



SPARTAN
—→ **LOCKER**

INSTALLATION MANUAL



Also available from USA Standard Gear:

- **Ring & Pinion Sets** •
- **Master Overhaul Kits** •
- **Axles** •



Note about your carrier: Before beginning to tear down your differential, please be aware that the Spartan Locker is designed to fit open carriers only. It will not install into any type of limited slip carrier.

Preparing the vehicle for installation

Take the following steps to prepare your vehicle for installation:

- Block the vehicle's tires, and place the transmission in neutral
- Loosen the lug nuts and jack the vehicle up
- Make sure that the vehicle is securely resting on jack stands
- Remove the wheels, disconnect the brake lines and emergency brake cables
- Remove the differential cover (if it is not a third member style differential), and drain the oil
- Slide out both axles to provide enough clearance to remove the carrier, if necessary. This will require the removal of C-clips, if present
- Check your ring gear to see if there is enough clearance to remove the cross pin shaft. If there is not enough clearance, please take the steps in the following section to remove your carrier

Carrier removal

If you are running a low ratio ring & pinion set, such as a 4.88 or 5.13, you may find that your ring gear is too thick to allow for removal of the cross pin shaft. If this is the case, please take the following steps:

- Using a punch, mark one of the bearing caps so you can remember which side it belongs to. Bearing caps are specific to each side of the housing. ***This is very important for re-assembly. Figure 1***
- Check your backlash with a dial indicator and make note of it. You will need to check it again later after re-assembly to make sure everything went back together properly
- Remove your bearing caps, and pull out your carrier. Some designs have shims outside the races. You must keep track of which side you removed the shims from; they must be returned to the same sides they were removed from. This is also true for the carrier races
- Remove your ring gear from the carrier

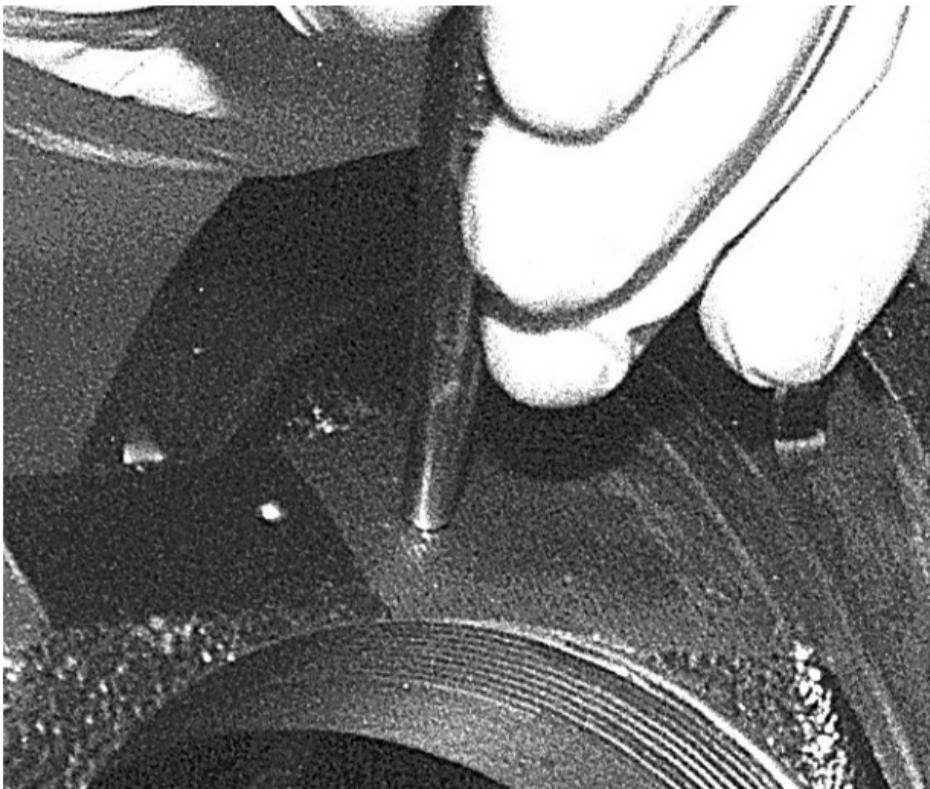


Figure 1

Removal of spider gears

*Note: If you were able to remove the cross pin shaft without having to remove the ring gear, the following process can be performed with the carrier still in the differential housing.

