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Glossary of Terms

Glossary of Terms—A through D

ITEM	ABBREVIATION	DESCRIPTION
Accessory	ACC	Secondary electrical system
Air Conditioning	A/C	System used for cooling the air in the cab
Alternating Current	AC	Electrical current that reverses its direction at regularly recurring intervals
Battery	Bat	A device used to furnish electrical current
Brakes	BR	Abbreviation
Controller Area Network	CAN	A communication system linking on-board electronics
Central Control Unit	CCU	Computerized system for tractor monitoring
Circuit	CCT	A complete path of an electrical current
Clockwise	CW	Direction in which the hands of a clock rotate
Cold Cranking Amperes	CCA	Battery´s measured capability to perform during cold weather operation
Component Technical Manual	CTM	Technical manual developed for the servicing of major components
Counterclockwise	CCW	Direction opposite the rotation of the hands of a clock
Diagnostic Receptacle	DR	A connection where hydraulic pressure can be measured
Digital Multimeter	DMM	An electrical multi-functional measuring device
Direct Current	DC	Electrical current flowing in one direction only

Glossary of Terms—E through L

ITEM	ABBREVIATION	DESCRIPTION
Electro-Hydraulic	EH	Hydraulic valve function that is controlled electrically
Electronic Components Relay	ELX	Relay powering most of the electronic components
Excess Flow (SCV/Hitch Flow)	EF	Reference—SCV/Hitch flow
Excess Flow Load Sense (SCV/Hitch Flow)	EFL	Reference—SCV/Hitch load sense
Forward	FWD	Direction of movement
Gallons per Minute	gpm	Amount of fluid displaced over a period of one minute
Heating-Ventilating and Air Conditioning	HVAC	Abbreviation

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will be no tone. If the circuit made has continuity (less than 150 ohms), a continuous tone will sound.

Autoranging —The meter powers up in the autorange mode. Range is selected automatically. The digital display indicates the range.

Manual Ranging —When the button in the middle of the selector knob is pressed with the meter on, the range is selected manually. You can “dial” through ranges by repeatedly pressing the button. As in the autorange mode, range in use will be shown in the digital display. To return to autorange mode, press range button for 1 second. Meter will “chirp” once and return to autorange mode.

Touch Hold —If the button in the selector is pressed and held down while the meter is being turned on, and held until the display reaches full brightness, the meter is in the touch hold” mode. In touch hold, any reading which is constant for a minimum of 1/2 second and differs from the previous reading by at least one bar of the analog display will be “captured” by the meter. A tone (beep) will sound when the reading has been held. The operator can then remove the probes and the reading will be retained. Touch hold is always in autorange mode. Turn the selector switch to OFF to deactivate touch hold.

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PTR 000628.02- EOL Check Sum Error

379

Code caused by: Power Train Reverser (PTR) control unit detects that End-of-Line memory failed.

Code Diagnosis

Control Unit Response: Defaults to Neutral

(1) Operational Check

Action:

Operational check not required.

Result:

YES:GO TO 2.

(2) Verify Code

Action:

1. Recall, Record, and Clear Codes for this control unit.
2. Turn key switch to RUN position (Engine OFF).
3. Check for code return.
4. If problem is intermittent, repeat check until code returns.

Result:

YES: Code does not return. Diagnosis complete.

NO: Code returns. Perform Programming Control Units , then perform Power Train Reverser (PTR) Control Unit Configuration and Calibration .

NO: Operator reports continued problems, perform EHC—Electrohydraulic Control Unit Test .

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(3) Starting Circuit Test

Action:

Perform starting circuit test.

Result:

YES:GO TO 2.

NO: Repair starting circuit as needed and check operation.GO TO 2.

(4) Cold Start Circuit Test

Action:

Perform cold start circuit test.

Result:

YES:GO TO 2.

NO: Repair starting aid circuit as needed and check operation.GO TO 2.

(5) Charging System Test

Action:

Perform charging system voltage test.

Result:

YES:GO TO 2.

NO: Repair charging system as needed and check operation.GO TO 2.

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IMPORTANT:

If using another battery tester without a blue, cold cranking rating scale, turn load knob until amperage is equal to HALF the battery cold cranking amperage (CCA) rating.

