

John Deere

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MODEL:

4520 Tractor

MANUAL PREVIEW

**SERVICE
MANUAL**



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JD-S-TM1007

4520 TRACTOR**TECHNICAL MANUAL
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POWER SHIFT TRANSMISSION:

Type Planetary gears, hydraulically actuated wet disk clutches and brakes
Gear selections . . . 8 forward and 4 reverse
Shifting Hydraulic, powershifting controlled by speed selector

POWER TAKE-OFF:

Type Independent PTO with mid and rear power take-off controlled by hand-operated clutch lever

Clutch:

Syncro-Range . . . One dry-disk, hydraulically actuated
Power Shift . . . Multiple disk, wet clutch hydraulically actuated
Speed (1900 engine rpm) 1000 rpm
PTO ahead of drawbar hitch point . . . 16 in.

HYDRAULIC SYSTEM:

Type . . . Closed center, constant pressure. Includes power steering, power brakes, implement control, and transmission and differential lubrication.
Standby pressure 2250 psi

BRAKES Hydraulically power actuated, disk-type operating in oil
Provision for manual operation with brake accumulator to supply oil.

STEERING Full power, hydrostatic type.
Provision for manual operation.

ELECTRICAL SYSTEM:

Type 12-volt, negative grounded
Batteries Two, 6-volt, 75-plate 172-ampere-hour, 3 EH type, connected in series
Alternator 12-volt, 55-amp, with integral transistorized regulator
Capacity available at 1900 engine rpm:
Lights off operation 40 amps
Lights on operation (6 working lights) 23 amps

FRONT TIRES* 10.00-16, 6-ply
14.9-24, 6-ply

REAR TIRES* 20.8-38, 10-ply

FRONT WHEEL TREAD:

10.00-16 tire 57-1/2 to 83-1/4 in.
14.9-24 tire 72 to 88 in.

REAR WHEEL TREAD:

20.8-38 tire, regular axle 63 to 107-1/2 in.

GROUND SPEEDS IN MILES PER HOUR (2200 engine rpm and with 20.8-38 rear tires):

Gear	Syncro-Range	Power Shift
1st	2.0	1.7
2nd	3.1	2.5
3rd	4.1	3.8
4th	5.3	5.0
5th	6.6	6.5
6th	8.7	8.5
7th	11.2	10.9
8th	18.3	18.5
1st reverse	4.0	2.1
2nd reverse	6.4	3.0
3rd reverse		4.7
4th reverse		6.3

POWER FRONT WHEEL DRIVE

Type . . . Hydraulic motor driven with planetary gear reduction in wheel hub, uses pressure oil from hydraulic system
Torque . . . Low (series connected) and high (parallel connected)
Controls . . Solenoid operated control valves, synchronized with transmission controls
Planetary disconnect . . Hydraulic wet brake on ring gear releases when drive is disengaged

DIMENSIONS:

Wheelbase (Subtract 1 inch for tractors equipped with Power Front Wheel Drive) 106-1/4 in.
Over-all length 170-3/4 in.
Over-all height 106 in.
Height to steering wheel 87 in.
Over-all width 95-7/8 in.
Turning radius
Without Power Front Wheel Drive (minimum tread and brakes applied) 151 in.
Power Front Wheel Drive (with drive engaged in "High Torque", brakes applied and minimum wheel tread) 137 in.

SHIPPING WEIGHT (With equipment for average field service, less fuel and ballast) 13,030 lbs.

Subtract 50 lbs. if equipped with Syncro Range transmission. Add 575 lbs. if equipped with Roll-Gard. Add 1,000 lbs. for Power Front Wheel Drive and 1,100 lbs. for Roll-Gard Cab.

*Additional tire sizes available.

(Specifications and design subject to change without notice.)

BEFORE DELIVERING TRACTOR—Continued

Service	Specifications	Reference
Check 3-point hitch operation.		Operator's manual
Check seat operation.		Operator's manual

General

Tighten accessible nuts and cap screws.	.....
Clean tractor and touch up paint.	.....

DELIVERY SERVICE

A thorough discussion of the operation and service of a new tractor at the time of delivery helps to assure complete customer satisfaction. Proper delivery should be an important phase of a dealer's program. A portion of the John Deere Delivery Receipt (Fig. 1) emphasizes the importance of proper delivery service.

Many complaints have arisen simply because the owner was not shown how to operate and service his new tractor properly. Enough time should be devoted, at the customer's convenience, to introducing the owner to his new tractor and explaining to him how to operate and service it.

IMPORTANT: Install Caplug in muffler outlet if transporting tractor to customer. This will prevent damage to the turbocharger caused by air passing through the turbocharger and rotating it when the engine is stopped.

The following procedure is recommended before the serviceman and owner complete the delivery acknowledgments portion of the delivery receipt.

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

1. Controls and Instruments.
2. How to start and stop the engine.
3. The importance of the break-in period.
4. How to use liquid or cast-iron ballast.
5. All functions of the hydraulic system.
6. Using the power takeoff.
7. The importance of safety.
8. The importance of lubrication and periodic services.

