

Steering Clutches

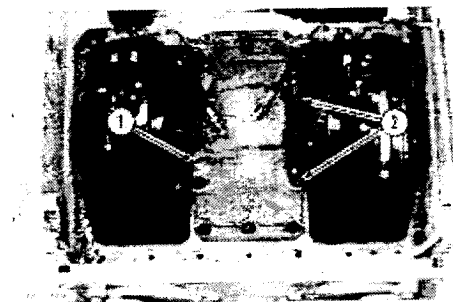
Remove Steering Clutches 4109-11

Tools Needed		A
8S8303	Wrench	1

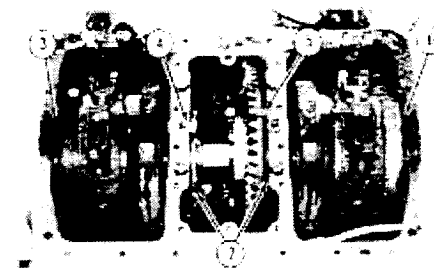
start by:

a) remove steering clutch controls

1. Remove the oil from the bevel gear case.



2. Remove bolts (2) and washers from cover. Remove cover (1) and gasket.

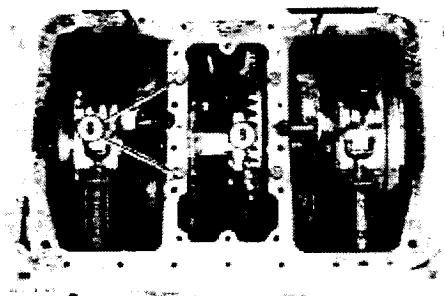


3. Remove fourteen bolts (3) and (6) from both flanges.

NOTE: Turn the tracks for removal of all the bolts.

4. Remove the bolt and lock from lock (4). Remove the lock. Remove the bolt and lock from deflector (5). Remove the deflector.

5. Use tool (A) to loosen two nuts (7).



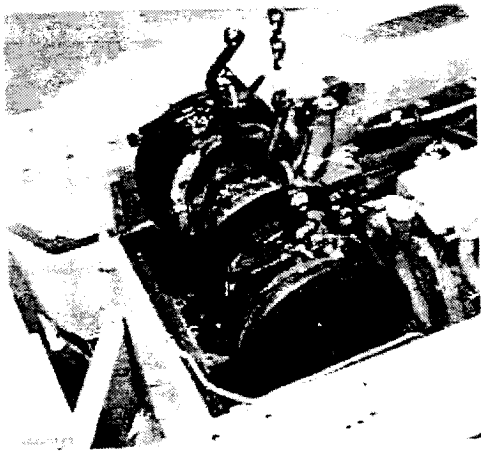
6. Remove two bolts (8) and washers from each cap (9). Remove the two caps (9).



7. Remove the two rod ends from the two yokes. Install two 1/2" - 13 NC forged eyebolts in the yokes. Fasten a hoist to the steering clutches. Weight of steering clutches are 475 lb. (215.5 kg). Remove steering clutches.

Install Steering Clutches 4109-12

Tools Needed		A
8S8303	Wrench	1



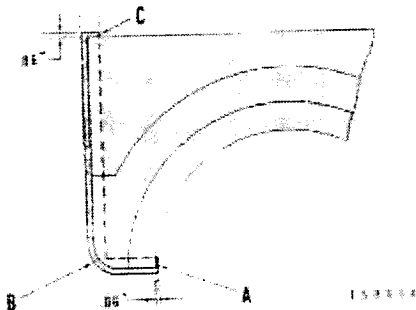
1. Fasten a hoist to the steering clutches. Put the steering clutches in the correct position in the steering clutch case. Remove the hoist. Install the rod ends in the yokes.

NOTICE

Make sure the balls on the ends of the two yokes are in position in the sockets of the steering clutch case. Make sure the notch in each bearing cage is facing in an "UP" position.

2. Install new seals in the two caps as follows:

a) Make sure the two caps are clean and dry.



b) Put the seal in the groove of the cap at point (A). Work the seal around point (B) to point (C). Do not pull on the seal. Make sure the seal

is in the groove by working the seal from point (C) back to point (A).

c) Put a light amount of liquid soap on the wall in the steering clutch case where the seals make contact. Do not let the liquid soap get in the groove of the caps.



