

Volvo TechTips

Information for the Independent Volvo Specialist

VolvoTechTips.com

Summer 2023

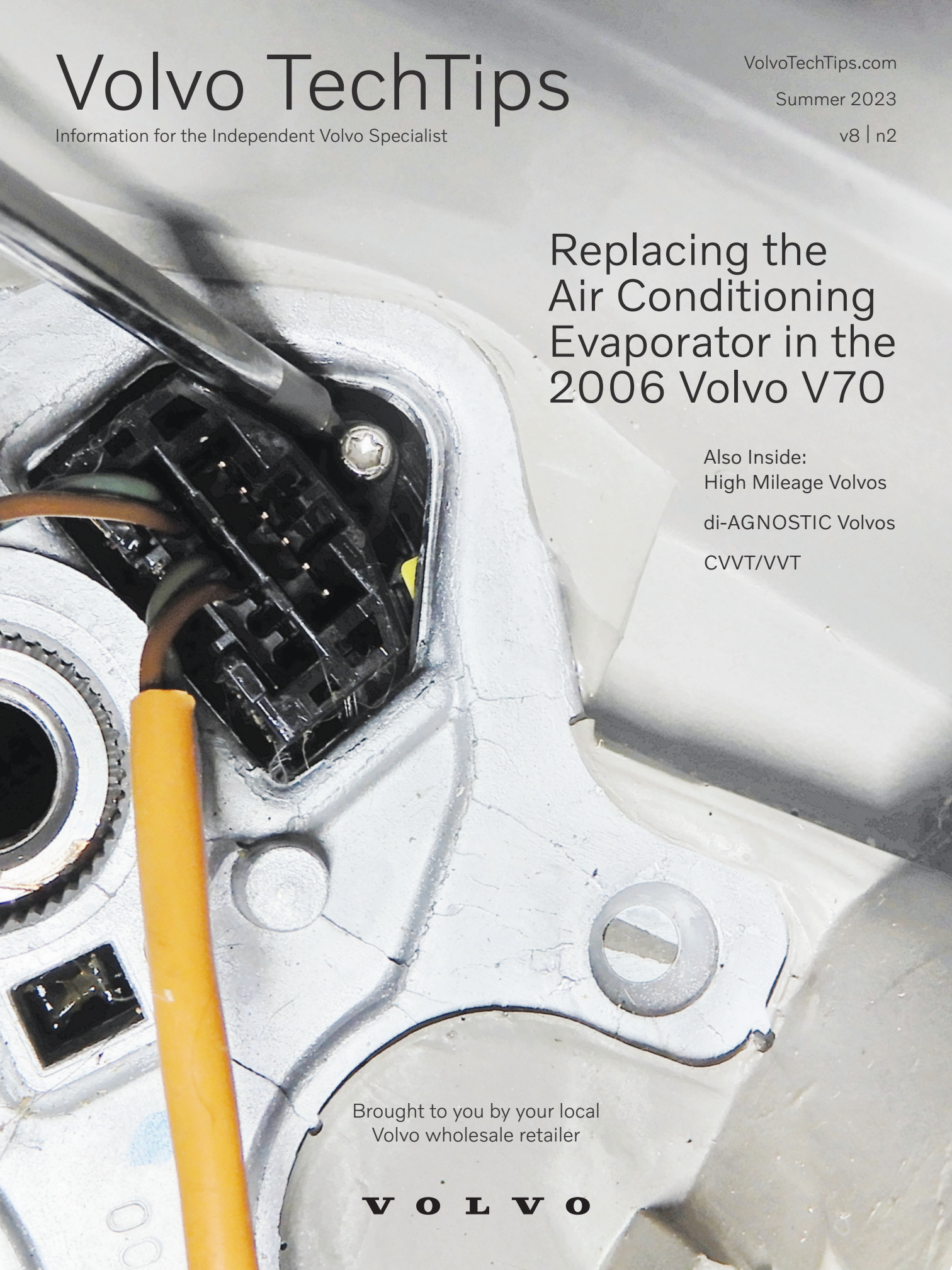
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Replacing the Air Conditioning Evaporator in the 2006 Volvo V70

