



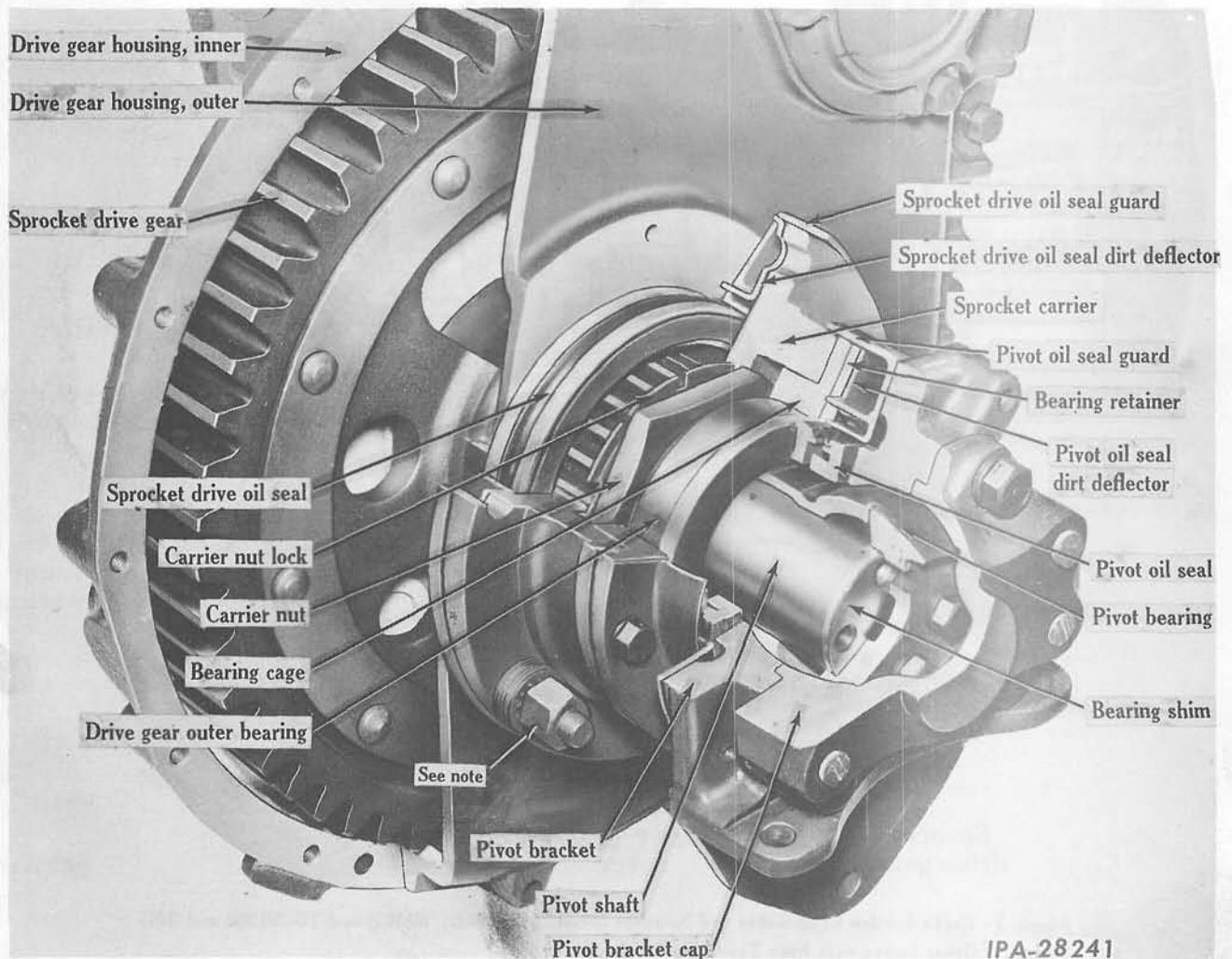
1. DESCRIPTION

The sprocket and sprocket drive assembly on these crawler tractors consists of a set of spur gears located in separate gear cases, one on each side at the rear of the tractor. Engine power is transmitted from the bevel drive gear through the steering clutches to the sprocket drives. The sprockets, which are attached to the sprocket carriers transmit power to the tracks. The sprocket drives and sprockets are ball and roller bearing mounted on the stationary pivot shaft.

The sprocket drive pinion is driven by a splined shaft (extending from the steering clutch).

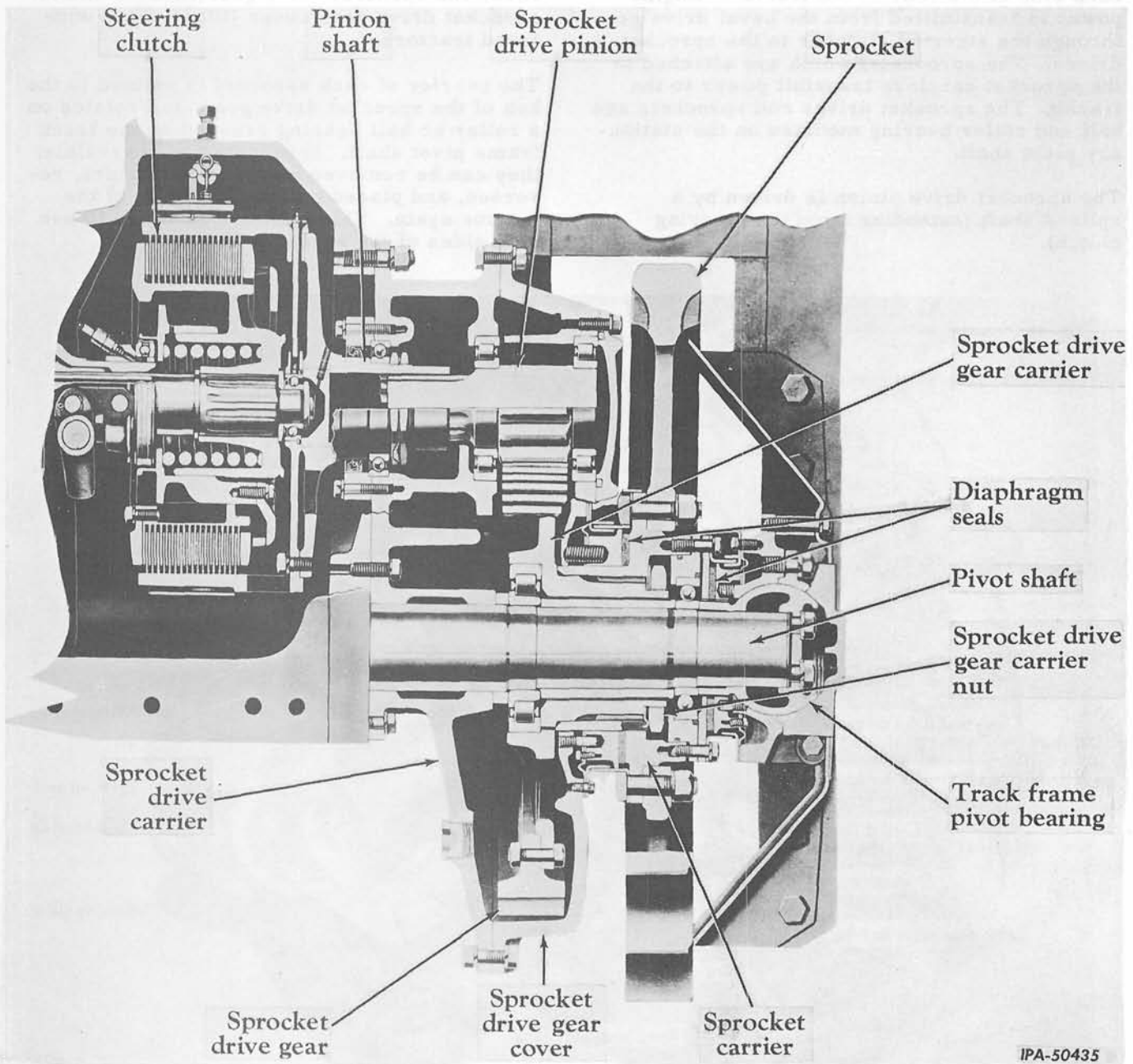
A large sprocket drive gear (driven by the pinion) drives the carrier and sprocket. Each sprocket drive is completely enclosed in a gasket sealed compartment between the inner and the outer drive gear housings (Illust. 1) or between the sprocket drive gear carrier and the sprocket drive gear cover (Illust. 2) on wide tread tractors.

