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Original Instructions. All information, illustrations and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

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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—15APR13

T133588 —19—28AUG00

TX,RECOGNIZE -19-28JUN10-1/1

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. Use this operator's manual for correct safety sign placement. Be sure that 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 could impair the function 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.

TX,FOLLOW -19-20JAN11-1/1

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.

TX,QUALIFIED -19-18JAN11-1/1

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Operational Checkout

This procedure is used to check operation of the machine. It is written so a technician 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 can direct a technician to perform a simple adjustment to correct the problem. Use the table of contents to help find adjustment procedures.

Machine is positioned so it is level and there is 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. Then perform check, and 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.

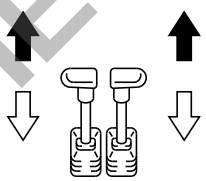
TZ24494,0000F46 -19-21AUG15-1/32

Ignition OFF, Engine OFF Checks

TZ24494,0000F46 -19-21AUG15-2/32

Horn Circuit Check	Key switch ON. Push horn button on top of right control lever. *LISTEN: Does horn activate?*	**YES:** Check complete. **NO:** Check fuse (F1). See Fuse Specifications. (Group 9015-10.) Check switch, wiring, and connections: See System Functional Schematic. (Group 9015-10.) See Main Harness (W8) Wiring Diagram—35D or see Main Harness (W8) Wiring Diagram—50D. (Group 9015-10.)

TZ24494,0000F46 -19-21AUG15-3/32

Travel Lever and Pedal Neutral Check	 TX1095391 —UN—23AUG11 Engine OFF. Push each travel lever forward, then release. Pull each travel lever rearward, then release. *FEEL: Does each lever have equal effort to operate forward and reverse?* *FEEL/LOOK: Does each lever return to neutral at the same time when released?*	**YES:** Check complete. **NO:** Repair or replace pilot controller. See Pilot Control Valve Remove and Install. (Group 3360.)

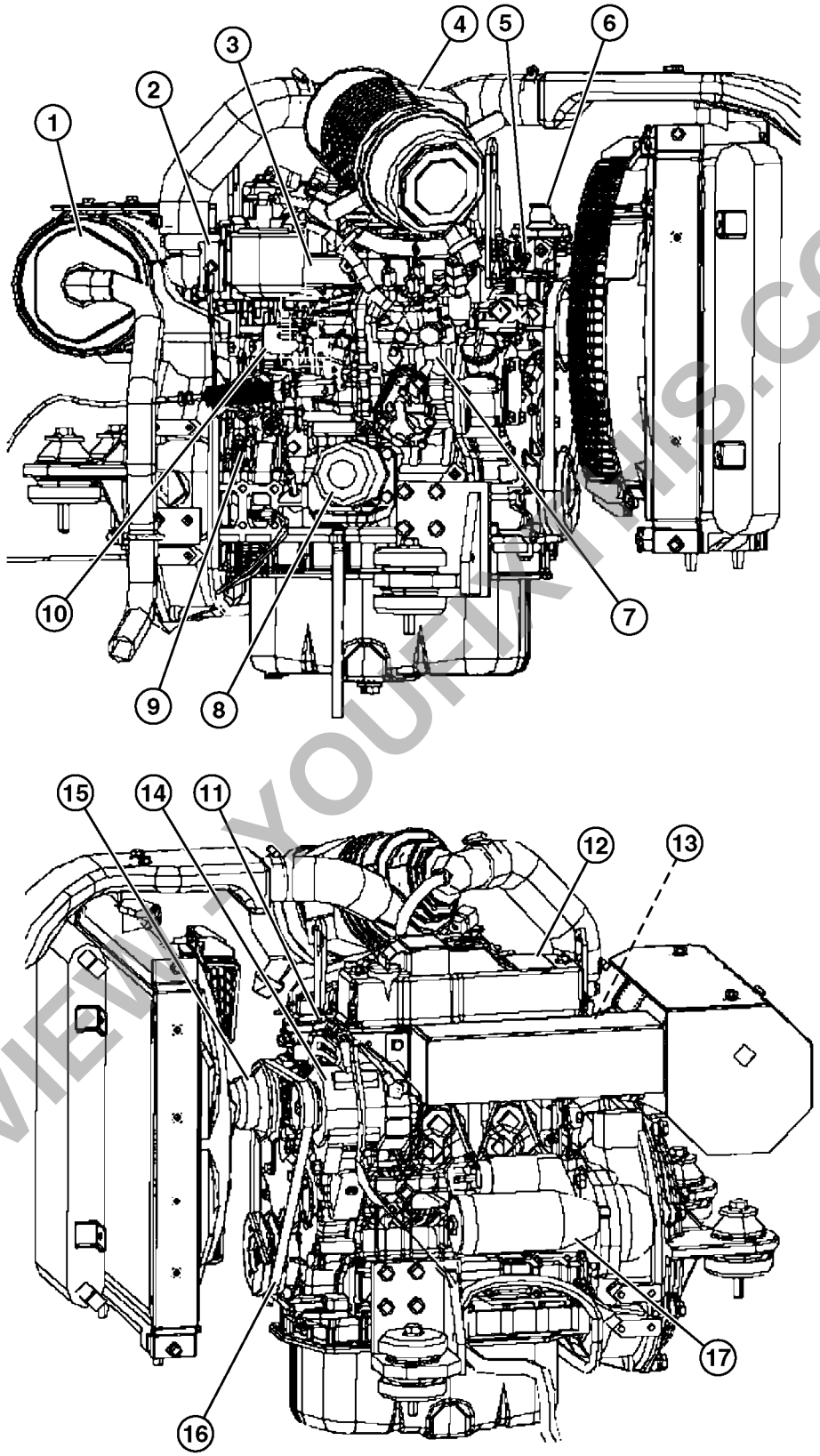
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Engine Component Location



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T205967 —UN—14DEC04

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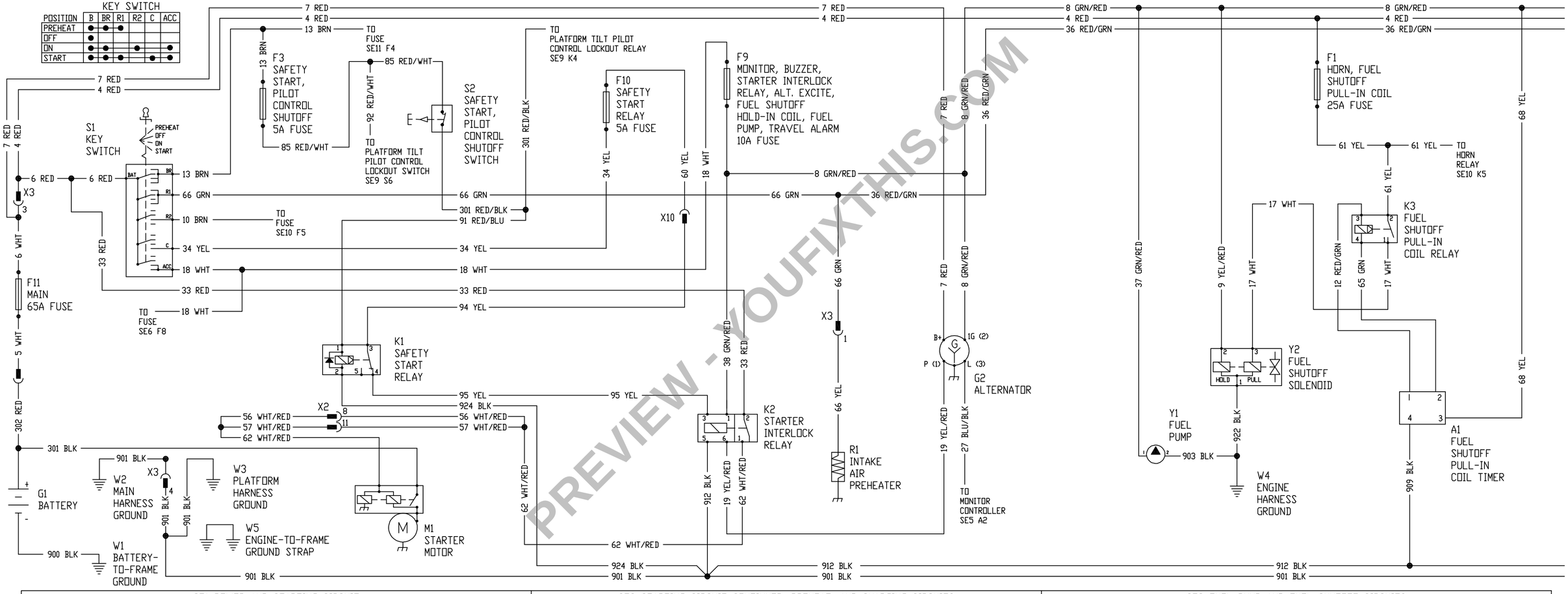
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System Functional Schematic

