

# John Deere JD544 and JD544-A Loaders



## Technical Manual

John Deere Dubuque Works  
TM-1002 (May-80)



LITHO IN U.S.A.



**JD544 AND JD544-A LOADERS**

TECHNICAL MANUAL

TM-1002 (Apr-74)

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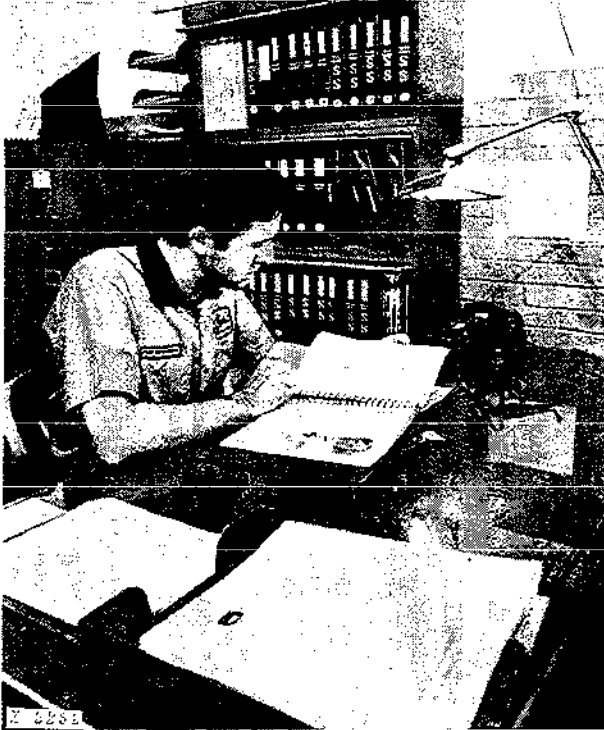
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## INTRODUCTION



Use FOS Manuals for Reference



Use Technical Manuals for Actual Service

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 men and for reference by experienced men.

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



When a serviceman should refer to a FOS Manual for more information, a FOS symbol like the one at the left is used in the TM 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—a journeyman mechanic. Keep it in a permanent binder in the shop where it is handy. Refer to it whenever in doubt about correct service procedures or specifications.

Using the technical manual as a guide will reduce error and costly delay. It will also assure you the best in finished service work.



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.

**Thanks very much for your reading,  
Want to get more information,  
Please click here, Then get the complete  
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## Section 10

# GENERAL

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## Group 5

# SPECIFICATIONS

<p><b>ENGINE</b></p> <p style="padding-left: 20px;">Flywheel horsepower at 2500 rpm . . . . . 94</p> <p style="padding-left: 20px;">Number of cylinders . . . . . 6</p> <p style="padding-left: 20px;">Bore and stroke . . . . . 3.86x4.33 in.</p> <p style="padding-left: 20px;">Displacement . . . . . 303 cu. in.</p> <p style="padding-left: 20px;">Compression ratio . . . . . 16.3 to 1</p> <p style="padding-left: 20px;">Firing order . . . . . 1-5-3-6-2-4</p> <p style="padding-left: 20px;">Intake valve clearance . . . . . 0.014 in.</p> <p style="padding-left: 20px;">Exhaust valve clearance . . . . . 0.018 in.</p> <p style="padding-left: 20px;">Slow idle . . . . . 700 rpm</p> <p style="padding-left: 20px;">Fast idle . . . . . 2650 rpm</p> <p style="padding-left: 20px;">Governed speed range . . . . . 700 to 2650 rpm</p>		<p style="text-align: center;">JD544</p> <p style="text-align: center;">JD544-A</p>		<p><b>ELECTRICAL SYSTEM</b></p> <p style="padding-left: 20px;">Battery voltage (nominal) . . . . . 12 volts</p> <p style="padding-left: 20px;">Battery specific gravity at full charge (corrected to 80° F.) . . . . . 1.260 ±0.010</p> <p style="padding-left: 20px;">Battery terminal grounded . . . . . Negative</p> <p style="padding-left: 20px;">Alternator regulation . . . . . Voltage Regulator</p> <p><b>TRANSMISSION</b></p> <p style="padding-left: 20px;">Make . . . . . Allison</p> <p style="padding-left: 20px;">Type . . . . . Torque converter and planetary gear</p> <p style="padding-left: 20px;">Converter oil pump . . . . . Input driven, gear type</p> <p style="padding-left: 20px;">Transmission clutches . . . . . Multi-disk, hydraulically actuated, spring released, oil cooled, self-adjusting type</p>
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TRAVEL SPEEDS (with 17.5-25 Tires)

