



6030 Tractor



TECHNICAL MANUAL 6030 Tractor

TM1052 (01MAR83) English

**John Deere Tractor Works
TM1052 (01MAR83)**

LITHO IN U.S.A.
ENGLISH



6030 TRACTOR

TECHNICAL MANUAL

TM-1052 (JAN-73)

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All information, illustrations and specifications contained in this technical manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

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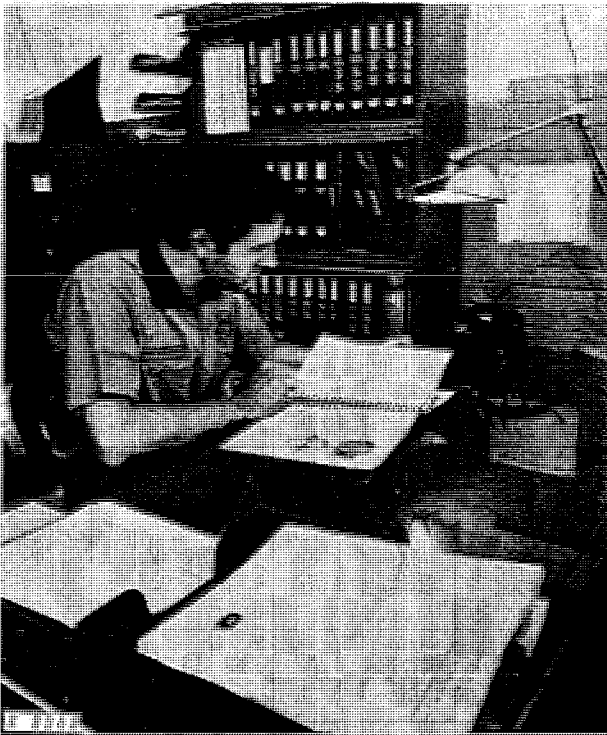
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INTRODUCTION



Use FOS Manuals for Reference



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

PTO HORSEPOWER:

- * Tractors with 6531A engine 175.99
- * * Tractors with 6531D engine 141

ENGINE:

- Type 6-cylinder, in-line, valve-in-head
- Bore and stroke 4-3/4 in. x 5 in.
- Displacement 531 cu. in.
- Compression ratio 15.4 to 1
- Firing order 1-5-3-6-2-4
- Valve clearance Intake - 0.018 in.
Exhaust - 0.028 in.

Slow idle speed 800 rpm

Fast idle speed:

- 6531A engine 2300 rpm
- 6531D engine 2400 rpm
- Timing (Injection Pump) 27° BTDC (6531A)
or TDC (6531D)

LUBRICATION SYSTEM Fully pressurized

- * Official test at 2100 rpm.
- * * Factory observed at 2200 rpm.

FUEL SYSTEM:

- Type Direct injection
- Filters Dual Master filters with two-stage filtration

Injection pump:

- Robert Bosch (6531A) Multiple plunger in-line
- Roosa Master (6531D) Inlet metering distributing type

AIR INTAKE SYSTEM:

- Air cleaner Dry-type with safety filter

COOLING SYSTEM:

- Type Pressurized with centrifugal pump, engine temperature control, heavy-duty thermostats

	6531A	6531D
CAPACITIES:		
Fuel tank	73 U.S. gals.	68 U.S. gals.
Crankcase (with filter change)	26 U.S. qts.	20 U.S. qts.
Transmission-hydraulic system	16 U.S. gals.	16 U.S. gals.
Cooling system (add 2 qts. for cab heater)	40 U.S. qts.	33 U.S. qts.

TRANSMISSION:

Type	Synco-Range, constant mesh	
Clutch	Two plates, heavy-duty, foot operated	
Size	13-1/2 in.	12 in.
Gear selections	8 forward and 2 reverse	
Shifting	4 stations, synchronized shifting within stations	

POWER TAKE-OFF:

Type	Independent, rear	
Clutch	Wet disk, hydraulically actuated	
Speed (2100 engine rpm)	1024 rpm	1024 rpm

PTO ahead of drawbar hitch point

1-3/8 in. shaft	16 in.	16 in.
1-3/4 in. shaft	20 in.	20 in.

