**ADJUSTMENTS**

**Variator Linkage Adjustment on 200, 210, 212, 214 and 216 Tractors**

1. To adjust the variator linkage, place the variable speed control lever (A) in notch 5 on the quadrant, which is the third notch from the front of the tractor.

2. Pry button plug from adjusting hole in right side of the tractor pedestal and loosen cap screw (D) one to two turns with a 3/4-inch (19.050 mm) socket wrench (B).

3. Disconnect spark plug cable and ground. Turn ignition key (C) to crank engine several revolutions with starter until the clutch pedal raises as high as it will go.

4. Take up slack in linkage by pushing down on cap screw (D). Tighten cap screw (D) and replace button plug in adjusting hole.

**NOTE:** If, after adjusting variator linkage, tractor will not move when the variable speed control lever is in first notch on the quadrant (slow speed position) and the clutch pedal is released, install a new primary belt.

---

**Spring Adjustment on 200, 210, 212, 214 and 216 Tractors**

To obtain desired torque and load sensing characteristics, adjust the variator spring as follows:

For greater load sensitivity (variator increases torque earlier under load) loosen the spring tension by lengthening the eyebolt. For less load sensitivity, tighten the spring tension by shortening the eyebolt.

---

**Belt Guide Adjustment on 200, 210, 212, 214 and 216 Tractors**

If the primary belt jumps the variator sheave when the clutch pedal is depressed, the distance between the variator and primary belt guide should be checked. Distance between guide and sheave should not exceed 1/8 inch (3.175 mm).
## VARIATOR SPECIFICATIONS

<table>
<thead>
<tr>
<th>Component</th>
<th>Dimension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Center Sheave I.D. with Bearing</td>
<td>2.0015 to 2.0025 in. (50.8381 mm to 50.8635 mm)</td>
</tr>
<tr>
<td>Hub O.D.</td>
<td>1.999 to 2.001 in. (50.7746 mm to 50.8254 mm)</td>
</tr>
<tr>
<td>Hub I.D.</td>
<td>1.1790 to 1.1800 in. (29.9466 mm to 29.9700 mm)</td>
</tr>
<tr>
<td>Bearing O.D.</td>
<td>1.1806 to 1.1811 in. (29.9872 mm to 29.9999 mm)</td>
</tr>
<tr>
<td>Bearing Shaft O.D.</td>
<td>0.6262 to 0.6267 in. (15.9055 mm to 15.9182 mm)</td>
</tr>
<tr>
<td>Bearing Support I.D.</td>
<td>0.6240 to 0.6255 in. (15.8496 mm to 15.8877 mm)</td>
</tr>
<tr>
<td>Primary Belt Guide</td>
<td>1/16 to 1/8 in. (1.588 mm to 3.175 mm)</td>
</tr>
</tbody>
</table>

*Distance Between Variator and Guide*
Assembling Variator
(200, 210, 212, 214 and 216 Tractors)

Thread one sheave onto hub. Coat bearing case with a light film of oil. Place hub with sheave on press bed. Press bearing into hub shaft first until bearing end is 1/8 inch (3.175 mm) below hub face, Fig. 32.

IMPORTANT: Press on outer race of bearing only.

Wipe a light film of oil on bearing shaft. Place variator arm on bearing shaft with weld down. Press variator arm on bearing shaft until end of bearing shaft is flush with outside of variator arm, Fig. 33.

Clamp assembly in vise having soft jaws. Place center sheave on hub and thread half sheave on hub. Using two large punches and bar, or special tool, tighten sheaves firmly by turning sheave in clockwise direction.
Assembling Variator—Continued

Fig. 34-Spiking Threads
Spike threads three or four places on both sides of variator, Fig. 34.

Installing Variator
(200, 210, 212, 214 and 216 Tractor)

Install shoulder bolt and tighten securely, Fig. 29.

Fig. 35-Installing Variator
Install variator assembly from under tractor. Guide pivot through notch in tractor frame, Fig. 35.

Fig. 37-Connecting Speed Control Link
Connect speed control link with spring locking pin, Fig. 37.

Fig. 38-Installing Variator Spring
Attach variator spring to variator and eyebolt and tighten eyebolt for desired tension, Fig. 38.

Reinstall battery base and battery.

Reinstall belts on variator.

After installation is completed, make final adjustments to variator.

Litho in U.S.A.
Group 25
PTO CLUTCH

200 SERIES TRACTORS SERIAL NO. 30,001-190,000

A—Seal
B—Roller Bearings
C—PTO Drive Sheave
D—Inner Snap Ring
E—Small Snap Ring
F—Ball Bearing
G—Outer Snap Ring
H—PTO Clutch Pivot

Fig. 1-PTO Clutch Drive Sheave Assembly on 200 Series Tractors
(Serial No. 30,001-190,000)

PRINCIPLE OF OPERATION

The manual PTO clutch on 200 Series Tractors (Serial No. 30,001-190,000), is the cup and cone-type. The cone, which has the clutch lining bonded to it, is attached directly to the engine crankshaft. The cup (C), Fig. 1, slides on the crankshaft, and is controlled by the PTO clutch linkage.

Engaging the PTO clutch, slides the cup into contact with the cone, starting rotation. Disengaging the PTO clutch slides the cup out of engagement with the cone and into engagement with the brake shoe, stopping rotation.

DIAGNOSING MALFUNCTIONS

Clutch Will Not Engage
- Clutch linkage bent or broken.
- Clutch linkage out of adjustment.
- Clutch lining on fulcrum bolt worn excessively.

Clutch Will Not Disengage
- Clutch linkage bent or broken.
- Clutch linkage out of adjustment.

Clutch Will Not Stop Rapidly When Disengaged
- Clutch brake shoe out of adjustment.
- Clutch brake shoe lining worn excessively.

PTO Drive Sheave Noisy
- Drive sheave bearing dry.
- Bearing worn excessively.
- PTO clutch pivot bearing worn excessively.
Disassembly

Remove clutch arm (X) from PTO clutch pivot (A) and fulcrum bolt (W). Loosen clutch brake shoe (T) to allow PTO clutch cup (M) to be removed. Remove cap screw (N) and washers (O and P) from end of crankshaft and remove bearing inner race (Q). Remove clutch cone (R) and key (S).

Remove outer snap ring (B). Press PTO clutch pivot (A) out of PTO clutch cup (I). Remove inner snap ring (J). Press two needle bearings (K) and oil seal (L) out of PTO drive sheave. Remove small snap ring (D) from PTO clutch pivot (A) and press bearing (C) off clutch pivot (A).

Inspection

Inspect clutch linings and mating surfaces for excessive wear. Inspect bearings, bearing inner race and seal. Inspect PTO brake shoe for excessive wear. Replace parts as necessary.
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