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Group 01 - Safety Information

Handle Fluids Safely-Avoid Fires



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.

Prevent Battery Explosions



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).

Prepare for Emergencies

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→NOTE:

Specifications and design subject to change without notice. Wherever applicable, specifications are in accordance with ICED and SAE standards. Except where otherwise noted, specifications are based on a machine equipped with all standard, 17.5-25, 12 PR, L2 tires, one rear counterweight, ROPS cab, full fuel tank, and 79 kg (175 lb) operator.

544E Engine Specifications

Engine:	
John Deere 6059T	86 kW (115 hp)
Bore and stroke	106.5 x 110 mm (4.19 x 4.33 in.)
Piston displacement	5.884 L (359 cu in.)
Lubrication	Pressure system with full-flow filter
Cooling	Pressurized with thermostat, controlled bypass, and coolant recovery bottle
Fan	Blower
Aspirated dual-stage air cleaner with restriction indicator	Dry
Electrical system	12-volt with alternator
Batteries (one or two 12-volt)	
Cold cranking capacity at -18°C (0°F)	625 amps
Reserve capacity	160 min. ea.
Alternator: standard with canopy Alternator: standard with cab Alternator: optional with cab	65 amps 90 amps 130 amps
Torque Converter	Single phase, single stage
Transmission	Countershaft power shift

544E Travel Speeds

Travel Speeds:		
Forward Speeds:	**km/h**	**mph**
1	0-7.2	0-4.5
2	0-12.2	0-7.6
3	0-27.7	0-17.2
4	0-39.5	0-24.6

Reverse Speeds:	**km/h**	**mph**
1	0-7.2	0-4.5
2	0-12.2	0-7.6
3	0-27.7	0-17.2

544E Differentials

Differentials:	
Front and rear	Standard
Front hydraulic differential lock with capture circuit	Optional
Front no spin	Optional
Rear no spin	Optional

544E Drive Axles

Drive Axles:
Inboard-mounted planetary gears to each wheel
Front axle fixed
Rear axle oscillates 22° total

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544E Brakes And Service

Brakes, Service:
Power-actuated, 4-wheel, inboard-mounted, wet disk
Foot-operated, by either pedal
Left pedal also disconnects transmission (if selected by operator)
External inspection
Low brake pressure warning light and buzzer in monitor

Brakes, Park:
Expanding shoe on transmission output shaft, foot-operated
Transmission disconnects with park brake applied
Warning light in monitor-Dual-level
Amber lights with transmission in neutral Red lights, and buzzer sounds with transmission in gear

544E Steering

Steering:	
Turning radius (to centerline of outside tire)	4.95 m (16 ft 3 in.)

544E Tires

Tires
14.0-24, 10 PR, G2
15.5R-25, 1 STAR, L2 Equivalent
15.5-25, 12 PR L2
17.5-25, 12 PR, L2
17.5-25, 12 PR, L3
17.5R-25, 1 STAR, L2 Equivalent
20.5-25, 12 PR, L2
20.5-25, 12 PR, L3
23.1-26, 10 PR, LS-2
28 L-26, 14 PR, LS-2

544E Wheel Treads

Wheel Treads:	
Front and rear	1.94 m (76.4 in.)
Front and rear w/20.5-25 tires	1.90 m (74.8 in.)

544E Lift Capacity

Maximum Lift Capacity With Standard Equipment	
Maximum height	5 302 kg (11,691 lb)
Ground level	10 757 kg (23,719 lb)

544E Drain And Refill Capacities

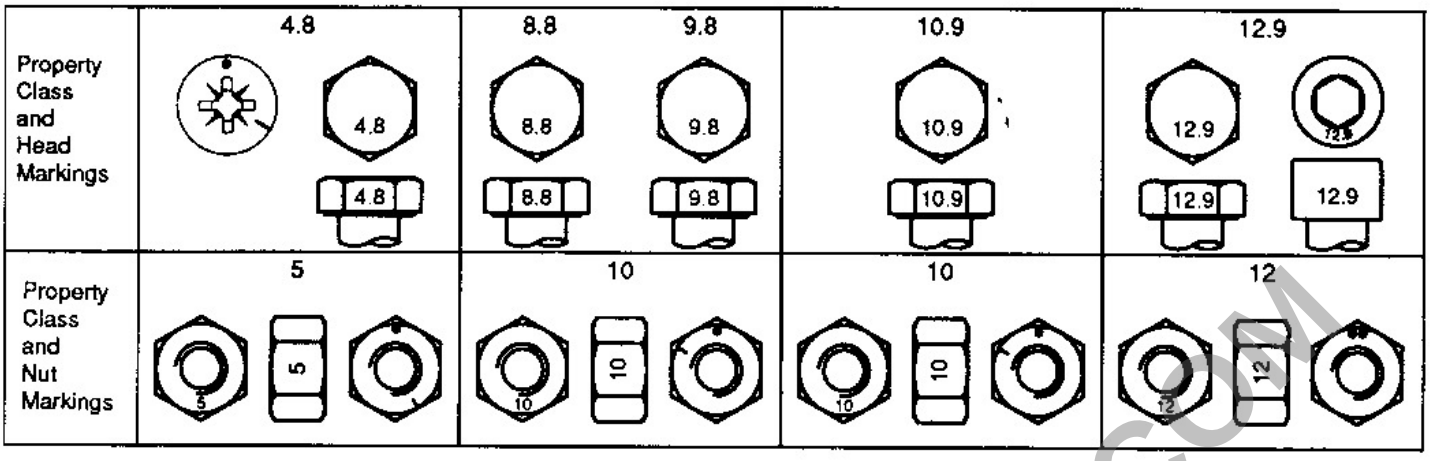
Drain And Refill Capacities

	Metric	**U.S.**
Cooling system	23.5 L	25 qt
Fuel tank	208 L	55 qt
Engine crankcase and filter	19 L	20 qt
Transmission case and filter	9.5 L	10 qt
Front differential	16 L	17 qt

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Metric Bolt and Cap Screw Torque Values



Size	Class 4.8				Class 8.8 or 9.8				Class 10.9				Class 12.9			
	Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]		Lubricated[a]		Dry[a]	
	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft	N·m	lb-ft
M6	4.8	3.5	6	4.5	9	6.5	11	8.5	13	9.5	17	12	15	11.5	19	14.5
M8	12	8.5	15	11	22	16	28	20	32	24	40	30	37	28	47	35
M10	23	17	29	21	43	32	55	40	63	47	80	60	75	55	95	70
M12	40	29	50	37	75	55	95	70	110	80	140	105	130	95	165	120
M14	63	47	80	60	120	88	150	110	175	130	225	165	205	150	260	190
M16	100	73	125	92	190	140	240	175	275	200	350	255	320	240	400	300
M18	135	100	175	125	260	195	330	250	375	275	475	350	440	325	560	410
M20	190	140	240	180	375	275	475	350	530	400	675	500	625	460	800	580
M22	260	190	330	250	510	375	650	475	725	540	925	675	850	625	1075	800
M24	330	250	425	310	650	475	825	600	925	675	1150	850	1075	800	1350	1000
M27	490	360	625	450	950	700	1200	875	1350	1000	1700	1250	1600	1150	2000	1500
M30	675	490	850	625	1300	950	1650	1200	1850	1350	2300	1700	2150	1600	2700	2000
M33	900	675	1150	850	1750	1300	2200	1650	2500	1850	3150	2350	2900	2150	3700	2750
M36	1150	850	1450	1075	2250	1650	2850	2100	3200	2350	4050	3000	3750	2750	4750	3500

DO NOT use these values if a different torque value or tightening procedure is given for a specific application. Torque values listed are for general use only. Check tightness of fasteners periodically.

Shear bolts are designed to fail under predetermined loads. Always replace shear bolts with identical property class.

Fasteners should be replaced with the same or higher property class. If higher property class fasteners are used, these should only be tightened to the strength of the original.

[a] *"Lubricated" means coated with a lubricant such as engine oil, or fasteners with phosphate and oil coatings. "Dry" means plain or zinc plated without any lubrication.*

Make sure fasteners threads are clean and that you properly start thread engagement. This will prevent them from failing when tightening.

