3030 and 3130 Tractors

JOHN DEERE

TECHNICAL MANUAL

3030 and 3130
Tractors

TM4277 (01JUN79) English

John Deere Werke Mannheim
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3030 and 3130 Tractors
Technical Manual
TM-4277 (June-79)

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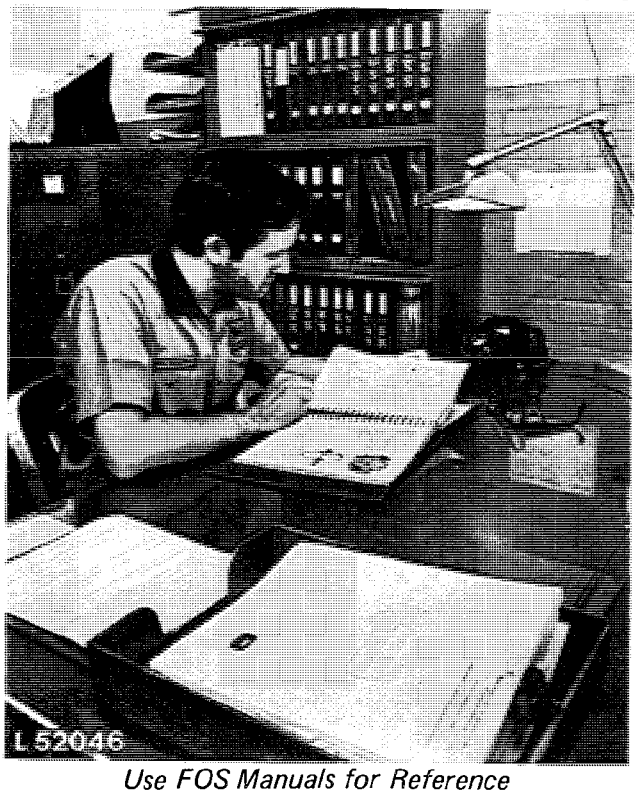
Introduction



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 personnel and for reference by experienced technicians.

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

IMPORTANT! Your technical manual contains the international standardized SI metric measurement system.

When a technician 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 on page 1*
- *Contents at front of each Section*
- *Specifications at end of each Group*
- *Torques for hardware at end of each Group*
- *Special tools at end of each Group*

This technical manual was planned and written for you — an experienced technician. 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.

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Section 10
General

CONTENTS OF THIS SECTION

Group 5
Specifications

SERIAL NUMBERS

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

NOTE: If ordering engine parts, indicate all digits of the serial number of the name plate.

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

NOTE: If ordering tractor parts, (excluding engine parts), indicate all digits of the serial number on the name plate.

MODEL NUMBERS

The injection pump, injection nozzles, alternator, starting motor and hydraulic pump have model numbers to facilitate identification of different makes of a given unit.

ENGINE

Number of cylinders 6

Cylinder liner bore ..... 102 mm (4.02 in.)

Stroke ..... 110 mm (4.33 in)

Displacement ..... 5390 cm^3 (329 cu.in.)

Compression ratio ..... 16.2 : 1

Maximum torque:

3030 at 1200 rpm ..... 285 Nm (28.5 mkp 210 ft-lb)
3130 at 1300 rpm ..... 300 Nm (30 mkp; 218 ft-lb)

Firing order ..... 1 - 5 - 3 - 6 - 2 - 4

Valve clearance (engine hot or cold)

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

Fast idle ..... 2660 rpm

Slow idle ..... 750 rpm

Working speed range:

3030 ..... 1200 to 2500 rpm
3130 ..... 1300 to 2500 rpm

Flywheel horsepower at 2500 rpm according to DIN 70020:

3030 ..... 63 kW (86 HP)
3130 ..... 68 kW (92 HP)

PTO horsepower*:
(at 2500 rpm engine speed)

3030 according to DIN 70020 57 kW (78 HP)
according to SAE J 816 B 55 kW (74 HP)
3130 according to DIN 70020 61 kW (83 HP)
according to SAE J 816 B 60 kW (80 HP)

ENGINE CLUTCH

Single dry disk clutch with torsion damper (isolator), foot-operated.

ELECTRICAL SYSTEM

Batteries ..... 2 x 12 volts, 88 ampere-hours

Starting motor ..... 12 volt, 3 kW (4 HP)

Alternator ..... 14 volts, 28 amps.

Battery terminal grounded ..... negative

TRANSMISSION

Collar shaft transmission with helical cut gears.

The tractor has 6 forward gears and three reverse gears. However, by shifting the High-Low shift unit, 12 forward and 6 reverse speeds may be selected.

*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 % .

