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Promoting and Installing High-Performance Brakes

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Performance brakes require a premium product manufactured to high standards, along with high-quality installation work by the technician. Quality performance parts are never the cheapest. Also, all performance parts are not created equal. Some manufacturers simply put a label on a part and say it's a performance part. Not so with true high-quality performance parts used in this article.

A vehicle of this type is what you most commonly will encounter for performance brake work in most shops. Cars like this are capable of high speeds and frequently are used for high-performance driving. This creates situations in which performance brakes are a real benefit for stopping control and vehicle safety.

Pretty blue paint doesn't make for a performance-brake system. This caliper has been painted with high-temp paint to look nice but no longer slides as it should. This inability to slide prevents application of the proper brake force to both pads.

Look closely at the knuckle tension clip. It's clean and silver, but that is because it was brush-painted in place. The paint applied to this brake system hides a problem with the slide area.

After removing the caliper you can start to see some of the problems present on this brake system. There is no lubricant on the caliper-slide areas, and it's obvious that the brake system was painted while assembled without the critical components being cleaned/replaced or lubricated.

There was so much buildup of rust and other material that the outer pad could not be removed with hand force. It had to be pried out with a screwdriver. This pad obviously was not free to move with normal tip-in application force. Remember that you should be able to install pads with little or no force and move them within their slides with hand force.

Look closely at the rust and scale on the pad-mounting clip. This vehicle may have had drilled and slotted rotors, but they would do little good if the rest of the brake system was not performing as designed or this vehicle was operating with restricted pad movement.

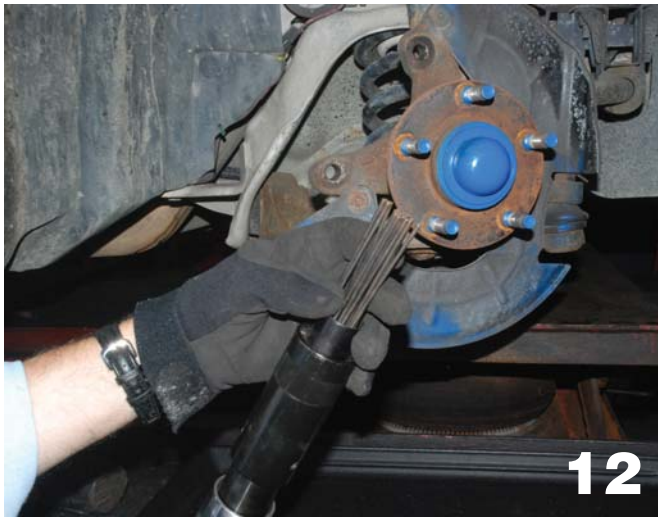
New caliper brackets frequently come with performance and other high-quality calipers. New brackets were part of the new calipers being placed on this vehicle, so the old one was removed. Note the piece of scale that was in the pad-mounting area of the bracket.

One part of this system that was OK was the caliper-mounting pins. There were lubricated and the dust seals were intact.

This picture really tells it all. The pad is cracked because of the high heat to which this brake has been subjected. The heat may have been due to pad drag resulting from binding caused by the rust, paint and scale, or the customer's driving habits may have been responsible – or both. In any event, the performance brake parts being installed will cure this condition.

This Mustang uses slip-on/off rotors. Why, then, was beating the old rotor necessary to remove it? The reason was the rust and scale buildup around the center hole and on the backside of the rotor. This buildup also can easily cause a runout problem that will lead to brake-pedal pulsation.

Look at the corrosion buildup around the studs. This must be cleaned up before installation of the new performance rotors. Failure to do so will surely cause a problem in the near future.



This de-scaling tool should be a "must-have" for every shop. It is one of the best ways of removing rust and scale buildup and works extremely well on hubs/studs and around the center raised area.

The tool's design allows it to fit around a stud and get into the recess area where the stud passes through the hub face.

After the de-scaling tool is used, the final cleanup of the hub face is done with a tool such as this one. This tool also works well but doesn't remove heavy rust and scale as a de-scaling tool does. Likewise, a de-scaling tool doesn't leave as smooth a surface as this tool does. Doing the job correctly requires both tools.

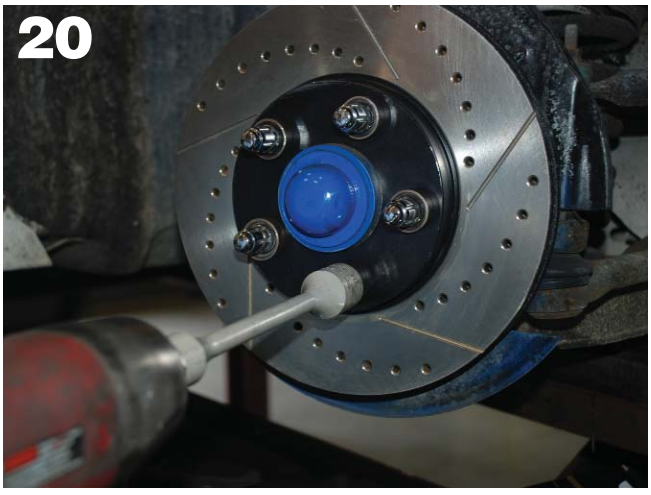
Many technicians believe in coating the hub face with a product such as the anti-seize compound used here to prevent rust and scale buildup. What you use is open to discussion, but I believe you should use something to prevent future buildup.

