

Operator's Manual



To the Purchaser

! This safety alert symbol indicates important safety messages in this manual. When you see this symbol, be alert to possibility of personal injury and carefully read message that follows.

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

Read Contents to learn where each section is located. Use Alphabetical Index for fast reference.

Throughout this manual, "right-hand" and "left-hand" sides are determined by facing drive end (rear) of engine.

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

The warranty on this engine appears on your copy of engine registration.

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

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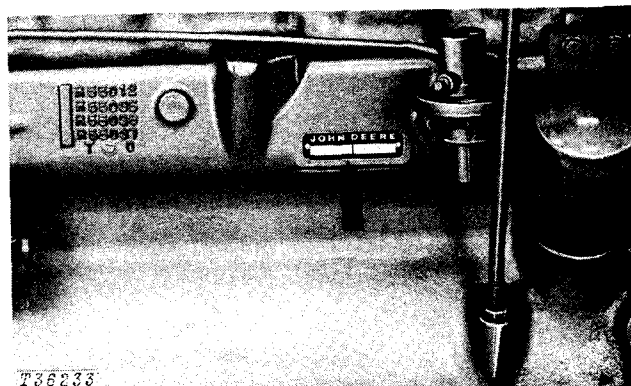
ACCESSORY CODE PLATE AND ENGINE SERIAL NUMBER PLATE

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

JOHN DEERE	
CONTROL:	XXXXXXXXXXXXXXX
BASIC ENGINE	XXXXX
OPTION CODES	
XXXX XXXX XXXX XXXX XXXX XXXX	
XXXX XXXX XXXX XXXX XXXX XXXX	
XXXX XXXX XXXX XXXX XXXX XXXX	
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T35527

Accessory Code Plate



Engine Type _____ Engine Serial No. _____
(6329 Engine)

The basic engine number identifies the engine model.

Enter 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

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

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

3000 - No Starting Motor

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



Safety Rules

Reports on accidents show that careless use of the engine causes a high percentage of accidents. You can avoid many accidents by observing safety rules on this page. Study these rules carefully and enforce them on the job.

Never leave engine unattended while it is running.

Turn radiator cap slowly to relieve pressure before removing. Add coolant only when engine is idling or stopped.

Mount a fire extinguisher close to the engine. Maintain extinguisher properly and be familiar with its use.

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

Do not operate engine in a closed garage or shed unless properly ventilated.

Remove trash from engine and surrounding area daily.

Before using booster batteries read the instructions on page 6. If a battery needs recharging, avoid sparks by turning off the charger before connecting or disconnecting the charger.

Escaping fluid under pressure can penetrate skin.

Use a piece of cardboard or wood, not hands, to search for leaks.

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

Clothing worn by the operator should be relatively tight and belted.

Do not leave engine running while making adjustments or repairs unless specifically recommended.

Do not oil or grease engine while it is running.

Provide a first aid kit.

Use caution in handling fuel. Never refuel a hot or running engine. Do not smoke while filling fuel tank or servicing fuel system.

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

Check for loose electrical connections or faulty wiring.

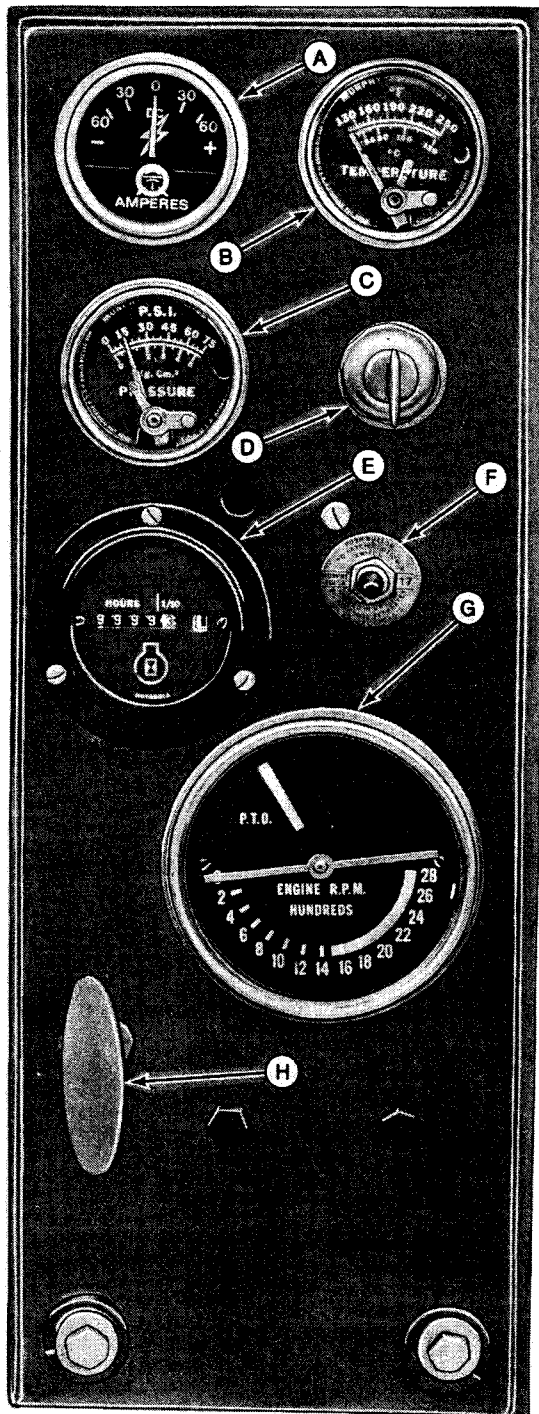
Engine should be operated only by qualified persons.

Walk completely around engine making sure everything is clear before starting to work.

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

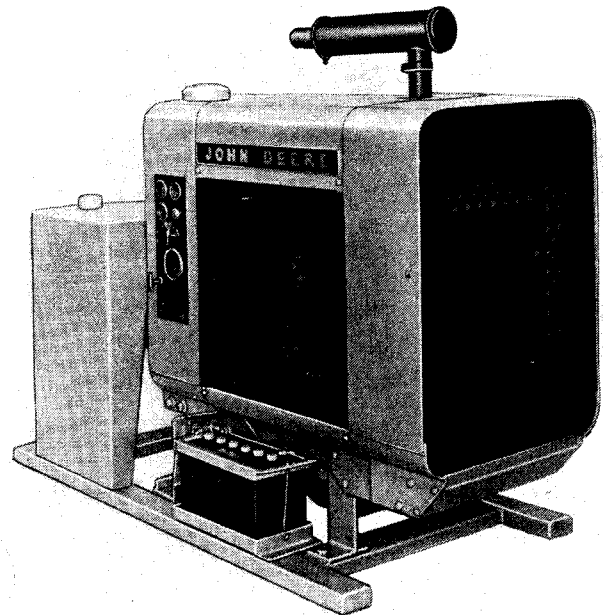


Instruments



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Instrument Panel
4219 Engine

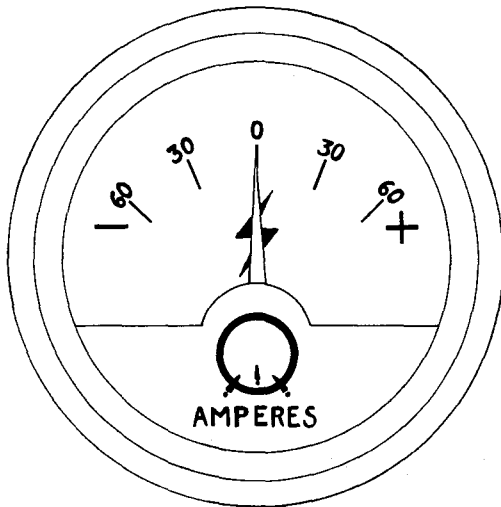


T51254Y

4219 Engine (Enclosed)

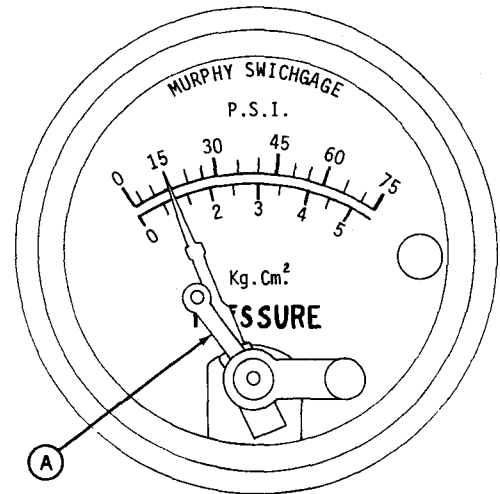
- A—Ammeter
- B—Engine Coolant Temperature Gauge
- C—Engine Oil Pressure Gauge
- D—Starter Switch
- E—Hour Meter
- F—Safety Switch
- G—Tachometer
- H—Throttle

4 Instruments



T51255

Ammeter
4219 Engine

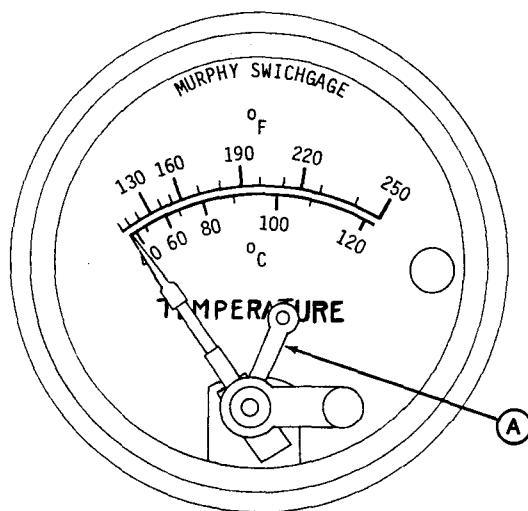


T51257

A — Contact

Oil Pressure Gauge
4219 Engine

Contact is set at 15 psi (1 bar), factory recommended setting.

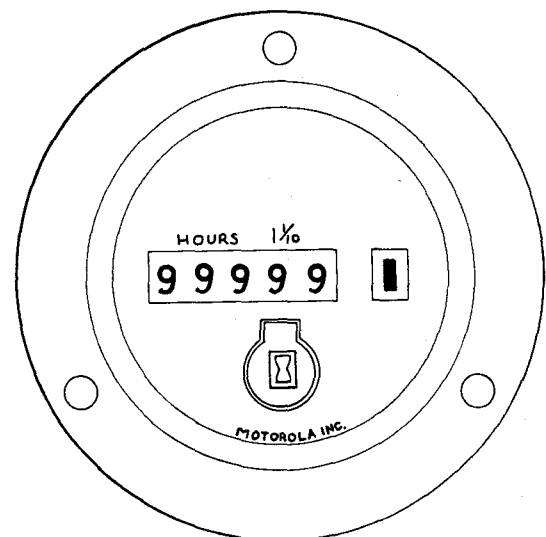


T51256

A — Contact

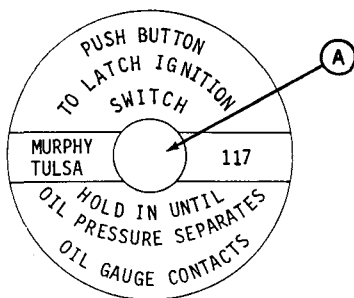
Coolant Temperature Gauge
4219 Engine

Contact is set at 220° F (104° C), factory recommended setting.



