

# John Deere 2030 Tractor



JOHN DEERE

## TECHNICAL MANUAL John Deere 2030 Tractor

TM1051 (01FEB86) English

**John Deere Tractor Works**  
**TM1051 (01FEB86)**

LITHO IN U.S.A.  
ENGLISH



# 2030 TRACTOR

TECHNICAL MANUAL  
TM-1051 (Nov-74)

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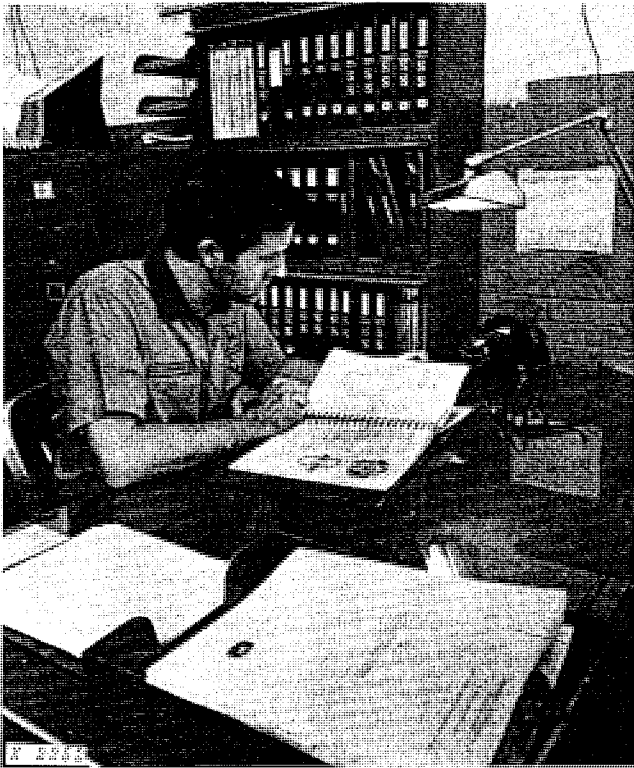
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## INTRODUCTION



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 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.

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

	Gasoline	Diesel		
ENGINE			ELECTRICAL SYSTEM	
Maximum PTO horse- power* . . . . .	60.34	60.65	Battery dry voltage . . . . .	12 volts
Number of cylinders . . . . .	4	4	Battery specific gravity at full charge (corrected to 80°F) . . . . .	1.260
Bore and stroke, inches . . . . .	4.02 x 4.33	4.02 x 4.33	Battery terminal grounded . . . . .	negative
Displacement in cubic inches . . . . .	219	219	CAPACITIES (U.S. Standard Measures)	
Compression ratio . . . . .	7.5 to 1	16.3 to 1**	Fuel tank . . . . .	19-1/2 gals.
Firing order . . . . .	1-3-4-2	1-3-4-2	Cooling system . . . . .	12 qts.
Intake valve clearance . . . . .	0.014-in.	0.014-in.	Crankcase (including filter) . . . . .	6 qts.
Exhaust valve clear- ance . . . . .	0.022-in.	0.018-in.	Transmission-hydraulic system . . . . .	10 gals.
Slow idle . . . . .	600 rpm	800 rpm***	On Mannheim tractors	
Fast idle . . . . .	2680 rpm	2650 rpm	Dry system . . . . .	9.5 gals.
			At service intervals . . . . .	7.4 gals.
			Belt pulley . . . . .	2-1/2 pts.

\*Official test at 2500 engine rpm (650 or 1210 PTO rpm)

\*\*16.2 to 1 on Mannheim tractors

\*\*\*650 rpm on Mannheim tractors

CLUTCH . . . . . Single or dual stage,  
 spring-loaded, dry  
 disk, foot-operated.

**TRANSMISSION**

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

**HI-LO SHIFT**

Hydraulic wet clutches, no clutching required. Shifting from high to low decreases ground speed 25.8 percent (21 percent on Mannheim tractors) and increases pull power up to 35 percent (27 percent on Mannheim tractors) in any of the transmission speeds.

**REVERSER**

Hydraulic wet clutches, no clutching required. Provides reverse speeds for gear selections 1 through 4 which are 16% faster than corresponding forward speeds.

**BRAKES** ..... Hydraulically actuated, wet-disk type.

**DIFFERENTIAL AND FINAL DRIVES**

Type ..... Planetary reduction final drives with spiral bevel gear drive differential.

Differential lock ... Hand or foot operated mechanical lock, spring-loaded out of engagement.

**POWER TAKE-OFF**

Type ..... Continuous-running or independent types available in 540 and/or 1000 rpm options. On Mannheim tractors, independent types only.

**HYDRAULIC SYSTEM**

Type ..... Closed center, constant pressure.  
Standby oil pressure ..... 2250 psi

**STEERING**

Type ... Hydraulically actuated, with manual provision in case of hydraulic failure.

**FRONT TIRES\***

Size	Ply Rating
6.00-16	6
7.5L-15	6
7.50-16	6
6.00-14	4
6.00-16	4
27/9.50-15	10
6.00-16	6
7.5L-15	6
7.50-16	6

**REAR TIRES\***

13.6-28	4
14.9-28	6
16.9-28	6
14.9-24	6
16.9-24	6
18.4-26	6
12.4-36	4
13.6-38	4
15.5-38	6

\* Additional tire sizes available.

