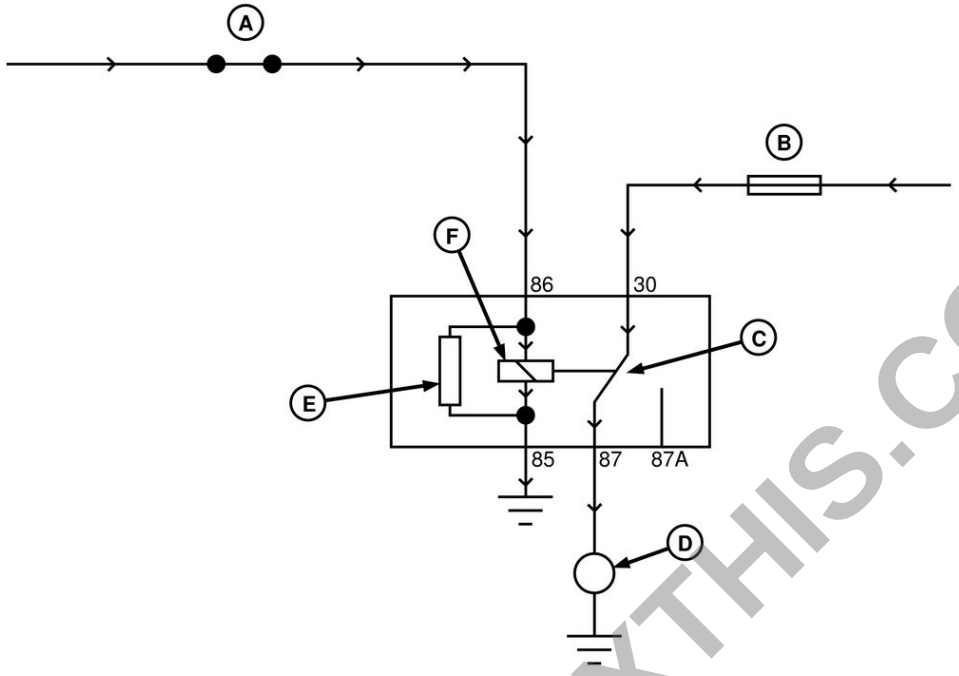
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Common Relay ON

LEGEND:

A	Switch
B	Fuse
C	Internal Switch
D	Load
E	Resistor
F	Solenoid

When the switch (A) is closed (turned ON), battery power is supplied to terminal 86. The current flows through the solenoid (F) inside the relay to terminal 85 and then to ground. As the current is flowing through the solenoid, a magnetic field is created that pulls the relay internal switch (C) from terminal 87A to terminal 87. This allows battery power to flow from the fuse through terminal 30 to terminal 87 and to the load (D).

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(2) Verify Code

Action:

Recall, record and clear codes.

If using SERVICE ADVISOR ™ : This procedure can be performed by making a connection to the vehicle and using the “Diagnostics” tab to view and clear codes.

If using performance monitor: See Performance Monitor General Operation (See reference 245-05-001) for more information.

Recall codes again and check for return of this code.

Result:

YES: Code does not return. GO TO 3.

NO: Code returns. GO TO 4.

(3) Code Operational Checks

Action:

1. Start vehicle.
2. Check for code return.

→NOTE:

If problem is intermittent, repeat check until code returns. If unable to recreate code but operator reports continued problems, see Step 6 (Additional Checks and Intermittent Failure Evaluation).

Result:

YES: Code does not return. Diagnosis complete.

NO: Code returns. GO TO 4.

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(2) Verify Code

Action:

Recall, record and clear codes.

If using SERVICE ADVISOR ™ : This procedure can be performed by making a connection to the vehicle and using the “Diagnostics” tab to view and clear codes.

If using performance monitor: See Performance Monitor General Operation (See reference 245-05-001) for more information.

Recall codes again and check for return of this code.

Result:

YES: Code does not return. GO TO 3.

NO: Code returns. GO TO 4.

(3) Code Operational Checks

Action:

1. Start vehicle.
2. Cycle hitch through full range.
3. Check for code return.

→NOTE:

If problem is intermittent, repeat check until code returns. If unable to recreate code but operator reports continued problems, see Step 6 (Additional Checks and Intermittent Failure Evaluation).

