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EVAPorating

Since 1996, OBD II regulations have required that the fuel supply system be checked for leaks as small as .020 in. As fuel is used, air must be allowed into the tank to prevent a vacuum from forming. But how do we help prevent fuel vapors from escaping?

Away

Under the Clean Air Act of 1970, all '71 and newer model cars sold in this country were required to have an evaporative emissions system that prevented raw gasoline vapors from the tank (and, in those days, from the carburetor fuel bowl) from escaping into our precious atmosphere. In a typical early EVAP set-up, these vapors were routed to a charcoal canister via small-diameter hoses, where they were stored. When the engine was running off-idle, ported vacuum near the throttle plates would draw them into the intake manifold so that they would get burned in the combustion process.

About a decade later when closed-loop electronic engine management was phased in, the PCM controlled a vacuum solenoid that would purge the charcoal canister at the most opportune moment for performance.

When OBD II regulations were instituted in 1996, everything changed. The Society of Automotive Engineers (SAE) proposed a means of addressing the concerns of escaping fuel vapors. Raw fuel (hydrocarbons, aka HC) could get into the atmosphere because of a leak in the EVAP system, or because it was overwhelmed. The EPA wanted these potential emissions to be eliminated by a protocol that could check for leaks. Early attempts at compliance were dubbed non-enhanced systems with minimal capacity. Enhanced systems are capable of finding large leaks (.040 in., or larger), or small leaks (down to .020 in.).

EVAP Leak Monitor 101

There are two different ways to determine if there is a leak in the system: pressure decay and vacuum decay. With pressure decay, a small amount of air pressure is generated and applied to the EVAP. Of course, the system is vented as it absorbs fresh air into the canister to mix with the gasoline vapors. This venting needs to be closed to check for a leak. All EVAPs have a canister purge solenoid that opens and allows the vapors in the canister to be drawn into the engine. In a pressure decay system, this solenoid is closed to seal one end. The other end of the solenoid seals the vented canister side. Next, a sensor or switch indicates the pressure in the now sealed system. If the pressure is maintained in the EVAP, it must not be leaking and therefore passes the EVAP monitor. If the sensor or switch indicates that pressure is lost, the PCM looks at how long it took to drop and calculates if it is a large leak or a small leak. If this happens twice, the PCM flags a code.

On the vacuum-decay type, the EVAP system is pulled into a vacuum. A computer-controlled solenoid closes the vented half of the system, and the canister purge solenoid is pulsed to pull the system into a vacuum. The solenoid is then closed, and the system is completely sealed on both ends. If the vacuum is maintained, no leak is present. If vacuum is lost, there must be a leak. Once again, the amount of vacuum lost over time is used by the PCM to calculate if it is a large or a small leak. Either a pressure-sensitive switch, or a fuel tank pressure sensor determines this. This test is referred to as the EVAP monitor. In order for the PCM to run the monitor, certain conditions have to be met. One of the primary concerns is fuel level. Although the purge solenoid is operated all the time to purge vapors in the canister, the overall EVAP leak test is only run when the fuel level is between one-half and three-quarters of a tank. This means the PCM needs to know how much gas is in the tank.

After the vehicle is warmed up, the engine control unit will pulse open the canister purge solenoid. Right after start-up, you will see the solenoid is opened to only 5% at 8Hz. After operating temperature is reached, it may be opened as much as 30% at about 15Hz.

When looking for leaks, it is a good idea to check all the connections first. On this 2005 Volkswagen Jetta fuel filter, the black line is the fuel feed, the green line is the fuel return, and the white is the EVAP line from the canister to the purge solenoid. Check for proper sealing.

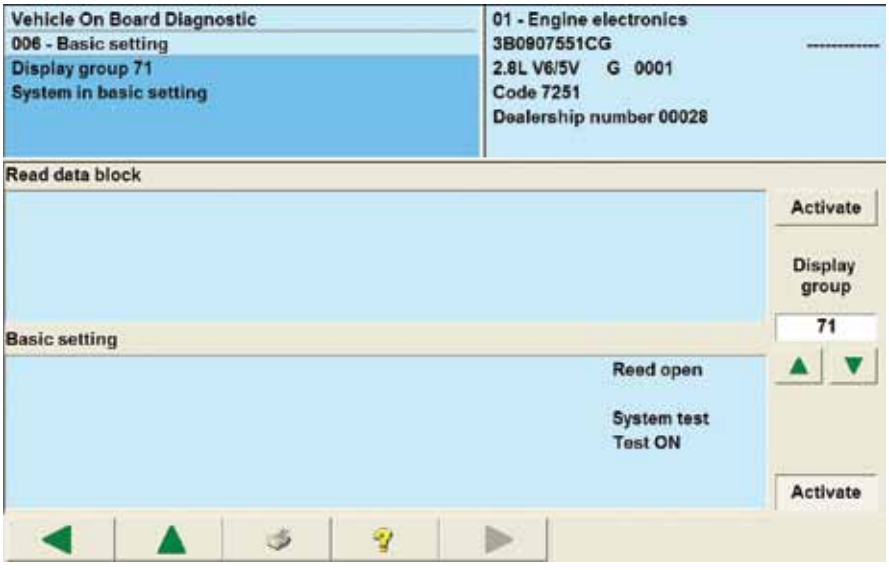
EVAP Monitor

This information can be a direct input to the PCM, or it may come in on a CAN network from the instrument cluster if the fuel gauge is wired directly into the cluster. Either way, if you have codes for a fuel level sensor you may have some difficulty getting the EVAP monitor to run. If you have a VAS 5052 or equivalent, you can force the monitor to run to completion. Also, if you have a leak the fact that you can run the test should be considered in your diagnosis. If you enter basic settings, you can get all non-continuous monitors to run (non-continuous monitors do not run all the time). The first time the test runs and fails, a pending DTC is set. The second time the system fails the monitor, it flags a DTC and the MIL (Malfunction Indicator Lamp) is illuminated. Continuous monitors run whenever the ignition key is on and will flag a code immediately if a failure is present. A problem with the electrical circuits of the EVAP system will flag a code. Remember, leak codes require two trips to flag a permanent code.

Starting in late 1995, Volkswagen vehicles used the pressure decay method to determine if the system had a leak greater than .020 or .040 in. The second component in the EVAP working with the canister purge solenoid was the Leak Detection Pump (LDP), the purpose of which was to pressurize the system. It is two components molded into one. One is the solenoid that controls the vacuum supply to the pump, and the other is the switch that reacts to the vacuum in the system. When the LDP is not energized, it is the fresh air vent to the canister. When the system is energized, the solenoid is pulsed on and off. This allows manifold vacuum into the upper chamber of the LDP causing a diaphragm inside to lift against a spring. When the solenoid is pulsed off the diaphragm returns and

EVAPorating Away

forces slightly pressurized air through a reed valve into the EVAP system, which causes the pressure sensitive switch to close and send a voltage signal back to the PCM. The computer evaluates how long this switch stays closed in response to pressure in the system and determines if there is a leak, and if it is small or large.



If you have a VAS 5052 or equivalent, you can run the EVAP monitor in Basic Setting 71. Here, you can see that the reed switch is currently open and the test is on. The fourth field will indicate the results.

Due to space constraints, we now have some unusually-shaped canisters. This 2005 Jetta has one mounted under the trunk in the hole of the spare tire well. You can see the two large hose fittings that go to the fuel tank and refueling lines. Also, note the smaller white line that brings the vapors to the canister purge solenoid. Check all of the fittings as they are potential leak spots.

The Smoking Gun

If the self-diagnostics have determined that there is a leak, you are going to have to find it, and there are a few different approaches. We're sure you've heard of smoke detection. In this case, lightly pressurized air and visible smoke is pumped into the test port of the EVAP system. Often, smoke machines used for EVAP have a nitrogen tank to supply the pressure. This is considered safer than using shop air, which would create a flammable mixture. As the smoke fills the system and builds pressure it will escape through any leaks. With the vehicle on your lift, go over all of the hoses with a strong light looking for smoke. Most smoke machines have a flow meter, which can be used to see if you still have flow when you close the fresh-air vent.

As mentioned earlier, on Volkswagen vehicles from the late 1990s you can select Basic Setting data block 71 to run the test. If the system passes, the monitor will show it as completed. This can also be used as a diagnostic tool. If you have a VAS 5052 or equivalent, you can command the EVAP test by simply clearing any DTCs and running the monitor in Basic Setting data block 71, and you can do this multiple times. Each time, you can remove and plug off another part of the system.

Start with the components and hoses farthest away from the LDP.

For example, suppose you have code for a large leak. You enter Basic Setting, select block 71, run the test, and it fails. You then block off the canister purge solenoid and rerun the test. If it passes now, you can conclude that the canister purge solenoid is not closing all the way and is allowing EVAP air to leak into the intake manifold while the PCM is trying to perform a leak test.

New and Improved

Newer Volkswagen models, such as the 2011 Volkswagen Routan, use a system called Natural Vacuum Leak Detection (NLVD). The heart of this is the Evaporative System Integrity Monitor (ESIM), which is mounted directly on the canister. It contains mechanical components, so its position is critical (brackets are used when the canister is mounted at an angle). The ESIM comprises a housing, cover, a pressure-sensitive diaphragm and switch, and two check valves attached to two different weights. One weighted check valve reacts to pressure and the other reacts to vacuum. The diaphragm/ switch in turn reacts to the pressure or vacuum inside the EVAP system and sends a signal to the PCM. This system is an improvement on earlier NVLD systems since it no longer needs a solenoid. During refueling, the air that was in the gas tank becomes pressurized. When the pressure exceeds five inches of water, the large check valve is forced open and the fuel vapors are sent to the canister. While the vehicle is running, the fuel is heated by ambient conditions and expands. As the fuel cools, it contracts and the EVAP system draws a vacuum.

The natural vacuum created causes the diaphragm to be pulled in and closes the switch. This lets the PCM know the system is in a slight vacuum. After a calibrated amount of vacuum (about one inch of water) has been achieved, the small check valve opens and allows fresh air in to mix with the vapors in the canister. With atmospheric pressure being the same inside and outside the canister, both weighted check valves are closed, sealing the system. The PCM evaluates how long it takes the cooling of fuel to pull the system into a vacuum. If it takes too long, then there must be a leak. The PCM is only watching the switch condition, so the test is considered nonintrusive. If this test is failed, the PCM performs an intrusive test.

During the next cold start, it pulses the purge solenoid and draws the EVAP system into a vacuum. It then monitors how long it takes for the switch to open. If it opens quickly, there must be a large leak. If it takes slightly longer, there must be a small leak. The PCM also evaluates leaks in the purge hose to the manifold. For 30 seconds after the engine is shut off, the purge solenoid is kept open. This should eliminate any vacuum built up in the system and the PCM verifies that the switch in the ESIM is open.

In Closing

Understanding how EVAP systems work is the key element in diagnosis, and will help you troubleshoot nagging EVAP leak codes faster and with more accuracy. It is also important to learn about future EVAP monitor testing to prepare for when newer vehicles start showing up at your shop. Your continuing education through your Volkswagen dealer and ***TechConnect*** will help you along the way. ●

If you suspect a leak in a plastic housing such as the canister itself, or the fuel tank filler tube, you can pressurize the system without smoke and spray a soap-and-water solution and look for bubbles. Try spraying around seams first, then look at joints and hose connections.

Volkswagen recommends Castrol

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Get a Grip

In an effort to help make its vehicles safer, Volkswagen has combined ABS with traction control and electronic stability. Here's a look at how this integrated technology works so that you can better address customer concerns.

