John Deere Agriculture

5055E, 5065E & 5075E Tractors Diagnostic Technical Manual (North America Edition)

DIAGNOSIS AND TESTS SERVICE MANUAL

5055E, 5065E, 5075E

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Table of contents

FOREWORD
Section 210 - GENERAL
Group 05 - Safety
Group 10 - General Specifications
Group 15 - General References
Section 211 - DIAGNOSTIC TROUBLE CODES
Group CCU - CCU Code Diagnostics
Group ICC - ICC Code Diagnostics
Group PTR - PTR Code Diagnostics
Section 212 - OBSERVABLE SYMPTOMS
Group 20 - Engines
Group 30 - Fuel and Air
Group 40 - Electrical
Group 45 - Control Units
Group 55 - PowrReverser™ Transmissions
Group 56 - Drive Systems
Group 60 - Steering and Brakes
Group 70 - Hydraulics
Group 90 - Operator Station
Section 213 - SYSTEM DIAGNOSIS
Group 40 - Starting, Charging and Start Aid
Group 55 - PowrReverser™ Transmission
Group 56A - Differential Lock
Group 56B - MFWD
Group 56C - PTO
Group 60A - Steering
Group 60B - Rear Brakes
Group 70A - Rear SCV System Diagnosis
Group 70B - Mid-Mount Control Valve System Diagnosis
Group 70C - Rear Hitch System Diagnosis
Group 90 - Air Conditioning
Section 220 - ENGINES
Group 05 - General Information
Group 15 - Tests and Adjustments
Group 20 - Engine System Theory of Operation
Section 230 - FUEL AND AIR
Group 05 - General Information
Group 20 - Fuel and Air Theory of Operation
Section 240 - ELECTRICAL SYSTEM
Group 05 - Fuse/Relay Block
Group 15 - Tests and Adjustments
Group 20 - Theory of Operation
Group 25A - Functional Schematics (Cab)
Group 25B - Functional Schematics (OOS)
Group 35 - Connector Information
Section 245 - CONTROL UNITS
Group 05 - General References
Group 15 - Tests and Adjustments
Group CCU - CCU

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Group 05 - Safety

Recognize Safety Information



Safety-alert symbol

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

Follow recommended precautions and safe operating practices.

Understand Signal Words







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(4) System Checks

Action:

Perform Hydraulic System Preliminary Checks .

Result:

YES:GO TO 5.

NO: Problem identified. Repair as needed.GO TO 2.

(5) Electrical Circuit Checks

Action:

Perform CCU - Hydraulic Oil Temperature Sensor Circuit Test .

Result:

YES:GO TO 6.

NO: Problem identified. Repair as needed.GO TO 2.

(6) Additional Checks and Intermittent Failure Evaluation

Action:

Perform Troubleshooting Unresolved Problems .

If applicable, perform CCU - Beep Mode Test With Speed Sensors .

Result:

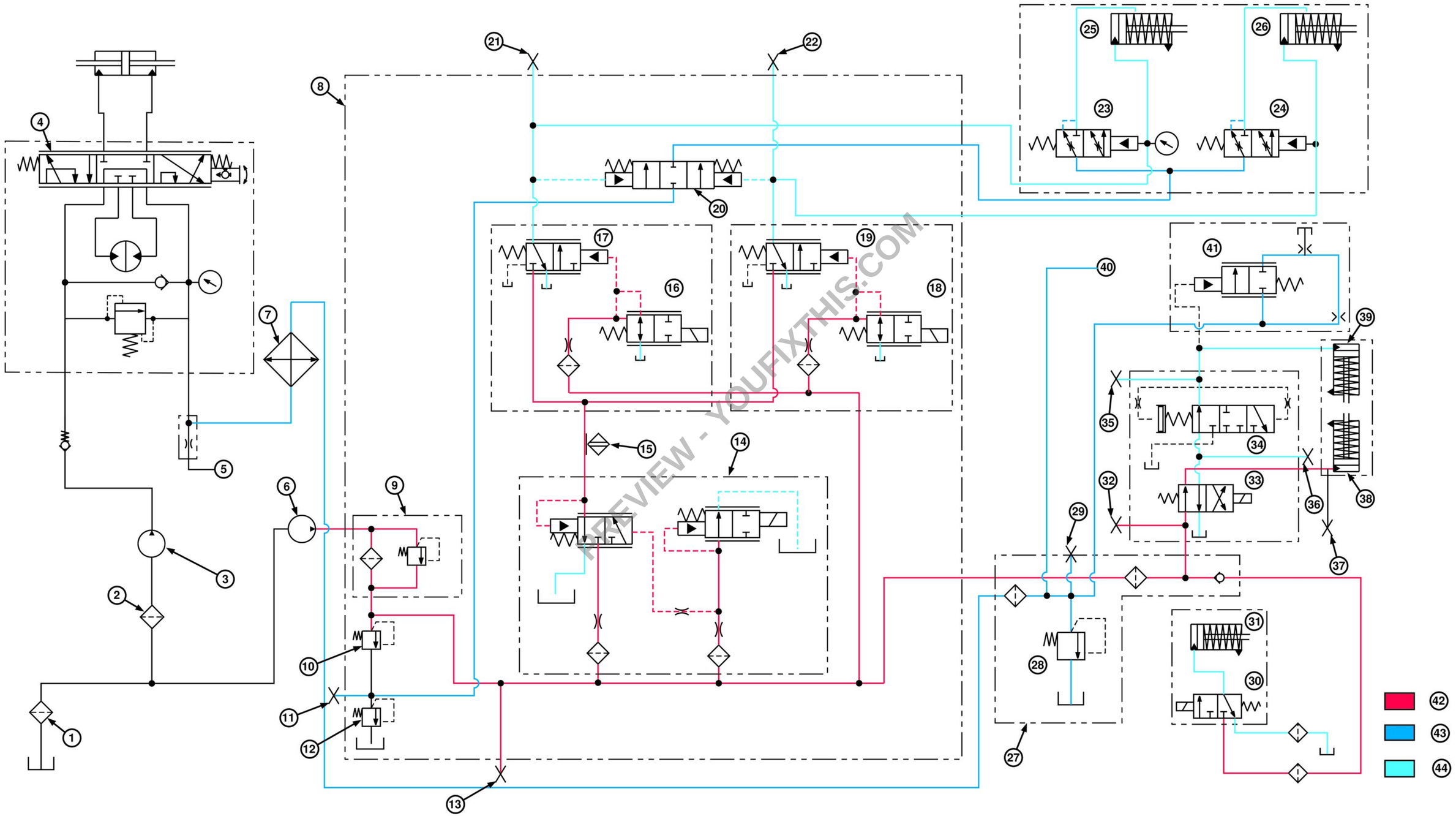
YES:GO TO 2.

