

MIATA BRAKE UPGRADE

Installing Wilwood brakes on a track-driven Mazda Miata



The Miata's brake system was improved with a part number 140-11704 Brake Installation Kit. The kit features forged billet Dynalite four-piston calipers in a black finish. The calipers work together with the 11-inch vented rotors with aluminum hats. The kit includes the caliper brackets, BP-10 brake pads and all of the hardware required to finish the installation.

Mazda Brake Kit P/N 140-11704

Most of the true sports car roadsters, such as the MG and Triumph, were disappearing in 1980 and 1981 leaving a void in the market. There were still plenty of people who liked the little sports cars, but nobody was making them. The marketing team at Mazda noticed the void in the market and felt that an affordable, small sports car roadster might be a car that would sell well, so the design and engineering teams went to work on one. The Mazda Miata was released in 1989 as a 1990 model and it was an instant success. The Miata was a small car with an 89.2-inch wheelbase and a 155.2-inch overall length. The car was a featherweight that weighed in at 2,116 pounds and the selling price was also light at \$13,800.

Mazda felt that because the car was light and small, the engine didn't have to be big, so they installed a 1.6-liter dual overhead cam engine producing 116 horsepower. Mazda sold 35,944 cars in 1990 and there was a demand for twice that many, which was more than Mazda could produce in the first year. As time went on, the engine size and horsepower started to increase, and the roadsters turned out to be great cars on the street and on the track. The management at Mazda noticed the track action their cars were receiving, so they came out with a special "R" model that was upgraded for track performance.

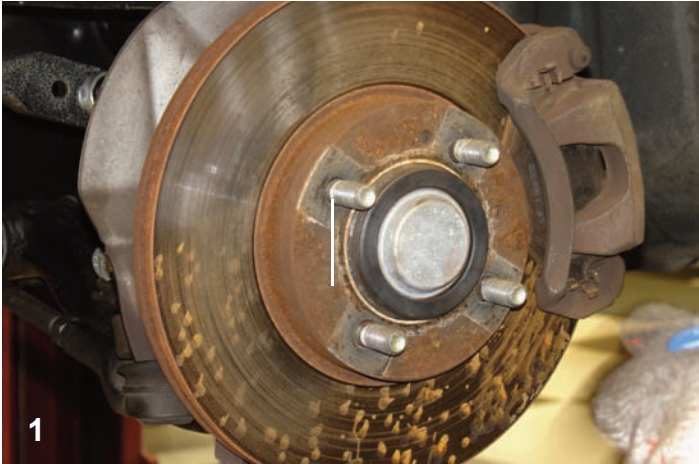
There have been three generations of Miatas built since their introduction in 1989 and the first two

share a very similar suspension arrangement. The last generation (2006 to present) has a different suspension system design. When the second generation Miata (1995-2005) came out with a stronger engine, there was a real interest in taking the cars out on the track, so Wilwood introduced a new track-tested brake system for the Miata. The fellow who owns this Mazda drives his car on the street and on the track, and he felt that he could improve his lap times if he installed Wilwood brakes on his car. He ordered a part number 140-11704 brake system that comes with Dynalite four-piston calipers, 11-inch vented rotors with aluminum hats, caliper brackets, BP-10 brake pads and all of the hardware required to complete the brake upgrade. In addition to the brake installation kit, a braided steel brake line kit will also have to be ordered and that is part number 220-11751. It is important to route the brake hoses away from any moving parts.

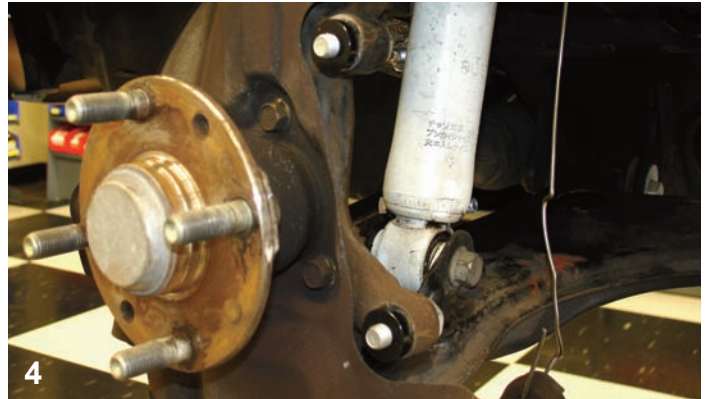
After receiving the kit, the owner was ready to improve his Miata. Wilwood Engineering recommends persons experienced in the installation and proper operation of disc brake systems should only perform the installation of this kit. A hobby builder can install this kit if he has good mechanical ability, car-building experience and has a good assortment of tools. In order to complete this installation you will need a floor jack, jack stands, an assortment of metric wrenches and sockets, an impact gun, line wrenches, a foot-pound and an inch-pound torque wrench. Before the brake installation starts, it would

be a good idea to spread all of the parts out so you can make sure that you have all of the parts listed on the instruction sheet. It would also be a good idea to have Teflon tape, Loctite 271, and Wilwood Hi-Temp 580 Racing Brake Fluid or Wilwood EXP

600 Plus Super Hi-Temp Racing Brake Fluid. 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.



The original Miata brake uses a single piston floating caliper and a small rotor.