35D (S.N. —260000) 50D (S.N. —270000)

TX1236799 —UN—03APR17



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TX1236799

35D AND 50D SYSTEM FUNCTIONAL SCHEMATIC (1 OF 6)

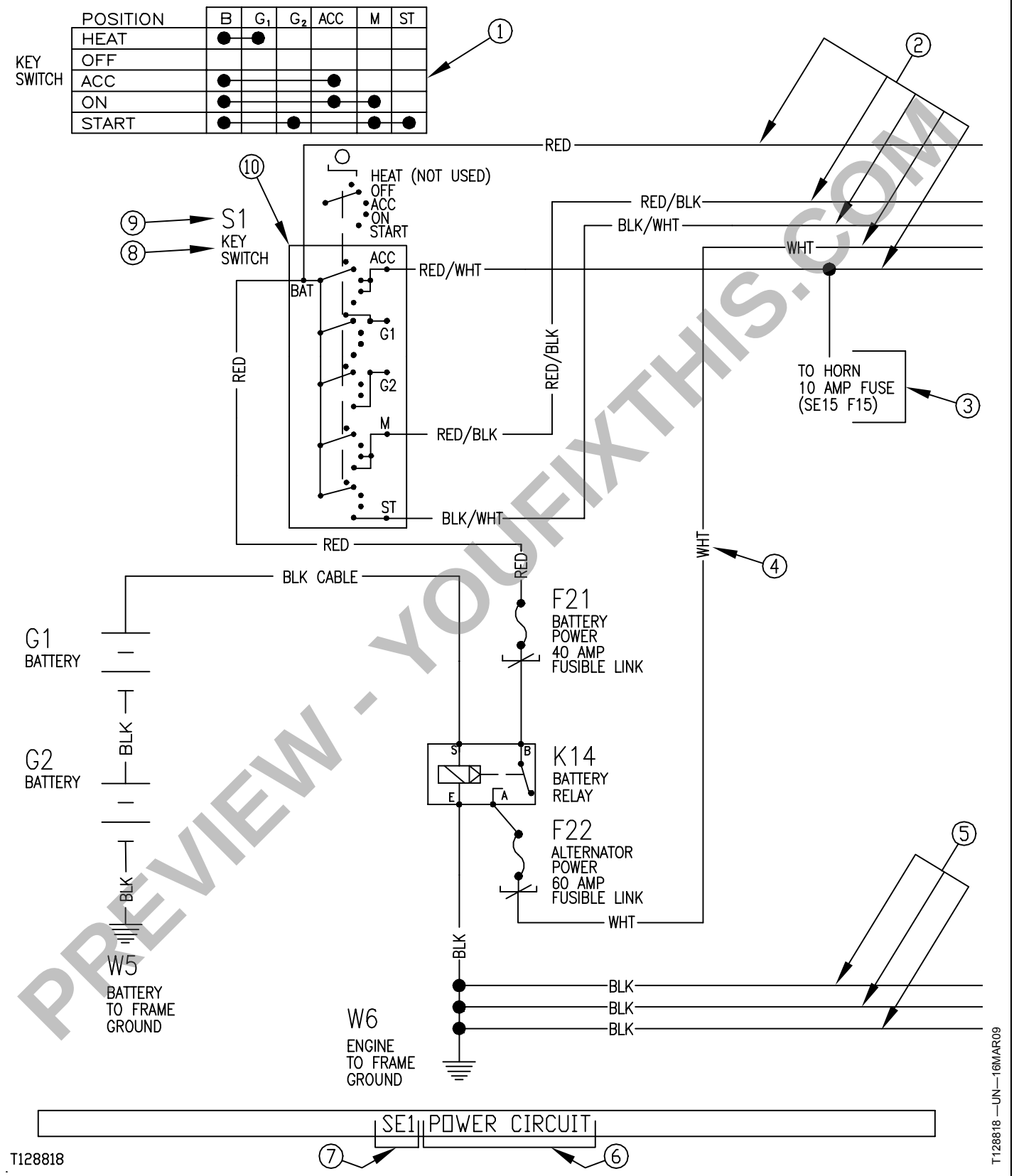
System Functional Schematic (SE1—SE3) 35D (S.N. —260000) 50D (S.N. —270000)

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OUO1010,00016CB -19-04APR17-1/24

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System Functional Schematic Diagram

