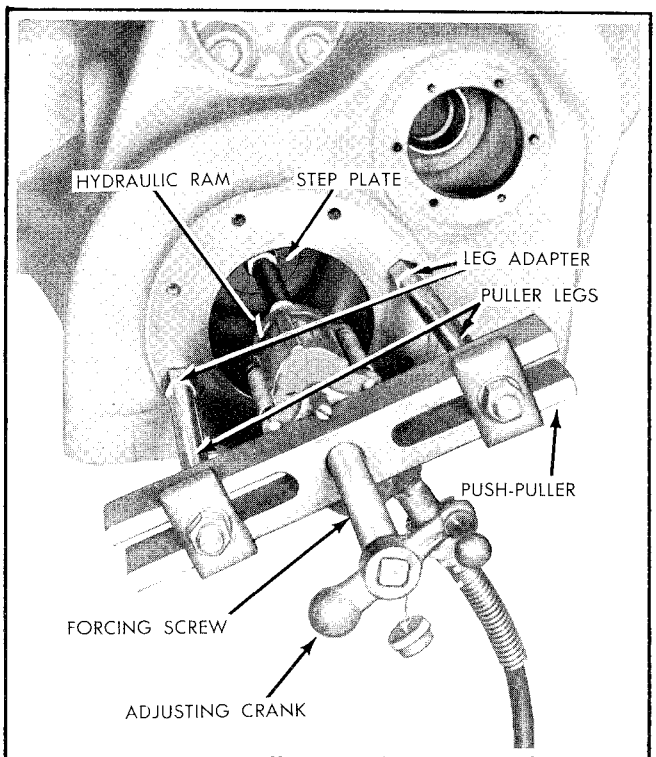

Fig. 13 — Installing Track Sprocket Shaft Inner Bearing Cup

4. ASSEMBLY

Before assembling the final drive, the track sprocket shaft bearings and the intermediate shaft bearings should be adjusted correctly without the gears installed. Proceed as follows:

A. Adjustment of Final Drive Intermediate Shaft Bearings

1. Install the intermediate shaft inner bearing cup in position in the housing. Install the bearings on the intermediate shaft using tools similar to those shown in Fig. 11.

2. Lubricate the bearings with clean oil and insert the intermediate shaft (without the gears) into position in the housing, then install the outer bearing cup. Procure an extra outer bearing cover and drill a 1 inch hole through the center of the cover. Install the drilled cover using the original amount of bearing adjustment shims. Install a 5/8" NC capscrew into the end of the intermediate shaft through the hole in the cover so that a torque indicating wrench can be used to check the bearing pre-load as shown in Fig. 14.

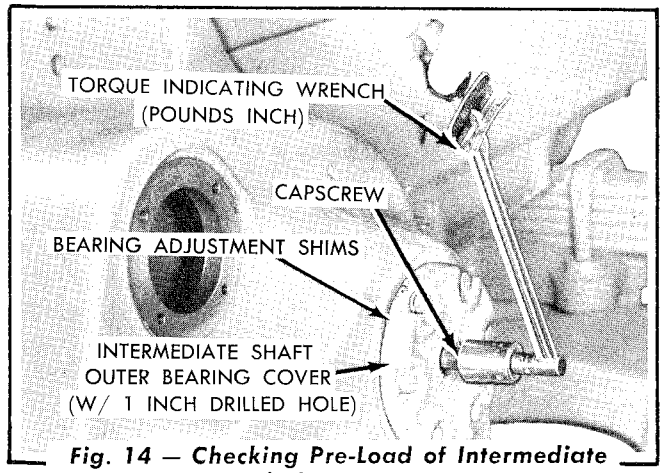

Fig. 14 — Checking Pre-Load of Intermediate Shaft Bearings

3. The intermediate shaft bearings are correctly adjusted when they have 10 to 20 pounds inch pre-load, or when they are adjusted .003" to .004" tight. Add or remove bearing adjustment shims to obtain the proper pre-load. When adjusting, bump the outer bearing cover to make certain the bearings are properly seated. NOTE: *If a torque wrench and an extra outer bearing cover are not available, add or remove bearing adjustment shims until a very slight pre-load (start of pre-load) is noted when turning the intermediate shaft by hand, then*

substitute the combination of shims to reduce the total shim pack thickness .003" to .004" to obtain the proper pre-load.

