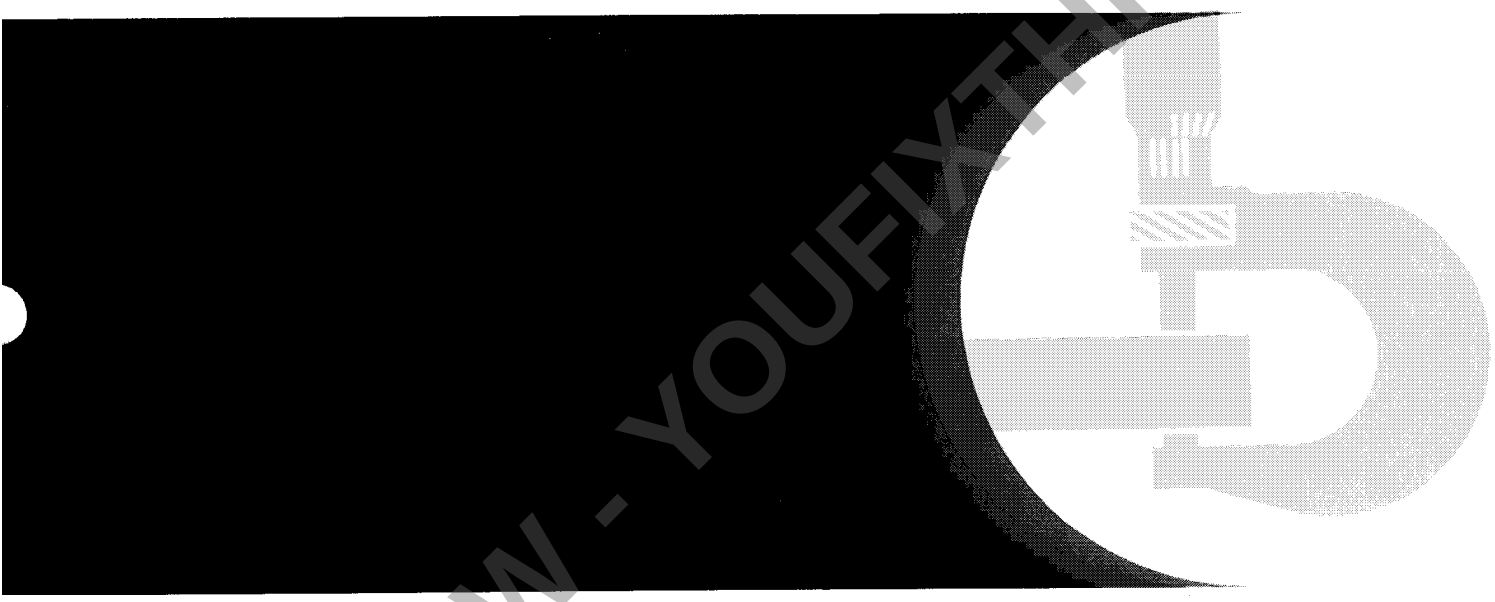
# John Deere
# JD500-C
# Loader Backhoe



## TECHNICAL MANUAL

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## TM-1038

Litho in U.S.A. (T) Revised

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# JD500-C Loader Backhoe TECHNICAL MANUAL

**TM-1038 (Oct-79)**

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*The specifications and design information contained in this manual were correct at the time it was printed. It is John Deere's policy to continually improve and update our machines. Therefore, the specifications and design information are subject to change without notice. Wherever applicable, specifications and design information are in accordance with SAE and ICED standards.*

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# Group 5
# SPECIFICATIONS

(Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with ICED and SAE Standards. Except where otherwise noted, these specifications are based on a unit equipped with 18.4-28, 8 ply rating rear tires; 14.5/75-16, 10 ply rating front tires; 1 cu. yd. (0.76 m³) loader bucket, 24 in. (610 mm) standard backhoe bucket and standard equipment.)

| **Power** (@ 2500 engine rpm): | **SAE** | **DIN** |
|---|---|---|
| Gross | 83 hp (61.9 kW*) | |
| Net | 80 hp (59.7 kW) | 85.0 PS |

Net engine flywheel power is for an engine equipped with fan, air cleaner, water pump, lubricating oil pump, fuel pump, alternator and muffler. Gross engine power is without fan. Flywheel power ratings are under SAE standard conditions of 500 ft. altitude and 85°F temperature and DIN 70 020 standard conditions of 760 mm Hg barometer (sea level) and 20°C temperature.

*In the International System of Units (SI), power is expressed in kilowatts (kW).

**Engine:** John Deere diesel, 4-cylinder, 4-stroke cycle
Bore and stroke ..... 4.25x4.75 in. (108x121 mm)
Piston displacement ..... 270 cu. in. (4425 cm³)
Compression ratio ..... 17.3 to 1
Maximum torque
@ 1300 rpm ..... 202 lb-ft (274 Nm) (27.9 kg-m)
NACC or AMA (U.S. Tax) horsepower ..... 28.9
Main bearings ..... 5
Lubrication ..... Pressure system w/full-flow filter
Cooling ..... Pressurized w/thermostat and fixed bypass
Fan ..... Suction
Air cleaner w/restriction indicator ..... Dry
Electrical system ..... 12 volt w/alternator
Batteries (two 6 volt) ..... Reserve capacity: 340 minutes each

**Transmission:**
Full Power Shift. 8 speeds forward, 4 reverse: Power Shift from forward to reverse in first 4 gears.

| **Gear:** | **Travel Speeds: mph** | **kmh** |
|---|---|---|
| Forward 1 | 1.7 | 2.7 |
| 2 | 2.4 | 3.9 |
| 3 | 3.8 | 6.1 |
| 4 | 4.9 | 7.9 |
| 5 | 6.3 | 10.1 |
| 6 | 8.1 | 13.0 |
| 7 | 10.8 | 17.4 |
| 8 | 18.0 | 29.0 |
| Reverse 1 | 2.0 | 3.2 |
| 2 | 2.8 | 4.5 |
| 3 | 4.4 | 7.1 |
| 4 | 5.7 | 9.2 |

**Final Drives** ..... Inboard, planetary
**Brakes**...Hydraulically power actuated, full enclosed wet-disk. Self-equalizing. Foot-operated individually or simultaneously.

**Steering:** Power
Turning radius (brake applied) ..11 ft. 2 in. (3.40 m)
Loader clearance (brake applied)... 33 ft. (10.06 m)
Number of turns, far left to far right ..... 5

**Hydraulic System:** Closed-center

Pressure..... 2350 psi (16 203 kPa) (165.2 kg/cm²)
Loader control..... Single-lever
Backhoe control ..... Two-lever
Pump...Piston, constant pressure, variable-displacement, 38 gpm (144 L/min) @ 2500 engine rpm
Filter...25 micron steel-enclosed paper cartridge in return

| **Hydraulic Cylinders:** | **Bore** | **Stroke** |
|---|---|---|
| Loader boom | 3.25 in. (83 mm) | 28.7 in. (729 mm) |
| Loader bucket | 3.25 in. (83 mm) | 16.7 in. (424 mm) |
| Backhoe boom | 4.5 in. (114 mm) | 36.7 in. (932 mm) |
| Backhoe crowd | 4.5 in. (114 mm) | 35.5 in. (902 mm) |
| Backhoe bucket | 3.5 in. (89 mm) | 27.37 in. (695 mm) |
| Backhoe swing | 4 in. (102 mm) | 9.31 in. (237 mm) |
| Stabilizer | 3.5 in. (89 mm) | 16.9 in. (429 mm) |

Cylinder rods..Ground, heat-treated, chrome-plated, polished
Loader boom, backhoe swing and stabilizer cylinder rods ..... 1.75 in. (44 mm) dia.
Loader bucket cylinder rods .. 1.50 in. (38 mm) dia.
Backhoe crowd, boom and bucket cylinder rods ..... 2.25 in. (57 mm) dia.

