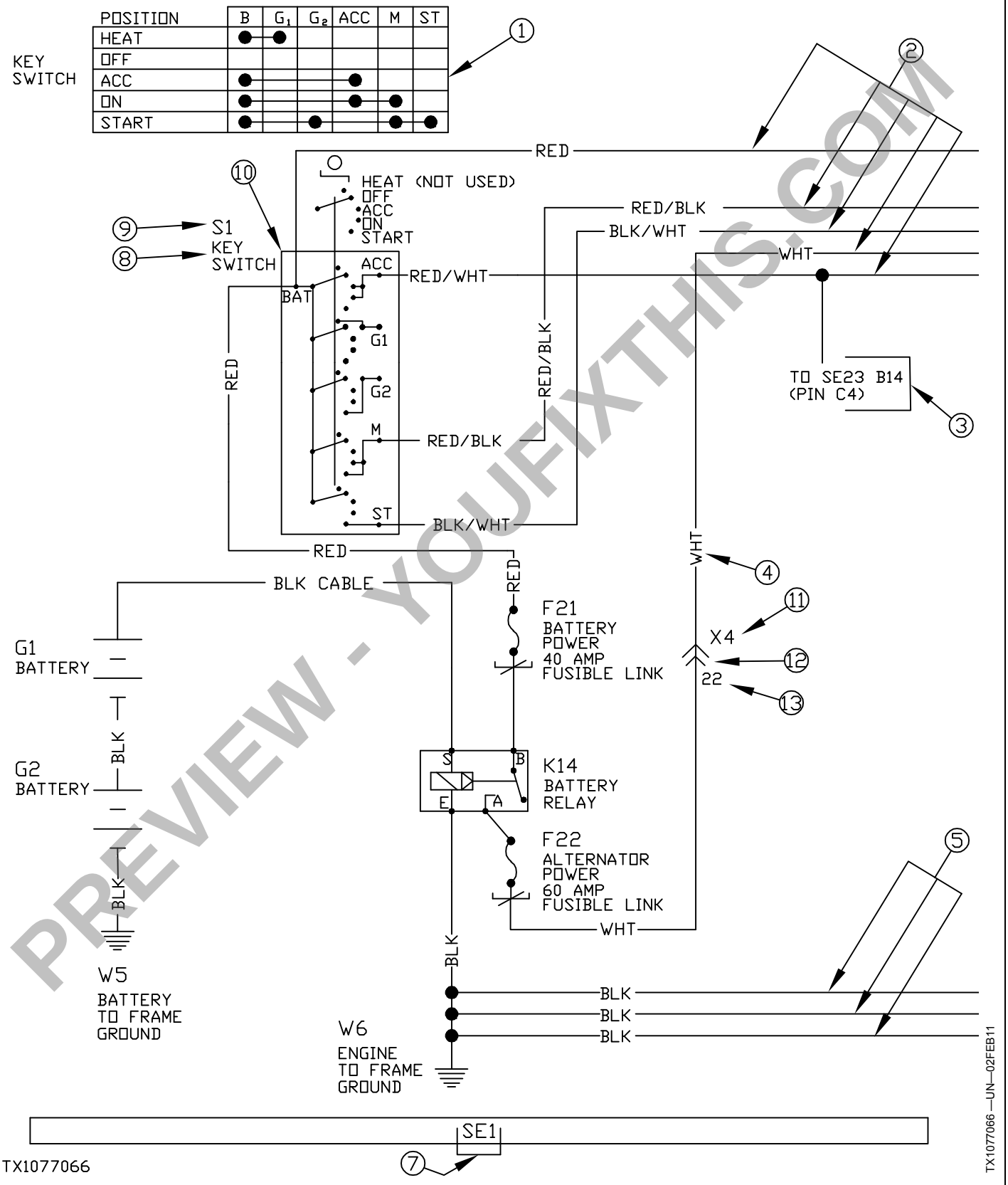
Electrical Diagram Information

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

Explanation of Wire Markings

System Functional Schematic Diagram



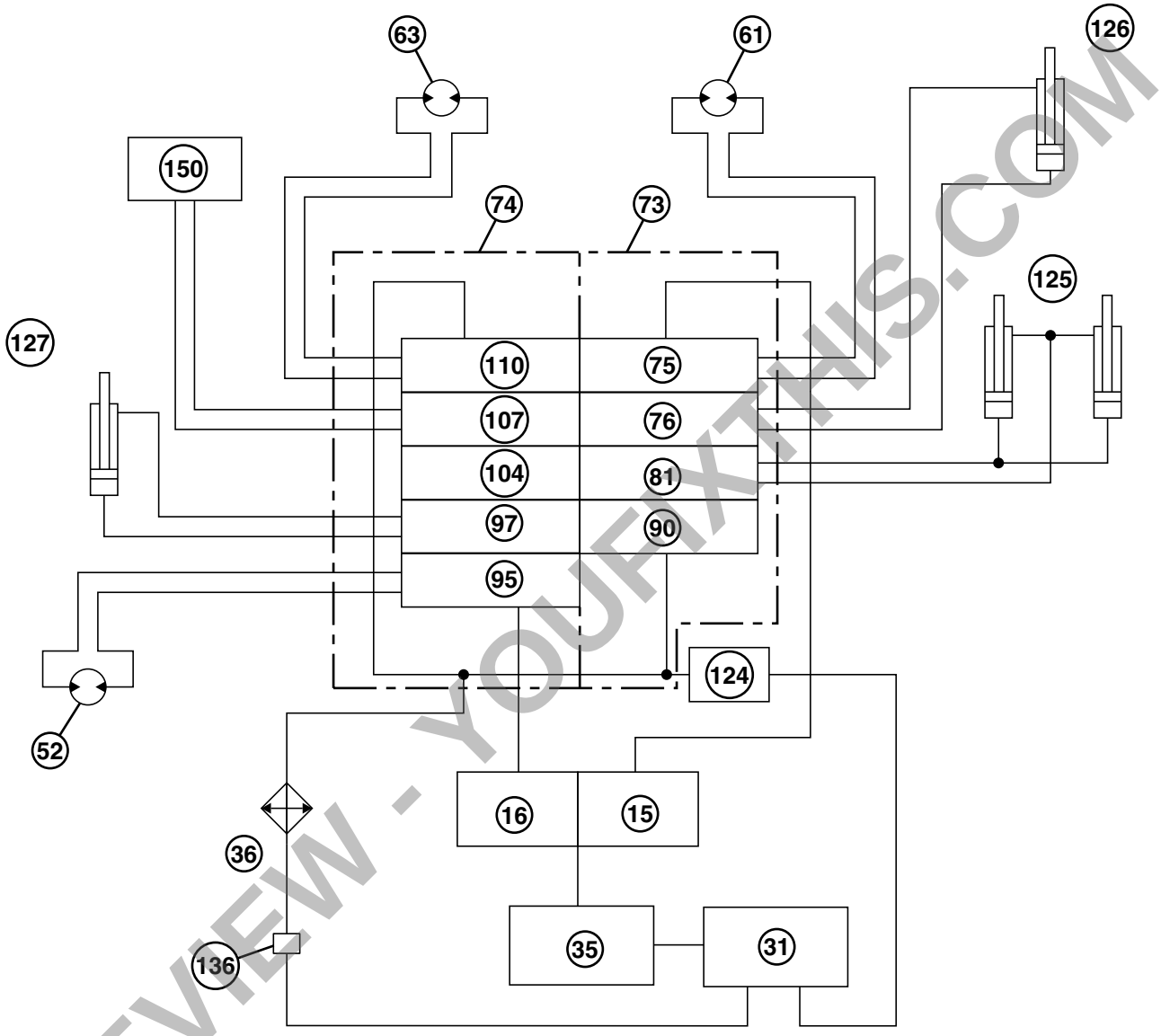
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LD30992,0000534 -19-02FEB07-1/8

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Hydraulic System Diagram and Operation



TX1139146 —UN—25JUN13

TX1139146

Hydraulic System Diagram

15— Pump 1
16— Pump 2
31— Hydraulic Oil Tank
35— Suction Screen
36— Hydraulic Oil Cooler
52— Swing Motor
61— Right Travel Motor
63— Left Travel Motor
73— Right Control Valve (4-spool)
74— Left Control Valve (5-spool)
75— Right Travel Spool
76— Bucket Spool
81— Boom 1 Spool
90— Arm 2 Spool
95— Swing Spool
97— Arm 1 Spool
104— Boom 2 Spool
107— Auxiliary Spool
110— Left Travel Spool
124— Hydraulic Oil Cooler Bypass Valve
125— Boom Cylinders
126— Bucket Cylinder
127— Arm Cylinder
136— Restriction Valve
150— Auxiliary Attachment

Main hydraulic system is open-center hydraulic system.

