

830 TRACTOR

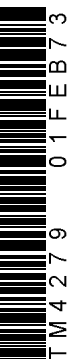


TECHNICAL MANUAL 830 TRACTOR

TM4279 (01FEB73) English

JOHN DEERE TRACTOR WORKS
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ENGLISH



Tractor-830

Technical Manual
TM-4279 (Feb-73)

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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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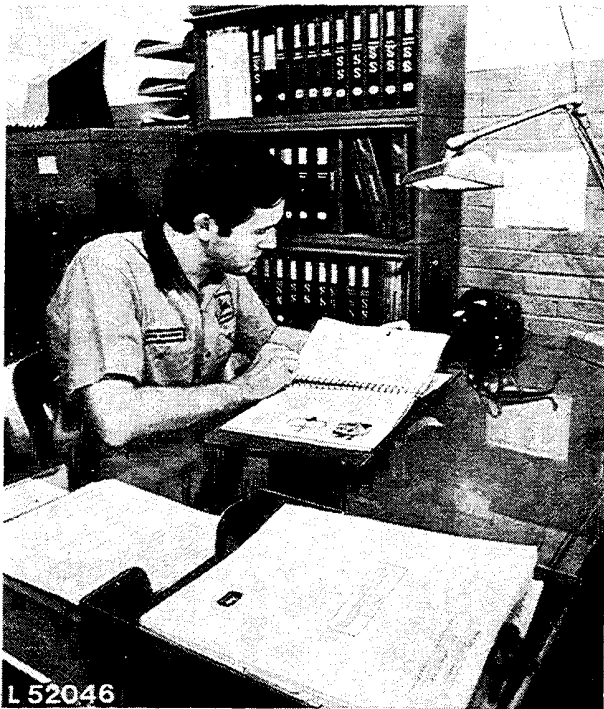
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INTRODUCTION



Use FOS Manuals for Reference

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.



Use Technical Manuals for Actual Service

Some features of this technical manual:

- Table of contents at front of whole Manual.
- Contents at front of each Section
- Exploded views showing parts relationship
- Photos showing service techniques
- Specifications at end of each Group
- Special tools at end of each Group

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 indicates 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.

Section 10

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Group 5

SPECIFICATIONS

SERIAL NUMBERS

The engine serial number is stamped into the name plate at the lower right of the front cylinder block.

NOTE: If ordering engine parts, indicate all digits of the serial number on 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, the alternator, starter and the hydraulic pump have model numbers to facilitate identification of different makes of a given unit.

SPECIFICATIONS

ENGINE

| | |
|--------------------------------------|-----------------------------------|
| Number of cylinders | 3 |
| Cylinder liner bore | 98 mm (3.86 in.) |
| Stroke | 110 mm (4.33 in.) |
| Displacement | 2490 cm ³ (152 cu.in.) |
| Compression ratio | 16.7 : 1 |
| Maximum torque at 1400 rpm | 14.1 mkg (102 ft.lbs.) |
| Firing order | 1 - 2 - 3 |
| Valve clearance (engine hot or cold) | |
| Intake valve | 0.35 mm (0.014 in.) |
| Exhaust valve | 0.45 mm (0.018 in.) |

| | |
|---------------------|---|
| Fast idle | 2545 rpm |
| Slow idle | 650 rpm |
| Working speed range | 1400 to 2400 rpm |
| PTO power. | 35 HP (26.2 kW) (at 2400 rpm engine speed and 624 rpm powershaft speed) |

ENGINE CLUTCH

Dual dry disk clutch, foot-operated.

ELECTRICAL SYSTEM

| | |
|---------------------------|----------------------------------|
| Batteries | 2 x 12 volts, 55 ampere-hours |
| or | 1 x 12 volts, 70 ampere-hours |
| Starter | 12 volts, 4 HP |
| Alternator | 14 volts, 28 amps. |
| Battery terminal grounded | negative |

* 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 $\pm 5\%$.

TRANSMISSION

Type Collar shift
Gear selections 8 forward and 4 reverse
Shifting 4 speeds each in high, low, and
reverse ranges. Park lock in-
cluded.

DIFFERENTIAL AND FINAL DRIVES

Planetary reduction gear and differential with
spiral bevel gears.

DIFFERENTIAL LOCK

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

PTO

Single, 540 rpm rear powershaft continuous-run-
ning.

Power Shaft Speeds (in rpm)

| Engine Speed in rpm | 540 rpm shaft |
|---------------------|---------------|
| 650 | 170 |
| 2070 | 540 |
| 2400 | 624 |
| 2545 | 662 |

HYDRAULIC SYSTEM

Open center, constant oil flow system; also
includes rockshaft and selective control valves.

Relief valve setting 148 to 150 kp/cm²
(2105 to 2130 psi)

Pump gear pump
driven by the engine

POWER STEERING

The steering system is an "open center" type
independent from the tractor hydraulic system. It
is connected to the front wheels by means of a
steering linkage.

Relief valve setting 148 to 150 kp/cm²
(2105 to 2130 psi)

Pump gear pump
driven by the engine

MANUAL STEERING

The manual steering is a recirculating ball bearing,
worm and nut type. A number of steel balls
between ball nut and steering wheel shaft provide
for positive engagement of steering wheel and
steering linkage.

