

JEEP WRANGLER

ULTIMATE DIY DIAGNOSIS AND REPAIR GUIDE



WRANGLER FIXES

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This resource will give you step-by-step guide on how to troubleshoot most of the Jeep Wrangler's common problems as well as answer most of Wrangler diagnosis questions.

This guide is so unique since you do not need to know what the problem is beforehand, in order to successfully diagnose and repair it. Solutions are explained in basic, simple English detailing what action needs to be taken to resolve the problem. It's like having your own personal mechanic with your 24/7.

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WHO NEEDS THIS

How does this differ from an owner's manual or a service manual? The Owner's manual is mainly an operational guide on the best practices the user needs to follow, as specified by the manufacturer. There are no troubleshooting or diagnosis procedures in an Owner's Manual.

A Service manual is designed for a skilled, fully qualified Jeep service technician or mechanic who has prior technical knowledge and experience. Most of the time, they already know what the problem is and simply need to follow the correct procedures. You do not!

- TJ, JK, JL OWNERS
- GLADIATOR OWNERS
- DIY TYPE PERSON
- LIMITED DIAGNOSTIC EXPERIENCE
- OUT OF WARRANTY JEEP OWNERS
- OVERLANDERS
- OFF-ROADERS
- JEEP MECHANICS

POWERFUL GUIDE

This guide is very powerful in that it takes you through a series of questions and narrows down the problem to one or more possible components, based on the described symptoms.

"IT'S LIKE HAVING YOUR OWN PERSONAL MECHANIC WITH YOUR 24/7."

Anyone who owns a Jeep Wrangler TJ, JK, JL or Gladiator will benefit greatly. If you are a hands on DIY type person but have limited knowledge on the inner workings of your Jeep's engine, transmission, and drivetrain, then this guide will be perfect for you. If your Jeep is out of warranty and you want to keep maintenance costs down, this guide is perfect for you. Do you enjoy extended off-road trips and overlanding? This guide could save your bacon when something goes wrong in the middle of nowhere.





ENGINE PROBLEMS

COVERED IN THIS SECTION

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MY JEEP WRANGLER WON'T TURN OVER

IN ENGINE PROBLEMS

If you own a Jeep Wrangler and are experiencing intermittent starting, or no crank, then this section can help you identify what the possible cause is and identify why your Jeep won't turn over.

It could just be a bad battery. However, there are other potential issues such as a faulty starter or bad solenoid. Are you getting fuel supplied? Perhaps its a loose earth connection or electrical corrosion on the battery terminals?

We will discuss all these and more in this section, and explain in detail how to troubleshoot each.



WHY WON'T YOUR JEEP WRANGLER START?

Your Jeep Wrangler will not start if it has any of the below faults:

1. Dead or Low Voltage battery
2. A bad Starter
3. Loose Earth Cable
4. Faulty Ignition Switch
5. Battery Terminal Corrosion
6. A faulty Solenoid
7. Bad Starter Relay
8. Faulty Park Neutral Safety Switch
9. Fuel Related

INTRODUCTION

So we've identified a few potential culprits that could cause your trusty Wrangler not to start. But how do we isolate which component it actually is? The last thing you want to do is run out and spend a load of money on a replacement battery, only to find out it was simply a loose earth strap connection in the end. Not cool!

So, let us see what tests we can carry out to determine which component is faulty and what part needs replacement. Let's get into it.

MY JEEP WRANGLER WON'T TURN OVER

The first thing we want to determine is the age of your battery. Many people seem to forget that car batteries only last about 2-3 years nowadays, after which you can expect it to die at any time, without prior warning. Usually, there is some sort of inscription or date stamp on the battery which indicates its age or purchase date. If your battery is well over 3 years you're probably due for a replacement soon anyway. So checking battery age is critical.

Next, you want to determine if the battery is fully charged and if it can still handle the required cranking load. How do we do that?

BAD/LOW BATTERY

The most effective testing method is to hook up a voltmeter and take a reading under the load setting. The first starting point when diagnosing a dead battery is to verify your battery has the correct voltage. Incorrect or low power to the starter will not start your Jeep.

Batteries use CCA (Cold Cranking Amps) to measure starting power. Be aware that your battery could have power, however, when under load, the cranking amps are not powerful enough to get the starter to crank the engine. A good fully charged battery should read over 12.6 volts. If the battery reads 12.45 volts or less, it is low. If your battery is reading less than a 75 percent charge it needs to be recharged or replaced if it has expired. Battery voltage readings drop with ambient temperatures. A rough guide is 0.01 volts for every 10 degrees F. (-12.2 Celsius)

BAD STARTER

So if you've determined that your battery is healthy and fully charged, how do we go about testing the starter? Remember, the starter only has one function, and that is to turn/crank the engine. That's it! If the engine is turning over but not starting your problem lays elsewhere. Starters usually last many years and can endure thousands of starts, however, if your Jeep has been regularly exposed to rivers or beach water, mud, and other moist or dusty conditions, it could drastically reduce the lifespan of your electrical components.

Typical symptoms of a bad starter is, it has no cranking functionality and just a clicking sound. The clicking sound you hear is the solenoid trying to engage the starter. The starter gears and spindle could be jammed up inside or worse case, the wire cores could be burned out completely.

The starter will draw heavy current to try and start/turn the engine, however, if the battery voltage is low it could burn out the brushes or even the entire wiring inside, completely destroying it.

Typical symptoms of a bad starter are:

- Lights on but no crank
- Clicking sounds

LOOSE EARTH CABLE

Jeeps have been known for somewhat inadequate grounding, so don't overlook this part.

Make sure you have sufficient ground contact and the earth strap is still in good condition. You might even have to install a second earth ground cable if need be. In many cases, the electrical faults on Jeeps aren't usually electrical as they are more ground related. Electrical components don't only need the correct power but also a solid ground to function correctly.

Have a look at this quick video where Matt shows us how to repair a broken or corroded ground wire on a 2007 Jeep Wrangler.

A good way to test your ground is by means of your volt meter. You do this by placing the positive point on the positive battery post, and the negative lead on a clean metal surface on the starter body, or the solenoid mounted on it. Make sure the metal surface is clean and free of any grease or oil on the starter will suffice. Ensure the voltage reading you get at rest is the same as the battery reading at rest.

IGNITION SWITCH

Many Wrangler owners have reported faulty ignition switches. What happens in many cases is, the key gets stuck in the ignition start position, unbeknownst to the driver. This results in the starter constantly engaging and eventually burning out. If you are unaware of the strange sound it makes, it can go undetected and the starter will eventually fail. Inspect the ignition switch actuator pin. It's a bad design and a bit of an inferior design. Jeep has had many issues with these parts as far as recalls go.

This video demonstrates how to install an ignition switch on a Jeep Wrangler.

Recall Number 02V075000

Recall Date 03/08/2002

Component ELECTRICAL SYSTEM: IGNITION: SWITCH

Summary ON CERTAIN SPORT UTILITY VEHICLES, WATER AND IMPURITIES CAN ENTER INTO THE IGNITION SWITCH, CAUSING A SHORT CIRCUIT

Consequence THIS COULD RESULT IN A VEHICLE FIRE

What Owners Should Do DEALERS WILL REPLACE THE IGNITION SWITCH WITH A REDESIGNED SWITCH. OWNER NOTIFICATION BEGAN APRIL 8, 2002. OWNERS WHO TAKE THEIR VEHICLES TO AN AUTHORIZED DEALER ON AN AGREED UPON SERVICE DATE AND DO NOT RECEIVE THE FREE REMEDY WITHIN A REASONABLE TIME SHOULD CONTACT DAIMLERCHRYSLER AT 1-800-853-1403.

MY JEEP WON'T START BUT IT TURNS OVER

To diagnose, you first need to determine if the problem is electrical or fuel related. If you have determined that fuel is being supplied all the way to the injectors then your next option is to inspect for electrical spark. Make sure you are getting a good strong spark to all your plugs.

If your starter spins but it does not start the engine then you have bad starter. The spindle or drive inside the starter is possibly damaged. If the starter is repairable, you can have the drive spindle replaced, alternatively, you'll need to replace the starter. It is also possible (but unlikely under normal circumstances) that your driveshaft is snapped, or the planetary track in the starter is worn, in which case a new starter is on the cards. Don't forget to inspect for damaged teeth on the flywheel.

WON'T START BUT HAS POWER

Many reports of 2018 jeep Wranglers suddenly not starting at random intervals. Owners would stop to fill up at a gas station only to be stranded with a non-starting Jeep. All of the lights turn on and the radio works, but no engine sound. No prior warnings signs either. Many reports indicate the battery and starters are all new or have been recently replaced, ruling those options out.

The vehicle would randomly just start again, sometimes after about an hour. What could possibly be the cause? In this instance, it could be the **transmission temperature switch**. This means your transmission is running over the temperature limit. Hence, after sitting for about an hour it cools down and allows you to restart again as if nothing was wrong.

In this instance, you want to ensure your transmission fluid is topped up, so check the fluid levels first and top-up if necessary. If the fluids are full, check your **cooling temperature sensor**.

If all else fails, another thing you can try is **starting your Jeep from the (N) neutral position**. Turn the key enough to move from park to neutral. Hold your foot on the brake while turning the key to start the ignition.

JEEP WRANGLER JK WON'T START ONE CLICK

If your Jeep won't start and you only hear one click, then you could have a faulty starter motor. Again, using a voltmeter with a load function, make sure all your voltages are all correct. The solenoid could have enough power to engage and feed current to the starter, however, a loss of current in the ground cable, or faulty battery could be causing the starter to not crank properly.