The main pump consists of pump 1 (15), pump 2 (16) in a common housing, the pump drive gearbox, and coupling. A pilot pump is mounted to the gearbox adjacent to pump 2. Pump 2 is driven directly by the engine through the coupler. Pump 1 and the pilot pump are driven by pump 2 through the gear train in gearbox. The engine to pump gear ratio for pump 1, pump 2, and pilot pump is 1:1.

Continued on next page

TP97644,0000093 -19-26JUN13-1/2

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24 DTC Check	Connect connector to information controller (ICF). Clear DTC and re-check for DTCs. Is DTC 11004.02-Abnormal CAN Communication still present? *NOTE: Key Switch: On*	**YES:** Information controller (ICF) malfunction. Replace information controller (ICF). See Information Controller (ICF) Remove and Install. (Group 9015-20.) **NO:** Check harness connection to information controller (ICF).

LD30992,000016F -19-12MAY10-26/30

25 ECU CAN Resistance Check	Connect all connectors except engine control unit (ECU) connector J2 (X15). Check resistance between pins A1 (X15) and B1 (X15). Is resistance between 50—70 Ω? *NOTE: Key Switch: Off*	**YES:** Go to DTC Check. **NO:** Go to Monitor Controller CAN Resistance Check.

LD30992,000016F -19-12MAY10-27/30

26 DTC Check	Connect connector to engine control unit (ECU). Clear DTC and re-check for DTCs. Is DTC 11004.02-Abnormal CAN Communication still present? *NOTE: Key Switch: On*	**YES:** Engine control unit (ECU) malfunction. Replace engine control unit (ECU). See Engine Control Unit (ECU) Remove and Install. (Group 9015-20.) **NO:** Check harness connection to engine control unit (ECU).

LD30992,000016F -19-12MAY10-28/30

27 Monitor Controller CAN Resistance Check	Connect all connectors except monitor controller connector B (X20). Check resistance between pins B6 and B7. Is resistance between 110—130Ω? *NOTE: Key Switch: Off*	**YES:** Go to DTC Check. **NO:** Check CAN bus terminator resistor (R10). See CAN Bus Terminator Check. (Group 9015-20.)

Continued on next page

LD30992,000016F -19-12MAY10-29/30

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Battery Remove and Install

CAUTION: Battery gas can explode. Keep sparks and flames away from batteries. Use a flashlight to check battery electrolyte level.

Never check battery charge by placing a metal object across the posts. Use a voltmeter or hydrometer.

Always remove grounded (-) battery clamp first and replace it last.

1. Remove wing nuts (2) and washers (3).
2. Remove battery covers (1).
3. Remove spacers (4), jam nuts (5) and washers (6).
4. Disconnect battery ground (-) cable (12), positive (+) cable (10) and jumper cable (9).
5. Remove battery brackets (8).

CAUTION: Prevent possible crushing injury from heavy component. Use appropriate lifting device.

6. Remove batteries (11).

Specification	
Battery—Weight	38 kg approximate 84 lb approximate

7. Check battery cables and clamps for wear and corrosion.
8. Repair or replace parts as necessary.

IMPORTANT: If one battery in a 24-volt system has failed, replace both batteries.

CAUTION: Prevent possible crushing injury from heavy component. Use appropriate lifting device.

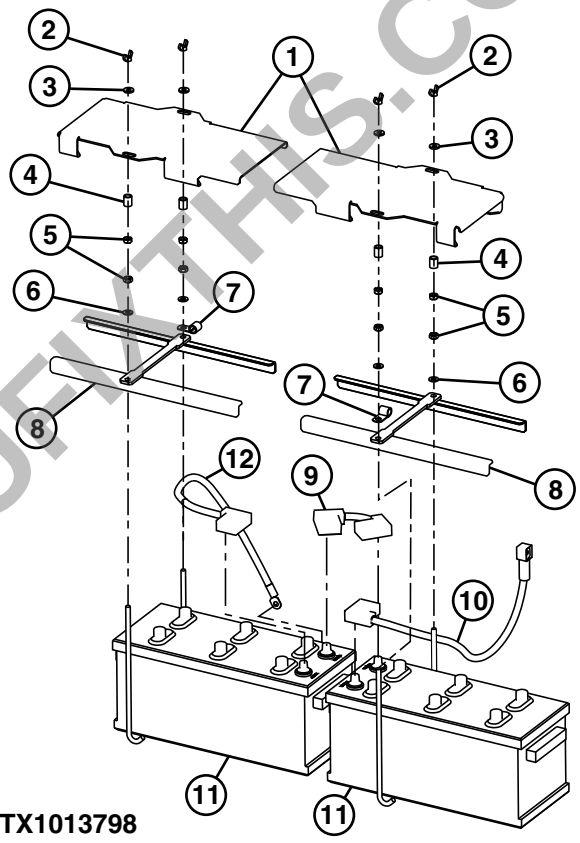
9. Install batteries.

Specification	
Battery—Weight	38 kg approximate 84 lb approximate

10. Connect battery cables.
11. Install brackets and covers.



TS204 —UN—15APR13



TX1013798

TX1013798 —UN—04NOV06

Batteries, Support and Cables

1— Battery Cover (2 used)
2— Wing Nut (4 used)
3— Washer (4 used)
4— Spacer (4 used)
5— Jam Nut (8 used)
6— Washer (4 used)
7— Clip (2 used)
8— Battery Bracket (2 used)
9— Jumper Cable
10— Positive (+) Cable
11— Battery (2 used)
12— Ground (-) Cable

