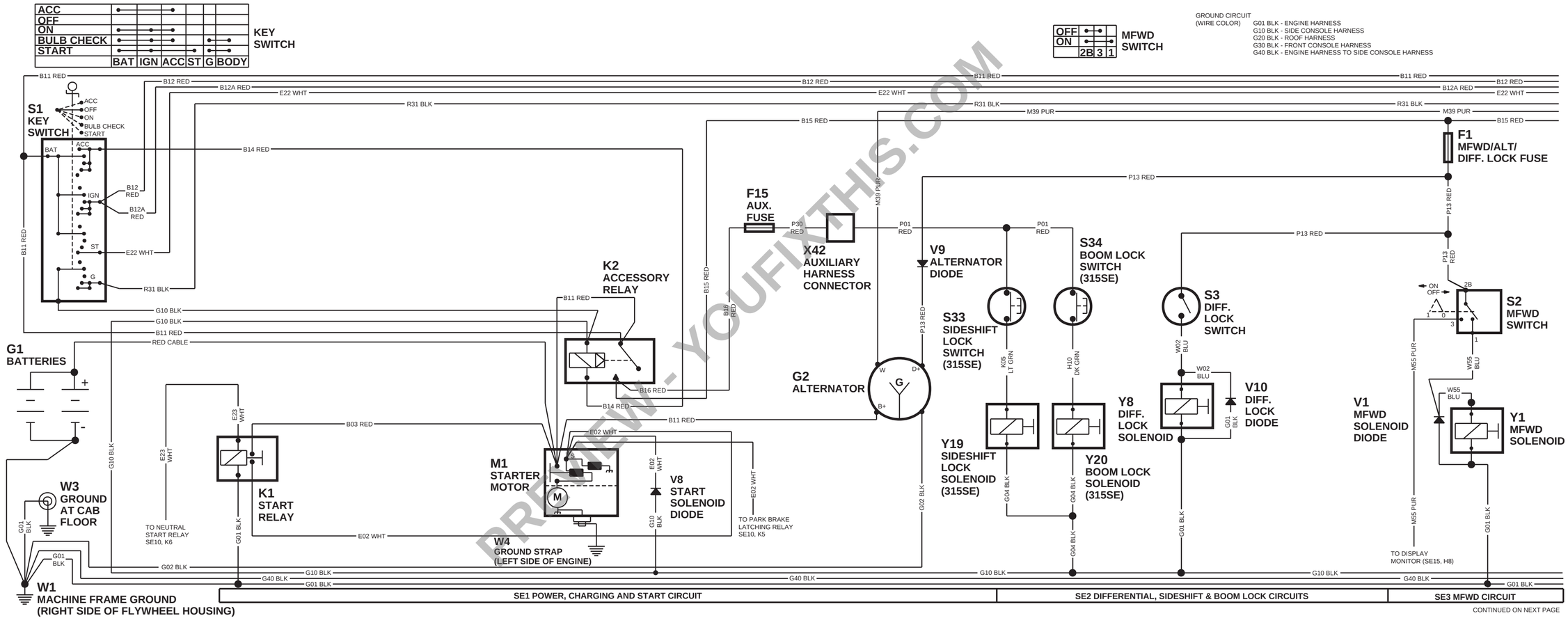
System Functional Schematic

T127520 –19–20JAN00



T127520

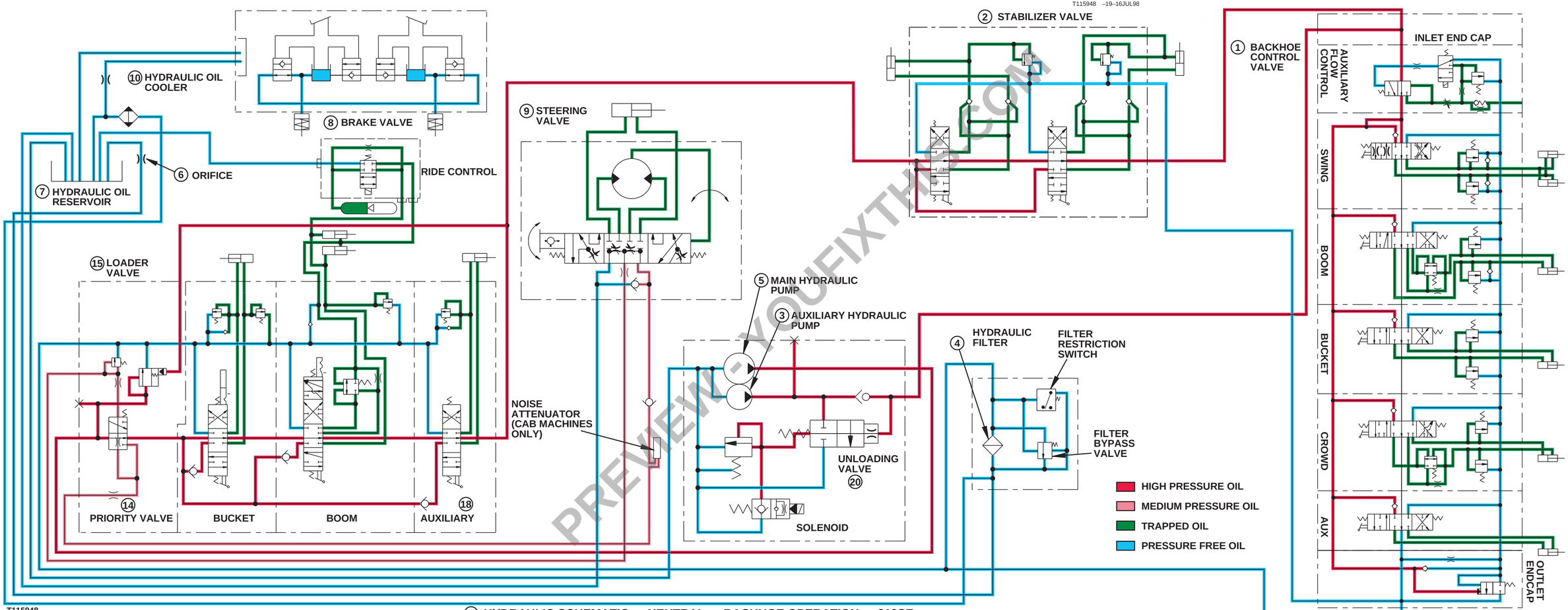
SYSTEM FUNCTIONAL SCHEMATIC (1 OF 8)

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Hydraulic System Schematic-Neutral-310SE

