

Installation Instructions For E36 BMW M3 & 3-Series



Front Big Brake Upgrade



APPLICATION DISCLAIMER

Caliper Clearance

The StopTech BMW E36 M3 kit will not fit the stock M3 wheels. Most 17" wheels will clear the outer diameter of the caliper. The more critical clearance is the spokes of the wheel to the outer face of the caliper. Do not assume an 18, 19 or even 20 inch wheel will clear the outer face of the caliper. ***The actual metal-to-metal distance measured from the stock rotor face to the inside of the wheel spokes is 63.00 mm. We recommend at least 2mm of additional clearance.*** This is the net metal-to-metal measurement. We recommend at least 2mm additional clearance to clear the ST-40 caliper on the E36 BMW M3. See the Wheel Fitment Drawing page on our website for more specific measurements at www.stoptech.com.

Final fitment of the wheel to the caliper is the responsibility of the customer.

Wheel Spacers

Wheel spacers can provide extra clearance to the outer face of the caliper. This will also space out the entire wheel, widening the track width of the vehicle. Fender clearances should be checked on lowered cars, and longer lug studs or wheel bolts are usually required. Note: The Wheel Industry Council has issued guidelines advising wheel spacers not be used.

It is the responsibility of the customer to insure wheel spacers are properly specified and installed.

Brake Vibration - THIS IS IMPORTANT!

The most common cause of brake vibration is improper bedding of pads and rotors or improper pad selection for the specific driving environment. Rotor runout may also cause vibration, but precision manufacturing and inspection typically means runout is not an issue. Double disc grinding insures the rotor runout is within +/- 0.002" when installed on our aluminum hat and controls thickness variation within 0.0003". Under the most extreme conditions, any rotor may warp, but uneven pad deposition is a more typical vibration cause. If the system is not properly bedded in, or street pads are run on an open track, uneven pad deposits will occur causing an ever worsening vibration. Failure to immediately address a pad deposition/vibration issue may lead to permanent damage of the rotors. Please read and understand the bed-in procedures included with this manual. If you have any questions, please contact the StopTech Customer Service Department for assistance.

