

Spring 2017

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VOLVO TECHTIPS

Information for the Independent Volvo Specialist



「VOLVO
BRAKES」

VOLVO HVAC
VOLVO AGING ISSUES 3
VOLVO WINDOWS, DOORS AND LOCKS, OH MY!

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VOLVO TECHTIPS



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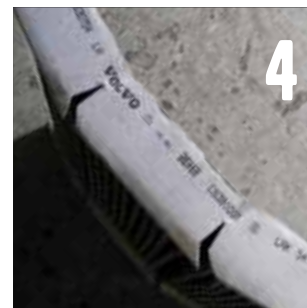
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FEATURES

HVAC

In this series of articles we will cover diagnosis, service and repairs of Volvo climate control systems that are commonly seen in independent shops.



AGING ISSUES

This article is the third in a continuing series that will cover common problems that come up on Volvos with higher mileage.



BRAKES

Diagnosis, service, repairs, tips and tricks from the world of the independent Volvo shop.



WINDOWS, DOORS AND LOCKS, OH MY!

As a technician, you either love this kind of job or you hate it.



DEPARTMENTS

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VOLVO HVAC

VOLVO CLIMATE CONTROL DIAGNOSIS AND REPAIR

IN THIS SERIES OF ARTICLES
WE WILL COVER DIAGNOSIS,
SERVICE AND REPAIRS OF VOLVO
CLIMATE CONTROL SYSTEMS
THAT ARE COMMONLY SEEN IN
INDEPENDENT SHOPS.



WHEN REPLACING THE CABIN FILTER
ON A VOLVO, USING AN OE VOLVO FILTER
WILL NOT ONLY MAKE INSTALLATION
MUCH EASIER BUT WILL MAKE YOUR
CUSTOMER'S HVAC SYSTEM PERFORM
THE WAY IT WAS DESIGNED TO.

HVAC is not just another four letter word, even though working under the dash sometimes can bring out some of the most colorful words from the technician that is squeezed under it. Depending on what part of the world you're from and what season it is, you may have a lot of customers wanting you to make their cars hot, cold or somewhere in between.

The Volvo climate control system is not just designed to keep the occupants comfortable; it has become part of the Volvo active safety system. Volvo engineers have done a lot of research and have proven that the correct temperature and air flow in the passenger compartment increases driver safety.

It is well documented that human performance abilities are reduced in heat. Research carried out in traffic and in a normal vehicle demonstrated that when the passenger compartment temperature was increased from 21 to 27 degrees C (69.8 to 80.6 degrees F):

- The risk of the driver missing important traffic information (hazard warnings, traffic signals, signs etc.) increased by 50 percent.
- The driver reaction times were 22 percent slower.

With an air conditioning system in the vehicle, car travel is both more comfortable and safer. A climate control system provides increased comfort by:

- Cooling the air in the event of high ambient temperatures or in warm, sunny conditions.
- Warming the air in the event of low temperatures.
- Dehumidifying the air.
- Filtering the air.

The relative humidity of the air is extremely important for our well-being and comfort. We perceive a relative humidity of 30-60 percent to be comfortable, as the moisture that is given off by the human body can easily be absorbed by the surrounding air.

If the humidity exceeds 75 percent, we perceive it to be oppressive and uncomfortable in warm weather, as the air cannot absorb much more moisture. For this reason, the climate control system is designed to regulate both temperature and air humidity.

Volvo climate control systems are very reliable. When these systems do have malfunctions, knowing how to proceed with testing can save you and your customers a lot of time and money.

ASKING THE RIGHT QUESTIONS

The first step in any diagnostic procedure is to get as much information about the symptoms as possible from the customer. The service writer should ask questions like, how often the symptom occurred, what the ambient temperature was and what kind of noise, smell, or other symptoms the customer's Volvo was displaying when the problem appeared.

CUSTOMER EDUCATION

In this day and age of smart phones, instant answers from Google, and the good old owner's manual in the glove box, you would think that your average Volvo driver would know how to operate the climate control on his own car.

But this is not always the case, so when your customer brings their Volvo in for A/C or heating problems, it's always good to take a test drive with the customer to try to confirm the symptoms. In many cases the customer just needs a lesson on how the system works, what's normal and what buttons to push or not to push.

For example, most later Volvo climate control systems have a feature called afterblow. This program will run the blower fan long after the car has been turned off — a customer may think their Volvo has a mind of its own. A lot of customers come into shops thinking that their Volvo is possessed.

But if your customer has a 1999 - 2016 Volvo (varies by year and model), this condition may be normal. Afterblow is a feature in the CCM that commands the blower fan to come on at half speed, 50 minutes after the car has gone into sleep mode. This function is designed to prevent moisture from building up in the ventilation system that can cause mold growth and odors.

If you have VIDA and you have a Volvo that has not had the latest CCM software installed, you should advise your customer of the benefits of having the software updated; of course that goes for all needed software updates.

When working on any problem on a Volvo, it's always helpful to check to see if there are any Technical Journals (TJs) for the system you're working on. Volvo has several for their climate control systems. This information can be invaluable and in some cases the TJ is the fix for your customer's problem.

PREVENTIVE MAINTENANCE

Before we talk about some common Volvo HVAC problems, let's go over some service opportunities that will help keep your customers' Volvo HVAC systems performing the way they were designed to. Some of these services may even prevent some of the common HVAC problems that independent shops deal with every day.

COOLANT

When your customer brings their Volvo in for regular service, it's important to check their coolant not only for glycol level, but also for acidity. Many people think the only job of engine coolant is to cool the engine during the summer and prevent freeze-up during the winter, but that's only part of the story.

The coolant also plays an important role in preventing corrosion caused by electrolysis. As the coolant ages, the additives start to deteriorate.

When this happens, the coolant can become a conductor of electricity, causing an electrochemical charge across the aluminum. This results in rapid corrosion and severe damage to the components in the cooling system including discoloration, pitting, flaking, and pinholes.

Since the coolant that's inside the heater core is only being circulated when the heater is on, that worn out acidic coolant can make short work of the thin aluminum tubes inside the heater core.

The easiest way to check the condition of your customer's coolant is to use disposable coolant test strips. These can reliably test engine coolant for glycol level (freeze protection level) and pH level.

Volvo does not specify a recommended coolant pH level, but a pH level between 9.8 and 10.5 is about where you want it to be.

Water has a pH level of around 7-7.2, and most pure antifreeze has a pH level of 10.5. So this means that an exact 50/50 mix of antifreeze and water will have a pH level of about 8.75, which is a bit too acidic, so you should adjust your mixture accordingly.

A good rule of thumb is, if your customer's coolant pH is below 9.0 you should recommend a coolant system flush and change.

Of course the best coolant to use on a Volvo is OE Volvo antifreeze/coolant. Volvo uses additives that are specifically designed to protect and not react with the alloys used in Volvo engines.

CABIN FILTERS

Volvo started offering cabin air filters as an option as early as 1994, and by



It's a good idea to check your customer's coolant during your regular service inspection. The easiest way to determine the coolant's condition is with disposable test strips. These strips not only check freeze level but also check pH level. If the coolant pH is 9.0 or less it is time to change the coolant.

1998 climate system filters became standard equipment. On most of their models, Volvo recommends replacement of the cabin filter every 15K miles under normal driving conditions. A clogged cabin filter can cause the blower fan to overheat causing premature failure.

Also the organic debris (dirt) in the cabin filter can start to grow mold and mildew. This can be bad for customers with allergies and can help cause that foul smell that your customers are always complaining about.

Volvo HVAC systems work best when you install an OE Volvo replacement cabin filter. These high quality filters not only fit better, but they are designed specifically for Volvo climate control systems.



If organic debris is allowed to build up and clog the evaporator drain tube, the condensation and moisture will not only leak into the car but can start to grow mold and bacteria that can be difficult to completely remove.