T115948 –19–16JUL98



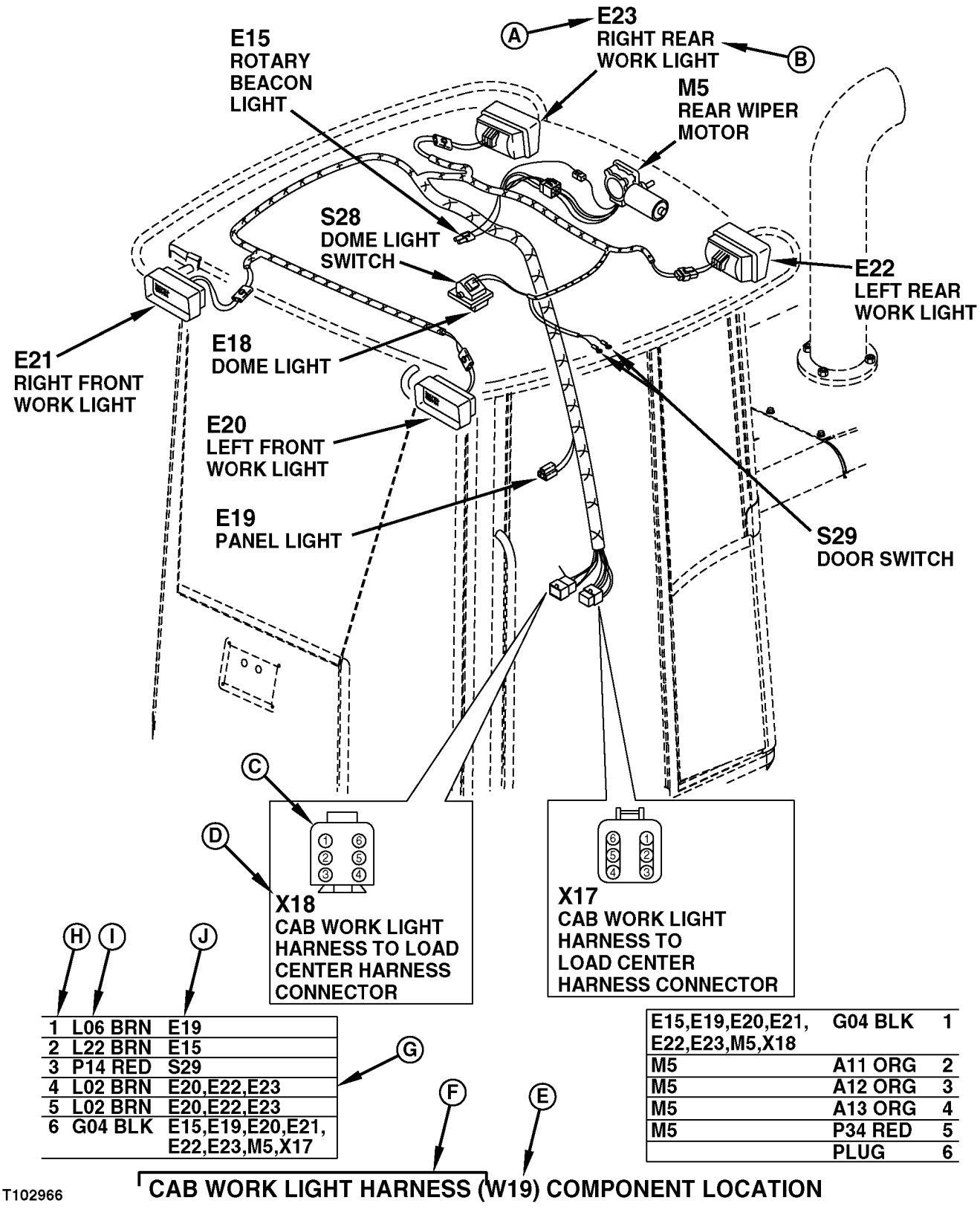
T115948

21 HYDRAULIC SCHEMATIC — NEUTRAL — BACKHOE OPERATION — 310SE

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Reading a Component Location Diagram

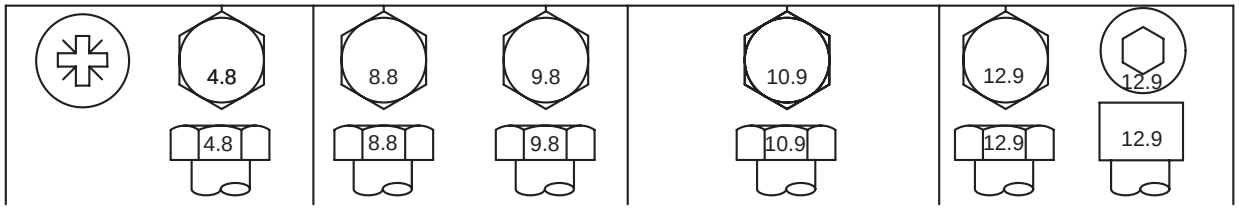


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TX,9015,QQ6293 –19–17AUG96–1/4

9000
03
2

Metric Bolt and Screw Torque Values



TS1670 –UN–01MAY03

Bolt or	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
Screw	Lubricated[a]		Dry[b]		Lubricated[a]		Dry[b]		Lubricated[a]		Dry[b]		Lubricated[a]		Dry[b]	
Size	N•m	lb-in	N•m	lb-in	N•m	lb-in	N•m	lb-in	N•m	lb-in	N•m	lb-in	N•m	lb-in	N•m	lb-in
M6	4.7	42	6	53	8.9	79	11.3	100	13	115	16.5	146	15.5	137	19.5	172
									N•m	lb-ft	N•m	lb-ft	N•m	lb-ft	N•m	lb-ft
M8	11.5	102	14.5	128	22	194	27.5	243	32	23.5	40	29.5	37	27.5	47	35
			N•m	lb-ft	N•m	lb-ft	N•m	lb-ft								
M10	23	204	29	21	43	32	55	40	63	46	80	59	75	55	95	70
	N•m	lb-ft														
M12	40	29.5	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	46	80	59	120	88	150	110	175	130	220	165	205	150	260	190
M16	100	74	125	92	190	140	240	175	275	200	350	255	320	235	400	300
M18	135	100	170	125	265	195	330	245	375	275	475	350	440	325	560	410
M20	190	140	245	180	375	275	475	350	530	390	675	500	625	460	790	580
M22	265	195	330	245	510	375	650	480	725	535	920	680	850	625	1080	800
M24	330	245	425	315	650	480	820	600	920	680	1150	850	1080	800	1350	1000
M27	490	360	625	460	950	700	1200	885	1350	1000	1700	1250	1580	1160	2000	1475
M30	660	490	850	625	1290	950	1630	1200	1850	1350	2300	1700	2140	1580	2700	2000
M33	900	665	1150	850	1750	1300	2200	1625	2500	1850	3150	2325	2900	2150	3700	2730
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2770	4750	3500

Torque values listed are for general use only, based on the strength of the bolt or screw. DO NOT use these values if a different torque value or tightening procedure is given for a specific application. For stainless steel fasteners or for nuts on U-bolts, see the tightening instructions for the specific application. Tighten plastic insert or crimped steel type lock nuts by turning the nut to the dry torque shown in the chart, unless different instructions are given for the specific application.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical property class. Replace fasteners with the same or higher property class. If higher property class fasteners are used, tighten these to the strength of the original. Make sure fastener threads are clean and that you properly start thread engagement. When possible, lubricate plain or zinc plated fasteners other than lock nuts, wheel bolts or wheel nuts, unless different instructions are given for the specific application.

