STOPPING A ROCKET

Installing Wilwood Engineering Brakes on a 2007 GT500 Mustang

The Wilwood part number 140-10830 disc brake kit features the W6A calipers, caliper brackets, drilled and slotted 14-inch diameter rotors with aluminum hats, BP-10 Smart Pads and all of the hardware required to finigh the installation.

Ford has produced some fast cars over the years, but the latest offerings are far superior to the muscle machines of the ‘60s in regard to handling and horsepower. Ford wanted to come out with a really special Mustang tire burner in 2007, so the company released a GT500 Carroll Shelby 40th Anniversary Edition that would accelerate faster and handle better than the original GT500 Mustangs that were released in 1967. When you combine 500+ horsepower with the retro styling of the new Mustang you have a package that can’t be beat; except in the slowing down department. That is one improvement that can be made to the finest Mustang ever built, so the owner of this GT500 decided to upgrade the car with high performance brakes from Wilwood Engineering. Improved deceleration is the most important feature of the Wilwood Engineering W4A/W6A matched body aluminum calipers, but another nice feature is the improved appearance of the Mustang. The open window wheel design allows the viewer to see the brake assembly behind the wheel, and there was a large size discrepancy between the front and rear calipers used by the factory, and that appearance factor wasn’t pleasing to the owner. The Wilwood Engineering brakes feature a design where the front and rear calipers are matching in size and finish, so the brakes not only stop the car faster, they look great when they are doing it.

The Wilwood part number 140-10950 internal brake rear brake kit features W4AR calipers, caliper brackets, the internal brake assembly, 14-inch diameter drilled and slotted rotors, aluminum hats, BP-10 Smart Pads and all of the hardware required to finish the installation

The new Wilwood Engineering brake calipers generate superior clamping force using four and six differential pistons pushing against the pads that are outfitted with race proven friction material. The Wilwood front and rear brake calipers incorporate racecar technology, and offer more pad area on the rotors for improved clamping force, and this is accomplished with a brake system that is also lighter in weight for improved handling. The calipers also look terrific in the buyer’s choice of red or black finish. Other colors are available on a special request.

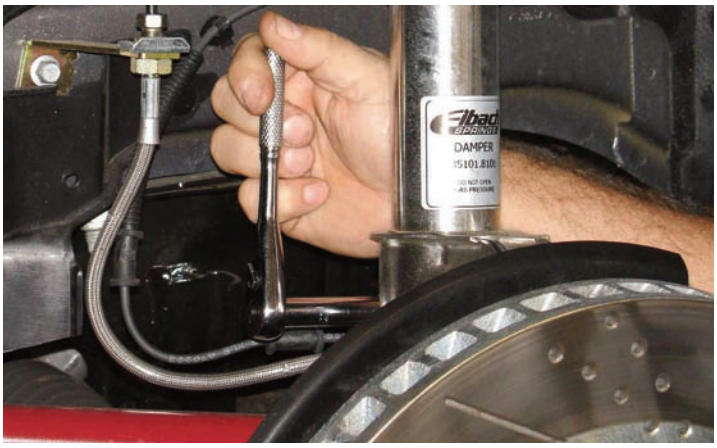
The Wilwood Engineering brake upgrade is easy

to accomplish if you have excellent mechanical ability and a good assortment of tools, but for most enthusiasts you might want to consider a qualified mechanic with brake system experience. When you are ready to get started you should check to make sure that you have the correct kits to march your application. The parts you will need are as follows: The front brake kit is part number 140-10830-D. The front line kit is part number 220-9111. The rear brake kit is part number 140-10950-D. The rear line kit is 220-9248. You will also need the parking brake cable kit part number 330-11221. Then verify the factory hub stud pattern to make sure it matches your wheel's bolt pattern. It is also important to verify your wheel clearance using Figure 2 in the detailed assembly instructions that comes included in the kit. Finally, you should inspect the kit to make sure the contents matches the parts list, so that you are sure that you have the components and hardware required to finish the installation.