T51258

Hour Meter
4219 Engine



T51259

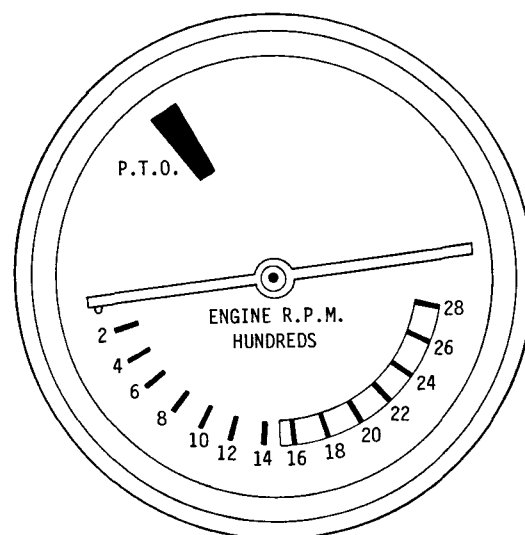
A—Button

Safety Switch
4219 Engine

Depress safety switch button as starter-switch key is turned on each time engine is started.

Safety switch will shut off engine if oil pressure lowers to 15 psi (1 bar) or coolant temperature rises to 220° F (104° C).

Determine cause before restarting engine.



T51260

Tachometer
4219 Engine



Operation

PRE-STARTING INSPECTION

Perform following checks before starting engine for first time each day:

- A. Check engine crankcase oil level.
- B. Check fuel filter for sediment.
- C. Check radiator coolant level.
- D. Inspect air cleaner; service if necessary.
- E. Inspect turbocharger mountings and connections for lubricant or duct leakage.

STARTING THE ENGINE



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



CAUTION: Before starting engine be sure there is plenty of ventilation. Never operate engine in closed shed or garage unless properly ventilated.

1. Before starting engine check fuel supply.
2. Turn key switch to on position. Depress starter safety switch, if equipped.
3. Depress starter button. Do not crank engine more than 20 seconds at a time. Wait 2 minutes between cranking periods.

If starter button is released before engine starts, wait until starter stops turning before depressing starter button again.

4. As soon as engine starts, release starter button and adjust engine speed to one-third throttle.

Cold Weather Starting

During cold weather, use starting aids as necessary.

Booster Batteries

Connect an additional 12-volt battery in parallel with 12-volt battery or batteries on engine for easier starting in cold weather.

Connect one jumper cable between booster battery positive (+) terminal and battery positive (+) terminal. Connect other jumper cable between booster battery negative (-) terminal and battery negative (-) terminal.



CAUTION: Gas given off by batteries is explosive: Avoid sparks near batteries.

ENGINE WARM-UP

Warm engine for 5 minutes by operating engine at half throttle.

Do not race or idle engine during warm-up.

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

TURBOCHARGER ENGINES

Do not exceed 1000 rpm until engine oil pressure gauge reaches 20 psi (1.4 bar).

IMPORTANT: If engine stops under load, remove load and restart immediately.

ENGINE IDLING

Avoid unnecessary engine idling.

STOPPING THE ENGINE

Gasoline Engine

1. Run at half speed, no load for two minutes.
2. Set throttle at low idle.
3. Turn ignition key "OFF".

Diesel Engine

1. Run at half speed, no load for two minutes.
2. Set throttle at low idle.
3. Pull engine stop knob.
4. Turn ignition key "OFF".
5. Push engine stop completely in after engine stops.

NOTE: If engine stops under load, remove load and restart immediately.

Turbocharged Engine

IMPORTANT: Follow all steps above, then run engine at low idle for at least one minute before shut-off.

NOTE: Safety switch may stop engine. See page 5.

BREAK-IN PERIOD

FIRST 100 hours of operation is the break-in period. During this period, warm up engine thoroughly. See "Engine Warm-Up", page 6.

See page 9 for proper servicing and maintenance of engine during break-in period.

ENGINE SPEEDS

Normal engine working range for Series 300 OEM engines is 1500 to 2500 rpm. Low idle is 800 rpm.

Generator Set

1. Engine runs at 1800 rpm only; no high or low idle.
2. Run standby units at no load for half hour every two weeks.
3. Break unit in under load and operate periodically under load.
4. Cool down under no load for 3 to 5 minutes.



Fuels and Lubricants

FUELS

Use only clean, high quality fuel.

Fuel Specifications

Use Grade No. 1-D or No. 2-D fuel, as defined by ASTM Designation D975 for diesel fuels.

Use Grade No. 2-D fuel at ambient temperatures above freezing. Use Grade No. 1-D fuel at ambient temperatures below freezing and for all temperatures at altitudes above 5000 feet (1 500 m).

Use fuel having less than 1.0 percent sulfur, preferably less than 0.5 percent.

Sediment and water should not exceed 0.10 percent.

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.

Storing Fuels

Keep dirt, scale, water, and other foreign matter out of the fuel. Avoid storing fuel for a long period of time.

Filling the Fuel Tank

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

LUBRICANTS

Use only lubricants specified in this section; apply them according to instructions in lubrication and periodic service section.

Storing Lubricants

Use only clean, high quality lubricants stored in clean containers in a protected area.

Engine Lubricating Oils



We recommend John Deere TORQ-GARD SUPREME engine oil for use in the engine crankcase.

NEVER PUT ADDITIVES IN THE CRANKCASE.

Oils other than TORQ-GARD SUPREME must conform to one of following specifications:

SINGLE VISCOSITY OILS

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

MULTI-VISCOSITY OILS

API Service CC/SD
MIL-L-46152

Depending on average temperature use oil as follows.

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

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



Lubrication and Periodic Service

The OEM 300 Series engine requires regular, periodic service. Read this section carefully to aid in maintaining efficient engine performance.

Use engine hour meter to determine when periodic service is required.

When operating under unusual conditions, such as excessive heat, cold, dust, mud, or water, check and service engine more frequently.

BREAK-IN PERIOD

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

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

Check crankcase oil level frequently during break-in.

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

At end of 100-hour break-in period, drain crankcase oil, change oil filter and refill crankcase with proper viscosity oil. Thereafter change crankcase oil every 100 hours and crankcase oil filter every 200 hours.

See pages 15, 16 and 17 for oil and oil filter change procedure.

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.	Midway between core and filler neck.	.....
2	Fuel filter	Drain any water or dirt deposits.	.....	.....
3	Engine crankcase	Check oil level with dipstick fully inserted.	Between marks on dipstick.	Use recommended viscosity and type of oil.
4	Pre-cleaner	Clean out if necessary.	.....	.....
5	Air cleaner	Clean element when indicator shows red with engine shut off or excessive smoke or loss of power is noted. Empty dust cup.	..... .....	..... .....

EVERY 100 HOURS

6	Alternator-fan belt	Check tension.	3/4-inch (17 mm) belt flex with 20 pound (89 N) force.	.....
7	Batteries	Check level of electrolyte in each cell. Check for terminal corrosion.	Fill each cell to bottom of filler neck above plates.	Distilled water.
8	Engine crankcase	Drain and refill.	See chart on page 16.	Use oil of recommended viscosity and type.

EVERY 200 HOURS

9	Engine crankcase filter*	Change element.		
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*Change every 200 hours or yearly whichever occurs first.

EVERY 500 HOURS

Item No.	Component	Description of Service	Capacity or Procedure	Description of Lubricant
10	Fuel filter*	Replace.	.....	Use a John Deere filter.
11	Engine crankcase vent tube	Remove and clean.	.....	Diesel fuel.
12	Air intake hoses	Check connections for leaks.	.....	.....

EVERY 1000 HOURS

13	Starter (Delco-Remy only)	Lubricate wicks. Check brushes for excessive wear.	Saturate wicks.	SAE 10W-20 engine oil.
14	Engine valves	See your John Deere dealer.	.....	.....
15	Engine speeds	Check speeds.	See your John Deere dealer.	.....

EVERY SPRING AND FALL

16	Cooling system	Drain, flush and refill. Remove any trash on screen.	.....	.....
17	Engine crankcase	Drain and refill. Replace filter.	See chart on page 16.	Use oil of recommended viscosity and type.

ANNUALLY

18	Air cleaner	Replace both elements.		
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*Change every 500 hours or yearly, whichever occurs first.

DETAILED PERIODIC SERVICE

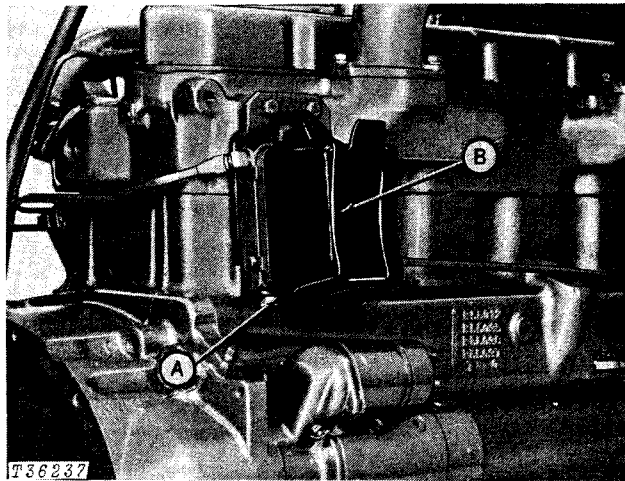
DAILY OR EVERY 10 HOURS

1. Radiator

⚠ CAUTION: Do not remove radiator filler cap until coolant temperature is below boiling point. Then loosen cap slowly to the stop to relieve excess pressure before removing cap completely.

Check coolant level daily before starting engine. Coolant should be midway between radiator core and filler neck. Add permanent type antifreeze if cold weather is expected.