EVAPORATOR DRAINS

Over time, the dust and debris in the HVAC system can build up in the bottom of the evaporator box

and accumulate in the evaporator drain tube. It is important to make sure this drain is clear, especially in areas where there is high humidity or if your customers use the A/C

CLIMATE UNIT FAN MOTOR, NOISE OR DOES NOT WORK

REF NO: TJ 27558

ISSUE DATE: 2014-12-12

DTC DIAGNOSTIC TROUBLE CODES

Rows beginning with * are modified

Note! If using a printed copy of this Technical Journal, first check for the latest online version.

DESCRIPTION

Fan motor noise or does not work may occur due to water ingress from plenum area.

PRODUCT MODIFICATION

*New PUR string routing at front windscreen implemented in car factories.

MATERIAL RETURN

Material for analysis can be requested in Vehicle Report. In other cases, follow normal routines.

VEHICLE REPORT

Use concern area "Vehicle Report" and sub concern area "Support Not Needed", use function group 8733.

SERVICE

In case of customer complaints regarding fan motor noise or does not work, replace the fan motor according to VIDA and perform action according to attachment.

VST OPERATION NUMBER

87306-2 Blower fan motor replace

98480-2 Adjust cowl acc. to TJ27558. ●

VEHICLE TYPE

TYPE	MY	CHASSIS RANGE	STRUC WEEK RANGE
124	2007-2015	0000805-0184236	200605-201416
134	2011-2015	0000194-0316426	201020-201416
135	2008-2010	0000395-0167000	200720-201019
136	2008-2015	0000400-0200508	200720-201416
155	2015-2015	0001147-0209641	201346-201416
156	2010-2015	0000212-0580792	200835-201404

CSC CUSTOMER SYMPTOM CODES

CODE	DESCRIPTION
TC	Blower fan/Does not work
8B	Temperature control/A/C slow to cool in front section
TB	Temperature control/A/C does not work
TN	Temperature control/Heater does not work
N8	Climate control system/A/C water leaks/condensation
8F	Blower fan/Unusual noise

for extended periods. Checking and clearing the evaporator drain should be a part of any A/C service.

The excess water in the A/C system will start to grow mold in the HVAC system that is very difficult to remove completely. To help prevent this from happening, you should educate the customer on the importance of keeping the HVAC intake vents clear of leaves and debris. A lot of shops will vacuum out the leaves when doing a regular service.

CLOGGED INTERIOR TEMPERATURE SENSORS

Volvo uses an interior temperature sensor in most of their climate control systems. Most of these sensors have a tiny fan that pulls cabin air through the sensor element. The CCM uses this data to help keep the cabin's actual temperature close to the temperature selected by the driver.

Over time these sensors get clogged with dust and debris. When this happens, the cabin temperature data readings from the sensor can be off by a significant amount, causing the CCM to over- or under-compensate while trying to maintain the selected temperature.

These sensors are easy to check and clean. With a flashlight, look in the sensor inlet vent and, if there is dust buildup, gently blow it out with compressed air. If you have VIDA, you can check the cabin temp data before and after cleaning out the sensor. Sometimes there can be a substantial difference in the temperature readings.

HERE ARE JUST A FEW COMMON VOLVO CLIMATE CONTROL ISSUES

Here are some of the most common HVAC problems that are seen in independent shops on Volvos with higher mileage.

- Air conditioning shutting off on its own.
- Foul smell from the air ducts.
- Heater core leakage.
- Blower fan not working or only having one speed.

1993-2000 850/S/V 70 WORN A/C COMPRESSOR CLUTCH

When you get one of these early Volvos in your shop and the customer

complaint is that the A/C stops cooling after being on for a while, especially on hotter days, you may be dealing with a weak compressor clutch.

As these cars age, heat, vibration and extended use can cause the A/C compressor clutch coil windings to start to crack and deteriorate.

As the worn compressor coil heats up, the cracks in the windings



You should make vacuuming the leaves and debris that collect under the hood part of your regular service. This will help prevent organic material from breaking down and clogging the evaporator drain.

Later Volvo climate control systems use an interior temperature sensor mounted in the dash. These sensors rarely fail but because they use a miniature fan to constantly sample the cabin air temp., they also pull in dust and debris that can cause the sensor readings to become fuzzy (no pun intended). It's always good to clean these sensors with low pressure air when the car is in for service or HVAC repairs.



expand, causing the clutch to disengage due to a weak magnetic field.

Before you condemn the compressor, make sure you check the basics, like fuses, refrigerant charge level and, of course, power and ground at the compressor clutch.

And as with any Volvo A/C performance issues, you should start your testing by checking the temperature output at the center vents, with the A/C set at max, and compare this temperature to the ambient temp.

If the 134A is low on these early systems, the compressor will cycle on and off quickly as the low pressure sensor/switch turns power on and off. When the Volvo you are working on is displaying this fault symptom, the compressor clutch will have power, but will not engage.

You should always replace the compressor and clutch as a complete unit, along with a new receiver/dryer.

Most Volvo A/C compressors have well over 100K miles on them before they start to have any issues. So to make sure your customer gets the same performance and reliability out of their Volvo HVAC system, only use OE Volvo replacement parts.

FOUL SMELLS FROM VENTS

This is a very common customer complaint and a problem that is difficult to fix, at least fix permanently.

If moisture, mold, and bacteria are allowed to accumulate in the ducting and on the evaporator, they can produce some very pungent smells.

As mentioned above this condition is preventable in most cases, but when a Volvo with this smelly problem is brought into your shop, it's important to know how to proceed.

Some Volvo dealers use an ultrasonic cleaning system to deal with this issue as described in Retailer Technical Journal 19292. Volvo issued a service bulletin TJ 28340 that covers the change in the cleaning product that Volvo uses with their ultrasonic cleaning system.

Of course there are a lot of products on the market that claim to be able to effectively treat this problem. Most shops have used these products and have a favorite that gives them good results. But once the mold that causes these smells starts to grow, it's very difficult to permanently get rid of it.

There are several ways to treat this, but the best solution is not to experience it in the first place.

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BLOWER MOTOR NOT BLOWING OR INTERMITTENTLY SHUTTING OFF 1993-2000 850/ S70/V70/C70

After years of service it's common to see the blower motors in these Volvos start to show their age.

The most common cause of failure is high resistance in the blower motor connector, causing excessive heat to melt the plastic around the connector and creating a poor electrical connection.

It's easy to check for this problem; just remove the right side kick panel, turn on the fan switch and use a volt meter or test light to check for power and ground at the fan connector.

If you have both power and ground, try pushing on the connector. Many times the fan will start working. Make sure you always replace the fan motor resistor when you replace the blower fan motor.

HEATER CORE LEAKAGE

If you work on a lot of older Volvos, you will have to make checking the heater core for seepage or leaks part of your regular inspection procedure, especially on cars that have coolant loss problems. The most common heater core leaks are seen on 1993-2000 850/S-V 70 Volvos.

Most times the customer will not even notice that the core is leaking engine coolant inside the car, because in most cases when Volvo heater cores start to leak, the symptoms can be very subtle.

The first sign of this is usually mysterious engine coolant loss over long periods of time. The next most common customer complaint is a sour smell when the heater is on and poor defroster performance.

Some of these Volvos will have a slimy film on the inside of the windshield. If your customer has any of these symptoms, they probably need a heater core.

When you replace a Volvo heater core you should always use a high quality replacement core, like the OE Volvo unit you are replacing that probably has over 100K on it.

On 1993-2000 Volvo 850/70 series cars you should include the firewall

coupler assembly, coolant and thermostat as part of a complete job.

Many shops have replaced heater cores on these early Volvos only to have the car come back with hot coolant gushing into the interior. The couplers get brittle over time and when the core is replaced, the pipes connected to the coupler get moved around. So do yourself and the customer a big favor and include this in every core replacement on these early Volvos. ●



The most common heater core leaks seen at independent shops are those from the 1993-2000 Volvo 850/70 series cars.



When replacing the heater core on 1993-2000 Volvo 850/70 series cars, always replace the firewall coupler assembly and thermostat as part of the complete job.