Make sure battery passes voltage and specific gravity tests before load testing.

[2] - Turn load knob of tester clockwise until amperage reading (D) is equal to:

a. Cold cranking amperage rating (blue scale).
   OR—
b. Three times ampere hour rating (black scale).

[3] - Hold for 15 seconds, note voltage reading, and turn load knob of tester to off.

Item	Measurement	Specification
Battery	Minimum Voltage	9.6 volts under load

RESULTS:

- If the battery passes the test, battery is good.
- If the battery does not pass the test, replace battery.

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LEGEND:

F01	30A Fuse for Key Switch
F26	125A Fuse Link
G1	Battery
G2	Alternator
K1	Manifold Heater Relay
K4	Neutral PTO Off Relay
K11	Fuel Flow Relay
K11A	Neutral Relay for PR
K12	Neutral Latch Relay
K18	Start Relay
K18A	Start Relay for PR
M1	Starter
R1	Manifold Heater
S1	Key Switch
S2	Rear PTO Swtich
S3	Neutral Start Switch
Y1	Fuel Flow Solenoid
Y12A	Fuel Shutoff Solenoid for PR

SE3- Accessory Power, SE4- Horn

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Cab Harness (PR) Circuit Table					
1128D	X131, SP1128	6502G	S10, SP6502	9915D	A15, SP9915A
1132	S35, X141	6503	A06X3, X140	9915F	A06X2, SP9915E
1136A	X141, SP1136	6505	X131, A06X3	9915G	X142, SP9915E
1136B	E04, SP1136	6506A	X140, SP6506	9922	A01/ A02, X142
1136C	X131, SP1136	6506B	A06X3, SP6506	9923A	S04, SP9923
1136D	E03, SP1136	6507	A06X3, X140	9923B	A06X1, SP9923
1138	X918, X141	6508A	X140, SP6508	9923C	A15X1, SP9923
1147A	S33, X918,	6508C	A06X2, SP6508	9942A	X11, A06X2
1148	S06, X141	6509B	A06X3, S15	9942B	X11, A06X2

→NOTE:

Any designation that starts with “SP” indicates a splice in the related circuit. There can be multiple circuit splices within a harness. There can be multiple splices for the same circuit. When testing a harness be aware that splices can be a potential failure point in a circuit.

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ADVISOR/Performance Monitor and Electro-Hydraulic Controller connectors for unseated or bent pins. Repair circuit.

(2) Compare CAN Hi and CAN Lo Voltages

Action:

→NOTE:

The CAN bias voltage is 2.5 V. To evaluate the CAN Hi and CAN Lo circuits, the voltage recorded for each must be calculated in reference to this bias.

Calculate voltages as given below:

CAN Hi Calculation

	Recorded value:	Subtract Bias voltage	Results
CAN Hi Voltage		— 2.5 V =	

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(1) Address Description

Action:

1. Start vehicle.
2. Access CCU Address 008.
3. Verify display meets specification:

Item	Measurement	Specification
CCU Address 008		
Engine Speed Sensor Status	Signal Detected	1
	Signal Undetected	0

Result:

YES: Return to diagnosis.

CCU 010 — Hydraulic Oil Temperature Sensor Voltage

Status/Beep Address

→NOTE:

See Access Control Unit Addresses .

Address displays the voltage from hydraulic oil temperature sensor.

(1) Address Description

Action:

1. Place key switch in RUN position (engine OFF).
2. Access CCU Address 010.
3. Verify display meets specification:

Item	Measurement	Specification
CCU Address 010		
Hydraulic Oil Temperature Sensor	Voltage	0.0—5.0 V

Result:

YES: Return to diagnosis.

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CCU—Sensor Excitation Circuit Test (PR Transmission)

Test Procedure

→NOTE:

Required tools:

1. **JDG1478 —Digital Multimeter**
2. **JDG10466 —Flex Probe Kit**

→NOTE:

Unless instructed otherwise, use a chassis ground point for voltage checks.

See SE17B- INSTRUMENT CLUSTER (PR) .

(1) Fuse F20 Check

Action:

1. Place key switch in RUN position (engine OFF).
2. Use a digital multimeter to check for battery voltage on terminals A and B of fuse F20 (10A) Electrohydraulic System/Sensor Excitation Fuse.

