

(GEN 2)

Rear Disc Brake Install (All Models)

Our goal is to make the installation a breeze. Please read the entire guide before beginning.

1. Loosen the lug nuts 1/4 turn before jacking the vehicle up.
2. Jack up the front end and place on jack stands.
3. Remove wheels and place under the vehicle as an additional fail safe.
4. Remove the cotter pin and axle nut from the axle. Most of the time it will require an air impact to do this job. Remove the drum from the axle assembly. If it does not slide off easily, the brake shoes will need to be adjusted in. Locate the adjustment hole in the drum and spin the adjusting stars on each side to allow the drum to come off.
5. Once the drum comes off, it is time to remove the eBrake cables. Inside the car, between the seats on all vehicle besides the Type 2 bus which is on the floor, remove the 2 jam nuts on each cable to free the cable from the handle. Back at the backing plates, remove the 13mm bolt holding the cable to the backing plate. Pull the cable out of the chassis and unhook it from the eBrake lever on the backing plate. You will not be using these cables again.
6. (Swing Axle Applications - Place a drip pan under the backing plate/axle) Remove the four 14mm bolts holding the axle bearing cap onto the transaxle. Lightly tap the backing plate to break it loose. For 1949-1965 Beetle/Ghia applications, you will no longer use the bearing caps but you will use the hardware and seal races again. All other applications will re-use the bearing caps.
7. Clean all grease/ residue with a quality brake parts cleaner. Sometimes the swing axle assemblies will continue to drip oil for awhile, so don't fight it. Allow it to drip. You will need to top off the transaxle after this is all done. We suggest Valvoline 80/90 to top it off.
8. For 1949-1965 Beetle/Ghia applications, a pair of axle bearing caps have been supplied. You will need to install the supplied oil seal into your bearing cap. Install it dry so it doesn't pop out. (All other applications) It's time to inspect all the parts for wear and flatness. If you have the tools to go the extra mile, please follow along. Once the bearing cap and seal race are cleaned, it is a good idea to face the flat surfaces. I like a belt sander for this job but a flat bastard file also works. remove the old seal and install the new seal.
9. There is a v-groove on the seal that needs to be filled with axle bearing grease so the seal does not burn off.
10. If you have an IRS Application, skip to step 12.
11. Swing Axle Specific applications - Install the oil sling washer and small o-ring and lube the o-ring. Then install the seal race with the bevel side inboard. Place the caliper mounting plate on the axle tube, then a paper gasket and then the larger o-ring. Install

- the bearing cap with the OEM hardware. Torque to 35 ft. lbs after initial tightening in a cross pattern.
12. IRS applications - Place the caliper mounting plate on the diagonal arm with the factory bearing cap and the OEM hardware. Torque to 35 ft. lbs after initial tightening in a cross pattern. Then install the seal race.
 13. Install a single chromoly spacer on the swing axle applications and two for IRS applications.
 14. Slide the rotor on. Add some anti-seize to the axle threads.
 15. Install another chromoly spacer bevel side in and install the supplied axle nut.
 16. With an air impact gun with over 150 psi capacity, tighten the axle nut until the nut no longer moves. Check to see if you see a complete hole through the nut and the axle. If it can't, keep tightening it until you can. If you follow this step, you won't need to ever replace your hubs.
 17. When achieving the recommended tightness, check to see if the rotor spins freely. If it does, you're ready for the next step. If it does not, recheck to make sure you have all the spacers in place. If the bearing cap is touching the inside of the rotor, you might need to surface the casting marks off the bearing cap to achieve adequate clearance.
 18. Install the supplied bolt and nut that replaces the factory cotter pin in the axle.
 19. If you have a caliper option that does not have an eBrake, please check out the RaceReady section at the bottom.
 20. You are now ready to test fit the brake caliper. There is an assortment of washers/ shims supplied with the kit. The caliper needs to be fitted so that A, the rotor rides as close to center of the caliper cutout on both the top and bottom of the caliper and B, the pads contact the rotor dead flat to surface; IE, it doesn't contact the top of the pad to the rotor while not contacting at the bottom of the pad, or vice versa. Thus, the brake caliper must be installed in parallel with the brake disc.
 21. Once it is determined that the caliper is spaced such that this has been achieved, the caliper can be fixed to the mounting plate with the appropriate shims using loctite and torqued to 35 ft lbs.
 22. Run the supplied e-brake cables through the factory locations and hook up to the caliper. This will require a 7/8" wrench to tighten the cable housing to the caliper. The cable end going to the rear of the vehicle are built to be long so that they can be trimmed to fit. Do not trim the cables until after bleeding the brakes.
 23. The supplied stainless steel brake hoses are designed to replace both the soft line and the hardline. For swing axle applications, they will go from the caliper to the frame horn junction near the carrier of the trans axle. For IRS applications, they will go from the caliper all the way up to the brass unions, on the IRS pivot joints. The banjo end will be mounted to the caliper angled towards the front of the car in between two copper crush washers. Do not over tighten the supplied bolt.
 24. Fill the master cylinder reservoir with fresh DOT-3 fluid.
 25. Bleed the front brakes first when doing four wheel disc brakes. Make sure you leave the reservoir cap off to avoid vacuum. Start with the right side front, left side front, right side rear and left side rear. Check and top off reservoir frequently.