Also Inside:
High Mileage Volvos
di-AGNOSTIC Volvos
CVVT/VVT

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V O L V O



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Head of Volvo Car USA Parts Operations
Michael Lohfink
Director, Parts Operations

Business Coordination For Service & Parts Operations (Customer Service USA)
Roman Grudin
Business Coordination Project Manager

Head of Volvo Car USA Wholesale Parts Strategy
Christina Lloyd-Williams
Manager, Wholesale Parts & Certified Collision

Head of Volvo Car USA Wholesale Parts Programs
Richard King
Senior Analyst, Parts Business

Publisher | Tamra Ayers Banz
tbanz@AutomotiveDataMedia.com

Editorial Director | Dick Moritz
dmoritz@AutomotiveDataMedia.com

Contributing Writers
Kevin Parkhurst, Gary Smith, Sean Stephens, Wayne Riley, Frank Walker

Art Director | Christopher M. Ayers III
ayersc3@AutomotiveDataMedia.com

Group Publisher | Christopher M. Ayers, Jr.
cayers@AutomotiveDataMedia.com

Editorial and Circulation Office
134B River Rd., Montague, NJ 07827

Caution: Vehicle servicing performed by untrained persons could result in serious injury to those persons or others. Information contained in this publication is intended for use by trained, professional auto repair technicians ONLY. This information is provided to inform these technicians of conditions which may occur in some vehicles or to provide information which could assist them in proper servicing of these vehicles.

Properly trained technicians have the equipment, tools, safety instructions and know-how to perform repairs correctly and safely. If a condition is described, DO NOT assume that a topic covered in these pages automatically applies to your vehicle or that your vehicle has that condition. Volvo Car USA LLC, the Volvo name and Volvo logo are registered trademarks of Volvo Corporation.

Features

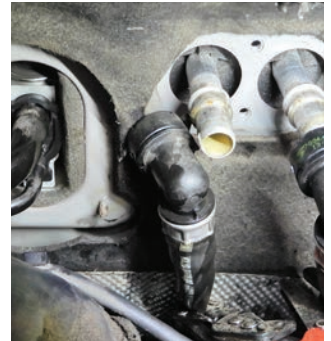
4 More Volvo High Mileage Problems

This article is part of a continuing series that will cover some of the problems that may come up on higher mileage Volvos.



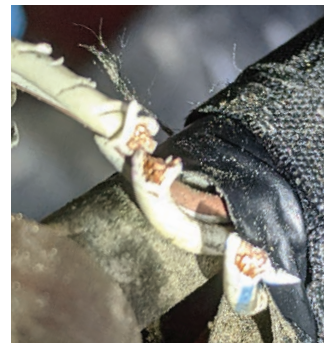
10 Replacing the Air Conditioning Evaporator in the 2006 Volvo V70

This is not an easy job but it can be rewarding for both the technician and the customer.