**DIMENSIONS\***

Over-all height ..... 81-1/4 in.  
Over-all width, min ..... 69-1/2 in.  
Over-all length  
(with 3-point hitch) ..... 139-1/2 in.  
Shipping weight (approx.)  
Gasoline tractor ..... 4720 lbs.  
Diesel tractor ..... 4800 lbs.

\* 14.9-28 rear tires and 6:00-16 front tires

# Group 10

## PREDELIVERY, DELIVERY, AND AFTER-SALE SERVICES

### 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.

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 that portion of the customer's John Deere Delivery Receipt is completed.

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

### Temporary Tractor Storage

Service	Specification	Reference
Check radiator for coolant loss and antifreeze protection .....	Midway between core and filler neck .....	.....
(Mannheim Tractors)		
Electrical System		
<b>IMPORTANT: When the tractor is delivered red cable is not connected to alternator terminal "B+".</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 key switch before stopping the engine by means of the fuel pump shut-off cable. Further it is recommended to use additional current (lights) while 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 35
Remove batteries. Drain electrolyte and store batteries .....	Store at room temperature .....	.....
(All Tractors)		
Drain fuel system (gasoline) .....		Operator's manual
Reduce shipping pressure of tires .....		Operator's manual
Cover tractor and tires for protection and cleanliness .....		.....

## Before Delivering Tractor

Service	Specification	Reference
Electrical System (U.S. Tractors)		
Remove resistor and connect wiring lead (red) to alternator output terminal. Do not attempt to polarize Alternator connected. Serial No. (187301-	)	Section 40, Group 10
Install electrolyte and charge batteries. Tractors Serial No. (187301-	)	FOS-20 Manual
Check electrolyte level and specific gravity		
Punch date code on battery tag		
Check battery terminal connections		Section 40, Group 5
Check alternator belt tension	3/4-inch deflection, 20 lb. force	Operator's manual

### Electrical System (Mannheim Tractors)

**IMPORTANT: When the tractor is delivered, red cable is not connected to alternator terminal "B+".** Section 40, Group 35

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 key switch before stopping the engine by means of the fuel pump shut-off cable. Further it is recommended to use additional current (lights) while 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 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.** Section 40, Group 35

First connect positive (+) cable and then ground (-) strap of each battery. Only then start tractor engine. Section 40, Group 35

**Before Delivering Tractor—Continued**

Service	Specification	Reference
Cooling System		
Inspect radiator for coolant loss	Midway between core and filler neck	
Check antifreeze protection		
Tires and Wheels		
Adjust pressure of tires		Operator's manual
Check front wheel hub bolts, rear wheel rim clamp nuts, and rear wheel cap screws for tightness	Front hub bolts; Tires 6.00-16 or smaller . . . 85 ft-lb. Tires larger than 6.00-16 . . . 100 ft-lb. Rear hub bolts-300 ft-lb. Rim clamp nuts-170 ft-lb. Rear wheel-to-flanged axle; cast-130 ft-lb., steel wheel-100 ft-lb.	Operator's manual
Lubrication		
Check crankcase oil level	To upper marks on dipstick	Operator's manual
Check transmission-hydraulic system oil level	To top of "SAFE" range on dipstick. Type 303 Special-Purpose Oil	Operator's manual
Lubricate grease fittings	John Deere Multi-purpose Lubricant	Operator's manual
Check distributor lubrication	Distributor cam lubricant	Section 40, Group 20
Check belt pulley oil level		Operator's manual
Engine		
Check air cleaner		Operator's manual
Drain sediment from diesel fuel filter		Operator's manual
Fill fuel tank and start engine	19-1/2 U.S. gallons	Operator's manual
Check operation of starter, alternator, lights, flashers, gauges, and indicator lights		Operator's manual



**Before Delivering Tractor—Continued**

Service	Specification	Reference
Check engine timing.....	Diesel - TDC Gasoline - "S" mark, 2500 rpm	Operator's manual
Check speed control linkage for free operation .....		Section 20, Group 35 for gasoline tractors; Section 30, Group 25 or Group 55* for diesel tractors.
Check engine speeds		
Gasoline .....	Slow idle, 600 rpm High idle, 2680 rpm Foot throttle, 2800 rpm	Section 20, Group 35
Diesel .....	Slow idle, 800 rpm, 650 rpm* High idle, 2650 rpm Foot throttle, 2800 rpm, 2650 rpm*	Section 30, Group 25 or Group 55*
Operation		
Check transmission clutch free travel (tractors without reverser) .....	Approximately 1-inch free pedal travel .....	Operator's manual
Check clutch wear adjustment (tractors with reverser) .....	5-1/4 in. ....	Operator's manual
Shift transmission through all speeds .....		Operator's manual
Check power takeoff operation .....		Operator's manual
Check differential lock operation .....		Operator's manual
Check steering operation .....		Operator's manual
Check brakes .....	Bleed brakes if spongy, check for excessive pedal travel, and even position .....	Operator's manual
Check hydraulic system operation: Rockshaft, and remote cylinder .....		Operator's manual
Check 3-point hitch operation .....		Operator's manual
Check negative stop screw adjustment		
Tractors without Independent PTO .....	1/4 turn .....	Section 70, Group 30
Tractors with Independent PTO .....	1/3 turn .....	Section 70, Group 30
All Mannheim tractors .....	1/8 turn .....	Section 70, Group 30
Check operation of reverser, or Hi-Lo shift .....		Operator's Manual
Check seat operation .....		Operator's manual

\*Mannheim tractors

## Before Delivering Tractor—Continued

Service	Specification	Reference
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.

