Service Manual

Ground Care FM30

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Fluids, Lubricants and Capacities

Table 1.

Item	Capacity Litres	Fluid / Lubricant	International Specification
Fuel Tanks	50 litres (11 gal)	Diesel Oil	⇨ *Types of Fuel (🗋 3-32).*
Engine (Oil)	5.5 litres (1.2 gal)	JCB Super Multigrade Engine Oil 15W40 (4001/1500)	SAE15W/40, API CD-SF or MIL-L-2104D
Hydraulic (Oil)	20 litres (4.4 gal)	JCB Gear Oil HP Plus (4000/2200)	Agip ROTRA JD/F SAE 80W Spec: API GL-4
Transmission (Oil)	20 litres (4.4 gal)	JCB Gear Oil HP Plus (4000/2200)	Agip ROTRA JD/F SAE 80W Spec: API GL-4
Rear axle (Oil)	3.3 litres (0.7 gal)	JCB Gear Oil EP 80W90 (4004/6300)	Agip ROTRA MP 80W/90
Engine Coolant	5 litres (1.1 gal)	JCB Universal Antifreeze/water ⇨ *Coolant Mixtures (🗋 3-12).*	ASTM D3306-74
Grease		JCB EP MPL Moly Grease (4003/1312)	Agip Grease 30
Deck Gearbox Oil (1.5/1.8m)	0.6 litres (0.132 gal)	JCB Gear Oil EP 85/140	API GL-S
Deck Gearbox Oil (Twin-Flail)	0.7 litres (0.154 gal)	JCB Gear Oil EP 85/140	API GL-S

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Symptom	Problem	Correction
Engine Overheating	Air intake grille clogged.	Service air intake grille.
	Cooling fins on radiator clogged.	Clean radiator fins.
Engine Stalling While Blades are Engaged	Operator not in seat.	Sit on seat.
	Faulty safety system.	Contact JCB Dealer.
	Spindle bearing failure.	Contact JCB Dealer.
	Blades locked by foreign matter.	Clean underside of deck
Low Engine Oil Pressure	Low oil level.	Add oil.
	Oil diluted or too light.	Change oil and locate source of contamination
High Oil Consumption	Improper Oil Viscosity.	Use SAE30 oil whenever possible
	Numerous other possible causes.	Contact JCB Dealer.
Engine Will Not Turn Over	Flat battery.	Charge unit or jump start.
	Bad ground connection.	Correct the connection
	Poor terminal connection at battery.	Correct the connection.
	Poor wiring harness connections.	Correct the connection.
	Faulty park switch.	Contact JCB Dealer.
	Faulty PTO switch.	Contact JCB Dealer.
	PTO switch engaged.	Disengage PTO switch.
	Operator not in seat.	Sit in seat.
	Blown Fuse.	Replace fuse.
Engine Turns Over But Doesn't Start - There Is a Glow At Plug	No fuel or line plugged.	Fill tank or replace line.
	Bad fuel solenoid.	Contact JCB Dealer.
	Fuel valve turned OFF.	Turn fuel valve on.
	Dirt in fuel filter.	Replace fuel filter.
	Dirt, water, or stale fuel.	Contact JCB Dealer.
	Incorrect fuel in fuel system.	Drain tank and replace
Engine Turns Over But Doesn't Start - No Glow at Plug	PTO switch is ON.	Turn PTO switch OFF.
	No operator in seat.	Sit on seat.
	Bad seat switch.	Contact JCB Dealer.
	Bad park switch.	Contact JCB Dealer.

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Circuit Schematics

Information

For details and locations of fuses, diodes and relays, ***See Section 3 - Electrics, Fuses.***

Serial	Description
1	12 V Battery
2	Alternator
3	General fuse (FG)
4	Alternator pickup fuse (F6)
5	Start-up panel
6	Input fuse (F9) for **16** and **38**
7	Instrument input fuse
8	Hour counter
9	Fuel indicator
10	Engine oil pressure warning light
11	Engine coolant high temperature warning light
12	Air filter clogged warning light
13	Fuel reserve warning light
14	Parking brake warning light
15	Starter motor
16	Air pre-heating control unit
17	Air heater
18	Additional heater pilot light for low temperature start-up
19	Battery charge pilot light
20	Hydrostatic transmission filter clogged warning light
21	Sidelights on
22	Dipped beam on
23	Direction indicators pilot light
24	Licence plate light
25	Engine oil pressure bulb
26	Coolant temperature bulb
27	Air filter bulb
28	Fuel level float
29	Hydrostatic transmission oil filter bulb
30	Oil pressure and coolant temperature buzzer
31	Starter relay
32	Starter acknowledgement relay (R4)
33	Input fuse (F10) for **52** and **50**
34	"HOLD" diesel solenoid and timer fuse (F11)
35	"PULL" diesel solenoid fuse (F12)
36	PTO system relay (R5)
37	Diesel solenoid relay (R8)
38	Engine stop relay (R7)
39	3A Diode (D13)
40	3A Diode (D14)
41	Seat microswitch
42	3A Diode (D15)
43	3A Diode (D16)
44	Diesel solenoid
45	PTO system relay (R6)
46	PTO switch and pilot light
47	PTO solenoid valve
48	Main plate 15 degree angle micro
49	Starter three second timer
50	Brake pedal microswitch
51	Seat three second timer
52	Parking brake microswitch
53	Lights circuit
54	Acoustic signaller
55	Left tail light
56	Left headlight
57	Right headlight
58	Right tail light
59	Emergency lights switch
60	Direction indicator relay
61	Emergency fuse (F1)
62	Acoustic signaller fuse (F2)
63	Dipped beams fuse (F5)
64	Right sidelight fuse (F4)
65	Left sidelight fuse (F3)
66	Rotating beacon lamp fuse (F8)
67	Rotating beacon lamp switch
68	Rotating lamp

