CONTENTS

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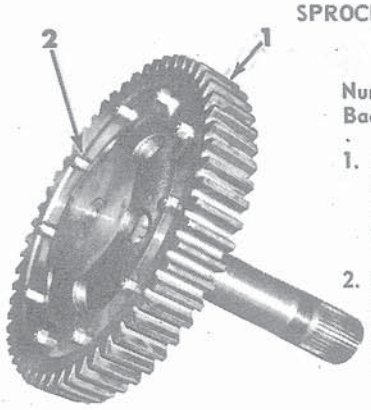
SPROCKET DRIVE GEAR

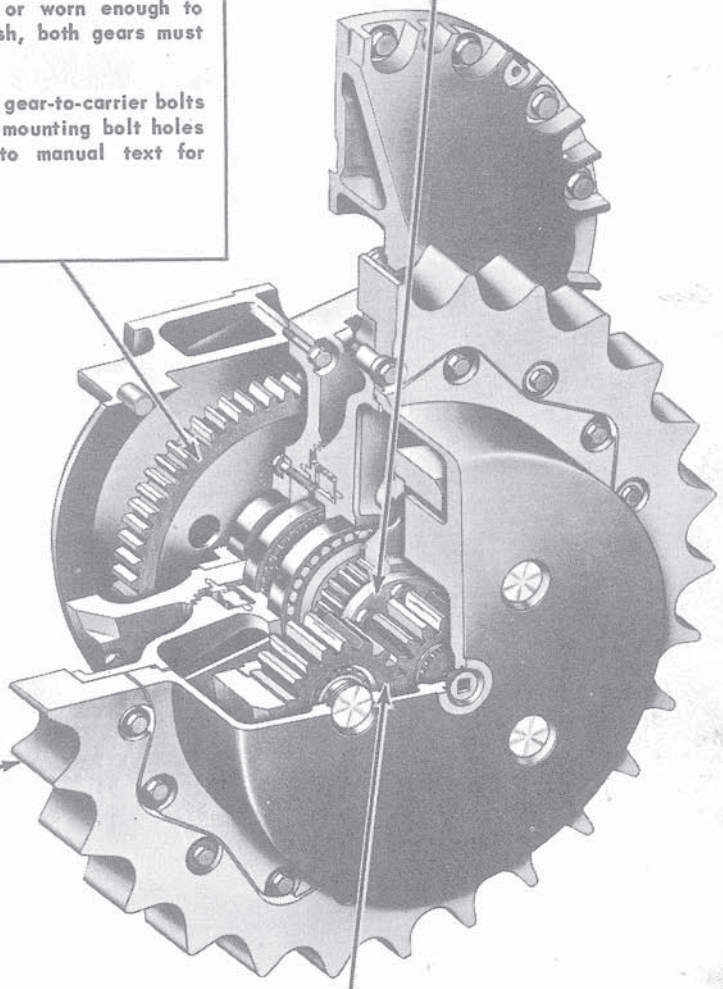


Number of teeth 59
Backlash (Inch) ..... .014-.020

1. If the gear teeth of the sprocket drive gear or pinion are damaged or worn enough to cause excessive backlash, both gears must be replaced.
2. Check the sprocket drive gear-to-carrier bolts for looseness. Check if mounting bolt holes are elongated. (Refer to manual text for instructions.)

RETAINER PLATE END CLEARANCE

Shim thickness used must equal gap less .003 inch (Refer to manual text for instructions.)



SPROCKET

Check the sprocket for excessive wear or damage. Probable cause of wear may be loose or worn track assembly or track frame out of alignment.

PLANETARY ASSEMBLY

1. Inspect the ring gear, ring gear hub, sun gear and planet gear teeth for damage or wear excessive enough to cause excessive backlash.
   (a) Backlash for ring gear, sun gear and planet gears. ..... .010-.016"
   (b) Backlash for ring gear hub ..... .006-.014"
2. Inspect the ring gear hub and sun gear splines for excessive wear or damage. Slight burrs can be smoothed down with a stone.

CEA-83688

TD-15 SERIES B and Model 175 Series Loader
Sprocket Drive Service Chart.

1. DESCRIPTION
(Refer to Illust. 2.)

The sprocket and sprocket drive assembly consists of a set of spur gears and a planetary assembly on each side at the rear of the tractor. Engine power is transmitted from the bevel gear, through the steering planetary to the sprocket drive pinion, which is an integral part of the sprocket drive pinion shaft. The sprocket drive pinion shaft is splined to the sprocket drive pinion shaft gear in the steering planetary at the inner end and is supported at the outer end by two straight roller bearings. The sprocket drive pinion is meshed with the sprocket drive gear, which provides the first gear reduction.

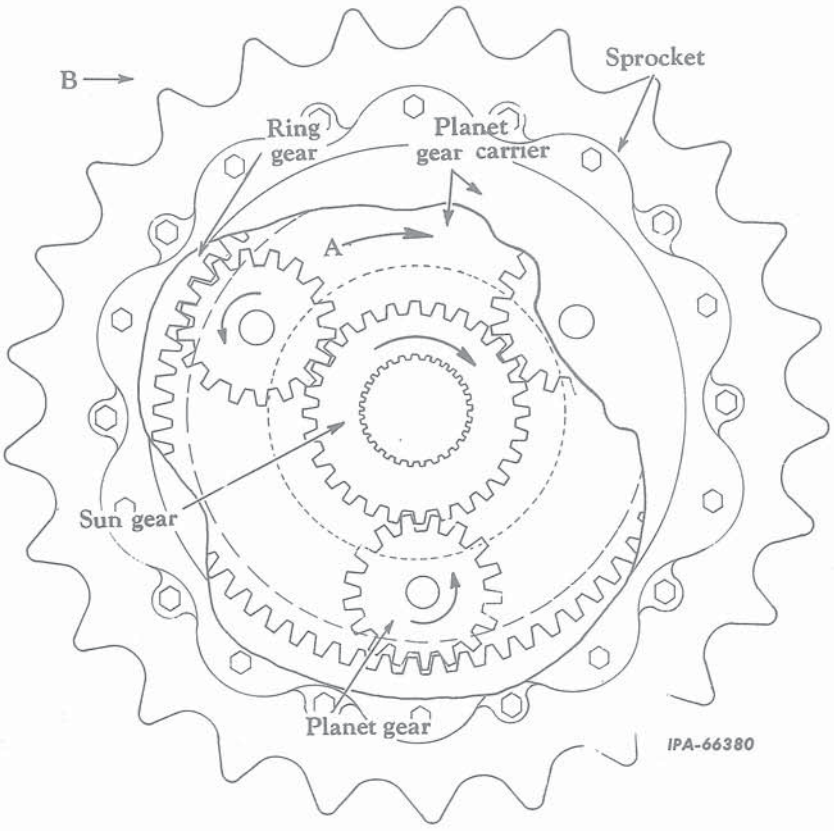
The sprocket drive gear is attached to the sprocket drive gear carrier, which is supported on the sprocket drive carrier cover by a double-row spherical roller bearing. Three planet gears are meshed with the sun gear, which is splined to the sprocket drive gear carrier, and are also meshed with the sprocket drive ring gear.

The sprocket drive ring gear hub is splined to the sprocket drive carrier cover and is in mesh with the sprocket drive ring gear, keeping the ring gear stationary during operation. The planet gears provide the second gear reduction. Two tapered roller bearings support each planet gear on its shaft. The shafts are housed in the planet gear carrier. The planet gear carrier and the sprocket are both attached to the sprocket carrier which is supported on the carrier cover by two tapered roller bearings.

As the sprocket drive gear carrier and sun gear revolves, it causes the planet gear to rotate on their shafts. The planet gears, being meshed with the stationary ring gear, cause the planet gear carrier, sprocket carrier and sprocket to rotate in direction "A" driving the tractor in direction "B" (Illust. 1).

