



Impacts on Automobile Vehicle During Floods

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ABSTRACT

Flooding can pose a danger to people and their property in floodplains. The hydraulic behaviour and hazard conditions of vehicles on floodplains during floods have recently attracted increased attention, and it is critical to investigate the hydraulic behaviour and hazard conditions of vehicles on floodplains during floods. In this paper it is discussed that the effect of floods on personal vehicles and the steps to be taken to safeguard the vehicles. It is also discussed that the restoration of effected vehicle by floods

1. INTRODUCTION

During the monsoon season in India, floods are extremely common. It only takes a light rain in most cities for the streets to turn into gentle streams, and then into raging rivers. Floods are kryptonite for cars, no matter how convincing some TV commercials may appear. Yes, most cars can handle a small amount of water (up to a foot in depth and for a few minutes), but staying in deep water for long periods of time is a big no-no. Nonetheless, because flooding in India is as unavoidable as Thanos (spoiler alert), here are some suggestions to help you get out of a flooded scenario with the least amount of damage.

Also see: What To Do If Your Home Has Been Flooded by the first thing you should have done was turn around and choose a different path. However, you now have an automobile that has become trapped in the water and is unable to move. This is what you must do safe.

2. REALATED WORK

How to Drive Through Flood Water - Important Flood Driving Tips:

Because of the poorly maintained roads and infrastructure of India, rain generally results in flooding. Now that the monsoon is approaching, several cities throughout the country are gearing up to deal with the unpredictable weather. The rainy season is perhaps your greatest fear if you drive a car in India. Driving conditions deteriorate as a result of wet, slick roads and limited vision. Hu enormous potholes and thick puddles to contend with, you may come to regret driving your car out. If you must drive in the rain or through floods, here are some safety guidelines to help you stay safe.

How to Keep Your Parked Car Safe During Floods

Here's what you should do if you find yourself stuck in a flooded car:

Turn Off The Engine

The first thing you should do if you find yourself stuck in a puddle or on a flooded street is turn off the car's engine. Water appears to be entering the engine through the air intake, causing it to stall. This prevents water from entering the engine when you turn it off. If water has already entered the air intake, rapidly shutting down the engine may prevent it from seizing.

On the Side Of The Highway

When the floodwaters become too much to handle, the finding higher ground to halt your car is the best option. If you can't find a better spot, park your car on the side of the road, away from the flow of traffic. Use the danger lights to warn other motorists of your location and avert any potential collisions. If feasible, unplug the battery after shutting off the engine once parked.

Disconnect the battery safely.



The battery is the beating heart of your vehicle. Your engine and other components would not work without the battery's power. This is why, after you've parked your car and turned off the engine, you should try to disconnect the battery. Water and electricity, as you may know, are two necessities.

If your car comes into touch with flood water, the electrical components and wiring can be destroyed, not to mention that you could get a nasty shock. Reconnect the battery and inspect the electrical systems for any flashing or additional damage once you've been out of the floods for a while.



Wait till the floodwaters have subsided.

You should wait until the flood water has subsided or totally receded before assessing the damage to your car. When the water is fully gone, you may either inspect the vehicle for water damage or hire a mechanic to do so.

You should notify your insurance company if the car is significantly damaged for any repairs that may be necessary

How Should You Drive Through Floods With Your Car?



Here's what you should do if you're about to drive through floodwaters:

Continue revving the engine.

Before you start driving through the floodwaters, make sure the water level is low enough for your automobile to handle. While driving through the water, remember to keep the car in first gear and rev the engine constantly. This will keep water out of the engine and prevent it from stalling or seizing.

Slow Down Your Speed

During the monsoons, traction and visibility, two factors that are critical for driving, are dramatically diminished. The roads are always damp and slick, and tyres frequently fail to gain adequate grip. This is why, during the monsoons, you should always drive at a slower speed. Driving through a flood in first gear will bring you to a halt. The car from "hydroplaning," or losing control.

If the water level rises, get out of the car.

