



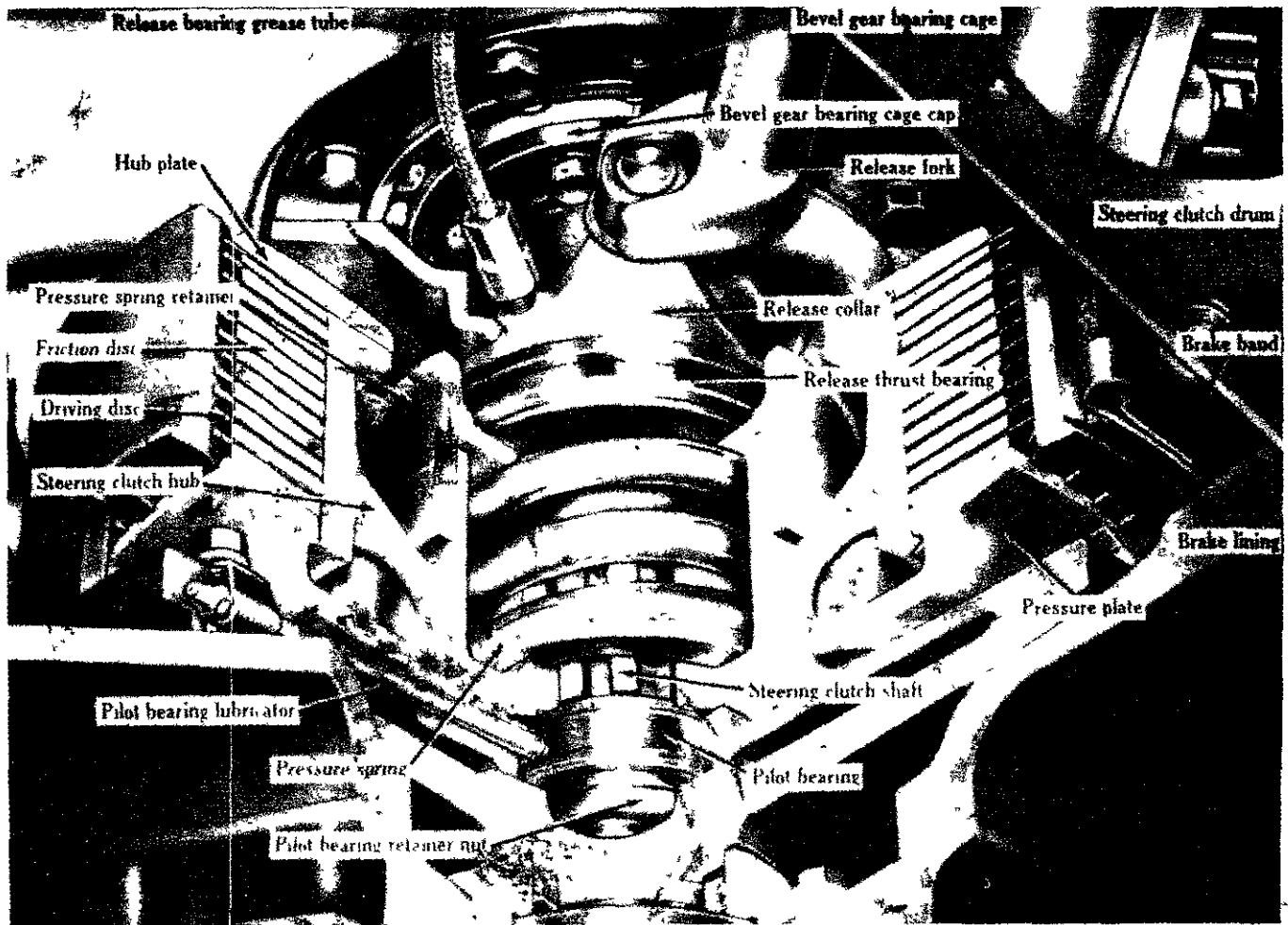
1. DESCRIPTION

Steering clutches of the multiple dry disc, spring-loaded type are located one in each side of the drive bevel gear compartment at the rear of the main frame. The steering clutches are controlled manually by levers directly in front of the operator. Each clutch consists of metal drive discs with teeth on the outside and composition friction discs with teeth on the inside. The discs are held compressed by a heavy coil spring. A release fork connected to the steering levers in front of the operator compresses the coil spring to allow the friction discs to rotate between the driving discs when the steering clutch is disengaged. The release collar is equipped with a ball type thrust bearing.

engage the flow of power to one track, for the purpose of steering the tractor. When one track is disengaged, the other track will continue traveling and the tractor will turn on the disengaged track.

A steering brake is provided for each steering clutch. Its purpose is to stop the clutch drum from rotating after the steering clutch has been disengaged. This locks one track and forms a pivot point for short turns. Brakes also may be used for parking purposes. Pedals for each brake are adjustable to suit the operator. Each pedal may be locked in holding position. The brakes are simple and very accessible and are of external contracting type, contracting on the steering clutch drums. Brake bands may be relined after removing them from convenient holes in the bottom of the main frame.

The function of the steering clutches is to dis-



Illust. 1 - Cutaway View of Steering Clutch

A-28230 A



STEERING CLUTCHES AND BRAKES

2. SPECIFICATIONS

STEERING CLUTCHES

Type . . . Multiple dry disc, spring loaded

Number 2

Location Each side of bevel gear, on sprocket drive pinion shaft

		Not	
		Bi-Metallic	Bi-Metallic
Nominal diameter	(6) 10-7/8 in.	10-7/8 in.	
	(9) 14-1/8 in.	14-1/8 in.	

Number of driving discs	(6)	12	11
	(9)	11	10

Number of friction discs	(6)	13	12
<i>Fibre</i>	(9)	12	11

Outside diameter friction discs	(6) 10-7/8 in.	10-7/8 in.	
	(9) 14-1/8 in.	14-1/8 in.	

Inside diameter friction discs	(6) 7-1/4 in.	7-11/16 in.	
	(9) 10-7/16 in.	11 in.	

Maximum warp before replacing discs	.005 in.	0.005 in.	
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Number of friction surfaces, each clutch	(6)	24	22
	(9)	22	20

Total friction area, each clutch	(6)	1115.1 sq. in.	1022.2 sq. in.
	(9)	1356.6 sq. in.	1233.3 sq. in.

Pressure spring			
Free length	(6)	5-19/64 ± 1/8 in.	
	(9)	4-29/32 ± 3/16 in.	
Test length	(6)	3-19/32 in.	
	(9)	3-3/16 in.	
Test load	(6)	1425-1725 lb.	
	(9)	1750-2120 lb.	

Steering clutch release lever return spring			
Free length		6-7/16 in.	
Test length		8-3/8 in.	
Test load		18 to 22 lb.	

Steering clutch hand lever booster spring		
Free length	6-11/32 in.	
Test length	6-7/8 in.	
Test load	450 to 550 lb.	

Control mechanism		
Type of system	Mechanical	
How actuated	Hand levers	

STEERING BRAKES

Type External contracting bands

Number 2

Location On each steering clutch drum

Brake drum diameter	(6)	12-1/8 in.
	(9)	15-3/4 in.

Brake lining (not floating pivot type)		
Width	(6)	2-1/4 in.
	(9)	2-3/8 in.
Thickness	(6)	1/4 in.
	(9)	1/4 in.

Number of linings, each brake	(6)	3
	(9)	3

Total friction area, each brake	(6)	71 sq. in.
	(9)	99 sq. in.

Brake lining (floating pivot type)		
Width	(6)	2-1/2 in.
	(9)	2-3/4 in.
Thickness	(6)	3/8 in.
	(9)	3/8 in.

Number of linings, each brake	(6)	8
	(9)	8

Total friction area, each brake	(6)	78 sq. in.
	(9)	117 sq. in.

Control mechanism		
Type of system	Mechanical	
How actuated	Individual pedals	

Provision for parking	Ratchet and pawl on each pedal	
Free pedal travel	3 in.	

Clearance between steering clutch drum and hand opposite set screw	1/64 in.
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Steering brake band
release spring
Free length 3-3/16 ± 1/32 in.
Test length 2-1/4 in.
Test load 13.5 to 16.5 lb.

Steering brake band
anchor spring (not
floating pivot type)
Free length 2-1/16 ± 1/32 in.
Test length 1-1/2 in.
Test load 18 to 22 lb.

Steering brake band
anchor spring (floating
pivot type)
Free length 3-1/4 in.
Test length 2-1/2 in.
Test load 35 lb.

Steering brake rod
return spring (not
floating pivot type)
Free length 10 ± 1/32 in.
Test length 16-5/8 in.
Test load 58.5 to 71.5 lb.

Steering brake rod
return spring (floating
pivot type)
Free length 10 in.
Test length 16-5/8 in.
Test load 64.9 lb.

SPECIAL TORQUES * In Foot Pounds

Steering clutch pilot bearing
retaining nut 180 - 220
Steering clutch support
bearing nut 280 - 320

*All threads to be lubricated with SAE-30 engine oil.

3. MAINTENANCE

1. When operating the tractor in water or under very wet conditions, or under extremely dusty conditions, water or dust may enter the steering clutch compartments through the holes in the drain plugs. To avoid this, replace the drain plugs (if used) with solid pipe plugs. Remove the solid plugs after every 60 hours of operation to allow any accumulation of water or oil to drain out.

2. If the steering clutches start to slip, measure the free movement of the steering clutch levers. If the free movement is less than the amount given in Par. 14, adjustment is necessary.

