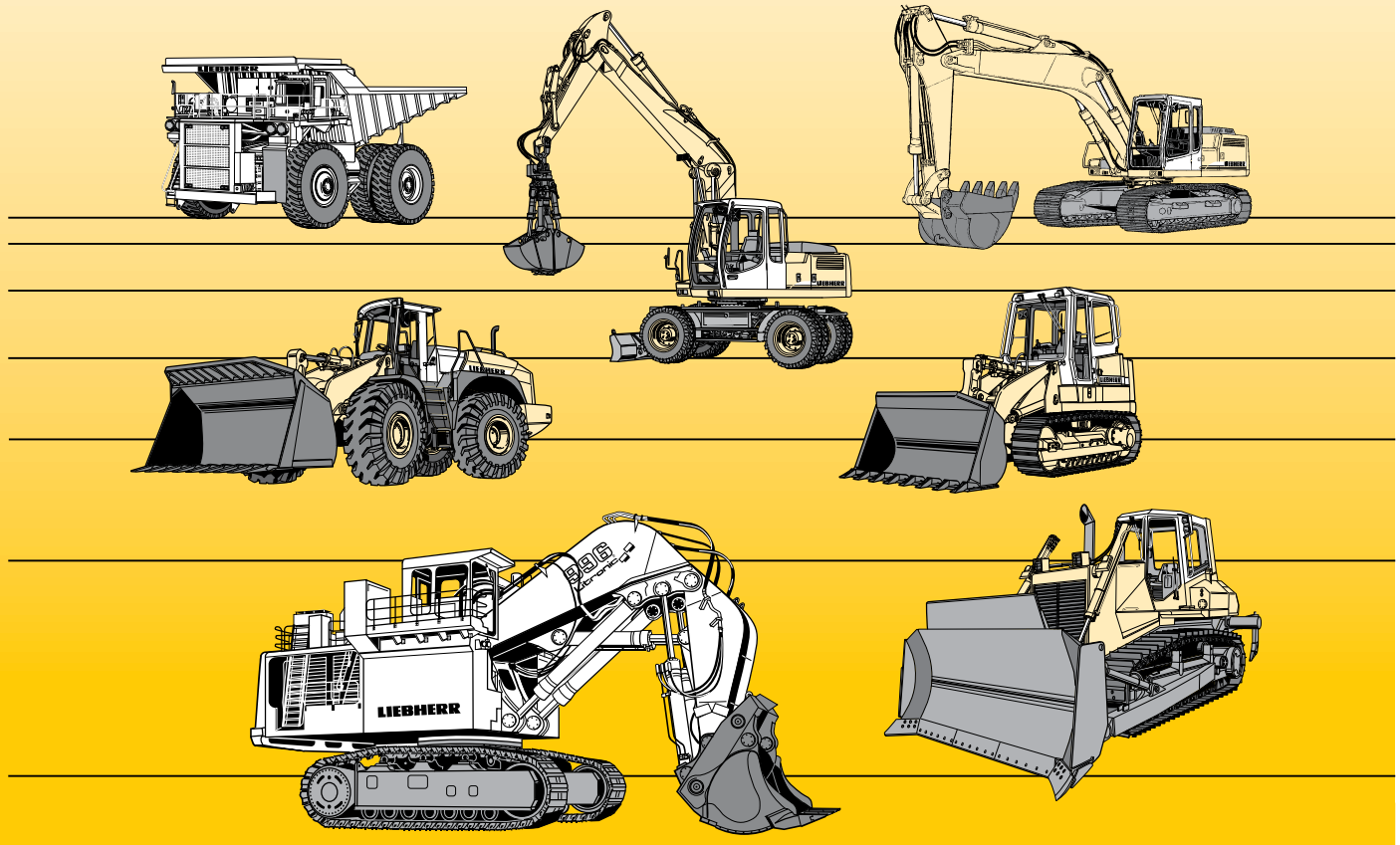
Service Manual
Crawler Dozer 714
Serie 4



LIEBHERR

Recognize Safety Information

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

Follow the precautions and safe operating practices highlighted by this symbol.

A signal word — DANGER, WARNING, or CAUTION — is used with the safety alert symbol. DANGER identifies the most serious hazards.

On your machine, DANGER signs are red in color, WARNING signs are orange, and CAUTION signs are yellow. DANGER and WARNING signs are located near specific hazards. General precautions are on CAUTION labels.

T133555 —UN—28AUG00

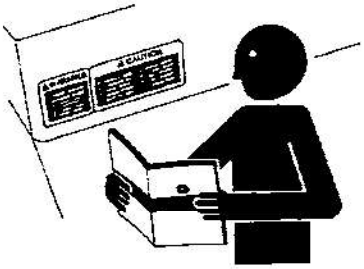
T133588 —19—28AUG00

TX03679,00016CC -19-05FEB10-1/1

Follow Safety Instructions

Read the safety messages in this manual and on the machine. Follow these warnings and instructions carefully. Review them frequently. Keep safety signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from your John Deere dealer.

Be sure all operators of this machine understand every safety message. Replace operator's manual and safety labels immediately if missing or damaged.



T133556 —UN—24AUG00

TX03679,00016F9 -19-14JAN08-1/1

Operate Only If Qualified

Do not operate this machine unless the operator's manual has been read carefully, and you have been qualified by supervised training and instruction.

Operator should be familiar with the job site and surroundings before operating. Try all controls and machine functions with the machine in an open area before starting to work.

Know and observe all safety rules that may apply to every work situation and work site.

TX03679,00016FA -19-03JAN07-1/1

Section 9001
Diagnostic Trouble Codes (DTCs)

Contents

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2 Short Circuit Check	Turn key switch OFF.	
	Disconnect fuel level sensor (B35). See Transmission Harness (W7) Component Location. (Group 9015-10.)	
	Check for ground at pin A (wire Y33 YEL) on fuel level sensor (B35) connector. See Transmission Harness (W7) Wiring Diagram and Main Cab/Canopy Harness (W5) Wiring Diagram. (Group 9015-10.)	**YES:** Go to Replace Controller.
	Is ground present?	**NO:** Short to ground on wire Y33 YEL between pin A sensor (B35) connector and pin N of SDM (H1) connector (X6). Repair or replace harness(es).

WS68074,0000F8D -19-05APR07-4/5

3 Replace Controller	Reprogram Standard Display Monitor (SDM) (H1).	
	Check for active codes.	**YES:** Replace controller.
	Is SDM code 000096.04 present?	**NO:** Checks complete.

WS68074,0000F8D -19-05APR07-5/5

000107.03 — Eng Air Filter Short to Power

There is a short to power present on the engine air filter restriction switch.

WS68074,0000FDF -19-23MAR07-1/5

Engine Air Filter Restriction Switch Short to Power Diagnostic Procedure

Alarm Level:

No Warning Lamp

WS68074,0000FDF -19-23MAR07-2/5

1 Component Check	Turn key switch OFF.	
	Remove engine air filter restriction switch (B18). See Engine Harness (W6) Component Location. (Group 9015-10.)	
	Check continuity across switch pins A and B.	**YES:** Replace engine air filter restriction switch (B18).
	Is continuity indicated?	**NO:** Go to Short Circuit Check.

Continued on next page

WS68074,0000FDF -19-23MAR07-3/5

2	**Blade Control Joystick (BCJ) Check**	Observe the joystick's 4-way axis movement as a percentage by accessing the Diagnostic / Live Values / Performance menu in the SDM menu structure. See Standard Display Monitor (SDM) Menu Structure—Service Mode. (Group 9015-20.)	
		Slowly move the joystick handle through complete range in all four axes.	**YES:** Go to Electrohydraulic Controller (EHC) Check.
		Do the joystick values in the CMU menu correspond with the joystick movements?	**NO:** Perform CAN Circuit Test.

WS68074,0000FEA -19-04APR07-4/6

3	**Electrohydraulic Controller (EHC) Check**	Start engine.	
		Observe the blade functions by accessing the Diagnostic / Live Values / Blade Angle and Blade Icr/Dcr menu in the SDM menu structure. See Standard Display Monitor (SDM) Menu Structure—Service Mode. (Group 9015-20.)	**YES:** Go to Reprogram Controller.
		Is EHC blade information displayed?	**NO:** Perform CAN Circuit Test

WS68074,0000FEA -19-04APR07-5/6

4	**Reprogram Controller**	Reprogram SDM unit (SDM).	
		Check for active codes.	**YES:** Replace controller.
		Is SDM code 003156.09 present?	**NO:** Checks complete.

WS68074,0000FEA -19-04APR07-6/6

003359.31 — Trans Oil Filter Restricted

The transmission oil filter is restricted.

WS68074,0000FEB -19-23MAR07-1/3

Transmission Oil Filter Restricted Diagnostic Procedure

Alarm Level:

Transmission Oil Filter Icon

WS68074,0000FEB -19-23MAR07-2/3

1	**Component Check**	Turn key switch OFF.	
		Remove transmission oil filter restriction switch (B15). See Transmission Harness (W7) Component Location. (Group 9015-10.)	
		Check for continuity across pins A and B on transmission oil filter restriction switch (B15).	**YES:** Replace transmission oil filter restriction switch (B15).
		Is continuity indicated?	**NO:** Change transmission oil filter. See Change Transmission Oil and Filter. (Operator's Manual.)

WS68074,0000FEB -19-23MAR07-3/3

1 Alternator Check	Check alternator output. See Alternator Test. (Group 9015-20.) Does alternator test good?	**YES:** Go to Battery Check. **NO:** Replace alternator.

WS68074,0000F94 -19-05NOV07-3/7

2 Battery Check	Test batteries. See Check Battery Electrolyte Level and Terminals. (Operator's Manual.) Do the batteries test good?	**YES:** Go to Circuit Check. **NO:** Replace batteries.

WS68074,0000F94 -19-05NOV07-4/7

3 Fuse Check	Remove fuse F27 and F2. See Fuse and Relay Specifications (S.N. 139436—153830) or see Fuse and Relay Specifications (S.N. 153831—). (Group 9015-10.) Check fuses for continuity. Is continuity indicated?	 **YES:** Go to Circuit Check. **NO:** Replace fuse(s).

WS68074,0000F94 -19-05NOV07-5/7

4 Circuit Check	Turn key switch OFF. Disconnect ECU connector (X26). See Engine Harness (W6) Component Location. (Group 9015-10.) Turn key switch ON. Check voltage at the following pins on the ECU connector (X26): • P07 RED pin B2 • P06 RED pin L1 • P06 RED pin L4 • P06 RED pin M1 • P06 RED pin M4 Is system voltage present?	 **YES:** Go to Reprogram Controller. **NO:** Repair circuit with low or no voltage.

WS68074,0000F94 -19-05NOV07-6/7

5 Reprogram Controller	Reprogram engine control unit (ECU) (A3). Check for active codes. Is ECU code 000627.01 still present?	 **YES:** Replace controller. **NO:** Checks complete.

WS68074,0000F94 -19-05NOV07-7/7

000651.00 — Cyl 1 Injector Max Cal

Cylinder #1 injector is limited by maximum pulse duration.

WS68074,0000F95 -19-23MAR07-1/3

Injector Limited by Maximum Pulse Duration On Cylinder #1 Diagnostic Procedure

Alarm Level:

Check Service Code

Continued on next page

WS68074,0000F95 -19-23MAR07-2/3

2 Reprogram Controller	Reprogram transmission control unit (TCU) (A1).	
	Check for active codes.	**YES:** Replace controller.
	Is TCU code 000091.01 still present?	**NO:** Checks complete.

WS68074,0000FF1 -19-01DEC09-4/4

000091.03 — Throttle Sensor Short to Power

The signal voltage from the engine speed control is more than 4.95 volts.

WS68074,0000FF2 -19-05APR07-1/6

Engine Speed Control Voltage Short to Power Diagnostic Procedure

Alarm Level:

Check Service Code

WS68074,0000FF2 -19-05APR07-2/6

1 Code Check	Check for active codes. See Standard Display Monitor (SDM) Menu Structure—Service Mode. (Group 9015-20.)	**YES:** Repair code 000620.03 first. See 000620.03—Sensor Supply Short to Power. (Group 9001-30.)
	Is TCU code 000620.03 still present?	**NO:** Go to Component Check.

WS68074,0000FF2 -19-05APR07-3/6

2 Component Check	Turn key switch OFF.	
	Disconnect engine speed control (R10). See Main Cab/Canopy Harness (W5) Component Location. (Group 9015-15.)	
	Turn key switch ON.	**YES:** Go to Short Circuit Check.
	Is TCU code 000091.03 still present?	**NO:** Replace engine speed control (R10). Calibrate TCU, See Transmission Control Unit (TCU) Calibration. (Group 9015-20.)

Continued on next page

WS68074,0000FF2 -19-05APR07-4/6

Decelerator Sensor Input Voltage Is Greater Than Maximum Calibration Value Diagnostic Procedure

Alarm Level:

Check Service Code

WS68074,0000FFC -19-01DEC09-2/4

1 Calibration Check	Perform Transmission Control Unit (TCU) Calibration. (Group 9015-20.)	
	Check for active codes. See Standard Display Monitor (SDM) Menu Structure—Service Mode. (Group 9015-20.)	**YES:** See TCU code 000521.06—Decel Sensor Brake Cal Too High, 000521.15—Decel Sensor Min Cal Too High, or 000521.16—Decel Sensor Max Cal Too High. (Group 9001-30.)
	Is TCU code 000521.06, 000521.15, or 000521.16 active?	**NO:** Go to next step in this check.
	Is TCU code 000521.00 still present?	**YES:** Go to Reprogram Controller. **NO:** Checks complete.

WS68074,0000FFC -19-01DEC09-3/4

2 Reprogram Controller	Reprogram transmission control unit (TCU) (A1).	
	Check for active codes.	**YES:** Replace controller.
	Is TCU code 000521.00 still present?	**NO:** Checks complete.

WS68074,0000FFC -19-01DEC09-4/4

000521.01 — Decel Sensor Input Less Than Min Cal

The decelerator sensor input voltage is less than minimum calibration value.

WS68074,0000FFD -19-01DEC09-1/4

Decelerator Sensor Input Voltage Is Less Than Minimum Calibration Value Diagnostic Procedure

Alarm Level:

Check Service Code

Continued on next page

WS68074,0000FFD -19-01DEC09-2/4

1 Calibration Check	Observe the input voltage from decelerator sensor (B1) by accessing the Diagnostic / Live Values / Input Voltages menu in the SDM menu structure. See Standard Display Monitor (SDM) Menu Structure—Service Mode. (Group 9015-20.) Record voltage with decelerator pedal at low decel position. **Specification** Decelerator Sensor (B1)—Calibration Limits.....3.40—3.60 V at Low Decel Position Is the voltage reading less than 3.25 volts?	**YES:** Go to Component Adjustment. **NO:** Go to Reprogram Controller.

WS68074,0001005 -19-20MAR07-3/6

2 Component Adjustment	Adjust decelerator sensor (B1). See Decelerator/Brake Pedal Adjustment. (Group 9015-20.) Calibrate the TCU. See Transmission Control Unit (TCU) Calibration. (Group 9015-20.) Is TCU code 000521.18 active?	**YES:** Go to Component Check. **NO:** Repair complete.

WS68074,0001005 -19-20MAR07-4/6

3 Component Check	Remove the decelerator sensor (B1). Verify the shaft is turning. Does shaft on decelerator sensor turn?	**YES:** Go to Reprogram Controller. **NO:** Replace sensor. Calibrate the TCU. See Transmission Control Unit (TCU) Calibration. (Group 9015-20.)

WS68074,0001005 -19-20MAR07-5/6

4 Reprogram Controller	Reprogram transmission control unit (TCU) (A1). Check for active codes. Is TCU code 000521.18 active?	**YES:** Replace controller. **NO:** Checks complete.

WS68074,0001005 -19-20MAR07-6/6

000581.00 — Speed Buttons Input Greater Than Max Cal

The transmission speed control sensor input voltage is greater than 3.50 volts.

WS68074,0001006 -19-01DEC09-1/4

Transmission Speed Control Sensor Input Voltage Is Above Maximum Calibration Value Diagnostic Procedure

Alarm Level:

No Warning Lamp

Continued on next page

WS68074,0001006 -19-01DEC09-2/4

2 Component Check	Disconnect neutral start switch (S3). See Main Cab/Canopy Harness (W5) Component Location. (Group 9015-10.)	
	Check switch continuity at pins A and B while moving TCL.	**YES:** Go to Open Circuit Check.
	Is continuity indicated in the neutral state only?	**NO:** Replace neutral start switch (S3). Calibrate the TCU. See Transmission Control Unit (TCU) Calibration. (Group 9015-20.)

WS68074,000100E -19-19MAR07-4/6

3 Open Circuit Check	Turn key switch OFF.	
	Disconnect neutral start switch (S3). See Main Cab/Canopy Harness (W5) Component Location. (Group 9015-10.)	
	Disconnect the TCU connector (X1). See Main Cab/Canopy Harness (W5) Component Location. (Group 9015-10.)	
	Check continuity (wire E03 WHT) at pin A of neutral start switch (S3) and pin E2 of TCU connector (X1).	**YES:** Go to next step in this check.
	Is continuity indicated?	**NO:** Open circuit between pin A on neutral start switch (S3) connector and pin E2 on TCU connector (X1). Repair or replace harness. See Main Cab/Canopy Harness (W5) Wiring Diagram. (Group 9015-10.)
	Key switch OFF.	
	Decelerator sensor (B1) disconnected.	
	Check for continuity (wire G01 BLK) between pin B on neutral start switch (S3) connector and ground. See Main Cab/Canopy Harness (W5) Wiring Diagram. (Group 9015-10.)	**YES:** Go to Reprogram Controller.
	Is continuity indicated?	**NO:** Open circuit on wire G01 WHT between pin B on neutral start switch (S3) connector and pin ground. Repair or replace harness. See Main Cab/Canopy Harness (W5) Wiring Diagram. (Group 9015-10.)

WS68074,000100E -19-19MAR07-5/6

4 Reprogram Controller	Reprogram transmission control unit (TCU) (A1).	**YES:** Replace controller.
	Is TCU code 000604.03 active?	**NO:** Checks complete.

WS68074,000100E -19-19MAR07-6/6

000604.04 — FNR Neut Switch Short Circuit

NOTE: The FNR switch is also referred to as the TCL.

Neutral Start Switch Short Circuit

Continued on next page

WS68074,000100F -19-30NOV09-1/6

2 Short Circuit Check	Disconnect the left speed sensor (B7).	
	Check voltage at pin A (wire T18 BLU) on left speed sensor (B7) connector. See Transmission Harness (W7) Wiring Diagram. (Group 9015-10.) Is voltage approximately 5 volts?	**YES:** Go to next step in this check. **NO:** Short to power on wire T18 BLU between pins B on left speed sensor (B7) connector and pin H1 on TCU connector (X1). See Transmission Harness (W7) Wiring Diagram and see Main Cab/Canopy Harness (W5) Wiring Diagram. (Group 9015-15.)
	Turn key switch ON. Check voltage at pin B (wire T17 BLU) on left speed sensor (B7) connector. See Transmission Harness (W7) Wiring Diagram. (Group 9015-10.) Is voltage approximately 0 volts?	**YES:** Go to Reprogram controller. **NO:** Short to power on wire T17 BLU between pins B on left speed sensor (B7) connector and pin H2 on TCU connector (X1). See Transmission Harness (W7) Wiring Diagram and see Main Cab/Canopy Harness (W5) Wiring Diagram. (Group 9015-15.)

WS68074,0001017 -19-15MAR07-4/5

3 Reprogram controller	Reprogram transmission control unit (TCU) (A1).	**YES:** Replace controller.
	Is TCU code 000907.03 active?	**NO:** Checks complete.

WS68074,0001017 -19-15MAR07-5/5

000907.04 — Left Speed Sensor Short

The left motor speed sensor signal voltage is below 0.11 volts.

WS68074,0001018 -19-20MAR07-1/4

Left Speed Sensor Short Diagnostic Procedure

Alarm Level:

No Warning Lamp

Continued on next page

WS68074,0001018 -19-20MAR07-2/4

002660.00 — Steer Sensor Input Greater Than Max Cal

Left steer sensor input voltage is greater than the stored calibration value.

WS68074,000101F -19-19MAR07-1/6

Left Steer Sensor Input Greater Than Maximum Calibration Value Diagnostic Procedure

Alarm Level:

No Warning Lamp

WS68074,000101F -19-19MAR07-2/6

1 Calibration Check	Observe the input voltage from steer sensor (B5) by accessing the Diagnostic / Live Values / Input Voltages menu in the SDM menu structure. See Standard Display Monitor (SDM) Menu Structure—Service Mode. (Group 9015-20.)	
	Record voltage readings while moving TCL lever to right and left steer positions. **Specification** Steer Sensor (B5)—Calibration Limits.....2.3—2.7 V at Neutral Position 1.52—1.94 V at Right Steer Position 1.40—1.78 V at Right Counter Rotate Position 3.06—3.48 V at Left Steer Position 3.22—3.60 V at Left Counter Rotate Position	**YES:** Calibrate the TCU. See Transmission Control Unit (TCU) Calibration. (Group 9015-20.)
	Are readings within specifications?	**NO:** Go to Sensor Adjustment.

