

fast times

the newsletter of **Bavarian Autosport**

Spring 2008

Cool Carbon S/T brake pads offer better performance and pedal feel with less dust.

If you enjoy spirited driving in your BMW or MINI, or occasionally take your car to the track or Autocross events, one of the best upgrades you can make is to replace your stock brake pads with Cool Carbon S/T performance brake pads. Why? There are two main reasons:

1. Greater safety at high speeds.

Stopping power is directly related to a brake pad's "coefficient of friction," (i.e. how much it grabs the surface of the rotor).

As the brakes are used, the pads get hot and may "glaze over," becoming so smooth and hard the

coefficient of friction drops significantly. This is called brake fade. Performance pads are designed to fade very little.

However, one of the knocks against most performance pads is that they have a very low coefficient of friction when cold, performing well only after they've warmed up, so the first few times you use them it feels as if they are not grabbing at all. This can be dangerous (and scary) when you come to your first intersection of the morning.

Thanks to a unique formula, Cool Carbon S/T performance pads have a high coefficient of friction and are extremely fade-resistant, yet they do not need to be warm to be effective. Plus they are low dust and virtually noise free. (This "best of all possible worlds" formulation is described in more detail further on.)



2. Greater control over speed reduction.

If you're into performance driving, you want to be able to control just how much you reduce your speed: too little and it's unsafe; too much and you've lost time. One driver we know compares using stock brake pads to using a 3-speed fan – you can choose High, Low or Off. Using Cool Carbon S/T pads is more like using a fan with one of those infinite dials: you have much greater control over braking force.

Innovative S/T compound makes a huge difference.

Most brake pad compounds are made using solid fibers, while the S/T formula uses a hollow-structure ceramic fiber. With a solid fiber, friction is generated by the outside circumference of the fiber rubbing against the rotor. With a hollow fiber, both the inside and outside circumferences are rubbing (two friction rings). In addition, the hollow core of these fibers provides a path for heat to dissipate more rapidly than through solid fibers. Plus, Cool Carbon uses more than one type of hollow-core fiber in its S/T compound, each selected for maximum performance at a specific temperature – one for

NEW! aFe intakes for V8 and V10.



aFe Magnum Force cold-air intake kit for 550/650.

As if you V8 and V10 owners need more horsepower, the folks at advanced Flow engineering (a.k.a. aFe) have developed cold-air intake kits for the 550, 650, M5 and M6 06 on. Like their other Magnum Force intakes, these kits

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continued on page 2...

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cool carbon continued from page 1

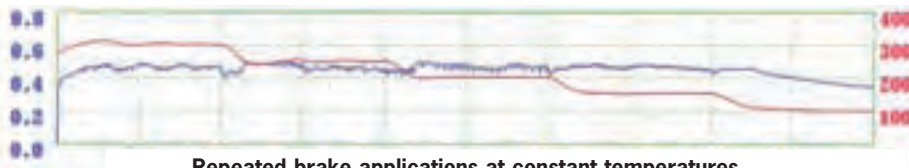
cold, one for warm and one for hot. This gives S/T pads more consistent performance across a range of temperatures. (See graph below.) The compound also contains ceramic friction modifiers and an aramid pulp (the material from which Kevlar is made). As a result, these pads offer the performance characteristics of carbon fiber pads but without the noise or high cost.

More consistent manufacturing.

Most brake pads on the market are molded en masse: The molds are filled with compound and the forming press closes until it reaches a positive stop. This makes the thickness of each pad very similar (lowering finishing costs), but the density can vary, causing variations in performance.

Cool Carbon S/T pads are made using a positive molding process: Each pad is molded individually to a predetermined pressure rather than to a common thickness. As a result, every pad has the same density and there are no variations in performance from pad to pad. The only variation is pad thickness, but this is adjusted during a final grinding operation.

Cool Carbon S/T pads are available for a range of BMWs and MINIs. They're normally \$112.95–159.95 per set (front or rear), but during the month of April we're offering a full-car deal – when you buy both front and rear sets for your BMW or MINI, the total cost is just \$199.95, saving you \$30 or more.



Repeated brake applications at constant temperatures

This graph is a compilation of friction tests performed on Cool Carbon S/T brake pads at various constant temperatures. Temperature (in C°) is indicated in red; friction is in blue. Notice how friction stays relatively constant after repeated applications, even though the temperature varies between 100°C (212°F) and 300°C (572°F).