.375

19/64 = .296875



4. CHECKING MECHANICAL PROBLEMS

PROBABLE CAUSE

REMEDY

TRACTOR DOES NOT MOVE

- | | |
|---|--|
| 1. Steering brakes locked | Release the steering brake pedals from the latching pawls. |
| 2. Engine clutch faulty | Refer to "ENGINE CLUTCH," Section 5 of this manual. |
| 3. Transmission faulty | Refer to "TRANSMISSION AND BEVEL GEAR," Section 6 of this manual. |
| 4. Steering clutches slip - incorrect adjustment. | Adjust to correct specifications or remove and repair the steering clutches. |

TRACTOR MOVES WITH BRAKES LOCKED (Brakes do not hold)

- | | |
|--|---|
| 1. Brake lining worn. | Install new lining. |
| 2. Improper brake adjustment | Adjust steering brakes. |
| 3. Oil on brake lining | Wash brake linings, or if badly oil-soaked, install new lining. |
| 4. Brake band broken | Install new brake band. |
| 5. Broken linkage | Install new linkage parts. |

TRACTOR DOES NOT TURN (Steering clutch does not disengage)

- | | |
|---|---|
| 1. Improper operation of steering clutch lever. | Pull steering clutch hand lever all the way back. |
| 2. Improper adjustment. | Properly adjust controls. |
| 3. Steering clutch faulty | Remove and repair steering clutches. |

TRACTOR WILL NOT MAKE SHORT (PIVOT) TURN

- | | |
|--|---|
| 1. Steering clutch does not disengage. | See "Tractor Does Not Turn." |
| 2. Steering brake will not hold | Adjust brake and controls, or replace brake if necessary. |

TRACTOR MOVES BUT CREEPS TO ONE SIDE

- | | |
|--|--|
| 1. Track or track frame faulty | Inspect track frames for parallel alignment. Correct or replace parts as necessary. |
| 2. Steering brake drags. | Remove steering brake inspection cover and hand feel the steering brake band. If band is hot, the brake is dragging. Adjust brake. |
| 3. Steering clutch slips | Adjust steering clutch and if clutch is faulty remove and repair. |

TRACTOR LOSES PULLING POWER

- | | |
|-------------------------------------|---|
| 1. Steering brakes drag. | Remove inspection cover and hand feel the steering brake bands. If bands are hot, brakes are dragging. Adjust brakes. |
| 2. Steering clutches slip | Adjust steering clutches. If clutches are faulty, remove and repair. |
| 3. Engine clutch slips | Refer to "ENGINE CLUTCH," Section 5 of this manual. |



PROBABLE CAUSE

REMEDY

STEERING CLUTCHES OVERHEAT

- | | |
|--|---|
| 1. Improper use of steering brakes | Steering brakes should never be applied unless steering clutches are completely disengaged. |
| 2. Steering brakes drag | Remove inspection cover and hand feel the steering brake bands. If bands are hot, brakes are dragging. Adjust brakes. |
| 3. Steering clutches slip | Adjust steering clutches. If clutches are faulty, remove and repair. |

STEERING BRAKES OVERHEAT

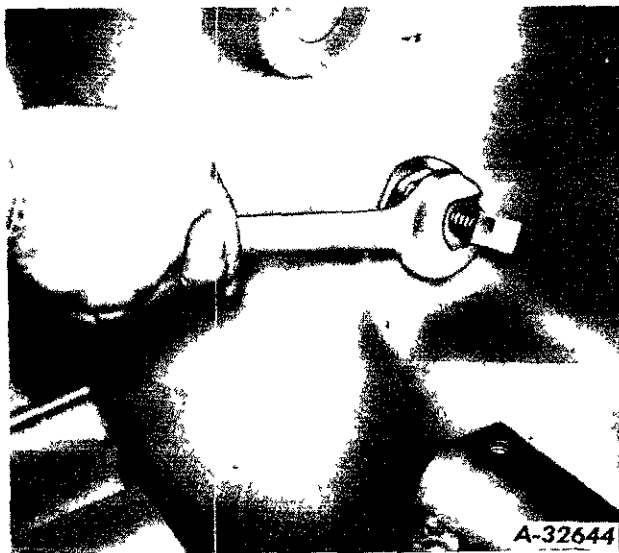
- | | |
|--|---|
| 1. Brakes adjusted too tight | Adjust brakes to proper clearances. |
| 2. Steering clutch does not disengage | |
| a. Improper adjustment | a. Adjust steering clutch. |
| b. Warped discs | b. Replace warped discs. |
| 3. Oil on brake lining | Wash or replace lining. |
| 4. Binding in brake controls | Free controls and lubricate with light oil. |

STEERING BRAKES

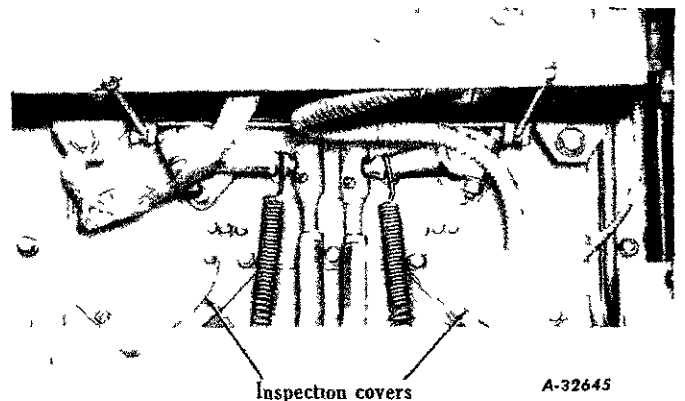
5. REMOVAL

T-6, TD-6 and TD-9 Series (Ref. Nos. Refer to Illust. 7)

- | | |
|--|--|
| 1. Remove the steering brake band set screw (19). See Illust. 2. | |
| 2. Remove the inspection covers from the top and bottom of the rear main frame. See Illust. 3 and 4. The seat cushion should be removed. | |
| | 3. Remove the cotter pin and joint pin that connects the front band to the center band. Also remove the anchor spring from the anchor in the rear main frame. |
| | 4. Remove the cotter pin and joint pin (31) that connects the pivot lever (33) to the brake linkage. |
| | 5. Remove the pivot shaft retainer cap screw (35) and work the shaft (34) with a screwdriver to the inside of the frame, until the shaft is free of the pivot lever. This has to be done from the under side of the tractor. |



Illust. 2 - Backing Out Steering Brake Band Set Screw.



Illust. 3 - Steering Brake Inspection Covers.

Continued on next page.



STEERING BRAKES

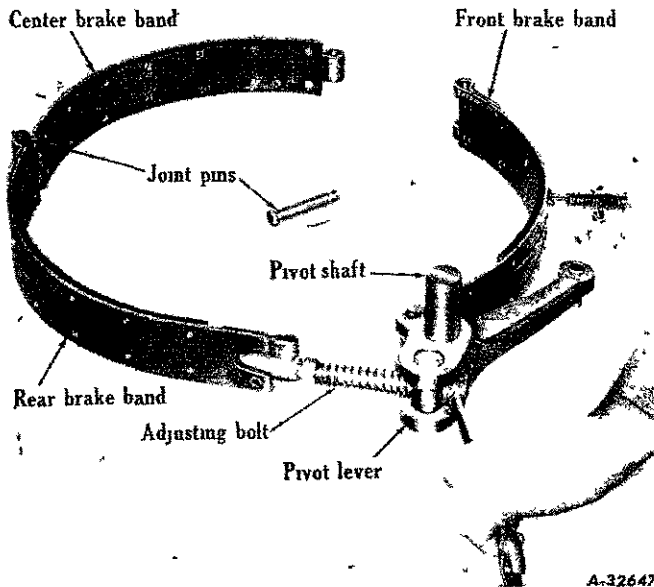
5. REMOVAL - Continued

T-6, TD-6 and TD-9 Series - Continued

6. Remove the brake bands (1, 3 and 4) and pivot lever (33) through the bottom inspection opening. See Illust. 4.



Illust. 4 - Bottom Inspection Cover Removed.



Illust. 5 - Removing Brake Adjusting Bolt (TD-9 Shown)

7. Remove cotter pins and joint pins (2 and 9) that hold the front band to the pivot lever (33) and the center band (1) to the rear band (4). Remove the adjusting bolt (36) that holds the rear band (4) to the pivot lever (33). See Illust. 5.

ISS-1832B (6-64)

6(61), 6(62), 9(91) and 9(92) Series (Ref. Nos. Refer to Illust. 8)

1. Remove the top inspection covers (Illust. 3) and the bottom inspection cover (Illust. 4) from the main frame.

2. Loosen the lock nut (Illust. 2) and turn back the brake band set screw, to relieve the spring tension. Reach through the top cover opening and unhook the anchor spring (4).

3. Loosen and unhook the turnbuckle (25) by removing the eye end pins (21) and (28).

On the old T-61 and TD-6 (61) only: Unhook the return spring (7) when removing the clevis pin to free the steering brake pivot lever. Remove cotter pin and brake rod end pin (17) to disconnect pivot lever (18) from the brake rod (16).

3. Loosen and unhook the turnbuckle (25) by removing the eye end pins (21) and (28). Remove cotter pin and brake rod end pin (17) to disconnect pivot lever (18) from the brake rod (16).

4. Remove the pipe plug from the main frame to gain access to the brake pivot shaft. Remove the set screw which secures the pivot shaft (19). With a drift, drive the pivot shaft toward the inside of the frame until the shaft is free of the pivot lever (18). The Welch plug will fall out as the shaft is driven out.

5. Rotate and push the front brake band forward and down for access to the brake band pivot lever joint pin (23). Pull the cotter pin and remove the joint pin (23).

6. Rotate the band forward and downward until the front band clears through the bottom inspection hole, with a manual assist to the rear shoe, slightly angle the front shoe outward and lower the rear shoe out of the hole.

NOTE. This slight angle is necessary because of the inner contour of the main frame at this point.