The carrier of each sprocket is splined to the hub of the sprocket drive gear, and rotates on a roller or ball bearing pressed on the track frame pivot shaft. Sprockets are reversible; they can be removed from their carriers, reversed, and placed on the same side of the tractor again. This makes it possible to use both sides of the sprocket teeth.



Illust. 1 - Cutaway View of Sprocket Drive on Regular Tread Tractors. (14, 18 and old 18A Series)

NOTE: The sprocket is not shown above; if it were shown, it would be installed on the sprocket carrier under the nut indicated.



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Illust. 2 - Cross Section of Sprocket and Sprocket Drive. (18A(181), 18(182) and TD-20(200 and 201) Series. Other Series with Wide Tread are Similar.)



2. SPECIFICATIONS

Description	14 and 15 Series	18 and 20 Series
NUMBER OF TEETH:		
Sprocket	27	29
Sprocket Drive Pinion:		
Regular and Wide Tread		
Serial No. TDF-501 to 3886	14	
Serial No. TDF-3887 to TD-141-40600	13	14
Serial No. TD-141-40601 up and TD-142-41551 up	12	13
Serial No. TD-150-501 to TD-150-1788 (regular tread only)	12	
Serial No. TD-150-1789 up and TD-151-4001 up (regular tread only)	11	
Wide Tread Only		
Serial No. TD-142-43666 up	11	
Serial No. TD-150-501 up and TD-151-4001 up	11	
Wide Tread Became Regular		
Serial No. TD-181-34550 to TD-182-38639		12
Serial No. TD-182-38640 up		11
Serial No. TD-200-501 up and TD-201-3001 up		11
Sprocket Drive Gear:		
Serial No. TDF-501 to 3886	67	
Serial No. TDF-3887 to TD-141-40600	62	73
Serial No. TD-141-40601 up and TD-142-41551 up	61	68
Serial No. TD-150-501 to TD-150-1788 (regular tread only)	61	
Serial No. TD-142-43666 up (wide tread only)	60	
Serial No. TD-150-501 up and TD-151-4001 up (wide tread only)	60	
Serial No. TD-150-1789 up and TD-151-4001 up (regular tread only)	60	
Serial No. TD-181-34550 to TD-182-38639		70
Serial No. TD-182-38640 up		69
Serial No. TD-200-501 up and TD-201-3001 up		69
OUTPUT REDUCTION:		
Serial No. TDF-501 to 3886	4.78 to 1	
Serial No. TDF-3887 to TD-141-40600	4.75 to 1	5.21 to 1
Serial No. TD-141-40601 up and TD-142-41551 up	5.00 to 1	5.23 to 1
Serial No. TD-150-501 to TD-150-1788 (regular tread only)	5.00 to 1	
Serial No. TD-142-43666 up (wide tread only)	5.45 to 1	
Serial No. TD-150-501 up and TD-151-4001 up (wide tread only)	5.45 to 1	

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2. SPECIFICATIONS - Continued

Description	14 and 15 Series	18 and 20 Series
OUTPUT REDUCTION - Continued		
Serial No. TD-150-1789 up and TD-151-4001 up (regular tread only)	5.45 to 1	
Serial No. TD-181-34550 to TD-182-38639		5.83 to 1
Serial No. TD-182-38640 up		6.27 to 1
Serial No. TD-200-501 up and TD-201-3001 up		6.27 to 1
BACKLASH (inches):		
Serial No. TD-141-40601 up, TD-142-41551 up, and TD-150-501 to 1788 (regular tread only)016 - .024	
Serial No. TD-181-34550 to TD-182-38639016 - .024
Serial No. TD-142-43666, TD-150-501 up and TD-151-4001 up (wide tread only)014 - .020	
Serial No. TD-182-38640 up, TD-20-501 up and TD-201-3001 up013 - .021
Serial No. TD-150-1789 up and TD-151-4001 up (regular tread only)014 - .020	
SPECIAL TORQUE DATA (foot pounds): (All threads lubricated with SAE-30 engine oil)		
Sprocket carrier bolt nut	280 - 320	440 - 490
Sprocket drive gear carrier nut	630 - 700	630 - 700
Sprocket drive pinion shaft bearing nut (wide tread, TD-14, 14A, 15, 18 and 18A only)	280 - 320	280 - 320
Serial No. TD-150-1789 up and TD-151-4001 up (regular tread only)	280 - 320	
Pivot bracket bolts (top and side)	660 - 740	660 - 740
Sprocket drive gear dowel bolt nuts	255 - 285	255 - 285
BEARINGS:		
Sprocket drive pinion, inner and outer	Ball	Ball
Serial No. TD-142-43666 up (wide tread only)	Roller	
Serial No. TD-150-501 up and TD-151-4001 up (wide tread only)	Roller	
Serial No. TD-150-1789 up and TD-151-4001 up (regular tread)	Roller	
Serial No. TD-181-34550 up and TD-20-501 up		Roller
Sprocket drive pinion shaft (wide tread)	Ball	Ball
Serial No. TD-150-1789 up and TD-151-4001 up (regular tread)	Ball	
Sprocket drive gear, inner and outer	Ball	Ball
Serial No. TD-141-40601 up (inner)	Roller	
Serial No. TD-150-501 up and TD-151-4001 up (inner)	Roller	
Serial No. TD-181-34550 up, TD-20-501 up and TD-201-3001 up (inner)		Roller

3. CHECKING MECHANICAL PROBLEMS

PROBABLE CAUSE	REMEDY
Sprocket Drives Overheating	
1. Improper or insufficient lubrication	Use proper grade and amount of lubricant. Check for leaks.



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
- 2. Improper, dirty or insufficient lubricant. . .

Inspect the gears and replace if necessary. Use proper grade and amount of lubricant.

Lubricant Leakage

- 1. Faulty gasket
- 2. Faulty oil seals

Oil leaks may occur at sprocket drive gear cover gasket or at other gaskets. Replace gaskets. 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
- 2. Tracks worn excessively.
- 3. Track frame out of alignment or damaged .

Adjust the tracks. (Refer to Section 9.) Install new tracks. (Refer to Section 9.) Repair, or install new frame.

