

# PART 7 — STEERING CLUTCHES AND BRAKES

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## DESCRIPTION AND OPERATION

Steering clutches are multiple disc, dry type, consisting of eight steel driving discs and eight driven discs. Brakes are mechanically actuated and consist of an external contracting band and drum.

The internal toothed clutch outer hub is also the brake drum.

Steering clutches are disengaged and steering brakes are applied using two levers with dual mechanical linkage.

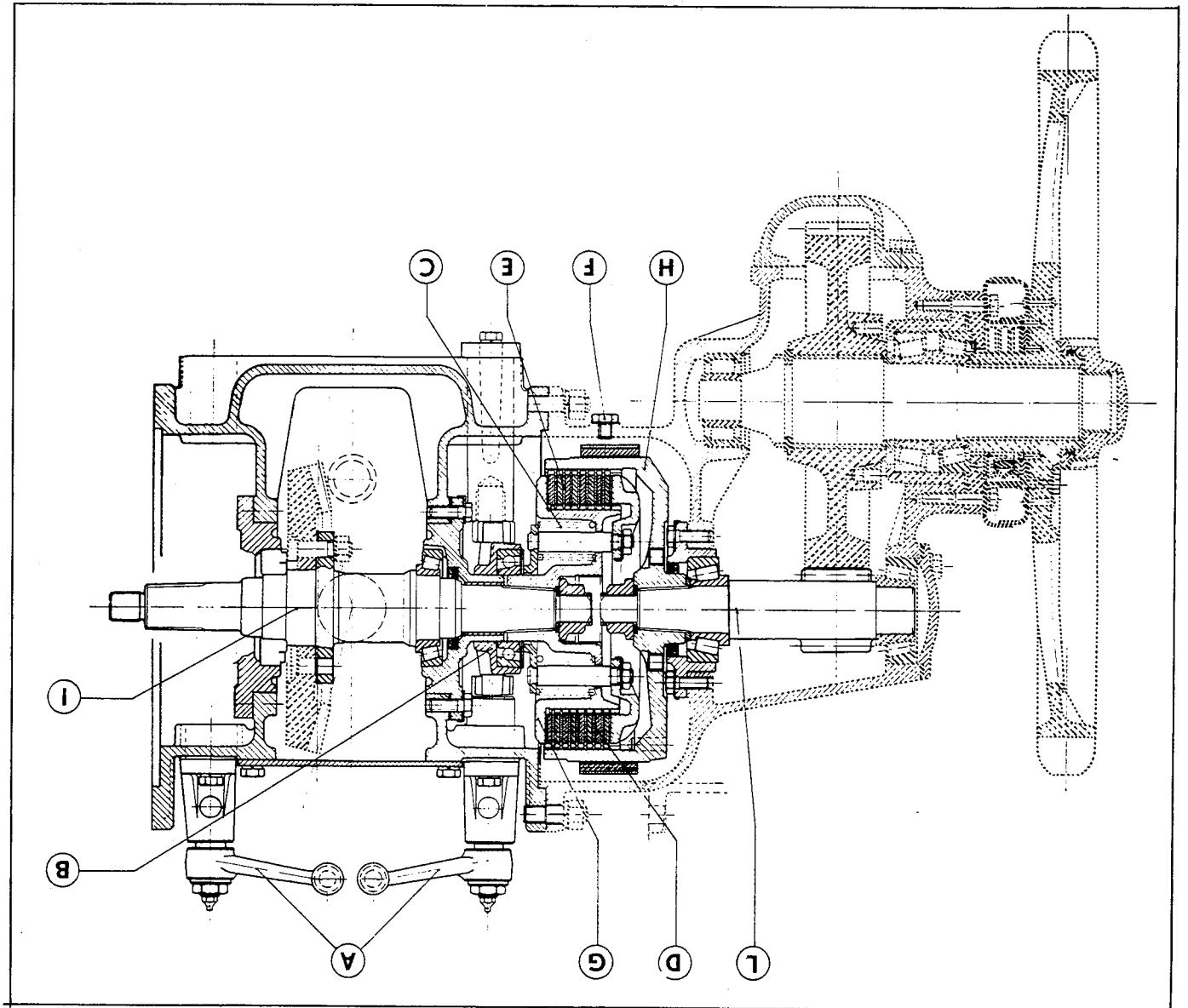
A master brake pedal when applied acts simultaneously upon both individual steering brakes.

