Lug Stud Replacement

by **Flopster843**

06 Aug 2012

So, one day I was walking to my truck and happened to look down at the front wheel before I got in. I noticed that I had a lug nut missing. Upon further inspection, I noticed that the entire stud had sheared off and was missing. I walked around the truck looking for any other signs of distress and noticed that the other front tire had a lug stud missing as well.

One common key contributor to broken lug studs is a loose wheel. Knowing this, the first thing I did was check to make sure my wheels were tight. The first lug stud I put the wrench on, twisted off with virtually no pressure. I tightened another one up, and then twisted the next one off with the same amount (or lack) of pressure. Keep in mind that I was doing this by hand with a torque wrench, NOT an impact wrench. Something was definitely wrong with the front of my truck. I placed the front end on jack stands and proceeded to take the wheel off. While taking the wheel off, another lug stud broke off, for a total of 4 missing studs on the front wheel.

The truck was parked at this point and wouldn't be driven until I put new studs in that side, so I decided to take the other front wheel off to see if the problem was common. While taking the other side front wheel off, 3 more lug studs twisted off. I now had a total of 8 (4 on each side) broken lug studs on the front of my truck. I would like to mention here that the shop that does my rotation always torques my wheels on with a torque wrench and never uses an impact. It was at this point that I decided that I would replace all 32 lug studs on the truck, both front and rear. I believe if that many were already broke, the structural integrity of the rest was probably compromised as well.

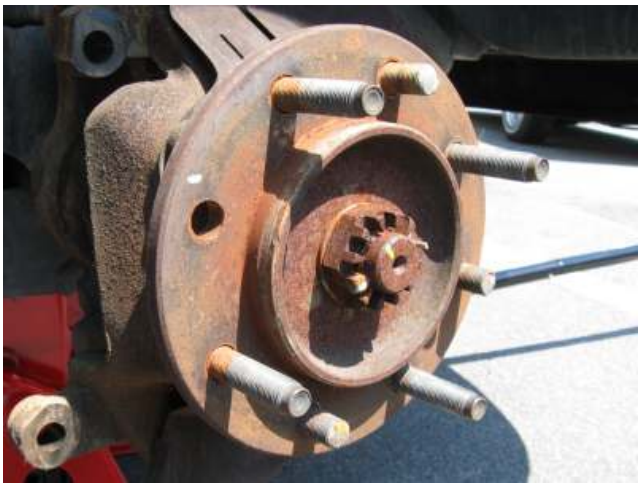
Nobody around me had any lug studs and I sure wasn't putting the OEM crap back in, so I ordered some from Rock Auto. While waiting for the studs, it was time to figure out why so many of them broke. Other than the two studs that were originally missing, there was no visible corrosion and nothing appeared to be bent. I did notice that some of the lug studs still had the little washer that the factory puts on in order to hold the brake disk in place. I've heard rumors that these could cause studs to fail because they don't allow the wheel to fully sit against the brake disk. I can't comment specifically on that, but I will tell you that all of the studs that broke did not have that washer and all the ones still intact did. That seems to lead to some suspicion.

Once all my lug studs came in I picked a nice, sunny, stupidly hot day to install them. The process is started by supporting the truck on jack stands and removing the wheels. I would like to stress at this point that the vehicle should be supported on jack stands, not just the jack. You will be climbing all around the axle and will be wrenching and beating on the hub. If you happen to knock the truck off of the jacks, or whatever else you propped up under there, it's going to be a bad day.

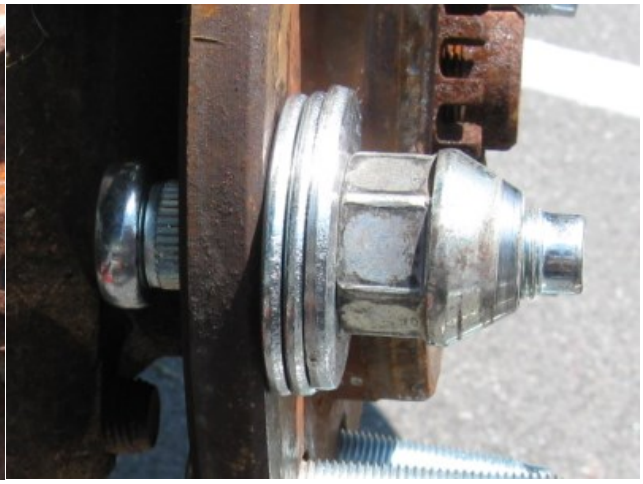
Remove the brake caliper from the disk by removing the two bolts that hold it to the knuckle. Once both bolts are removed, it might fall off under its own weight, so support it with your free hand or be ready to catch it. Once the caliper is off, set it out of the way on something so it's not hanging by the brake line. It's never a good idea to let the caliper hang by the line due to possible damage to the line. I supported mine with an extra jack stand.

Now, if applicable, remove the washers on the lug studs that hold the brake disk in place. Then simply pull the brake disk off of the hub. It might be necessary to persuade it to move with a hammer due to it being stuck. Take care not to damage the disk while you “cave man” it off. Now you can see the hub assembly where the lug studs are.

