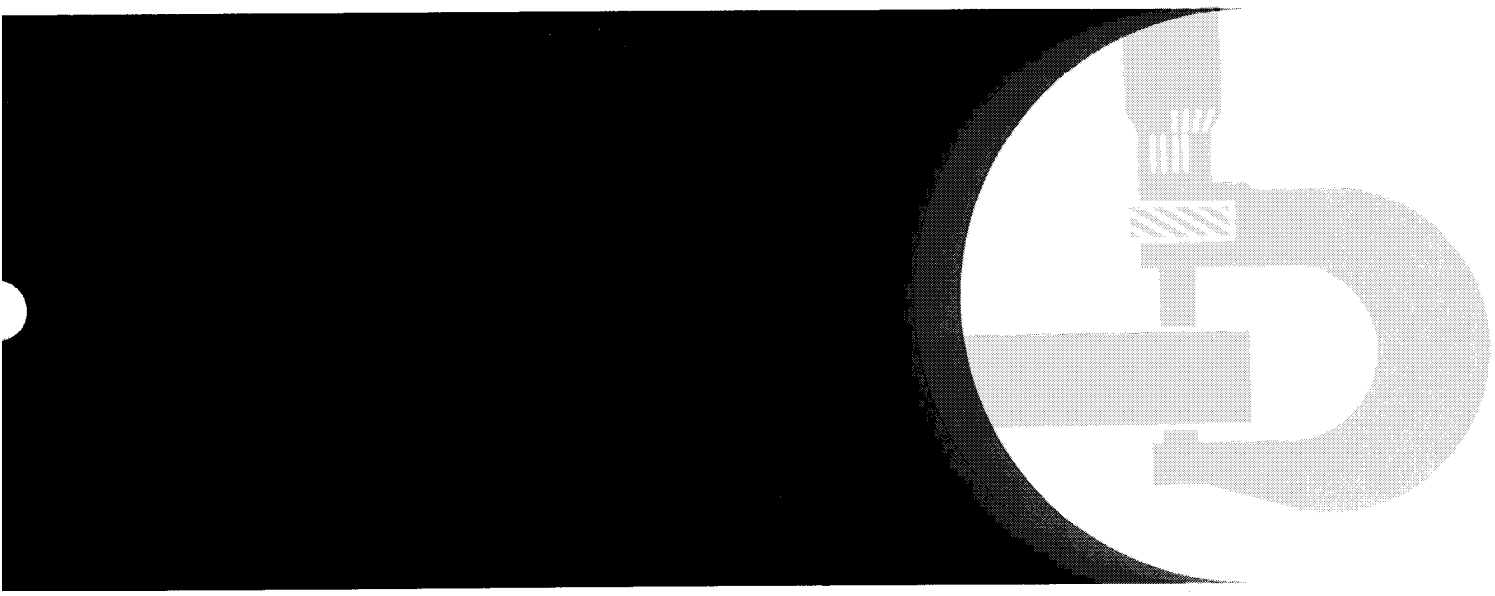
# John Deere
# JD500-C
# Loader Backhoe



# TECHNICAL MANUAL

## TM-1038

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

# JD500-C Loader Backhoe TECHNICAL MANUAL

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

## CONTENTS

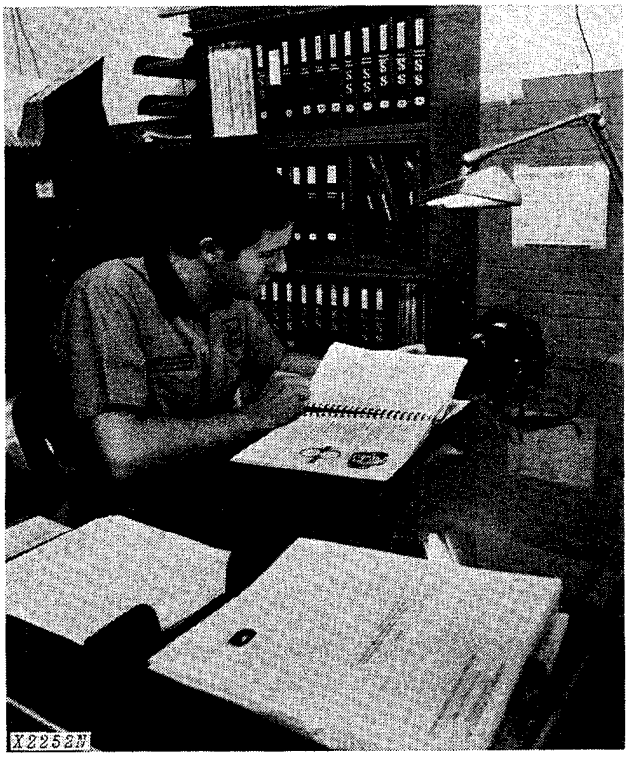


*The specifications and design information contained in this manual were correct at the time it was printed. It is John Deere's policy to continually improve and update our machines. Therefore, the specifications and design information are subject to change without notice. Wherever applicable, specifications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

