



HPA Rear Big Brake Kit and Parking Brake Assembly

Congratulations on your Purchase of your HPA Rear Big Brake Kit. This kit has been specially engineered to match your car's design – we hope it brings you many years of precision driving pleasure.

This packet contains:

- Rear Brake Kit and Parking Brake Installation Instructions
- Bleeding Instructions
- Rotor Seasoning and Pad Bedding Instructions
- Rotor Installation and Rotation Instructions
- Bleeder Valve Cleaning Instructions
- Syringe and Needle for Cleaning Bleeder

SPECIAL NOTE – Due to the large variety of vehicles that this kit can be fitted to, and the variety of interior configurations, instructions on installing the parking brake cable have not been included. Please consult your VW / Audi service manual for vehicle specific procedures.

For questions regarding your brake system and technical support, please contact:

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INSTALLATION INSTRUCTIONS: REAR BIG BRAKE KIT WITH PARKING BRAKE CONVERSION

ATTENTION: Read this before going any farther!

Returns will not be accepted for ANY installed PART or ASSEMBLY. Use great care to prevent cosmetic damage when performing wheel fit check.

WARNING: The following installation should only be completed by a professionally qualified technician, familiar with specialty brake systems.

HPA takes no responsibility for incorrectly installed components.

ALL HARDWARE FOR NEW PARTS IS INCLUDED

No hardware is to be re-used, unless otherwise indicated
WHEN TROUBLE SHOOTING FITMENT OF PARTS, PLEASE CONSIDER THAT PHOTOS AND PARTS SHOWN
ARE FOR THE RIGHT SIDE OF THE VEHICLE

Parts for parking brake assembly included in kit (LEFT TO RIGHT photo):

- A. Brake Shoe Retainer (pre-assembled, includes two M5 X 15 bolts)
- B. Parking Brake Backing Plate
- C. Backing Plate Rear Bolt Spacer
- D. Parking Brake Cable Bracket - shown as installed (includes two M8X20 w/ lock nuts)
- E. Parking Brake Actuator – preassembled (includes two M10X20 bolts)
- F. Drum Brake Shoe

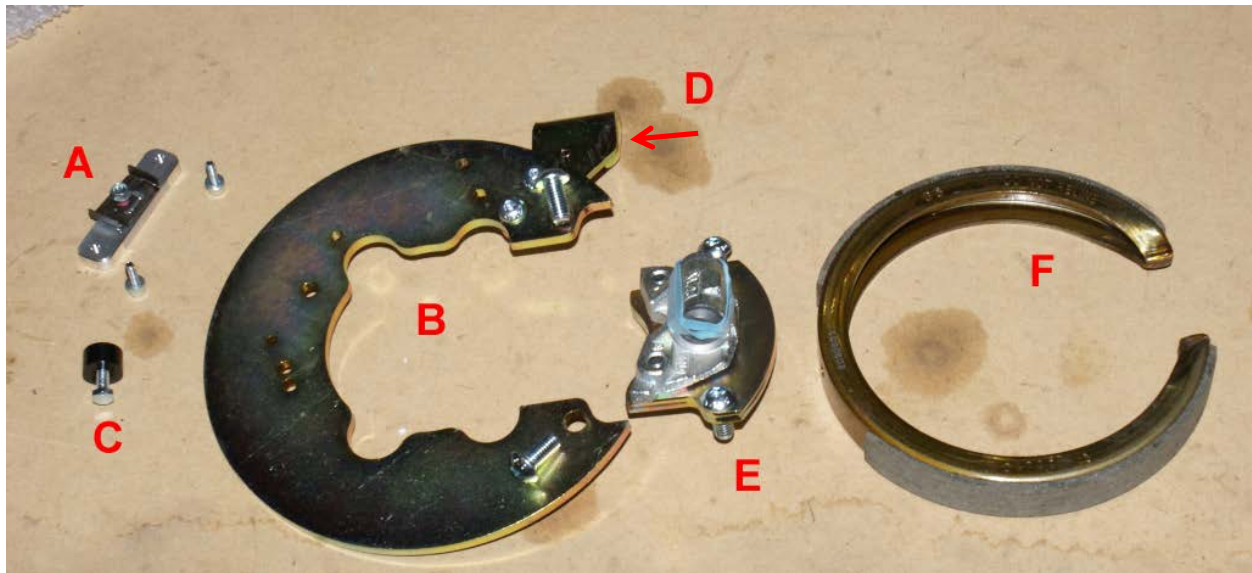


Figure 1

With the car safely lifted off the ground and the rear wheels removed...