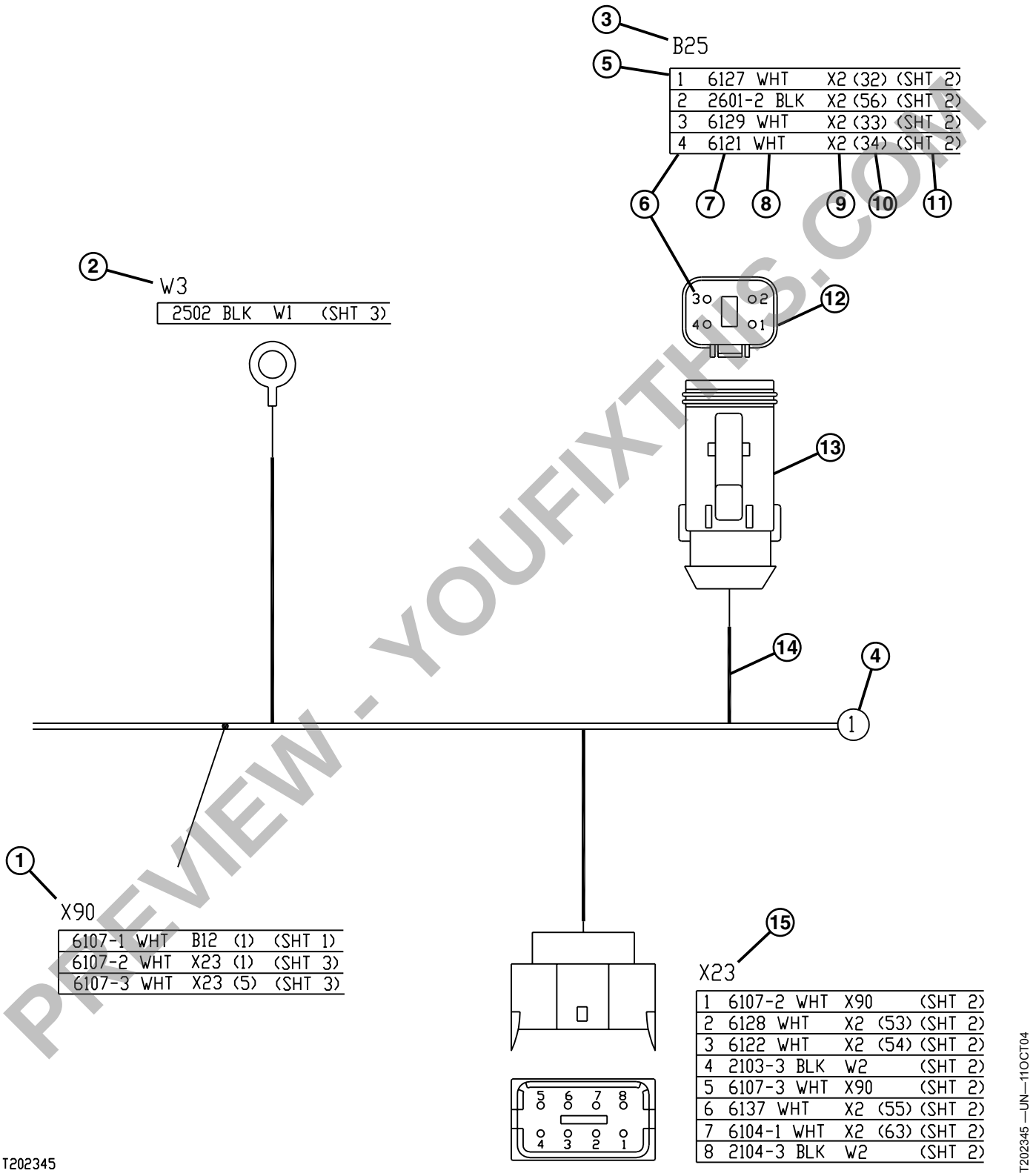


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Wiring Diagram



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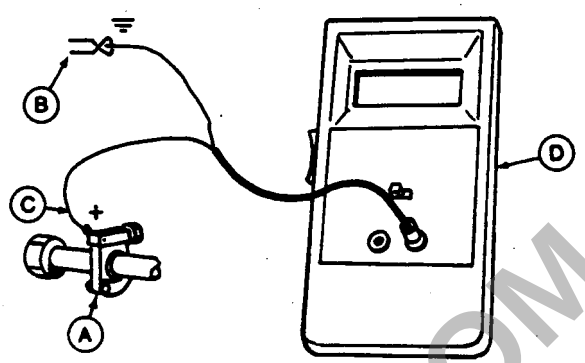
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JT05801 Clamp-On Electronic Tachometer Installation

SERVICE EQUIPMENT AND TOOLS
JT05801 Clamp-On Electronic Tachometer

1. Before installing clamp-on electronic tachometer, remove the paint from a straight section of injection line within 100 mm (4 in.) of No. 1 injection nozzle. Use emery cloth to remove the paint.
2. Install the clamp-on transducer (A). Tighten finger tight only—DO NOT overtighten.
3. Connect the red clip (+) (C) to the clamp-on transducer.
4. Connect the black clip (-) (B) to a ground connection such as the head of a cap screw or other metal part on engine.
5. Start the engine. Check for a reading on the digital readout unit (D).



T6813AG —UN—28FEB89

A—Clamp-On Transducer
B—Black Clip (-)
C—Red Clip (+)
D—Digital Readout Unit

OUT1738,0000025 -19-02JUL02-1/1

Engine Speed Check

SPECIFICATIONS	
35D (S.N. —264999) Slow Idle Speed	1200—1300 rpm
35D (S.N. 265000—) Slow Idle Speed	1200—1300 rpm
35D (S.N. —264999) Fast Idle Speed	2590—2690 rpm
35D (S.N. 265000—) Fast Idle Speed	2490—2590 rpm
50D (S.N. —274999) Slow Idle Speed	1100—1200 rpm
50D (S.N. 275000—) Slow Idle Speed	1100—1200 rpm
50D (S.N. —274999) Fast Idle Speed	2600—2700 rpm
50D (S.N. 275000—) Fast Idle Speed	2490—2590 rpm

SERVICE EQUIPMENT AND TOOLS
JT05801 Clamp-On Electronic Tachometer

1. Turn key switch to ON position. Do not start engine.
2. Turn engine speed control dial to slow idle position. Confirm that fuel injection pump governor lever contacts slow idle stop.
3. Turn engine speed control dial from slow idle to fast idle. Confirm that fuel injection pump governor lever contacts fast idle stop.
4. Start engine and warm to operating temperature.
5. Connect tachometer. See JT05801 Clamp-On Electronic Tachometer Installation. (Group 9010-25.)
6. Turn engine speed control dial to slow idle position and measure engine rpm.

Specification

35D (S.N. —264999)
Slow Idle—Speed ..... 1200—1300 rpm
35D (S.N. 265000—)
Slow Idle—Speed ..... 1200—1300 rpm
50D (S.N. —274999)
Slow Idle—Speed ..... 1100—1200 rpm
50D (S.N. 275000—)
Slow Idle—Speed ..... 1100—1200 rpm

7. Turn engine speed control dial to fast idle position and measure engine rpm.

Specification

35D (S.N. —264999)
Fast Idle—Speed ..... 2590—2690 rpm
35D (S.N. 265000—)
Fast Idle—Speed ..... 2490—2590 rpm
50D (S.N. —274999)
Fast Idle—Speed ..... 2600—2700 rpm
50D (S.N. 275000—)
Fast Idle—Speed ..... 2490—2590 rpm

8. Repeat measurement three times to ensure accuracy. Adjust as necessary.

TZ24494,0000F45 -19-24APR13-1/1

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Electrical Component Specifications

Item	Measurement	Specification
B1—Fuel Level Sensor	Resistance	90 ohms (tank empty) 40 ohms (tank 1/2 full) 10 ohms (tank full)
Fuel Level Warning Indicator ON	Capacity	6.5 L (1.7 gal)—35D 11.0 L (2.9 gal)—50D
B2—Engine Coolant Temperature Gauge Sensor	Resistance	7.6 ohms @ 25°C (77°F) 4.0 ± 0.35 ohms @ 40°C (104°F) 2.70 ± 0.22 ohms @ 50°C (122°F) 0.92 ± 0.02 ohms @ 80°C (176°F) 0.56 ohms @ 95°C (203°F) 0.42 ohms @ 105°C (221°F) 0.276 ± 0.014 ohms @ 120°C (248°F)
B2 Engine Coolant Temperature Gauge	Temperature	20°C (68°F) (or less) = First Segment Blinks 20—49°C (68—120°F) = First Segment ON 50—79°C (122—174°F) = Second Segment ON 80—104°C (176—219°F) = Third Segment ON 105—109°C (221—228°F) = Fourth Segment ON 110—119°C (230—246°F) = Fifth Segment ON 120°C (248°F) (or higher) = Sixth Segment ON
B3—Engine Coolant Temperature Switch (Closes)	Temperature	110°C (230 ± 4°F)
B4—Engine Oil Pressure Switch (Closes)	Pressure	49 ± 9.8 kPa (0.49 ± 0.1 bar) (7.1 ± 1.4 psi)
B6—Auto-Idle Pressure Sensor	Voltage	0.0—2.5 volts (no pilot pressure applied) 2.5—5.0 volts (pilot pressure applied)
B7—Travel Speed Pressure Sensor	Resistance	30k—50k ohms (Terminals 1—2) 5k—15k ohms (Terminals 2—3)
R2—Engine Speed Control Potentiometer	Voltage	0.8 volts (approximate) @ slow idle position 4.2 volts (approximate) @ fast idle position
	Resistance	0—2700 ohms (approximate) (unrestricted pot movement) 1000—2600 ohms (approximate) (movement of pot restricted by dial)
R3—Engine Speed Control Actuator Feedback Potentiometer	Voltage	2.1 volts (approximate) @ slow idle position 3.9 volts (approximate) @ fast idle position
Y3—Travel Speed Solenoid	Resistance	10—15 ohms

Continued on next page

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Diagnostic Procedure

Follow the six basic steps below to carry out troubleshooting efficiently.