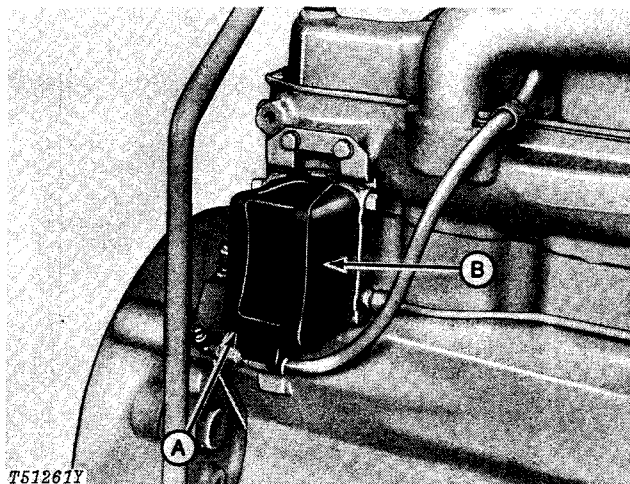
2. Fuel Filter



A—Fuel Filter Drain Plug

B—Fuel Filter

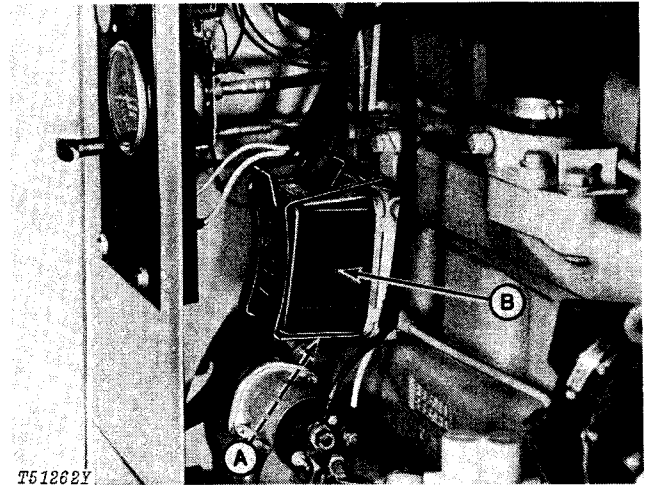
6329 Engine



A—Fuel Filter Drain Plug

B—Fuel Filter

6359 Engine



A—Fuel Filter Drain Plug

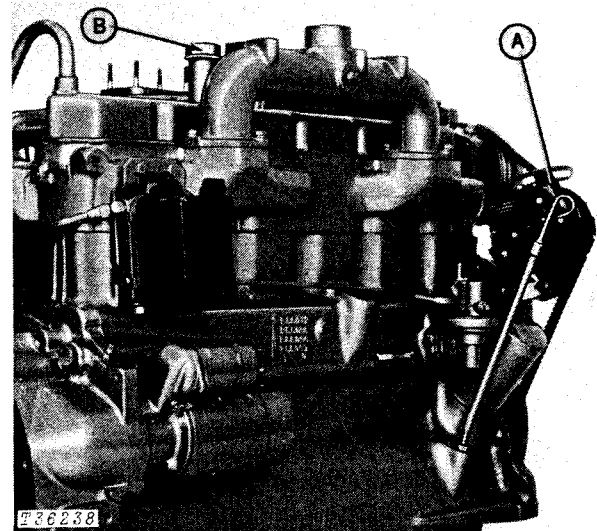
B—Fuel Filter

4219 Engine

Visually inspect fuel filters. Drain water and sediment by loosening filter drain plug. Bleed fuel filter. See page 21.

NOTE: Replace fuel filter when necessary.

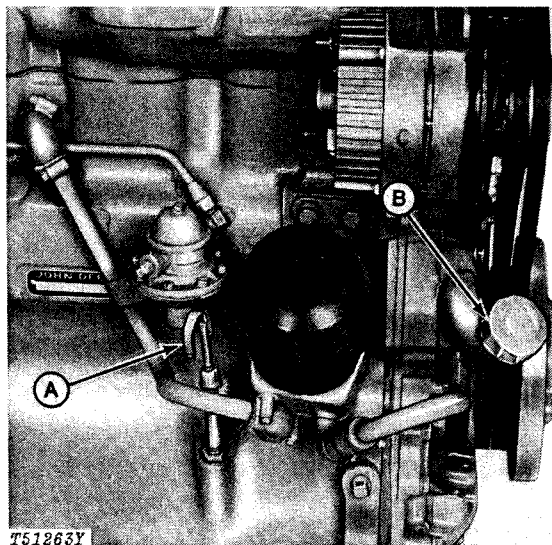
3. Engine Crankcase



A—Crankcase Dipstick

B—Crankcase Filler

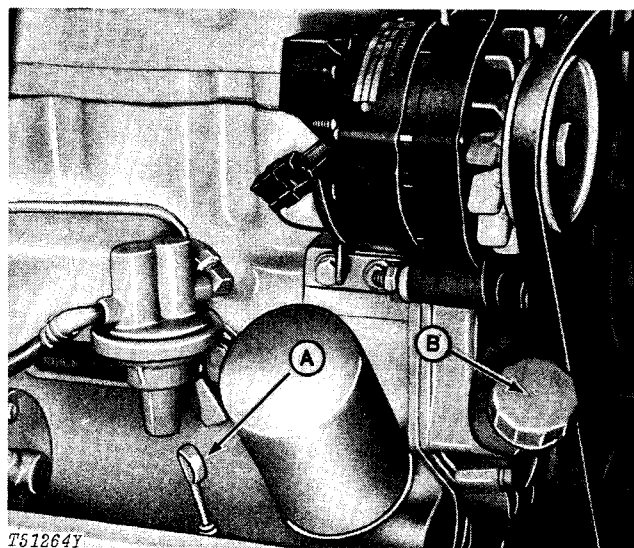
6329 Engine



A—Crankcase Dipstick

B—Crankcase Filler

6359 Engine

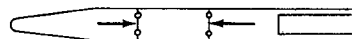


A—Crankcase Dipstick

B—Crankcase Filler

4219 Engine

Check crankcase oil level with engine off. If oil is at or below bottom mark on dipstick, add oil specified on page 8 to bring oil level between marks on dipstick. Do not operate engine with oil level below bottom mark.



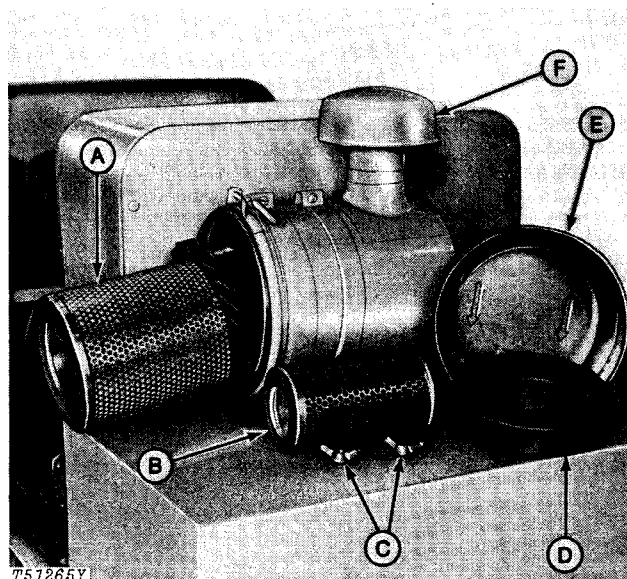
T51292

NOTE: There is a 2-quart (1.9 l) difference between bottom and top marks on dipstick.

4. Pre-Cleaner (if equipped)

Check level of accumulated material in bowl. Empty bowl as necessary.

5. Air Cleaner



A—Primary Element

B—Safety Element

C—Wing Nuts

D—Rubber Skirt Baffle

E—Cup

F—Pre-cleaner

Air Cleaner
4219 Engine

CAUTION: Stop engine before servicing air cleaner.

Empty dust cup, if equipped, before beginning work.

Clean primary air cleaner filter element whenever indicator red signal locks in full view. A portion of red signal may be visible at times during operation (this is normal). Excessive smoke or loss of power may indicate a restriction.

NOTE: Do not remove safety element unless emergency field servicing or replacement is necessary.

When element must be serviced in field, tap it on palm of your hand as a temporary service. Replace safety element IMMEDIATELY upon returning to the shop.

Carry a spare element in a sealed plastic bag.

Dusty Element

Remove element. Tap element on palm of your hand to remove dust. **DO NOT TAP ON A HARD SURFACE.**

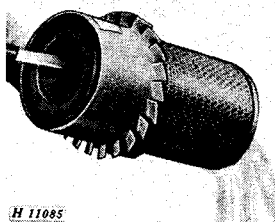
If tapping element does not remove dust, use compressed air under 30 psi (2.1 bar) to clean element. Direct clean dry air up and down the pleats, blowing from inside to outside. **DO NOT RUPTURE ELEMENT.**

Oily or Sooty Element

Soak and wash element in solution of lukewarm water (no hotter than your hand can stand) and R36757 Filter Element Cleaner or an equivalent non-sudsing detergent. Rinse element thoroughly with clean water from hose having maximum water pressure of 40 psi (2.8 bar). Shake excess water from element and allow it to air dry (usually requires 24 to 72 hours). Do not oven dry or use drying agents. Temperatures above 180° F (82°C) will shorten filter element service life. Protect element from freezing until dry.



Washing Element



Rinsing Element

IMPORTANT: Never wash element in fuel oil, oil, gasoline, or solvent. Never use compressed air to dry element.

Cleaning Element with Compressed Air

Use John Deere AR62377 Dry Element Cleaning Gun with compressed air and insert cleaning gun. Hold air nozzle near inside of perforated sheet metal retainer and squeeze handle. Air is forced through element from inside to outside. Move gun up and down pleats.

Inspect element for damage by placing a light bulb inside. Discard any element that shows slightest rupture.

Inspect filter element gasket for damage. Replace element if gasket is missing or damaged.



Cleaning Element Using Compressed Air

IMPORTANT: Replace primary element: (1) if damaged; (2) after one year of service; (3) when element is not responding to cleaning (indicated by excessive smoke or loss of power).

Thoroughly clean inside of air cleaner body with clean damp cloth. Place element in cleaner body with gasket fins in first and secure with wing nut and gasket washer. Be sure gasket is in place between element and wing nut. Clean and install baffle and dust cup, if equipped, and tighten clamp finger tight. Reset indicator by pressing reset button at end of indicator.

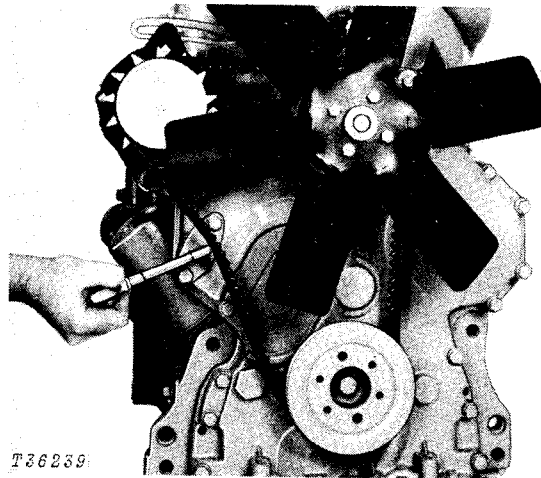
If indicator again turns red, safety element should be replaced.