Result:

YES: Code does not return. Diagnosis complete.

NO: Code returns. GO TO 4.

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(4) System Checks

Action:

No system checks required.

Result:

YES: GO TO 5.

NO: Repair as needed. GO TO 2.

(5) Electrical Circuit Checks

Action:

Perform Optional Infinitely Variable Shuttle Control Circuit Test (See reference 245-PTR-007).

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 (See reference 210-15-101).

If applicable, perform PTR Control Unit Beep Mode Test With Speed Sensors (See reference 245-PTR-002).

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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- PTO Horn Diagnostic Wiring Diagram—5225, 5325, 5425 and 5525 Cab and Isolated Open Operator Station (IOOS) (Reference 240-25-140).
- PTO Horn Diagnostic Wiring Diagram—5625 Cab and Isolated Open Operator Station (IOOS)(Reference 240-25-140a).
- PTO Horn Diagnostic Wiring Diagram—5603, 5083E Limited, 5093E Limited, and 5101E Limited (Reference 240-25-140b).
- PTO Horn Diagnostic Wiring Diagram—5225, 5325, 5425 and 5525 Straddle Mount (Reference 240-25-141).
- PTO Horn Diagnostic Wiring Diagram—5625 Straddle Mount (Reference 240-25-141a).
- MFWD Diagnostic Wiring Diagram—5225, 5325, 5425, 5525 and 5625 Cab and Isolated Open Operator Station (IOOS) (Reference 240-25-142).
- MFWD Diagnostic Wiring Diagram—5225, 5325, 5425, 5525 and 5625 Straddle Mount (Reference 240-25-143).
- Engine Speed Sensor Diagnostic Wiring Diagram—Cab and Isolated Open Operator Station (IOOS) (Reference 240-25-144).
- Engine Speed Sensor Diagnostic Wiring Diagram—Straddle Mount (Reference 240-25-145).
- Wheel Speed Sensor Diagnostic Wiring Diagram—Cab and Isolated Open Operator Station (IOOS) (Reference 240-25-146).
- Wheel Speed Sensor Diagnostic Wiring Diagram—Straddle Mount (Reference 240-25-147).
- Engine Oil Pressure Switch Diagnostic Wiring Diagram—Cab and Isolated Open Operator Station (IOOS) (Reference 240-25-148).
- Engine Oil Pressure Switch Diagnostic Wiring Diagram—Straddle Mount (Reference 240-25-149).
- Air Filter Restriction Switch Diagnostic Wiring Diagram—Cab and Isolated Open Operator Station (IOOS) (Reference 240-25-150).
- Air Filter Restriction Switch Diagnostic Wiring Diagram—Straddle Mount (Reference 240-25-151).
- Fuel Level Sender Diagnostic Wiring Diagram—Cab and Isolated Open Operator Station (IOOS) (Reference 240-25-152).
- Fuel Level Sender Diagnostic Wiring Diagram—Straddle Mount (Reference 240-25-153).
- Engine Coolant Temperature Sender Diagnostic Wiring Diagram—Cab and Isolated Open Operator Station (IOOS) (Reference 240-25-154).
- Engine Coolant Temperature Sender Diagnostic Wiring Diagram—Straddle Mount (Reference 240-25-155).
- HVAC Diagnostic Wiring Diagram—Cab Tractors (Reference 240-25-156).
- Wiper System Diagnostic Wiring Diagram—Cab Tractors (Reference 240-25-157).
- Mid-Mount SCV Diagnostic Wiring Diagram (Reference 240-25-158).
- Fuel Transfer Pump Diagnostic Wiring Diagram—5625 Cab and Isolated Open Operators Station (IOOS) (Reference 240-25-159).
- Fuel Transfer Pump Diagnostic Wiring Diagram—5625 Straddle Mount (Reference 240-25-160).
- Fuel Transfer Pump Diagnostic Wiring Diagram—5603 and 5E Limited (Reference 240-25-161).

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5325—3.0 L Engine

Engine Model	Horsepower	Fuel Injection System	Base Engine CTM	Fuel System CTM
5030PF270	50 kW (67 hp)	Integrated Fuel System (IFS)	CTM301	CTM301

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Reference 240-15-006, Charging System Test

Reference

→NOTE:

The following tools may be required for proper diagnosis:

1. **JT02153 —Current Clamp-On Probe**
2. **JT05791 —Digital Multimeter**
3. **JT05685 —Battery Load Tester**

See Section 299, Group 10 for tool listings.

