

**Operator's
Manual**

**John Deere
Series 300 OEM
Engines**

**OM-R70081
Issue L8**




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.

Your operator's manual has SI Metric equivalents which follow immediately after U.S. units of measure.

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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 herewith 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



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.

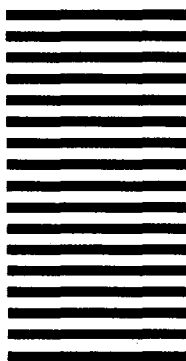
BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1, MOLINE, ILLINOIS 61265

POSTAGE WILL BE PAID BY ADDRESSEE

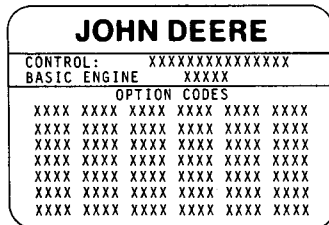
John Deere OEM Sales
John Deere Rd.
Moline, Illinois 61265

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



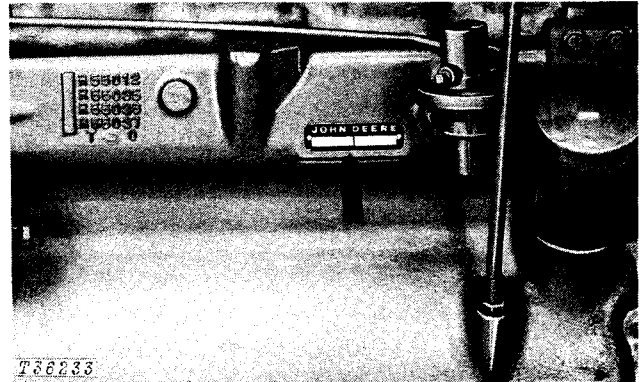
ACCESSORY CODE PLATE AND ENGINE SERIAL NUMBER PLATE

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



T35527

Accessory Code Plate



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 1102 - Rocker Arm
Cover, No
Filler

Functional Group Codes	Description
11 _____	Rocker Arm
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 Pulley

Functional Group Codes	Description
24 _____	Fan Belts
25 _____	Fan
26 _____	Engine Heater
27 _____	Radiator
28 _____	Exhaust System
29 _____	Vent System
30 _____	Starting System
31 _____	Electrical System
32 _____	Instrumentation
33 _____	Tachometer
34 _____	Hour Meter
53 _____	Sheet Metal
58 _____	Clutch and PTO

Write the last two digits in spaces above from the option code numbers on your engine code plate.

Accessories not sold by John Deere will be listed 00 (last two digits) on the code plate. 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 number.



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.

Never leave the engine while it is running.

Turn the radiator cap slowly to relieve pressure before removing it. Add coolant only when the engine is stopped or running at slow idle.

Fasten a fire extinguisher close to the engine. Keep the extinguisher in correct condition. Know how to use it.

Always disconnect the battery ground strap before making adjustments on the engine or electrical equipment.

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

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

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

If a battery needs charging, turn off the charger before connecting or disconnecting the charger.

Use a piece of cardboard or wood, rather than hands, to search for suspected leaks.

Escaping fluid under pressure can penetrate the skin.

If injured by escaping fluid, see a doctor at once.

The operator must not wear loose clothing.

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

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

Use caution when working with fuel. Never 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.

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

Check for loose electrical connections or bad wiring.

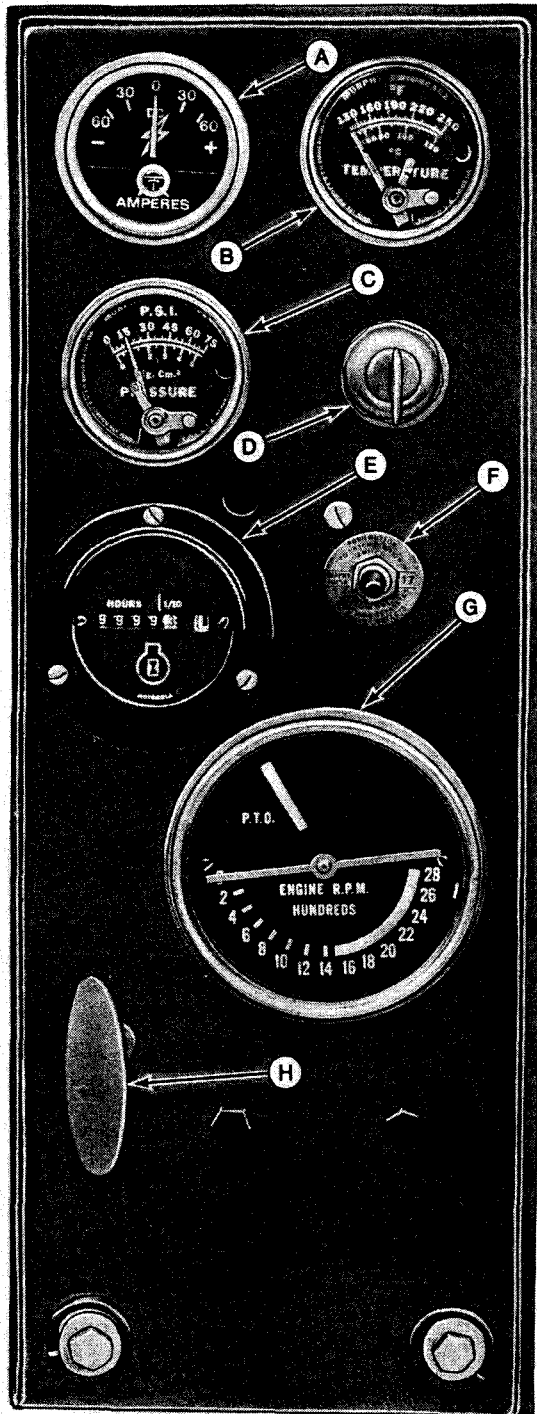
The engine can be operated only by approved persons.

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.

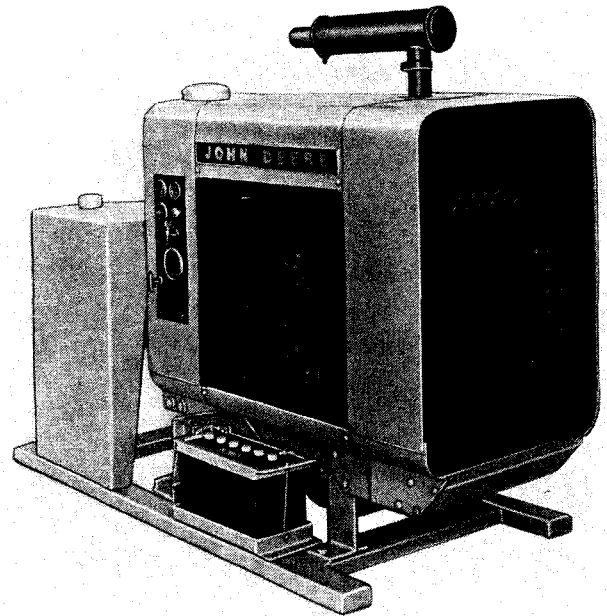


Instruments



T51253

Instrument Panel
4219 Engine

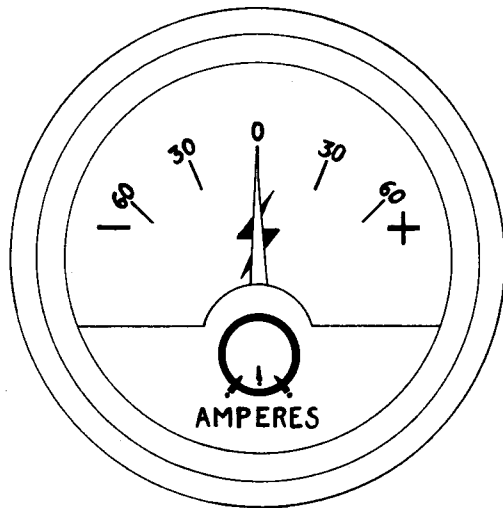


T51254Y

4219 Engine (Enclosed)

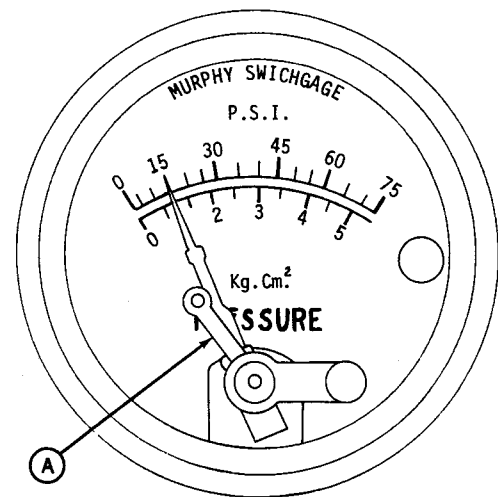
- A—Ammeter
- B—Engine Coolant Temperature Gauge
- C—Engine Oil Pressure Gauge
- D—Starter Switch
- E—Hour Meter
- F—Safety Switch
- G—Tachometer
- H—Throttle

4 Instruments



T51255

*Ammeter
4219 Engine*

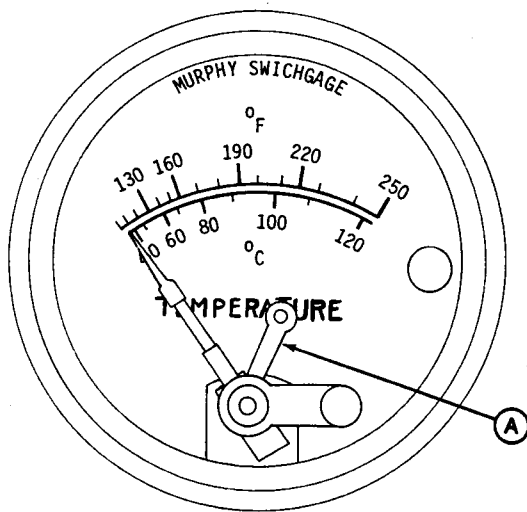


T51257

A—Contact

*Oil Pressure Gauge
4219 Engine*

When the oil pressure goes down to 15 psi (1 bar), the contact will stop the engine.

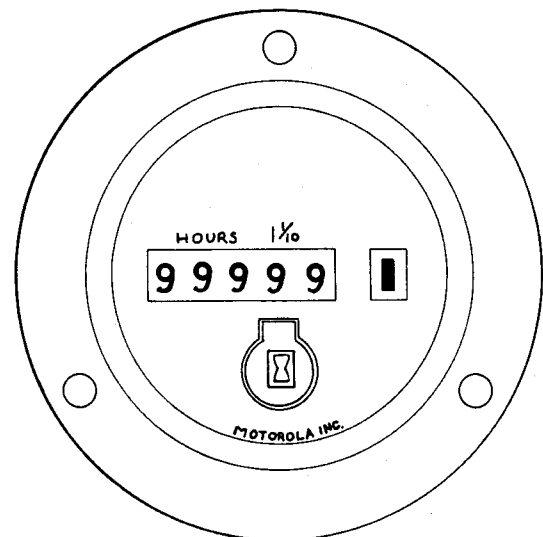


T51256

A—Contact

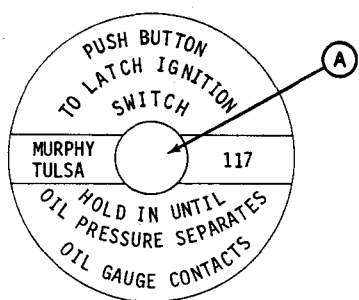
*Coolant Temperature Gauge
4219 Engine*

When the coolant temperature goes up to 220°F (104°C), the contact will stop the engine.



