Wheel Safety Bulletin

TO: All Sales and Service
FROM: Service Operations
DATE: 2/28/18
SUBJECT: Wheel safety

Over the years we've hired many new faces in our stores and need to continue to keep important safety information in front of our installers and sales staff. One of our struggles in the Service Departments is that Vehicle manufactures and aftermarket parts manufactures are continually changing, either by design or the factory(s). For this reason we need to keep focus on all the parts we are selling and installing in our stores. The focus needs to be at the highest level so everything goes as smooth as possible and we eliminate any room for error.

When a vehicle is in our shops the same rules apply as in the past as far as wheel torque goes. After the wheels are put back on the vehicle and it hits the ground the wheels are to be torqued with the proper tool. Torque sticks first, then a torque wrench by the technician. ((Do not run the lugs nuts to full torque with an impact gun)). You will never know if you over-torque the lugs nuts or not. This may result in stud damage, or the lug nut backing off causing a very unsafe condition.

After the test drive they are to be re-torqued by the Service Manager and once again by the Service Manager or Manager after final drop zone.

Below are a few scenarios that stores should be aware of that could cause a false torque reading and or an unsafe condition on a vehicle. Please take the time to go over each example with both the Sales and Service Teams.

Remember that you're Service Manager or Shop Foreman can only check what they can see.

- The first set of pictures show that one of the lug nut was not long enough for the wheel stud. This can be common on Super Duty, Ford Ranger and F-150 because of the extended stud length that comes from the factory. Look at the lug nut on the left, the end of the lug has been pushed out from hitting the end of the wheel stud. This is a visual indicator for the Service Manager that there is a problem and should be corrected.

- This picture shows an “ET style” lug that has been installed on an aluminum wheel, notice the (galling) aluminum on the shank of the lug nut. This can also give you a false torque reading. Here’s a tip, spray a small amount of WD-40 or Anti Seize on “shank only of the lug” this will keep the shank from galling.

- The picture below shows the variance between different lug manufactures. You can see the difference in the length of the shank on the two in the center. Wheel manufactures also have different specs in the lug webbing. For this reason the lug nuts need to be checked on every vehicle before the wheel is bolted on.

- The picture below shows examples of ET style lugs that are too long and what can happen if they make it onto the vehicle.

It is important that the shank insertion depth is at least 3mm (0.125") away from the hub mating surface of the wheel. The lug nut(s) can be pressed against the conical seat(s) by hand to determine the depth of insertion.

- If the insertion depth comes within 2mm or less of the hub mating surface with any ET lug nuts, they will need to be replaced with alternative extended thread lug nuts with shanks not to exceed 6mm in length.

It is important that the shank insertion depth is at least 3mm (0.125”) away from the hub mating surface of the wheel. The lug nut(s) can be pressed against the conical seat(s) by hand to determine the depth of insertion

Here is the rule of thumb for general safety standards on wheel studs, it is recommended the same amount of thread engagement as the thickness of the lug stud. When this cannot be achieved, the absolute minimum acceptable engagement is 0.8 times the stud diameter. The guide below translates this engineering standard into the number of complete turns of the lug wrench to achieve proper thread engagement.

Lug Stud Size	Recommended number of turns	Minimum Number of Turns
M12 x 1.25	9.6	8
M12 x 1.5	8.0	6.5
M14 x 1.25	11.2	9
M14 x 1.5	9.3	7.5
M14 x 2.0	7.0	6
7/16" - 20	8.8	9
1/2" - 20	10.0	8
9/16" - 18	10.1	8

Note: Lug nuts should be torqued by hand to manufacturer's recommendation. These torque values are for clean, dry threads - Never use anti-seize or oil on threads as it can result in over-torqueing, which can stretch lug studs and cause failure.