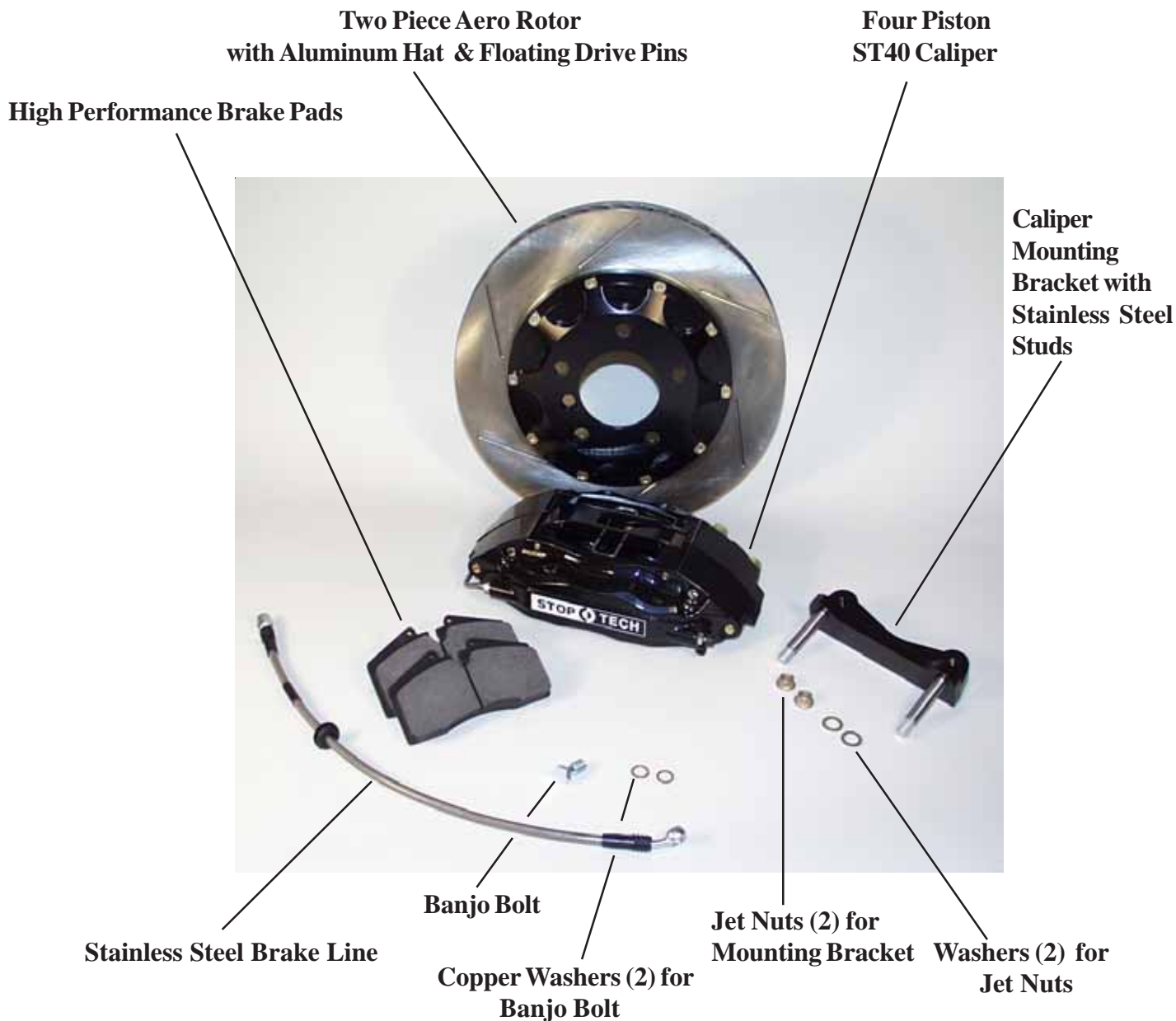
STOPTECH is not liable for vibrations caused by extreme usage or improper break-in procedures.

Brake Noise

Certain brake pad compounds make more noise than others. Proper anti-squeal shim plates between the caliper pistons and backing plate of the pad help reduce the problem. Anti-squeal lubricants are also available to reduce some of the noise. The reality is, performance pads are more prone to brake squeal.

The customer is responsible for any squeal related problems due to pad selection.

COMPONENT IDENTIFICATION



One Corner Shown

BMW M3 (E36 Model) ST-40 Front Axle Kit

Safety Notice

Improper handling of a vehicle, especially while raised and supported by jack stands, ramps or other mechanical means can cause serious bodily injury or even death. It is strongly recommended that a trained, experienced technical mechanic, with proper equipment, install the Big Brake Kit as supplied by STOPTECH LLC. STOPTECH LLC assumes no liability expressed or implied for the improper installation or use of this product or its components.

Liability No Warranty

Automobile racing, whether sanctioned or not, on or off the street, is dangerous. Products used in such environments / applications are subject to stresses and conditions outside of normal use / wear and tear. All equipment sold or provided by STOPTECH is sold WITHOUT WARRANTY, EXPRESSED OR IMPLIED. No warranty or representation is made to the product's ability to protect the user from injury or death. The user assumes all risk. STOPTECH is NOT responsible for any damage, consequential or otherwise for equipment failure or mal-performance after installation.

Please *believe us*, it will be better to read and understand this ENTIRE Installation Manual, including the Break-In Procedures before starting the installation.

NOTE- Some different models or years may use different size fasteners. Every effort has been taken to correctly identify the proper size tool for each job. Occasionally, the manufacturer may use an alternate fastener. Check that each tool correctly fits the fastener before tightening or loosening.

