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Standard Features-5210 and 5310



LV1886

Model 5210



LV1887

Model 5310

- John Deere 3000 Series Engine
  - 5210 CD3029DLV50 40 kw (53 hp)
  - 5310 CD3029TLV50 47 kw (63 hp)
  - 3-cylinder diesel engine
  - Wet sleeved
  - Direct injection
  - Intake air heater starting aid
  - Key switch controlled fuel shut-off
  - 5210 is naturally aspirated

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Section 30 - FUEL AND AIR REPAIR

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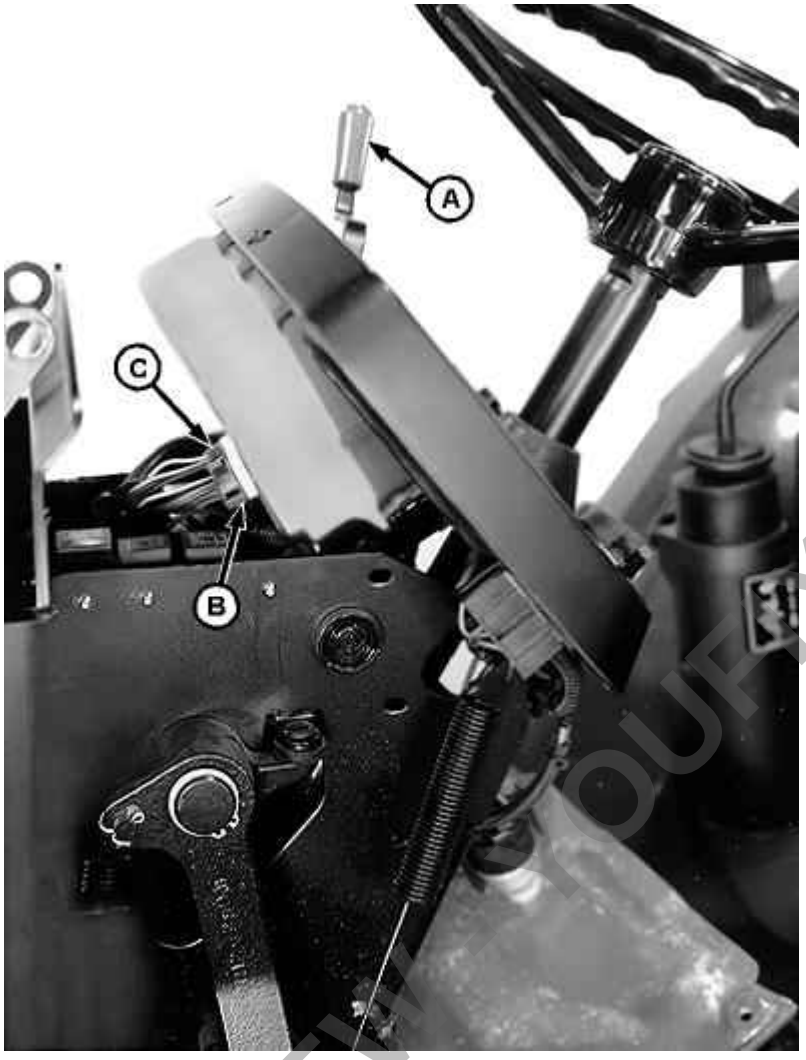
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Replace Instrument Panel-CollarShift/SyncShuttle™ Transmission

[1] -



Instrument Panel

LEGEND:

A Throttle Lever Knob
B Wiring Connector
C Wiring Connector

Remove right and left dash panels.

[2] - Remove turn signal controller. (See Replace Turn Signal Controller in this group.)

[3] - Remove light switch. (See Replace Tractor Light Switch in this group.)

[4] - Remove throttle lever knob (A).

[5] - Disconnect wiring connectors (B and C).

