



Fall  
Car  
Care  
GUIDE



# Check Your Washer Fluid System

It's easy to take your vehicle's washer fluid system for granted. You probably don't think of it with the same importance as engine oil or transmission fluid.

While it isn't crucial for your car to run properly, using the correct type of washer fluid during the cold season can help keep you safe.

## DIFFERENT TYPES

Like many other automotive fluids, you have several options when it comes to choosing the washer fluid which works best for you. Here are a few different types and when they are most beneficial.

- **Cold weather:** If you experience frigid temperatures during the autumn, consider switching to a mixture that is resistant to freezing. Most bottles will advertise their freeze threshold clearly on the bottle.

- **De-icing:** Another popular colder weather type of fluid is mixed with de-icing properties. Not only is it resistant to freezing, it will help clear icy windshields while you sit comfortably in the warm car.

- **Bug cleaning:** More popular in warmer climates, this solution applies a chemical to clear bug residue collected on your windshield.

## HOW THE SYSTEM WORKS

Understanding how a washer fluid system works is easy. Once you know its process, you will know how to diagnose

problems when they occur. The windshield washer is activated by a switch in your car, near the steering column in most vehicles. Once it is engaged, a pump goes to work to push washer fluid from your reservoir into a series of tubes that are connected to nozzles located on the front or back of your window.

## WHAT GOES WRONG

If nothing happens when you activate your switch, there are a few things that can be blamed. The first thing you should do is ensure your reservoir has enough fluid. If that's the case, it's likely that pump has failed, or a hose has collapsed.

## SAFETY

Washer fluid is largely made up of methanol; without it, regular water would freeze in the reservoir. It's important to keep your extra bottles away from children as its bright color can easily be mistaken for a sweet drink. When maintaining your vehicle's system, be careful to avoid contact and clean any spill, because it's harmful to pets, too. According to the National Capital Poison Control, the methanol in washer fluid can cause kidney failure, blindness and even death if swallowed.





# Your Heating System

**F**or many locations around the country, fall means crisp temperatures and cool drives to work. Make sure your heating system is working before enduring a teeth-chattering commute. Schedule a visit to your local auto repair shop to test the integrity of your car's heater before the temperatures drop.

## HEATER CORE

**What it does:** This crucial part of your heater resembles a compact radiator. Instead of acting to cool the engine, it is responsible for the defrost and heating capabilities of your vehicle. It directs hot coolant through brass or aluminum tubing, allowing the air you feel inside to be maintained at comfortable levels.

**When it fails:** If your coolant levels are adequate but the air is still cool, it's likely the heater core is clogged or failing. Some signs you may notice include fog inside your car, an overheating engine or an unusually sweet smell.

## BLOWER MOTOR

**What it does:** This electric motor is responsible for pushing air through the vents in your cabin. For air conditioning, it pulls cool air from the vehicle's evaporator. Heated air is taken from the heater core.

You may think you are controlling the motors speed when you change the dial. However, the interior climate control is actually operating a resistor. This part distributes different voltage levels to the motor when you adjust the knob or auto-climate control changes temperatures. A popular style of resistor uses coils to produce resistance and fluctuate speeds to accommodate your comfort.

**When it fails:** A breakdown of this part can lead to an uncomfortable drive home. A professional can test the motor, resistor and relay, which all play a role in a properly functioning blower motor.



# Maintenance for Safety

**B**eing a safe driver is a responsibility held by everyone on the highway. However, it takes more than watching the road and driving defensively to ensure things go smoothly. Drivers must also take the issue of safety maintenance seriously.

Before the cool weather returns, schedule an appointment at your local garage to check the integrity of important safety systems.

## TIRES

According to the National Highway Traffic Safety Administration, nearly 700 people die each year in accidents due to faulty tires. If you notice the tread is low or there are wires showing on your car's tires, do not attempt to drive. Not only are you putting everyone in your vehicle at risk, other innocent drivers may be injured if you experience a blowout on the road.