Save even more – change your BMW's or MINI's brakes yourself!

We show you how to do it on page 7 of this newsletter...

aFe intake kits continued from page 1

were designed to not only improve power and performance, but give your BMW a more aggressive sound. The benefits of installing an aFe cold-air intake on your BMW or MINI include:

- **Increased horsepower and torque.** Specific gains depend on the year and model of your BMW or MINI; driving conditions (high altitude vs. sea level) the condition of other components in your engine (e.g. dirty plugs); etc.
- **Maximum airflow for better acceleration and responsiveness.** This improvement in performance is usually accompanied by greater fuel efficiency.
- **Installs in less than 60 minutes using factory mounting points.** No cutting or drilling into the engine compartment is required. (For a step-by-step guide to installing aFe intakes, see the Spring 2007 issue of *Fast Times* at www.BavAuto.com/newsletter.)

- **The OE panel air filter is replaced with a high-flow, high-performance, 360-degree air filter.** It's the largest filter possible in the space allowed, and has the deepest pleats in the industry.
- **The factory air box is replaced with a heat shield that seals to the hood or has a brushed aluminum cover.** This prevents the hot air that surrounds the engine from entering the filter and robbing you of power. (Hot air is less dense so it doesn't combust as powerfully.)
- **The filter is washable and reusable.** With proper care, the filter should last the life of the car. (Maybe that's why it comes with a limited lifetime warranty!)

Prices on aFe cold-air intakes range from \$289.95–699.95. If you buy one during the month of April, we'll send you a \$50 savings certificate, which is good on any future order at Bavarian Autosport.

Product Focus:

NEW! PIAA “plug in” LED bulbs for BMWs.

PIAA, maker of the popular XtremeWhite bulbs, has developed several direct-replacement LED bulbs for 3 series 06 on, 5 series 04 on and the new 1 series. These high-quality bulbs are truly “plug in” – just remove your low-output factory bulbs and install these bright white replacements:



Room lamp bulb (left). Replaces the bulb in the overhead lamp with a bright, 3-LED panel. Includes the resistor necessary to replace the bulb without affecting the diagnostic system. Fits 1 series, 3 series 06 on, 5 series 04 on. #19490. \$59.95.



Map lamp bulb (right). Specifically engineered wedge bulb uses high-output LED technology with a diffuser lens to broaden the beam pattern. Makes reading easier on the eyes. Fits 1 series, 3 series 06 on, 5 series 04 on. #19491. \$49.95.



Courtesy lamp bulb (left). Incorporates a panel of three, bright LED bulbs in an aluminum housing for longer life. Available for 3 series 06 on and 5 series 04 on. Specify year and model. #19492/3. \$49.95.

PIAA also offers a **license plate bulb kit** for the 3 series 06 on, with two LED bulbs and the resistor needed to integrate with the BMW diagnostic system. #19325. \$109.95. For more information, ask your phone rep or visit our online store at www.BavAuto.com

Ultimate floor mats for BMWs & MINIs

Our Ultimate floor mats are the ultimate in luxury and durability. They're made with 54oz. carpeting that is so thick, you'll be tempted to drive barefoot. They're cut to fit your year and model precisely for a perfect fit. They're offered in eight colors (below), in your choice of plain or with our logo embroidered on the front mats. They come with a true Lifetime Warranty. And now through April 30th, they're the ultimate deal – normally \$139.95 set, we're discounting them to \$124.95.

P.S. Make sure you get the right color; ask for free color samples before ordering.



Sandstone	Autumn	Desert	Natural
Ebony	Navy	Titanium	Graphite

Even our 32oz. Plush Mats (left) and 42oz. berber mats (center) seem to pale in comparison to our super-plush, 54oz. Ultimate mats (right).

from our tech team
ask "bavarian otto"

More than 200 years of experience is just a phone call or e-mail away.



If you add up all the time the enthusiasts at Bavarian Autosport have been working on BMWs and MINIS – and helping people like you work on theirs – it's well over 200 years. That's a lot of knowledge, and it's all yours for the asking. Just call that savvy old BMW enthusiast, "Bavarian Otto" at 800.535.2002 or e-mail Otto@BavAuto.com.

