CATERPILLAR®

Service Repair Manual

Models

E120B EXCAVATOR

Product: EXCAVATOR
Model: E120B EXCAVATOR 6JF
Configuration: E120B TRACK-TYPE EXCAVATOR 6JF00001-UP (MACHINE) POWERED BY 3114 ENGINE

Disassembly and Assembly
E120B EXCAVATOR VEHICLE SYSTEM
Media Number -SENR4577-01 **Publication Date -01/06/2005** **Date Updated -07/06/2005**

SENR45770024

Travel Drives

SMCS - 4050-017

Disassemble And Assemble Travel Drives

Tools Needed		A	B	C
1P2420	Transmission Repair Stand	1		
6V2157	Link Bracket		2	
8M7912	Seal Installer			1

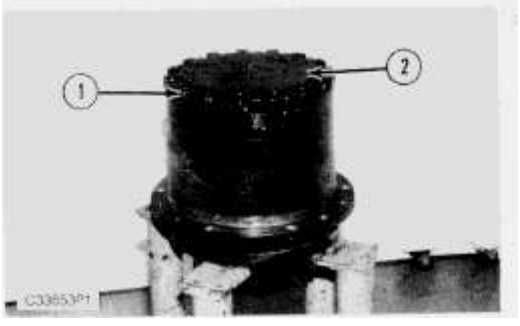
Start By:

a. remove travel drives and travel motors

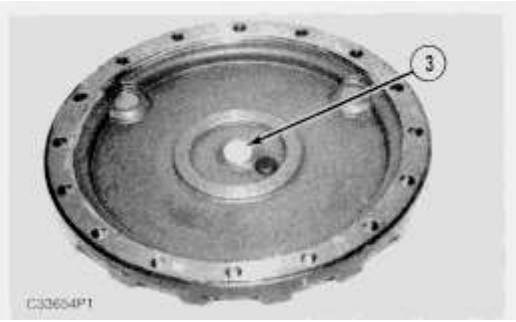
1. Thoroughly clean the outside of the travel drive and travel motor prior to disassembly.

2. Fasten the travel drive and travel motor to tool (A) as shown. The combined weight of the travel drive and travel motor is 215 kg (475 lb).

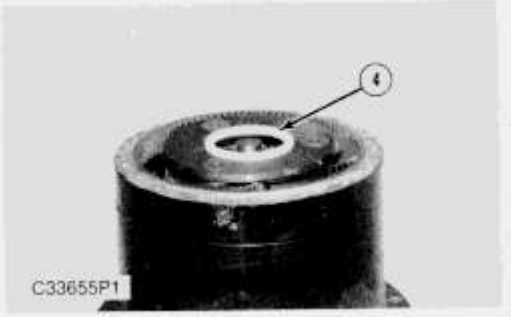
3. Put an alignment mark across the outside of the travel drive and travel motor so the components of the unit can be reinstalled in their original positions.



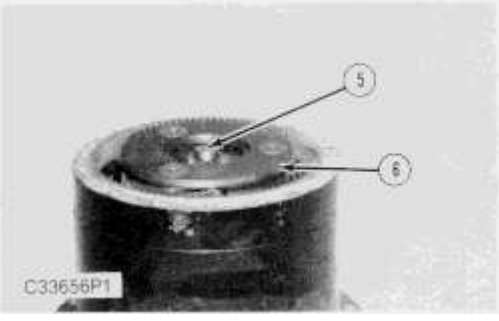
4. Remove sixteen bolts (1) and cover (2) from the ring gear.



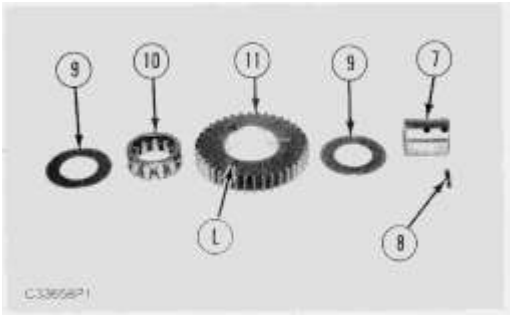
5. Remove plate (3) from cover (2).

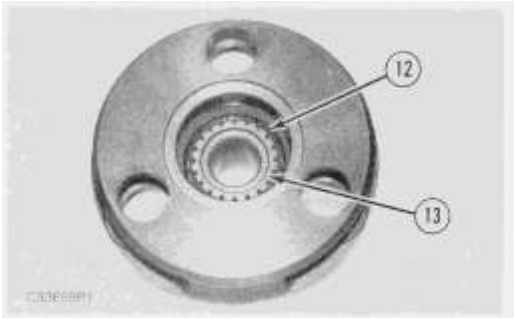


6. Remove plate (4) from the carrier.



7. Remove sun gear (5) from carrier assembly (6). Remove carrier assembly (6) from the ring gear. Weight of the carrier assembly is 15 kg (33 lb).





8. Disassemble carrier assembly (6) as follows:

a. Drive spring pin (8) into planetary shaft (7) with a hammer and a punch.

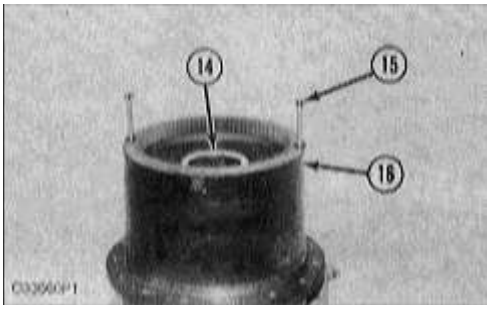
b. Remove planetary shaft (7), two thrust washers (9) and planetary gear (11) from the carrier.

c. Remove bearing (10) from the planetary gear.

d. Drive spring pin (8) out of planetary shaft (7) with a hammer and a punch.

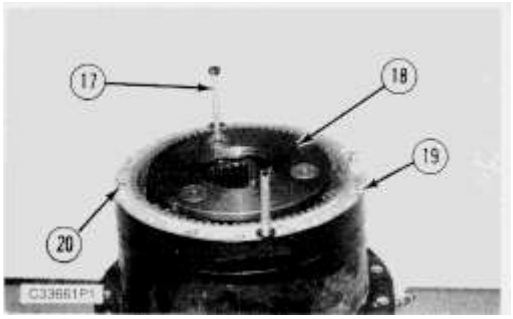
e. Remove the other two planetary gears from the carrier as in Steps 8a through 8d.

f. Remove snap ring (12) that holds sun gear (13) in the carrier. Use a screwdriver to remove the snap ring. Remove the sun gear from the carrier.



9. Remove plate (14) from the carrier assembly.

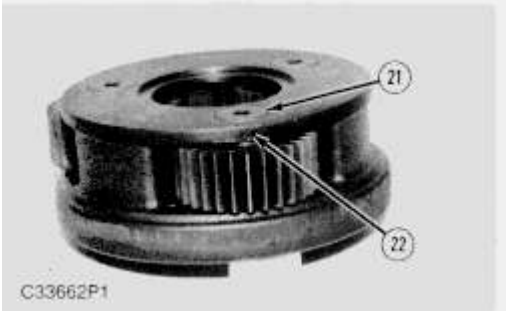
10. Install two forcing screws (15) of the appropriate size in ring gear (16). Tighten the forcing screws evenly to separate ring gear (16) from the unit.

