



## **Nuts and Bolts Guide to Understanding Your Car**



Providing World-Class Service  
to You, Your Family and the Community.

# **Servando Orozco**

# ***Orozco's Nuts & Bolts Guide to Understanding Your Car***

Servando Orozco

"The Automotive Expert's Expert"



***Orozco's***  
***Nuts & Bolts Guide***  
***to Understanding***  
***Your Car:***  
***Providing World-Class Service***  
***to You, Your Family, and the***  
***Community***



Servando Orozco, CEO

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**Endorsements for**  
***Nuts & Bolts***  
**by Servando Orozco**

“Over the years I have read hundreds if not thousands of books, and this is one that is a must-read. Not only is it a great insight as to how a world class auto repair shop owner thinks and lives, but the information Servando provides should be taught in every school in America. Learning how to drive is one thing, but learning how to find the right mechanics, and how to take good care of a vehicle, is something we all need to know. Knowing Servando as I do, and the principles he stands for, I am thrilled he has now provided us with a guide that every motorist should read, and pass on to their family and friends. Once you start reading this book you will find it hard to stop, and you will discover why so many people trust Servando with all their automotive needs.”

Bob Cooper  
President  
Elite Worldwide, Inc.

(Note: Elite Worldwide, Inc. is an ethics-based company that helps auto repair shop owners build their businesses. Since 1990, they have offered a variety of coaching, consulting, peer groups and training services tailored specifically to the needs of this

industry. Their ultimate goal is to help auto shop owners develop more profitable, successful businesses in the most affordable and ethical way.)

"As a retired Master Technician, business owner and now a Business Coach, I find one of the most difficult tasks in the automotive service industry is to communicate to the consumer the myriad of technical jargon that relates to their vehicle. We automotive people simply think that everyone knows the technical nomenclature of an automobile and often struggle to communicate the vehicle's needs in layman's terms. What Servando has done in this book is to bridge that gap in everyday terms and definitions that the average consumer can understand. His warm personality and love of the industry and people resonate throughout the book. I suggest after reading it that you keep it handy in your glove compartment as a reference."

Jim Piraino

2002 Napa/ASE Tech of the Year

Independent Business Coach with Elite Worldwide

"Servando Orozco is one of the best representatives of business professionalism and ethics in the field of automobile repair and entrepreneurship. His business acumen is only surpassed by his devotion to staff development, impeccable

customer service, contributions to his community, and a constant striving for professional and personal excellence. As a former automobile and aircraft mechanic, I highly recommend Servando and his wisdom conveyed in this excellent auto service guide. You will do well to follow these recommendations, which will add miles and enjoyment to your ride... and drop by one of his well-kept shops and meet his awesome team!”

James K. Lewis, M.A., CCNL, CFRE  
Long Beach, CA

“This book is an excellent resource for not only new drivers, but it also serves as a refresher to those who have been driving for some time. The more you know about your vehicle, the better off you and your family will be in terms of reliability and safety. Servando provides a strong foundation where people can build their knowledge and skills to maximize their safety. He really cares about people and the approach that the book takes demonstrates that.”

Jim McDonnell, Chief of Police  
Long Beach Police Department

## **Orozco's Auto Service: Testimonials**

Excellent customer service. Rates are superior to dealership prices. Friendly environment with plenty of diversions like a library filled with a variety of genres to choose from. Cold water, hot coffee and shuttle service available. Also love how patient and nice the service advisors are. Very fast, even when just for something small like getting air in your tires (and they didn't even charge me for it!).

*-Julie Fogg, 07/13/2011*

I am so very pleased with the work done on my car. The staff person I dealt with was very professional. Thank you for all you have done!

*-Marguerite Dollie, 07/11/2012*

Orozco's has been my auto service garage for many years, and I have always been completely satisfied with their service, professionalism, and courtesy, as well as their willingness to "go the extra mile" for customer satisfaction. Servando, the owner, comes out to greet me and asks after my well-being. That personal touch is very much appreciated. He is also very involved in community affairs, and Long Beach is the better for it. I recommend Orozco's wholeheartedly.

*-Camilla Marie, 01/14/2013*

## **Acknowledgments**

I'd like to dedicate this book to those who are most precious in my life: my wife Cindy and my beautiful children, Brianna, Andrew, and Kenya. My number one goal in life is to make my wife and kids proud of me.

I'm very thankful to all the Orozco family's employees: Eddie Flores, Seldon Thompson, Kurt Drewitz, Jeff Frias, Oliver Altobello, Bob Trent, Jesus Frias, Raymond Frias, Leticia Colin, Art San Miguel, Gloria Bolanos, Ricardo Castro, Dave Fa Ya, Binh Nguyen, Mark Hardwick, Antonio Montes, Juan Serna, Francisco Rodriguez, Socorro Vargas, Carlos Castellanos, Gabriel Escamilla, Carlos Rangel and Donovan Arevalo. You're the greatest assets we have at the company. Thank you for being part of the Orozco family, thank you for all that you do, and thank you for who you are as human beings. Finally, thank you for the care you take in serving our wonderful customers. Without your expertise and skills, none of this would be possible.

My life has taken me along many paths: child vendor, roadie, mechanic and successful entrepreneur. I've been fortunate to meet people who have helped me along the way, who have supported my professional activities or who have helped make this book possible. To these people I owe the most

sincere thanks: the Los Muecas Band who brought me to this country; Leonardo and Fernando Garcia who introduced me to and mentored me in the automotive trade; and Tony Phou, Maurizio Cappelletti, Tom Waldie and Sharon Hillert, who believed in me and gave me the opportunity to pursue my dreams. Bob Cooper and Jim Piraino have helped me keep my eyes on the big picture.

I've had many mentors, including some I've never met. Nevertheless, they've had an impact on my life through their inspirational books and videos. Among them are Zig Ziglar, Sam Geist, Stephen Covey, John Maxwell, Napoleon Hill, Dale Carnegie, Jack Canfield, and Peter F. Drucker. Jim Rohn's words and writings have changed my life in the most beneficial ways and I have learned so much from him. My book is sprinkled with quotes I find are powerful and worth sharing from Jim and these other men.

I also wish to express my deep gratitude to the Goldman Sachs and Long Beach Community College's Goldman Sachs *10,000 Small Businesses Program*. I learned so much through participating in this program; it was the best thing that ever happened to my company and me. I encourage every small business owner to take advantage of this program if you have the opportunity.



Finally, I'd like to say "Thank you" to my friend Lawrence Fortenberry for his assistance in editing this book.



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# ***Quick Tips for Drivers***

- *Don't wait for car trouble  
to find a good car repair shop!*

Start looking for a good shop by asking friends and associates for recommendations *now* and by following the tips in this book. You're more likely to make a good decision when you're not rushed into it.

- *Follow the servicing recommendations  
of your Owner's Manual.*

The manufacturer wants you to buy another vehicle from them and designs their recommendations to make you love your car. Use them as the basis for your servicing decisions.

- *Keep good records!*

Keep all your vehicle repair and maintenance paperwork together. This is a valuable way for you to track your vehicle needs *and* an excellent tool when you're ready to sell it!

# PART I:

## WARMING OUR ENGINES

### INTRODUCTION

Originally called the “horseless carriage,” the automobile was designed to replace the horse. It succeeded in its original goals—it gets us where we want to go faster than horses and makes our work much easier.

In 1908, Henry Ford introduced the Model T, the first car the average American worker could afford. Ford’s Model T was built “for the multitudes,” but it was a boxy “contraption” and before long America’s taste in cars changed.



## ***NUTS & BOLTS***

Eventually, each car seemed to take on the owner's personality. When you saw a car coming toward you, you knew exactly what it was because there weren't that many different kinds on the road. Things have certainly changed. Today, there are many different nameplates with hundreds of different models.

Technology now advances so rapidly that a complete understanding of your car is nearly impossible, unless you live and breathe it as I do. People tell me they used to look under the hood and name every part they saw. Today they won't even raise the hood—they're afraid to look! Most of my customers say they'd love to know more about their cars. That's why I wrote this book.

Like Ford's Model T, this book is intended for everyone, especially people who may dread going to an automobile repair shop. My heart wants to serve people, to help them in any way I can. If someone in need crosses my path, and I have the resources to meet their need, I don't just say, "Go be warm and be fed." Instead, I want to serve them if I can.

I see a need for people to know not only how to take care of their car but to make wise choices when replacing it. So here it is—the self-help book of car ownership. It won't make you a Master Certified Auto mechanic, but it will help you better understand how to keep yourself, your family, and your car safe.

Safety is a primary objective every time we get in a car. We pray for travel mercies and tell our loved ones to be careful on the roads. Signs tell us to drive safely, wear our seat belts and obey traffic laws--all so we will “arrive alive” at our destinations.

Cars were never meant to be phone booths, texting stations or music halls. They were meant to transport us and help us arrive safely. Most technological advancements have an underlying theme of safety, many of which are addressed in these pages.

I firmly believe this book will help anyone who wants to learn more about their automobile. The strategies and plan of attack that I have developed and detailed in this book will help you care for your car and understand its language—the pings, squeaks, knocks and rumbles. It also provides information to help you communicate with today’s auto technician and more.

In the Car Care 101 section, I define common terms and acronyms. Car Care 201 provides information on making the right decisions when purchasing a new or used vehicle. It also covers what you must know when looking for an auto repair facility. Car Care 301 is the “how to” section, including how to change a flat tire, “jump start” your car and manage a breakdown.

## ***NUTS & BOLTS***

This book also covers my personal success story, a framework you can use to achieve similar success. Finally, I say a word to my fellow business owners in *Business Matters*, and conclude with a discussion on starting a business. But most of this book is devoted to teaching readers about their cars.

So consider me the “expert you never had” who wants you to know how to care for your car and arrive safely. If you have a specific question, simply go to [www.orozcosautoservice.com](http://www.orozcosautoservice.com) to find additional resources. Or, let me know how I can help.

Servando Orozco,  
CEO and Founder, Orozco’s Auto Service  
August 2014

What you'll learn by reading this book:

- Car care basics
- Tips on buying a vehicle
- The truth about extended warranties
- "How To" get more out of your car
- How Orozco's Auto Service began
- How to think like an entrepreneur

## **HOW I GOT HERE: A SHOT IN THE DARK**

I love America. What a country! Where else can a poor boy from the Mexican countryside take up residence and in a few short years turn his life around?

Music brought me to the United States. At the time, I was working in Mexico with a country and rock band called Los Muecas, which translates to “The Faces.” I was a “roadie,” a part of the set-up crew loading instruments on and off the tour bus. Do you remember Freddie Fender, the great Mexican-American performer? He was best known for his 1975 hit “Before the Next Teardrop Falls.” Well, Los Muecas played music similar to his.

When the band planned to tour the United States, the bandleader approached me and asked if I wanted to come along. Of course I did! I was supposed to stay in the States for three months. We traveled widely, playing in Nevada, Oregon, Washington and California.

While in Southern California, I stayed with a friend of the band who owned an auto repair shop. During the week I spent time in his shop, cleaning up and doing anything I could to help the owner.

One fateful night, two weeks before I was supposed to return to Mexico, I headed to the store on an errand. I was wearing a bright red shirt, walking down the street minding my

own business. Suddenly a series of shots rang out—seven in all. What was going on? It sounded like a war zone. I felt a sense of panic. When the smoke cleared, I felt a pain in my lower leg. I had been shot! What was I to do? I was wounded and hundreds of miles away from home in a foreign country.

It wasn't until a police officer stood over me asking me what gang I belonged to that I learned the name of the city I was in! On the sleeve of his dark blue uniform was a patch that said Compton.

At the time, I knew nothing about gangs or their rivalry. I knew even less about their loyalty to colors. The officer persisted with his questions.

“Tell me the truth,” he said. “That way we can help you. Which set do you claim?”