1. Know the system.

   Study the machine technical manual. Understand the system and circuits. Use schematics, component location drawings, and theory of operation for each circuit and circuit components to better understand how the system, circuits and components work.

2. Ask the operator.

   What type of work was the machine doing when the trouble was noticed?

   Did the trouble start suddenly or has it been getting worse?

   Did the machine have any previous problems? If so, which parts were repaired?

3. Inspect the machine.

   Check all daily maintenance points. See Check Engine Oil Level. (Operator's Manual.) Check batteries, fuses, fusible link, and electrical connections.

4. Perform Operational Checkout.

   Check all systems and functions on the machine. Use the helpful diagnostic information in the checkout to pinpoint the possible cause of the problem.

5. Perform troubleshooting.

   Before starting any troubleshooting first check battery voltage, fusible link, and fuses.

   Go to test groups to check pressures and voltages. Make sure adjustments are correct.

6. Trace a cause.

   Before reaching a conclusion, check the most probable and simplest to verify. Use the flow charts and symptom, problem, solution charts to help identify probable problem components.

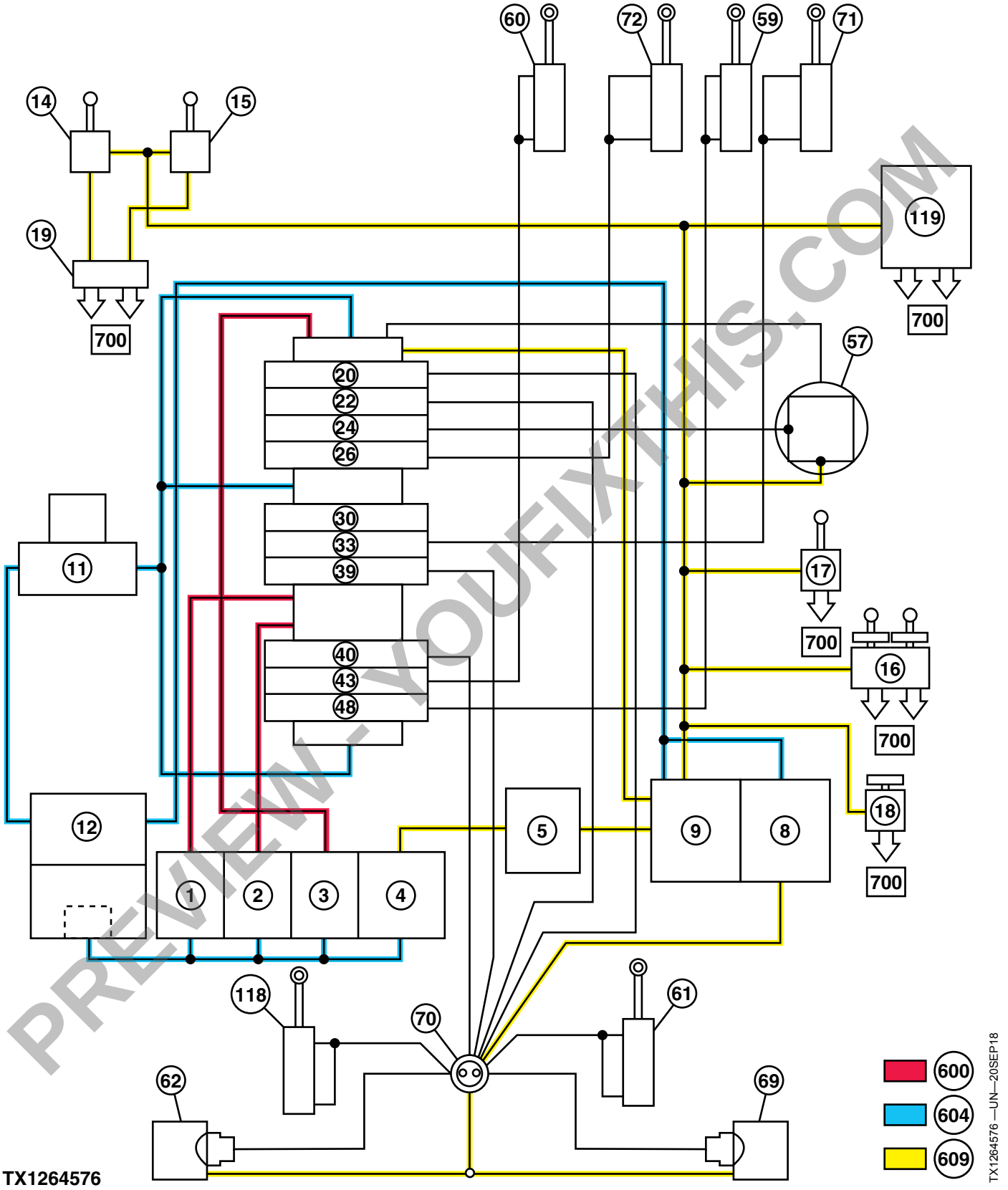
   Make a plan for appropriate repair to avoid other malfunctions.

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Hydraulic System Diagram—35D



Hydraulic System Diagram (10-spool valve shown)

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Engine Fuel System Operation

Fuel Injection Pump Operation

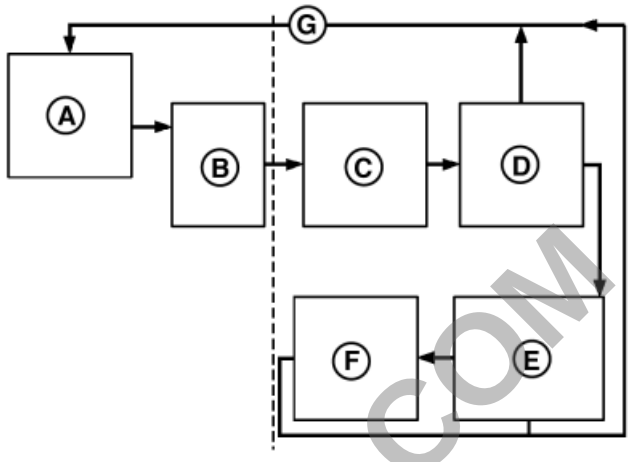
The fuel system supplies fuel to injection nozzles.

Fuel supply pump draws fuel from a vented fuel tank through a water separator and directs fuel through a fuel filter to the fuel galley of an injection pump. The injection pump meters fuel as determined by the governor and delivers it at high pressure to the injection nozzles.

The injection nozzle prevents flow until high pressure is reached, opening the valve and spraying atomized fuel into the combustion chamber. Injection lines have trapped fuel whenever injection is not taking place.

A small amount of fuel leaks past the nozzle valve to lubricate the fuel injection nozzle. This leakage combines with excess fuel from the injection pump and is returned to tank.

Any air in the fuel system is bled out with return fuel to the fuel tank.