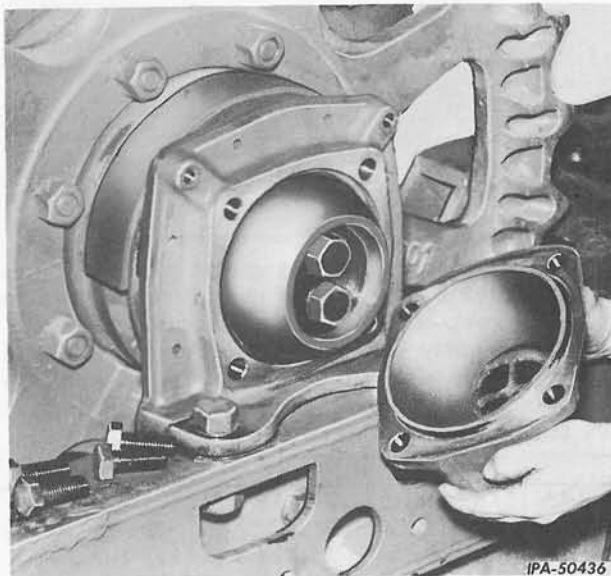
SPROCKET

4. REMOVAL

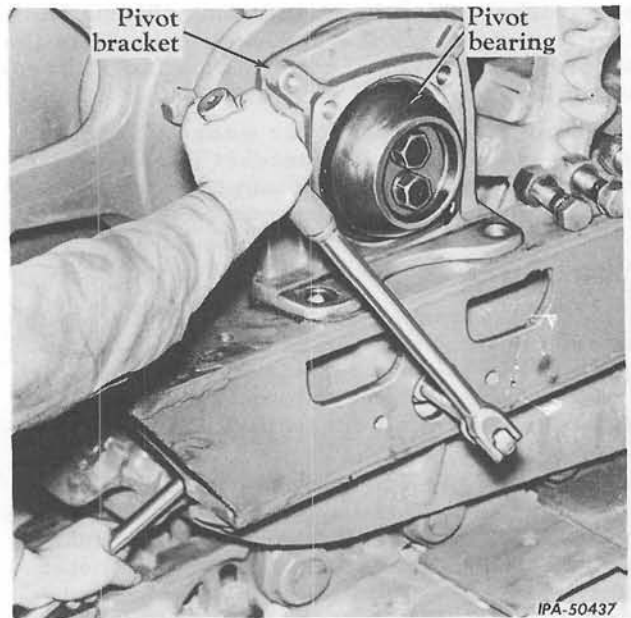
- 1. Take off the track chain, but do not remove it from under the tractor. Refer to "Track and Track Frame", Section 9.
- 2. Disconnect the diagonal brace from the pivot shaft but not from the track frame. Refer to "Track and Track Frame", Section 9.

- 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).

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Illust. 3 - Removing Pivot Bracket Cap.

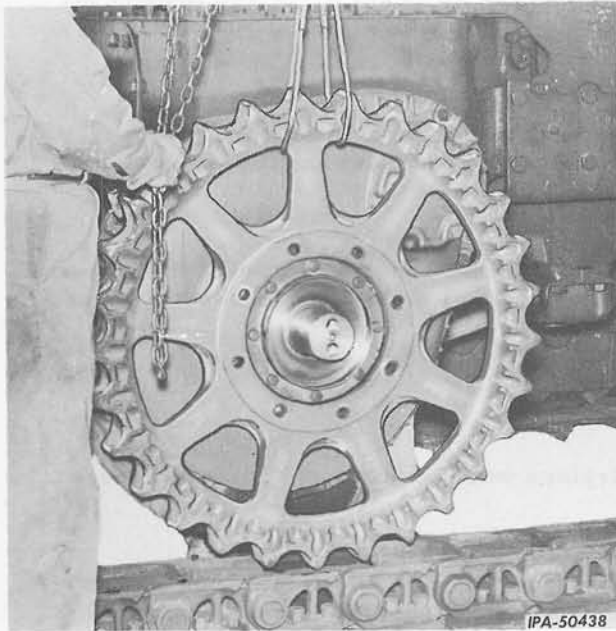


Illust. 4 - Disconnecting Pivot Bracket.



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.

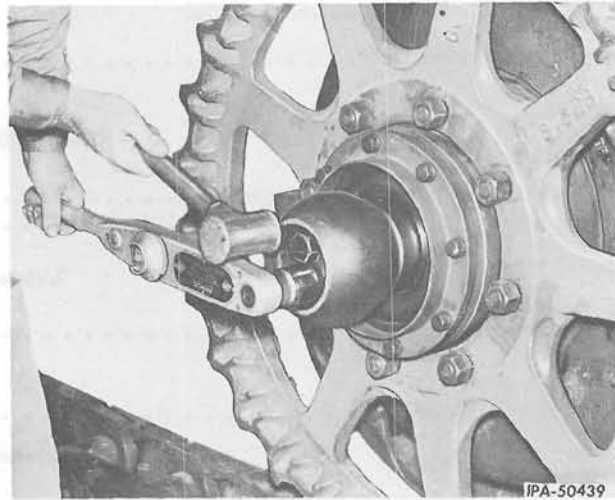
8. Examine the sprocket for wear. Excessive wear is indicated if the sprocket jumps the track chain when the track adjustment is correct. A worn sprocket (if worn on one side of the teeth only) may be reversed.

5. INSTALLATION

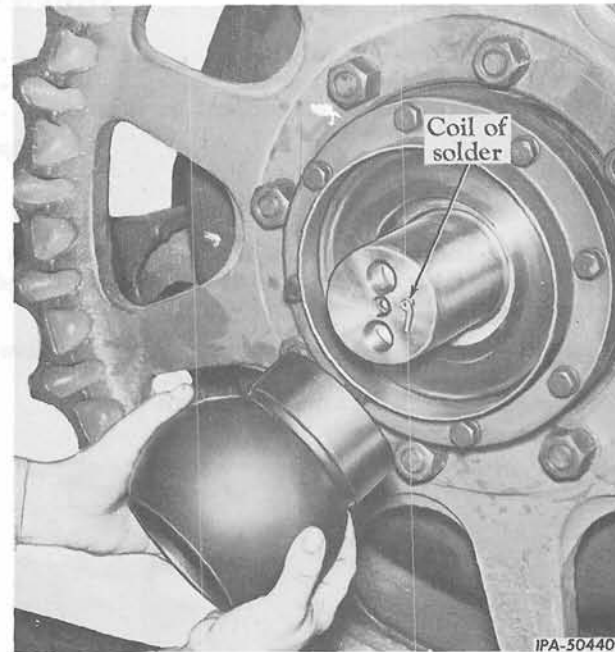
1. Lift the sprocket into position, lining up the cap screws projecting from the sprocket carrier with the holes in the sprocket. Secure the sprocket to the carrier with nuts tightened to the torque shown in paragraph 2, "SPECIFICATIONS."

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.

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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.

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.

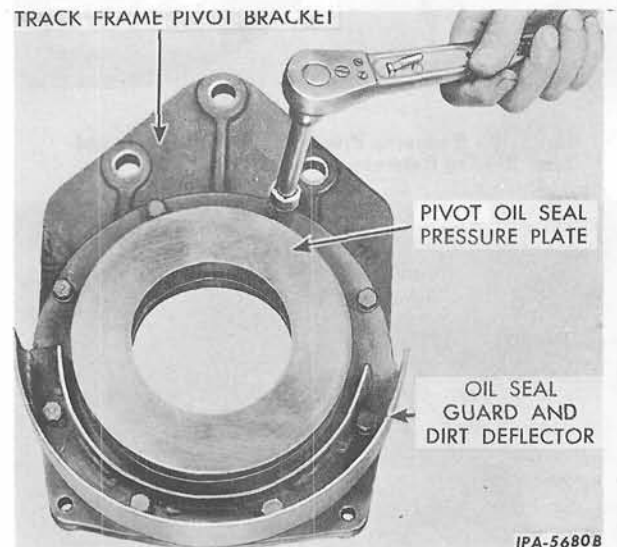
2. Drain the lubricant from the sprocket drive.

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.

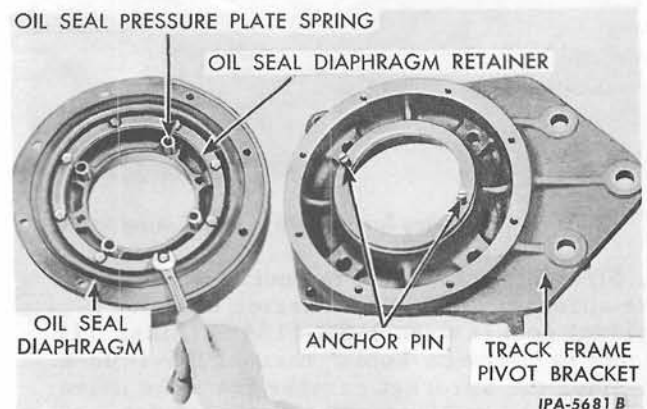
4. Remove the retainer from the inner side of the pressure plate (Illust. 9) to free the diaphragm. The two anchor pins in the bracket prevent the spring loaded pressure plate from rotating.