Tools and Equipment Required

17mm socket, 1/2" drive suggested
16mm socket, 1/2" drive suggested
14mm wrench
11mm wrench
9/16 " open end wrench
1/2" socket and ratchet (6 point is preferable, though 12 point will be sufficeint)
Torque wrenches capable 10-90 lb-ft settings
5mm Allen (hex) wrench
Small drip tray or several rags
Small funnel
Brake bleed bottle
1 pair of jack stands
Flat file
Half round file

Tools and Equipment Required (Continued)

Power die grinder with protective gloves and eye wear
Aircraft sheetmetal shears or snips

DOT 3 or 4 Brake Fluid. Check manufactures recommendation for compatibility. STOPTECH recommends flushing brake fluid every 1-2 years. If not done recently, the installation of a brake kit is an excellent opportunity to refresh your brake fluid.

Kit Includes The Following

1 pair of ST-40, 4 Piston Calipers

1 set of high performance brake pads

1 pair of 332 X 32mm AeroRotors™, mounted to anodized billet 7075-T6 aluminum hats, using floating drive pins and Inconel® anti-rattle hardware

1 pair of 6061-T6 aluminum caliper adapter brackets, with stainless steel mounting studs pre-installed using thread locker.

- 4ea. 7/16-20 Jet Nuts
- 4ea. 12mm washers
- 2 pair of copper washers
- 2 ty-wraps
- 1 pair of stainless steel covered Teflon brake lines.
- 1 pair of Banjo Bolts
- 1 pair of rubber end caps

Caliper, Hat and Bracket Finish Disclaimer

Many wheel-cleaning solutions contain *strong acids* that may damage the finish on any caliper or aluminum anodized finish, especially the plating on the hardware. Check for adverse effects by trying a small amount of the cleaner in question on an inconspicuous area. Avoid over spraying, and rinse cleaning solutions off as quickly as possible. *STOPTECH will not be held liable for damage to caliper, hat or bracket or hardware finish due to corrosive chemical exposure.*

A level, stable and clean surface suitable for supporting the car on jack-stands should be used for the installation.

Step 1

Jack up car

Apply parking brake and block rear wheels.

Break loose the lug nuts on both front wheels with a 17mm socket before jacking up the car.

Refer to the Owners Manual for correct location for jacking up the vehicle. Jack up the vehicle and secure on a pair of jack stands, or one side at a time with one jack stand.

NEVER LEAVE ANY VEHICLE SUPPORTED WITH ONLY A JACK, ALWAYS USE JACK STANDS.

Note: All Photographs Show Right Side Installation

Step 2

Remove Wheels

After securing the vehicle at a convenient height, remove the front wheels.

To simplify wheel removal - hold foot at bottom of wheel while removing the lower (last) lug.



Wheel shown may not be representative of this kit.

Step 3

Remove Inner Brake Line Connection



WARNING - Brake fluid will damage most painted surfaces. Immediately clean spilled brake fluid from any painted surfaces.

Place a drip tray or several rags directly below the inboard brake line connection. If the area around the connection is dirty, clean with brake cleaner or appropriate cleaning agent.

NOTE - Be sure the cap is securely installed on the master cylinder. If the cap is loose or removed, it is likely more fluid will drip.

Using a 11mm wrench, loosen and remove the hard line fitting from the stock brake line.

Step 3 (Continued)

Quickly place one of the rubber caps over the end of the hard line. This should effectively control fluid loss for the duration of the installation.

Note - The hard line and fitting will remain in the spring clip on the top side of the mounting bracket attached to the chassis of the car.



Slide the inboard brake line fitting clear of the bracket.



With wheel pointed straight ahead, remove the brake line with grommet from the bracket on the strut. The grommet will be easier to remove with the wheels straight ahead.

Step 4

Remove Stock Caliper

Loosen the stock caliper mounting bolts with a 16mm wrench or socket.

Note - Bolts are very tight from the factory. A great deal of force may be required to loosen them. It may be necessary to turn the steering opposite of the side you are working on so the wrench handle sticks out clearing the rear of the wheel well. Full lock may slightly straighten if wheels not held.

Remove the caliper with stock line attached. Be aware there may be some leakage from the open end of the brake line, but it should remain fairly dry unless the pads / pistons on the caliper are retracted.