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## 11. Steering

Check power steering. Steering wheel should turn freely in both directions without jerking or excessive play.

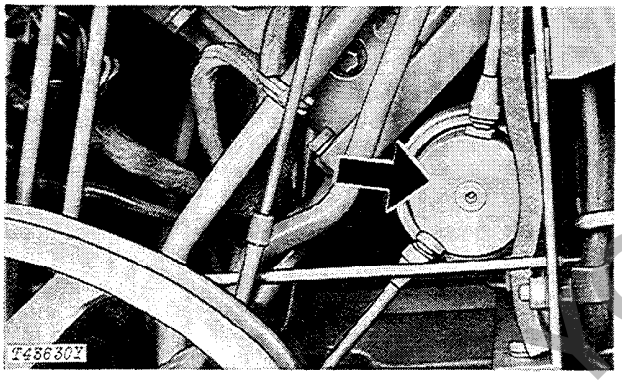
If repair is needed, see Section 60.

*Steering checked* *Yes* *No*

## 12. Accumulator

Check the brake accumulator and hydraulic accumulator circuits.

**CAUTION: Do not attempt to disconnect or remove the accumulator unless you release the hydraulic pressure. To do so, stop engine, loosen the right-hand brake bleed screw and hold the right-hand brake pedal down for a few minutes.**

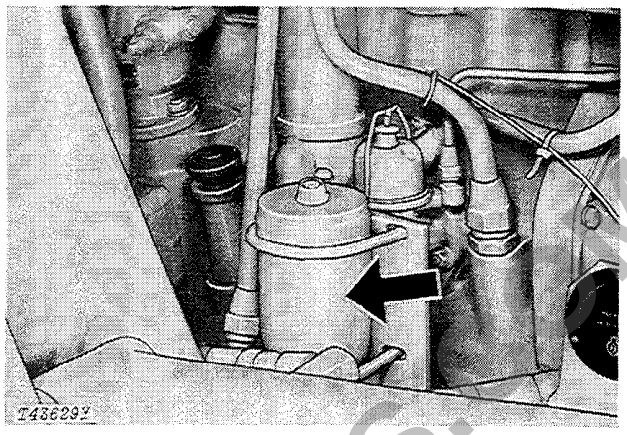



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*Fig. 27-Brake Accumulator*

Check the accumulator brake circuit.

1. Run engine one minute minimum, or until transmission-hydraulic oil is at normal operating temperature.
2. Stop engine.
3. Wait 10 to 15 minutes.
4. Apply brakes five times at five second intervals.
5. If brakes stop working in five applications or fewer, the brake circuit needs service.




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*Fig. 28-Hydraulic System Accumulator*

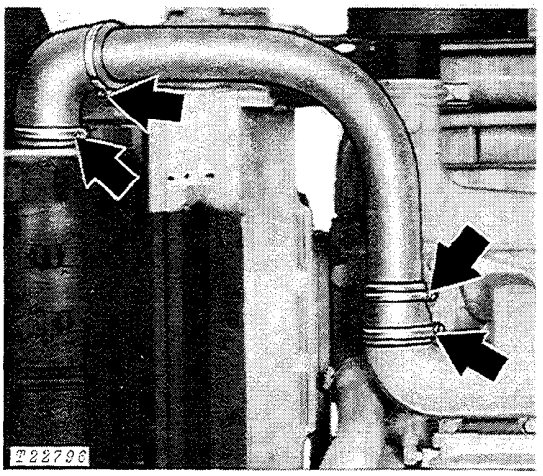
Check hydraulic system accumulator circuit as follows:

Start engine and run for one minute. Stop engine.

Turn steering wheel to left as far as possible. Power steering should be available for 1/2 to 3/4 steering wheel revolution. If not, the accumulator circuit may need service.

*Accumulators checked* *Yes* *No*

## 13. Air Intake Hoses




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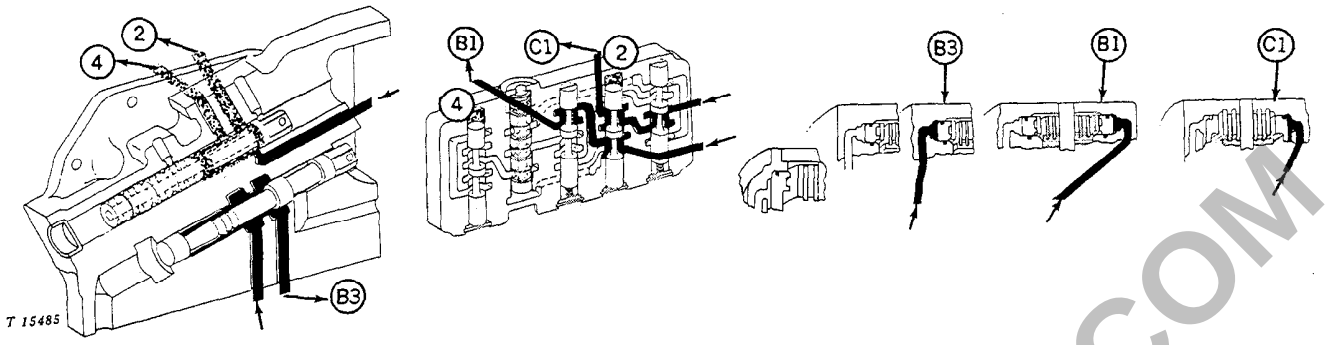
*Fig. 29-Air Intake Hose Clamps*

Check air hose clamps. Tighten clamps if necessary. Inspect hoses for damage.

