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Safety Check List

P4-1005_2

Safety - Yours and Others

INT-1-3-1_3

All machinery can be hazardous. When a machine is correctly operated and properly maintained, it is a safe machine to work with. But when it is carelessly operated or poorly maintained it can become a danger to you (the operator) and others.

In this manual and on the machine you will find warning messages. Read and understand them. They tell you of potential hazards and how to avoid them. If you do not fully understand the warning messages, ask your employer or JCB distributor to explain them.

But safety is not just a matter of responding to the warnings. All the time you are working on or with the machine you must be thinking what hazards there might be and how to avoid them.

Do not work with the machine until you are sure that you can control it.

Do not start any job until you are sure that you and those around you will be safe.

If you are unsure of anything, about the machine or the job, ask someone who knows. Do not assume anything.

Remember

BE CAREFUL
BE ALERT
BE SAFE

General Safety

T1-043

⚠ WARNING

California Proposition 65

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

Battery posts, terminals and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. WASH HANDS AFTER HANDLING.

0013

⚠ WARNING

To operate the machine safely you must know the machine and have the skill to use it. You must abide by all relevant laws, health and safety regulations that apply to the country you are operating in. The Operator Manual instructs you on the machine, its controls and its safe operation; it is not a training manual. If you are a new operator, get yourself trained in the skills of using a machine before trying to work with it. If you don't, you will not do your job well, and you will be a danger to yourself and others.

INT-1-4-1

⚠ WARNING

Care and Alertness

All the time you are working with or on the machine, take care and stay alert. Always be careful. Always be alert for hazards.

INT-1-3-5

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Pre-start Cold Checks, Service Points and Fluid Levels

Table 1. Engine

	Operation	10	50	100(1)	500	1000	2000
Coolant Level	- Check	☐	☐	☐	☐	☐	☐
Coolant	- Change						☐
Oil Level	- Check	☐	☐	☐	☐	☐	☐
Oil and Filter(2)(3)	- Change				☐	☐	☐
Air Cleaner - Condition of the hoses and clamps	- Check		☐	☐	☐	☐	☐
Outer Filter Element(4)	- Change					☐	☐
Inner Filter Element	- Change						☐
Water Seperator and Fuel Filter	- Drain	☐	☐	☐	☐	☐	☐
Water Seperator Pre-Filter(5)	- Change				☐	☐	☐
Fuel Filter Element(5)	- Change					☐	☐
DEF (Diesel Exhaust Fluid) Filter(6)	- Change					☐	
Engine Crankcase Ventilation Filter(7)	- Change						
Front End Accessory Drive Belt	- Check				☐	☐	☐
Front End Accessory Drive Belt(8)	- Change						
Hoses and Fittings	- Check			☐	☐	☐	☐
Radiator(9)	- Clean				☐	☐	☐
Oil Filter and Dipstick Seals(10)	- Check						☐
Engine Mounting Bolts for Tightness	- Check			☐	☐	☐	☐
Valve Clearances(10)	- Check/Adjust						☐
Rocker Cover and Injector Seals(10)	- Change						☐
Injectors(10)(11)	- Change						
Injector(s) Leak-Off Rail(10)(11)	- Change						
High Pressure Fuel Lines(10)(12)	- Inspect						

(1) Initial service and inspection, to be done by your JCB dealer.
(2) If operating under arduous conditions, change the engine oil and filter every 250 hours.
(3) The oil service interval will be affected if there is a high sulphur content in the fuel. Refer to the Fuel System for more information.
(4) If operating in dusty working environments, change more frequently.
(5) If the engine is difficult to start or the engine has poor performance, fit new filters. For the water separator filter, use a 10 micron filter.
(6) Change DEF filter more regularly under arduous conditions.
(7) Change every 1500 hours.
(8) Change every 6000 hours.
(9) If operating in dusty working environments, clean more frequently.
(10) Jobs which should only be done by a specialist. Refer to your JCB dealer.
(11) Change every 8000 hours.
(12) Check every 6000 hours.

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Zinc Plated Fasteners and Dacromet Fasteners

Table 2. Torque Settings - UNF Grade 'S' Fasteners

Bolt Size		Hexagon (A/F)	Condition 1			Condition 2		
in.	mm	in.	Nm	kgf m	lbf ft	Nm	kgf m	lbf ft
1/4	6.3	7/16	11.2	1.1	8.3	10.0	1.0	7.4
5/16	7.9	1/2	22.3	2.3	16.4	20.0	2.0	14.7
3/8	9.5	9/16	40.0	4.1	29.5	36.0	3.7	26.5
7/16	11.1	5/8	64.0	6.5	47.2	57.0	5.8	42.0
1/2	12.7	3/4	98.00	10.0	72.3	88.0	9.0	64.9
9/16	14.3	13/16	140.0	14.3	103.2	126.0	12.8	92.9
5/8	15.9	15/16	196.0	20.0	144.6	177.0	18.0	130.5
3/4	19.0	1 1/8	343.0	35.0	253.0	309.0	31.5	227.9
7/8	22.2	1 15/16	547.0	55.8	403.4	492.0	50.2	362.9
1	25.4	1 1/2	814.0	83.0	600.4	732.0	74.6	539.9
1 1/8	31.7	1 7/8	1181.0	120.4	871.1	1063.0	108.4	784.0
1 1/4	38.1	2 1/4	1646.0	167.8	1214.0	1481.0	151.0	1092.3

Table 3. Torque Settings - Metric Grade 8.8 Fasteners

Bolt Size		Hexagon (A/F)	Condition 1			Condition 2		
ISO Metric Thread	mm	mm	Nm	kgf m	lbf ft	Nm	kgf m	lbf ft
M5	5	8	5.8	0.6	4.3	5.2	0.5	3.8
M6	6	10	9.9	1.0	7.3	9.0	0.9	6.6
M8	8	13	24.0	2.4	17.7	22.0	2.2	16.2
M10	10	17	47.0	4.8	34.7	43.0	4.4	31.7
M12	12	19	83.0	8.5	61.2	74.0	7.5	54.6
M16	16	24	205.0	20.9	151.2	184.0	18.8	135.7
M20	20	30	400.0	40.8	295.0	360.0	36.7	265.5
M24	24	36	690.0	70.4	508.9	621.0	63.3	458.0
M30	30	46	1372.0	139.9	1011.9	1235.0	125.9	910.9
M36	36	55	2399.0	244.6	1769.4	2159.0	220.0	1592.4

