

# 5220, 5320, 5420, and 5520 Tractor Operation and Test

## TECHNICAL MANUAL 5220, 5320, 5420, and 5520 Tractor Operation and Test

TM2049 18MAR02 (ENGLISH)

For complete service information also see:

5220, 5320, 5420, and 5520 Tractor Repair.....	TM2048
Component Technical Manual 4045 Engine .....	CTM104
Component Technical Manual 4045 Mechanical Fuel System.....	CTM207
Component Technical Manual 3029 Engine .....	CTM125
Alternators and Starting Motors.....	CTM77

**John Deere Augusta Works**  
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# Introduction

## Foreword

This manual is written for an experienced technician. Essential tools required in performing certain service work are identified in this manual and are recommended for use.

Live with safety: Read the safety messages in the introduction of this manual and the cautions presented throughout the text of the manual.



This is the safety-alert symbol. When you see this symbol on the machine or in this manual, be alert to the potential for personal injury.

Technical manuals are divided in two parts: repair and operation and tests. Repair sections tell how to repair the components. Operation and tests sections help you identify the majority of routine failures quickly.

Information is organized in groups for the various components requiring service instruction. At the beginning of each group are summary listings of all applicable essential tools, service equipment and tools, other materials needed to do the job, service parts kits, specifications, wear tolerances, and torque values.

Technical Manuals are concise guides for specific machines. They are on-the-job guides containing only the vital information needed for diagnosis, analysis, testing, and repair.

Fundamental service information is available from other sources covering basic theory of operation, fundamentals of troubleshooting, general maintenance, and basic type of failures and their causes.

DX, TMIFC -19-29SEP98-1/1

# Contents

## SECTION 210—Operational Checkout Procedures

Group 10—Operational Checkout Procedures

## SECTION 220—Engine Operation, Tests, and Adjustments

Group 05—Component Location  
Group 10—Theory of Operation  
Group 15—Diagnosis, Tests, and Adjustments

## SECTION 230—Fuel/Air Operation, Tests, and Adjustments

Group 05—Component Location  
Group 10—Theory of Operation  
Group 15—Diagnosis, Tests and Adjustments

## SECTION 240—Electrical System Operation, Test & Adjust

Group 05—Component Location  
Group 10—Theory of Operation  
Group 15—Diagnosis, Test and Adjust  
Group 20—Wiring Schematics

## SECTION 250—Power Train Operation, Tests and Adjustments

Group 05—Component Location—  
CollarShift/SyncShuttle™ Transmission  
Group 06—Component Location—PowrReverser™  
Transmission  
Group 10—Theory of Operation—  
CollarShift/SyncShuttle™ Transmission  
Group 11—Theory of Operation—PowrReverser™  
Transmission  
Group 15—Diagnosis, Tests, and Adjustments—  
CS/SS Transmission  
Group 16—Diagnosis, Tests, and Adjustments—  
PowrReverser™

## SECTION 260—Steering and Brake Operation, Test & Adjust

Group 05—Component Location  
Group 10—Theory of Operation  
Group 15—Diagnosis, Tests and Adjustments

## SECTION 270—Hydraulic System Operation, Tests,

## and Adjustments

Group 05—Component Location  
Group 10—Theory of Operation  
Group 15—Diagnosis  
Group 16—Hydraulic Tests—Without SCV  
Group 17—Hydraulic Tests—With SCV  
Group 18—Hydraulic Tests—All  
Group 19—Adjustments  
Group 20—Hydraulic Schematics

## SECTION 290—Operator Station

Group 05—Component Location  
Group 10—Theory of Operation  
Group 15—Diagnosis, Tests, and Adjustments

## SECTION 299—Dealer Fabricated Tools

Group 00—Dealer Fabricated Tools

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210

220

230

240

250

260

270

290

299

INDX

*Contents*

210

220

230

240

250

260

270

290

299

INDX

# Section 210

## Operational Checkout Procedures

### Contents

Page	Page
<b>Group 10—Operational Checkout Procedures</b>	
Specifications . . . . .	210-10-1
Operational Checkout Procedure Information. . . . .	210-10-1
Engine Oil Level and Condition Check . . . . .	210-10-2
Coolant Level and Condition Check . . . . .	210-10-3
Transmission and Hydraulic Oil Check . . . . .	210-10-4
3-Cylinder Fan and V-Belt Check . . . . .	210-10-5
4-Cylinder Fan and Serpentine Belt Check . . . . .	210-10-6
Compressor Belt Check . . . . .	210-10-7
Fuel System Check. . . . .	210-10-8
Air Intake System Check. . . . .	210-10-9
Electrical System Check . . . . .	210-10-10
Hydraulic System Check . . . . .	210-10-11
MFWD Oil Check . . . . .	210-10-12
MFWD Differential Oil Check. . . . .	210-10-12
Indicator Lamps Check . . . . .	210-10-13
Cab Blower Motor Check . . . . .	210-10-14
A/C Compressor Clutch Check . . . . .	210-10-15
Engine Start Check—Straddle Mount Tractors . . . . .	210-10-16
Engine Start Check—Isolated Open Operator Station and Cab Tractors . . . . .	210-10-17
Transmission Neutral Start Check—Straddle Mount Tractors . . . . .	210-10-18
Transmission Neutral Start Check—Isolated Open Operator Station and Cab Tractors . . . . .	210-10-19
PTO Neutral Start Check. . . . .	210-10-20
Engine Fast and Slow Idle Operation . . . . .	210-10-21
Foot Throttle Pedal Check—Isolated Open Operator Station and Cab Tractors . . . . .	210-10-22
Power Steering Check. . . . .	210-10-23
Differential Lock Check . . . . .	210-10-23
PTO Engagement Check. . . . .	210-10-24
Clutch Check. . . . .	210-10-25
Transmission Shift Check . . . . .	210-10-26
Range Lever Shift Check . . . . .	210-10-27
MFWD Drive Check . . . . .	210-10-28
Brake Check . . . . .	210-10-29
Park Brake Check—CollarShift and SYNCSHUTTLE™ Transmissions . . . . .	210-10-30
Park Brake Check—POWRREVERSER™ Transmission . . . . .	210-10-31
Rockshaft Check—Straddle Mount Tractors . . . . .	210-10-32
Rockshaft Check—Isolated Open Operator Station and Cab Tractors . . . . .	210-10-33
Selective Control Valve Check—Straddle Mount Tractors . . . . .	210-10-34
Selective Control Valve Check—Isolated Open Operator Station and Cab Tractors . . . . .	210-10-35
Front End Loader Joystick Control Check (Optional). . . . .	210-10-36
A/C System Operational Check. . . . .	210-10-37
Cab Heater Valve Check. . . . .	210-10-38
Miscellaneous Checks. . . . .	210-10-38



## Specifications

Item	Measurement	Specification
Engine Slow Idle Speed	Rotation	825 ± 25
Engine Fast Idle Speed	Rotation	2625 ± 25

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## Operational Checkout Procedure Information

The procedures covered in this group are used to give a quick checkout of all the systems and components on the unit. These checkouts should be run to ensure proper operation after any extended storage, when the unit comes in for service, and after repairs have been made on the unit. They can also be helpful in determining the value of the unit at trade-in time. The unit should be placed on a level surface to run the checkouts. All the checkouts should be done and all of the steps of each checkout should be followed.

Each checkout lists:

- Conditions—How the unit should be set up for the checkout.
- Procedure—The specific action to be done.
- Normal—What should happen or be heard or be seen.
- If Not Normal—Where to go if other tests or adjustments are needed.

