



### Diagnostics Today

During my 30 years in the automotive repair field I have seen a lot of changes in the way vehicles are built and how they operate. We have become as dependent on the electronic age in automobiles in the same way that we have in most other facets of our everyday lives. Thirty years ago cars were simpler and most of the controls were mechanical and easy to repair. With a basic set of hand tools, one could maintain the family automobile and doing so could save a few bucks.

Today things are different. Computers control many of the functions under the hood (some vehicles today have up to six on-board computers controlling the engine, transmission, brakes, traction control, climate control, entertainment systems, security systems, air bag systems, etc.). Are vehicles built any better? Absolutely! Engines that used to wear out at 80, 000 km, now are serviceable to 500, 000 km with regular maintenance and upkeep. Electronic fuel injection and ignition systems are providing power and fuel economy that used to be unheard of with older vehicles. However, there is a price for all this technology. Vehicles cost more to purchase and maintain. Some of my customers sometimes confuse today's vehicles with yesterday's vehicles when it comes to costs of repairs. With the average new car today costing \$30,000, maintenance will cost more than it used to, but, do you the consumer not want to protect your investment, to allow that new car to be able to do all that it is capable of? Regular preventative maintenance will help you out in the long run for repair costs, so read your owner's manual and heed to the recommended service intervals. From time to time some of those electronic devices can break down and cause you problems. How you deal with these can affect your appreciation for your "iron steed." Find yourself a reputable up-to-date repair facility to help you get the most for your money.

Here are some frequently asked questions from many of today's vehicle owners:

Q: Do you have one of those machines that plug into my car that tell you exactly what is wrong?

A: There are many machines that assist a technician in diagnosing problems. You all have, no doubt, seen ads and commercials that feature such machines. While these machines are very impressive and provide valuable information, none of them tell you exactly what is wrong! Even when the diagnostic equipment gives you a "code" for a component, it does not mean that the component has failed, (it could be wiring, bad connections or grounds). A failed table lamp is an example. If the bulb does not light (trouble code) is it the bulb, the switch, is it plugged in, or is the breaker tripped? Think of a doctor using an x-ray machine. The machine takes the x-ray, but it is the doctor who reads the x-ray and makes the diagnosis. Automotive test equipment basically works the same way. We have machines that can do many things: retrieve data from computers, measure voltage, resistance and current in electrical circuits and sometimes record values from sensors during vehicle operation. All of these procedures are like



the x-ray, but it takes a well trained and experienced technician to interpret the data and make the diagnosis.

Q: Why do you ask so many questions about my vehicle and my driving habits when I bring my vehicle in for service?

A: It is not our intention to interrogate or embarrass you in any way with the questions we ask. Our objective here is to gather as much information as we can so we can diagnose your concern quickly and effectively. Quick and effective diagnosis not only reduces the amount of time you are without your vehicle, but also reduces the cost of diagnosis. What might seem like trivial or insignificant details to you may be the key bit of information needed to diagnose your vehicle. A simple example of this would be in the differences between a "crank - no start," a "no crank - no start," and a "slow crank - no start." To you, the result may be the same, the car does not start, but to the technician these are three different situations, each having their own particular procedure for diagnosis. Knowing up front what kind of "no start" condition you have reduces the time and expense of diagnosis. Sometimes people feel the more they tell about the problem, the more it will cost to repair. The opposite is really the truth, just as when you go to the doctor, you tell them everything you can to assist in a proper diagnosis. This will save you money by allowing the technician to head more directly to the source of the problem.

Q: Why can't you just skip the testing and do the repair? "My brother-in-law used to be a mechanic and he thinks the problem's in the distributor."

A: First of all, no disrespect to the "brother-in-law's" mechanical ability, but many of today's vehicles don't have distributors, they have distributor-less Ignition systems (or D.I.S.). So, the problem would have to be caused by something else. Even if your vehicle had one, would you not like to know what the exact cause was? If this were the case, then the accuracy of the diagnosis is at best, questionable. In the same way, you wouldn't expect a doctor to perform surgery based on another doctor's diagnosis. The surgeon would want to examine you first. We don't replace parts and make repairs without first confirming the diagnosis for ourselves. This could lead to unnecessary repairs and with us spending more time and you spending more money to do the fix. Would you not prefer \$200 in testing and \$200 in repairs to over \$800 in repairs of which most were not necessary?

Q: You used to test my vehicle for free and you didn't need those fancy tools and equipment. Why do you charge me for doing that now?

A: Free testing without the need for expensive equipment used to be common practice in the past. Today, due to the complexity of the automotive systems, we need to have equipment to help us diagnose. In past years, (before computers and fuel injection)



diagnosis was pretty straight forward. A technician could tell if a component was bad by visual inspection. Many of today's components are encased in plastic housings. There is no way to tell if it's good by looking at it. To accurately diagnose today's vehicles, a shop needs to invest in expensive equipment like scanners, scopes, gas analyzers, and electrical meters. Not only do we need the equipment, we need technical information (manuals) and training as well. The cost of diagnosis has changed dramatically over the years and, the way these costs are passed on to the customer have changed as well. A well managed and competent shop will itemize the costs of diagnostics so the customer will know exactly where their repair dollars went. A shop today cannot stay in business without the capital to invest in training and equipment to provide top quality service, and continue to grow in the future.

Q: Why do you sometimes charge for procedure and not an hourly rate?

A: Hourly rates for auto repairs were developed in the early days of the automobile, when cars were pretty simple. The failed part was usually obvious, and no testing was needed to unbolt the broken part and bolt on a new one. Today, such situations are the exception. Also, an hour of time today can involve anything from an apprentice technician with a few hand tools or two or more experienced and highly trained technicians using several pieces of equipment costing tens of thousands of dollars. Obviously the cost of these situations would be vastly different, even though each took the same length of time.

I trust this gives you, the consumer, a bit of insight into the "why's and how's" of auto repair in the 90's and the new millennium.