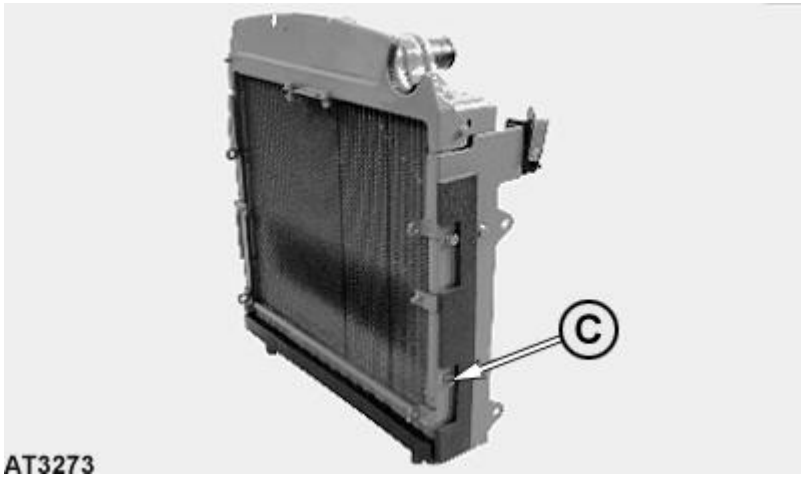
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Group 20 - EHS - Electronic Hitch Sensing
Section 250 - POWER TRAIN — OPERATION AND TESTS
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Group 10 - Theory of Operation
Group 15 - Diagnosis, Tests and Adjustments
Section 251 - 24/12-SPEED TRANSMISSION — OPERATION AND TESTS
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Section 260 - STEERING AND BRAKE SYSTEMS — OPERATION AND TESTS
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Install Radiator

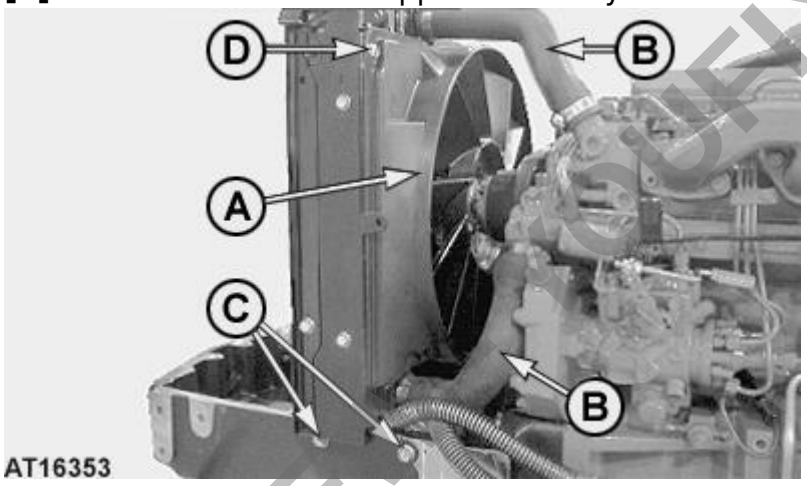
[1] - Install radiator in support.



Install cap screws and hood guides

[2] - Install all cap screws (C).

[3] - Install radiator and support assembly.



Radiator components

LEGEND:

A	Fan shroud
B	Radiator hose
C	Cap screws (4 used)
D	Cap screws (4 used)

[4] - Install fan shroud (A). Adjust shroud for fan clearance.

[5] - Install upper and lower radiator hoses (B).

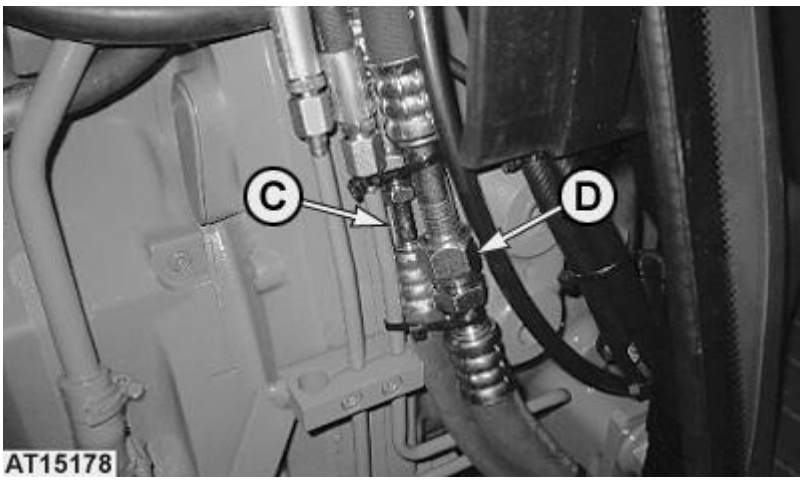
[6] - Install cap screws (D).

[7] - Install cap screws (C).

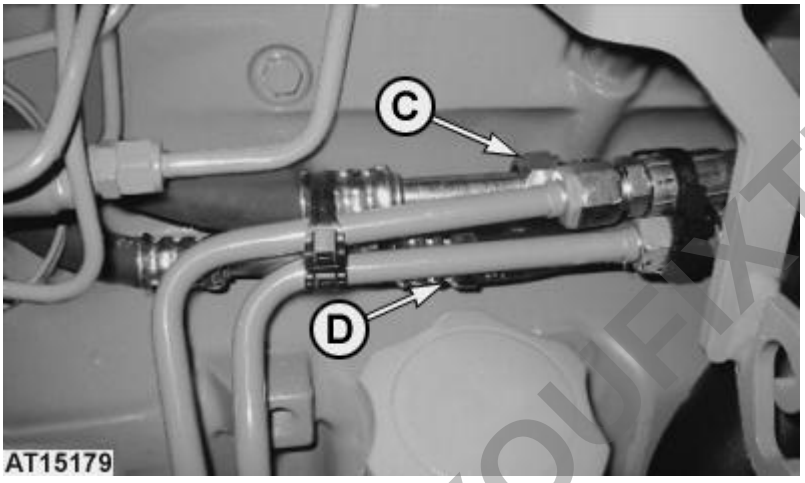
[8] - Install recovery tank (A). Check that overflow hose is in strap (D).