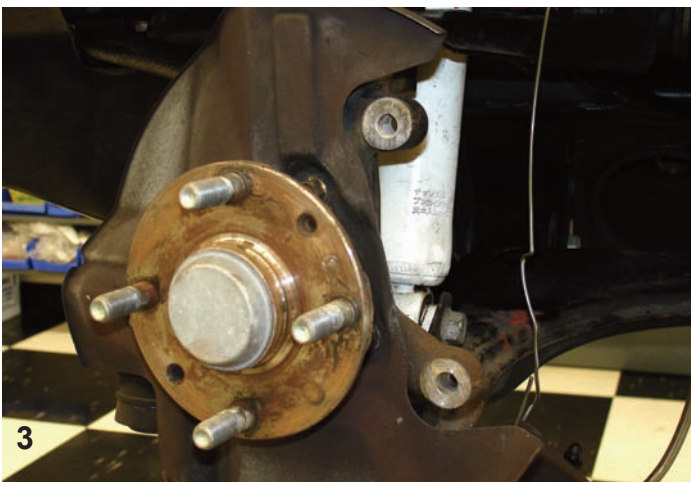
The caliper bracket bolts were installed in the original mounting ears and then each bolt was loaded with a 0.165-inch thick spacer.



Using a socket wrench and the appropriate size socket, the original caliper bolts were disconnected and the caliper was removed.



Being careful to keep the bolts in place, the Wilwood caliper bracket was held up to the ears and the bolts were installed by hand. When the bolts were started they were tightened with a socket wrench.



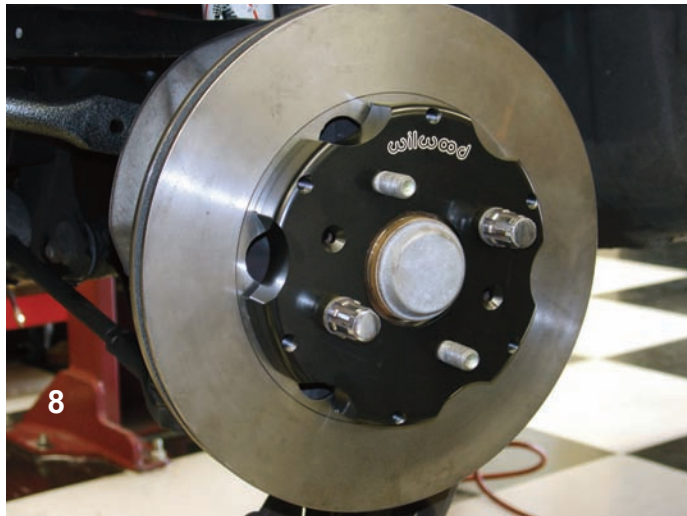
After the caliper was removed you can see the two caliper mounting ears. The ears will be used to mount the Wilwood caliper bracket.



The aluminum rotor adapter was bolted to the rotor using the bolts and washers in the kit. The bolts should be coated with Loctite 271 and then they should be tightened to 85 in-lbs using an inch-pound torque wrench. Using the information in the instruction sheet, the bolts can be safety wired for extra protection



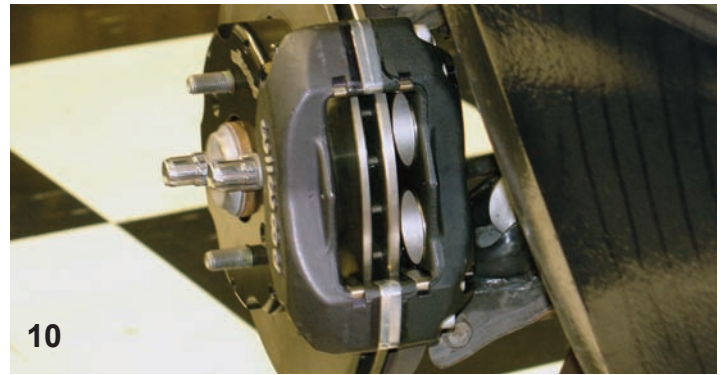
7
The mounting hub assembly should be thoroughly cleaned before the rotor is installed. Here a small rotor registration adapter was installed to help center the rotor on the hub. The smaller adapter diameter should be facing outward.



8
The rotor was installed on the hub assembly and then it was tightened with two lug nuts in preparation for finding the caliper to rotor centering.



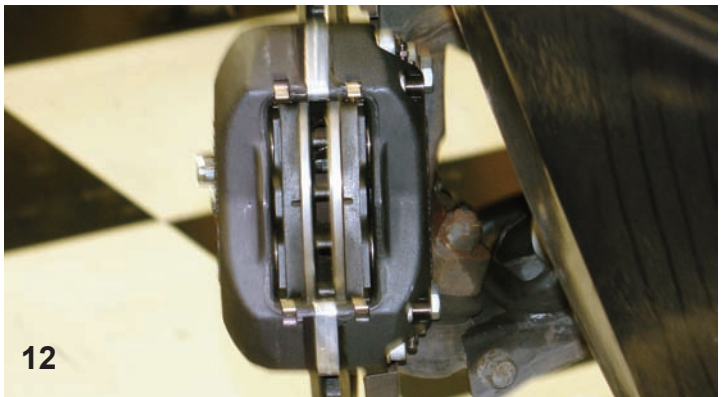
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The caliper mounting bolts were placed through the Dynalite caliper mounting holes and then the bolts were loaded with two shims as seen here. Shims can be added or subtracted to make sure the caliper is centered over the rotor.



10
The two shims were perfect to get the calipers centered over the rotors. Here the two mounting bolts are snug in order to check the fit.



11
After the bolts were snug, they were coated with Loctite and then they were tightened to 40 ft-lbs using a foot-pound torque wrench.



12
The brake pads were installed in the caliper and then the large cotter key was installed to keep the pads in place.



13
Under the round decal you will find the drilled hole for the hose adapter fitting. Remove the small decal and then install the fitting using Teflon tape on the threads. One end of the hose is attached to the fitting while the other end of the hose attaches to the steel hard line in the fender well.



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The wheel was reinstalled and now it is time for bleeding the brakes followed by the bedding procedure. The bedding procedure instructions can be found on the instruction sheet.