CONCLUSION

Always diagnose your starting with the easy components first like your earth cable, corrosion around the battery terminals, and unsecured battery connections. Next move to transmission fluid levels and sensors. If all of those are fine inspect the ignition switch and battery health and then lastly move to the more expensive components like the starter and battery replacement if necessary.

CHECK ENGINE LIGHT RESET

IN ENGINE PROBLEMS

Nothing freaks me out quicker than a **CHECK ENGINE** light appearing on your instrument panel. The light can appear for a multiple reasons, some of which are bit unnecessary or completely unrelated to your engine. Fact remains, we shouldn't ignore this warning signal and have the problem rectified, and the fault code cleared ASAP. But what if you don't have access to a professional OBD2 scanner to read and clear fault codes? Is there a way you can manually check an error code on your dash and clear it without any fancy equipment? Let's find out!



CHECK ENGINE LIGHT FAULT CODES

If you drive a JEEP Wrangler JK, you can check engine fault codes by inserting the key into the ignition and turning it 3x to the run position without starting the vehicle.

Turning the key 3x tells the OBD (On Board Diagnostics) computer there has been 3 bad runs with the same error and it throws out an error code on the instrument panel.

INTRODUCTION

Fantastic! So if you didn't already know about this trick, you do now. But what is the procedure to clear the codes. We generally don't want to clear engine codes and pretend nothing is wrong, however if you've done some maintenance work and disconnected a component with an electronic sensor, your vehicle diagnostic system will detect something has changed and throws out a code. Maybe it was just some cleaning on a throttle body unit or you accidentally left your fuel cap open, and now you're driving around with this annoying orange light glaring at you.

Let's see how we can reset the code without an OBD2 scanner tool to read and clear any fault codes.

JEEP WRANGLER CHECK ENGINE LIGHT RESET

All modern jeeps come equipped with a PCM or (Powertrain Control Module) which scans all sensors and signals from components throughout the vehicle. When the PCM detects any problems it sends a code that is displayed in your instrument panel.

So when you get an error code appearing, it is essentially the "brains" of your Jeep providing you with vital information telling you, something is wrong and you need to take action.

HOW TO CLEAR CODES ON JEEP WRANGLER

Let's assume, there was a mechanical fault, which you've since rectified, how do we go about resetting the error code?

RESETTING THE CHECK ENGINE LIGHT:

- Make sure the engine is not running
- Make sure the key is out of the ignition
- Disconnect the battery terminals
- Wait 5 minutes
- Reconnect battery terminals
- Insert and turn the ignition key to the run position without starting
- All error codes are cleared and CHECK ENGINE icon disappeared.

So what's the purpose of disconnecting the battery terminals when you have error codes and the check engine light?

Well, what happens is once you disconnect the main source i.e. the main battery, all the stored energy inside the electronic capacitors and modules lose their memory and all settings are reverted back to default. Any error codes that was stored in onboard memory banks are all erased. When electrical energy is sent to the capacitors it is called charging and releasing the energy from a capacitor by disconnecting the battery is known as discharging.

It only takes a few seconds for some capacitors to lose their energy and memory. The nice thing about the engine codes are they give a reference point to start troubleshooting and diagnosing the problem. You can then hop online and check what the code means and begin the repair process.

But what if you have CHECK ENGINE light, but no codes?

HOW TO PULL THE CODES ON THE INSTRUMENT PANEL

The process to read what codes are being pulled by the PCM is fairly simple.

Follow the below process to read what fault codes are being generated:

- Make sure the driver's door is closed
- Insert and turn the ignition key from off to run 3x consecutively
- Do not start the engine
- The key should end in the ON position
- Your Odometer will do a reading and display any error codes

Some owners reported that this method does not display any error codes. If that's the case repeat the above procedure but instead of turning from OFF to ON, turn from ON to ACC (Accessories) Position 3x. If you still find no success with this process, you might have a faulty dash code reader and you'll need a OBD2 Scanner to read and clear any codes.

JEEP WRANGLER CHECK ENGINE LIGHT NO CODES

Manny Jeep Wrangler owners have at some point experienced the CHECK ENGINE light but no error codes shows up on the instrument panel. Is this something to worry about?

Most reports indicate that the Check engine light went away after a batter reset or after a few days of normal driving. Many didn't report any weird behavior and that everything appeared ok in terms of performance and behavior.

So what could be the possible cause of this?

Well, many reports show that almost all of the owners reported bad fuel to being the possible culprit. After filling up at a dodgy gas station they've experienced this error. Some reported weird smells after filling up a certain gas stations and shortly thereafter a CHECK ENGINE light appearing without any codes.

So you can possibly put it down to bad gas.

The other possibility is, there is an error code but the **PCM (Power Control Module)** isn't throwing out any codes. If you have an OBD2 scanner, in almost all cases the code does appears on the scanner. So you'll do well to invest in one of these scanners if you own a modern vehicle since you don't want to be running to the dealer only for them to charge you over \$100, only to tell you everything is A-OK!

Also, if you are fond of extended off-road traveling to isolated places, where mechanical assistance is hundreds of miles away, a decent ODB2 scanner tool will come in very handy. You will at least be able to diagnose your problem, allowing you to do some DIY repairs to get you home.

So the two possible causes of CHECK ENGINE but no codes are:

- **BAD FUEL**
- **HIDDEN CODE**

WHAT DOES THE CHECK ENGINE LIGHT MEAN ON A JEEP WRANGLER?

When your Jeep throws up a **CHECK ENGINE** light it means a faulty signal has been picked up by one of the sensors. The system has detected a mechanical problem with a specific component, or a faulty electrical signal in the Jeeps system.

The Code is very vague since you'll never know what it means unless you have the service manual or an OBD scanner that can give you more detail about the code.

CONCLUSION

Jeeps are amazing machines and those who own them, love them. The more modern Jeeps tend to be a bit more sensitive, the more sophisticated and intelligent they become. Unfortunately, that's the direction manufacturers are going with strong emphasis on emissions and safety over everything else. This means your vehicle is packed with all sorts of electronic sensors and modules to read any potential errors.

If you can self-diagnose these error codes with an OBD2 scanner and are able to repair your Jeep and clear codes, it will save you plenty of unnecessary trips to the dealerships and days without your Jeep. It also allows you to be more independent and gives you more confidence when venturing off into uncharted territory.

JEEP WRANGLER STALLS INTERMITTENTLY

IN ENGINE PROBLEMS

If you are experiencing problems with your Jeep stalling on you at random intervals then hopefully this article could assist with your troubleshooting. Does your vehicle stall when coming to a stop, or when driving very slowly? Does your Jeep only stall when you reverse? Let's look into what could be the possible causes of these symptoms.



JEEP WRANGLER STALLS RANDOMLY

If your Jeep stalls randomly you need to inspect the following components:

1. Crank Position Sensor
2. Low Battery
3. Oil Pump Drive Assembly
4. Wiring Harness
5. Ignition Switch Actuator Pin
6. Fuel Pump

INTRODUCTION

When troubleshooting a stalling issue, there are two main areas you want to investigate first, and those are, but not limited to:

- **Fuel Supply**
- **Electrical components**

Most stalling problems can be narrowed down to these two areas.

These are two very wide-ranging categories so we'll break down the usual suspects that could possibly be the cause of your Jeep Wrangler stalling.

JEEP WRANGLER DIES RANDOMLY

So you're driving down the road and come to a stop, when suddenly your Jeep stalls without any prior warning. Or you could be cruising at a very slow speed when this happens. Strangely, when driving on the highway, your jeep appears to be going perfectly fine?

Most Jeep owners report, once this happens, the engine light appears, but no error code is kicked out. The vehicle restarts as if nothing happened and appears to be able to function 100% fine again. This is also completely random and not a phenomenon you can recreate, which always makes troubleshooting a lot more tricky.

Symptoms to look out for when stalling:

- Check engine light flickering
- No other warning symbols appear
- Gauges and instruments remain on
- Fuel Gauge returns to empty
- Cruise Control Cancels Out

So now we know what the symptoms are, let's look at some of the possible solutions to this weird stalling problem.

WRANGLER STALLING PROBLEMS (SOLUTIONS)

If you are mechanically-minded or a DIY type person, then these checks and fixes are relatively easy to perform and can be carried out with no special tools. So let's start by looking at the most common reasons why Jeeps stall and work our way down.

CRANK POSITION SENSOR

Electrical gremlins are a real pain in the, "you know what", to diagnose at times. These can cause sudden stalls and even the inability to restart the engine again. A very common cause of sudden fails on Jeeps and many other modern vehicles are the CPS (Crank Position Sensor). The purpose of the crank position sensor is to monitor the position and rotational speed of the crankshaft.

The engine computer then takes this information to control the fuel injection and the ignition timing system. If the crank position sensor is bad, it can cause misfiring, poor engine performance and stalling since the engine is robbed of spark, which it needs to function properly. Take note not to use sub-standard electrical components when replacing. When replacing electrical parts, use only genuine MOPAR parts for best performance and functionality.

BAD CPS SYMPTOMS INCLUDE:

- Erratic engine behavior
- Rough idle
- Frequent stalling
- Decrease in engine power
- Increased Fuel consumption
- Slow/lethargic acceleration
- Check Engine Light appears
- Inability to Start

Let's now look at another sneaky component that can cause unexpected stalling.