→NOTE: Fuse does not need to be removed for this check.

Result:

YES:GO TO 2.

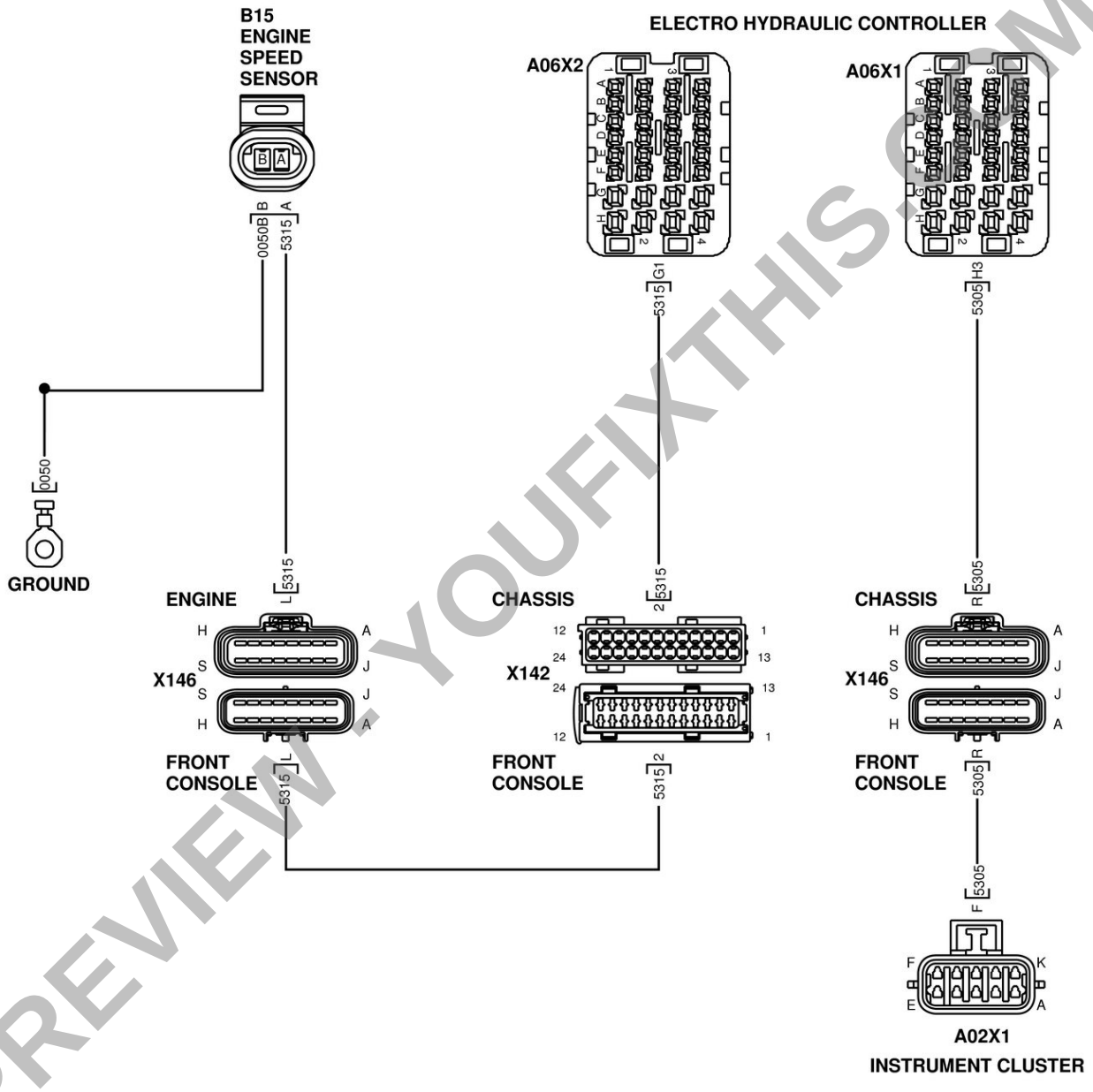
NO: No or low voltage on terminal A.GO TO 3.