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.

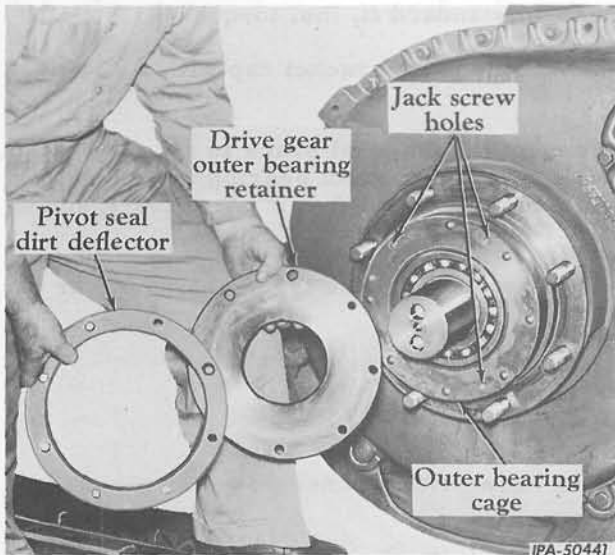


Illust. 9 - Removing Pivot Oil Seal Diaphragm.

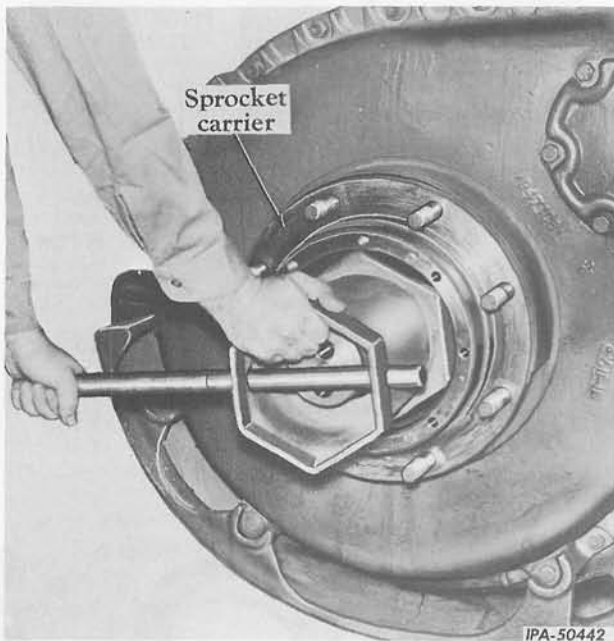


SPROCKET DRIVE

6. REMOVAL AND DISASSEMBLY - Continued



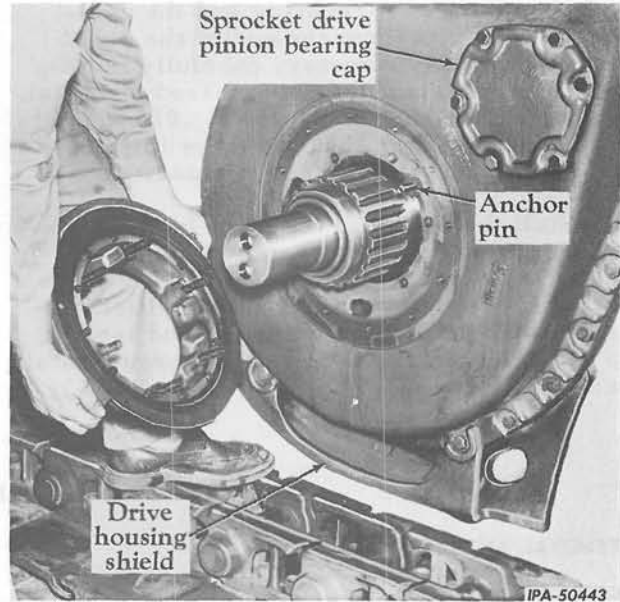
Illust. 10 - Removing Pivot Seal Dirt Deflector and Outer Bearing Retainer.



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.

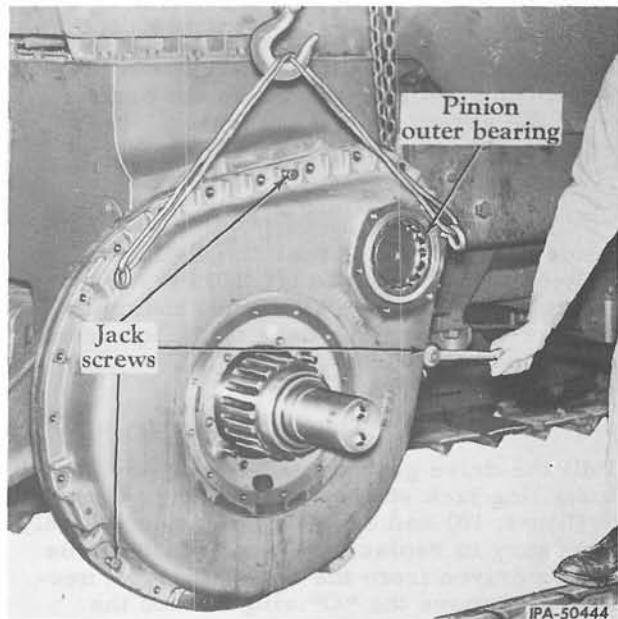
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Illust. 12 - Removing Sprocket Drive Oil Seal.

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.)

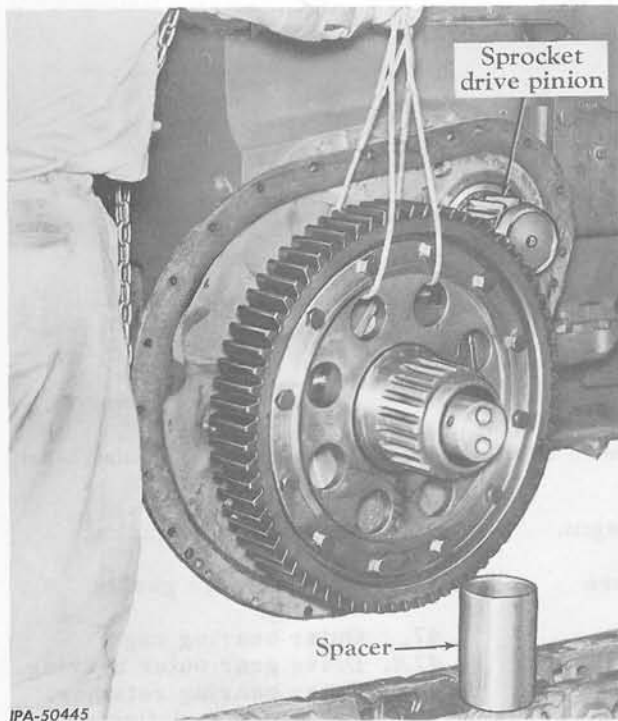


Illust. 13 - Removing Drive Gear Cover.



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.



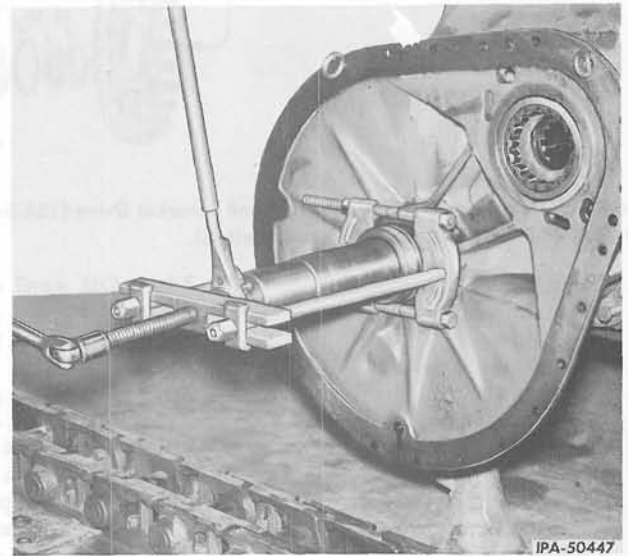
Illust. 14 - Removing the Sprocket Drive Gear and Carrier.