T51258

*Hour Meter
4219 Engine*



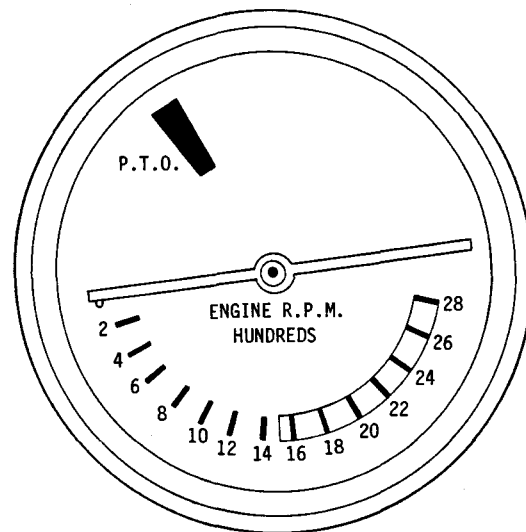
T51259

A—Button

Safety Switch
4219 Engine

The safety switch will stop the engine if the oil pressure lowers to 15 psi (1 bar) or if the coolant temperature goes up to 220°F (104°C).

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



T51260

Tachometer
4219 Engine



Operation

PRE-START INSPECTION

Check or inspect the following before starting the engine for the first time each day:

1. Engine oil level.
2. Fuel filter for water and sediment.
3. Engine coolant level.
4. Air cleaner.
5. Turbocharger mounting and connections for air or oil leaks.
6. Fuel supply.

STARTING THE ENGINE

CAUTION: Never start the engine unless it is safe to do so.

CAUTION: Before starting the engine, be sure there is enough ventilation. Never operate the engine in a closed building without correct ventilation.

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

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.

Turn the engine several revolutions by pushing the starter button. Hold the button down. Inject starting fluid into the air intake system.

IMPORTANT: Inject starting fluid **ONLY** while the engine is turning. 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.

Engine Coolant Heater

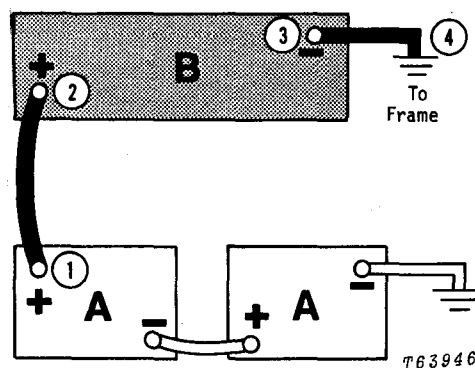
Connect the coolant heater to 115 volt electrical power ten hours before starting the engine.

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

Booster Batteries

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

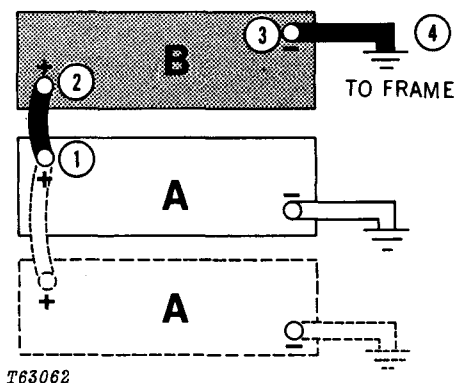
CAUTION: Battery gas can explode. Keep flames and sparks away from batteries.



A—Machine Battery

B—Booster Battery

The booster battery hook-up above is for 12 volt electrical systems that use two 6 volt batteries in series.



A—Machine Battery

B—Booster Battery

The booster battery hook-up above is for 12 volt electrical systems that use two 6 volt batteries in parallel.

ENGINE WARM-UP

Warm the engine for five minutes by operating the engine at half throttle.

Do not run the engine at slow idle or fast idle during warm-up.

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

TURBOCHARGED ENGINES

If the engine has not run for several weeks:

1. Disconnect the electric shut-off wire to keep the engine from starting.
2. Turn the key on.
3. Push the starter button.
4. Turn the engine until the engine oil pressure gauge shows pressure.
5. Connect the shut-off wire.
6. Start the engine.

Do not run the engine faster than 1000 rpm until the engine oil pressure gauge shows 20 psi (1.4 bar).

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

ENGINE IDLING

Do not run the engine at slow idle unnecessarily.

STOPPING THE ENGINE

Gasoline Engine

1. Run at half speed, without load for two minutes.
2. Move the throttle to slow idle.
3. Turn the ignition key off.

Diesel Engine

1. Run at half speed, without load for two minutes.
2. Move the throttle to slow idle.
3. Turn the ignition key off.

NOTE: If the engine stops while operating under load, remove the load. Start the engine immediately.

Turbocharged Engines

IMPORTANT: Follow all the steps above. Then run the engine at slow idle for at least one minute before stopping the engine.

NOTE: The safety switch can stop the engine. See page 5.

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" on page 7.

See page 10 for correct service and maintenance of the engine during the break-in period.

ENGINE SPEEDS

The normal working range for Series 300 OEM engines is 1500 to 2500 rpm, except for the 4276T, 6414D, and 6414T engines. The normal working range for these three engines is 1500 to 2200 rpm. Slow idle is 800 rpm.

Generator Set Engine

1. The engine runs at 1800 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.
4. Cool the engine down without load for three to five minutes before stopping it.



Fuels and Lubricants

FUELS

Use only clean, high quality fuel.

Fuel Specifications

Use Grade No. 2-D fuel above 32°F (0°C).

Use Grade No. 1-D fuel at temperatures below 32°F (0°C). Use Grade 1-D fuel for all temperatures at elevations above 5000 ft. (1 500 m).

The interval between fuel system services can be made longer by adding John Deere Diesel Fuel Conditioner to fuel.

The cetane number should be 40 minimum. The interval between fuel system service may be increased by adding John Deere Diesel Fuel Conditioner to fuel.

Storage of Fuels

Do not keep fuel for a long period of time.

IMPORTANT: Keep all dirt, scale, water, and other foreign matter out of fuel.

Filling the Fuel Tank

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

LUBRICANTS

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

Storage of Lubricants

Keep lubricants in clean containers in a protected area.

Engine Lubricating Oils



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

NEVER PUT ADDITIVES IN THE CRANKCASE.

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

SINGLE VISCOSITY OILS

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

MULTI-VISCOSITY OILS

API Service CC/SD
MIL-L-46152

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 can use more oil when SAE 5W-20 or SAE 5W oils are used in the crankcase. Check the oil level regularly.



Lubrication and Periodic Service

The OEM 300 Series engines need regular, periodic service. Read this section carefully to learn how to correctly service your engine.

Use the engine hour meter to know when periodic services are 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.

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. Change the oil filter.
3. Fill the crankcase with correct oil.

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 screen.	Halfway between core and filler neck.	.....
2	Fuel filter	Drain any water or dirt.	.....	.....
3	Engine crankcase	Check oil level.	Between marks on dipstick.	Use correct oil shown on page 9.
4	Air cleaner	Clean element when indicator shows red when engine is off or too much smoke or loss of power is seen. Clean dust cup.	..... .....	..... .....

EVERY 100 HOURS

5	Alternator-fan belt	Check tension.	20 lb (89 N) force moves belt 3/4 in. (19 mm).	.....
6	Batteries	Check level of electrolyte in each cell. Check for terminal corrosion.	Fill each cell to bottom of filler neck.	Distilled water.

EVERY 200 HOURS

7	Engine crankcase	Drain and refill.	See chart on page 17.	Use correct oil shown on page 9.
8	Engine crankcase filter*	Install new filter.	.....	.....

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

12 Lubrication and Periodic Service

EVERY 500 HOURS

Item No.	Component	Description of Service	Capacity or Procedure	Description of Lubricant
9	Fuel filter*	Install new filter.	.....	Use a John Deere filter.
10	Engine 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	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 refill. Remove any trash from screen.	.....	.....
16	Engine crankcase	Drain and refill. Install new filter.	See chart on page 17.	Use correct oil shown on page 9.

ANNUALLY

17	Air cleaner	Install new primary and safety elements.
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**Install a new filter every 500 hours or every year, whichever comes first.*

DETAILED PERIODIC SERVICE

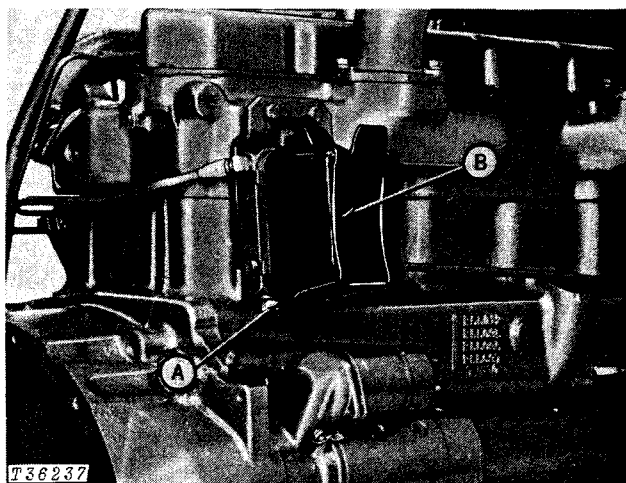
DAILY OR EVERY 10 HOURS

1. Radiator

CAUTION: Do not remove the radiator cap unless you can hold your hand on the radiator tank. First, loosen the cap slowly to the stop. Then release all pressure in the cooling system before removing the 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.