I struggled to understand his words because my English was very poor. The officer spoke no Spanish. Thanks to God, a stranger came along who spoke English and Spanish and interpreted for us.

“No, no,” I said. “I do not belong to a gang.”

How could this happen to me? I only had two weeks left on my green card! I just wanted to go home.

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The officer told me I could not return to Mexico during the investigation. Moments later (*finally*, it seemed to me) I was rushed to the Dr. Martin Luther King Jr. Hospital in nearby Watts.

The shooting, my injury, was the reason I stayed in this country. During my recovery, I began to spend more time in the auto shop in Compton. That's when I learned my way around a repair shop. As my wound healed, my interest in mechanics grew.

If I hadn't been shot, things could have easily turned out differently in my life. Since the shooting, I have benefitted from the fruits of my labor and this great nation has rewarded me handsomely. Now I own my own business. I met and married a beautiful woman, and together we have three adorable children. Our family enjoys a lovely home in Long Beach, California.

But even the shooting taught me a valuable lesson that I have carried over into my work. If you are going to do something, make sure you do it right. Seriously, I soon came to realize that if I could survive a gunshot wound, I could endure any hardship.

I pray the person who shot me has turned his life around. But if I ever met him, I might thank him, because his action



## ***A SHOT IN THE DARK***

changed my destiny and set my future. I thank God he was a poor shot in the dark.



## ***NUTS & BOLTS***

### **WHAT'S THE SECRET?**

The other day I was speaking to a group of auto shopkeepers and one man asked to what I owed my success. I didn't have to think about my answer—I'm successful because I love what I'm doing. Of course, that's not the only factor in my success, but it's the foundation.

There's nothing better than being paid for doing what you love. I have been blessed in the automobile industry. When I first started out, though, I literally worked for free. When I wasn't working for no pay, I was working for very little. You read that right. I worked "pro bono" because I knew that if I learned this trade, I'd have a skill—and the ability to make a living—to last a lifetime.

Today I own four auto repair shops with 28 employees in car-obsessed Southern California, and Orozco's Auto Service is a trusted name in our community. We are a NAPA auto care center and AAA-approved repair facility. And while we work on all makes and models of cars, we specialize in customer service. I often say that we're not in the car business; we're in the people business. I want to emphasize that—we're in the business of helping people. Fixing and maintaining their cars is just the main way we go about helping them.

Here's the bottom line: There is no secret to success. And there is no secret formula. For me, the qualities that have worked are a combination of hard work, persistence and a willingness to take risks. Persistence means you don't give up on your dreams. Once you have a dream, you have to keep going and keep going and don't give up. No matter what happens in business or life, you keep going. Many people give up when they run into problems, but no matter how hard life gets, don't give up.

I learned about hard work at an early age. I am the oldest of eight, with three other boys and four girls. Life was a struggle in Michoacán. Early on, I did everything possible to survive—I sold chewing gum, cleaned car windows, pumped gas, sold fresh water and peddled fruit. I also helped my dad, Adolfo, milking and feeding cows at the farm where he worked. Farming was still a matter of hard physical labor when I was a boy. By the age of ten, I was used to getting up early and helping my dad on his job. This early introduction to hard work helped to mold me into the businessman I am today.

Dad was a stern man and not one to show his feelings, but still I learned from him. He was man of his word. He used to tell me, "If you say you're going to do something make sure you do it. And make sure you do it right the first time."

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At the tender age of 10, I thought Dad was too hard on me. But I now realize he was right to introduce me to his work ethic when I was young. Thanks, Dad. At the same time, my mother taught me to be frugal and to avoid wasteful living.

The early days of owning my shop were difficult for me. I lacked the money and skills needed to run a business, but I had the desire, determination and discipline necessary to succeed. What do I mean by those words?

**Desire** burns like a fire in the belly, and it takes a burning passion to reach the goals you have set for yourself in life and in business. Fire burns everything that gets in its way. You must have a burning desire to reach your goals and you cannot let anything put out that fire. I could not let anything stop me from opening that first shop.

If desire is like a fire, then **determination** is the keeper of the flame, the fuel or energy that keeps the flame alive. The one thing all highly successful people share is the determination to persist against great odds. Napoleon Hill, writer of *Think and Grow Rich*, devoted an entire chapter to this subject and focused on two great Americans, Henry Ford and Thomas Edison. They each knew failure but never gave in or gave up. Ford and Edison knew what they wanted and even though the odds were against them, they went after their dreams with all their heart and soul. I have come to believe that the bigger your problems and the

harder you work to solve each one, the more successful you will be in overcoming them.

If desire is fire and determination is the fuel keeping the fire burning, then **discipline** is what it takes to keep the fire under control. Discipline is what it takes to do the things you don't like doing in order to do the things you love doing. It takes discipline to exercise to lose weight or to make your body strong. People don't like exercising because it is hard work. It takes discipline to get up early and exercise, and most people prefer sleeping late. But in the long run, it is better to get up early and do what you have to do. If you have that burning desire, fueled by determination and controlled by discipline, you can succeed, too.

In 1990, Tony's Shell Oil Company Service Station was located at 3009 Long Beach Blvd. That's where I got my start in the automotive business, working for Tony on the corner of Long Beach and Spring Street. I worked there for 10 years, until shortly after the day Tony pulled me aside and admitted he was losing his shop. Then he said something that changed my life. He said I could find work somewhere else or *open my own shop*.

And that's what I did. I opened the doors to my first shop in December 1999 right next door to Tony's Shell Station.

The early days were difficult--very difficult. Part of the problem was that I had the wrong mindset. I opened the business

## ***NUTS & BOLTS***

thinking as a mechanic and my vision did not include anything beyond being the best mechanic I could be. It did not occur to me that the mechanic side and the business side are two different things. Basically, when you are a good mechanic, you need good tools and the proper skills to work on cars. The business side needs a different set of skills for success, including leadership, accounting, marketing, systems management and many other skills.

There was another problem. I was not a numbers person. By that, I mean I had never *seen* a profit-and-loss statement, much less read one. I had no idea about how to design and manage a budget; I just put the money I received in my left pocket and switched it to my right pocket to pay bills from there!

It took me five years to understand the business side and those first five years were a struggle. When we started the business, it was just my wife and I. Cindy did the paperwork and ordered parts, and I handled everything else. After a couple of months, we saw the need to hire another employee.

We made a lot of mistakes in the early days. For example, we tried to satisfy everybody. We hired the wrong people. We did not know how to charge properly for services. What was my biggest mistake? I had a bad habit of working on cars instead of working on my customers' needs. People aren't buying parts and labor—all they really want is a solution to their problem.

What was the hardest thing for me to learn? It was something Peter Drucker talked about in his books on management. I read *The Five Most Important Questions You Will Ever Ask About Your Organization*, and agreed with his view about the purpose of a company. It was a turning point for our business to realize our purpose is to create *customers*, not sales. And you can't just keep creating new customers—you want to *keep* the customers you create.

It was a risk to open my own shop with no business background, but I did it anyway. I worked hard. And I persisted in my dreams. That's how I went from my first shop in those early days to a four-shop operation. As I've said, America has been good to me, and that's why I want to "pay it forward." This book is my way of giving back to America. I hope you enjoy reading it as much as I have enjoyed writing it!

### **A PERSONAL PHILOSOPHY**

*“PERSONAL PHILOSOPHY*

*IS LIKE THE SET OF THE SAIL” – Jim Rohn*

Our personal philosophy is like a guidance system to help us make decisions. My personal philosophy, guiding all my business decisions, is that we are put on this earth to help others. That means my customers can trust us to always put their best interests first and to adhere to the highest ethical standards. For my employees, it means I am always focused on helping them to be successful and to realize their dreams. For my readers who are trying to get ahead or who want to become entrepreneurs, I'll share the kind of advice I give my employees as I try to help them become leaders.

I recently met with one of my employees and discussed his situation and areas where he needed improvement. This employee is growing to be a leader in our company. I wanted to encourage him and challenge him to become all that he can be and to help those around him to grow as well.

First, I encouraged him to keep working to meet his shop's daily, weekly and monthly goals for service advisors, technicians and the number of cars processed. He's already doing a good job and I let him know I appreciate it.



Then I talked with him about becoming more effective with his time and becoming a better leader. Although it's his job to make profits for our company, it's also important for him to develop his people and get the best out of them.

One aspect of developing your people is helping them to become disciplined, but before we can help them, we must discipline ourselves. It's always better to lead by example than to simply issue orders. People just don't react well to "Do as I say, not as I do."

I told him to remember that what you think, say and do is what you become. Stop and think about that. People form habits every day, and whether for good or for bad, they make you who you are.

I reminded him that part of his job is to plan and to see things before they happen--to predict the needs of the shop, our employees and our customers before there's a problem. I also reminded him that efficiency is great but we don't want to be efficient at doing the wrong things. We want to be *effective* so our efforts aren't wasted.

To conclude our meeting, I asked him to think about two things: production and leadership. To improve his leadership abilities, I suggested some books on personal development for him to read.

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That's good advice for anyone. Take the time to read books on the subjects where you need information. This book is one example—if you're a car owner and need to care for your car to ensure your safety and protect your investment, it will inform you on those subjects. There are many other examples I could give, especially if you are an entrepreneur. The authors I listed in the *Acknowledgements* section of this book provide a good starting point.

Research your subjects and examine your own skills and abilities. If you need help in any area of your life, there's probably a book that can provide guidance for you. The more we learn, the more information we have; and the more we know, the better we are at making good decisions.

I try to lead by setting a good example—by demonstrating desire, determination and discipline. No business can grow or prosper without good leadership at the steering wheel. I try to help my people be leaders, by teaching them how to help themselves, communicate effectively and make ethical decisions. My goal is to teach them about our business, that we don't just sell parts and labor, but that we are helping people with their problems. Most of all I try, by example, to teach them about the work required to succeed. I require new leaders to take personal control of *their* performance and lead by example.

## **REALIZE YOUR DREAMS**

Fear often keeps people from realizing their dreams. Start overcoming your fears by believing in yourself. Then prepare for opportunities. Remember:

- You only fail when you fail to try.
- Don't fear success, embrace it.

Some of us think that success in life can result from good luck, and sit back waiting for it to arrive. The truth is that successful entrepreneurs don't wait for luck to knock at the door. They don't get stuck in a rut, afraid to make changes because they are comfortable, or at least able to make ends meet, doing what they're doing now.

True entrepreneurs are willing to “kill the cow,” or as I would say, “tirar la vaca”—one of my favorite metaphors. Let me share it with you.

### **TIRAR LA VACA: KILL THE COW**

“A professor and his student decide to visit a rural town in one of the worst parts of the country, where the people are very poor and the residents have no hope for better days.

## ***NUTS & BOLTS***

Upon arrival, they search for the chief of the town and ask, “How do your people survive in this town?” “

Well,” says the Chief, “we have a cow. We milk the cow and make cheese, which we exchange for eggs, and that’s how we survive.”

That night the professor asks his student to kill the cow, which the student does, while feeling terrible for doing something so bad to the people of the town. The professor and student leave the town bright and early the next morning.

Years later, the student—who is no longer a student but now a professor—has not been able to forget the people of this poor town. He decides to return and find out what has been the fate of the people.

When he arrives, to his surprise he finds much bigger homes and prosperity. He searches for the chief of the town and asks, “What happened to the people of this town? Where did they go? When I came here years ago there was no hope in this town.”

The Chief answers, “We are the same people. One morning many years ago we found our cow, our

sole means of survival, dead. If we ate the dead cow we would die, for we had nothing else to go on with.

“We decided to exchange the meat for chickens, and then exchange the eggs for pigs. We then learned to cultivate the land and plant vegetables. As our animals grew and multiplied, we exchanged them for other animals, such as horses and cows. We learned that we had the means and opportunity to change our fate—we just never saw it before.”