18 di-AGNOSTIC Volvos

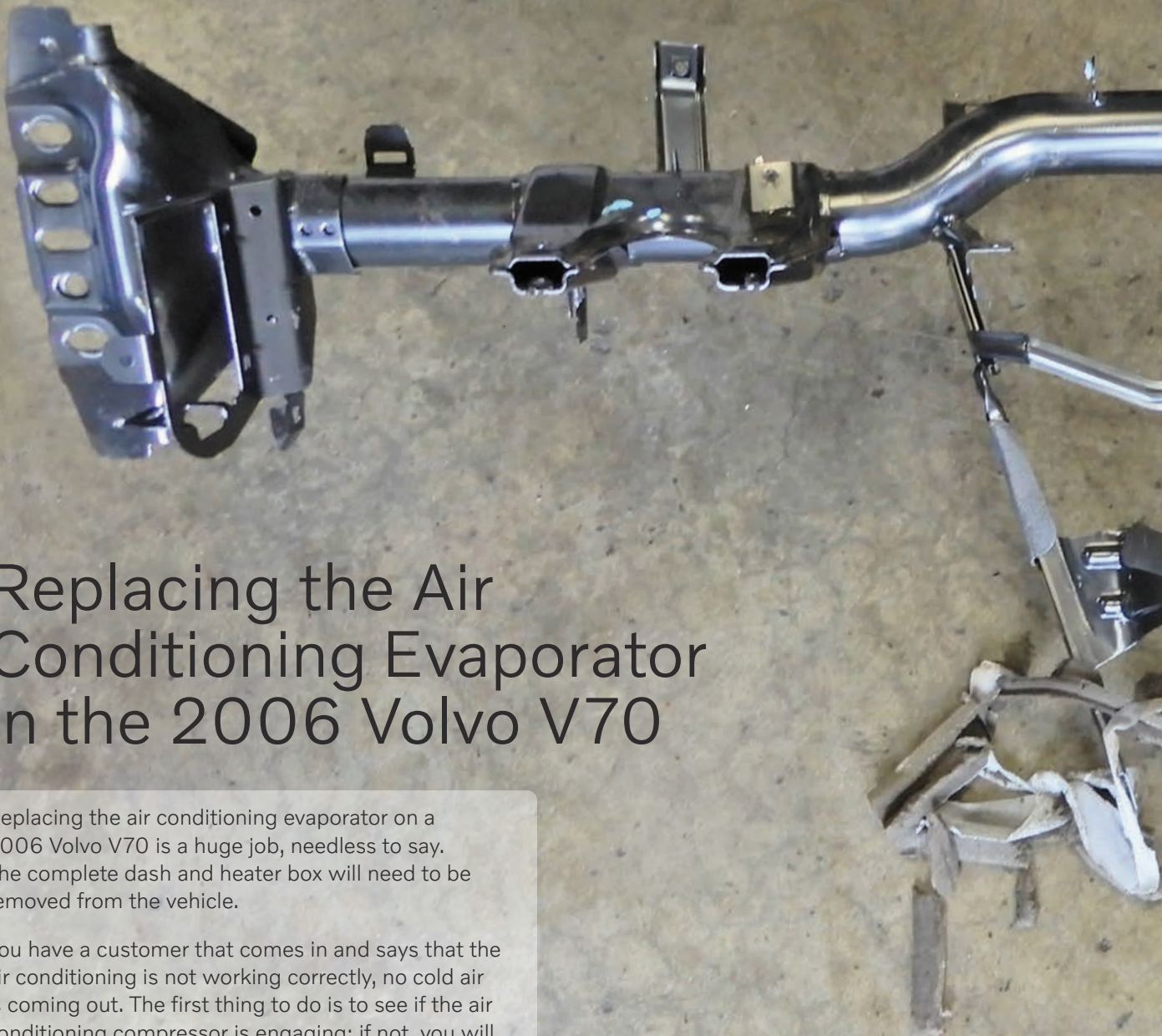
Approaching automotive diagnostics from an agnostic viewpoint allows a technician to gather evidence without bias toward a specific answer.



20 Understanding, Diagnosing and Repairing Volvo CVVT/VVT Systems

CVVT/VVT variable valve timing systems have been with us for a long time now.





Replacing the Air Conditioning Evaporator in the 2006 Volvo V70

Replacing the air conditioning evaporator on a 2006 Volvo V70 is a huge job, needless to say. The complete dash and heater box will need to be removed from the vehicle.

You have a customer that comes in and says that the air conditioning is not working correctly, no cold air is coming out. The first thing to do is to see if the air conditioning compressor is engaging; if not, you will have to check to see if the system has refrigerant in it.

The best way is to hook up an air conditioning machine to the vehicle. Attach the high and low side hoses of the A/C machine to the high and low side connectors to the vehicle at the engine compartment.