- 1 Disconnect the parking brake cable.
- 2 Disconnect the OEM caliper's flex hose from chassis hard brake line. Using the supplied cap, cap-off the hard line to prevent fluid spillage.
- 3 Remove the OEM brake caliper and carrier from the bearing housing.
- 4 Remove the OEM brake rotor from the wheel hub.
- 5 Remove the OEM backing plate (dust shield) from the bearing housing.
- 6 Install the HPA brake caliper Adapter Bracket, using the supplied bolts. Torque to 90 ft/lb. (Figure 3)

NOTE: The brackets are symmetrical, and will fit either left or right side of vehicle.

Parking Brake Backing Plate

The Backing plate mounts to the same 3 holes that the OEM dust-shield was attached to. The Backing Plate is specific to the left or right side of the car, and only fits one way. The "up" position can be identified by the two holes that the park brake cable bracket attaches to. (See Figure 1 for clarification)

- 7 Loosely fasten the backing plate to the bearing housing, using only the two FRONT bolts (Figure 4). Once the plate is held in place, the rear bolt can be installed (Figure 5).



Figure 2



Figure 3



Figure 4

- 8 Position the corresponding spacer between the bearing housing and the backing plate, inserting the 3rd bolt through both and threading into the hole on the bearing housing. Figure 5 shows the installed bolt.

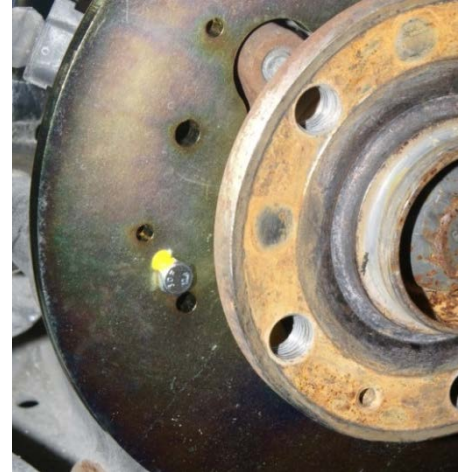


Figure 5

- 9 Tighten and torque all 3 bolts to 95 in/lb.

- 10 Install the brake shoe retainer using the two provided bolts and washers. The retainer has threaded holes, and will not require nuts. Torque to 55 in/lb.

NOTE: Using the provided washers, BE SURE THAT THE BOLT- ENDS REMAIN FLUSH WITH THE RETAINER (Figure 6).



Figure 6

- 11 Install brake cable bracket on the back-side of the backing plate, using M8 bolts and locknuts. Torque to 19 ft/lb. (see parts diagram figure 1 for reference).

NOTE: It is recommended that the brake cable bracket be installed AFTER the backing plate has been installed to the bearing housing. This is done to ensure that enough leverage can be applied to correctly torque the cable bracket bolts.

- 12 Feed brake cable and housing through the brake cable bracket, and secure cable housing to bracket using provided e-clip.

Brake Actuator

The brake actuator is installed with the arm pointed down. The actuator is supplied fully assembled, and bolts directly to the caliper adapter bracket.

- 13 Feed the brake cable out from between the caliper adapter bracket and the bearing housing, holding the end of the cable out as in Figure 7.



Figure 7

- 14 Engage the cable with the arm of the brake actuator, and push into position with the caliper adapter and the backing plate (Figure 8).



Figure 8

- 15 Hold the actuator firmly in place, while you loosely secure it with the two provided bolts (Figure 9).
- 16 Check fit of all components, then torque the actuator bolts to 37 ft/lb.

