

Z1/AshSPEC Big Brake Kit Installation & Users Manual



Thankyou for purchasing the Z1/AshSPEC Big Brake Kit! We believe that you will find this brake upgrade to be highly comparable to the “high-dollar” brake kits available for the Z32, offering significantly improved braking performance even in the harshest of operating conditions at a fraction of the cost. We hope you feel that your money was well spent with us on this great product and we are open to any questions, suggestions, or comments you may have throughout the course of ownership of this product and we look forward to hearing from you!

As with any performance oriented upgrade component, it is imperative that the parts be properly installed as well as monitored throughout their service life to ensure they will perform to the best of their abilities and be trouble-free. Braking systems are a high-wear, high-load component of your vehicle and enduring the immense stresses without fail is paramount to just about every other system in the vehicle. In the event of a brake system failure, you are piloting an object with a million or greater lbs. of force, dependent on your speed. Dissipating this energy without brakes will likely end in a collision with some unforgiving object, or worse, a person and/or another vehicle.

We have taken the time to develop and test this high-performance braking system to ensure that you will not have to worry about the above scenarios, but it still requires proper installation and maintenance to ensure trouble-free operation. The steps in the installation portion of this manual should be followed to the “T” and your work should be double checked before use. Additionally, the rotors and pads MUST be properly broken-in to avoid rotor warpage and achieve maximum braking efficiency. We have provided pictures of each step of the process to show you how things should look after each step as well as detailed instructions on how to break-in your braking system. All of the hardware necessary for installation is provided, but if braided lines and speed bleeders were not purchased with this kit, the steps for installation of these parts can be skipped.

NEVER INSTALL USED PADS WITH NEW ROTORS!

STEP 1: Remove Wheel

- **Use a good floor-jack of adequate capacity and place jackstands in appropriate locations to support the vehicle. Never leave a car jacked up without stands!**



Step 2: Remove Caliper

- 19mm socket
- (2) bolts



Step 3: Remove Brake Line Clip

- Needle-Nose Pliers
- Only at this point



Step 4: Remove Caliper & Rotor



Step 5: Remove Factory Studs

- 5 lb. hammer, drive out studs with hub in this position to allow studs to not interfere with the hub assembly.



Step 6: Install New NISMO Studs



Step 7: Lock-In NISMO Studs

- This can be achieved by using a short 1/2" drive socket to slip over the stud and use either an old lug nut or nut with matching threads. Drive the nut down until the head of the stud is flush with the back-plate. Install all 5 lugs this way.



Step 8: Install Hub-Centric Ring

- The ring has a flared edge to it that must be installed with this flare towards the face of the hub. You may need to use a wire-brush to clean up any rust or debris from this area to ensure a good fit. Be sure to slip this ring on evenly and it will NOT require much force to fit onto the hub snout.



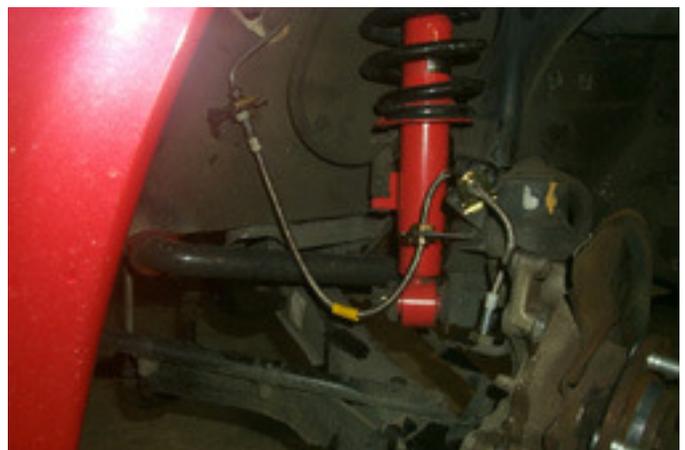
Step 9: Grind Caliper

- This operation can be done either with the brake line still connected, or you can disconnect the line if so desired. You will need a die-grinder to perform this part of the installation and a carbide bit. The two shiny areas you see on the far left and far right of the caliper where the rotor fits into have approximately 1.5mm removed at the outermost points with a feathered taper moving inwards to the center of the caliper to smoothly match the factory profile of the caliper. This trimming is to allow proper clearance between the rotor and caliper.
- If you want to paint your calipers, this would be a good time to do so.



Step 10: Install Braided Brake Line

- At this point in the process, it is convenient to install the new braided brake lines (if you purchased them) before the caliper and rotor are installed. Be sure to use all retaining clips to hold the line in place and secure the lines with a 10mm wrench.
- Inspect clearance of line to other suspension components by swinging the hub from full left to full right.