Even if you believe your vehicle is capable of handling the floods in front of you, you may not be aware of the situation ahead. It is better to park your automobile on the side of the road and exit the vehicle if the flood water level is gradually rising and is halfway up the doors. When the water level rises to unsafe levels, your car's electrical systems may fail, and the doors may become stuck shut due to the water pressure, which can be a deadly condition. When the floods subside, you can always return to your car with the help of a repair to examine the damage

Break glass with the headrests

As previously stated, you must find a way out if you find yourself in heavy floods with doors stuck shut and windows that don't operate due to electrical failure. The head rests are used in this situation. Most people are unaware that the head rests are designed with pointed tips to aid in the breaking of glass windows or windshields in an emergency. Despite the fact that most experts advise drivers to have a small hammer in their glove box or boot, the headrest is the superior solution.



Keep a safe distance from trees and power lines.

When it's pouring, you might assume that hiding behind a giant tree is a good idea. However, that might be the dumbest idea ever. During the monsoons, avoid parking your automobile near trees or power poles because the rains are frequently accompanied by lightning. If lightning strikes a tree near your automobile, it may fall and inflict significant damage. Similarly, a lightning strike on an electrical pole might short circuit your vehicle and do extensive damage. Even if it's raining, you should keep a few metres away from trees and power lines when driving.

If visibility deteriorates, stop.

Driver visibility is greatly limited during monsoon rains. In fact, a lack of visibility is to blame for the majority of traffic accidents. If you are unable to do so, when you see the road ahead of you, pull over to a safe area and wait for the rain to cease or lessen. It is exceedingly unsafe to drive in these conditions and should be avoided at all costs. If you are unable to stop and must continue

driving, turn on all of your lights, including your headlights, fog lights, taillights, and cabin lights, to ensure that other motorists can see you. This will increase your visibility and keep you and other drivers on the road safe. To minimise hydroplaning and maintain a safe distance from the vehicle in front of you, you should also travel at a slower speed.

1. Do Not Try To Start The Car - This cannot be emphasised enough. Every component within an automobile, including the engine and transmission, can be damaged by water. The problem will only become worse if you try to start the engine and additional water enters. It's called "hydrolock" when water damages the engine and the pistons don't compress or move as they should. It's very common in flooded cars. If your car is hydrolocked, when your car is hydrolocked, you can expect to pay a lot of money for repairs.

2. Remove As Much Water As Possible - Water that sits stagnant for an extended length of time can cause substantial damage to anything it comes into contact with. The wiring and mechanical components are the first to be destroyed, so you'll need to act quickly. If you see puddles of water in your car, you should not drive it.

They must be eliminated as quickly as feasible. You can rapidly remove the puddles using a vacuum cleaner, or you can soak up the water with towels and remove it from the cabin. If you're going to use a vacuum cleaner, make sure it's not a standard one because you could get electrocuted.



Maintain Car Ventilation – Taking the water out of your car will not fix your problems. You must begin drying the soaked areas as soon as possible. If there is sufficient

sunlight near where your car is parked, simply roll down the windows, open all the doors, and let the sun's heat do its work. If there isn't enough sunlight, park your car in an open place and dry out the damp sections with electric or battery-operated fans. A fan will also aid in the removal of any unpleasant odours as well as the prevention of mould and mildew. If your automobile was not seriously flooded but the cabin was still damp, you can use the heaters to quickly dry the interiors - just make sure they are turned on.

3. Ventilate the vehicle: Once you've successfully removed the water build-up from the cabin and other areas of the vehicle, you'll need to dry the affected areas just as quickly. If there is sufficient sunlight near where your car is parked, simply roll down the windows, open all the doors, and let the sun's heat do its work. If there isn't enough sunlight, park your car in an open place and dry out the damp sections with an electric table or standing fan. A fan will also aid in the removal of any unpleasant odours as well as the prevention of mould and mildew. You can use the heaters if your automobile was not severely flooded but the cabin was still moist.



3. PROPOSED WORK

How to Deal with a Flooded Car: A Step-by-Step Guide

Since the monsoons have already arrived, here are some pointers to assist you in reviving your flood-damaged vehicle:

Step 1: Do not start the car if it is flooded, since the gathered water could damage the engine and other components irreversibly.

Step 2: Once the vehicle is out of the water and on dry land, examine the extent of the damage and determine what needs to be done. Check to see if the water level was

high enough to go into the car or if it had stopped below the doors. In most circumstances, insurance companies consider water damage to the dashboard level to be a totalled vehicle and will not pay for repairs.