[a]"Lubricated" means coated with a lubricant such as engine oil, fasteners with phosphate and oil coatings, or M20 and larger fasteners with JDM F13C zinc flake coating.

[b]"Dry" means plain or zinc plated without any lubrication, or M6 to M18 fasteners with JDM F13B zinc flake coating.

DX,TORQ2 –19–24APR03–1/1

Diagnose Engine Malfunctions

NOTE: Diagnostic charts are arranged from most probable and simplest to verify, to least likely and more difficult to verify. Remember the following steps when diagnosing a problem:

Step 1. Operational Checkout Procedure (See Group 9005-10).

Step 2. Adjustments and/or Tests (See Group 9010-20 and/or 9010-25).

9010
15
4

Symptom	Problem	Solution
Engine Will Not Start Or Starts Hard	Fuel tank empty	Check fuel quantity
	Fuel tank vent plugged	Remove cap and listen for sound of air entering tank. Replace cap.
	No electrical power to injection pump solenoid	Turn key switch to "On". Must hear click at injection pump. Replace fuse. See Fuse Specifications. Repair wiring. See Engine Harness (W8) Component Location in Group 9015-10.
	Water in fuel or water frozen in fuel line.	Drain water from fuel tank. See Drain Fuel Tank Water and Sediment in Operator's Manual. Inspect fuel filter for water. See Draining Fuel Filter Sediment in Operator's Manual. Change filter. See Replace Fuel Filter in Operator's Manual.

Continued on next page

TX,15,SS3184 –19–09JUL98–1/15

Operational Checkout Procedure

Use this procedure to check all systems and functions on the machine. It is designed so you can make a quick check of machine operation while doing both a walk around inspection and performing specific checks from the operator's seat.

Should you experience a problem with your machine, you will find helpful diagnostic information in this checkout that will pinpoint the cause. Use the table of contents to help find adjustment procedures. This information may allow you to perform simple repairs yourself, reducing machine down time.

The information obtained after completing the operational checkout will allow you or your authorized dealer to pinpoint a specific test or repair needed to restore the machine to specifications.

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

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

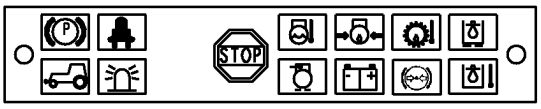
Locate the check to be performed at the top of the left column and read completely down the column before performing the check. Follow this sequence from left to right. In the far right column, if no problem is found, you will be instructed to go to next check. If a problem is indicated, you will be referred to either a group in this manual or to your authorized dealer for repair.

9005
10
1

TX,9005,YY2037 –19–08AUG96–1/1

❶ Gauge and Indicator Check With Engine Off

– – –1/1

Monitor Indicator Lights and Alarm Checks	 T103007 –UN–30OCT98 Turn key switch to BULB CHECK position and hold. *LOOK: Are all monitor indicator lights on? Is STOP light ON and does alarm sound?* *NOTE: Starting motor MUST NOT operate.*	**YES:** Go to next check. **NO:** Check monitor/gauge fuse. Go to Group 9015-15, Display Monitor Checks. If motor starts and bulb check position is OK, key switch is failed or there is a short in wiring. Go to Group 9015-15, Start Circuit.

– – –1/1

9000
02
2

310SE and 315SE Backhoe Loader Dimensions

NOTE: Specifications and design subject to change without notice. Whenever applicable, specifications are in accordance with SAE Standards unless otherwise noted, these specifications are based on a standard machine with 19.5L-24, 8PR, R4 rear tires; 11L-16, 12PR, F3 front tires; 0.86 m^3 (1.12 cu yd) loader bucket; 610 mm (24 in.) backhoe bucket; ROPS/FOPS; full fuel tank and 79 kg (175 lb) operator.

Item	Measurement	Specification
A—Loading Height, Truck Loading Position		
Backhoe w/o Ext. Dipperstick	Height	3.43 m (11 ft 3 in.)
Backhoe w/Ext. Dipperstick Retracted	Height	3.53 m (11 ft 7 in.)
Backhoe w/Ext. Dipperstick Extended	Height	4.29 m (14 ft 1 in.)
B—Reach from Center of Swing Mast		
Backhoe w/o Ext. Dipperstick	Distance	5.56 m (18 ft 3 in.)
Backhoe w/Ext. Dipperstick Retracted	Distance	5.66 m (18 ft 7 in.)
Backhoe w/Ext. Dipperstick Extended	Distance	6.68 m (21 ft 11 in.)
C—Reach from Center of Rear Axle		
Backhoe w/o Ext. Dipperstick	Distance	6.63 m (21 ft 9 in.)
Backhoe w/Ext. Dipperstick Retracted	Distance	6.73 m (22 ft 1 in.)
Backhoe w/Ext. Dipperstick Extended	Distance	7.72 m (25 ft 4 in.)

Continued on next page

Tachometer Calibration (S.N. 852338—)

1. Remove side console panel.
2. Verify engine speed using tachometer. See Tachometer Installation in this group.

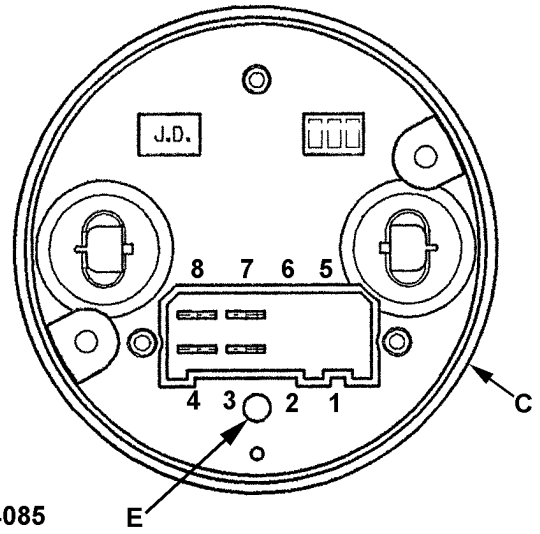
NOTE: Calibration of tachometer should be performed at an engine speed near 2000 rpm.