Once the hoses are connected, check the pressure. If the pressure is low and the A/C compressor is not coming on, the vehicle will need to be serviced. Recover all of the refrigerant in the system, and evacuate the system down to a vacuum. Once the system is evacuated, you can watch the gauge to see if the system stays at a constant vacuum; if the gauge raises, you'll know that there is a leak in the system.

Add oil and dye into the system, and then add the right amount of refrigerant to the system. Start the vehicle to make sure the air conditioning compressor



Air conditioning machine hooked up to vehicle at low and high side connectors under hood of vehicle



After checking for leaks, you find that the evaporator inside the vehicle's heater box is leaking and will need to be replaced.

The first thing to do is remove the refrigerant from the air conditioning system like before. Once the refrigerant is removed, drain the coolant from the engine completely.

Disconnect the heater hoses at the firewall.

Remove the two bolts that hold the cover plate and rubber seal to the heater core. Remove the cover plate and seal.

Once the A/C refrigerant is recovered, right next to the heater hoses are the A/C hard lines going through the firewall to the expansion valve that need to be removed. Remove the two big wire nuts at the panel and remove the cover plate. Remove the center bolt that holds the lines to the evaporator, and pull the lines from the expansion valve.

Plug the hard lines at the A/C system so moisture or debris do not get into the lines. If possible, cap the lines at the heater core.

Remove the nuts at the wiper arms and remove the arms from the vehicle. Remove the four plastic rivets from the cowl. On each side at the A-pillar, remove the rubber fasteners from the cowl.

Once the rivets and rubber seal at the A-pillar are removed, remove the cowl from the vehicle. Remove the windshield wiper motor assembly, disconnect the electrical connector and the two bolts that hold the wiper assembly in place.

Move both front seats all the way to the rear and remove the battery negative terminal. Remove the four bolts from the cover over the Central Control Module

is engaging and the interior is cooling off. Test drive the vehicle to make sure the air conditioning is working sufficiently.

Now that the dye in the system and has circulated through it, you can now check for leaks in the system.



Disconnecting heater hoses at firewall from heater core. Disconnect hard lines for Air Conditioning to Expansion valve.



The two T25 torx screws that need to be removed at frame to CEM

(CEM) that are under the wiper assembly. Pull back on the cover and disconnect the two connectors at the CEM. Using a T25 torx socket, remove the two screws at the frame to the CEM; this will allow you to remove the CEM when it comes time to do so.

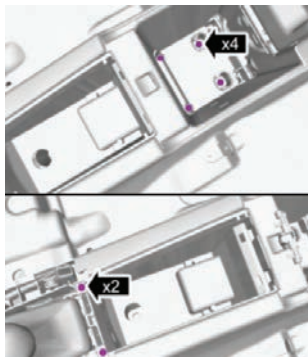
Now that the outside components are removed, move to the inside of the vehicle to remove the dash.

Remove both kick panels at the driver's side and passenger's side, remove the two side panels at the center console. Remove the A-pillar panel on both sides, pull out on the panel and lift upward, disconnect the safety clip.

Remove the panel at gear shift rod, use a trim tool to pop the trim up. Move the shift rod to the bottom position to give room to lift the panel. On the bottom of the panel, open the four catches at each corner and release the inner panel. Remove the two screws at the front of the center console. Open the center console compartment, pop out the panel at the bottom and remove the two screws.

Pull up on the emergency brake handle and remove the boot around the parking brake handle. At the back of the console, remove the ash tray or panel and disconnect the 12-volt power supply connector.

Lift up on the center console carefully, slide the console over the parking brake handle, and set the console



Remove screws at center console for removing console.