NO: Problem identified. Repair as needed.GO TO 2.

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

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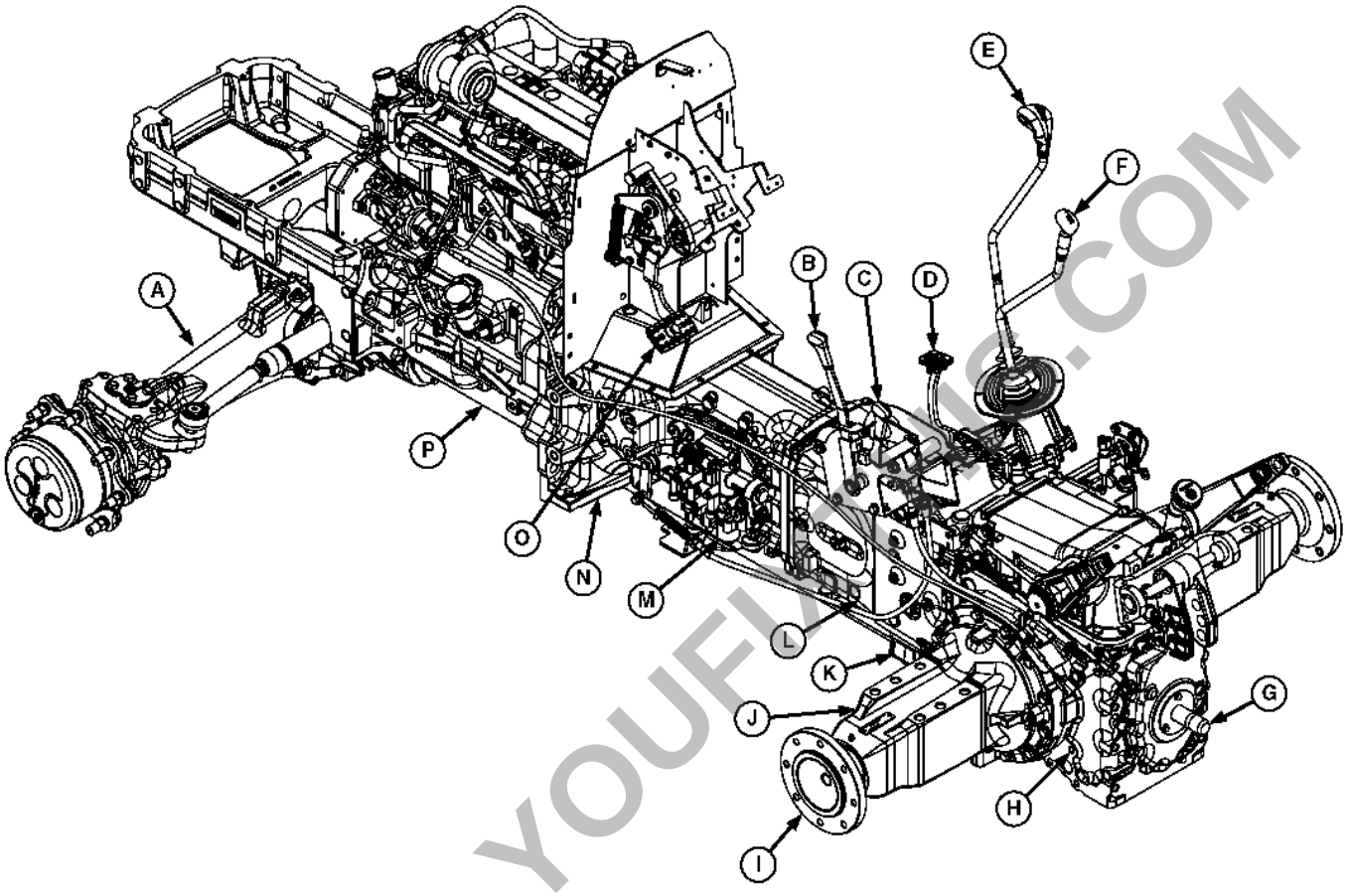
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Power Train Components