4. Remove the 5/8" capscrew from the end of the intermediate shaft. Remove the drilled outer bearing cover and adjustment shims. Place the adjustment shim pack with the original outer bearing cover. Pull the intermediate shaft and bearings using a slide hammer puller as shown in Fig. 5.

B. Adjustment of Track Sprocket Shaft Bearings

1. Make certain the sprocket shaft end inner cover, cover seal ring, and the inner bearing cup are properly installed in the housing.

2. Install the inner bearing and the intermediate bearing in position on the sprocket shaft using tools similar to those shown in Fig. 12. Lubricate the bearings with clean oil and insert the sprocket shaft (without the gear) into position in the housing, then install the intermediate bearing cup. Install the bearing retainer with the original amount of bearing adjustment shims.

3. Procure an extra sprocket shaft outboard bearing retaining nut and weld a small plate and a high nut to the outer face of the bearing retaining nut, so that a torque indicating wrench may be used to check the bearing pre-load as shown in Fig. 15. The sprocket shaft bearings (inner and intermediate) are correctly adjusted when they have 10 to 20 pounds inch pre-load, or when they are adjusted .002" to .003" tight. Add or remove bearing adjustment shims to obtain the proper pre-load. NOTE: *If a torque wrench and an adaptor nut are not available, add or remove bearing adjustment shims until a very slight pre-load (start of pre-load) is noted when turning the shaft by hand, then substitute the combination of shims to reduce the total shim pack thickness .002" to .003" to obtain the proper pre-load.*

4. Remove the adaptor nut. Remove the sprocket shaft bearing retainer and adjustment shims. Keep the adjustment shim pack with the bearing retainer. Pull the sprocket shaft and bearings using a slide hammer puller.

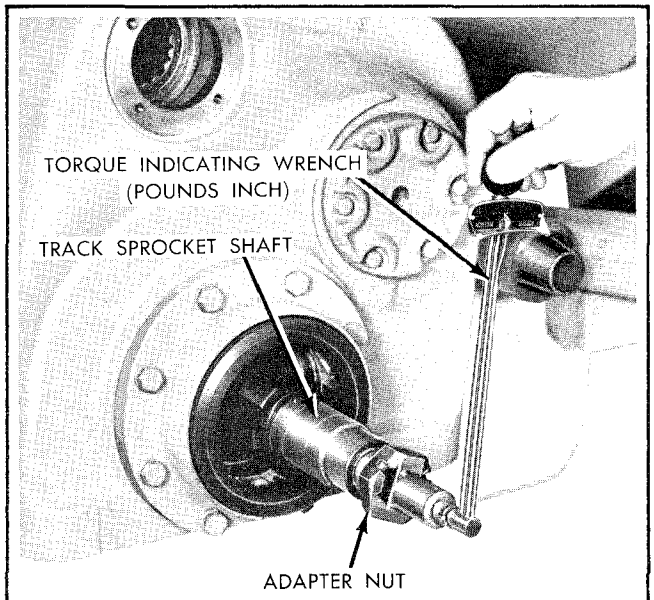

Fig. 15 — Checking Pre-Load of Sprocket Shaft Bearings

C. Installation of Track Sprocket Shaft Seal Assembly

If the seal assemblies for the track sprocket shaft were removed, the seal assemblies should be installed at this time so that the "NEOPRENE" cement, used for cementing the seal assemblies in place, will have sufficient time to dry.

To Install the Inner Seal Assembly:

1. Place the sprocket shaft intermediate bearing retainer on a clean bench, with the flat face of the retainer up.

2. Make certain the inner seal follower assembly, inner seal boot, and the inner seal ring (stationary ring) are clean and dry. Install the seal boot on the seal follower assembly, lining up the holes in the boot with the protruding pins of the follower assembly. Hold each lip of the seal boot out and coat the inside of the lips and the sides of the follower assembly with "NEOPRENE" cement. Press the boot lips back in place against the follower assembly.