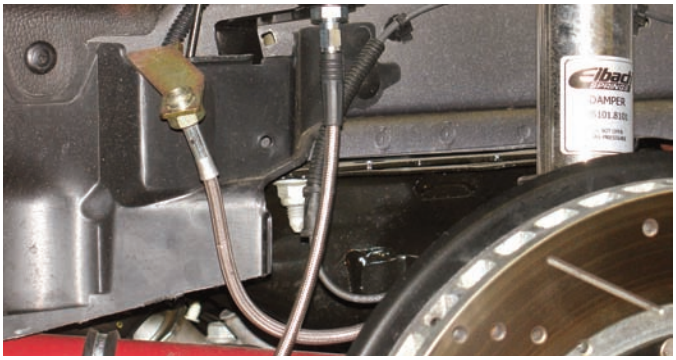
If you are going to install the brakes yourself, make sure you have the following tools:
A floor jack and jack stands, a 7/16-in open/closed end wrench, a 3/8-inch drive ratchet, a 3/8-inch line wrench, a 3/8-inch open/closed end wrench, ft-lbs and in-lbs torque wenches, a 5/16-inch open/closed end wrench, a rubber mallet, a flat screwdriver, an assortment of SAE sockets, a small wire brush, a three-inch angle sander an OEM lug wrench, Loctite 271 (red) thread locker, and a coat hanger bent into a C or S hook. Depending upon your mechanical ability, this installation should take a day to complete, but for some it may take a little longer. We recommend doing the installation on a weekend when you don't have to take the car to work and don't have to rush the job.

You can start by jacking the car up using a floor jack and jack stands, but if you have access to a lift it is even better. If the car is jacked up chock the tire that is still on the ground to make sure the car doesn't move. Another important thing to remember is do not get brake fluid on the car's painted surface because it is an excellent paint stripper. Follow along and we will show you how it is done step-by-step and you can decide if you have the ability to do the installation by yourself of if you should have a mechanic do it for you.

Using the factory lug wrench or an appropriately sized socket and breaker bar, the lug nuts were removed. After the nuts were disconnected, the wheels and tires were removed from the brake assembly.



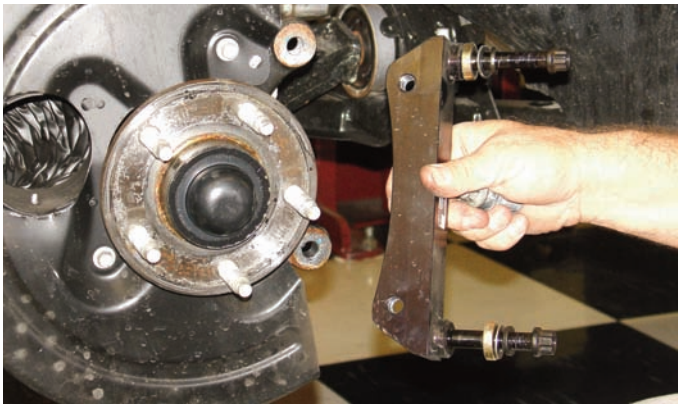
The U-clip from the OEM brake line bracket that is mounted on the inner fender was removed. The brake line bracket on the rear of the upright was removed and it was saved for reassembly.



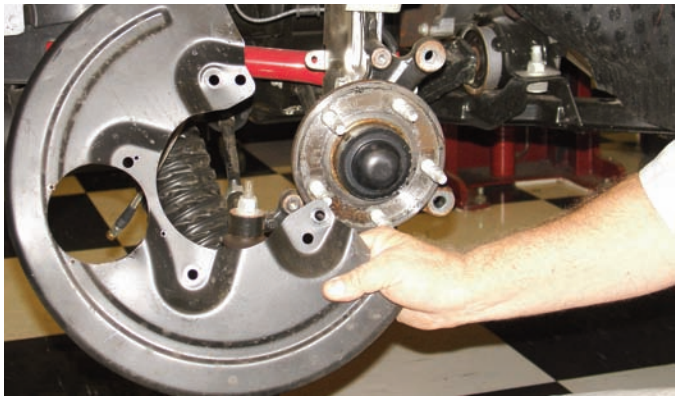
Using a line wrench, the OEM flex line was disconnected from the hard line. After that was finished, the stainless steel Wilwood Flexline (part# 220-9111) was connected to the OEM hard line. The brake line bracket supplied with the Flexline was bolted into the same hole used by the OEM bracket. After the bracket was secure, the U-clip that is supplied with the Flexline kit was installed.

