PROBABLE CAUSE	REMEDY
2. Bearing seizure	Remove the sprocket drive and inspect for damaged bearings. Replace if necessary.

Sprocket Drive Gear Noisy

1. Misaligned or damaged gears	Inspect the gears and replace if necessary.
2. Improper, dirty or insufficient lubricant	Use proper grade and amount of lubricant.

Lubricant Leakage

1. Faulty gasket	Oil leaks may occur at sprocket drive gear cover gasket or at other gaskets. Replace gaskets.
2. Faulty oil seals	Replace oil seals.

Excessive Backlash

1. Sprocket drive or pinion shaft worn or damaged	Replace worn or damaged parts if necessary.

Excessive Wear on Sprockets

1. Tracks run too loosely	Adjust the tracks. (Refer to Section 9.)
2. Tracks worn excessively	Install new tracks. (Refer to Section 9.)
3. Track frame out of alignment or damaged	Repair, or install new frame.

SPROCKET

4. REMOVAL

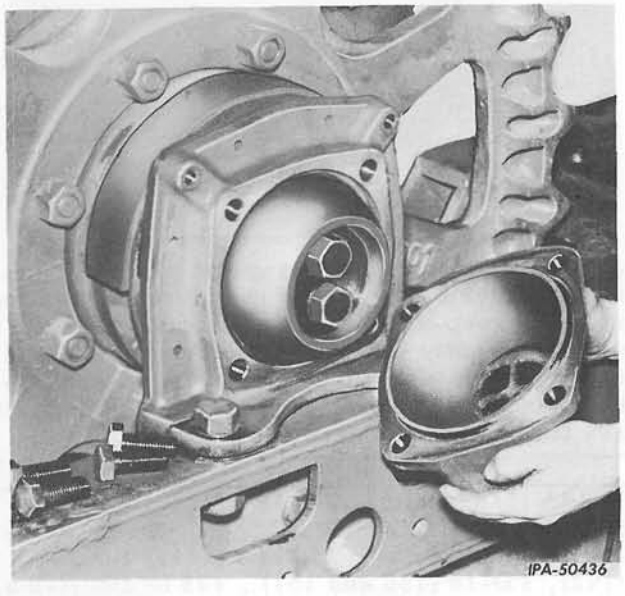
1. Take off the track chain, but do not remove it from under the tractor. Refer to "Track and Track Frame", Section 9.

2. Disconnect the diagonal brace from the pivot shaft but not from the track frame. Refer to "Track and Track Frame", Section 9.

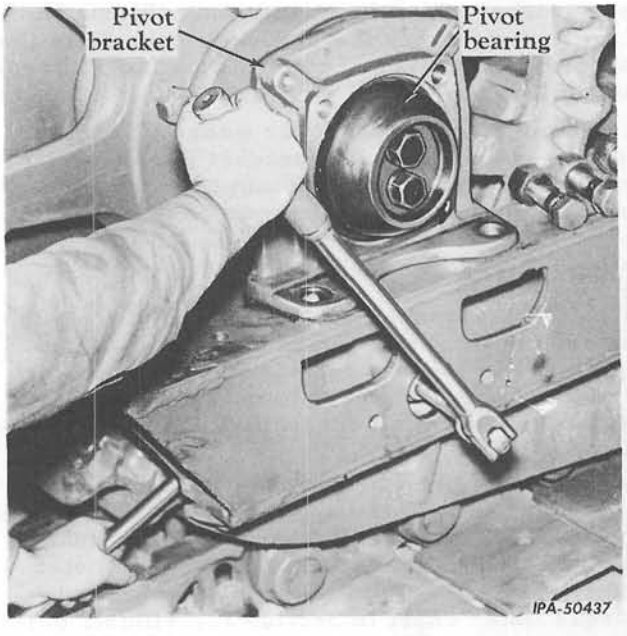
3. Remove the sprocket shield. Remove the pivot bracket cap and gasket, (Illust. 3).

4. Disconnect the pivot bracket from the track frame by removing the top and side bolts, (Illust. 4).

continued on next page



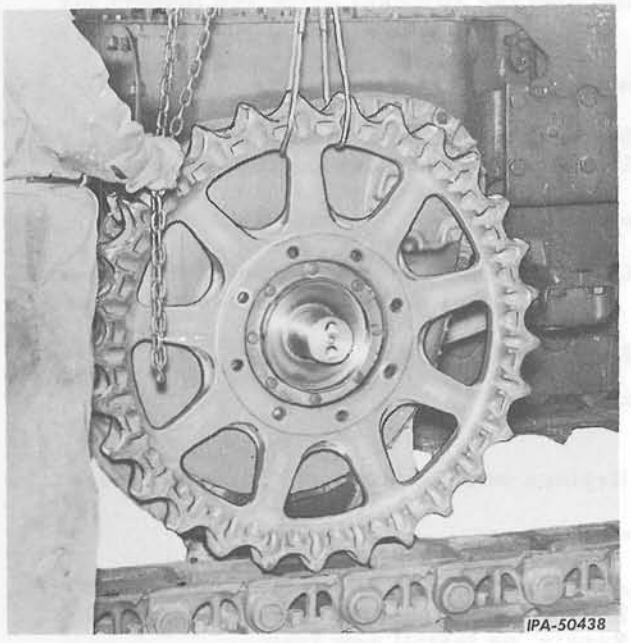
Illust. 3 - Removing Pivot Bracket Cap.



Illust. 4 - Disconnecting Pivot Bracket.

SPROCKET

4. REMOVAL - Continued



Illust. 5 - Removing the Sprocket.

5. Jack up the rear of the tractor high enough so that the sprocket will clear the track frame. Block the tractor securely.

6. Remove the two cap screws securing the pivot bearing to the pivot shaft (Illust. 4). Remove the pivot bracket assembly together with the pivot bearing.

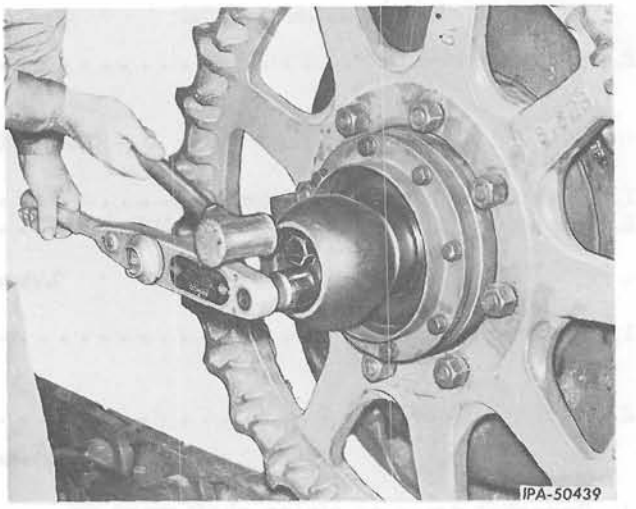
7. Remove the nuts and washers which secure the sprocket to the sprocket carrier. Remove the sprocket with a hoist and sling (Illust. 5). If necessary, break the sprocket loose from the carrier with a sledge hammer or a large three-jaw puller.