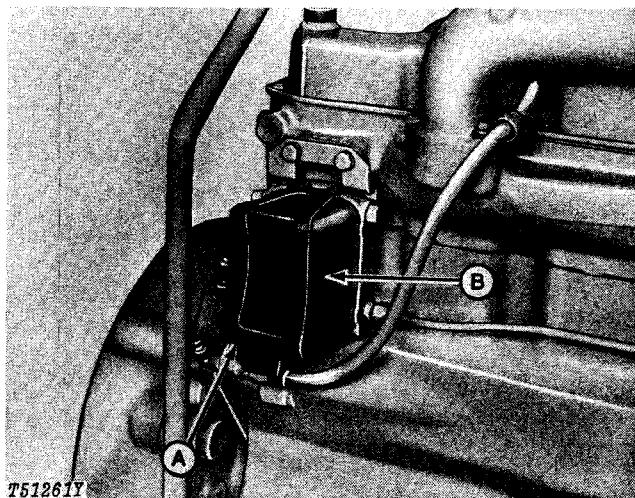
2. Fuel Filter



A—Fuel Filter Drain Plug

B—Fuel Filter

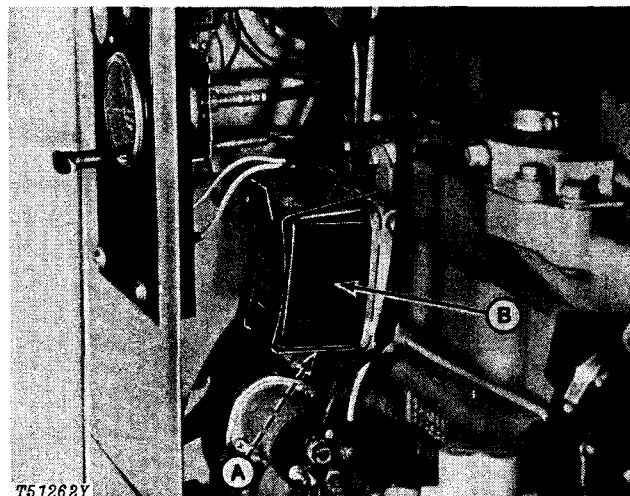
6329 Engine



A—Fuel Filter Drain Plug

B—Fuel Filter

6359 Engine



A—Fuel Filter Drain Plug

B—Fuel Filter

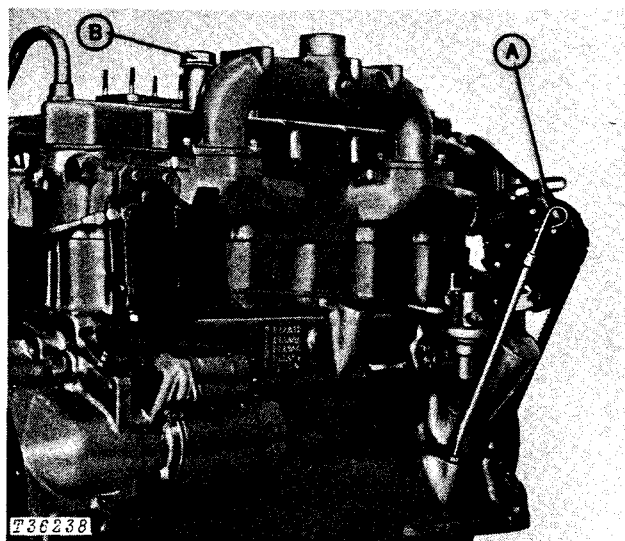
4219 Engine

Visually inspect the fuel filter. Loosen the drain plug (A) to drain water and sediment from the fuel filter. Remove air from the fuel filter. See page 22.

NOTE: Replace fuel filter when necessary.

3. Engine Crankcase

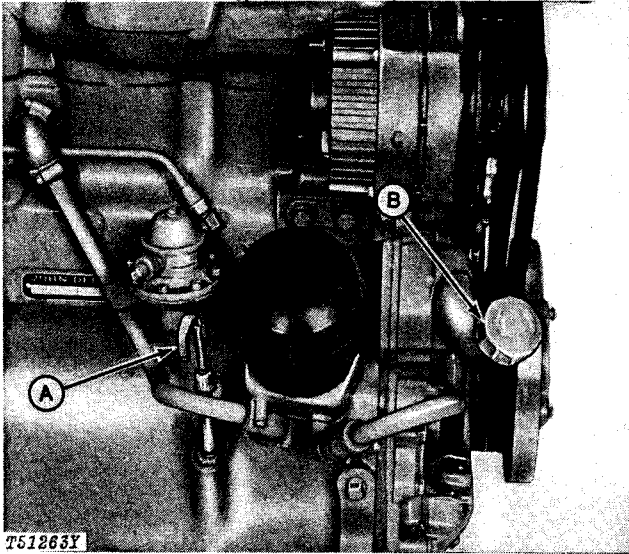
Check the crankcase oil level.



A—Crankcase Dipstick

B—Crankcase Filler

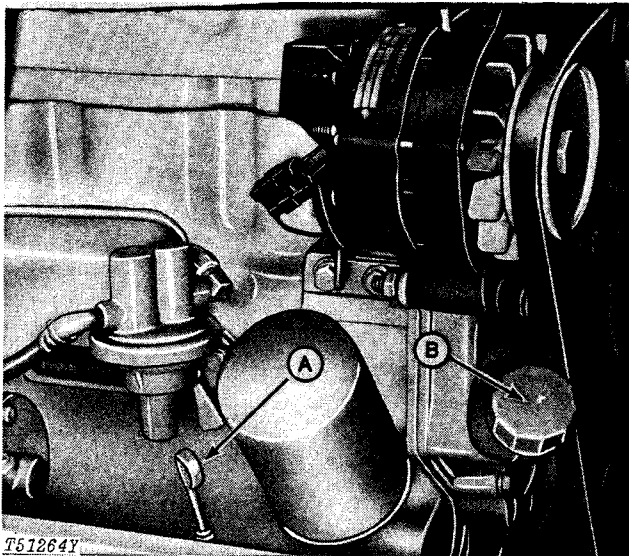
6329 Engine



A—Crankcase Dipstick

B—Crankcase Filler

6359 Engine

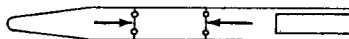


A—Crankcase Dipstick

B—Crankcase Filler

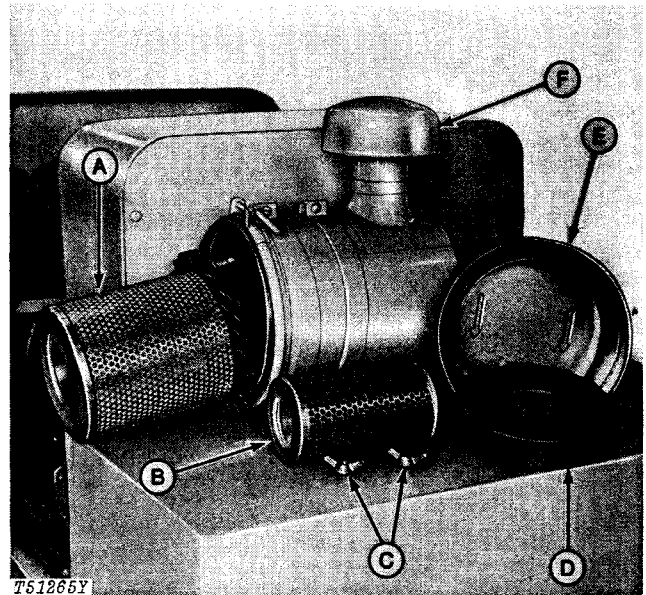
4219 Engine

Check the oil level with the engine off. If oil is at or below the bottom mark on the dipstick, add oil shown on page 9 to bring the oil level between the marks on the dipstick. Do not operate the engine with the oil level below the bottom mark.



T51292

4. Air Cleaner



A—Primary Element
B—Safety Element
C—Wing Nuts

D—Rubber Skirt Baffle
E—Cup
F—Air Stack Cap

Air Cleaner
4219 Engine



CAUTION: Stop the engine before working on the air cleaner.

Use hand pressure on the dust unloader to remove dirt. If the unloader is plugged, inspect the filter element for possible cleaning.

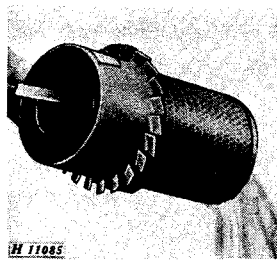
Clean the primary element when the indicator shows red.

NOTE: The indicator will not work correctly if an element has a break or is not correctly sealed in the air cleaner housing.

Oil or Sooty Element



Washing Element

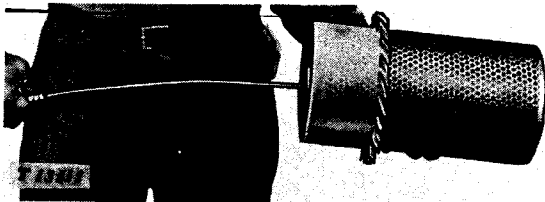


Rinsing Element

IMPORTANT: Never wash the element in fuel oil, oil, gasoline, or solvent. Never use compressed air to remove water from an element.

1. Add John Deere R36767 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 (2.8 bar).
3. Move the element from side to side rapidly to remove water. Do not install the element in the machine for 24 hours.

Dusty Element



Cleaning the Element with Compressed Air

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

If hitting the element does not remove dust, use compressed air under 30 psi (2.1 bar).

Hold the air gun inside the element. Clean the element with clean, dry air. Be careful not to make a break in the element.

After cleaning, put a lighted bulb inside the element. Inspect the element and gasket for damage. Throw away an element that has the smallest break. If the gasket is broken or missing, install a new element.

IMPORTANT: Install a new primary element:
1. If the element shows damage. 2. After one year of service. 3. When the element will not clean.

Install a new safety element every year or every 1000 hours, or when the primary element is ruptured.

NOTE: Do not remove the safety element except to give emergency service or to install a new element.

Before installing the primary element, thoroughly clean the inside of the air cleaner housing with a clean, damp cloth.

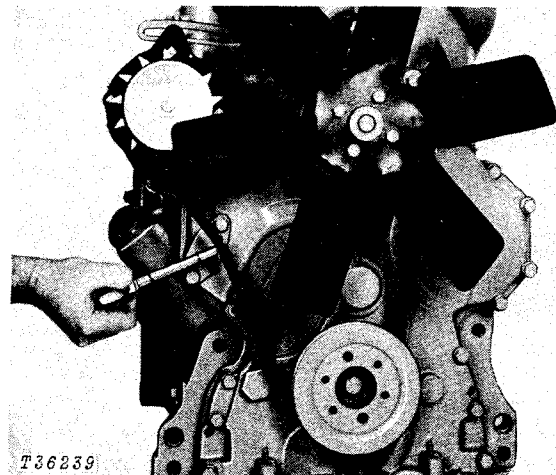
Install the primary element. Fasten it with the wing nut. Be sure the gasket is in place between the element and the wing nut.

Push the reset button of the filter indicator.

