

# LITTLE CAR - BIG BRAKES

Stopping a quicker than you would expect Scion xA



This Scion is going to be equipped with a Wilwood part number 140-8335 disc brake installation kit. The kit features large Forged Superlite 4 calipers and 12.88-inch diameter slotted and drilled rotors. The kit also features aluminum hat adapters, caliper brackets, BP-10 Smart Pads, and all of the hardware required to complete the installation.



Toyota dealerships started appearing in the late '60s after the company did marketing surveys to determine if there was a market for Japanese cars in the United States. The first Toyotas released in the U.S. were small and unusual looking by American standards, but like the VW, they were economical and reasonably priced. The Toyotas weren't for the performance minded muscle car buyers of the time, but they did appeal to the average person who simply needed economical transportation for going to work and back. Using a marketing strategy of dependability, Toyota cars were attracting many female buyers.

One thing you can say about Toyota is the company does its homework and it didn't take long for the cars to improve in styling and performance. While the American car manufacturers were fumbling around during the '70s trying to build small cars the government was mandating, Toyota was already building small fuel thrifty cars. When the American buyer decided to buy an economical car, the Toyotas were generally better in quality and detail than the American counter parts. Before long there were a large number of people who were loyal to the Japanese brand name. Toyota was building a decent looking, reasonably comfortable, and extremely dependable product and that was what many buyers were looking for.

Toyota as a company had plenty of flexibility, so when the American market started shifting to larger trucks and sport utility vehicles (SUV), Toyota brought out several nice ones. Known for their little trucks, Toyota saw that many American truck buy-

ers liked the new large Dodge, Chevy and Ford trucks so they decided to come out with a big V8 powered truck. That truck engine had more than one use because Toyota decided to compete in the all-American NASCAR racing series. Toyota also built several factories in the US, the latest of which was just outside of San Antonio, Texas, so many buyers didn't look at the Toyota brand as a foreign car. The baby boomers were hooked on the Toyotas and that was a good thing for the company until recently. Toyota really believes in consumer surveys so they did one to find the average age of the Toyota buyer and the median age was 48-years-old. Toyota wasn't capturing the imagination of the youth market.

Many of the young buyers wouldn't buy a Toyota because they related the brand to mom and dad's conservative cruiser. They didn't want anything to do with an old person's car so they were looking for sporty drivers. When Toyota entered the car market they were inexpensive drivers and now they are as expensive, and in many cases, more expensive than American cars. In simple terms young buyers couldn't afford them even if they wanted to.

After trying to capture the youth market with one marketing attempt and failing, the Toyota management went back to their surveys to find out what the problem was. It turned out the name Toyota was the problem. The young buyers related to the name as an old person's car. Toyota started Project Exodus and the team who headed it up decided to release youth oriented cars under a new name badge called Scion. The name meant descendent or off-

spring and that is what the new company was to Toyota.

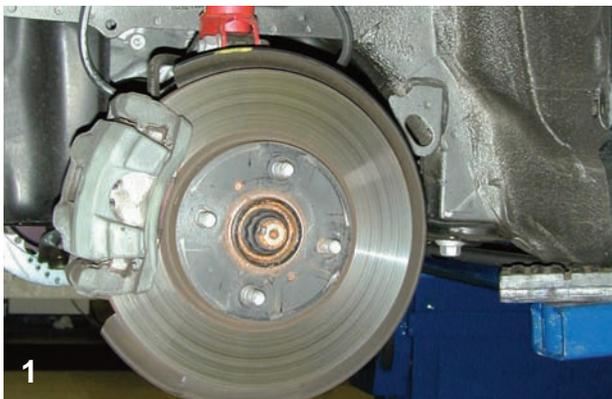
The new car was going to be offered in one trim group and was going to have a pure price, which meant there was only one price listed. There were also 38 accessories offered by the dealerships so the cars could be customized at the point of purchase. The base price for the Scion was also reasonable so young buyers could afford one. The price of a stick shift Scion was \$13,880 and an automatic transmission equipped Scion's selling price was \$14,680. The cars were sold through guerrilla marketing using posters, ads in movie theaters, and through other non-traditional methods to get young buyers to look the car up on the Internet.

