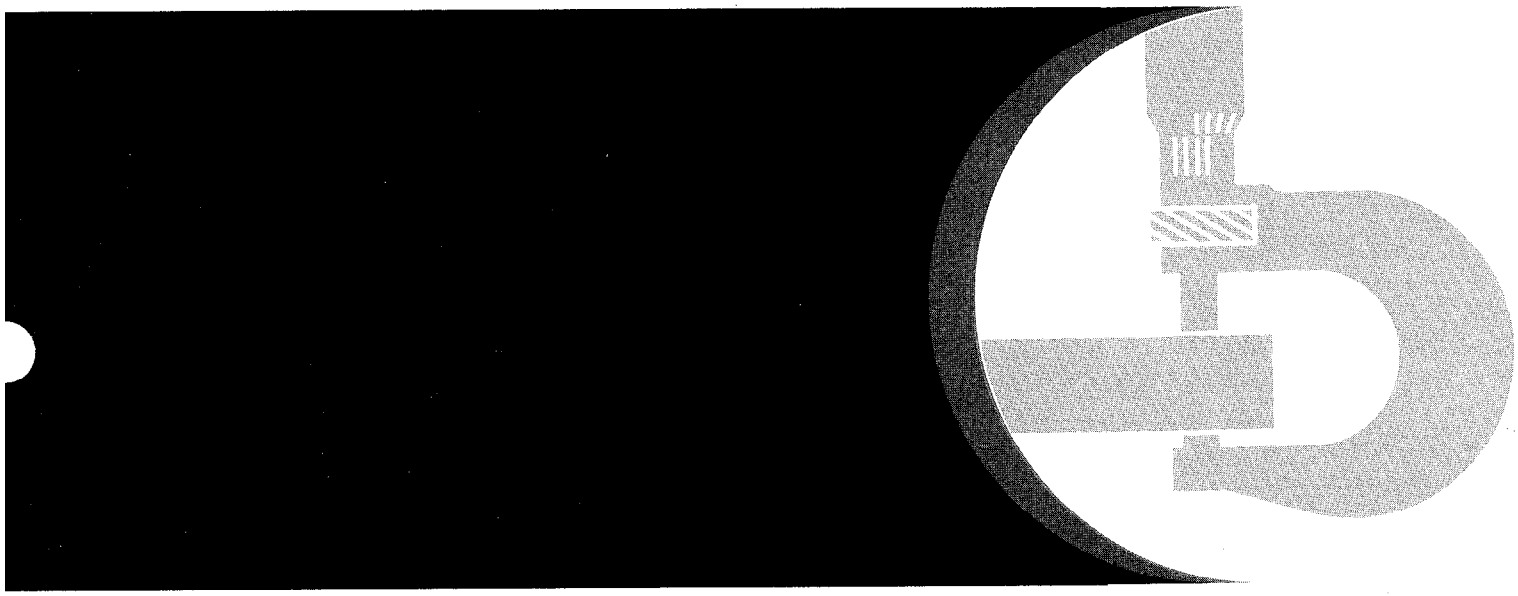
John Deere
JD510
Loader Backhoe



TECHNICAL MANUAL

John Deere Dubuque Works
TM-1039
Litho in U.S.A.

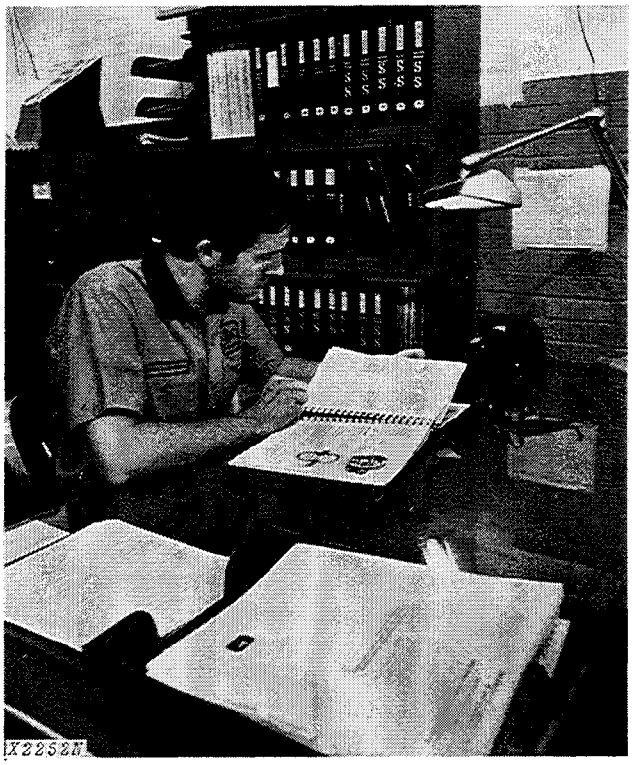
JD510 Loader Backhoe Technical Manual TM-1039 (Oct-79)

CONTENTS

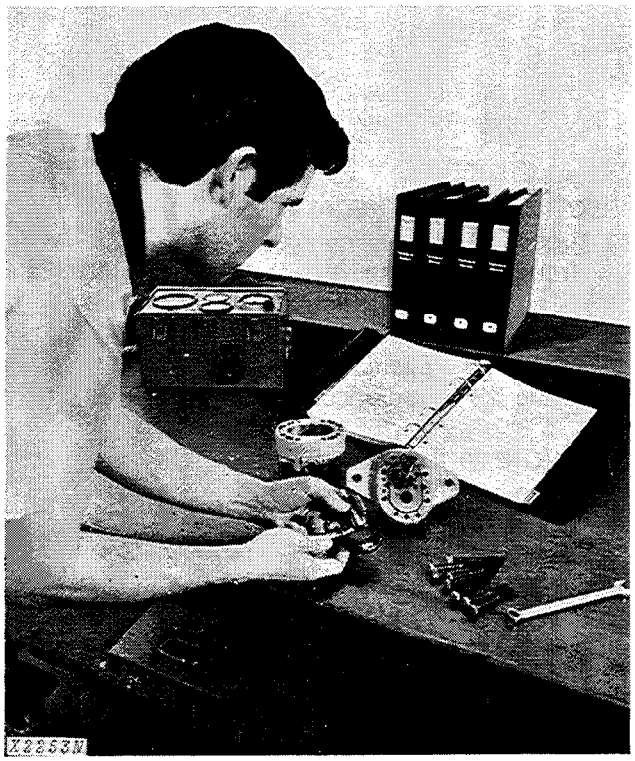
The specifications and design information contained in this manual were correct at the time it was printed. It is John Deere's policy to continually improve and update our machines. Therefore, the specifications and design information are subject to change without notice. Wherever applicable, specifications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

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.

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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.

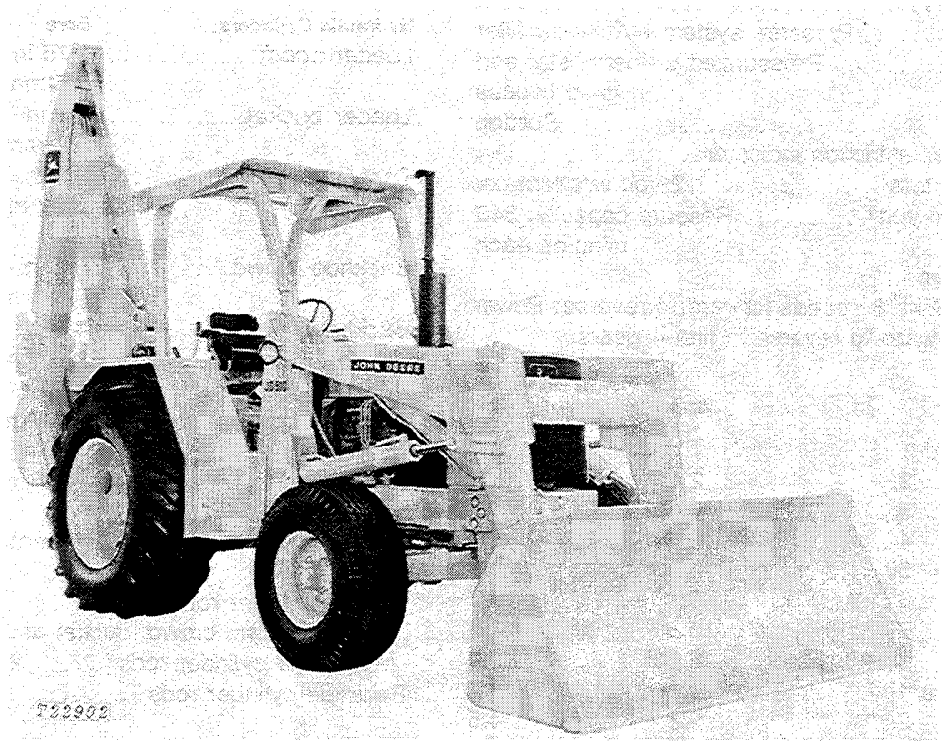
Some features of this technical manual:

- *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

CONTENTS OF THIS SECTION



JD510 Backhoe Loader

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Group 5
SPECIFICATIONS

JD510 BACKHOE LOADER 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 1-1/8 cu. yd. (0.86 m³) loader bucket, 24 in. (610 mm) 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 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	km/h
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, fully 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).... 31 ft. (9.45 m)
Number of turns, far left to far right 3.3

Hydraulic System: Closed-center
Max. Pressure ..... 2350 psi 16 203 kPa (162 bar)
Load control ..... Single-lever
Backhoe control ..... Two-lever
Pump...Piston, constant pressure, variable-displacement, 60 gpm (227 L/min) @ 2500 engine rpm
Filter ..... 25 micron steel-enclosed paper cartridge in return

Hydraulic Cylinders:	**Bore**	**Stroke**
Loader boom	3.75 in. (95 mm)	28.7 in. (729 mm)
Loader bucket	3.5 in. (89 mm)	27.3 in. (693 mm)
Backhoe boom	3.5 in. (140 mm)	41.75 in. (1060 mm)
Backhoe crowd	5.5 in. (140 mm)	37.5 in. (953 mm)
Backhoe bucket	4 in. (102 mm)	37.5 in. (953 mm)
Backhoe swing	4.5 in. (114 mm)	9.9 in. (251 mm)
Stabilizer	4.5 in. (114 mm)	21.5 in. (546 mm)

Cylinder rods..Ground, heat-treated, chrome-plated, polished
Loader cylinder rods ..... 2 in. (51 mm) dia.
Backhoe boom, crowd, bucket and stabilizer cylinder rods ..... 2.5 in. (64 mm) dia.
Backhoe cylinder rods ..... 2 in. (51 mm) dia.

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Tires:

Front: 14.5/75-16.1, 10 ply rating, F3
Rear: 18.4-28, 12 ply rating, R4

Wheel Treads:

Front ..... 70.34 in. (1.79 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	29.9 gal.	25.0 gal.	113.2

OPERATING INFORMATION

Loader:

Rollback at ground level ..... 40 deg.
Breakout force .... 10,000 lb. (44.82 kN) (4 536 kg)
Digging depth below ground level (with bucket level) ..... 4 in. (102 mm)
Lifting capacity, full height ..... 6000 lb. (2 722 kg)
Height to bucket hinge pin ..... 10 ft. 7 in. (3.23 m)
Maximum dump angle ..... 45 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. 4 in. (711 mm)
Raising time to full height ..... 5.6 sec.
Bucket dump time ..... 3.0 sec.
Lowering time (power) ..... 3.7 sec.

Backhoe:

Digging depth (ICED):
Maximum ..... 17 ft. 3 in. (5.26 m)
2 ft. (610 mm) flat bottom .... 17 ft. 2 in. (5.23 m)
8 ft. (2.44 m) flat bottom ..... 16 ft. 5 in. (5.0 m)
Swing arc ..... 180 deg.
Lifting capacity:
Boom at full reach and full height ..... 2400 lb. (1 089 kg)
Dipper lifting, boom holding, full height ..... 4000 lb. (1 814 kg)
Digging force (bucket cylinder in power-dig position) ..... 12,662 lb. (56.75 kN) (5 743 kg)
Digging force, crowd cylinder ..... 8811 lb. (39.49 kN) (3 997 kg)
Reach from center of swing mast ..... 22 ft. 3 in. (6.78 m)
Reach from center of rear axle ..... 25 ft. 11 in. (7.90 m)
Loading height (truck-loading position) ..... 13 ft. 8 in. (4.17 m)
Transport height ..... 13 ft. 3 in. (4.04 m)
Bucket rotation ..... Adjustable for 148 or 161 deg.
Bucket positions .. Adjustable for 19 or 8 deg. rollback

Stabilizer Width:

Transport position ..... 7 ft. 8 in. (2.3 m)
Operating position (overall) ..... 13 ft. 4 in. (4.06 m)
Operating position (ICED) ..... 12 ft. (3.66 m)

Buckets:

	Nominal Heaped Capacity	Width
Loader	1-1/8 cu. yd. (0.86 m³)	90.5 in. (2.30 m)
	1-1/2 cu. yd. (1.15 m³)	94 in. (2.39 m)

	Struck Capacity	Width
Backhoe	8 cu. ft. (0.227 m³)	18 in. (457 mm)
	10 cu. ft. (0.283 m³)	24 in. (610 mm)
	12 cu. ft. (0.340 m³)	30 in. (762 mm)
	14 cu. ft. (0.396 m³)	36 in. (914 mm)

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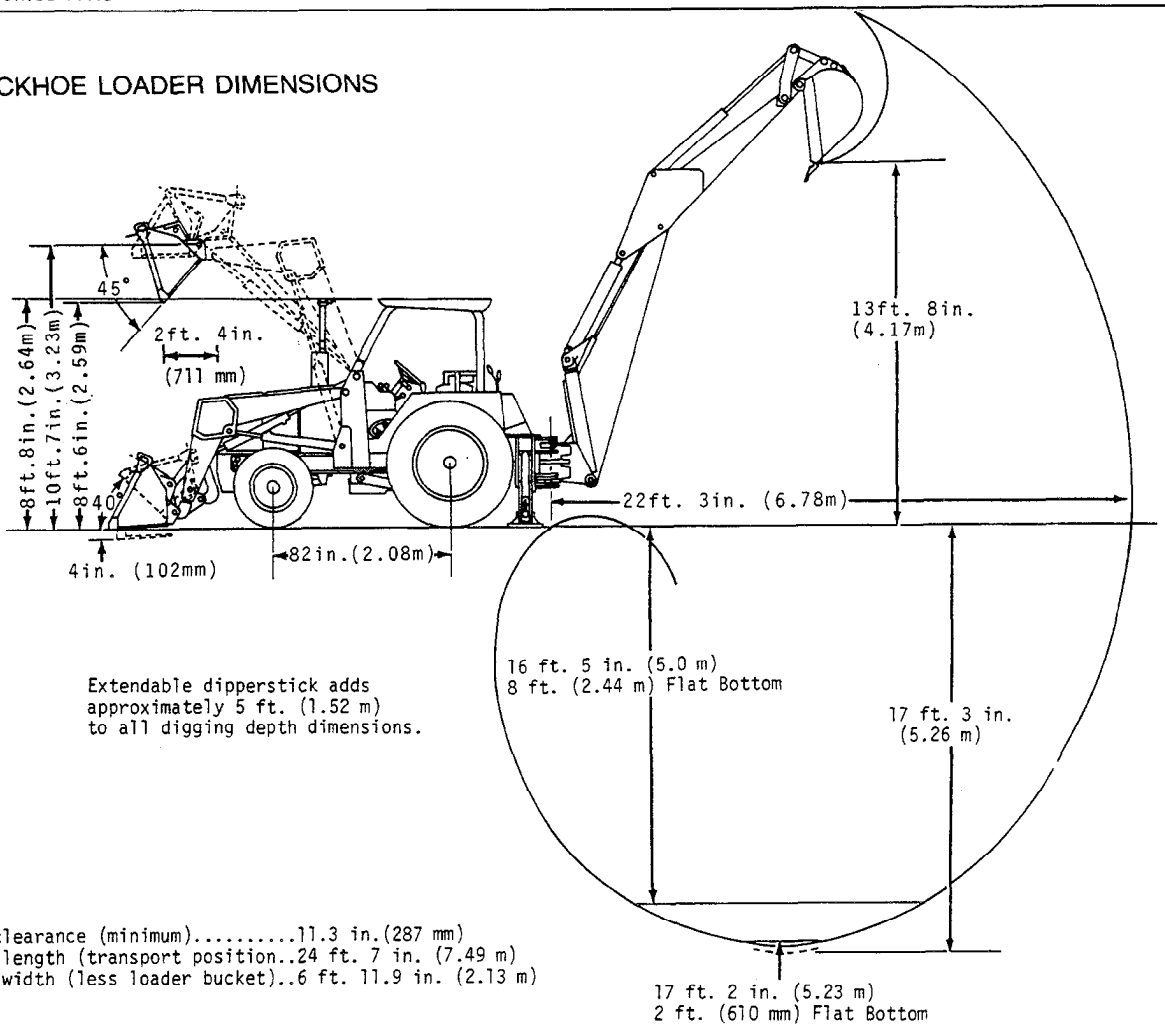
JD510 BACKHOE LOADER DIMENSIONS