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. Enough time should be devoted, at the customer's convenience, to introducing the owner to his new tractor and explaining to him how to operate and service it.

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 and belt pulley.
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

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 Procedure

Service	Specification	Reference
<b>Cooling System</b>		
Check radiator coolant level. . . . .	Midway between core and filler neck . . . . .	
Clean external surface of radiator core . . . . .		
Check hoses and connections for leaks . . . . .		
<b>Fuel System</b>		
Remove water and foreign matter from fuel pump and filter sediment bowls . . . . .		Operator's manual
Bleed fuel system . . . . .		Operator's manual
Tighten loose connections and check entire system for leaks. Correct if necessary . . . . .		
Check air cleaner element and unloading valve. Clean element if necessary . . . . .		Operator's manual
<b>Electrical System</b>		
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

## Inspection Procedure—Continued

Service	Specification	Reference
Check belt tension .....	3/4-inch deflection with a 20 lb. force .....	Operator's manual
Start engine and check operation 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 Spec- cial-Purpose Oil .....	Operator's manual
Check distributor lubrication .....	Distributor cam lubricant .....	Section 40, Group 20
Engine		
Check valve clearance (static) .....	Intake: 0.014 in. Exhaust: Gasoline-0.022 in. Diesel -0.018 in. ....	Operator's manual
Check engine speed (under load), and horsepower .....	Specification .....	Group 15 of this Section.
Operation		
Check transmission clutch free trav- el (tractors without reverser) .....	Approximately 1-inch free pedal travel .....	Operator's manual
Check clutch wear adjustment (tractors with reverser) .....	5-1/4 in. ....	Operator's manual
Shift transmission through all speeds .....		Operator's manual
Check Reverser, Hi-Lo operation .....		Operator's manual
Check Power Take-Off opera- tion .....		Section 50, Groups 35 & 40
Check differential lock operation .....		Operator's manual
Check rockshaft and remote cylin- der operation .....		Section 70, Group 30

**Inspection Procedure—Continued**

Service	Specification	Reference
Check negative stop screw adjustment		
Tractors without Independent		
PTO .....	1/4 turn .....	Section 70, Group 30
Tractors with Independent		
PTO .....	1/3 turn .....	Section 70, Group 30
Mannheim tractors .....	1/8 turn .....	Section 70, Group 30
Check steering system operation .....	Smooth, without excessive freeplay .....	Section 70, Group 20
Check brakes .....	Bleed brakes if spongy, check for excessive pedal travel, and even position .....	Section 70, Group 25
Nuts and Cap Screws		
Tighten accessible nuts and cap screws that seem to require adjustment .....		

# Group 15 TUNE-UP

## GENERAL INFORMATION

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 rpm, full load)	Compare with previous recorded output; compare with output after tune-up	FOS 30 Manual, Chapter 12
Compression Test (minimum readings)		
Diesel	300 psi at full cranking speed	FOS 30 Manual, Chapter 12
Gasoline	120 psi at full cranking speed	FOS 30 Manual, Chapter 12
Manifold Depression Test (gasoline)	15 to 20 inches Mercury, engine 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 (full-load speed):		
Normal reading with clean filter element (inches of water)	Diesel - 3-1/2 inches Gasoline - 2-1/2 inches	FOS 30 Manual, Chapter 12
Maximum permitted reading	25 in. at 2500 rpm (full load)	FOS 30 Manual, Chapter 12
Exhaust System		
Check system for leaks		FOS 30 Manual, Chapter 12
Check muffler and exhaust pipe for restrictions		FOS 30 Manual, Chapter 12

## Engine Tune-Up—Continued

Operation	Specification	Section-Group Reference
Crankcase Ventilating System		
Check system for restrictions .....		FOS 30 Manual, Chapter 12
Cooling System		
Clean grille screen, radiator core, and oil cooler core .....		20-35
Clean and flush system; check thermostat opening temperature, if necessary .....		20-35
Check pressure cap .....	6.25 to 7.50 psi release pressure .....	20-35
Cylinder Head and Valves		
Torque cylinder head cap screws .....	110 ft-lbs in sequence .....	20-10
Set valve clearance .....	Intake-0.014 inch Exhaust-0.022 inch (gasoline) 0.018 inch (diesel) .....	20-10
Ignition System		
Inspect system; install new points, condenser, and plugs		
Points .....	0.020 in. (66-72 degrees dwell) .....	40-20
Spark plugs .....	0.025 in.; 35 ft-lbs torque .....	40-20
Time distributor .....	"S" mark, 2500 rpm .....	40-20
Gasoline Fuel System		
Check fuel tank for water or other foreign material .....		30-20
Change fuel filter .....		30-20
Check system for leaks .....		30-20
Check fuel pump pressure .....	3-1/2 to 4-1/2 psi .....	30-20
Clean carburetor inlet screen .....		30-20
Drain carburetor bowl .....		30-20
Check choke operation .....		30-20
Check carburetor load needle adjustment .....	Engine at high idle, turn in load needle until engine misses, turn load needle out until engine runs smooth, then turn out one extra turn .....	30-25
Adjust throttle linkage .....	Foot pedal - 2800 rpm Hand Throttle High idle - 2680 rpm Slow idle - 600 rpm .....	30-25