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.

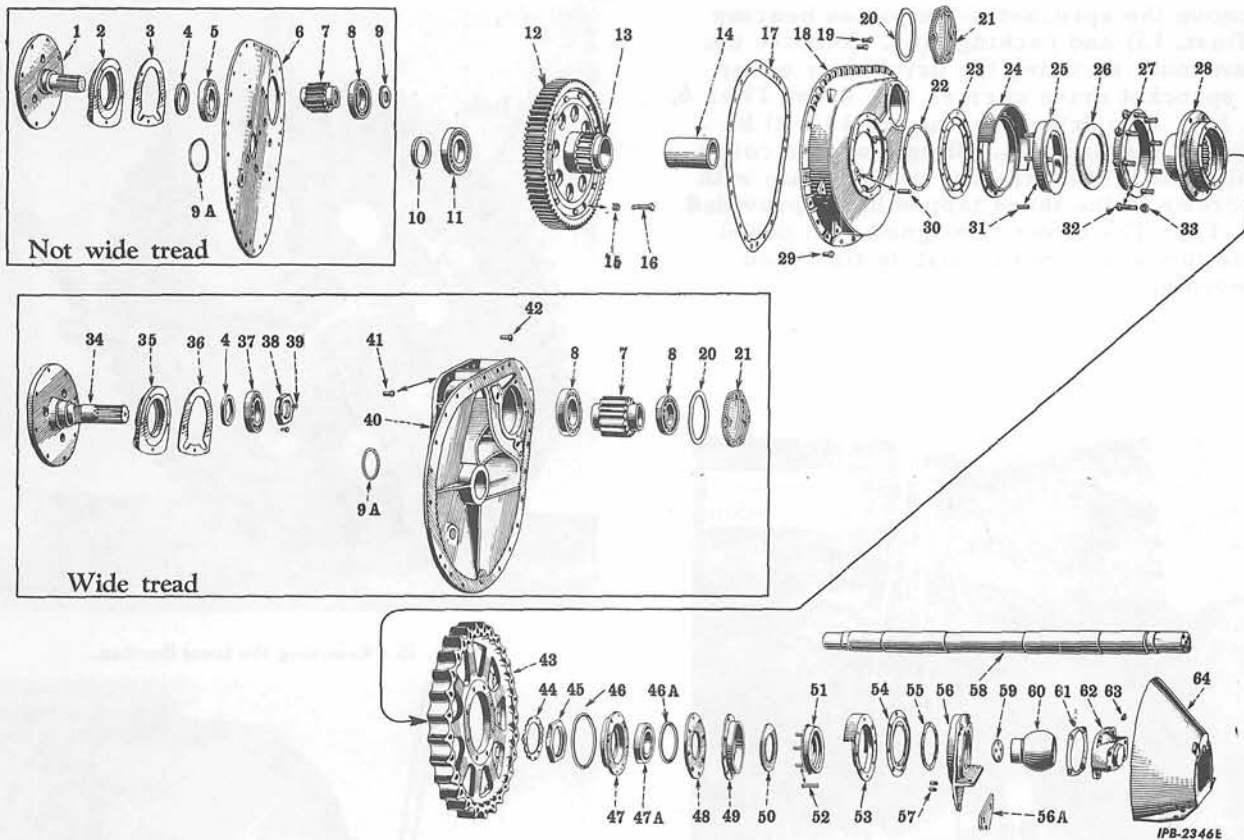
12. If the sprocket drive gear inner bearing is a roller bearing, pull the inner race from the pivot shaft (Illust. 16). Heat the bearing race with a blow torch or the cold flame of an acetylene torch to ease removal. Remove the spacer behind the bearing race.

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).

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SPROCKET DRIVE

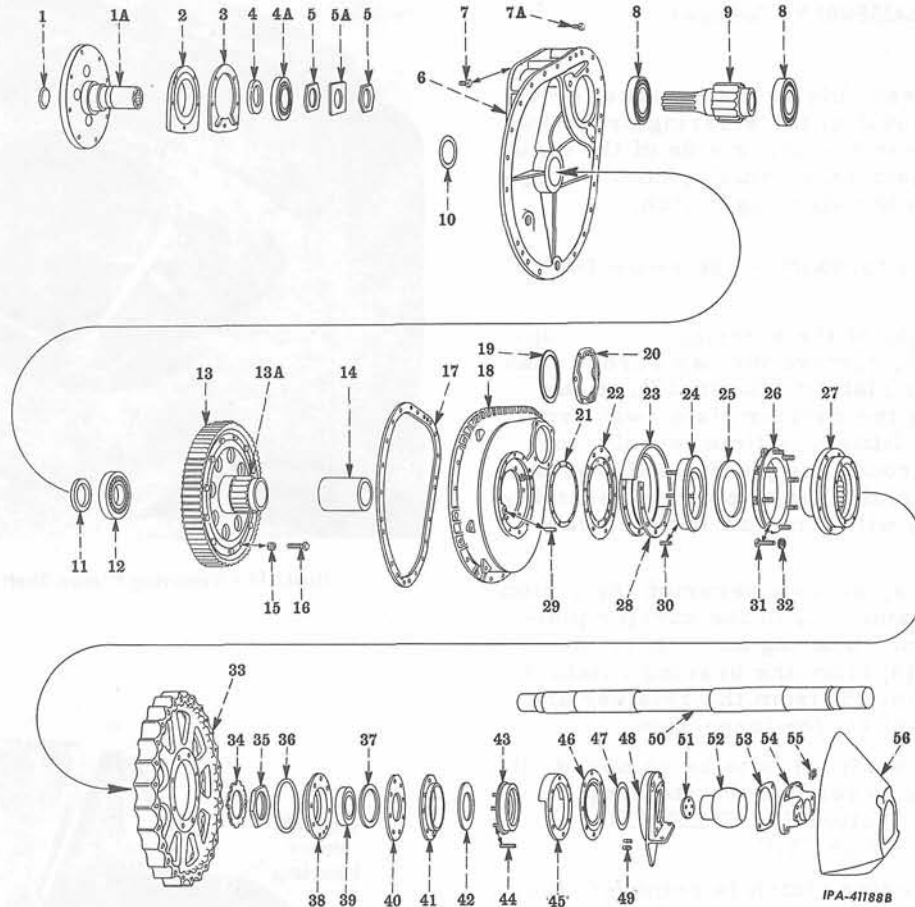


Illust. 17 - Exploded View of Sprocket and Sprocket Drive (18A Series Shown.) (14A (141), 14 (142) Series and 15 (150) Series, Serial TD-150 - 501 to 1788 , Regular Tread Similar.)

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



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

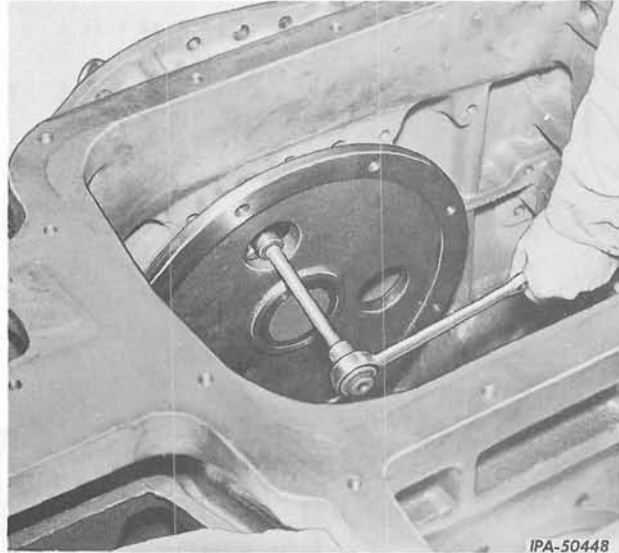
Wide Tread and TD-150 - 1789 and Up and TD - 151-4001 up
(Regular Tread)

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.