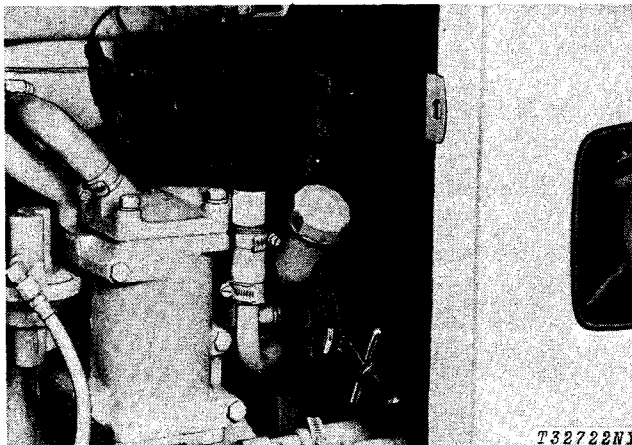
EVERY 100 HOURS

5. Alternator-Fan Belt

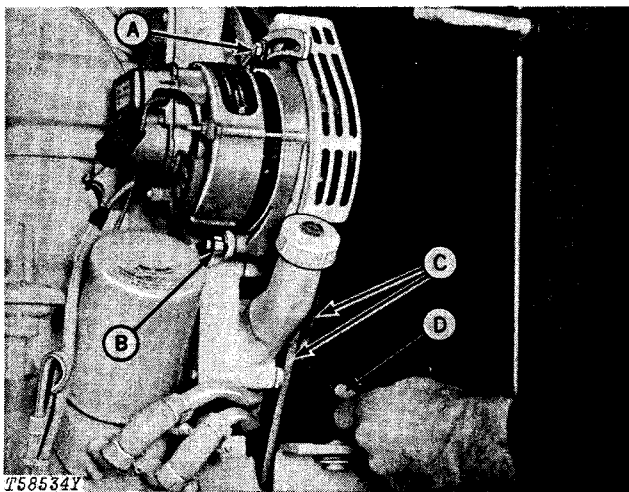
Check the tension of the alternator belt. Make the adjustment for the correct tension.



Tension Tester on 3164 Engine



Strand Tension Gauge on 6359 Engine



A—Adjusting Strap Cap
Screw
B—Bracket Cap Screw

C—Fan Belts
D—Tension Tester

Tension Tester on 6239 Engine

NOTE: When the engine has two belts (see picture above), check and make the tension adjustment on the front belt only.

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

Tension tester: A force of 20 lb. (89 N) halfway between the pulleys must move the belt 3/4 in. (19 mm).

Adjustment: Loosen the alternator bracket and adjusting cap screws. **PULL THE FRONT ALTERNATOR FRAME ONLY.** 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

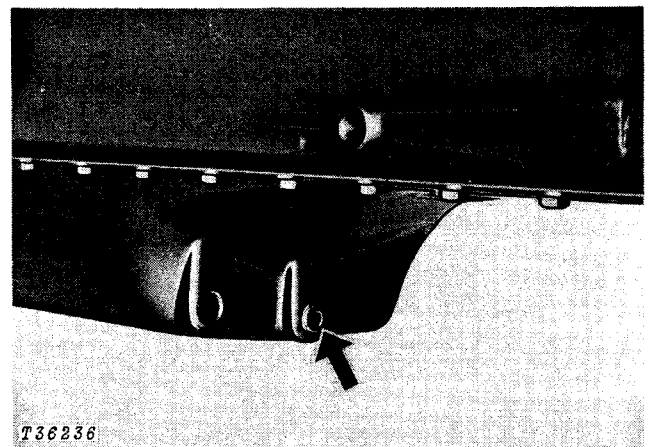
Check the battery electrolyte level. If distilled water is not available, use clean soft water. Do not use hard water. Clean the battery with a damp cloth. Put petroleum jelly on terminals.

IMPORTANT: Never add water to battery in freezing weather unless the engine will be run 2 or 3 hours.

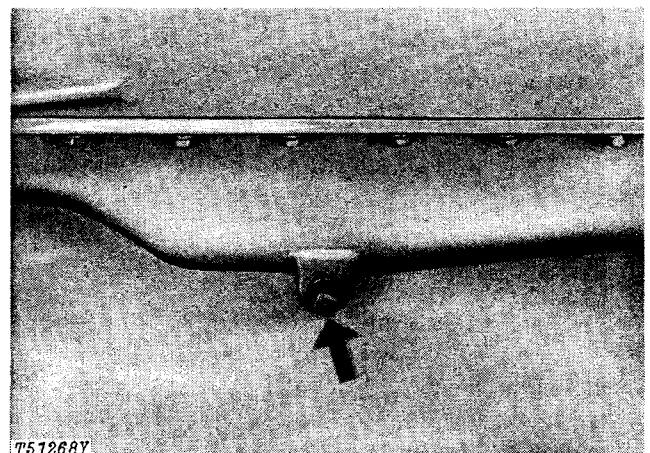
EVERY 200 HOURS

7. Engine Crankcase

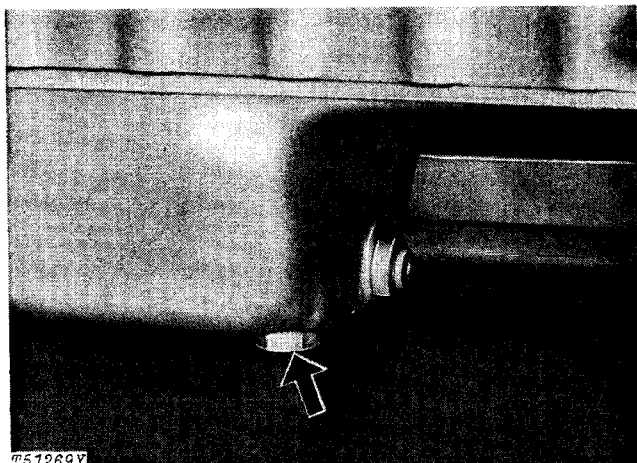
Drain the crankcase when the oil is hot.



Crankcase Drain Plug
6329 Engine



Crankcase Drain Plug
6359 Engine



Crankcase Drain Plug
4219 Engine

Remove the crankcase drain plug. Let all the oil drain. Install the plug.

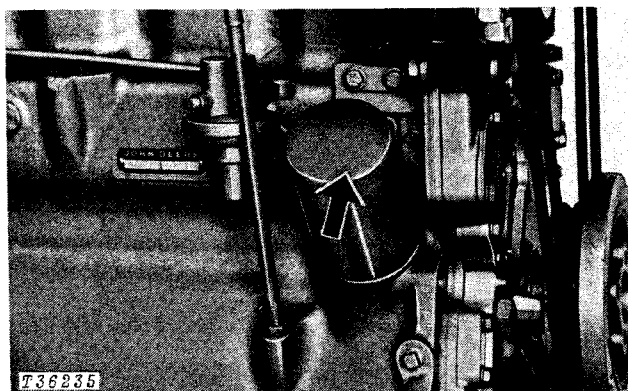
IMPORTANT: During periodic cold weather, change the oil every 100 hours or every six weeks, whichever comes first. Also, change the oil when a new season changes temperatures so your engine needs a different viscosity oil.

Fill crankcase with oil shown on page 9.

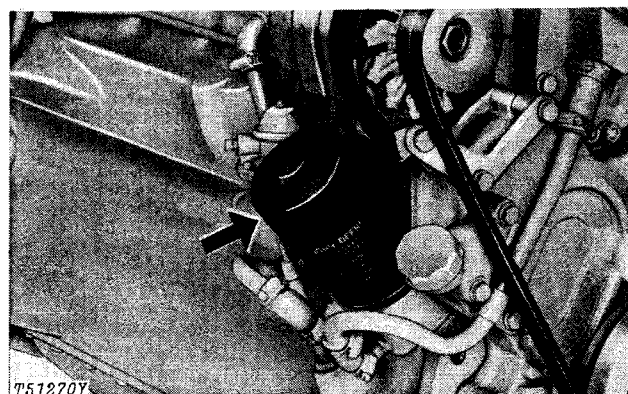
CRANKCASE CAPACITY

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	6 qts. (5.7 L)	5 qts. (4.8 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)

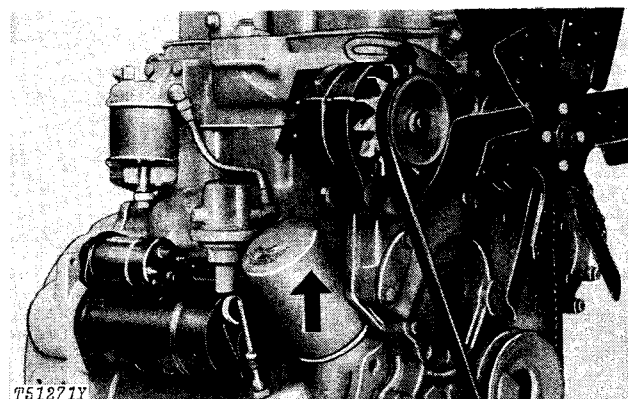
8. Engine Crankcase Filter



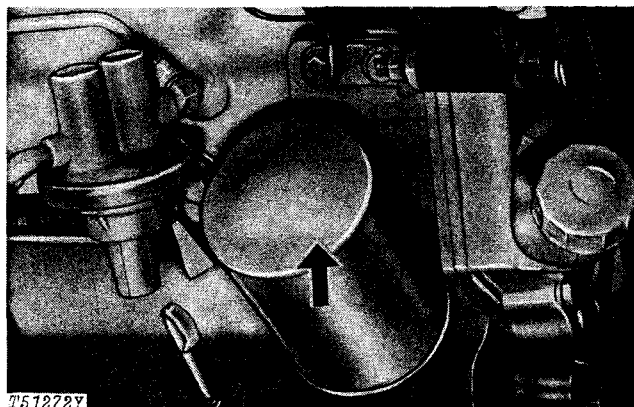
Oil Filter
6329 Engine



Oil Filter
6359 Engine



Oil Filter
3164 Engine



Oil Filter
4219 Engine

NOTE: The filter holds 1 quart (0.9 L) of oil.

NOTE: Change the filter after a year if this comes before 200 hours.

1. Remove the pipe plug below the filter. Drain the filter. Install the plug.
2. Remove the filter. Turn it counterclockwise. Throw it away.
3. Clean the mounting surface.
4. Put a film of oil on the sealing ring.
5. Tighten the new filter until it touches the mounting surface.
6. 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. Turn the engine for 20 seconds. Connect the shut-off wire.

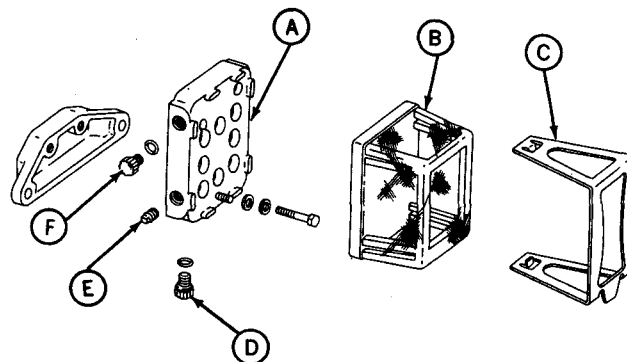
7. Start the engine. Check for leaks around the element. Tighten the element again, if necessary, but only enough to stop leaks.
8. Check the oil level of the crankcase.

EVERY 500 HOURS

9. Fuel Filter

Install a new fuel filter.

NOTE: Change the filter after a year if this comes before 500 hours.



A—Body
B—Element
C—Spring
D—Fuel Drain Screw
E—Fuel Inlet Plug
F—Bleed Screw

Fuel Filter

1. To release the top hook of the spring (C) push the outer finger tab. At the same time pull the inner tab.
2. Remove the spring.
3. Remove the element (B).
4. Install a new element over the spring pin.
5. Install the bottom hook of the spring.
6. Install the top hook.