Step 5

Remove Stock Rotor

Remove hex head screw using a 6mm Allen Wrench

Spindle showing caliper and rotor removed



Note - Rust and corrosion may make this bolt difficult to remove. Be careful not to strip the bolt hex. If bolt does not easily come loose, try a penetrating thread lubricant to loosen the threads. If bolt is not easily removed, consult a professional mechanic or brake technician for assistance.

Step 6

Check Clearance and Install Caliper Bracket

Test-fit the StopTech caliper bracket, as excess material on the BMW steering knuckle may prevent it from being mounted properly. On models earlier than 2000, it may be necessary to file a small flat on the knuckle, as shown. On 2000 or newer models, you may need to remove up to 8mm of material, using a power die grinder.

Removing this material does not compromise the structural integrity of the upright.

Both caliper bolts should easily thread in with no interference. Visually check for a small amount of “daylight” between the components, or use a feeler gage. A clearance of 0.010” or more will be sufficient between the bracket and upright.



Ground boss (top)

Filed boss (top)



Install the caliper adapter bracket to the upright using the stock caliper mounting bosses and the stock mounting bolts. The pre-installed studs face rearward, and the bracket mounts on the outboard side of the caliper mounting lugs on the upright.



Apply Loctite™ 262 to both threads on the caliper bracket and torque the bolts to 60-65 lb-ft.



Installed bracket

Note - Again, it may be necessary to turn the steering opposite of the side you are working on so the wrench handle sticks out, clearing the rear of the wheel well.

Step 7

Install the AeroRotor Assembly

Install the pre-assembled AeroRotor and aluminum hat assembly onto the spindle. Hold in place with the stock retaining Allen screw.



Be sure the rotor assemblies are on the correct side of the car. Reversing the rotors will severely decrease the cooling capacity of the system. The vanes inside the rotor should lean to the rear of the car on the top side of the rotor.

Left Side AeroRotor



Driver's Left

Right Side AeroRotor



Driver's Right

Outboard Side

(Rotors shown may not be representative of product supplied for a specific kit)

