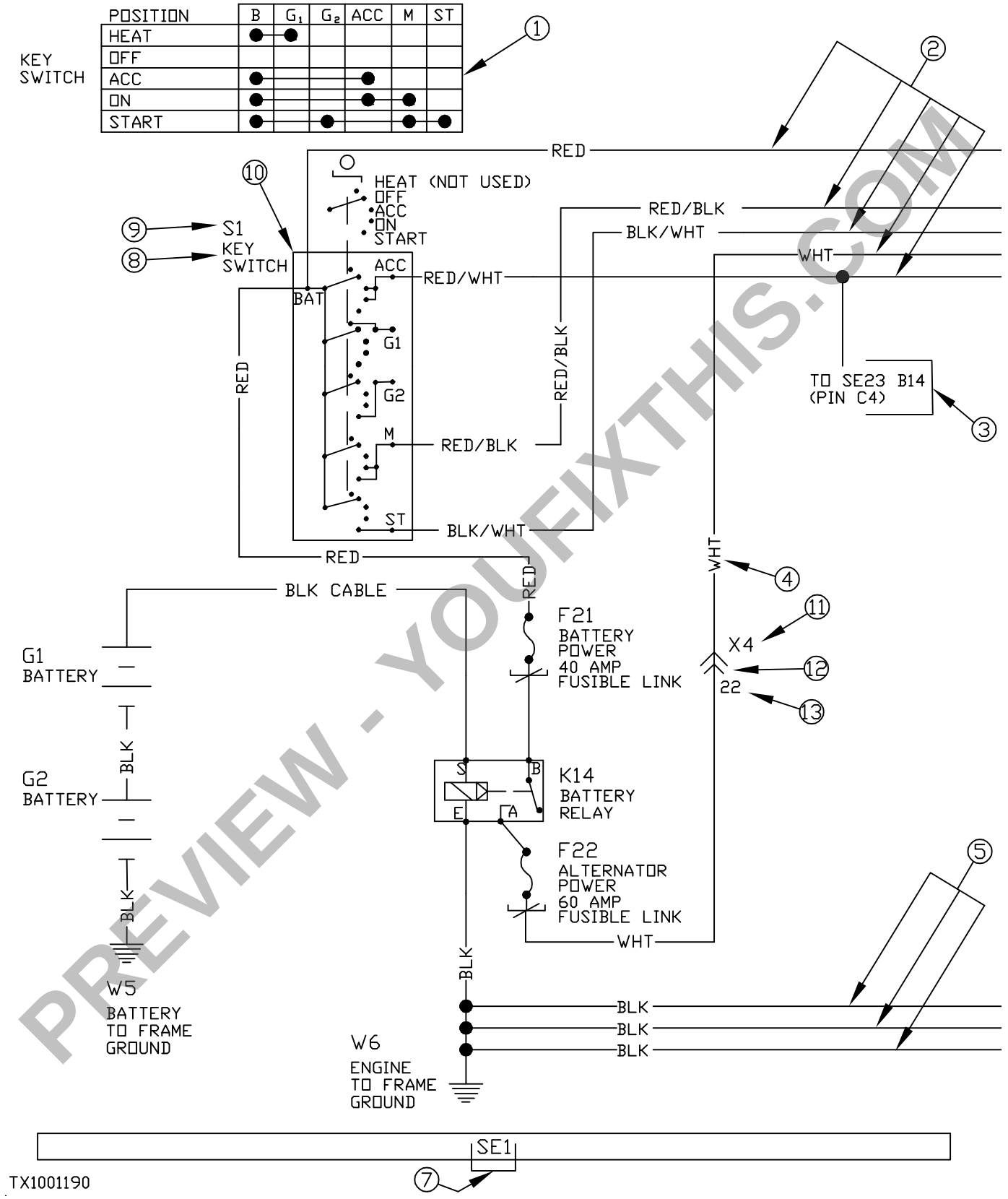
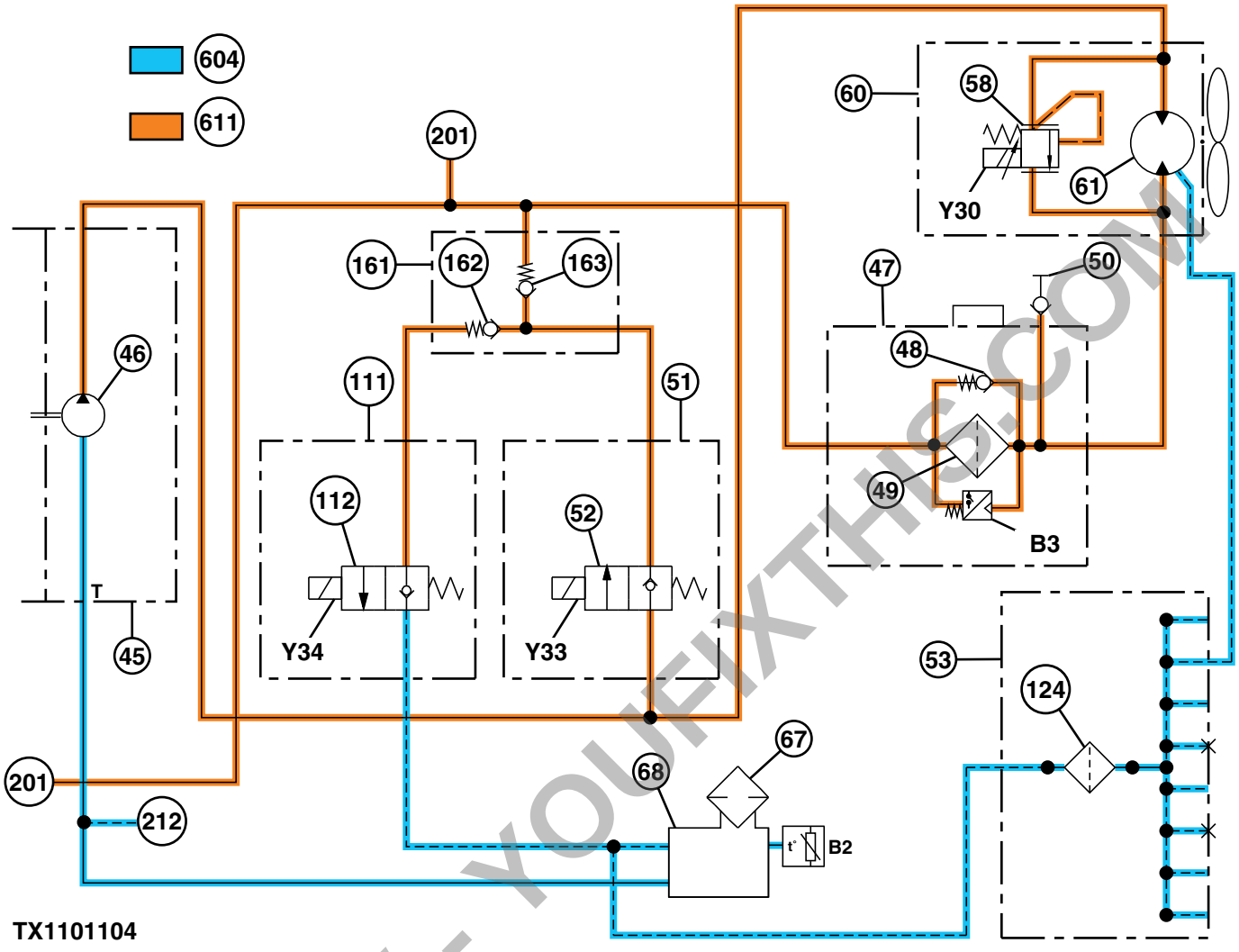
System Functional Schematic Diagram



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LW86157,000022F -19-01FEB08-2/3