Get A Grip

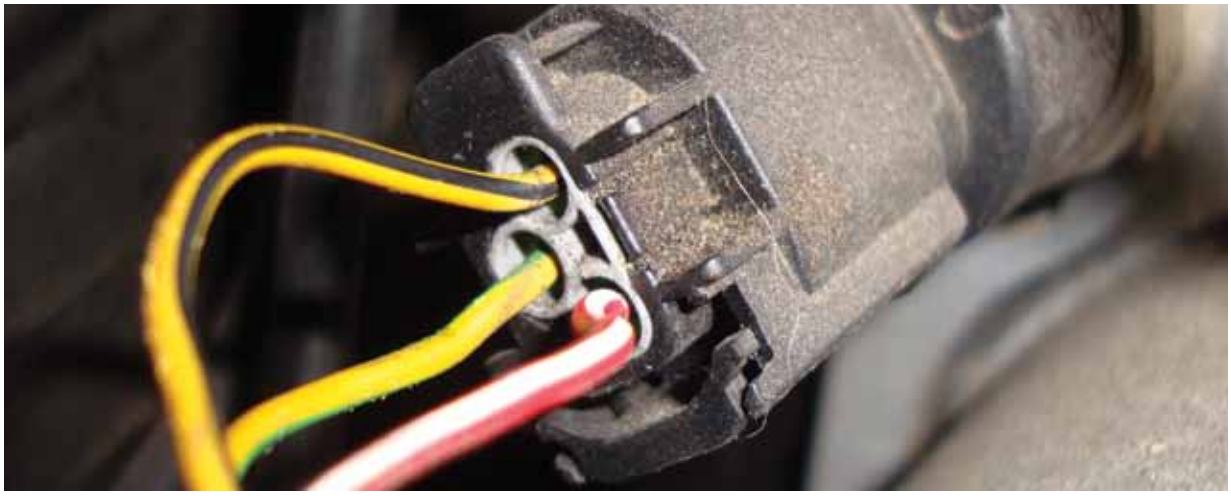
The most important safety features of any vehicle are those that help you avoid a collision in the first place. With its "Drivers Wanted" campaign, Volkswagen emphasized that its superior suspension designs naturally lead to greater driver control, and electronic driving aids help make for a safer vehicle. This started with Anti-Lock Brake Systems (ABS) in the late '80s. As you probably know, a control unit monitors the speed of the wheels. If it determines that one or more are traveling at a slower speed than the others, which indicates wheel lock-up, it reduces brake fluid pressure to that wheel allowing the tire to regain traction. When wheels speeds once again match, pressure is reapplied, and this action is repeated until vehicle control is returned to the driver. This then evolved into a combination of ABS and traction control. Under acceleration, the power delivered by the engine can overwhelm the available traction causing the tire to spin.

With Anti-Slip Reduction (ASR), brake pressure is applied to the spinning wheel, slowing it until traction is regained, and throwing its torque to the wheel on the other side of the differential, so it acts much like a mechanical limited-slip axle. The computer that controls ASR can also communicate the event to the engine control unit. On vehicles with electronic throttle actuation, the throttle plate can be closed to temporarily limit power production to further reduce wheel spin. It allows the driver to accelerate even if condition may not be optimal for the situation. Further evolution brings us to the Electronic Stability Control (ESC). ESC can do more than measure and compare wheel speeds. It can monitor the steering wheel direction and the acceleration of the body as it rotates while negotiating corners. By knowing the direction the vehicle is being steered and the direction the body is traveling, ESC helps determine if the vehicle is skidding out of the driver's control and applies the brakes at the appropriate corners to mitigate the situation.

How Fast are We Going?

Computer control of vehicle dynamics necessarily requires sensors. In vehicles that incorporate ABS, ASR, and ESC, the speed at which each wheel is traveling is vital data that comes from four wheel speed sensors reading hub rotations. Volkswagen uses AC pulse generators for this purpose. These consist of a permanent magnet with a coil winding wrapped around it. As a toothed wheel attached to the hub rotates by the AC pulse generator it induces voltage in the windings. This is an AC pulse wave, similar to a sine wave. The voltage travels in both direction with half of the signal being positive and the other half being negative (below ground). This type of pattern can be measured by a Digital Multi-Meter (DMM) or an oscilloscope. With a DMM , you will only see a digital display of the peak signal voltage, whereas with a scope you can watch the pattern over time and see when the toothed wheel passes by the sensor and then the following air gap.

The 2004 Jetta was the first to use active speed sensors, which are on all current models, and



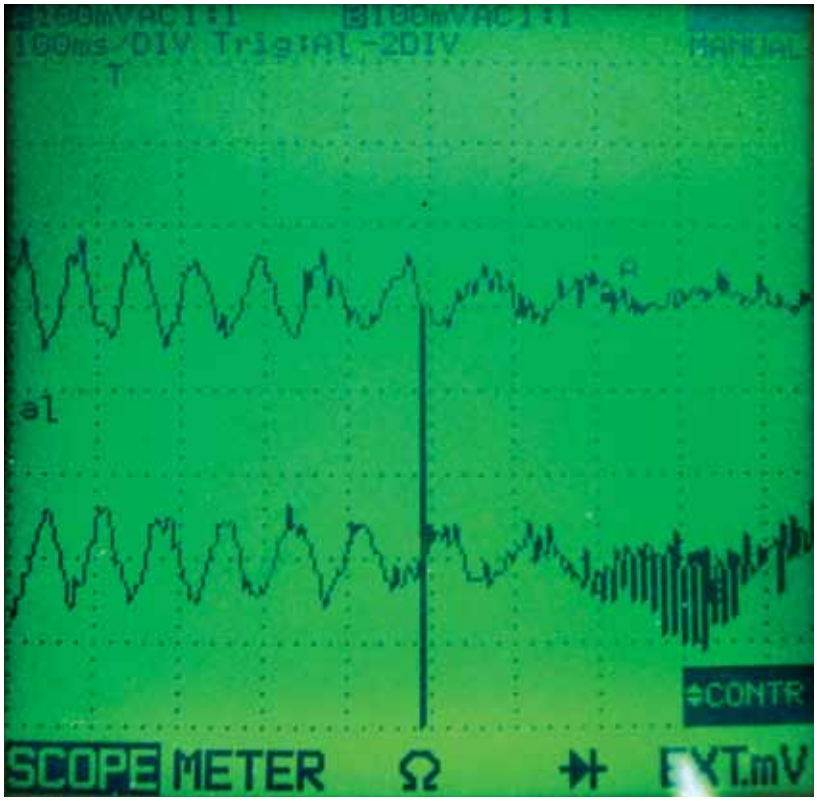
In early models, the brake fluid pressure sensor is mounted in the ABS/ASR solenoid body, but in current versions it is inside the ABS hydraulic control unit, and cannot be serviced separately. It measures the pressure increase as the driver applies the brakes. The harder the brake application, the higher the signal voltage.

work slightly differently from conventional pulse generators. Similar to Hall-effect sensors they receive a reference voltage from the ESC control unit, which powers an active Hall-type element. Instead of a tone wheel or toothed ring, the rotating hub contains a magnetic ring with alternating poles attached. As the poles pass by the Hall-effect element, they cause it to switch on and off. This alternately grounds and un-grounds the reference voltage and generates a square-wave signal. This signal does not necessarily have to go all the way to ground as most of us are accustomed to seeing, so do not expect to see a traditional square wave on your scope. The deflection between reference high and reference low can be very small and only a high-resolution scope can capture it. Luckily, with a VAS 5052 or equivalent you can monitor the data supplied by the self-diagnostic functions of the ABS, ASR, and ESC control unit.

Testing, Testing, Testing

There are a few ways to test the proper operation of a wheel speed sensor. Remember, it is made up of a coil winding with a beginning and an end. Since it is a continuous coil, you can measure the winding resistance between the two terminals. These specifications can be found in the diagnostic trouble code charts. With a paid subscription to www.vw.erwin.com, you can look up these readings for the particular vehicle you are working on. If the resistance of the coils matches specifications, you can move on to the next test of measuring the AC voltage the sensor is generating. Since AC voltage is induced by the moving ring gear on the hub, you are going to have to spin the wheel to generate the signal. You should compare the signal voltage from one side of the axle to that of the other and make sure they are nearly identical. If both readings are close, you may have to scope the signals, particularly if there is no DTC for the sensor. Your customer may experience low-speed ABS activation even through the wheels are not locking up. This is because the ABS,ASR, or ESC control units is being fooled into believing that one of the wheels is traveling at a slower rate of speed than the others when it's really not.

There are many more inputs the ESC control unit uses to maintain control of the vehicle, such as that from the brake switch. This tells the computer that the brakes are applied for a possible ABS condition, or that the brakes are not applied so that ASR and ESC may have to follow acceleration programs. In the past, it was always difficult for engineers to determine the driver's intentions when both the brake pedal and accelerator pedals were applied at the same time. To help prevent pedal misapplication, the engineers came up with a brake fluid pressure sensor that determines if the brake pedal is really being applied to stop the vehicle, or if the driver is just resting a foot on the pedal. This is a three-wire sensor with a 5V reference, signal wire, and ground. As fluid pressure increases, the signal voltage goes



This scope pattern shows two AC waveforms representing the two sensors on one axle. The height of the pattern is getting smaller, which tells us the wheels are decelerating. Notice that the pattern on the lower speed sensor is breaking up, which is caused by low-speed ABS activation.

up with it. Early on, this sensor was mounted on the ABS/ASR solenoid body, but in current versions it is inside the ABS hydraulic control unit, and cannot be serviced separately.

Feeling the Pressure

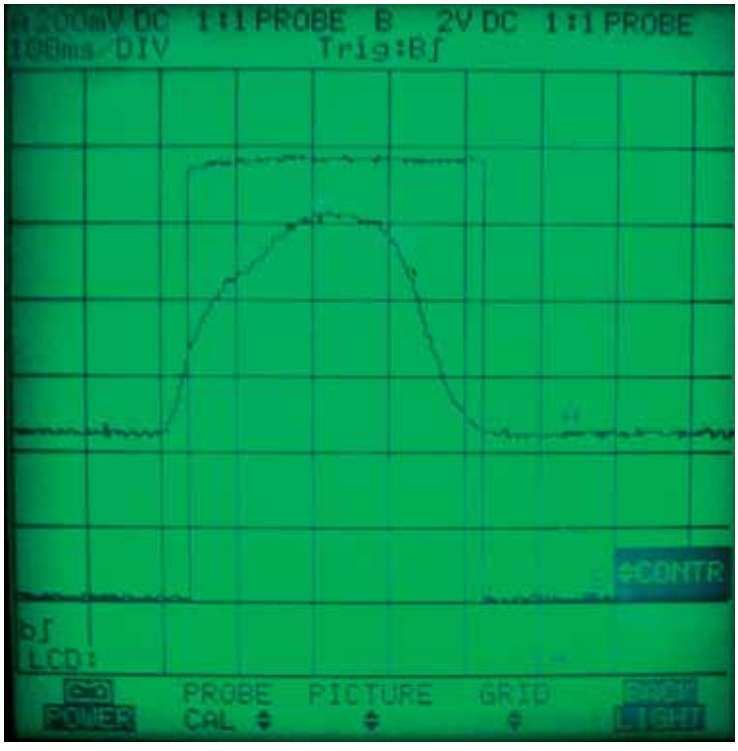
With the brake pedal at rest, you should see about 0.6V. If you apply the brake without the engine running, the signal voltage should go as high as 3.5V. It can go even higher with the engine running under hard braking. The ESC control unit cross-checks the brake fluid pressure switch with the brake switch. When the brake pedal switch changes states, the brake pressure switch needs to read below 1.0V, or you will set a code for the brake pressure sensor.

