



Service Manual

Chassis & Mast

EC15N, EC18N

A4EC1-10200-up

A4EC1-20200-up

EC20N, EC25N

A4EC2-10200-up

A4EC2-20200-up

EC25EN, EC25LN, EC30N

A4EC3-20200-up

A4EC3-30200-up

A4EC3-40200-up

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Chapter 1: General Information

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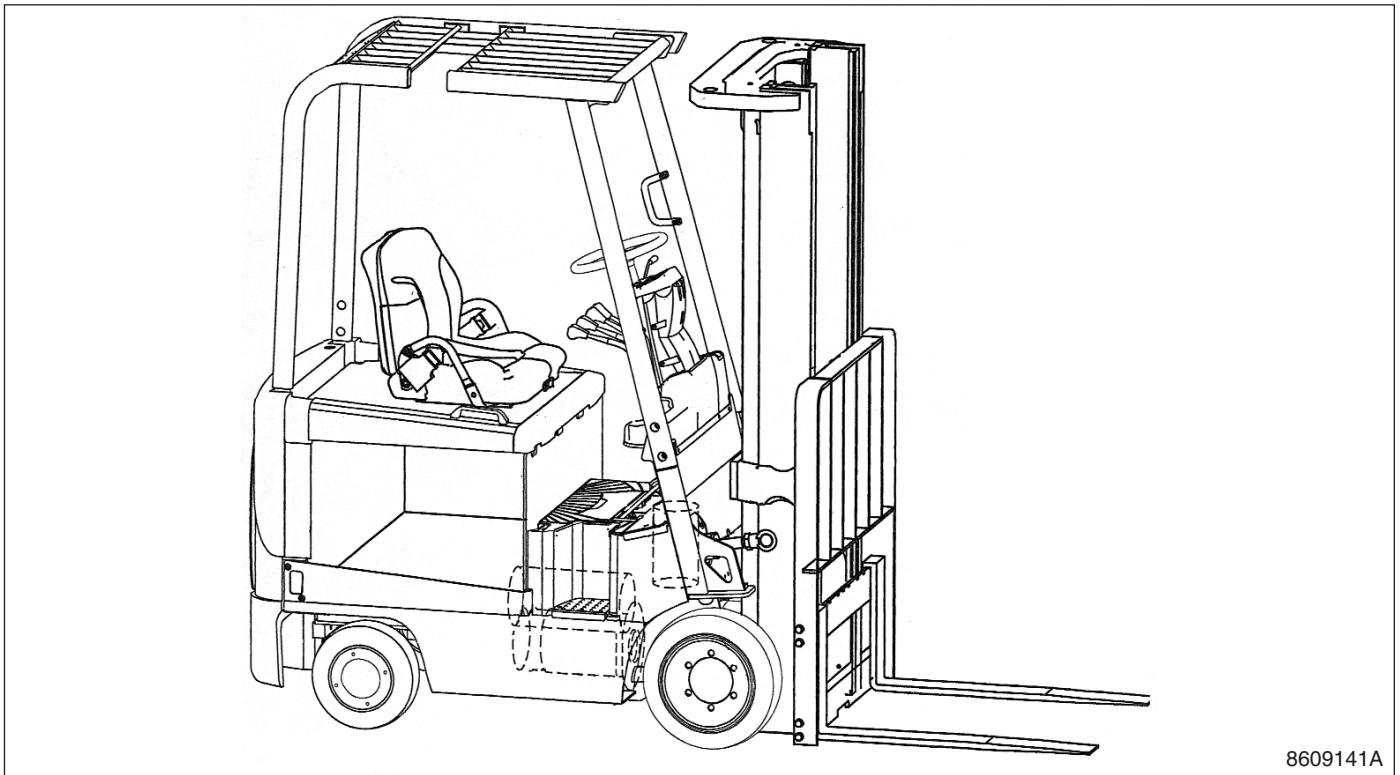
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Scope

This service manual deals with all components or systems of the Cat lift trucks, except for the electrical system, which is covered in a separate manual.

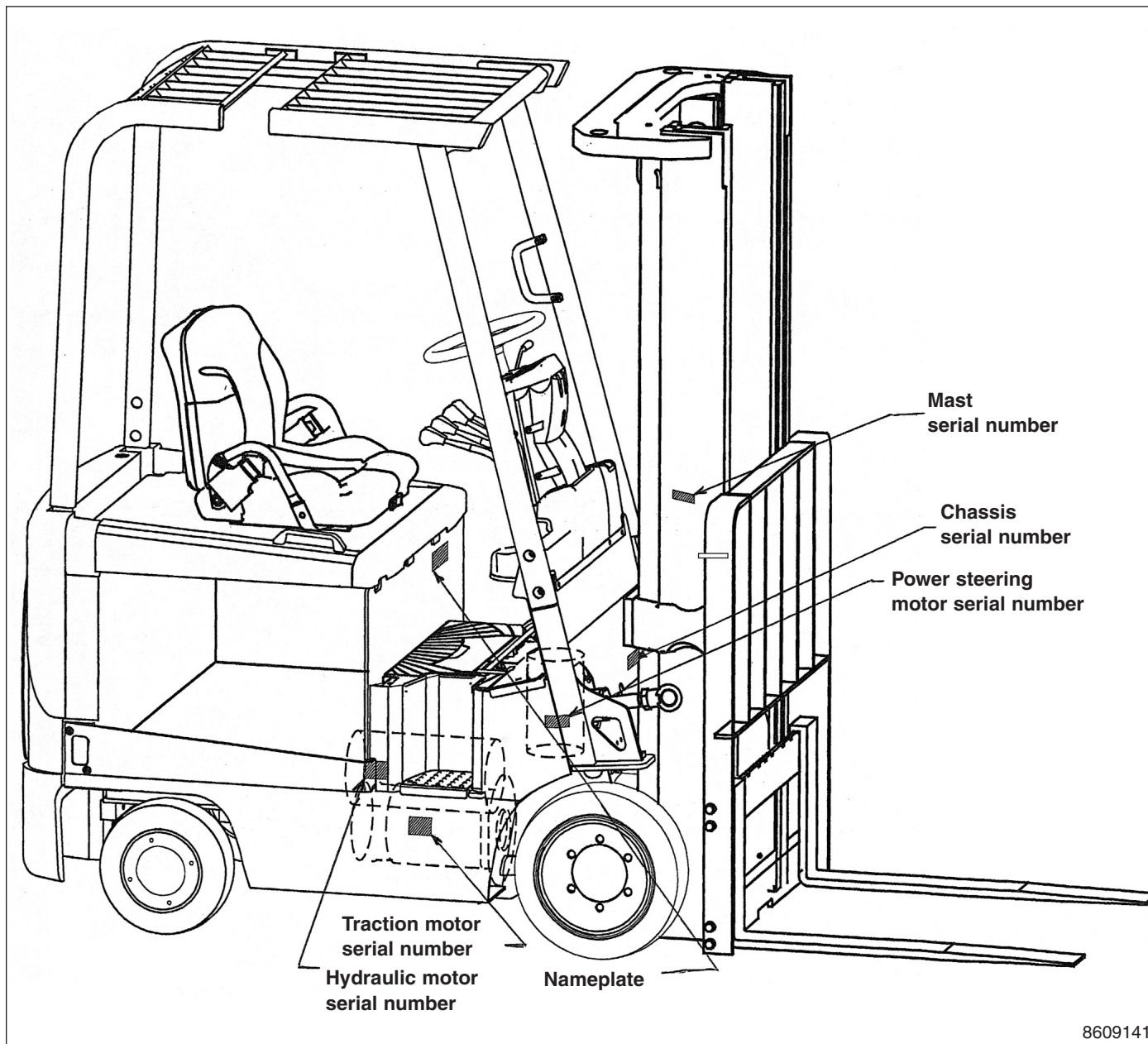


Truck Models Covered

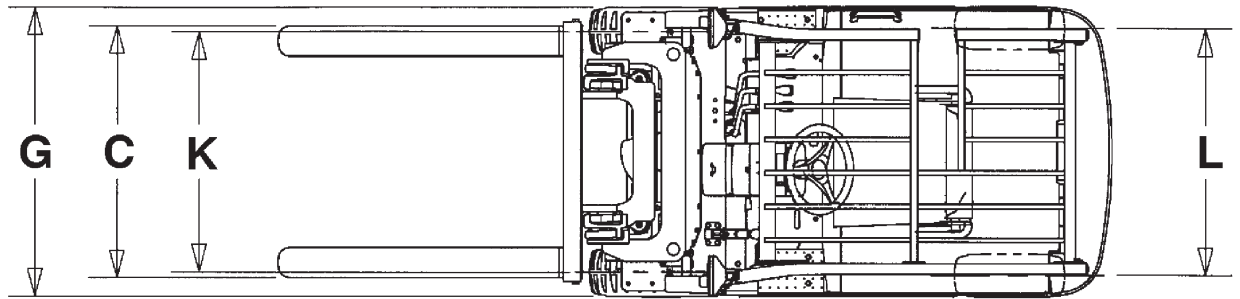
This service manual furnishes service and maintenance information for the following trucks.

Truck Model	Serial Number
EC15N, EC18N	A4EC1-10200-up
	A4EC1-20200-up
EC20N, EC25N	A4EC2-10200-up
	A4EC2-20200-up
EC25EN, EC25LN, EC30N	A4EC3-20200-up
	A4EC3-30200-up
	A4EC3-40200-up