7. Remove the cotter pin and joint pin (2).

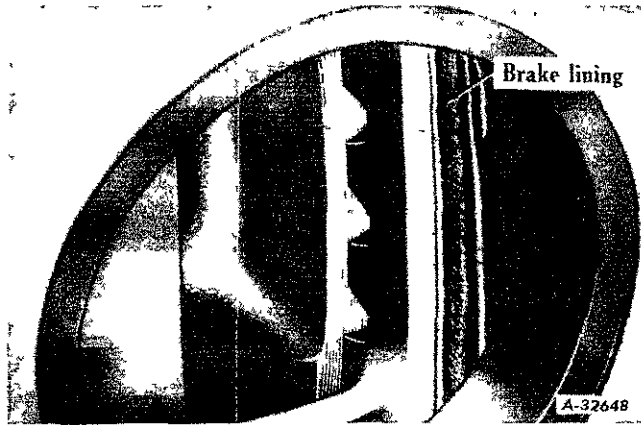
6. RELINING STEERING BRAKE BANDS

1. Remove and disassemble the steering brakes as described in Par. 5.

2. Punch out the rivets which hold the lining to the bands and remove the lining. Scrape all traces of the old lining from the bands. Wash the bands in dry-cleaning solvent. Rivet the new linings to the brake bands.



3. Assemble and install the brakes as described in Par. 7.



Illust. 6 - Inspection of Steering Brake.

7. REASSEMBLY AND INSTALLATION (Ref. Nos. Refer to Illust. 7)

1. Connect the center and rear brake bands (1 and 4) with the joint pins (2), and the front band (3) to the pivot lever (33). See Illust. 5.
2. Slide the center and rear brake bands (1 and 4) around the rear of the drum while sliding the front brake band (3) and pivot lever (33) up and around the front of the brake drum.
3. With a screwdriver, work the pivot shaft (34) through the pivot lever (33) and install the stud (35). Install the pin (29) and rod yoke (30) and lever pin (31).
4. Hook the return spring (16) to the anchor (21).
5. Connect the front and center brake bands (1 and 3) with the joint pin (2) and secure with a cotter pin.
6. Install the set screw (19) and adjust the steering brakes as described in Par. 8 following.
7. Replace the inspection covers to the top and bottom of the rear main frame. Replace the seat cushion.

8. ADJUSTMENT (See Illust. 9)

6 and 9 Series

1. Remove the two platforms.
2. Loosen the brake pedal adjusting lock bolt "A", which holds the brake pedal to the pedal shaft and adjuster. Access to this bolt is

through a hole in the main frame side channel (Illust. 10).

3. The adjuster is notched on the inside and contacts a notched adjuster lock "J". With the lock bolt loosened sufficiently, tap the adjuster "B" down several notches with a bar. Check the free pedal movement and when a three inch movement has been obtained, tighten the adjusting lock bolt "A".

When adjustment can no longer be made in the above manner, proceed as follows:

1. Loosen the adjusting lock bolt "A".
2. Pull the adjuster "B" up as far as possible.
3. Loosen the jam nut "K" and turn the set screw "C" in until the brake band contacts the drum, then back off 1/4 turn. Tighten jam nut "K".

4. Remove the steering brake inspection cover from the bottom side of the main frame.

5. Loosen the lock nut "D" and turn the adjusting bolt "E" until the clearance between the brake band lining and the drum at that point is 1/64 inch.

6. Secure the adjusting bolt "E" by tightening the lock nut "D" against the rear section of the brake band.

7. Replace the steering clutch and the steering brake inspection covers.

8. Adjust the brake pedal as described previously to give three inches free movement.

(6(61), 6(62), 9(91) and 9(92) Series). - (Illust. 10 and 11).

Measure the free travel of the brake pedal. (Refer to Illust. 11). If the free movement is more than three inches, adjust the brake by the following procedure:

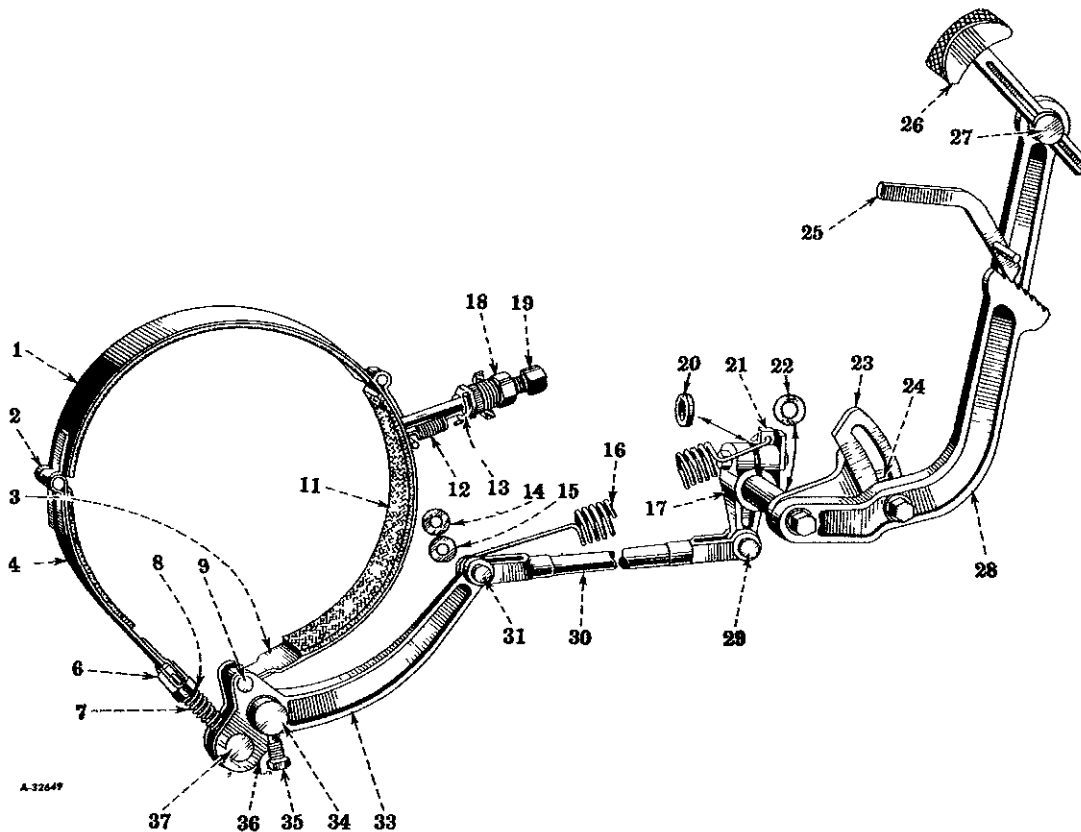
1. Remove the steering brake inspection cover (Illust. 11) from the bottom side of the main frame.

2. Loosen lock nut "A" and turn the turnbuckle until the brake lining contacts the clutch drum for its full length. This contact will have taken place when the turnbuckle becomes harder to turn.

Continued on page 9.



STEERING BRAKES

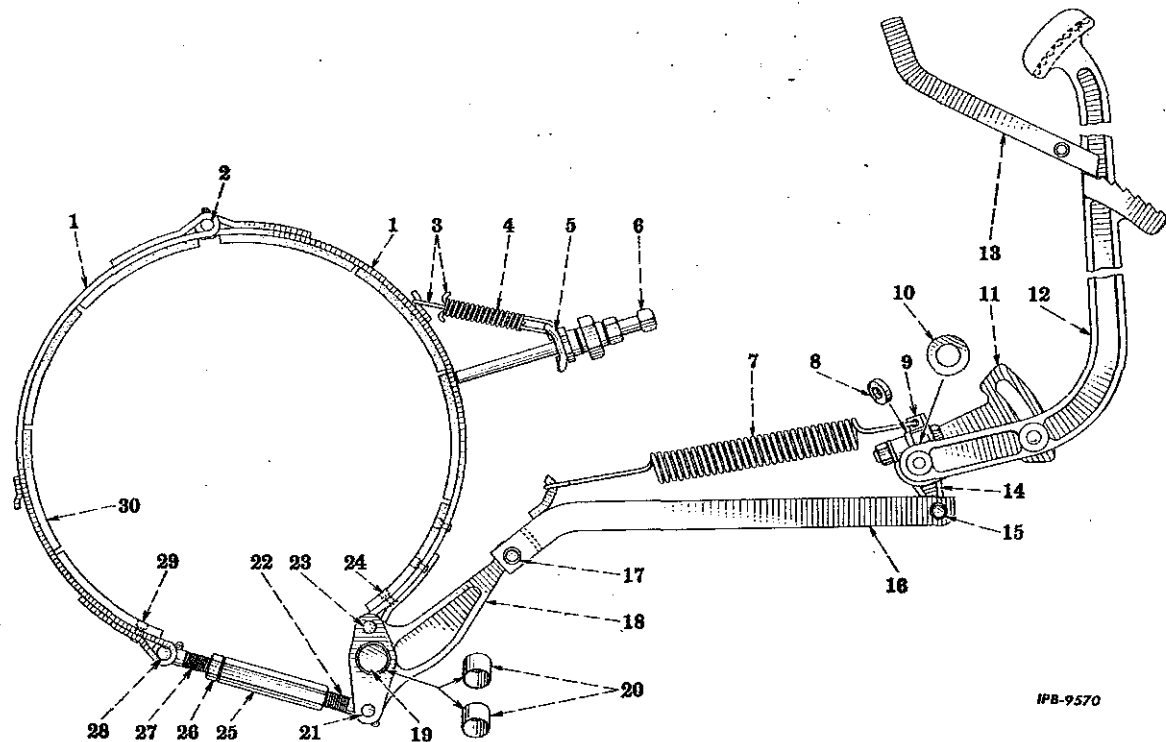


Illustr. 7 - Component Parts of Steering Brake Assembly (6 and 9 Series)

- | | |
|-------------------------------|------------------------------------|
| 1. Center brake band. | 20. Lever key. |
| 2. Joint pin. | 21. Rod return spring anchor. |
| 3. Front brake band. | 22. Pedal shaft dirt seal. |
| 4. Rear brake band. | 23. Pedal shaft and adjuster. |
| 6. Adjusting bolt spacer. | 24. Pedal adjuster lock collar. |
| 7. Release spring. | 25. Ratchet pawl. |
| 8. Release spring washer. | 26. Pedal pad. |
| 9. Pivot joint pin. | 27. Pedal pad swivel. |
| 11. Brake band lining. | 28. Brake pedal. |
| 12. Anchor spring. | 29. Rod end pin, long. |
| 13. Anchor spring hook. | 30. Brake rod. |
| 14. Rod return spring washer. | 31. Rod end pin, short. |
| 15. Rod return spring spacer. | 33. Pivot lever. |
| 16. Rod return spring. | 34. Pivot shaft. |
| 17. Brake lever. | 35. Pivot shaft stud. |
| 18. Anchor spring anchor. | 36. Brake band adjusting bolt. |
| 19. Band set screw. | 37. Brake band adjusting bolt pin. |



STEERING BRAKES



Illust. 8 - Component Parts of Steering Brake Assembly (9(91) and 9(92) Series).