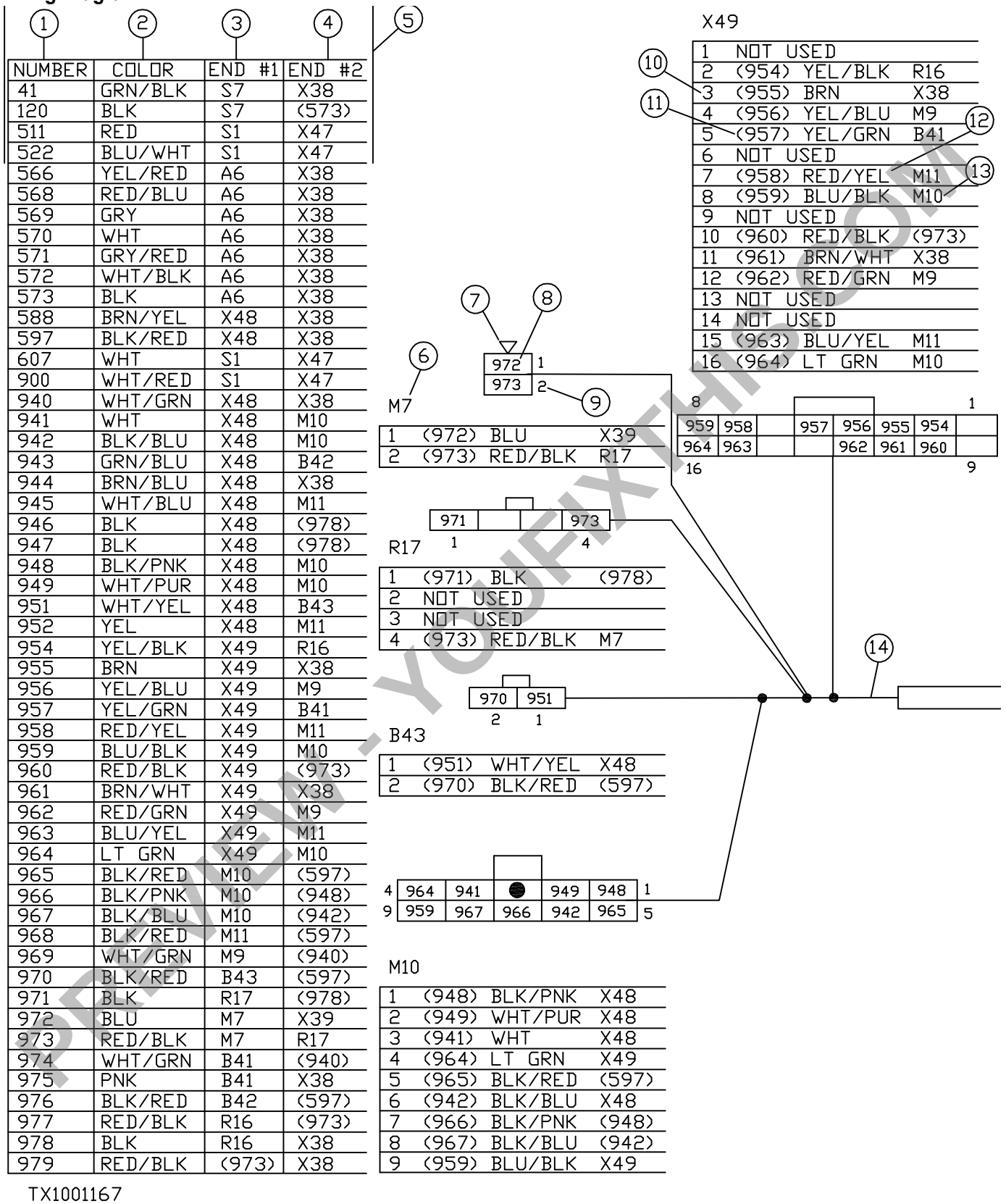
RR71361,00001C6 -19-23OCT06-1/1

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Wiring Diagram

NUMBER	COLOR	END #1	END #2
41	GRN/BLK	S7	X38
120	BLK	S7	(573)
511	RED	S1	X47
522	BLU/WHT	S1	X47
566	YEL/RED	A6	X38
568	RED/BLU	A6	X38
569	GRY	A6	X38
570	WHT	A6	X38
571	GRY/RED	A6	X38
572	WHT/BLK	A6	X38
573	BLK	A6	X38
588	BRN/YEL	X48	X38
597	BLK/RED	X48	X38
607	WHT	S1	X47
900	WHT/RED	S1	X47
940	WHT/GRN	X48	X38
941	WHT	X48	M10
942	BLK/BLU	X48	M10
943	GRN/BLU	X48	B42
944	BRN/BLU	X48	X38
945	WHT/BLU	X48	M11
946	BLK	X48	(978)
947	BLK	X48	(978)
948	BLK/PNK	X48	M10
949	WHT/PUR	X48	M10
951	WHT/YEL	X48	B43
952	YEL	X48	M11
954	YEL/BLK	X49	R16
955	BRN	X49	X38
956	YEL/BLU	X49	M9
957	YEL/GRN	X49	B41
958	RED/YEL	X49	M11
959	BLU/BLK	X49	M10
960	RED/BLK	X49	(973)
961	BRN/WHT	X49	X38
962	RED/GRN	X49	M9
963	BLU/YEL	X49	M11
964	LT GRN	X49	M10
965	BLK/RED	M10	(597)
966	BLK/PNK	M10	(948)
967	BLK/BLU	M10	(942)
968	BLK/RED	M11	(597)
969	WHT/GRN	M9	(940)
970	BLK/RED	B43	(597)
971	BLK	R17	(978)
972	BLU	M7	X39
973	RED/BLK	M7	R17
974	WHT/GRN	B41	(940)
975	PNK	B41	X38
976	BLK/RED	B42	(597)
977	RED/BLK	R16	(973)
978	BLK	R16	X38
979	RED/BLK	(973)	X38



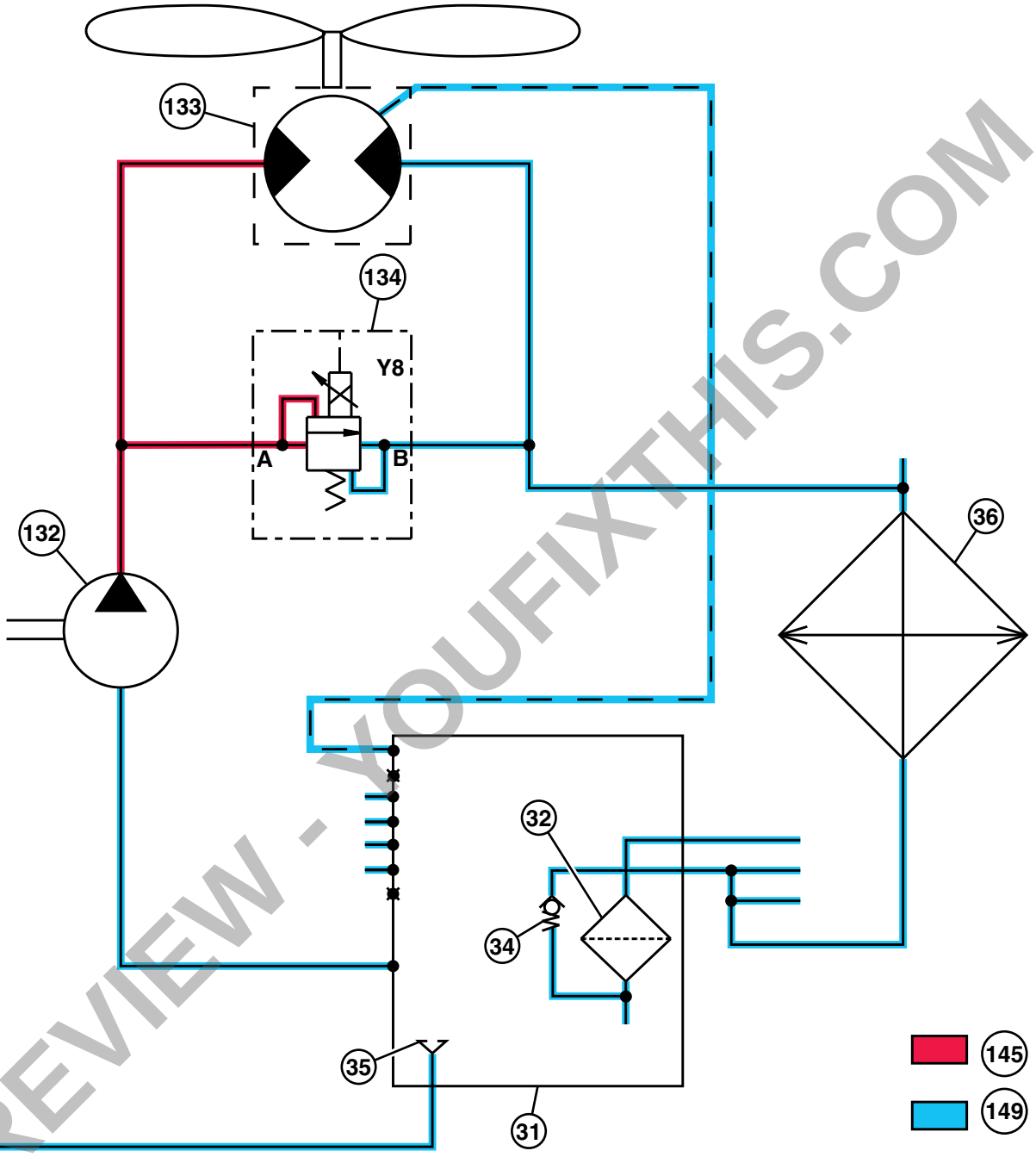
Wiring Diagram Example

Continued on next page

LD30992,0000534 -19-02FEB07-3/8

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Fan Drive Hydraulic System Operation—If Equipped (Serial No. —511303)



TX1113333

Fan Drive Hydraulic System Schematic—If Equipped

31— Hydraulic Oil Tank
32— Return Filter
34— Filter Bypass
35— Suction Screen
36— Hydraulic Oil Cooler
132— Fan Drive Pump
133— Fan Drive Motor
134— Fan Speed Control Valve
145— Supply Oil
149— Return or Pressure-Free Oil
Y8— Proportional Fan Speed Solenoid Valve

Continued on next page

MB00333,0000086 -19-18MAY12-1/3

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1 Code Check	Clear and re-check diagnostic trouble codes. Is DTC 11001.02-Abnormal RAM still present?	**YES:** Code is still present and machine does not operate. Replace main controller (MCF). See Main Controller (MCF) Remove and Install. (Group 9015-20.) **YES:** Code is still present but machine is still operable. Go to Machine Function Check. **NO:** Main controller (MCF) is OK.

LD30992,000016C -19-22JAN07-3/4

2 Machine Function Check	Is operation of machine normal? See Operational Checkout. (Group 9005-05.)	**YES:** Machine may be operated but it is recommended that the main controller (MCF) be replaced. **NO:** Main controller (MCF) malfunction. Replace main controller (MCF). See Main Controller (MCF) Remove and Install. (Group 9015-20.)

LD30992,000016C -19-22JAN07-4/4

11002.02 — Abnormal A/D Conversion

LD30992,000016D -19-22JAN07-1/4

Controller Hardware Diagnostics

LD30992,000016D -19-22JAN07-2/4

1 Code Check	Clear and re-check diagnostic trouble codes. Is DTC 11002.02-Abnormal A/D Conversion still present?	**YES:** Code is still present and machine does not operate. Replace main controller (MCF). See Main Controller (MCF) Remove and Install. (Group 9015-20.) **YES:** Code is still present but machine is still operable. Go to Machine Function Check. **NO:** Main controller (MCF) is OK.

