

INSTRUCTIONS

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919-09028
9" Posi Differential -
28 Spline
919-09031
9" Posi Differential -
31 Spline

TOOLS

Qty	Description	P/N
1	9" Ford Rear Setup Tool	910-82720
1	1/2" Torque Wrench	728-23142
1	Posi Lube Additive	910-99012
1	Carrier Bearing Tool	910-82740
1	1/4" Torque Wrench	728-23140
1	Assembly Stand	910-81005

1. Disassemble rear end as required to remove the center section (or 3rd member). Disassemble the 3rd member and thoroughly clean all components.

CAUTION: DO NOT discard the original shims installed between the gear case and pinion support.

2. Confirm the bearing O.D. for the housing you are using. If you are using Speedway's housing (#910-48398) it uses a race (#912-TLM603011) with an O.D. of 3.062 and a bearing (#912-TLM603049) with an I.D. of 1.781 for this differential.

3. Install the axle bearings onto the ends of the differential housing. Make sure you wipe clean both surfaces and be sure the bearings are fully seated up to the step.

4. Install the ring gear. All ring & pinion sets are matched and identified by matching numbers on the ring gear and the pinion. Make sure you have a matched set. Check the teeth for nicks, chips or other damage. Use a whetstone to remove any burrs on the mating surface of the ring gear or gear teeth. Thoroughly clean the ring and pinion to remove any preservative oil and any metal shavings. Air dry or wipe with a lint free cloth. This is to insure that no debris is trapped between the ring gear and the flange adversely effecting ring gear backlash. Install the ring gear onto the differential housing taking care that the ring gear does not get cocked during installation. Align the through holes of the flange with the threaded holes of the ring gear and start all ring gear bolts into their threads.

5. In order to hold the differential case in place while you torque the ring gear bolts you will need to obtain or make a couple of specialized tools. You will need a spline tool mounted in a bench vise. Clamp the tool in the bench vise and set the differential on the spline making sure that both sets of splines are engaged. You will also need to make or obtain a homemade T-shaped tool by taking some old pieces of axle shaft splines and welding them to a bar. Insert this into the other side gear. Now you can hold the side gear in place while you torque the ring gear bolts. While this may seem like overkill it is an effective technique rather than trying to clamp the differential case in the vise. Clamping the differential in a vise is not recommended and usually leaves gouges and stress risers, which could lead to cracking and failure.

6. Equally and alternately tighten the ring gear bolts until the gear is fully seated. **NOTE:** If the ring gear fits very tight you can optionally heat the ring gear to 400° F for a few minutes this may make the installation easier. Remove all the bolts and apply Loctite 263 to the threads and torque in 3 steps using a star pattern until the final torque of 60-65 ft-lbs is reached.

7. Thoroughly clean pinion gear and pinion support. Install new bearing races in pinion support. Press new load bearing (large) onto pinion gear. Make sure it is seated properly on pinion gear shoulder. Lightly lube bearing with oil and install pinion gear into pinion support. Do not install crush sleeve or pinion seal at this time. Install thrust bearing (small) on splined end of pinion gear and secure with driveshaft yoke and used pinion nut. **WARNING: DO NOT OVER TIGHTEN NUT!** Snug nut only enough to remove play from pinion bearings.

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8. Install the pinion support/pinion gear assembly into the gear case using the original shim/shims which were removed at disassembly. **NOTE:** If you do not know the original shim thickness or if you are using a new case or pinion support, use a .020" shim as a starting point.

9. Install the carrier assembly into the case, making sure that the carrier bearing races are positioned properly. Install the spanner nuts into each side of the case and turn clockwise until they firmly contact the carrier bearing races. Apply Loctite 263 to the bearing cap bolts threads and install them. Be very careful to make sure that the cap lines up with the adjuster nut threads and tighten the bolts in place. Don't forget to check that you set the correct caps as marked for left and right. Torque to 80 ft-lbs. Snug the spanner nuts down to pre-load the carrier bearings until you achieve a rotational torque value of 10-15 in-lbs (used bearings) or 20-25 in-lbs (new bearings).