Shift Lever Position	Speed
Low (L)	0 to 7 mph
High (H)	0 to 23 mph
Reverse (R)	0 to 9 mph

DIFFERENTIALS

Front . . . . . Standard or optional "No Spin"  
Rear . . . . . Standard

DRIVE AXLES

Four-wheel drive with inboard mounted planetary gears on both axles.  
Front . . . . . Fixed  
Rear . . . . . Oscillating (11° from horizontal)

LOADER HYDRAULIC SYSTEM

Type . . . . . Open center, constant volume system to operate loader boom and bucket  
Pump . . . . . Transmission-mounted, vane type

TIRE OPTIONS

13.00 - 24, 10 PLY RATING (Grader Tread)  
14.00 - 24, 12 PLY RATING (Grader Tread)  
15.5 - 25, 10 PLY RATING (Loader Tread)  
15.5 - 25, 12 PLY RATING (Loader Tread) (Early Models)  
17.5 - 25, 12 PLY RATING (Loader Tread)  
14.00 - 24, 12 PLY RATING (Rock Grader) (Early Models)  
17.5 - 25, 16 PLY RATING (Rock Tread)

POWER STEERING AND BRAKES HYDRAULIC SYSTEM

Type . . . . . Closed center, constant pressure system. Includes power steering, power brakes, and transmission cooling.  
Pump . . . . . Engine-driven eight-piston pump.

STEERING

Full power steering.  
Frame steered by two hydraulic cylinders.  
Frame pivot from center. . . . . 40°  
Clearance circle . . . . . 32 ft.  
Turning radius . . . . . 13 ft. 10 in.

BRAKES

Hydraulic power-operated, inboard-mounted disk type brake for each wheel. Brake pedal control of transmission clutches.  
Mechanical 10 x 1-1/2-inch expanding shoe parking brake on transmission output shaft.

CAPACITIES (U.S. Standard Measures)

Fuel tank . . . . . 40 gal.  
Cooling system . . . . . 7-1/2 gal.  
Engine crankcase . . . . . 12 qt.  
Transmission (includes steering and brakes hydraulic system). . . . . 10 gal. (approx.)  
Transmission case and filters (after initial fill) . . . . . 9-3/4 gal. (approx.)  
Front differential  
"No Spin" option . . . . . 4-1/4 gal.  
Regular . . . . . 4-3/4 gal.  
Rear differential. . . . . 4-3/4 gal.  
Loader hydraulic sump. . . . . 12 gal.  
Loader hydraulic system (sump, lines, and cylinders). . . . . 21 gal.