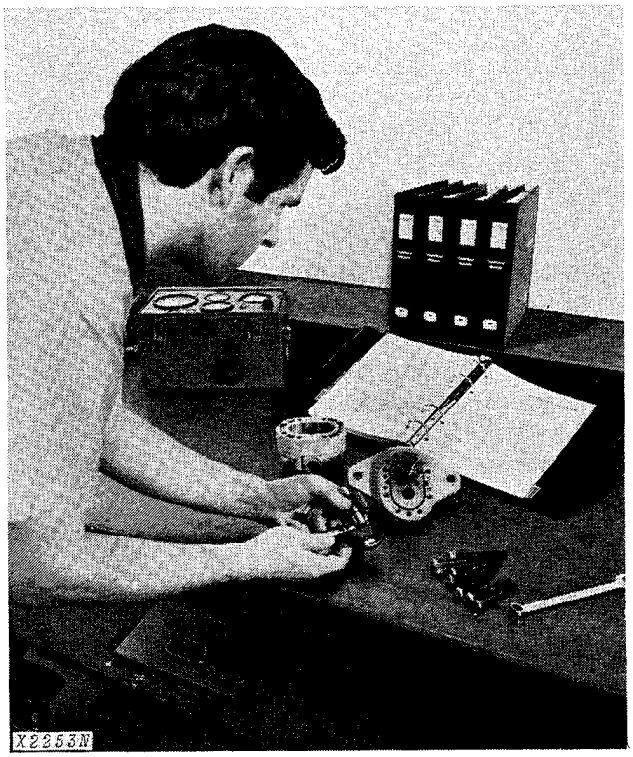


*Litho in U.S.A.*

# 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.

*Litho in U.S.A.*

# Section 10
# GENERAL

## CONTENTS OF THIS SECTION



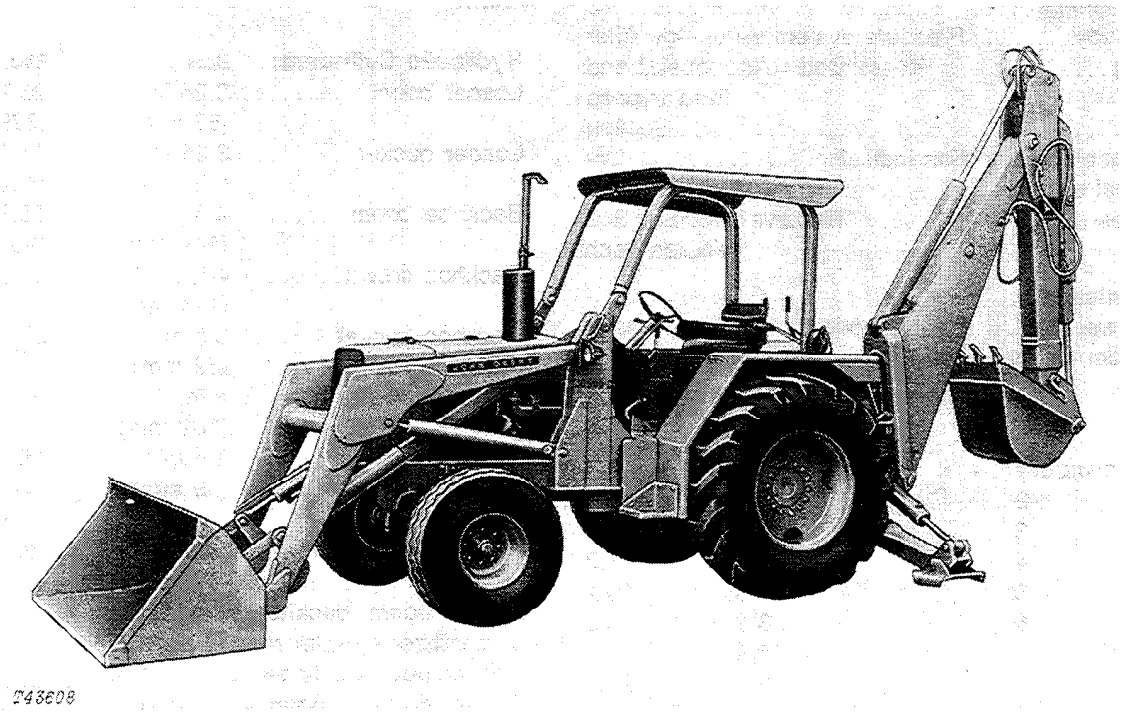



*Fig. 1-JD500-C Backhoe Loader*

# 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 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.

Litho in U.S.A.

| **Tires:** | **Front** | **Rear** |
|---|---|---|
| 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)

| **Capacities:** | **U.S.** | **Imp.** | **Liters** |
|---|---|---|---|
| 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. rollback 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.