Traditionally, brake inputs override throttle pedal inputs for safety reasons. Between the brake pedal switch and the brake fluid pressure sensor, the ESC control unit can tell how quickly the driver wants to stop. If we only drove in straight lines, this would not be a problem, but during many driving situations the vehicle is being turned while braking and evasive maneuvers can cause a loss of control. More vehicle inputs are required to inform the ESC what direction the vehicle is being steered in and what the body pitch and roll angles are.

A steering-angle sensor lets the ESC control unit know how severe the steering angle is relative to vehicle speed. The sensor is usually mounted in the steering column and incorporated into the clock-spring for the driver's side air bag, but the 2009 and newer Jetta and Golf, and 2012 and newer Passat with electromechanical power steering have this sensor in the steering rack. You cannot directly measure the signal voltages produced by it because it has its own processor and modifies the two steering angle sensor signal voltages into CAN communications the ESC unit can understand. You can read this information in the data of the ABS, ASR, and ESC control unit found in address #03. Here, you will read the signal as steering angle deflection off of center. This means that at some point the sensor will need to be centered. Enter "Basic Settings" and select basic setting block XXX. On later models, this may involve a road test with the driver alternating between left and right turns until the steering angle is learned.

Pitch and Roll

The ESC control unit now knows how the vehicle is being steered, but it also needs to know in what direction the body of the car is traveling. Is there a severe pitch forward from hard braking and body roll from hard cornering? For this on most earlier models, the ESC control unit used a combined sensor for transverse acceleration (usually G200) and a sender for rotation rate (usually G202). Each sensor has its own job. The transverse acceleration sensor measures forces in a straight line, forward and backwards. The sender for rotation rate indicates if the vehicle is being turned to the left or to the right. They are both three-wire sensors that share the same 5V reference and ground, but have two individual signal wires to send their two different signals to the ESC. On a level surface, the signal voltages stay static at approximately 2.5V. As you drive the vehicle, the reading will change according to direction. The signal voltage will increase in one direction and decrease in the other. The same applies to the sender for rotation rate. As you turn the vehicle to the right the voltage will change in one direction. Let's say for example that the voltage rises to 3.0V; when you then turn the vehicle to the left, the voltage should drop from 2.5V. The more severe the change of direction, the greater the voltage change.



If you use a two-channel scope, you can watch both the brake pressure signal voltage (trace A) and the brake pedal switch (trace B). As you can see, as you apply the brakes the pressure increases slightly, then the brake switch changes state. If the timing is not correct, a code will be flagged.

Much like the G201 brake pressure sensor, these are no longer stand alone components and cannot be tested with an oscilloscope or volt meter. The MK60 system has the sensors integrated into the ABS module. Even on some older vehicles (the 2004 Golf with ESC, for example), the G200 and G202 were part of the G419 ESC sensor unit, which still could not be tested separately.

When opening up the brake system for service, certain procedures will have to be followed. Depending on the vehicle you are working on, you may need to use your scan tool to bleed the brakes. For example, the New Beetle's Teves system does not require a VAS 5052 to perform a brake bleed, but vehicles with the Bosch 5.7 system or ESC it is necessary to have roughly 30 psi of fluid pressure to properly bleed the hydraulic pump. This must be done first before the rest of the system can be bled. You will need to login to the control unit first. Then, select "basic setting" and enter block number 00. This will cause the ESC control unit to activate the hydraulic pump for approximately 10 seconds. The left front bleeder valve should be open at this point to let the air to escape. From here, you should continue to bleed each wheel individually, but not in the traditional sequence. You can get the proper bleeding pattern to show up on your VAS 5052 by using the GFF test plan. The goal, of course, is to make sure all of the air has been purged from the hydraulic system.

Finally . . .

Having a basic understanding of the components and how they come together to form the system is the first step in properly diagnosing your customers' concerns. With your continuing education and your relationship with your Volkswagen dealer's OEM parts network, you will be able to provide the quality of service that will keep your customers coming back and leaving happy. Good job, everyone.

I'm A Convert

To PPG Waterborne

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Convert with Confidence

PPG is an approved supplier to Volkswagen of America's Certified Collision Repair Facility program.

PPG

Convert to Waterborne Paints With Confidence

Transitioning to waterborne paint systems will enhance a collision shop's quality, performance and profitability.

(Courtesy of BASF Corp.)

In mid-2009, Volkswagen of America Inc. (VWoA) introduced its VW Certified Collision Repair Facility (CCRF) program for U.S. dealer-affiliated and qualifying independent body shops. The CCRF program assures VW vehicle owners that collision repair facilities performing repairs do so in accordance with Volkswagen recommendations.

Among other tenets, facilities and collision professionals must meet certain VWoA training requirements provided by Inter-industry Conference on Auto Collision Repair (I-CAR). In addition, with respect to painting, VWoA also recommends that body shops and personnel use waterborne paint and associated equipment, tools, systems, and procedures.

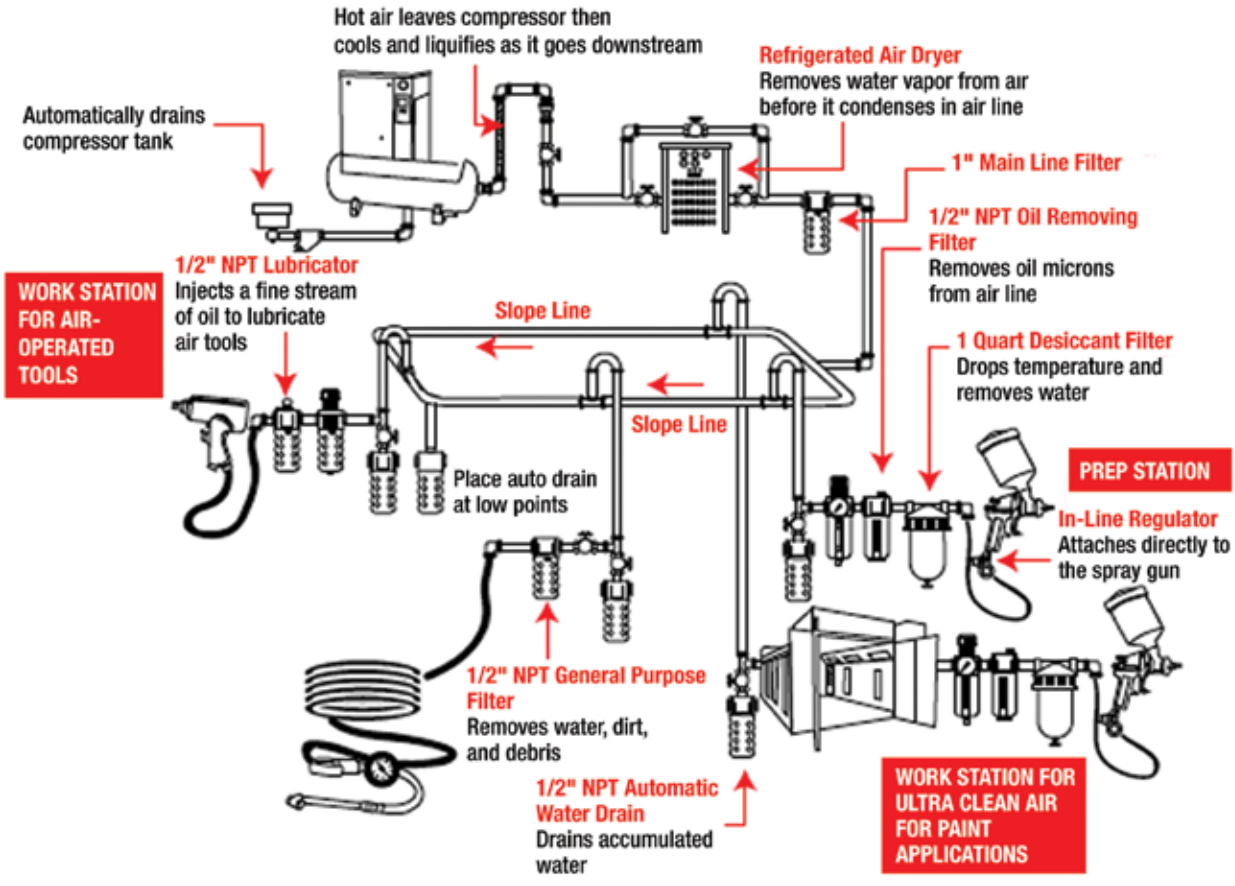
"We don't require waterborne coatings at this time, but it's recommended," explains Alain Bleau, GM Wholesale Parts Management. "Collision facilities must be sure to use paints which comply with state and federal VOC regulations. In many states this means that they are obligated to use waterborne base coat."

It's the law in many places; waterborne is also safer, faster, and cheaper

Regulatory pressures, economics, a shift by automakers into using waterborne paint systems and a desire to be both eco-conscious and safer are driving the transition to waterborne paint. Experience has shown that the transition from solvent-borne to waterborne can be seamless, efficient and profitable — provided the right choices are made regarding technology, equipment, support, training and preparation.

Waterborne paints meet the requirements of the U.S. Environmental Protection Agency's (EPA) National Emissions Standard for Hazardous Air Pollutants rule (EPA Rule 40 CFR Part 6H). The rule was published in January 2009; collision facilities were required to be in compliance by March 11, 2011. Facilities should also check with their state and regional authorities in regards to other requirements.

"Environmental issues are very important to our customers in the Colorado Rocky mountain region, as they are worldwide," says Jim Frost, manager of the Prestige Imports Collision Repair Center, a VW/Audi CCRF located in Lakewood, Colo. "Switching



For optimum productivity with waterborne coatings, compressed air supply systems must remove dirt, dust, oil residues and other contaminants from the air supply. Note the extra filtration required as one nears painting areas. (Courtesy of Kaeser Compressors Inc.)

to a waterborne paint system and procedures has allowed us to deliver eco-friendly collision repair solutions without compromising high quality service to our customers. Our paint technicians agree that waterborne basecoats color match, metallic control, and ability to blend not only meet, but exceed solvent-borne basecoats."

Volkswagen Certified Collision Repair Facility (CCRF) program

"The CCRF program benefits Volkswagen owners," says Alain Bleau, GM Wholesale Parts Management. "It provides the peace of mind that comes from knowing that when a vehicle is involved in a collision, VW Certified Collision Repair Facilities help maintain the brand's safety standards and specifications."

VWoA also provides several resources for collision facilities, regarding becoming a certified repair facility (www.vwccrf.com), subscribing to VWoA service and repair information (www.erwin.vw.com), and accessing genuine VWoA parts (www.vwparts.com). (Courtesy of Volkswagen of America Inc.)

Plan for a successful transition

Waterborne paints are latex and provide collision facilities with a safer and more efficient alternative to traditional solvent-based paints. Made of synthetic resins and pigments that are kept dispersed in water by surfactants, waterborne paints contain less coalescing solvents than solvent-borne paints.

This is because the coating material in waterborne paint is suspended in the water instead of being dissolved in solvents.

Consequently, waterborne paint has significantly lower volatile organic compounds (VOCs) emissions than solvent-borne paint. VOCs are harmful to people because they contain chronically hazardous pollutants; for example, they build smog. Although less harmful to the environment, collision facilities should note that waterborne coatings do require different handling; for instance, shop cleanliness.

In brief, the EPA rule incorporates the need for hygiene, lowers the VOC limits allowed in coatings, and mandates the use of waterborne refinish coatings. The rule requires collision facilities to implement equipment and management practices in compliance with the new standards, which help reduce toxic material consumption and produce savings for the facility.

Essentially, compliance is required in the following areas:

- Training – Paint technicians will find waterborne basecoat easy to spray, but spray techniques differ slightly from applying solvent-borne. All painters must train and certify on spray gun equipment selection, spray techniques, maintenance and environmental compliance. Note that major paint suppliers, such as PPG and BASF, provide training in using waterborne paints, associated equipment, tools, and more.