Power Train Components—Isolated Open Operator Station and Cab Tractors

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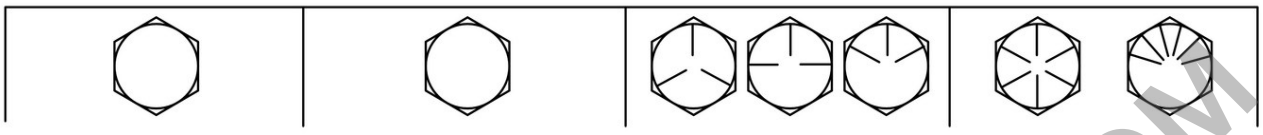
- A MFWD Axle (optional)
- B PTO Engagement Lever
- C EPTO Lever
- D Differential Lock Pedal
- E Range Shift Lever
- F Gearshift Lever
- G PTO Output Shaft
- H Differential Housing
- I Axle
- J Final Drive
- K MFWD Drop Gearbox (optional)
- L Transmission Housing
- M PowrReverser ™ Control Valve
- N Clutch Housing
- O Clutch Pedal
- P MFWD Drive Shaft

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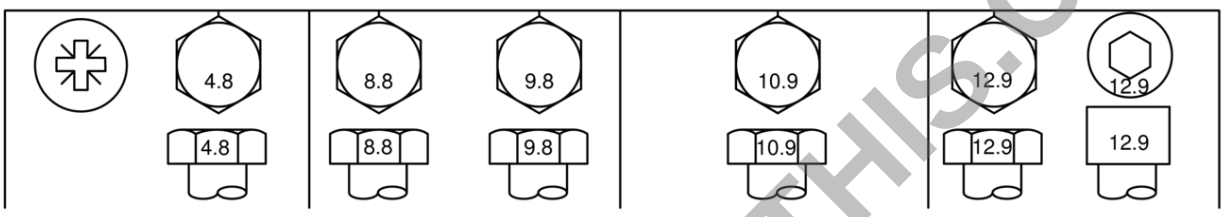
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Group 15 - General References

Bolt and Cap Screw Torque Values



Inch Torque Values



Metric Torque Values

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Group CCU - CCU Code Diagnostics

CCU- Non-Tractor CCU Codes

17

Non-Tractor CCU Codes

→NOTE:

These are engine specific codes. See relevant engine CTM for diagnostic procedure.

Non-Tractor- CCU Code List

Non-Tractor CCU Code List	
CCU 000100.01	Engine Oil Pressure Signal Extremely Low
CCU 000100.04	Engine Oil Pressure Signal Out of Range Low
CCU 000110.00	Engine Coolant Temperature Signal Extremely High
CCU 000110.03	Engine Coolant Temperature Signal Out of Range High
CCU 000110.04	Engine Coolant Temperature Signal Out of Range Low
CCU 000110.16	Engine Coolant Temperature Signal Moderately High

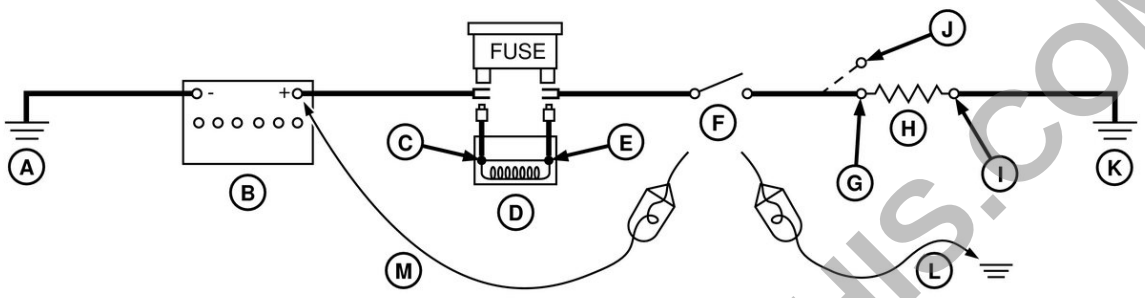
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Seven-Step Electrical Procedure

→NOTE:

A probe light or multimeter may be used when following this procedure.