When performing the checkout, be sure to set your machine up to the test conditions listed and follow the sequence carefully. The “Normal” paragraph gives the result that should happen when performing the checkout. If the results are not normal, go to the Section and Group listed in the “If Not Normal” paragraph to determine the cause and repair the malfunction.

The photograph that accompanies each checkout procedure is included to help conduct the checkout.

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## Engine Oil Level and Condition Check

### CONDITIONS:

- Machine parked on flat, level surface.
- Key switch in OFF position.
- Transmission in park position.
- Engine not run for at least five minutes.

### PROCEDURE:

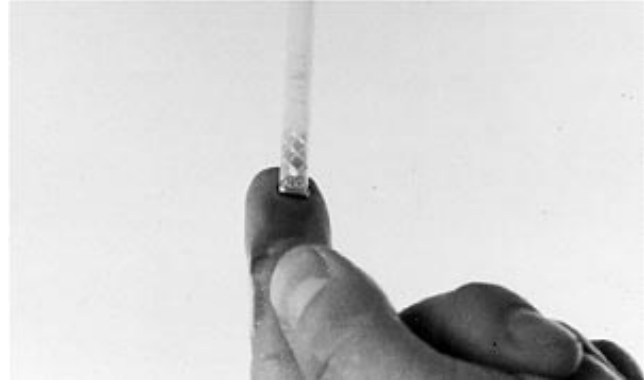
- Clean dirt from area around dipstick opening.
- Remove and wipe off dipstick.
- Install dipstick until seated in tube.
- Remove dipstick and check level and condition of oil.

### NORMAL:

- Oil level between full and add marks of dipstick.
- Oil not excessively thick or thin.
- No fuel odor in oil.
- No visible foreign material in oil.

### IF NOT NORMAL:

- Add proper oil to full mark on dipstick. (See Transmission and Hydraulic Oil in TM2048 Section 10, Group 20.)
- Replace contaminated oil and filter.
- See Section 220, Group 15 for Diagnosis, Tests, and Adjustments



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## Coolant Level and Condition Check

### CONDITIONS:

- Machine parked on flat, level surface.
- Key switch in OFF position.
- Transmission in park position.

### PROCEDURE:

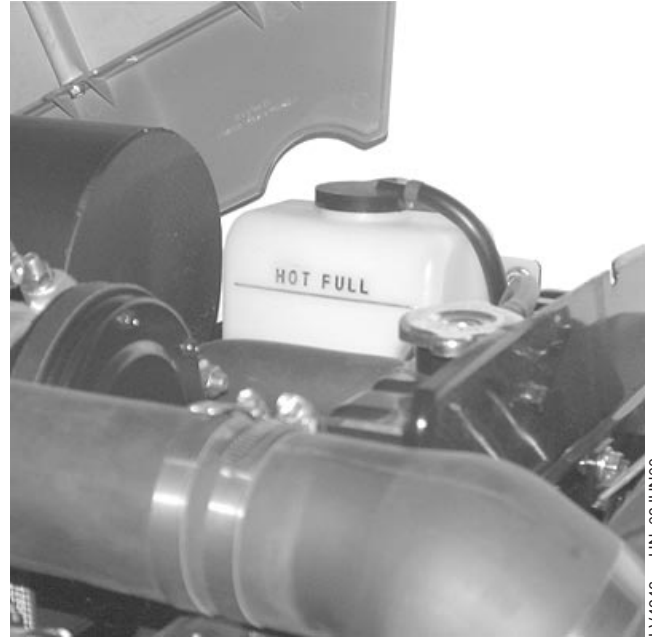
- Observe level of coolant in recovery tank.
- Check condition of recovery tank and tank-to-radiator hose.

### NORMAL:

- Recovery tank and hose in good condition, no holes or cracks.
- Coolant at full mark if engine at operating temperature.
- Coolant clean; no oil, rust-like discoloration or foreign material in fluid.

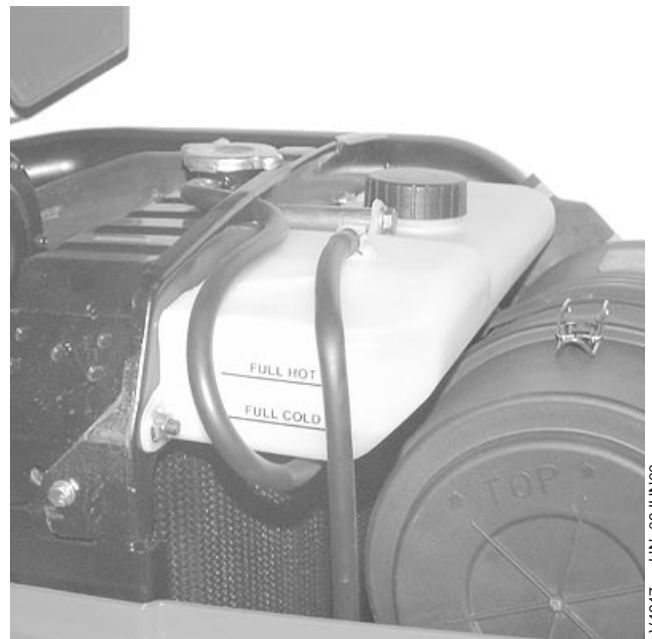
### IF NOT NORMAL:

- Replace recovery tank or hose, add coolant, and recheck level after operation.
- Add coolant to proper mark on tank.
- Check radiator-to-tank hose and recovery tank for holes or cracks.
- Change coolant and flush cooling system.
- See Section 220, Group 15 for Diagnosis, Tests, and Adjustments.



3-Cylinder Engine

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4-Cylinder Engine

LV4947 -UN-09JUN00

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**Transmission and Hydraulic Oil Check****CONDITIONS:**

- Machine parked on flat, level surface.
- Key switch in OFF position.
- Transmission in park position.

**PROCEDURE:**

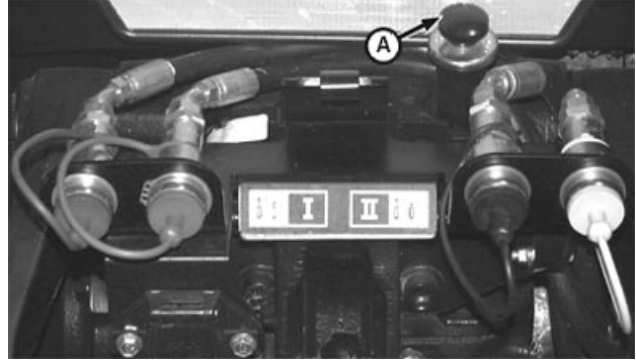
- Straddle mount tractors: Clean dirt from area around dipstick opening (A).
- Isolated open operator platform and cab tractors: Clean dirt from area around dipstick opening (B).
- Remove and wipe off dipstick.
- Install dipstick until seated in tube.
- Remove dipstick and check level and condition of oil.

**NORMAL:**

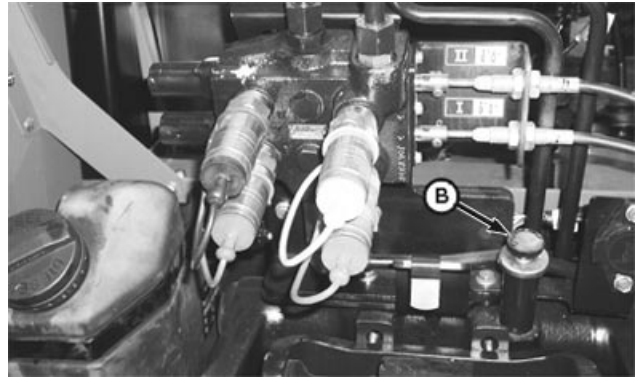
- Oil level between full and add marks of dipstick.
- Oil not excessively thick or thin.
- No visible foreign material in oil.