The Scion was first sold in California in 2003 and there were two models, the xA hatchback and the xB wagon version. The xB was a box on wheels while the xA was a more aerodynamic appearing car. Toyota's marketing strategy worked because both of the Scions appealed to younger buyers, the xB box for some who wanted a really unusual looking vehicle and the xA for young buyers who preferred a more traditional looking car. Both of the Scions shared a small 1.5-liter engine rated at 105 horsepower; however, many companies started building performance products for the new car and included was a supercharger that could significantly increase engine horsepower. The xA Scion in this story was treated to a variety of upgrades to improve power and handling and among those upgrades the buyer wanted superior brakes. He was

well aware of the Wilwood brand name so he browsed the Website and found the perfect brake upgrade for his vehicle. He contacted his local Wilwood dealer and ordered a 140-8335 disc brake kit for his car. The kit features large Forged Superlite 4 calipers and 12.88-inch drilled and slotted rotors. He also ordered Wilwood part number 220-8336 braided steel brake lines to finish off the installation.

This brake installation isn't difficult to do, but some special tools may be required. Wilwood Engineering recommends person's experienced in the installation and proper operation of disc brake systems should only perform the installation of this kit. A hobby builder can install this kit if he has good mechanical ability, car building experience, and a good assortment of tools. In order to complete this installation you need a floor jack and jack stands, an assortment of metric wrenches and sockets, line wrenches, a socket wrench, an impact gun, a small disc or barrel grinder, a foot-pound and an inch-pound torque wrench.

Before the installation begins it would be a good idea to spread all of the parts out so you can make sure that all of the parts are included in the kit. Check the parts with the parts list on the instruction sheet to make sure everything is there. It would also be a good idea to have Teflon tape, Loctite 271, and Wilwood Hi-Temp 570 Racing Brake Fluid or Wilwood EXP 600 Plus Super Hi-Temp Racing Brake Fluid on hand. We will show you the entire installation so you can decide whether you can do the work yourself or if it would be better to have a professional do it for you.



1 The car was elevated on a floor jack and it is resting on jack stands. Using an impact gun, the lug nuts were disconnected and the wheels and tires were removed from the car. Here is the original disc brake system featuring a single-piston floating caliper.



2 The two bolts that secure the caliper to the mounting ears were disconnected and then the caliper was removed from the assembly. The caliper was hung on a hook until the lines are changed over.



After the rotor was removed from the assembly, you can easily see the two mounting ears that will be used to connect the Wilwood caliper mount.



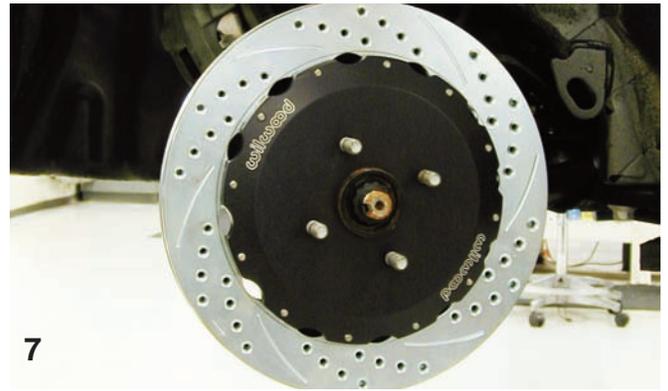
The small bolts securing the dust shield were removed and then the dust shield was cut with metal shears to remove it from the hub assembly.



After the cuts were made, the dust shield could be removed from the hub assembly.



The lower ball joint on this particular car was very close to the rotor so it was necessary to give the rotor some additional clearance. The lower ball joint connection was trimmed just a little with a coarse grit barrel sander.



The rotor was bolted to the hub adapter using the bolts in the kit. The bolts were coated with Loctite 271 and then they were tightened in an alternating sequence to 85 in-lbs. After the grinding was done, the rotor was connected to the hub assembly to make sure it would clear the lower ball joint without a problem.