10. Attach a dial indicator (supplied in our 9" Ford set up kit 910-82720) to the gear case in such a manner that the plunger is tangent to the rotation of the ring gear and the tip of the plunger contacts the outer edge of a ring gear tooth. Check backlash in 3 or 4 places equally spaced around the ring gear. **NOTE:** Maximum variation of these readings is .004 (for example: if specified back lash is .008 all readings must be within the range of .008 to .012). If the max variation is exceeded remove ring gear from carrier, make certain that no nicks, burrs or foreign particles are keeping the ring gear from seating properly. Stone off any high spots, clean, reassemble and try again).

11. To increase backlash, rotate the driver's side spanner nut counterclockwise a small amount and then adjust the passenger side spanner nut clockwise the same amount. To decrease backlash, reverse the procedure. When backlash is within specified range at all locations, torque cap bolts to spec and re-check backlash.

12. You are now ready to check the gear tooth contact pattern. Apply a thin coat of marking grease to the drive and coast side of several ring gear teeth at the location of your tightest back lash reading. Contact patterns should comply with the illustrations in the following table (or use the pattern recommended by your gerset manufacturer if provided in their instruction sheet). To alter the contact pattern, remove the pinion support, add or remove shims as required, reinstall pinion support, re-set backlash and check pattern again.

13. Once a satisfactory contact pattern has been established, remove the pinion support from the case, mark the shims for re-installation, and remove the pinion gear from the support. Install new crush sleeve on pinion, install pinion gear into pinion support, insert pinion thrust bearing, and install a new pinion seal, yoke and new nut. Hold the yoke with suitable tool or the one supplied in our set up kit (910-82720) and tighten the pinion nut to compress crush sleeve to preload pinion bearings. Tighten nut until you achieve a rotational torque on the pinion gear of 10-15 in-lbs (used bearing) or 20-25 in-lbs (new bearings).

14. Recheck rotational torque on carrier assembly and adjust spanner nuts if required. Install pinion support on gear case using the previously determined shims, torque bolts to 35 ft-lb. Re-check backlash, adjust as required. Re-check tooth contact pattern. If all is well, install the spanner nut retainers and the job is complete.

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	Ring Gear Tooth Contact	Coast Side	Drive Side	Condition	Remedy
A		For Street Gears			Ideal Pattern N/A
B		For Race Gears			
C		All Series - Pattern Too High			High Tooth Contact Heavy on the top of the drive gear tooth profile Move the drive pinion deeper into the mesh
D		All Series - Pattern Too Low			
					Low Tooth Contact Heavy on the root of the drive gear tooth profile Move the drive pinion out of the mesh

TORQUE SPECIFICATIONS RING GEAR BOLTS

GRADE 8

3/8" x all lengths	45-50 ft lb
7/16" x all lengths	60-65 ft lb
1/2" x all lengths	100-110 ft lb

CARRIER CAP BOLTS

7/16" (5/8" head)	60-65 ft lb
1/2" (3/4" head)	80-85 ft lb

IMPORTANT

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All exchanged or returned merchandise must be in original factory condition with no modifications or alterations. Returned merchandise must include original packaging materials, warranty cards, manuals, instructions, etc. If the returned item requires repackaging, your refund / exchange will be subject to a repackaging charge. Return/Exchange transactions less than \$99 are excluded from the free shipping offer.

HOW TO RETURN AN ITEM Please re-pack the item in a sturdy box, include a copy of your invoice and completed return form. Returns must be shipped prepaid. CODs are not accepted. Shipping costs for exchanged merchandise will be charged to your credit card.

Items that are returned after 60 days are subject to a 15% restocking charges. Fiberglass items returned will be subject to a 15% restocking charge. We are unable to accept returns on electrical parts, video tapes, DVD's, books, special order or closeout merchandise.

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