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Brembo 18Z 6 piston brake upgrade. DIY 'BBK' write-up. Big brakes for under a grand!

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Atl-Atl · Registered

Joined Jun 6, 2006 · 9,231 Posts

Discussion starter · #1 · Sep 26, 2012 (Edited)



Obviously do things at your own risk, I have no responsibility

So here we go. First things first, I owe this to Chuong(John) Tran known as xola3que on forums, who's build I followed and assistance was priceless when putting this kit together for the first time on a Golf R. He has the front and rear Cayenne setup on his MKV GTI and was the person that developed the bracket to mount the rear calipers with a separate parking brake. I have not done the rears yet because the brackets might not work on the AWD rear spindle. John and I are in the process of getting an AWD spindle to test fitment and make a new bracket if necessary. I'll get back to you. John also developed custom 2 piece rotors that can be had for \$500 which is about half what you can buy them for from a vendor. I opted not to do this to keep the cost down and I did not include it in the write-up but if you want the rotor info just ask.

I will try to include all the info I have but if necessary I will update this post when I realize things I have forgotten or decide I to add stuff. Hopefully this makes sticky status

I expect the people performing this swap know basic mechanics so I am not going into simple things like how to remove the stock brakes, or how to bleed to new brakes.

These calipers have been used on a number of different vehicles. From B5/6 A4/S4 Audis, A6/Allroad Audis, A3 Audis as well as MKV/VI GTI/Golf/Jettas. I chose to use the Brembo 18Z model caliper which is meant for

actually more powerful. I have not looked into this because I did not want to run a smaller than stock rotor. I did a ton of research on these brakes before purchasing anything. If anyone is interested in the links I saved or the specific people/places I went for my research let me know and I will share. I don't like to link other websites in my posts.

My First concern was if the 6 piston 18Z calipers would work well with the stock R master cylinder. This is where I did the majority of my research. Of course a lot of the people on the 'net post up nonsense like "your brake pedal will always be soft because the fluid volume of the 18Z calipers is so much higher due to all the pistons, your front bias will be terrible, your car will brake so terribly in the winter it will crash and explode upon impact etc." All of this speak came from people that seemed **not** to have these brakes on their cars. The people who actually had these brakes on their cars reported no ill brake effects at all. The only place I could find true concern with brake bias was in the Audi crowd. Someone even went so far as to buy an RS4 master cylinder and bench test it's flow because rumor was it had a higher volume than their stock master. Turns out they look identical but are definitely different. This person reported an increase in volume from the RS4 and consequently better brake pedal feel. I have not found anyone that did the master cylinder swap on an MKV/VI VW. Nothing I found in my research scared me away from installing these brakes on my R. Was that the right decision? I'll let you decide.

My second concern was if these calipers would actually bolt up to the R. I assumed they would but you all know what assuming does. So I started looking to see if anyone had run these brakes on an R but I couldn't find one. I might be the first, yippee! Since there are a lot of people running these on MKV/VI platform cars I crossed my fingers and assumed the front spindle on the R would be the same as the FWD cars and the caliper mounts would be identical. Thankfully I was right and platform/part sharing by VW helped me out. After countless emails with John and online research I decided to start ordering parts. I won't go into the reasons why it took me two months to acquire all the parts. Parts can be sourced individually from a few sites and probably completed in one day. It can even be done in one click if you just want to buy the whole kit from a few vendors that sell it. I wanted to do it for less than the \$1900-2500 they list for and I did, a lot less.

There were a few things I bought that were not necessary. I planned on repainting the calipers which I did not because it turns out the silver looks awesome and super low key on my black R. That was about \$50 worth of material. I bought some new high temp decals for \$8. I bought a power bleeder for \$70 that wound up not working and spilling brake fluid all over my engine bay and garage floor. I think the "kit" I got with it that was meant for Euro cars had the wrong cap for the fluid reservoir. Oh well I did the old fashioned two person brake pump job and it worked great. I bought new brake pad wear sensors for \$12 because I thought the plug was different than the R sensor plug. Turns out the wear sensor plugs are identical for the Cayenne and the R!!! This was pretty awesome to find out. Below you will find my parts list with prices. Lastly I bought some caliper rebuild parts I did not need, the pad arch and bolt that mounts it all to the caliper. This was \$60 I didn't need to spend. The parts needed for this kit are pretty minimal. I am surprised more people have not done this swap seeing how easy it is. That's a total of \$200 I "wasted" because I wound up buying both my calipers from a salvage yard that has a lot of high end stuff and sold the calipers completely loaded with pads and all, everything looked almost new.