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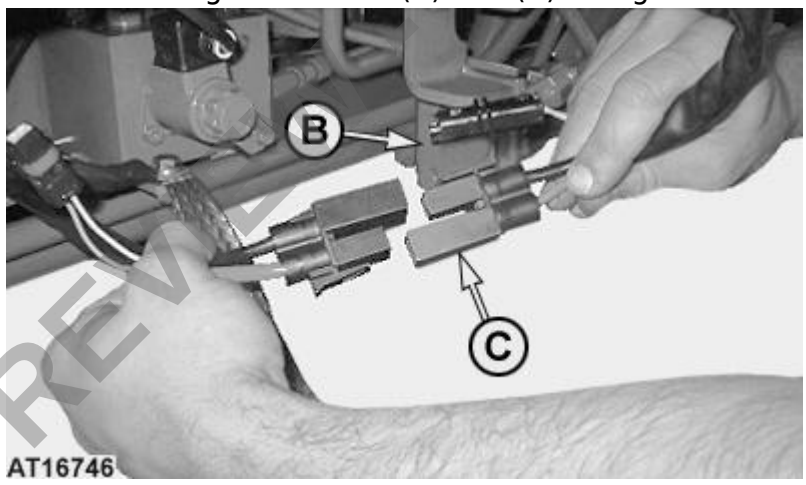


3-cylinder engine shown



4-cylinder engine shown

c. Connect wiring connectors (B) and (C) on right-hand side.



Wiring connector

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Group 20 - Transmission

Summary of References — Transmission

Remove and Install Transmission

Inspect and Repair Gear and Range Shift Levers

Remove, Inspect and Install Range Shaft

Range Shaft End Play Adjustment

Remove, Inspect and Install Primary and Reverse Shafts

Primary Shaft End Play Adjustment

Remove, Inspect and Install Pinion Shaft

Pinion Shaft Cone Point Adjustment

Pinion Bearing Preload Adjustment

Remove, Inspect and Install Secondary Shaft

Secondary Shaft End Play Adjustment

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Disassemble, Inspect and Assemble Electro-Hydraulic Reverse Clutch (24/12-Speed Transmission)

[1] - Remove low/reverse clutch assembly as described in " Remove Electro-Hydraulic High/Low/Reverse Clutch Assembly (24/12-Speed Transmission) " in this Group.



Low/reverse clutch assembly

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[2] - Remove differential lock shaft. (See " Remove, Inspect and Install Differential Lock Assembly " in this Section, Group 20.)

[3] - Remove PTO engagement control. (See " Disassemble, Inspect and Assemble Rear PTO Engagement Control " in this Group.)

[4] - Remove pinion shaft (A) and PTO selection control pin (G).

[5] - Slide out PTO shaft (L).

[6] - Remove spring pin (B) and extract hub (C).

[7] - Remove PTO coupling sleeve assembly (K, J, I, H, D, E, F).

[8] - Remove washer (K).

[9] - Remove ring (I), after compressing snap ring (J).

[10] - Remove springs (E) and balls (F).

[11] - Remove snap ring (J) and sleeve (H).

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

[13] - Lubricate all parts with clean transmission/hydraulic oil.

[14] - Assemble snap ring (J) on sleeve (D) and insert sleeve (H) inside PTO coupling sleeve (D).

[15] - Insert balls (F) in opposite holes on sleeve (D) and assemble springs (E) on balls (F).

[16] - Insert ring (I), by compressing snap ring (J).

[17] - Push springs (E) in their seat with a screwdriver and check if snap ring (J) is in its seat.

[18] - Insert washer (K) on PTO shaft (L).

[19] - Insert PTO coupling sleeve assembly (J, I, H, D, E, F) on PTO shaft (L).

[20] - Insert hub (C) on PTO shaft (L).

[21] - Assemble spring pin (B).

[22] - Check pin is inside hub on both sides.

[23] - Push PTO shaft (L) with hub (C) inside sleeve (D).

[24] - Install PTO selection control pin (G).

[25] - Install pinion shaft (A).

[26] - Install engagement control. (See " Disassemble, Inspect and Assemble Rear PTO Engagement Control " in this Group.)

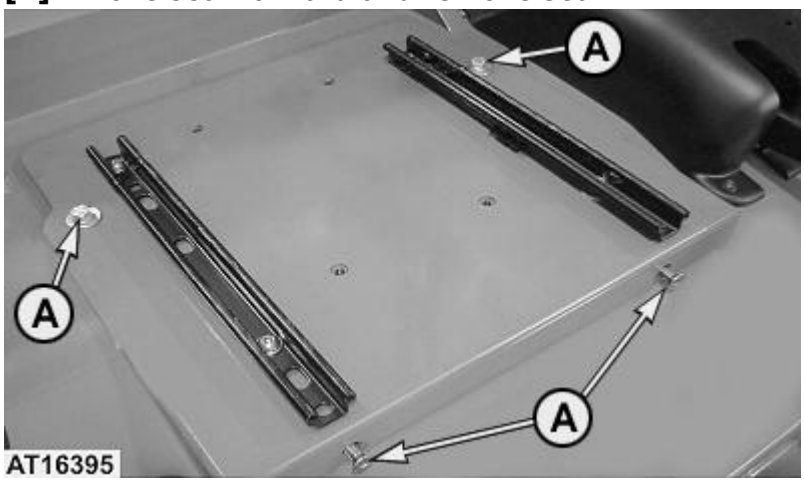
[27] - Install differential lock shaft. (See " Remove, Inspect and Install Differential Lock Assembly " in this Section, Group 20.)

