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Golf V R32

Mini DIY: How to drain/fill bevel box, haldex and rear differential housing

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Thread: Mini DIY: How to drain/fill bevel box, haldex and rear differential housing

Audi_Mechanic

Member

Join Date: Mar 24th, 2012 Location: Long Beach, CA 1,433 Posts:

Vehicles: 2003 20AE GTI BMP #2351, 2013 Golf R 4dr plain as paper

Mini DIY: How to drain/fill bevel box, haldex and rear differential housing

02-04-2016 01:53 AM

There's still lots of questions going around about servicing all the drivetrain oils, minus DSG. So I decided to take a few pictures to point out where all the drain & fill plugs are.

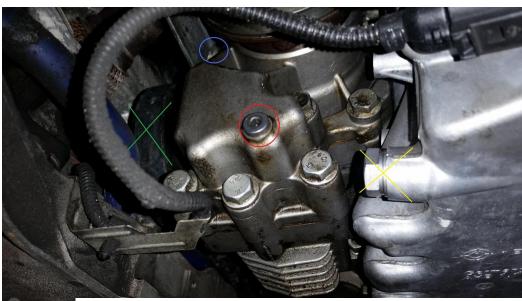
Oil capacities and part #'s were taken from 2008 A3 fluid capacity table last updated July 2012. Repair procedures and torque specs are referenced from 2008 A3 3.2 CBRA with DSG repair manual.

With each of these units, have a drain pan handy, remove the fill plug first to allow air to displace the oil, then remove the drain plug. Fill and drain sealing washers do okay when re-used, just make sure they don't have any rings crushed into them. Or plan ahead and get replacements; repair manual recommends replacing the drain/fill bolts.

BEVEL BOX/TRANSFER CASE

Oil part #G 052 145 S2 (confirmed in ETKA), for 02E DSG bevel box used with 0AV rear final drive. New Fill: 0.9L (1.0qt) Drain and fill plugs 15Nm for 5mm allen drives; upper & lower: N 902 818 02. If you have a larger sized drain bolt, 60Nm; 02M 409 057

View from below: Yellow X is the engine oil drain bolt, Red circle is drain plug, Blue circle is fill plug, Green X is front propeller shaft coupler.



Better view of fill plu

















Side view of fill plug from r/f driveshaft:



Drain and fill are removed using a 5mm allen. Use a 1/4" drive allen driver on fill plug, ball end helps, and extensions. Not a lot of torque is needed so if hand tightening keep in mind: aluminum housing. If you can't see the fill, take a picture with your mobile do every and sometimes place calls device, check the allen drive for dirt and clean out if necessary to prevent rounding it out. Fill til it spills. No temperature sensors in the unit and no temp recommendation by the repair manual. Try to have the car level.

HALDEX

Oil part #G 055 175 A2 if your rear diff starts with 0AV. G 060 175 A2 if rear diff starts with 0BR (verified these #'s through ETKA for Audi). For 0AV; New Fill: 0.85L (0.9 qt); Replacement: 0.65L (0.7qt)
Filter part #02D 598 574 (from ECS' website)
Fill plug 15Nm, 5mm allen drive (N 902 818 02). Drain plug 30Nm, 8mm allen drive (N 910 827 01). Filter cap 35Nm.

The second best feature of this car behind VR6 noises. There's no recommended service interval for the filter so replace whenever you feel like; not a lot of wear in the haldex clutch nor is it exposed to contaminates. I wasn't thinking of it when I took pictures so one will have to be added in a future update.

Silver box with the dimples and black border is the haldex control unit. Blue circle is fill with 5mm allen drive, Red circle is the drain with 8mm allen drive. Drain bolt is pretty tight to the housing so having a ball allen helps.



Fill til it spills, drive around to warm up oil. As per repair manual, "The oil temperature must be 20 to 40 °C (68 to 104 °F)" This is found in AWD electronics control module address 22, measured value block for control module temperature or clutch temperature; best to look at both. When warm enough and vehicle level, remove fill plug, let excess drain out to bottom of hole or as much as 3mm below fill hole.