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Hydraulic Fan Schematic

45— Charge Pump Housing
46— Charge Pump
47— Hydraulic Oil Filter Manifold
48— Hydraulic Oil Filter Bypass Valve
49— Hydraulic Oil Filter
50— Hydraulic Oil Test Port
51— Fan Bypass Valve 1 (if equipped)
52— Fan Bypass Spool 1 (if equipped)
53— Return Manifold
58— Fan Speed Solenoid Valve
60— Hydraulic Fan Manifold
61— Hydraulic Fan Motor
67— Hydraulic Oil Tank Breather
68— Hydraulic Oil Tank
111— Fan Bypass Valve 2 (if equipped)
112— Fan Bypass Spool 2 (if equipped)
124— Return Manifold Screen
161— Check Tee Fitting (if equipped)
162— Check Valve (830 kPa) (8.3 bar) (120 psi) (if equipped)
163— Check Valve (35 kPa) (0.35 bar) (5 psi) (if equipped)
201— Charge Oil to Hydraulic and Hydrostatic Systems
212— Return Oil from Hydraulic Oil Cooler
604— Return Oil
611— Charge Pressure Oil
B2—Hydraulic Oil Temperature Sensor
B3—Hydraulic Oil Filter Restriction Switch
Y30— Hydraulic Fan Speed Solenoid
Y33— Fan Bypass Solenoid 1 (if equipped)
Y34— Fan Bypass Solenoid 2 (if equipped)

Standard Fan

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

- Charge pump (46)
- Fan speed solenoid valve (58)
- Hydraulic fan speed solenoid (Y30)
- Hydraulic fan motor (61)

Continued on next page

KK70125,0000A34 -19-14DEC11-2/6

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Engine Control Unit (ECU) Diagnostic Trouble Codes

The diagnostic trouble code number is indicated by a suspect parameter number (SPN) and a failure mode indicator (FMI) number. In the example 000744.04, 000744 is the SPN and 04 is the FMI number.

Diagnostic trouble codes can be displayed using the engagement and monitor unit (EMU) or by using the Service ADVISOR™ diagnostic application. See Reading Diagnostic Trouble Codes (DTCs). (Group 9015-16.)

For in-depth diagnostics on machine specific ECU diagnostic trouble codes, see specific code diagnostic procedures in this group. Additional engine control unit DTC diagnostic procedures for John Deere PowerTech E™ engines are located in the component technical manual (CTM), PowerTech™ E 2.4L and 3.0L Diesel Engines Component Technical Manual. (CTM101019.)

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KK70125,000043E -19-17NOV09-1/1

000029.03 — Foot Throttle Sensor Out of Range High

Input from engine speed control pedal (B19) is shorted to power (5 volts or greater).

KK70125,0000440 -19-16NOV09-1/5

Foot Throttle Sensor Out of Range High Diagnostic Procedure

KK70125,0000440 -19-16NOV09-2/5

1 Short to Power Check	Key switch OFF. Disconnect engine control unit (ECU) J2 connector (X16). See Main Harness (W3) Component Location. (Group 9015-10.) Disconnect engine speed control pedal (B19) connector. Turn key switch ON. Using a multimeter, check for voltage on wire E34 WHT between pin F3 of ECU J2 connector (X16) and machine ground. Is voltage indicated?	**YES:** Short to power in wire harness. Repair or replace harness. See Main Harness (W3) Wiring Diagram. (Group 9015-10.) **NO:** Go to Connector Check.

KK70125,0000440 -19-16NOV09-3/5

2 Connector Check	Turn key switch OFF. Check ECU J2 connector (X16) and engine speed control pedal (B19) connector for any damage, corrosion, or debris that could cause short to power condition for E34 WHT wire. Are connectors in good condition and free of corrosion and debris?	**YES:** Go to Wire Check. **NO:** Repair or replace connector. See Main Harness (W3) Wiring Diagram. (Group 9015-10.)

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KK70125,0000440 -19-16NOV09-4/5

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John Deere Engine

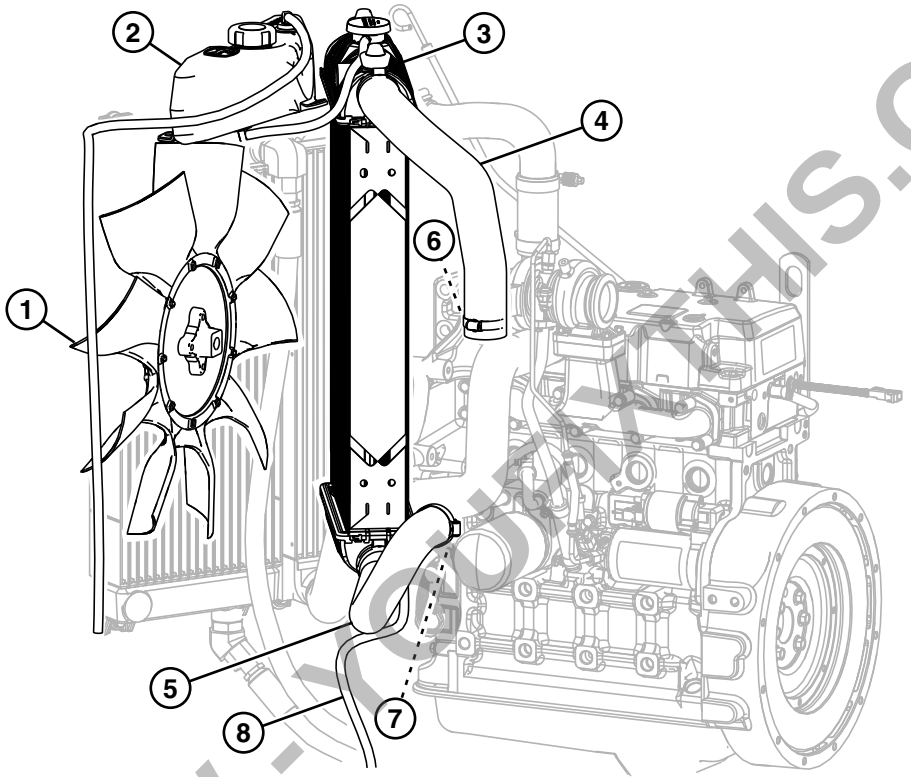
For more information on John Deere PowerTech™ engines and components, see the following component technical manual.

- See PowerTech™ E 2.4L and 3.0L Diesel Engines. (CTM101019.)

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TF44157,0000E90 -19-05SEP12-1/1

Engine Cooling System Component Location



TX1064630 —UN—07OCT09

TX1064630

Engine Cooling System Component Location

1— Fan
2— Coolant Surge Tank
3— Radiator
4— Thermostat Housing-to-Radiator Pipe
5— Radiator-to-Coolant Pump Pipe
6— Thermostat Housing
7— Coolant Pump
8— Radiator Drain Hose

TF44157,0000CE2 -19-08OCT09-1/1

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1 Connector Check	Key switch OFF.	
	Check engine control unit (ECU) J2 connector (X16) and starter relay connector (X65) for corrosion, loose fit, bent/pushed out terminals or crimp malfunctions. See Main Harness (W3) Component Location. (Group 9015-10.)	**YES:** Go to Component Check.
	Are connectors in good condition?	**NO:** Repair or replace connector(s) or terminal(s) as needed.

KK70125,0000451 -19-16NOV09-3/5

2 Component Check	Key switch OFF.	
	Check resistance across pins 85 and 86 of starter relay (K1). See Electrical Component Specifications. (Group 9015-20.)	**YES:** Go to Wire Harness Check.
	Is solenoid resistance within specifications?	**NO:** Replace starter relay (K1).

KK70125,0000451 -19-16NOV09-4/5

3 Open Circuit Check	Key switch OFF.	
	Disconnect ECU J2 connector (X16).	
	Remove starter relay (K1).	
	Using a multimeter, check continuity of wire R04 BLK between pin C2 of ECU J2 connector (X16) and pin 85 of starter relay connector (X65).	**YES:** Go to next step in this check.
	Is continuity indicated?	**NO:** Open circuit in wire R04 BLK. Repair or replace harness. See Main Harness (W3) Wiring Diagram. (Group 9015-10.)
	Key switch OFF.	
	Disconnect ECU J2 connector (X16).	
	Remove polarity sensing diode (V2).	
	Check continuity of wire J07 TAN between pin 4 of diode block connector (X64) and pin 86 of starter relay connector (X65).	**YES:** Checks complete.
	Is continuity indicated?	**NO:** Open circuit in wire R04 BLK. Repair or replace harness. See Main Harness (W3) Wiring Diagram. (Group 9015-10.)

