OilHead Rear Drive “Big Bearing” Replacement

Date: February 17, 2006

By: Ron Wiebe – BC CANADA

I've just finished replacing a failed rear drive "Big Bearing" on my 2001 R1150GS and thought I would share my experience with all of you.

First, I must thank - Dick Fish's BMW Rear Drive Bearing Post.
Dick Fish posted his experience of an on the road rear drive repair. Dick is in his 60's, is a former ISDE rider, a top 10 IBR finisher and ran this route in last year’s Ultimate North America Challenge.

His comments and suggestions in his post were invaluable, especially the comment about keeping a close eye on the condition of the rear drive by changing the rear drive oil at **EVERY** engine oil change. I followed his advice, which allowed me to "catch" the start of the destruction of the big bearing in my Rear Drive at the very earliest stage.

The "ONLY" damage to my Rear Drive was the initial pitting/metal flaking of the inner surface of the outer race of the big bearing. I was only able to see this damage after removing the damaged bearing and very closely inspecting all surfaces. I first discovered evidence of this by noticing shiny metal flakes on the Magnetic Drain Plug in the Rear Drive when doing an oil change of the drive. This is different than the normal grayish buildup that you will see on the drain plug. If you see ANY shiny metal on the drain plug that's a sure sign of future troubles.

The big oil seal on the outside of the Rear Drive on my bike was not even damaged when I discovered the problem because I discovered it so early.

Believe me when I say that it's not a question of "IF" but "when" your Rear Drive will experience this problem. We've had five members of our small BMW club (50 members in total) that developed this problem last year alone!

In my opinion, there does not appear to be any correlation between mileage on the bike and when the damage will occur. I feel that it's "probably" related to heavy loads (Two up riding and/or a lot of luggage) in addition to extreme shock loading, such as hitting a severe pot hole or rock in the road. If you mainly ride solo you probably won’t experience this problem as often or at all.

If you're lucky enough to catch the problem as early as I did, the only thing you'll have to replace is the big bearing. Replacing the big seal and the large o-ring seal between the cases is recommended however.

If you're not comfortable in performing these procedures do not proceed any further with this repair. Take the bike to your favorite competent mechanic.

Here are the steps to follow:

1) Remove the Rear Brake Caliper, the Rear Wheel and the ABS Sensor. Make note of the funny shaped stainless steel spacers that are part of the ABS Sensor mounting. These are necessary to provide the proper clearance of the ABS sensor.

2) Remove the "Funny Fender Extension" from the Rear Drive.

Now come the more difficult parts.

3) Separate the two Rear Drive Case halves by removing the 8 hex bolts. These are an unusual 7mm size. Remove the "inner" case (the case half closest to the wheel, when it's mounted) from the Rear Drive "outer" case half. (The case half is attached to the Paralever.)

4) Now remove the Crown Gear/Big Bearing assembly from the inner Rear Drive Case.
Heat up the case with a heat gun or torch. Careful you don't get it too hot and ruin the paint on the case.
Support the Inner Case in such a way to allow you to "tap" out the Crown Gear/ Big Bearing assembly.
Gently tap on the wheel side of the gear/bearing assembly to force it out of the inner case half. It won't take much force to get this apart.
There will be a shim, or two, between the Big Bearing and the Inner Case half. Don't forget to re-install these at re-assembly. This shim(s) are for setting pre-load of the Crown/Pinion Gear setup. If all you're doing is a big bearing replacement you should not have to change the size of the shim.

5) Now, the hardest part is removing the old damaged big bearing from the crown gear assembly.
I used a small shop hydraulic press and used a made up press bracket.
Heat up the bearing with a heat gun or propane torch and also try to keep the Crown Gear assembly as cool as possible to aid in the removal of the bearing. A cool rag placed onto the Crown Gear assembly before trying to remove the bearing will help.
Rather than using a hydraulic press you could try to lever the bearing out of place with a large screwdriver. Be VERY CAREFULL in using the screwdriver to remove the bearing.
If you're not comfortable in doing the bearing removal take it to your local machine shop. This is the only step you'll have need of a shop to do and it will take them about 10 minutes.

6) Next cleanup the Inner Case half, and the Crown Gear assembly in preparation for installing the new parts. In particular, cleanup the mating surfaces where the new Big Bearing will be installed. I used 600 grit sandpaper to dress the surfaces and then a good cleaning. You could also use scotch brite or emery cloth.

7) Install the new Big Bearing onto the Crown Gear assembly.
Freeze the Crown Gear in your freezer and heat the new "Big Bearing" in your stove. I set the temp on my stove to 180 deg F (82 deg C). I left the parts in the freezer for around ½ hour and the bearing in the stove for 15 minutes.
Now just drop the new bearing onto the Crown Gear. If you properly cleaned up the surface of the Crown Gear where the bearing has to be installed the bearing will just fall into place with no force necessary!

8) Install the Crown Gear with the new "Big Bearing" into the Inner Rear Drive Case half.
<u>Don't forget to re-install the original shim(s).</u>
Again, heat the Inner Case Half in the stove to 180 deg F (82 Deg C) and freeze the Crown Gear/Big Bearing.
Drop the Crown Gear/Big Bearing into the Inner Rear Drive Case Half.
Once again, this should just drop into place with no need to force it further if your surfaces were properly cleaned up.

9) Lastly, replace the large oil-seal. Make sure you only install it flush with the outer lip of the Case Half.
A light coating of Gear Lube on the part of the seal that will be rubbing on the Crown Gear/ Bearing assembly is a good idea.

10) Re-install the two halves of the Rear Drive Cases together using the 8) 7mm hex bolts.
It would be a good idea to also replace the large O-ring between the two case halves right now as well.

11) Re-install the “Funny Fender Extension”, the Rear Brake Caliper and the ABS Sensor.
Don’t forget to re-install the stainless steel shims that are used with the ABS Sensor as well.

The parts necessary for repair are:

1) Big Bearing **33121468899** (This is, **supposedly**, the new improved 17 ball bearing unit.)
2) Large Oil-Seal. **33127663482**
3) Large O-ring for the two Case halves. **33111241257**

These are the only parts necessary to replace the Big Bearing in the Rear Drive. If you have more extensive damage, such as a damaged Crown Gear and/or Pinion Gear or Pinion Shaft Seal, that goes beyond what I've mentioned here.

I've found that there are a many dealers that are not aware of the new part number for the big bearing, especially in Canada. Don't be surprised if they tell you this part number does not even exist!
I got mine from Chicago BMW and have been told that San Jose BMW also has them. Check around.

I hope this helps some of you out.

Remember, Change Your Rear Drive Oil At Every Engine Oil Change.

You might get lucky, as I did, in catching the problem early on before more damage occurs.

Ron Wiebe

THE END