Step 3: If your car insurance policy includes coverage for theft and fire, it should also include coverage for flood damage, which is a good sign. However, you must be particularly thorough while reading the policy because firms may state what they are prepared to repair and what they do not. It's wise to discuss your coverage with insurance agent because it can cover anything from floor mats to complete engine replacements.

Step 4: As soon as the weather improves or you can find a site where you and your vehicle will be protected from the rain, begin working on drying the car out rapidly. Water damage, particularly to metal and electrical components, can be devastating. You should start.

Step 5: Bacteria and fungi thrive on damp surfaces, resulting in bad odours. After cleaning your automobile, you'll probably need to replace items like floor mats, carpets, upholstery, and possibly even the inner door panels, as they all absorb water and might promote mildew and mould growth. If the components are not severely damaged, deodorise the vehicle with baking soda before reassembling it

Step 6: After you've taken care of the cabin, you should



move on to the engine. First, make sure there is no water in the oil tank. Check the oil using the dipstick to see if there are any water droplets. If you detect some drops, do not start the automobile because this could damage the engine's cylinders. The best thing you can do is have a skilled technician assess the situation. The fuel tank is usually drained first, and then the water is evacuated.

Step 7: Electrical components and water don't mix well, which is why you should double-check all wiring and connections before turning it on.



Step 8: If possible, have a professional mechanic examine your vehicle to ensure that everything is in working order. If it isn't, you must begin the insurance process. An insurance agent will examine your vehicle closely and determine if it should be fixed or replaced. If the cost of restoring the vehicle exceeds its value, it will most likely be considered a totaled vehicle by the insurance carrier. Your insurance claim, along with photographic verification of the damage, will be submitted to the company for further examination.

Step 9: If the cost of repairing your flood-damaged car exceeds the cost of a new car, you must proceed with the purchase of a new vehicle. If you're considering about buying a used or second-hand car, there are a few things to think about before making the purchase. Request a copy of the vehicle's history report from the prior owner or dealership so you can learn about past owners, maintenance, and odometer readings. This will also reveal whether the vehicle has been in any past accidents or has been destroyed by fire or floods. Finally, you should have the car inspected by a mechanic to confirm that it is in good working order.

Step 10: Buying a new car necessitates a great deal of consideration and decision-making. The first thing you must determine is your financial situation. The next step is to choose the type of vehicle you desire (hatchback, SUV, sedan, etc.). Then you must choose a brand and check to see whether they have the colour option you choose. You have to choose from a variety of various versions when buying a new car, so it's best to conduct a lot of research before deciding on one. Also, have backup

plans in place in case you don't obtain the automobile you want at the price you desire.

Cleaning Your Car

When it comes to cleaning an automobile that has been flooded, haste is crucial. The first and most important thing you must do is locate and eliminate all moist areas. Water may wreak havoc on all of your car's components, resulting in a wrecked vehicle. It's important to get rid of all the water and dry the car as soon as possible. Here's what you should do if your car has been damaged by flooding. Cleaners may be found in most stores and can be used with a brush to thoroughly clean upholstery. Finally, keep an eye out for any leaks or wet places that can cause the car to smell and even rust. If you discover any damp places, either fix them yourself or get a mechanic to do so.

Flooding Causes a Wide Range of Issues

Flooding and water damage can cause a variety of issues. Mold, mildew, and nasty odours are only the start. Rust is frequently the result of water collecting around metal, especially around the hood, trunk, and door panels. Here are some of the issues that can arise if your car is not serviced promptly:



Electrical Issues — When your car has been water-damaged, stay away from the electrical

components and cables until the vehicle has completely dried off. Wires are frequently the first thing to be harmed by a flooded car, and they should only be repaired by a trained mechanic. Wires are used in the dashboard, radio, entertainment system, windows, doors, seats, lights, and even side-view mirrors today, and should only be tested when the car is dry and safe to operate.

