

Jeep Cherokee Inspection Report

In the matter of: **2010 Jeep Cherokee Limited (ABC 123)**

Vin No: 1C4PJMHS7FW765445

Date: 4th July, 2016

Owner: **Mr Michael Smith**

Phone: 0415 179 456

Address: 45 Green St, Sydney

Name: **Sydney Auto Inspections**

Lic No: 44/24746

Contact: **Peter Jenkyns**

Phone: 0402 408 936

1. This statement made by me accurately sets out the facts and evidence obtained by me and is true to my best knowledge. My name is Peter Jenkyns and I'm a fully qualified motor mechanic with over 35 years experience. I completed my studies in Automotive Mechanics in 1984 and worked in many different fields of the automotive industry. I have gained vast experience inspecting and repairing engines, transmissions, steering, suspension, and braking systems. I started my own mobile mechanic business in 1990 and continue working as a motor mechanic to this present day. I have also worked for 8 years as a part-time driving instructor and high school presenter for L-Trent driving school. I'm now working as a Car Inspector and Accident Damage Investigator throughout Sydney.
2. This report was prepared by me over a period of 2 weeks. I have been communicating with Mr Michael Smith by email and telephone to gain a better understanding of the problem with his vehicle. Mr Smith has provided me with emails and other documents that have detailed his correspondence with the XYZ Motor Dealers. I have also spoken to both Mr and Mrs Smith to obtain their own personal experience while driving the vehicle. This information has enabled me to form a timeline of the repair process and assisted in determining the cause of the mechanical problem/s.
3. On Monday, 6th June, I was contacted by Mr Michael Smith and advised there were some problems with his vehicle. Mr Smith explained that in May, 2015 he purchased a new Jeep Cherokee Limited from XYZ Motor Dealers, Warrick Farm. The vehicle had now developed a bad vibration and was steering erratically. There was also an error warning light appearing on the instrument display.
4. In January, 2016 Mr Smith noticed there was an alarm sound coming from the vehicle. An indicator light was flashing "car overheating", so Mr Smith pulled over briefly to check for any problems. He continued to drive again but the light would continue to flash intermittently. He also notice a vibration at the front of the vehicle when accelerating from a standing start.
5. On 30th January, 2016 Mr Smith contacted Peter Warren and explained there were various problems with his vehicle. He spoke to the assistant service manager, Mr George Brown who told him to bring the vehicle in and have the problem checked. Mr Brown also explained there

were recall parts now available for the vehicle. The recall would take approximately 1-2 hours. They weren't sure how long it would take to fix the other problems.