Step 11: Install Relocating Bracket

- Use the OE caliper bolts, passing them through the backside and through the holes in the bracket. There are two 19mm self-locking nuts provided with the kit to fasten the bracket into place.
- **TORQUE TO 75 ft/lbs!**
- The bracket **MUST** be installed as shown; with the notched crown slightly lower than center. **If this is not installed properly, the lower fastener that holds the caliper will not clear the hub when you install the caliper!**



Step 12: Install New Rotor

- The rotors are **DIRECTIONAL**. This means that there is a **LEFT** side and a **RIGHT** side rotor. The **LEFT** side is the same as the **DRIVER'S** side. There is a small white sticker on the rotor hat to indicate the rotor side.
- **IT IS NOT NECESSARY TO REMOVE OR MODIFY THE OE DUST SHIELD!**
- Align studs with holes and press rotor onto the hubcentric ring. You will note a small bit of resistance when doing this – this is supposed to occur. The ring is compressing into the rotor center-bore which provides the snug tolerance required to properly center the rotor.
- **Once installed, be sure to hold the caliper and turn the wheelstuds/hub in the direction of wheel rotation to ensure the studs are firm against the front of the inner bore of each stud hole of the rotor hat.**
- Ensure that the rotor spins freely and that there is no contact with the dust-shield or the brake lines. Sometimes the dust shield gets accidentally bent in the process of this upgrade, so if there is contact, identify the point of contact and massage the shield back into its original position.



Step 13: Install Caliper and Attach Line

- The kit provides (2) 17mm head bolts to secure the caliper to the relocating bracket. Hand-thread the bolts into position while making sure the caliper is flush to the bracket. **DO NOT TORQUE YET!**
- Ensure that the rotor is firm against the hub **AND** spin the rotor to ensure clearance with the caliper. If there is any rotor-caliper contact, you will hear it. Remove caliper, inspect for contact and remove material as necessary. Do **NOT** grind the rotor!
- **TORQUE TO 75 ft/lbs!**
- The OE brake line will need slight modification to fit. Carefully massage it to shape and secure both ends with a 10mm wrench.



Step 14: Install Speed-Bleeders

- The factory bleeder requires two people in order to bleed the brakes. This special “speed-bleeder” is equipped with a ball and spring check-valve that allows the brakes to be bled by yourself and significantly speeds up the process of bleeding the brakes. This would be a good time to install these if you have purchased them.
- Requires a 10mm wrench



Step 15: Clean Parts

- Be sure to clean all parts – caliper and pistons, both friction surfaces of the rotor, and any areas where brake-fluid was spilled. Apply cleaner liberally – you should have a full can so don't be afraid to use ½ of it here. Any contaminants on these parts will affect braking and can cause vibration, “pulling”, or lack of braking ability.
- Using a compressed air-tip in conjunction with the brake-cleaner will speed up this process.



Step 16: Install Pads and Fasteners

- Using the OE fasteners, install your **NEW** brake pads according to original specifications. Be sure to use an anti-squeal compound between the back-plate of the pads and the dampening plates, as well as on the dampening plates where the pistons contact them.
- **NEVER INSTALL USED PADS!**



Step 17: Spacer Orientation

- The spacer plate is required for most applications since the caliper has been relocated to fit the new rotor. Looking at the center-bore of the spacer, you will note that one side has a smaller chamfer than the other. The side with the smaller chamfer must be installed towards the rotor hat.
- You will note that the hubcentric ring will stick out further than the hat of the rotor – this is to allow material for the spacer to center itself when installed. When the spacer is installed, it should remain in place, held by the hubcentric ring.



Step 18: Bleed the brake

- If you have speed-bleeders, attach a small hose to the tip of the bleeder and use a catch-can to contain the fluid that is bled. Loosen the bleeder by about $\frac{1}{2}$ turn, ensure the reservoir is full and the reservoir cap is removed. Begin pumping the brake pedal until you no longer hear air coming from the bleeder.
- **ENSURE THAT THE RESERVOIR DOES NOT RUN OUT OF FLUID!**
- If you have OE bleeders, you will need a partner to pump the brakes. Follow OE procedure.
- If any brake fluid was spilled onto the brake components during this process, you must clean the parts once again.



Step 18: Inspection

- At this point, everything should be in place and only the wheel installation is left. The checklist on the following page should be followed to ensure everything is correct before final assembly.



Although these checks are elementary to any professional mechanic, it is always a good idea to give an installation of any kind a good ‘once over’ regardless of your skill level.