26. It is now time to trim the eBrake cables. Adjust the cables until you attain 3 clicks maximum to engage the brakes to lock up. In 2023, the rear wedged ball was replaced with a barrel nut. This barrel nut will allow you to slide on the cable to find the best position possible to attain the 3 click maximum. Once that is achieved, cut off the excess. Now pump some grease into the cables via the grease zerk.
27. Install your wheels and tighten in a star pattern and lower the vehicle. Before driving off, test the brake pedal pressure. If it all checks out and you give it the #AirkewldArmy stamp of approval, your ready to bed-In the rotors.

Pad and Rotor Bedding:

Bedding is a "real conditions" heat cycle and the final step in preparing the pads and rotors for service. All pads especially cast iron rotors that will be operated at sustained high temperatures will provide longer service life and smoother braking when properly bedded. Bedding can be done either in the vehicle or on a special bedding dyno that can realistically duplicate the torque loads pressure and temperature that will be realized in the vehicle.

Rotor Bedding:

Rotor bedding is an essential element to high level performance and durability. It is most critical with cast iron rotors. Cast iron is extremely well suited to use as a brake rotor but it can be susceptible to thermal stress distortion and even cracking if subjected to rapid changes in temperature when it's new. The cracking sound that you may hear when pouring a favorite beverage over a glass of ice is thermal shock. A proper bedding cycle will gradually bring the rotors up to temperature and then allow them to cool slowly and completely in order to "season" and relieve any remaining stresses from the casting and machining processes. With some compounds a layer of pad material may also be embedded onto the rotor face. It is important that this "transfer layer" be deposited slowly and smoothly. Otherwise pedal pulsing and compromised friction values can result.

Pad Bedding:

The bedding process is the final "heat cure" for the pads. This final bedding cure differs from an oven heat cure in such that the oven heat cure does not include the pressure torque and elevated surface temperatures that are necessary to properly condition the pad for service. As it is with the rotors new pads must be gradually brought up to temperature and then slowly cooled. If the pads are put into hard service right from the start damage from fractures or accelerated deterioration due to extreme temperature variations between the surface and the body of the pad can occur. Overall poor performance with the potential for rotor damage are often the results.

Bedding Steps:

1. Once the brake system has been tested and determined safe to operate the vehicle follow these steps for bedding of all pad materials and rotors.

2. Begin with a series of 8-10 light stops from approximately 30 MPH down to 15 MPH allowing 20-30 seconds for cooling between each stop.
3. Progress to series of 8-10 moderate stops from around 45 MPH down to 30 MPH allowing the 20-30 second cool down period between each stop.
4. Proceed with a series of 8-10 hard stops from 55-65 MPH down to 25 MPH allowing 20-30 seconds of cool down time between each stop.
5. Drive at a moderate cruising speed with the least amount of brake contact possible until most of the heat has dissipated from the brakes. Avoid sitting stopped with the brake pedal depressed to hold the car in place during this time. Park the vehicle and allow the brakes to cool to ambient air temperature.

Notes:

During the bedding process a more positive feel from the brakes should develop. This is an indication that the bed in process is working. If any level of brake fade is observed during the hard stops it may be an indication that the brakes have been more than adequately heated. Begin cooling the brakes with light driving and without brake contact immediately.

RaceReady Applications - Non eBrake set ups

In your kit, you received caliper brackets without mounting holes. This is not an error but is done for a reason. Non eBrake applications are not street legal. To offer this application, you must customize the bracket by drilling the mounting holes to bolt the caliper to it. This releases us, Airkewld LLC, of the liability.

Installation specifics for RaceReady applications with Wilwood Calipers

1. After finishing step 15 above, it is time to set the caliper in place on the rotor to mark the caliper bracket for the holes you will need to drill. When we did our latest install on the #MadManx, we took some 6mm vent line and placed it on the rotor edge and slid the caliper over it until it bottomed out evenly on the hose. We lined of the caliper ears to the powder coated mount and with a scribe, wax pencil or something similar, the inside diameter of the caliper ear is traced out.
2. With a center punch, make an indentation to allow for a straight hole to be drilled.
3. With a 10mm or 25/64 drill bit, drill the holes in the bracket.
4. With the supplied hardware and shims, you will need to align the caliper evenly and tighten the bolts.
5. With the included stainless steel brake lines, the 90° end will be installed into the caliper after the sticker over the inlet on the caliper is removed and thread sealant is used on the fitting. The female end will be installed on the frame horn near the carrier of the transaxle.
6. When bleeding Wilwood calipers, you will need to bleed both upper bleeders to ensure all air is removed.

Bolt Pattern Removal:

If you plan on changing these, understand the torque settings. You will need a 5/16" Allen socket to remove these bolts. When installing the new one, you will need to add blue Loctite and torque to 75 ft lbs.

Front Rotor Replacement:

In the event you replace your rotors, you will need a 7/32" Allen socket. When installing, you will need to use blue Loctite and torque to 33 ft lbs.

You finish installing your brand new disc brake kit bleed it out and the pedal is just not there. Pump it up a few times and gets harder and harder. Guess what? It still has air in the system.

Here are some things to check when you have a spongy pedal with disc brakes.

Make sure your bleeders are on top of the brake lines. Air rises to the top and can not be bled out the bottom

Loose connections with your new stainless brake hoses

Tools you need