KK70125,0000451 -19-16NOV09-5/5

001321.06 — Starter Relay Output Out of Range High

Open circuit or short to ground in the wire harness to starter relay (K1).

KK70125,0000452 -19-16NOV09-1/6

Starter Relay Output Out of Range Low Diagnostic Procedure

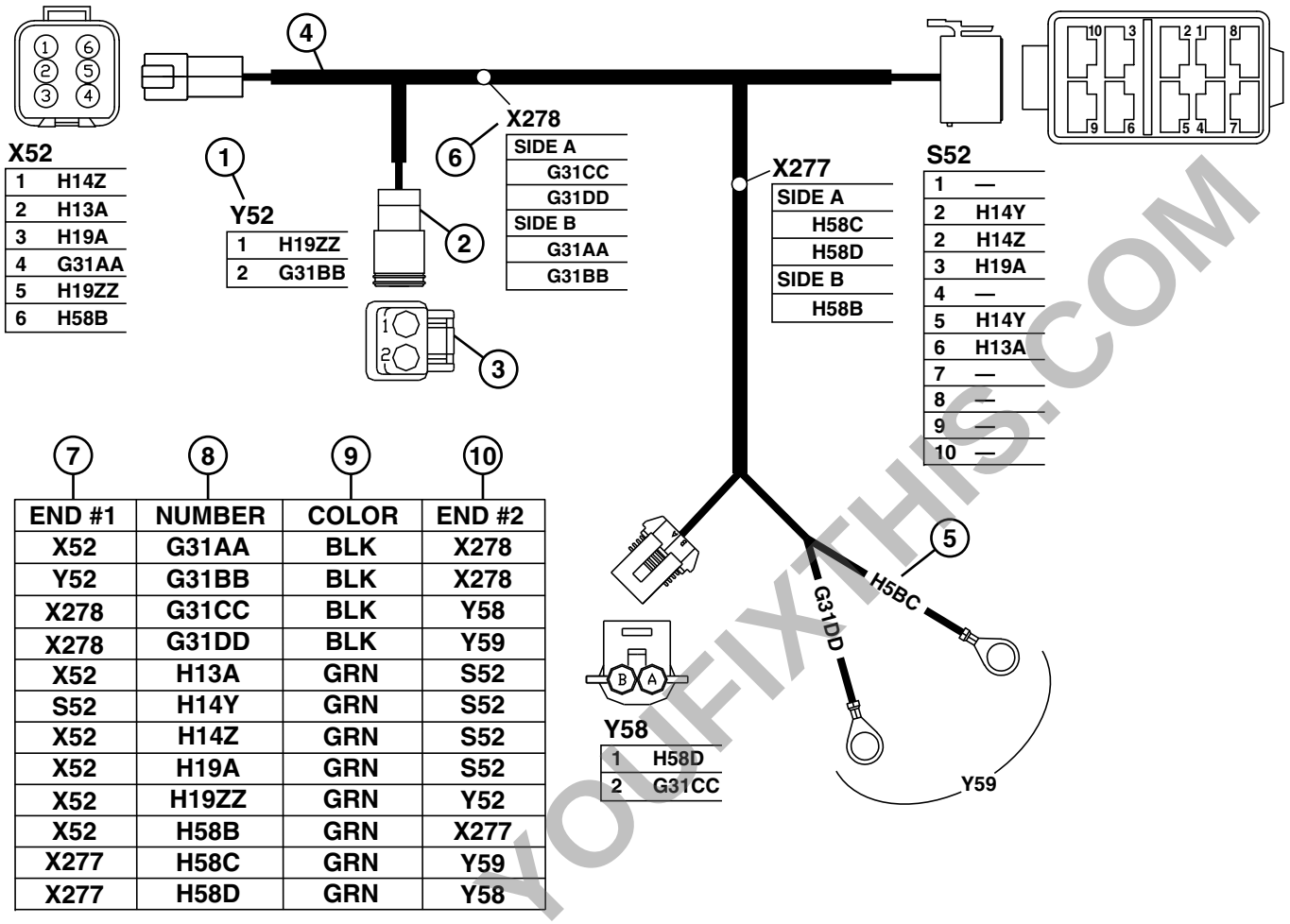
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Wiring Diagram



7 END #1	8 NUMBER	9 COLOR	10 END #2
X52	G31AA	BLK	X278
Y52	G31BB	BLK	X278
X278	G31CC	BLK	Y58
X278	G31DD	BLK	Y59
X52	H13A	GRN	S52
S52	H14Y	GRN	S52
X52	H14Z	GRN	S52
X52	H19A	GRN	S52
X52	H19ZZ	GRN	Y52
X52	H58B	GRN	X277
X277	H58C	GRN	Y59
X277	H58D	GRN	Y58

TX1020361 —UN—19MAR07

TX1020361

Wiring Diagram Example

1— Component Identification Number
2— Connector
3— Connector End View
4— Wire Harness
5— Wire Number
6— Wire Splice
7— Wire End #1 Termination Location
8— Wire Number
9— Wire Color
10— Wire End #2 Termination Location

Each harness on the machine is drawn showing connectors, wires, and splices. A “W” component identification number identifies harnesses. (W6, Etc.) The harness is drawn showing spatial arrangement of components and branches.

A component identification or connector number (1) identifies each component. The harness branch (4) is terminated by a top or side view of the connector (2). If more than one wire is supplied to the connector, a harness side connector end view (3) is provided. Each wire number is labeled for the appropriate pin. If only one wire is supplied to the connector, the wire number (5) is indicated.

An “X” component identification number of 100 or higher identifies splices (6). Each splice lists side A wires and side B wires to differentiate the side of the harness that the wires come from.

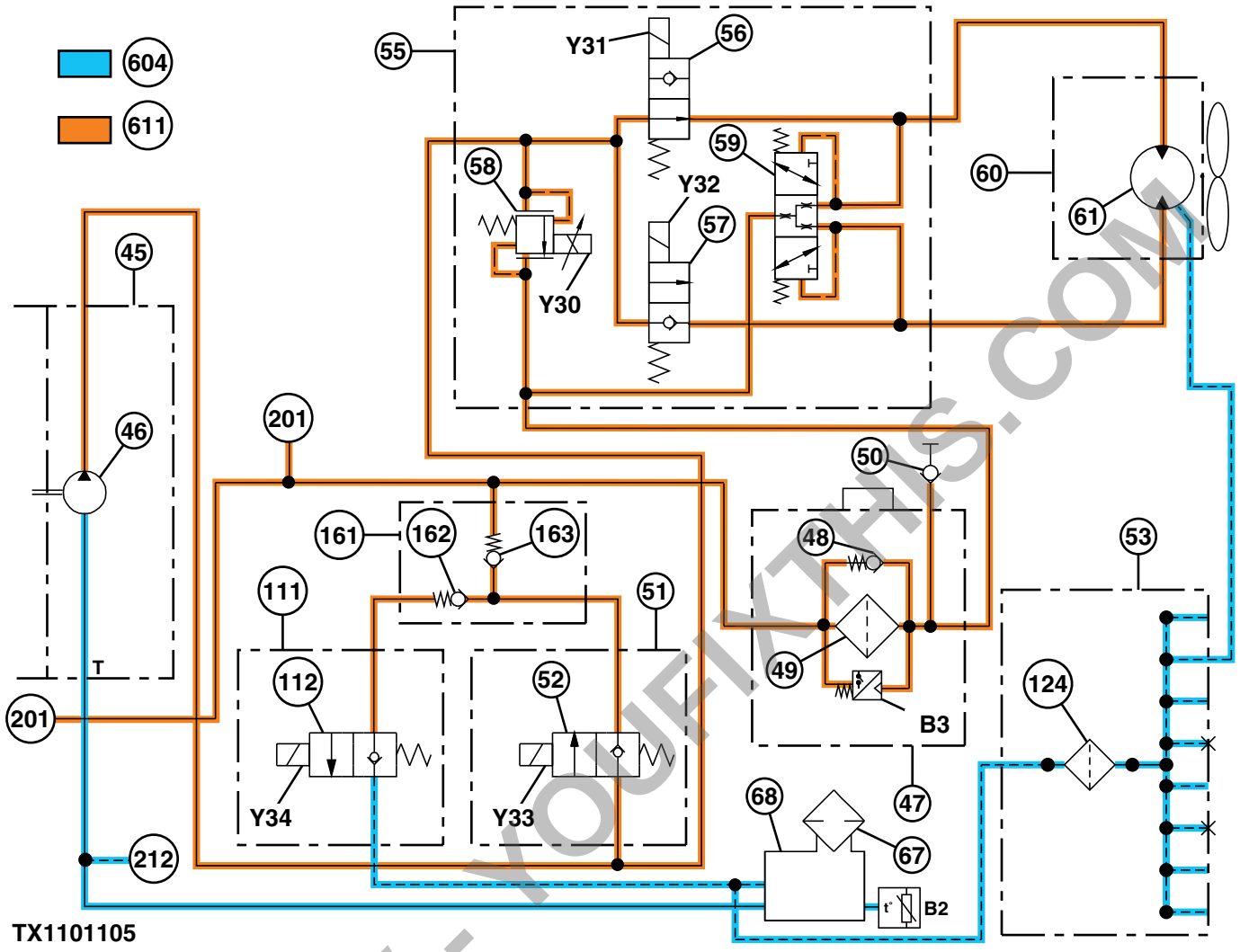
A wire legend is provided for each harness. A component identification number is listed in the “END #1” column (7) to indicate the termination location of one end of a wire. In the center, the wire number (8) and wire color (9) are listed. A component identification number in the “END #2” column (10) identifies the opposite end of the wire.

