CAT® Lift Trucks

Service Manual

Chassis & Mast

GC35K	AT87B-10011-up
GC40K	AT87B-10011-up
GC40K STR	AT87B-10011-up
GC45K SWB	AT87B-10011-up
GC45K STR	AT87B-10011-up
GC55K	AT88B-10011-up
GC55K STR	AT88B-10011-up
GC60K	AT89B-10011-up
GC70K	AT89B-10011-up
GC70K STR	AT89B-10011-up

For use with PSI 4X LPG Engine Service Manual and Fuel System Supplements

99739-8D100

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7. Performance

Class					3.5 ton class	4 ton class		4.5 ton class	
Lift truck model					GC35K	GC40K	GC40K STR	GC45K SWB	GC45K STR
Work performance	Capacity/load center			kg/mm (lb/in.)	3500/500 (7000/24)	4000/500 (8000/24)		4500/600 (10000/24)	
	Maximum lift height Simplex			mm (in.)	3050 (120)			2900 (114)	
	Lift speed (loaded)			mm (fpm)/ sec.	540 (105)			390 (78.0)	
	Lowering speed (loaded)				550 (108)			440 (86.5)	
	Mast tilt (forward-backward)			degree	5/10				
	Free lift			mm (in.)	150 (6.0)			160 (6.5)	
Traveling performance	Travel speed	Powershift transmission models	Loaded	km/h (mph)	19 (12.0)			18.5 (11.5)	
			No loaded		19.5 (12.5)				
	Minimum turning radius			mm (in.)	2235 (88.0)	2285 (90)	2090 (82.5)	2340 (92.0)	2440 (96.0)
	Minimum intersecting isle	Standard			2245 (88.5)	2295 (90.5)	2100 (82.5)	2350 (92.5)	2345 (94.5)
	Gradability at 1 mph (1.6 km/h)	Loaded		%	37	33	32	27	26
		No loaded			23.8	21.1	21.5	17.7	23.8
	Gradability at stall	Loaded			42	37	36	30	
		No loaded			23.8	21.1	21.5	17.7	23.8

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Class					3.5 ton class	4 ton class		4.5 ton class	
Lift truck model					GC35K	GC40K	GC40K STR	GC45K SWB	GC45K STR
Dimensions	Overall length to fork face			mm (in.)	2510 (98.5)	2550 (100)	2360 (93)	2620 (103)	2730 (107)
	Overall width	Standard			1180 (46.5)				1320 (52.0)
		Wide tread (optional)			1270 (50.0)				1420 (56.0)
	Overall height	To top of mast (lowered)			2200 (86.5)			2350 (92.5)	
		To top of mast (extended)			4250 (167.5)			4130 (162.5)	
		To top of overhead guard			2155 (85.0)				
	Wheelbase				1575(62.0)				1780 (70.0)
	Tread	Front	Standard		940 (37.0)				1015 (40.0)
			Wide tread (optional)		1040 (41.0)				1115 (44.0)
		Rear			980 (38.5)				965 (38.0)
	Overhang	Rear			485 (18.8)	525 (20.3)	335 (13.3)	565 (22.1)	470 (18.1)
	Under clearance (at frame)				150 (5.9)				
	Tire size	Front	Single wheels	mm	22x9x16				22x12x16
		Rear			18x7x12.12				18x8x12.12
Weight	Single wheels (without load)	Service weight-no load		kg (lb)	5200 (11500)	5600 (12300)	5700 (12700)	6500 (14300)	6600 (14500)
		Axle loading	Front		2050 (4600)	2025 (4400)	2150 (4900)	1925 (4200)	2625 (5700)
			Rear		3150 (6900)	3575 (7900)	3550 (7800)	4575 (10100)	3975 (8800)

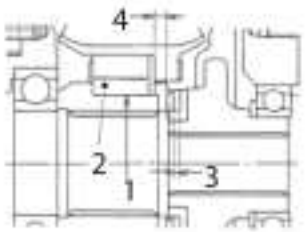
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Class					5.5 ton class		6.0 ton class	7.0 ton class	
Lift truck model					GC55K	GC55K STR	GC60K	GC70K	GC70K STR
Work performance	Capacity/load center			kg/mm (lb/in.)	5500/600 (12000/24)		6000/600 (13500/24)	7000/600 (15500/24)	
	Maximum lift height Simplex			mm (in.)	2900 (114)		2360 (93)		
	Lift speed (loaded)			mm (fpm)/ sec.	390 (78.0)		360 (71.0)		
	Lowering speed (loaded)				440 (86.5)		540 (106.0)		
	Mast tilt (forward-backward)			degree	5/10		6/10		
	Free lift			mm (in.)	160 (6.5)		165 (6.5)		
Traveling performance	Travel speed	Powershift transmission models	Loaded	km/h (mph)	18 (11.5)		21 (13.0)	20.5 (12.5)	
			No loaded		19.5 (12.5)		23 (14.5)		22.5 (14.0)
	Minimum turning radius			mm (in.)	2550 (100)	2350 (92.5)	2570 (101.0)		2400 (94.5)
	Minimum intersecting isle	Standard			2455 (96.5)	2255 (89)	2395 (94.5)		2220 (87.5)
	Gradability at 1 mph (1.6 km/h)	Loaded		%	22.6	22.2	24.5	21.7	21.4
		No loaded			20.2	20.9	22.2	19.7	20.4
	Gradability at stall	Loaded			26	25	30	27	26
		No loaded			20.2	20.9	22.2	19.7	20.4
Dimensions	Overall length to fork face			mm (in.)	2910 (115)	2460 (104)	2950 (116)		2700 (106)
	Overall width	Standard			1320 (52.0)		1440 (56.5)		
		Wide tread (optional)			1420 (56.0)		-		
	Overall height	To top of mast (lowered)			2350 (92.5)		2530 (99.5)		
		To top of mast (extended)			4130 (162.5)		2370 (93.0)		
		To top of overhead guard			2155 (85.0)		2205 (87.0)		
	Wheelbase				1780 (70.0)		1830 (72.0)		
	Tread	Front	Standard		1015 (40.0)		1135 (44.5)		
			Wide tread (optional)		1115 (44.0)		-		
		Rear			965 (38.0)		1160 (45.5)		
	Overhang	Rear			650 (26.1)	380 (15.1)	590 (23.1)		340 (13.1)
	Under clearance (at frame)				150 (5.9)		200 (7.9)		
	Tire size	Front	Single wheels	mm	22x12x16		28x12x12		
		Rear			18x8x12.12		22x8x16		