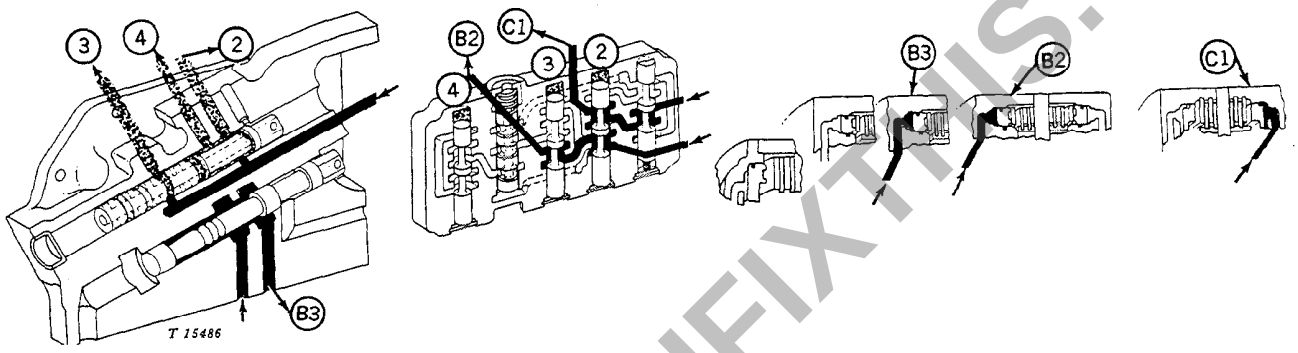
*Air intake hoses checked* *Yes* *No*



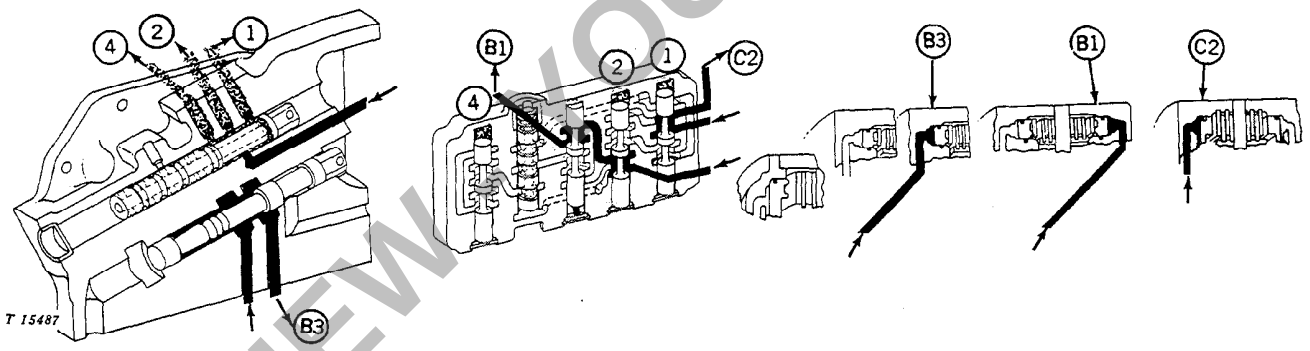
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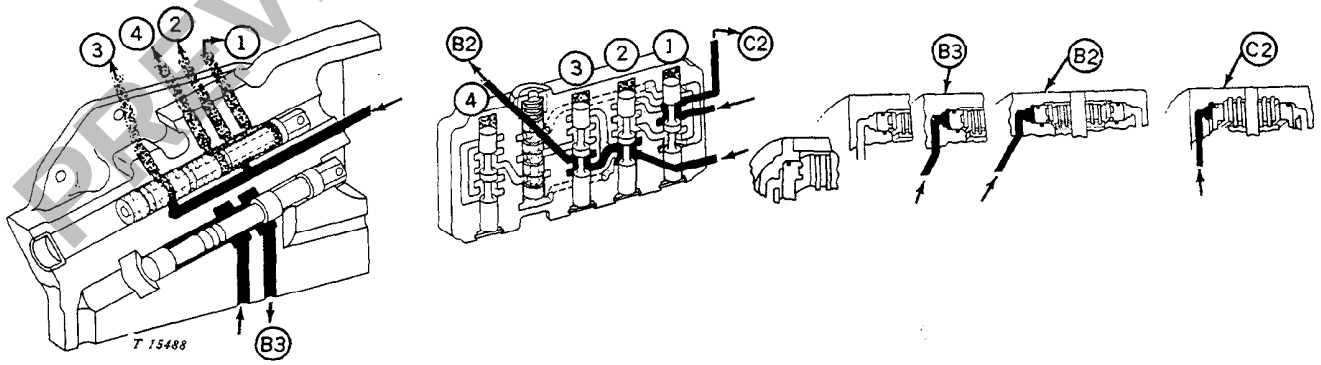

1st Speed Reverse




2nd Speed Reverse




3rd Speed Reverse




4th Speed Reverse

*Fig. 14-Hydraulic Control System Flow for 1st Through 4th Reverse Speeds*



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**CAUTION: Operate steering valve and loader or backhoe control valve to bleed down accumulator before disconnecting lines.**

Remove hydraulic lines from valve and valve from control support.

Remove inlet connector, valve, orifice, shim, and spring from valve body.

Inspect all parts for wear and damage. Inspect valve housing for cracks.

Check valve bore I.D. at front (0.7508 to 0.7518 in.) and rear (0.7268 to 0.7278 in.)

Check front (0.7497 to 0.7503 in.) and rear (0.7257 to 0.7263 in.) O.D. of valve.

Check spring ( -209476) for free length (4.609 in.) and test length (3.50 in. at 50 lbs.).

Check spring (209477- ) for free length (4.331 in.) and test length (3.500 in. at 39.7 lbs.).

Replace worn or damaged parts as necessary.

Reverse removal and disassembly procedure.

## ADJUSTMENT

Test pressure control valve as directed in Group 5. Add or subtract shims as necessary to obtain operating pressure specifications.

Test pressure control valve as directed in Group 5. Add or subtract shims as necessary to obtain operating pressure of 1850 to 1950 psi at 800 rpm ( -209476) or 1400 ± 50 psi at 1000 rpm (209477- ).

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Both fuel pumps are of the diaphragm type and are operated by an eccentric lobe on the engine camshaft.

## TESTING AND DIAGNOSIS

### Suspected Low Fuel Delivery

Test flow at transfer pump. Flow should be approximately 2 quarts per minute at 900 engine rpm.

### Fuel Flow Not to Specifications

Primer lever left in upward position.
Position lever at lowest point of stroke.
Plugged fuel screen inside pump sediment bowl.
Remove and clean. Can be replaced if necessary on early units only.
Clogged fuel line from tank to transfer pump.
Blow out line with filtered air.
Loose fuel line fittings.
Tighten connections.
Leaking pump bowl gasket.
Tighten bail assembly. Can be replaced if necessary on early units.
Loose cover screws.
Tighten screws.
Damaged diaphragm.
Replace diaphragm on early units.
Replace pump on later units.

## REPAIR

### Early Units

Two parts kits: (1) a pump overhaul kit (diaphragm and gaskets), and (2) a rocker arm parts kit are used when repair is necessary.

#### Disassembly

Refer to Fig. 2 and disassemble the transfer pump. Replace parts as necessary. Use the following as a guide in checking pump parts.

1 - Inspect rocker arm for wear.
2 - Inspect diaphragm for leaks.
3 - Check pull rod for wear.
4 - Inspect valve and cage assemblies.
5 - Check rocker arm springs.
6 - Inspect rocker arm link and pin.

#### Assembly

Be sure diaphragm pull rod is engaged with link inside body.

Tighten cover to body screws evenly to prevent distortion.

### Later Units

Service parts are not available for later fuel transfer pumps. If a diagnosis of the fuel system indicates a faulty transfer pump, a new pump must be ordered as a complete assembly.

#### Installation

Tighten fuel transfer pump cap screws to 30 + 5 – 12 lb-ft (41 + 6 – 16 Nm) (4.1 + 0.6 – 1.6 kg-m).