HIGH-LOW SHIFT UNIT

Hydraulically controlled reduction gear which can be shifted under load, with "wet" multiple disk clutch and "wet" multiple disk brake. Allows reduction of the individual gear speeds by 21%.

DIFFERENTIAL AND FINAL DRIVES

Planetary reduction gear and differential with spiral bevel gears.

DIFFERENTIAL LOCK

Hand or foot operated; spring-loaded out of engagement.

POWER TAKE-OFF (PTO)

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

The independent PTO is engaged by a hydraulically operated disk clutch. Disengaging the PTO is achieved by operating the hydraulically actuated disk brake.

Changing PTO shaft speed from 540 rpm to 1000 rpm or vice-versa is effected by changing the PTO stub shaft.

PTO Speeds (in rpm)

Engine speed in rpm	540 rpm shaft	1000 rpm shaft
750	185	346
2175	540	1000
2500	620	1150
2660	660	1225

HYDRAULIC SYSTEM

Closed center, constant pressure system; also includes rockshaft, power steering and selective control valves.

System pressure . . . . . 155 bar (2250 psi)

Pump . . . . . 8-piston pump driven by the engine crankshaft

POWER STEERING

The steering system is a "closed center" type incorporated in the hydraulic system and supplied with oil by the hydraulic pump. It is connected to the front wheels by means of a steering linkage.

HYDRAULIC BRAKES

The disk brakes run in an oil bath and are hydraulically controlled.

HANDBRAKE

Band-type locking brake acting on differential.

CAPACITIES

	Liters	U.S.gals.
Fuel tank	106.0	28.0
Cooling system	19.0	5.0
Engine crankcase incl. filter	11.5	3.0
Transmission-hydraulic system		
Dry system	57.0	15.0
At service intervals	49.0	12.9
Belt pulley	1.0	0.3

TRAVEL SPEEDS

See Operator's Manual.

FRONT AND REAR WHEELS

For tire sizes, treads, inflation pressure and weights see Operator's Manual.

DIMENSIONS

See Operator's Manual.

Group 10

Predelivery, Delivery and After-Sales Inspections

PREDELIVERY INSPECTION

Every new JOHN DEERE tractor leaves the factory in such a condition that it can be delivered to the customer after a minimum of service.

To promote complete customer satisfaction, proper predelivery service including mending of possible shipping damage and giving the finishing touches to the tractor, are of prime importance to the dealer.

A tag pointing out the factory-recommended procedure for predelivery service is attached to every new tractor before it leaves the factory. The reverse side of this tag is filled in by the factory after the tractor has undergone a thorough inspection prior to shipping.

After completing the factory-recommended dealer checks and services listed on the predelivery tag, remove the tag from the tractor and file it with the shop order for the job. The tag will then serve as a basis for certifying that the tractor has received the proper predelivery service.

Temporary Tractor Storage

Service	Specifications	Reference
Check radiator for coolant loss and antifreeze protection (gravity of antifreeze and rust inhibitor mixture)	Coolant level should be midway between radiator core and bottom edge of filler neck	Operator's manual
If the tractor is to be operated for a short time without battery (using a slave battery for starting), do not, under any circumstances, interrupt the circuit by switching off the main switch before stopping the engine by means of fuel pump shut off cable. Use additional current (lights) whilst engine is running. Insulate terminal of battery cable before starting by means of slave battery. If this advice is disregarded, damage to alternator and regulator may result.	. . . . .	Section 40, group 10
Remove batteries.	Store in a cool and dry room	. . . . .
Reduce shipping pressure of tires	. . . . .	Operator's manual
Cover tractor and tires for protection and cleanliness	. . . . .	. . . . .

PREDELIVERY INSPECTION (Contd.)

Service	Specifications	Reference
COOLING SYSTEM		
Check radiator for coolant loss	Coolant level should be midway between radiator core and bottom edge of filler neck.	Operator's manual
Check gravity of antifreeze and rust inhibitor mixture	. . . . .	Operator's manual
ELECTRICAL SYSTEM		
If the tractor is to be operated for a short time without battery (using a slave battery for starting), do not, under any circumstances, interrupt the circuit by switching off the main switch before stopping the engine by means of fuel pump shut off cable. Use additional current (lights) whilst engine is running. Insulate terminal of battery cable before starting the engine by means of slave battery. **If this advice is disregarded, damage to alternator and regulator may result.**	. . . . .	Section 40, group 10
If the batteries are to be installed, connect them in the proper polarity (negative to ground). If they are improperly connected, the rectifier diodes will be immediately destroyed.	. . . . .	Section 40, group 10
First connect positive (+) cable and then ground (-) strap of each battery. Only then start tractor engine.	. . . . .	Section 40, group 10

PREDELIVERY INSPECTION (Contd.)