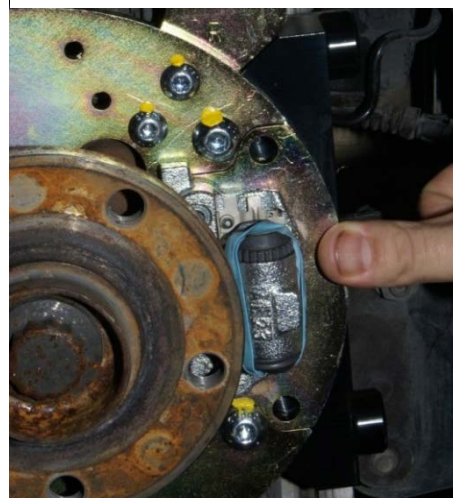


Figure 9

Brake Shoe Installation:

- 17 The brake shoe is installed by pushing it onto the actuator at a perpendicular angle to the car, and is then swung 90 degrees, until flush with the backing plate. The shoe will slip under the shoe retaining clip, securing it in place.
- 18 Install HPA BBK rear rotor, and secure using original rotor set-screw.

NOTE: Rotors are labeled LEFT and RIGHT, and are a radial vane design. If in doubt, the vanes at the top of the rotor must point towards the rear of the car. The slots on rotor surface, at the top of the rotor, will be pointing forwards.

Caliper Installation:

- 19 Pre-install Flex hose on caliper with banjo bolt, using supplied crush washers. Keep the banjo bolt LOOSE until further steps are completed.

NOTE: Crush washers should go one on either side of the flex hose, with the banjo bolt sandwiching them with the caliper. The flex hose should be installed so that it angles away from the caliper, and points upwards in the same orientation as the bleed nipple. (Figure 10)

- 20 Fit the caliper to the caliper bracket, using supplied hardware and torque to 90 ft/lb.
- 21 Connect the flex hose to hardline on chassis.
- 22 Torque the flex hose banjo bolt to caliper to 18 ft/lb.



Figure 10



Once installation is complete, follow a standard brake bleeding procedure. A 4-wheel fluid flush is recommended.

**Please see the following additional instructions for the correct seasoning and bedding procedures for the rotors and pads.*

Caliper Clean-Up

When the installation of your Brake system is complete, a quick clean-up will prevent damage to caliper finishes and the appearance of fluid leaks.

Brake fluid left in the hollow bleeder screw(s) will, over time, seep out around the threads and the cap provided with your system. This can possibly stain the finish, and give a false indication of a potential leak.

Please take a few moments to clear this out with the flushing set provided.

Other items needed for this: small bucket of clean water and soft wash cloth or sponge.

After the system is completely bled out and before the wheels are installed, take the syringe provided and fill with clean water. Insert this into the hollow port in the bleed screw (remove the seal cap) and flush the residual brake fluid out of the screw. **DO NOT USE COMPRESSED AIR TO CLEAR THE BRAKE FLUID!** Do this a couple of times to insure no brake fluid residue is present.

Fill the syringe with air and blow the water out of the screw when this is done. Compressed air can be used to remove the remaining water. Some calipers have more than one bleeder. Do this for all screws. Place the cap over the bleed screw(s) and using the wash cloth, rinse the entire caliper with clean water. Drying with a Micro-Fibre cloth will enhance the appearance of the Calipers.

Bleeding

Always remember, good to excellent brakes or fluid do not function without adequate cooling. In fact the more serious your brake system the more attention needs to be directed to proper ducting, as they will generate more heat due to the increased capacity.

Proper Bleeding Technique

Slowly pour fluid into the master cylinder so as not to aerate the fluid. (BLEEDING BRAKES IS NOT DONE WITH PRESSURE, IT IS PURELY A FUNCTION OF MOVING FLUID THROUGH THE SYSTEM. THE OBJECT IS TO DISPLACE AIR, NOT TO SEE HOW FAR FLUID CAN BE SHOT OUT OF THE CALIPER!) Enlist someone who will help you bleed the brakes. Make sure they also read these instructions carefully so they understand the goal.

1. For systems which are essentially dry front and rear, start by filling the master cylinder with proper fluid.
2. Next, at the caliper farthest from the master cylinder attach the clear plastic bleed line to the bleeder and open it, VERY SLOWLY stroke the brake pedal by hand or foot until fluid comes out. Now close the bleeder.