# FILTER

## GENERAL INFORMATION

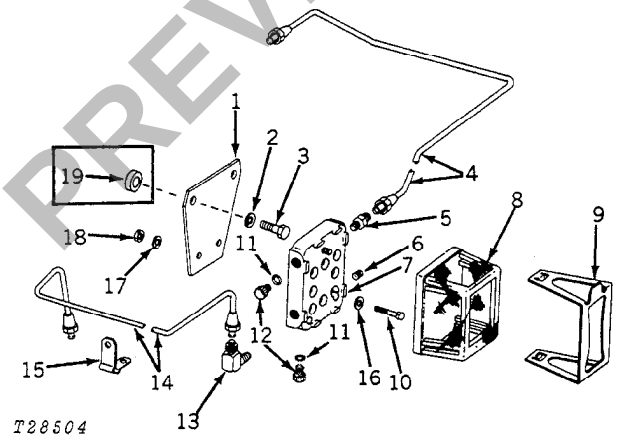



*Fig. 4-Fuel Filter*

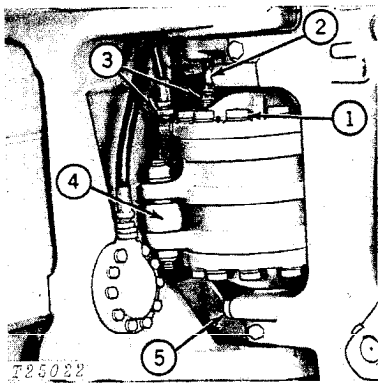
| | |
|---|---|
| 1—Fuel Filter Bracket | 11—O-Ring (2 used) |
| 2—Lock Washer (2 used) | 12—Special Screw (2 used) |
| 3—Cap Screw (2 used) | 13—Elbow |
| 4—Fuel Line | 14—Fuel Line |
| 5—Connector | 15—Clip (2 used) |
| 6—Pipe Plug | 16—Washer (2 used) |
| 7—Fuel Filter Body | 17—Lock Washer (2 used) |
| 8—Element | 18—Nut (2 used) |
| 9—Retaining Spring | 19—Spacer (2 used) (later units) |
| 10—Cap Screw (2 used) | |

*Legend for Fig. 4*

The fuel filter prevents dirty fuel from reaching the injection pump and nozzles. A combination first and second stage filter element is located on the left side of the engine.

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1—Cap Screw
2—Top Coupling
3—Hoses
4—Bushing
5—Bottom Coupling

*Fig. 2-Removing Swing Cylinder*

## DISASSEMBLY

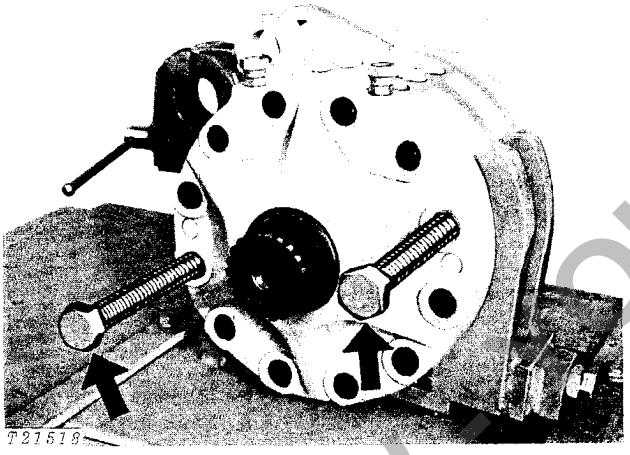


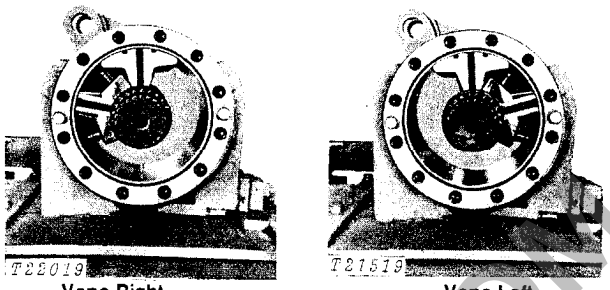

*Fig. 3-Removing Top Plate*

Clamp swing cylinder in special fixture (Fig. 3). Drawings of this fixture are shown in "Special Tools."

Use two 7/8-inch cap screws as jack screws (Fig. 3) and force the top plate from the cylinder barrel.

Turn jack screws alternately and evenly so that top and bottom plates are always square.

Slide top plate from splined shaft being careful not to damage O-ring and backup washer.




Vane Right
Vane Left

*Fig. 4-Removing Shaft Vane*

The shaft vane must contact either the right or left side of the barrel vane (Fig. 4) before it can be removed. Rotate it either to the right or left position.

Remove the shaft vane being careful not to scratch the barrel surface.

Support the barrel vane so it cannot drop inside the barrel, and remove the barrel vane.

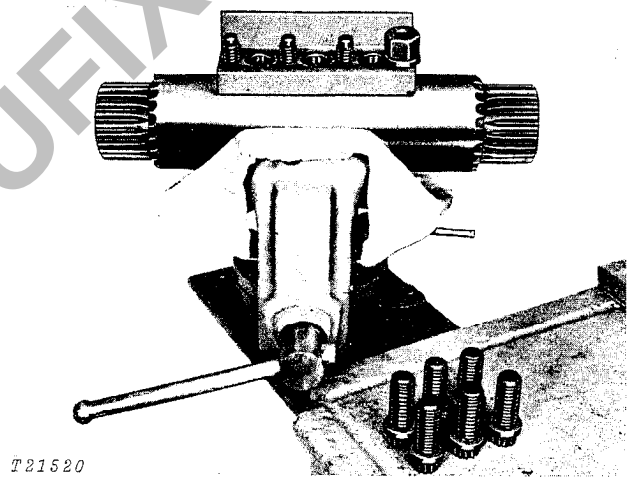



*Fig. 5-Removing Shaft Vane*

Place splined shaft in vise being careful not to scratch the shaft. Mark the shaft and vane before disassembly so the vane can be installed in exactly the original position.

To remove dowel pins, place a spacer and nut on a pin (Fig. 5) and tighten to end of threads. Remove the nut, add a second spacer, install the nut and tighten until pin is removed.



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## Special Welding Instructions

A low hydrogen (with iron powder) electrode (American Welding Society, Series E7018) is recommended for this type of work. The sizes most easily handled in horizontal or out of flat positions are 5/32-inch and 3/16-inch diameters.

To obtain maximum strength it is imperative that all craters at the termination of each weld be filled. Because of the cupping action of heavy electrode coating it is necessary to drag the electrode lightly or hold a very short arc.

As a second choice, an E7010 Series Electrode can be used in DC reverse polarity after preheating the cutting edge to approximately 300 degrees F. Allow the edge to cool slowly.

IMPORTANT: When repairing a small section of the cutting edge, it is necessary to preheat around damaged area regardless of the electrode used. This will prevent rapid cooling of the edge around the weld which could cause the cutting edge to become brittle.