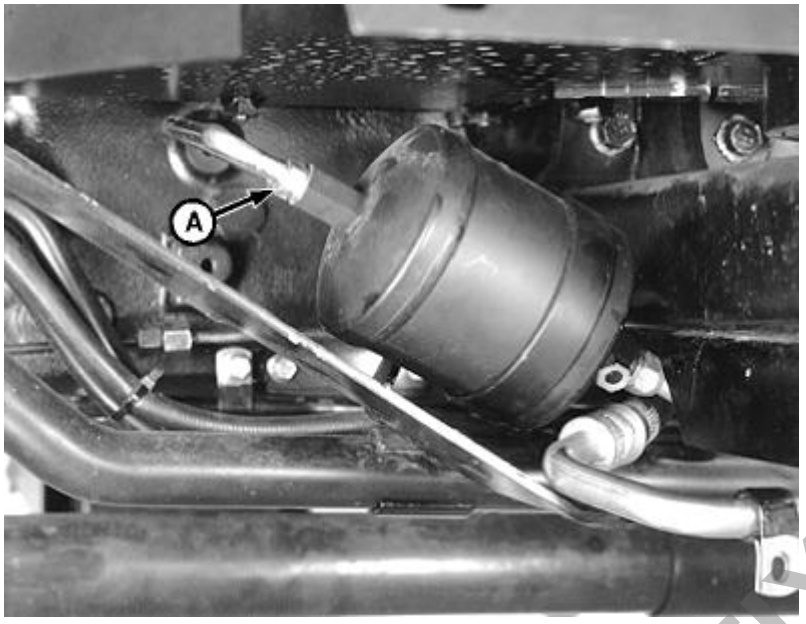
[6] - Remove instrument panel assembly.

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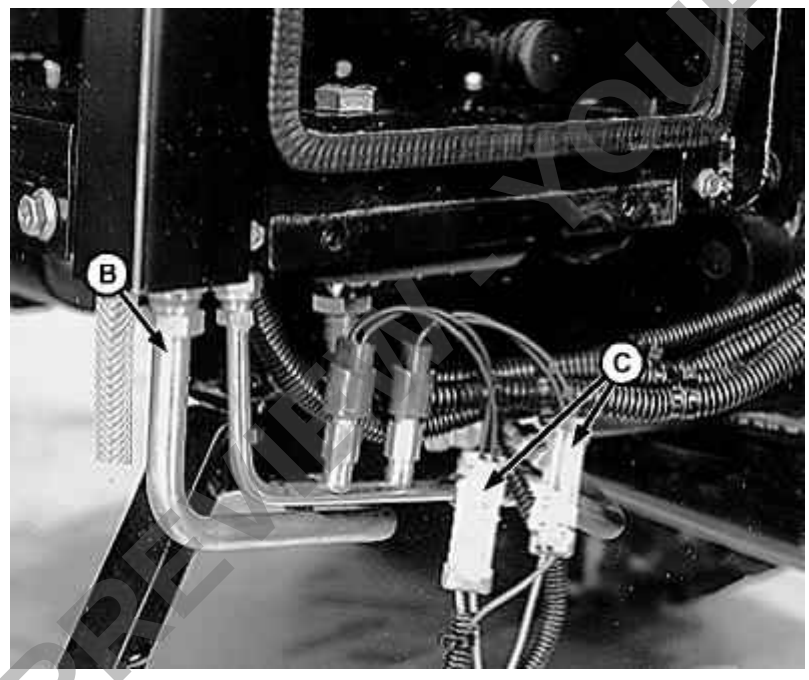
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Separate Engine from Clutch Housing-Tractors With Cab

[1] -



Separate Engine From Clutch Housing



Air Conditioning Line

LEGEND:

A Air Conditioning Line
B Air Conditioning Line
C Wire Connector

Recover/recycle air conditioning refrigerant. (See Recover/Recycle Air Conditioning Refrigerant in Section 90, Group 20.)

[2] - Remove hood and side grille panels.

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[2] - Check distance (height) (E) from pressure plate (D) to PTO clutch finger (B) using JDG919 Clutch Finger Height Gauge (C).

Clutch Finger Height Gauge

JDG919

Measures PTO clutch finger height. See Dealer Fabricated Tools in Section 299, Group 10 for dimensions.

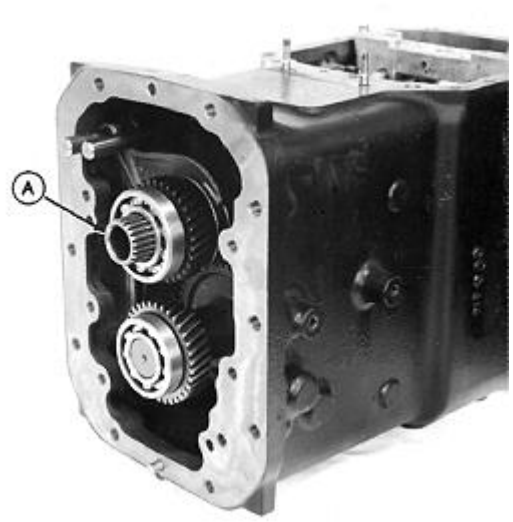
[3] - Turn special nut (A) in or out until clutch finger touches gauge.

[4] - Using pliers, crimp the top of special nut to flats on finger adjusting rod.