Tighten plastic insert or crimped steel-type lock nuts to approximately 50 percent of the dry torque shown in the chart, applied to the nut, not to the bolt head. Tighten toothed or serrated-type lock nuts to the full torque value.

Metric Torque Values

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Complete Machine Operational Checkout

This procedure is designed so technician can make a quick check of the operation of machine while sitting in operator's seat.

A location will be required which is level, has adequate space to complete the driving checks and to work the unit.

The engine and all other major components must be at operating temperature for some checks.

Complete the necessary visual checks (oil levels, oil condition, external leaks, loose hardware, loose linkage, etc.) prior to doing the checkout.

No special tools or gauges are needed. Always start in the left column and read completely, following this sequence from left to right. Read each check completely before performing.

At the end of each check, if no problem is found (OK:), you will be instructed to go to next check. If problem is indicated (NOT OK:), you will be given repair required and group location or CTM number. If verification is needed, you will be given next best source of information:

Group 10 (System Operational Checks)

Group 15 (Diagnostic Information)

Group 20 (Adjustments)

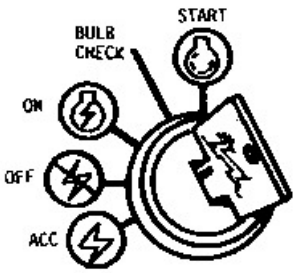
Group 25 (Tests)

CTM (Component Technical Manual)

Monitor Indicator And Gauge Checks-Engine Off

(1) Key Switch Check

Action:



Key Switch

Turn key switch to ACC.

sss:

Accessory relay must click.

sss:

Fuel gauge must indicate fuel level.

Turn key switch to ON.

sss:

Accessory relay must click.

sss:

Fuel gauge must indicate fuel level.

Turn key switch to BULB CHECK.

→NOTE:

Turning key past BULB CHECK will engage starter.

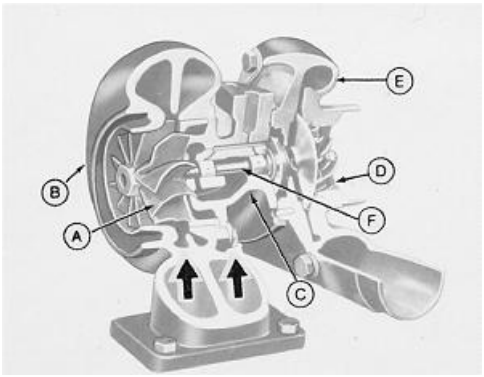
sss:

All monitor lights must come on, STOP light must flash.

sss:

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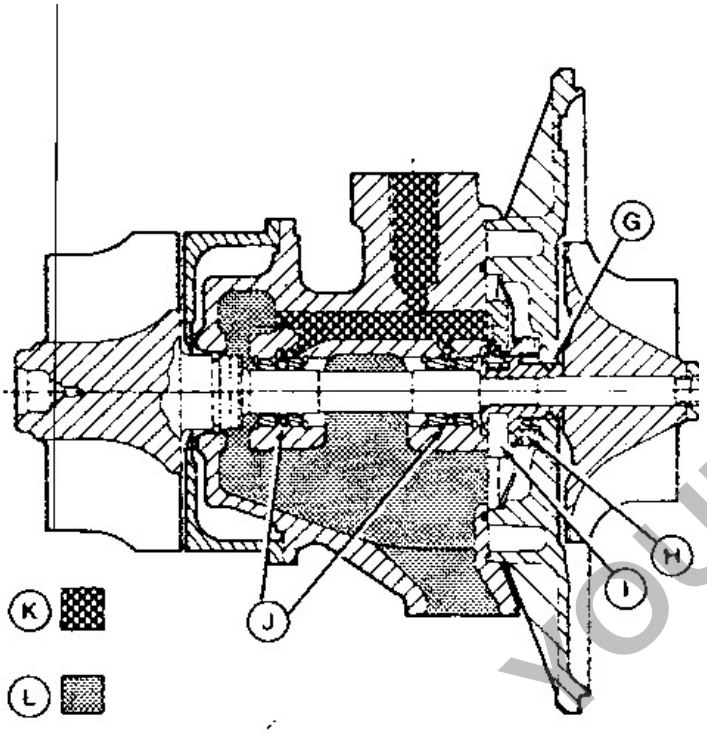
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LEGEND:

A	Turbine Wheel
B	Turbine Housing
C	Center Housing
D	Compressor Wheel
E	Compressor Housing
F	Shaft
G	Piston Ring
H	Thrust Collar
I	Thrust Washer
J	Bearings
K	Pressure Oil
L	Pressure-Free Oil

Turbocharger Cutaway View



Turbocharger Cross Section

The turbocharger provides additional air to burn more fuel and produce more power without increasing the size of the engine. In the thinner air of high altitudes, the turbocharger turbine wheel may turn as fast as 125,000 rpm to maintain power.

Exhaust gasses from the engine pass through the turbine housing (B) causing the shaft (F) to rotate before the exhaust gas is discharged.

The compressor wheel (D) also mounted on shaft (F) rotates in the compressor housing (E). Inlet air is drawn into the housing, where it is compressed and delivered to engine cylinders.

Pressure oil (K) from the engine lubrication system is pumped through passages in the center housing and directed to bearings (J) and thrust washer (I) through passages in the center housing and thrust collar (H). Oil is sealed from the compressor and turbine by a piston ring (G) at both ends of the center housing.

The turbocharger contains two floating bearings that have a clearance between the bearing O.D. and housing wall as well as a clearance between the bearing I.D. and the shaft O.D. These clearances are lubricated by the oil supply and the bearings are protected by a cushion of oil.

The pressure-free oil (L) drains by gravity from the center housing to the engine crankcase.

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Group 15 - Diagnostic Information

Diagnose Engine Malfunctions

→NOTE:

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

- **Step 1. Operational Checkout Procedure (See Group 9005-10.)**
- **Step 2. Engine Operational Checkout Procedure (See Group 9010-10.)**
- **Step 3. Diagnose Malfunctions Charts (See Group 9010-15.)**
- **Step 4. Adjustments and/or Tests (See Group 9010-20 and/or 9010-25.)**