Extendable dipperstick adds approximately 5 ft. (1.52 m) to all digging depth dimensions.

Ground clearance (minimum).....11.3 in.(287 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)

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Additional Standard Equipment:

Vertical muffler w/rain cap
Differential lock
Fuel gauge
Lights
Oil pressure indicator light
Alternator charge indicator light
Water temperature gauge
Transmission oil pressure indicator light
Cigar lighter
Transmission oil temperature gauge
Tachometer
Key switch w/push-button safety start
Fenders
Vandal protection
Horn
Hand throttle
Foot throttle
Electric hour meter
Deluxe swing-around seat
Antifreeze
Cold weather starting aid
Bucket level indicator
Rear reflector
Transistorized voltage regulator
Flat deck w/skid-proof platform

SAE Operating Weight . . . . . 20,560 lb. (9 326 kg)

Special Equipment:

ROPS w/canopy and seat belt
Cab (includes ROPS and seat belt)
Heater
Defroster
Pressurizer for cab
Exhaust extension
Bolt-on stabilizer street pads
Extendable dipperstick
Reversible stabilizer pads
Parking brake w/warning system
Backup alarm
ADCO buckets for backhoes
Seat belt—3 in. (76 mm)

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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 JD510 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.

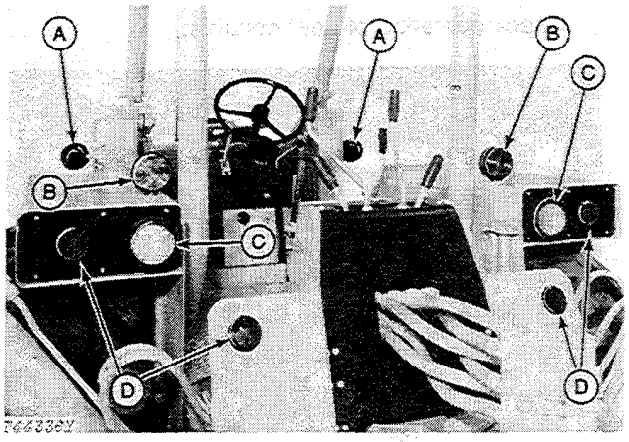
1. Cab Accessories

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

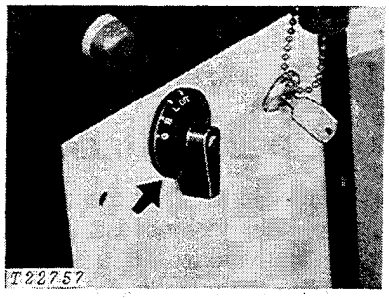


Fig. 2-Light Switch

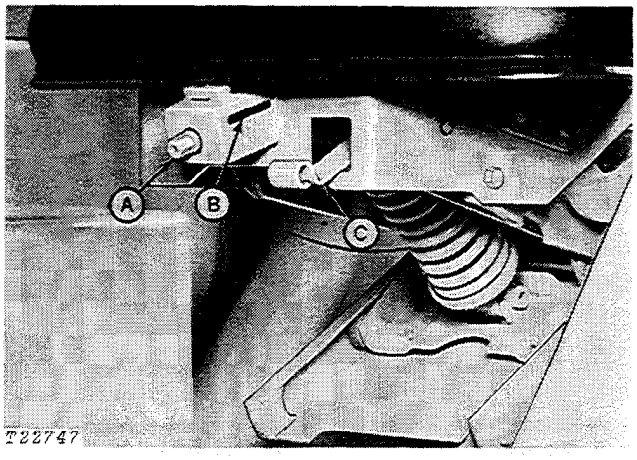
When key switch is turned clockwise to ON, light switch will turn on all machine lights. The light switch has four positions:

"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

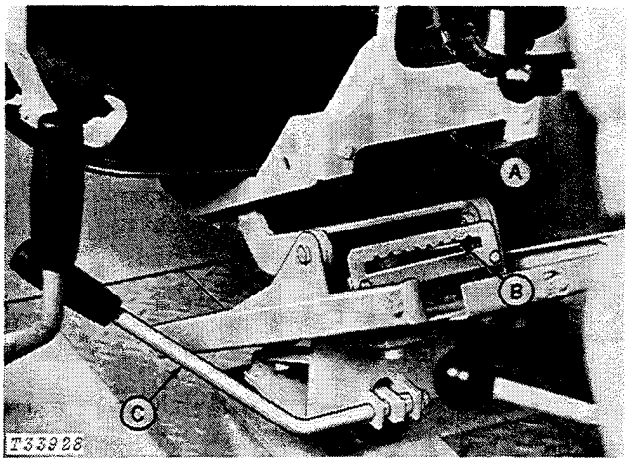
Check operation of seat controls.



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.

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.

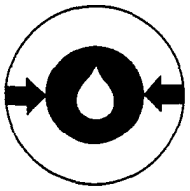


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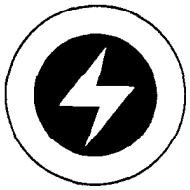
Fig. 5-Engine Oil Pressure Indicator Light

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.

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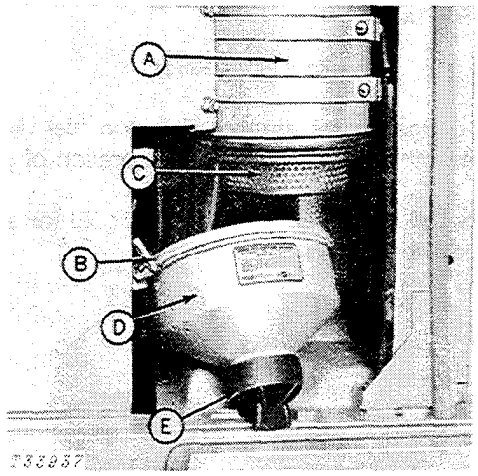
Fig. 8-Air Filter Indicator Light

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



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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.

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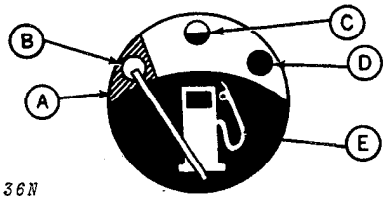
Fig. 10-Parking Brake Indicator Light

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.



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.

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.