In everyone’s life, there is a cow. The cow can be one’s parents, the company one works for, the business one has, the country one lives in, the circumstances of one’s life, one’s corporate title (doctor, engineer, teacher), or anything else that holds one back. These “cows” keep you from doing anything else.

I recommend that you keep an eye on your cow. If the cow is not helping you get ahead, then kill your cow before someone else kills it for you and you find yourself helpless.

What I want you to understand is that many of your current limitations have nothing to do with your mental capacity, gifts or talents. On the contrary, these limitations are limiting *beliefs* that create wrong ideas of your true potential—of what you are or aren’t capable of reaching.

## ***NUTS & BOLTS***

Anyone wanting to start their own business, or wanting to improve their position wherever they work, should remember this:

- Believe in yourself
- Believe in your dreams and dream *big*
- Take inspiration from highly successful people
- Work hard on yourself and be persistent in the pursuit of your dreams
- Fight negative ideas with positive actions

And most of all, determine if there is a cow standing in your way. If so, *tirar la vaca!*

## **SHIFT INTO DRIVE**

We're ready to move into the auto guide portion of this book. I hope the information in the coming pages will be useful to you and help you become more knowledgeable about your vehicle.

I encourage you to keep a copy of this book in your glove box, along with your owner's manual and other important papers. I believe it will be a handy reference for you for many years.

And now, please, read on!

# **PART II:**

## **CAR CARE 101**

### **LEARNING THE LINGO: ACRONYMS**

Communication can easily break down in my industry due to the many acronyms used. Listed here are some of the most common ones. Armed with this knowledge, hopefully, you can make informed decisions about keeping your vehicle serviced properly.



***ABS = Anti-Lock Brake System***

If you read that as a word, it says “abs.” So, if we were a gym, you would think of something totally different—a part of your body. But in the car industry, ABS refers to your Anti-lock Brake System. So, if your “ABS” light comes on, that means there’s a fault in the Anti-lock Brake System. (As far as your body is concerned, check with the gym on that!) If the “ABS” light is on, an important safety system is not working properly!

***ASE = Automotive Service Excellence***

You’ll see this acronym a lot. ASE is an independent organization that tests the competency of those in our industry. ASE does not provide training; they only conduct testing and provide certification based on test results. The training takes place in other locations or through other venues, then ASE tests, much like SAT tests students preparing for college. ASE testing is administered under close supervision at a “neutral” location and the results are provided by the certifying organization.

ASE says, “We’re going to see if you learned anything through what you’ve studied. And if you can pass our test, then we will certify that you know what you’re talking about and are qualified to repair these specific systems.” When someone passes their exam, they become “ASE Certified.” For the

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automotive repair side of our industry, there are eight different areas of ASE certification. If you certify in all eight areas, you are an ASE Master Technician.

ASE also has specific certifications for diesel trucks—like a light-duty diesel truck. Additionally, they have certifications for heavy-duty diesel, certifications for people working in a parts department and certifications for service advisors.

ASE is the “gold standard” in our industry, and in my opinion, it is important that anyone who works on your vehicle should be an ASE Certified technician. Before you have any work done on your vehicle, ask if the technician assigned to your car is ASE Certified. If they aren’t, you may want to look for a repair shop with fully trained and certified technicians and service advisors.

ASE Certification must be renewed every five years. This is important because cars and technology change. Therefore, ASE Certified Technicians must stay up-to-date on cutting-edge technology so they can continue to service your vehicles properly. Every year there are over a million pages of new information hitting our industry, so it’s important for my staff and me to stay current.

Your great-grandfather may have said all he needed to fix his car was a piece of baling wire, a pair of pliers and some duct

tape. That may have been true back then, but today, we need a little more than that. That is why being ASE Certified is so important.

### ***AT = Automatic Transmission***

This is the type of transmission in most passenger vehicles. In fact, it's increasingly difficult to find a standard transmission anymore. If your gearshift has choices like "Park," "Reverse" and "Drive," you have an automatic transmission. This type of transmission automatically shifts when certain conditions exist.

The invention of the automatic transmission revolutionized driving by making it much easier. Before, drivers had to use a clutch pedal and manually shift their cars into different gears, which is it's called a "manual" or standard transmission.

### ***BCM = Body Control Module***

The Body Control Module pays attention to everything internal (inside the vehicle). "Things you touch" is a simple way to define what goes through the BCM—for example, turn signals, headlights, heating and air conditioning controls and other items like these. They all send information through the Body Control Module.

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### ***CSS = Cooling System Service***

CSS is our acronym for Cooling System Service. That's the process where we typically drain your cooling system and reinstall coolant. It's not a chemical flush; it's just a simple service of your cooling system fluid.

### ***DIS = Driver Information System***

This system provides information to the driver. It may be an LED style display, a warning light in the console, scrolling across the dash or touch screen, or perhaps visible in a small window somewhere on the dash. You need to be aware of this important system. Pay close attention to any messages and look for more specific information and responses in the index of your owner's manual.

### ***EGR = Exhaust Gas Recirculation***

EGR is an acronym you'll hear often. It stands for Exhaust Gas Recirculation. It is an emission control item and a system that recirculates exhaust gases back into the engine for re-burning. Also, fumes from your gas tank return to the engine for re-burning through this system. This has to do with fuel economy and proper engine operation.

### ***LOF = Lube, Oil and Filter Service***

LOF is pronounced "loaf." What's a "loaf?" In our industry, 'LOF' means Lube, Oil and Filter. Interestingly

enough, not a lot of cars receive lubrication anymore, but the acronym has carried over for many years. So, when you see “LOF,” that refers to an oil change. If your Service Advisor hands your car off to a tech and tells them they have a “loaf,” don’t think they’ve been told to goof off on your car.

### ***PCM = Powertrain Control Module***

The PCM is the grandfather of the computer systems on the vehicle. It is the mission control center, the head honcho, the king, the president—it is what everything else goes through. Typically, there are many computers within a single car; and they all communicate with the PCM.

### ***TPMS = Tire Pressure Monitoring System***

TPMS stands for Tire Pressure Monitoring System. Like the name says, this system monitors the tire pressure of your car. After Ford had problems with accidents caused by low air pressure on their vehicles’ tires, the federal government mandated that all vehicles, beginning in 2008-2009, must contain a Tire Pressure Monitoring System.

Today, the technology actually notifies the driver when a tire has low pressure. Some systems will tell you about a specific tire—for instance, “Your left front tire is low.” Some simply indicate that you have a low tire somewhere on the vehicle.

## NUTS & BOLTS

Spare tires also have these sensors—so although the four tires on the ground may be fine, you should still check the spare tire too.

### *TPS = Throttle Position Sensor*

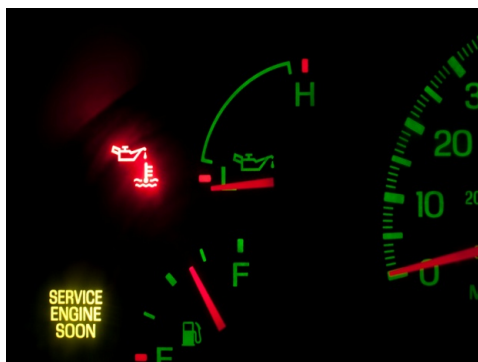
In the past, a car had a physical cable that connected the gas pedal with the throttle control mechanism on the engine. Today, instead of a cable, your vehicle uses a throttle position sensor, which means that your gas pedal is now an electronic sensor. . So, when you push down on the gas pedal, you are moving a sensor. The gas pedal sensor information is sent to the throttle position sensors, which tell the onboard computer how much gas and air to allow into the engine.

## DASHBOARD: LIGHTS THAT POP UP

As you sit in the driver's seat and turn on the key, you see various lights pop up on the dashboard. But what do they mean?

First, there's a reason for the color of lights on your dashboard. These colors can be associated with the traffic lights you see when you are driving down the road.

If you see a RED light, what does that usually mean to you? Stop. And when you see YELLOW?



Of course, that means caution. And GREEN? Green means go.

Let's apply this to the dashboard lights. If, for example, you have the cruise control on, the button is normally some sort of orange color. Once you set the cruise control, the button turns green.

Your dashboard lights are very important. *Never ignore them.* If a red dashboard light comes on, you should discontinue driving immediately and seek service by a qualified technician right away.

### ***ABS Light:***

The ABS light relates to your brakes, as we mentioned previously. If the ABS light is on, the Anti-lock Brake System computer has found a fault somewhere in the system. It could be anything from low brake fluid to a problem with a particular wheel sensor or another component within the system.

You may remember your parents telling you that if you're on ice you should pump your brakes and not apply them hard. The ABS System uses that principle as well. The ABS system pumps your brakes ten times per second, which is something no human is able to do.

When the ABS light is on, your normal braking will still work. However, if you get into a panic stop, the anti-lock brake system will *not* take over your braking—that is, your wheels will

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lock up like a vehicle not equipped with anti-lock brakes. Therefore, you lose the ability to maneuver around objects in your path. Instead, momentum carries you forward and you'll likely hit the object ahead of you.

The ABS light typically comes on as a yellow light. It doesn't mean that you have to stop your car immediately, but it does indicate that the system won't work until you get it resolved. It does not mean your car won't stop or that your brakes have failed completely; it only means that the anti-lock side of your brake system won't operate in a panic stop situation on a slick surface. Drive cautiously—as you always should—and quickly get your vehicle to a shop for testing.

### ***Check Engine Light:***

The check engine light has been around since about 1990. Initially it provided information about the emission control status of the vehicle. Check engine lights are typically orange because they still primarily deal with emission controls. However, emission controls now include additional elements, too.

Emissions concern air pollution—so, for instance, if a spark plug is not working properly, it causes the car to pollute more than it should, and the check engine light comes on.

Formerly, a failed spark plug wouldn't cause the check engine light to come on. It would come on if you had a fuel



canister that was full of gasoline or if the EGR (Exhaust Gas Recirculation) system failed. Now the check engine light encompasses many things. There are somewhere between six hundred and nine hundred different reasons why the check engine light might come on. A technician needs to run tests on the system to determine the actual cause so they can correct this problem.

### *Oil Light:*

The oil light can indicate an issue with the oil level or oil pressure—or both. If the engine loses oil pressure, the oil light will come on. That light is red because you have to shut the engine down quickly. If the oil pressure is too low, there will be internal damage to the engine. The damage would be similar to driving without oil in the engine.

To clarify, you can be low on oil and still have oil pressure. The oil light may not let you know that you are low on oil—in some cars, only checking the level with a dipstick can tell you if you are low on oil. (One new technology in some of the higher end cars, like some BMW and Mercedes models, uses no dipstick. Instead, a sensor inside the engine reads the oil level and indicates its level. Most cars still have a dipstick.)

Even when you're a quart or two low on oil, you still have enough oil in the engine to produce oil pressure. In that case, the

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oil light might not come on because adequate oil pressure exists. However, the lower your oil level, the more stress and damage to your engine may occur. Potentially, you could have a low oil level and no indicator light to warn you. That's why regular oil changes are so important.

Having a sufficient oil level provides several benefits. Lubricating the engine is the oil's primary job, but it also increases fuel mileage when the proper oil is used.

### ***Reduced Power Light:***

Reduced power is something primarily seen on GM vehicles. The reduced power light is usually red and indicates that something has gone wrong, that the vehicle has gone into "limp mode"—as in "we are limping" or "we only have one leg and cannot run." Such a fault in this system could be problematic. Many times, this fault pertains to either transmission functions or accelerating functions. If this light comes on, you must get it in for service.

Some limp modes limit your speed to no more than 25 miles an hour, which will allow you to drive to a safe place. You'll likely need to have it towed from that point, especially if you have a long way to go. Other limp modes allow you to go 40 miles per hour, usually enough that you can get to a repair facility on your own.

The reduced power light will most always be red. It indicates a problem that needs to receive immediate attention.