**IF NOT NORMAL:**

- Add proper oil to full mark on dipstick.
- Replace contaminated oil and filter.
- See Diagnosis, Tests, and Adjustments—CS/SS Transmission (Section 250, Group 15), Diagnosis, Tests and Adjustments (Section 260, Group 15), or Diagnosis (Section 270, Group 15) for transmission and hydraulic system diagnosis, tests and adjustments.



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LV6475 -UN-14MAR01

**A—Dipstick (Straddle Mount Tractor)****B—Dipstick (Isolated Open Operator Station or Cab Tractors)**

### 3-Cylinder Fan and V-Belt Check

#### CONDITIONS:

- Key switch in OFF position.
- Engine not run for at least 15 minutes.
- Transmission in park position.

#### PROCEDURE:

- Inspect fan and V-belt for damage.
- Check belt tension. (See Fan/Alternator V-Belt Adjustment—5220 and 5320 Tractors in Section 220, Group 15.)

#### NORMAL:

- Fan undamaged; no cracks or bent blades.
- Belt not cracked, frayed or glazed.
- Belt does not “squeal” during operation.

#### IF NOT NORMAL:

- Replace damaged fan or belt.
- Adjust belt tension. (See Fan/Alternator V-Belt Adjustment—5220 and 5320 Tractors in Section 220, Group 15.)



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## 4-Cylinder Fan and Serpentine Belt Check

### CONDITIONS:

- Key switch in OFF position.
- Engine not run for at least 15 minutes.
- Transmission in park position.

### PROCEDURE:

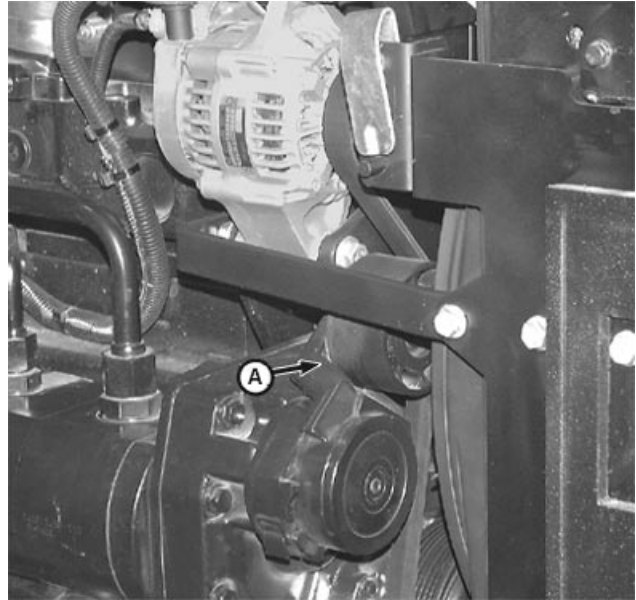
- Inspect fan and serpentine belt for damage.
- Check belt tensioner (A) spring tension. (See Inspect and Replace Belt Tensioner—Models 5420 and 5520 in TM2048 Section 20, Group 10.)

### NORMAL:

- Fan undamaged; no cracks or bent blades.
- Belt not cracked, frayed or glazed.
- Belt does not “squeal” during operation.

### IF NOT NORMAL:

- Replace damaged fan or serpentine belt.
- Replace belt tensioner. (See Inspect and Replace Belt Tensioner—Models 5420 and 5520 in TM2048 Section 20, Group 10.)



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A—Belt Tensioner

## Compressor Belt Check

*NOTE: Three-cylinder engine shown. Some procedures for the four-cylinder engine are slightly different. See specifics below.*

*NOTE: Air intake tube removed for clarity of photo.*

### CONDITIONS:

- Key switch in OFF position.
- Engine not run for at least 15 minutes.
- Transmission in park position.

### PROCEDURE:

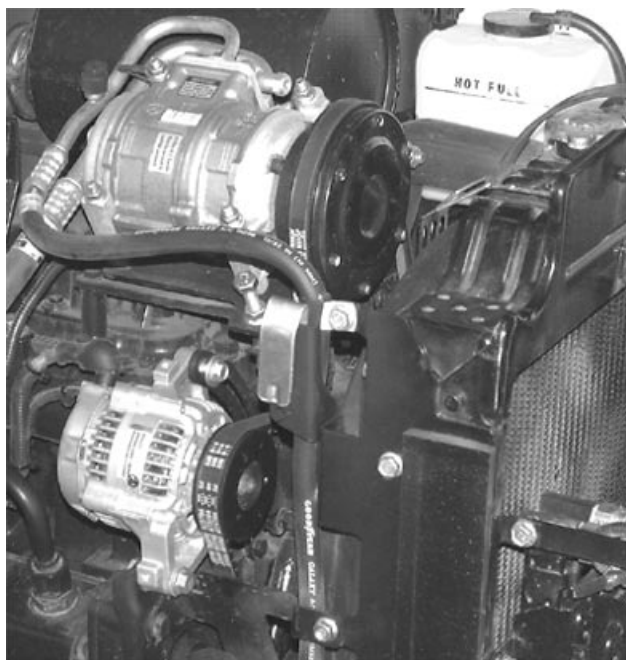
- Inspect belt for damage.
- 3-cylinder engines: Check belt tension. (See Fan/Alternator V-Belt Adjustment—5220 and 5320 Tractors and Compressor Drive Belt Adjustment—3-Cylinder in Section 220, Group 15.)
- 4-cylinder engines: Inspect belt tensioner and spring tension. (See Inspect and Replace Belt Tensioner—Models 5420 and 5520 in TM2048 Section 20, Group 10.)

### NORMAL:

- Belt not cracked, frayed or glazed.
- Belt does not “squeal” during operation.

### IF NOT NORMAL:

- Replace damaged compressor belt.
- 3-cylinder engines: Adjust belt tension. (See Fan/Alternator V-Belt Adjustment—5220 and 5320 Tractors and Compressor Drive Belt Adjustment—3-Cylinder in Section 220, Group 15.)
- 4-cylinder engines: Replace belt tensioner. (See Inspect and Replace Belt Tensioner—Models 5420 and 5520 in TM2048 Section 20, Group 10.)



LV6184 -UN-15FEB01

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**Fuel System Check****CONDITIONS:**

- Machine parked on flat, level surface.
- Key switch in OFF position.
- Transmission in park position.
- Straddle mount tractors: Fuel drain valve (A) closed.
- Isolated open operator station or cab tractors: Fuel drain valve (B) closed.
- Fuel shut-off valve (C) open.

**PROCEDURE:**

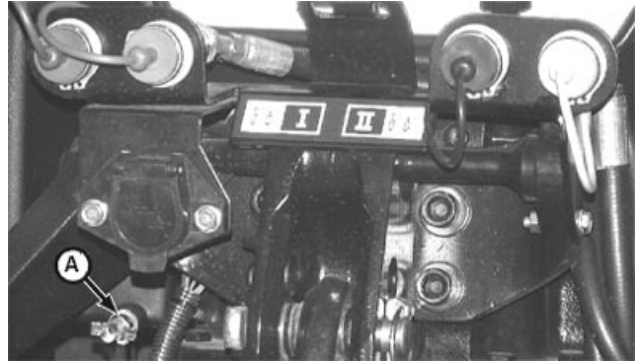
- Observe fuel level and condition.
- Check fuel tank cap and seal condition.
- Check fuel filter (D) condition.
- Check fuel tank, lines, and hoses for kinks, leaks, or damage.

