300 and 400 TRACTORS

SPECIFICATIONS & GENERAL

ENGINE

HYDRAULICS

ADJUSTMENTS

CHASSIS

POWER TRAIN

ELECTRICAL SYSTEM
HYDRAULICS

HYDRASTATIC OIL AND FILTER

1. Check the hydrostatic oil level (Figure 42). To be certain of satisfactory performance it is important that the hydrostatic oil is kept absolutely clean and that the level of oil in the oil reservoir be maintained. Before checking the hydrostatic oil level, be certain the outside of the hydrostatic oil reservoir is clean and that no debris can enter the reservoir.

2. Check the hydrostatic oil level by removing the oil level plug located on the side and near the top of the reservoir. If oil runs out, the reservoir is full and the plug should be replaced. If oil does not run out, replace the oil level plug, remove the nut and cover from top of reservoir and add oil to the reservoir until it reaches the level of the oil level plug. Use Power Fluid 401, Dexron ATF (Automatic Transmission Fluid) which is available locally from several major oil companies.

3. Capacity of the system is 1-3/4 quarts.

4. Hydrostatic oil filter (Figure 42). The hydrostatic oil filter in the bottom of the reservoir should be changed only when dirt gets into the hydrostatic system. To change the filter, remove the nut and cover from top of reservoir. Have a container ready to catch the oil and disconnect one of the hoses at the bottom of the oil reservoir. Raise the end of the hose and tie it up so oil will not run out of the pump assembly. Drain the oil from the reservoir into the container. Flush reservoir with kerosene and then follow up with 1/2 quart of new oil to flush any dirt from the

5. Use two pieces of wire with a hook formed on end to pull large washer and filter up out of reservoir. Flush reservoir with kerosene and then follow up with 1/2 quart of new oil to flush any dirt from the

6. Keep the pump cooling fins on the hydrostatic pump and the transmission cooling fins clean for more efficient operation (Figure 42).

7. After every five (5) hours of operation (more often in dusty conditions) remove the snap-out plug from the fan and oil cooler housing and clean fan and cooler with air or water under pressure. Replace the plug by pressing it into the hole in cooler housing (Figure 43).
ADJUSTMENTS

300 SERIES TRACTORS
- Clutch ................................................ D-2
- Brake ............................................... D-2
- Hydrostatic Control .............................. D-2
- Variable Speed Control ......................... D-2
- Belt Slippage Adjustments ..................... D-3
- Variable Speed Adjustment Check ............ D-3
- Manual Power Take-Off ......................... D-4
- Electric Power Take-Off ....................... D-5
- Seat Adjustment .................................. D-5

400 Series Tractors
- Seat Adjustment ................................ D-6
- Front Power Take-Off Idler Adjustment .... D-6
- Tractors with 3-Speed Transmission ........ D-7
- Tractors with Shuttle Clutch ................ D-9
- Tractors with Hydrostatic Transmission .... D-10
300 SERIES TRACTOR ADJUSTMENTS

CLUTCH (See Page E-12 for Parts Break Down)
Manual Shift Model (Figure 1) (310, 310D, 312, 312D, 314, 314D)

With the Variable Speed Control Lever in the "slow" speed position, adjust the two locknuts on the Clutch Rod to give a spacing of 7/8 inch between the inside nut and the Idler Pulley Pivot Arm Rod Guide. Nut must not touch Rod Guide when Control Lever is in fast position.

CLUTCH (See Page E-12 for Parts Break Down)
Hydrostatic Drive (Figure 2) (312H, 314H)

With the Hydrostatic Control Lever in the "Neutral" position, adjust the two locknuts on the Clutch Rod to give a spacing of 5/8 inch between the inside nut and the Idler Pulley Pivot Arm Rod Guide.

BRAKE (See Page E-12 for Parts Break Down)
Manual Shift Model (Figure 1) (310, 310D, 312, 312D, 314, 314D)

Should Brake adjustment become necessary, follow adjustment procedure Number 4 and Number 6 under Variable Speed Control section.

BRAKE (See Page E-12 for Parts Break Down)
Hydrostatic Drive (Figure 2) (312H, 314H)

The brake should be adjusted to provide full braking when the Clutch Pedal is completely depressed. Place the Hydrostatic Control Lever in "Neutral" position. Depress Clutch-Break Pedal completely and turn the Brake Band Adjusting Nuts until the Brake Band is tight against the Brake Drum.

HYDROSTATIC CONTROL (Figure 2)
Hydrostatic Drive (312H, 314H)
(See Page E-14 for Parts Break Down)

Put the Hydrostatic Control Lever in the "Neutral" position. If the tractor "creeps" forward or backward, the turnbuckle on the Control Linkage should be adjusted. Loosen the locknuts at end of the turnbuckle. Rotate the turnbuckle clockwise or counter-clockwise — whichever is necessary to stop the creeping — and retighten the locknuts using two wrenches so that the turnbuckle will not move. If the tractor still creeps, readjust by the same procedure.

VARIABLE SPEED CONTROL (Figure 1)
(See Power Train Section)
Manual Shift Model (310, 310D, 312, 312D, 314, 314D)

The Variable Speed Mechanism is adjusted at the factory under "no load" conditions. In most instances, this adjustment should provide satisfactory operation.

If, under load or after the "break-in" period, erratic or improper operation is noted, follow the procedures outlined below to make the necessary adjustments.