HYDRAULIC BRAKES

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

CAPACITIES

| | Ltr. | US.gals. | Imp.gals. |
|--|------|----------|-----------|
| Fuel tank | 62.5 | 16.5 | 13.75 |
| Cooling system | 10.5 | 2.75 | 2.3 |
| Engine crankcase incl. filter | 5.7 | 1.5 | 1.25 |

Transmission-hydraulic
system

| | | | |
|--------------------------------|------|-----|------|
| Dry system | 30.0 | 7.9 | 6.6 |
| At service intervals | 28.0 | 7.4 | 6.2 |
| Belt pulley | 1.1 | 0.3 | 0.25 |

TRAVEL SPEEDS

See Operator's Manual

FRONT AND REAR WHEELS

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

DIMENSIONS AND WEIGHTS

See Operator's Manual.

Group 10

PREDELIVERY, DELIVERY AND AFTER-SALES INSPECTIONS

PREDELIVERY INSPECTION

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 unit has received the proper predelivery service.

TEMPORARY TRACTOR STORAGE

| Service | Specifications | Reference |
|--|--|----------------------|
| Check radiator for coolant loss and antifreeze protection (gravity of anti-freeze and rust inhibitor mixture) | Coolant level should be mid-way between radiator core and bottom edge of filler neck | Operator's manual |
| IMPORTANT: When the machine is delivered, red cable is not connected to alternator terminal "B+". Further, the alternator three-terminal plug is not connected. Connect cable and plug before operating tractor for the first time. 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 starter switch before stopping the engine by means of fuel pump shut off cable. Further, it is recommended to use additional current (lights) whilst engine is running. Insulating tape on battery cable end leading to starting motor should not be removed. If this advice is disregarded, damage to alternator and regulator may result. | ..... | Section 40, group 10 |
| Remove batteries. Drain electrolyte and store batteries | Store at room temperature | ..... |
| Reduce shipping pressure of tires | ..... | Operator's manual |
| Cover tractor and tires for protection and cleanliness | ..... | ..... |

BEFORE DELIVERING TRACTOR

| 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 | | |
| IMPORTANT: When the machine is delivered, red cable is not connected to alternator terminal "B+". Further, the alternator three-terminal plug is not connected. Connect cable and plug before operating tractor for the first time. 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 starter switch before stopping the engine by means of fuel pump shut off cable. Further, it is recommended to use additional current (lights) whilst engine is running. Insulating tape on battery cable end leading to starting motor should not be removed. If this advice is disregarded, damage to alternator and regulator may result. If the batteries are to be installed in the tractor, remove insulating tape on terminal of battery cable. This is to be done if the tractor was shipped with dry-charged batteries or without batteries. Connect batteries in the proper polarity (negative to ground). If they are improperly connected, the rectifier diodes will be immediately destroyed. First connect positive (+) cable and then ground (-) strap of each battery. Only then start tractor engine. | ..... | Section 40, group 10 |
| | | |
|  | ..... | Section 40, group 10 |
|  | ..... | Section 40, group 10 |

BEFORE DELIVERING TRACTOR - Continued

| Service | Specification | 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 air cleaner | | Operator's manual |
| Fill fuel tank and start engine | Capacity: 62,5 liters (13.75 Imp.gals. = 16,5 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 | | |
| Check clutch pedal adjustment | Approx. 25 mm (1 in.) clutch pedal free travel | Section 50, group 5 |
| Shift transmission through all speeds | | Operator's manual |
| Check differential lock operation | | Operator's manual |
| Check power shaft operation | | Operator's manual |
| Check 3-point hitch operation | | Operator's manual |
| Check hydraulic system operation | | Section 70, group 5 |
| Check brake system | | Section 60, group 15 |

BEFORE DELIVERING TRACTOR - Continued

| Service | Specifications | Reference |
|--|---|----------------------|
| Check steering operation | ..... | Section 60, group 10 |
| Check seat operation | ..... | 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 (if equipped) | Tighten cap screws cross-wise 1. Step = 7 mkp (50 ft.lbs.) 2. Step = 41,5 mkp (300 ft.lbs.) | 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 satisfaction.

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

It is a 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 convenience, to introducing him to his 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 weights and proper inflation pressure as well as filling of tires with water and calcium chloride, if required.
6. Operating the complete hydraulic system
7. Operating the power shaft 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 difficulties 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

| 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 fuel filter for water or sediment and clean transfer pump screen | ..... | Operator's manual |
| Check line connections | ..... | ..... |
| ELECTRICAL SYSTEM | | |
| Check gravity of battery electrolyte | Gravity should be 1.260 at an electrolyte temperature of 27°C (80°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 9 kp (20 lbs.) 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 manual steering gear housing | Add oil up to filler hole | 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

| Service | Specifications | Reference |
|--|---|----------------------|
| ENGINE | | |
| Check 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 |
| Shift transmission through all speeds | ..... | 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 screws and nuts | 41.5 mkp (300 ft.lbs.) | ..... |
| Tighten accessible hydraulic lines | ..... | ..... |
| Visual inspection of tractor | Damaged paint, loose connections, proper posi- tioning of hoses and lines, leaks, operation of all me- chanical parts | ..... |

Group 15

LUBRICATION AND PERIODIC SERVICE

For brands of oil and lubricants to be used as well as for lubricating and servicing the tractor 830, see operator's manual.



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 | 355 to 635 mm (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 | ..... | ..... |
| Check compression which should be at least using special tool No. 19.58-90.578 | 21 kp/cm ² (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" | ..... |

ENGINE TUNE-UP

| Service | Specifications | Reference |
|--|---|---|
| AIR INTAKE SYSTEM | | |
| Service air cleaner and check system for leaks | |  Operator's manual and "Fundamentals of Service, Engine" manual |
| Check crankcase vent tube for foreign particles (restriction) | | |
| Tighten cylinder head cap screws | 15 mkp (110 ft.lbs.) | 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 wires, 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 9 kp (20 lbs.) 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 |
| 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 |