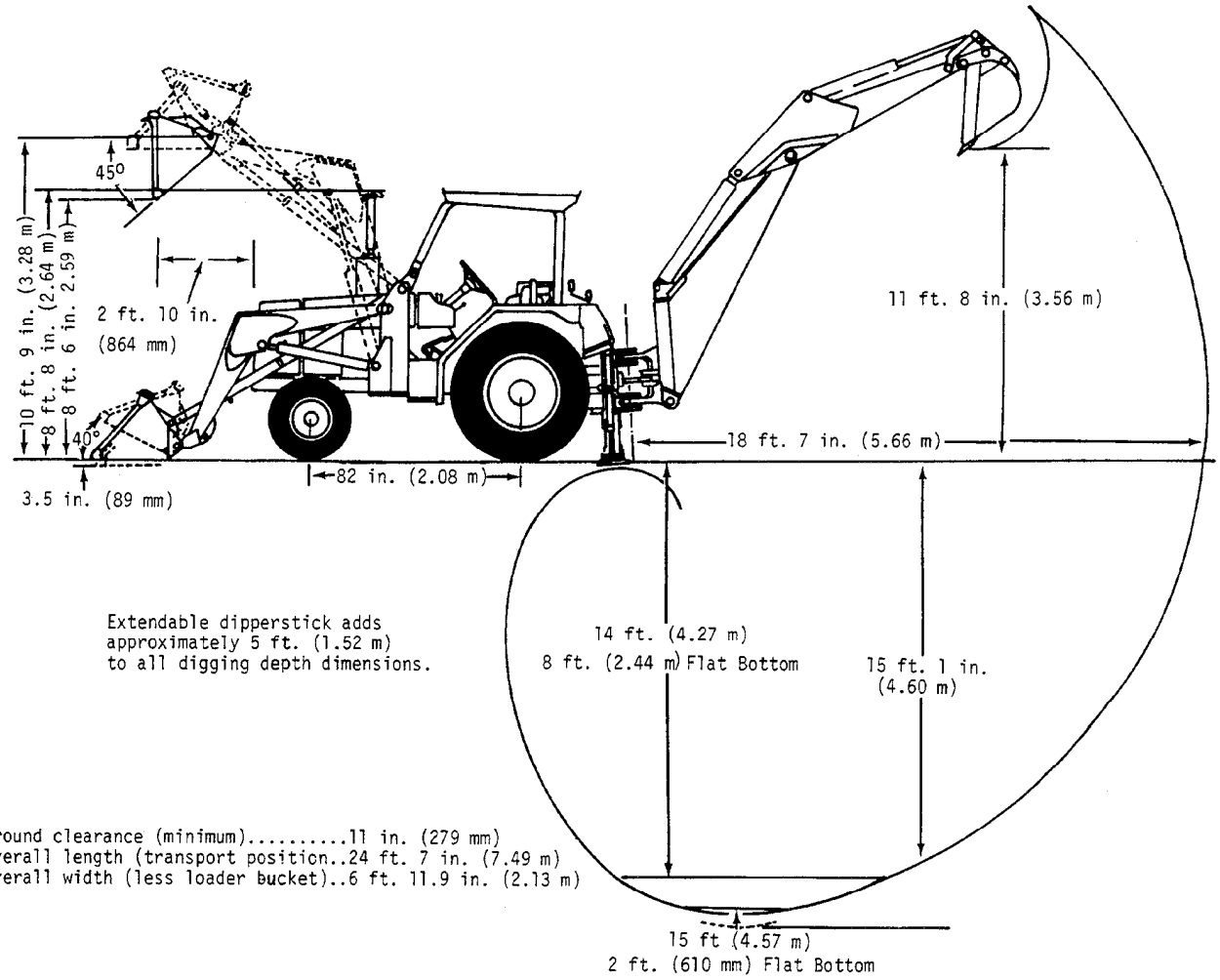
**Buckets:**

| **Loader** | **Nominal Heaped Capacity** | **Width** |
|---|---|---|
| General Purpose | 1 cu. yd. (0.76 m³) | 89.4 in. (2.27 m) |
| Light Materials | 1-1/4 cu. yd. (0.96 m³) | 89.4 in. (2.27 m) |

| **Backhoe:** | **Struck Capacity** | **Width** |
|---|---|---|
| Standard | 2.5 cu. ft. (0.071 m³) | 12 in. (305 mm) |
| | 3.6 cu. ft. (0.102 m³) | 16 in. (406 mm) |
| | 4.4 cu. ft. (0.125 m³) | 18 in. (457 mm) |
| | 6.0 cu. ft. (0.170 m³) | 24 in. (610 mm) |
| | 7.6 cu. ft. (0.215 m³) | 30 in. (762 mm) |
| | 7.2 cu. ft. (0.204 m³) | 36 in. (914 mm) |
| Heavy-duty | 4.4 cu. ft. (0.125 m³) | 18 in. (457 mm) |
| | 6.0 cu. ft. (0.170 m³) | 24 in. (610 mm) |