3. Cut and remove plastic covering from calibration button (E) on back of tachometer (C).
4. Press and hold in calibration button as you turn on ignition and start engine. Hold button until "**ADJUST**" is displayed on LCD readout. When it does, release calibration button.
5. Press calibration button once, and "**UP**" will be displayed on LCD readout for upward calibration of pointer. Press calibration button again, and "**DN**" will be displayed for downward calibration of pointer.

NOTE: If pointer is moved past upper limit of calibration range, LCD display will flash and pointer can only be adjusted downward. If pointer is moved past lower calibration limit, LCD display will also flash and pointer can only be adjusted upward.

6. When either "**UP**" or "**DN**" is showing, press button again and hold it in to move pointer. If button is held in for just a short time, pointer will move slowly either upwards or downwards, depending on which mode is selected. Holding button in for a longer period of time makes pointer move faster.
7. When pointer is in desired position, release calibration button and wait. If no further adjustments are made within one minute, tachometer will perform self-test and revert back to normal operating mode.
8. After calibration is complete, cover hole for calibration button (E) with a small amount of non-corrosive Form-in-Place Gasket sealer.

C—Tachometer
E—Calibration Button

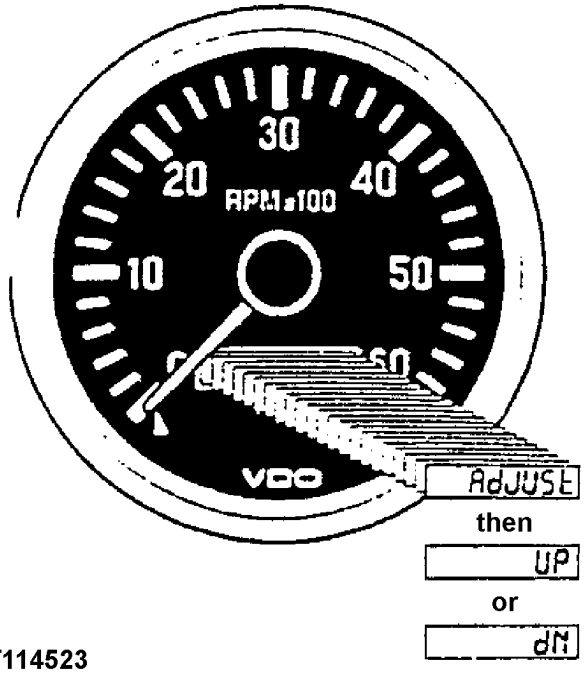


T114085

T114085 –UN–09APR98



T114688B –UN–02APR98



T114523

T114523 –19–03APR98

CED,TX17864,110 –19–19JAN00–1/1

Torque Converter Stall Speed Test

SPECIFICATIONS	
Transmission/Hydraulic Oil Temperature	65 ± 5°C (150 ± 10°F)
Engine Speed	Fast idle
Torque Converter Stall Speed	2050—2250 rpm
Combined Torque Converter/Hydraulic Engine Stall Speed	1600—1800 rpm

SERVICE EQUIPMENT AND TOOLS
Electronic Tachometer
Digital Thermometer

1. **Torque Converter Stall:**Install electronic tachometer. (See procedure in this group).

2. Install digital thermometer probe into the transmission and hydraulic sumps through the fill tube.

3. Heat oil to specifications.

Specification

Transmission/Hydraulic Oil—
Temperature ..... 65 ± 5°C (150 ± 10°F)

(See Transmission Warm-Up Procedure in this Group and Hydraulics Warm-Up Procedure in Group 9025-25.)

IMPORTANT: Converter should NOT be stalled longer than 20 seconds or serious converter damage may result. Return FNR lever to neutral position for 10 seconds before doing next stall test.

4. With machine off the ground. Put transmission in third gear.

5. Apply and hold service brakes throughout test.

6. Cycle from low idle to high idle with service brakes engaged. The highest stabilized speed measured is converter stall speed.

Specification

Engine—Speed..... Low and High idle
Torque Converter—Stall Speed ..... 2050—2250 rpm

IMPORTANT: Minimum engine speed listed is for an engine that is broken-in and using No. 2 fuel.

7. **Combined Torque Converter Stall:** Stall converter as described above and hold a loader function over relief. Record combine torque converter stall.

Specification

Transmission/Hydraulic Oil—
Temperature ..... 65 ± 5°C (150 ± 10°F)

Observe tachometer reading while boom is raising.

Specification

Combined Torque
Converter/Hydraulic Engine—
Stall Speed ..... 1600—1800 rpm

8. If converter stall speed is low, check for:

   - Low engine output. See Group 9010-25.
   - Incorrect torque converter. Check part number through inspection hole in bottom of transmission housing, number should be either 247001 or 4168-028-209.
   - Failed freewheel clutch in torque converter.

9. If converter stall speed is too high, check for:

   - Incorrect oil temperature.
   - Low oil level.
   - Incorrect oil in machine.
   - Restricted suction screen. See repair manual.
   - Incorrect torque converter. Check part number through inspection hole in bottom of transmission housing, number should be either 247001 or 4168-028-209.
   - . See Group 9010-25.
   - Converter failed.
   - Failed transmission clutch pack.
   - Low system (pump) pressure in transmission.

TX,9020,BA2161 –19–10NOV97–1/1

Handle Fluids Safely—Avoid Fires

When you work around fuel, do not smoke or work near heaters or other fire hazards.

Store flammable fluids away from fire hazards. Do not incinerate or puncture pressurized containers.

Make sure machine is clean of trash, grease, and debris.

Do not store oily rags; they can ignite and burn spontaneously.



TS227 –UN–23AUG88

DX,FLAME –19–29SEP98–1/1

Prevent Battery Explosions

Keep sparks, lighted matches, and open flame away from the top of battery. Battery gas can explode.

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

Do not charge a frozen battery; it may explode. Warm battery to 16°C (60°F).



TS204 –UN–23AUG88

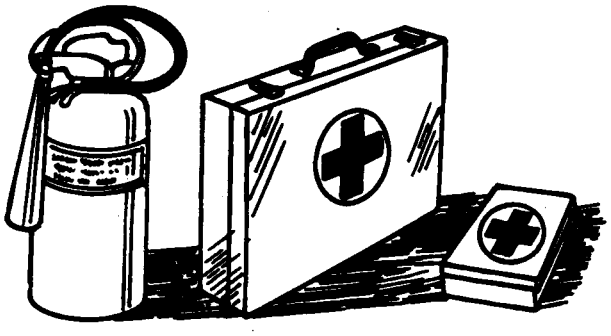
DX,SPARKS –19–03MAR93–1/1

Prepare for Emergencies

Be prepared if a fire starts.