Service	Specifications	Reference
TIRES AND WHEELS		
Check tire inflation pressure	. . . . .	Operator's manual
Retighten wheel bolts	. . . . .	Section 80, group 15 and Operator's manual
LUBRICATION		
Check crankcase oil level	Top mark on dip stick	Operator's manual
Check transmission-hydraulic system oil level	. . . . .	Operator's manual
Lubricate all lubrication points on the tractor	. . . . .	Operator's manual
ENGINE		
Check dry type air cleaner	. . . . .	Operator's manual
Fill fuel tank and start engine	Fuel tank capacity: 106.0 liters (28.0 U.S. gals.)	Operator's manual
Check lighting system, indicator lights and instruments for proper operation	. . . . .	Operator's manual
Check if speed control linkage moves easily	. . . . .	Section 20, group 40
Check engine idle speeds	. . . . .	Section 20, group 40
Check injection timing	. . . . .	Section 30, group 15
OPERATION		
Engine clutch	Check clutch pedal adjustment-should be 25 mm (approx. 1 in.)	Section 50, group 5
Check operation of High-Low shift	. . . . .	Section 50, group 10
Shift transmission through all gears	. . . . .	Operator's manual
Check differential lock operation	. . . . .	Operator's manual
Check PTO operation	. . . . .	Operator's manual
Check 3-point hitch operation	. . . . .	Operator's manual
Check hydraulic system operation	. . . . .	Section 70, group 5
Check brake operation	. . . . .	Section 60, group 15

PREDELIVERY INSPECTION (Contd.)

Service	Specifications	Reference
Check steering operation	. . . . .	Section 60, group 10
Check seat adjustment	. . . . .	Operator's manual
Check operation of remote hydraulic cylinder (if equipped)	. . . . .	Section 70, group 5
GENERAL		
Tighten accessible nuts and attaching screws	. . . . .	Section 10, group 20
Attach roll guard	. . . . .	Section 80, group 20
Clean tractor and touch up paint	. . . . .	. . . . .

DELIVERY INSPECTION

A thorough discussion of the operation and service of the tractor at the time of its delivery helps to assure complete customer satifaction.

Proper delivery should be an important phase of the dealer's program.

It is well-known fact that many complaints have arisen simply because the owner was not shown how to operate and service his new tractor properly. Therefore, enough time should be devoted, at the customer's comvenience, to introducing him to this new tractor and explaining to him how to operate and service it.

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

1. Adjusting the seat
2. Operation of control levers and instruments
3. Starting and shutting off the engine
4. The importance of the tractor break-in period
5. Use of counterweights and proper tire inflation pressure as well as filling of tires with water and calcium chloride, if required
6. All functions of the hydraulic system
7. Operating the PTO and belt pulley (if equipped)
8. The importance of the safety rules
9. The importance of lubrication and periodic service

AFTER-SALES INSPECTION

In the interest of the purchaser and the dealer an after-sales inspection should be carried out by the dealer after the first 100 hours of using a new John Deere tractor.

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.

Through this inspection a needless volume of service work can be eliminated by preventing minor difficultes from developing into serious problems later on. It also will promote stronger dealer -customer relations and give the customer an opportunity to ask questions that may have arisen during the first few days of use.

Thereby the dealer has the further opportunity of promoting the possible sale of other new equipment.

The following inspection program is recommended:

AFTER-SALES INSPECTION (Contd.)

Service	Specifications	Reference
COOLING SYSTEM		
Check coolant level	Coolant level should be midway between radiator core and bottom edge of filler neck	Operator's manual
Clean exterior of radiator	. . . . .	. . . . .
Check hose connections	. . . . .	. . . . .
FUEL SYSTEM		
Check water trap (if equipped) and fuel filter housing for water or sediment deposits and clean transfer pump screen	. . . . .	Operator's manual
Check line connections	. . . . .	. . . . .
ELECTRICAL SYSTEM		
Check gravity of battery electrolyte	Gravity should be: 1.28 with normal and arctic conditions and 1.23 with tropical conditions at an electrolyte temperature of 20°C (68°F)	
Check electrolyte level of batteries	To bottom of filler neck in each cell	Operator's manual
Check tension of fan belt	19 mm (3/4 in.) deflection with a 90 N (20 lb) force	Operator's manual and section 20, group 35
Start engine and check operation of lights, indicator lamps and instruments	. . . . .	Operator's manual
LUBRICATION		
Check crankcase oil level	Top mark on dip stick	Operator's manual
Check transmission oil level	. . . . .	Operator's manual
Check oil level of belt pulley housing	Add oil up to filler hole	Operator's manual
Lubricate clutch throw-out bearing	. . . . .	Operator's manual
Lubricate 3-point hitch	. . . . .	Operator's manual

AFTER-SALES INSPECTION (Contd.)