WS68074,000101F -19-19MAR07-3/6

2 Sensor Adjustment	Adjust TCL sensor linkage. See Transmission Control Lever (TCL) Adjustment. (Group 9015-20.)	
	Calibrate the TCU. See Transmission Control Unit (TCU) Calibration. (Group 9015-20.)	**YES:** Go to Component Check.
	Is TCU code 002661.00 still active?	**NO:** Repair complete.

WS68074,000101F -19-19MAR07-4/6

3 Component Check	Remove steer sensor and verify shaft is turning.	**YES:** Go to Reprogram Controller.
	Is steer sensor shaft turning?	**NO:** Replace steer sensor. Calibrate TCU. See Transmission Control Unit (TCU) Calibration. (Group 9015-20.)

WS68074,000101F -19-19MAR07-5/6

4 Reprogram Controller	Reprogram transmission control unit (TCU) (A1).	**YES:** Replace controller.
	Is TCU code 002660.00 still active?	**NO:** Checks complete.

WS68074,000101F -19-19MAR07-6/6

002660.01 — Steer Sensor Input Less Than Min Cal

Steer sensor input voltage is less than the stored calibration value.

Continued on next page

WS68074,0001020 -19-19MAR07-1/6

TCL Sensor Short to Power Diagnostic Procedure

Alarm Level:

Check Service Code

WS68074,0001029 -19-20MAR07-2/5

1 Component Check	Turn key switch OFF. Disconnect TCL sensor (B2). See Main Cab/Canopy Harness (W5) Component Location. (Group 9015-15.) Turn key switch ON. Is TCU code 002661.03 active?	**YES:** Go to Short Circuit Check. **NO:** Replace TCL sensor (B2). Calibrate the TCU. See Transmission Control Unit (TCU) Calibration. (Group 9015-20.)

WS68074,0001029 -19-20MAR07-3/5

2 Short Circuit Check	Turn key switch OFF. Disconnect TCL sensor (B2). See Main Cab/Canopy Harness (W5) Component Location. (Group 9015-15.) Turn key switch ON. Check voltage at pin B (wire T02 BLU) on TCL sensor (B2) connector. See Transmission Harness (W7) Wiring Diagram. (Group 9015-10.) Is voltage approximately 0 volts?	**YES:** Go to Reprogram Controller. **NO:** Short to power on wire T02 BLU between pins B on TCL sensor (B2) connector and pin A2 on TCU connector (X1).

WS68074,0001029 -19-20MAR07-4/5

3 Reprogram Controller	Reprogram transmission control unit (TCU) (A1). Is TCU code 002661.03 active?	**YES:** Replace controller. **NO:** Checks complete.

WS68074,0001029 -19-20MAR07-5/5

002661.04 — FNR Sensor Open or Short

NOTE: FNR is also referred to as the TCL.

The TCL sensor input voltage is less than .05 volts.

WS68074,000102A -19-23APR08-1/5

TCL Sensor Open or Short Diagnostic Procedure

Alarm Level:

Check Service Code

Continued on next page

WS68074,000102A -19-23APR08-2/5

2 Short Circuit Check	Turn key switch OFF. Disconnect charge pressure sensor (B33 or B41) and TCU connector (X1). See Main Cab/Canopy Harness (W5) Component Location and see Transmission Harness (W7) Wiring Diagram. (Group 9015-15.) Check for ground at pin C (wire T21 BLU) on charge pressure sensor (B33 or B41) connector. see Main Cab/Canopy Harness (W5) Wiring Diagram and see Transmission Harness (W7) Wiring Diagram. (Group 9015-15.) Is ground present?	**YES:** Short to ground (wire T21 BLU) between pin B on charge pressure sensor (B33 or B41) connector and ground. See Main Cab/Canopy Harness (W5) Wiring Diagram and see Transmission Harness (W7) Wiring Diagram. (Group 9015-10.) **NO:** Replace charge pressure sensor (B33 or B41). If code 522444.04 is active after repair, go to Reprogram Controller.

WS68074,0001032 -19-24SEP09-4/5

3 Reprogram Controller	Reprogram transmission control unit (TCU) (A1). Is TCU code 522444.04 active?	**YES:** Replace controller. **NO:** Checks complete.

WS68074,0001032 -19-24SEP09-5/5

522447.05 — Right Fwd Pump Coil Open

The front pump pressure control pilot is limited to reverse direction and current draw is too low in forward direction.

WS68074,0001033 -19-23NOV09-1/5

Right Forward Pump Coil Open Diagnostic Procedure

Alarm Level:

Check Service Code

WS68074,0001033 -19-23NOV09-2/5

1 Connector Check	Check pump pressure control pilot (PCP) front (B9) connector, main cab/canopy harness-to-engine harness connector (X10), and transmission control unit (TCU) connector (X1) for corrosion, loose fit, bent/pushed out terminals or crimp malfunctions. See Engine Harness (W6) Component Location and see Main Cab/Canopy Harness (W5) Component Location. (Group 9015-10.) Are connectors in good condition?	**YES:** Go to Component Check. **NO:** Repair or replace connector(s) or terminal(s) as needed.

Continued on next page

WS68074,0001033 -19-23NOV09-3/5

1 **Reprogram Controller**	Calibrate the TCU. See Transmission Control Unit (TCU) Calibration. (Group 9015-20.) Is TCU code 522449.16 active?	**YES:** See TCU Calibration Malfunctions. (Group 9026-15.) **NO:** Repair complete.

WS68074,0001042 -19-20MAR07-3/3

522449.17 — Left Rev Pump Thresh Cal Low

The rear pump pressure control pilot is limited to the forward direction and the reverse threshold (point of track movement) is too low.

WS68074,0001043 -19-20MAR07-1/3

Left Reverse Pump Threshold Calibration Value Too Low Diagnostic Procedure

Alarm Level:

Check Service Code

WS68074,0001043 -19-20MAR07-2/3

1 **Reprogram Controller**	Calibrate the TCU. See Transmission Control Unit (TCU) Calibration. (Group 9015-20.) Is TCU code 522449.17 active?	**YES:** See TCU Calibration Malfunctions. (Group 9026-15.) **NO:** Repair complete.

WS68074,0001043 -19-20MAR07-3/3

522449.18 — Left Rev Pump Max Spd Cal Low

The rear pump pressure control pilot maximum calibration speed value is too low in reverse.

WS68074,0001044 -19-20MAR07-1/3

Left Reverse Pump Max Speed Calibration Value Too Low Diagnostic Procedure

Alarm Level:

Check Service Code

WS68074,0001044 -19-20MAR07-2/3

1 **Reprogram Controller**	Calibrate the TCU. See Transmission Control Unit (TCU) Calibration. (Group 9015-20.) Is TCU code 522449.18 active?	**YES:** See TCU Calibration Malfunctions. (Group 9026-15.) **NO:** Repair complete.

WS68074,0001044 -19-20MAR07-3/3

522450.05 — Left Fwd Pump Coil Open

The rear pump pressure control pilot is limited to reverse direction and current draw is too low in forward direction.

WS68074,0001045 -19-23NOV09-1/5

Left Forward Pump Coil Open Diagnostic Procedure

Alarm Level:

Check Service Code

Continued on next page

WS68074,0001045 -19-23NOV09-2/5

1 **Reprogram Controller**	Calibrate the TCU. See Transmission Control Unit (TCU) Calibration. (Group 9015-20.) Is TCU code 523578.16 active?	**YES:** See TCU Calibration Malfunctions. (Group 9026-15.) **NO:** Repair complete.

WS68074,000104F -19-20MAR07-3/3

523578.18 — Right Motor Max Cal Too Low

Right motor maximum calibration current value is too low.

WS68074,0001050 -19-20MAR07-1/3

Right Motor Maximum Calibration Value Too Low Diagnostic Procedure

Alarm Level:

Check Service Code

WS68074,0001050 -19-20MAR07-2/3

1 **Reprogram Controller**	Calibrate the TCU. See Transmission Control Unit (TCU) Calibration. (Group 9015-20.) Is TCU code 523578.18 active?	**YES:** See TCU Calibration Malfunctions. (Group 9026-15.) **NO:** Repair complete.

WS68074,0001050 -19-20MAR07-3/3

❷ **Short Circuit Check**	Disconnect auxiliary 1 actuator connector (X90) (if equipped) and EHC connector (X83). See Integrated Grade Control (IGC) Machine Harness (W21) Component Location—If Equipped and see Integrated Grade Control (IGC) Cab Harness (W22) Component Location—If Equipped. (Group 9015-10.)	
	Check continuity between pin 1 (wire H30 GRN) and pin 4 (wire P61 RED) on auxiliary actuator connector (X90).	**YES:** Short to power in IGC cab harness (W22). Repair or replace.
	Is continuity indicated?	**NO:** Go to Open Circuit Check.
	Disconnect bulkhead connector (X95) and EHC connector (X83).	
	Check continuity between pin 9 (wire H30 GRN) and pin 13 (wire P61 RED) on IGC cab harness side of bulkhead connector (X95). See Integrated Grade Control (IGC) Cab Harness (W22) Component Location—If Equipped. (Group 9015-10.)	**YES:** Short to power in IGC cab harness (W22). Repair or replace. See Integrated Grade Control (IGC) Cab Harness (W22) Wiring Diagram—If Equipped. (Group 0915-10.)
	Is continuity indicated?	**NO:** Short to power in IGC machine harness (W21). Repair or replace. See Integrated Grade Control (IGC) Machine Harness (W21) Wiring Diagram—If Equipped. (Group 0915-10.)

Continued on next page

523779.01 — Blade Rotate Current Below Min

There is a short to ground present on the blade angle electrohydraulic actuator.

AA95137,0000859 -19-12MAR07-1/4

Blade Angle Actuator Current Below Minimum Diagnostic Procedure

Alarm Level:

Check Service Code

AA95137,0000859 -19-12MAR07-2/4

1 Short Circuit Check	Turn key switch OFF.	
	Disconnect blade angle actuator (Y30). See Integrated Grade Control (IGC) Machine Harness (W21) Component Location—If Equipped. (Group 9015-10.)	
	Check for ground (H31 RED) at pin 12 of actuator connector.	**YES:** Short to ground on wire H31. Repair or replace harness..
	Is there ground present?	**NO:** Go to next step in this check.
	Key switch OFF.	
	Blade angle actuator (Y30) disconnect. See Integrated Grade Control (IGC) Machine Harness (W21) Component Location—If Equipped. (Group 9015-10.)	
	Check for ground (wire H34 BLK) at pin 4 of actuator connector. See Integrated Grade Control (IGC) Machine Harness (W21) Wiring Diagram—If Equipped. (Group 9015-10.)	**YES:** OShort to ground on wire H34. Repair or replace harness. See Integrated Grade Control (IGC) Machine Harness (W21) Wiring Diagram—If Equipped. (Group 9015-10.)
	Is ground present?	**NO:** Replace Blade angle actuator (Y30) If code 523779.01 is still present after actuator replacement, go to Reprogram Controller.

AA95137,0000859 -19-12MAR07-3/4

2 Reprogram Controller	Reprogram electrohydraulic controller (EHC).	
	Check for active codes.	**YES:** Replace controller.
	Is code 523779.01 still present?	**NO:** Checks complete.

AA95137,0000859 -19-12MAR07-4/4

523780.00 — Tilt PVE Open Circuit

There is an open circuit present on the blade tilt electrohydraulic actuator.

Continued on next page

AA95137,000085A -19-20MAR07-1/6

3 Open Circuit Check	Disconnect EHC connector (X83) and actuator connector. See Integrated Grade Control (IGC) Machine Harness (W21) Component Location—If Equipped and see Integrated Grade Control (IGC) Cab Harness (W22) Component Location—If Equipped. (Group 9015-10.)	
	Check circuit H35 GRN (X83 pin 24 and actuator connector pin 1) for continuity.	**YES:** Go to Reprogram Controller.
	Is continuity indicated?	**NO:** Go to next step in this check.
	Disconnect EHC connector (X83) and bulkhead connector (X95). See Integrated Grade Control (IGC) Cab Harness (W22) Component Location—If Equipped. (Group 9015-10.)	
	Check circuit H35 GRN (X83 pin 24 and X95 pin 6) for continuity on IGC cab harness side of connector (X95).	**YES:** Open circuit in harness. Repair or replace harness. See Integrated Grade Control (IGC) Machine Harness (W21) Wiring Diagram—If Equipped. (Group 9015-10.)
	Is continuity indicated?	**NO:** Open circuit in IGC cab harness (W22). Repair or replace harness. See Integrated Grade Control (IGC) Cab Harness (W22) Wiring Diagram—If Equipped. (Group 9015-10.)

AA95137,000085F -19-23MAR07-5/6

4 Reprogram Controller	Reprogram electrohydraulic controller (EHC).	
	Check for active codes.	**YES:** Replace controller.
	Is code 523781.00 still present?	**NO:** Checks complete.

AA95137,000085F -19-23MAR07-6/6

523781.01 — Height PVE Low or Open Circuit

There is an open or short to 5 volts present on the Blade Lift Hydraulic Actuator Circuit.

AA95137,0000860 -19-05APR07-1/6

Blade Lift Hydraulic Actuator Open Circuit Diagnostic Procedure

Alarm Level:

Check Service Code

AA95137,0000860 -19-05APR07-2/6

1 Component Check	Look at LEDs on blade lift actuator (Y32). See Integrated Grade Control (IGC) Machine Harness (W21) Component Location—If Equipped. (Group 9015-10.)	**YES:** Blade tilt actuator (Y32) malfunction. Replace actuator.
	Is LED constantly lit red?	**NO:** Go to Short Circuit Check.

Continued on next page

AA95137,0000860 -19-05APR07-3/6

4 Harness Check	Turn battery disconnect switch to the OFF position.	
	Disconnect electrohydraulic control unit (EHC) connectors (X82 and X83), auxiliary joystick connector (X85), and eloctrohydraulic control unit interface connector (X96). See Integrated Grade Control (IGC) Machine Harness (W21) Component Location—If Equipped and see Integrated Grade Control (IGC) Cab Harness (W22) Component Location—If Equipped. (Group 9015-10.)	
	Check for continuity between pin 4 (circuit H37 GRN) of auxiliary joystick connector (X85) and remaining pins of EHC connectors (X82, X83, and X96).	**YES:** Circuit H37 GRN is short to circuit that indicated continuity. Repair circuit or replace harness. See Integrated Grade Control (IGC) Cab Harness (W22) Wiring Diagram—If Equipped and see Integrated Grade Control (IGC) Machine Harness (W21) Wiring Diagram—If Equipped. (Group 9015-10.)
	Is continuity indicated?	**NO:** Auxiliary 1 joystick malfunction. Replace auxiliary 1 joystick.

NM00125,000086A -19-21JUN11-6/6

524062.03 — Aux 1 Jstk Sensor 2 Short to Power

There is a short to power present on sensor 2 circuit of auxiliary joystick 1.

AA95137,0000867 -19-12MAR07-1/5

Sensor 2 of Auxiliary Joystick 1 Diagnostic Procedure

Alarm Level:

Check Service Code

AA95137,0000867 -19-12MAR07-2/5

1 Code Check	Disconnect connector (X85) from auxiliary joystick (if equipped). See Integrated Grade Control (IGC) Cab Harness (W22) Component Location—If Equipped. (Group 9015-10.)	
	Check for active codes.	**YES:** Go to Short Circuit Check.
	Is code 524062.03 still present?	**NO:** Auxiliary 1 joystick malfunction. Replace auxiliary 1 joystick.

Continued on next page

AA95137,0000867 -19-12MAR07-3/5

1 Code Check	Disconnect connector (X85) from auxiliary joystick (if equipped). See Integrated Grade Control (IGC) Cab Harness (W22) Component Location—If Equipped. (Group 9015-10.)	
	Check for active codes.	**YES:** Go to Voltage Check.
	Is code 524086.14 still present?	**NO:** Auxiliary 1 joystick malfunction. Replace auxiliary 1 joystick.

AA95137,0000870 -19-12MAR07-3/7

2 Voltage Check	Disconnect connector (X85) from auxiliary 1 joystick (if equipped). See Integrated Grade Control (IGC) Cab Harness (W22) Component Location—If Equipped. (Group 9015-10.)	
	Check voltage across circuits H22 GRN (X85 pin 2) and R41 BLK (X85 pin 1).	**YES:** Go to Short Circuit Check—Sensor 1.
	Is voltage 4.75—5.25 volts?	**NO:** Harness malfunction. Repair or replace harness. See Integrated Grade Control (IGC) Cab Harness (W22) Wiring Diagram—If Equipped. (Group 9015-10.)

AA95137,0000870 -19-12MAR07-4/7

3 Short Circuit Check—Sensor 1	Disconnect connectors X83 from EHC and X85 from auxiliary 1 joystick (if equipped). See Integrated Grade Control (IGC) Cab Harness (W22) Component Location—If Equipped. (Group 9015-10.)	
	Check continuity between circuits H37 GRN (X85 pin 4) and H26 GRN (X85 pin 3).	
	Check continuity between circuit H26 GRN (X85 pin 3) and system power and machine ground.	**YES:** Short circuit in harness. Repair or replace harness. See Integrated Grade Control (IGC) Cab Harness (W22) Wiring Diagram—If Equipped. (Group 9015-10.)
	Is there continuity between circuits H26 GRN and H37 GRN or power and ground?	**NO:** Go to Short Circuit Check—Sensor 2.

AA95137,0000870 -19-12MAR07-5/7

4 Short Circuit Check—Sensor 2	Disconnect EHC connector (X83) and connector (X85) from auxiliary 1 joystick (if equipped). See Integrated Grade Control (IGC) Cab Harness (W22) Component Location—If Equipped. (Group 9015-10.)	
	Check continuity between circuits H37 GRN (X85 pin 4) and H26 GRN (X85 pin 3).	
	Check continuity between circuit H37 GRN (X85 pin 4) and system power and machine ground.	**YES:** Short circuit in harness. Repair or replace harness. See Integrated Grade Control (IGC) Cab Harness (W22) Wiring Diagram—If Equipped. (Group 9015-10.)
	Is there continuity between circuits H37 GRN and H26 GRN or power and ground?	**NO:** Go to Reprogram Controller.

Continued on next page

AA95137,0000870 -19-12MAR07-6/7

Section 9005
Operational Checkout Procedure

Contents

Decelerator/Brake Pedal and Park Brake Check

CAUTION: Pushing on decel/brake pedal will stop machine abruptly.

Operate engine at slow idle.

Move park lock lever to the UNLOCK (down) position.

Operate machine slowly in forward. Fully depress decel/brake pedal and then release.

LOOK: Does machine stop when decel/brake pedal is depressed and move when pedal is released?

Depress decel/brake pedal until spring resistance is felt.

Adjust engine speed to fast idle and transmission speed to 3.0.

Move TCL to forward position.

Release decel/brake pedal.

LOOK: Does machine accelerate smoothly to maximum speed?

NOTE: Decel/brake response time can be set to operator preference. See Standard Display Monitor (SDM) Menu Structure—Service Mode. (Group 9015-20.)

YES: Check complete.

NO: Inspect park brake valve. See Park Brake Operation. (Group 9026-05.) Perform Transmission Control Unit (TCU) Calibration. (Group 9015-20.)

AA95137,00008DC -19-23MAY12-20/28

Transmission Control Lever (TCL) Check

CAUTION: Prevent possible injury from machine movement. Make sure there is adequate room and be aware of bystanders.

Operate engine at 1500 rpm.

Put transmission speed to 2.0.

Make several shifts from neutral to forward, neutral to reverse, and then forward to reverse.

Specification

Engine—Speed.....1500 rpm

LOOK: Does machine shift smoothly?

LOOK: Does machine operate in forward and reverse?

NOTE: Transmission shift rate can be set to operator preference. Low has a slower reaction time, and high has a quicker reaction time. See Standard Display Monitor (SDM) Menu Structure—Service Mode to change transmission rates. (Group 9015-20.)

YES: Check complete.

NO: Test TCL sensor. See Main Cab/Canopy Harness (W5) Wiring Diagram. (Group 9015-10.)

AA95137,00008DC -19-23MAY12-21/28

Transmission Speed Check

Operate engine at slow idle.

Check transmission speed. Transmission speed should default to 1.6.

LOOK: Does transmission speed default to 1.6?