RG8586A —UN—25APR00

A—Fuel Tank
B—Water Trap
C—Feed Pump
D—Fuel Filter
E—Fuel Injection Pump
F—Fuel Injection Nozzle Valve
G—Return Fuel

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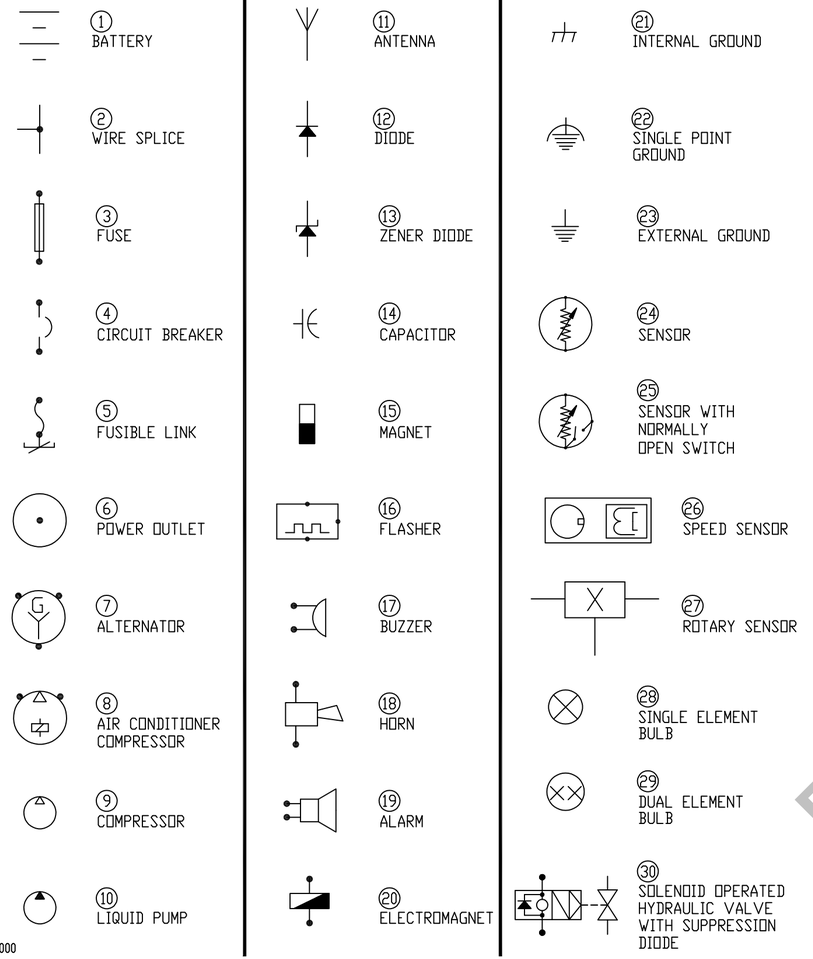
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Electrical Schematic Symbols

T143000 —UN—21JUN01



T143000

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A6—Heating and Air Conditioner Console
B10— Air Conditioner High/Low Pressure Switch
B11— Left Radio Speaker
B12— Right Radio Speaker
E5—Heating and Air Conditioning Unit
F7— Radio, A/C Control, and Blower Motor 25-Amp Fuse
K6—Blower Relay—Low
K7—Blower Relay—Medium
K8—Blower Relay—High
K9—Air Conditioner Torque Control Relay
K10— Air Conditioner Compressor Clutch Relay
M5—Heater Control Valve Actuator
W17—Radio Antenna
X13— Platform Harness-to-Heating and A/C Control Harness Connector
X19— Auxiliary Unswitched Power Connector
X29— Radio Connector
Y6—Air Conditioner Compressor Clutch
Y7—Air Conditioner Torque Control Solenoid

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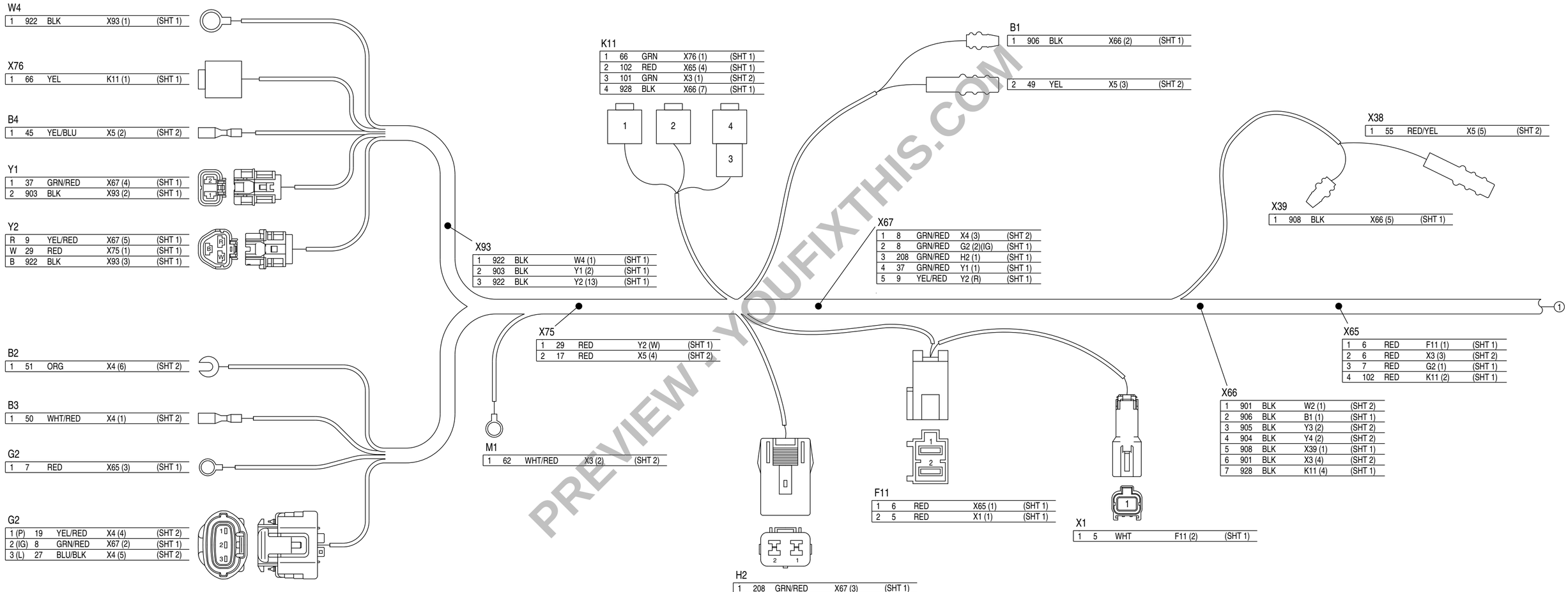
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50D (S.N. 270001—274999)

TX1092233 —UN—19MAY11



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Main Harness (W8) Wiring Diagram—50D (S.N. 270001—274999) (1 of 2)

