

# John Deere

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MODEL:

410

Backhoe Loader

MANUAL PREVIEW

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JD-S-TM1037

# JD410 LOADER BACKHOE

Technical Manual  
TM-1037 (Feb-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 IEMC standards.

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 GENERAL**

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**Group 5**

**GENERAL MACHINE 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 16.9-24, 8 ply rating rear tires; 11L-16, 10 ply rating front tires; 1 cu. yd. (0.76 m<sup>3</sup>) loader bucket, 24 in. (610 mm) standard backhoe bucket, diesel engine and standard equipment.)

Power @ 2500 engine rpm):	SAE	DIN
Gross .....	66 hp (49.2 kW*)	
Net .....	62 hp (46.2 kW)	65.9 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 4-cylinder valve-in-head, 4-stroke cycle

**Diesel**

Bore and stroke .....	4.02x4.33 in. (102x110 mm)
Piston displacement .....	219 cu. in. (3588 cm <sup>3</sup> )
Compression ratio .....	16.2 to 1
Maximum torque @ 1,300 rpm .....	160 lb-ft (217 Nm) (22.1 kg-m)
NACC or AMA (U.S. Tax) horsepower .....	25.65

Main bearings .....	5
Lubrication .....	Pressure system w/full-flow filter
Cooling .....	Pressurized w/thermostat and fixed bypass
Fan .....	Suction
Air cleaner .....	Dry
Electrical system .....	12 volt w/alternator
Batteries (two 6 volt) .....	Reserve capacity: 340 minutes each

**Engine Clutch** .....

**Final Drives** .....

**Brakes** .....

**Steering** .....

Turning radius (brake applied) .....	10 ft. 2 in. (3.10 m)
Loader clearance (brake applied) .....	30 ft. (9.14 m)
Number of turns (far left to far right) .....	3.3

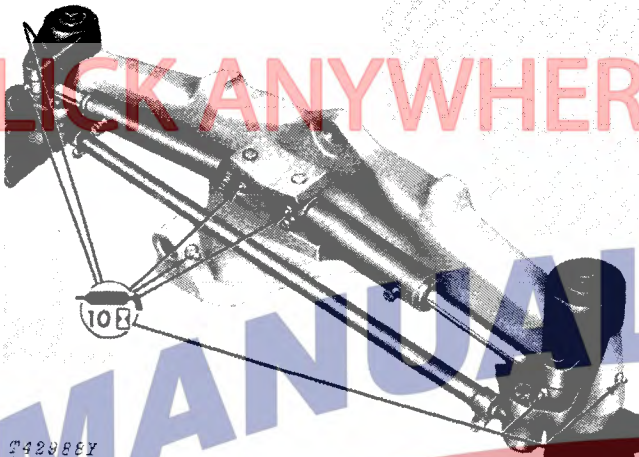


Fig. 72-Front Axle Grease Fittings (7 points)

Lubrication required Yes No

**24. Cycle Times**

Check backhoe and loader hydraulic function cycle times.

*NOTE: Operate each hydraulic control function until all air has been removed from the hydraulic system. Check for freedom of movement of all controls and proper direction of travel before checking cycle times.*

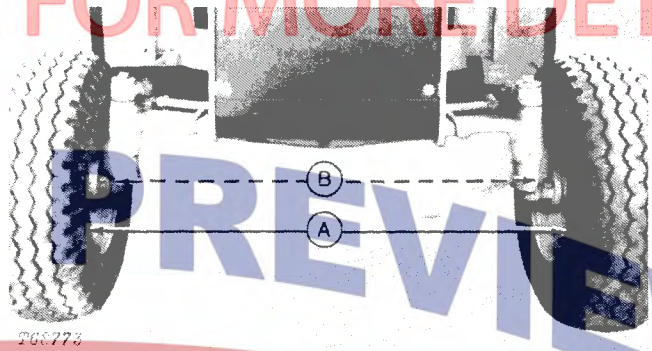
Use the following times as a guide. If cycle times vary greatly from those listed, trouble shoot the hydraulic system. Check cycle times when oil is warm and engine at 2500 rpm.

	Seconds
<b>Loader</b>	
Boom lower	3.8 max.
Boom raise	4.8 max.
Bucket dump (boom at full height)	1.9 max.
<b>Backhoe</b>	
Bucket cylinder retract	2.5 max.
Bucket cylinder extend	3.5 max.
Swing left (180°)	2.5 - 4.0
Swing right (180°)	2.5 - 4.0

Cycle times checked Yes No

**25. Toe-In**

Check the front wheel toe-in.



A—Tread at Front of Rims

B—Tread at Rear of Rims

Fig. 73-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 and rear.
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.



Fig. 74-Adjusting Front Wheel Toe-In

If adjustment is needed, loosen the clamps (Fig. 74) on each end of the tie rod. Turn the tie rod to make the correct adjustment. Tighten the clamps to 40 lb-ft.

