WELLS Counter Point

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THE ELECTRONIC, DIAGNOSTIC AND DRIVEABILITY RESOURCE.

Ahead Of The Curve?

When was the last time you sat down to do an unbiased assessment of your shop? There's no time like the present.

What sets your business apart from the other auto repair shops in your community? Can you name five compelling reasons why a customer should decide to bring his vehicle to your shop for the first time, and not to your competitors? And after that first visit, can you think of five more reasons why he should continue to rely on your shop to service his vehicle?

We realize these are hard questions that don't lend themselves to easy answers. They require the kind of introspection and self-evaluation that makes most of us at least slightly uncomfortable. Discomforting, but very necessary. When was the last time you sat down to do an unbiased assessment of your shop, and to truthfully evaluate all of its strengths and weaknesses?

We believe that an honest self-assessment would reveal some fundamental weaknesses in many shops. Let's begin by naming the big ones, then we'll offer suggestions on how to turn those liabilities into strengths:

- A lack of up-to-date service training,
- Inadequate shop management software,
- Failure to capitalize on today's maintenance-oriented vehicle service economy.

Service Training

It's difficult to stay up-to-date on the never-ending advances in automotive technology. But the further you fall behind on the ability to service the newest vehicles with the latest technologies, the less valuable you become to your customers. Conversely, the more skills you can offer to your customers, the more valuable you become. Therefore, you must make a firm commitment to keep up with industry advances.

If you've decided that you need help, finding the training to bring you up to speed is not difficult. Most program jobbers provide training courses for the benefit of their members. Often these courses are open to nonmembers as well. Many aftermarket parts manufacturers and suppliers (like Wells), as well as tool or equipment makers, also offer service training to their customers. Take advantage of any opportunities they offer. Many extend to more than just the basics and are an excellent form of training. Check with each source for availability.

The vast majority of vehicle manufacturers also offer training classes or materials to the aftermarket. The types of training and materials offered can be found on the National Automotive Service Task Force (NASTF) website at *www.nastf.org*. Click on "Training Matrix" to find the charts describing the types of materials and/or courses available, along with contact information for each company.

An excellent way to stay up-to-date on the advances in automotive technology is to read. Several trade publications are available to members of the automotive repair field at no cost. Forward-thinking companies like Wells also provide automotive repair and service information to their customers through publications like *Counter Point*, also at no cost. Several professional associations also publish reports, magazines and supplements to provide their members with a steady stream of information on auto technology and repair as a regular member benefit. Reading these publications will help you to determine what you don't know and identify the areas that need improvement through further study and/or training.

Shop Management Software

Are you still writing out your customer invoices on blank business forms with a pen or pencil? Do you have a filing cabinet full of old invoices that you occasionally need to search through to find information on a previously completed service or repair on a customer's vehicle? If so, it's time to get with the program.

Shop management software, specifically tailored for the needs of an automotive repair shop, is readily available at prices that nearly every shop should be able to afford. Computer hardware prices have steadily dropped over the past 10 years or so, removing another potential obstacle to purchasing and implementing shop management software.

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Fine Tuning

Fine Tuning questions are answered by Mark Hicks, Technical Services Manager. Please send your questions to: Mark Hicks c/o ***Wells Manufacturing, L.P., P.O. Box 70, Fond du Lac, WI 54936-0070*** *or e-mail him at* ***technical@wellsmfgcorp.com.*** *We'll send you a very nice Wells golf shirt if your question is published. So please include your shirt size with your question.*

Q: I am fighting with a 2000 Ford Windstar. It has a 3.8L engine and about 70,000 miles on it. It has set two codes: P0171 (Bank 1 Lean) and a P0174 (Bank 2 Lean). I performed the Ford TSB for the upper intake manifold and gaskets, changed the engine oil and filter and replaced both front O2 sensors. The short and long-term fuel trims are at -20, indicating the PCM is constantly supplying less fuel than normal to compensate.

I tried disconnecting and cleaning the Mass Air Flow (MAF) sensor, which caused a slight change in performance. I have also cleaned all spark plugs and the throttle body — still no luck. I have checked fuel pressure and volume and they are right on specifications. Nothing has changed. Could it be the fuel injectors are restricting fuel flow?

Irving Irons
Shaker Heights, OH

A: Yes, Steve, the problem could be associated with the injectors. If one injector is stuck partially open or if one or two injectors are restricting flow, cylinder misfire(s) will typically occur. You didn't mention any misfire count, so for right now I will assume there was none. It is also common for the fuel pressure regulator to leak fuel into the vacuum hose on these vehicles, so be sure to check that, too. Also check for vacuum leaks and cracks in the air intake allowing unmetered air into the system.