IGNITION SWITCH ACTUATOR PIN

There is a pin inside your ignition switch that can be responsible for engine stalling without prior warning. One of the parts inside the switch is a metal rod and a link that triggers and sends an electrical signal to your starter motor when cranking. It then retains the key securely and keeps the connection closed within the switch.

So if the ignition switch is not functioning properly, the connection between ignition and fuel systems are cut off, which will cause the engine to stall. Depending how bad the switch is, the engine might or might not start.

It's always recommended not to add a bunch of unnecessary keys or any heavy key ring decorations on your ignition key, since the additional weight will prematurely wear out your ignition barrel, resulting in intermittent connection and stalling issues.

Removal and Repair procedure:

- Remove the ignition switch from the steering
- Remove the ignition switch actuator pin assembly from the ignition lock cylinder housing.
- Install the new ignition switch actuator pin assembly into the ignition lock cylinder housing.
- Refit the ignition lock cylinder. Next, let's investigate the OPDA

OPDA (OIL PUMP DRIVE ASSEMBLY)

A problematic OPDA was an issue on the 4.0 engine ranging in year models 1992 to 2006. The factory standard OPDA was designed with two bronze oil bushings, which was separated by an oil seal. The upper bushing is cut off from lubrication by that seal, resulting in premature failure. Over time, radial movement develops in the shaft. Eventually, the complete assembly and camshaft will fail.

You ignore a bad OPDA at your own peril, since failure to replace this relatively inexpensive component will result in lack of sufficient lubrication and eventually catastrophic engine failure. The repair is a DIY repair for any hands-on type of person without the need for any special tools.

JEEP WRANGLER STALLS WHEN STOPPING

There are multiple reasons why a vehicle will stall intermittently and we've covered a few common causes of them so far. Now, let's investigate which other components can cause the same stalling phenomenon when stopping.

FAULTY OR WEAK BATTERY

A bad battery can cause all sorts of electrical gremlins. When the battery is weak, it has very low cranking power and amps. This can cause incorrect electrical signals, "confusing" the ECU, causing your Jeep to stall unexpectedly. A weak battery also means extra hard work for your alternator to try and charge the battery and keep the engine running. The additional load on your engine components can also cause an unexpected stall.

WIRING HARNESS

These faults are always difficult to trouble-shoot. It's also one of the last things we tend to check, at least I am guilty of that. Electrical harnesses that are constantly exposed to heat are usually the first ones to perish quicker than the rest. Chaffing and moisture exposure can also cause shorts and electrical gremlins to develop over time. Always start inspecting the harnesses closest to your firewall that wraps around the valve cover. There are 2x bolts sticking up presses into the harness creating random shorts and misses. No code will appear.

FUEL PUMP

Signs of a failing Fuel pump are, but not limited to:

- Decrease in fuel efficiency
- Weak acceleration and power
- Spluttering
- Whining or loud humming sound from the rear near the fuel tank

A weak fuel pump with low pressure results in your engine not getting the correct fuel to air mixture it needs to power the vehicle. Whining in the backseat.

CONCLUSION

We've identified a few common causes of Jeeps Wranglers stalling. Always take care to replace any electrical components with genuine MOPAR parts for best results. Avoid cheap shop components which can send inaccurate electrical signals and strengths resulting in other problems down the line. A battery is often overlooked for strange stalling behavior so ensure your battery is still healthy and not more than 3 years old. Before replacing electrical components, do a thorough clean and spray all contact points with a good dielectric spray for good connection.

JEEP WRANGLER OVERHEATING ISSUES

IN ENGINE PROBLEMS

Has your Jeep suddenly developed an overheating problem?

If your Jeep overheats while idling but seems to cool down when you drive then this section is for you.

We will look at the various components that can cause your Jeep Wrangler to overheat only while idling, as well as, tips on what you should avoid doing which could cause your jeep to overheat.



WHY DOES YOUR JEEP WRANGLER OVERHEAT?

A Jeep Wrangler can overheat for various reasons. When your Jeep overheats only at idle, in most cases it is the Radiator Fan Clutch that has gone bad. Overheating during idle means the fan is not pulling sufficient air through the radiator to maintain the engine operating temperature.

Components that can cause your jeep Wrangler to overheat

- Bad Thermostat
- Bad Water Pump
- Faulty Radiator Fan Clutch
- Low Coolant level
- Air block in the cooling system
- Radiator Cap Seals leaking pressure
- Radiator clogged or fins badly damaged
- Insufficient Air Flow

INTRODUCTION

If you regularly enjoy wheeling your jeep on muddy tracks, over time, you can expect your radiator to become clogged up with mud and debris. This results in restricting the air flow and causing the engine to overheat. If any of the components that makes up the cooling system is not functioning 100%, it will add stress on the other components, thus causing your Jeep to eventually overheat.

Take time to regularly inspect for bugs, leaves and other debris buildup in your radiator fins, and anything that could possible cause blockages. More about this later.

Let's now look at what the possible cause could be for your jeep overheating at only at idle.

REASONS WHY YOUR JEEP COULD OVERHEAT AT IDLE

If suddenly your Jeep begins to overheat when idling, we have another issue altogether. Because you're not driving, the primary engine fan should engage once the engine reaches operating temperature and continue to circulate coolant to keep the engine temperature consistent.

But what happens if this is not the case?

RADIATOR FAN CLUTCH

So, how do we check if the radiator clutch fan is functioning properly? Is there a manual test we can perform?

One way to tell your clutch fan is bad, is if the fan is not rotating freely and feels a bit "gritty" or stuck. If you struggle to rotate the radiator fan by hand (with the engine off of course), then the clutch is bad and should be replaced ASAP. If your engine temperature is high only at idle but normal at cruising speed, it's usually a symptom of a bad fan clutch. Do not continue to drive the vehicle in this state.

A second way to tell, is by observing the clutch fan once the engine reaches operating temperature. Does the fan engage as designed? Also, when you turn off the engine, does the fan continue to rotate for multiple seconds?

Now this isn't a 100% bullet proof method but it will give you a sign that something is amiss with the Fan clutch.

Another factor to inspect is the condition of the fan. When the fan is damaged or missing a fin, it means the fan is not pulling enough air through the radiator as designed? This will cause overheating at idle. Lack of sufficient airflow by your radiator Fan, would cause the engine to overheat when stationary, since the radiator fins are not receiving enough air to cool the engine sufficiently. If on the other hand, you have low coolant or a bad thermostat, the engine would overheat in all conditions, stationary or driving.

AIR BLOCK

What if the engine temperature rises when idling, however, when you drive it, the temperature drops to an acceptable level. Once you idle too long again, immediately it raises. What could be the cause? Well there are at least 2 things you need to inspect in this instance. One, is your radiator cap sealing as it should and number two, do you have an air lock in your system. If you are sure your cap is sealing, you possibly have air in the cooling system which needs to be removed by "burping" the cooling system.

Symptoms of an air lock in the system:

- Recently had your radiator boil over due to a loose or missing cap
- Overheating during idle but temperature drops while driving
- Increasing driving speed decreases the temperature
- All other components appear to be working 100%

These are all tell-tale signals that there is an "air lock" in your cooling system that needs to be "burped" out.

Procedure to burp air from your cooling system:

1. Park your Jeep with the nose at an incline
2. Remove the radiator cap
3. Start the engine and allow to reach operating temperature
4. Once operating temperature is reached, squeeze the main upper water hose to force out any air bubbles in the system
5. Monitor your coolant levels
6. Top-up the coolant as the level decreases.
7. Repeat step 1-6 multiple times and allow the engine to cool down completely in between.
8. Allow to settle overnight and repeat process in the morning.

WHAT ABOUT AN AUXILIARY ELECTRIC FAN UPGRADE?

Well, electric fans might sound like a good upgrade option on the Wranglers, however, it's in fact a downgrade. It might work a treat on other vehicle brands and engines but on the 4.0 jeep Wranglers, the electric fan is a no-go since it simply cannot provide enough airflow through the radiator as the OE serpentine belt-driven fan can.

If your Radiator fan engages when you run your AC, but fails to engage on its own once temperature exceeds operating levels, you have another issue and need to investigate further. It is more likely an

electrical component such as a faulty temperature switch, bad sender unit or failed fan relay that is meant to activate the fan when required. The actual fan itself is functioning 100%.

THERMOSTAT

The job of the thermostat is to monitor the engine temperature and engage the fan once it exceeds operating temperature. The Jeep Wrangler 4.0 has a cooling system that requires a 195 degree thermostat. Anything lower than that can trigger the CHECK ENGINE light. It should activate automatically as the engine temperature fluctuates.

WATER PUMP

Your water pump can also be the cause of overheating, since they also have a limited lifespan. Also, if you're not using enough coolant, over time, the water pump impeller can wear down and begin to corrode. The corrosion in the system causes scale that eventually builds up and begins to clog the thin flat tubes in the radiator and heater core, causing the engine to eventually overheat. A leaking water pump will lose coolant and needs replacement ASAP.

COOLANT

Lack of coolant or low coolant levels are another reason why your Jeep can overheat. Using the proper coolant and flushing your cooling system periodically is imperative to the proper functioning of your system. **Use Mopar 68048953AB Standard HOAT Coolant and Antifreeze for 07-12 Jeep Wrangler JK.**

The coolant contains many additive which are designed to prevent corrosion in the cooling system, but they unfortunately have a limited life span, which requires replacing. As a vehicle owner and Jeep owner, it's important to regularly inspect the coolant levels and flush and refill periodically. This is one of the most important maintenance items to protect and prolong your Jeeps engine life.