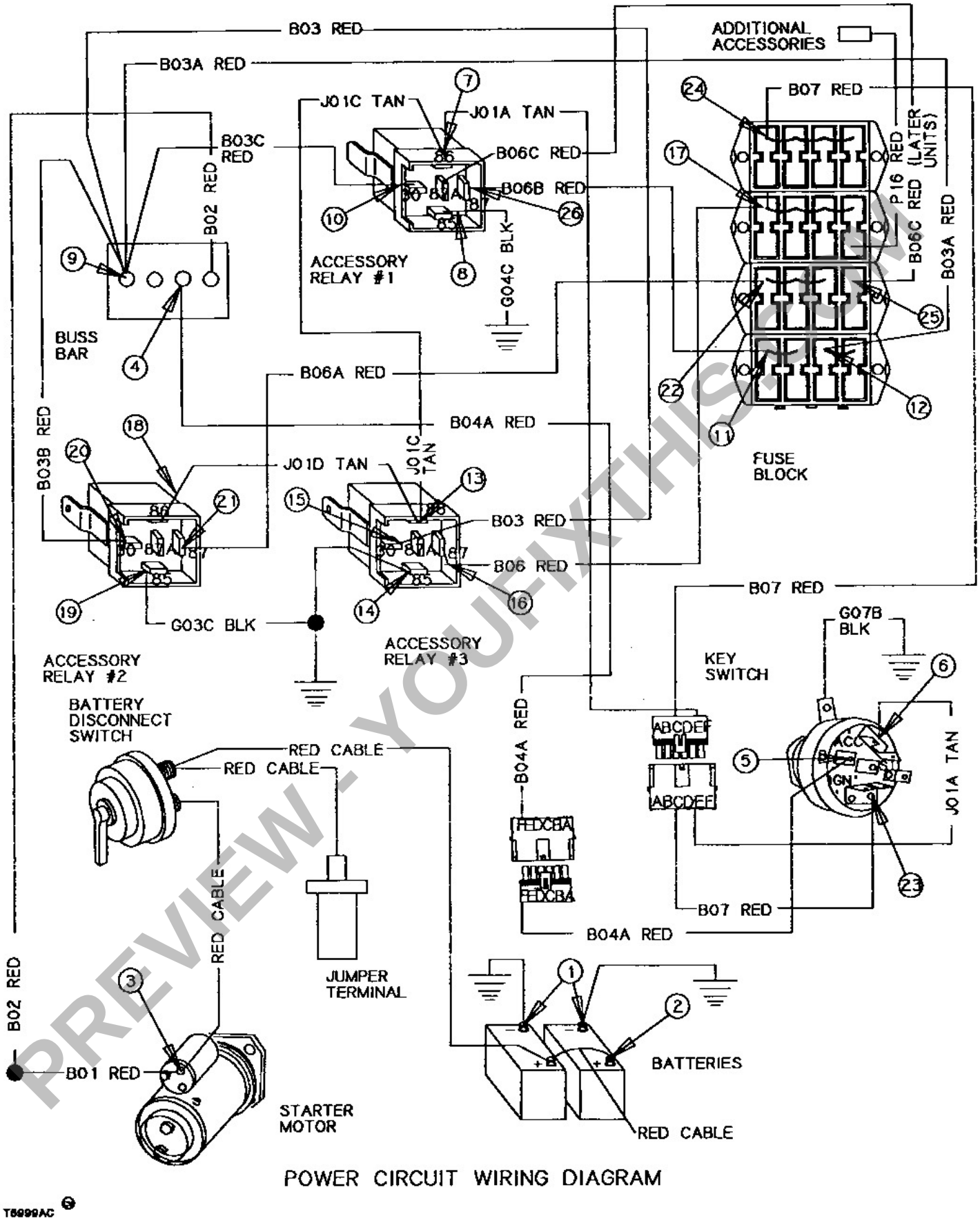
For 544E with 6359, see CTM-4 for engine repair.
For 624E with 6414, see CTM-4 for engine repair.
For 644E with 6076, see CTM-6 for engine repair.

Symptom	Problem	Solution
Engine Will Not Start or Starts Hard	Fuel tank empty	Check fuel quantity.
	Fuel tank cap vent plugged-544E, 624E	Loosen cap and listen for air rushing into tank. Clean or replace hose.
	Water in fuel or water frozen in line	Drain water from fuel tank. Inspect fuel filter(s) for water. Change filter(s).
	Fuel filter(s) plugged	Inspect and replace fuel filter(s).
	Incorrect grade of fuel	Drain fuel tank and add correct fuel.
	Air leak on suction side of fuel system	Check and tighten connection. Check fuel lines for damage.
	Fuel shut-off cable incorrectly adjusted-644E	Push fuel shut-off knob down. Fuel shut-off lever must be against run stop on injection pump.
	Injection pump metering valve sticking-544E, 624E	Lightly tap injection pump housing. If engine now starts, repair metering valve. (See Local Injection Pump Service Center.)
	Faulty electric shut-off-544E, 624E	Test solenoid. (See Group 9015-25.)
	Fuel pump	Check fuel pump pressure. (See Group 9010-25.)
	Slow cranking speed	Check batteries and connections.
	Restricted air filter	Check air filter restriction indicator and air filters.
	Incorrect injection pump timing	Check timing. (See Group 9010-20.)
	Fuel drains from filters with engine stopped due to leakage in check valve-644E	Disconnect filter inlet line from check valve. Inspect for leakage.
	Injection nozzle(s)	Remove and test nozzles. (See CTM-6 or CTM-4.)
	Low compression or blown head gasket	Pull fuel shut-off knob up (644E) or remove injection pump fuse (544E, 624E.) Crank engine and listen for air leaking past valves or an uneven starter speed. Start engine and observe blow-by from vent tube. Do Compression Pressure Test. (See Group 9010-25.)
	Fuel injection pump	Remove and test pump. (See Local Fuel Injection Pump Service Center.)
Engine Surges or Stalls Frequently	Fuel tank cap vent plugged-544E, 624E	Remove fuel cap and listen for air rushing into tank. Replace cap.
	Fuel tank hose vent plugged-644E	Loosen cap and listen for air rushing into tank. Clean or replace hose.
	Fuel shut-off cable incorrectly adjusted-644E	Push fuel shut-off knob down. Fuel shut-off lever on injection pump must be against stop.
	Incorrect grade of fuel	Drain fuel tank and add correct fuel.
	Water in fuel or water frozen in line	Drain water from fuel tank trap. Inspect fuel filter(s) for water. Change filter(s).
	Fuel filter(s) plugged	Replace filter(s).
	Air leak on suction side of fuel system	Check and tighten connections. Check fuel lines for damages.
	Fuel pump	Check fuel pump pressure. (See Group 9010-25.)
	Fuel return line from injection pump to tank restricted	Disconnect fuel return line from injection pump. Connect a hose to pump and route fuel into a container. If engine now operates normally, return hose is restricted.
	Plugged or malfunctioning overflow valve in injection pump-644E	Check for high fuel pressure. Do Fuel Pump Pressure Test. (See Group 9010-25.)
	Restrictor fitting on top fitting in injection pump plugged.	Remove, inspect and clean.

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Power Circuit Wiring Diagram