3. Put the bevel gear into position in relation to the bevel pinion to prevent damage to seal (2).

4. Put the two caps (1) in position in the steering clutch case. Do not cause damage to the seals in the caps.

NOTICE

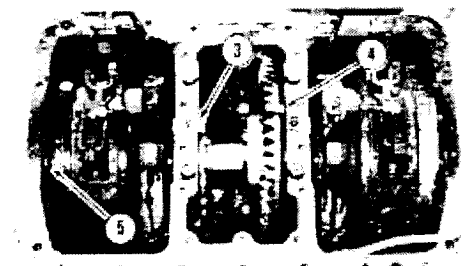
Make sure dowels in the caps are in the notches of the bearing cages before tightening down bolts.

5. Install the bolts and washers that hold the caps in position.

NOTE: If the seal is .25 in. (5.3 mm) above the top surface of the cap, the seal installation must be done again. After final installation trim the ends of the seal at points (A) and (C) to .06 in. (1.5 mm).

6. Make an adjustment to the bevel gear bearing preload. See **BEVEL GEAR AND PINION SETTINGS.**

7. Make adjustments to the gear tooth contact setting and gear clearance (backlash). See BEVEL GEAR AND PINION SETTINGS.



8. Install the bolts (5) and washers that hold the flanges to the drums of the steering clutches.

9. Install the lock (3) and deflector (4).

10. Install the gasket and cover over the bevel gear.

11. Fill the bevel gear case with oil to the correct level. See LUBRICATION AND MAINTENANCE GUIDE.

end by:

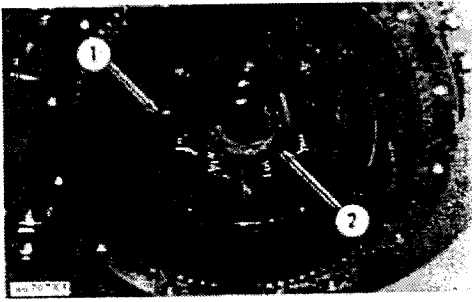
a) install steering clutch controls

Disassemble Steering Clutches 4109-15

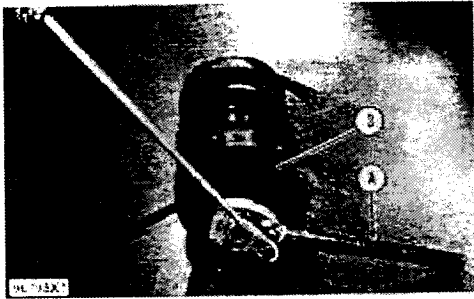
Tools Needed		A	B	C
7S4135	Torque Multiplier	1		
8B7548	Puller Assembly		1	1
8B7556	Adapter		2	2
7F9540	Puller Assembly		1	1
9S5800	Pump Group		1	1
8B7561	Step Plate		1	1
7S8431	Plate			1

start by:

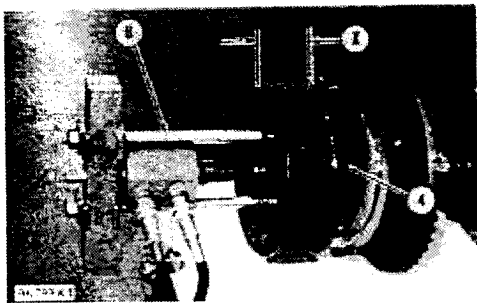
a) remove steering clutches



1. Remove two bolts (1), washers and lock (2).



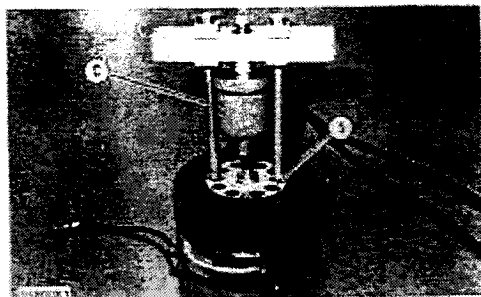
2. Install two 1/2"-13 NC bolts (3) in the drum as shown. Put tool (A) on the nut. Install a bar on the two bolts (3) as shown. Loosen the nut. Remove tool (A). Do not take the nut off the bevel gear shaft. Put the nut in position on the bevel gear shaft so there is a distance of .25 in. (6.53 mm) between the nut and the face of the drum. Remove the brake bands and linings. Remove the drum.