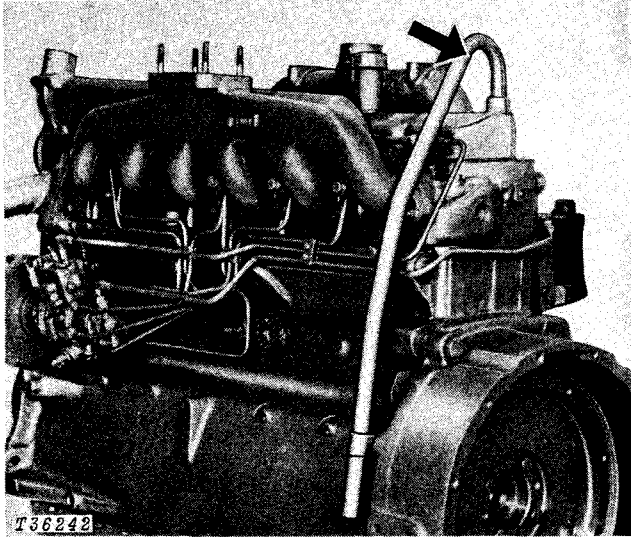
IMPORTANT: Dirt in the spring pin groove or on the end of the spring pin can be washed into the injection system and cause damage to the injection pump or nozzles.

10. Engine Crankcase Vent Tube

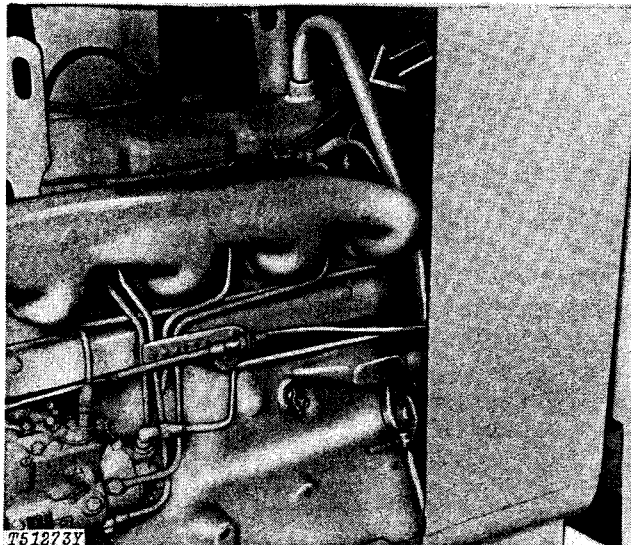
Remove the vent tube. Clean it with diesel fuel.

Clean the tube at shorter intervals if operating the engine in dusty conditions.

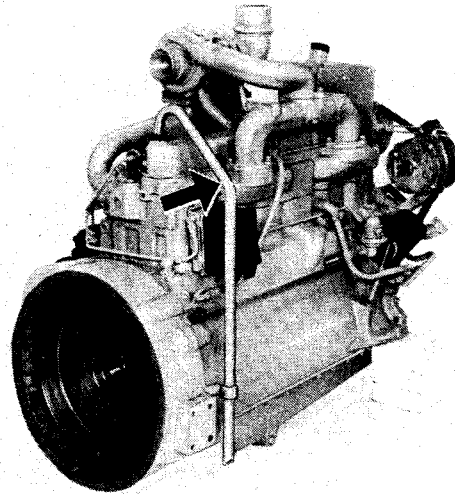
When installing the tube, be sure the O-ring fits correctly in the tappet cover.



*Engine Crankcase Vent Tube
6329 Engine*



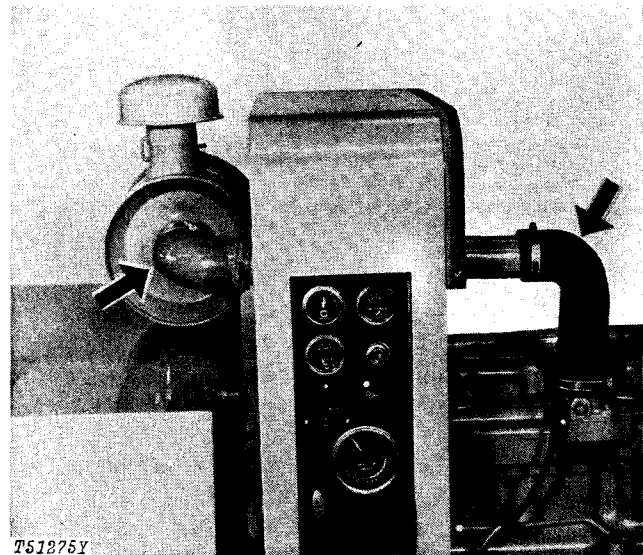
*Engine Crankcase Vent Tube
4219 Engine*



*Engine Crankcase Vent Tube
6359 Engine*

11. Air Intake Hoses

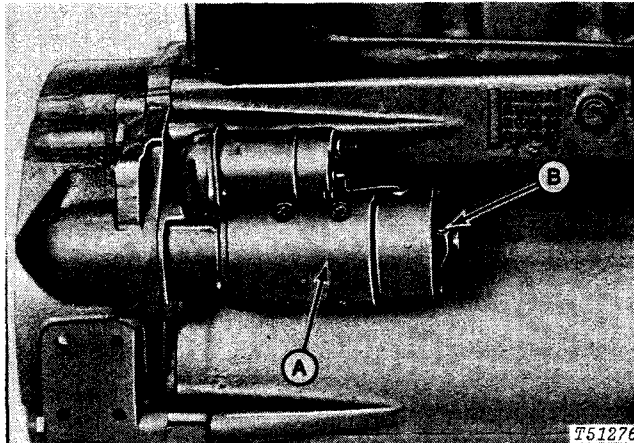
Check the clamps on the hoses which connect the air cleaner and the engine. Tighten the hose clamps where necessary to keep dirt out of the engine. Inspect the hoses for cracks.



*Air Intake Hoses
4219 Engine*

EVERY 1000 HOURS

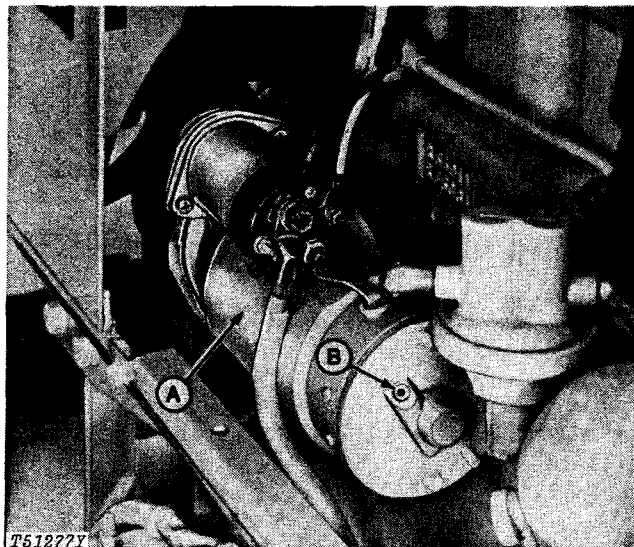
12. Starter (Delco-Remy Only)



A—Starter Motor

B—Pipe Plug

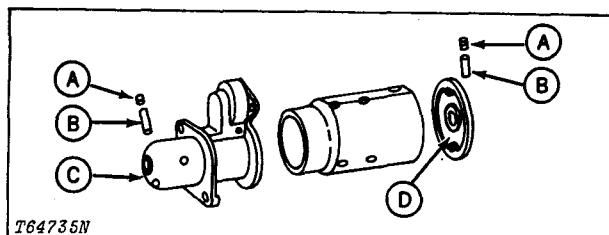
6329 Engine



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.

Normal working range for Series 300 OEM engines is 1500 to 2500 rpm, except for the 4276T, 6414D, and 6414T engines. The normal working range for these three engines is 1500 to 2200 rpm. Slow idle is 800 rpm.

See your John Deere dealer for service.

EVERY SPRING AND FALL

15. Cooling System

Drain, flush, and fill the cooling system with correct coolant. Remove trash from the radiator area. See page 24 for more instructions.

16. Engine Crankcase

Drain and refill the engine crankcase with John Deere TORQ-GARD SUPREME engine oil or an equivalent. See page 9. Install a new crankcase filter.

NOTE: Drain and refill the crankcase every spring and fall only if the 200 hour service has not been done during the three-week period just before this.

ANNUALLY

17. Air Cleaner

Clean the air cleaner housing and the dust unloader. Then install new primary and safety elements. See page 14.



Service

This section gives you general service information on the following:

Fuel System

Cooling System

Electrical System

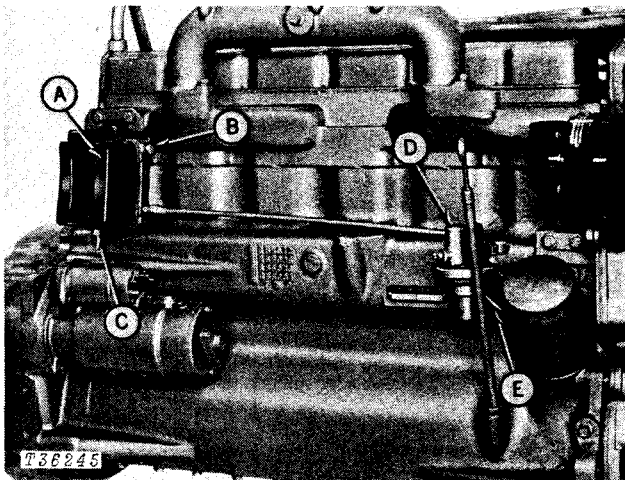
These systems need service to keep your engine in the best possible condition. See your John Deere dealer for assistance or added service.