Using a socket wrench and the appropriate size socket, the two nuts and washers that are holding the caliper to the mounting bracket were disconnected. When that was complete the caliper was removed from the mount.

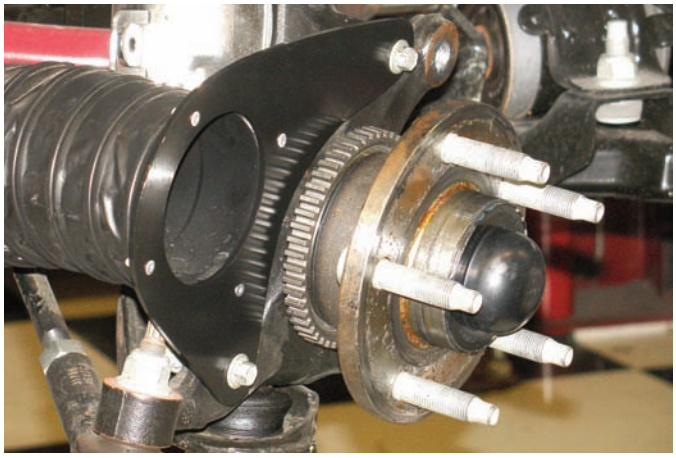
The rotor was persuaded to disengage by striking it with a rubber mallet. The rotor was removed to expose the hub and upright.



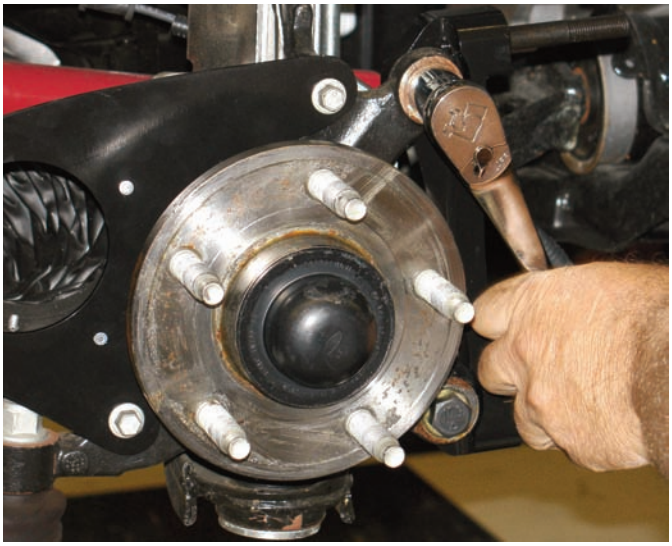
Using the socket wrench, the two bolts that are holding the caliper mounting bracket to the OEM upright mounting ears were disconnected and then the bracket was removed. The bolts should be saved for reassembly.



The brake cooling hose/duct from the backing plate was disconnected and then the three bolts holding the backing plate to the suspension upright were removed. The backing plate was also removed because it will no longer be used, but the bolts and washers were retained for reassembly. **The GT 500 40th Anniversary Edition is the only Mustang that uses the cooling hose and duct similar to some of the original Shelby Mustangs.**



A bracket was fabricated to shape for the cooling hose/duct from a piece of sheet metal making sure there were no sharp edges. The bracket was painted to eliminate any chance of rusting. Using the original bolts, the fabricated bracket along with the cooling hose and ducting was reinstalled.