**NORMAL:**

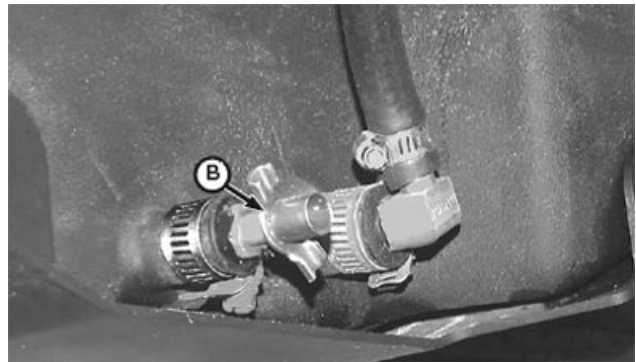
- Fuel level OK.
- Correct type and grade of clean fuel.
- Fuel tank overflow hose and vent valve in good condition. (No pressure or vacuum observed in fuel tank when cap is removed.)
- No leaks in system.
- No water or sediment in fuel filter bowl.

**IF NOT NORMAL:**

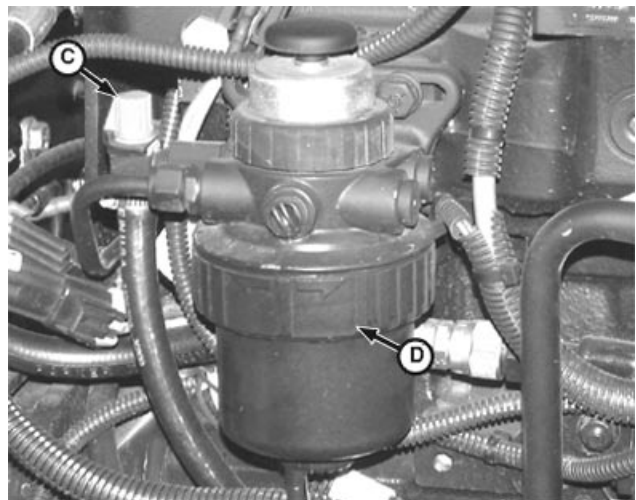
- Add correct type and grade of clean fuel. (See Section 10, Group 20 in TM2048.)
- Clean contaminated fuel tank, filter, or lines.
- Repair or replace damaged fuel tank, cap, drain valve, filter, or lines. (See Section 30, Group 05 in TM2048.)



LV6187 -UN-15FEB01



LV6185 -UN-15FEB01



LV6186 -UN-15FEB01

- A—Fuel Drain Valve (Straddle Mount)
- B—Fuel Drain Valve (Isolated Open Operator Station or Cab Tractors)
- C—Fuel Shut-Off Valve
- D—Fuel Filter

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## Air Intake System Check

### CONDITIONS:

- Key switch in OFF position.
- Transmission in park position.

### PROCEDURE:

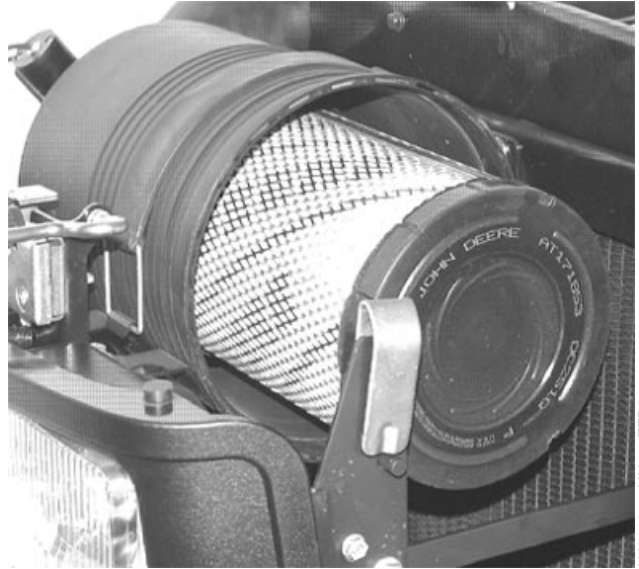
- Observe condition of primary and secondary air filter elements.
- Check condition of air intake hose, tube, and turbocharger (if equipped).
- Observe air cleaner restriction indicator on dash (engine running).

### NORMAL:

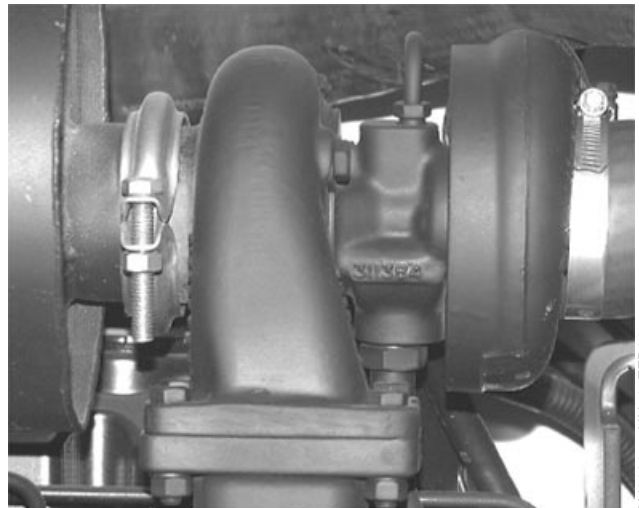
- Air intake and elements free of debris.
- Air intake hoses and tube in good condition. Hose clamps tight. Intake tube gasket intact.
- Air cleaner unloader valve not plugged.
- Air cleaner housing sealed.
- Air cleaner restriction indicator light off.
- Turbocharger (if equipped) operates with no grinding or bearing noise.

### IF NOT NORMAL:

- Clean, repair or replace as required.
- 5320 and 5520 tractors: Repair damaged turbocharger, (if equipped).
- See Section 220, Group 15 for diagnosis, tests, and adjustments.
- See Section 30, Group 10 for inspection and repair.



*Air Filter (5320 Shown)*



*Turbocharger (5320 Shown)*

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**Electrical System Check****CONDITIONS:**

- Machine parked on flat, level surface.
- Key switch in OFF position.
- Transmission in park position.

**PROCEDURE:**

- Check battery electrolyte level.
- Check battery cable condition.
- Straddle mount and isolated open operator station tractors: Check ground cable connection (A) located in front of radiator on left side.
- Cab tractors: Check ground cable connection (B) located on right side of clutch housing, behind battery box.
- Check condition of starter, and alternator connections.
- Check fuses located below key switch panel.

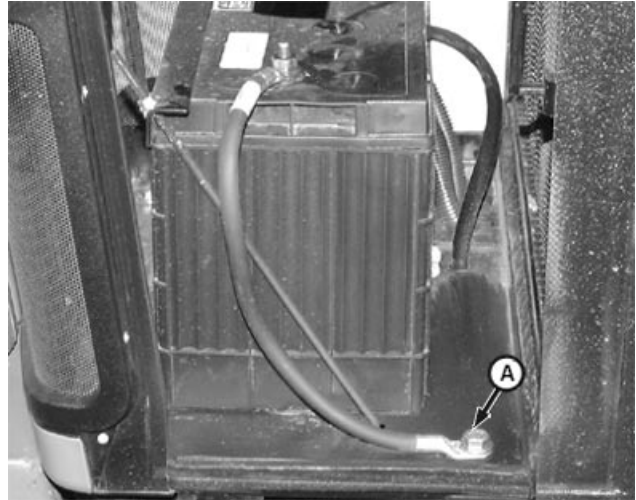
**NORMAL:**

- Battery electrolyte between full and add indicators.
- All electrical connections clean and tight.
- Fuses good and of correct rating.

