

Product: TRACK-TYPE TRACTOR

Model: D7R II TRACK-TYPE TRACTOR BRM

Configuration: D7R SERIES II TRACK-TYPE TRACTOR /DIFFERENTIAL STEERIN/ BRM00001-00800 (MACHINE) POWERED BY 3176C ENGINE

Disassembly and Assembly

D7R and D7R Series II Track-Type Tractors Power Train

Media Number -REN2086-04

Publication Date -01/05/2006

Date Updated -31/05/2006

i04905904

Steering Planetary and Brake - Disassemble

SMCS - 4132-015

Disassembly Procedure

Table 1

Required Tools			
Tool	Part Number	Description	Qty
A	138-7575	Link Bracket	3
B	1P-0520	Driver Group	1
C	5B-4274	Forcing Bolt 3/8 - 16 by 3.5 inches	3

Start By:

- A. Remove the right hand final drive, the planetary group, and the brake. Refer to Disassembly and Assembly, "Final Drive, Steering Planetary, and Brake (Right Side) - Remove".

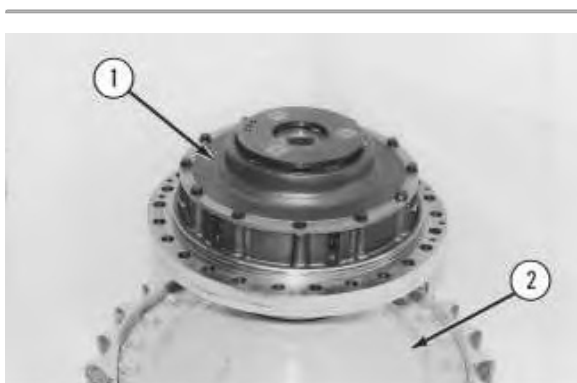


Illustration 1

g00622108

1. Position the final drive, the planetary group, and the brake, as shown.
2. Remove the bolts that hold the planetary group and brake (1) to final drive (2). The bolts are on the bottom (not shown).

3. Attach Tooling (A) and a suitable lifting device to the planetary group and brake.
4. Install Tooling (C) in the final drive hub.
5. Tighten the forcing screws evenly in order to remove the planetary group and brake (1) from final drive (2). The weight of planetary group and brake (1) is approximately 136 kg (300 lb).



Illustration 2

g00622109



Personal injury can result from parts and/or covers under spring pressure.

Spring force will be released when covers are removed.

Be prepared to hold spring loaded covers as the bolts are loosened.

6. Remove bolts (3). Remove ring gear (4) from housing (5) .



Illustration 3

g00622110

7. Remove friction discs (6) and the brake plates from the housing.
-

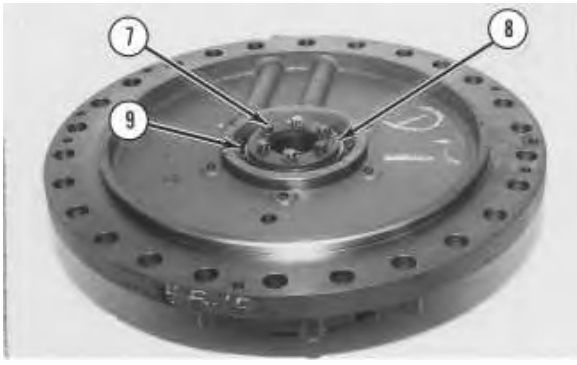


Illustration 4

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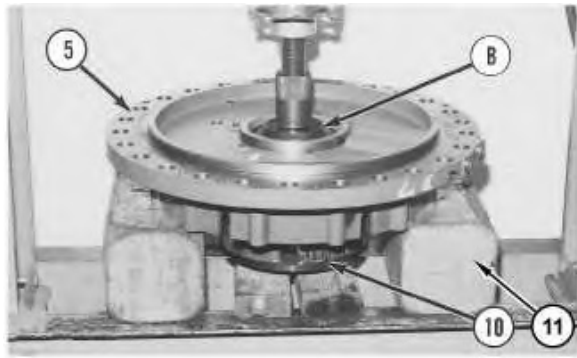


Illustration 5

g01205302

8. Remove bolts (7) and plate (8) .
9. Position the housing on suitable blocks (11) .

Note: Do not allow planetary carrier (10) to fall when the carrier is pressed from housing (5) .

Note: If a shim pack is present between the plate (8) and planetary carrier (10). Reuse the same shim pack during assembly only if reusing the same planetary carrier (10). If a new planetary carrier (10) is being used the shim pack should be discarded.

10. Use Tooling (B) and a suitable press to remove planetary carrier (10) from housing (5) .
11. Remove bearing cone (9) from the housing.

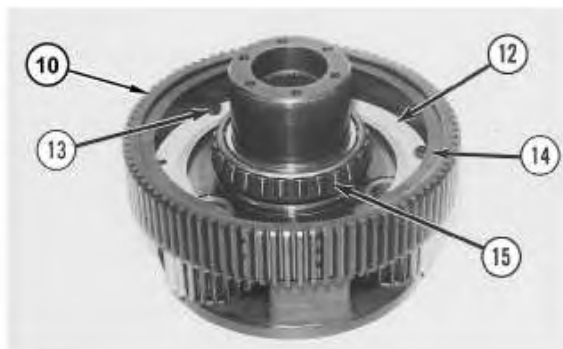


Illustration 6

g01205303

12. Remove ring (14) from planetary carrier (10). Remove bolts (13). Remove slinger (12) from the planetary carrier.

NOTICE

The component is destroyed if the component is removed.