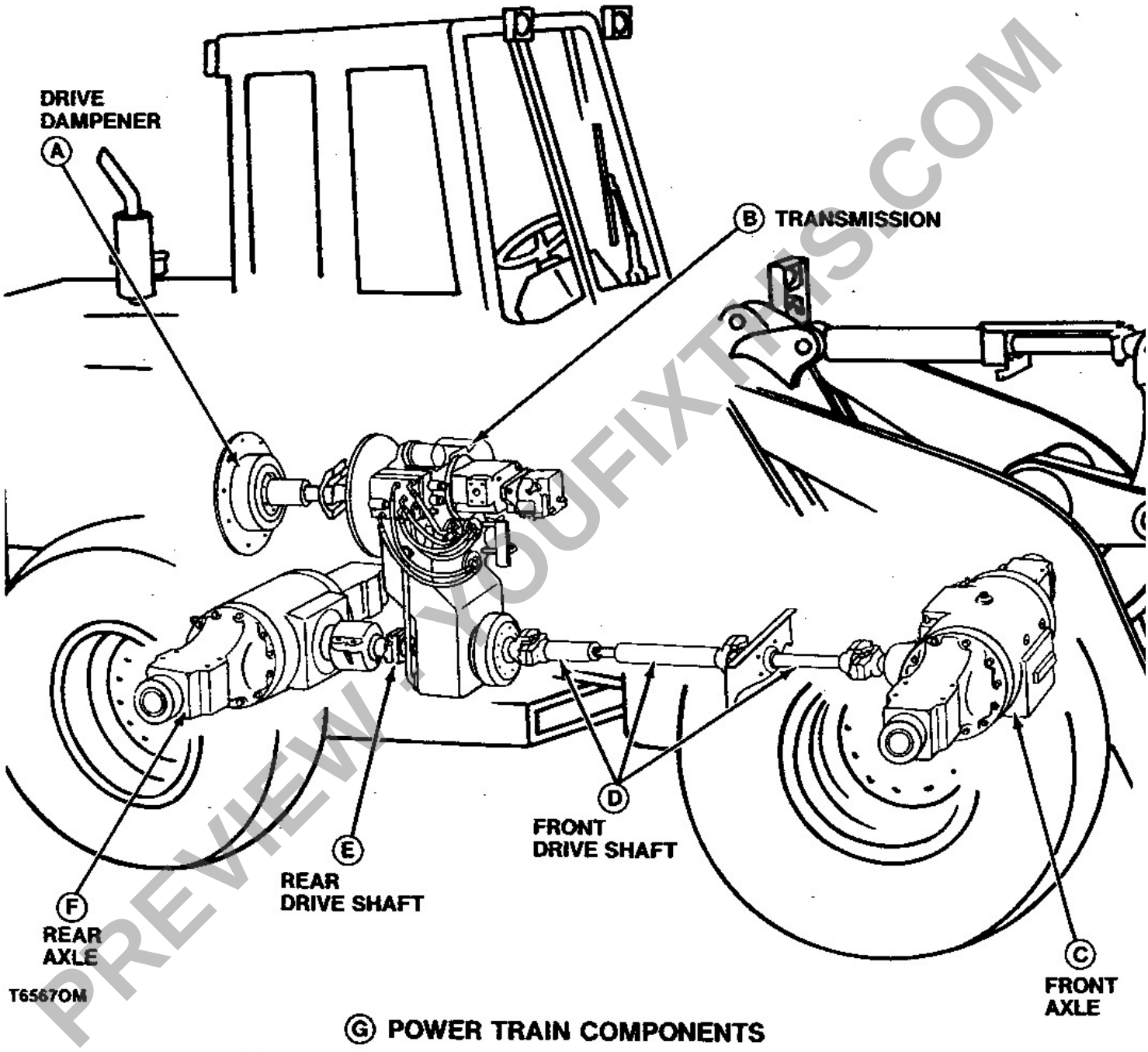
Power Circuit Wiring Diagram

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Group 05 - Theory Of Operation

Power Train Component Overview



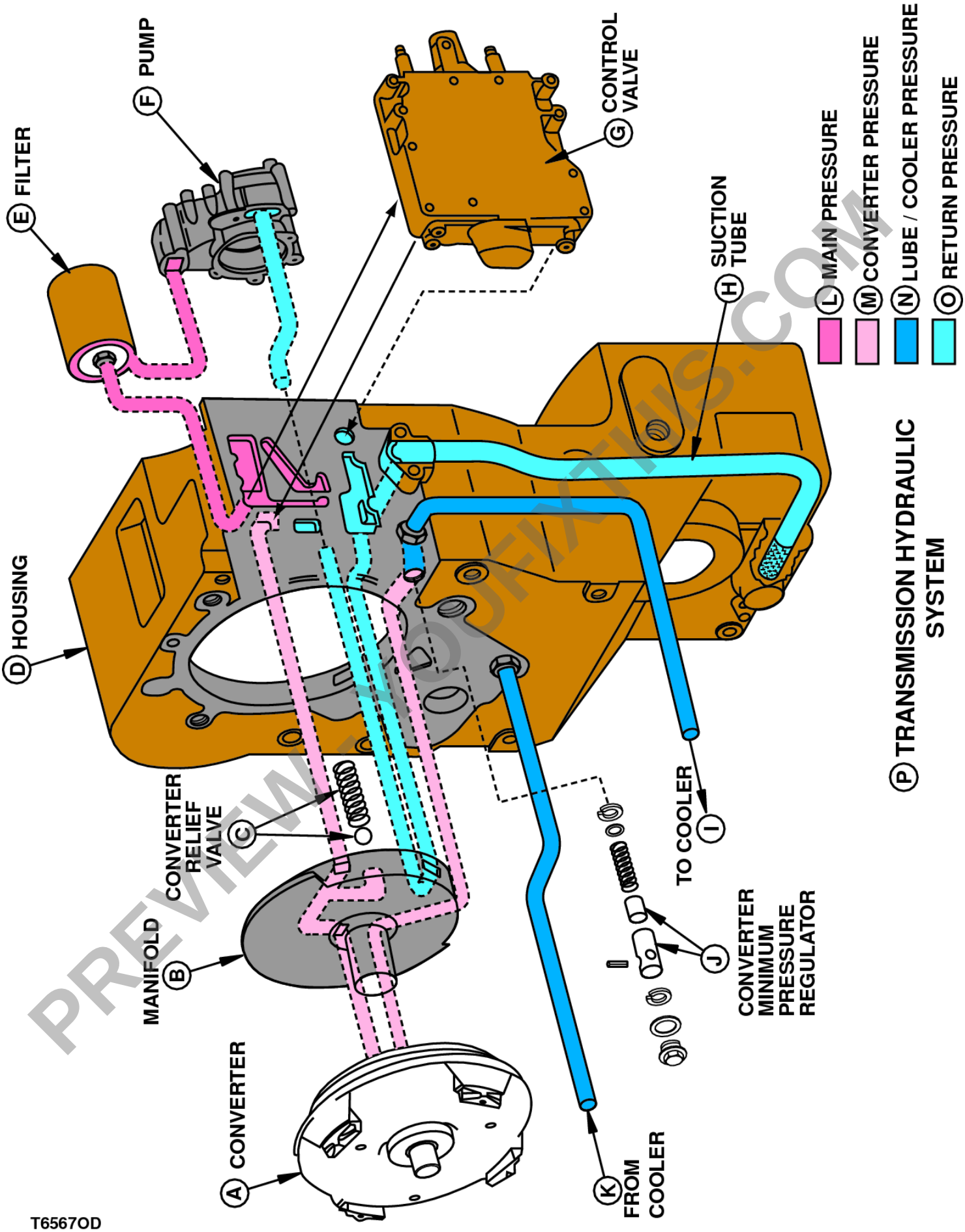
G POWER TRAIN COMPONENTS

Power Train Components

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Transmission Hydraulic System



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Transmission Hydraulic System

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Foreword

This manual is written for an experienced technician. Essential tools required in performing certain service work are identified in this manual and are recommended for use.

Live with safety: Read the safety messages in the introduction of this manual and the cautions presented throughout the text of the manual.


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

Technical manuals are divided in two parts: repair and operation and tests. Repair sections tell how to repair the components. Operation and tests sections help you identify the majority of routine failures quickly.

Information is organized in groups for the various components requiring service instruction. At the beginning of each group are summary listings of all applicable essential tools, service equipment and tools, other materials needed to do the job, service parts kits, specifications, wear tolerances, and torque values.

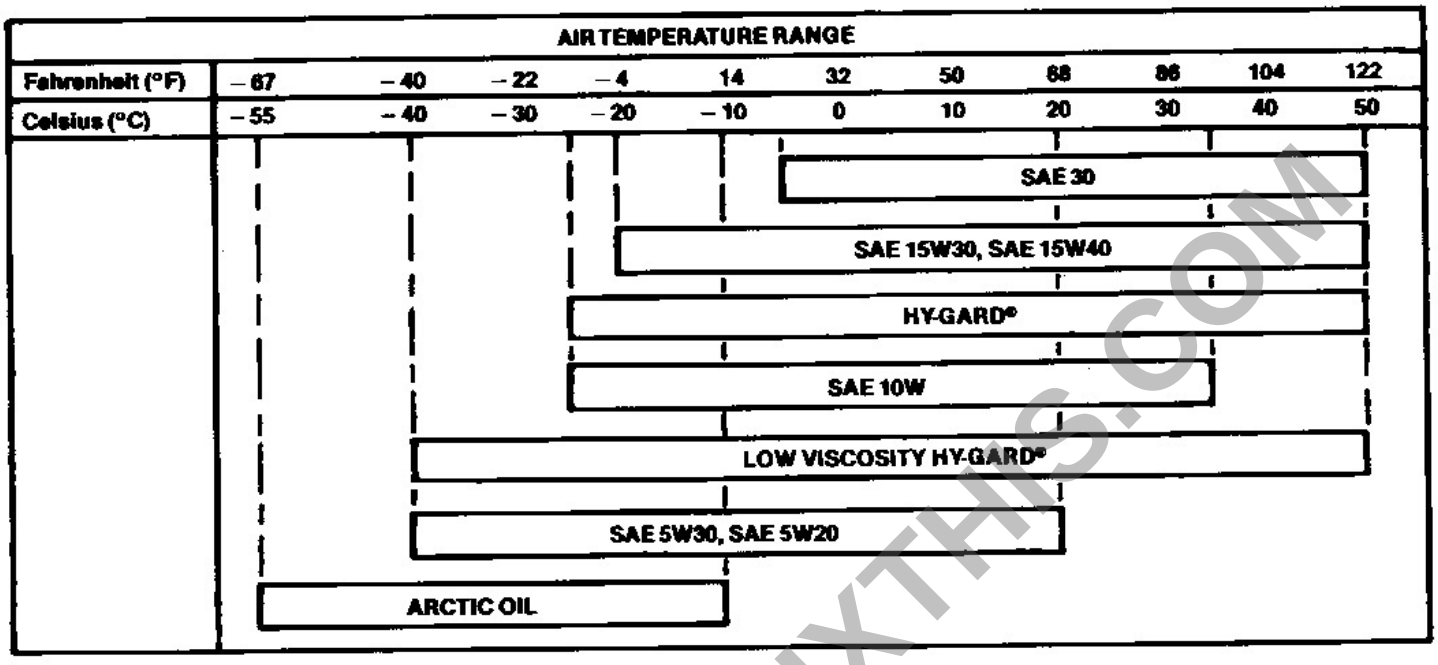
Technical Manuals are concise guides for specific machines. They are on-the-job guides containing only the vital information needed for diagnosis, analysis, testing, and repair.

