CAT® Lift Trucks

Service Manual

Controller

EP16NT	**ETB11-20011-up**
EP18NT	**ETB13-20011-up**
EP20NT	**ETB13-70001-up**

For use with EP16NT-EP20NT Chassis Service Manual. 99759-6C111

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Setup Options (Group 1)

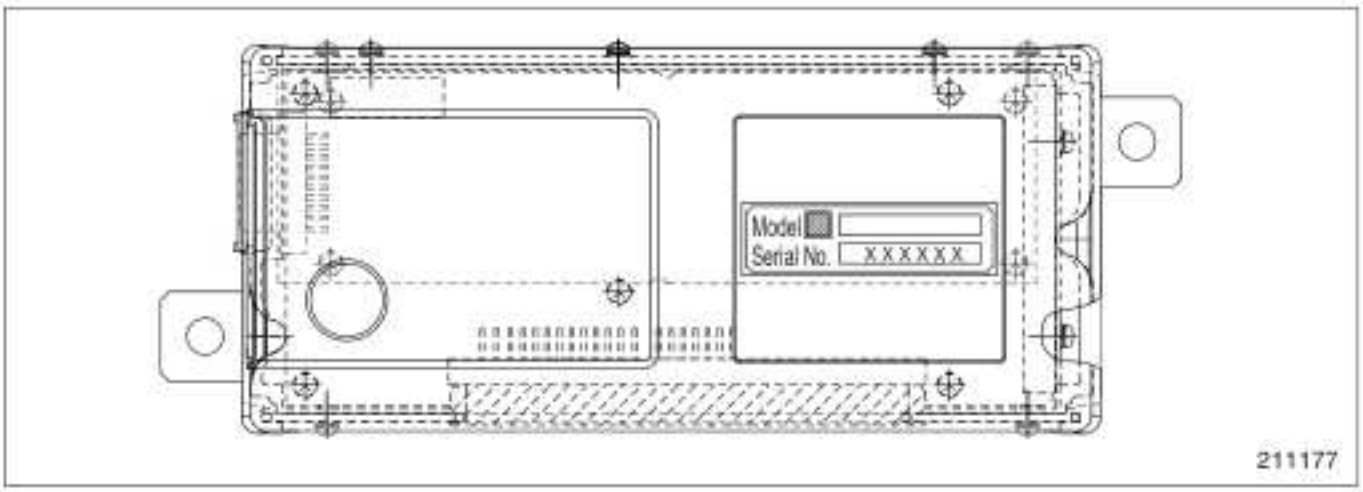
Option #	Title of Option	Description	Range	Default Value
#1	Application Pre-Sets (Truck Operation Mode)	The value setting of the following 7 items are registered beforehand. Top travel speed, Acceleration rate, Traveling power, Regen adjustment, Start lift speed, Top lift speed, Tilt speed. Refer to the explanation for details.	A, b, C, d, E (1)	A
#2	Start Lift Speed	Beginning lift speed Start lift speed cannot exceed top lift speed. (1: SLOW → 10: FAST)	1 to 10	1
#3	Top Lift Speed	Lift speed when operating the lever at maximum	1 to 10	6
#4	Tilt Speed	Speed setting for tilt	1 to 10	5
#5	Auxiliary 1 Speed	Speed setting for attachment 1	1 to 10	3
#6	Auxiliary 2 Speed	Speed setting for attachment 2	1 to 10	1
#7	Top Travel Speed Limit	Maximum travel speed	5 to 17 [km/h]	15
#8	Acceleration Rate	Choice of acceleration rate (1: SLOW → 5: FAST)	1 to 5	3
#9	Traveling Power	Choice of power characteristic (1: ECONOMY, 2: STANDARD, 3: HIGH POWER)	1, 2, 3	2
#10	Service Indicator	This function notifies service personnel that maintenance time is approaching or has passed. It means the lapsed time when setting up. Approached: !LED flashes (20 hour) Passed :!LED turn on and power reduction (selected) (2) Refer to the explanation for details.	0, 0.1, 100, 150, ...950, 1000, =0.1 (6 min.), =100, =150, -=950, =1000 (In increments of 50 [hour]) "=": power reduction 0: no action	0

NOTICE: (1) Before changing, when parameter data are different from the values of the selected mode, the truck mode indicator (A to E) flashes.
When the truck mode is changed, all parameter data is replaced by the set values of the selected mode.

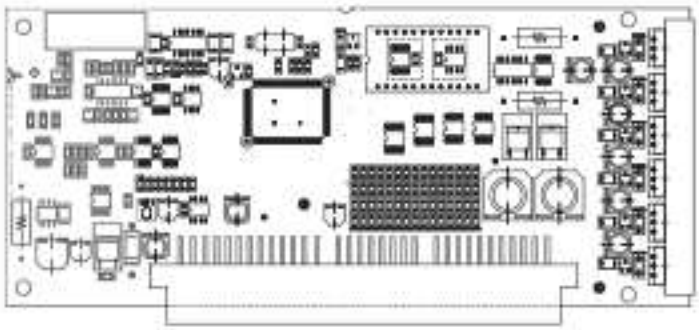
(2) The data from the truck hour meter at set time is saved apart from the selected value. If the key switch is turned off without setting the DRS switch to R, the data at set time is maintained.
When the DRS switch is set to R, the data at set time is replaced by the current truck hour meter data.

