OM

Operator's Manual

John Deere Series 300 OEM Engines

OM-R73993
Issue F0

Engines for the Original Equipment Market

To the Purchaser

To keep your engine running efficiently, read the instructions in this operator's manual carefully.

CAUTION: This safety symbol is used for important safety messages. When you see this symbol, follow the safety message to avoid personal injury.

Read the contents to learn where each section is. Use the alphabetical index for fast reference.

Left (L.H.) and right (R.H.), front, and rear in this manual are seen by facing the rear (drive end) of the engine.

Write your engine serial number and accessory codes in the spaces on page 1. Your dealer needs this information when you order parts.

The warranty for this engine is on your copy of the engine registration.

This manual shows U.S. units of measure and their metric equivalents.

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JOHN DEERE OEM WARRANTY INFORMATION

What you should do to get service on your John Deere engine:

- ○ It is always best to locate an authorized John Deere distributor/dealer before service is needed.
- ○ Advise the authorized John Deere distributor/dealer that you are the owner of a John Deere engine.
- ○ If you have a service need that may be covered by warranty, make sure to have your warranty certificate available.
- ○ Always have model and serial number available when asking for service and when ordering parts.

Additional information for customers outside the USA:

- ○ Contact your local authorized John Deere distributor/dealer.
- ○ If unable to locate an authorized John Deere distributor/dealer contact: (Write or Telex)

John Deere OEM Sales
John Deere Road
Moline, Illinois 61265
USA

- ○ The warranty card should be mailed in an air mail envelope.

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

BUSINESS REPLY CARD
FIRST CLASS PERMIT NO. 1, MOLINE, ILLINOIS 61265

POSTAGE WILL BE PAID BY ADDRESSEE

John Deere OEM Sales
John Deere Rd.
Moline, Illinois 61265

NOTICE!

TO PURCHASER

THE WARRANTY COVERAGE ON JOHN DEERE ENGINES VARIES BY APPLICATION

To ensure that proper warranty coverage is extended to the owner of this engine, it is necessary that the attached card be filled out COMPLETELY and ACCURATELY and returned to JOHN DEERE.

THE WARRANTY PERIOD WILL START ON THE DELIVERY DATE ENTERED BELOW

The Engine Warranty Information Card below must be completed and signed by the purchaser upon receipt of delivery of equipment powered by a John Deere engine.

For future reference when ordering parts, parts catalogs, or technical manuals for this engine, record the following information:
Engine Model _____ Engine Serial No. _____ Delivery Date _____

The following is valid in the USA only:

The Purchaser has received the Warranty statement which sets forth the obligations of John Deere Industrial Equipment Company or John Deere Company with respect to the John Deere engine in the above-described original equipment and such Warranty and the limitations thereof are hereby accepted by the Purchaser. Where permitted by law, neither seller, the original equipment manufacturer, John Deere nor any corporation affiliated therewith makes any other representations or warranties, express or implied with respect to such engine (AND EXPRESSLY DISCLAIMS THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS) or has any obligations to the Purchaser except as provided in the statement of warranty.

ENGINE WARRANTY INFORMATION CARD (Please Type or Print)

Sold by _____ (Name)
_____ (Address)
_____ (City State/Cty Zip)
_____

Sold to _____ (Name)
_____ (Address)
_____ (City State/Cty Zip)
_____ (Signature of Purchaser)

APPLICATION (Check PRIMARY Application Only)

- ☐ FA Agricultural Mobile
- ☐ FB Agricultural Stationary
- ☐ FC Industrial Mobile
- ☐ FD Industrial Stationary
- ☐ FGP Generator - Primary
- ☐ FGS Generator - Standby
- ☐ FI Other (Please Specify)

_____

DESCRIPTION OF EQUIPMENT BEING POWERED

ENGINE MODEL	ENGINE SERIAL NO.	DELIVERY DATE

SP-337 (Oct-79)

JOHN DEERE SERVICE LITERATURE AVAILABLE...

To order these publications, fill out the form below and mail it with payment to the address given. Make checks payable to Deere & Co. Service Publications. Please allow three weeks for delivery. Prices include handling, taxes and postage to anywhere in the U.S.A. and Canada.

John Deere Distribution Service Center
Department S/P
1400 3rd Ave.
Moline, Ill. 61265

Please send to...

Name _____

Address _____

Town _____

State _____ Zip _____

Title	Order No.	Qty.	Price Each
Parts Catalogs - 3164D	PC-1416		$ 3.00
4219D	PC-1417		4.50
4276D	PC-1469		3.00
6329D	PC-1418		4.50
6414D	PC-1471		4.50
Operator's Manual Series 300 OEM Engines	OM-R73993		$ 1.35
Technical Manual Series 300 OEM Engines	TM-1190		$21.50

NOTE: If you want manuals or catalogs for equipment not shown on this list, list the model number, serial number and name of the equipment below.

FOS Manual - Hydraulics	FOS-10B		$ 5.95
FOS Manual - Electrical Systems	FOS-20B		6.95
FOS Manual - Engines	FOS-30B		7.95
FOS Manual - Power Trains	FOS-40B		5.95
FOUR FOS MANUALS (above)	FOS-90 Set		24.95
FOS Manual - Shop Tools	FOS-51B		2.95
FOS Manual - Welding	FOS-52B		4.95
FOS Manual - Belts and Chains	FOS-53B		2.95
FOS Manual - Bearings and Seals	FOS-54B		3.95
FOS Manual - Tires and Tracks	FOS-55B		3.95
FOS Manual - Mowing and Spraying Equipment	FOS-56B		2.95
FOS Manual - Air Conditioning	FOS-57B		4.95
FOS Manual - Fuels, Lubricants and Coolants	FOS-58B		3.95
FOS Manual - Fiber Glass	FOS-59B		2.95
FOS Manual - Fasteners	FOS-60B		3.95
SET OF TEN FOS MANUALS FOS-51B, 52B, 53B, 54B, 55B, 56B, 57B, 58B, 59B and 60B	FOS-70 Set		31.95
SET OF ALL FOURTEEN FOS MANUALS	FOS-180 Set		55.95

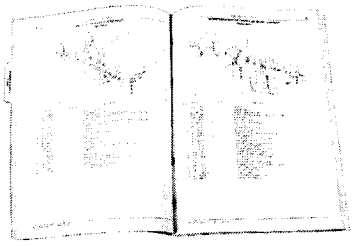
Illinois State Residents add 5% for ROT. . . . . _____

Check or money order in U.S. dollars enclosed . . . . . .Total _____
(Do not send cash or stamps)

Prices subject to change without notice.

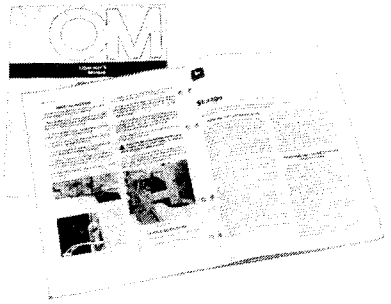
SP-219 Litho in U.S.A. NOV-79

PARTS CATALOG



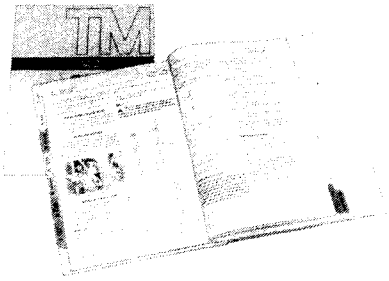
A parts catalog containing exploded view illustrations and lists of all parts is useful when purchasing service parts. Helps identify the correct parts. Useful in assembling and disassembling.

OPERATOR'S MANUAL



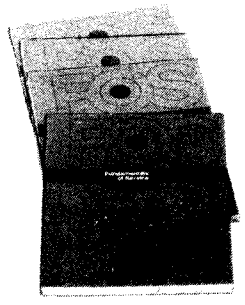
An extra copy of the operator's manual may be important if the copy furnished with your machine is misplaced.

TECHNICAL MANUAL



The technical manual is a service guide for your machine. Included in the manual are specifications, diagnosis and adjustments, illustrations of special assembly and disassembly procedures, hydraulic oil flows, and wiring diagrams.

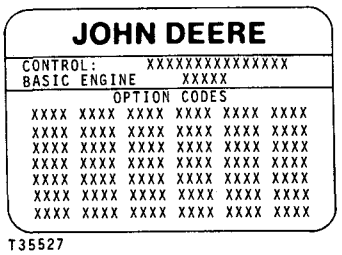
FOS MANUALS



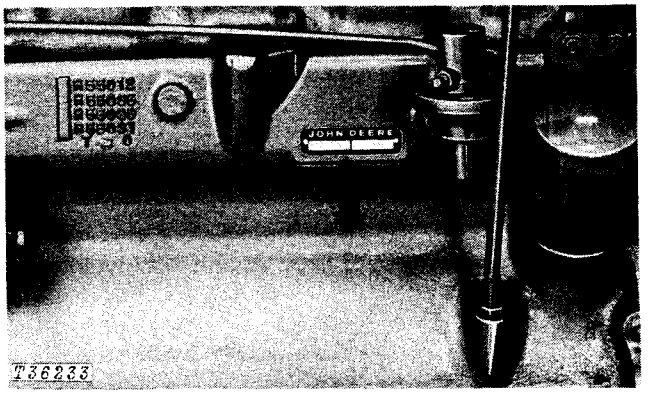
Fundaments of Service manuals contain basic fundamentals of service and operation. These manuals are applicable to most types and makes of machinery. Each starts with basic theory; covers operation, basic servicing, diagnosis, and testing. They are fully illustrated with colorful diagrams.

ACCESSORY CODE LIST AND ENGINE SERIAL NUMBER PLATE

An accessory code list and engine serial number plate are on your John Deere engine.



Accessory Code List
(on rocker arm cover)



Engine Type_____Engine Serial No._____
(6329 Engine)

The basic engine number shows the engine model.

Write the engine model number and serial number above.

Option codes give functional groups (first two digits) and specific options (last two digits).
For example: 11_____Rocker Arm Cover 1102 - Rocker Arm Cover, No Filler

Functional Group Codes	Description
11____.....	Rocker Arm Cover
12____.....	Oil Filler Cover and Inlet
13____.....	Crankshaft Pulley
14____.....	Flywheel Housing
15____.....	Flywheel
16____.....	Injection System
17____.....	Air Intake
18____.....	Air Cleaner
19____.....	Oil Pan
20____.....	Water Pump
21____.....	Thermostat Cover
22____.....	Thermostat
23____.....	Fan Drive
24____.....	Fan Belts
25____.....	Fan

Functional Group Codes	Description
26____.....	Engine Heater
27____.....	Radiator
28____.....	Exhaust System
29____.....	Vent System
30____.....	Starting System
31____.....	Alternator
32____.....	Instrumentation
33____.....	Tachometer
34____.....	Hour Meter
53____.....	Sheet Metal
55____.....	Engine Stand
56____.....	Paint Color
58____.....	Clutch and PTO
59____.....	Oil Cooler
61____.....	Muffler

Write the last two digits in spaces above from the option code numbers on your accessory code list.

Accessories not installed by John Deere will be listed 00 (last two digits) on the code list. For example:

3000 - No Starting Motor

When you need engine parts or service, give your John Deere dealer the engine model number, engine serial number, and option code numbers.

Safety Rules

Careless use of the engine can cause accidents. You can avoid many accidents by following the safety rules on this page. Study these rules carefully and use them on the job.

The engine should be operated only by qualified persons.

The operator should wear fairly tight clothing.

Keep hands, feet, and clothing away from power-driven parts.

Fasten a fire extinguisher near the engine. Keep the extinguisher fully charged. Learn to use it correctly.

Keep a first aid kit near the engine.

Walk completely around the engine. Make sure the area is clear before starting to work.

Do not operate an engine with an unsafe condition. If one is seen, put a tag on the engine so other operators will also know it.

Do not operate the engine in a closed building without enough ventilation.

Remove trash from the engine and the area around it daily.

Check for loose electrical connections or bad wiring.

Before making adjustments on the engine or electrical equipment, disconnect the battery negative (−) cable unless the approved procedure calls for battery power.

Before connecting or disconnecting a battery charger, turn off the charger.

Before using booster batteries, read the instructions on pages 6 and 7.

Do not remove radiator cap unless engine is cool. Then turn the cap slowly to the stop. Release all pressure before removing cap. Add coolant only when the engine is stopped or running at slow idle.

Do not add oil or grease to the engine while it is running.

Do not run the engine while making adjustments or repairs unless the manufacturer's instructions tell you to do so.