13. If necessary, remove bearing cone (15) from planetary carrier (10) .



Illustration 7

g00622128

14. Use a hammer and a punch to push pin (17) in shaft (16) .

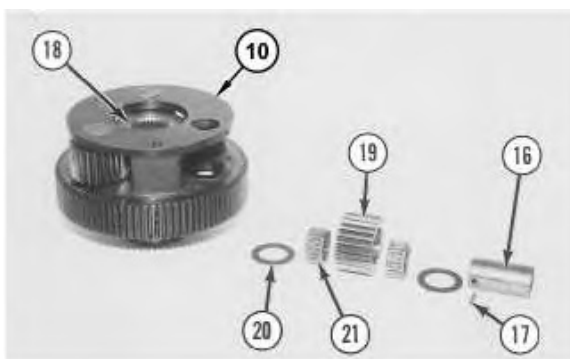


Illustration 8

g01205304

15. Remove shaft (16), planetary gear (19), discs (20), and bearings (21) from planetary carrier (10) .
 16. Remove pin (17) from shaft (16) .
 17. Repeat Steps 14 through 16 for the remaining planetary gears.
 18. Remove sun gear (18) from planetary carrier (10) .
-



Illustration 9

g00622132

WARNING

Personal injury can result from parts and/or covers under spring pressure.

Spring force will be released when covers are removed.

Be prepared to hold spring loaded covers as the bolts are loosened.

19. Remove bolts (22) and washers.
20. Remove retainer (23) from piston (24) .



Illustration 10

g00622155

21. If necessary, remove bearing cups (25) and seal ring (26) from retainer (23) .



Illustration 11

g00622156

22. Remove piston (24) and O-ring seal (27) from the housing.



Illustration 12

g00622157

23. Remove seal ring (28) from piston (24) .

Note: Inspect the O-ring seals. If necessary, replace the O-ring seals.



Illustration 13

g00819345

24. Remove spring (29) and ring (30) from housing (5) .
-

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Disassembly and Assembly

D7R and D7R Series II Track-Type Tractors Power Train

Media Number -REN2086-04

Publication Date -01/05/2006

Date Updated -31/05/2006

i07321002

Steering Planetary and Brake - Assemble

SMCS - 4132-016

Assembly Procedure

Table 1

Required Tools			
Tool	Part Number	Description	Qty
A	138-7575	Link Bracket	3
D	6V-6640	Sealant	1

Reference: Refer to Specifications, "Brake and Planetary" in the Service Manual for your machine.



Illustration 1

g00819345

Note: Orient the disc spring with the outer edge downward.

1. Install ring (30) and spring (29) in housing (5).



Illustration 2

g00622157

2. Apply clean oil to seal ring (28).

Note: Orient the seal ring with the lip downward. Refer to Illustration 2.

3. Install seal ring (28) in piston (24).



Illustration 3

g00622156

4. Install piston (24) and O-ring seal (27) in the housing.



Illustration 4

g00622155

5. Lower the temperature of bearing cups (25). Install bearing cups (25) in retainer (23).

Note: Orient the seal ring with the lip downward. Refer to Illustration 4.

6. Apply clean oil to seal ring (26). Install seal ring (26) in retainer (23).



Illustration 5

g00622132

WARNING

Improper assembly of parts that are spring loaded can cause bodily injury.

To prevent possible injury, follow the established assembly procedure and wear protective equipment.

7. Install retainer (23) on piston (24). Align the oil passage in retainer (23) with the oil passage and the O-ring seal in the housing. Install bolts (22).



Illustration 6

g01205304

8. Install sun gear (18) in planetary carrier (10).
9. Install bearings (21) in planetary gear (19).
10. Install discs (20) and planetary gear (19) in planetary carrier (10). Install shaft (16).



Illustration 7

g00622128

Note: If the rubber in pin (17) is damaged, replace pin (17).

11. Align the hole in shaft (16) with the hole in planetary carrier (10) and install pin (17). Install pin (17) until the pin is even with the surface of planetary carrier (10).
12. Repeat Steps 9 through 11 for the remaining planetary gears.

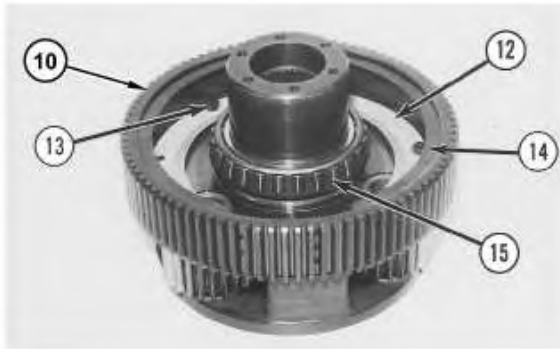
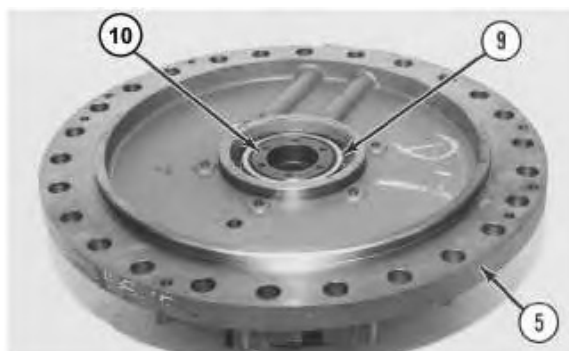


Illustration 8

g01205303

Note: If bearing cone (15) was removed from planetary carrier (10), a new bearing must be installed.