NO: No or low voltage on terminal B. Replace fuse F20. Fuse fails repeatedly. Repair circuit 6502 as necessary.GO TO 2.

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Engine Speed Sensor Diagnostic Wiring Diagram (Cab)



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(1) Address Description

Action:

⚠ CAUTION:

Ensure area around vehicle is clear of obstacles and people.

1. Turn key switch to RUN position (engine ON).
2. Access PTR Address 008.
3. Select first gear and range “A”.
4. Select forward position.
5. Drive vehicle.
6. One of the four digits (XXXX) represents one component:

→NOTE: Use S14 Forward Neutral Reverse (FNR) Switch and S23 High/Low Shifter Switch to view the below mentioned commands.

Item	Measurement	Specification
PTR Address 008		
Reverse, Low, High, and Trans Enable Relay Driver Command	Reverse Solenoid Command OFF (de-energized)	XXX0
	Reverse Solenoid Command ON (energized)	XXX1
	Low Solenoid Command OFF (de-energized)	XX0X
	Low Solenoid Command ON (energized)	XX1X
	High Solenoid Command OFF (de-energized)	X0XX
	High Solenoid Command ON (energized)	X1XX
	Trans Enable Relay Command OFF (de-energized)	0XXX
	Trans Enable Relay Command ON (energized)	1XXX

Result:

YES: Return to diagnosis.

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PTR—Power Shuttle Control Circuit Test

Test Procedure

→NOTE:

Required tools:

1. **JDG1478 —Digital Multimeter**
2. **JDG10466 —Flex Probe Kit**

→NOTE:

See Optional Infinitely Variable Shuttle Control Diagnostic Wiring Diagram (Cab) and Optional Infinitely Variable Shuttle Control Diagnostic Wiring Diagram (OOS)

→NOTE:

Unless instructed otherwise, use a chassis ground point for voltage checks.

(1) Operational Check

Action:

Perform PTR 011 — Power Shuttle Input Voltage .

Result:

YES: Diagnosis complete.

NO:GO TO 2.

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(3) Operational Check

Action:

1. Place gearshift lever in PARK position.
2. Access PTR Address 080 . The display should read:**080 00**
3. Press the set/save button to change the value displayed. The value will then begin to flash, indicating that the value may now be changed.
4. Using the number pad on the performance monitor, key in the desired value.Change address 080 as follows:**080 10** —Forward Solenoid Commanded on
5. Press the set/save button to save the changed value. The value will then stop flashing and the PTR will command the valves to the desired position.
6. Verify that the current to the solenoid is within the following specification:

Item	Measurement	Specification
Forward Solenoid		
Measured Current	Forward Solenoid Energized	1.0—1.5 Amps

Result:

YES: Return to diagnosis in progress.

NO: Current display on multimeter does not meet specification. GO TO 4.

(4) Coil Resistance Check

Action:

Use a JT05791 —Digital Multimeter to test solenoid coil resistance across terminals A and B of forward solenoid connector according to the specification below:

Item	Measurement	Specification
Forward Solenoid		
Resistance Across Coil	Ohms	12.0—18.0