- | | |
|-------------------------------------|---|
| 1. Steering brake band. | 16. Brake rod. |
| 2. Brake band joint pin. | 17. Brake rod end pin. |
| 3. Brake band anchor spring hook. | 18. Brake pivot lever. |
| 4. Brake band anchor spring. | 19. Brake pivot shaft. |
| 5. Brake return spring anchor. | 20. Brake pivot lever bushing. |
| 6. Brake band set screw. | 21. Brake band turnbuckle eye pin, short. |
| 7. Brake rod return spring. | 22. Brake band turnbuckle eye. |
| 8. Brake lever key. | 23. Brake band pivot joint pin. |
| 9. Brake rod return spring anchor. | 24. Brake band rivet, short. |
| 10. Brake pedal shaft dirt seal. | 25. Brake band turnbuckle. |
| 11. Brake pedal shaft and adjuster. | 26. Brake band turnbuckle eye nut. |
| 12. Brake band. | 27. Brake band turnbuckle eye. |
| 13. Brake ratchet pawl. | 28. Brake band turnbuckle eye pin, long. |
| 14. Brake lever. | 29. Brake band rivet, long. |
| 15. Brake rod end pin. | 30. Brake band lining. |

8. ADJUSTMENT - Continued

(6(61), 6(62), 9(91) and 9(92) Series) - Continued

3. Loosen the lock nut "B" and turn the set screw clockwise until the brake lining contacts the clutch drum. Turn the set screw counter-clockwise one-third turn, and tighten lock nut "B." This adjustment can be made from outside the tractor. (Illust. 2 and 10).

4. Back turnbuckle off one and one-half turns. Test pedal for three inch movement. If less than three inches, buck off until a three inch movement is acquired. Tighten lock nut "A."

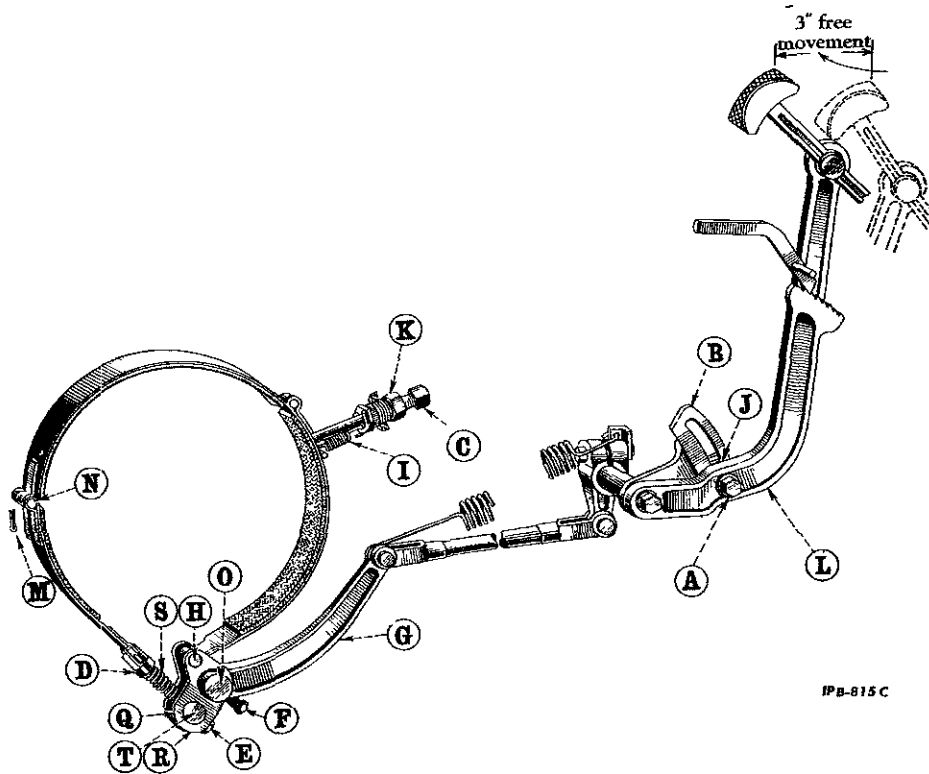
5. Install steering brake inspection cover.



STEERING BRAKES

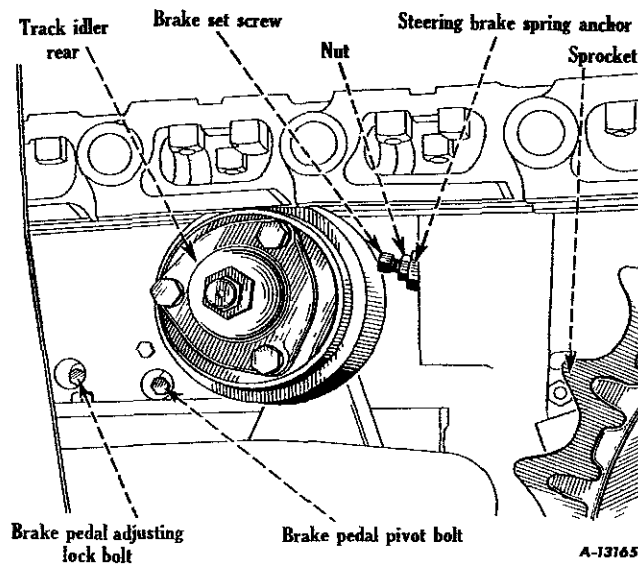
8. ADJUSTMENT - Continued

(6(61), 6(62), 9(91) and 9(92) Series) - Continued



IPB-815C

Illust. 9 - Steering Brakes Adjustment (6 and 9 Series).

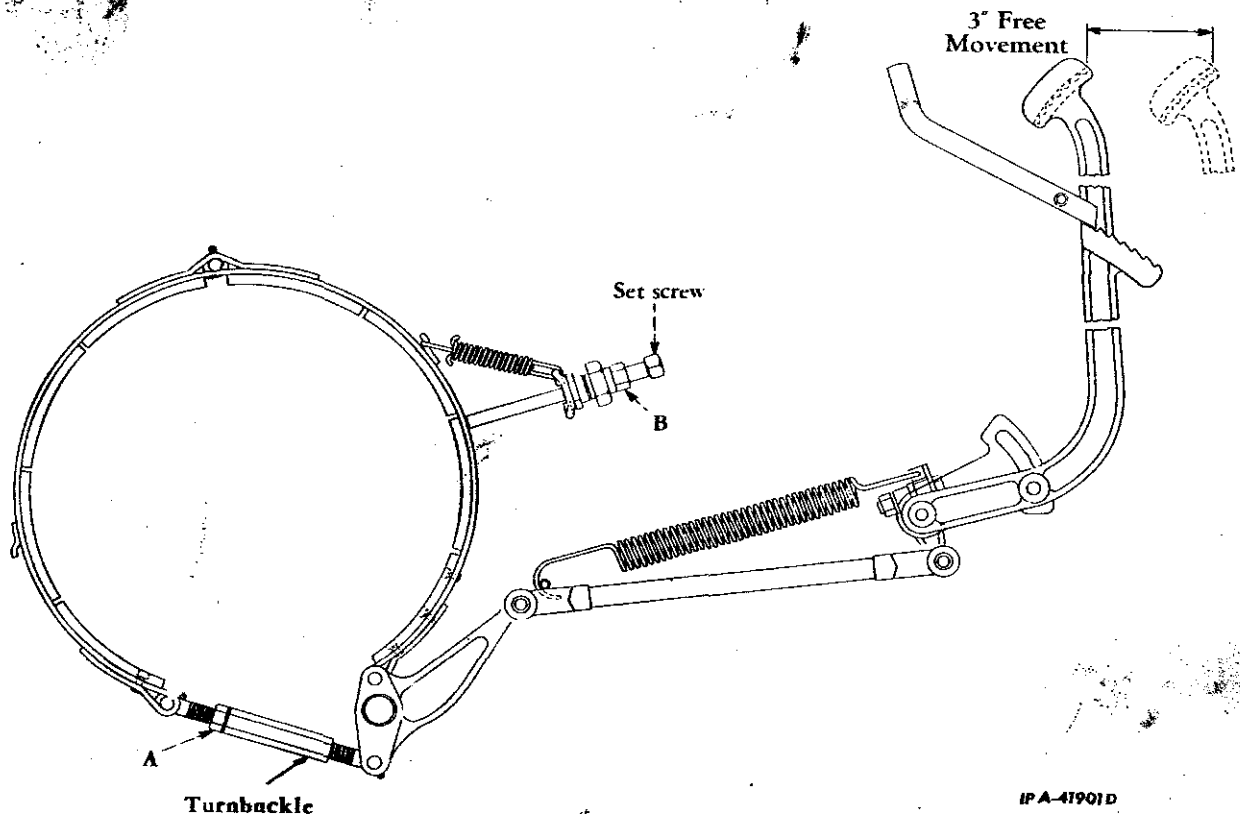


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Illust. 10 - External Points for Adjusting Steering Brake.