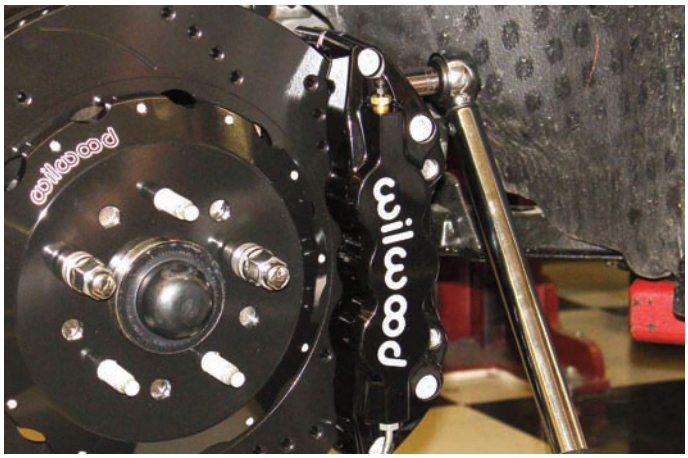


It is important to clean any dirt from the “hat locator” and lugs on the hub. After that was done, the radial caliper mounting bracket was installed using the original bolts and washers. The brackets should be installed on the inboard side of the spindle by sliding the washers over the bolts and then inserting them through the outboard side of the spindle mounting ears. Two shims were placed on the bolts and then they were hand-tightened into the radial caliper mounting bracket. Before the bolts are installed, the threads should be clean and it is important that the bracket tightens squarely against the inboard side of the caliper mounting boss on the spindle.

The rotor was bolted to the hat through the backside of the rotor using the bolts and washers supplied in the kit. Loctite 271 was applied to the bolts and they were tightened to 85 in-lbs in an alternating pattern. After the bolts were in place, they were safety wired using standard 0.032-inch diameter stainless steel safety wire. Reference can be made to Wilwood’s data sheet DS-386 that is available at (www.wilwood,com/pdf/ds385.pdf) for complete safety wire installations instructions. This same procedure was done to the rear rotors and hat assembly so they were ready when the rear brakes were being installed.

The rotor and hat assembly was installed over the wheel studs making sure that it seats squarely against the axle flange face. At this point two lug nuts were installed to hold the rotor/hat assembly firmly against the hub to finish the assembly and clearance checking procedures.

The protective decal was removed from the rear of the caliper. Teflon tape was applied to the caliper fitting and then it was installed on the rear of the caliper facing upward.

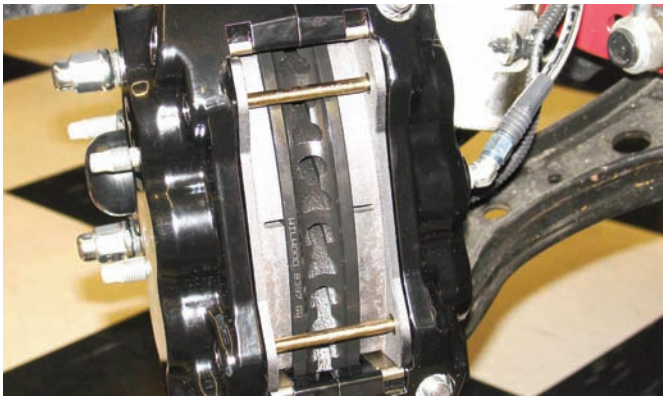


Two 0.033-inch washers were installed on the mounting studs of the mounting bracket. The caliper was placed on the studs and then the washers and self-locking nuts were tightened. The caliper and rotor centering was checked and to get the centering perfect, shims can be used to move it inboard or outboard just a little.

The two mounting pad retaining clips and pins were removed from the caliper. The brake pads were installed into the calipers making sure they went in easily without interference. After they were in place, the retaining pins and clips were reinstalled. It was important to note that the diameter radius of the brake pads is aligned with the outside diameter radius of the rotor face. This was another chance to make sure the caliper was centered over the rotor.

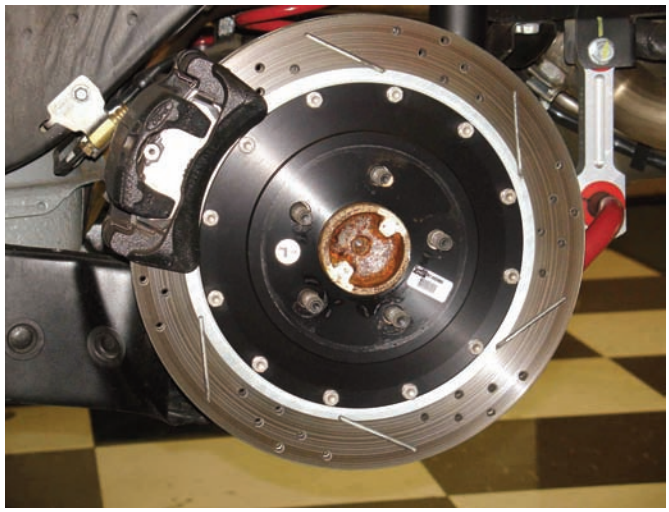
The two lug nuts holding the hat assembly on were removed, and then the wheel was installed and all of the lug nuts were tightened. It is important that the wheel rotates freely without interference.