### ***Smart Air Bag Light:***

Almost all cars today are equipped with smart air bags. These sensors measure the weight of the person in the front passenger seat. Depending on that weight, the air bag may or may not deploy. You don't need to do anything when this light comes on. If there is a small child in the front seat, the smart bag knows it. If the weight in the front seat does not meet the minimum limit established by the manufacturer, the smart air bag light will come on to let you know that the airbag is off on the passenger side.

The airbag doesn't deploy with a child in the front passenger seat is because the car industry has learned that small children do not withstand the explosion of an airbag as well as an adult.

The inside of an airbag contains a substance similar to gunpowder. When triggered, the "gunpowder" explodes the bag out of the dash at an extremely high rate of speed. The air inside that bag immediately deflates, but is present for just long enough to provide a cushion to the blow of an impact.

Typically, the occupant of the seat moves forward while the bag deploys rearward so a collision takes place between the

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bag and the occupant. Because the airbag deploys at such a high rate of speed, a child's body simply cannot withstand that kind of force. Injury or death can occur as a result. After learning this, car manufacturers introduced smart bags—which was quite a “smart” thing to do.

### ***SRS Light:***

Air bags are very important elements for your safety in a vehicle. Cars equipped with air bags have an SRS light (or air bag light) on the dashboard. SRS is an acronym for Supplementary Restraint System—the key word being *supplementary*.

That means it supplements your safety system and that safety system is your seat belt. If you are not wearing your seat belt when you are in an accident that deploys the airbags, a greater amount of bodily injury will occur. For that reason, *you should ALWAYS wear your seatbelt*.

If the airbag light is on, there is a problem in the system and the airbags will not deploy in an accident. As you can imagine, this can be very serious. If your SRS light comes on, get your vehicle to the shop quickly.

### ***Temperature Light:***

Most cars today have an engine temperature gauge as well as a temperature light. The engine temperature light will always

be red, indicating that you need to shut the car down as soon as possible. The longer you continue to drive, the more damage will occur. Eventually, you will damage the engine internally. By continuing to drive the vehicle you will create more problems—very costly problems.

When the temperature light comes on, you should pull over and check the temperature gauge. If it indicates the engine is too hot, turn your vehicle off as quickly as you safely can. Then you want to determine the cause of the problem.

The first step in the troubleshooting process is to make sure that your coolant level is full. However, be very careful! You have to use extreme caution when checking your coolant level or adding coolant to a hot car, because you can be burned. It is best to let the car sit for at least an hour, with the hood raised, to cool down before adding coolant. You must check the radiator coolant level, not just the overflow bottle.

The need to add coolant usually indicates you have a leak that needs to be repaired. If the coolant is full and the vehicle is running hot, that means that a component within the system has failed. Either way, you'll need to get your car to the repair facility quickly.

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### ***Traction Control Light:***

The vehicle computer not only monitors the brake system and airbags, but it also helps move power from one tire to another in all-wheel-drive vehicles. For example, in an all-wheel drive vehicle, let's say you become stuck in sand, ice, or in snow and are trying to get out. One of your wheels is usually stuck worse than the others—it's spinning but not getting any traction. The traction control system will move the power from the wheel that is spinning to a wheel that is not, since the non-spinning wheel has greater traction. The traction control system allows power to be transferred so that you can gain traction, have greater control and get out of a situation where you may normally remain stuck.

Traction control also works during acceleration. An example of acceleration mode is when the weight of the car shifts from one side to the other as you turn a corner. The traction control system moves the power to the wheels with the best traction.

The traction control light comes on briefly whenever the system activates. If there's a failure in the system, the light will stay on. That is when you need to take your vehicle in for inspection.

## **DASHBOARD GAUGES**



Many cars have dashboard gauges in addition to dashboard lights. The following pages describe the primary gauges you'll find on the dashboards of today's vehicles. These gauges provide a quick and easy way to tell how well our car is functioning.

### ***Battery Gauge:***

The battery gauge simply measures battery voltage, also known as the "voltage gauge." You will usually see a small picture of a battery on this gauge. Some gauges will have a

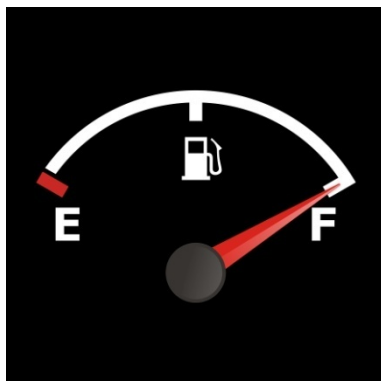
## ***NUTS & BOLTS***

number 12, which relates to the voltage, but most of the time the normal position for the needle, when everything is fine with the battery and charging system, is in the middle of the gauge.

### ***Fuel Gauge:***

Most people know that “E” does not stand for “enough”—it stands for empty. And “F” of course stands for full.

In today’s cars, the fuel pump is located *inside* the gas tank. Having enough fuel in the tank helps keep that little electric motor—called your fuel pump—cool, and will typically make it last longer.



As a rule, you should keep at least a quarter tank of fuel in your car at all times. This will add life to the fuel pump because it is an electric motor, which creates heat while running. Excessive heat shortens the life of the pump. That’s why keeping enough fuel in the tank helps it last longer, especially in the Yuma climate.

My advice is to refuel your car completely when your gauge indicates a quarter of a tank. If you always run in that quarter to empty range, you’re going to shorten the life of the



pump and that is an expensive repair. Not only that, but when you need to get somewhere right away, you will want more than a quarter of a tank of gas.

### *Odometer:*

The odometer gauge tells you how many miles are on your vehicle. The accuracy of an odometer gauge has changed over the years. Today it's electronic, whereas years ago, a cable ran from the speedometer head down to the transmission, rotating with the transmission. That allowed odometer readings to be altered. That's impossible with the LED-displayed odometers we have today, which accurately show a car's mileage.

### *Speedometer:*

The speedometer gauge is, of course, useful for showing how fast you are moving. Its speed sensors are reliable and accurate. The onboard computer also uses this information to tell the transmission when to shift.

### *Tachometer:*



Most tachometer gauges (also referred to as “tachs” or RPM gauges) are circular with a series

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of numbers on them (often 0-8).

Even when you are sitting still, you'll see the tachometer needle move around the gauge as you accelerate by pressing on the gas pedal. The tachometer indicates how many times the engine is rotating each minute. Multiply the number on the gauge by one thousand—for example, if the needle is sitting at 1, the engine is rotating one thousand times per minute. (If the numbers on the tachometer are multiples of 10—numbers like 20, 30, 40, and so on—then you multiply that number by one hundred instead of one thousand.) That number is how many times the engine makes one full revolution each minute—called revolutions per minute or “RPMs” for short.

It can be helpful to keep an eye on the RPM gauge. The RPM number will drop each time the transmission shifts into a higher gear to increase fuel economy. If you notice that the engine appears to be running at a higher RPM than normal, it may indicate that something is not right—that the engine is working harder than usual. Another situation when the tachometer is helpful is as you are idling. If you have a vacuum leak or a similar problem, your idling RPM will be higher than usual. Most engines should run just below the 1 mark. If the idling RPM is significantly higher, that's a problem. You should expect to see the idling RPM a little bit higher when the engine is cold. Once the engine reaches operating temperature, you will

see the gauge go back down to the 650-750 RPM range. Isn't understanding acronyms cool?

### *Temperature Gauge:*

One common gauge is the cold/hot gauge, also referred to as the coolant temperature gauge.



Typically, you find the coolant temperature gauge on the left side of the dash. This gauge monitors the temperature of the engine.

Transmissions usually will not shift into the final drive gear until the engine temperature has reached at least a quarter of the way of its full gauge range. Most gauges are set to run—in normal operation—about midway up the gauge. So, you'll usually see a "C" (for cold) on the bottom and an "H" (for hot) on the top (or Blue for cold and Red for hot).

The gauge may be installed horizontally—in that case, the 'C' would be on the left and the 'H' would be on the right. Typically, the needle will be in the middle of the gauge, indicating what is called, "Operating Temperature."

Interestingly, if the indicator needle indicates your engine is staying cold, that has a negative effect on your fuel mileage.

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The vehicle's computer is designed to put fuel in the engine based on a certain engine temperature. When the engine is cold, it puts in more fuel because a cold engine needs more. If the thermostat is not working—a typical failure—then the computer perceives that the engine is running at a colder temperature and continues putting more fuel into the engine, increasing your gasoline usage. Because the thermostat can affect fuel mileage, it's important that you are familiar with the temperature gauge to know what is normal. Check that gauge on a consistent basis. Remember: If you continue running the vehicle when the gauge shows the engine is hot, this will cause very expensive and critical internal engine damage. Too many times we have seen very expensive engine damage caused by someone who knew the gauge was reading hot but explained that they only drove “less than a mile” to get to an exit, home, or elsewhere.

## NOISES

One of the greatest things about car ownership is really getting to know your car. That means using your five senses—hearing, sight, smell, taste, and touch. You can use your senses to know what is normal for *your* car so you'll recognize when something has changed.

When it comes to hearing noises that you know are not normal—not what you are used to hearing—one of the best things to do is “show the noise.”

When you take the car into a service facility, don't try to explain the noise. *Show* them the noise. One of the greatest helps to any service facility is when the vehicle owner pays attention so they can duplicate the noise.

- How fast was I going?
- Was I turning?
- Was I braking?
- Was I accelerating?
- What were the scenarios?
- Was I going uphill or downhill?

Pay attention to the environment and the activity that is taking place when the noise occurs. Then you can take that information, go to the repair facility, get someone in the car with you and duplicate the sound. Highly trained automotive technicians can typically hear many noises that you may not hear. This small step will assist the technician in locating and correcting the same noise that concerned you. When you pay attention to how the car normally sounds, you'll recognize when something changes.

### ***Brake Squeaking***

One common noise that often scares people is a squeaky noise that happens when you push on your brake pedal. A high-pitched noise is indicative of brakes needing repair, especially if

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this is a new sound. Sometimes what we'll call "inferior" brake pads or "inferior" parts are used on a brake job. In those cases, you should expect some squeaking.

The sound is not necessarily metal contacting metal, but actually a vibration of the brake pad against the rotor, which comes out as an audible squeak. The vibration is at a decibel level that sounds like a squeak, so this can occur due to the type of brake pad used or the surface of the rotor.

However, if you have a good brake system and use high quality parts, you should not hear any noise. If noise occurs at some point in the future, you should recognize it as a problem and have the brake system inspected for any wear, tear or other issue.

### ***Brake Grinding***

Grinding usually happens after squeaking. Some brakes never squeak, but go straight to grinding. That is typically metal grinding on metal, and you definitely need to get your vehicle into a shop.

Some of the higher end manufacturers, such as Mercedes, BMW and Lexus, have what are called "brake pad wear indicators." These are just small wires built into the brake pad. Once that wire makes contact with the rotor, a dash light comes on that says "brake wear indicator." At that point, you can bet it

is time to replace your pads. Once the sensor makes contact with the rotor, the sensor is ruined and will have to be replaced along with the brake pads.

### *Squeaky Engine*

Many times, you'll find a plastic splash shield installed underneath the front of the car for multiple purposes. These shields not only prevent foreign objects from getting into the engine compartment and causing damage, but also protect against water getting into the drive belt area. If water enters that area, the drive belt may actually slip on the pulleys. You are hearing the squeaking noise because water intrusion has occurred. This is not especially harmful but it probably means that the shield is either disfigured or not there at all.

Shields are frequently damaged when you pull too close to parking spots and hit the sidewalk curb slightly, or when you hit one of those parking stops because your car sits a little bit lower than the average vehicle. If you hit the shield enough times, eventually it will come off.

If that happens, your lower engine area will be exposed and could sustain damage from water, a rock or other debris. Check to see if this plastic shield is in good condition when you wash your car or get fuel. It only takes a moment, and could save you thousands of dollars in repairs.