When cutting edge is cracked, cut completely through cutting edge. Extend cut 1/2-inch beyond each end of crack.

Weld crack from both sides.

When welding cracks between cutting edge and bucket, extend weld at least 1/2-inch beyond each end of the crack.

## TORQUE VALUES

| Item | Torque (ft-lbs) |
|---|---|
| Bucket teeth-to-bucket | 120 |
| Bucket pin retaining cap screws | 35 |

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## SPECIFICATIONS

| Item | New Part Dimension | Wear Tolerance |
|---|---|---|
| Differential lock return valve spring (5, Fig. 3) | | |
| Free length | 1.265 to 1.275 in. | |
| Load to compress to 1.13 inches | 190 to 210 lbs. | |
| Differential lock check valve spring (14, Fig. 3) | | |
| Free length | 1.750 in. | |
| Load to compress to 1.3125 inches | 12-1/4 to 15 lbs. | |
| Plunger spring (3, Fig. 4) | | |
| Free length | 2.280 in. | |
| Load to compress to 1.92 inches | 103 to 125 lbs. | |
| Spring (9, Fig. 4) | | |
| Free length | 0.620 in. | |
| Load to compress to 0.38 inch | 4 to 5 oz. | |
| Pressure control valve spring (17, Fig. 4) | | |
| Free length | 2.560 in. | |
| Load to compress to 1.31 inches | 9.5 to 11.5 lbs. | |
| Clutch piston return spring | | |
| Free length | 0.760 in. | |
| Load to compress to 0.520 to 0.540 in. | 50 to 60 lbs. | |
| Brake latch rod spring | | |
| Free length | 1.77 in. | |
| Load to compress to 1.26 in. | 5.55 to 6.95 lb. | |
| Preload of differential quill bearings | 0.002 to 0.0075 in. | ..... |
| Backlash between differential ring gear and pinion | 0.0075 to 0.0155 in. | ..... |
| Oil pressure (lock engaged) ( -161722) | 420 to 480 psi | ..... |
| Oil pressure (lock engaged) (161723- ) | 510 to 560 psi. | ..... |
| Clearance for pedal adjusting screw | 0.085 to 0.105 in. | ..... |
| Parking brake shaft end play | 0.001 to 0.003 in. | |
| Backlash between differential ring gear and brake shaft | 0.011 to 0.023 in. | |
| Brake pad wear allowance | 0.10 in. | |
| Upper brake puck to brake disk clearance | 0.020 in. | |

## TORQUE VALUES

| Item | Torque (ft-lbs) |
|---|---|
| Ring gear-to-differential housing cap screw | 110 |
| Control valve housing attaching cap screws | 130 |
| Brake disk-to-brake support cap screws | 85 |
| Special slotted hex nut torque | |
| To establish end play | 445 |
| After end play established | 225 to 300 |
| Park brake housing-to-rear transmission cover cap screws | 120 |
| Jam nut on special screw after adjustment | 58 |

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## 7. Hand Controls

Check operation of all hand controls.

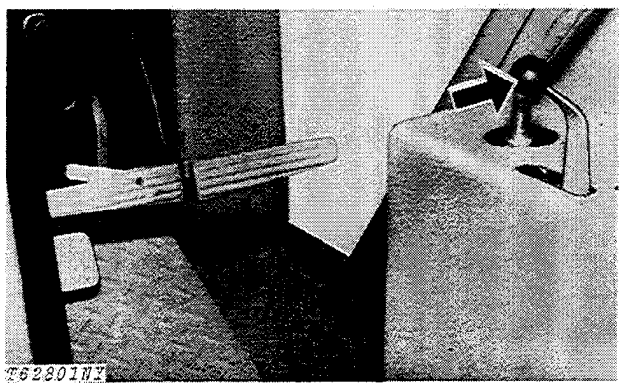
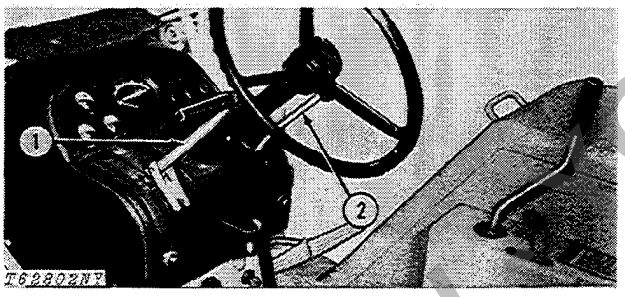



*Fig. 19-Hand Throttle*

Push throttle forward to speed up engine.

An adjustable throttle stop on the throttle lever bracket limits engine speed to 2200 rpm. The hand throttle can override this stop.




**1—Reverser Lever** **2—Transmission Shift Lever**

*Fig. 20-Transmission Shift Controls*

Check operation of transmission in all gears.

The power shift transmission can be shifted "on the go" or when the machine is stopped by moving the shift lever and reverser lever to the desired position. It is not necessary to use inching pedal when starting out or when shifting.

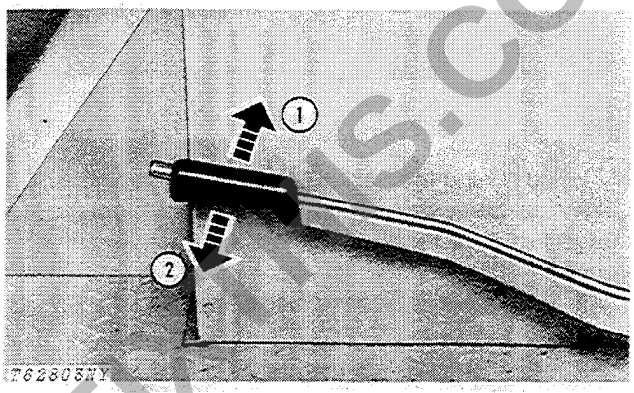
To move forward, push reverser lever into forward position and move shift lever to desired gear. Shift one gear at a time.

To reverse the machine when operating in one of the first four gears, pull the reverser lever rearward to the reverse (R) position. When shift lever is in 5th gear or higher, the reverser lever cannot be put in reverse.

A backup alarm sounds at intervals when machine is operated in reverse.

Reduce engine speed before making sudden speed changes. Use hand rail beside shift lever to aid shifting when traveling over rough ground.

The transmission speed of shift may be adjusted for rapid shift or smooth shift. See page 10-10-23.




