PREMIUM GUARD

IS ENGINE OIL AFFECTED BY A RICH RUNNING ENGINE AND WILL THE PROPER OIL FILTER HELP THE ENGINE LIFE IN THIS SITUATION?

Engines need a precise mixture of air and fuel to run properly. The ideal ratio, referred to as the stoichiometric ratio, is 14.7 parts air to 1 part fuel. A mixture that has less than 14.7 parts air (for example, a ratio of 12:1) is said to be "rich". A rich air/fuel ratio can affect many different parts of the engine, including the oil.

Engine Oil Fuel Dilution

In a healthy engine, nearly all the fuel that enters the cylinder is burned during the combustion. With a rich mixture, unburned fuel is left inside the cylinder. That fuel eventually flows past the piston, into the crankcase where it mixes with the engine oil. This can have some disastrous effects, such as:

- Lower oil viscosity: Fuel dilution lowers the engine oil's viscosity. This reduces the oil's ability to provide a protective barrier between internal engine components. Friction quickly begins to build between rotating parts, causing them to overheat and fail.
- Fuel wash: The excess fuel can wash the cylinder walls, wiping away essential engine oil. This causes friction to built up between the pistons and cylinder walls, leading to damage.
- Reduced effectiveness of oil additives: Detergents are added to engine oil to prevent sludge build up. Fuel weakens these additives, leaving the engine vulnerable to sludge accumulation.
- Increased oil consumption: Fuel-diluted oil has a very low viscosity. This allows it to slip past the piston rings, into the combustion chamber where it is burned. As a result, the engine consumes more oil.
- Accelerated oxidation: Engine oil that is mixed with fuel oxidizes quickly and performs poorly.

In each of these scenarios, the end result is extensive engine damage or complete engine failure.

Common Causes of a Rich Mixture

There are a number of engine problems that can result in a rich air/fuel mixture. Some of the most common include:

- Leaking fuel injector
- Excessive fuel pressure
- Restricted air intake
- Exhaust restrictions
- Faulty engine sensors

On late-model vehicles, the engine control module will usually try to compensate for the rich condition. It does this by reducing fuel injection.

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Vehicles at Risk of Fuel Dilution

Any vehicle can suffer from fuel dilution, but modern, direct-injected engines are especially susceptible. This is because the fuel is sprayed directly into the combustion chamber instead of the intake manifold. As a result, the fuel easily washes past the pistons into the crankcase.

Engines that see a lot of cold starts and/or a lot of short trips are also more prone to fuel dilution. Why? Because the engine runs richer when it's first started.

Effects on Oil Filtration

Fuel-diluted oil takes a toll on the entire lubrication system, including the oil filter. In some cases, the filter may help the situation for a while by trapping contaminants created by dilution.

Changing the oil and filter regularly can help combat dilution, but it's not a cure for the problem. A rich-running engine should be repaired to restore the proper stoichiometric ratio. A proper air/fuel ratio has other benefits as well, such as improved engine performance and increased fuel economy. Don't live with a rich running engine; get it fixed right away before it's too late.

WHAT CAN HAPPEN IF YOUR AIR FILTER IS NOT FILTERING PROPERLY?

Whether you complete your own routine maintenance on your vehicle or take it into your favorite service center, you probably always wonder if you really need to change out all the filters as often as recommended. After all, if your engine air filter is a little contaminated, won't it still protect the engine? Let's do some quick fact checks to find out.

What Does the Engine Air Filter Do?

On the surface, your air filter performs the following function:

- Traps debris that could enter the engine
- Delivers clean air to the engine
- Allows the right amount of air in for complete combustion

Your engine draws in air every time it goes through a combustion cycle, sucking it in as the pistons move back down the cylinders. Your air filter stops debris from getting into the cylinders, reducing friction and allowing your engine to operate at peak efficiency.

What Happens to the Engine if the Air Filter is Damaged?

If you leave the air filter in beyond its recommended life, it is possible that the filter medium can become damaged and allow a portion of the dirt and debris it is supposed to stop into the engine. This dirt will then mix with the engine oil, reducing its ability to protect the engine. The resulting grit can be harmful to the cylinder walls and bearing surfaces. This damage will lead to reduced engine performance and, if allowed to continue, could cause complete engine failure.

What if You Use a Different Air Filter?

While you might find an air filter made for a different vehicle that has the same dimensions as the one made for your vehicle, it may not seat perfectly onto the filter mount. This can allow unfiltered air to slip past and damage your oil and engine. Do the right thing and get the filter specified for your car.

Your engine is a carefully crafted machine and every part, including the air filter, works together for the best performance. When you skip a simple step like replacing the air filter, you risk damaging your engine.

DOES THE OWNER'S MANUAL COVER HOW OFTEN THE AIR FILTER SHOULD BE REPLACED?

Manufacturer recommendations on when to change your engine air filter can vary greatly – from 12,000 to 45,000 miles. You'll want to check your vehicle's owner manual to be sure. While your manufacturer will have a recommended time frame for air filter replacement, if it's dirty, don't wait.

Different driving conditions can accelerate the need for air filter replacement. Dusty conditions, off-road driving, or desert-like environments can clog filters more quickly. Regular driving in urban environments or heavy traffic can also reduce the life of your automotive air filters.

You should check your air filter at every oil change or at least twice a year.

Dirty Air Filters Affect Acceleration

A dirty filter can allow accumulated dust, dirt, and contaminants to get into your engine, which can inhibit its operation. In extreme cases of neglect, it can even degrade and flake off pieces of the filter into the engine.

A dirty filter can dramatically reduce your vehicle's acceleration by as much as 11%, according to a Department of Energy study. In older vehicles with carbureted engines, dirty air filters could also negatively impact gas mileage. That's no longer the concern, however, in any vehicles newer than the 1990-1991 models when the last vehicles with carbureted engine were sold.

What are Oiled Filters?

While paper filters are the most common and work in most situations, you may consider oiled filters, which trap more contaminants. The oil absorbs additional dirt that may not be trapped by the micron mesh. Oiled filters are more expensive, but have a substantially longer life, up to 50,000 miles between service. It can also be cleaned, recharged, and reused.

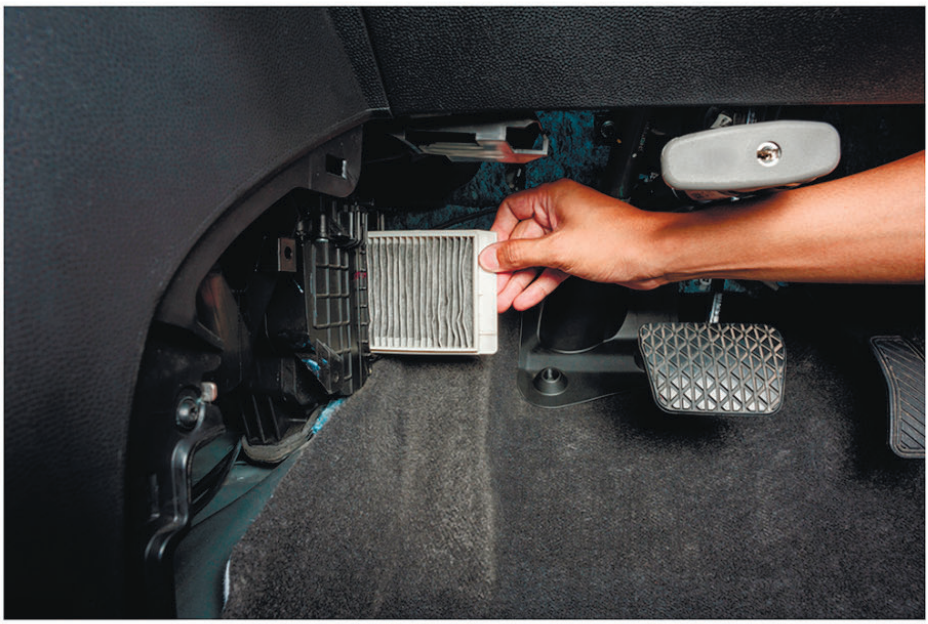
What is a Pre-Charger?

If you're driving in extremely dusty locations, you may want to think about adding a pre-charger. A pre-charger is a polyester "bonnet" that fits over the air filter. By wrapping the air filter, you get an additional layer of filtration without reducing engine air flow. Pre-chargers will need to be cleaned and oiled approximately every 5,000 miles to keep optimal performance.

What to Look for in a Replacement Air Filter

You want to look for air filters that can deliver optimal dirt holding capacity and filtering efficiency to provide the maximum protection for your engine. Make sure the filter you choose meets or exceeds OEM standards with at least 99% efficiency. In addition, air filters should provide a minimum of 12,000 miles of engine protection from dust and harmful particles with low pressure drop to maintain optimal air flow.

CAN REPLACING A CABIN FILTER ON A REGULAR INTERVAL HELP TO EXTEND THE LIFE OF THE AIR CONDITIONING AND HEATER COMPONENTS?



Cabin filters prevent harmful dirt and debris from entering your vehicle's interior. But did you know they also protect your car's heating, ventilation, and air conditioning (HVAC) system? Cabin filters are nearly as important to your vehicle's health as they are to your own.

Cabin Filter Construction

The cabin filter is a simple way of protecting – not only your lungs – but your vehicle's HVAC components. Most cabin filters have a pleated paper filtering element mounted to a plastic frame. Contaminants get trapped in the element before they enter the vehicle's HVAC system and interior.

There are two basic types of cabin filters: particulate and activated charcoal. Particulate filters trap dust and debris. Activated charcoal filters do that too, while also absorbing fumes and odors. Both filter types are capable of providing protection for the HVAC system.

How the Cabin Filter Protects the HVAC System

Even though we take heat and A/C for granted, the HVAC system is quite complex. Heated or cooled air must pass through a maze of tubes and ducts before it reaches the interior. The cabin filter is placed at the beginning of this maze, in the HVAC system's air intake. Outside air gets pulled into the system by the blower motor. That air passes through the cabin filter before it reaches the interior – or any of the HVAC system components. The blower motor, heater core and A/C evaporator are all protected by the cabin filter. It traps dust, dirt, and pollen before they can contaminate these vital (and often expensive) HVAC parts. This improves HVAC performance and extends component life.

The Importance of Cabin Filter Replacement

Over time, the cabin filter becomes clogged with pollutants. When this happens, it blocks airflow into the HVAC system. As a result, the HVAC system has to work harder to heat and cool the cabin. For example, the blower motor may have to be run longer, or be set on a higher setting, to pull in enough air. This extreme use shortens component life.

In some cases, a filter that is severely restricted can also allow contaminants to enter the HVAC system. The blower motor may pull dirt and debris from the over-saturated filter, sending it directly into the evaporator and heater core. This can clog and damage these critical HVAC components.

For these reasons, regular cabin filter replacement is essential for HVAC system health. Typically, charcoal filter replacement should be done once a year, or every 15,000 miles. Particulate filters are generally replaced every 30,000 miles. Both filter types should be changed more frequently on vehicles that are driven in dirty, dusty, or high-pollution areas.

Quality Cabin Filters for Maximum Protection

Not all cabin filters are created equal. Some cut-rate filters don't trap enough contaminants to be effective. When you choose Premium Guard cabin filters, you're guaranteed the best performance. Premium Guard cabin filters trap up to 99% of airborne contaminants to protect your HVAC system. Consider the cost of replacing a evaporator or heater core – you'll quickly realize a high-quality cabin filter is a must.

ARE ALL CABIN AIR FILTERS THE SAME?

More than 90% of new cars and trucks have cabin air filters, but many drivers don't know it. Cabin filters are usually behind the dashboard or under the windshield and not always the easiest to find. We've grown up checking the air filter at each oil change, but not the cabin filter. Cabin air filters didn't start showing up in cars until the late 1980's.

What Does a Cabin Filter Do?

