2350 and 2550 Tractors

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TECHNICAL MANUAL

2350 and 2550
Tractors

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2350 AND 2550 TRACTORS TECHNICAL MANUAL TM-4403 (May-85)

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All information, illustrations and specifications contained in this technical manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

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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, 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, hydrostatic steering valve, compressor of air conditioning system (when equipped) and hydraulic pump have model numbers to facilitate identification of different makes of a given unit.

ENGINE

Number of cylinders		4
Cylinder liner bore	106.5 mm	4.19 in.
Stroke	110 mm	4.33 in.
Displacement	3920 cm3	239 cu. in.
Compression ratio		16.8 : 1
2350 up to engine serial no. 571 490 CD and 2550 up to engine serial no. 547 536 CD		16.8:1
2350 from engine serial no. 571 491 CD and 2550 from engine serial no. 547 537 CD		17.4:1

Maximum torque

2350 at 1400 rpm	220 N·m	160 lb-ft
2550 at 1400 rpm	250 N·m	185 lb-ft

Firing order	1 - 3 - 4 - 2

Valve clearance (engine hot or cold)

Intake valve	0.35 mm	0.014 in.
Exhaust valve	0.45 mm	0.018 in.

Fast idle speed ..... 2670 to 2660 rpm

Slow idle speed ..... 700 to 800 rpm

Rated engine speed ..... 2500 rpm

Working speed range
2350 and 2550 ..... 1400 to 2500 rpm

PTO* horsepower at engine rated speed—2550 rpm

According to SAE J816b—2350	41 kW	55 hp
2550	48 kW	65 hp

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

ENGINE CLUTCH ..... Single dry disk clutch with torsion damper, 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

2350	Roto Diesel No. R 3448F040
2550 up to engine serial no. 573009CD	Roto Diesel No. R 3443F950
2550 from engine serial no. 573010CD	Roto Diesel No. R 3448F230

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 ± 5 per cent.*

Electrical System

Batteries ..... 2 x 12 volts, 55 Ah or 66 Ah

Alternator with internal regulator
Tractors without SOUND-GARD body ..... 14 volts, 33 or 55 amps.
Tractors with SOUND-GARD body ..... 14 volts, 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 per cent

Shifting to reduced (Lo) speed ..... Preloaded cup springs

Shifting to normal (Hi) speed ..... Hydraulic

Reverser Transmission

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 per cent.

Creeper Transmission

Type ..... Synchronized reduction unit

Travel speed decreases in low (I) and reverse ranges by ..... approx. 79%

Shifting both ranges ..... Mechanical and not under load

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

INDEPENDENT PTO - 540 rpm or 540/1000 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	1000 rpm shaft
800	180	335
2400	540	1000
2500	565	1040
2660	600	1110

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	Preloaded cup springs
Disengagement	Hydraulic
Hydrostatic Steering	Without mechanical linkage between steering valve and the front wheels
Foot Brakes	1 Self-adjusting, hydraulically operated "wet" disk brakes
Handbrakes	Mechanically operated band-type locking brake acting on the differential

Hydraulic System

Type			Closed center, constant pressure system
Standby pressure	15800 to 16200	158 to 162 bar	2300 to 2350 psi
Operating pressure	14000 kPa	140 bar	2050 psi
Hydraulic pump			8-piston pump with variable displacement

Capacities

Fuel tank	91 L	24.0 U.S. gal
Cooling System		
Without SOUND-GARD body	13 L	3.4 U.S. gal
With SOUND-GARD body	14 L	4.0 U.S. gal
Engine crankcase		
Without filter change	8 L	2.1 U.S. gal
With filter change	8.5 L	2.25 U.S. gal
Transmission - Hydraulic system (including oil reservoir and oil cooler)		
Synchronized transmission		
Dry system—2350	59 L	15.6 U.S. gal
2550	64 L	16.9 U.S. gal
Oil change—2350	51 L	13.5 U.S. gal
2550	56 L	14.8 U.S. gal
Collar shift transmission (with reverser)		
Dry system	42 L	11.1 U.S. gal
Oil change	34 L	9.0 U.S. gal

Capacities (Contd.)

Oil reservoir	4 L	1.1 U.S. gal
Oil cooler	2 L	0.5 U.S. gal

Mechanical front wheel drive

Front axle housing	5.0 L	(1.30 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 to 800 rpm
Fast idle	2610 to 2660 rpm
Rated speed	2500 rpm

FAN BELT

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

COMPRESSOR BELT

The compressor belt should have 19 mm (3/4 i.) flex with 60 N (13 lb force) pull midway between pulleys.

BATTERIES

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

Normal and arctic conditions	1.28
Tropical conditions	1.23

Clutch Operating Linkage

Tractors without SOUND-GARD Body

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

Tractors with SOUND-GARD Body

Travel of slave cylinder operating rod	8.5 to 12 mm 5/16 to 15/32 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)
Tie rod clamps		
Cap screw (M10)	55 N·m	(40 lb-ft)
Cap screw (M13)	90 N·m	(65 lb-ft)
Tie rod tube, cap screw	55 N·m	(40 lb-ft)
Rear wheels to axle	400 N·m	(300 lb-ft)
Wheel disk to hub (rack-and-pinion axle)	400 N·m	(300 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	8.0 L	(2.1 U.S. gal)
With filter change	8.5 L	(2.3 U.S. gal)

Cooling System

Without SOUND-GARD body	13 L	(3.4 U.S. gal)
With SOUND-GARD body	15 L	(4.0 U.S. gal)

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

Synchronized transmission

Dry system - 2350	59 L	15.6 U.S. gal
2550	64 L	16.9 U.S. gal
Oil change - 2350	51 L	13.5 U.S. gal
2550	56 L	14.8 U.S. gal

Collar shift transmission (with reverser)

Dry system	42 L	11.1 U.S. gal
Oil change	34 L	9.0 U.S. gal

Capacities (Contd.)

Oil reservoir	4 L	1.1 U.S. gal
Oil cooler	2 L	0.5 U.S. gal

Mechanical front wheel drive

Front axle housing	5.0 L	(1.30 U.S. gal)
Wheel hub, each	0.75 L	(0.2 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
Changing hydrostatic steering filter	every 100 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