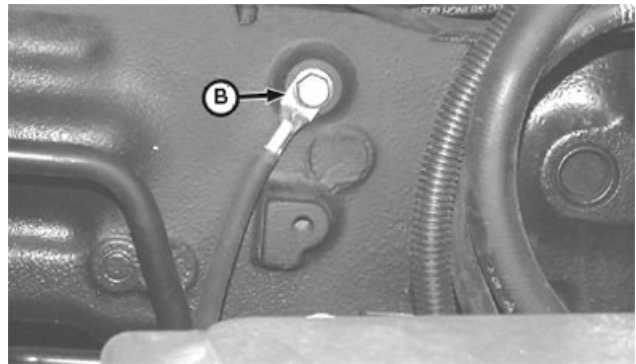
**IF NOT NORMAL:**

- Add distilled water to battery to bring electrolyte to proper level.
- Clean and tighten electrical connections.
- Replace fuses as required. Determine reason for blown fuses. (See Section 240, Group 15 for diagnosis, tests, and adjustments.)

- A—Ground Cable Connection (Straddle Mount and Isolated Open Operator Station Tractors)**  
**B—Ground Cable Connection (Cab Tractors)**



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LV6191 -UN-16FEB01



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*Fuses*



## Hydraulic System Check

### CONDITIONS:

- Engine running.
- Hydraulic oil at operating temperature.
- Transmission in park position.

### PROCEDURE:

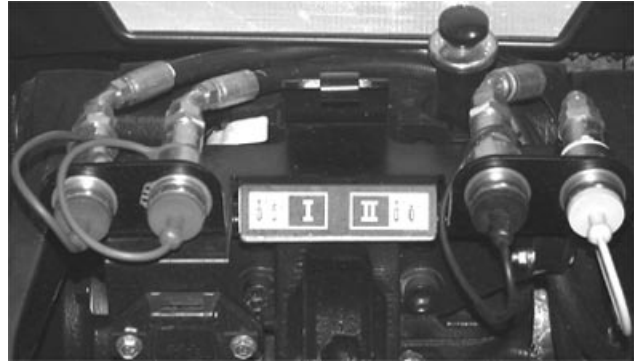
- Check on and under machine for signs of hydraulic oil leakage (engine not running).
- Operate all hydraulic controls (operator on seat with engine running).

### NORMAL:

- No oil leakage.
- Hydraulic controls operate smoothly through entire range of function.

### IF NOT NORMAL:

- Repair oil leaks.
- Replace damaged oil lines.
- Repair hydraulic components as required.
- See Section 270, Group 15 for diagnosis, tests, and adjustments.
- See Section 70 in TM2048 for component repair or replacement.



*Couplers (Straddle Mount Tractors)*



*Couplers (Isolated Open Operator Station or Cab Tractors)*

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**MFWD Oil Check****CONDITIONS:**

- Machine parked on flat, level surface.
- OIL LEVEL arrow (A) parallel to ground.
- Transmission in park position.
- Key switch in OFF position.

**PROCEDURE:**

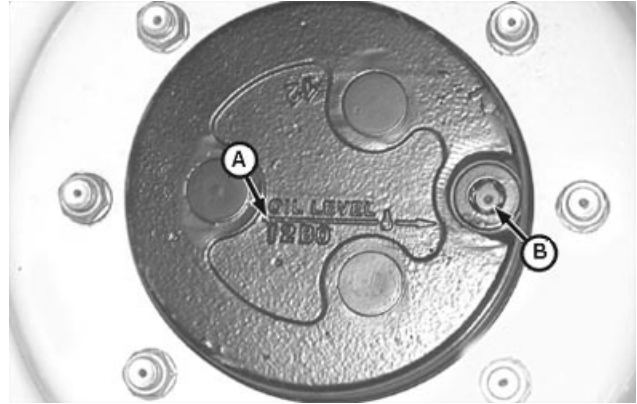
- Remove filler plug (B).
- Observe level of oil.
- Repeat this procedure for opposite side.

**NORMAL:**

- Oil level even with bottom of filler plug hole.

**IF NOT NORMAL:**

- Drain excess oil or add oil to proper level.



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A—Oil Level Arrow  
B—Filler Plug

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**MFWD Differential Oil Check****CONDITIONS:**

- Machine parked on flat, level surface.
- Transmission in park position.
- Key switch in OFF position.

**PROCEDURE:**

- Remove oil fill plug (A) located on left rear MFWD axle housing.
- Observe level of oil.

**NORMAL:**

- Oil level even with bottom of oil fill plug hole.

**IF NOT NORMAL:**

- Drain excess oil from oil fill plug (A).
- Add oil to proper level through oil fill plug (A).



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Oil Fill Plug

A—Oil Fill Plug

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## Indicator Lamps Check

*NOTE: Steering wheel removed for clarity of photo.*

*Straddle mount tractor shown. Isolated open operator platform and cab tractors are similar.*

### CONDITIONS:

- Key switch in ON position.

### PROCEDURE:

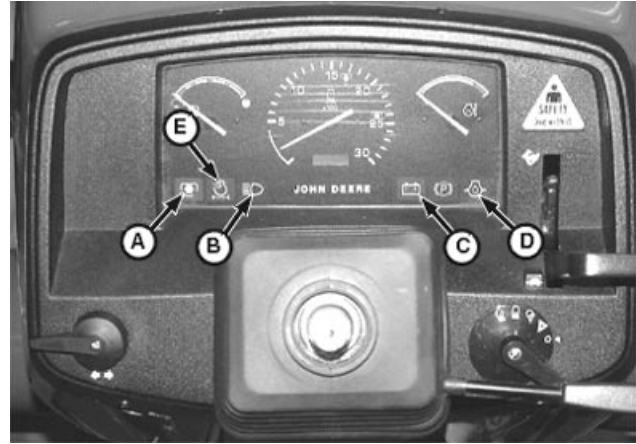
- Turn light switch to high beam position.
- Push PTO control lever forward to PTO engage position.

### NORMAL:

- Indicator lamps (A—D) should light. (Lamp (B) will light with key switch in OFF position.)
- Lamps (C and D) should be off when engine is running.
- Lamp (E) will light when key is advanced to START position.

### IF NOT NORMAL:

- Check lamps and wiring circuit.
- See Section 240, Group 15 for electrical diagnosis, tests, and adjustments.
- If lamps (D or E) remain on when engine is running, stop engine. See Section 220, Group 15 for engine diagnosis, tests and adjustments.



A—PTO Engaged Indicator  
B—High Beam Indicator  
C—Charging System Indicator  
D—Engine Oil Pressure Indicator  
E—Air Cleaner Restriction Indicator

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**Cab Blower Motor Check****CONDITIONS:**

- Cab 30-amp fuse F14 removed.

**PROCEDURE:**

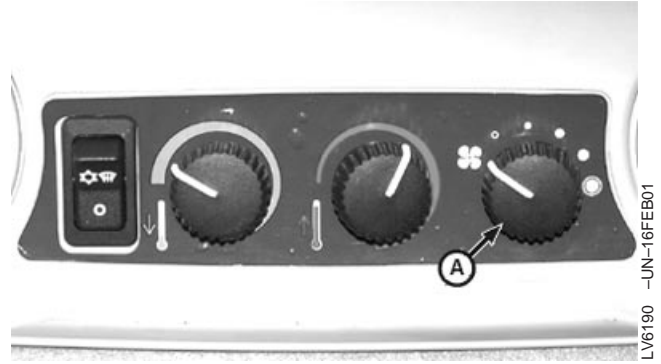
- Turn key switch to ON position but do NOT start engine.
- Turn blower motor switch (A) to any position.
- Both blower motors should be off.