MORE INFORMATION ON AFTERBLOW

THIS TJ PROVIDES MORE HELPFUL HINTS FOR DEALING WITH THE AFTERBLOW FUNCTION.

NO: 17865

DATE: 11-01-2005

M. YEAR: MY03 - MY06

MODEL: S60, S80, V70, XC70, XC90

SUBJECT: AIR CONDITIONING, "AFTERBLOW" FUNCTION.

REFERENCE: VIDA

DESCRIPTION

Under certain conditions, customers may complain about a musty odor from the A/C system.

Activating the afterblow function prevents this from occurring.

SERVICE

To avoid a musty odor from the A/C system, it is strongly recommended to enable the afterblow function on all cars within the above chassis limits, especially in warm and humid climates.

For customer complaints matching the above description, perform following steps:

1. Check the A/C system for leaks (the PAG oil in the refrigerant has a very distinctive smell).
2. If you suspect a leak, perform fault tracing to locate the leak (use UV-light) and replace the faulty component.
3. If there is no indication of a leak, switch on the afterblow function according to VIDA.

4. If activation of the afterblow function does not solve the problem, further fault tracing must be done.

IMPORTANT NOTES

- Downloading new software in the OCM may switch off the afterblow function (default value in the car configuration file is "OFF" for all cars in or above the chassis ranges listed under vehicles affected). After downloading or upgrading the OCM software, always verify if the afterblow function is still enabled.
- XC90 V8 variants DO NOT have the afterblow option feature.

GENERAL INFORMATION ABOUT THE AFTERBLOW FUNCTION

When the afterblow function is activated and certain criteria are fulfilled (depending on driving cycle and use of the A/C system) the interior fan will start to blow 50 minutes after the car is switched off. The interior fan will blow for 5 minutes with external air directed to the dashboard air outlets.

If you activate the afterblow function, it is recommended to inform the customer about this function and the expected behavior of the car. ●

TYPE	MODEL	MY	CHASSIS	PLANT
384	S60	MY-03 - MY06	235000-501290	22
184	S80	MY-03 - MY06	297035-426600	21
285	V70	MY-03 - MY06	287167-531400	21
285	V70	MY-03 - MY06	286000-531530	22
295	XC70	MY-03 - MY06	095082-208900	21
275	XC90 (excl. V8)	MY-03 - MY06	000690-226300	21

Note: Cars before and after the chassis breaks listed above have the afterblow function enabled from the factory.

WARRANTY CLAIM INFORMATION

LABOR OP	LABOR DESCRIPTION	LABOR TIME
36050-2	Activating afterblow with VIDA	0.2hr

Claims may be submitted under the new car warranty when there is a documented customer complaint using claim type: 01



VOLVO AGING ISSUES

THIS ARTICLE IS PART OF
A CONTINUING SERIES
COVERING COMMON
PROBLEMS THAT CAN
ARISE ON VOLVOS WITH
HIGHER MILEAGE.



Just like all other car makes, Volvos have some common wear problems as these cars age, and similar models tend to experience some of the same problems. If you work on a lot of Volvos in your shop you have probably seen some of these common problems.

Opposite page: If you have an 850 that makes a loud crack or pop noise from the front of the dash board when the car hits a large bump, you may have a broken dash assembly mount on your hands.



Your customer will have to really love their Volvo to fix this one. It will be expensive and require removing and most likely replacing the whole dash assembly.



When the SAS check valve fails it usually damages the air pump by allowing exhaust gases and moisture to be sucked directly into it.

LOUD "POP" OR "CRACK" NOISE OVER LARGE BUMPS OR POT HOLES (1993-1997 850 SERIES CARS)

A lot of good old Volvo 850 series cars that are still on the road and still showing up at your shop are starting to show their age.

20 to 25 years old and still rolling strong, these cars can develop a lot of rattles, especially the wagons.

You can fix a lot of these interior rattles by just tightening loose screws and brackets or identifying parts that are rubbing together and isolating them with felt tape.

Volvo has a great service bulletin for fixing some of the interior noises on 850 series cars, SB 85-820-1297

But if you get one of these Volvos in your shop with a customer that complains about a loud "POP" or "CRACK" noise coming from the dash area when the car hits a pot hole or large bump, this Volvo may have a broken dash board mount or mounts where the main dash board assembly connects to the firewall.

This problem is more common in 850s that are driven in warmer climates and are normally parked on the street.

Over the years of sun and heat exposure, the plastic at the front of the dash begins to get brittle and starts to crack.

If the dash is just rattling over bumps you probably just have to tighten the four mounting bolts under the wiper motor cowl.

When the dash mounting points break, you will know it; when you drive the car over a hard bump the noise is very sharp and loud.

Your customer will really have to love their Volvo to repair this problem, because it is going to be expensive to fix.

The whole dash assembly will have to be removed including the steering wheel and both air bags, and in most cases the main dash assembly will have to be replaced.

VOLVO 850 - 1993 - 1997 (SAS) (PAIR) AIR PUMP FAILURES NON-TURBO

When a higher mileage Volvo 850 comes into your shop with a Check Engine light on and the ECU has

stored one or more codes related to the air pump system (SAS), there is a good chance that this car might need a new air pump and air pump check valve. As these 850s get older, the diaphragm in the air pump check valve can crack and leak internally.

The SAS check valve is exposed to heat and vibration constantly, because it is mounted right above the exhaust manifold. These valves are built to work in this type of harsh environment, but they do have a life span.

Most of the SAS check valves that fail have over 100K miles on them, but if the car is driven in extreme temperatures constantly, the part's life may be shortened.

When the SAS check valve diaphragm is damaged, it can allow some exhaust gases to leak through it and flow backwards through the inlet hose that comes from the air pump. As we all know, engine exhaust can contain quite a bit of water vapor as part of the normal combustion process, especially when the car is cold.

Volvo's secondary air injection system operates like most AIR systems that use an electrically-

powered vane-type pump. This system is designed to reduce hydrocarbon and carbon monoxide emissions during cold starts, and to speed the heating of the Three-Way Catalytic Converter (TWC) by pumping fresh air into the exhaust manifold when the engine is cold.

The extra oxygen helps to "after burn" the unburned hydrocarbons that remain in the exhaust when the engine is cold. This also makes it possible to increase injection time and retard ignition timing, which will increase exhaust temperatures, speeding the activation of the TWC.

In the Volvo 850 the AIR system operates like this: when engine coolant temperature is between 10 degrees C and 30 degrees C (50 degrees F - 86 degrees F) and the car is running, then the auxiliary air system is activated 20 seconds after the engine is started. Once the system has been activated it runs for 45 to 120 seconds depending on the coolant temperature.

The problem occurs when exhaust gases and water vapor are allowed to leak into the electric air pump. When this happens, the water can soak into the air pump's motor and windings,

causing the pump to short out and rust internally.

The easiest way to check for this problem is to take the top off the air cleaner housing and check the inlet hole for the air injection system. In most cases you will see traces of rusty water around the hole, and in some cases, on the air filter element itself.

You could just replace the air pump check valve and air pump, but it is always better to recommend replacement of the air pump, air pump check valve, air pump relay and air pump switching valve to ensure a proper repair.

WEAKENED POSITIVE BATTERY CABLES CAUSING HIGH RESISTANCE, VOLTAGE DROP AND LOW CHARGING SYSTEM VOLTAGE

This condition is most commonly seen in Volvos like the 1993-2000 850/S70 series with over 100K miles on them.

When an older Volvo comes into your shop with a charging system problem or a dead battery, you should always make checking the battery cables



The rust residue inside the air cleaner housing is a sure sign that the SAS valve is leaking.



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part of your initial testing. Of course we all know that, but in a lot of cases these cables will not always act up during testing, especially when the car is cold, when they will often pass a voltage drop test. And in most cases, the battery clamps will be tight and not show any visible signs of wear or corrosion.