## Engine Tune-Up—Continued

Operation	Specification	Section-Group Reference
<b>Diesel Fuel System</b>		
Check fuel tank for water or other foreign material		30-15
Check fuel pump pressure	3-1/2 - 4-1/2 psi	30-15
Change filter		30-15
Injection Pump:		
Service and check timing	TDC	30-15,30-45*
	4° advance at 1200 rpm (no load)	30-15
Adjust throttle linkage	Foot throttle - 2800 rpm (2650 rpm*) Hand throttle	
	High idle - 2650 rpm	30-25
	Slow idle - 800 rpm (650 rpm*)	30-55*
<b>Lubrication System</b>		
Check engine oil pressure	45 - 65 psi at high idle	20-30
<b>Charging System</b>		
Check battery specific gravity	1.240 - 1.260	40-10
Check battery water consumption and electrolyte level		40-10
Clean battery, cables, and box		40-10
Check alternator belt tension	20 lb. with 3/4 in. belt deflection	40-10
Check alternator output	25 amps at 13 to 15 volts (2052 engine rpm, 3000 alternator rpm)	40-10
Check alternator regulated voltage	13.8 - 14.3 volts (operating)	40-10
<b>Starting System</b>		
Check start-safety switch operation		
Check battery voltage when starting	Min. 9 volts (cranking)	40-15
Check starter current draw	Diesel - approx. 400 amps Gasoline - approx. 170 amps	40-15
Check operation of alternator and oil pressure indicator lights		40-25

## Final Engine Test

Operation	Specification	Section-Group Reference
Carburetor mixture	Use exhaust gas analyzer and dynamometer	30-20
Dynamometer	Compare with previous recorded output. Record for future use.	FOS 30 Manual, Chapter 12

\*Mannheim tractors



## Tractor Tune-Up

Operation	Specification	Section-Group Reference
Adjust transmission clutch pedal free travel		
Tractors without reverser .....	1-inch .....	50-5,50-6 <sup>#</sup>
Tractors with reverser .....	5-1/4 inches .....	50-5
Check transmission shifting .....	.....	50-20
Check transmission for proper operation without excessive noise .....	.....	50-20
Check reverser, Hi-Lo operation .....	.....	50-10&15
Check power take off for proper operation .....	.....	50-35&40
Check differential lock operation .....	.....	50-25
Check brake pedal travel and position ...	Bleed brakes if spongy .....	70-25
Check front wheel bearing adjustment and lubrication .....	35 ft-lbs; backoff to nearest hole .....	.....
Check front wheel toe-in .....	1/8 - 3/8 in. ....	.....
Check tire inflation .....	See operator's manual .....	.....
Transmission pump .....	6 gpm at 2500 rpm .....	70-15
Main hydraulic pump .....	2200-2300 psi standby; 13.5 gpm (1.4 cu. in.), or 23 gpm (2.4 cu. in.), 2500 rpm and 2000 psi .....	70-15
Pressure control valve .....	1700-1800 psi at 1900 engine rpm .....	70-10
Rockshaft lift cycle time (78 degrees rotation) .....	1.51 - 2.31 seconds at 2100 rpm .....	70-5
Check selective control valve and remote cylinder cycle time .....	Remote cylinder (2-1/2 x 8-in.) extends in 1.5 to 2.0 sec. ....	70-5

*Hydraulic system pressures and flow rates are for conditions specified in Section 70 (tractor at operating temperature, transmission-hydraulic oil at correct temperature, proper test equipment, correct test sequence, etc.)*

*\*Mannheim tractors*

# Group 20 LUBRICATION

## GENERAL INFORMATION

Carefully written and illustrated lubrication instructions are included in the operator's manual furnished with your customer's machine. Remind him to follow these instructions.

For your convenience, the following chart shows capacities and types of lubricants for the tractor components and systems. Specifications for lubricants follow the chart.

Item	Capacity	Type of Lubricant	Interval of Service
Engine crankcase	6 U.S. quarts (including filter)	See page 20-2	10 Hours—Check 100 Hours—Drain and re-fill 200 Hours—Change filter
Transmission and hydraulic system	10 U.S. gals.*	JD303 Special-Purpose Oil (or its equivalent)	50 Hours—Check 50 Hours—Change filter (end of initial break-in) 500 Hours—Change filter 1000 Hours—Drain and re-fill. Clean screen.
Clutch throwout bearing (without reverser) early models	2 strokes	High temperature grease	200 Hours
Belt pulley	2-1/2 pts.	JD303 Special-Purpose Oil (or its equivalent) or SAE 80 multipurpose lubricant	200 Hours—Check 500 Hours—Drain, flush and refill
Grease fittings	.....	John Deere Multi-Purpose Lubricant or its equivalent	See Operator's manual
Distributor cam	Trace	Cam lubricant or high temperature grease	500 Hours
Starter	Saturate wicks	SAE 10W engine crankcase oil	1000 Hours
	Lubricate armature shaft splines during assembly	SAE 10W engine crankcase oil	.....

\*Mannheim tractors—9.5 gals., dry system; 7.4 gals., at service intervals

## LUBRICANTS

### Engine Lubricating Oils



We recommend John Deere Torq-Gard Supreme Engine Oil for use in the engine crankcase. Torq-Gard Supreme is compounded specifically for use in John Deere engines and provides superior lubrication under all conditions. NEVER PUT ADDITIVES IN THE CRANKCASE. Torq-Gard Supreme Oil was formulated to provide all the protection your engine needs. Additives could reduce this protection rather than help it.

If Torq-Gard or Torq-Gard Supreme is not used, use an engine oil that conforms to one of the following specifications:

#### SINGLE VISCOSITY OILS

API Service CD/SD  
MIL-L-2104C  
Series 3\*

#### MULTI-VISCOSITY OILS

API Service CC/SE, CC/SD, or SD  
MIL-L-46152

\* As further assurance of quality, the oil should also be identified as suitable for API service designation SD.