→NOTE:

This procedure covers testing the alternator and the circuits to/from the battery and key switch.

Voltage tests/checks should always be made with respect to the tractor frame ground, that is, the meter common lead (black) should be connected to the tractor frame. Make sure the meter lead makes good contact with the tractor frame, and paint, dirt or oil, etc., do not interfere with the connection.

(1) Alternator Output Test

Action:

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(4) Circuit 107 Check

Action:

1. Turn light switch (S5) to WORK position.
2. Disconnect VEC gray connector.
3. Check for battery voltage at terminal E of VEC gray connector.
4. If battery voltage is not available to terminal E of VEC gray connector, check circuit 107 between terminal E of VEC gray connector and terminal FL of light switch.

Result:

YES: Circuits check good.GO TO 5.

NO: Repair as needed.

(5) Front Work Lights Relay (K9) Check

Action:

Test front work lights relay (K9).

Result:

YES: Relay tests good.GO TO 6.

NO: Replace relay.

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Reference 240-20-215, Instrument Cluster Operation—Fuel Gauge

Unswitched power from battery (G1) is available at the following components:

- 125-Amp Fuse Link (F26)
- 20-Amp Fuse (F1)
- Key Switch (S1)
- Instrument Cluster (A1) (Terminal J1-H)

When the key switch (S1) is turned to the RUN position, current flows from the key switch through circuit 032 to 10-amp fuse (F18). From 10-amp fuse (F18), current flows through circuit 072 to terminal J1-A of the instrument cluster (A1), causing the instrument cluster to power up.

Fuel level sender (B1) consists of a movable float attached to a variable resistor (potentiometer). The varying fuel level causes the float to move up or down, which causes the resistance of the fuel level sender to change accordingly.

The instrument cluster (fuel gauge) measures the resistance of the fuel level sender, then moves the pointer on fuel gauge to the corresponding fuel level. Ground is provided to fuel level sender (B1) from terminal J4-P of instrument cluster (A1) through circuit 030. To determine the amount of fuel in the fuel tank, the resistance of fuel level sender is measured by instrument cluster terminal J1-C through circuit 303. When the fuel tank is full, the resistance between fuel level sender terminals is approximately 0—3 ohms. When the fuel tank is empty, the resistance between fuel level sender terminals is approximately 117—123 ohms.

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Starting Circuit Four Cylinder Engine Diagnostic Wiring Diagram, Straddle Mount—POWRREVERSER Transmission

LEGEND:

A6J2	Electro-Hydraulic Controller Connector
A6J3	Electro-Hydraulic Controller Connector
F1	20-Amp Fuse
F17	10-Amp Fuse
F18	10-Amp Fuse
F20	10-Amp Fuse
K11	PTO Off/Neutral Relay
K15	ELX Relay
K16	Neutral Relay
K17	Trans Enable Relay
K18	Start Relay
M1	Starter Motor
S1	Key Switch
S2	PTO Switch
S20	Directional Reverser Switch
V1	Diode Block
X1	Chassis-to-Engine Connector
X6	Power Connector
X7	Power Connector
X8	Power Connector
Y1	Fuel Shutoff Solenoid

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LEGEND:

A1J1	Instrument Cluster Connector (10-pin)
A1J2	Instrument Cluster Connector (6-pin)
A1J4	Instrument Cluster Connector (16-pin)
F1	20-Amp Fuse
F8	10-Amp Fuse
F18	10-Amp Fuse
F26	125-Amp Fuse Link
G1	Battery Terminal
H8	PTO Horn
M1	Starter Motor
S1	Key Switch
S2	PTO Switch
S18	Seat Switch
X1	Front Console-to-Engine Connector
X6	Chassis-to-Engine Power Connector
X7	Chassis-to-Engine Power Connector
X18	VEC Power Terminal
X23	VEC Blue Connector
X24	VEC Black Connector
X25	VEC Green Connector
X26	Ground Terminal
X28	Ground Terminal (050C for 4-Cyl Engine and 050D for 5-Cyl Engine)