13. Raise the temperature of bearing cone (15). Install the bearing cone on planetary carrier (10).
14. Apply Tooling (D) to the flange of slinger (12).
15. Install slinger (12) on planetary carrier (10). Install bolts (13) and tighten to a torque of $25 \pm 6 \text{ N}\cdot\text{m}$ ($221 \pm 53 \text{ lb in}$).
16. Install ring (14) in planetary carrier (10).



17. Position housing (5) on planetary carrier (10).

Note: Install shim pack between plate and planetary carrier (10) , only if there was a shim pack originally installed in the differential group and if the same planetary carrier (10) is being reused. shim pack thickness should be 0.31 mm (0.0122 inch).

18. Raise the temperature of bearing cone (9). Install bearing cone (9) on planetary carrier (10).

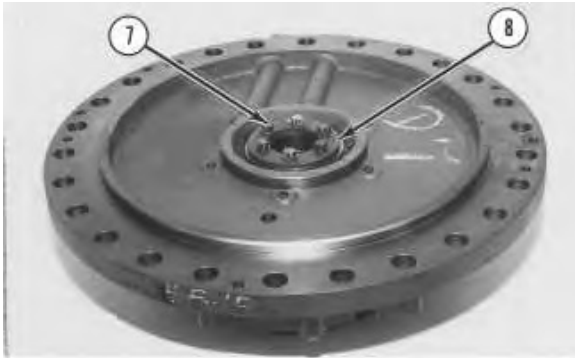


Illustration 10

g00818972

19. Position plate (8) on the planetary carrier.

20. Install bolts (7).



Illustration 11

g00622110

21. Install friction discs (6) and brake plates. Alternate the friction discs and the brake plates.



Illustration 12

g00622109

22. Position ring gear (4) on housing (5).
23. Install bolts (3). Tighten the bolts to a torque of $135 \pm 20 \text{ N}\cdot\text{m}$ ($100 \pm 15 \text{ lb ft}$).

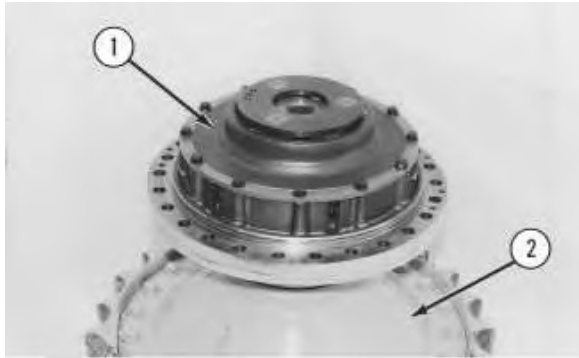


Illustration 13

g00622108

24. Use a suitable lifting device and Tooling (A) to position the planetary group and brake (1) on final drive (2). The weight of the planetary group and brake is approximately 135 kg (300 lb).
25. Install the bolts that hold the planetary group and brake on the final drive.

End By:

- a. Install the right-hand final drive, the planetary group, and the brake. Refer to Disassembly and Assembly, "Final Drive, Steering Planetary, and Brake (Right Side) - Install"
-

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Disassembly and Assembly

D7R and D7R Series II Track-Type Tractors Power Train

Media Number -REN2086-04

Publication Date -01/05/2006

Date Updated -31/05/2006

i01572642

Final Drive, Steering Planetary, and Brake (Right Side) - Install

SMCS - 4050-012-RI; 4132-012-RI

Installation Procedure

Table 1

Required Tools			
Tool	Part Number	Description	Qty
A	8T-3207	Lifting Bracket	1
	5P-8622	Shackle	1
	1D-4615	Bolt (3/4 inch by 10 by 5 1/2 inch)	2
	1B-4331	Nut (3/4 inch by 10)	2
	5P-8248	Washer (3.5 mm by 36.5 mm)	4

Reference: Refer to Specifications, "Final Drive" in the Service Manual for your machine.

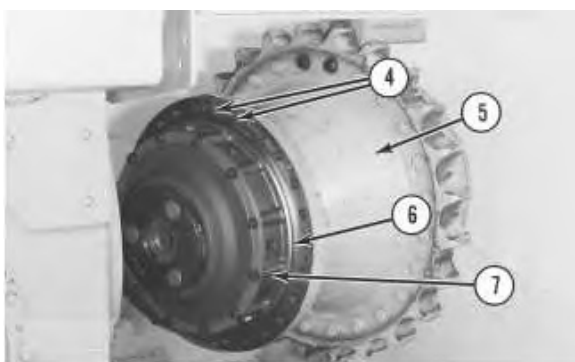


Illustration 1

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1. Inspect O-ring seals (4) and (6). If necessary, replace the O-ring seals. Apply clean oil to the O-ring seals. Install O-ring seals (4) and (6).

WARNING

Personal injury or death can result from lifting a heavy assembly.

The heavy assembly can fall if using an incorrect hoist to lift the load.