ACTUAL BLEEDING SEQUENCE:

1. Have your partner very slowly, with modest pressure (approximately 25-30 lbs/ft), stroke the pedal ONE TIME until hydraulic resistance is encountered. Ask your partner to hold at this point with the same modest and even pressure and notify you that he is, "holding."
2. Open the bleeder, letting the pedal go to the floor or until it stops using the same modest level of pressure, close the bleeder, notify your partner, "the system is sealed."
3. Repeat BLEEDING SEQUENCE (never stroke the pedal more than one time), until all signs of air are purged (no bubbles) from fluid.

IMPORTANT NOTE: DO NOT LET THE MASTER CYLINDER RUN DRY Be sure to check fluid level after every third bleeding sequence or sooner if reservoir volume is very small.

4. Move to the location which is the next furthest from the master cylinder and repeat the procedures previously outlined. Continue until all calipers have been bled. You are now 75 % complete with the bleeding process.
5. Now, take a small block of wood or a plastic hammer and carefully tap the calipers to dislodge any additional air bubbles that may be trapped.
6. Before reinstalling wheels and placing the car on the ground, we recommend you carefully wipe clean all caliper surfaces, hose joints and fittings making sure they are all dry and free from seeping. If not, inspect and tighten appropriately. Spray all rotor surfaces with Brake Klean® or a similar product to remove all dirt and oils from your hand that may have been transferred to the rotor during assembly. Also remember to remove the nut which has been holding rotor in place, before attempting to re-install the wheel. For street use, as with any time you open the brake system, it may be advisable to repeat the bleeding procedure after driving the vehicle for a day, as driving the car may dislodge some additional air bubbles. For competition cars, we

recommend repeating this procedure directly after at least the first two sessions the car is on track and at the beginning of each race weekend thereafter.

Even if your pedal is high and firm and additional bleeding is deemed unnecessary, always inspect the calipers, hoses and fittings after the first outing for signs of any fluid seeping, and correct immediately.

Rotor Seasoning / Pad Bedding - Street or Light Track Applications

What proper "Rotor Preparation" is all about

The first step in preparing the brake system for duty is to "SEASON" the rotors. The most visible effects are that of burning the machine oils from the surface of the iron and establishing a wear pattern between the pad and rotor. The most complex task it performs is that of relieving the internal stresses within the material. If you've ever poured water into a glass of ice, and noticed the ice cracking, then you've witnessed, first hand, the effects of internal stresses. The rotor casting and cooling processes leave the rotor with internal stresses.

By gradually heating the material, the crystalline matrix will reconfigure to relieve these internal stresses. After these stresses are relieved, the rotor is ready to accept the heat of bedding pads. Heating the rotors before they are fully seasoned can result in material deformation due to the unrelieved internal stresses in the material. This deformation may cause a vibration from the brakes.

Rotors need to be gradually elevated to "race" temperatures before any severe use. A "nibble", or slight vibration, normally indicates rotors that were heated too quickly.

After initial "Seasoning", when running your car at open track events or serious canyon carving, you should use the first lap of a session (or first couple of miles of open road), to warm the brakes as well as the engine, gearbox, etc. Where an engine turns chemical energy into motion, the brakes turn that motion into thermal energy...and lots of it! And where there is no cooling system for the brakes as there is in the engine, and there's not, the brakes could use the courtesy of a warm-up lap.

Remember to ALWAYS WARM THE BRAKES before any heavy use! It is also considered mandatory to run air ducts to the eye(center) of the rotor on any car used on track or in actual competition.

Seasoning Procedure

Before you begin, please note: The following represents the minimum recommended "Seasoning" process. If your situation offers any opportunity to perform gentle preliminary "Seasoning" outlined in Steps below for a longer period of time, this will generally render even better performance and increase further long term rotor life.

1. Use the vehicle for 5 to 6 days of gentle driving. Use the brakes to the same extent that you used the stock brakes, but **DO NO TEST PERFORMANCE OR ATTEMPT HEAVY USE UNTIL ALL ITEMS OUTLINED HAVE BEEN COMPLETED.** It is imperative that excessive heat is **NOT** put into the rotors at this stage. They need temperature-cycling to relieve the internal stresses.

Note: Zinc plated rotors (which are an extra cost option) need a couple of extra days of driving to wear through the plating before "Seasoning" actually will begin.