Rear final drive/rear diff housing OAV

Oil part #G 052 145 S2 (confirmed in ETKA), used with 0AV and 0BR rear final drives. 0.95L (1.0 qt) with 0AV Fill and drain bolts 15Nm, 5mm allen drive (upper & lower: N-902-818-02).

Red circle is drain plug, Blue circle is fill plug, as a reference for location/orientation Yellow X is the electrical connector for suspension level sensor. With vehicle level, "the oil level is correct when the rear final drive is filled to the lower edge of the filler hole".



Cases can be filled using a gear oil pump. Best not to mix oils so get a few of em; inexpensive pumps from harbor freight tools do a good job. Haldex oil is pretty thick, so shake up the bottle (additives collect in the bottom) and heat it up a little to get it flowing.

Last edited by Audi_Mechanic; 08-06-2017 at 04:54 PM. Reason: fixing images

Reply With Quote

thesharkman o

02-04-2016 11:41 AM Reply #2

AR.

Dec 2nd, 2010 Location: city by the bay Posts: 888

great shots... the color codes are great, thanks \blacksquare

shark -

Reply With Quote

02-05-2016 12:47 AM Reply #3

02-05-2016 01:17 AM

mach gti o

Member



Join Date: Dec 14th, 2007 Posts: 606



Excellent DIY! I've been meaning to get to the bevel box! Can you guess how much you've leaked before you change the oil?

Reply With Quote

Audi_Mechanic®

Member

Mar 24th, 2012 Long Beach, CA Join Date: Location: Posts: 1,433

Vehicles: 2003 20AE GTI BMP #2351, 2013 Golf R 4dr plain as paper

If I remember correctly, mine was leaking when I got the car. Topped it off and monitored the leak. Seal for R/F driveshaft flange was leaking and kept getting worse. I checked a week after initial top off and oil spilled out of the fill hole. Waited maybe a month and was still good. Took maybe 3-6 months before the leak dropped the oil level enough to need topping off. When the leak was dripping oil off the belly pan daily is when I replaced some of the seals. At least I think that's how this process went down, been more than a year.

How much it will need for top off depends on how bad the leak is and how long it's been leaking. Could be as little as 10mL or something like 100-300mL. However much mine took was low enough for me to not at all worry about the bevel gears being burned.

Reply With Quote

nall3karhu o



May 21st, 2015 Location: Finland Posts: 266 Vehicles: 2006 R32

Bevel Box oil:

The oil was only available from VW stearlership for 47.50€ / liter
I tried two of the biggest Finnish parts retails stores and none of them had the oil even in their database.
I truly recommend using this instead of any Castrol, Mobil or other oil companies products with similar specifications

Here's what a liter of bottled mermaid tears looks like.

02-05-2016 03:39 PM



.:r32 mkv **Reply With Quote**

Audi_Mechanic

Member Join Date:

Location: Long Beach, CA Posts: 1,433 Vehicles: 2003 20AE GTI BMP #2351, 2013 Golf R 4dr plain as paper

Mar 24th, 2012

48 euro 😯

02-05-2016 04:03 PM Reply #6

02-05-2016 06:56 PM



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Reply

KTrip o

Member



Join Date: Jul 13th, 2007 Location: Dayton, Ohio Posts: 1 438 98' TRed GTI, 98' LK4U

Vehicles: GTD, 04' R32

Just curious why you recommend OEM fluid over other reputable companies such as Amsoil, Motul etc?

Kurtis.

Instagram : KTriplett

Reply With Quote

02-06-2016 08:25 AM Reply

nall3karhu o



Join Date: May 21st, 2015 Location: Finland Posts: 266 Vehicles: 2006 R32

Q Originally Posted by **VR6T3**

Just curious why you recommend OEM fluid over other reputable companies such as Amsoil, Motul etc?

Fist of all this is just \boldsymbol{my} opinion and here it goes.

1, as seen on the first two picture of this topic the job doesn't seem to be one of the easiest to do. So by choosing "some" oil do you really want to risk of doing the job again? Luckily I have the gearbox separated from the engine and doing it this way is alot easier. $\c 4$

2, I've read 2-3 cases where the bevel box has shattered/broken/tooth have chipped etc. If I remember correctly the retail price for this with the replacement is somewhere between 2k-3k\$?