When you get one of these Volvos in the shop, you will notice that when the car is cold it may be charging normally, but as the car warms up two things will happen: the charging voltage will slowly begin to drop, and the positive battery clamp will begin to heat up. So be careful not to touch the positive clamp with your bare hands when these cars are running and warmed up. This is because the high resistance in the battery's cable and connector can cause the battery clamp to get very hot!!

Along with a volt meter, you can use a non-contact infrared thermometer to measure the positive battery clamp voltage and temperature as the car

warms up. If the car has one of these failing positive cables, you will see the voltage slowly drop as the clamp temperature rises.

What happens to these cables over time is, moisture can build up inside the cable and start to cause corrosion to develop inside the battery clamp where the cable is inserted and crimped. You usually can't see this corrosion because the cable connection is covered with heavy-duty heat shrink. This corrosion causes resistance, the resistance causes heat, the heat causes the clamp to expand, which causes a poor connection, and the poor connection causes voltage drop.

Isn't science cool?

Sometimes as these clamps cool the metal can contract, re-establishing the connection, and the car will suddenly start charging normally again. That's why these cables are often missed during the initial charging system testing. Remember, when working with batteries and battery acid, always take safety precautions, and wear eye protection and gloves. Car batteries

contain sulfuric acid that can give off Oxidized Hydrogen (HHO) gas. This is the reason batteries can catch fire. Oxidized Hydrogen is combustible, even though it usually takes about 570 degrees C (1058 degrees F) to ignite it.

FUN FACT

A lit cigarette burns between 1100 degrees F and 1600 degrees F, so don't smoke around car batteries!

If you have a Volvo that needs to have this cable replaced for any reason, you should also recommend replacement of the battery at the same time because all that heat and stress can cause permanent damage to the battery.

1993-2000 VOLVO 850/S/V 70 SERIES FUEL PUMP SENDING UNIT AND FUEL LEVEL SENSOR SEAL LEAKS.

The replacement procedure for the fuel sending unit and sending unit seal requires Volvo special tools: 999-5486 and 999-5885.



The positive battery cable can corrode inside the clamp's crimp, causing intermittent high resistance.



Be careful not to touch the positive clamp during testing on one of these cars, because if the car is running and warmed up, it not uncommon to measure temps over 200 degrees F at the clamp when these cables act up.

If a customer brings in one of these early Volvos with a complaint of a fuel smell after filling up the fuel tank, the car may have a deteriorated or loose fuel pump sending unit or fuel level sensor seal.

Over many years and miles of rough roads, expansion and contraction

from hot and cold weather can cause the fuel tank level sensor and fuel pump assembly caps to loosen and allow fuel vapor and even raw fuel to escape though the seals on the top of the fuel tank, where the sending units are installed.

Even if the customer does not notice any fuel tank problems, you should make inspection of the fuel tank and hoses part of your regular inspection procedure, because fuel leaks should always be taken seriously.

To inspect for this problem, put the car up on the rack and use a flashlight to inspect the surface of the fuel tank. You will probably notice signs of old fuel leakage and, in some cases, wet fuel, usually on the right side of the tank coming down from the top, above the filler neck connection.

There are a few ways to confirm that the leaks are coming from the sender and fuel pump seals. You could take the car to a gas station, and fill the tank to the top to check for the size of the leak by watching how much gas spills onto the ground. But there are safer, cleaner and more environmentally friendly ways to confirm this problem. You can remove the access panel above the fuel pump sender and you will usually see obvious signs of fuel seepage. In some cases the holding rings will be loose enough for you to be able to turn them by hand.

In this case don't be tempted to just tighten the caps, because the seals are probably compromised. It's best to replace both the fuel sender and fuel pump seal with new seals from Volvo. If you have a smoke machine with an adapter to thread into the fuel filler neck, you can pump smoke in and usually see a leak. Remember to use only a smoke machine that is specifically designed for EVAP system testing; you don't want to cause damage by applying too much pressure to the fuel tank.

These Volvos rarely have fuel leaks, but always inspect the tank for damage and the fuel lines for leakage. Shops in areas where salt is used on roads for snow removal have seen cars with steel fuel and brake lines rusted through.



Make sure you replace both the fuel pump and fuel level sender seals with new ones when you see them leaking or even if you are just replacing the fuel pump.

1999-2004 VOLVO S/V 40 UPPER ENGINE WIRE HARNESS INTERMITTANT FAILURE CAUSING MULTIPLE ISSUES.

Some of the first generation of Volvos S/V 40 series, also known as the X40 platform cars, that were made from 1999-2004, are starting to show their age.

These Volvos were the first ones that were manufactured outside of Sweden, but don't hold that against them, the ones that were well serviced are still rolling strong.

Among a few other aging issues that commonly occur with this model, a few shops have seen problems stemming from a worn upper engine wire harness.

This short wire harness starts at a connector at the fire wall and connects to the two ignition coils and the VVT solenoid.

If you get one of these 1999-2004 S/V 40s in your shop with a camshaft reset valve code (ECM-61 or POO14) stored in the ECM, make sure you make inspecting the wire harness part of your initial diagnosis.

Of course the most common reasons for a camshaft reset valve code on these cars are low oil, low oil pressure, oil contamination and worn or clogged VVT solenoid valves.

HERE IS THE DESCRIPTION OF HOW THE ECM-61 CODE IS "NORMALY" GENERATED.

Each time that the engine is switched off the camshaft pulley sets itself in the locked position. The control module checks that the camshaft pulley leaves the locked position when the engine is started again. Diagnostic trouble code (DTC) ECM-61 is stored if the control module



If you get one of these 1999-2004 S/V 40s in your shop with a camshaft reset valve code (ECM-61 or POO14) stored in the ECM, make sure you make inspecting the wire harness part of your initial diagnosis.



Collision Advantage

In support of the collision repair market, Volvo Car USA has introduced Volvo Collision Advantage, powered by CollisionLink®. Volvo Collision Advantage supports body shops with faster estimates and cycle times, and also offers price matching on a select group of parts. Volvo wants to help repair shops get the Volvo Genuine Parts they need to help ensure the vehicle will be repaired properly.

Contact your local Volvo dealer to learn more.

collisionlink®

detects that the camshaft pulley is in the locked position.

Substitute value: None.

Possible source:

- Low oil pressure in the engine.
- Blocked oil ducts for the camshaft reset valve.
- Defective camshaft reset valve.
- Fault symptom[s].
- Malfunction indicator lamp (MIL) lit.

When you begin your diagnostics on one of these Volvos you should start with the basics, check the oil level and condition.

Check the car's service records if possible to find out if the customer serviced their car on a regular basis or not.

If the driver of the Volvo in question is one of those drivers that is "not" servicing their Volvo on a regular basis, the camshaft valve code may have been set for one of the usual reasons listed above.

You know those customers that only bring the car in when they have more than 3 warning lights on the dash or the ones that call and say they need an oil change because the oil light just came on.

Of course there is an old school trick to find out if the car has had its engine oil changed on a regular basis or not, just look at the bottom of the oil filler cap. If it's clean, this Volvo has been loved; if it has a lot of baked on crud built up on it, this Volvo probably has not been loved on a regular basis.

But this article is about the wire harness, not oil changes, the point is that a worn upper engine harness has been known to cause this code to be generated even if all the other components in the VVT system are operating flawlessly.

This is because the upper engine wire harness on these Volvos runs over the top of the cam case and operates in a very hostile environment. After years of heat and vibration the harness insulation can become brittle and start to crack, causing intermittent shorting and implausible data to be sent to the ECU.

The other problems that can be caused by these worn harnesses are unexplained misfire codes and, in states that require emissions testing,

there have been cases where a shorting harness has caused the car not to be able to run and complete the component monitor in the ECU.

So inspect those wires and connectors, you will usually see that the wire insulation right near the coil connections is rock hard and crispy.

The replacement harness from Volvo has blue connectors at the coils and the original harness has black. ●



There is an old school trick to find out if the car has had its engine oil changed on a regular basis or not. Just look at the bottom of the oil filler cap, if it's clean, this Volvo has been loved, if it has a lot of baked on crud built up on it, this Volvo probably has not been loved on a regular basis.