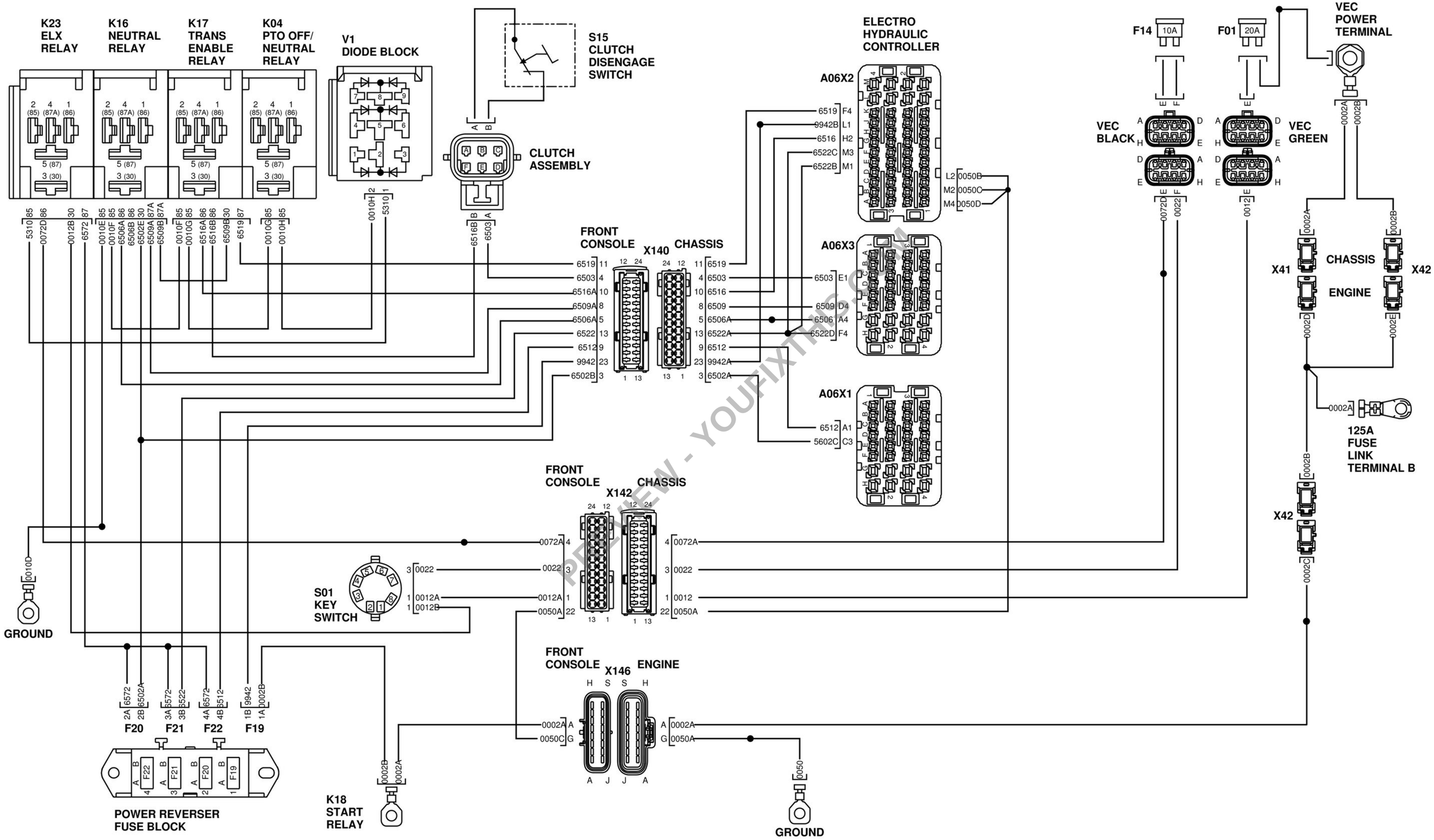
Result:

YES: Repair circuit(s) 6517 and/or 0010 as needed. GO TO 3.

NO: Replace solenoid. GO TO 3.

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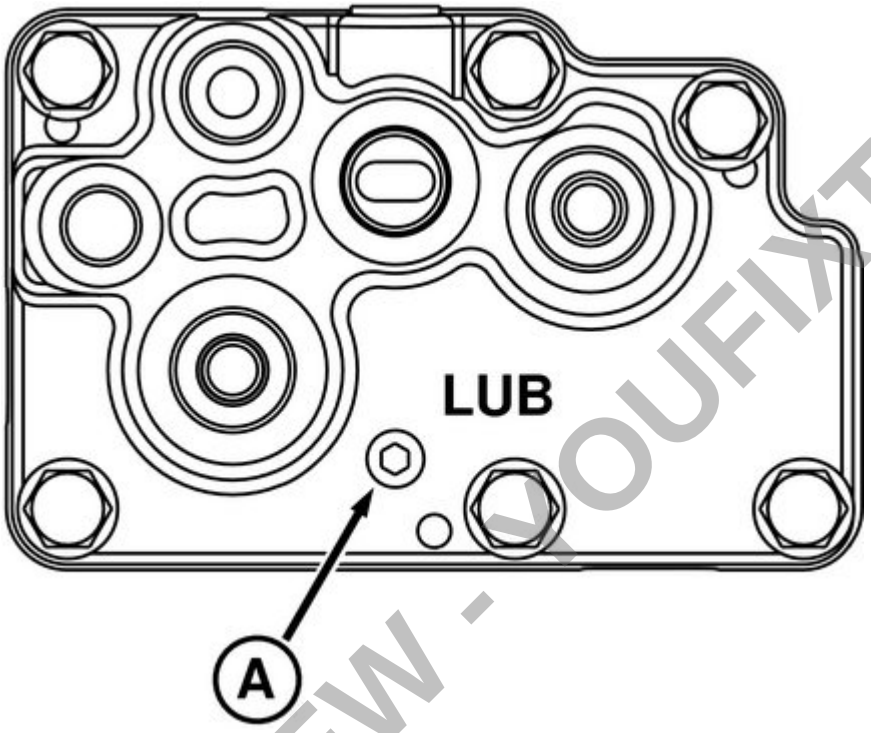
B Lubrication Pressure Test Port
C Reverse Pressure Test Port
D PR Pump Pressure Test Port
E Forward Pressure Test Port