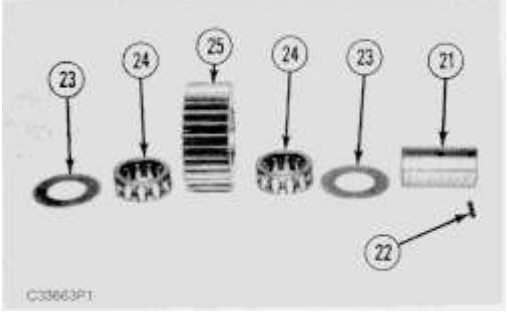


11. Install two forcing screws (17) of the appropriate size in ring gear (19). Tighten the forcing screws evenly to separate ring gear (19) from the unit.

12. Remove locating pins (20) from the main case.

13. Remove carrier assembly (18). Weight of the carrier assembly is 20 kg (45 lb).





14. Disassemble carrier assembly (18) as follows:

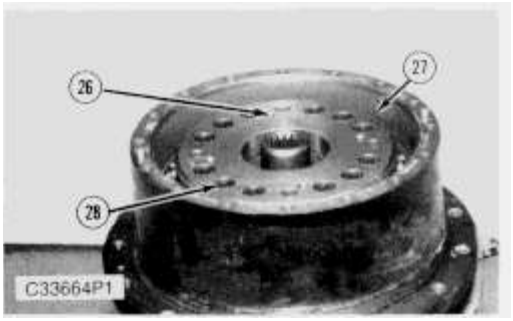
a. Drive spring pin (22) into planetary shaft (21) with a hammer and a punch.

b. Remove planetary shaft (21), two thrust washers (23) and planetary gear (25) from the carrier.

c. Remove two bearings (24) from the planetary gear.

d. Drive spring pin (22) out of planetary shaft (21) with a hammer and a punch.

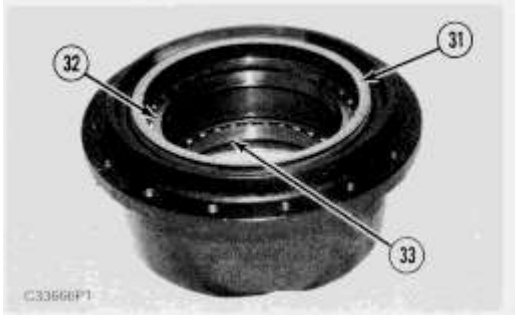
e. Remove the other two planetary gears from the carrier as in Steps 14a through 14d.



15. Remove twelve socket head bolts (28) that hold gear coupling (27) in position. Install a forcing screw of the appropriate size in each of the four holes (26) in the gear coupling. Tighten the forcing screws evenly to loosen the gear coupling from the four locating pins.

16. Remove shims (29) from the main casing.

17. Fasten tool (B) and a hoist to main casing (30) as shown. Remove the main casing from the travel motor.



18. Remove Duo-Cone seal (31) from the main casing.

19. Remove bearings (32) and (33) from the main casing.

20. Remove Duo-Cone seal (34) from the main casing of the travel motor.

NOTE: The following steps are for the assembly of the travel drive.

21. Be sure all parts of the travel drive are thoroughly clean and free of dirt and debris prior to assembly. Reassemble the travel drive on tool (A).

22. Install bearings (32) and (33) in their original locations in the main casing with a press. Install the bearings until each one makes contact with the counterbores in the main casing.

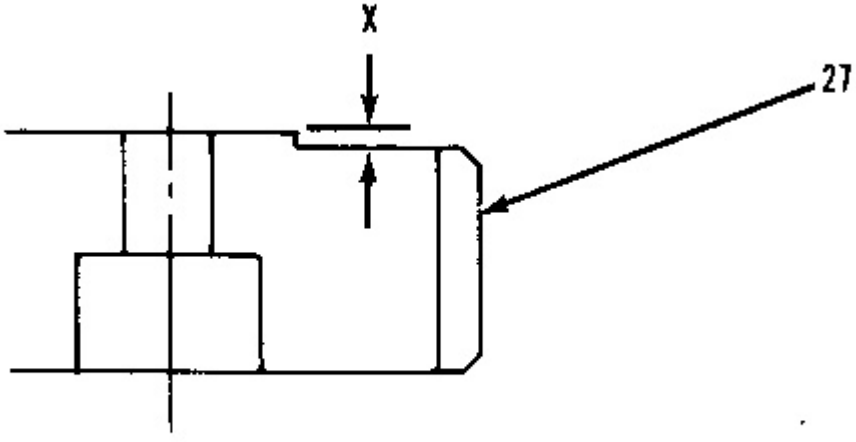
NOTICE

See, "Assembly And Installation Of Conventional Duo-Cone Seals" in this module.

NOTE: The rubber seals and all surfaces that make contact with the seals must be clean and dry. After installation of the seals, put clean SAE 30 oil on the contact surfaces of the metal seals.

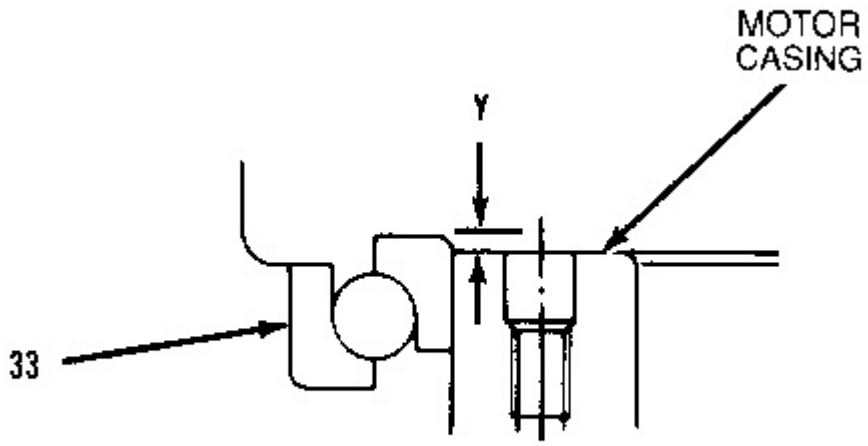
23. Install Duo-Cone seal (31) in the main casing of the travel drive with tool (C).

24. Fasten tool (B) and a hoist to the main casing for the travel drive. Temporarily install the main casing on the main casing of the travel motor. It may be necessary to tap around the circumference of the casing with a soft faced hammer to seat it properly.



C33669P1

25. Using a depth micrometer, measure the step height [dimension (X)] of gear coupling (27) at several locations around the gear coupling. Find the average of the dimensions measured, and record it.



C33670P1

26. Using a depth micrometer, measure the distance between the top face of the travel motor main casing and the inner race of bearing (33) [dimension (Y)] at several locations around the main casing of the travel motor. Find the average of the dimensions measured, and record it.

27. Determine the correct thickness of the shim pack to be used between the main casing for the travel motor and gear coupling (27). The shim pack thickness is equal to dimension (X) - (Y) + 0 to 0.05 mm (0 to 0.002 in).

28. Temporarily install the shim pack determined in Step 27 and gear coupling (27) on the main casing of the travel motor. Only use eight socket head bolts (28) to hold the gear coupling. Tighten the bolts evenly.

29. Turn the casing by hand. It must turn smoothly. If the casing does not turn smoothly, install a shim which is 0.05 mm (0.002 in) thinner. Be sure the shim pack is positioned correctly under the gear coupling.

30. Remove the gear coupling, shim pack and main casing for the travel drive.

NOTICE

See, "Assembly And Installation Of Conventional Duo-Cone Seals" in this module.

NOTE: The rubber seals and all surfaces that make contact with the the seals must be clean and dry. After installation of the seals, put clean SAE 30 oil on the contact surfaces of the metal seals.