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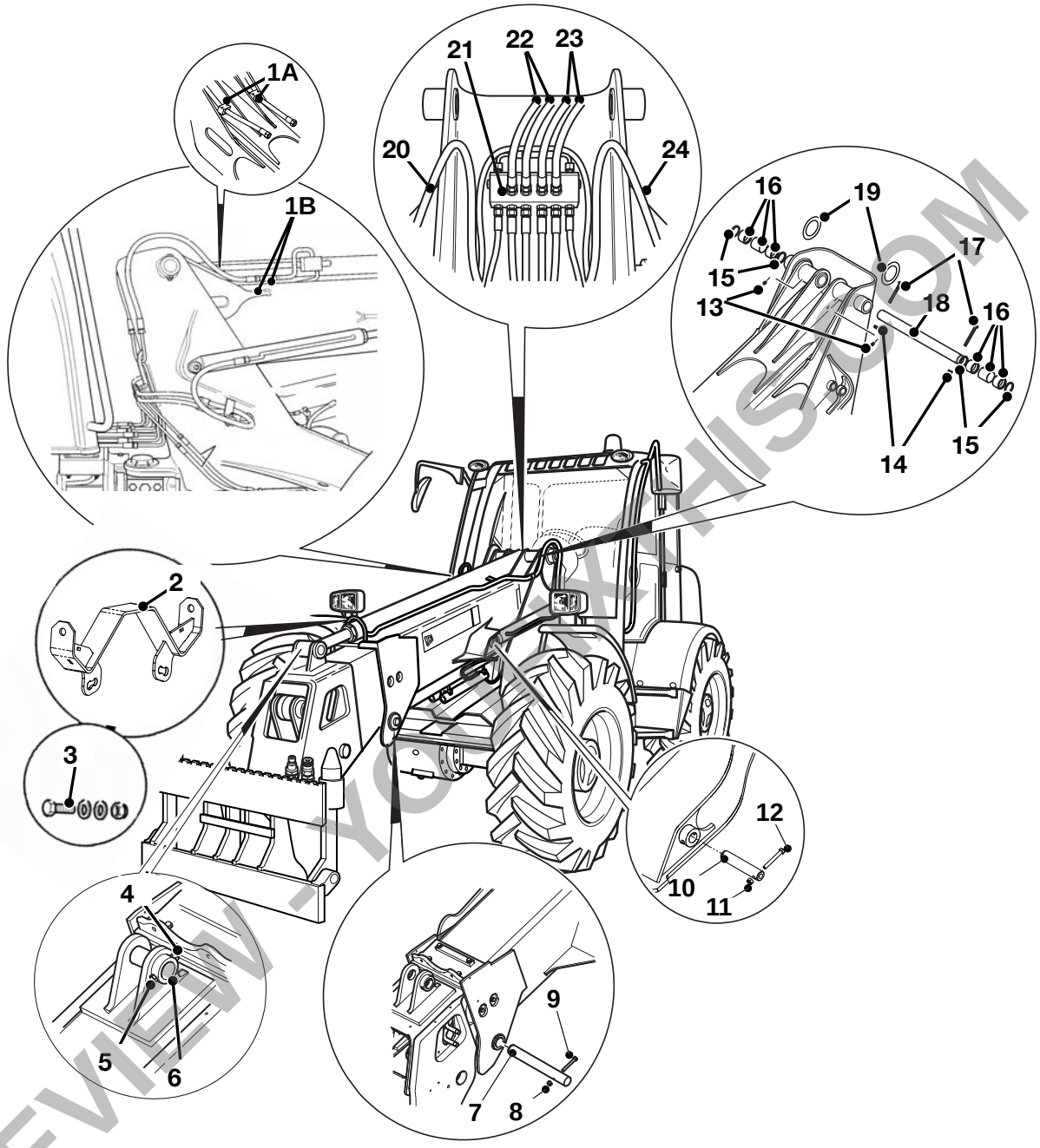


Fig 45.

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Changing the Oil and Filter

Drain the oil when the engine is warm as any contaminants held in suspension will be drained with the oil.

1 Make the machine safe with the boom lowered. ⇒ *Prepare the Machine for Maintenance (3-21)*.

2 Open the engine cover. ⇒ *Engine Cover (3-32)*.

3 Remove the filler caps **B**.

4 Put a suitable container below the drain plug **C**.

⚠ CAUTION

Oil will gush from the hole when the drain plug is removed. Hot oil and engine components can burn you. Keep to one side when you remove the plug.

13-3-1-15

5 Remove the drain plug **C** and its O-ring **D**.

Let the oil drain.

Clean, then install the drain plug with a new O-ring. Torque tighten to 40-60Nm.

6 Loosen and remove the drain plug **E** from the filter housing.

Let the oil drain.

Clean, then install the drain plug. Torque tighten to 40-60Nm.

7 Unscrew the filter canister **F**, use a chain wrench if necessary.

8 Clean the seal face on the filter head **G**.

9 Apply a thin layer of clean engine oil to the seal **H** on the new filter canister.

10 Install the new filter canister, hand tight only.

11 Through one of the filler points **B**, fill the engine with the recommended oil to the MAX mark on the dipstick **A**. ⇒ *Fluids, Lubricants and Capacities (3-14)*.

12 Remove any spilt oil.

13 Remove the container.

14 Replace the filler caps and make sure they are secure.

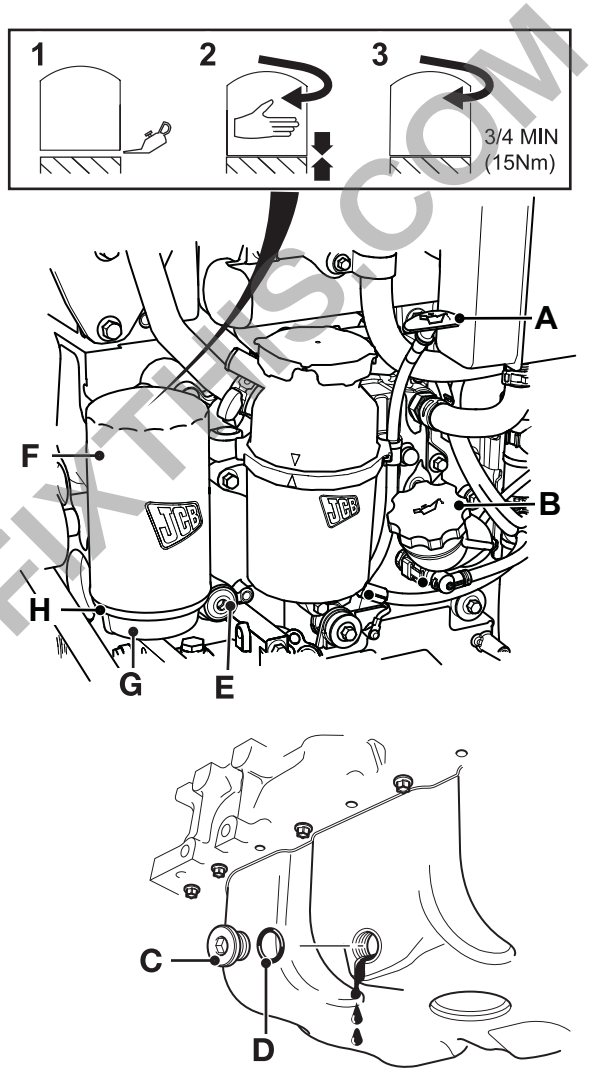
15 Run the engine until the oil pressure low warning light goes off.

16 Check the system for leaks.

17 Let the oil cool.

18 Check the oil level again, if necessary top up with clean engine oil.

19 Close and secure the engine cover.



P1060994-2

Fig 20.

A Dipstick
B Filler caps
C Drain plug
D O-ring
E Drain plug
F Filter canister
G Filter head
H Seal

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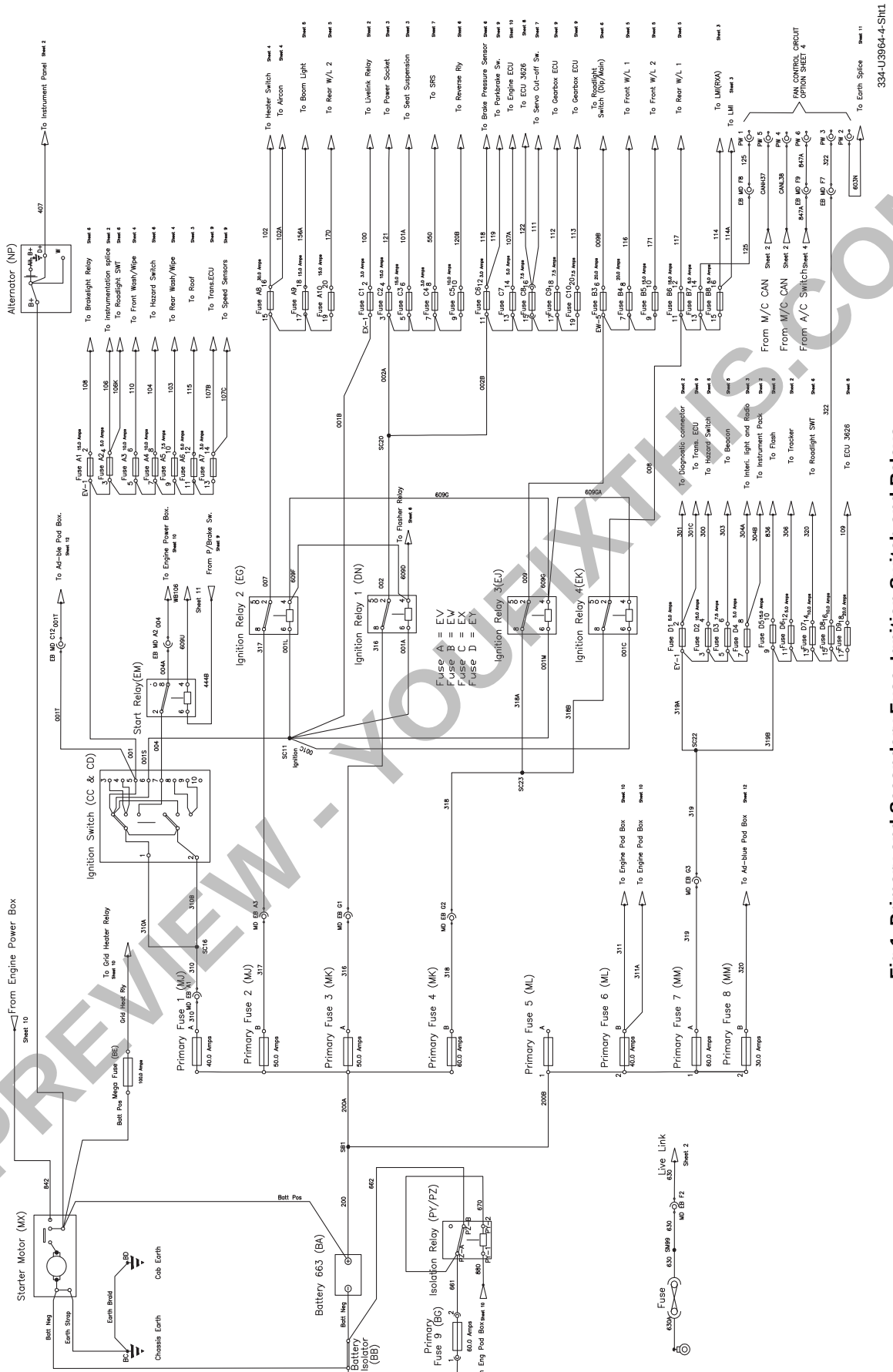


Fig 1. Primary and Secondary Fuse, Ignition Switch and Relays

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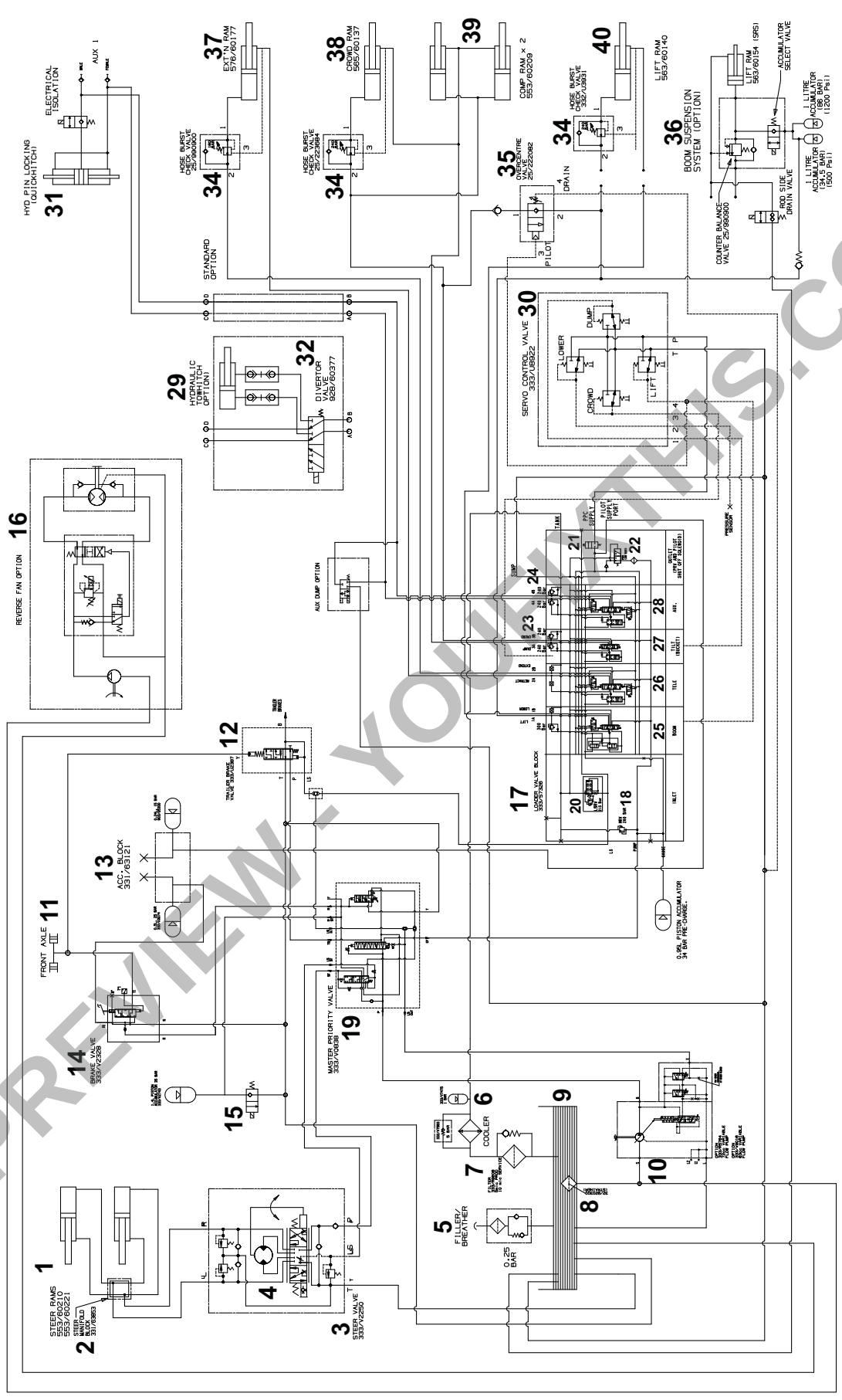


Fig 1.

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Table 3. No Air Conditioning

	CHECK		ACTION
1	Are the controls set correctly, i.e. air conditioning selected, and blower switched on?	YES:	Check 2
		NO:	Reset controls and retest
2	Is the air conditioning fuse blown? (See section 3 for fuse number)	YES:	Renew fuse and retest
		NO:	Check 3
3	Does the compressor clutch operate with 12V connected directly to the clutch?	YES:	Check 4
		NO:	Change clutch assembly
4	Is the blower working?	YES:	Check 5
		NO:	Check the electrical connections to the blower switch, resistor and blower motor. If connections are correct, replace blower switch and retest. If blower motor will still not function, replace blower motor assembly.
5	Does the compressor clutch engage with the pressure switch bypassed?	YES:	Replace pressure switch and retest. If still not working check the refrigerant system pressure. If pressure is very low, the refrigerant charge has leaked from the system. Call in a qualified refrigeration engineer or a suitably trained person to determine the fault and recharge the system. If pressure is high, go to check 6.
		NO:	Renew the compressor clutch and retest
6	Bypass the thermostat switch (i.e. disconnect the electrical leads and connect them together). Does the clutch work?	YES:	Replace thermostat switch and retest
		NO:	Check all electrical connections

Table 4. Compressor clutch cycles frequently, air conditioning performance is only moderate

Is the condenser coil contaminated with debris?	YES:	Clean the condenser and retest.
	NO:	The refrigeration system has an internal blockage. Call in a qualified refrigeration engineer or a suitably trained person to determine the fault

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Fault Code List

⇒ *Table 3. Engine Errors (M-16)*
⇒ *Table 4. DCU Errors (M-25)*
⇒ *Table 5. IFM Transmission Errors (M-32)*
⇒ *Table 6. Hydraulics Errors (M-36)*
⇒ *Table 7. Low Spec Display Errors (M-39)*
⇒ *Table 8. Livelink Errors (M-39)*

Table 3. Engine Errors

Fault Code	Description
P046D-2F	
P0405-23	
P0404-00	
P2620-2F	Throttle position feedback signal noisy fault
P2622-24	Throttle position feedback signal high fault
P2621-23	Throttle position feedback signal low fault
P2620-00	Throttle position feedback ADC fault
P2135-00	Foot Pedal Corrolation track 1 over track 2 fault detected
P0088-00	Rail pressure control undefined error (over max calibrated system pressure)
P0087-00	Rail Pressure Control Error Positive
P0088-00	Rail Pressure Control Error Negative
P0089-00	Rail Pressure control error
P2265-64	Water in fuel sensor feedback signal 2 plausability fault
P2267-24	Water in fuel sensor feedback signal high fault
P2266-23	Water in fuel sensor feedback signal low fault
P2264-00	Water in fuel sensor feedback signal ADC fault
P250B-00	Oil level sensor signal global fault
P0523-68	Low Oil Pressure During Engine Running
P0096-2F	Intake manifold temperature sensor (M2) signal noise fault (Intake Manifold 2 temp)
P0235-00	Boosted air pressure sensor fault: ADC
P007E-2F	TMAP (Intake Manifold 1 temp) Temperature Element sensor noise fault
P007D-24	TMAP (Intake Manifold 1 temp) Temperature Element sensor high fault
P007C-23	TMAP (Intake Manifold 1 temp) Temperature Element sensor low fault
P007A-00	TMAP (Intake Manifold 1 temp) Temperature Element sensor fault (ADC)
P0106-24	Intake Manifold Absolute Pressure (MAP) sensor signal drift high fault
P0106-23	Intake Manifold Absolute Pressure (MAP) sensor signal drift low fault
P0106-64	Intake Manifold Absolute Pressure (MAP) sensor signal plausibility fault
P0116-64	Coolant sensor fault (plausibility)
P0118-24	Coolant sensor signal high fault
P0117-23	Coolant sensor signal low fault
P0100-11	AMF High Side Driver fault Short Circuit To Ground (SC2G)
P0100-00	AMF electrical sensor fault (ADC)
P0194-00	Rail Pressure Sensor signal drop fault
P0193-24	Rail Pressure Sensor signal high fault
P0192-23	Rail Pressure Sensor signal low fault
P0087-23	Rail Pressure build normal fault
P0089-00	Rail Pressure Positive Control Error During 'HPV-Only' control. PID controller not able to stabilise the RPC value
P0089-00	Rail Pressure Negative Control Error During 'HPV-Only' control. PID controller not able to stabilise the RPC value
P0089-00	Rail Pressure Positive Control Error During 'IC & HMV' control. PID controller not able to stabilise the RPC value
P0563-24	Battery voltage monitoring signal high fault
P0562-23	Battery voltage monitoring signal low fault
P0113-24	Inlet Air Temperature (IAT) sensor signal high fault detected
P0112-23	Inlet Air Temperature (IAT) sensor signal low fault detected
P0110-00	Inlet Air Temperature (IAT) sensor signal ADC fault detected
P2428-00	
P0183-24	Fuel temperature sensor high fault

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JCB Dieselmax and Ecomax

Specifications

Note: *Full technical data for all engine variants is given in the applicable engine Service Manual.*

Engine type	SJ ecoMAX	Turbocharged and intercooled, EGR, VGT	93 kW
	SJ ecoMAX	Turbocharged and intercooled, EGR, VGT	108 kW
Weight (dry)	SJ	496 kg (1091 lb)	
Number of cylinders	4		
Nominal bore size	103 mm (4.05 in)		
Stroke	132 mm (5.196 in)		
Cylinder arrangement	In line		
Cycle	4 stroke		
Firing Order	1, 3, 4, 2 - Number 1 cylinder at crankshaft pulley end		
Displacement	4.4 litres (268.5 in^3)		
Compression ratio	SH	16.9 : 1	
Engine Compression	Compression variance between each cylinder should be no greater than 3.5 bar (50.7 psi)		
Direction of rotation (viewed from crankshaft pulley end)	Clockwise		
Valves	4 per cylinder		
Valve tip clearances (measured cold)	SH	Inlet: 0.15 mm to 0.20 mm (0.006 to 0.008in)	
		Exhaust: 0.43 mm to 0.50 mm (0.017 in to 0.020 in)	
Lubricating oil pressure (1)	1.6 to 6.5 bar (23.2 to 94.2 lbf/in^2)		
Combustion system	Direct injection		
Fuel injection system	SJ	Electronic common rail	
Idle speed(2)	850 to 900 r.p.m.		
Rated speed	2200 r.p.m.		
High idle speed (throttle stop)	SJ	2450 r.p.m.	
Recommended fuel specifications	Refer to ***Section 3 - Maintenance***		

(1) Dependent on engine temperature and speed.
(2) Engine at normal operating temperature.

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⚠ WARNING

Fluid Under Pressure

Fine jets of fluid at high pressure can penetrate the skin. Keep face and hands well clear of fluid under pressure and wear protective glasses and gloves. Hold a piece of cardboard close to suspected leaks and then inspect the cardboard for signs of fluid. If fluid penetrates your skin, get medical help immediately.

INT-3-1-10_3

⚠ WARNING

Hydraulic Pressure

Hydraulic fluid at system pressure can injure you. Before connecting or removing any hydraulic hose, residual hydraulic pressure trapped in the service hose line must be vented. Make sure the hose service line has been vented before connecting or removing hoses. Make sure the engine cannot be started while the hoses are open.

INT-3-1-11_2

⚠ WARNING

Fuel

Fuel is flammable; keep naked flames away from the fuel system. Stop the engine immediately if a fuel leak is suspected. Do not smoke while refuelling or working on the fuel system. Do not refuel with the engine running. Completely wipe off any spilt fuel which could cause a fire. There could be a fire and injury if you do not follow these precautions.

INT-3-2-2_3

⚠ WARNING

Oil

Oil is toxic. If you swallow any oil, do not induce vomiting, seek medical advice. Used engine oil contains harmful contaminants which can cause skin cancer. Do not handle used engine oil more than necessary. Always use barrier cream or wear gloves to prevent skin contact. Wash skin contaminated with oil thoroughly in warm soapy water. Do not use gasoline, diesel fuel or kerosene to clean your skin.

INT-3-2-3U

⚠ CAUTION

It is illegal to pollute drains, sewers or the ground. Clean up all spilt fluids and/or lubricants.

Used fluids and/or lubricants, filters and contaminated materials must be disposed of in accordance with local regulations. Use authorised waste disposal sites.

INT-3-2-14

⚠ WARNING

Soft Ground

A machine can sink into soft ground. Never work under a machine on soft ground.

INT-3-2-4

⚠ WARNING

Always wear safety glasses when dismantling assemblies containing components under pressure from springs. This will protect against eye injury from components accidentally flying out.

GEN-6-2

⚠ CAUTION

Cylinders

The efficiency of the cylinders will be affected if they are not kept free of solidified dirt. Clean dirt from around the cylinders regularly. When leaving or parking the machine, close all cylinders if possible to reduce the risk of weather corrosion.

INT-3-2-10U

⚠ CAUTION

Cleaning

Cleaning metal parts with incorrect solvents can cause corrosion. Use only recommended cleaning agents and solvents.

INT-3-2-11

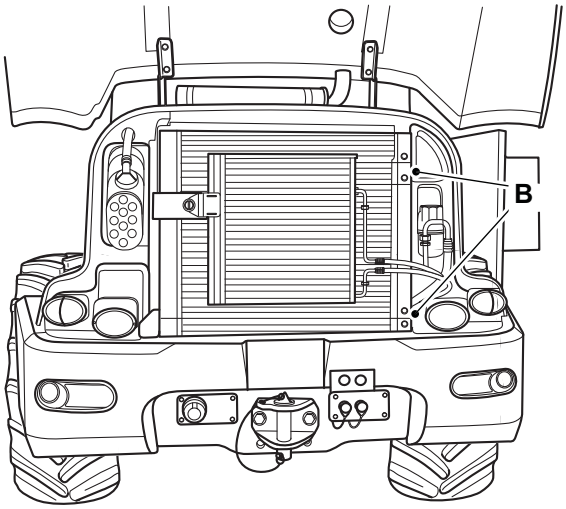
⚠ WARNING

When using cleaning agents, solvents or other chemicals, you must adhere to the manufacturer's instructions and safety precautions.

GEN-1-9

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P1070016

Fig 13.

A Battery isolator key

Jump Starting the Engine

T3-021

⚠ WARNING

Do not use a battery if its electrolyte is frozen. To prevent the battery electrolyte from freezing, keep the battery fully charged.

Do not try to charge a frozen battery or jump-start and run the engine, the battery could explode.

Batteries produce a flammable gas, which is explosive; do not smoke when checking the electrolyte levels.

When jump-starting from another vehicle, make sure that the two vehicles do not touch each other. This prevents any chance of sparks near the battery.

Set all the machine switches to their OFF positions before connecting the external power supply. Even with the starter switch set to off some circuits will be energised when the external power supply is connected.

Do not connect the booster (slave) supply directly across the starter motor. Doing this by-passes the neutral gear safety switch. If the machine is in gear, it may 'runaway' and kill or injure bystanders.

Use only sound jump leads with securely attached connectors. Connect one jump lead at a time.

The machine has a negative earth electrical system. Check which battery terminal is positive (+) before making any connections.

Keep metal watch straps and jewellery away from the jump lead connectors and the battery terminals - an accidental short could cause serious burns and damage equipment.

Make sure you know the voltage of the machine. The booster (slave) supply must not be higher than that of the machine. Using a higher voltage supply will damage your machine's electrical system.

If you do not know the voltage of your booster (slave) supply, then contact your JCB dealer for advice. Do not attempt to jump-start the engine until you are sure of the voltage of the booster (slave) supply.

4-2-2-3_1

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Transducer Output Test (V4) - with Transducer Removed

1 Remove the transducer from the rear chassis, reconnect to the machine wiring harness **16-M** and support the transducer under the machine.

2 Set the test box switches to RUN / TRANS / TEST 1, then measure the voltage between TP1 and TP4.

Expected reading: 4.48V to 4.52V

Important: *This voltage cannot be measured using a voltmeter directly on the wiring. This voltage can only be measured via the test box (see* ***Section 1, Service Tools****).*

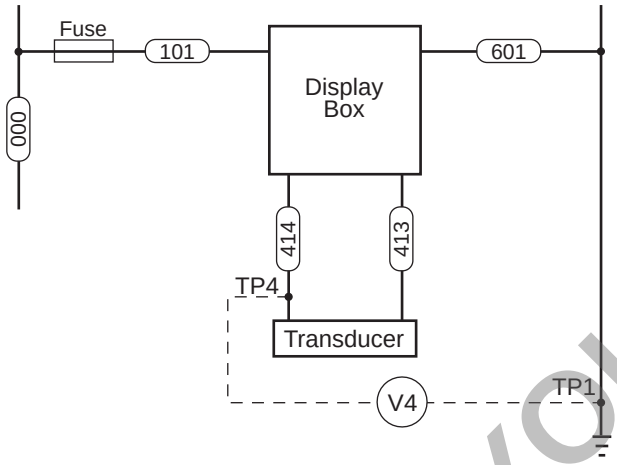


Fig 15. Transducer Output Test (V4)

If the test box is not available, disconnect the transducer harness from the machine wiring **16-M**. Connect test harness (see ***Section 1, Service Tools***) between the two connectors **16-E** and **16-F**. Connect the pins of the test harness to a good quality multi meter capable of reading milli-amps (mA).

The expected reading should be 47 to 53 mA.

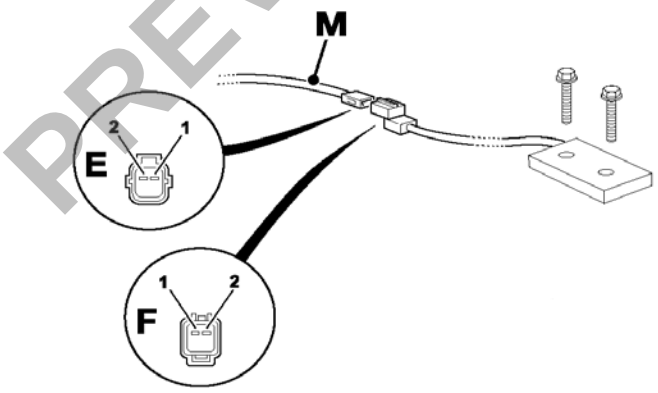


Fig 16.

3 If the transducer is not distorted, then the voltage V4 should be between 4.48V and 4.52V. If it is outside this range, but within 4.40V to 4.60V, the transducer may still be serviceable, providing the result of ***Transducer Output Test (V3)*** is satisfactory.

If the transducer passes this test, having failed ***Transducer Output Test (V3)***, the apparent failure may be due to uneven transducer mounting.

a Check mounting surfaces are clean, flat and free from paint and rust etc.

b Refit the transducer to the rear chassis and torque tighten the fixing screws, see ***Transducer, Removal and Replacement***.

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Hydraulic Tank

Removal and Replacement

Removal

Make the machine safe, r**efer to Section 3 - Maintenance, Preparing the Machine for Maintenance**.

Vent the hydraulic pressure, **refer to Section 3, Maintenance, Hydraulic System**.

Obey the General Safety procedures, see ***Section 2 - General Procedures***

⇨ *Fig 62. (B-68)*

WARNING

Hydraulic Pressure

Hydraulic fluid at system pressure can injure you. Before connecting or removing any hydraulic hose, residual hydraulic pressure trapped in the service hose line must be vented. Make sure the hose service line has been vented before connecting or removing hoses. Make sure the engine cannot be started while the hoses are open.

INT-3-1-11_2

1 Lift the engine canopy. See ***Section 3 - Access Panels.***

2 Remove the drain plug **D** and drain tank contents into a suitable clean container.

3 Remove the battery **E**, see ***Section C - Battery.***

4 Disconnect the hydraulic hose to the filter **F**.

WARNING

Make the machine safe before working underneath it. Park the machine on level ground, lower the attachments to the ground. Apply the park brake, put the transmission in neutral and stop the engine. Block both sides of all four wheels.

Disconnect the battery, to prevent the engine being started while you are beneath the machine.

GEN-4-1_1

5 Working below the machine, put a label on each hose before disconnecting to help identification when replacing. ⇨ *Hose Connections (B-69)*

6 Disconnect the hydraulic feed and return hoses at the tank connectors **B**.

7 Support the tank.

8 Remove the bolts from the front mountings **C**.

9 Working below the machine, remove the bolts **A** from the inner side of the chassis.

10 Remove the fuel tank from the machine.

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Alternator

TC-006

General Description

The alternator is a three phase generator having a rotating field winding and static power windings.

When the start switch is turned on, current from the battery flows by way of the 'No Charge' warning light to the field winding. This creates a magnetic field which supplements the residual magnetism in the rotor poles. As the engine is started, the fan belt drives the rotor and alternating current is generated in the power windings as they are cut by the rotating magnetic field. Output is controlled by a solid state regulator which varies the field current in accordance with electrical demand.

Servicing is restricted to periodic inspection of slip ring brushes. Bearings are 'sealed for life'.

Service Precautions

1 Ensure that the battery negative terminal is connected to the earthing cable.

2 Never make or break connections to the battery or alternator, or any part of the charging circuit whilst the engine is running. Disregarding this instruction will result in damage to the regulator or rectifying diodes.

3 Main output cables are 'live' even when the engine is not running. Take care not to earth connectors in the moulded plug if it is removed from the alternator.

4 During arc welding on the machine, protect the alternator by removing the moulded plug (or if separate output cables fitted, remove the cables).

5 If slave starting is necessary, connect the second battery in parallel without disconnecting the vehicle battery from the charging circuit. The slave battery may then be safely removed after a start has been obtained. Take care to connect batteries positive to positive, negative to negative.

Charging Circuit Test

1 Ensure that all battery and alternator connections are in place, secure and making good metal - to - metal contact, especially the 'earth' connections to chassis and engine.

2 Adjust the alternator drive belt tension if necessary and make sure that the battery is well charged.

3 Turn the start switch to the ON position.

'Oil pressure' and 'No charge' warning lights should glow. If any light fails, ⇒ *Check 1 (C-22)*.

4 Start the engine; all warning lights should extinguish rapidly.

If the 'No charge' warning light remains ON, ⇒ *Check 2 (C-23)*.

If the oil pressure warning remains on stop engine immediately and investigate the engine lubrication system.

Check 1

With start switch 'ON' try the heater motor and screen wiper.

If they operate normally, check the warning light bulb for blown filament.

Simultaneous failure of all items indicates a fault at the start switch. Check for cable disconnection before condemning the switch itself.

If the 'No charge' warning bulb is in good order, withdraw the triple plug from the back of the alternator. Make a temporary connection between the SMALL terminal in the plug and earth as shown below. If the 'No charge' warning bulb still fails to light, check the cable for continuity. If the bulb now lights, check the alternator for a defective regulator. ⇒ *Alternator Charging Test (C-23)*.

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Basic Operation

Flowshare

The following explains the basic operation of Flowshare machines with a variflow pump driven hydraulic system.

The JCB Flowshare variflow hydraulic system differs in many important aspects to that of the normal parallel hydraulic system. Before attempting to service or fault find the system ensure that you read and understand all the descriptions in this section.

