

TM2360 - 350DLC Excavator Travel Gearbox Remove and Install

Travel Gearbox Remove and Install

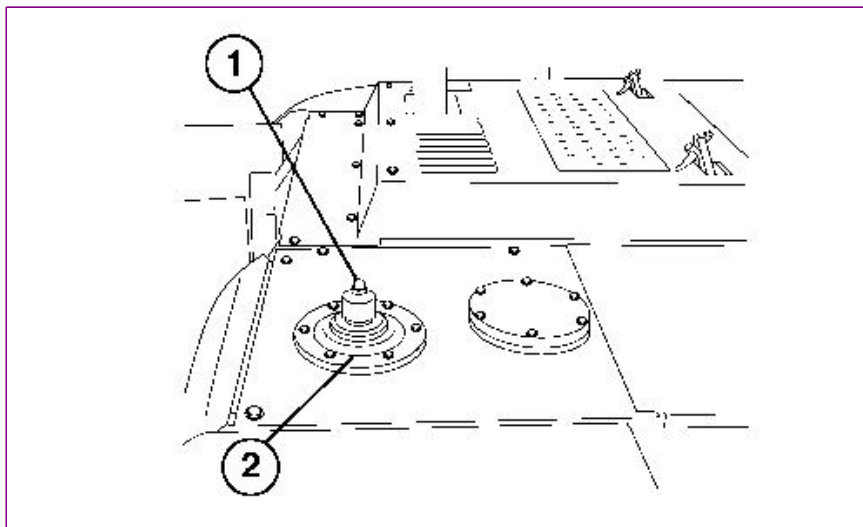
1. Disconnect track chain. See [Track Chain Repair](#) . (Group 0130.)
 2. Remove sprocket only if replacement is required. See [Sprocket Repair](#) . (Group 0130.)
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3.



CAUTION:

High pressure release of oil from pressurized system can cause serious burns or penetrating injury. Relieve pressure by pushing pressure release button (1).



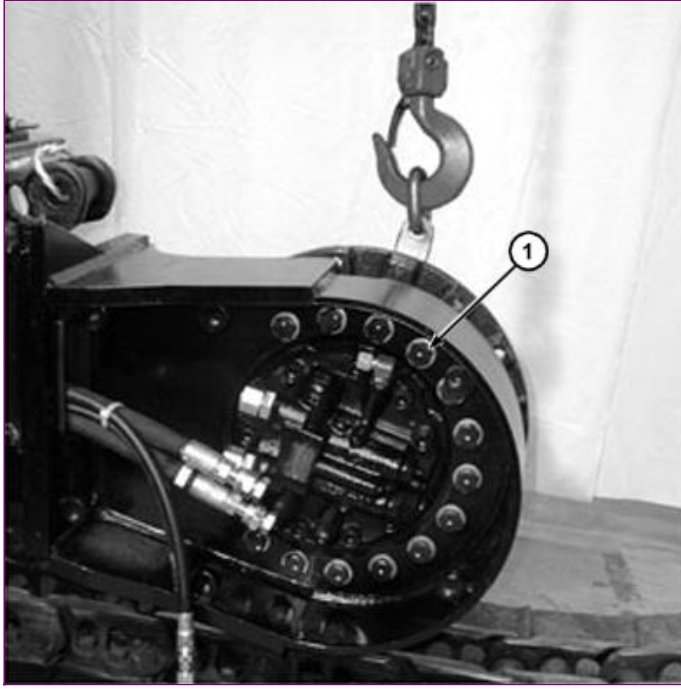
T214924-UN: Hydraulic Oil Tank

LEGEND:

- 1 - Pressure Release Button
- 2 - Hydraulic Oil Tank Cover

Relieve hydraulic tank pressure, push pressure release button (1).

4. Drain oil from travel gearbox.
 5. Drain oil from hydraulic oil tank or pull vacuum in hydraulic oil tank using vacuum pump. See [Apply Vacuum to Hydraulic Oil Tank](#) . (Group 3360.) The approximate capacity of hydraulic oil tank is 195.0 L (51.5 gal).
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6. T142702B-UN: Travel Gearbox (with sprocket removed)

LEGEND:

1 - Cap Screw (24 used)

Disconnect lines. Tag and close all open lines and fittings using caps and plugs.

- 7.



CAUTION:

Heavy component; use appropriate lifting device.

Item	Measurement	Specification
Travel Gearbox Approximate	Weight	483 kg 1065 lb

Attach appropriate lifting device to travel gearbox using JDG909 Lifting Bracket.