STEERING BRAKES

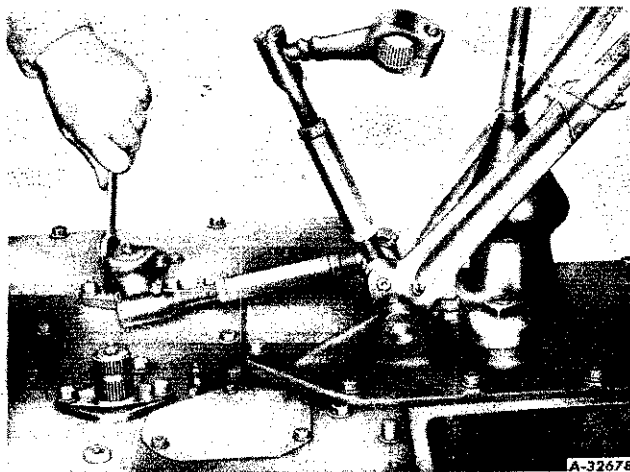


Illust. 11 - Steering Brake Adjustment (6(61), 6(62), 9(91) and 9(92) Series).

STEERING CLUTCHES

9. REMOVAL

1. Drain the transmission oil.



Illust. 12 - Removing Clutch Controls.

2. Remove the seat frame, fenders, fuel tank, and battery box (if used), being sure to disconnect the fuel lines and electric wiring.

3. Remove the steering clutch controls from the release forks. (Illust. 12.)

4. Remove the main frame cover.

NOTE: Keep the bevel gear compartment covered to prevent dirt and other objects from falling into the compartment.

5. Remove steering brake band set screw (Illust. 2).

6. 6 AND 9.SERIES: Remove cotter pins and joint pins that connect the center brake band to the front and rear brake bands. Remove center brake band.

Continued on next page.

STEERING CLUTCHES

9. REMOVAL - Continued

TD-6 (61), 6 (62), 9 (91) AND 9 (92) SERIES ONLY: To remove the steering clutches, it will be necessary to remove the steering brakes. Follow the instructions given in Par. 5, "REMOVAL."

7. Remove the anchor spring from its anchor in the main frame.

8. Tie the front steering brake band to the main frame, so that it does not get in the way when removing the steering clutch assembly. See Illust. 13.

NOTE: If the steering brakes need new linings, they may be removed now or after the steering clutch has been removed.

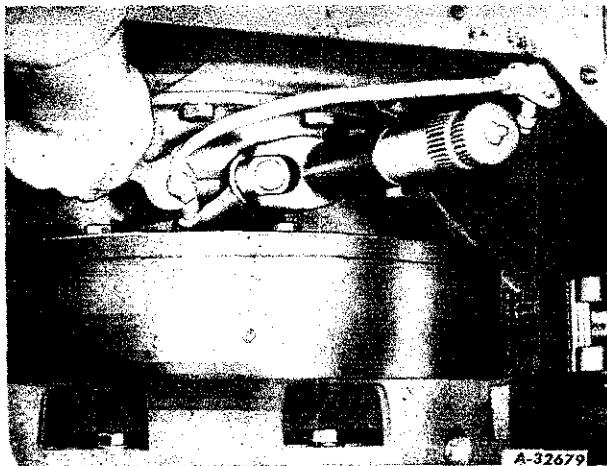
9. Remove the steering clutch release bearing grease tube. (Illust. 13.)

10. Loosen the release fork pivot and remove the release fork as shown in Illust. 14.

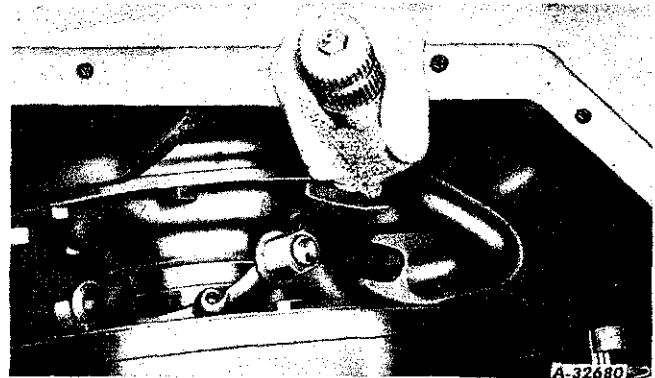
11. Remove the release fork bushings.

12. Remove the four cap screws and four nuts from the bevel gear bearing cage cap and pry the cap from the bearing cage as shown in Illust. 15. For the TD-6 (61), 6 (62), TD-9 (91) AND 9 (92) SERIES: Remove the eight bolts used to secure the bearing adjuster ring and bearing cage to the main frame.

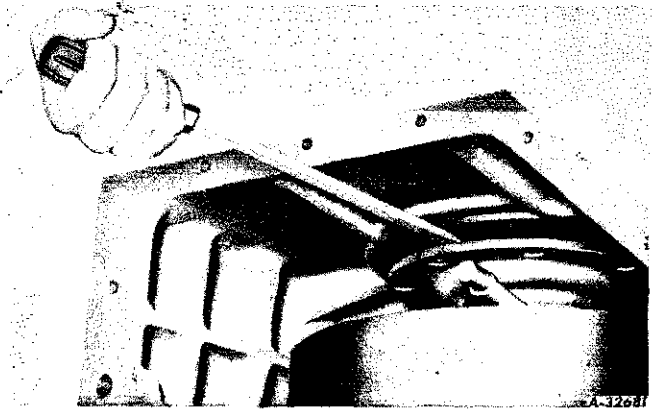
13. Separate the adjusting ring and adjuster assembly from the bearing cage, allowing the bearing to remain in the main frame. Slide the adjuster assembly toward the clutch to expose the coupling retainer cap screws.



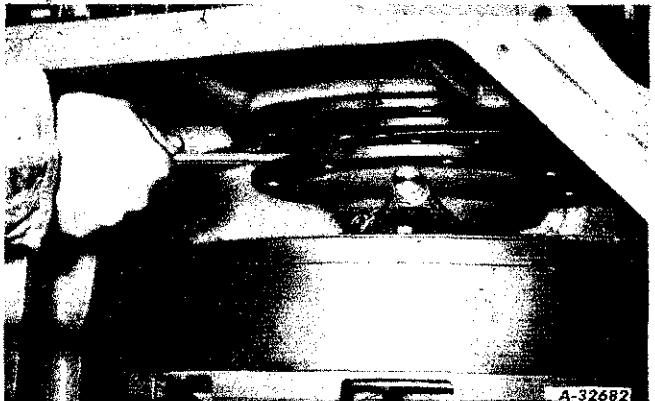
Illust. 13 - Removing Release Bearing Grease Tube.



Illust. 14 - Removing Release Fork.



Illust. 15 - Prying Bearing Cage Cap Loose.

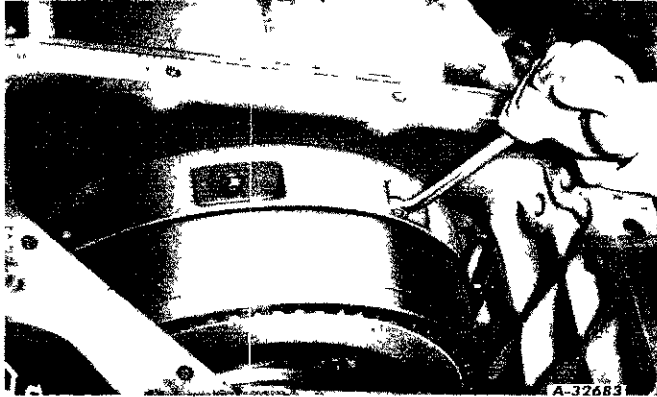


Illust. 16 - Removing Coupling.

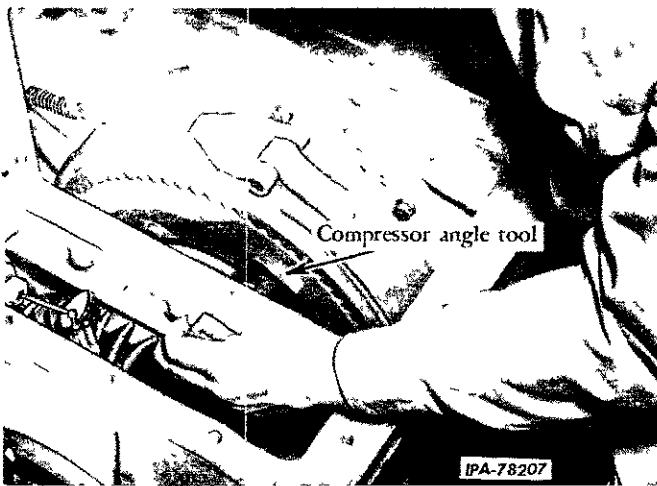
13. Disconnect the coupling from the drive bevel gear hub (Illust. 16.) The coupling screws are secured by lock wires.

FOR THE TD-6 (61), 6 (62) AND TD-9 (91), 9 (92) SERIES: (Reference numbers refer to Illust. 20.)

STEERING CLUTCHES



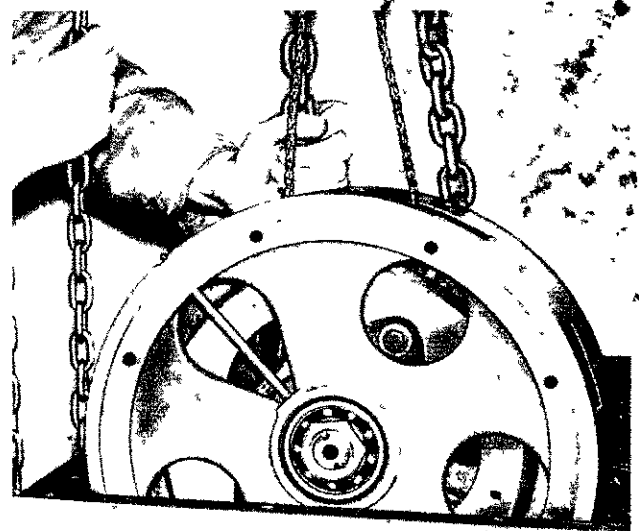
Illust. 17 - Removing Drum from Pinion Flange.