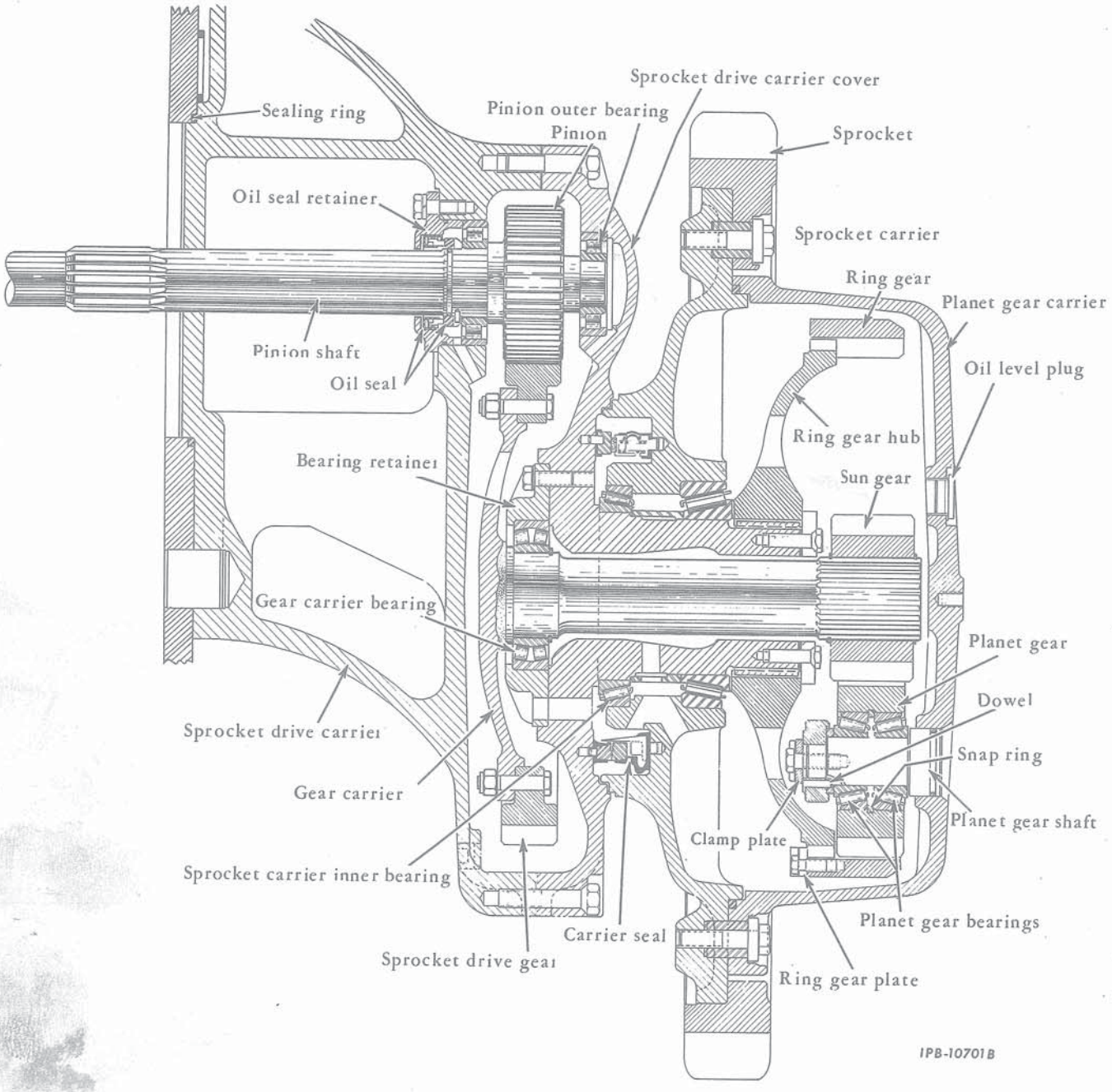
The sprocket drive assembly has its own supply of lubrication and is sealed against leakage and dirt by gaskets, sealing rings and oil seals.

(Continued on next page.)



Illust. 1
Planetary Drive.

1. DESCRIPTION - Continued
(Refer to Illust. 2.)



Illust. 2
Cross Section of Sprocket Drive.

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2. SPECIFICATIONS

Sprocket drive carrier cover outer bearing surface diameter, inches	5.624-5.625
Sprocket drive carrier cover outer bearing inside diameter, inches	5.625-5.626

Sprocket Drive Pinion

Number of bearings	2
Type of bearings	Straight roller
Number of teeth	16
Backlash, inch	.014-.020

Sprocket Drive Gear

Number of teeth	59
Backlash, inch	.014-.020

Sprocket Drive Gear Carrier

Number of bearings	1
Type of bearing	Double-row, spherical roller

Sprocket Carrier

Number of bearings	2
Type of bearings	Tapered roller

Sprocket Drive Ring Gear Hub

Number of teeth	60
Backlash, inch	.006-.014

Sprocket Drive Ring Gear

Number of teeth	60
Backlash, inch	.010-.016

Sprocket Drive Sun Gear

Number of teeth	18
Backlash, inch	.010-.016

Planet Gears

Number of gears	3
Number of bearings	6
Type of bearings	Tapered roller
Number of teeth	21
Backlash, inch	.010-.016

Special Bolt and Nut Torque Data (Foot-Pounds)
(Torques given are for bolts and nuts lubricated with SAE-30 engine oil)

Sprocket carrier bearing retainer plate bolts	160-180
Sprocket drive carrier cover bolts	220-250
Sprocket drive gear dowel bolts	80-90

3. CHECKING MECHANICAL PROBLEMS

PROBABLE CAUSE	REMEDY
Sprocket Drive Overheating	
1. Improper or insufficient lubrication	Use proper grade and amount of lubricant. Check for leaks.
2. Bearing seizure	Remove sprocket drive and inspect for damaged bearings.
Noise	
1. Improper, dirty or insufficient lubricant .	Use proper grade and amount of clean lubricant.
2. Bearings scored or damaged	Replace bearings.
3. Worn or damaged gears	Inspect all the gears and replace as necessary.
Lubricant Leakage	
1. Lubricant leaks at drain plugs, level plug or planet gear shaft	Tighten plug or replace sealing rings as necessary.
2. Lubricant leaks between sprocket drive carrier and rear main frame or between planetary gear carrier and sprocket carrier	Replace sealing rings.
3. Lubricant leaks between the sprocket carrier and sprocket carrier cover	Replace carrier oil seal.
4. Lubricant leaks between the sprocket carrier cover and sprocket drive carrier	Clean sealing surfaces and apply liquid gasket.
5. Lubricant leaks into sprocket drive carrier	Replace pinion gear oil seal. This leakage will not be noticeable from the outside but would result in a low oil level in the sprocket drive lubrication system.
Excessive Wear on Sprockets	
1. Tracks run too loosely	Adjust the tracks.
2. Tracks worn excessively	Install new tracks.
3. Track frame out of alignment or damaged .	Repair or install new track frame.

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SPROCKET

4. REMOVAL AND INSTALLATION

1. Remove the sprocket rock shield (if equipped).

2. Remove the track chain (refer to "TRACKS AND TRACK FRAME," Section 10). It is not necessary to remove the chain from under the tractor.

3. Jack the rear of the tractor enough to allow the sprocket to clear the track chain.

4. Remove the cap screws, dowel bolts and dowel washers (44, Illust. 6) securing the sprocket to the sprocket carrier (24, Illust. 6).

5. Turn in the three hexagon-socket set screws provided in the sprocket to pull the sprocket off the dowels.

6. Check for excessive wear on the sprocket. Refer to Par. 3, "CHECKING MECHANICAL PROBLEMS," for causes of excessive wear and how they can be corrected.

7. To install the sprocket, reverse the removal procedure. Be sure the three hexagon-socket set screws in the sprocket are turned back into place before positioning the sprocket on the sprocket carrier. Apply "LOCKTITE" Grade "B" to the cap screws and dowel bolts securing the sprocket to the sprocket carrier.

SPROCKET DRIVE PLANETARY
(Ref. Nos. Refer to Illust. 6)

5. REMOVAL

1. Remove the sprocket rock shield (if equipped).

2. Move the tractor until the drain plug in the carrier (42) is at the bottom. Drain the oil from the sprocket drive by removing the plug in the bottom of the planet gear carrier and the lower plug in the rear of the sprocket drive carrier (6).

3. Remove the cap screws, dowel bolts and dowel washers (44) securing the carrier (42) to the sprocket carrier (24). Wrap a cable around the planet gear carrier and attach it to a hoist. Tighten the three hexagon-socket set screws provided in the planet gear carrier to pull it from the dowels (43). Remove the carrier with planet gears and sealing ring (25). Remove the sealing ring. (Refer to Illust. 3.)

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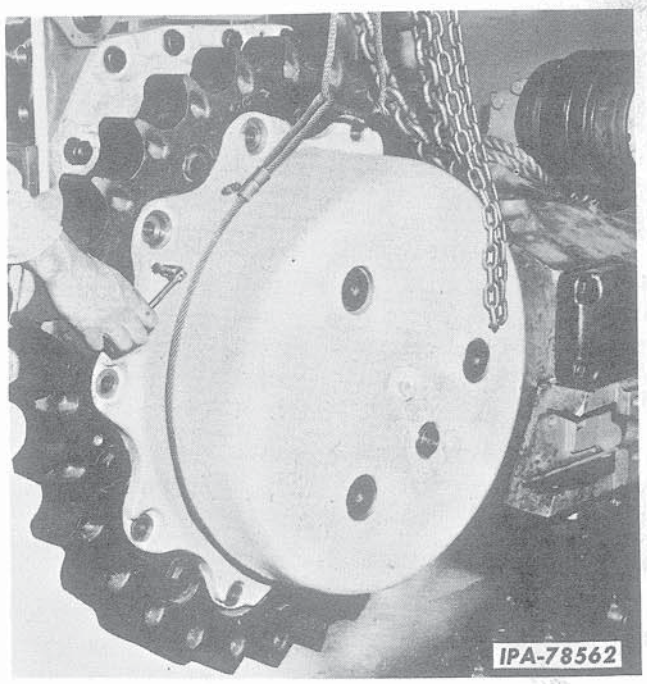
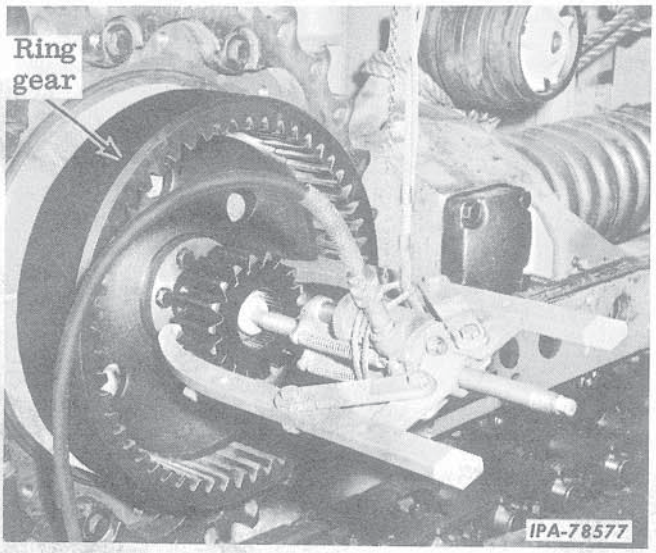


Illust. 3
Tightening the Planet Gear Carrier Set Screws.