The cabin filter is designed to filter the air coming into the vehicle's cabin. It keeps pollutants, dust, and pollen from getting into the air circulation in the passenger compartment.

A clogged filter can lead to reduce air flow or bad odors inside your vehicle.

Are All Cabin Air Filters the Same?

There are two types of cabin air filters:

1. **Particle (Dust-type) cabin filters** – Dust-type filters trap particles that are very small from getting into your vehicle. The best ones snag particles as small as 0.3 microns. By comparison, the width of a human hair is approximately 100 microns. It handles most pollen, mold spores, soot, smoke, tire dust, and bacteria.

2. **Activated Carbon Cabin (Combination Dust/Odor) filters** – Combination dust and odor filters have an additional element to reduce or eliminate odors, such as activated charcoal. In addition to particle removal, the activated charcoal absorbs harmful gases, fuels, ozone, and carbon monoxide. It also helps prevent mold buildup. There are also versions with anti-bacterial coating for added protection.

Just like air filters, different vehicles use different cabin air filters. You need to make sure you pick the proper one for your vehicle. You can look up the correct filter for your vehicle using the Premium Guard Filter Look-Up tool.

How Much Do They Cost?

Like most things, you get what you pay for. The smaller micron-rating a cabin air filter has, the better job it will do at filtering out contaminants and pollutants, but the more it will cost.

How Often Do I Need to Change My Cabin Air Filter?

Your best bet is to check your vehicle's owner manual for location, type, and recommended cabin filter replacement schedule. A good rule of thumb is to change your filter at least once a year or every 12,000 to 15,000 miles. If you do a lot of driving in urban areas, heavy traffic, or in dusty environments, you may need to change it more frequently.

It's important to change your filter, not just so your car smells good, but filters can get clogged and restrict airflow. Restricted airflow can affect your air conditioner, vents, heater, and defroster. Dirty cabin air filters can also allow mold and bacteria to grow.

WHAT KIND OF DAMAGE CAN BE CAUSED BY A MISSING CABIN AIR FILTER?

While updating the maintenance logs for your car, you see that replacing the cabin air filter is recommended. You pull it out and discover it is completely clogged with leaves, dirt, and even twigs. No wonder you don't have any heat! So, you skip replacing the cabin filter and just throw it away. You figure you don't mind a little extra dust on your daily drive. Was that a good idea or are you about to cause some kind of unseen damage to your vehicle?

What Does a Cabin Air Filter Do?

While it might seem like it's just a piece of paper that gathers dust, car cabin filters are actually part of the engineering design for the entire vehicle. The first job of the filter is to remove:

- Dirt
- Dust
- Pollen
- Smoke
- Smells
- Larger debris

However, the cabin filter also restricts airflow past the condenser and heating coil into the passenger compartment. This resistance is calculated into the performance of the climate controls for your vehicle. When you remove that restriction by taking out the cabin air filter, a whole host of problems can pop up.

Poor Climate Controls

First, you will likely be too hot or too cold. If you own a vehicle manufactured in the past decade, your onboard computer will try to compensate for the lack of an air filter by altering the power supplied to the fans, but that can reduce the lifespan of the entire climate control system.
Your car was built to last the longest with all of its components in place, including the cabin air filter.

Breathing in Pollution

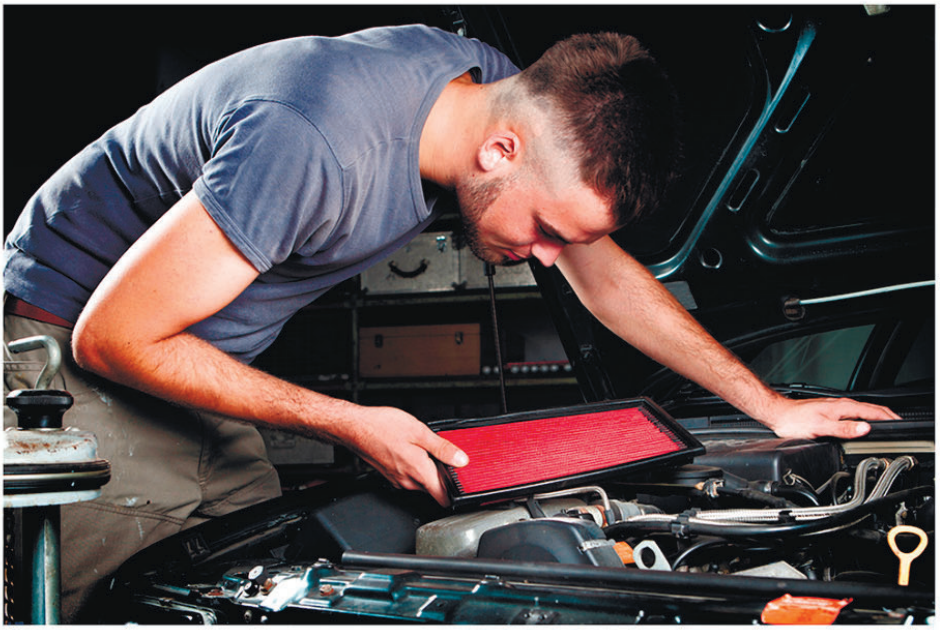
Of course, the most noticeable problem with a missing cabin filter is the air quality. You will be breathing in all of the contaminants spewed by other vehicles on the road, like diesel fumes and burning oil. Allergens also make its way in and won't be scrubbed before being circulated through the cabin.

Ripped and Torn Ducts and Burnt Blower Motors

There is also hidden damage that occurs when a cabin air filter is missing. Remember the leaves and twigs mentioned at the beginning of the article? Those were captured before they got to the blower motor and the fragile ducting that delivers fresh air to your cabin. It doesn't take much for a stick or pebble to puncture a duct or get caught in the motor. You will notice a further drop in the efficiency of your air conditioning as the motor works harder and ends up burning out.

A quality cabin air filter replacement by Premium Guard Inc. costs less than twenty dollars and only takes a few minutes to switch out. In today's modern vehicle, replacing the cabin air filter is extremely easy to do. Generally, they are located behind the glove box in the passenger compartment but you can refer to the vehicles owner's manual to determine the exact location. By using a screwdriver and a little patience it can be replaced easily with very little effort. If you skip the cabin air filter replacement, you could end up spending thousands on repairs to your entire heating and air conditioning system.

WHAT HAPPENS IF AN AUTO AIR FILTER WORKS TOO WELL?



Does it seem like you are always throwing away money on your auto air filter replacement? If you think that opting for a filter with a denser medium might extend the time between filter changes, you will only end up causing more damage to your ride.

What Does Your Air Filter Do?

- Prevents dust and contaminants from entering the engine
- Maintains a steady air flow
- Maintains a balance of power among all engine components

Your engine air filter not only removes contaminants from entering the combustion chamber, it also maintains the correct airflow for the best performance. The manufacturer of your vehicle stipulates what kind of air filter should be used in order to maintain the right mix of air and fuel.

Restrict Air Flow and Restrict Horsepower

If you install a denser filter than what is suggested for your car, you will be restricting the air flow to the engine. If the engine lacks oxygen, the fuel has a more difficult time igniting, which in turn delivers less horsepower and lower fuel economy. You might even experience a lag between putting the pedal down and feeling your ride launch off the line.

It's like sipping through a straw when you really want to take a big gulp.

This problem can also occur if you put off replacing the filter as it can become clogged with dirt and debris.

Heavy Duty Filters are for Extreme Environments

While there are heavy duty filters and bonnets on the market, they are intended for areas with extreme amounts of pollution and dust in the air, like the desert. They are built for vehicles that run thousands of miles through choking clouds. Those vehicles are designed to withstand the extreme conditions and to work with those automotive air filters.

Your daily driver really just wants its paper engine air filter changed every 30,000 miles with one that meets the OEM specs like those produced by Premium Guard Inc. When you use the right filter for the right application, you extend the life of your ride while lowering your overall maintenance costs.

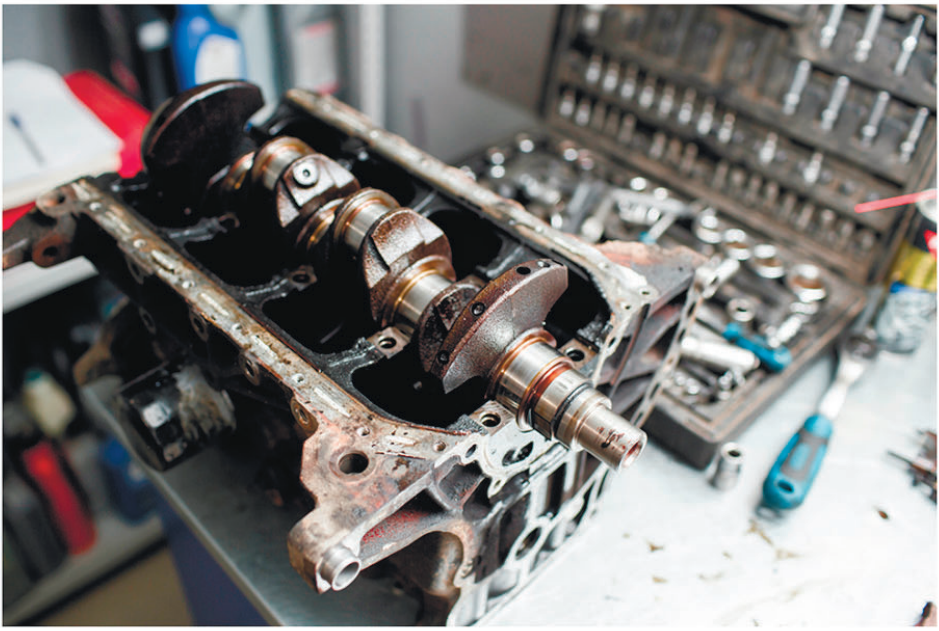
What About those Lifetime Automotive Filters?

It is possible to find an air filter that is advertised to last the lifetime of your vehicle. These are typically made out of cotton fibers and are oiled for best performance. Instead of switching out and discarding the paper cartridge, you or your service center wash out the oiled filter, recharge it, and reinstall it.

If you do your own maintenance, these can be an affordable option over time. However, if you rely on your local quickie-lube shop for your basic car maintenance, they may not have the knowledge or time to properly care for your fancy filter.

Do what's right and follow your owner's manual to replace your engine air filter on the recommended schedule.

WHAT CAN HAPPEN TO AN OIL FILTER WHEN THE PRESSURE RELIEF VALVE FAILS?



The oil pump maintains oil pressure to lubricate internal components. Most oil pumps are positive displacement pumps, which deliver more oil than an engine needs. To address this, there's a pressure relief valve located at the oil pump outlet. Its purpose is to open when engine oil pressure reaches a certain value. A problem with the pressure relief valve can cause damage to the engine oil filter and to the engine itself.

How an oil pump works

Modern oil pumps are either driven off the camshaft, crankshaft, or timing belt/chain. This allows the oil pump to rotate faster and distribute more oil when engine RPMs increase. The pump turns and pulls oil from the pan through a pickup tube. It then pushes pressurized oil through the oil filter and into the engine.

There are two common types of pumps:

- Gear: A gear-type pump uses two spur gears in a housing. Oil is pulled into the housing and through the gear teeth, where it is pressurized. The oil then exits the pump outlet and is sent to the engine.
- Rotor: A rotor-type pump uses a lobe-shaped gear and rotor inside a housing. Oil enters the housing and is pulled into space between the lobes. The lobes mesh, pressurizing oil to be sent throughout the engine.

How an oil pump pressure relief valve works

Under normal pressure conditions, the oil pressure relief valve is forced down against a spring. As a result, oil goes directly through the pump to the engine. As oil pressure created in the system increases, the valve's piston is forced against the spring causing it to open. This allows oil to flow back into the crankcase preventing excessive oil pressure. The spring tension of the relief valve determines the maximum oil pressure.

