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Drive manual smoothly

There are may be any number of reasons why you may want (or need) to learn how to drive a car with a manual transmission, but in a market where more than 85% of vehicles on the road have automatic transmissions, a manual transmission may be a rarity. Nonetheless, say you find that classic muscle car you have been wanting for years, but when you do find it, it comes with a manual transmission. Also say you have the money to buy it on the spot; are you going to pass up the opportunity just because you cannot drive it? We don't think you should pass it up, which is why we have produced this tutorial on how to drive a car with a manual transmission. Manual transmissions may not be for everyone, but we believe that everyone should try it at least once, so if you have the vehicle and the time, simply follow the instructions in this easy, step-by-step tutorial on how to learn how to drive a manual as smoothly as an automatic. If you need a practical demonstration of the points raised in this tutorial, watch this video. Step 1 - Find a quiet area if you have never driven a manual vehicle before, we strongly advise you to find a quiet area in which to practice the basic principles of vehicle control. Try to find an empty parking lot, such as at a mall, school, or sports field. Also enlist the services of an experienced driver to instruct you in the basics. WARNING: Do NOT try to learn to drive a manual where there is other traffic, since it is easy to become so engrossed in the exercise that you could lose sight of other traffic and cause an accident. Step 2 - Get to know the controls Once you have found a suitable training ground, and your instructor is available, take a few minutes to familiarize yourself with the controls of the manual vehicle. The pedal to the left of the brake pedal is the clutch pedal, which you need to learn to coordinate with the accelerator pedal to achieve smooth take-offs and gear shifts. However, before you start the engine, take some time to learn the movement of the gear selector. Although the gear selection pattern on most manuals is the same, there might be differences in how reverse gear is selected. Familiarize yourself with the feel and movement of the gear selector, so that you can be sure you know exactly where each gear is located within the selection pattern. The image below illustrates a typical 5-speed manual transmission selection pattern. Image credit: wikiwand The horizontal line represents the neutral position, in which no gear is selected. In this position, the engine can rotate freely since there is no mechanical link between the engine and the driving wheels. Take note however that the hand brake should always be engaged when the gear selector is in the neutral position to prevent the vehicle from rolling forward or backward on surfaces that are not level, and especially whenever the vehicle is unattended. NOTE: While it is generally not possible to select reverse on a vehicle that is moving forward without consciously forcing it into reverse, it is possible to cause serious damage to a manual transmission by forcing it into any forward gear without fully disengaging the clutch. Any grating sound is the result of gears not fully intermeshing, and continued grating can cause gear teeth to shear off. Step 3 - Get to know the clutch Before you start practicing, make sure there are no obstacles anywhere near you. The last thing you want is to run into a tree on your first try, so make sure you have at least a couple of hundred feet of clear space on all sides. By now, you should be ready to start driving, so make sure the hand brake is engaged before you start the engine. Next, check that the gear selector is in the neutral position, and start the engine. Now fully depress the clutch pedal, move the selector into the first-gear position, and release the handbrake. Let the clutch out slowly. What you need to do at this point is to find out where in the clutch pedal's travel the clutch starts to engage, so let the clutch pedal out SLOWLY. Nothing will happen for the first couple of inches in its travel, but at around the midway point, the clutch will start to engage, and the vehicle will start to move. As soon as this happens, depress the clutch pedal again, and use the brake pedal to bring the vehicle to a stop. Repeat this process a few times until you are sure at what point the vehicle starts to move. Practice taking off The next thing you need to get the hang of is taking off smoothly. This requires some practice, since you have to coordinate the accelerator with the movement of the clutch pedal. If you don't apply enough power as the clutch engages, the engine will stall, and if you apply too much power, you could set up a violent, jerking takeoff that could damage the vehicle. So with the vehicle in first gear, place your right foot on the accelerator, and apply just enough pressure to raise the engine speed to about 1000 RPM. Slowly let out the clutch until the vehicle starts to move, but be prepared to apply more gas as the clutch takes up the weight of the vehicle, and it starts to move forward. TIP: The engine might stall on your first attempt, but resist the temptation to apply more power. Keep the engine speed at around 1000 RPM, and try again until you can get the vehicle moving forward without stalling, or surging ahead violently. Too much power at this point can damage the clutch, or you could lose control and run into an obstacle. NOTE: Use the brake