

Automobile Wheel Bearing Failure

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PROACT[®] Root Cause Analysis software has been more than just a tool I use at work. I have found it to be extremely useful in many aspects of my life.

I have used this process on many occasions. One usage was when the Harley Davidson mechanics couldn't seem to correct a problem I was experiencing with my motorcycle. So I used our PROACT[®] application to logically question the mechanics enabling them to solve the problem. Another time I used our application in a civil court case and clearly out-performed the defendant's case. It was so powerful to watch the judges face when we produced factual evidence that backed up every point we made. PROACT[®] really provides a person or team the tools necessary to uncover the "real" facts of an investigation.

I have also recently used the software with an automobile manufacturer and I want to share my experience with my readers.

I used our PROACT[®] application to determine that a wheel bearing on my automobile should not have failed after 110,000 miles.

Over a period of about 3 months I noticed that there was an unusual sound coming from the rear passenger side of my automobile. At first I didn't pay much attention but it was becoming more and more annoying with time.

My first thoughts were that it may be the tires. I decided to take my automobile to a local tire shop and have the tires removed and inspected. Both the inside and outside of the tires were examined for any possible manufacturer defects. There were no signs of delaminating, unevenness, and no visual tire damage. I had the tires remounted on the rims and then balanced.

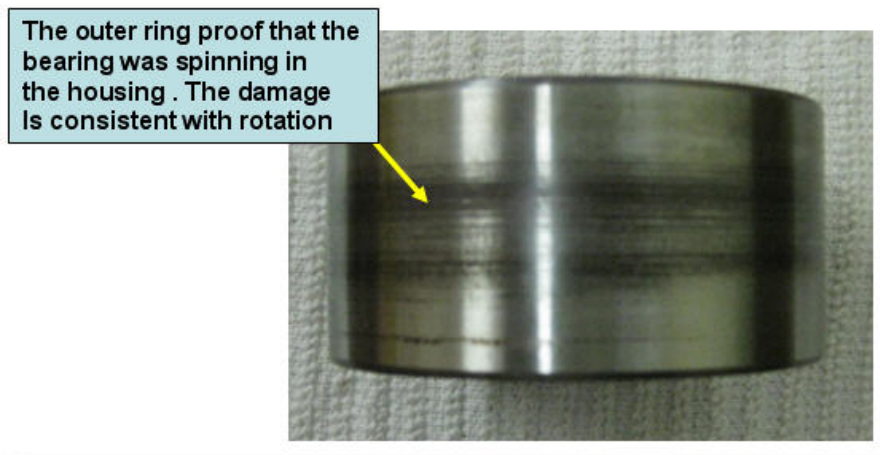
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The tires were reinstalled and the automobile was tested, the noise persisted. To insure every possibility was examined the two rear tires were rotated and the automobile was test driven again. The noise was still evident on the rear passenger side which ruled out the tires as the culprit.

I then came to the determination that the rear passenger wheel bearing may be failing. I had the dealer replace the bearing and the noise problem was resolved. This had a hefty price tag associated with it and I felt that the bearing should have easily lasted the life of the automobile. I asked the dealer's mechanics to return the removed bearing to me so I could examine it closely.

I examined the outer ring and the bore while still at the dealership. It was noticeable that the outer ring had been spinning in the housing and it was also evident the bore had fretting corrosion on one side, both indicating fit problems.



I asked the mechanic who performed the repairs if he measured the fits before reinstalling the new bearing and he said he did not. He went on to explain that the mechanics have a procedure they must follow for bearing installation. This alarmed me because he had just installed a new bearing into a damaged housing and possibly a damaged shaft.

I had the bearing split and performed a thorough examination which revealed the inner ring had a fatigue spall on the same side where the fretting was on the bore. This is evidence of heavy loading in the one direction (consistent with fit problems). There were a number of other findings as well.

The fit problems had to have been from the assembly process so I prepared a PROACTOnDemandSM Root Cause Analysis report and sent it to the manufacturer's customer service department. The report indicates there may be some flaws in both their manufacturing Quality Assurance (QA) procedures as well as dealership procedures.

The manufacturing QA practices should have detected the fit problems and they should review the processes and make corrections accordingly. Not being able to visit the

manufacturer leaves the analysis short of a full set of recommendations. However, if the manufacturer were to verify the hypotheses on the tree I constructed they may learn what the latent causes were.

The mechanics didn't seem to know what the signs on the removed bearing meant and they are not expected to know. The procedure is only about the practice of installation not about knowing what happened and correcting to eliminate the causes.

I have this documented and if for any reason the same bearing fails again I am prepared to complete another investigation, compare, and then take appropriate action.

I received a coupon for a free oil change from the manufacturer because it was out of warranty. I am pursuing getting the report into the hands of the correct people.

I am hoping for a free automobile since I saved them a million dollars in recalls ... JUST KIDDING. I am hoping that they see the value in using a tool such as PROACT[®] to improve their business practices.

You just can't make this stuff up.