



4030 Tractor



JOHN DEERE

TECHNICAL MANUAL 4030 Tractor

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4030 TRACTOR
TECHNICAL MANUAL
TM-1055 (JAN-78)

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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**

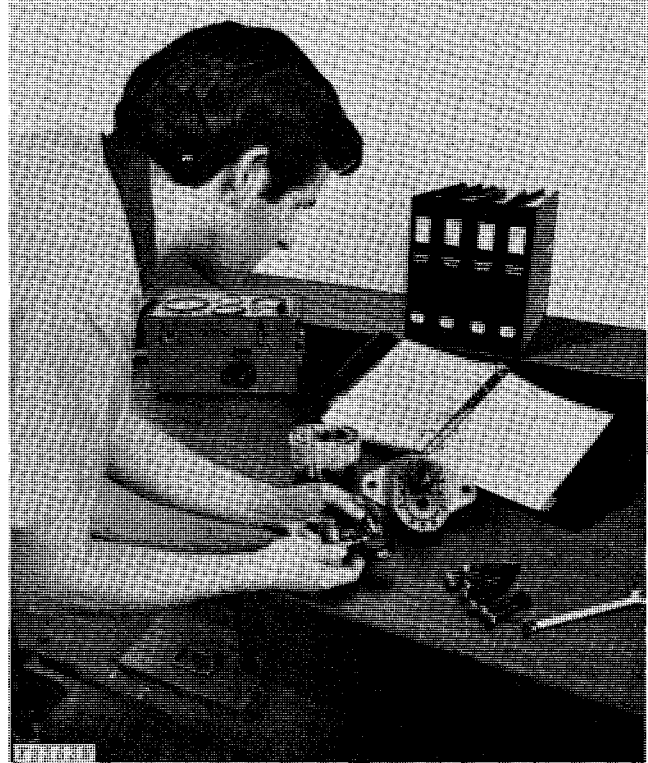
The two kinds of manuals work as a team to give you both the general background and technical details of shop service.

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 people and for reference by experienced people.

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 serviceperson 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 manual*
- *Exploded views showing parts relationship*
- *Photos showing service techniques*
- *Specifications grouped for easy reference*

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 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.

Section 10 GENERAL

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Group 5

GENERAL TRACTOR SPECIFICATIONS

PTO HORSEPOWER (2500 engine rpm):

Diesel (official test)	80.33
Gasoline (factory observed)	80

ENGINE

Type	4-stroke cycle, 6-cylinder in-line, valve-in-head
------------	--

Bore and Stroke

Diesel	4.02 x 4.33 in. (102.1 x 109.9 mm)
Gasoline ..	3.86 x 4.33 in. (98.0 x 109.9 mm)

Displacement

Diesel	329 cu. in. (5396 cm ³)
Gasoline	303 cu. in. (4971 cm ³)

Compression Ratio

Diesel -E368190)	16.2 to 1
(E368191-	16.7 to 1
Gasoline (all)	7.6 to 1

Firing order

	1-5-3-6-2-4
--	-------------

ENGINE (Continued)

Engine Speeds:	
Working range	1500 to 2500 rpm
Slow idle	800 rpm

COOLING SYSTEM

Type	Pressurized system with centrifugal pump
Engine temperature control	Heavy-duty thermostat

LUBRICATION SYSTEM

Type	Force-feed, pressurized with full-flow oil filter
------------	--

FUEL SYSTEM

Diesel	Direct injection, inlet metering, distributing-type Diaphragm-type fuel pump
--------------	--

FUEL SYSTEM (Continued)

Gasoline Pressure system, diaphragm-type fuel pump, single barrel updraft carburetor with electrical shut-off

CAPACITIES

Fuel tank 35 U.S. gals (132.5 L)
 Cooling system* 22 U.S. qts. (20.8 L)
 Crankcase 17 U.S. qts. (16.1 L)
 Transmission-Hydraulic system**
 Quad-Range or
 Perma-Clutch 13 U.S. gals. (49.2 L)
 Belt pulley 2½ U.S. pts. (1.2 L)

ELECTRICAL SYSTEM

Type 12-volt, negative grounded Batteries:

Diesel Two, 6-volt, group 5D, 800 amps cold cranking at 0° F, 376 minutes reserve capacity at 25 amps; or two 6-volt, group 1, 565 amps cold cranking at 0° F, 195 minutes reserve capacity at 25 amps
 Gasoline One, 12-volt, group 30H, 485 amps cold cranking at 0° F, 160 minutes reserve capacity at 25 amps