[5] - Repeat procedures for two remaining fingers.

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Transmission Top Shaft

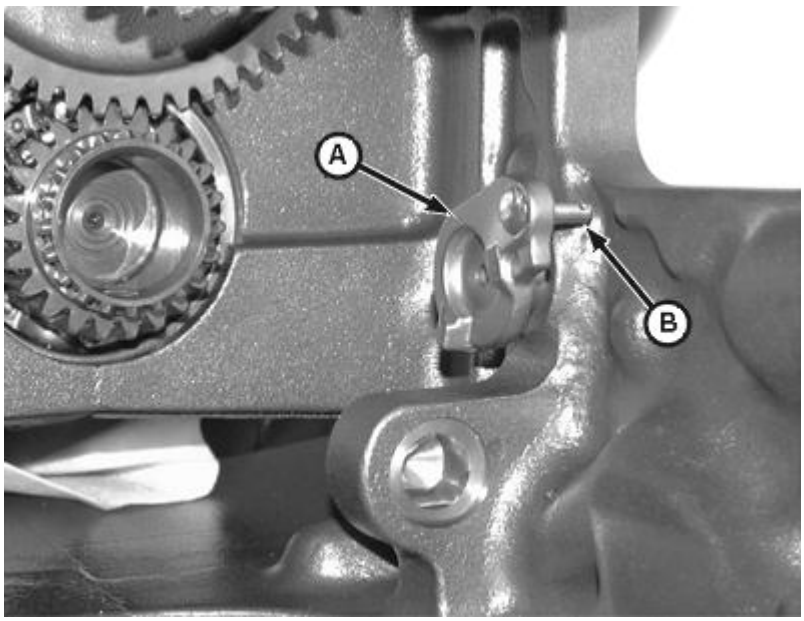
LEGEND:

A Transmission Top Shaft
B Reverse and 2nd Gear Shift Shaft Assembly
C 1st and 3rd Gear Shift Shaft Assembly

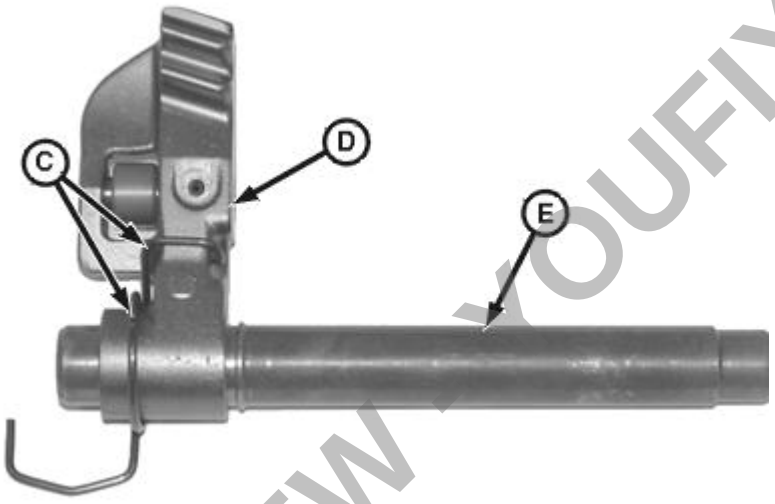
Install transmission top shaft (A) with reverse and 2nd gear shaft assembly (B) and 1st and 3rd gear shaft assembly (C).

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Park Cam



Park Shaft

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[10] - Inspect all parts for wear or damage. Replace as necessary.

→NOTE:

Bearing cups (C and G) are press fit in quill (D). Remove cups only if replacement is necessary.

[11] - Remove bearing cups using a small punch and hammer.

IMPORTANT:

Differential drive shaft and differential ring gear are a matched set. If shaft was replaced, ring gear must be replaced also.