3. Use tooling (B) to loosen the plate assembly (4). Remove tooling (B). Remove plate assembly (4). Weight of the plate assembly is 120 lb. (54.43 kg).

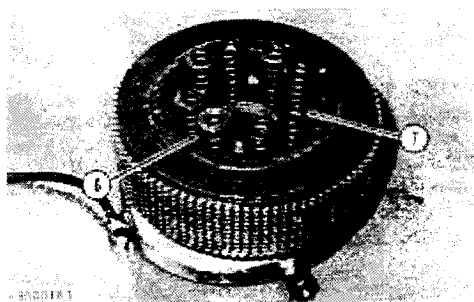
NOTE: Measure the total thickness of the discs and disc assemblies of the clutch assembly. The minimum thickness (X) is 2.63 in. (66.80 mm). If

dimension (X) is less than 2.63 in. (66.80 mm), install new discs and disc assemblies.

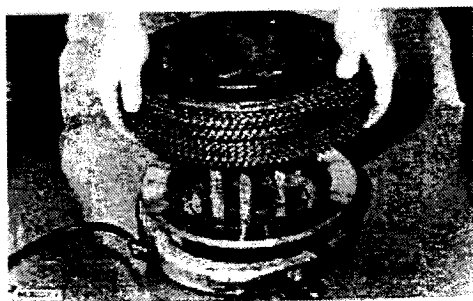


4. Install tooling (C) as shown. Put pressure on springs and remove locks (5). Release pressure and remove tooling (C).

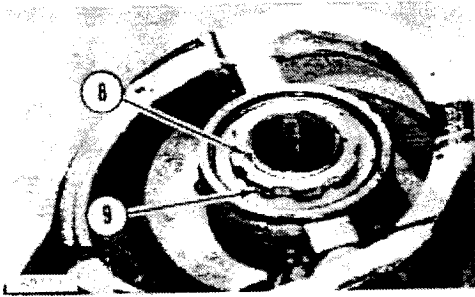
NOTE: The flange of the 7F9540 Puller Assembly will have to be ground off a small amount at two locations to permit installation of the legs for the tooling (C).



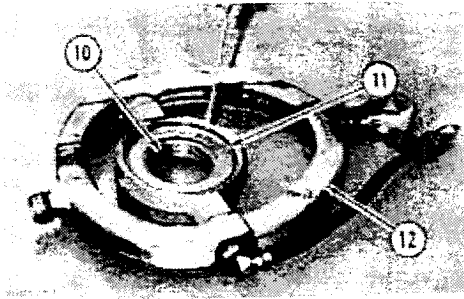
5. Remove a retainer (6) and two springs (7) from each of the eight studs.



6. Remove the drum and disc assemblies.

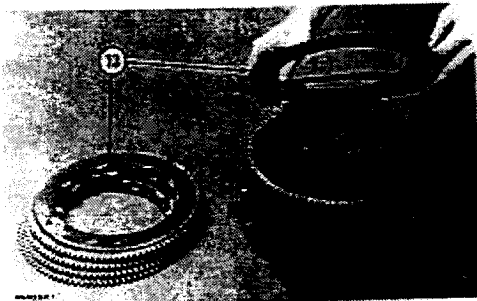


7. Remove two screws (8). Remove nut (9). Remove yoke from drum.



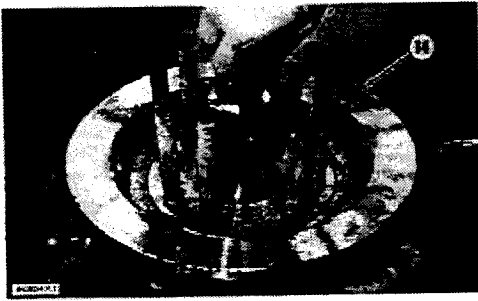
8. Remove ring (11) from cage. Remove the other ring and bearing (10) from the cage.