The waterless flush. ⚡⚡

Dear Bavarian Otto,

I drive a 2000 323i wagon and have a question regarding flushing old coolant from the system before adding the lifetime, NPG+ waterless coolant you sell. Would following the Bentley manual instructions for flushing be enough to prepare for this change or do you recommend any additional steps? Thanks. Bill

Otto replies:

The basic procedure is the same, Bill, but there are some additional issues (nothing extraordinary) you need to address when switching from water-based coolant to waterless NPG+. We address those issues in our NPG+ instructions (based on the manufacturer's instructions but tailored for BMWs). You can download them (and lots of others) from www.BavAuto.com/techinfo. Use them in conjunction with the Bentley manual and you should be fine. Remember: since you don't dilute NPG+, you'll need three containers for your car. (Fortunately for you, NPG+ is currently on sale.)

Gimme a (bigger) brake! ⚡⚡

Dear Bavarian Otto,

For a couple of weeks I've been researching alternatives to the factory front brakes on my 2001 325ci. I have 17" wheels on it and I'm reasonably sure the one-piece Brembo kit will work with them, but I don't want to spend \$1,700. According to my Bentley manual, the rotor size on the 330 is 325mm, or 1" larger in diameter than my 325 rotors. Is it possible to use the 330 rotors and calipers without changing spindles, struts, etc? If so, that would be an affordable upgrade for all us 325 owners. If you are aware of any other brake upgrades, please let me know. Thanks for your time, and the great service! Alan

Otto replies:

Yes, Alan, your 2001 325ci can definitely be upgraded to the 330 brakes. You will need new calipers, caliper carriers, brake rotors (stock rotors are \$130, or you can upgrade to our Ultimate rotors, which are on sale for \$143.95 until April 30), brake pads and a sensor wire. The whole thing would cost less than \$1,000, saving you more than \$700 over the Brembo kit. For an even better deal, consider our street performance brake kit: it includes stock calipers and carriers that have been powder-coated red, a pair of our Ultimate brake rotors, Cool Carbon brake pads and a sensor wire, PLUS caliper bushing upgrade kit, stainless steel brake lines, Noise Free compound, Sta-Lube caliper grease and a liter of ATE Super blue fluid. The 325 kit is \$879.95 while the 330 kit is \$949.95 Both should work fine with your 17" wheels. Either way, you'll enjoy better braking and a cooler looking BMW. [Editor's note: See related article on page 7.]

Annual vs. the manual. ⚡

Dear Bavarian Otto,

We really liked your "Ultimate Maintenance Schedule" in the last issue of Fast Times. (My husband posted it on our garage wall!) But we're having a family dispute about the change interval for cabin microfilters. You recommend changing it annually, but BMW's schedule for my 2003 330xi says every 30,000 miles. I put about 18,000 miles a year on the car. Will it hurt to wait and do it at 30,000 miles?

Susan

Otto replies:

Well, it won't hurt your 330xi – there are lots of BMWs driving around with microfilters that have never been changed and they run just fine – but it's not doing you any good. We recommend annual changes because we know how awful our microfilters look when we take them out after 30,000 miles (right). How often you need to change your filter will depend greatly on what kind of conditions you drive in – dusty, polluted, tons of pollen, etc. (We have some customers who change their microfilters every six months.) And since the microfilter for your 330xi costs \$30 and takes 3 minutes to change, we see no reason not to do it annually. (By the way, BMW used to recommend changing microfilters every 20,000 miles, which means it was changed twice during the warranty period. In 1999, they increased the interval to 30,000 miles, so now there's only one microfilter change in the warranty period. I wonder why that is ?...) For more on changing microfilters, see the Summer 2003 issue of Fast Times. You can download it at www.BavAuto.com/newsletter.



The top filter was pulled out of a 1999 323i after 30,000 miles; the bottom filter is new. Not only is cabin air healthier with a new filter, it smells better.

Relief for painful gas (prices). ⚡

Dear Bavarian Otto,

These gas prices are killing me! What can I do to improve my Bimmer's MPG? Micah

Otto replies:

There are several, very simple things you can do that will help your BMW's fuel efficiency – by as much as 20%! Check out the Summer 2006 and Summer 2007 issues of Fast Times at www.BavAuto.com/newsletter.