**Be sure the hoist has the correct capacity to lift a heavy assembly.
Approximate weight of the assembly is given below.**

2. Install Tooling (A) and a hoist to final drive (5).
 3. Adjust Tooling (A) in order to level the final drive.
 4. Install the final drive, the planetary group, and the brake on the machine. The weight of the final drive, planetary group, and brake is approximately 800 kg (1750 lb).
-

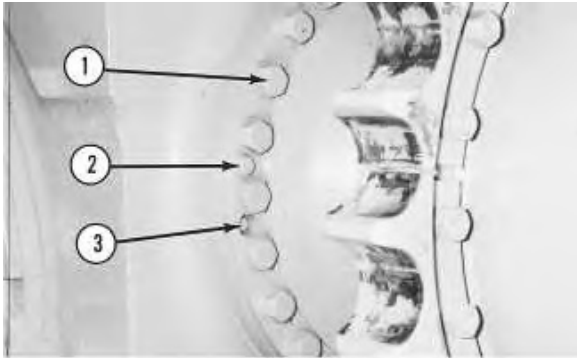


Illustration 2

g00622099

5. Install bolts (1).
 6. Use bolts (1) to pull the final drive, the planetary group, and the brake to the machine.
 7. Bolts (2) were installed in order to assemble the final drive and the brake.
 8. Install bolts (3).
 9. Tighten bolts (1) to a torque of $750 \pm 90 \text{ N}\cdot\text{m}$ ($550 \pm 65 \text{ lb ft}$).
 10. Tighten bolts (3) to a torque of $105 \pm 20 \text{ N}\cdot\text{m}$ ($78 \pm 15 \text{ lb ft}$).
-

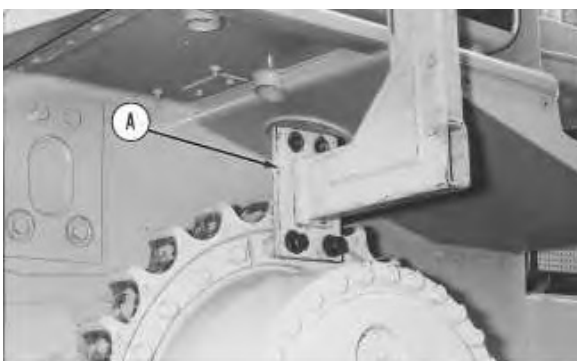


Illustration 3

g00622098

11. Remove Tooling (A).
12. Apply SAE 30W oil to the threads of the two sprocket segment bolts.
13. Install the two bolts, the nuts, and the washers in the sprocket segment.
14. Tighten the nuts to a torque of $300 \pm 50 \text{ N}\cdot\text{m}$ ($220 \pm 37 \text{ lb ft}$). Tighten the nuts by another 1/3 turn. The final torque must be a minimum of $570 \text{ N}\cdot\text{m}$ (420 lb ft).
15. Fill the final drive with oil.

Reference: Refer to Operation and Maintenance Manual, SEBU7234, "Final Drive Oil Level - Check".

End By:

- a. Install the drive axles. Refer to Disassembly and Assembly, "Axle - Remove and Install".
 - b. Connect the track. Refer to Disassembly and Assembly, "Track - Connect".
-

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Disassembly and Assembly

D7R and D7R Series II Track-Type Tractors Power Train

Media Number -REN2086-04

Publication Date -01/05/2006

Date Updated -31/05/2006

i01545208

Final Drive - Remove

SMCS - 4050-011

Removal Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	8T-3045	Adapter	1
B	8T-3207	Lifting Bracket	1
	5P-8622	Shackle	1
	1D-4615	Bolt (3/4 inch by 10 by 5 1/2 inch)	2
	1B-4331	Nut (3/4 inch by 10)	2
	5P-8248	Washer	4

Start By:

- Separate the track. Refer to Disassembly and Assembly, "Track - Separate".

Note: The planetary carriers of the final drives can be removed directly from the machine. Refer to Disassembly and Assembly, "Final Drive Planetary Carrier (In Chassis) - Remove".



WARNING

Without the sun gear in place, the brakes are ineffective. Personal injury or death could result. Provide other means to hold or stop the machine.

NOTICE

Care must be taken to ensure that fluids are contained during performance of inspection, maintenance, testing, adjusting, and repair of the product. Be prepared to collect the fluid with suitable containers before opening any compartment or disassembling any component containing fluids.

Refer to Special Publication, NENG2500, "Dealer Service Tool Catalog" for tools and supplies suitable to collect and contain fluids on Cat products.

Dispose of all fluids according to local regulations and mandates.

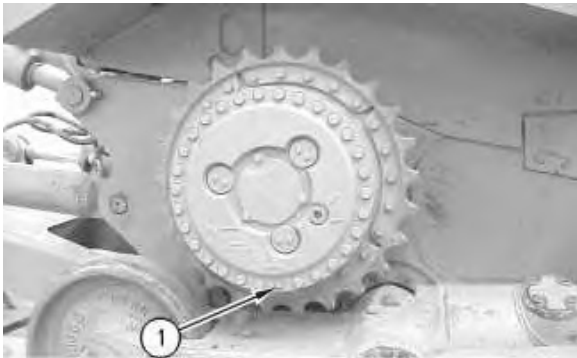


Illustration 1

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1. Position drain plug (1) of the final drive toward the bottom. Remove the drain plug and drain the oil from the final drive. The capacity is approximately 11.4 L (3 US gal).