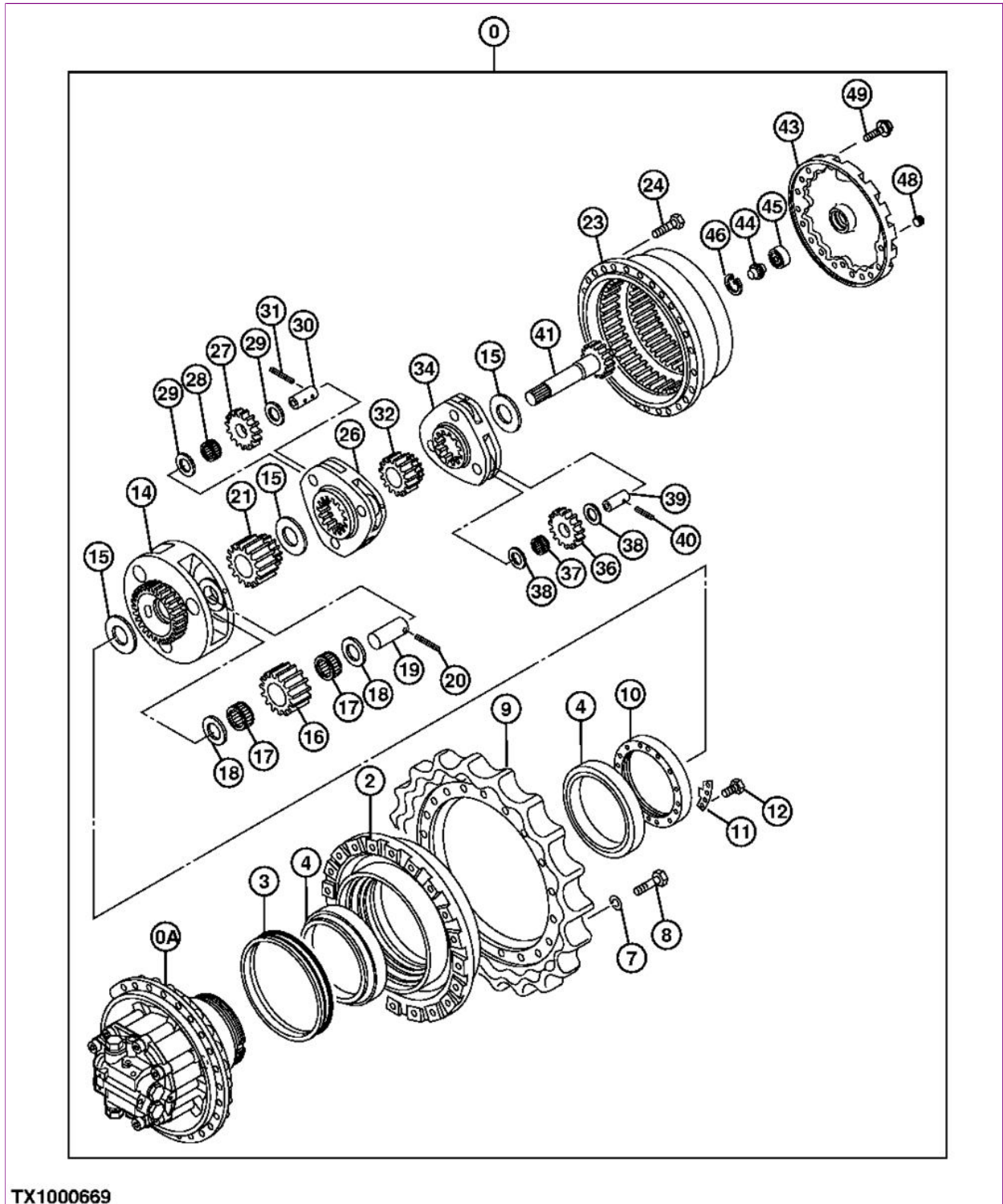
8. Make alignment marks between travel gearbox and undercarriage to aid in installation.
9. Remove cap screws (1). Remove travel gearbox and travel motor.
10. Repair or replace parts as necessary.
11. Align marks made during removal and install gearbox. Tighten cap screws (1).

Item	Measurement	Specification
Gearbox-to-Frame Cap Screw	Torque	630 N·m 460 lb-ft

12. Connect lines. See [Travel System Component Location](#) . (Group 9025-15.)
13. Fill travel gearbox with oil. See [Check Travel Gearbox Oil Level](#) . (Operator's Manual.)
14. Do [Travel Motor and Park Brake Start-Up Procedure](#) . (Group 0260.)

TM2360 - 350DLC Excavator
Travel Gearbox Disassemble and Assemble

Travel Gearbox Disassemble and Assemble



TX1000669

1. TX1000669-UN: 350DLC Travel Gearbox

LEGEND:

- 0 - Travel Gearbox Assembly
- 0A - Travel Motor Assembly
- 2 - Drum
- 3 - Seal
- 4 - Tapered Roller Bearing (2 used)
- 7 - Lock Washer
- 8 - Cap Screw (24 used)
- 9 - Chain Sprocket
- 10 - Bearing Nut
- 11 - Lock Plate
- 12 - Cap Screw (2 used)
- 14 - Third Stage Planetary Pinion Carrier
- 15 - Spacer (3 used)

- 16 - Planetary Gear (3 used)
- 17 - Needle Bearing (6 used)
- 18 - Thrust Washer (6 used)
- 19 - Pin (3 used)
- 20 - Spring Pin (3 used)
- 21 - Third Stage Sun Gear
- 23 - Ring Gear
- 24 - Cap Screw (28 used)
- 26 - Second Stage Planetary Pinion Carrier
- 27 - Planetary Gear (3 used)
- 28 - Needle Bearing (3 used)
- 29 - Shim (6 used)
- 30 - Pin (3 used)
- 31 - Spring Pin (3 used)
- 32 - Second Stage Sun Gear
- 34 - First Stage Planetary Pinion Carrier
- 36 - Planetary Gear (3 used)
- 37 - Needle Bearing (3 used)
- 38 - Shim (6 used)
- 39 - Pin (3 used)
- 40 - Spring Pin (3 used)
- 41 - Shaft
- 43 - Cover
- 44 - Pin
- 45 - Ball Bearing
- 46 - Snap Ring
- 48 - Fitting Plug (3 used)
- 49 - Cap Screw (16 used)

Make alignment marks between cover (43), ring gear (23) and drum (2).

2. Remove cap screws (8) and cover (43).
3. Remove shaft (41) and first stage planetary pinion carrier (34) from ring gear (23).
4. Remove second stage sun gear (32), second stage planetary pinion carrier (26), and third stage sun gear (21) from ring gear (23).
5.



CAUTION:

Heavy component; use appropriate lifting device.

Item	Measurement	Specification
Ring Gear Approximate	Weight	53 kg 117 lb

Install JT01748 Lifting Brackets to ring gear (23). Remove cap screws (24) and ring gear (23) from drum (2).

6.



CAUTION:

Heavy component; use appropriate lifting device.

Item	Measurement	Specification
Third Stage Planetary Pinion Carrier Assembly Approximate	Weight	61 kg 135 lb

Remove third stage planetary pinion carrier (14).

7. Remove cap screws (12) and lock plate (11).
8. Remove bearing nut (10) using DFT1305 Travel Gearbox Nut Wrench. [See DFT1305 Travel Gearbox Nut Wrench](#). (Group 9900.)
9.



CAUTION:

Heavy component; use appropriate lifting device.

Item	Measurement	Specification
Drum Approximate	Weight	77 kg 170 lb

Remove drum (2) using JT01748 Lifting Brackets from hydraulic motor (0A).

10. **IMPORTANT:**
Metal face seals can be reused if they are not worn or damaged. A used seal must be kept together as a set because of wear patterns on seal ring face.

