ECS TUNING®

VW VR6 water pipe and cooling system upgrade

Installation Instructions

This tutorial is provided as a courtesy by ECS Tuning.

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.

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Overview

VR6 owners may not have a timing belt to fret about or replace, but that doesn't mean their engines will run forever without periodic care. High-mileage VR6 engines have a few issues of their own, and are particularly susceptible to coolant loss from multiple leaks, including the water pipe that connects the engine coolant passage near the water pump to the thermostat housing.

In this tutorial, we will perform a major cooling system refresh on a VR6 12V that has logged 180,000 miles. Procedures for 12V and 24V are similar, although the Secondary Air Injection pump on our car is not used on all VR6 engines.

VR6 owners already know that the narrow-angle-six is shoehorned into the Golf engine bay, making front-of-engine parts hard (or impossible) to see, let alone reach. That said, an initial visual inspection tells us that we have several coolant leaks to repair, including an original radiator with several persistent drips and large accumulations of pink coolant crust. The crossover metal coolant tube from the lower radiator hose is paper thin with rust, and moist in spots, indicating perforation. When the lock carrier is removed, we discover two more steel pipes in similar condition.

The water pipe is not the only part of this cooling system that needs attention.

Our Project

1) We will do a cooling system upgrade, replacing the radiator and thermostat housing assembly. We will replace all steel coolant tubes at the front of the engine.

2) We will install a new ECS Tuning aluminum water pipe, and thermostat housing assembly, and engine coolant temperature sensor.

3) We will show you how to move the lock carrier to the service position, and also demonstrate how to remove it from the car completely; a little more work for a lot more working space.

4) We will show you how to remove and reinstall the Secondary Air Pump on cars that have them.

5) We will demonstrate how to use a cooling system vacuum fill tool to easily refill the cooling system and eliminate system bleeding.

6) Along the way, we'll flush the system, then add fresh radiator hoses and seals, and fill the cooling system with a 50/50 mix of distilled water and the newest generation of antifreeze, G13.

Ready?

Tools and Recommendations

You'll need standard tools like ratchets, a metric socket set with extensions, a set of Torx bits or screwdrivers (T25 and T30), and a hydrometer or refractometer to check the specific gravity of the coolant mix. We also recommend the following tools to make this job a lot easier!

Spring Clamp Pliers

We do **NOT** recommend installing the standard screw-type hose clamps sold at the local parts store. Unlike factory-installed spring clamps, worm-drive screw clamps have a single tightness, established when you install them. Spring clamps are far more efficient, since they "squeeze" the hose all the time. This helps prevent leaks as hose rubber ages, or expands and contracts at different temperatures.

Most DIYers hate spring clamps since they are a total pain to remove and install with common pliers. If you've tried it, you and your scraped knuckles know what we mean.

A dedicated removal tool makes spring clamps easy to remove and install. Its small clamping head and long cable will fit into tight places that regular pliers can't go, and the squeeze handle locks in place to relieve clamp tension while you position or remove them.

A mechanic who worked on this project and used this tool for the first time was heard to say, "I love this thing."

Cooling System Vacuum Fill Tool

If you hate bleeding the air out of cooling systems during a drain and fill, a vacuum fill tool will make your day. This tool uses compressed air and venturi vacuum to pull a vacuum in the cooling system, then fills it without air pockets.

Here's how it works:

- When you have the cooling system completely closed following a drain-and-fill or repairs, insert the tapered rubber neck of the vacuum tool into the coolant bottle neck.
- Connect the tool to a compressed air source and open the vacuum valve. Venturi vacuum draws a vacuum in the cooling system so strong that larger hoses will suck flat temporarily.
- If the vacuum holds, you have a good indication the system is leak-free–**before** you add coolant. (Always add a system pressure test after the system is filled since small leaks are more apt to show up under pressure.)
- Mix your coolant in a large clean pail and insert the tool's fill hose into the liquid. Open the fill valve, and the fresh coolant will be sucked into the entire cooling system. This eliminates air pockets and the hassle of bleeding the system.

ECS Tuning VR6 Cooling System Kits

We have several cooling system repair options for VR6 engines that include both OEM and aftermarket parts; from individual repair parts to problem-solving kits.

Click on any part number below to link directly to its product page.

Kits:

ES2702204 - Includes an ECS Tuning black aluminum water pipe, radiator, water pump, cooling fans, sensors, o-rings, recovery bottle, thermostat and housing, hoses, and G13 coolant.

ES2702184 - Includes an ECS Tuning billet aluminum water pipe, radiator, water pump, cooling fans, sensors, o-rings, coolant bottle with pressure cap, thermostat and housing, hoses, and G13 coolant.

ES257346 - ECS Tuning Water Pipe Kit - Stage 1
Includes an OEM black plastic water pipe, thermostat and housing with cover, and sealing rings.

ES257347 - ECS Tuning Water Pipe Kit - Stage 2
Includes an OEM black plastic water pipe, thermostat and housing, sealing rings, and coolant.

ES1892127 - ECS Tuning Water Pipe Kit - Stage 3
Includes an ECS Tuning billet aluminum water pipe with stainless drain plug, thermostat and housing, coolant sensor and retaining clips, sealing rings, and coolant.

For individual VR6 cooling system parts, visit the ECS Tuning **VR6 cooling system product section.**

Before You Start

High-milers like our 2001 GTI commonly have scaly deposits and other contamination that restrict coolant flow. A mild flushing agent, used as directed, will loosen and remove many harmful deposits (**ES2608077**).

A clogged system has symptoms that often include overheating (especially when the air conditioner is on) or when the car is accelerated under high engine loads. A clogged heater core can also reduce heater output.

Note: All used engine coolant should be treated as toxic waste. Please dispose of used coolant safely so it won't be ingested by children or animals, and observe all local laws regarding coolant disposal.

Step 1

Test the specific gravity of the old coolant. This is an important first step.

Our GTI currently has too much water in the coolant. The mix is weak, with freeze protection good only to +15°F. Since draining the system won't remove all of the old coolant, we will have to refill with a coolant mixture that has slightly more antifreeze than water so we end up with a 50/50 balance. This will give us freeze protection good to -34°F.

Why does this matter? Too much water in the coolant promotes corrosion and does not provide enough freeze protection. On the other hand, too much antifreeze in the mix results in poor heat transfer and possible engine and cooling system damage.

Step 2

- Leave the pressure cap **off** the coolant recovery bottle.
- Raise the car and remove the belly pan.
- Open the drain in the lower radiator hose.

Service Tips: The drain valve is located in the lower radiator hose at the bottom left side of the radiator. If you attach a length of tight-fitting rubber hose to the drain tube as we have done here, you can direct the coolant to a container without making a major mess.

(See next photo for more.)

Step 3

Here's a closeup of the drain knob in a new hose, showing how it works.

Note the curved notch in the neck. To open the valve, rotate it counterclockwise to unlatch it, then pull to open it.

On older cars, these valves can stick from dirt and dried coolant crust. Soap and water applied with a nylon bristle brush and a blast of compressed air should get the valve moving again.

Service Tip: Some lower radiator hoses have no drain valve**.** Drain the system by disconnecting the lower radiator hose (a messy proposition).

Step 4
Remove the front bumper.

Start by removing the screws securing the fender liners to the sides of the bumper, four per side.

Step 5
Open the hood.

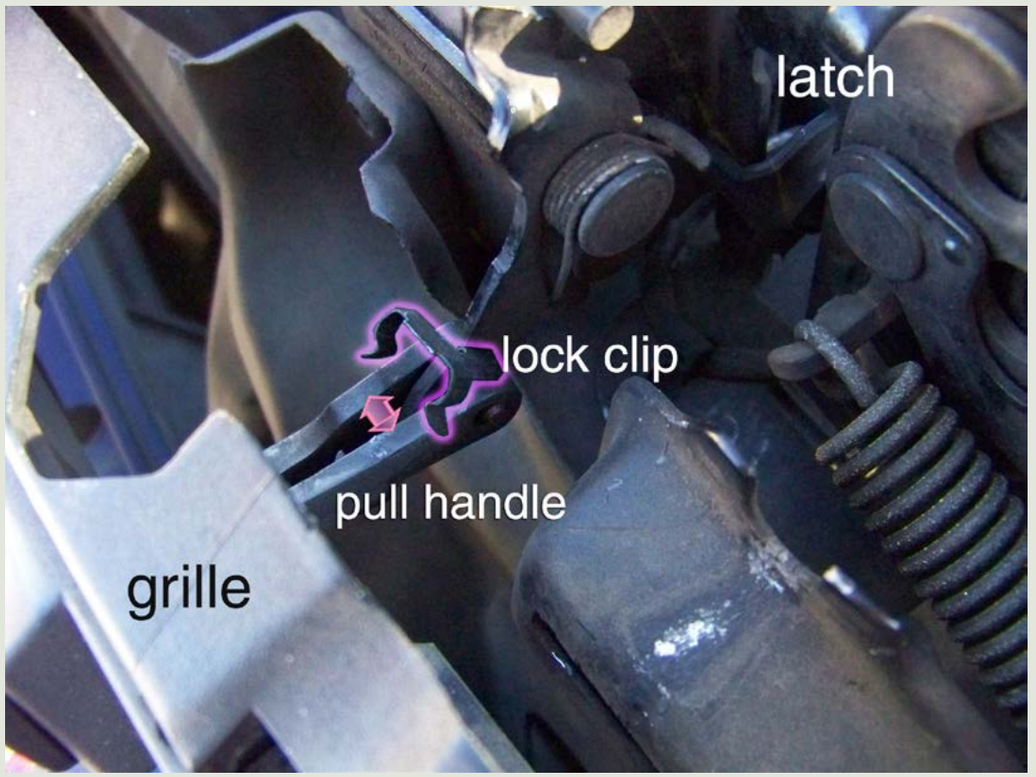
Use a small screwdriver to push straight down on the center grille clip as you pull the center of the grille forward to release it. (The lock tab is located inside a small rectangular window in the area below the center arrow.)

Then pry between the rear top edge of the grille and lock carrier (outer arrows) to pop the other two snap clips free.

Step 6

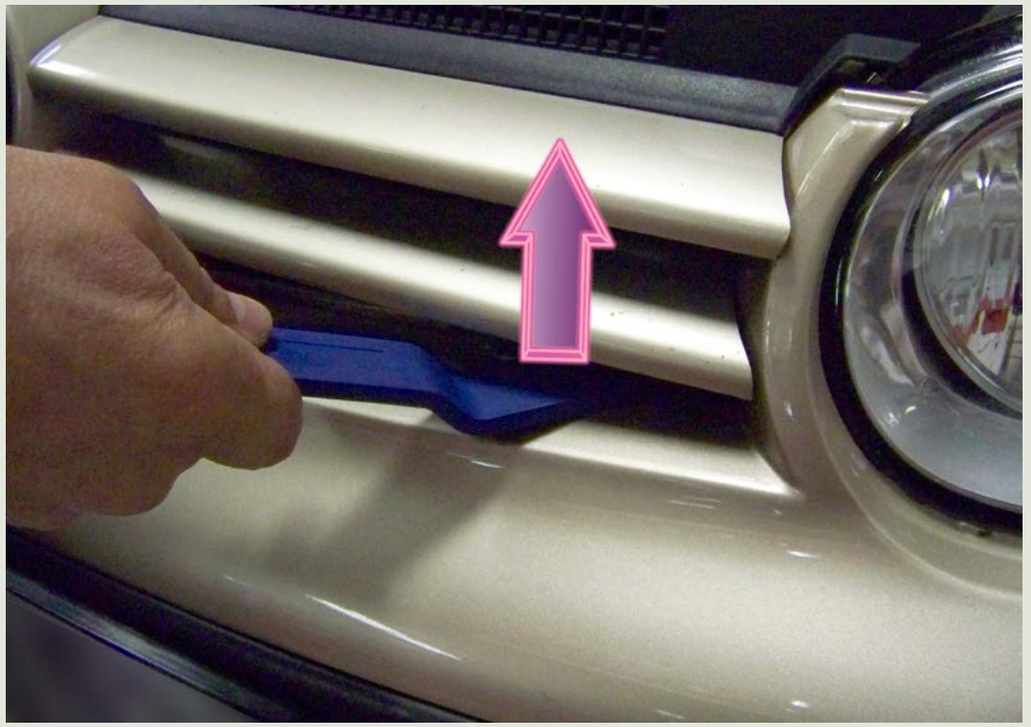
Tilt the top of the grille forward slightly to expose the lock clip on the secondary hood latch pull handle. Pry the front of the clip upward, and remove it.

