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Machinery Runaway

Avoid possible injury or death from machinery runaway.

Do not start engine by shorting across starter terminals. Machine will start in gear if normal circuitry is bypassed.

NEVER start engine while standing on ground. Start engine only from operator’s seat, with transmission in neutral or park.

Park Machine Safely



Remove the Key

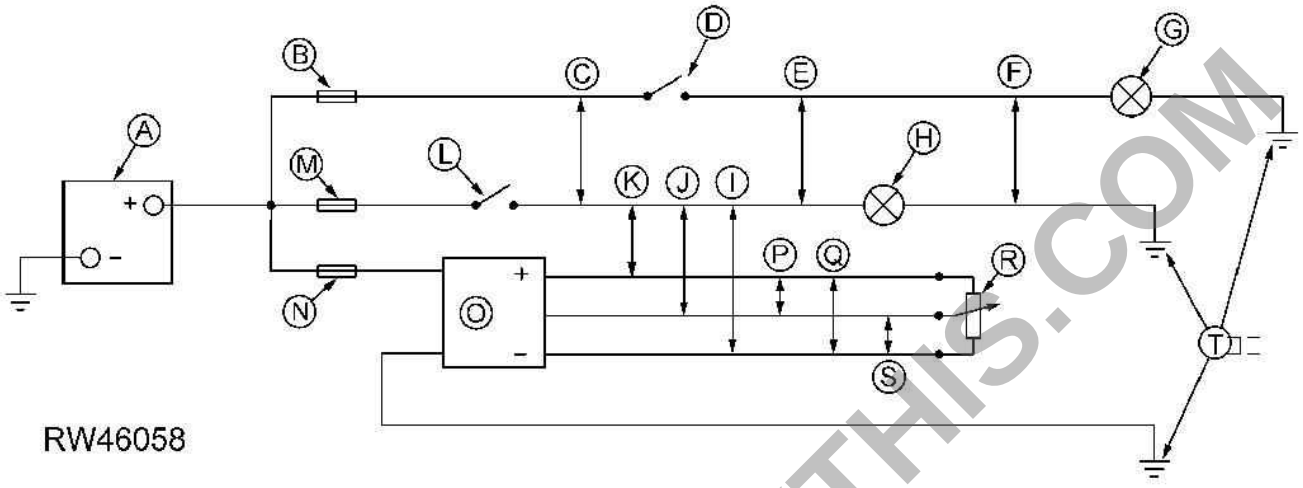
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→NOTE: In the example, the circuit is grounded between (D) and (E) at (F).

If there is no continuity, check the component for shorts and grounds.

4. Perform an operational check-out on the component after completing the repair.



Shorted Circuit

LEGEND:

A	Battery
B	Fuse F1
C	Voltage-to-Voltage Short
D	Switch S1
E	Voltage-to-Voltage Short
F	Voltage-to-Ground Short
G	Lamp E1 (Load)
H	Lamp E2 (Load)
I	Voltage-to-Sensor Ground Short
J	Voltage-to-Sensor Signal Short
K	Voltage-to-Sensor Voltage Short
L	Switch S2
M	Fuse F2
N	Fuse F3
O	Control Unit
P	Sensor Voltage-to-Signal Short
Q	Sensor Voltage-to-Ground Short
R	Sensor
S	Sensor Signal-to-Ground Short
T	Ground

Shorted Circuit

Machines equipped with several electronic control devices contain wiring harnesses that can become shorted by one of the following ways shown above.

1. Battery wire from fuse F1 (B) is shorted at (C) to another battery wire after switch S2

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CCU 001883.00- Rear PTO Overspeed

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Code caused by: PTO shaft speed over 540 or 1000 limits. PTO shuts OFF if shaft speed more than 17% fast for 2 seconds. PTO shuts OFF immediately if shaft speed more than 30% fast.

Code Diagnosis

Control Unit Response: Function Disabled (OFF)

(1) Operational Check

Action:

Perform CCU 005 — Rear PTO Speed Signal Status and CCU 058 — Rear PTO Speed .

Result:

YES:GO TO 2.

NO: Perform Rear EH PTO Speed Sensor Circuit Test for PR transmissions.GO TO 2.

(2) Verify Code

Action:

1. Perform Recall, Record, and Clear Codes for this control unit.
2. Start vehicle.
3. Operate PTO.
4. Check for code return.
5. If problem is intermittent, repeat check until code returns.

