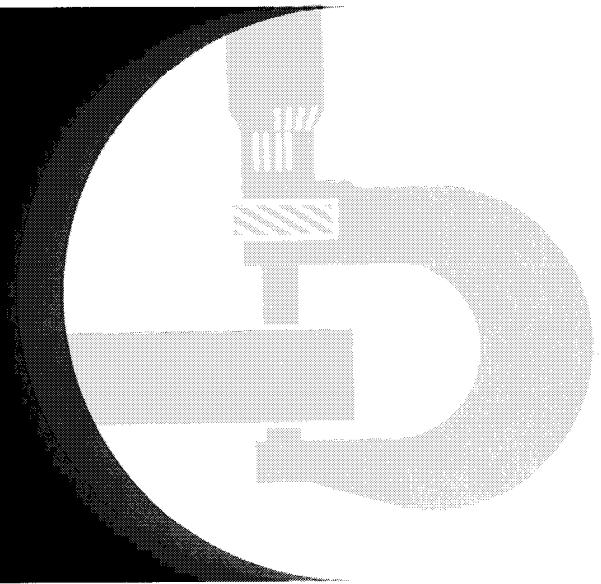


# John Deere JD500-C Loader Backhoe



## TECHNICAL MANUAL

**TM-1038**

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

# JD500-C Loader Backhoe TECHNICAL MANUAL

TM-1038 (Oct-79)

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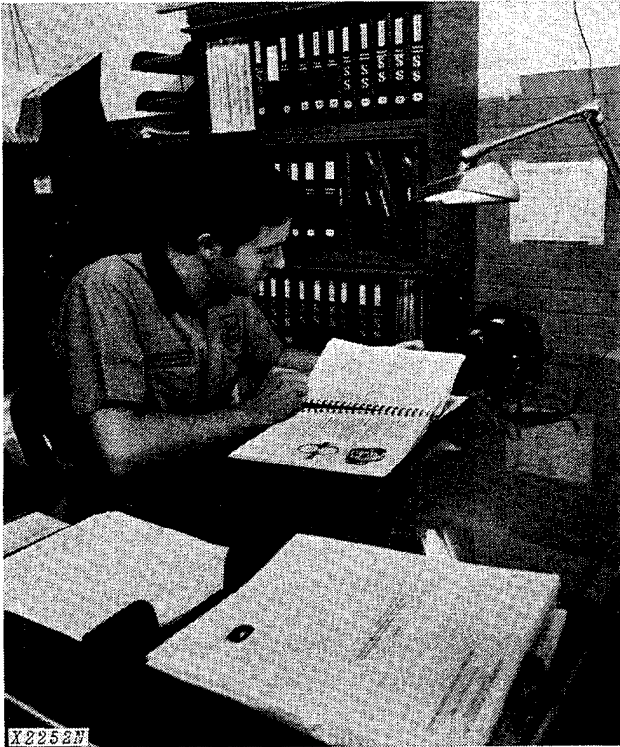
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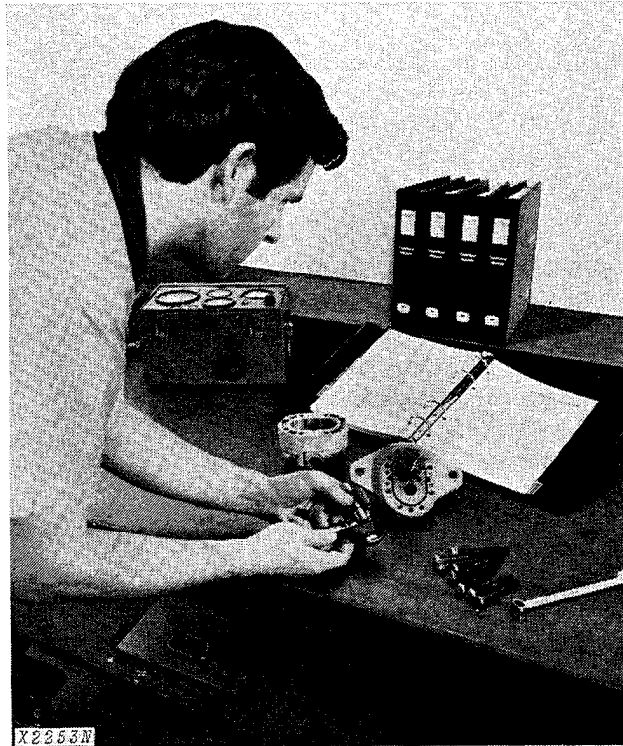
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*The specifications and design information contained in this manual were correct at the time it was printed. It is John Deere's policy to continually improve and update our machines. Therefore, the*

## 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.

# Section 10 GENERAL

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T43608

Fig. 1-JD500-C Backhoe Loader

# 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 m<sup>3</sup>) loader bucket, 24 in. (610 mm) standard backhoe bucket and standard equipment.)