6. On 3rd February, Mr Smith took the vehicle to XYZ Motor Dealers to have the problem rectified and have the recall parts fitted. On 4th February, he picked the vehicle up from XYZ Motor Dealers but soon noticed the problems were still evident.
7. On 5th February, Mr Smith contacted Mr Brown to explain the problems to him. Mr Brown explained the error message was not caused by the engine overheating but the fault was reading from the automatic transmission. Mr Brown explained he would have to book the vehicle in once again to have it assessed. They would also check the source of the vibration problem once again.
8. Mr Brown explained they were booked out until 18th May, so Mr Smith decided to wait until then to have the vehicle repaired. The vehicle was checked and software updates were carried out on the engine computer, PCM, and transmission. Mr Smith was told the software update would fix the problems in the vehicle. Interestingly, this recall notice (R27) was pointed out by Mr Smith in November, 2015 and he expressed his concerns about the transmission failures and steering problems to Mr Brown.
9. Soon after, Mr Smith picked up his vehicle and was assured the problems were fixed. A few days later, he noticed the "car overheating" error message once again. Mr Smith and his wife have both experienced the error message light coming on. This usually happens after the vehicle has warmed up and driven for longer distances.
10. More recently, the vehicle has developed a bad vibration on the passenger side front (P/S/F) wheel area. The vibration is very bad and transmits throughout the vehicle. Mr Smith's wife was driving the car and noticed the vibration was getting a lot worse. She was very concerned as the shaking continued and decided to drive the car back home. Mrs Smith uses this vehicle to transport her children but is now very reluctant to drive the vehicle.
11. Interestingly, the transmission has now developed a problem when reversing. Occasionally, when in Reverse (R) the transmission takes 3-4 seconds before it engages. When the vehicle is stationary and Reverse gear is selected, the motor will rev up and then jump into reverse gear. While this is an intermittent problem, it still raises concern for Mr & Mrs Smith.
12. On Friday, 10th May I drove to Ermington so I could inspect the vehicle. I conducted an examination on a white Jeep Cherokee Limited with registration ABC 123. I carried out a thorough inspection of the vehicle and checked for any signs of vibration. I took photographs of the front suspension, steering rack, CV shafts, automatic transmission, transfer case, tail shafts and universal joints, and cross members (see attached images). I also took vibration level readings using an Accelerometer (see attached chart) and used this data for comparisons against another vehicle (2005 Toyota Kluger).
13. I carried out a thorough inspection of the vehicle and examined all previous repairs. There was clear evidence of a very bad vibration and various oil leaks. These included
 - Bad vibration on the passenger side front wheel area (P/S/F)
 - Oil leak on the driver's side front (D/S/F) steering rack
 - Oil leak on the lower engine case bolt
 - Oil droplets forming on the front sway bar
 - Intermittent reverse problem.
14. During my examination it was evident the vehicle had a major vibration coming from the P/S/F wheel area. I inspected the front wheels, front brakes, CV shafts, ball joints, bearings, shock absorbers, sub frame, and suspension components. A vibration may originate from any of these moving and rotating components. Vibration is motion, and as with any form of motion there are many different ways to quantify these values. Most regulating bodies and standard agencies

use the term "acceleration" as a measure of vibration. Acceleration is a direct indicator of the overall force in a system and shows the direction and magnitude of the changes in velocity (speed).

An Accelerometer was used to measure and analyse the extent of the vibration. This special sensor software has inbuilt utilities that convert the acceleration to velocity (or displacement) and vice-versa. This allows us to look at the vibration and measure how fast is the velocity is changing at a given location. The amount of vibration can be determined by measuring acceleration in the units of meters per second squared (m/s^2). The extent of a vehicle's problems and/or degree of harm to the occupants is related to the exposure and magnitude of this acceleration.

The Accelerometer was attached to the Jeep Cherokee to record and analyze the vibration levels. Readings were also taken from a 2005 Toyota Kluger and recorded for comparison purposes. The Accelerometer was attached to the passenger side front (P/S/F) lower kick panel. Readings were taken while driving on a suburban road at speeds of 40, 50, and 60 kph. Readings were also taken while driving on a highway/freeway at speeds of 70, 80, and 90 kph. These readings were listed in the table below (see Fig 1). Additionally, there is a standardised "Whole Body Vibration Chart" below (see Fig 2) that shows the levels of comfort a passenger would experience while riding in a normal family sedan or SUV.

Fig. 1

Car Vibration Levels		
Car	Road Condition	Vibration Levels (m/sec 2)
Toyota Kluger SUV	Suburban Rd	0.35 to 0.65
Toyota Kluger SUV	Highway/Freeway	0.25 to 0.45
Jeep Cherokee Ltd	Suburban Rd	0.35 to 2.50
Jeep Cherokee Ltd	Highway/Freeway	0.25 to 2.70

Fig. 2

Whole Body Vibration Chart	
Level of Comfort	Measure of Vibration (m/sec 2)
Not Uncomfortable	< 0.315
A Little Uncomfortable	0.315 to 0.63
Fairly Uncomfortable	0.5 to 1.0
Uncomfortable	0.8 to 1.6
Very Uncomfortable	1.25 to 2.5
Extremely Uncomfortable	> 2