NOTE: All adjustments require the Variable Speed Control Lever to be placed in the "Slow" or "Fast" position. Observe which position the Lever should be placed in before making each adjustment.

DO NOT ATTEMPT TO MOVE THE VARIABLE SPEED CONTROL LEVER WHEN THE ENGINE IS NOT RUNNING OR WHEN THE CLUTCH PEDAL IS DEPRESSED.
CHASSIS

STEERING GEAR BOX (300 & 400 Series) ....................... E-2
STEERING LINKAGE (300 & 400 Series) ........................ E-3
FRONT AXLE ASY. (300 Series) ................................. E-5
FRONT AXLE ASY. (400 Series) ............................... E-7
FRONT WHEEL BEARINGS (300 & 400 Series) ............... E-7
CLUTCH AND BRAKE SYSTEM — VARIABLE SPEED
TRANSMISSION (300 Series) ...................................... E-9
SHUTTLE CLUTCH CONTROL (400 Series) ..................... E-11
CLUTCH AND BRAKE SYSTEM — SHUTTLE CLUTCH
(400 Series) & DIRECT DRIVE (300 & 400 Series) .......... E-13
HYDROSTATIC CONTROLS (300 & 400 Series) ................ E-15
CLUTCH AND BRAKE SYSTEM — HYDRAULIC
TRANSMISSION (300 Series) ...................................... E-17
CLUTCH AND BRAKE SYSTEM — HYDROSTATIC
TRANSMISSION (400 Series) ..................................... E-19
DRIVE SHAFT (300 & 400 Series) ............................... E-20
ELECTRIC LIFT (300 & 400 Series)
Specifications .......................................................... E-21
Motor Inspection ....................................................... E-21
Motor Assembly ....................................................... E-21
Ball Bearing Screw & Brake Assembly ......................... E-22
Outer Tube .............................................................. E-23
Gear Case ............................................................... E-23
Installation of Clutch and Shaft Assembly in
  Gear Case .......................................................... E-23
Overload Clutch and Gear Assembly Inspection .......... D-24
BALL BEARING SCREW AND BRAKE ASSEMBLY
AND INSPECTION

(Refer to Figure 3)

1. Remove the four (4) 1/4 inch capscrews at the base of the outer tube.
2. Pull the inner tube, ball bearing screw and brake assembly from the outer tube sufficient to permit the removal of the quad ring dust seal from recess in the outer tube. The complete assembly can be removed from the outer tube.
3. Inspect the grooves in the threaded shaft and remove any nicks or burrs. If the shaft is damaged too severely, it will need replacement. The ball bearing screw and brake is serviced only as a complete assembly.
4. Replace the ball bearings. It will be necessary to support the threaded shaft and place the block so that the ball bearings remain in the grooves in the shaft and block. If the ball bearings are in the grooves of the block and shaft properly they form spirals around the shaft from one split tube port to the other. The grooves will be completely filled if a ball bearing comes out of one port as a bearing is forced in the other split tube port. Use some pressure gun grease to hold the balance of the bearings in the split tube.
5. Enter the ends of the split tube in the ports in the block and secure the clamp with the two (2) machine screws.
6. Apply color code green Loctite to the threaded section of the block assembly and replace the inner tube assembly.
7. Lubricate the threaded shaft with a good grade of pressure gun grease. Rotate the inner tube and block assembly to work some lubrication to the ball bearings.
8. Place the quad ring around the threaded shaft between the brake and inner tube.
9. Install the coupler sleeve on the coupling (Figure 3). A liberal amount of pressure gun grease in the sleeve will keep it in place during assembly.
10. Start the assembly in the outer tube a sufficient distance so that the brake is past the quad ring groove, then install the quad ring in the internal groove of the outer tube. Move the inner tube through the quad ring while rotating the tube slightly to prevent damage to the quad seal. A little lubrication on the tube would be helpful during installation.
11. Push the assembly in so that the shaft drive pin will enter the slot in the coupling.
12. Replace the four (4) 1/4 inch capscrews. It may be necessary to rotate the complete assembly to align the four holes in the brake with the four holes in the outer tube.

(Refer to Figure 4)

1. Clamp the block assembly in a vise and remove the inner tube assembly.
2. Remove the clamp from the block assembly and the split tube.
3. There are sixty-seven (67) 1/8 inch ball bearings in the grooves of the threaded shaft, block assembly and split tube assembly.
ELECTRICAL SYSTEM

DESCRIPTION .................................................. G-3
BATTERY CIRCUIT ............................................. G-4
BATTERY .......................................................... G-4
BATTERY CARE .................................................. G-4
WINTER CARE .................................................... G-4
REGULATOR — RECTIFIER ....................................... G-4
WIRING CONDUIT ................................................. G-5
CHARGING CONDUIT ............................................... G-5
STARTING CIRCUIT ............................................... G-5

COMMON TERMS
Voltage ............................................................... G-6
Amperes ............................................................. G-6
Resistance .......................................................... G-6
Multi-Meter ........................................................ G-6
Circuit — Continuity ............................................. G-6
Switches .............................................................. G-7
Starting Circuit ................................................. G-7
Direct Current .................................................... G-7

WIRING DIAGRAM (Magneto Ignition) ..................... G-8
WIRING DIAGRAM (Breaker Point Ignition) ............... G-9
FIGURE 1
300 & 400 Series Tractors
G-2