**1—Engaged** **2—Disengaged**

*Fig. 21-Parking Brake*

1. To engage, pull up.

2. To disengage, press button and push lever down.

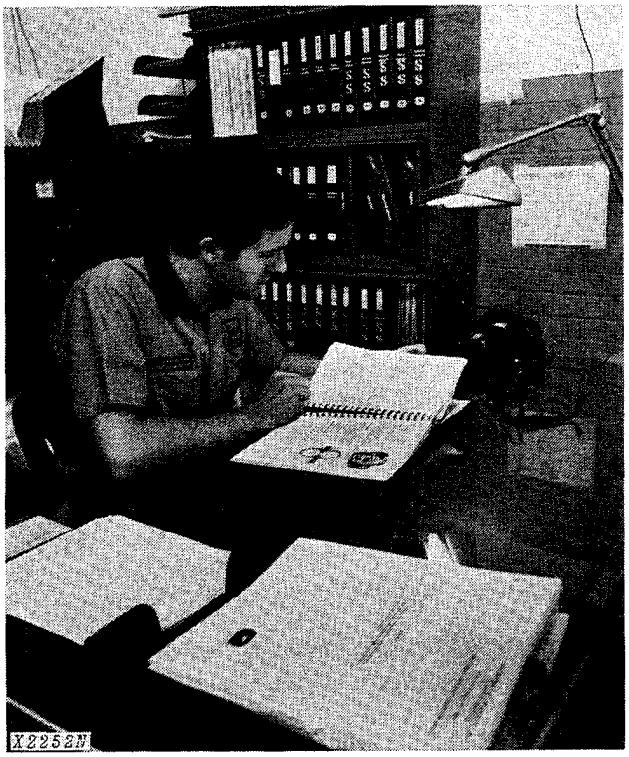
*NOTE: Parking brake warning light will glow when key switch is on and parking brake is engaged. Horn will blow also if transmission is shifted from neutral with parking brake applied.*

If adjustment is needed, see page 10-10-23.

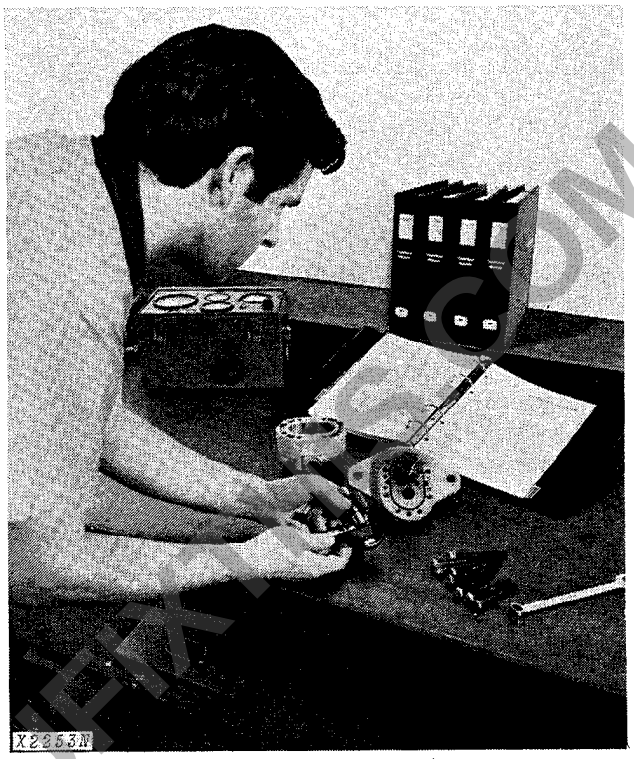


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# INTRODUCTION




*Use FOS Manuals for Reference*




*Use Technical Manuals for Actual Service*

This safety alert symbol identifies important safety messages in this manual. When you see this symbol, be alert to the possibility of personal injury and carefully read the message that follows.

This technical manual is part of a twin concept of service:

- **FOS Manuals—for reference**
- **Technical Manuals—for actual service**

The two kinds of manuals work as a team to give you both the general background and technical details of shop service.

*Fundamentals of Service (FOS) Manuals* cover *basic* theory of operation, *fundamentals* of trouble shooting, *general* maintenance, and *basic* types of failures and their causes. FOS Manuals are for training new service technicians and for reference by experienced service technicians.

*Technical Manuals are concise* service guides for *specific* machines. Technical Manuals are on-the-job guides containing only the vital information needed by a service technician.

When a service technician should refer to a FOS Manual for more information, a FOS symbol like the one at the left is used in the technical manual to identify the reference.

Some features of this technical manual:

- *Table of contents at front of manual*
- *Exploded views showing parts relationship*
- *Photos showing service techniques*
- *Specifications grouped for easy reference*

This technical manual was planned and written for you—an experienced service technician. Keep it in a permanent binder in the shop where it is handy. Read it when you need to know correct service procedures or specifications.

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## Valve Guides

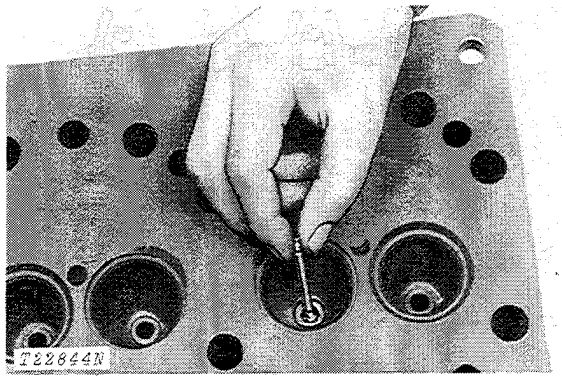



*Fig. 3-Checking Valve Guide Clearance*

Knurl valve guides, if necessary, using tool exactly as recommended by the manufacturer. See specifications.

## Valves

Check valve springs (Fig. 1) to specifications.

Check valves and valve seats to specifications. Refer to "Basic Engine" in FOS Manual - ENGINES for the proper procedure on valve and seat reconditioning. See page 10-2 for valve seat replacement.

## Rocker Arm Assembly

Be sure that rocker arm shaft oil holes are not plugged.

Check condition of valve rotators and valve stem caps.

If a failed valve has been replaced, inspect the rocker arm and push rod for that valve.

### ASSEMBLY

Assemble parts on rocker arm shaft in sequence removed. Position plugs correctly in each end of the rocker arm shaft.

## Valve Assembly

Apply AR44402 Lubricant to valve stems and guides and install valves into guides from which they were removed. Valves must move freely and seat properly.

Install valve springs making certain that cylinder head end of spring is located correctly in the machined counterbore of the head.

Install rotators or spring retainers and retainer locks on valves. "Pop" each valve three or four times with a soft mallet to insure proper positioning of the retainer locks.

Tighten 3/4-inch pipe plugs to 35 ± 5 lb-ft (47 ± 7 Nm) (4.7 ± 0.7 kg-m).

### INSTALLATION

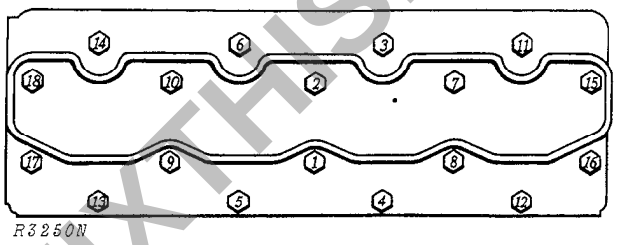



*Fig. 4-Proper Sequence for Tightening Cylinder Head Cap Screws*

Install new head gasket (dry). Dip cylinder head-to-cylinder block cap screws in engine oil and tighten to 80 ± 21 lb-ft (109 ± 29 Nm) (11 ± 3.4 kg-m) in the sequence shown in Fig. 4.

Retighten cylinder head cap screws to 115 ± 12 lb-ft (156 ± 16 Nm) (16 ± 1.6 kg-m) in the sequence shown in Fig. 4.