As can be seen in Fig 1, a normal SUV wagon (Toyota Kluger) will experience vibration levels up to 0.45 on a freeway and 0.65 on a suburban road. The Jeep Cherokee recorded vibration levels of up to 2.5 on a suburban road and 2.7 on the freeway. From the figures it can be seen that the vibration level in the Jeep Cherokee is over 4 times more than the Toyota Kluger. Moreover, the level of comfort in the Toyota Kluger ranges from "not uncomfortable" on the freeway to "a little uncomfortable" on the suburban road. The level of comfort in the Jeep Cherokee is "extremely uncomfortable" when the vibration occurs on both suburban and freeway conditions.

- I inspected the engine, engine mounts, and lower cross members. There was a small oil leak around the lower engine casing bolt and flywheel inspection cover area (see Pic 1). This will need to be assessed and repaired to prevent any further oil leakage. I found that all the other parts were serviceable and there didn't appear to be anything worn or loose.

16. I inspected the automatic transmission, transfer case, input and output shafts, tail shaft, and uni joints. The front transfer shaft appeared to have wear in the splines. This wear will need to be checked and verified against the wear specifications and tolerances for this vehicle. There was no evidence of any other parts being worn or loose.
17. I inspected the transmission for any reverse problems that were pointed out by Mr Smith. While on the test drive, the transmission did appear to have an intermittent reverse problem. This happened twice while I was reversing the vehicle. When reverse gear was selected, there was a short delay and the engine would rev up. After about 3-4 seconds, reverse gear would engage and the automatic transmission would operate. While this problem was intermittent, the transmission definitely needs to be inspected and repaired.
18. I inspected the rack and pinion steering, steering shaft, mountings, bushes, and tie rod ends. There was an oil leak on the rack adjustment cover plate and drops of oil forming around this area (see Pic 2). This will need to be further assessed and repaired in order to stop the leak. There didn't appear to be anything worn or loose and all of the parts were serviceable.

In Summary

As a result of my examination and based wholly or substantially on my specialised knowledge, I am of the opinion this Jeep Cherokee Limited has major problems with the transmission and/or power-train. There is a major vibration in the front end of the vehicle when accelerating from a standing start. The vibration continues throughout the gear changing sequence and increases slightly at higher speeds. The vibration is quite heavy and transmits throughout the vehicle. The Jeep vibration readings clearly show the vibration is over four times the level of a normal SUV.

The vibration was consistent when the vehicle was driven at the lower speeds (40 - 60 kph). When the vehicle is driven at 70 kph or more, it will continue to vibrate and veer dangerously to the right. The steering wheel is difficult to hold and the driver must grip the wheel to keep the vehicle within the lane. This problem has often been reported to XYZ Motor Dealers and taken back for repairs. Unfortunately, the dealer has failed to rectify the problem on each occasion.

In addition to the vibration, the "car overheating" error message is still occasionally flashing. The vehicle has also developed an intermittent problem when reversing. And, there are oil leaks that shouldn't be evident in a late model vehicle like this one. Mr and Mrs Smith have expressed their concerns about all these problems and are now reluctant to drive the vehicle anymore.

I contacted XYZ Motor Dealers on 15th June and explained these problems to them. I spoke with Mr Brown and expressed my concerns about the safety of the vehicle. I explained the vehicle has been sent back to their workshop two times but the problem persists. The vibration has been getting a lot worse since the last time it was in their workshop. At present, the vehicle is very dangerous to drive and should not be driven. Mr Smith has been advised to park the car in the driveway and contact XYZ Motor Dealers immediately.

These vibration problems have been reported on numerous Jeep forums and websites. The late model Jeep Cherokee transmission appears to have major problems within the drive train. The problem causes a bad vibration and shaking in these vehicles. There are various recalls and software upgrades ordered by Jeep to repair the problem. However, in most cases the transmission problems persist and Jeep owners are now making their complaints well known via the internet.

Regards,
Peter Jenkyns