CAT® Lift Trucks

Service Manual

MC/FC

Chassis, Mast & Options

GP40K	ET29C-00011-up	DP40K	ET19C-00011-up
GP40KL	ET29C-50001-up	DP40KL	ET19C-50001-up
GP45K	ET29C-80001-up	DP45K	ET19C-80001-up
GP50K	ET33B-50001-up	DP50K	ET28B-50001-up

For use with S6S and TB45 Engine Service Manual. 99739-65120

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GENERAL INFORMATION

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Item \ Truck Model			DP40K	DP40KL	DP45K	DP50K
Engine (diesel)	Fuel tank capacity liter (U.S. gal.)		115 (30)			
	No-load minimum speed rpm		650 to 700			
	No-load maximum speed rpm		2600 to 2650			
Fuel system	Fuel injection pump	Type	Bosch			
		Plunger diam. mm (in.)	6.5 (0.256)			
		Cam lift (one side) mm (in.)	6 (0.24)			
	Fuel injection nozzles	Type	Throttle			
		Spray holes diam. mm (in.)	1.0 (0.04)			
		Injection pressure kPa (kg/cm²) [psi]	1372 (140) [1992]			
	Glow plugs	Type	Sheathed			
		Voltage – current V – A	22 – 4.4			
	Fuel pump type		Plunger			
	Air cleaner	Type × number	Cyclone with paper element × 1			
Lubrication system	Type		Pressure feed			
	Oil pump		Trochoid type			
	Oil filter		Paper element type			
	Refill capacities liter (U.S. gal.)	Oil pan	11 (2.9)			
		Oil filter	1 (0.3)			
		Total	12 (3.2)			

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(5) When coupling or uncoupling a connector, make sure that the starter switch is OFF. Never try to insert or pull off the connector half forcibly or its pins will suffer damage. When coupling a connector, be sure that the inserted half snaps into its self-locking position.

(6) Before starting troubleshooting work, check to be sure that the following conditions are met on the machine side:

Conditions in the machine	Check item	What to check	Remedy
Starter switch OFF Safety switch OFF	Hydraulic line	Hoses, pipes and connectors for damage and sign of leak.	Repair leaking or damaged parts.
	Hydraulic devices	Check control valve and hydraulic cylinders for damage and oil leaks.	Repair damaged or leaking parts, if any.
	Electrical connectors and wires	Check connectors for tightness, burns and breakage; check wires for insulator stripping and signs of rubbing.	Repair.
	Power source voltage	Check to be sure that voltage is at least 10 V as read across battery's terminals.	Correct alternator or battery if this voltage is too low.
Engine at standstill Starter switch ON Safety switch ON	System check lamp	Check to be sure the lamp goes ON and OFF properly; if not, check its bulb.	Replace lamp bulb if blown.
	Auto-light unit	After making sure check light bulb is OK, see if auto-light works properly.	Refer to Case 1 and 2.
	LED indicator (red) in the controller	Be sure that red LED go ON and OFF correctly.	Proper functioning of LED indicator is essential to troubleshooting.
	Trouble-data reading function of controller	Connect GSE to controller and check its input and output actions.	(Proper functioning of controller is essential to troubleshooting.)
Engine running Safety switch ON	Hydraulic devices	With your hands kept off control levers, see if solenoid valves and hydraulic pump are making any abnormal sound.	Refer to the sections dealing with control valve and hydraulic pump, respectively.
		Operate control lever to see if any abnormal sound, indicative of flow throttling, comes from control solenoid valve or from any other solenoid valve. Check to see if unload solenoid valve operates properly, in response to a lever being moved.	(Proper function of solenoid valves is essential to troubleshooting.)
	Work attachments	Check each work attachment for the following: (a) Does it work properly? (b) Does it "inch" properly? (c) Does mast go down with proper speed?	 Refer to Case 3. Refer to Case 4. Refer to Case 5.

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Suggestions for Removal

(1) Disconnect the head lamp and combination lamp harness connectors, then remove the overhead guard.

(2) Drain coolant from the engine cooling system, and remove the radiator assembly.