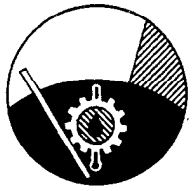


Fig. 13-Transmission Oil Temperature Gauge

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

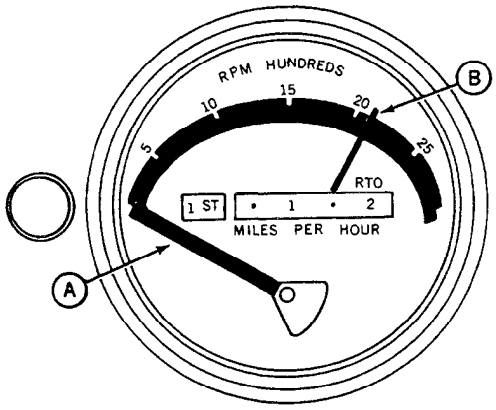


Fig. 14-Tachometer

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 must 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.

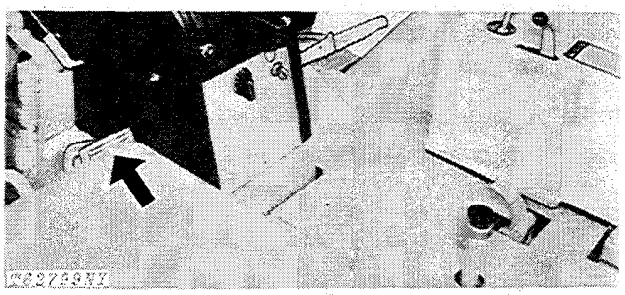


Fig. 15-Inching Pedal

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.

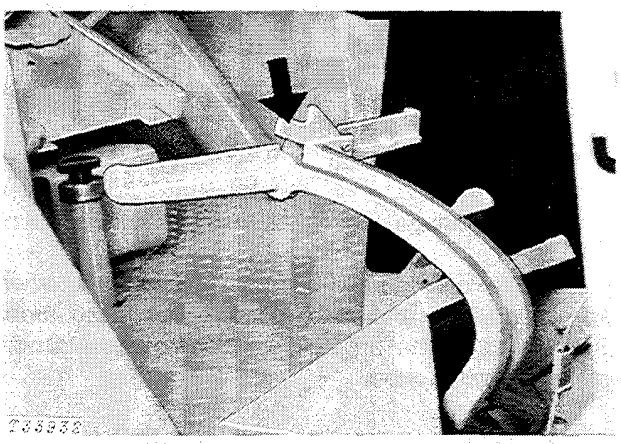


Fig. 16-Brake Pedals and Pedal Bar

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).

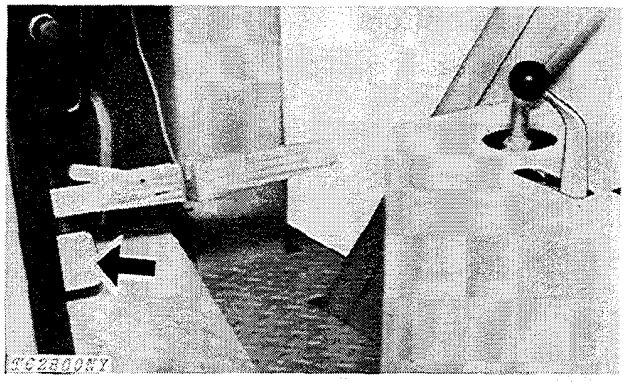


Fig. 17-Foot Throttle

Use foot throttle to speed up engine quickly, especially during loader operation when hands are busy with levers. When foot throttle is released, engine speed returns to hand throttle setting.

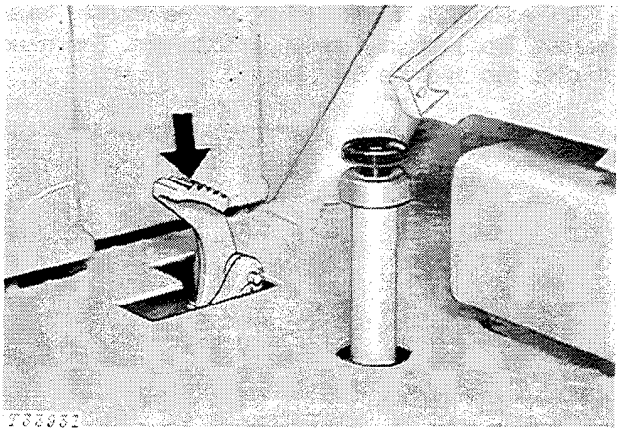


Fig. 18-Differential Lock Pedal

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.

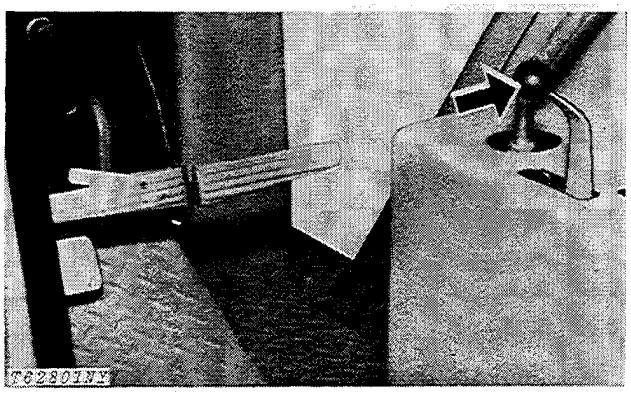
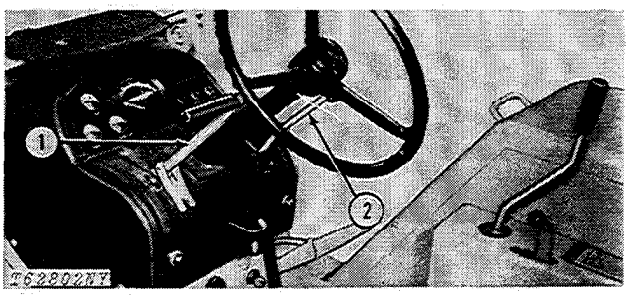


Fig. 19-Hand Throttle

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.

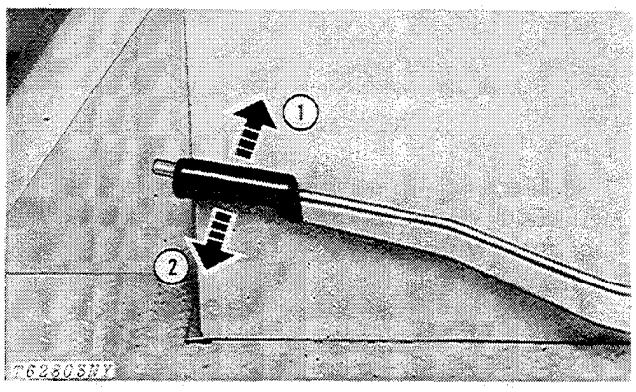
To move forward, push reverser lever into forward position and move shift lever to desired gear. Shift one gear at a time.

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**

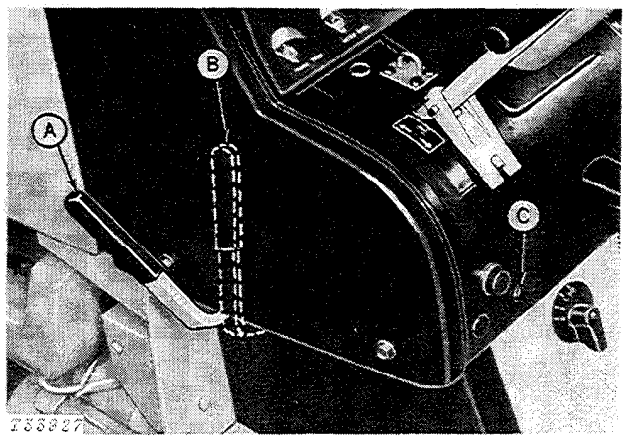
Fig. 21-Parking Brake

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.



A—Engaged **C—Release Button**
B—Disengaged

Fig. 22-Transmission Disconnect Lever

During cold weather, increase engine cranking speed by disengaging transmission from engine. Pull disconnect lever rearward until it is latched in disengaged position.

IMMEDIATELY after engine starts, engage lever by pulling it slightly rearward. Push release button in and allow lever to move forward to engaged position.

IMPORTANT: To avoid damage to main hydraulic pump, engage the disconnect clutch as soon as the engine starts.

Hand controls checked *Yes* *No*

8. Loader Control

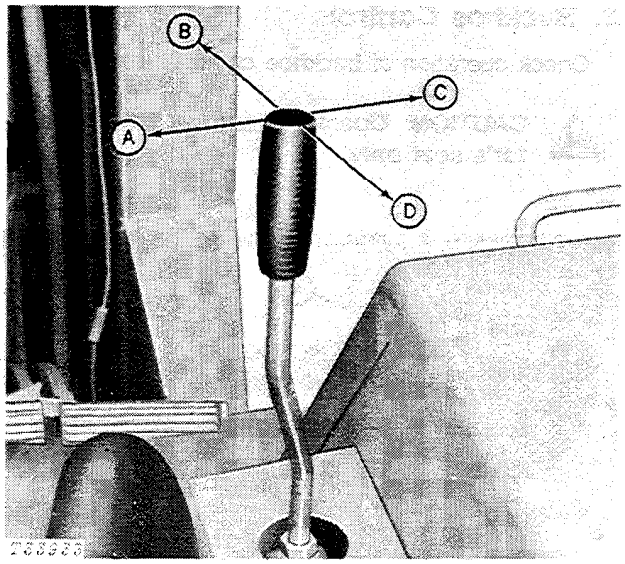
Check operation of boom and bucket lever.

Boom and bucket lever operates when engine is running.

If the lever is released at any time during normal loader operation, it will return to neutral and the boom and bucket will be held in position reached at that time.

Push control lever all the way forward for float position. Lever will stay in this position until it is manually returned to neutral.

When lever is in float position, boom moves freely up or down as bucket follows contour of ground.



A—Retract Bucket **C—Dump Bucket**
B—Lower Boom **D—Raise Boom**

Fig. 23-Boom and Bucket Control Lever

Push lever to right to dump bucket. Push lever beyond stop for maximum speed.

For most accurate control and maximum power of the bucket cutting edge, do not move control lever beyond the stop.

When retracting the bucket, move lever all the way left for maximum power.

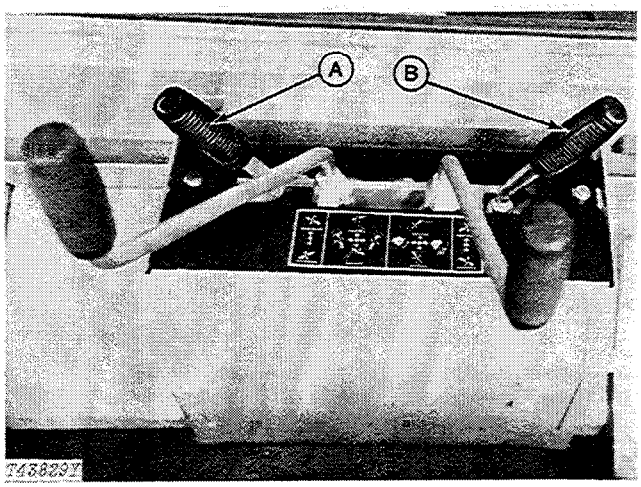
IMPORTANT: Do not hold lever in power position A or C after cylinder has completed its stroke.

Loader control lever checked *Yes* *No*

9. Backhoe Controls

Check operation of backhoe control levers.

CAUTION: Operate backhoe from operator's seat only.



A—Left Stabilizer Lever **B—Right Stabilizer Lever**

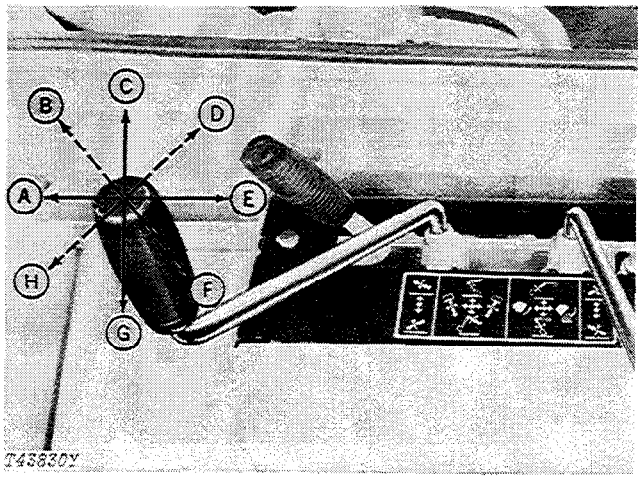
Fig. 24-Stabilizer Control Levers

The right and left stabilizer legs on each side of the main frame are individually controlled by two levers. The stabilizers may be raised or lowered individually, or at same time.

To lower stabilizers, move control levers forward. To raise them, pull levers rearward.

CAUTION: To avoid tipping when operating backhoe, extend stabilizer legs to widest position.

CAUTION: Use caution when raising the stabilizers. Remember that the stabilizers may be the only restraint preventing the machine from rolling into the excavation.



A—Left
B—Left and Down
C—Down
D—Right and Down
E—Right
F—Right and Up
G—Up
H—Left and Up

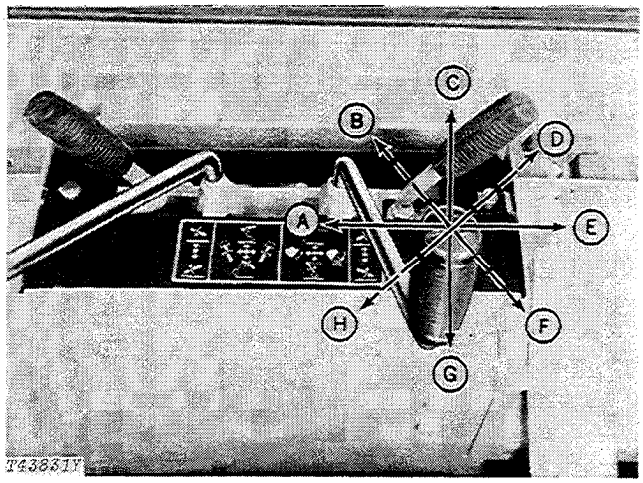
Fig. 25-Boom Control Lever

Boom control lever raises or lowers boom, and swings it to left or right.

To lower boom push control lever forward. To raise boom move lever rearward. To swing left move lever left; to swing right move lever right.

Move lever to an intermediate position to swing boom left or right at same time it is being raised or lowered.

A swing brake, built into the swing cylinder, automatically slows boom before it strikes stops on main frame.



A—Load
B—Out and Load
C—Bucket Out
D—Out and Dump
E—Dump
F—In and Dump
G—Bucket In
H—In and Load

Fig. 26-Bucket and Dipperstick Control Lever

To extend dipperstick (move bucket out) move control lever forward, to retract it (move bucket in) move lever rearward.

To dump bucket move control lever to right; to load it move lever to left.

Move lever to an intermediate position, to extend or retract dipperstick at same time bucket is being loaded or dumped.

Backhoe controls checked *Yes* *No*

10. Cycle Times

Check backhoe and loader hydraulic function cycle times.

Before checking loader functions cycle times, remove air from system as follows:

1. Operate the engine at 1/2 to 3/4 throttle and raise the boom to the top of its stroke, then lower to the bottom of its stroke (front of tractor off ground) three times. On the last cycle hold the handle in each direction after the boom has stopped and check for external leaks.

2. Operate the engine full throttle and place the bucket four feet off ground. Dump and roll back bucket three times. During the third cycle hold the handle in each direction at least five seconds after bucket has stopped and check for external leaks. With bucket fully dumped, raise boom to the top of its stroke to be sure that no lock-up occurs.