Damage caused by a faulty pressure relief valve

Oil pump pressure relief valves can fail in either the open or closed position. This can cause damage to the engine oil filter and to the engine itself.

- A pressure relief valve that is stuck open can allow too much oil to bleed off. This results in a lack of oil pressure and catastrophic engine damage.
- A valve stuck closed will result in excessive oil pressure. This can blow out the oil galley plugs in the engine block. When this happens, the engine loses a large amount of oil and pressure drops. Internal components are starved of oil, causing them to quickly overheat and seize.
- Often when the pressure relief valve sticks closed, severe damage to the oil filter is the result. The extreme pressure causes the gasket that seals the oil filter to the engine block to fail which results in a severe oil leak and loss of lubrication to the engine.

Damage caused by a failed pressure relief valve typically results in an engine that will have to be rebuilt or replaced. Obviously, this is an expensive repair.

How to prevent relief valve failure

There is no sure way to prevent relief valve failure. In some cases, the valve just wears out over time. However, regular oil changes help prevent sludge and varnish build up, both of which can cause the valve to stick. Changing your vehicle's engine oil according to the maintenance schedule is the best way to prevent relief valve problems.

WHAT ARE THE BENEFITS OF PURCHASING AN EXTENDED LIFE OIL FILTER?

Many automotive manufacturers are increasing oil change intervals to 7,500, or even 10,000 miles, so it makes sense to consider an extended life oil filter for your next service.

Benefits of an extended life oil filter

Filter life.

The most obvious advantage of an extended life oil filter is its long life. The filter will provide maximum filtration for an extended duration. For example, Premium Guard extended life filters are designed to last up to 10,000 miles. This works perfectly with late-model vehicles, which have extended oil change intervals. Vehicles running synthetic motor oil will also benefit from a Premium Guard extended life filter.

Heavy Duty Construction.

Since they're designed to last longer, extended life oil filters are built tougher. Traditional oil filters are made from cellulose. By comparison, Premium Guard extended life oil filters are made from a synthetic resin media, providing 98% efficiency. They're built to withstand high flow and high pressure, exceeding the capacity of some OEM filters by 10%. Step up to the Premhium Guard EX series of extended life filters, and you get a silicone gasket and silicon anti-drain back valve. Both of these design elements are built to withstand extreme temperatures for longer life.

Money savings.

In the long run, extended life filters can save you money. Regular oil filters should not be used on vehicles that go a long time between oil changes. Many traditional car oil filters are designed for only 5,000 miles of use. So, to protect your vehicle, you need to change the oil filter between services, or you have to change your oil more frequently. Both of these alternatives cost more money than simply purchasing an extended life oil filter.

Timing savings.

Whether you do it yourself or have it done at a shop, changing oil takes time. Using synthetic oil and an extended life oil filter allows you to go longer between oil changes. This means less time spent crawling under your car, changing oil, and getting dirty. Or, less time is spent at the repair shop, reading old magazines, and drinking stale coffee.

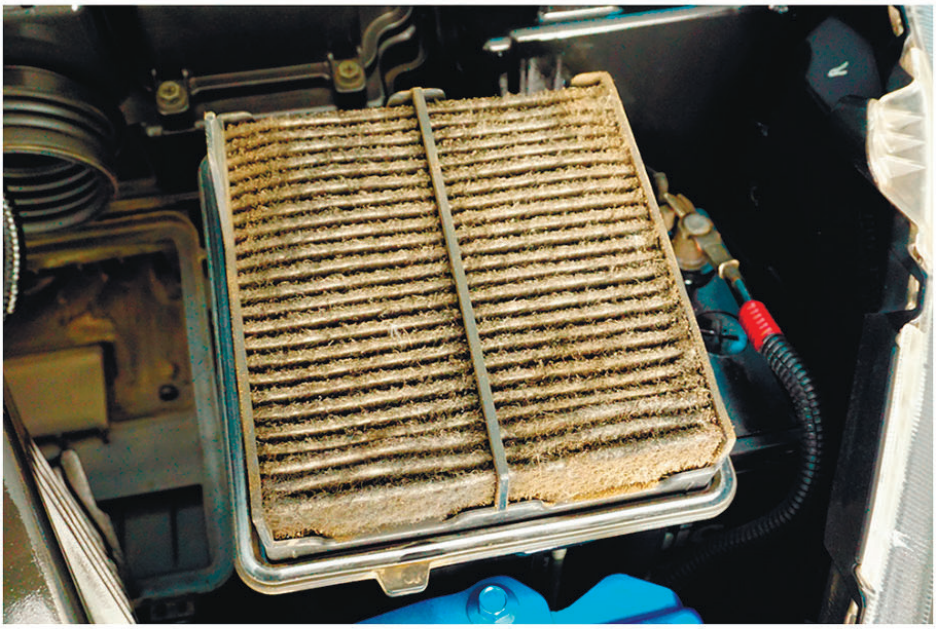
How to choose an extended life oil filter

Not all extended life oil filters are created equal. In fact, some are just traditional filters, hiding under an extended life label.
A good quality extended life filter will typically cost more than a regular filter. It will also have a more durable construction, the specifics of which should be listed on the box or the manufacturer's website. Extended life filters will typically have a synthetic media which can trap smaller particles. Filter life will also be listed on the box or website. An extended life filter should last up to 10,000 miles.

Extended life oil filters make a difference

If you have a vehicle that undergoes prolonged oil change intervals, an extended life oil filter is a good idea. Spending a little more on your filter will save you both time and money in the long run, while also protecting your engine more efficiently. So, the next time you need to change your oil, reach for a Premium Guard extended life oil filter.

CAN REPLACING YOUR AIR FILTER IMPROVE GAS MILEAGE?



A clean air filter protects the engine from harmful debris without obstructing airflow. To promote engine health, most automotive manufacturers recommend replacing the air filter every 15,000 to 30,000 miles. But, does replacing your car's air filter also improve gas mileage?

How an Air Filter Affects Fuel Economy

Dirty air filters reduce airflow – Air filters trap contaminants in a media made of paper and synthetic fibers. Over time, this media becomes filled with dirt and debris, preventing the engine from breathing properly. As a result, the engine will work harder and use more fuel.
This affect isn't as noticeable on modern, fuel injected engines. Late-model vehicles use one or more sensors to measure the amount of air entering the engine. The vehicle's onboard computer uses this information to adjust engine operation as needed. To some extent, the computer can compensate for a dirty air filter. If, however, the air filter is clogged with dirt, the computer may not be able to.

Clear air filters improve performance and economy – Late-model vehicles aren't as sensitive to a dirty air filter as older vehicles are, but that doesn't mean they don't benefit from air filter replacements. Dense, fresh air always improves engine performance. As a result, you won't be tempted to stomp on the accelerator as much. This helps improve driving habits for increased fuel economy.

How to Restore Performance and Efficiency

Signs of a dirty air filter – For optimum performance, a dirty air filter should be swapped out. How grimy does the filter need to be to warrant replacement? If the filter looks dirty when held up, and allows very little light to pass through, you need a new one. In most cases, the air filter is pretty easy to access. It's kept in the air filter housing, which is usually held in place by clips or screws. It's important to note that a dirty, paper air filter should not be cleaned – it should be replaced.

How to select a replacement air filter – There are a wide range of air filters on the market, some of which perform better than others. For maximum engine performance and efficiency, it's important to select a high-quality filter. Although they may cost more, good filters provide the best combination of airflow and dirt-trapping ability. For example, Premium Guard air filters are designed to meet or exceed OEM requirements, with 99% efficiency. This means the filters trap almost all air contaminants while also ensuring a low pressure drop for maximum airflow. Both modern and classic engines benefit from this design.

Don't wait to replace your air filter – Putting off air filter replacement can cost you money at the pump and jeopardize your engine. The best rule of thumb is to exchange your air filter according to the manufacture's specifications. Replacement intervals can typically be found in your vehicle owner's manual. Don't wait until your air filter is black and filthy. Swap it out early on to make your vehicle – and your wallet – happy.

WILL THE CABIN FILTER REMOVE HARMFUL CONTAMINANTS FROM AIR THAT IS ALREADY IN THE PASSENGER COMPARTMENT?

Cabin filters were first introduced in European vehicles in the 1980s. Since then, they've become standard fare on all cars and trucks sold in the U.S. There's a lot of harmful contaminants in the air, especially in large cities, and cabin filters keep it out so you can breathe easy. Although the concept is simple, it's also quite novel. How did we ever live without the venerable cabin filter? Understanding how a cabin filter works and how filtered air is routed to the interior will help you better appreciate this remarkable invention.

Cabin filter design

Cabin filter construction is pretty simple. Most have a pleated paper filtering element mounted to a plastic frame. Pollutants get trapped in the element, preventing them from entering the vehicle's interior.
There are two basic types of cabin filters: particulate and activated charcoal. Particulate filters trap dust and debris. Activated charcoal filters do that too, while also absorbing fumes and odors.
Not all cabin air filters are created equal. Some have a greater filtering capacity and are designed to last longer than others.

How filtered air is routed to the interior

The cabin filter is placed in the HVAC (Heating, Ventilation, and Air Conditioning) system's air intake. Outside air gets pulled into the system by the blower motor. Outside air passes through the cabin filter before it reaches any HVAC components, or the interior. Contaminants such as dust, dirt, and pollen are trapped in the filter. Some filters may also capture fumes and odors. Not only does this provide vehicle occupants with fresh air to breathe, but it also keeps HVAC components clean. This helps the parts perform better and last longer.

Once the filtered air has passed through the HVAC evaporator or heater core, it enters the cabin through the vents. Most of the time, air flows through the cabin filter from outside the vehicle. But, when the HVAC controls are set to recirculation mode, interior air is blown through the filter before re-entering the cabin. This allows the filter to remove harmful contaminants that are already inside the vehicle. Typically, this is only true of cabin filters that are located in the HVAC case. Those mounted in the engine compartment, under the vehicle's cowl, only filter outside air.

Cabin air filter replacement

It's important to perform cabin air filter replacement on a regular basis. Left unattended to, the filter becomes clogged with pollutants, preventing it from doing its job. This can lead to a stinky, unhealthy cabin. It can also cause poor HVAC system performance.

Typically, charcoal filter replacement should be done once a year, or every 15,000 miles.
Particulate filters are generally replaced every 30,000 miles. Both filter types should be changed more frequently on vehicles that are driven in dirty, dusty, or high-pollution areas.

Replacing your cabin filter with one from Premium Guard is always a smart choice. Premium Guard cabin filters are available in both particulate and activated charcoal varieties. They trap up to 99% of airborne contaminants to keep your vehicle's interior fresh.

WHEN TO REPLACE YOUR ENGINE AIR FILTER WHEN DRIVING IN EXTREME CONDITIONS?

Whether you live in the desert or a big city, the air can be filled with dust, dirt, and other irritants. Your auto air filter serves to clean up the smog to protect your engine and extend the life of your vehicle. Do you need to install an air filter replacement more often in these extreme conditions? Absolutely, but sorting out a service interval can be a bit of a challenge.

30,000 or 12,000 Miles?

As always, start with the owner's manual where the manufacturer may recommend changing out the automotive air filters after 30,000 miles in normal conditions. For extreme conditions, it is suggested that installing an automotive filter replacement twice as often will do the job, but there are a number of other considerations to take into account.

- Extreme weather resulting in dust storms
- Operating in dusty environments such as mines or farming
- Heavy-duty equipment vs. a family minivan
- Disposable or washable filter mediums

If you find that your standard auto air filter replacement is completely clogged after just five or six thousand miles, you may need to look at additional products for extra protection.

Install a Pre-Charger for Added Protection

For cars and trucks operating in dusty regions, a pre-charger can help to extend the lifespan of your filter. These polyester bonnets are designed to fit over the air filter and provide an additional barrier against solids without reducing air flow to the engine. They require cleaning and oiling every 5,000 miles to maintain peak performance.