Bavarian Profile



Chris Mars

After 10 years as a Bavarian Autosport customer, maintaining and upgrading his own BMWs, Chris joined us as a phone rep in January of 2007. Prior to that, he had all kinds of mechanical and parts experience: purchaser for a commercial HVAC service company; service coordinator at a motorcycle/ATV/Sea-Doo dealership; and reconditioning boats on Lake Winnepesaukee. In fact, Chris is originally from the NH lakes region, and he goes back there whenever he has a chance. You can usually find him either floating on his boat or working on his current ride, a 1989 325is. He has also owned and worked on an '84 325e and a '92 325ic. He'd trade them all in a heartbeat for his favorite BMW, the new M6. (Well, maybe not his boat... the M6 doesn't float too well.)

How easy is this?! do-it-yourself

Repairing multiple paint chips. ✂

Over time, the nose and hood of a BMW or MINI can develop a sizeable collection of paint chips, ranging from multiple tiny specks to 1/4" chips. To have this professionally repaired can be very costly – as much as \$1200. If you're not ready to invest that much quite yet, we have an inexpensive alternative. After much searching and testing of products, Bavarian Autosport has put together an assortment of three different kits that are used for various paint repair needs.

Road Rash kit for multiple small chips in a general area as well as overall sandblasting damage. Includes custom-mixed touch-up paint.

Paint Chip Repair kit for individual chips that are larger than 1 to 2 millimeters. Use in conjunction with BMW touch-up paint.

Quixx Scratch Repair kit for blending and smoothing minor scrapes and scratches that have not gone through the color coat.

Having personally tested and used all three of these products, we're confident that you can use them with great results as well.

In this issue of Fast Times, we will show you how easy it is to use the Road Rash kit. Our subject vehicle: a sandblasted 2000 740i. For this DIY, we will work the area around the center grills. As you can see, this car was in poor shape (right).



1) Clean and prep the paint surface. Wash and dry the area to be repaired (Dawn dish soap is an excellent wax remover). **Note:** We highly recommend working on small areas until you gain experience with how the paint and the solvent work.



2) Be sure that the bottle of touch-up paint (fig. 1) is well shaken. Using the supplied latex glove, apply the paint with your finger (fig. 2) and let set-up until tacky (a couple of minutes).



3) Using a cotton rag (an old T-shirt works really well), apply the solvent to the rag and begin wiping the paint you just applied (fig. 3). The solvent will remove the paint from the smooth surfaces of the body and leave the chips filled with paint. Continue working with clean sections of rag until all of the paint has been removed from the smooth surface.



4) Continue on to the next area, applying the touch-up paint, letting it set-up and using the solvent and rag to remove the excess.

5) Once the repair has been completed to your satisfaction, buff the area to remove all of the residue, then apply wax.



There were a few larger chips (right) that could not be easily filled using the Road Rash kit. In the next issue of Fast Times, we'll show you how to use the Paint Chip Repair kit to fix these chips.



NOTES & TIPS: Wrapping the rag around a firm piece of plastic (like a credit card, but don't use your credit card) will help remove the excess paint without removing the filler paint inside the chips. If you're unhappy with your first application, go ahead and repeat the process. You can experiment with the length of time you allow the paint to set-up. Sometimes a longer set-up time will help fill the tough spots.

There really is a night-and-day difference in the area that we repaired. Want to try the Road Rash kit on your BMW or MINI? During the month of April we'll take \$5 off the price: originally \$59.95, it's now just \$54.95.

Installing a muffler. ✂✂

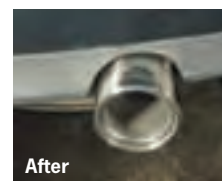
Most BMW and MINI exhaust systems are bolt-on. This means that, with a few caveats, they are replaceable by a typical owner. (That's you!) The caveats?

1. You need to get the car up in the air. High-quality jack stands work fine.
2. Some exhausts are not bolt-on, they're cut-in, meaning the piping must be cut. This is primarily on the later models (3 series 99 on, 5 series 97 on, etc.). A drill and reciprocating saw may be needed. (For how to install a cut-in exhaust, see the blue box on the opposite page.)
3. Don't think you'll get out of this without obtaining a coating of dirt and rust.

Most free-flow performance exhausts are bolt-on as well. If you're going to replace your exhaust, it takes no more work to install a performance exhaust, and you'll end up with more power, a throatier sound and a system that will last longer.

Here we install a bolt-on Scorpion exhaust on an '02 Mini Cooper.