Depending on the expected prevailing temperature for the fill period, use oil of viscosity as shown in the following chart.

Some increase in oil consumption may be expected when SAE 5W-20 or SAE 5W oils are used. Check oil level more frequently.

Air Temperature	John Deere Torq-Gard Oil	Other Oils	
		Single Viscosity Oil	Multi-Viscosity Oil
Above 32°F.	SAE 30	SAE 30	Not recommended
-10°F. to 32°F.* *	SAE 10W-20	SAE 10W	SAE 10W-30
Below -10°F.	SAE 5W-20	SAE 5W	SAE 5W-20

\* \* SAE 5W-20 oil may be used where required to insure optimum lubrication at starting, particularly for an engine subjected to -10°F. or lower for several hours.

### Transmission Hydraulic Oils

Use only John Deere Hy-GARD Transmission and Hydraulic Oil or its equivalent in the transmission hydraulic system. Other types of oil will not give satisfactory service and may result in eventual damage. This special oil, available from your John Deere dealer, may be used in all weather conditions.

*NOTE: John Deere Hy-GARD Transmission and Hydraulic Oil may be added to or mixed with John Deere Type 303 Special-Purpose Oil.*

### Greases

John Deere Multi-Purpose Lubricant or an equivalent SAE Multipurpose-Type grease is recommended for grease fittings. Application of grease as instructed in the lubrication section of the operator's manual will provide proper lubrication and will keep contamination out of bearings.

### Storing Lubricants

A tractor can operate at top efficiency only if clean lubricants are used. Use clean containers to handle all lubricants. Store them in an area protected from dust, moisture, and other contamination.

## Group 25 SEPARATION

### SEPARATING ENGINE FROM CLUTCH HOUSING

Remove right-hand or left-hand cowl. Disconnect battery cable and ground strap. Remove battery, side grille screens, hood, muffler, and front ballast (if used). Drain cooling system.

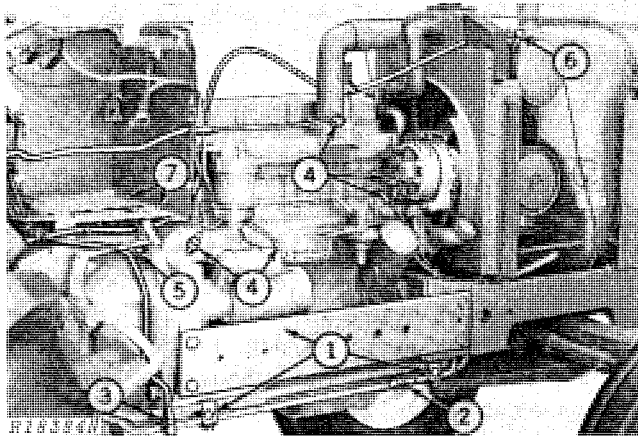


Fig. 1-Right-Hand Separation Procedures

1. Remove clamps securing hydraulic oil pipes (Fig. 1). Remove tool box and side frames (if used).

2. Disconnect hydraulic pump pressure pipe at connector.

3. Remove retaining clamp from pump inlet and reservoir return pipes. Remove power steering pressure pipe.

4. Disconnect battery cable and wiring harness from starter solenoid. Disconnect wiring harness at oil pressure switch, ignition coil, alternator, and fuel gauge sending unit connector. Remove wiring band from harness. Disconnect ether starting aid pipe (diesel).

5. Disconnect tachometer cable, and remove from clutch housing.

6. Disconnect hydraulic oil reservoir vent hose from top of reservoir, and remove hose from support clamp.

7. Remove the two cowl-to-flywheel housing cap screws (Fig. 2).

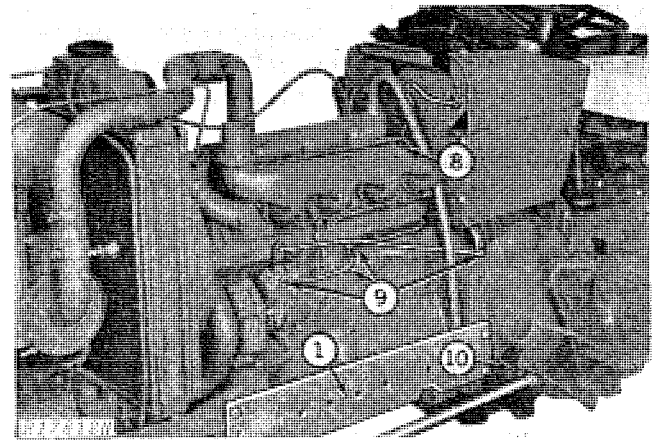


Fig. 2-Left-Hand Separation Procedures

8. Disconnect temperature gauge sensing bulb from engine:

9. Disconnect speed control rod, choke cable, carburetor or injection pump solenoid wire or fuel shut-off rod. Remove wiring bands that fasten wiring to fuel pipe. Disconnect underneath exhaust.

10. Disconnect steering drag link rod from steering arm.

Install JDG-9 support stand (Fig. 3). Place a floor jack under the rear portion of clutch housing.

**CAUTION:** Install a wood block between front axle and engine front support on both sides of tractor to prevent assembly from tipping.