Alternator

	with Sound-Gard Body	without Sound-Gard Body
(-16363)	55 amp	37 amp
(16364-)	61 amp	37 amp

SYNCHRO-RANGE TRANSMISSION

Type Synchro-range, constant mesh Clutch
 Perma-Clutch Hydraulically operated, multiple disk, wet clutch
 Gear selections 8 forward and 2 reverse
 Shifting 4 stations, synchronized forward speed shifting within stations

QUAD-RANGE TRANSMISSION

Type 2 speed, power shifted planetary and an 8 speed, synchro-range transmission with constant mesh gears
 Perma-Clutch Hydraulically operated multiple disk, wet clutch
 Gear selections 16 forward and 6 reverse
 Shifting
 Range selector lever Collar shifted between ranges
 Speed selector lever
 Forward-rearward lever movement Mechanically synchronized forward speed shifting of synchro-range transmission
 Sideways lever movement Power shifted planetary transmission speeds

POWER TAKE OFF

Type Independent PTO with rear power take-off controlled by hand-operated clutch lever.
 Stub shafts used for dual PTO speed conversion.
 Speed (2108 engine rpm)
 Dual speed 540 or 1000 rpm
 Single speed 1000 rpm
 Single speed 540 rpm
 PTO shaft to drawbar hitch point
 540 rpm 14 in.
 1000 rpm 16 in.

*Add 2 U.S. qts (1.9 L) on tractors equipped with a heater.

**Add approx. 4½ (17 L) gallons to capacity if equipped with Power Front Wheel Drive.

540 14 in. (356 mm)
 1000 rpm 16 in. (406 mm)

GROUND SPEED IN MPH (km/h), 16.9-34 REAR TIRES

SYNCHRO-RANGE TRANSMISSION		
Gear	1500 rpm	2500 rpm
1st	1.2 (1.9)	2.0 (3.2)
2nd	1.9 (3.1)	3.1 (5.0)
3rd	2.4 (3.9)	4.0 (6.4)
4th	3.1 (5.0)	5.2 (8.4)
5th	3.8 (6.1)	6.3 (10.1)
6th	5.1 (8.2)	8.5 (13.7)
7th	6.4 (10.3)	10.6 (17.0)
8th	10.5 (16.9)	17.4 (28.0)
1st rev	2.4 (3.9)	—
2nd rev	3.7 (6.0)	—

QUAD-RANGE TRANSMISSION					
Range	Speed	Forward		Reverse	
		1500	2500	1500	2500
A	1	1.1 (1.8)	1.9 (3.0)	1.9 (3.0)	3.1 (5.0)

QUAD-RANGE TRANSMISSION					
Range	Speed	Forward RPM		Reverse RPM	
		1500	2500	1500	2500
A	1	1.1 (1.8)	1.9 (3.0)	1.9 (3.0)	3.1 (5.0)
	2	1.5 (2.4)	2.4 (3.9)	2.4 (3.9)	3.9 (6.3)
	3	1.9 (3.0)	3.2 (5.1)	—	—
	4	2.4 (3.9)	4.0 (6.4)	—	—
B	1	2.6 (4.2)	4.4 (7.1)	4.2 (6.8)	7.1 (11.4)
	2	3.3 (5.3)	5.5 (8.9)	5.4 (8.7)	9.0 (14.5)
	3	4.4 (7.1)	7.3 (11.7)	—	—
	4	5.5 (8.9)	9.2 (14.8)	—	—
C	1	3.0 (4.8)	5.0 (8.0)	4.9 (7.9)	8.1 (13.0)
	2	3.8 (6.1)	6.4 (10.3)	6.2 (10.0)	10.4 (16.7)
	3	5.0 (8.0)	8.4 (13.5)	—	—
	4	6.4 (10.3)	10.6 (17.0)	—	—
D	1	4.6 (7.4)	7.7 (12.4)	—	—
	2	5.9 (9.5)	9.8 (15.8)	—	—
	3	7.7 (12.4)	12.9 (20.8)	—	—
	4	9.8 (15.8)	16.4 (26.4)	—	—

STEERING

Type Hydraulically actuated power, manual operation in case of hydraulic failure.