Fundamental service information is available from other sources covering basic theory of operation, fundamentals of troubleshooting, general maintenance, and basic type of failures and their causes.

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Transmission Oil



Oil Viscosity By Air Temperature Range

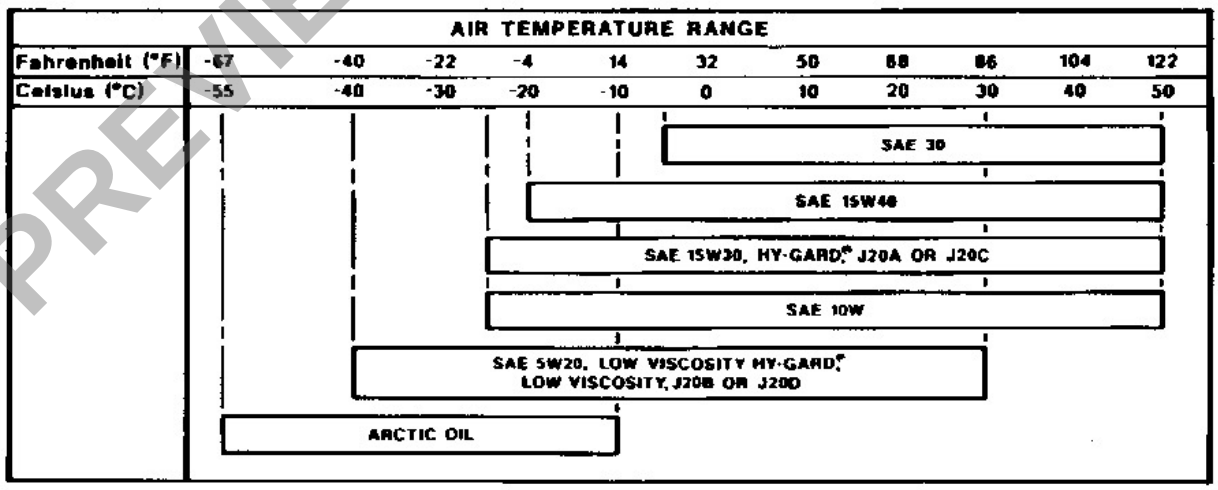
Depending upon the expected air temperature range between oil changes, use viscosity shown on the chart above.

JOHN DEERE HY-GARD ™ TRANSMISSION AND HYDRAULIC OIL IS RECOMMENDED because it is specifically formulated to provide optimum clutch engagement and maximum protection against mechanical wear.

Other oils, including engine oils, may be used if they meet the Allison C-3 specification.

Oil meeting MIL-L-46167A may be used as an arctic oil.

Hydraulic System Oil



Oil Viscosity By Air Temperature Range

→NOTE:

The hydraulic system reservoir also supplies the oil for the steering system and the brake system.

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Repeat with other side.

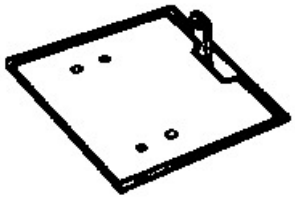
Result:

YES: Go to next check.

NO: Lubricate hinges. Lubricate or repair lock. Repair latch.

(10) Radiator Cap Access Door Check

Action:



Radiator Cap Access Door

Open and close access door on top of grille housing.

sss:

Door must move freely. Locking pin for padlock must not be bent.

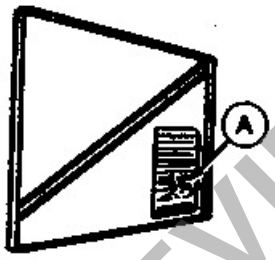
Result:

YES: Operational Checkout completed.

NO: Lubricate hinges. Repair door.

(11) Service Decal Check

Action:



Service Decal Location

Check service decal (A) above left side battery compartment.

sss:

Service decal must be legible.

Result:

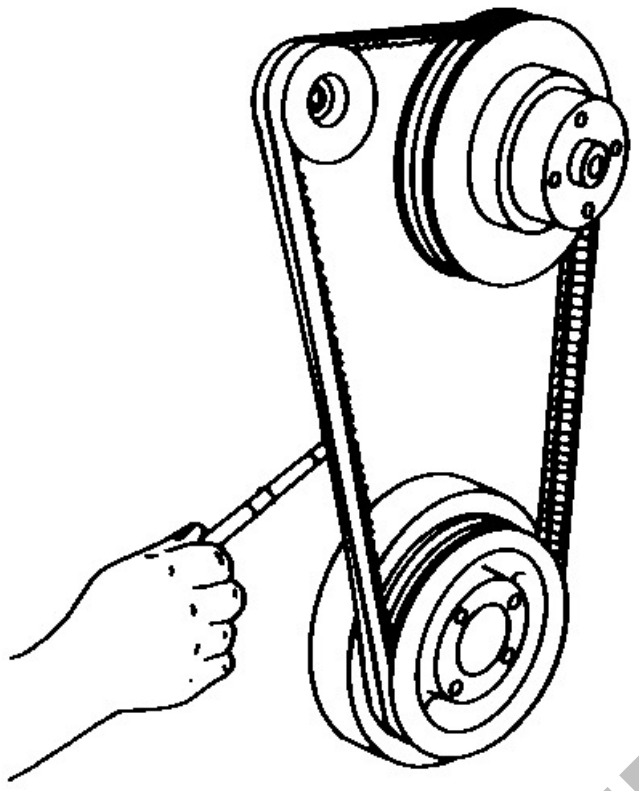
YES: Operational Checkout completed.

NO: Replace service decal.

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Fan Belt Tension Adjustment



Gauge Used To Check Belt Tension

Specifications

SPECIFICATIONS	
544E, 624E Fan Belt Deflection Midway Between Fan and Crankshaft Pulleys	19 mm (0.75 in.) at 67 N (15 lb force)
644E Fan Belt Deflection Midway Between Alternator and Crankshaft Pulleys	19 mm (0.75 in.) at 90 N (20 lb force)

Service Equipment And Tools

SERVICE EQUIPMENT AND TOOLS
Belt Tension Gauge

[1] - Check fan belt tension using a belt tension gauge on belt closest to alternator.

Belt Tension Gauge

Used to check fan belt tension.

[2] -

IMPORTANT:

Apply pressure to alternator front housing only when adjusting belt tension.

Adjust belts to specification if necessary.