31. Install Duo-Cone seal (34) in the main casing of the travel motor with tool (C).

NOTICE

Do not scratch or damage the Duo-Cone seals in the main casing or the travel motor casing during assembly of the components. After installation of the main casing for the travel drive on the travel motor casing, there will be a gap between the components. The gap is caused by the Duo-Cone seals and will be eliminated during installation of gear coupling (27).

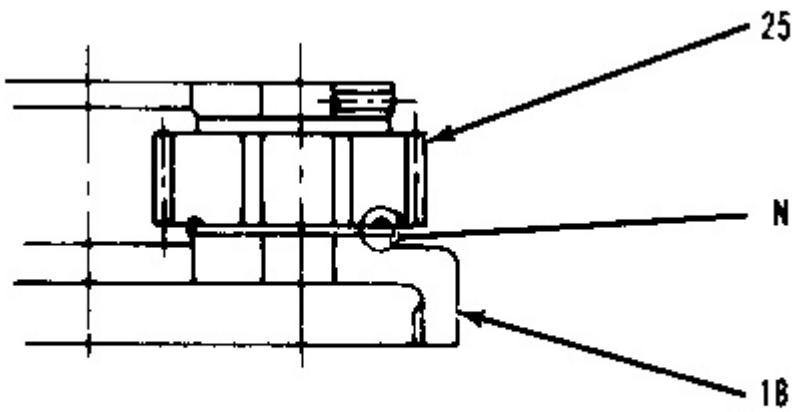
32. Fasten tool (B) and a hoist to the main casing. Put the main casing in position on the main casing of the travel motor. Do not scratch or damage the Duo-Cone seals in either component during installation.

33. Put the shim pack determined in Step 27 and gear coupling (27) in the correct position on the main casing of the travel motor. If two shims are required, put the thinner shim in contact with the gear coupling. Be sure all of the holes in the components are in alignment with each other. Install two of the locating pins to hold the gear coupling and shim pack.

34. Put a thin coat of 9S3263 Thread Lock on the threads of twelve socket head bolts (28). Install the socket head bolts to hold gear coupling (26) in place. Tighten the bolts evenly to a torque of 226 N·m (165 lb ft).

35. Use a hammer and punch to install the remaining locating pins in gear coupling (27).

36. If the two locating pins used to position ring gear (19) on the main casing were removed, reinstall them in the main casing in their original locations. Be sure the larger bevel on each pin is facing up after installation.



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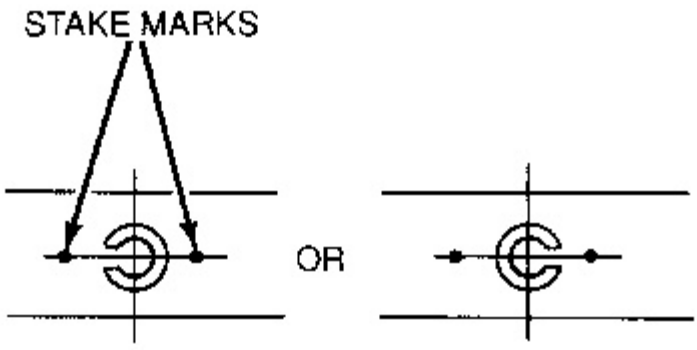

C28668P1

NOTICE

Identification grooves (N) in planetary gears (25) must be facing toward gear coupling (27), after installation in carrier (18) and in the main casing. See Illustration C33671P1

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37. Assemble carrier assembly (18) as follows:

a. Put clean SAE 30 oil on bearings (24). Install two bearings (24) in planetary gear (25).

b. Install a thrust washer (23) on each side of the planetary gear. Install the planetary gear and thrust washers in carrier (18). Be sure identification grooves (N) are facing in the correct direction.

c. Install planetary shaft (21) in carrier (18) and through planetary gear (25). Be sure the spring pin hole in the planetary shaft is in alignment with the spring pin hole in the carrier.

d. Install spring pin (22) in the carrier and into the planetary shaft. Install the spring pin until it is 2 to 3 mm (.078 to .118 in) below the outside surface of the carrier, and with the split in the spring pin facing to either side of the carrier as shown in illustration C28668P1. To prevent the spring pin from falling out, make a stake mark on each side of the spring pin hole in the carrier. Each stake mark should be approximately 1.5 to 2.5 mm (0.06 to 0.10 in) from the spring pin hole.

e. Install the other two planetary gears in carrier (18) as is Steps 37a through 37d.

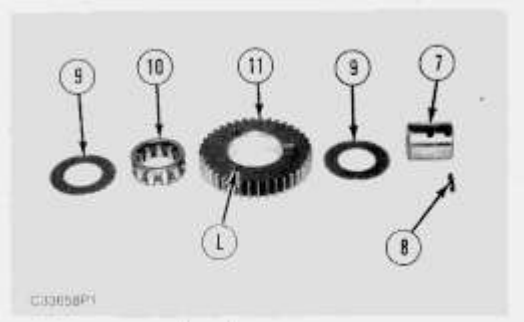
38. Install carrier assembly (18).

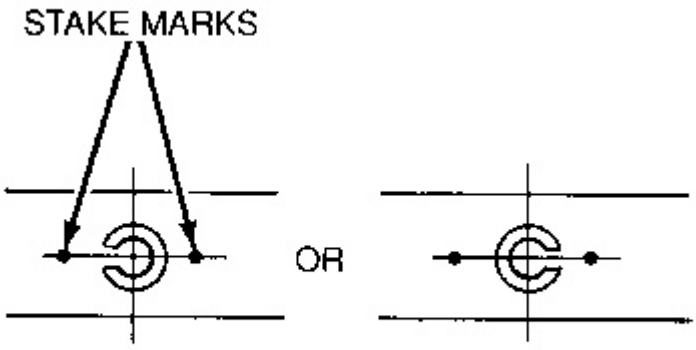
39. Put a bead of 6V6640 Gasket Maker on the mating surface of the main casing. Put ring gear (19) its original location on the main casing. It may be necessary to use a soft faced hammer to seat the ring gear on the main casing.

40. Thoroughly clean the mating surface of ring gear (19) that makes contact with ring gear (16).

41. Put a bead of 6V6640 Gasket Maker on the mating surface of ring gear (19). Put ring gear (16) in its original position on ring gear (19). It may be necessary to use a soft faced hammer to seat the ring gear.

42. Install plastic plate (14) in the groove of carrier assembly (18).





C28668P1

NOTICE

Identification grooves (L) in planetary gears (11) must be facing up toward the top of carrier assembly (6) after installation.

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43. Assemble carrier assembly (6) as follows:

a. Install sun gear (13) in carrier (6). Using a screwdriver, install snap ring (12) that holds the sun gear in the carrier.

b. Put clean SAE 30 oil on bearing (10). Install the bearing in planetary gear (11). Install a thrust washer (9) on each side of the planetary gear.

c. Install the thrust washers and planetary gear in carrier (6). Be sure identification grooves (L) in the planetary gear are facing up toward the top of the carrier assembly after installation. Install planetary shaft (7) in carrier (6) and through planetary gear (11). Be sure the spring pin hole in the planetary shaft is in alignment with the spring pin hole in the carrier.