Oiled-Filters Trap More Contaminants

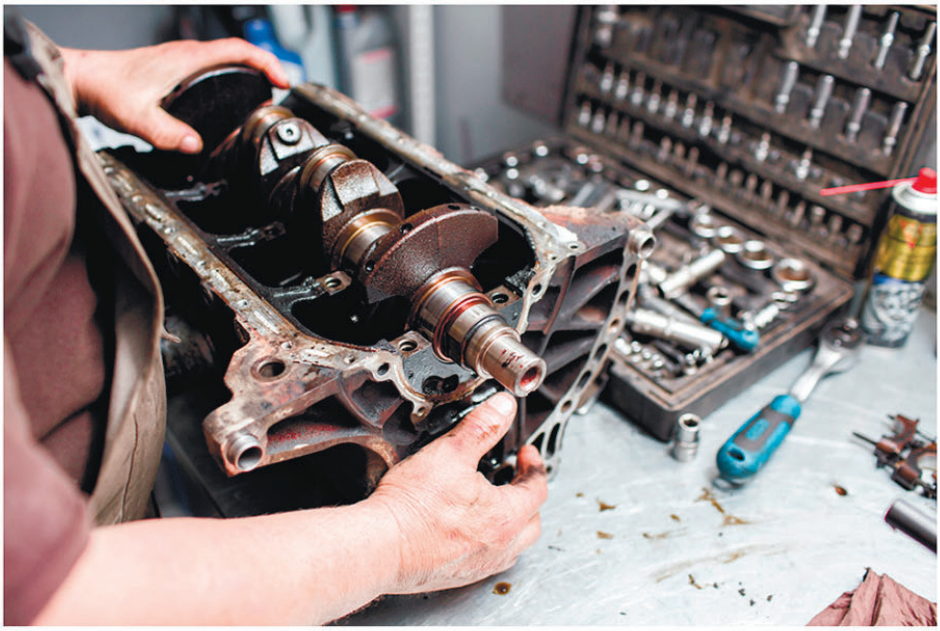
Besides the typical paper replacement filters, there is a premium product available designed to collect even more sediment and can be cleaned to improve the return on your investment. Oiled filters start with a washed cotton medium, oil it, apply an epoxy to protect the filter from wear, and are designed to fit each model. The oil absorbs additional dirt that is not always stopped by the fine micron mesh. They are able to run up to 50,000 miles between services under normal conditions. It can be cleaned, recharged, and reused for the life of the vehicle.

This makes oiled-filters a great option for car owners who drive through the desert on a regular basis. However, the cleaning process takes effort or can rack up additional charges at the service center. Combined with a pre-charger, it is the recommended application for heavy-duty vehicles operating in extreme environments.

Paper Filters Provide Convenience When On the Run

Not everybody looking for a car air filter replacement is interested in performing additional time-consuming maintenance. Fortunately, quality replacement filters from Premium Guard offer an economical option that doesn't add steps to your maintenance routine. After five to six thousand miles operating in a very dirty area, simply change out the paper filter and throw out the old one. It's a simple solution that provides good protection and works to extend the lifespan of your engine.

WHAT IS THE FUNCTION OF THE ANTI-DRAIN BACK VALVE IN AN OIL FILTER?



The oil filter is a very important component; it traps dirt and debris, preventing them from circulating throughout the engine. This protects vital internal parts such as bearings, journals, and cylinder walls.

Another way the oil filter protects and helps lubricate the engine is through the use of an anti-drain back valve. This valve is predominantly used within the spin-on versions of today's oil filter and not a part of the cartridge style filters. Although you may not have heard of it before or know what it does, this valve is extremely important. Extensive engine damage can result if it isn't working properly.

Oil filter design

The oil filter's design might seem simple, but there is a lot more to an oil filter than you might think. Before delving into the details of what damage can be caused by a faulty anti-drain back valve, it's a good idea to know how a car oil filter works. Typical oil filter components include the following:

- **Tapping or cover plate:** This is the plate at the bottom of the filter. It serves as an entry and exit point for oil. It also contains a threaded center hole, which allows the filter to attach to the engine.
- **Filter medium:** Dirt and debris are trapped in the filter medium. Typically, it is constructed from microscopic cellulose fibers along with synthetic fiber. It is then saturated with resin for added strength. The filter medium is folded into pleats to create a greater surface area.
- **Center steel tube:** The center steel tube provides a structure for the filter. It also allows filtered oil to return to the engine.
- Relief valve: The relief valve opens when oil pressure is too great due to clogged filter media. This allows unfiltered oil to exit through the center tube to prevent engine starvation.
- **End disc:** Some oil filters use an end disc to prevent unfiltered oil from leaking into the center tube. Others use a sealant instead.
- **Retainer:** As the name implies, the retainer keeps the filter medium and end disc tight against the tapping plate.
- **Anti-drain back valve:** The anti-drain back valve prevents oil from draining out of the filter when the engine is turned off.

Engine damage caused by a faulty anti-drain back valve

During an oil change, it's recommended you put fresh oil in the new filter before installing it. This is so oil is available to the engine as soon as it's started.

The anti-drain back valve serves a purpose that's similar to this oil change strategy. Every time your engine is shut off, the valve keeps oil from draining out of the filter. This allows the engine to receive oil immediately upon start up.

A faulty anti-drain back valve lets oil drain back into the engine. This keeps oil from getting to the engine when it's first started. The result is engine wear and eventual failure from lack of lubrication. Low-quality oil filters often have a poorly designed anti-drain back valve that doesn't work properly.

Don't settle for low-quality oil filters

The best way to avoid anti-drain back problems is to use a high-quality filter. A good filter usually has a robust anti-drain back valve, designed to protect your engine. For example, Premium Guard offers oil filters that are rigorously tested for leakage and pressure burst. The Extended Life series oil filters also include a silicone anti-drain back valve to withstand extreme temperatures. A top-of-the-line oil filter is an inexpensive way to protect your vehicle's engine.

IS A DIFFERENT FILTER REQUIRED WHEN THE ENGINE USES SYNTHETIC OIL?

There are advantages to using synthetic oil. It last longer, can withstand higher temperatures, and reduces engine wear. Its resistance to break down can keep your engine running smoother for longer, and it's also better for the environment than regular motor oil when it comes to the time it takes to dispose of it. Synthetic oil is more expensive at the start but may be a worthwhile investment in the long run.

Do I Need A Synthetic Oil Filter?

If you are using synthetic oil, do you need a synthetic oil filter? No. The use of the word "synthetic" in the case of synthetic oil filters refers to the material it's made from. Synthetic media is used in the manufacturing process, rather than traditional pleated paper. While you don't have to use it with synthetic oil, there are some advantages. Typically, synthetic oil filters do a better job of trapping small contaminates for a longer period of time (and more miles on your vehicle), meaning less frequent changes. Combined with synthetic oil, it means fewer trips to the shop. Look for an oil filter that provides 10,000 mile protection with at least a 98% efficiency, such as the Premium Guard Extended Life oil filter.

Can I Use Any Car Oil Filter With Synthetic Oil?

You will want to check with your vehicle's manufacturer to make sure, but typically any automotive filters that are made for modern vehicles can be used with any type of oil. Every major motor oil manufacturer says you do not need a special or different oil filter when using synthetic oil. The better quality an oil filter is, the better job it will do in filtering contaminants.

It's best to check what the manufacturer recommends because you don't want to do anything that might void your warranty is a problem arises.

Why You May Want To Pick A Higher Quality Oil Filter

An oil filter does what you would expect it to do; it filters the oil to prevent contaminants and engine by-products from being circulated into the engine. The filter has to be porous enough to let good oil pass through, but trap any particulate matter that could do damage.

The more contaminants that pass into your engine, the more it will reduce the engine's life. The majority of engine wear comes from particles between 5 and 20 microns. The better job a filter does of keeping those particles out of your engine, the better performance you will get. The lower the micron efficiency number, the higher the price. The best high efficiency filters are efficient to about 10 microns and also filter out most smaller particles.

The Society of Automotive Engineers has done extensive car oil filter testing. The group reports that switching from a 40-micron oil filter to a 30-micron oil filter can reduce engine wear by as much as 50%. Switching from 40-micron filtration to 15 micron filtration for your automotive filters can reduce engine wear by as much as 70 percent.

While you do not need a synthetic oil filter, or a special oil filter with synthetic oil, the quality of your oil filter can make a big difference. However, like most things in life, you get what you pay for.

DOES A CABIN FILTER HAVE SPECIFIC SERVICE INTERVALS

Cabin air filters are found on most late model vehicles. They clean the air that comes into the cabin through the ventilation, heating and cooling systems. The filter catches small particles such as pollen, dust, and other airborne materials, so they don't enter the cabin. A person that has allergies or respiratory problems can benefit greatly from having this type of filtration system.

Where Are The Filters Located?

Cabin air filters are usually found behind the glove box or under the windshield's base located where the outside air comes into the vehicle. Some hybrids may have a separate cabin air filter for the battery cooling system located in the rear of the passenger compartment. Many consumers do not realize that they have this type of filter or that it does need to be changed.

How Often Should You Change Your Car Cabin Filters?

Each vehicle manufacturer has their own recommendation on when you should change the filter. This information can be found in the owner's manual of the car. Generally, the recommendation is to change them every 12,000 to 15,000 miles or once a year, whichever comes first. A maximum benefit can be obtained by changing it twice a year.

The driving conditions make a huge difference in when you should do a cabin air filter replacement. If the car is driven in a dusty environment, such as a desert climate or on dirt roads, it will need changing more often to reap the benefits it offers.

What Are The Signs of Needing a Cabin Air Filter Replacement?

Several items can alert you to the need to replace a cabin filter. You may notice a significant reduction of airflow from your air conditioning or heating vents into the cabin. When you turn the fan up to the highest setting for maximum airflow, you may notice that it makes a lot of noise, but the airflow doesn't increase very much. If there are bad odors in the cabin, your cabin filter may need changed, as it isn't capturing them in the filter. Mold and mildew are the most common persistent bad odors that you would notice, these occur if the filter is neglected and it becomes a breeding ground for these types of spores.

The Asthma and Allergy Foundation of America states, "Researchers think nasal allergies affect about 50 million people in the United States, affecting 30 percent of adults and 40 percent of children. Allergies are the 6th leading cause of chronic illness in the U.S."

What Are The Types of Cabin Air Filters?

There are two main categories of a car cabin air filter: dust or dust and odor combination. The dust type can trap particles as tiny as 0.3 microns. This includes exhaust soot, smoke, mold spores, pollen and bacteria Most filters of this type will stop up to 100 percent of all particles that are 3 microns or larger. They will also trap 95 to 99 percent of 1 to 3 micron particles.

The dust and odor combination type of cabin air filters have activated charcoal or baking soda in them to absorb air pollutants and odors. Some of these types of filters also include a light, clean-smelling scent.

WHAT ARE THE DIFFERENT TYPES OF AIR FILTER ELEMENT MATERIALS?

If you have been shopping for an air filter replacement for your vehicle, you may have run across some that offer improved performance and others that offer more affordable price tags. What is the real difference between the different types of air filters? Is one better than another?

The 3 most common filter elements you will find at your local parts store are:

- Paper
- Cotton
- Foam

Let's check how each performs in your car and which one will work best for your vehicle.

Paper: For Affordable and Reliable Performance

The engine or cabin air filter that came with your car is most likely a paper filter. Since your filter should be changed every 12,000 to 30,000 miles, it is made to be as affordable as possible. The woven wood pulp provides good airflow while reducing the amount of dust and debris that can get into your engine and gum up the works.

Paper auto filters are relatively inexpensive and made to be thrown out after each use.