RADIATOR CAP SEAL

The radiator cap can be such an insignificant component, yet it plays such a vital role in controlling the engine temperature. Replace the radiator cap with the correct one for your year model, since the wrong radiator cap, even new, will result in your engine overheating.

Make sure you invest in a decent replacement cap that is OE quality. Use the Mopar 55116901AA Radiator Cap for 97-07 Jeep Wrangler TJ & JK. A good radiator cap should have a Heavy-Duty Steel Construction and provide sufficient sealing to allow the Engine to cool efficiently.

Ensure it is a corrosion-resistant and has at least a 5-year warranty. Do not cheap out on this component.

RADIATOR CONDITION

The radiator is probably the most important component that keeps your vehicle's engine operating at ideal temperatures. Located in front of the Jeep, and functions as the car moves forward, cool air is forced between all the narrow tubes or fins in the radiator. This action draws the heat from the coolant. The cooled fluid then pumps out of the radiator and back into the engine cooling it down and maintaining operating temperatures.

So it's, kind of obvious, when your radiator isn't working 100%, your engine will begin to overheat, even with all the fans running and coolant flowing.

SUFFICIENT AIR FLOW

4WD owners seldom consider air-flow when they modify their vehicles. Many Jeeps and other 4WD run with massive spot lights, winches and LED bars in the front of their trucks. Now, you have to remember that maximum airflow to the radiator at all times is needed to properly cool down the water coolant.

However, If the radiator is blocks with large accessories and a few leaves, bugs, mud and debris clog up the front, the coolant won't reduce in temperature as it should resulting in overheating.

Accessories that could restrict airflow to your engine include:

- **Oversized spot lights mounted on the bumper**
- **Oversized Winches**
- **LED light Bars mounted directly in front of the grill**
- **Metal Mesh grill protectors**
- **Grass seed nets**

Combinations of all these accessories severely restricts the flow of air to allow the radiator to sufficiently "breathe" and do its job by cooling the engine.

CONCLUSION

The Jeep Wrangler cooling system consists of a combination of related components that depend on each other to function properly for efficient cooling. If one of these components are faulty, even a worn-out rubber seal on the radiator cap will prevent the cooling system from functioning optimally and keeping the engine cool. Service the cooling system periodically and replace any under-performing or suspected weak parts.

JEEP WRANGLER "SPUTTERING" ISSUES

IN ENGINE PROBLEMS

Does your Jeep Wrangler sputter on acceleration? Do you have a strong gas smell inside the cabin?

Does your Jeep feel under-powered and sluggish? Has your CHECK ENGINE light appeared with a few codes? If you answered yes to any of the above questions, you might find a solution in this article.



DOES YOUR JEEP "SPUTTER" WHILE ACCELERATING?

A sputtering Jeep Wrangler can be caused by any of the below bad components:

- Upstream O2 Sensors
- Valve springs
- TPS (Throttle Position Sensor)
- Spark Plugs
- Coil Rail

INTRODUCTION

So there's a host of possible causes why your Wrangler can become sluggish and sputter under load. The above-mentioned solutions will vary, depending on which year model Wrangler you own. The bad Valve springs, for example are only related to the older model TJ's, which were synonymous for this for problem.

Various codes should appear, some of which you can safely ignore, as well as a CHECK ENGINE light. We'll get into that in more detail a bit later.

Note: when self-diagnosing problems, be very weary of what advise you accept from counter salesman, since most of them are not qualified mechanics and don't always have your best interests at heart. Now that we have that out of the way, let's now look at a few possible solutions to your sputtering woes.

SPUTTERING ON ACCELERATION (SOLUTIONS)

The below solutions covers a wide range of Wrangler models, which can include the 2.5 as well as 4.0 models ranging from the TJ and upwards. When replacing electrical sensors and other components, always insist on genuine Mopar parts for optimal performance. 3rd party components might be cheaper, however they can cause additional problems later down the line, resulting in your vehicle not performing optimally.

Sub-standard 3rd party components could even result in the issue not being resolved, even though the correct component was replaced. Remember, you buy cheap, you buy twice! Ok, let's get into it!

UPSTREAM O2 SENSORS

Let's first understand what the function of the O2 sensors are, to properly diagnose the problem. The Oxygen or O2 sensor is the sensor in your vehicles exhaust system designed to monitor how much unburnt oxygen is in the exhaust to allow the engines computer to adjust the fuel mixture accordingly. The O2 sensor gauges the fuel to air mixture and tells the computer to increase or reduce the ratios. The O2 sensor also assists in reducing the harmful and poisonous fumes from the motor into the atmosphere

A faulty O2 sensor means the vehicle can't properly monitor and adjust the fuel/air mixture accordingly and will result in a strong gas fume smells inside the cabin. That indicates your Wrangler is running too rich in fuel.

You will experience the following symptoms:

- Runs fine when cold but 'sputters' once it reaches operating temps
- Your vehicle will 'sputter' only on acceleration
- Strong gas fume smells
- CHECK ENGINE light will appear
- Fault Codes p0171 will be thrown out

If you want to determine which codes have been thrown out you'll need to reset the engines faults. This is done by simply disconnecting the battery for 5 minutes. You then need to turn the key 3 times to read all codes.

Code is p0171 means bank 1 too lean, meaning the O2 sensor(s) are faulty and needs replacement. There are 2x upstream and 2x downstream on each bank on the 4.0 wranglers. You want to replace the upstream sensors. The recommended sensors are the NTK O2 sensor and not any aftermarket or 3rd party sensors.

If you are going to self-diagnose your Jeep problems, it's highly recommended to invest in an OBDII scanner to properly diagnose your problem, which can save you thousands in the long run. Next, let's investigate the valve springs.

VALVE SPRINGS

Once again if your valve springs are shot, your TJ Wrangler should kick out a CHECK ENGINE light as well as a few codes. If the codes disappeared, you can call them up by doing the 3-turn sequence where you turn your ignition key from off to ON 3x ending it in the ON position. The computer will spit out all the relevant fault codes on your instrument panel for you to diagnose. Codes like 12 and 55 can be safely ignored.

If you get an Error code you can check it here: [Jeep Wrangler Error Codes](#) So after many years and many unhappy jeep Owners complaining about the same issue, jeep finally released a TSB (technical Service Bulletin) addressing the issue of the bad valve springs on 97 models. Insist on the OE Mopar valve spring replacement

TPS (THROTTLE POSITION SENSOR)

If your Jeep seems to run normally under low RPM,s however when you accelerate to pick up speed the vehicle starts spluttering and feels very under-powered, this section is for you.

Possible culprits could be any of the following:

- **Dirty throttle body**
- **Faulty Fuel pump**
- **Bad TPS**
- **CHECK ENGINE lights**
- **Code P0123 (Throttle Position Sensor 1**
- **Circuit High)**
- **Code P0441 (EVAP Purge System Performance)**
- **Code P0121 (Throttle Position Sensor 1 Performance)**

Before you run out and purchase a new fuel pump or throttle body, which can be quite pricy, start off by cleaning the throttle body thoroughly. It's a worthwhile exercise which should improve performance as well as throttle response irrespective. There is nothing to lose by doing it. Your fuel pump will give other tell-tale signs like a loud buzzing noises coming from near the fuel tank. A bad Throttle Position Sensor is more likely the case here since Code P0123 and P0121 indicates faults with the Throttle position sensor. Do not cheap-out on sensors and only Insist on genuine Mopar sensors for optimal performance and reliability.

SPARK PLUGS

A few years back I owned little ¼ ton ford pickup. The vehicle suddenly developed a spluttering. After lots of head-scratching and trouble-shooting, it turned out to be a crack in the porcelain of one spark plug. That's when I remembered, a couple of months prior when I serviced the vehicle, I accidently dropped one of the sparked plugs. It resulted in a hairline crack which I didn't notice.

So obviously a badly worn or burnt spark plug will result in loss of spark on a cylinder resulting in a spluttering on acceleration. Also a cracked sparkplug will lose a lot of spark to the cylinder, resulting in spluttering under load.

COIL RAIL

If your vehicle splutters under light acceleration and low RPM but becomes increasingly bad the faster you drive, then you want to investigate your Coil Rail. Another tell-tale symptom is if the spluttering is in direct proportion to your RPM, i.e. the faster you drive the faster the spluttering.

We are quick to assume it's the injectors, however it's very rare that Wranglers suffer from injector problems. The 4.0 Wrangler is not a very highly-strung engine compared to more modern high-tech vehicles.

Symptoms to look out for:

- **CHECK ENGINE LIGHT**
- **Fault Code P0303 (Multiple Cylinder Misfire)**
- **Sputtering in sync with engine RPM**
- **Most apparent at 2,000 RPM**

The Fault code indicates it's a misfire on multiple cylinders. If you are 100% certain it's not a clogged CAT or bad plugs then the only option in this instance is a bad COIL RAIL since its affecting multiple cylinders at once.

CONCLUSION

So, we've identified multiple causes of a sputtering Jeep Wrangler. Some are year model specific like the Valve springs which was mostly related to a batch of the 97 model range.

There are other factors that could also cause sputtering and those include:

- Bad Fuel pump
- Clogged Fuel Filter
- Rusty Fuel Tank
- Vacuum Leaks

If there are no fault codes being thrown out, you need to drive it until it does. Usually after 3 bad runs the computer will throw out a fault code, however this isn't always reliable. Do the 3x key turn dance to read fault codes on the instrument panel, alternatively invest in a decent OBD2 Scanner.