You should also recheck the Mass Air Flow (MAF) sensor. Cleaning a MAF does not always take care of the problem. After cleaning a MAF, a quick and accurate test should be performed. Check the barometric reading with your scan tool and clear the adaptive memory stored in the PCM. A MAF altitude chart is available on our website *(www.wellsmfgcorp.com)*.

Here are the rule of thumb MAF specifications: the reading at sea level should be 159 Hz and it should decrease by 3 Hz for every 1,000 feet of additional altitude. So for example, you should see a reading of 129 Hz at 10,000 feet (30 Hz less than the reading at sea level).

To clear the adaptive memory, disconnect the battery, then use a test light to connect the cable ends together for about 20 minutes. Volumetric efficiency is another effective way to check MAF accuracy. This information is available on the Internet. In the future, we will include it in one of our articles.

Results: Steve performed another check of the MAF and found it was reading 150 Hz. He is located 1,000 ft. above sea level, so this reading indicates the MAF was inaccurate. He replaced the MAF and this took care of the problem.

In the last ***Counter Point***, we were trying to figure out what the heck was happening with a 1996 Jeep that had a lack of power. Here's the skinny: it set a code P0121, which means the TPS voltage did not agree with the MAP voltage. All the sensors and the mechanical engine seemed to be in good shape. The only noted PID was the BARO sensor. It would read 29 in-Hg at idle, but would drop to 17 in-Hg during heavy acceleration and would not return to 29 in-Hg until a "key off, key on" was performed.

I was disappointed when only one person was able to answer this one correctly. Maybe it was a tougher question than I thought.

Let's begin this explanation by looking at the definition of a barometer. A barometer is an instrument that is used in weather forecasting to measure barometric pressure. Weather conditions affect barometric pressure, as do changes in altitude.

Why would you need a barometer incorporated into the computer system on a vehicle? As altitude increases, the air gets thinner and has less weight or pressure, right? Less air equals less required fuel. As the air gets thinner, the BARO readings

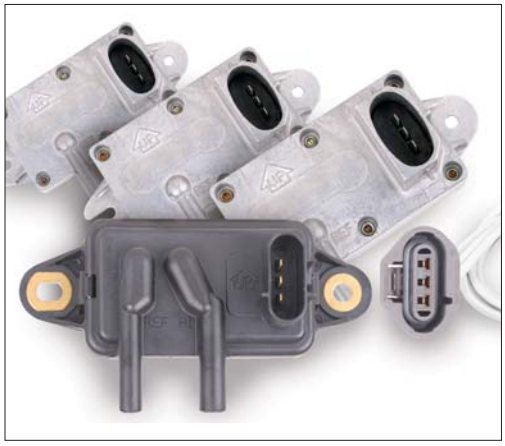
Quality Points

DPFE Update

Have you purchased an OE replacement DPFE sensor lately? If you have, you will easily relate to the following information. If not, be prepared to learn how an otherwise simple part replacement has the potential to turn into a very frustrating experience with excessive labor time.

In the "Quality Points" department of the Spring 2005 ***Counter Point***, we provided information on Wells' DPFE (Delta Pressure Feedback EGR) sensors. We demonstrated how Wells has improved on the original equipment (OE) design to produce sensors that offer greater accuracy and longer service life.

To correct design errors, the original metal-cased DPFE design is being superseded and



consolidated by the OE to a new sensor with a plastic housing, shown in the foreground of the photo above. A problem arises on many applications because the harness connector does not always mate with the replacement sensor. A replacement connector also is required! The connector has three white wires which must be stripped and soldered into the wiring harness. The challenge is matching these wires to the correct harness wires. We suggest doing this one wire at a time, to avoid crossed wires and possible sensor damage.

The Wells design has superior RFI shielding and is more accurate, so we have decided not to switch to the plastic housing, unless that design was originally installed on the vehicle. This allows a quick replacement, using the original harness connector.

Getting it right the first time… that's Wells. WELLS

drop. The PCM uses this information and compensates by adjusting fuel delivery.

Barometric pressure sensors are incorporated in the MAP or MAF sensors on today's vehicles. They are used to calculate barometric pressure as the ignition key is turned from the Off to the Start position. The BARO sensor does not recalculate unless a wide-open throttle condition exists or until another ignition key cycle is performed.

If vacuum or negative pressure is present during a WOT, the BARO readings are skewed. Something must be restricting air flow during WOT. If something is restricting airflow, vacuum will not totally evacuate the system and the BARO readings will be distorted.

An inspection revealed that a windshield washer bottle was stored in front of the air inlet. During heavy acceleration, the bottle would move, partially blocking the air intake, preventing the vacuum from completely evacuating and skewing the BARO recalculation.

The first correct answers we received came from:

Tom Mileski
Sioux Falls, SD

Diagnose The Problem Win A Shirt

We have a 1998 Pontiac Grand Prix with a 3.8L engine that will start and then stall. I checked for spark, and the engine does not lose spark when the engine dies. The pressure is within specs, but drops off just before the engine dies. The engine kept running with no problems when I unplugged the fuel pump and ran current to it with a battery.