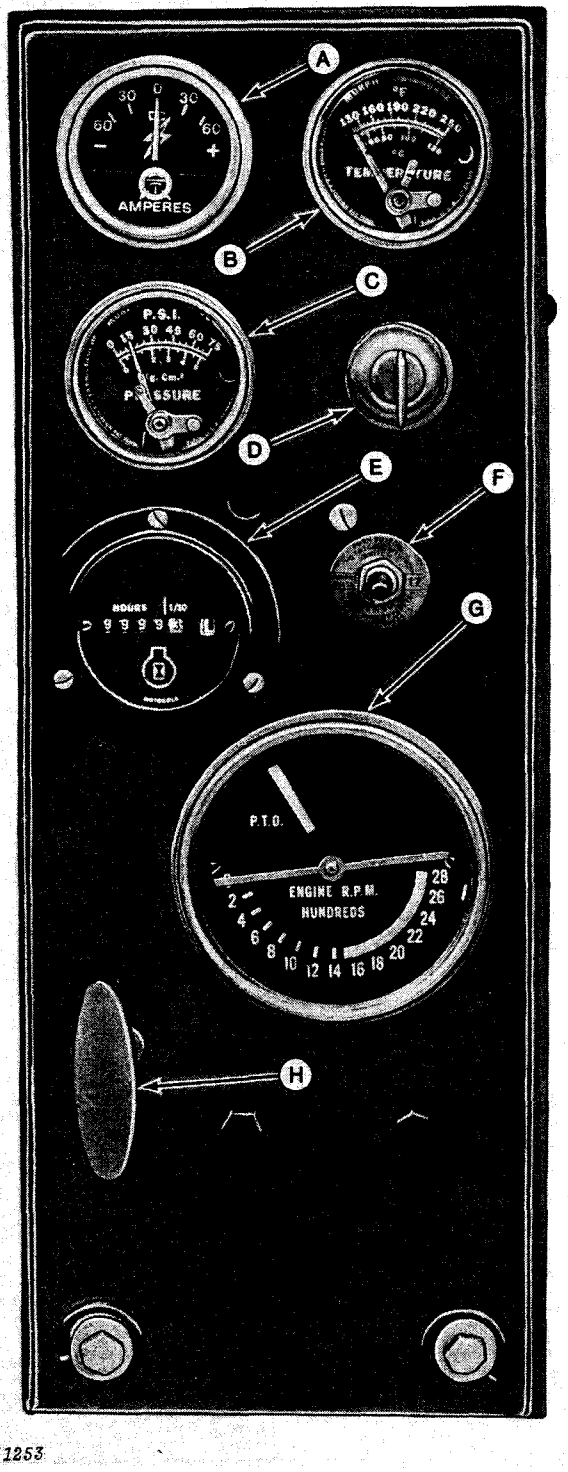
When working with fuel, BE CAREFUL. Do not add fuel to the tank of a hot or running engine. Do not smoke while filling the fuel tank or working on the fuel system.

Escaping fluid under pressure can have sufficient force to penetrate the skin, causing serious personal injury. Before disconnecting lines, be sure to relieve all pressure. Before applying pressure to the system, be sure all connections are tight and that lines, pipes and hoses are not damaged. Fluid escaping from a very small hole can be almost invisible. Use a piece of cardboard or wood, rather than hands, to search for suspected leaks.

If injured by escaping fluid, see a doctor at once. Serious infection or reaction can develop if proper medical treatment is not administered immediately.

Do not leave the engine while it is running unless it is designed to run unattended.

Instruments



Instrument Panel
4219 Engine

A—Ammeter

B—Engine Coolant Temperature Gauge

C—Engine Oil Pressure Gauge

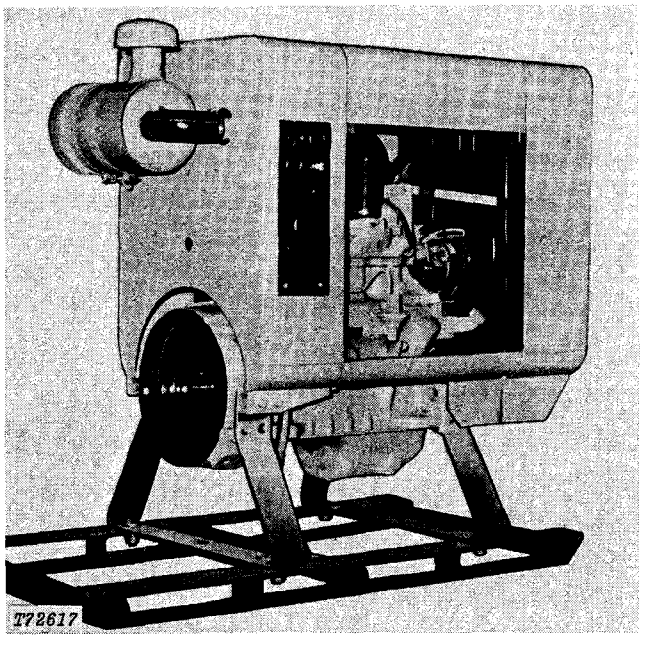
D—Starter Switch

E—Hour Meter

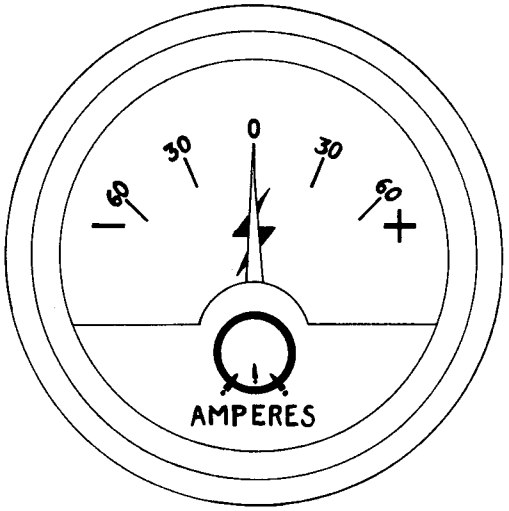
F—Safety Switch

G—Tachometer

H—Throttle

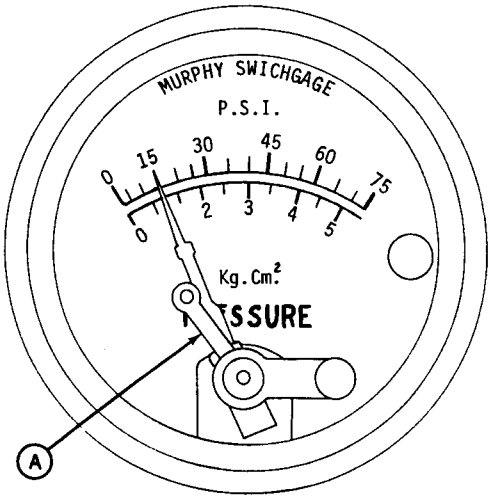


4219 Enclosed Engine



T51255

Ammeter

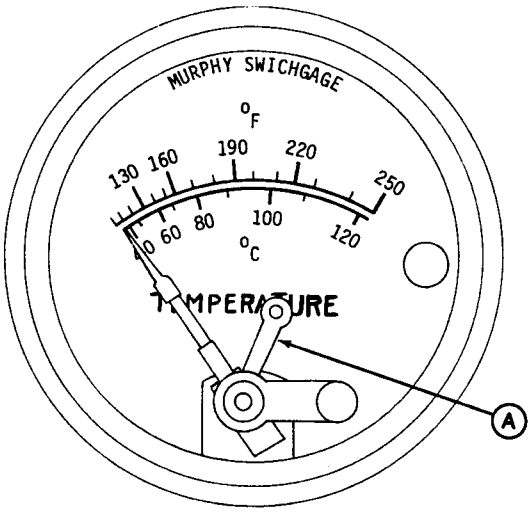


T51257

A—Contact

Oil Pressure Gauge

If the oil pressure goes below 15 psi (105 kPa), the contact will stop the engine.

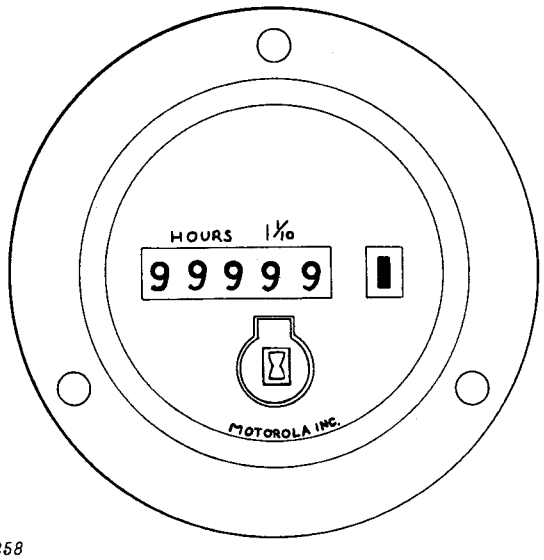


T51256

A—Contact

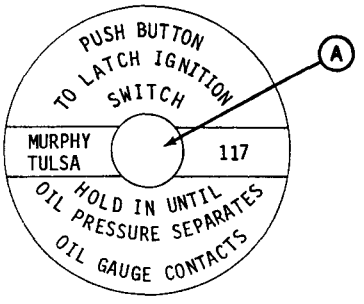
Coolant Temperature Gauge

If the coolant temperature goes above 220°F (104°C), the contact will stop the engine.



T51258

Hour Meter



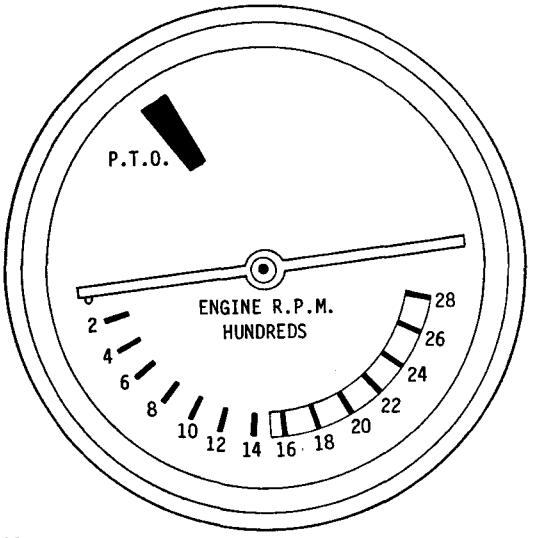
T51259

A—Button

Safety Switch

If the oil pressure goes below 15 psi (105 kPa), or if the coolant temperature goes above 220°F (104°C), the safety switch will stop the engine.

If the safety switch stops the engine, find the cause before starting the engine.



T51260

Tachometer

Operation

PRE-START INSPECTION

Before starting the engine for the first time each day, check the following:

1. Fluid levels: oil, coolant, fuel.
2. Fuel filter for water and sediment.
3. Air cleaner.
4. Turbocharger mounting and connections for air or oil leaks.
5. Hardware: loose or missing parts.
6. Components: bent, broken, or badly worn parts.

STARTING THE ENGINE

CAUTION: Do not start the engine unless it is safe to do so.

CAUTION: Before starting the engine, be sure there is enough ventilation.

1. Connect the fuel shut-off wire.
2. Move the throttle to one-third speed position.
3. Turn the starter switch key on.
4. Push the button on the safety switch (p. 5).
5. Crank the engine. Do not crank the engine longer than 20 seconds. Wait two minutes before trying again.
6. When the engine starts, release the key.
7. Move the throttle to half-speed position.

TURBOCHARGED ENGINES

If the engine has not run for several weeks:

1. Disconnect the electric shut-off wire on the injection pump to keep the engine from starting.
2. Crank the engine until the oil pressure gauge shows pressure, but not more than 20 seconds.
3. Connect the shut-off wire.
4. Start the engine.
5. Do not run the engine faster than 1000 rpm until oil pressure is 20 psi (140 kPa).

Cold Weather Starting

During cold weather, use starting aids when necessary.

Cold Weather Starting Aid

Use the cold weather starting aid when the temperature is below 32°F (0°C).

CAUTION: Starting fluid is highly flammable.

Crank the engine several revolutions, then inject starting fluid into the air intake system.

IMPORTANT: Inject starting fluid ONLY while the engine is cold and cranking. Do not inject fluid for more than one or two seconds at a time. Stop injecting fluid as soon as the engine starts and runs smoothly.

Coolant Heater

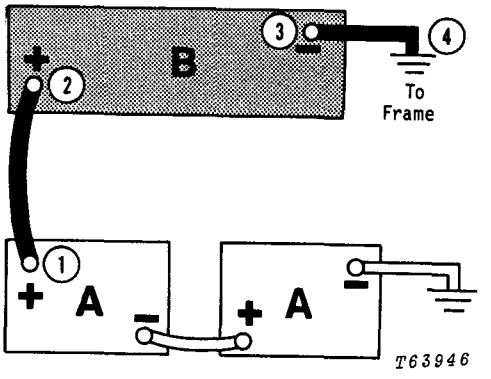
Connect the coolant heater to 115 volt electrical power ten hours before starting the engine.

CAUTION: Use a grounded cord to connect the coolant heater to electrical power.

Booster Batteries for 12 Volt Systems

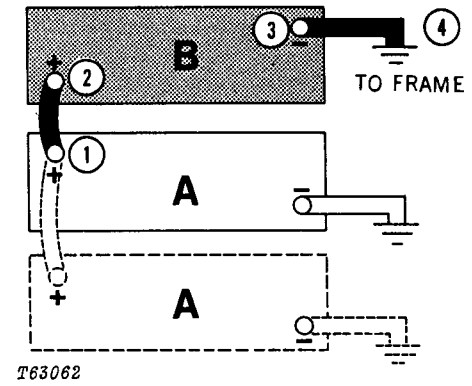
Connect a 12 volt booster battery to the machine batteries as shown in the following diagrams. Make connections in the order shown. Make the last connection (4) to the frame.