3. Coat the outer face of one lip of the inner seal boot and the machined face of the intermediate bearing retainer with "NEOPRENE" cement. Immediately place the inner seal boot and inner seal follower assembly in position on the bearing retainer, inserting the ends of the pins into the corresponding holes in the retainer.

4. Coat the face of the outer lip of the inner seal boot and the back face of the inner seal ring (stationary ring) with "NEOPRENE" cement. Immediately place the inner seal ring on the seal boot and follower assembly, inserting the ends of the follower pins into the corresponding holes in the inner seal ring.

5. Place a weight on the inner seal ring, using a clean cloth between the weight and the seal ring, and allow the "NEOPRENE" cement to dry and set thoroughly. NOTE: *When coating the above parts with "NEOPRENE" cement, do not use an excessive amount.* The "NEOPRENE" cement and solvent for thinning can be purchased from your "Allis-Chalmers" Construction Machinery Dealer.

6. Install the seal ring packing ring (rubber) in place in the inner seal ring (rotating ring), then install the inner seal ring in position on the sprocket hub with the chamfered side of the ring next to the sprocket.

To Install the Outer Seal Assembly:

1. Place the outboard bearing cage assembly on a clean bench, with the cover attaching side of the cage downward.

2. Make certain the seal boot, seal spring assembly, and the outer seal rings are clean and dry. Install the seal boot on the seal spring assembly, lining up the holes in the boot with the protruding pins of the seal spring assembly. Hold each lip of the boot out and coat the inside of the lips and the sides of the spring assembly with "NEOPRENE" cement. Press the lips back in place against the spring assembly.

3. Coat the outer face of one lip of the seal boot and coat the machined face in the bottom of the counterbore in the sprocket retaining nut with "NEOPRENE" cement. Immediately place the boot and spring assembly in the retaining nut, inserting the ends of the pins into the corresponding holes of the nut.

4. Coat the face of the outer lip of the boot and the back face of the seal ring with "NEOPRENE" cement. Immediately place the seal ring on the boot assembly, inserting the ends of the pins into the corresponding holes in the seal ring.

5. Place a weight on the seal ring using a clean cloth between the weight and the seal ring and allow the "NEOPRENE" cement to dry and set thoroughly.

6. Coat one side of the seal ring gasket and coat the machined surface in the bottom of the counterbore of the outboard bearing cage with "NEOPRENE" cement. Immediately place the seal ring gasket in the bearing cage, inserting the ends of the pins into the corresponding holes in the gasket.

7. Coat the face of the seal ring gasket and the back face of the outer seal ring with "NEOPRENE" cement and immediately place the seal ring on the gasket, inserting the ends of the pins into the corresponding holes in the seal ring.

8. Place a weight on the seal ring using a clean cloth between the weight and the seal ring and allow the "NEOPRENE" cement to dry and set thoroughly.

   NOTE: *When coating the above parts with "NEOPRENE" cement, do not use an excessive amount.* The "NEOPRENE" cement and solvent for thinning can be purchased from your "Allis-Chalmers" Construction Machinery Dealer.

D. Installation of Final Drive Pinion Shaft

60" Tread Model

1. Install the inner race of the intermediate roller bearing and the inner race of the inner roller bearing in place on the shaft, if they were removed. Install these bearing races so that the shoulders of the races are next to the shoulders on the shaft. Install the pinion shaft snap ring in position on the shaft.

2. Lubricate and install the intermediate roller bearing in position in the final drive housing.

3. Hold or block the final drive pinion (with hub side towards the outer bearing bore) in position in the final drive housing, then insert the pinion shaft (from the inside of the steering clutch compartment) into position in the intermediate roller bearing and the pinion.

4. Install the inner roller bearing and the pinion shaft oil seal (lip type) in the inner bearing cage. NOTE: *Install the oil seal in the cage so that the lip of the seal is towards the roller bearing.*

5. Lubricate the inner roller bearing and the oil seal with clean oil and install the bearing cage, with bearing cage gasket, in position in the housing. IMPORTANT: *Make certain that the oil hole in the bearing cage and the gasket are positioned in line with the oil hole in the housing.* Tighten the attaching capscrews securely.

