

John Deere 2150 2255 Tractor Repair Technical Manual



# 2150 AND 2255 TRACTORS



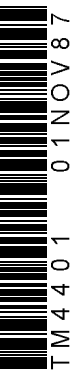
JOHN DEERE

## TECHNICAL MANUAL 2150 AND 2255 TRACTORS

TM4401 (01NOV87) English

JOHN DEERE WERKE MANNHEIM  
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ENGLISH



# 2150 AND 2255 TRACTORS TECHNICAL MANUAL TM-4401 (Nov-87)

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Group 00

**SPECIFICATIONS AND SPECIAL TOOLS**

**SPECIFICATIONS**

**SERIAL NUMBERS**

The engine serial number is stamped into the plate located on the lower front right-hand side of the cylinder block.

*NOTE: When ordering engine parts, quote all digits of serial number stamped on the plate.*

The plate showing the tractor serial number is located on the right-hand side of the front axle carrier.

*NOTE: When ordering tractor spare parts (excluding engine parts), quote all digits and letters of serial number stamped on the plate.*

A plate showing the tractor type, transmission serial number, (and cone point measurement etched into pinion face of differential drive shaft as well as reduction of differential) is located on the right-hand side of the transmission case.

**MODEL NUMBERS**

*The fuel injection pump, fuel injection nozzles, alternator, starting motor, and hydraulic pump have model numbers for positive identification.*

**ENGINE**

Number of cylinders .....	3
Cylinder liner bore .....	106.5 mm (4.19 in.)
Stroke .....	110 mm (4.33 in.)
Displacement .....	2940 cm <sup>3</sup> (179 cu.in.)
Compression ratio	
2150 up to engine serial no. 554175CD and 2255 up to engine serial no. 570858CD .....	16.8 : 1
2150 from engine serial no. 554176 CD and 2255 from engine serial no. 570859 CD .....	17.4 : 1
Maximum torque	
2150 at 1400 rpm	
Up to engine serial no. 571078 CD .....	175 N·m (129 lb-ft)
From engine serial no. 571079 CD .....	185 N·m (136 lb-ft)
2255 at 1400 rpm	
Up to engine serial no. 581072 CD .....	185 N·m (136 lb-ft)
From engine serial no. 581073 CD .....	192 N·m (141 lb-ft)
Firing order .....	1 - 2 - 3

## Valve clearance (engine hot or cold)

Intake valve .....	0.35 mm (0.004 in.)
Exhaust valve .....	0.45 mm (0.018 in.)

Fast idle speed ..... 2610—2660 rpm

Slow idle speed ..... 700—800 rpm

Rated engine speed ..... 2500 rpm

Working speed range ..... 1400—2500 rpm

## PTO\* horsepower at engine rated speed—2500 rpm

2150

Up to engine serial no. 571078 CD ..... 34 kW      45 hp

From engine serial no. 571079 CD ..... 37 kW      50 hp

2255 ..... 37 kW      50 hp

Lubrication system ..... Full internal force-feed system with full flow filter

**ENGINE CLUTCH** ..... Single dry disk or dual-stage dry disk,  
foot-operated

**COOLING SYSTEM**

Type ..... Pressurized system with centrifugal pump

Temperature regulation ..... Thermostat

**FUEL SYSTEM**

Type ..... Direct injection

Fuel injection pump timing to engine ..... TDC

Fuel injection pump type ..... Distributor type

2150

Up to engine serial no. 571078 CD ..... Roto Diesel Nr. R 3432 F 940

From engine serial no. 571079 CD ..... Rotor Diesel Nr. R 3432 F 830

2255

Up to engine serial no. 581072 CD ..... Rotor Diesel Nr. R 3432 F 830

From engine serial no. 581073 CD ..... Rotor Diesel Nr. R 3432 F 940

Air cleaner ..... Dry-type air cleaner with secondary (safety) element

*\*With the engine run in (above 100 hours of operation) and having reached operating temperature (engine and transmission); measured by means of a dynamometer. Permissible variation  $\pm 5$  per cent.*