Then use a small screwdriver to pry apart the two legs of the release handle far enough to clear the cross pin in the release lever (small arrows). Pull the lever forward, out of the grille.



Step 7

Lift (or pry) upward on the bottom of the grille and remove it from the bumper cover.



Step 8

Removing the upper grille exposes the upper bumper cover screws.

Remove the five screws (arrows) with a T30 Torx driver.

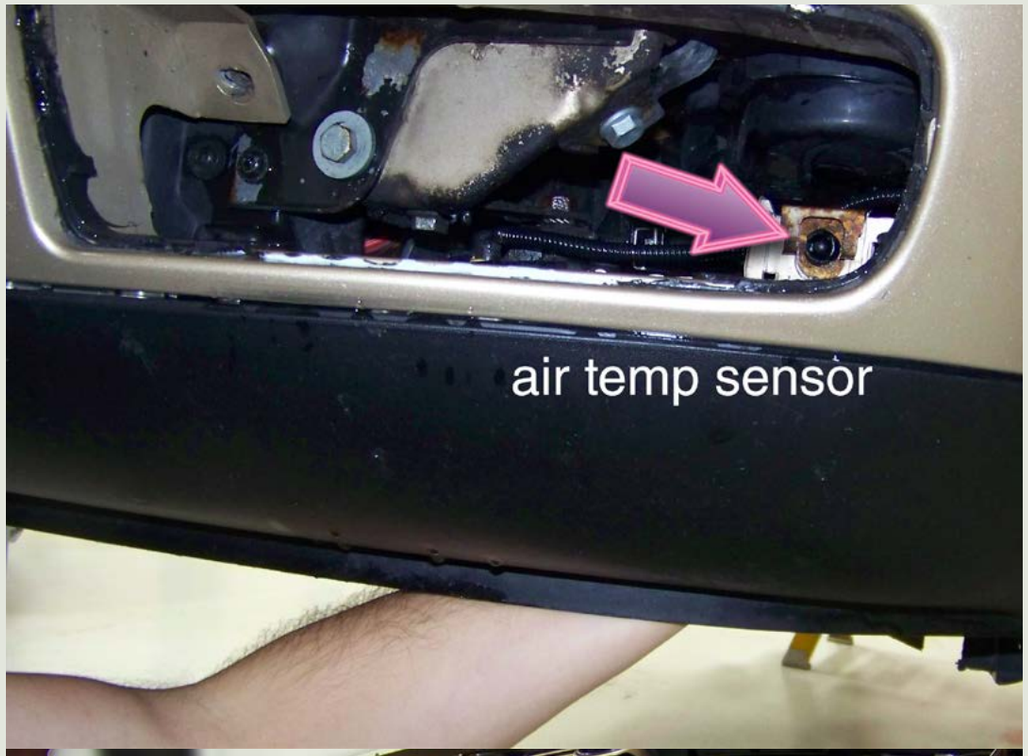
Step 9

Remove the lower left and right side bumper grilles, then remove the bottom bumper cover Torx screws in the grille openings, one per side.

Service Tip: The bottom grilles are normally held in place by plastic tabs at the outer edges of the grille body. Usually, squeezing the center vent slats together slightly will release them. (Ours has been glued in place, a fairly common occurrence when grille tabs break.)

Step 10

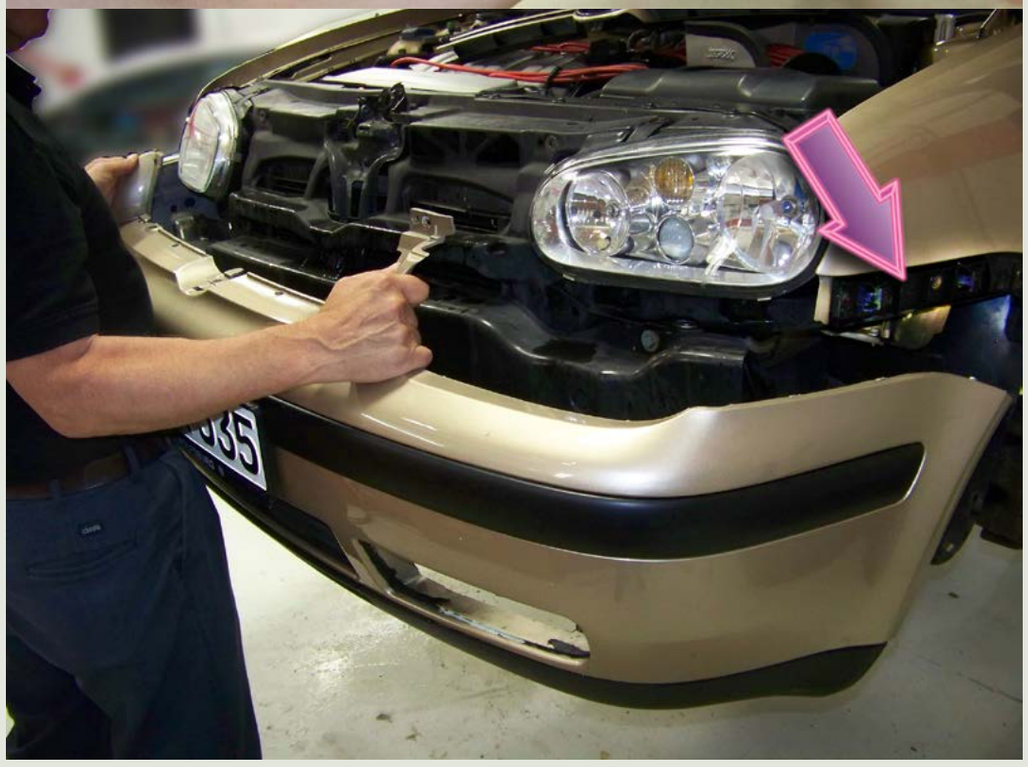
Remove the retainer clip holding the ambient air temperature sensor in the bumper. No need to disconnect it; just let it hang for now.



Step 11

Grab the bumper cover, and slide it straight off the front of the car until it comes free from the plastic retainers on the fenders (arrow).

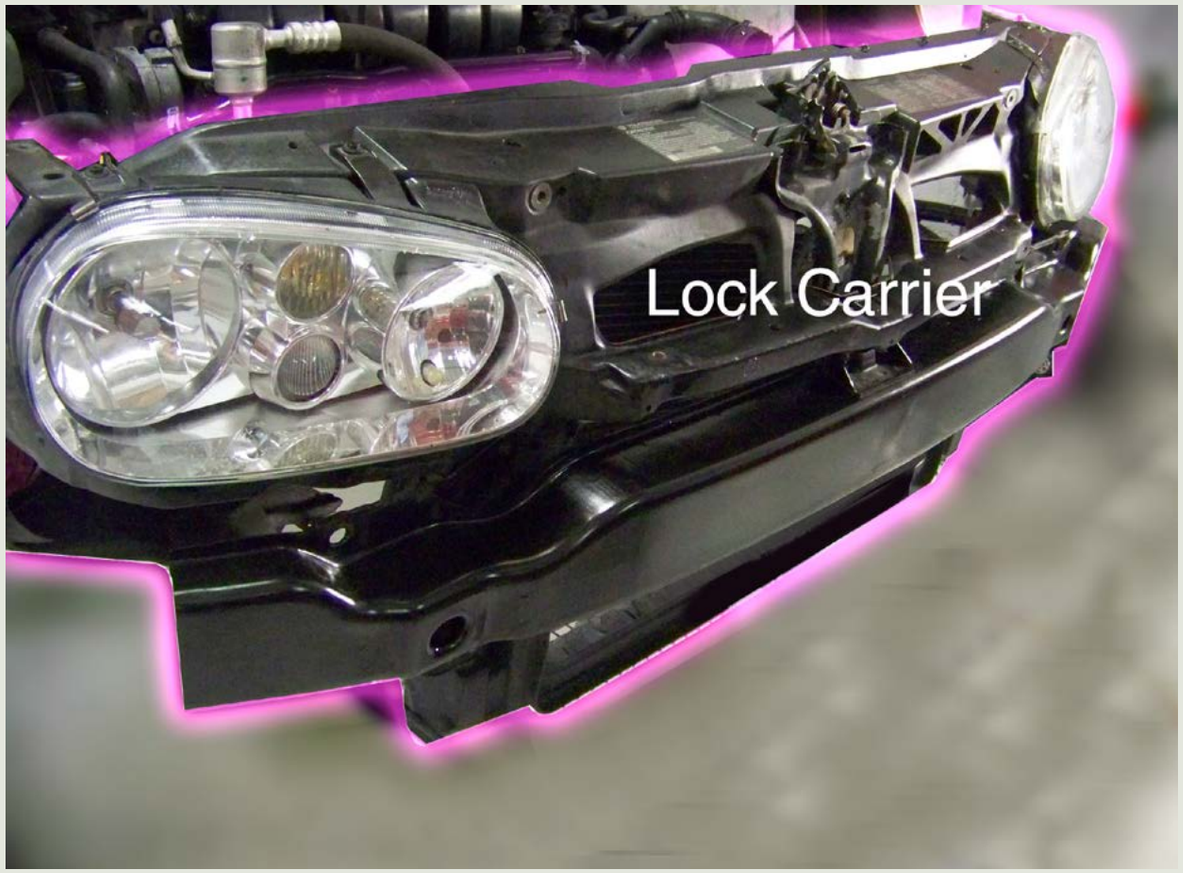
Lay the bumper cover aside.



Terminology.

VW/Audi refer to the radiator core support as the "**lock carrier.**" The term is a little confusing if you've never heard it before. The lock carrier is the large metal support brace that spans the front of the car. (The generic term is "radiator core support.") It bolts to the frame rails to tie the front end together structurally, and supports major front end components like the bumper cover, radiator, ac condenser, hood latch, and headlights.

It also blocks access to the front of the engine.



Service Option 1

To make room, you can unbolt the carrier and slide it forward on long bolts several inches to what VW/Audi call the "service position." The service position gives you room enough to reach down between the back of the radiator and the front of the engine to do your repairs. Not a lot of room, to be sure, but more.

Moving the lock carrier to the service position requires a special tool (VW3411) from VW that is basically a pair of long 8x1.25 bolts that let you "hang" the carrier away from the engine. (Don't have the special tools? Just use a couple of standard 8mm bolts, 7 inches long.)

Service Option 2

The other option is to remove the carrier from the car altogether. We prefer this approach for a job this size. A little more work initially, removing the carrier gives us full access to the front of the engine.

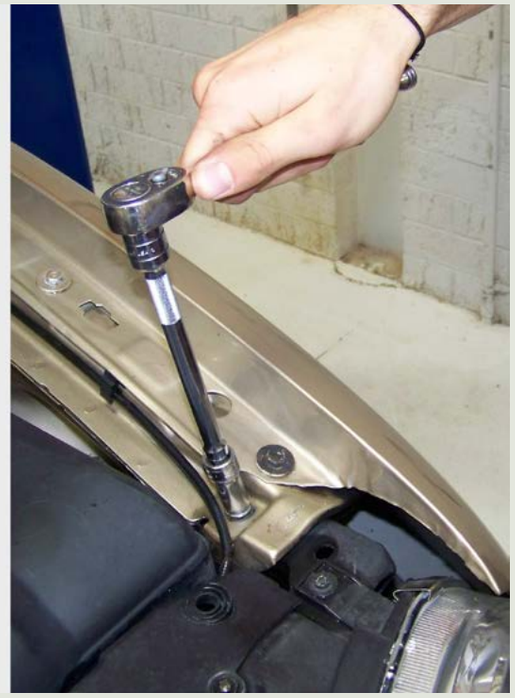
We will show both options and let you choose.

