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After moving up to 33" tires from the stock 31" size, I wanted to regain the lost engine performance and crawl ratio. I choose to re-gear rather than try to boost engine horsepower. I turned to Mark Mason of Kongs 4X4 in Phoenix, Arizona for assistance with this project. The photos below will give you a general idea of what is involved in a regear of an IFS 4Runner.

Setting up gears is not necessarily hard but it does require some specialized equipment and patience. The installer needs to get a correct, or good, pattern with proper contact and depth. Experience speeds the gear set up process greatly to get to an acceptable pattern. With some aftermarket gears it is nearly impossible to get a perfect pattern, the quality of the gear itself plays a large part of this. Setting up larger gear sets is much easier than setting up smaller gear sets. At 7.5 and 8 inches, the Toyota ring gears are on the small end of the spectrum.

This article is a general overview of what is involved in the re-gear process and will not go into detail of the actual gear set up itself. It is recommended that only experienced mechanics set gears up in a properly equipped shop.

Independent front suspension differential:

Steps to remove the front differential.

1. Remove the front tires.
2. Drain the gear oil in the front differential.
3. Unbolt the lower spring/strut assembly from the lower a-arm.
4. Swing spindles outward and disengage the drive axles from the 3rd member.
5. Disconnect the drive shaft from the pinion flange.
6. Disconnect any electrical or vacuum lines.
7. Remove the 3 mounting bolts and rotate the front differential out.
8. Front differential is now ready to be opened and the gears set up by an experienced mechanic.



Photo 1: Front differential installed in the 4Runner.

Photo 2: Third member removed.

Photo 3: Front 3rd member on the bench ready for disassembly.



Photo 4: New 7.5" reverse-cut 5.29 gears and install kit. The install kit contains new bearings, seals and shims.

Photo 5: New gears and front IFS differential. Notice the new split case design used in the 3rd generation 4Runner.

Photo 6: Front differential broken apart, removing the axle to get the carrier out.



Photo 7: Front differential disassembled and separated. The pinion can be seen mounted sideways and the ring gear is exposed.

Photo 8: Front differential completely disassembled with carrier and ring gear removed. Original stock gears pictured.

Photo 9: Half of the disassembled front differential with pinion shown. The adjusters can be seen in the center of the differential housing.

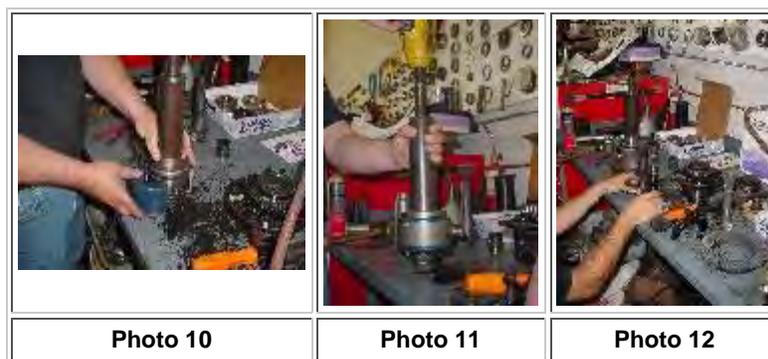


Photo 10: Bearing puller used to remove the pinion bearing from the pinion.

Photo 11: Pulling the pinion bearing.

Photo 12: Removing the stock pinion shim and placing the stock shims on the new pinion. Getting ready to set up the gears. See the rear differential for a brief overview of the actual gear setup.

Solid axle rear differential with the factory electric locker:

Steps to remove the rear differential.

1. Remove the rear tires.
2. Drain gear oil from the axle.
3. Unbolt the rear drive shaft at the pinion flange.

4. Disconnect the brake lines including the parking brake at the backing plates and cap off lines.
5. Unbolt the axle flange and pull axles all the way out.
6. Undo any electrical like ABS or electric locker on the 3rd member.
7. Remove nuts from the 3rd member and pull the 3rd member out.



Photo 1: Rear axle removed from the rear axle housing.

Photo 2: Axle flange of the rear axle where the rear brakes attach. (not the 1999 4Runner but the concept is the same)

Photo 3: Rear axle housing of the 4Runner with the 3rd member removed. Notice the notch for the electric locker.



Photo 4: Rear electric locker 3rd member in a differential holder waiting to be inspected for damage.

Photo 5: Rear electric locker 3rd member before disassembly with stock gears.

Photo 6: Rear 5.29 gears with the install kit. There are different gears (4 cylinder and V6/Turbo) for the 8" Toyota rear, Kongs used 5.29 V6 gears with the factory electric locker.



Photo 7: Rear differential with ring gear and carrier removed. Fork for the electric locker can be seen. The electric locker is gear driven and it is very important that the fork is lined up and properly timed. Stock pinion still in differential.

Photo 8: Rear carrier and ring gear ready for inspection and disassembly.

Photo 9: This photo shows the initial pattern check after the backlash is set.



Photo 10: The pattern looks good.

Photo 11: This is a disassembled third member and ready to install new bearings now that pattern is acceptable.

Photo 12: Installing new pinion seal onto the 3rd member.



Photo 13, 14 & 15: Setting the carrier back in the differential housing and aligning the adjusters.



Photo 16: A dial indicator is used to measure the backlash.

Photo 17: Spanner wrench is used to move the adjusters to set the correct backlash.

Photo 18: A torque wrench is used to torque the main caps to the manufacturer's specs.



Photo 19: Rear 3rd member being re-installed and getting ready to time the the electric locker motor.

Photo 20: Kongs 4X4 gear installation information card.