- Spray Booths – Open-air spraying is no longer allowed in any collision repair shop. Coatings containing a targeted hazardous air pollutant (HAP) must be sprayed in booths outfitted with an exhaust filter that has a VOC capture efficiency of 98%, or greater. Work with your spray booth manufacturer or filter supplier to select the right filter for your shop's needs.

- Spray Gun Requirements – Spray guns used to apply coatings must employ high-volume, low-pressure (HVLP), or an equivalent EPA-approved technology. In addition, spray gun cleaning operations must prevent atomized mist, or avoid spraying cleaning solvent and paint residue outside of a container used to collect waste solvent.

- Record keeping – Collision facilities must provide notice of compliance to the EPA; newly-built facilities are required to comply before opening for business. In addition, all facilities must notify the agency each calendar year of any reportable changes that occurred and keep copies on file of all EPA-required documents (e.g. employee training certifications, equipment documentation and corrective compliance actions taken).

Partner with quality suppliers

Choosing quality paint and equipment suppliers that provide training, technical support, and other services required to make a smooth transition to waterborne is essential. Besides providing reliable and durable products, they should also have a clear and practical understanding of how to get the very best out of your new waterborne basecoat system. PPG and BASF are just two of the reputable suppliers with established training and support. You might also want to check with your industry networks for positive experiences.

PPG and BASF are both VWoA-approved waterborne system vendors. Not only is each a reputable supplier of waterborne coatings and systems, they both provide on- and off-site training as well as other support during conversions. Approved equipment vendors include Global Finishing Solutions LLC for spray booths, Kaeser Compressors Inc. for a clean air supply, SATA GmbH for spray guns, Becca Inc. for cleaning systems, and others.

Support can help you design and equip your waterborne system based on your facility, car flow, health and safety issues, and other factors. Training can cover an overview of your waterborne system, application techniques, color adjustments, spot repair, blending, waste management, maintenance, and more.

Note that these approved suppliers offer a variety of classroom and hands-on training before, during,

and after converting to waterborne – some online, some onsite, some offsite, and some a combination of these. For example, in addition to onsite training prior to and during conversion, PPG offers MVP Green Belt Training to waterborne system customers. This program helps collision facilities and staff to continuously improve after conversion via follow-up classroom training that also incorporates visits to other body shops to see the new learning being put into real-life practice.

Consider your staff's learning styles, then check to see what prospective suppliers offer to meet your training needs. For example, besides training at your supplier's facility, negotiate having your supplier's conversion and training team provide on-site training at your facility during the actual waterborne conversion period (typically one to three days). Working with your technicians on your site with your equipment – while covering application training, computer training, waste stream training, and color tool training – could go a long way to making the smoothest transition possible. You might also want to check within your industry networks and draw from their positive experiences.

In addition to VWoA information resources, to plan a successful transition to waterborne coatings, rely on VWoA-approved suppliers for waterborne coating systems and associated equipment, training and support. (Courtesy of PPG Industries)

State-of-the-art waterborne spray guns, such as the digital SATA Jet4000b HVLP standard and digital versions above, are lighter in weight, quieter and offer more spray control (courtesy Dan-Am Co.).

"We were told by our supplier that waterborne is unforgiving in regards to cleanliness, so it was imperative that we start with a clean slate," says Tom Gillespie, manager of Bodyworks by Concours, a VWoA CCRF located in Milwaukee, Wis. "When our paint department underwent a complete renovation, the spray booths were retrofitted with corner air movers; the floors were blasted and epoxy coated afterward; and the whole department was commercially cleaned from girders to floor."

Equip for success

Converting from solvent to water won't take much time at all – typically a month or less – especially when a bodyshop partners with quality suppliers and their dedicated teams of conversion and training specialists. Importantly, you won't sacrifice your shop's performance or quality.

When converting to waterborne, keep in mind the following four benchmarks that will enable a successful transition:

- Use spray guns designed for waterborne paint. Waterborne paints can rust plain steel and attack aluminum, so choose a gun that is constructed of a corrosion-resistant material such as #316 stainless steel with 1.2mm to 1.4mm fluid tips. To extend spray gun life, dedicate this spraying equipment for waterborne products only.

- Cleaning your dedicated waterborne spray guns to maintain top performance and durability. Check with your gun's manufacturer for instructions on how to clean and maintain your specific equipment. Exercise caution here, as cleaners may not

be suitable for both waterborne and solvent-borne spray guns.

- Be aware that the evaporation characteristics of waterborne coatings differ from those of solvent-borne. Notably, waterborne systems are very fast and can often outperform solvent-based coatings. But waterborne paint requires good airflow to quickly evaporate water from the coating. For efficient drying, increasing the cubic feet per minute (CFM) of air passing over the surface is key. Temperature and humidity also play a role in drying times. Generally, 200 CFM or more will lead to great results.

- Drying equipment can range from simple additions to existing equipment to installing specialized equipment specifically designed for use with waterborne automotive paint systems. Specialized waterborne downdraft spray booths use accelerated air make-up systems (e.g. fans that double their speed in flash mode) to decrease dry times and improve productivity at the flip of a switch. Systems can also be retrofitted with temperature/humidity controls, mounted blowers, and floor stands to increase airflow and quickly evaporate water after spraying waterborne.

Modern spray booths and accessory equipment, in conjunction with waterborne systems, enable body shops to return vehicles to customers several days earlier than the could with solvent-based coatings (courtesy Global Finishing Solutions LLC).

Benefits worth switching for

While waterborne paints do not eliminate the need for safety equipment, their use lowers the exposure risk to those in collision operations who handle paint. Standard safety equipment is still required, but the harsh odors associated with using solvent-based paint throughout a facility can be eliminated. Waterborne paints can also reduce the amount of hazardous waste generated by a body shop.

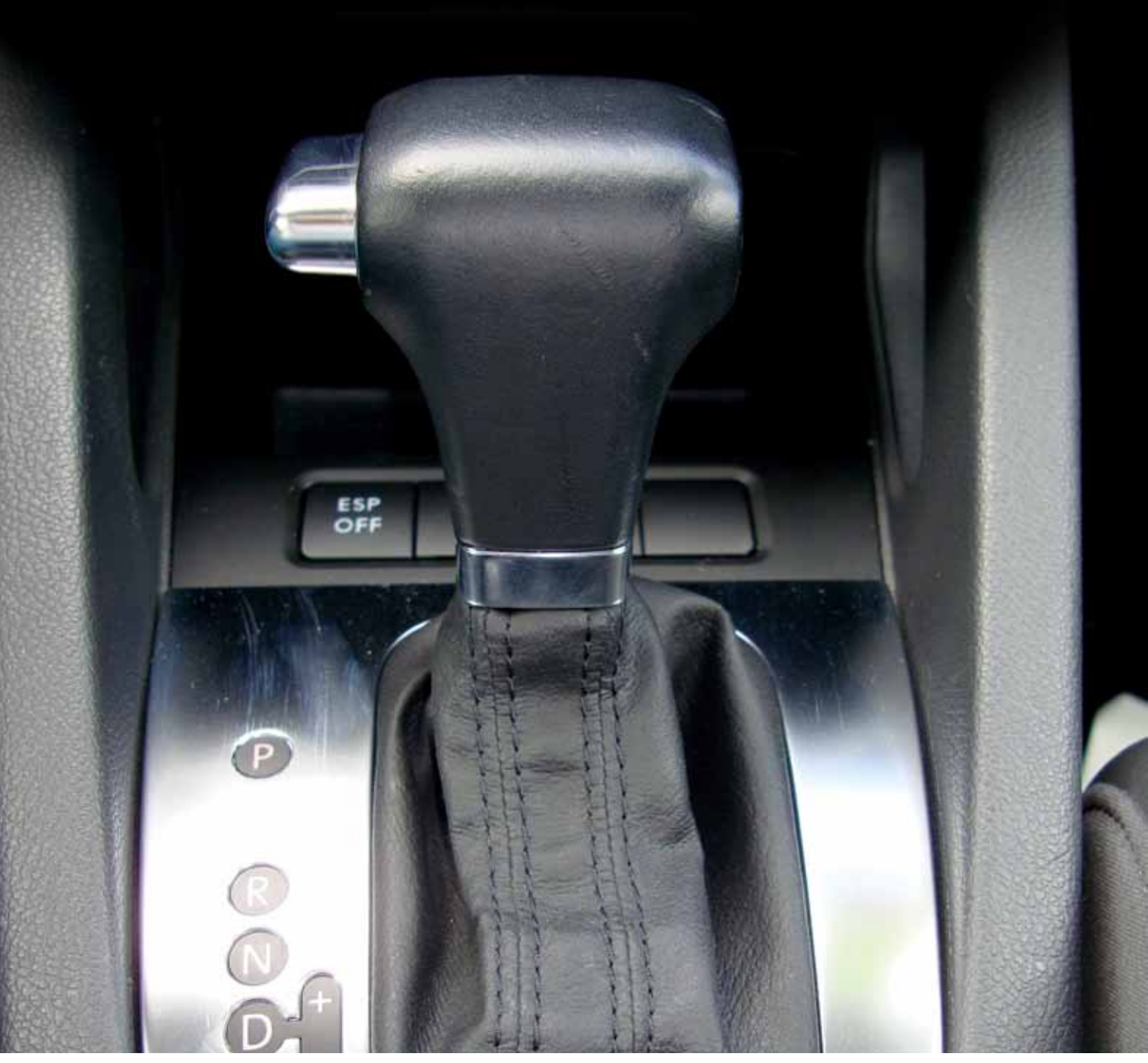
The ease of use and ability of waterborne paints to match a vehicle's finish, (whether or not the original paint was solvent-borne) is a critical advantage. Current waterborne paint technology and systems from leading suppliers allow refinish technicians to simply shake, pour, spray, and expect the same performance, accuracy, and durability of solvent-based systems. Facilities no longer need a mechanical mixing machine, because the toner pigments in acrylic waterborne latex resins are engineered with anti-settle technology.

Waterborne paints also dry and cure faster than solvent-borne paints, allowing vehicles to be ready for customers several days sooner. As with any type of paint, temperature, humidity, and airflow all play a role in curing speed. Fortunately, modern spray booths and accessory equipment can optimize these influences.

"Waterborne is a major technological advancement with no downside," notes Rick Sloan, field operations manager of White Allen Volkswagen, located in Dayton, Ohio. "Our team has the I-CAR Gold Class designation and is certified to work on Volkswagen, Audi, and other brands. Our switch to waterborne basecoats has been a win-win situation — better for the environment, for the employees, and great color matches for our customers' vehicles."

Now, more than ever before, the decisions you make today will have a long-lasting impact on the quality, productivity and profitability of your body service business. Like any new material or procedure, there's a learning curve to go through. But with the right information, support, equipment, and training, collision repair facilities and their technicians can make a successful transition into waterborne finishes.

Paradigm Shift



Volkswagen has been working hard to make its automatic transmissions more efficient.[1] They shift faster and more smoothly than ever before, and help improve mpg. Let's see what we can do to keep it that way.

[1]See www.fueleconomy.gov for EPA estimates. Your mileage will vary.

Worldwide, Volkswagen sells some of the highest numbers of manual transmission-equipped vehicles, but in the U.S. automatic transmissions outsell sticks. Since manuals have a zero-slip mechanical clutch, they are inherently more fuel efficient[1] than automatics with their torque converters. Torque converters by their nature are not as efficient as the direct-drive mechanical clutch of a manual gearbox. Volkswagen's automatics are, however, getting more and more efficient.[1]

In the early- to mid-'90s, Volkswagen produced several different variations on the automatic transmission theme. The 01M and 01P were the first with electronic controls. They had evolved away from mechanical valve bodies and used computer-controlled solenoids to manage shift points and torque converter lock-up. In 1998, the Passat appeared with the ZF-built 01V, and it was one of the first to use an electro-hydraulic valve body. In 2002 the Golf and Jetta came with the 09A transmission built by JATCO in Japan, which also featured computer-controlled shifting. In later years, the five-speed 09A/09B transmissions were introduced along with a six-speed gearbox designated as the 09D, 09G and 09M.