SPROCKET DRIVE PLANETARY
(Ref. Nos. Refer to Illust. 6)

5. REMOVAL - Continued

4. Remove the sun gear outer snap ring (48) and, using a hydraulic ram and gear puller (Illust. 4), remove the sun gear (49) from the sprocket drive gear carrier splines. Remove the inner snap ring (50) using a ring expander.

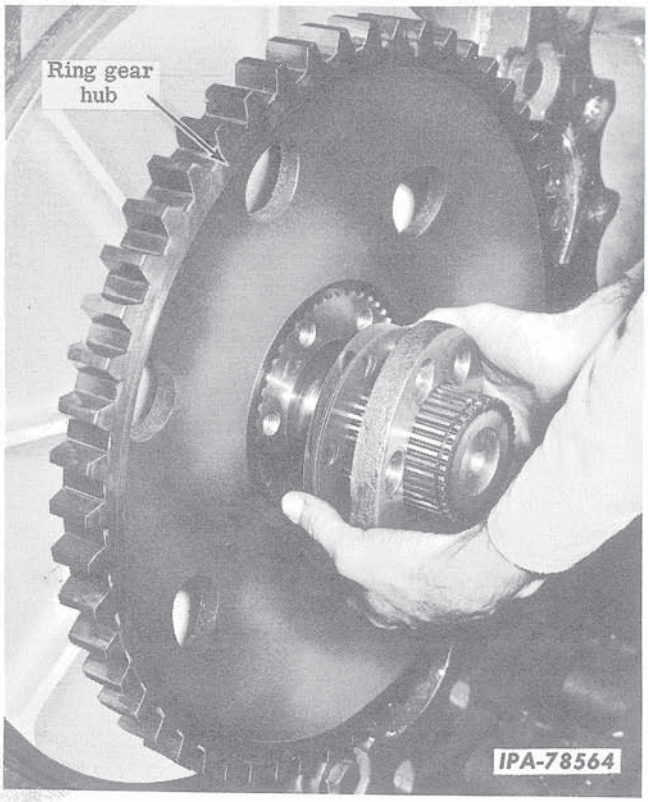


Illust. 4
Removing the Sprocket Drive Planetary Sun Gear.

5. Bend back the tabs of the lock plates (32) and remove the cap screws securing the three lock plates and clamp plates (33) to the ring gear (34). Remove the ring gear from the splines of the ring gear hub (28).

6. Remove the retainer plate bolts (31), bearing retainer plate (30) and shims (29) from the end of the sprocket drive carrier cover (17). Keep the shims together to facilitate installation. (Refer to Illust. 5.)

7. With a torch, heat the inner diameter of the ring gear hub (28) to a temperature of not more than 300° F. Insert the legs of a puller into the openings provided in the hub and pull the hub from the sprocket drive carrier cover splines.



Illust. 5
Removing the Bearing Retainer Plate and Shims.

6. DISASSEMBLY

1. Remove the two cap screws securing the two plates (35 and 36) to the planet gear shaft and carrier. Remove the plates. (Illust. 7.)

2. Position the carrier in a press as shown in Illust. 7 and push the shaft with "O" ring (45) out the front of the carrier.

3. Remove the planet gear (40) with bearings from the carrier. Remove the two bearing cones (38) from the gear. If replacement of the planet gear bearings is necessary, the bearing cups (39) can be pulled from the gear. A snap ring (41), located between the bearing cups, positions the bearing cups during reassembly.

(Continued on page 8)

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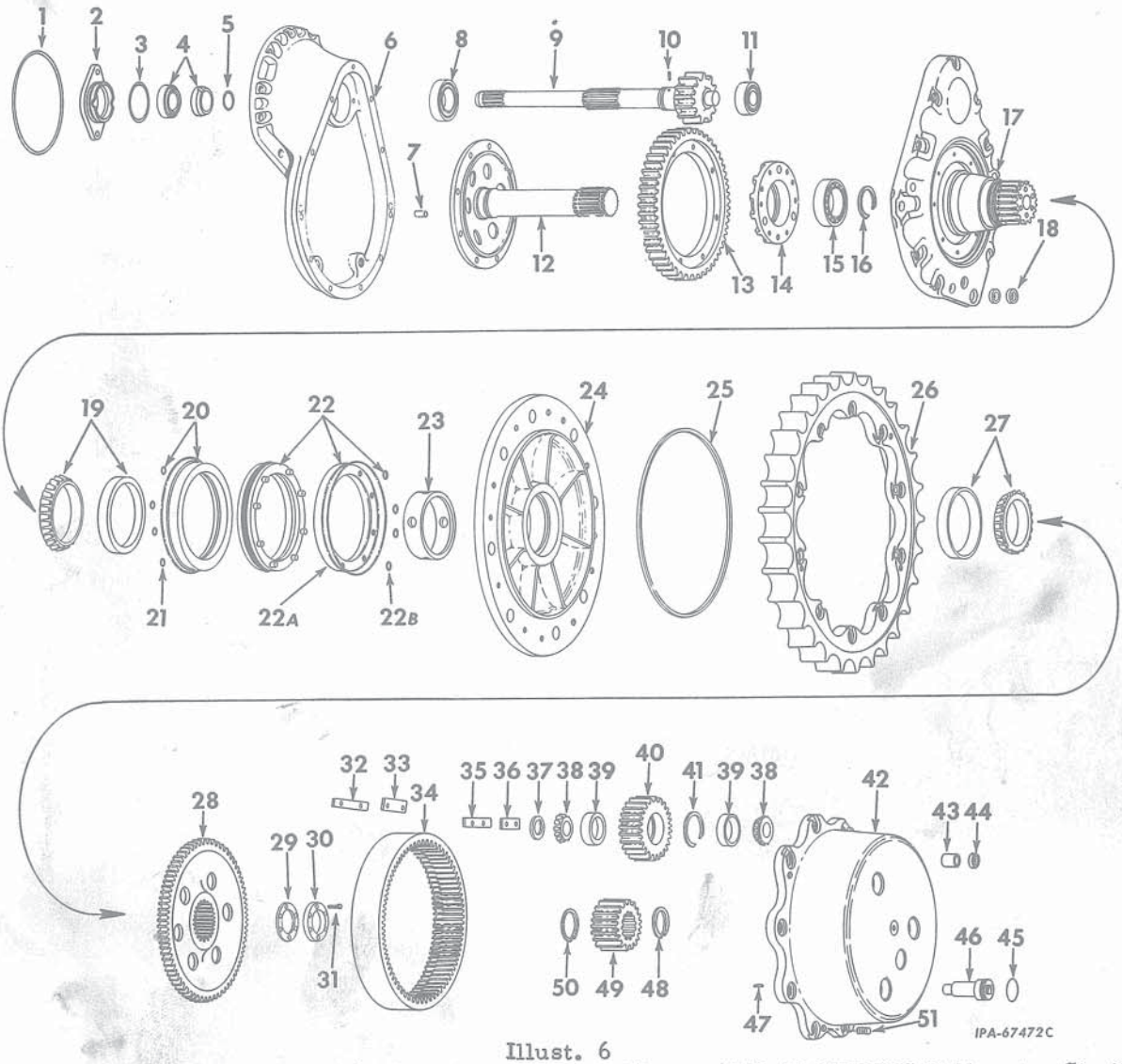
SPROCKET DRIVE PLANETARY
(Ref. Nos. Refer to Illust. 6)



Illust. 6
Exploded View of Sprocket Drive (MODEL 175 Loader Shown, TD-15 SERIES B Tractor Similar).

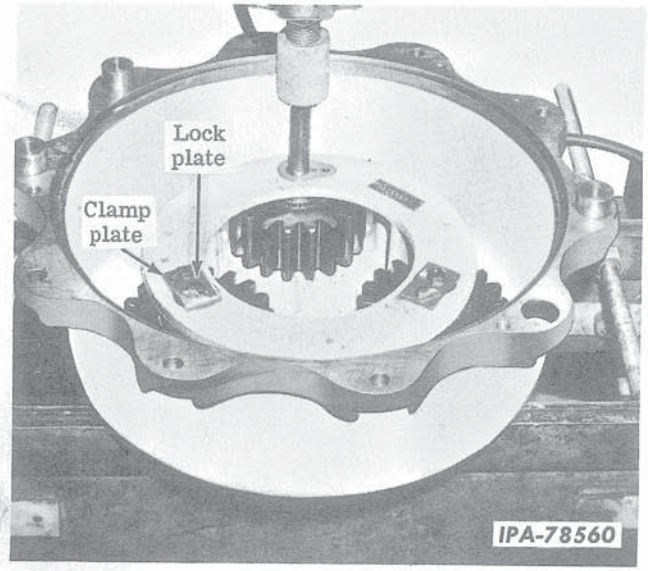
1. Carrier sealing ring.
2. Oil seal retainer.
3. Retainer "O" ring.
4. Pinion oil seal.
5. Pinion "O" ring.
6. Sprocket drive carrier.
7. Dowel.
8. Pinion inner bearing.
9. Pinion.
10. Oil seal driving dowel.
11. Pinion outer bearing.
12. Drive gear carrier.
13. Sprocket drive gear.
14. Bearing retainer.
15. Drive gear carrier bearing.
16. Bearing snap ring.
17. Sprocket drive carrier cover.
18. Carrier cover link bushing - (MODEL 175 Loader only).
19. Sprocket carrier inner bearing.
20. Seal wear plate.
21. Drive pin "O" ring.
22. Seal rotor assembly.
22A. Seal rotor back-up gasket.
22B. Seal pin "O" ring.
23. Bearing spacer.
24. Sprocket carrier.
25. Planet carrier sealing ring.
26. Sprocket.
27. Sprocket carrier outer bearing.
28. Ring gear hub.
29. Retainer plate shims.
30. Bearing retainer plate.
31. Retainer plate bolt.
32. Lock plate.
33. Ring gear clamp plate.
34. Ring gear.
35. Lock plate.
36. Planet gear shaft clamp plate.
37. Bearing spacer.
38. Planet gear bearing cone.
39. Planet gear bearing cup.
40. Planet gear.
41. Bearing snap ring.
42. Planet gear carrier.
43. Dowel.
44. Dowel washer.
45. Shaft "O" ring.
46. Planet gear shaft.
47. Planet gear shaft dowel.
48. Sun gear snap ring.
49. Sun gear.
50. Sun gear snap ring.
51. Set screw.