Illust. 17A - Compressor Angle Tool Installed.

Remove the lock wire from the cap screws (15) and the cap screws (15) from the coupling retainer (14A). Remove the split halves of the retainer and pry the coupling (14) toward the clutch until coupling splined end is out of the drive bevel gear hub.

NOTE: To remove all the cap screws from the coupling or coupling retainer, it is necessary to turn the bevel gear to bring up the screws at the bottom.



Illust. 18 - Lifting Out Steering Clutch.

14. Mark the drum and the flange of the sprocket drive pinion shaft to facilitate replacement. The cap screws are not all evenly spaced around the drum, so the drum can go on in only one way.

15. The compressor angle tool will have to be installed to allow sufficient clearance for removal of the clutch assembly. (Illust. 17A.)

16. Remove the cap screws which hold the drum to the pinion shaft flange. (Illust. 17.)

NOTE: The tractor will move slightly as the drum is rotated. To turn the drum, use a long bar inserted in the drum opening.

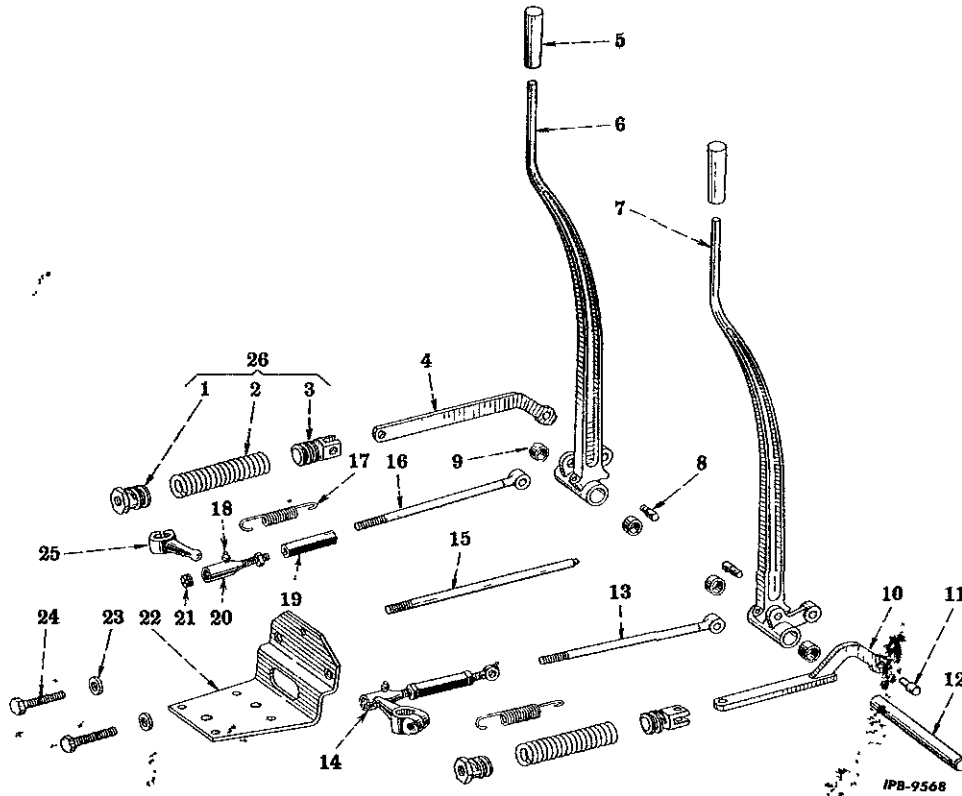
17. Place a sling through the opening in the side of the drum and under the bearing cap. Attach a lifting device to the sling and lift the clutch out of the compartment (Illust. 18.)

Continued on next page.



STEERING CLUTCHES

9. REMOVAL - Continued

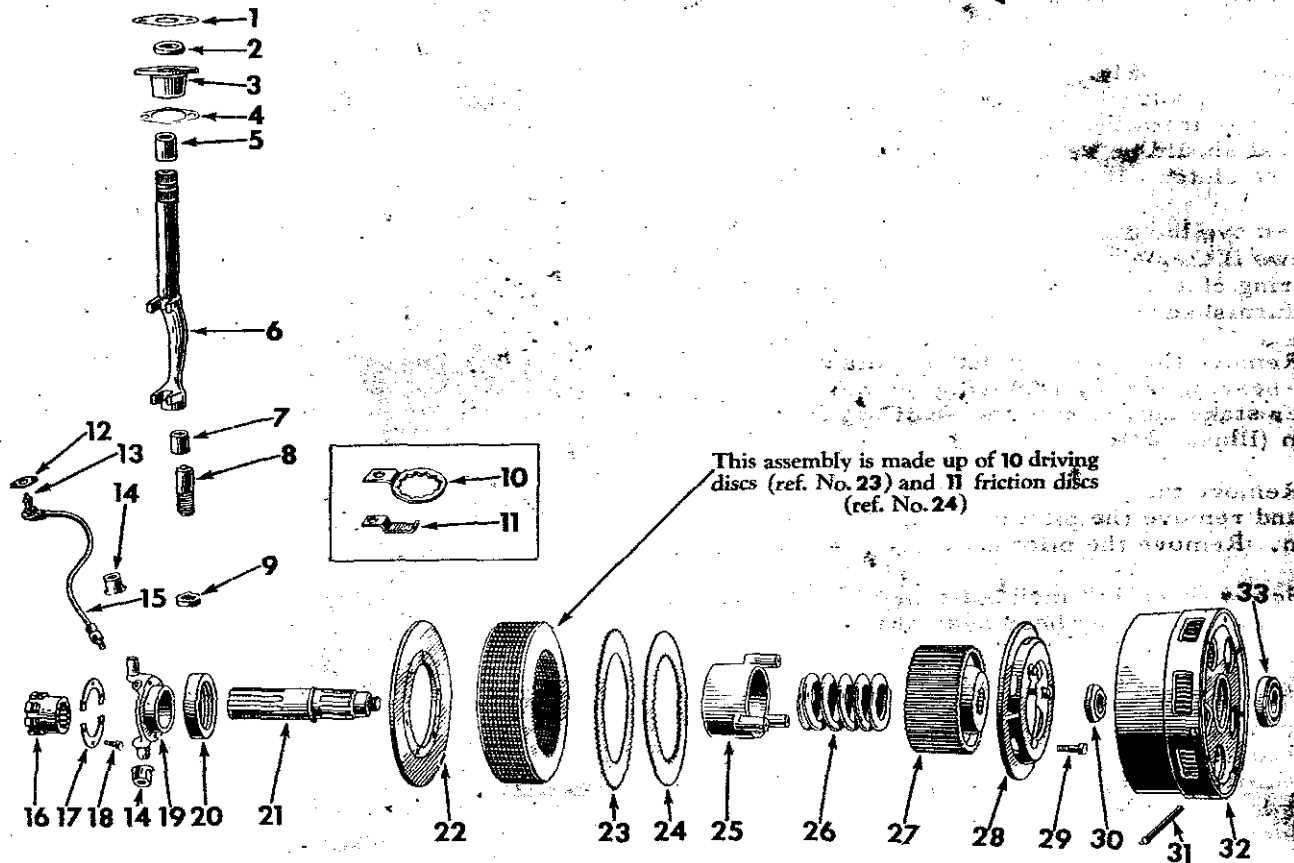


Illust. 19 - Exploded View of Steering Clutch Controls (9(91) and 9(92) Series Shown).

- | | |
|--|--|
| 1. Booster spring adjuster nut. | 14. Turnbuckle socket, R.H. |
| 2. Booster spring. | 15. Booster spring anchor brace. |
| 3. Booster spring yoke. | 16. Turnbuckle eye, L.H. |
| 4. Booster spring link, L.H. | 17. Release lever return spring. |
| 5. Hand lever handle. | 18. Turnbuckle socket lubrication fitting. |
| 6. Hand lever, assembly L.H. | 19. Turnbuckle. |
| 7. Hand lever, assembly R.H. | 20. Turnbuckle socket, L.H. |
| 8. Turnbuckle eye pin. | 21. Turnbuckle socket plug. |
| 9. Hand lever bushing. | 22. Booster spring anchor. |
| 10. Hand lever booster spring link, R.H. | 23. Booster spring adjuster bolt washer. |
| 11. Booster link pin, front. | 24. Booster spring adjuster bolt. |
| 12. Hand lever shaft. | 25. Release lever. |
| 13. Turnbuckle eye, R.H. | 26. Hand lever booster spring. |



STEERING CLUTCHES



Illust. 20 - Exploded View of Steering Clutch Mechanism (9(91) and 9(92) Series Shown). (6(61) and 6(62) Series Similar).

- | | | |
|---|--|--|
| 1. Release shaft bearing felt retainer. | 10. Release fork pivot lock nut lock. | 22. Hub plate. |
| 2. Release shaft bearing felt. | 11. Release fork pivot lock. | 23. Driving disc. |
| 3. Release shaft bearing with bushing. | 12. Gasket. | 24. Friction disc. |
| 4. Retainer. | 13. Release bearing lubrication fitting. | 25. Pressure spring retainer. |
| 5. Release shaft bearing with bushing. | 14. Release pin bushing. | 26. Pressure spring. |
| 6. Release fork with bushing. | 15. Release bearing grease tube. | 27. Hub. |
| 7. Release fork pivot bushing. | 16. Shaft coupling. | 28. Pressure plate. |
| 8. Release fork pivot. | 17. Shaft coupling retainer. | 29. Pressure plate dowel bolt. |
| 9. Release fork pivot lock nut. | 18. Shaft coupling retainer bolt. | 30. Pilot bearing spacer. |
| | 19. Release collar. | 31. Pilot bearing lubrication fitting. |
| | 20. Release thrust bearing. | 32. Drum. |
| | 21. Shaft. | 33. Pilot bearing. |



STEERING CLUTCHES

10. DISASSEMBLY (Ref. Nos. Refer to Illust. 20)

1. Remove the coupling, adjusting ring and adjuster assembly, and the release collar from the clutch shaft (Illust. 21). A shaft coupling oil seal is installed inside the adjuster and this oil seal should be replaced if lubricant leaks into the clutch compartment.