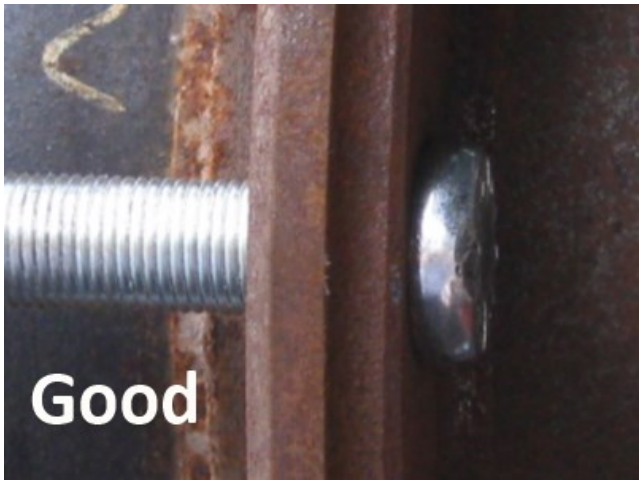
To remove the studs, simply hit them with a hammer to drive them out. There is a location on the aft side of the knuckle where you can slide the studs in and out of the hub easily. You’ll have to rotate the hub around so each stud you’re working with is in this location.



Once the old stud is out, insert the new one into the hub. The studs need to be pressed into their location. This can be accomplished by pulling the stud through the hub utilizing one of the OEM lug nuts. If you use the lug nut to pull it through, you must use a nut that has a flat side and the flat side must be against the hub. This is to ensure the stud is pulled through straight. Utilizing a tapered nut could cause the stud to be out of alignment in the hub. I installed three flat washers behind the backwards lug nut to keep the nut from turning against the hub, it helps to reduce some of the friction and keeps the nut away from the splines when you pull it through the hub. The only problem with utilizing the OEM nut backwards is you must use a wrench to tighten it, it is impossible to put a socket on it due to the tapered side. Using a non-tapered nut for the stud would remedy this problem and make the install easier.

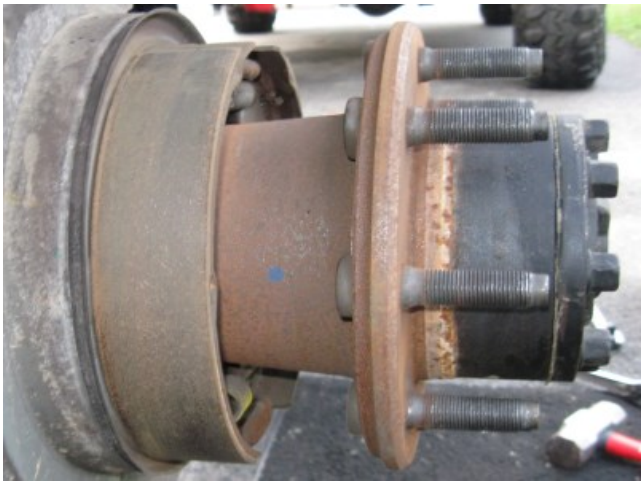


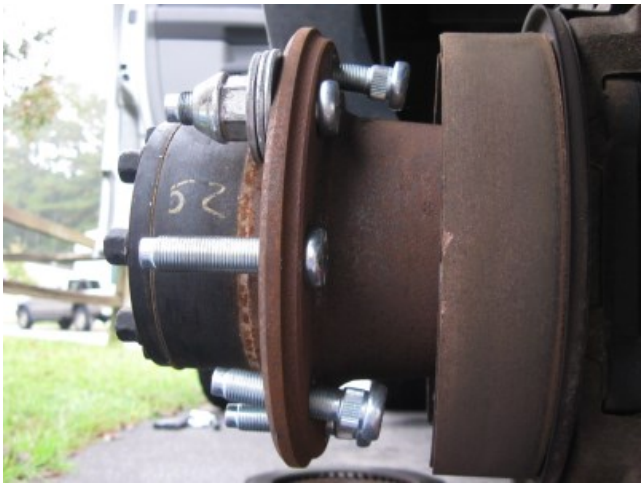
Pulling the stud through the hub with the nut is quite challenging due to the tight interference fit of the stud. This can be mitigated by striking the back of the stud with a hammer while pulling it through the hub with the lug nut. Be absolutely sure to fully seat the lug stud into the hub. You should be able to look at the stud head (back side of the hub) and not see any of the stud splines at all. This process is repeated for all the studs in the hub. Here's a helpful tip; by placing the truck in 4x4, the hub will be locked in place allowing you to pull the stud through without the hub turning.



After all 8 studs are replaced; reinstall the brake disk by simply sliding it over the studs. Do not reinstall the lug stud washers that were utilized to hold the disk on during initial assembly. Slide the brake caliper over the disk and reinstall the two bolts that hold it to the knuckle. Finally, reinstall the wheel and TORQUE it to 140 ft lbs. Do this in several stages, working your way around the wheel in a crisscross pattern. I went 50, 100, 120, and finally 140 ft lbs with a good torque wrench.

I'm not going to go into great detail about the rear lug studs because they are nearly identical to the front. The only major difference is that the rear brake disks have a drum style parking brake in the center. Make sure you don't have the parking brake set or you'll never get the disk off. The back is easier because you can remove and insert the new studs without rotating the hub around. However, there isn't enough room behind the hub to hit the stud with a hammer to help it go in easier, so you'll have to pull it all the way through with the nut. Other than those few things, they are identical to the front.





After all the studs are installed, it is crucial to re-torque them periodically. The studs will work their way into the hub assembly until they are fully seated and as with any bolt, they will stretch. Start out by taking the truck on a 2-5 mile run at low to medium speed and then re-torque to 140 ft lbs. After that, I like to torque them once a day for a week, and then once a week for a month. After the month is over the new studs should be fully seated and you can treat them as you normally would. This is probably a little over-kill, but it's better to be safe than sorry.