Most vehicle manufacturers recommend rotating your tires at least every 6,000 miles. In years past, the common rule of thumb was to get this maintenance done every other oil change. Today, synthetic oils and efficient engines are requiring intervals much less often, so it can be harder to keep track of your rotation schedule. It's important to save the date or ask your repair facility to send you a reminder as the day approaches. Properly rotating your tires helps with balancing, evening out tread wear and prolonging tire life.

## BRAKES

If your stopping power is compromised, you may find



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yourself in a dangerous situation. Brake pads are designed to begin making noise when they require to be changed, modern vehicles even feature brake pad wear sensors which

trigger a warning light on the dashboard. Change the brakes at the first sign of trouble to avoid costly repairs by replacing rotors and calipers that can become damaged.

## WINDSHIELD

Your view of the highway should always be cleaned and free of cracks or blemishes. Avoid using any tint on the windscreen; it's not only illegal

in most states but it can lessen your view quality. If your windshield is damaged from rock chips, hire a professional to repair it. Most small cracks can be fixed inexpensively.



# Is Your Smart Car Secure?

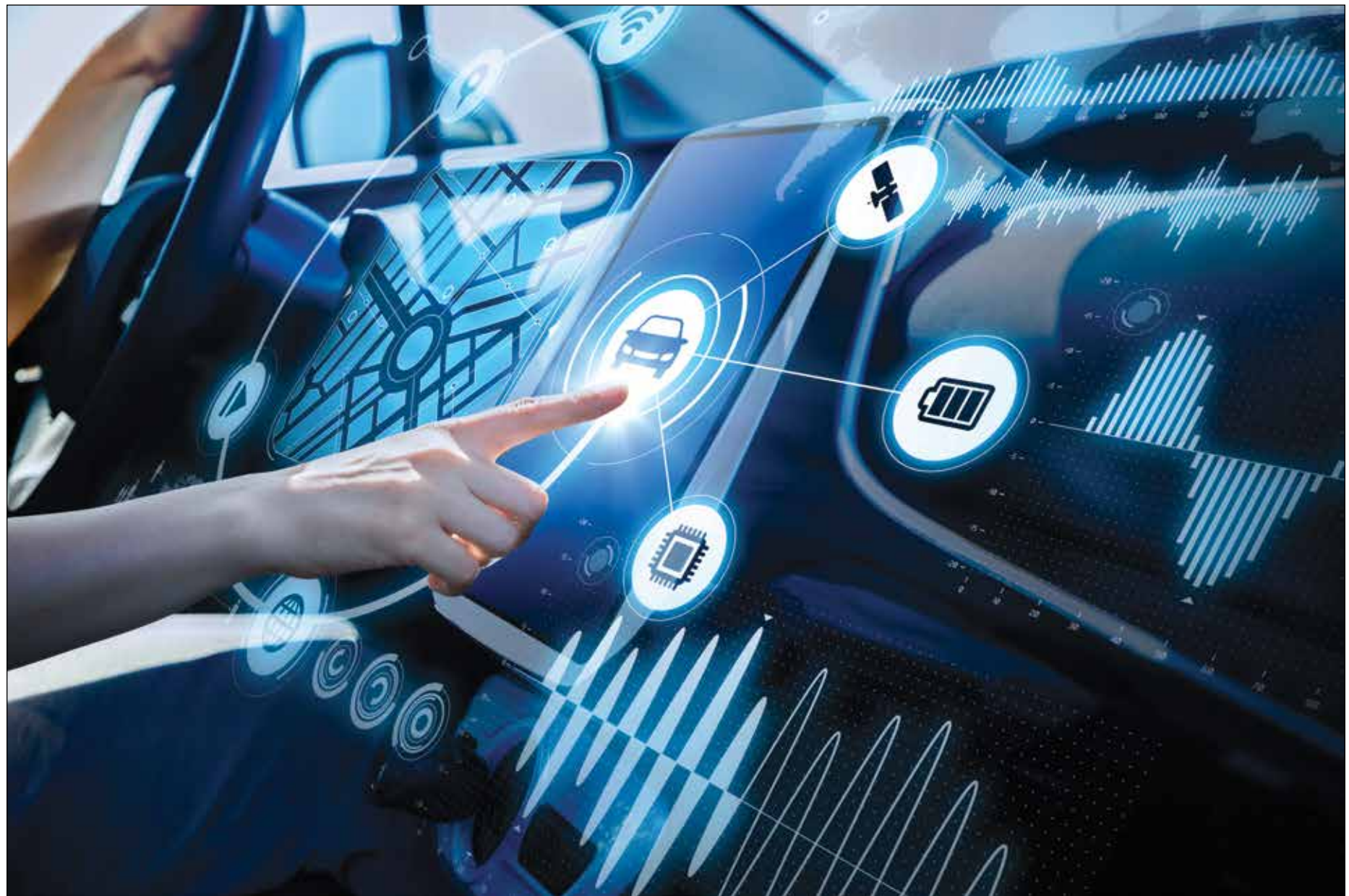
Cybersecurity has been long associated with computers and other internet-connected devices. Today, there is a new threat and the results can come with serious consequences. This autumn, take the advice from the National Highway Traffic Safety Administration and protect your vehicle from cyber threats.