IMPORTANT: Replace safety element: (1) annually or every 1000 hours; (2) whenever primary element is ruptured.

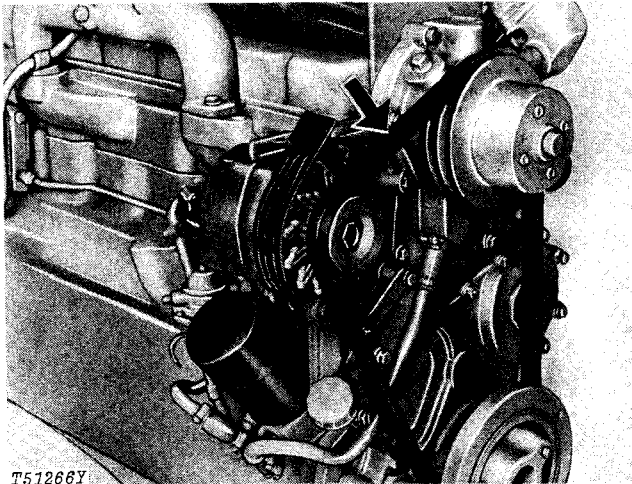
EVERY 100 HOURS

6. Alternator-Fan Belt Tension

Check the tension on the alternator belt. Adjust to proper tension.

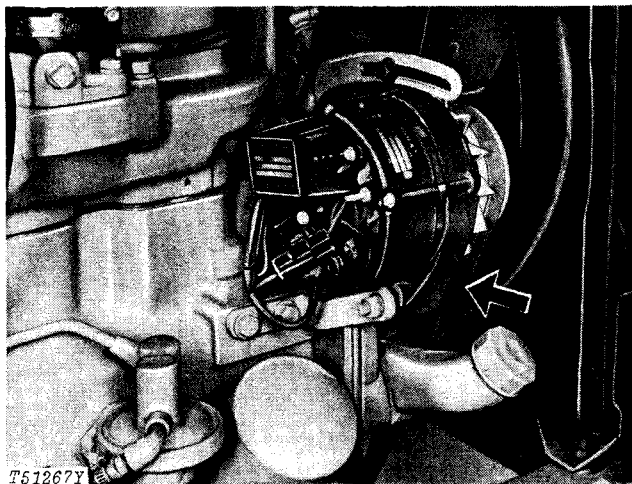


4219 Engine



T51266Y

6359 Engine



T51267Y

4219 Engine (Enclosed)

IMPORTANT: Do not pry on the matched rear alternator housing.

If belt gauge is used, tighten new single fan belt to 135-lb. (601 N) and new belts to 110-lb. (490 N) tension. After 3 minutes of machine operation tension should be 80-lb. (356 N) minimum. If manual method is used, loosen alternator bracket and adjusting cap screws and apply outward force to FRONT alternator frame until a 20-lb. (89 N) force on belt midway between pulleys will deflect belt 3/4-inch (19 mm).

NOTE: Tighten used fan belts to 90-lb. (401 N) tension.

Inspect belts periodically for wear or damage. If necessary to replace a belt, always replace BOTH belts.

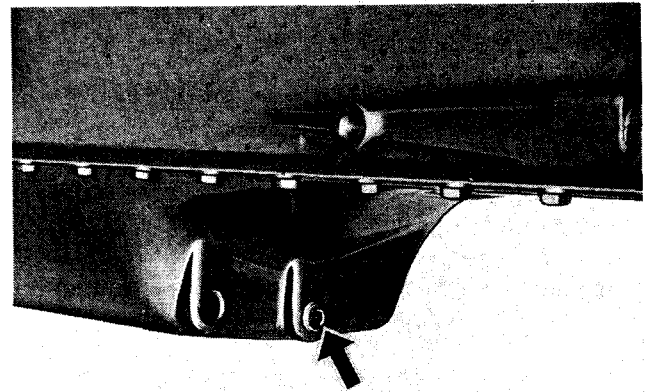
7. Batteries

Check battery electrolyte level. If distilled water is not available, use clean soft water. Avoid use of hard water. Remove foreign material from top of battery and coat terminals with petroleum jelly.

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

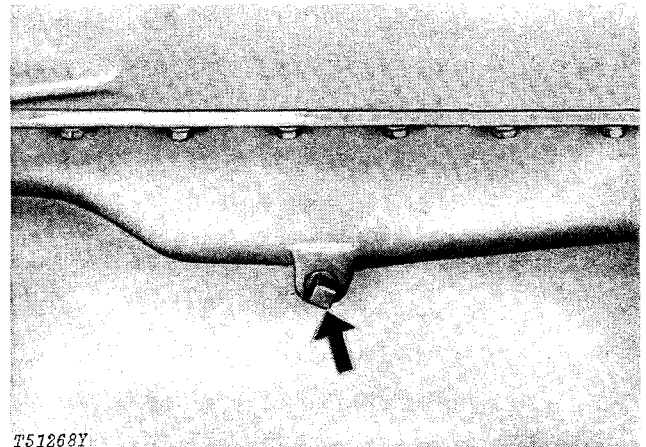
8. Engine Crankcase

Replace engine oil every 100 hours of operation. Drain crankcase when oil is hot.



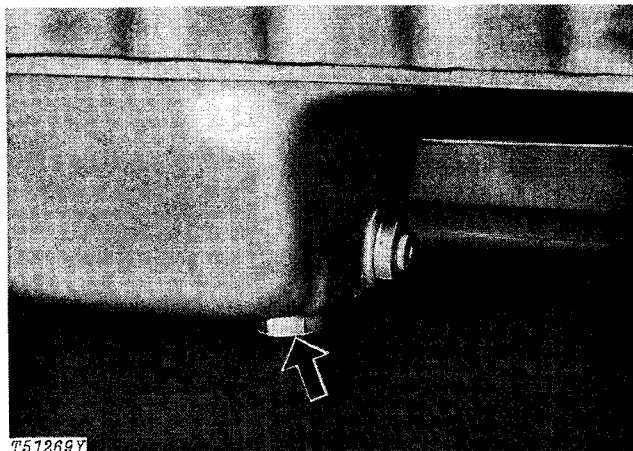
T36236

Crankcase Drain Plug
6329 Engine



T51268Y

Crankcase Drain Plug
6359 Engine



T51268Y

*Crankcase Drain Plug
4219 Engine*

Remove crankcase drain plug. Allow oil to drain. Replace plug after all oil has drained.

IMPORTANT: During intermittent cold weather operation, change oil at least every 100 hours or every six weeks, whichever occurs first. Also change oil at any seasonal change in temperature when a new viscosity of oil is required.

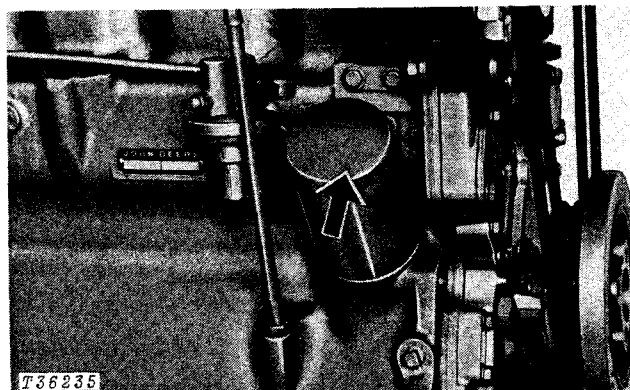
Fill crankcase with oil specified on page 8.

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)

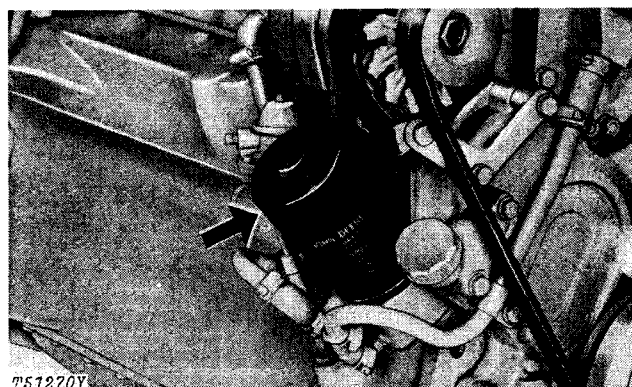
EVERY 200 HOURS

9. Changing Engine Crankcase Filter Element



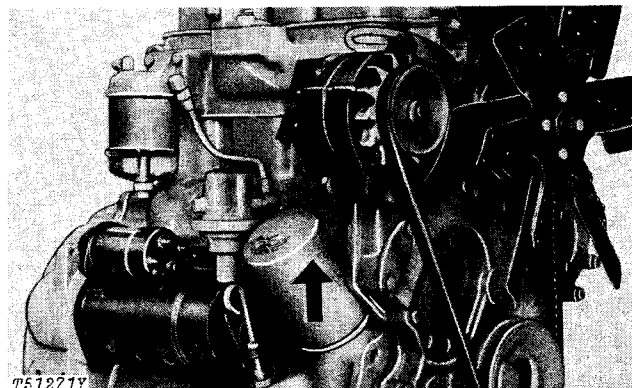
T36235

*Oil Filter
6329 Engine*



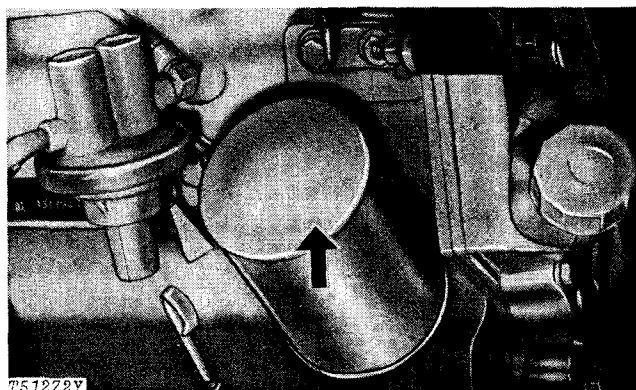
T51270Y

*Oil Filter
6359 Engine*



T51271Y

*Oil Filter
3164 Engine*



Oil Filter
4219 Engine

NOTE: Filter contains 1 quart (0.9 l) of oil.

NOTE: Change yearly if this occurs prior to 200 hours.

Spin off crankcase filter element and discard. Thoroughly clean filter mounting surface and install new element, making sure new sealing ring is inserted in bottom of element. Apply a thin film of oil to sealing ring. Spin element down by hand until sealing ring just touches mounting pad and then turn down an additional 1-1/2 turns. Do not overtighten.

With oil in crankcase, start engine and check for leaks around filter element. Retighten only as much as necessary to eliminate leaks, but do not overtighten.

IMPORTANT: Filter has a special bypass valve. Replace only with a John Deere filter.

Check crankcase oil level after changing filter and running engine.