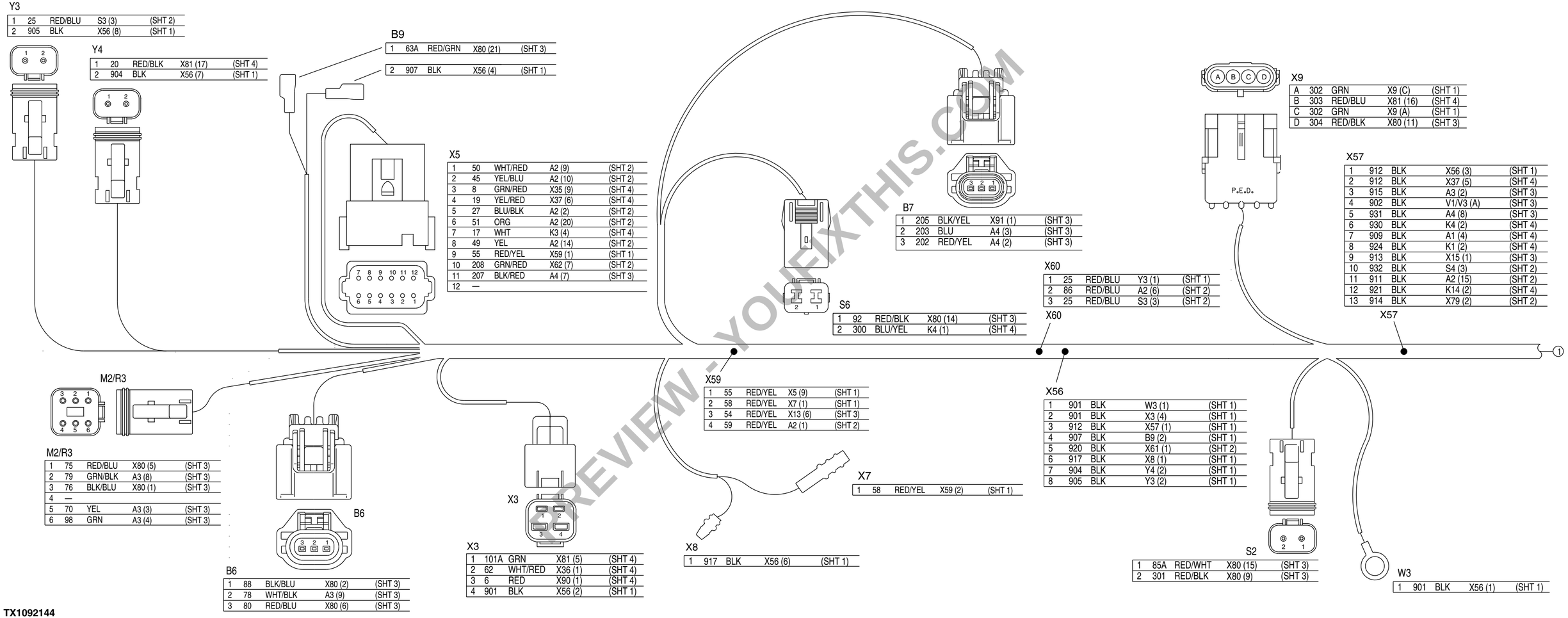
OUO1010,00016D8 -19-19AUG11-5/12

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35D (S.N. 265000—) 50D (S.N. 275000—)

TX1092144 —UN—19MAY11



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TX1092144

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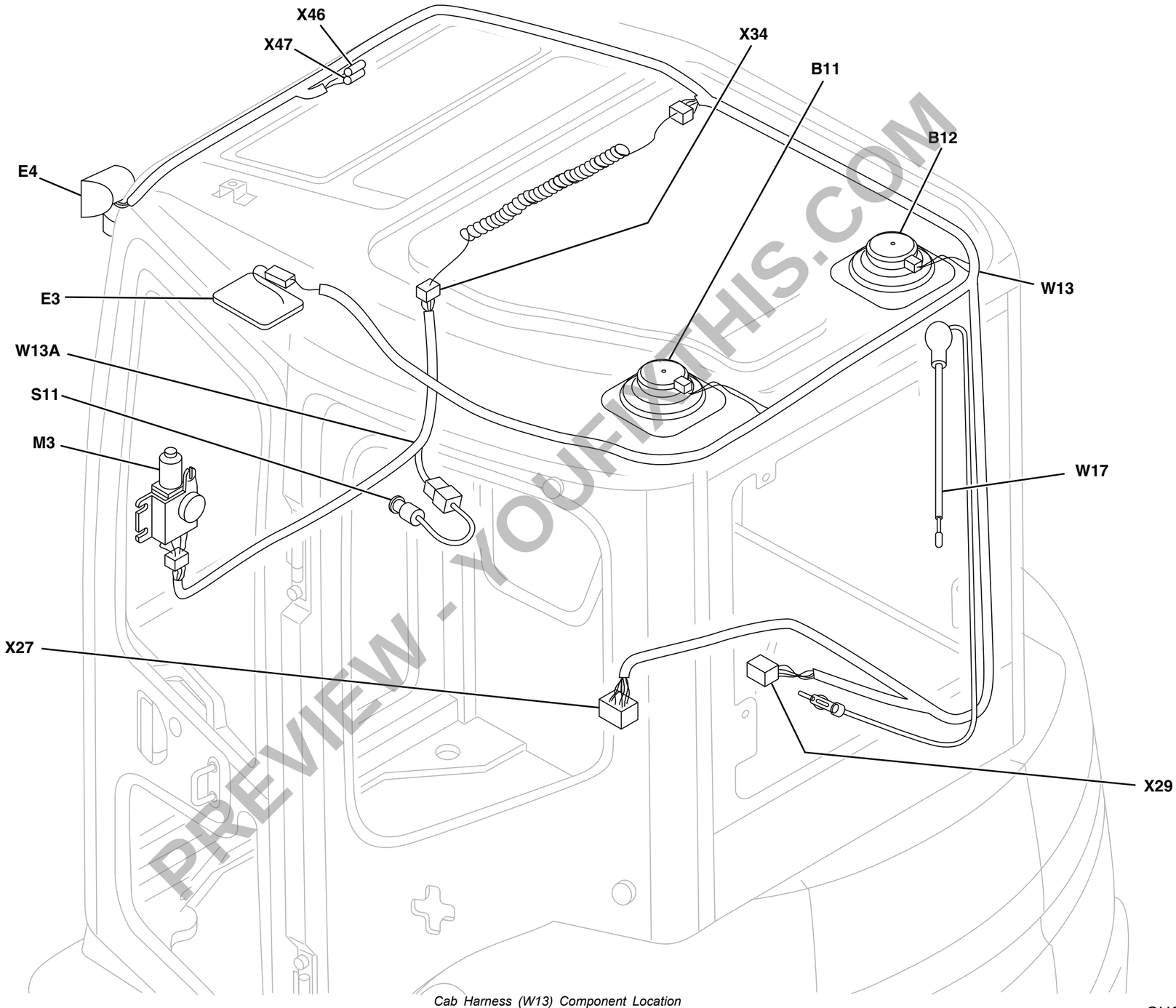
Platform Harness (W9) Wiring Diagram 35D (S.N. 265000—) 50D (S.N. 275000—) (1 of 4)

OUO1010,00016D5 -19-27FEB12-13/20

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Cab Harness (W13) Component Location

TX1054353 —UN—15JAN09



TX1054353

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Cab Harness (W13) Component Location

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A2—Monitor Controller and Display
A3—Auto-Idle Controller
B6—Auto-Idle Pressure Sensor
F4—Auto-Idle, 12-Volt Power Outlet 10-Amp Fuse
M2—Engine Speed Control Actuator
R2—Engine Speed Control Potentiometer
R3—Actuator Feedback Potentiometer
W3—Platform Harness Ground
X5—Main Harness-to-Platform Harness 12-Pin Connector
X16— Monitor Controller and Display 20-Pin Connector
X17— Monitor Controller and Display 16-Pin Connector

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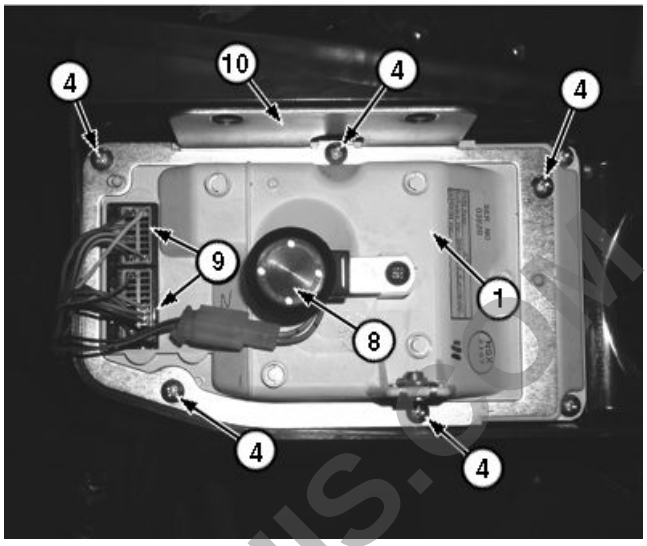
OUO1010,00016E5 -19-09MAY13-2/5

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6. Remove screws (4) to remove mounting bracket (10).
7. Repair or replace parts as necessary.
8. Install mounting bracket and monitor controller.
9. Connect wire connectors to monitor controller (1) and monitor warning alarm (8).
10. Connect 12-volt power outlet (5) and install side cover to machine.
11. Install floor mat.