Remove metal face seal (3). See [Metal Face Seals Repair](#). (Group 0130.)

11. **NOTE:**
Disassembly of first, second, and third stage planetary pinion carriers are similar. Repeat procedure as required.

Remove spring pins, pins, thrust plates, needle bearings, and planetary gears.

Clean and inspect parts, replace as necessary. Oil parts with gear oil prior to assembly.

12. **NOTE:**

Further disassembly is not necessary unless bearing replacement is required. Bearing will be destroyed during removal, replace with new bearing.

Inspect bearings (4) and races inside housing.

13. Replace parts as necessary.

14.



CAUTION:

DO NOT heat oil over 182°C (260°F). Oil fumes or oil can ignite above 193°C (380°F). Use a thermometer. DO NOT allow a flame or heating element to come in direct contact with the oil. Heat the oil in a well-ventilated area. Plan a safe handling procedure to avoid burns.

Heat inner bearing cone. Install cone tight against shoulder.

Item	Measurement	Specification
Bearing Cone	Temperature	50—70°C 122—158°F

15. **IMPORTANT:**

Metal face seal O-rings and seat surfaces for O-rings must be clean, dry, and oil free so O-ring does not slip.

Thoroughly clean metal face seal O-rings and seat surfaces in travel motor housing, drum, and seal ring using volatile, non-petroleum base solvent and lint-free tissues.

16. **NOTE:**

A volatile, non-petroleum base solvent or talcum powder can be used as a lubricant. Solvent must not damage the O-ring or leave an oil residue.

Install O-ring and metal face seal on travel motor housing and drum. Apply equal pressure with fingers at four equally spaced points on seal face. Seal must "pop" down into place so O-ring is tight against seal bore and seal ring is installed squarely.

17. Clean seal ring face. Apply a thin film of clean oil.

18. **IMPORTANT:**

Install bearing nut with stepped surface towards bearing.

Apply a thin coat of multi-purpose grease to bearing nut (10). Tighten bearing nut using DFT1305 Travel Gearbox Nut Wrench. [See DFT1305 Travel Gearbox Nut Wrench](#) . (Group 9900.)

Item	Measurement	Specification
Bearing Nut	Torque	800 N·m 590 lb-ft

19. To seat bearings, tap on drum using a plastic hammer. Then turn drum three times to the right and left to seat the bearings.

Repeat steps to ensure bearings are seated properly.

20. **NOTE:**

If lock plate (11) will not engage with spline of housing tighten bearing nut (10) until lock plate engages.

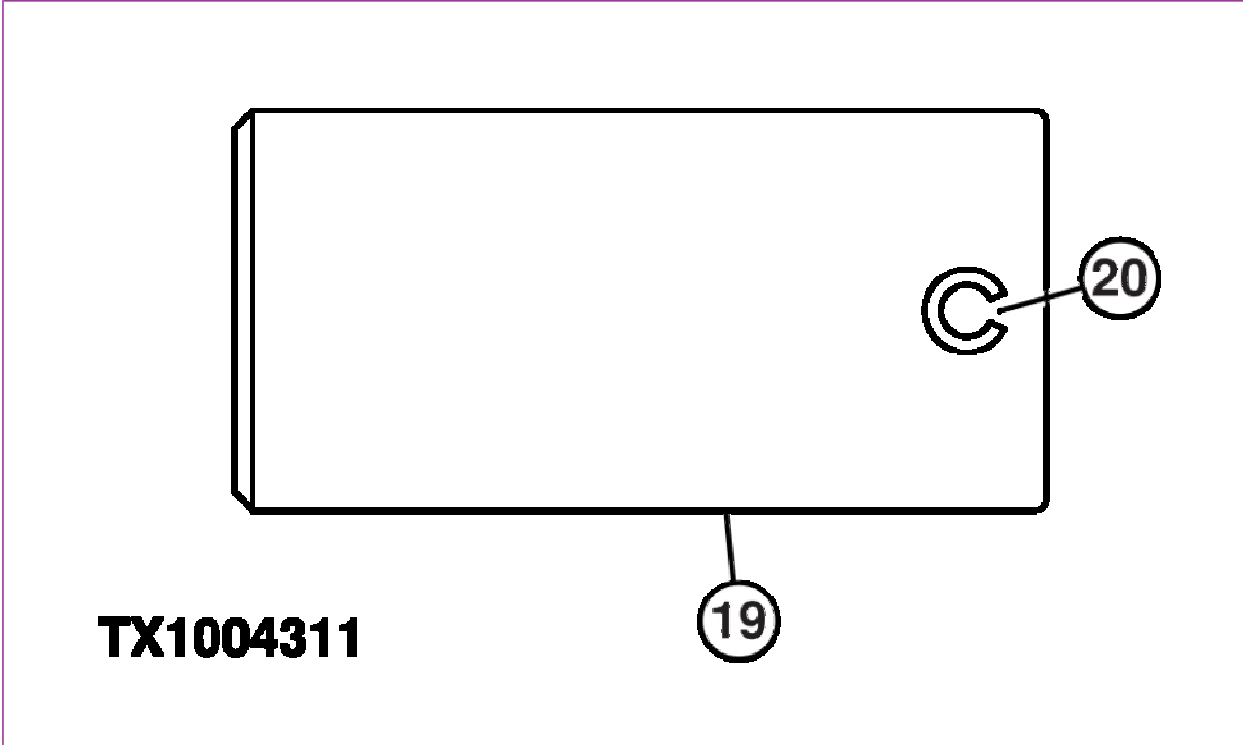
Install lock plate (11). Apply PM37421 Thread Lock and Sealer (high strength) to threads of cap screws (12). Tighten cap screws.

Item	Measurement	Specification
Lock Plate-to-Bearing Nut Cap Screw	Torque	88 N·m 65 lb-ft

21. Install planetary gears (16) in third stage planetary pinion carrier (14).

22. **IMPORTANT:**

There is an identification groove on one side of third stage planetary gear (16). Be sure that this marked side faces the hole for the spring pin.



TX1004311-UN: Spring Pin Installation

LEGEND:

- 19 - Pin
- 20 - Slit

Install spring pins with slit (20) toward end of pin (19).