pedal to bring the vehicle to a stop after each attempt, but be sure to depress the clutch pedal before applying the brakes. If you don't disengage the clutch, the engine will stall every time you brake, which could damage the transmission. Step 4 - Learn to change gears Be prepared to spend a couple of hours learning to take off smoothly. The next step is learning to change from first gear to second gear, so make sure you have plenty of clear space all around you since you will now be moving a little faster, which means you will need more space to stop safely. Changing gears is a little more complex than taking off smoothly, since you have to maintain the vehicle's forward motion, while accelerating smoothly. So if you are certain you have the hang of taking off smoothly, you now need to learn to coordinate the clutch, accelerator, and the gear selector in a smooth, almost seamless manner. There is a sequence of events involved in changing gears, so let's start at the beginning. Take off with the engine speed at about 1000 RPM, but do not let the engine speed rise to above 1 200 or so RPM. As soon as you are moving smoothly, let go off the accelerator, depress the clutch, and move the gear selector straight down into second gear. NOTE: This is where it gets tricky; if you let out the clutch suddenly at this point, you will experience a sudden deceleration if you don't apply power at the same time. However, too much power can cause the clutch to slip if it is not fully engaged, but more importantly, too much power can cause you to accelerate too fast, which can cause you to lose control. Thus, you need to let the clutch out smoothly, but slowly until you feel it starting to engage. At the same moment, you need to apply power, since the smaller gear ratio requires more power to maintain the vehicle's forward acceleration. This is done automatically in an automatic transmission, but with a manual, you have to coordinate the various control inputs to achieve a seamless acceleration. TIP: Don't try to get this right the first time round. All drivers who learn to drive manual vehicles have some trouble getting the coordination between the clutch and accelerator pedals right, and some never do. Achieving a smooth acceleration only comes with long practice, so take as much time as it takes to get the transition between first and second gears done as smoothly as you can. Be aware though that it can take many tries and several hours, but keep at it until you get it right. WARNING: If you are accelerating in second gear, do not let the engine speed rise above about 1 500 RPM or so. If you do, you may find you are travelling too fast in a confined area in which it might not be safe to do so. Step 5 - Learn to change to higher gears Once you have mastered the art of changing gears, you need to learn how to use the higher gears, but a parking lot may be too confined for this, since you will be driving at much higher speeds. NOTE: In some jurisdictions it is illegal to drive a manual on public roads if you are licensed to drive an automatic, and vice versa. So before you proceed to the next level, check with the authorities on the legalities of learning to drive a manual vehicle. Nevertheless, you need to learn how to use the higher gears in your vehicle, so you may need to find a quiet stretch of road. However, no matter how quiet it is, find a piece of road with no acute corners, blind rises, or stop signs and traffic lights. You need to concentrate on learning to control your vehicle, and you cannot afford to be distracted. So assuming that you have found a suitable stretch of road, and you have enlisted the help of an instructor, you need to practice performing gearshifts at higher speeds. The actual process of shifting gears through the range of ratios is much the same as shifting between first and second gears, but with this difference; you will be doing it at higher speeds, which requires a higher degree of coordination between the pedals, and the gear selector. WARNING: It is important that you do not exceed speeds of about 30, to 40 mph during this phase of learning to drive a manual. Stopping a manual vehicle safely at speed takes a different approach than stopping an automatic, so don't drive the vehicle at speeds that make you feel uncomfortable, or unsafe. If you are an experienced driver already, you needn't worry about maintaining directional control. However, inexperienced drivers tend to look at what they are doing while learning to change gears, instead of looking at where they are going. Regardless of your driving skill though, you may at first find it impossible to coordinate the clutch and accelerator pedals in such a way that the vehicle accelerates smoothly, but don't worry about this too much at this point. TIP: The biggest secret to driving a manual is not to over think the process. Besides, much of how smoothly you drive has to do with the power of the vehicle. For instance, if you are learning to drive a classic muscle car fitted with a powerful V8 engine, you could change gears all the way up to third-, or even fourth gear with the engine running at idle. With such a vehicle, you don't have to coordinate the accelerator as finely as you would have to do with a small, compact car that requires large throttle openings, and therefore high engine speeds to drive smoothly in higher gears. Step 6 - Learn to stop the vehicle safely Learning to stop a manual vehicle safely is as important as learning to change gears smoothly. With an automatic transmission, there is