1— Monitor Controller
4— Screw (5 used)
8— Monitor Buzzer (H1)
9— Platform Harness-to-Monitor Connectors (2 used)
10— Monitor Bracket



TX1041802A —UN—20MAY08

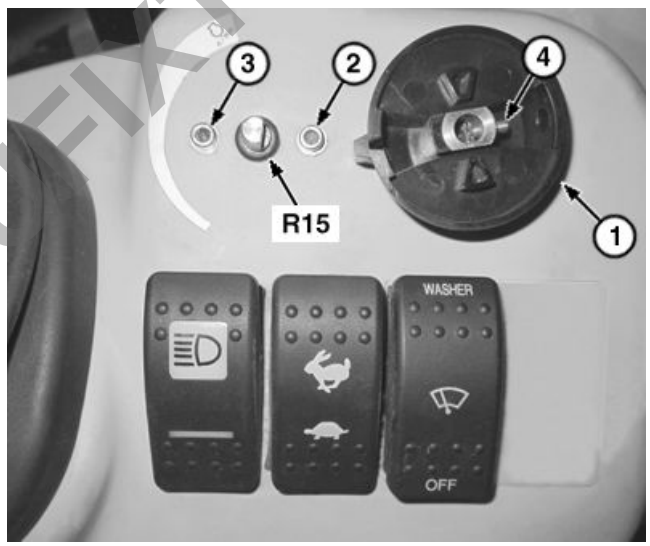
Monitor Controller 35D (S.N. —264999), 50D (S.N. —274999) Shown

OUO1010,000170A -19-29JUN11-3/3

Engine Speed Dial Remove and Install

1. Park and prepare machine for service safely. See Park and Prepare for Service Safely. (Group 9000-01.)
2. Remove right console cover.
3. Remove set screw (4) and engine speed dial knob (1).
4. Remove cap screws (2 and 3).
5. Remove engine speed dial (R15) assembly.
6. Repair or replace parts as necessary.
7. Install engine speed dial and tighten set screw.
8. Install cap screws (2 and 3).
9. Rotate engine speed dial shaft aligning flat side with cap screw (2).
10. Install engine speed dial knob.

1— Engine Speed Dial Knob
2— Cap Screw
3— Cap Screw
4— Set Screw
R15— Engine Speed Dial



TX1215745A —UN—17MAY16

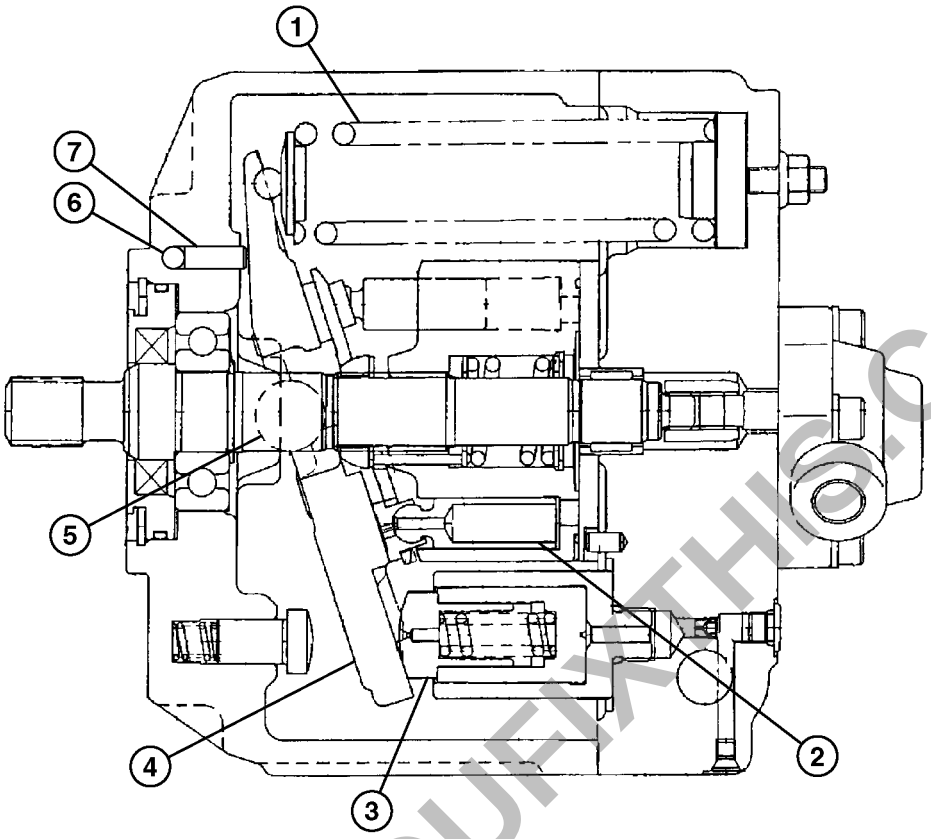
Engine Speed Dial

MB00333,0000341 -19-13JUN16-1/1

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Hydraulic Pump Regulator Operation—50D



T206360

T206360 —UN—03JAN05

1— Spring
2— Piston
3— Control Piston
4— Swash Plate
5— Oscillation Pin
6— Pilot Oil Port (air conditioning only)
7— Destroke Piston (air conditioning only)

Power Control

To prevent the load of hydraulic pump and pilot pump from exceeding the engine torque, the hydraulic pump regulates delivery flow rate.

When the hydraulic pump delivery pressure increases more than the load pressure, the increased pressure acts on the pistons (2). The pressure force on the pistons pushes the swash plate (4) around the oscillation pin (5) until the pressure force equals the spring (1) force. As a result, the hydraulic pump decreases delivery flow rate. Depending on the delivery oil pressure, the delivery flow rate from the hydraulic pump is controlled so that the total power required to drive hydraulic pump and pilot pump does not exceed engine power.

On machines equipped with air conditioning, a air conditioning pilot control solenoid valve (86) is enerigized when the system is turned ON. Pilot oil is then sent to the hydraulic pump to move the destroke piston (7) which limits the amount of swash plate (4) angle. Limiting the swash plate angle helps maintain peak engine and hydraulic pump performance when the air conditioning system is operating.

Flow Rate Control

Flow rate control regulates the pump delivery flow rate in response to change in loads on pump pistons and motors.

Pilot oil PGR varies in proportion to engine speed and is sent from the pilot flow rate sensing manifold. Pilot oil PLS varies in response to the pressure change from the actuators and is sent from the control valve differential reducing valve. Until pressure PGR becomes equal to pressure PLS, the pump delivery flow rate valve regulates the pump delivery flow rate.

Pilot oil from the pump delivery flow rate valve is routed to the control piston (3). The control piston pushes the swash plate (4) around the oscillation pin (5) until force equals the spring (1) force.

As the delivery flow rate from hydraulic pump varies, the pressure oil supplied to the control valve varies. As the pressure oil to the control valve varies, pilot oil pressure PLS, from the control valve differential reducing valve, varies. Pilot oil PLS and PGR are routed to the pump delivery flow rate valve. When these pressures become equal, the hydraulic pump swash plate stops tilting.