- 23. Install third stage planetary pinion carrier (14) and third stage sun gear (21).
- 24. Apply PM38627 Rigid Form-in-Place gasket to flange surface on ring gear (23) and install ring gear.

Apply PM37421 Thread Lock and Sealer (high strength) to cap screws (24). Tighten cap screws.

Item	Measurement	Specification
Ring Gear-to-Drum Cap Screw	Torque	265 N·m 195 lb-ft

- 25. Install second and first stage planetary pinion carriers, sun gears and shaft.

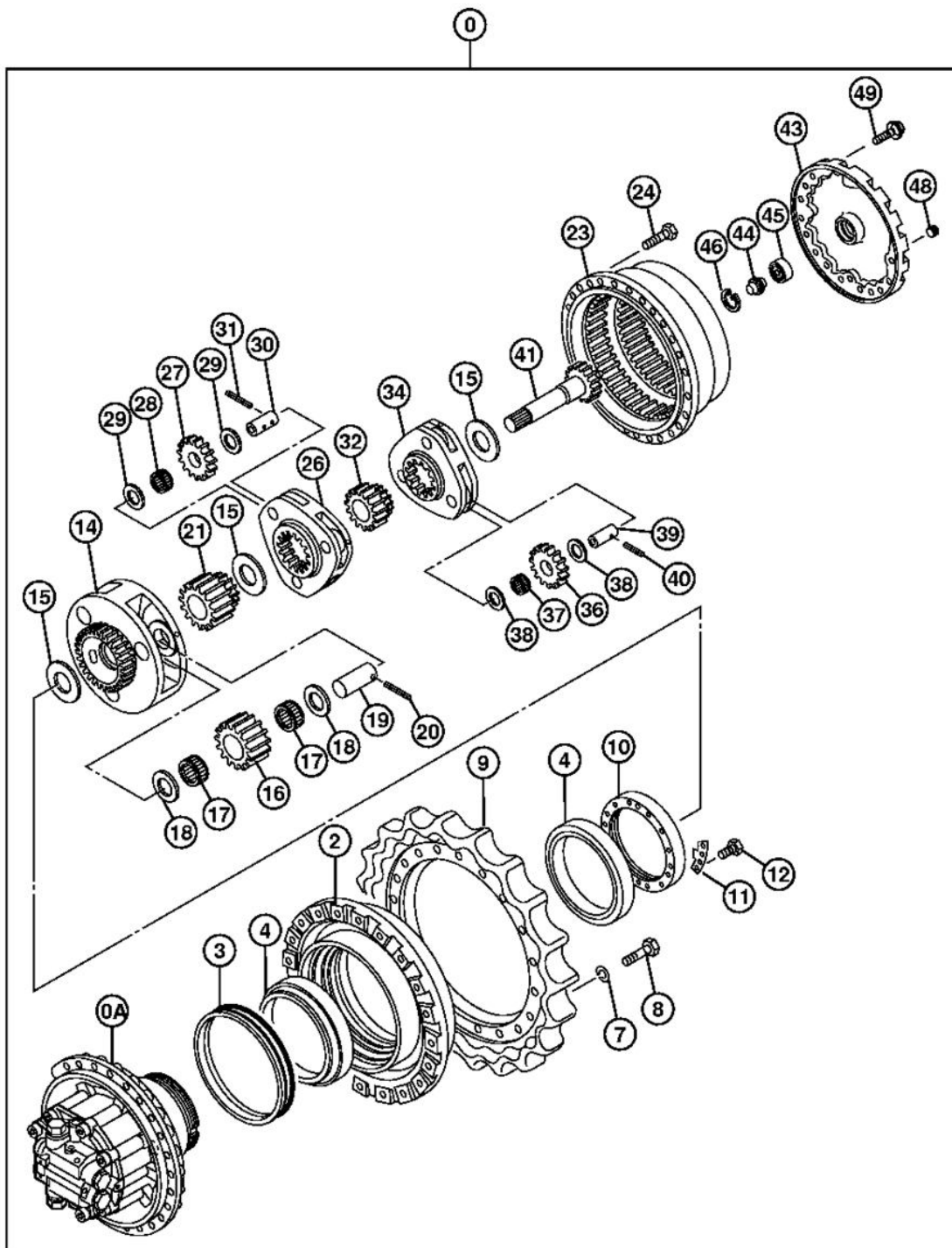
- 26. Apply PM38656 Rigid Form-in-Place gasket to flange surface on cover.

Apply PM37418 Thread Lock and Sealer (medium strength) to thread of cap screws (49). Tighten cap screws.

Item	Measurement	Specification
Cover-to-Ring Gear Cap Screw	Torque	110 N·m 83 lb-ft

TM2360 - 350DLC Excavator
Travel Motor and Park Brake Remove and Install

Travel Motor and Park Brake Remove and Install



TX1000669

TX1000669-UN: 350DLC Travel Gearbox

LEGEND:

- 0 - Travel Gearbox Assembly
- 0A - Travel Motor Assembly
- 2 - Drum
- 3 - Seal
- 4 - Tapered Roller Bearing (2 used)
- 7 - Lock Washer
- 8 - Cap Screw (24 used)
- 9 - Chain Sprocket
- 10 - Bearing Nut
- 11 - Lock Plate
- 12 - Cap Screw (2 used)
- 14 - Third Stage Planetary Pinion Carrier
- 15 - Spacer (3 used)

- 16 - Planetary Gear (3 used)
- 17 - Needle Bearing (6 used)
- 18 - Thrust Washer (6 used)
- 19 - Pin (3 used)
- 20 - Spring Pin (3 used)
- 21 - Third Stage Sun Gear
- 23 - Ring Gear
- 24 - Cap Screw (28 used)
- 26 - Second Stage Planetary Pinion Carrier
- 27 - Planetary Gear (3 used)
- 28 - Needle Bearing (3 used)
- 29 - Shim (6 used)
- 30 - Pin (3 used)
- 31 - Spring Pin (3 used)
- 32 - Second Stage Sun Gear
- 34 - First Stage Planetary Pinion Carrier
- 36 - Planetary Gear (3 used)
- 37 - Needle Bearing (3 used)
- 38 - Shim (6 used)
- 39 - Pin (3 used)
- 40 - Spring Pin (3 used)
- 41 - Shaft
- 43 - Cover
- 44 - Pin
- 45 - Ball Bearing
- 46 - Snap Ring
- 48 - Fitting Plug (3 used)
- 49 - Cap Screw (16 used)

1. **IMPORTANT:**

Travel motor housing will be damaged if attempted to remove it while travel gearbox is on machine. Travel motor housing is a integral part of travel gearbox and retained in place by bearing nut (10). This procedure is written with the travel motor removed from travel gearbox. This is the recommend repair procedure for major repairs of motor or park brake problems.