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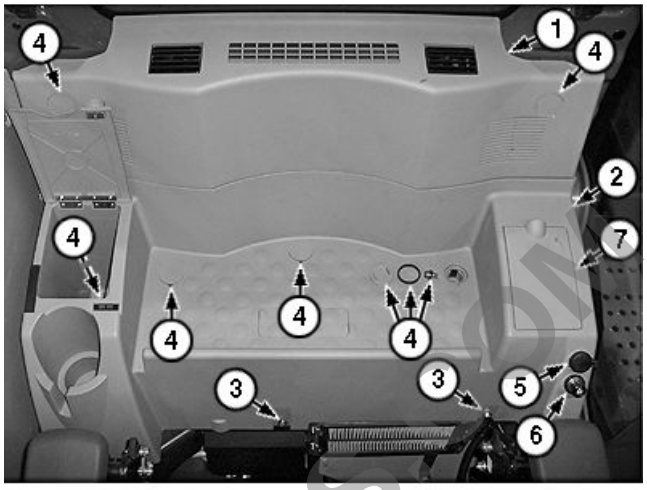
LD30992,000016D -19-22JAN07-3/4

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Rear Cover Remove and Install

1. Remove fuse cover (7).
2. Loosen cap screws (3).
3. Remove plugs, O-rings, and screws (4).
4. Lift and remove diffuser (1).
5. Disconnect electrical connections to power outlet (5) and lighter (6).
6. Lift and remove rear cover (2).
7. Repair or replace parts as necessary.
8. Install rear cover.
9. Connect electrical connections.
10. Install diffuser.
11. Install fuse cover.



TX1005108A —UN—23MAR06

Rear Cover

1— Diffuser
2— Rear Cover
3— Cap Screw (2 used)
4— Plug, O-Ring, and Screw (6 used)
5— Power Outlet
6— Lighter
7— Fuse Cover

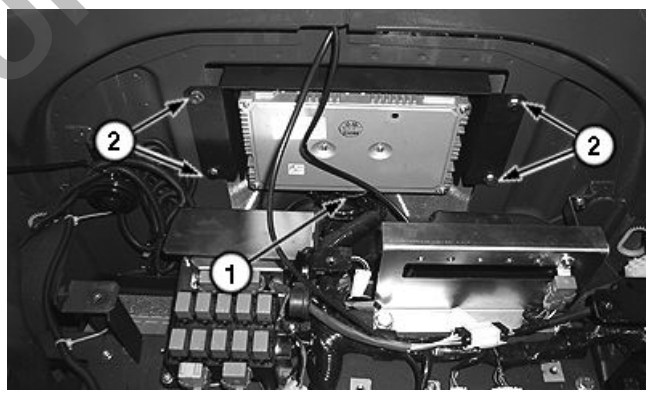
RR71361,00001C7 -19-23OCT06-1/1

Main Controller (MCF) Remove and Install

CAUTION: Do not install controller from another machine. Machine data will be incorrect and machine may not operate correctly.

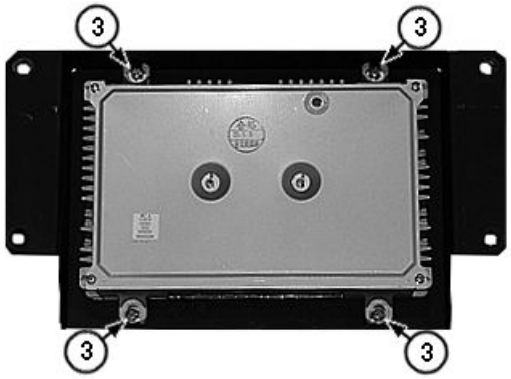
1. Disconnect battery ground (-) cable.
2. Remove rear cover. See Rear Cover Remove and Install. (Group 9015-20.)
3. Disconnect electrical connectors (1).
4. Remove cap screws (2).
5. Remove main controller and mounting bracket.
6. Remove screws (3).
7. Replace as necessary.

1— Electrical Connectors
2— Cap Screw (4 used)
3— Screw (4 used)



TX1000923A —UN—08DEC05

Main Controller



TX1000925A —UN—01DEC05

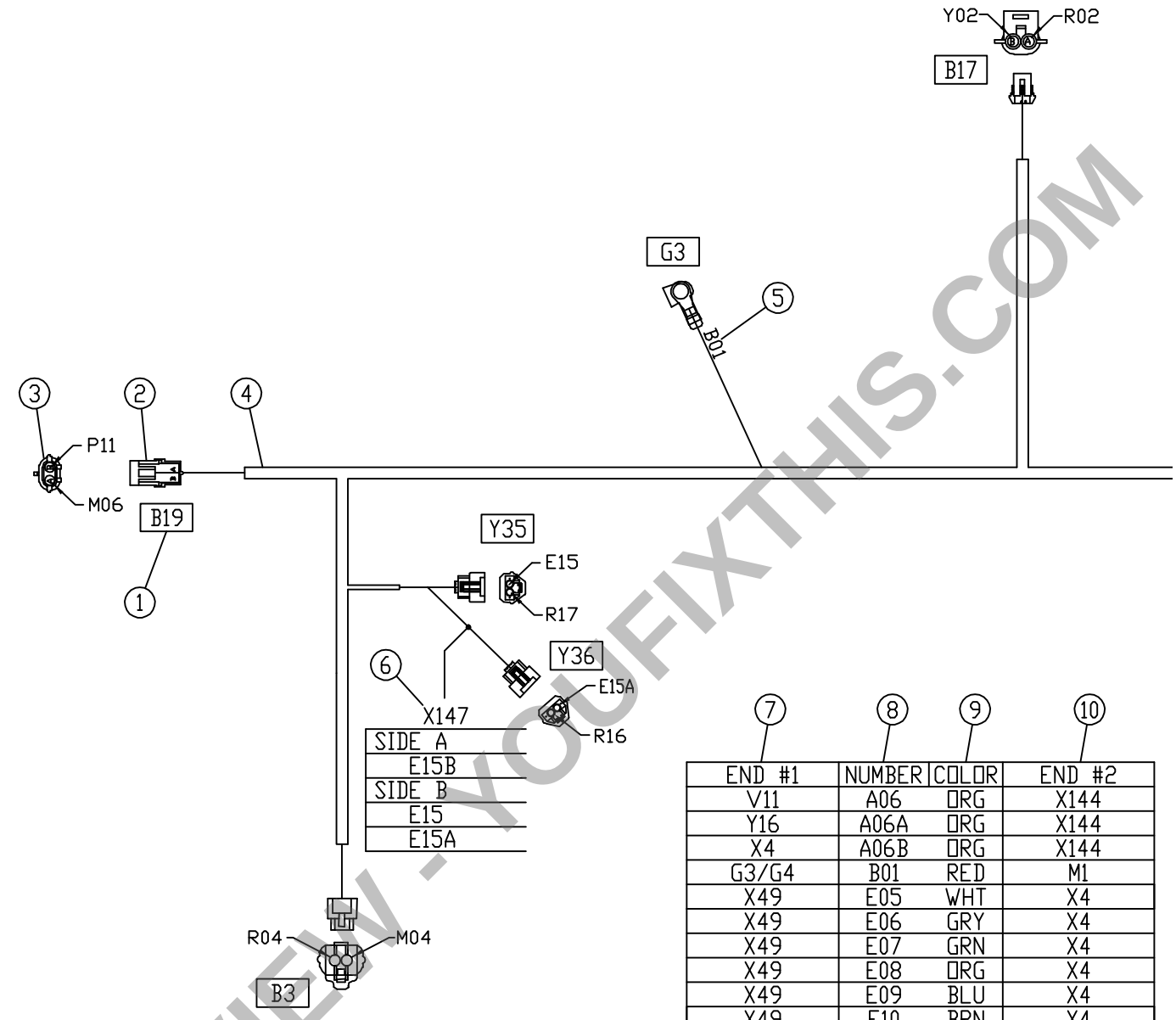
Main Controller

RR71361,00001C8 -19-02APR18-1/1

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Wiring Diagram



7 END #1	8 NUMBER	9 COLOR	10 END #2
V11	A06	ORG	X144
Y16	A06A	ORG	X144
X4	A06B	ORG	X144
G3/G4	B01	RED	M1
X49	E05	WHT	X4
X49	E06	GRY	X4
X49	E07	GRN	X4
X49	E08	ORG	X4
X49	E09	BLU	X4
X49	E10	BRN	X4
X38	E13	WHT	X4
Y35	E15	RED	X147
Y36	E15A	RED	X147
X4	E15B	RED	X147
G3/G4	G03	BLK	W27
W27	G03A	BLK	X148
V11	G03B	BLK	X148
Y16	G03C	BLK	X148
X145	G03D	BLK	W27
X37	H13	GRN	X4
G3/G4	J08	TAN	X4
B4	M03	PUR	X4
B3	M04	PUR	X4
B19	M06	PUR	X4
B23	N02	YEL	X4