CAUTION: Battery gas can explode. Keep flames and sparks away from batteries.



A—Machine Batteries (two 6 volt batteries in series)

B—Booster Battery (12 volt)



A—Machine Batteries (one or more 12 volt batteries)

B—Booster Battery (12 volt)

ENGINE WARM-UP

Run the engine at half-throttle five minutes.

Do not use slow or fast idle during warm-up.

Operate engine under lighter loads and lower speeds than normal for 30 minutes.

NORMAL OPERATING CONDITIONS

Coolant temperature should be 180° to 200°F (82° to 93°C). Oil pressure at normal operating temperature should be 50 psi (350 kPa) at fast idle and a minimum of 15 psi (105 kPa) at slow idle.

SLOW IDLE

Do not run the engine at slow idle unless it is necessary.

STOPPING THE ENGINE

1. Run at half speed, without load for two minutes.
2. Move the throttle to slow idle.
3. Stop the engine.

NOTE: Before stopping a stationary power unit, run the engine three to five minutes at half speed without load.

IMPORTANT: If the engine stops while operating under load, remove the load. Start the engine immediately. Run the engine at half speed for 30 seconds before adding a load.

BREAK-IN PERIOD

The first 100 hours of operation is the break-in period. During this period, warm up the engine thoroughly. See "Engine Warm-Up"

See page 9 for correct service and maintenance of the engine during the break-in period.

ENGINE SPEEDS

Slow idle should be 800 rpm. For working range of your engine, see specifications, page 30.

Engine	Fast Idle RPM
3164D	2660
4219D	2660
4239D	2660
4239T	2660
4276D	2660
4276T	2360
6329D	2660
6359D	2660
6359T	2660
6414D	2360
6414T	2360

Stationary Power Units

1. The engine runs at 1900 rpm only: no fast or slow idle.
2. Run standby units without load for half an hour every two weeks.
3. Break the engine in by operating it under load. Operate the engine regularly under load.

Fuels and Lubricants

FUELS

Use only clean, high quality fuel.

Fuel Specifications

Use Grade No. 2-D fuel above 40°F (4°C).

Use Grade No. 1-D fuel at temperatures below 40°F (4°C). Use Grade 1-D fuel for all air temperatures at altitudes above 5000 ft. (1 500 m).

Use Grade 1-D fuel in standby engines.

Use fuel with less than 1.0 percent sulfur. If possible, use fuel with less than 0.5 percent.

For maximum filter life, sediment and water should not be more than 0.10 percent.

The cetane number should be 40 minimum. If you operate your engine where air temperatures are normally low or where altitudes are high, you may need fuel with a high cetane number.

Cloud Point - For cold weather operation cloud point should be 10°F (6°C) below lowest normal air temperature.

Storing Fuels

Keep fuels in clean containers in a protected area. Store fuel drums on their sides with plugs up. Check fuel tank or drum fuel filters for water regularly. Drain filters regularly.

NOTE: Diesel fuels stored for a long time may form gum and plug filters.

IMPORTANT: Keep all dirt, scale, water, or other foreign material out of fuel.

Filling the Fuel Tank

Fill the tank at the end of each day's operation.

⚠ CAUTION: Handle fuel carefully. If the engine is hot or running, do not fill the fuel tank. Do not smoke while filling fuel tank or working on fuel system.

LUBRICANTS

Use only lubricants shown below. Follow the instructions in the "Lubrication and Periodic Service" section.

Engine Oils

X3377

Use John Deere TORQ-GARD SUPREME® engine oil or an equivalent in the engine crankcase.

DO NOT PUT ADDITIVES IN THE CRANKCASE.

Oils other than TORQ-GARD SUPREME must have one of the following specifications:

SINGLE VISCOSITY OILS	MULTI-VISCOSITY OILS
API Service CD/SC MIL-L-2104C Series 3	API Service CC/SE MIL-L-46152

Oils and Air Temperature

Use oil to fit normal temperatures as shown below.

Air Temperature	John Deere TORQ-GARD Oil	Other Oils	
		Single Viscosity Oil	Multi-Viscosity Oil
Above 32°F (0°C)	SAE 30	SAE 30	Not recommended
−10°F to 32°F (−23°C to 0°C)	SAE 10W-20	SAE 10W	SAE 10W-30
Below −10°F (−23°C)	SAE 5W-20	SAE 5W	SAE 5W-20

Engines may use more oil when SAE 5W-20 or SAE 5W oil is used in the crankcase. Check the oil level regularly.

Lubrication and Periodic Service

The OEM 300 Series engines need regular service. Read this section carefully to learn the correct services for your engine.

Use the engine hour meter to know when service is needed.

Intervals on the periodic service chart are for operation under normal conditions. If the engine is operated under difficult conditions, then it must be worked on at shorter intervals.

BREAK-IN PERIOD

Before your new engine was shipped from the factory, all bearings and friction surfaces were correctly fitted and lubricated.

The crankcase was filled with John Deere TORQ-GARD SUPREME 10W-20. Use only this oil for break-in during the first 100 hours.

Check the crankcase oil level regularly during break-in.

The oil level must be between the two marks on the dipstick. Do not operate the engine with the oil level below the bottom mark.

At the end of the 100 hour break-in period:

1. Drain the crankcase oil.

2. Install a new oil filter.

3. Fill the crankcase with oil specified on page 8.

After this, change the crankcase oil and filter every 200 hours.

PERIODIC SERVICE CHART

DAILY OR EVERY 10 HOURS

Item No.	Component	Description of Service	Capacity or Procedure	Description of Lubricant
1	Radiator	Check coolant level. Remove trash from fins.	Halfway between core and filler neck.	.....
2	Fuel filter	Drain any water or dirt.	.....	.....
3	Engine oil	Check oil level.	Between marks on dipstick.	Use correct oil shown on page 8.
4	Air cleaner	Clean element if indicator shows red when engine is off, or if engine smokes too much or loses power. Clean dust cup.	.....	.....

EVERY 100 HOURS

5	Alternator-fan belt	Check tension.	90 lb. (400 N) strand tension	.....
6	Batteries	Check level of electrolyte in each cell. Check terminals.	Fill each cell to bottom of filler neck.	Distilled water.

EVERY 200 HOURS

7	Engine oil	Drain and fill.	See chart on page 16.	Use correct oil shown on page 8.
8	Engine oil filter*	Install new filter.	.....	.....

**Install a new filter every 200 hours or every year, whichever comes first.*

EVERY 500 HOURS

Item No.	Component	Description of Service	Capacity or Procedure	Description of Lubricant
9	Fuel filter*	Install new filter.	.....	.....
10	Crankcase vent tube	Remove and clean.	.....	Diesel fuel.
11	Air intake hoses	Check connections for leaks.	.....	.....

EVERY 1000 HOURS

12	Starter (Delco-Remy only)	Lubricate wicks. Check brushes for wear.	Wicks must be full of oil.	SAE 10W-20 engine oil.
13	Engine valves	Check tappet clearance.	See your John Deere dealer.	.....
14	Engine speeds	Check speeds.	See your John Deere dealer.	.....

EVERY SPRING AND FALL

15	Cooling system	Drain, flush and fill. Remove trash from fins.	.....	.....
16	Engine crankcase	Drain and fill. Install new filter.	See chart on page 16.	Use correct oil shown on page 8.

ANNUALLY

17	Air cleaner	Install new primary and safety elements.	.....	.....

**Install a new filter every 500 hours or every year, whichever comes first.*

DETAILED PERIODIC SERVICE

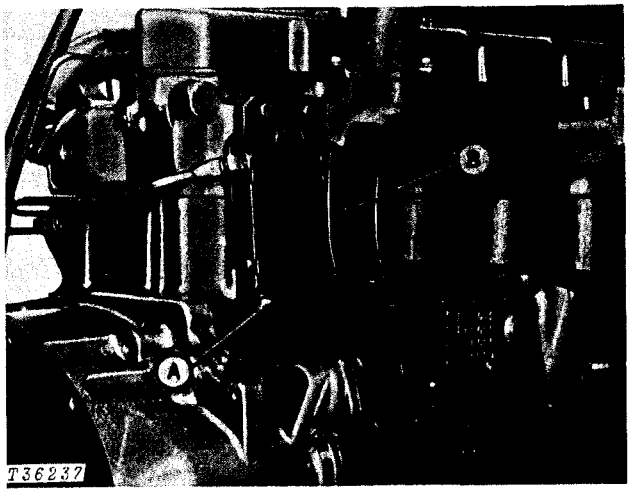
DAILY OR EVERY 10 HOURS

1. Radiator

⚠ CAUTION: Do not remove radiator cap unless engine is cool. Then turn the cap slowly to the stop. Release all pressure before removing cap.

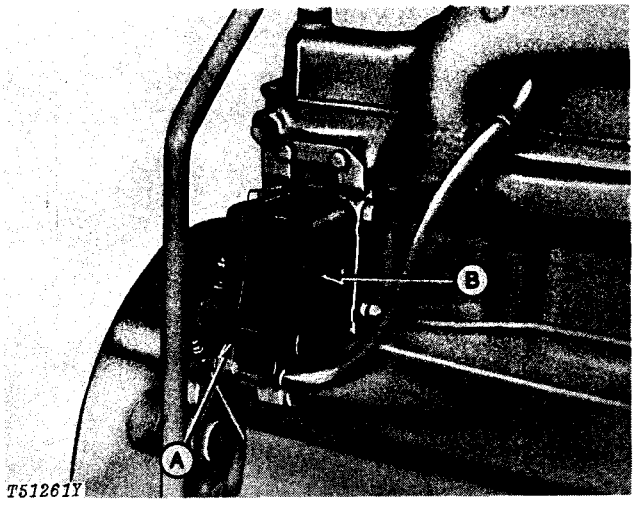
Check the coolant level daily before starting the engine. Coolant must be halfway between the radiator core and the filler neck. Add permanent type antifreeze before cold weather.

2. Fuel Filter



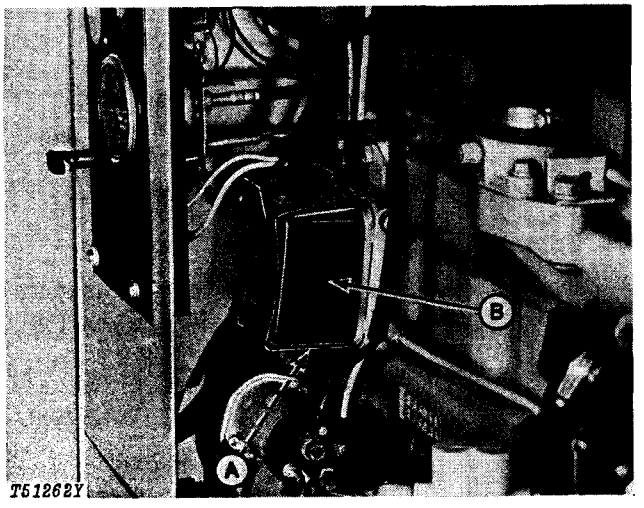
A—Fuel Filter Drain Plug **B—Fuel Filter**

6329 Engine



A—Fuel Filter Drain Plug **B—Fuel Filter**

6359 Engine



A—Fuel Filter Drain Plug **B—Fuel Filter**

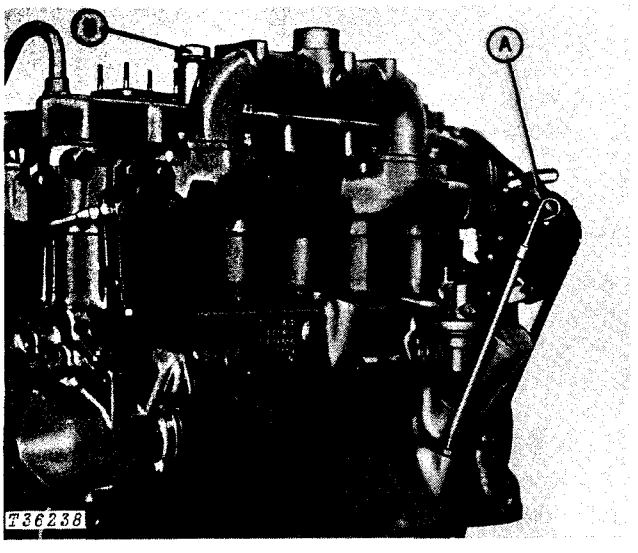
4219 Engine

Loosen the drain plug (A) to drain water and sediment from the fuel filter. If you find water in fuel filter, drain the whole fuel system. Remove air from the fuel system. See page 17.

NOTE: Install a new fuel filter when necessary.