THERE'S NO SECOND CHANCE

VOLVO GENUINE BRAKES

Volvo Genuine Brakes are more than simply replacement discs and pads. They are essential components that interact with sophisticated systems and software to help ensure the safety and performance of Volvo cars.

Installing Volvo Genuine Brakes is an investment in reliability and quality – the best option in the marketplace for keeping your customers safe.

They are critical in Volvo Active Safety Systems including:

- Antilock Braking System (ABS) with Electronic Brake Distribution (EBD) and Electronic Brake Assistance (EBA)
- Automatic Braking
- City Safety
- Collision Warning with Auto Brake
- Pedestrian Detection

Get the replacement brake parts designed and engineered by Volvo. Contact your local Volvo dealer for a complete selection of Volvo Genuine Parts.





VOLVO BRAKES!

VOLVO BRAKE AND TRACTION CONTROL SYSTEMS

DIAGNOSIS, SERVICE, REPAIRS,
TIPS AND TRICKS FROM THE
WORLD OF THE INDEPENDENT
VOLVO SHOP.

THIS WILL BE PART 1 OF A SERIES
OF ARTICLES THAT WILL COVER
VOLVO BRAKE SYSTEMS FROM
BASIC SERVICE TO ADVANCED
TRACTION CONTROL DIAGNOSTICS.



Brakes, yes brakes, every technician's favorite job! Well, most technicians like to do them. It's an easy job, there's not much chance for problems and when you're done, you and the customer can see and feel a real difference.

Most technicians have done more brake jobs than they can count. Doing brake jobs every day becomes so second nature that it's easy to forget the true importance of these systems and why it's critical to do brake repairs the right way every time.

It is important that your shop has an inspection procedure for every car that includes a complete brake inspection, because next to the tires, the brakes are the most important safety system on the car.

Most of your customers won't notice when their Volvo is experiencing brake symptoms like pedal fade or brake pulsation until these symptoms become too pronounced to ignore. And in most cases when customers bring their cars in to have the brakes checked, it's because they hear a noise or squeak when they apply the brakes.

The service writer needs to get as much information about the symptoms as possible. Sometimes they will have to ask leading questions, like "do the brakes only

squeak when the car is turning?" or "at what speed do you feel the vibration and did the ABS light come on?"

Taking some extra time to interview the customer and asking the right questions will help you to more accurately diagnose and repair your customer's Volvo the right way the first time.

If it's possible, take a test drive in the car with the customer, to make sure you are addressing the noise or symptom that the customer is describing.

Since most noises develop slowly over time, most of your customers tune them out or think the noises are normal. In fact, most of your customers will only notice when there are dramatic changes in their car's behavior.

That's where we come in. If you're like most technicians, you will hear multiple noises, clunks and rattles on a routine test drive, most of which the customer probably has tuned out or thinks are normal.

If you can manage your customers' expectations by educating them about how their brake systems work and about the testing and repair process, it will go a long way towards avoiding confusion and comebacks due to lack of communication.

Make sure you can duplicate the customer's complaints. If you cannot duplicate the symptoms and you don't see any obvious problems with the brakes, you need to explain to the customer that, without a symptom, you can only make an educated guess.

the roads for snow removal, shops often see Volvos that are much older and may have well over 100K miles on them.

When test driving for brake problems, "around the block" just won't get it. Volvo's definition of a brake system test drive should include "normal" driving, with multiple stops at different speeds and, whenever possible, a freeway test drive with speeds above 50 mph with light and hard braking.

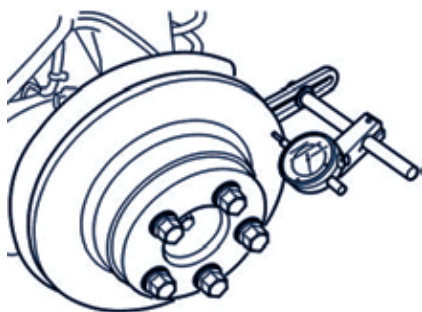
At least one braking should activate ABS control from a speed of above 50 km/h (31 mph). Make a note of any unusual noise or abnormal behavior. Listen particularly for clicks or bangs, see if the car pulls to one side or if the brake pedal does not seem to be responding properly.

If you experience brake pedal pulsation, don't automatically assume that warped brake rotors are the cause. Yes, in a lot of cases the rotors turn out to be the cause of pulsations, but testing should always be done to ensure that you replace the right parts the first time.

Make sure to measure the rotor runout with a dial indicator. You should start by removing all four wheels and making sure that the rotors are pressed flush against the wheel bearing hubs. On Volvos, the maximum allowable lateral runout of the hub should not exceed 0.02 mm. You should also check the wheel hub's lateral runout before installing new brake discs. Although rare on Volvos, the bearing hub could be bent from a serious pot hole encounter or a past accident.

NOISE FROM REAR BRAKES?

Under certain conditions while driving in reverse and applying the brakes, a groaning noise may be heard from the new rear brakes. A rear brake pad and a grease retainer are available



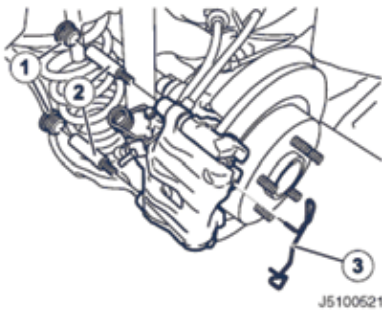
When you measure runout with a dial indicator on a Volvo, you should make sure the rotor sits flush against the hub. You can do this with washers and lug bolts or Volvo has a nice kit for this (Part #999-5418-2).

BRAKE INSPECTIONS

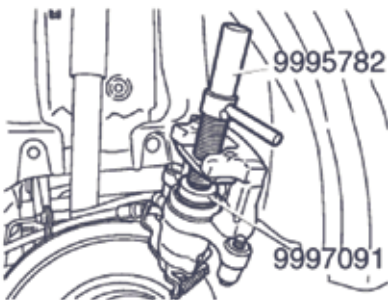
Most of the Volvos that come into independent shops tend to be at least 5 years old or older with at least 30K miles on them. And in a lot of states that don't use salt on

as a service solution, should it be determined that this is the cause. Here is the repair procedure:

1. Remove the spring (3).
2. Next remove the protective caps (1).
3. Next remove the caliper pins (2) with a 7mm hex socket.
4. Use a bungee cord or wire to hang brake caliper so the brake hose won't get damaged.
5. Remove the old brake pads
Note! Do not depress the brake pedal while the brake pads are removed.



6. Clean the brake caliper 2.
7. Clean and check the brake caliper and the dust cover.
8. Clean and check the brake pad mating surfaces in the brake caliper and caliper holder.
9. Press the piston back into the cylinder on the brake caliper.
Use: The press tool 9995782 with the Key 9997091.



Always measure the wheel hub lateral runout before replacing the rotors.

10. Check that the dust boot is correctly positioned.
11. Install the new brake pads.
Note! The brake pad with the spring must be placed against the brake caliper piston.

INSTALL:

1. The brake caliper.
2. The locating pins (2). Tighten to 30 Nm (22 ft lbs).
3. Lubricate the locating pins using silicone grease.
Note! Check the rubber sleeves of the locating pins. Replace if necessary.

INSTALL:

1. The protective caps (1).

CHECK THOSE BRAKE HOSES!

As Volvos age and clock all those miles on the odometer, the original

parts will begin to wear and deteriorate. This is especially true of rubber and plastic parts, like the hydraulic brake hoses, and you will often see older Volvos with high mileage come into your shop with the original brake hoses on them.

The brake hoses on older Volvos with high mileage can start to develop cracks, usually at the pivot point where the hoses move and flex the most during normal driving and turning.

In some cases the brake hoses can develop bumps or bubbles on the outer skin of the hose. This is a serious condition! The bumps indicate that the inner part of the brake hose has ruptured and is bleeding brake fluid into the outer hose wall. You will usually only see this condition on Volvo 240/740/940 (1978-94) models.