Increase transmission speed to 3.0.

LOOK: Does transmission speed increase to 3.0?

YES: Check complete.

NO: Calibrate TCU. See Transmission Control Unit (TCU) Calibration. (Group 9015-20.)

Continued on next page

AA95137,00008DC -19-23MAY12-22/28

1— Fuel Injection Pump
2— Fuel Injection Nozzle
3— Fuel Tank
4— Fuel Level Sensor (B35)
5— Final Fuel Filter
6— Fuel Supply Pump
7— Primary Fuel Filter/Water Separator
8— Fuel Return Line
9— Fuel Supply Line

Continued on next page

AA95137,0000559 -19-26MAY10-2/4

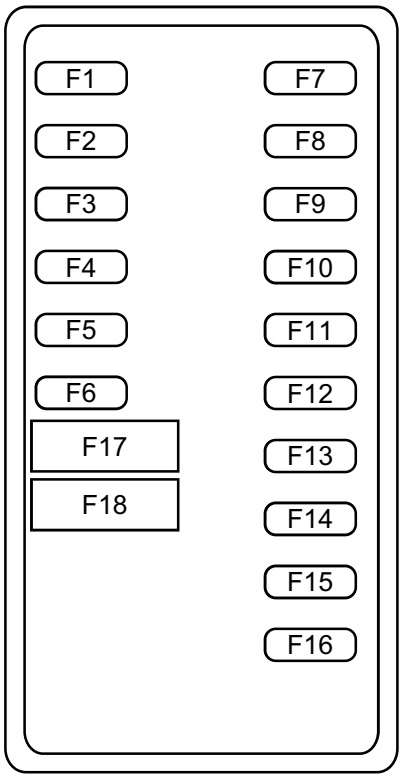
Electrical Diagram Information

NOTE: All System Functional Schematics, Circuit Schematics, and Wiring Diagrams are shown with key switch in the off position.

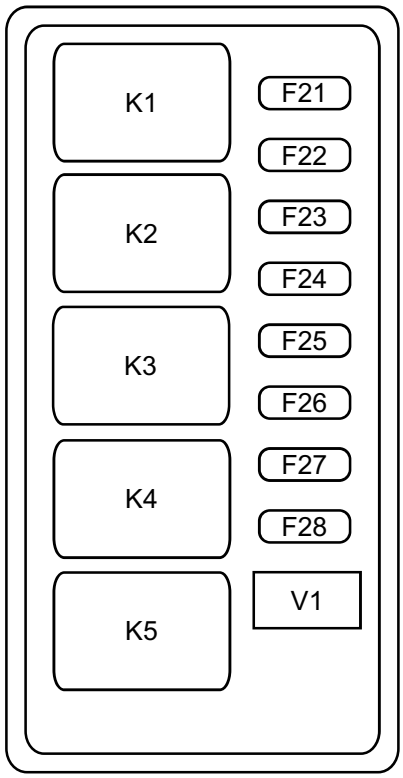
Continued on next page

Fuse and Relay Specifications (S.N. 139436—153830)

IMPORTANT: Install fuse with correct amperage rating to prevent electrical system damage from overload.



Load Center 1 (A4)



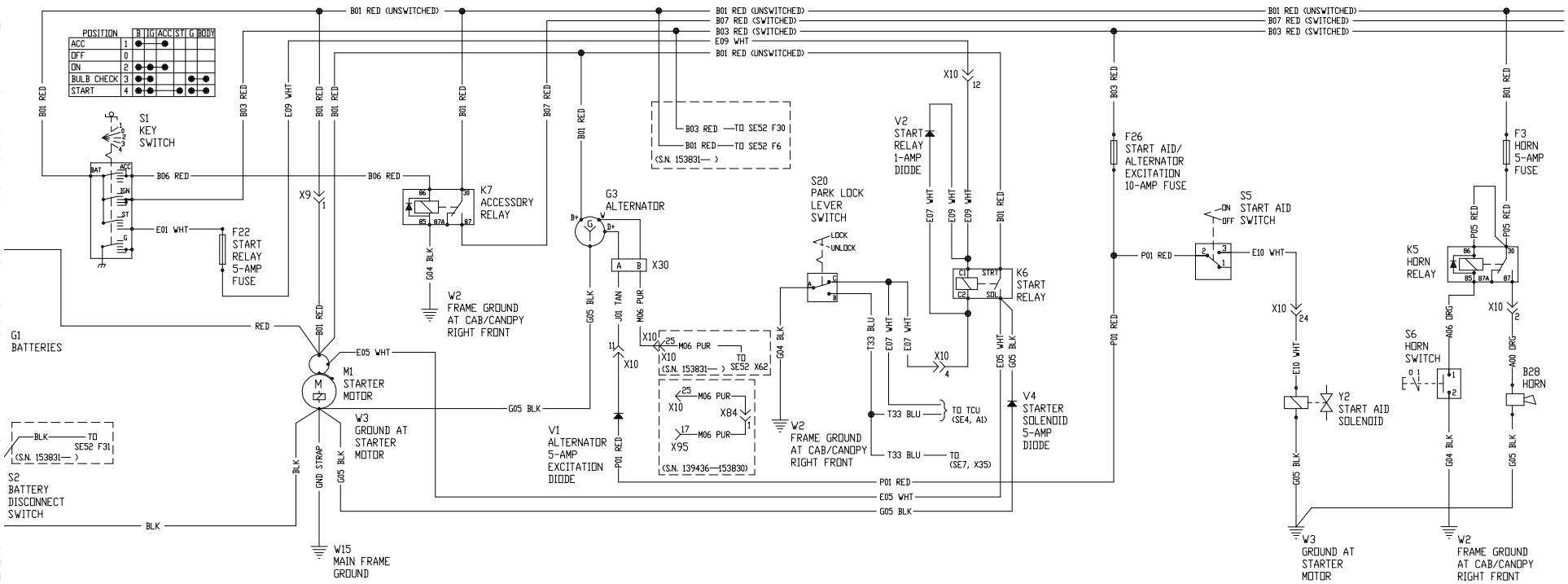
Load Center 2 (A5)

F1— Monitor 5-Amp Fuse (Unswitched Power)
F2— ECU 10-Amp Fuse (Unswitched Power)
F3— Horn 5-Amp Fuse
F4— Radio 5-Amp Fuse (Unswitched Power)
F5— Service ADVISOR™ 5-Amp Fuse
F6— Spare 5-Amp Fuse
F7— Under-Seat Heater 15-Amp Fuse
F8— Spare 10-Amp Fuse (marked as Heater Valve)
F9— Front/Rear Wiper 10-Amp Fuse
F10— Left/Right Wiper 10-Amp Fuse
F11— Air Ride Seat 10-Amp Fuse
F12— Radio/Dome Light 10-Amp Fuse
F13— Hydraulic Lockout 5-Amp Fuse (not used)
F14— IGC/Beacon Light 5-Amp Fuse
F15— Heater Blower 15-Amp Fuse (earlier models 10 amp)
F16— Switch Backlights 5-Amp Fuse
F17— Lights 15-Amp Circuit Breaker
F18— Lights 20-Amp Circuit Breaker
F21— Monitor 5-Amp Fuse (Switched Power)
F22— Start Relay 5-Amp Fuse
F23— A/C Condenser Fan #1 15-Amp Fuse (earlier models 10 amp)
F24— A/C Condenser Fan #2 15-Amp Fuse (earlier models 10 amp)
F25— A/C Compressor 10-Amp Fuse
F26— Start Aid/Alternator Excitation 10-Amp Fuse
F27— ECU 5-Amp Fuse (Switched Power)
F28— TCU 10-Amp Fuse (Switched Power)
K1—Standard Lights Relay
K2—Optional Lights Relay
K3—A/C Condenser Fans Relay
K4—A/C Compressor Relay
K5—Horn Relay
V1—Alternator Excitation 5-Amp Diode

The load centers are located inside the cab under the right console. See Main Cab/Canopy Harness (W5) Component Location. (Group 9015-10.)

Continued on next page

AA95137,0000CB5 -19-17DEC08-1/2



700J SYSTEM FUNCTIONAL SCHEMATIC

System Functional Schematic (SE1, SE2, SE3) (1 of 10)

Continued on next page

WS68074,00037C7 -19-18MAY12-2/21

1— If Equipped
A3—Engine Control Unit (ECU)
B6—Crankshaft Position Sensor
B10— Fuel Rail Pressure Sensor
B12— Engine Coolant Temperature Sensor
B14— Engine Oil Pressure Sensor
B29— Fuel Temperature Sensor
B31— Manifold Air Temperature Sensor
B34— Water-In-Fuel Sensor
B70— Camshaft Position Sensor
F5— Service ADVISOR™ 5-Amp Fuse
F13— Hydraulic Lockout 5-Amp Fuse (if equipped) (S.N. —153830)
F29— Hydraulic Lockout 5-Amp Fuse (if equipped) (S.N. 153831—)
K11— Hydraulic Lockout Relay (if equipped)
W2—Frame Ground at Cab/Canopy Right Front
W3—Ground at Starter Motor
X3— Service ADVISOR™ Connector
X26— ECU 48-Pin Connector
X27— ECU 32-Pin Connector
X31— 2-Pin Connector (not used)
X35— Hydraulic Lockout Harness Connector (if equipped)
Y20— Hydraulic Lockout Solenoid—Blade Lift (if equipped)
Y21— Hydraulic Lockout Solenoid—Blade Tilt (if equipped)
Y22— Hydraulic Lockout Solenoid—Blade Angle (if equipped)
Y23— Hydraulic Lockout Solenoid—Auxiliary (if equipped)

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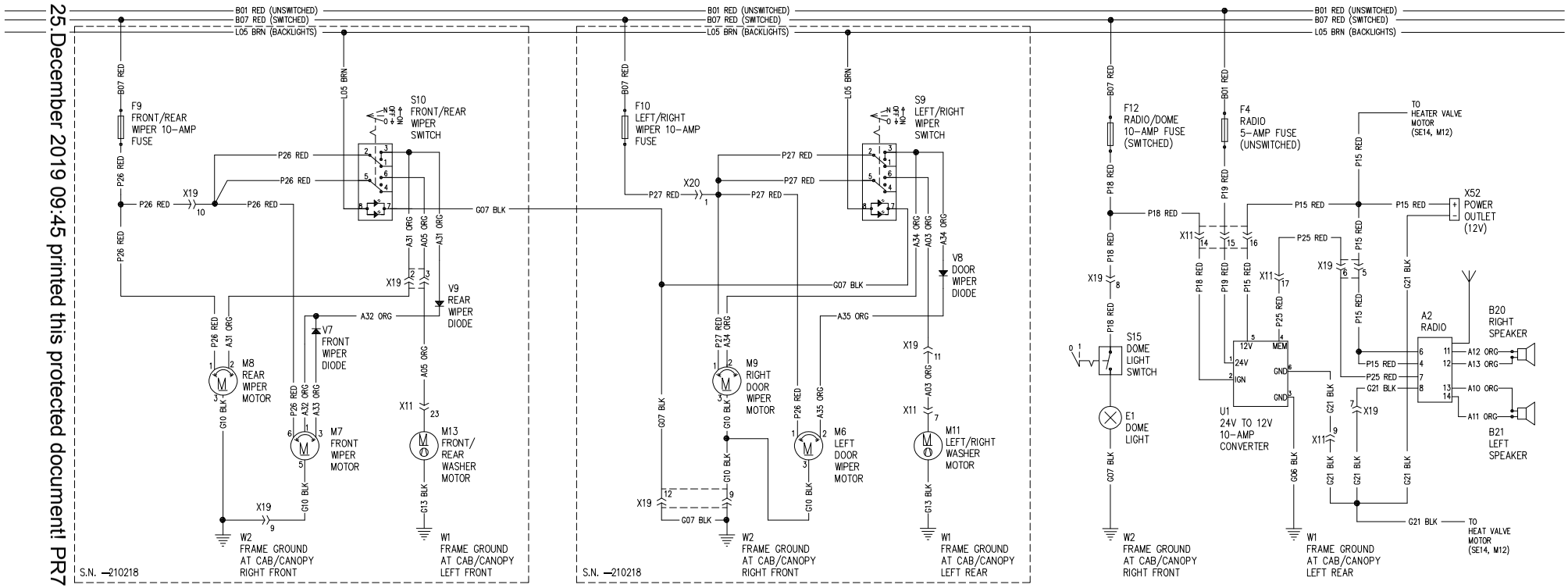
WS68074,00037C7 -19-18MAY12-7/21



SE16 FRONT AND REAR WIPER CIRCUIT (S.N. —210218)

SE17 LEFT AND RIGHT WIPER CIRCUIT (S.N. —210218)

SE18 POWER OUTLET, DOME LIGHT, AND RADIO CIRCUITS

700J SYSTEM FUNCTIONAL SCHEMATIC

System Functional Schematic (SE16, SE17, SE18) (6 of 10)

Continued on next page

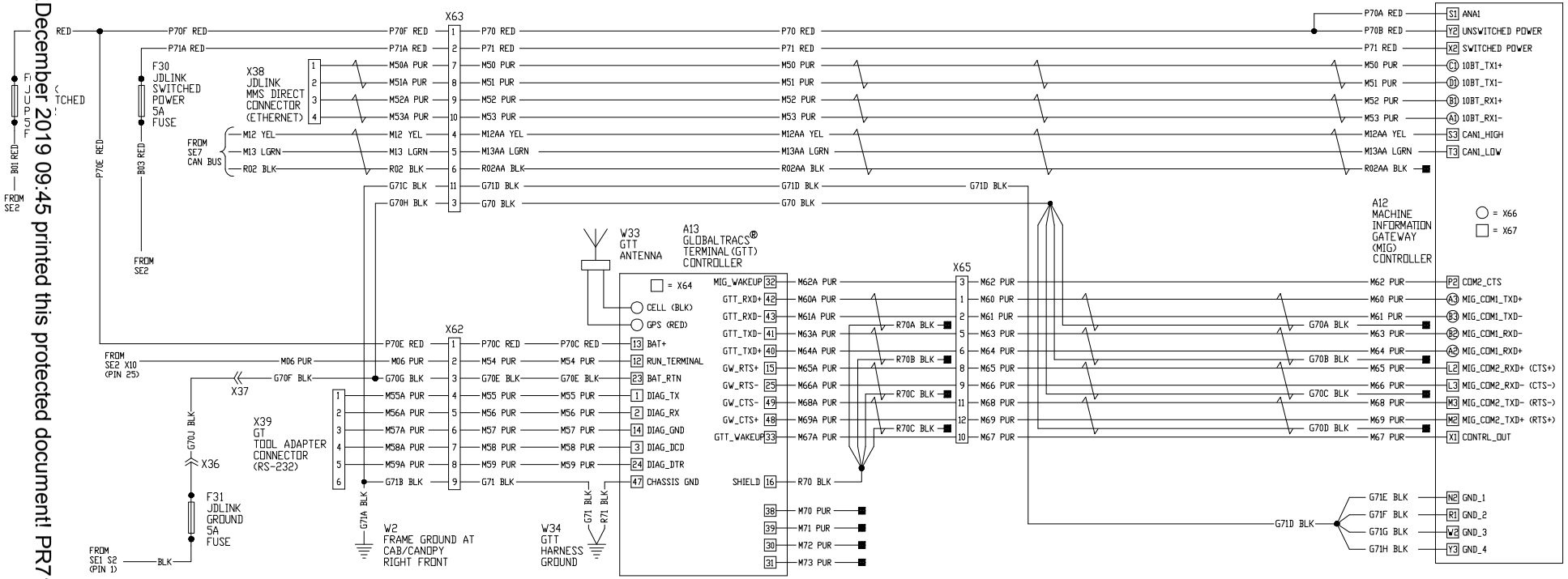
B61— Fuel Filter Heater Temperature Switch
E11— Beacon Light Right (S.N. 220683—)
E12— Beacon Light Left (S.N. 220683—)
F8— Spare 10-Amp Fuse (marked as heater valve)
F11— Air Ride Seat 10-Amp Fuse
F13— Fuel Filter Heater 10-Amp Fuse
F14— IGC/Beacon Light 5-Amp Fuse
F16— Switch Backlights 5-Amp Fuse
M14— Air Ride Seat Motor
R14— Fuel Filter Heater
S12— Beacon Light Switch (if equipped)
S22— Air Ride Seat Switch
W2—Frame Ground at Cab/Canopy Right Front
X19— Cab Roof Harness-to-Main Cab/Canopy Harness Connector
X28— Air Ride Seat Connector
X29— Fuel Filter Heater Harness 2-Pin Connector (if equipped)
X50— 1-Pin Beacon Connector (not used)

Continued on next page

WS68074,00037C7 -19-18MAY12-17/21

JDLink™ System Functional Schematic—If Equipped (S.N. 153831—196417)

TX1041243 —19—



SE52 MACHINE INFORMATION POWER CIRCUIT

SE53 GLOBALTRACS TERMINAL (GGT) CIRCUIT

SE54 MACHINE INFORMATION GATEWAY (MIG) CIRCUIT

JDLINK SYSTEM FUNCTIONAL SCHEMATIC

JDLink™ Sub-System Schematic (S.N. 153831—196417)

TX10

Continued on next page

WS68074,00037C8 -19-17MAR11-1/2

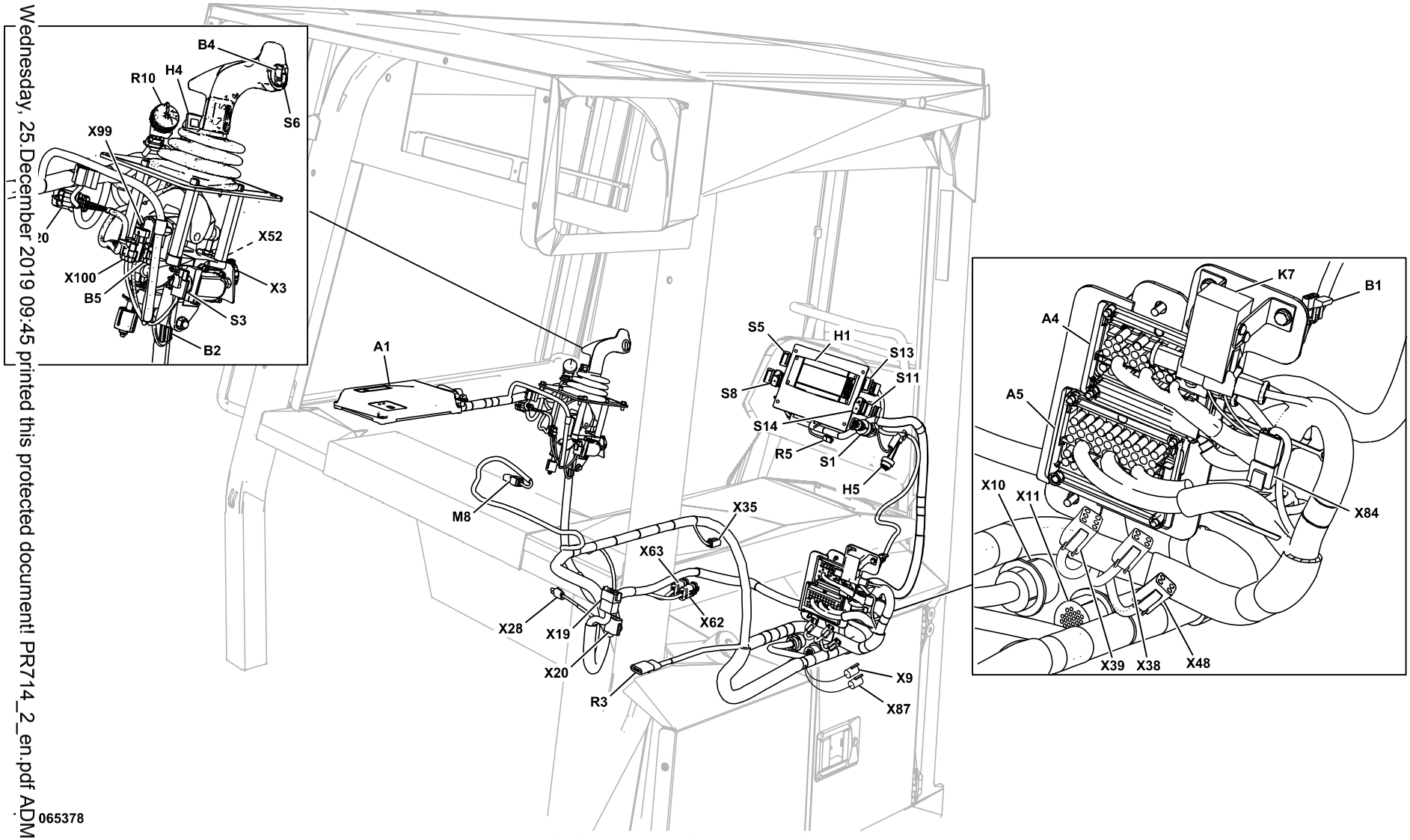
B26— Heat… perature Control
E1—Dome…
E5—Rear A… y Light Right
E6—Rear A… y Light Left
E7—Front … ry Light Left
E8—Front … ry Light Right
M6—Left D… per Motor
M7—Front … Motor
M9—Right Door Wiper Motor
S7—Heater Blower Switch
S9—Left/Right Door Wiper Switch
S10—Front/Rear Wiper Switch
S15—Dome Light Switch
S19—A/C On/Off Switch
V7—Front Wiper Diode
V8—Door Wiper Diode
V9—Rear Wiper Diode