JEEP WRANGLER VIBRATION AT IDLE

IN ENGINE PROBLEMS

Has your Jeep Wrangler developed a slight vibration during idle? Perhaps it wasn't there before and seems to be becoming increasingly obvious. Have you perhaps, done any suspension upgrades to your Wrangler recently or added an accessory or two? When idling at a stop-street, do you notice your engine hood, gear shifter and rear-view mirrors vibrate?

If you've answered yes to any of the above questions, hopefully this article can help you trouble-shoot your vibration problems.



DOES YOUR JEEP VIBRATE WHILE IDLING?

There are multiple components that can cause your Jeep Wrangler to vibrate at idle, however a bad transmission mount and a worn out spark plug is the most common causes.

Common causes of vibrations at idle include:

- Bad Transmission Mounts
- Bad Engine Mounts
- Bad Spark plugs
- Bad Harmonic Balancer
- Lightweight Flywheel
- Engine Misfires (Fuel Related)

JEEP WRANGLER VIBRATION AT IDLE

In many cases when you report this issue to your service department, they will quickly fob off as normal behavior and have no real interest to investigate further. Many times their go-to response is you probably don't have the latest software upgrades and you probably just require a quick OBDII upgrade to do the trick. Others have been told "It's the Nature of the beast" and you should accept it as normal behavior characteristics.

Next, let's look at the possible vibration causes starting with the most common.

JEEP WRANGLER VIBRATION AT IDLE (POSSIBLE CAUSES)

So you went for your software upgrade but the vibration is still there. What now? You haven't made any suspension modification and you haven't added any accessories lately.

my jlu has 700 miles I am noticing a minor vibration and idle speed I do not see any fluctuations is rpm at idle auto start turned off. I was wondering if anyone has had experience this, or if it just the balancing of the engine that does this from factory.

Refernce: <https://www.jlwranglerforums.com/forum/threads/vibration-at-idle.14384/>

Does this statement sound familiar?

Well, before any good Doctor diagnoses your problem, he first needs to identify your symptoms. Lets' look at some of the common vibration symptoms.

VIBRATION SYMPTOMS

- The hood shakes while idling at a stoplight
- Passenger seat shakes
- Vibration is felt on your steering wheel
- Vibration is felt on the armrest
- Noticeable engine shake when the hood is open
- Idle needle is stable, no fluctuations

If the idle vibration is slightly rough, noticeable but not too bad, don't make anyone have you believe its normal behavior and just a "Jeep Thing", that's nonsense. Some have even been told by their service mechanic that is "normal" because the valves are driven by oil and when cold, the oil understandably doesn't flow as well.

C'mon, how much wobble is considered acceptable and at what stage does it need to be addressed? Well, if the vibration is detracting from the driving experience or causing an annoyance, I'd say there is something amiss and you need to investigate further, no matter what your service technician tells you.

Let's look at the common causes of vibrations when stopping.

VIBRATIONS WHEN YOU STOP

If your Jeep feels 100% fine when driving, however, picks up a vibration only felt while idling, we can put it down to any of the below components that needs either maintenance or replacement. First, investigate your transmission mounts

TRANSMISSION MOUNTS.

One thing to keep in mind when it comes to transmission and engine mounts, is that they don't require a certain amount of miles before they can fail. They are perishable components and designed to last a very long time, however, they have been known to fail or tear, even at low mileage.

A few important questions you need to ask:

- 1 Has your Jeep undergone any extensive frame work recently?
- 2 Have you been involved in an accidents recently, even a light "fender-bender"
- 3 Have you driven any hard off-road tracks in the last few weeks?

Any one of these scenarios can result in a hair-line crack in the rubber mounts, resulting in a slight vibration being felt through the vehicle. The crack might not even be visible from the outside.

The job of the engine and transmission mounts are to secure your vehicle's engine and transmission to the sub frame. They mounting rubbers are designed to dampen all the vibration into the cabin and absorb vibration and shock, to ensure that the driver and passengers are unable to feel any movement of the motor, detracting from the driving experience and comfort.

Symptoms of a bad transmission mount:

- Excess vibration while the engine is running.
- Clanking or clunking noises when shifting gears.
- Difficulty shifting gears.

Below is a real-world experience of a Jeep owner, who has done some suspension upgrades and replaced his OE rubber mounts with a lower quality aftermarket version, obviously unbeknown to him.

"I figured I would post my experience so it may help someone else with the same problem.

I installed a 4" lift that came with the transfer case drop spacers. The factory transmission mount was broke so they replaced it with a aftermarket rubber mount. (It looked just like factory). As you All know when you drop the transfer case it puts the motor mounts under a bit more stress. After the lift was all installed I had a horrible vibration sitting still at idle with my foot on the brake in gear (stop sign). It wasn't terrible in neutral but was still present.

However when in gear with my foot on the brake it was so bad I could feel it in my feet, seat, and would shake all the mirrors. This is totally sitting still has nothing to do with drive shaft angles or any vibrations from moving part. I wasn't sure if it was due to the fact the motor mounts were under more stress and much tighter or the new transmission mount.

I did a little research and found people that said a mopar mount was much better than the aftermarket ones. My first mount was \$30 and the cheapest mopar mount I could find was \$120. I had a hard time trying it but couldn't stand the way the Jeep felt. It shook and rattled everything in the Jeep. I ordered a mopar mount and swapped it out. 100% of the vibrations are gone and ideals smooth as silk. 2004 unlimited."

We are so grateful for people like Trav that provide us with feedback once they've resolved the problem. Notice, the mount was replaced with an aftermarket version that was sub-standard OE quality.

This teaches us that even though you have replaced the transmission or engine mounts, but you failed to use OE MOPAR mounts, you risk running into vibration issues. Insist on genuine MOPAR parts when replacing rubber mounts.

Symptoms of a bad transmission mount:

- Excess vibration while the engine is running.
- Clanking or clunking noises when shifting gears.
- Difficulty shifting gears.

Below is a real-world experience of a Jeep owner, who has done some suspension upgrades and replaced his OE rubber mounts with a lower quality aftermarket version, obviously unbeknown to him.

HARMONIC BALANCER

Every modern engine has a harmonic balancer built into it. The function of the balancer is to keep the rotational parts (Crankshaft) balanced, duh, and protect the engine from dangerous harmonic vibrations and potential damage.

Signs of a Bad Crankshaft Harmonic Balancer

- 1 Excessive Engine Vibrations**
- 2 Timing Marks out of position**
- 3 Harmonic Balancer out of position**
- 4 Excessive Engine Noise**
- 5 Irregular Engine Beats**

Let's now look at engine misfires

SPARK PLUGS

A worn out spark plug will result in a weak spark or even no spark at all, resulting in that cylinder to not detonate. The lack of detonation on any cylinder will result in the engine vibrating uncontrollably. You will hear an obvious audible difference in the engine idle. Excessive vibrations will be felt throughout the body, steering and seats. A small component such as a spark plug can result in the engine to vibrate as the cylinders misfire during idling and at running speeds.

Fitting new OE specification spark plugs is the best way to resolve such vibration related issues.

ENGINE MISFIRE

Misfiring is closely related to spark plugs but can be the result in lack of fuel or low fuel pressure as well. An engine misfire will detract from the driving experience by causing jerking, spluttering and vibration inside the cabin. A misfire from the engine should kick out a code and throw up the CHECK ENGINE light on your instrument panel. Make sure you invest in a good OBDII scanner to troubleshoot these codes.

ENGINE MOUNTS

The Engine mounts, much similar to transmission mounts are designed to secure your vehicle's engine and transmission to the sub-frame and absorb all vibration and shock caused by the detonation process and cylinder vibration happening inside the engine. They are designed to ensure the driver is unable to feel any rotational movement of the motor. There is no minimum lifespan of a rubber mount and can go bad as it drives off the floor.

Factors that can destroy a rubber mount include:

1. Mileage
2. Excessive heat
3. Constant rotation between heat and cold
4. Environmental factors
5. Exposure to harsh fluids
6. Certain harsh cleaning agents

Note: Your motor mount through bolts should be torqued to the correct specification to prevent vibrations.

OTHER COMPONENTS THAT CAUSES VIBRATION DURING IDLE

- Suspension Upgrades
- Installing lightweight flywheels
- Poly Mount Bushings

CONCLUSION

Vibrations on jeeps are a common issue. Take the time to crawl underneath your jeep or get it on a hoist to inspect all bushings for tears and cracks. Drive-shafts and related components won't be the cause of vibrations at idle since they are not rotating when the vehicle is stationary. When replacing rubber mounts, try to avoid poly bushes, since they are a lot harder and don't dampen vibration very well.

Insist on OE MOPAR transmission and motor mounts.

WHY IS MY JEEP WRANGLER JERKING?

IN ENGINE PROBLEMS

Does your Jeep feel sluggish under acceleration? Does it misfire when you depress the gas pedal? Have you been to a car wash lately or used a high pressure hose while cleaning?

If you answer yes to any of these questions, then the following article will have the possible cause and solutions for you.



DOES YOUR JEEP JERK WHEN DRIVING?

A Jeep Wrangler needs the correct ratio of 14.7-to-1 air/fuel necessary for proper engine operation. Incorrect ratio of fuel and air will cause the Jeep to Jerk under acceleration.