FUEL SYSTEM

The fuel system:

fuel tank
fuel filter
fuel lines

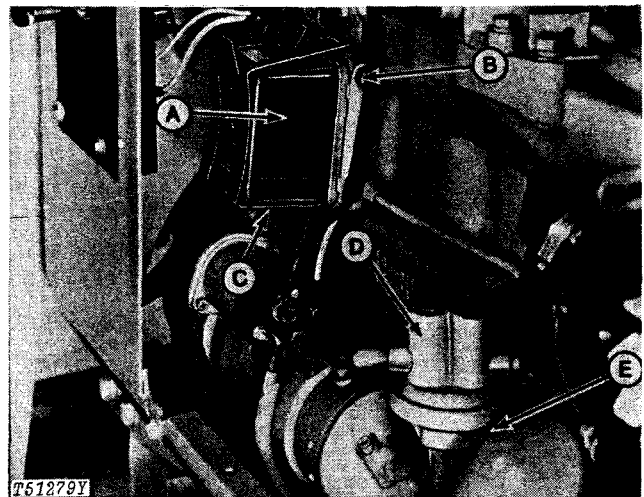
fuel transfer pump
injection pump
injection nozzles



A—Fuel Filter
B—Bleed Screw
C—Fuel Drain Plug

D—Fuel Transfer Pump
E—Fuel Transfer Pump
Primer Lever

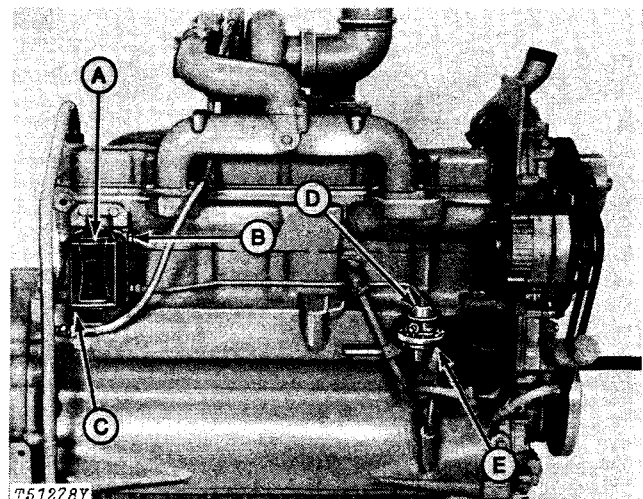
*Fuel System Components
6329 Engine*



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*

Incorrect 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.

IMPORTANT: Never clean an injection pump that is warm with steam or water.

NOTE: Do not change the injection pump, injection pump timing, or fuel injection nozzles in any way not approved by the manufacturer. See your John Deere Warranty on this engine.

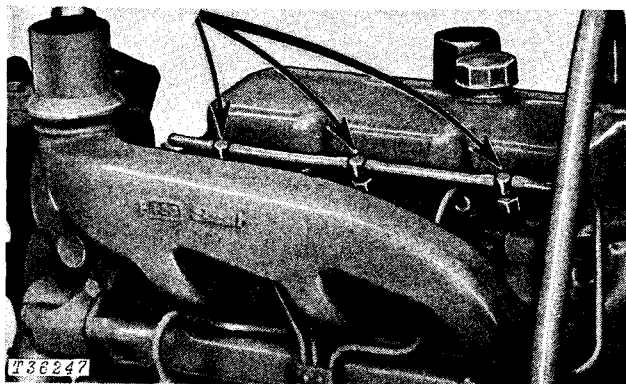
REMOVING AIR FROM THE FUEL SYSTEM

When the fuel filter or fuel pump sediment bowl is removed, or the engine runs out of fuel, remove air from the fuel system as follows:

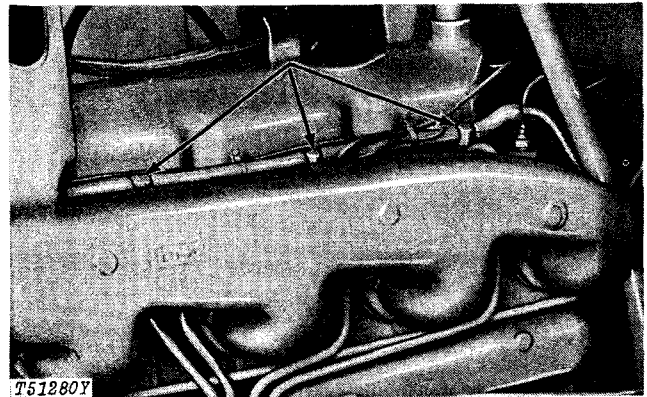
1. Loosen the filter bleed screw.
2. Pump the primer lever on the fuel transfer pump until a solid stream of fuel flows from the bleed screw.
3. Tighten the bleed screw.
4. Push the primer lever down.

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

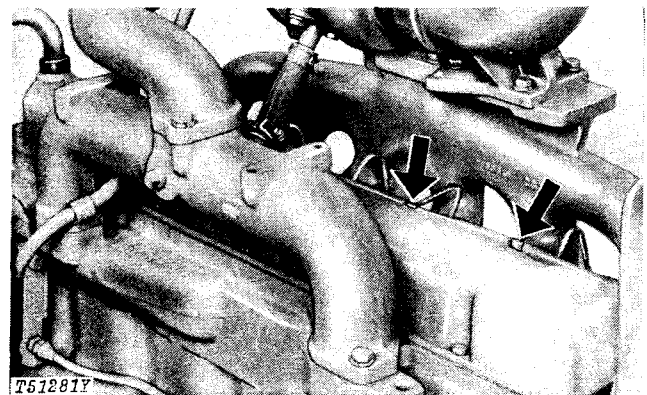
FUEL INJECTION NOZZLES



*Fuel Injection Nozzles
3164 Engine*



*Fuel Injection Nozzles
4219 Engine*

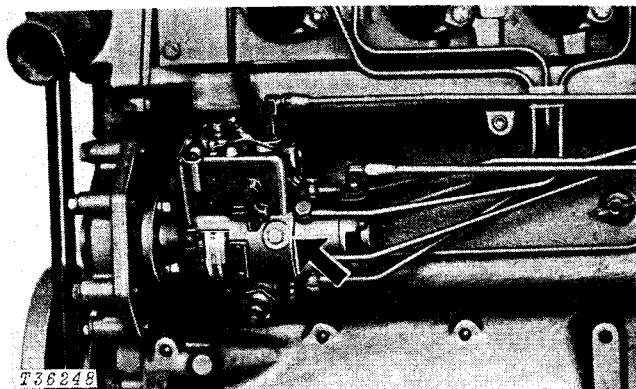


*Fuel Injection Nozzles
6359 Engine*

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 PUMP

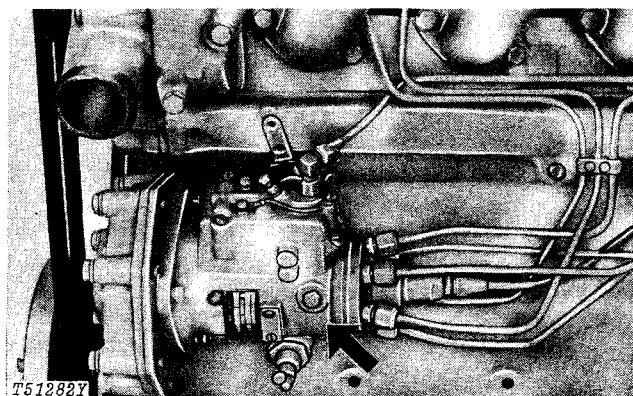


*Fuel Injection Pump
6329 Engine*

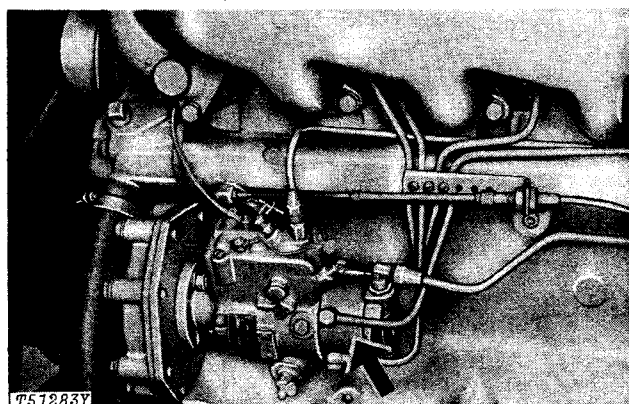
Changing the injection pump in any way not approved by the manufacturer will end the warranty. See your copy of the John Deere warranty.

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

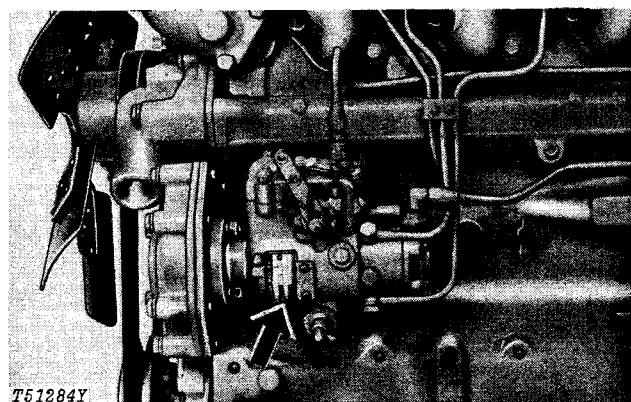
IMPORTANT: Never clean an injection pump that is warm with steam or water.



*Fuel Injection Pump
6359 Engine*



*Fuel Injection Pump
4219 Engine*



*Fuel Injection Pump
3164 Engine*

COOLING SYSTEM

A pressure radiator cap and a thermostat work to keep a proper engine operating temperature.

A pressure valve in the radiator cap releases when the pressure is between 6-1/4 and 7-1/2 psi (0.4 and 0.5 bar).

Keep the cooling system air tight.

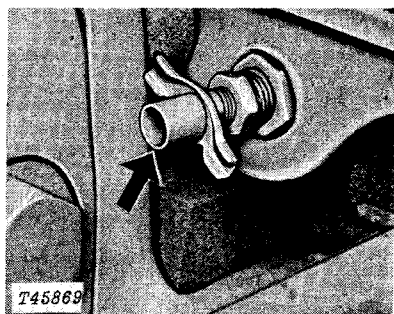
CAUTION: Do not remove the radiator cap unless you can hold your hand on the radiator tank. First, loosen the cap slowly to the stop. Then release all pressure in the cooling system before removing the cap.

CLEANING THE COOLING SYSTEM

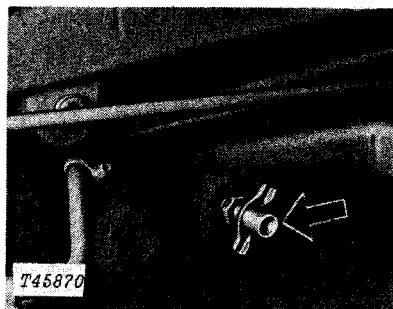
Drain, flush, and refill the cooling system once a year.

To drain the cooling system completely:

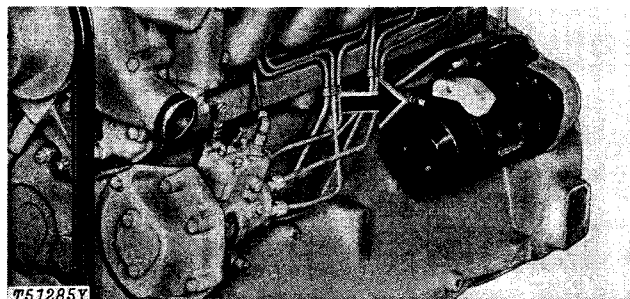
1. Open the drain cock of the radiator.
2. Open the drain cock of the cylinder block.
3. Remove the drain plug of the engine oil cooler.