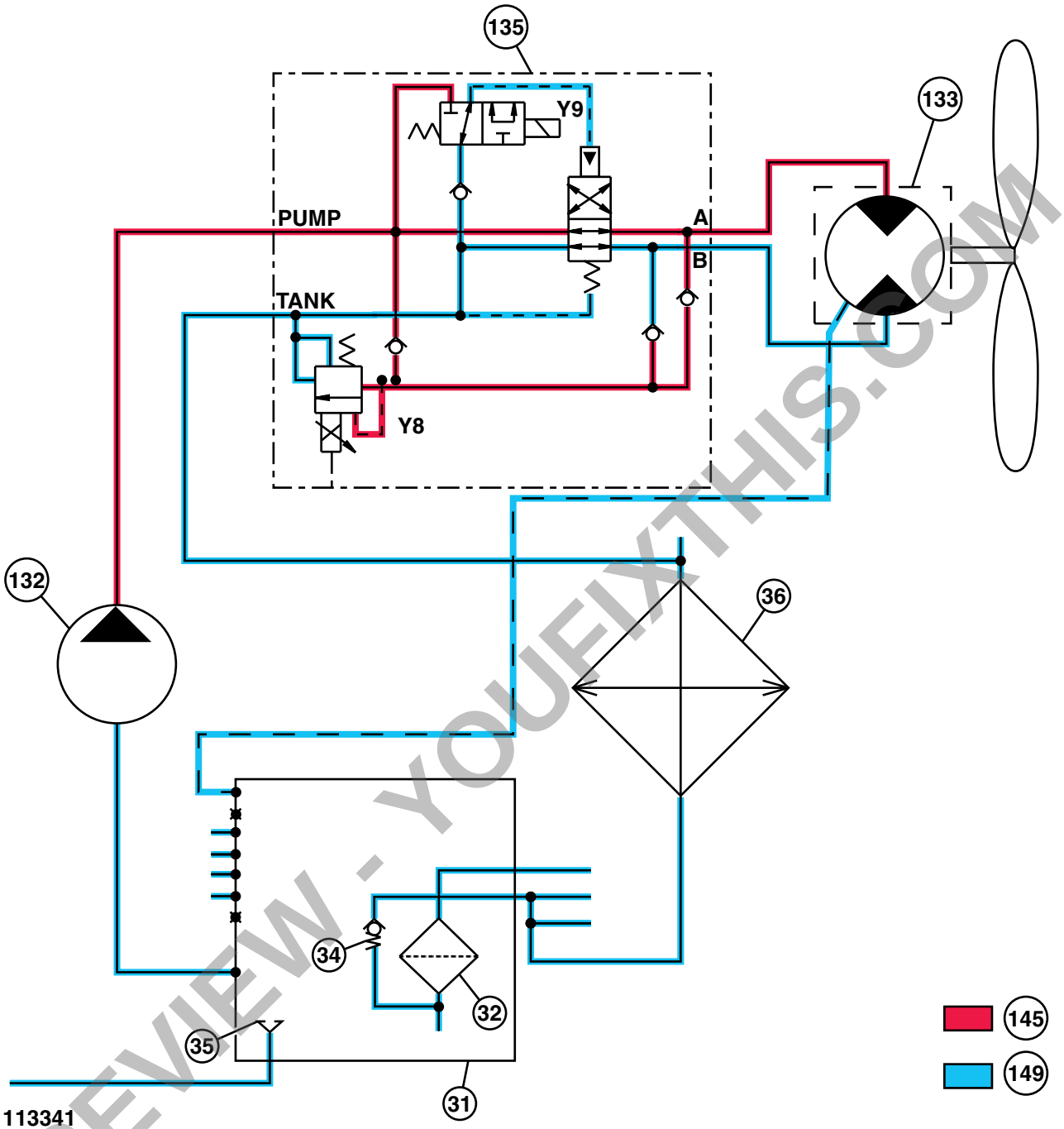
T195714 —UN—30OCT03

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LD30992,0000534 -19-02FEB07-5/8

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Fan Drive Hydraulic System Schematic—Reversing (if equipped)

31— Hydraulic Oil Tank
32— Return Filter
34— Filter Bypass
35— Suction Screen
36— Hydraulic Oil Cooler
132— Fan Drive Pump
133— Fan Drive Motor
135— Fan Speed and Reversing Control Valve
145— Supply Oil
149— Return or Pressure Free Oil
Y8— Proportional Fan Speed Solenoid Valve
Y9— Reversing Fan Solenoid Valve

Standard Hydraulic Fan Function—If Equipped

See Fan Drive Hydraulic System Schematic. (Group 9025-15.)

See Fan Drive Hydraulic System Component Location. (Group 9025-15.)

A hydraulic-powered cooling fan is used to provide air flow for the machine's cooling package. The fan drive system consists of:

- Gear type fan drive pump (132)
- Fan speed control valve (134) or fan speed and reversing control valve—if equipped (135)
- Gear type fan drive motor (133)

Continued on next page

MB00333,0000086 -19-18MAY12-2/3

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2 Machine Function Check	Is operation of machine normal? See Operational Checkout. (Group 9005-05.)	**YES:** Machine may be operated but it is recommended that the main controller (MCF) be replaced. **NO:** Main controller (MCF) malfunction. Replace main controller (MCF). See Main Controller (MCF) Remove and Install. (Group 9015-20.)

LD30992,000016D -19-22JAN07-4/4

11003.03 — Abnormal Sensor Voltage

Individual sensor or component diagnostic trouble code (DTC) may also be present within this code. Engine speed dial may not function correctly when this code is present.

LD30992,000016E -19-24JUL14-1/6

Abnormal Sensor Voltage Diagnostic Procedure

LD30992,000016E -19-24JUL14-2/6

1 Voltage Check	Turn key switch to OFF position. Disconnect all 5-volt sensors. See Main Controller (MCF) Circuit Theory of Operation. (Group 9015-15.) Turn key switch to ON position. Monitor engine speed dial (R15) voltage while moving the engine speed dial from low idle to high idle. See Monitor Data Items. (Group 9015-20.) Does voltage increase steadily as engine speed dial is moved to high idle?	**YES:** Go to Sensor Check. **NO:** Go to Machine Harness Check.

LD30992,000016E -19-24JUL14-3/6

2 Sensor Check	Perform the following: • Turn key switch to OFF position. • Connect one 5-volt sensor at a time. • Turn key switch to ON position. • Monitor engine speed dial (R15) voltage while moving engine speed dial from low idle to high idle. See Monitor Data Items. (Group 9015-20.) Does voltage increase steadily as engine speed dial is moved to high idle?	**YES:** Repeat these steps for each remaining sensor. **NO:** Replace last sensor that was connected.

Continued on next page

LD30992,000016E -19-24JUL14-4/6

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Engine Control Unit (ECU) Remove and Install

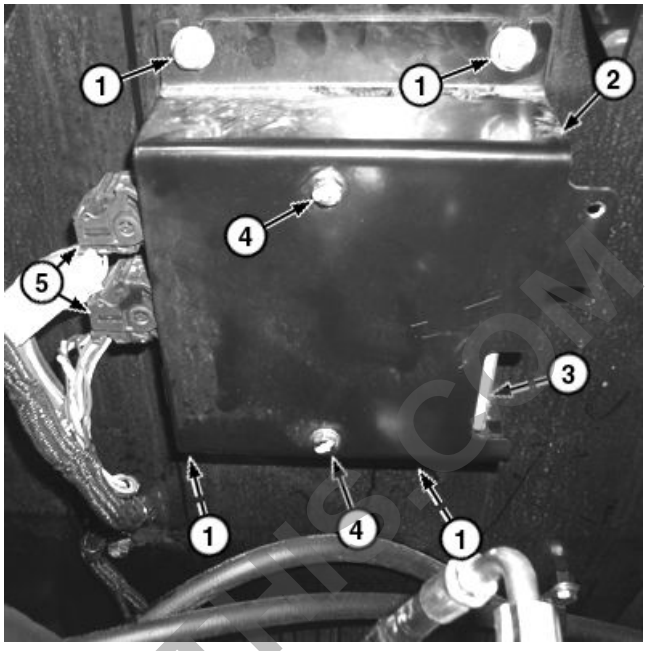
CAUTION: Do not install controller from another machine. Machine data will be incorrect and machine may not operate correctly.

NOTE: The engine control unit (ECU) is located in the engine compartment below the hood latch.

1. Disconnect battery ground (-) cable.
2. Disconnect electrical connectors (5).
3. Remove cap screws (1) to remove mounting bracket (2).
4. Remove cap screws (4) to remove engine control unit (ECU) (3).
5. Repair or replace parts as necessary.

IMPORTANT: When replacing engine control unit, new software must be loaded after installation.