Result:

YES: Code does not return. Diagnosis complete.

NO: Code returns.Perform Rear EH PTO Speed Sensor Circuit Test for PR transmissions

NO: Operator reports continued problems. Perform Electrohydraulic Control (EHC) Unit (CCU and PTR) Test .

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(3) Additional Checks and Intermittent Failure Evaluation

Action:

1. Perform Troubleshooting Unresolved Electrical/Electronic Problems in section 210.
2. If needed, perform PTR - Control Unit Beep Mode Test With Speed Sensors in section 245.

Result:

YES:GO TO 1.

NO: Problem identified. Repair as needed.GO TO 1.

NO: Problem not identified.Replace control unit. Perform setups and calibrations as required.

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Miscellaneous Electrical Problems

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Information for diagnosing general electrical problems.

General Information:

- General References - Summary of References in section 210.

Electrical Information:

- SE3- Accessory Power, SE4- Horn in section 240.
- SE10 - Power Source, SE11B - EEC Trailer Interfaces in section 240.
- SE12 - Power Outlet And Lighter, SE13 - Heater, SE14 - Air Conditioning in section 240.
- SE15 - Windshield Wiper, SE16 - Dome Light/ Door Switch/ Radio in section 240.
- SE18 - Seat Switch, Backup Alarm And Wheel Speed Sensor, SE19 - ELX Relay And Fuses(PR Only), SE20 - EH MFWD (PR Only), SE21 - Brake Switch in section 240.

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General Engine Specifications

→NOTE:

The 5083E Limited and 5093E Limited tractors use a Stage IIIa / Tier 3 engine.

Stage IIIa

5083E Limited—4.5L Engine

Engine Model	Horsepower	Pump Style	Base Engine CTM	Fuel System CTM
4045HP058	61.5 kW (82 hp)	Distributor-type Injection Pump	PowerTech™ 4.5L & 6.8L Diesel Engines Base Engine	4.5L & 6.8L Diesel Engines Mechanical Fuel Systems

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Starter Circuit Test

Test Procedure

→NOTE:

Required tools:

1. **JT05791 — Digital Multimeter**
2. **JDG10466 — Flex Probe Kit**

(1) Starter Check

Action:

→NOTE:

For schematic, see SE1- Starting Motor, Charging Circuit, Starting Aid And Fuel Preheater, SE2B- EH PTO, Neutral Start, Fuel (12/12 PR) in this section.

1. Check for voltage at terminal B of starter (M01).
2. Place Forward/Neutral/Reverse (FNR) lever in NEUTRAL.
3. Place transmission in PARK.
4. Place rear PTO lever in OFF position.
5. Turn key switch to START position.
6. Check for voltage at terminal S of starter.

Result:

YES: Repair starter as needed. Return to diagnosis.

NO: No voltage present at terminal B. Repair circuit 0002 as needed. Return to diagnosis.

NO: No voltage present at terminal S.GO TO 2.

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Action:

1. Key switch OFF.
2. Access and disconnect S35 warning light switch.
3. Place key switch in RUN position (engine OFF).
4. Check for battery voltage on terminal C of S35 warning light switch harness connector.
5. Check continuity of S35 warning light switch according to table.

S35 Warning Light Switch Continuity Table

S35 Warning Switch Continuity Table	
Switch Position	**Terminal Continuity**
OFF	No continuity between any terminal.
ON	B and C

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(2) Operational Check Continued

Action:

1. Start vehicle.
2. Place HVAC Blower Switch in LOW speed position.
3. Place A/C ON/OFF Switch in ON speed position.
4. Run vehicle for five minutes. Feel for cool air coming out of A/C vents.

Result:

YES: All checks are good. Diagnosis complete.

NO:GO TO 3.

(3) A/C ON/OFF Switch Check

Action:

→NOTE:

Refer to functional schematics to follow circuit path, making voltage and continuity checks of components and wire harness as needed to isolate the cause of the problem. Check for open circuits, high-resistance, shorts to ground and shorts to power as needed.

1. Key switch OFF.
2. Access and disconnect A/C ON/OFF Switch.
3. Key switch in RUN position (engine OFF).
4. Place HVAC Blower Switch in LOW speed position.
5. Check for battery voltage on terminal A of A/C ON/OFF Switch (circuit 2205) harness connector.
6. Place A/C ON/OFF Switch in ON position. Check continuity through switch.