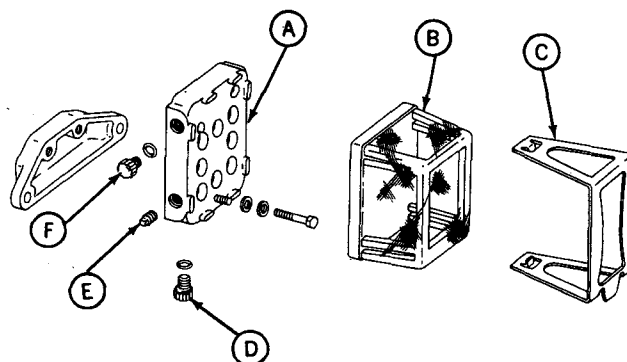
EVERY 500 HOURS

10. Fuel Filter

Replace fuel filter.

NOTE: Change yearly if this occurs before 500 hours.

Replacing Filter Element



T 20723

A—Body
B—Element
C—Spring

D—Fuel Drain Screw
E—Fuel Inlet Plug
F—Bleed Screw

Fuel Filter

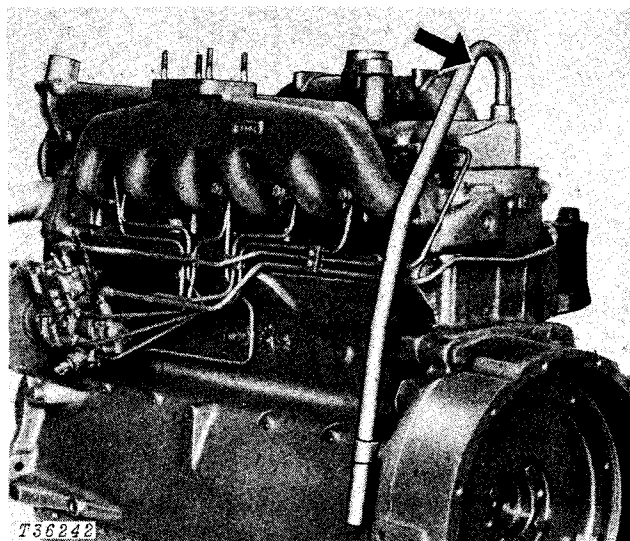
To release filter element retaining spring, press inward on outside finger tab and squeeze tabs together to disengage top hook of spring. Quickly pull filter element off and push new filter element over spring pin. Hook bottom of filter element retaining spring first and top hook last.

IMPORTANT: Dirt lodged in spring pin groove or at end of spring pin by cleaning efforts may be washed into injection system and damage injection pump or nozzles.

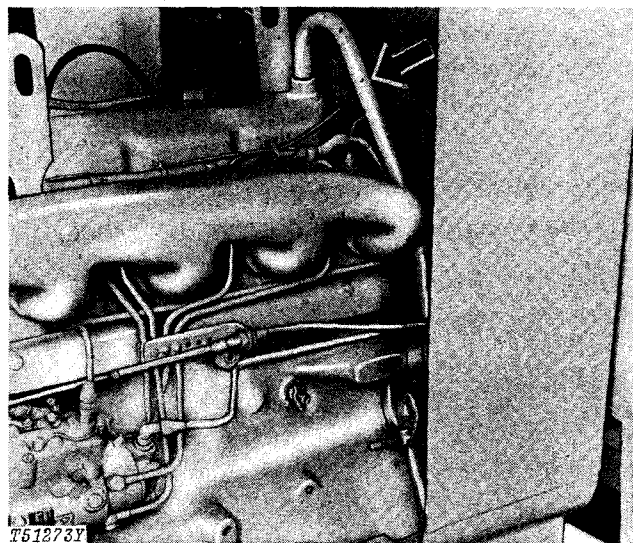
11. Engine Crankcase Vent Tube

Remove and clean vent tube in solvent or diesel fuel. When installing tube, be sure O-ring is secure in groove in engine rocker arm cover bore.

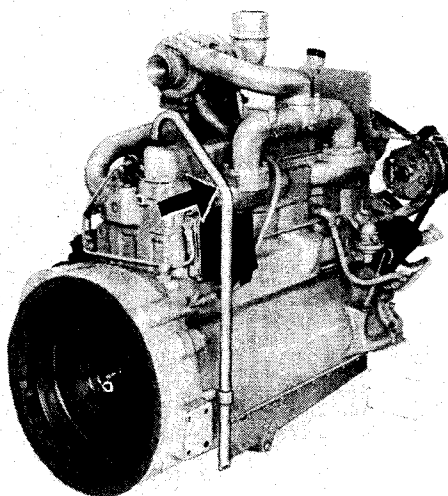
NOTE: Service vent tube more often if engine is operating in unusually dusty conditions.



Engine Crankcase Vent Tube
6329 Engine



Engine Crankcase Vent Tube
4219 Engine

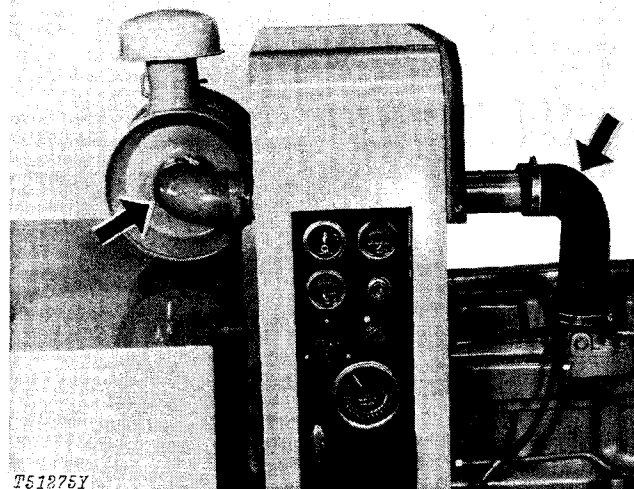


T51274Y

Engine Crankcase Vent Tube
6359 Engine

12. Check Air Intake Hoses

Check clamps on hoses which connect air cleaner and engine. Tighten hose clamps where necessary to prevent dirt from entering engine. Inspect hoses for cracks or rotting.

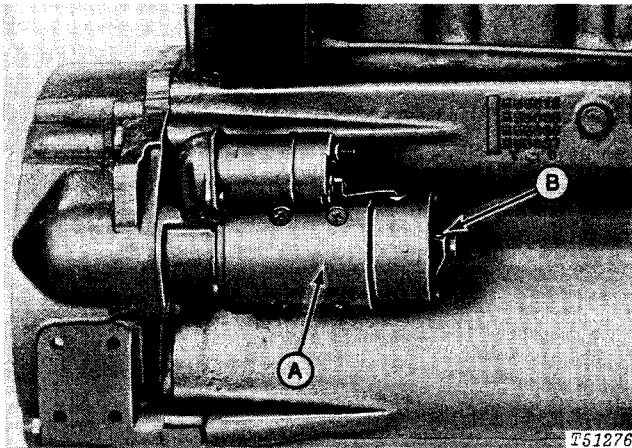


T51275Y

Air Intake Hoses
4219 Engine

EVERY 1000 HOURS

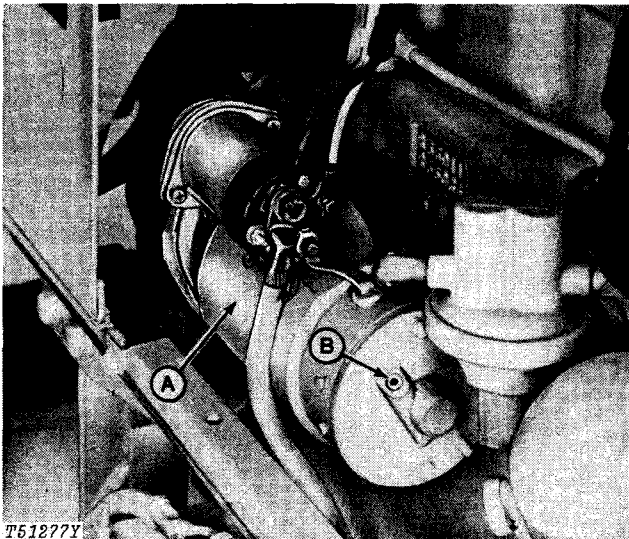
13. Lubricating Starter (Delco-Remy Only)



A—Starter Motor

B—Pipe Plug

6329 Engine



A—Starter Motor

B—Pipe Plug

4219 Engine

Remove starter. Remove pipe plugs at each end of starter and saturate wicks with SAE 10W-20 John Deere TORQ-GARD SUPREME engine oil or an equivalent. Install starter.

14. Engine Valve Tappet Adjustment

See your John Deere dealer for service.

15. Engine Speeds

Warm up engine and use tachometer to check engine speeds.

Normal engine working range for Series 300 OEM engines is 1500 to 2500 rpm. Low idle is 800 rpm.

See your John Deere dealer for service.

EVERY SPRING AND FALL

16. Servicing Cooling System

Drain, flush, and fill cooling system with proper coolant. Also remove any trash around radiator. See page 23 for seasonal recommendations.

17. Servicing Engine Crankcase

Drain and refill engine crankcase with John Deere TORQ-GARD SUPREME engine oil or an equivalent. See page 8. Replace crankcase filter element.

NOTE: Perform this service only if 200-hour periodic service has not been performed during previous three-week period.

ANNUALLY

18. Servicing Air Cleaner

Replace primary and safety air cleaner elements. Before replacing elements, be sure to clean out air cleaner and dust unloading valve. See page 13.

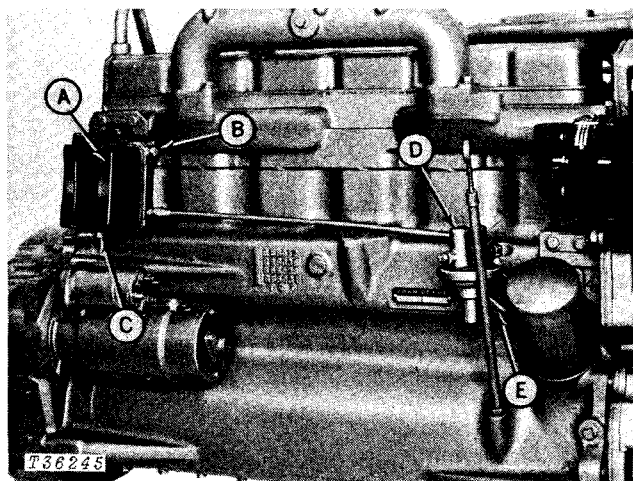


Service

Instructions in this section will help you keep your engine performing efficiently and economically. For additional service, see your John Deere dealer.