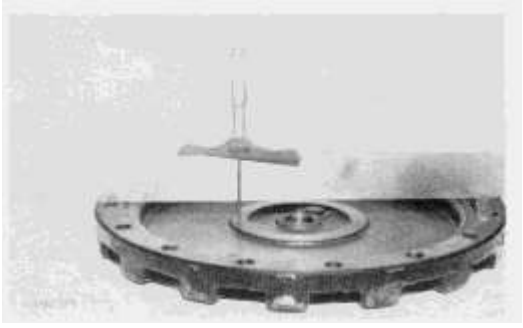
d. Install spring pin (8) until it is 2 to 3 mm (.078 to .118 in) below the outside surface of the carrier, and with the split in the spring pin facing to either side of the carrier as shown in illustration C28668P1. To Prevent the spring pin from falling out, make a stake mark on each side of the spring pin hole in the carrier. Each stake mark should be approximately 1.5 to 2.5 mm (0.06 to 0.10 in) from the spring pin hole.

e. Install the other two planetary gears in carrier (6) as in Steps 43a through 43d.

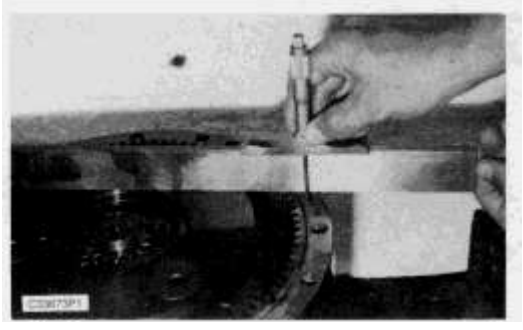
44. Install carrier assembly (6) and sun gear (5) into carrier assembly (18). Be sure the sun gear, planetary gears and the travel motor shaft all mesh properly.

NOTE: In Steps 45a through 45e, the thickness of plate (4) must be determined. Plate (4) is available in several thicknesses.

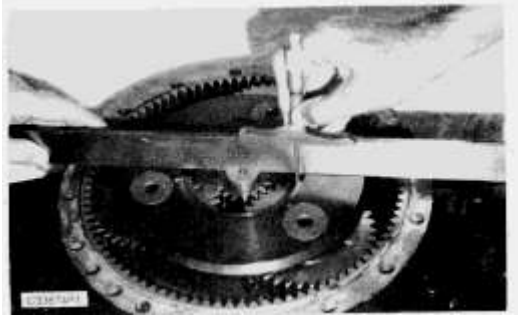
45. Determine the required thickness of plate (4) as follows:



a. Using a straight edge and a depth micrometer, measure the distance between the outer machined surface of cover (2) and the inner machined surface of cover (2) as shown. Record this as dimension (D). The standard value of dimension (D) is 17.5 ± 0.2 mm (0.69 ± .008 in).



b. Using a straight edge and a depth micrometer, measure the distance between the top surface of carrier assembly (6) and the machined surface of ring gear (16). Record this as dimension (E).



c. Using a straight edge and a depth micrometer, measure the distance from the top surface of carrier assembly (6) to the bottom of the counterbore which holds plate (4) in position. Record this as dimension (F).

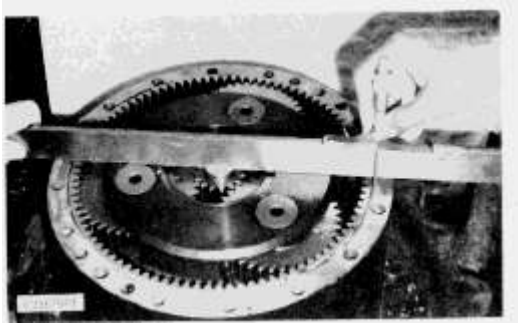
d. The required thickness of plate (4) equals [(D - E) + F] - 1 to 2 mm (0.04 to 0.08 in).

e. After the correct thickness of plate (4) has been determined, install the plate in the counterbore of carrier assembly (6). The plate is the same on both sides and can be installed either way.

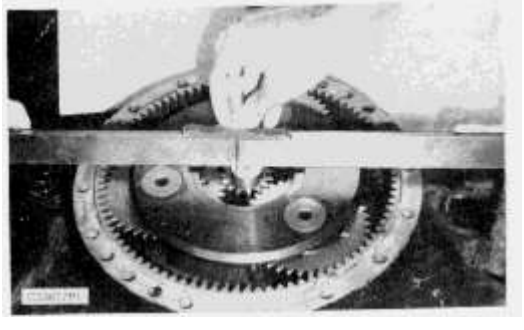
NOTE: In Steps 46a through 46e, the thickness of plate (3) must be determined. Plate (3) is available in several sizes.

46. Determine the required thickness of plate (3) as follows:

a. Using a straight edge and a depth micrometer, measure the distance from the outer machined surface of cover (2) to the bottom of the counterbore which holds plate (3) in position. Record this as dimension (G). The standard value of dimension (G) is 24.0 ± 0.1 mm (0.94 ± .004 in).



b. Using a straight edge and a depth micrometer, measure the distance from the end surface of sun gear (5) to the outer machined surface of ring gear (16). Record this as dimension (H).



c. Using a straight edge and a depth micrometer, measure the distance from the top surface of sun gear (5) to the top surface of carrier assembly (6). Record this as dimension (J).

d. The required thickness of plate (3) equals [(G - H) + J] - 1 to 2 mm (0.04 to 0.08 in).

e. After the correct thickness of plate (3) has been determined, install the plate in the counterbore in cover (2).

NOTE: After cover (2) is installed on the travel drive, the distance between the top surface of sun gear (5) and plate (3) must be 1 to 2 mm (0.02 to 0.08 in).

47. Be sure the machined surface of ring gear (16) is thoroughly clean, free of dirt and debris and is dry. Put a bead of 6V6652 Gasket Eliminator around the machined surface of the ring gear. Install cover (2) in its original position on ring gear (16).

48. Put a thin coat of 9S3263 Thread Lock on the threads of sixteen bolts (1) that hold the cover in position. Install the bolts, and tighten them to a torque of 110 N·m (80 lb ft).

End By:

a. install travel drives and travel motors

Product: EXCAVATOR
Model: E120B EXCAVATOR 6JF
Configuration: E120B TRACK-TYPE EXCAVATOR 6JF00001-UP (MACHINE) POWERED BY 3114 ENGINE

Disassembly and Assembly
E120B EXCAVATOR VEHICLE SYSTEM
Media Number -SENR4577-01 **Publication Date -01/06/2005** **Date Updated -07/06/2005**

SENR45770025

Travel Motors

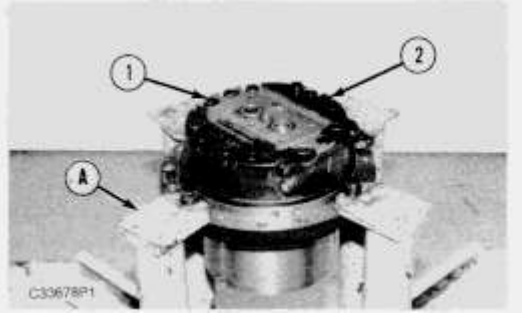
SMCS - 4351-017

Disassemble And Assemble Travel Motors

Tools Needed		A	B
1P2420	Transmission Repair Stand	1	
1P5546	Crossblock		1
3H0465	Plate		2

Start By:

a. remove travel drives and travel motors



1. Thoroughly clean the outside of the travel motor prior to disassembly. Fasten the travel motor to tool (A) as shown. Weight of the travel motor is approximately 125 kg (275 lb).

2. Put an alignment mark across the cover and body of the travel motor for assembly purposes. The cover must be reinstalled in its original position on the body.

NOTICE

During removal of cover (2) from the travel motor, do not scratch or damage the mating surfaces of the components.