8. Examine the sprocket for wear. Excessive wear is indicated if the sprocket jumps the track chain when the track adjustment is correct. A worn sprocket (if worn on one side of the teeth only) may be reversed.

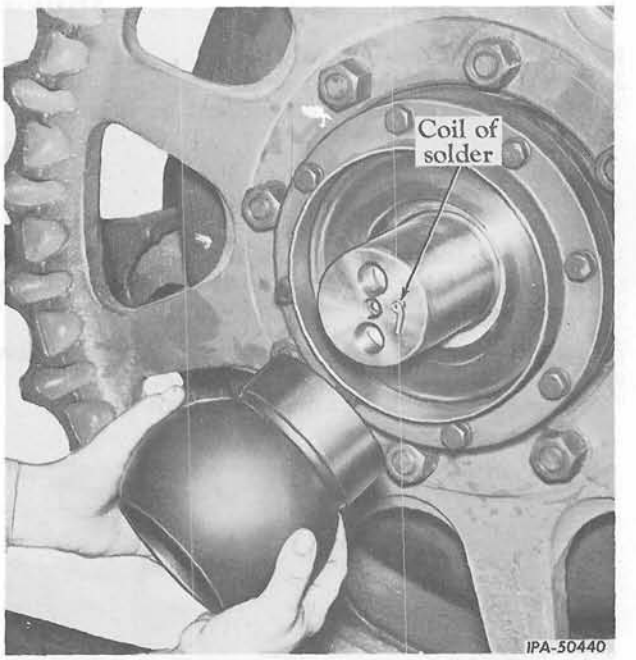
5. INSTALLATION

1. Lift the sprocket into position, lining up the cap screws projecting from the sprocket carrier with the holes in the sprocket. Secure the sprocket to the carrier with nuts tightened to the torque shown in paragraph 2, "SPECIFICATIONS."

2. Place the pivot bearing on the end of the pivot shaft without the shims and install the cap screws. Tighten the cap screws to the final specified torque as required for the diameter and type of cap screw. (Refer to "Standard Torque Data" chart in Section 1.) (Illust. 6.) This will eliminate the clearance between the bearings and spacer.



Illust. 6 - Seating the Pivot Bearing.



Illust. 7 - Installing Measuring Material.

3. Remove the pivot bearing and place a short coil of solder on the end of the pivot shaft. Use grease to keep it in position (Illust. 7). Molding clay or putty (about 1/4 inch round) may be used as a measuring material. Install the pivot bearing and torque cap screws to the preliminary torques as shown in the following chart.

PRELIMINARY TORQUES	
TD-14A (5/8" Bolts), TD-18A (3/4" Bolts)	50 ft-lbs.
TD-14A (7/8" Bolts), TD-14A (141), TD-14 (142), TD-15 (150 and 151)	175 to 200 ft-lbs.
TD-18A (1" Bolts), TD-18A (181), TD-18 (182), TD-20 (200 and 201)	250 to 275 ft-lbs.

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SPROCKET

4. Remove the pivot bearing and the compressed material from the end of the pivot shaft. With a micrometer, carefully measure the thickness of the compressed material. This measurement, less .013 to .018 inch, is the amount of shims that are to be installed in the pivot bearing for proper preload.

5. Install the shims in the pivot bearing. Install the pivot bracket assembly and pivot bearing on the pivot shaft. Tighten the pivot bearing cap screws to the final specified torque as required for the diameter and type of cap screw. (Refer to "Standard Torque Data" chart in Section 1.)

6. Lower the tractor onto the track frame. Secure the pivot bracket to the track frame with side and top cap screws. Tighten the cap screws to standard ft. lbs. torque.

7. Install the pivot bracket cap with a new gasket.

8. Connect the diagonal brace to the pivot shaft, making sure the correct bearing clearance is maintained. Refer to Section 9, "Track and Track Frame".

9. Install and adjust the track chain. Refer to Section 9.

SPROCKET DRIVE

6. REMOVAL AND DISASSEMBLY

(Regular and Wide Tread up to Step 13)

1. Remove the sprocket as described in paragraph 4.

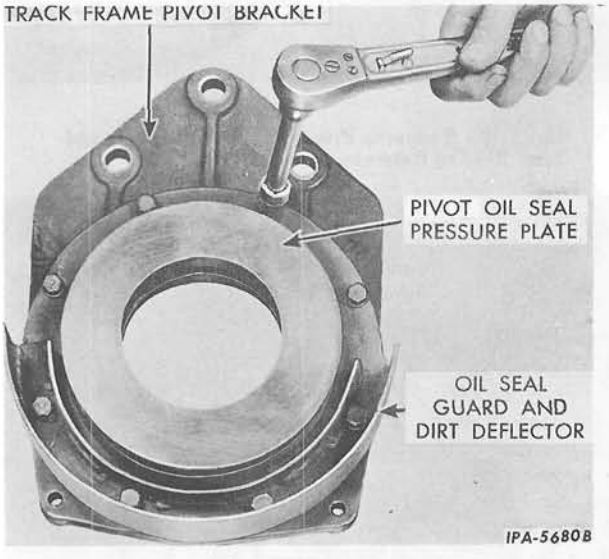
2. Drain the lubricant from the sprocket drive.

3. Disassemble the pivot bracket assembly removed in step (6) under "Sprocket Removal". Remove the leather packing from the face of the pivot oil seal pressure plate. Remove the pivot oil seal guard (Illust. 8) and lift out the pressure plate with leather diaphragm.