FUEL SYSTEM

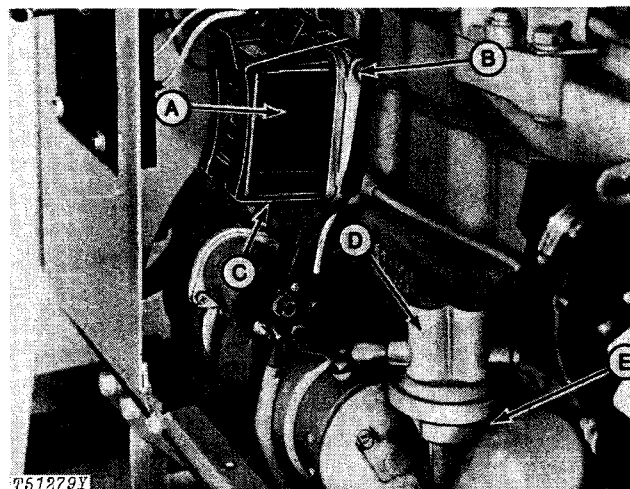
Fuel system includes fuel tank and sump (if equipped), fuel transfer pump, fuel filter, injection pump, fuel injection nozzles, and lines which connect these parts.



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*

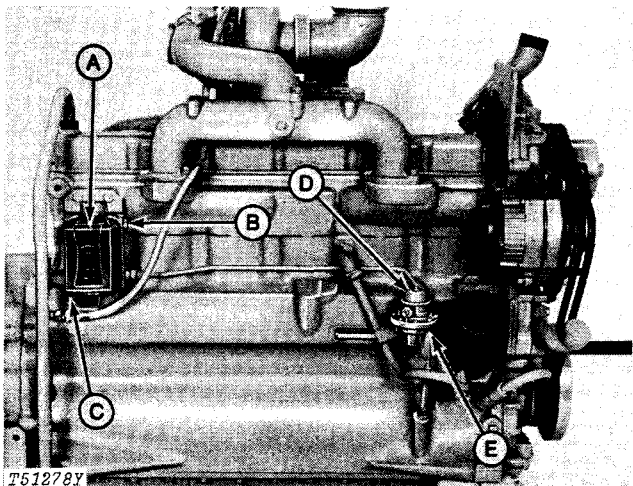


A—Fuel Filter
B—Bleed Screw
C—Fuel Drain Plug

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

*Fuel System Components
4219 Engine*

Improper fuel storage may cause frequent contamination of fuel system. Water or sediment found daily in fuel filter indicates contamination of fuel system. Check storage tank.



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*

Do not run engine while steam cleaning or washing near injection pump.

NOTE: Do not modify injection pump, injection pump timing, or fuel injection nozzles. See your John Deere Warranty on this engine.

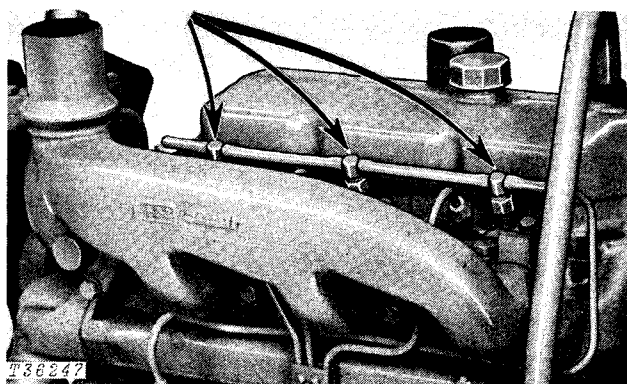
BLEEDING FUEL SYSTEM

When fuel filter or fuel pump sediment bowl is removed or engine runs out of fuel, bleed air from fuel filter. Loosen filter bleed screw. Pump primer lever on fuel transfer pump until air bubble in filter is gone and fuel flows from the bleed screw. Tighten the bleed screw and leave primer lever in down position.

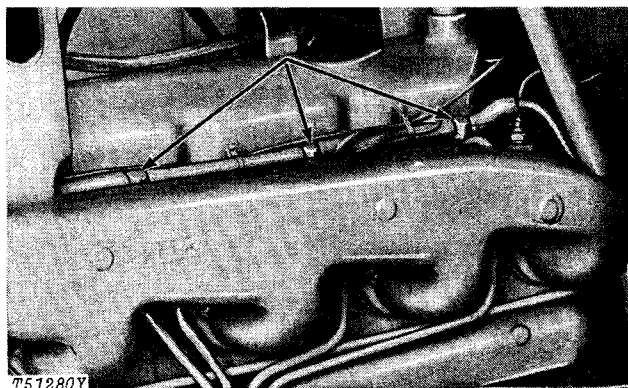
NOTE: If primer does not pump fuel and no resistance is felt at upper portion of lever stroke, turn engine very slightly with starter.

CAUTION: Escaping fluid under pressure can penetrate skin. Use a piece of cardboard or wood, not your hands, to search for leaks. If injured by escaping fluid, see a doctor at once.

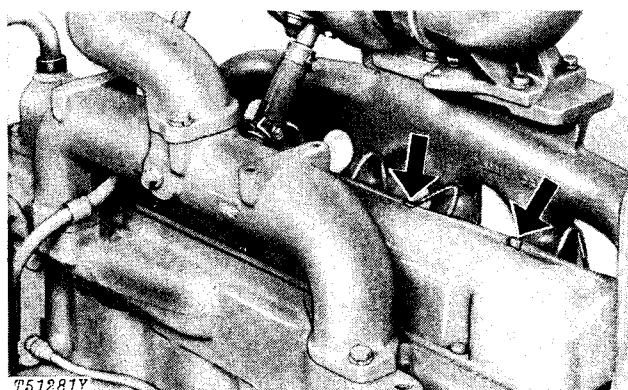
FUEL INJECTION NOZZLES



Fuel Injection Nozzle
3164 Engine



Fuel Injection Nozzle
4219 Engine

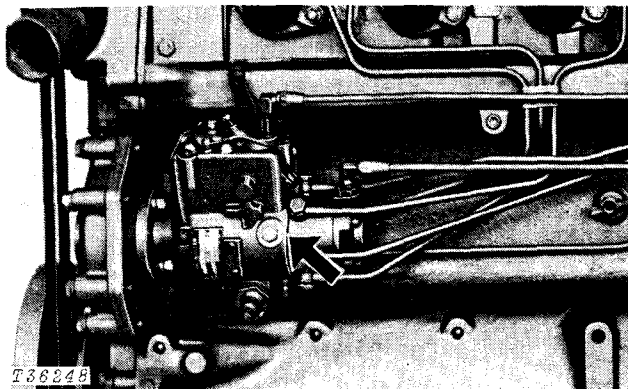


Fuel Injection Nozzles
6359 Engine

Occasionally fuel injection nozzles may require removal for inspection or service. If faulty or dirty nozzles are indicated by abnormal engine operation, see your John Deere dealer.

IMPORTANT: Do not attempt to remove and disassemble injection nozzles: special tools are required.

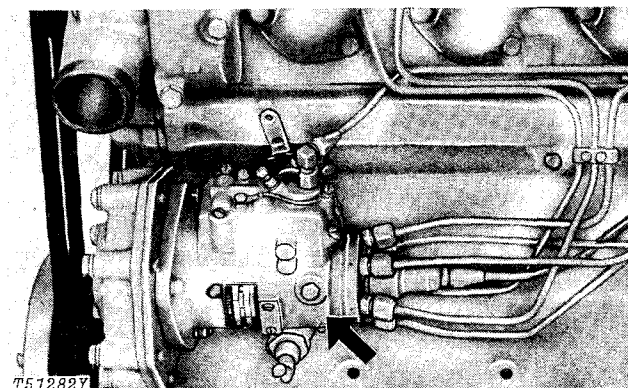
FUEL INJECTION PUMP



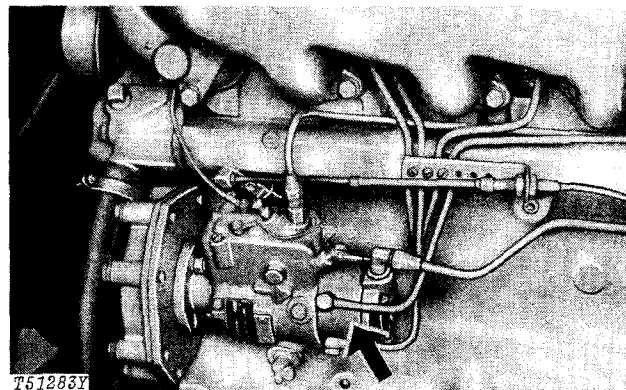
*Fuel Injection Pump
6329 Engine*

Service fuel injection pump only if abnormal engine operation indicates pump malfunctions. See your John Deere dealer for fuel injection pump service.

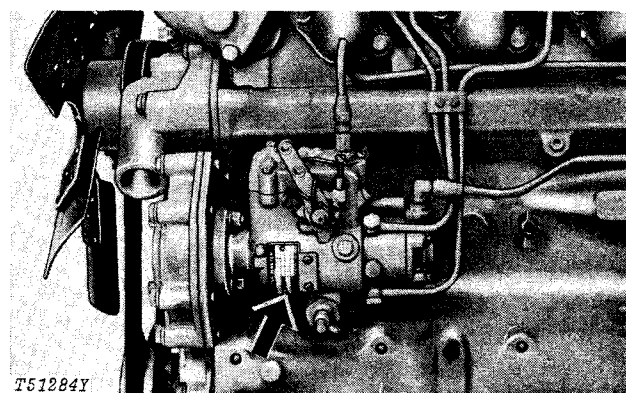
IMPORTANT: Never steam clean or spray water on a warm injection pump.



*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 maintain proper engine operating temperature.

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

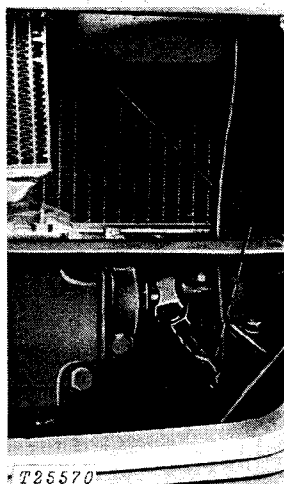
Keep cooling system air tight.

CAUTION: Do not remove radiator filler cap until coolant temperature is below boiling point. Loosen cap to the stop to relieve pressure before removing cap completely.

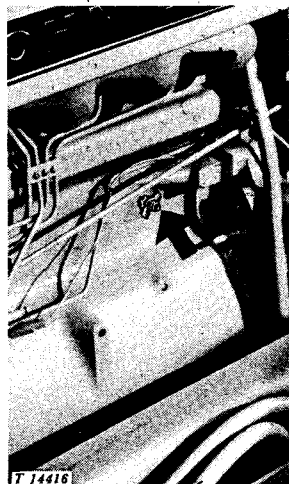
CLEANING COOLING SYSTEM

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

To drain system completely, open radiator drain cock, cylinder block drain cock and engine oil cooler drain plug.