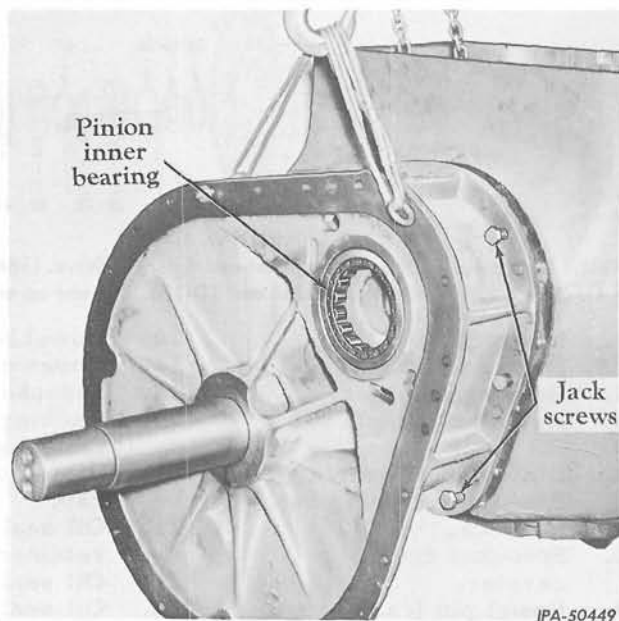
14. Before removing the sprocket drive carrier (40, Illust. 17 or 6, Illust. 18), remove the steering clutches. Refer to Section 7, "STEERING CLUTCHES AND BRAKES."

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.

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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



SPROCKET DRIVE

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 in-board flange of the carrier (Illust. 20). Move the carrier carefully straight off the pivot shaft to prevent binding.

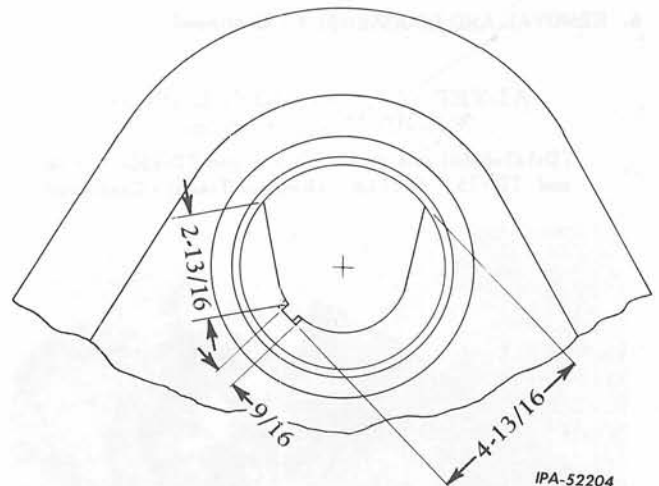
ALTERNATE REMOVAL PROCEDURE

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

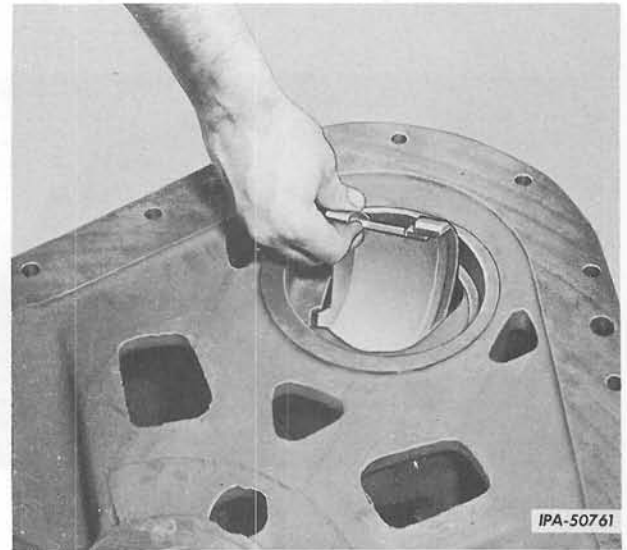
A special service tool is available for use on the 141 starting with serial TD-141-40601, 142, 150 and 151 series (wide tread) and on 150 and 151 series (regular tread) starting with serial TD-150-1789 and TD-151-4001 up. This tool makes it possible to remove the sprocket drive carrier (Illust. 20) without 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.

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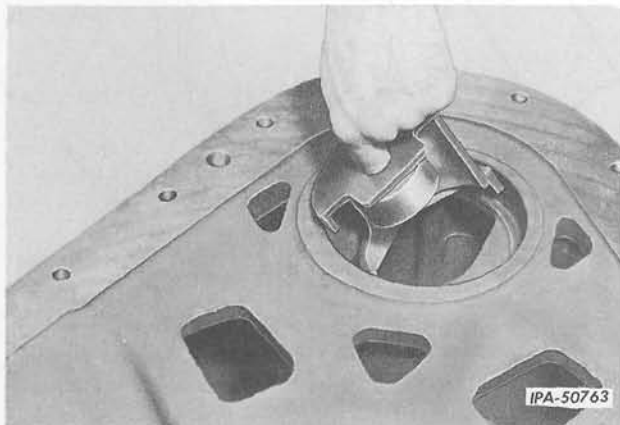


SPROCKET DRIVE

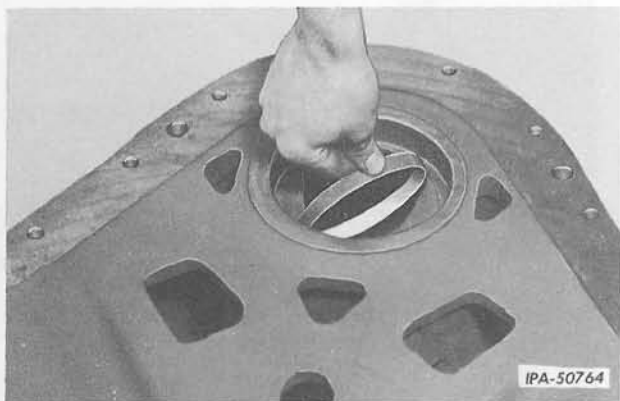
6. REMOVAL AND DISASSEMBLY - Continued

ALTERNATE REMOVAL PRO-
CEDURE - Continued

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



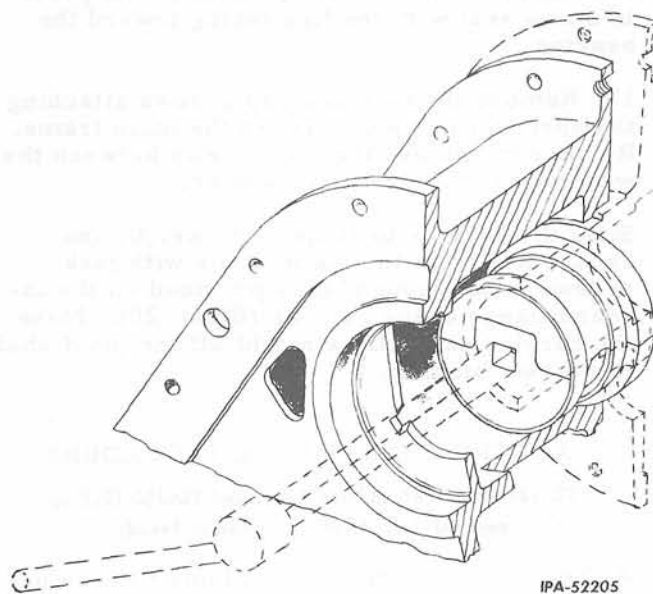
Illust. 23 - Starting Second Half of Wrench in Opening.