[28] - Install rockshaft case. (See " Remove and Install Rockshaft Case " in Section 70, Group 10.)

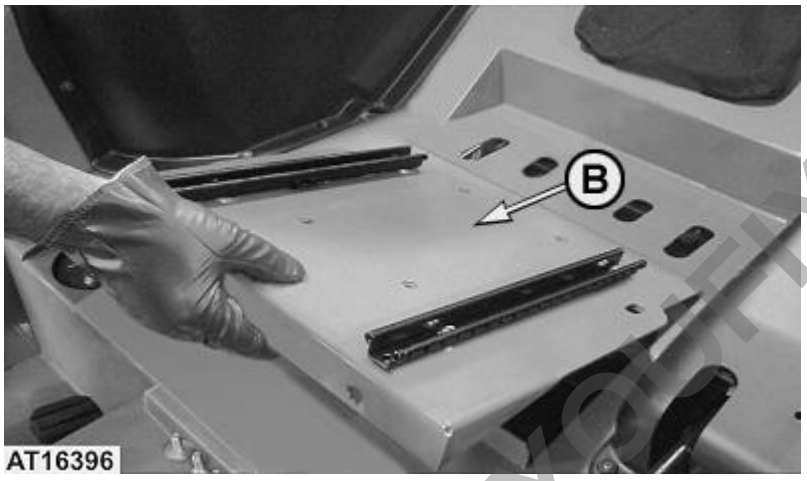
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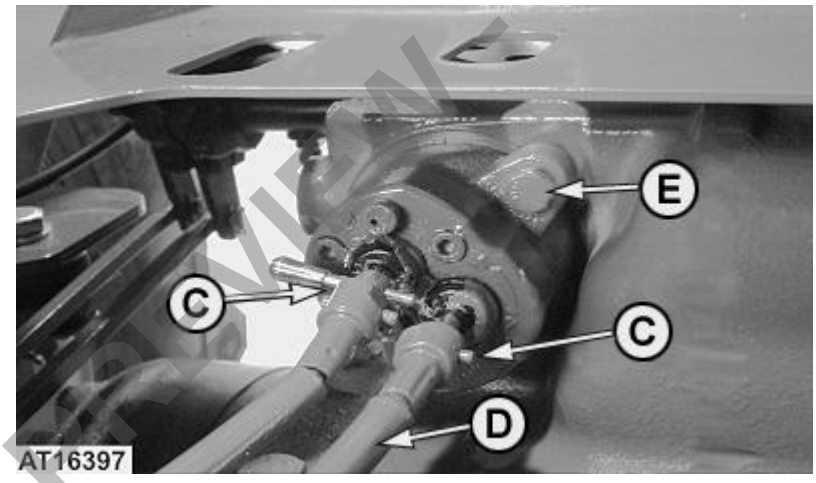
[1] - Move seat forward and remove seat.



Remove seat support



Remove seat support



Flexible shaft, split pin and cap screws

[2] - Unscrew screws (A) and remove seat support (B).

[3] - Remove split pin (C) to remove flexible shaft (D).

[4] - Remove two cap screws (E) to remove rockshaft control valve assembly.

[5] - Remove parts (1) to (40).

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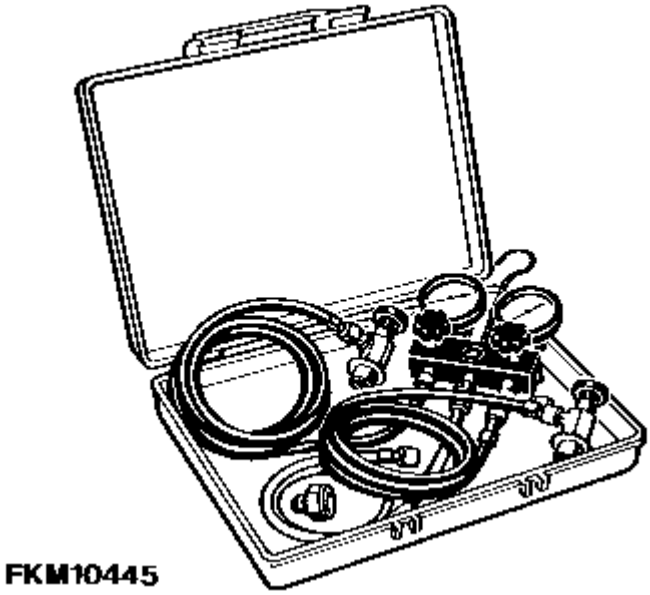
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[6] - Install rear wheels. (See " Remove and Install Front or Rear Wheels " in this Section, Group 15.) Remove support stands under left and right-hand rear axle housing.

[7] - Remove wooden blocks between front axle and frame rail on both sides.

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FKM10445

Evacuating, filling and checking the air conditioning system.

to the low-pressure valve (A), and connect the red hose to a commercially available R134a recycling container (D).