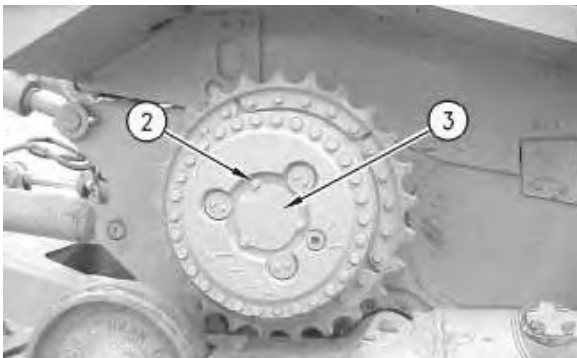


Illustration 2

g00826710

2. Remove bolts (2) and remove cover (3) from the final drive.
-

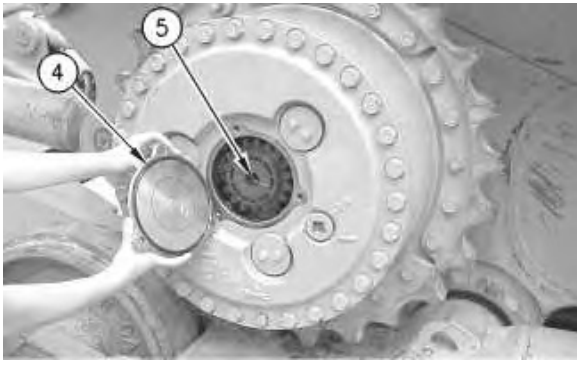


Illustration 3

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3. Remove retainer (5) from the sun gear of the final drive. Remove O-ring seal (4) from the cover.

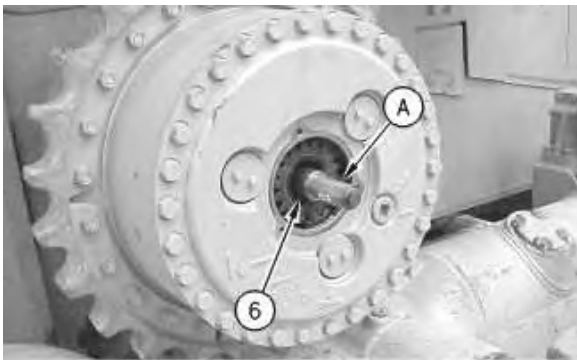


Illustration 4

g00826733

4. Use Tooling (A) to remove outer axle (6).

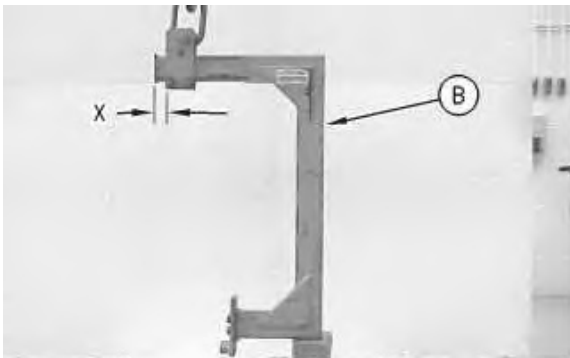


Illustration 5

g00826743

5. Adjust the top bracket of Tooling (B) until Dimension (X) is 38 mm (1.5 inch). Adjust the lower plate so that the spacers are oriented away from the vertical leg of the tool.

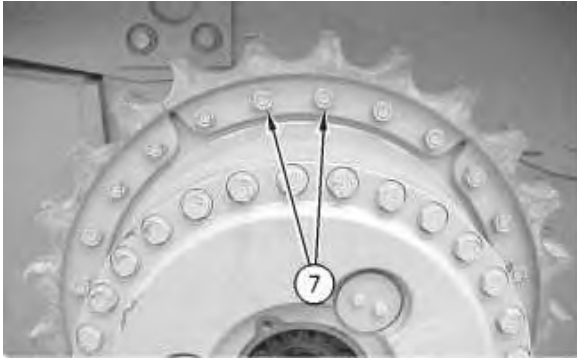


Illustration 6

g00826763

6. Remove bolts (7) from the sprocket segment.

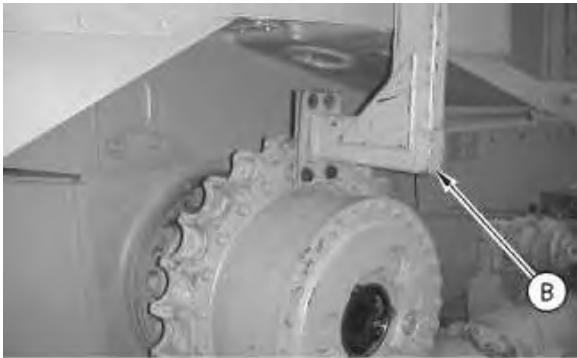


Illustration 7

g00826770

7. Fasten a hoist with Tooling (B) to the final drive.

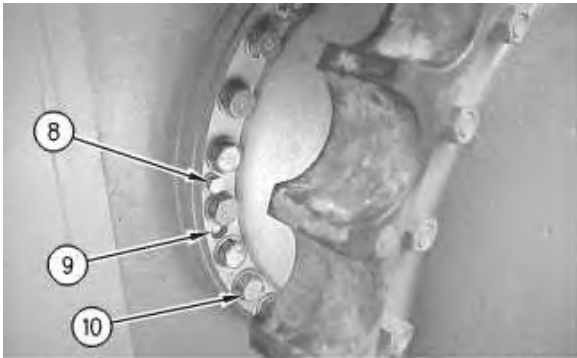


Illustration 8

g00826783

8. Remove bolts (8) that hold the final drive and the steering planetary and brake together.

Note: Do not remove bolts (9) that hold the steering planetary and brake to the frame.