Here is the parts list with prices I paid including shipping tax etc. I am not kidding, this is everything:

- Mercedes Benz GL450 Powerslot rotors \$230 shipped.
- Stoptech stainless steel brake lines for MKIV R32 \$88 shipped.
- JHM mounting bolts \$87 shipped.
- Aluminum hub-centric rings 67mm OD to 65.1mm ID \$10 shipped from John!

Total = \$941

The stock caliper weighs 18.5lbs, 18Z weighs in at only 14.35!



The stock rotor weighs 26.5lbs, the Benz GL450 Powerslot rotor I am running weighs in at 29.56. Total weight savings between the two is about 1lb per corner, not bad for the massive increase in pad size!



This kit can be done for even less money. It is possible to use the stock R rotors. You can "shave" \$200 off the price of the kit by doing this which would bring the price total down to a measly \$741, that's pretty nuts for a forged aluminum monobloc 6 piston caliper front brake setup!

A note about brake lines

You can run the stock lines, but you will need to get a banjo bolt to mount the stock lines to the Cayenne calipers. I chose to run MKIV R32 brake lines. (I do not have the specs for this bolt but can probably find them easily.) They are the same length as the stock R lines. They have the same body side mount. They have the same mid-point mount where the line is attached to the spindle. The difference is the caliper side mount. The MKIV R32 line threads directly into the caliper with no other parts or work necessary. I chose to run Stantech stainless R32 lines because they are DOT approved







A note about running Benz rotors

Benz rotors have a different inside hub diameter than VW rotors. The Benz hub diameter is 67mm. The VW hub diameter is 65mm. You need to run a spacer to fill that gap. If you do not run the spacer you will get wobbles at certain speeds that feel similar to your wheels/tires being out of balance. Almost all cars these days are hub-centric so the rotor needs to sit securely on the hub, the lugs will not accomplish this task sufficiently you have to run the spacers. These spacers are available in plastic and metal. I would only run metal because brakes get very hot and could potentially melt the plastic. I bought a pair of aluminum spacers from John for \$10 which was a great deal. The cheapest I found them online was \$20. The ones he sent me fit however they stuck out farther than the hat of the rotor so I had to grind them down flush with the face of the rotor hat. I did not take a picture of these and I apologize. If you snap the spacer into the Benz rotor you will see what I mean. Mark the excess with a sharpie, grab it with two pairs of pliers and grind it off with a bench grinder. Its aluminum and aluminum is soft, be careful.

Stock rotor "set screw" hole



Benz rotor "set screw" hole, see the difference? There isn't a tapered hole that's anywhere close in size to stock.



Now let's start looking at how to assemble everything

If you are going to run custom 2 piece rotors (which I'll get to later) or any kind of Benz GL450/ML63 variant rotor skip this step.

The stock rotors need to be machined. This can be done at almost any decent auto parts store for about \$20 per rotor. The rotors are face down in this pic, the side that needs to be machined is the side facing the ground. The only modification you have to do is machine down the outer face (the one you can see from the outside of the vehicle) of the rotors 3mm. The stock R rotors are 345mm (the 18Z calipers are meant for a 350mm rotor) so they will sit slightly low on the pads giving 5mm of pad overhang at the top and 5mm where the pad will not contact the rotors braking surface so it may rust. The other downside to using machined stock rotors is they will not sit centered in the caliper. This may be bad and it may not, I don't know and I didn't do it so I can't help you there. See pic below which shows the offset difference between



Mounting the new calipers and rotors

Assuming you skipped the last step let's look at mounting the Benz rotors and 18Z calipers. I bought the mounting bolt kit from JHM so I can't speak for anyone that pieced together the nuts/bolts/washers/spacers. It was tough to swallow \$87 for a few small pieces of metal but it saved me a ton of time and gave me piece of mind knowing the parts were the correct grade fasteners etc. to use in the most important part of the vehicle, the brakes. The calipers bolt right up to the stock mounting points. The only thing you need is a spacer that sits inside the caliper mounting hole and takes up the size difference between the bolt threads and the caliper mounting hole, see pics.



The Benz rotors do not have the same rotor set screw as the stock R rotors. This means two things, you can deal with the floating rotors trying to rotate when you are mounting a wheel and having to line up the holes in the rotor with the holes in the hub and wheel. Or you can do a lug stud conversion. I opted for the lug stud conversion. I do not know if the stock dust shields will clear any part of this setup. I removed them before



Mounting hardware.



