the time you start because it takes 12 minutes, no more no less and if you don't time it you'll sit there guessing if it is finished. Don't open the reservoir cap or bleed screw during the venting process! (you'll have start the process over if you do). You may want to hook up an extra battery to the under-hood jumper points to keep the car's battery from running down (that's my original battery I keep around for stuff like this).



- 10) Once the water pump stops after 12 minutes, open the reservoir cap (it will hiss a little) and add coolant until the measuring stick (ball indicator) is 6 mm above the top of the filler neck. (there is a pictograph on the reservoir that shows how far out the stick is at the full level)
- 11) Close the cap and check for leaks in the system

10. Reinstall fuel hose guard, radiator shield, and engine splash shield

All Just reverse of removal in the reverse order. Make sure you install the radiator shield first, then the aluminum brackets.

Reinstall the Engine Splash Shield.

- a. Have all the screws at the ready in a pocket.
- b. Slide the front lip of the shield up over the bumper cover. Align the screw holes and loosely thread the front three screws.
- c. Loosely thread the four rear screws.
- d. Loosely thread the remaining screws and torque all screws down.

Shroud of Berlin:

