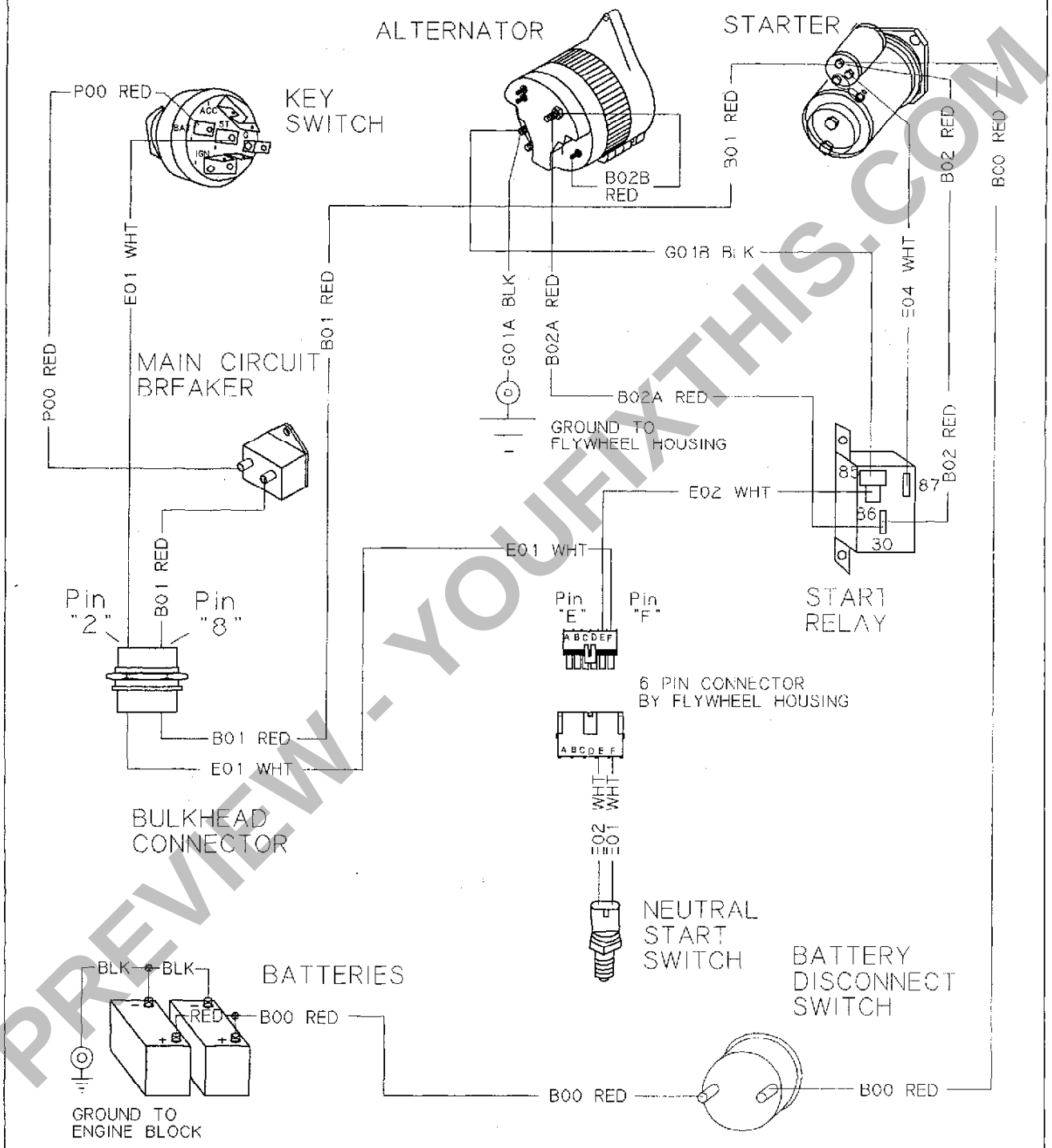
POWER CIRCUIT OPERATION



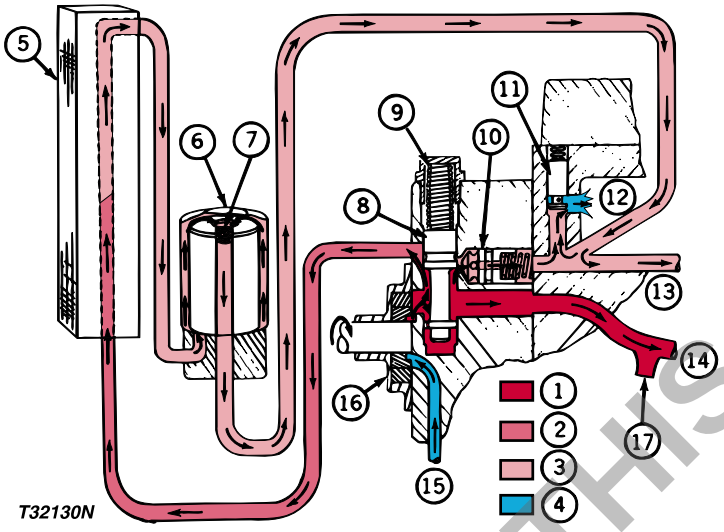
POWER CIRCUIT WIRING DIAGRAM-400G

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POWER TRAIN HYDRAULICS



1—Pressure Oil
2—Intermediate Pressure Oil
3—Low Pressure Oil
4—Return Oil
5—Oil Cooler
6—Oil Filter
7—Filter Bypass
8—Pressure Regulating Valve
9—Shims
10—Cooler Bypass Valve
11—Lube Relief Valve
12—Excess Oil To Clutches
13—Lube Oil To Clutches
14—Engaging Oil to Clutches
15—Oil From Reservoir
16—Transmission Oil Pump
17—To Steering Clutches

The power train hydraulic oil system cools and filters the transmission oil and delivers it as needed for all functions of the transmission and steering clutches.

Oil is sucked out of the reservoir (transmission case) by the transmission oil pump and is sent to the pressure regulating valve. The pressure regulating valve is shim adjustable and delivers pressure oil to the H-L-R and steering clutches for engagement or to the oil cooler to be cooled and filtered and return for clutch lubrication.

Oil that is not required for engagement of the H-L-R clutches or the steering clutches is sent to the cooler, filter, and lube. If the pressure differential between oil cooler inlet and oil cooler outlet (lube) exceeds 620 ± 70 kPa (6.2 ± 0.7 bar) (90 ± 10 psi), the oil cooler bypass opens and diverts excess oil to the lube circuit. If lube pressure exceeds 450 ± 50 kPa (4.5 ± 0.5 bar) (65 ± 7 psi) the lube relief valve opens and dumps excess oil to reservoir.