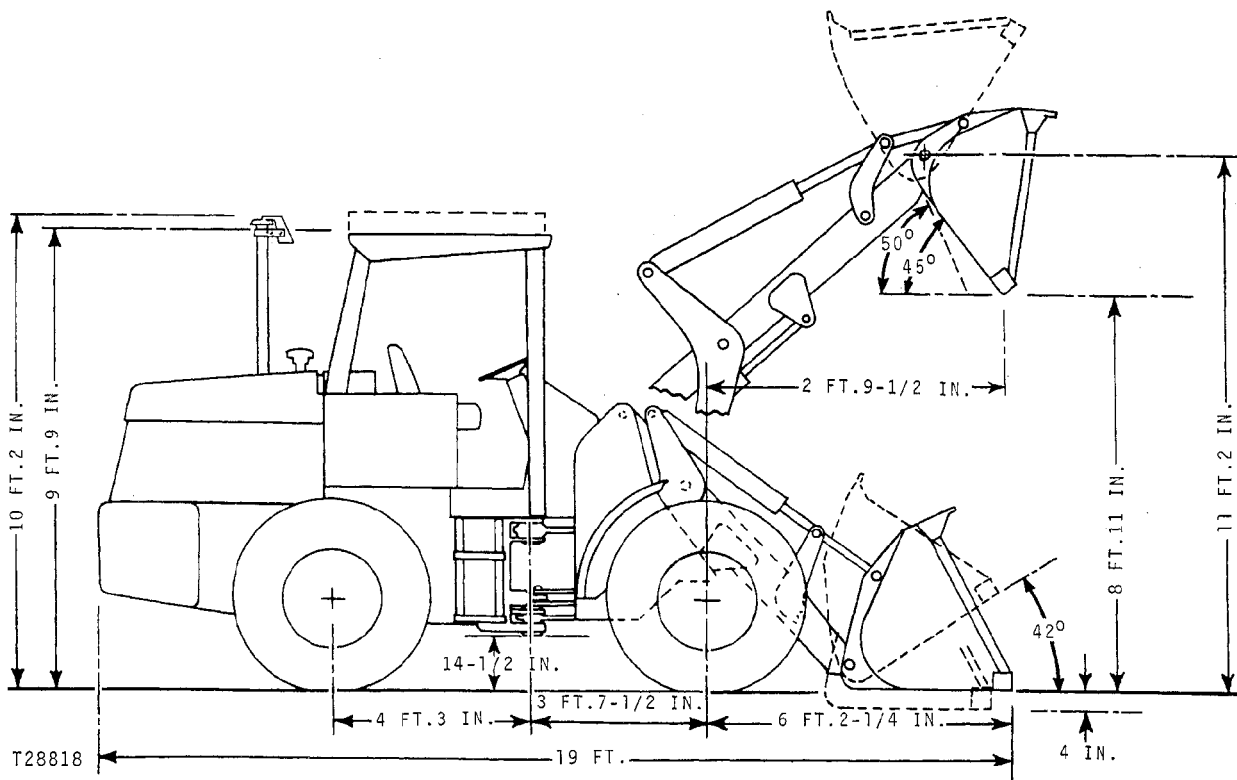


Fig. 1-Loader Dimensions

**LOADER DIMENSIONS** (with 17.5-25 tires and 1-1/2 yd. Bucket)

Overall height (to top of Cab) . . .	10 ft. 2 in.
Height to top of canopy . . . . .	9 ft. 9 in.
Overall width . . . . .	7 ft. 4 in.
Overall length (bucket level, no bucket teeth) . . . . .	19 ft.
Ground clearance . . . . .	14-1/2 in.
Wheel base . . . . .	7 ft. 10-1/2 in.
Maximum bucket dump angle (full height) . . . . .	50°
Dumping reach (full height) (bucket at 45° angle) . . . . .	2 ft. 9-1/2 in.
Dumping clearance (full height) (bucket at 45° angle) . . . . .	8 ft. 11 in.
Maximum lift (bucket at full height) (at pivot pin) . . . . .	11 ft. 2 in.
Digging depth below ground (bucket level) . . . . .	4 in.

**Bucket breakout force (SAE)**

1-1/2 yd. . . . .	16,105 lbs.
1-3/4 yd. . . . .	14,875 lbs.
2 yd. . . . .	14,260 lbs.
3 yd. . . . .	10,650 lbs.
Bucket width (1-1/2 yd.) . . . . .	7 ft. 4 in.
(1-3/4 yd.) . . . . .	7 ft. 8 in.
(2 yd.) . . . . .	8 ft.
(3 yd.) . . . . .	8 ft.
Drott-4-in-1 . . . . .	8 ft.
Bucket roll-back (ground level) . . . . .	42°
Bucket reach (bucket on ground) . . . . .	6 ft. 2-3/4 in.
Operating weight (with cab) . . . . .	20,430 lbs.

**LOADER OPERATING INFORMATION**

Bucket capacities 1-1/2, 1-3/4, 2 or 3 cu. yd.	
Lift (full height) . . . . .	8374 lbs.
Raising Time . . . . .	5.7 sec.
Lower Time (power down) . . . . .	4.5 sec.
Dumping Time . . . . .	1.6 sec.

*(Specifications and design subject to change without notice. Whenever applicable, specifications are in accordance with IEMC and SAE Standards)*

LOG AND LUMBER FORK

Lift capacity (full height stability limited)  
(with two sets side counterweights)  
Fork with single clamp . . . . . 10,040 lbs.  
Fork with double clamp . . . . . 9,792 lbs.  
Basic lumber fork . . . . . 11,410 lbs.  
Maximum clamp diameter . . . . . 9 ft. 1/2 in.  
Minimum clamp diameter . . . . . 28 in.  
Length of tines (heel-to-toe) . . . . . 4 ft.  
Maximum tine width (center-to-center) . . . . . 5 ft. 11 in.  
Minimum tine width (center-to-center) . . . . . 15 in.  
Raising time . . . . . 5.7 sec.  
Lowering time (power down) . . . . . 4.5 sec.  
Dumping time . . . . . 1.6 sec.  
Maximum unloading (dump) angle.. .40 degrees

