

# Servicing Drum Brakes



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It's a grinding noise that follows you around town--at least it sounds like it's following because the sound is coming from the rear of your vehicle. You only hear it when you use the brakes. You grab a flashlight to check the thickness of the rear pads--but then realize you've got rear drums, not discs. Well, it's time to fix the problem, because you've worn out the linings on your rear brake shoes, and that grinding noise means the shoes are going metal-to-metal with the inside of the drums.

## DEGREE OF DIFFICULTY



**DIFFICULT**

Why do some vehicle manufacturers still use drum brakes instead of the superior disc brakes? Drums are lighter and have less friction when not applied--both important for mileage. And they're used on a lot of light trucks and smaller fwd cars on the rear axle, because these vehicles have a heavy forward weight bias and don't need rear brakes that are as effective as the front ones.

[For background information on how drum brakes work, click here.](#)

## SHOPPING LIST

You'll need to buy a set of brake shoes. Get an axle set so you can do both rear wheels at the same time, regardless of how broke you might be. Don't cheap out and get the loss-leader, least expensive shoes--go for at least the middle of the line. If you drive hard or tow a trailer, ask for premium parts. I like to replace the hardware at the same time because it can get very rusty. This is especially true if you live or regularly drive near salt water, or if you tow a boat trailer and your rear wheels are submerged frequently. You should be able to find a hardware kit, which will include springs, adjusters, retainer clips and pins, and other essential parts.

You may or may not be able to have the friction surface of the drums machined, depending on how badly they are worn. So you'd better check on the availability of replacement drums before you take the vehicle out of service.

Also, unless you work on drum brakes on a regular basis, you'll need a service manual specific to your car.

## JACK IT UP

Start by loosening all the lug nuts on the rear wheels. Block both front wheels in both directions. Then, put the vehicle up on safety stands--never work on a vehicle that's resting on a jack. Remove the wheel. I prefer to put the removed wheel under the car frame near where I'm working. This way, should the vehicle fall, there will be something thicker than my head for it to land on. Large pieces of wood are also a good option, but concrete blocks are not. Concrete may crumble under the force of a falling car. Parking brake off, please. And if you have only one wheel up in the air, put the transmission in Neutral: You'll need to spin the hub during this procedure and if one wheel is on the ground and the trans is in Park or any gear, you can't.

## OPEN SESAME

Remove the drum--a job that's often easier said than done. Some brake drums are simply sandwiched between the hub and wheel and held in place by nothing more than a clip to keep the drum from falling onto your foot when the wheel is removed. Others may



**CLICK TO ENLARGE**

**First remove retaining** screws or clips holding the drum. This drum comes off by threading bolts into holes conveniently provided.



**CLICK TO ENLARGE**

**Remove rust** from the hub's land area where the drum centers.

have a Phillips-head screw to achieve the same purpose. All brake drums have a machined bore in their center that locates on a land on the hub. This is to keep the drum concentric with the axle. All too often, corrosion and road dirt will have insinuated themselves into the few thousandths of an inch of clearance there, making the drum difficult to remove. Start by giving the drum a few whacks with a soft-head hammer, in the hope that the shock will pulverize the corrosion, and let the drum free up.

This never works right off, of course. Soak the area with penetrating oil and whack again. Don't whack so hard that you dent, crack or bend the drum. If the drum still won't budge, check to be sure the parking brake is really off and the cable that actuates it isn't hung up. Now is the time to check the manual for any insight it offers into removing the drum.

Our example vehicle, a Suzuki Grand Vitara, has two 8mm holes drilled and tapped into the face of the drum. We threaded a pair of 8mm bolts into them and the bolts pushed the drum off cleanly. Stubborn drums may require the use of heat and a large tool called a drum puller. If you need a drum puller, the auto parts store that sold you the shoes should be able to rent--or if you ask nicely, lend--you one.

Once the drum has moved a few millimeters, check to see that there isn't a ridge worn into the drum's inner surface that prevents it from coming clear. You may need to release the adjuster through the rear of the backing plate and retract the shoes enough to let the drum clear.



**CLICK TO ENLARGE**

**Depress the springs** and twist the retaining clips to release the shoes from the backing plate.



**CLICK TO ENLARGE**

**Use an old screwdriver** to pop the springs off the shoes to allow the two shoes to separate and come away from the hub.

## WHERE'S THIS SPRING GO?

Now it's time to remove the springs, retainers and shoes. If you don't have a good shop manual with an intelligible exploded diagram, you'll want to take closeup photos or at least make diagrams of what goes where. Otherwise, you'll have a giant 3D puzzle to reassemble--and I guarantee you won't remember how to do it without some visual aids. Use a screwdriver and needle-nose pliers to pop off the springs. Depress the retainer clips and rotate the retainer pins 90 degrees, and the whole mess will fall off onto the ground.

## CHECK IT OUT

The drum should have a shiny surface that won't let you catch any of the grooves with your fingernail. If you've had metal-to-metal contact, you'll need to machine or replace the drums--both drums



**CLICK TO ENLARGE**

**Peel back** the sealing boot at both wheel cylinders and check for wetness. Leaking brake fluid means the cylinder must be replaced and the brake system bled of air afterward.



need to be turned to the same diameter or the car will veer off-center every time you hit the brakes. The machine shop knows this. The maximum allowable diameter is cast into the drum. Check the depth of the friction material on the shoes. The shop manual tells you the minimum allowable thickness. If any of the four shoes are worn more than halfway, replace them.

Carefully pull back the boot on the brake slave cylinder and check for fluid. A slight amount of moisture is normal, but if there is any accumulation of fluid, replace the cylinder and bleed the system.

Clean up any dirt, corrosion or brake dust powder on the backing plate with aerosol brake cleaner or the shop vacuum. Use a wire brush to clean every mating surface between the drum and the hub to remove any trace of corrosion and dirt, which would make the drum run out of true. Coat these surfaces with a light film of antiseize compound, in case you ever need to remove the drum again. Put a dab of high-temp brake grease on the pivot points of the adjuster struts and the backing plate.

## TOGETHER AGAIN

Clean the friction surface of the drum with solvent or brake cleaner so you don't leave oily fingerprints on the friction surfaces. Clean up all the hardware if you're not replacing it, and lube the adjuster with high-temp grease. Run the adjuster all the way in so the new shoes will clear the drum later. Now reassemble the shoes, adjuster, and springs and retainers. You'll need those photos or diagrams. Trust me. You may need to spin the adjuster star wheel while you hold the pawl out with a second screwdriver and take up some slack between the shoe and drum. Now you can hang the drum and reinstall the wheel.

The self-adjusting mechanism is activated differently on different vehicles. Some use the handbrake to energize the automatic brake adjusters, while others simply require you to apply the brakes while backing up. If the pedal is persistently low, you may need to manually crank the adjuster star wheel a few clicks.



**CLICK TO ENLARGE**

**You can measure the thickness** of the friction material to see if the shoes have reasonable life. If in doubt, replace all shoes.



**CLICK TO ENLARGE**

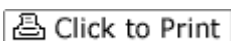
**Brake drums are marked** with their maximum allowable inside diameter and should never be machined beyond the limit.

## Links referenced within this article

For background information on how drum brakes work, click here.  
<http://auto.howstuffworks.com/drum-brake.htm>

## Find this article at:

[http://www.popularmechanics.com/automotive/sub\\_care\\_sat/1782947.html](http://www.popularmechanics.com/automotive/sub_care_sat/1782947.html)



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