

 **FACT SHEET****—ON-CAR VS. BENCH: WHICH IS BETTER?** Page 1/2**Gimme a Break 2005: For Mighty Auto Parts****By Bill Williams**

—Trapped rotors require special service procedures due to their design. When machining trapped rotors, it is critical that they be machined on the hub or axis they rotate on.

—On the car lathes are now used and mandated by many OEM's to combat the ongoing problem with runout induced disc thickness variation (DTV).

—In closing, consider the following:

You can't service these rotors without an on the car lathe and not just any lathe will do.

You can't easily service existing trapped rotor vehicles with a bench lathe.

The occurrence of runout induced thickness variation is increasing due to lower runout tolerances.

What you do about this is up to you, but it might be time to consider looking at what's available in on car lathe technology. My only advice is to look for a "production" lathe. This is my description of an on the car lathe that can replace your bench lathe on all but brake drums and a few rotors. If you're going to play the game, you have to have the tools to do so.

**Undercar Digest 2007: Future Remains Bright for Brake Service****By Charlie Elder (Owner of Ray Gordon Brake Service also Pro-Cut Owner)**

Brake rotors continue to evolve, with more and more part numbers being available in both economy brands (offshore rotors) and premium brands. The offshore parts have driven down the overall price of rotors and drums so that the decision to replace or machine has changed.. Also, new rotors do not automatically solve all problems. Vibration caused by stacked tolerances and other problems can persist even after new rotors are installed. This makes the need for an on the car lathe much greater to effectively solve the brake vibrations and other concerns of your customer. I believe brake lathes will be around for a long time, but we will see a shift toward the on the car lathes and away from bench lathes. . . I see brake repair being a stable and profitable service for those who keep abreast of new technology and are willing to adapt to new ways of doing business. Today is not your fathers auto repair industry.

**Import Car, June, 2007: Diagnostic Solutions**

On car vs. off vehicle resurfacing: While off vehicle resurfacing has its place, newer versions of on vehicle resurfacing equipment have become more accurate and easier to use. Assuming the wheel bearings are in good condition, on car resurfacing eliminates variables like bearing hub and lathe spindle runout. Set up times have been reduced to a minimum and the process is, at the least, as cost effective as off vehicle resurfacing.

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### ON-CAR VS. BENCH: WHICH IS BETTER? continued

#### Find a Brake Lathe That Meets Your Shop Needs

By Larry Carley, 2003

—If you don't already own a brake lathe, there are a variety of different types and models from which you can choose. And even if you have a lathe, you might find that a second lathe can boost your productivity and allow you to handle a wider variety of vehicles more easily than before.

—Bench lathes are for cutting rotors and drums off the vehicle, while on-car lathes cut rotors in place. The latter can be a real time saver on vehicles with trapped rotors, eliminating the need to pull the hubs and possibly risk damaging the wheel bearings.

—On-car lathes, by comparison, are for cutting rotors on the vehicle. Many shops that have a bench lathe also own an on-car lathe. Why? Because an on-car lathe greatly reduces rotor runout, which in turn reduces the risk of pedal pulsation, uneven wear and break job comebacks ... all rotors have some runout as a result of tolerance stackup between the spindle, wheel bearings and hub.

—So the newest hub-mounted on car lathes now have computerized setups that automatically compensate for runout. The computerized models cost more, but make the equipment much easier to use.

#### *Undercar Digest* June 2007: Quiet Down: Reduce Brake Noise

By Jay Buckley

—Finally, make sure you are using an on car lathe when it is recommended by the vehicle manufacturer. If you don't use an on car lathe, you may be gambling with a comeback.

—TECHNICAL SERVICE BULLETINS: A plethora of information on how to prevent noise and vibration is available from manufacturers. Take time to familiarize yourself with all related technical service bulletins and updated service procedures. (Pro cut bulletins) In many instances, what was once industry standard may have changed.

#### *MOTOR* Braking Points, June 2008

—A number of vehicle manufacturers recommend the use of an on car brake lathe. Many believe that it's the only way to turn the rotors and not produce runout. Nevertheless many shops are still using conventional brake lathes to turn rotors. Any serious brake shop should consider investing in an on car lathe. In many cases it may be the only way to avoid time consuming comebacks.

—When measurements indicate that rotor resurfacing is necessary, a growing number of vehicle manufacturers recommend the use of an on car lathe ... Besides its ability to reduce runout an on car brake lathe also can save you time up front. Difficult to remove rotors that pass specification checks but need resurfacing can stay where they are.

—On car resurfacing can compensate for a certain amount of hub runout. And since rotor removal isn't needed if the rotor is not being replaced, on car resurfacing can keep anything from getting caught between the rotor and hub.

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### NEW ROTORS: THE TRUE COST, continued

#### **Brake and Front End 2005: Rotor Debate**

—Although the price of many aftermarket rotors has fallen drastically in recent years due to the availability of inexpensive rotors from China and elsewhere, quality remains an issue.