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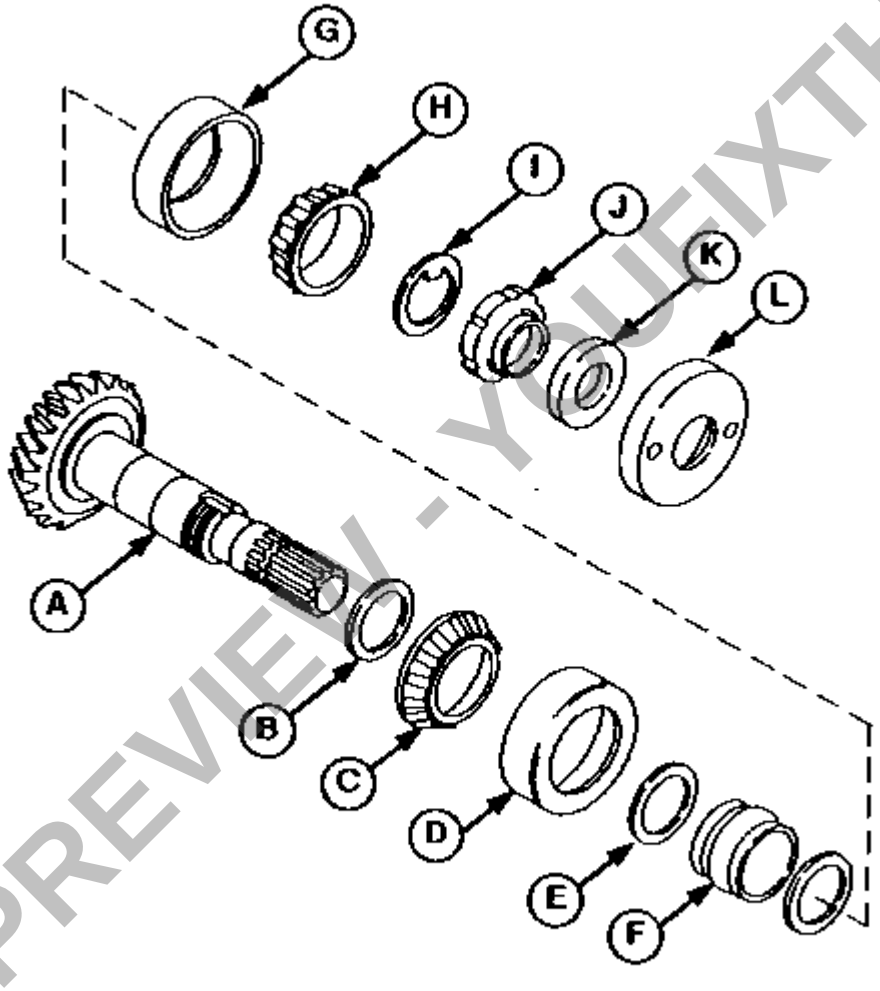
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Assemble MFWD Differential Carrier Assembly

IMPORTANT:

If the ring gear and pinion assembly, pinion bearings, or the differential carrier housing have been replaced, it will be necessary to calculate for thickness of shim (B) to adjust cone point.

[1] -



MFWD Differential Carrier Assembly

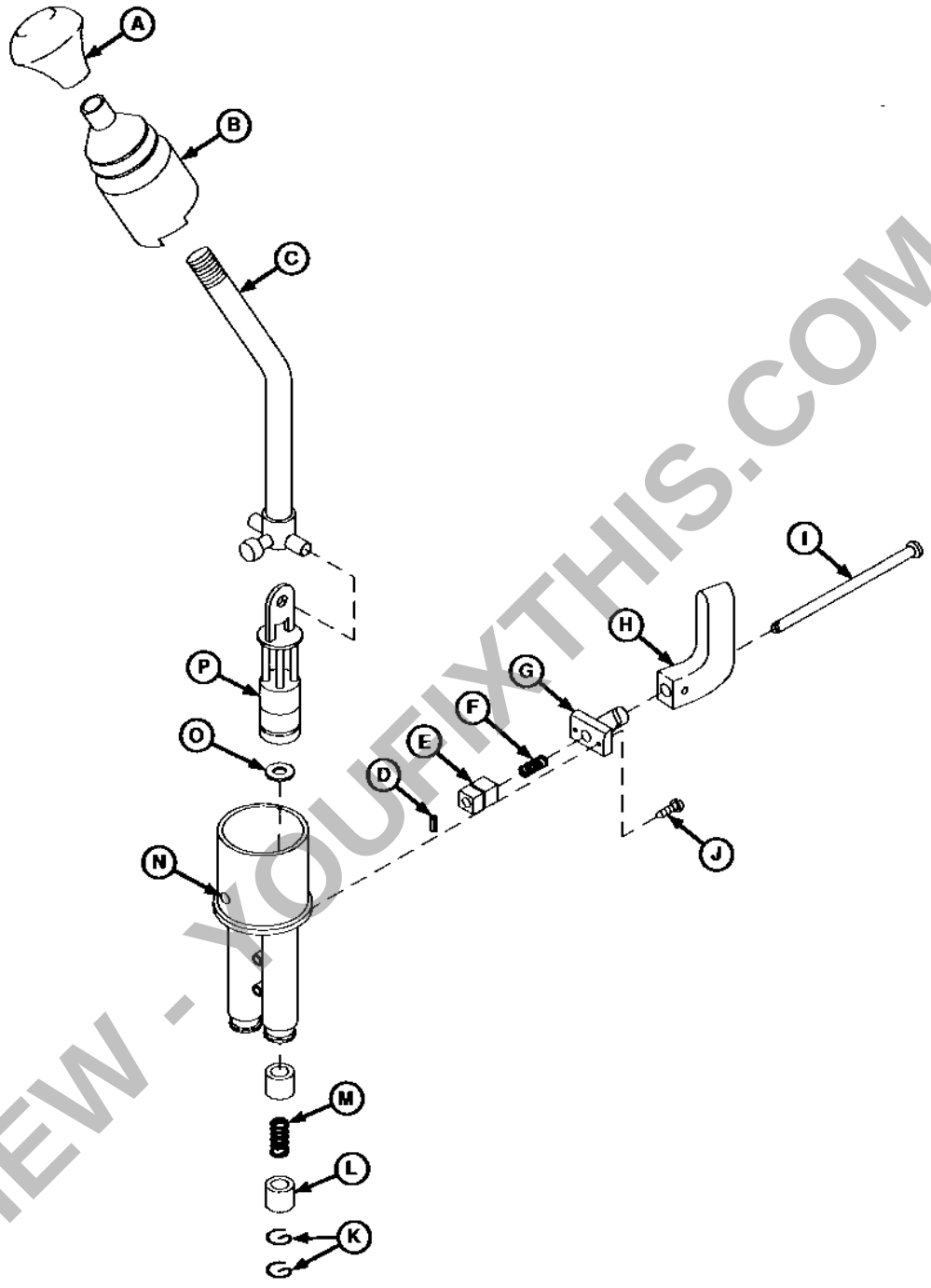
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Joystick and Linkage