Reuse a Gauze or Cotton Filter to Save Money on the Long Haul

If you are a do-it-yourself person, perhaps you would like to save a few extra dollars and work to protect the environment. Some cotton or gauze auto air filter replacements are designed to be cleaned, oiled, and reinstalled every 5,000 miles. High-mileage vehicles like long-haul trucks or ones that work in a dusty environment benefit from using the cotton filters since you can keep reusing them until the element becomes worn out or damaged. In performance vehicle applications, the air filter is designed to be cleaned and then coated with a special oil that increases the filter's ability to capture more debris.

A cotton filter will cost about twice the price as the paper filter, but the buyer will make that back after the first few times the filter is cleaned and reused. Better yet, this type of filter could last the lifetime of your vehicle with proper maintenance. That's up to 150,000 miles!

Foam Adds Extra Protection in Dusty Environments

Finally, you may find a foam filter or filter wrap in the automotive filter replacement section of your local parts store. These are the least popular kind of filter as the foam doesn't offer the same trapping ability as paper, and it can restrict airflow. Foam is also the least environmentally friendly type of element. You will often find foam filters on farm and lawn equipment. In many of these applications, the foam portion is coated with a special oil that increases the filter's ability to remove debris. If you live in a very dusty area, your service center may suggest adding a foam filter wrap to your standard paper filter to help reduce the amount of debris in your engine.

Ultimately, most drivers looking to care for their daily driver will be happy with the cost and performance of a paper air filter. For improved long-haul performance or for extreme conditions, you may wish to invest in a reusable cotton or foam air filter replacement.

WHAT IS THE OIL FILTER'S PRIMARY JOB?

Have you ever wondered why your oil filter needs to be replaced along with the oil at specified intervals that are recommended by the OE manufacturer? We've created a quick FAQ to help you better understand the importance of regular maintenance and the use of correct parts to extend the life of your engine and car.

What Does an Oil Filter Do?

The car oil filter constantly removes dirt and impurities from the oil circulating around moving engine parts. Clean oil provides greater lubrication and lowers heat buildup due to friction inside the engine.

Your oil filter should be changed every time you change the oil as the medium collects dirt and debris as you rack up the miles on your ride.

How is the Oil Filter Constructed?

Your oil filter is usually cylindrical in shape. The outside case is made out of a thin metal. Inside, there is a fiber medium such as bulk cotton or pleated filter paper, which is what does the job. The medium is held inside the filter by a perforated metal piece that allows oil to flow in and out. It screws into place usually on the side or near the bottom of the engine.

How Does Oil Protect the Engine?

Oil is often referred to the lifeblood of an engine. In reality, it is more like a liquid shock absorber. Every moving part of the engine is constantly rubbing against other metal parts, including the pistons, cams, pushrods, and rockers. Oil provides a protective layer between the components. When the right weight and properly filtered oil is pumping through the entire system, there is less friction and a much lower rate of metal striking metal, increasing the life of the engine and maintaining performance.

What Happens if the Wrong Oil Filter is Installed?

It can be tempting to pick up an oil filter designed for a car that is not quite the same model as yours because it is on sale. However, using the wrong oil filter can lead to some serious problems. Doing so can result in:

- Oil leaking around the filter mount,
- Low oil pressure,
- High oil pressure,
- Dirt entering the oil system through loose fittings,
- Damage to engine components, and/or
- Overheating.

Every part on your engine was designed to work with one another. Every time you add a part that belongs on a different car, you increase the chance of damage or part failure.

What to Look for When Shopping for a Replacement Automotive Oil Filter

While you don't have to buy the authentic automotive filter replacement sold at your dealership, it is very important to purchase one that meets the OEM specs of the original filter. Cross-reference the make and model of your car along with its engine size against the list of filters offered by a filter manufacturer. Verify that the filter is intended to last for the expected duration of your oil change, whether that is 3,000 or 10,000 miles. While one filter will fit a variety of vehicles, none of the available automotive filters will fit all cars.

WHAT ADVANTAGE IS ACTIVATED CHARCOAL TREATMENT FOR A CABIN FILTER?

Cabin air filters improve the health of drivers everywhere by trapping contaminants, such as dust and pollen, providing clean cabin air to you and your loved ones. Cabin filters also help keep the air conditioning evaporator clean to combat microbe growth, which can lead to musty odors.
Traditional, particulate cabin air filters are great. But there's an even better type of cabin air filter: activated charcoal.

Advantages of activated charcoal cabin filters

Particulate filters are very successful at cleaning cabin air, but activated charcoal filters do even more. Not only do activated charcoal filters trap dust and debris, they also absorb fumes and odors.
The charcoal found in cabin filters isn't what you'd throw on a BBQ pit. It's treated with heat and chemicals that allow for odor control. Gases are held on the surface of the activated charcoal filter by adsorption. Because it's so porous, activated charcoal is extremely effective.
Some of the gases controlled by activated charcoal cabin filters can be very harmful. For example, charcoal cabin filters absorb carbon monoxide and nitrogen oxide, both of which are serious health hazards.
Activated charcoal cabin air filters may also have an anti-bacterial coated material. This prevents harmful bacteria from entering the cabin.

Activated charcoal cabin filter maintenance

Activated charcoal cabin air filters should be changed more frequently than traditional filters. Typically, charcoal filter replacements should take place once a year or every 15,000 miles. By comparison, particulate filters are generally replaced every 30,000 miles. Both filter types should be changed more frequently on vehicles that are driven in dirty, dusty, or high-pollution areas.

Like all cabin filters, charcoal activated filters are easy to replace. Any DIYer can handle the task, and in most cases, tools aren't required. On many vehicles, the cabin filter is located right behind the glove box. Simply push the glove box tabs inward to pull the glovebox out. Then, push a couple more tabs to remove the filter cover. At this point, the cabin filter can be accessed and replaced.

Some vehicles may have the cabin filter located at the base of the windshield cowl area. In this case, a plastic panel must be removed to access and replace the cabin filter.
Either way, upgrading your current cabin filter to an activated charcoal filter is a simple task. On most cars, the job can be completed in under 10 minutes.
Activated charcoal cabin filters typically cost more than particulate filters. But you will find it's worth it the next time you're stuck in traffic behind a large rig. A charcoal cabin filter can easily block diesel smoke, improving the quality of your daily commute.

Breathe easy with the best

An activated charcoal cabin filter's performance depends on the quality of the filter. Premium Guard cabin air filters trap up to 99% of airborne contaminants. Just like your home furnace filter, a good cabin air filter helps you breathe easy and promotes good health. Equip your home on wheels with the best – a high quality, activated charcoal air filter from Premium Guard.

WHAT HAPPENS TO AN ENGINE WHEN THE AIR FILTER ALLOWS UNFILTERED AIR TO ENTER THE ENGINE?

The air filter keeps dirt and debris from entering the engine. Most air filters are made from a combination of paper and synthetic fibers that trap harmful particles. Without a functional air filter, dirt and debris can sneak into the engine, which can have a number of costly consequences.

Air filter performance

Most air filters trap particles that are 5 to 6 microns or larger in size. They also trap 80 to 90% of particles that are as small as a couple microns in size. Some higher quality filters, such as those from Premium Guard, filter up to 99% of contaminants. These filters keep even more harmful impurities out of your vehicle's engine.

What happens to an engine without a functional air filter?

Incorrect filter installation or installing the wrong filter can leave your engine open to dirt and debris. When the engine's air intake is not completely covered by a filtering element, extensive damage can occur. Here are common examples:

- Turbocharger damage: Air filters are particularly important to turbocharged engines. The turbocharger forces pressurized air into the engine for increased performance. One side of the turbocharger, the impeller side, is connected to the engine's air intake. Without a functional air filter, dirt and debris can easily enter the turbocharger, causing extreme damage. To make things worse, metal from the failed turbocharger can find its way into the engine, circulating throughout the system. This can result in complete engine failure.

- Internal engine damage: As the piston moves down in the engine, air gets sucked in. This happens during the engine's intake stroke. Without an air filter in place, the engine may also be sucking dirt and debris in at the same time. This can cause damage to internal engine parts, such as valves, pistons and cylinder walls. The result is excessive oil consumption, poor engine performance, and eventually engine failure.
  In some cases, a severely restricted filter can also allow contaminants to enter the turbocharger and engine. This is because the engine has to work harder to pull in enough air. The result is a vacuum effect that pulls dirt and debris into the engine.

The best way to defend your engine against dirt and debris

A well-maintained air filter is the best way to protect your engine from dirt and debris. Not all air filters are created equal; it's important to get a quality air filter designed to fit your particular vehicle. High-quality air filters will filter out more contaminants and will fit your engine's air intake better.
Air filters should be changed on a regular basis to avoid contaminant built up. Premium Guard makes the highest quality automotive air filters, designed to protect your engine for up to 12,000 miles with 99% efficiency.

Cheap insurance

Replacing your air filter on a regular basis is cheap insurance against engine damage. Would you rather spend a few bucks on a new air filter or a few thousand on an engine rebuild?

CAN A CONTAMINATED AIR FILTER CAUSE A CHECK ENGINE LIGHT?

An air filter is like a security guard for your engine. It keeps the undesirables (dirt and debris) out while letting power-producing air in. A restricted air filter can cause many problems, including an illuminated check engine light.

Engine airflow performance

Besides keeping contaminants out, an air filter must allow unrestricted airflow into the engine. This is why air filter replacement is so important. An air filter that isn't changed on a regular basis will become contaminated with dirt and debris. This prevents the proper amount of air from entering the engine. In extreme cases, a contaminated air filter can turn on the check engine light.

How a contaminated air filter can turn on the check engine light

An extremely dirty air filter restricts engine air intake. This disrupts the air/fuel mixture inside the engine. As a result, the vehicle may experience performance problems that trigger the check engine light. Here are some common examples:

- Rich air/fuel mixture: Engine performance and operation is monitored by a computer, called the engine control module (ECM). The ECM monitors the level of oxygen in the exhaust via one or more oxygen sensors. When there is a lack of oxygen in the exhaust (a rich condition), the oxygen sensor will consistently send a signal to the ECM that's above 450 mV. The ECM recognizes this is an abnormal condition that could affect vehicle emissions. In response, it turns on the check engine light (CEL).

- Engine misfire: A misfire results from incomplete combustion inside the engine. A contaminated air filter can restrict engine airflow, resulting in a rich air/fuel mixture. This results in incomplete combustion and an engine misfire. A rich fuel mixture can also foul the spark plugs, causing a misfire.

  An engine misfire can greatly increase vehicle emissions. For this reason, the ECM constantly monitors the engine misfire status. If it detects an engine misfire, it turns on the CEL.

- Turbocharger performance: Turbocharger-equipped vehicles are particularly susceptible to clogged air filter issues. A turbocharger uses exhaust gases to force pressurized fresh air into the engine. A blocked air filter can prevent the turbocharger from building sufficient boost pressure. Since turbocharger performance is monitored by the ECM, lack of boost pressure can cause the ECM to turn on the CEL.

  It should be noted that the air filter must be extremely restricted to turn the CEL on in a modern, naturally aspirated vehicle. This is because the ECM is good at compensating for lack of air flow.

Most modern vehicles have a mass air flow sensor (MAF) mounted downstream from the air filter. If the air filter becomes clogged, the ECM will adjust the air/fuel mixture, using input from the MAF. This smooths out engine performance and often prevents the CEL from being turned on. However, if the air filter is severely restricted, the ECM may not be able to compensate enough.

Keep the check engine light off with regular air filter maintenance

Regular air filter replacement prevents contamination that could turn on the check engine light. Exactly when a filter should be replaced depends on the filter manufacturer.
With Premium Guard air filters, you know you're getting up to 12,000 miles of engine protection from dust and harmful particles. Premium Guard filters also provide a low-pressure drop, for maximum engine airflow. This keeps your engine performing its best and keeps the check engine light off.

Inexpensive peace of mind

No light is more unnerving than the dreaded check engine light. Keep your engine running right with regular air filter maintenance.