FRONT TIRES* 6.00-16, 6-ply rating

REAR TIRES* 16.9-34, 6-ply rating

WHEEL TREADS .. See tractor operator's manual

DIMENSIONS

	Tractor with Roll-O-Matic less Roll-Guard	Tractor with wide front axle and Sound-Gard Body
Wheel base	97¼ in. (2470 mm)	101 in. (2565 mm)
Over-all length	154¾ in. (3921 mm)	154¾ in. (3921 mm)
Height to muffler cover	85⅞ in. (2162 mm)	114⅞ in. (2918 mm)
Height to steering wheel	78½ in. (1994 mm)	—
Height to top of Sound-Gard Body	—	107¼ in. (2724 mm)
Over-all width (regular axle)	86¼ in. (2190 mm)	86¼ in. (2190 mm)
Shipping weight**	6846 lbs. (3105 kg)	8440 lbs. (3828 kg)

*Additional tire sizes available.

**With equipment for average field service, less fuel and ballast. Add 125 lbs. (57 kg) if equipped with a Quad-Range transmission. Add 450 lbs. (204 kg) for a 4-post Roll-Gard. Subtract 250 lbs. (113 kg) for tractors with a gasoline engine.

(Specifications and design subject to change without notice.)

HYDRAULIC SYSTEM

Type Closed center, constant pressure.
 Actuates power steering, power brakes, Power Front Wheel Drive, and implement control.
 Standby pressure 2250 psi (155 Bar)

BRAKES

Type Hydraulically actuated power disk type operating in oil.

Group 10

PREDELIVERY, DELIVERY AND AFTER-SALE SERVICE

PREDELIVERY SERVICE

Because of the shipping factors involved, plus extra finishing touches that are necessary to promote customer satisfaction, proper predelivery service is of prime importance to the dealer.

A tag pointing out the factory-recommended procedure for predelivery service is attached to each new tractor before it leaves the factory.

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 certify that the tractor has received the proper predelivery service when the portion of the customer's John Deere Delivery Receipt is completed.

Temporary Tractor Storage

Service	Specification	Reference
Check radiator for coolant loss and antifreeze protection	1½ inches above baffle .....	.....
Reduce shipping pressure of tires .....	.....	Operator's manual
Cover tractor and tires for protection and cleanliness .....	.....	.....

Before Delivering Tractor

Service	Specification	Reference
COOLING SYSTEM		
Inspect radiator for coolant loss	1½ inches above baffle .....	.....
Check antifreeze protection
ELECTRICAL SYSTEM		
Install electrolyte and charge batteries	FOS-20
Date code battery	FOS-20
Install light switch knob
Clean terminals and connect battery cables	Section 40, Group 5
Check light operation and adjustment. Remove flasher if required by local government regulations	Operator's manual

Before Delivering Tractor—continued

Service	Specification	Reference
TIRES AND WHEELS		
Adjust pressure of tires		Operator's manual
Check front wheel hub bolts, rear wheel rim clamp nuts, and rear wheel retainer cap screws for tightness	Front hub bolts — 100 ft-lbs Rear hub bolts — 300 ft-lbs Rim clamp nuts — 170 ft-lbs	.....
LUBRICATION		
Check crankcase oil level	To upper marks on dipstick	Operator's manual
Check transmission-hydraulic system oil level	To top of "SAE" range on dipstick. Type 303 Special-Purpose Oil	Operator's manual
Lubricate grease fittings	John Deere Multi-Purpose Lubricant or an equivalent SAE multipurpose-type grease	Operator's manual
Check distributor lubrication	Distributor cam lubricant	Section 40, Group 25
ENGINE		
Check air cleaner		Operator's manual
Fill fuel tank	Diesel and gasoline — 35 U.S. gallons	Operator's manual
Start engine		Operator's manual
Check operation of flasher, gauges, and indicator lamps		Operator's manual
Check throttle linkage for free operation		Section 30, Group 25
Check engine timing	Diesel — TDC Gasoline — S mark 24° BTDC, 2500 rpm	Section 30, Group 15 Section 40, Group 25
Check engine idle speeds	Fast idle — 2660 rpm diesel; 2700 rpm gasoline Slow idle — 800 rpm	Section 30, Group 25