Electrical Test Procedure

LEGEND:

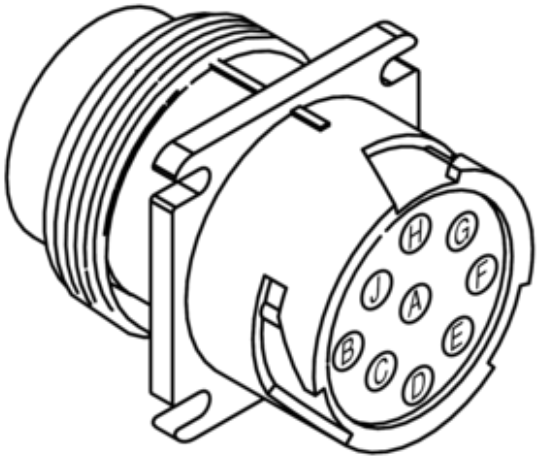
- A Battery Ground
- B Battery
- C Circuit Breaker Battery Side
- D DFRW26 Fuse Test Lead
- E Circuit Breaker Load Side
- F Switch
- G Component Battery Lead
- H Load
- I Component Ground Lead
- J Component Battery Lead Disconnected
- K Ground
- L Voltage Check
- M Ground Check

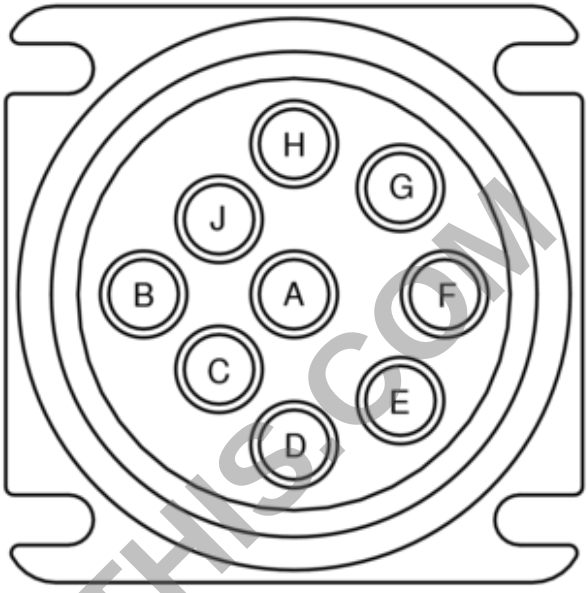
Seven Step Electrical Procedure

Step	Sequence	Results [a] Probe—Multimeter Conditions
1-Switch On [b]	Check circuit breaker battery side (C) for battery voltage. [c]	Bright Light—Battery voltage. Normal. GO TO 2.
		Dim Light—Low voltage. Repair high resistance.
		No Light—No voltage. Repair open circuit from battery.
2-Switch Off	Check circuit breaker load side (E) for battery voltage.	Bright Light—Battery voltage. Normal. GO TO 4.
		Dim Light—Low voltage. Replace circuit breaker.

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Service ADVISOR Pinouts

LEGEND:

A	Circuit 050—Ground
B	Circuit 942—12 V Battery
C	Circuit 914—CAN Hi
D	Circuit 915—CAN Lo
E	Not Used
F	Not Used
G	Not Used
H	Not Used
J	Not Used

Turn key switch to RUN position (engine off).

2. Use a multimeter to measure CAN Hi and CAN Lo voltages at the Service ADVISOR ™ Connector.

Item	Measurement	Specification
CAN Hi and CAN Lo Voltages		
CAN Hi Circuit 914	(A to C)	2.50—3.50 V
CAN Lo Circuit 915	(A to D)	1.50—2.49 V