After all of the clearances were checked and found satisfactory, the wheel, caliper, rotor/hat assembly and caliper mounting bracket were removed. Now the parts can be reinstalled and tightened to the proper specifications. The caliper mounting bracket was reinstalled to the mounting bosses using the bolts that were coated with Loctite 271 compound and then they were tightened to 65 ft-lbs. The rotor/hat assembly was reinstalled and it was held in place with two lug nuts. The caliper mounting studs were coated with lightweight oil and then the caliper washers and caliper nuts were reinstalled and were tightened to 30-35 ft-lbs.



The stainless steel Wilwood Flexline was hand tightened to the caliper. The Flexline fitment was checked to ensure that there was no interference between the line and suspension parts. When the line was in the proper location, both ends were tightened with a line wrench. The flex line bracket was reattached to the original location on the rear of the upright and the original bolts were tightened to hold it in place.

The two lug nuts were removed from the rotor/hat assembly and then the tire and wheel were bolted back on. Now the front of the Mustang is ready for action, so we moved to the rear of the car to get it ready to go.

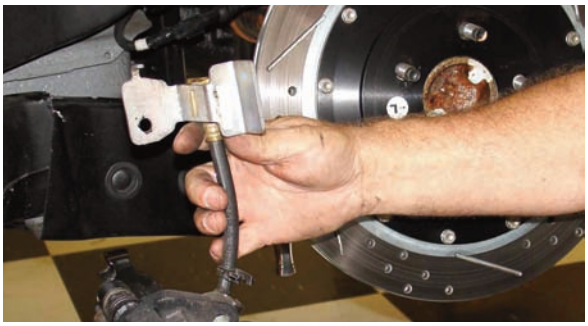


Using the OEM lug wrench or an appropriate size socket and a breaker bar, the lug nuts were disconnected and the rear wheels and tires were removed.

The parking brake cables were disconnected from the OEM calipers.

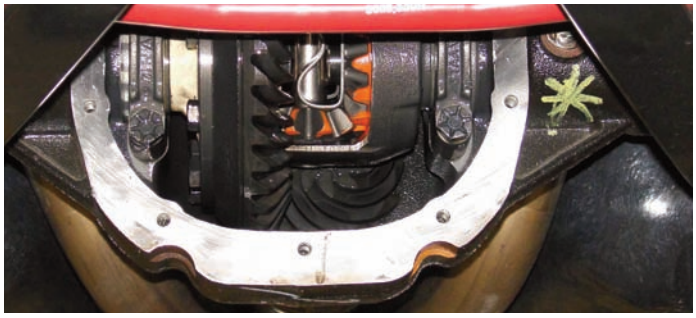
The U-clip was removed from the OEM brake line bracket that is mounted on the inner fender. The bolt and washer holding the bracket on were removed and were retained for reassembly.

A line wrench was used to disconnect the OEM flex line from the OEM hard line, then the Wilwood stainless steel Flexline (part # 220-9248) was connected to the hard line. The brake line bracket supplied with the Flexline was secured to the same hole used by the OEM bracket using the original bolt and washer. Using a new U-clip, the Flexline was connected to the bracket.



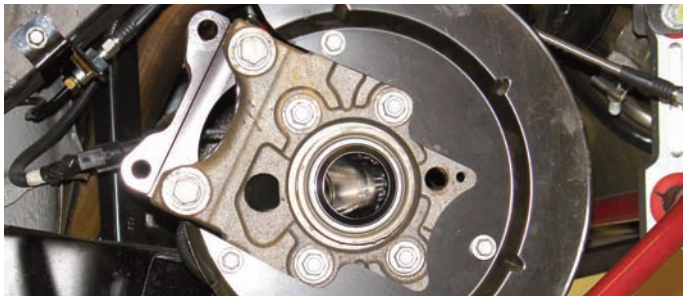
The two nuts and washers holding the caliper to the caliper mounting bracket were disconnected and then the caliper was removed. The ABS sensor was removed from the inboard side of the backing plate by disconnecting the bolt.