6. Install ECU and mounting bracket.
7. Connect electrical connectors.
8. Connect battery ground (-) cable.



TX1013944A —UN—06NOV06

Engine Control Unit (ECU)

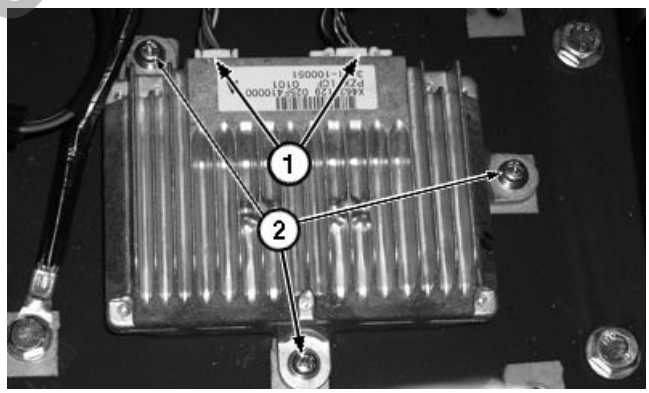
1— Cap Screw (4 used)
2— Mounting Bracket
3— Engine Control Unit (ECU)
4— Cap Screw (2 used)
5— Electrical Connector (2 used)

RR71361,00001C9 -19-02APR18-1/1

Information Controller (ICF) Remove and Install

CAUTION: Do not install controller from another machine. Machine data will be incorrect and machine may not operate correctly.

1. Disconnect battery ground (-) cable.
2. Remove rear cover. See Rear Cover Remove and Install. (Group 9015-20.)
3. Disconnect electrical connectors (1).
4. Remove screws (2).
5. Replace information controller as necessary.



TX1000910A —UN—01DEC05

1— Electrical Connector (2 used)
2— Screw (3 used)

RR71361,00001CA -19-02APR18-1/1

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Recognize Safety Information

This is the safety alert symbol. When this symbol is noticed on the 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 the 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—15APR13

T133588 —19—28AUG00

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

Follow Safety Instructions

Read the safety messages in this manual and on the machine. Follow these warnings and instructions carefully. Review them frequently.

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 -19-03JAN07-1/1

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

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General Information

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2 DTC Check	Switch connectors of travel speed solenoid (SC) with another solenoid in solenoid valve manifold.	
	Clear and re-check DTCs.	**YES:** Main controller (MCF) malfunction. Replace main controller (MCF). See Main Controller (MCF) Remove and Install. (Group 9015-20.)
	Does DTC 11405.03-Travel speed solenoid feedback current high still display?	**NO:** Travel speed solenoid malfunction. Replace solenoid.

LD30992,0000195 -19-22JAN07-4/4

11405.04 — Travel Speed Solenoid Feedback Current Low

LD30992,0000196 -19-22JAN07-1/4

Travel Speed Solenoid Diagnostics

Travel speed solenoid feedback current below 56 mA.

LD30992,0000196 -19-22JAN07-2/4

1 Continuity Check	Disconnect harness from travel speed solenoid and main controller (MCF).	
	Check continuity between travel speed solenoid connector pin 1 and main controller (MCF) connector A (X28) pin A31. Check continuity between travel speed solenoid connector pin 2 and main controller (MCF) connector A (X28) pin A5.	**YES:** Go to DTC Check.
	Is there continuity between solenoid and main controller (MCF)?	**NO:** Open circuit in harness. Repair or replace harness. See Cab Harness (W1) Wiring Diagram and See Machine Harness (W2) Wiring Diagram. (Group 9015-10.)

LD30992,0000196 -19-22JAN07-3/4

2 DTC Check	Switch connectors of travel speed solenoid (SI) with another solenoid in solenoid valve manifold.	
	Clear and re-check DTCs.	**YES:** Main controller (MCF) malfunction. Replace main controller (MCF). See Main Controller (MCF) Remove and Install. (Group 9015-20.)
	Does DTC 11405.04-Travel speed solenoid feedback current low still display?	**NO:** Travel speed solenoid malfunction. Replace solenoid.

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Operational Checkout

This procedure is used to check operation of the machine. It is designed so you can do a walk around inspection, check machine operation, and perform specific checks from the operator's seat.

If there is a problem with the machine, diagnostic information in this checkout will help determine the probable cause. This information may allow you to perform a simple adjustment to correct the problem. Use the table of contents to help find adjustment procedures.

A location will be required which is level and has adequate space to complete the checks. No tools are needed to perform the checkout.

Complete the usual necessary visual checks (oil levels, oil condition, external leaks, loose hardware, linkage, wiring) prior to doing the checkout. The machine must be at operating temperature for many of the checks.

Read each check completely before performing. If no problem is found, you will be instructed to go to the next check. If a problem is indicated, you will be referred to a procedure for adjustment, repair, or replacement.

The monitor can be used to perform diagnostic and operational checks. The monitor can display engine speed, pressures, and Diagnostic Trouble Codes (DTCs).

JD29379,000003D -19-19NOV12-1/46

Diagnostic Trouble Codes Check

JD29379,000003D -19-19NOV12-2/46

Display and Clear Diagnostic Trouble Codes	Always check for diagnostic trouble codes and correct them before performing the operational checkout. Diagnostic trouble codes can be displayed by using several methods: • Monitor Controller • With Service Advisor • With WinDr *LOOK: Are diagnostic trouble codes present?*	**YES:** Correct all diagnostic trouble codes before proceeding. See Reading Diagnostic Trouble Codes With Service ADVISOR™ Diagnostic Application. (Group 9015-20.) See Reading Diagnostic Trouble Codes With Monitor Display. (Group 9015-20.) **NO:** Proceed with operational checkout.

JD29379,000003D -19-19NOV12-3/46

Operational Checks—Key Switch Off, Engine Off Checks

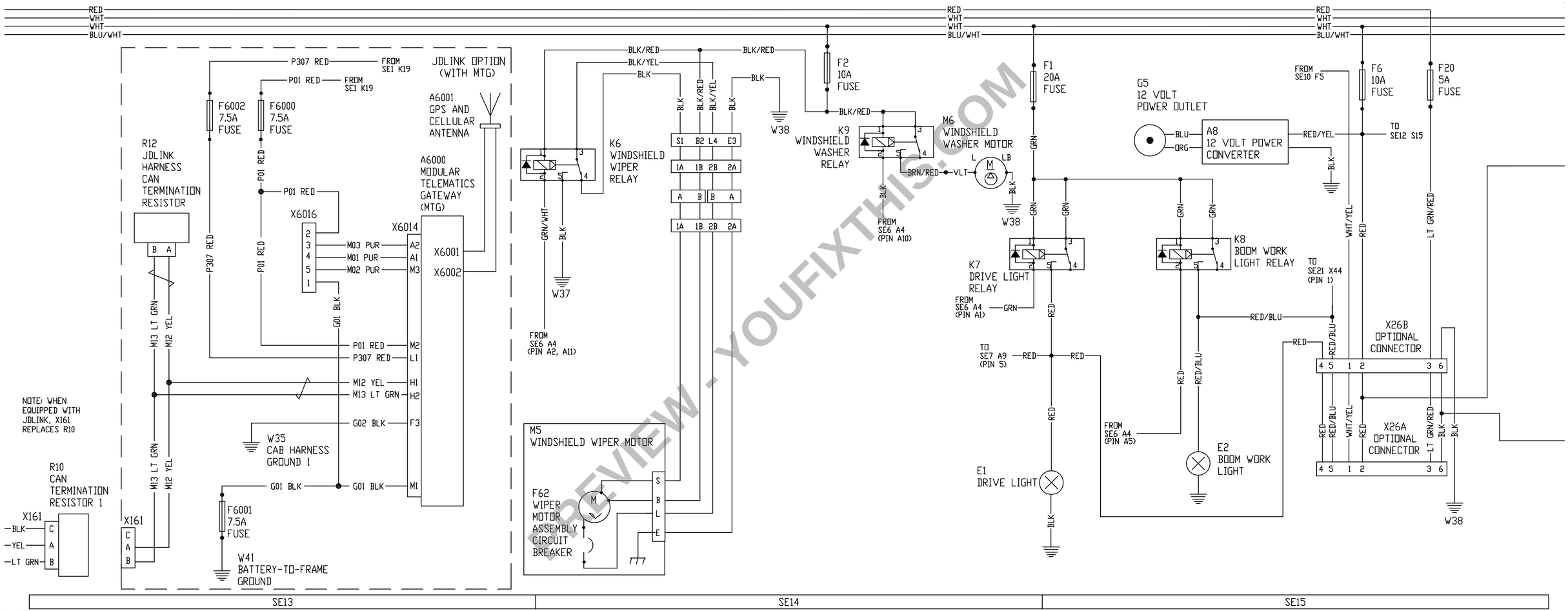
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JD29379,000003D -19-19NOV12-4/46