(3) Drain oil from the transmission, reduction gear and differential.

(4) Remove the front axle shafts.

(5) Remove the battery.

(6) Disconnect the harnesses between the engine and transmission at the sockets or terminals, taking care not to damage them. After disconnecting, fasten them to the main harness.

(7) Disconnect the vacuum hose from the engine. Close the port and the disconnected end of the hose with covers.

(8) In a truck with a torque converter, disconnect the inching cable. In a truck with a mechanical clutch, disconnect the oil pipe of the clutch release cylinder.

(9) Uncouple the universal joint at the engine side for removal.

(10) To remove the engine, transmission and differential case, use three lifting slings, hitching two slings to the engine and one sling to the transmission, and carefully lift them off the frame, making sure that they can be lifted safely, and work them rearward while lifting them.

Unit: kg (lb)

Item \ Truck Model	GP40K thru GP45K	DP40K thru DP45K	GP50 DP50
Weight of 1-speed transmission	310 (684)	310 (684)	–
Weight of automatic 2-speed transmission	–	–	350 (772)

Installation

To install, follow the reverse of removing procedure, and do the following steps:

(1) Output shaft shim adjustment

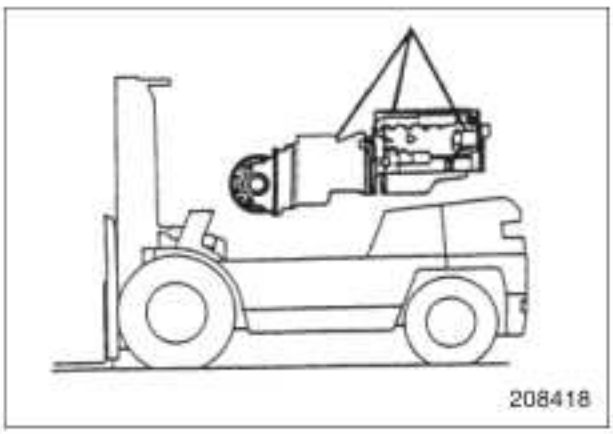
The output shaft and reduction bevel gear should be replaced as an assembly if the reduction bevel gear teeth are defective. When installing the output shaft, check the tooth contact, and adjust it by shimming.

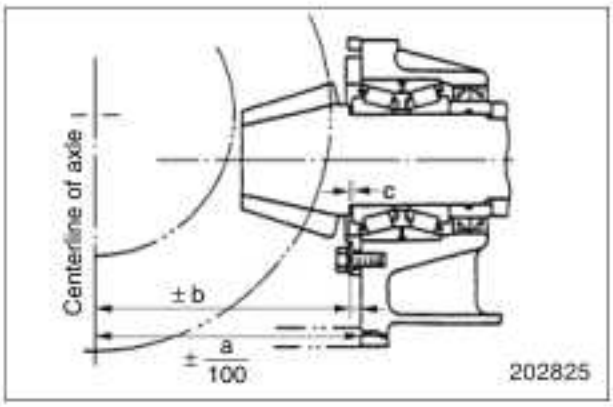
Unit: kg (lb)

Weight of overhead guard	95 (209)

Unit: kg (lb)