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### ***Thumping While Turning***

Sometimes when you turn, you will hear a thumping noise and possibly feel a jerking action through the steering wheel. Several problems could cause this thumping noise.

One problem could be your “constant velocity joints” (or CV joints). Your axle has a constant velocity joint built into it that maintains quickness of motion to the wheels when you turn your steering wheel. When CV joints wear out, they cause a thumping or knocking noise when you turn. The only repair option is to replace the CV joint.

Another thumping noise involves the brakes. Usually occurring at highway speeds, you will hear this when you apply the brakes. It could be something you hear or something you feel. Many times, you see the steering wheel shake.

That usually means the rotors, which are a brake component, are warped. The rotors turn with the wheel as you drive. When you apply the brakes, the brake pads rub against the rotor to create the friction that causes your vehicle to slow down. If the surface of the rotor is not smooth or straight, it produces a thumping noise or a vibration.

Another phrase we hear is described as a “pulsation of the brakes” when they’re applied. You typically hear or feel that pulsation when you brake at speeds above 45 miles per hour. You may not necessarily feel the pulsations if you are braking at



20 miles per hour, but once you get up to highway speeds and apply the brakes, you are more likely to feel or hear the vibrations.

Though not necessarily a dangerous situation, it can be quite a nuisance. It also has a negative impact on brake pad and suspension life.

### *Thumping While Driving*

If you hear a regular thumping or vibration that varies with your speed as you're driving down the road, the tires are usually the culprit. Many times, the tread in the tire is separating internally.

Want a sure-fire way to know if this has occurred? Try this: Drive across a parking lot at 2 to 3 miles per hour, then let go of the steering wheel. If your steering wheel shakes back and forth, slightly left to right, that's an indication that the tread has moved inside the tire, and you definitely need to replace the tires.

The age at which you should replace a tire has become an issue over the years. All tires have a number on them that indicates the age of the tire. The number will start with the letters DOT (an abbreviation for Department of Transportation), followed by a series of letters and numbers. At the end of the series will be four digits. Those digits represent the week and

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year the tire was made. For instance, if one of your tires has the digits 4512, the tire was made in the 45th week of 2012. The numerical significance comes into play because the recommendation for replacing tires is between five and seven years old.

Check your tires. If they are 10 years old, they definitely need to be replaced. If you don't replace them, you are at a great risk of a blow out or tire separation.

### ***Whining Engine***

Whining usually occurs either from the children in the back seat or from the car's power steering pump under the hood. You'll want to check both of those possibilities. You may need a cookie for one and power steering fluid for the other.

The power steering fluid is a sealed system for the most part. The fluid does not go away without cause. If you need to add power steering fluid, you most likely have a leak somewhere in the system. Adding fluid will be a temporary measure. If you have a leak, the whine may stop for a while, but once the fluid leaks out again, the whining noise will resume. Take your car for servicing if you suspect a power steering fluid leak.

### ***Vehicle Starting***

When you start your car, several noises may be heard. One is a tapping noise that can indicate that your oil is not getting

where it needs to be. That noise occurs because some areas of the car need to have oil immediately upon starting. One reason some of the manufacturers have gone to a lighter weight oil is because it can get to those areas that need lubrication quicker on start-up.

Another noise you might hear is a rattling. Any time you hear a rattle in your engine when you start your car, it is metal-to-metal contact. While it will not cause *immediate* failure, problems will happen eventually. The cause is usually a low oil level, low oil pressure, or it could signal that internal wear has occurred.

### ENGINE OIL

Here are some common questions about engine oil:

- *Does the type of engine oil I use really matter?*
- *Can I change the brand of oil I use?*
- *What do the numbers mean?*

All oil today is called “paraffin-based oil.” That means the oil has the ability to capture dirt—this is one of its jobs. When we perform an oil change, we drain the oil from the vehicle and dirt goes with it.



## ***NUTS & BOLTS***

Manufacturers have made changes to the oil for use in lubricating their specific engines. The car industry used to recommend oil based on geographic conditions. If you lived in a cold climate, like Alaska, thinner winter oil was recommended. If you lived in the warmer southern states, heavier oil was recommended.

All that has changed due to the tolerances built into cars by the manufacturers. Today it is more important than ever that you pay attention to the type of oil the manufacturer recommends.

The label on a bottle of oil provides information about that oil. Most people examine the weight of the oil first. Is it 5W-30? 10W-30? What does that even mean? Well, the “W” stands for winter. If we used 5W-30 for example, the “5” and “30” actually measure the thickness, or viscosity, of the oil at different temperatures.

If an oil bottle has “5W-30” on it, the oil will have a viscosity of a “5” weight oil when cold and a viscosity of a “30” weight oil when hot. This combination provides an oil that flows well at low temperatures, but still protects the engine at high temperatures. For comparison’s sake, SAE 5W-30 and SAE 0W-30 will flow better at even lower temperatures than 10W-30, while still providing protection at high temperatures. Just remember, the “W” stands for winter.

Most cars today use either 5W-20 or 5W-30, regardless of geographic location. The brand you choose is up to you. Contrary to what your grandfather told you, it's okay to switch brands.

### *Oil Change Frequency*

How often you should change your oil is becoming an issue in our industry because of changes in service intervals. Years ago, it was every three months or three thousand miles. Our fathers, grandfathers and great-grandfathers all taught us that. The reason the oil needed changing so often was because the engines were exposed to the elements, and the filtering system of air and fuel was not what it is today. Your oil could be easily contaminated and cause internal engine damage. That's why car engines used to last only about fifty thousand miles.

Several things have changed since then. With the advent of electronic fuel injection, the problem with outside elements getting to the crankcase was virtually eliminated because the fuel systems are sealed. Fuel is managed better, too, so your oil isn't contaminated with fuel the way it used to be.

Thus, we have better control of outside elements, like dirt and dust, coming into the engine, and we have better control through better filtering. We have better control of the amount of fuel that is dumped into an engine for burning—almost all of it is

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being burned these days. And finally, the oil has gotten better at suspending the dirt in the engine. When you put these factors together, your service interval can now be longer than it used to be. Some manufacturers will tell you 7,500 miles, some 10,000 miles, and some 15,000 miles. To help simplify things, many cars today have oil life monitors that tell you when it is time to change your oil. My personal opinion is that you should change your oil every 5,000 miles.

Why do it at 5,000 miles? First, because you should have several other aspects of your car inspected at that interval. For example, you should rotate your tires every 5,000 miles. Secondly, an ASE Certified Technician should inspect your car at 5,000-mile intervals to make sure everything else is working safely and properly.

Some manufacturers have recommended oil changes at longer intervals, only to find that the extended duration between changes caused internal engine damage or failure after seventy, eighty, or ninety thousand miles. They realized too late that a shorter interval would have extended the car's lifespan.

### ***Tests to Perform at Oil Changes***

Another reason to have your oil changed at regular intervals is to have your car checked out by an ASE-certified mechanic for other potential maintenance issues. One item that owners

frequently overlook is their headlights, taillights and turn signals. These are important safety features that should not be neglected.

Some vehicles will indicate a signal lamp outage by a rapidly blinking dashboard turn indicator. Otherwise, unless you or your mechanic do a visual inspection, you may get unwelcome indications of problems with your vehicle's lamps.

If your headlights are out of alignment, other motorists may flash their lights, thinking you have your lights on bright when you don't. Near-rear-end collisions may be your first indication that your brake lights or turn signals aren't functioning properly. Don't let screeching brakes or an accident be your first indication of trouble! Inspect your lights, your turn signals and your emergency flashers regularly and be sure your mechanic checks them and your headlight alignment whenever you take your car in for service.

# **PART III:**

## **CAR CARE 201**

In this section, let's explore what to look for when buying a new car. This could become a reference manual for you and a great training manual for new drivers in your family. I've structured this section in the form of a Question and Answer series, much like an FAQ section of a website or resource book.



## **BUYING A NEW CAR**

Let's discuss a few of the most frequently asked questions related to purchasing a new vehicle. Having this information could save you thousands of dollars.

*Q. When do I need to buy a new car versus investing in the one I have?*

A. Every car has a point of diminishing returns. What you do from the day you drive your car off the showroom floor and whether you think of your vehicle as an investment or as an expense affects the decisions you make about replacing it.

You shouldn't simply say, "Well, I don't want to put that much money into my car," without doing a cost comparison. If you've maintained your car well, you should expect to get 200,000 to 400,000 miles from it. When you buy a vehicle, you have to understand that how you maintain it today will determine its condition tomorrow. With proper servicing, your point of diminishing returns will be a lot farther down the road than if you neglect it.

## ***NUTS & BOLTS***

I've seen vehicles with as few as 75,000 miles need an engine (between \$7,000 and \$10,000) simply because the oil wasn't changed properly. In a case like this, investing in the repair would only be worthwhile for an extremely expensive vehicle. Otherwise, it would be time to purchase a replacement and the trade-in or resale value of the vehicle that needed a new engine would be very low. The owner's original investment would be essentially worthless.

It is always better to maintain a car correctly from the beginning so that the point of diminishing returns is much farther out than it otherwise would be.

Let's say you have a six or seven-year-old vehicle. Perhaps it needs a timing belt, or has blown a head gasket. It will cost \$1,500 to \$2,500 to repair a vehicle you've been driving for six to seven years. You're just not sure you want to pay that much to get it fixed, so you consider buying a new car. Here's a calculation that may help you decide.

Larry Burkett was a well-known financial advisor who started Crown Financial Ministries. He would tell you that the cheapest car you'll ever own is the one in your driveway. What he means is that by having the car

maintained and keeping everything in good working order, you'll spend less money than purchasing a newer vehicle.

When we talk about making a major repair on a car, a way you can try to crunch the numbers is to ask yourself, "What's it going to cost me over the next year?" Let's say you need \$3,000 worth of work done on your vehicle and you have decided you are not going to repair it. Instead, you are going to go buy a used vehicle.

Even if you bought an inexpensive one, around \$10,000, there's still the down payment, then the calculated monthly payments if you finance. Of course, depending on the state, you might also have to pay sales tax on that vehicle. Plus, you'll need to figure an almost immediate depreciation, as well. You may have personal property taxes on your vehicles, and that will increase. Your insurance will increase because, if you finance the car, you'll have to have full coverage insurance. Even if you don't finance, your "new" car is typically more valuable than the one you are replacing, so your insurance rates will rise for that reason. Calculate your total cost over the next 12 months for that used car and compare that to the cost of making repairs on the one in your driveway. Can you beat the \$3,000 investment in your current car?

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If you apply this same principle to buying a brand new car, these dollar figures are going to go up exponentially. Therefore, it usually makes more sense to fix your existing car than to buy a new one.

## EXTENDED WARRANTIES

*Q: If I buy a new vehicle, should I purchase an extended warranty?*

A: I advise my customers against purchasing extended warranties. Evidence proves that, in most cases, the cost of the warranty is far more than the benefit received.

**Note:** If you're interested in learning more about this topic, see the *Appendix* in the back of this book.

## CARING FOR YOUR CAR

*Q. When should I jump-start my car?*

A. The purpose of a battery is to send power to the starter, which then starts the engine. If a problem with the battery exists, it will show up when you try to start the car, not while you're driving.

We've all experienced a dead battery, haven't we? We turn the key and either hear nothing or series of

repetitive clicks. The engine does not turn over. That is the only time you should jump-start your car.

If you're driving down the road and your car dies, the battery is not the cause of your car dying. Do not jump-start your car in this situation. It will not help.

**Note:** See the “How-To” Section to learn the proper way to jump-start your car.

### PREMIUM FUEL

*Q. Do I need to buy premium fuel?*

A. The best way to determine if premium fuel is right for you is to check your owner's manual to see what they recommend for your specific car. Higher-end models may require premium gas. Those cars are designed to burn fuel at optimum levels. Both the way the engine is timed and tuned, and the type of spark plugs used ensures that when you use this fuel, you'll get the optimum performance from your vehicle.