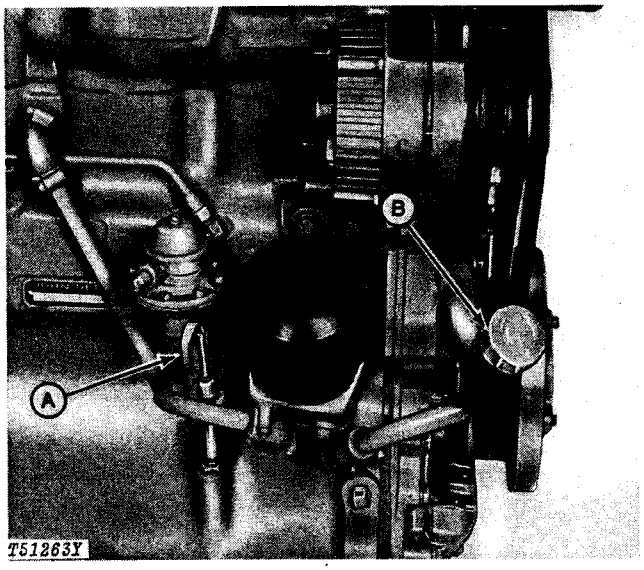
3. Engine Oil

Check the engine oil level.



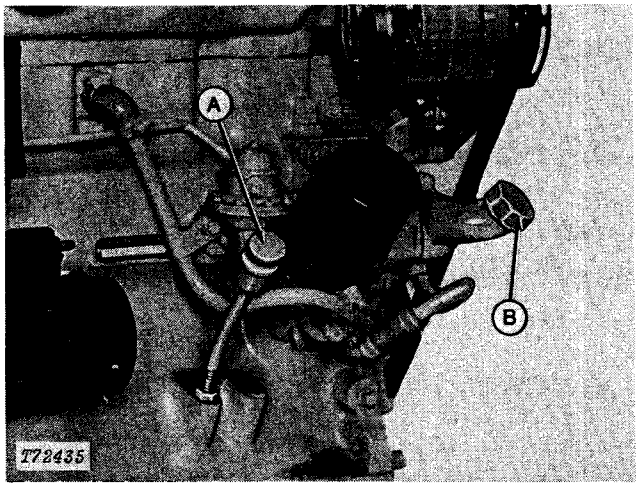
A—Crankcase Dipstick **B—Crankcase Filler**

6329 Engine



A—Crankcase Dipstick **B—Crankcase Filler**

6359 Engine

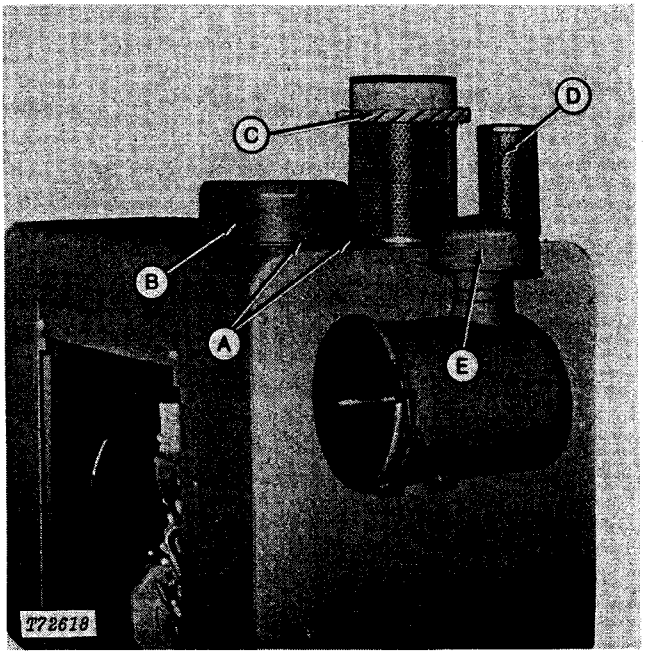


A—Crankcase Dipstick **B—Crankcase Filler**

4239 Engine

Before checking engine oil level, stop the engine. If oil is at or below the bottom mark on the dipstick, add oil shown on page 8 to bring the oil level between the marks on the dipstick. If the oil level is below the bottom mark, do not operate the engine.

4. Air Cleaner



A—Wing Nuts
B—Cup
C—Primary Element
D—Safety Element
E—Air Stack Cap

Air Cleaner (4219 Engine)

Before working on the air cleaner, stop the engine.

IMPORTANT: Install a new primary element:

1. **If the element shows damage.**
2. **After 500 hours or one year of service.**
3. **When the element will not clean.**

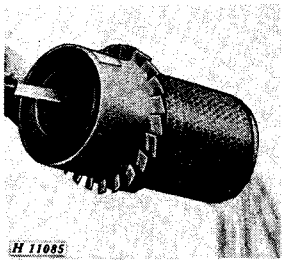
IMPORTANT: Install a new safety element:

1. **After 2000 hours service.**
2. **After one year of service.**
3. **If a primary element is damaged and needs to be replaced.**

IMPORTANT: Do not clean a safety element. Install a new element.

Oily or Sooty Element

Washing Element



Rinsing Element

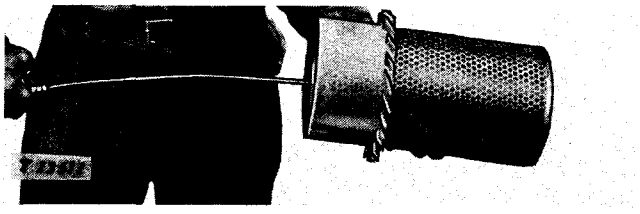
IMPORTANT: Do not wash the element in fuel oil, oil, gasoline, or solvent. Do not use compressed air to remove water from an element.

1. Add John Deere R36757 Filter Element Cleaner or an equivalent non-sudsing detergent to water. Move the element up and down in this solution to loosen dirt.

2. Flush the element with clean water. Use water pressure under 40 psi (280 kPa).

3. Shake water from element. Do not install the element in the machine until it is dry.

Dusty Element



Cleaning the Element with Compressed Air

Remove element. Tap element with the palm of your hand, NOT ON HARD SURFACE.

If tapping does not remove dust, use compressed air under 30 psi (210 kPa).

Direct clean, dry air up and down the pleats, blowing from inside to outside. Be careful not to make a break in the element.

After cleaning, inspect for damage by placing a lighted bulb inside element. Throw away an element that shows slightest break.

Inspect element gasket for damage. Install a new element if gasket is missing or damaged.

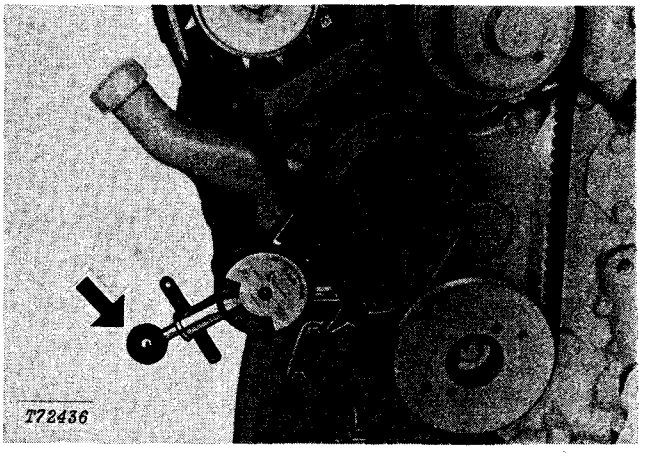
Thoroughly clean inside of air cleaner body with clean, damp cloth. Put element in cleaner body. Fasten it with wing nut. Be sure gasket is in place between element and wing nut. Tighten wing nut finger tight.

Push the reset button of the filter indicator.

EVERY 100 HOURS

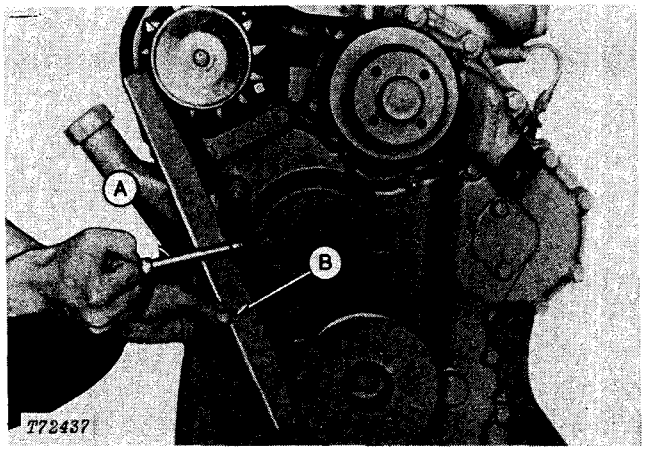
5. Alternator-Fan Belt

Check and adjust alternator-fan belt tension.

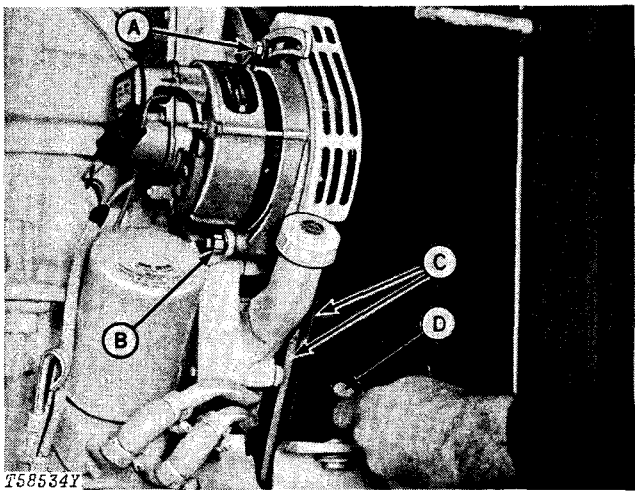


Strand Tension Gauge

Strand tension gauge: Immediately after the engine stops (run the engine at least 5 minutes), check the belt tension. If tension is less than 50 lb. (223 N), let the engine cool 10 to 15 minutes. Then make tension 90 lb. (400 N).



A—Tension Tester **B—Straight Edge**



A—Adjusting Strap Cap Screw
B—Bracket Cap Screw
C—Fan Belts
D—Tension Tester

Tension Tester on 6239 Engine

NOTE: If your engine has two belts (see picture above), check and adjust front belt only.

Tension tester: A force of 20 lb. (89 N) halfway between the pulleys must move the belt 3/4 in. (19 mm). Use a straight edge to measure distance belt moves.

Adjustment: Loosen the alternator bracket and adjusting cap screws. PULL THE FRONT ALTERNATOR FRAME ONLY to tighten the belt. Tighten the cap screws.

Inspect belts regularly for wear or damage. If it is necessary to install a new belt, always install BOTH belts.

6. Batteries

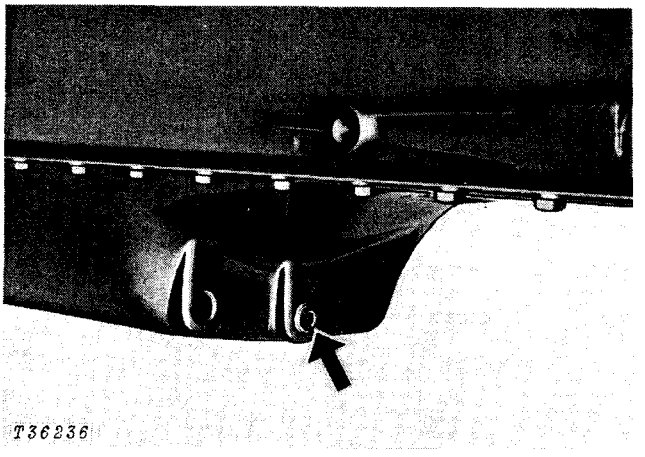
Check the battery electrolyte level. If distilled water is not available, use clean soft water. Do not use hard water. Fill each cell to the bottom of the filler neck. Clean the battery with a damp cloth. Put petroleum jelly on terminals.

IMPORTANT: Do not add water to battery in freezing weather unless you run the engine two or three hours or charge the battery.

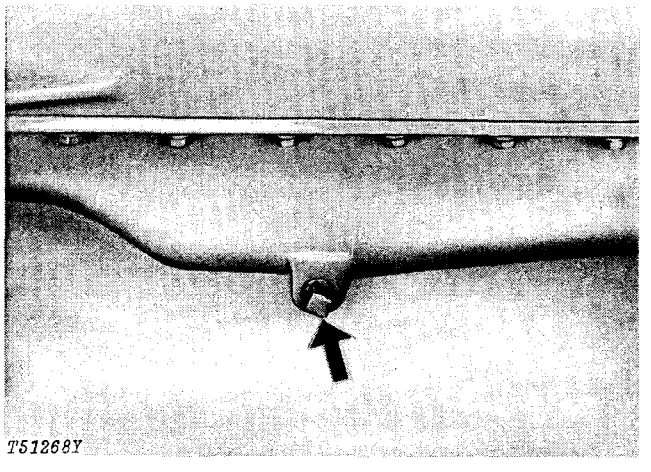
EVERY 200 HOURS

7. Engine Oil

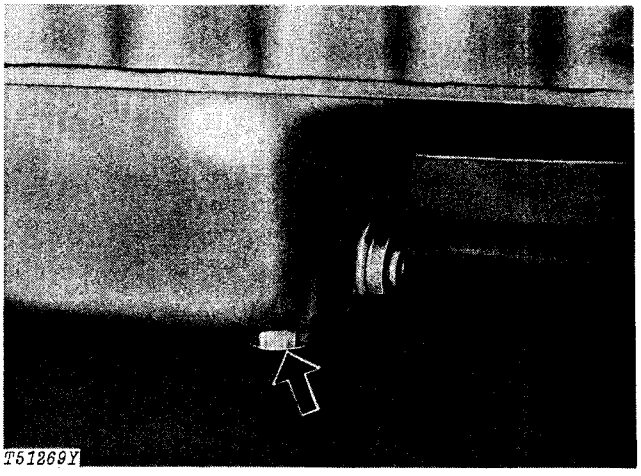
Warm the engine. Stop the engine.