The following times should be used as a guide. If cycle times vary greatly from those listed, trouble shoot the hydraulic system. Check cycle times with oil warm and engine at fast idle.

Backhoe cycle times:

Bucket retract	2.5 seconds max.
Bucket extend	3.5 seconds max.
Swing (180 degrees)	3.5 to 7.0 seconds max.

Loader cycle times:

Boom raise	5.7 seconds max.
Boom lower (power)	5.3 seconds max.
Boom lower (float)	7.5 seconds max.
Bucket dump (boom at full height)	4.2 seconds max.

Cycle times checked *Yes* *No*

11. Steering

Check power steering. Steering wheel should turn freely in both directions without jerking and 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.

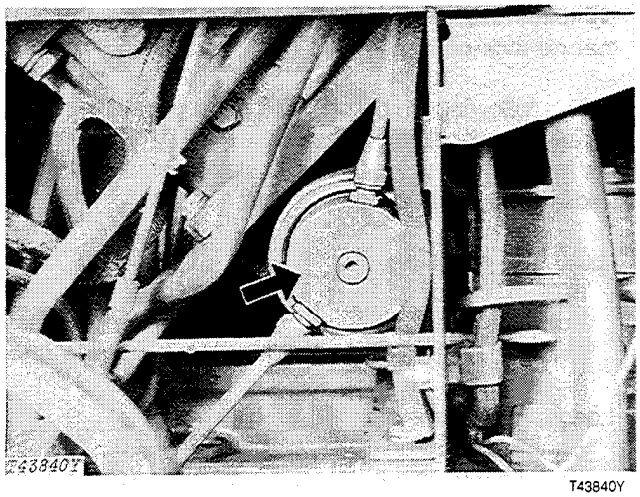


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Fig. 27-Brake Accumulator

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.

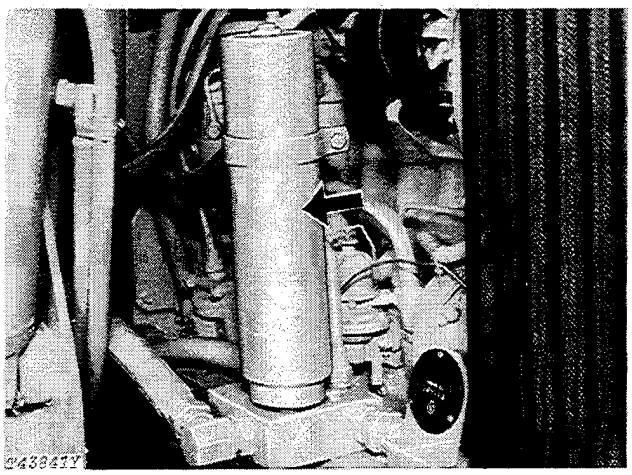

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Fig. 28-Hydraulic System Accumulator

Check hydraulic system accumulator circuit as follows:

Start engine and run for one minute. Stop engine.

Turn steering wheel to left as far as 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

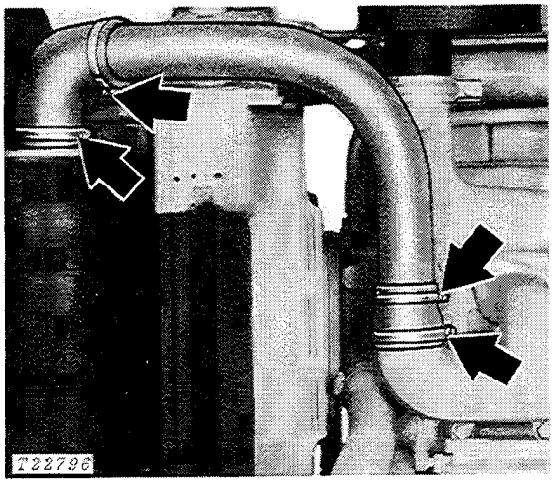

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Fig. 29-Air Intake Hose Clamps

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

Air intake hoses checked *Yes* *No*

14. Radiator

Check coolant level.

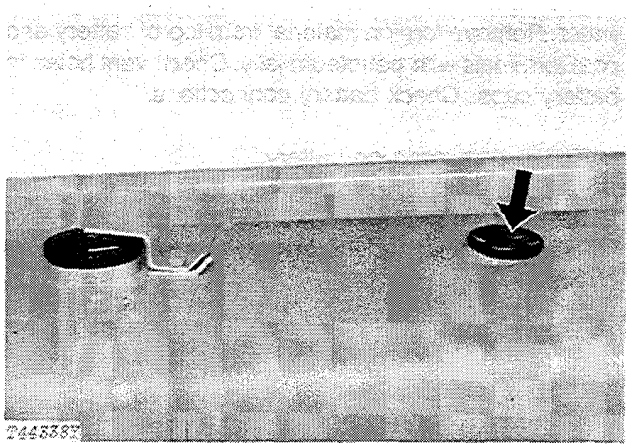


Fig. 30-Radiator Cap

CAUTION: Remove radiator filler cap only when coolant temperature is below boiling point. Then loosen cap slightly to the stop before removing the cap completely.

Check coolant level with unit on level ground. Add clean soft water (summer) or antifreeze (winter) if the coolant level is lower than 1-1/2 inches above the header plate in the radiator top tank.

Check cooling system for loose connections or leaks after adding coolant. Tighten the filler cap.

Coolant level checked *Yes* *No*

15. Crankcase Oil Level

Check crankcase oil level with unit on level ground. (Allow a minimum of 10 minutes for the oil to drain down before checking.) If oil level is at or below bottom mark on dipstick, add oil specified on page 10-20-2 to bring oil level to between marks on dipstick. Do not operate engine with oil level below bottom mark.

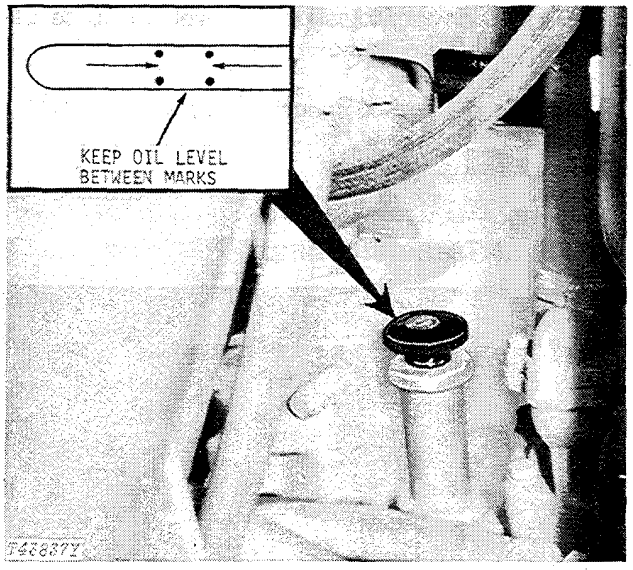


Fig. 31-Crankcase Filler Cap and Dipstick

Crankcase oil level checked *Yes* *No*
Oil added _____*qts.*

16. Transmission Oil Level

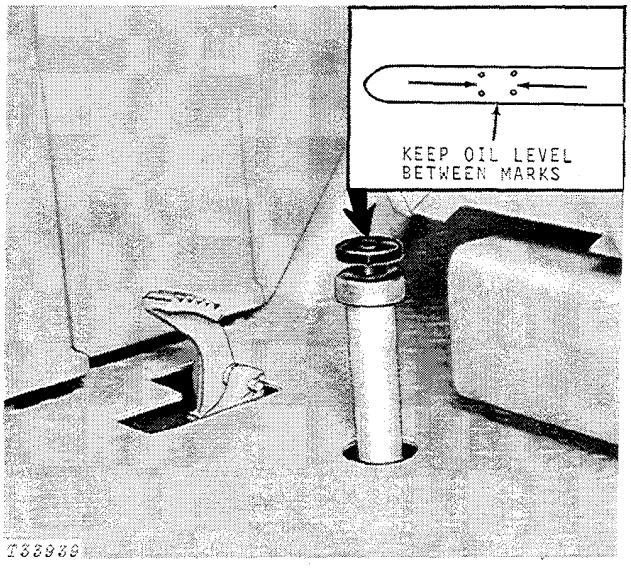


Fig. 32-Transmission Filler Cap and Dipstick

Park machine on level ground. Put transmission in park. Engage parking brake (if equipped). Put reverser lever in neutral. Lock it. Lower loader bucket to ground. Put backhoe in transport position. Run engine at slow idle 2 minutes with clutch engaged. Stop engine.