LEGEND:

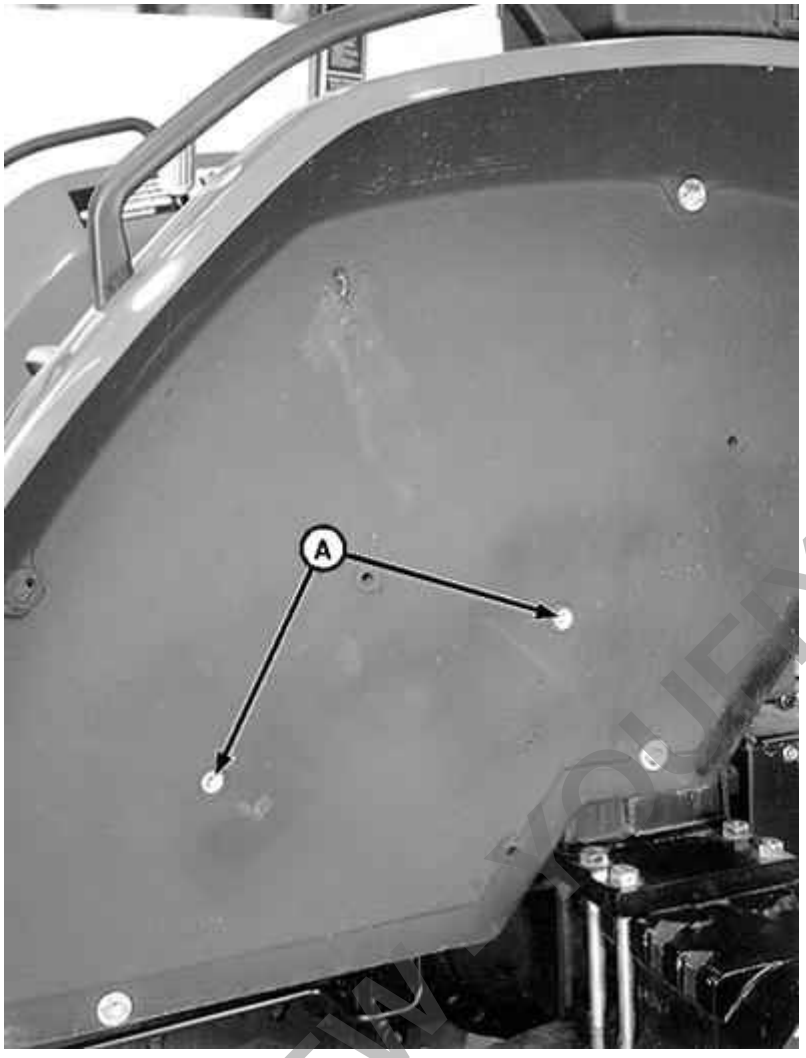
A	Knob
B	Boot
C	Lever
D	Spring Pin
E	Insert
F	Compression Spring
G	Drive
H	Lever
I	Rod