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X25—VEC Black Connector

X25—VEC Black Connector	
Terminal	**Circuit**
A	212C
B	162
C	109
D	119
E	072D
F	032
G	282
H	167

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Reference 245-05-004C, PTR Address List

Addresses

TLA	Address	Address Type	Description
PTR	000		Initial Address/EOL Programming
PTR	001		Recall/Clear Stored Diagnostic Trouble Codes
PTR	002	Beep	PTR System Beep Mode With Speed Sensors
PTR	003	Beep	PTR System Beep Mode Without Speed Sensors [Address 3 is identical to address 2 except that engine speed and countershaft speed are not included in address 3. This is to eliminate the intrusion of frequency inputs when trying to troubleshoot problems with the engine running.]
PTR	004	Beep	Engine and Countershaft Speed Sensor Status
PTR	005	Beep	Transmission Enable Relay Status
PTR	006	Beep	Neutral, Not Neutral, Forward and Reverse Switches
PTR	007	Beep	Hi/Lo switches
PTR	008	Beep	Park Switch
PTR	009	Beep	Seat Switch
PTR	010	Beep	Clutch Disengaged Switch
PTR	011	Beep	Infinitely Variable Shuttle Sensor Voltage
PTR	012	Beep	Enable Pressure Sensor Voltage
PTR	13	Beep	Clutch Sensor A Voltage
PTR	014	Beep	Clutch Sensor B Voltage
PTR	022	Input	Automatic Overfill Protection Setting
PTR	030	Display	PTR Switched Supply Voltage
PTR	031	Display	PTR Sensor Supply Voltage
PTR	032	Display	Clutch Pedal Position Status
PTR	033	Display	Clutch Pedal Pressure Command
PTR	034	Display	Enable Pressure
PTR	035	Input	Countershaft Pulses Per Revolution
PTR	036	Display	Countershaft Speed
PTR	037	Display	Hydraulic Oil Temperature
PTR	060	Input	Transmission Configuration
PTR	061	Input	Hydraulic Oil Type Selection
PTR	062	Input	Temperature Adjustment for Non-JD20C Oil
PTR	063	Cal	PTR Transmission Calibration
PTR	064	Display	Transmission Fill Pressure and Fill Volume Calibration Values
PTR	065	Input	Forward Valve Fill Pressure Adjustment
PTR	066	Input	Reverse Valve Fill Pressure Adjustment

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Reference 245-CCU-011, Rear EH PTO Solenoid Circuit Test

Reference

→NOTE:

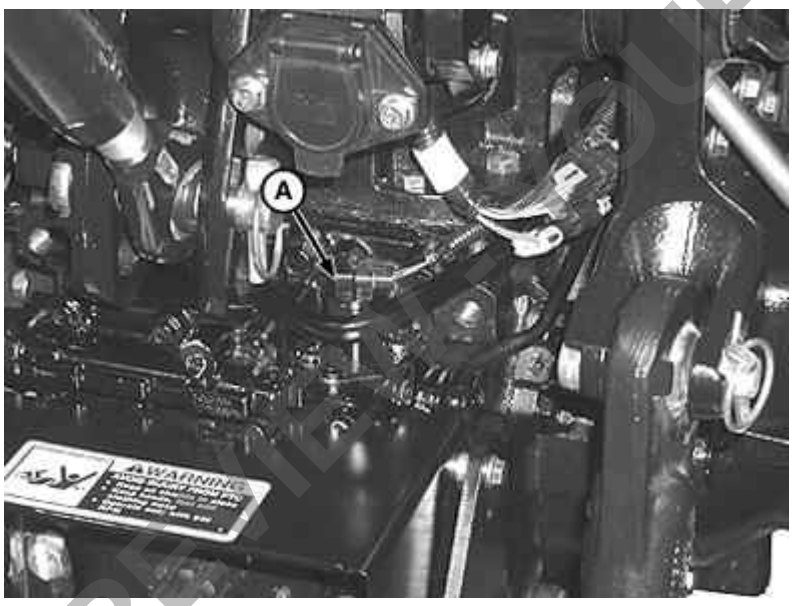
The following tools may be required for proper diagnosis:

1. **JT05791 —Digital Multimeter**
2. **JDG774 —Jumper Harness**
3. **DFRW126 —Modified Tap Out Harness Leads**

See Section 299, Group 10 for tool listings.