Item	Measurement	Specification
544E, 624E Fan Belt	Deflection Midway Between Fan and Crankshaft Pulleys	19 mm (0.75 in.) at 67 N (15 lb force)
644E Fan Belt	Deflection Midway Between Alternator and Crankshaft Pulleys	19 mm (0.75 in.) at 90 N (20 lb force)

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Diagnose Power And Ground Circuit Malfunctions

Symptom	Problem	Solution
No Electrical Accessories Working	Battery cables making poor connections	Clean connections at batteries, starter motor and battery frame ground
	Poor ground for accessory relays	Check ground connection at cab ground (right rear leg)
	Buss bar	Check buss bar connections
	Key switch	Do Key Switch Operational Check .
Following Circuits Not Working-Everything Else OK:	Accessory relay #1	Do Accessory Relay Operational Check .
Defrost, Brake, Turn Light, Boom Down Relay or Hour Meter Relay, Differential Lock	Wiring harness	Check wiring harness. (See Power Circuit Test.)
Following Circuits Not Working-Everything Else OK:	Buss bar	Check buss bar B03 red wire connection.
Work Light (Cab), Module	Wiring harness	Check wiring harness. (See Power Circuit Test.)
Following Circuits Not Working-Everything Else OK:	Accessory relay #2	Do Accessory Relay Operational Check.
Heater, Gauges, Horn, Dome Light.	Wiring harness	Check wiring harness. (See Power Circuit Test.)
Following Circuits Not Working-Everything Else OK:	Accessory relay #3	Do Accessory Relay Operational Check.
Return-to-Dig, Boom Kickout, Boom Float, Wipers, Head Light, Taillight	Wiring harness	Check wiring harness. (See Power Circuit Test.)
Engine Shutoff, Start Aid, Lighter, Monitor, Secondary Steering, Neutral Start, Reverse Alarm	Wiring harness	Check wiring harness. (See Power Circuit Test.)
Several or All Components Connected To One Wiring Harness Do Not Work	Disconnected or corroded ground circuit connection or failure in wiring harness.	Check ground connections. (See Ground Circuit Wiring Diagram.) Check wiring harness. (See Power Circuit Test.)

Power Circuit Operational Checks

(1) Battery State Of Charge

Action:

CAUTION:

Engine may crank during this check.

Remove engine shut-off fuse (544E, 624E).

Pull fuel shut-off knob up (644E).

Pull light switch knob out.

Turn key switch to START.

sss:

Work lights must NOT go out or get very dim while cranking engine.

Result:

YES: Go to rear check.

NO: Clean battery cable terminals. Repeat test.

NO: Test battery.

NO: If battery charge is low, recharge or replace.

NO: If battery is OK but is always low on charge, go to Charging Circuit Operational Checks.

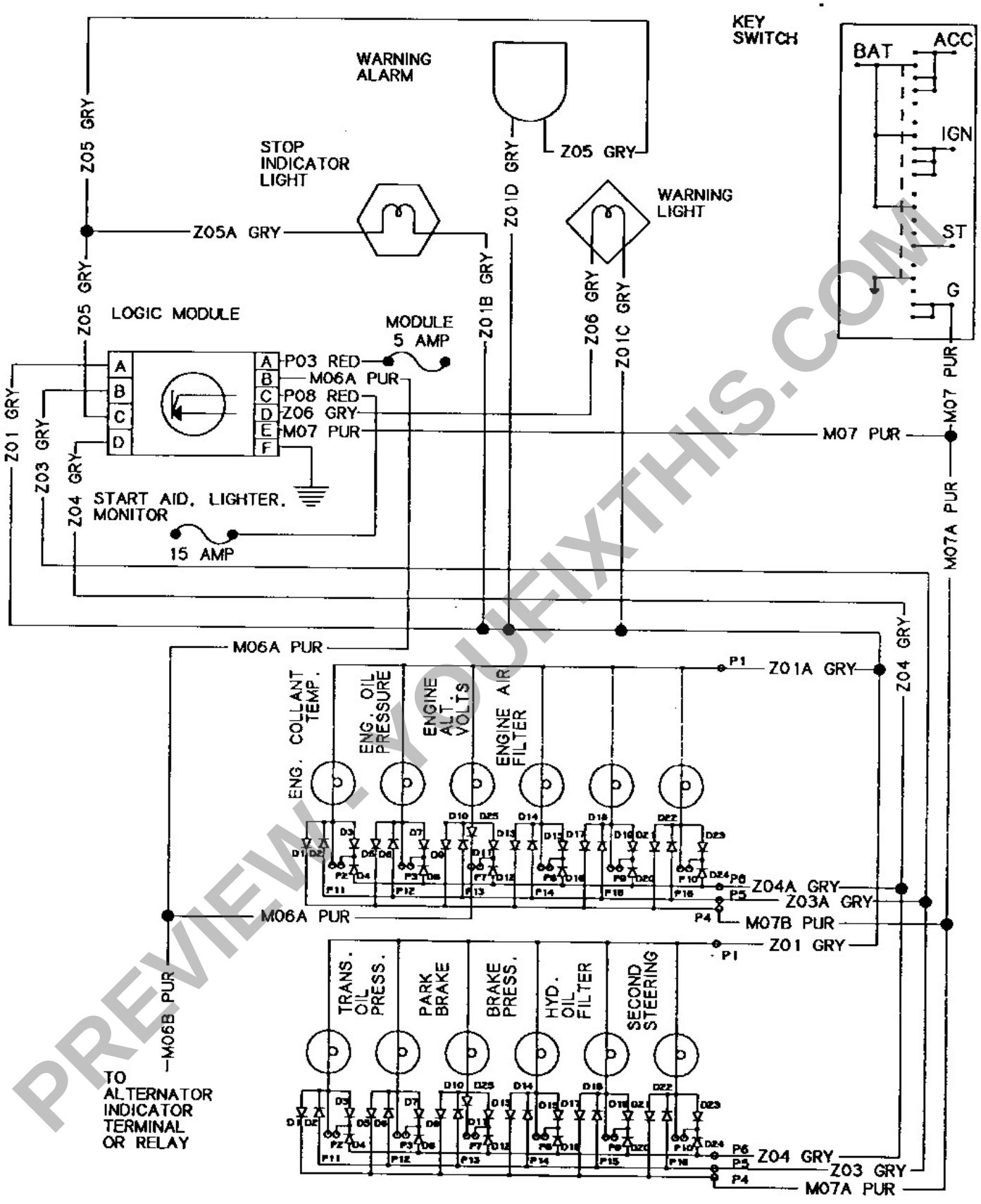
(2) Key Switch

Action:

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Logic Module And Warning Alarm Circuit Operation



T6999BN

LOGIC MODULE AND WARNING ALARM CIRCUIT SCHEMATIC

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Logic Module/Alarm Circuit Schematic

Key Switch Off

Power is supplied to the logic module through the MODULE fuse.

Key Switch ON

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CAUTION:

Unit may steer during this check, reducing clearance between loader and engine frames. Install frame locking bar to prevent personal injury.

Key switch OFF.

Disconnect harness from motor.

Connect battery voltage to rear motor terminal.

Ground front motor terminal (above relay).

sss:

Secondary steering motor must start.

Result:

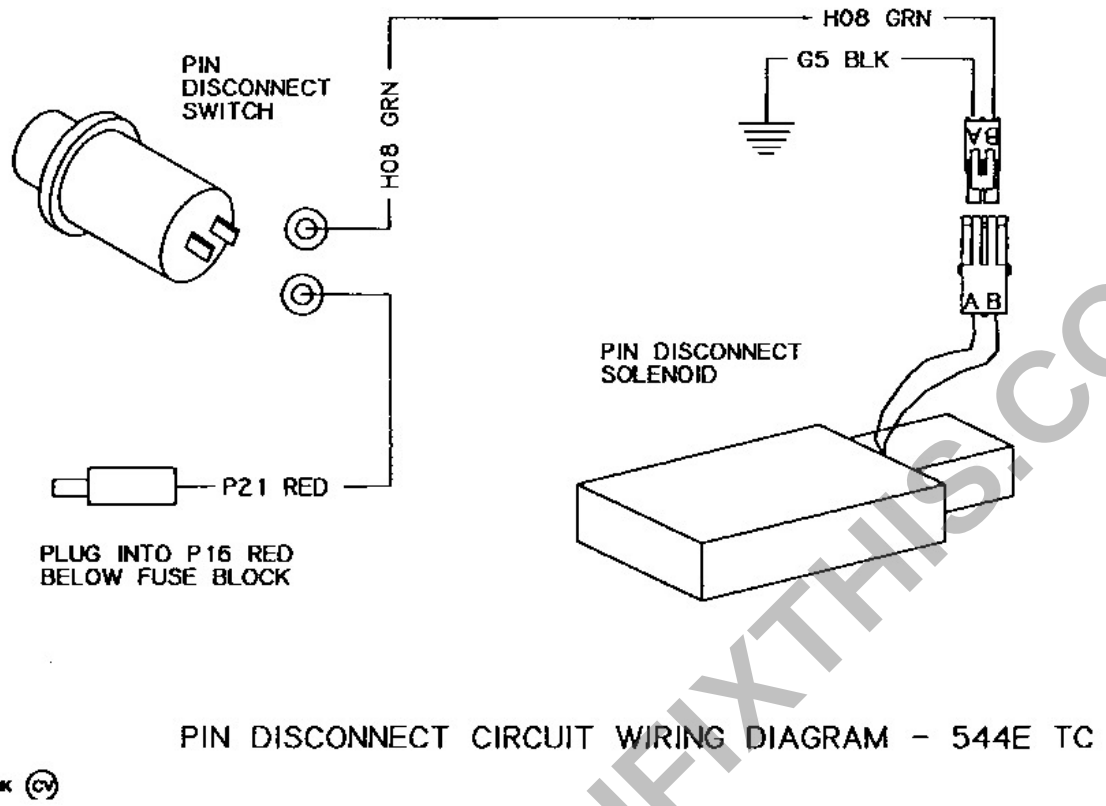
YES: Check wiring harness. Go to Secondary Steering Circuit Test.

NO: If steering motor does not start, replace steering motor.

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Pin Disconnect Circuit Wiring Diagram



PIN DISCONNECT CIRCUIT WIRING DIAGRAM - 544E TC

TRIMBLE (CV)

Pin Disconnect Circuit Wiring Diagram

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shifts to the left, the control land meters the engagement oil supplied to the clutches.

Oil flows through orifice (E) to the shoulder area of the vent valve (F). As clutch pressure begins to increase, the vent valve shifts to the left against its spring. When the vent valve is shifted to the left, it opens a passage, allowing orificed oil flow into the modulation piston (A) chamber. The action of the orifice and the vent valve provide a time delay to allow the oncoming clutch to fill.

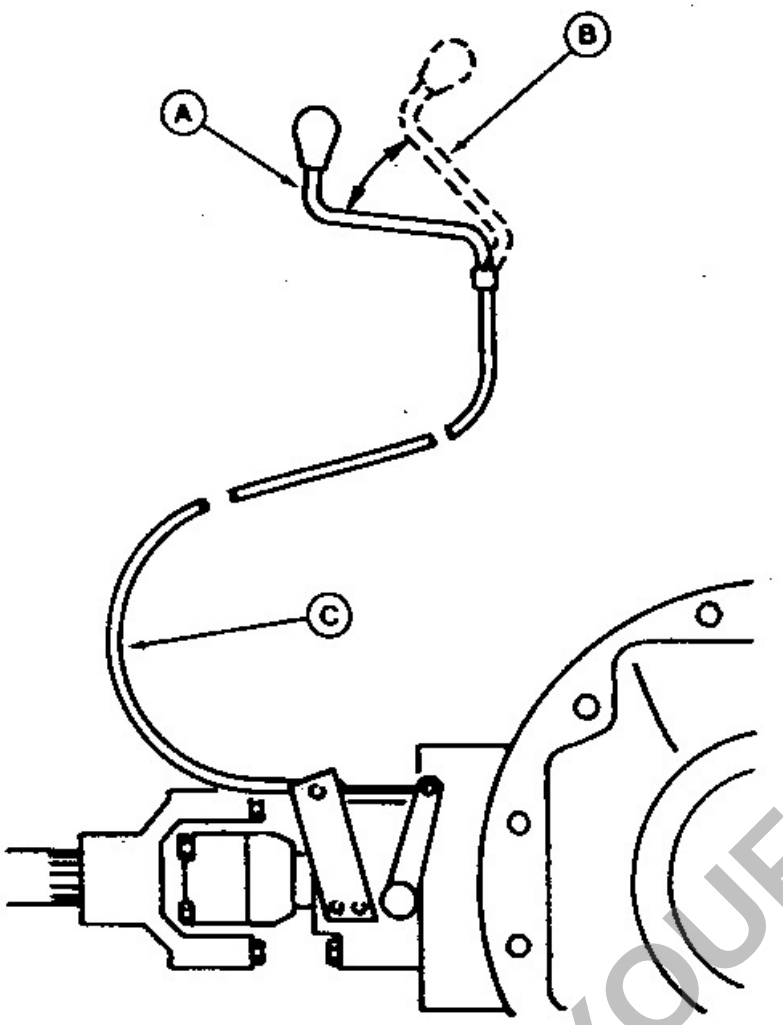
As the modulation piston moves to the right, the modulation valve springs compress, forcing the modulation valve to the right. As the modulation valve moves to the right, more flow is allowed to the engaging clutch. When the clutch becomes fully engaged, the modulation valve will reach its normal position.

The combined action of the orifice, vent valve, and modulation piston and valve control the rate of clutch slippage during a shift.

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Front Axle Disconnect Adjustment



Lever Positions

Adjust cable (C) so that axle disconnect is engaged when lever is in horizontal position (A). Axle disconnect must be disengaged in position (B).

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CAUTION:

Escaping fluid under pressure can penetrate 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 skin, it must be surgically removed within a few hours by a doctor familiar with this type injury or gangrene may result.

If accumulator is to be charged on unit and has some nitrogen pressure left, apply right brake pedal at one second intervals and observe feedback on left pedal. On later units pedal is spring loaded away from brake valve plunger. Reach under pedal to feel feedback on plunger. When feedback stops (after approximately 75 applications), apply left brake pedal until feedback stops on right pedal. Both brake accumulators should be relieved of oil at this time.

→NOTE:

Oil can be heard flowing through brake valve for approximately ten applications. After the hissing noise stops, the accumulator is still pressurized and requires more applications to fully relieve oil pressure.

[2] - Loosen hose fitting at accumulator 1 turn. Move hose from side to side to bleed of any remaining oil pressure. Disconnect hose and install test fittings.

Quick Coupler

A-JT01608 (1/8 x 7/16 M 37°)

Used to connect gauge.

Adapter

B-JT03103 (7/16 M 37° x 11/16 F 37°)

Used to connect gauge.

Adapter

C-JT05687 (-6 F ORFS x 1-1/16 M 37°)

Used to connect gauge.

Tee

D-38H1030 (-6 M ORFS x -6 M ORFS x -6 F ORFS) (Parker No. 6 R6LO-S)

Used to connect gauge.

Gauge 0-34 475 kPa (0-345 bar) (0-5000 psi)

Used to read pressure.

[3] - Heat brake oil to test specifications.

Tachometer/Temperature Gauge

Used to read engine speed and temperature.

Item	Measurement	Specification
Oil	Temperature	65 ± 6°C (150 ± 10°F)

(See Hydraulic Oil Warm-Up Procedure in this group.)

[4] - Run engine until pressure exceeds precharge test specifications on pressure gauge.

Item	Measurement	Specification
Brake Accumulator	Precharge Pressure	3448 kPa (34.5 bar) (500 psi)

Stop engine.