Service	Specifications	Reference
ENGINE		
Check dry-type air cleaner	. . . . .	Operator's manual
Check valve clearance	Intake valve: 0.35 mm (0.014 in.) Exhaust valve: 0.45 mm (0.018 in.)	Section 20, group 10
Check engine speed under load as well as fast and slow idle speed	. . . . .	Section 20, group 40
Check engine performance	. . . . .	Section 10, group 20
GENERAL		
Check clutch pedal adjustment	Approx. 25 mm (1 in.) free travel	Section 50, group 5
Check operation of High-Low shift unit	. . . . .	Section 50, group 10
Shift transmission through all gears	. . . . .	Operator's manual
Check operation of PTO	. . . . .	Operator's manual
Check differential lock	. . . . .	Operator's manual
Check operation of hydraulic system	. . . . .	Section 70, group 5
Check steering system	. . . . .	Section 60, group 10
Check brakes	. . . . .	Section 60, group 15
Tighten accessible nuts and cap screws	. . . . .	Section 10, group 20
Tighten roll guard attaching cap screws and nuts	. . . . .	Section 80, group 20
Tighten accessible hydraulic lines	. . . . .	. . . . .
Visual inspection of tractor	Damaged paint, loose connections, proper positioning of hoses and lines, leaks, operation of all mechanical parts	. . . . .

Group 15

Lubrication and Periodic Service

For brands of oil and lubricants to be used as well as for lubricating and servicing the 3030 and 3130 tractors see operator's manual.

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Group 20
Engine and Tractor Tune-Up

GENERAL INFORMATION

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

PRELIMINARY ENGINE TESTING

Service	Specifications	Reference
Checking air intake system by means of vacuum gauge	35 to 60 mbar (14 to 25 in. water head): engine running at fast idle speed	"Fundamentals of Service, Engine" manual under "Diagnosis and Testing"
Check radiator for air bubbles or oil film	. . . . .	. . . . .
Measure blow-by at crankcase vent tube*	3.0 cm3 (105 cu.ft./h.)	. . . . .
Check compression which should be at least (using special tool No. 19.58-90.578)	21 bar (300 psi)	"Fundamentals of Service, Engine" manual under "Diagnosis and Testing"
Measure engine horsepower at powershaft (using a dynamometer)	Record measured performance and compare with performance measured after carrying out "Engine Tune-up"	. . . . .

* *Measure with a standard gas gauge, placing hose over end of crankcase vent tube. The engine must be tested at 2500 rpm and full load, normal running temperature and should be run in (at least 100 hours). Measure over a period of 5 minutes and multiply measured value by 12 (for hourly rate). Compare with values quoted above.*

There is no undue wear on piston rings and cylinder liners if the measured value is lower than that quoted above. Should a further test be desired, carry out a compresssion test. If the "blow-by" reading is more than that quoted above, the decline in performance is due to excessive wear and the engine should be overhauled.

ENGINE TUNE-UP

Service	Specifications	Reference
AIR INTAKE SYSTEM		
Service air cleaner and dust unloading valve, check system for leaks	. . . . .	Operator's manual and "Fundamentals of Service, Engine" manual
Check crankcase vent tube for foreign particles (restriction)	. . . . .	. . . . .
CYLINDER HEAD		
Re-tighten cylinder head cap screws	130 Nm (13 mkp; 95 ft-lb)	Section 20, group 10
Check and adjust valve clearance	Intake valve: 0.35 mm (0.014 in.) Exhaust valve: 0.45 mm (0.018 in.)	Section 20, group 10
BATTERIES		
Thoroughly clean cables, connections and batteries	. . . . .	. . . . .
Tighten cable clamp screws	. . . . .	. . . . .
Liberally coat battery terminals and cable connectors with petroleum jelly	. . . . .	. . . . .
Check electrolyte level of battery	. . . . .	Operator's manual
Check specific gravity of electrolyte	. . . . .	Operator's manual
ALTERNATOR		
Check fan belt tension	19 mm (3/4 in.) deflection with 90 N (20 lb) force	Section 20, group 35
FUEL SYSTEM		
Check fuel tank and lines for leaks or restriction	. . . . .	. . . . .
Clean screen of fuel transfer pump	. . . . .	Operator's manual
Check fuel filter element and replace, if necessary	. . . . .	Section 30, group 10 and Operator's manual
Check injection timing and adjust, if necessary	. . . . .	Section 30, group 15
Bleed fuel system	. . . . .	Section 30, group 15
Check engine speeds and adjust speed control linkage, if necessary	. . . . .	Section 20, group 40