The Basics Evolve

This means there is a lot of opportunity for servicing these drivetrains in our future. Most Volkswagen transmissions use a synthetic or synthetic-blend fluid, which is considered "fill for life," but in the event you have to repair one you will have to drain and refill the system. You should know that when you remove the pan and empty the system, you are only removing approximately 1/3 of the volume of old fluid.

In order to properly service these units and diagnose problems, you need to know the particulars, especially when it comes to the Transmission Control Module (TCM) function and operation. Like any other computer-controlled system, there are sensors that tell the TCM the conditions the vehicle is under. These sensors are directly wired to the TCM, and since that module works within a CAN system, outside control units can have an effect on shifting. You need to know what affects these inputs, direct and indirect, can have on shifting if you are going to address your customers' complaints.

The next step in any transmission diagnostic procedure is to check the fluid level. On the surface,

this seems simple, but there is more involved than just removing a dipstick. On the 01V transmission manufactured by ZF, the rear differential is filled with separate gear oil. On the JATCO unit, the fluid used in the transmission is the same as that used in the differential. This means that a leak in the differential will lower the level in the transmission.

By '95, most Volkswagen transmissions no longer had a dipstick. Instead, there is a stand pipe inside the transmission pan that is blocked with a plug. Remove it to see if fluid comes out. If it does, the level is correct. Keep in mind, though, that this has to be under certain conditions. Number One is that the engine has to be running so that the pump is drawing and circulating fluid throughout. Also, you should connect a scan tool and interrogate the TCM to monitor the fluid temperature. It should be at approximately 85 deg. F. (30 deg. C.). You can usually get within that range by letting a cold vehicle idle for three minutes with a starting temperature of 60 deg. F.

Plugging the Leak

When looking for leaks, Volkswagen does not recommend that you add a phosphorus-type leak detector to the fluid for use with a black light because you cannot predict how these or any other additives will affect the components. Instead, Volkswagen recommends that you sprinkle or spray a thin layer of talc power or silver spray paint around the potential leak source. Go on a road test, then inspect the trail left as the leaking fluid washes away the talc or paint. After looking at the level, consider the fluid condition. Dark or discolored fluid indicates that it is "burnt." Slipping clutches and over-heated fluid, possibly from a clogged cooler, indicate severe transmission damage. Some service facilities may advertise that a fluid exchange may alleviate the problem, but it would be a temporary fix. A fluid exchange may remove deposits from sticking valve bodies, but worn clutch material cannot be replaced with a transmission transfusion. If the fluid level is within its operating range, the problem may be deeper. The next step should be to see if the TCM has set any Diagnostic Trouble Codes (DTCs). The TCM has sophisticated

When checking the fluid level on modern Volkswagen transmissions, you need to remove the plug that seals the standpipe and verify that fluid is dripping out. If the level is low, fill your VAG 1924 with the appropriate transmission and fill the pan until fluid drips out.

Paradigm Shift

Vehicle On Board Diagnostic	02 - Gearbox electronics
004.01 - Check DTC memory	8D0927156BM ----------
2 Trouble code detected?	AG5 01V 1.8I5VT USA 8508
	Code 0
	Dealership number 00000

00266	028
Magnetventil 5-N92	
Short circuit to B+	
Intermittent	
00526	027
Bremslichtschalter	
Implausible signal	
static	

After verifying that the customer complaint is transmission-related and the fluid level is correct, you should use your VAG 5052 to interrogate the TCM for any DTCs that may have set. Here, Code 00266 indicates that one of the solenoids circuits is open. In this case, the solenoid is N92, a pressure control solenoid.

electronics that are capable of picking up problems in the system.

The TCM is in control of how and when the transmission shifts. It calculates this from a variety of direct sensor inputs and further inputs that come in on the powertrain CAN system. The TCM then manipulates output controls and also sends information out on the CAN for the other controls units to react to accordingly. Let's look at the inputs the TCM looks at to make these "shifty" decisions. One major input to the TCM is the transmission range switch. This switch indicates the gear position the driver has selected. Previous to 1998, the transmission range switch was a typical multi-switch unit where one contact would indicate each gear position. After '98, a Hall-effect switch was used. Here, four contacts toggle between ground and a 5V reference. Since there are four switches that can only indicate 0V or 5V, each gear position has a different combination of the four switches.

Below: As with any computer-controlled system, the TCM needs power and ground to function. Here, we are verifying the power and ground supplies.

For example, if switches #1 through #4 read 0V,0V, 5V, 0V, this indicates the Park position. In reverse, the combination would change to 0V, 5V, 0V. This type of switch can be checked with a Digital Multi-Meter (DMM), but it is very difficult and time-consuming to measure each switch voltage in each gear position. With a VAS 5052, you can read this information in data block and quickly run through the gears to check the transmission range switch.

Reading the Speeds

When it comes to transmission shifting, engine rpm and vehicle speed are critical inputs to the TCM. Therefore, there are three sensors that are wired directly into TCM and one that comes in on the CAN. There are a few variations with Volkswagen transmissions, so there may be a different combinations of input speed sensors. This is one of the reasons it is critical to know the exact make and model of transmission with which you are dealing. Most Volkswagen transmissions have one sensor devoted to mainshaft input speed, a second sensor for output shaft speed, and an overall vehicle speed sensor. An input shaft speed sensor can be calculated off of the engine speed coming in on the CAN. The output shaft speed sensor can also be used to calculate the overall vehicle speed. For the most part, you have individual sensors directly wired to the TCM. These are typically pulse generators that put out an AC voltage signal. The TCM calculates the shaft speed off the frequency reading, although the AC voltage will increase with speed. The difference between the input and output shaft speed sensors can determine if the gear ratio is off, which an indication of slipping clutches or sticking solenoids.

There are other important inputs to the TCM that have an effect on shifting. Transmission fluid viscosity is significant to shift quality, and the fluid temperature sensor reports to the TCM. The hotter the fluid, the thinner it is. If an engine were to run hotter than normal under hard acceleration, or up a long hill, the fluid can get hot enough to affect shifting.

On Passats from the late '90s and early 2000s, the TCM is mounted under the carpet on the passenger side. In this case, water from leaking seals has collected under the carpet and corroded the connector for the TCM. This can cause harness-related DTCs.

One of the more obvious inputs is the kick-down switch. Before electronic control, kick-down was managed by a Bowden cable, which is a mechanical linkage to the from the throttle. Now, a switch is attached to the accelerator pedal. Near the end of pedal travel, the switch changes state and indicates to the TCM that the driver has applied full throttle. This causes the TCM to "kick-down" to the next lower gear. As a result, engine rpm increases and the vehicle accelerates faster. When you evaluate the wiring diagram for the particular transmission you're working on, you may notice a brake switch input. It can be directly wired to the TCM as well as to the ABS, ASR, or ESC control unit. Obviously, under braking to a stop, the transmission will need to down-shift.

Coding The TCM

Since shifting is now computer-controlled, variations in coding can change it. For example, on the 01M transmission in the 1998 Passat you can code the TCM with the Dynamic Shift Point (DSP) active or inactive by changing the fourth number in the coding string. If you enter "0," DSP will be active. This means the control unit will learn how the car is being driven and change shift points to match the driving style. If the driver accelerates rapidly, the TCM will call for later shifts for better acceleration. If the DSP is inactive (coding number "1"), the TCM will shift at fixed points by vehicle speed. You can also code the TCM into an economy or sport mode by changing the fifth digit in the string. If you put in a "1" as the fifth digit, you will command economy mode, in which the TCM will shift earlier with relatively lower engine rpm for better fuel economy. If you put in the number "2" as the fifth digit, you will command sport mode, in which the TCM will shift at higher rpm for more power. If you have selected to have DSP active, you will not be able to choose either of these modes and you will need to enter the fifth digit as "0". So, a coding number of "00000" means DSP is active. If you code the TCM for economy, you will enter "00011.". Sport mode can be selected by coding the control unit with the number "00012."

The TCM controls shift points by operating solenoids throughout acceleration and deceleration. These solenoids are divided into two categories: shift solenoids and pressure-control solenoids. The former are simple on/off units that either open a passage in the valve body for fluid to flow, or close it. Different combinations will produce different gear positions. Pressure control solenoids are usually duty-cycle controlled and vary the amount of pressure applied to a clutch. This allows for smoother shifts that are less noticeable to the driver. With a paid subscription to www.vw.erwin.com, you can access clutch and brake apply charts. These let you know which solenoids have an effect on the shift point you may be having a problem with. You can also use solenoid apply charts to let you know which solenoids are being activated and which are not. You can evaluate all of this data with your VAS 5052. In data, you can look at the amperage control of the output solenoids, which are normally open. Therefore, a lower current reading means the solenoids are open, and a higher amperage reading means the solenoids are being commanded closed.

Solenoid Control

The TCM supplies the power and ground control of the shift- and pressure-control solenoids. If any of these or the wiring were to fail, the transmission would default to a single gear, usually third. This allows continued driving to a shop for repair. While on your road test, check the engine rpm to verify that the transmission is shifting. If it isn't, you should have DTCs indicating why the TCM is in "limp-home" mode. For instance, if you pull a code 17086 on a 01V transmission (TCM electrical malfunction, or defective control unit) the problem may not be in the control unit. Evaluate measuring block 003 in the TCM and look at field #4. This PID represents the voltage supply to the solenoids. You should read battery voltage in gear with the engine running. If you do not, you need to access the TCM under the passenger side floor carpeting and check terminals 52 and 53 for battery voltage. One terminal is the supply voltage for the shift solenoids, and the other wire brings the supply voltage to the pressure control solenoids. The TCM monitors the supply voltage coming back from each solenoid to determine if there is a wiring harness problem.

Having a basic understanding of how Volkswagen automatic transmissions work will help in addressing your customers' concerns. The process starts by properly identifying the model you are working on, followed by checking basics like fluid level. Finally, check for any DTCs and evaluate scan data pertinent to the problem. Back up your evaluation with visual examination and electrical testing of the circuits in question, and you should come to the quick and accurate diagnosis that your customers expect from you. With the help and support of your Volkswagen parts supplier, you should be able to provide a complete repair the first time.