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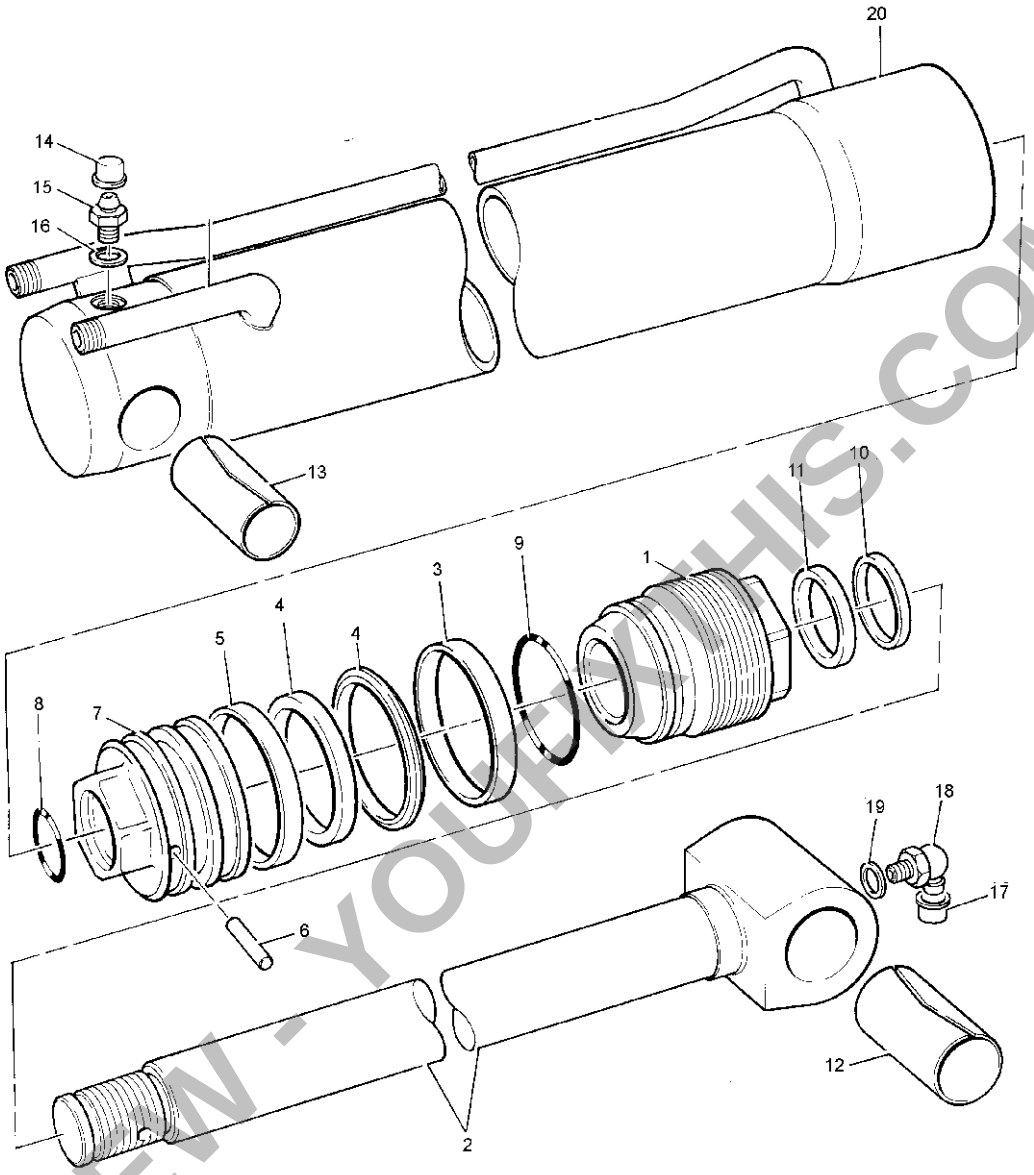


Fig 12.

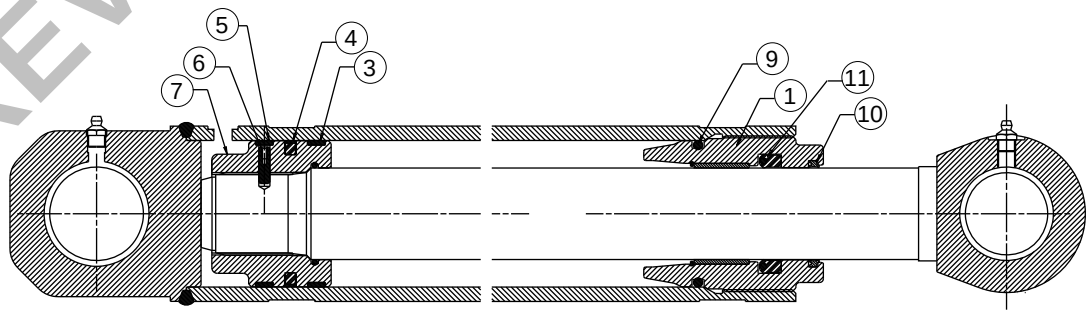


Fig 13. Typical Ram Assembly

Note that on boom and bucket rams, pivot pin grease seals are fitted.

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Fig 42. Solenoid Actuation

Transmission Dump Operation

T.B.A.

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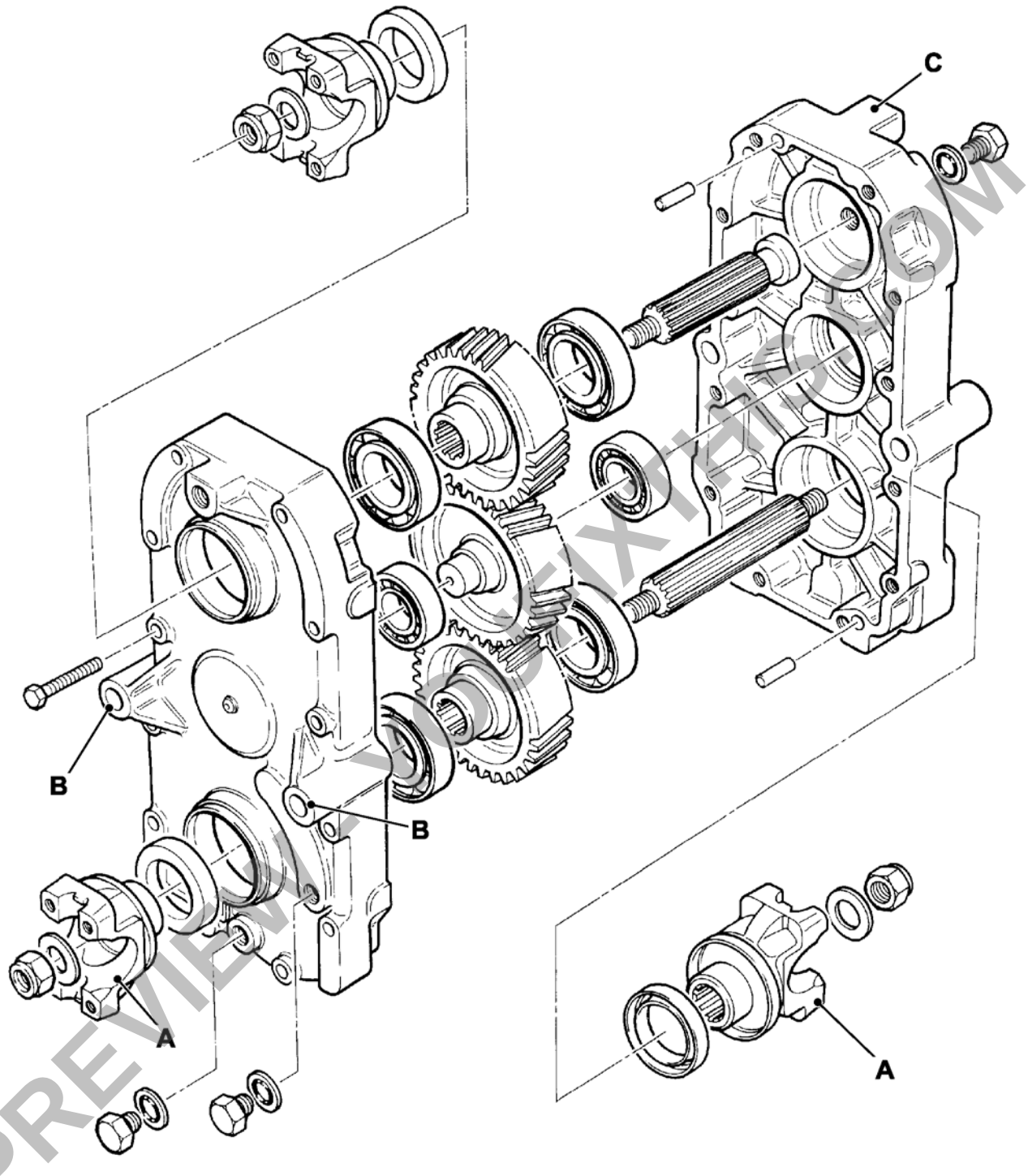