INSPECTION CHECKLIST:

- 1. Are all of the wheel-studs present?**
- 2. Are all of the fasteners installed and properly torqued?**
- 3. Did you bleed the brake?**
- 4. Is the rotor free of any oil, brake fluid, or fingerprints?**
- 5. Did you use new pads?**
- 6. Do you have the proper rotor on the correct side?**
- 7. Is the hub-centric ring present?**
- 8. Is the spacer present and properly oriented?**
- 9. Is there proper clearance between the caliper and the rotor?**
- 10. Does the brake line contact any suspension or brake component at any point in the steering position?**
- 11. Did you tighten the bleeder?**

Step 19: Install Wheel & Inspect Clearance

- Install your wheel and torque to 90ft/lbs, making note of the spacer plate to ensure it is flush with the rotor-hat.**
- Ensure that the wheel spins freely and that there is no contact between the wheel and the caliper. Unless your wheel is bent, you should notice no run-out when the wheel is spinning. If runout is detected, remove wheel and inspect parts for improper installation.**



Rotor Seasoning for Street or Light Track Applications:

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. In order to prevent this vibration, the rotors are trued before shipping.

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 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 for 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!

Seasoning Procedure:

1. 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 Step 2 below for a longer period of time, this will generally render even better performance and increase further long term rotor life.
2. Use the vehicle for 5 to 6 days of gentle driving. Use the brakes to the same extent that you used the stock brakes, DO NOT 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.
3. Find a safe location where the brakes can be run to temperature.
 - o Your goal is to gradually increase brake temperatures with progressively faster stops. Start by performing four 60 to 70 mph stops, as you would in the normal course of driving.
 - o Next, perform four medium effort partial stops (about 50 %) from 60 mph down to 15 mph. Follow this with five minutes of freeway driving with LITTLE to NO BRAKING to allow the rotors to cool.
 - o Then, perform four medium-hard effort partial stops (about 75 %) from 60 mph down to 15 mph. Follow this with ten minutes of freeway driving with LITTLE to NO BRAKING to allow the rotors to cool.
 - o 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 4 the following day.
4. Return to the safe location where the brakes can be run to temperature.
 - o Make sure the brakes are warmed to full operating temperature and then, perform four medium effort partial stops (about 50 %) from 60 mph down to 15 mph. Follow this with five minutes of freeway driving with LITTLE to NO BRAKING to allow the rotors to cool.
 - o Then, perform four medium-hard effort partial stops (about 75 %) from 60 mph down to 15 mph. Follow this with ten minutes of freeway driving with LITTLE to NO BRAKING to allow the rotors to cool.

- NOW, make six HARD partial stops from 60+ mph down to 15 mph or until rotors have reached an operation temperature of between 900 and 1,100° (Note: Temperature paints to accurately measure rotor temperature may be purchased from Baer Racing). Every effort should be made to perform this procedure without locking a wheel. Follow this with ten minutes of freeway driving with LITTLE to NO BRAKING to allow the rotors to cool.
5. Let the system cool off over night. The rotors are then ready for the next step in Preparing your Brake System: Bedding Pads.

Pad Bedding:

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 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 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)

1. 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.
2. Perform four repeated light to medium stops, from 65 to 10 mph, to bring the rotors to temperature.
3. Perform two heavy stops, back to back, at a point just pending wheel lock, from 65 mph to about 5 mph.
4. Drive for five to ten minutes to create cooling airflow, without using the brakes if at all possible.
5. Perform three light stops in succession.
6. Perform eight heavy stops, back to back, at a point just pending wheel lock, from 65 mph to about 5 mph.
7. Drive for ten 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 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.

Rotor Seasoning for Race Applications

Before you begin, please note: The following is a condensed version of the Seasoning process designed for racing, where rotors are often replaced after every event. If your situation offers any opportunity to perform the Seasoning for Street & Track outlined on a separate instruction set, please do so. The most noticeable result of which will be dramatically increased long term rotor life.

1. Temporarily close any cooling ducts provided for the brakes. Note: New rotors should be "Seasoned" with used pads. If you are "Seasoning" a completely new system, this is not an alternative. Take extra care in the "Seasoning" procedure. Most likely, you will begin "bedding" the pads in the latter stages of the procedure. It is still recommended that you follow the 'Bedding Pads' procedures.
2. Make several light stops from 30 mph to ensure brake system is functioning properly.
3. Gradually increase brake temperatures with progressively harder, faster, stops.
4. Continue the process, through 10-15 stops, until the rotors have reached full operational temperature; about 1100°F.
Note: Accurate temperature paints may be obtained from Baer Racing.
5. Allow the brakes to cool, slowly, by driving easily for 10 minutes or so. The idea is to cool the brake system to ambient. Given the opportunity, let the system cool off over night.
6. The rotors are now ready for the next step in Preparing your Brake System, bedding pads

Racers should "Season" a couple sets of rotors at the same time. In the event that one needs to be replaced during a race, it should be replaced with a "Seasoned" rotor. We strongly advise against racing on a "green" rotor. The thermal shock and unrelieved internal stresses can crack, or even break, a "green" rotor.

Additionally, race cars should run a cool down lap before parking a car that has been run at speed. In the pits it is advised to roll the car back and forth, when the brakes are hot, to avoid internal stresses from uneven cooling of the rotor.

Pad Bedding for Race Applications will follow the same procedure as Pad Bedding for Street or Light Track Applications.