SERVICE MANUAL

2TFT, 2THS, 2TST, 3.5TST, 3TFT, 3TST

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This manual contains original instructions, verified by the manufacturer (or their authorized representative).

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Foreword

The Operator's Manual

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You and others can be killed or seriously injured if you operate or maintain the machine without first studying the Operator's Manual. You must understand and follow the instructions in the Operator's Manual. If you do not understand anything, ask your employer or JCB dealer to explain it.

Do not operate the machine without an Operator's Manual, or if there is anything on the machine you do not understand.

Treat the Operator's Manual as part of the machine. Keep it clean and in good condition. Replace the Operator's Manual immediately if it is lost, damaged or becomes unreadable.

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Fault-Finding

Table 42. Coolant - Loss.

Cause	Remedy
Incorrect coolant level.	Check the level.
Coolant leaking from engine radiator or cab heater.	Visually inspect the radiator heater, hoses and connection to locate the leak. If oil is present in the coolant, check for a transmission or engine oil cooler leak.
External engine coolant leak.	Visually inspect the engine and components for seal, gasket hose connection leaks. Make sure all hose clips are in good condition and torqued to the recommended figure. Make sure all spring band clamps are in good condition and apply sufficient pressure to the hoses.
Overheating or compression gases leaking, resulting in loss through the radiator overflow.	See Also: Table 43. Coolant - Over Temperature.
If installed, transmission cooler leak.	Check/replace the transmission cooler. Check for coolant in the inlet manifold and in the oil.
Lubricating oil cooler leak.	Check/replace the oil cooler. Check for coolant in the oil.
Cylinder head gasket leak.	Check/replace the head gasket.
Cylinder head cracked or porous.	Check/replace the cylinder head.
Crankcase coolant passages leaking.	Check/replace the crankcase.

Table 43. Coolant - Over Temperature.

Cause	Remedy
Incorrect coolant level (low).	Check the level. See Also: Table 42. Coolant - Loss.
External radiator matrix blocked with dirt or chaff.	Clean exterior or radiator matrix.
Air flow to the radiator inadequate or restricted.	Check/repair fan shroud, anti-recirculation sealing, shutters, fan sensors, fan speeds as required.
Coolant pump or fan drive belts loose.	Check/correct belt tension.
Radiator hose collapsed, restricted or leaking.	Check/replace hose.
Oil level overfilled.	Check oil level.
Cooling system pressure cap incorrect or faulty.	Replace cap with the correct rating for the system.
Over concentration of anti-freeze.	Remove part of the coolant from cooling system and replace with water.
Temperature sensor gauge faulty.	Check the electronic fault codes. Verify that the gauge and temperature sensor are accurate.
Thermostat faulty, incorrect or missing.	Check/replace the thermostat.
Air or combustion gases in the cooling system.	Make sure the fill rate is not exceeded and the correct vented thermostat is installed. If aeration continued, check for a compression leak through the head gasket.
Coolant pump faulty.	Check/replace the coolant pump.
Vent line from engine and/or radiator blocked or incorrectly routed (sudden overheating).	Check routing and operation or vent line.

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Technical Data

Table 54. Transmission

Transmission	Dana crash box type 401/303			
Input rotation	Clockwise as seen looking on the input of the gearbox			
Output rotation	Same as the input rotation			
Gear ratios	1st	2nd	3rd	Reverse
	4.29:1	1.85:1	1:1	3.85:1
Gears	Case hardened nickel steel			
Gearbox casing	Heavy duty cast iron			
Bearings	Ball and roller bearings			
Shafts	Hardened nickel steel: input shaft splined to 25.4mm SAE10			
Gear change mechanism	Substantial involute dogs of gear tooth form actuated by a robust selector mechanism			

Table 55. Transfer Gearbox

Make	Dana
Model	300–303
Recommended lubricant	Shell Spirax A 80W90

Table 56. Axles

Make	Dana		
Description	110	315	112
Capacity	3L	10.9L	9.7–15L
Oil type	Shell Donax TD		
Grease type	Tecnolube seal polymer 400/L (DIN = KHER1R ISO —1–XMR-XM2) Molykote		