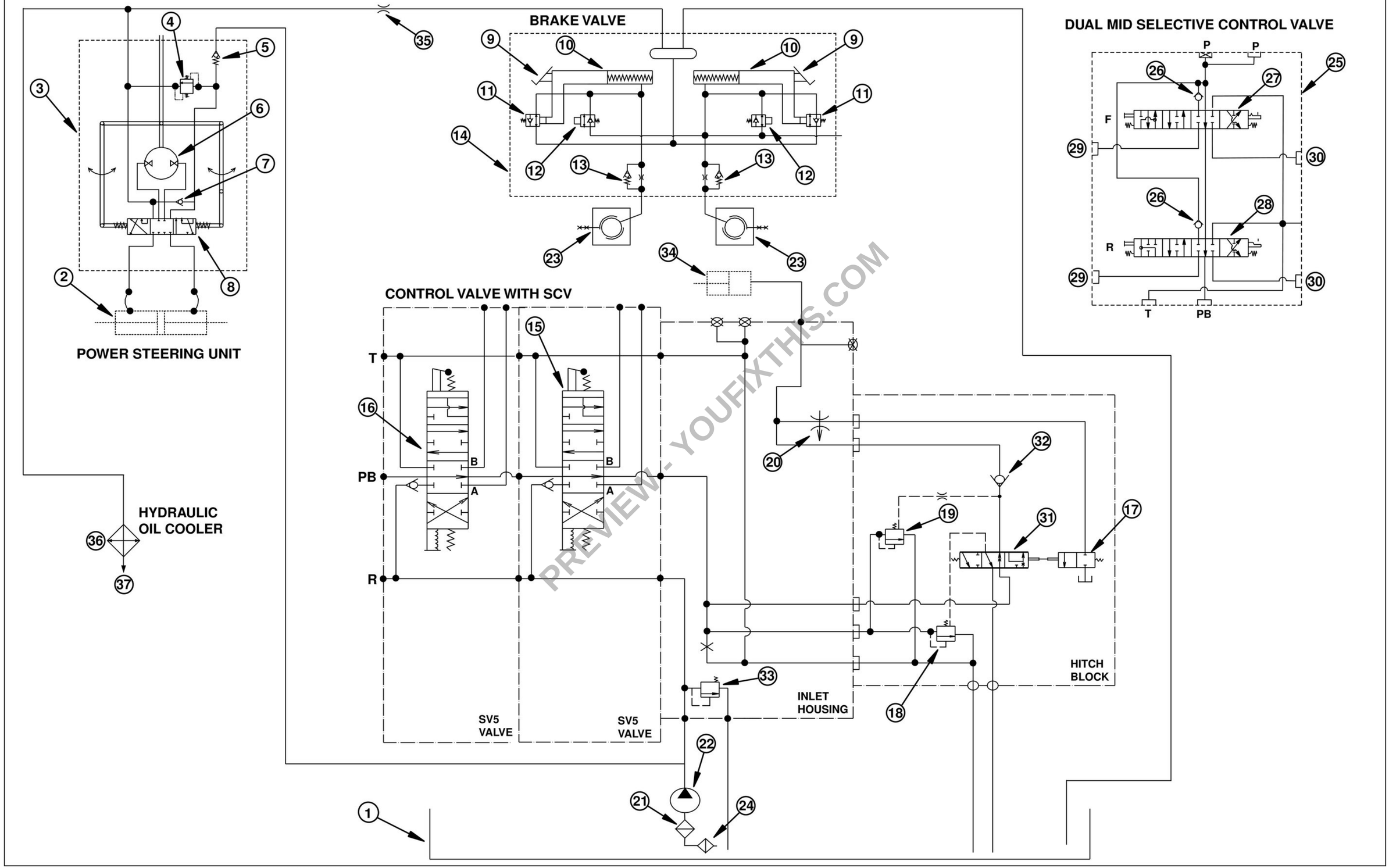
Result:

YES:GO TO 2.

NO: Check Service ADVISOR/Performance Monitor and Electro-Hydraulic Control Unit

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Troubleshooting Unresolved Problems

→NOTE:

This reference is a guideline for troubleshooting problems that still exist after standard diagnostics have been performed. These problems are typically due to specific operating conditions, intermittent failures or, in rare cases, control unit failures. Depending on the situation, some or all of the following may be important.

Problems Due to Specific Operating Conditions

Review all recorded codes and consult with operator to determine operating and vehicle conditions when the problem occurs. Record details.

1. Does code/problem occur at the same time as other problems?
2. Does code/problem occur when vehicle is warm or cold?
3. Does code/problem occur during field or transport operation?
4. Does code/problem occur while performing a specific action such as shifting, turning, braking, operating certain hydraulics?
5. When did code/problem first appear? Was there any maintenance performed recently? (If yes, inspect areas of maintenance for inadvertent damage or improper installations.)

Attempt to recreate code/problem based on conditions. If possible, repeat operational, system, electrical, hydraulic or mechanical checks under these conditions.

Problems Due to Intermittent Electrical Failures

→NOTE:

Electrical intermittent failures are usually caused by harness, terminal or connector problems.

1. Inspect all connectors and terminals of related circuits.
2. Inspect mechanical linkages for interference with harnesses or connectors.
3. Inspect harnesses for missing or improperly installed clamps or bands. Loose harnesses that are allowed to move too freely or harnesses that are banded too tightly may result in worn or damaged wires.
4. Inspect mechanical linkages for proper operating condition.

Problems Due to Control Unit Failures

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General Engine Specifications

Cab and OOS

5055E —2.9 L Engine

Engine Model	Horsepower	Pump Style	Base Engine CTM	Fuel System CTM
3029T	40.45 kW (55 hp)	Direct Injection Rotary with Electric Shutoff	PowerTech 2.9L Diesel Engine Base Engine	PowerTech 2.9L Diesel Engine Mechanical Fuel System

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2. Press the set/save button to begin the calibration.