If the oil filter clogs, the filter bypass valve opens and allows unfiltered oil to go to the lube circuit.

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HARDWARE TORQUE VALUES

NOTE: Torque wrench tolerance is ± 10 per cent of specified torque.

Customary Hardware

Cap Screw Size-Inches	Grade B lb-ft.	Grade B (N-m)	Grade D lb-ft.	Grade D (N-m)	Grade F lb-ft.	Grade F (N-m)
1/4	6	(8)	10	(14)	14	(19)
5/16	10	(14)	20	(27)	27	(37)
3/8	20	(27)	35	(47)	50	(68)
7/16	30	(40)	55	(75)	80	(108)
1/2	45	(60)	85	(115)	120	(163)
9/16	70	(95)	120	(160)	170	(230)
5/8	95	(130)	165	(225)	235	(320)
3/4	165	(225)	300	(405)	420	(570)
7/8	170	(230)	450	(610)	675	(915)
1	255	(345)	720	(975)	1015	(1375)
1-1/8			900	(1220)	1430	(1940)
1-1/4			1250	(1700)	2025	(2750)

Seating Torque Values for Set Screws

INCH SCREWS

Screw Size	Seating Torque (Lb-in.)	Seating Torque (Nm)
5	9	1
6	9	1
8	20	2
10	33	4
1/4	87	10
5/16	165	19
3/8	290	33
7/16	430	49
1/2	620	70
9/16	620	70
5/8	1225	138
3/4	2125	240

METRIC SCREWS

Screw Size	Seating Torque (Nm)
M3	0.9
M4	2.5
M5	5.0
M6	8.5
M8	20
M10	40
M12	65
M16	160
M20	310
M24	520

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OPERATIONAL CHECKOUT PROCEDURE

Use this procedure to check all systems and functions on the unit.

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

A location will be required which is level, has adequate space to complete the driving checks and to work unit. The engine, power train and hydraulic oil must be at operating temperature.

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

No special tools or gauges are needed. Always start in the left column and read completely, follow this sequence from left to right. Read each check completely before performing. Make a copy of the Operational Checkout Record Sheet and record the results of each check on this sheet.

At the end of each check if no problem is found (OK:), you will be instructed to GO TO NEXT CHECK. If problem, (NOT OK:) is indicated, 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 after GO TO:

Group 10 (System Operational Checks)

Group 15 (System Diagnostic Checks)

Group 20 (Adjustments)

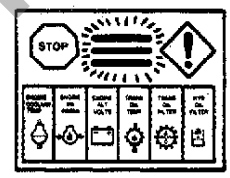
Group 25 (Test)

CTM (Component Technical Manual)

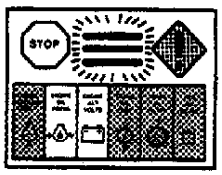
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❶ INDICATORS, SHIFT LEVER LINKAGE AND REVERSE WARNING ALARM CHECKS

10T;9005 J407 200188

MONITOR INDICATOR LIGHTS AND ALARM CHECKS Engine off. Turn key switch to "bulb check" position.		*LOOK: All six monitor indicator lights and "CAUTION" light must be on. "STOP" light must flash and alarm must "BEEP".* *LISTEN: Starting motor must NOT operate.*	**OK:** Go to next check. **NOT OK:** Monitor Lights Do Not Come On During "Bulb Check". Go to Display Monitor Check in Unit Group 9015-25.	**NOT OK:** If motor starts, go to Key Switch Check in Group 9015-10.

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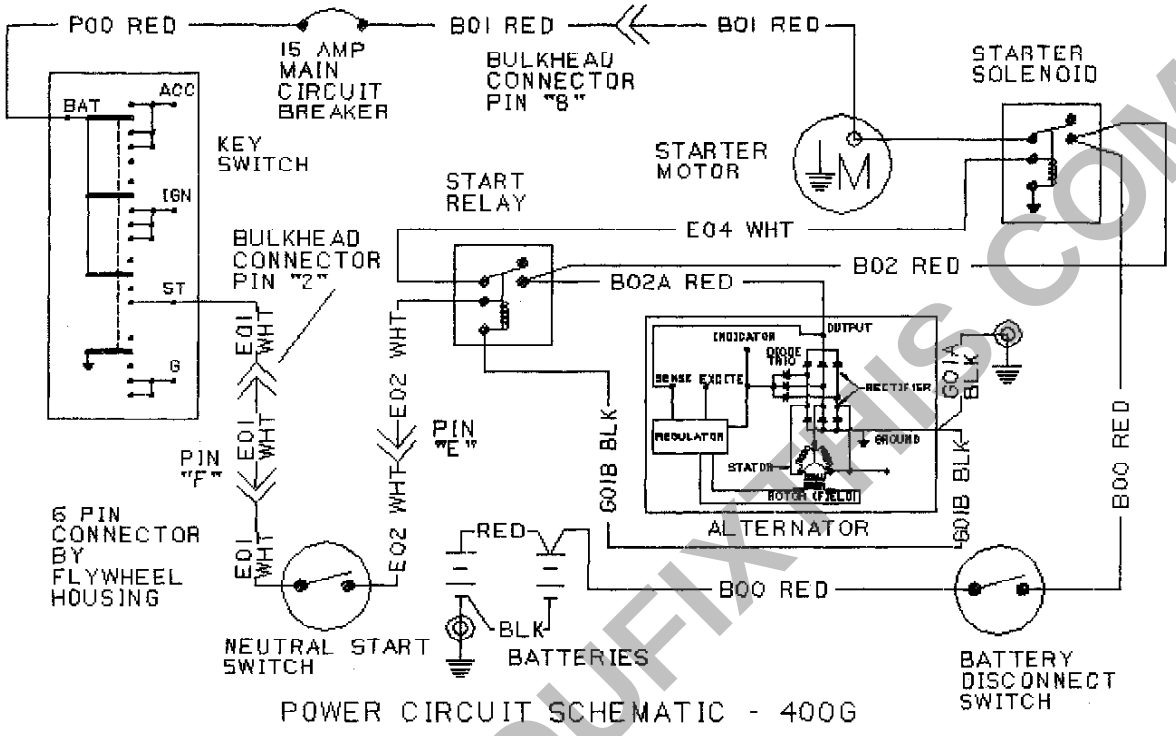
ENGINE LOW PRESSURE AND ALTERNATOR LOW VOLTAGE MONITOR INDICATOR LIGHT CHECKS Engine off.		Turn key switch to "bulb check" position then back to "ON" position. *LOOK: Engine low pressure and alternator low voltage indicator's must be "ON", "STOP" must flash and alarm must "BEEP".*	**OK:** Go to next check. **NOT OK:** No engine low pressure indicator light. Check wiring to sender connection. Go to Engine Oil Pressure Switch Check, Group 9015-10.	**NOT OK:** No alternator low voltage indicator light. Check wiring connector at alternator. Go to Charge Indicator Light Check in Group 9015-10.

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POWER CIRCUIT SCHEMATIC - 400G

Power Circuit—Power circuit consists of battery, battery disconnect relay, main circuit breaker and key switch.

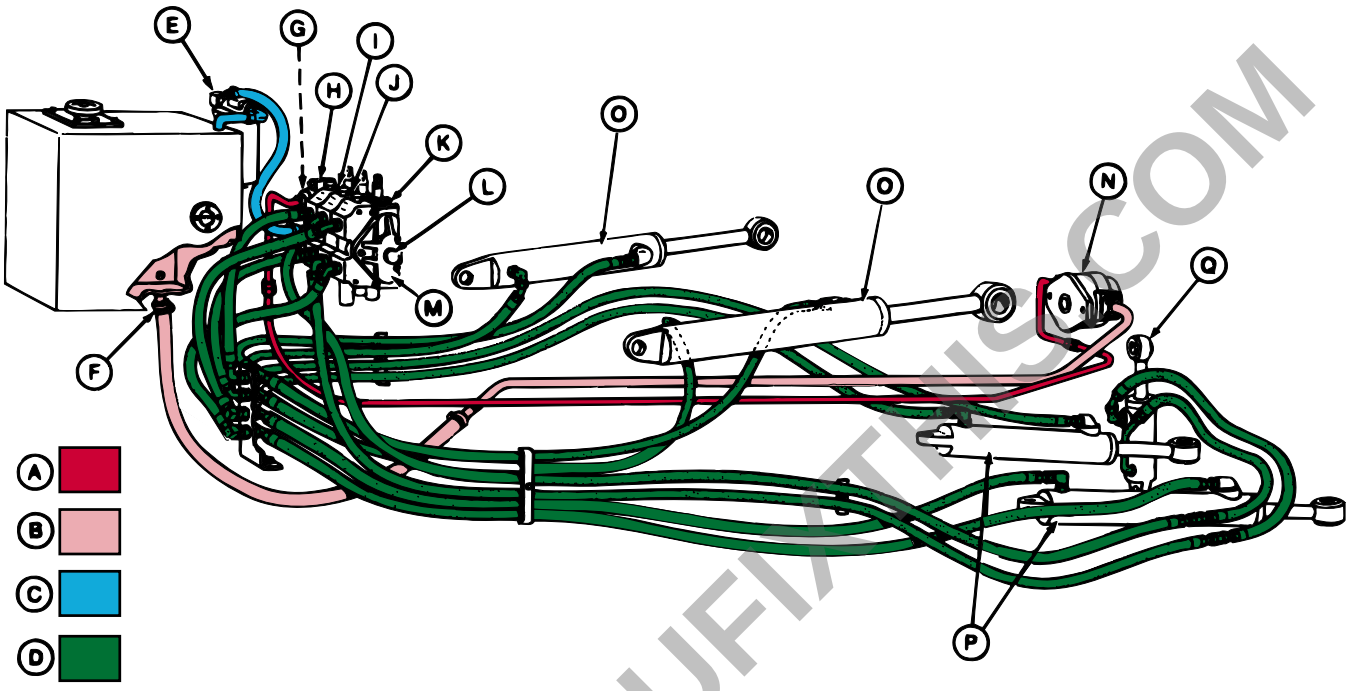
Key switch OFF and battery disconnect switch ON, power is at starting motor B terminal, start relay terminal, main circuit breaker, key switch, and logic module large connector terminal A. Turn key switch ON, power will flow from key switch terminals to units electrical components.

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DOZER HYDRAULIC SYSTEM OPERATION



TXC6738AD

A—Pressure Oil
B—Low Pressure Oil
C—Return Oil
D—Trapped Oil
E—Return Filter
F—Reservoir Pick Up Tube
G—System Relief Valve
H—Inlet and Outlet End Cap
I—Blade Lift Valve
J—Blade Tilt Valve
K—Blade Angle Valve
L—Power Beyond Port
M—End Cap
N—Hydraulic Pump
O—Blade Lift Cylinders
P—Blade Angle Cylinders
Q—Blade Tilt Cylinder

The dozer hydraulic system consists of a pressurized hydraulic reservoir, pump, control valve, return filter, and cylinders. A backhoe is available as optional equipment.

If a backhoe is installed, oil flows from the power beyond port of the dozer valve to the backhoe valve when all dozer valves are in neutral. If a dozer function is activated, oil flow to the backhoe valve is blocked.

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METRIC HARDWARE TORQUE CHART

NOTE: Torque wrench tolerance is ± 10 percent of specified torque.

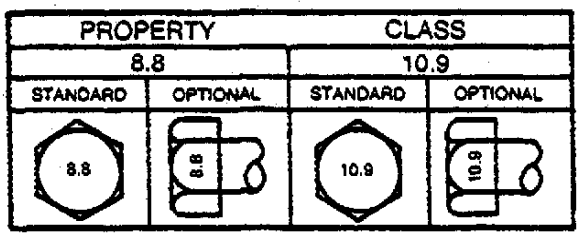
Metric Standard Thread

GRADE SIZE	8.8		10.9	
	Nm	LB FT	Nm	LB FT
M3	1.5	1.0	2.0	1.5
M4	3.5	2.6	5.0	4
M5	7.0	5	10.0	7
M6	12	9	12	12.0
M8	28	20	40	30
M10	55	40	80	59
M12	95	70	140	100
M14	150	110	220	160
M16	235	170	350	260
M20	475	350	675	500
M24	825	610	1170	860
M30	1630	1200	2320	1710
M36	2850	2100	4060	3000

1 Nm = .7376 (lb-ft)

For 9.8 fasteners, use 8.8 torque.

Head Markings - Bolts are marked as shown and with a letter to identify the manufacturer.



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ENGINE SPEED ADJUSTMENT

SPECIFICATIONS

Slow Idle .....900 ± 25 rpm
Fast Idle .....2250 ± 25 rpm

SERVICE EQUIPMENT AND TOOLS

Sealing Wire Pliers
Tachometer

1. Install tachometer (see Tachometer Installation Procedure in Group 25). Run engine until it is at normal operating temperature.

2. Disconnect speed control cable (A) and decelerator rod (B) from injection pump lever.

3. Turn slow idle override screw (D) counterclockwise and push lever (C) forward until it contacts slow idle stop screw. Record engine speed.

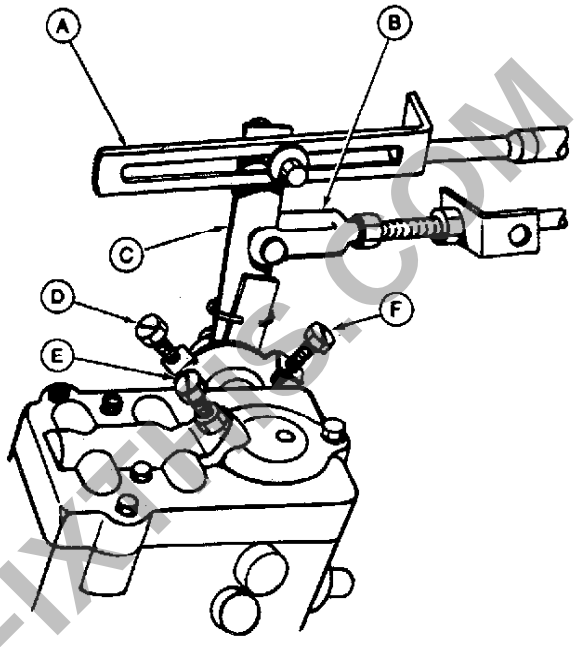
4. If rpm is not to specification, adjust slow idle stop screw (E) until slow idle speed is correct. Tighten lock nut.

5. Turn slow idle override screw (D) clockwise until engine speed increases 25 rpm. Turn screw one turn counterclockwise and tighten lock nut.

6. Move lever (C) to the rear until it contacts fast idle stop screw (F). Record engine rpm.

7. If engine speed is not to specification, hold lever against stop screw and adjust screw until fast idle is correct.

8. Install new sealing wire and lead seal in stop screws using sealing wire pliers.



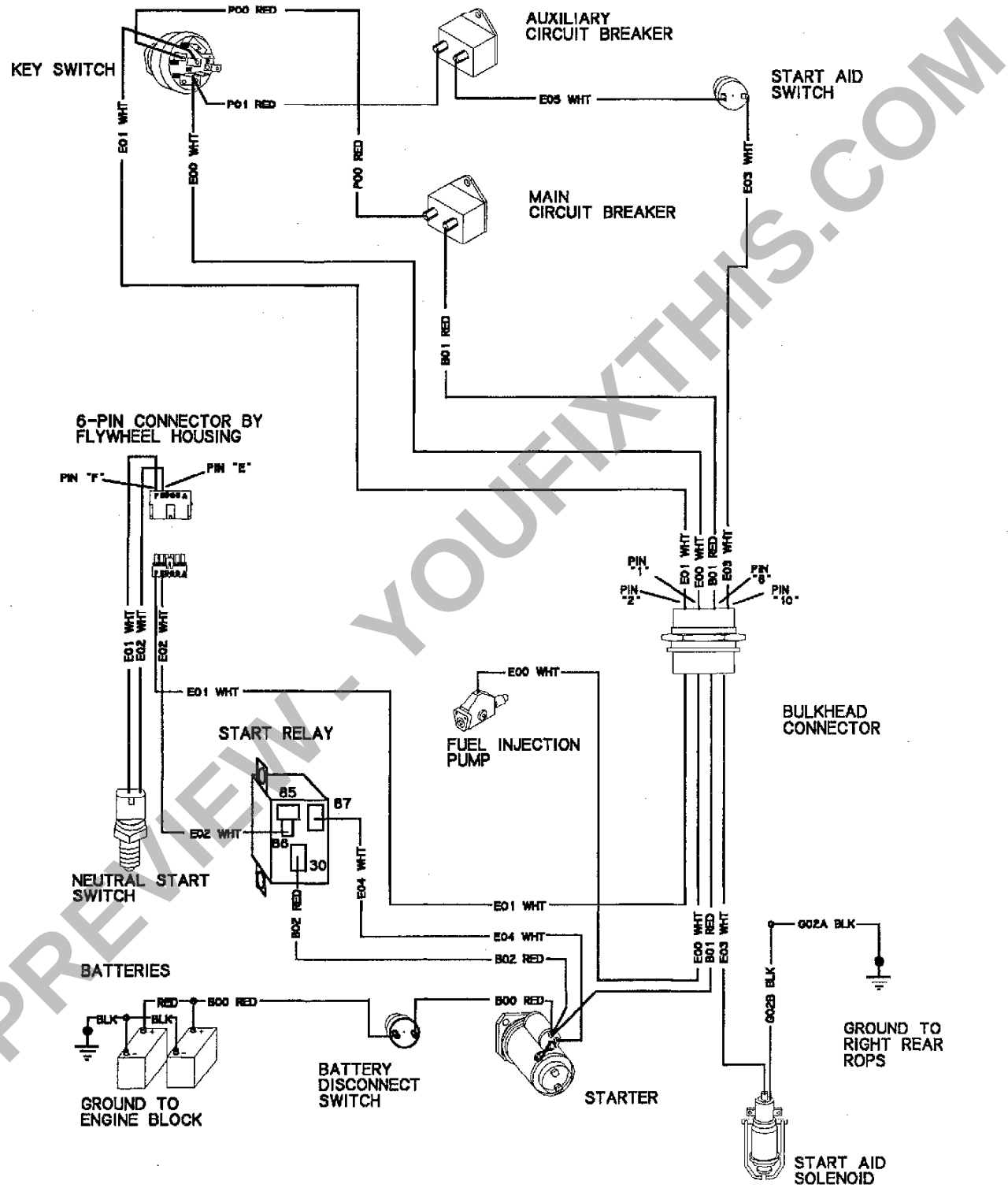
A—Speed Control Cable
B—Decelerator Rod
C—Lever
D—Slow Idle Override Screw
E—Slow Idle Stop Screw
F—Fast Idle Stop Screw

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STARTING CIRCUIT OPERATION



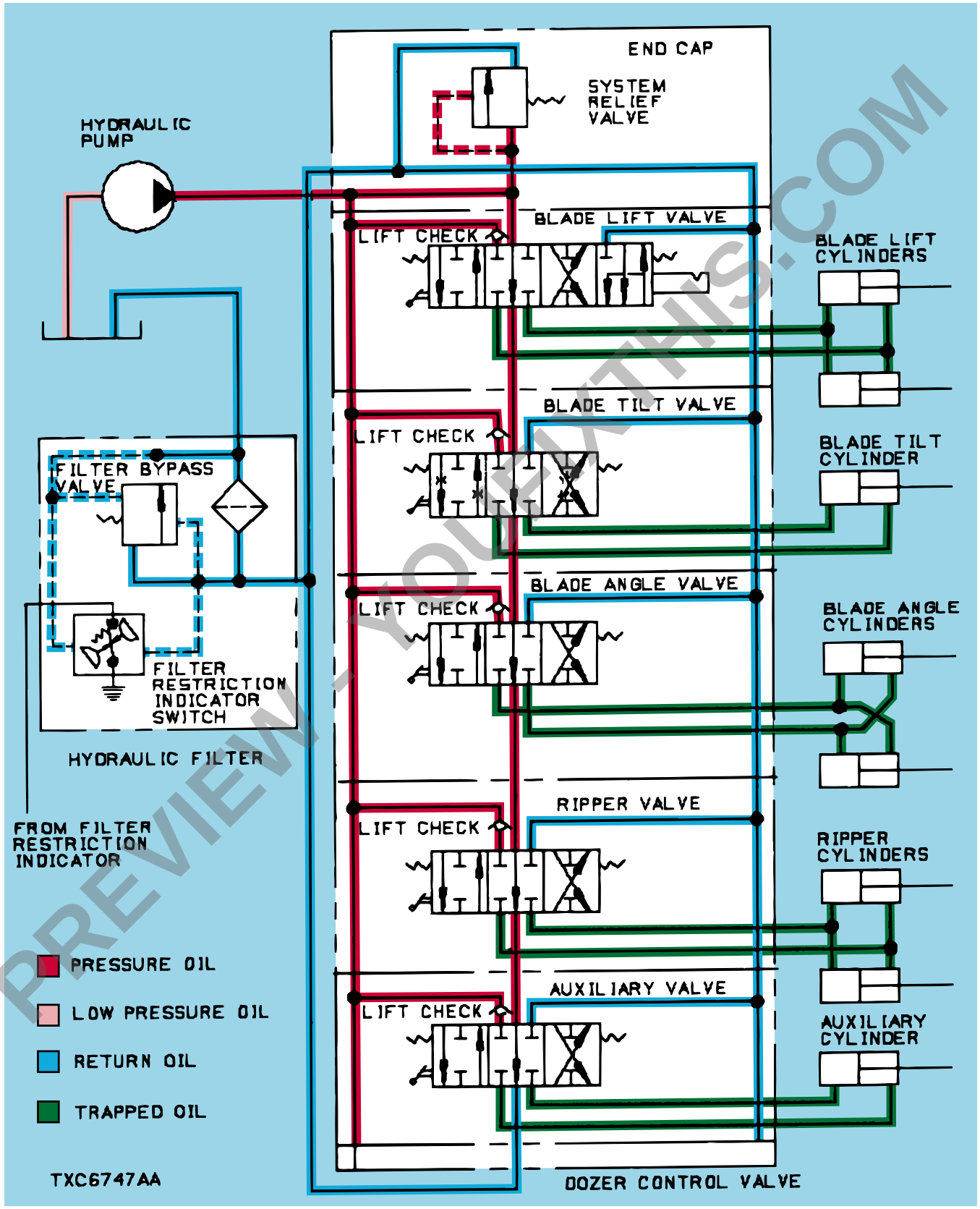
STARTING CIRCUIT WIRING DIAGRAM-400G

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DOZER HYDRAULIC SYSTEM SCHEMATIC



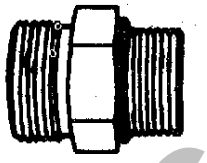
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SERVICE RECOMMENDATIONS FOR O-RING BOSS FITTINGS

