



Corvette Brakes

What You Should Know – but Might Not!

Before you begin your brake project, take a look at some of the options available for your Corvette. There are many product options to consider when tackling your disc brakes, including brake rotors, pads, brake hoses, and brake fluid.

This guide will help you determine what parts you will need to replace your brakes for lack of function or a needed upgrade to fit your driving style. And if you are still using your original drum brakes, we will take a quick look at what to inspect to make sure your drum brake setup is functioning like it was designed to and not suffering from wear.

BRAKE HARDWARE

Before you even begin considering what kind of brakes you want, be sure that all your brake hardware is still functioning properly. Check for broken, unattached, loose or worn springs. Check for damaged, broken, or unattached levers and pins.

BRAKE PADS

Semi Metallic Brake Pads have been used in the automotive industry for a long time. They are made with a mixture of metal fibers in the brake pad compound. The higher quality semi metallic pads contain finer particles of metallic fibers, while pads of lesser quality will have larger, coarser metal particles imbedded into the compound.

Pros:

- Work Great When Cold; Excellent For Short Trips & Cold Climates
- Available In Track-Ready Formulations
- Relatively Less expensive Than Comparable Ceramic Pads
- Typically Easier On Rotors Than Ceramic Pads

Cons:

- Louder Than Ceramic Pads
- Generate More Black Dust That Can Stick to Wheels
- Don't Last As Long As Ceramic Pads





Ceramic Brake Pad technology was originally introduced on production vehicles in the 1980s. Ceramic pads are created using a blend of super-strong ceramic and copper fiber imbedded into the pad compound.

Pros:

- Quieter Than Semi-Metallic Pads
- Create Less Dust, Keeping Your Wheels Cleaner
- Last Longer Than Semi-Metallic Pads

Cons:

- Not Recommended For Racing
- Generally More Expensive Than Comparable Metallic Pads
- Generally Cause More Wear To Brake Rotors Than Metallic Pads



ROTORS

OEM Rotors:

As opposed to performance rotors, the OEM style rotors have a smooth pad contact surface with no grooves or holes for heat dissipation. They do; however, have a vented center between both rotor sides as well as straight, parallel fins to improve the passage of air. This ensures the metal will expand more evenly, minimizing the chance of warping. For those who are going to use their Corvette for everyday driving rather than racing, or aggressive driving, a basic OEM style rotor is just the ticket.



Slotted Rotors:

Slotted rotors look like a traditional set of rotors with slots carved into the surface of the discs. The slots actually allow the discs to expel built-up brake dust and gases that are generated every time you tap your brakes. You can continue to use traditional or original style brake pads with slotted rotors or you can match a set of high performance pads to your new high performance rotors.



Drilled Rotors:

Unlike slotted rotors, drilled rotors do not have grooves. Instead, they have holes drilled through the surface of the rotors. These holes allow brake dust and gas to vent. Unlike the slotted rotors, the drilled rotors have holes that go through the rotor. This creates more air movement through the hole and dissipates heat even more effectively than the slots do in slotted rotors. The downside is that drilling holes weakens the strength of your rotors.



Drilled and Slotted Rotors:

Can't decide between slotted or drilled rotors? Go with a hybrid of the two. Drilled and slotted rotors will give you the maximum amount of heat dissipation, keeping your pad and rotor temperatures down. This will keep your brake pedal firm and give you maximum stopping capabilities even under extreme braking conditions. There are a couple negatives to these rotors. The drilled and slotted rotors are the weakest in strength, but this should not be an issue if you are looking for a high performance rotor or taking your car to the race track, as you should be replacing your rotors frequently anyway.





BRAKE HOSES

Rubber Hose vs. Stainless Steel:

Rubber brake hoses (lines) are less expensive than their stainless steel counterparts. Rubber brake line installations are much more common, because the average everyday vehicle owner won't notice the difference in braking response that comes from using rubber brake lines. Rubber brake lines are easier to inspect than the stainless steel brake hoses since you can visually see the rubber, where as the stainless steel covers the rubber.

Upgrading to stainless steel lines does have its advantages. The rubber brake hoses are susceptible to wear and damage, while the stainless steel hoses are protected by the stainless steel braid. Stainless steel brake lines serve in many high performance braking systems because Teflon resists expansion as mentioned above, and therefore creates more direct fluid pressure.