2. After completing 5-6 days of gentle driving, find a safe location where the brakes can be run to temperature.
 - A. Your goal is to gradually increase brake temperatures with progressively faster stops. Start by performing (4) stops from 60 mph to 15 mph, as you would in the normal course of driving.

- B. Next, perform (4) medium effort partial stops (about 50% of maximum stopping force) from 60 mph down to 15 mph. Follow this with (5) minutes of freeway driving with LITTLE to NO BRAKING to allow the rotors to cool.
- C. Then, perform (4) medium-hard effort pedal stops (about 75%) from 60 mph down to 15 mph. Follow this with (10) minutes of freeway driving with LITTLE to NO BRAKING to allow the rotors to cool.
- D. Park the car and allow the brakes to cool overnight to ambient temperature. You are now 50% done with the rotor "Seasoning/Bedding" procedure; proceed to STEP 3 the following day.

Return to the safe location where the brakes can be run to temperature

- 3 Make sure the brakes are warmed to full operating temperature and then, perform (4) medium effort partial stops (about 50%) from 60 mph down to 15 mph. Follow this with (5) minutes of freeway driving with LITTLE to NO BRAKING to allow the rotors to cool.
 - A. Then, perform (4) medium-hard effort pedal stops (about 75%) from 60 mph down to 15 mph. Follow this with (10) minutes of freeway driving with LITTLE to NO BRAKING to allow the rotors to cool.
 - B. NOW, make (6) HARD partial stops from 60+ mph down to 15 mph or until rotors have reached an operation temperature of between 900 and 1,100°. Every effort should be made to perform this procedure without locking a wheel. Follow this with (10) minutes of freeway driving with LITTLE to NO BRAKING to allow the rotors to cool.
 - C. 2 Let the system cool off overnight. The rotors are then ready for the next step in Preparing your Brake System: Bedding Pads.

Bedding Pads

Bedding brake pads has a couple of important effects. The friction material in semi-metallic pads is held together by an organic binder, usually a type of phenolic material. As the pads get hot, the binder boils, and burns, from the top surface of the pad. Once this burning or "Bedding" takes place the friction material makes proper contact with the rotor.

Some race/performance pads, like the Performance Friction's line of pads, are designated as "pre-burnished" from the manufacturer. In our experience, these pads still benefit from "bedding". "Bedding" pads establishes a wear pattern between the pads and rotor. Some pads, like the Performance Friction pads, deposit a layer of carbon in the surface of the rotor. They need that layer of carbon to perform at peak efficiency.

Bedding Metallic or Carbon/Metallic Pads - (NEVER "DRAG" the brakes)

Note: Never "Bed" pads on rotors which have not first been "Seasoned". Always allow a substantial coast down zone when bedding pads that will allow you to safely drive the car to a stop in the event of fade.

1. Perform (2) repeated light to medium stops, from 65 to 10 mph, to bring the rotors to temperature.
2. Perform (2) heavy stops, back to back, at a point just pending wheel lock or ABS actuation, from 65 mph to about 5 mph. 2 Drive for (5) to (10) minutes to create cooling airflow, without using the brakes if at all possible.
3. Perform (3) light stops in succession. 4 Perform (8) heavy stops, back to back, at a point just pending wheel lock, from 65 mph to about 5 mph. 5 Drive for (10) minutes to create cooling airflow, without using the brakes if at all possible.

Metallic brake pads need high temperatures to keep the pad "Bedded". If you drive the car for a period of time without using the brakes extensively, you may need to "Bed" the pads again. This is not a problem. Simply repeat the procedure.

When switching from Performance Friction brand or other Carbon Metallic pads to semi-metallic brake pads (something we do not recommend), you will need to wear through the layer of carbon that the PFC pads have deposited in the rotor surface. The new pads won't grip well at all, until this layer of carbon is removed.

Racers should "Bed" a few sets of pads at a time. In the event you need to change brake pads during a race, you **MUST** use a set of "Bedded" pads. Racing on "non-bedded" pads leads to a type of "fade" caused by the binding agents coming out of the pad too quickly. This is called "green fade". These binders may create a liquid (actually a gas) layer between your pads and rotors. Liquids have a very poor coefficient of friction. This condition is the reason for reverse slotting or crossdrilling rotors, as it allows a pathway for the gasses to escape.