no mechanical link between the engine and the driving wheels, meaning that even though the transmission shifts down during braking, much of the difference between the engine speed and the transmission speed is absorbed by slippage in the torque converter. However, with a manual transmission, the clutch forms a rigid mechanical link, which means that during deceleration, the driving wheels are applying a rotating force to the engine through the transmission. This is known as "engine braking" and while it can be useful in some situations, it can also be dangerous on slippery roads, because it can cause the driving wheels to lose traction. Thus, there comes a point during deceleration when it becomes necessary to "break" this mechanical link by depressing the clutch to prevent the engine from stalling. There are many variables when it comes to deciding when to break the link, but much of it has to do with the vehicle speed. For instance, this is usually not required at freeway speeds, since small adjustments in your speed relative to other moving vehicles can be made either my letting go of the accelerator, or by a light, momentary pressure on the brake pedal. At this point though, you will not be driving at freeway speeds, and any heavy application of the brakes is likely to cause the engine to stall. To prevent this, you need to learn when to depress the clutch pedal. For instance, if you need to stop in an emergency situation, you need to depress the clutch pedal, but you don't have to when you are merely trying to lower your speed slightly as you practice changing gears. Of course, you will need to depress the clutch pedal when you want to come to a dead stop during your practicing sessions, in order to prevent the engine stalling. Step 7 - Practice, practice, practice There is only one way to learn to drive a manual, and that is to practice until you get it right. The ultimate goal is to manipulate the controls in such a way that both acceleration and deceleration is smooth and seamless, and with sufficient practice, it is entirely possible to achieve the same seamless acceleration and deceleration that is possible with a modern automatic transmission, but the problem is that it can take months, if not years of practice. At this point in your driver training, you should be perfectly comfortable with changing gears through the entire range, even though it may not be as smoothly as you want it to be. At this point, it is also important not to swap vehicles. No two vehicles are the same, so if you decide to continue practicing in a bigger, more power vehicle, or a smaller, less power one, you may find that you have to start from scratch, since the replacement vehicle will likely not respond to your control inputs in the same way. TIP: Stick to the same vehicle until you're perfectly comfortable driving it throughout its range of gears. At this point, you should be able to take off without stalling the engine, and to change gears without jerking, surging, or over-revving the engine. If you can do this, congratulations, but now you need to learn to take off on an incline. Step 8 - Mastering hill starts Many older vehicles are not fitted with systems that automatically hold them stationary on inclines. There are many names for these systems, such as Hill Assist, but in essence, they all work by applying the brakes when sensors detect that the vehicle is not on a level surface. Regardless of the transmission, the system releases the brakes automatically if various sensors agree that sufficient power is being developed to propel the vehicle up the incline without allowing it to roll back. All this is accomplished without any inputs from the driver, but in a vehicle without such a system, the driver has to replace the system by being able to take off on an incline by coordinating the handbrake with the clutch and accelerator pedals. This might sound scary, and it could be if the incline is steep, and the car behind you is almost touching yours. The secret to taking of smoothly in such a situation is not to panic, but to concentrate on using the clutch to accelerate away from the vehicle behind you smoothly, and without allowing the clutch to slip. Here is how to do it. Find an incline If you have never done this before, find an incline that is just steep enough to cause the vehicle to roll back when you stop on it. Make sure there are no obstacles behind you, park on the incline, and apply the handbrake. NOTE: Do NOT use the clutch to hold the vehicle stationary on the incline. Doing this will cause the clutch to overheat because of the prolonged friction, which can destroy the clutch in a matter of seconds. Always use the handbrake to hold the vehicle stationary on inclines. Next, engage first gear, but raise the engine speed to just above 1000 RPM, since you will need more power to take off on the incline than you need when taking off on a level surface. Now let the clutch out slowly; you will by now know where in its travel the clutch starts to engage, so as soon as you sense the clutch engaging, release the handbrake, but be prepared for what may happen next- This will happen if you let the clutch out rapidly, without applying sufficient power to move the vehicle forward. It can also happen if you don't release the handbrake in time, so you need to coordinate the clutch with the moment the handbrake releases. The clutch may start slipping This could happen if you apply too much power while the clutch is not fully engaged. 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