In 2015, the first-ever recall due to automotive cybersecurity was made. Fiat Chrysler recalled 1.4 million vehicles in the United States to include software which prevented hackers from controlling the engine, steering and other settings. The flaw was discovered when researchers hacked into a Jeep Cherokee, shutting down its engine as it drove. The issue led the NHTSA to act and encourage the automotive industry to take cues from the National Institute of Standards and Technology Cybersecurity Framework.

## KEEPING TO THE RULES

Innovations in driver assist functions such as collision warning, emergency braking and safety communications are incredible features. While the advantages are beneficial to drivers, they all require a vehicle to be connected to a network, meaning there is a level of vulnerability.

The efforts to make smart cars secure is not only the responsibility of the manufacturers. While OEM providers are doing their due diligence in protecting the software included, there are many other agencies like e regulatory bodies, insurance companies, technology giants and telecommunication providers are working to keep you safe.



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As new risks are becoming prevalent, important bills like the Spy Car Act, Security and Privacy in Your Car Study Act and SELF DRIVE Act have been instilled by national governments to ensure the safety of the passengers inside connected vehicles.

## PROTECT YOURSELF

Lawmakers are working endlessly to tighten security for automotive cybersecurity. However, there are actions you can take to protect yourself and vehicle in the meantime. Follow these tips from insurance provider Geico.

- **Keep in touch with the manufacturer.** Be on the lookout for important messages about notices like recalls regarding cybersecurity. Make sure to schedule an appointment to correct issues as soon as they are discovered, sometimes it may be as simple as a

software update.

- **Protect your fob.** If your keyless entry remote is near your car, it is possible for hackers to use a wireless signal to unlock your car or change safety settings. Consider storing your key fob in a metal box when you're parked.



# National Preparedness Month

Each September, the Department of Homeland Security promotes National Preparedness Month to encourage Americans to be ready for anything. Don't forget your vehicle.

Ignoring what may seem like minor mechanical issues can have serious consequences. These issues will only continue to grow, leading to an unreliable vehicle or expensive repairs.

Here are a few tips from the Car Care Council to keep in mind when preparing your automobile.

## KEEP FLUIDS TOPPED OFF

It is recommended to check fluid levels at least once a month. Keep track of fluids that require constant refills as there may be a leak or a defect that demands immediate attention. The Council recommends checking under the hood while you fill up your gas tank; it's easy to check engine oil, coolant and brake fluids while your vehicle is being refueled.

## CHARGING SYSTEM

In an emergency, you may not have time to call a friend for a jump if your battery is dead. If you feel your charging system is not working properly, a qualified technician can easily run a test to see how much life is left in your alternator or battery. It's important to note that extreme temperatures can take a serious toll on the components involved in a charging system, so take extra notice in the heat or cold.

## PREPARE A KIT

Having an emergency kit stored in your vehicle is of the utmost importance. Without one, if you break down in a secluded area, you may be left without important supplies while you wait for help.