The Service Position

Step 1

The lock carrier is secured to the front end by six bolts.

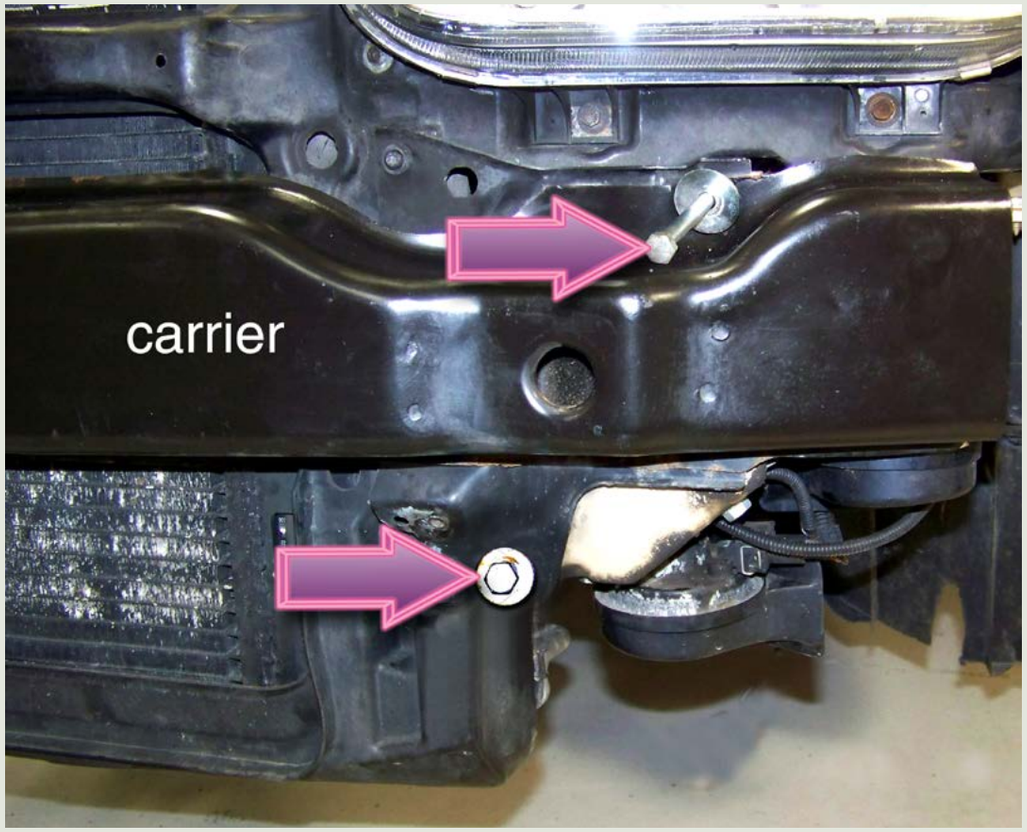
To move the lock carrier to the service position, start by removing the two top bolts in the engine compartment, just behind the headlights (10mm socket and ratchet).



Step 2

Using a 13mm socket and ratchet, loosen and remove the upper front bolts on both sides of the lock carrier (beneath the headlights). In their place, screw in an 8mm x 1.25mm bolt, 6-7 inches long, with a large washer to limit carrier travel (top arrow). Make sure you have full thread penetration.

Remove both lower carrier bolts (right side shown by lower arrow).

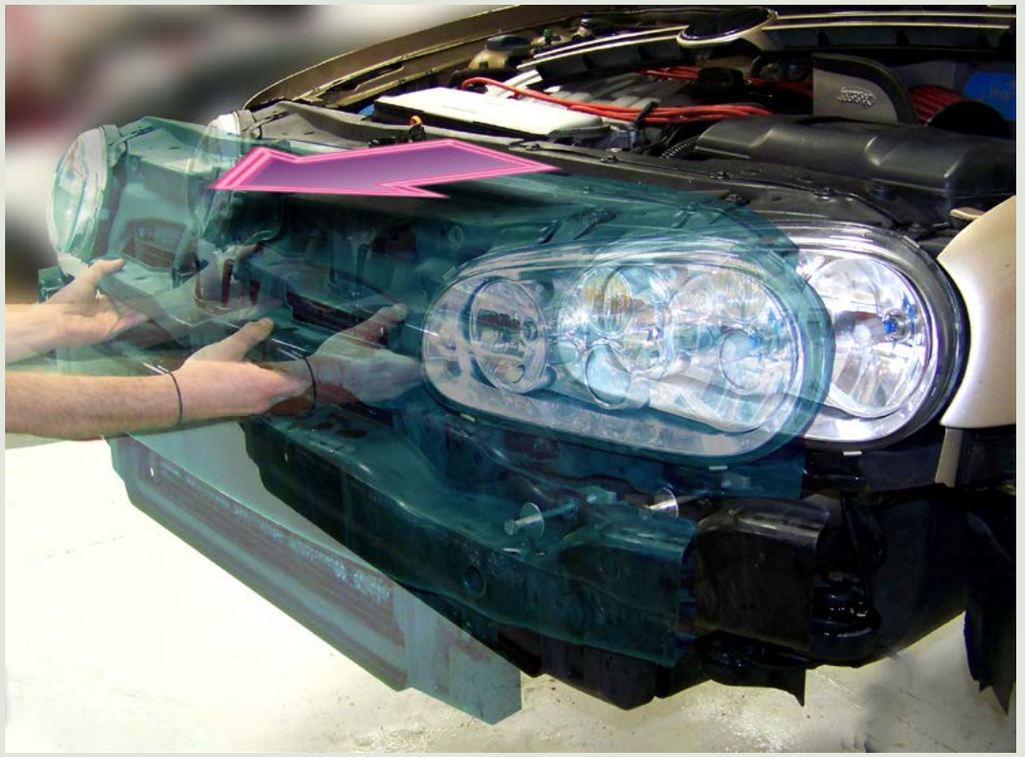


Step 3

Disconnect the hood release cable from the back of the latch. (Pry the bowden cable grommet from its bracket and pop the cable ball-end from the latch arm.)

Slide the lock carrier forward on the long bolts until they hit the washers. The lock carrier is now in the service position.

If you are an experienced technician, you may feel comfortable with replacing the water pipe and other engine parts in the service position. Since we are replacing the radiator and want more room to shoot photos, we'll remove the lock carrier completely. It may surprise you to find that it isn't all that hard to do, even with vehicle air conditioning.

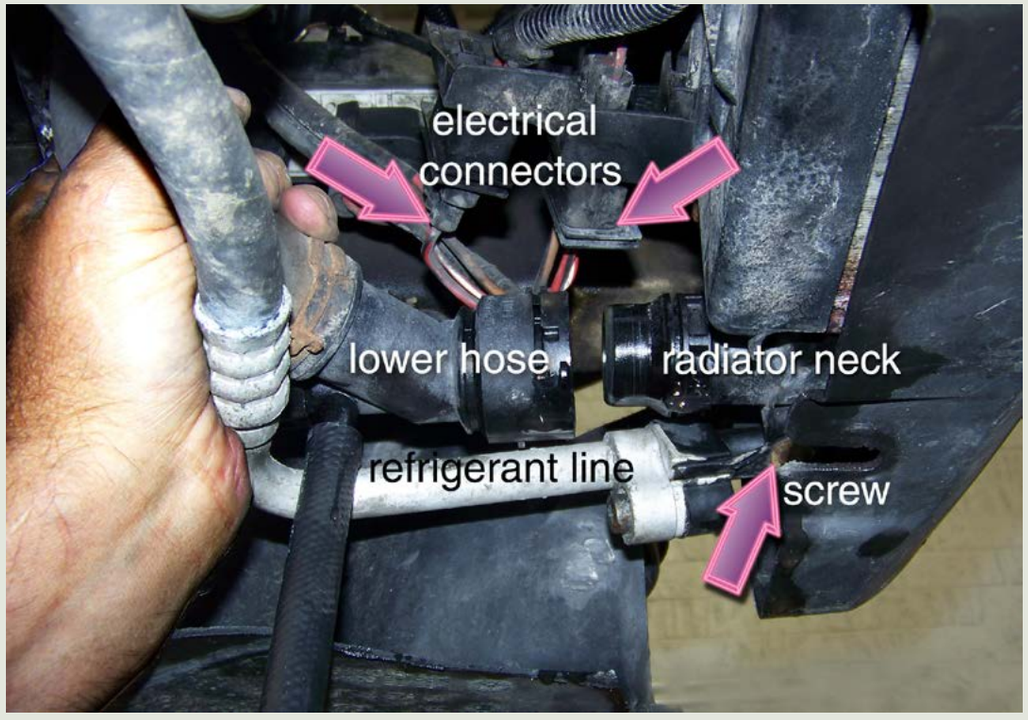


Removing the Lock Carrier (optional)

Step 1

With the carrier in the service position, raise the car:

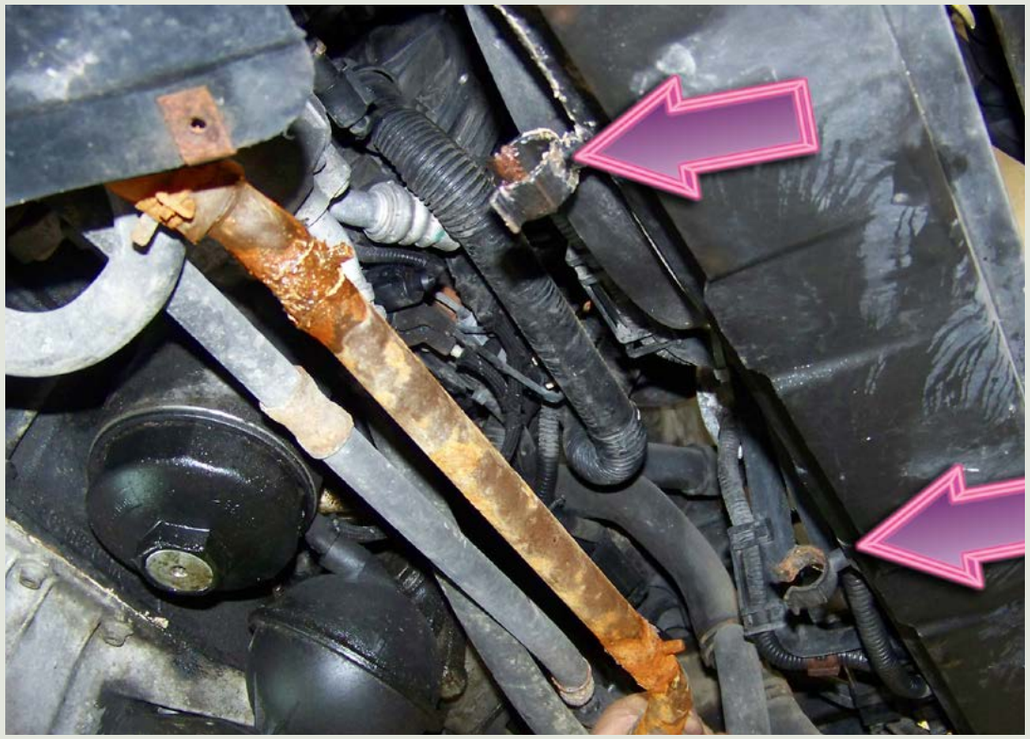
- Pry up on the lower radiator hose retainer clip and pull the lower radiator hose off the radiator neck.
- Reach up above the lower hose and disconnect the cooling fan temperature switch and the two cooling fan harness electrical connectors.
- Remove the single Torx screw that secures the refrigerant line to the bottom of the radiator (labeled with arrow).



