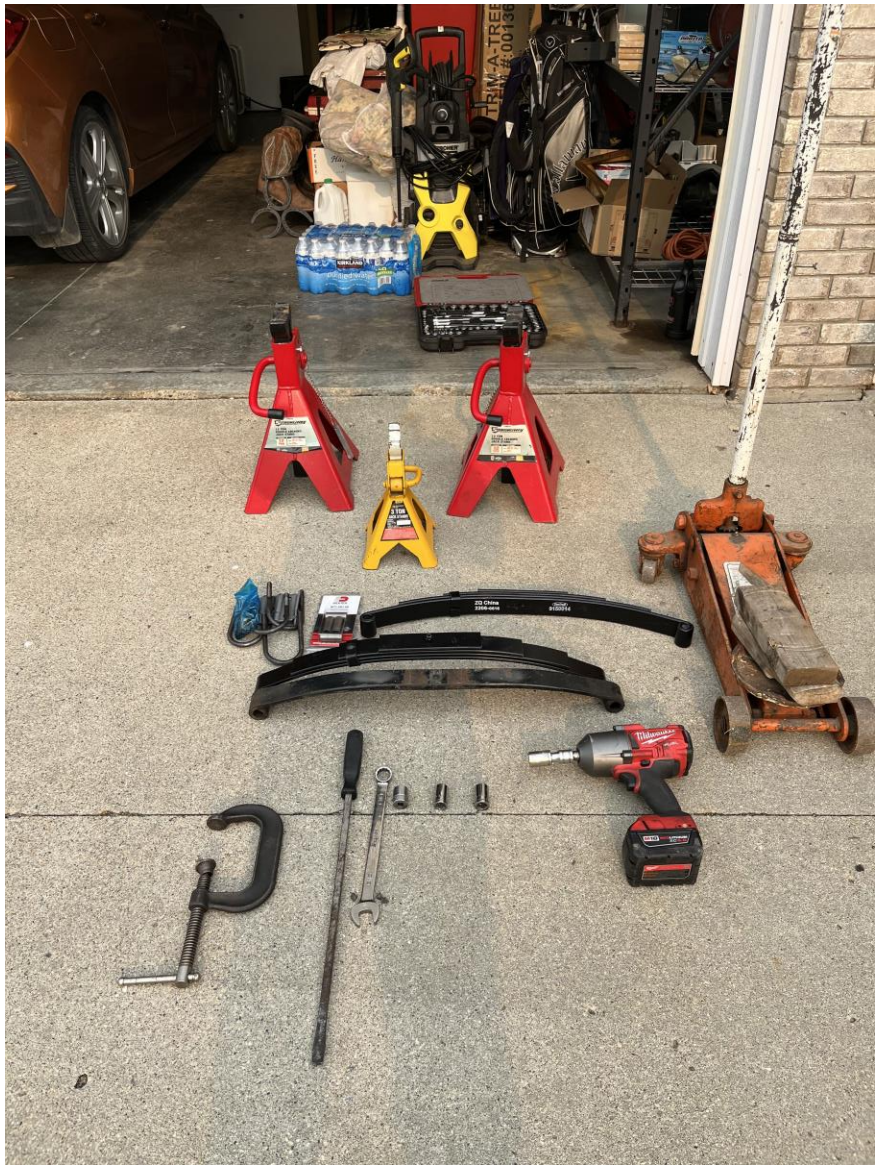
NITRO Trailer Leaf Spring Replacement

5/18/2023

Tools Needed

Tall Jack Stands
Regular Jack Stand for under trailer tongue
Chinese 4-leaf springs
2 Ton Floor jack
½” impact wrench – don’t even start if you don’t have on of these
4” C-clamp
13/16” combo wrench
13/16” 3/8 drive short socket
5/8” ½” drive socket
11/16” ½” drive socket
3/4” ½” drive socket with 1” extension or ¾” deep socket
Creeper
3 lb maul
7/16” SHCS 12 pt for removing/replacing bushings
2 – 3000lb tie downs (due to their length)
King size Snap-On screwdriver



Reason for Spring Replacement:
mono leaf springs sag like a mofo and/or break

Procedure

- Install the regular jack stand under the front of the trailer where the tongue meets the side rails. This is done by raising the jackstand up to the level of the tube and lowering the trailer jack to load up the jackstand.
- I used 3 2x4 spacers on top of my floor jack to jack up the rear frame rails. Jack it up until both wheels are in the air, put the large jackstand under the frame rail after raising it 2 notches and lower the floor jack.
- On the license plate side, it’s easier if you remove the license plate (no license plate in ND ☺) before jacking it up.

Next Steps

- Remove the wheels off of the axle you are replacing the springs. (I’m doing the front axle in this procedure)
- Use the tie downs to suspend the axle while removing all the attach hardware.
- Remove the 11/16” nuts off of the spring eyes.
- Remove the shackle bolts from the spring and equalizer.

Removing the Front Spring Eye Bolt

- The front spring eye bolt is splined at the bolt head so it doesn't spin during operation. It doesn't just fall out, you need to press it out.
- Install the 13/16" 3/8" drive socket onto the bolt head and install the 4" clamp over the socket and the other end of the bolt. Make sure the clamp is centered on the socket and the end of the bolt.
- Tighten the clamp and you'll hear a pop telling you the bolt is disengaged from the "splines."