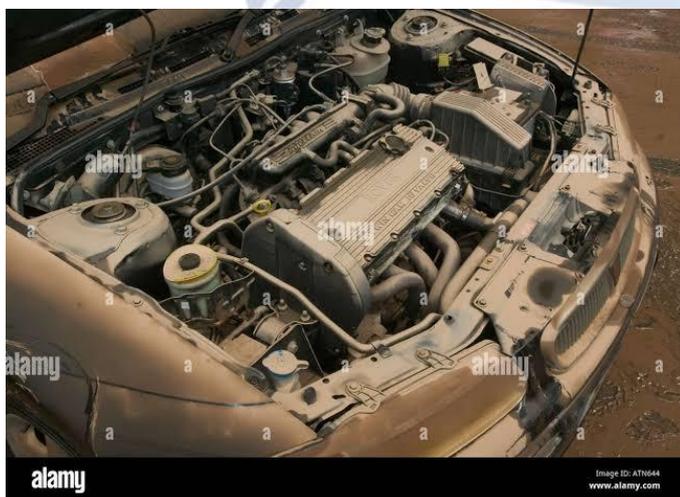
Parts That Move – The brake, clutch, and accelerator are vital components of any vehicle, and they are frequently the first to be damaged during a flood. Water can get into these pieces because they are moving components. They damage them rapidly and easily. In a flooded car, other moving parts such as the starter, pistons, and cylinders are also vulnerable to serious damage. An expert should be called in to make repairs to ensure that nothing is damaged further.

When It Rains, Where Do Cars Usually Leak?

Although an automobile is designed to keep water out, the weather stripping along windows and doors can become damaged over time. As a result, leaks occur, allowing rainwater to enter the vehicle and causing moist areas throughout. If you hear or see signs of a leak in your car, discover the source of the problem and fix it as soon as possible. Even if the leak is minor and just allows a few drops into the cabin, it can grow into a larger leak that damages the upholstery, panels, carpets, and electronic components. If your car's weather stripping has started to leak, you should either replace it or clean it with car shampoo on a regular basis.

What to Do:

do if your car has flood damage?



As we have already mentioned earlier, flooding can be a major problem for car owners and the repairs afterward are even more of a headache. So, if you have a car plagued by flooding or if you know of anyone who is going through it right now, here is a vehicle flood damage checklist you should also have prepared.

Survey the damage by understanding how deep the floodwaters are.

DO NOT start a flooded car.

Either get a towing service to get the car to drier and higher ground or quickly start working on drying out the car to avoid corrosion.

What should you do if your automobile has been flooded?

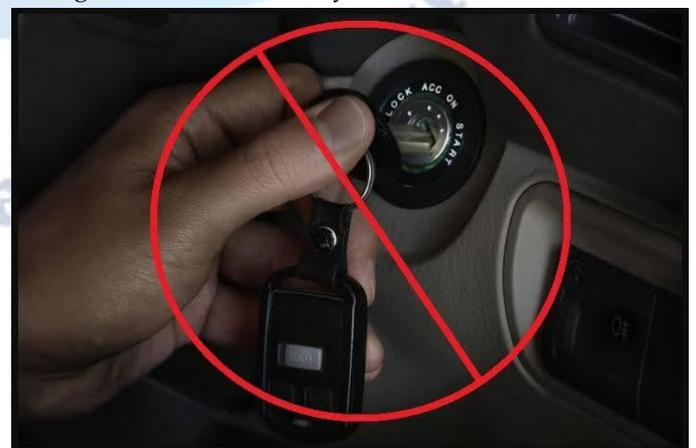
As previously stated, flooding may be a huge issue for car owners, and the subsequent repairs can be even more difficult. So, if your car has been flooded, or you know someone who is, here is a vehicle water damage checklist you should have ready.

Assess the damage by determining the depth of the floodwater

A flooded car should not be started.

Either hire a towing service to transport the vehicle to a safer and higher location, or begin drying the vehicle as soon as possible to avoid rust.

Request that your insurance company inspect the damage and file a claim on your behalf.



We may expect a lot more rain in the coming months now that the monsoon has arrived. Driving in these conditions

can be challenging, and you must always be alert of your surroundings. Puddles abound on Indian highways, posing a danger to all cars. If at all possible, avoid them, but if you absolutely must, proceed slowly and carefully. If you come across a flooded road or a large puddle, follow the actions outlined above to avoid having your vehicle totaled

5. CONCLUSION

How to spot a flooded automobile and avoid buying one Flood-damaged vehicles can have a variety of issues that can become problematic later in the vehicle's life. We explain how to spot an automobile that has been flooded. Examine for rusting.