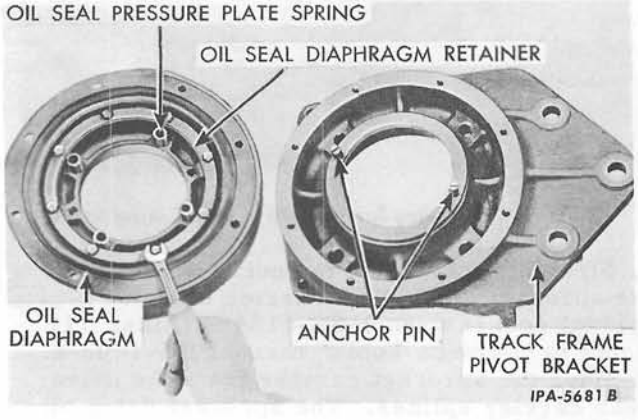
4. Remove the retainer from the inner side of the pressure plate (Illust. 9) to free the diaphragm. The two anchor pins in the bracket prevent the spring loaded pressure plate from rotating.

5. Remove the pivot oil seal dirt deflector and outer bearing retainer (Illust. 10) by removing the eight cap screws which secure them and the drive gear outer bearing cage to the sprocket carrier.

6. Pull the drive gear outer bearing and cage by installing jack screws in the flange of the cage (Illust. 10) and drawing up on them evenly. If necessary to replace the bearing, it can be pulled or driven from the cage. It is not necessary to remove the "O" ring around the outer circumference of the bearing unless the bearing is to be removed.



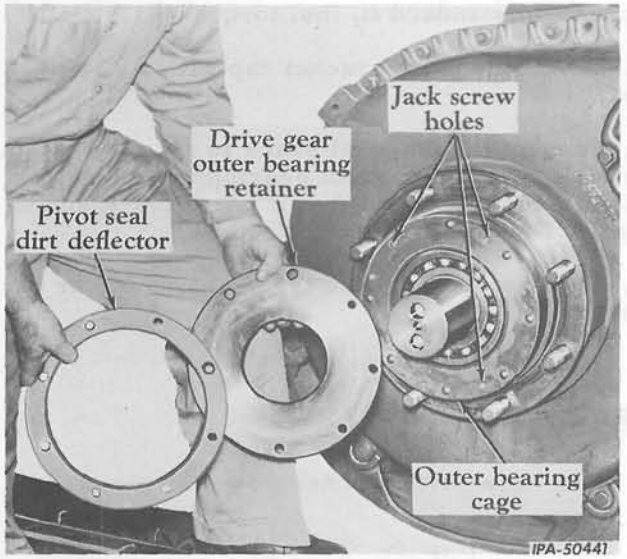
Illust. 8 - Disassembling Pivot Bracket.



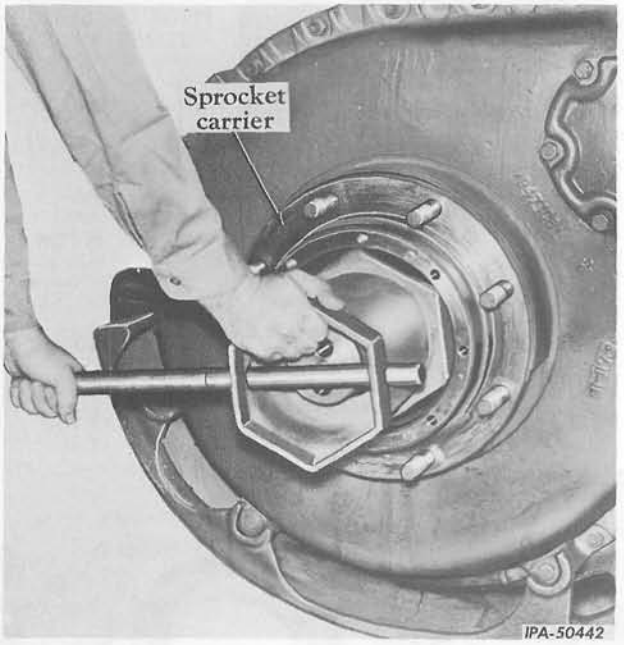
Illust. 9 - Removing Pivot Oil Seal Diaphragm.

SPROCKET DRIVE

6. REMOVAL AND DISASSEMBLY - Continued

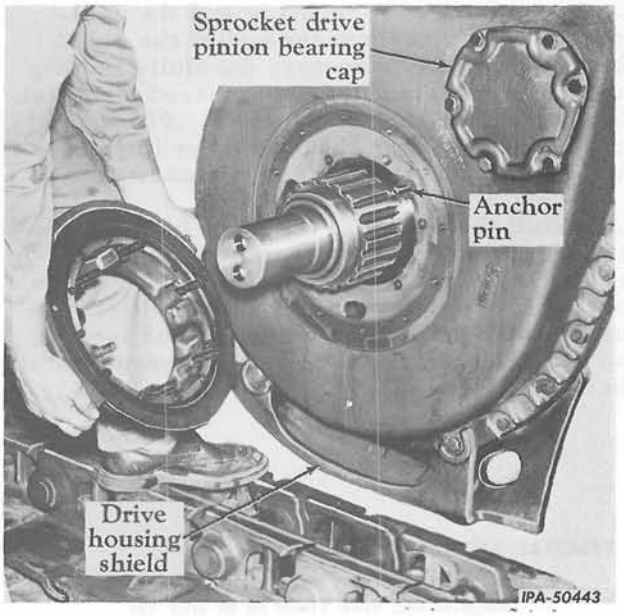


Illust. 10 - Removing Pivot Seal Dirt Deflector and Outer Bearing Retainer.



Illust. 11 - Removing Sprocket Drive Gear Carrier Nut.

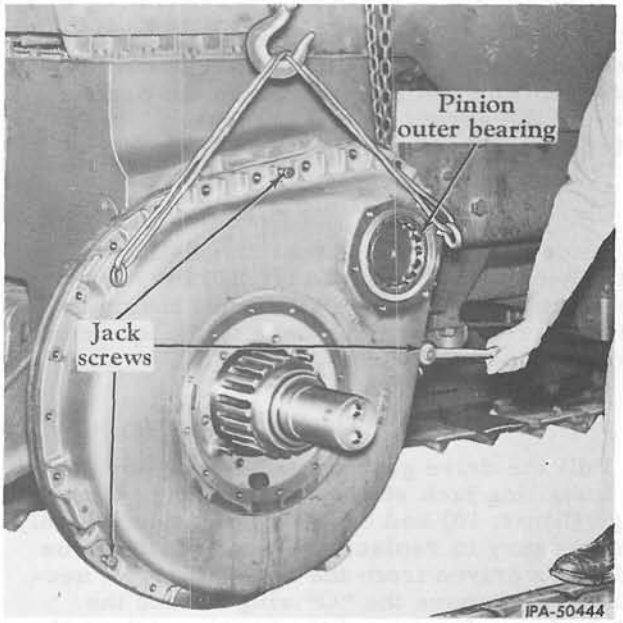
7. Straighten the lip of the nut lock and remove the sprocket drive gear carrier nut with special socket wrench SE-1184-2 (Illust. 11). Refer to "Service Tools" manual ISS-1002-S. Remove the sprocket carrier from the drive gear carrier splines. The sprocket drive oil seal leather packing will come out with the sprocket carrier.