Crankcase Drain Plug (6329 Engine)



Crankcase Drain Plug (6359 Engine)



Crankcase Drain Plug (4219 Engine)

Remove the crankcase drain plug. Drain the oil. Install the plug.

Fill crankcase with oil shown on page 8.

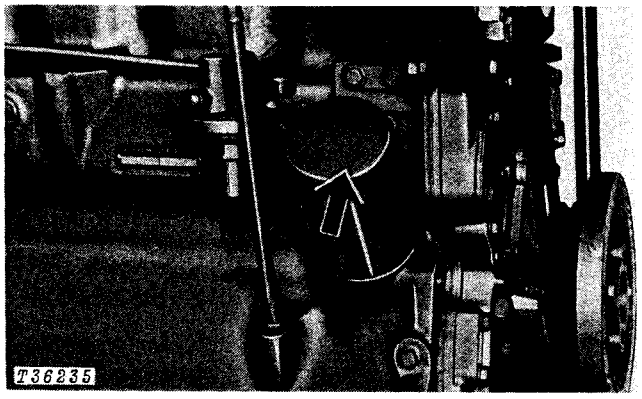
CRANKCASE CAPACITY

Engine Model	With Filter Change	Without Filter Change
3164D	6 qts. (5.7 L)	5 qts. (4.8 L)
4219D	6 qts. (5.7 L)	5 qts. (4.8 L)
4239DF	9 qts. (8.5 L)	8 qts. (7.6 L)
4239TF	15 qts. (14 L)	14 qts. (13.2 L)
4276D	9 qts. (8.5 L)	8 qts. (7.6 L)
4276T	14 qts. (13.2 L)	13 qts. (12.4 L)
6329D	12 qts. (11.4 L)	11 qts. (10.4 L)
6359DF	18 qts. (17.1 L)	17 qts. (16.1 L)
6359TF	18 qts. (17.1 L)	17 qts. (16.1 L)
6414D	18 qts. (17.1 L)	17 qts. (16.1 L)
6414T	18 qts. (17.1 L)	17 qts. (16.1 L)

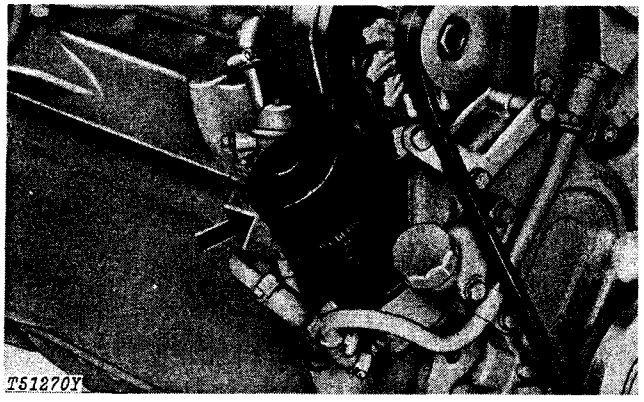
IMPORTANT: During irregular cold weather, change oil every 100 hours or every six weeks, whichever comes first. Use oil specified on page 8.

8. Engine Oil Filter

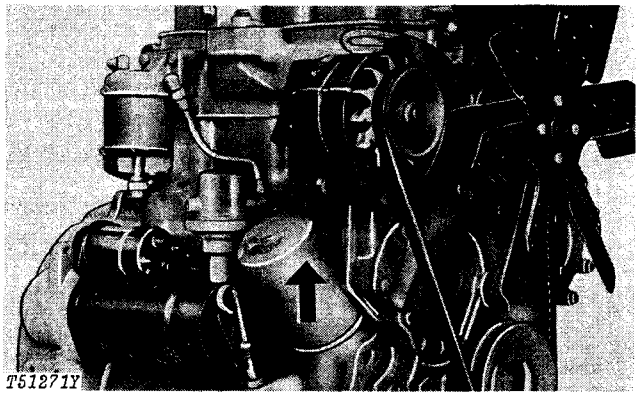
Install a new engine oil filter.



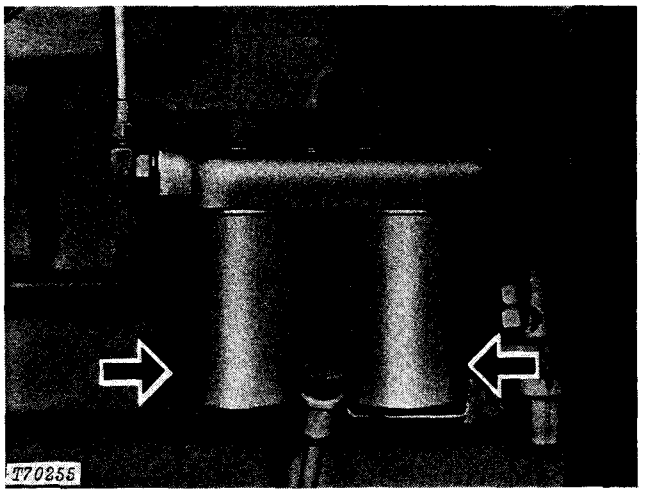
Oil Filter (6329 Engine)



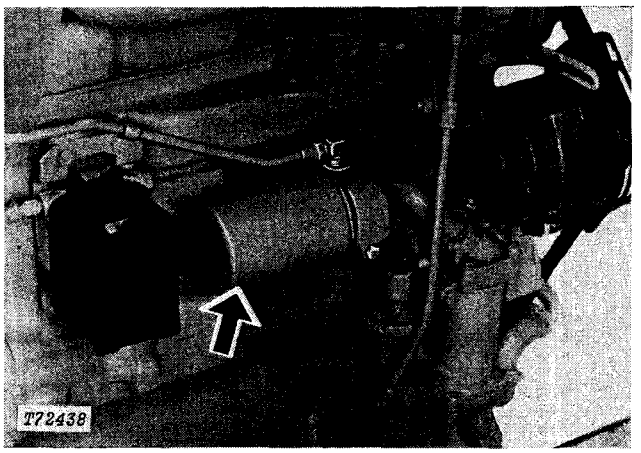
Oil Filter (6359 Engine)



Oil Filter (3164 Engine)



Oil Filters (6414 Engine)



Oil Filter (4276 Engine)

1. Turn the filter counterclockwise to remove it. Throw it away.
2. Clean the mounting surface.
3. Put a film of oil on the gasket of the new filter.
4. Tighten the filter clockwise until the gasket touches the mounting surface.
5. Turn the filter 1/2 to 3/4 turn more.

IMPORTANT: Before starting a turbocharged engine after a filter change, disconnect the electric shut-off wire. Crank the engine for 20 seconds. Connect the shut-off wire.

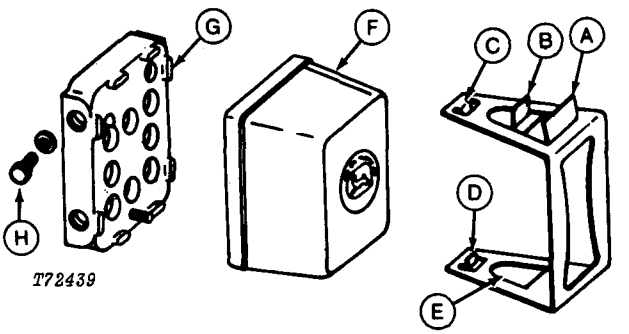
6. Start the engine. Check for leaks around the filter. Tighten the filter again, if necessary, but only enough to stop leaks.
7. Check the engine oil level.

EVERY 500 HOURS

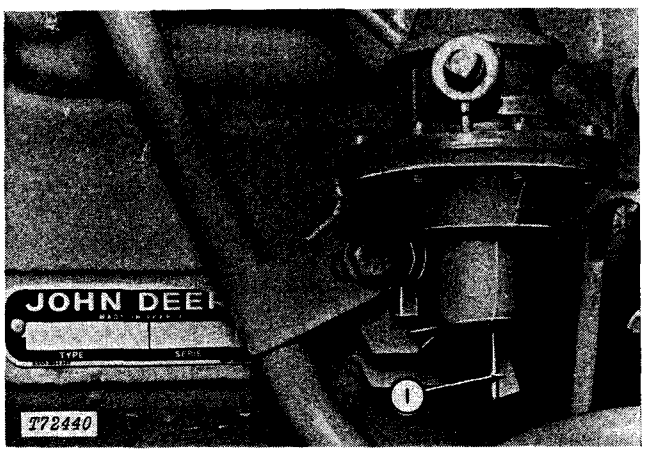
9. Fuel Filter

Install a new fuel filter.

NOTE: Change the filter at one year if this comes before 500 hours.



1. Push tab A and pull tab B to disengage hook (C).
2. Disengage hook (D).
3. Remove spring (E).
4. Remove element (F).
5. Clean the filter body (G) and spring pin.
6. Install new element and spring.
7. Remove air from fuel system.



1. Loosen the bleed screw (H).
2. Pump the primer lever (I) until fuel without air bubbles flows from the bleed screw.
3. Tighten the bleed screw.
4. Push the primer lever down.

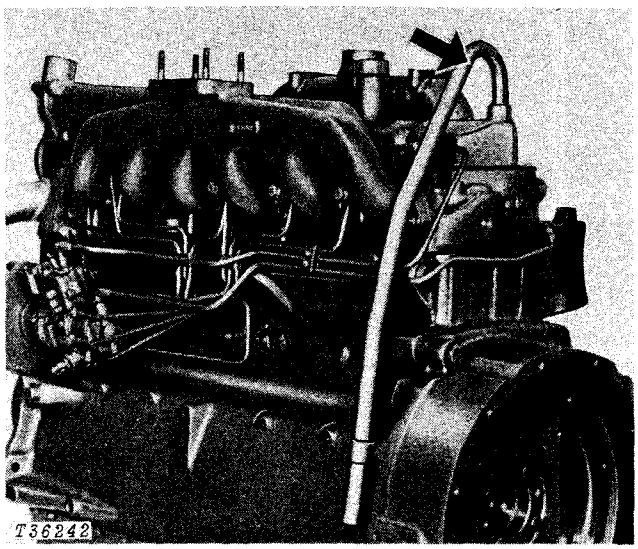
NOTE: If the primer does not pump fuel and no resistance is felt at the upper part of the lever stroke, crank the engine briefly with the starter.

10. Crankcase Vent Tube

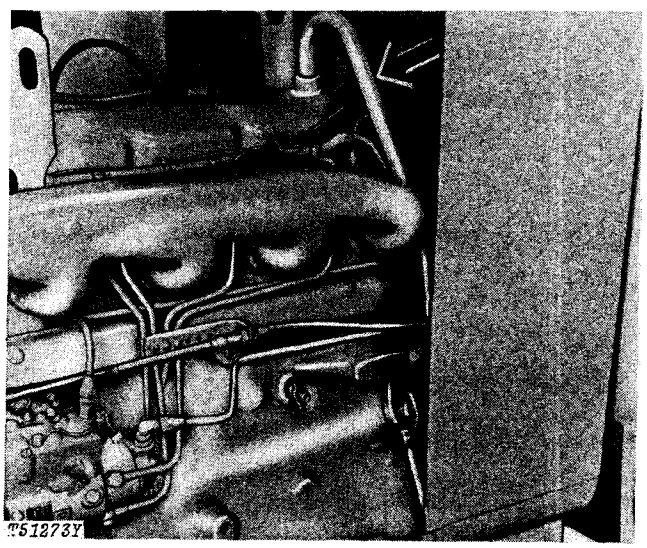
Remove the vent tube. Clean it with diesel fuel.

If you operate the engine in dusty conditions, clean the tube at shorter intervals.

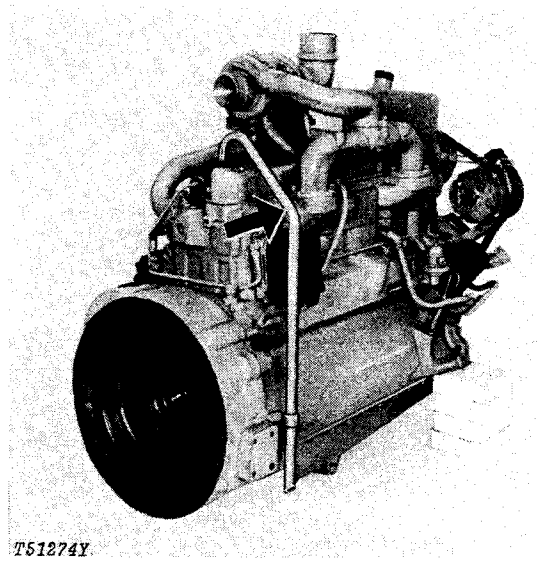
When installing the tube, be sure the O-ring fits correctly in the rocker arm cover.