6. Install the oil seal ("NEOPRENE") on the inner end of the pinion shaft and push the seal into position. Install the brake drum hub on the shaft, then install the brake drum hub retaining washer, capscrew lock, and the retaining capscrew. Tighten the capscrew to 300 lbs. ft. torque, then lock the capscrew in position with the capscrew lock.

7. Install the inner race of the pinion shaft

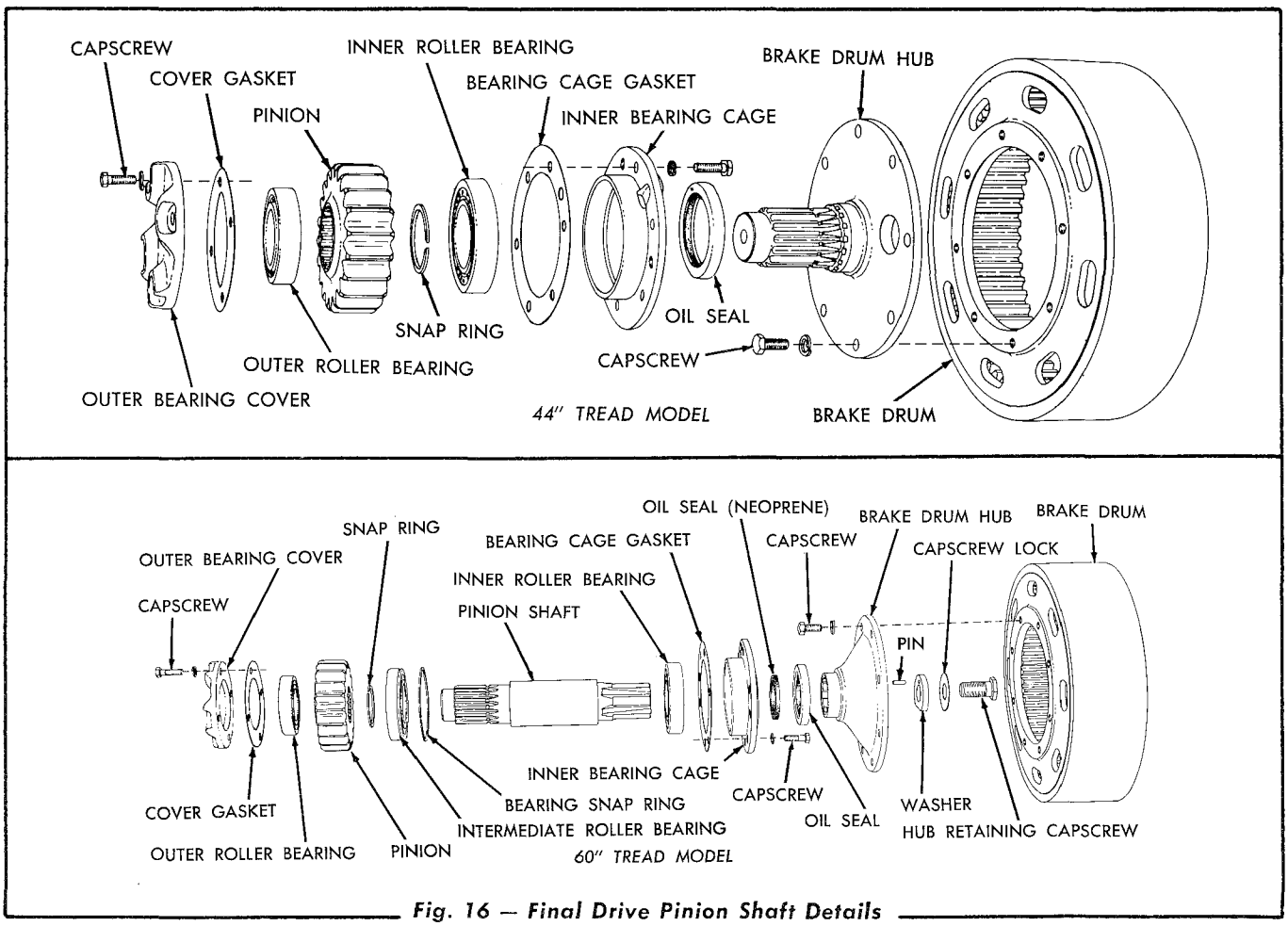

Fig. 16 — Final Drive Pinion Shaft Details

outer roller bearing onto the shaft (shoulder of the race next to the shaft splines), then install the outer bearing. Lubricate the outer bearing and install the outer bearing cover and gasket.