Illust. 12 - Removing Sprocket Drive Oil Seal.

8. Remove the twelve cap screws securing the sprocket drive oil seal to the drive gear cover and remove the seal assembly (Illust. 12). This seal is constructed exactly the same as the pivot oil seal and is disassembled in the same manner. Refer to step (3) of this paragraph and Illustrations 8 and 9.

NOTE: Some tractors are equipped with an oil seal diaphragm retainer stiffener which fits between the drive cover (18) and the retainer (22). (Illust. 17.)



Illust. 13 - Removing Drive Gear Cover.

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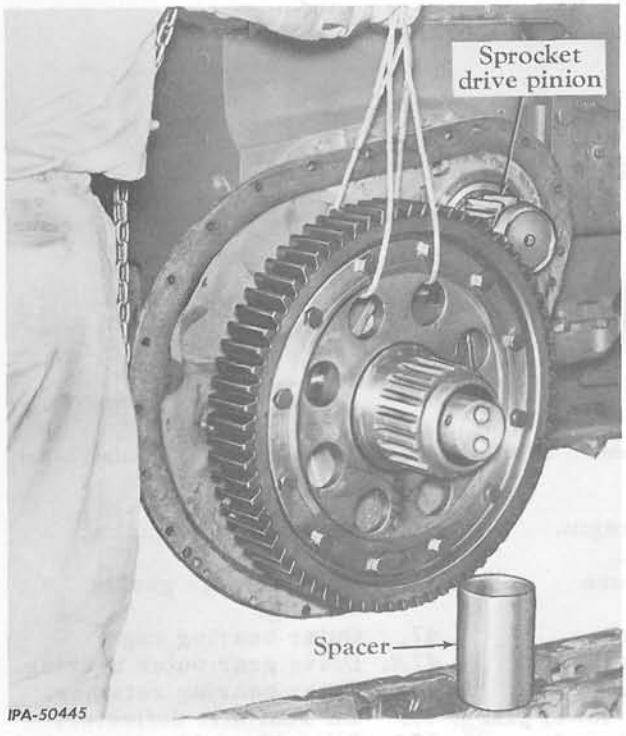
SPROCKET DRIVE

9. Remove the sprocket drive pinion bearing cap (Illust. 12) and packing ring. Remove the bolts and nuts securing the drive gear cover to the sprocket drive carrier (40, Illust. 17 or 6, Illust. 18). The drive housing shield will be removed in the process. Sling the gear cover and separate it from the carrier or plate with jack screws in the three tapped holes provided (Illust. 13). The cover is aligned with dowel pins, so the jack screws must be tightened down evenly.

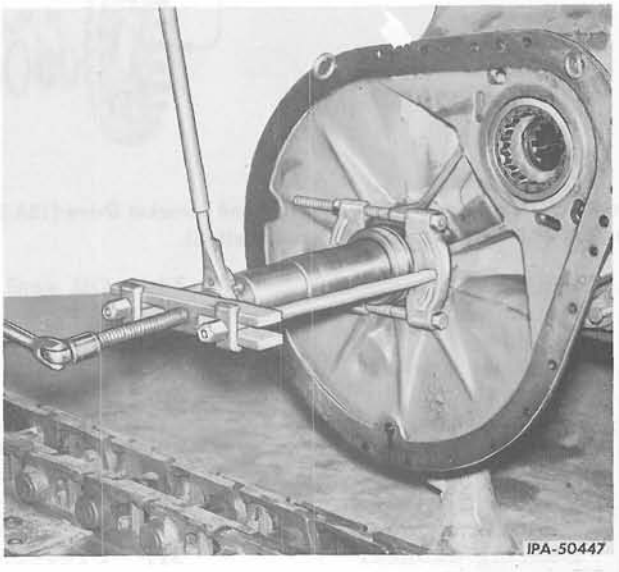


Illust. 14 - Removing the Sprocket Drive Gear and Carrier.

10. Slide the bearing spacer (14, Illust. 18) off the pivot shaft. With a hoist and cable sling, remove the sprocket drive gear and gear carrier from the pivot shaft (Illust. 14). If necessary to remove the inner ball bearing, tap it out with a drift punch in the holes located around the hub of the carrier (Illust. 15).

11. Remove the sprocket drive pinion (Illust. 14). The pinion inner bearing will remain in the sprocket drive carrier. There is no need to remove it unless it is to be replaced. If inner or outer pinion bearings need replacement, pull the inner races off the pinion with a gear puller. Pull the bearings from the cover (Illust. 13).

Illust. 15 - Removing the Inner Bearing.