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Remove and Install Left-Side Control Console and Panel-Tractors Without Cab

[1] -



Left-Side Control Console

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Specifications

Item	Measurement	Specification
Compressor Shaft Bolt	Torque	14 N·m (10 lb-ft)
Compressor Through Bolts	Torque	26 N·m (19 lb-ft)
Compressor Pulley-to-Clutch Hub	Clearance	0.35-0.65 mm (0.014-0.026 in)
Compressor Relief Valve	Torque	12-16 N·m (9-12 lb-ft)
Manifold-to-Compressor Cap Screws	Torque	26 N·m (19 lb-ft)
Evacuating System	Vacuum	94.4 kPa (0.9 bar) (28.6 in. Hg) required at sea level
Flushing Solvent-Suction Port	Volume	240 ml (8 fl oz)
Flushing Solvent-Discharge Port	Volume	120 ml (4 fl oz)
Clutch Coil	Current Draw	2.6 amps at 12 volts, 20° C (68°F)
Clutch Coil	Resistance	3.5-4.0 ohms at 20° C (68°F)
Compressor Discharge Line	Torque	32-40 N·m (24-29 lb-ft)
Compressor Suction Line	Torque	34-42 N·m (25-31 lb-ft)

Service Parts Kits

The following kits are available through your parts catalog:

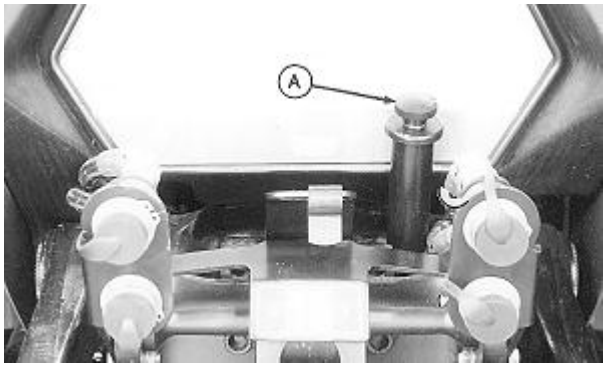
- Compressor Shaft Seal Kit
- Compressor Clutch Hub and Pulley Kit
- Compressor Clutch Coil Kit
- Compressor Hardware Kit

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- 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.
- Go to Diagnosis, Tests, and Adjustments Section 220, Group 15 for diagnosis, tests and adjustments.

Transmission and Hydraulic Oil Check



Transmission Check

LEGEND:

A Dipstick

CONDITIONS:

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

PROCEDURE:

- Clean dirt from area around dipstick (A) 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 visible foreign material in oil.

IF NOT NORMAL:

- Add proper oil to full mark on dipstick.
- Replace contaminated oil and filter.
- Go to Sections 250, 260, or 270, Group 15 for transmission and hydraulic system diagnosis, tests and adjustments.

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[1] - With coolant at proper level and radiator cap tight, run engine to operating temperature.

[2] - Remove cap from coolant recovery tank.

[3] - Check for bubbles coming from hose (A) at bottom of recovery tank.

[4] - Isolate source of compression leak: Remove injector nozzles.

[5] - Install JT01679 Adapter (B) and JT02017 Clamp (C) in injector port of cylinder to be tested.

Adapter

JT01679

To test injection nozzles for compression leaks.

Clamp

JT02017

To test injection nozzles for compression leaks.

[6] - Move piston to bottom of stroke with intake and exhaust valves closed.

[7] - Connect hose from compressed air source (2400 kPa) (24 bar) (350 psi) maximum) to adapter.

[8] - Check for bubbles in recovery tank or air escaping from exhaust pipe, air cleaner or oil fill opening.

[9] - Repeat steps (5-8) for each cylinder.

→NOTE:

Cylinder being tested when bubbles appear or air escapes is usually the defective cylinder.