If the 20\$ that you save by using Motul, Castol Geartrax/Syntrax makes your bank account go less minus, feel free.

But as I said, I'd go with the OEM. Thatway **I KNOW** that the gears swim in the proper fluid that VW recommends. 💝

3, And to be honest this is a job that you will do once, max twice in the average car lifespan until you decide to let the car go and buy an RS4 😊

So OEM oil **or** aftermarket + fuel for 200miles? It's up to you. And when doing this remember to clean or replace the magnetic oil plug. Mine was "full", but managed to clean it.

Ahh Saturday!

http://forums.vwvortex.com/showthrea...f-Unit-Failure

叹 Originally Posted by Wolk's Wagon 🔟

Update:

Front Diff/Bevel Gear/Final Drive unit replaced under extended warranty.

0AV-409-053-T \$2,607.99 Gear oil, labor, tax \$1,137.07

Total----->\$3745.06 😯

Last edited by nall3karhu; 02-06-2016 at 08:28 AM. Reason: Added info

.:r32 mkv

Reply With Quote

Ryan E. o

Member



I agree OEM oil is best for the diffs, the specs are exact to VW's recommendation. I had read a thread years ago about a MKIV R that blew the rear diff using redline oil. That redline oil is still sitting in my garage years later. Probably should have researched before buying, I'm going to play it safe and save the fancy oil for my motor.





Join Date: Oct 1st, 2002 Location: Huntington Beach
Posts: 3,374
Vehicles: '08 CW R32, '74 BMW
2002tii

Rigi Cola.

"The VR6 was an orchestra of well-tuned cylindrical delights." - jalopnik.com

Reply With Quote

KTrip o

Member



Join Date: Jul 13th, 2007 Location: Dayton, Ohio Posts: 1,438

Vehicles: 98' TRed GTI, 98' LK4U GTD, 04' R32 Mini DIY: How to drain/fill bevel box, haldex and rear differential housing

02-06-2016 10:57 AM

02-06-2016 08:34 PM



👥 Originally Posted by Ryan E. 🔟

I agree OEM oil is best for the diffs, the specs are exact to VW's recommendation. I had read a thread years ago about a MKIV R that blew the rear diff using redline oil. That redline oil is still sitting in my garage years later. Probably should have researched before buying, I'm going to play it safe and save the fancy oil for my motor.

I was just curious for his reasoning. I'd be much more inclined to stick with OE oil as far as the engine goes, and upgrade the not so technical rear end's fluid haha. Redline would def not be my choice though.

I've been wondering about the bevel box. What did you use to fill it? I heard that's the hardest part due to access. 🕏

The whole convo makes me curious if anyone knows who makes VW's gear oil. I assume it's a Castrol product. Maybe someone can chime in.

Last edited by KTrip; 02-06-2016 at 11:01 AM.

Kurtis. 🖤

Instagram : KTriplett

Reply With Quote

helement2003 o

Member

OLKSWAGEN **Racing**

Join Date: Aug 2nd, 2004 Location: SoCal

Posts: 6,864 Vehicles: 3.2 VR6 4motion / Dual Voltage ('13/'17)

My Flickr Stream // 2008 R32 #138 // 2013 Chevy Volt // 2017 Chevy Volt

Reply With Quote

02-06-2016 09:17 PM Reply

Audi_Mechanic

Member

 Join Date:
 Mar 24th, 2012

 Location:
 Long Beach, CA

 Posts:
 1,433

 Vehicles:
 2003 20AE GTI BMP

 #2351, 2013 Golf R 4dr plain as paper

Q Originally Posted by helement2003 **D**

I've been wondering about the bevel box. What did you use to fill it? I heard that's the hardest part due to access. 🕏

Originally Posted by Audi_Mechanic

Cases can be filled using a gear oil pump. Best not to mix oils so get a few of em; inexpensive pumps from harbor freight tools do a good job.







helement2003 o

Member

Join Date: Aug 2nd, 2004 Location: Posts: 6,864

Vehicles: 3.2 VR6 4motion / Dual Voltage ('13/'17)

02-06-2016 09:19 PM Reply #13

Ahh I missed that note at the bottom, as I know and have performed the Haldex/rear diff changeout myself. I figured some type of pump. I have that red one somewhere...