1. Steering (clutch) lever free travel.
  1. Brake band adjustment.
- As the steering (clutch/brake) lever is pulled rearward, it passes through four successive stages of operational travel as follows:
- Steering clutches and brakes are controlled with two hand operated levers using multiple mechanical linkage. It is therefore important that adjustments be made accurately and correctly.
- The steering clutches and brakes are adjusted by performing in sequence three separate adjustments:
1. Brake band adjustment.
  2. Steering clutch disengagement.
  3. Steering lever free travel, between clutch disengagement and brake application.
  4. Steering brake application.

## STEERING CLUTCHES AND BRAKES

## ADJUSTMENTS

Fig. 1 — STEERING CLUTCH DIAGRAM



3. Steering lever free travel between clutch disengagement and brake application.

Component	Specification	Procedure
Steering Clutch Lever	5/8 to 7/8 in. free travel	Measured at height of instrument panel
Brake Lever	1/4 in. free travel	Measured at brake lever adjustor
Brake Lever	5/8 to 7/8 in. free travel	Tighten brake band adjustor, then back off 3 clicks (1-1/2 turns)

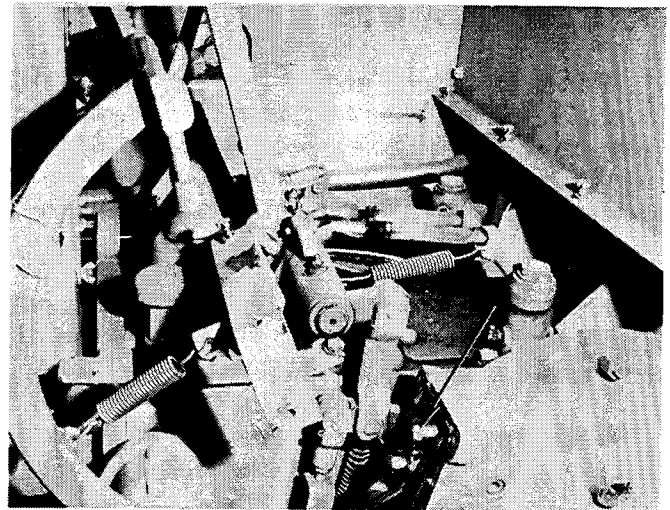


Fig. 2 — BRAKE BAND ADJUSTOR

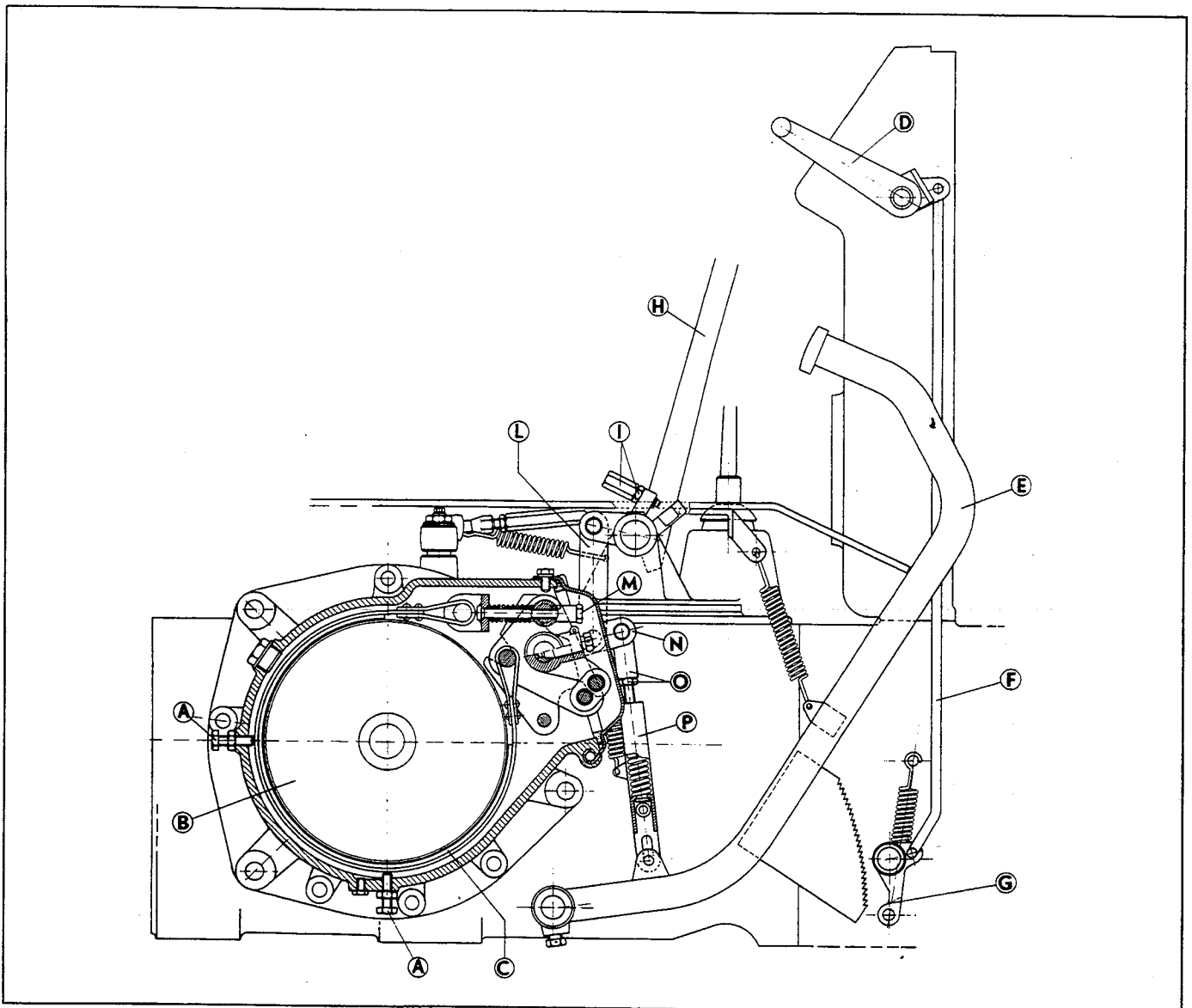


Fig. 3 — BRAKE SYSTEM DIAGRAM