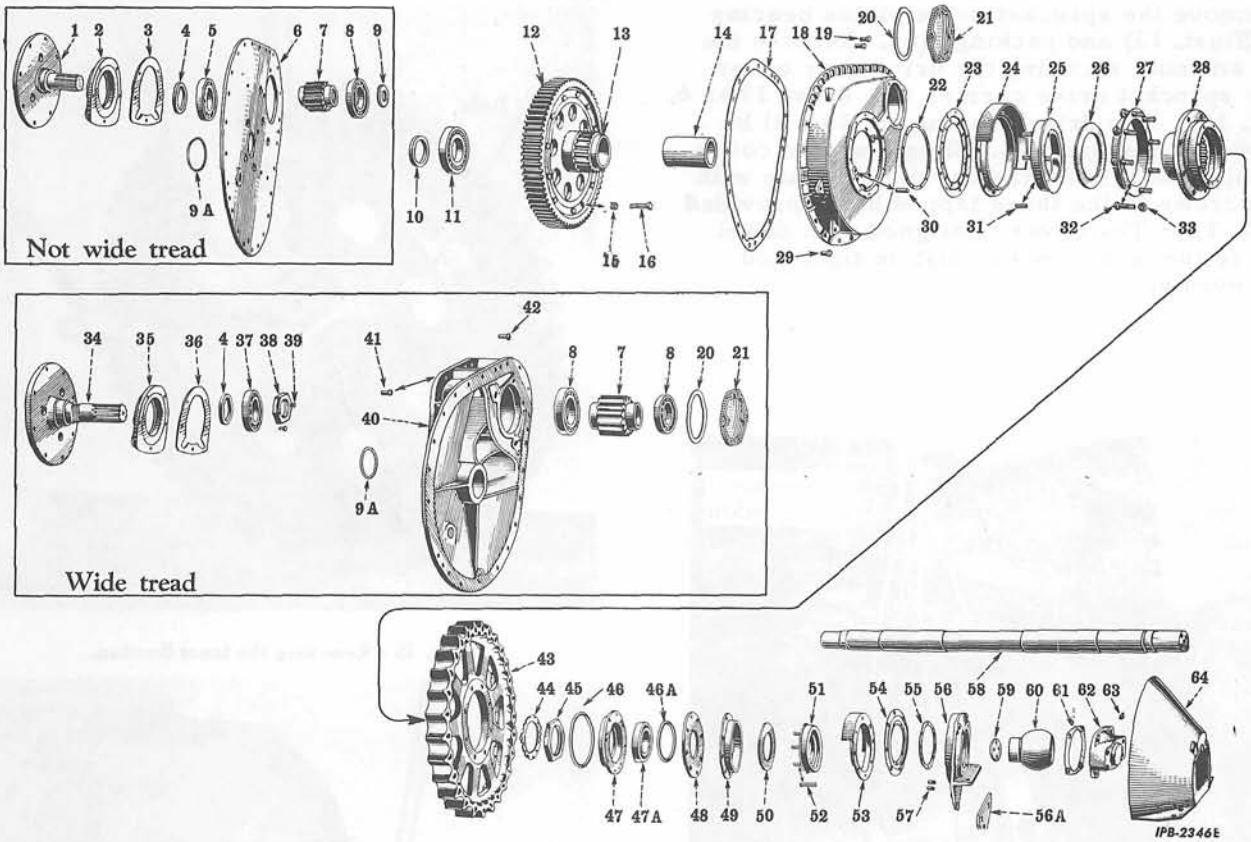
Illust. 16 - Removing Drive Gear Bearing Inner Race.

12. If the sprocket drive gear inner bearing is a roller bearing, pull the inner race from the pivot shaft (Illust. 16). Heat the bearing race with a blow torch or the cold flame of an acetylene torch to ease removal. Remove the spacer behind the bearing race.

NOTE: Later type bearing spacers, short, (11, Illust. 18) have puller holes. On units so equipped, insert jack screws into the three puller holes and use the spacer for removing the inner race of the bearing (12, Illust. 18).

continued on page 12

SPROCKET DRIVE



Illust. 17 - Exploded View of Sprocket and Sprocket Drive (18A Series Shown.) (14A (141), 14 (142) Series and 15 (150) Series, Serial TD-150 - 501 to 1788 , Regular Tread Similar.)

1. Pinion shaft.
2. Pinion inner bearing retainer.
3. Retainer gasket.
4. Oil seal.
5. Pinion inner bearing.
6. Sprocket drive carrier plate.
7. Sprocket drive pinion.
8. Pinion bearing.
9. Bearing washer.
9A. Pivot shaft seal ring.
10. Inner bearing spacer.
11. Drive gear inner bearing.
12. Sprocket drive gear.
13. Drive gear carrier.
14. Drive gear bearing spacer.
15. Dowel bolt nut.
16. Dowel bolt.
17. Cover gasket.
18. Sprocket drive cover.
19. Cover to main frame dowel pin.
20. Bearing cap packing ring.
21. Pinion outer bearing cap.
22. Oil seal diaphragm retainer.
23. Oil seal diaphragm.
24. Oil seal guard.
25. Oil seal pressure plate.
26. Oil seal packing.
27. Oil seal dirt deflector.
28. Sprocket carrier.
29. Cover to plate dowel pin.
30. Anchor pin (oil seal pressure plate).
31. Pressure plate spring.
32. Sprocket carrier bolt.
33. Carrier bolt nut.
34. Pinion shaft.
35. Bearing retainer.
36. Retainer gasket.
37. Pinion shaft bearing.
38. Bearing retaining nut.
39. Bearing nut lock bolt.
40. Sprocket drive carrier.
41. Dowel pin (carrier to main frame).
42. Dowel pin (cover to carrier).
43. Sprocket.
44. Nut lock.
45. Drive gear carrier nut.
46. Bearing cage gasket or ring.
46A. Bearing cage gasket or ring.
47. Outer bearing cage.
47A. Drive gear outer bearing.
48. Outer bearing retainer.
49. Oil seal dirt deflector.
50. Oil seal packing.
51. Oil seal pressure plate.
52. Pressure plate spring.
53. Pivot oil seal guard.
54. Oil seal diaphragm.
55. Diaphragm retainer.
56. Track frame pivot bracket.
56A. Pivot bracket shim.
57. Anchor pin (oil seal pressure plate).
58. Pivot shaft.
59. Pivot bearing shim.
60. Pivot bearing.
61. Cap gasket.
62. Pivot bracket cap.
63. Lubrication fitting.
64. Sprocket shield.

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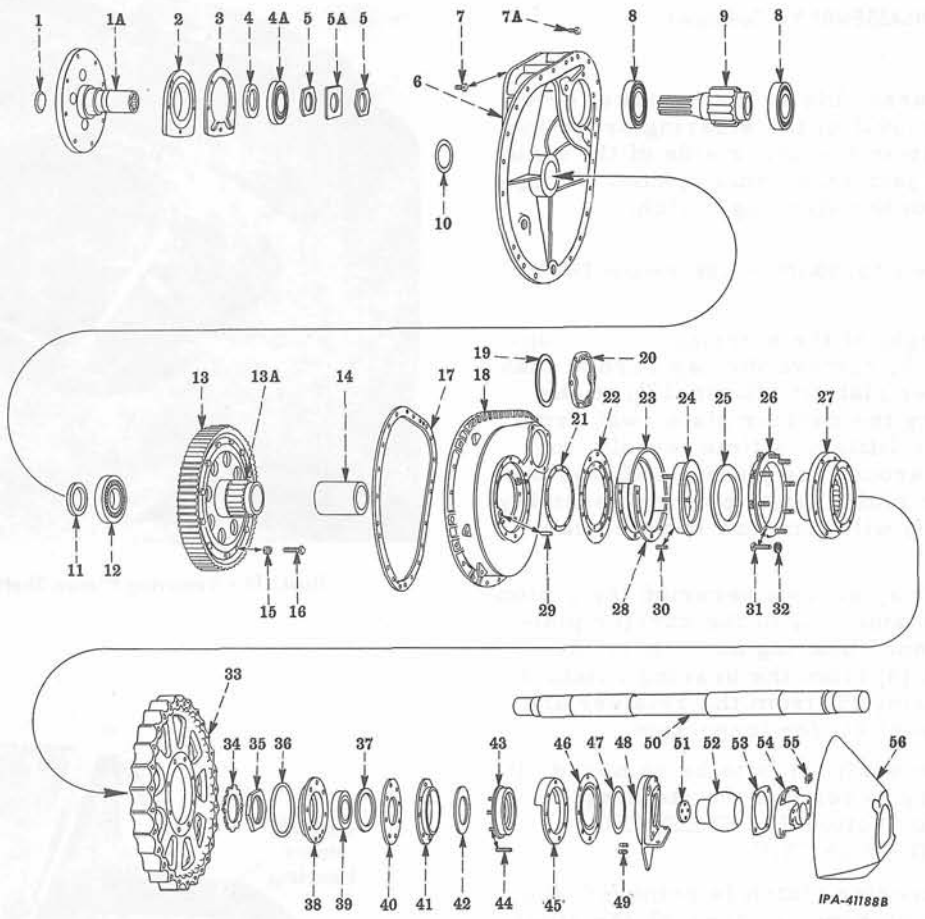
SPROCKET DRIVE