—We've also seen some vehicles with rotor runout problems (Chevy Malibu). Resurfacing the rotors on the vehicle with an on-car lathe (Pro-Cut DR 9.2) virtually eliminates runout problems, but it requires investing in an on-car lathe.

—However if the runout is in the hub, new rotors won't make any difference! Many OEM engineers have said that rotors are typically designed to last two or even three pad replacements.

Premium rotors typically use the same casting configuration as the original (same number of cooling ribs between the faces and same pattern). Vehicle manufacturers use different cooling rib configurations to "optimize" cooling for specific vehicle applications and to reduce harmonics that contribute to brake noise. If rotors with a different rib design or configuration are installed, it may create cooling and or noise problems.

—If an OEM rotor has 37 ribs and an economy rotor has only 32, cooling may be reduced 8 to 10 percent. This can make the rotors run hotter, which in turn shortens pad life. Laboratory tests have also shown that some economy rotors are much noisier than OEM rotors or premium replacements (85 decibels versus 50 decibels)

—A brake pedal pulsation or shudder is one of the most common symptoms that indicates rotor trouble. The cause may be too much runout in a rotor and or variation in the thickness or the rotor. Runout occurs when the rotor wobbles as it rotates. This may be due to runout in the hub, runout in the way the rotor was originally machined, rust or dirt between the rotor and hub, or uneven torquing of the lug nuts that cause distortion in the rotor and hub (which is why lug nuts should always be tightened to specifications).

—Checking a rotor for such subtle variations in thickness isn't easy because you have to measure thickness at a dozen or more equally spaced locations around the rotor.

—Solution: Resurface the rotor on the hub using an on-car lathe. The main advantage of cutting rotors in place is that an on-car lathe cuts the rotor in the same plane that it rotates when in use. This virtually eliminates runout and allows the rotor to run true. But it does require an on car lathe and some training on how to set it up and use it properly. However high end on car lathes (such as pro cut) have an automatic set up procedure that makes them quick and easy to use.

#### **ImportCar June 2007: Diagnostic Solutions**

On car vs. off vehicle resurfacing: While off vehicle resurfacing has its place, newer versions of on vehicle resurfacing equipment have become more accurate and easier to use. Assuming the wheel bearings are in good condition, on car resurfacing eliminates variables like bearing hub and lathe spindle runout. Set up times have been reduced to a minimum and the process is, at the least, as cost effective as off vehicle resurfacing.

 **FACT SHEET****—NEW ROTORS: THE TRUE COST** Page 1/2***Brake and Front End, March 2008: How long does it take for parts delivery?***

When it comes to auto repair, time is money. In many instances, customers don't have the time, or simply aren't willing to wait for their vehicles to be repaired. If a repair shop doesn't have a particular part in stock, having a fast, reliable resource for parts is critical to getting the repair done in a timely fashion. According to the most recent survey of Brake and Front End readers, 75 % of deliveries take 60min or less. A very small portion of readers surveyed said they wait more than two hours (6%), or 90 minutes to two hours (7%). The largest fraction of respondents (44%) said they typically wait 30 to 60 minutes for parts delivery. (45 min AVG)

***Undercar Digest 2007: Future Remains Bright for Brake Service***

**By Charlie Elder (Owner of Ray Gordon Brake Service also Pro-Cut Owner)**

Brake rotors continue to evolve, with more and more part numbers being available in both economy brands (offshore rotors) and premium brands. The offshore parts have driven down the overall price of rotors and drums so that the decision to replace or machine has changed. Some rotors are inexpensive enough that it is a better value for the customer to replace them than to machine them if service to the rotors is needed. I believe this trend will keep prices on rotors and drums in check. Some think that this trend will eliminate the need for brake lathes. I don't believe that will happen because there is a limit to the drop in price, and some rotors, even in the economy brand, will be expensive to replace vs. machining them. Also, new rotors do not automatically solve all problems. Vibration caused by stacked tolerances and other problems can persist even after new rotors are installed. This makes the need for an on the car lathe much greater to effectively solve the brake vibrations and other concerns of your customer. I believe brake lathes will be around for a long time, but we will see a shift toward the on the car lathes and away from bench lathes ... I see brake repair being a stable and profitable service for those who keep abreast of new technology and are willing to adapt to new ways of doing business. Today is not your fathers auto repair industry.

***Service Tech Larry: Tire Review, February, 2002***

**By Larry Carley**

Tip 2: Don't install cheap replacement rotors! Differences in metallurgy and surface finish between cheap rotors and quality rotors can alter their friction characteristics. This, in turn, may cause an increase in stopping distance compared to the OE rotors and take a vehicle out of compliance with the FMVSS105 or FMVSS135 safety standards that were engineered into the brake system.

In some tests, cheap rotors were found to increase a vehicle stopping distance by as much as 20%. That could be the difference between a safe stop and an accident.

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