## BRAKE BAND ADJUSTMENT

Remove clutch and brake compartment cover. Turn brake band adjuster, Fig. 2, clockwise removing all clearance between brake band lining and drum, then loosen adjuster (turn counterclockwise) 1-1/2 turns (3 clicks). Replace cover.

Additional information: Two brake band positioning bolts are located on each brake compartment housing, see Fig. 3.

These adjusters are primarily for locating new brake bands in relation to the drums.

Adjustment is as follows:

Loosen locknuts and turn bolts in (clockwise) until lining bottoms on brake drum, then back out bolt two turns. Secure with locknuts.

## BRAKE PEDAL FREE

### TRAVEL ADJUSTMENT

The brake pedal free travel should be 5/8" to 3/4".

To adjust, remove brake compartment inspection cover. Turn adjuster in (clockwise)

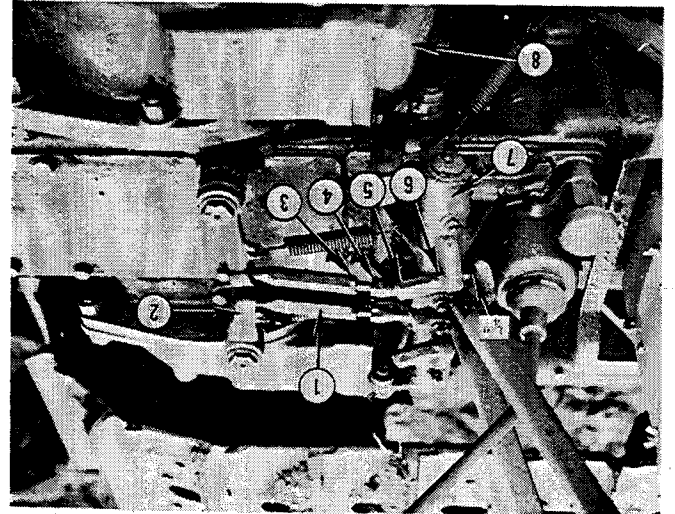


Fig. 4 — STEERING LINKAGE ADJUSTMENT

1. Steering Clutch Release Lever
2. Steering Clutch Linkage
3. Clutch Linkage Adjuster Locknut
4. Clutch Linkage Adjuster (Cover)
5. Brake Lever Adjuster (Locknut)
6. Brake Lever Adjuster (Locknut)
7. Brake Lever (Belcrank)
8. Brake-Clutch Compartment Cover

until brake band is tight against drum, then back out adjuster 1-1/2 turns (3 clicks).

## STEERING LEVER FREE TRAVEL ADJUSTMENT

(1st Stage)

Adjust steering clutch linkage, No. 1, Fig. 4, to provide for 5/8 to 7/8 inch lever free travel measured at instrument panel height.