Item	Measurement	Specification
Engine	Speed	0 rpm

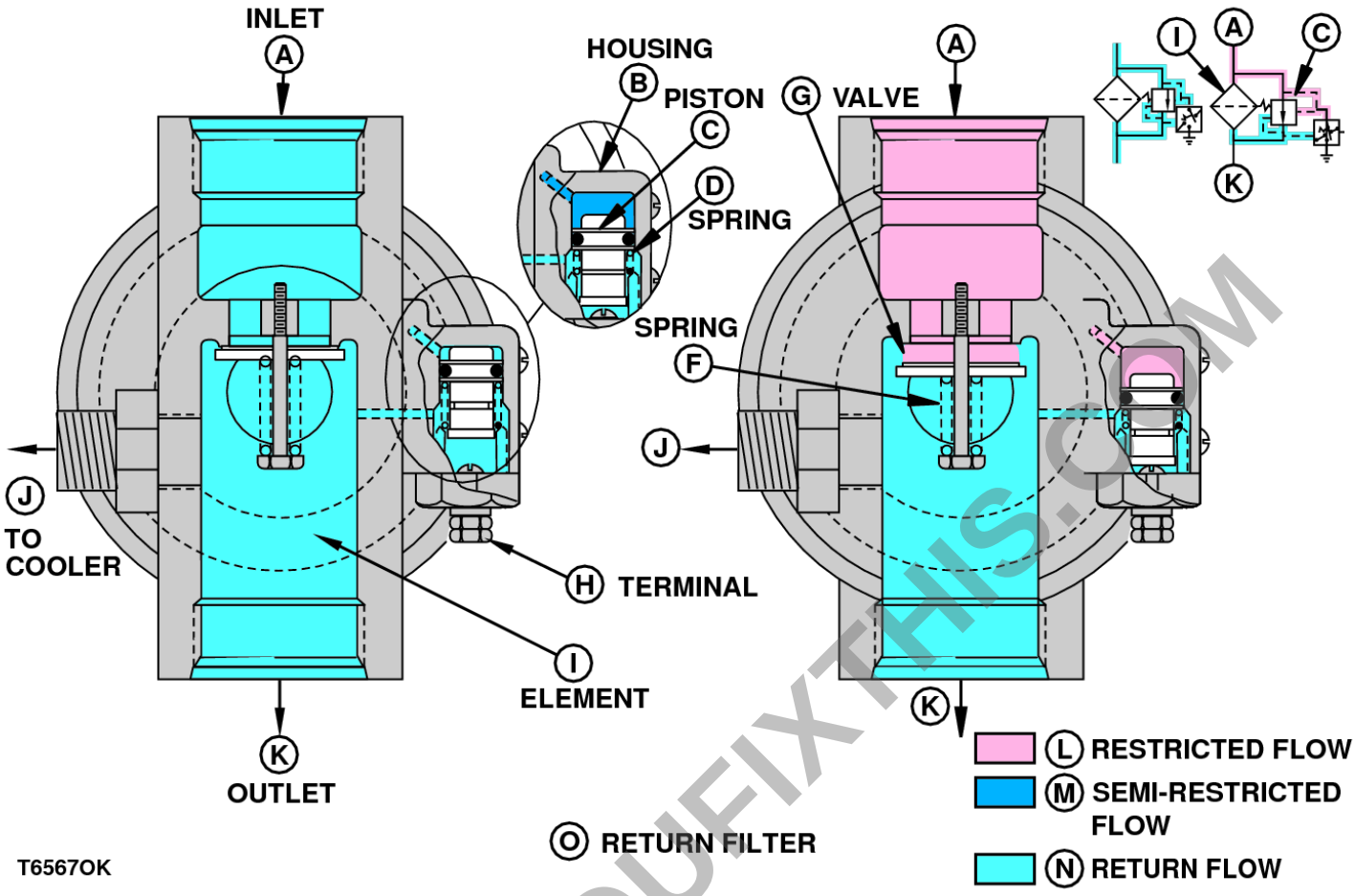
[5] - Slowly operate brake valve and observe pressure gauge. Pressure must decrease slowly to brake accumulator precharge pressure specifications, then decrease rapidly to zero. Point of rapid decrease is brake accumulator precharge pressure.

If brake accumulator precharge is not to specification, charge accumulator. (See Group 9020-20.)

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Return Filter Operation



Return Filter

The hydraulic return filter removes contaminants from the hydraulic system oil. The filter housing contains a bypass valve and a filter restriction switch.

Under normal operation, return flow from the steering, loader and priority valve enters the inlet (A), flows through the filter element (I), up through the filter canister and out the outlet (K).

If the pressure differential between the inlet and outlet increases past a set level due to cold oil or a partially restricted filter element, inlet pressure in the housing (B) increases, moving the piston (C) down against spring (D) force and outlet pressure. The piston contacts the terminal (H), completing a circuit which causes the filter restriction indicator light to glow.

As the filter element becomes plugged, the pressure differential between the inlet and outlet increases. Inlet pressure is sensed on one side of the valve (G) which opens against spring (F) force and outlet pressure. The return oil then bypasses the filter while the restriction indicator light glows.

Under normal operation, the restriction indicator light will glow when operating the hydraulic functions with cold oil. However, if the restriction indicator light continues to glow after the oil reaches operating temperature, the return filter is being bypassed. Extended operation in the bypass mode will cause damage to the hydraulic system.

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CAUTION:

Never work under raised equipment unless it is supported with a hoist or support stands.

Fully extend the cylinder to be tested. If testing the boom cylinders, restrain boom in the fully raised position using a hoist or a stand.

→NOTE:

Check cylinders for leakage in the fully extended position only. In the retracted position the piston contacts the end of the cylinder and seals off piston seal leakage.

[4] - Remove and plug cylinder rod end hose or line.

Plug (544G Boom Head End)

38H1150 (-16 ORFS) (Parker No. 16 PNLO-S)

Used to plug cylinder hose or line.

Plug (544G Boom Rod End)

38H1149 (-12 ORFS) (Parker No. 12 PLNO-S)

Used to plug cylinder hose or line.

Plug (624G Boom) (2 used)

38H1150 (-16 ORFS) (Parker No. 16 PNLO-S)

Used to plug cylinder hose or line.

Plug (644G Boom Head End)

38H1151 (-20 ORFS) (Parker No. 20 PNLO-S)

Used to plug cylinder hose or line.

Plug (644G Boom Rod End)

38H1150 (-16 ORFS) (Parker No. 16 PNLO-S)

Used to plug cylinder hose or line.

Plug (544G Bucket) (2 used)

38H1150 (-16 ORFS) (Parker No. 16 PNLO-S)

Used to plug cylinder hose or line.

Plug (624G Bucket) (2 used)

38H1151 (-20 ORFS) (Parker No. 16 PLNO-S)

Used to plug cylinder hose or line.

Plug (644G Bucket) (2 used)

38H1151 (-20 ORFS) (Parker No. 20 PNLO-S)

Used to plug cylinder hose or line.

[5] - Run engine at slow idle.

Item	Measurement	Specification
Engine	Speed	Slow idle

Activate control lever to extend cylinder for 1 minute over relief while measuring leakage from open port.

Stop Watch

Used to time test.

Measuring Container

Used to measure leakage.

Item	Measurement	Specification
Boom and Bucket Cylinder	Maximum Leakage	15 mL/min. (1/2 oz/min.)

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Inspect compressor.

sss:

Compressor drive belt must be tight. Specification is 13 mm (.50 in.) deflection with 67 N (15 lb force midway between pulleys.) Belt must not be frayed, worn or glazed. Belt tightening strap must NOT be bent.

sss:

Compressor belt pulley must NOT be worn (grooved).

sss:

Compressor to bracket and bracket to engine mounting cap screws must be tight.

sss:

Compressor pulley must be aligned with engine pulley. Engine dampener pulley must NOT be worn (grooved).

sss:

Electrical connections to compressor clutch must be clean and tight. Wiring to compressor must be in good condition.

Result:

YES: Go to next check.

NO: Repair or replace components as required.

(3) Condenser Cores And Condenser Fans

Action:

Engine OFF.

Inspect cores and fan blades.

sss:

Condenser must be free of dirt or debris.

sss:

Condenser fins must NOT be bent or damaged.

sss:

Blades must move freely and show no vibration.

Result:

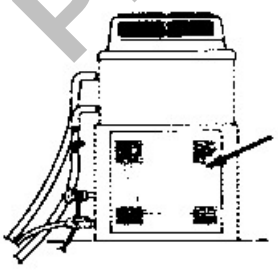
YES: Check complete.

NO: Clean condenser of dirt and debris. Straighten bent fins or replace condenser.

NO: Check for bent blades or a failed motor.

(4) Evaporator Core

Action:



Evaporator Core

Engine OFF.

Inspect core.

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