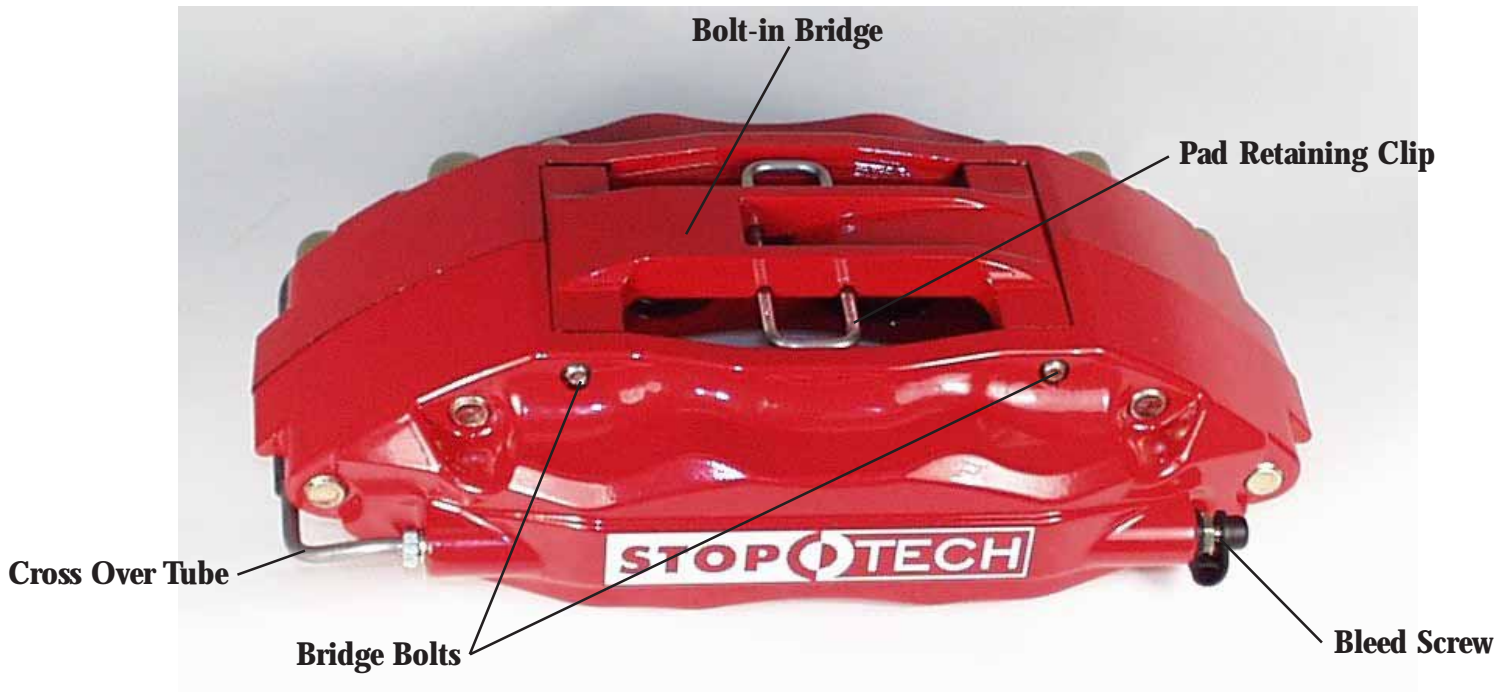
Step 8

Install the ST-40 Caliper

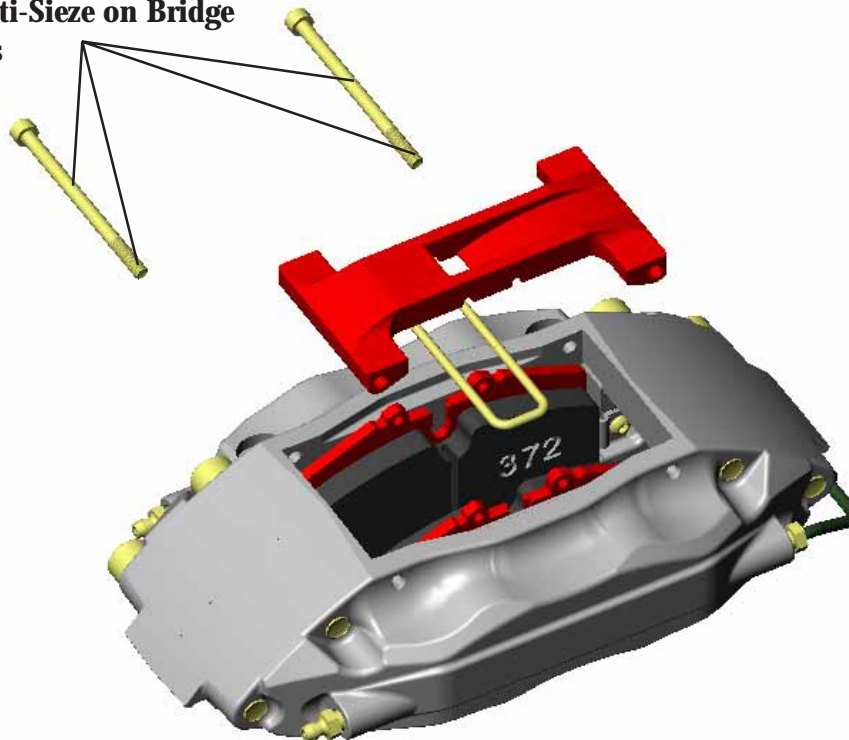
If not already done, remove the Jet Nuts and washers from the studs of the caliper adapter bracket. Determine the left and right side calipers. The calipers are marked on each box.

As a check, the bleed screws always go to the top of the caliper.

Caliper Component Identification



Use a light film of Anti-Sieze on Bridge Bolt shaft and threads



The ST-40 caliper uses a Porsche style pad.

The Friction Materials Standards Institute (FMSI) number for the pad backing plate is
D372

Please see the FAQ section of our website for further pad interchange information. www.stoptech.com

Step 8 (Continued)

Remove the 2 bolts holding the caliper bridge using a 5mm Allen wrench.