44" Tread Model

1. Install the inner roller bearing and the pinion shaft oil seal in the inner bearing cage. NOTE: *Install the oil seal in the cage so that the lip of the seal is towards the roller bearing.*

2. Lubricate the inner roller bearing and oil seal with clean oil, then install the bearing cage in position on the shaft of the brake drum hub. Place the inner race of the inner roller bearing on the shaft with the shoulder of race towards the outer end of the shaft. Drive or press the race into position on the shaft. Install the snap ring in position on the shaft. Place the bearing cage gasket in position on the cage.

3. Hold or block the final drive pinion (with hub side towards the outer bearing bore) in position in the final drive housing, then insert the brake drum hub, with the bearing cage assembly, into position in the housing and final drive pinion. Install the bearing cage attaching capscrews and tighten securely.

4. Install the inner race of the outer roller bearing onto the shaft (shoulder of race next to the pinion), then install the outer bearing. Lubricate the outer bearing with clean oil and install the outer bearing cover and gasket.

E. Installation of Final Drive Intermediate Shaft

1. With the intermediate shaft bearings and the inner bearing cup installed (as in "ADJUSTMENT OF FINAL DRIVE INTERMEDIATE SHAFT BEARINGS," Par. A above), refer to Fig. 5 and turn a holding tool into the outer end of the intermediate shaft as shown. Hold the intermediate pinion in position in the housing and start the intermediate shaft. Hold the intermediate gear in position in the housing (with lock side of gear towards the intermediate pinion) and start the intermediate shaft into the gear.

2. Hold the gears and shaft so that the inner bearing is in position in the inner bearing cup, then install the outer bearing cup in position in the housing.

3. Install the outer bearing cover and the correct amount of bearing adjustment shims as determined in Step 3 of "ADJUSTMENT OF FINAL DRIVE INTERMEDIATE SHAFT BEARINGS," Par. A above. Tighten the attaching capscrews securely.

4. Position the intermediate gear on the shaft so that the gear retaining locks may be installed on the gear and into the machined groove in the shaft. Install the two gear retaining locks, attaching capscrews, and capscrew locks. Tighten the capscrews securely and lock in position with the cap-

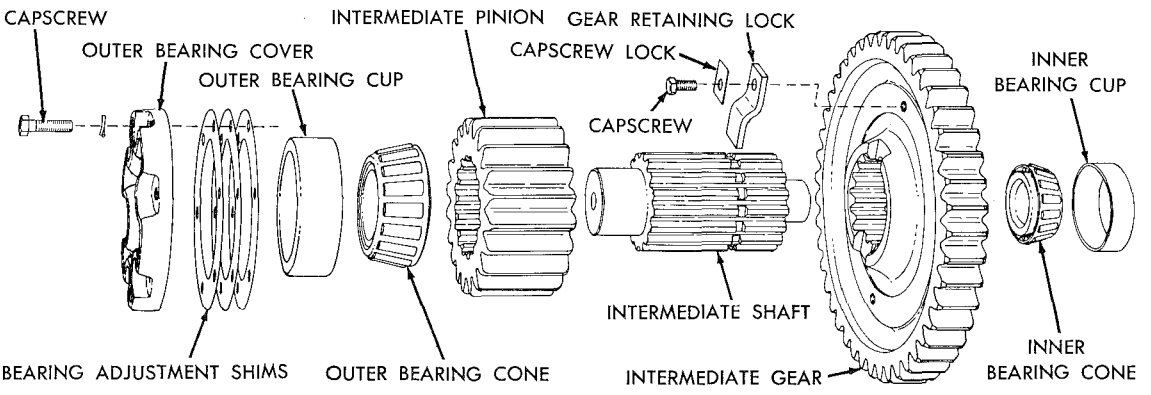

Fig. 17 — Final Drive Intermediate Shaft Details

screw locks.