   →NOTE: If oil temperature is not within the necessary range for calibration the display will show: Oil

3. The display should read:**063: For** —Place Directional Reverser Lever in Forward Position
4. The display will then change to:**063: F** —While Calibrating the Forward Valve
5. The display will then change to:**063: nEu** —Place Directional Reverser Lever in Neutral Position
6. The display will then change to:**063: A** —Place Range Lever in A Range and then Gear Lever in First Gear
7. The display will then change to:**063: For** —Place Directional Reverser Lever in Forward Position
8. The display will then toggle between:**063: - - - -** —Forward Element Calibration Being PerformedAnd...**063: F** —Forward Element Calibration Being Performed
9. The display will then change to:**063: rEu** —Place Directional Reverser Lever in REVERSE position
10. The display will then toggle between:**063: - - - -** —Reverse Element Calibration Being PerformedAnd...**063: r** —Reverse Element Calibration Being Performed
11. The display will then change to:**063: EOC** —End of Calibration.
12. Place the directional reverser lever in NEUTRAL position.
13. Apply brakes and place the gearshift lever in PARK position.
14. Press the set/save button to store the new calibration values.
15. Access PTR Address 066 . The display should read:**066: XXX** —Forward Fill Time
16. 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.
17. Using the number pad on the performance monitor, key in the below value.Change address 066 as follows:**066: 100** —Forward Fill Time
18. Press the set/save button to save the changed value. The value will then stop flashing, indicating that the value has been saved.
19. Access PTR Address 070 . The display should read:**070: XXX** —Reverse Fill Time
20. 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.
21. Using the number pad on the performance monitor, key in the below value.Change address 070 as follows:**070: 100** —Forward Fill Time
22. Press the set/save button to save the changed value. The value will then stop flashing, indicating that the value has been saved.

Result:

YES:GO TO 12.

NO:EOC never displayed:GO TO 10.

NO:L, H, F, S, or D displayed when either the Forward F or Reverse r element was being calibrated. If one of these indicators is shown during calibration, record the element

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Battery Load Test

LEGEND:

A Tester Load Knob
B Tester Red Cable
C Tester Black Cable
D Amperage
E Voltage

1. Turn load knob (A) of tester counterclockwise to OFF.
2. Connect tester red cable (B) to battery positive post.
3. Connect tester black cable (C) to battery negative post.

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.

5. Turn load knob of tester clockwise until amperage reading (D) is equal to:
   - Cold cranking amperage rating (blue scale).OR—
   - Three times ampere hour rating (black scale).
6. Hold for 15 seconds, note voltage reading, and turn load knob of tester off.

Battery Table

RESULTS	
Battery Voltage	**Battery Condition**
9.6 volts or higher	Battery is serviceable
Below 9.6 volts	Replace battery

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Code Diagnosis 71
Operational Check 71
Verify Code 71
Code Diagnosis 72
Operational Check 72
Verify Code 72
Code Diagnosis 73
Operational Check 73
Verify Code 73
Code Diagnosis 74
Operational Check 74
Verify Code 74
Code Diagnosis 75
Operational Check 75
Verify Code 75
Code Diagnosis 76
Operational Check 76
Verify Code 76
Code Diagnosis 77
Operational Check 77
Verify Code 77
Code Diagnosis 78
Operational Check 78
Verify Code 78
Code Diagnosis 79
Operational Check 79
Verify Code 79
Code Diagnosis 80
Operational Check 80
Verify Code 80
Code Diagnosis 81
Operational Check 81
Verify Code 81

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Group 70A - Rear SCV System Diagnosis

Single and Dual Rear SCV System Diagnosis

Before You Start

Always start with the first step and follow the sequence from left to right. Read each step completely before performing the check. Concentrate only on the check you are performing and disregard signals from unrelated components.

Complete all checks before making repairs, unless instructed otherwise.

→NOTE:

Additional References:

- **Install Test Equipment - Hydraulics**
- **Warming Transmission/Hydraulic System Oil**
- **Hydraulic System Operation**

(1) Operational Check

Action:

Determine the extent of this hydraulic system failure by operating each SCV.

- Record operating characteristics of each valve.
- Connect a remote cylinder or implement to SCV I outlet.
- Operate SCV I in extend and retract modes.
- Operate the SCV, while holding other SCV lever (with no hose in outlets) in a extend mode. Move cylinder to each SCV and repeat previous checks.
- If an SCV is found not working, or working in one direction only, reverse hoses in outlets and repeat checks to check for flow checking.

Result:

YES: All SCVs operate consistently. No problem found. Diagnosis complete.

NO: One or more SCVs fail to operate. GO TO 2.

NO: Oil will flow in one direction only. GO TO 5.