There is nothing wrong with using fuel rated at 87 octane if a higher octane fuel is not advised by the manufacturer. Components called “knock sensors” were added to vehicles a few years ago. These sensors adjust the

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timing if the engine begins to “ping” or “knock” due to lower octane or other factors in the fuel.

So do you have to use premium fuel? The answer is no. However, if you want the best performance and the best fuel mileage for your particular vehicle, then I would recommend using the higher-grade gasoline.

The return on investment is simply a crunching of the numbers. (Keep in mind that other factors affect gas mileage, as well—how fast we drive, driving conditions, environmental factors, and more.)

If you want to see if you really get better performance, do your own test. Calculate and record your fuel mileage after two or three fill-ups with premium gas. Do the same after two to three fill-ups with lower octane fuel. You should be able to determine if using premium gas makes a difference.

## **MOTOR CLUB MEMBERSHIPS**

*Q. How beneficial are motor club memberships?*

A. Motor clubs provide good benefits for the consumer and offer peace of mind for the consumer who travels a lot or has a loved one living away from home. Undoubtedly, their primary focus is the customer. I am thinking of clubs

like AAA Motor Club or Cross Country Motor Club, the two big wheels in the industry.

It's easy to feel vulnerable when traveling through an unfamiliar part of the country. These clubs help locate a reliable repair facility, a towing company, a hotel, and other things of that nature. Therefore, you have more confidence in the quality of service you will receive.

As an expert in the automotive industry, I highly recommend AAA membership for anyone who drives a car. It doesn't matter how good and dependable your transportation is, things can go wrong anytime and anywhere. You simply never know when you will need help. One of the greatest ways to achieve peace of mind is to know that you are in good hands. AAA takes care of their members.

There are many benefits to an Auto Club membership. My personal favorite is the elimination of the need to go to the Department of Motor Vehicles (DMV) to register my car. This way I avoid long lines. This single benefit is worth the cost of membership in my humble opinion.

### **THE VALUE OF PROPER MAINTENANCE**

Our individual driving habits, the quality of the fluids in our cars, the quality of the parts, the skills of the people who work

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on our cars, all are factors having a bearing on our car's performance. The more you know about cars, the safer you will be on the highway.

Proper maintenance of your car can save you thousands of dollars in repair costs over time. Seems obvious, right? Like the country doctor said, prevention is the best cure. It's an old saying but true. What does this mean for you?

Clearly, you can't have peace of mind if your car is constantly breaking down. But here's the problem. Many people don't "look beyond the moment." Why? It's a mindset. I want to change that mindset.

What do I mean by look beyond the moment? Put simply, look beyond the immediate matter or cause of concern, say your oil change.

The mindset is, "I don't want to know what else may be wrong with my car. I'll worry about the squeaky brakes later—when I have the time and the money." The problem is that fixing those squeaky brakes later will be much more expensive. And, in the meantime, you're putting your safety, and that of your passengers, at risk.

Here's another obvious truth about preventative maintenance. Too many car owners do not familiarize themselves with their owner's manual. The owner's manual is a



written document that tells the story of your car, gives details about the car's components and recommends a maintenance schedule.

I cannot tell you the number of times I've been called on to rebuild a transmission with less than 100,000 miles on it, only to find out that the owner had never had the transmission serviced. But the worst part of it is when I hear the service had not been recommended by the last shop to service the vehicle.

That's why the quality of the fluids in your car is so important. In general, the fluids have three things to do: build pressure, and cool down and lubricate components. When the fluids are deficient, it's hard for them to do their job with 100% effectiveness. It's better to replace the fluids before they go bad.

Finally, preventative maintenance protects your vehicle's warranties, protects your investment in the car by maintaining its value and prevents future breakdowns. So it's essential for you to adjust your mindset and adopt the habit of always having routine maintenance performed on your vehicle on schedule and taking care of little problems before they become big problems.

Let's see. We've discussed crucial factors in the care and upkeep of your vehicle—things like engine oils, the benefits of regular services, and so on. Let's address the other fluids in your

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vehicle and a few other important components of your car's maintenance.

### ***Important Fluids***

#### **Transmission Fluid**

In the section on motor oil, we covered the fact that dirt is suspended in the oil. At each oil change, the oil (and the dirt it holds) drains out of your car and clean oil is added. Can we apply the same reasoning with transmissions?

Transmissions don't pull in air, but they do have metal-to-metal contact, or the potential for metal-to-metal contact (this is true with every component on your car where fluids are involved). Transmissions are also exposed to heat.

Heat, plus metal-to-metal contact eventually breaks down the fluid that circulates through the system. The good news is that we do not have to service the transmission every 5,000 miles. Most experts advise servicing the transmission every 30,000 miles, especially if your vehicle is used for towing (boats, campers, etc.). If you're not towing and don't do a lot of driving, then you could probably extend your regular transmission service to 50,000 miles. Typically, the manufacturer has a recommendation, as well. Check with your owner's manual.

### **Differential Fluid**

We can apply this same concept to the differential. On most front-wheel-drive vehicles, the differential is a part of the transmission. The differential on rear-wheel-drive cars is located in another part of the transmission. Differentials also need occasional fluid changes.

### **Power Steering Fluid**

These same principles and guidelines apply to the power steering system. This system is predominantly a “closed” or “sealed” system, but over time, this fluid needs to be changed to protect the components from wearing from the inside. Remember, it is always less expensive to change the fluid that protects the part than to replace the part itself.

### **Brake Fluid**

Unlike the previous aspects of maintenance, brake fluid is not added at particular intervals. Instead, we can measure when brake fluid or coolant should be changed. The measurement for when brake fluid should be flushed is 200 copper parts per million.

Brake fluid is hygroscopic, which means that if you left the can open overnight, the contents would be ruined because the moisture it would absorb overnight would render it unusable

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inside your vehicle. It is *imperative* to keep brake fluid tightly sealed.

Brake fluid is designed to absorb moisture in your brake system since moisture deteriorates all the metal components the brake fluid comes in contact with. Brake fluid is a hydraulic fluid crucial to proper braking.

If your brake fluid becomes too heated (especially if it heats to boiling) it creates air bubbles. If you've ever had air in your system, you know that the brake pedal goes to the floor and still doesn't stop the car! It's a horrifying experience.

Once the fluid reaches 200 copper parts per million, the brake fluid's boiling point is reduced, which could potentially cause problems. The destruction to your brakes would not occur suddenly, so by the time it causes actual problems, your system could already be ruined—which will be quite an expensive repair.

Since we have started doing brake flushes on vehicles, we seldom have to replace the calipers. Many chain stores will put new calipers on your car as part of a routine brake job, but they typically are not needed.

Most manufacturers recommend a brake flush every two to four years, but it depends on your driving habits and where you

drive. The best practice is to follow the recommendations in your owner's manual.

That's another important reason you should take your car to a licensed technician who will keep it in proper running condition and replace fluids appropriately. The old Ben Franklin quote about an ounce of prevention being worth more than a pound of cure is really true when it comes to maintenance on your car.

### **Cooling System Fluid: Antifreeze/Coolant**

The cooling system's primary component is antifreeze/coolant, which helps keep the engine from freezing in the winter, and keeps it cool in the summer. As with brake fluid, a measurement can be made to determine when your coolant needs to be replaced.

In this case, we measure the pH level, which is an indicator of the acidic protection that the fluid is capable of providing, and the freeze point. For instance, a pH level of 7.0 is neutral, indicating that the coolant is no longer protecting the soft metals inside your engine. It's like having straight water in your cooling system, which is detrimental because it deteriorates the metal inside the system. This shortens the life of your heater core, radiator and cylinder heads.

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The cooling system should be measured at 10,000-mile intervals. Usually cooling system repairs cost more than having the coolant system flushed. You're saving long-term dollars by maintaining your vehicle on a regular basis.

### **Air Conditioning System Fluids/Refrigerant**

In states with sweltering, hot summers, such as California, few things are more frustrating than having your air conditioning blow hot air when it is over 100° outside. Your air conditioning system is a sealed system.

We know from previous discussions that in a closed system the only way you will suffer a loss in fluid or, in this case, refrigerant, is to have a leak in the system. Having the air conditioning evacuated and recharged about every three to five years is a good maintenance guideline.

The A/C system uses oil, which is carried throughout the system by the refrigerant. If you have a leak in the system, the oil will be too low to protect those expensive A/C components. Just like running your engine without oil, running your A/C system without oil will damage your A/C “engine,” (also known as the compressor).

Some compressors look like very small engines on the inside. They have some of the same components as your car's engine—pistons, rings, rods and a crankshaft, only much

smaller. Keeping the compressor well lubricated extends its longevity.

You should ALWAYS have your A/C system serviced by an ASE Certified Technician. It's just too dangerous to do yourself.

Keeping your air conditioning system serviced every couple of years is a great way to save money and stay cool in the heat of summer.

***NEVER*** attempt to recharge your air conditioning system yourself!

### ***Testing and Diagnosis***

Years ago, a technician might spend five minutes diagnosing a car and five hours making the repair. Today, we might spend five hours running tests and diagnosing the vehicle, and five minutes repairing or putting a component on it. The cost of electronics drives this change.

Vehicles today have a tremendous number of electronic systems. It is not unusual to find between five and fifteen computers on any given car. It is imperative that all those computers communicate with each other. And the main computer is the Power Train Control Module. All other

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computers must communicate with this “mission control center” through a CAN—Controlled Area Network. Investigating these various computer systems can become complex.

Again, this is where experienced, certified technicians are worth their weight in gold. Let the professionals do their jobs—taking care of the upkeep for your car.



# **PART IV:**

## **CAR CARE 301**

No book like this would be complete without a “How To” section. There are many things on a car that you can do yourself, and in this section, I want to explain the proper way to do them.

### HOW TO CHANGE A FLAT TIRE



Most vehicles have a tire pressure monitoring system that will indicate that you have a low tire. Technology has improved to the point that some cars even tell you which tire is low, so pay attention to your dash lights. If that light comes on, you need to quickly find a safe place to investigate the situation.

Tires can go flat over a short *or* a long period, depending on the size of the hole. When you need to change a tire, *the most dangerous place for you to change it is on the edge of the interstate*. If possible, get off the interstate, even if that means driving on the shoulder at a very slow speed until you can exit—or at least to an area of the road where you can safely pull off the road (which to me is at least 15 to 20 feet from the edge of the freeway). Ideally, you want to exit and get to a safe location out of sight of the freeway, where you can raise the car using the

tools provided. A lighted area is preferable if this happens at night.

If you've never changed a flat before, let me encourage you to practice doing so in the safety and comfort of your garage or driveway. Become familiar with the tools and the procedure. Follow the directions given in the driver's manual. If you have children of or near driving age, demonstrate the technique to them and then let them duplicate the process. The last thing you want to do is figure out how to change a flat when you're pulled off the side of a road!

The owner's manual will tell you the exact location where you must place the jack in order to raise the vehicle safely. You can damage your car, or injure yourself, if you place it incorrectly. Here's another little hint: Always loosen (but don't remove) the lug nuts holding the wheel in place *before* you jack up the car. It's much easier to remove the tire if you do it that way.

When putting the spare tire on, be sure to start each of the lug nuts by hand. Remember to put the beveled edge of the lug nut toward the wheel. Then, with your tire iron, tighten them in a star pattern. To do this, tighten one, then skip one, tighten one, then skip one. Eventually, all five nuts will be tight.

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Most cars come with the wrench or tire iron you use to tighten the lug nuts. To make it easier to change the tire, position the wrench in such a way that you can stand on it, using your leg and body weight to loosen each lug nut. However, you do not want to do that while tightening the lug nuts (because you can over-tighten them). After tightening all of the lug nuts, drive 50 to 100 miles, and then check them again to make sure they are still tight.