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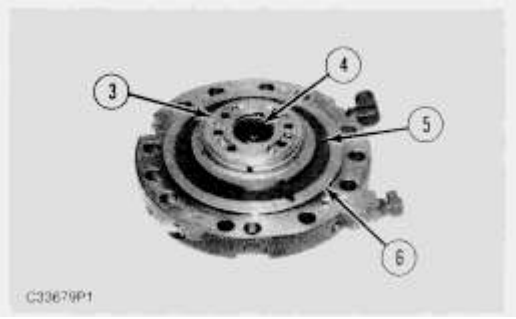
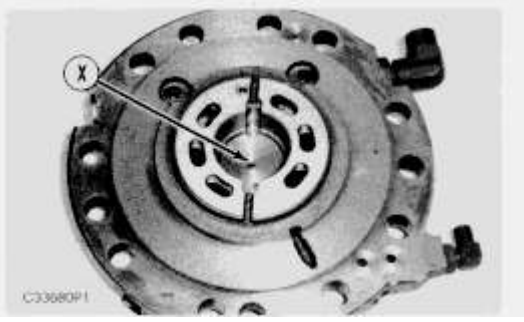
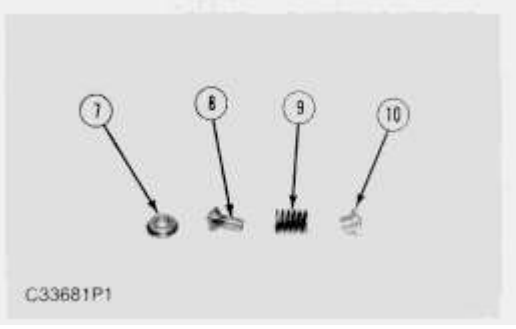
3. Remove thirteen socket head bolts (1) and cover (2) from the body of the travel motor.



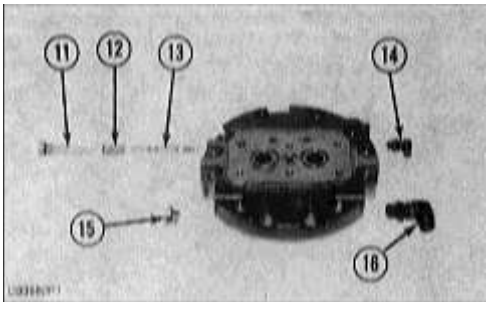
4. Turn cover (2) over, and remove shim (5), valve plate (3), bearing (4) and o-ring seal (6).





NOTE: There is a retainer located under spring (9). This retainer has been press-fitted in cover (2).

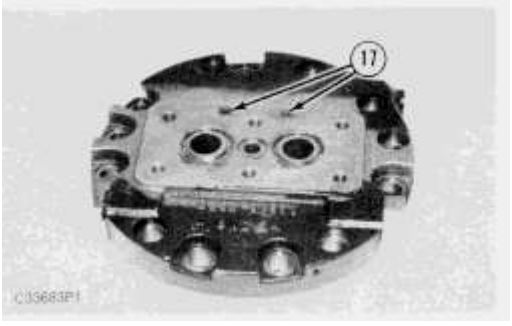
5. Install a small diameter rod in hole (X). Tap the rod with a plastic hammer to remove retainer (10), spring (9), poppet (8) and seat (7) from the cover.

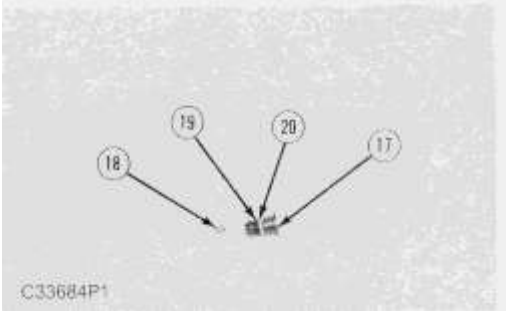


6. Put identification marks on fittings (14) and (16) and the adapter joints for the fittings, as to their location in the cover. Remove the fittings and adapter joints. Remove the o-ring seals from the adapters.

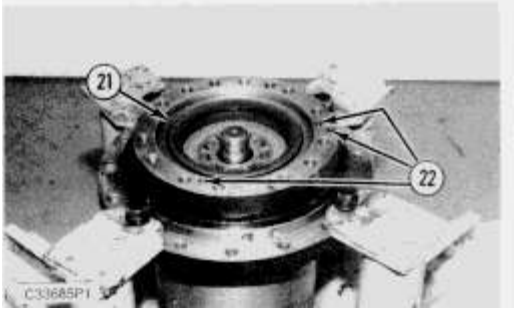
7. Remove plug (15) from the cover. Remove the o-ring seal from the plug.

8. Remove stopper (11), spring (12) and spool (13) from the cover. Remove the o-ring seal from stopper (11).



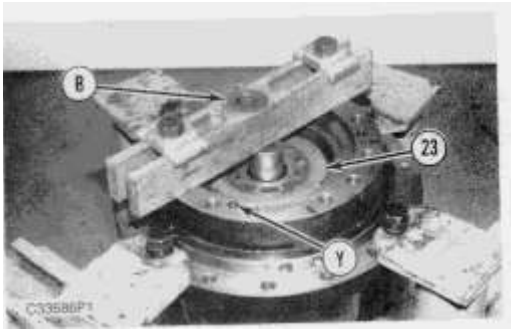


9. Remove two retainers (17) from the cover. Remove two balls (18) which are located under retainers (17). Remove o-ring seal (19) and ring (20) from each retainer.



10. Remove two disc springs (21) from the brake piston.

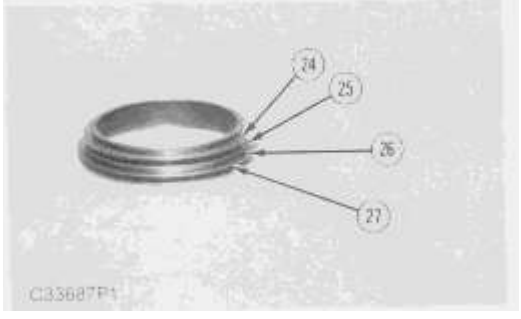
11. Remove three o-ring seals (22) from the body of the travel motor.



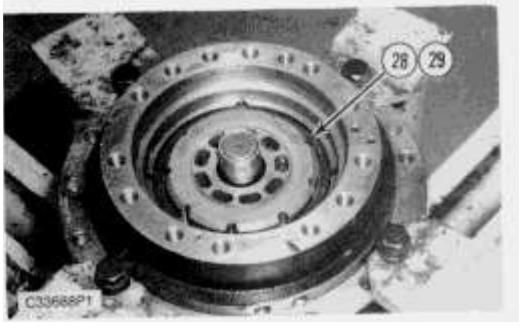
WARNING

Brake piston (23) must be removed from the body of the travel motor with shop air pressure. The brake piston can come out of the body with force during the removal procedure. To prevent possible personal injury, install tool (B) as shown. Tool (B) will retain the brake piston in the body when applying shop air pressure.

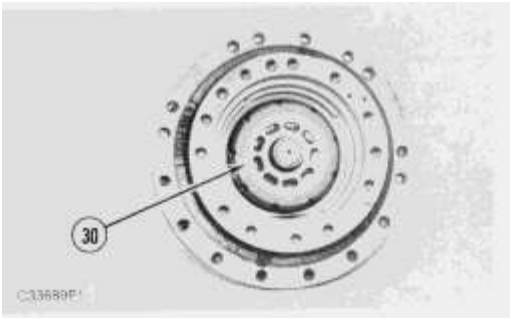
12. Install tool (B) on the body of the travel motor as shown. Use two suitable sized bolts to hold tool (B) in place. Apply shop air pressure (free of water) of approximately 525 kPa (75 psi) to brake release port (Y). Brake piston (23) will move up and out of the bore in the body. Remove tool (B) and the brake piston from the body.