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TX1234598 —UN—20FEB17



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TX1234598

200DLC AND 200D SYSTEM FUNCTIONAL SCHEMATIC (5 OF 9)

System Functional Schematic (SE13—SE15) (5 of 9)

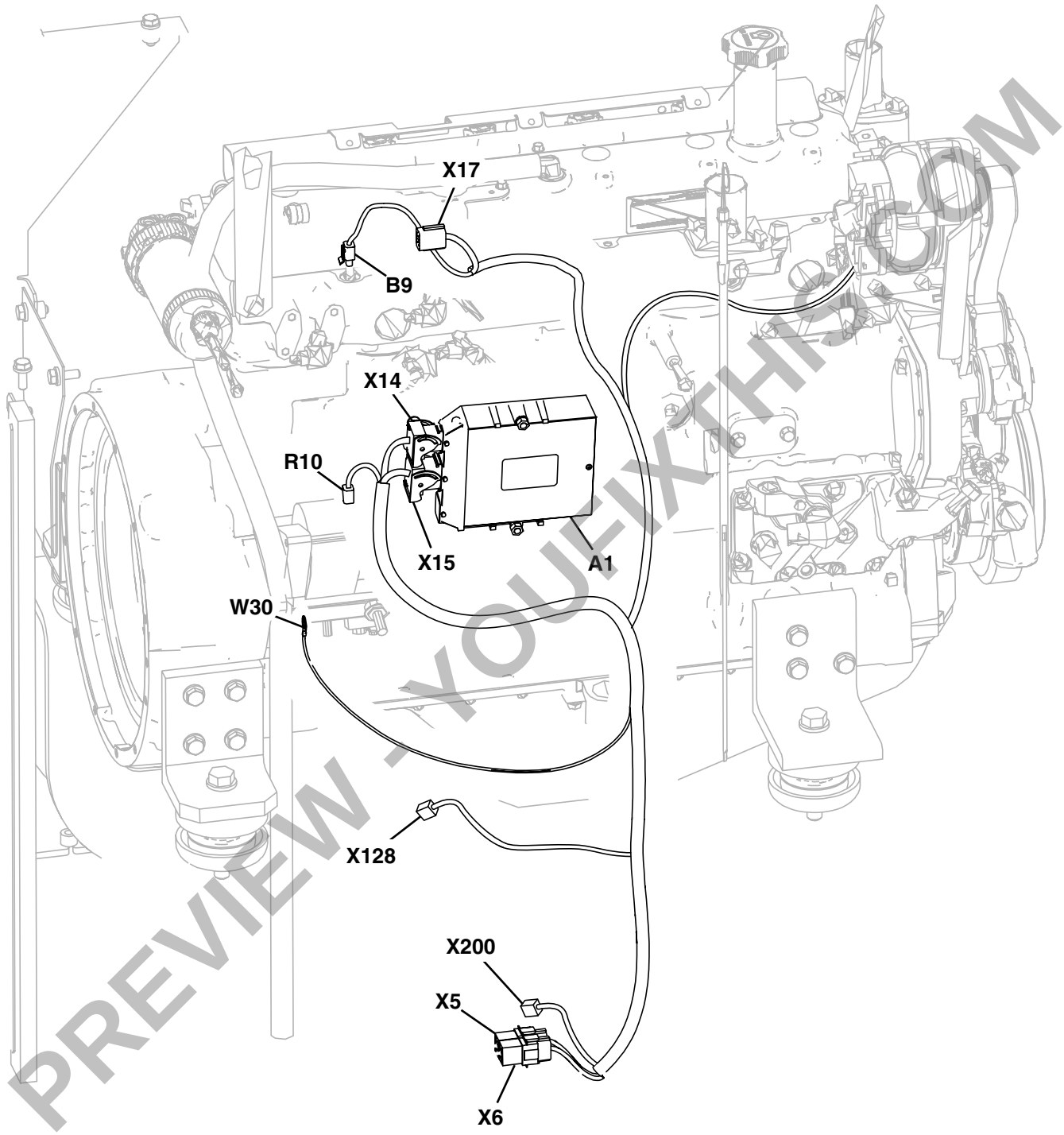
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LD30992,0000538 -19-29JUN17-9/18

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(S.N. 511792—)



TX1076058 —UN—21APR10

TX1076058

Engine Harness (W4) Component Location (right side) (S.N. 511792—)

Continued on next page

MB00333,0000100 -19-15OCT12-7/9

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F45— Starter In-line 30 A Fuse
K34— Starter Relay
K35— Starter Protection Relay
M1—Starter Motor
V44— Starter Relay Diode
X127— Machine Harness-to-Starter Harness Connector
X128— Engine Harness-to-Starter Harness Connector
X399— G01 BLK Splice

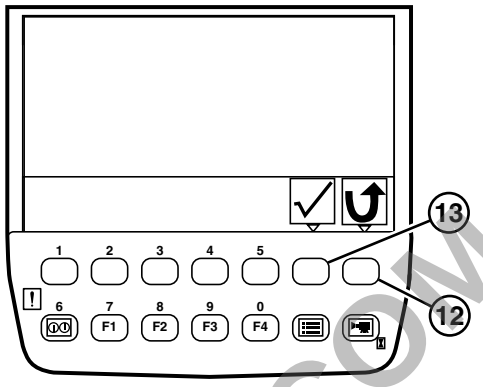
TF44157,00003AD -19-13MAY10-4/4

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Press button (13) to reset the monitoring data item list or press button (12) to return to the previous screen.

12— Select Button **13— Return Button**



TX1077072 —UN—29APR10

Monitoring Reset Screen

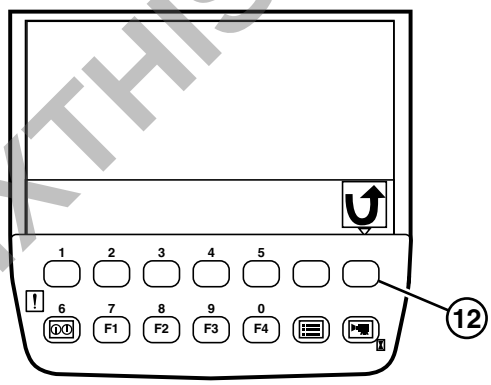
LD30992,0000559 -19-12MAR10-6/7

Controller Version

The controller version screen displays the version of each controller.

Press button (12) to return to the previous screen.