The rotor was tapped with a rubber mallet to release the unit and then it was removed.Here you see the original caliper mounting bracket.



In order to access the axle C-clips, the 10 bolts securing the rear end cover were removed. Make sure you have a drain pan because as soon as you break the cover loose the differential lube will drain out. Make sure you have a new gasket, silicone sealer and lubrication for a limited slip differential so you can reinstall the cover.

The axle was pressed inward, and then the C-clip was removed from the axle shaft with a drift. After the clip was disconnected, the axle shaft can be removed from the differential. This procedure has to be done on both sides of the differential after the brakes are installed.

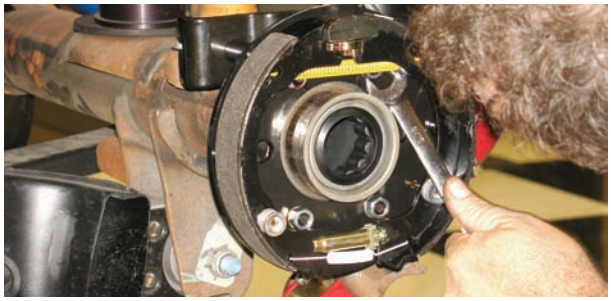


The four bolts and washers that secure the bearing retainer to the flange were removed. The two bolts holding the caliper mounting bracket to the OEM mounting ears were also disconnected. The two nuts and the U-bolt from around the axle were disconnected and then the bracket was removed. The bolts were retained for reinstallation.

The three OEM bolts and washers were disconnected from the backing plate and then the plate was removed. The plate was discarded because it will not be used.

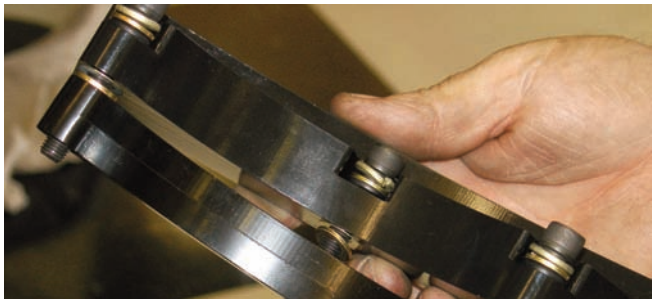
The bolts were removed from the sway bar to gain access to the lower shock absorber bolt. The nut and bolt were removed, and then the bolt was rotated so that the bolt faces inboard. After that is complete the bolts can be tightened. The lower shock absorber bolt may require shortening to fit.

The axle-housing flange requires modification to install the ABS sensor. A small relief similar to the OEM relief was made to the front of the axle differential flange using a three-inch angle sander. The modification is necessary to reinstall the OEM ABS sensor into the new backing plate assembly.



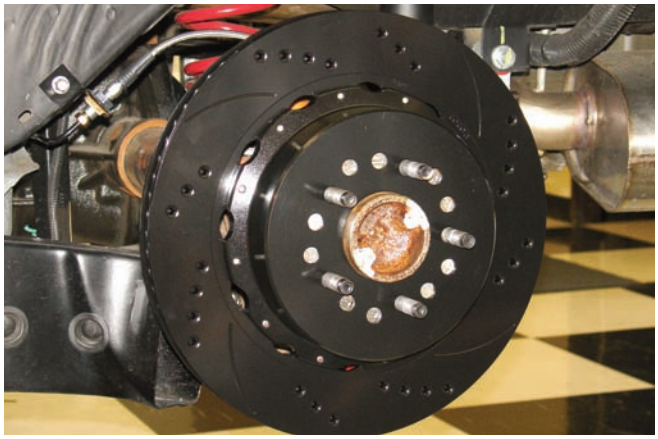
The four OEM bolts and washers were installed in the inboard side of the axle housing flange and then the parking brake and bracket assembly was installed making sure the assembly tightens squarely against the axle flange. The assembly was secured to the axle flange with the OEM bolts and washers. They were coated with Loctite 271 and were tightened to 180 in-lbs.

The ABS sensor was installed into the front of the backing plate and was secured with the OEM bolt and washer.