13. Remove back-up rings (24) and (27) and o-ring seals (25) and (26) from the brake piston.



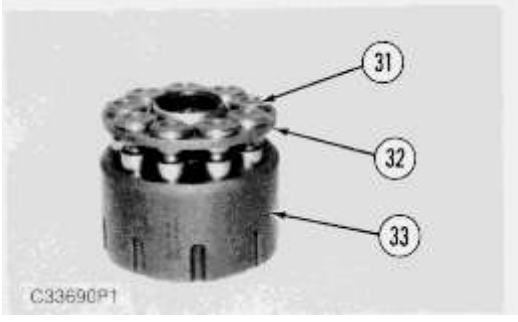
14. Remove three steel plates (28) and three friction plate (29) from the body of the travel motor.



NOTICE

Do not let the components of the piston shoe assembly and barrel plate assembly come apart during removal from the body of the travel motor. The components of the two assemblies must be installed in their original locations.

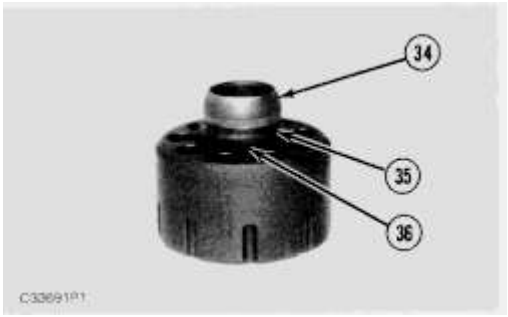
15. Remove piston shoe assemblies and barrel plate assembly (30) as a unit.



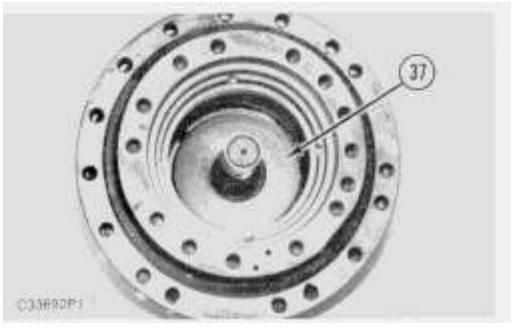
NOTICE

Retainer (32) and piston shoe assemblies (31) are not serviced separately. Prior to removal of the retainer and piston shoe assemblies from barrel plate assembly (33), put identification marks on piston shoe assemblies (31) as to their location in retainer (32) and barrel plate assembly (33). The piston shoe assemblies must be installed in their original bores in the retainer and barrel plate assembly.

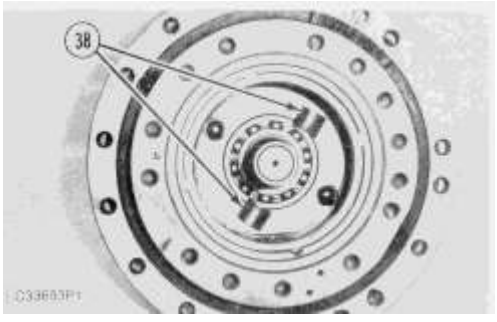
16. Remove retainer (32) and piston shoe assemblies (31) from barrel plate assembly (33). Separate the piston shoe assemblies from the retainer.



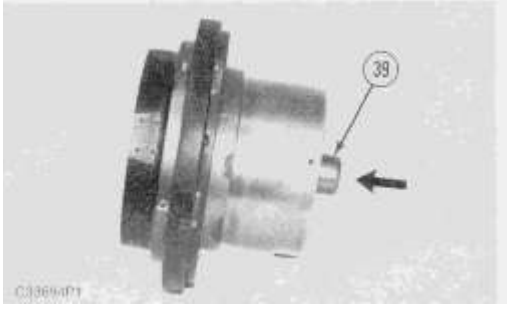
17. Remove retainer (34) and spacer (35) from the barrel. Remove nine springs (36) from the barrel.



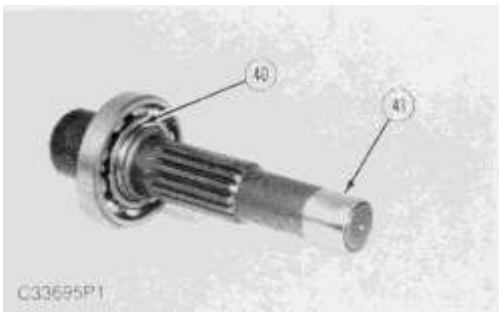
18. Put identification marks on cam plate (37) and the body of the travel motor so the cam plate can be installed in its original position in the body. Remove cam plate (37) from the body of the travel motor.



19. Put identification marks on woodruff keys (38) as to their location in the travel motor body. Remove woodruff keys (38) from the body of the travel motor.

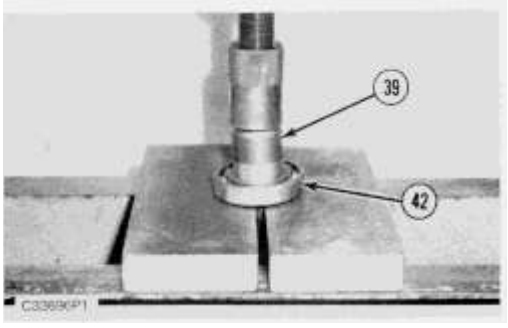


20. Using a soft faced hammer, remove shaft (39) from the body in the direction shown.

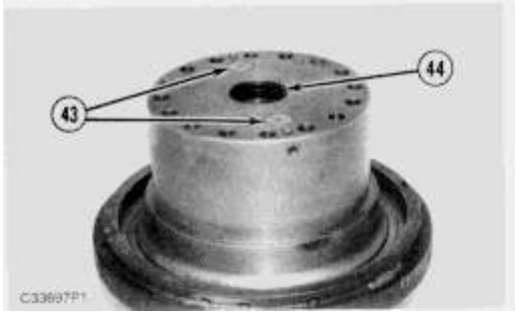


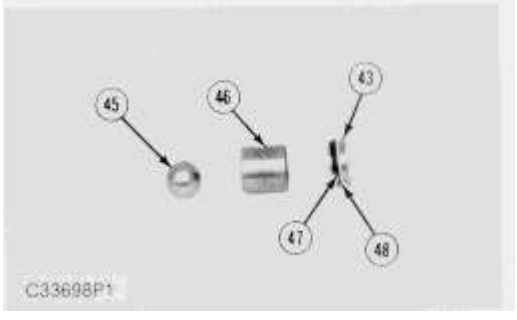
21. Remove bearing inner race (41) from the end of the shaft.

22. Remove snap ring (40) from the groove in the shaft.



23. Push shaft (39) out of bearing (42) with a press as shown.





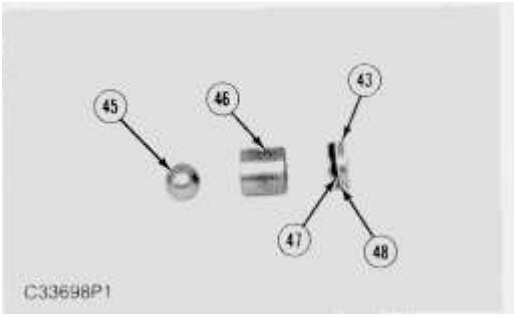
24. Remove oil seal (44) from the travel motor body. Remove two seats (43), two pistons (46) and two balls (45) from the travel motor body.

