

The Preventive Maintenance Series

Mike Dawson

Diagnosing Brakes That Pull to One Side

There are many reasons that brakes can pull to one side or the other. Use the following list as a guide to diagnosing the problem, but keep in mind that thinking that a certain item cannot be the issue since it is supposed to be new, may be misleading. It is always best to pretend you have never seen the car before and are starting fresh in addressing a problem.

Do the quick easy stuff first: loose wheel bearings can let the toe in change when you use the brakes; miss-matched tires or tire pressure can also affect braking.

Use a temperature gun to check side to side and front to rear. Drive the car enough to get the brakes equally hot and check at the same spot on each drum. You can lie on the ground and hit a similar spot on drums or backing plates. The hot side is doing more work, but it could be because it is dragging or because the other side is not working. In lieu of a temperature gun you can make stops on gravel or a dirty or sandy street while you or an assistant check which wheel(s) tend to lock up. A rear brake problem can make the car pull and appear to be in the front, so diagnose this area carefully. Once you know if it is front or rear and read through the following items you should be able to remedy the problem.

Initial Inspection: After you have determined if the problem is front or rear, pull both drums and do visual inspections of the shoes, looking for unequal wear patterns, fluids, different colors, unequal dust build up, broken springs etc. If nothing immediately shows up, move on to the following.

Sticking Wheel Cylinder Pistons: Early models through mid '64 had aluminum pistons. These were prone to corrosion and would lock up when stored for long periods. The late models use a much improved sintered iron piston but if a lot of moisture gets in the system they too will stick. Look for a gap where the top of the shoes meet the anchor pin, a piston may have pushed through corrosion going out but the springs cannot pull it back. With the shoes off you should be able to move the wheel cylinder pushrods in and out against the wheel cylinder spring with hand pressure. With new wheel cylinders available for \$25 each I would highly recommend replacing them in pairs if you find a leaking or sticking wheel cylinder.

Aging Flexible Brake Hoses: The interior of the hose is only 1/8" and it will either close completely or act like a one way valve if the crimped steel fittings rust and expand. Replace them in pairs and pay attention to where the new hoses move to when you turn the front wheels to the lock or raise the rear of the car off of the ground.

Broken, Relaxed or Miss-matched Brake Springs: Unless you are experienced in Corvair brakes it is hard to identify if they are mismatched, but look from side to side for anything different in return springs and check the hold down nail lengths. Broken springs

will be noticeable, but you will need to remove the return springs to check for relaxed coils that may leave a gap where the shoe meets the anchor pin. In the rear a gap at the top may indicate a frozen parking brake cable.

Fluid on the Shoes: Brake fluid or grease on drums & shoes can make them either slip or lock up depending on how much brake dust is available. Even fingerprints of fluid or grease can cause a problem so after a brake job be sure you have cleaned fingerprints off of shoes and drums. Over-packed wheel bearings with cheap grease or bad seals in the front or rear can let oil get out into the drums and on to the shoes. Use quality wheel bearing grease and new seals in the front and if you pack late rear wheel bearings with the fitting method you should pull the drums and check after a highway test drive. Early model rears also need good seals and quality grease (do not pack the area between the bearings completely full). Recheck after a test drive at highway speed.

Miss-matched Shoes: Corvair brake shoes have a front and rear shoe for each wheel that are not the same. The front shoe (primary) for late models is shorter and usually thinner than the rear shoe which does more braking. Quality shoes have different material in the primary and secondary shoes. The shoes must be installed in the correct order or the friction area for the rear shoe will be inadequate and pulling can occur. If both sets of shoes are installed wrong on both sides then pulling may not occur but braking will be reduced. Early model shoes were also designed with a secondary and primary shoe but re-built shoes and the new Chinese shoes may all be the same size and material. Not the best situation but installed correctly they should work OK.

Miss-matched Drums (inside diameter): Shoes and drums do not perfectly match in their diameters when new and require a break-in period during which the area of the shoe being used starts off at about 50% (or less) in the center of the shoe, and expands as break-in continues until the diameters are equal. If one drum has either worn or been turned significantly more than the other, the break-in period is unequal and pulling can occur the entire time.

Hot Spots or Rust in Drums: In our humidity it is not uncommon for drums to rust and require some cleaning or just drive time for self cleanup to occur. Heat spots will glaze and if enough surface area is affected, it can cause grabbing or pulling. Heat spots cannot be removed by turning and would need to be ground down first and then turned or they will be bumps in the drum surface.

Adjustment: As noted above, the contact area widens as shoes are broken in but the self adjusting feature may be unable to compensate as it only adjusts a tiny amount each time you back up and stop. Be sure your adjustment with new brakes is the same on each side or pulling can occur, and be prepared to do a second adjustment if the pedal is low after a break-in period. Manual adjusting brakes obviously require attention when the pedal is low and the adjustment must be the same from side to side.

Parking Brake Cables: This becomes an issue due to age and degraded boots that do not keep water out of the casings. A cable on one side can start freezing up inside the casing

and start dragging one set of shoes. The drum on that side may be hard to get off and the shoes will not be up against the anchor pin.

Bad Suspension Components: This could be a bad bushing that shifts under braking or a tie rod end that lets the toe change significantly. Badly worn ball joints can shift under braking. Fifty (plus) year old suspension parts need to be checked carefully and greased properly.

Front or Rear Wheel Alignment: Toe-in is adjustable on the front and rear of all Corvairs and can have an effect on braking as well as drifting as you drive. Unequal camber or castor can make the car drift and then pull when braking.

Other temporary or long term issues could be wet shoes from deep water or hard rain (light pressure driving will dry them) or air trapped in one wheel cylinder or line. Dust buildup can cause noises and pulling.

And finally, brake shoe material has changed significantly since the original Delco Moraine asbestos shoes were available. Most shoes now are very hard material (lifetime warranty) and require more pedal effort. I have used less expensive shoes and had them work fine on one brake job and the next time they took a very long time before they seated and stopped pulling first to one side and then the other. Some exhibit a strong smell like burning plastic when they are hot (I still fondly remember the smell of hot asbestos). Obviously the best approach to 50 year old brakes is to completely replace wheel cylinders, brake hoses, hardware, shoes and steel lines where necessary. If you do a complete job, do not try to seat the brakes like the old days, making several long hard stops. It is best to just drive normally, seating the shoes over a period of time. Otherwise, you may experience fading, pulling and the objectionable smell of burning plastic, which some say is Kevlar.