Volkswagen Dealers Listing

Alabama

Birmingham
Serra Volkswagen
(205) 856-6520

Huntsville
Hiley VW Of Huntsville
(256) 882-0200

Mobile
Dean Mccrary Imports
(251) 471-3326

Montgomery
Jack Ingram Motors, Inc.
(334) 277-5700

Tuscaloosa
Volkswagen Of Tuscaloosa
(205) 345-8040

Vestavia
Royal Volkswagen
(205) 978-4141

Alaska

Anchorage
Morrison Auto Group, Inc.
(907) 272-5522

Arizona

Avondale
Larry H. Miller VW Avondale
(623) 215-1660

Flagstaff
Findlay Volkswagen
(928) 522-2700

Gilbert
Berge Volkswagen
(480) 835-5010

Santan Volkswagen
(480) 786-8960

Peoria
Peoria Volkswagen
(623) 875-4005

Phoenix
Camelback Volkswagen
(602) 264-4355

Volkswagen North Scottsdale
(480) 538-4760

Prescott
Prescott Import Car Service
(928) 778-9305

Scottsdale
Chapman Volkswagen
(480) 424-3536

Tucson
Chapman Volkswagen
(520) 748-1000

Tucson Volkswagen
(520) 670-3600

Arkansas

Fort Smith
Bill White Imports
(479) 648-3510

Little Rock
Owens-Murphy Volkswagen
(501) 661-0303

Rogers
VW Of Northwest Arkansas
(479) 631-0101

Sherwood
North Point Volkswagen
(501) 850-8953

California

Alhambra
Volkswagen Alhambra
(626) 407-0500

Bakersfield
Family Volkswagen
(661) 617-6200

Carlsbad
Bob Baker Volkswagen
(760) 438-3113

Cerritos
Mckenna Motors Cerritos
(562) 653-9000

Chico
Chico Volkswagen
(530) 891-6275

City Of Industry
Puente Hills Volkswagen
(818) 432-5839

Clovis
Clovis Volkswagen
(559) 314-1465

Colma
Serramonte Volkswagen
(650) 746-3000

Corona
Cardinaleway Volkswagen
(951) 279-1220

Covina
Bozzani Motors
(800) 491-4909

Dublin
Dublin Volkswagen
(925) 361-9071

El Cajon
Mossy Volkswagen El Cajon
(619) 401-5000

Elk Grove
Elk Grove Volkswagen
(916) 421-9267

Encinitas
Herman Cook VW, Inc.
(760) 753-4439

Escondido
Mossy Volkswagen
(760) 745-7551

Fairfield
Volkswagen Of Fairfield
(707) 402-7130

Fresno
Michael Volkswagen
(559) 431-4994

Garden Grove
Volkswagen Of Garden Grove
(877) 331-5415

Glendale
New Century Volkswagen
(818) 552-6265

Hawthorne
Pacific Volkswagen
(310) 531-9471

Hayward
Team VW Of Hayward
(510) 300-2732

Huntington Beach
Mckenna Volkswagen
(714) 842-2000

Indio
Coachella Valley Volkswagen
(866) 308-5004

Irvine
Fladeboe Volkswagen
(949) 231-1035

Long Beach
Timmons Volkswagen
(888) 489-5001

Los Angeles
VW Of Downtown L.A.
(213) 747-7246

Merced
Merced Volkswagen
(800) 833-0325

Modesto
Central Valley Volkswagen
(209) 524-5595

Moreno Valley
VW Of Moreno Valley
(951) 485-4188

Murrieta
Murrieta Volkswagen
(951) 894-4721

Napa
Hanlees Volkswagen
(707) 253-9100

National City
South Bay Volkswagen
(619) 336-4030

Newark
Winn Volkswagen
(510) 668-8080

North Hills
Galpin VW Of San Fernando Valley
(818) 895-3800

Oakland
Volkswagen Of Oakland
(510) 834-7711

Ontario
Ontario Volkswagen
(909) 230-5659

Palmdale
Antelope Valley Volkswagen
(661) 274-2524

Pasadena
Volkswagen Pasadena
(866) 654-8591

Redwood City
Boardwalk Volkswagen
(650) 364-0100

Richmond
Hilltop Volkswagen
(510) 283-6300

Riverside
Riverside Volkswagen
(951) 509-2125

Roseville
Roseville Volkswagen, LLC.
(916) 960-0898

Sacramento
Niello Volkswagen
(800) 423-1453

Salinas
Cardinale Volkswagen
(831) 449 0118

San Diego
City Volkswagen
(800) 927-2277

Volkswagen Kearny Mesa
(619) 302-8865

San Francisco
Royal Motor Sales
(415) 241-8154

San Jose
Capitol Volkswagen
(408) 265-4400

Volkswagen Of Stevens Creek
(408) 248-6500

San Juan Capistrano
Capistrano Volkswagen
(949) 493-4511

San Rafael
Sonnen Motorcars, Inc.
(800) 460-4176

Santa Ana
Commonwealth Volkswagen
(714) 565-7500

Santa Barbara
Santa Barbara Volkswagen
(805) 966-6164

Santa Cruz
Volkswagen Of Santa Cruz
(831) 426-5100

Santa Maria
Community Volkswagen
(805) 348-3221

Santa Monica
Volkswagen Santa Monica, Inc.
(310) 828-0553

Santa Rosa
Hansel VW Of Santa Rosa
(707) 575-1051

Stockton
Hammer Lane Volkswagen
(209) 644-8500

Sunnyvale
Sunnyvale Volkswagen
(408) 739-2571

Thousand Oaks
Neftin Volkswagen
(805) 497-9404

Vacaville
Vacaville Volkswagen
(866) 947-2787

Valencia
Parkway Volkswagen
(661) 253-4441

Van Nuys
Volkswagen Of Van Nuys
(818) 785-7111

Ventura
Barber Volkswagen
(805) 642-6707

Walnut Creek
Dirito Brothers Walnut Creek VW
(925) 934-8224

Woodland Hills
Livingston Volkswagen, Inc.
(818) 884-4444

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Aurora
Tynan's Volkswagen, Inc.
(303) 341-3213

Boulder
Gebhardt Volkswagen
(720) 974-2135

Colorado Springs
Al Serra Volkswagen
(719) 258-1050

Colorado Springs
Bob Penkhus Volkswagen
(719) 473-4711

Denver
Emich Volkswagen
(303) 758-7739

Denver
North Valley Volkswagen
(303) 438-5200

Fort Collins
Ed Carroll Motor Company, Inc.
(970) 226-3000

Glenwood Springs
Elk Mountain Motors
(970) 384-5354

Greeley
Ehrlich Vehicles, Inc.
(970) 346-3571

Lakewood
Larry H. Miller VW Lakewood
(303) 234-1311

Littleton
Mcdonald Automotive Grp. VW
(303) 795-1100

Connecticut

Canton
Mitchell Volkswagen
(860) 693-5907

Danbury
Danbury Volkswagen
(203) 546-6538

Enfield
Lia Volkswagen
(860) 745-2000

Glastonbury
Gene Langan VW, Inc.
(860) 633-0261

Greenwich
New Country VW Of Greenwich
(203) 302-1390

Hartford
Volkswagen Of Hartford
(860) 543-6012

Meriden
Langan VW Meriden, LLC
(203) 237-0261

New Milford
New Milford VW, Inc.
(860) 354-3977

North Haven
Montesi Motors, Inc.
(203) 281-0481

Old Saybrook
Volkswagen Of Old Saybrook
(860) 388-3400

Plainfield
Central VW Of Plainfield
(860) 564-4014

Plainville
Crowley Volkswagen, Inc.
(860) 747-1607

Stamford
Riverbank Motors Corp.
(203)327-2500

Stratford
Curran Volkswagen, Inc.
(203) 3786516

Vernon
Langan VW Of Vernon, LLC.
(860) 645-0261

Watertown
Valenti Motors, Inc.
(860) 274-9846

Delaware

Dover
Dover Volkswagen, Inc.
(302) 734 4761

Wilmington
Smith Volkswagen, Ltd.
(800) 637-8093

Florida

Bradenton
Bob Boast Volkswagen
(941) 755-8585

Clearwater
Lokey Volkswagen
(727) 450-7991

Coconut Creek
Gunther VW Of Coconut Creek
(954) 590-3835

Daytona Beach
Fields Volkswagen
(386) 523-0500

Delray Beach
Maroone Volkswagen
(561) 266-2712

Fort Lauderdale
Gunther Volkswagen
(954) 797-1646

Fort Myers
Volkswagen Of Fort Myers
(239) 433-8307

Fort Walton Beach
Lee Volkswagen
(850) 243-3171

Gainesville
Volkswagen Of Gainesville
(352) 433-4926

Holiday
VW Of New Port Richey
(727) 234-4200

Jacksonville
O'Steen Volkswagen
(904) 322-5150

Tom Bush Regency Motors
(800) 874-7129

Volkswagen Of Orange Park
(904) 269-2603

Lake Park
Schumacher Automotive, Inc.
(561) 227-6154

Lakeland
Lakeland Volkswagen
(863) 904-1414

Melbourne
Prestige Volkswagen
(321) 309-8989

Miami
Deel Volkswagen
(305) 444-2222

Esserman International Volkswagen
(305) 728-8341

Esserman Volkswagen
(305) 474-8989

South Motor Co. Of Dade Co.
(305) 256-2370

Naples
Volkswagen Of Naples
(239) 435-3202

Ocala
Volkswagen Of Ocala
(352) 861-0234

Orlando
Aristocrat Volkswagen East, Inc.
(866) 921-3175

David Maus Volkswagen
(407) 581-4321

David Maus Volkswagen North
(321) 214-3160

Pensacola
Pete Moore Imports
(850) 457-1000

Pompano Beach
Vista Motor Company
(954) 942-3517

Port Charlotte
Port Charlotte Volkswagen
(941) 743-7185

Sanford
Aristocrat Volkswagen, Inc.
(407) 321-2277

Sarasota
Suncoast Volkswagen
(941) 923-1700

Springfield
Volkswagen Of Panama City
(850) 763-5495

St. Petersburg
Bert Smith International
(727) 527-7290

Stuart
Wallace Volkswagen
(772) 219-0007

Tallahassee
Capital Volkswagen
(850) 574-3777

Tampa
Brandon Volkswagen
(813) 630-4000

Kuhn Volkswagen
(800) 678-3275

Reeves Import Motorcars, Inc.
(813) 933-2817

West Palm Beach
Schumacher Volkswagen, Inc.
(561) 615-3319

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Atlanta
Jim Ellis VW Of Chamblee
(770) 454-7711