Keep a first aid kit and fire extinguisher handy.

Keep emergency numbers for doctors, ambulance service, hospital, and fire department near your telephone.



TS291 –UN–23AUG88

DX,FIRE2 –19–03MAR93–1/1

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Indx 1

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TX,II,FAX –19–10JUL01–1/1

Diesel Fuel

Consult your local fuel distributor for properties of the diesel fuel available in your area.

In general, diesel fuels are blended to satisfy the low temperature requirements of the geographical area in which they are marketed.

Diesel fuels specified to EN 590 or ASTM D975 are recommended.

Required fuel properties

In all cases, the fuel shall meet the following properties:

Cetane number of 45 minimum. Cetane number greater than 50 is preferred, especially for temperatures below -20°C (-4°F) or elevations above 1500 m (5000 ft).

Cold Filter Plugging Point (CFPP) below the expected low temperature OR **Cloud Point** at least 5°C (9°F) below the expected low temperature.

Fuel lubricity should pass a minimum level of 3100 grams as measured by ASTM D6078 or maximum scar diameter of 0.45 mm as measured by ASTM D6079 or ISO 12156-1.

Sulfur content:

- Diesel fuel quality and fuel sulfur content must comply with all existing emissions regulations for the area in which the engine operates.
- Use of diesel fuel with sulfur content less than 0.10% (1000 ppm) is STRONGLY recommended.
- Use of diesel fuel with sulfur content 0.10% (1000 ppm to 0.50% (5000 ppm) may result in REDUCED oil and filter change intervals.
- BEFORE using diesel fuel with sulfur content greater than 0.50% (5000 ppm), contact your John Deere dealer.
- DO NOT use diesel fuel with sulfur content greater than 1.0%.

IMPORTANT: Do not mix used diesel engine oil or any other type of lubricating oil with diesel fuel.

IMPORTANT: Improper fuel additive usage may cause damage on fuel injection equipment of diesel engines.

DX,FUEL1 –19–17NOV05–1/1

Make Visual Inspection of Engine and Supporting Systems

1. Inspect for coolant leaks at:

   - Radiator
   - Water pump
   - Hoses
   - Coolant manifold
   - Thermostat cover

   Check for proper coolant level in radiator. Look at coolant for evidence of oil and/or debris.

2. Inspect for oil leaks around the oil pan, drain plug, oil filter, and clutch housing at drain hole.

3. Inspect hoses to see if they are hard, cracked, soft, or swelled. Replace as necessary.

4. Inspect radiator for bent fins, kinks, dents, cracked side frames, seams and tubes. Check radiator mounts for loose hardware.

5. Check fan to ensure it has been installed correctly.

6. Inspect fan blades. They must be straight and not striking the radiator core or shroud. Bent blades reduce the efficiency of the fan and make the fan out of balance. An out of balance condition can add additional load to fan support and bearing.

7. Inspect fan belt and belt tensioner. Belt must not be too tight, too loose, or cracked. Check to see if belt pulleys are worn excessively (if belts run against bore of groove) and that the pulleys are in proper alignment. Tensioner must turn freely and smoothly. Tensioner must hold constant pressure on belt.

   A belt which is too tight puts extra load on the bearings and shortens the life of the bearings as well as the belts. A belt which is too loose allows slippage and reduces fan and alternator speed, causes excess belt wear. Belt slippage can lead to overheating of the cooling and/or hydraulic system, and undercharged batteries.

   The condition of the belts and their tension must be checked periodically.

8. Inspect fuel tank:

   a. Inspect the tank mounting hardware to ensure they are in position and tight.

   b. Inspect fuel tank for cracks and leakage.

   c. Inspect fuel tank outlet strainer and water trap for accumulated debris by shining a flashlight through the filler neck toward bottom right corner of fuel tank.

9. Inspect fuel transfer pump. See if there is fuel leaking from inlet and outlet connections.

10. Inspect fuel filter for water in base of filter. Look for fuel leaking from inlet and outlet connections.

    Check for debris and air in filters. Drain or bleed filters if necessary. See Bleed the Fuel System in CTM207. Replace filters as required.

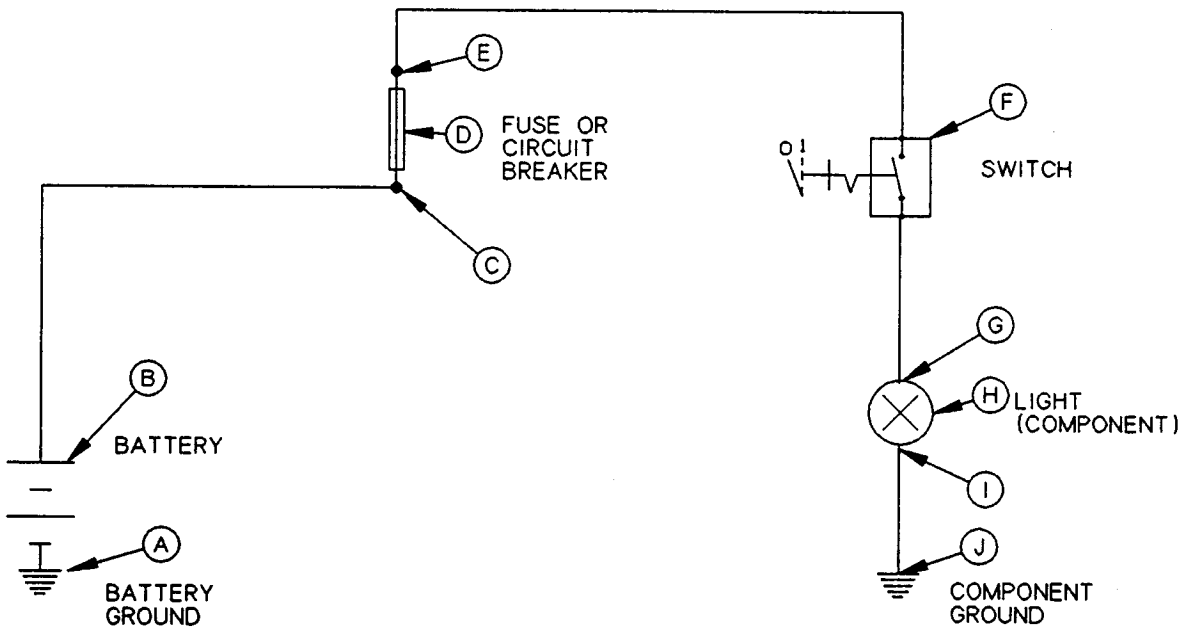
    CAUTION: Escaping fluid under pressure can penetrate the skin causing serious injury. Relieve pressure before disconnecting hydraulic or other lines. Tighten all connections before applying pressure. Keep hands and body away from pinholes and nozzles which eject fluids under high pressure. Use a piece of cardboard or paper to search for leaks. DO NOT use your hand.