→NOTE:

Comply with data on recycling container (e.g. weight when empty, max. weight).

The recycling container must be weighed repeatedly before and during the discharging process to make sure that it is not overfilled.

Tighten all screw connections, switch on the discharge unit and open the valves.

The discharge unit discharges the system until the suction-pressure switch trips and switches the unit off at a pressure of approx. -30 kPa (-0.3 bar; -4.5 psi). Then close the valves.

→NOTE:

If the system is already discharged, do not attempt to discharge the system further. Avoid air ingestion.

At the sight-glass in the oil separator, observe how much oil has been sucked out. When the system is subsequently recharged, remember to top up with the same quantity of fresh oil.

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(2) Check the ground connection for clutch pedal potentiometer

Action:

• Check the supply voltage between orange cable at the clutch pedal potentiometer and any suitable ground point.

• Use a JT05791A multimeter to check the supply voltage.

• Turn the tractor key switch**on** .

Item	Measurement	Specification
Voltage, 5-volt power supply from EHM or EHM II control unit		
Between orange cable at the connector to the potentiometer and any suitable ground point	Voltage	4.75 - 5.25 volts

Result:

YES: Check the ground lead (black cable) between clutch pedal potentiometer and vehicle ground.Perform " SE26A - Clutch Pedal Potentiometer (EHM), Diagnostic Schematic and Circuit Test " or " SE26B - Clutch Pedal Potentiometer (EHM II), Diagnostic Schematic and Circuit Test "Repair as needed. Carry out an operational test after repair.

NO: Check the supply lead (orange cable) between clutch pedal potentiometer and EHM or EHM II control unit.Perform " SE26A - Clutch Pedal Potentiometer (EHM), Diagnostic Schematic and Circuit Test " or " SE26B - Clutch Pedal Potentiometer (EHM II), Diagnostic Schematic and Circuit Test "Repair as needed. Carry out an operational test after repair.

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⚠ CAUTION:

Shut off the engine before checking any components located near moving parts.

⚠ CAUTION:

Always shut off the engine before connecting test equipment to the tractor.

⚠ CAUTION:

Always engage the parking lock when performing test with engine running.

⚠ CAUTION:

Escaping fuel under pressure can penetrate the skin causing serious injury. Avoid the hazard by relieving pressure before disconnecting hydraulic or other lines. Check and tighten all connections before applying pressure.

⚠ CAUTION:

To avoid the possibility of severe infection, seek medical assistance immediately if injured by exposure to fuel under pressure.

⚠ CAUTION:

When testing is performed with the engine running, there is a risk of injury from moving parts.

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(3) Check voltage at F01 fuse output of fuse box

Action:

Result must be same as battery voltage.

Result:

YES: GO TO 4.

NO: Check for failed fuse F01. Replace fuse if failed. If fuse is good, check for corroded or loose terminals.

(4) Check voltage at orange wire terminal 2 of 12-pin connector X20 for instrument panel

Action:

Location: X20 - 12-Pin Connector for Instrument Panel

Result must be same as battery voltage.

Result:

YES: GO TO 5.

NO: Check for corroded connections or broken orange wire between fuse box and instrument panel connector.

(5) Fuel Gauge Circuit: Read the fuel gauge instrument (P01)

Action:

Remove wire from center terminal from fuel gauge side.

Gauge indicates empty.

Result:

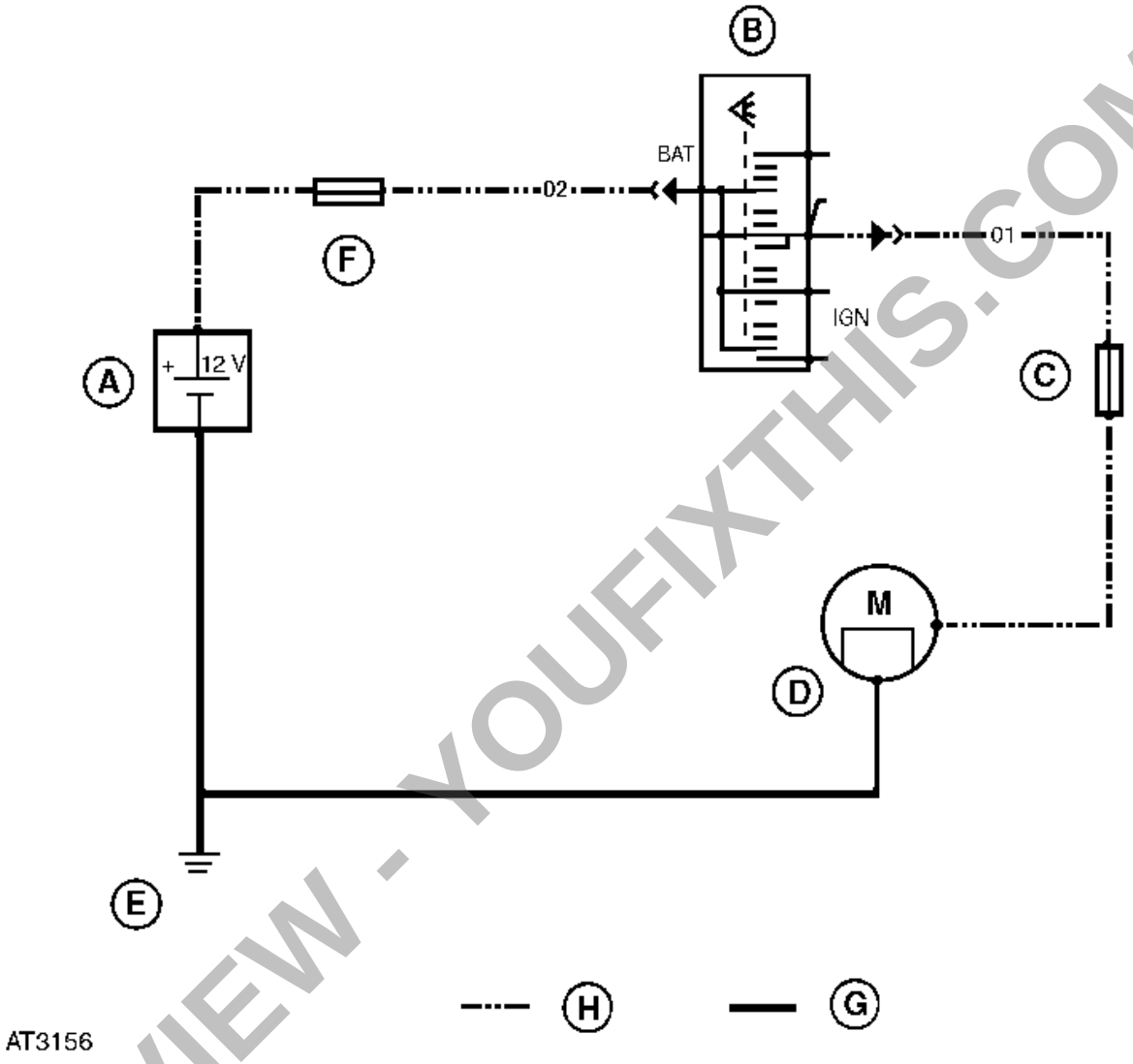
YES: GO TO 6.