25. Remove back-up ring (48) and o-ring seal (47) from each seat (44).

NOTE: The following steps are for the assembly of the travel motor.

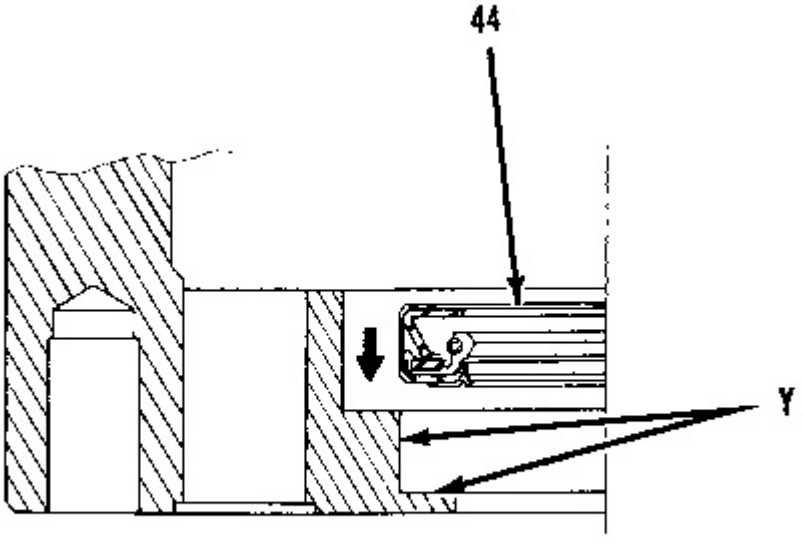
26. Be sure all parts of the travel motor are thoroughly clean and free of dirt and debris prior to assembly. Check the condition of all parts in the travel motor. Guideline For Reusable Parts

"Piston Pumps And Motors", Form No. SEBF8032-01 can be used as a guide for reconditioning and determining the reusability of parts.



27. Install back-up ring (48) and o-ring seal (47) on each seat (43) as shown.

28. Put clean hydraulic oil on seats (43), pistons (46) and balls (45). Reinstall the components in the body of the travel motor.

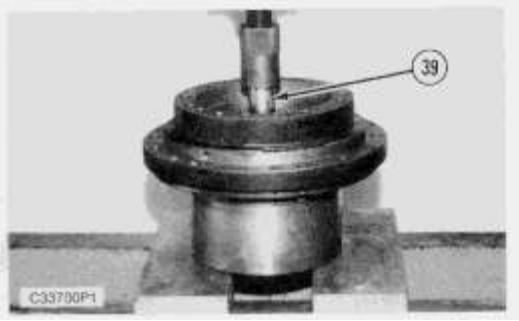


C33699P1

29. Put a thin coat of 9S3265 Retaining Compound on surfaces (Y) of the travel motor body. Install oil seal (44) in the body with the lip of the seal facing in as shown. Be sure the seal makes contact with the counterbore in the body after installation.

30. Install snap ring (40) in the groove on shaft (39). Install bearing (42) on shaft (39) with a press. Install the bearing until it makes contact with the snap ring.

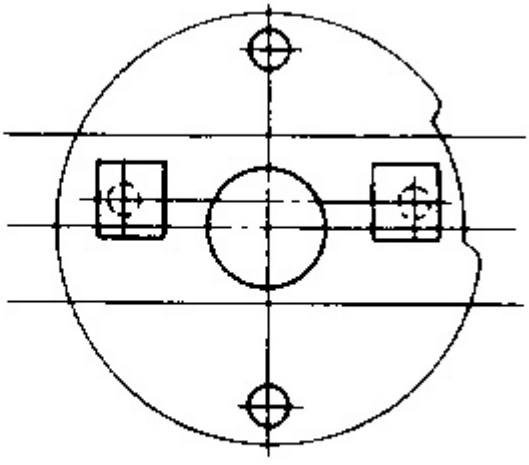
31. Install bearing inner race (41) on the end of shaft (39) until it is seated against the shoulder on the shaft.



NOTICE

During installation of shaft (39) in the travel motor body, rotate the shaft slowly to be sure it does not bind.

32. Put clean hydraulic oil on the lip of oil seal (44). Install shaft (39) in the travel motor body with a press. Rotate the shaft slowly during installation making sure it does not bind. Be sure the bearing on the shaft makes contact with the counterbore in the body.



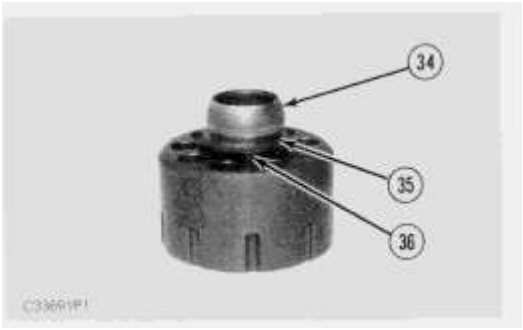
C33701P1

NOTICE

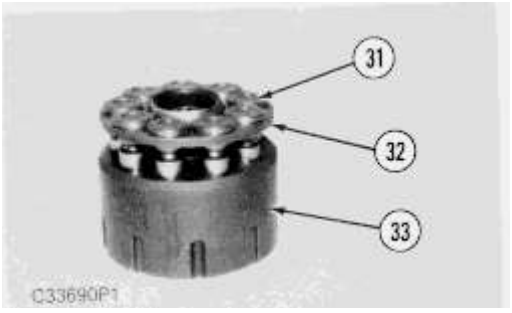
The locating pin on each woodruff key (38) is not centered. To prevent damage to the barrel plate assembly during assembly of the travel motor, the woodruff keys must be installed as shown in the illustration. Also, the woodruff keys must be reinstalled in their original locations in the travel motor body.

33. Install two woodruff keys (38) in the travel motor body as shown.

34. Install cam plate (37) in the travel motor body in its original position. Be sure the machined cutouts in the cam plate engage with the woodruff keys.



35. Install nine springs (36) in the barrel. Install spacer (35) and retainer (34) on the barrel.



36. Install piston shoe assemblies (31) in their original bores in retainer (32).

37. Put clean hydraulic oil in the bores of the barrel and on piston shoe assemblies (31). Install the piston shoe assemblies with the retainer in their original bores in the barrel.

NOTICE

Prior to installing the piston shoe assembly and barrel plate assembly as a unit, be sure cam plate (37) is correctly engaged on woodruff keys (38). When the travel motor body is tilted to allow installation of the piston shoe assembly and barrel plate assembly, the cam plate can slide off of the woodruff keys. The remainder of the travel motor can be assembled with the cam plate out of position, however extensive parts damage will occur during the remaining assembly procedure. Use the procedure which follows to prevent parts damage.

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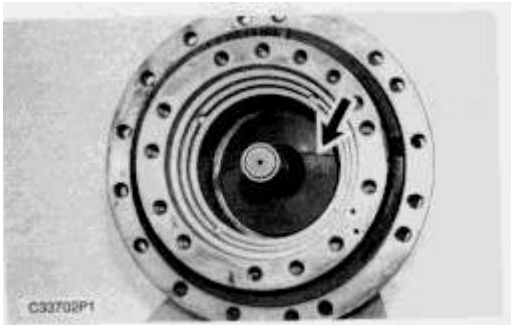
38. Put clean hydraulic oil on the sliding surfaces of the cam plate, the piston shoe assemblies and on the splined shaft of the motor.