Continued on next page

X12—Cab Roof Harness-to-A/C Harness Connector
X13—Cab Roof Harness-to-Radio Harness Connector
X19—Cab Roof Harness-to-Cab Harness Connector
X20—Cab Roof Harness-to-Cab Harness Connector
X50—1-Pin Beacon Connector (not used)
X115—L02 BRN Splice
X116—G07 BLK Splice
X120—P26 RED Splice
X121—P15 RED Splice
X123—P27 RED Splice
X132—G10 BLK Splice
X133—P09 RED Splice

AA95137,00008DF -19-03MAY12-3/9

TX1065378 —UN—01OCT09



Main Cab/Canopy Harness (W5) Component Location (S.N. 153831—210218)

TX1065378

Continued on next page

AA95137,0000812 -19-07MAY12-3/6

TX1026056 —UN— L07

END #1	NUMBER	COLOR	END #2
X8	A00	ORG	X10
R3	A01	ORG	S13
R3	A02A	ORG	S13
X19	A03B	ORG	X11
X20	A04B	ORG	M12
X19	A05B	ORG	X11
X8	A06	ORG	S6
X8	A14	ORG	X10
S13	A15A	ORG	S13
X7	A16	ORG	X28
X20	A28B	ORG	X144
X8	A28C	ORG	X144
X8	A28D	ORG	X144
X19	A31C	ORG	M8
X54	B01A	RED	X9
X54	B01B	RED	S1
X55	B01C	RED	K2
X119	B01F	RED	X55
X119	B01G	RED	X87
X119	B01H	RED	X8
X119	B01J	RED	X8
X140	B03A	RED	X140
X8	B03B	RED	X140
X8	B03C	RED	X140
X8	B03D	RED	X140
X8	B03E	RED	X140
X8	B03F	RED	X140
X8	B03G	RED	S1
X8	B04A	RED	X142
X8	B04B	RED	X142
X8	B04C	RED	X142
X8	B05A	RED	X8
K7	B06A	RED	S1
K7	B07A	RED	K2
X53	B07B	RED	X8
K7	B07C	RED	X8
X8	E01	WHT	S1
X2	E03A	WHT	S3
X2	E06A	WHT	S8
X118	E07	WHT	S20
X118	E07C	WHT	X10
X118	E07D	WHT	X2
X8	E09	WHT	X10
X10	E10	WHT	S5
X10	G01	BLK	X11
X10	G01A	BLK	X122
X108	G01B	BLK	X3
X108	G01D	BLK	X2
X6	G01E	BLK	X122
X108	G01F	BLK	S3
X101	G04	BLK	W2
X101	G04A	BLK	S14
S14	G04B	BLK	S11
X101	G04C	BLK	X28
X101	G04D	BLK	S20
R3	G04E	BLK	X142
S11	G04F	BLK	S8
X101	G04G	BLK	S6
X8	G04H	BLK	X142
X8	G04J	BLK	X142
K7	G04K	BLK	X142
X29	G04L	BLK	X142
X101	G04M	BLK	W2
S11	G07A	BLK	S8
S14	G07F	BLK	S12
S13	G07G	BLK	S14
S13	G07H	BLK	S11
W2	G07J	BLK	S12
X19	G07M	BLK	W2
X20	G08A	BLK	W2
X20	G08C	BLK	W2
X48	G09A	BLK	W2
X48	G09B	BLK	W2
X122	G10C	BLK	W2
X19	G10E	BLK	X122
M8	G10G	BLK	X122
X35	G11D	BLK	W2
X10	G12B	BLK	X131
X11	G12D	BLK	X131
X11	G12E	BLK	X131
X10	G14B	BLK	X84
X134	G21A	BLK	X11
X19	G21B	BLK	X134
X134	G21C	BLK	X52
X20	G21E	BLK	X134
X134	G21F	BLK	M12
X37	G70F	BLK	X180
X182	G70G	BLK	X42
X182	G70H	BLK	X41
W2	G71A	BLK	X181
X181	G71B	BLK	X42
X181	G71C	BLK	X41
V1	J01	TAN	X10
X19	L02D	BRN	X136
X8	L02E	BRN	X136
X48	L02H	BRN	X136
X48	L02J	BRN	X136
X19	L03A	BRN	S12
X8	L04	BRN	X137
X10	L04A	BRN	X137
X137	L04B	BRN	X11
S13	L05A	BRN	S14
S13	L05B	BRN	S11
X7	L05C	BRN	S12
S11	L05D	BRN	S8
S14	L05E	BRN	S12
X20	L05F	BRN	S8
X8	L06	BRN	S14
X8	L07A	BRN	S11
H5	M01A	PUR	X6
X11	M02	PUR	X2
X10	M03B	PUR	H4
X10	M06B	PUR	X42
X104	M12	YEL	X3
X109	M12A	YEL	X2
X112	M12C	YEL	X185
X112	M12F	YEL	R5
X6	M12G	YEL	X112
X10	M12K	YEL	X104
X185	M12AB	YEL	X41
X185	M12AC	YEL	X112
X104	M12TJ	YEL	X104
X103	M13	LGRN	X3
X110	M13A	YEL	X2
X184	M13C	LGRN	X109
X113	M13F	LGRN	R5
X184	M13G	LGRN	X6
X10	M13K	LGRN	X110
X109	M13AB	LGRN	X41
X109	M13AC	LGRN	X103
X110	M13TJ	LGRN	X103
X38	M50A	PUR	X41
X38	M51A	PUR	X41
X38	M52A	PUR	X41
X38	M53A	PUR	X41
X39	M55A	PUR	X42
X39	M56A	PUR	X42
X39	M57A	PUR	X42
X39	M58A	PUR	X42
X39	M59A	PUR	X42
X11	N03B	YEL	X5
X11	N04B	YEL	X5
X11	N05	YEL	H7
X10	N06	YEL	X5
X8	P01A	RED	X138
X138	P01B	RED	S5
V1	P01C	RED	X138
X7	P02A	RED	X3
X145	P05A	RED	X7
X145	P05B	RED	X8
X145	P05C	RED	X8
X7	P06A	RED	X10
X10	P07B	RED	X139
X139	P07C	RED	H4
X8	P07D	RED	X139
X7	P08A	RED	X8
X8	P10A	RED	X147
X147	P10B	RED	X6
H7	P10C	RED	X147
X7	P11A	RED	X6
X8	P12A	RED	X2
X7	P14A	RED	X146
X146	P14B	RED	X84
X146	P14C	RED	X12
X143	P15A	RED	X11
X19	P15B	RED	X143
X143	P15F	RED	X52
X20	P15J	RED	X143
M12	P15K	RED	X143
X20	P16A	RED	X8
X20	P17A	RED	X8
X7	P18	RED	X135
X135	P18A	RED	X11
X19	P18D	RED	X135
X7	P19B	RED	X11
X7	P20A	RED	X8
X7	P22	RED	S13
X19	P25A	RED	X11
X19	P26C	RED	X141
M8	P26E	RED	X141
X7	P26F	RED	X141
X20	P27	RED	X7
X20	P28A	RED	X7
X8	P29A	RED	X35
X7	P31A	RED	X29
X7	P70D	RED	X180
X180	P70E	RED	X42
X180	P70F	RED	X41
X8	P71A	RED	X41
X102	R02	BLK	X3
X111	R02A	BLK	SHIELD
X102	R02C	BLK	X183
X114	R02F	BLK	R5
X114	R02G	BLK	SHIELD
X10	R02K	BLK	X111
X183	R02AB	BLK	X41
X183	R02AC	BLK	X102
X111	R02TJ	BLK	X102
X106	R04	BLK	X5
X106	R04F	BLK	X106
X11	R04G	BLK	X16
H5	R11A	BLK	X6
X1	T01	BLU	B2
X1	T02	BLU	B2
X11	T03	BLU	X1
X1	T04	BLU	B4
B1	T05	BLU	X1
B1	T06	BLU	X1
X1	T07	BLU	B4
X1	T08	BLU	S21
X1	T09	BLU	S21
X1	T10	BLU	B5
X1	T11	BLU	B5
X11	T17	BLU	X1
X11	T18	BLU	X1
X11	T19	BLU	X1
X11	T20	BLU	X1
X11	T21	BLU	X1
X151	T33A	BLU	S20
X151	T33B	BLU	X1
X151	T33C	BLU	X35
X10	T38	BLU	X1
X10	T41	BLU	X1
X10	T42	BLU	X1
X10	T45	BLU	X1
X11	T50	BLU	X2
X11	T51	BLU	X2
X11	T52A	BLU	X2
X11	X12A	YEL	X5
X11	X33	YEL	X6
X10	X38	YEL	X5
X1	Z01	GRY	B2
X11	Z02	GRY	X1
B1	Z03	GRY	X1
X1	Z04	GRY	B4
X1	Z05	GRY	B5
X1	Z07	GRY	S21
X11	Z08	GRY	X1
X11	Z09	GRY	X1

TX10260

Main Cab/Canopy Harness Wiring Table (S.N. 153831—210218)

Continued on next page

AA95137,00008E0 -19-04MAY12-7/20

1—Continu Sheet 3
A4—Load C 1
A5—Load C 2
B1—Decele Sensor
B61—Fuel Heater Temperature Switch (if equipped)
H5—Monito m
K7—Acces elay
M8—Rear V Motor
M12—Heate e Motor
R3—Under Heater Blower Resistor
R10—Fuel Heater (if equipped)
X7—Load C 1 Connector
X8—Load C 2 Connector
X9—Main C nopy Harness-to-Engine Harness Connector

Continued on next page

X10—Main Cab/Canopy Harness-to-Engine Harness Connector
X11—Main Cab/Canopy Harness-to-Transmission Harness Connector
X19—Cab Roof Harness-to-Main Cab/Canopy Harness Connector
X20—Cab Roof Harness-to-Main Cab/Canopy Harness Connector
X28—Air Ride Seat Connector
X29—Fuel Filter Heater Harness 2-Pin Connector (if equipped)
X35—4-Pin Connector (not used)
X37—Transmission Harness-to-Cab Harness Connector
X48—Main Cab/Canopy Harness-to-Canopy Auxiliary Light Harness Connector
X53—Switched Power Terminal Connector (Marked as L2)
X54—Unswitched Power Terminal Connector (Marked as L1)
X55—Unswitched Power Terminal Connector
X84—4-Pin Connector (not used)
X87—1-Pin Connector (not used)
X118—E07 WHT Splice
X119—B01 RED Splice 2
X122—G10 BLK Splice
X134—G21 BLK Splice
X135—P18 RED Splice
X136—L02 BRN Splice
X137—L04 BRN Splice
X139—P01 RED Splice
X139—P07 RED Splice
X140—B03 RED Splice
X141—P26 RED Splice
X142—B04 RED Splice
X143—P15 RED Splice
X144—A28 ORG Splice
X145—P05 RED Splice
X151—T33 BLU Splice

AA95137,00008E0 -19-04MAY12-16/20

Engine Harness (W6) Wiring Diagram

TX1014632 —UN—08NOV06

END #1		WIRE		END #2	
CONNECTOR	PIN	NUMBER	COLOR	CONNECTOR	PIN
X152	Side-A	SHIELD_1	CLR	X23	
X152	Side-A	SHIELD_2	CLR	Y1	
X10	2	A00A	ORG	B28	1
X10	18	A14A	ORG	V6	CATHODE
V6	CATHODE	A14B	ORG	Y5	A
X9	1	B01	RED	G2	1
G3	1	B01D	RED	G2	1
K6	1	B01E	RED	G2	1
X27	H1	E02A	RED	Y1	1
K6	1	E05A	WHT	G2	A
V4	CATHODE	E05B	WHT	K6	1
X10	4	E07A	WHT	K6	1
V2	ANODE	E07B	WHT	K6	1
X10	12	E09A	WHT	K6	1
V2	CATHODE	E09B	WHT	K6	1
X10	24	E10A	WHT	Y2	A
X27	G2	E11A	RED	X23	8
X27	G1	E12A	ORG	X23	7
X27	E1	E13A	WHT	X23	1
X27	B1	E14A	GRY	X23	2
X27	D1	E15A	GRN	X23	3
X27	A1	E16A	VLT	X23	4
X27	F1	E17A	YEL	X23	5
X27	C1	E18A	BLU	X23	6
X27	E3	E20A	YEL	B10	2
X27	D3	E21A	RED	B10	3
X27	B2	E25A	WHT	B21	A
X10	8	G01H	BLK	M1	1
X10	6	G01J	BLK	M1	1
M1	1	G01M	BLK	X153	Side-A
X153	Side-B	G01R	BLK	X27	M2
X153	Side-B	G01T	BLK	X27	L3
X153	Side-B	G01U	BLK	X27	L2
M1	1	G03A	BLK	X126	Side-A
X126	Side-B	G03B	BLK	E3	2
X126	Side-B	G03C	BLK	E4	2
M1	1	G05	BLK	G3	1
X127	Side-B	G05A	BLK	M1	1
V4	ANODE	G05B	BLK	X127	Side-B
V6	ANODE	G05C	BLK	Y5	B
X127	Side-A	G05D	BLK	B28	1
B18	B	G05E	BLK	X127	Side-A
X127	Side-A	G05F	BLK	V6	ANODE
X127	Side-A	G05H	BLK	Y2	B
X10	23	G12A	BLK	M1	1
X10	26	G14A	BLK	M1	1
X10	11	J01A	TAN	X30	A

END #1		WIRE		END #2	
CONNECTOR	PIN	NUMBER	COLOR	CONNECTOR	PIN
X125	Side-B	L04C	BRN	E1	1
X125	Side-B	L04D	BRN	E4	1
X10	7	L04E	BRN	X125	Side-A
X10	19	M03A	PUR	X27	C1
X10	25	M06A	PUR	X30	B
X150	Side-B	M12D	YEL	X27	A1
X150	Side-B	M12E	YEL	R4	A
X10	20	M12H	YEL	X150	Side-A
X149	Side-B	M13D	LGRN	X27	B1
X149	Side-B	M13E	LGRN	R4	B
X10	21	M13H	LGRN	X149	Side-A
X27	B4	M20	PUR	B6	A
X27	A4	M22	PUR	B70	B
X27	A3	N01A	YEL	B14	C
X10	10	N06A	YEL	B18	A
X27	F3	P04A	RED	B14	B
X10	15	P06C	RED	X151	Side-A
X151	Side-B	P06D	RED	X27	M1
X151	Side-B	P06E	RED	X27	L4
X151	Side-B	P06F	RED	X27	L1
X151	Side-B	P06G	RED	X27	M4
X10	9	P07A	RED	X27	B2
B12	B	R01A	BLK	X128	Side-A
B29	2	R01C	BLK	X128	Side-B
X128	Side-A	R01D	BLK	B31	B
B14	A	R01E	BLK	X128	Side-B
X128	Side-A	R01G	BLK	B21	B
X27	D2	R01H	BLK	X128	Side-B
X148	Side-B	R02D	BLK		
R4	C	R02E	BLK	X148	Side-B
X10A	22	R02H	BLK	X148	Side-A
M1	1	R02GND	BLK	X148	Side-A
X10	17	R04A	BLK	B40	B
X27	H2	R05A	BLK	Y1	2
X27	E2	R10A	BLK	B10	1
X152	Side-B	R11	BLK	X27	F2
X27	D4	R15	BLK	B6	B
X27	E4	R16	BLK	B70	A
X10	5	T38A	BLU	B8	2
X10	13	T41A	BLU	B8	1
X10	3	T42A	BLU	B9	2
X10	14	T45A	BLU	B9	1
X27	C4	X07A	YEL	B12	A
X27	C2	X08A	YEL	B31	A
X27	F4	X09A	YEL	B29	1
X10	16	X38A	YEL	B40	A

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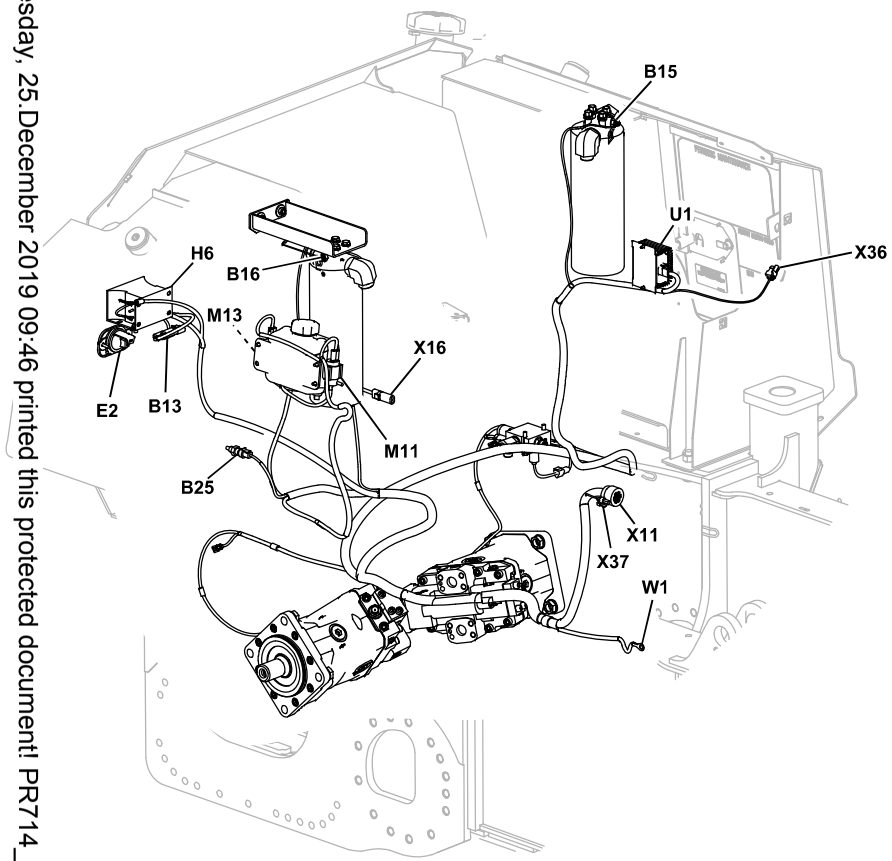
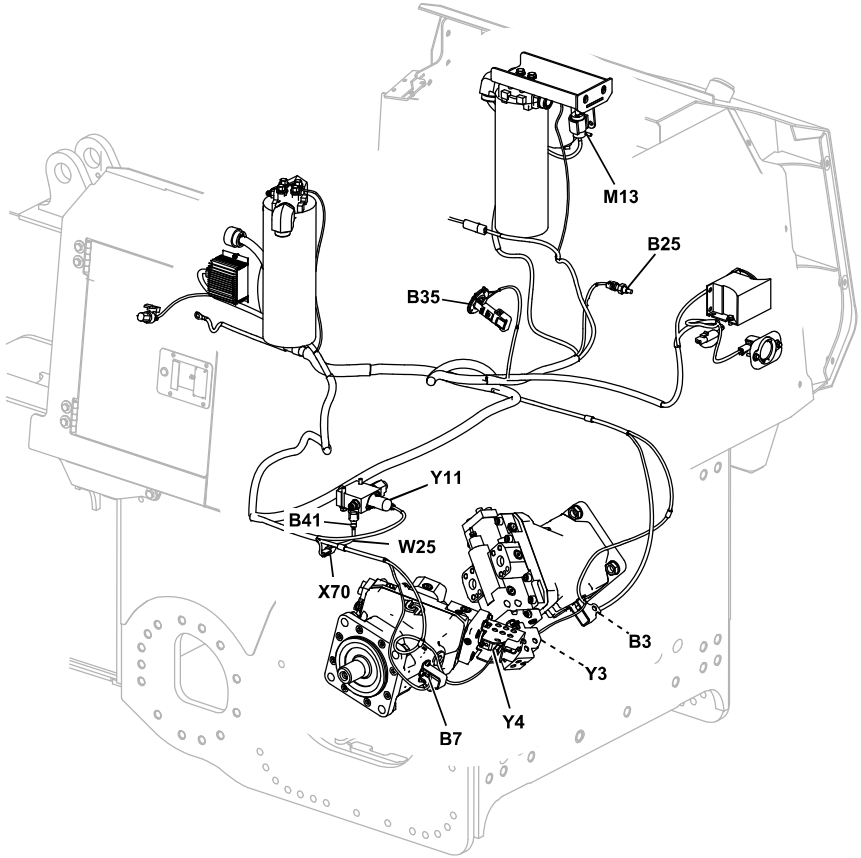
Continued on next page