Component Location Diagram

The Component Location Diagram is a pictorial view by harness showing location of all electrical components, connectors, harness main ground locations and harness band and clamp location. Each component will be identified by the same identification letter/number and description used in the System Functional Schematic Diagram.

LW86157,000022F -19-01FEB08-4/3

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Hydraulic Reversing Fan Schematic

45— Charge Pump Housing
46— Charge Pump
47— Hydraulic Oil Filter Manifold
48— Hydraulic Oil Filter Bypass Valve
49— Hydraulic Oil Filter
50— Hydraulic Oil Test Port
51— Fan Bypass Valve 1 (if equipped)
52— Fan Bypass Spool 1 (if equipped)
53— Return Manifold
55— Reversing Fan Valve (if equipped)
56— Reversing Fan Solenoid Spool A (if equipped)
57— Reversing Fan Solenoid Spool B (if equipped)
58— Fan Speed Solenoid Valve
59— Reversing Fan Direction Control Valve (if equipped)
60— Hydraulic Fan Manifold
61— Hydraulic Fan Motor
67— Hydraulic Oil Tank Breather
68— Hydraulic Oil Tank
111— Fan Bypass Valve 2 (if equipped)
112— Fan Bypass Spool 2 (if equipped)
124— Return Manifold Screen
161— Check Tee Fitting (if equipped)
162— Check Valve (830 kPa) (8.3 bar) (120 psi) (if equipped)
163— Check Valve (35 kPa) (0.35 bar) (5 psi) (if equipped)
201— Charge Oil to Hydraulic and Hydrostatic Systems
212— Return Oil from Hydraulic Oil Cooler
604— Return Oil
611— Charge Pressure Oil
B2—Hydraulic Oil Temperature Sensor
B3—Hydraulic Oil Filter Restriction Switch
Y30— Hydraulic Fan Speed Solenoid
Y31— Hydraulic Reversing Fan Solenoid A
Y32— Hydraulic Reversing Fan Solenoid B
Y33— Fan Bypass Solenoid 1
Y34— Fan Bypass Solenoid 2

Reversing Fan Valve (55)—If Equipped

NOTE: The hydraulic fan speed solenoid (Y30) and fan speed solenoid valve (58) move from the hydraulic fan manifold (60) to the reversing fan valve when equipped with the reversing fan option.

The optional reversing fan valve is located between the charge pump (46) and hydraulic fan manifold (60). The reversing fan valve reverses the fan to clean the machine cooling package of dirt and debris.

Continued on next page

KK70125,0000A34 -19-14DEC11-5/6

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3 Wire Check	Key switch OFF. ECU J2 connector (X16) disconnected. Engine speed control pedal (B19) disconnected. Using a multimeter, check for continuity between pin F3 (wire E34 WHT) of ECU J2 connector (X16) and other pins in same connector. Is continuity indicated between any circuits?	**YES:** Short circuit in wire harness. Repair or replace harness. See Main Harness (W3) Wiring Diagram. (Group 9015-10.) **NO:** Engine speed control pedal (B19) malfunction. Replace pedal sensor.

KK70125,0000440 -19-16NOV09-5/5

000029.04 — Foot Throttle Sensor Out of Range Low

Input from engine speed control pedal (B19) is open or shorted to ground.

KK70125,0000441 -19-16NOV09-1/4

Foot Throttle Sensor Out of Range Low Diagnostic Procedure

KK70125,0000441 -19-16NOV09-2/4

1 Connector Check	Key switch OFF. Check engine control unit (ECU) J2 connector (X16) and engine speed control pedal (B19) connector for corrosion, loose fit, bent/pushed out terminals or crimp malfunctions. See Main Harness (W3) Component Location. (Group 9015-10.) Are connectors in good condition?	**YES:** Go to Wire Harness Check. **NO:** Repair or replace connector(s) or terminal(s) as needed.

KK70125,0000441 -19-16NOV09-3/4

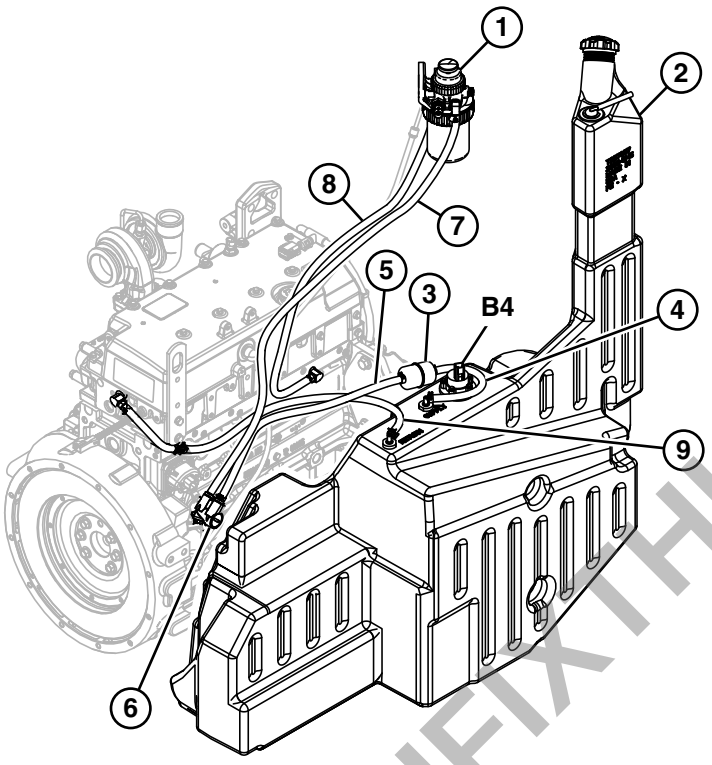
2 Wire Harness Check	Key switch OFF. Disconnect ECU J2 connector (X16). Disconnect engine speed control pedal (B19). Using a multimeter, check continuity of wire E34 WHT between pin F3 of ECU J2 connector (X16) and engine speed control pedal (B19) connector. Is continuity indicated?	**YES:** Go to next step in this check. **NO:** Open circuit in wire harness. Repair or replace harness. See Main Harness (W3) Wiring Diagram. (Group 9015-10.)
	Check for continuity to ground at pin F3 (wire E34 WHT) of ECU J2 connector (X16). Is continuity to ground indicated?	**YES:** Short to ground in wire harness. Repair or replace harness. See Main Harness (W3) Wiring Diagram. (Group 9015-10.) **NO:** Engine speed control pedal (B19) malfunction. Replace pedal sensor.