Result:

YES: All checks are good.GO TO 4.

NO: No or low voltage on circuit 2205. Repair circuit 2205 as needed.GO TO 1.

NO: No continuity through S09 A/C ON/OFF Switch. Replace switch.GO TO 1.

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(4) Sensor Ground Circuit Test

Action:

1. Key switch OFF.
2. Access and disconnect instrument cluster connector.
3. Check for opens, shorts, and high resistance on circuit 0030, from terminal P of instrument cluster connector to terminal B of coolant temperature sensor (B02) connector.

Result:

YES:GO TO 1.

NO: Repair circuit 0030 as needed.GO TO 1.

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Engine Speed Sensor Circuit Test

Test Procedure

→NOTE:

Required tools:

1. **JT05791 — Digital Multimeter**

(1) Operational Check

Action:

→NOTE:

For schematic, see SE22 - EH Transmission in this section.

1. Start vehicle.
2. Access CCU Address 004 .

→NOTE: When the engine is on, the display should toggle between 0 and 1. Display may appear erratic under normal conditions.The right digit at address 004 represents the PTO speed sensor.

Verify that the display at address 004 meets the following specification:

Item	Measurement	Specification
CCU Address 004		
Engine Speed Sensor Input	Gear Tooth Present	1X
	Gear Tooth Not Present	0X

→NOTE: When engine is turned off, the display should stop toggling between 0 and 1.

Turn off the engine.

Result:

YES: Address display is within specification and operating normally. Return to diagnosis.

NO:GO TO 2.

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→NOTE:

The temperatures displayed in the above table are a scale to determine if Hydraulic Oil Temperature is being correctly reported to the Control Unit. Temperatures can vary ± 2° from the voltage displayed at address 010.

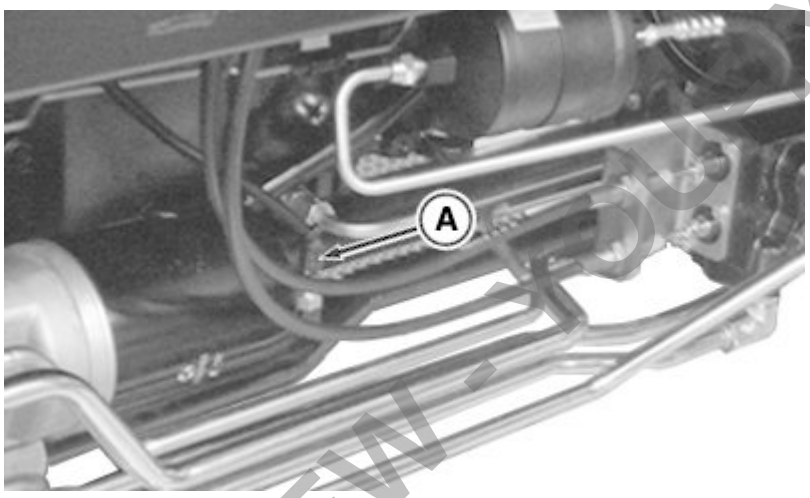
Result:

YES: Address display is within specification and operating normally. Return to diagnosis.

NO:GO TO 2.

(2) Access Component to Be Tested

Action:



Hydraulic Oil Temperature Sensor Connector

LEGEND:

A Hydraulic Oil Temperature Sensor Connector

Access and disconnect the hydraulic oil temperature sensor connector (A).

Result:

YES:GO TO 3.

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(1) Access Addresses Using Service ADVISOR™

Action:

Accessing addresses using Service ADVISOR™ with live connection to tractor:
Access addresses through ”Connections-Readings”, ”Calibrations”, and ”Interactive Tests”.

Result:

YES: Return to diagnosis.

(2) Access Addresses Using On-Board Diagnostics

Action:

→NOTE:

Diagnostic addresses can be retrieved via Customer mode or Technician mode. Some addresses are available only in technician mode.