Install push rods in holes from which they were removed.

Install valve stem wear caps on valves making ceratin caps rotate freely.

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## SPECIAL TOOLS

| No. | Name | Use |
|---|---|---|
| D-24001 MO | Battery Tester | Check battery internal condition. |
| D-19001 TT | Volt-Ohmmeter | Check electrical circuits and components. |
| D-05138 ST | Voltage Detector | Check electrical circuits and components. |

## CONVENIENCE TOOLS

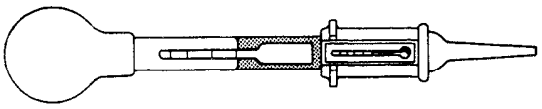
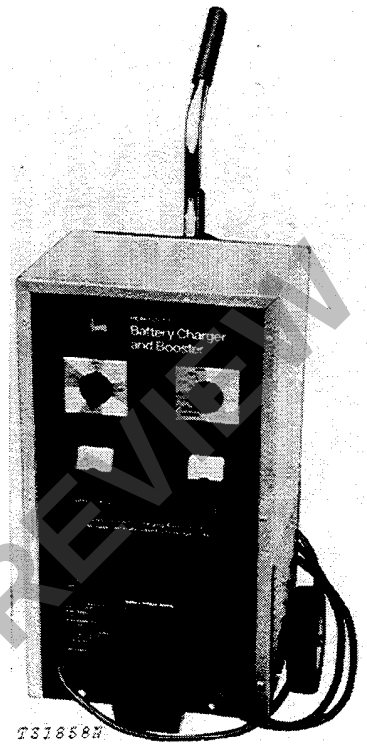
| Tool | Tool No. | Use |
|---|---|---|
|  T70047 | -------- | Hydrometer - To check specific gravity. |

*Fig. 10-Hydrometer*

| | |
|---|---|
|   TS1858 | TY-1337 (10 amp)<br>TY-5104 (15 amp)<br>TY-5105 (30 amp)<br>TY-5106 (100 amp) |

Battery Charger - To charge battery and to use as a booster to start engine.

*Fig. 11-Battery Charger*

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| Item | Specification |
|---|---|
| Oil Cooler Relief Valve | |
| Operating pressure | 100 psi |
| Spring free length | 3.78 in. |
| Spring compressed | 3.22 in. at 37 ± 4 lb |

## TORQUE VALUES

| Item | Torque (ft-lbs) |
|---|---|
| Transmission pump cover to housing | 21 |
| Differential front retainer plate-to-drive shaft | 35 |
| Clutch output yoke bearing unit | 200 |

## SPECIAL TOOLS

| No. | Name | Use |
|---|---|---|
| **Essential Tools** | | |
| JDT-1 | Snap Ring Expander | To expand snap rings. |
| JDT-2 | Snap Ring Expander Cone | To hold snap rings open for insertion of plate JDT-3A. |
| JDT-3A | Snap Ring Expander Plate | To hold snap rings open for installation on differential drive shaft. |
| JDT-9-1 and 2 | Differential Drive Shaft Installation Arbor | To align differential drive shaft parts in transmission case for installation of differential drive shaft. |

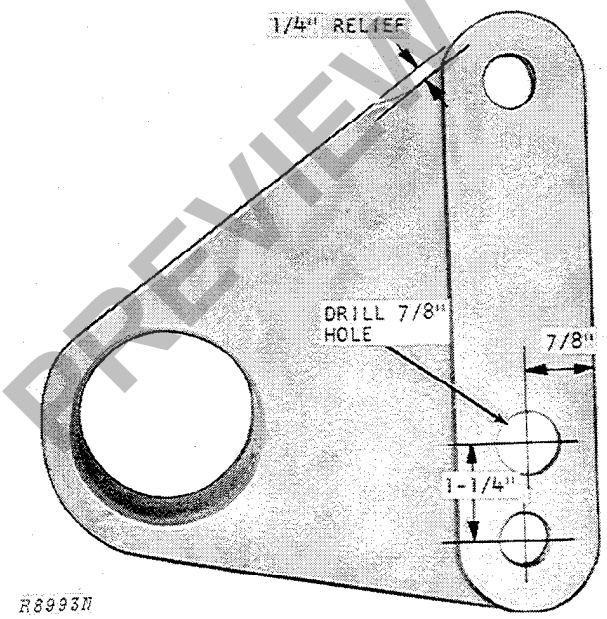



*Fig. 19-Altering JDT-9-1 Arbor*

To modify the JDT-9-1 arbor, drill an extra 7/8 inch hole and grind a 1/4 inch relief. Refer to Fig. 19.

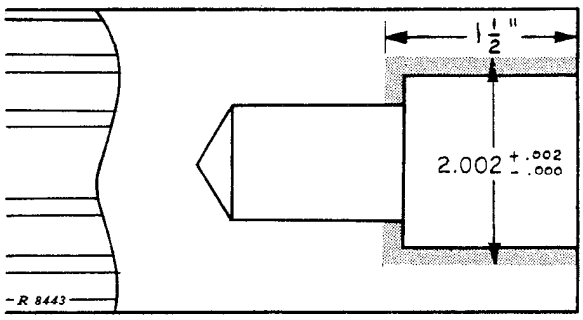



*Fig. 20-Altering JDT-9-2 Dummy Shaft*

Enlarge the bore in the JDT-9-2 dummy shaft (Fig. 20) to a diameter of 2.002 inches for a depth of 1-1/2 inches.

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## INSTALLATION

Use shims (19, Fig. 6) between brake housing (18) and transmission case rear cover to adjust backlash. Place a dial indicator 2.50 inches from the center of brake shaft (23) and measure backlash. Using shims, adjust backlash to 0.011 to 0.023 in.

Install park brake assembly to transmission case cover and tighten cap screws (16) with washers (17) to 120 lb-ft.

Make sure lube oil port in brake housing (18) points toward front of transmission case.

Make sure mating surface of brake disk and brake disk support are clean.

Install brake disk (6) on brake disk support (11) and tighten cap screws (5) to 85 lb-ft. Make sure brake disk is fully seated on support.

Position brake caliper assembly (4) and tighten brake caliper to transmission case rear cover cap screws against thread run-out in transmission rear cover.

Install parking brake cover to rear transmission cover.

Connect brake cable rod to hole in caliper cam lever.

Install the seat and seat support base unit.

## ADJUSTMENT

1 - Adjust caliper brake assembly with special screw (2, Fig. 6) until the lower brake puck contacts the brake disk.

2 - Adjust brake cam nut (1, Fig. 7) to provide a 0.020 in. clearance between upper brake puck and brake disk. Lock the adjacent nut with jam nut.

3 - Back off special screw about 1/6 turn. Lock special screw with jam nut (1, Fig. 6). Tighten jam nut to 58 lb-ft torque.

Refer to page 50-40-11 and adjust brake lever.

**IMPORTANT: After using parking brake for an emergency stop, check adjustment of brake.**

# PARKING BRAKE LEVER (251347- )

## GENERAL INFORMATION

The parking brake lever is located on the right-hand side of the driver's seat.

The parking brake is actuated by pulling up on the lever.