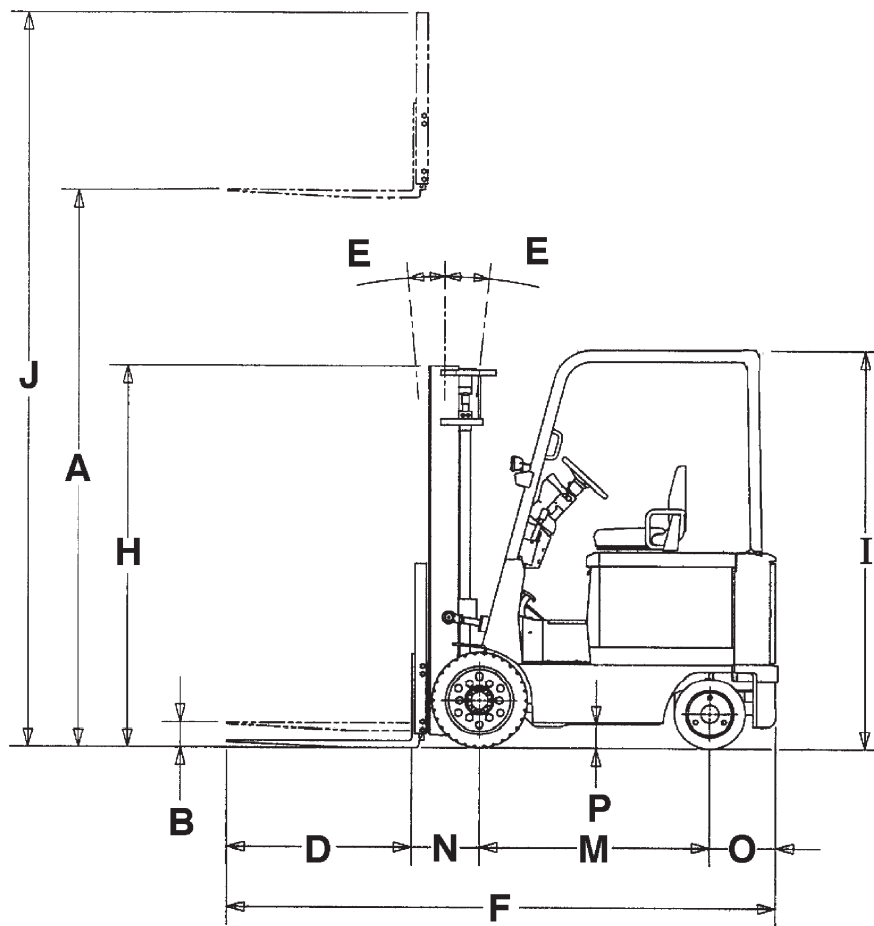
Nameplate and Serial Number Locations



Dimensions



8609142



8609143

Dimensions Chart

Ref#	Truck Model	EC15N, EC18N	EC20N, EC25N	EC25EN	EC25LN	EC30N
A	Maximum Lift	3320 (130)	3340 (131)	3340 (131)	3340 (131)	3310 (130)
B	Free Lift	115 (4.5)	130 (5.1)	130 (5.1)	130 (5.1)	135 (5.3)
C	Maximum Fork Spacing (outside to outside)	818 (32.0)	818 (32.0)	818 (32.0)	818 (32.0)	818 (32.0)
D	Fork Length	1070 (42)	1070 (42)	1070 (42)	1070 (42)	1070 (42)
E	Tilt Angle (forward/backward)	5°/6°	5°/6°	5°/6°	5°/6°	5°/6°
F	Overall Length	3050 (120)	3155 (124)	3255 (128)	3255 (128)	3325 (131)
G	Overall Width (outside of tires)	945 (37)	1055 (41.5)	1055 (41.5)	1103 (43.5)	1103 (43.5)
H	Overall Height (to top of mast, lowered)	2105 (83)	2110 (83.5)	2110 (83.5)	2110 (83.5)	2110 (83.5)
I	Overall Height (to top of overhead guard)	2180 (86)	2210 (87)	2210 (87)	2210 (87)	2210 (87)
J	Overall Height (to top of mast, extended)	4570 (180)	4570 (180)	4570 (180)	4570 (180)	4550 (179)
K	Tread (front)	793 (31)	875 (34.5)	875 (34.5)	900 (35.5)	900 (35.5)
L	Tread (rear)	826 (32.5)	900 (35.5)	900 (35.5)	900 (35.5)	900 (35.5)
M	Wheelbase	1170 (46)	1280 (50.5)	1380 (54.5)	1380 (54.5)	1380 (54.5)
N	Front Overhang	376 (14.8)	394 (15.5)	394 (15.5)	394 (15.5)	406 (16)
O	Rear Overhang	434 (17.2)	411 (16)	411 (16)	411 (16)	469 (18.5)
P	Underclearance (at center of wheelbase)	118 (4.6)	124 (4.9)	124 (4.9)	124 (4.9)	124 (4.9)

Unit: mm (in.)

General Information (Standard Models)

			Truck Model								
			Units	EC15N	EC18N	EC20N	EC25N	EC25EN	EC25LN	EC30N	