| | 7.6 cu. ft. (0.215 m³) | 30 in. (762 mm) |
| Ejector | 4.2 cu. ft. (0.119 m³) | 24 in. (610 mm) |

*Litho in U.S.A.*

JD500-C BACKHOE LOADER DIMENSIONS




Ground clearance (minimum).....11 in. (279 mm)
Overall length (transport position..24 ft. 7 in. (7.49 m)
Overall width (less loader bucket)..6 ft. 11.9 in. (2.13 m)

*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

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

**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

# 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.

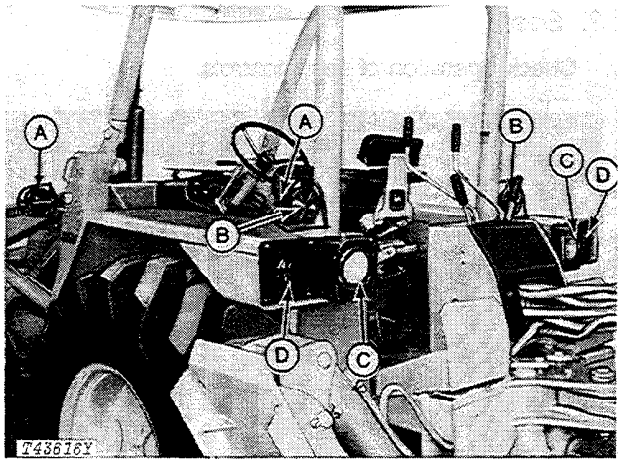
### 1. Cab Accessories

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**
**B—Warning Lamps**
**C—Combination Rear Lamps**
**D—Reflectors**