The rotor was removed so that the Caliper bracket could be connected to the original mounting ears. The holes in the ears are larger than necessary, so here sleeves were installed to get the holes down to the bolt size.



The caliper adapter was bolted to the ears using the bolts and washers in the kit.



After the caliper mounting bolts were secured, the bolts were coated with Loctite 271 and then they were tightened to 75 ft-lbs.



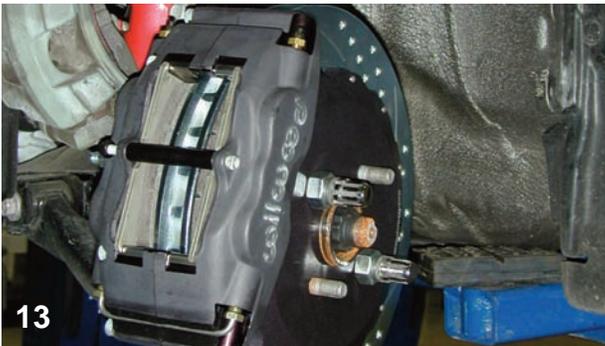
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The rotor was placed back on the hub assembly and it was secured with two lug nuts so that the rotor to caliper centering can be checked.



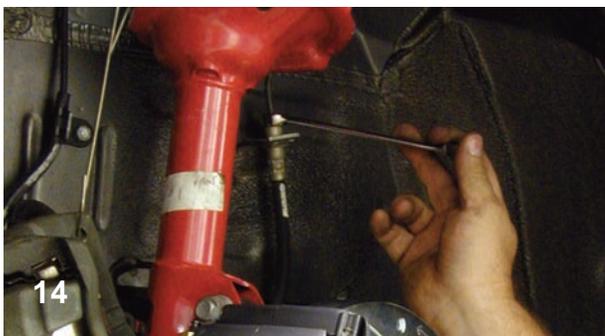
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The caliper was attached to the caliper bracket using the bolts, washers and spacers included in the kit. This caliper requires a 0.016-inch thick washer and a 0.285-inch spacer between the caliper and the mounting ears. A 0.063-inch thick washer is also used under the bolt head.



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After the caliper is centered and the brake pads are installed, the caliper bolts were coated with Loctite 271 and they were tightened to 75 ft-lbs. Here the bridge bolt was also installed.



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Using a line wrench, the original rubber line was disconnected from the steel hard line.



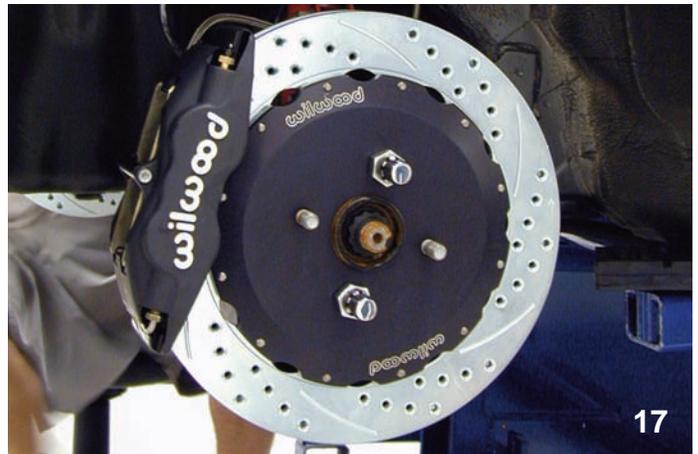
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The built-in bracket in the steel line was disconnected so that the original caliper could be removed from the car.



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Before the original caliper could be removed, this spring clip was disconnected as seen. After the connection is loose the Wilwood adapter and 220-8336 braided steel lines were installed and secured.



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Here is the Wilwood brake installation finished and ready for bleeding and pad bedding. This caliper is much more powerful than the original and the rotor is larger, so this Scion will stop quickly when the brakes are applied.



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This brake system will definitely stop this Scion quickly and it will also add to the car's macho appearance because you can easily see the attractive appearing brakes behind the large diameter wheels and low profile tires.

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