Radiator Drain
4219 Engine



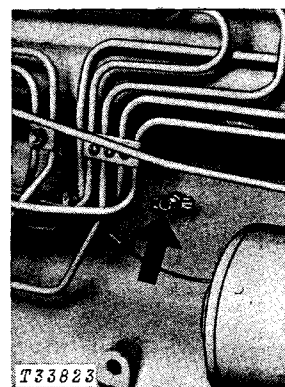
Cylinder Block Drain
4219 Engine



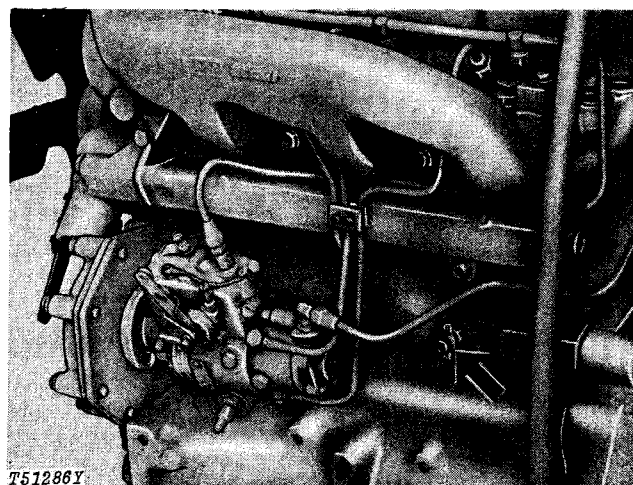
Cylinder Block Drain Cock
6359 Engine



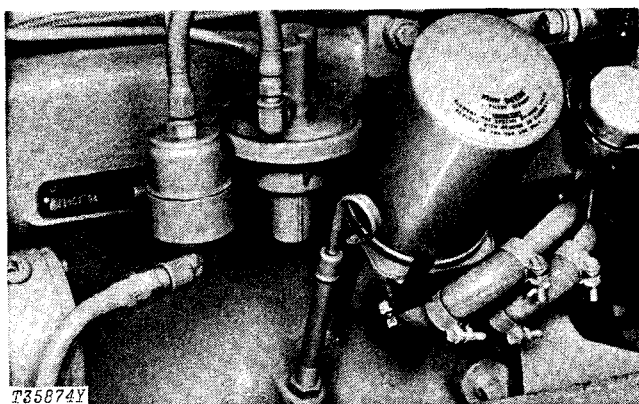
Radiator Drain Cock



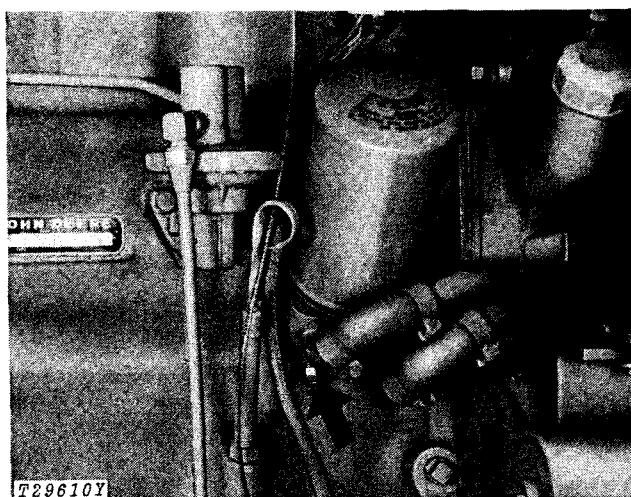
Cylinder Block Drain Cock
6414 Engine



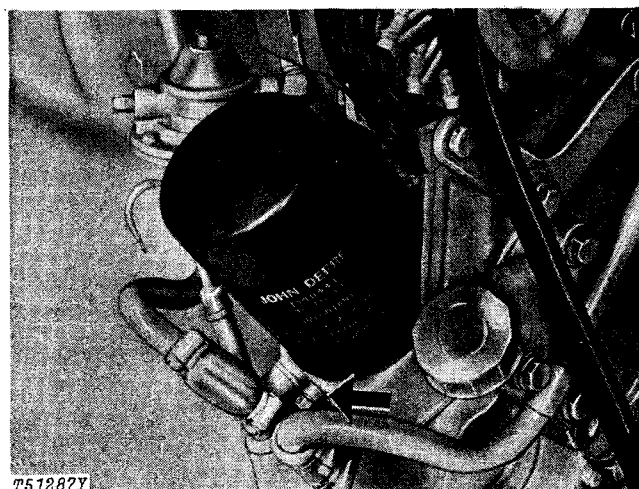
Cylinder Block Drain Cock
3164 Engine



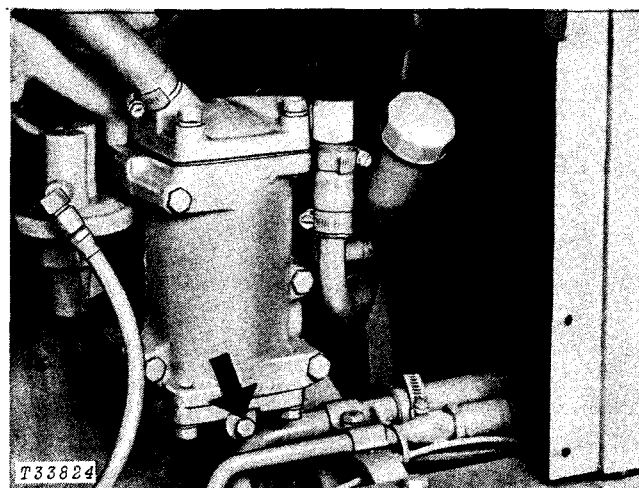
Engine Oil Cooler Drain Plug
4219 Engine



Engine Oil Cooler Drain Plug
6329 Engine



Engine Oil Cooler Drain Plug
6359 Engine



Engine Oil Cooler Drain Plug
6414 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.

When cold weather is expected, fill the cooling system with 50% water and 50% antifreeze (ethylene glycol type). When temperatures are above freezing, fill the cooling system with water. Add John Deere Summer Engine Coolant Conditioner or equivalent to prevent rust and corrosion and to lubricate the water pump.

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

Clean radiator fins when necessary with John Deere Heavy Duty Cooling System Cleaner with Detergent or an equivalent.

ELECTRICAL SYSTEM

BATTERIES



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

IMPORTANT: When working on the electrical system, disconnect the battery ground strap.

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 ammonia solution or 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 clear water.

Checking Specific Gravity

Check the specific gravity of electrolyte in each battery cell.

A fully charged battery will have a corrected specific gravity reading of 1.260. If the reading is below 1.200, charge the battery.

NOTE: In tropical areas use 1.225 for the full-charge reading. In cold areas, use 1.200 for the full-charge reading.

Checking Electrolyte Level

Check the electrolyte level every 100 hours of operation.

Fill each battery cell to the bottom of the filler neck. Use distilled water or soft water.

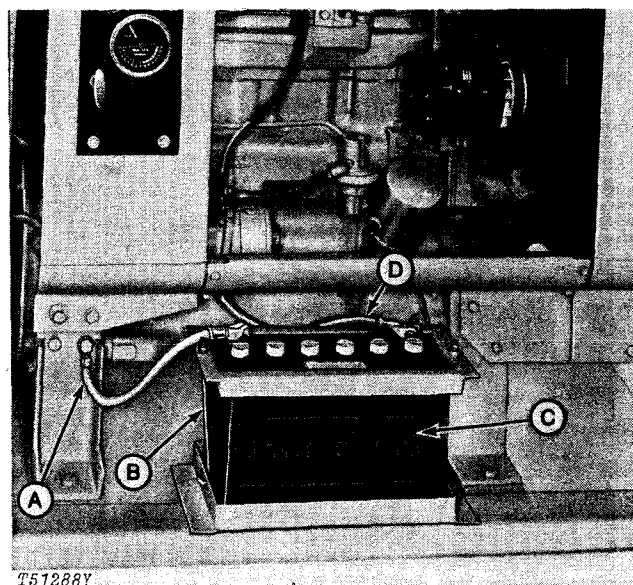
NOTE: Do not add water in freezing weather unless the engine will be run two or three hours.

Cold Weather Battery Service

Keep the electrolyte at the correct level. Keep batteries fully charged.

Storing Batteries

If the engine will be stored for more than 30 days, remove the battery. Store the battery in a cool place. Keep the battery fully charged.



A—Negative Ground Cable
B—Battery Hold-Down

C—Battery
D—Positive Cable To Starter

Battery
4219 Engine

ALTERNATOR AND REGULATOR

Precautions for the Alternator and Regulator

When the batteries are connected, follow these precautions:

1. When working on or near the alternator or regulator, disconnect the ground strap.
2. If the alternator or regulator wiring is disconnected, be sure it is correctly connected before the batteries are connected.
3. Do not ground the alternator outlet terminal.
4. Do not ground the alternator field terminal or the field circuit between the alternator and regulator.
5. When the batteries are connected or the alternator is operating, NEVER disconnect or connect any alternator or regulator wires.
6. Always connect the batteries or a booster battery so the negative terminal is grounded.
7. When the engine is running, never disconnect the batteries.

STARTER

IMPORTANT: Never hold the starter button in start position for more than 20 seconds at a time. Let two minutes go by before pushing the button again. After a false start, be sure the starter has stopped completely before attempting to start engine again.

Checking the Causes of Slow or Weak Starter Operation

If the starter operation is slow or weak, check for the following:

1. Too small or weak battery.
2. Dirty, loose, or corroded cables or wires.
3. Tight engine.
4. Wrong engine oil.
5. Low temperature.

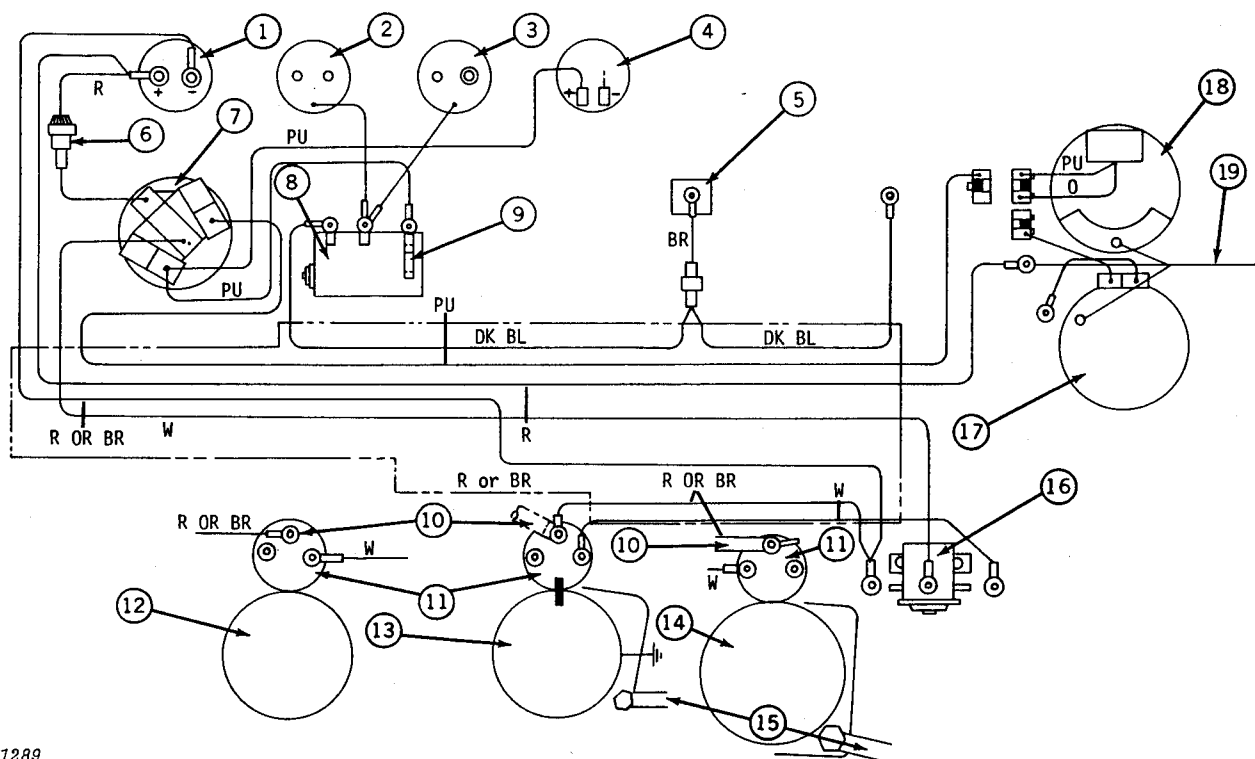
BOOSTER BATTERIES

A battery charger can be used as a booster to start the engine.

