

2040 Tractor



TECHNICAL MANUAL

2040
Tractor

TM4300 (01SEP79) English

John Deere Tractor Works
TM4300 (01SEP79)

LITHO IN U.S.A.
ENGLISH



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2040 TRACTOR TECHNICAL MANUAL TM-4300 (SEP-77)

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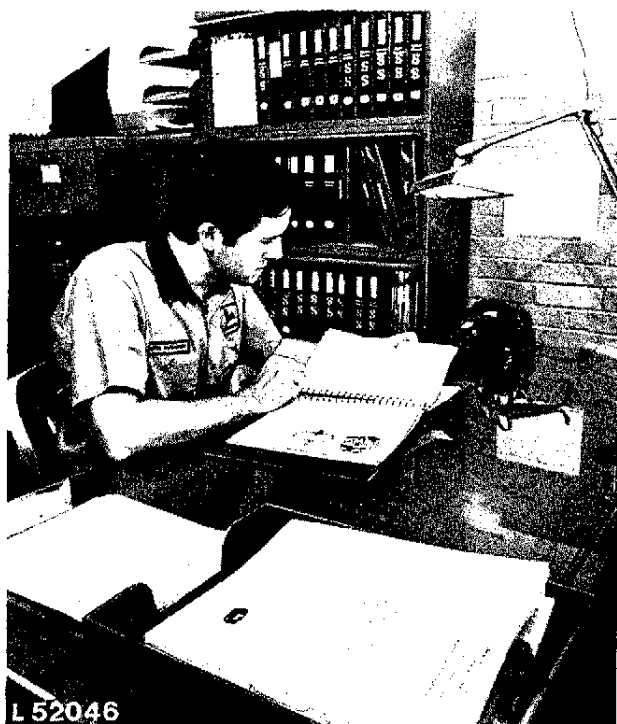
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INTRODUCTION



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 personnel and for reference by the experienced technician.

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.



When any 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 — 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 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 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, starting motor 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 102 mm (4.02 in.)

Stroke 110 mm (4.33 in.)

Displacement 2690 cm³ (164 cu.in.)

Compression ratio
(- 269 539 CD) 16.2:1
(269 540 CD -) 16.8:1

Maximum torque at
1400 rpm 152 Nm (112 ft-lb)

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 2650 rpm

Slow idle 650 rpm

Working speed range 1500 to 2500 rpm

PTO power 30 kW (40 HP)
(at 2500 rpm engine speed and
650 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,
55 ampere-hours

Starting motor 12 volts, 3 kW (4 HP)

Alternator 14 volts, 28 amps.

Battery terminal grounded negative

TRANSMISSION

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

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-running.

Power Shaft Speeds (in rpm)

Engine Speed (rpm)	540 rpm Shaft
650	170
2070	540
2500	650
2650	690

HYDRAULIC SYSTEM

(— 266 749 L)

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

Relief valve setting 145 to 147 bar
(2100 to 2130 psi)

Pump..... gear pump
driven by the engine

(266 750 L —)

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

Stand by oil pressure..... 153 to 157 bar
(2220 to 2280 psi)

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

POWER STEERING

(— 266 749 L)

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 145 to 147 bar
(2100 to 2130 psi)

Pump..... gear pump
driven by the engine

(266 750 L —)

The steering system is a "closed center" type incorporated by 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.

CAPACITIES

	Ltr.	U.S. gals.
Fuel tank.....	62.5	16.5
Cooling system	10.0	2.6

Engine crankcase		
incl. filter	7	1.8
without filter.....	6.5	1.7

Transmission-hydraulic system		
Dry system		
(— 266 749 L)....	30.0	7.9
(266 750 L —)....	36.0	9.5

At service intervals 28.0 7.4

Belt pulley..... 1 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 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
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 key 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. 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		

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 key 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.	.....	Section 40, group 10
If this advice is disregarded, damage to alternator and regulator may result.		
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	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 (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 PTO operation	.....	Operator's manual
Check 3-point hitch operation	.....	Operator's manual
Check hydraulic system operation	.....	Section 70, group 5 or 6
Check brake system	.....	Section 60, group 15

PREDELIVERY INSPECTION (Contd.)

Service	Specifications	Reference
Check steering operation	.....	Section 60, group 10 or 11
Check seat operation	.....	Operator's manual
Check operation of remote hydraulic cylinder (if equipped)	.....	Section 70, group 5 or 6
GENERAL		
Tighten accessible nuts and attaching screws	.....	Section 10, group 20
Attach roll guard (if equipped)	Tighten cap screws cross-wise 1st step = 70 Nm (50 ft-lb) 2nd step = 400 Nm (300 ft-lb)	.....
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 at an electrolyte temperature of 27° C (80° F) should be at normal and arctic conditions: 1.28 tropical conditions: 1.23	
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 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 (— 224 436 L)	.....	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 or 6
Check steering system	.....	Section 60, group 10 or 11
Check brakes	.....	Section 60, group 15
Tighten accessible nuts and cap screws	.....	Section 10, group 20
Tighten roll guard attaching screws and nuts	400 Nm (300 ft-lb)	.....
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 2040, 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 (min. reading)	2068 kpa (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"	.....

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)	.....	.....
CYLINDER HEAD		
Re-tighten cylinder head cap screws	130 Nm (95 ft.lbs.) (dip in oil)	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 90 N (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