Radiator Drain Cock

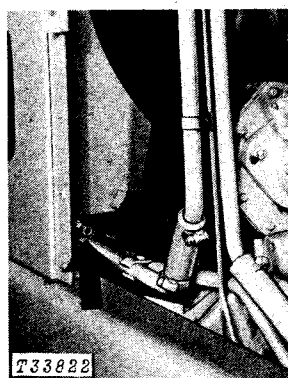


Cylinder Block Drain Cock

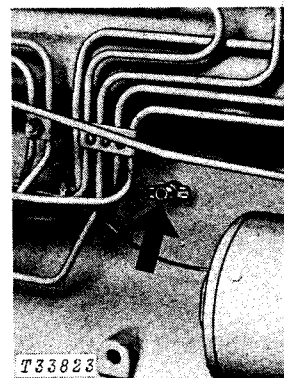
4219 Engine



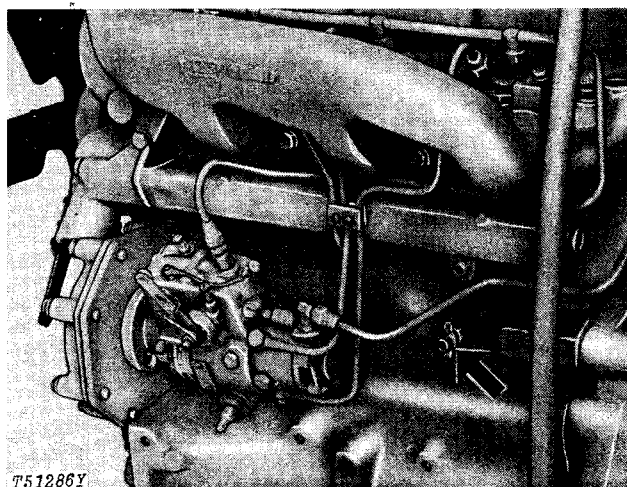
Cylinder Block Drain Cock
6359 Engine



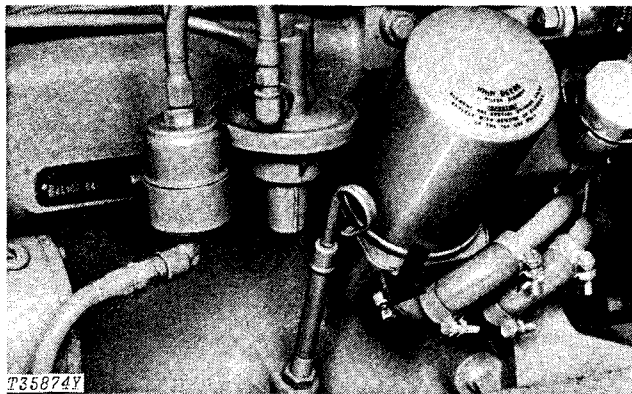
Radiator Drain Cock



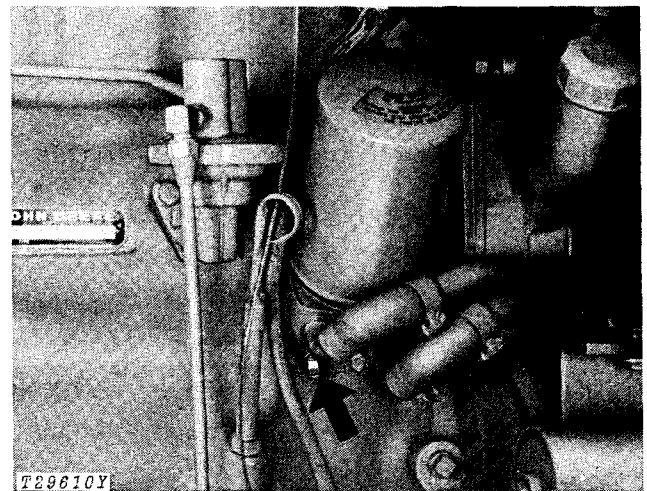
Cylinder Block Drain Cock
6414 Engine



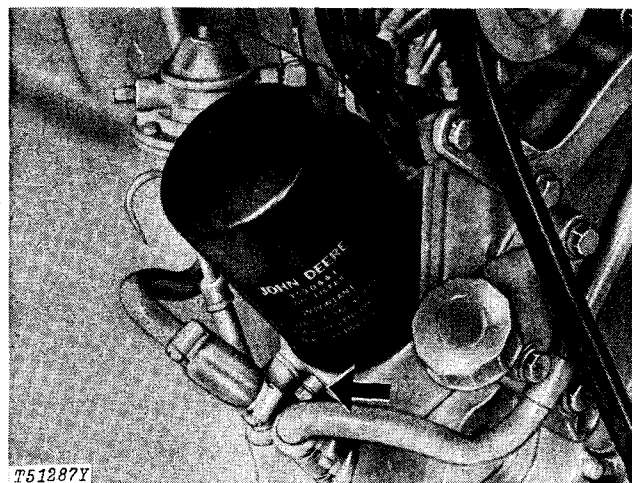
Cylinder Block Drain Cock
3164 Engine



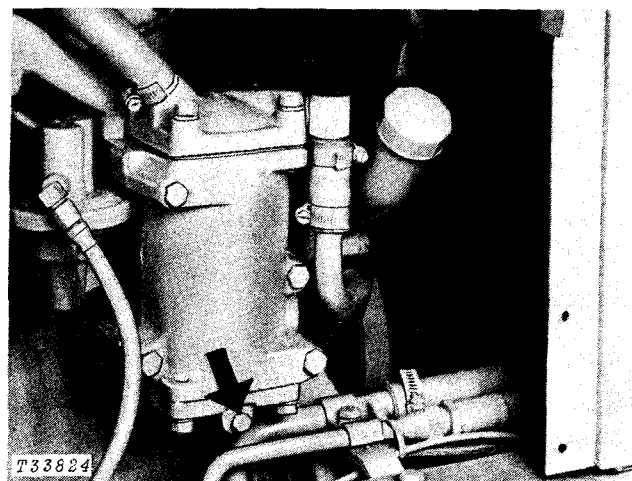
Engine Oil Cooler Drain Plug
4219 Engine



Engine Oil Cooler Drain Plug
6329 Engine



Engine Oil Cooler Drain Plug
6359 Engine



Engine Oil Cooler Drain Plug
6414 Engine

Servicing Cooling System

⚠ CAUTION: Do not remove radiator filler cap until the coolant temperature is below boiling point. Then loosen cap slowly to the stop to relieve any excess pressure before removing cap completely.

Open radiator cylinder block, and oil cooler drain cocks (if equipped) to drain cooling system. Flush cooling system, using 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 with 50% anti-freeze (ethylene glycol type) and 50% water. When temperatures remain above freezing fill cooling system with water, adding John Deere Summer Engine Coolant Conditioner or equivalent to prevent rust and corrosion and provide lubrication to water pump.

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

Clean radiator fins as necessary with John Deere Heavy Duty Cooling System cleaner with detergent or an equivalent.

ELECTRICAL SYSTEM

BATTERIES

Use adequate size battery and cables.

IMPORTANT: When servicing electrical system, disconnect battery ground strap.

Cleaning Batteries

Keep batteries clean; wipe with damp cloth. Be sure vent plugs are tight.

To remove corrosion around terminals, remove battery cables and wash terminals with ammonia solution or a solution consisting of 1/4 pound (0.1 l) of baking soda added to 1 quart (0.9 l) of water.

After cleaning, flush outside of battery, battery compartment, and surrounding areas with clear water.

Checking Specific Gravity

Check specific gravity of electrolyte in each battery cell.

Hold the hydrometer vertically. Correct reading by adding four gravity points (0.004) for every ten degrees electrolyte temperature is above 80°F (27°C) or subtracting four gravity points for every ten degrees below 80°F (27°C). A fully charged battery will have a corrected specific gravity of 1.260. Charge battery if reading is below 1.215.

NOTE: In tropical areas, use a 1.225 full charge reading. In cold regions, use a 1.280 full charge reading.

Checking Electrolyte Level

Check electrolyte level at least every 100 hours of operation.

Fill battery cells to bottom of filler neck. Use distilled water or soft water.

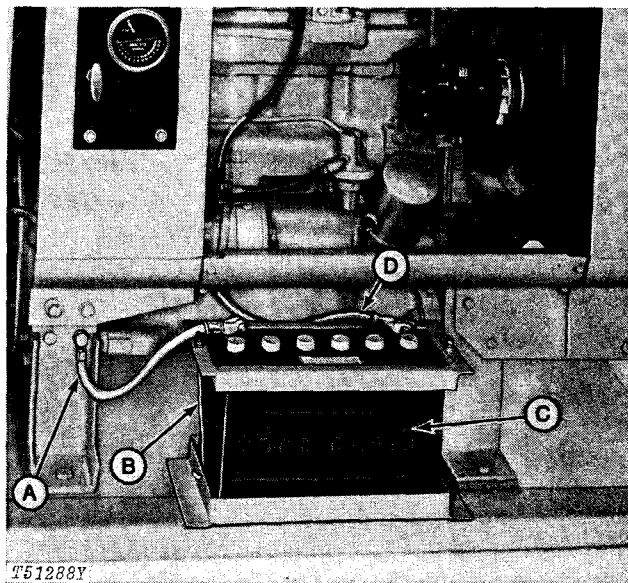
NOTE: Do not add water in freezing weather unless engine is to be run two or three hours.

Cold Weather Battery Service

During cold weather, keep electrolyte at proper level, and keep batteries fully charged.

Storing Batteries

If engine is to be stored for more than 30 days, remove batteries. Store battery in cool place. Keep 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 Alternator and Regulator

When batteries are connected, observe precautions listed here.

- (1) Disconnect negative ground strap when working on or near alternator or regulator.
- (2) NEVER ATTEMPT TO POLARIZE ALTERNATOR OR REGULATOR.
- (3) If alternator or regulator wiring is disconnected, be sure it is properly connected before batteries are connected.
- (4) Do not ground alternator outlet terminal.
- (5) Do not ground alternator field terminal or field circuit between alternator and regulator.
- (6) NEVER disconnect or connect any alternator or regulator wires with batteries connected or with alternator operating.
- (7) Always connect batteries or a booster battery in correct polarity.
- (8) Never disconnect batteries when engine is running.

STARTER

IMPORTANT: Never hold starter button in start position for more than 20 seconds at a time. Wait two minutes between cranking periods. Be sure starter has stopped completely after a false start before cranking engine again.

Checking Causes of Sluggish Starter Operation

If starter fails or operates sluggishly, check for the following:

- 1 - Battery too small or weak.
- 2 - Dirty, loose or corroded cables or wires.
- 3 - Tight engine.
- 4 - Incorrect engine oil.
- 5 - Low temperature.