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Rear Work Light Circuit Test

Reference

→NOTE:

The following tools may be required for proper diagnosis:

1. **JT05791—Digital Multimeter**

See Section 299, Group 10 for tool listings.

→NOTE:

The following drawings are available for circuit diagnosis:

- **Functional Schematics Listing .**

(1) Fuse F4 Circuit Check

Action:

1. Remove and check fuse F4 and replace if failed.
2. Check for continuity between fuse F4 supply terminal and VEC battery terminal.
3. If continuity is not present between fuse F4 supply terminal and VEC battery terminal, replace VEC.
4. Check for battery voltage at VEC battery terminal.
5. If battery voltage is not present, check circuit 0002 between VEC battery terminal and fuse link.
6. Disconnect VEC blue harness connector.
7. With fuse F4 installed, check for battery voltage at terminal A of VEC blue connector.
8. If voltage is not available to terminal A of VEC blue connector, replace VEC.

Result:

YES: Circuits check good.GO TO 2.

NO: Repair as needed.

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SE6—Trailer Connector, Seat Switch, Horn Switch

LEGEND:

F16	20-Amp Fuse for Optional Accessory Relay
F17	10-Amp Fuse for Seat Switch
H2	Horn
H3	Back-up Alarm
K12	Optional Accessory Relay
S10	Seat Switch
S11	Horn Switch
S12	Reverse Ball Switch
X1	Trailer 7-Pin Connector

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(2) Operate Beep Mode Supported Controls

Action:

Operate the following controls and listen for a “beep” to sound when the mode is selected. Observe address displayed when the control is activated.

- Rear PTO Switch
- Remote PTO Enable Switch
- Left and/or Right Fender PTO ON/OFF Switches
- Left and/or Right Brake Pedals
- Secondary Hand Brake
- MFWD Switch

Result:

YES: To check other CCU Beep Mode supported functions:GO TO 3.

NO: If no “beep” is heard, or address is displayed when a component is operated, access the address for that component to check for proper operation.

(3) Harness / Connection Check

Action:

All other circuits that support the CCU diagnostic “beep” mode do not have controls that can be operated, but are sensing and monitoring circuits that the CCU uses to activate system alert and / or status indicators.

If a certain circuit is creating intermittent problems, the diagnostic “beep” mode at address 003 can be used to check for intermittent malfunctions in harnesses or connectors.

Tugging on or moving connectors and / or harnesses while at address 003 may reveal a poor circuit or connection if the warning signal sounds.

Result:

YES:GO TO next address required or return to diagnosis.

NO: If a beep indicates a harness or connection problem, use a digital multimeter to check harness leads and connector terminals. Repair as needed.GO TO next address required or return to diagnosis.

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PTR—Park Switch Circuit Test

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.

(1) Operational Check

Action:

Perform PTR 007 — Speed Lever Neutral, High, Low, and Park Switch Status .

Result:

YES: Diagnosis complete.

NO:GO TO 2.

(2) Component Supply Voltage Check

Action:

1. Key switch OFF.
2. Access and disconnect S18 Park Switch connector.
3. Place key switch in RUN position (engine OFF).
4. Check 12 V supply voltage on terminal A of S18 harness connector to ground.

Result:

YES:GO TO 2.

NO: Repair circuit 0072 as necessary.GO TO 1.

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PTR - Clutch Pedal Position Sensor Circuit Test

Reference

→NOTE:

The following tools may be required for proper diagnosis:

1. **JT05791—Digital Multimeter**

(1) Operational Check

Action:

1. Turn key switch to RUN position (engine off).
2. Access PTR Address 032 .
3. Verify that the display at address 032 meets the following specification:

Item	Measurement	Specification
PTR Address 032		
Clutch Pedal Position	Clutch Pedal Released	000

4. Slowly depress the clutch pedal noting any non-linear jumps in the value displayed at address 032. Verify that the display at address 032 ramps up to meet the following specification:

Item	Measurement	Specification
PTR Address 032		
Clutch Pedal Position	Clutch Pedal Fully Depressed	250

Result:

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

NO: Value at address 032 does not meet specification.GO TO 2.

(2) Access Component to Be Tested

Action:

→NOTE:

When clutch pedal position sensor is disconnected, the value at PTR Address 032 should go to 255 and an audible beep should be heard. This indicates an open circuit.