2. Remove the clutch spring compressor screws if they were used in the removal of the steering clutches. The compressor screws are furnished with the tractor.

3. Remove the steering clutch shaft (21) and pilot bearing (33) by removing the bearing retainer stake nut. Drive the shaft out of the drum (Illust. 22).

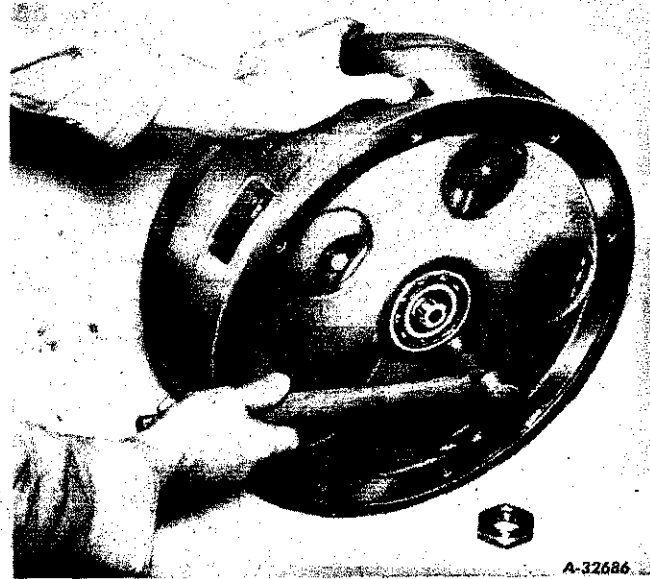
4. Remove the drum (32) from the disc assembly and remove the pilot bearing (33) from the drum. Remove the pilot bearing spacer (30).

5. Screw three 1/2 inch bolts into the pressure plate until they bear against the hub (Illust. 23). This will relieve the spring pressure for removal of the hub plate (22).

6. Take out the cap screws which hold the plate to the hub and remove the plate (Illust. 24). Lift the clutch discs (23 and 24) from the hub. It may be necessary to tap or pry the discs out.

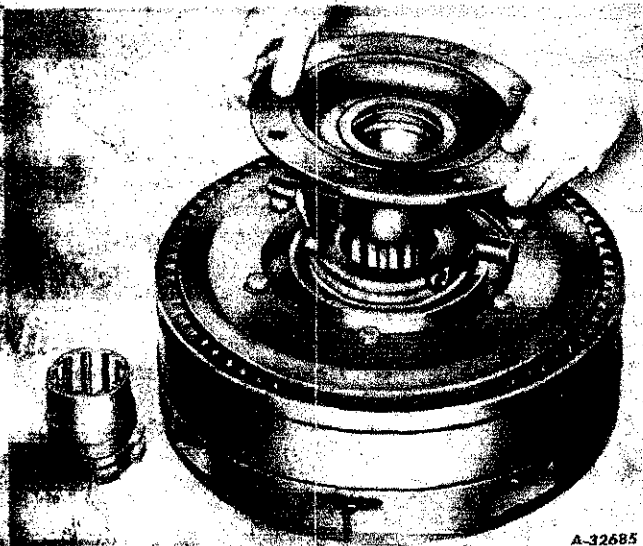
7. Place the hub (27) and spring retainer (25) in an arbor press and apply pressure on the spring retainer. Remove the three bolts from

the pressure plate (28) which were used to compress the spring, and the three dowel screws which hold the pressure plate to the retainer (Illust. 25). Release the arbor press gradually until spring (26) is fully extended, then lift off pressure plate, hub (27), spring (26) and retainer (25).



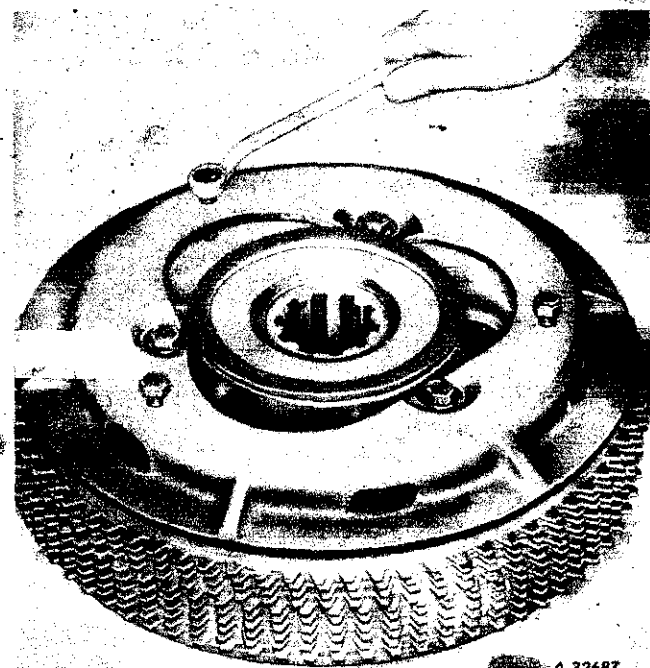
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Illust. 22 - Removing Clutch Shaft.



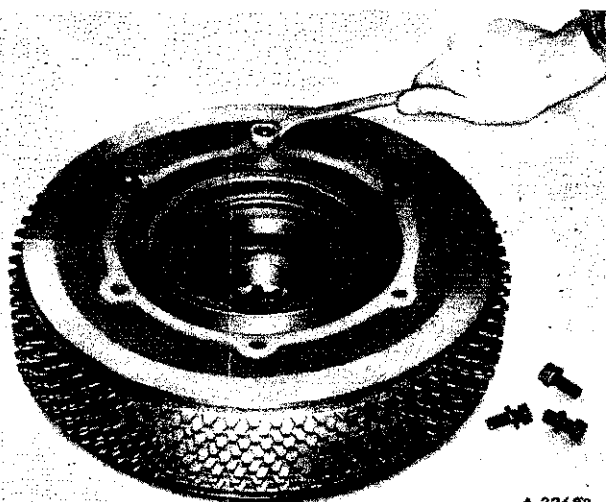
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Illust. 21 - Removing Shaft Coupling and Bearing Adjuster Assembly.

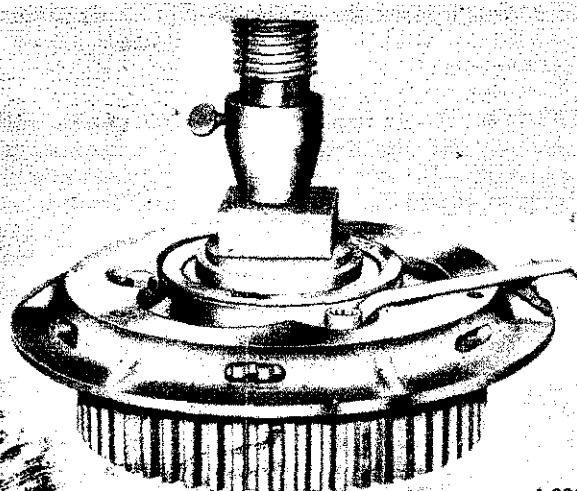


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Illust. 23 - Compressing Pressure Spring.



Illustr. 24 - Removing Hub Plate.



Illustr. 25 - Removing Retainer Screws.

11. INSPECTION AND REPAIR

1. BEARINGS: The release thrust bearing and lower release fork bearing can be inspected without removing them from the release collar and release fork. If all bearings, including the pilot bearing and upper release fork bearing, are in good condition, thoroughly grease them and cover them until ready for assembly.

2. DRUM AND HUB: Check the surface of the drum for scoring. A scored drum can be

placed in a lathe and turned down not to exceed 0.015 inch. If it does not clean up, replace with a serviceable drum. Check the teeth inside of the drum and outside of the hub for wear. Movement of the clutch disc may develop notches in the teeth. Replace either the drum or the hub if the teeth are worn excessively. Small burrs can be removed with a stone. The outside of the hub and the inside of the spring retainer must be smooth.

3. DISCS: Place the discs one at a time on a surface plate or under a straightedge to check for warping. If a 0.005 inch feeler gauge can be inserted between the disc and surface plate or straightedge, replace the discs. If disc teeth are damaged, replace the discs.

4. PRESSURE SPRING: Replace the spring if it is cracked or broken, or if it does not come up to specifications given in Par. 2.

5. OIL SEAL: Inspect the oil seal in the bearing cap, or in the bearing adjuster or the later machines. If the seal is mutilated or oil has been leaking into the clutch compartment, replace with an oil-soaked seal placed so that the leather lip of the seal faces toward the coupling. The coupling can be used to drive in the seal. Inspect the oil seal in the upper release bearing cage and replace if necessary, with the lip facing toward the bearing.

6. Inspect all parts for wear and damage and replace if necessary.

12. REASSEMBLY (Ref. Nos. Refer to Illustr. 20)

1. Install the steering clutch spring (26) by placing the spring in the retainer (25), and the hub (27), and pressure plate (28) on top of the spring. Then arrange the pressure plate on the hub so that the prongs of the retainer are centered in the holes of the hub. Place the unit in an arbor press and compress the spring (Illustr. 25). Install the dowel bolts (29) and lock washers in the tapped holes in the pressure plate (28) to hold the spring compressed. Remove the unit from the arbor press.