Crankcase Vent Tube (6359 Engine)



Crankcase Vent Tube (4219 Engine)

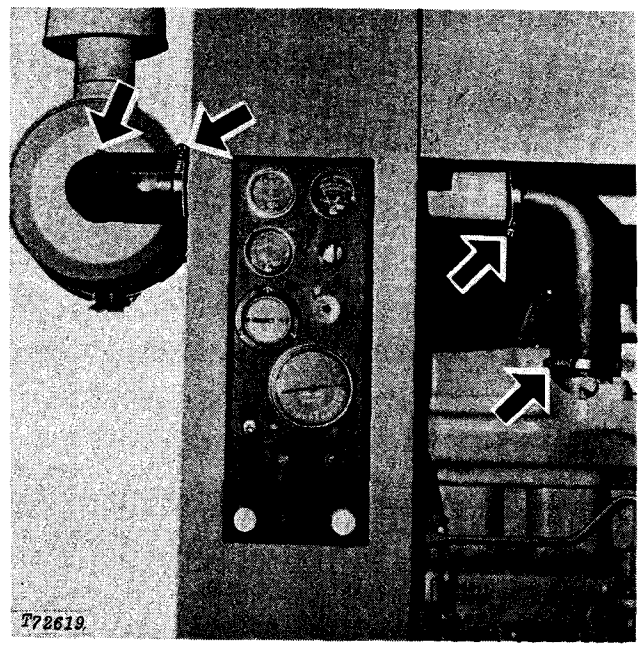


Crankcase Vent Tube (6359 Engine)

11. Air Intake Hoses

Check the clamps on the hoses which connect the air cleaner and the engine. If necessary, tighten the hose clamps. Inspect the hoses for cracks.

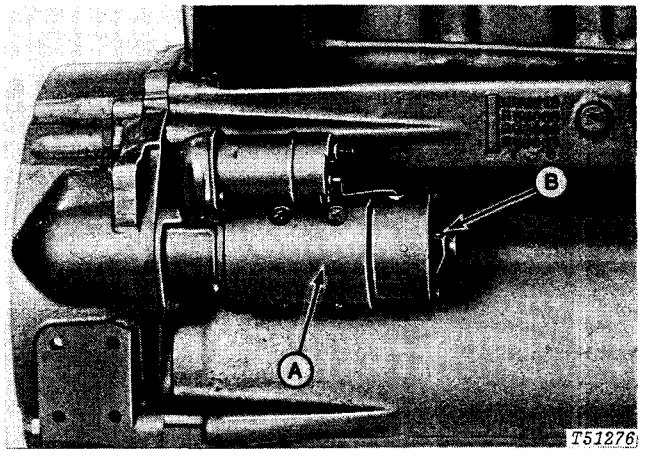
Tighten clamps on the turbocharger intake hose to 70 lb-ft (95 N·m).



Air Intake Hose Clamps (4219 Engine)

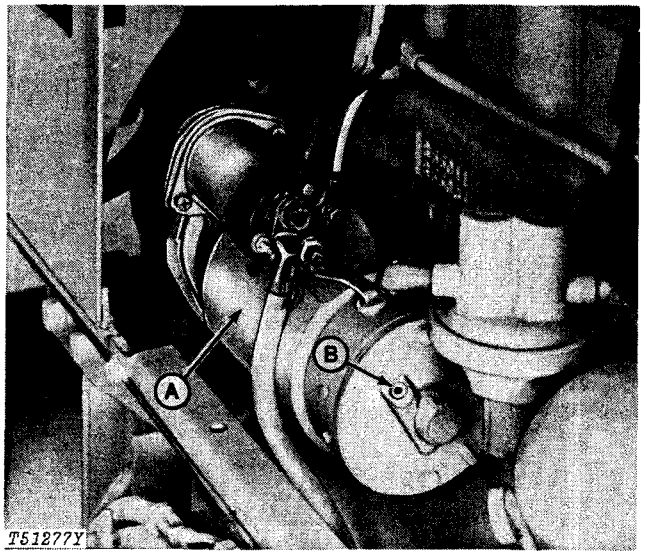
EVERY 1000 HOURS

12. Starter (Delco-Remy Only)



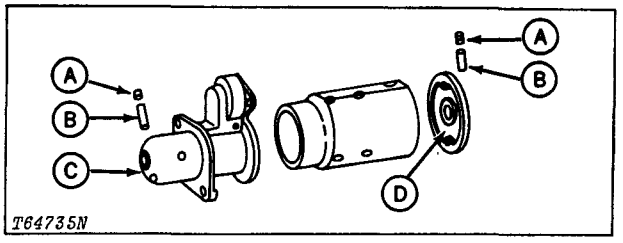
A—Starter Motor **B—Pipe Plug**

6329 Engine



A—Starter Motor **B—Pipe Plug**

4219 Engine



A—Pipe Plug
B—Wick
C—Drive End Housing
D—Commutator End Frame

Delco-Remy Starter

Remove the starter. Remove the pipe plugs (A) from each end of the starter. Put SAE 10W-20 John Deere TORQ-GARD SUPREME engine oil or an equivalent on the wicks (B). The wicks must be full of oil. Install the pipe plugs.

13. Engine Valves

See your John Deere dealer for engine valve adjustment.

14. Engine Speeds

Warm-up the engine. Use a tachometer to check engine speeds.

See engine speeds chart on page 7.

If engine speeds are not correct, see your John Deere dealer for service.

EVERY SPRING AND FALL

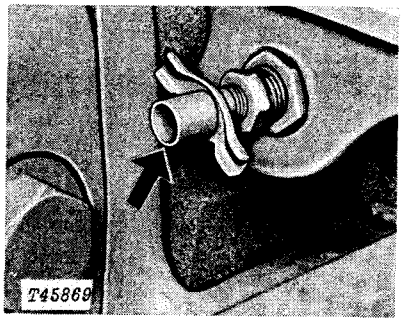
15. Cooling System

Drain, flush, and fill the cooling system with correct coolant.

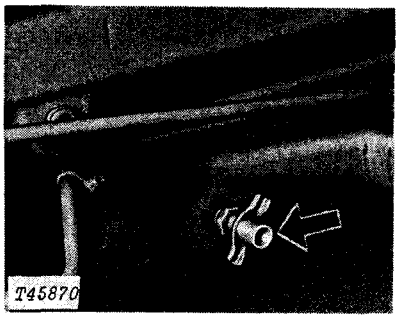
CAUTION: Do not remove the radiator filler cap unless the engine is cool. Then loosen the cap slowly to the stop. Release all pressure before removing the cap.

To drain the cooling system completely:

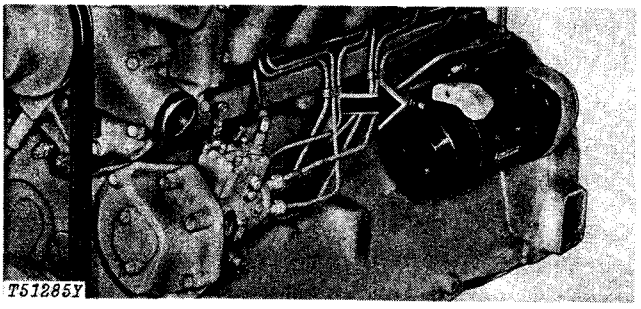
1. Open the drain cock of the radiator.
2. Open the drain cock of the cylinder block.
3. Remove the drain plug of the engine oil cooler.



Radiator Drain (4219 Engine)

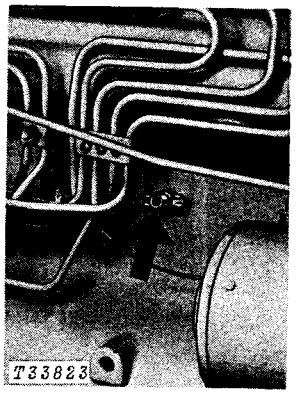


Cylinder Block Drain (4219 Engine)

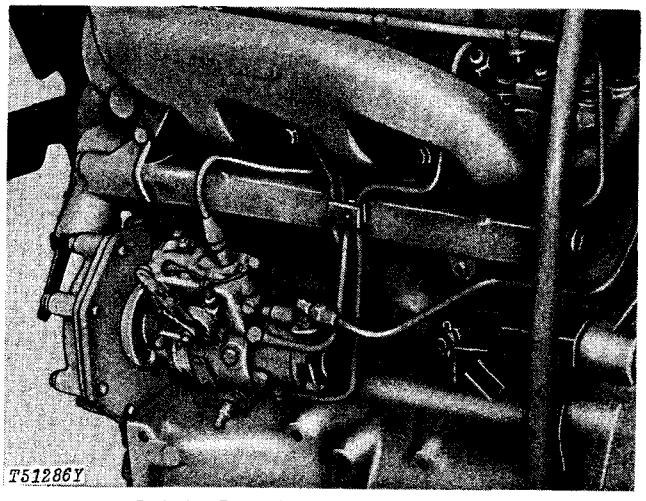


Cylinder Block Drain Cock (6359 Engine)

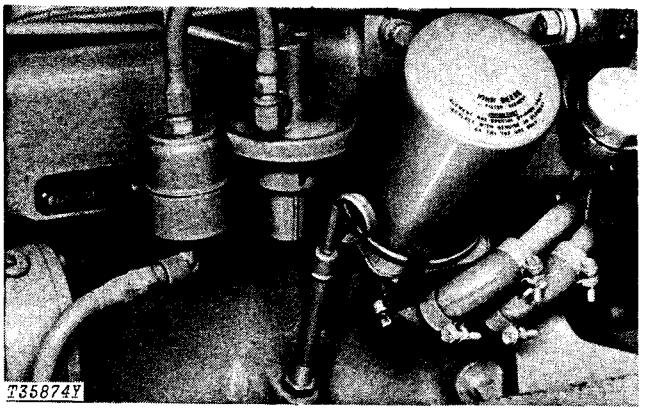
Radiator Drain Cock



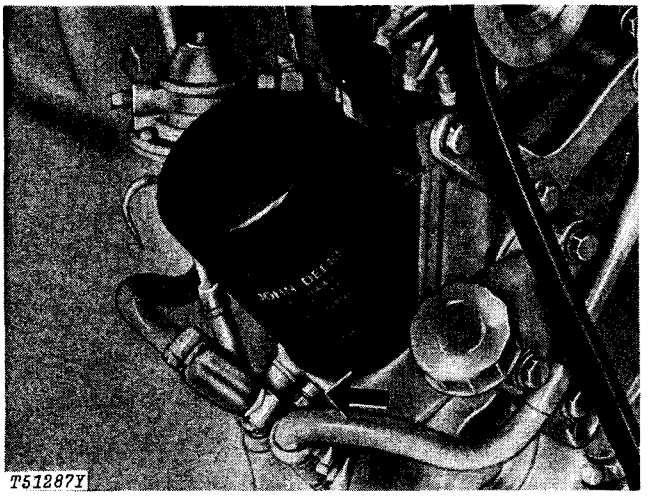
Cylinder Block Drain Cock 6414 Engine



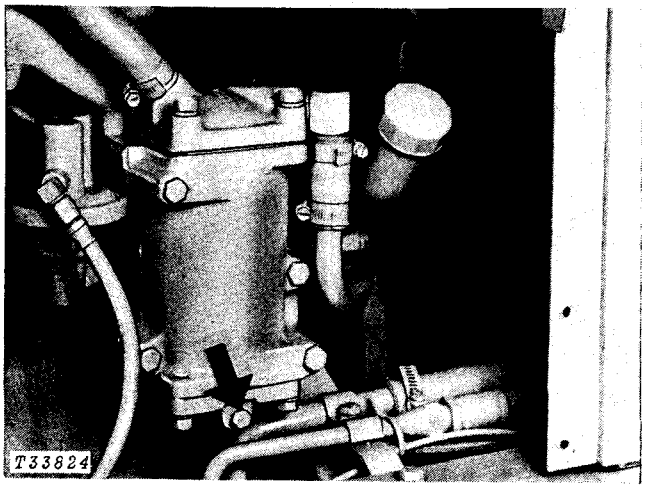
Cylinder Block Drain Cock (3164 Engine)



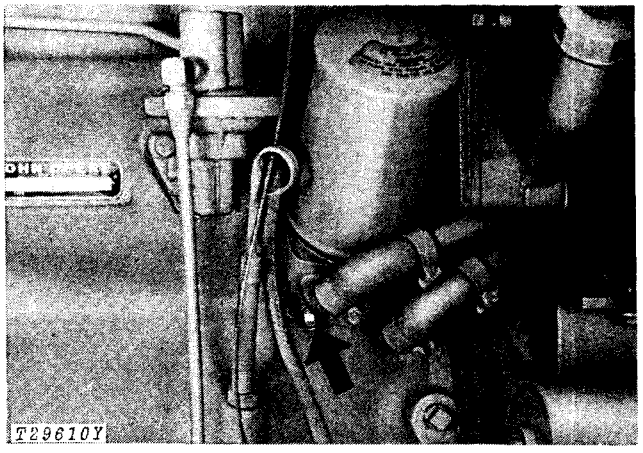
Engine Oil Cooler Drain Plug (4219 Engine)



Engine Oil Cooler Drain Plug (6359 Engine)



Engine Oil Cooler Drain Plug (6414 Engine)



Engine Oil Cooler Drain Plug (6329 Engine)

Flush the cooling system with John Deere Heavy Duty Cooling System Cleaner with Detergent, John Deere Cooling System Quick Flush, or an equivalent radiator cleaning compound.