## **HOW TO JUMP-START A CAR**

Jump-starting a car is actually controlling a spark.

You're running an electrical current from one battery to another. That gives you two batteries with the potential



to vent acid gas. Therefore, a controlled spark of electricity reduces the risk of injury and/or damage.

What we mean by “venting” is that it’s not uncommon for battery fumes from the acid inside to slowly leak from the top of the battery. Since acid is explosive, you could potentially blow up the battery if you don’t control that spark. And if your face happens to be in the vicinity at the time, bad things could happen. If you have safety glasses, it would be a good idea to

wear them when you jump-start a car. Safety glasses are about \$1.50 at most places. I keep a pair in my vehicle for just such a situation.

Here's how to properly jump-start a car:

**Note:** The car with the “good” battery should *not* be running when you begin.

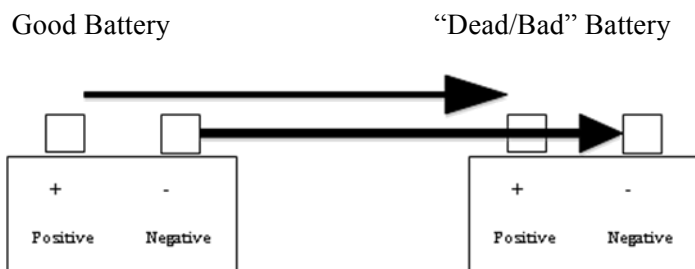
1. Connect the red jumper cable clamp to the positive terminal (+) of the “good” battery.
2. Connect the other end of that red cable to the positive terminal of the “bad” battery.
3. Connect the black cable clamp to the negative (-) terminal of the “good” battery.
4. Connect the final cable clamp to a good solid metal surface under the hood of the car being “jumped,” such as a bracket or other metal object. If necessary, you can attach to the negative terminal of the battery, it's just not as safe.
5. Now have the driver of the “good” car start the engine and run it at just above idle for a couple of minutes.
6. Then, attempt to start the car with the dead battery. If done correctly and the problem is just a dead battery, the car should start right up.

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7. Carefully remove the cables in reverse order.

Jump-starting a car essentially uses electricity from the good battery to power the bad one, thus making an electrical circuit. Making the last connection to the engine instead of the battery will minimize the possibility of an uncontrolled spark, thus keeping you and your battery safe.

### **Jump Starting a Car: Illustration**



Connect Positive to Positive

THEN

Connect Negative to Negative  
(or to solid metal surface)

When jump-starting a car, remember:

+ to + THEN - to -

## **HOW TO MANAGE A BREAKDOWN**

You should be familiar enough with your gauges to know what “normal” is, so when the gauges are not within normal range, you will realize something is wrong.

When you are driving, and begin to feel something about the function of your car that you are unsure about, or hear a new noise, cautiously move into the right lane. You do *not* want your vehicle to be disabled in the left lane or in the median of a freeway. Always try to get to a safe location to manage a breakdown—not only for your sake, but also for that of your passengers and your car.

If your vehicle begins to overheat, the gauges will indicate it, so keep an eye on them. If your vehicle *is* overheating, turn the engine off as soon as possible.

The second thing you should do during a breakdown is to make a call. These days most people carry cell phones. I recommend you keep numbers for a towing company, motor club or repair shop in your phone for such an emergency.

Make sure you're in a safe spot and keep passengers a safe distance from the highway as you wait for help to arrive. This will decrease your risk of an accident.

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Managing a breakdown, though sometimes nerve-racking and always inconvenient, is not that complicated. Try to remember the following:

1. Don't panic!
2. Think "safety."
3. Call for assistance.

## **HOW TO MANAGE AN ACCIDENT**

Having an accident is always an emotional situation—whether that emotion is anger, frustration, fear, sorrow, anxiety, worry or panic. Even something as minor as a fender-bender or a slow-speed parking lot accident can be enough to create emotion. Try to remain calm.



When you are in an accident, the first thing you need to realize is that insurance companies are the ones who typically investigate the accident to determine fault—so don't assume or admit that you are the guilty party. Being in an emotional state or in a state of



shock can skew your perception of the accident. Let them do their job.

Next, call the police. Once they are on their way, exchange insurance information with the other driver. You should have your insurance information in the glove box to give the other party. Make sure you get proof of insurance from the other driver. If they have the necessary information available at the scene, call immediately to verify that they do have coverage. Just because the paper says they are covered doesn't mean they are.

For most states, unless there's bodily injury, you should remove the vehicle from the road. You can get a ticket for obstruction of traffic if you keep your car on the road when there's no personal injury. Remove your car to a safe place and proceed to work out the details with the other party as you await the arrival of the police.

Tow trucks dispatched by the police are under contract with the police. They will tow your vehicle to their impound lot and charge you a considerable amount to keep it there. (In fact, that's how most tow companies make their money—through storage from accidents. They make more money from storing your vehicle than from towing it.)

Instead, have a company tow the vehicle to your repair facility. Most repair facilities allow cars to remain there, free of

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charge, while the insurance company details are resolved. This will save you hundreds of dollars in storage fees.

If the police dispatch a towing company to the scene, you have the right to ask them to tow it to your home or to your repair shop. Do *not* allow them to tow it to their impound lot. If they do, you'll pay exorbitantly for it.

## **HOW TO MANAGE BEING STUCK IN TRAFFIC**

The one thing you want to avoid is becoming trapped behind the car in front of you. The way I avoid that is to stop far enough behind that I can still see their rear tires touching the pavement. That way, I can maneuver around it if I need to.

You've heard of, or perhaps have been a part of, a pile up where one car rams into the car in front of them and it causes a domino effect. If you leave enough space between you and the car in front of you, you're not trapped; you can swing your car to either side and avoid being rammed from behind.

Sometimes traffic jams simply cannot be avoided. That's another reason to keep more than a quarter tank of gas in your car. You don't want to run out at a time like that.

Always watch your temperature gauge when you're stopped in traffic. Most cars are designed to be able to idle indefinitely—even with the air conditioning on. Still, you need to watch that

gauge. If you notice your engine heating up, roll your windows down and turn off the air conditioning.

Traffic jams happen in the winter, as well. Some states require you to have a safety kit in your vehicle. The kit usually contains items like bottled water, a blanket, and a flashlight. It's not a bad idea. You never know when you'll be caught in traffic, or how long it will take to clear the roads.

## **HOW TO DRIVE ON SNOW AND ICE**

Snow and ice certainly provide challenges to drivers. When driving on snow you need increased traction. That's why four-wheel-drive vehicles (or front-wheel-drive vehicles) get around better—simply because of their superior traction.

In deep snow, one tip that might come in handy is to lower the air pressure in your tires to about 25 pounds of pressure. You still won't be able to drive fast, but since there's more rubber on the road, you'll notice an improvement in your ability to negotiate snowy road conditions.

We learned years ago to gently pump the brakes in the snow, but the best advice I can offer is to drive as though you had an egg under the gas and brake pedals. Accelerate slowly and brake gently. Don't push on the pedals too strongly. You'll break the eggs!

### **HOW TO BUY A USED CAR**

Buying a used car can be risky business. Let me offer some strategies that might prove helpful in that situation.

First, do your homework. Look online, read consumer magazines, peruse some used car lots, investigate the For Sale ads in your newspaper and check out Kelly Blue Book for reasonable pricing. Take all the time you need to figure out exactly what you're interested in—make, model and even options.

Once you've narrowed your search, it's time to find that perfect vehicle—whether you intend to buy from an individual or a car dealership. Study the car, walk around it and look at it from different angles. When you finish assessing the cosmetic aspects, then sit behind the steering wheel. Touch everything you can touch. Check out the wipers, the radio, the heat and air, the glove box and the lights. Make sure everything works, including turn signals, power windows, power locks, power seats, rear wipers, and so on.

If everything checks out, let the seller know you'd like to take about 45 minutes to an hour to road test this car. If they want to ride with you, that's fine, but make sure they're willing for you to spend the time you need.

Most people drive the car around the block or spend ten minutes driving up the road and back and say, “I’ll take it”—but not you. You’re too savvy for that. During your test drive, listen to the vehicle. Notice the way it feels, handles and steers. You don’t have to be an automotive mechanic to know if something is not quite right.

If you hear a noise that concerns you, or there’s a shake or shimmy in the steering, or anything else that doesn’t quite seem right, then make note of it. Spend time driving both on the freeway at highway speeds and in town at normal speeds. See how the vehicle take corners, slows, stops, accelerates—just as you would drive the vehicle on any given day.

Use your senses. Don’t play the radio. Make sure the radio plays, then turn it off and listen. Use your five senses to note if anything seems abnormal.

If everything checks out, move to the next step—take it to an ASE-certified technician for a used-car inspection. This will include having a trained technician inspect the exterior and interior of the car, take it for a drive, bring it back into the bay and raise it up to do a more thorough inspection. The technician will know exactly the kinds of things to look for, the kinds of things that could signal a future problem. And when you get an

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“all clear” from someone who truly knows what they’re doing, it will give you great confidence.

Through this process, the ASE-certified technician can help you make a decision about repairs that may need to be done now or in the near future and can tell you the costs of those repairs.

That will give you greater wisdom and leverage in making an offer to the seller. Once you decide to buy this particular car, you’re ready for the final step—making the deal.

You should not talk about price, or make any offer until you have taken all these steps. Then you’ll be able to approach the seller and tell them, “I’d like to buy this car. I’ve had it inspected and here is the estimate of the items that need attention before I consider it to be in satisfactory condition. With that in mind, I’m willing to pay this amount for it—and if that’s agreeable with you, I’m ready to buy it today.”

THAT is the right way to buy a vehicle. Constrain your emotions, have a certified technician inspect it and know what you are getting into before you make an offer. By following this process, you will save yourself from some unpleasant surprises that could cost you a lot of money.

## **HOW TO FIND A GOOD REPAIR SHOP**

If you’re moving out of your current area, one of the best actions you could take in finding a reliable new repair shop is to

ask your current one. Most shops are in some kind of network or association and may know a good shop in the area where you're relocating. You can also go online under NAPA Auto Care Center and find more than 14,000 member shops throughout the country. Click on their shop locator and enter a zip code to find the shop nearest your home or office.

If you're looking to find a reliable repair shop in your current locale, here are some tips about finding one you'll be happy with. Do some investigation. Ask others if they're satisfied with their shops.

When you've narrowed down your choices, move to the next step. Make an appointment for something relatively simple and easy—a tire rotation or an oil change. When you take your car in, tell them you'll wait for it. While you're waiting, look and listen. You can learn a lot by simply doing that.

While that service is being performed, pay attention to how employees interact with each other and with the other customers. Notice how they answer the phone. If possible, watch the way they handle your car. It won't take long before you arrive at an opinion about how professionally they run their shop. That can go a long way in helping you make a decision.

Find out if their technicians are ASE-certified and if they are required to participate in continuing education/training.

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Ascertain to what extent they service your particular make and model. Do they have the software to communicate with the computer systems on your vehicle? Do they have the specialized tools your car may require?

Ask them if they utilize any system of reminders to let you know when it's time for service. Do they have a schedule in place to keep your car well maintained?

Compare the shops you visit. Make an informed decision and choose the one that best meets your needs.

## **FIVE QUESTIONS TO ASK A SHOP**

If you are not able to visit the repair shop, a phone call may need to suffice. If so, here are five simple questions you can ask any shop.



As a word of caution, let me say that it's extremely dangerous to choose a shop based on their pricing. For instance, let's say you see an ad for an oil change. You must ask yourself two questions: What quality of oil are they going to use on my car? Are they just looking for work? A lot of shops use "cheap" oil changes as a marketing tool and an



excuse to find additional work. There's too much room for misunderstanding and manipulation if price is your only criteria.