9. Check the yoke (12) and hose for damage and wear. If the parts are worn, use new parts for replacement.



10. Remove discs (13) from the drum.

NOTE: Put identification on the discs to prevent mixing at assembly. If the same discs are used at assembly, install them in the drum in the same order to prevent fast wear. The discs will wear better if they are moved from the top to the bottom of the clutch assembly with the same faces up. New discs can be installed with any face up.

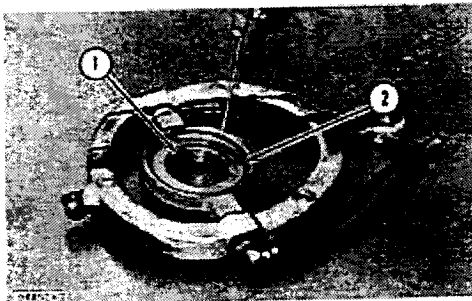


11. Put plate assembly (14) on the bevel gear shaft. Check the clearance between the shaft and the bearing in the plate assembly. The clearance must not be more than .020 in. (0.5 mm). If the clearance is more install a new bearing.

12. Disassemble the other side of the steering clutches, following the procedure in Steps 1 through 11.

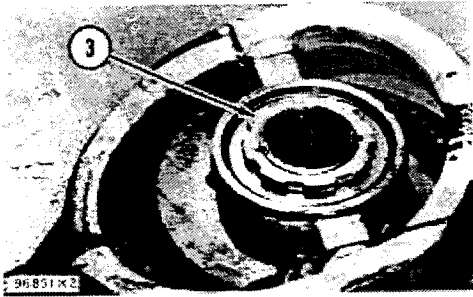
Assemble Steering Clutches 4109-16

Tools Needed		A	B	C
8B7548	Puller Assembly	1		
8B7556	Adapter	2		
7F9540	Puller Assembly	1		1
9S5800	Pump Group	1		1
7S8431	Plate	1		
7S4135	Torque Multiplier		1	
7M7236	Adapter Group			1



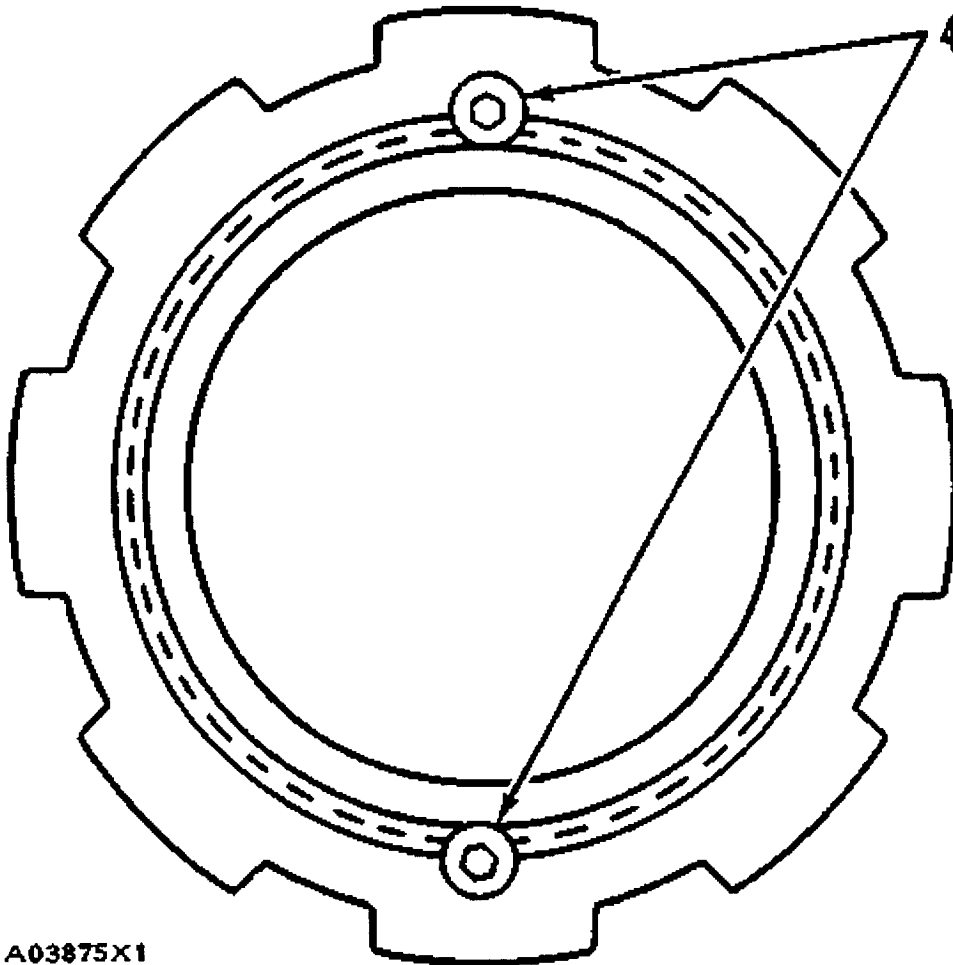
1. Install bearing (1) in the cage of the yoke. Install the ring on bearing. Install ring (2).