    If ANY fluid is injected into the skin, it must be surgically removed within a few hours by a doctor familiar with this type injury or gangrene may result.

11. Inspect injection pump and nozzles.

Continued on next page

Seven Step Electrical Test Procedure



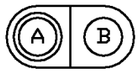
T7719AA –19–05MAR92

A—Battery Ground
B—Battery
C—Battery Side Of Fuse Or Circuit Breaker
D—Fuse Or Circuit Breaker
E—Component Side Of Fuse Or Circuit Breaker
F—Switch
G—Battery Side Of Component Terminal
H—Light (Component)
I—Ground Side Of Component Terminal
J—Component Ground

Step 1—Switch ON	
Check battery side of circuit breaker (C) for battery voltage	Battery voltage normal. Go to Step 2.
	Low voltage, repair high resistance.
	Open circuit from battery.
Step 2—Switch OFF	
Check component side of circuit breaker for battery voltage	Battery voltage normal. Go to Step 4.
	Low voltage, repair high resistance.
	No voltage. Go to Step 3.

Continued on next page

TX,9015,QQ6290 –19–01MAY95–1/2



V12
SPEED SOLENOID (1)
DIODE
(POWER SHIFT)

	T17	BLU
	G01	BLK

V13
SPEED SOLENOID (2)
DIODE
(POWER SHIFT)

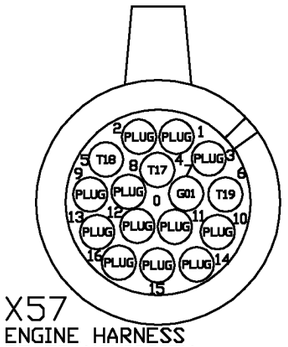
	T18	BLU
	G01	BLK

V14
SPEED SOLENOID (3)
DIODE
(POWER SHIFT)

	T19	BLU
	G01	BLK

V18
LOW RANGE SOLENOID
DIODE
(POWER SHIFT)

	T16	BLU
	G01	BLK



X57
ENGINE HARNESS
TO TRANSMISSION
SPEED CONTROL
VALVE CONNECTOR
(POWER SHIFT)

1	PLUG	
2	PLUG	
3	PLUG	
4	T17	BLU
5	T18	BLU
6	T19	BLU
7	G01	BLK
8	PLUG	
9	PLUG	
10	PLUG	
11	PLUG	
12	PLUG	
13	PLUG	
14	PLUG	
15	PLUG	
16	PLUG	

TRANSMISSION SPEED
CONTROL VALVE
(POWER SHIFT) CONTAINS
THE FOLLOWING SOLENOIDS

Y12
SPEED SOLENOID (1)

	T17	BLU
	G01	BLK

Y13
SPEED SOLENOID (2)

	T18	BLU
	G01	BLK

Y14
SPEED SOLENOID (3)

	T19	BLU
	G01	BLK

T126770

CONNECTORS FOR ENGINE HARNESS

T126770 –19–20DEC99

CED,TX17864,114 –19–19JAN00–4/4

9015
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37

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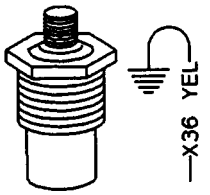
Sub-System Diagnostics/Indicator Circuit

TX,9015,QQ6335 –19–06JUN96–1/1

Indicator Circuit Diagnostic Procedures

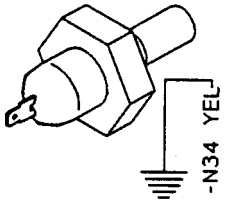
This circuit is powered by the monitor fuse, and hazard/monitor fuse.

– – –1/1

Engine Coolant Temperature Indicator Switch	 T7199CG –19–16AUG90	Disconnect X36 yellow wire from switch and ground to frame. Without starting engine, turn key switch to BULB CHECK, then release to ON. Is engine coolant indicator light on?	**YES:** Replace switch. **NO:** Switch is good. Go to next check.

9015 15 31

– – –1/1

Engine Oil Pressure Switch	 T7199DZ –19–26SEP90	Disconnect N34 yellow wire from switch and ground to frame. Without starting engine, turn key switch to BULB CHECK, then release to ON. Is engine oil pressure indicator light on?	**YES:** Replace switch. **NO:** Switch is good. Go to next check.

– – –1/1

Engine Alternator Indicator Circuit	Disconnect M39 purple wire from terminal (W) of alternator and apply 6 volts to M39 purple wire. Without starting engine, turn key switch to BULB CHECK, then release to ON. Is alternator indicator light off? Remove voltage from M39 purple wire. Is alternator indicator light on?	**YES:** Circuit is good. Repair or replace alternator. **NO:** Go to next check.

– – –1/1

Battery Operation

A battery is a device for converting chemical energy to electrical energy. It is not a storage tank for electricity, but stores electrical energy in chemical form.

Because of the constant chemical to electrical change (self-discharge, discharge, or charge), the battery has a limited life. Proper care (cleaning, adding water, charging) will extend the life of the battery.

The battery is made up of positive plates, negative plates, separators, plate straps, and chemical solution (electrolyte). The electrolyte is a solution of sulfuric acid and water. Sulfuric acid is not lost during overcharging; therefore, if the liquid solution is low, only water should be added.

In a fully charged battery, the positive plate is lead peroxide (PBQ2), the negative plate is "spongy" lead (Pb), and the electrolyte solution is about 1.270 times heavier than water.

Specification

Fully Charged Battery—Specific Gravity 1.270

The amount that the solution is heavier than water is called specific gravity.

All batteries will self discharge at a rate of .001 specific gravity point per 24 hour period at a constant 85°F.

Specification

Battery—Self Discharge Rate ..... .001 specific gravity point per 24 hour period at a constant 85°F

The discharge rate increases as temperature increases and decreases as temperature decreases. If the machine is not used for a period of time, the batteries must be maintained or stored in a cool place.

Wipe batteries with a damp cloth. If terminals are corroded, use a stiff brush and wash with an ammonia solution. After washing, flush battery and compartment with clear water. Keep caps in place when cleaning and charging.

Batteries should be maintained at an open circuit voltage of 12.50 volts or greater.

Specification

Battery—Minimum Open Circuit Voltage ..... 12.50 volts

To determine open circuit voltage do the following:

1. Turn master disconnect switch to ON position.
2. For machines that have not been run during the past ten hours, go to Step 4.
3. For machines that have been run in the past ten hours, remove surface charge. Turn key switch to START, turn on 3 or 4 work lights and leave them on for 3 to 5 minutes. Turn key switch OFF, then wait two minutes. (If machine does not have lights, turn key switch to START position for at least 5 minutes, then turn off.)
4. Measure voltage at alternator by placing the negative lead of a multimeter to case of alternator and the positive lead to the sense terminal of the alternator.