**ELECTRICAL SYSTEM**

- Batteries ..... 1 or 2 x 12 volts, 55 ampere-hours
- Alternator with internal regulator ..... 14 volts, 33 or 55 amps
- Starting motor ..... 12 volts, 3 kW (4 hp)
- Battery terminal grounded ..... negative

**SYNCHRONIZED TRANSMISSION**

- Type ..... Synchronized transmission
- Gear selections ..... 8 forward and 4 reverse
- Gear shifting ..... Two forward groups and one reverse group  
Synchronized forward and reverse shifting  
within groups

**COLLAR SHIFT TRANSMISSION**

- Type ..... Helical gears
- Gear selections ..... 8 forward, 4 reverse speeds
- Gear shifting ..... Two forward ranges, One reverse range

**HI-LO SHIFT UNIT**

- Type ..... Hydraulic gear reduction unit which can be  
shifted under load with "wet" multiple disk  
clutch and brake packs
- Travel speed decreases in each gear by ..... Approx. 20 percent
- Shifting to reduced (Lo) speed ..... Pre-loaded cup springs
- Shifting to normal (Hi) speed ..... Hydraulic

**REVERSER**

- Type ..... Hydraulically controlled can be  
shifted under load, with "wet" disk  
clutches and brakes, planetary reverser unit
- Gear selections ..... 1 to 4
- Increase in reverse gear speeds ..... Approx. 16 percent



**DIFFERENTIAL AND FINAL DRIVES**

Type of differential ..... Spiral bevel gears

Type of final drive ..... Planetary reduction drive

**DIFFERENTIAL LOCK**

Operation ..... Hand or foot operated

Disengage ..... Will disengage automatically as soon as traction  
has equalized

**PTO SHAFTS**

**Independent PTO — 540 RPM**

Type ..... Independent of transmission, can be engaged  
and disengaged under load

PTO clutch ..... Hydraulically operated “wet” disk clutch

PTO brake ..... Hydraulically operated “wet” disk brake

**Continuous — Running PTO — 540 RPM**

Type ..... Independent of transmission, with  
engine dual-stage clutch

**PTO SPEEDS (IN RPM) — WITHOUT REVERSER**

Engine speed	540 rpm shaft
800	180
2400	540
2500	565
2660	600

**PTO SPEEDS (IN RPM) — WITH REVERSER**

Engine speed	540 rpm shaft
800	210
2075	540
2400	625
2500	650
2660	690

**MECHANICAL FRONT WHEEL DRIVE**

Type ..... Engaged hydraulically, under full load with "wet" disk clutch

Control ..... Electrical/hydraulic solenoid switch

Engagement ..... Pre-loaded cup springs

Disengagement ..... Hydraulic

**POWER STEERING** ..... Hydraulically operated steering linkage

**FOOT BRAKES** ..... Self-adjusting, hydraulically operated "wet" disk brakes

**HANDBRAKE** ..... Mechanically-operated band-type locking brake acting on the differential

**HYDRAULIC SYSTEM**

Type ..... Closed center, constant pressure system

Standby pressure ..... 15800—16200 kPa    158—162 bar    2300—2350 psi

Operating pressure ..... 14000 kPa    140 bar    2050 psi

Hydraulic pump ..... 8-piston pump with variable displacement

**CAPACITIES**

Fuel tank ..... 74 L    19.6 U.S. gal.

Cooling System ..... 10.5 L    2.80 U.S. gal.

Engine crankcase

    Without filter change ..... 6.5 L    1.7 U.S. gal.

    With filter change ..... 7 L    1.8 U.S. gal.

**CAPACITIES - Continued**

Transmission - Hydraulic system (including oil reservoir and oil cooler)

Synchronized transmission

Initial filling .....	59.0 L	15.6 U.S. gal.
Oil change .....	51.0 L	13.5 U.S. gal.