HYDRAULIC SYSTEM:

Type	Closed center, constant pressure. Includes power steering, power brakes and implement control	
Standby pressure	2250 psi	

BRAKES Hydraulically power actuated, disk-type operating in oil
Provision for manual operation with brake accumulator to supply oil

STEERING Full power, hydrostatic type
Provision for manual operation

ELECTRICAL SYSTEM:

Type	12-volt, negative ground	
Batteries	Two 6-volt, 87-plate, 204 ampere-hour group 6T3A, tractor-type, connected in series	
Alternator	12-volt, with integral transistorized regulator:	
Capacity	55 amp. without air conditioning 72 amp. with air conditioning	

FRONT TIRES:*

Standard	11.00-16, 8-ply-rating	
Row-Crop	9.50-20, 8-ply-rating	

REAR TIRES:*

Standard	24.5-32, 10-ply-rating	
Row-Crop	18.4-38, 12-ply-rating	

FRONT WHEEL TREAD:

Fixed tread	69 or 71 in.	
Adjustable tread (11.00-16 tires)	68 to 80 in.	

REAR WHEEL TREAD:

Standard:		
24.5-32 tire	70 to 81 in.	
18.4-34 tire (dual)	68 and 111 in.	
18.4-38 tire (dual)	65 to 119 in.	
Row-Crop:		
18.4-38 tire	60 to 119 in.	
24.5-32 tire	70-111 in.	

GROUND SPEEDS IN MILES PER HOUR
(2100 engine rpm with 24.5-32 tires)

1st	2.01
2nd	3.12
3rd	4.27
4th	5.29
5th	6.61
6th	8.73
7th	11.21
8th	18.50
1st reverse	4.70
2nd reverse	7.28

DIMENSIONS:

Standard (Fixed tread front axle):	
Wheel base	104 in.
Over-all length	172.3 in.
* * Over-all height	98.3 in.
Height to steering wheel	82.4 in.
Width	Regular wheel, 95.8 in.
Drawbar clearance	16 in.
Turning radius	12 ft. 6 in.
Row-Crop (81.5-inch tread front axle):	
Wheel base	102 to 106 in.
Over-all length	172.3 in.
* * Over-all height	98.3 in.
Height to steering wheel	82.4 in.
Over-all width	108.4 in.
Turning radius	13 ft.

**SHIPPING WEIGHT (With equipment for average field service, less fuel and ballast).
Add 575 lbs. if equipped with Roll-Gard.**

Standard	15,800 lbs.
Row-Crop	14,680 lbs.
* Additional tire sizes available.	
* * Tractors with Air Conditioned Cab and 20.8-38 tires	116 in.
Tractors with Cab and without Air Conditioning (20.8-38 tires)	
	109 in.

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.

Tractors shipped from the factory with the alternator completely disconnected require an AR47860 Auxiliary Ignition Battery Kit to supply power for the fuel shutoff solenoid on tractors with a 6531D engine. The adapter on the battery harness kit plugs into the

cigar lighter. Be sure to read the instructions attached to the tractor before starting the engine.

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.

Temporary Tractor Storage

Service	Specification	Reference
Check radiator for coolant loss and antifreeze protection	Within 3/4-inch from bottom of filler neck (6531A), 1-1/2-inch above baffle (6531D)	
Reduce shipping pressure of tires		Operator's manual
Cover tractor and tires for protection and cleanliness		

Before Delivering Tractor

Electrical System

Install electrolyte and charge batteries		FOS-20
Punch date code on battery tag		
Connect Motorola alternator. Do not attempt to polarize		Section 40, Group 10
Install light switch knob		
Clean terminals and connect battery cables		Section 40, Group 5
Check alternator belt adjustment		
Tractors with 6531A engine	1-inch deflection, 25 lb. force	Operator's manual
Tractors with 6531D engine	1-inch deflection, 20 lb. force	Operator's manual

Before Delivering Tractor—Continued

Service	Specification	Reference
Cooling System		
Inspect radiator for coolant loss	Within 3/4-inch from bottom of filler neck (6531A); 1-1/2 in. above baffle (6531D)	
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 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 "SAFE" range on dipstick. Type 303 Special-Purpose Oil.	Operator's manual
Lubricate grease fittings	John Deere Multipurpose-Lubricant	Operator's manual
Engine		
Check air cleaner		Operator's manual
Fill fuel tank and start engine	Capacity - 73 U.S. gallons (6531A) 68 U.S. gallons (6531D) ..	Operator's manual
Check operation of gauges and indicator lamps		Operator's manual
Check speed control linkage for free operation		Section 30, Group 20
Check engine idle speeds		Section 30, Group 20
Operation		
Shift transmission through all speeds		Operator's manual
Check transmission clutch operation	Clutch pedal free travel should be 1-1/2 inches	Operator's manual
Check power take-off operation		Operator's manual
Check differential lock operation		Operator's manual
Check hydraulic system operation: Rockshaft, steering, remote cylinder, and brakes		Operator's manual

Before Delivering Tractor—Continued

Service	Specification	Reference
Check 3-point hitch operation	Operator's manual
Check seat operation	Operator's manual
Check cab pressurizer and wind- shield wiper operation, air conditioner and heater system operation (if equipped)	Operator's manual
Adjust headlights and check operation	Operator's manual
General		
Adjust air conditioner drive belt tension	1/4-inch deflection, 15 lb. force (6531A); 1-inch deflection, 25 lb. force (6531D)	Operator's manual
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. 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.
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 at some mutually agreeable time 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 customer's 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 needless 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 sale of other new equipment.