SPROCKET DRIVE PLANETARY
(Ref. Nos. Refer to Illust. 6)

6. DISASSEMBLY - Continued

4. Remove the spacer (37) from the planet gear shaft dowel (47) in the carrier.

5. Disassemble the remaining two planet gear and shaft assemblies in the same manner.



Illust. 7
Removing the Planet Gear Shaft.

7. INSPECTION AND REPAIR

1. Make a preliminary inspection of all parts before cleaning to detect discrepancies which may not show up once the parts are cleaned. Examine the oil for metal particles, dirt and other foreign material. Check for foreign material in the bearings which will cause excessive wear. Wash all parts thoroughly in a dry-cleaning solvent and dry with compressed air. After cleaning, make a final inspection of all parts. Do not spin bearings during cleaning or when drying with compressed air. All new parts must remain wrapped until ready for installation.

2. Inspect the bearings for scores, cracks and wear and replace if necessary. Oil the bearings that are in a serviceable condition and wrap until ready for reassembly.

3. Check the sealing rings for damage and replace if necessary.

4. Inspect the ring gear, ring gear hub, sun gear and planet gear teeth for damage or wear excessive enough to cause excessive backlash. Inspect the ring gear hub and sun gear splines for excessive wear or damage. Slight burrs can be smoothed down with a stone.

8. REASSEMBLY

1. Place the carrier (42) on a bench so the fill and level plug is up. Install the three bearing spacers (37) on the dowels (47) located in the carrier (42).

2. Be sure the snap ring (41) is seated fully in its groove in the planet gear (40). If removed, press new bearing cups (39) into the planet gear (the small diameter of the taper to the inside) until they bottom on the snap ring. To prevent the snap ring from dishing, support the assembly on the bearing cup when pressing in the second bearing cup. Assemble the two remaining planet gears in the same manner.

3. Insert the bearing cones (38) in their cups in the planet gears. Place the gears into the carrier (42) and move them as far to the outside as possible. Let the assemblies rest on the spacers (37).

NOTE: Due to gear clearances, it is necessary to place all three planet gears into the carrier as described and then re-position on their respective centerlines. Line up and center the bearings with the shaft supporting holes in the carrier using an aligning plug.

4. Apply "LOCTITE" grade "B" to the two surfaces of each of the planet gear shafts that rest in the planet carrier. With the "O" ring (45) in place on each of the planet gear shafts, install the shafts through the carrier and two bearings, being sure to align the slot in the shafts with the dowels (47) in the carrier.

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SPROCKET DRIVE PLANETARY
(Ref. Nos. Refer to Illust. 6)

5. Turn the carrier over. Apply "LOCTITE" grade "B" to the planet gear shaft cap screws and secure the shafts in the carrier with the clamp plates (36), lock plates (35) and cap screws. Bend the end of the lock plate against the cap screw. (Refer to Illust. 7.)

6. Hit the exposed face of the planet gears with sufficient force to be assured that the outer cone is against the shaft shoulder. This force must be applied to the gear at 180 degrees apart at the same time using a fixture that will span the carrier web.

7. Turn the planet gears. They should turn freely; however, it is satisfactory if the bearings are lightly preloaded as long as the gear can be turned by hand. If they cannot be turned by hand, it will be necessary to make shims to be added between the planet gear shaft and the planet gear carrier.

(a) Install a short coil of solder approximately 1/16 inch thick on the end of the carrier cover (17). Use grease to keep it in position. Do not install shims (29).

(b) Install the bearing retainer plate and torque the bolts (31) to 75 ft-lbs.

(c) Remove the retainer plate and compressed solder from the end of the cover (17). With a micrometer, carefully measure the thickness of the compressed solder. This measurement, less 0.003 inch is the amount of shims to be installed on the end of the carrier cover (17).

NOTE: The shim pack should never be the same or greater than the thickness of the gap measurement.

(d) Install the shims, retainer plate and retainer plate bolts. Torque the bolts to the amount shown in Par. 2, "SPECIFICATIONS."

9. INSTALLATION

1. Heat the ring gear hub (28) to not more than 300° F and place the hub on the sprocket drive carrier cover splines until it is up against the cone of the bearing (27). Hold the hub in position until it has reasonably cooled using an old retainer plate (30). While tightening the retainer bolts, rotate the sprocket carrier (24) to be sure the carrier bearings are properly seated. Do not use the retainer plate to be installed for service to hold the hub in position as dishing of the plate will occur.

2. Install the same thickness of shims (29) which were removed, in position on the end of the sprocket drive carrier cover (17). Position the retainer plate (30) and secure both the shims and plate to the cover (17) with the retainer plate bolts (31). Refer to Par. 2, "SPECIFICATIONS," for the proper torque.

NOTE: If a new ring gear hub (28), sprocket drive carrier cover (17), sprocket carrier inner or outer bearing (19 or 27) or bearing spacer (23) was installed, the end clearance of the bearing retainer plate (30) must be checked before applying the final torque to the retainer plate bolts (31).

3. Install the sun gear inner snap ring (50) in the inner groove on the gear carrier splines. Heat the sun gear (49) to a maximum of 300° F and tap the gear on the splines of the gear carrier (12) until the outer snap ring groove appears. Install the sun gear outer snap ring (48) in the groove in the gear carrier splines.

4. Install the ring gear (34) on the ring gear hub (28) and secure with the three ring gear clamp plates (33), lock plates (32) and six cap screws. Bend up the tabs of the lock plates to prevent the cap screws from loosening.

5. Lubricate and install the sealing ring (25) in the counterbore around the flange of the planet gear carrier (42). Check to be sure the three hexagon-socket set screws in the carrier have been turned back into place.

6. Wrap a cable around the carrier drum and attach it to a hoist. (Illust. 3.) Position the carrier over the dowels (43) in the sprocket carrier (24). The planet gears must mesh with the sun gear (49) and ring gear (34). Drive the planet gear carrier onto the sprocket carrier dowels.

(Continued on next page)

SPROCKET DRIVE PLANETARY
(Ref. Nos. Refer to Illust. 6)

9. INSTALLATION - Continued

7. Secure the planet gear carrier to the sprocket carrier with cap screws, dowel washers (44) and dowel bolts.

8. Be sure the drain plug in the planet gear carrier and the drain plug in the rear of the sprocket drive carrier (6) are installed and tight. Fill the sprocket drive with the proper amount and grade of lubricant as described in the operator's manual.

9. Install the sprocket rock shield (if equipped).

SPROCKET DRIVE CARRIER COVER AND SPROCKET DRIVE GEAR
(Ref. Nos. Refer to Illust. 6)

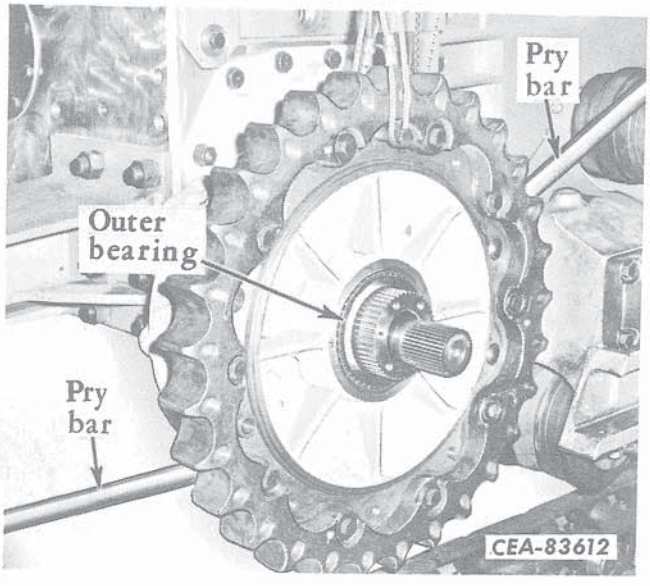
10. REMOVAL

1. Remove the track chain (refer to "TRACKS AND TRACK FRAME," section 10). It is not necessary to remove the chain from under thr tractor.