Removing the Lock Carrier

Step 2

Pull the lower transverse coolant pipe out of the two retainer clips (arrows) at the bottom of the radiator. (We colorized the pipe to make it stand out.)



Step 3

Lower the car.

- Pull the top radiator hose wire clip, then disconnect the upper radiator hose.

- Unplug both headlights. No need to remove the headlight assemblies from the carrier.

Service Tip: The top and bottom radiator hoses can stick tightly to the radiator necks. It may take wiggling and prying to get them loose.

Removing the Lock Carrier

Step 4

Working from the front of the lock carrier, remove the four radiator Torx screws, two per side (shown here on the right side).

Then remove the two ac condenser screws, one per side (arrow).

Tilt the top of the radiator back toward the engine far enough to clear the top edge of the lock carrier, then lift it out.

Step 5

With the carrier still hanging from the long bolts, support the weight of the lock carrier with a cart or something similar.

With the carrier safely supported, remove the carrier bolts altogether and pull the carrier the rest of the way off the car.

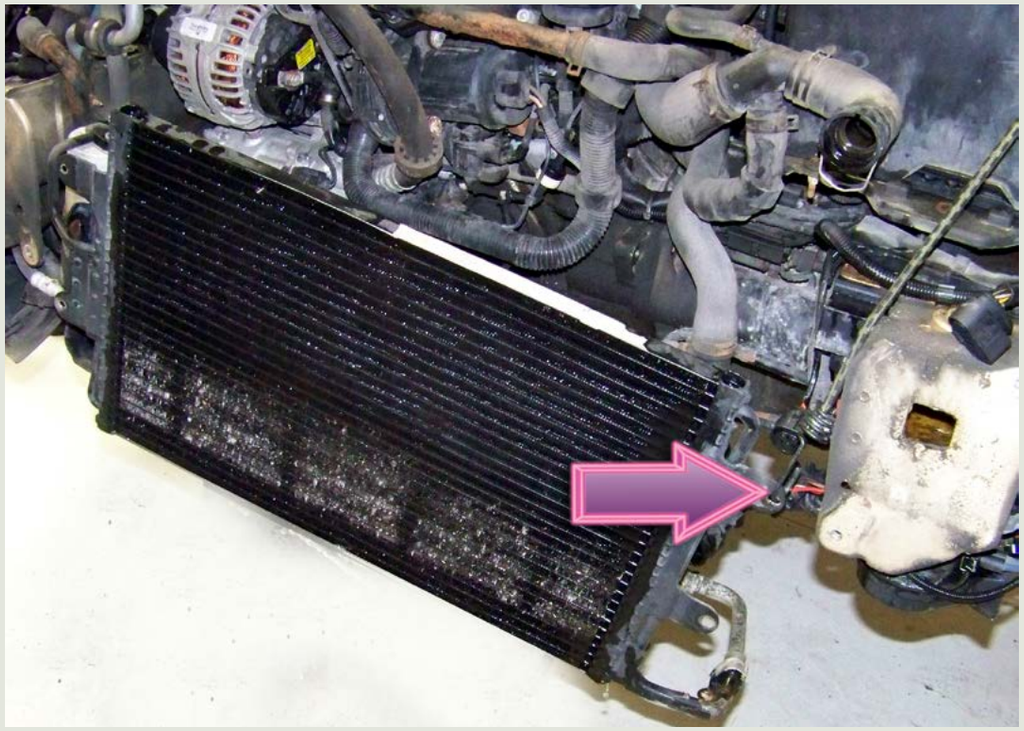
Service Tip: The carrier is not extremely heavy, but you may want to have an assistant help you. See next step for hints about the ac condenser.

Removing the Lock Carrier

Step 6

Since we're hanging the condenser, there is no need to discharge the system refrigerant. Just be sure to work carefully around the ac condenser and hoses, which will still be connected. Suspend the ac condenser from a wire or bungee cord so its weight won't hang from the hoses.

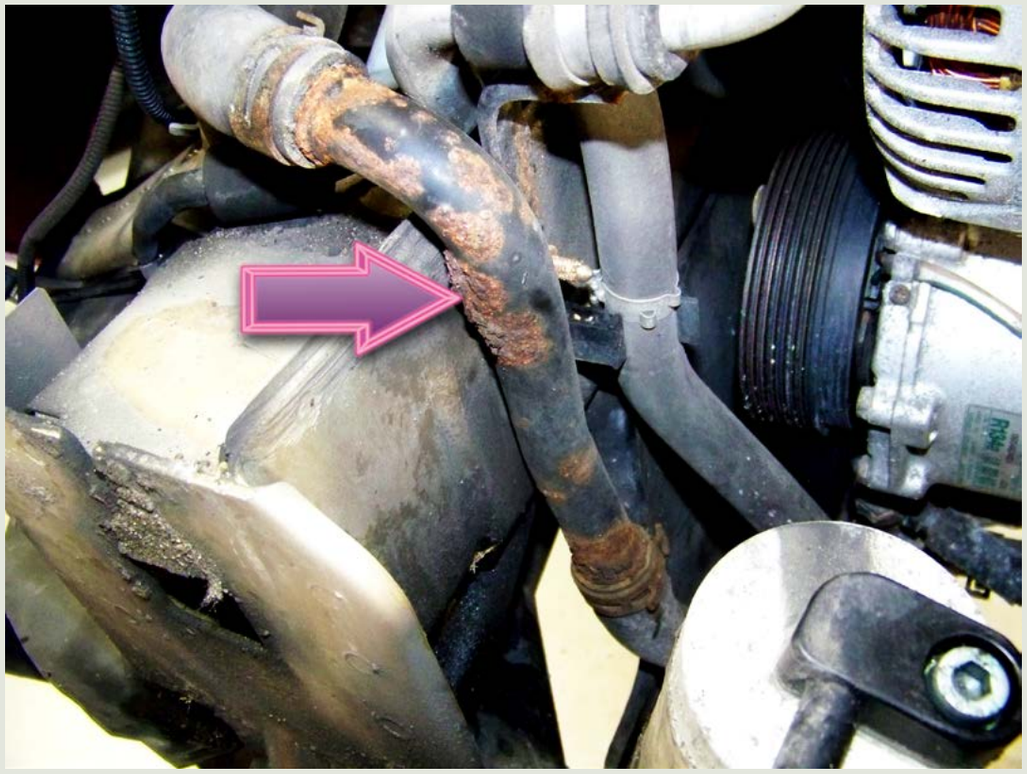
As you can see, with the carrier removed, there is ample work space now at the front of the engine.



Step 7

With a clear view of components, we quickly identify several additional parts that need to be ordered, including two more severely rusted coolant tubes for the auxiliary radiator.

(Those of you in sunnier climates may never replace these, but pipes in rust belt cars often end up looking like these.)



Replace the Water Pipe

Step 1

12 valve VR6 engines have a Secondary Air Injection pump (SAI). The SAI pump body blocks access to the water pipe.

Service Tip: In theory, the plastic air lines should come off the SAI pump easily. Just squeeze the ribbed sections of the plastic collars (arrows) between thumb and forefinger to release the lock tabs, then pull the hoses to remove them.

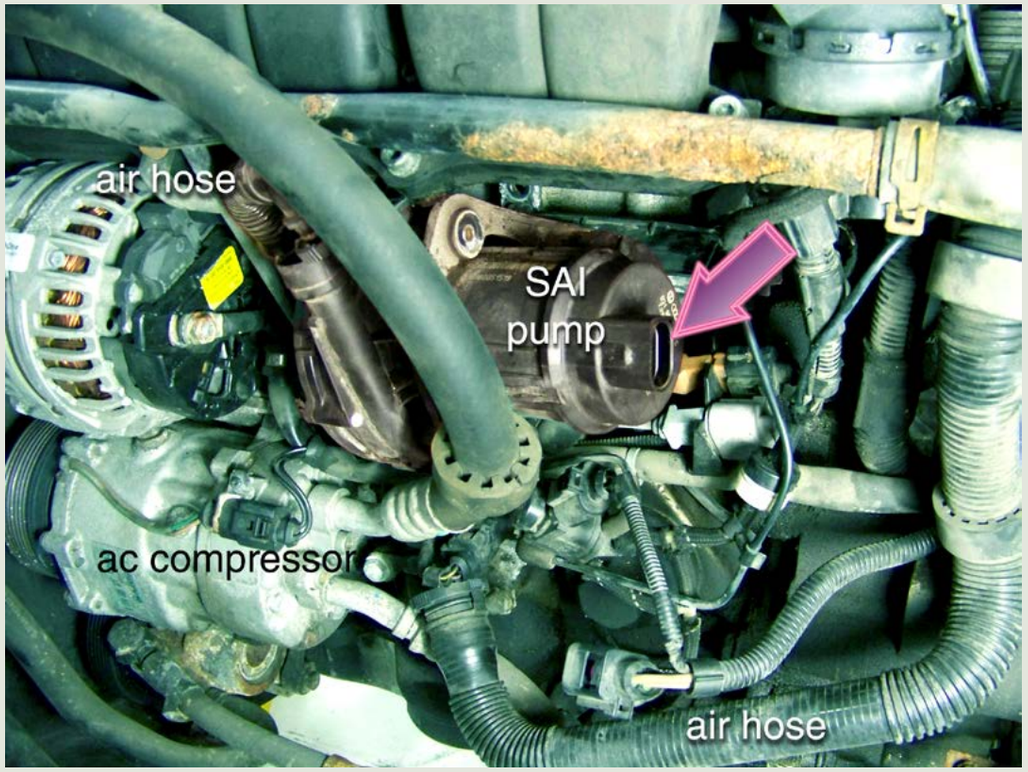
In the real world, this plastic gets very hard and stiff. You may need a set of adjustable pliers to compress the rings far enough to release the hose. Just don't squeeze too hard, or you'll damage the plastic.

Step 2

Unplug the pump electrical connector from the large cavity on the pump body (arrow).

The pump body is bolted to a plastic mount that snaps over a metal bracket attached to the front of the engine. If you reach in and release the lock tab on the plastic mount, you can slide the pump off the bracket.

(See next step for more.)



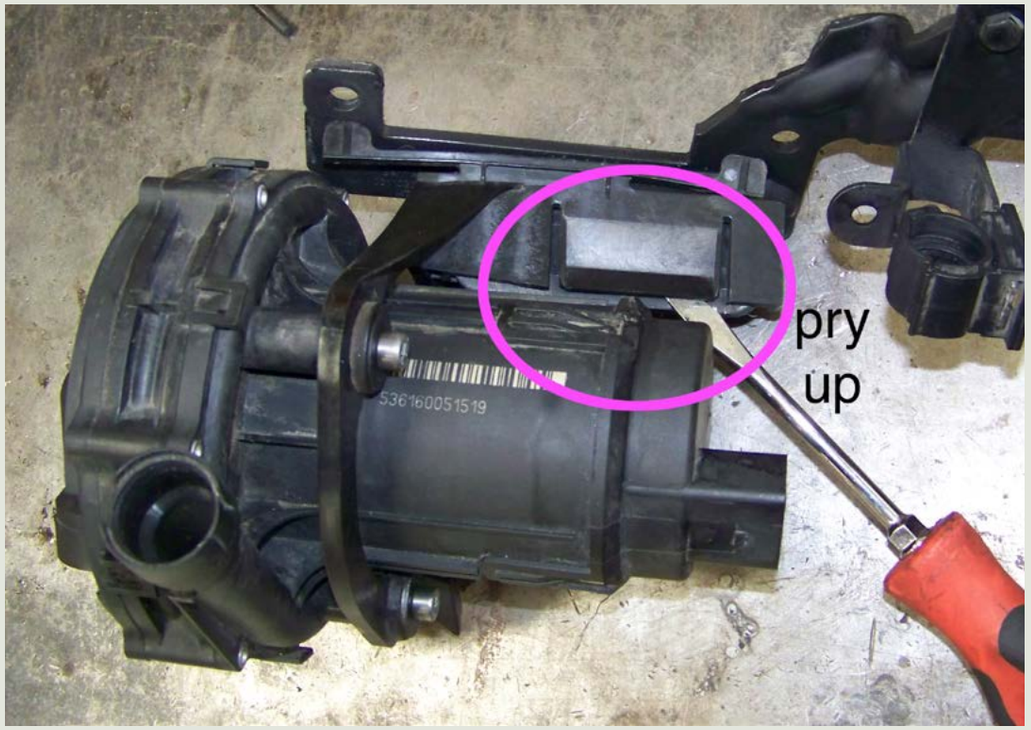
Replace the Water Pipe

Step 3

We removed the pump, plastic pump support, and the metal bracket that bolts to the engine to take bench-top photos. (It's all but impossible to show this in the car.)