Remove the caliper bridge taking note of the direction it is installed in and the correct location of the pad retaining wire clip, which typically, but not always, stays attached to the bridge.

Wire pad retaining clip

Note direction of bridge vane - it points downward toward the smaller diameter piston

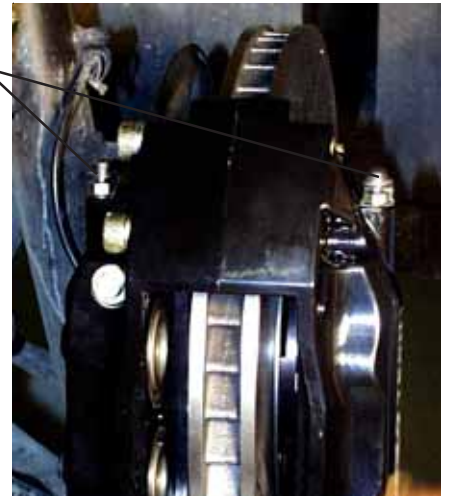
Note- In order to stiffen the caliper, the bridge is a very snug fit and the bolts may be tight when coming out. Keep turning bolts gently with pressure applied in the direction of removal. After removing the bolts, it may be necessary to tap the bridge out from the inside of the caliper with a plastic or leather hammer or similar tool. The handle of the tool works well for this. With use, the bridge and bolt fit will become easier to remove and install.

- Slide the caliper over the mounting studs with the bleed screws facing up.

Install the Jet nuts onto each stud with one 12mm washer under each nut.



Tighten the nuts to 40-45 lb-ft of torque using a 1/2" socket (6 point is preferable, but 12 point will work).



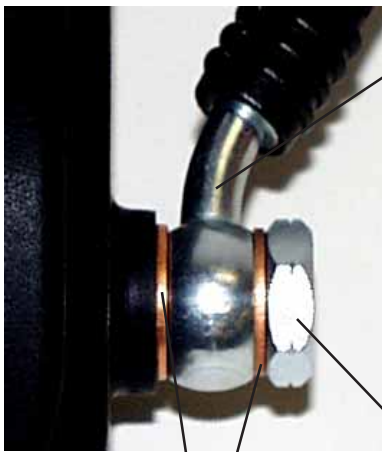
Step 9 (Continued)

Install the Stainless Covered Teflon Brake Line

With the banjo bolt end of the line toward the caliper, and the wheels pointed straight ahead, slide the gromet on the brake line into the bracket on the strut in the same location as the stock line.



(Photo may not represent orientation on vehicle - shown for reference only)



Install the Banjo bolt with a copper washer on each side of the Banjo fitting on the brake line, and thread into the inlet port of the caliper.

While holding the line pointing toward the bracket on the strut, use a 14mm socket or wrench to tighten the Banjo bolt to **10-14 lb-ft of torque**.

Banjo

BanjoBolt

Copper Washers

Orientation

Caliper



Step 9 (Continued)

Remove the rubber cap from the end of the hard brake line.



Slide the inboard end of the new stainless line into the existing bracket hole the old line came out of. Be prepared to use both hands to align the fittings as the spring clip may keep the hard line fitting from immediately lining up. Start the hard line fitting into the new line several threads by hand before using a 11mm wrench to tighten the fitting. It will be necessary to hold the stainless brake line fitting in place with a 9/16 wrench.

Turn the wheels lock-to-lock and be sure the brake line is not binding in any way. If necessary, loosen the Banjo bolt and slightly re-align the brake line.

After confirming brake line location is acceptable, ty-wrap grommet to strut as shown.



Grommet

Secured Ty-Wrap



Step 10

Install Brake Pads



Slide the pads into position through the outboard side of the calipers. Be sure the friction side of the pad is facing the rotor (Yes, they have been installed backward before).

Make sure the pad retention clip is installed in the caliper bridge.

Re-install the bridge by sliding it into position and rocking it until one of the bolt holes lines up. It may be necessary to gently tap the bridge into place with a plastic or leather hammer. Insert the first bolt and start the first few threads using a 5mm Allen wrench. Gently press the opposite side of the bridge with the palm of your hand until the second bolt engages the hole. With pressure still applied, start the second bolt. Torque each bolts to **8 to 10 lb-ft of torque**.