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.

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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.



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.

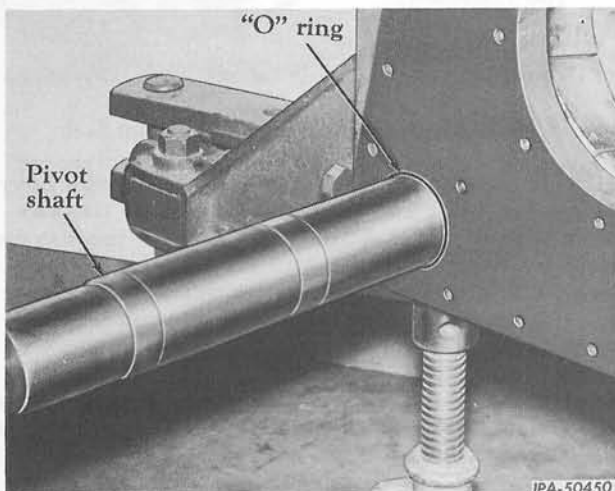
NOTE: When sprocket drive gear or sprocket drive gear carrier or both are furnished as service items, gear must be heated in oil to a maximum of 400° F to obtain the required .002-.006 shrink fit between the gear and the carrier. Care must be taken to have the dowel holes in line between the two parts 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.

8. ASSEMBLY AND INSTALLATION



Illust. 26 - Pivot Shaft "O" Ring.

1. Install a new "O" ring seal on the pivot shaft next to the main frame (Illust. 26), if the carrier plate or the drive housing was removed from the main frame.

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

2. If the pinion shaft was removed, insert the pinion shaft into position through the steering clutch compartment and install the steering clutch and brake as outlined in Section 7. Use a jack through the bottom opening in the main frame to support the weight of the clutch, also to help center the pinion shaft in the bore of main frame when installing the pinion inner bearing and carrier plate to the main frame.

3. Install a new oil soaked seal (4) in the bearing retainer (2), so that the lip side of the seal faces outward toward the bearing. Reassemble the parts of the pinion inner bearing (Illust. 17, parts 2 through 6) in the reverse order of their disassembly, and install the assembly to the carrier plate.

4. Install the carrier plate to the main frame. See that the bearing retainer (2) fits evenly around the shoulder of the pinion shaft to prevent damage to the oil seal (4). Tap the carrier plate against the main frame and secure with cap screws.

NOTE: The remainder of reassembly for the "Regular Tread" is similar to that of the "Wide Tread" beginning with step 5.

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

2. If the pinion shaft (34, Illust. 17 or 1A, Illust. 18) was removed, install a new oil-soaked seal (4) in the bearing retainer so that the lip side of the seal faces outward toward the bearing. Then reassemble the steering clutch support bearing parts to the pinion shaft in the reverse order of their disassembly. Tighten bearing retaining nut (38) to torque shown in "SPECIFICATIONS" par. 2, and secure with lock bolts (39). Bearing retaining nut (5, Illust. 18) should be tightened to standard torque. The use of a new nut lock is recommended.

3. Install the sprocket drive pinion inner bearing in the sprocket drive carrier (Illust. 20). Position the sprocket drive carrier on the pivot shaft and align the locating dowel pins into the main frame. Install the attaching bolts and nuts, tightening them evenly. Be sure to install the cap screws between the webs on the inside of the carrier.

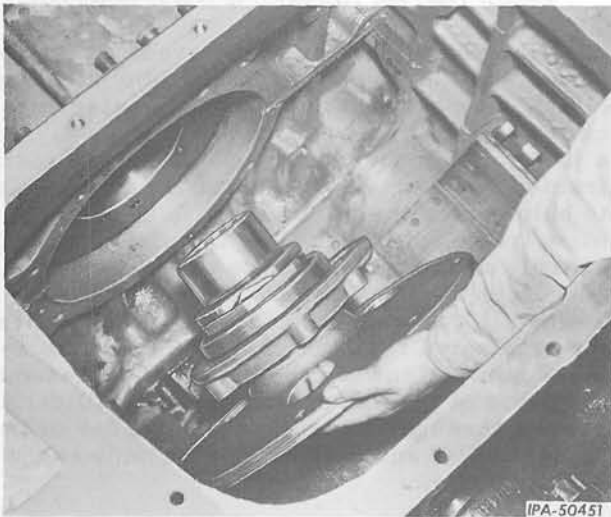
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SPROCKET DRIVE

8. ASSEMBLY AND INSTALLATION - Continued

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



Illust. 27 - Installing the Pinion Shaft.

4. With a new gasket (3) in position, install the pinion shaft assembly in the main frame (Illust. 27). Install and tighten the retainer cap screws through the access holes in the pinion shaft flange (Illust. 19).

5. Install the steering clutch as outlined in Section 7.

6. Press the bearing inner races on both ends of the drive pinion. Install the pinion to engage the pinion shaft splines.

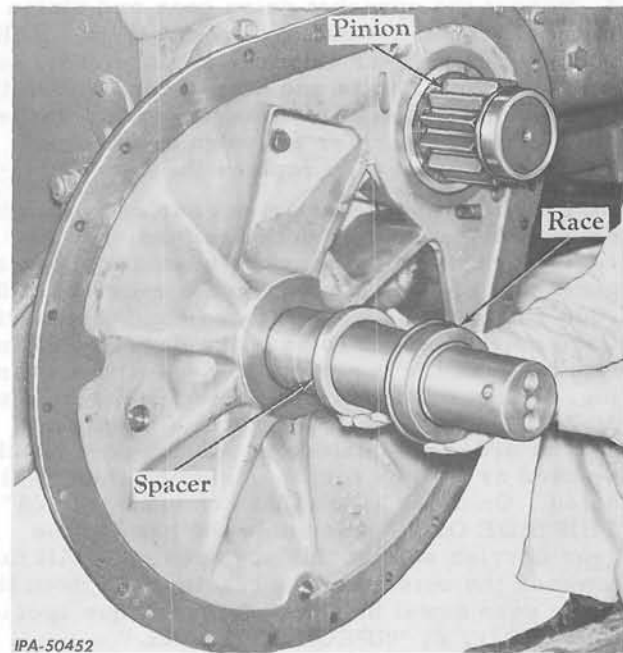
7. Slide the spacer and inner race of the drive gear inner bearing onto the pivot shaft and seat them against the carrier (Illust. 28). The bearing race can be heated in oil to 275 degrees for easier installation.

8. If it was removed, install the sprocket drive gear inner bearing in the hub of the drive gear carrier. Hoist the drive gear and carrier into position on the pivot shaft, meshing it with the pinion (Illust. 14). Slide the bearing spacer on the pivot shaft so that it contacts the inner bearing race.

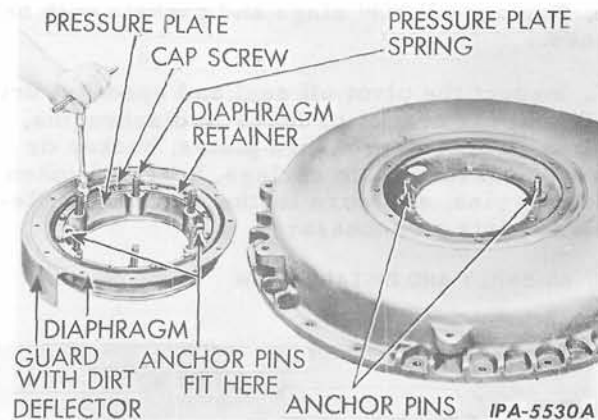
9. Install the sprocket drive oil seal pressure plate in the seal guard and dirt deflector. Secure the leather diaphragm to the pressure plate with retainer and cap screws (Illust. 29). Make sure the springs and anchor pins are in position and bolt the seal assembly to the gear cover.