Standard Controller			MHI SX Controller								
Standard Simplex Mast Size			meters	3.3	3.3	3.3	3.3	3.3	3.3	3.3	
Service Weight (standard axle)	Without Battery	kg (lb)	2095 (4620)	2335 (5140)	2685 (5920)	2870 (6330)	2695 (5940)	2865 (6320)	3335 (7353)		
	With Max. Battery		3295 (7270)	3535 (7790)	4285 (9470)	4420 (9880)	4495 (9940)	4665 (10320)	5135 (11353)		
Work Performance	Rated Capacity/ Load Center		kg/mm (lb/in.)	1350/600 (3000/24)	1600/600 (3500/24)	1800/600 (4000/24)	2275/600 (5000/24)	2275/600 (5500/24)	2500/600 (5000/24)	2725/600 (6000/24)	
	Maximum Fork Height		mm (in.)	33235 (131)			3340 (131)			3315 (131)	
	Lift Speed (Rated Load)	36V	m/sec. (fph)	.38 (75)	.36 (71)	.32 (63)	.28 (55)			.25 (49)	
		48V		.53 (104)	.49 (96)	.45 (89)	.38 (75)			.36 (71)	
	Lowering Speed (rated load)			.50 (98)							
	Tilt Angle (forward/backward)		degrees	5° / 6°							
Free Lift			mm (in.)	115 (4.5)			130 (5.1)			135 (5.3)	
Traveling Performance	Travel Speed (Without Load)	36V	km/h	18 (11.2)	17.3 (10.8)	17.4 (10.8)			17.0 (10.6)	17.1 (10.6)	
		48V	(mph)	18.2 (11.3)							
	Minimum Turning Radius		mm (in.)	1790 (70.5)		1840 (72.5)		1990 (78.5)		2045 (80.5)	
Power Train	Traction Motor Output	36V	60min.	8.3 (6.2)			12.1 (9.0)			13.7 (10.2)	
		48V	HP(kW)	9.2 (6.8)			14.2 (10.6)			17.2 (12.8)	
	Transfer Gear	Type		Spur							
		Ratio		3.538			3.067				
	Reduction Gear	Type		Bevel							
		Ratio		4.571			5.0				
	Differential	Axle Housing		Banjo							
		Gear Type/	Gears	Straight Bevel/2							
Number		Pinions	Straight Bevel/2								

