

## “Grinding” First Gear

One Triumph owner asked me how to stop his bike from making that grinding noise while shifting from neutral into first gear. While the 4-speed Triumphs have always "crunched" into 1st gear due to the design of the gearbox, the general design of British bikes is similar enough so that we can make generalizations that will help everyone.

The first thing we need to understand is that the grinding noise comes from trying to mesh a moving gear with a stationary gear. In a perfect world, when the clutch is fully disengaged (that is, when the clutch lever is pulled in), both gears should nearly stop spinning. It's the failure of the clutch to release the gearbox from motion that causes almost all gearbox noise. Therefore all the cures are aimed at making the clutch release more thoroughly. Here's a list of the most common causes in the order in which they should be performed:

- 1) Do a "major adjustment" on the clutch to insure the clutch pressure plate is getting the proper lift. This needs to be done once a year on all Brit bikes. Your maintenance manual will explain how this is done. Making this adjustment will also stop that annoying “popping” noise that some bikes make. Not making this adjustment can lead to “mushroomed” clutch operating rods, slipping clutches and excessive wear on other parts of the clutch mechanism.
- 2) Adjust most of the free-play out of the cable at the lever so that clutch engagement happens at the last instant. This maximizes the clutch disengagement distance. If you have no cable “free-play”, then the cable may break. It's best to leave at least 1/16” of cable slack.
- 3) If your motorcycle *DOES NOT* share engine oil with the primary oil, then convert the primary to a thinner lubricant, such as Type-F ATF. This decreases the hydraulic drag within the clutch pack. Motorcycles that *DO* share the engine oil with the primary, like the Triumph twins after 1970 and some BSA singles, should run a multi-grade oil (such as 20W50) and be allowed to completely warm up first before best shifting is expected.
- 4) Change the primary oil more often and check the primary fluid level using a flashlight, not by using the “level plug”. The bottom of the chain should barely drag the top of the fluid. This is one case where more is NOT better. Even though it's called a “wet clutch” the only item inside the primary case that needs oil is the chain.
- 5) “True” the clutch pressure plate run-out really well. With the primary cover off, pull in the clutch lever, and kick the engine through while standing on the RH side of the bike. From the standing position, look straight down on the clutch pack. Adjust the pressure plate until there is no perceptible wobble as seen from the standing position. This reduces the mechanical drag. (This does not apply to Norton Commandos or the 3-cylinder machines.)
- 6) Change your shifting habits. Pull in the clutch and count... 1... 2... 3... then shift into 1st. This simply allows time for the gears to slow down.
- 7) Install fresh 90W gear oil in your gearbox to help slow the gears after disengagement. Some of the older manuals tell you to run 50W motor oil, but 90W gear oil is much better.

8) Remove any “racing” type clutch plates from your motorcycle’s clutch pack. There is no need to run racing clutch plates on the street. Barnett clutch plates in particular are noted for dragging if not used with the correct primary lubricants.

9) Good Brit bike repair shops are now finding that BSA and Triumph machines that were stored for a long time may have a worn out “ball ramp”. If all the other cures have failed to give you any relief, then you might want to pull off the outer gearbox cover and inspect the condition of the ball ramp. During long storage or during long term use in humid climates the 3 ball bearings in the ball ramp rust. Then when the bike is placed back in service the rust then eats away the ramps. If your ramps are in anything besides perfect condition, then they probably need replacing.

10) With the onset of classic age, that is to say after 35 years of sport riding, the clutch center cush hub may show signs of rough clutch work in the form of “grooving” of the slots. If the grooving is light, it can sometimes be remedied with a hand file. However, if each driven plate position shows a deep dimple it is time to replace the cush housing. Such hammering of the clutch center is most always caused by riding around with hardened cush rubbers, so be sure and change the internal rebound damper rubbers, all the steel plates, as well as the center clutch housing for a thorough repair.

11) Check your engine idle speed. British twins should not idle slowly like some V-twin, but neither should the engine race either. The perfect idle speed for a twin is between 950 and 1000 RPM. British singles can idle at a somewhat slower speed, say 900 RPM.

Following these simple steps should cure about 95% of all gearbox shifting noise. If your gearbox continues to “grind” and the clutch does not seem to want to stay adjusted, then this is an indicator of the onset of major problems and your bike should be taken in for service.

Hope this helps!

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