<b>Power (@ 2500 engine rpm):</b>	<b>SAE</b>	<b>DIN</b>
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 cm<sup>3</sup>)  
 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/cm<sup>2</sup>)  
 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

<b>Hydraulic Cylinders:</b>	<b>Bore</b>	<b>Stroke</b>
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.

**Tires:**

	<b>Front</b>	<b>Rear</b>
14.5/75-16.1, 10 ply rating F3		
		18.4-28, 8 ply rating, R4
		18.4-28, 12 ply rating, R4

**Wheel Treads:**

Front	66 in. (1.68 m)
Rear	65.5 in. (1.66 m)

<b>Capacities:</b>	<b>U.S.</b>	<b>Imp.</b>	<b>Liters</b>
Cooling system	4.75 gal.	4.0 gal.	18.0
Fuel tank	34 gal.	28.3 gal.	128.7
Engine lubrication, including filter	8 qt.	6.7 qt.	7.6
Transmission and hydraulic system	21.5 gal.	18.0 gal.	81.4

**OPERATING INFORMATION**

**BACKHOE:**

Digging depth (ICED):

Maximum	15 ft. 1 in. (4.60 m)
2 ft. (610 mm) flat bottom	15 ft. (4.57 m)
8 ft. (2.44 m) flat bottom	14 ft. (4.27 m)

Swing arc.....180 deg.

Lifting capacity:

Boom at full reach and full height	1950 lb. (884 kg)
Dipper lifting, boom holding, full height	3300 lb. (1497 kg)

Digging force (bucket cylinder in power-dig position)..... 9650 lb. (43.25 kN) (4377 kg)

Digging force, crowd cylinder .... 7158 lb. (32.08 kN) (3247 kg)

Reach from center of swing mast ..... 18 ft. 7 in. (5.66 m)

Reach from center of rear axle ..... 22 ft. 1 in. (6.73 m)

Loading height (truck-loading position) ..... 11 ft. 8 in. (3.56 m)

Transport height ..... 11 ft. 8 in. (3.56 m)

Bucket rotation . Adjustable for 123, 126 or 154 deg.

Bucket positions... Adjustable for 22 or 13 deg. roll-back and 2 deg. forward

**Stabilizer Width:**

Transport position	7 ft. 3 in. (2.21 m)
Operating position (overall)	10 ft. 2 in. (3.10 m)
Operating position (ICED)	8 ft. 9 in. (2.67 m)