NOTE: On tractors that have diaphragm retainers (21) with two notches, be sure to align these notches with the bosses on the pressure plate (24) (Illust. 18). If equipped, be sure to

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Illust. 28 - Installing Drive Gear Inner Bearing Race.
install the stiffener between the drive cover (18) and the retainer (22) (Illust. 17).



Illust. 29 - Assembling Sprocket Drive Oil Seal.

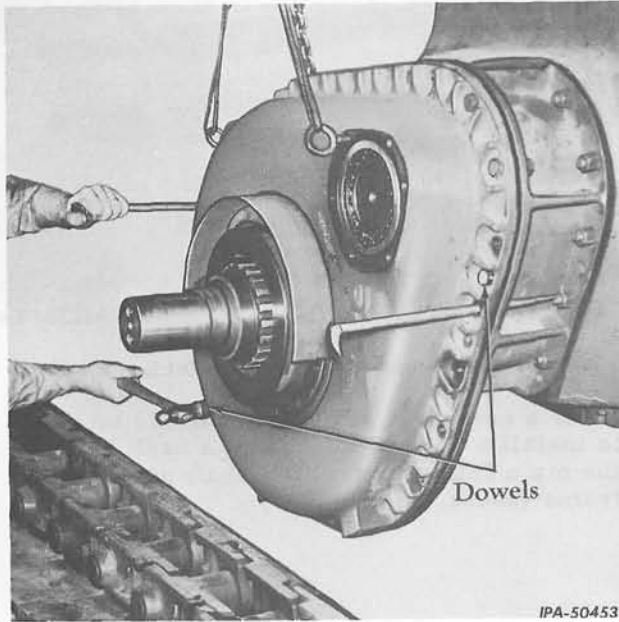
10. Tap the pinion outer bearing into the cover. Hoist the gear cover into position on the carrier (Illust. 30). Align the cover to the carrier with drifts so that the two positioning dowels can be driven in. Install the drive housing shield and secure the cover to the carrier with bolts and nuts.

11. Install the drive pinion bearing cap with a new cork seal. Position the leather packing on the face of the oil seal pressure plate. Slide the sprocket carrier on the splines of the gear hub. Tap the carrier with a soft hammer to seat it properly. Install the nut lock and the

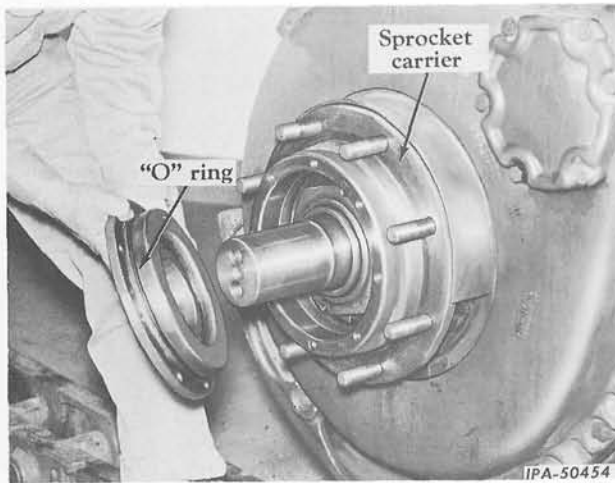


SPROCKET DRIVE

sprocket drive gear carrier nut, tightening the nut to the torque in "SPECIFICATIONS", paragraph 2. Use wrench SE-1184-2 to tighten the nut. (See Illust. 11.) Bend a tab of the nut lock against the nut.



Illust. 30 - Installing the Drive Gear Cover.



Illust. 31 - Installing Outer Bearing and Cage.

12. If the drive gear outer bearing was removed, heat the bearing cage to a maximum of 300° F and place the bearing into the cage. If the bearing is equipped with loading grooves, be sure to assemble the bearing with the grooves toward the outside of the bearing cage (Illust. 32).

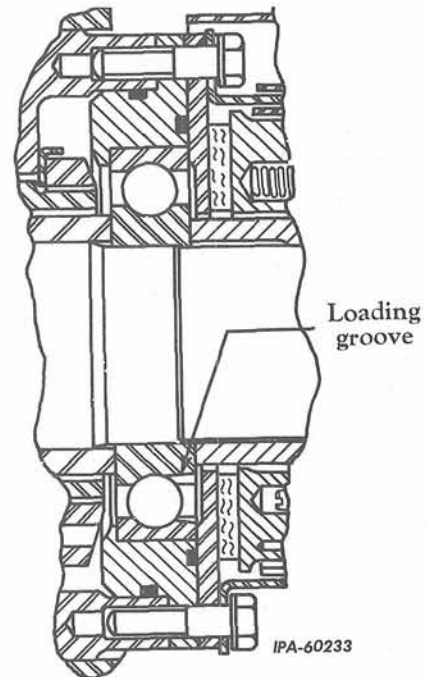
NOTE: The use of hammers to install the bearing is likely to result in premature bearing failure.

13. Install the drive gear outer bearing and cage against the sprocket carrier (Illust. 31). Be sure the "O" ring is in place and that the bearing is flush against the long spacer. Install the drive gear outer bearing retainer and pivot oil seal dirt deflector over the bearing cage (Illust. 10) and secure all three to the sprocket carrier with eight cap screws and lock washers.

14. Assemble the pivot oil seal and bracket. This seal is assembled exactly the same as the sprocket drive oil seal. Refer to Step 8 of this paragraph.

15. Install the sprocket as described in Par. 5.

16. Refill the sprocket drive with the recommended grade and quantity of lubricant.



Illust. 32 - Drive Gear Outer Bearing Installed in Bearing Cage.

9. PIVOT SHAFT REPLACEMENT

The pivot shaft is pressed through the rear of the main frame and extends from both sides to support the sprocket drive gears and the rear end of the track frames.

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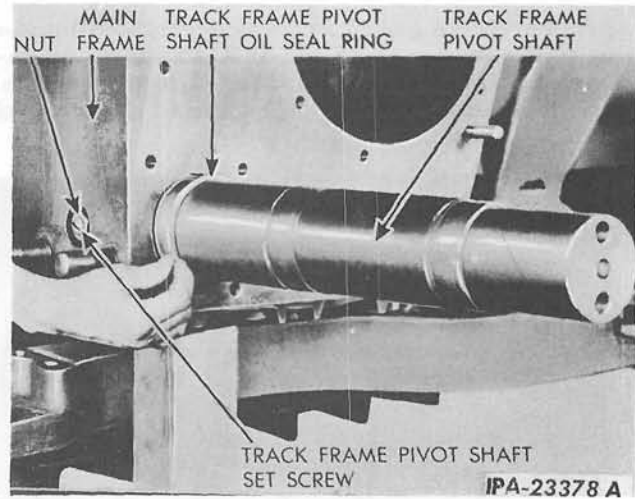


SPROCKET DRIVE

9. PIVOT SHAFT REPLACEMENT - Continued

If necessary to replace, the shaft is positioned and held from turning by the two lower studs holding each drawbar guide bracket to the rear of main frame. Set screws and lock nuts at the rear of the main frame (Illust. 33) are used for this purpose on older 14A and 18A series tractors. In either case, the drawbar guide brackets must be removed in order to remove the four lower bracket studs or to gain access to the set screws and lock nuts, located behind the brackets, for their removal. Also the track frame diagonal brace bearings clamped around the pivot shaft must be removed.

The shaft must be pulled out of the main frame. This requires a COMPLETE disassembly of both sprocket drives. The pivot shaft can be removed or installed most easily with pivot shaft removing and installing set, No. Y-3100-E for the 14 and 15 series or No. Y-3100-F for the 18 and 20 series. Refer to "Service Tools Manual," ISS-1002.



Illust. 33 - Installing Pivot Shaft Oil Seal Ring.

After a new pivot shaft is installed, be sure to install a new oil seal ring in each side of the main frame to seal the shaft and main frame (Illust. 33).