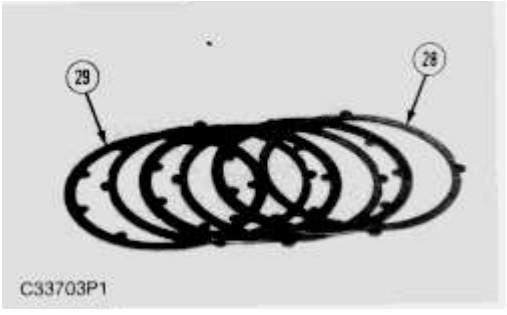


39. Temporarily remove two seats (43), two pistons (46) and two balls (45) from the travel motor body.

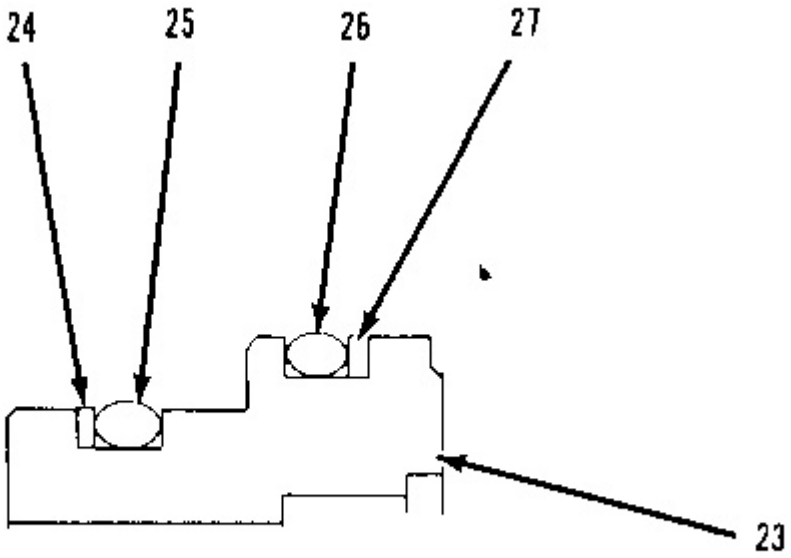
Route a strong piece of string through one of the low speed piston chambers in the bottom of the body, over the sliding surface of the cam plate, and out the other low speed piston chamber. See Illustration C33702P1. Hold the string tight to keep the cam plate properly engaged with the woodruff keys. While keeping the string tight, put the travel motor body on its side. Do not release the tension on the string at this time. Install the piston shoe assemblies and barrel plate assembly (31) on the shaft as a unit. Pull the string out of the travel motor body. It may be necessary to pull the barrel plate assembly and piston shoe assemblies away from the cam plate a small amount to release the string.

40. Put the travel motor body in a vertical position.

41. Reinstall two balls (45), two pistons (46) and two seats (43) in the travel motor body.



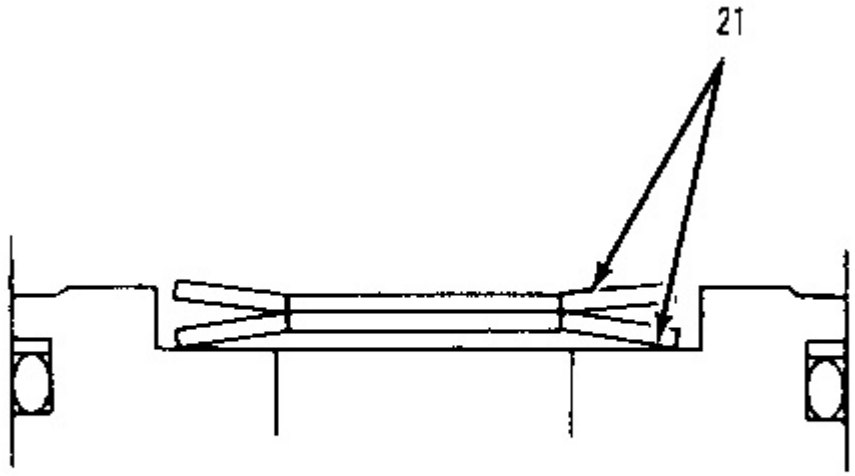
42. Put clean hydraulic oil on three friction plates (29) and three steel plate (28). Install the plates in alternating order in the travel motor body. Start with a friction plate and end with a steel plate.



C33704P1

43. Be sure brake piston (23) is thoroughly clean and free of dirt and debris. Check the condition of back-up rings (24) and (27) and o-ring seals (25) and (26). If the rings or seals are worn or damaged, use new parts for replacement. Install back-up rings (24) and (27) and o-ring seals (25) and (26) on brake piston (23) as shown. Put a coat of 1U6396 Assembly Compound on the back-up rings and the o-ring seals.

44. Put a thin coat of clean hydraulic oil on the surface of the travel motor body which makes contact with the brake piston. Install brake piston (23) in the travel motor body by hand. It may be necessary to use a soft faced hammer to seat the piston properly.



C33705P1

45. Install two disc springs (21) in the brake piston as shown.

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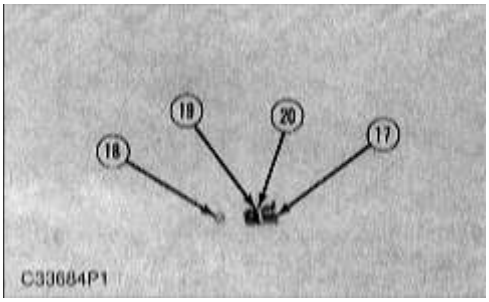
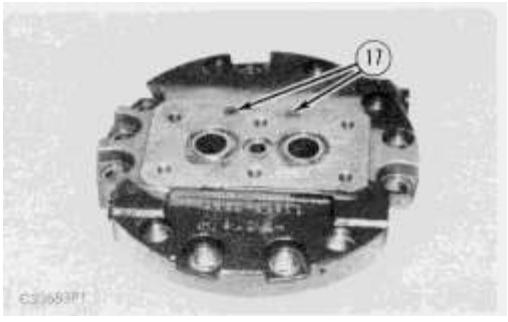
first, and then click the above link

to download the complete manual.

Thank you so much for reading

46. Check the condition of three o-ring seals (22). If the seals are worn or damaged, use new parts for replacement. Install three o-ring seals (23) in the body of the travel motor.

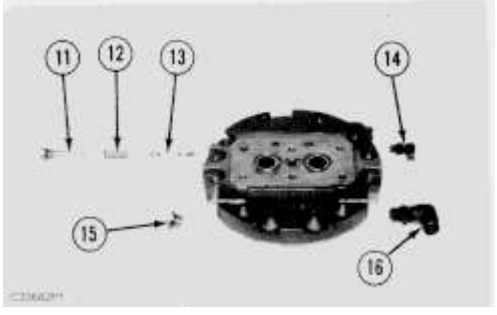




47. Check the condition of o-ring seals (19) and rings (20) used on retainers (17). If the seals and rings are worn or damaged, use new parts for replacement.

48. Install rings (20) and o-ring seals (19) on retainers (17) as shown.

49. Install balls (18) and retainers (17) in cover (2) as shown.



50. Check the condition of the o-ring seal on plug (15). If the seal is worn or damaged, use new parts for replacement. Install plug (15) in cover (2). Tighten the plug to a torque of 120 N·m (85 lb ft).

51. Check the condition of the o-ring seal on stopper (11). If the seal is worn or damaged, use new parts for replacement. Put clean hydraulic oil on spool (13), spring (12) and on the end of stopper (11). Install the spool, spring and stopper in cover (2) as shown. Tighten the stopper to a torque of 49 N·m (36 lb ft).

52. Install the adapter joints and fittings (14) and (16) in their original locations in cover (2).