**LOADER:**

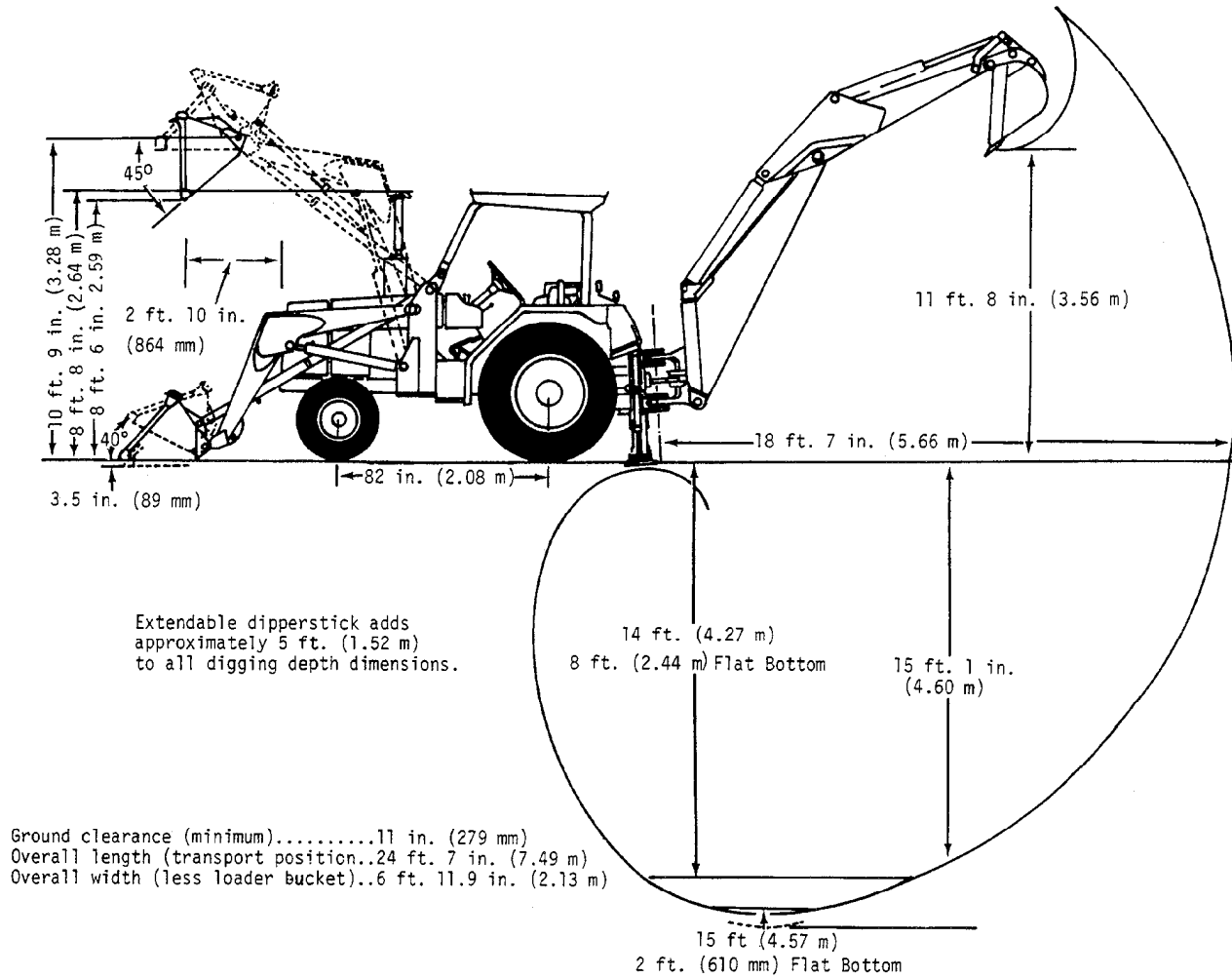
Rollback at ground level	40 deg.
Breakout force	7800 lb. (34.96 kN) (3538 kg)
Digging depth below ground level (with bucket level)	3.5 in. (89 mm)
Lifting capacity, full height	5300 lb. (2404 kg)
Height to bucket hinge pin	10 ft. 9 in. (3.28 m)
Maximum dump angle	60 deg.
Clearance, bucket dumped at 45 degrees	8 ft. 6 in. (2.59 m)
Reach at maximum height, bucket dumped at 45 degrees	2 ft. 10 in. (864 mm)
Raising time to full height	4.5 sec.
Bucket dump time	1.5 sec.
Lowering time (power)	3.0 sec.

**Buckets:**

	<b>Nominal Heaped Capacity</b>	<b>Width</b>
<b>Loader</b>		
General		
Purpose	1 cu. yd. (0.76 m <sup>3</sup> )	89.4 in. (2.27 m)
Light		
Materials	1-1/4 cu. yd. (0.96 m <sup>3</sup> )	89.4 in. (2.27 m)

	<b>Struck Capacity</b>	<b>Width</b>
<b>Backhoe:</b>		
Standard		
	2.5 cu. ft. (0.071 m <sup>3</sup> )	12 in. (305 mm)
	3.6 cu. ft. (0.102 m <sup>3</sup> )	16 in. (406 mm)
	4.4 cu. ft. (0.125 m <sup>3</sup> )	18 in. (457 mm)
	6.0 cu. ft. (0.170 m <sup>3</sup> )	24 in. (610 mm)
	7.6 cu. ft. (0.215 m <sup>3</sup> )	30 in. (762 mm)
	7.2 cu. ft. (0.204 m <sup>3</sup> )	36 in. (914 mm)
Heavy-duty		
	4.4 cu. ft. (0.125 m <sup>3</sup> )	18 in. (457 mm)
	6.0 cu. ft. (0.170 m <sup>3</sup> )	24 in. (610 mm)
	7.6 cu. ft. (0.215 m <sup>3</sup> )	30 in. (762 mm)
Ejector		
	4.2 cu. ft. (0.119 m <sup>3</sup> )	24 in. (610 mm)