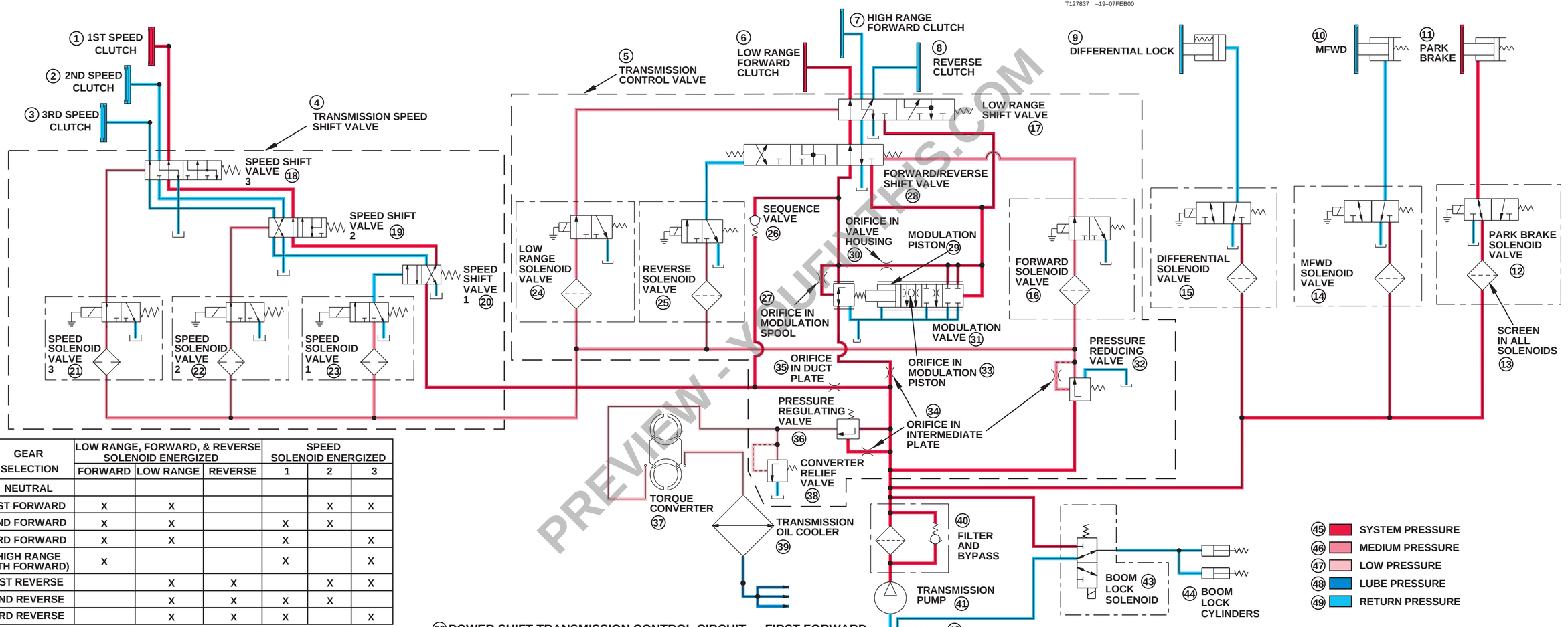
Specification

100% Charged Stabilized Open Circuit—Voltage ..... 12.5 volts or more
75% Charged Stabilized Open Circuit—Voltage 12.4
50% Charged Stabilized Open Circuit—Voltage 12.2
25% Charged Stabilized Open Circuit—Voltage 12.0
0% Charged Stabilized Open Circuit—Voltage ..... 11.7 or less

TX,9015,QQ6347 –19–21MAY96–1/1

Power Shift Transmission Control Circuit—First Forward

T127837 –19–07FEB00



GEAR SELECTION	LOW RANGE, FORWARD, & REVERSE SOLENOID ENERGIZED			SPEED SOLENOID ENERGIZED		
	FORWARD	LOW RANGE	REVERSE	1	2	3
NEUTRAL						
1ST FORWARD	X	X			X	X
2ND FORWARD	X	X		X	X	
3RD FORWARD	X	X		X		X
HIGH RANGE (4TH FORWARD)	X			X		X
1ST REVERSE		X	X		X	X
2ND REVERSE		X	X	X	X	
3RD REVERSE		X	X	X		X