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

Inspection Procedure

Service	Specification	Reference
Cooling System		
Check radiator coolant level	Within 3/4-inch from bottom of filler neck (6531A); 1-1/2 in. above baffle (6531D)	
Clean external surface of radiator core .....	.....	.....
Check hoses and connections for leaks .....	.....	.....
Fuel System		
Remove water and foreign matter from filter sediment bowl .....	.....	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 clean it if necessary .....	.....	Operator's manual
Electrical System		
Check specific gravity and electrolyte level of batteries	Full charge - 1.260 at 80°F.	Operator's manual
Check belt tension	1-inch deflection with a 25-pound force (6531A); 1-inch deflection with 20 lb. force (6531D)	Operator's manual
Start engine and check operation of starter, lights, and indicator lamps .....	.....	Operator's manual

Inspection Procedure—Continued

Service	Specification	Reference
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
Engine		
Check valve clearance	Intake - 0.018 inch. Exhaust - 0.028 inch.	Operator's manual
Check injection pump timing		
Tractors with 6531A engine	"INJ" Mark	Section 30, Group 15
Tractors with 6531D engine	"TDC" Mark	Section 30, Group 15
Check engine speed under load, fuel consumption, and horsepower.	Specification	Group 15 of this section
Clutches and Differential Lock		
Check transmission clutch free travel	Approximately 1-1/2-inch free travel	Operator's manual
Check PTO clutch and brake operation		Section 50, Groups 35 and 40
Check differential lock operation		Operator's manual
Hydraulic System		
Check rockshaft and remote cylinder operation		Operator's manual
Check power steering	Smooth, easy operation	Section 70, Group 20
Check power brakes and accumulator	The accumulator should supply oil to each brake for at least 20 applications at 5 second intervals after the engine has been stopped for 15 minutes, when applied individually	Operator's manual
Cab		
Check operation of cab controls		Operator's manual
Check air conditioning compressor drive belt tension	1/4-inch deflection, 15-lb force (6531A); 1-inch deflection, 25-lb force (6531D) ..	Operator's manual
Nuts and Cap Screws		
Tighten accessible nuts and cap screws that 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 de-

termine 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
6531A ENGINE		
Dynamometer Test—2100 engine rpm or 1024 PTO rpm	Compare with previous recorded output record and compare with output after tune-up	FOS 30 Manual, Chapter 12
Compression Test	340 - 380 psi at 200-250 rpm	FOS 30 Manual, Chapter 12
Engine Coolant Check Test	No air bubbles or oil film in radiator	FOS 30 Manual, Chapter 12
6531D ENGINE		
Dynamometer Test—2200 engine rpm or 1073 PTO rpm	Compare with previous recorded output record and compare with output after tune-up	FOS 30 Manual, Chapter 12
Compression Test	425 - 450 psi at 130 rpm	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 (inches of water)	.....	FOS 30 Manual, Chapter 12
Normal reading (with clean filter elements)	13-14 in. at 2100 rpm	.....
Maximum permitted reading (full load)	25 in. at 2100 rpm	.....
Check restriction indicator light operation	24-26 in. at 2100 rpm	.....
Check intake manifold pressure (6531A)	14-17 psi at 2100 rpm	30-10
Exhaust System		
Check system for leaks	.....	FOS 30 Manual, Chapter 12
Check for restricted muffler or exhaust pipe	.....	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 cooler core	.....	20-30
Clean and flush system, check thermostats	.....	20-30
Check pressure cap	6.25 to 7.50 psi release pressure	20-30
Rocker Arm Shaft Clamp—Retighten cap screws (6531A)		
Set valve clearance	55 ft-lbs Intake, 0.018 in. Exhaust, 0.028 in.	20-10 20-10
Diesel Fuel System:		
Check fuel tank for water	.....	30-15
Check fuel pump pressure	20 psi (6531A); 3-1/2 to 4-1/2 psi (6531D)	30-15
Clean sediment bowls and change filter	.....	30-15
Injection Pump:		
Service and check timing	27° BTDC, "INJ" Mark (6531A); TDC Mark (6531D) 2° no load advance at 1300 rpm—4° full load advance at 1900 rpm	30-15 30-15
Adjust throttle linkage:		
Tractors with 6531A engine	Fast idle - 2300 rpm (hand and foot) Slow idle - 800 rpm	
Tractors with 6531D engine	Fast idle - 2400 rpm (hand and foot) Slow idle - 800 rpm	
Check engine oil pressure	45 - 55 psi (2100 rpm, 6531A) 25 - 35 psi (1900 rpm, 6531D)	20-25 20-25