To remove the pump body from the metal bracket: Reach in at an angle with a long, large, flat-bladed screwdriver. Insert the tip of the screwdriver between the plastic tab and the metal bracket. Pry or twist to lift the tab until it clears the slot in the bracket. Then wiggle the pump of the bracket.

Note: It is ***possible*** to unbolt the metal bracket from the engine, but one top bolt is very hard to reach with anything but a long ball end hex key or driver.



Step 4

Even after the pump comes off the bracket, the assembly must be wiggled around to get it off the engine.

Service Tip: It is possible to remove the pump with the support bracket still installed. (It is also possible to hit .400 in baseball.) If you get stuck, remove the three bolts holding the pump to the plastic collar, then separate and remove the bracket and pump, individually.

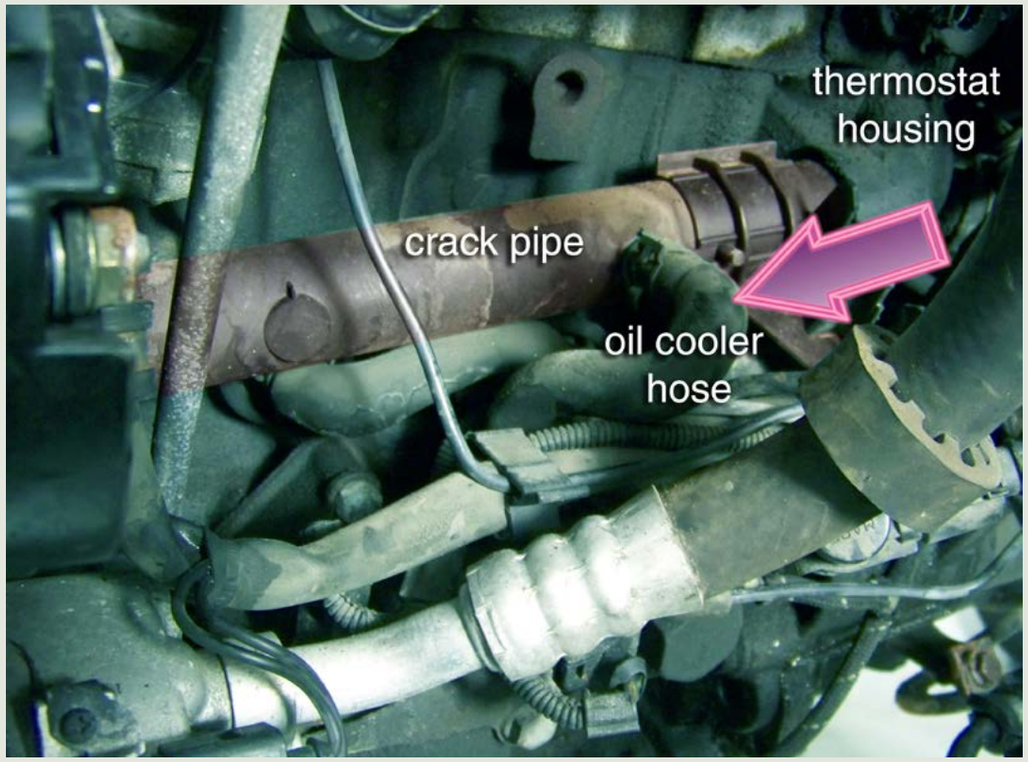
Replace the Water Pipe

Step 5

This straight coolant tube commonly called the water pipe runs across the engine. The original part is made of plastic and seals at both ends with o-rings in smooth bores.

Remove the coolant hose that connects the pipe to the oil cooler (arrow).

Service Tip: This is where those special hose clamp pliers shown back on page 3 really come in handy. Removing (and installing) the spring clamp from the oil cooler hose using common pliers can be highly frustrating.

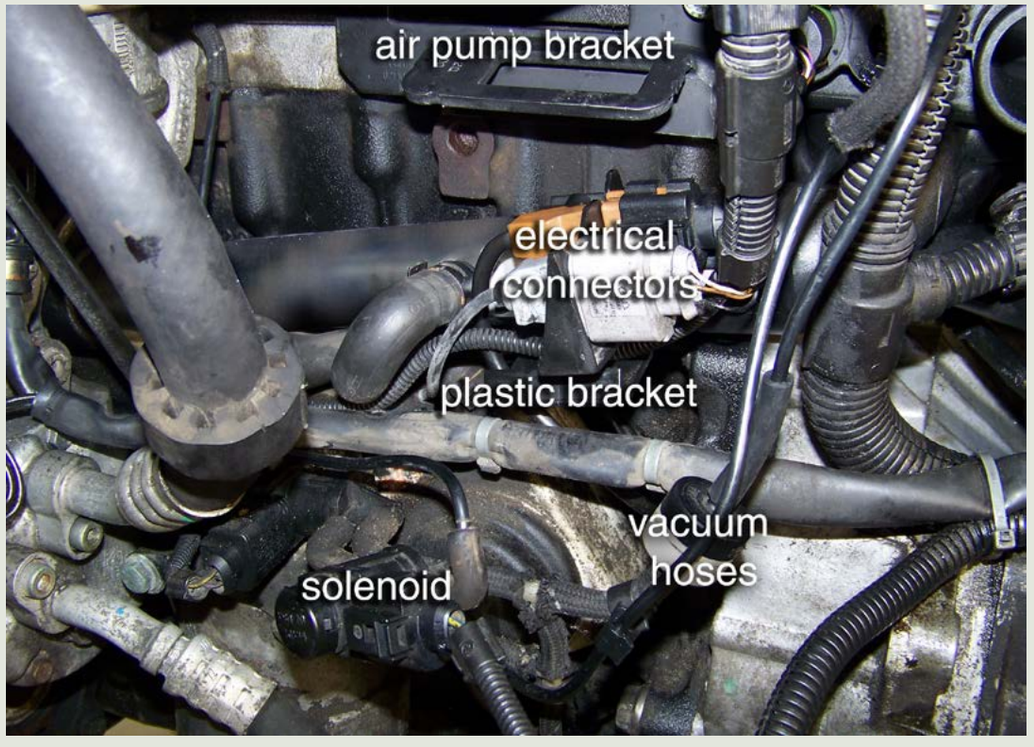


Step 6

Note several other miscellaneous items near the pipe.

- There are two electrical connectors mounted in a plastic bracket that snaps over the water pipe. Pop the connectors out of the bracket.

- You'll also see an electrical solenoid and a pair of vacuum hoses, one of which has an inline vacuum delay valve that looks like a black and white fishing bobber. If you remove or reposition any of these to make room, note their locations for later.



Replace the Water Pipe

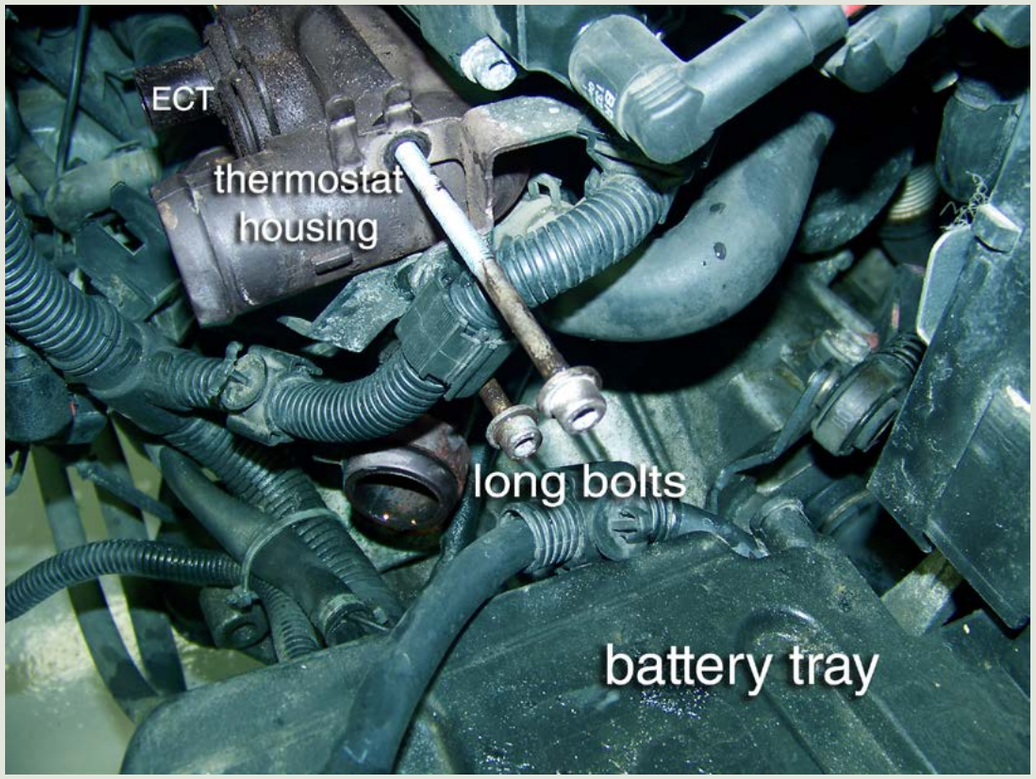
Step 7

The thermostat housing is located on the left side of the engine, next to the battery tray. (Battery removed here to make room.)

Disconnect all hoses from the housing. Use a 5mm hex to remove the three thermostat housing bolts. Two of the bolts are long, and are visible here. There is a third, short bolt at the rear of the housing that cannot be seen here. Reach around with an extension and 5mm bit to remove the short bolt “by feel.”

Service Tip: Use a fresh hex bit with sharp corners, and make sure it is fully inserted into each bolt head; these bolts round out easily. You don’t want to have to struggle with bolt extractors or other time consuming removal methods.

Remove the metal support bracket that supports the wire harnesses; note its orientation for reassembly.