CAN THE INCORRECT AIR FILTER SHORTEN ENGINE LIFE?

The short answer to this question is yes. However, if you are worried that your driver information system says to change the air filter and you skip the chore for a few weeks, you can stop panicking. Air filters work by trapping dust and debris and do not have a magical expiration date. However, they do wear out and that's when they can start affecting engine performance and longevity.

What Kinds of Air Filters are in My Car?

Most cars have more than one air filter. They can include:

- Engine air filter
- Cabin air filter

Your mechanic might mention your oil and fuel filter, but these are not air filters. Your cabin air filter helps to maintain your air conditioning system and provide clean air inside the passenger compartment. It does not affect your engine or its performance.

Your engine air filter helps to prevent debris from entering into the combustion chamber and provides a vital role in maintaining the life of your engine. It should be changed out according to your owner's manual, usually about every 15,000 to 30,000 miles.

Your Engine Air Filter is Designed for Your Vehicle

There is not a generic air filter that fits all cars. If you drive a Chevrolet Tahoe, you need to get the filter that matches your model and engine combination. When properly installed it only allows filtered air through to the engine. If debris sneaks by the wrong filter, it can pit and scratch your cylinders, which lowers horsepower and can lead down the path to overheating the block, cracking or even seizing.

We Both Drive Fords–Can't I Use their Engine Air Filter?

The air filter designed for your Taurus is likely not the same one that the Ford Fiesta will need. Along the same line, the filter designed for a Silverado 2500 HD will not necessarily work for the F250. Check the owner's manual for each vehicle for the right part number and description, or check with your parts supplier.

What Happens if I Use the Wrong Filter?

The wrong air filter will not protect your engine. Its frame will not match up to the mounting points on your engine, leaving gaps where dirt and dust can slip by. When dirt gets into your engine, it mixes with the oil and can be deposited on the piston, cylinder walls, and any other surface. It can then scratch the surface of the engine, which will lower horsepower, cause blow-by, and shorten the life of your engine.

Ultimately, it's an inexpensive part but one that provides important protection to the heart of your car. When it's time to change it out, make sure to spend a few minutes to locate the correct part. It really won't cost any more and will end up saving you big bucks on serious engine repairs in the future.

CAN THE INCORRECT OIL FILTER AFFECT ENGINE OIL PRESSURE?

Oil plays a critical role in keeping your vehicle running smoothly. Not only does it lubricate your engine parts and reduce friction, but it helps to remove heat as well. Over time, oil naturally degrades. It also picks up tiny particulate matter and even metal shavings from the combustion cycle. The oil filter keeps these particles from passing back into the pump or engine.

The filter is also important in maintaining oil pressure. Using the wrong oil filter can negatively impact oil pressure. The wrong filter, a filter that isn't working properly, or a filter that gets clogged can cause oil pressure to drop. The proper oil filter, along with the pressure relief valve, will help regulate oil pressure and avoid spikes. If the relief valve is damaged, or the wrong filter is used, too much or too little oil can pass into the engine.

Using the wrong oil filter may prevent the filter from sealing properly, leading to problems with oil pressure or leaks. We've even seen instances of incorrect oil filters literally falling off.

An oil leak won't just make an ugly mess on your driveway, if your engine runs out of oil, the damage can be catastrophic. The engine can dry out and, without the oil to help displace the heat, it can overheat your vehicle. Without reducing friction, engine parts wear out and strain the cooling system. Unfiltered particles can pass into the internal parts of the engine and mineral deposits can obstruct heat conductivity.

Warning Signs of Incorrect or Clogged Oil Filters

- Performance: Engine performance will be degraded and you may lose acceleration
- Sputtering: Your vehicle may sputter when you are driving and you may have trouble maintaining speeds
- Metallic Screeching: If you hear that metal-on-metal grinding sound, it may be a lack of oil in the engine
- Oil Pressure Drops: Your oil pressure gauge can move slightly normally, but if you see a quick drop, it's a warning sign
- Black Exhaust: If oil isn't passing through your filter properly, you may smell burning oil as it passed into the exhaust pipe, leading to black or dirty looking exhaust

Even the wrong oil filter can look like it fits. Just because the threads line up and it seems to screw on properly, it does not mean it is the right type. The rubber seal on an incorrect oil filter might not line up and lead to oil pressure problems and leaks.

It's important to check your owner's manual or your vehicle manufacturer's website to make sure you are using the right oil filter for your vehicle.

WHAT IS THE DIFFERENCE BETWEEN A LONG-LIFE OIL FILTER AND A STANDARD DESIGN?

Oil filters have some of the shortest replacement intervals of all car parts, and it's easy to fall into a routine of going with whatever filter you usually buy. If you let your dealership or a mechanic handle your oil changes, you may not even know what kind of filter you have under the hood. Why does it matter? New advancements allow synthetic oil to last 10,000 miles between replacements. Yet you can't move to that kind of extended maintenance intervals when you're still using an oil filter designed for just 3,000 miles.

The Demand for Longer Intervals

Since modern drivers put far more miles on their personal vehicles than they ever did in the past, it's not surprising that changing the oil every 3,000 miles has become a chore. For some people with serious commutes, they can hit this interval in a month or less. Unless you want to spend the time and energy on oil changes that often, you'll want to upgrade to a motor oil that can go 10,000 miles or more before needing a change. You'll still need to swap the filters at the regular mileage mark unless you upgrade to a long life oil filter as well.

Advanced Features

These extended life oil filters don't just feature a higher number on the box. Careful construction and higher quality materials ensure that these filters can actually last as long as they claim, and pass-through testing proves it. Some of the features used by different filter manufacturers include:

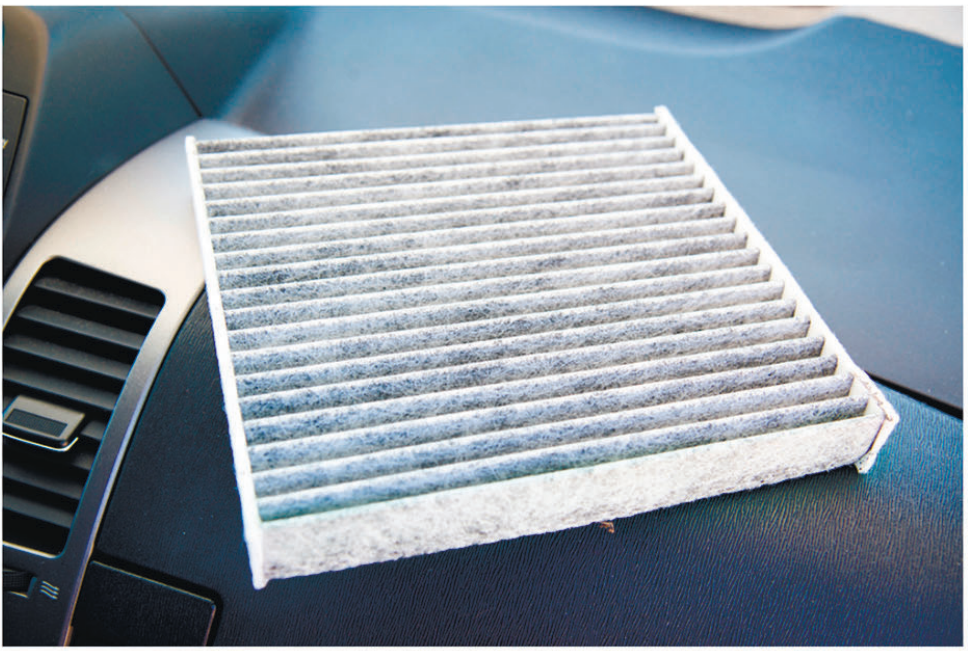
- Thicker metal shells to prevent accidental damage from pieces of road debris
- Deeper baffles to trap and hold more dirt without restricting flow
- Finer weave in the cellulose baffle material to trap smaller particles
- Reinforced centers to prevent collapse under higher pressure or movement of the baffle
- Stronger drain valves to withstand the extended number of starts
- By-pass valves to keep the oil flowing in case the filter becomes completely clogged

Original Equipment from the Manufacturer

Some of the oil filters coming from vehicle manufacturers already conform to these standards for longer use because the manufacturer has made the decision to increase all maintenance intervals. BMW is just one of the many manufacturers choosing this option, and the OEM filters they supply to dealerships and approved repair shops last 10,000 miles or more as a standard feature. If your vehicle's manual recommends long intervals due to the design of the engine, you must keep up with those demands by only using extended life filters and oil. You can't expect good results by installing a basic 3,000 mile filter and oil in one of these vehicles and ignoring it until the recommended maintenance retrieval.

It can be tricky to find long life oil filters for older cars and rare models. Drop-in style filters are easier to find in extended life design than metal enclosed spin-on designs, but if you have the right source for auto parts, you can find a matching long life filter for practically any make and model of car.

WHAT IS THE PURPOSE OF A CABIN FILTER?



For decades, the air filter located under the hood was the only one a car owner had to remember. Starting around 2000, car manufacturers began adding the cabin air filter, yet another filter to replace on a regular schedule. Thankfully your cabin air filter doesn't affect your engine's performance. It's still important to keep this filter clean in order to get the best performance from your air conditioner and to enjoy better air quality in the cabin. Find out why carmakers added a cabin filter, where to find it, what to do with it, and the risks of forgetting about your filter.

Why Do Late Model Cars Feature Cabin Air Filters?

So if cars didn't need cabin air filters in the 80s and 90s, why did they suddenly start featuring them in 2000? It's due to consumer demand for cleaner air while they're traveling down the road. Without an air filter, fresh air blowing into the cabin brought along plenty of dust, pollen, smog, and more. Driving through a cloud of smoke or the dust released from a gravel truck ahead of you meant switching the air controls to recirculation as quickly as possible or dealing with the consequences inside the cabin.

Slipping a filter into each model's main fresh air intake for the cabin solved the air quality problem by trapping incoming particles. But like with any other filter, all that dust and pollen builds up rather quickly. A clogged cabin air filter doesn't reduce engine performance or degrade your oil, but it does leave your interior dirtier than necessary. It also reduces the air flowing through it from the air conditioner, resulting in reduced cooling that you can't fix with a refrigerant refill.

Where Are Cabin Air Filters Located?

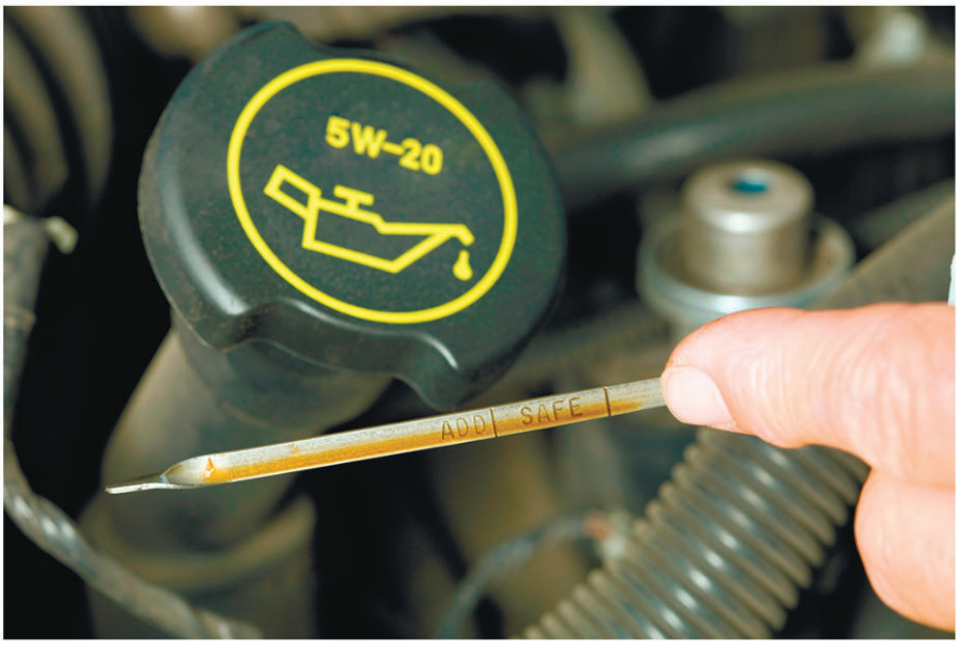
Of course, you can't check the filter, clean it, or replace it without locating it first. As with practically every part, the location differs from model to model. Check your manufacturer's manual for the location. If there's no help there, try looking in the following locations:

- Under the hood near the cabin, sliding into the fresh air intake
- At the bottom of the dashboard, usually on the passenger side
- Behind the back or top panel of the glove compartment.