ENGINE TUNE-UP—Continued

Operation	Specification	Section-Group Reference
Charging System:		
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	25 lbs. at 1 in. belt deflection (6531A) 20 lbs. at 1 in. belt deflection (6531D)	
Check alternator output		
6531A engine	55 amp. alternator - 45 amps at 1140 engine rpm and 13 to 15 volts 72 amp. alternator - 65 amps. at 2000 engine rpm and 13 to 15 volts	40-10 40-15
6531D engine	55 amp. alternator - 45 amps. at 1440 engine rpm and 13 to 15 volts 72 amp. alternator - 65 amps. at 1400 engine rpm and 13 to 15 volts	40-10 40-15
Check alternator regulated voltage	14.2 - 14.6 volts (operating)	40-10 & 15
Starting System:		
Check start-safety switch operation		40-20
Check starter current draw	Approximately 525 amps.	40-20
Check battery voltage when starting	Min. 9 volts (cranking)	40-20
Check operation of alternator, oil pressure and indicator lights		40-20

FINAL ENGINE TESTING

Dynamometer	Compare with previous recorded output and file for future reference.	20-5
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TRACTOR TUNE-UP

Operation	Specification	Section-Group Reference
Adjust transmission clutch free travel	1-1/2 in.	50-5
Transmission:		
Check shifting		50-10 & 20
Check for proper operation without excessive noise		50-10 & 20
Power Take-Off:		
Check engagement feel		50-25
Check for excessive noise		50-25
Check differential lock operation	420 - 525 psi	50-15
Check brake pedal travel and even position.	3 inches maximum pedal travel for 20 applications (each brake pedal) at 5 second intervals, when applied individually	70-25
Check front wheel bearing adjustment and lubrication	35 ft-lbs, loosen to hole	....
Check front wheel toe-in	1/8 - 3/8 in.	....
Check tire inflation . . . . .		....
<i>Hydraulic system pressures, flow rates, or cycle times are for conditions specified in Section 70 (tractor at operating temperature, transmission-hydraulic oil at 140°F. to 160°F., proper test equipment, correct test sequence, etc.).</i>		
Transmission pump	5.5 gpm minimum at 2100 engine rpm	70-5
Main hydraulic pump	2200 - 2300 psi (standby) 24 gpm at 2000 psi and 2100 rpm	70-5
Pressure control valve	1650 - 1700 psi at 800 rpm (approximately 10 gpm flow)	70-5
Rockshaft:		
Lift cycle time (75 degrees rotation)	2.7 - 3.0 seconds at 2100 rpm	70-30
Lever position (depth control)	Full raise (lever leading edge at 0 on quadrant)	70-30
Lever position (load control)	Complete raise (control lever leading edge at 1-1/2 on quadrant)	70-30
	Complete lower (control lever leading edge at 2-1/2 on quadrant)	70-30
Selective control valve	2 to 20 gpm at 1200 psi and 2100 rpm	70-35

Group 20 LUBRICATION

GENERAL INFORMATION

Carefully written and illustrated instructions are included in the tractor operator's manual. Remind your customer to follow the recommendations in these instructions.

For your convenience, the following chart shows capacities and type of lubricant for the various components. Additional lubrication information is on page 20-2.

Component	Capacity	Type of Lubricant	Interval of Service
Engine Crankcase (includes filter)	26 U.S. qts. (6531A)	See "Engine Lubricating Oils" on page 20-2	10 Hours - Check level
	20 U.S. qts. (6531D)		100 Hours - Change oil 200 Hours - Replace filter
Transmission and Hydraulic System	16 U.S. gallons	John Deere Type 303 Special-Purpose Oil	200 Hours - Check level
			600 Hours - Replace filter
			1200 Hours - Change oil
Front Wheel Bearings	.....	Wheel Bearing Grease	1200 Hours - Repack bearings
Grease Fittings	.....	John Deere Multi- purpose Lubricant	See Operator's Manual

LUBRICANTS

Engine Lubricating Oils



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

If oil other than Torq-Gard or Torq-Gard Supreme is used, it must conform to 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.

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.

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

Transmission Hydraulic Oils

Use only John Deere Type 303 Special-Purpose 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 may be used in all weather conditions.

Greases

John Deere Multi-Purpose Lubricant or an equivalent SAE Multipurpose-Type grease is recommended for most grease fittings. Wheel bearing grease is recommended for front wheel bearings. 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.