NO: Check for corroded connections or broken splice of pink/white wire between instrument panel connector and fuel gauge instrument.

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SE14B - Air Suspension Seat Compressor Motor M06, Functional Schematic and Theory of Operation



Pneumatic seat

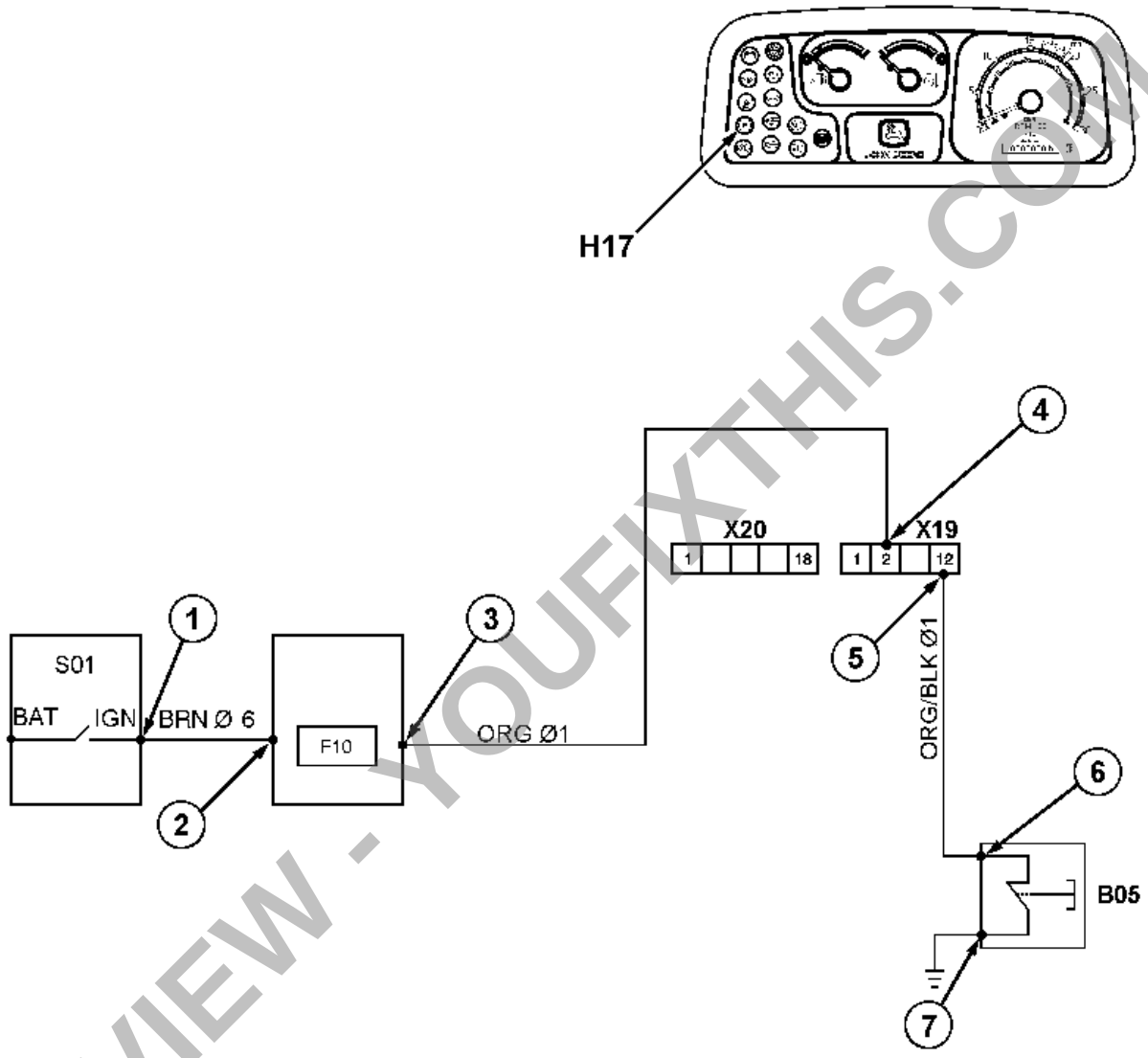
LEGEND:

- A Battery G01
- B Main switch S01
- C Fuse F14, 7.5 amp
- D Air suspension seat compressor motor M06
- E Ground
- F Main fuse F00, 50 amp
- G Ground circuit
- H Power circuit

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SE16C - Parking Brake, Diagnostic Schematic and Circuit Test



AT15712

Instrument panel test - parking brake

Meet following requirements:

- Main switch in RUN (1) position.
- PTO disengaged.
- Gear shift lever in neutral position.
- Meter positive lead on numbered test points.
- Meter on DC volt.