1. Place key switch in RUN position (engine OFF).
2. Press and hold S36 Roll Mode Switch for 5 seconds to display first control unit screen.
3. Stored Diagnostic Trouble Codes (DTC) appear on A01 Instrument Cluster Control (ICC) LCD. If codes appear, record the code information.
4. Use S07 Turn Signal Switch to enter password**Left, Right, Right, Right, Left, Right** for Technician Level Access.
5. Use Right Turn Signal to scroll and select CCU, ICC or PTR.
6. Press and release the Roll Mode Switch to enter CCU, ICC or PTR address space.
7. Use repeated cycles of Right Turn Signal to scroll to address.
8. Press and release Roll Mode Switch to enable data entry.
9. Press and release Roll Mode Switch repeatedly to select correct digit.
10. Use Right Turn Signal to scroll to appropriate value for tractor.
11. Press and release Roll Mode Switch to save data entry.
12. Press and hold the Roll Mode Switch again for 5 seconds or until diagnostics are exited.

Result:

YES: Return to diagnosis.

(3) Access Addresses Using Performance Monitor

Action:

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Result:

YES:CAN circuits are OK. Return to diagnosis.

NO:CAN Hi result approximately 2X CAN Lo result. Loss of CAN Lo between active and passive terminators.See Electrohydraulic Control (EHC) Unit and Service ADVISOR™ Functional Schematic in section 240 to diagnose a circuit malfunction. Repair circuit.GO TO 1.

NO:CAN Lo result approximately 2X CAN Hi result. Loss of CAN Hi between active and passive terminators.See Electrohydraulic Control (EHC) Unit and Service ADVISOR™ Functional Schematic in section 240 to diagnose a circuit malfunction. Repair circuit.GO TO 1.

NO:GO TO 4.

(4) Voltages Within Range But Out of Specification

Action:

Perform the following until voltages are within specification.

1. Check voltages at Service ADVISOR™ Connector after each of the next steps. Turn key switch to the OFF position when removing fuses or disconnecting control units and to the RUN position (engine OFF) when measuring voltages.
   - Remove fuses to all OPTIONAL control units and repeat voltage checks.
   - Disconnect all OPTIONAL control units and repeat voltage checks.
   - Remove fuses one at a time to each of the STANDARD control units, checking voltage each time.
   - Disconnect all STANDARD control units one at a time and repeat voltage checks.

   Results:
   If removing fuse to any control unit causes voltage to come within specification, check CAN Hi and CAN Lo, power and ground circuits to control unit. Replace control unit if circuits check OK.
   If removing fuse did not cause voltage to return to normal but disconnecting control unit resulted in voltage within specification, replace control unit.
2. Replace active and passive terminators with known good components. Check voltages.
3. With key switch in the OFF position and both terminators removed, perform continuity checks on all circuits from the active terminator to the passive terminator. Check each circuit for possible short to other circuits and to ground.

Result:

YES: Return to diagnosis.

NO: Repair circuit.
GO TO 1.

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Wheel Speed Sensor Theory of Operation



Wheel Speed Sensor

LEGEND:

A Wheel Speed Sensor

The wheel speed sensor (B10) (A) is located on the left side of the transmission housing.

The wheel speed sensor is provided with a 12 V supply voltage via circuit 0072 and is grounded via circuit 0050.

The wheel speed sensor is a hall-effect type sensor and provides both the controller and instrument cluster with an input. The input indicates how many times per second a gear tooth passes the sensor. The wheel speed sensor's input to the controller is represented at CCU Address 004 . The actual speed is internally calculated using this input to display speed in meters per hour at CCU Address 034 .

CCU address 005 uses a two-digit display (XX). The left digit represents the wheel speed sensor. The left digit will toggle between 0 and 1 as pulses from the speed sensor are detected. The display may appear erratic under normal conditions.

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PTR 003 — PTR System Beep Mode With Speed Sensors

Status/Beep Address

→NOTE:

See Access Control Unit Addresses .

→NOTE:

Required tools:

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

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PTR 075 — PTR PowerShuttle Setup Status

Reading/Beep Address

→NOTE:

See Access Control Unit Addresses .

PTR address 075 indicates whether a B21 Power Shuttle Control is installed on the vehicle.

(1) Address Description

Action:

1. Turn key switch to RUN position (engine OFF).
2. Access PTR Address 075.
3. Digit X indicates whether a PowerShuttle potentiometer is installed:

Item	Measurement	Specification
PTR Address 075		
Power Shuttle Configuration	PowerShuttle Potentiometer Not Installed	0
	PowerShuttle Potentiometer Installed	1

→NOTE: If the vehicle does not have a PowerShuttle pot installed, then this address must be set to ″0″ to avoid reporting PowerShuttle input faults.

Result:

YES: Return to diagnosis.

