



# 2040 Tractor



## TECHNICAL MANUAL 2040 Tractor

TM4300 (01SEP79) English

**John Deere Tractor Works  
TM4300 (01SEP79)**

LITHO IN U.S.A.  
ENGLISH





---

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

## CONTENTS

### SECTION 10 - GENERAL

- Group 05 - Specifications
- Group 10 - Predelivery, Delivery, and After-Sales Inspections
- Group 15 - Lubrication and Periodic Service
- Group 20 - Engine and Tractor Tune-Up
- Group 25 - Tractor Separation (Open Center System)
- Group 26 - Tractor Separation (Closed Center System)

### SECTION 20 - ENGINE

- Group 05 - General Information, Diagnosing Malfunctions
- Group 10 - Cylinder Head and Camshaft
- Group 15 - Cylinder Block, Liners, Pistons, and Connecting Rods
- Group 20 - Crankshaft, Main Bearings, and Flywheel
- Group 25 - Timing Gear Train
- Group 30 - Engine Lubrication System
- Group 35 - Cooling System
- Group 40 - Speed Control Linkage

### SECTION 30 - FUEL SYSTEM

- Group 05 - Diagnosing Malfunctions
- Group 10 - Fuel Tank, Fuel Transfer Pump, and Air Cleaner
- Group 15 - Roto Diesel
- Group 20 - Injection Nozzles
- Group 25 - Cold Weather Starting Aid

### SECTION 40 - ELECTRICAL SYSTEM

- Group 05 - Diagnosing Malfunctions
- Group 10 - Components and Wiring Diagram
- Group 15 - Starting Motor
- Group 20 - Alternator and Regulator

### SECTION 50 - POWER TRAIN

- Group 05 - Engine Dual-Stage Clutch and Clutch Linkage
- Group 10 - Collar-Shift Transmission
- Group 15 - Differential Assembly
- Group 20 - Final Drives
- Group 25 - Continuous Running PTO

### SECTION 60 - FRONT AXLE, POWER STEERING, AND BRAKES

- Group 05 - Front Axle
- Group 10 - Power Steering (Open Center System)
- Group 11 - Power Steering (Closed Center System)
- Group 15 - Hydraulic Brakes

### SECTION 70 - HYDRAULIC SYSTEM

- Group 05 - General Information, Diagnosing Malfunctions and Tests (Open Center System)
- Group 06 - General Information, Diagnosing Malfunctions and Tests (Closed Center System)
- Group 10 - Oil Reservoir, Filter and Valves (Open Center System)
- Group 11 - Oil Reservoir, Filter and Valves (Closed Center System)
- Group 15 - Hydraulic Pump (Open Center System)
- Group 16 - Hydraulic Pump (Closed Center System)
- Group 20 - Rockshaft (Open Center System)
- Group 21 - Rockshaft (Closed Center System)
- Group 25 - Selective Control Valves (Spool Type; Open Center System)
- Group 26 - Selective Control Valves (Poppet Type; Closed Center System) and Breakaway Coupler
- Group 30 - Remote Cylinder

### SECTION 80 - MISCELLANEOUS

- Group 05 - Belt Pulley
- Group 10 - Seat
- Group 15 - Front Wheels

*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.*

Copyright© 1977  
DEERE & COMPANY  
Moline, Illinois  
All rights reserved

**Thanks very much for your reading,  
Want to get more information,  
Please click here, Then get the complete  
manual**

**JustClickHere** 

**NOTE:**

**If there is no response to click on the link above,  
please download the PDF document first, and then  
click on it.**

**Have any questions please write to me:  
[admin@servicemanualperfect.com](mailto:admin@servicemanualperfect.com)**

## 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

# GENERAL

### CONTENTS OF THIS SECTION

#### GROUP 5 — SPECIFICATIONS

	Page
Serial numbers . . . . .	5-2
Model numbers . . . . .	5-2
Engine . . . . .	5-2
Engine clutch . . . . .	5-2
Electrical system . . . . .	5-2
Transmission . . . . .	5-2
Differential and final drives . . . . .	5-2
Differential lock . . . . .	5-2
PTO . . . . .	5-3
Hydraulic system . . . . .	5-3
Power steering . . . . .	5-3
Hydraulic brakes . . . . .	5-3
Capacities . . . . .	5-3
Travel speeds . . . . .	5-3
Front and rear wheels . . . . .	5-3
Dimensions and weights . . . . .	5-3

#### GROUP 10 — PREDELIVERY, DELIVERY AND AFTER-SALES INSPEC- TIONS

Predelivery inspection . . . . .	10-1
Delivery inspection . . . . .	10-4
After-sales inspection . . . . .	10-4

#### GROUP 15 — LUBRICATION AND PERIODIC SERVICE

Lubrication and periodic service . . . . .	15-1
--	------

#### GROUP 20 — ENGINE AND TRACTOR TUNE-UP

General information . . . . .	20-1
Preliminary engine testing . . . . .	20-1
Engine tune-up . . . . .	20-2
Checking engine performance . . . . .	20-3
Tractor tune-up . . . . .	20-3
Standard torques . . . . .	20-5

#### GROUP 25 — TRACTOR SEPARATION (Open Center System)

	Page
Separating between engine and tractor front end . . . . .	25-1
Removing and installing engine . . . . .	25-3
Removal and installation of clutch housing . . . . .	25-4
Removal and installation of final drives . . . . .	25-6
Removal and installation of rockshaft . . . . .	25-7
Torques for hardware . . . . .	25-8
Special tools . . . . .	25-8

#### GROUP 26 — TRACTOR SEPARATION (Closed Center System)

Separating between engine and tractor front end . . . . .	26-1
Removing and installing engine . . . . .	26-3
Removal and installation of clutch housing . . . . .	26-5
Removal and installation of final drives . . . . .	26-7
Removal and installation of rockshaft . . . . .	26-8
Torques for hardware . . . . .	26-9
Special tools . . . . .	26-9

# 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 cm <sup>3</sup> (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
<b>COOLING SYSTEM</b>		
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
<b>ELECTRICAL SYSTEM</b>		
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.	.....	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	Specification	Reference
<b>TIRES AND WHEELS</b>		
Check tire inflation pressure	.....	Operator's manual
Retighten wheel bolts	.....	Section 80, group 15 and Operator's manual
<b>LUBRICATION</b>		
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
<b>ENGINE</b>		
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
<b>OPERATION</b>		
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
<b>Check PTO operation</b>	.....	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
<b>GENERAL</b>		
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
<b>COOLING SYSTEM</b>		
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	.....	.....
<b>FUEL SYSTEM</b>		
Check fuel filter for water or sediment and clean transfer pump screen	.....	Operator's manual
Check line connections	.....	.....
<b>ELECTRICAL SYSTEM</b>		
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
<b>LUBRICATION</b>		
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
<b>ENGINE</b>		
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
<b>GENERAL</b>		
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 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 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
<b>AIR INTAKE SYSTEM</b>		
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)	.....	.....
<b>CYLINDER HEAD</b>		
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
<b>BATTERIES</b>		
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
<b>ALTERNATOR</b>		
Check fan belt tension	19 mm (3/4 in.) deflection with 90 N (20 lbs.) force	Section 20, group 35
<b>FUEL SYSTEM</b>		
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