What Happens When You Forget About This Filter?

At worst, a clogged cabin air filter will reduce the air coming out of your vents to the slightest breeze. This reduces both heating and cooling power. You may also notice unpleasant odors that persist in the car no matter what you do, along with possible dust coming out of your vents in very bad cases. Most manufacturers recommend replacing the cabin filter every 12,000 to 15,000 miles. However, you may need to clean it more often if you drive regularly on dirt roads or in areas with heavy smog. Don't try to clean the filter to extend its life unless recommended by the filter manufacturer.

WHICH OIL CHANGE SCHEDULE SHOULD YOU USE?



Your service technician suggests a filter replacement. If this is the oil, air, or cabin filter that they are suggesting needs replaced, then it probably is time for the standard vehicle service that is recommended by the manufacturer. Every vehicle manufacturer establishes a recommended service interval for each vehicle they manufacturer. Most manufacturers have two different schedules; one is the standard duty, and the second is extreme duty.

How do you know which maintenance schedule to follow? There are a few items to look at in determining this. First, consider how the vehicle is driven. Is it on the road daily? Is the vehicle's engine allowed to fully warm up before it is shut off? Is there a significant amount of stop and go driving? Does the vehicle tow extreme loads? What type of outside conditions is it driven in? Is it an extremely dusty or damp environment? All of these variables can affect which service schedule you should use. Let's look at a couple different scenarios.

Vehicle Number One

You commute 120 miles round trip to work each day. The majority of these miles are driven at 70 miles per hour on the interstate, with only ten miles of it in stop and go city traffic. And you only travel to the office three days a week. Vehicle number one has logged 2,880 miles in an eight-week period.

Vehicle Number Two

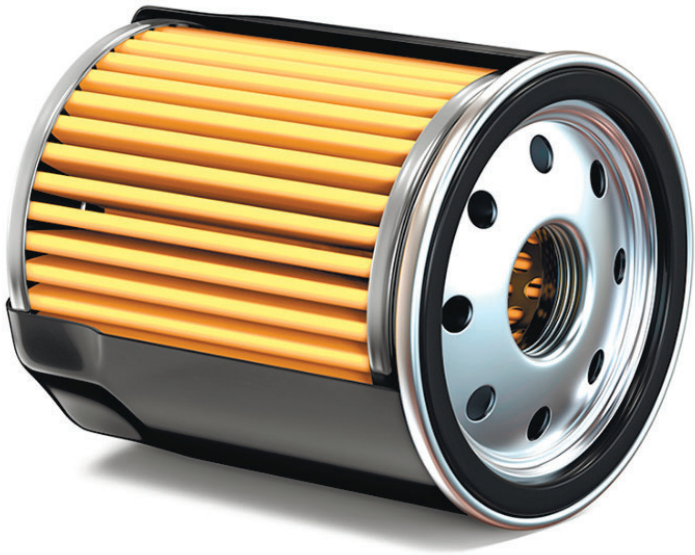
This vehicle is driven back and forth to work as well, though its round trip is only three miles in stop and go traffic. This commute is performed every day of the week, and the vehicle is only driven for the commute to work. Vehicle number two has only logged 120 miles in the same eight-week period.

As for the two scenario vehicles, the first would be serviced on the standard duty schedule mainly because the engine is allowed to operate at full engine temperature and at continuous rpms for an extended period of time. Vehicle two should be serviced on the extreme duty schedule since it is experiencing stop and go traffic. Because the engine is either accelerating or idling, raw fuel can be found at higher levels in the engine oil of this vehicle. Another contaminate that can be found at higher levels is moisture which is especially prevalent in colder climates. These two items along with normal oil oxidation and atmospheric pollutants will cause the oil to break down into a gelatin-like substance known throughout the industry as sludge. This substance tends to build up on the internal components of the engine and affects normal flow of the oil. The sludge will affect the engines ability to be properly lubricated. When this happens, crucial internal engine components can be neglected of lubrication and premature engine failure will occur.

To determine what service schedule is best for your vehicle, consult the owner's manual and a trusted source such as the repair facility that performs the service work on your vehicle. Discuss with them how the vehicle is used and under what conditions. Then determine the correct schedule for the way your vehicle is operated. Whichever schedule you choose to use, it is important to use a quality filter and oil that meets or exceeds your vehicles requirements.

WHAT IS THE FUNCTION OF THE BYPASS VALVE IN AN OIL FILTER?

Tech Tips



The bypass valve – otherwise known as a pressure relief valve – is an integral part of the oil filter. The valve is designed to open when the oil filter becomes clogged or when the oil is too thick. This allows the oil to bypass the filter through a center tube. The oil then goes straight to the engine to prevent starvation and damage.
If the bypass valve doesn't open when needed, the filter will swell and eventually burst. When this happens, the engine looses all oil pressure. The end result is either extensive engine damage, or complete engine failure. Choosing a high-quality oil filter for your vehicle helps to prevent this from happening.

HOW DOES AN OIL FILTER WORK?

Tech Tips

In layman's terms, the pressurized oil inside the engine enters the oil filter via the holes located in the base plate of the filter.

The dirty or contaminated oil will then pass through the filter media to clean or remove metallic particles, dirt, and sludge. During this period, the filter media will capture or trap the contaminants using two methods:

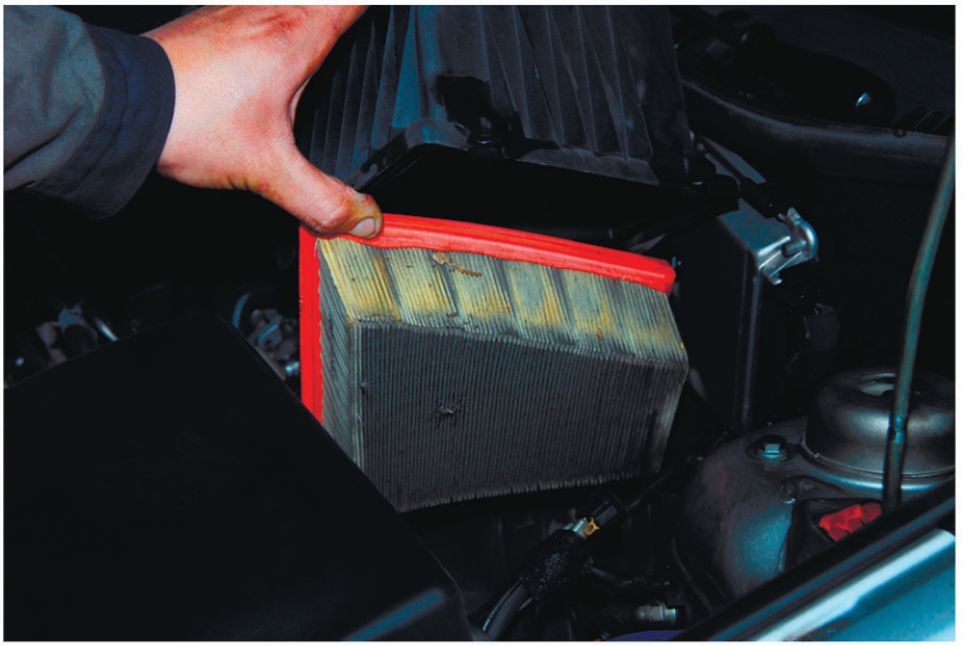
1. **Surface retention.** This simply means the dirt and particles are held near the surface of the filtering media; and
2. **Depth retention.** This means the contaminants are trapped or held within the deep passages of the filtering media.

The oil will then flow towards the central tube where the clean oil is pumped back into the engine via the threaded hollow center mounting stud of the oil filter.

Premium Guard's Extended Life media is engineered to achieve optimal performance that combines capacity, efficiency and high flow. Premium Guard uses a blend of cellulose and synthetic fibers. Premium Guard's Extended Life media offers capacity that exceed some OE filter manufacturers by 10% or more.

CAN A DIRTY AIR FILTER AFFECT FUEL MILEAGE?

Tech Tips



If the air filter is dirty, it passes less air into the engine. That is not a good thing. It can impact your gas mileage – by as much as 10 % – and it will also affect engine performance. Your engine needs oxygen for fuel to combust. Less airflow can impact power, acceleration, and torque. In addition, failing to change your air filter can lead to other problems, including engine choking or even overheating because of a bad air to fuel ratio.

Generally, you should expect to change your air filter every 12,000 to 15,000 miles, although that may vary depending on driving conditions. Check the manufacturer recommendations for your specific vehicle.

WHY WOULD MY OIL FILTER HAVE A SILICONE GASKET?

Tech Tips

Many aftermarket automotive oil filters feature one of two gasket materials: silicone or rubber. Which one is better?

Quick Answer: Silicone

Why?

- Remains pliable at high and low temperatures
- Resists warping
- Maintains a tight seal

While both silicone and rubber meet OEM specifications, rubber can be subject to degradation when exposed to extreme cold or heat. Silicone is the preferred gasket material when installing an extended life oil filter due to silicone's characteristics for longevity. Premium Guard Extended Life Oil Filters use a silicone gasket to provide better protection for your vehicle. When shopping for your next car oil filter, check out the quality products by Premium Guard Inc.

SHOULD ENGINE OIL BE REPLACED EVERY TIME THE OIL FILTER IS REPLACED?

Tech Tips

The Fast Answer: Yes, it should.

Over time the oil in your engine collects dirt and debris that enters the engine through the air and fuel. While your car oil filter works to catch much of the grit, it won't catch all of it. Like the filter, the oil becomes clogged with debris which increases friction and heat in the engine.

Replacing your oil along with the automotive oil filter will ensure that your engine is fully protected.

HOW DOES A CLEAN AIR FILTER IMPROVE ENGINE PERFORMANCE?

Tech Tips

Engines need the proper mixture of air and fuel to run right. The air filter is designed to protect the engine from contaminants, while also promoting airflow. Over time, however, the air filter accumulates dirt and debris that prevent air from entering the engine. This causes the engine to work harder and reduces engine performance.

A clean air filter restores engine power and efficiency by allowing fresh air to enter the engine. To protect your engine and keep it running at peak performance, the air filter should be changed on a regular basis. Generally, this is every 15,000 to 30,000 miles.

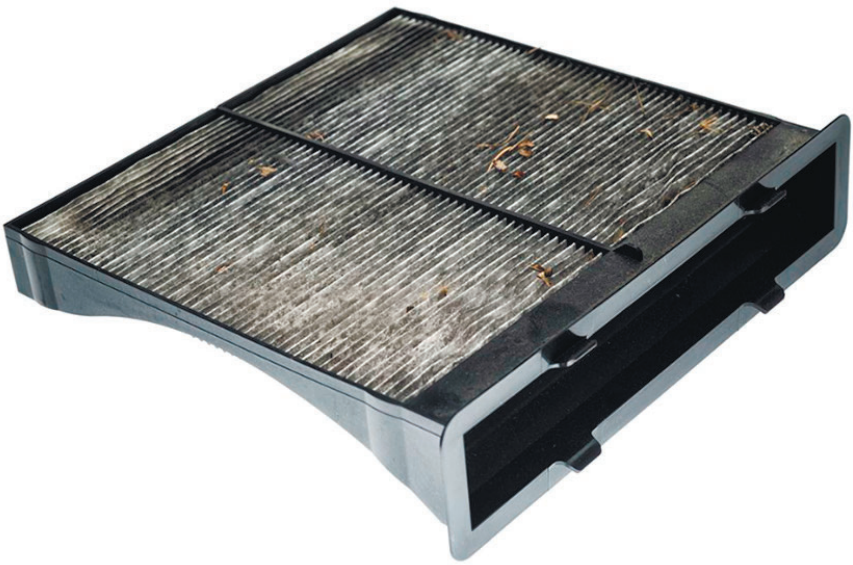
WHAT IS THE IMPORTANCE OF THE AIR FILTER SEAL AND THE MATERIAL IT IS MADE OF?