JD500-C BACKHOE LOADER DIMENSIONS



T57849N

**Additional Standard Equipment:**

- Differential lock
- Vertical muffler w/rain cap
- Fuel gauge
- Oil pressure indicator light
- Alternator charge indicator light
- Water temperature gauge
- Trans. lube pressure indicator light
- Flat deck w/skid-proof platform
- Rear reflector
- Transistorized voltage regulator
- Key switch w/push-button safety start
- Lights

- Cold weather starting aid
- Fenders
- Horn
- Bucket-level indicator
- Electric hour meter
- Foot throttle
- Cigar lighter
- Trans. temp. gauge
- Tachometer
- Hand throttle
- Antifreeze
- Deluxe swing-around seat
- Vandal protection

**Special Equipment:**

- Exhaust extension
- ROPS w/canopy and seat belt
- Steel bucket teeth for loader
- Cab (includes ROPS, front windshield wiper, seat belt and exhaust extension)
- Cab pressurizer
- Cab heater
- Cab defroster
- Ripper tooth for backhoe
- Bolt-on stabilizer street pads
- Extendable dipperstick
- Parking brake w/warning system
- ADCO buckets for backhoes
- Back-up alarm
- Counterweights
- Seat belt - 3 in. (76 mm)
- Reversible stabilizer pads

SAE Operating Weight.....15,660 lb. (7 103 kg)

# Group 10

## PREDELIVERY, DELIVERY, AND AFTER-SALE SERVICES

### TEMPORARY UNIT STORAGE

After receiving your unit from the factory and before putting the machine into temporary storage, perform the following checks and services.

For long term storage (over 30 days) information, consult your JD500-C operator's manual.

1. Check battery electrolyte level and charge the battery, if necessary.
2. Check coolant level. Maintain 1-1/2 in. above header plate in tank top.
3. Fill the fuel tank.
4. Check crankcase oil level. Oil should be between marks on dipstick after machine has been shut down for 10 minutes.
5. Relieve hydraulic pressure by stopping engine, lowering backhoe and loader to ground, and operating control levers and steering wheel until system fails to respond.
6. Reduce shipping pressure of all tires to inflation pressure shown on page 10-10-14.
7. Cover unit for protection and cleanliness.

### PREDELIVERY SERVICE

Because of the shipping factors involved, plus extra finishing touches that are necessary to promote customer satisfaction, proper predelivery service is of prime importance to the dealer and the customer.

If adjustments are required, procedures are found in the after-sale section.

Use the following list when preparing a backhoe loader for delivery to the customer.

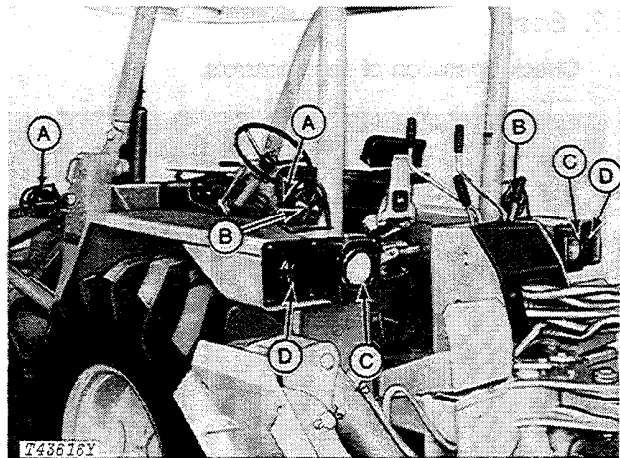
#### 1. Cab Accessories

Check operation of windshield wiper, horn, seat belt, pressurizer, heater, defroster, dome light, etc.

*Cab accessories checked* Yes No

#### 2. Lights

Check operation of all lights.