LOG LOADER

Fork capacity (8-foot wood) . . . . . 0.9 cord  
Lift capacity (with two sets side counterweights)  
(full height stability limited) . . . . . 9290 lbs. |  
Maximum clamp diameter . . . . . 6 ft. 2 in.  
Minimum clamp diameter . . . . . 15-3/8 in.  
Length of tines (heel-to-toe) . . . . . 4 ft. 2 in.  
Tines width (center-to-center) . . . . . 5 ft.  
Raising time . . . . . 5.5 sec. |  
Lowering time (power down) . . . . . 4.5 sec.  
Dumping time . . . . . 1.2 sec. |  
Maximum unloading (dump) angle.. 40 degrees |

9305 BACKHOE

Bucket retract . . . . . 2.0 sec.  
Bucket extend . . . . . 3.0 sec.  
Digging depth (IEMC) . . . . . 13 ft. 5 in.  
Digging force . . . . . 10,500 lbs.  
Reach from center of swing mast.. 17 ft. 1 in.  
Transport height . . . . . 12 ft. 1 in.  
Stabilizer width  
Transport . . . . . 7 ft. 3 in.  
Operating position (IEMC) . . . . . 8 ft. 7 in.

## Group 10

# PREDELIVERY, DELIVERY, AND AFTER-SALES SERVICES

### PREDELIVERY SERVICE

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

A tag pointing out the factory-recommended procedure for predelivery service is attached to each new loader before it leaves the factory.

After completing the factory recommended dealer checks and services listed on the predelivery tag, remove the tag from the loader and file it with the job shop order. The tag will then serve as a basis for certifying that the loader has received the proper predelivery service when the section of the customer's John Deere Delivery Receipt is completed.

### TEMPORARY LOADER STORAGE

Service	Specifications	Reference
Check radiator for coolant loss and anti-freeze protection.	Midway between radiator core and filler neck.	-----
Reduce shipping pressure of tires.	-----	Operator's Manual
Check crankcase oil level and fill fuel tank.	-----	Operator's Manual
Relieve hydraulic pressure.	Stop engine, lower bucket to ground, operate control levers and steering wheel to relieve pressure.	-----
Cover loader and tires for protection and cleanliness.	-----	-----

### BEFORE DELIVERING LOADER

#### COOLING SYSTEM

Inspect radiator for coolant loss.	Midway between radiator core and filler neck.	-----
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Check anti-freeze protection.	-----	-----
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#### ELECTRICAL SYSTEM

Inspect battery electrolyte	-----	Operator's Manual
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Charge batteries, if required.	-----	FOS 20 - ELECTRICAL SYSTEMS
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Punch date code on battery tag.	-----	-----
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**BEFORE DELIVERING LOADER - Continued**

Service	Specifications	Reference
Check battery terminals to be sure they are tight.	-----	-----
Remove brake fuse from spare fuse holder and insert into fuse block. Test brake lights.	-----	-----
<b>LUBRICATION</b>		
Check crankcase oil level.	Between marks on dipstick.	Operator's Manual.
Check loader hydraulic system oil level.	Check oil level at window (JD303 Special-Purpose oil).	Operator's Manual.
Check front and rear differential oil levels.	To level of check plug (cold) (JD303 Special-Purpose oil).	Operator's Manual.
Check transmission oil level.	To top mark on dipstick (J. D. Torque Converter Fluid type C-2)	Operator's Manual.
Lubricate grease fittings.	John Deere Multi-Purpose Lubricant or an equivalent.	Operator's Manual.
<b>ENGINE</b>		
Check air cleaner.	-----	Operator's Manual.
Fill fuel tank and start engine.	40 U.S. gallons.	Operator's Manual.
Check operation of lights, gauges and indicator lights.	-----	Operator's Manual.
Check speed control linkage.	-----	Section 20, Group 20.
Check engine speeds.	-----	Section 20, Group 20.
<b>OPERATION</b>		
Shift transmission through all ranges.	-----	Operator's Manual.
Check loader hydraulic system operation.	-----	Section 70, Group 5.
Check operation of rear axle disconnect	-----	Section 50, Group 11