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- Kinked pipes.
- Crushed hoses.
- Plugged oil cooler.
- Wrong oil viscosity.
- Internal leaks.
- Mechanical failure

[5] - Check for external oil leaks with engine stopped and again with engine running.

⚠ CAUTION:

(See Safety in the General section about oil leak checks.)

Cycle all hydraulic control levers, pedals and switches with engine running at slow idle.

Possible Causes:

- Broken pipes, hoses or loose connections.
- Leaking O-rings or seals.
- Cracked housing.

After performing checks return to diagnosis.

Transmission Preliminary Checks (PY) (010000-)

See Component Technical Manual (PowrReverser ™ Transmission - John Deere™ Pune Works (Sr. No. PY1068XXXXXXX, LV12363, LV12364, PY10953, LV12781 and PY10952) for PR Transmission Preliminary Checks.

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PowrReverser™ Clutch Operation (PY) (010000-)

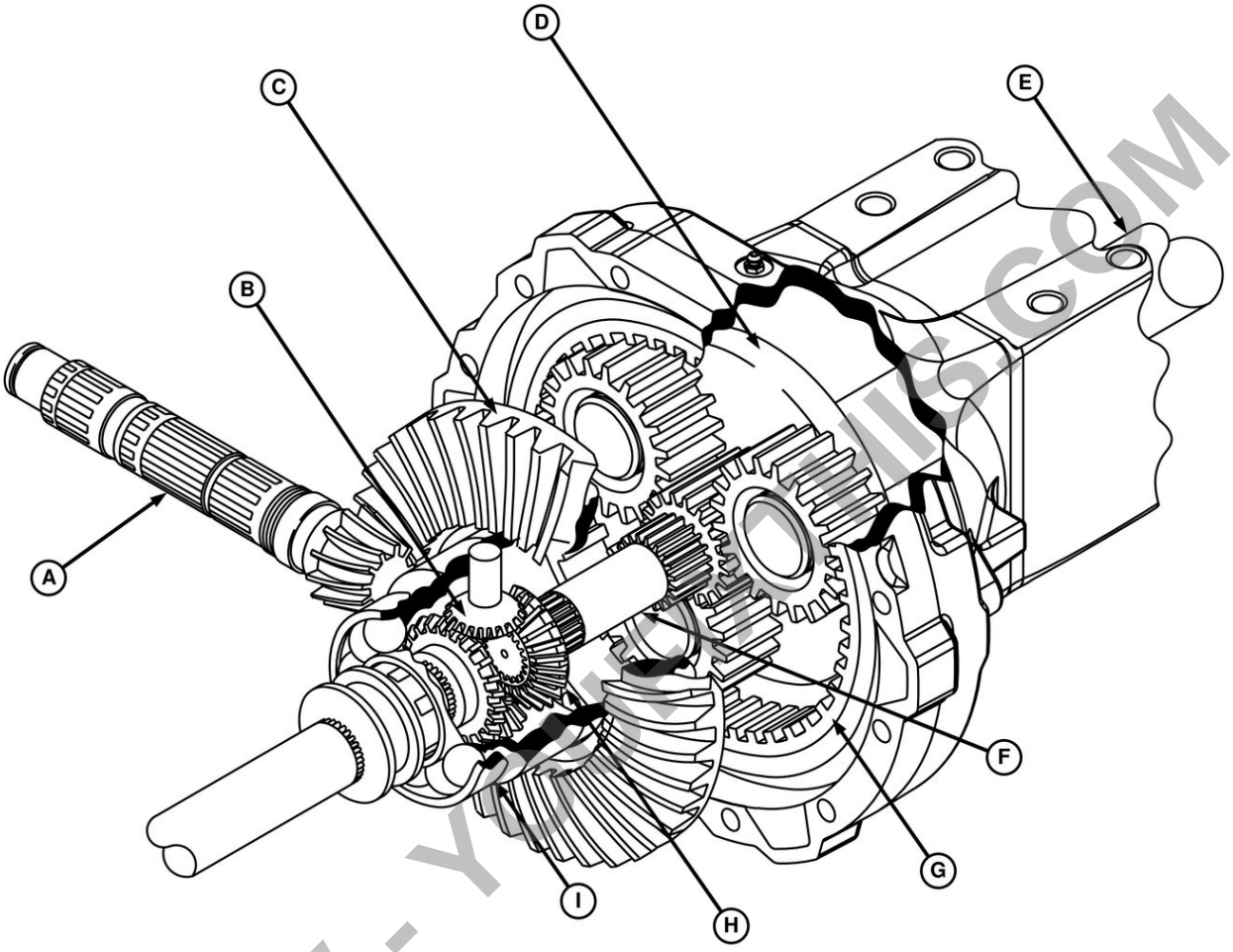
See Component Technical Manual (PowrReverser ™ Transmission - John Deere™ Pune Works (Sr. No. PY1068XXXXXXX, LV12363, LV12364, PY10953, LV12781 and PY10952) for the following PowrReverser™ Clutch Operations:

- PR Clutch Operation in Forward (Without EH Hi/Lo)
- PR Clutch Operation in Forward High
- PR Clutch Operation in Forward Low
- PR Clutch Operation in Reverse (Without EH Hi/Lo)
- PR Clutch Operation in Reverse (With EH Hi/Lo)

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Differential Power Flow (PM) (-009999)



Differential Power Flow

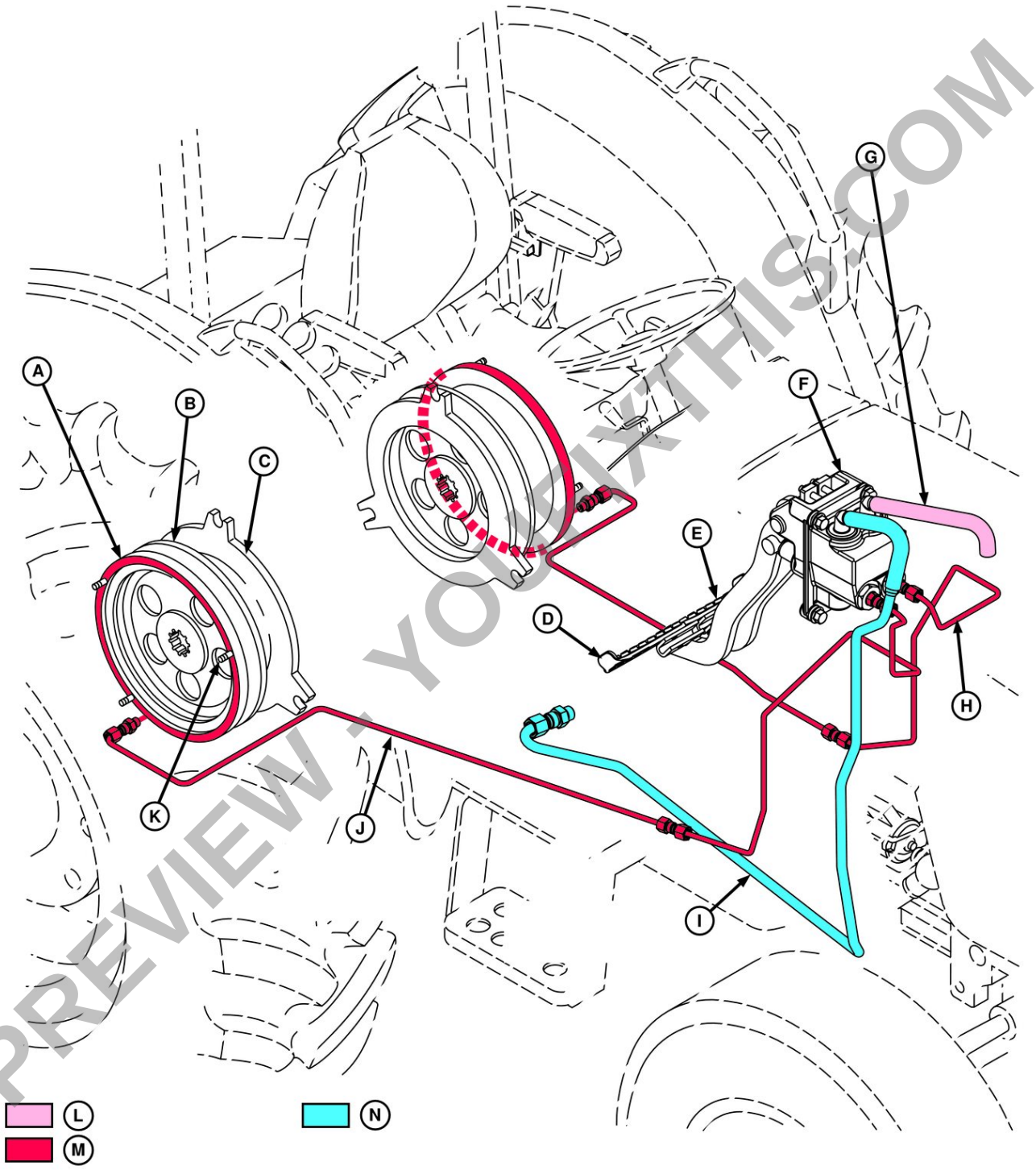
LEGEND:

A	Differential Drive Shaft
B	Bevel Pinion
C	Differential Ring Gear
D	Planetary Carrier Assembly
E	Axle Shaft
F	Final Drive Pinion Shaft
G	Final Drive Ring Gear
H	Bevel Gear
I	Differential Carrier

Power from the differential drive shaft (A) is transmitted through the differential assembly to

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Brake System Operation



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Brake System Operation

LEGEND:

A Piston
B Brake Disc

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→NOTE:

Required Tools:

- **DFRW213—Hydraulic Trailer Brake Test / Bleed Assembly**
- **38H1029—Tee (—4 ORFS)**
- **JT03477—Male Quick Coupler x 9/16—18 (f) ORFS**
- **JT07119—1.50 m (5 ft.) Test Hose**
- **JT05474—Gauge w/Quick Coupler, 2000 kPa (20 bar) (300 psi)**
- **JT05473—Gauge w/Quick Coupler, 35000 kPa (350 bar) (5000 psi)**
- **KJD10128—Adaptor Fitting**
- **FKM10303—Connector**

Hydraulic Trailer Brake Pilot Supply

1. Remove bleed screw (top of hydraulic trailer brakevalve) and install KJD10128 fitting with L76408 ring.Use FKM10303 connector to attach hose.

   →NOTE: Alternative method: Install 38H1029 tee between pilot supply line and HTBV, then attach JT03477 male quick coupler.

2. Connect JT07119 hose and JT05474 gauge to quick coupler.

Hydraulic Trailer Brake Supply

1. Disconnect trailer brake hose from trailer brake valve coupler (B).
2. Connect DFRW213 (hydraulic trailer brake test / bleed assembly coupler) onto trailer brake valve coupler.
3. Connect JT07119 hose and JT5473 gauge to DFRW213.

Result:

YES:GO TO 2.

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A Valve Housing
B Sump Passage
C Inlet Passages
D Return Pressure Passage
E Spool
F Retract Port
G Pressure Inlet Passage
H Load Check
I Extend Port
J System Pressure Oil
K Trapped Oil
L Return Oil
M SCV II Extend Port (Regenerative)
N SCV II Retract Port
O SCV I Retract Port
P SCV I Extend Port (Float)

The regenerative SCV is the bottom spool valve of the dual mid-mount SCV assembly. Besides the positions of neutral, extend, and retract, SCV II also has a regenerative position.

When the spool (E) moves inward to the regenerative position, inlet passages (C) are blocked, causing a pressure rise at pressure inlet passage (G). Oil flowing into pressure inlet passage (G) opens load check (H) which allows oil flow to spool. Oil flows out extend port (I) to head end of implement cylinder. Oil returning through retract port (F) from rod end of cylinder also enters extend port (I) and supplements flow passing to piston end of cylinder, causing faster action of cylinder.

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(3) Incorrect Engine Coolant Circulation

Action:

Check following possible reasons in order:

1. Heater valve is installed in incorrect flow direction.
2. Standard A/C heater valve control cable is out of adjustment and does not shut off valve. See relevant repair manual for procedure.
3. Heater valve is leaking internally in OFF position.

Result:

YES: Repair as needed.GO TO 1.

(4) Excessive Air Leakage From Cab

Action:

Check for excessive air leakage inside cab at following locations:

- Deteriorated cab door and window seals.
- Improperly sealed openings for electrical harnesses.
- Poor fit of air duct to evaporator housing and circulation blower motor.

Result:

YES: No air leaks.GO TO 5.

NO: Air leaks indicated. Repair as needed.GO TO 1.

(5) Possible Causes for Poor Cooling

Action:

→NOTE:

If compressor clutch was earlier wired directly to battery voltage to keep compressor operating, reconnect compressor.

1. Lack of cooling can be caused by following components, if components are dirty or damaged.
    - Condenser, oil cooler or radiator
    - Recirculating filter
    - Fan air duct and fan cages

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