The parking brake is released by depressing the bottom at the end of the lever and pushing back down.

## REMOVAL

Remove seat and seat support bracket from unit.

Remove caliper brake cover from parking brake cover (12, Fig. 8).

Remove snap ring (14) and headed pin (15) from brake lever (4). Remove brake lever assembly from parking brake cover (12).

Remove nuts (9) securing brake latch plate (11) to parking brake cover and remove brake latch plate.

Remove headed pin (20) securing rod yoke (25) to brake cam lever. Remove rod yoke and nut (24) from brake rod (22).

Remove snap ring (19) and remove bell crank (18) from bell crank pivot shaft.

Remove brake rod (22) from brake rod boot (23).

Remove cotter pin (8) and remove brake latch rod (7) from brake latch (6).

Unscrew button (1) from brake latch rod and remove rod from brake lever handle.

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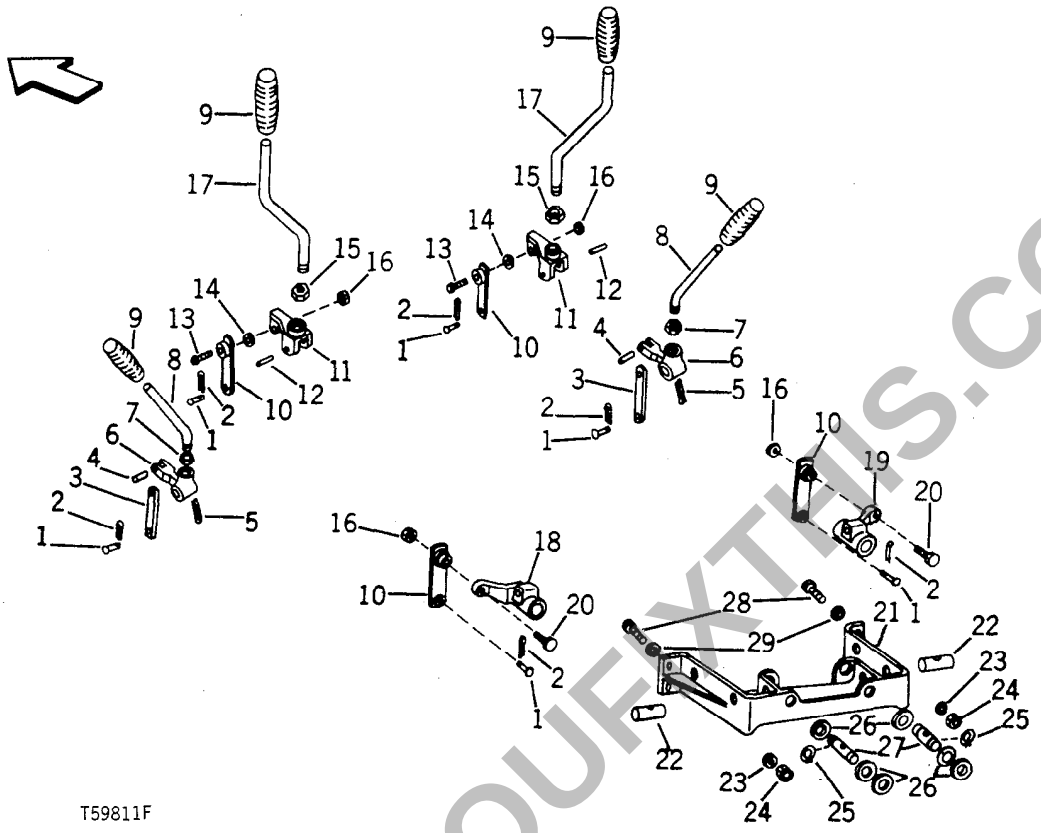
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## SPECIFICATIONS

| Item | New Part Specification |
|---|---|
| **HYDRAULIC OIL FILTER (Power Shift)** | |
| Filter Relief Valve | |
| Operating Pressure | 40 to 50 psi (differential) |
| Valve Spring (free length) | 2.75 in. |
| (test strength) | 30±3 lbs. at 1.85 in. |
| Surge Filter Relief Valve | |
| Operating Pressure | 80 to 100 psi |
| Valve Spring (free length) | 3.78 in. |
| (test strength) | 37±4 lbs. at 3.22 in. |
| **HYDRAULIC OIL ACCUMULATOR** | |
| Dry nitrogen charge (piston-type) | 500 psi |
| (bladder-type) | 1550±100 psi |
| Inside diameter of cylinder | 2.9980 to 3.0010 in. |
| Outside diameter of piston | 2.9930 to 2.9960 in. |
| Outside diameter of cap | 2.9940 to 2.9980 in. |
| Gas valve spring (free length) | 1.10 in. |
| (test strength) | 1.5±2 lbs. at .59 in. |
| **PRESSURE CONTROL VALVE** | |
| System operating pressure | 2000 psi |
| Valve operating pressure ( -209476) | 1850 - 1950 psi at 800 rpm |
| (209477- ) | 1350 - 1450 psi at 1000 rpm |
| Front O.D. of valve | 0.7500±0.0003 in. |
| Rear O.D. of valve | 0.7260±0.0003 in. |
| Front I.D. of valve bore | 0.7513±0.0005 in. |
| Rear I.D. of valve bore | 0.7273±0.0005 in. |
| Valve spring free length ( -209476) | 4.609 in. |
| Valve spring test length ( -209476) | 3.50 in. at 50 lbs. |
| Valve spring free length (209477- ) | 4.331 in. |
| Valve spring test length (209477- ) | 3.50 in. at 39.7 lbs. |
| Maximum leakage at 2250 psi | 100 cc. per minute |
| **OIL COOLER BYPASS VALVE** | |
| Bypass valve opening pressure | 22 to 35 psi |
| Bypass valve spring (free length) | 2-1/2 in. |
| (test strength) | 1/4 lb. at 1-7/8 in. |
| Washer valve spring (free length) | 2-1/4 in. |
| (test strength) | 8 lbs. at 1-3/4 in. |
| Bypass valve flatness | within 0.007 in. |
| **OIL COOLER** | |
| Leakage testing pressure | 150 psi |

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1—Connector Pin (6 used)
2—Cotter Pin (6 used)
3—Connector Link (2 used)
4—Spring Pin (2 used)
5—Cotter Pin (2 used)
6—Handle Mount (2 used)
7—Jam Nut (2 used)
8—Control Lever (2 used)
9—Hand Grip (4 used)
10—Connector Link (4 used)
11—Action Link (2 used)
12—Groove Pin (2 used)
13—Cap Screw (2 used)
14—Special Washer (2 used)
15—Stop Nut (2 used)
16—Special Nut (4 used)
17—Four-Way Lever (2 used)
18—Pivot Link
19—Pivot Link
20—Cap Screw (2 used)
21—Mounting Frame
22—Pivot Shaft (2 used)
23—Lock Washer (4 used)
24—Nut (4 used)
25—Snap Ring (4 used)
26—Washer (6 used)
27—Pivot Shaft (2 used)
28—Cap Screw (4 used)
29—Washer (8 used)

*Fig. 10-Backhoe Control Levers and Linkage (031180- )*

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