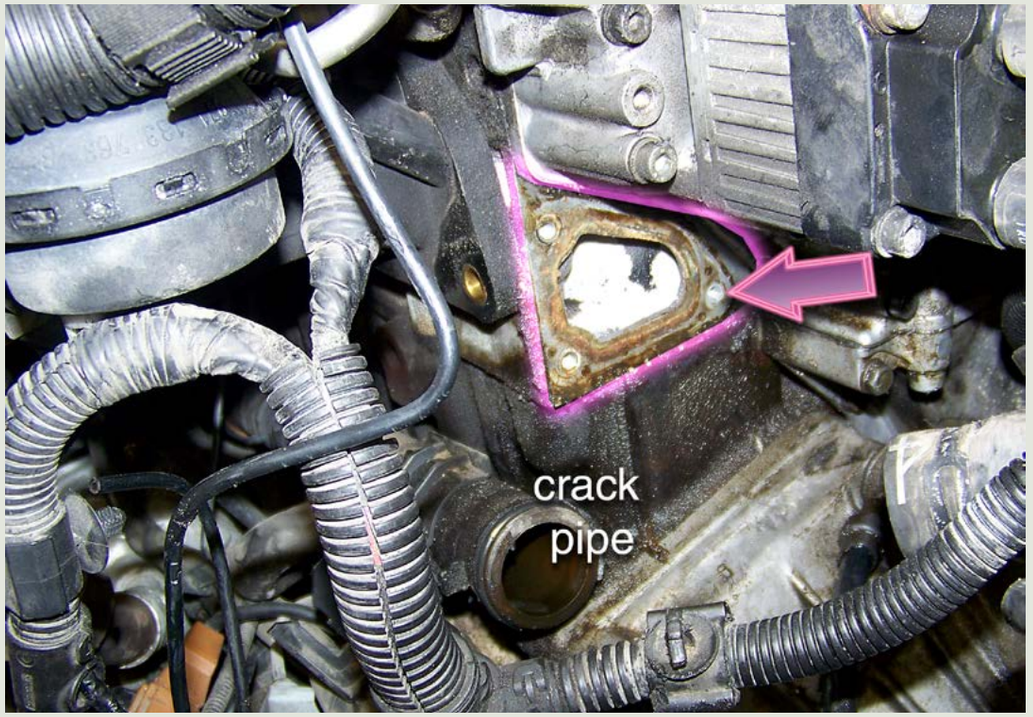


Step 8

When the thermostat housing is unbolted, pull it away from the engine and water pipe.

Clean the highlighted area on the side of the engine carefully. The new thermostat housing uses a shaped rubber o-ring that requires a clean, very smooth, very flat surface to seal properly. DO NOT clean the surface with a hard metal scraper, hard wire brush, or screwdriver that will gouge the surface. Get it clean, but keep it flat and smooth.

The hole for the short bolt (mentioned in the previous step) is marked by an arrow for reference.



Replace the Water Pipe

Step 8

Remove the opposite end of the water pipe from the coolant passage in the engine. Freeing the old pipe from the engine block may require some force. Ours was “crusted” in place and did not come out easily. In fact, the twisting caused the brittle end to fracture.

Carefully clean the engine bore to remove all scale, rust and debris. Residual scale can damage the new water pipe o-ring as you install it, causing leak.

Step 9

Install the pipe plug in the water pipe drain hole. You must use sealer. Apply pipe thread sealing compound or sealing tape to the plug threads.

Service Tip: Hand-tighten the plug, but do not over-tighten it. If you use plumbing tape, make sure to use two layers, wound with the tail of the tape facing ***away*** from the direction the plug rotates as it is tightened.

Note: The plug is both visible and accessible from beneath the car after it is installed. We suggest that you always check it under pressure after the system is filled with coolant, and tighten it an additional quarter to half turn, if necessary.

Replace the Water Pipe

Step 10

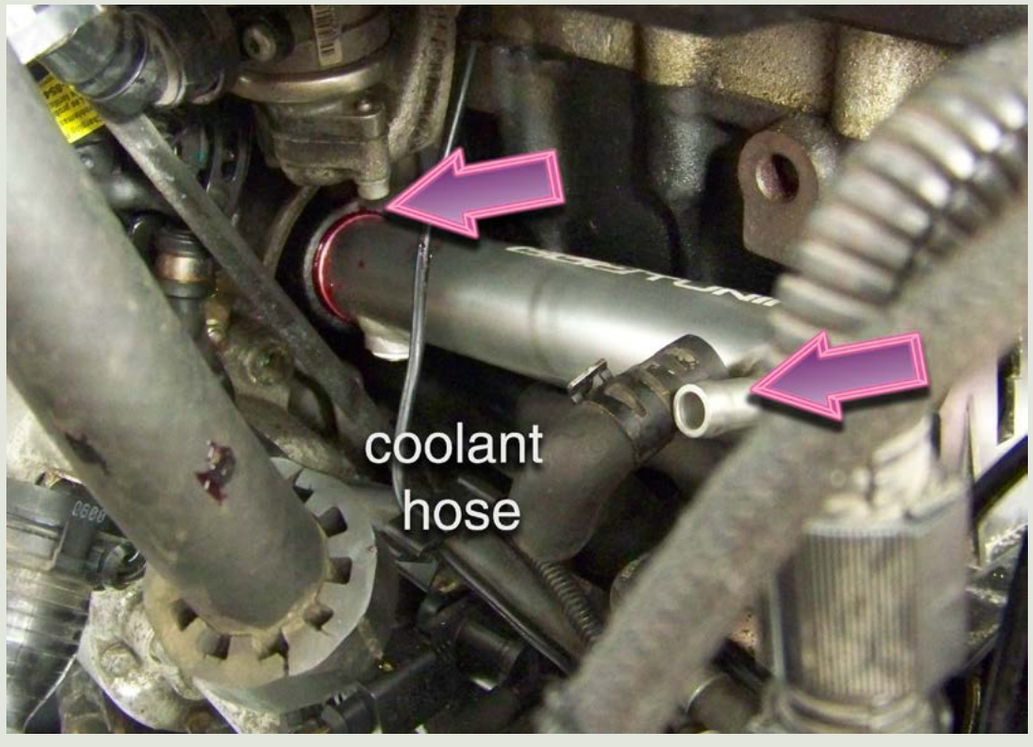
Pry the plastic, snap-on support bracket for the electrical connectors from the old pipe and snap it onto the new pipe.

Step 11

Lube the o-ring with fresh coolant, then slide the new pipe into the engine bore as far as it will go. Note that the drain plug points straight down when the pipe is installed correctly, and that the hose nipple points straight forward, toward the coolant hose coming from the oil cooler.

Service Tip: If you detected minor imperfections in the engine bore when you cleaned it, you can apply a film of gasket sealer on the o-ring (**ES2162826**). It will compensate for small imperfections or pitting of the bore sealing surface that were not there when the car left the factory!

Connect the coolant hose from the oil cooler to the pipe nipple (lower arrow).



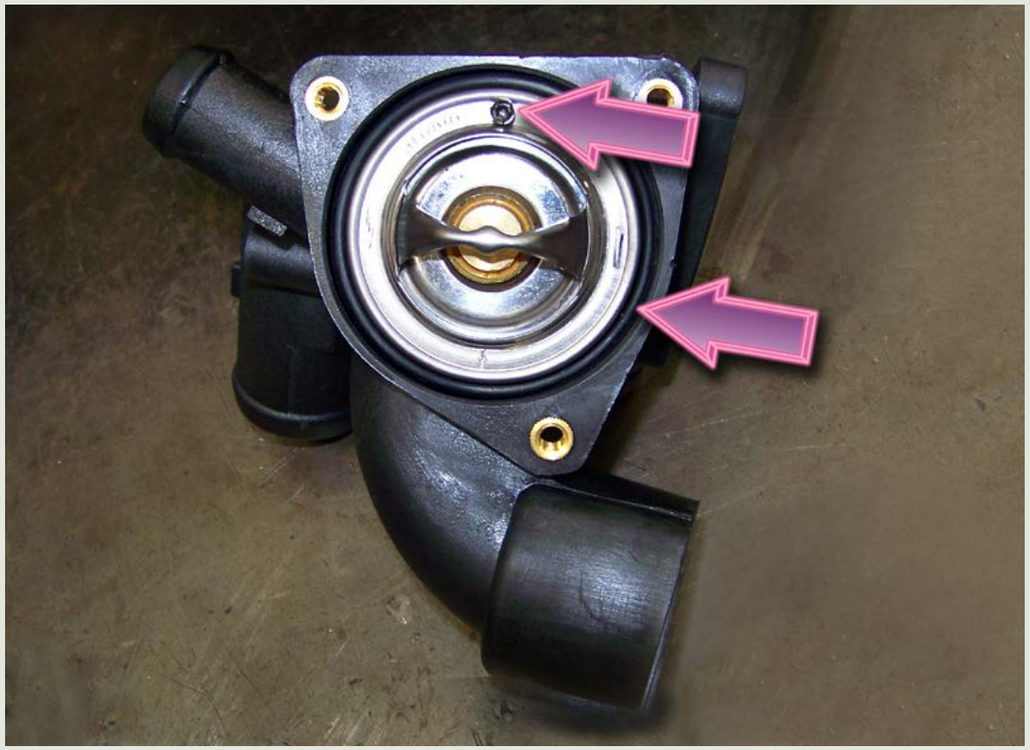
Replace the Water Pipe

Step 12

Assemble the thermostat housing.

Install the thermostat in the housing, as shown here, with the bleed valve at the top (top arrow).

Install the thermostat o-ring **on top** of the thermostat (lower arrow). Make sure it is centered.



Step 13

Place the shaped seal into the groove in the thermostat housing (arrow).

A small dab or two of sealer will help hold it in place until it is installed. If the mating surface on the engine shows ***minor*** imperfections after you clean it (see Step 8 in this section), apply a film of gasket sealer here as well.

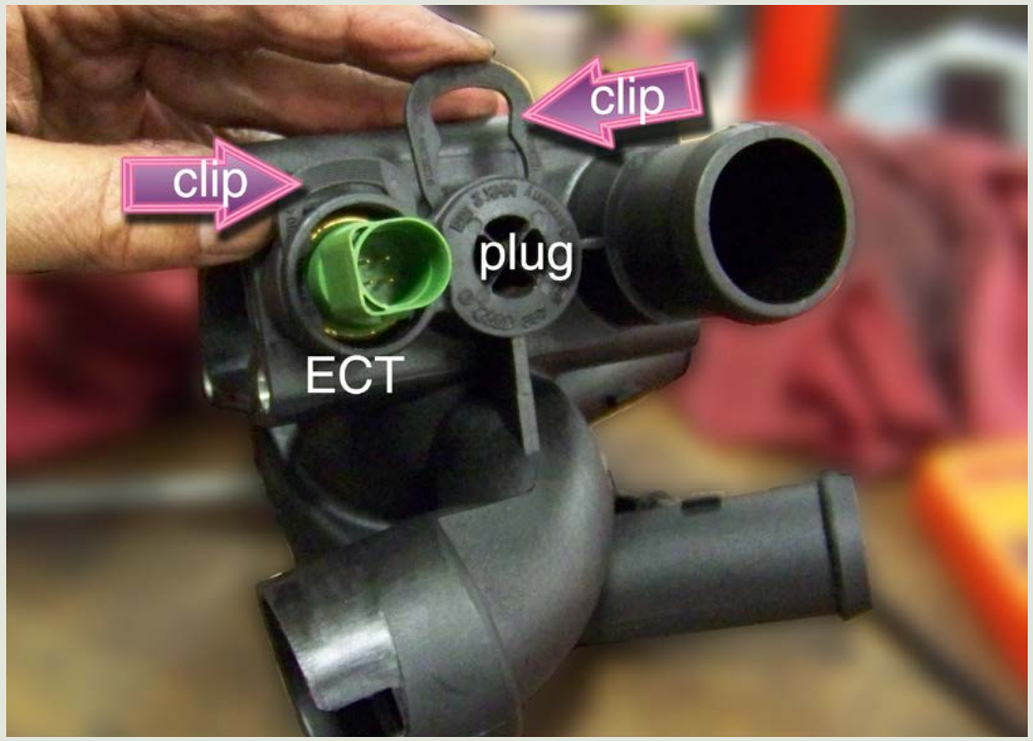
Replace the Water Pipe

Step 14

- Install fresh o-rings on the blind plug and Engine Coolant Temperature sensor (ECT).

- Lube the o-rings with fresh coolant and push the sensor and plug into the two bores in the thermostat housing.

- Install the two u-shaped retaining clips (arrows). Make sure the clips are fully seated to secure the ECT and plug.



Step 15

Install the thermostat cover onto the housing in the orientation shown here.

Place it squarely over the o-ring, then use a hex key to alternately snug down and tighten the three bolts.