Thank you for the mini DIY! 🍇

My Flickr Stream // 2008 R32 #138 // 2013 Chevy Volt // 2017 Chevy Volt

Reply With Quote

Audi_Mechanic

Member

Join Date: Mar 24th, 2012 Location: Long Beach, CA 1,433 Posts:

Vehicles: 2003 20AE GTI BMP #2351, 2013 Golf R 4dr plain as paper

02-08-2016 04:59 PM ^ I was considering adding links to harbor freight tools but figured those would eventually expire. I took a picture of my pump, but I have it atop a bottle of ATF for the ZF 8spd so I decided not to use it, didn't wan't to cause confusion. If you've never been to a harbor freight, don't grab a cart so you'll be limited to how much you can carry. That place is like a candy store for DIY adults.

Your ? got me to stop being lazy and add pictures so people will have an idea of what to look for.

Reply With Quote

jddaigle o

Member

Join Date: May 30th, 2003 Location: Denver, CO 6,588 Posts: Vehicles:

Way to go filling a hole in the DIY library with this. Added to the Resource Thread.

02-11-2016 08:25 PM Reply #15



- Jeff B6 Passat 3.6 & 4motion Resource Thread

Now: 2008 VW Passat 3.6 4motion Wagon, 2013 Fiat 500 Sport
Then: 1987 Volvo 745GLE, 1989 Volvo 740GL, 1994 Volvo 940T, 1995 Infiniti G20, 2000 VW Passat 1.8T, 2001 VW Jetta Wolfsburg Ed (x2), 2004 VW Golf TDI, 2006 Jetta TDI

Reply With Quote

punk0208 o

Member

JAR.

Feb 23rd, 2010 Location: VA 175 Posts: Vehicles: 2008 R32 833/5000,2013 SUBARU BRZ LMT 02-11-2016 09:53 PM Reply #16

wow!!! Great DIY write up!!! this really help my curiosity.!!

thanks.

Reply With Quote

02-12-2016 01:51 AM Reply #17

nall3karhu o

Member



Join Date: May 21st, 2015 Location: Finland Posts: 266 Vehicles: 2006 R32

Here's what the job looked from my POV.

I believed that the oil was still original (120k) in the bevel box, but it looked quite normal to me.

Sure it was black, but the oil was **still** fresh and **still** smelled like cat piss. Can't imagine how joyful the labor is when the gearbox is still inside the car...

Tools that I used:

1x HEINZ KETCHUP PUMP!! (have used before, still works like a dream)
1x pneumatic tool hose adapter, 3/4" (the thread is different, but it goes about 1½ turns in and doesn't leak)
2x clamps for the hose

1x hose 1ft (30cm)

And the capacity was 0,9l exactly **NOTE: THE TOOLS ARE SUITABLE FOR ANY OF THE TRANSAXLE/HALDEX OIL REPLACEMENTS**













.:r32 mkv

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Howboutcha C'mon o

Member

Join Date: Oct 11th, 2009

Posts: 563 02-12-2016 08:55 AM #18

Any idea what the book time is on the bevel box service?

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02-12-2016 01:08 PM Reply #19

02-12-2016 01:17 PM

Audi_Mechanic@

Member

Join Date: Mar 24th, 2012 Location: Long Beach, CA Posts: 1,433 Vehicles: 2003 20AE GTI BMP #2351, 2013 Golf R 4dr plain as paper The bevel box R&R repair time includes the labor operation for rear final drive oil inspect + add, but that labor operation isn't listed separately. All I could find was the Haldex oil replacement labor operation which is 40 time units (24 minutes; time seems to include use of scan tool for temperature). Since you have to remove the belly pan to get to the bevel box and the inspection plug is harder to access than the haldex, expect something in the range of 25 - 75 TU, depending on if anything else is being serviced. If the car is already in the air for something like an oil change, then it's not that much extra trouble to drain/fill the bevel box.