Collar shift transmission (with reverser)

Initial filling .....	42.0 L	11.1 U.S. gal.
Oil change .....	34.0 L	9 U.S. gal.
Oil reservoir .....	4.0 L	1.1 U.S. gal.
Oil cooler .....	2.0 L	0.5 U.S. gal.

Mechanical front wheel drive

Front axle housing .....	5.3 L	1.4 U.S. gal.
Wheel hub, each .....	0.75 L	0.2 U.S. gal.

**TRAVEL SPEEDS** ..... see Operator's Manual

**FRONT AND REAR WHEELS**

Tires, tread widths, tire pressures and ballast weights ..... see Operator's Manual

**DIMENSIONS AND WEIGHTS** ..... see Operator's Manual

## PREDELIVERY, DELIVERY AND AFTER-SALES INSPECTIONS

### ENGINE SPEEDS

Slow idle .....	700—800 rpm
Fast idle .....	2610—2660 rpm
Rated speed .....	2500 rpm

### FAN BELT

The fan belt should have 19 mm (3/4 in.) flex with 90 N (20 lb) pull midway between crankshaft and alternator or water pump (use a spring scale).

### BATTERIES

Specific gravity at an electrolyte temperature of 20°C (68°F)

Normal and arctic conditions .....	1.28
Tropical conditions .....	1.23

### CLUTCH PEDAL

Clutch pedal free travel ..... approx. 25 mm (1 in.)

### FRONT WHEEL TOE-IN

Tractors without MFWD .....	3 to 6 mm	(0.12 to 0.25 in.)
Tractors with MFWD .....	0 to 3 mm	(0 to 0.12 in.)

### TORQUES FOR HARDWARE

Start safety switch in rockshaft housing, max. ....	50 N·m	(35 lb-ft)
Front wheel rim to hub		
Tractors without MFWD .....	180 N·m	(130 lb-ft)
Tractors with MFWD .....	300 N·m	(220 lb-ft)
Axle knees to axle center, cap screws .....	400 N·m	(300 lb-ft)
Outer tie rod clamp		
Cap screw (1/2 in.) .....	110 N·m	(80 lb-ft)
Cap screw (M12) .....	90 N·m	(65 lb-ft)
Inner tie rod clamp		
Cap screw (3/8 in.) .....	40 N·m	(30 lb-ft)
Cap screw (M10) .....	55 N·m	(40 lb-ft)
Rear Wheels		
Tractors with steel wheel disks		
Rear wheels to rear axle .....	175 N·m	(130 lb-ft)
2-post ROLL-GARD protective structure		
Supports to crossbar, cap screws .....	230 N·m	(170 lb-ft)
Supports to final drives, cap screws and nuts .....	230 N·m	(170 lb-ft)

## LUBRICATION AND SERVICE

### CAPACITIES

Engine crankcase	
Without filter change .....	6.5 L (1.70 U.S. gal.)
With filter change .....	7.0 L (1.80 U.S. gal.)
Transmission-Hydraulic system (including oil reservoir and oil cooler)	
Synchronized transmission	
Initial filling .....	59.0 L 15.60 U.S. gal.)
Oil change .....	51.0 L (13.50 U.S. gal.)
Collar shift transmission (with reverser)	
Initial filling .....	42.0 L (11.10 U.S. gal.)
Oil change .....	34.0 L (9.00 U.S. gal.)
Mechanical front wheel drive	
Front axle housing .....	5.3 L (1.40 U.S. gal.)
Wheel hub each .....	0.75 L (0.20 U.S. gal.)