Before Delivering Tractor—continued

Service	Specification	Reference
OPERATION		
Shift transmission through all speeds		Operator's manual
Check power takeoff operation		Operator's manual
Check differential lock operation		Operator's manual
Check brakes and brake accumulator	Not to exceed 3 in. immediately after stopping engine	Section 70, Group 25
Check hydraulic system operation: Rockshaft, steering, and remote cylinder		Operator's manual
Check implement hitch operation		Operator's manual
Check seat operation		Operator's manual
Check operation of air conditioning system and heater system (if equipped)		Operator's manual
Check air conditioner compressor drive belt	¼ in. deflection, 15 lb. pull	Operator's manual
Check Sound-Gard Body mount caps	Tighten until effort is required to rotate cap by hand (early models without holes); 9-11 ft-lbs torque required to rotate cap (late models with holes).	Section 10, Group 25
Adjust headlights and check operation		Operator's manual

GENERAL

Tighten accessible nuts and cap screws		
Clean tractor and touch up paint		

DELIVERY SERVICE

A thorough discussion of the operation and service of a new tractor at the time of delivery helps to assure complete customer satisfaction. Proper delivery should be an important phase of a dealer's program. A portion of the John Deere Delivery Receipt emphasizes the importance of proper delivery service.

Many complaints have arisen simply because the owner was not shown how to operate and service his new tractor properly. Spend enough time, at the customer's convenience, to introduce the owner to his new tractor and explain to him how to operate and service it properly.

The following procedure is recommended before the serviceman and owner complete the delivery acknowledgments portion of the delivery receipt.

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

1. Controls and instruments.
2. How to start and stop the engine.
3. The importance of the break-in period.
4. How to use liquid or cast-iron ballast.
5. All functions of the hydraulic system.
6. Using the power takeoff.
7. The importance of safety.
8. The importance of lubrication and periodic services.

After explaining and demonstrating the above features, have the owner sign the delivery receipt and give him the operator's manual.

AFTER-SALE INSPECTION

Purpose of Inspection

The purchaser of a new John Deere tractor is entitled to a free inspection within the warranty period after the equipment has been "run in." The terms of this after-sale inspection are outlined on the back of the John Deere Delivery Receipt.

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.

If the recommended after-sale service inspection

is followed, the dealer can eliminate a needless volume of service work by preventing minor irregularities from developing into serious problems later on. This will promote strong dealer-customer relations and present the dealer an opportunity to answer questions that may have arisen during the first few days of operation. During the inspection service, the dealer has the further opportunity of promoting the possible sale of other new equipment.

The following inspection program is recommended within the first 100 hours of tractor operation.

Inspection Procedures

Service	Specification	Reference
COOLING SYSTEM		
Check radiator coolant level	1½ inches above baffle	.....
Clean external surface of radiator core .....		.....
Check hoses and connections for leaks .....		.....
FUEL SYSTEM		
Drain contaminants from sediment bowl (Gasoline), and from filter (Diesel)		Operator's manual

Inspection Procedure—continued

Service	Specification	Reference
Tighten loose connections and check entire system for leaks. Correct if necessary		
Check air cleaner cup, element, and unloading valve. Clean element if necessary		Operator's manual

ELECTRICAL SYSTEM

Check specific gravity of battery(s) ...	Full charge — 1.260 at 80°F	Operator's manual
Check level of battery electrolyte	To bottom of filler neck in each cell	Operator's manual
Check belt tension	1-inch deflection, 25-pound force	Operator's manual
Start engine and check action of starter, lights, and indicator lamps		Operator's manual

LUBRICATION

Check crankcase oil level	To upper marks on dipstick	Operator's manual
Check transmission-hydraulic system oil level	In "SAFE" range on dipstick. Use John Deere Type 303 Special-Purpose Oil	Operator's manual
Check distributor lubrication	Distributor cam lubricant	Section 40, Group 25

ENGINE

Check valve clearance	Diesel, Intake — 0.014 in. Exhaust — 0.018 in. Gasoline, Intake — 0.014 in. Exhaust — 0.022 in.	Operator's manual
Check engine speed under load, fuel consumption, and horsepower		Group 15 of this Section

HYDRAULIC SYSTEM

Check rockshaft and remote cylinder operation		Operator's manual
Check power steering	Smooth, easy operation	Section 70, Group 20
Check brakes and brake accumulator	Not to exceed 3 in. immediately after stopping engine.	Operator's manual Section 70, Group 25

Inspection Procedure—continued




Service	Specification	Reference
CLUTCHES and DIFFERENTIAL LOCK		
Shift transmission through all speeds		Operator's manual
Check PTO clutch and brake operation		Section 50, Group 35 and 40
Check differential lock operation		Operator's manual
Check air conditioning and heater system for proper operation (if equipped)		Operator's manual
Check air conditioner compressor drive belt	1/4 in. deflection, 15 lb. pull	Operator's manual