Result:

YES: Return to diagnosis in process.

(3) Junction Block Test Port Location

Action:



Lubrication Pressure Test Port

LEGEND:
A Lubrication Pressure Test Port

Result:

YES: Return to diagnosis in process.

(4) PR Control Valve Test Connections

Action:

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I PTO Drive Shaft
J PTO Clutch Assembly

Pushing the PTO engagement lever forward causes PTO clutch armshaft (F) to rotate and force PTO clutch release bearing (G) against PTO clutch release fingers (D). As the clutch release fingers are forced inward, pressure plate (C) moves forward against PTO clutch disk (B), clamping the PTO clutch disk between pressure plate (C) and flywheel (A).

This causes the PTO clutch disk to rotate with the flywheel. Because the PTO clutch disk is splined to the PTO drive shaft (I), power is transmitted from the PTO clutch disk to the PTO drive shaft and on to the rear PTO shaft.

Torsional damper (H) is connected directly to the flywheel. The torsional damper is splined to traction drive shaft (E); thus the traction drive shaft turns whenever the engine is running.

PR General Information

The PR clutch is a pair of hydraulically actuated wet disk clutch packs contained in a single housing within the transmission clutch housing. The PR allows for shifting between forward, neutral and reverse without the use of the clutch pedal. The PR clutch packs are hydraulically engaged and mechanically disengaged by use of spring pressure. The PR control valve supplies pressurized oil to the PR clutch. The PR control valve receives pressurized oil from the PR pump which is driven by the traction drive shaft within the clutch housing. An external tube between the right-side transmission housing and clutch housing provides oil supply to the PR pump. The PR control valve consists of a pressure relief valve, lubrication relief valve, forward solenoid valve, reverse solenoid valve, enable proportional valve and lubrication shuttle valve. The PR valve supplies hydraulic oil pressure to the PR for engagement into forward or reverse when commanded by the electro-hydraulic controller. It also supplies oil to the PR clutch for cooling and lubrication when operating in forward or reverse.

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Trans-Axle Hydraulic Schematic (Without EH Hi/Lo)

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Group 25 - Schematics and Diagrams

Drive Systems Component Location Listing

- Schematics and Diagrams - Drive Systems
- Final Drive Components
- Hi-Crop Final Drive Components
- Hi-Crop Final Drive Components (April 2013)
- Rear PTO Components
- Rear 540/540E PTO Components
- Park Brake Components (Synchronized Transmission)
- Park Pawl Components (PowrReverser Transmission

Schematics and Diagrams - Drive Systems

→NOTE:

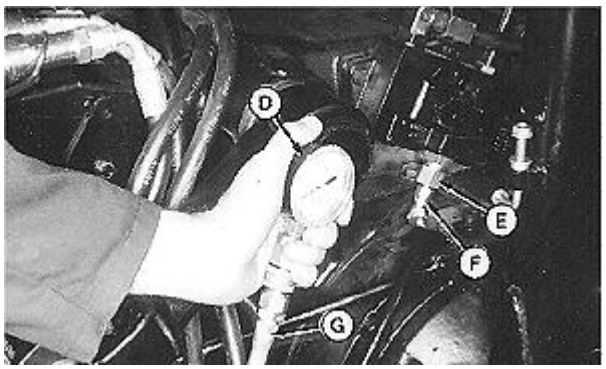
For Synchronized Transmissions, refer the relevant component technical manual Drive Train PY0970, PY0321, PY0311, PY0110, PY0992, PY0735, PY0736, PY0323, PY10196, PY10960, PY10962 and PY10963