If you have a stud conversion you can simply slide the new rotor on and it will for the most part stay in place. If you did not you will have to finagle the rotor on, maybe hold it in place by threading on a stock lug-stud. Then mount the caliper. The mounting pieces come in the bag pieced together in the correct order. The bolt head(which is a 12mm allen!!!!) sits on the "inside" of the vehicle, the nut(which is 22mm, stock is 21mm what a PITA) sits on the "outside" of the vehicle. The nut will appear to be *extremely* close to hitting the inside of the rotor, see pic below. It does clear by a mm or two. I was so worried about this clearing I mocked up the calipers on both sides TWICE before I did the full on install. I even bolted the wheels on, dropped the car down to ride height and pushed the whole vehicle back and forth to listen for any kind of contact. You can leave the stock calipers still attached and simply set them out of the way while you bolt on the Cayenne calipers.



I did not torque the caliper mounting bolts. This was probably not smart. I tightened the new hardware tighter than the stock hardware which wasn't on very tight. I will try to get the torque specs from JHM for their bolt kit. I will add this info when I get it.

Now we are getting close

Once you have the rotors and calipers bolted on its time for the misc. parts. There are a few electric cables running around the brake parts. The larger cable is the wheel speed sensor cable, don't mess with this. This is the only cable on the passenger side. On the drivers side there is a slightly smaller cable that is attached to the caliper. This is the brake pad wear sensor. The 18Z calipers have brake pad wear sensors on both driver and passenger sides. The R only has one brake pad wear sensor which is on the drivers side. I simply snipped off the stock 18Z wear sensor that was on the passenger side caliper. Here's the amazing part. The plug on the R which connects the pad sensor to the cable coming from the vehicle is the same exact plug as the stock 18Z plug! My 18Z calipers came from an 05 Cayenne S, I can't speak for any other years or vehicles but I was surprised/happy to learn it plugged right in. The only modification you need to make is slightly bending up the tab where the plug mounts. You'll know what I mean when you get here. If your plug doesn't line up there are a few options. You can run aftermarket pads that have the correct sensor installed. You can splice in the correct plug from the R. Or you can simply cut the stock R sensor and "close the loop" on the sensor by connecting the two wires to each other. I have confirmed the latter works with MrSonSO who performed this "mod" when he put Hawk pads with no sensors on his R.

Now you are ready to install the new brake lines at the caliper, remove the stock line at the body and quickly install the new line at the body. Do this on both sides and you are done with installation. All you have to do is bleed the brakes and you are good to go. Have fun bedding in your rotors and staring at your beautiful new



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Atl-Atl · Registered

Joined Jun 6, 2006 · 9,231 Posts

Discussion starter · #2 · Sep 26, 2012 (Edited)



Rear setup has hit a major snag. The R rear knuckle is completely different than the MKV R32 knuckle and also different than FWD knuckles. There is no way to make the xola3que brackets work in the rear. Something new has to be made custom and the project has fizzled for now.

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Joined Jun 6, 2006 · 9,231 Posts

Discussion starter · #3 · Sep 26, 2012 (Edited)



Wheels that clear the brembos are the following:

No spacer

19 VMR V709s

Spacer

Spacer + Grinding of caliper

TR Motorsport MT1s 17x8 et48

- Will fit eventually, they are very close with no spacer or grinding. I bet with 2mm of grinding and 2-3mm of spacer they will fit.

Template to check wheel fitment



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E [ecirwin](#) · Registered
Joined Feb 27, 2009 · 2,741 Posts

#4 · Sep 26, 2012



Very nicely done! Awesome write up as well.

2012 Golf R 2Dr Loaded CSG - Diesel Geek, Delete R Badges, USP Downpipe, Autotech HPFP, UM Stg2, Rebadge.com, Volant CAI, Twintercooler, LED Tails, TSW Interlaggos 19X8, CTS TOP & TP, USRT W/M, VWR Streetsport Plus, H&R RSB, SPM motor mounts

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P [psipassat](#) · Registered
Joined Sep 13, 2001 · 610 Posts

#5 · Sep 26, 2012



So tempting.

2012 Candy White Loaded Golf R **UM Tune!!!! GT Haus Meisterschaft Exhaust with 104/90mm downpipe, and 76mm rear section Valve actuated Exhaust EVOMS intake HPA short shifter HPA Stage 3+ Clutch Kit** 

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V [velocity196](#) · Registered
Joined Feb 19, 2006 · 5,520 Posts

#6 · Sep 26, 2012



:beer:

60mm

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HardKnox · Registered

Joined May 26, 2012 · 864 Posts

#7 · Sep 26, 2012



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V

VR420man · Registered

Joined Jun 13, 2009 · 1,271 Posts

#8 · Sep 26, 2012



Do the stock wheels fit on this setup

2013 CW 4D Golf .:R / **UnitedMotorsport stage 2**/ APR RSC TB Exhaust / Forge TwinTake / NSP Golf .:R boost guage / Autotech HPFP.....