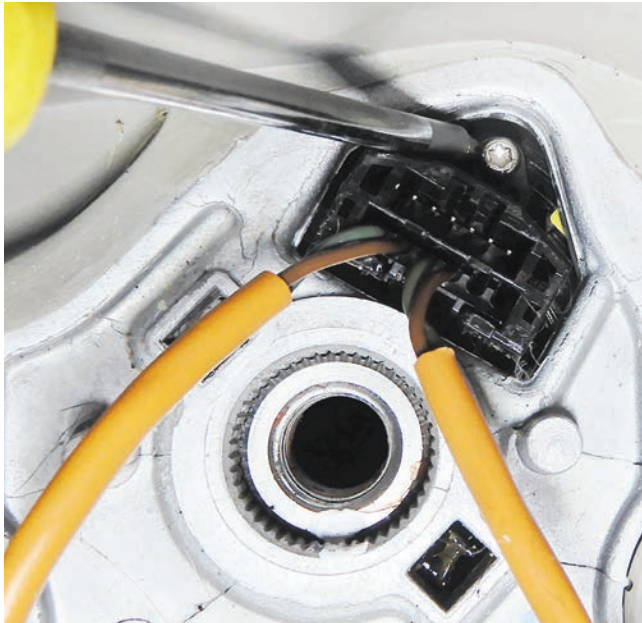
Radio and climate control unit that needs to be removed from vehicle

aside. Remove the two screws at the bottom of the radio and climate control unit. Pull the complete unit out and down to remove. Disconnect the electrical connectors at the back of the radio and climate control unit. Remove the unit from the vehicle.

At the shifter controls, lift up on the cable connector for the gear lever lock; this will make it easy to slide the gear selector handle back and forth. Remove vent above radio assembly using a trim tool to release the catch, disconnect the hazard warning switch electrical connector. Lift up on the sun sensor at the top of dash, disconnect the connector, and remove the sensor.

Remove the speaker at the top of the dash board and disconnect. Remove both end covers at the dash near the A-pillars. Open up the glove compartment and release the upper mount for the gas strut. Release the limiter stop. Remove the connector for the light, remove the screws that hold the glove compartment in place, and remove the glove compartment from the vehicle.

On the driver's side, at the bottom of the dash, remove the two screws that hold the data link connector in place. Remove the air bag at the steering wheel. On cars equipped with a 3-spoke steering wheel, turn the steering wheel a quarter turn so the two holes at the back of the steering wheel are accessible. Insert a small screwdriver at each hole and lift up to release the air bag at the steering wheel. Note that on cars equipped with a 4-spoke steering wheel, there are two T30 Torx screws that hold the bag in place instead of the spring clips. Disconnect the electrical connector for the air bag and remove the air bag.



Screw inserted in clockspring to secure clockspring



Removing the steering column from the vehicle

Center the steering wheel, using the screw that is inserted at the steering wheel secure contact reel. Remove the center bolt at the steering wheel; it would be a good idea to mark the steering wheel so that it can be reinstalled in the same position. Remove the steering wheel from the column. Feed the air bag connectors through the steering wheel.

Pop up the cowling at the top of the steering column. Remove the three screws from the cowling at the bottom of the steering column and remove the cowling. Remove two screws at the lever hub and disconnect the electrical connectors; remove the lever hub with the turn signal switch and wiper switch.

Remove the trim at the Driver Information Module (DIM), pull straight out. Remove the four screws at the DIM, unplug the electrical connector and remove the DIM from the vehicle.

Volvo Genuine Parts

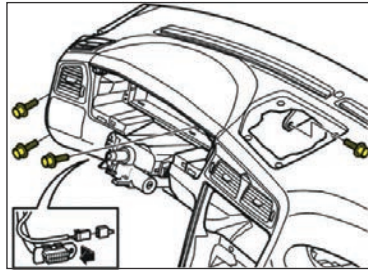
We know quality repairs matter at your shop, and we're here to help.

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Insert the key in the ignition and turn to the number two position and remove the cable from the switch to the gear lever. Remove the bolt at the bottom of the steering column that connects the steering rack. Remove the four bolts at the steering column and remove the column from the vehicle.