*Fig. 1-Backhoe Loader Lights*

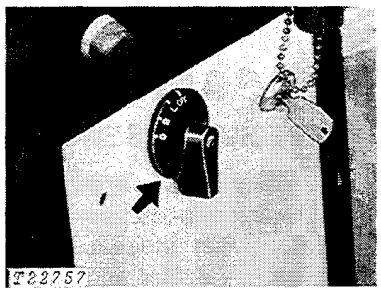



*Fig. 2-Light Switch*

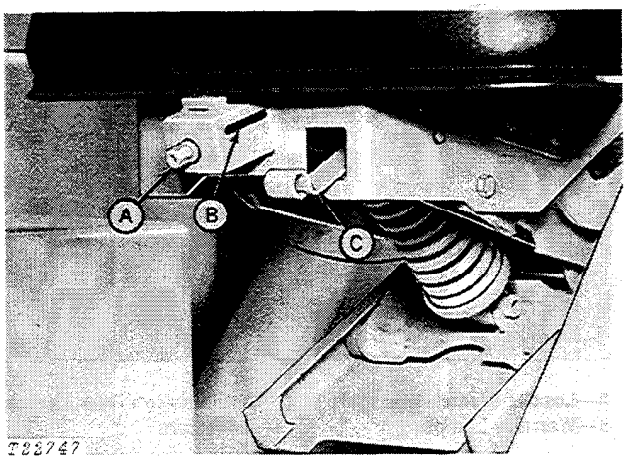
When key switch is turned clockwise to ON, light switch will turn on all machine lights. The light switch has four positions:

"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*

## 3. Seat

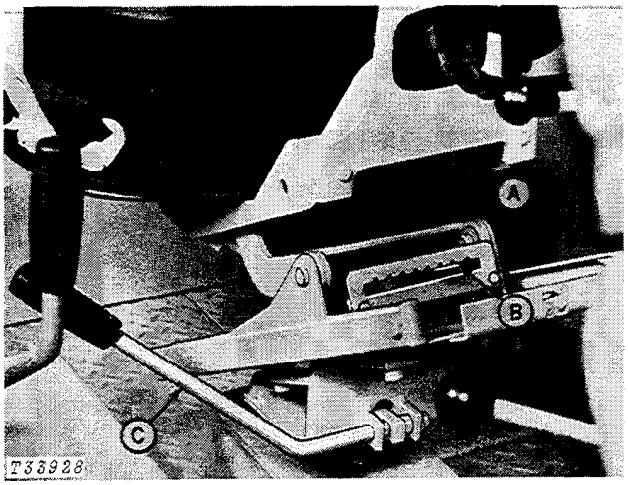
Check operation of seat controls.




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

*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** **C—Seat Pivot Release Lever**
**B—Seat Position Selector 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*

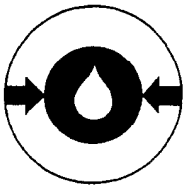
Thank you very much for your reading. Please Click Here Then Get More Information.

NOTE:

If there is no response to click on the link above, please download the PDF document first and then click on it.

## 4. Indicator Lights

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



T22738

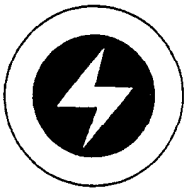
*Fig. 5-Engine Oil Pressure Indicator Light*

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

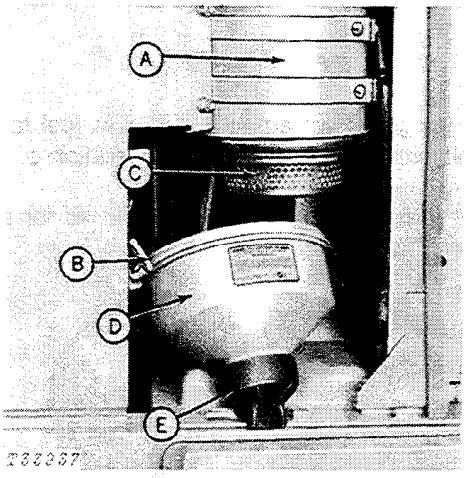
*Fig. 7-Alternator Indicator Light*

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.




T33267

**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

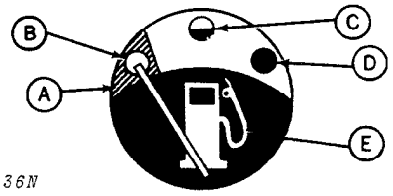
*Fig. 10-Parking Brake Indicator Light*

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.