Here is a performance drilled and slotted rotor for the Mustang. There are differences in drilled and slotted rotors. Where the slots are, their angle and the location of the holes make a difference in cooling and removal of brake dust during operation. In addition, the quality of the metal is key to overall quality.

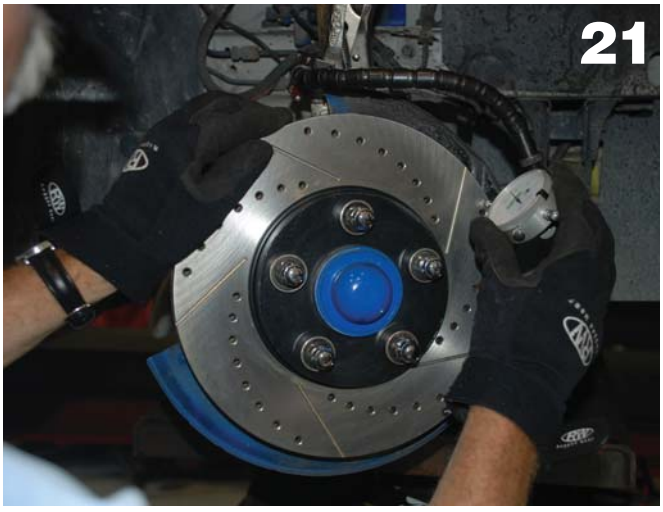
Depending on the protective coating used, you may need to clean a new rotor with an aerosol brake cleaner before installation.

As any good machinist will tell you, washing with soap and water should be the final step in cleaning a rotor. The soap lifts off any remaining particles so you can flush them off the surface.

The technician slips the cleaned rotor onto the hub.

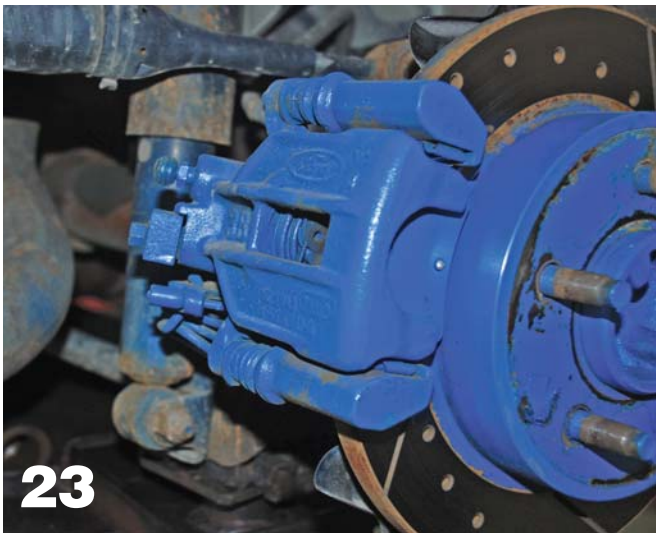


The rotor is held in place by torquing down all five lug nuts. Use a torque stick or torque wrench to avoid creating runout.



Using a dial indicator, measure runout on the new rotor. On a drilled and slotted rotor you can't have the contact point of the runout gauge dipping into the slots or holes, so take your runout reading at the outer edge.

Here is the front brake, consisting of a new drilled and slotted performance rotor, a caliper with performance pads, a new mounting bracket and new hardware. This brake is a performance upgrade.



The rear brakes exhibited the same conditions found on the front.

Look carefully at the anti-rattle-clip pad tensioner, indicative of the underlying rust problem.

New drilled and slotted rotors, premium pads and quality calipers with new brackets and hardware are the cure for this vehicle's braking problem.

This windshield-mounted gauge measures deceleration in feet per second per second on the left scale and meters per second per second on the right. Although it's not as high-tech as a GPS computerized deceleration read-out or a dyno test, it does clearly show a vehicle's stopping ability in terms of deceleration rate.

This photo shows the vehicle stopping before installation of the performance brakes. Note the vehicle's position relative to the building in the background.

The gauge shows that the vehicle's best deceleration rate before the brakes were replaced was 19 feet per second per second.

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After brake replacement, you can see by the vehicle's position relative to the building that it stopped in a shorter distance.

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Deceleration after installation of the new brakes was 23 feet per second per second. This test was performed after only six 35-mph stops with the new brakes. After the brakes are seated in, there should be an additional 15% to 20% improvement. UD