Illust. 18 - Exploded View of Sprocket and Sprocket Drive. (18A (181), 18 (182) and TD-20 (200 and 201) Series Shown.) (14A (141), 14 (142), 15 Series with Wide Tread and TD-150 1789 and up and 15 (151) Series (Regular Tread) Similar.)

1. Insert plug.
1A. Pinion shaft.
2. Bearing retainer.
3. Retainer gasket.
4. Oil seal.
4A. Pinion shaft bearing.
5. Bearing retaining nut.
5A. Nut lock.
6. Sprocket drive carrier.
7. Dowel pin (carrier to main frame).
7A. Dowel pin (cover to carrier).
8. Pinion bearings.
9. Sprocket drive pinion.
10. Pivot shaft seal ring.
11. Bearing spacer.
12. Drive gear inner bearing.
13. Sprocket drive gear.
13A. Drive gear carrier.
14. Drive gear bearing spacer.
15. Dowel bolt nut.
16. Dowel bolt.
17. Cover gasket.
18. Sprocket drive cover.
19. Packing ring (bearing cap).
20. Pinion outer bearing cap.
21. Oil seal diaphragm retainer.
22. Oil seal diaphragm.
23. Oil seal guard.
24. Oil seal pressure plate.
25. Oil seal packing.
26. Oil seal dirt deflector.
27. Sprocket carrier.
28. Oil seal guard stiffener.
29. Oil seal pressure plate anchor pin.
30. Pressure plate spring.
31. Sprocket carrier bolt.
32. Carrier bolt nut.
33. Sprocket.
34. Nut lock.
35. Drive gear carrier nut.
36. Packing ring.
37. Packing ring.
38. Outer bearing cage.
39. Drive gear outer bearing.
40. Outer bearing retainer.
41. Oil seal dirt deflector.
42. Oil seal leather packing.
43. Oil seal pressure plate.
44. Pressure plate spring.
45. Pivot oil seal guard.
46. Oil seal diaphragm.
47. Diaphragm retainer.
48. Track frame pivot bracket.
49. Oil seal pressure plate anchor pin.
50. Pivot shaft.
51. Pivot bearing shim.
52. Pivot bearing.
53. Cap gasket.
54. Pivot bracket cap.
55. Lubrication fitting.
56. Sprocket shield.

SPROCKET DRIVE

6. REMOVAL AND DISASSEMBLY - Continued

13. Further disassembly of the sprocket drive requires the removal of the steering brake inspection cover from the under side of the main frame. Place a jack under this opening to support the weight of the steering clutch.

Regular Tread and TD-150-501 to 1788 (Regular Tread)

14. With the weight of the steering clutch supported by the jack, remove the cap screws that attach the carrier plate (6, Illust. 17), to the main frame. Pry the carrier plate away from the main frame a little at a time, evenly, to prevent binding around the pinion shaft and the pivot shaft. The pinion inner bearing assembly (2 to 6, Illust. 17) will come off with the carrier plate.

15. Remove the cap screws securing the pinion inner bearing retainer (2) to the carrier plate and lift off the inner bearing assembly. Remove the gasket (3) from the bearing retainer (2), pull the bearing (5) from the retainer and remove the oil seal (4) for inspection.

16. If the pinion shaft (1) is to be removed, it will be necessary to remove the steering clutch. Refer to Section 7, "STEERING CLUTCHES AND BRAKES."

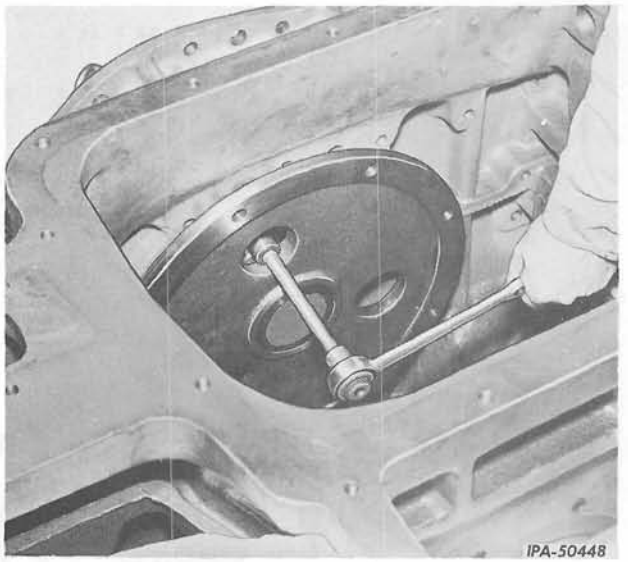
17. After the steering clutch is removed, the pinion shaft can be removed through the steering clutch chamber, similar to Illust. 19, for the wide tread.