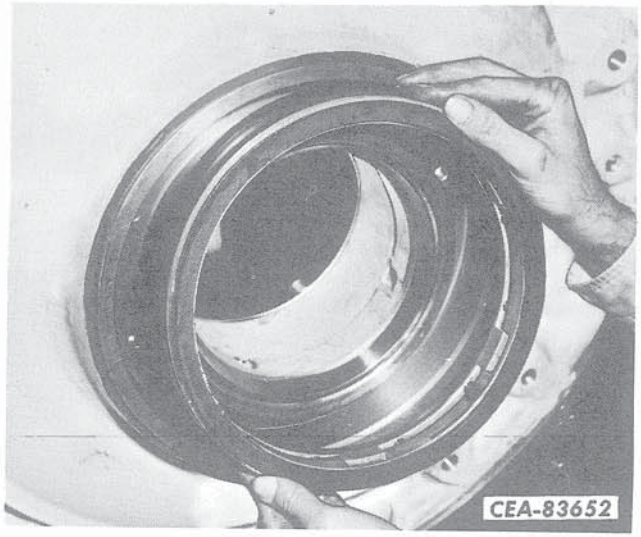
2. Jack the rear of the tractor enough to allow the sprocket to clear the track chain. Block under the rear main frame.

3. Remove the sprocket drive planetary as described in Par. 5, "REMOVAL." Be sure the drain plug in the planet gear carrier (42) is at the bottom after removing the track chain.

4. Attach a hoist to the sprocket carrier (24) and pry or tap the carrier from the cover (17). (Illust. 8.) The carrier must be removed evenly to prevent possible damage to the pins of the seal rotor (22). As the carrier starts over the end of the cover, remove the cone of the outer bearing (27) to prevent it from falling and being



Illust. 8
Removing the Sprocket and Sprocket Carrier.



Illust. 9
Removing the Seal Rotor From the Sprocket Carrier.

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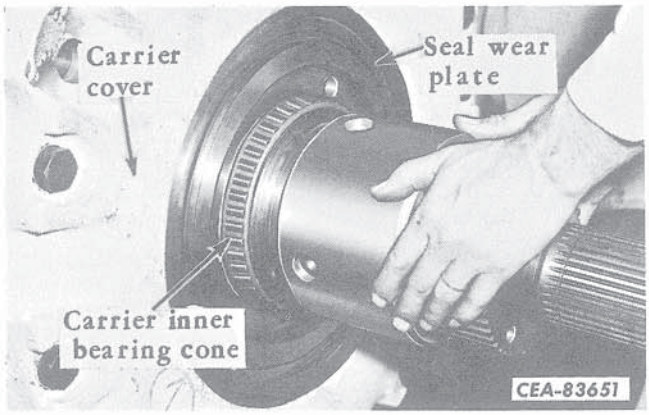
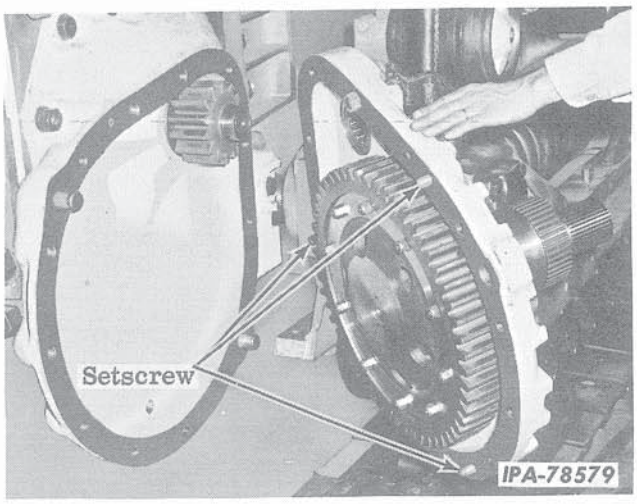
SPROCKET DRIVE CARRIER COVER AND SPROCKET DRIVE GEAR
(Ref. Nos. Refer to Illust. 6)

damaged. The cups of the sprocket carrier inner and outer bearings will come off with the carrier and should not be removed unless replacement is necessary.

5. Remove the seal assembly (20 and 22) and the bearing spacer (23). (Illust. 9 and 10.)



Illust. 10
Removing the Carrier Bearing Spacer.

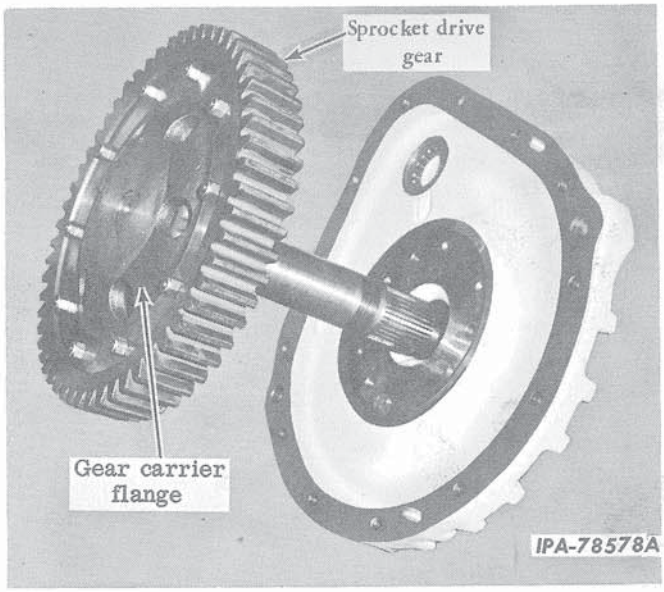


Illust. 11
Removing the Sprocket Drive Carrier Cover.

6. MODEL 175 LOADER ONLY: Remove the track frame coupling link. Remove the cap screws, washers and link pin locks securing the link pins to the coupling at the track frame and at the bottom of the sprocket drive carrier cover (17). Tap out the link pins to remove the coupling link.

7. Remove the cap screws securing the cover (17) to the sprocket drive carrier (6). Attach a hoist to the cover and take the slack out of the chain. Use the three hexagon-socket set screws provided in the cover to pull the cover free of the dowels (7) in the sprocket drive carrier. Refer to Illust. 11.

NOTE: The cup of the pinion outer bearing (11) will remain in the cover and should not be removed unless bearing replacement is necessary. Use a bearing puller to remove when replacement is necessary.



Illust. 12
Removing the Sprocket Drive Gear and Carrier From the Carrier Cover.

SPROCKET DRIVE CARRIER COVER AND SPROCKET DRIVE GEAR
(Ref. Nos. Refer to Illust. 6)

11. DISASSEMBLY

1. The cone (Illust. 10) of the sprocket carrier inner bearing (19) should not be removed from the cover (17) unless bearing replacement is necessary. The cone should be removed (when necessary) with a bearing puller.

2. The assembly should be placed on a bench with the cover (17) blocked and resting on its splines. (Illust. 12.)

3. Insert a socket through the openings in the flange of the gear carrier (12) and remove the six cap screws and washers securing the retainer (14) to the cover (17). (Illust. 12.) The gear carrier can be turned to reach all the cap screws.

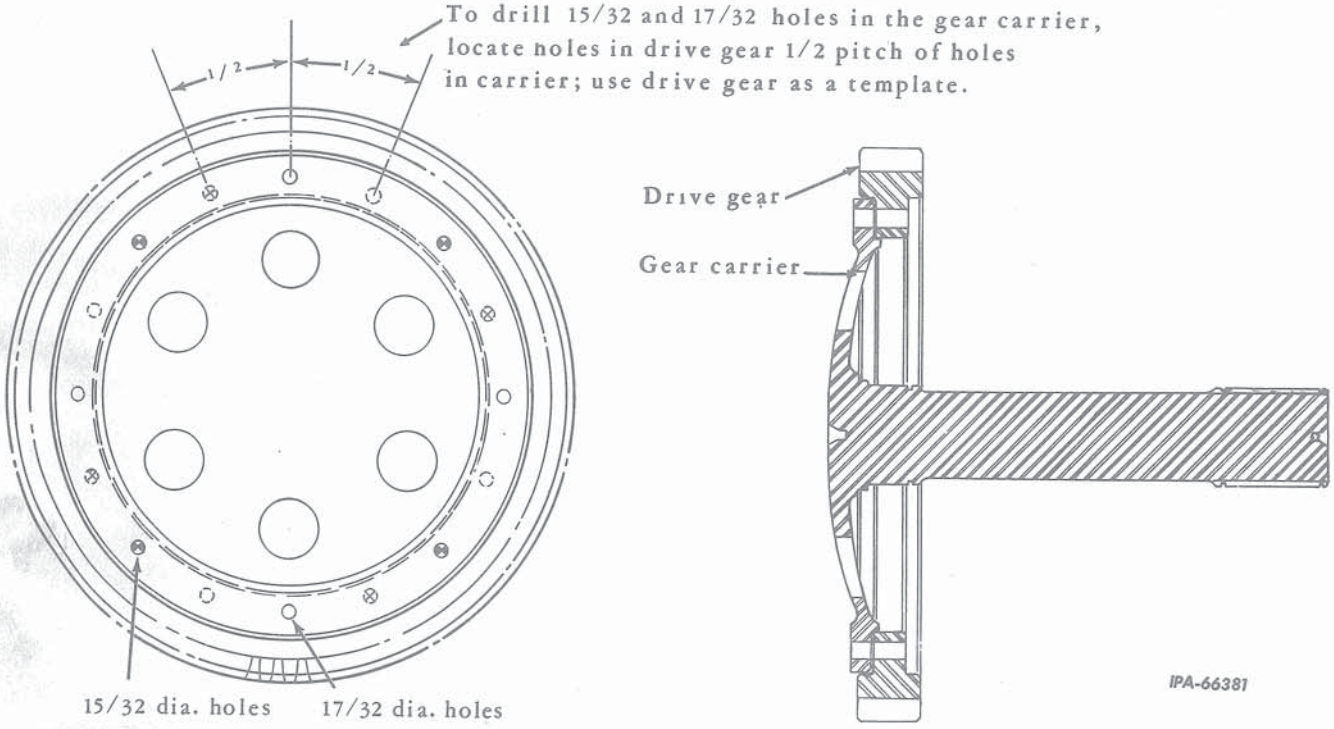
4. Pull the sprocket drive gear (13) and gear carrier from the cover. (Illust. 12.)