If you intend to track the car or live in a climate with severe weather add a light film of anti-sieze to the shaft and threads of the bridge bolts before installing.



WARNING: DO NOT HAMMER BRIDGE BOLTS INTO PLACE. Adjust position of bridge until bolts slide in more easily.

Note: In order to reduce caliper flex, the bridge is a precision fit that must be aligned correctly to slide straight in and out. The bridge is directional, in that the “air-scoop” detail should always face the smaller caliper piston.

Note: The stainless steel wire pad-retaining clip will have a slight spring load when installed. This load helps keep the pads away from the rotor when the brakes are released.

Step 10 Continued

NOTE: Complete brake installation on the other side of vehicle and make sure both side have pads installed before bleeding brakes.

Step 11

Bleed the Brakes

Bleed the brake system using a 11mm wrench on the bleed screws:

The sequence for bleeding the brakes should be:

- 1. Right outboard bleed screw**
- 2. Right inboard**
- 3. Left outboard**
- 4. Left inboard**

Note: The calipers and lines will need to fill with fluid, quickly draining the brake fluid reservoir. Keep a close watch on the fluid level when initially bleeding the system. Do not allow the master cylinder to run dry and suck air. Doing so may require the brake system to be serviced by a certified brake technician. After bleeding, with a constant pressure applied to the brake pedal, check all connections for leaks.

Note:

Brake fluid will damage most painted surfaces. Immediately clean spilled brake fluid from any painted surface, including the caliper. Though caliper paint is designed to resist harsh chemicals, prolonged exposure will damage the finish.

Step 12

Check Wheel Clearance and Install Wheels

Check wheel to caliper clearance before installing wheels - see Note below!

Note: Many wheels are balanced on the inside with adhesive backed lead. If the lead is on the outboard edge near the spokes, it may interfere with the caliper. If necessary note weight and location and place a new piece of the same weight further inboard to clear the caliper.

Re-install the wheels using wheel manufacturer's torque specifications. If in doubt, 85–90 lb-ft of torque is normal. It may be necessary to snug the bolts before lowering the vehicle and then torque the wheel bolts when the car is on the ground.

Note: If using slotted rotors, align the wheel so slots show between the spokes (purely aesthetic, but why cover them up!)

Step 13

Test Brake System

Carefully test-drive the vehicle in a safe area at low speed to insure all components are working correctly. If there is any question as to what you feel, hear or see during this slow drive, consult a professional mechanic or brake technician for advice, or call the STOPTECH Customer Service Dept. at 310-325-4799 X 105.

After assuring brake system has been correctly installed, follow pad and rotor break-in procedures on following pages.

All trademarks are properties of their respective owners. STOPTECH is not associated or affiliated with or sponsored by BMW.

Thank you for selecting STOPTECH, we know you had a choice in selecting your big brake upgrade for your BMW M3.

We proudly support our fine products. For any assistance or questions, please contact our Customer Service Department at

(310) 325-4799 extension 105
or e-mail us at support@stoptech.com.



AeroRotor™ Installation & Break-in Procedure

READ THIS NOW

FAILURE TO READ, UNDERSTAND AND FOLLOW THESE PROCEDURES WILL CAUSE PERMANANT DAMAGE TO YOUR BRAKE ROTORS AND KEEP THE SYSTEM FROM WORKING AT IT'S FULL CAPACITY.

The majority of brake system problems are due to improper installation and/or break-in of the rotors and pads. By reading and understanding the following, you will avoid the most common causes of poor brake performance and vibration. **FAILURE TO READ AND UNDERSTAND THIS MAY CAUSE SERIOUS PERMENANT DAMAGE TO YOUR NEW ROTORS.**

Wash Non-Plated AeroRotors with SOAP AND WATER before installation.

