



# 4030 Tractor



JOHN DEERE

## TECHNICAL MANUAL 4030 Tractor

TM1055 (01JAN78) English

**John Deere Waterloo Works**  
**TM1055 (01JAN78)**

LITHO IN U.S.A.  
ENGLISH



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

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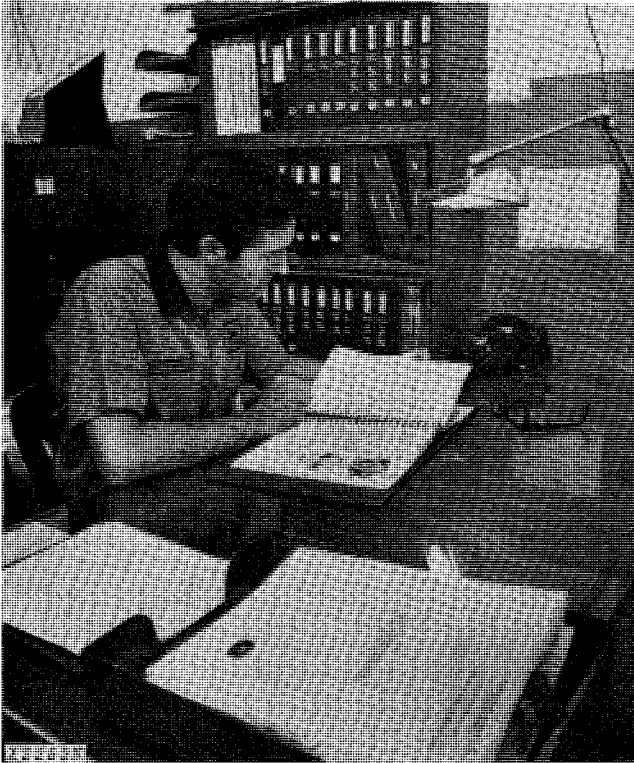
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## INTRODUCTION



*Use FOS Manuals for Reference*

This technical manual is part of a twin concept of service:

- **FOS Manuals — for reference**
- **Technical Manuals — for actual service**

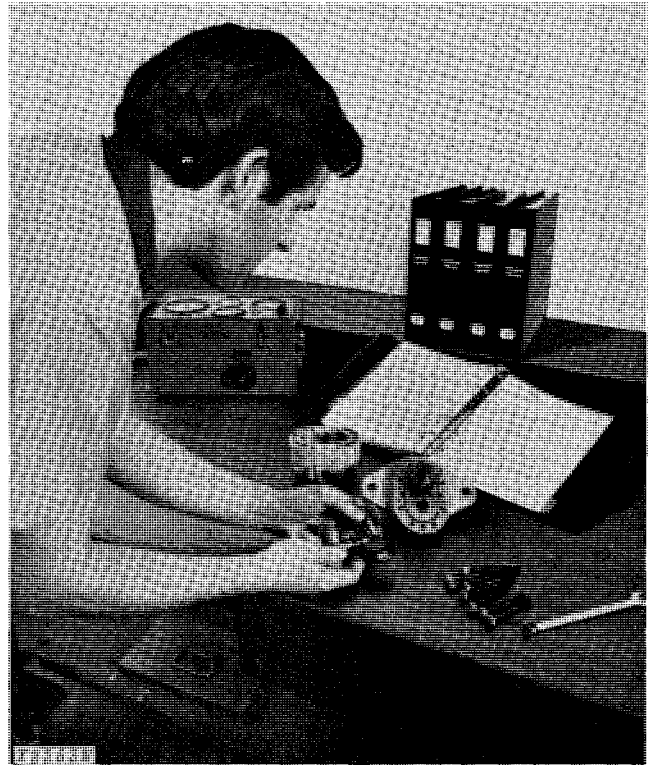
The two kinds of manuals work as a team to give you both the general background and technical details of shop service.

*Fundamentals of Service (FOS) Manuals* cover *basic* theory of operation, *fundamentals* of trouble shooting, *general* maintenance, and *basic* types of failures and their causes. FOS Manuals are for training new 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 <sup>3</sup> )
Gasoline .....	303 cu. in. (4971 cm <sup>3</sup> )

**Compression Ratio**

Diesel -E368190) .....	16.2 to 1
(E368191- .....	16.7 to 1

    Gasoline (all) .....

Gasoline (all) .....	7.6 to 1
----------------------	----------

**Firing order** .....

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

**SYNCRANGE TRANSMISSION**

Type . . . . . Syncro-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, syncro-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 syncro-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
<b>COOLING SYSTEM</b>		
Inspect radiator for coolant loss .....	1½ inches above baffle .....	.....
Check antifreeze protection .....	.....	.....
<b>ELECTRICAL SYSTEM</b>		
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
<b>TIRES AND WHEELS</b>		
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	.....
<b>LUBRICATION</b>		
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
<b>ENGINE</b>		
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



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**Before Delivering Tractor—continued**

Service	Specification	Reference
<b>OPERATION</b>		
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
<b>COOLING SYSTEM</b>		
Check radiator coolant level .....	1½ inches above baffle	.....
Clean external surface of radiator core .....		.....
Check hoses and connections for leaks .....		.....
<b>FUEL SYSTEM</b>		
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
<b>CLUTCHES and DIFFERENTIAL LOCK</b>		
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
<b>NUTS and CAP SCREWS</b>		
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

## Engine Tune-up—continued

Operation	Specification	Section-Group Reference
<b>Air Intake System—Continued</b>		
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
<b>Exhaust System</b>		
Check system for leaks . . . . .		FOS 30 Manual, Chapter 12
Check muffler and exhaust pipe for restrictions . . . . .		FOS 30 Manual, Chapter 12
<b>Crankcase Ventilating System</b>		
Check system for restrictions . . . . .		FOS 30 Manual, Chapter 12
<b>Cooling System</b>		
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
<b>Cylinder Head and Valves</b>		
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
<b>Ignition System</b>		
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
<b>Gasoline Fuel System</b>		
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