Other common causes for Jeeps to jerk while accelerating are:

- Bad Alternator
- Bad Upstream O2 sensors
- Bad Spark Plugs
- Bad Battery
- Clogged Fuel Filter
- Faulty Crank Position Sensor

INTRODUCTION

Most conventional gas powered vehicles, including the Jeep Wranglers, require three elements to run properly. Those 3 elements are a very specific mixture of air, fuel and electrical spark. If any of those 3 elements are missing or out of spec, it will cause the vehicle to run poorly, jerk, and even stall.

This section will discuss those elements in more detail, explaining the common causes for your Jeep Wrangler to jerk when accelerating, so stick around.

WHY IS MY JEEP WRANGLER JERKING -CAUSES

The Jeep wrangler has a few key electrical components that can cause it to jerk, so you will need to systematically inspect all of them as best you can to locate your culprit.

ELECTRICAL

Once an electrical component comes into contact with water or any fluid, it drastically reduces the functionality of that part. Something as innocent as using a high pressure hose when cleaning your engine bay or driving through a car wash can cause electrical components to pick up moisture.

ALTERNATOR

A bad alternator is not something we can physically look at and detect that it is bad. Unless, of course, it's completely burnt out, then you might notice some black traces around the outer casing, but generally the only signs we have are those emitted by the behavior of your Jeep and the information being displayed on the instrument panel.

If you have a bad alternator, your instrument panel should display a battery symbol which indicates a fault and you have a "Battery Charging Condition". A bad battery that has a low charging voltage from the alternator will confuse my electrical sensors and can be the cause of jerking while under acceleration.

UPSTREAM O2 SENSORS

The basic structure of a modern exhaust system comprises of a few components.

- Exhaust Manifold(s)
- Exhaust Pipe
- Oxygen Sensors
- Catalytic Converter(s)
- Heat Shield(s)
- Muffler
- Tailpipe

The Oxygen Sensors (O2S) are connected directly to the Jeeps exhaust system. Depending on the engine or emission package, the vehicle may use a total of either 2 or 4 sensors.

An O2 sensor is a galvanic battery that provides the PCM with a voltage signal (0-1 volt) inversely proportional to the amount of oxygen in the exhaust. In other words, if the oxygen content is low, which can be caused by a blocked or clogged up air filter, the voltage output is high.

On the other hand, if the oxygen content is high the output voltage is low. The PCM uses this information to adjust injector pulse-width to achieve the 14.7-to-1 air/fuel ratio necessary for proper engine operation and to control emissions. Any Ratio below or above this mixture ratio will result in your vehicle underperforming and jerking under load.

In the event any of the O2 sensors get water-damaged, you are recommended to replace all 4 and use only high quality NGK sensors.

SPARK PLUGS

In order for your Jeep to run smoothly, you need to ensure your spark plugs are good quality and in good condition. A plug that has deposits on it will under-perform and result in your Jeep fuel consumption to increase and cause jerking while accelerating.

Identification signs of a bad spark plug include:

- Light tan/grey in color on the tips
- Black electrodes caused by electrode burning
- Large Gaps

Your spark plugs gap will expand every 1000 miles of driving. This is referred to as "Gap growth". Gap growth should not exceed more than roughly 0.025 mm (.001 in) per 1600 km (1000 miles) of operation.

A spark plug can be restored by doing the following:

- Step 1 Remove the plugs
- Step 2 Thoroughly clean the plug
- Step 3 File the electrodes
- Step 4 Set the gaps
- Step 5 re-install

CPS (CRANK POSITION SENSOR)

Like most modern engines, the Jeep Wrangler makes use of a CPS to monitor the position or rotational speed of the crankshaft and ignition timing. This information is then relayed to the engine management systems to control the fuel injection or the ignition system timing and other engine parameters. A faulty CPS can easily cause a misfire, poor engine performance and jerking.

BATTERY

A bad battery that has a low voltage will result in incorrect voltage signals to be transferred to electrical components. This can also confuse many electrical sensors which can be the cause of jerking while under acceleration since they won't relay the correct information to allow the engine to function optimally.

The most obvious signs of a bad battery are:

- Dim headlights
- Clicking sound when you try and start the engine
- Slow cranking
- Longer than usual cranking times
- Backfiring and jerking

The average life expectancy of a car battery is three years so check your battery age stamp to determine if you are due for a replacement. There are external factors that can result in your battery wearing/breaking down sooner such as environmental conditions and chemical reactions.

Next, let's look at a few fuel related aspects that can cause problems with acceleration.

FUEL

This section covers your fuel supply, pressure and filters.

Fuel Filter If you often fill up at dodgy filling stations, your fuel tank eventually becomes filled with all sorts of sediment that gets sucked up from the filling station tanks. This accumulates over time and the waste in the fuel filter could also cause the car to jerk.

A clogged up fuel filter is one of the most common causes for a jerking vehicle. When your Jeep gets its scheduled services, ensure only quality fuel filters gets used to block all rust and sediment from entering your engine and clogging injectors, causing even further more expensive damage.

Another sign of a bad fuel filter is when your are driving up an incline or when the vehicle is under more load, this will also cause the vehicle to jerk, cut out, or lose power.

FUEL PUMP

A bad fuel pump can be caused by running your tank to low too often or simply old age.

There are gears inside the fuel pump that eventually wears out, resulting in a load buzzing sound being emitted from the rear close to the fuel tank.

A bad fuel pump will result in your vehicle jerking when accelerating or when driving up an incline since it won't be able to produce enough fuel pressure to supply your injectors.

IDLE AIR CONTROL MOTOR

The AIC motor is located on the rear side of the throttle body, and regulates the amount of air bypassing the control of the throttle plate. When the engine loads and ambient temperatures changes, engine rpm changes The IAC is controlled by the Powertrain Control Module (PCM) to maintain the target engine idle speed. A faulty AIC will result in decreased performance, jerking and stalling.

CONCLUSION

Whatever the cause of your Jeep Wrangler jerking while driving, if you follow the above mentioned guidelines, you can successfully identify which component is responsible for your vehicle's behavior.

Begin your trouble-shooting with the most common causes first such as the spark plugs, battery and sensors. It's always valuable to know the inner workings of your Wrangler, and doing a bit of DIY diagnosis can save you lost of time and money at the dealerships.

WHITE SMOKE ON STARTUP

IN ENGINE PROBLEMS

Has your Jeep started smoking recently causing you much anxiety? Are you smelling anything strange like a sharp water vaporized smell in the exhaust fumes? Have you noticed a puff of smoke bellowing from your exhaust a second after you start up your Wrangler?

Does it occur intermittently or does it smoke consistently? If your Wrangler is displaying any of the mentioned symptoms, then you might find the solution in this section.



WHITE SMOKE DIAGNOSIS

In order to accurately diagnose the problem, we first need to identify a few signs which either isolates a very specific component or eliminate other possibilities, and we go about this by identifying the following:

- Identify any smells from the exhaust
- Identify the color of the smoke (Blue/White)
- Identify the smoke density (Thick/Thin)
- Does it smoke constantly or only at startup

Once we've achieved the above, we can move to the next phase by determining the possible cause and a solution.

- Let's look at each possibility in more detail

INTRODUCTION

One identifying sign that it's either a serious problem or nothing to really be concerned about is if the smoke being emitted from your Jeep is thin and only lasts a short while and disappears without repeating or, If the smoke lingers and happens each time on startup with a distinct smell like antifreeze or oil burning.

In the case of the latter, you have a much more serious problem on your hands. Oil and antifreeze have very distinct smells and are signs of a serious leaks which could result in catastrophic engine failure in not attended to immediately.

Let's look at the fuel injectors as a possible causes.

LEAKING FUEL INJECTORS

If you have an injector that is leaking from the O-rings, it allows additional fuel to slowly seep into the combustion chamber once the engine is switched off. As the fuel slowly drips into the combustion chamber over a few hours, it results in excess fuel collected in the chamber upon initial startup. That's because, on startup your injection system squirts a bit of fuel to ignite and start-up the engine.

So with the excess fuel in the chamber, it cannot burn up quick enough and results in a lot of unburnt fuel exiting the exhaust pipe in a white or gray color smoke.

BLOWN HEAD GASKET

There is constant water circulating through your block to cool it down and maintain stable engine temperatures. However, if that coolant starts leaking from the block into your cylinders between the cylinder bore and the cooling channel, due to a blown head gasket, you will experience smoking as the coolant burns up. The smoke color is white, however, it's not very obvious during daytime driving.

The smoke is a lot more obvious and visible at night when a vehicle drives behind you and its lights reflects the smoke. The difference is the smoking will be consistent and not only during startup, and it emits a very distinct smell.

-

LEAKING COOLANT

We touched briefly on coolant leaks earlier, and trouble-shooting for coolant leaks is one of the easiest things to do. A reputable garage should be able to detect coolant leaks within a few minutes.

There are a few ways to check and they are

1. You can tell by the level of coolant constantly dropping. That is the most obvious method, however you shouldn't always wait too long to notice a considerable drop.
2. Check your oil. If the oil looks milky white, you definitely have coolant mixing in oil. This is really bad news and depending how far gone it is, worst case scenario it means damaged bearings and a complete engine redo.
3. Burning coolant emits a terrible smell and can be detected immediately.
4. Check for traces around the head gasket for obvious leaks.
5. A milky white appearance in the smoke
6. Bubbles in the radiator once engine reaches operating temperature
7. Puffing white smoke on and off at startup

It is a well-known secret that Jeep adds a stop-leak to stop small leaks from developing and seals minor leaks. Many manufactures add this additive on the assembly line. It's a harmless product that constantly circulates through the cooling system and basically remains dormant until a leak occurs.