Wide Tread and TD-150 - 1789 and Up and TD - 151 - 4001 up (Regular Tread)

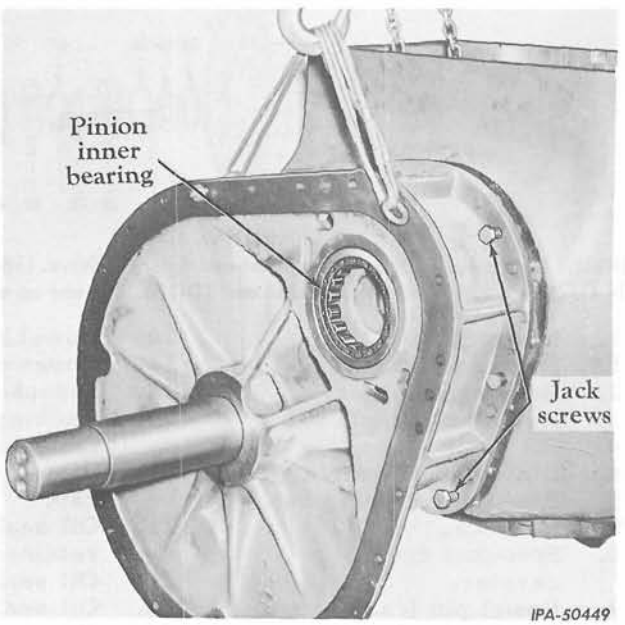
NOTE: The following Steps 14 and 15 do not apply to the 141 starting with a serial TD-141-40601, 142, 150 and 151 series (wide tread), the TD-150 series (regular tread) starting with serial TD-150-1789 or the TD-151-4001 up (regular tread) if the suggested "ALTERNATE REMOVAL PROCEDURE" is followed. However, if the pinion shaft (1A, Illust. 18) is to be removed, disregard the alternate removal procedure and begin the disassembly with the following Step 14.

14. Before removing the sprocket drive carrier (40, Illust. 17 or 6, Illust. 18), remove the steering clutches. Refer to Section 7, "STEERING CLUTCHES AND BRAKES."

15. With the steering clutch removed, remove the cap screws securing the pinion shaft bearing retainer (35, Illust. 17 or 2, Illust. 18) to the sprocket drive carrier. Rotate the pinion shaft flange for access to the lower cap screws. Remove the pinion shaft assembly through the steering clutch chamber.



Illust. 19 - Removing Pinion Shaft Assembly.



Illust. 20 - Removing the Sprocket Drive Carrier.

16. Disassemble the pinion shaft bearing assembly. Refer to Illust. 17, (34 through 39), or Illust. 18, (1A through 5A), as the case may be. Remove the gasket (36 or 3) from the bearing retainer. Then, either remove the two lock bolts (39) and remove the bearing retaining nut (38) or, straighten the lips of nut lock (5A) and remove both bearing retaining nuts (5). Remove the retainer, oil seal and bearing with a standard 3-jaw puller. Inspect the oil seal in

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the retainer and if worn, remove it and press in a new seal with the lips facing toward the bearing.

17. Remove the nuts and cap screws attaching the sprocket drive carrier to the main frame. Be sure to remove the cap screws between the webs on the inside of the carrier.

Sling the carrier to support its weight and separate it from the main frame with jack screws in the tapped holes provided on the inboard flange of the carrier (Illust. 20). Move the carrier carefully straight off the pivot shaft to prevent binding.

ALTERNATE REMOVAL PROCEDURE

TD-141-40601 and up Wide Tread and TD-150-1789 up and TD-151-4001 up (Regular Tread)

A special service tool is available for use on the 141 starting with serial TD-141-40601, 142, 150 and 151 series (wide tread) and on 150 and 151 series (regular tread) starting with serial TD-150-1789 and TD-151-4001 up. This tool makes it possible to remove the sprocket drive carrier (Illust. 20) without removing the main frame cover and accessories, steering clutch and pinion shaft assembly (Illust. 19) as covered in Steps 14 and 15, under "Wide Tread and TD-150-1789 and up and TD-151-4001 up (regular tread)."

This service tool is a 2-piece wrench designed to remove the bearing retaining nuts (5, Illust. 18). The procedure for its application is as follows:

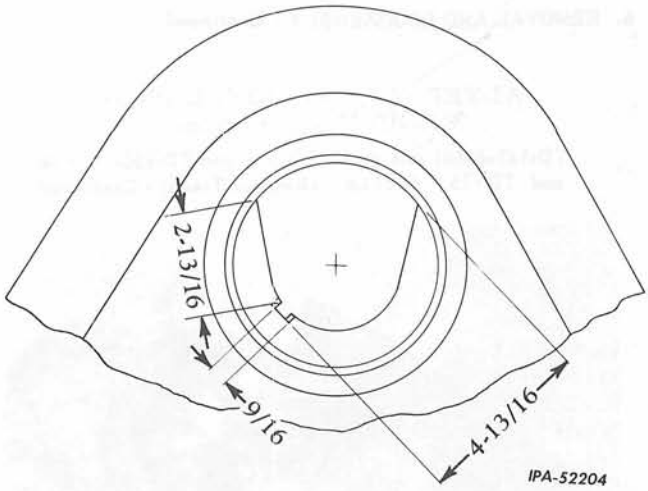
1. Remove the sprocket and disassemble the sprocket drive as outlined in steps 1 through 12 inclusive.

2. Remove the pinion inner bearing (8, Illust. 18) from the sprocket drive carrier (Illust. 20).

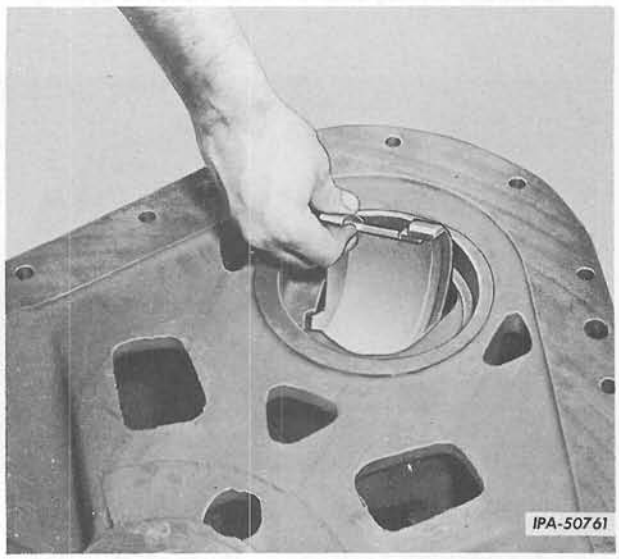
3. File or grind through the web in the upper bore of the casting to make an oblique slot (approximately 60°) as shown in Illust. 21. Place a rag in the opening to catch the filings.

4. With a cape chisel, bend back the retaining nut lock (5A, Illust. 18).

5. Place one-half of the wrench through the opening (Illust. 22). Turn this half of wrench into position and place it over the nut.



Illust. 21 - Grind a Slot in the Web.



Illust. 22 - Starting First Half of Wrench in Opening.

6. Similarly insert and turn the second half of the wrench through the opening Illust. 23, and place it over the nut. The pilot on this half of wrench fits into the pinion shaft which prevents the wrench from cocking or slipping off the nut.