**BEFORE DELIVERING LOADER - Continued**

Service	Specifications	Reference
Check clutch cutoff control disconnect.	-----	Section 60, Group 5.
Check brake operation.	-----	Section 60, Group 5.
Check steering operation.	-----	Section 60, Group 5.
<b>TIRES AND WHEELS</b>		
Check air pressure.	-----	Operator's Manual.
Check all wheel retainers for tightness.	275 ft-lbs torque.	Operator's Manual.
<b>GENERAL</b>		
Tighten accessible nuts and cap screws.	-----	-----
Clean loader and touch up paint.	-----	-----

**DELIVERY SERVICE**

A thorough discussion of the operation and service of a new loader at the time of delivery helps to assure complete customer satisfaction. Proper delivery is an important phase of a dealer's program. One section of the John Deere Delivery Receipt emphasizes the importance of proper delivery service.

Complaints may arise if the owner is not shown how to operate and service his new loader correctly. Devote enough time, at your customer's convenience, to introduce him to his new loader.

The following procedure is recommended before the service man and owner complete the delivery acknowledgements section of the delivery receipt.

Using the operator's manual as a guide, be sure the owner thoroughly understands the following points:

1. Operation and use of controls and instruments.
2. Operation of the engine.
3. Importance of the break-in period.
4. Operation and functions of the hydraulic system.
5. Operation and use of the power shift transmission.
6. Importance of lubrication and periodic services.
7. Importance of safety.
8. Terms and conditions of warranty.

After explaining and demonstrating the above points, have the owner sign the delivery receipt and give him his operator's manual.

**AFTER-SALES SERVICE**

The purchaser of a new John Deere loader is entitled to a free inspection at some mutually agreeable time within the warranty period after the equipment has been "run in". The terms of this after-sales inspection are outlined on the back of the customer's John Deere Delivery Receipt.

If the recommended after-sales service inspection is followed, the dealer can eliminate minor irregularities which could develop into major service problems at a later date. This will promote strong dealer-customer relations and present an opportunity to answer questions that may have arisen during initial operation.

The purpose of this inspection is to ensure that the customer is receiving satisfactory performance from his loader. At the same time, the inspection should reveal whether or not the machine is being operated, lubricated, and serviced properly.

During the inspection service, the dealer has the further opportunity of promoting the sale of additional new equipment and accessories.

**INSPECTION PROCEDURE**

Service	Specifications	Reference
<b>COOLING SYSTEM</b>		
Check radiator coolant level.	Midway between radiator core and filler neck.	-----
Check hoses for loose connections and leaks.	-----	-----
<b>ELECTRICAL SYSTEM</b>		
Check specific gravity of batteries.	Full charge - 1.260 at 80° F.	Operator's Manual.
Check level of battery electrolyte.	To bottom of filler neck in each cell.	Operator's Manual.
Check alternator belt tension.	3/4-inch deflection with a 20-pound force.	Operator's Manual.
Start engine and check action of starter, lights, and indicator lamps.	-----	Operator's Manual.
<b>LUBRICATION</b>		
Check engine crankcase oil level.	Between marks on dipstick.	Operator's Manual.
Check loader hydraulic system oil level.	Check oil level at window (JD303 Special-Purpose Oil).	Operator's Manual.
Check front and rear differential oil levels.	To level of check plug (cold oil) (JD303 Special-Purpose Oil).	Operator's Manual.
Check transmission oil level.	To top mark on dipstick. (J.D. Torque Converter Fluid Type C-2).	Operator's Manual.

**INSPECTION PROCEDURES - Continued**

Service	Specifications	Reference
<b>ENGINE</b>		
Check engine valve tappet clearance.	Intake - 0.014-inch Exhaust - 0.018-inch	Section 20, Group 10.
<b>FUEL SYSTEM</b>		
Bleed fuel system.	-----	Operator's Manual.
Check fuel line connections.	-----	-----
Check air cleaner element and unloading valve. Clean element if necessary.	-----	Operator's Manual.
<b>HYDRAULIC SYSTEM</b>		
Check power steering.	-----	Section 60, Group 5.
Check power brakes.	With engine stopped, pedal travel should not exceed two inches with firm but moderate effort.	-----
Check brake accumulator.	20 brake pedal applications with engine stopped.	-----
Tighten accessible oil lines and hoses.	-----	-----
<b>CONTROLS</b>		
Check clutch cutoff disconnect.	-----	Section 60, Group 25.
Check return-to-dig valve operation.	Check oil level and adjust (JD303 Special-Purpose Oil).	Operator's Manual.