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Engine Fuel System Component Location



TX1064678

TX1064678 —UN—06OCT09

Engine Fuel System Component Location

1— Water Separator Fuel Filter
2— Fuel Tank
3— In-Line Fuel Filter
4— Fuel Tank-to-In-Line Fuel Filter Hose
5— In-Line Fuel Filter-to-Fuel Transfer Pump Hose
6— Fuel Transfer Pump
7— Fuel Transfer Pump-to-Water Separator Fuel Filter Hose
8— Water Separator Fuel Filter-to-Fuel Rack Hose
9— Fuel Rack-to-Fuel Tank Hose
B4— Fuel Level Sensor

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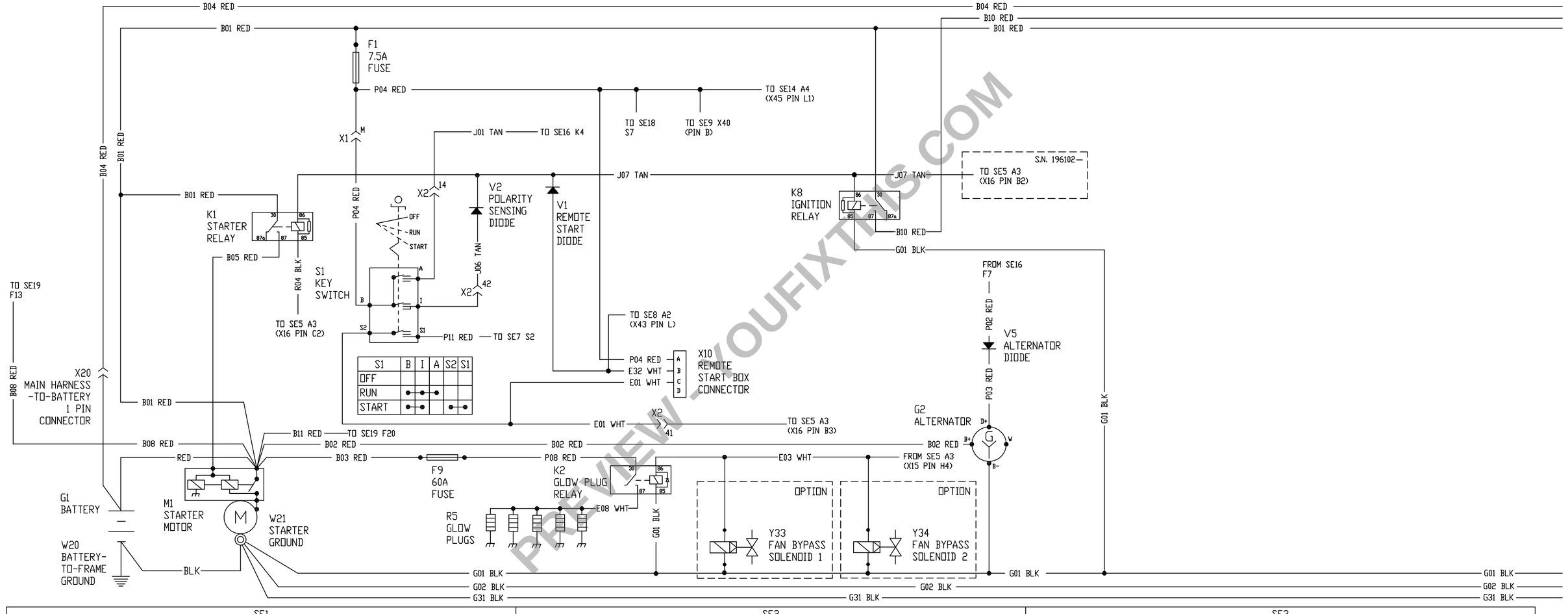
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System Functional Schematic

TX1101626 —UN—17JAN12



TX1101626

EH CONTROLS SYSTEM FUNCTIONAL SCHEMATIC (1 OF 7)

System Functional Schematic (SE1—SE3)

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ML82895,000075A -19-01APR14-1/14

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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

Carefully read all safety messages in this manual and on your machine safety signs. 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.

There can be additional safety information contained on parts and components sourced from suppliers that is not reproduced in this operator's manual.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.

Keep your machine in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.



TS201 —UN—15APR13

If you do not understand any part of this manual and need assistance, contact your John Deere dealer.

DX,READ -19-16JUN09-1/1

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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Section 9000
General Information

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001196.11 — Anti Theft Unknown Fault

The engagement and monitor unit (EMU) has not received expected anti-theft system status from the engine control unit (ECU).

KK70125,0000494 -19-23NOV09-1/4

Anti Theft Unknown Fault Diagnostic Procedure

KK70125,0000494 -19-23NOV09-2/4

1 Connector Check	Key switch OFF. Check EMU J1 connector (X41), cab harness-to-main harness connector (X2), and ECU connector (X16) for corrosion, loose fit, bent/pushed out terminals or crimp malfunctions that could cause controller area network (CAN) communication problems. See Cab Harness (W2) Component Location. See Main Harness (W3) Component Location. (Group 9015-10.) Are connectors in good condition?	**YES:** Go to CAN Circuit Check **NO:** Repair or replace connector(s) or terminal(s) as needed.

KK70125,0000494 -19-23NOV09-3/4

2 CAN Circuit Check	Check CAN circuit between EMU and ECU. See Controller Area Network (CAN) Circuit Test. (Group 9015-20.) Does CAN circuit test good?	**YES:** Checks complete. **NO:** Repair CAN circuit.

KK70125,0000494 -19-23NOV09-4/4

001504.04 — Seat Switch Input Out of Range Low

Input from seat switch (S4) shorted to ground.

KK70125,0000470 -19-23NOV09-1/5

Seat Switch Input Out of Range Low Diagnostic Procedure

KK70125,0000470 -19-23NOV09-2/5

1 Connector Check	Key switch OFF. Check EMU J2 connector (X42) and seat switch (S4) connector for corrosion, loose fit, bent/pushed out terminals or crimp malfunctions. See Cab Harness (W2) Component Location. (Group 9015-10.) Are connectors in good condition?	**YES:** Go to Wire Harness Check **NO:** Repair or replace connector(s) or terminal(s) as needed.

Continued on next page

KK70125,0000470 -19-23NOV09-3/5

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1 **Intermittent Check**	Turn key switch ON.	
	Using Service ADVISOR™ or engagement and monitor unit (EMU), clear diagnostic trouble codes (DTCs).	**YES:** Left joystick controller (JSL) malfunction. Replace left joystick controller. See Left Joystick Controller (JSL) Remove and Install. (Group 9015-20.)
	Cycle key switch. Does DTC return?	**NO:** DTC is intermittent. If DTC returns, replace left joystick controller.

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KK70125,00004B4 -19-16NOV09-3/3

002698.07 — Left Joystick Y-axis Mechanical Fault

Left joystick controller (JSL) (A5) Y-axis position sensor data is inconsistent or conflicting.

KK70125,00004B5 -19-16NOV09-1/3

Left Joystick Y-axis Mechanical Fault Diagnostic Procedure

KK70125,00004B5 -19-16NOV09-2/3

1 **Intermittent Check**	Turn key switch ON.	
	Using Service ADVISOR™ or engagement and monitor unit (EMU), clear diagnostic trouble codes (DTCs).	**YES:** Left joystick controller (JSL) malfunction. Replace left joystick controller. See Left Joystick Controller (JSL) Remove and Install. (Group 9015-20.)
	Cycle key switch. Does DTC return?	**NO:** DTC is intermittent. If DTC returns, replace left joystick controller.

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003597.03 — 5 Volt Sensor Supply 1 Out of Range High

The 5 volt power supply from the hydraulic control unit (HCU) to the motor speed sensors is above the specified value. The measured power supplied is greater than 5.5 volts for > 1 second.