Straight Fitting

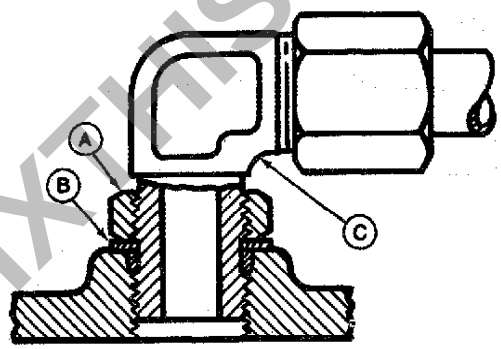


1. Inspect O-ring boss seat for dirt or defects.

2. Lubricate O-ring with petroleum jelly. Place electrical tape over threads to protect O-ring. Slide O-ring over tape and into O-ring groove of fitting. Remove tape.

3. Tighten fitting to torque valve shown on chart.

Angle Fitting



1. Back-off lock nut (A) and back-up washer (B) completely to head-end (C) of fitting.

2. Turn fitting into threaded boss until back-up washer (B) contacts face of boss.

3. Turn fitting head-end (C) counterclockwise to proper index (maximum of one turn).

4. Hold fitting head-end (C) with a wrench and tighten locknut (A) and back-up washer (B) to proper torque value.

NOTE: Do not allow hoses to twist when tightening fittings.

TORQUE VALUE CHART

Thread Size	Torque N·m	(lb-ft)
3/8-24 UNF	8	(6)
7/16-20 UNF	12	(9)
1/2-20 UNF	16	(12)
9/16-18 UNF	24	(18)
3/4-16 UNF	46	(34)
7/8-14 UNF	62	(46)
1-1/16-12 UN	102	(75)
1-3/16-12 UN	122	(90)
1-5/16-12 UN	142	(105)
1-5/8-12 UN	190	(140)
1-7/8-12 UN	217	(160)

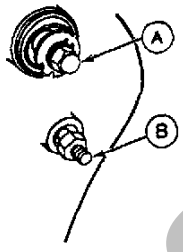
NOTE: Torque tolerance is ± 10%.

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ENGINE VALVE CLEARANCE ADJUSTMENT



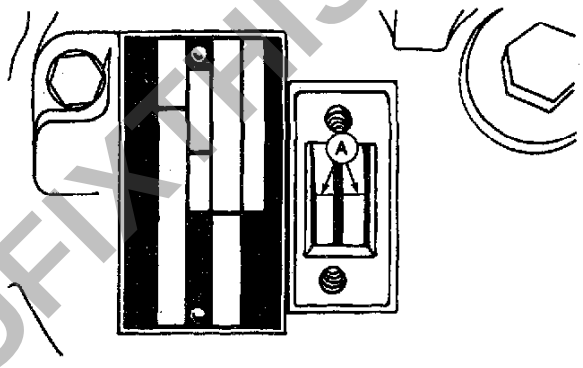
SPECIFICATIONS

Valve Clearance:
- Intake ..... 0.36 mm (0.014 in.)
- Exhaust ..... 0.46 mm (0.018 in.)

Rocker Arm Cover
Cap Screw Torque ..... 9.5 ± 4 N·m (84 ± 36 lb–in.)

ESSENTIAL TOOLS

JDE–81–4 Timing Pin
JDE–83 Flywheel Turning Tool



1. Remove engine side shield, muffler, air cleaner, and hood.

2. Disconnect crankcase ventilation tube from rocker arm cover. Clean tube with solvent or diesel fuel. Check that O–ring in rocker arm cover is in good condition.

3. Remove rocker arm cover.

4. Install JDE–81–4 Timing Pin (B) and JDE–83 Flywheel Turning Tool (A).

5. Turn flywheel until timing pin goes into hole in flywheel.

6. Use either of the following methods to determine which cylinder is at top dead center (TDC):

Try to move both pushrods at number one cylinder. If both are not loose, pull timing pin out of flywheel, rotate flywheel 360°, and insert timing pin. Both pushrods being loose indicates the piston is at TDC on compression stroke.

Remove timing hole cover from fuel injection pump. If the timing lines (A) are in alignment, then the number one piston is at TDC on the compression stroke. If the lines are not in alignment, the number four piston is at TDC on the compression stroke.

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