StopTech coats non-plated AeroRotors with a water soluble, environmentally friendly rust inhibitor that **MUST** be cleaned before use. A non-plated rotor looks like bare metal, plated rotors are bright silver in color and do not need to be washed. Even though you may not see a change in the rotor color, if the rotor is not rusty, the rust inhibitor is there. Use soap and water, **NOT BRAKE CLEANER** to wash the rotors. A small piece of Scotchbrite works well to scrub with. When cleaned and rinsed properly, the surface of the rotor will immediately show a light rust color which is normal.

Break in your new pads and rotors by carefully following the procedure described below and on the opposite side of this page.

Breaking in rotors and pads is critical to the optimum performance of your new brakes. When breaking in new parts, you are not only heat cycling the pads, but depositing a layer of pad material onto the rotor face as well. If not broken in properly, an uneven layer of pad material will be deposited onto the rotor causing vibration. ***Virtually every instance of a "warped" rotor is attributed to uneven pad deposition.***

Note: Plated rotors must be driven with gentle braking until CAD plating is worn off rotor faces BEFORE starting the break-in procedure. Do not use brakes aggressively until plating is worn off, typically several miles of driving

Typically, a heavy braking street driver will experience approximately 1 to 1.1G's of deceleration. At this rate, ABS will be activated on such equipped vehicles. A moderate braking effort is needed to properly break in rotors and pads. If ABS intervention or lock-up was called 100% brake effort, a stopping force of approximately 70-80%, just short of ABS intervention or lock-up is a general estimate of pedal effort you are trying to achieve.

(Please see other side)

3541 Unit A, Lomita Boulevard, Torrance, CA 90505 (310) 325-4799

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Rotor and Pad Break-in (continued)

Note-

Bedding of pads should not be done in wet weather or wet road conditions.

After completing installation, make a series of 10 stops from 60 to 5-10 MPH. At the end of each stop, immediately accelerate to 60 again for the next stop. Run all stops in one cycle.

During the 60 to 5-10 MPH series of stops, the exact speed is not critical. Accelerate to approximately 60 and begin the braking cycle. As you approach 5-10 MPH, it is not necessary to watch the speedometer, keep your eyes on the road and approximate your speed at the end of each cycle. **DO NOT COME TO A COMPLETE STOP, AS YOU WILL IMPRINT PAD MATERIAL ONTO THE ROTOR, CAUSING A VIBRATION.**

There are several indicators to look for while breaking in the system:

On the 8th or 9th stop, there should be a distinct smell from the brakes. Smoke may be evident after several stops as well.

Also on the 8th or 9th stop, some friction materials will experience “green fade”. This is a slight fading of the brakes. The fade will stabilize, but not completely go away until the brakes have cooled.

After the break-in cycle is finished, there will be a blue tint color on the rotor with a light gray film on the rotor face. The blue tint indicates the rotor has reached the proper break-in temperature and the gray film is pad material starting to transfer onto the rotor face. This is normal and good!

If racing or higher performance pads are being used, add four stops from 80 to 5-10mph and if a full race pad, four stops from 100 to 5-10 mph.

After the first break in cycle shown above, the brakes will still not be operating at their best capacity. A second or third bed-in cycle is typically necessary before the brakes really start to “come in”. A “cycle” is a series of stops with a cool down in between each cycle.

StopTech does not endorse speeding on public roads. If going above the legal speed limit, do so in a safe area, away from traffic at your own risk.

After the final stop of each cycle, drive as much as possible without using the brakes to cool off the system. Ideally, the brakes should be allowed to cool to ambient temperature before using again.

DO NOT COME TO A COMPLETE STOP WHEN THE SYSTEM IS HOT AND LEAVE YOUR FOOT ON THE PEDAL. PAD MATERIAL WILL IMMEDIATELY TRANSFER TO THE ROTOR CAUSING A VIBRATION.

If you have any questions about rotor and pad break in, or any aspect of your StopTech brake kit or brakes in general, please contact our Customer Service Department at 310-325-4799 X 105 or e-mail us at support@stoptech.com

Thank you for selecting StopTech, we realize you had a choice in selecting a big brake upgrade for your vehicle and know you'll be happy with our system.

We proudly support our fine products. For any assistance or questions, please contact our Customer Service Department

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