Replace the Water Pipe

Step 16

Install the thermostat housing onto the engine, aligning the thermostat housing elbow with the open end of the water pipe. Lube the o-ring with fresh coolant to help it slide in place.

Service Note: The connection is very hard to photograph once the pipe is installed. To help you visualize the connection, we overlaid a simplified illustration on top of the photo to show how the pipe and housing join.

Step 17

Make sure the wire harness bracket is positioned so the long bolts pass through the bracket and housing holes (arrows). Don't forget the short bolt hiding at the rear of the housing!

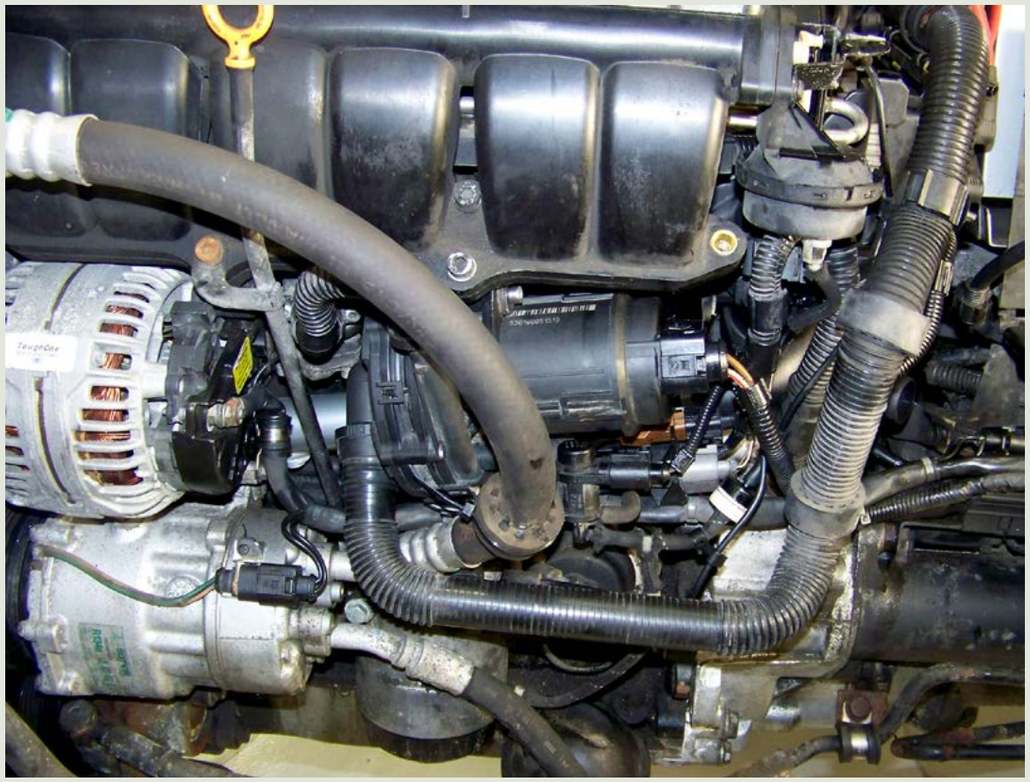
Alternately tighten the three bolts to a final torque of 8Nm (6 ft-lb).

Replace the Water Pipe

Step 18

Reassemble the front of the engine.

- Reinstall the air pump on its bracket.
- Plug in the air pump electrical connector.
- Connect the corrugated tubes to the air pump.
- Reconnect any electrical connectors and vacuum lines disconnected to gain access to the pipe.
- Connect the coolant hoses to the thermostat housing.



Reinstall the remaining items removed earlier:

new steel coolant pipes

top radiator hose

all electrical and vacuum connections

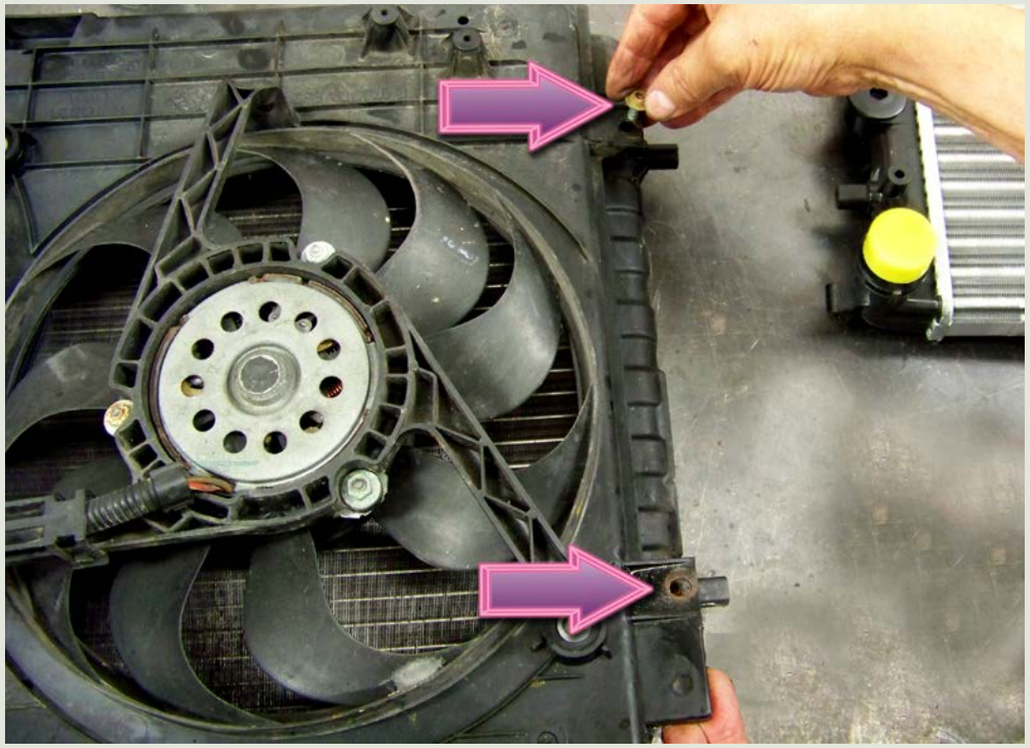
bottom radiator hose

Prepare the Radiator

Step 1

Our project list includes a new radiator. We'll start by removing the cooling fan assembly from the old radiator so we can transfer it to the new one.

The fan shroud attaches to the radiator with four Torx screws, two shown here (arrows).



Step 2

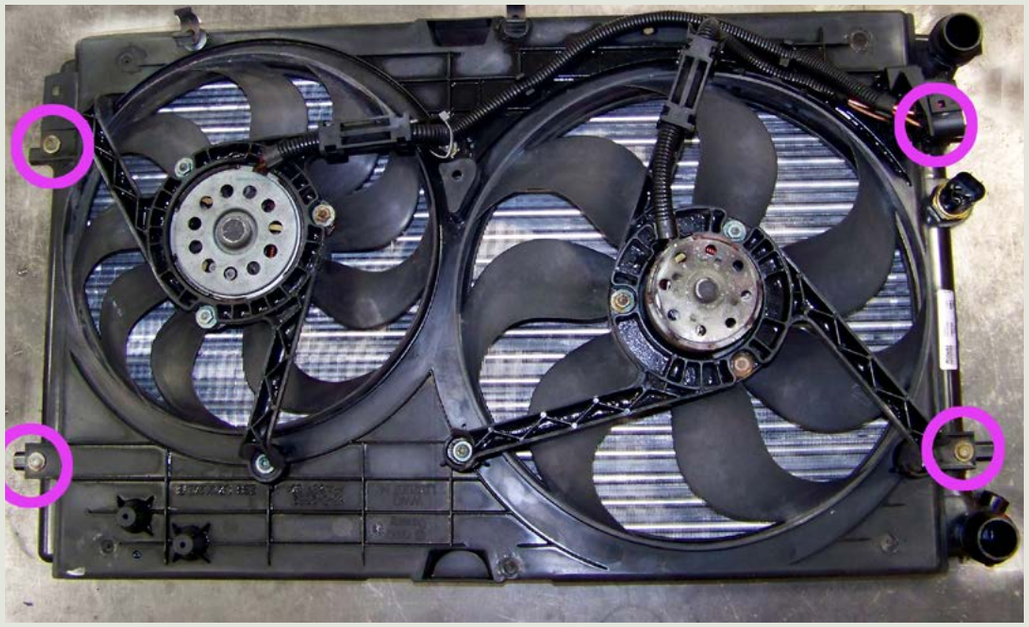
Remove the shipping plug from the radiator and screw in the new cooling fan control switch. Tighten the switch using a 29mm or 1 1/16-inch box wrench.

Service Tip: Don't forget to install the copper sealing washer that comes with the switch.

Prepare the Radiator

Step 3

After cleaning away 180,000 miles of dirt, leaves, and sand, we bolt the fan shroud assembly to the new radiator, and hand-tighten the four screws.

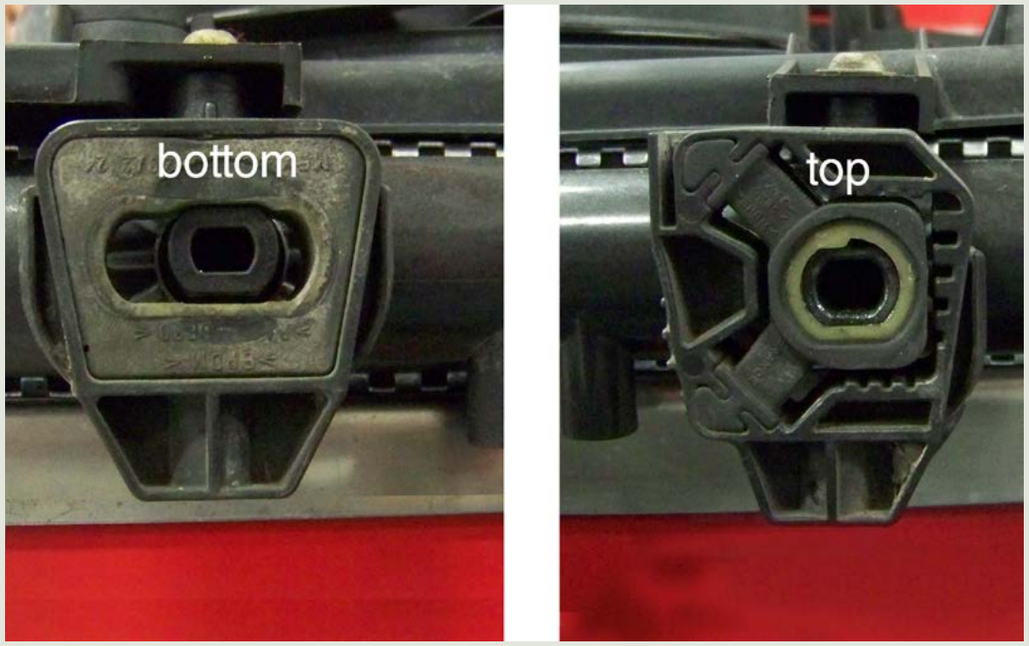


Step 4

Transfer the rubber radiator mounts from the old radiator to the new one. There are a total of four mounts, two per side. Note the difference in the mounts used at top and bottom.

Install the mounts by sliding them onto the plastic dowels on the sides of the radiator tanks.

Service Tip: The top mounts may be a tight fit. Tap them onto the dowels using a plastic mallet if necessary.