9. Remove bolts (10) that hold the final drive and the steering planetary and brake to the frame.

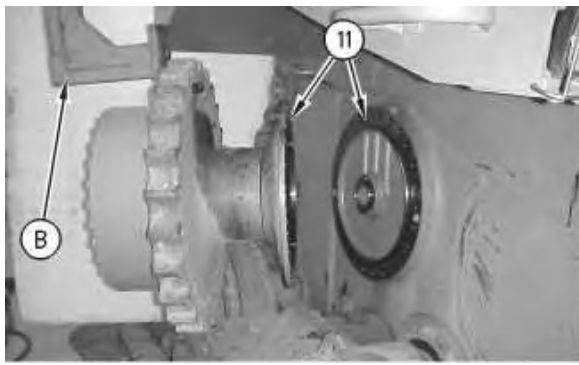


Illustration 9

g00826793

10. Use Tooling (B) to remove the final drive from the machine. The weight of the final drive is approximately 625 kg (1377 lb).
 11. Remove the O-ring seal from either the face of the steering planetary or the final drive hub.
-

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Disassembly and Assembly

D7R and D7R Series II Track-Type Tractors Power Train

Media Number -REN2086-04

Publication Date -01/05/2006

Date Updated -31/05/2006

i02529031

Final Drive - Disassemble

SMCS - 4050-015

Disassembly Procedure

Table 1

Required Tools			
Tool	Part Number	Part Description	Qty
A	138-7575	Link Bracket	3
B	1P-0510	Driver Group	1
C	8B-7548	Puller Assembly	1
	8H-0684	Ratchet Box Wrench	1
	8B-7554	Bearing Cup Puller Attachment	1
D	138-7573	Link Bracket	2
E	1P-0520	Driver Group	1
F	138-7573	Link Bracket	3
G	1P-0520	Driver Group	1
	6V-3160	Cylinder	1
	1D-4620	Bolt 3/4 inch -10 × 7 inch long	4
	FT-1934	Beam	1
	5P-8248	Washers	4
	4C-4865	Pump	1
H	138-7574	Link Bracket	2

Start By:

- Remove the final drives. Refer to Disassembly and Assembly, "Final Drive - Remove".
-

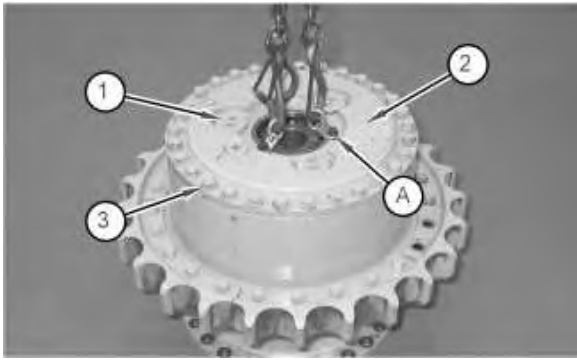


Illustration 1

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1. Attach Tooling (A) and a suitable lifting device to planetary carrier (2). The weight of planetary carrier (2) is approximately 105 kg (231 lb).
2. Remove bolts (3) and planetary carrier (2).
3. Remove bolts (1) and the O-ring seal from each of the plates.

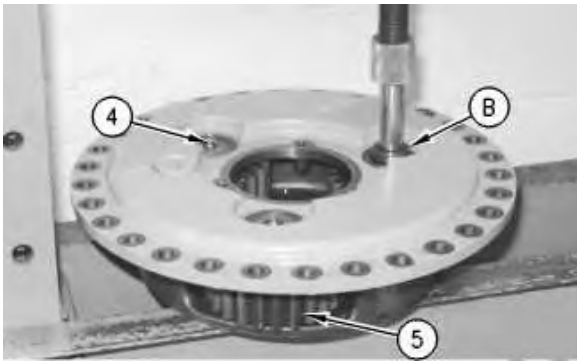


Illustration 2

g00504707

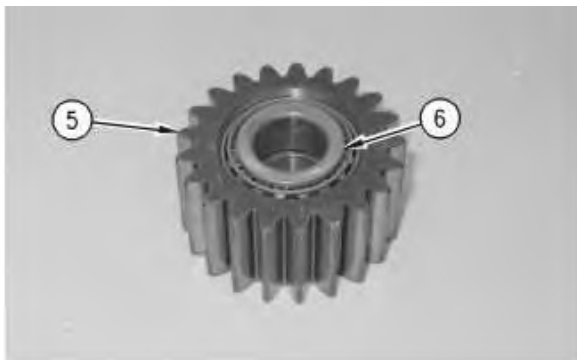


Illustration 3

g00504708

4. Use Tooling (B) and a suitable press in order to remove shafts (4).
5. Remove gears (5).
6. Remove bearing cones (6) from each side of gears (5).