- Remove your cross pin shaft retaining pin or bolt
- Remove the cross pin shaft and inspect it for damage. If it shows excessive wear or damage, purchase a new shaft prior to installation of your Spartan Locker
- Remove your spider gears and thrust washers.
- Thoroughly clean the inside of the carrier and dry it. Inspect for any cracks or excessive wear. If the carrier is damaged or worn, replace it prior to installation of your Spartan Locker

Installing your Spartan Locker

- Place a spring into the hollow end of each of the alignment pins, set aside. *Figure 2*
- Fashion 4 retainer wires from the wire provided, make sure each retainer is long enough to be removed after driver installation with small pliers. *Figure 3 & 4*
- Install the four alignment pin/spring assemblies into the respective driver holes. *Figure 5*
- Push each alignment pin/spring assembly fully down into the driver and insert the retainer wire into retainer wire hole in the driver to hold the alignment pin/spring assembly down *Figure 6*
- Install side couplers into carrier case *Figure 7*
- Install the spacers into the centers of each driver, Making sure that the "open" face of the spacer is positioned toward the driver's teeth. *Figure 8*
- Take one of the center drivers, with the spacer placed in it, and install it into the carrier. *Figure 9*

- Rotate the drivers until the alignment pin/spring assemblies line up with corresponding alignment pin seating notches in the opposite driver.
- Pull the alignment pin/spring assembly retainer wire out of one of the alignment pin/spring assemblies using a suitable tool, allowing the assembly to extend fully into the seating notch in the opposite driver. *Figure 10*
- Repeat process for the remaining three alignment pin/spring assemblies.

Note: Retaining wire may need to be bent along side the Spartan drivers to be properly installed in some cases.

Center Gap Measurement

1. With the Spartan components fully installed measure the distance between the two Spartan drivers using a set of feeler gauges or slide caliper. Distance should measure between .145 and .170 in.
2. If measurement does not fall within range check installation procedure and product for potential obstructions.



