



**DIFFERENTIAL  
DISASSEMBLY / ASSEMBLY  
INSTRUCTIONS**

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## Auburn Gear Differential Disassembly / Assembly Instructions

These instructions are intended as an aid for the experienced automobile mechanic in properly servicing the Auburn Gear Limited-Slip differential. It is expected that the mechanic be equipped with the proper tools, equipment, and experience before attempting to service the differential.

Differential removal will be required for most maintenance operations. Refer to the vehicle service manual for differential removal and installation procedures.

### INTEGRAL CARRIER AXLES

#### A. Differential Cross-pin

1. Remove axle housing cover to expose differential.
2. Remove the differential cross-pin lock screw and remove pin. See Fig. 1. The differential cross-pin may need to be driven out. Use a hammer and a brass drift to drive the differential cross-pin out.

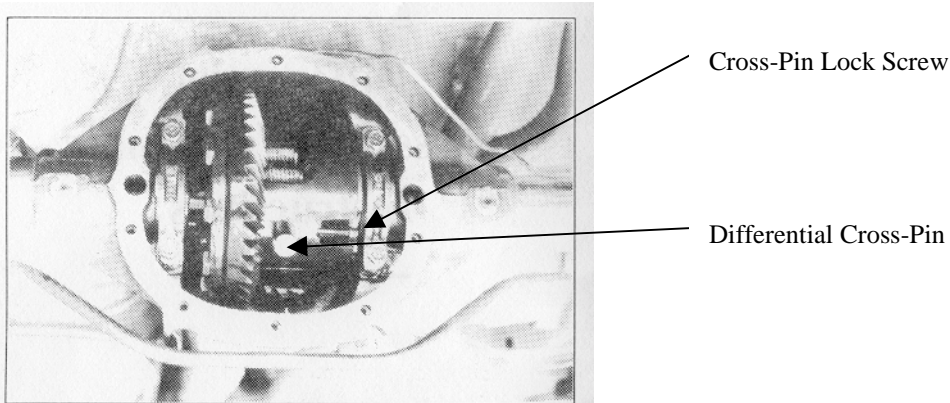


Figure 1 – Differential Cross-pin Lock Screw

3. Install new cross-pin and torque new lock screw to 25 lb-ft.
4. Install axle housing cover.
5. Fill axle with the recommended axle lubricant for use with limited-slip differentials level with the filler hole.

NOTE: Some gear ratios require a flatted cross-pin. Replacing the cross-pin in this application will require differential removal and ring gear removal as well as modifying the new cross-pin.

#### B. Differential Disassembly Procedure

CAUTION: Do not attempt to remove the end cap of the differential. All servicing will be done through the large window of the differential case.

1. Remove differential from axle housing (refer to vehicle service manual).
2. Remove and discard ring gear screws.
3. Using a non-metallic hammer or brass drift punch, drive the ring gear loose from the differential case pilot and remove. See Fig. 2.

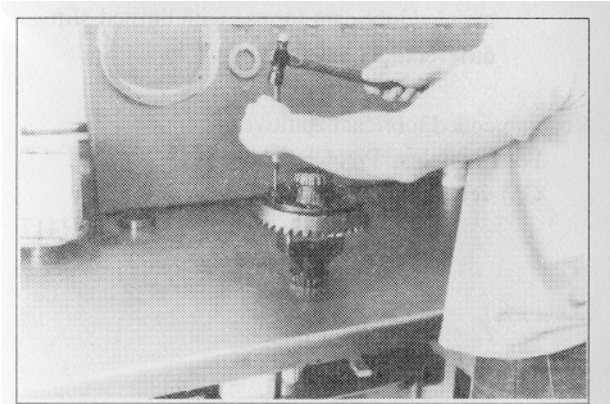


Figure 2 – Driving Ring Gear Loose

4. With the differential cross-pin removed, position a small pry bar between the outboard spring and the differential case on each side of the installation window. Slowly pry the spring pack out of the differential with the two (2) pry bars. Once the spring pack is approximately half way out, wrap a rag around the spring pack and remove the rest of the way by hand.
5. Inspect the spring retaining plates for cracks and replace if necessary.
6. Remove the differential pinion gears through the installation window by aligning the half-rounds of the cone clutch with the half-round of the installation window and rolling the pinion gears to the window.
7. Once the pinion gears have been removed, remove the side gear and cone assemblies.  
CAUTION: DO NOT MIX GEAR/CONE ASSEMBLIES. Mark each assembly “L” or “R” so that they will be reassembled in their original position.
8. Degrease the differential case and cone assemblies.
9. Inspect the clutch surfaces for galling. If the cone and cone seat (case) are galled, there is no point completing the rebuild. The differential is beyond repair and should not be used.
10. If no galling is present, lightly scuff the clutch surfaces with 250-300 grit emery cloth. This will remove any glazing that may have occurred and restore torque biasing capabilities. Thoroughly clean the cone and cone seat to remove any debris.

#### C. Differential Assembly Procedure

1. Apply liberal coating of axle lubricant to the cones and cone seats and install them in their original position.
2. Align the half-rounds of the cones with the half-rounds of the case. Install the pinion gears (with the thrust washers in place) and rotate them into position. Check pinion alignment by inserting the cross-pin through each pinion bore.
3. Install the spring pack as a compressed unit. This can be done by using two (2) steel plates, a “C” clamp, and a striking block. See Fig. 3.
4. Place the differential cross-pin in the case only far enough to go into one (1) pinion gear. This will keep the pinion bores aligned with the case bore during spring pack installation.
5. Position the compressed spring pack fixture against the two (2) side gears through the installation window. Carefully drive the spring pack out of the fixture into the differential by striking the striking block. See Fig. 4. NOTE: Do not strike the spring block directly as this may damage the spring retaining plates.