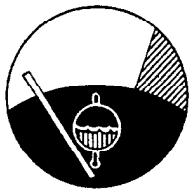

T22736N

**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.

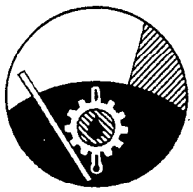
Open fuel tank drain cock. Drain liquid for several seconds. Close drain cock.



T22741

*Fig. 12-Engine Coolant Temperature Gauge*

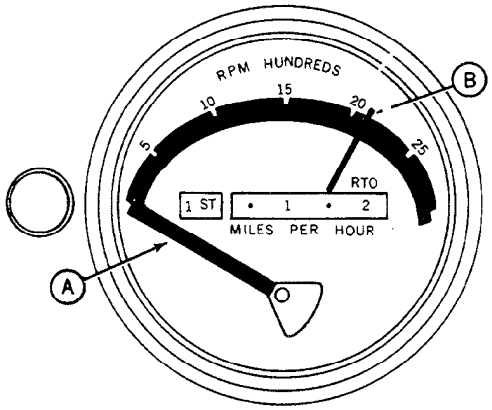
White zone shows normal operating temperature. If indicator hand enters red-orange warning zone (striped area in Fig. 12), stop engine and determine cause.



T22742

*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.




T57845N

*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* |

## 6. Foot Controls

Check operation of all foot controls.

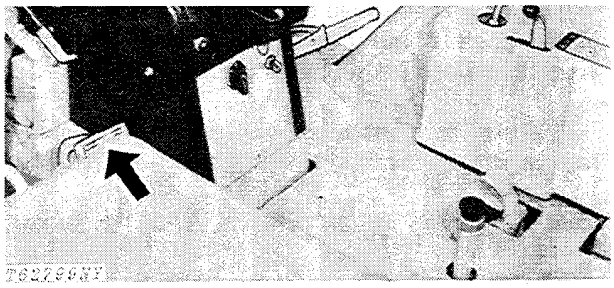


Fig. 15-Inching Pedal

While driving the backhoe loader, depress the inching pedal completely. The transmission should disengage the drive wheels.

If adjustment is needed see page 10-10-21.

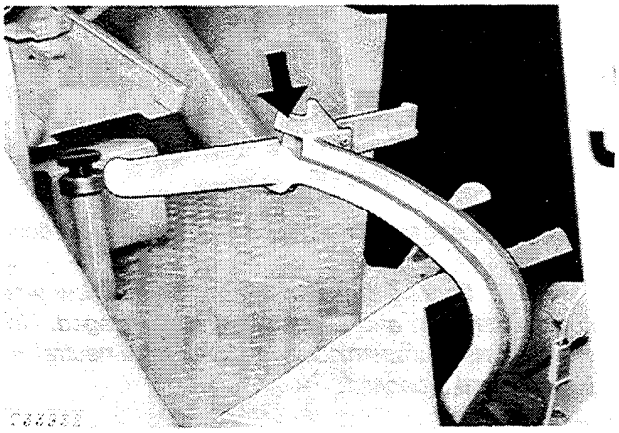


Fig. 16-Brake Pedals and Pedal Bar

Check brake system for leaks or improper operation.

Put backhoe loader in gear and depress brake pedal. Moderate pedal force should hold backhoe loader in place.

If pedal force does not hold backhoe loader in place, pedal feels spongy or bottoms out, repair is required, or system may require bleeding (page 10-10-21).

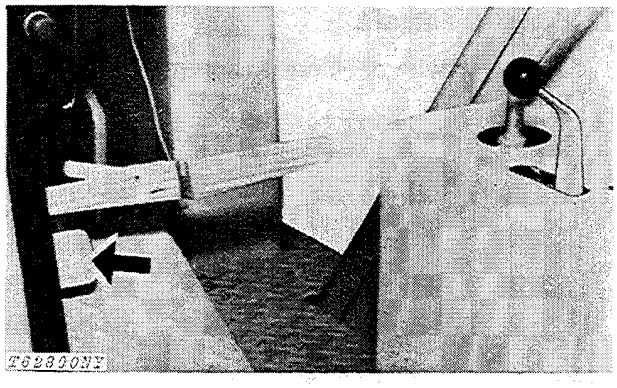


Fig. 17-Foot Throttle

Use foot throttle to speed up engine quickly. When foot throttle is released, engine speed returns to hand throttle setting.