5. Remove the bearing snap ring (16) from the groove in the gear carrier. Insert three 1/2-13 inch puller screws into the threaded holes in the retainer (14) and pull the retainer and bearing (15) from the gear carrier. If necessary the retainer can be turned to allow the puller screws to push up against the gear retainer flange.

6. If replacement of the bearing (15) is necessary it can be pressed out the front of the retainer.

12. INSPECTION AND REPAIR

1. Wash all parts thoroughly in a dry-cleaning solvent and dry with compressed air. Thoroughly scrape the sprocket drive carrier (6) and cover (17) mating surfaces clean. Be careful not to scratch these finished surfaces or sealing may become ineffective.



Illust. 13
Drilling Diagram for Drilling New Holes in Either the Sprocket Drive Gear or Sprocket Drive Gear Carrier. (When Drilling Holes in the Sprocket Drive Gear, Use Carrier as a Template.

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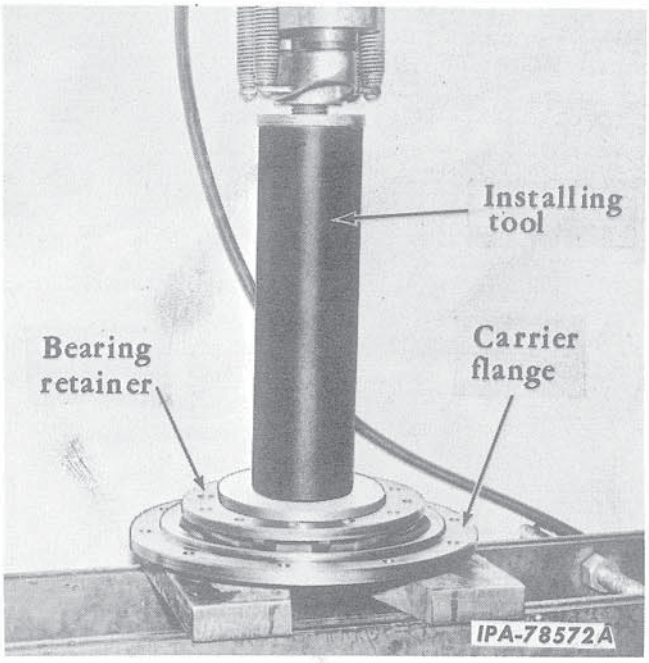
SPROCKET DRIVE CARRIER COVER AND SPROCKET DRIVE GEAR
(Ref. Nos. Refer to Illust. 6)

2. Inspect the bearings for scores, cracks and excessive wear and replace if necessary. Reusable bearings should be wrapped until ready for assembly. Inspect the carrier cover outer bearing surface for wear. Refer to Par. 2, "SPECIFICATIONS."

3. Inspect the oil seal rotor (22) and wear plate (20) for excessive wear or damage. If either part is excessively worn, it is recommended that a new oil seal assembly be installed. Whenever this oil seal assembly is removed, it is recommended that a new gasket (22A) be installed. Snap the new gasket into place on the seal pins. Do not apply any sealer or adhesive to the gasket. Be sure the four drive pin "O" rings (21) and the four "O" rings (22B) are in place on each of the alternate drive pins of the wear plate and seal rotor. If the "O" rings (21 or 22B) are damaged, replace with new.

NOTE: Do not discard the "O" rings (21 or 22B) because they are notched. The notches are for relieving compression when the seal pins are inserted into the mounting holes.



Illust. 14
Installing the Carrier Bearing and Retainer on the Drive Gear Carrier (Sprocket Drive Gear Not Shown).

4. MODEL 175 LOADER ONLY: Inspect the bushings (18) in the bottom of the carrier cover for damage. If necessary install new bushings. Refer to Par. 13, "REASSEMBLY."

5. If the gear teeth on the pinion (9) or sprocket drive gear (13) are damaged or are worn enough to cause excessive backlash, the gear or pinion or both must be replaced. Slight burrs can be smoothed down with a stone.

6. The sprocket drive gear and the sprocket drive gear carrier are individual service parts. The two parts are a shrink-fit of 0.002 to 0.006 inch. After separating the old parts, install the new gear or carrier as follows:

(a) Expand the pilot bore by placing the sprocket drive gear in hot oil.

(b) While the sprocket drive gear is still hot, place it over the carrier shaft and position it on the carrier pilot with the dowel bolt holes and the cap screw holes in the gear and carrier in line. Allow the gear to shrink in place (refer to Illust. 13).

(c) After the gear has been allowed to cool and shrink in place on the carrier, line ream the four dowel holes through both parts to 0.4970 - 0.4975 inch diameter and install the dowel bolts with nuts. (Refer to Par. 2, "SPECIFICATIONS.") Install the four cap screws and nuts.

NOTE: If the holes in either the sprocket drive gear or the gear carrier have become elongated, relocate and drill new holes of 15/32 and 17/32 inch diameter, midway between the old elongated holes (Illust. 13). The surfaces of both the gear and carrier must be smooth to provide a good contact between the gear and carrier. Remove any burrs or irregularities that may have resulted when the holes became elongated or when drilling the new holes. The 15/32 inch holes must then be line reamed as specified previously.

SPROCKET DRIVE CARRIER COVER AND SPROCKET DRIVE GEAR
(Ref. Nos. Refer to Illust. 6)

13. REASSEMBLY

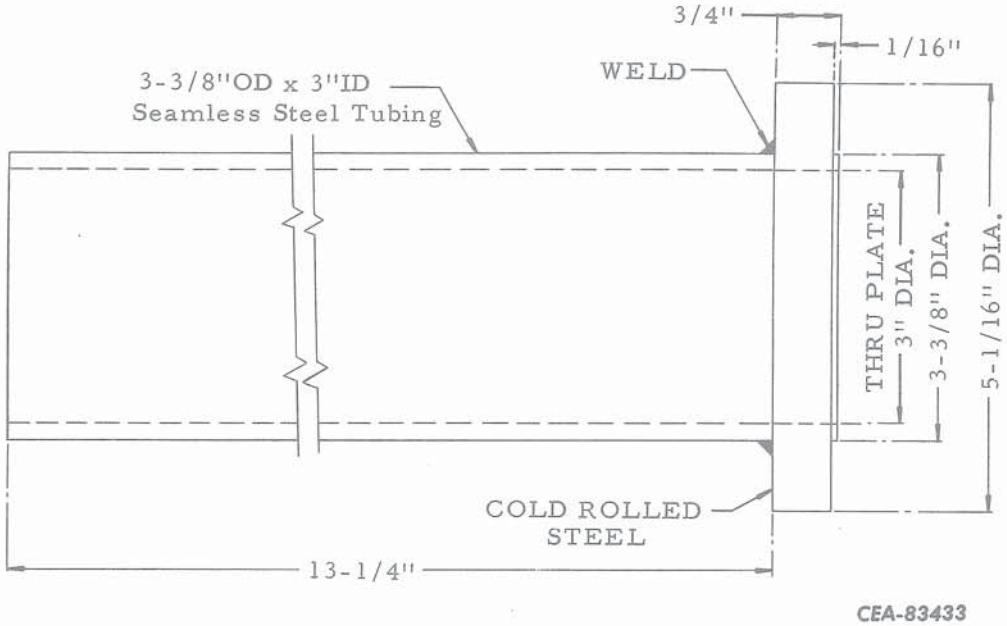
1. MODEL 175 LOADER ONLY: If the bushings (18) needed replacement, new ones must be pressed into the carrier cover from each end until flush with the bushing bore.

2. If the pinion outer bearing (11) needed replacement, press a new bearing cup into the carrier cover until it bottoms. The bearing cone must be installed on the end of the pinion (9) until the lip of the cone is bottomed against the pinion shoulder.

NOTE: The pinion outer bearing (11) must be thoroughly soaked with sprocket drive lubricant to insure initial lubrication.

3. If the sprocket carrier bearings (19 and 27) needed replacement, press new bearing cups into the sprocket carrier (24) (large diameter of the taper up) until they bottom. Heat the inner bearing cone (Illust. 10) to 275 degrees for approximately 45 minutes and assemble on the cover until it is solid against the shoulder with the small diameter of the taper up. To assure cone is against the shoulder. make a final press after it has reasonably cooled down. The outer bearing cone will be installed later.

4. If the bearing (15) needed replacement, press a new bearing (using the outer race) into the retainer (14) until it bottoms. To press the inner race of the bearing on the carrier a installing tool as shown in Illust. 14A must be used to keep the outer race and bearing retainer from cocking as the inner race is pressed on. Cocking of the outer race can cause the outer race to hang-up on a roller and result in scuffing the roller or race causing premature bearing failure. Place the sprocket drive gear and carrier assembly in a press with the splines of the carrier (12) up. Position the retainer (14) with bearing on the hub of the carrier (small diameter of the retainer down) and, using the installing tool, press the bearing and retainer onto the carrier until the snap ring groove appears. (Illust. 14.) Install the snap ring (16).



Illust. 14A
Drive Gear Carrier Bearing Installing Tool.