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Reply #20

Audi_Mechanic @

Member

Join Date: Mar 24th, 2012 Location: Long Beach, CA Posts: 1,433 Vehicles: 2003 20AE GTI BMP #2351, 2013 Golf R 4dr plain as paper

 Originally Posted by nall3karhu 📭 Here's what the job looked from my POV.

Nice addition and I like the recycling of the ketchup pump $\mbox{\ensuremath{\mbox{\ensuremath{\&}}}}$

looking for drain plugs 😯

But I can't help but wonder about that reverse fill method. Used the adapter just for the sake of finding a use for it, or was the outside diameter of the hose too large to fit inside the fill port?

If the hose was too large, and anyone else runs into that problem, one way to get around that is to cut a slit into the end of hose and maybe cut out a strip until you can fold the hose enough to fit it in.

Reply With Quote

Howboutcha C'mon o

Member

Join Date: Oct 11th, 2009

02-12-2016 04:18 PM My dealer has nothing on this either outside of it being likely 'non-serviceable'. They said they could look into it but I told them to just forget about it. I'd rather wait for the weather to warm up and then struggle to do it on my own than send someone else in blind and

Reply With Quote

Audi_Mechanic

Member

Join Date: Mar 24th, 2012 Location: Long Beach, CA 03-17-2016 12:35 AM Reply #22



Added part #'s for the drain/fill plugs. Most are the same with 5mm allen drive. Haldex drain is different with an 8mm drive; just an allen bolt with a sealing washer on it.

Posts: 1,433

Vehicles: 2003 20AE GTI BMP #2351, 2013 Golf R 4dr plain as paper

Reply With Quote

nall3karhu o

Member



Join Date: May 21st, 2015 Location: Finland Posts: Vehicles: 2006 R32

03-17-2016 02:28 AM Reply

03-17-2016 07:35 AM

03-17-2016 08:51 AM Reply

Originally Posted by Audi_Mechanic

Nice addition and I like the recycling of the ketchup pump 4

But I can't help but wonder about that reverse fill method. Used the adapter just for the sake of finding a use for it, or was the outside diameter of the hose too large to fit inside the fill port?

If the hose was too large, and anyone else runs into that problem, one way to get around that is to cut a slit into the end of hose and maybe cut out a strip until you can fold the hose enough to fit it in.

I didn't notice this post earlier.

Yes, you're right you can do it with the "proper/easy" way of course. The hose would have fit through the top hole, I suppose. Just wanted to demonstrate if the access is poor that you can do it this way as well. Sure some will get out when you take the hose off and insert the plug, but its not much really.

.:r32 mkv

Reply With Quote

Reply #24

punk0208 o



Join Date: Feb 23rd, 2010 Location: Posts: 175 Vehicles: 2008 R32 833/5000,2013 SUBARU BRZ LMT I'm guessing bevel box fluid and rear differential(final drive) fluid are same???

now same part number??? Dealer gave me same fluids except haldex fluid...

Reply With Quote

nall3karhu o

Member



Join Date: May 21st, 2015 Location: Finland Posts: 266 Vehicles: 2006 R32

🔐 Originally Posted by punk0208 🔟

I'm guessing bevel box fluid and rear differential(final drive) fluid are same???

now same part number??? Dealer gave me same fluids except haldex fluid...

It is not!

List of oils: (confirmed by Audi_Mechanic)

Haldex: https://www.ecstuning.com/Volkswagen...3.2/ES2062517/
HALDEX OIL: G 055 175 A2 OR G 060 175 A2
If your rear final drive unit part # starts with 0AV, use haldex oil G 055 175 A2. If your rear final drive starts with 0BR, G 060 175 A2. (thread page 2 with additional info)

Rear Diff: https://www.ecstuning.com/Volkswagen...3.2/ES2765922/ (ECS-Tuning has wrong picture on rear diff oil) REAR DIFF: G 052 145 A1

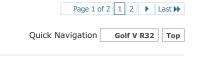
Bevel box: https://www.ecstuning.com/Volkswagen...3.2/ES2777105/BEVEL BOX: G 052 145 S2

-A

Last edited by nall3karhu: 03-18-2016 at 05:45 PM. Reason: Added more info

.:r32 mkv

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