At the dash near the A-pillar on both sides, remove two bolts from the dash to the body of the vehicle. Remove the one bolt behind the DIM from the dash and the bolt at at top of the dash where the speaker goes. There are two bolts at the dash behind the radio assembly that need to come out. On the passenger's side, remove two bolts behind the glove compartment near the air bag. Disconnect the air bag electrical connector.



Removing the steering column from the vehicle

Pull the dash out a bit to remove the brackets on both sides at the A-pillar for the electrical connectors. To remove the dash, pull straight out, move the gear selector handle backwards, maneuver the dash around the gear selector handle, and remove the dash from the vehicle.

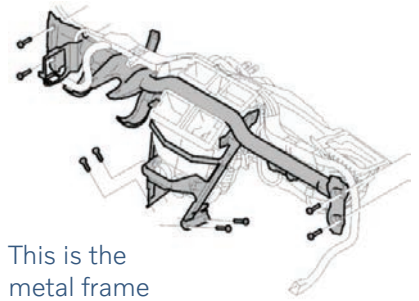
Now to remove the metal frame over the climate control box. Eight bolts hold this frame in place; remove the bolts. Disconnect the electrical harness at all connectors. Remove the tie wraps that hold the harness in place. Remove the air ducts from the climate control box.

Disconnect the harness at the center console area and maneuver it through the bracket near where the radio would be. Remove the bolts at the bracket and remove the bracket. Remove the other bolts that hold the metal frame to the climate control box. Disconnect the electrical connector at the blower motor.



Dashboard removed from vehicle

Pull up on the electrical harness and remove the metal frame around the climate control box.



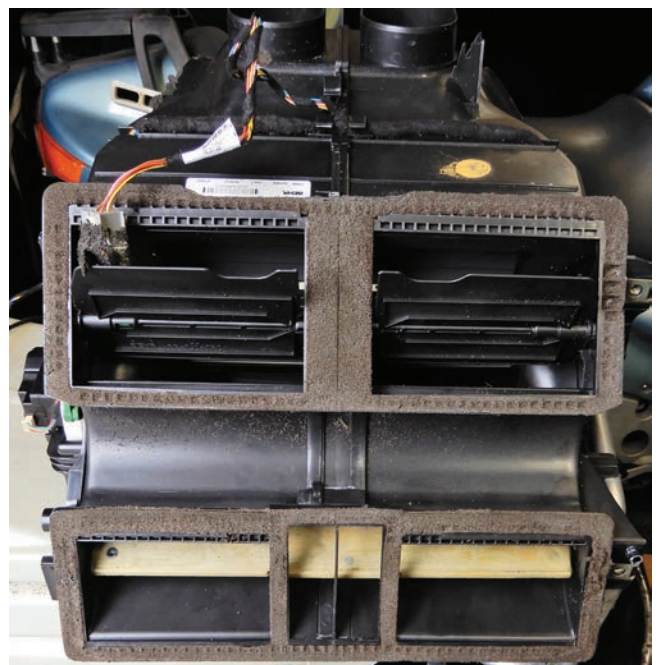
This is the metal frame that is installed over the climate control box, and bolts that need to be removed.

Now that the metal frame is removed, you can remove the climate control box from the vehicle. Set the climate control box on a bench so that you can remove the evaporator from the unit.

Remove the seals at the front of the climate control unit around the metal pipes, heater core pipes, and evaporator pipes. Remove the tie wrap at the heater pipes, remove the two screws that hold the heater core in place, and pull the heater core with pipes out of the climate control box.

Remove the cabin filter and blower motor from the unit. Remove the three screws at the central electrical unit and remove from the climate control box. Using a screwdriver and pliers, unlatch the upper and lower sections of the climate control box.

Lift up and separate the lower and upper sections of the climate control unit, and remove the evaporator. Clean out the box with cleaner and blow dry. Using new o-rings, install the expansion valve to the



Electrical unit that is removed from climate control box