

# Better Braking On A Budget

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When the Pantera was released, its specifications definitely represented the state of the art of automotive engineering at the time. The suspension, designed by the noted chassis guru Dallara, featured independent double wishbones and coil-overs, and disc brakes at all four corners. Disc



*Left to right, stock solid Pantera rotor, rare Euro GTS vented rotor, and new '65-'67 Ford Mustang rotor. The dimensional differences are thankfully trivial*

brakes had only been around for about 15 years, and they represented a quantum leap over the drum brakes which had been ubiquitous on cars in one form or another for the previous 70 years.

The notion of providing venting to cool the brakes had only been around for five or six years at this point, and while American cars adopted it almost immediately, generally European cars of the day still made do with solid rotors. Perhaps because there was a cost delta, vented rotors were not specified for the Pantera (except as an extra-cost option on European models only).

While the Pantera's solid discs are absolutely acceptable for use on the street, if a Pantera is driven especially aggressively (as on a race-track), the brakes can become a limiting factor. The cast-iron rotors become heat-soaked and are incapable of shedding the not-inconsiderable heat generated by the brakes, and when the brakes overheat, performance falls off.

While the Pantera vendors have numerous excellent upgraded braking system packages available, they are quite expensive, and are perhaps overkill for a substantial percentage of owners. Fitting vented rotors in place of the stock solid discs is a budget upgrade that can deliver real, tangible benefits.

Euro-spec vented front rotors are available from Panteras by Wilkinson, at a heart-stopping price of \$561.72 each. Larry Stock sells Brembo rotors originally intended for a Porsche 911, but they have the wrong bolt pattern and wrong offset (by a bunch!) and require extensive, and expensive machining and the fitment of adapters in order to mount them on the Pantera, which makes them a \$500 proposition as well.

Fortunately, Detroit has a more economical solution.

When the Ford Mustang was introduced in 1964, part of its appeal lay in the almost unlimited options a new buyer could choose. Entry-level models had a weedy six-cylinder engine and tiny drum brakes, while higher-specification models had vented front disc brakes and larger drums in the rear.

By happy coincidence, the front discs of a 1965-67 Mustang are a direct swap for the solid discs of a Pantera. However, as the manufacturing industry has changed, procurement of stock-

style discs has proven to be a great challenge. While the Mustang originally used discs which were separate from the hubs (as on the Pantera), as manufacturing of replacement discs has moved to offshore sources, the discs are now cast integral with the hub. While it's possible to simply remove the Pantera disc and hub combination and replace them with a one-piece unit, the Mustang studs pressed into the hub can't be replaced with the Pantera units due to their different diameter, so US-spec lug nuts must be fitted.

Lori was less-than-impressed



*A BFH and a pointed punch are used to drive the studs out of the stock rotor/hub assembly, although a press would be preferable*

with the brakes on her '71 Pantera when she drove it on the track a couple of times, but didn't want to spend thousands of dollars to replace the whole braking system.

I sought to find an original-style pair of Mustang rotors, but after much searching, eventually I determined that they simply weren't available anywhere. By happenstance, rotor manufacturer Citrix had the necessary tooling and was willing to produce original-specification discs for me, but I had to order them in quantity. I eventually ordered 100 discs, some of them with extra-cost laser slotting, which helps prevent debris and gasses from building up between the pads and rotors.

Happily, installation of the Mustang rotors on the Pantera was simple and painless. One just has to unbolt the caliper, remove the stock rotor-hub combination, remove the studs, separate the disc from the hub, join the new disc on the hub, and install the studs, then it's all ready to bolt back onto the car. It makes sense to fit new wheel bearings at the same time, just because you're in the neighborhood anyway.

The standard measurements of

the Mustang rotors differ from the metric measurements of the stock and vented Pantera rotors in trivial ways. The Mustang rotors are ever so slightly larger in diameter, measuring 286mm versus the stock discs 282mm. This is only a 2mm difference in radius, and fortunately there is plenty of room so the calipers fit over the discs with no modifications necessary.

Evidently when the Pantera was first designed, somebody got the math wrong, and the calipers didn't fit properly, so a pair of 1mm shims had to be fitted between the calipers and the mounting ears on the steering arm. By happy coincidence, the stock rotor offset is 60.25mm while the Mustang offset is 58.45mm, so removing the added shims allows the caliper to be centered perfectly on the disc.

(Stock rear rotors have the same 60.25mm offset but are larger



*The area where the inside of the rotor seats against the hub needs to be thoroughly cleaned to ensure the discs rrrn perfectly true, or else the brake pedal will pulse*

in diameter, measuring 295mm. The Mustang rotors can be used in the rear as well, with the caveat that the outer edge of the brake pad may slightly hang over the outside of the rotor).

The fitment of these vented Mustang rotors should provide an extra level of insurance when a mildly modified Pantera is driven aggressively on mountain roads, or at track days. While I have no more of these vented rotors available, if there was enough interest I could perhaps contract for a second production run. If you're interested, let me know!



*The end result—beautiful vented rotors which fit absolutely perfectly, deliver a noticeable improvement in consistant stopping power under aggressive use, at a fraction of the cost of the alternatives*