Once a little bit of coolant manages to seep into the combustion chamber, you'll get a nice milky white smoke on startup.

Engines overheat if they aren't getting enough coolant circulation, and if the coolant is constantly, your head gasket will blow.

CRACKED HEAD

A cracked head goes hand in hand with a coolant leak. As mentioned earlier, once the coolant leaks, the engine temperature cannot be regulated properly, resulting in a crack developing in the head and white smoke from the exhaust. Even a failed head gasket will yield similar results. Once a car overheats, it usually bad news. Also the aluminum cylinder head is very prone to cracking once it overheats.

OIL BLOW-BY

The Jeep head is designed with the PVC (Positive Crankcase Ventilation) valve is located behind the head. If the vehicle is in a severe incline position, you could experience white smoke for a limited period. This is a result of oil being dumped directly into your intake and burnt up. A catch can is a very good investment to prolong the health of your engine intake by keeping it free from soot buildup.

OIL RINGS

If you have a situation where your piston rings are shot, it will result in oil leaking directly into the combustion chamber. This will result in constant, bluish whitish smoke being emitted from the exhaust. This condition will result in constant smoking from startup.

VALVE GUIDES

If you have a situation where your valve seals are leaking, it will result in oil leaking directly into the combustion chamber. This will result in constant, bluish, whitish smoke being emitted from the exhaust. This condition will result in constant smoking from startup. It will emit a distinct oil rich smell.

BAD MODULATOR VALVE ON THE TRANSMISSION

Another culprit for excessive smoke exiting your exhaust is a TMV (Transmission Modulator Valve). This is only applicable to automatic transmission Jeeps.

The signs of a bad TMV are:

1. Inability or difficulty shifting into gear
2. Smoke from the exhaust
3. Whistling noise from a leaking diaphragm
4. Rough idle

EXHAUST SYSTEM UPGRADE

When we upgrade the exhaust system, it's usually to a bigger diameter pipe which releases a few more HP and gives of a deeper exhaust note. In many cases, a muffler is deleted and replaced with a smaller free-flow version to allow exhaust gases to escape easier.

However you might have noticed a slight increase in smoke and a stronger fuel smell after your upgrade, especially at startup. Removing the FF muffler and replacing it with the stock muffler visibly decreases smoke and the strong exhaust fumes.

You need to do a visible inspection for the drain hole on the mufflers. If the muffler was installed incorrectly with the drain hole facing upwards it could result in water being blown out.

CONCLUSION

If you've managed to do some of the suggested inspections and your findings are still inconclusive, then rather take the Jeep for a pressure test.

There is only so much Intel you can gather from a visual inspection.

CLICKING NOISE WHILE DRIVING

IN ENGINE PROBLEMS

Has your Jeep recently developed a weird clicking noise? Does the clicking become louder as the engine reaches operating temperature? Does the sound resemble a clicking pen or a ticking noise? Is the sound in sync with engine RPM or wheel speed? If you answered yes to any of the above questions, your solution could be right here in this article, so stick around.



CAUSES OF CLICKING NOISES

If your Jeep Wrangler emits a clicking/ticking sound, it could be caused by any of the below components being faulty:

- Worn Hydraulic Lifters
- Exhaust Manifold Gasket Leak
- Bad Purge Solenoid Valve
- Dry U-Joint
- Dry/Damaged CV Joint
- Low Oil level
- Faulty Oil Pump Drive Assembly

INTRODUCTION

When we troubleshoot the clicking noise, there are a few important behavioral factors we need to pay close attention to. For example, if the clicking only occurs under acceleration, we know its drive-train related.

Alternatively, if the ticking sounds louder as the engine reaches operating temperature, it is more closely related to lubrication. If the clicking is loud at cold operating temperatures, but dissipates slightly as the engine warms up, it isolates exhaust and drive-train components and could be more related to the engine's head/top.

So it's important to pay close attention and determine when exactly the problem occurs, and when it's most noticeable since that will narrow down your search to one or two possibilities.

Let's now look more closely at the symptoms and possible causes

POSSIBLE CAUSES OF CLICKING NOISES

TYPICAL SYMPTOMS

- Sounds like a pen taping or clicking
- Most audible at slower speeds
- Most obvious when driving next to a wall or tunnel
- Clicking/Ticking in sync with engine RPM
- Clicking/Ticking in sync with wheel rotation
- Higher speeds dissipates the noise somewhat

Next, let's determine if the clicking noise can be the result of bad lifters

WORN HYDRAULIC LIFTERS

It's a well-known fact that the 4.0 Wranglers are synonymous with ticking and clicking lifters. A lifter ticking and an injector rattle are two separate conditions and should not be confused.

I've personally experienced rattling injectors, and man is it annoying. Some days they are super quiet and you just wish they can remain that silent, and other days they drive you crazy, no matter how loud you put the radio, you can't help but listen to them clicking and rattling away.

A ticking lifter is something different though. It is caused when a gap develops between the push rod/camshaft to the point where they fail to make continuous contact with the lifters.

In the case with hydraulic lifters, they become worn out with old age.

With Wranglers, the lifter-tick syndrome is a common occurrence and many owners choose to ignore the noise and just live with it. The only way to eliminate it in the case with the

Hydraulic lifters, is to rebuild the cylinder head with new lifters. Expensive!

If you can learn to ignore the clicking, rather leave it since it won't harm your engine and is nothing to be overly concerned about.

If you can't live with the noise, you could try your hand at oil additives. I'm skeptical, however, I guess you have nothing to lose by trying. In many cases it won't completely eliminate the clicking but will make your engine considerably quieter, which is always a plus I guess.

EXHAUST MANIFOLD BLOW

Your exhaust manifold can be another possible cause for the constant clicking/ticking noises. The noise is most audible on cold startup. The clicking noise resembles that of a musician's metronome and is in sync with the engine RPM.

The cause of an exhaust manifold to tick is if the manifold bolts work themselves loose or break off completely. This results in exhaust gasses to escape around that area, resulting in a clicking/ticking noise.

One way to identify where the leak is coming from is to use a soapy water combination and spray it around the entire manifold. Bubbles forming will be a dead giveaway where the leak is. Inspect all bolts first for

- obvious signs. You are looking for broken off bolts or missing bolts/nuts.

PURGE SOLENOID

If you pop your hood and locate the purge valve. All TJ models are equipped with a duty cycle EVAP canister purge solenoid. The solenoid regulates the rate of vapor flow from the EVAP (EVAPORATION CONTROL SYSTEM) canister to the intake manifold. The solenoid attaches to a bracket located in the

- engine compartment near the EVAP canister. The top of the solenoid has the word UP or TOP on it.

The solenoid will not operate properly unless it is installed correctly. The ticking noise is normal and you can actually feel it clicking/ticking if you place your hand on the solenoid. The clicking solenoid shouldn't be heard from inside the cabin. If the valve is audible from inside then you will need to replace the valve. Replace the Purge valve to rectify the problem

U-JOINT

The Wranglers have 4x U-joints. One on each end of the front axle and one located on the front drive-shaft. The 4th one is located on the rear drive-shaft where it connects to the rear diff. A worn U-joint will emit an audible clicking noise as it rotates. U-joints wear out quickly and is caused by lack of lubrication.

It's not advisable to drive your vehicle as the U-joint may break, causing possible damage to the brake lines, transmission line, or drive shaft.

There are tiny pin-shaped bearings inside the short cross-shaped joint. If these lose lubrication and dry out, you might be able to hear a distinct clicking noise with each rotating of the drive shaft.

Thoroughly inspect the u-joint where the stub shaft meets the inner axle for excessive play. The clicking could be as a result of a dry U-joint or a missing C-clip. Inspect the U-joint cap that it hasn't shifted which will cause it to make contact with the C as the driveshaft rotates. When replacing the U-joint, ensure you have all the needle bearing nicely lined up before you fit the cap, else it won't fit snug and straight.

HUBS

If you have a worn out, or dry wheel bearing hub, you can usually hear an audible snapping, clicking or popping noise. Usually as a result of excessive bearing end-play.

Open and inspect, lubricate or replace

STONES

I can't count how many times this has happened to me, when I leave the dirt road and suddenly hear a clicking sound. It is in sync with wheel rotation. If you are running an AT (All Terrain) or MD (Mud Terrain) tire with an aggressive tread pattern you are more susceptible to this. The rubber lugs are spaced further apart than a HT (Highway Terrain) tire, causing small stones and debris to easily get trapped.

The clicking sound is made by the stone as it makes contact with the pavement or tarmac. By the time you realize it's only a stone, they're usually filed flat due to the friction against the road surface. A nail in your tire can result in the same noise.

Inspect all tires and dislodge any tiny pebbles and stones trapped between the rubber lugs. Nails will require a patch or a puncture repair at the tire shop.

OIL PUMP DRIVE ASSEMBLY

If your engine is running low on oil or not getting enough oil pressure, you need to address this issue immediately. It's the worst-case scenario and will result in catastrophic engine failure if left unattended. Low oil levels will become audible immediately on the head and top level of the engine simply because it's the highest point to pump sufficient oil and keep lubricated.

Check oil levels. Top-up if necessary. Avoid driving the vehicle until the problem has been resolved.