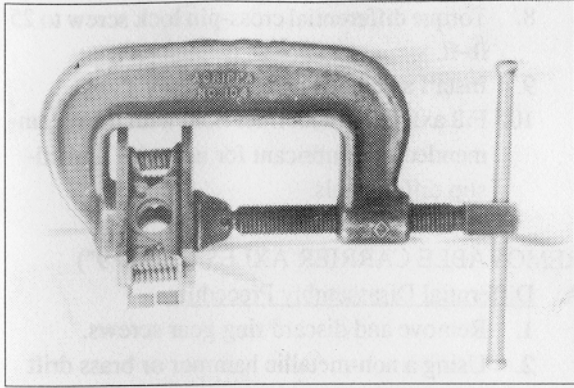


Figure 3 – Using a "C" Clamp



Figure 4 – Striking the Striking Block

6. Drive the spring pack into the differential until the spring retaining plate holes are aligned with the case and pinion bores. Install cross-pin to ensure alignment.
7. Reinstall differential (refer to vehicle service manual).
8. Torque differential cross-pin lock screw to 25 lb-ft.
9. Install axle housing cover.
10. Fill axle level with filler hole with the recommended axle lubricant for use with limited-slip differentials.

## REMOVABLE CARRIER AXLES (FORD 9")

### A. Differential Disassembly Procedure

1. Remove and discard ring gear screws.
2. Using a non-metallic hammer or brass drift punch, drive the ring gear loose from the differential case pilot and remove. See Fig. 2
3. Scribe an alignment mark across the flange outer diameter of both halves to ensure correct orientation at assembly.
4. Use two (2) 7/16 inch bolts and nuts to hold the two case halves together before removing the torx head screws. See Fig. 5

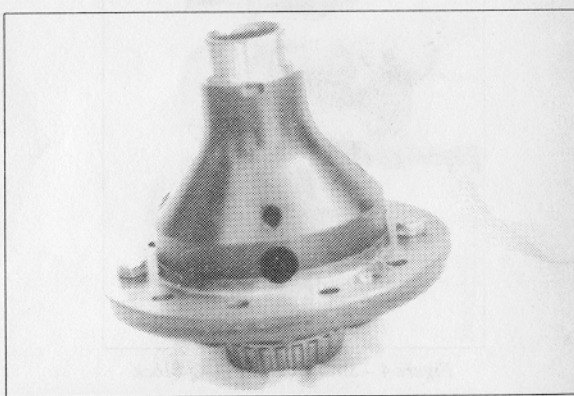


Figure 5 – Holding Case Halves Together

5. Loosen the two (2) 7/16 inch bolts, alternating between the two. It may be necessary to tap the differential case to spring it loose.
6. Remove the flange cover.
7. Remove the four (4) spring buttons, spring retaining plate and eight (8) springs.
8. Drive out the two (2) pinion shaft spring pins with a suitable drift.
9. Drive the short pinion shafts out of the case from the center outward with a brass drift punch.
10. Remove the long pinion shaft.
11. Remove the four (4) pinion gears and thrust washers.
12. Remove the spring retaining plate, side gear and thrust washer.
13. Remove the gear/cone assembly from the flange cover.
14. Degrease all components.
15. Inspect the clutch surfaces for galling. If galling has occurred, the cone and cone seat cannot be reworked.
16. If no galling is present, lightly scuff the cone and cone seat with 250-300 grit emery cloth to remove any glazing that may have occurred. Thoroughly clean the cone and cone seat to remove any debris.

B. Differential Assembly Procedure

1. Apply liberal amounts of axle lubricant to all parts during assembly.
2. Install the side gear and thrust washer into the case.
3. Install the four (4) pinion gears and thrust washers.
4. Install the spring retaining plate on the side gear with the dimples in the upward position.
5. Insert the long pinion shaft.
6. Insert the short pinion shaft with the dowel pin in place. The dowel pin will go through the hole in the long shaft.
7. Insert the other short pinion shaft.
8. With a suitable drift, install the two (2) pinion shaft spring pins to retain the short pinion shafts.
9. Make sure that the pinion gears and side gear are free to rotate.
10. Install the eight (8) preload springs.
11. Install the spring retaining plate over the four (4) center springs with the dimples facing downward.
12. Install the four (4) spring buttons over the four (4) outer springs.
13. Place the lubricated gear/cone assembly over the pinion gears and align the gear teeth.
14. Place the flange cover over the gear/cone assembly aligning the scribe marks made during disassembly.
15. Using the two (2) 7/16 inch bolts and nuts, evenly draw the case halves together. Install the torx head screws and tighten. Remove the 7/16 inch bolts.
16. Install ring gear and torque screws to 90 lb-ft.
17. Install differential (refer to vehicle service manual).
18. Fill axle level with filler hole with the recommended lubricant for use with limited-slip differentials.

Recommended lubricant additive: Ford vehicles: P/N C8A219B546A  
GM vehicles: P/N 1052358

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