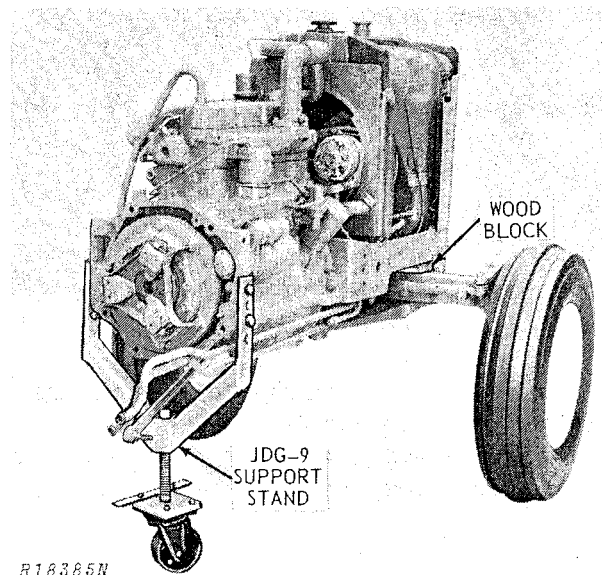


Fig. 3-Engine Separated From Clutch Housing

**Thank you very much for  
your reading. Please Click  
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MANUAL. NO WAITING**



**NOTE:**

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document first and then  
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Place a container under the rear portion of clutch housing to catch the hydraulic oil from the pump inlet pipe and the cooler return pipe, when the tractor is separated.

**IMPORTANT: Do not lose check valve assembly (tractors without Hi-Lo or reverser) in end of hydraulic pump inlet pipe when separation is made. Install caplugs on hydraulic pipes and fittings to prevent entry of foreign material.**

Remove the cap screws securing the clutch housing to the engine and roll rear portion of tractor away from engine. Place a metal support stand under transmission.

### ASSEMBLY

Remove caplugs and join engine and clutch housing. Reverse the numbered removal steps. Remove JDG-9 support stand and floor jack. Tighten cap screws to 170 ft-lbs torque.

Install battery, side grille screens, hood, muffler, and cowl. Start engine, inspect for leaks, and check operation.

### SEPARATING CLUTCH HOUSING FROM TRANSMISSION CASE

Drain the transmission (remove both drain plugs). Remove the hydraulic oil filter cover and element.

Remove the drawbar from tractor.

Disconnect the clutch return spring. Remove the left-hand and right-hand footrests. Remove the transmission shield.

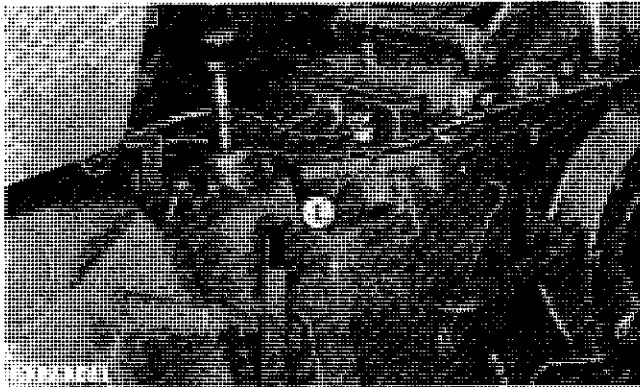


Fig. 4-Left-Hand Separation Procedures

1. Disconnect wiring harness from start-safety switch and light switch (Fig. 4).

2. Disconnect hydraulic oil reservoir vent hose (Fig. 5). Disconnect mid couplers (if equipped).

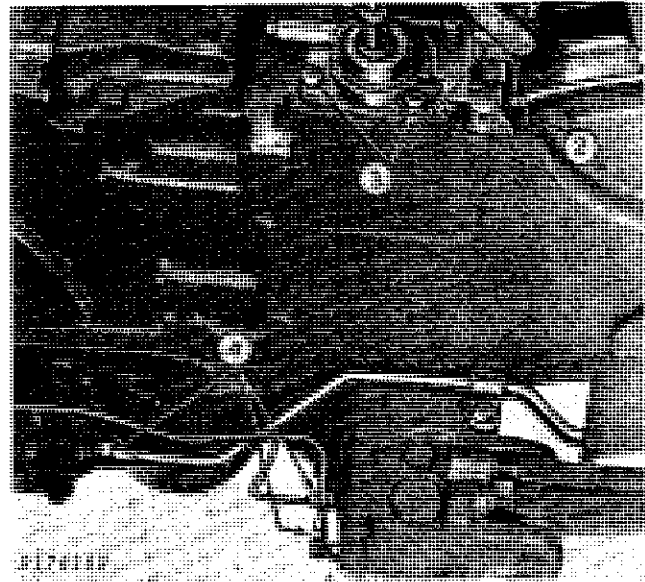


Fig. 5-Right-Hand Separation Procedures

3. Remove control valve cover, and remove shift cover cap screws (tractors with Hi-Lo shift). Remove shift cover from clutch housing. Inside the clutch housing, remove the two clutch housing-to-transmission case cap screws, and the gear shifter lever guide spring.

4. Disconnect brake pipes from brake valve housing, and disconnect pressure pipe at pressure control valve.

Install JDG-9 support stand on flywheel housing.

**CAUTION: Install a wood block between front axle and front support on both sides of tractor to prevent assembly from tipping (Fig. 6).**

Place floor jack under transmission case.

Remove the clutch housing-to-transmission case cap screws, and separate units. Install caplugs.