Check oil level on dipstick. Oil level should be between marks on dipstick.

If necessary add oil specified on page 10-20-2.

Transmission oil level checked *Yes* *No*
Oil added _____ *qts.*

17. Fuel Transfer Pump

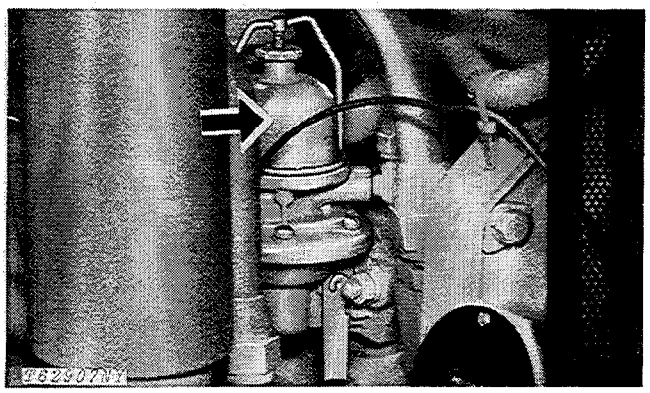


Fig. 33-Fuel Transfer Pump Sediment Bowl

Inspect fuel transfer pump sediment bowl. If there is water or an excess of foreign matter, remove and clean sediment bowl and fuel strainer. Install strainer and bowl, using a good gasket.

Sediment bowl checked *Yes* *No*

18. Fuel Filter

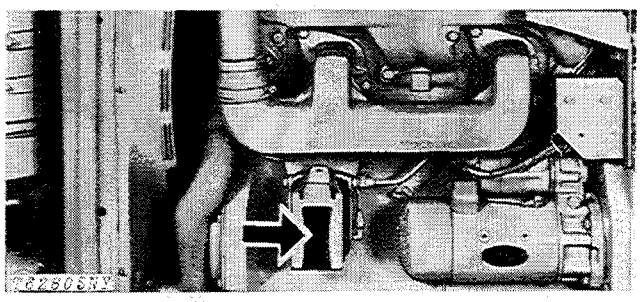


Fig. 34-Fuel Filter Element

Inspect fuel filter element for water and sediment. If necessary, loosen drain screw at bottom of filter body and drain liquid for several seconds. Tighten drain screw.

Bleed fuel system. See page 10-10-30.

Fuel filter checked *Yes* *No*

19. Batteries

Check battery electrolyte level. If distilled water is not available, use clean soft water. Avoid use of hard water. Remove foreign material from top of battery and coat terminals with petroleum jelly. Check vent holes in battery caps. Check battery connections.

Punch date code on battery.

IMPORTANT: Never add water to battery in freezing weather unless engine is to be run 2 or 3 hours.

Batteries checked *Yes* *No*

20. Engine Belts

Check alternator-fan belt tension.

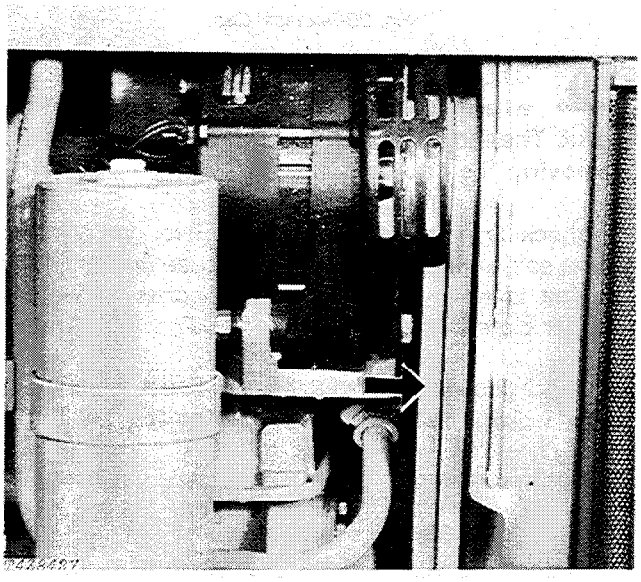


Fig. 35-Engine Belts

Checking Tension

Tension Gauge: Tighten new belts to 100 lb. and used belts to 90 lb. Check front belt only.

Tension Tester: Tighten belts until 20 lb. force midway between pulleys will deflect belt 1 in.

Immediately after shutdown, check tension with tension gauge. If tension is 50 lb. or less, wait 10 minutes then retension belts to 90 lb.

Adjusting Tension

Loosen mounting bolt and adjusting cap screw and apply force only to FRONT alternator frame.

Engine belts checked *Yes* *No*

21. Lubrication

The backhoe loader was checked and lubricated before it left the factory. However, to insure customer satisfaction, check each lubrication point shown in the following pages. Lubricate with several strokes of John Deere Multi-Purpose Grease or equivalent, if necessary.

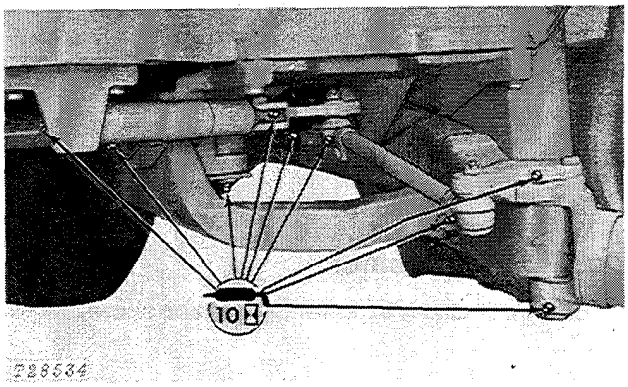


Fig. 36-Front Axle Fittings (15 points)

Lubrication required *Yes* *No*

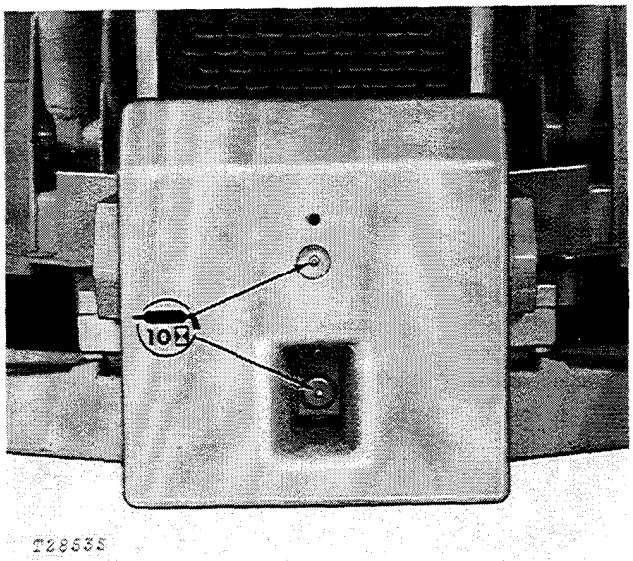


Fig. 37-Front Axle Grease Fittings (2 points)