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(4) Check continuity between light blue/green wire terminal 2 of 2-pin connector XB73 and terminal 49 of 56-pin connector XA310

Action:

Location: XA310 - 56-Pin Connector for EHM II Control Unit A310

Continuity must be present.

Result:

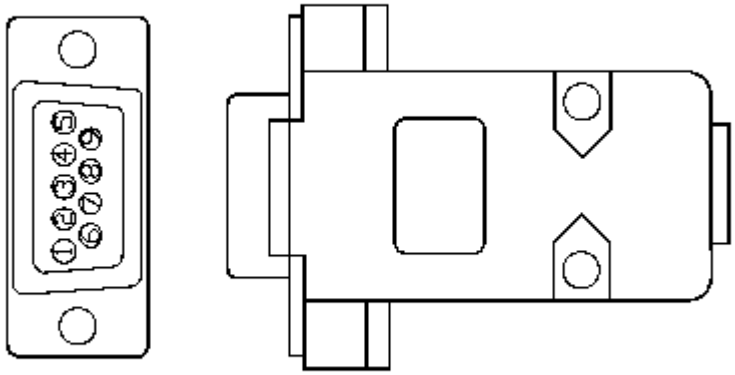
YES: Check B73 - Oil Filter Restriction Sensor (EHM or EHM II) and replace if necessary.END OF TEST

NO: Check for corroded connections or broken light blue/green wire between connector XB73 and 56-pin connector XA310.

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X16 - 9-Pin Com-Port for Diagnostic Connector (EHM or EHM II) to PC



ATX016

9-pin com-port for diagnostic connector (EHM or EHM II) to PC



9-pin com-port for diagnostic connector (EHM or EHM II) to PC

LEGEND:

X16 9-pin com-port for diagnostic connector (EHM or EHM II) to PC

Component information

Component information	
Number of pins:	9
Connection Point:	To PC
Wiring harness:	W03 - 24/12-Speed Transmission Wiring Harness (EHM) or W03 II - 24/12-Speed Transmission Wiring Harness (EHM II)

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Plug layout

Plug layout EHM II	
Pin no.	Wire color
1	white/red
2	light blue/green

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1-pin connector for declutch switch S54 (EHM or EHM II)

LEGEND:

X23 3-pin connector for Hi-Lo switches (S53 and S52)
XS54 1-pin connector for declutch switch S54

Component information

Component information	
Number of pins:	1
Connection Point:	S54 - Declutch Switch on Range Shift Lever (EHM or EHM II)
Wiring harness:	W03 - 24/12-Speed Transmission Wiring Harness (EHM) or W03 II - 24/12-Speed Transmission Wiring Harness (EHM II)
Circuit:	On EHM System: SE26A - Declutch Switch on Range Shift Lever (EHM), Diagnostic Schematic and Circuit Test or SE26A - Reverse Drive Lever (EHM), Diagnostic Schematic and Circuit Test On EHM II System: SE26B - Declutch Switch on Range Shift Lever (EHM II), Diagnostic Schematic and Circuit Test or SE26B - Reverse Drive Lever (EHM II), Diagnostic Schematic and Circuit Test

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(1) B56/1 - Coolant Temperature Sensor (3-Cylinder only)

Action:

→NOTE:

Unplug the coolant temperature sending unit from the wiring harness.

Use a JT05791A multimeter to measure resistance on the sending unit:

The relevant resistance values should be registered at the following temperatures.

Item	Measurement	Specification
B56/1 - Coolant Temperature Sensor (3-Cylinder only)		
Resistance value:	at 25°C (77°F)	approx. 560 ohms
	at 60°C (140°F)	approx. 134 ohms
	at 90°C (194°F)	approx. 51.2 ohms
	at 100°C (212°F)	approx. 38.5 ohms

For extended checks, see also SE02A - Fuel Gauge, Temperature Gauge, Rev Counter, Diagnostic Schematic and Circuit Test in this Section.

Result:

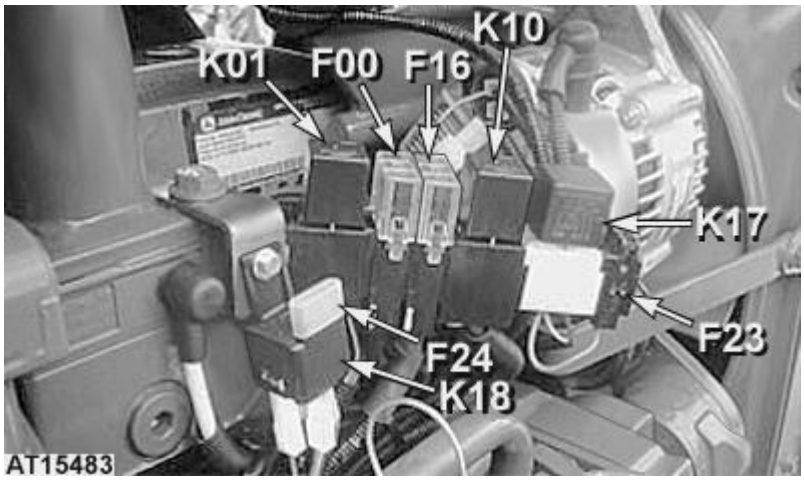
YES: Sending unit is in good condition.