NUTS and CAP SCREWS

Tighten accessible nuts and cap screws that seem to require adjustment		
--	--	--

TORQUE CHART

RECOMMENDED TORQUE IN FT-LBS COARSE AND FINE THREADS

Bolt Diameter			
	Plain Head*	Three Radial Dashes*	Six Radial Dashes*
1/4	6	10	14
5/16	13	20	30
3/8	23	35	50
7/16	35	55	80
1/2	55	85	120
9/16	75	130	175
5/8	105	170	240
3/4	185	300	425
7/8	160	445	685
1	250	670	1030

*The types of bolts and cap screws are identified by head markings as follows:

Plain Head: regular machine bolts and cap screws (B-grade).

3-Dash Head: tempered steel high-strength bolts and cap screws (D-grade).

6-Dash Head: tempered steel extra high-strength bolts and cap screws (F-grade).

Group 15 TUNE-UP

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

the condition is satisfactory, proceed with the tune-up. Choose from the following procedures only those necessary to restore the unit.

Preliminary Engine Testing

Operation	Specification	Section-Group Reference
Dynamometer Test (at 2500 engine full load rpm)	Compare with previous recorded output; compare with output after tune-up. See chart below	FOS 30 Manual, Chapter 12
Compression Test		
Diesel	300 psi at 250 rpm	FOS 30 Manual, Chapter 12
Gasoline	120 psi at 200 rpm	FOS 30 Manual, Chapter 12
Manifold Depression Test (gasoline)	15-20 inches mercury at slow idle	FOS 30 Manual, Chapter 12
Engine Coolant Check Test	No air bubbles or oil film in radiator	FOS 30 Manual, Chapter 12

Engine Tune-up

Operation	Specification	Section-Group Reference
Air Intake System		
Service air cleaner and check system for leaks		FOS 30 Manual, Chapter 12
Check system for restrictions using water manometer		30-10
Normal reading (inches of water):		
Diesel—with extension	5½ in. at 2500 rpm	30-10
without extension	4½ in. at 2500 rpm	30-10

ENGINE-PTO SPEED RELATIONSHIP
 (Diesel and Gasoline, equipped with Syncro-Range or Quad-Range transmission)

Engine RPM	PTO Speed	Rated PTO Horsepower*
2108	540 or 1000	77.72
2500 (Full load)	639 or 1186	80.33
2660 (Diesel fast idle)	680 or 1262	—
2700 (Gasoline fast idle)	690 or 1281	—

*Diesel, Official Test



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Engine Tune-up—continued

Operation	Specification	Section-Group Reference
Air Intake System—Continued		
Normal reading (inches of water):		
Gasoline—with extension	4½ in. at 2500 rpm (full load)	30-10
without extension	3½ in. at 2500 rpm (full load)	30-10
Maximum permitted reading	25 in. at 2500 rpm (full load)	30-10
Check restriction indicator light operation	24-26 in. at 2500 rpm (full load)	30-10
Exhaust System		
Check system for leaks		FOS 30 Manual, Chapter 12
Check muffler and exhaust pipe for restrictions		FOS 30 Manual, Chapter 12
Crankcase Ventilating System		
Check system for restrictions		FOS 30 Manual, Chapter 12
Cooling System		
Clean grille screen, radiator core, and oil cooler core		20-30
Clean and flush system; check thermostat		20-30
Check pressure cap	6.25 to 7.50 psi release pressure	20-30
Cylinder Head and Valves		
Tighten cylinder head cap screws	110 ft-lbs in torque sequence	20-10
Set valve clearance	Diesel — Intake 0.014 in. Exhaust 0.018 in.	20-10
	Gasoline — Intake 0.014 in. Exhaust 0.022 in.	20-10
Ignition System		
Inspect system; install new points, condenser, and plugs (if existing ones are good, clean and regap them)		
Contact point gap	0.020 in.	40-25
Cam angle	36° to 48°	40-25
Spark plug gap	Gasoline — .025 in.	40-25
Time distributor (2500 engine rpm)	Gasoline — S mark 24° BTDC	40-25
Gasoline Fuel System		
Clean sediment bowl		30-20
Check system for leaks		30-20
Check fuel pump pressure	3½ to 4½ psi	30-20
Clean carburetor inlet screen		30-20
Drain carburetor bowl		30-20
Install new filter		
Check choke operation		30-20