### SERVICE INTERVALS

Checking crankcase oil level .....	every 10 hours
Changing engine oil .....	every 100 hours
Changing engine oil filter .....	every 200 hours
Checking transmission/hydraulic system oil level .....	every 50 hours
Changing transmission/hydraulic system oil filter .....	every 500 hours
Changing transmission/hydraulic oil .....	every 1000 hours
Cleaning hydraulic pump strainer .....	every 1000 hours
Checking MFWD oil level .....	every 100 hours
MFWD oil change .....	every 1000 hours
Cleaning and packing front wheel bearings .....	every 1000 hours
Lubricating grease fittings	
Clutch throw-out bearing grease fitting (when equipped) .....	every 100 hours
Mechanical front wheel drive universal-jointed shaft .....	every 50 hours
In wet and muddy conditions .....	every 10 hours
Front axle and front axle bearings .....	every 50 hours
In wet and muddy conditions .....	every 10 hours
Rear axle bearings .....	every 500 hours
In wet and muddy conditions .....	every 10 hours
Three-point hitch .....	every 200 hours

## TUNE-UP

PTO horsepower\* at 2500 rpm rated engine speed

2150			
Up to engine serial no. 571078 CD .....	34 kW		(45 hp)
From engine serial no. 571079 CD .....	37 kW		(50 hp)
2255 .....	37 kW		(50 hp)
Compression .....	2100 kPa	21 bar	300 psi
Slow idle .....			700—800 rpm
Fast idle .....			2610—2660 rpm
Rated engine speed .....			2500 rpm
Air intake system vacuum .....	3.5—6.0 kPa	35—60 mbar	(14—25 in. water head)
Air cleaner restriction warning switch closes at a vacuum of .....	5.5—6.5 kPa	55—65 mbar	(22—26 in. water head)
Blow-by at crankcase vent tube, max .....		2.1 m <sup>3</sup> /h	(74 cu. ft./h)
Thermostat opens at .....		82°C	(180°F)
Radiator cap high pressure valve opens at .....	40—50 kPa	0.4—0.5 bar	(6—7 psi)
Radiator cap low pressure valve opens at .....	0—4 kPa	0—0.04 bar	(0—0.6 psi)

### Fan Belt

Fan belt should have 19 mm (3/4 in.) flex with 90 N (20 lbs) pull midway between crankshaft and alternator or water pump (use a spring scale).

*\*With the engine run in (more than 100 hours of operation) and having reached operating temperature (engine and transmission); measured by means of a dynamometer. Permissible variation  $\pm$  5%.*

## TRACTOR SEPARATION

### TORQUES FOR HARDWARE

Front axle carrier to engine		
front attaching cap screws (4 used) .....	230 N·m	(170 lb-ft)
Rear attaching cap screws (2 used) .....	180 N·m	(130 lb-ft)
Hydraulic pump drive shaft, cap screws .....	50 N·m	(35 lb-ft)
Jointed shaft flange to front axle		
drive hub (tractors with MFWD), cap screws .....	35 N·m	(25 lb-ft)
Drag link to bell crank or steering arm,		
slotted nuts* .....	75 N·m	(55 lb-ft)
Clutch housing to engine block		
Cap screws and hex nuts .....	230 N·m	170 ft-lb
Clutch housing to transmission case, cap screws .....	160 N·m	120 ft-lb
Transmission case drain plugs .....	135 N·m	100 ft-lb
Hydraulic lines retainer to		
clutch housing, cap screw .....	45 N·m	32 ft-lb
Final drive housings to transmission case, cap screws .....	120 N·m	85 ft-lb
Rockshaft housing to transmission case, cap screws .....	120 N·m	85 ft-lb
Rear wheels to rear axle .....	240 N·m	175 ft-lb
Rear fenders to final drive housings, hex. nuts .....	130 N·m	95 ft-lb
2-post roll guard to final drive housings		
both supports to crossbar .....	230 N·m	170 ft-lb
both supports to crossbar .....	230 N·m	170 ft-lb
Basic weight to front axle carrier, cap screws .....	400 N·m	300 ft-lb
Drawbar to transmission case, cap screws .....	120 N·m	85 ft-lb

*\*NOTE: If cotter pin cannot be inserted when tightening to the specified torque, turn nut to next slot and secure with cotter pin.*



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