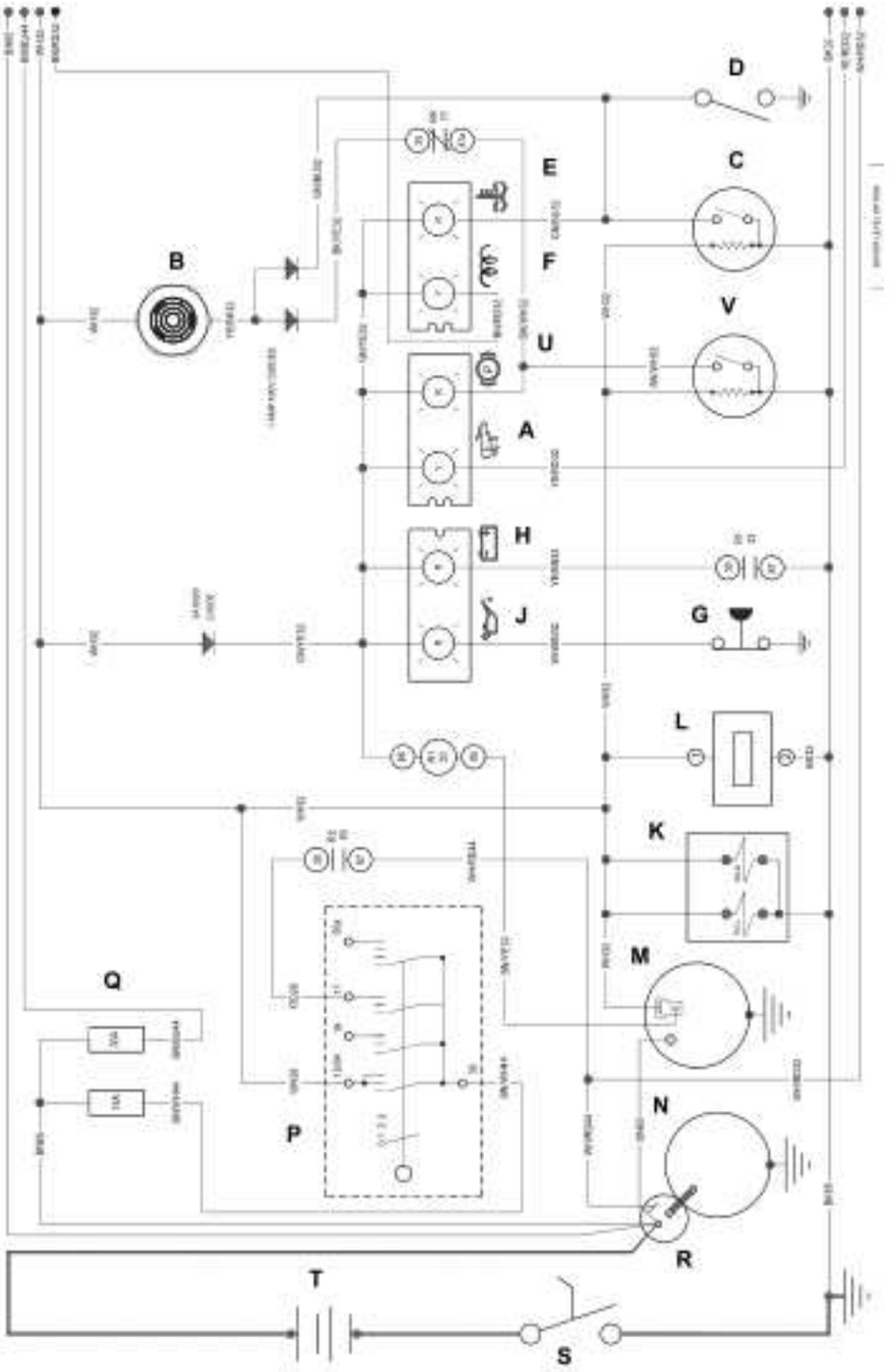
Table 57. Torque Values

Description	Torque value
Propshafts to output couplings	71N·m
Case half bolts	41N·m
Output coupling nuts	98N·m
Input shaft coupling bolt	58N·m
Idler lock bolt	12N·m
Oil drain plug	47N·m
Oil level plug	47N·m

