The Nutty Professor's Service Manual
Basic Servicing Part (4) – Brake Adjustment

OK my fun loving VW chums, this month I thought I'd talk about mechanics of the female mind.. Errr…second thoughts, that's a can of worms I'll be staying well away from. So this month, we'll be servicing and adjusting your brakes.
Now I don't know about you, but most people think of brakes as a right pain in arse, and when their brakes start feeling a little different, or not working as well as they should, they put off dealing with it for as long as possible, basically until something happens to force them into correcting things.
I've always been a little nervous when it came to brakes, until one particular incident with my old bay camper van. Driving down a duel carriageway towards a round about doing about 45 mph I hit the brakes. The brake master cylinder literally exploded and my brake pedal dove straight to the floor, like the French army when confronted with the enemy. So now I'm heading towards a round about with no brakes and partially brown trousers. The quick thinker that I am I pulled on the hand brake, which was about as much use Jeremy Clarkson at a safe driving convention. Luckily for me as I approach the round about, still doing about 30 mph in my two ton chunk of 1970's unstoppable VW parts, the round about was clear of traffic and I rolled straight through the junction and came to rest 50 yard past the round about on the edge of another dual carriageway. After changing my underpants for some that were less brown, I decided to learn about brakes, and ever since they have been my top priority in every vehicle I've had.
Once again, as per previous articles, this article is based on Kirsty's 1976 1300 air-cooled VW beetle, but most air cooled VW's are very similar.

Braking System – Adjusting your brakes

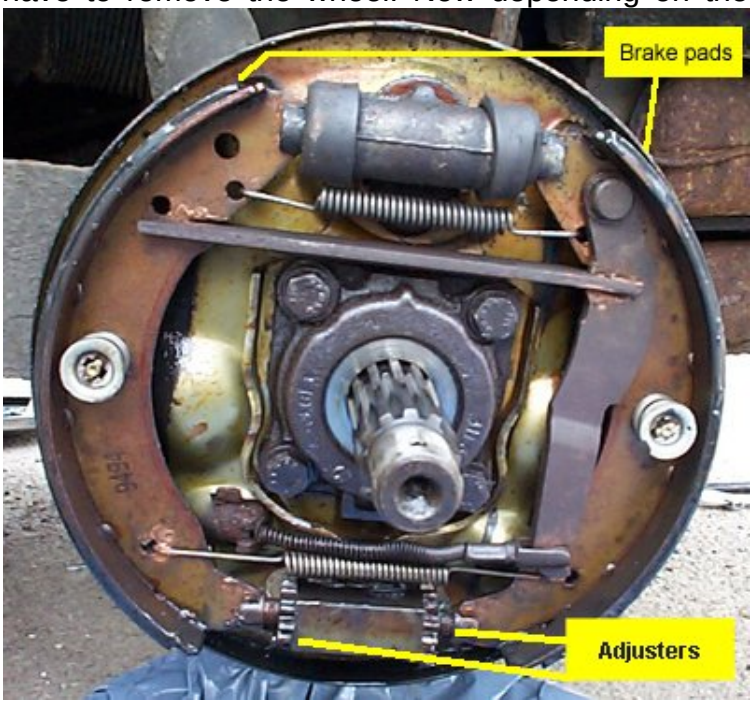
Difficulty Rating: Easier than cooking a roast turkey. WARNING: If you read any magazine like *Hello*, *OK* or any of the million other stupid titles, and actually think it's a good read, you do not have enough brain cells to attempt this!
Approximate Cost: *Not a lot… If you don't have to replace anything.*
Tools Needed: *Large flat head screw driver, a trolley jack, axles stands, wheel brace and a willing assistant(optional).*

A foreword: This article is a guide to the adjustment of your brakes. But if your vehicle has been going for more years than Status Quo without the brakes being looked at, then you are more than likely going to have to replace bits. This will be covered in the next article, so look out for it.

Lets get started. Firstly park your vehicle on a level hard surface. Trying to jack up your car on grass it like trying to put shit up a gravel hill. If you want to get thin, go on a diet. Dropping a car on yourself just hurts. We'll start with the back wheels. Jack up the vehicle so the wheel is about an inch clear of the ground and support the vehicle with an axle stand. Put a couple of bricks under the front tyres to stop the vehicle from moving. Remove any hub cap (if you have on). As a safety precaution, get into the habit of putting a wheel (the spare) under the vehicle, so in the event of the axle stand or jack breaking, the wheel will hold the vehicle off the ground enough to a) save your head from being crushed if you happen to be under the vehicle, or b) to give you enough space to get another jack under the vehicle to lift it up again.

It is easier to adjust the brakes if you don't have to remove the wheel, as spinning the wheel is easier than spinning the drum alone. With some after market wheel you may

have to remove the wheel. Now depending on the model of vehicle you have, you will notice a inspection/adjustment hole in the drum about the size of a penny. If it's not on the front of the drum, it will be on the back, probably with a rubber plug in it. To see it, you will need to lye on you back so you can look behind the wheel. Make sure the hand brake is off, and the vehicle is not in gear so you can spin the drum. Through the inspection hole you should be able to see the edge of the brake shoe and the amount of pad left, before it grinds on metal. For the purposes of this article, we'll assume the brake shoes have plenty of wear left in them (at least about 3mm) and do not need replacing. VW state that the surface of the pad should be at least 0.5mm above the head of the rivet holding the pad on the shoe. But seen as you can't see that without removing the drum, it's of no help what so ever.