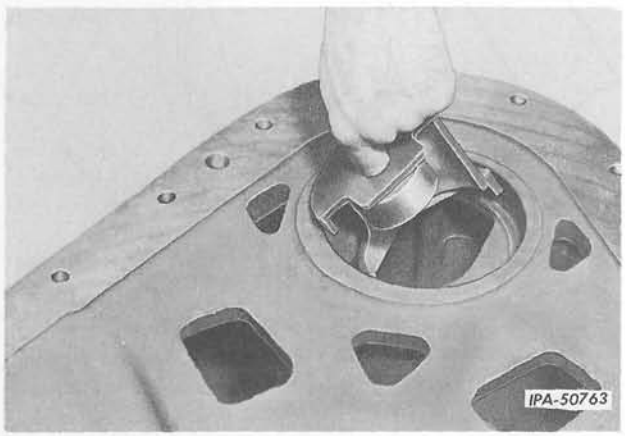
continued on next page

SPROCKET DRIVE

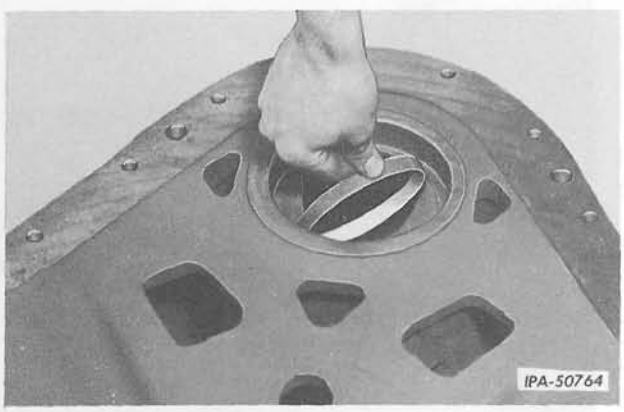
6. REMOVAL AND DISASSEMBLY - Continued

ALTERNATE REMOVAL PROCEDURE - Continued

TD-141-40601 and up Wide Tread and TD-150-1789 up and TD-151-4001 up (Regular Tread) - Continued

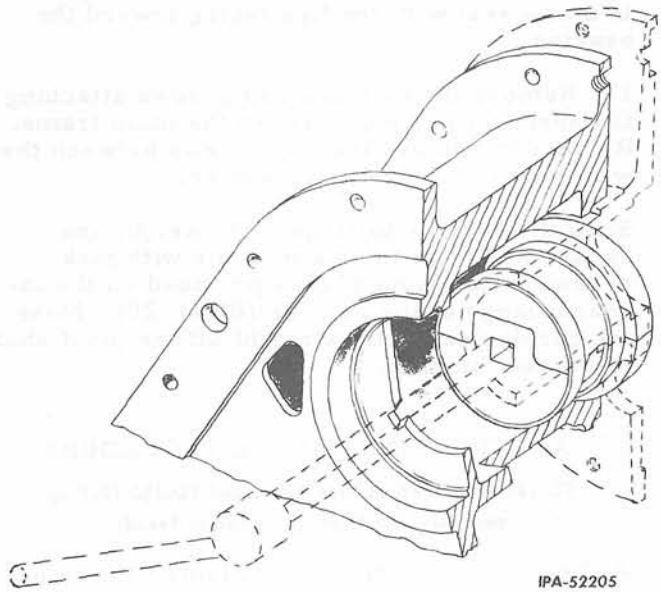


Illust. 23 - Starting Second Half of Wrench in Opening.



Illust. 24 - Placing Lock Ring in Opening.

7. Insert both lock rings through the slot and opening Illust. 24. Position one ring over the front of the wrench and one over the wrench drive end to prevent the wrench section from spreading when torque is applied. See Illust. 25.
8. Loosen the first nut, however, before the nut and nut lock can be removed, it is necessary that the lock rings and one-half of the wrench be removed.
9. After the first nut and nut lock are removed, reassemble the wrench over the second nut and loosen the nut. Disassemble and remove the wrench parts, then remove the second nut.



Illust. 25 - Cutaway View Showing Installation of Wrench for Removing the Retaining Nut from the Steering Clutch Support Shaft.

10. Proceed as outlined in steps 13, 17 and 16, in that order, paragraph 6, "SPROCKET DRIVE REMOVAL AND DISASSEMBLE."

NOTE: The part number of the wrench is 1 020 353 R91. It can be obtained by sending your purchase order to Service Tools Incorporated, 1923 S. Indiana Ave., Chicago 16, Illinois.

7. INSPECTION AND REPAIR

1. Examine the sprocket teeth for excessive wear. Excessive wear will cause the sprocket to jump the track chain even with proper track tension. If the teeth are worn on one side only, the sprocket may be reversed to present the unworn side of the teeth to the track chain bushings.

2. Inspect the bearings for scores, cracks, checks, wear and looseness in their cages or supports. Replace those that are not fit for further use. Oil those that are in serviceable condition and wrap or cover them with engine oil until ready for assembly.

3. Inspect bearing surfaces of pivot bracket, cap, and pivot bearing for scoring, cracks, or excessive wear. Replace parts as necessary.

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SPROCKET DRIVE

4. Inspect the sprocket drive gear and pinion gear for worn, chipped, or broken teeth. If the sprocket drive gear requires replacement, remove the dowel bolts and nuts securing it to the carrier and replace it with a new gear. Inspect the drive gear carrier for worn or damaged splines. If necessary replace the carrier.

NOTE: When sprocket drive gear or sprocket drive gear carrier or both are furnished as service items, gear must be heated in oil to a maximum of 400° F to obtain the required .002-.006 shrink fit between the gear and the carrier. Care must be taken to have the dowel holes in line between the two parts to permit line reaming. Parts must be line reamed in the field to a .7475 - .7490 diameter ream. If only one part is ordered, customers mating part should be used as a guide for line reaming the dowel holes. On drive gears that are stamped "25° THIS SIDE OUT," assemble the gear to the gear carrier so that this stamped side will face towards the outside of the tractor. Tighten the drive gear dowel bolt nuts to the torque specified in Par. 2, "SPECIFICATIONS."

5. Inspect the sprocket carrier for worn splines. Replace all bent or damaged seal guards and dirt deflectors.

6. Replace all "O" rings and gaskets with new ones.

7. Inspect the pivot oil seal and sprocket drive oil seal for cracks or holes in diaphragms, worn or scored pressure plates, broken or weak pressure plate springs, bent or broken anchor pins, and worn leather packings. Replace parts as necessary.