Lubrication required *Yes* *No*

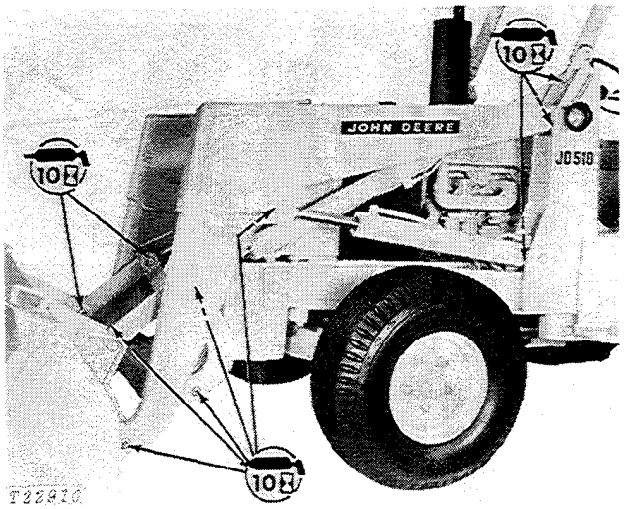


Fig. 38-Loader Pivot Points (16 Points)

Lubrication required *Yes* *No*

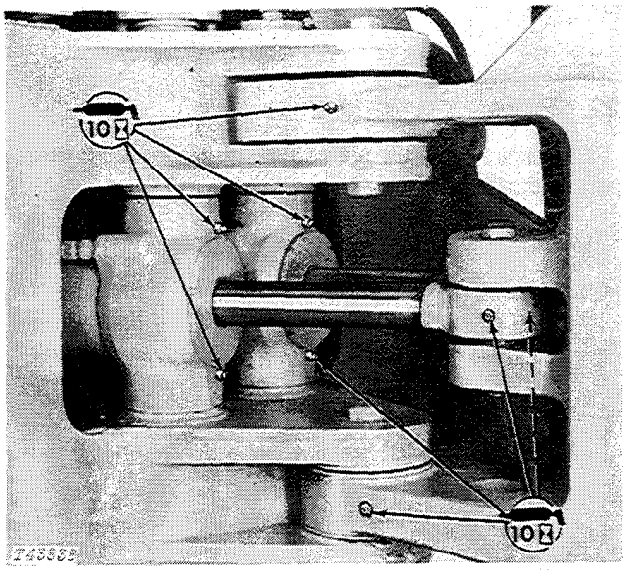


Fig. 39-Swing Cylinder Pivot Points (8 Points)

Lubrication required *Yes* *No*

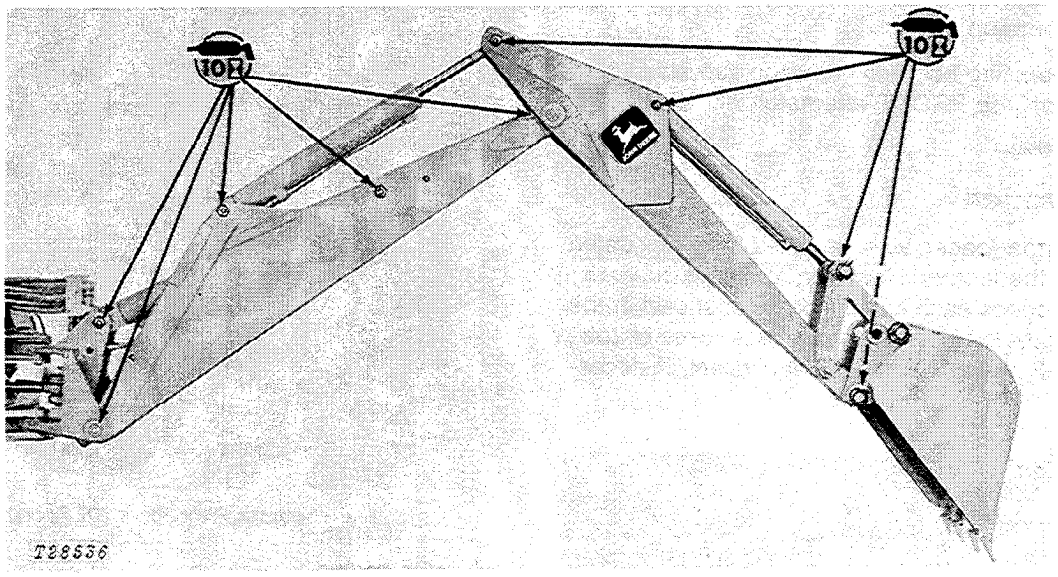


Fig. 40-Backhoe Pivot Points (9 Points)

Lubrication required *Yes* *No*

22. Tires

Check tire pressure with an accurate gauge having 1 psi graduations.

Inflate tires according to chart below.

FRONT TIRES

Tire Size	Ply Rating	Inflation Pressure psi
14.5/75 x 16.1	10	40
REAR TIRES		
18.4-28	12	30

Each front tire has 280 pounds of calcium chloride solution.

IMPORTANT: Check front tire inflation using a special gauge for liquid ballast.

Tire pressure checked *Yes* *No*

23. Bucket Position

Be sure bucket is in power dig position shown below.

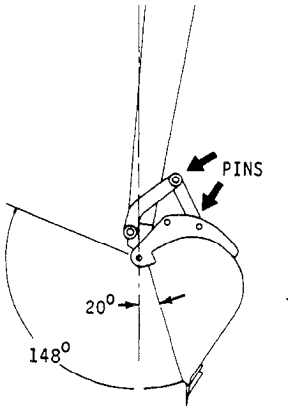
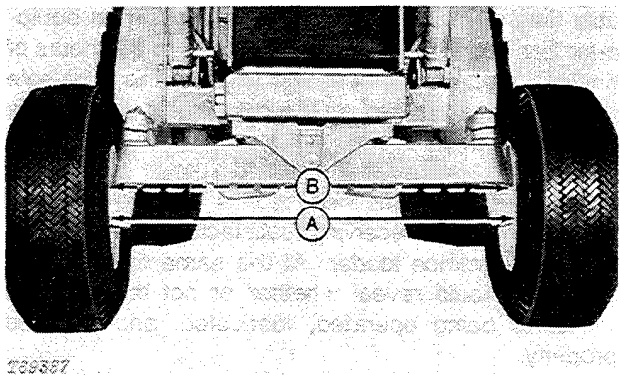


Fig. 41-Power Dig Position

Bucket position checked *Yes* *No*

24. Toe-In

Check the toe-in of the front wheels.



A—Tread at Front of Rim **B—Tread at Rear of Rim**

Fig. 41A-Checking Toe-In

1. Use down pressure of loader bucket to raise front wheels. Turn wheels so each valve stem is at bottom of tire.
2. Lower wheels to ground.
3. Measure from ground to hub.
4. Mark this distance on inside of each rim at the bead of tire front (A) and rear (B).
5. Measure distance between rims at front and rear marks.
6. Distance between front of rims must be 1/8 to 3/8 in. (3 to 9.5 mm) less than distance between rear of rims.

If distance in step 6 is not correct, see page 10-10-33 for adjustment.

Toe-in checked *Yes* *No*

25. Special Hardware Torque

Check hardware listed below. Tighten to torque shown.

Front wheel bolts ..... 100 lb-ft
Rear wheel bolts ..... 300 lb-ft
Backhoe tapered pins ..... 300 lb-ft

Hardware checked *Yes* *No*

26. Accessible Hardware Torque Values

Check all accessible bolts and nuts for proper tightness. If hardware is loose, tighten it to the proper torque. See torque chart on page 10-10-33.

Accessible hardware torqued *Yes* *No*

27. Fluid Leakage

Check the following systems for leakage due to poor or faulty connections and broken hoses or lines.

A. Cooling system checked *Yes* *No*
B. Hydraulic system checked *Yes* *No*
C. Transmission system checked *Yes* *No*
D. Fuel system checked *Yes* *No*

28. Final Check

The final predelivery procedure is the overall clean-up of the backhoe loader. Make the backhoe loader LOOK like a new backhoe loader with the proper touch-up of chipped paint and a good wash job. Deliver to the customer a backhoe loader anyone would be proud to own.