Continued on next page

OUO1030,0000062 -19-20DEC04-1/2

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1— Spool
2— Port M1
3— Motor Negative Pressure Pin
4— Port M2
5— Travel Mode Selector Solenoid Valve
6— Spring
8— Pilot Port Ps
9— Swash Plate
10— Control Piston
11— Plunger
12— Piston

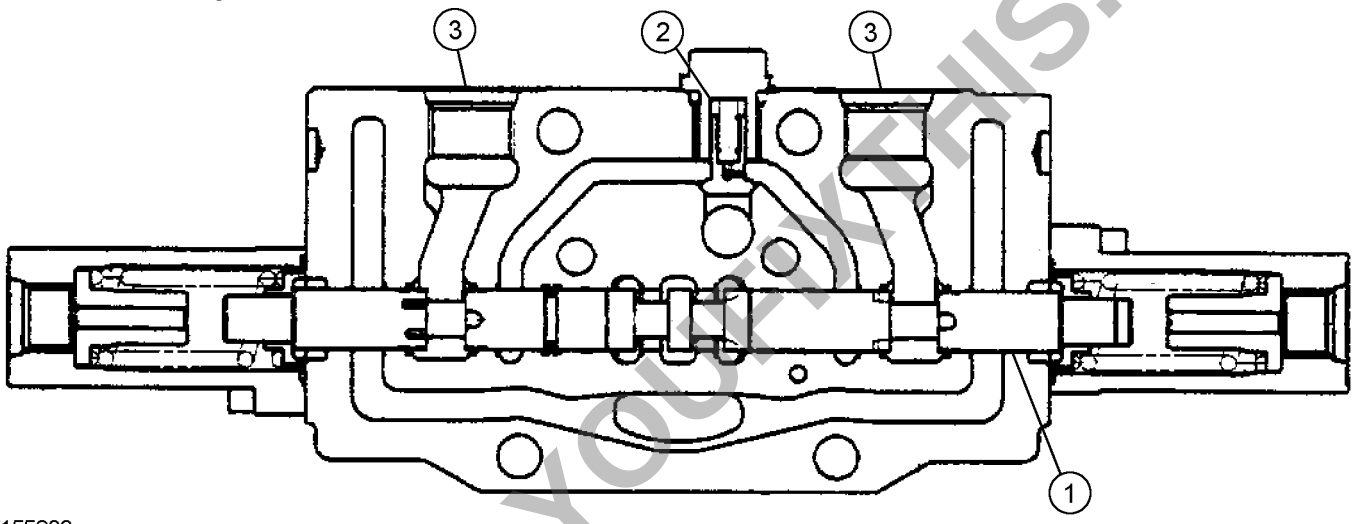
Fast Speed Operation—when the travel mode switch is in the fast speed position, pilot pressure from the travel mode selector solenoid valve (5) is delivered to pilot port Ps (8) in the travel mode selector solenoid valve. Pressure oil moves the spool to the right.

Pressure oil from the high pressure port and low pressure port [port M1 (2) and port M2 (4)] is delivered to the control piston (10). The control piston pushes the swash plate (9).

The displacement angle of the swash plate decreases so the stroke of the plunger (11) is decreased. The motor capacity is decreased, causing the motor to rotate at fast speed.

OUO1020,000193A -19-27JUL17-3/3

Blade Circuit Operation—35D



T155286

T155286 —UN—31MAY02

Blade Control Valve—35D

1— Valve Spool
2— Lift Check Valve
3— Work Port

The blade control valve is a four-way, three-position, open-center type valve. The valve spool (1) is pilot actuated by the pilot control valve. A lift check valve (2) is also incorporated. The work ports (3) are connected to the blade cylinder through the center joint.

Supply oil for the blade circuit is from hydraulic pump 3.

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Symptom	Problem	Solution
	Deformed track frame	Repair or replace components.
Excavator Will Not Hold Back and Park Brakes Engage and Disengage When Traveling Down an Incline	Counterbalance valve spool stuck	Inspect counterbalance and crossover relief valve. See Travel Motor Disassemble and Assemble—35D and 50D (S.N. —274999) or see Travel Motor Disassemble and Assemble—50D (S.N. 275000—). (Group 0260.)
Excavator Will Not Turn Smoothly In One Direction or Park Brake Grabs	Counterbalance valve spool stuck	Inspect counterbalance and crossover relief valve. See Travel Motor Disassemble and Assemble—35D and 50D (S.N. —274999) or see Travel Motor Disassemble and Assemble—50D (S.N. 275000—). (Group 0260.)

OUO1020,0001906 -19-01MAY17-5/4

Major Component Location—35D

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NM00125,000088D -19-16AUG11-1/3

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Pilot Pressure Regulating Valve Test and Adjustment

SPECIFICATIONS	
Hydraulic Oil Temperature	45—55 °C 110—130 °F
Engine Speed	Fast Idle
Pilot Pressure Regulating Valve at Fast Idle—35D Pressure	3900— 4900 kPa 39.0—49.0 bar 566—711 psi
Pilot Pressure Regulating Valve at Fast Idle—50D Pressure	6100— 7100 kPa 61.0—71.0 bar 885—1030 psi
Nut-to-Pilot Pressure Regulating Valve Housing Torque	25 N·m 18 lb-ft

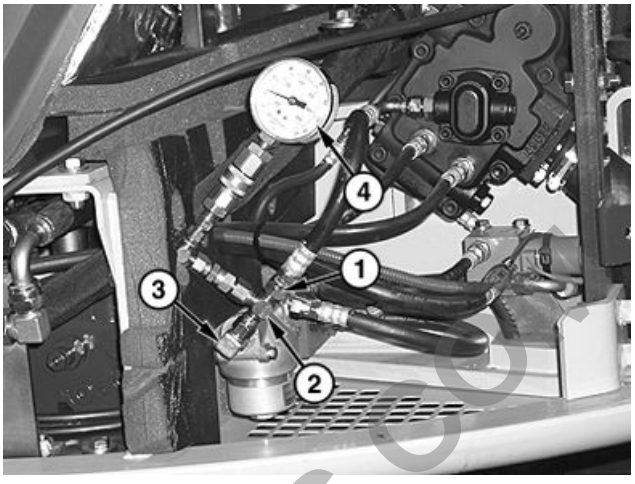
ESSENTIAL TOOLS
JT05412 Test Kit
JT03008-32 Swivel Run Tee 9/16-18 37°

SERVICE EQUIPMENT AND TOOLS
JT02156A Digital Pressure/Temperature Analyzer
JT02161 Transducer 35 000 kPa (350 bar) (5000 psi)
Gauge 7000 kPa (70 bar) (1000 psi)
17 mm Combination Wrench
6 mm Hex Key Wrench

Purpose of test is to ensure there is enough pilot pressure to operate all the pilot system functions and to adjust the pressure as necessary.

NOTE: 50D shown, procedure for 35D is the same.

1. Stop the engine.
2. Loosen cap to release the air pressure in hydraulic oil tank.
3. Disconnect pilot pressure line (1) at elbow fitting (3). Install JT03008-32 tee (2) and connect the digital pressure/temperature analyzer and transducer or a gauge (4).



T205053A —UN—17NOV04

50D Shown

1— Line
2— Tee
3— Elbow Fitting
4— Gauge

4. Perform Hydraulic System Warm-Up Procedure. (See procedure in this group.)

Specification

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

5. Run machine at specifications with auto-idle switch off.

Specification

Engine—Speed..... Fast Idle

6. Record pressure reading for pilot pressure regulating valve.

Continued on next page

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