For cold weather, fill the cooling system with 50% water and 50% antifreeze (ethylene glycol type with approved rust inhibitor). For temperatures above freezing, fill the cooling system with water. Add a non-chromate rust inhibitor every three months or every 500 hours to prevent rust and corrosion and to lubricate the water pump.

John Deere Cooling System Sealer or an equivalent may also be added to the radiator to seal leaks in the cooling system.

Clean radiator fins when necessary with compressed air under 40 psi (280 kPa) or water pressure.

16. Engine Oil

Drain and fill crankcase with oil specified on page 8. Install a new oil filter.

NOTE: If the engine has not run 200 hours before the season changes, drain the crankcase. Change the oil and oil filter. Use oil specified on page 8.

ANNUALLY

17. Air Cleaner

Clean the air cleaner housing. Then install new primary and safety elements. See page 13.

Service

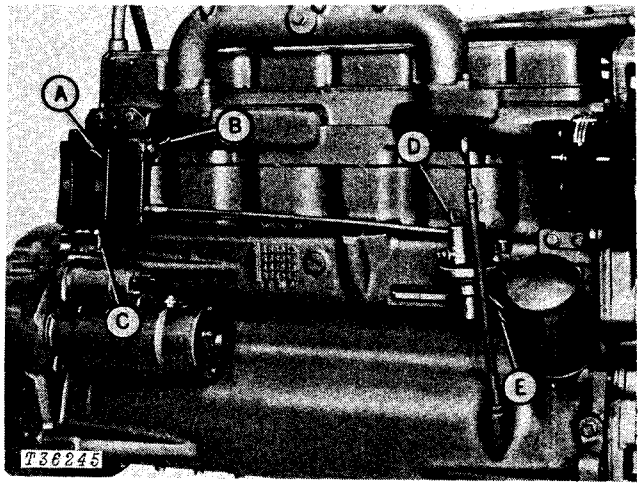
This section gives you general service information on the fuel system and electrical system.

These systems need service to keep your engine in the best possible condition. See your John Deere dealer for assistance or added service.

FUEL SYSTEM

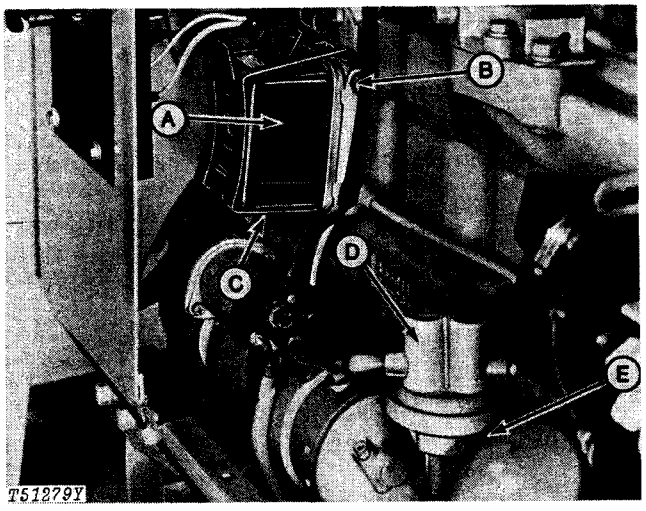
The fuel system:

fuel tank
fuel filter
fuel lines
fuel transfer pump
injection pump
injection nozzles



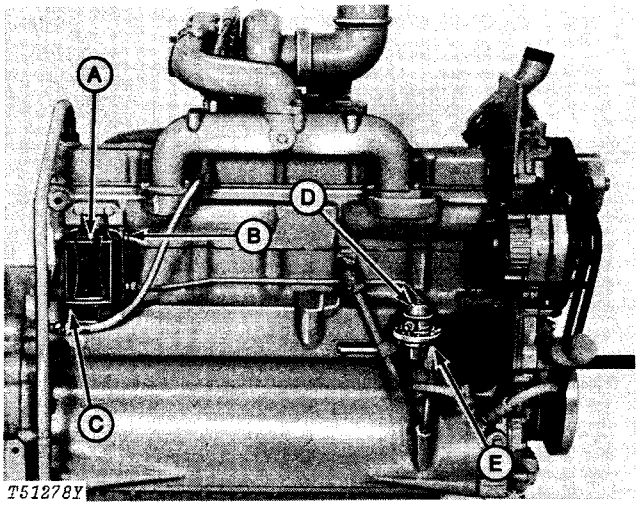
A—Fuel Filter
B—Bleed Screw
C—Fuel Drain Plug
D—Fuel Transfer Pump
E—Fuel Transfer Pump Primer Lever

Fuel System Components (6329 Engine)



A—Fuel Filter
B—Bleed Screw
C—Fuel Drain Plug
D—Fuel Transfer Pump
E—Fuel Transfer Pump Primer Lever

Fuel System Components (4219 Engine)



A—Fuel Filter
B—Bleed Screw
C—Fuel Drain Plug
D—Fuel Transfer Pump
E—Fuel Transfer Pump Primer Lever

Fuel System Components (6359 Engine)

FUEL STORAGE

Poor fuel storage can make the fuel system dirty. Water or sediment found in the fuel filter daily is proof that the fuel system is dirty. Check your storage tank.

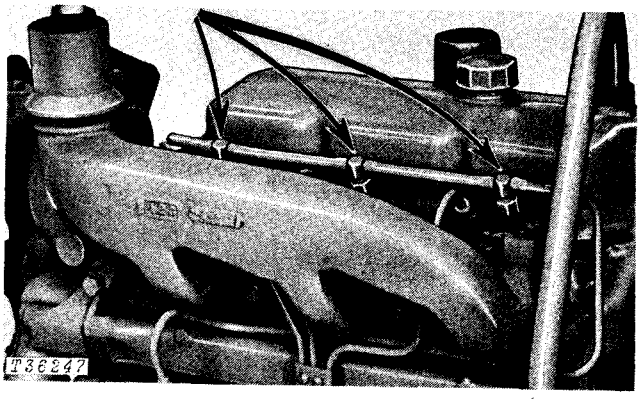
REMOVING AIR FROM THE FUEL SYSTEM

If the fuel filter or fuel pump sediment bowl is removed, or if the engine runs out of fuel, remove air from the fuel system.

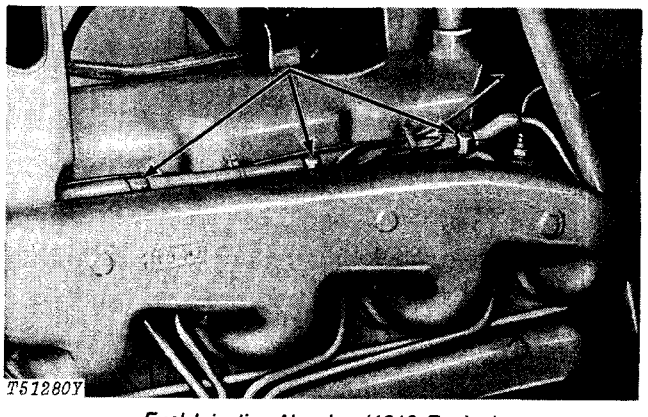
FUEL INJECTION NOZZLES

If injection nozzles are not operating correctly, the engine will not run normally. See your John Deere dealer for service on the injection nozzles.

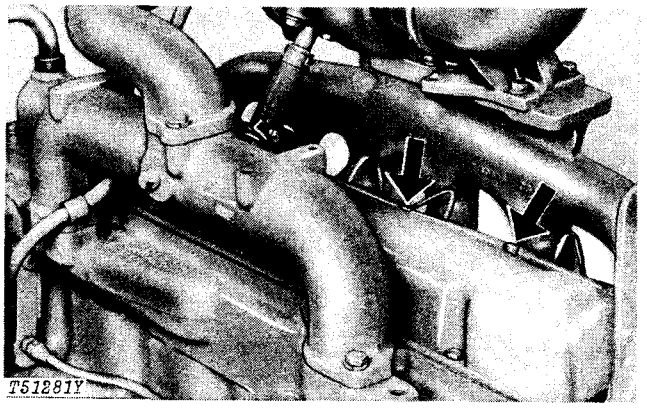
IMPORTANT: Do not remove injection nozzles.



Fuel Injection Nozzles (3164 Engine)



Fuel Injection Nozzles (4219 Engine)



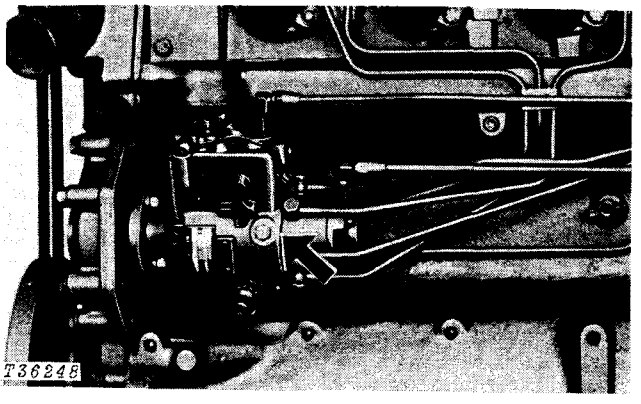
Fuel Injection Nozzles (6359 Engine)

FUEL INJECTION PUMP

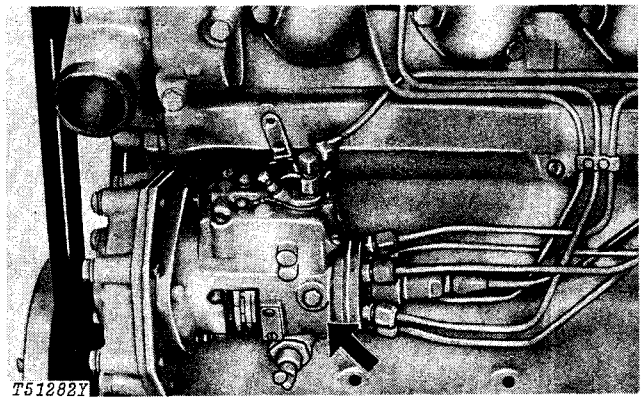
If you change the injection pump in any way not approved by the manufacturer, the warranty could be affected. See your copy of the John Deere warranty.

Do not work on an injection pump that is not operating correctly. See your John Deere dealer for service on the injection pump.

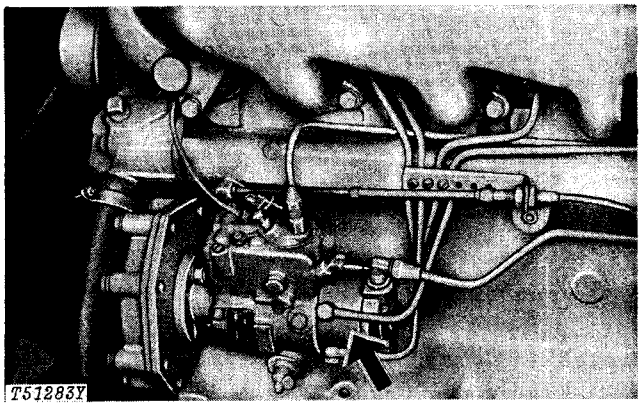
IMPORTANT: Do not clean a warm injection pump with steam or water.



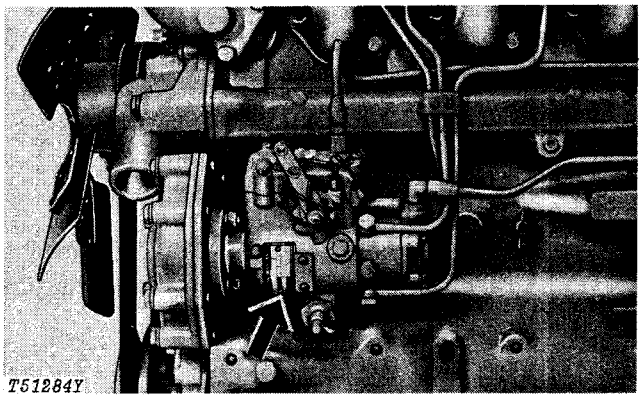
Fuel Injection Pump (6329 Engine)



Fuel Injection Pump (6359 Engine)



Fuel Injection Pump (4219 Engine)



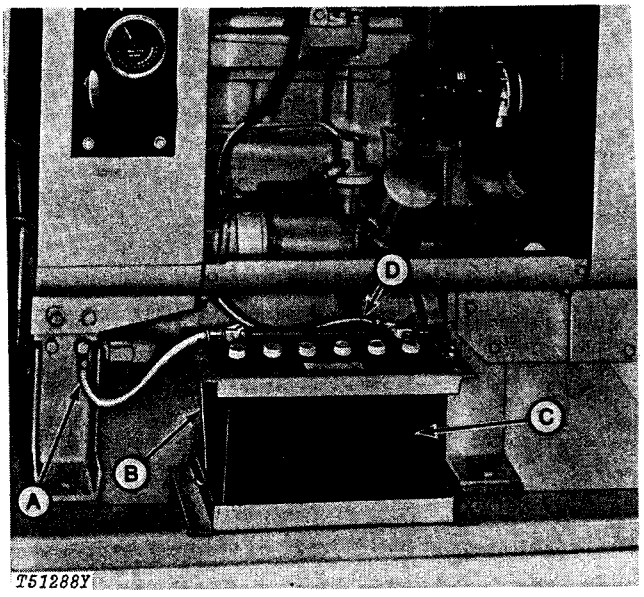
Fuel Injection Pump (3164 Engine)

ELECTRICAL SYSTEM

BATTERIES

⚠ CAUTION: Keep sparks and flames away from batteries.