Bougart
Volkswagen Of Athens
(866) 308-2723

Buford
Gunther VW Mall Of Georgia
(678) 745-9950

Columbus
Carl Gregory Volkswagen
(706) 243-3979

Dalton
Al Johnson Volkswagen, Inc.
(706) 278-9200

Lithia Springs
Heritage Volkswagen
(678) 569-0571

Macon
Butler Volkswagen, Inc.
(478) 314-4256

Marietta
Jim Ellis VW Of Marietta
(770) 955-2580

Martinez
Gerald Jones Volkswagen, Inc.
(706) 228-6900

Savannah
Vaden Volkswagen
(912) 629-6989

Snellville
Stone Mountain Volkswagen
(678) 836-1106

Union City
Heritage Volkswagen, Inc.
(770) 774-0758

Valdosta
Pipkin's Motors, Inc.
(229) 242-9920

Hawaii

Honolulu
Honolulu Volkswagen
(808) 687-6289

Waipahu
Tony Volkswagen
(808) 680-7175

Idaho

Boise
Boise Volkswagen
(208) 377-5400

Twin Falls
Con Paulos Volkswagen
(208) 735-3900

Illinois

Bensenville
Larry Roesch VW Of Bensenville
(630) 279-8806

Chicago
Fletcher Jones Volkswagen
(312) 628-4350

The Autobarn City Volkswagen
(773) 794-7800

Countryside
Autobarn VW Countryside
(708) 354-6600

Crystal Lake
Anderson Volkswagen
(815) 455-9770

Dixon
Dixon Volkswagen
(815) 288-3366

Downers Grove
Pugi Volkswagen
(630) 598-9900

Evanston
The Autobarn Ltd. - VW
(847) 570-3081

Glenview
Jennings Volkswagen, Inc.
(847) 729-3480

Gurnee
Gurnee Volkswagen
(847) 855-1500

Highland Park
VW Of Highland Park
(847) 433-7900

Joliet
D'Arcy Volkswagen
(815) 409-4670

Libertyville
Liberty Import Center
(847) 680-8000

Mt. Prospect
The Autobarn VW Of Mt. Prospect
(847) 392-6300

Naperville
Bill Jacobs Volkswagen
(866) 599-2527

Normal
Sud's Volkswagen
(309) 454-1101

O'Fallon
Auffenberg Volkswagen
(618) 622-4645

Oak Lawn
Mike Haggerty VW, Inc.
(708) 425-8989

Orland Park
Volkswagen Of Orland Park
(708) 428-5000

Ottawa
Sierra Volkswagen, Inc.
(815) 433-3767

Peoria
Volkswagen Of Peoria
(309) 243-7000

Rockford
Lou Bachrodt Volkswagen
(815) 332-3001

Schaumburg
Fox Valley VW Schaumburg
(224) 353-2481

Springfield
Green On Dirksen, Ltd.
(217) 698-3100

Urbana
O'Brien Volkswagen
(800) 386-6767

West Chicago
Fox Valley Volkswagen
(630) 818-4181

Indiana

Bloomington
Royal VW Of Bloomington
(812) 332-9251

Clarksville
Sam Swope VW of Clarksville
(812) 948-1541

Evansville
D-Patrick, Inc.
(812) 473-6500

Fort Wayne
Vorderman Volkswagen
(260) 969-6065

Greenwood
Dreyer & Reinbold Of Greenwood
(317) 885-4809

Indianapolis
Falcone Volkswagen
(317) 803-8767

Tom Wood Volkswagen
(317) 688-6109

Lafayette
Mike Raisor Imports
(765) 447-0808

Merrillville
Team Volkswagen
(888) 805-3689

Mishawaka
Gurley Leep Imports, Inc.
(574) 254-7130

Iowa

Cedar Falls
Dick Witham Volkswagen
(319) 277-8123

Davenport
Volkswagen Of Quad Cities
(563) 386-1511

Hiawatha
Volkswagen Of Cedar Rapids
(319) 743-6055

Iowa City
Carousel Motors
(319) 354-2550

Johnston
Lithia VW Of Des Moines
(515) 253-0333

Mason City
Schukei Volkswagen
(641) 423-5402

Kansas

Lawrence
Crown Volkswagen
(785) 843-7700

Olathe
Bud Brown Volkswagen
(913) 393-8183

Topeka
Sunflower Motors, Inc.
(785) 266-8480

Wichita
Steven Volkswagen
(316) 681-1211

Kentucky

Florence
Kerry Volkswagen
(859) 371-8191

Lexington
Don Jacobs Volkswagen
(859) 260-2621

Louisville
Bachman Volkswagen
(502) 719-7250

Louisville
Neil Huffman VW, Inc.
(502) 448-6666

Louisiana

Baton Rouge
Southpoint Volkswagen
(800) 291-0032

Bossier City
Moffitt Volkswagen, Inc.
(318) 746-2175

Lafayette
Southwest Volkswagen
(337) 456-8400

Mandeville
Northshore Volkswagen
(985) 626-1067

Metairie
Walker Volkswagen
(504) 465-2000

Maine

Auburn
Rowe Volkswagen
(207) 784-2321

Augusta
O'Connor Volkswagen
(207) 622-6336

Bangor
Darling's, Inc.
(207) 992-1550

Brunswick
Morong Brunswick
(207) 725-4323

Falmouth
Morong Falmouth VW
(207) 781-4020

Saco
Prime Volkswagen
(207) 283-2900

Waterville
Thompson Volkswagen, Inc.
(207) 873-0777

Maryland

Annapolis
Fitzgerald Automall
(410) 224-4636

Baltimore
Heritage VW Parkville
(410) 661-6588

Russel Volkswagen
(410) 744-2300

Bethesda
Martens Volkswagen
(301) 652-2452

Cockeysville
Volkswagen Of Hunt Valley
(410) 666-7777

Fallston
Cook Volkswagen, LLC.
(410) 877-1500

Frederick
Fitzgerald Volkswagen
(301) 696-9200

Gaithersburg
King Volkswagen
(240) 403-2300

Hagerstown
Sharrett Volkswagen
(301) 739-9999

Laurel
Ourisman VW Of Laurel
(800) 288-6985

Owings Mills
Heritage Volkswagen
(410) 581-6696

Pasadena
Antwerpen Volkswagen
(410) 760-8452

Rockville
Congressional Volkswagen
(301) 340-7668

Silver Spring
DARCARS Volkswagen
(301) 622-4040

Waldorf
Waldorf Volkswagen
(301) 843-1234

Massachusetts

Auburn
Patrick Motors
(800) 367-7222

Bedford
Minuteman Volkswagen, Inc.
(781) 275-8006

Braintree
Quirk Volkswagen
(781) 917-1537

Brockton
Paul Clark, Inc.
(508) 587-9040

Danvers
Kelly Volkswagen, Inc.
(978) 605-1555

Fall River
Mattie Imports, Inc.
(508) 678-5555

Hanover
Coastal Volkswagen
(781) 616-0616

Hyannis
Tracy Volkswagen, Inc.
(508) 775-3049

Lawrence
Commonwealth Volkswagen
(978) 687-3001

Medford
Colonial VW Of Medford
(781) 475-5208

Middleboro
Metro Volkswagen
(508) 967-2800

North Attleboro
VW Of North Attleboro, Inc.
(508) 695-7131

Northampton
Northampton Volkswagen
(413) 586-2959

Norwood
Volkswagen Gallery
(800) 240-0382

Pittsfield
Flynn Volkswagen
(413) 443-4702

Tewksbury
Atamian Volkswagen, Inc.
(978) 851-4356

Watertown
Boston Volkswagen
(617) 783-1477

Wellesley
Wellesley Volkswagen, Inc.
(781) 237-3553

West Springfield
Fathers & Sons, Inc.
(413) 737-7766

Westboro
Colonial Volkswagen
(508) 366-8383

Michigan

Ann Arbor
Volkswagen Of Ann Arbor
(734) 761-3200

Bay City
Thelen Volkswagen
(989) 684-2980

Escanaba
Halbinsel, Inc.
(906) 789-9650

Farmington Hills
Suburban VW Of Farmington Hills
(248) 471-0800

Grand Blanc
Volkswagen Of Grand Blanc
(810) 694-5600

Grand Rapids
Betten Imports, Inc.
(616) 301-2100

Gezon Volkswagen
(616) 361-7361

Holland
Crown Volkswagen
(616) 393-9205

Kalamazoo
Maple Hill Volkswagen
(269) 327-0816

Lansing
Williams Volkswagen, Inc.
(800) 258-2853

Livonia
Ralph Thayer Volkswagen
(734) 425-5400

Monroe
Elite Volkswagen
(734) 242-3900

Muskegon
Volkswagen Of Muskegon
(231) 799-2886

Rochester Hills
Fox Volkswagen
(248) 656-0400

Sterling Heights
Vyletel Volkswagen, Inc.
(586) 276-4652

Traverse City
Traverse City Volkswagen
(231) 946-5540

Troy
Suburban Volkswagen, Inc.
(248) 649-2074

Minnesota

Albert Lea
Dave Syverson VW, Inc.
(507) 379-2930

Brainerd
Auto Import, Inc.
(218) 829-3307

Burnsville
Burnsville Volkswagen, Inc.
(952) 892-9470

Hermantown
Volkswagen Of Duluth
(218) 722-6989

Inver Grove Heights
Volkswagen Of Inver Grove
(651) 204-4610

Mankato
Mankato Volkswagen
(507) 625-5641

Rochester
Rochester Motors, LLC.
(507) 282-9468

Saint Cloud
Eich Motor Company, Inc.
(320) 251-1737

Saint Louis Park
Luther West Side Volkswagen
(952) 374-0700

Saint Paul
Schmelz Countryside Volkswagen
(651) 484-0424

Mississippi

Gulfport
Volkswagen Of Gulfport
(888) 861-9626

Jackson
Volkswagen Of Jackson
(601) 987-9090

Missouri

Ballwin
The Dean Team Of Ballwin
(636) 227-6527

Gladstone
Northtowne Volkswagen
(816) 468-2275

Hazelwood
Bommarito VW Of Hazelwood
(800) 731-8270

Kansas City
Molle Volkswagen
(816) 941-9500

Kirkwood
The Dean Team Of Kirkwood
(314) 238-1036

Volkswagen Dealers Listing

Springfield
Volkswagen Of Springfield
(417) 886-6000

St. Louis
Suntrup Volkswagen
(314) 892-7790

St. Peters
Bommarito VW Of St. Peters
(636) 928-2300

Montana

Billings
Volkswagen Billings
(406) 655-7500

VW Of Alamo Heights
(210) 828-1201

Bozeman
Volkswagen Of Bozeman
(406) 586-1771

Great Falls
Bennett Imports
(406) 761-3305

Whitefish
DePratu Volkswagen
(406) 863-2520

Nebraska

Lincoln
Schworer Volkswagen
(402) 435-3300

Omaha
Performance Volkswagen
(888) 502-8675

Stan Olsen Auto Center
(402) 393-7006

Nevada

Henderson
Findlay Volkswagen
(702) 558-6600

Las Vegas
Desert Volkswagen
(702) 942-4000

Findlay North Volkswagen
(702) 982-4839

Reno
Lithia Volkswagen Of Reno
(775) 851-5826

New Hampshire

Greenland
Seacoast Volkswagen, Inc.
(603) 436-2938

Keene
Noyes Volkswagen, Inc.
(888) 355-2488

Lebanon
Miller Volkswagen
(603) 448-6363

Manchester
Quirk Volkswagen NH
(603) 206-2952

Nashua
Tulley Volkswagen
(603) 888-0550

Rochester
Volkswagen Of Rochester
(603)-332-6242

Tilton
Autoserv Volkswagen
(603) 286-3141

New Jersey

Bernardsville
Paul Miller VW Of Bernardsville
(908) 766-1600

Burlington
Burlington Volkswagen, Inc.
(609) 386-0174

Cape May Court House
Burke Brothers, Inc.
(609) 463-4903

Cherry Hill
Cherry Hill Volkswagen
(856) 665-5660

Clifton
Gensinger Motors, Inc.
(973) 778-8500

East Toms River
World VW Of Toms River
(732) 575-1800

Edison
Reydel Volkswagen, Inc.
(732) 287-2444

Egg Harbor Twsp
Atlantic Volkswagen
(609) 641-1788

Englewood Cliffs
East Coast Volkswagen
(201) 568-0053

Fair Lawn
Jack Daniels Motors, Inc.
(201) 398-1209

Flemington
Flemington Volkswagen
(800) 216-5124

Freehold
Volkswagen Of Freehold
(732) 339-6910

Hamilton Square
Hamilton Volkswagen
(800) 348-8816

Linden
Linden Volkswagen
(800) 343-5116

Lyndhurst
Three County VW Corp.
(201) 933-6566

Monroeville
Volkswagen Of Salem County
(856) 358-8103

Neptune
World Volkswagen
(732) 922-1503

Newton
Volkswagen Of Newton
(973) 383-2624

Pompton Plains
Crestmont Volkswagen
(973) 839-4832

Princeton
Princeton Volkswagen
(800) 216-1546

Ramsey