Travel motor and park brake internal components can be replaced with care while motor is on machine.

Remove travel gearbox assembly (0). [See Travel Gearbox Remove and Install](#) . (Group 0250.)

2. _____



CAUTION:

Heavy component; use appropriate lifting device.

Item	Measurement	Specification
Travel Gearbox Approximate	Weight	483 kg 1065 lb

IMPORTANT:

Weight of gearbox assembly can damage motor valve plate assembly, block travel gearbox assembly so that motor valve plate does not carry full weight of gearbox assembly.

Position gearbox assembly securely in a vertical position with the motor valve plate end down.

- 3. Make alignment marks between cover (43), ring gear (23) and drum (2).
- 4. Remove cap screws (49) and cover (43).
- 5. Remove shaft (41) and first stage planetary pinion carrier (34) from ring gear (23).
- 6. Remove second stage sun gear (32), second stage planetary pinion carrier (26), and third stage sun gear (21) from ring gear (23).

7. _____



CAUTION:

Heavy component; use appropriate lifting device.

Item	Measurement	Specification
Ring Gear Approximate	Weight	53 kg 117 lb

Install JT01748 Lifting Brackets to ring gear (23). Remove cap screws (24) and ring gear (23) from drum (2).

8. _____



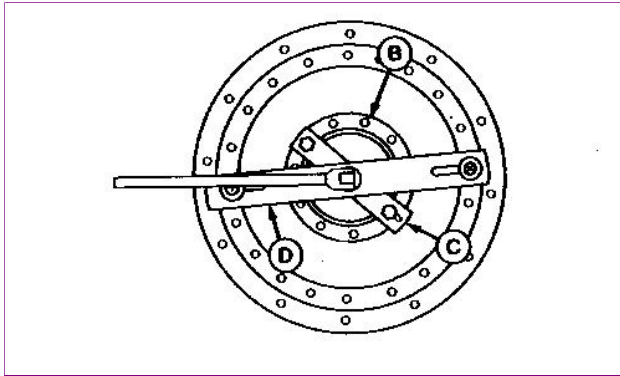
CAUTION:

Heavy component; use appropriate lifting device.

Item	Measurement	Specification
Third Stage Planetary Pinion Carrier Assembly Approximate	Weight	61 kg 135 lb

Remove third stage planetary pinion carrier (14).

- 9. Remove cap screws (12) and lock plate (11).



10. T7966DQ-UN: Similar Motor Bearing Housing Shown

LEGEND:

- B - Bearing Nut
- C - DFT1305 Travel Gearbox Nut Wrench
- D - DFT1109 Holding Bar

Remove bearing nut (B) using DFT1109 Holding Bar and DFT1305 Travel Gearbox Nut Wrench. [See DFT1109 Holding Bar](#) and [see DFT1305 Travel Gearbox Nut Wrench](#) . (Group 9900.)

11.

CAUTION:

Heavy component; use appropriate lifting device.

Item	Measurement	Specification
Drum Approximate	Weight	77 kg 170 lb

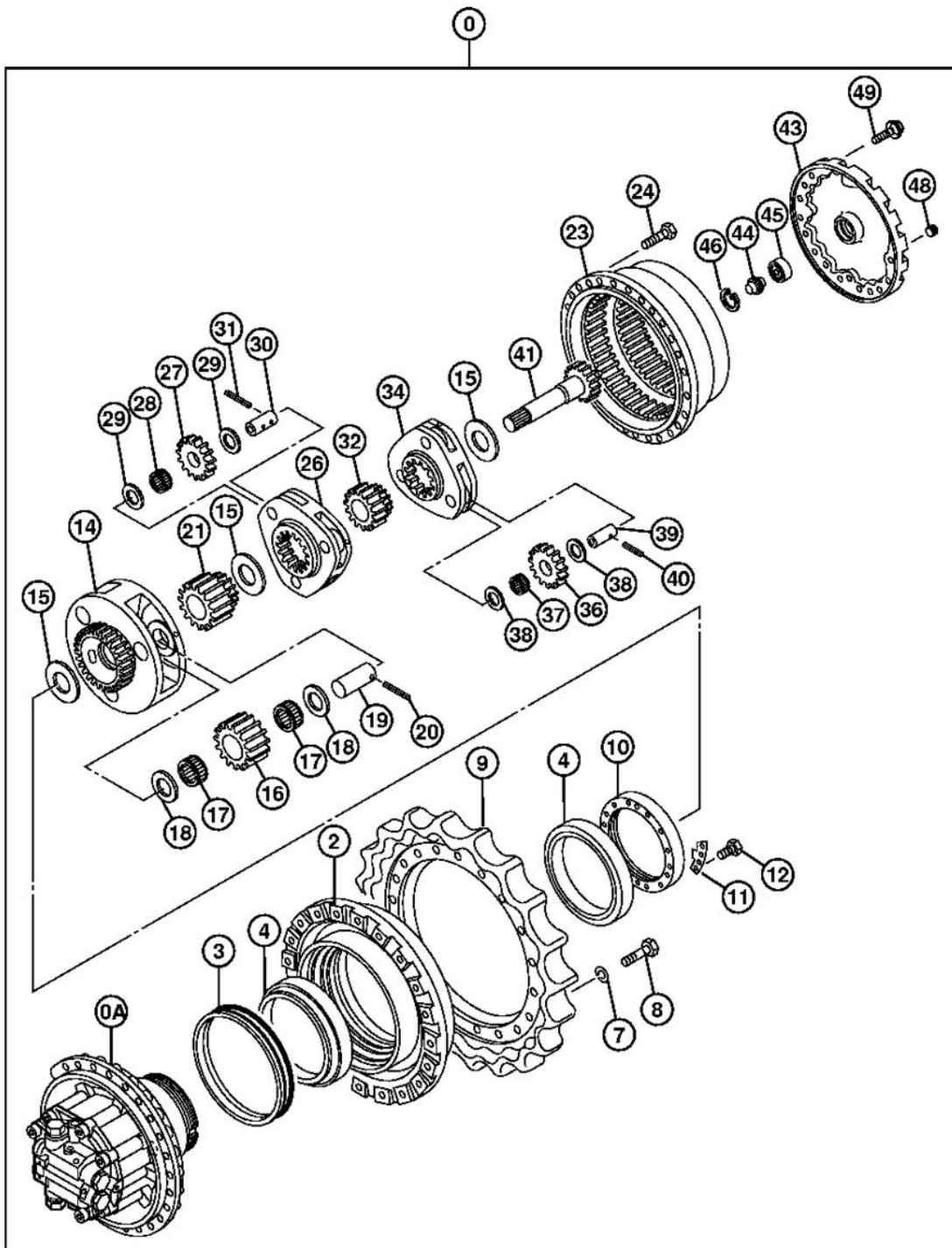
Remove drum (2) using JT01748 Lifting Brackets from hydraulic motor (0A).