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#9 · Sep 26, 2012



Great mod! Well done.

'12 Euro Golf R DSG

Stage 2+ APR | BCS Downpipe | BCS 100cel Cat | EVOMS Intake | APR HPFP | OEM LED Tails | OEM Black Light Housings | OEM 19s | OEM Recaros

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**Atl-Atl** · Registered

Joined Jun 6, 2006 · 9,231 Posts

Discussion starter · #10 · Sep 26, 2012



VR420man said:

Do the stock wheels fit on this setup

I did not try fitting the stock wheels before I sold them. I imagine they would clear with spacers but I don't know what size spacer that would be. I hope to start fitting wheels so I can add what wheels fit to the build thread. Some people have managed to fit 17" wheels over these calipers. Its more about spoke clearance than barrel clearance.

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**S****speedfrk** · Registered

Joined Nov 9, 2004 · 2,544 Posts

#11 · Sep 26, 2012



nicely done mike. i will most likely be doing this over the winter. got myself a beater for cheap. thanks!

UM ftw

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**V****VR420man** · Registered

Joined Jun 13, 2009 · 1,271 Posts

Ive done nothing at work but stare at this thread for the last 6 hrs.....:laugh:

2013 CW 4D Golf .:R / **UnitedMotorsport stage 2**/ APR RSC TB Exhaust / Forge TwinTake / NSP Golf .:R boost guage / Autotech HPFP.....

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V

velocity196 · Registered
Joined Feb 19, 2006 · 5,520 Posts

#13 · Sep 27, 2012



VR420man said: 

Ive done nothing at work but stare at this thread for the last 6 hrs.....:laugh:

LMAO!! Can't blame you really, 6 piston calipers slotted rotors braided lines and new hardware all for under a G! That is unheard of! To be honest I'm surprised some venders haven't complained and had this thread black holed LOL!

60mm

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M

MKIINIK · Registered
Joined Nov 2, 2009 · 1,471 Posts

#14 · Sep 27, 2012



Nice write up. I might have to look into doing this. :thumbup: I pieced 4 Piston for \$600 on my MKV so 6 piston \$800-1000 cheaper than some of the retail BBK kits sold is a smoking deal.

Team Freddy

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D

droopy1592 · Registered
Joined Nov 13, 2002 · 2,807 Posts

#15 · Sep 27, 2012



How is the "feel?"

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Atl-Atl · Registered
Joined Jun 6, 2006 · 9,231 Posts

Discussion starter · #16 · Sep 27, 2012



droopy1592 said:

How is the "feel?"

The "feel" is great. When I first installed them I gravity bled the new lines/calipers. Then I had a person pumping the brake pedal while I did the full bleed. There are 2 bleed screws on each caliper so you can really get them bled well/evenly. It took a while to get the pads to bed into the rotors. I think because the car is so light and the brakes are so powerful. It has taken multiple repeated very high speed stomps down to about 5mph to get it done and they still aren't quite finished. What I have noticed is the initial "bite" is getting stronger over time which I like, and I am still using the stock Porsche pads. There is zero "late-braking" in the wet, which the stock brakes did a little. First time I've owned a modern German car that didn't late-brake in the rain! I also have not noticed any front bias issues. I have really slammed on the brakes a few times, late braked into corners, turn while braking etc. and it feels exactly like stock just more powerful. I'm getting happier I did this every time I drive *and* look at the car!

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S

speedfrk · Registered

Joined Nov 9, 2004 · 2,544 Posts

#17 · Sep 27, 2012



I was thinking of you at the end of every one of my runs last night. Wishing I had this setup.

UM ftw

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T

tommiegunsz · Registered

Joined Nov 25, 2009 · 7 Posts

#18 · Oct 11, 2012



BBK Help

Hello- i need help sourcing the calipers for the BBK please... where did you find yours at?

thanks,

tom

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Atl-Atl · Registered

Joined Jun 6, 2006 · 9,231 Posts

Discussion starter · #19 · Oct 11, 2012



tommiegunsz said: 

Hello- i need help sourcing the calipers for the BBK please... where did you find yours at?

thanks,

tom

I found my matching pair at a local salvage yard. I also bought a single caliper on eBay. For starters try calling your local salvage yards.

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velocity196 · Registered
Joined Feb 19, 2006 · 5,520 Posts

#20 · Feb 7, 2013



Atl-Atl said: 

I replied to your pm.

I found my matching pair at a local salvage yard. I also bought a single caliper on eBay. For starters try calling your local salvage yards.

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That's how I found mine. They has a beat up seat that I'm going to paint back to life. 100 buck each side couldn't refuse them! From the looks of it, new drilled and slotted rotor will be more then the rest of the brake package!

60mm

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