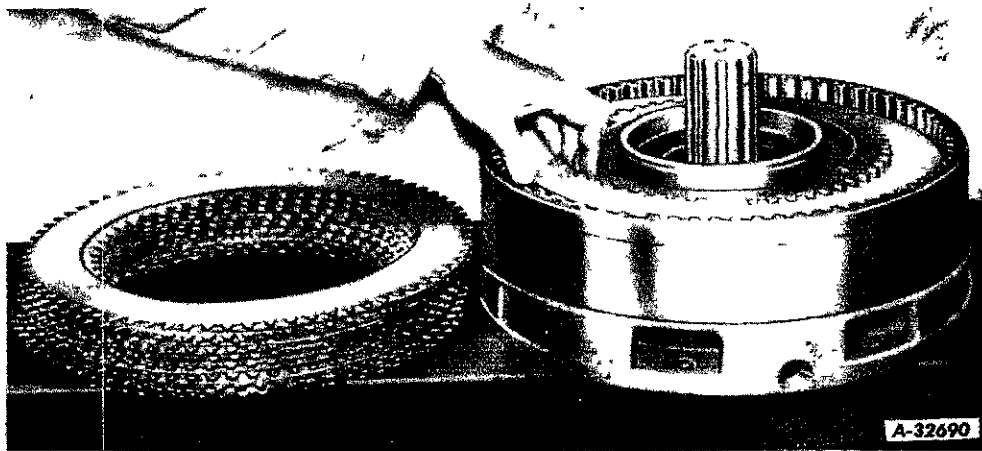
2. Install the steering clutch shaft (21) and drum (32) by inserting the shaft into the hub, and rest the unit on the splined end of the shaft. Tap the pilot bearing (33) into the drum from inside with the shielded side of the bearing toward the inside of the drum. Place the spacer (30) on the shaft, with the flat side down, and lift the drum and pilot bearing onto the pressure plate (28). Tap the pilot bearing (33) onto the end of the shaft and secure with the stake nut.

Continued on next page.



STEERING CLUTCHES

12. REASSEMBLY - Continued



Illust. 26 - Installing Clutch Discs.

3. Place the discs (23 and 24) in position over the hub. The first disc installed must have the teeth on the inside; the balance of the discs should alternate with teeth on the outside and inside (Illust. 26). Install the hub plate (22) and attach to the hub (27). Remove the three bolts which were used to compress the spring before.

4. 6 AND 9 SERIES: Slide the release collar with bearing on the cage cap so the lubricator hole will face the rear of the tractor when the clutch is installed. Coat the finished surface of the cage cap with oil before sliding on the collar. Slide the cage cap onto the clutch shaft and insert the coupling and oil seal on the shaft. Place a new bearing cage cap gasket in position on the main frame (Illust. 21). The clutch is now ready for installation.

6 (61), 6 (62), 9 (91) AND 9 (92): Place the release collar with bearing over the clutch shaft so the lubricator hole will face the rear of tractor when the clutch is installed. Apply a film of oil to the finished surface of the bearing adjuster before sliding into the collar. Slide the assembled bearing adjuster onto the clutch shaft and insert the coupling onto the shaft to engage the splines. (Illust. 21.)

Be sure to install the compressor angle tool so the steering clutch assembly will be in condition for installation. Remove the tool after the clutches are installed (Refer to Illust. 17A.)

13. INSTALLATION

1. Place a sling around the bearing adjuster, or bearing cage cap, and through two openings in the drum (Illust. 20). Lift the clutch into position in the main frame and line up the holes in the drum with the holes in the sprocket drive pinion shaft flange. All cap screws can-

not be installed if the drum is not in the correct position. Install the cap screws and lock washers which hold the drum to the shaft flange. Turn the drum with a crowbar to install all of the cap screws.

2. 6 AND 9: Turn the transmission gears until the coupling and the drive bevel gear splines are in alignment. Then pry the coupling into the gear hub. Install the cap screws and lock wires. Attach the bearing cage cap to the bearing cage and main frame. The torque for coupling screws is given in Par. 2, "SPECIFICATIONS."

6 (61), 6 (62), 9 (91) AND 9 (92): Turn the transmission gears until the splines of the clutch shaft coupling and the drive bevel gear hub are in alignment. Then pry the coupling into the gear hub. Install the coupling retainer halves between the coupling shoulder and the gear hub so the bolt holes line up. Install the cap screws and lock washers. Tighten the cap screws to 52-59 foot-pounds torque, and lock wire. Attach the bearing adjuster to the bearing cage and main frame. Slide the adjuster up against the bearing cage to position the adjuster nut lock toward the rear of tractor (see NOTE), and line up the bolt holes in the adjusting ring and bearing cage. Install all the cap screws (no washers) and tighten to 56-63 foot-pounds torque. Refer to "ADJUSTMENT" paragraph, Section 6 "TRANSMISSION AND BEVEL GEAR."

NOTE: The drive bevel gear bearing adjuster lock, on both sides, must be positioned toward the rear of tractor, otherwise they will interfere with the steering clutch release fork operation. Whenever the adjuster locks are removed they must be reinstalled to the tapped holes provided in the adjusting ring that are at the rear of the bearings, not the two holes at the front.



STEERING CLUTCHES

3. Install the release fork bushings to the release collar and put the fork in place on the pivot. Adjust the pivot for equal space above and below release bushings. Fork should turn freely before and after tightening pivot.

4. 6 AND 9 SERIES: Connect the steering brake bands with the joint pin. Install the release thrust bearing grease tube in the collar. Install the main frame cover.

6 (61), 6 (62), 9 (91) AND 9 (92) SERIES: Install steering brakes (see Par. 5 and reverse the procedure for removal.)

5. Replace the seat frame, fenders, fuel tank, and battery box (if used) being sure to connect the fuel lines and electric wiring.

6. Fill the transmission with lubricating oil.

7. Adjust the steering clutch levers as described in Par. 14.

8. Operate the tractor and try both steering clutches and brakes.

14. ADJUSTMENT - (See Illust. 27 and 28)

1. Loosen the lock nuts "A" and turn the turnbuckle "B" several turns to shorten the linkage. Then tighten the lock nuts "A" against the turnbuckle "B".

2. Check to see if the free movement of the clutch lever is between two and four inches.

NOTE: When the free travel of the clutch levers is reduced to 2 inches, adjustment should be made. MAXIMUM HANDLE LEVER PULL TO BE 35 POUNDS on the 6 Series; 45 POUNDS on the 9 Series.

3. When adjustment can no longer be made by means of shortening the operating linkage, proceed as follows: Remove the release spring "C." Loosen the lock nuts "A" and turn the turnbuckle "B" to lengthen the linkage as much as possible. Remove the release lever cap screw "D" and pry the release lever "D" off the splined release shaft "G." Turn the right hand release lever counterclockwise (the left hand release lever clockwise) slightly, and replace the release lever "E" on the splined shaft "G." Replace the spring "C" and shorten the linkage until the free movement of four inches is obtained.

4. When the desired free movement of the lever is obtained, replace, and tighten the release lever cap screw "D" and tighten the lock nuts "A" against the turnbuckle.

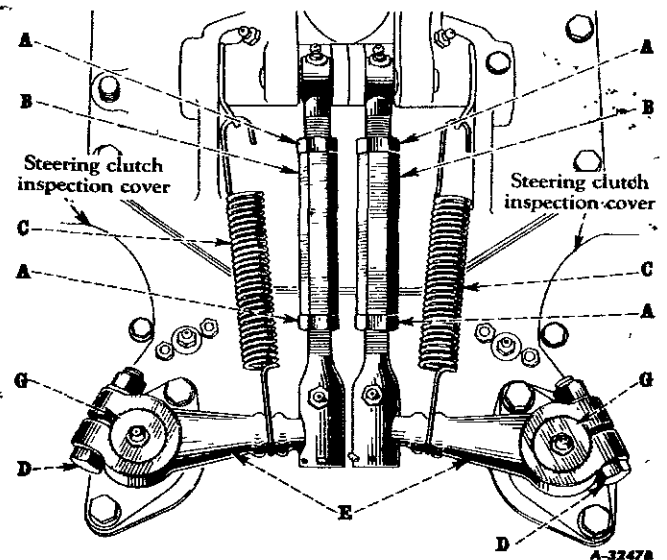
For Tractors Equipped with Hand Lever Booster Spring

Pull the hand levers all the way back and tighten the booster spring adjusting bolts until the

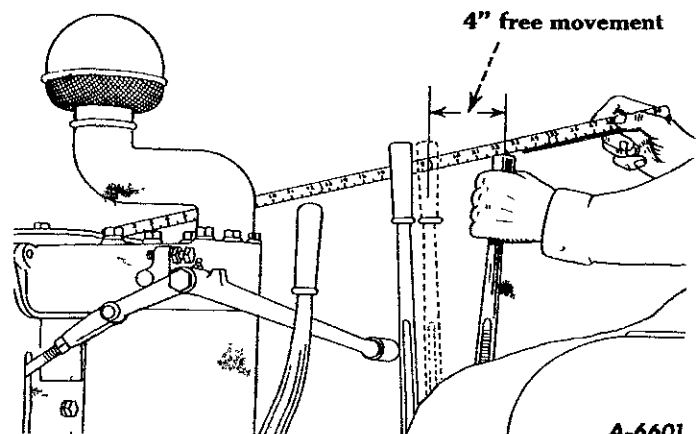
levers remain in this position. Then, loosen the adjusting bolts until the levers move forward to an over-center position. Readjust if necessary until this action is obtained. When the steering clutch hand levers can be pulled back with a minimum of effort and return to a fully engaged over-center position when released, correct adjustment is obtained.

If the levers remain in a partially disengaged position, undue wear of steering clutch discs will result. To prevent excessive wear, both clutch levers must strike the floor board stop when the seat is in the rear position.

5. Subsequent intermediate adjustments can be made by shortening the linkage as described.



Illust. 27 - Steering Clutch Adjustment.



Illust. 28 - Measuring Free Movement of Steering Clutch Levers.

A-6601