A—Loader Frame Headlights      C—Combination Rear Lamps  
B—Warning Lamps                  D—Reflectors

Fig. 1-Backhoe Loader Lights



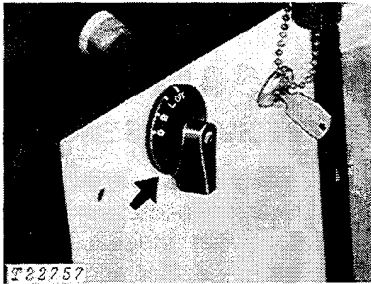


Fig. 2-Light Switch

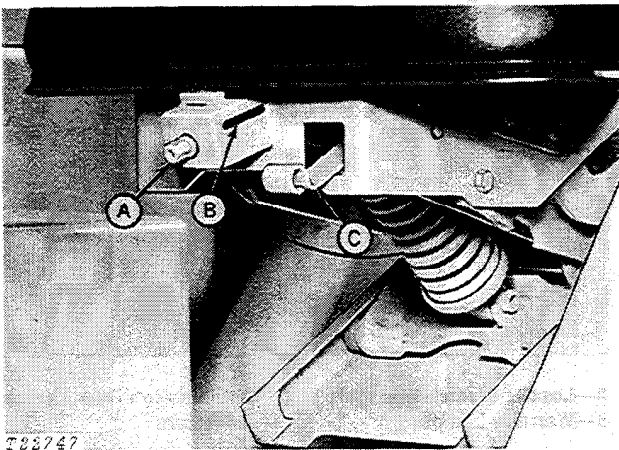
When key switch is turned clockwise to ON, light switch will turn on all machine lights. The light switch has four positions:

- "L" - To turn on all headlights (High) and rear work lights.
- "B" - To turn on all headlights (High), tail lights and flashing warning lamps.
- "D" - To turn on headlights (Dim), tail lights and flashing warning lamps.
- "OFF" - To turn off all lights.

Lights checked	Yes	No
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### 3. Seat

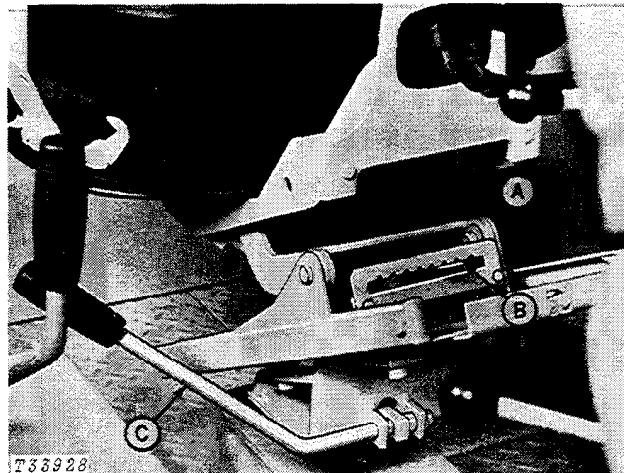
Check operation of seat controls.



A—Weight Adjusting Screw  
 B—Indicator  
 C—Seat Release Latch

Fig. 3-Seat Controls

To move the seat up and back, stand up and lift seat release latch. The seat will move automatically to upper rear position. Sit down to return seat to preset operating position.



A—Counterbalance Shaft  
 B—Seat Position Selector Lever  
 C—Seat Pivot Release Lever

Fig. 4-Seat Controls

To adjust for height, move seat to upper, rear position. Then shift seat position selector lever between "short" and "tall" until pedals and levers can be operated comfortably when you are seated. The seat will always return to this position when you sit down after having moved the seat up to the rear.

To adjust for weight, turn weight-adjusting screw clockwise or counterclockwise until indicator conforms to your weight.

To change position of seat for either backhoe or loader operation, raise pivot release lever and turn seat until it locks into new position.

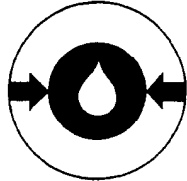
To change position of seat for either backhoe or loader operation, raise pivot release lever and turn seat until it locks into new position.

If seat does not move fully to rear when unlatched, adjust counterbalance spring as follows: Move seat to upper rear position. Insert a screwdriver in slot in counterbalance shaft, push in to unlatch shaft, and turn shaft counterclockwise. Align latch in end of shaft with one of the pairs of slots in the side of seat support and pull screwdriver outward to latch shaft.

Seat operation checked	Yes	No
------------------------	-----	----

#### 4. Indicator Lights

Check operation of indicator lights. All four indicator lights (Figs. 5-8) glow when key switch is turned to ignition.