T127837

50 POWER SHIFT TRANSMISSION CONTROL CIRCUIT — FIRST FORWARD

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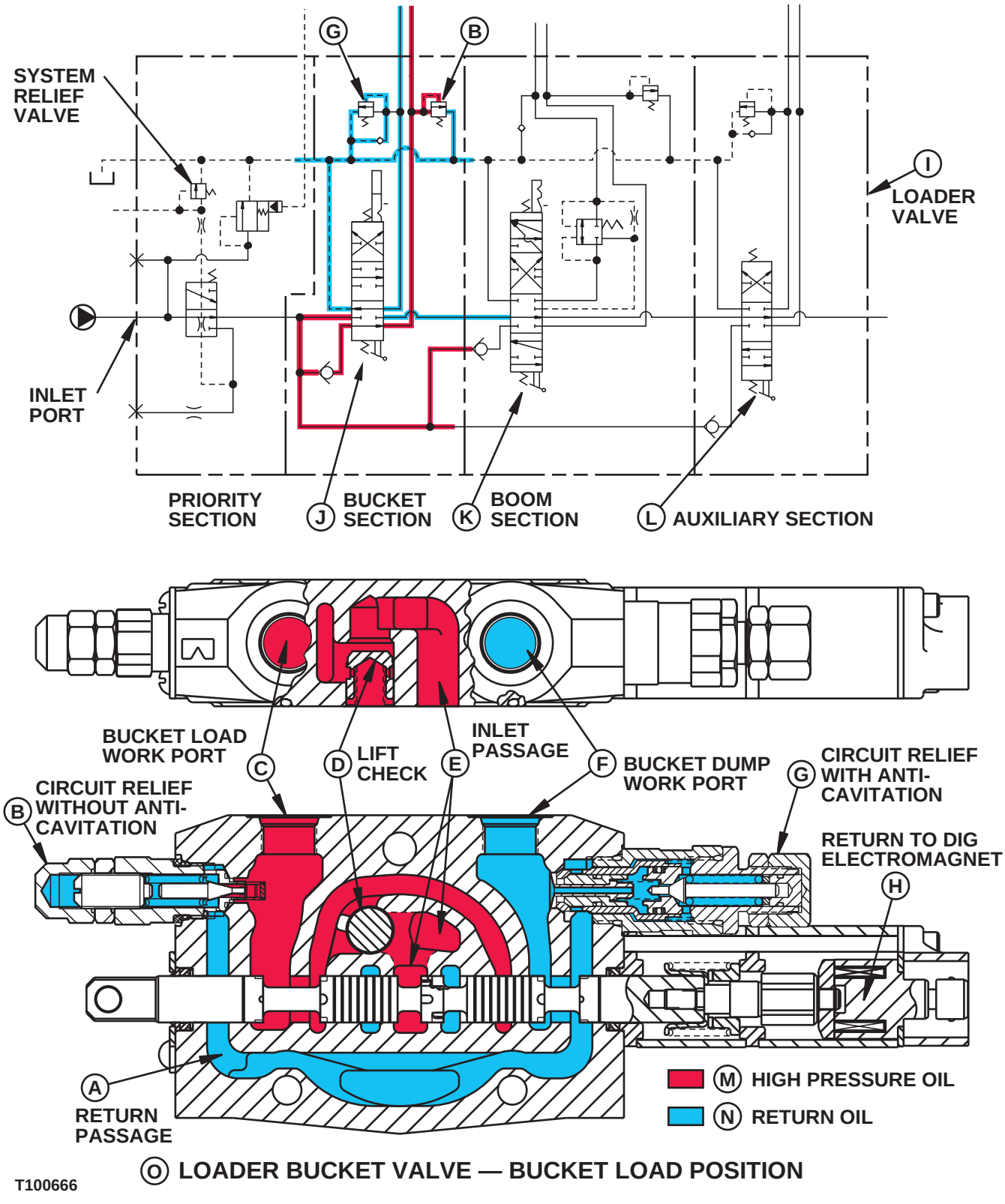
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Symptom	Problem	Solution
	Modulation orifice oversized	Do Modulation Pressure Test. See Group 9020-25. See repair manual, Group 0360.
Transmission Overheats	Oil level too high or too low	Check oil level and correct. See Group 9000-04.
	Incorrect type of oil	Drain and replace oil. See Group 9000-04.
	Temperature sensor malfunction	Check sensor, see Group 9015-15.
	Clutch pack dragging, worn disks	Repair transmission. See Group 0350.
	Torque converter malfunction	Do Torque Converter Stall Speed Test. See Group 9020-25. See repair manual, Group 0350.
	Torque converter stalled excessively	Use neutral disconnect switch in machine operations to reduce stall.
	Operating in too high a gear	Operate one gear lower.
	Oil cooler air flow restricted	Inspect and clean exterior of cooler. Do Air Flow Test. See Group 9010-25.
	Missing baffles, damaged fan shrouds or loose fan belt	Inspect and check belt. See Group 9010-20. Check baffles and repair. See repair manual, Group 0510.
	Oil cooler restricted internally	Do Cooler In and Out Pressure Test. See Group 9020-25. Flush Cooling System. See CTM104.
	Converter flow blocked by pump stop sleeve.	Do Converter In/Out Pressure Test. See Group 9020-25
	Oil flow to or from cooler restricted	Do Cooler-In/Out Pressure Test. See Group 9020-25.
	Converter-In relief valve stuck open or broken spring	Do Converter-In Relief Valve Test in Group 9020-25. Remove valve, inspect and repair. See repair manual, Group 0350.

9020
15
17

Continued on next page

Loader Bucket Valve Section—Bucket Rollback Position



T100666 –19–03NOV97

Loader Bucket Valve-Bucket Rollback Position

Continued on next page

TX,9025,RR7294 –19–10JUN96–1/2

Backhoe Valve Linkage Adjustment

SPECIFICATIONS	
Backhoe Lever Knob Edge-to-Masking Tape Distance	140 mm (5.5 in.)
Backhoe Lever Knob-to-Knob Distance	250 mm (10.25 in.)

NOTE: Levers must be positioned correctly to allow full travel and proper operation of backhoe valves. Cab and other components have been removed in some photographs for clarity.

1. Put backhoe valve spools in neutral position.
2. Put a piece of masking tape across the rear ROPS posts on inside surface at backhoe lever knob height.

TX,9025,RR7310 –19–10JUN96–1/2

3. Measure from edge of knobs to tape. Distance (B) should be 140 mm (5.5 in.).

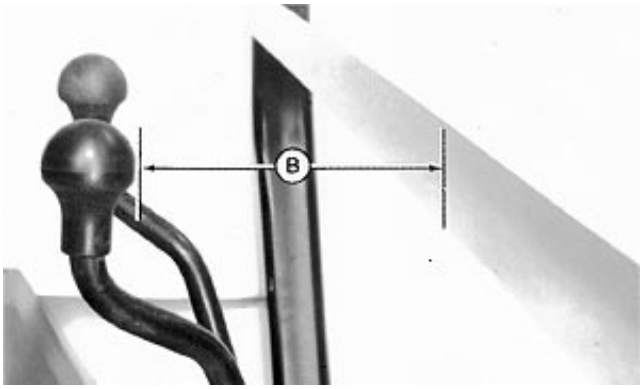
Specification

Backhoe Lever Knob Edge-to-Masking Tape—Distance..... 140 mm (5.5 in.)

Knobs should be 250 mm (10.25 in.) apart.

Specification

Backhoe Lever Knob-to-Knob—Distance..... 250 mm (10.25 in.)



T7407AJ –UN–30OCT90

TX,9025,RR7310 –19–10JUN96–2/2

The expansion valve diaphragm is activated by sensing temperature and pressure within the valve body. The internal bulb senses the evaporator outlet or discharge temperature and pressure of refrigerant as it passes through the valve back to the low pressure or suction side of the compressor. (See Expansion Valve Operation in this group for additional information on theory of operation.)

If too much refrigerant is flowing into evaporator, the liquid refrigerant will still be evaporating as it leaves the evaporator, causing a low temperature at the evaporator outlet. The low temperature causes the expansion valve variable orifice to decrease in size, restricting refrigerant flow. If the evaporator outlet temperature is too warm, the orifice will increase in size, allowing more refrigerant into evaporator.

If evaporator (K) temperature becomes too low, the A/C freeze switch (M) will interrupt current flow to the compressor clutch coil, stopping system operation until the temperature becomes normal, between 31° and 40°.

TX,9031,QQ6359 –19–02FEB00–2/2

Air Conditioning Circuit Operational Information

The following conditions must exist for air conditioning circuit to function:

- Key switch ON
- Machine running
- Air conditioning switch turned ON.
- Blower switch turned to position 1, 2, 3 or 4.

TX,9031,QQ6465 –19–07OCT96–1/1

9031
05
3

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