KK70125,00004B6 -19-16NOV09-1/6

5 Volt Sensor Supply 1 Out of Range High Diagnostic Procedure

Continued on next page

KK70125,00004B6 -19-16NOV09-2/6

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10 Boom Up Drift Check	*NOTE: This check may require two people.* *NOTE: Machine must be equipped with a bucket for this check.* Close cab door—if equipped. Operate hydraulic system until hydraulic oil reaches temperature specification. **Specification** Hydraulic Oil—Temperature ..... 43°C 110°F *NOTE: Bucket may need to be in dump position.* Actuate boom down function to raise front of machine off of the ground. Engage park brake. Mark and record a distance on the boom cylinder rod from the cylinder barrel. Disengage park brake. Allow machine to sit with engine speed at slow idle for 5 minutes. Engage park brake. Measure marked distance on boom cylinder rod. **Specification** Boom Cylinder—Drift (maximum) ..... 13 mm/5 min. 0.5 in./5 min. *LOOK: Does boom drift up more than specification?*	**NO:** Go to next check. **YES:** Go to next step in this check.
	Actuate boom down function to raise front of machine off of the ground. Engage park brake. Turn engine off. Allow machine to sit for 5 minutes. **Specification** Boom Cylinder—Drift (maximum) ..... 13 mm/5 min. 0.5 in./5 min. *LOOK: Does boom drift up more than specification?*	**YES:** For troubleshooting information. See Boom Drifts Up. (Group 9025-15.) **NO:** Go to next check.

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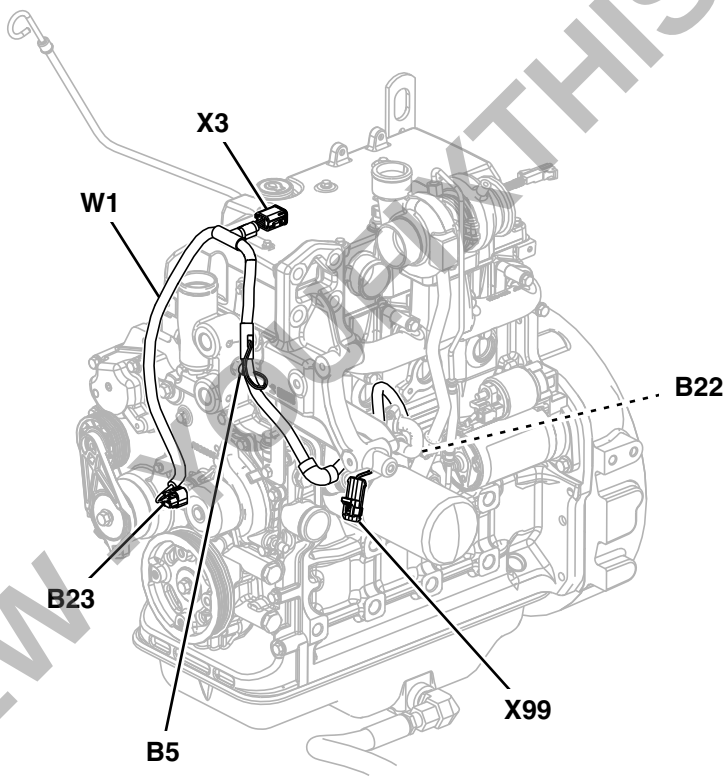
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B9—Air Conditioner Pressure Switch
B10— Air Conditioner Freeze Control Switch
B30— Water-in-Fuel Sensor—If Equipped
B31— Fuel Filter Heater Temperature Switch—If Equipped
E9—Dome Light
E10— Water-in-Fuel Indicator—If Equipped
F5— Dome Light and Accessory Power Socket 10 A Fuse
F8— Air Conditioner and Heater 30 A Fuse
F13— Quik-Tatch Inline 30 A Fuse
F20— Fuel Filter Heater 15 A Fuse—If Equipped
G3—12 Volt Auxiliary Power Outlet
K7—Air Conditioner Compressor Clutch Relay
K10— Fuel Filter Heater Relay—If Equipped
K13— Quik-Tatch Relay (LOCK)
K14— Quik-Tatch Relay (UNLOCK)
K16— Blower Motor (low speed) Relay
K17— Blower Motor (medium low speed) Relay
K18— Blower Motor (medium high speed) Relay
K19— Blower Motor (high speed) Relay
M3—Blower Motor
M6—Heater Control Valve Actuator
M10— Quik-Tatch Motor
R3—Cab Temperature Control Dial
R4—Blower Resistor
R10— Fuel Filter Heater—If Equipped
S9—Blower Speed Dial
S19— Air Conditioner Switch
S24— Dome Light Switch
S26— Quik-Tatch Switch
X1—Cab Harness-to-Main Harness 14-Pin Connector
X2—Cab Harness-to-Main Harness 47-Pin Connector
X8—Main Harness-to-Air Conditioner and Heater Harness 14-Pin Connector
Y13— Air Conditioner Compressor Clutch Solenoid

ML82895,000075A -19-01APR14-14/14

Engine Harness (W1) Component Location



TX1066096

TX1066096 —UN—20OCT09

Engine Harness (W1) Component Location

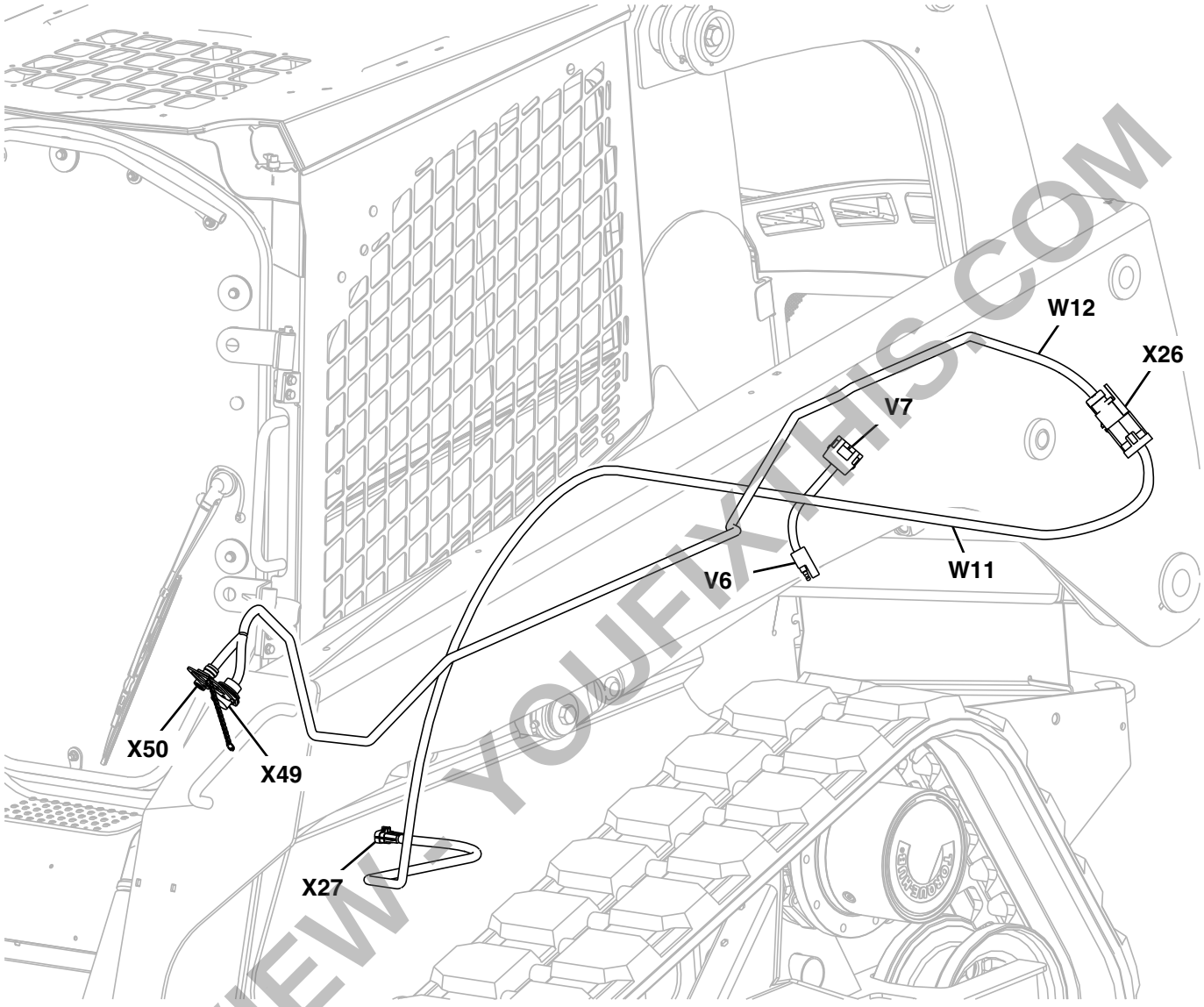
B5—Engine Coolant Temperature Sensor
B22— Crankshaft Speed Sensor
B23— Camshaft Speed Sensor
W1—Engine Harness
X3—Main Harness-to-Engine Harness 8-Pin Connector
X99— NOT USED