NO: Replace the sending unit.

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K10 - Intake Air Heater Relay



Fuses and relays

LEGEND:

F00	50 amp main fuse for main wiring circuit
F16	50 amp main fuse for cab wiring circuit
F23	7.5 amp fuse for shut-off system circuit (EHM)
F24	20 amp fuse for electronic hitch sensing circuit (EHS)
F24 II	20 amp fuse for electronic hitch sensing circuit (EHS II)
K01	Starter relay
K10	Intake air heater relay
K17	Relay of shut-off system (EHM)
K18	Relay of electronic hitch sensing (EHS)
K18 II	Relay of electronic hitch sensing (EHS II)

Component Information

Component Information	
Type:	Relay
Location:	R.h. side of the engine near the alternator
Connector:	XK10 - 4-Pin Connector for Intake Air Heater Relay K10
Harness:	W10 - Intake Air Heater Wiring Harness
Specifications and Details:	See component check below:

Component check

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(1) Solenoid valve

Action:

→NOTE:

Unplug the relevant solenoid valve from the wiring harness.

Use a JT05791A multimeter to measure resistance between pins A and B on the solenoid valve:

Item	Measurement	Specification
Solenoid valve		
Solenoid valve:	Resistance	approx. 15 - 20 ohms
Current draw:	Current	below 1 amp

For extended checks, see also SE26A - Shut-Off Solenoid Valve of Shut-Off System (EHM), Diagnostic Schematic and Circuit Test or SE26B - Shut-Off Solenoid Valve (EHM II), Diagnostic Schematic and Circuit Test in this Section.

Result:

YES: The solenoid valve is in good condition.

NO: Replace the solenoid valve.

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The display then will show:

L # – Forward low clutch pressure threshold #

where # is the actually stored Forward Low Clutch Pressure Threshold.

Adjust the Forward Low Pressure Threshold by moving the reverse drive lever: place in (F) to increase, in (R) to decrease, and in (N) and press the clutch pedal to confirm the adjusted value. (See Note 2.5)

The display then will show:

r # – Reverse clutch pressure threshold #

where # is the actually stored Reverse Clutch Pressure Threshold.

Adjust the Reverse Pressure Threshold by moving the reverse drive lever: place in (F) to increase, in (R) to decrease, and in (N) and press the clutch pedal to confirm the adjusted value. (See Note 2.5)

If Pressure Threshold manual calibration was successful, without any error messages appearing during the procedure, then the display will show:

End – Calibration procedure end

Wet clutch pressure threshold manual calibration - error messages:

If the following error message were generated, this means that the pressure thresholds have not been upgraded as per selected values.

EErr – Memory Error. EHM II failed updating FLASH memory.

→NOTE:

2.5 The range of the Pressure Threshold value # is from 0 to 40; Each point value is 5 mA.

Result:

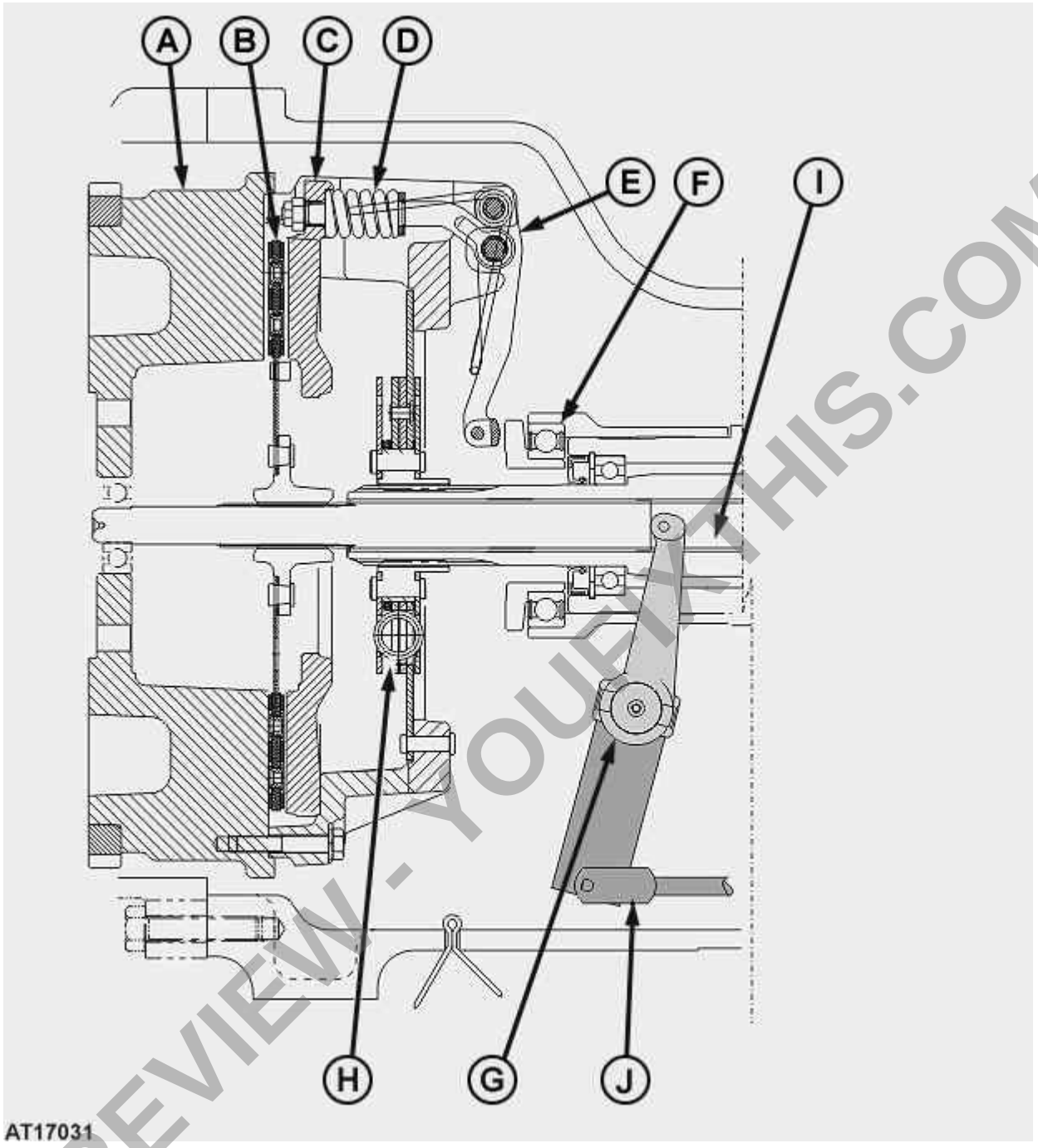
YES: No error messages displayed. GO TO 11