If you get a Volvo or any other car in your shop with brake hoses that have this type of rupture, you should insist that the customer have all the soft brake hoses on the car replaced along with a full brake fluid flush. Although it is rare on Volvos, some shops have had cars towed in with one of the brake hoses ruptured and leaking.

This is most commonly seen on the first generation of the S/V 40 series Volvos (1999-2004). When checking these brake hoses, be sure to pull back the spring that protects the top of the hose.

Don't go cheap on these brake hoses or any other brake parts, it's just not worth the risks. Use only genuine Volvo parts from your local dealership's parts department

BRAKE FLUID

Check your customers' brake fluid on every inspection; brake fluid is often overlooked. Since brake fluid is hygroscopic (water absorbing), it can absorb moisture from the atmosphere under normal humidity conditions.

Don't judge the fluid just by its color. Use an electronic fluid tester to measure the moisture

content of the fluid in the master cylinder. If the fluid has more than 2 percent water content, you should recommend replacement.

Of course if the brake fluid looks like muddy bilge water from a cargo ship, the entire brake system probably needs to be flushed out too. Volvo recommends brake fluid replacement every 20K miles or every 2 years. All Volvo models use only DOT 4 brake fluid.

BRAKE ROTORS

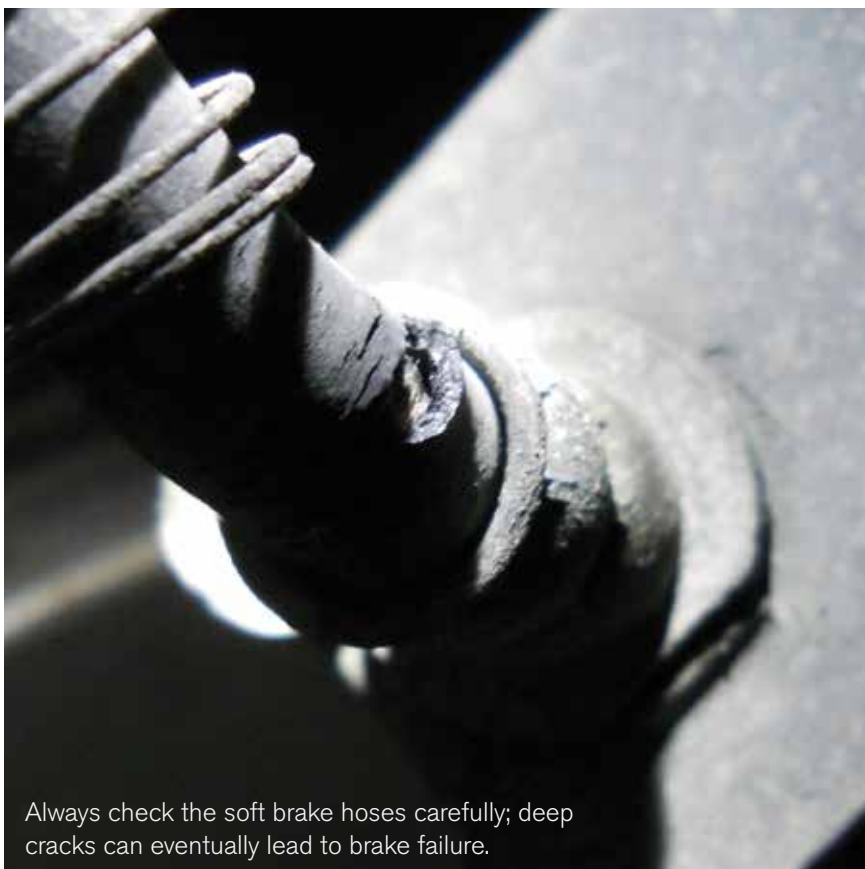
When you work on a lot of Volvos you will start to see a pattern, and not just the one scored into the rotors. The pattern is that most Volvos use up their brake discs as they wear down their pads, especially in city stop and go driving.

When you measure the rotor thickness, a lot of times the rotor will be very close to the minimum thickness, and if you machine the rotors you may still be barely above or at the discard limit. But you're probably going to have a comeback due to warp in a few months after the brake job is performed.

A lot of independent Volvo shops and dealerships never turn rotors. In some rare cases, mostly on older Volvos like 240s and 740s, you can just replace the brake pad set and reuse the rotors, if they are still within specifications and have less than 0.02 mm runout. But if the Volvo is driven mostly in city traffic, in most cases you're better off replacing the rotors on every Volvo brake job, especially on the XC70 and XC90.

VOLVO TECH TIP FOR BRAKE ROTORS

When you want to order new brake rotors for some later model Volvos, you will need to measure the old brake disc, because a lot of models will have 3 rotor size options available, and the size that was installed from the factory can't be determined by



Always check the soft brake hoses carefully; deep cracks can eventually lead to brake failure.

Check the condition of the brake fluid with an electronic brake fluid tester and if the fluid has more than 2 percent moisture content, you should recommend replacement. Volvo's

brake fluid tester and other special tools are available from your local dealer parts department or online from VolvoTools.com (Part #9814057).



the VIN. So do yourself a favor, get a tape measure that can measure in millimeters, so you can get the right parts the first time.

COMMON VOLVO BRAKE ISSUES AND REPAIRS

ABS CONTROL UNIT FAILURE (850- S/V 70 1996-2000)

Most of these early Volvos have had their ABS control unit replaced at least once, but you will still see the occasional car come with a malfunctioning control unit.

Most of the early versions failed because of poor solder joints on the circuit board where the connector pins are attached. The replacement ABS units have had this defect corrected, but there are a lot of

Volvos out there that have used or rebuilt units in them. These are the ones that you will see more recent failures on.

REPLACEMENT REAR BRAKE PAD SHIMS FOR LOW SPEED BRAKING VIBRATION AND NOISE (850- S/V 70 1993-2000)

If you have ever had the joy of feeling that these shims are the fix for the symptom, you probably did not believe that a modified shim could fix such a heavy vibration and noise resonance. The symptom usually only happens after repeated braking at very low speeds, 10 mph and below.

When you replace the rear brake pads on these cars make sure you use the updated shims (Part #272272).

BRAKE VACUUM PUMP FAILURE

If you get a Volvo in that feels like the brake booster is bad because the pedal is hard and has very little vacuum assist, don't just throw a brake booster at it. Check to see if it is equipped with a brake vacuum pump. These pumps can fail without warning and not store any codes in the BCM. You can test the pump by applying power and ground on the bench or activating it with your scan tool or VIDA.

When the vacuum pumps malfunction, the symptom is felt more after a cold start. Also if the vacuum pump has failed on a P1 Volvo, there is an updated overload relay and wire harness that needs to be installed with the new pump (this is covered in Volvo TJ 20293).



Volvos have a tendency to wear down the rotors along with the pads, so if the rotor is close to the minimum thickness, it's better to just replace the rotors rather than turn them.



If you have a Volvo come in with symptoms that feel like a bad brake booster, make sure you check to see if the car is equipped with an auxiliary vacuum pump. When these pumps fail their symptoms can feel like a bad booster.



Left: Volvo extensively tests all its brake systems at its \$81 million safety center in Sweden.

Volvos can be sensitive to the quality of their brake parts; a lot of brake noise complaints have been attributed to the customer's having someone install cheap aftermarket brake pads or missing brake hardware. If you want a happy customer and no comebacks, only install OE Volvo brake parts; you won't be sorry you did.

Some technicians say, "What's the difference as long as I use a 'good quality' brake pad set?" Well here's one difference you may not have thought about.

Volvo performs many months of performance and safety testing on all

of their parts while they're installed on the cars they were designed for, at Volvo's \$81 million safety center that happens to be the most technologically advanced crash-test facility in the world.

Most aftermarket brake manufacturers test their version or "copy" of the brake parts on a bench mounted brake testing machine in their factories.

VOLVO TJS

Read those Technical Journals!!!! Volvo has issued multiple TJs about brake systems on almost every model they make, so take some time and read them; the time spent will always pay off. ●



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HELP US PLAN CONTENT FOR VOLVO TECHTIPS!