That's why I advise you to ask these questions and compare the answers you receive:

1. What is your warranty policy and do you have a nationwide warranty?
2. Do you offer a money-back guarantee?
3. Are your technicians ASE-Certified and do you have any ASE Master Technicians?
4. Do you provide a free round-trip shuttle or loaner vehicle?
5. What happens if I have trouble when you're closed?

These five simple questions will successfully point you to the best shop in your area.

# PART V:

## BUSINESS MATTERS

Finally, besides being asked the secret to my success, the other question I'm asked most frequently concerns business. Besides consumer awareness, I also want to help people in business—men and women—and people who would like to become entrepreneurs.

My purpose here today is to share what it takes to run a business. What I'm going to share is what helped me to build a successful business. I promise that it's nothing new. Chances are it's something that you already know but haven't put into action.

## **MISSION STATEMENT**

Start with a Mission Statement. A mission statement is a core element in the startup of any new business. It defines what an organization is and outlines the reasons for its existence.

If you do not have a mission statement for your new business, now is the time to create one. Write down in one sentence the purpose of your business.

And, importantly, your company must follow its mission. At Orozco's Auto Service:

Our mission is to deliver the most affordable and effective car care service in the automotive industry through trust and high ethical standards.

## **SYSTEMS**

Making sure that you have a system in place to monitor and measure everything you do is equally important. Your car has many systems, and if one fails, it affects the operation of the vehicle. Similarly, a failure in your business system affects the operation of your company.

The McDonald's corporation is an example of a great system. If you walk into any McDonald's, whether you are in Seattle or San Diego, the product you purchase will be

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consistent. The value of the system is that everyone knows what to do every time the doors open for business.

Your system must monitor these three things: customer satisfaction, employee satisfaction, and cash flow. At Orozco's Auto Care Center, we measure customer satisfaction by results, by growth, and by customer comments.

We call every customer three days after service to ask if they had a pleasant experience with us. We measure our growth by looking at our sales receipts and profit statements. We address employee satisfaction by giving them an opportunity to earn as much as they can, by giving them the best tools to work with, and by offering an opportunity to grow in a healthy environment. We offer training courses on a regular basis so that they know the latest industry standards. We invest in them and we care about them. Finally, cash flow provides an indication of the company's direction.

Employees are the face of your company and your biggest asset. A well-trained employee is an investment with long-term benefits.

When I interview prospective employees, I try to get a feel for their attitude, their aptitude for the job and their sense of ethics. For me, attitude has to do with character and behavior: are they easy to teach, how do they respond to angry customers,

and how will they approach the job? Aptitude speaks to ability, the capacity to adapt to a new position and learn the skills to perform a specific task. As a final point, our company is based on ethics and we always do what is right for our customers. So I want to know if each prospective employee has the ethics in place to do what is right.

Develop a minimum acceptable performance level for every position. When you find the results are lacking, then you can decide to train, transfer or terminate.

This is how Wikipedia defines aptitude: “An aptitude is a component of a competency to do a certain kind of work at a certain level, which can also be considered ‘talent.’ Aptitudes may be physical or mental.”

Ethics involve employee conduct on the job. When I talk about ethics, I’m talking about high moral standards of conduct including honesty, integrity and acting in a way to benefit others.

In summary, make sure the right people are in the right jobs. Make sure they are receiving the best training and support, and advance the brightest, hardest working employees. Transfer or terminate the people who are not up to the tasks.

The surest way to fail in business is to lack execution. Execution means you do what you say you’re going to do when

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you say you're going to do it. Execution will give you license to grow.

## **BE A GREAT MANAGER**

Here are the keys to becoming a great manager in three parts:

### ***Part 1: Manage your time and priorities***

- Determine priorities
- Deal with higher priority tasks first
- Reduce excessive interruptions
- Organize an effective filing system
- Create an efficient workspace

### ***Part 2: Delegate effectively***

- Evaluate your delegation skills
- Increase your willingness to delegate
- Identify tasks for others to do
- Monitor the progress of others
- Hold people accountable

### ***Part 3: Manage meetings***

- Establish a clear agenda
- Define desired outcomes
- Come to the meeting prepared for a successful meeting
- Follow-up after meetings

## **MARKETING**

Many businesses, including auto repair shops, overlook the importance of marketing. Marketing is how you get your product or company known to a target audience.

The following definition was approved by the American Marketing Association (AMA) as of July 2013.

“Marketing is the activity, set of institutions, and processes for creating, communicating, delivering and exchanging offerings that have value for customers, clients, partners and society at large.”

In addition to a mission statement, develop a plan to market your business. Begin by targeting your audience, the customers you want to buy your product or service, and know exactly where to find them. Then choose the method to reach that audience. It could take the form of Public Service Announcements (PSAs) on radio and television; billboards near important intersections or highway off ramps; ads in the local newspaper, in magazines or your own website on the internet; and handbills and discount coupons .

Ask each new customer this question: “How did you find out about our shop?” Be sure you have a “system” in place to measure everything you do in marketing. You must be consistent

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for at least 90 days with a given program to determine its effectiveness.

All of this requires that you set aside a marketing budget. At Orozco's Auto Service, we set aside five percent of our sales revenue for marketing. Half of that amount is for traditional marketing, including promotional products, gift certificates, newspaper and magazine ads, Google online pay per click and websites. The other half of our budget is allocated for non-traditional marketing, such as contributions to local schools, hospitals and non-profit organizations.

If your marketing is successful, you will be able to bring in new customers. But remember, once the phone rings and people walk in the door, the marketing hasn't ended. It is still in effect when they meet your people at the front desk and continues right up to the point when they share their experience with friends and neighbors.

Marketing is a lot more than just getting your phone to ring. It's staying a step ahead of your competition. It's letting your existing customers know that you are still the right choice and it's letting your employees know they work with a progressive company.



## COMMUNITY INVOLVEMENT

I am often called upon to speak to auto shop owners. More than once, I've been asked about my involvement with local community groups and organizations.

They ask, "Why?"

I answer, "Why not?"

First of all, as I've said before, I believe we're put on this earth to help others. It just comes naturally to me to reach out my hand to help people who haven't been as fortunate as I have, for whatever reason. That's the main reason we give back to our community by participating in and donating to worthy causes.

But there is a practical, business reason for being involved in your community if you're an entrepreneur. You must network all the time. For a greater chance of success, consider expanding your sphere of influence by trying some of the following:

- Volunteer for programs that assist people in need
- Support your local schools and hospitals
- Sponsor and support events in your community

In addition, think of serving on the boards of various organizations and consider offering discounts in exchange for contributions to food pantries or other charitable causes such as

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Toys for Tots. Part of Orozco's Auto Service's success is our involvement in our community.

## CONCLUSION

Thank you for taking the time to read this book. This is an opportunity for me to give back to my community through you. I sincerely hope this book will benefit anyone who drives a car—in California or anywhere in the world.

Please keep a copy of this book in your glove box. You never know when you will need it, but you'll probably be in your car when you do! Keep it safely stowed with your owner's manual and other important documents.

To keep “paying it forward,” please buy an extra copy (or more) for your friends and family. Everyone who drives a car needs the information in this book to protect themselves and their investment. As a bonus, I'll give a free regular oil change to anyone who brings this book into one of our four shops. That's how important I believe it is for you and your loved ones to have this information.

Let's face it, finding a reputable auto shop can be difficult. My advice is to do business with someone you like and trust who is an expert in this field. If you can find a shop that cares about people, that possesses professional ethics, ASE-certified technicians and good warranties, it is in your best interest to stay with them. But if you cannot find such a shop, then please, give

us an opportunity to be your auto repair shop. You won't be disappointed.

In conclusion, let me express my gratitude to you for buying this book.

This book is also available in soft cover on Amazon.com and in a Kindle® version for your electronic reading pleasure.

Visit our website, [www.orozcosautoservice.com](http://www.orozcosautoservice.com), for more information or to schedule an appointment. We'd love to meet you!

## APPENDIX I: EXTENDED WARRANTIES

First, extended warranties are all over the board. A dealership typically offers two types. One is the type the manufacturer offers, so if I bought a Subaru, it would be a Subaru extended warranty. If I bought a GM, it would be a GM extended warranty. The dealership also offers an “after-market extended warranty.” That warranty is usually serviced by a company whose sole product is extended warranties.

For whatever reason, most after-market extended warranty companies are located in or originated in the St. Louis area. The St. Louis Better Business Bureau and the St. Louis Attorney General spend significant time dealing with these companies because of consumer complaints.

*ConsumerAffairs.com* says, “From what we’ve heard, we suspect that most extended warranties are a waste of money that could be better spent on performing exquisite maintenance, still the best insurance of trouble-free motoring.” They also said, “Sixty-five percent (or more than 8,000) *Consumer Reports* readers surveyed by the Consumer Reports National Research Center in the winter of 2011 said they spent significantly more for a new car warranty than they got back in repair cost savings.”

That is very common. ([http://www.consumeraffairs.com/news04/2005/extended\\_warranty.html](http://www.consumeraffairs.com/news04/2005/extended_warranty.html))

There are even conventions for these companies that teach how to sell an extended warranty. The following information is from the website *WarrantyInnovations.com*. The whole purpose of the convention, throughout all their breakout sessions and their main course, was this—and this is in the notes of the meeting!

“The discussion will also include ways to leverage systems and data to drive extended warranty sales, how to build a recurring revenue stream with extended warranties in maintenance, lower costs, and claims against your program and how to better work with your insurance and our administrator.”

That information clearly states that their intent is to sell more warranties and reduce the number of claims. Extended warranties are a contract, and I learned a long time ago that contracts are usually written in favor of those who write them.

Without question, extended warranty contracts are not good for the consumer. Can you find people who have been able to save money in buying an extended warranty? Yes, you can. The response rate, according to *Consumer Reports*, is about one in five—so about 20% said they had a net savings.

The *Consumer Reports* study essentially says that when you're buying a car, it is better *not* to buy an extended warranty,

but instead use those dollars to maintain your vehicle. In the survey, respondents cited warranty costs of \$1,000 on average that provided benefits of \$700—a \$300 loss. Forty-two percent of extended warranties were never used, and only about a third of all respondents used their plan to cover a serious problem.

There are also exclusions from coverage by an extended warranty. So, even though you purchased the warranty, you're still going to have to pay for repairs that are not covered. Beware, because there is a lot of fine print in those contracts. Read it carefully, if you're considering purchasing a warranty.

Most extended warranties give the warranty company the option of putting used parts on your car. So if your transmission goes out, instead of getting a new transmission, you could get a used one—one out of a salvage yard or from a recycler. It's their choice, not yours. That's scary, but it saves them money.

## APPENDIX II: AAA AND NAPA

Orozco's being a AAA-approved facility and a NAPA Auto Care Center creates great peace of mind for my customers because of their nationwide warranties and their standards, the highest in the industry. I highly recommend that anyone who drives a car obtain a AAA membership and take their car to a NAPA Auto Care Center. The Auto Club is another national agency that takes good care of their members.

For roadside and battery service anywhere in California, call 1-800-400-4222. For NAPA, go to [napaautocare.com](http://napaautocare.com).





## About the Author



Servando Orozco is CEO and founder of Orozco's Auto Service, a public speaker, and a consultant and personal coach for auto repair shops. That's why he's the auto expert's expert. Now he adds accomplished author to his list of titles.

Born in Michoacán, Mexico, Servando, like many other immigrants to this country, began his life here in the United States full of hopes and dreams. Today he has four auto care shops and 28 employees.

Servando is committed to giving back to the local community. He supports local organizations such as the YMCA, Kiwanis, the Lions Club, the Knights of Columbus, Long Beach Rescue Mission, and Rock for Vets, a music education/instructional program that teaches skills transferable to the music industry in a supportive environment.

Servando enjoys golf as a hobby and has taught his children to play. He lives with his wife Cindy and their three children, Brianna, Andrew and Kenya, in Long Beach, California.

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