Tech Tips

Auto air filters have the important job of keeping dirt and debris out of the engine, while also allowing ample air flow. An air filter must fit snugly in its housing to block contaminants and prevent air leakage. To accomplish this, air filters have a seal around their perimeter. But not all seals are created equal. Under hood temperatures can get extremely high, causing distortion of low-quality seals. For this reason, it's important to get an automotive air filter with a seal that can withstand extreme temperatures. High quality air filters, such as those from Premium Guard, are designed to take the heat.

DOES A CAR CABIN AIR FILTER HAVE SPECIFIC SERVICE INTERVALS?

Tech Tips



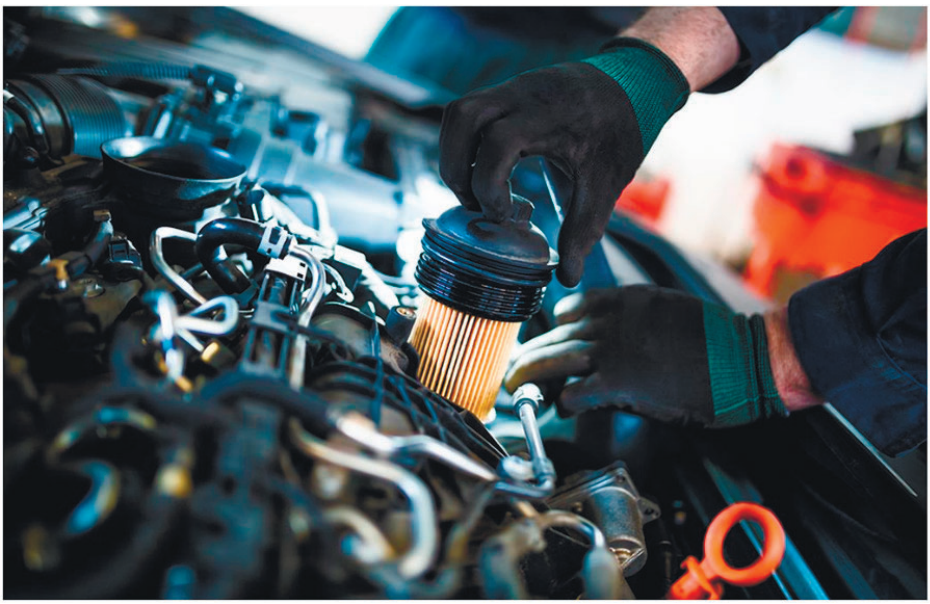
Quick Answer: Yes

Generally, most automotive manufacturers recommend installing a cabin air filter replacement every 12,000 to 15,000 miles. For most drivers, this translates into switching it out about once a year. Some user manuals may recommend intervals of up to 30,000 miles.

Car cabin filters work to remove dirt, pollen, irritants, and debris from the air conditioning, heating, and ventilation system. Clogged filters can cause circulating pumps and fans to work harder, shortening their useful lifespan. If the vehicle is used in areas with poor air quality, the filter may need to be changed more often.

CAN A PROPER OIL FILTER FOR THE APPLICATION REMOVE ALL THE CONTAMINATES IN ENGINE OIL?

Tech Tips



Quick Answer: No

Typical automotive filters for your oil used at those 30-minute service shops generally remove about 76% of contaminants over their 3,000-mile lifespan. When you opt for a premium automotive filter replacement like the Premium Guard Extended Life filter, 98% of the contaminants are captured for up to 10,000 miles.

It all depends on the type of media inside the filter that is used to trap the dirt. Look for a synthetic media able to catch debris as small as 10 microns for better performance.

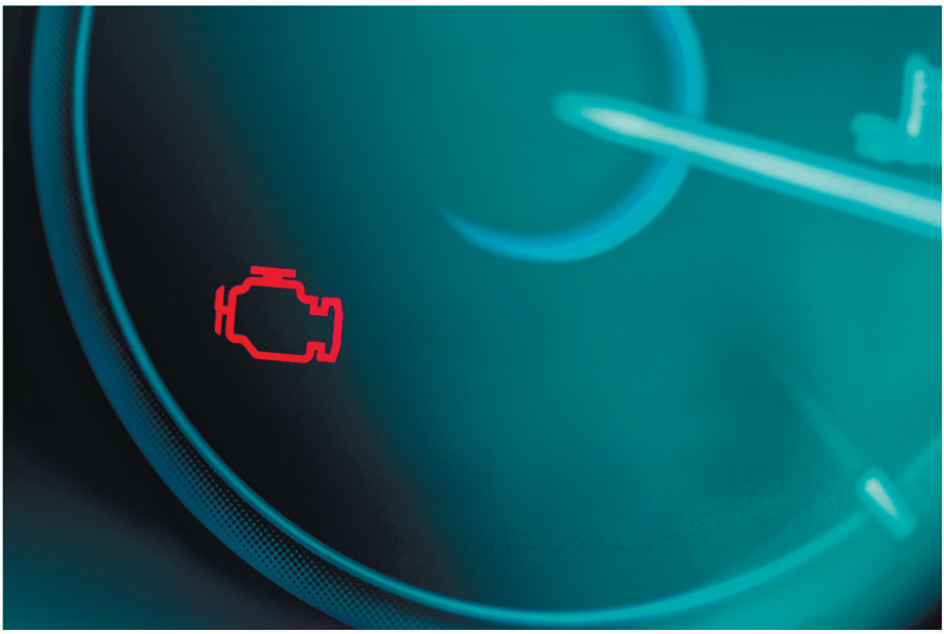
DAMAGE CAUSED BY EXCESSIVE OIL PRESSURE?

Tech Tips

The oil pump pressurizes oil to be pumped throughout the engine. A pressure relief valve is built into the oil pump. When oil pressure exceeds a specified value, the valve opens, allowing oil to return to the sump or pump inlet.
A stuck-closed pressure relief valve can raise oil pressure to dangerous levels. This extreme pressure can cause the oil filter to explode, resulting in engine oil loss. Excessive oil pressure can also cause pressed-in oil galley plugs to blow out. Either of these scenarios can result in complete loss of oil pressure and catastrophic engine failure.
The moral of the story is: too much oil pressure can be just as dangerous as too little. A properly functioning oil pump pressure relief valve is critical to engine health.

CAN AN INCORRECT FITTING AIR FILTER CAUSE A CHECK ENGINE LIGHT?

Tech Tips



The short answer: Yes

What Does the Air Filter Do?

The air filter cleans incoming air that will be mixed with the fuel and prevents dirt from building up on sensors.

Why Would the Engine Light Come On?

If the air filter is the wrong size, unfiltered air can slip around the opening. Dirt can build up on the mass airflow sensor. With the sensor clogged, the engine can no longer determine how much fuel to mix for proper combustion. This will trigger the engine light.

CAN A MISSING CABIN FILTER AFFECT THE LIFESPAN OF THE BLOWER MOTOR?

Tech Tips

The short answer: Yes

You may have removed your clogged cabin air filter to improve airflow in your car's interior. However, this can cause serious damage to your blower motor.

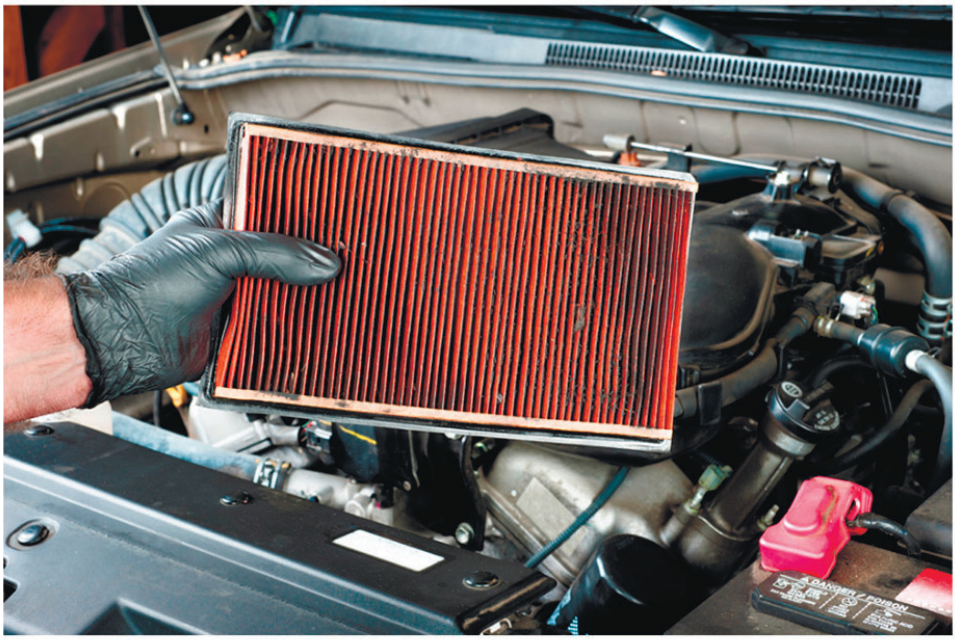
Cabin Air Filters Provide More than Clean Air

Cabin air filters stop debris from getting in the blower motor housing, and they remove pollen, dust, and toxins from the air.

Without the filter installed, dirt can build up on the blades of the fan and inside the motor housing. This can overheat the unit and knock the fan off balance. Eventually, this will result in complete failure.

REASONS FOR AIR FILTER SERVICE

Tech Tips



The air filter is designed to remove a large percentage of contaminants from the incoming air en route to the engine. Can your engine run without a filter? Yes, but there are several reasons why you should not operate the vehicle without an air filter and why it is recommended to periodically service the engine intake air filter. By removing contaminants from the incoming air, the vehicle can operate in environmental conditions that are less than optimum. You should regularly inspect the air filter, especially if the vehicle is operated in environments where there are a large number of airborne particles. These areas include deserts, agricultural environments, industrial settings, and continuous stop and go city traffic.

SHOULD OIL FILTERS BE SPECIFIC TO THE TYPE OF OIL YOU USE?

Tech Tips

The short answer is no. However, there are significant differences in the type of oil filters you can choose. The more you want to spend, the higher quality you will get, and the more contaminants you will keep out of your engine.

Filter manufacturers usually make varying grades of filters (good/better/best). If you're using a mineral-based oil and tend to change your oil on schedule, a good filter will work. If you are using a synthetic oil, or intend to put on more miles before another oil change, buying a top of the line filter is your best bet.

It's always a good idea to check your owner's manual or manufacturer's website for compatibility.

WHERE IS YOUR CABIN AIR FILTER AND WHAT DOES IT DO?

Tech Tips

If you're trying to figure out where your cabin air filter is located, you're not alone. They are not as obvious as engine air filters. They are typically found behind the glovebox, under or behind the dash on the passenger side, or in the engine compartment. You should check the manufacturer guidelines for the exact location and how often they need to be changed. A good rule of thumb is every 12,000-15,000 miles.

Cabin air filters are effective in reducing dust and dirt, pollen and mold spores, and other pollutants. If your car has a bad smell, or your air flow is reduced, it may also be a good time to swap out your cabin air filter.