Item	Measurement	Specification
Hydraulic Motor Approximate	Approximate Weight	137 kg 300 lb

12. **IMPORTANT:**

Metal face seals can be reused if they are not worn or damaged. A used seal must be kept together as a set because of wear patterns on seal ring face.

Remove metal face seal (3). See [Metal Face Seals Repair](#) . (Group 0130.)



13. **TX1000669**
TX1000669-UN: 350DLC Travel Gearbox

LEGEND:

- 0 - Travel Gearbox Assembly
- 0A - Travel Motor Assembly
- 2 - Drum
- 3 - Seal
- 4 - Tapered Roller Bearing (2 used)
- 7 - Lock Washer
- 8 - Cap Screw (24 used)
- 9 - Chain Sprocket
- 10 - Bearing Nut
- 11 - Lock Plate
- 12 - Cap Screw (2 used)
- 14 - Third Stage Planetary Pinion Carrier
- 15 - Spacer (3 used)
- 16 - Planetary Gear (3 used)
- 17 - Needle Bearing (6 used)
- 18 - Thrust Washer (6 used)
- 19 - Pin (3 used)
- 20 - Spring Pin (3 used)
- 21 - Third Stage Sun Gear
- 23 - Ring Gear
- 24 - Cap Screw (28 used)
- 26 - Second Stage Planetary Pinion Carrier
- 27 - Pin (3 used)
- 28 - Thrust Washer (6 used)
- 29 - Needle Bearing (6 used)
- 30 - Spring Pin (3 used)
- 31 - Pin (3 used)
- 32 - Thrust Washer (6 used)
- 34 - Cap Screw (24 used)
- 36 - Thrust Washer (6 used)
- 37 - Needle Bearing (6 used)
- 38 - Thrust Washer (6 used)
- 39 - Pin (3 used)
- 40 - Spring Pin (3 used)
- 41 - Cap Screw (24 used)
- 43 - Cap Screw (24 used)
- 44 - Thrust Washer (6 used)
- 45 - Needle Bearing (6 used)
- 46 - Thrust Washer (6 used)
- 48 - Cap Screw (24 used)
- 49 - Cap Screw (24 used)

- 27 - Planetary Gear (3 used)
- 28 - Needle Bearing (3 used)
- 29 - Shim (6 used)
- 30 - Pin (3 used)
- 31 - Spring Pin (3 used)
- 32 - Second Stage Sun Gear
- 34 - First Stage Planetary Pinion Carrier
- 36 - Planetary Gear (3 used)
- 37 - Needle Bearing (3 used)
- 38 - Shim (6 used)
- 39 - Pin (3 used)
- 40 - Spring Pin (3 used)
- 41 - Shaft
- 43 - Cover
- 44 - Pin
- 45 - Ball Bearing
- 46 - Snap Ring
- 48 - Fitting Plug (3 used)
- 49 - Cap Screw (16 used)

Replace parts as necessary. [See Travel Motor and Park Brake Disassemble and Assemble](#) . (Group 0260.)

14. Clean and inspect parts, replace as necessary. Oil parts with gear oil prior to assembly.

15. **NOTE:**

Further disassembly is not necessary unless bearing replacement is required. Bearing will be destroyed during removal, replace with new bearing.

Inspect bearings (4) and races inside housing.

16. Replace parts as necessary.

17.



CAUTION:

DO NOT heat oil over 182°C (260°F). Oil fumes or oil can ignite above 193°C (380°F). Use a thermometer. DO NOT allow a flame or heating element to come in direct contact with the oil. Heat the oil in a well-ventilated area. Plan a safe handling procedure to avoid burns.

Heat inner bearing cone. Install cone tight against shoulder.

Item	Measurement	Specification
Bearing Cone	Temperature	50—70°C 122—158°F

18. **IMPORTANT:**

Metal face seal O-rings and seat surfaces for O-rings must be clean, dry, and oil free so O-ring does not slip.

Thoroughly clean metal face seal O-rings and seat surfaces in travel motor housing, drum, and seal ring using volatile, non-petroleum base solvent and lint-free tissues.

19. **NOTE:**

A volatile, non-petroleum base solvent or talcum powder can be used as a lubricant. Solvent must not damage the O-ring or leave an oil residue.

Install O-ring and metal face seal on travel motor housing and drum. Apply equal pressure with fingers at four equally spaced points on seal face. Seal must "pop" down into place so O-ring is tight against seal bore and seal ring is installed squarely.

20. Clean seal ring face. Apply a thin film of clean oil.

21. **IMPORTANT:**

Install bearing nut with stepped surface towards bearing.

Apply a thin coat of multi-purpose grease to bearing nut (10). Tighten bearing nut using DFT1109 Holding Bar and DFT1305 Travel Gearbox Nut Wrench. [See DFT1109 Holding Bar](#) and [see DFT1305 Travel Gearbox Nut Wrench](#) . (Group 9900.)