AS79221,00000DD -19-27OCT09-1/1

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Attachment Control Frame Harness (W11) Component Location



TX1066623 —UN—26OCT09

TX1066623

Attachment Control Frame Harness (W11) Component Location

V6— Left Handle Diode
V7— Attachment Control Harness 5-Diode Pack
W11— Attachment Control Frame Harness
W12— Attachment Control Boom Harness
X26— Attachment Control Frame Harness-to-Attachment Control Boom Harness 8-Pin Connector
X27— Main Harness-to-Attachment Control Harness 8-Pin Connector
X49— Attachment Harness Connector A
X50— Attachment Harness Connector B

AS79221,00000F1 -19-27OCT09-1/1

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Anti-Theft Security System Operation—If Equipped

IMPORTANT: When providing operator security codes to machine users, owners should not provide operators with the default codes. Instead, owners should first change the default operator security codes to other values before providing codes to machine users. See Anti-Theft Security System Configuration—If Equipped. (Group 9015-16.)

NOTE: On a locked machine, engine can be started but will shutoff after 3 seconds.

Locking the Machine (Operator and Owner)

NOTE: On a locked machine, engine can be started but will shutoff after 3 seconds.

There are three different locking methods available with the anti-theft security system. See Anti-Theft Security System Configuration—If Equipped. (Group 9015-16.)

- Prompt for Lock
- Auto Lock—5 min.
- Auto Lock—60 min.

Prompt for Lock

1. Turn key switch to OFF.

NOTE: If you do not press SELECT to lock the machine within 20 seconds of turning key switch OFF, the engagement and monitor unit (EMU) will NOT lock the machine.

2. The monitor display shows PRESS SELECT TO LOCK ATS.
3. Press the SELECT button within 20 seconds to lock the machine.

Auto Lock—5 Minutes

1. Turn key switch to OFF.
2. The monitor display shows 5 MIN AUTO LOCK LOCK NOW?
3. Machine remains unlocked for the next 5 minutes. After 5 minutes, a valid 3-digit or 5-digit security code, depending on system configuration, is required for machine operation.

   OR

   Press SELECT to lock the machine immediately.

Auto Lock—60 Minutes

1. Turn key switch to OFF.
2. The monitor display shows 60 MIN AUTO LOCK LOCK NOW?
3. Machine remains unlocked for the next 60 minutes. After 60 minutes, a valid 3-digit or 5-digit security code, depending on system configuration, is required for machine operation.

   OR

   Press SELECT to lock the machine immediately.

Unlocking the Machine (Operator and Owner)

1. Sit in the operator's seat to power up the engagement and monitor unit.
2. Turn key switch to ON position.
3. The engagement and monitor unit (EMU) displays ENTER CODE 0 _ _ (3-digit system) or ENTER CODE 0 _ _ _ _ (5-digit system).
4. Enter the appropriate security code:

   a. Press the NEXT button or the BACK button to change the number displayed in the active (flashing) field. The NEXT button increments the current digit; the BACK button decrements the current digit.

NOTE: Pressing the SELECT button to accept the last digit (third digit or fifth digit depending on system configuration) processes the entered security code.

   b. Press the SELECT button to accept the number displayed (flashing) in the active field and shift the active field to the next digit to the right.

NOTE: The anti-theft security system allows three attempts to enter a valid security code. After three attempts, the key switch must be cycled OFF and ON to restart the process.

5. If a correct security code is entered, the monitor displays ANTITHEFT UNLOCKED for 2 seconds before the EMU returns to the normal runtime display.

   The display shows INVALID CODE if the security code was incorrect.

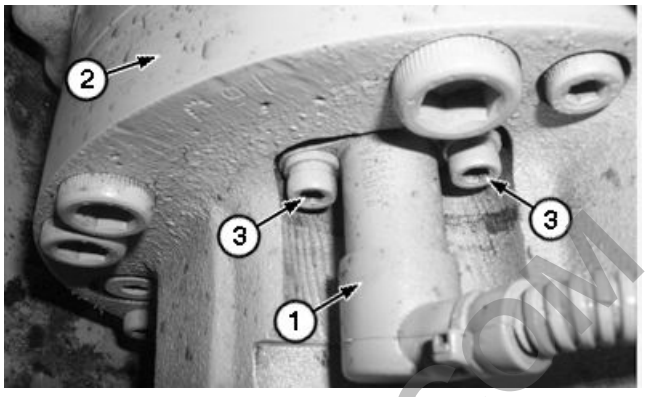
BR70016,0000148 -19-24NOV09-1/1

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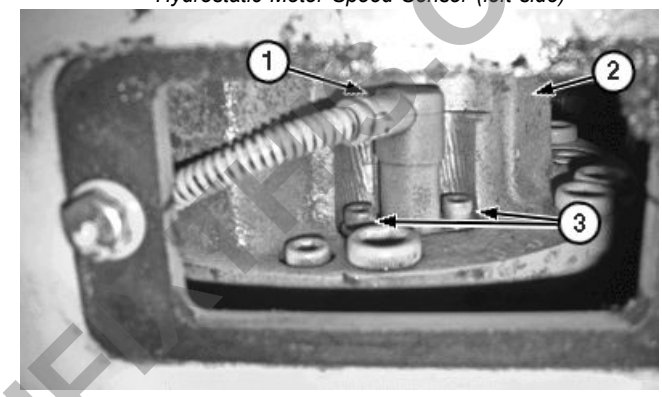
8. Remove cap screws (3) and motor speed sensor (1) from hydrostatic motor (2).
9. Remove O-ring and discard.
10. Install new O-ring and motor speed sensor (1) in hydrostatic motor (2). Secure with cap screws (3).
11. Connect motor speed sensor harness connector (4).
12. For right motor speed sensor, install access plate (5) on bottom of machine.
13. Install footwell in machine.
14. Lower operator's station. See Raising Operator's Station. (Operator's Manual.)
15. Release boom lock and lower boom. See Boom Lock. (Operator's Manual.)
16. Remove machine from blocks, if necessary. See Raising and Blocking Machine. (Operator's Manual.)