INSPECTION PROCEDURES—Continued

Service	Specifications	Reference
GENERAL		
Tighten the transmission front output shaft retaining nut.	600-700 lb-ft	Operator's Manual
Tighten accessible nuts and bolts.	-----	Section 10, Group 25.
Check air cleaner hoses for breaks or loose connections.	-----	-----
Visual Inspection.	-----	-----

## Group 15 TUNE-UP AND ADJUSTMENT

### GENERAL INFORMATION

Before tuning up an engine, determine if it is in condition so that performance can be restored by tune-up. Perform the following tests:

#### PRELIMINARY ENGINE TESTING

Operation	Specification	Reference
Vacuum test (at air cleaner)	8-25 inches of water at fast idle	.....
Intake manifold pressure (diesel engine with altitude compensating turbocharger)	6 to 8 psi at 2500 rpm, full load	Section 30, Group 15
Check radiator for air bubbles and indication of oil	.....	Section 20, Group 25
Cylinder compression	300 psi*	Section 20, Group 10
Engine power output (at flywheel) (use dynamometer)	Note hp. output and compare with output after tune-up	.....

#### ENGINE TUNE-UP

##### AIR INTAKE SYSTEM

Air cleaner - clean primary element and dust cup	.....	Section 30, Group 15
Check breather pipe for restrictions	.....	.....
Retighten cylinder head cap screws	110 ft-lbs	Section 20, Group 10
Check valve clearance	0.018 in. -Exhaust 0.014 in. -Intake	Section 20, Group 10

##### BATTERY

Check electrolyte level	.....	.....
Clean cables, terminals and box	.....	.....
Tighten cable clamps	.....	.....

\*The most important factor in compression readings is the difference between cylinders. This difference should be no more than 50 psi.

**ENGINE TUNE-UP—Continued**

Operation	Specification	Reference
<b>ALTERNATOR</b>		
Check belt tension	20 lb. at 3/4 in. deflection.	.....
<b>FUEL SYSTEM</b>		
Check fuel tank and lines for leaks or restrictions	.....	.....
Clean fuel transfer pump bowl and strainer	.....	.....
Replace fuel filter elements	.....	.....
Time injection pump	.....	Section 30, Group 25
Check injection pump advance	.....	Section 30, Group 25
Bleed fuel system	.....	.....
Adjust speed control linkage and check engine speeds	.....	Section 20, Group 20
<b>ENGINE LUBRICATION SYSTEM</b>		
Check engine oil pressure	45-65 psi at 2500 rpm. (180° to 220° F.)	Section 20, Group 15
<b>COOLING SYSTEM</b>		
Clean and flush system	.....	.....
Inspect hoses	.....	.....
Clean trash from radiator	.....	.....
<b>EXHAUST SYSTEM</b>		
Check system for leaks	.....	FOS 30 - ENGINES
Check muffler and exhaust pipe for restrictions.	.....	FOS 30 - ENGINES

### FINAL ENGINE TESTING

Use a dynamometer in final testing to determine if engine is performing at rated horsepower. Compare output of engine with horsepower delivered prior to tune-up.

### LOADER ADJUSTMENTS

Make the following loader adjustments whenever the engine is tuned up.

Operation	Specification	Reference
<b>BRAKES</b>		
Bleed brakes	.....	Section 60, Group 25
Check action of brake accumulator	.....	Section 60, Group 5
Check mechanical parking brake	.....	Section 60, Group 25
<b>POWER STEERING</b>		
Bleed steering system	.....	Section 60, Group 20
Check time cycle (limit to limit) at 1000 rpm engine speed	4.0 seconds	Section 60, Group 5
Check steering system accumulator	.....	Section 60, Group 15
<b>HYDRAULIC SYSTEM</b>		
Check boom raise cycle time	5.7 to 6.2 seconds	Section 70, Group 5
Check boom lower cycle time (power down)	4.5 to 5.0 seconds	Section 70, Group 5
Check bucket dump cycle time	1.6 to 2.0 seconds	Section 70, Group 5
Bleed bucket return-to-dig valve	.....	Section 70, Group 25
<b>TIRES</b>		
Check tire inflation	.....	See Operator's Manual
<b>TIGHTEN ACCESSIBLE HARDWARE</b>	See torque chart.	Section 10, Group 25