Item	Measurement	Specification
Bearing Nut	Torque	800 N·m 590 lb-ft

22. To seat bearings, tap on drum using a plastic hammer. Then turn drum three times to the right and left to seat the bearings.

Repeat steps to ensure bearings are seated properly.

23. **NOTE:**

If lock plate (11) will not engage with spline of housing tighten bearing nut (10) until lock plate engages.

Install lock plate (11). Apply PM37421 Thread Lock and Sealer (high strength) to threads of cap screws (12). Tighten cap screws.

Item	Measurement	Specification
Lock Plate-to-Bearing Nut Cap Screw	Torque	90 N·m 65 lb-ft

24. Install planetary gears (16) in third stage planetary pinion carrier (14).

25. **IMPORTANT:**

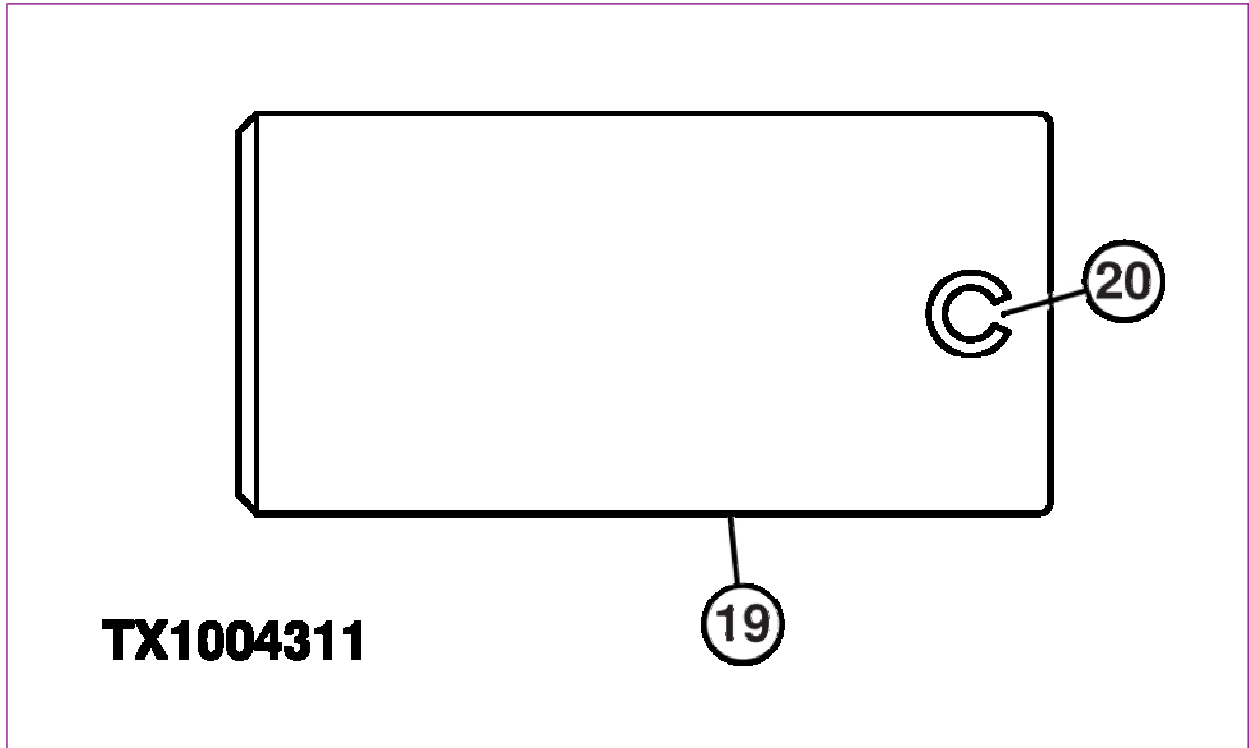
There is an identification groove on one side of third stage planetary gear (16). Be sure that this marked side faces the hole for the spring pin.

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TX1004311-UN: Spring Pin Installation

LEGEND:

- 19 - Pin
- 20 - Slit

Install spring pins with slit (20) toward end of pin (19).

26. Install third stage planetary pinion carrier (14) and third stage sun gear (21).
27. Apply PM38627 Rigid Form-in-Place gasket to flange surface on ring gear (23) and install ring gear.

Apply PM37421 Thread Lock and Sealer (high strength) to cap screws (24). Tighten cap screws.

Item	Measurement	Specification
Ring Gear-to-Drum Cap Screw	Torque	265 N·m 195 lb-ft