Joe Heidt Motors, Corp.
(201) 327-2900

Rockaway
Trend Motors, Ltd.
(888) 267-2821

Shrewsbury
Shrewsbury Volkswagen
(800) 662-3140

Somerville
Open Road VW Of Bridgewater
(908) 685-1068

Summit
Douglas Motors Corp.
(908) 277-1100

Turnersville
Prestige Volkswagen
(856) 262-3090

Union
Union Volkswagen
(877) 986-4668

New Mexico

Albuquerque
University Volkswagen, Inc.
(505) 761-1900

Albuquerque
Uptown Volkswagen
(505) 260-5188

Las Cruces
Sisbarro Autoworld, Inc.
(575) 541-7830

Santa Fe
Volkswagen Of Santa Fe
(505) 428-7341

New York

Amherst
Northtown Volkswagen
(716) 836-4666

Amityville
Legend Autorama, Ltd.
(631) 691-7700

Binghamton
Gault Volkswagen
(607) 772-0700

Bowmansville
Schmitt's Volkswagen
(716) 683-3343

Bronx
Teddy VW Of The Bronx
(718) 696-6117

Brooklyn
Bay Ridge Volkswagen
(718) 680-1006

Kings Volkswagen
(718) 646-6700

Cicero
Burdick Volkswagen
(800) 233-2002

East Rochester
VW Of East Rochester
(585) 586-2225

Fayetteville
Romano VW Of Fayetteville
(315) 637-4491

Glenmont
Capital Cities Imported Cars, Inc.
(518) 463-3141

Great Neck
Bayside Volkswagen
(516) 482-3346

Hicksville
Platinum Volkswagen
(516) 822-4800

Huntington Station
Volkswagen Of Huntington
(631) 470-8100

Ithaca
Maguire Automotive
(607) 257-1515

Kingston
Volkswagen Of Kingston
(845) 336-6600

Latham
Martin Nemer VW Corp.
(518) 785-0906

Lynbrook
Sunrise Volkswagen, Inc.
(516) 596-1111

Middletown
Compass Volkswagen
(845) 344-4448

Mohegan Lake
Mohegan Lake Motors, Inc.
(914) 528-2528

New York
Open Road VW Of Manhattan
(646) 358-8100

Nyack
Palisades Volkswagen
(845) 689-3536

Oneonta
Volkswagen Oneonta
(866) 308-4291

Orchard Park
Volkswagen Of Orchard Park
(716) 662-5500

Pleasantville
Prestige Imports
(914) 769-5100

Queensbury
Garvey Volkswagen, Inc.
(518) 793-3488

Rensselaer
Cooley Motors Corp.
(518) 283-2902

Riverhead
Riverhead Bay Volkswagen
(631) 727-5590

Rochester
Dorschel Volkswagen
(800) 727-8789

Rome
Volkswagen Of Rome, Inc.
(315) 337-8900

Sayville
Donaldson's, Inc.
(631) 567-8100

Schenectady
Volkswagen Of Schenectady
(518) 374-9161

St. James
Smithtown Volkswagen
(631) 724-6600

Staten Island
Open Road VW Of Staten Island
(718) 513-7500

Wappingers Falls
Hudson Valley Volkswagen
(845) 298-2365

Watertown
F.X. Caprara Volkswagen
(315) 788-7400

West Islip
Atlantic Volkswagen
(631) 539-3653

White Plains
Lash VW Of White Plains
(914) 931-9700

Woodside
Koeppel Volkswagen, Inc.
(800) 669-0922

Yorkville
Steet Ponte Volkswagen
(315) 736-2787

North Carolina

Asheville
Volkswagen Of Asheville
(828) 232-4002

Burlington
Maxwell Volkswagen, Inc.
(336) 227-2727

Cary
Leith Volkswagen
(919) 297-1640

Charlotte
Carolina Volkswagen
(800) 489-2336

Charlotte
VW Of South Charlotte
(888) 699-4128

Durham
Southern States VW Durham
(888) 998-0075

Fayetteville
Valley Auto World, Inc.
(910) 867-7000

Goldsboro
Frema Motors, Inc.
(919) 778-1010

Greensboro
Flow Motors Of Greensboro
(336) 856-9050

Greenville
Joe Pecheles VW, Inc.
(252) 756-4982

Hickory
Paramount Automotive Group
(828) 449-1430

Huntersville
Keffer Volkswagen
(704) 766-2129

Jacksonville
National Volkswagen
(910) 938-1417

Raleigh
Leith Volkswagen Of Raleigh
(919) 828-0828

Wilmington
Bob King Volkswagen
(910) 392-3889

Winston Salem
Flow Motors Of Winston-Salem, LLC.
(336) 761-3698

North Dakota

Fargo
Valley Imports, Inc.
(701) 277-1777

Ohio

Akron
Dave Walter, Inc.
(330) 434-8989

Amherst
Spitzer Volkswagen
(440) 988-4444

Bedford
Ganley VW Of Bedford
(440) 439-3444

Boardman
Volkswagen Of Boardman
(330) 726-8948

Brunswick
Brunswick Volkswagen
(330) 723-3300

Canton
Kempthorn Volkswagen
(330) 580-4916

Cincinnati
Beechmont Volkswagen
(513) 474-4777

Northland Volkswagen
(800) 521-PART

Columbus
Byers Imports, LLC.
(614) 552-5490

Hatfield Volkswagen
(614) 465-8989

Dayton
Evans Volkswagen
(937) 890 6200

White-Allen European Auto Group
(937) 312-3022

Dublin
Midwestern Auto Group
(614) 553-5247

Fairfield
Fairfield Volkswagen
(888) 932-4734

Loveland
Kings VW Of Loveland
(513) 677-2710

Mentor
Classic Volkswagen
(440) 205-6504

North Olmsted
Ganley Westside Imports, Inc.
(440) 734-1076

Perrysburg
Ed Schmidt Volkswagen
(419) 874-4331

Springfield
Bill Marine Auto Center, Inc.
(937) 325-7091

Steubenville
Sunset Motors Incorp
(740) 264-1696

Willoughby Hills
Eastside Volkswagen
(440) 944-8700

Wooster
Volkswagen Of Wooster
(330) 264-1113

Oklahoma

Norman
Fowler VW Of Norman
(405) 310-3700

Oklahoma City
Cable Volkswagen
(405) 787-0095

Tulsa
Volkswagen Tulsa, LLC.
(918) 712-8989

Oregon

Beaverton
Herzog Meier Volkswagen
(503) 372-3250

Bend
Carrera Motors
(541) 382-1711

Eugene
Sheppard Motors
(541) 343-8811

Gladstone
Armstrong Volkswagen
(503) 656-1215

Mcminnville
Mac Volkswagen, Inc.
(503) 472-4658

Medford
Lithia Volkswagen
(541) 774-7500

Portland
Dick Hannahs VW Of Portland
(360) 256-5000

Salem
Volkswagen Of Salem
(503) 581-7785

Pennsylvania

Allentown
Faulkner-Ciocca Volkswagen
(610) 791-4177

Ardmore
Piazza VW Of Ardmore
(610) 642-4275

Butler
Mikan Volkswagen
(724) 287-4763

Colmar
North Penn Imports, Inc.
(800) 887-2111

Danville
Jack Metzer Volkswagen
(570) 275-2212

Devon
Fred Beans Volkswagen
(610) 254-9637

Downingtown
Jeff D'Ambrosio Volkswagen
(610) 873-2400

Volkswagen Dealers Listing

Du Bois
Central Volkswagen, Inc.
(814) 583-5121

Easton
Young Volkswagen, Inc.
(610) 991-9140

Edgemont
Y B H Sales & Service, Inc.
(610) 356-3493

Erie
New Motors, Inc.
(800) 352-1052

Feasterville
Colonial Volkswagen, Inc.
(215) 355-8856

Greensburg
Sendell Motors, Inc.
(724) 837-9500

Harrisburg
Sutliff Volkswagen
(717) 231-1560

Hollidaysburg
Fiore Volkswagen
(814) 695-5533

Lancaster
Autohaus Lancaster, Inc.
(717) 299-0325

Langhorne
Volkswagen Of Langhorne
(800) 298-4300

Larksville
Wyoming Valley Motors
(570) 288-7411

Lebanon
H.A. Boyd, Inc.
(717) 273-9385

Leesport
Volkswagen Reading
(610) 777-6505

McMurray
Three Rivers Volkswagen
(724) 941-6100

Mechanicsburg
Cumberland Valley Motors
(717) 697-9478

Monroeville
Day Volkswagen
(724) 327-4950

Montoursville
Fairfield Volkswagen
(570) 368-8121

Moon Township
Day Apollo, Inc.
(412) 264-7171

New Kensington
Hillcrest Volkswagen, Inc.
(724) 335-9847

Norristown
Jim Wynn Volkswagen, Inc.
(610) 539-4622

Orwigsburg
J. Bertolet, Inc.
(570) 366-0501

Philadelphia
Chapman Volkswagen
(215) 698-8018

Pittsburgh
Cochran Volkswagen
(412) 245-3333

Scranton
Kelly Volkswagen
(570) 347-5656

State College
Volkswagen State College
(814) 206-0900

Warrington
Thompson Volkswagen
(215) 343-4810

West Chester
Garnet Volkswagen
(610) 361-0624

Wexford
Billco Motors, Inc.
(724) 940-1000

Whitehall
Gilboy Volkswagen, Inc.
(610) 434-2953

York
York Volkswagen, Inc.
(866) 893-2337

Puerto Rico

San Juan
Euroclass Motors, Inc..
(787) 782-4087

East Providence
Scott Volkswagen
(401) 431-0334

Wakefield
Speedcraft Volkswagen
(401) 792-3300

West Warwick
Balise Volkswagen
(401) 822-4400

South Carolina

Columbia
Mcdaniels Volkswagen
(803) 786-6408

Wray Volkswagen
(800) 424-0183

Greenville
Steve White Volkswagen
(864) 288-8300

Hardeeville
Hilton Head Volkswagen
(843) 288-0510

Mount Pleasant
Low Country VW, LLC.
(843) 881-8555

Myrtle Beach
East Coast Volkswagen
(843) 215-6500

North Charleston
Stokes Volkswagen
(843) 767-2525

Spartanburg
Vic Bailey Volkswagen
(864) 585-2492

Sumter
Goodwin Volkswagen, Inc.
(803) 469-2595

South Dakota

Rapid City
Liberty Volkswagen
(605) 343-1000

Sioux Falls
Graham Automotive
(605) 336-3655

Tennessee

Bristol
Wallace Volkswagen
(423) 764-1145

Chattanooga
Village VW Of Chattanooga
(423) 855-4981

Clarksville
Gary Mathews North, Inc.
(931) 552-1111

Franklin
Hallmark VW At Cool Springs
(615) 236-3200

Johnson City
Wallace VW Of Johnson City
(423) 952-0888

Kingsport
Fairway Volkswagen
(423) 378-1800

Knoxville
Harper Volkswagen, Inc.
(865) 691-5569

Madison
Hallmark Volkswagen, Inc.
(615) 859-3200

Memphis
Gossett Volkswagen
(901) 388-8989

Gossett VW Of Germantown
(901) 333-8989

Murfreesboro
Southeast Signature Motors, Inc.
(615) 898-0700

Texas

Abilene
Volkswagen Of Abilene
(325) 673-4663

Arlington
Randy Hiley VW Of Arlington
(817) 575-6100

Austin
Maund Automotive Group
(512) 420-2409

Beaumont
Volkswagen Of Beaumont
(409) 833-7100

Brownsville
Payne Volkswagen
(956) 350-4488

Bryan
Garlyn Shelton Imports
(979) 776-7600

Corpus Christi
VW Of Corpus Christi
(361) 653-8400

Dallas
Boardwalk VW Park Cities
(214) 561-8100

El Paso
Hoy-Fox Automotive Market
(915) 778-7788

Fort Worth
Autobahn Motorcar Group
(817) 336-0885

Garland
Rusty Wallis Volkswagen
(972) 271-6767

Georgetown
Hewlett Volkswagen
(512) 681-3500

Houston
Archer Volkswagen
(713) 272-1750

Demontrond Automotive Group, Inc.
(281) 872-3909

Momentum Volkswagen
(713) 596-3380

Momentum VW Jersey Village
(281) 925-5160

Momentum VW Of Clear Lake
(281) 848-5660

West Houston Volkswagen
(281) 675-8600

Irving
Metro Volkswagen
(972) 256-1102

Killeen
Automax Volkswagen
(254) 699-2629

Lewisville
Lewisville Volkswagen
(972) 538-0550

Longview
Gorman-Mccracken VW
(903) 753-8657

Lubbock
Gene Messer Volkswagen
(806) 793-8844

McKinney
Mckinney Volkswagen
(800) 565-9807

Mission
Payne Mission
(956) 584-6300

Richardson
Boardwalk Volkswagen
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