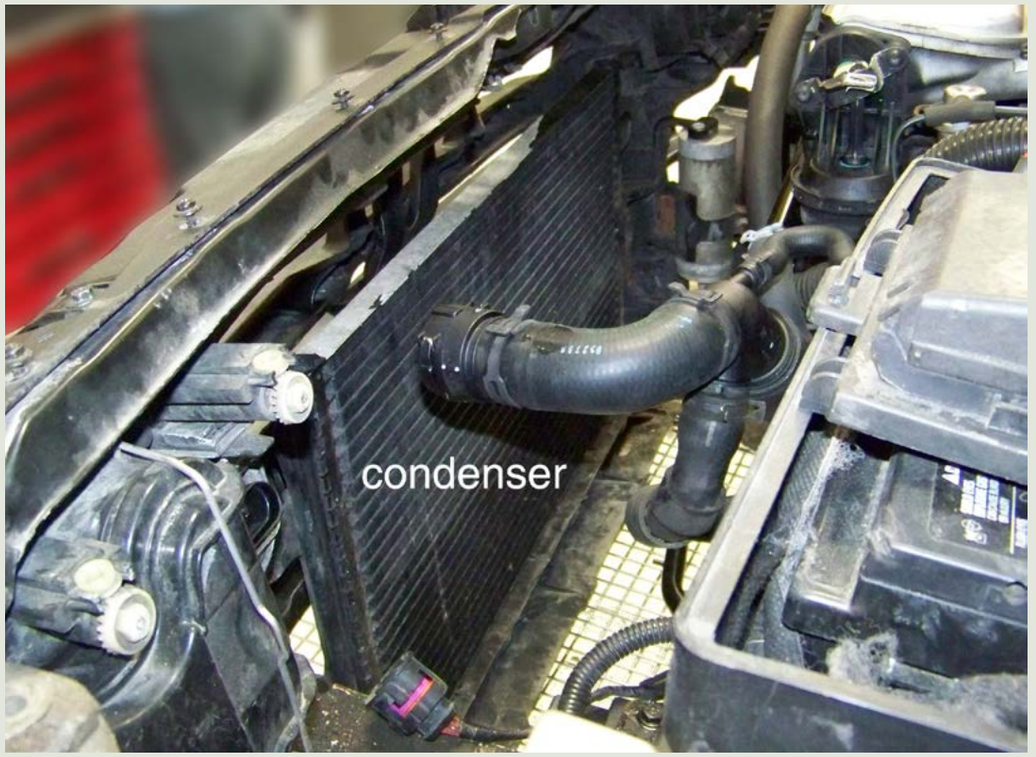


Install the Radiator and Lock Carrier

Step 1

Position the lock carrier in front of the car using the cart used to remove it earlier.

Place the condenser into the lock carrier at its normal location.



Step 2

Drop the radiator assembly in place at the rear of the carrier, behind the condenser.

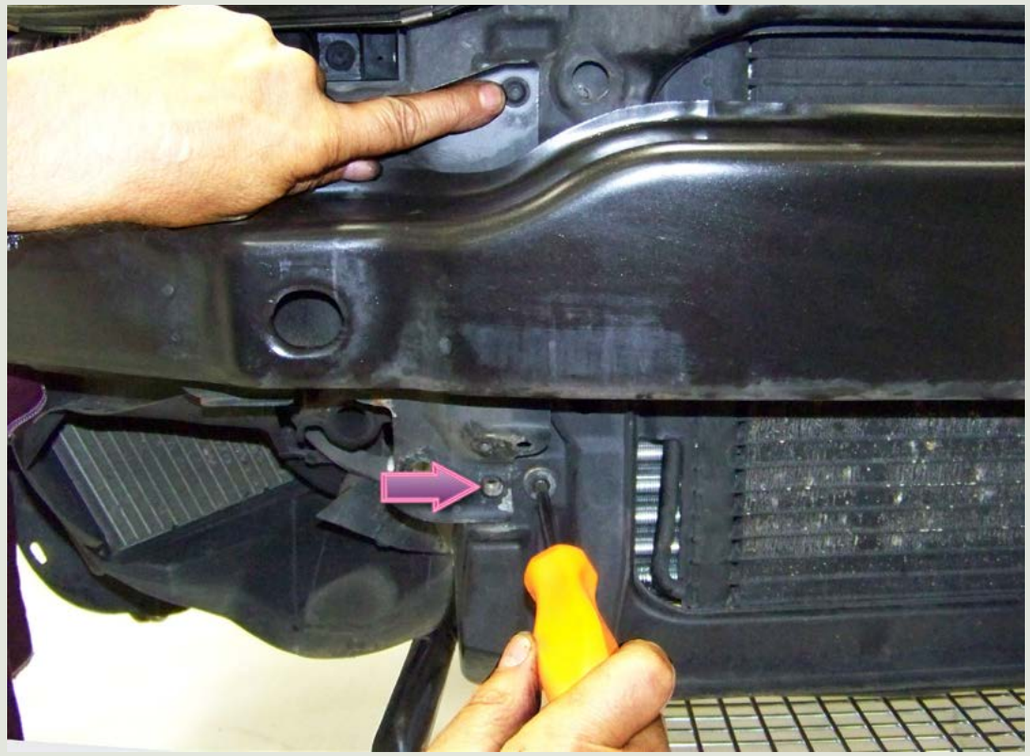
Align the radiator mounts with the mating recesses in the rear of the lock carrier and push them and the radiator into place. The condenser should now be sandwiched between the radiator and carrier.

Install the Radiator and Lock Carrier

Step 3

Working at the front of the lock carrier, reinstall all four radiator screws in the rubber mounts, and tighten them to 8Nm (71 in-lb).

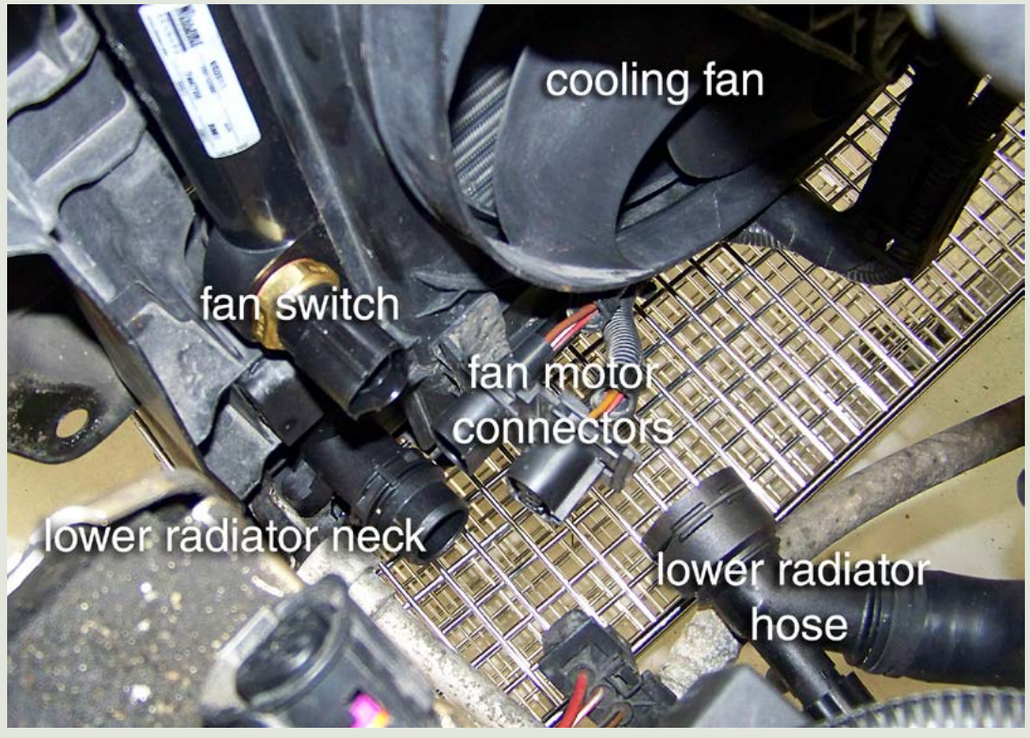
Align the condenser in the carrier until you can reinstall the two condenser screws, one on each side (right side shown at lower arrow).



Step 4

It is easier to reconnect hoses and electrical connectors with the lock carrier still positioned a few inches away from the car:

- Reattach the hood release cable to the rear of the latch mechanism.
- Connect the electric fans and coolant switch. Make sure all connectors lock together.
- **Service Tip:** Lube the seals inside the radiator hoses with fresh coolant, then push them straight onto the radiator necks until you hear the wire clips snap in place. Give each hose a tug to be sure it is fully seated and locked in place.
- Reconnect the headlights.

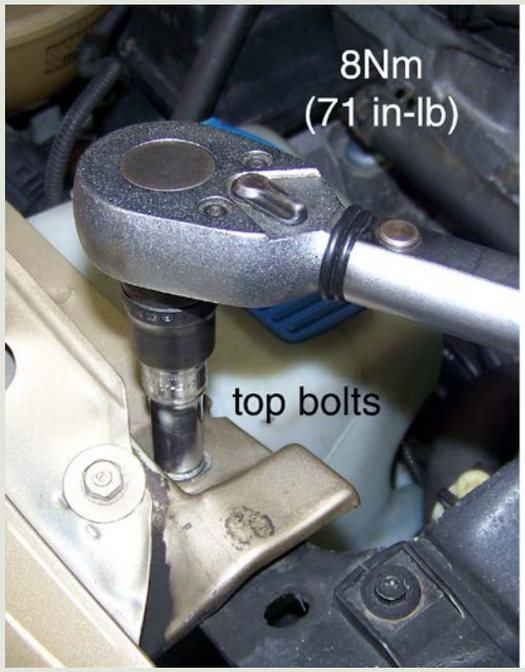


Install the Radiator and Lock Carrier
Step 5

Push the lock carrier to its normally-installed position. Replace all four of the front carrier bolts and the two top bolts on the fenders. Snug them, then center the carrier.

(**Service Tip:** You'll have some wiggle room to position the carrier, but not much.)

When the carrier is properly positioned, tighten all bolts to specifications.



Step 6

Have an assistant help you reinstall the bumper cover. Slide it in place aligning the cover with the plastic retainers on each fender.

- Reinstall all bumper cover bolts.
- Reinstall all fender liner bolts (four per side).
- Reinstall both front lower grilles.

Service Tip: Have an assistant operate the hood release handle inside the car as you watch to be sure it works. Do this **before** closing the hood.

Fill the System

- Mix your coolant using distilled or de-mineralized water to avoid adding minerals like calcium that will create scale and corrosion.

- The ideal final solution for temperate climates is a 50/50 mix of water and ethylene glycol coolant, providing freeze protection to -34°F. (This blend also raises the boiling point of the coolant.)

- If you have a vacuum fill tool (shown on page 3 of this pdf) follow the manufacturer's instructions to pull a vacuum, and draw in fresh coolant.

  If not, fill the system through the coolant bottle as follows:

- Fill the coolant bottle.

- Set the heater to full HOT to allow coolant circulation through the heater core and hoses.

- Start the engine and add coolant to the bottle as needed to keep it at the correct level as the pump draws down and circulates the initial fill.

- Run the engine at 1200-1500 rpm, monitoring the temperature gauge.

- When the heater blows hot and the radiator cooling fan cycles, top off the bottle to bring it to the correct HOT level, marked on the side of the bottle.

- Reinstall the pressure cap.

ES2603076

G13?

Hey. Doesn't this engine use G12 coolant? Originally, yes. But G13 is the VW fill of choice on newer models. We think it's a great improvement, since it uses a hybrid mixture that combines organic acid chemistry with a dash of silicate for fast-acting protection against rust and corrosion.

Fresh coolant and additives will protect the system from chemical attack, and give our new parts a healthy working environment for trouble-free service.

Wrapping Up

Here are a few tips that will help you wrap up your cooling system project:

- Take the time to test your antifreeze protection to be sure your final mix is correct.
- Take the time to pressure test the system and the pressure cap. There are many hoses in the VR6 cooling system, and a pressure test will alert you to any remaining system leaks or a faulty cap.
- Make sure the cooling fan cycles properly when the engine reaches normal operating temperature.
- Check the condition of both the accessory belt and belt tensioner.

Thanks!

For purchasing your cooling system kit from ECS Tuning.

We appreciate your business, and hope this tutorial has been helpful.