Fig 62.

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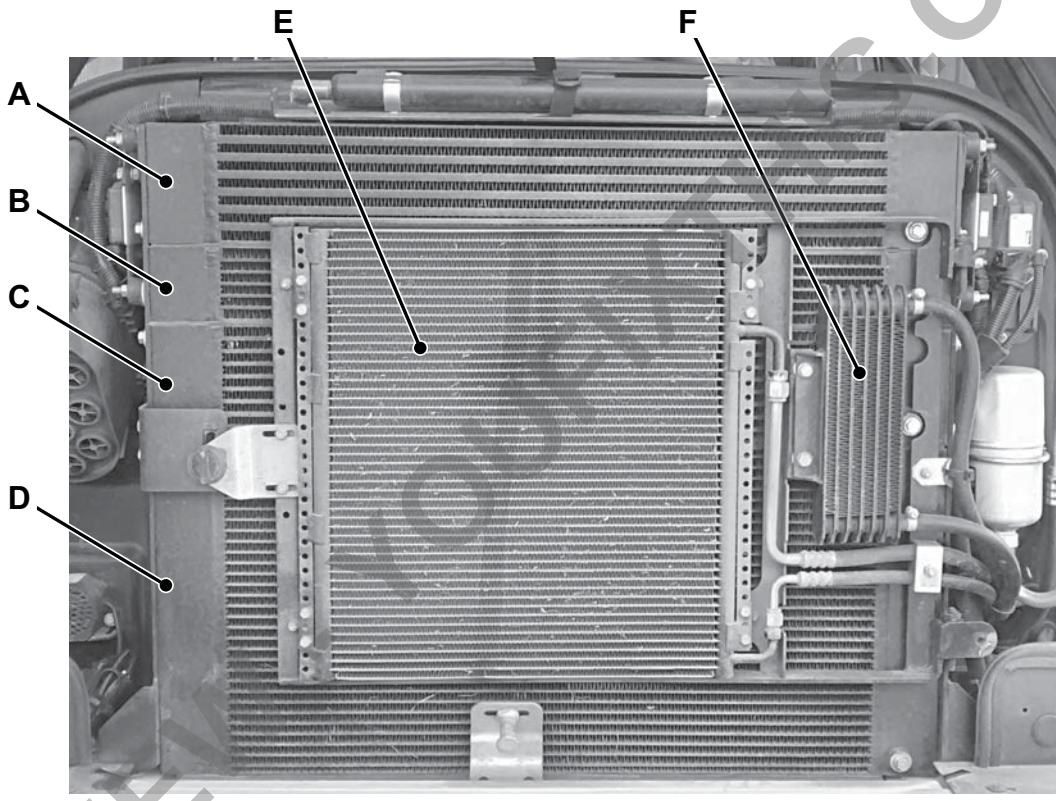
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Cooling Pack

Component Location

A	Charge Air Cooler (CAC) matrix
B	Transmission coolant radiator matrix
C	Hydraulic Oil Cooler matrix

D	Engine coolant radiator matrix
E	Air Conditioning Condenser
F	Fuel Cooling Matrix



C147240

Fig 5. Cooling Pack (with CAC)

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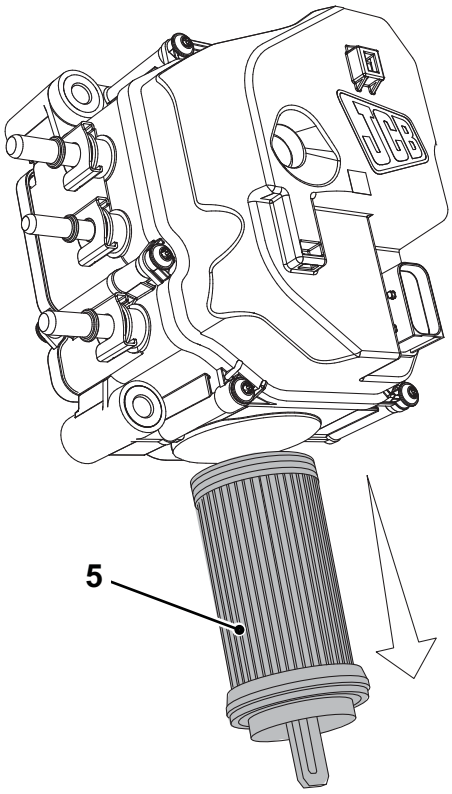


Fig 39.

8 Lubricate the O-rings with distilled water or DEF.

9 Install a new filter element **5** into the supply module.

10 Install a new pressure equalising element.

11 Install the filter cover, tighten to 22.5 Nm (16.5 lbf ft).

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Start Servicemaster

1 Double click on the Servicemaster icon. ⇒ *Fig 13. (M-45)*. (The icon is found on the desktop or in the `Start' menu -`Programs' - 'JCB'.)

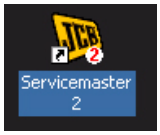


Fig 13.

2 The Servicemaster chooser window will open. ⇒ *Fig 14. (M-45)*



Fig 14.

3 Open the drop down menu to see the machines and components supported by Servicemaster tools. ⇒ *Fig 15. (M-45)*



Fig 15.

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