Engine Harness (W6) Wire Table

AA95137,00008E1 -19-22MAR07-1/5

TX1092456 —UN—23MAY11





TX1092456

Transmission Harness (W7) Component Location (S.N. 173345—)

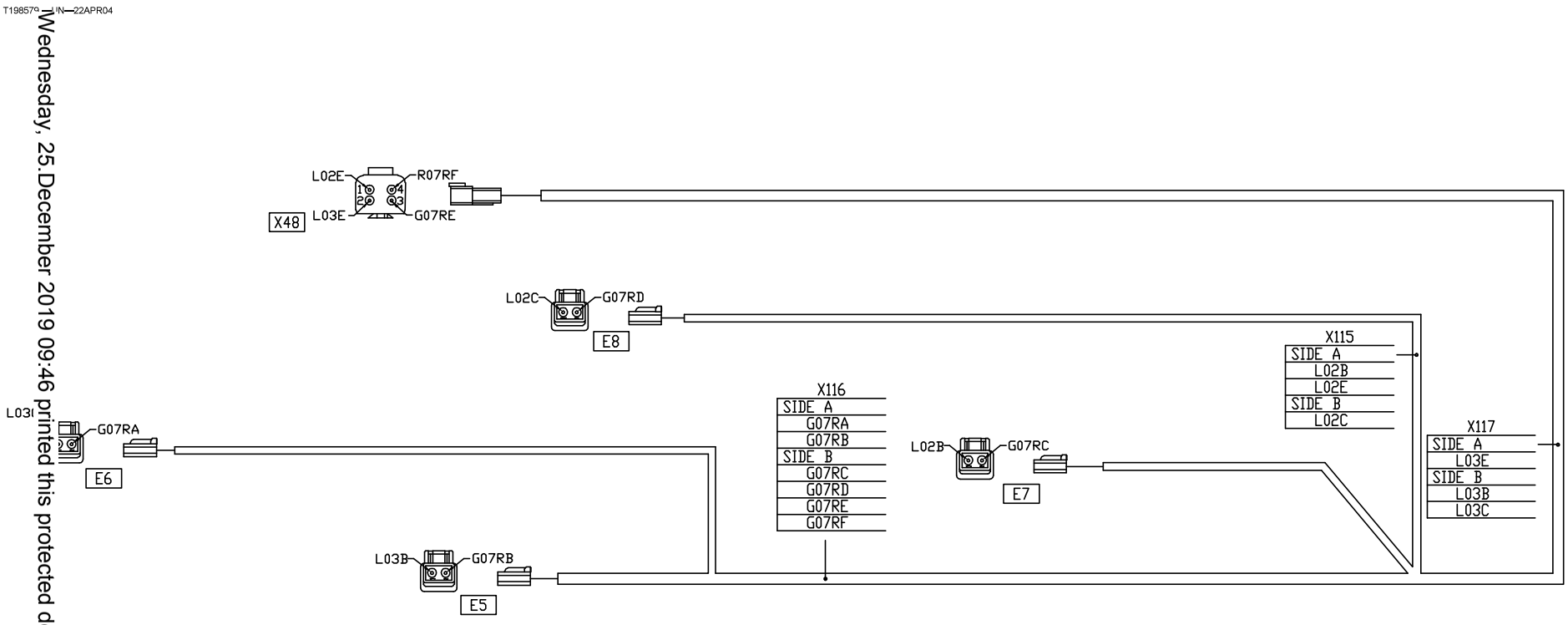
Continued on next page

AA95137,0000576 -19-19MAY11-5/6

B22— A/C Freeze Switch
B50— A/C High/Low Pressure (Binary) Switch
M2—Heater Blower Motor
M4—Condenser Fan Motor
M5—Condenser Fan Motor
R2—Cab Heater Blower Resistor
W14—Condenser Harness
X12— Cab/Canopy-to-A/C Harness Connector
X51— A/C Harness-to-Condenser Harness Connector

AA95137,00005AE -19-11DEC06-2/2

Canopy Auxiliary Light Harness (W11) Wiring Diagram



D #1	NUMBER	COLOR	END #2
116	G07RA	BLK	E6
116	G07RB	BLK	E5
-7	G07RC	BLK	X116
-8	G07RD	BLK	X116
116	G07RE	BLK	X48
116	G07RF	BLK	X48
115	L02B	BRN	E7
115	L02C	BRN	E8
115	L02E	BRN	X48
117	L03B	BRN	E5
117	L03C	BRN	E6
48	L03E	BRN	X117

T198579

Canopy Auxiliary Light Harness (W11) Wiring Diagram

Continued on next page

MF82180,0000044 -19-27JAN05-1/2

A9—Blade Control Joystick (BCJ)
A11—Electrohydraulic Controller
R6—IGC CAN Termination Resistor
R7—IGC CAN Termination Resistor
S30—Hydraulic Enable Switch
X81—RS232 3-Pin Connector
X82—Electro-Hydraulic Controller (EHC) 24-Pin Connector
X83—Electro-Hydraulic Controller (EHC) 24-Pin Connector
X84—IGC Cab Harness-to-Cab/Canopy Harness 4-Pin Connector
X85—Auxiliary Joystick 4-Pin Connector
X86—Machine CAN 3-Pin Connector
X95—IGC Machine Harness-to-IGC Cab Harness 35-Pin Connector
X97—BCJ Switch Module Connector
X98—BCJ Four-Way Axis Module Connector

AA95137,0000813 -19-23FEB07-2/2

K11— Hydraulic Lockout Relay
X191— P30 RED Splice
X192— G11 BLK Splice
X35— Hydraulic Lockout Harness Connector (if equipped)
Y20— Hydraulic Lockout Solenoid—Blade Lift
Y21— Hydraulic Lockout Solenoid—Blade Tilt
Y22— Hydraulic Lockout Solenoid—Blade Angle
Y23— Hydraulic Lockout Solenoid—Auxiliary

KK70125,0000002 -19-09MAY12-2/2

A6000—JDLink™ Modular Telematics Gateway (MTG) Control Unit
A6001—GPS/Cellular Antenna
A6002—Satellite (SAT) Module Control Unit (if equipped)
A6003—Satellite Antenna (if equipped)
W6002—Universal JDLink™ Harness
W6003—Satellite Adapter Harness
X63— Main Cab/Canopy Harness-to-JDLink Harness 12Pin Connector
X6014—Modular Telematics Gateway (MTG) Control Unit 48-Pin Connector
X6015—Satellite (SAT) Module Control Unit 48-Pin Connector
X6016—Satellite Adapter Harness-to-Universal JDLink™ Harness 6-Pin Connector

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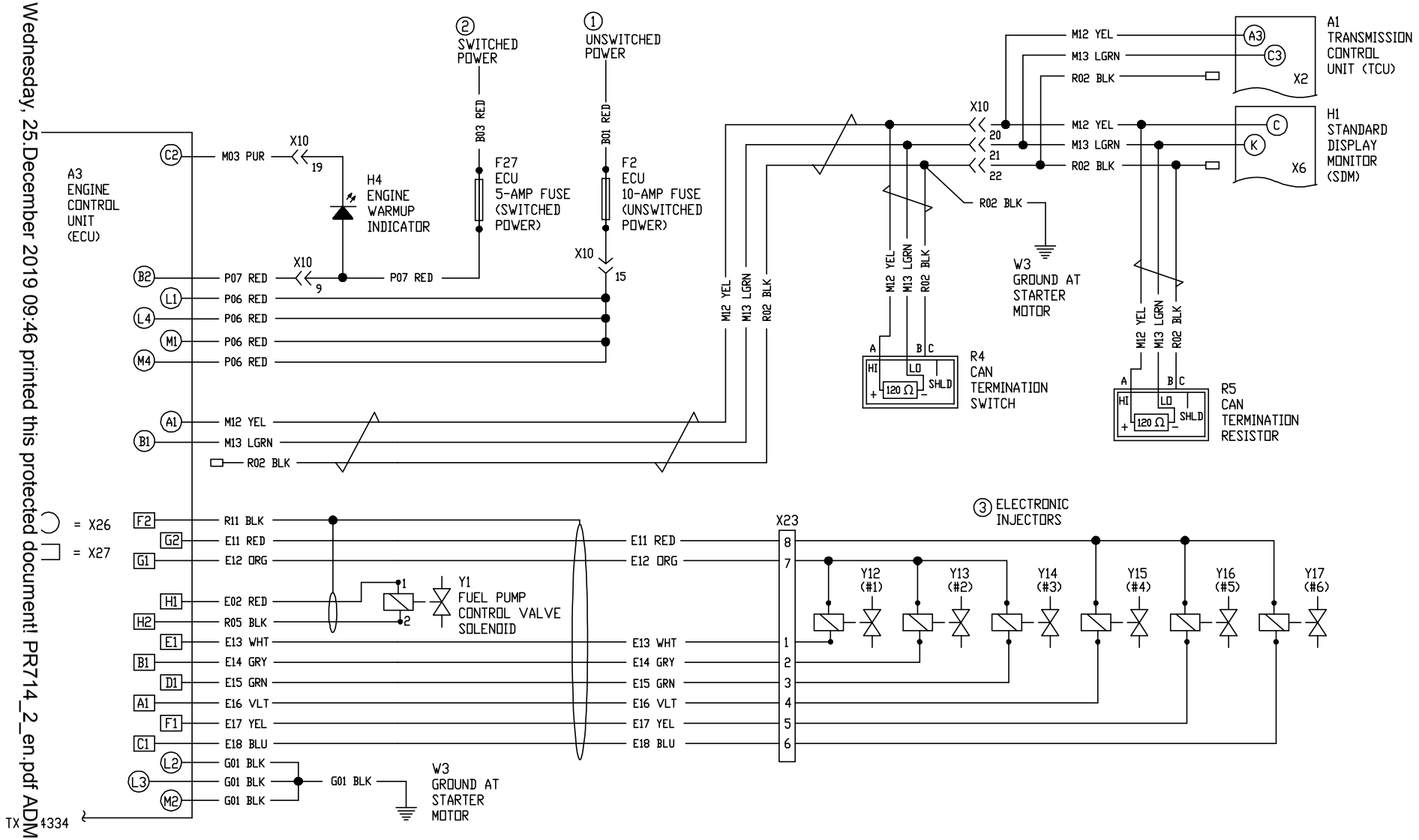
WS68074,00037C1 -19-17MAR11-2/2

TX1074334 —UN—22APR10



Engine Control Unit (ECU) Circuit Schematic (2 of 2)

Continued on next page

AA95137,00004F9 -19-23APR08-3/6

When neit IP or DOWN buttons are pushed, the transmission speed control sensor sends approximately 2.20 volts to pin C2 of TCU connector X1. When the UP button is pushed, approximately 3.00 volts is sent to pin C2 of TCU connector X1. The v of the up, down, and null voltages are stored in the TCU during calibration.

When eith UP or DOWN buttons are pushed, the TCU transmits the transmission speed across the CAN data line to the SDM. The SDM displays the transmission speed in the monitor display window.

If this sen auses a DTC, the maximum machine speed will be limited to 5.23 km/h (3.25 mph).

Pump Pr e Control Pilot (PCP) (B8 and B9)—The rear and front PCPs control the displacement of the rear and front hydrostatic pumps, respectively. When the TCU receives a signal from any one of the operator controlled input sensors, the TCU applies positive or negative voltage to the PCPs, which causes electromagnetic valves to move according ovement of the electromagnetic valves creates differential control pressures, which varies the pump displacement and thus controls machine movement.

For forwar vement, the TCU will increase positive voltage (i.e. +3.5 V to +4.0 V) to increase pump displacement and decrease positive voltage (i.e. +3.5 V to +3.0 V) to decrease pump displacement.

For revers vement, the TCU will increase negative voltage (i.e. -3.5 V to -4.0 V) to increase pump displacement and decrease negative voltage (i.e. -3.5 V to -3.0 V) to decrease pump displacement.

The TCU pplies voltage to the rear PCP in proportion to the front PCP for steering and counter-rotation commands. For more information on PCP operations, see Pump Pressure Control Pilot (PCP) Operation. (Group 9026-05.)

If one of th component causes a DTC, either the forward or reverse functions will be disabled.

Motor Sp ensor (B3 and B7)—The motor speed sensors are feedback devices used by the TCU to determine actual track speed. The sensors enable the TCU to control tracking, thus allowing the machine to move in the desired motion. The TCU monitors track speeds and slows the faster track to match the slower track. Each sensor is supplied 5 and a ground reference from the TCU.

The motor d sensor right (B3) sends a pulsed signal to pin J2 of TCU connector X1. Motor speed sensor left (B7) sends a pulsed signal to pin H2 of TCU connector X1. If one of these sensors causes a DTC, the tracker function will be disabled and mistracking will occur.

For motor d sensor specifications, see Electrical Component Specifications. (Group 9015-20.)

Motor Sh lenoids (Y3 and Y4)—The TCU applies a frequency-varied signal to the motor shift solenoid left (Y3) and motor shift solenoid right (Y4) to control the displacement of the hydrostatic motors. As transmission speed increases, the TCU applies a higher frequency signal to the motor shift solenoids to reduce the motor displacement. The motor shift solen ctivation, along with the motor displacement control valve (MDCV), control motor displacement. The TCU will also reduce voltage to pump pressure control pilot (PCP) rear (B8) and pump pressure control pilot (PCP) front (B9) as motor displacement decreases for smooth acceleration.

If one of th components cause a DTC, the maximum machine speed will be limited to 5.23 km/h (3.25 mph).

For more nation on the motor shift solenoids in motor operation, see Hydrostatic Motor Operation. (Group 9026-05.) For solenoid specifications, see Electrical Component Specifications. (Group 9015-20.)

Charge P re Sensor (B33 or B41)

NOTE: Th arge pressure sensor is B33 for (S.N. —173344) and B41 for (S.N. 173345—).

The charg ssure sensor provides the TCU with a variable resistance based on charge pressure. The charge pressure sensor receives 5-volt power from pin E1 of TCU connector X1 and a ground reference from pin E3 of TCU connector X1. The TCU measure sensor resistance at pin K2 of TCU connector X1. The TCU transmits this informatio ss the CAN data line to the SDM. The charge pressure can be displayed on the monitor display window.

If the char essure drops below 1310 kPa (13.1 bar) (190 psi) for more than 10 seconds while the engine is running, machine speed will ramp down and the machine will stop. Forward and reverse functions will be disabled, the engine speed will be limited to slow idle, and a diagnostic trouble code (DTC) will be generated. When the malfur is fixed, the key switch must be cycled to clear the code.

If the char essure exceeds 3447 kPa (34.5 bar) (500 psi) and the transmission oil temperature is above 32°C (90°F), or if the charge pressure exceeds 5170 kPa (51.7 bar) (750 psi) at any temperature, the TCU will transmit this information across the CAN data line to the ECU, which will then limit the engine speed to 1200 rpm. When the malfur is fixed, the key switch must be cycled to clear the code.

For charg ssure sensor specifications, see Electrical Component Specifications. (Group 9015-20.)

Engine S Control (R10)—The engine speed control is a potentiometer which receives 5-volt power from pin G1 of TCU connector X1 and a ground reference from pin G3 of TCU connector X1.

Turning th ine speed control sensor varies the amount of voltage sent to pin G2 of TCU connector X1. This signal represents desired engine speed, which the TCU compares with values recorded during TCU calibration, then transmits the engine speed command as a percentage across the CAN data line. The ECU detects this signal and onds by increasing or decreasing engine speed accordingly.

The ECU ts the signal representing actual engine speed from crankshaft position sensor (B6). The ECU transmits the engine speed signal across the CAN data line. The TCU detects the actual engine speed signal and compares it to the desired engine speed command signal for antistall purposes. If the load on the engine causes the engine to pull down, the will send the appropriate current to PCP solenoids (B8 and B9) to decrease pump displacement and prevent the engine from stalling. The TCU uses the engine speed to determine the pump speeds. For more information on the ECU, see Engine Control Unit (ECU) Circuit Theory of Operation. (Group 9015-15.)

If machine arted and the TCU does not measure voltage at pin G2 that represents slow idle command, the engine speed control sensor must be rotated to slow idle position before the engine speed can be increased.

If this sen auses a DTC, engine speed will be limited to slow idle and machine speed will be limited to creep. If this sensor causes a calibration code, the TCU default values will be used for this sensor.

Backup A (H6)—When the key switch is ON and reverse travel is selected, the TCU will send current out pin F3 of TCU connector X2, to the backup alarm (H6), activating the alarm.

Continued on next page

AA95137,00004FB -19-06OCT09-3/4

- 000521.16—Decel Sensor Max Cal Too High
- 000521.17—Decel Sensor Min Cal Too Low
- 000521.18—Decel Sensor Max Cal Too Low
- 000581.00—Speed Buttons Input > Max Cal
- 000581.01—Speed Buttons Input < Min Cal
- 000581.03—Speed Buttons Short to Power
- 000581.04—Speed Buttons Open or Short
- 000581.15—Speed Buttons Min Cal Too High
- 000581.16—Speed Buttons Max Cal Too High
- 000581.17—Speed Buttons Min Cal Too Low
- 000581.18—Speed Buttons Max Cal Too Low
- 000604.03—FNR Neut Switch Open Circuit
- 000604.04—FNR Neut Switch Short Circuit
- 000604.15—FNR Neut Switch Min Cal Too High
- 000604.16—FNR Neut Switch Max Cal Too High
- 000604.17—FNR Neut Switch Min Cal Too Low
- 000604.18—FNR Neut Switch Max Cal Too Low
- 000619.05—Brake Solenoid No Response
- 000620.03—Sensor Supply Short to Power
- 000620.04—Sensor Supply Short to Gnd
- 000907.03—Left Speed Sensr Short to Power
- 000907.04—Left Speed Sensr Short
- 000907.07—Left Speed Sensr No Response
- 000907.12—Left Speed Sensr Open
- 000908.03—Right Speed Sensr Short to Power
- 000908.04—Right Speed Sensr Short
- 000908.07—Right Speed Sensr No Response
- 000908.12—Right Speed Sensr Open
- 002660.00—Steer Sensor Input > Max Cal
- 002660.01—Steer Sensor Input < Min Cal
- 002660.03—Steer Sensor Short to Power
- 002660.04—Steer Sensor Open or Short
- 002660.15—Steer Sensor Min Cal Too High
- 002660.16—Steer Sensor Max Cal Too High
- 002660.17—Steer Sensor Min Cal Too Low
- 002660.18—Steer Sensor Max Cal Too Low
- 002661.00—FNR Input > Max Cal
- 002661.01—FNR Input < Min Cal
- 002661.03—FNR Sensor Short to Power
- 002661.04—FNR Sensor Open or Short
- 002661.15—FNR Sensor Min Cal Too High
- 002661.16—FNR Sensor Max Cal Too High
- 002661.17—FNR Sensor Min Cal Too Low
- 002661.18—FNR Sensor Max Cal Too Low
- 522444.00—Charge Pressure High
- 522444.01—Charge Pressure Low
- 522444.03—Charge Pressure Short to Power
- 522444.04—Charge Pressure Open or Short
- 522447.05—Right Fwd Pump Coil Open
- 522447.06—Right Fwd Pump Coil Short
- 522447.15—Right Fwd Pump Thresh Cal High
- 522447.16—Right Fwd Pump Max Spd Cal High
- 522447.17—Right Fwd Pump Thresh Cal Low
- 522447.18—Right Fwd Pump Max Spd Cal Low
- 522448.05—Right Rev Pump Coil Open
- 522448.06—Right Rev Pump Coil Short
- 522448.15—Right Rev Pump Thresh Cal High
- 522448.16—Right Rev Pump Max Spd Cal High
- 522448.17—Right Rev Pump Thresh Cal Low
- 522448.18—Right Rev Pump Max Spd Cal Low
- 522449.05—Left Rev Pump Coil Open
- 522449.06—Left Rev Pump Coil Short
- 522449.15—Left Rev Pump Thresh Cal High
- 522449.16—Left Rev Pump Max Spd Cal High
- 522449.17—Left Rev Pump Thresh Cal Low
- 522449.18—Left Rev Pump Max Spd Cal Low
- 522450.05—Left Fwd Pump Coil Open
- 522450.06—Left Fwd Pump Coil Short
- 522450.15—Left Fwd Pump Thresh Cal High
- 522450.16—Left Fwd Pump Max Spd Cal High
- 522450.17—Left Fwd Pump Thresh Cal Low
- 522450.18—Left Fwd Pump Max Spd Cal Low
- 523577.09—TCU Not Calibrated Sensor/Pump/Motor
- 523577.09—Left Motor Sol No Response
- 523577.16—Left Motor Max Cal Too High
- 523577.18—Left Motor Max Cal Too Low
- 523578.09—Right Motor Sol No Response
- 523578.16—Right Motor Max Cal Too High
- 523578.18—Right Motor Max Cal Too Low

Electrohydraulic Controller (EHC) Diagnostic Trouble Codes

NOTE: For in-depth diagnostics on all EHC diagnostic trouble codes, see Electrohydraulic Controller (EHC) Diagnostic Trouble Codes in Group 9001-40.