Some great things to pack in your

kit include:

- A road atlas;
- First-aid kit and flashlights with extra batteries;
- Non-perishable food and blankets; and
- Jumper cables or charged-jump box.

## BELTS

A belt operates a system of pulleys to ensure important parts are engaging. When the rubber begins fraying or cracking, the belt could snap, leaving you stranded. Keep an extra belt and a copy of your vehicle's routing diagram in your vehicle.



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# Get Your Wheels in Line

**A**fter driving through the rough conditions of summer road-construction projects, it's likely your vehicle is in need of an alignment.

Hitting potholes, curbs and normal wear from your car's steering components can cause your wheels to point the wrong way.

While fall is the perfect time to perform an alignment due to the many road hazards created during warmer temperatures, don't forget to add it to your regular maintenance schedule all year.

## HOW TO KNOW IT'S TIME

It's not easy to see that your car needs an alignment. Sometimes the wheels will only be off by a hundredth of a degree. However, the way your car handles will provide the telltale signs while you're in the driver's seat. Pay attention for these symptoms while traveling.

- When you let go of the steering wheel, the vehicle may pull to one side.

- While driving down a straight and flat road, your steering wheel can be unbalanced. Pay attention to the angle of the logo in the center, if it isn't straight, make an appointment.

- It is also common for



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steering wheels to constantly vibrate while traveling when an alignment is required.

## HOW IT'S PERFORMED

A wheel alignment is not a job for the DIY mechanic. The procedure requires a special machine with technology to determine the proper angle of

your tires. There are a series of suspension angles called toe, thrust, camber and caster that impact the direction wheels move. To ensure a smooth ride, each part must be properly aligned to the manufacturer's specifications.

Once your vehicle is connected to an alignment

machine, special sensors and cameras work to show the exact degree where a component must be adjusted.

## HOW IT AFFECTS YOUR CAR

The main concern when driving an unaligned vehicle is safety. Especially when trav-

eling at high speeds, steering can be extremely difficult, affecting your reaction time to hazards. It also takes an enormous toll on your tires. When driving with proper alignment and regular tire rotations, you will get more out of your car's shoes and expensive-suspension components.

# Installing a Hitch

If your vehicle isn't equipped with a factory hitch but you need a way to haul, the aftermarket has you covered. Whether you're looking to pull a trailer, so you can bring more gear on autumn camping trips or want to host October hayrides, a professional installation is easy and inexpensive.

## CHOOSING THE RIGHT HITCH

Before meeting with an installer, it's important to understand the different classes associated with a hitch. You will need to determine the average amount of weight you will be pulling in addition to how much your vehicle can safely haul.

Here are a few of the common class sizes you should expect:

- **Class I & II:** Capable of towing up to 3,500 lbs., they are a great choice for those with sedans or small trucks. They work best for moderate hauls of cargo like motorcycles and small utility trailers.

- **Class III:** Comfortably tows up to 6,000 lbs. You will commonly see Class III hitches installed on pickups, minivans and full-size SUVs. They're the best option for hauling things like mid-sized campers, boats and large-utility trailers.

- **Class IV:** Tow up to 10,000 lbs. with this hitch. Typically, they are found on heavy-duty pickup trucks. They make great haulers for heavy loads like large campers, boats and some equipment.

Whether you want to use your hitch for recreation or work, a professional can show you the best option for your vehicle.



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## THE INSTALLATION

Aftermarket hitch manufacturers offer many direct fit options which simply bolt onto mounting holes. Some vehicles require a bit of modification to safely install a

hitch, so costs of labor may fluctuate by model. If your automobile doesn't have an existing tow package, it's likely that some wiring will be necessary. To operate a trailer legally, its taillights must be

tied into your vehicle's system.

## CUSTOMIZE

If you're worried about a hitch degrading the appearance of your vehicle, there are many customization tools

available. When you don't have a trailer connected, you can place a decorative cover featuring the logo of your favorite sports team or vehicle manufacturer, or with additional wiring, an extra brake light.