A standard rubber brake line, when faced with more than 1500 PSI of pressure at the point of brake application, will flex and absorb some of the pressure from the brake fluid compression. In a stainless steel brake line, brake fluid will only flow to the path of least resistance, which usually ends up being the end of the brake line or caliper in a sealed system. This will give you a firm brake pedal feel. There is also a cosmetic advantage to stainless steel lines. If you have a show car, a set of steel lines may be the choice for you, regardless of the technical benefits.



Brake Fluid:

Most automotive professionals agree that glycol-based brake fluid, (DOT 3, DOT 4, DOT 5.1) should be flushed, or changed, every 1–2 years under non-racing conditions. Periodic fluid changes will ensure reliability and safety. Once added to the braking system moisture will diffuse into the fluid through brake hoses and rubber seals and, eventually, the fluid will have to be replaced when the water content becomes too high. Most brake fluids used today are glycol-ether based, but mineral oil and silicone (DOT 5) based fluids are also available.

Silicone fluid should be used only to fill brake systems that have not been previously filled with glycol based fluid. Silicone fluid does not allow moisture to enter the system, but also does not disperse any that is already there. A system filled from dry with silicone fluid does not require the fluid to be changed at intervals, but only when the system has been disturbed for a component repair or renewal. Silicone fluid is used extensively in cold climates.

Quality standards refer to a brake fluid's "dry" and "wet" boiling points. Wet boiling point, refers to the fluid's boiling point after absorbing a certain amount of moisture. This is several (single digit) percent, varying from formulation to formulation. Glycol-ether (DOT 3, 4, and 5.1) brake fluids are hygroscopic or water absorbing, which means they absorb moisture from the atmosphere under normal humidity levels. Non-hygroscopic fluid, such as silicone or DOT 5 based formulations, are hydrophobic and can maintain an acceptable boiling point over the fluid's service life.



Although it is recommended to use a brake fluid that has a DOT rating recommended for your car, here are the quality standards that determine the DOT Rating:

DOT Rating	Dry Boiling Point	Wet Boiling Point	Viscosity Limit	Primary Constituent
DOT 2	190 °C (374 °F)	140 °C (284 °F)	?	Castor oil/alcohol
DOT 3	205 °C (401 °F)	140 °C (284 °F)	1500 mm ² /s	Glycol Ether
DOT 4	230 °C (446 °F)	155 °C (311 °F)	1800 mm ² /s	Glycol Ether/Borate Ester
DOT 5	260 °C (500 °F)	180 °C (356 °F)	900 mm ² /s	Silicone
DOT 5.1	260 °C (500 °F)	180 °C (356 °F)	900 mm ² /s	Glycol Ether/Borate Ester

DRUM BRAKES

A drum brake is a brake that uses friction caused by a set of shoes or pads that press against a rotating drum-shaped part called a brake drum. Early brake shoes contained asbestos. When working on brake systems of older cars, care must be taken not to inhale any dust present in the brake assembly.

Brake drums were used on the rear axle of the 1953-1962

Corvette. Although there are certainly aftermarket brake kits that allow you to upgrade your stock drum brakes to a more effective disc brake kit, you may choose to maintain your original drum brakes. If you do retain your drum brakes, look for these signs to indicate it's time for a replacement.

Shoes: The shoe lining should be evenly worn with no bald spots or thin places. They should not be worn down far enough to be close to any metal or rivets. The lining should be firmly bonded in place to the brake shoes.

Wheel Cylinder: Check to make sure they are not leaking brake fluid. Check the rubber seals, to make sure they are not missing, cracked or split. They should be good, pliable rubber.

Brake Adjusters: New brakes need to be adjusted several times as they wear in. While the self-adjusters normally handle this when the car is driven in reverse and when the brakes are applied, it is a good idea to perform the initial adjustment manually: this is considered standard procedure by most professional mechanics. To do this, use a brake adjusting tool or screwdriver. With the parking brake off, turn the adjusting wheel on the inside of the backing plate until the brake tightens up all the way. Then, back off the adjustment until the wheel turns freely. Be sure to back off both brakes the same amount to equalize them.