- 000158.03—EHC System Volts Too High
- 000158.04—EHC System Volts Too Low
- 000620.03—Sensor Short to Power
- 000620.04—Sensor Short to GND
- 001903.00—Aux 1 PVE Open Circuit
- 001903.01—Aux 1 PVE Low or Open Circuit
- 001903.03—Aux 1 PVE Short to Power
- 001903.04—Aux 1 PVE Short to GND
- 001903.31—Aux 1 PVE Spool Pos Error
- 001915.00—Aux 2 PVE Open Circuit
- 001915.01—Aux 2 PVE Low or Open Circuit
- 001915.03—Aux 2 PVE Short to Power
- 001915.04—Aux 2 PVE Short to GND
- 001915.31—Aux 2 PVE Spool Pos Error
- 002697.09—CAN Joystick Pos Missing From BCJ
- 002712.00—Hyd Enable Sw Inputs Both On
- 002712.01—Hyd Enable Sw Inputs Both Off
- 003157.03—Incr / Decr Buttons Short to Power
- 003157.04—Incr / Decr Buttons Open or Short
- 003157.31—Incr / Decr Buttons Invalid Output
- 522442.31—Blade Buttons Invalid Output
- 523779.00—Blade Rotate Current Above Max
- 523779.01—Blade Rotate Current Below Min
- 523780.00—Tilt PVE Open Circuit
- 523780.01—Tilt PVE Low or Open Circuit
- 523780.03—Tilt PVE Short to Power
- 523780.04—Tilt PVE Short to GND
- 523780.31—Tilt PVE Spool Pos Error
- 523781.00—Height PVE Open Circuit
- 523781.01—Height PVE Low or Open Circuit
- 523781.03—Height PVE Short to Power
- 523781.04—Height PVE Short to GND
- 523781.31—Height PVE Spool Pos Error
- 524059.03—Aux 2 Jstk Sensor 2 Short to Power
- 524059.04—Aux 2 Jstk Sensor 2 Short to GND
- 524059.31—Aux 2 Jstk Sensor 2 Invalid Output
- 524062.03—Aux 1 Jstk Sensor 2 Short to Power
- 524062.04—Aux 1 Jstk Sensor 2 Short to GND
- 524062.31—Aux 1 Jstk Sensor 2 Invalid Output

Continued on next page

- Restore Factory Defaults—Settings can be reset to original factory defaults.

WS68074,0000942 -19-31MAY11-4/3

Standard Display Monitor (SDM)—Change Units

NOTE: The navigation buttons MENU, BACK, NEXT, and SELECT are located at the right side of the SDM display.

The standard display monitor (SDM) will display the units of measure in English standard units or Metric units.

To change the way the units appear on the SDM, do the following:

1. Enter the Main Menu in Service Mode by pushing and holding the MENU button down for approximately 5 seconds until a beep is heard and Service Mode temporarily appears on the Main Menu.
2. From the Main Menu, push NEXT until Monitor is highlighted.
3. Push SELECT to enter the Monitor screen.
4. Push SELECT in the Monitor submenu to enter Units submenu.
5. Use the NEXT button to choose either English or Metric. Push SELECT to activate the change and return to the Units submenu.
6. Exit the Main Menu screen by pushing the MENU button.
7. Exit Service Mode by cycling the key switch off and back on.

WS68074,0000B23 -19-24MAR10-1/1

Standard Display Monitor (SDM)—Hide/Unhide Main Menu

The Main Menu screen on the standard display monitor (SDM) can be made accessible or hidden from view using the hide/unhide Main Menu function.

The Hide/Unhide Main menu is a function of Service Mode. See Standard Display Monitor (SDM) Menu Structure—Service Mode. (Group 9015-20.)

NOTE: The navigation buttons MENU, BACK, NEXT, and SELECT are located at the right side of the SDM display.

To hide main menu:

1. Push the MENU button to access the Main Menu.
2. Push the NEXT button until Monitor is highlighted.
3. Push SELECT to enter the Monitor submenu.
4. From the monitor submenu push NEXT until Hide Menu is highlighted.
5. Push SELECT. The screen will momentarily flash Menu Hidden and return to the Monitor submenu. Unhide will now appear in the Monitor submenu.

NOTE: The hide menu function will not be activated until the key switch has been cycled off and back on again.

To unhide main menu:

1. Enter the Main Menu in Service Mode by pushing and holding MENU down for approximately 5 seconds until a beep is heard and Service Mode temporarily appears on the Main Menu.
2. Push NEXT until Monitor is highlighted.
3. Push SELECT to enter Monitor submenu.
4. From the Monitor submenu push NEXT until Unhide Menu is highlighted.
5. Push SELECT. The screen will momentarily flash Menu Unhidden and return to the Monitor submenu. Hide will now appear in the Monitor submenu.
6. Push the MENU button to exit out of Service Mode.
7. Return the SDM to Operator Mode.

NOTE: Cycling the key switch resets the SDM menu back to Operator Mode.

WS68074,0000B24 -19-24MAR10-1/1

4 EHC 5-Volt Circuit Check	*NOTE: For connector and wiring information, see Integrated Grade Control (IGC) Machine Harness (W21) Wiring Diagram—If Equipped. (Group 9015-10.)*	
	Disconnect harness connector X82 from electrohydraulic controller (EHC) (A11).	
	Turn key switch ON.	
	NOTE: EHC connector X83 must be connected when performing this check.	
	Check for voltage at pin 3 (controller side) of EHC connector X82.	**YES:** Check wire H22 BRN for open or short circuit between pin 3 of EHC connector X82 and pin 2 of hydraulic enable switch (S30).
	Are approximately 5 volts present?	**NO:** Go to EHC Supply Voltage Circuit Check.

AA95137,00008E4 -19-26MAR10-6/58

5 EHC Supply Voltage Circuit Check	*NOTE: For connector and wiring information, see Integrated Grade Control (IGC) Machine Harness (W21) Wiring Diagram—If Equipped. (Group 9015-10.)*	
	Disconnect harness connector X83 from electrohydraulic controller (EHC) (A11).	
	Turn key switch ON.	
	Check for voltage at pins 1 and 18 (wire P58 RED) (harness side) of EHC connector X83.	**YES:** Go to EHC Ground Check.
	Is system voltage (approximately 24 volts) present at the designated pins?	**NO:** Go to next step in this check.
		YES: Go to next step in this check.
	Remove relay (K102) and check for voltage at pins 30 and 85 of the relay socket.	**NO:** If no voltage is present at pin 30, check wire P50 RED for open or short circuit between connector (X87) and pin 30 of relay (K102). Repair as necessary.
	Is system voltage (approximately 24 volts) present at the designated pins?	**NO:** If no voltage is present at pin 85, check wire P14 RED for open or short circuit between fuse (F14) and pin 85 of relay (K102). Repair as necessary.
	Relay (K102) removed.	
	Check for ground at pin 86 of the relay (K102) socket.	**YES:** Check wire P51 RED for open or short circuit between fuse (F103) and pin 87 of relay (K102) socket. Repair as necessary.
	Is ground present?	**NO:** Check continuity of wire G30 BLK between pin 86 of relay socket and W20 IGC ground. Repair as necessary.

Continued on next page

AA95137,00008E4 -19-26MAR10-7/58

5 Blade Angle Actuator Circuit Check	*NOTE: For connector and wiring information, see Integrated Grade Control (IGC) Machine Harness (W21) Wiring Diagram—If Equipped. (Group 9015-10.)*	
	Turn key switch ON.	
	NOTE: Blade angle actuator (Y30) must be connected when performing this check.	
	Push and hold upper blade angle button on joystick while checking for voltage at pin 1 (wire H31 RED) of blade angle actuator (Y30) connector.	**YES:** Go to next step in this check.
	Are approximately 5 volts present?	**NO:** Check circuit H31 for open or short circuit between blade angle actuator and pin 12 of EHC connector X83. Repair as necessary.
	NOTE: Blade angle actuator (Y30) must be connected when performing this check.	
	Key switch ON.	
	Push and hold lower blade angle button on joystick handle while checking for voltage at pin 4 (wire H34 BLK) of blade angle actuator (Y30) connector.	**YES:** Go to Actuator Ground Circuit Check.
	Are approximately 5 volts present?	**NO:** Check circuit H34 for open or short circuit between blade angle actuator and pin 5 of EHC connector X83.

AA95137,00008E4 -19-26MAR10-32/58

6 Actuator Ground Circuit Check	*NOTE: For connector and wiring information, see Integrated Grade Control (IGC) Machine Harness (W21) Wiring Diagram—If Equipped. (Group 9015-10.)*	
	Key switch OFF.	
	Disconnect blade angle actuator (Y30) connector.	
	Check for ground at pins 2 and 3 (wire G30 BLK) (harness side) of actuator connector.	**YES:** See Hydraulic System Diagnose Malfunctions—IGC. (Group 9025-15.) If problem cannot be resolved, contact the grade control equipment supplier or John Deere DTAC.
	Is ground present?	**NO:** Check wire G30 BLK for open circuit between pins 2 and 3 of actuator connector and W20 IGC ground. Repair as necessary.

AA95137,00008E4 -19-26MAR10-33/58

Blade Lift and Angle Operate Normally, But Blade Incr/Decr Does Not

Continued on next page

AA95137,00008E4 -19-26MAR10-34/58

Item	Measurement	Specification
R4—CAN Termination Resistor	Resistance	120 ohms
R5—CAN Termination Resistor	Resistance	120 ohms
R10—Engine Speed Control Switch	Resistance between pins A and B	280—420 ohms Minimum Value 4.28—6.42 kohms Maximum Value
	Resistance Between Pins A and C	4—6 kohms
	Calibration Limits	2.96—4.15 V at Slow Idle
		0.45—1.22 V at Fast Idle
Y3—Motor Shift Solenoid Right	Resistance	21.3 ohms at 20°C (68°F)
Y4—Motor Shift Solenoid Left	Resistance	21.3 ohms at 20°C (68°F)
Y5—A/C Compressor Clutch Solenoid	Resistance	3.5—6 ohms
Y11—Park Brake Solenoid	Resistance	20.5—23.1 ohms at -40°C (-40°F) 22.6—25.5 ohms at -20°C (-4°F)
		24.7—27.8 ohms at 0°C (32°F)
		26.8—30.2 ohms at 20°C (68°F)
		28.9—32.6 ohms at 40°C (104°F)

WS68074,000111A -19-20AUG09-4/4

Transmission Control Lever (TCL) Adjustment

SPECIFICATIONS	
Neutral Adjustments	
Steer Input—Neutral Voltage	2.48—2.52 V
FNR Input—Neutral Voltage	2.37—2.63 V
Steer Linkage Adjustment	
Steer Linkage—Right Voltage	1.62—1.94 V
Steer Linkage—Right Counter-Rotate Voltage	1.43—1.75 V
Steer Linkage—Left Voltage	3.06—3.38 V
Steer Linkage—Left Counter-Rotate Voltage	3.25—3.57 V
TCL Linkage Adjustments	
TCL Linkage—Forward Position Voltage	3.09—3.95 V
TCL Linkage—Reverse Position Voltage	1.05—1.91 V

ESSENTIAL TOOLS
JT07237-1 Test Harness
JT07329-3 Test Harness

This procedure is used to adjust the steer sensor linkage and TCL sensor linkage to provide the correct voltage for the rotary sensors.

1. Key switch on, engine off.
2. Press and hold the **MENU** button on the SDM until three beeps are heard and Service Mode flashes.
3. Select **DIAGNOSTICS** from the SDM main menu.
4. Select **LIVE VALUES** from the diagnostics submenu. Push **NEXT** until **STEER** is displayed. The steer input voltage must be as specified.

Neutral Adjustments—Specification

Steer Input—Neutral—Voltage ..... 2.48—2.52 V

5. Push **NEXT** button until **FNR** appears. FNR input voltage in neutral position must be as specified.

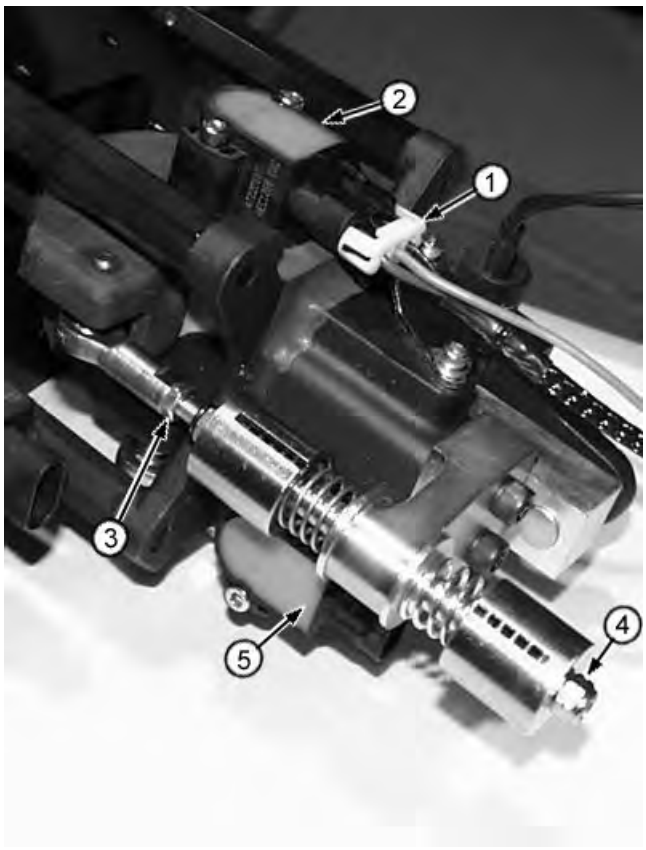
Neutral Adjustments—Specification

FNR Input—Neutral—Voltage ..... 2.37—2.63 V

6. If voltages are not to specification, remove SLC assembly from machine.

Steer Linkage Adjustment—Procedure adjusts the steer linkage.

1. Install JT07329-3 test harness (1) to machine harness and to steer sensor (2). Connect JT07237-1 test harness to the white and black leads of the JT07329-3 test harness.
2. Loosen lock nut (3) from ball joint. Turn rod assembly (4) while monitoring the STEER input reading on the SDM. Adjust to specification and tighten lock nut.



T118886B —UN—09DEC98

1— JT07329-3 Test Harness
2— Steer Sensor
3— Lock Nut
4— Rod Assembly
5— TCL Sensor

3. Move steer lever to right steer position. Do not go into counter-rotate. Voltage must be as specified.

Steer Linkage Adjustment—Specification

Steer Linkage—Right—Voltage ..... 1.62—1.94 V

4. Move steer lever to right counter-rotate position. Voltage must be as specified.

Steer Linkage Adjustment—Specification

Steer Linkage—Right Counter-Rotate—Voltage ..... 1.43—1.75 V

5. Move steer lever to left steer position. Do not go into counter-rotate. Voltage must be as specified.

Steer Linkage Adjustment—Specification

Steer Linkage—Left—Voltage ..... 3.06—3.38 V

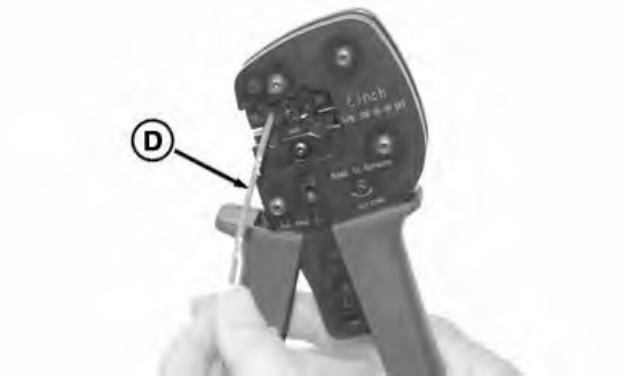
Continued on next page

7. Remove old terminal and strip 4.85 mm (0.191 in.) of insulation from wire.
8. Firmly grip JDG1727 terminal crimping tool (A). Squeeze ratcheting mechanism until it bottoms out, then allow it to open completely.
9. With tool in ready position (open handle), open terminal receptacle (B).
10. Insert terminal (C) into correct wire gauge window so crimp wings are facing up.
11. Close terminal receptacle (B).
12. Squeeze handle until two clicks are heard.
13. Insert stripped wire (D) into terminal.
14. Hold wire stationary and squeeze tool together until ratchet releases.
15. Remove terminated wire from tool.
16. Push terminal into connector body until fully seated. Pull on wire slightly to ensure terminal is locked in position.
17. Push terminal lock closed.
18. Install cover.
19. Install connector to controller and close connector body locking cam.

A—CINCH Terminal Crimping Tool
B—Terminal Receptacle
C—Terminal
D—Wire

RXA0070479 —UN—10SEP03

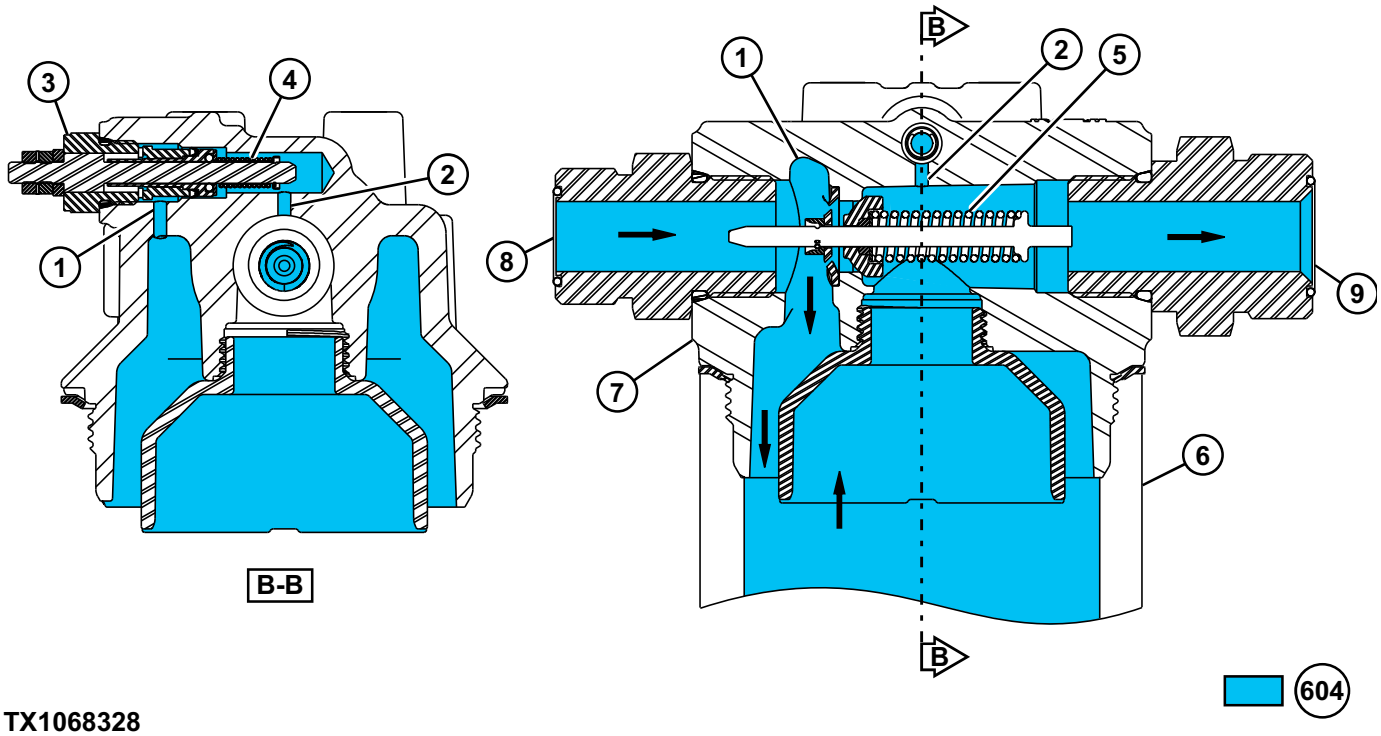
RXA0070480 —UN—10SEP03



RXA0070481 —UN—10SEP03

OUO1010,000096F -19-07DEC06-4/4

Filter Operation—Normal (S.N. 182275—)



TX1068328

Filter Operation—Normal (S.N. 182275—)

1— High Pressure Passage
2— Low Pressure Passage
3— Filter Restriction Indicator Switch
4— Switch Spring
5— Bypass Valve
6— Filter Element
7— Filter Head
8— Inlet
9— Outlet
604— Return Oil

The hydraulic filter element (6) removes contaminants from the hydraulic system return oil. The filter head (7) contains a filter bypass valve (5) and a filter restriction indicator switch (3).