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Fig. 5-Engine Oil Pressure Indicator Light

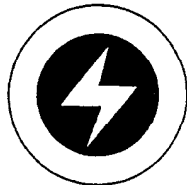
If light glows red when engine is running, stop engine immediately and determine cause.



T22740

Fig. 6-Transmission Oil Filter Indicator Light

After engine starts, light may glow while transmission oil is cold. If light glows when oil is warm, stop engine and change transmission filter element.



T22737

Fig. 7-Alternator Indicator Light

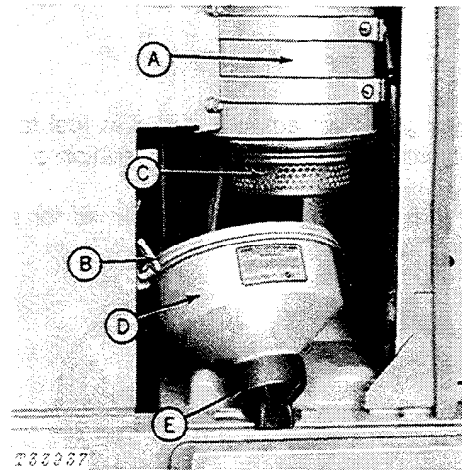
Light glows red when alternator is not charging. When light goes on with engine running, stop engine and determine cause.



T22739

Fig. 8-Air Filter Indicator Light

If light stays on after engine starts, clean and service air cleaner element.



T22337

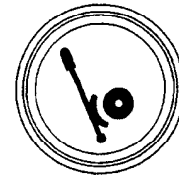
A—Air Cleaner Body  
 B—Clamp  
 C—Element

D—Dust Cup  
 E—Unloader Valve

Fig. 9-Air Cleaner

Check for restrictions. Replace element if necessary.

**NOTE:** Indicator light will not signal correctly if the element is ruptured or improperly sealed in air cleaner housing.



T62798N

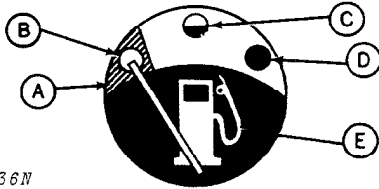
Fig. 10-Parking Brake Indicator Light

Indicator light will glow when key switch is on and parking brake is engaged.

Indicator lights checked	Yes	No
Air filter element cleaned	Yes	No

## 5. Gauges

Check operation of gauges.



T 22736N

A—Warning Zone  
 B—Empty Tank  
 C—Half-Full Tank

D—Full Tank  
 E—Fuel

Fig. 11-Fuel Gauge

Fuel gauge shows amount of fuel in fuel tank. Fill fuel tank with proper fuel. Check operation of gauge.

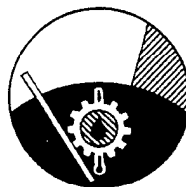
Open fuel tank drain cock. Drain liquid for several seconds. Close drain cock.



T 22741

Fig. 12-Engine Coolant Temperature Gauge

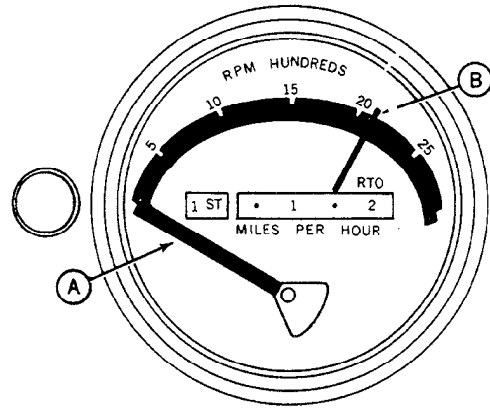
White zone shows normal operating temperature. If indicator hand enters red-orange warning zone (striped area in Fig. 12), stop engine and determine cause.



T 22742

Fig. 13-Transmission Oil Temperature Gauge

White zone shows normal operating temperature. If indicator hand enters red-orange warning zone (striped area in Fig. 13), stop engine and determine cause.



T 57845N

Fig. 14-Tachometer

Pointer A shows miles per hour up to 22 mph.

Pointer B shows rpms up to 2650 rpm (fast idle).

Warm up engine and check engine speeds. Slow idle should be 800 rpm. Fast idle 2650 rpm.

If adjustment is needed, see page 10-10-20.

Gauges checked	Yes	No
Fuel tank filled	Yes	No
Fuel tank sediment drained	Yes	No
Engine speeds checked	Yes	No



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