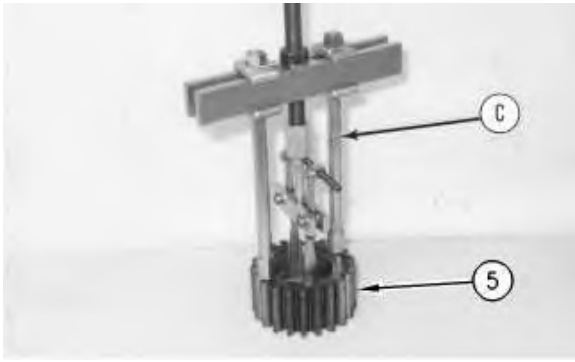


Illustration 4

g00830055

7. Use Tooling (C) in order to remove the bearing cups from each side of gears (5).

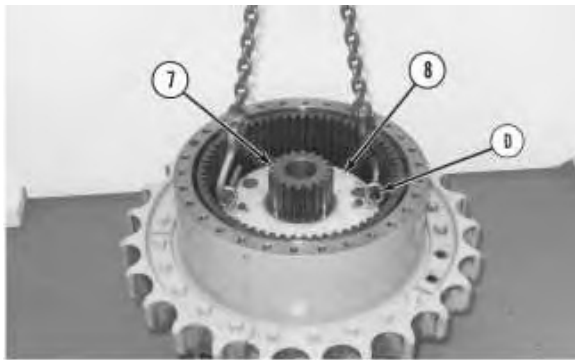


Illustration 5

g00504710

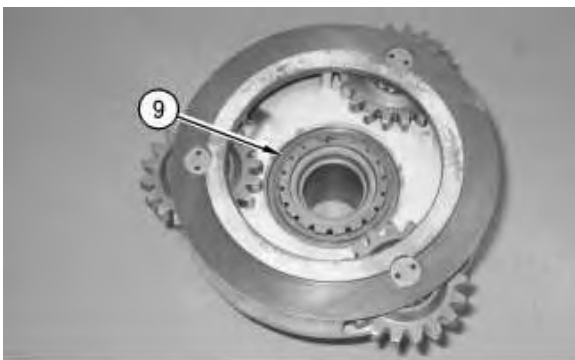


Illustration 6

g00504711

NOTICE

There is a second sun gear that is shown in Step 15 in the center of the planetary carrier. The sun gear is free to fall if the gear stays with the planetary carrier.

8. Install Tooling (D) and a suitable lifting device to planetary carrier (8). The weight of planetary carrier (8) and sun gear (7) is approximately 46 kg (101 lb). Remove planetary carrier (8) and sun gear (7) as a unit.

9. Invert planetary carrier (8) and remove spiral ring (9) from sun gear (7).
10. Use a suitable lifting device in order to remove planetary carrier (8) from sun gear (7). The weight of planetary carrier (8) is approximately 32 kg (70 lb).

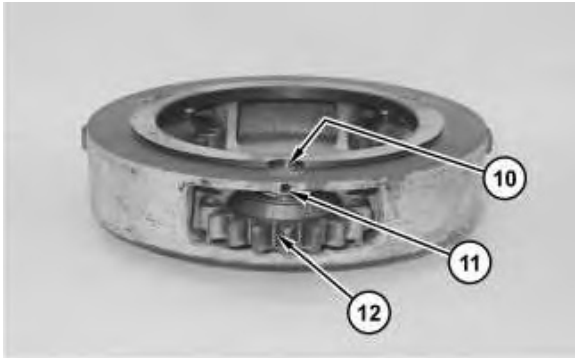


Illustration 7

g01265395

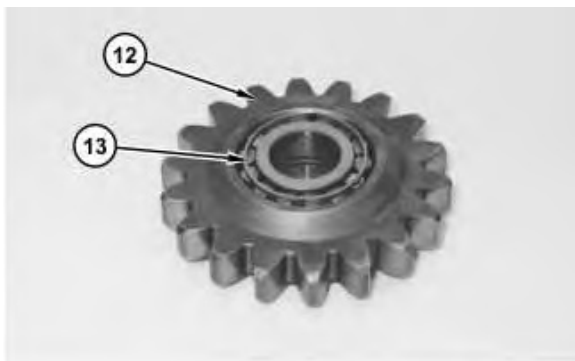


Illustration 8

g01265398

11. Use a suitable punch in order to drive roll pins (11) in the planetary gear shafts (10).
12. Use a suitable press in order to remove shafts (10) from gears (12). Remove roll pins (11) from planetary gear shafts (10).
13. Remove gears (12).
14. Remove bearings (13) from each side of gears (12).