Toe-in checked Yes No

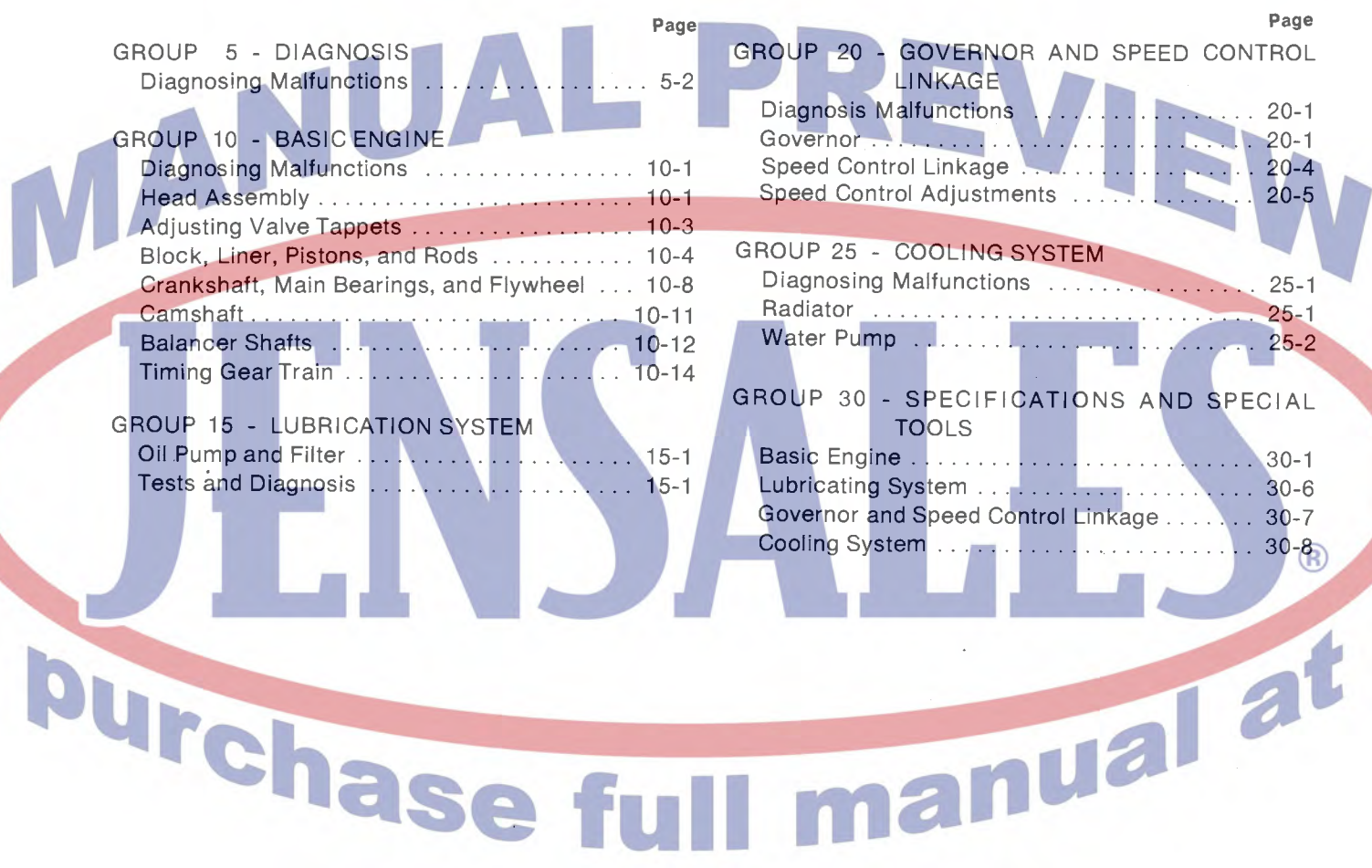


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## Group 5<sup>®</sup> DIAGNOSIS

### DIAGNOSING FUEL SYSTEM MALFUNCTIONS

The following is a guide for diagnosing fuel system difficulties. For specific diagnosis of fuel system components, refer to the groups which cover complete servicing.

#### Engine Hard to Start or Will Not Start

- No fuel.
- Old gasoline in tank.
- Fuel shut off valves closed.
- Screen in fuel tank shut-off valve dirty.
  - Clean screen.
- No gasoline in carburetor.
  - Clean fuel line and carburetor.
- Air leak on suction side of fuel system.
  - Look for leaks at all connections.
- Improper type of fuel.
  - See operator's manual for correct fuel.
- Water, dirt, or air in fuel system (diesel).
  - Drain, flush, and refill. Bleed system (diesel).
- Water in gasoline.
  - Drain gasoline and clean spark plugs.
- Defective carburetor solenoid.

- Clogged fuel filter (diesel)
  - Replace first-stage filter element and bleed system.
- Dirty or faulty injectors (diesel).
  - Service injectors.
- Cranking speed too slow.
  - Check starting circuit to increase cranking speed.
- Incorrect timing.
  - See Group 25.
- Fuel pump primer lever left on upward end of stroke.
  - Move lever to lowest point of stroke.
- Engine Knocks**
- Dirt in air intake system.
  - Clean filter.
- Injection pump or distributor out of time.
- Low octane gasoline.



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**Group 5  
 HYDRAULIC BRAKES**

**GENERAL INFORMATION**

For circuit diagrams on how the brake circuit fits into the main hydraulic system, refer to Section 70.



For additional basic hydraulic brake information refer to FOS Manual - HYDRAULICS.

The hydraulic brake assembly is activated by two brake pedals, allowing individual or simultaneous operation of the hydraulic brake pressure plates lo-

cated in annular cylinders in each final drive housing.

Braking is fully hydraulic with no mechanical connection between the valve and pressure plate.

The brake valve reservoir is filled with oil by the transmission oil pump via the transmission lubrication circuit (See Section 70).

As long as there is oil in the brake valve reservoir, hydraulic braking is possible with the engine either running or stopped.

## Section 70

# HYDRAULIC SYSTEM

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