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

DELIVERY RECEIPT		FOR AGRICULTURAL AND LAWN & GARDEN EQUIPMENT		NEW USED	☐ AGR. ☐ LAWN & GARDEN	TIME SALE	CASH SALE
SELLER'S NAME		SELLER'S ADDRESS		ZIP No.			
PURCHASER'S NAME (LAST NAME FIRST)		PURCHASER'S MAILING ADDRESS		ZIP No.			
PURCHASER'S NAME (LAST NAME FIRST)		PURCHASER'S MAILING ADDRESS		ZIP No.			
DELIVERY ACKNOWLEDGMENTS							
The new Equipment shown above was carefully prepared for delivery, inspected and adjusted according to factory recommendations before delivery to the Purchaser. Operation and service of this Equipment and the importance of following instructions in the Operator's Manuals were explained to the Purchaser.				DELIVERED BY		COLLECT ON DELIVERY	
						☐ YES ☐ NO	
The above Equipment (and Operator's Manuals for new Equipment) was received, and the safe operation and the proper servicing of the Equipment were explained to me.				PURCHASER'S SIGNATURE		DATE	
Dealer Representative		Date		PURCHASER'S COPY			

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Fig. 1—Portion of John Deere Delivery Receipt

AFTER-SALES INSPECTION

The purchaser of a new John Deere tractor 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.

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

If the recommended after-sales service inspection is followed, the dealer can eliminate needless service work by preventing minor irregularities from developing into serious problems later on. This will promote strong dealer-customer relations and present the dealer an opportunity to answer questions that may have arisen during the first few days of operation. During the inspection service, the dealer has the further opportunity of promoting the possible sale of other new equipment.

The following inspection program is recommended within the first 100 hours of tractor operation.

INSPECTION PROCEDURE

Service	Specifications	Reference
<u>Cooling System</u>		
Check radiator coolant level.	1-1/2 inches above baffle.	.....
Clean external surface of radiator core.	.....	.....
Check hoses and connections for leaks.	.....	.....
<u>Fuel System</u>		
Remove water and foreign matter from fuel pump and filter sediment bowls.	.....	Operator's manual
Bleed fuel system.	.....	Operator's manual
Tighten loose connections and check entire system for leaks. Correct if necessary.	.....	.....
Check air cleaner element and clean it if necessary.	.....	Operator's manual
<u>Electrical System</u>		
Check specific gravity and electrolyte level of batteries.	Full charge - 1.260 at 80° F.	Operator's manual
Check belt tension.	1-inch deflection with a 25-pound force.	Operator's manual
Start engine and check action of starter, lights, and indicator lamps.	.....	Operator's manual.

INSPECTION PROCEDURES—Continued

Service	Specifications	Reference
<u>Lubrication</u>		
Check crankcase oil level.	To upper marks on dipstick.	Operator's manual
Check transmission-hydraulic system oil level.	In "SAFE" range on dipstick. Use John Deere Type 303 Special-Purpose Oil.	Operator's manual
<u>Engine</u>		
Check valve clearance.	Intake - 0.018 inch. Exhaust - 0.022 inch.	Operator's manual
Check engine speed under load, fuel consumption, and horsepower.	Specification.	Group 20 of this Section.
<u>Clutches and Differential Lock</u>		
Check transmission clutch free travel (Synchro-Range transmission).	Approximately 1-1/2-inch free travel.	Operator's manual
Check engine disconnect clutch (Power Shift transmission).	No tendency for tractor to creep when clutch is disengaged.	Section 50, Group 15
Check PTO clutch and brake operation.	.....	Section 50, Groups 35 and 40
Check differential lock operation.	.....	Operator's manual
<u>Hydraulic System</u>		
Check rockshaft and remote cylinder operation.	.....	Operator's manual
Check power steering.	Smooth, easy operation.	Section 70, Group 20
Check power brakes and accumulator.	With engine stopped, brakes must be solid and pedal travel should not exceed 3 inches for 5 applications at 5-second intervals. If necessary, bleed brakes.	Operator's manual
<u>Nuts and Cap Screws</u>		
Tighten accessible nuts and cap screws that require adjustment.		

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Fig. 1—Cutaway View of John Deere 4520 Tractor

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Group 15 TUNE-UP

Before tuning up a tractor, determine whether a tune-up will restore operating efficiency. When there is doubt, the following preliminary tests will help to determine if the engine can be tuned

up. If the condition is satisfactory, proceed with the tune-up. Choose from the following procedures only those necessary to restore the unit.

PRELIMINARY ENGINE TESTING

Operation	Specification	Section-Group Reference
Dynamometer Test (at 2200 engine rpm full load) . .	Compare with previous recorded output; compare with output after tune-up.	FOS - 30 Manual, Chapter 12
Compression Test	385-410 psi at 215-245 rpm	FOS - 30 Manual, Chapter 12
Vapor Flow Test (average engine condition and without turbo-charger blowby)	Normal blowby - 120-150 cu. ft./hr. Excessive blowby - 200 cu. ft./hr.	FOS - 30 Manual, Chapter 12
Engine Coolant Check Test . . .	No air bubbles or oil film in radiator.	FOS - 30 Manual, Chapter 12

ENGINE TUNE-UP

Operation	Specification	Section-Group Reference
Air Intake System Service air cleaner and check system for leaks		FOS - 30 Manual, Chapter 12
Check system for restrictions using water manometer (inches of water)		FOS - 30 Manual, Chapter 12
Normal reading (with clean filter elements)	8 in. at 2200 rpm	
Maximum permitted reading	25 in. at 2200 rpm	
Check restriction indicator light operation	24-26 in. at 2200 rpm	
Exhaust System Check system for leaks		FOS - 30 Manual, Chapter 12
Check muffler and exhaust pipe for restrictions		FOS - 30 Manual, Chapter 12