1— Motor Speed Sensor
2— Hydrostatic Motor
3— Cap Screw (2 used)



TX1034311A —UN—10JAN08

Hydrostatic Motor Speed Sensor (left side)



TX1041537A —UN—30APR08

Hydrostatic Motor Speed Sensor (right side)

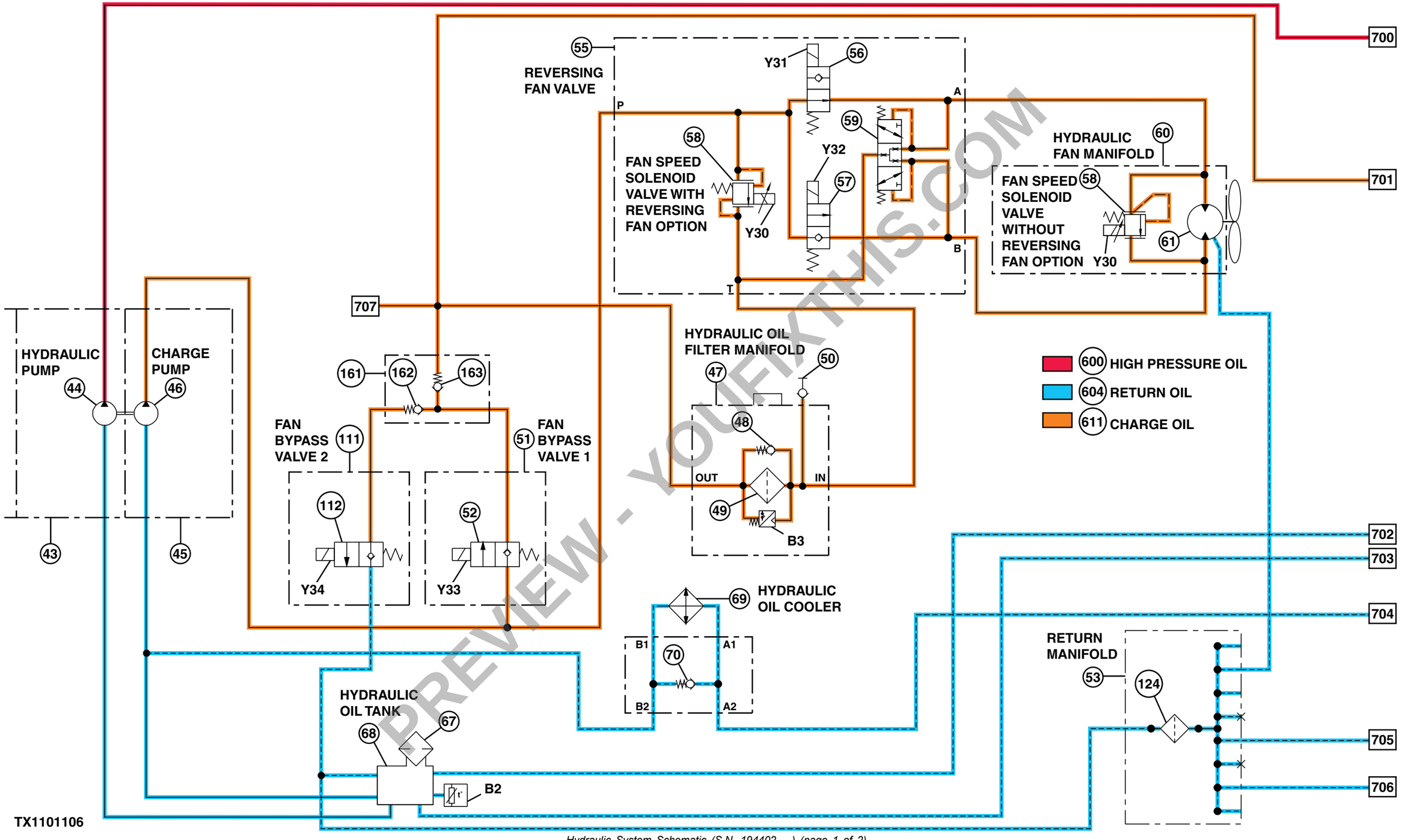
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BR70016,0000135 -19-18DEC12-10/13

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TX1101106 —UN—19NOV11



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Hydraulic System Schematic (S.N. 194402—) (page 1 of 2)

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Bucket Dump Drift Check

NOTE: These checks will require two people if machine is equipped with cab door.

Machine must be equipped with a bucket (empty) for these checks.

1. Close cab door, if equipped.
2. Operate hydraulic system until hydraulic oil reaches temperature specification.

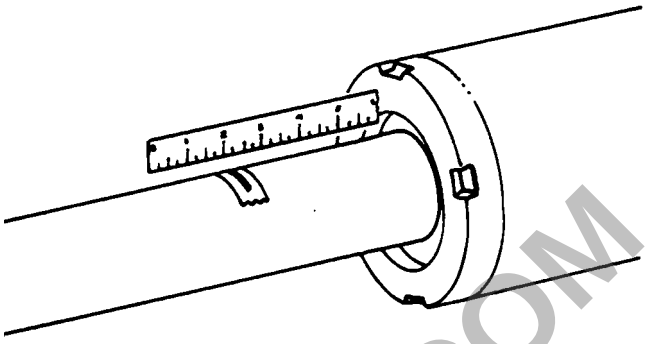
Specification	
Hydraulic Oil—Temperature	43°C 110°F

3. Raise boom half way.
4. Fully roll back bucket.
5. Dump bucket half way.
6. Engage park brake.
7. Mark and record a distance on the bucket cylinder rod from the cylinder barrel.
8. Disengage park brake.
9. Allow machine to sit with engine speed at slow idle for 5 minutes.

Specification	
Engine—Speed	Slow Idle

10. Engage park brake.
11. Measure marked distance on bucket cylinder rod.

Specification	
Bucket Cylinder—Drift (maximum)	13 mm/5 min. 0.5 in./5 min.



T6222AM —UN—26MAY89

Function Drift Measurement

12. If bucket dump drift is more than specification, continue with the following steps.
13. Raise boom half way.
14. Fully roll back bucket.
15. Dump bucket half way.
16. Engage park brake.
17. Turn engine off.
18. Allow machine to sit for 5 minutes.
19. Measure marked distance on bucket cylinder rod.

Specification	
Bucket Cylinder—Drift (maximum)	13 mm/5 min. 0.5 in./5 min.

20. If bucket dump drift is more than specification, diagnose cause of bucket drift. See Bucket Drifts Down. (Group 9025-15.).

Continued on next page

KK70125,0000760 -19-20APR11-3/4

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5 Low Hydrostatic Pump Flow	Check hydrostatic pump flow. See Hydrostatic Pump Flow Test. (Group 9026-25.) Is hydrostatic pump flow within specification?	**YES:** Done. **NO:** Repair or replace hydrostatic pump. See Hydrostatic Pump Remove and Install. (Group 0360.)

KK70125,000077D -19-20SEP10-7/7

Wheels or Tracks Powered On One Side, Not The Other

KK70125,000077E -19-20SEP10-1/6

Wheels or Tracks Powered On One Side, Not The Other Diagnostic Procedure

KK70125,000077E -19-20SEP10-2/6

1 Diagnostic Trouble Codes (DTCs)	Check engagement and monitor unit (EMU) for any DTCs. See Reading Diagnostic Trouble Codes (DTCs). (Group 9015-20.) Are DTCs present?	**YES:** Diagnose and repair displayed DTCs. See Diagnostic Trouble Codes (DTCs). (Group 9001.) **NO:** Go to Park Brake Engaged or Dragging.

KK70125,000077E -19-20SEP10-3/6

2 Park Brake Engaged or Dragging	Check that park brake releases completely. See Park Brake Release Pressure Test. (Group 9026-25.) Does park brake release correctly?	**YES:** Go to Low Hydrostatic Pump Pressure. **NO:** Correct park brake release problem.

KK70125,000077E -19-20SEP10-4/6

3 Low Hydrostatic Pump Pressure	Check hydrostatic pump pressure. See Hydrostatic Pump System Pressure Relief Test. (Group 9026-25.) Are hydrostatic pump pressure relief valves within specification?	**YES:** Go to Hydrostatic Motors Worn or Damaged. **NO:** Repair or replace hydrostatic pump pressure relief valves.

KK70125,000077E -19-20SEP10-5/6

4 Hydrostatic Motors Worn or Damaged	Remove hydrostatic motors and inspect for wear. See Hydrostatic Motor, Park Brake and Gearbox Repair. (Group 0360.) Are hydrostatic motors damaged or worn excessively?	**YES:** Repair or replace hydrostatic motors. **NO:** Done.

KK70125,000077E -19-20SEP10-6/6

Machine Will Not Shift Into Or Out Of High Speed

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KK70125,000077F -19-20SEP10-1/6

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