(1) Access Component to Be Tested

Action:



Rear PTO Solenoid Connector

LEGEND:

A	Rear PTO Solenoid Connector

Disconnect the rear PTO solenoid connector (A).

Result:

YES: GO TO 2.

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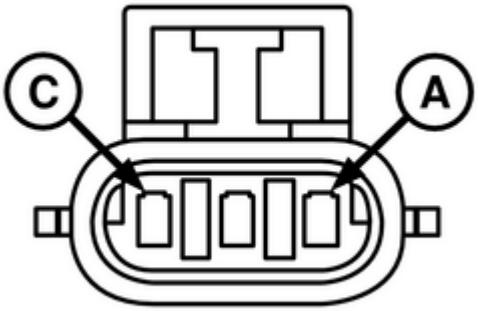
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(4) Component Supply Voltage Test

Action:

→NOTE:

Use a chassis ground point rather than the ground circuit at the connector to test for supply voltage. This step of the procedure is only to test the integrity of the supply voltage circuit.



Rear Hitch Load/Depth Control Connector

LEGEND:

A	Circuit 801
B	Circuit 814
C	Circuit 803

Use a JT05791 —Digital Multimeter to test for supply voltage on terminal C of rear hitch load/depth control connector according to the specification below:

Item	Measurement	Specification
Rear Hitch Load/Depth Control Connector		
Supply Voltage	Key Switch in RUN Position (engine off)	4.80—5.20 V

Result:

YES: GO TO 5.

NO: See “Reference 245-HCU-302 , Hitch Load/Depth Control Diagnostic Wiring Diagram”. Repair circuit 803 as needed. GO TO 1.

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(22) Tractor Model for Compensation

Action:

1. Access PTR Address 076 . The display should read:**076: XX** —Tractor Model Number
2. 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.
3. Using the number pad on the performance monitor, key in the desired value.Change address 076 as follows:**076: 52** —For 5225 Model TractorsOR...**076: 53** —For 5325 Model TractorsOR...**076: 54** —For 5425 Model TractorsOR...**076: 55** —For 5525 Model Tractors
4. 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 23.

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Reference 245-PTR-202, Come-Home Mode Theory of Operation

Come-home mode is designed to allow the machine to be moved in the event certain neutral-recoverable or power-up recoverable faults become active. The following inputs will be ignored by the controller when come-home mode is active:

- Neutral-recoverable clutch pedal sensor faults
- Missing engine speed signal
- Missing countershaft speed signal
- Missing enable pressure signal
- Park signal stuck active
- EOL data checksum error

To enter come-home mode, access PTR Address 100 . See “Come-Home Mode Enable” in “Reference 245-PTR-001 , PTR Control Unit Calibration” to enter into come-home mode.

If a clutch pedal sensor neutral-recoverable fault is active, come-home mode will use PTR controller software to engage the clutch, provided the clutch disengaged switch is closed. When the clutch pedal is depressed fully and the clutch disengaged switch is opened, the clutch will be disengaged.

If there is no clutch pedal sensor neutral-recoverable fault, come-home mode will engage the clutch by commanding fill pressure and then ramping slowly until full pressure is reached, provided the following are true:

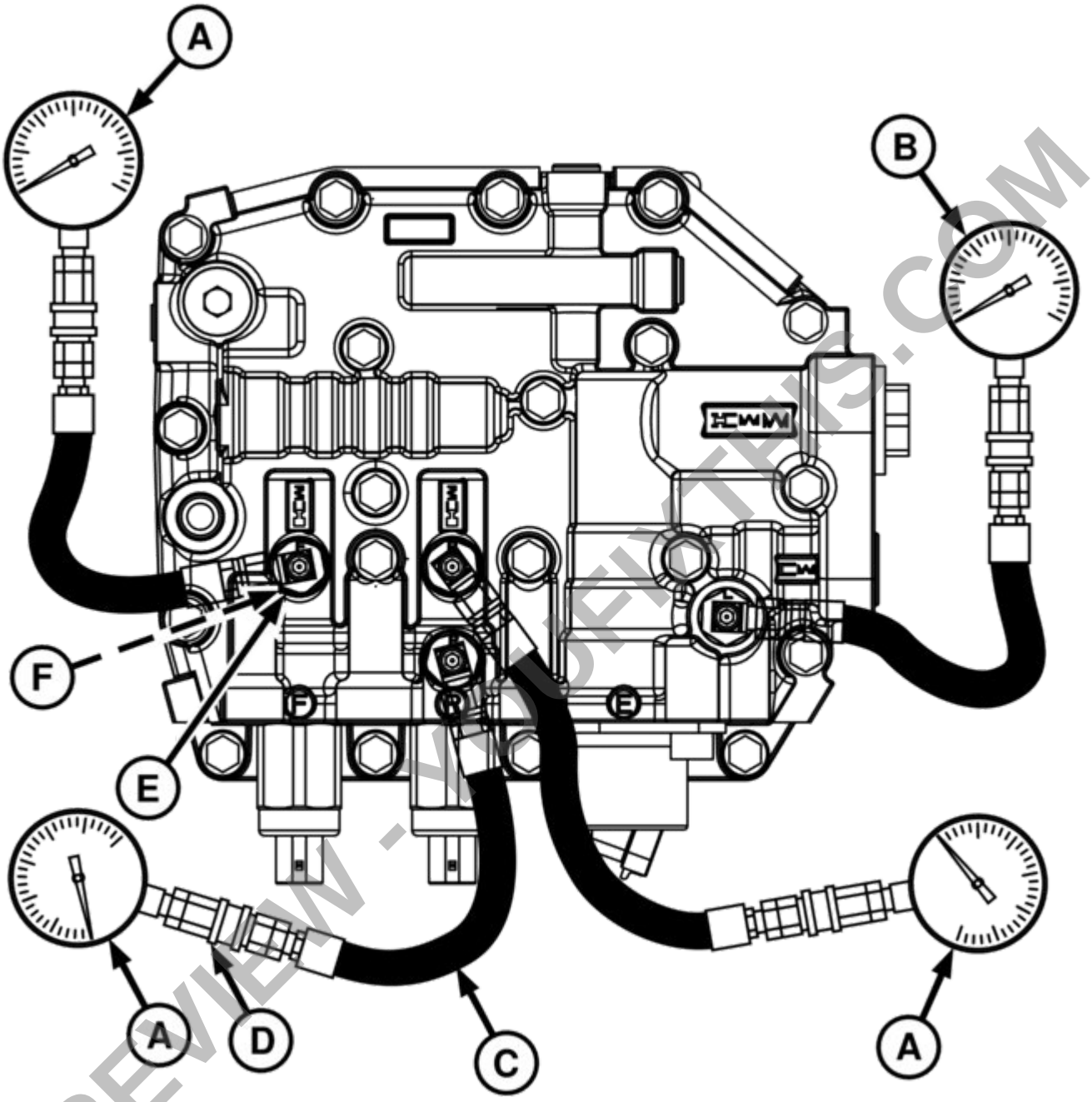
- Clutch disengaged switch is closed.
- PTR software indicates the clutch pressure command is greater then the disengaged point.
- Directional reverser lever has gone from valid neutral to valid direction.

When the clutch pedal is depressed to the software disengaged point, the traction clutch is disengaged.

Reference 245-PTR-203, Directional Reverser Switch Theory of Operation

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POWRREVERSER Control Valve Test Equipment

LEGEND:

A	Gauge, 2800 kPa (400 psi) (3 used)
B	Gauge, 400 kPa (60 psi)
C	Hose, 508 mm (20 in.) (4 used)
D	Adapter (4 used)
E	Adapter (4 used)
F	Adapter (4 used)

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Operation of the 3rd and 4th gear synchronizer is the same as described above. The shift collar is moved rearward to engage 3rd gear and forward to engage 4th gear.

Lubrication

Lubrication of the synchronizers is provided by sump oil. When the transmission is filled to the proper level, the synchronizers are half submersed in the sump oil.

Transmissions with optional Hi/Lo use pressurized lubrication oil as a supplement to the non-pressurized sump oil. The pressurized lubrication oil flows from the Hi/Lo clutch shaft in the clutch housing, through a passage in the bottom shaft to the synchronizers.