Return oil (604) flows from the hydraulic control valve, through the hydraulic oil cooler to the filter inlet (8), or directly into the filter inlet, through the hydraulic filter element (6), and out the filter outlet (9) to the hydraulic reservoir. Pressure on the inlet side of the filter element is sensed by the low pressure passage (2) on the right side of the bypass valve. Any pressure at the filter outlet due to line restriction is sensed on the left side of the bypass valve by the high pressure passage (1).

Pressure in the outlet passage and the bypass valve spring force holds the bypass valve closed.

As the filter starts to plug, pressure at the filter inlet increases. When the filter becomes restricted to the point where pressure at the filter inlet increases enough to overcome outlet pressure plus bypass valve spring force, the bypass valve opens, allowing unfiltered oil to flow to the reservoir.

Continued on next page

1— Angle Left Workport
2— Parallel Passage
3— Load Check
4— Bridge Passage
5— Angle Right Work Port
6— Spool
7— Return Passage
8— Thru Neutral Passage
9— Pressure Oil
10— Return Oil

The blade angle valve is a three-position, four-way, spool-type valve containing a load check (3). The valve spool is returned to neutral by a centering spring in the spool end cap.

When the spool is moved to activate a function, oil flows from the parallel passage (2), past the load check (3), and the spool (6), and out the workport to the cylinders. Return oil from the cylinders flow into the other workport, past the spool (6), into the return passage (7), then out of the control valve to the system reservoir. The spool has grooves that meter the oil through the valve to allow for smooth starts and stops.

CED,TX03768,2773 -19-19SEP06-2/2

1— System Relief (S.N. 109730—)
2— System Relief (S.N. —109729)
3— Anti-Cavitation Valve
4— Orifice
5— Hydraulic Filter
6— Hydraulic Cooler
7— Pump
8— Hydraulic Reservoir
9— Inlet Valve
10— Auxiliary Valve
11— Angle Valve
12— Tilt Valve
13— Lift Valve
14— Outlet Valve
15— Low Pressure Oil
16— Return Oil
17— Trapped Oil

MS12501,000000B -19-24MAR10-2/2

Hydraulic System Diagnose Malfunctions

OUO1020,0001642 -19-23MAR07-1/45

No Hydraulic Functions Diagnostic Procedure

OUO1020,0001642 -19-23MAR07-2/45

1	**Hydraulic Enable Switch in Off Position**	Check position of hydraulic enable switch. *Is switch in off position?*	**YES:** Move switch to on position. **NO:** Go to Hydraulic Enable Switch Malfunction.

OUO1020,0001642 -19-23MAR07-3/45

2	**Hydraulic Enable Switch Malfunction**	Perform hydraulic control enable circuit check. See Operational Checkout. (Group 9005-10.) Check hydraulic control enable switch and circuit. See System Functional Schematic and Section Legend. (Group 9015-10.) *Are switch and circuit working correctly?*	 **YES:** Go to Hydraulic System Relief Valve Stuck Open. **NO:** Repair or replace hydraulic enable switch and circuit.

OUO1020,0001642 -19-23MAR07-4/45

3	**Hydraulic System Relief Valve Stuck Open**	Check hydraulic system pressure. Perform Hydraulic System Relief Valve Test. (Group 9025-25.) *Is relief valve adjusted to specification?*	**YES:** Go to Hydraulic Pump Worn or Damaged. **NO:** Replace relief valve.

OUO1020,0001642 -19-23MAR07-5/45

4	**Hydraulic Pump Worn or Damaged**	Check pump Flow. Perform Hydraulic Pump Flow Test. (Group 9025-25.) *Is pump flow to specification?*	**YES:** Checks complete. **NO:** Repair or replace pump as necessary.

OUO1020,0001642 -19-23MAR07-6/45

Hydraulic Functions Slow Diagnostic Procedure

OUO1020,0001642 -19-23MAR07-7/45

1	**Hydraulic Oil Cold**	Check hydraulic oil temperature. *Is hydraulic oil at normal operating temperature?*	**YES:** Go to Engine Speed Slow. **NO:** Warm-up hydraulic oil.

Continued on next page

OUO1020,0001642 -19-23MAR07-8/45

3	**Electrohydraulic Actuator Malfunction**	Check electrohydraulic actuator. See Integrated Grade Control (IGC) Diagnose Malfunctions—If Equipped. (Group 9015-20.) *Is actuator malfunctioning?*	**YES:** Replace actuator. **NO:** Go to Hydraulic Control Valve Spool Binding.

OUO1020,0001643 -19-23MAR07-29/59

4	**Hydraulic Control Valve Spool Binding**	Inspect and repair control valve. See Hydraulic Control Valve Disassemble and Assemble—IGC. (Group 3260.) *Is control valve spool binding?*	**YES:** Repair or replace control valve. **NO:** Checks complete.

OUO1020,0001643 -19-23MAR07-30/59

One Hydraulic Function Does Not Work Diagnostic Procedure—IGC

OUO1020,0001643 -19-23MAR07-31/59

1	**Anticavitation Valve Stuck Open**	Check anticavitation valves. See Hydraulic Control Valve Disassemble and Assemble—IGC. (Group 3260.) *Is anticavitation valve worn or damaged?*	**YES:** Repair or replace anticavitation valve. **NO:** Go to Hydraulic Lines Blocked or Damaged.

OUO1020,0001643 -19-23MAR07-32/59

2	**Hydraulic Lines Blocked or Damaged**	Inspect hydraulic lines. See Hydraulic System Component Location—IGC. (Group 9025-15.) *Are any hydraulic lines blocked or damaged?*	**YES:** Repair or replace damaged lines. **NO:** Go to Hydraulic Cylinders Leaking Internally.

OUO1020,0001643 -19-23MAR07-33/59

3	**Hydraulic Cylinders Leaking Internally**	Check cylinders for leakage. Perform Lift cylinder Drift Test. (Group 9025-25.) *Are any cylinders leaking?*	**YES:** Repair or replace leaking cylinders. **NO:** Go to Electrohydraulic Actuator Malfunction.

OUO1020,0001643 -19-23MAR07-34/59

4	**Electrohydraulic Actuator Malfunction**	Check electrohydraulic actuator. See Integrated Grade Control (IGC) Diagnose Malfunctions—If Equipped. (Group 9015-20.) *Is actuator malfunctioning?*	**YES:** Replace actuator. **NO:** Go to Hydraulic Control Valve Spool Binding.

Continued on next page

OUO1020,0001643 -19-23MAR07-35/59

Hydraulic Pump Flow Test

SPECIFICATIONS	
Hydraulic Oil Temperature	60—70°C 140—160°F
Hydraulic Oil Pressure	13 720—13 860 kPa 137—139 bar 1990—2010 psi
Engine Speed	1990—2010 rpm
New Pump Min Flow	95 L/min 25 gpm
Used Pump Min Flow	76 L/min 20 gpm

SERVICE EQUIPMENT AND TOOLS
JTO7148 Flowmeter
Gauge 0—35000 kPa (0—350 bar) (0—5000 psi)
JT05691 (1-5/16 M 37° x —16 F ORFS) Adapter (2 Used)
38H1098 (—16 F x —16 M ORFS) (Parker No. 16C6LO-S) 90° Elbow (2 Used)
38H1281 (—16 M x —16 M ORFS) (Parker No. 16HLO-S) Connector

1. Pull a vacuum on the hydraulic reservoir.

IMPORTANT: Flow meter is connected directly to pump for this test. Hydraulic pump damage will occur if flowmeter loading valve is closed during this test. Flow meter loading valve must be left fully open at all times except during partial restriction for warm-up and test procedures.

2. Disconnect pressure hose (1) from control valve inlet and install flow meter (3).

   Connect wire leads (6) to monitor and flowmeter.

   Turn flowmeter loading valve to fully open position.

3. Run engine at fast idle and heat oil to specification by slowly turning flowmeter loading valve knob (5) to partially restrict oil flow.

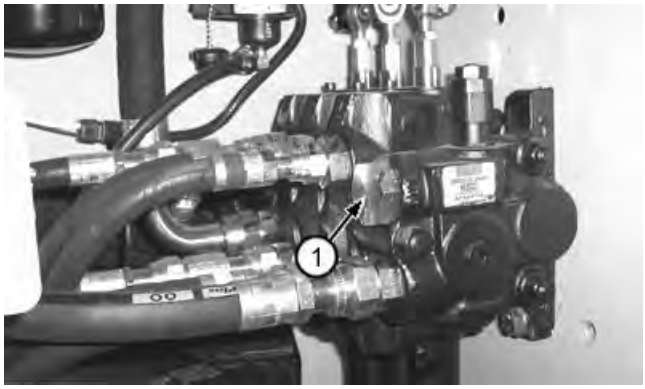
Specification

Hydraulic Oil—Temperature ..... 60—70°C
140—160°F

4. When oil temperature is at specifications, reduce engine speed to specification and adjust flowmeter to test specifications.

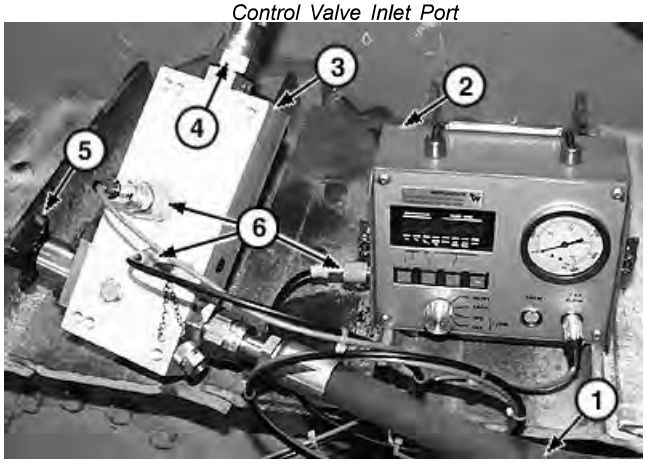
Specification

Engine—Speed ..... 1990—2010 rpm
Hydraulic Oil—Pressure ..... 13 720—13 860 kPa
137—139 bar
1990—2010 psi



T205160A —UN—19NOV04

Control Valve Inlet Port



T131863B —UN—19JUN00

Hydraulic Pump Test

1— Control Valve Inlet Port
2— Flowmeter Monitor
3— Flowmeter
4— Pressured Inlet Hose
5— Flowmeter Oil Pressure Resistance Knob
6— Connectors

5. Record flow, then open flowmeter unloading valve and stop engine.

   Compare flow reading to specifications.

Specification

New Pump Min—Flow ..... 95 L/min
25 gpm
Used Pump Min—Flow ..... 76 L/min
20 gpm

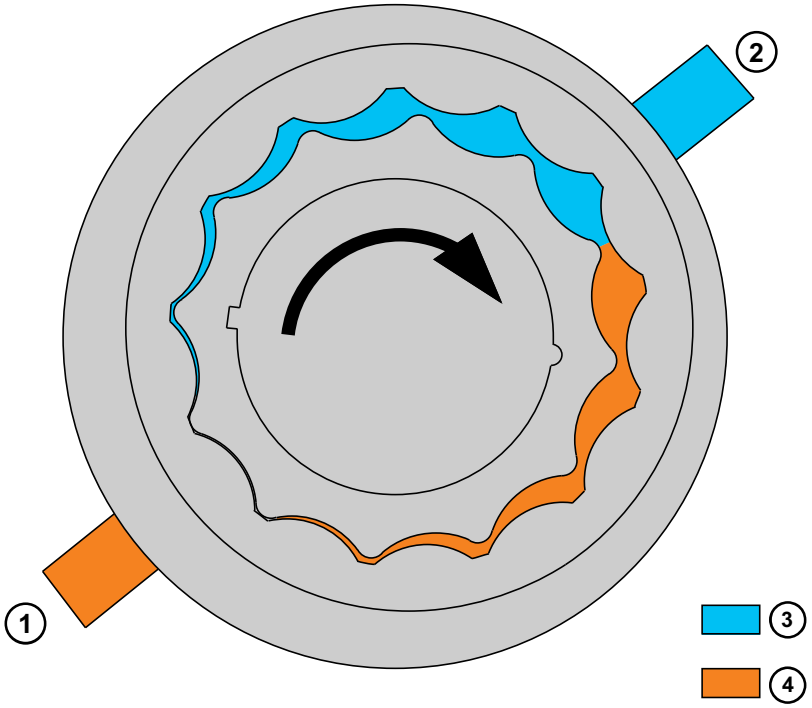
6. If flow is low, repair or replace pump. See Hydraulic Pump Remove and Install. (Group 2160.)

CED,TX03768,2718 -19-13SEP06-1/1

1— Operator Input Commands
2— Power in 24V DC
3— Tracking Feedback
4— Current
5— To Left Track
6— To Right Track
7— Throttle Command
8— Anti-Stall
9— Voltage
10— Differential Control Pressure
11— Fuel Delivery Command
12— Rear Pump Displacement Control Valve (PDCV)
13— Front Pump Displacement Control Valve (PDCV)
14— Engine
15— Front Pump
16— Rear Pump
17— Left Motor
18— Right Motor
19— Control Pressure
20— Charge Pressure
21— Closed Loop Pressure
A1—Transmission Control Unit (TCU)
A3—Engine Control Unit (ECU)
B1—Decelerator Sensor
B2—TCL Sensor
B3—Motor Speed Sensor Right
B4—Transmission Speed Control Sensor
B5—Steer Sensor
B7—Motor Speed Sensor Left
B8—Pump Pressure Control Pilot (PCP) Rear
B9—Pump Pressure Control Pilot (PCP) Front
H1—Standard Display Monitor (SDM)
R10— Engine Speed Control
Y3—Motor Shift Solenoid Right
Y4—Motor Shift Solenoid Left

AA95137,00008ED -19-24MAR10-2/2

Charge Pump



TX1012092 —UN—20SEP06

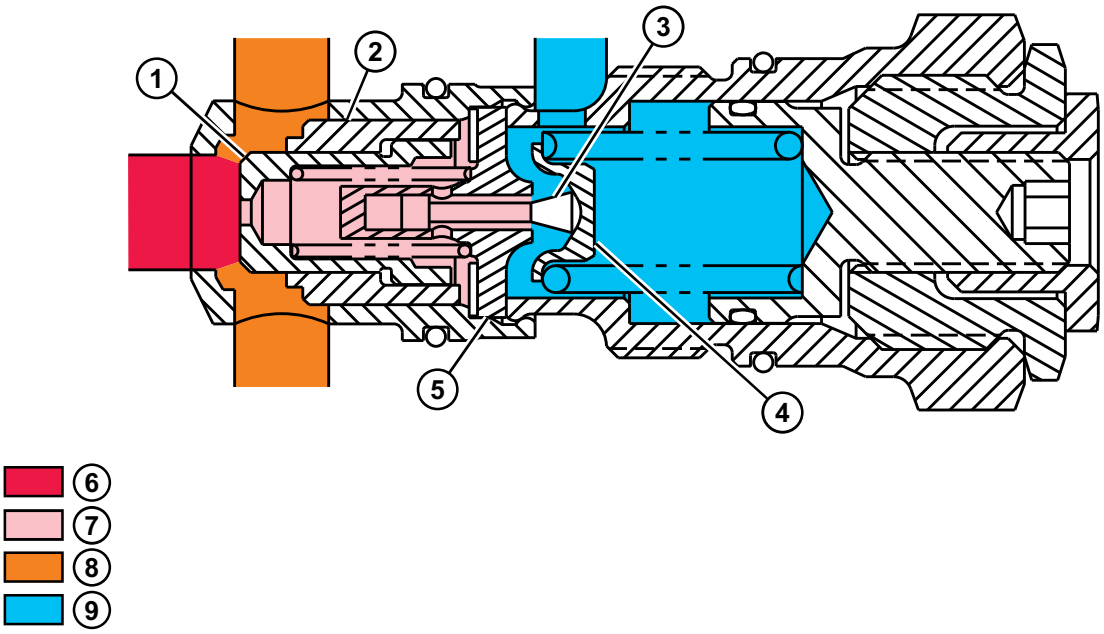
TX1012092

Charge Pump

1— To Hydrostatic Filter
2— From Reservoir
3— From Reservoir
4— Charge Pressure

The charge pump is an integral part of each hydrostatic pump. The charge pump is a gerotor type pump and is driven directly at engine speed. Each pump has a separate suction line from the reservoir. Charge pressure oil from each pump is then combined and sent to a single filter. Passing through the filter, the charge oil is routed to the control circuit for each hydrostatic pump and to the Park Brake Valve. A neutral charge relief valve located on the front pump return line from the hydrostatic filter regulates charge pressure and protects the charge pumps. Passing through the filter, the charge oil is routed to the park brake valve and the control circuit for each hydrostatic pump and motor.

CED,TX03543,2288 -19-12MAR09-1/1



TX1012097 —UN—20SEP06

TX1012097

Multi-Function Valve (High Pressure Relief)

1— High Pressure Relief Valve Poppet
2— Check Valve Poppet
3— Pressure Limiter Poppet
4— Spring Seat
5— Pressure Limiter Poppet Seat
6— High Pressure
7— Reduced High Pressure
8— Charge Pressure
9— Return Oil

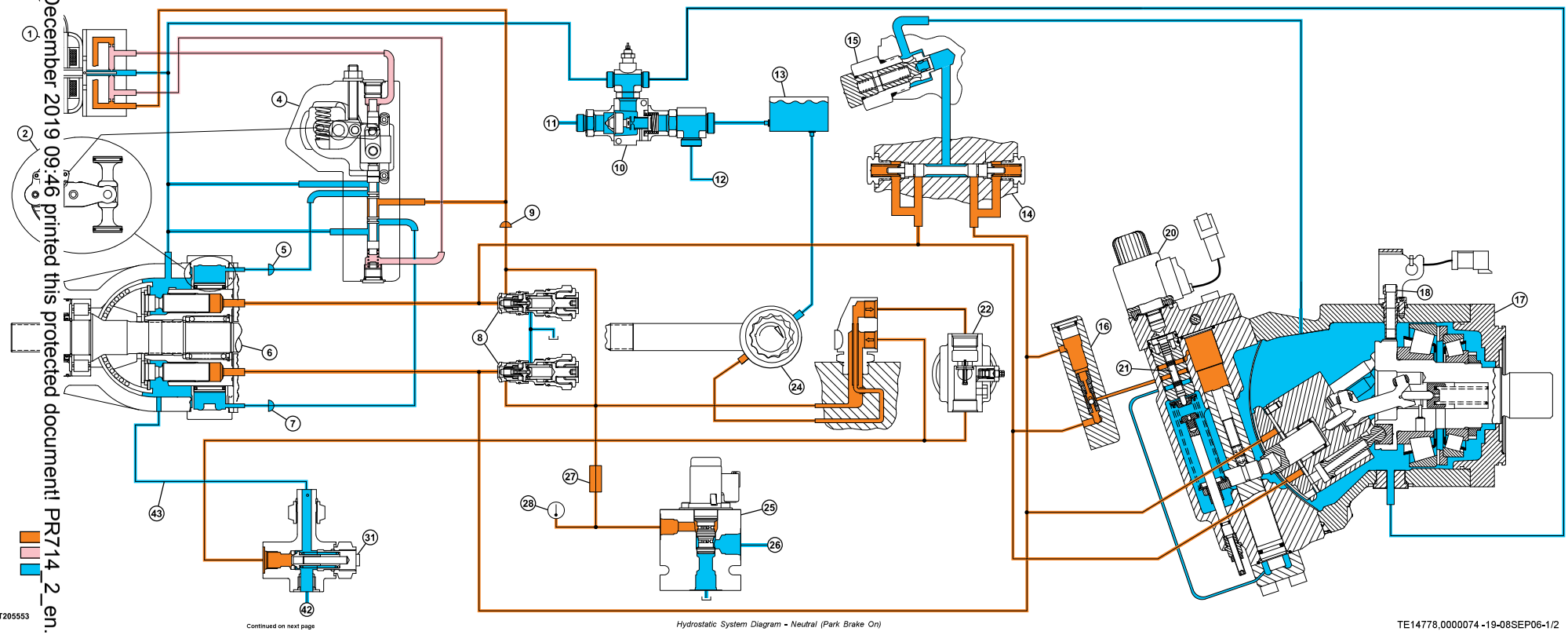
High Pressure Relief During normal operation of the machine, the pressure limiter poppet senses closed-loop pressure and is held against its seat by spring force through the spring seat.