**NORMAL:**

- The left- and right-handed blower motors should not operate when fuse F14 is TEMPORARILY removed.
- Reinstall F14 fuse.
- Both blower motors should operate with the blower motor switch in the LOW, MEDIUM, HIGH, and PURGE positions, and not operate when switch is in the OFF position.

**IF NOT NORMAL:**

- Left blower motor will not operate in purge only: Check fuse F16. (See Section 240, Group 15 for Electrical System Operation, Tests and Adjustments.)
- See Section 240, Electrical System Operation, Tests, and Adjustments.

**A—Blower Motor Switch**

## A/C Compressor Clutch Check

### CONDITIONS:

- Cab door open.
- A/C switch (A) ON.
- A/C temperature control (B) set for maximum cooling.
- Engine off.

### PROCEDURE:

- Turn key switch on but do NOT start engine.
- Operate blower motor switch (C) from OFF to LOW several times while listening for click indicating compressor clutch engagement at engine.

### NORMAL:

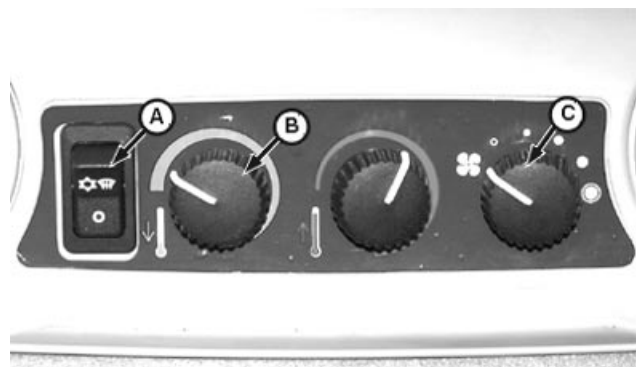
- Compressor clutch engages and disengages when blower switch motor is turned ON and OFF.

*NOTE: The evaporator temperature must be above 3°C (37°F) so contacts of temperature control switch will be closed.*

*System must also be charged with 300—400 kPa (3—4 bar) (45—60 psi) so the A/C low pressure switch will be closed.*

### IF NOT NORMAL:

- See Section 240, Group 15 for Electrical System Operation, Tests and Adjustments and/or Section 290, Group 15 for A/C system diagnosis, tests, and adjustments.



A—A/C ON-OFF Switch  
B—A/C Temperature Control  
C—Blower Motor Switch

LV6217 -UN-16FEB01

OUC1082,0000145 -19-28FEB02-1/1

**Engine Start Check—Straddle Mount Tractors****CONDITIONS:**

- PTO lever in disengaged position.
- Transmission in park or neutral position.
- Range shift lever in neutral position.
- Cold weather starting aids used, if necessary.

**PROCEDURE:**

- Push throttle lever (A) forward about one-third of travel.
- Turn key clockwise.
- Release key when engine starts.

**NORMAL:**

- Engine starts within 20 seconds.

**IF NOT NORMAL:**

- Wait 2 minutes for starter to cool.
- Try to start engine again.
- Repeat start procedure two more times, if necessary.
- See Section 220, Group 15 for engine diagnosis, tests, and adjustments.



LV6200 -UN-16FEB01



LV6210 -UN-16FEB01

**A—Throttle Lever**

OUO1082,000012A -19-28FEB02-1/1

## Engine Start Check—Isolated Open Operator Station and Cab Tractors

*NOTE: Isolated open operator station tractor shown. Cab tractors are similar.*

### CONDITIONS:

- PTO lever in disengaged position.
- Transmission in park or neutral position.
- Range shift lever in neutral position.
- Cold weather starting aids used, if necessary.

### PROCEDURE:

- Push throttle lever (A) forward about one-third of travel.
- Turn key clockwise.
- Release key when engine starts.

### NORMAL:

- Engine starts within 20 seconds.

### IF NOT NORMAL:

- Wait 2 minutes for starter to cool.
- Try to start engine again.
- Repeat start procedure two more times, if necessary.
- See Section 220, Group 15 for engine diagnosis, tests, and adjustments.

**A—Throttle Lever**



LV6208 -UN-16FEB01



LV6208 -UN-16FEB01

OUO1082,000012B -19-28FEB02-1/1

210  
10  
18

## Transmission Neutral Start Check—Straddle Mount Tractors

### CONDITIONS:

- PTO lever (A) in disengaged position.
- Transmission shift lever (B) in forward or reverse gear.
- Tractors equipped with hydraulic reverser transmission: Put selector lever (C) in F (forward) or R (reverse).
- Operator on seat.

### PROCEDURE:

- Turn key switch to START position.

### NORMAL:

- Starter should not crank engine.

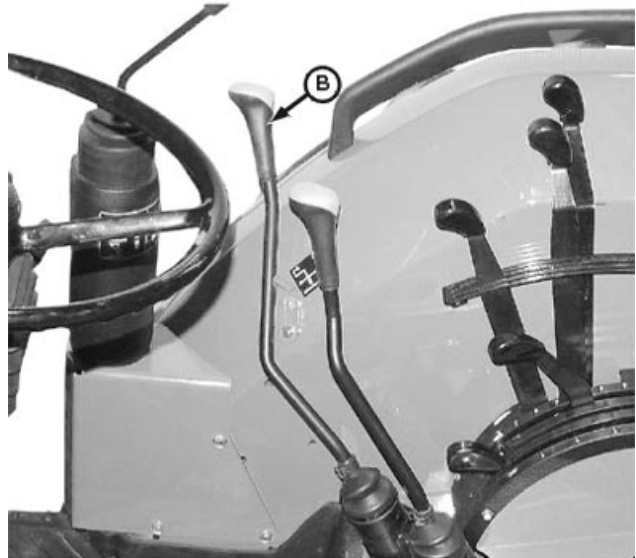
### IF NOT NORMAL:

- See Section 240, Group 15 for electrical diagnosis, tests, and adjustments.

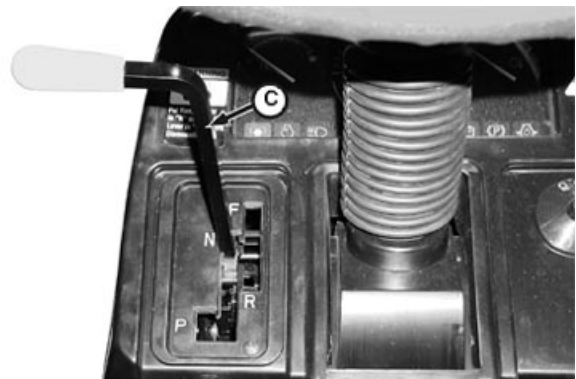
- A—PTO Lever
- B—Transmission Shift Lever
- C—Hydraulic Reverser Selector Lever



LV6181 -UN-16FEB01



LV6400 -UN-27FEB01



LV6455 -UN-13MAR01



## Transmission Neutral Start Check—Isolated Open Operator Station and Cab Tractors

*NOTE: Cab tractor shown. Isolated open operator station tractors are similar.*

### CONDITIONS:

- PTO lever (A) in disengaged position.
- Transmission shift lever (B) in forward or reverse gear.
- Tractors equipped with hydraulic reverser transmission: Put selector lever (C) in F (forward) or R (reverse).
- Operator on seat.

### PROCEDURE:

- Turn key switch to START position.