For PowrReverser Transmissions, refer the relevant component technical manual PowrReverser™ Transmission - John Deere™ Pune Works (Sr. No. PY1068XXXXXXX, LV12363, LV12364, PY10953, LV12781 and PY10952)

Final Drive Components

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Main Relief Valve Test Connections—Without SCV

LEGEND:

A	End Plate
B	Power-Beyond Plug
C	Pipe Threads
D	JT05473 Gauge
E	JT03469A Adapter
F	JT05483 Adapter
G	JT03364 Hose with Coupler

[1] - Remove power-beyond plug (B) from end plate (A) and install 3/8 in. pipe plug in threads (C) located in passage.

[2] - Install adapter (E) into end plate.

[3] - Assemble gauge (D), hose (G), and adapter (F).

[4] - Connect test equipment to adapter (E).

Result:

YES: Return to diagnosis in process.

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Slide LVC2212

LEGEND:

A	Pilot Chamber
B	Passage
C	Counterbored Passage
D	Passage
E	Neutral Flow Passages
F	Rockshaft Valve Housing
G	Sump Passage
H	High Flow Regulator Valve
I	Inlet Port
J	Passage
K	Front of Machine
L	Lowering Valve
M	Passage
N	Lowering Valve Spring
O	Passage
P	Sump Passages
Q	Raise Valve
R	Raise Poppet
S	Unregulated Low Pressure Flow
T	Regulated Low Pressure Flow
U	Return Oil
V	Pilot Oil
W	Trapped Oil

FUNCTION:
Controls oil flow to the rockshaft cylinder.

MAJOR COMPONENTS:

- Rockshaft Valve Housing
- Rockshaft Valve

THEORY OF OPERATION:

With the rockshaft control valve in the neutral position, pressure from the lowering spring (N) keeps the lowering valve (L) closed while applying light pressure to the raise valve (Q). Raise valve position allows the counterbored passage (C) to align with passage (O). Pilot pressure in the pilot chamber (A) vents to the sump, causing raise poppet (R) to open and route pump flow from passage (D) to sump through the neutral flow passages (E). Passage (M) connects to the cylinder side of the raise check valve and is blocked by the lowering valve (L) to maintain cylinder position.

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49 Port T (Return-to-Tank)
50 Pressure Return
51 Mid Mount Valve II with Regeneration
52 Mid Mount Valve II Load Check Valve
53 Mid Mount Valve I with Float
54 Mid Mount Valve I Load Check Valve
55 Pressure In
56 Mid Mount Valve Extend Ports
57 Mid Mount Valve Retract Ports
58 Mid Mount Valve Coupler Assembly

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(31) Possible Causes for Poor Cooling Are:

Action:

[1] - Evaporator freeze-up.

- Temperature controls do not blend heat. Check temperature control cables, A/C temperature control switch and coolant shut-off valve for operation and proper adjustment.
- A/C temperature control switch stuck closed. Check switch opening limits as described in step 34.

[2] - System is contaminated with a mixture of nitrogen, air, two different refrigerants, or moisture in the system. Do number 3 of this step. Recover refrigerant, flush system, replace receiver-dryer, purge system with dry nitrogen, evacuate, and recharge the system.

Number	Name	Use
• N/A (us)	GENESOLV 2004 ™	Flush air conditioning system.

[3] - Compressor efficiency is low. Perform volumetric efficiency test as described in Repair Technical Manual Section 95. (See Test Volumetric Efficiency of Compressor in Repair Technical Manual Section 95, Group 10)

- If compressor efficiency is normal, poor cooling is a result of conditions in number 2 above.
- If compressor efficiency is not normal, replace the compressor.

Result:

YES: After system/component is repaired, GO TO 16 .

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