IMPORTANT: If the reading of the specific gravity of the battery is below 1.150, do not use a battery charger as a booster.

Charge the battery until the specific gravity reading is above 1.150 before using a battery charger as a booster.

NOTE: If any electrical system wires are disconnected, connect them as shown on the wiring diagram, page 28.



T51289

- 1—Ammeter
- 2—Oil Pressure Gauge
- 3—Water Temperature Gauge
- 4—Hour Meter
- 5—Fuel Injection Pump
- 6—Fuse Holder (25 amp fuse)
- 7—Key Switch
- 8—Safety Switch
- 9—Fuse, 14 amp

- 10—Positive Battery Cable
- 11—Solenoid
- 12—Starting Motor (Delco Remy, R.H. side)
- 13—Starting Motor (Delco Remy, L.H. side)
- 14—Starting Motor (John Deere)
- 15—Negative Battery Cable
- 16—Starting Circuit Relay
- 17—Alternator (Delco Remy)
- 18—Alternator (Motorola)
- 19—Output to Battery

- R—Red
- O—Orange
- BL—Blue
- BR—Brown
- W—White
- PU—Purple
- DK—Dark

Electrical System Schematic: Series 300 OEM Engines



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 when storing the engine.

Change the crankcase oil before storing the engine. Drain the crankcase when the engine is warm. Install a new filter element. Fill the crankcase with correct oil. See page 9.

Drain, flush, and fill the cooling system. Use clean, soft water and John Deere Summer Coolant Conditioner (T19566). Use antifreeze during cold weather. Run the engine at normal operating temperature at slow idle to circulate the coolant.

Drain the fuel tank. Add 1 ounce (29.5 cc) of inhibitor to the fuel tank for each 4 gallons (15 L) of tank capacity.

Add 1 ounce (29.5 cc) of inhibitor to the engine crankcase for each quart (0.9 L) of crankcase oil.

Inspect the air intake system. See page 14.

Disconnect the air intake pipe from the manifold. Put 3 ounces (88.5 cc) of inhibitor in the manifold. Connect the air intake pipe. Turn the engine over slowly for two revolutions.

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.

Loosen the fan belt.

Remove, clean, and store the battery. See page 26.

Put grease or corrosion preventive on exposed metal surfaces.

Clean the outside of the engine. Put paint on scratched and chipped painted surfaces.

Store the engine in a dry, protected place. If the unit must be stored outside, cover it.

REMOVING THE ENGINE FROM STORAGE

Use the following procedure to remove your 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. See page 15.

Fill the fuel tank with fresh 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.
2. Turn the key switch on.
3. Push the starter button. Turn the engine until the oil pressure gauge of the engine shows pressure.

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

4. After the gauge shows pressure, connect the shut-off wire.
5. Start the engine.
6. Run the engine several minutes at slow idle.
7. Check carefully all the operations of the engine before adding a load to the engine.



Trouble Shooting

If you cannot correct engine trouble by using the following symptoms 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. Page 26.

Too much resistance in starting circuit.

Clean and tighten all connections on batteries and starter.

Crankcase oil too heavy.

Use correct oil. Page 9.

Wrong fuel.

See your fuel supplier. Use correct fuel. Page 9.

Water, dirt, or air in fuel system.

Drain, flush, fill, and remove air from system. Page 22.

Plugged fuel filter.

Install a new filter element. Page 18.

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.

If water temperature gauge is not in normal range, see "Coolant Temperature Too Low" below.

Plugged fuel filter.

Install a new filter element. Page 18.

Water, dirt, or air in fuel system.

Drain, flush, fill, and remove air from system. Page 22.

Injection nozzles dirty or not working correctly.

See your John Deere dealer.

Inspect clamps and hose. Install new parts if necessary.

Use only approved parts.

Use correct fuel. Page 9.

Coolant Temperature Too Low

Thermostat not working correctly.

Remove and check thermostat.

Coolant Temperature Too High

Engine working too hard.

Take away 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. Page 15.

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.

Take away load.

Plugged air intake.

Clean air cleaner. Page 14.

Plugged fuel filter.

Install new filter element. Page 18.

Wrong fuel. Page 9.

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.

Inspect clamps and hose. Install new parts as necessary.

Use only approved parts.

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". Page 30.

Coolant temperature too high.

See "Coolant Temperature Too High" above.

Engine Uses Too Much Fuel

Wrong fuel. Page 9.
Plugged or dirty air cleaner.
Clean air cleaner. Page 14.
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 air cleaner. Page 14.
Muffler not working correctly.
Incorrect fuel. Page 9.
Engine working too hard.
Take away load.
Injection nozzles dirty.
See your John Deere dealer.
Engine out of time.
See your John Deere dealer.

Battery Will Not Take a Charge

Loose or corroded connections.
Clean and tighten battery connections.
Worn-out battery.
Check specific gravity of each battery. Page 26.
Check electrolyte level of each battery. Page 26.
Alternator belt loose or not working correctly.
Tighten belt. Page 15.
Install new belt. Page 15.

Starter Not Working

Loose or corroded connections.
Clean and tighten connections.
Low battery power.
Check specific gravity of each battery. Page 26.
Check electrolyte level of each battery. Page 26.
Electrical system ground wire not working correctly.
Repair or install new wire.

Exhaust Gas is White

Incorrect fuel. Page 9.
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. Page 9.
Oil leaks.
Check for leaks in lines, around gaskets and drain plug.

Coolant temperature too high.
See "Coolant Temperature Too High". Page 30.

Low Oil Pressure

Low oil level. Page 14.
Wrong oil.
Drain and fill crankcase with correct oil.
Pages 9, 17.
Plugged oil filter.
Install new filter.

ELECTRICAL SYSTEM

Starter Turns Slowly

Low battery power.
Battery too small.
Battery cable too small.
Check specific gravity of each battery. Page 26.
Check electrolyte level of each battery. Page 26.
Crankcase oil too heavy. Page 9.
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 battery. Page 26.

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 (mm)	4.02 (102)	4.02 (102)	4.19 (106.5)	4.19 (106.5)	4.19 (106)	4.19 (106)	4.02 (102)	4.19 (106.5)	4.19 (106.5)	4.19 (106)	4.19 (106)
Stroke	in (mm)	4.33 (110)	4.33 (110)	4.33 (110)	4.33 (110)	5.00 (127)	5.00 (127)	4.33 (110)	4.33 (110)	4.33 (110)	5.00 (127)	5.00 (127)
Displacement	cu. in. cm ³	164 (2690)	219 (3590)	239 (3917)	239 (3917)	276 (4520)	276 (4520)	329 (5390)	359 (5885)	359 (5885)	414 (6780)	414 (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 (intermittent)												
@ RS without fan		52	70	75	89	82	95	104	113	134	120	142
HP (continuous)												
@ RS without fan		44	60	59	75	58	*74	88	90	113	*91	*113
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 (max.) without fan	122 (165) (Nm) @ 1500	175 (237) (Nm) @ 1400	188 (255) (Nm) @ 1400	236 (320) (Nm) @ 1600	214 (290) (Nm) @ 1300	250 (339) (Nm) @ 1500	250 (335) (Nm) @ 1500	280 (380) (Nm) @ 1200	346 (470) (Nm) @ 1400	330 (447) (Nm) @ 1200	390 (529) (Nm) @ 1500
Basic Weight	lb (kg)	695 (315)	845 (383)	845 (383)	975 (442)	950 (431)	975 (442)	1145 (519)	1145 (519)	1250 (567)	1220 (553)	1250 (567)
Flywheel housing and flywheel (SAE No.)			2 3 4	2 3 4	2 3 4	2 3 4	2 3 4	2 3 4	2 3 3	2 3 3	2 3 3	2 2 3
Nozzles	mm	9.5	9.5			9.5	9.5	9.5			9.5	9.5
Fuel filter area	in ² cm ²	860/490 (5549/3161)	860/490 (5549/3161)	860/490 (5549/3161)	860/490 (5549/3161)	860/490 (5549/3161)	860/490 (5549/3161)	860/490 (5549/3161)	860/490 (5549/3161)	860/490 (5549/3161)	860/490 (5549/3161)	860/490 (5549/3161)
Dimensions:												
Width	in (mm)	19.88 (505)	19.72 (500.9)	19.72 (500.9)	19.72 (500.9)	19.72 (500.9)	19.72 (500.9)	19.62 (498.5)	19.62 (498.5)	19.62 (498.5)	19.62 (498.5)	19.62 (498.5)
Height	in (mm)	32.01 (813)	32.03 (812.6)	31.9 (810.3)	37.16 (943.9)	33.31 (846.1)	37.16 (943.9)	31.78 (807.2)	36.58 (929.1)	42.15 (1070.6)	36.58 (929.1)	42.15 (1070.6)
Length	in (mm)	27.64 (702.1)	32.68 (830)	32.72 (830)	33.58 (852.9)	32.72 (831.1)	34.74 (882.4)	45.81 (1163.6)	43.63 (1108.2)	43.63 (1108.2)	43.63 (1108.2)	43.63 (1108.2)
Crankcase capacity with filter change	qts. (l)	6 (5.7)	6 (5.7)	6 (5.7)	15 (14)	9 (8.5)	14 (13.2)	12 (11.4)	18 (17.1)	18 (17.1)	18 (17.1)	18 (17.1)
without filter change	qts. (l)	5 (4.8)	5 (4.8)	5 (4.8)	14 (13.2)	8 (7.6)	13 (12.4)	11 (10.4)	17 (16.1)	17 (16.1)	17 (16.1)	17 (16.1)

*Based on 1800 rpm.

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