### NORMAL:

- Starter should not crank engine.

### IF NOT NORMAL:

- See Section 240, Group 15 for electrical diagnosis, tests, and adjustments.

- A—PTO Lever
- B—Transmission Shift Lever
- C—Hydraulic Reverser Selector Lever



LV6214 -UN-16FEB01



LV6213 -UN-16FEB01



LV6218 -UN-16FEB01

**PTO Neutral Start Check****CONDITIONS:**

- Transmission in park or neutral position.
- Straddle mount tractors: Push PTO lever (A) forward to engaged position.
- Isolated open operator station or cab tractors: Push PTO lever (B) forward to engaged position.
- Operator on seat.

**PROCEDURE:**

- Turn key switch to START position.

**NORMAL:**

- Starter should not crank engine.

**IF NOT NORMAL:**

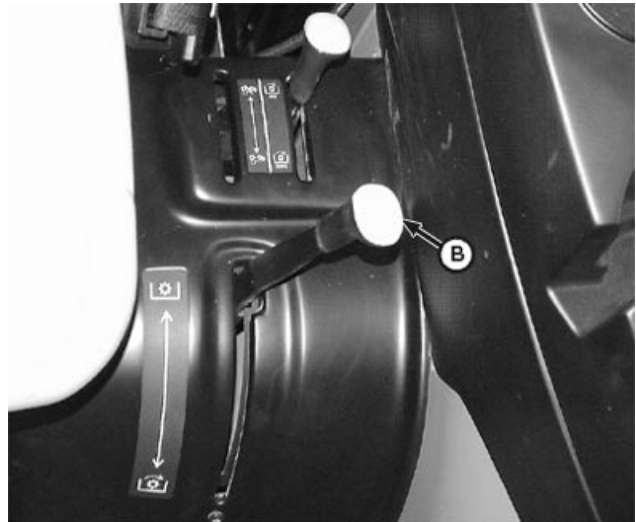
- See Section 240, Group 15 for electrical diagnosis, tests and adjustments.

A—PTO Lever (Straddle Mount Tractor)

B—PTO Lever (Isolated Open Operator Station and Cab Tractors)



LV6181 -UN-16FEB01



LV6198 -UN-16FEB01

OUO1082.000012D -19-28FEB02-1/1

## Engine Fast and Slow Idle Operation

### CONDITIONS:

- Transmission in park position.
- Operator on seat.

### PROCEDURE:

- Start engine and warm up for several minutes between 1500 and 1900 rpm.
- Straddle mount tractors: Move throttle lever (A) from slow to fast idle several times slowly and rapidly.
- Isolated open operator station or cab tractors: Move throttle lever (B) from slow to fast idle several times slowly and rapidly.

### NORMAL:

- Engine runs smoothly at all throttle settings.
- Engine accelerates and decelerates smoothly without misfiring or stumbling.
- Engine rpm within specifications.

#### Specification

Engine Slow Idle Speed—	
Rotation .....	825 ± 25
Engine Fast Idle Speed—Rotation.....	2625 ± 25

### IF NOT NORMAL:

- See Section 220, Group 15 for engine diagnosis, tests, and adjustments.



LV6200 -UN-16FEB01



LV6212 -UN-16FEB01

A—Throttle Lever (Straddle Mount Tractor)  
B—Throttle Lever (Isolated Open Operator Station and Cab Tractor)

OUO1082,000012E -19-28FEB02-1/1

## Foot Throttle Pedal Check—Isolated Open Operator Station and Cab Tractors

**NOTE:** Isolated open operator station tractor shown. Cab tractors are similar.

### CONDITIONS:

- Transmission in park position.
- Operator on seat.

### PROCEDURE:

- Start engine and warm up for several minutes between 1500 and 1900 rpm.
- Push downward and release foot throttle pedal (A) several times.
- Move throttle lever (B) from slow to fast idle several times slowly and rapidly.

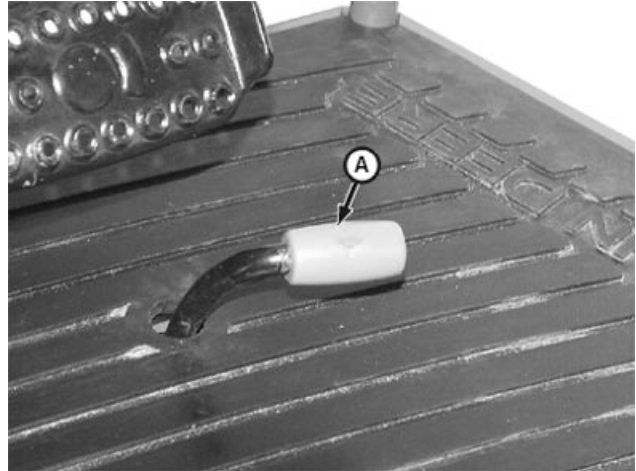
### NORMAL:

- Pushing down and releasing foot throttle pedal should advance and retard engine rpm.
- When the throttle lever is advanced or retarded, the foot throttle pedal should move also.

### IF NOT NORMAL:

- See Section 220, Group 15 for engine diagnosis, tests, and adjustments.

A—Foot Throttle Pedal  
B—Throttle Lever



LV6201 -UN-16FEB01



LV6212 -UN-16FEB01

## Power Steering Check

### CONDITIONS:

- Operator on seat.
- Transmission in neutral position.
- Engine running.

### PROCEDURE:

- Turn steering wheel from full left to full right and back.

### NORMAL:

- Tires move from stop-to-stop.
- Wheel moves smoothly in both directions.
- Wheel stops turning when released.

### IF NOT NORMAL:

- See Section 260, Group 15 for diagnosis, tests, and adjustments.



LV6197 -JUN-16FEB01

OUO1082,0000149 -19-28FEB02-1/1

## Differential Lock Check

### CONDITIONS:

- Operator on seat.
- Transmission in forward gear.
- Engine running at slow idle.

### PROCEDURE:

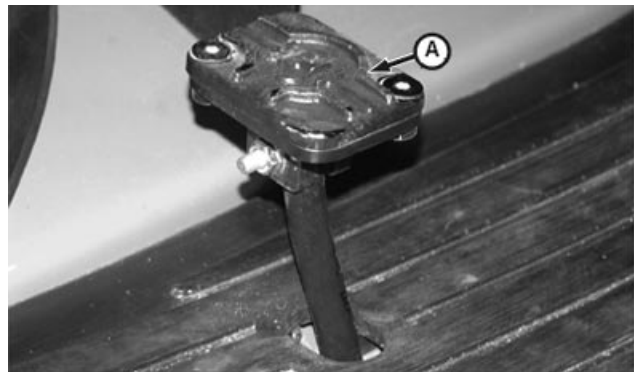
- Depress and hold differential lock pedal (A).
- Briefly turn steering wheel left or right.

### NORMAL:

- Machine must try to go straight forward when steering wheel is turned.
- Differential operates quietly.

### IF NOT NORMAL:

- See Section 250, Group 15 for differential diagnosis, tests, and adjustments.



LV6195 -JUN-16FEB01

A—Differential Lock Pedal

OUO1082,0000130 -19-28FEB02-1/1

**PTO Engagement Check****CONDITIONS:**

- Operator on seat.
- Engine running.

**PROCEDURE:**

- Straddle mount tractors: Move PTO lever (A) to engage and disengage position.
- Isolated open operator station and cab tractors: Move PTO lever (B) to engage and disengage position.
- Operator rises off seat while PTO lever is in engage position.