From reoccurring challenges you see in your shop, to new technologies you'd like to know more about – and everything in between. It's open season on topic ideas.

Send us an email feedback@VolvoTechTips.com with your ideas and feedback.

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VOLVO WINDOWS, DOORS AND LOCKS OH MY!

AS A TECHNICIAN, YOU
EITHER LOVE THIS KIND
OF JOB OR YOU HATE IT.
IT'S NOT FOR EVERYONE.



Working on windows and locks can be more of an art than a science. This kind of work takes skill, patience, creativity, and X-ray vision would help too. But there is hope if you find this kind of work difficult or frustrating because, just like a lot of jobs, the more experience you get doing this kind of work, the better you will become at doing it.

You will get to know how things look and feel, like how to remove old plastic door parts without damaging them, or the difference between a lock cylinder that needs to be lubricated and a lock cylinder that needs to be replaced just by the way it feels.

As we all know, it's easy to break expensive clips and damage door panels if you don't know how to disassemble the door and window parts the right way. It's because, in most cases, this kind of work requires finesse, not force.

As with all customer complaints, you or your service writer should get as much information about the problem as possible, especially if the problem is intermittent or not easily duplicated.

Your shop should have a system in place to confirm which door or window is involved, R/F, L/R, Driver's Window, etc. And make sure that it is clearly and correctly stated on the RO.

HAS THIS EVER HAPPENED AT YOUR SHOP?

You may be handed a repair order from the service writer that says something like, "Customer complains that R/R door lock sticks, remove door panel and estimate needed repairs." You then go get the car, pull it on your rack, lock and unlock the right rear door a couple of times and don't get the symptom, so you go to work disassembling the R/R door panel.

Once you get down to the lock actuator, you check the wires, check the linkages and try to replicate the symptom. Of course there's still no symptom, so you take the RO and go talk to the service writer about your findings.

You tell the service writer that you can't find anything wrong with that right rear door lock, the service writer looks at you strangely and says, "I wrote L/R on the RO," then you look at the service writer strangely, hold up the RO and point out the letters R/R that are written there.

This never happens at your shop right?

And remember, it's not always the service writer's fault; often times the customer can be confused and give the service writer the wrong information.

VOLVO KEY & REMOTE PROGRAMMING

Volvo started using laser cut keys back in 1992, but the keys did not have immobilizer communication chips inside until 1999. They also started offering a keyless entry remote as an option in 1992.

These early security measures were very effective and made stealing a Volvo very difficult. But when Volvo introduced the immobilizer system into its cars, it became darn near impossible to steal a Volvo without a key or a tow truck.

In the early days you could only get the laser keys from Volvo. You would call up your Volvo dealership parts department and give them the VIN of the car you wanted the key made for.

Then the parts person would transmit the order details to someone overseas, who would enter the VIN into Volvo's Magic Master Key Cutting Machine (at least that's what they should have called it).

There would be a flash of light, a puff of smoke and "VOILA," you would receive the new key in about a week.

These days you get the keys a lot faster from Volvo.

In 1999, Volvo upped the ante for car thieves, with the addition of the immobilizer and chipped keys that communicate with the immobilizer through an antenna ring on the ignition lock.

To get a 1999 - 2017 Volvo to recognize a new key and do more than just unlock the steering wheel, you will need to download a software package with Volvo's VIDA program.

So if you don't have VIDA, you will have to send your customer to your local Volvo dealership to have their keys and remotes programmed, along with all the other things you won't be able to do without this valuable tool.

It's just yet another reason to get a VIDA subscription up and running at your shop. Volvo's VIDA software, along with the DICE communication tool, is invaluable if your shop works on Volvos, even if you have no interest in key programming.

DID YOU CHECK THE BATTERY?

Volvo has been offering keyless entry remotes on their cars since the early 1990s; early Volvo remotes were very tough and simple.

Volvo keyless remotes that were used on 1992-1998 960, 850, S/V 90 series cars are very easy to program.

HERE'S HOW...

With all the doors, hood, and trunk closed and with other electronics such as lights, radio, HVAC turned off, insert the key into the ignition and turn the key to the "On" position and back off 5 consecutive times. Do not turn the key to start the engine, or turn the key as far as to engage the starter.

On the 5th time the key hits the "On" position, the red alarm light located on the right hand top of the dash should start blinking.

Within 15 seconds, press either button on the remote. If the remote is successfully recognized, the alarm light will stop blinking and become solid.

If you have additional remotes to program, you can push the buttons on them within a maximum of 10 seconds of each other. If you are too slow or interrupt the key in the ignition, you will have to start over again.

In 1998, with the introduction of the S/V 70 series Volvos, remote programming got a little trickier. The type of keyless remote that was used in the 1998 S/V 70 was only used for one model year.

To program one of these remotes you will need a Volvo System Tester (VST) and a four digit code from your Volvo dealership.

The VST is very useful when working on pre-1999 Volvos. But if you don't already have one of these early scan tools, you may have difficulty finding one. Volvo no longer sells the tool, however they have an arrangement with Ohio Diagnostics in the USA for repair of Volvo Scan Tool, VST 9988686, Multi-tester Pro 9511532 and VDII adapter 9511457. For more information contact: Ohio Diagnostics, 631 Brookwall Drive, Suite B208, Akron, OH 44333, Phone: 330.668.1518, info@ohiodiagnostics.com.

But of course, most of the Volvos that independent shops work on these days will be 1999 and newer models, and when these cars need new keys or remotes, it's a whole different ball game. If you want to program keys or remotes on these Volvos, you will need VIDA. Here are a few rules to keep in mind when programming keys and remote fobs on 1999 - 2017 Volvos:

1. They have to be new parts from Volvo.
2. They have to be blank, meaning not previously programmed.
3. Make sure part came in the unopened original factory packaging. (In later Volvos you will be prompted in VIDA to enter two rows of numbers off of the key fob's packaging, so don't throw it away!)
4. You can't bring the customer's old broken keys or remotes back to life by trying to "reload" the software. (Remember to check the battery in the old remote before tossing it.)
5. If your customer needs more than one key or remote added to their Volvo, in most cases they will save money on software by downloading all the new keys at the same time, because some of the key software packages will allow you to load all the new keys into the available spots during programming.
6. A common mistake that happens in a lot of busy shops, is when the person that orders the parts ends up giving the wrong VIN to the Volvo parts person.

When the key that was ordered with the wrong VIN shows up a few days

later, you need to check the fit in the ignition right away. If it's the right one it will turn the ignition lock freely.



To program the remote for a 1998 Volvo you will need a four digit key code from Volvo and the use of a Volvo system tester tool.



Make sure you keep the packaging for keyless remotes because you will be prompted by VIDA to enter two sets of alpha-numeric codes from the label on the package.

REMOTE CONTROL DOES NOT WORK

REF NO: TJ 28752

ISSUE DATE: 2016-02-19

VST

Operation Number

Note! If using a printed copy of this Technical Journal, first check for the latest online version.

DTC

Diagnostic Trouble Codes

Rows beginning with * are modified

DESCRIPTION

Many replaced remote controls are found to be symptom free when tested.

Analysis of replaced remote controls has shown that some remote controls had batteries inserted with wrong polarity or that batteries were missing. These remote controls were fully operational again with correctly inserted batteries in good condition.

This TJ has been released to increase awareness of carrying out proper fault-tracing before replacing a remote control.

SERVICE

When fault tracing remote control complaints, it's desirable to have access to at least 2 remote controls to be able to do a proper fault tracing according to VIDA.

Kindly ask customer to bring both remote controls to workshop before fault tracing.

If no DTCs are set that can be related to the customer complaint, then fault trace according to VIDA "Symptom Related Diagnostic Procedures" - "Fault tracing non-functioning remote control"

Before replacing a remote control, always check that the batteries are correctly inserted and in good condition. See owner's manual for battery replacement instructions. Pay extra attention to the battery polarity in 6-button remote controls, see picture "TJ-28752" on the left.