CV JOINT

Another very common cause of clicks and ticking when driving is your CV's. It's a very common occurrence on IFS vehicles where a raised suspension aggravates the CV joint angle resulting in the CV joint losing its flexibility and causes the joint to "climbing over itself" when doing extreme off-roading, especially when there are tire lifts.

When altering a truck's suspension to make it higher, the vehicle's frame and body is moved up and away from the differentials. This places enormous amounts of pressure on the CV and damages it just enough to start clicking and ticking before it eventually breaks completely.

On a Jeep that has a SFA (Solid Front Axle) it's not much of a problem for the CV Ball when the vehicle is lifted. However a dry CV will result in premature wear, and nasty vibrations

CONCLUSION

It's hard to immediately identify which of the above components are responsible for the ticking sound. Your best bet is to systematically work your way through each of the above mentioned parts to determine which one is the culprit. The most common causes on Wranglers are bad lifters/rockers, low or thin oil and exhaust manifold leaks, however it can be something as simple as a stone jammed in your tire.

HIGH PITCHED NOISES

IN ENGINE PROBLEMS

Jeep wranglers have been known to emit some weird and wonderful noises. There is a very specific noise that only affects the JLU range and other high pitched sounds that affects JK's. This article will cover both models and explain the possible causes and solutions.



CAUSES OF HIGH PITCHED NOISES

Jeep Wrangler JLU and JK models that produce a high pitched noise can be attributed to any of the following components:

- Electronic Throttle Body
- Slipping Belts
- Failing Water Pump bearing
- Bad Tensioner/Idler Pulley
- Worn Serpentine/Alternator belt
- Throttle Body
- Leaking Vacuum lines
- Power Steering Pump
- Exhaust Manifold Bolts

INTRODUCTION

As you can see, there are a number of components that can be the cause, so in order to narrow it down, we need to look a series of symptoms to better understand where exactly the noise is emanating from.

Some of the reported symptoms on the JLU include:

- Constant high pitched whine sound similar to a tuning fork
- Noise is most audible when the ignition is in the ON position but not running
- Random clicking sound under the high pitched sound
- Most audible near the driver side
- Can be heard from the center instrument panel inside the cabin
- Sounds like an electronic noise
- Continues while the engine is running but less audible

So we've established the sound is coming from the engine bay area and constant even after the engine is started. That rules out any drive-train related components. We know for certain, it's an electrical issue. Let's now look at the most likely causes.

ELECTRONIC THROTTLE BODY (JLU SOLUTION)

The JLU has been known to emit a high pitched squealing noise which stems from the electronic throttle body. Pop in at your local dealership and they'll have you know its "normal" behavior for the JLU throttle body. It's a common "symptom" with all JLU Wranglers, and Chrysler/Jeep have no intention on rectifying or changing anything in the near future.

Because it's a known behavioral trait of the JLU range, it's commonly labeled as "by design", and any conversation with a Jeep service technician or manager will confirm this. I guess it's a "JEEP THING" Have a look at the below video to confirm your JLU is doing the same thing.

JEEP WRANGLER JK HIGH PITCHED SQUEAL SOUND WHEN DRIVING

Just like the JLU troubleshooting procedure, we need to look at some of the symptoms of the high pitched noises.

- High-pitched squeal sound when driving
- Sound not in sync with the speedometer or RPM
- High-pitched noise is audible under acceleration only
- high pitched noise when in idle or moving slowly
- Most audible when engine has reached operating temperature
- Noises dissipate once speed increases passed walking pace.
- Sound appears to emit from behind the radiator

In order to accurately diagnose your squealing problem you need to determine a few behavioral facts. Establish if the problem is consistent while accelerating or only when idling. You need to establish if the noise is audible only at specific speeds. Take note of any modifications you've done recently. Are the squealing noise synonyms with a hard-top wind noises?

In order to answer any of these questions, let's look at some of the possible causes.

POSSIBLE CAUSES

- Slipping Alternator/Serpentine belt
- Failed Water pump bearing
- Debris inside air filter intake tub
- Failing Tensioner Pulley
- Bad Idler Pulley
- Throttle Body
- Damaged Intake Hose
- Leaking Vacuum Lines
- Loose or Broken Exhaust Manifold Bolts
- Failing Power Steering Pump
- CAI (Cold Air Intake) Modification

SLIPPING ALTERNATOR/SERPENTINE BELT

It's very common for a serpentine or alternator belt to start squealing since they have a limited life span. When diagnosing serpentine accessory drive belts look out for small cracks that run across the ribbed surface of the belt.

Cracks that run from rib to rib are considered normal. It's not necessary to replace the belt in this instance. What is more serious are when cracks run along a rib (not across) since these are not normal and require the belt to be replaced.

Ensure you regularly inspect your pulleys before and after big off-road trips and if there are signs of excessive wear, heavy glazing and frayed cords, replace them immediately. Sounds caused by the accessory drive belt are most obvious at idle. Before replacing a belt to resolve a noise condition, inspect all of the accessory drive pulleys for alignment, glazing, or excessive end play.

Belt tension cannot be adjusted. Refer to the following Belt Tension table for specifications:

Description:

New Serpentine Belt: 800-900NM, 180-200Lbs.ft

Used Serpentine Belt: 623-712NM, 140-160Lbs.ft

As you can see from the above specifications the belt loses quite a bit of tension from new.

FAILED WATER PUMP BEARING

If you've recently had any viscous fan damage, inspect the water pump bearing and shaft assembly. These can pick up debris from a viscous fan drive failure.

DEBRIS INSIDE AIR FILTER INTAKE TUB

Leaves, dry grass, and other debris can be sucked into the air intake box and become lodged inside resulting in loud squealing noises as the air passes through under acceleration.

Inspect the Air Filter intake tub doing the following:

- Step 1. Disconnect air intake duct at front of element cover.
- Step 2. Pry up spring clips
- Step 3. Release housing cover from locating tabs
- Step 4. Remove the cover
- Step 5. Remove air cleaner element (filter) from the housing.
- Step 6. Clean inside of housing from any debris

FAILING TENSIONER PULLEY

A failing tensioner pulley will emit a loud squealing noise under acceleration. It usually starts off softly and gradually progresses to a louder more noticeable squeal over a few weeks. If you regularly do water crossings, you need to inspect your tensioner pulley more often, since this can shorten its lifespan.

BAD IDLER PULLEY

As soon as the engine is started, when idling, a bad pulley will emit a squealing sound. This is due to the bearings in the pulley going bad. An idler pulley will make noise even when the vehicle isn't under load.

Remove the belt and check if you are able to spin the pulleys freely by hand. No noise or "course" feeling should be present. Inspect for glazing which looks like shiny spots on the ribbed sided.

THROTTLE BODY

Throttle noises are another very common trait on the Wranglers due to its internal design where pressurized air escapes through the throttle body.

If you have air escaping through the throttle body, you could be in for something more serious since air escaping through the throttle body is a sign that you could have a bent valve or it's not seated properly. Inspect valve and valve seat. Reface or replace, if necessary. Also, inspect all throttle body bolts.

DAMAGED INTAKE HOSE

A damaged intake is another cause for whistling sounds. Inspect the intake hose thoroughly for cracks. Take note of the nipple on the intake manifold, located on the driver side of the engine that feeds to an elbow (black) for cracks. This could cause your cruise-control to become faulty as well.

LEAKING VACUUM LINES

Thoroughly inspect all the vapor/vacuum lines and hoses. They need to be firmly connected and free of any cracks or tears. Check the vapor/vacuum lines at the LDP (Leak Detection Pump), LDP filter and EVAP canister purge solenoid for damage or leaks. If a leak is present, a Diagnostic Trouble Code (DTC) will be set.

LOOSE OR BROKEN EXHAUST MANIFOLD BOLTS

The exhaust manifolds share a common gasket with the intake manifold. The exhaust manifolds also incorporate ball flange outlets for improved sealing and strain free connections

There are 11 bolts that needs to be tightened in the correct sequence and to the exact torque specification, as recommend by the manufacture.

- Fastener Numbers 1 through 5—Tighten to 33 N·m (24 ft. lbs.) torque.
- Fastener Numbers 6 and 7—Tighten to 31 N·m (23 ft. lbs.) torque.
- Fastener Numbers 8 through 11—Tighten to 33 N·m (24 ft. lbs.) torque

FAILING POWER STEERING PUMP

The power steering pump is located behind the radiator fan towards the front of the engine. Always make sure you use only MOPART ATF+4 in the power steering system. Avoid using any 3rd party power steering or automatic transmission fluid since damage may result to the power steering pump and system if any other fluid is used. Take special care not to overfill.

- **SYMPTOM #1:** Unpleasant Hiss or Whistle
- **CAUSE:** Faulty steering intermediate shaft to dash panel seal
- **FIX:** Inspect and replace seal at dash panel

- **SYMPTOM #2:** Unpleasant Hiss or Whistle
- **CAUSE:** Noisy valve in power steering gear
- **FIX:** Replace Steering Gear

- **SYMPTOM #3:** Chirp/Squeal
- **CAUSE:** Loose Belt
- **FIX:** Adjust or Replace

CAI (COLD AIR INTAKE) MODIFICATION

It's not uncommon for Wranglers to develop loud hissing or squealing noises after installing an aftermarket CAI. The noise will be in sync with the engine RPM as it sucks air into the system. If you cannot live with the hissing/sucking noises, revert back to factory standard.

CONCLUSION

Whatever your faulty component is, ensure you replace it with a genuine Factory specification part. Always insist on genuine Mopar parts as far as possible to get the maximum performance and reliability out of your Jeep