[Editor's note: Scorpion exhausts are on sale through April 30th. See page 8.]



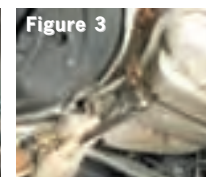
1) Get the car up in the air, following proper safety procedures. Getting the car as high as you can will make the job easier. (If using jack-stands, we recommend the larger 6-ton or 12-ton units. This is not only for greater safety, but these stands are much taller than the garden variety 1.5-ton or 3-ton units.)

2) Take a look at what you've got. Assess the hangers and connection points. It's typically easier to get the forward bolted connection disconnected before releasing any of the hanger points.

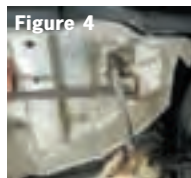


3) Work with the flange connection nuts & bolts (fig. 1). They will likely be rusty. Use a hammer to tap the socket securely onto the nut. At this point, it will not be uncommon that you will simply break the bolt or stud. Since this will all be replaced, it actually makes the task easier. If the nut and/or bolt are so rusted that you cannot get a socket or wrench on them, use a reciprocating saw (with a metal cutting blade) or die-grinder with a cut-off wheel to cut the nut and/or bolt heads off, flush with the flange surface.

4) Start releasing the hanger points. It's usually easier to work from the front toward the rear (figs. 2 & 3). Prepare your jack to support the rear of the muffler as you release the hangers.



5) Once all of the hangers are released, lower the system and get it out from under the car.



6) Clean up the flange connection surfaces in preparation for the new gasket or flared flange on the new system.

7) Inspect the new exhaust. Note any differences in the hanger system (if installing a free-flow system). Prepare all of the hanger points (figs. 4 & 5).



8) Using a floor jack to assist in placement and support, get the new system into place and lined up. With some systems it will be easier to install some of the hangers before connecting the forward flanges; others will be easier to connect the flanges first (fig. 6).

9) Loosely install all the hardware, connection points and hangers. Get the system aligned so it is level and the tips are centered in the rear panel. Finally tighten the connection flanges and hangers (fig. 7).

How easy is this?! do-it-yourself

Replacing brake rotors and brake pads. *🔧🔧*

With a few standard tools and an hour or so of your time, you can change your pads and rotors yourself, saving a significant amount of money and enjoying the satisfaction of successfully accomplishing a new task.

For this demonstration, we are replacing the stock rotors and pads on a 2001 330i with Ultimate rotors and Cool Carbon S/T pads. The procedure outlined below is typical of most BMWs from the early 1980s through today. For model-specific procedures and torque specs, consult the appropriate repair manual for your BMW or MINI.

[Editor's note: Ultimate brake rotors (page 8) and the Cool Carbon S/T pads (page 1) are on sale through April 30th.]

NOTE: Apply Noise Free (#NF20Z) to the backs of the pads at least one hour prior to installation. (We highly recommend you do this the night before to allow the compound to set up.)

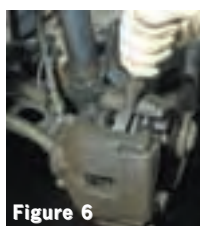
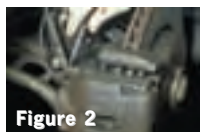
1) Loosen the wheel lugs, then get the car up in the air, following proper safety procedures.

2) Remove the wheel.

3) Remove the anti-rattle clip. Many people have trouble with these clips. Here's the trick; Use a pry bar or screwdriver between the hub and the clip to push the clip away from the hub. While pushing with the pry bar, use another pry tool to pop the center of the clip away from the caliper (fig. 1).

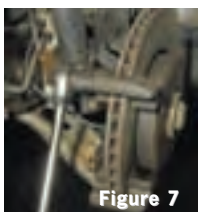


4) Unplug the brake pad wear sensor wire from the vehicle harness and any further securing points.



10) Remove the outer brake pad from the caliper mount bracket.

11) Remove the two hex-head bolts that secure the caliper mount bracket to the spindle hub and remove the bracket (figs. 7 & 8).



5) Remove the plastic dust caps to access the two caliper guide bolts (figs. 2 & 3).

6) Use an Allen head bit to remove the caliper guide bolts (figs. 4 & 5).

7) Gently pry caliper away from rotor and remove (fig. 6).