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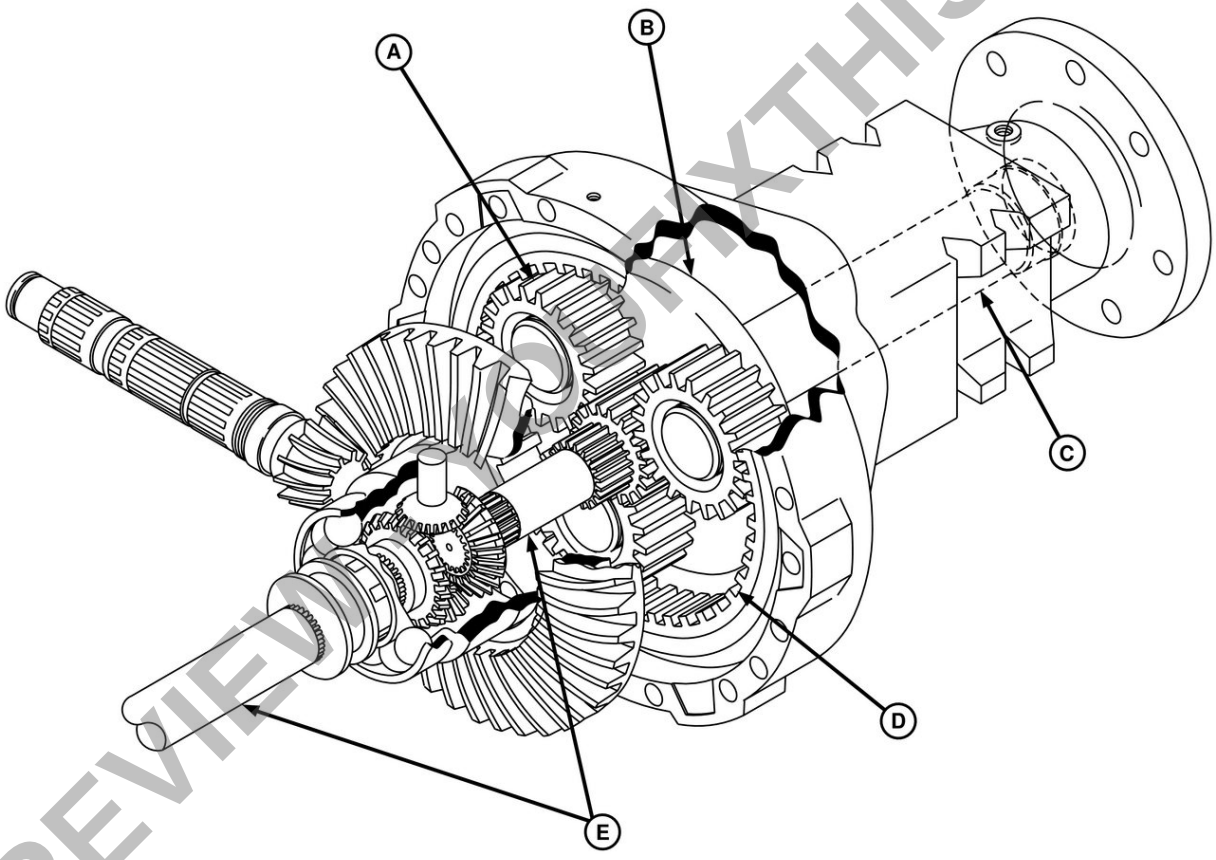
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As the shaft moves, spring (B) is compressed and fork (A) forces differential lock collar (G) toward differential carrier (F).

When the pins on the collar align with the slots in the carrier, the pins will slip into the slots. Since the collar is splined to the right differential output shaft, no differential action will take place and both output shafts turn equally.

Unequal traction will keep the lock engaged. When traction equalizes, lock will disengage itself by spring action. If lock does not disengage, depress one brake pedal and then the other.

Final Drive Operation



Final Drive Operation

LEGEND:

- A Planetary Gears
- B Planetary Carrier Assembly
- C Axle Shaft
- D Final Drive Ring Gear
- E Final Drive Pinion Shafts

The final drive is a planetary ring gear type system. The final drive pinion shafts (E) are in mesh with the planetary gears (A) attached to the planetary carrier assembly (B) and ride

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Discharge Phase

LEGEND:

A	Isolator
B	Rate of Drop Knob
C	Passage from Check Valve
D	Preselector Knob
E	Cylinder
F	Passage to Sump
G	Unloader Valve
H	Passage to Unloader Valve
I	Discharge Valve
J	Passage to Discharge Valve
K	Passage from Control Spool
L	Cylinder
M	Control Spool Passage
N	Metering Holes
O	Passage to Check Valve
P1	Inlet Housing Passage
P2	Isolator Passage
P3	Preselector Knob Passage
P4	Control Spool Hallow Passage
P5	Check Valve Passage
Q	Passage to Sump
R	Passage to Unloader Valve Spring Chamber
S	Control Spool
T	Passage to Preselector Knob
U	Check Valve
V	External Cylinder
W	End Cover
X	Pressure Relief Valve
H1	High Pressure Oil
N1	Neutral Oil
T1	Trapped Oil

FUNCTION:

Controls oil flow to the rockshaft cylinder with rockshaft control lever in the lower position.

MAJOR COMPONENTS:

- Rockshaft Cylinder
- Control Spool
- Discharge Valve
- Isolator
- Check Valve
- Unloader Valve
- Rate of Drop of Valve

THEORY OF OPERATION:

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