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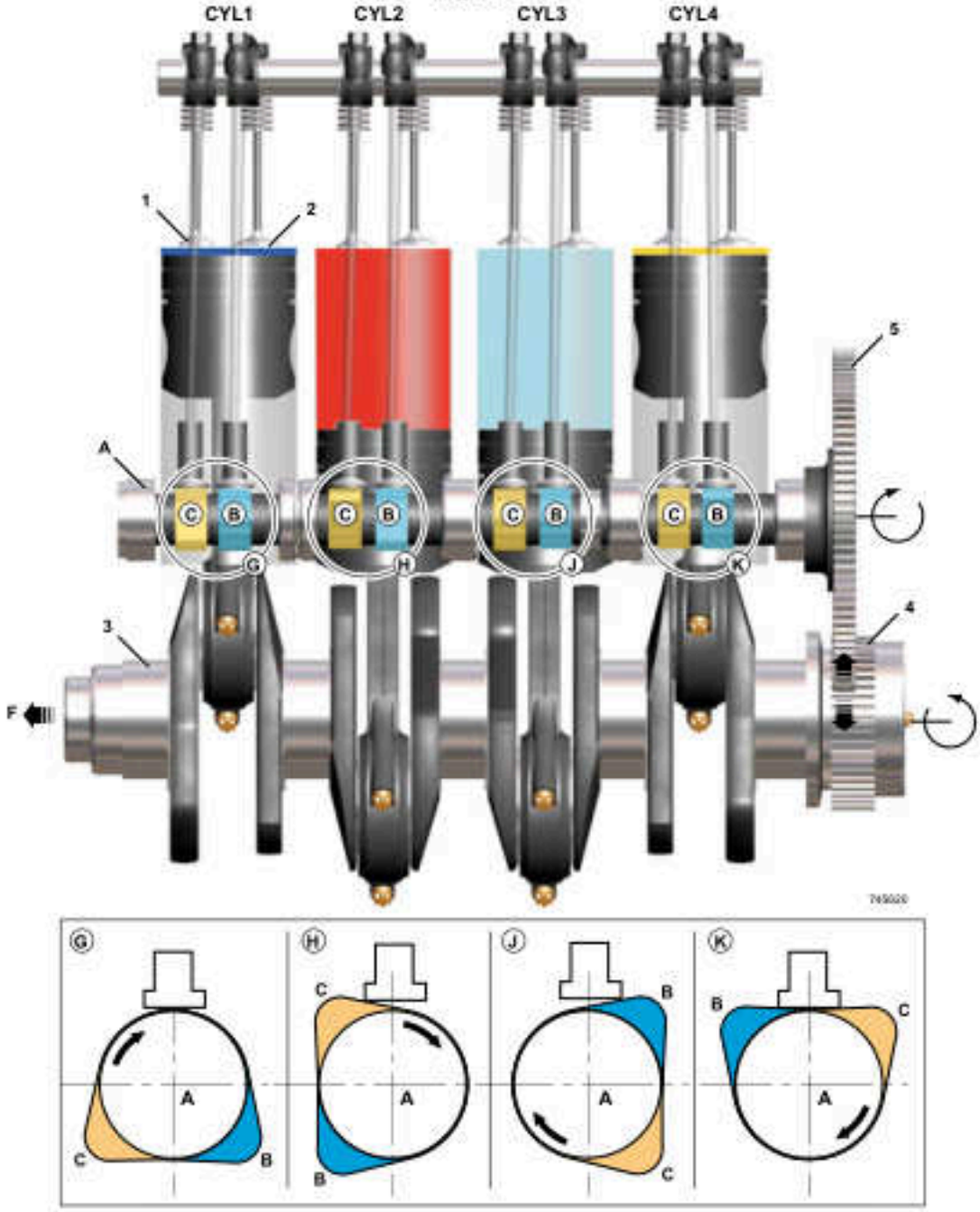
For Machines with Hydrostatic Transmission

Figure 451. Electrical schematic (Sheet 1 of 3)



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Figure 98.



CYL1	Cylinder number 1
CYL2	Cylinder number 2
CYL3	Cylinder number 3
CYL4	Cylinder number 4
A	Camshaft
B	Camshaft lobe - Inlet valve operation
C	Camshaft lobe - Exhaust valve operation
F	Front of engine
1	Exhaust valves
2	Inlet valves
3	Crankshaft
4	Crankshaft gear
5	Camshaft drive gear

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Introduction

Batteries used in normal temperate climate applications should not need topping up. However, in certain conditions (such as prolonged operation in high ambient temperatures or if the alternator overcharges) the electrolyte level should be checked frequently and top up as necessary.

The electrolyte level should be checked in accordance with the routine maintenance schedule. Shorter maintenance intervals are required if the machine is operating at high ambient temperatures or continuously for long periods.

Later Machines may have the new type batteries installed which include a sight glass to check the condition of the battery. New batteries should be used as replacements if replacing the battery on earlier machines.

Figure 454.



A Maintenance free battery

Maintenance

To make sure that the battery provides optimum performance the following steps should be observed:

- Make sure that the electrical connections are clean and tight. Smear petroleum jelly on connectors to prevent corrosion.
- When applicable - never allow the electrolyte level to fall below the recommended level of 6mm above the plates. Use only distilled water for topping up.
- Keep the battery at least three quarters charged, otherwise the plates may become sulphated (hardened) - this condition makes recharging the battery very difficult.

Extra precautions must be taken when bench charging maintenance free batteries, they are more prone to damage by overcharging than the standard type of battery:

- Never boost charge a maintenance free battery (if installed).

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