To adjust free travel, loosen locknut, No. 3, Fig. 4, and shorten or lengthen steering clutch control linkage by turning adjuster accordingly. Secure adjuster with locknut.

(2nd Stage)

**NOTE: It is especially important that this adjustment be made correctly to assure that the steering clutch is completely disengaged before brake application commences.**

Always adjust brake bands and clutch lever "Free Travel, 1st Stage" before attempting to make this adjustment.

1. Lift track (or tracks) off ground. Loader/Dozer and Ripper can be used to lift crawler, if so equipped, otherwise use jack.

2. Pull steering lever rearward just far enough to disengage steering clutch. This can be determined by a second person attempting to rotate track (pry bar can be used as an aid if required).

3. With steering lever held in the exact position outlined in step 2, adjust the brake lever "adjustor" to provide for 1/4" clearance between the "adjustor" and pick-up lug on steering lever. See Fig. 4. Use a 1/4" gauge. A 1/4" thick end wrench may be used as a gauge.

**NOTE: Depress brake pedal when adjusting (1/4" clearance) to assure all play is removed from brake linkage.**

## STEERING CLUTCHES

To gain access to the steering clutch and brake assemblies, it is necessary to remove the final drive assemblies. Specific details on removal procedures of the final drive assemblies are covered in Part 8 of this Manual.

### REPLACEMENT OF CLUTCH PLATES AND DISCS

It is not necessary to remove the clutch assembly from center reduction drive shaft in order to replace clutch discs and plates.

#### DISASSEMBLY

Procedures for replacing clutch discs and plates are, as follows:

1. Place steering clutch lever in the disengaged position. This will compress clutch pressure springs and release tension on spring retaining nuts.

2. Remove pressure spring retaining nuts and safety locks, Nos. 3 and 4, Fig. 5.

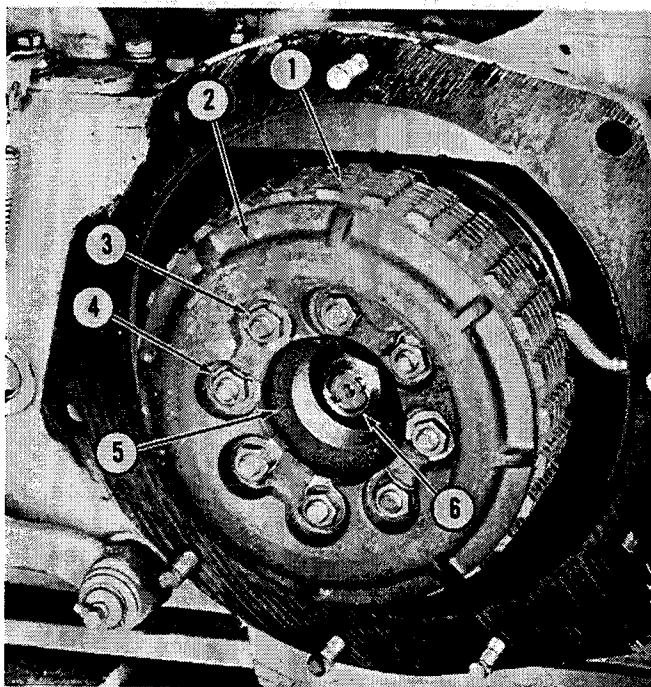


Fig. 5 — STEERING CLUTCH ASSEMBLY

1. Clutch Driven Discs
2. Clutch Pressure Plate
3. Pressure Spring Retaining Nuts
4. Safety Locks
5. Clutch Inner Hub
6. Reduction Shaft Nut