8) Remove inner brake pad from caliper piston. Note the spring clips that fit into the piston.

9) Set caliper aside so that it is not hanging from the fluid hose.

Parts needed:

Brake pads
Brake rotors
Rotor hold-down bolts
Brake sensor wire
Noise Free compound
Sta-Lube caliper grease
Lubro Moly Anti-seize

Tools needed:

Jack stands
Ratcheting socket set
7mm allen wrench/bit
Flat screwdrivers/pry bars
Würth brake parts brush
Würth hex-head socket
Slip-joint pliers or C-clamp



Figure 9



Figure 10

12) Use a Würth hex head socket, #71511504/5/6, to remove the single rotor hold-down bolt (fig. 9).

13) Remove the brake rotor (fig. 10).



Figure 11

14) Clean up the wheel hub flange using a stiff wire brush, such as the Würth brake parts brush, #07155526 (fig. 11).

Note: Use the cleaning brush to also clean the wheel hub hole and mating surfaces.

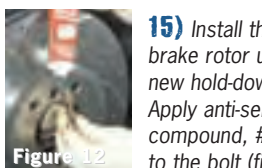


Figure 12

15) Install the new brake rotor using a new hold-down bolt. Apply anti-seize compound, #2012, to the bolt (fig. 12).



Figure 13

NOTE: Clean the friction surfaces of the new brake rotor using spray brake cleaner and a clean rag. This can be done prior to mounting the rotor or after the rotor is mounted, prior to mounting the caliper and bracket (fig. 13).

16) Install the caliper mounting bracket.

17) Lubricate the areas of the bracket where the brake pads mount and slide, using Sta-Lube caliper grease, #3301. Use only a light coating, we do not want excess grease to get on the rotor or the brake pad friction surface (fig. 14).

18) Push the caliper piston into the caliper, using a specific piston press tool, a large C-clamp or a large pair of slip-joint pliers. Push the piston in until it is fully seated (fig. 15).

19) Lubricate the upper and lower edges of the caliper where the brake pad mounting ears will slide (as with the caliper bracket, in step #17).



Figure 14

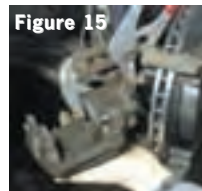


Figure 15

Installing a cut-in exhaust

1) Once the vehicle is up in the air, hold the new muffler up in position under the stock muffler and note the location of the required cut on the original pipe by making a mark on the pipe. (A permanent marker works well.)

2) Make further measurements of the new muffler and the install location and finalize your cut point. Make sure you leave enough pipe to slide into the new muffler piping. It's always better if you end up a bit too long (on the vehicle pipe) and have to cut some more, rather than too short. Cut the pipe using a reciprocating saw with a metal cutting blade (fig. 1).

3) Install the new muffler onto the cut vehicle piping (fig. 2). Do not tighten the clamp. Install the hanger hardware. Align the muffler for proper fit and tighten hanger hardware and pipe clamp(s).



Figure 1



Figure 2

20) Install the inner brake pad into the caliper piston (fig. 16). Note: If working at the left-front or right-rear, install the new brake pad wear sensor wire through the caliper and into the inner pad prior to mounting the pad into the caliper piston.



Figure 16



Figure 17

21) Install the outer brake pad into the caliper mount bracket (fig. 17).



Figure 18

22) Mount the caliper over the rotor, bracket and outer pad (fig. 18).

23) Lubricate the guide bolts with the caliper grease and install them. Install the plastic dust caps over the guide bolts.

24) Route and install the brake pad wear sensor, if applicable.



Figure 19

25) Install anti-rattle clip. Position outer ends of the clip against the bracket, hold in position with your thumb and use a pry bar to push clip away from center hub while pushing middle tangs into caliper holes with your thumb (fig. 19).

26) Apply anti-seize compound to the hub flange and the wheel mounting surface of the rotor. Apply only a thin film to the rotor/wheel mounting surface, as we do not want excess to be expelled onto the rotor friction surface (fig. 20).

27) Install wheel. Torque lug bolts.

28) Lower vehicle. Pat self on back.

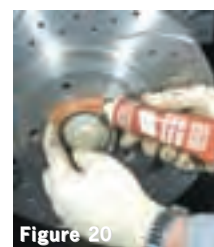


Figure 20