GENERAL INFORMATION

				Truck Model						
				Units	EC15N	EC18N	EC20N	EC25N	EC25EN	EC25LN
Power Steering System	Type			Dynamic Load Sense						
	Turning Angle	Inside	Degrees	83°	83°					
		Outside		54°	56°					
	Steering Wheel Diameter		mm (in.)	328 (13)						
	Cylinder Minimum Test Pressure		kgf/cm ² (psi) [kPa]	107 (1522) [10,500]	163 (2320) [16,000]					
Brake System	Service Brake	Type		Self-Adjusting Duo-Servo						
		Inside Drum Diameter	mm (in.)	254 + ₀ ^{0.13} (10.00 + ₀ ^{0.0051})						
		Lining Thickness	mm (in.)	4.87 (0.19)	6 (0.24)					
		Master Cylinder ID	mm (in.)	22.22 (0.8748)						
		Wheel Cylinder ID		22.22 (0.8748)	28.58 (1.1252)					
	Park Brake	Type		Mechanical, Mounted on Front Wheels						
		Lever Operating Effort	kgf (lbf) [N]	25 to 30 (55 to 66) [245 to 295]						
Traveling System	Mounting	Front Wheels		Fixed Type						
		Rear Wheels		Center Pivot Type						
	Wheel Alignment	Oscillation Angle	Degrees	3°						
		Camber		1°						

				Truck Model						
				Units	EC15N	EC18N	EC20N	EC25N	EC25EN	EC25LN
Hydraulic System	Hydraulic Pump	Type		Gear						
		Make		Casappa		Parker Hydraulics, Inc.				
		Model		KP20–24.5		25R029				
		Displacement	cc (cu in.)	25 (1.526)		29 (1.77)				
	Control Valve	Make		Husco International						
		Model		9510 Sectional Valve						
	Interval	Relief	kgf /cm ²	AUX		158 (2250) [15513]				
		Pressure	(psi) [kPa]	Lift Tilt		185 (2630) [18133]				
	Flow Regulator Valve	Type		Variable						
		Regulated Flow Rate	liter (cu.in.) / min	45 (2746)		60 (3661)				
Lift Cylinders	ID	mm (in.)	45 (1.77)		50 (1.97)			55 (2.17)		
Tilt Cylinders	ID		63 (2.48)		70 (2.75)			80 (3.15)		
Hydraulic Tank Capacity liter (Approx)		1 (US gal.)	8 (4.8)		24 (6.3)			30 (7.9)		
Mast and Forks	Mast			Roller type CL						
	Mast Dimensions (Flange Inside Width x THK x WEB THK)	Outer	mm (in.)	100 x 42 x 11 (3.94 x 0.59 x 0.47)		115 x 46 x 12 (4.53 x 0.79 x 0.51)				
		Inner		100 x 60 x 10 (3.94 x 0.67 x 0.47)		115 x 45 x 11 (4.53 x 0.83 x 0.51)				
	Main Rollers	Type		#6308 Ball Bearing		#6309 Ball Bearing				
		Diameter x Width		100 x 27 (3.94 x 1.18)		115 x 30 (4.53 x 1.58)			115 x 30 (3.94 x 1.18)	
	Side Rollers	Type		Lubricating type needle roller bearing						
		Diameter x Width	mm (in.)	42 x 36 (1.65 x 1.42)						
	Lift Chains			BL534		BL634			BL834	
	Forks (Lgth x Wdth x Thk)		mm (in.)	1070x100x35 (36x4x1.3)		1070 x100 x40 (42 x 3.9 x 1.6)			1070 x 125 x 45 (42 x 5 x 1.8)	
	Fork Spacing (out to out) min/max			240 / 818 (9.4/32)		240 / 920			285 / 960	
Battery	Voltage			36/48						
	Amp Hours (6 hr. rate)		36V	900		1400				
			48V	700		1100				
	Compartment Dimensions	Height-Center	mm (in.)	598 (23.6)						
		Height-Edges		589 (23.2)						
		Length		705 (27.8)		772 (30.4)			872 (34.3)	
		Width		903 (35.5)		1000 (39.4)				
	Weight (Min/Max)		kg (lb)	750/1200 (1650/2650)		1000/1600 (2200/3550)	1315/1600 (2900/3550)		1400/1800 (3100/4000)	

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