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Stator

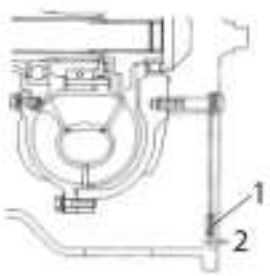
Ref.	Item		Specifications
1	Outside diameter of clutch hub	Standard	65 $^{-0.03}_{-0.049}$ mm (2.56 $^{-0.0012}_{-0.00193}$ in.)
		Limit	64.9 mm (2.555 in.)
2	Outside diameter of clutch roller	Standard	8.1 $^{0}_{-0.015}$ mm (0.32 $^{0}_{-0.00059}$ in.)
		Limit	7.985 mm (0.31437 in.)
3	Outside diameter of thrust washer	Standard	2.0 $^{0}_{-0.05}$ mm (0.08 $^{0}_{-0.0020}$ in.)
		Limit	1.75 mm (0.0689 in.)
4	Thickness of thrust washer	Standard	3.0 $^{0}_{-0.05}$ mm (0.12 $^{0}_{-0.0020}$ in.)
		Limit	2.75 mm (0.1083 in.)



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Flexible plate

Ref.	Item		Specifications
1	Runout of flexible plate (in free condition)	Standard	0.2 mm (0.008 in.)
		Limit	0.5 mm (0.020 in.)
2	Distance between end face of case and mating face of flexible plate	Standard	4 to 6 mm (0.157 to 0.236 in.)



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8. Troubleshooting

Item		Possible cause		Remedy
Stiff steering wheel	Defect in flow divider valve	No steering flow	Foreign materials clogged in spool pit	Disassemble and clean
			Fatigued or damaged spring in the spool	Replace spring
		Malfunction of relief valve	Decline in relief pressure	Adjust relief pressure 7355 $^{+490}_{0}$ kPa (75 $^{+5}_{0}$ kgf/cm^2) [1066 $^{+71}_{0}$ psi]
			Damage on valve seating surface	Replace valve assembly
			Fatigued or damaged spring	Replace springs and adjust relief pressure
		Oil leak from relief valve	Damaged O-rings on the valve body circumference	Replace O-rings
	Defect in control valve	Clogging in metering section		Disassemble and clean
		Malfunction of spool		Disassemble and clean
		Faulty bearing		Disassemble and replace
	Defect in steering cylinder	Bent piston rod		Repair or replace
		Faulty piston seal		Replace
	Misalignment	Faulty installation of steering valve or tilt column		Repair
	Others	Flattened pipe or mixing of foreign materials		Clean or replace oil line
Unstable steering	Defect in control valve	Sticking of spool or sleeve		Repair or replace
		Breakage of centering spring		Disassemble and replace
	Others	Flattened pipe or mixing of foreign materials		Clean or replace oil line
		Faulty piston seal of steering cylinder		Replace
	Abnormal noise	Air trapped in hydraulic fluid		Bleed air
		Loose installation of power cylinder and socket end		Repair or replace

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Chapter 13 HOW TO READ CIRCUIT DIAGRAMS

1. Description of Circuit Diagrams

The circuit diagrams consist of the schematic diagrams and connector diagrams.

1.1 Circuit Diagrams

All circuits including the power supply and ground are divided into the power circuit, GND circuit and system circuits.

Power circuit diagram

The power circuit diagram indicates the power circuit including the battery, fuse, ignition switch, etc.

GND circuit diagram

The GND circuit diagram indicates the circuits from each electric component to the body ground or from each component to the battery negative terminal.

System circuit diagrams

The system circuit diagrams indicate the circuits of each system from fuse to GND (earth) excluding the above power supply and GND circuit portions.

1.2 Connector Diagrams

The connector shapes, terminal shapes and terminal arrangements of all connectors in the circuit diagrams are indicated.

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