Relief operation occurs when the closed-loop pressure on the limiter poppet overcomes the spring force on it causing it to move off its seat. In this condition there is oil flow through the high pressure relief valve poppet orifice, the unseated limiter poppet and out of the housing to pump case. The oil flow through the orifice causes a pressure drop across the high pressure relief moving it off the valve seat. This allows closed-loop high pressure oil to flow past the poppet and into the charge circuit.

CED,TX03543,2292 -19-19SEP06-2/2

Hydrost… System Diagram—Neutral (Park Brake On)

T205553 —UN—



T205553

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Hydrostatic System Diagram - Neutral (Park Brake On)

TE14778,0000074 -19-08SEP06-1/2

9 Cooling Package Check	Inspect radiator and transmission oil cooler for debris. Is there excessive debris in radiator and oil cooler?	**YES:** Clean debris from radiator and oil cooler. **NO:** Go to next step in this check.
	Inspect transmission oil cooler and radiator fins. Are fins damaged?	**YES:** Repair or replace radiator and/or transmission oil cooler. **NO:** Go to Serpentine Belt Check.

AA95137,00008A7 -19-10JUN10-11/14

10 Serpentine Belt Check	Check serpentine belt. See Inspect Serpentine Belt. (Operator's Manual.) Is belt OK?	**YES:** Go to Fan Check. **NO:** Replace serpentine belt.

AA95137,00008A7 -19-10JUN10-12/14

11 Fan Check	Inspect fan to make sure fan is installed properly and is correct size fan. Is the correct fan installed properly?	**YES:** Go to Engine Compartment Check. **NO:** Install correct fan, or re-install fan properly.

AA95137,00008A7 -19-10JUN10-13/14

12 Engine Compartment Check	Check baffles around radiator and fan. Are baffles present and free of obstruction from debris?	**YES:** Checks complete. **NO:** Install correct hood and side panels or clean debris from baffles.

AA95137,00008A7 -19-10JUN10-14/14

TCU Calibration Malfunctions

AA95137,00008B2 -19-03APR07-1/14

TCU Calibration Malfunctions Diagnostic Procedure

Continued on next page

AA95137,00008B2 -19-03APR07-2/14

11 Pump Manual Override Test	View left motor speed and right motor speed by accessing the Diagnostics / Live Values / Speeds menu on the SDM. See Standard Display Monitor (SDM) Menu Structure—Service Mode. (Group 9015-20.)	
	Perform Pressure Control Pilot (PCP) Manual Override Test. (Group 9026-25.)	**YES:** Perform Pressure Control Pilot (PCP) Test. (Group 9026-25.) If PCP differential pressure is out of specification, adjust PCP. See Pressure Control Pilot (PCP) Internal Adjustment. (Group 9026-25.)
	Do motor speeds increase when PCP manual override is activated?	**NO:** Go to Multi-Function Relief Valve Check.

AA95137,00008B3 -19-30MAR07-13/20

12 Multi-Function Relief Valve Check	Perform Multi-Function Relief Valve Test. (Group 9026-25.)	**YES:** Go to Pump Servo Pressure Test Check.
	Are relief pressures within specification?	**NO:** Adjust multi-function relief valve. See Multi-Function Relief Valve Test. If pressures are not within specification after adjustment, go to next step in this check.
	Switch multi-function relief valves. See Hydrostatic System Component Location. (Group 9026-15.)	**YES:** Multi-function relief valve malfunction. Repair or replace valve. See Hydrostatic Pump Disassemble. (Group 0360.)
	Did problem move and follow suspect relief valve?	**NO:** Go to Transmission Efficiency Test Check.

AA95137,00008B3 -19-30MAR07-14/20

13 Pump Servo Pressure Test Check	Perform Pump Servo Pressure Test. (Group 9026-25.)	**YES:** Perform Transmission Efficiency Test. (Group 9026-25.) If a large amount of leakage is indicated in the pump, repair or replace pump. See Hydrostatic Pump Disassemble. (Group 0360.) If a large amount of leakage is indicated in the motor, repair or replace motor. See Hydrostatic Motor Disassemble. (Group 0360.)
	Are servo pressures equal (approximately) and less than charge pressure?	**NO:** Go to Pressure Control Pilot (PCP) Test Check.

Continued on next page

AA95137,00008B3 -19-30MAR07-15/20

10 Pressure Control Pilot Check	Perform Pressure Control Pilot (PCP) Test. (Group 9026-25.) **Specification** Neutral PCP Differential—Pressure..... 0—34 kPa 0—0.34 bar 0—5 psi Is differential pressure within specifications?	**YES:** Go to Pump Servo Pressure Test Check. **NO:** If either pump neutral PCP differential pressure is greater than specification and less than 103 kPa (1.03 bar) (15 psi), PCP must be adjusted. See Pressure Control Pilot (PCP) Internal Adjustment. (Group 9026-25.) **NO:** If either pump differential pressure is over 103 kPa (1.03 bar) (15 psi), PCP must be replaced. See Hydrostatic Pump Disassemble. (Group 0360.)

AA95137,00008B5 -19-30MAR07-12/14

11 Pump Servo Pressure Test Check	Perform Pump Servo Pressure Test. (Group 9026-25.) Are servo pressures equal and less than charge pressure?	**YES:** Go to Motor Displacement Control Valve Adjustment Check. **NO:** Faulty pump displacement control valve (PDCV). Repair or replace. See Pump Displacement Control Valve (PDCV) Disassemble and Assemble. (Group 0360.)

AA95137,00008B5 -19-30MAR07-13/14

12 Motor Displacement Control Valve Adjustment Check	Perform Motor Displacement Control Valve (MDCV) Adjustment. (Group 9026-25.) Is motor displacement control valve functioning properly?	**YES:** Perform Transmission Efficiency Test. (Group 9026-25.) If leakage is indicated in the pump, see Hydrostatic Pump Disassemble. (Group 0360.) If leakage is indicated in the motor, see Hydrostatic Motor Disassemble. (Group 0360.) **NO:** Faulty motor displacement control valve (MDCV). Repair or replace. See Hydrostatic Motor Disassemble. (Group 0360.)

AA95137,00008B5 -19-30MAR07-14/14

Track Malfunctions

Continued on next page

AA95137,00008B6 -19-30MAR07-1/12

Hydrostatic Pump Flushing Procedure

SPECIFICATIONS	
Engine Speed	900—1500 rpm

SERVICE EQUIPMENT AND TOOLS
D01182AA 20-Ton Floor Stands
38H1004 90° Fitting (2 used)
38H1160 Fitting (4 used)
Parker 1JS43-6-6 Fitting 9/16 ORB (4 used)
Parker #601-6 Hose 2134 mm (7 ft) (4 used)

This procedure is used whenever major repair has been done to the hydrostatic circuit.

CAUTION: Prevent possible injury from unexpected track movement. Raise the machine off the ground and support with appropriate stands. Tracks must be free to rotate in either direction, check for objects on tracks before rotating tracks.

1. Raise machine off the ground and support with D01182AA stands. Lower blade to ground. Tracks must be free to rotate in either direction.

NOTE: Bulkhead wiring bracket will need to be loosened to give access to test ports.

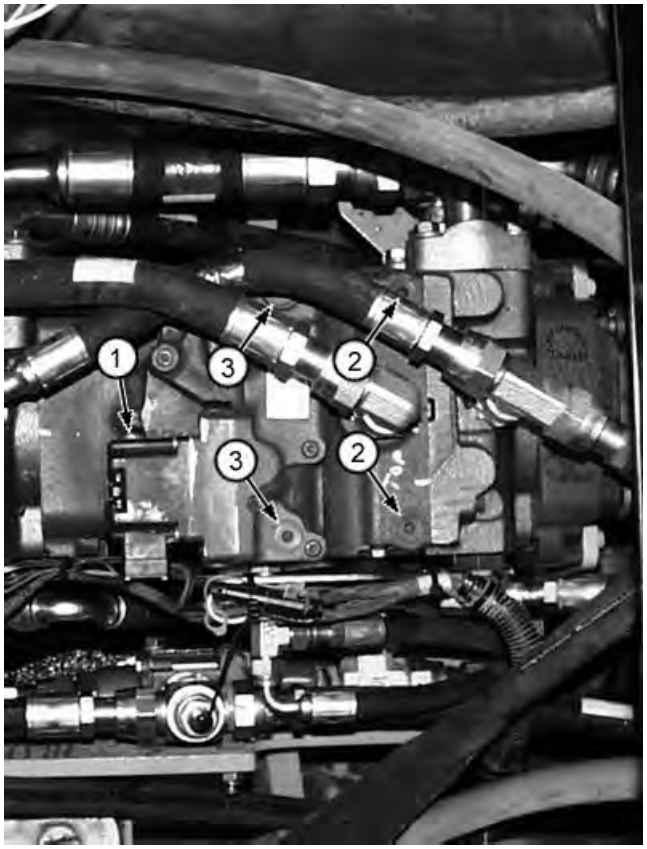
IMPORTANT: Test ports (3) MUST be closed to shift displacement control valve and allow flow from servos (2).

2. Install test hoses and fittings into ports (3) on both pump displacement control valves. Route opposite end of hoses back to reservoir.
3. Run engine speed at slow idle.

Specification	
Engine —Speed	900—1500 rpm

CAUTION: Tracks will rotate when FNR is moved to forward or reverse.

NOTE: Operate machine in 20 second intervals allowing sufficient time for cooling.



T157960B —UN—23JUL02

Hydrostatic Pump

1— PCP Internal Adjustment Port
2— Servo Test Ports
3— Displacement Control Valve Test Ports

4. Put transmission speed control to midrange. Cycle FNR lever to forward left counter rotate through right counter rotate position. This will flush the displacement control valve areas.

   Continue cycling machine at low idle for several minutes. Increase engine speed to 1500 rpm and continue cycling control to actuate transmission pumps for approximately 10 minutes.
5. Repeat procedure using servo test ports (2).

TX03543,000090C -19-13SEP06-1/1

Hydraulic Oil Cleanup Procedure

A hydraulic oil cleanup procedure must be done prior to starting machine after a component has been repaired or replaced. The use of attachments increases the need to monitor and filter oil to a safe contamination level. See 450H, 550H, 650H, 700H, 450J, 550J, 650J and 700J Crawler Dozer General Oil Cleanup Procedure. (CTM310—Super Caddy Oil Cleanup Procedure.)

MR50960,000013D -19-13SEP06-1/1

Transmission Efficiency Test

SPECIFICATIONS	
Transmission Oil Temperature	57—66°C 135—150°F
Transmission Speed Position	1.6
Engine Speed	Fast Idle
Multi-Function Relief Valve Pressure	46 195—48 953 kPa 462—490 bar 6700—7100 psi
Amperage 0—11 mA above 1000 psi reading	Good
Amperage 11—16 mA above 1000 psi reading	Marginal
Amperage Over 16 mA above 1000 psi reading	Bad

ESSENTIAL TOOLS
JT03482 High Pressure Test Kit

SERVICE EQUIPMENT AND TOOLS
D01182AA 20-Ton Floor Stands
JT02156A Digital Pressure/Temperature Analyzer (2 used)
JT02160 70 000 kPa (700 bar) (10 000 PSI) Transducer (2 used)

The purpose of this test is to determine the amount of transmission internal leakage in the closed-loop components.

This is accomplished by determining the amount of oil the transmission pump must deliver to maintain a specified system pressure in closed-loop. This pressure is below the multi-function valve setting. Therefore, the amount of pump flow indicates the amount of internal leakage in closed-loop.

The transmission controller sends a current signal to the Pressure Control Pilot (PCP) on each pump. The PCP produces a hydraulic pressure differential to the servo piston relative to the amount of current. By monitoring the current signal being sent to the PCP, the amount of leakage in closed-loop can be determined.

A small current signal to maintain system pressure means there is very little leakage. A large current signal reading means higher internal leakage.

CAUTION: Prevent possible injury from unexpected track movement. Raise the machine off the ground and support with appropriate stands. Tracks must be free to rotate in either direction; check for objects on tracks before rotating tracks.

1. Raise machine off the ground and support with D01182AA 20-Ton Floor Stands.
2. Lower blade to ground. Check if tracks are still off the ground and are free to rotate in either direction.

CAUTION: To avoid injury from escaping fluid under pressure, stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines. Tighten all connections before applying pressure. Pressure spikes in the transmission closed-loop can approach 68 950 kPa (690 bar) (10,000 psi). Use hoses and fittings rated for these pressures when checking transmission system pressures.

3. Stop engine and relieve the pressure in the system before disconnecting or connecting hydraulic or other lines.

   Install test fittings, lines and gauge in motor test ports.

Each test port senses closed-loop pressure.
- (S.N. —137828) Use test ports (1 and 2) to check left motor (rear pump) relief setting.
- (S.N. 137829—) Use test port (5) to check left motor (rear pump) relief setting.
- (S.N. —137828) Use test ports (3 and 4) to check right motor (front pump) relief setting.
- (S.N. 137829—) Use test ports (6) to check right motor (front pump) relief setting.

4. Start engine and heat oil to specification. See Transmission Oil Warmup Procedure. (Group 9026-25.)

Specification

Transmission Oil—Temperature ..... 57—66°C (135—150°F)

5. Set brake mode to test.
   a. Enter service mode on the SDM, by pressing and holding MENU for approximately 5 seconds until three beeps are heard and “service mode: is temporarily displayed on the screen.
   b. Select MACHINE SETTINGS from the SDM main menu.
   c. Press NEXT until BRAKE MODE appears and then press SELECT. Set the brake mode to TEST. For more information on navigation using the SDM, see Standard Display Monitor (SDM) Menu Structure—Service Mode. (Group 9015-20.)
6. View left or right pump output current on the SDM.
   a. Select DIAGNOSTICS from the SDM main menu.
   b. Select LIVE VALUES from the diagnostics submenu.
   c. Select OUTPUTS and push NEXT until the left or right pump output is displayed in mA.
7. Start engine, increase engine speed and set transmission speed to specifications.

Specification

Transmission Speed—Position 1.6
Engine—Speed ..... Fast Idle

Continued on next page

5. With park lock lever in UP (locked) position, set transmission Speed-In-Grip (SIG) to specification.

Specification	
Speed-In-Grip (SIG)—Position	1.6

   a. Run engine at slow idle.

   b. Put park lock lever in DOWN position.

   c. Put TCL lever in forward.

   d. Slowly increase engine rpm until TCU amperage is at test specification.

Specification	
Transmission Control Unit (TCU) Test—Amperage	238—242 mA

AA95137,0000564 -19-23JAN07-2/3

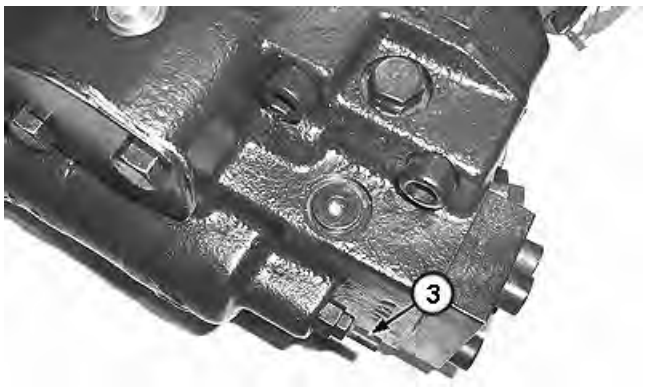
NOTE: Turning the screw **out** *will decrease the motor servo pressure. This sudden drop in motor servo pressure indicates that the motor is starting to de-swash (increase speed).*

6. Loosen lock nut and adjust motor displacement control valve (MDCV) (3) out until servo pressure begins to decrease.

7. Repeat procedure on other side.

8. Calibrate machine TCU. See Transmission Control Unit (TCU) Calibration. (Group 9015-20.)

3— Threshold Control Spring Adjusting Screw



T205765A —UN—04DEC04

Threshold Adjusting Screw

AA95137,0000564 -19-23JAN07-3/3

Air Conditioning System Diagnose Malfunctions

AA95137,00008B7 -19-16DEC08-1/35

Air Conditioning System Does Not Operate Diagnostic Procedure

AA95137,00008B7 -19-16DEC08-2/35

1 Heater Blower 15-Amp Fuse (F15) Check

Check heater blower 15-amp fuse (F15). See Fuse and Relay Specifications (S.N. 139436—153830) or see Fuse and Relay Specifications (S.N. 153831—). (Group 9015-10.)

Is fuse blown?

NOTE: If the heater blower switch and all work lights do not operate, check accessory relay (K7). See Accessory Relay Check.

YES: Replace fuse (F15).

NO: Go to Heater Blower Switch Check.

AA95137,00008B7 -19-16DEC08-3/35

2 Heater Blower Switch Check

Check heater blower switch (S7). See Cab Roof Harness (W4) Component Location. (Group 9015-10.)

Switch Position	Continuity Between Pins
Off	No Continuity
Low	1 and Battery Power
Medium	1, 2 and Battery Power
High	1, 2, 3 and Battery Power
Maximum	1, 2, 3, 4 and Battery Power

Is switch functioning properly?

YES: Go to Cab Heater Blower Resistor Check.

NO: Switch malfunction. Replace heater blower switch (S7).

AA95137,00008B7 -19-16DEC08-4/35

3 Cab Heater Blower Resistor Check

Check cab heater blower resistor (R2). See A/C Harness (W8) Component Location. (Group 9015-10.)

Is resistor within specifications?

Specification

R2—Cab Heater Blower Resistor—Low Speed Resistance (X12 pins 2 and 6) ..... 2.2—2.7 ohms
Medium Low Speed Resistance (X12 pins 3 and 6) ..... 1.3—1.9 ohms
Medium Speed Resistance (X12 pins 5 and 6) ..... 0.5—0.9 ohms

YES: Go to Heater Blower Motor Check.

NO: Resistor malfunction. Replace cab heater blower resistor (R2).

AA95137,00008B7 -19-16DEC08-5/35

4 Heater Blower Motor Check

Disconnect heater blower motor (M2) and supply 24 volts to motor. See A/C Harness (W8) Component Location. (Group 9015-10.)

Does motor run?

YES: Go to Accessory Relay Check.

NO: Motor malfunction. Replace heater blower motor (M2).

Continued on next page

AA95137,00008B7 -19-16DEC08-6/35

Proper Refrigerant Handling

The U.S. Environmental Protection Agency prohibits discharge of any refrigerant into the atmosphere, and requires that refrigerant be recovered using the approved recovery equipment.

IMPORTANT: Use correct refrigerant recovery, recycling and charging stations. Do not use refrigerant, hoses, fittings, components or refrigerant oils intended for use with R12 refrigerant.

Recovery, recycling and charging stations for R12 and R134a refrigerants **must not** be interchanged. Systems containing R12 refrigerant use a different oil than systems using R134a. Certain seals are not compatible with both types of refrigerants.

MODTX9031QQ2009 -19-06MAY04-1/1

R134a Refrigerant Cautions

SPECIFICATIONS	
Maximum Amount To Heat Refrigerant In Closed Container Temperature	52°C 125°F

CAUTION: Do not allow liquid refrigerant to contact eyes or skin. Liquid refrigerant will freeze eyes or skin on contact. Wear goggles, gloves and protective clothing.

If liquid refrigerant contacts eyes or skin, do not rub the area. Splash large amounts of cool water on affected area. Go to a physician or hospital immediately for treatment.

Do not allow refrigerant to contact open flames or very hot surfaces such as electric welding arc, electric heating element and lighted smoking materials.

Do not heat refrigerant over 52°C (125°F) in a closed container. Heated refrigerant will develop high pressure which can burst the container.

Specification	
Maximum Amount To Heat Refrigerant In Closed Container—Temperature	52°C 125°F

Keep refrigerant containers away from heat sources. Store refrigerant in a cool place.

Do not handle damp refrigerant container with your bare hands. Skin may freeze to container. Wear gloves.

If skin freezes to container, pour cool water over container to free the skin. Go to a physician or hospital immediately for treatment.

TX,9031,JC1705 -19-06MAY04-1/1

R134a Oil Charge Capacity

Item	Measurement	Specification
System (Total)	Capacity	232.2 mL 7.85 fl oz
Compressor (Precharge)	Capacity	229.8 mL 7.77 fl oz

TX14826,000009E -19-21AUG03-1/1

R134a Refrigerant Charge Capacity

Item	Measurement	Specification
Refrigerant Charge (Portable Charge Station)	Capacity	1.59 kg 3.5 lb

Item	Measurement	Specification
Refrigerant Charge (Automated Charge Station)	Capacity	1.47 kg 3.25 lb

TX14826,000009F -19-31AUG04-1/1