IMPORTANT: Before working on the electrical system, disconnect the battery negative (−) cable.



A—Negative Ground Cable
B—Battery Hold-Down
C—Battery
D—Positive Cable To Starter

Battery (4219 Engine)

Cleaning Batteries

Keep the batteries clean. Wipe them with a damp cloth. Be sure vent plugs are tight.

To remove corrosion from terminals, remove the battery cables. Wash the terminals with a solution of 1/4 pound (0.1 L) of baking soda added to 1 quart (0.9 L) of water.

After cleaning, flush the outside of the battery, the battery compartment, and the area around the battery compartment with clean water.

Storage

To store your engine, or take it out of storage, follow the instructions below.

STORING THE ENGINE

Use the AR41785 Engine Storage Kit or its equivalent.

1. Change the crankcase oil. Drain the crankcase when the engine is warm. Install a new filter. Fill the crankcase with correct oil.
2. Drain, flush, and fill the cooling system. Use clean, soft water and John Deere Summer Coolant Conditioner (T19566). Use antifreeze for cold weather. Run the engine at normal operating temperature at slow idle to circulate the coolant.
3. Drain the fuel tank. Add 1 ounce (29.5 mL) of inhibitor to the fuel tank for each 4 gallons (15 L) of tank capacity.
4. Add 1 ounce (29.5 mL) of inhibitor to the engine crankcase for each quart (0.9 L) of crankcase oil.
5. Inspect the air intake system. Clean it, if necessary.
6. Disconnect the air intake pipe from the manifold. Put 3 ounces (88.7 mL) of inhibitor in the manifold. Connect the air intake pipe. Disconnect the injection pump shut-off wire. Crank the engine slowly for two revolutions. Connect the shut-off wire.
7. Seal the following openings with plastic bags and tape from the kit: air cleaner inlet, exhaust opening, crankcase breather pipe, fuel tank vent, and radiator overflow hose. Follow the check list on the tag.
8. Loosen the fan belt.
9. Remove, clean, and store the battery.
10. Put grease or corrosion preventive on unpainted metal surfaces.
11. Clean the outside of the engine. Put paint on scratched and chipped painted surfaces.
12. Store the engine in a dry, protected place. If the unit must be stored outside, cover it.

REMOVING THE ENGINE FROM STORAGE

Remove all protective coverings from the engine. Remove seals from all openings in the engine and electrical system. Follow the check list on the tag.

Install the batteries. Tighten the alternator belt.

Fill the fuel tank with clean fuel.

Check the engine crankcase oil level. Check the cooling system level.

Perform the 500 hour services shown on the periodic service chart.

To start and warm-up the engine:

1. Disconnect the electric shut-off wire of the injection pump.
2. Crank the engine until the oil pressure gauge shows pressure.

IMPORTANT: Do not engage the starter for more than 20 seconds.

3. After the gauge shows pressure, connect the shut-off wire.
4. Start the engine.
5. Run the engine several minutes at 1/3 throttle.

IMPORTANT: Before running the engine under load, check carefully all engine operations.

Trouble Shooting

If you cannot correct engine trouble by using the following problems and solutions, see your John Deere dealer.

Engine Hard to Start or Will Not Start

Wrong starting procedure.
No fuel.
Low battery power.
  Check electrolyte level and specific gravity of battery.
Too much resistance in starting circuit.
  Clean and tighten all connections on batteries and starter.
Crankcase oil too heavy.
  Use correct oil.
Wrong fuel.
  Use correct fuel.
Water, dirt, or air in fuel system.
  Drain, flush, fill, and remove air from system.
Plugged fuel filter.
  Install a new filter element.
Injection nozzles dirty or not working correctly.
  See your John Deere dealer.
Fuel pump primer lever is up.
  Push lever down.

Engine Runs Irregularly or Stops

Low coolant temperature.
  See "Coolant Temperature Too Low" below.
Plugged fuel filter.
  Install a new filter element.
Water, dirt, or air in fuel system.
  Drain, flush, fill, and remove air from system.
Injection nozzles dirty or not working correctly.
  See your John Deere dealer.
Leaks in air intake system.
  Tighten hose clamps. Install new parts, if necessary.
Wrong fuel.
  Use correct fuel.

Coolant Temperature Too Low

Thermostat not working correctly.
  Remove and check thermostat.

Coolant Temperature Too High

Engine working too hard.
  Reduce load.
Low coolant level.
  Fill radiator to correct level.
  Check radiator and hoses for loose connections and leaks.
Fan belts loose or not working correctly.
  Tighten belt or install new belt.
Dirty radiator core.
  Clean the radiator core.
Cooling system needs flushing.
Defective thermostat.
  Remove and check thermostat.
Temperature gauge not working correctly.
  Check coolant temperature with thermostat.
  Install new gauge if necessary.

Engine Has Little Power

Engine working too hard.
  Reduce load.
Plugged air intake system.
  Clean primary element.
Plugged fuel filter.
  Install new filter element.
Wrong fuel.
Engine too hot.
  See "Coolant Temperature Too High" above.
Below normal engine temperature.
  Remove and check thermostat.
Wrong valve clearance.
  See your John Deere dealer.
Injection nozzles dirty or not working correctly.
  See your John Deere dealer.
Injection pump out of time.
  See your John Deere dealer.
Leaks in air intake system.
  Tighten hose clamps. Install new parts, if necessary.

Engine Knocks

Not enough oil.
  Add correct oil.
Injection pump out of time.
  See your John Deere dealer.
Low coolant temperature.
  See "Coolant Temperature Too Low".
Coolant temperature too high.
  See "Coolant Temperature Too High".

Engine Uses Too Much Fuel

Wrong fuel.
Plugged or dirty air cleaner.
  Clean air cleaner.
Engine working too hard.
  Take away load.
Wrong valve clearance.
  See your John Deere dealer.
Injection nozzles dirty.
  See your John Deere dealer.
Injection pump out of time.
  See your John Deere dealer.
Engine not at correct temperature.
  Check thermostats.

Exhaust Gas is Black or Gray

Plugged or dirty air cleaner.
  Clean primary element.
Muffler not working correctly.
Wrong fuel.
Engine working too hard.
  Reduce load.
Injection nozzles dirty.
  See your John Deere dealer.
Engine out of time.
  See your John Deere dealer.

Exhaust Gas is White

Wrong fuel.
Cold engine.
  Warm up engine to normal operating temperature.
Thermostat not working.
  Remove and check thermostat.
Engine out of time.
  See your John Deere dealer.

Engine Uses Too Much Oil

Crankcase oil too light.
  Use correct oil.
Oil leaks.
  Check for leaks in lines, around gaskets and drain plug.
Coolant temperature too high.
  See "Coolant Temperature Too High".

Low Oil Pressure

Low oil level.
Wrong oil.
  Drain and fill crankcase with correct oil.
Plugged oil filter.
  Install new filter.

ELECTRICAL SYSTEM

Battery Will Not Take a Charge

Loose or corroded connections.
  Clean and tighten battery connections.
Worn-out battery.
  Check specific gravity of each cell.
  Check electrolyte level of each cell.
Alternator belt loose or not working correctly.
  Tighten belt or install new belt.

Starter Not Working

Loose or corroded connections.
  Clean and tighten connections.
Low battery power.
  Check specific gravity of each cell.
  Check electrolyte level of each cell.
Electrical system ground wire not working correctly.
  Repair or install new wire.

Starter Turns Slowly

Low battery power.
  Battery too small.
  Battery cable too small.
  Check specific gravity of each cell.
  Check electrolyte level of each cell.
Crankcase oil too heavy.
Loose or corroded connections.
  Clean and tighten connections.

Electrical System Does Not Work

Battery connections not working correctly.
  Clean and tighten connections.
Worn-out battery.
  Check specific gravity and electrolyte level of each cell.

Specifications

SPECIFICATION	UNIT OF MEASURE	SERIES 300										
		3164D	4219D	4239DF	4239T	4276D	4276T	6329D	6359DF	6359T	6414D	6414T
Number of cylinders		3	4	4	4	4	4	6	6	6	6	6
Fuel		Diesel	Diesel	Diesel	Diesel	Diesel	Diesel	Diesel	Diesel	Diesel	Diesel	Diesel
Bore	in.	4.02	4.02	4.19	4.19	4.19	4.19	4.02	4.19	4.19	4.19	4.19
	(mm)	(102)	(102)	(106.5)	(106.5)	(106)	(106)	(102)	(106.5)	(106.5)	(106)	(106)
Stroke	in.	4.33	4.33	4.33	4.33	5.00	5.00	4.33	4.33	4.33	5.00	5.00
	(mm)	(110)	(110)	(110)	(110)	(127)	(127)	(110)	(110)	(110)	(127)	(127)
Displacement	cu. in.	164	219	239	239	276	276	329	359	359	414	414
	cm^3	(2690)	(3590)	(3917)	(3917)	(4520)	(4520)	(5390)	(5885)	(5885)	(6780)	(6780)
Compression ratio		16.8:1	16.8:1	16.8:1	16.2:1	16.3:1	16.3:1	16.8:1	16.8:1	16.2:1	16.3:1	16.3:1
Rated speed	RPM	2500	2500	2500	2500	2500	2200	2500	2500	2500	2200	2200
HP (maximum intermittent)												
@ RS without fan		52	70	75	89	82	95	104	113	134	120	142
HP (continuous)												
@ 2200 rpm without fan		44	56	63	72	66	81	83	95	110	103	120
Normal working range	RPM	1500-2500	1500-2500	1500-2500	1500-2500	1500-2500	1500-2200	1500-2500	1500-2500	1500-2500	1500-2200	1500-2200
Slow idle		800	800	800	800	800	800	800	800	800	800	800
Torque @ RPM	lb/ft	128 (174)	168 (228)	187 (254)	226 (306)	206 (279)	263 (357)	243 (330)	280 (380)	338 (459)	320 (434)	396 (537)
(max.) without fan	(Nm)	@ 1500	@ 1400	@ 1300	@ 1600	@ 1100	@ 1500	@ 1400	@ 1200	@ 1400	@ 1100	@ 1500
Basic Weight	lb	695	845	845	975	950	975	1145	1145	1250	1220	1250
	(kg)	(315)	(383)	(383)	(442)	(431)	(442)	(519)	(519)	(567)	(553)	(567)
Flywheel housing			2	2	2	2	2	2	2	2		
and flywheel		2	3	3	3	3	3	3	3	3	2	2
(SAE No.)		4	4	4	4	4	4	4			3	3
Nozzles	mm	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5
Fuel filter	$in.^2$	860/490	860/490	860/490	860/490	860/490	860/490	860/490	860/490	860/490	860/490	860/490
area	cm^2	(5549/3161)	(5549/3161)	(5549/3161)	(5549/3161)	(5549/3161)	(5549/3161)	(5549/3161)	(5549/3161)	(5549/3161)	(5549/3161)	(5549/3161)
Dimensions:												
Width	in.	19.88	19.72	19.72	19.72	19.72	19.72	19.62	19.62	19.62	19.62	19.62
	(mm)	(505)	(500.9)	(500.9)	(500.9)	(500.9)	(500.9)	(498.5)	(498.5)	(498.5)	(498.5)	(498.5)
Height	in.	32.01	32.03	31.9	37.16	33.31	37.16	31.78	36.58	42.15	36.58	42.15
	(mm)	(813)	(812.6)	(810.3)	(943.9)	(846.1)	(943.9)	(807.2)	(929.1)	(1070.6)	(929.1)	(1070.6)
Length	in.	27.64	32.68	32.72	33.58	32.72	34.74	45.81	43.63	43.63	43.63	43.63
	(mm)	(702.1)	(830)	(830)	(852.9)	(831.1)	(882.4)	(1163.6)	(1108.2)	(1108.2)	(1108.2)	(1108.2)
Crankcase capacity with filter change	qts.	6	6	9	15	9	14	12	18	18	18	18
	(L)	(5.7)	(5.7)	(8.5)	(14)	(8.5)	(13.2)	(11.4)	(17.1)	(17.1)	(17.1)	(17.1)
without filter change	qts.	5	5	8	14	8	13	11	17	17	17	17
	(L)	(4.8)	(4.8)	(7.6)	(13.2)	(7.6)	(12.4)	(10.4)	(16.1)	(16.1)	(16.1)	(16.1)

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