12— Return Button



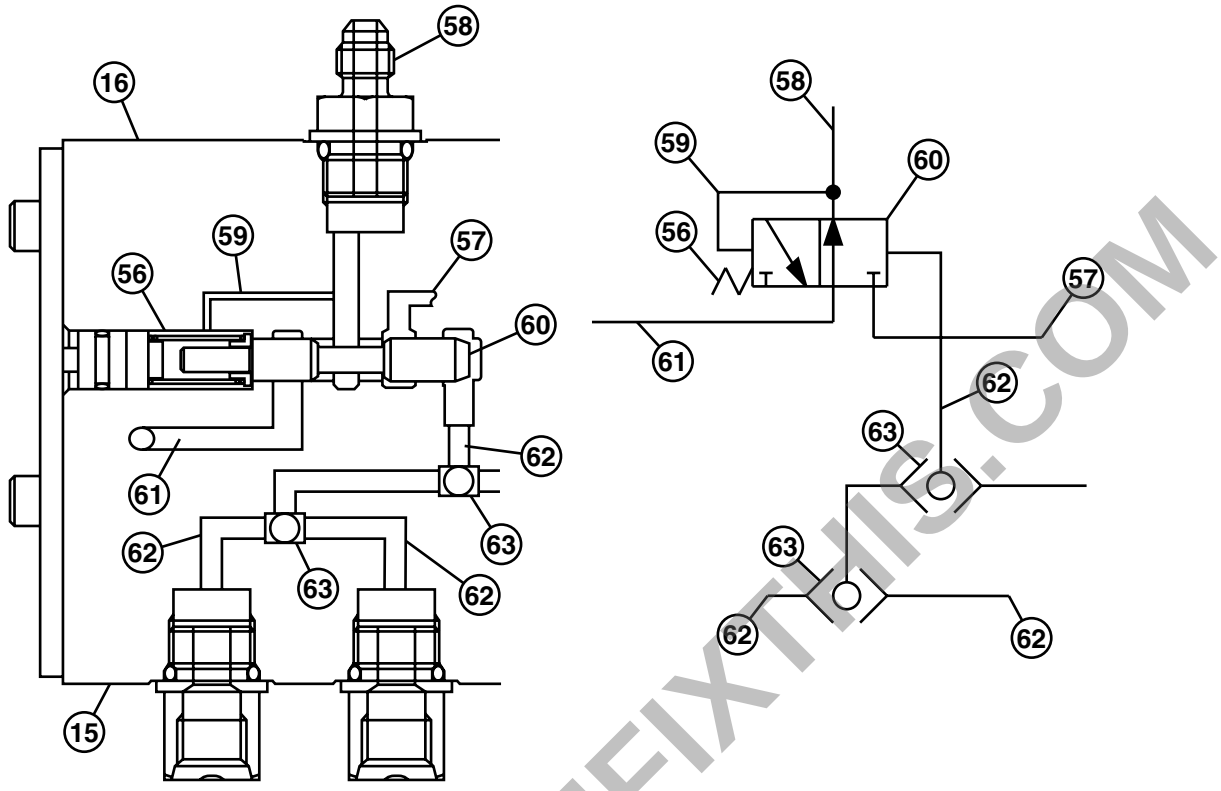
TX1077073 —UN—29APR10

Controller Version Screen

LD30992,0000559 -19-12MAR10-7/7

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TX1011427 —UN—23AUG06

TX1011427

Pump 1 or Pump 2 Flow Rate Pilot Valve

15— Control Valve Side of Pilot Signal Manifold
16— Pilot Control Valve Side of Pilot Signal Manifold
56— Spring Chamber
57— To Hydraulic Oil Tank by Port DF
58— Port SA to Pump 1 Regulator or Port SB to Pump 2 Regulator
59— Sensing Passage
60— Pump 1 or 2 Flow Rate Pilot Valve
61— Primary Pilot Oil From Port PI
62— Control Pilot Oil From Actuated Pilot Control Valve
63— Shuttle Valve

Pump 1 Flow Rate Pilot Valve (port SA) and Pump 2 Flow Rate Pilot Valve (port SB)

The function of pump 1 and pump 2 flow rate pilot valves (60) is to deliver a regulated amount of primary pilot oil to the pump 1 and/or 2 regulators in proportion to the control pilot oil applied to the flow rate pilot valve by the actuated pilot control valves (62). The primary pilot oil is from port A4 of the pilot shutoff solenoid valve to the pilot signal manifold through port PI (61).

Pump 1 flow rate pilot valve delivers primary pilot oil to pump 1 through port SA. Pump 2 flow rate pilot valve delivers primary pilot oil to pump 2 through port SB. The control pilot oil from the actuated pilot control valve is routed to the flow rate pilot valves by the shuttle valves (63).

Actuating a pilot control valve sends a control pilot oil signal to the pilot signal manifold. The control pilot oil flows through the manifold to the control valve pilot cap and within the manifold is routed by shuttle valves to the end of flow rate pilot valve. The pilot valve is shifted to the left against the spring force allowing a regulated amount of primary pilot oil to flow past the pilot valve and out port SA to pump 1 regulator or port SB to pump 2 pump regulator (58) and through the sensing passage (59) into spring chamber (56). The pressure of primary pilot oil to the pump regulators and spring chamber increases pushing the pilot valve back to the right until the pressure of primary pilot oil and spring force balances with the pressure of control pilot oil stopping the increase of primary pilot oil pressure to pump regulators.

See Pump 1 and Pump 2 Regulator Operation. (Group 9025-05.)

NOTE: Ports SA and SB are located on the pilot control valve side of pilot signal manifold but, for simplification of the schematic, are shown schematically on the control valve side of pilot signal manifold.

When the pilot control valve is returned to neutral, control pilot oil on the end of pilot valve is released to the hydraulic oil tank through the pilot control valve. The pilot valve is pushed to the right by the spring releasing the primary pilot oil in the pump regulator and spring chamber to the hydraulic oil tank through port DF (57).

Continued on next page

TP97644,0000060 -19-19JAN09-5/11

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Swing Crossover Relief Valves:

1. High pressure oil (19) of the pressure spike at return side of swing motor (17) is relieved to inlet side through the swing crossover relief valves. See Swing Motor, Crossover Relief Valve, and Make-Up Check Valve Operation.

Swing Dampener Valve A (5):

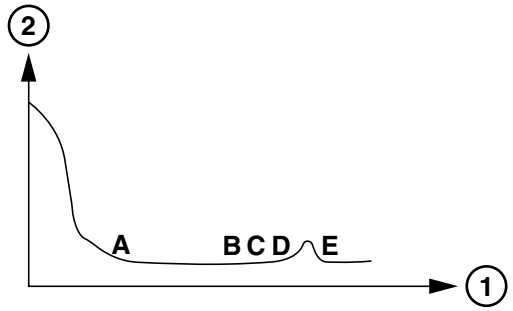
1. High pressure oil pushes the ball (11) off seat of poppet (7) and then flows through the plunger (12) to chamber N (14).
2. Pressure in chamber N increases pushing the piston (15) against the plug.
3. When pressure increase becomes greater than the force of springs (8 and 13), plunger, ball, and poppet are pushed to the right compressing the springs.

Swing Dampener Valve B (6):

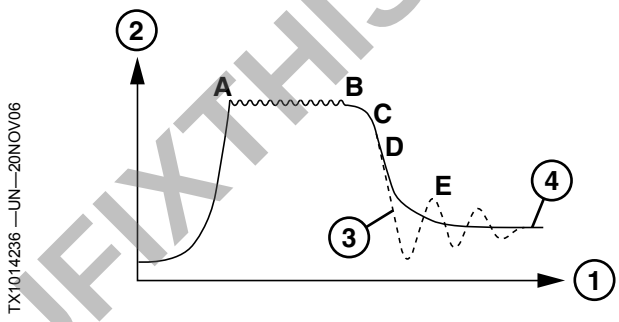
1. High pressure oil flows through inner passage to spring chamber (16).
2. When pressure increase becomes greater than the force of springs, the piston, plunger, ball, and poppet are pushed to the left compressing the springs.

The valves remain at this state until the high pressure oil on return side of swing motor begins to decrease (B to C—pressure begins to decrease).

TP97644,00000AF -19-22JUN10-3/12



Time to Pressure Output Curve For Inlet Side



Time to Pressure Output Curve For Return Side

1— Time
2— Pressure
3— Without Swing Dampener Valve
4— With Swing Dampener Valve

Continued on next page

TP97644,00000AF -19-22JUN10-4/12

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5 Harness Check	Check harness and harness connectors for damage, corrosion, or debris. Are harness and harness connectors in good condition?	**YES:** Go to Travel Speed Circuit Check. **NO:** Repair or repair harness as necessary.

DF89619,00B5889 -19-14MAR17-7/13

6 Travel Speed Circuit Check	Inspect travel speed circuit. • See Hydraulic System Schematic. (Group 9025-15.) • See Center Joint Operation. (Group 9025-05.) • See Travel Hydraulic System Line Connection (S.N. 501493—) or see Travel Hydraulic System Line Connection (S.N. —501492). (Group 9025-15.) Are all lines and hoses straight and in good condition; not kinked, worn from rubbing, or weather checked?	**YES:** Checks complete. **NO:** Repair or replace lines or hoses as necessary.

DF89619,00B5889 -19-14MAR17-8/13

7 Travel Mode Switch Check	View travel mode switch in monitor. See Monitor Service Menu Operation. (Group 9015-16.) See Monitor Data Items. (Group 9015-20.) Move travel mode switch to fast (rabbit) position and slow (turtle) position. Do switch positions match monitor status?	**YES:** Go to Front Attachment Pressure Sensor Check. **NO:** Repair or replace travel mode switch or harness.

DF89619,00B5889 -19-14MAR17-9/13

8 Front Attachment Pressure Sensor Check	View front attachment control pilot pressure in monitor. See Monitor Service Menu Operation. (Group 9015-16.) See Monitor Data Items. (Group 9015-20.) Fully actuate dig function and return pilot control levers to neutral to view reading. Does indicated pressure rise above 3.0 MPa and return to 0.0 MPa?	**YES:** Go to Travel Pressure Sensor Check. **NO:** Test front attachment pressure sensor. See Pressure Sensor Test. (Group 9015-20.)

DF89619,00B5889 -19-14MAR17-10/13

9 Travel Pressure Sensor Check	View travel control pilot pressure in monitor. See Monitor Service Menu Operation. (Group 9015-16.) See Monitor Data Items. (Group 9015-20.) Fully actuate travel function and return pilot control valve to neutral to view reading. Does indicated pressure rise above 3.0 MPa and return to 0.0 MPa?	**YES:** Go to Pump Delivery Pressure Sensor Check. **NO:** Test travel pressure sensor. See Pressure Sensor Test. (Group 9015-20.)

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DF89619,00B5889 -19-14MAR17-11/13

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11. Continue procedure until oil temperature is within specifications.

	Specification
Hydraulic Oil—Temperature	45—55°C 110—130°F

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