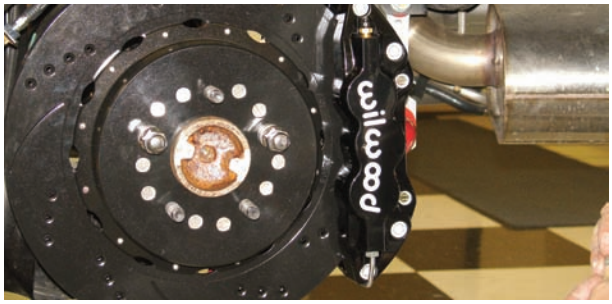


The radial caliper mounting bracket was mounted on the inboard side of the backing plate assembly using the kit-supplied hardware. It should be installed with the bolt through the lock washer, flat washer, bracket, shim washers, and through the spacer.

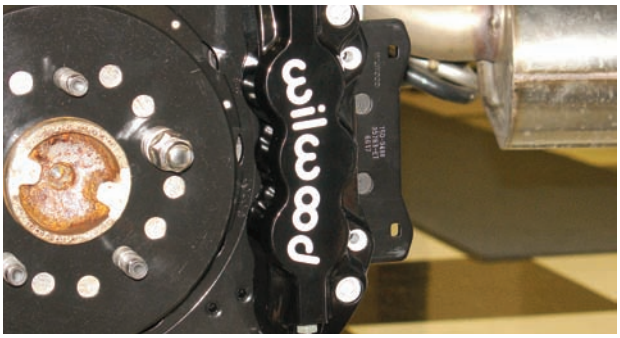
The axles were reinstalled into the differential housing reversing the removal process. After the C-clips were in place, the differential cover was reinstalled and it was filled with differential lube.



The hat assembly, which was assembled earlier, was placed onto the studs and it was secured with two lug nuts. The internal parking brake shoes were adjusted by removing the dust cover to access the star wheel. It was turned out while the rotor was spinning until a slight drag was achieved.

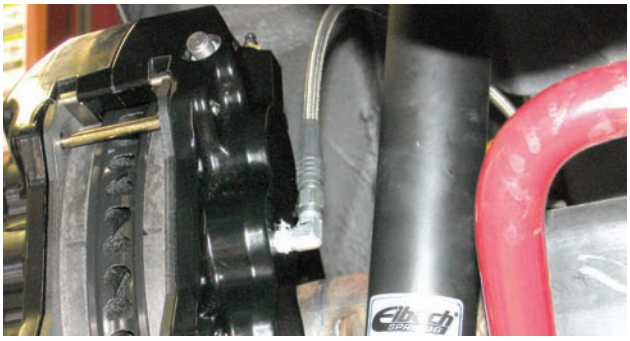


The threads should be wrapped with Teflon tape and it should be facing upward. Two 0.035 shims were placed on each mounting stud of the caliper mounting bracket and then the caliper was installed on the studs. The caliper was secured with washers followed by self-locking nuts. The caliper should be centered over the rotor so some positive or negative shimming may be required.



The two pad retaining clips and pins were removed from the caliper and then the pads were placed into the calipers making sure they installed easily and without interference. When they were securely in place the pins and clips were reinstalled. The outside radius of the brake pad should be aligned with the outside diameter radius of the rotor face.

The wheel and tire were installed and then wheel was spun to make sure there was clearance. When that was satisfactory, the wheel, caliper, rotor/hat assembly and caliper mounting bracket were removed for the final installation and tightening. The caliper mounting bracket was secured to the bracket assembly using bolts coated with Loctite 271 and then they were tightened to 180 in-lbs. The rotor/hat assembly was reinstalled and then it was secured with two lug nuts. The caliper washers and nuts were reinstalled and were tightened to 30-35 ft-lbs.



The Wilwood braided stainless steel Flexlines were hand tightened to the calipers. The Flexline should be mounted with body and suspension clearance, and when it is satisfactory, the fittings should be tightened with a line wrench.

After both of the rear brakes were installed, it was time to install the parking brake cable. All of the OEM cable retainers were removed from the undercarriage and retained for reassembly. The new cables were installed and connected to the parking brake at the front and the brakes at the rear. The OEM retainers can be used to secure the new parking brake lines.

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