NOTE: The bearing must be installed in the correct position. The inner race of the bearing is installed next to the rings.



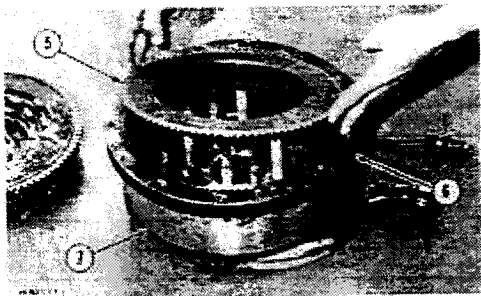
2. Put the yoke in position on the drum. Install nut (3). Tighten nuts (3) to a torque of 250 ± 50 lb.ft. (34.6 ± 6.9 mkg).

3. Drill two $13/64$ in. (5.16 mm) holes .38 in. (9.6 mm) deep opposite each other on the separation line of the nut and plate assembly.



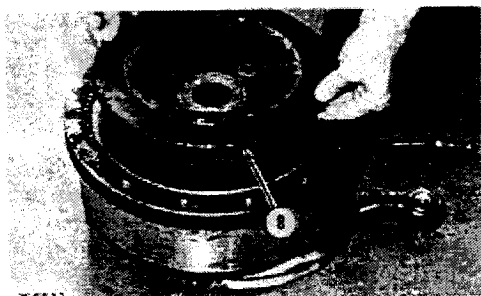
A03875X1

4. Use a 1/4"-20-3B NC thread tap to tap both holes .31 in. (7.9 mm) deep. Instal two screws (4).

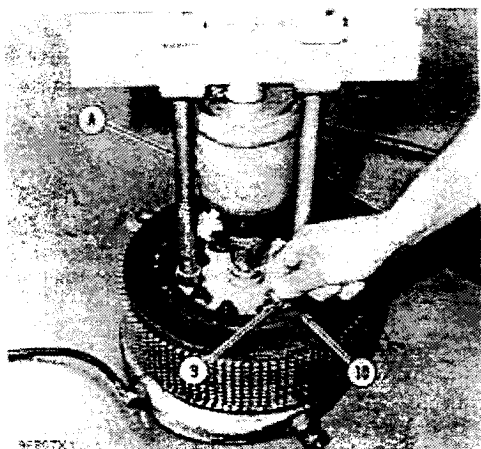


5. Put drum (6) on plate assembly (7) as shown.

6. Install discs (5) in the drum. Make sure discs are installed in the correct order.



7. Put drum (8) in clutch assembly.

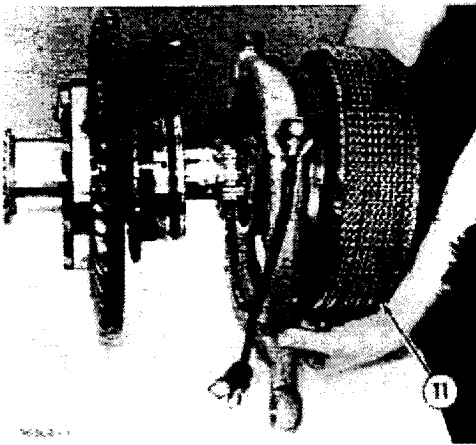


8. Put the two springs and retainers on each stud of the plate assembly. Install tooling (A). Put pressure on the springs and retainers until locks (9) can be installed on the studs.