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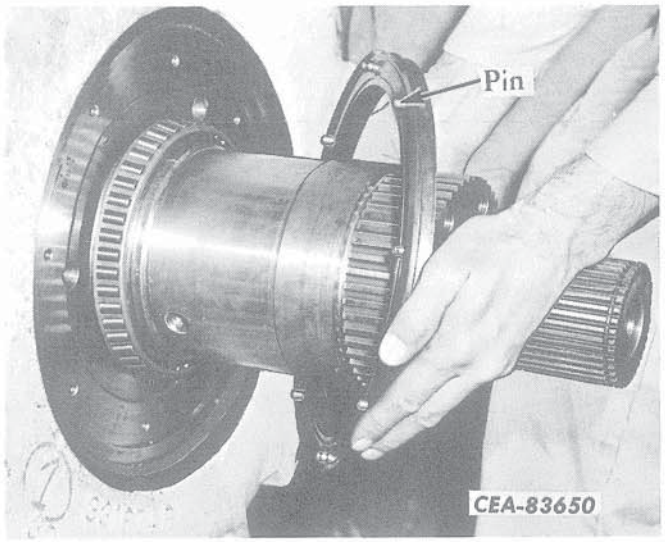
SPROCKET DRIVE CARRIER COVER AND SPROCKET DRIVE GEAR
(Ref. Nos. Refer to Illust. 6)

5. Block the carrier cover (17) so the splines of the cover are down. The cover must be blocked so the end of the sprocket drive gear carrier (12) will clear the bench when it is installed.

6. Insert the sprocket drive gear and carrier assembly through the hub of the cover. (Illust. 12.) Before seating the flange of the retainer (14) in the cover bore, align the larger three cored holes in the retainer with those in the cover and also the smaller holes with the tapped holes in the cover.

Through the openings in the gear carrier flange, (Illust. 12) insert and tighten the six cap screws and washers to secure the retainer to the cartier cover (17).



Illust. 15
Installing the Oil Seal Wear Plate.

14. INSTALLATION

1. Be sure the sealing surfaces of the carrier cover (17) and sprocket drive carrier (6) are clean of the old gasket and apply International Harvester liquid gasket to both mating surfaces.

2. Attach a hoist to the carrier cover (17) and position the cover over the carrier dowels (7). Be sure the three hexagon-socket set screws in the carrier cover have been turned back into place. (Illust. 11.) Using the flats on each side of the carrier cover, drive the cover onto the dowels (7). Secure the cover to the carrier with the cap screws (refer to Par. 2, "SPECIFICATIONS") and remove the hoist.

NOTE: The cover (17) must be started square in the dowels to prevent possible damage to the rollers of the pinion outer bearing cup.

3. Install the oil seal wear plate assembly (20) on the cover, engaging the pins of the wear plate with the holes provided in the cover. (Illust. 15.) Be sure the wear plate is up against its mating face on the cover. Install the oil seal rotor assembly (22) to the sprocket carrier (24), engaging the pins of the rotor with the holes provided in the rear of the sprocket carrier. Be sure the rotor is up against its mating face on the carrier.

NOTE: Do not use Lubriplate or grease on the back-up gasket of the seal wear plate (20) or the gasket (22A) of the seal rotor to hold them in place during assembly as this could cause the seal to leak. The "O" rings (21 and 22B) hold the sealing members in place. Only the leather seal face of the wear plate and the "O" rings must be lubricated with oil to permit easier installation.

4. Place the bearing spacer (23) on the carrier cover and up against the sprocket carrier inner bearing cone (Illust. 10).

5. With the aid of a hoist, position the sprocket and sprocket carrier on the cover (17), being sure the carrier inner bearing cup seats properly on its cone (Illust. 8). Heat the bearing cone of the outer bearing (27) to 275 degrees for approximately 45 minutes and assemble onto the cover hub until it bottoms against the spacer (23). To assure cone is solid against spacer, keep pressure against the cone until it reasonably cools down. Remove the hoist and rotate the sprocket carrier to be sure that the bearings are properly seated.

(Continued on next page)

SPROCKET DRIVE CARRIER COVER AND SPROCKET DRIVE GEAR
(Ref. Nos. Refer to Illust. 6)

14. INSTALLATION - Continued

NOTE: The outer bearing (27) must be thoroughly soaked with sprocket drive lubricant to assure initial lubrication.

6. MODEL 175 LOADER ONLY: Install the track frame coupling link. Place the link in position and secure to the track frame coupling and sprocket drive carrier cover with the link pins. Install the link pin locks and secure with cap screws and washers.

7. Install the sprocket drive planetary as described in Par. 9, "INSTALLATION."

8. Remove the blocking from under the rear frame and slowly lower the unit until the sprocket rests on the track chain.

9. Install the track chain (refer to "TRACKS AND TRACK FRAME," section 10).

SPROCKET DRIVE PINION
(Ref. Nos. Refer to Illust. 6)

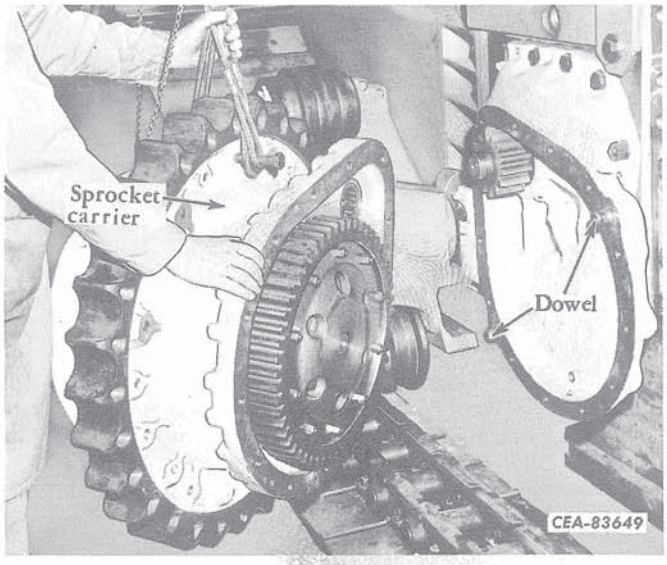
15. REMOVAL

If it is desired to inspect or replace only the sprocket drive pinion (9), pinion bearings (8 and 11) or pinion oil seal (4); the sprocket, sprocket drive planetary and the sprocket drive carrier cover and sprocket drive gear can be removed as a unit.

1. Remove the sprocket rock shield (if equipped).

2. Remove the track chain (refer to "TRACKS AND TRACK FRAME," Section 10). Be sure to move the tractor (if necessary) after the track chain is off the sprocket, so that the drain plug in the planet gear carrier (42) is at the bottom.

3. Drain the oil from the sprocket drive by removing the plug in the bottom of the planet gear carrier and the lower plug in the rear of the sprocket drive carrier (6).



Illust. 16
Removing the Sprocket Drive as a Unit.

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SPROCKET DRIVE PINION
(Ref. Nos. Refer to Illust. 6)

4. MODEL 175 LOADER ONLY: Remove the track frame coupling link. Remove the cap screws, washers and link pin locks securing the link pins to the coupling at the track frame and at the bottom of the sprocket drive carrier cover (17). Tap out the link pins to remove the coupling link.

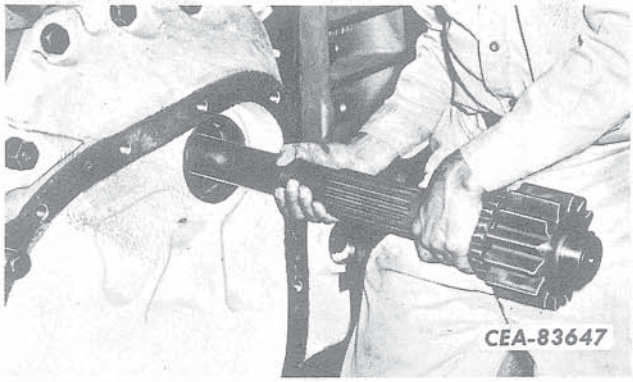
5. Jack the rear of the tractor enough to allow the sprocket to clear the track chain. Block under the rear frame.

6. Remove the cap screws securing the cover (17) to the sprocket drive carrier (6). Attach a hoist to the sprocket carrier in a manner similar to that shown in Illust. 16 to balance the assembly. Use the three hexagon-socket set screws provided in the cover (17) to pull the cover free of the dowels (Illust. 16) in the sprocket drive carrier. If necessary, pry bars can also be used to free the cover from the dowels.

CAUTION: Keep clear of the cover (17) as the assembly is removed as it is possible that the cover may swing down once it is free of the dowels.

7. Depress the brake pedal and lock it with the pedal ratchet. This will keep the internally splined pivot discs locked in position when the pinion (9) is removed.

8. Pull the sprocket drive pinion from the carrier (6) and main frame. (Illust. 17.) The two pinion bearing cones, pinion oil seal rotor and pinion "O" ring (5) will come off with the pinion.



Illust. 17
Removing the Pinion Shaft.

9. Inspect the condition of the pinion inner bearing (8) and oil seal (4). The oil seal stator is in the retainer (2) secured to the inside of the sprocket drive carrier.