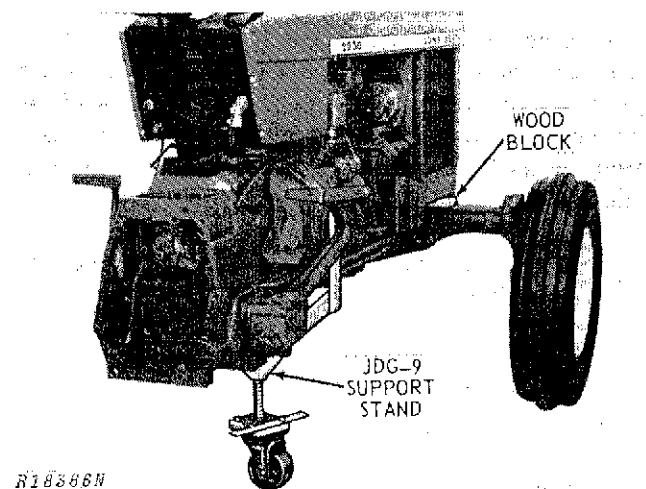


Fig. 6-Clutch Housing Separated From Transmission

## ASSEMBLY

Install a new clutch housing-to-transmission case gasket and new rubber packings. Remove caplugs.

**IMPORTANT:** If tractor has a mid-PTO, be sure spring and ball are inserted in PTO drive shaft before joining units.

Join front and rear units. Reverse the numbered separation steps. Tighten cap screws to specified torque.

Install the transmission shield, footrests, clutch return spring, and drawbar.

Install hydraulic oil filter element and cover. Fill transmission to proper level.

Remove JDG-9 support stand, floor jack, and wood blocks.

## SEPARATING TRACTOR FRONT END FROM ENGINE

Remove right-hand cowl. Disconnect battery cable and ground strap. Remove battery, side grille screens, hood, muffler, and front ballast (if used). Drain cooling system. Remove side frames (if equipped).

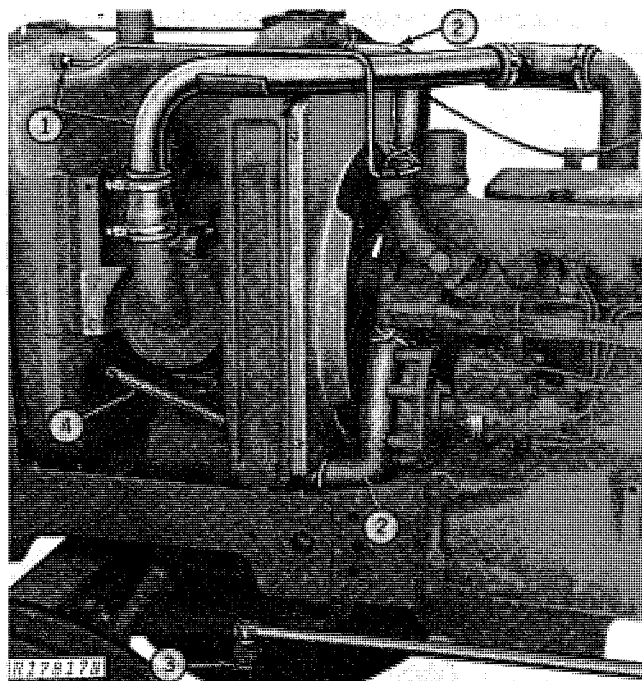


Fig. 7-Left-Hand Removal Procedures

1. Remove the air intake pipe (Fig. 7) and leak-off pipe (diesel).
2. Remove the upper and lower radiator hoses.

Litho in U.S.A.

3. Disconnect drag link and governor spring strap (gasoline).
4. Remove side grille screen springs.

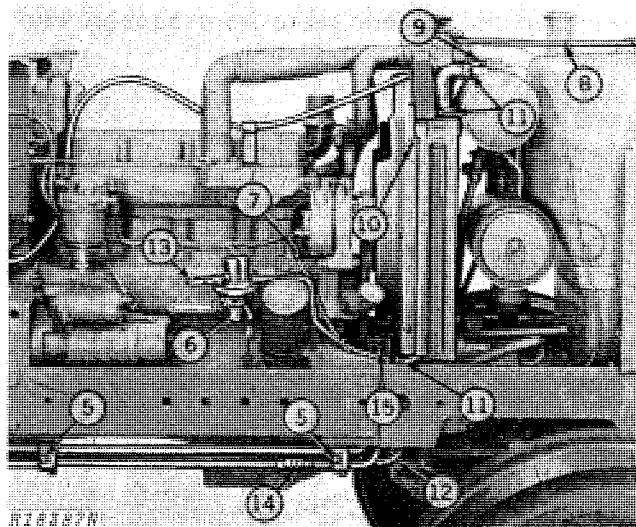


Fig. 8-Right-Hand Removal Procedures

5. Remove hydraulic pipe clamps (Fig. 8).
6. Close fuel tank valve (on bottom of tank), and remove fuel pump and oil filter.
7. Disconnect fuel gauge wire at connector.
8. Remove radiator support rod.
9. Disconnect hydraulic reservoir vent hose.
10. Remove screws fastening fan shroud to radiator, and slide fan shroud toward engine.
11. On tractors with Hi-Lo shift or reverser, disconnect the oil cooler inlet and outlet hoses. Remove radiator by sliding radiator out toward left-hand side of tractor.
12. Remove the hydraulic oil cooler return pipe (tractors with Hi-Lo shift or reverser). On tractors without Hi-Lo shift or reverser, remove the reservoir outlet pipes.
13. Remove fuel pipe.
14. Disconnect hydraulic pump pressure pipe at connector.
15. Disconnect hydraulic pump drive coupling.