BOOSTER BATTERIES

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

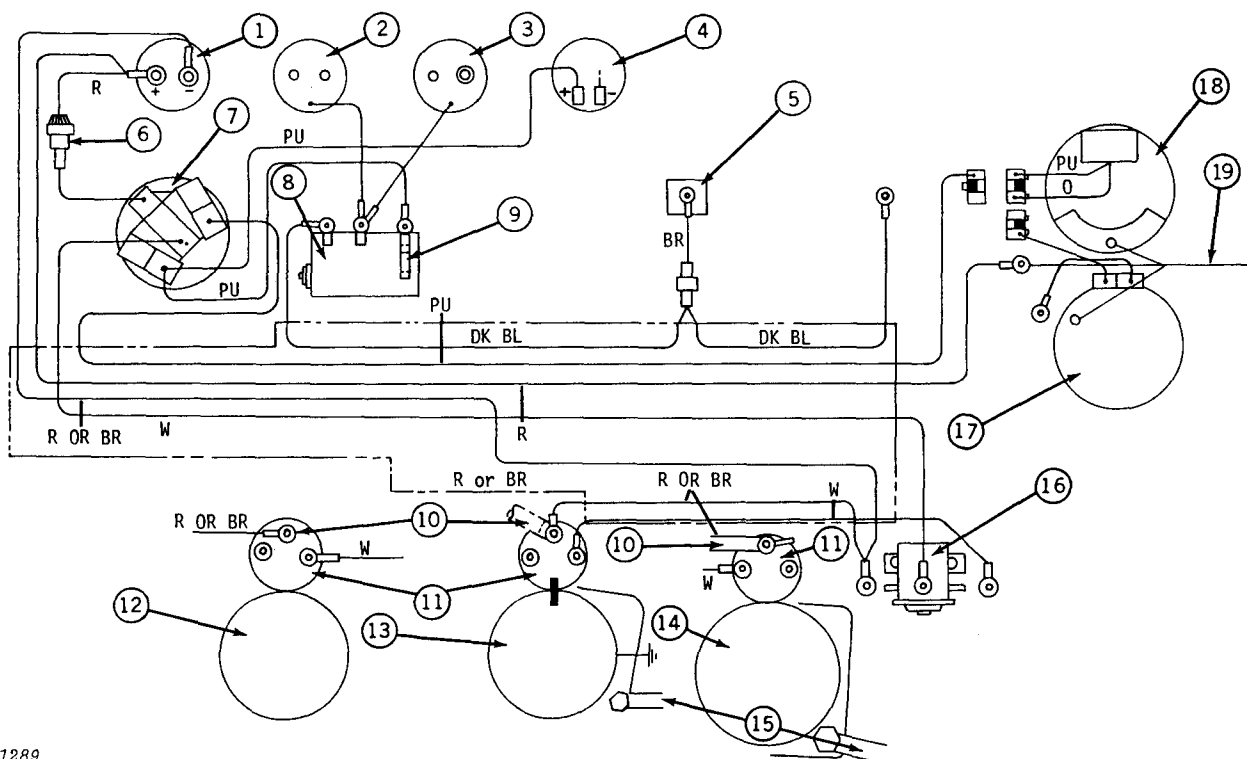
IMPORTANT: A battery charger should not be used as a booster if a battery has a very low charge (1.150 specific gravity reading or lower).

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



CAUTION: Gas from electrolyte is explosive. Keep batteries away from sparks or fires.

NOTE: If any electrical system wires are disconnected, connect them as shown on wiring diagram, page 27.



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—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 instructions below.

STORING ENGINE

Use AR41785 engine storage kit or its equivalent when storing engine.

Change crankcase oil before storing engine. Drain the engine crankcase with the engine warm. Replace filter element and fill crankcase with correct oil.

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

Service air cleaner. See page 13.

Drain fuel tank and add 1 ounce (29.5 cc) of inhibitor to fuel tank for each 4 gallons (15 l) of tank capacity.

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

Disconnect air intake pipe from manifold. Place 3 ounces (88.5 cc) of inhibitor in manifold. Reconnect air intake pipe. Turn engine over slowly for 2 revolutions.

Seal following openings with plastic bags and tape from kit: air cleaner inlet, exhaust opening, crankcase breather pipe, fuel tank vent and radiator overflow hose. Follow check list on tag.

Loosen fan belt.

Remove, clean, and store battery as instructed on page 25.

Coat exposed metal surfaces with a grease or corrosion preventive.

Clean exterior of engine and touch up scratched or chipped painted surfaces.

Store engine in a dry protected place or; if outside, cover it with suitable protective material.

REMOVING ENGINE FROM STORAGE

Use following procedure to remove your engine from storage:

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

Remove batteries from storage. Install them and connect cables. Adjust alternator belt tension (page 14).

Fill diesel fuel tank with fresh fuel.

Check engine crankcase oil level. Check cooling system level.

Perform recommended 500 hour service.

To start engine, hold fuel shut-off out, crank engine with starter until engine oil pressure gauge shows oil pressure. Do not operate starter more than 20 seconds at a time. After gauge shows pressure, push fuel shut off completely in and start engine.

Operate engine for a few minutes at slow idle. Check proper condition before operating under a load.



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

- Improper starting procedure.
- No fuel.
- Low battery output.
 - Check electrolyte level and specific gravity of battery. Page 25.
- Excessive resistance in starting circuit.
 - Clean and tighten all connections on batteries and starter.
- Crankcase oil too heavy.
 - Use oil of proper viscosity. Page 8.
- Improper type of fuel.
 - Consult fuel supplier and use proper type of fuel for operating condition. Page 8.
- Water, dirt, or air in fuel system.
 - Drain, flush, fill and bleed system. Page 21.
- Clogged fuel filter.
 - Replace filter element. Page 17.
- Dirty or faulty injection nozzles.
 - Have your John Deere dealer check injection nozzles.
- Fuel pump primer lever left on upward end of stroke.

Engine Runs Irregularly or Stalls Frequently

- Low coolant temperature.
 - If water temperature gauge is not in normal range, see "Below Normal Engine Temperature". Page 29.
- Clogged fuel filter.
 - Replace filter element. Page 17.
- Water, dirt, or air in fuel system.
 - Drain, flush, fill and bleed system. Page 21.
- Dirty or faulty injection nozzles.
 - Have your John Deere dealer check injection nozzles.
- Inspect clamps and hose. Replace if necessary.
- Use only approved parts.
- Improper type of fuel.
 - Use proper type of fuel for operating conditions. Page 8.

Engine Knocks

- Insufficient oil.
 - Call your John Deere dealer.
- Injection pump out of time.
 - See your John Deere dealer.
- Low coolant temperature.
 - See "Below Normal Engine Temperature". Page 29.
- Engine overheating.
 - See "Engine Overheats". Page 30.

High Fuel Consumption

- Improper type of fuel. Page 8.
- Clogged or dirty air cleaner.
 - Service air cleaner. Page 13.
- Engine overloaded.
 - Reduce load.
- Improper 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 proper temperature.
 - Check thermostats.

Below Normal Engine Temperature

- Defective thermostat.
 - Remove and check thermostat.

Lack of Engine Power

Engine overloaded.
 Reduce load.
Intake air restriction.
 Service air cleaner. Page 13.
Clogged fuel filter.
 Replace filter element. Page 17.
Improper type of fuel. Page 8.
Overheated engine.
 See "Engine Overheats". Page 30.
Below normal engine temperature.
 Remove and check thermostat.
Improper valve clearance.
 See your John Deere dealer.
Dirty or faulty injection nozzles.
 See your John Deere dealer.
Injection pump out of time.
 See your John Deere dealer.
Inspect clamps and hose. Replace as necessary.
Use only approved parts.

Engine Overheats

Engine overloaded.
 Reduce load.
Low coolant level.
 Fill radiator to proper level.
 Check radiator and hoses for loose connections and leaks.
Loose or defective fan belts.
 Adjust belt tension. Page 14.
Dirty cooling system radiator core.
 Remove all foreign matter from exterior of radiator core.
Cooling system needs flushing.
Defective thermostat.
 Remove and check thermostat.
Defective temperature gauge.
 Check water temperature with thermometer and replace gauge if necessary.

Low Oil Pressure

Low oil level. Page 12.
Improper type of oil.
 Drain and fill crankcase with correct oil. Pages 8, 16.
Partially plugged oil filter.
 Replace filter.

High Oil Consumption

Crankcase oil too light.
 Use proper viscosity oil. Page 8.
Oil leaks.
 Check for leaks in lines around gaskets and drain plug.
Engine overheats.
 See "Engine Overheats." Page 30.

Engine Emits Black or Gray Exhaust Smoke

Clogged or dirty air cleaner.
 Service air cleaner. Page 13.
Defective muffler.
Improper fuel. Page 8.
Engine overloaded.
 Reduce load.
Injection nozzles dirty.
 See your John Deere dealer.
Engine out of time.
 See your John Deere dealer.

Engine Emits White Smoke

Improper fuel. Page 8.
Cold engine.
 Warm up engine to normal operating temperature.
Defective thermostat.
 Remove and check thermostat.
Engine out of time.
 See your John Deere dealer.

ELECTRICAL SYSTEM

Battery Will Not Charge

Loose or corroded connections.

Clean and tighten battery connections.

Sulfated or worn-out batteries.

Check specific gravity of each battery. Page 25.

Check electrolyte level of each battery. Page 25.

Loose or defective alternator belt.

Adjust belt tension. Page 14.

Replace belt. Page 14.

Starter Inoperative

Loose or corroded connections.

Clean and tighten loose connections.

Low battery output.

Check specific gravity of each battery. Page 25.

Check electrolyte level of each battery. Page 25.

Defective electrical system ground wire.

Repair or replace.

Starter Cranks Slowly

Low battery output.

Batteries too small.

Battery cable too small.

Check specific gravity of each battery. Page 25.

Check electrolyte level of each battery. Page 25.

Crankcase oil too heavy. Page 8.

Loose or corroded connections.

Clean and tighten loose connections.

Entire Electrical System Does Not Function

Faulty battery connection.

Clean and tighten connections.

Sulfated or worn-out batteries.

Check specific gravity and electrolyte level of each battery. Page 25.



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	1800	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
Low idle		800	800	800	800	800	800	800	800	800	800	800
Torque @ RPM	lb/ft	122 (165)	175 (237)	188 (255)	236 (320)	214 (290)	250 (339)	250 (335)	280 (380)	346 (470)	330 (447)	390 (529)
(max.) without fan	(Nm)	@ 1500	@ 1400	@ 1400	@ 1600	@ 1300	@ 1500	@ 1500	@ 1200	@ 1400	@ 1200	@ 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
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)

*Based on 1800 rpm.

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