F. Installation of Track Sprocket Shaft and Sprocket

1. With the sprocket shaft inner and intermediate bearings and the inner bearing cup installed (as in "ADJUSTMENT OF TRACK SPROCKET SHAFT BEARINGS," Par. B above), install the final drive gear (with the tapped holes for the gear retaining lock capscrews toward the inner bearing cup) in position in the housing and block the gear in position so that the track sprocket shaft may be inserted.

2. Insert the sprocket shaft into the housing and the final drive gear, push the shaft in so that the inner bearing is in position in the inner bearing cup, then install the sprocket shaft intermediate bearing cup in position in the housing.

3. Install the intermediate bearing retainer (with the inner seal assembly attached) and the inner seal guard in position on the housing, using the correct amount of bearing adjustment shims as determined in Step 3 of "ADJUSTMENT OF TRACK SPROCKET SHAFT BEARING," Par. B above. Tighten the attaching capscrews securely.

4. Position the sprocket shaft gear so that the gear retaining lock may be installed on the gear and into the machined groove in the sprocket shaft. Install the gear retaining lock, attaching capscrews, and capscrew locks. Tighten the capscrews securely and lock in position with the capscrew locks.

5. Install the final drive compartment bottom cover and gasket. Tighten the attaching capscrews securely.

6. Lubricate the mating surfaces of the inner seal rings, then install the track sprocket (with the inner seal ring in place) on the track sprocket shaft. Install the sprocket retaining nut and tighten to a torque of 2200 to 2300 lbs. ft. This may be accomplished as follows:

   a. Place a wooden block against the track sprocket to keep it from turning.

   b. Use a suitable wrench with a ten foot extension on the handle and tighten the nut "snugly" by hand. Measure the distance of ten feet from the center of the track sprocket shaft to a point on the wrench handle extension and mark this location. Attach a weight of 220 to 230 lbs. at the 10 foot mark on the wrench handle extension to obtain the specified torque on the nut.

   NOTE: *If a longer or shorter extension is used on the wrench handle, the num-*

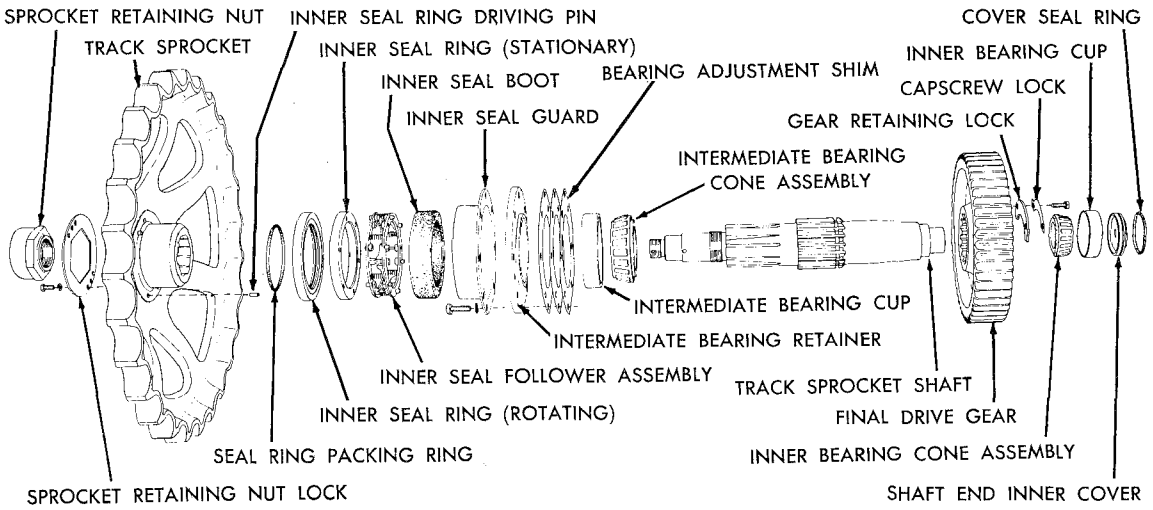

Fig. 18 — Final Drive Sprocket, Shaft, and Gear Details

ber of lbs. required at the point where the weight is attached may be obtained by measuring the distance from the center of the sprocket shaft to the point where the weight is attached and dividing 2300 by this measurement in feet.