Figure 2



Figure 3

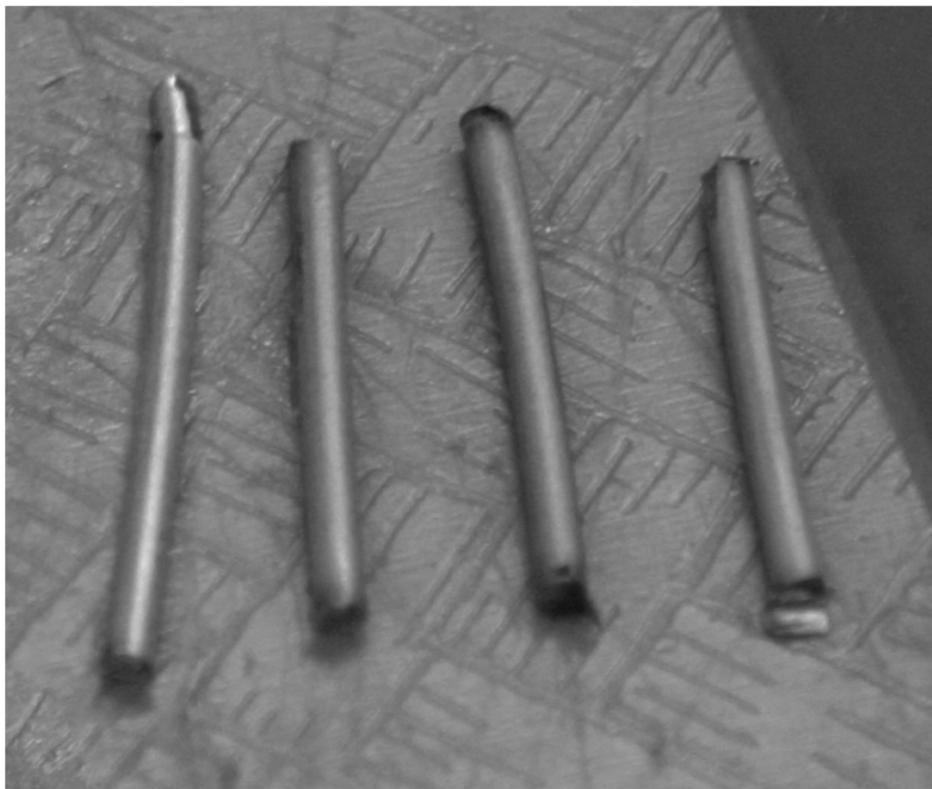


Figure 4

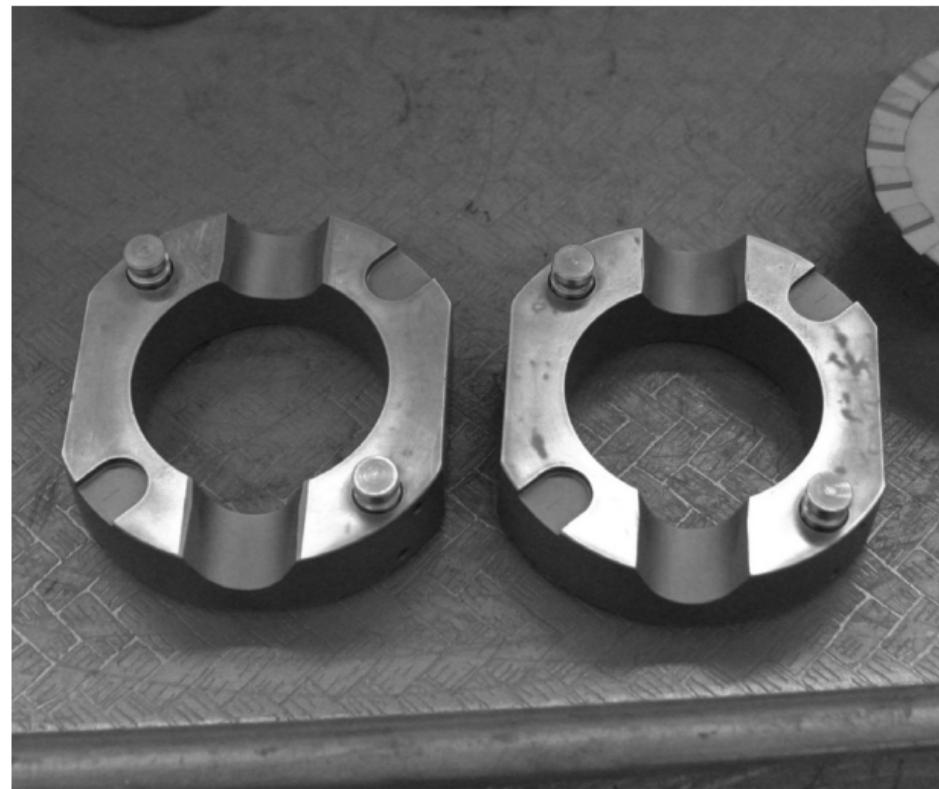


Figure 5



Figure 6

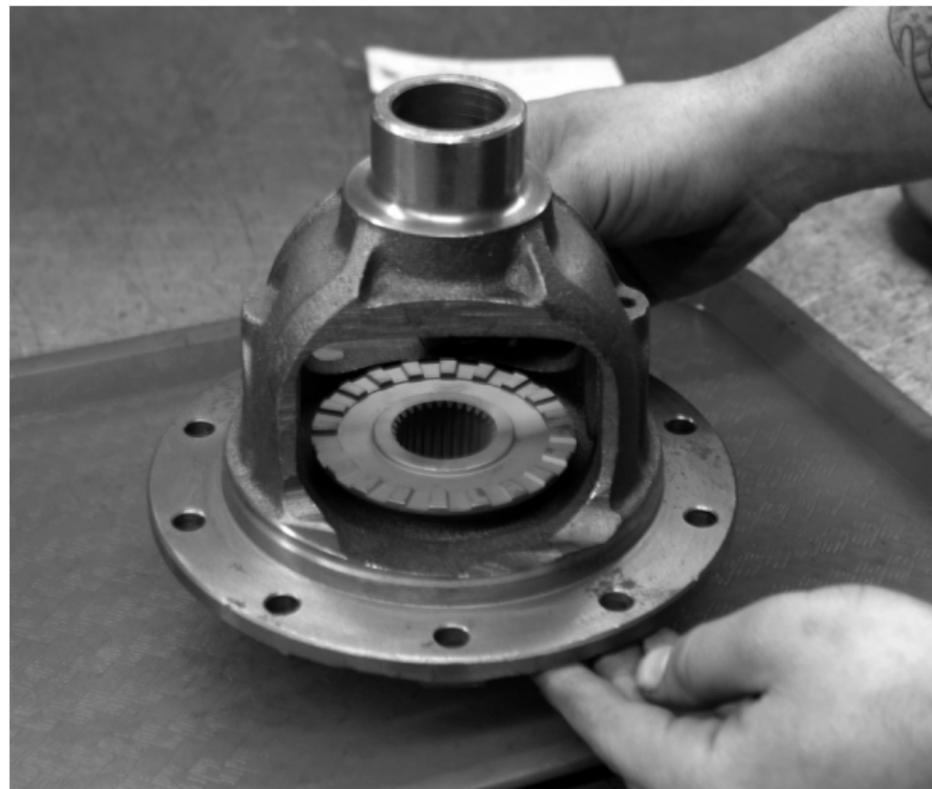


Figure 7



Figure 8



Figure 9



Figure 10

Final Installation Steps – Carrier in vehicle

- Install the cross pin shaft and retaining pin
- Finish assembly by reconnecting brake lines, backing plates, tires, etc
- Check installation by putting the vehicle in gear and in 4wd if installing in a front application.
- Rotate one tire forcefully until it stops against the drivetrain. This must be done in both directions on each side.
- Have a second person rotate the opposite tire in the opposite direction, It should unlock and spin
- Your Spartan locker should make a clicking sound as the teeth move over each other. If this sound is not present, or you cannot get the teeth to disengage at all, check your work
- Once everything is correctly installed, and the locker has been tested, attach the differential cover (if your vehicle has one) using a gasket or black RTV silicone and tighten all the cover bolts
- Add gear oil

Final Installation Steps – Carrier out of vehicle

- Thoroughly clean the housing
- Place the carrier caps on same sides they were removed from
- Install the carrier into the housing. If outside carrier shims were present, install them into the same sides they were removed from
- Replace bearing caps to their correct sides, torque down bolts to the proper amount. Consult shop manual for the torque specification
- Finish assembly by reconnecting brake lines, backing plates, tires, etc
- Check locker operation as described in Final Installation Steps – Carrier in vehicle
- Once everything is correctly installed, attach the differential cover (if your vehicle has one) using a gasket or black RTV silicone and tighten all the cover bolts
- Add gear oil

****Note about tire diameters****

For safety and long life of your Spartan Locker, it is important that your tire diameters are as close to identical as possible. Differing tire sizes can cause premature wear to your Spartan Locker, shortening its life and causing possible damage to your differential. Measure each tire to make sure that they match from the ground to the top of the wheel, adjusting tire pressure as necessary.