**CAUTION:** Place support stands under front and rear of tractor front end (Fig. 9), to prevent tipping forward or backward. Install a wood block between front support and axle on both sides of tractor to prevent tipping sideways.

Install JD-244 lifting eyes on engine. Using an overhead hoist, attach JDG-1 engine lift sling to JD-244 lifting eyes to support engine (Fig. 12).

Remove the six engine-to-front support cap screws.

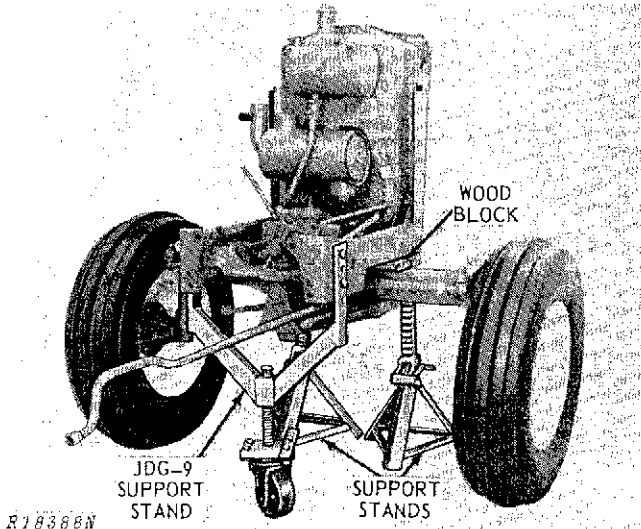


Fig. 9-Tractor Front End Separated From Engine

Carefully separate tractor front end by rolling rear section away from front end (Fig. 9). Place a metal stand under clutch housing. Install caplugs.

## ASSEMBLY

**IMPORTANT:** Be sure hydraulic pump check valve (tractors without Hi-Lo or reverser) is installed in the pump inlet pipe before joining sections. Remove caplugs.

Join sections. Tighten bolts and cap screws to specified torque (Section 10, page 30-1). Remove JDG-1 lift sling, and JD-244 lifting eyes.

Reverse the numbered removal steps. When installing radiator, tighten radiator mounting cap screws until head of cap screw is flush with bottom of front support.

Install battery, side grille screens, hood, muffler, and front ballast (if used). Fill cooling system.

Start engine and check operation.

## REMOVING ENGINE

Remove the front end from tractor as explained in SEPARATING TRACTOR FRONT END FROM ENGINE.

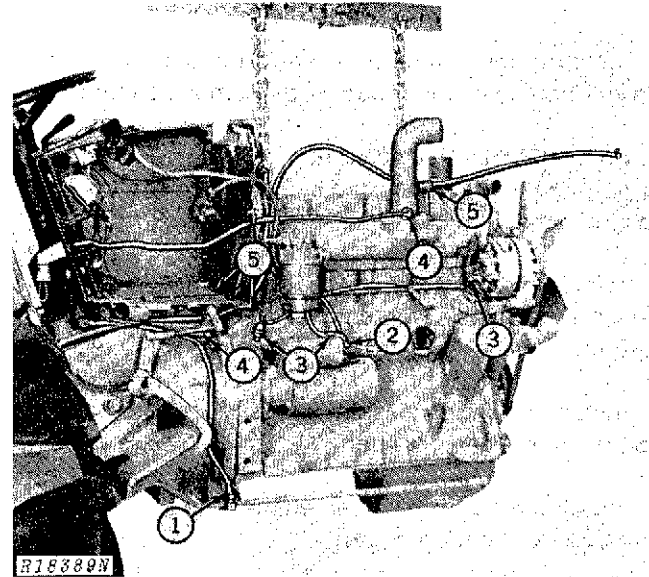


Fig. 10-Right-Hand Removal Procedure

1. Disconnect and remove the power steering pressure pipe (Fig. 10).

2. Disconnect battery cable from starter solenoid.

3. Disconnect the wiring from the oil pressure switch, starter solenoid, alternator, and coil. Remove wiring harness band from fuel pipe.

4. Disconnect speed-hour meter drive from flywheel housing, and disconnect ether starting aid pipe.

5. Remove hydraulic reservoir vent hose from support clamp. Remove cowl-to-flywheel housing cap screws.

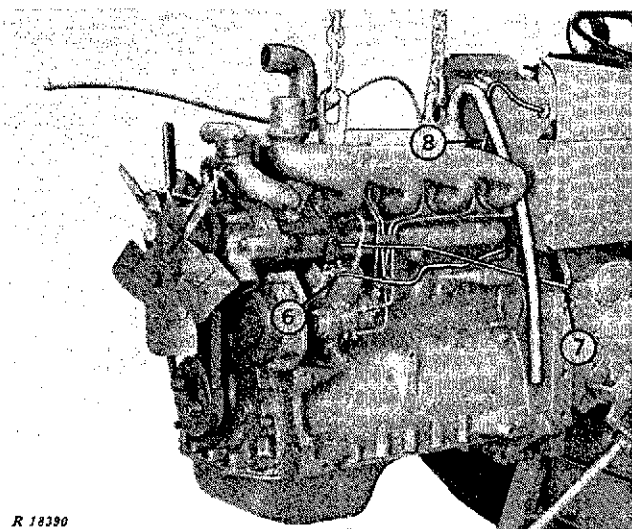


Fig. 11-Left-Hand Removal Procedure