Holding the drum in place is a large nut (36mm) and a split pin. Yes, the one that looks like it should be used to hold Lucifer's charm bracelet in place. The one that your average socket set is not gonna have a hope in hell at fitting. Luckily, you do not need to remove this, assuming your brake shoes just need adjusting and not replacing. The picture about is just so you'll know what is inside the drum to give you a better understanding.

Just so you understand what you are trying to do, here is what goes on inside the drum. Basically there are two brake shoes on the inside of the drum that are pushed out onto the inside edge of the drum, by a brake cylinder. This is like a little piston, which sits inside the drum between the two shoes and expands outwards when you stamp on the brake pedal. Thus pushing the shoes outwards onto the drum, which grips it and slow down the wheel. Also inside the drum are two star adjusters. One for each brake shoe. These adjust how far away from the edge of the drum the brake shoes are, and are designed to be adjusted using a screwdriver through the inspection hole.
Now here's the weird bit. Just to confuse you, the layout of all these bits inside the drum differs from vehicle to vehicle, depending on the type of vehicle and the year of manufacture. Some have one brake cylinder in the drum, some have two, and the orientation of where everything is changes as well. For example, the cylinder in the front wheel drum might be to one side, but on the back wheels will probably be at the top as per the picture above. Anyway, whatever the layout is, the principle is the same, and adjustment is the same.

To adjust the shoes, it is more than helpful if you have an assistant to site in the vehicle and operate the brake pedal. You can do it without an assistant, but you'll be up and down and in and out of your car like a yo-yo.
Firstly make sure the wheel spins freely by hand. Now look through the inspection hole and slowly move the wheel round until you see one or the star adjusters. On the rear wheels, they should both be at the bottom of the drum, at about five o-clock and seven o-clock positions. The one at seven o-clock, adjusts the shoe on the left and the one at five

o-clock adjusts the shoe on the right. This is if you look at the wheel from the outside rather than the back of the wheel. Get your large flat head screw driver and start with the right hand shoe. To move the shoe nearer the drum, use the screw driver on the star adjuster like you are levering up the lid of a paint tin (i.e. turning it up away from you). Turn the star adjuster one turn and try turning the spinning the wheel with your hand. If you can still move the wheel, turn another step on the adjusted, and so on until you cannot move the wheel. This means the shoe is gripping on the drum. Now turn the star adjuster back the other way just one or two notches, so that the wheel can spin freely again. Now get your trust assistant to press the brake pedal a couple of times and pull the hand brake on and off. Then check that the wheel will still spins freely. If not, back off the adjuster another notch, and operate the brake again. Repeat this until you are sure that the brake shoe is as close as possible to the drum, but without actually rubbing when the wheel is spinning. You may need to do the whole process of adjusting right up to the drum and then back a couple of notches several times, with your assistant operating the brake pedal and hand brake in between. Just to make sure you have it set right. DO NOT have it too tight. If the shoe is rubbing on the drum it will heat up faster than a 16 year old at a Take That concert, and either catch fire (in extreme cases) or possibly warp the drum due to the heat. Which will mean you'll be going nowhere, as your brakes will end up seized on.
Once you have done the right hand shoe, go to the other adjuster for the left hand shoe. To move this nearer the drum (i.e. tighten it) you will need to move the adjuster in the opposite direction to the right hand shoe. So lever the star adjuster down to push the shoe outwards to grip the drum, and upwards to back it off a step. Now all you got to do is do the same procedure with all four wheels, assuming you have drums all round. If you have disk brakes on the front, you will be pleased to know that these are self adjusting, and as long as there is sufficient wear left on the pads, you need not adjust them at all. To inspect the pads, just remove the wheel and look at the top of the brake calliper where the brake disk spins through it and you will see the pads. Make sure they have plenty of pad left. If you feel the front disk brakes are not gripping well, replace the pads without delay. Even if there is plenty of wear left, they may well be old and glazed, making them as useful as duffle coat in the Bahamas.

Once you have adjusted your brakes, it's time to go for a test drive. Do not drive straight onto the nearest motorway or dual carriageway, to test your brakes. Use a quiet none busy road without pedestrians or other vehicles to bounce off. Drive slowly and gently touch to brakes at first. Do not slam your foot down hard straight away, as you may be surprised as the effectiveness of the brakes and have to drive straight to casualty after prizing your face back out of the steering wheel, and arguing with the man in the ninety thousand pound Mercedes that crashed into the back of you.
Gradually build up to an emergency stop. If you vehicle pulls to one side under braking, firstly check if your assistant that is sitting in the passenger seat next to you is a fat 300-pound bastard. If he or she is, tell them to get out and walk home. They could use the exercise anyway.
Now test your brakes again. If it still pulls to one side, you'll need to jack your car up again and re-check the front brake adjustments. This is assuming you have drums on the front of course. If your brakes are still not working correctly, the chances are there are parts of the braking system that need renewing. In the next article we will be replacing brake shoes and wheel cylinders.

Drive Safely! And don't put off checking your brakes!

Regards,
Simon (aka Nutty Professor)