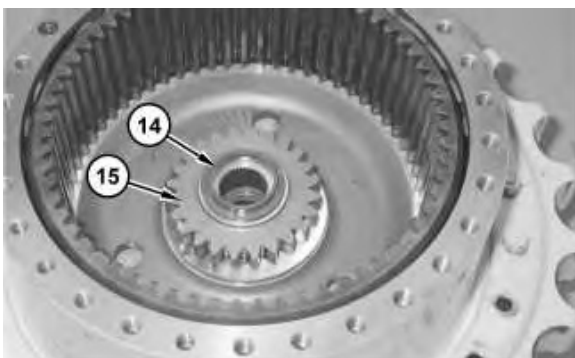


Illustration 9

g01265403

15. Remove ring (14) and sun gear (15) from the hub.

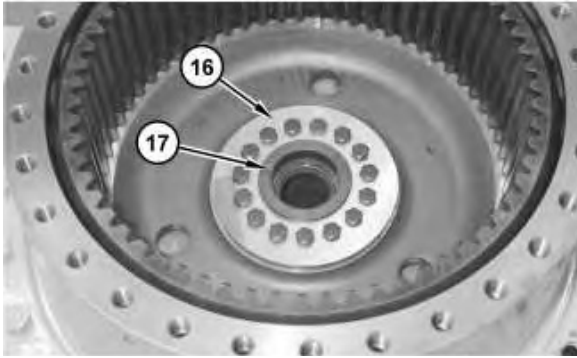


Illustration 10

g01265414

16. Remove the bolts and retainer (16). If ring (17) and retainer (16) need to be replaced, use Tooling (E) and a suitable press, and remove ring (17) from retainer (16).

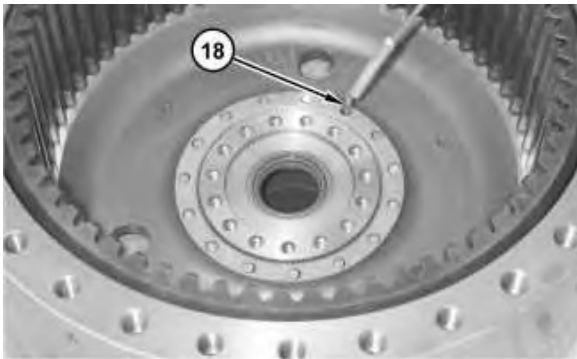


Illustration 11

g01265437

17. Use a magnet, and remove pins (18) from the hub.



Illustration 12

g01265441



Illustration 13

g01265458

18. Install Tooling (F) and a suitable lifting device to hub (19) and ring gear (20). The weight of hub (19) and ring gear (20) is approximately 73 kg (161 lb). Remove hub (19) and ring gear (20).
19. Invert hub (19) and ring gear (20). Remove retainer ring (21).
20. Remove hub (19) from ring gear (20). The weight of hub (19) is approximately 22 kg (48 lb).

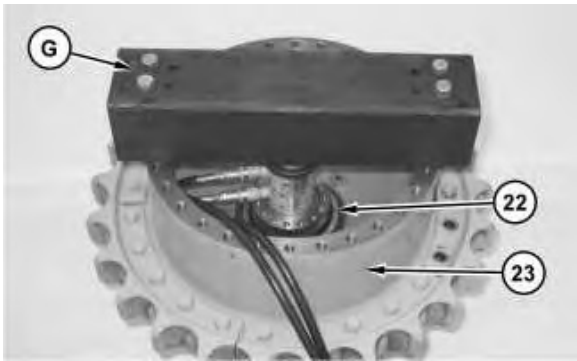


Illustration 14

g01265461



Illustration 15

g01265480

21. Install Tooling (G) on hub (23), as shown.

NOTICE

Do not lift the hub high enough to make contact with the fitting on the hydraulic cylinder which is part of Tooling (G).

-
22. Use Tooling (G), and loosen hub (23) from hub (24).
 23. Remove Tooling (G). Remove bearing cone (22) from the hub.
 24. Install Tooling (H) on hub (23).
 25. Attach a suitable lifting device to Tooling (H) and remove hub (23) from hub (24). The weight of hub (23) is approximately 260 kg (573 lb).

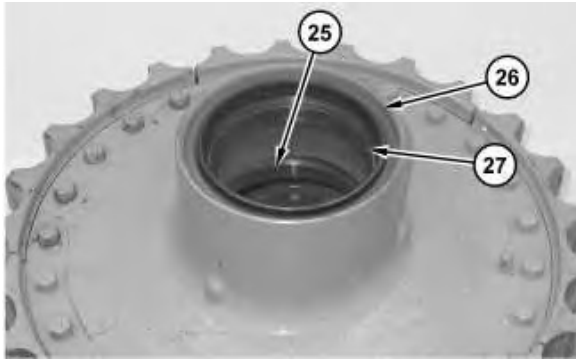


Illustration 16

g01265488

26. Invert the hub and remove Duo-Cone seal (26). Remove bearing cup (27) with a hammer and a punch.
27. Turn over the hub and remove bearing cup (25) from the hub with a hammer and a punch.

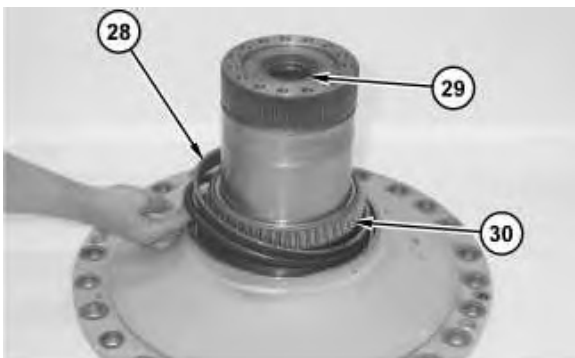


Illustration 17

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Note: In order to reuse the Duo-Cone seals, place identification marks on the seals.

28. Remove Duo-Cone seal (28).

NOTICE

Bearing cone (30) may become damaged if it is removed from the hub

29. Remove bearing cone (30) from hub (24).
 30. Remove lip seal (29) from the hub.
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