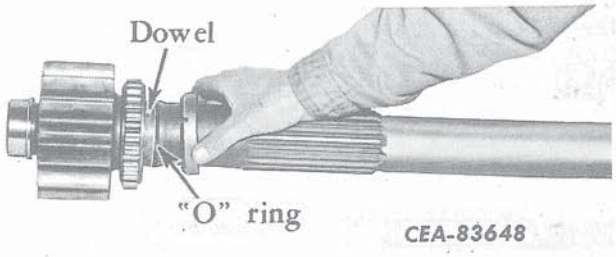
10. If the oil seal or the pinion inner bearing needs replacement, the oil seal or the bearing cup can be removed from the carrier bore only after first removing the carrier from the main frame and the pivot brake assembly from the carrier. (Refer to Section 8, "STEERING SYSTEM" under "PIVOT BRAKES," for the removal procedure of the carrier and pivot brake assembly.

Working through the pivot brake disc opening in the rear of the carrier (6), remove the cap screws and washers securing the seal retainer to the carrier. Remove the seal retainer (2) with "O" ring (3). If replacement is necessary, the seal stator can be pressed out of the retainer. Using a bearing cup puller, remove the pinion inner bearing cup from the carrier bore.

16. DISASSEMBLY

1. Remove the rotor of the oil seal (4), driving dowel (10) and "O" ring (5) from the shaft. (Illust. 18.)

2. If bearing replacement is necessary, the pinion bearing cones can be pressed from the pinion. The pinion outer bearing cup can easily be pulled from the cover (17).



Illust. 18
Removing the Rotor of the Pinion Oil Seal.

SPROCKET DRIVE PINION
(Ref. Nos. Refer to Illust. 6)

17. INSPECTION AND REPAIR

1. Wash all parts thoroughly in a dry-cleaning solvent and dry with compressed air.

2. Inspect the bearings for scores, cracks and wear and replace if necessary. Oil bearings that are in a serviceable condition, and keep covered until ready for assembly.

3. Thoroughly scrape the sprocket drive carrier (6) and carrier cover (17) mating surfaces clean. Be careful not to scratch these finished surfaces or sealing may become ineffective.

4. Inspect the oil seal for excessive wear or damage and replace if necessary. (Refer to Par. 18, "REASSEMBLY" for method of handling the cartriseal type oil seal.)

5. It is recommended that new "O" rings and sealing rings be installed.

6. Inspect the pinion splines and gear teeth for damage. Slight burrs can be smoothed down with a stone. If the pinion gear teeth are worn enough to cause excessive backlash, the pinion (and possibly the sprocket drive gear) will have to be replaced.

18. REASSEMBLY

NOTE: Before installing the pinion inner and outer bearings, immerse them in sprocket drive lubricant. Even if they were not removed they must be thoroughly soaked with sprocket drive lubricant to insure initial lubrication.

1. If pinion bearing replacement was necessary, place the pinion (9) in a press with the long end of the shaft up. Press on the inner bearing cone. Reverse the pinion in the press and install the outer bearing cone so the lip of the cone is up against the pinion shoulder. Install the outer bearing cup into the cover (17) until it bottoms.

2. Install the oil seal driving dowel (10) in the pinion until it extends 1/4 inch above the shaft. Molykote the oil seal "O" ring bearing surfaces on the pinion shaft and install the "O" ring (5) in the groove provided in the shaft. (Illust. 18.)

3. If the oil seal (4) needed replacement the following method of handling the new Cartriseal type oil seal must be used:

(a) Do not remove the seal from its box until ready to install.

(b) Be extremely careful not to nick either seal face.

(c) Clean seal faces just prior to their contracting each other.

(1) It is usually easier to clean these faces when they are dry.

(2) Apply Molykote to seal rotor face to permit a few minutes running until the oil can reach the seal faces. Some of this is likely to rub off during the final cleaning.

(3) Clean rags should be used to wipe the seal faces. The paper pads in the seal box are often the cleanest available in your service shop so these will suffice. If oil is used to wipe the seal faces, it must be clean and be kept in a closed container.

(4) Subsequent assembly procedures following the installation of the seal rotor may cause chips or dirt to fall onto the rotor seal face. Step "c" therefore is very important.

(d) When pressing the seal stator into the retainer (2), it must remain square to the bore within 0.010 per inch.

(e) When pressing the seal stator into the retainer (2), the back of the stator must be fully supported (minimum support would be where only 50 per cent of the stator contacts the assembly tool).

4. Press the oil seal stator into the retainer (2) as follows:

OPEN BORE RETAINER: Place the retainer in a press with the larger inside diameter down. With the sealing lip of the stator down, press the stator into the retainer (refer to Steps "d" and "e" under Step 3) until it is positioned in the retainer as shown in Illust. 20.

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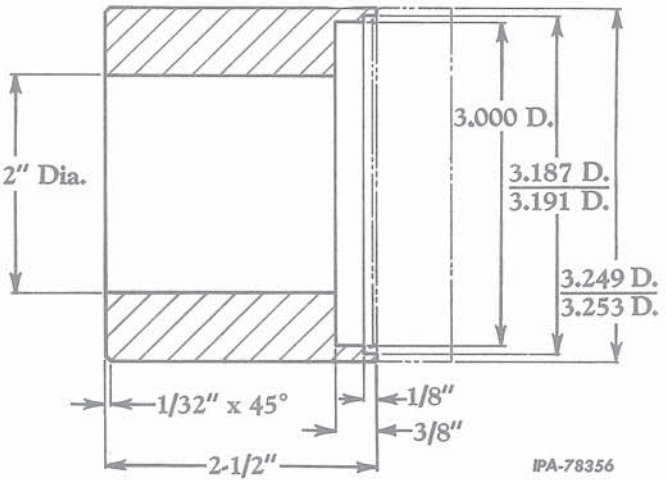
SPROCKET DRIVE PINION
(Ref. Nos. Refer to Illust. 6)

CLOSED BORE RETAINER: The seal stator must be installed in the retainer with the sealing lip up. To provide the proper support and to prevent damaging of the sealing lip, the assembly tool shown in Illust. 19 should be constructed for installing the stator. Place the assembly in a press and install the stator until it bottoms in the retainer bore.

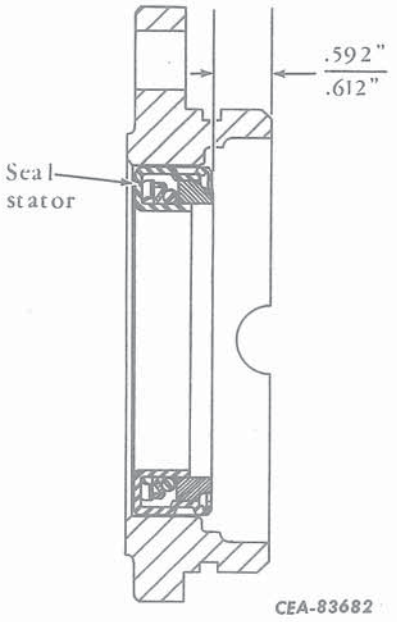


Illust. 19
Pinion Shaft Oil Seal Assembly Tool.
(Used With Closed Seal Retainer.)

5. Install the "O" ring (3) in the groove on the seal retainer. Working through the opening in the rear of the carrier (6), secure the retainer to the carrier.

6. Place the rotor of the oil seal (4) on the shaft until it engages the driving dowel. The sealing surface of the rotor must face the long end of the pinion. (Illust. 18.)

7. If the pinion inner bearing was removed, drive the pinion inner bearing cup into the carrier bore until it bottoms against the oil seal retainer. The lip of the bearing cup must be against the retainer. Install the pivot brake assembly to the carrier and the carrier to the main frame as described under "PIVOT BRAKES" in Section 8, "STEERING SYSTEM."



Illust. 20
Pinion Shaft Oil Seal Installation Drawing
(Open Bore Retainer Only).

19. INSTALLATION

1. Apply "MOLYKOTE" type "G" to the oil seal "O" ring surface on the pinion shaft (9). Insert the pinion shaft (9) through the carrier and main frame (Illust. 17). The splines of the shaft must engage the pivot brake discs and the sprocket drive pinion shaft gear in the steering planetary. If the carrier (6) was removed, install the pinion shaft using a back and forth motion, keeping some inward pressure to allow the pivot brake discs to pick-up the shaft splines.

2. Release the brake pedal ratchet.

3. Be sure the three hexagon socket set screws in the carrier cover have been turned back into place.

4. Be sure the sealing surfaces of the carrier (6) and cover (17) are clean of the old gasket and apply International Harvester liquid gasket to both mating surfaces.

(Continued on next page)

SPROCKET DRIVE PINION
(Ref. Nos. Refer to Illust. 6)

19. INSTALLATION - Continued

5. Attach a hoist to the sprocket carrier in the same manner as was done when removed and position the assembly over the carrier dowels (7). Using the flats on each side of the carrier cover, drive the cover onto the dowels. Secure the cover to the carrier with the cap screws (refer to Par. 2, "SPECIFICATIONS") and remove the hoist.

NOTE: The carrier cover (17) must be started square on the dowels to prevent possible damage to the rollers of the pinion outer bearing cup.

CAUTION: Until the assembly is started on the dowels (7), the carrier cover (17) must be supported to prevent it from swinging down.

6. Remove the blocking from under the rear frame and slowly lower the unit until the sprocket rests on the track chain.

7. MODEL 175 LOADER ONLY: Install the track frame coupling link. Place the link in position and secure to the track frame coupling and sprocket drive carrier cover with the link pins. Install the link pin locks and secure with cap screws and washers.

8. Be sure the drain plug in the planet gear carrier (42) and in the sprocket drive carrier (6) are installed and tight. Fill the sprocket drive as described in the operator's manual.

9. Install the track chain (refer to "TRACKS AND TRACK FRAME," Section 10).

10. Install the sprocket rock shield (if equipped).

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