Yes, autos develop corrosion over time, with the rate varying based on the location – exposure to salty sea-side air accelerates corrosion. Look for evidence of corrosion where there shouldn't be any. Look for gaps between panels near the bonnet and gaps between panels high on the body. Examine unpainted metal components such as under dash brackets, under the body, and the bonnet joints for signs of corrosion. Excessive corrosion signs

A rusted tool set is another indicator that can be easily overlooked by someone attempting to conceal water damage.

Corrosion on the seat rails could indicate a wet vehicle.

Check for rust on the inside, too, in locations like the exposed screws that hold the front seat rails in place. Screws that aren't correctly installed should also raise red flags. It could indicate that the seats have been removed and replaced to aid in the appropriate drying of the carpet.

Water stagnation signs

Examine the head and taillights for a slight water line on either the outside lens or the inside reflector. However, take in mind that these components could have been replaced before the car was put on the market, it could have easily been replaced.

Modes:

Check for a faint waterline on the lenses of the headlamps and tail-lamps

Next up, look closely at difficult-to-wipe parts under the hood and in the boot. Water-borne mud and dirt trails may still be visible around the engine bay or under the boot floor in the housing for the spare wheel.

Check for water-borne silt behind the dash and inside the glovebox. This is more common than you expect in flooded cars. Also look for signs of upholstery discoloration or staining – a variation in colour of the upper and lower seat upholstery could indicate that the car had been partially submerged.

Smell for musty or foul odour



While the car's interior may have been dried a musty or foul odour could still be stuck to the cabin. If you find the interior smelling damp, musty or have an unpleasant odour you might want to reconsider. On the flip side a strong-smelling air-freshener could also be used in order to disguise the smell so be careful. Also run the air-condition to see if you get a musty odour from the compressor or blower.

Examine the headlight and taillamp lenses for a faint waterline.

Next, inspect under the hood and in the boot for difficult-to-clean areas. Water-borne mud and dirt trails may still be evident in the engine compartment or beneath the boot floor in the spare wheel housing.

Look beneath the dashboard and inside the glovebox for water-borne silt. In flooded cars, this is more prevalent than you might think. Look for signs of discoloration or stains in the upholstery – a difference in colour between the upper and lower seat fabric could indicate that the car was partially submerged.

Check for a musty or bad smell.

Even if the car's inside has been dried, a musty or nasty odour may still be present. You might want to reconsider if the interior smells damp, musty, or has an unpleasant odour. On the other hand, a strong-smelling air freshener could be utilised to mask the odour, so be cautious. Run the air conditioner to see if the compressor or blower emits a musty odour.

Check the air conditioner for a musty odor; a strong air freshener could be used to mask the odor.

Drain plugs should be checked.

Drain plugs are located in the floor pan and doors of automobiles and can be removed to drain water. It's possible that the rubber drain plugs used on the floorboards and at the bottom of the doors have been removed recently or are missing to allow the water to escape.

Examine the wiring.

Make a complete circuit of the car's electricals. From the cabin lights to the infotainment system to the headlamps and taillights, and even the visible wiring harnesses, everything is made of metal. When the warning lights on the dashboard don't come on, look for signs like that.

Other safeguards

Pulling the seatbelts and letting them retract are two further inspections that can be done. It could be a symptom of rust within if the seatbelt does not retract smoothly. Check that features like the handbrake and steering work smoothly, as any hiccups in these systems could indicate corrosion or the presence of dirt and silt. A difficult to modulate clutch could indicate flooding, but it could simply be due to driving style.

Check the vehicle's service records as well, since they may reveal some information.

It's beneficial to have a reputable mechanic evaluate the vehicle.

While you may be able to recognise some of these red flags, it is always a good idea to have a reliable car repair or garage on hand. To get a proper evaluation, have the car thoroughly inspected, including raising it on jacks to see the underbody. Having the car thoroughly evaluated at an authorised service centre can also help you detect any subpar water damage repair work.

The last thing anyone wants is to be stuck with a flood-damaged vehicle. While everything may appear to be in order at first, there may be numerous hidden costs later on in the vehicle's life. It is therefore better to walk

away if the automobile appears to have been flooded. Otherwise, get it properly inspected before you decide to put your money down.



Conflict of interest statement

Authors declare that they do not have any conflict of interest.

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