Procedure (cont)

- Remove the front eye bolts and remove the old leaf spring.
- Repeat the steps on Slide 6 on the other side.
- Now both leaf springs are removed.
- It should take about 35 minutes to get his far.

Re-assembly

- Install the Dexter oilite bushings into the new leaf springs.
- Remove the plastic bushings by inserting the 7/16” SHCS into the plastic bushing and then hammering it thru using an air hammer, press or whatever you have.
- Install the new bushings using the 7/16” SHCS and the 3 lb maul. It doesn’t take much to coax them into place so don’t use your inner gorilla to beat them in.

Re-assembly (cont)

- Grab a spring, a front spring eye bolt and start putting things back together. You start with the front spring eye bolt as that one will absolutely not line up if you put the shackle end together first. I installed the springs with the clamped leafs “forward”.
- Line up the front spring eye and insert the bolt up to its “splines”. In order to aid in allowing grease into the bushing, position the grease hole in the bolt to be horizontal. I aim them to the rear at 9:00 on the LF side of the trailer, and 3:00 on the RH side of the trailer. If you position the grease hole at 6:00, the grease won’t go to the top of the bushing where it is needed. If you position the bolt at 12:00, the weight of the trailer is pushing the bushing onto the grease hole and this will prevent grease from entering the bushing cavity. (Think of this; you have to jack up the trailer with the grease gun to lube the joint. There are grease guns that will do this, but your Fleet Farm special ain’t gonna do it.)

Re-assembly (cont)

- With the front eye bolt installed, loosely install the shackle on the rear spring eye and equalizer.
- Do not install the other shackle “leg” and nuts until later when the springs and axle are mated.
- Note the position of the spring eye that is lower than the equalizer. It will need to be positioned as one of the final assembly steps.

Re-assembly (cont)

- Repeat the steps on Slides 9 & 10 for the other spring.
- Now you can fully install the front spring eye bolts. This is done in one of a few ways; you can see if the splines are very close to engagement – if so, hold the outside of the bolt with the 13/16” wrench and slowly tighten the nut on the other side. The splines have to engage at the same time the shaft of the bolt goes through the other leg of the bracket.
- If the splines are at least ¼” away from engagement, you can use a 7/16” deep socket and the maul to encourage spline engagement. Then follow up with tightening the nut to align and mate up properly.

Re-assembly (cont)

- With the shackles loose on each side and the front springe eye bolts snugged up, we are now ready to drop the axle onto the spring center bolts. This is the key activity to avoid a ton of frustration and swearing because “shit ain’t going together right.”
- The background is that the spring pads on the axles are somewhere between 76 1/8” to 76 ¼” between centers. This is fundamentally where the center of the frame rails are at. The frame brackets are somewhere between 75 ¾” and 75 7/8” between centers. If you tighten the shackles on each side of the trailer, you’ll need a porta-power to spread the springs apart enough to engage the spring center bolts into the axle spring pads.
- So, we have left the shackles loose to this point. We now loosen the tie downs that are suspending the axle so the axle sits on the springs. Align the spring center bolt with the spring pad until fully seated and then repeat the alignment on the other spring.
- Loosely install the u-bolts, plate and nuts to keep everything in formation while finishing the shackle assembly installation.

Re-assembly (cont) – installing axle onto spring center bolts, pads are flush with spring

RH Side

LH Side

Re-assembly (cont)

- Now, you can hand assemble one shackle fully and install the flange nuts. At this point, the front eye bolts are snug and one shackle is assembled snug.
- Go to the other side of the trailer with the 4” C-clamp and use it to squeeze the shackle bolts through the equalizer. You may need to first squeeze it together without the inside plate to get the equalizer bolt thru, then install the plate and re-squeeze enough to attach flange nuts.

Re-assembly (cont)

- At this point, all the spring attach hardware is in formation but not yet torqued up. The axle is attached properly but the u-bolts aren't torqued yet.
- Now torque the shackle/eye bolt nuts. You can use the proper torque callout for a 7/16" fine thread bolt which is proper or just tighten the nuts until they bottom on the shoulder of the bolt. You can feel this easily with the impact (I set mine on "2" for this) or with a ½" ratchet.
- Also, now snug up the u-bolts but don't final torque them yet.
- We need to get the shackles positioned properly as they are pointing down instead of up. See the arrow.

Re-assembly – Final Steps

- To rotate the shackles into formation, jack up the axle about an inch and use a jackstand to hold it there.
- Using the king sized screwdriver as a lever, pry this side of the shackle to about “level”.
- You won’t be able to fully pivot the shackle from one side of the axle so don’t get frustrated that “it’s not working.”

Re-assembly – Final Steps

- With one side the shackle is “level”, use the screwdriver lever on the other side of the trailer to position the shackle to point up. This action actually gets both shackles pointing up and you are nearly done.
- Grease the shackle and eye bolts and torque the axle u-bolts and the job is basically finished.
- Test drive the trailer and then retorque the u-bolts as needed.

Time to perform the spring replacement

- I probably didn’t beat flat rate but I bet it’s close.
- If I didn’t take a lap around the trailer to get a tool I forgot where I put, I coulda shaved off at least a minute. ☺