Remote controls with 5-buttons have 1 battery.

Remote controls with 6-buttons have 2 batteries.

If a remote control is replaced then write a detailed symptom description in the warranty claim text. ●

TYPE	MY	CHASSIS	STRUC WEEK RANGE
124	2007-9999	0000850-9999999	200605-999952
134	2011-9999	0000194-9999999	201020-999952
135	2008-2010	0000395-9999999	200720-201019
136	2008-9999	0000400-9999999	200720-999952
137	2016-9999	0000007-9999999	201524-999952
138	2016-9999	0085038-9999999	201521-999952
155	2015-9999	0158359-9999999	201346-999952
156	2010-9999	0000212-9999999	200905-999952
157	2015-9999	0000001-9999999	201450-999952

CSC CUSTOMER SYMPTOM CODES

CODE	DESCRIPTION
UH	Locking/unlocking/Central locking does not work
VZ	Locking/unlocking/Other central locking problems
IJ	Remote control/Mechanical problem/Key unit only
XI	Remote control/Does not work



Some independent shops choose to purchase their VIDA subscriptions for just 3 days at a time. If this customer's key download is the sole reason for activating the 3 day subscription and you don't verify that the key is correct for the Volvo in question before you purchase and activate a 3 day VIDA subscription, you will not only lose money on the software purchase and key, but you will have wasted the customer's time and will have to have them come back in a few days when the correct key arrives.

COMMON VOLVO KEY LOCK AND DOOR PROBLEMS

FLIP OR FLOP?

Most Volvo keys and remote fobs only require one software package per key or fob, but there is (technically) one exception. The switchblade type key and remote combo is used in a lot of Volvo models starting in 2004. The switchblade type key comes in two parts. The upper part houses the keyless entry remote section

and has a separate transponder from the lower section that has the key blade mechanism and its own RFID transponder. Both the upper and lower parts of this type of key require their own separate software packages if you are replacing the entire key assembly.

If your customer's remote section is good and you just want to replace the worn-out switchblade part, you can just get a new lower key blade part and just download one software package. Or you can order a valet key without the remote if your customer just wants a backup key with no remote functions.

It's common to see the spring go out in the switchblade part of the key. This causes the key to flop around while inserted into the ignition lock. This can turn into a safety issue, especially in the earlier XC90s made from 2003-2010 that use this type of key.

Some shops have reported customers coming in with these cars, with a complaint of intermittent mysterious stalling, especially at stops. These

XC90 customers had a few things in common; they all had baby seats installed on the back seat, they all had no codes stored in the ECM, or any other problems that could cause these cars to stall, and they all had FLOPPY KEYS IN THE IGNITION!

What was happening was that the floppy key was hanging down and, when the drivers would turn around at stops to check on their baby, they would hit the key with their knee and turn off the engine. The driver would not notice they had done this because the natural reaction would be to try to turn the key and restart the car.

STICKY SITUATION

Early Volvo C70 series cars have lock pin bezels that are made from soft plastic. Over the years, the plastic



The switchblade type key comes in two parts and requires two individual software packages.



A floppy key can be a safety issue, because it can hang down, close to the driver's knee, which could cause them to inadvertently switch off the engine while driving.



VOLVO GENUINE PARTS

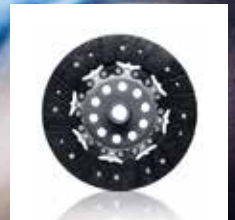
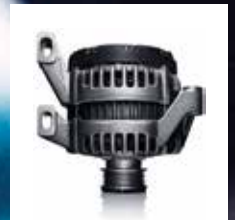
NOTHING CAN REPLACE THEM

When a part needs replacement, a Volvo Genuine Part is the right choice. Manufactured to Volvo's exact specifications, they deliver the safety, quality and reliability your customers expect from the Volvo brand.

Volvo Genuine Parts fit perfectly and come with a 2-year limited warranty.*

Don't let your Volvo customers leave your shop with less Volvo than they came in with. Contact your local Volvo dealer for a complete selection of Volvo Genuine Parts.

**2-YEAR
WARRANTY**



*Warranty excludes consumable "wear item" parts, labor and Volvo accessories.

can become sticky and soft. This can be caused by sunlight and cleaning products. When the lock bezels start to break down, they can cause the lock pins to stick down and not allow the doors to unlock, especially after the car has been sitting in the sun for a while. To check to see if a C70 has this problem, just use your fingernail to scratch at the edge of the bezel. If it feels like cheese instead of plastic, it needs to be replaced.

OFF THE TRACKS?

If you have a 1999 - 2016 S60, V70, XC70, or XC90 in your shop with a window that's off the tracks, jamming, or sticking, the window regulator sliding pivot may be broken or worn.

The window regulator pivot is a blue plastic guide with a metal clip that holds the window regulator arm ball socket into the window channel. When these clips break, the window can move off track, causing the window to jam. If the customer continues to use the window with the broken or worn pivot clip, the window regulator can bend the arms to the point that the regulator will have to be replaced.

Replacing the sliding pivots is a fairly straightforward job. Start by removing the door panel. Next, lower the window to about half way down,

then casually peel back the sound-deadening foam material from the top down, just enough to access the window pivot clips.

Next, use some blue painter's tape or a window suction cup tool to support the window glass. If the sliding pivots are still attached to the window channel, use a hook tool or needle-nose pliers to remove the metal clips and pop out the regulator ball sockets. Now make sure the window glass is lined up back in the side channels and moves freely. Remove the old sliding pivots and any bits of broken plastic, then lubricate the channels where the pivots slide and insert the new sliding pivots.

At this point you will have to pop the regulator's ball sockets into the new sliding pivot clips. If you have very strong fingers you may be able to pop these in by hand, but if you don't have Superman finger strength, you will have to use tools.

A lot of techs have success by using short pliers that will support the window channel from the back while pressing the regulator ball socket into the sliding pivot. You will hear an audible "pop" when the ball socket is seated in the sliding pivot. Now you can hook up the window switch and test the window's function.

After reassembling the door panel, you should calibrate the window stop point by turning the ignition to the "On" position (KOE0). Use the switch to move the window to the top closed position, then hold the window switch in the up position for 30 seconds. Check the auto up and down for the window and you're done.

You can also calibrate the windows with VIDA. Just go to Vehicle Communication and select the DDM, then select the Advanced tab. ●



Early Volvo C70 series cars have lock pin bezels that are made from soft plastic. Over the years, the plastic starts to get sticky and soft. This can be caused by sunlight and cleaning products.



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DON'T LET YOUR CUSTOMERS GET STRANDED. TEST THE BATTERY.

CONSUMER BATTERY MINDSET

- 77% of consumers wait until the battery fails to replace
- 74% choose another outlet for batteries

PROACTIVE BATTERY TESTING

- 95% of your current customers are willing to have a battery test
- 84% will proactively replace a battery if the test shows it will fail soon
- The best opportunity to sell batteries is to the customer who's already in your shop

TEST EVERY BATTERY. IT'S THE HIGHWAY TO SATISFIED CUSTOMERS AND GREATER PROFITS.



A PARTNERSHIP FOR SATISFIED VOLVO OWNERS

What's the most important thing that independent repair facilities and Volvo dealers have in common? We think it's our shared commitment to make Volvo drivers happy. One way to do that is to be sure everyone driving a Volvo car is always able to get Volvo Genuine Parts installed.

The advantages are clear. Today's sophisticated safety and performance features demand replacement parts that precisely replicate the originals. Volvo Genuine Parts also fit perfectly on the first try, which saves you time and money. Add to that a 2-year limited warranty* and you have a formula for satisfaction that's unmatched.

But there's more. Volvo can support your business on many levels. We cater to your needs with easy ordering, unrivaled availability, and you get access to technical information.

Satisfied Volvo customers –
the basis of a rewarding relationship.

*Warranty excludes consumable "wear item" parts, labor and Volvo accessories.