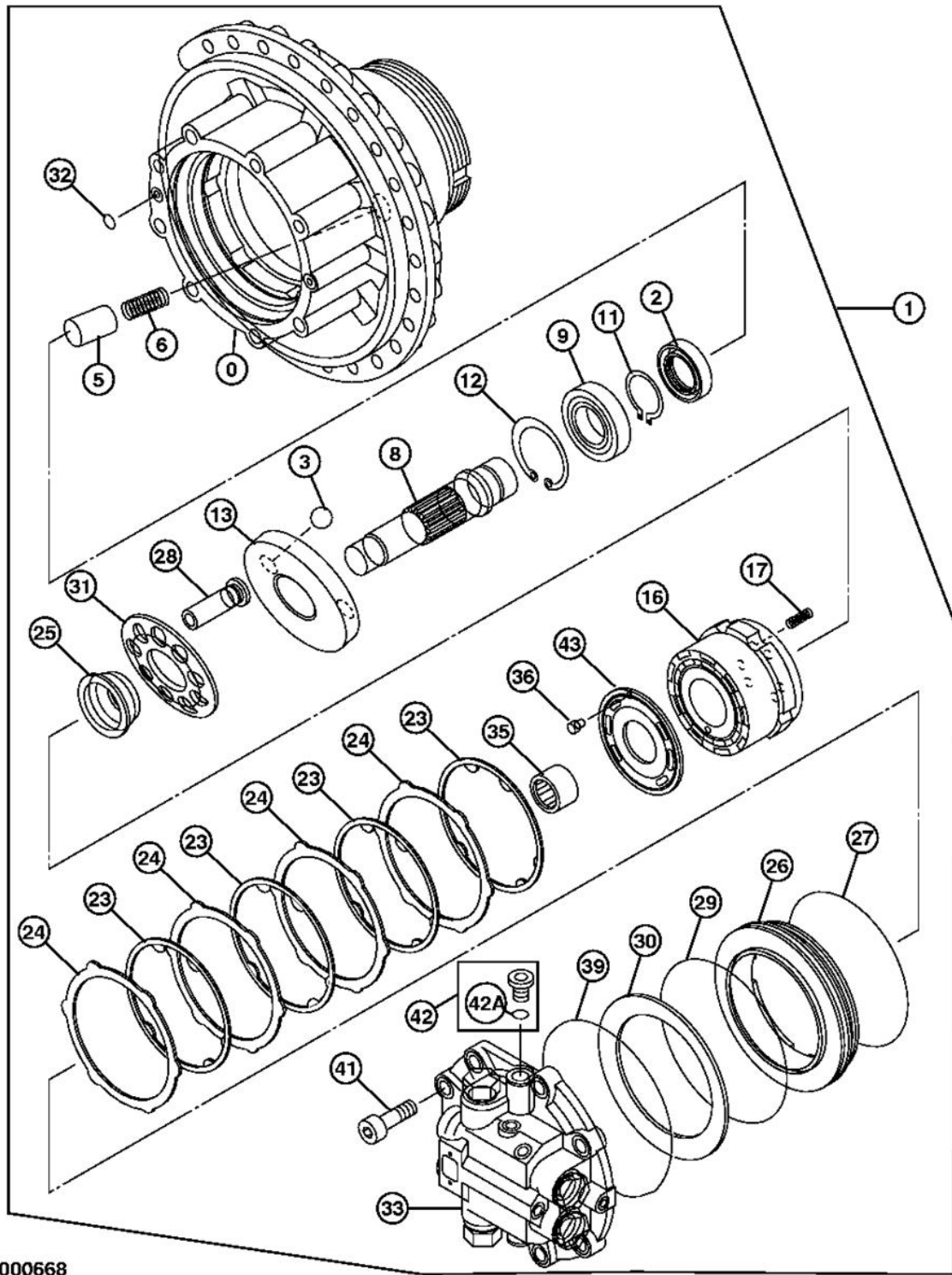
28. Install second and first stage planetary pinion carriers, sun gears and shaft.
 29. Apply PM38656 Rigid Form-in-Place gasket to flange surface on cover.
- Apply PM37418 Thread Lock and Sealer (medium strength) to thread of cap screws (49). Tighten cap screws.

Item	Measurement	Specification
Cover-to-Ring Gear Cap Screw	Torque	110 N·m 83 lb-ft

30. Install travel gearbox assembly. [See Travel Gearbox Remove and Install](#) . (Group 0250.)

TM2360 - 350DLC Excavator
Travel Motor and Park Brake Disassemble and Assemble

Travel Motor and Park Brake Disassemble and Assemble



TX1000668

TX1000668-UN: Travel Motor

LEGEND:

- 0 - Housing
- 1 - Travel Motor Assembly
- 2 - Seal
- 3 - Ball (2 used)
- 5 - Piston
- 6 - Compression Spring
- 8 - Universal Driveshaft
- 9 - Cylindrical Roller Bearing
- 11 - Snap Ring
- 12 - Snap Ring
- 13 - Plate
- 16 - Rotor
- 17 - Compression Spring (6 used)

- 23 - Clutch Plate (4 used)
- 24 - Plate (4 used)
- 25 - Bushing
- 26 - Piston
- 27 - O-Ring
- 28 - Piston (9 used)
- 29 - O-Ring
- 30 - Disk Spring
- 31 - Retainer
- 32 - O-Ring (2 used)
- 33 - Valve
- 35 - Needle Bearing
- 36 - Pin
- 39 - O-Ring
- 41 - Cap Screw (8 used)
- 42 - Fitting Plug
- 42A - O-Ring
- 43 - Plate

1. **IMPORTANT:**

Travel motor housing will be damaged if attempted to remove it while travel gearbox is on machine. Travel motor housing is a integral part of travel gearbox and retained in place by bearing nut (10), not shown on artwork. This procedure is written with the travel motor removed from travel gearbox. This is the recommend repair procedure for major repairs of motor or park brake problems.

Travel motor and park brake internal components can be replaced with care while motor is on machine.

Remove travel motor assembly from travel gearbox. [See Travel Motor and Park Brake Remove and Install](#) . (Group 0260.)

2.



CAUTION:

Heavy component; use appropriate lifting device.

Item	Measurement	Specification
Hydraulic Motor Approximate	Weight	137 kg 300 lb

Position motor assembly securely in a vertical position with the motor valve (33) plate end up.

3. **IMPORTANT:**

Use care when removing valve (33), valve plate is easily damaged.

Remove valve (33), and valve plate.

4. **IMPORTANT:**

Remove needle bearing (35) only if replacement is necessary. Do not reuse needle bearing as it may have been damaged during removal.

Remove needle bearing (35) as required.

5. Remove disk spring (30).

6. Inspect disk spring for wear or damage.

Item	Measurement	Specification
Disk Spring	Height	7.6—7.2 mm 0.300—0.283 in.

7. Apply 100—300 kPa (14—43 psi) air pressure to brake release passage to remove brake piston (26).

8. Remove friction plates (23) and plates (24).

9. Inspect parts for wear or damage.

Item	Measurement	Specification
Plate	Height	1.80—1.75 mm 0.071—0.069 in.

10. **IMPORTANT:**

Pistons must be installed into the same bores because of wear patterns. Mark location of pistons with respect to bores to aid in assembly.

Remove parts (36, 43, 16, 17, 25, 31, 28, 13, and 3).

11. Remove parts (8, 12, 9, 11, and 2) through motor side of housing (0).

12. Replace parts as necessary.

13. Apply multi-purpose grease to lip of seal (2) and apply PM38656 Rigid Form-in-Place Gasket to outer surface of seal.

14. Install parts (8, 12, 9, 11, and 2) using D01044AA Bushing, Bearing and Seal Driver Set.