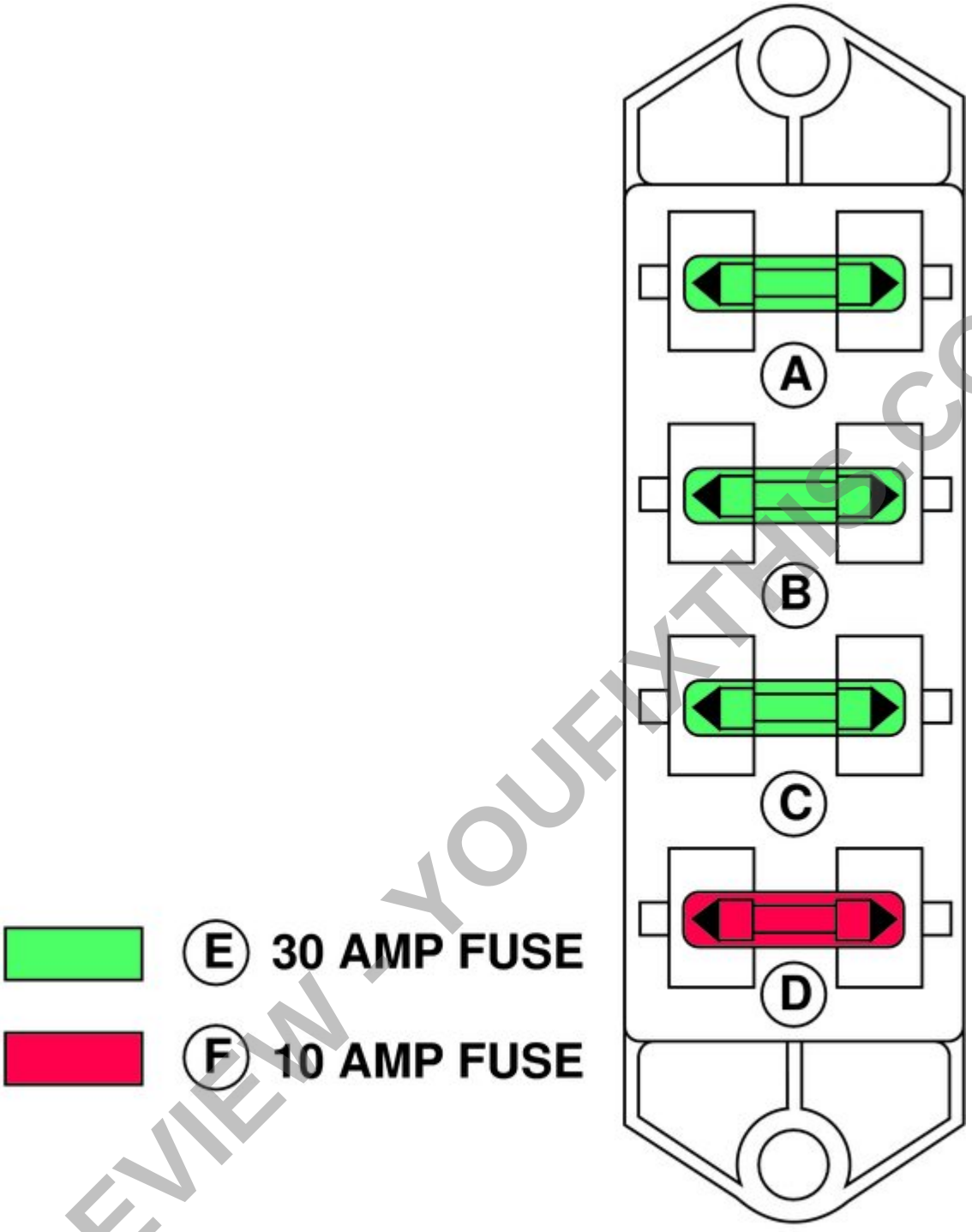
RESULTS:

- If bubbles are present, check for cracks in cylinder head, cylinder liner, and block. Check for damaged head gasket.
- If air escapes from exhaust pipe, check for worn exhaust valve.
- If air escapes from air cleaner, check for worn intake valve.
- If air escapes from engine oil fill, check for worn piston rings.
- Go to CTM104 or CTM125 and service as needed.

Cooling System Test

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CAB FUSE BLOCK AND FUSES

LVC1601

Cab Fuse Block and Fuses

LEGEND:

A	F13
B	F14
C	F15
D	F16

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CONDITIONS:

- Turn signal controller moved to left turn position.

Light. Sys. Test Points-Turn Signals (Without Cab)

Test Location	Normal	If Not Normal
8. Terminal 3 of turn signal connector.	Battery voltage (pulsing).	Replace turn signal controller.
9. Terminal D of instrument connector.	Battery voltage (pulsing).	Check for corroded connections or break in splice or wire between turn signal controller and instrument panel connector.
10. Top terminal of left turn indicator socket.	Battery voltage (pulsing).	Check for corroded connections between instrument panel circuit board and left turn indicator socket.
11. Bottom terminal of left turn indicator socket.	Less than 0.2 volt.	Check or replace bulb. Check ground connections of black wire, circuit No. 010, from turn indicator socket through instrument panel to ground connection on center control console.
12. Male end of bullet connector for green wire of left turn light.	Battery voltage (pulsing).	Check for corroded connections or break in splice or wire between turn signal controller and bullet connector.
13. Female end of bullet connector for green wire of left turn light.	Battery voltage (pulsing).	Make sure connector is fully pushed together. Check for corroded or damaged terminals. Repair or replace connector.
14. Left turn light lens mounting screw.	Less than 0.2 volt.	Check or replace bulb. Check for good ground from base of turn light to ROPS through the mounting bolts.