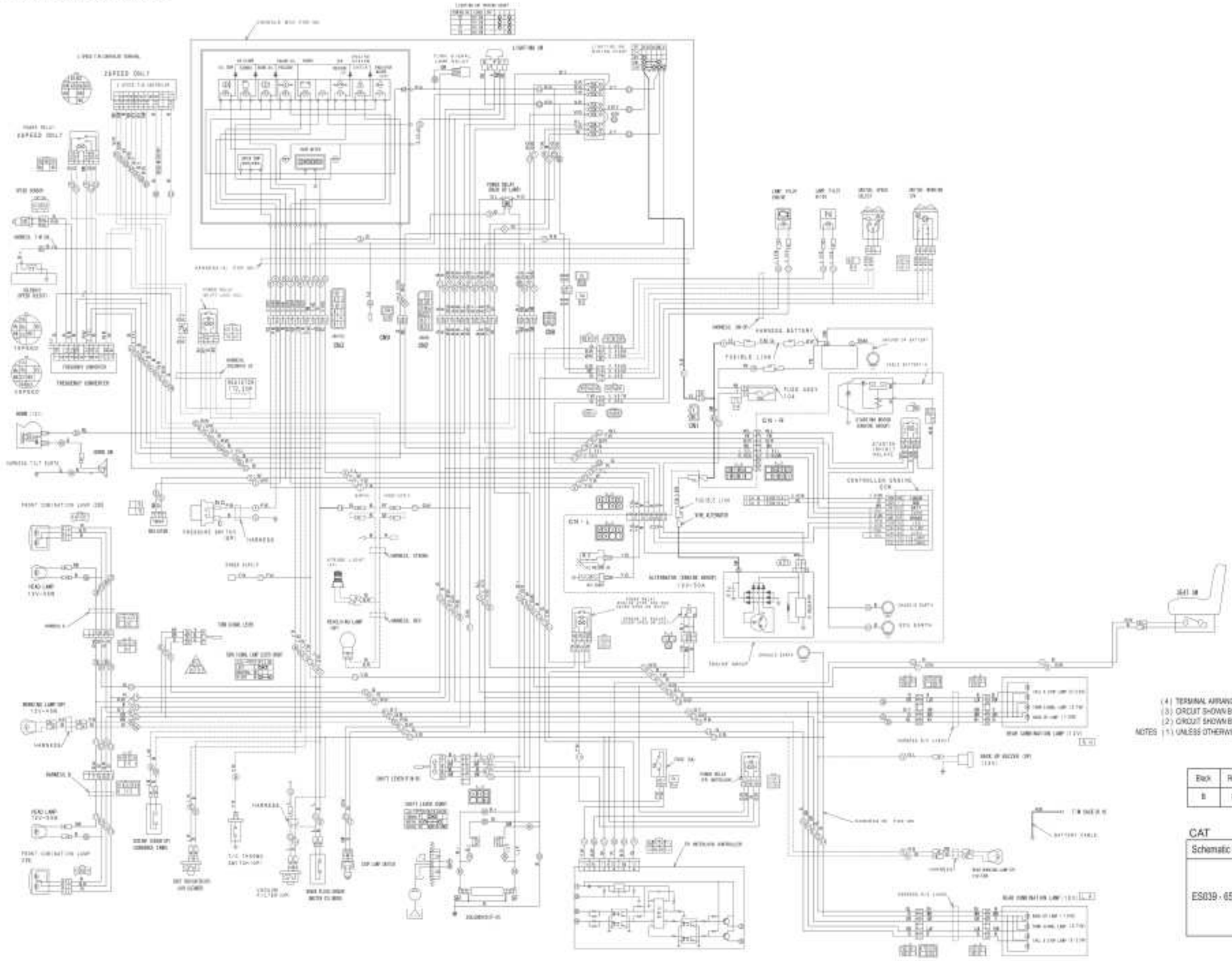
Item \ Truck Model	GP40K thru GP50K	DP40K thru DP50K
Weight of engine	313 (690)	390 (860)





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Electrical Schematic



(4) TERMINAL ARRANGEMENT OF CONNECTOR SHOWN MUST BE HERNESS (B) ARRANGEMENT.
(3) CIRCUIT SHOWN BY CHAIN DOUBLE – DASHED LINE (———) MUST BE OPTIONAL CIRCUIT.
(2) CIRCUIT SHOWN BY DASHED LINE (- - - - - -) MUST BE 2 SPEED T / M CONTROLLER CIRCUIT.
NOTES (1) UNLESS OTHERWISE SPECIFIED, WIRE SIZE MUST BE 1.25 mm².

Black	Red	Green	Yellow	Blue	White	Brown	Light green
B	R	G	Y	L	W	Br	Lg

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Schematic No.	Used for	Truck Model	Serial No.
ES039 - 65120	99739 - 65120	GP40K	ET29C - 00011 - up
		GP40KL	ET29C - 50001 - up
		GP45K	ET29C - 80001 - up
		GP50K	ET33B - 50001 - up

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