**NORMAL:**

- PTO engages and disengages with lever movement.
- Warning horn sounds approximately 8—9 seconds and engine will continue to run if operator rises off seat while PTO lever is in engage position.

**IF NOT NORMAL:**

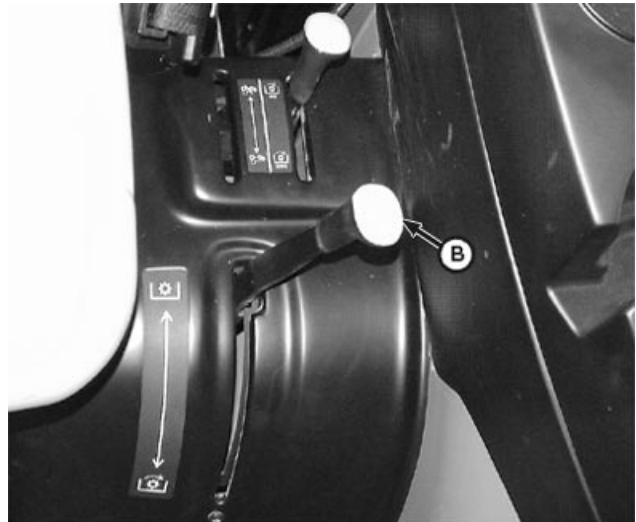
- See Section 250, Group 15 for PTO diagnosis, tests, and adjustments.
- See Section 240, Group 15 for electrical diagnosis, tests, and adjustments.

A—PTO Lever (Straddle Mount Tractor)

B—PTO Lever (Isolated Open Operator Station and Cab Tractors)



LV6181 -UN-16FEB01



LV6198 -UN-16FEB01

OUO1082.0000131 -19-28FEB02-1/1

## Clutch Check

### CONDITIONS:

- Operator on seat.
- Engine running.

### PROCEDURE:

- Depress clutch pedal (A).
- Move transmission shift lever to any forward gear.
- POWRREVERSER™ equipped tractors: Put selector lever in F (forward) position.
- Move range shift lever to range A.
- Slowly release clutch pedal.

### NORMAL:

- Clutch engages smoothly and machine moves forward smoothly.

### IF NOT NORMAL:

- See Section 250, Group 15 for clutch diagnosis, tests, and adjustments.



A—Clutch Pedal

LV6199 -UN-26FEB01

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OUO1082,0000132 -19-28FEB02-1/1

## Transmission Shift Check

*NOTE: Straddle mount tractor shown. Isolated open operator platform and cab tractors are similar.*

### CONDITIONS:

- Operator on seat.
- Engine running.

### PROCEDURE:

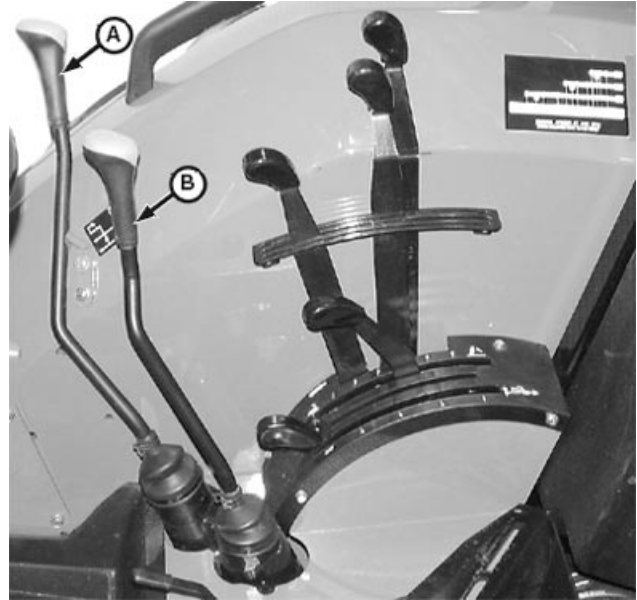
- Depress clutch pedal.
- Put transmission shift lever (A) in 1st gear and range shift lever (B) in range A.
- POWRREVERSER™ equipped tractors: Put selector lever in F (forward) position.
- Release clutch pedal and move machine in gear.
- Depress clutch pedal and stop machine.
- Repeat above procedure with remaining forward gears and reverse.
- Move range shift lever to neutral.
- Move transmission shift lever to neutral and park.

### NORMAL:

- Machine moves in appropriate direction but does not move in neutral or park.
- Transmission stays in gear selected.
- Gears do not clash excessively when engaged.

### IF NOT NORMAL:

- See Section 250, Group 15 for transmission diagnosis, tests, and adjustments.



A—Transmission Shift Lever  
B—Range Shift Lever

LV6307 -JUN-16FEB01



## Range Lever Shift Check

*NOTE: Straddle mount tractor shown. Isolated open operator platform and cab tractors are similar.*

### CONDITIONS:

- Operator on seat.
- Engine running at specific rpm.

### PROCEDURE:

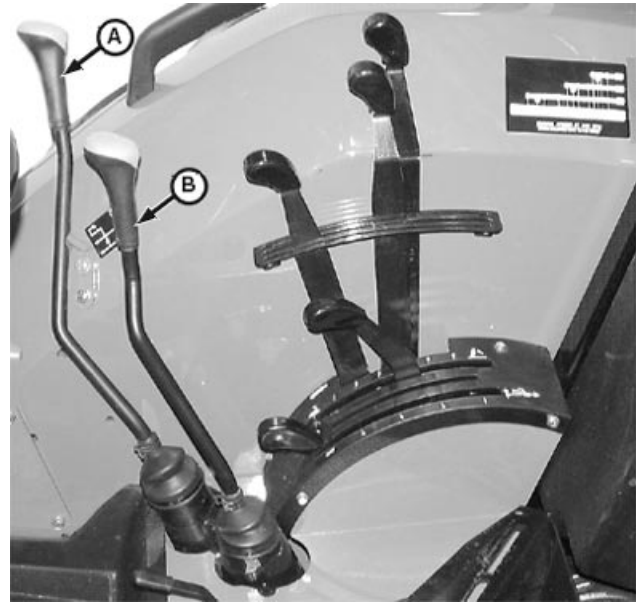
- Depress clutch pedal.
- Put transmission shift lever (A) in gear.
- Put range shift lever (B) in speed range A.
- POWRREVERSER™ equipped tractors: Put selector lever in F (forward) position.
- Release clutch pedal and move machine in gear.
- Depress clutch pedal and stop machine.
- Repeat above procedure with remaining speed ranges B and C.

### NORMAL:

- Machine moves smoothly. Ground speed increases as higher gears and speed range are selected.
- Range shift stays in range selected.
- No excessive gear noise.

### IF NOT NORMAL:

- See Section 250, Group 15 for diagnosis, tests, and adjustments.



A—Transmission Shift Lever  
B—Range Shift Lever

LV6307 -JUN-16FEB01

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OOU1082,0000134 -19-28FEB02-1/1

## MFWD Drive Check

*NOTE: Straddle mount tractor shown. Isolated open operator platform and cab tractors are similar.*

### CONDITIONS:

- Machine on loose soil condition.
- Engine running.

### PROCEDURE:

- Depress clutch pedal.
- Push MFWD lever (A) forward to engage.
- POWRREVERSER™ equipped tractors: Put selector lever in F (forward) position.
- Put transmission in gear, release clutch, and move machine forward.

### NORMAL:

- Machine moves with increased traction.
- No excessive noise.
- MFWD lever stays in position.

### IF NOT NORMAL:

- Check MFWD oil level.
- See Section 250, Group 15 for diagnosis, tests, and adjustments.



LV6220 -JUN-16FEB01

A—MFWD Lever