EXAMPLE: If the distance from the center of the sprocket shaft to the weight is 8 ft., 2300 ÷ 8 = 287.5 lbs. which is the weight required on the handle extension to impose a torque of 2300 lbs. ft. on the track sprocket retaining nut.

7. Install the sprocket retaining nut lock and tighten the lock attaching capscrews securely.

G. Installation of Track Sprocket Shaft Outboard Bearing Cage and Outboard Bearing

1. With the outboard bearing installed in the cage, install the cage on the sprocket shaft to a position allowing .050" to .060" clearance between the outer seal rings. Lubricate the outboard bearing with clean oil. IMPORTANT: *Do not allow the outer seal rings to contact each other, as this will cause a drag between the rings, thus a false reading will be obtained when checking the adjustment of the outboard bearing.*

2. Install the sprocket shaft outboard bearing cap using the original amount of outboard bearing adjustment shims.

3. The outboard bearing is correctly adjusted when it has 5 to 9 pounds inch pre-load. Using tools similar to those shown in Figs. 20 and 21, check the bearing pre-load as follows: Turn the outboard bearing cage so that the extended portion of the flange, used for attaching the track sprocket guard, is down. Install the outboard bearing cage torque wrench adapter in position on the outboard bearing cap and using a pounds inch indicating torque wrench on the ½" high nut of the adaptor, revolve the outboard bearing cage approximately 30° in either direction and note the maximum reading indicated on the torque wrench. Add or remove outboard bearing adjustment shims until the correct outboard bearing pre-load of 5 to 9 pounds inch is obtained. Make certain that the mating surfaces of the outer seal rings are not in contact and that the outboard bearing is not cramped on the sprocket shaft, while the bearing pre-load is being checked.

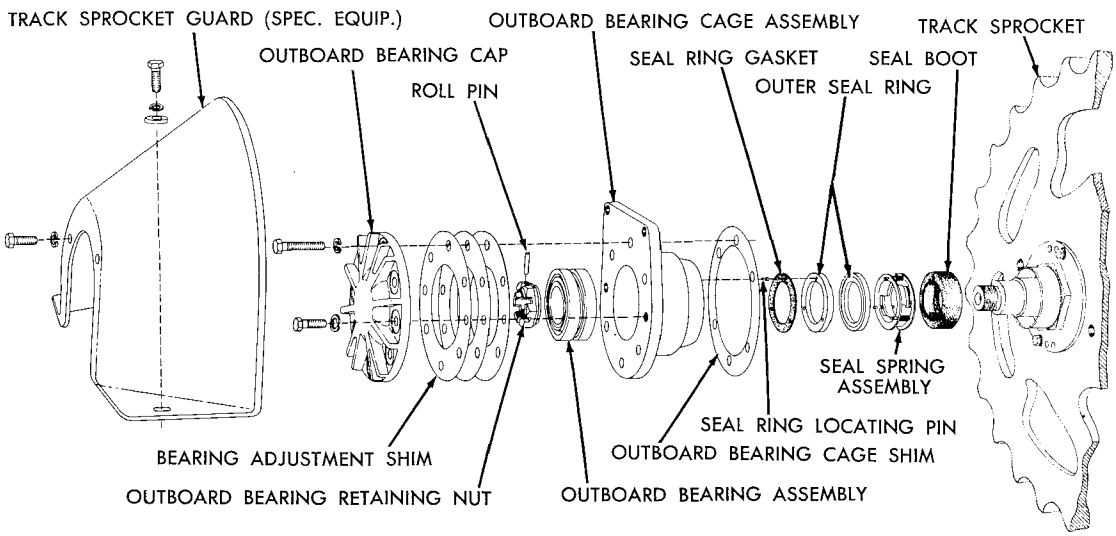

Fig. 19 — Final Drive Outboard Bearing and Seal Details