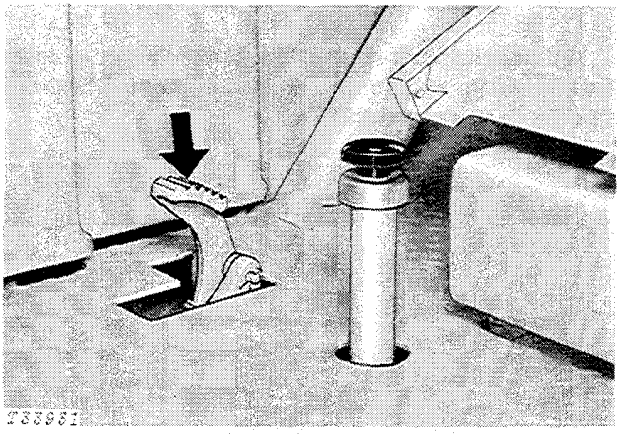


Fig. 18-Differential Lock Pedal

Run the engine. Put the transmission in park. Engage the differential lock. Turn the steering wheel. If the differential lock is working correctly, resistance will be felt.

To disengage differential lock, depress one or both brake pedals.

**⚠ CAUTION: Do not attempt to turn or operate at high speed with differential lock engaged.**

*Foot controls checked* *Yes* *No*

## 7. Hand Controls

Check operation of all hand controls.

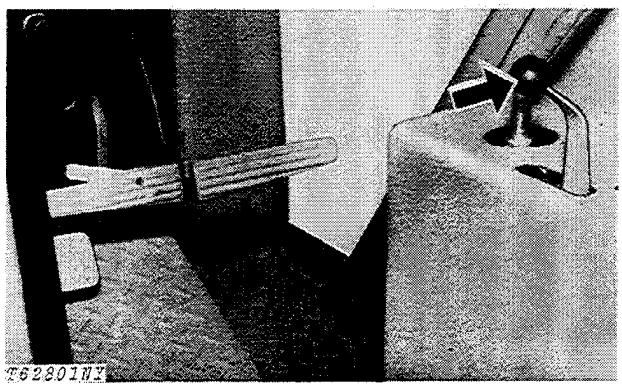
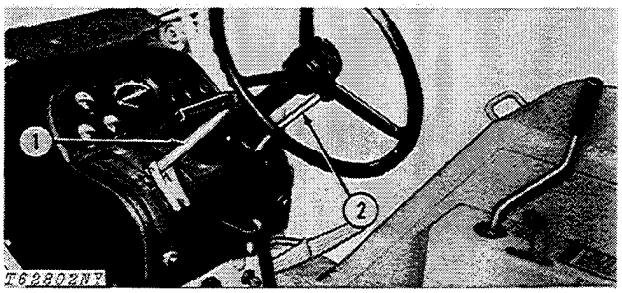



*Fig. 19-Hand Throttle*

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.

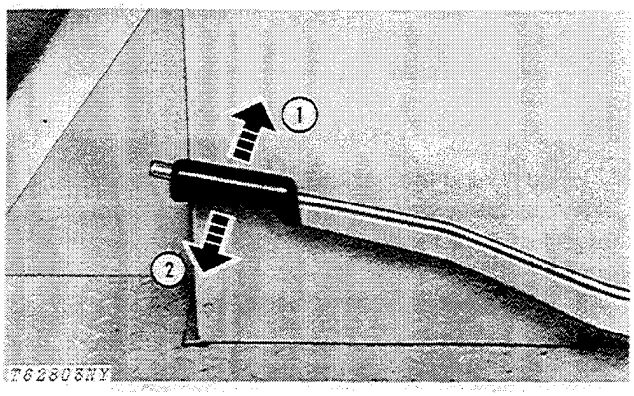
To move forward, push reverser lever into forward position and move shift lever to desired gear. Shift one gear at a time.

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.