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Fault Finding

Hydraulic System

Fault:

⇨ *Table 1. Lift will not rise (E-11)*
⇨ *Table 2. Lifting speed too slow (E-11)*
⇨ *Table 3. Lift lowers when adjusting knob is fully closed (E-12)*
⇨ *Table 4. Lift will not lower (E-12)*
⇨ *Table 5. Lowering speed too slow (E-12)*
⇨ *Table 6. Overheating fluid (E-12)*
⇨ *Table 7. Pump noisy (E-12)*
⇨ *Table 8. Excessive wear, deflection or damage to pump (E-12)*
⇨ *Table 9. Oil leaks from pump (E-12)*
⇨ *Table 10. Oil leaks from piping or joints (E-13)*
⇨ *Table 11. Oil leaks around lift arm (E-13)*

Table 1. Lift will not rise

Possible Cause	Action
Insufficient engine speed.	Increase engine speed slightly.
Insufficient transmission oil.	Replenish.
Suction line taking in air.	Tighten securely or replace broken parts.
Clogged suction filter.	Clean filter
Damaged or worn hydraulic pump.	Repair or replace pump.
Incorrect adjustment or worn link.	Adjust or replace link.
Excessive load on lift.	Reduce load.
Broken cylinder.	Replace.
Viscosity of transmission oil too low.	Replace oil with correct grade.
Incorrectly adjusted valve.	Adjust valve to correct setting.
Internal leaks.	Inspect cylinder and valves. Replace damaged seals.
Sticking valve spool.	Disassemble and wash spool clean. Replace/repair if necessary.

Table 2. Lifting speed too slow

Possible Cause	Action
All possible causes given in ⇨ *Table 1. Lift will not rise (E-11)*	Repair as given in ⇨ *Table 1. Lift will not rise (E-11)*
Control valve spool stroke too small.	Inspect, adjust or replace link mechanism as required.

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Charging System

Fault:

⇨ *Table 17. Battery is low in charge or discharge (C-13)*
⇨ *Table 18. Battery is charging at a high rate (battery over heating) (C-13)*
⇨ *Table 19. No output from alternator (C-13)*
⇨ *Table 20. Intermittent or low alternator output (C-13)*
⇨ *Table 21. Warning light dim (C-14)*
⇨ *Table 22. Warning light is normal but battery is discharged (C-14)*
⇨ *Table 23. Warning light is lit during operation (C-14)*
⇨ *Table 24. Warning light flashes intermittently (C-14)*

Table 17. Battery is low in charge or discharge

Possible Cause	Action
Loose or worn alternator drive belt.	Check, adjust tension or replace.
Defective battery: It will not accept or hold a charge. Electrolyte level Low.	Check condition of battery and replace if necessary.
Excessive resistance due to loose charging system connections.	Check, clean and tighten circuit connections.
Faulty alternator.	Check, and repair or replace.

Table 18. Battery is charging at a high rate (battery over heating)

Possible Cause	Action
Defective battery.	Check condition of battery and replace if necessary.
Faulty alternator.	Check, and repair or replace.

Table 19. No output from alternator

Possible Cause	Action
Alternator drive belt is broken.	Replace and tension correctly.
Loose connection or broken cable in charge system.	Inspect system, tighten connections and repair or replace faulty wiring.
Faulty voltage regulator.	Check and replace.
Faulty alternator.	Check, and repair or replace.

Table 20. Intermittent or low alternator output

Possible Cause	Action
Faulty external charging circuit connections.	Inspect system, clean and tighten connections.
Faulty rotor slip rings or brushes in alternator.	Inspect, repair or replace.
Defective monitor and warning light.	Check and replace.
Faulty rectifier or rectifying diodes in alternator.	Check and replace.

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