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E	Idler Gear
F	Shift Collar
G	Output Shaft
H	Power Flow
I	MFWD Engagement

FUNCTION:

Provides power to the MFWD housing for extra added traction.

MAJOR COMPONENTS:

- Differential Drive Shaft
- MFWD Gear
- MFWD Drop Gearbox
- Drive Shaft
- MFWD Axle

THEORY OF OPERATION:

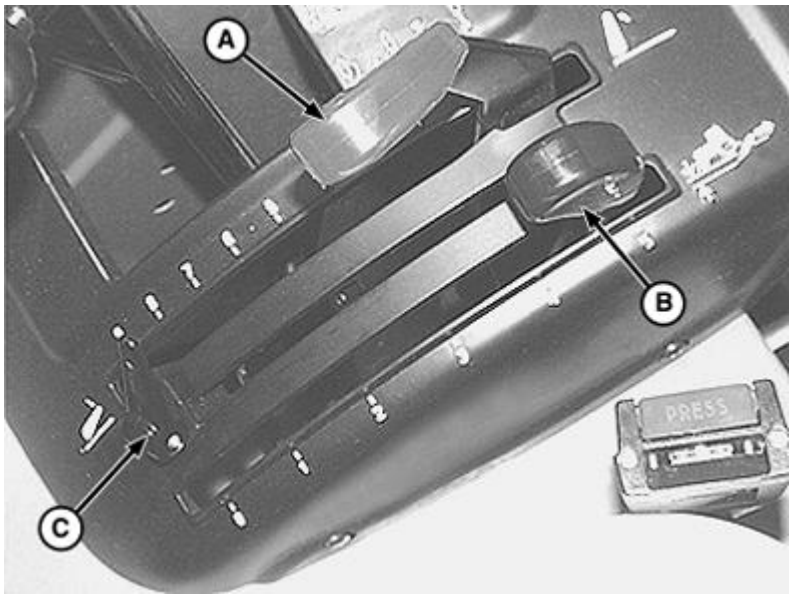
The MFWD driven gear (B) on the differential drive shaft (C) of the transmission is constantly in mesh with drive gear (A) in the MFWD drop gearbox (D). These gears transmit power (H) to the idler gear (E), which spins freely on the output shaft (G) until MFWD engagement (I) by shift collar (F).

When the MFWD lever is pushed forward, the shift collar slides back and engages the idler gear. Power is then transmitted through the output shaft and drive shaft to the MFWD axle housing.

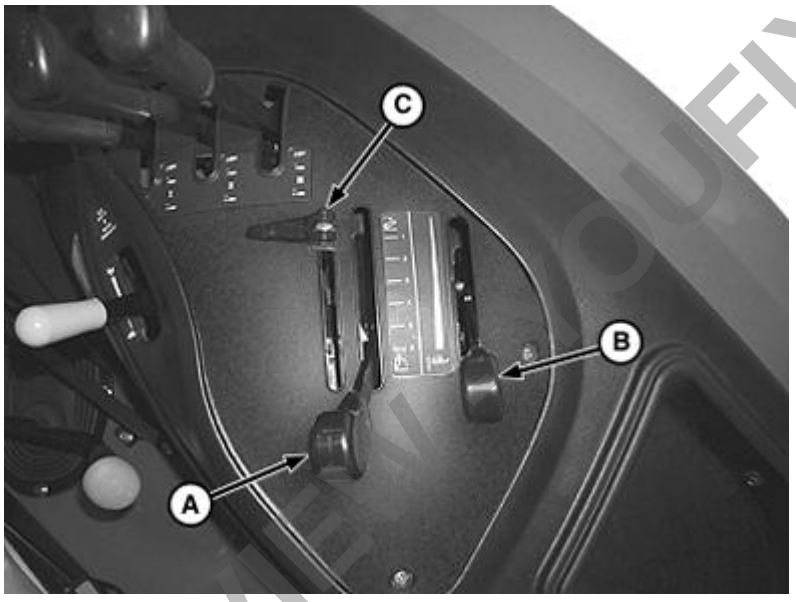
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PROCEDURE:



Mechanical Hitch Control—Straddle Mount Tractors



Mechanical Hitch Control--IOOS and Cab Tractors

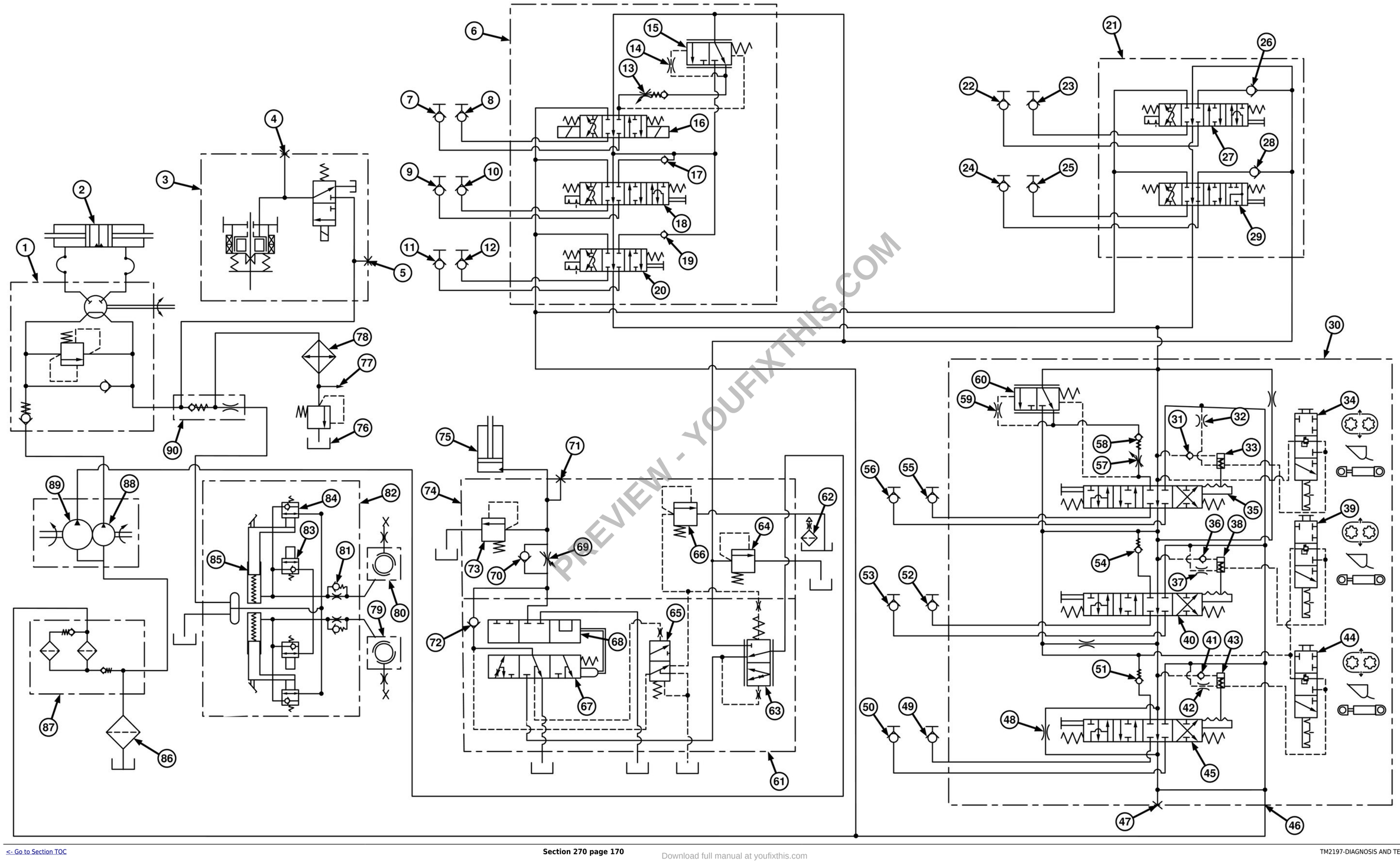
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Reference 270-20-002, Hydraulic System Operation

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(5) Air Duct Distribution Check

Action:

Check flow of air from left- and right-hand interior air ducts with blower speed control at PURGE.

Operate air ducts in the following positions:

- Open/Close—Air is regulated by duct opening.
- Rotation—Air is directed at windshield, operators body or operators feet.

Result:

YES: GO TO 6.

NO: Repair/replace air ducts and/or duct work. Repeat step.

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