NO:EErr error message was displayed during calibration. GO TO 19

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Clutch Operation (24/12-Speed Transmission)



PTO clutch disengaged - 24/12 transm.

FUNCTION:

Dry disc clutches enable mechanical engagement and disengagement of power flow between engine and PTO.

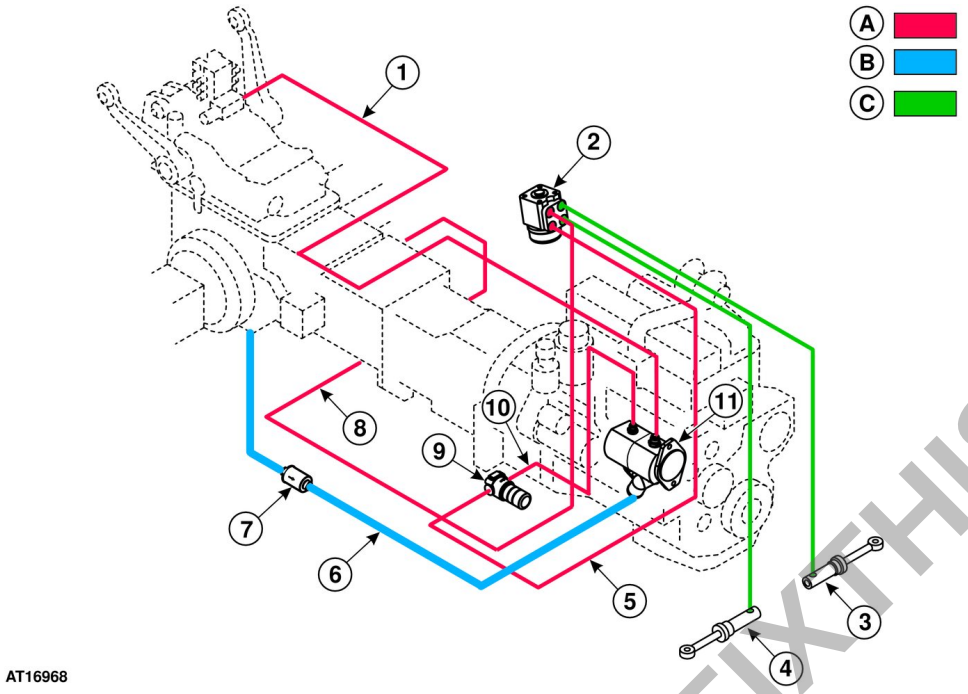
MAJOR COMPONENTS:

- Pressure plate

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Hydraulic System Components - Steering and Front-Wheel Drive (8/8 and 12/12-Speed Transmission)



Hydraulic system - Steering and front-wheel drive (8/8 and 12/12-speed transm.)

LEGEND:

1 Supply line to rockshaft
2 Steering valve
3 Steering cylinder, l.h. side
4 Steering cylinder, r.h. side
5 Supply line to steering valve
6 Suction line to oil pump
7 Oil filter, suction line
8 Hydraulic oil return line
9 Oil filter, steering line
10 Supply line to oil filter
11 Oil pump
A High pressure oil
B Suction oil
C Trapped oil

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(2) Rockshaft leakage test

Action:

2.1 Leak test with pipe plug installed in rockshaft passage.

Raised rockshaft under load must hold steady when engine is off.

Measure the distance of lowering at the end of lift arms.

→NOTE:

Lowering of 0.4 mm per minute can be normal.

Result:

YES:GO TO 2.2

NO: Inspect rockshaft cylinder, seals, piston or surge relief valve.

Action:

2.2 Leak test without pipe plug installed in rockshaft passage. Rate-of-drop valve open.

Raised rockshaft under load must hold steady when engine is off.

Measure the distance of lowering at the end of lift arms.

→NOTE:

Lowering of 0.4 mm per minute can be normal.

Result:

YES: GO TO 3

NO: Replace rockshaft valve or O-ring seals.

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