3. Remove pressure plate, No. 2, Fig. 5.
4. Remove eight driving plates and eight driven discs.

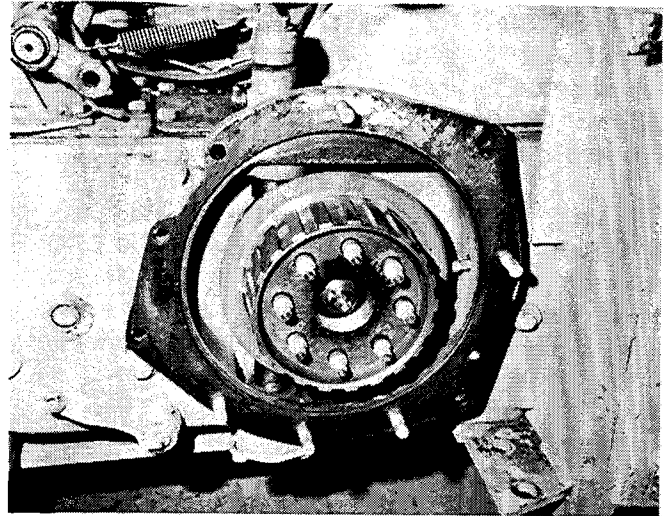


Fig. 6 — STEERING CLUTCH HUB

#### INSPECTION

Clean splines on inner clutch hub thoroughly with a wire brush. Inspect splines for excessive wear. Place a driving plate on inner hub and check to see if plate will move freely.

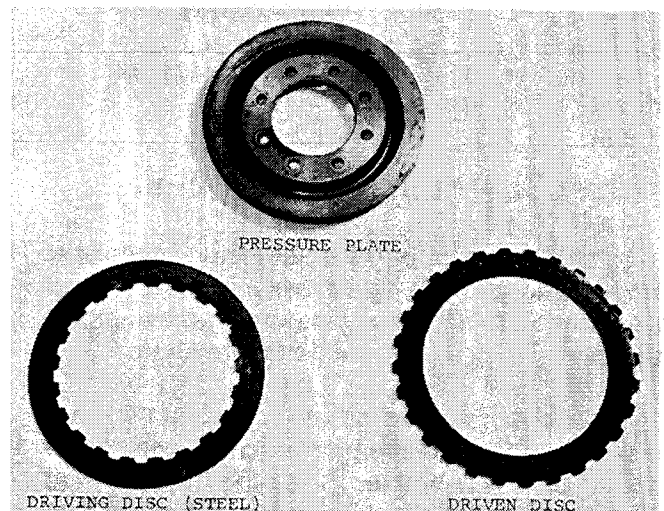


Fig. 7 — CLUTCH DISCS AND PRESSURE PLATE

**NOTE:** When steering clutch is disengaged, there is a slight side movement of driving plates on the splines of clutch inner hub. If driving plate movement is restricted, due to faulty splines or defective teeth on driving plates, the clutch will drag when disengaged.

Check steel driving plates for wear and deformation. If they are warped, or otherwise deformed due to heat from friction, they must be replaced. Check plate internal teeth for wear. Replace plates, if teeth are worn.

Inspect driven discs for wear. If they are worn in excess of the wear limits, which is 0.05 of an inch, they must be replaced. If they do not exceed the wear limits, inspect the external teeth for wear. If discs have become contaminated with oil replacement is recommended.

Inspect pressure plate for cracks or deformation. If warped or cracked, it must be replaced. Wear is not a replacement factor, as the pressure plate makes contact with a driving plate rather than a driven disc.

### REASSEMBLY

Reassemble the clutch plates and discs as follows:

1. With clutch release lever in the disengaged position, assemble discs and plates on the clutch inner hub, commencing with a driven disc and ending with a driving plate.

2. Install the clutch pressure plate, safety locks, and the pressure spring retaining nuts.

3. Tighten nuts to 145 ft.-lbs. torque, secure with safety locks.

### REMOVAL OF CLUTCH ASSEMBLY

If clutch is to be disassembled, the best method is to remove the pressure plate, driven plates and driving discs, before removing the assembly from center reduction drive shaft.

If clutch assembly is being removed to gain access to clutch release bearing only, and clutch is not to be disassembled, then the best method is to remove the clutch assembly intact. See Fig. 8.



**Fig. 8 — REMOVING STEERING CLUTCH ASSEMBLY**  
1. Clutch Release Arm  
2. Clutch Release Bearing

To remove clutch assembly when further disassembly is planned, proceed as follows:

1. Secure steering clutch lever in the disengaged position. This will compress the clutch pressure springs and release tension on the spring retaining nuts.

2. Remove pressure spring retaining nuts and safety locks, Nos. 3 and 4, Fig. 5.

3. Remove pressure plate, No. 2, Fig. 5.

4. Remove the eight driving plates and the eight driven discs.

5. Loosen center reduction shaft nut, No. 6, Fig. 5.



**CAUTION:** As a safety precaution, do not remove the reduction shaft nut until after completion of operation in sub-paragraph 6a, listed below.

6. Remove clutch inner hub from center reduction shaft, as follows:

- a. Move the steering clutch release lever to the disengaged position and tap the end of the inner clutch hub with a non-metallic-faced