I checked the fuel pump relay, fuse and wiring and everything looks good. The pump runs when I turn the key ON. Nevertheless, as soon as the engine starts, the pump loses power and the engine dies. I can keep it running by raising the RPM very high, but the engine quits as soon as it returns to idle. What is going on? I am thinking about replacing the PCM next.

Tom McHenry
Hartford, CT

If you have the answer, use the following contact information:
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Ahead Of The Curve

So what are you waiting for? These are just a few of the advantages of a computerized shop management system:
• All customer information in one place.
• Customer, vehicle identification and repair history information in a standardized, searchable and auditable format.
• The ability to quickly locate specific information about an individual customer or group of customers. For warranty verification, diagnostic assistance, maintenance and repair documentation and so on.
• Standardized pricing for parts and labor. Routine parts and services can be entered in the shop management database, eliminating the need to repeatedly enter the same information on customer invoices.
• Inventory Control
• The ability to identify recommended vehicle maintenance and repair needs, based on time and miles driven.

Maintenance-Oriented Vehicle Service

Today's vehicles don't break as frequently as those produced in the past. Any shop that is relying solely on vehicle repair versus maintenance work is probably going to see its business suffer as it waits for its customers' vehicles to break. Your job today is to help your customers maintain the investment they have made in their vehicles and to make sure they can depend on those vehicles to provide many years of safe, reliable and efficient transportation. It's no longer enough to be there when something goes wrong. You must make sure that as few things as possible go wrong in the first place. And the best way to do that is to make sure all of your customers maintain their vehicles in accordance with the manufacturers' maintenance schedules, taking into consideration the way they are used.

Working in tandem with your shop management software, you can accurately determine when your customers' vehicles require maintenance, based on the manufacturers' recommendations, time since the last service visit and the estimated number of miles driven. Armed with this information, a shop maintenance program can be instituted that will keep a steady flow of customers coming into your shop. Notify your customers of their vehicle maintenance needs, by mail, e-mail or phone. Don't wait for them to remember that their vehicles need maintenance – remind them. Once you have trained your customers to bring their vehicles in for maintenance at regular intervals, your shop will no longer be at the mercy of cyclical or seasonal high and low periods. Your customers will keep you busy year-round.

Take a proactive approach. Make proper vehicle maintenance a priority in your shop and preach this doctrine to your customers and employees at every opportunity. Explain the benefits of proper vehicle maintenance: enhanced vehicle resale value, greater reliability and longer service life. Pamphlets explaining your shop's maintenance-first philosophy should be readily available in your shop waiting room. To make sure the message is delivered, include a copy of your printed maintenance material with each repair order when a vehicle is returned to a customer. If you don't present a maintenance-first attitude, don't be surprised if you have difficulty convincing your customers to invest in maintenance work.

Setting Yourself Apart

Making a profit, keeping customers and being successful depend on a number of things. Certainly one of the most important is doing each job right the first time. But as important as that may be, it's not the only thing that will set you apart from your competitors. In today's vehicle service economy, you need something more. Proper and continuous training is essential for both you and your employees. You need to have the right tools and equipment (including computers and shop management software) to assure an orderly and efficient flow of work through the shop. And you need to stay in touch with your customers by emphasizing vehicle maintenance over repair work. When you combine all of those things, you'll be well on your way to higher customer satisfaction, greater shop efficiency and more billable hours. WELLS

Hot off the Wire

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The main feature in the ***Technical*** section is OBD II diagnostic trouble code identification. All codes for domestic and Asian vehicles are available, but this is much more than a code definition list. We also list up to five of the most common causes for each trouble code.

We end with a ***Contact Us*** section. There you will find a way to contact just about anyone at Wells using whichever communication method you prefer.

Our passion for quality does not end when you make a purchase. We are here to make the entire experience outstanding. WELLS

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Hot off the Wire

Updated Website

We are pleased to announce the launch of the newly redesigned Wells website at ***www.wellsmfgcorp.com.*** Our new site went live in July, 2006.

The first thing you will notice is the uncomplicated navigation strategy on the home page. The control buttons are easy to locate along the top of the page and on the left. Several product categories are also listed on the right of the page. Clicking on any of these buttons leads to more specific information.

You can now look up your favorite Wells components using our *E-Catalog* search engine. If you are a history buff, we have a section on our company history with some great photos. We've also added a *What's New* section, which will be updated on a regular basis to keep you in the know.

The complete set of *Counter Point* newsletters is available for download in Adobe Acrobat PDF format in the newly revamped *Technical* section. You will also find charts and searchable information like instruction sheets, coil specifications, and much more.

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