NOTICE

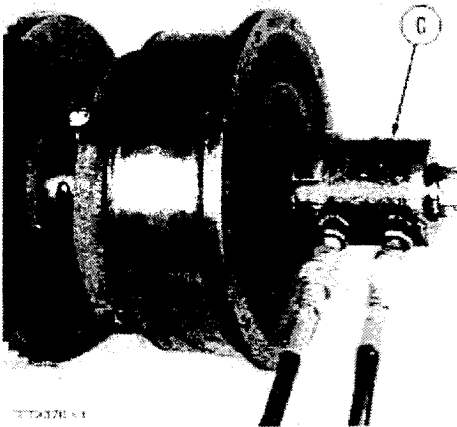
Put pressure on springs and retainers slowly to prevent damage to plate (7S8431) in tooling (A). Hit each stud with a hammer to make sure the locks (9) are in the correct position on the studs.

9. Remove drum (10) from clutch assembly.



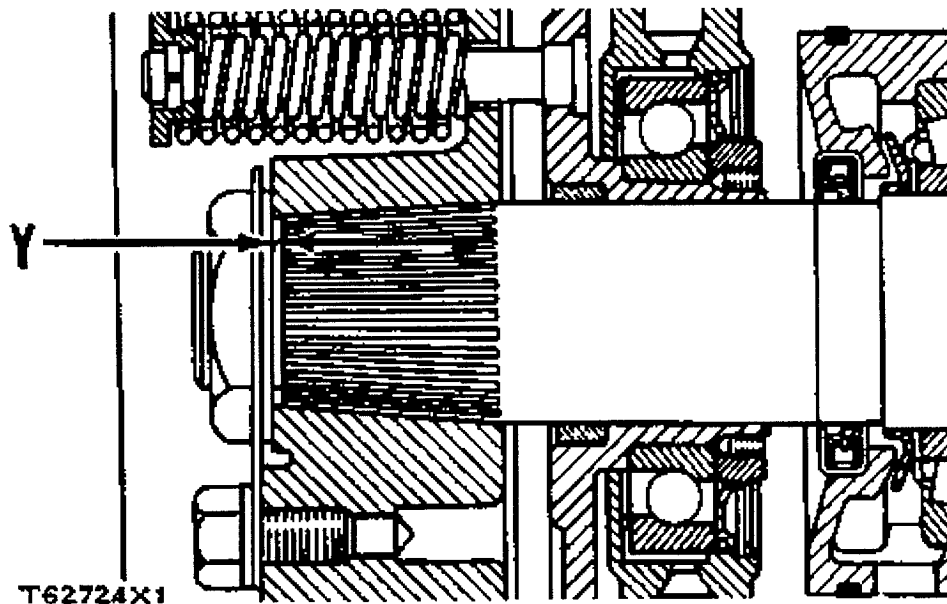
10. Put the clutch assembly (11) on the bevel gear shaft.

NOTE: Make sure the bevel gear shaft is clean and dry.



11. Install tooling (C). Install the clutch assembly on the bevel gear shaft

with a force of 15-20 tons (16.3 - 18.1 M tons).



12. Remove tooling (C). Measure dimension (Y). Dimension (Y) must be $.22 \pm .03$ in. (5.6 ± 0.8 mm).

13. Install the brake bands and linings on the drum. Put the drum in the clutch assembly. Install the nut on the end of the bevel gear shaft. Install two 1/2"-13 NC bolts in the drum. Put a bar between the bolts. Use tool (B) to tighten the bolts to a torque of 250 ± 50 lb.ft. (34.5 ± 6.9 mkg).

14. Install the lock and two bolts.

15. Assemble the other side of the steering clutches. Follow procedure in Steps 1 through 15.

end by:

a) install steering clutches

**Copyright 1991, 2015 Caterpillar Inc.
All Rights Reserved.**