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CONDITIONS:

- Push horn button and hold.

Optional Horn Test Points

Test Location	Normal	If Not Normal
8. Orange wire terminal of horn switch.	Battery voltage.	Check for corroded or loose terminals. Replace horn switch.
9. Terminal H of male pin side of 10-pin connector.	Battery voltage.	Check for corroded connections or break in wire between horn switch and 10-pin connector.
10. Terminal H of female socket side of 10-pin connector.	Battery voltage.	Make sure connector is fully pushed together. Check for corroded or damaged terminals. Repair or replace connector.
11. Horn harness connector, female side.	Battery voltage.	Check for corroded connections or break in wire between 10-pin connector and horn harness connector.
12. Horn harness connector, blade side.	Battery voltage.	Make sure connector is fully pushed together. Check for corroded or damaged terminals. Repair or replace connector.
13. Horn connector.	Battery voltage.	Check for corroded connections or break in wire between horn harness connector and horn. If wire and connectors are good, replace horn.

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Identification Letter	Type	Examples
Y	Electrically actuated mechanical device	Permanent magnets, (solenoid-operated) injection valves, electromagnetic clutches and brakes, air valves, fuel pumps, solenoids, switching valves, start valves, locking systems
Z	Electrical filter	Interference suppression filters

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The differential transmits power from the differential drive shaft to the final drive pinion shafts. It allows each wheel to rotate at varying speeds and still pull its own load.

MAJOR COMPONENTS:

- Differential Drive Shaft
- Differential Ring Gear
- Differential Carrier Assembly
- Final Drive Pinion Shafts
- Final Drive Ring Gear
- Planetary Carrier Assembly
- Axle Shaft

THEORY OF OPERATION:

Power from the differential drive shaft (A) is transmitted through the differential assembly to the final drive pinion shaft (F). The final drive pinion shaft is in mesh with the three small gears on the planetary carrier assembly (D). These small gears walk around the inside of final drive ring gear (G). The result is rotation of the axle shaft (E).

The differential assembly is a ring gear (C) bolted to the carrier (I). Inside the carrier are two bevel gears (H) and four bevel pinions (B).

When the tractor turns sharply, one axle is held stationary. The result is that the bevel pinions rotate on their own axis and walk around the stationary bevel gears. The turning ring gear transmits power through the pinion to the opposite bevel gear.

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Transmission Will Not Stay in Gear

CONDITIONS:

- Repair in Section 50, Group 15.

Transmission Will Not Stay In Gear

Test Location	Normal	If Not Normal
1. Speed and range shifter assemblies.	All shafts operate smoothly. No wear or damage to shaft detents. Detent ball assemblies installed properly and not damaged. Springs not weak or broken.	Replace worn or damaged components.
2. Transmission.	No evidence of wear or damage to gear teeth, splines, shift collars, and/or synchronizers or shifter forks.	Replace worn or damaged components.

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can flow through line (G) from the steering cylinder to the steering valve. From the steering valve, return oil flows through steering valve return line (E), hydraulic oil cooler (F), and steering valve return line (A) to the transmission.

→NOTE:

The steering valve is designed to allow manual steering if the engine is not running or the hydraulic pump fails.

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C Surge Relief Valve Cartridge
D Relief Spring
E Relief Ball
F To Sump
G Pressure Oil
H Return Oil

FUNCTION:

The surge relief valve threads into a passage at the end of the rockshaft cylinder. The valve protects the cylinder and its related parts from damage due to excessive pressure.

MAJOR COMPONENTS:

- Surge Relief Valve
- Rockshaft Cylinder
- Rockshaft Piston

THEORY OF OPERATION:

As long as pressure inside the rockshaft cylinder is less than 22994 to 22934 kPa (230 to 240 bar) (3335 to 3480 psi), tension from relief spring (D) holds relief ball (E) closed. If pressure increases suddenly and exceeds spring pressure, relief ball unseats, allowing oil back to sump. This condition can occur when the rockshaft encounters a sudden increase in implement load.

Main Relief Valve Operation

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Hydraulic Schematic-With Selective Control Valves

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