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Logic unit



Logic card



1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51	53	55	57	59	61	63
2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	50	52	54	56	58	60	62	64

Logic card side CN1

25	23	21	19	17	15	13	11	9	7	5	3	1
26	24	22	20	18	16	14	12	10	8	6	4	2

Harness B side CN3

41	39	37	35	33	31	29	27
42	40	38	36	34	32	30	28

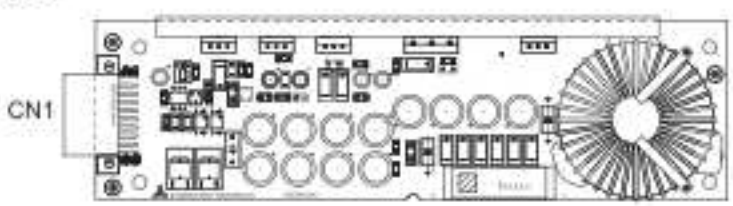
Harness B side CN2

63	61	59	57	55	53	51	49	47	45	43	
64	62	60	58	56	54	52	50	48	46	44	

Harness B side CN1

211178

Power supply card



1	3	5	7	9	11	13	15
2	4	6	8	10	12	14	16

Power supply card side CN1

15	13	11	9	7	5	3	1
16	14	12	10	8	6	4	2

Harness B side CN4

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The Service Tool connector exists on harness B CN21.

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Problem: Traction Motor R.H., Stall Timer (16)

(1) Situation
Display:"16". Traction motor operation inhibited. Pump motor and power steering operations inhibited if this fault occurs before pump contactor CLOSE, and both operable if it occurs after pump contactor CLOSE. Line contactor OPEN and pump contactor CLOSE or OPEN.

(2) Possible cause
Stall current flowed more than set time (#20) in right traction motor, faulty right traction inverter current sensor, shorted harness wiring, faulty right traction inverter DSP card, faulty logic unit.

(3) How the error code is triggered
Stall timer set time (set by Setup Option #20) is measured while stalling.

(4) Checks
Turn off power, then turn on power again. Confirm error code display.
No error, problem reoccurs — Error code 14

(5) Confirm stall timer set time of Setup Option #20.
Maximum value set — Larger value can be set

(6) See troubleshooting for code "14". See page 2-23.

(7) Check to see if truck is operated with heavy cargo load or on steps when motor stalls.
Normal steeps — Heavy load

(8) Change set time. See page 1-26.

Note: The more stall occurs, the more overheating occurs. Operate truck under normal condition.

(9) Disconnect battery plug, then perform inverter discharging work. See page 1-45.

(10) Operate under normal condition.

(11) Disconnect connector CN7 of right traction inverter and remove DSP cover, then check DSP flat cable for looseness or wire breakage. See page 1-48.
Normal — Abnormal

Power supply

(12) Check continuity between CN4-5 and CN7-16(254).
Check continuity between CN4-6 and CN7-20(255).
Continuity — No continuity

(13) Secure harness if loose. Replace right traction inverter if wire breaks. See page 1-46.

CAN

(14) Disconnect connector CN3 of logic unit.
Check continuity between CN3-5(211) and CN7-3(224).
Check continuity between CN3-6(212) and CN7-4(229).
Check continuity between CN7-14 and CN7-15(257).
Continuity — Abnormal and no continuity

(15) Connect connector CN4 to logic unit, then turn on power again.

(16) Repair or replace harness.

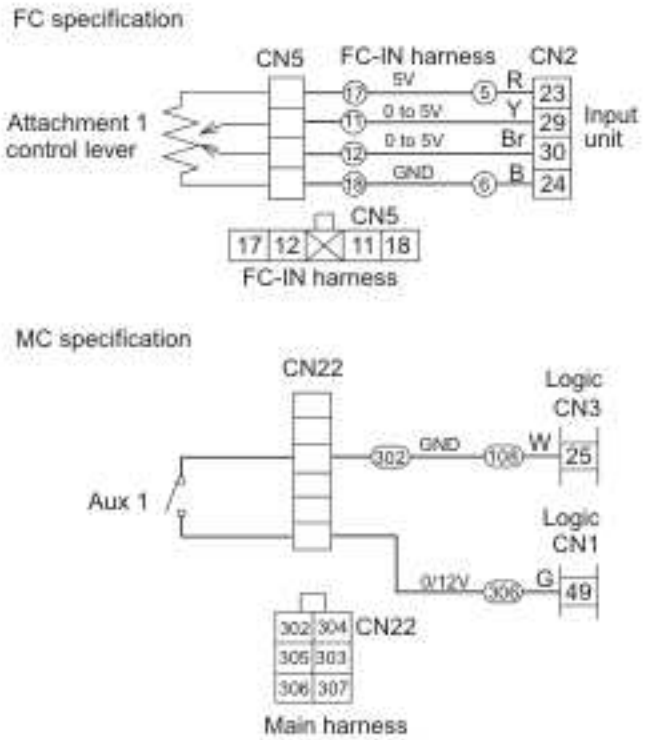
(17) Measure voltage between CN7-16(254) and CN7-20(255). Confirm value is 12V±1V.
Normal — Abnormal

(18) Disconnect battery plug, then perform inverter discharging work. See page 1-45.

(19) Replace DSP card of right traction inverter. See page 1-48.

(20) Replace power supply card of logic unit. See page 1-52.

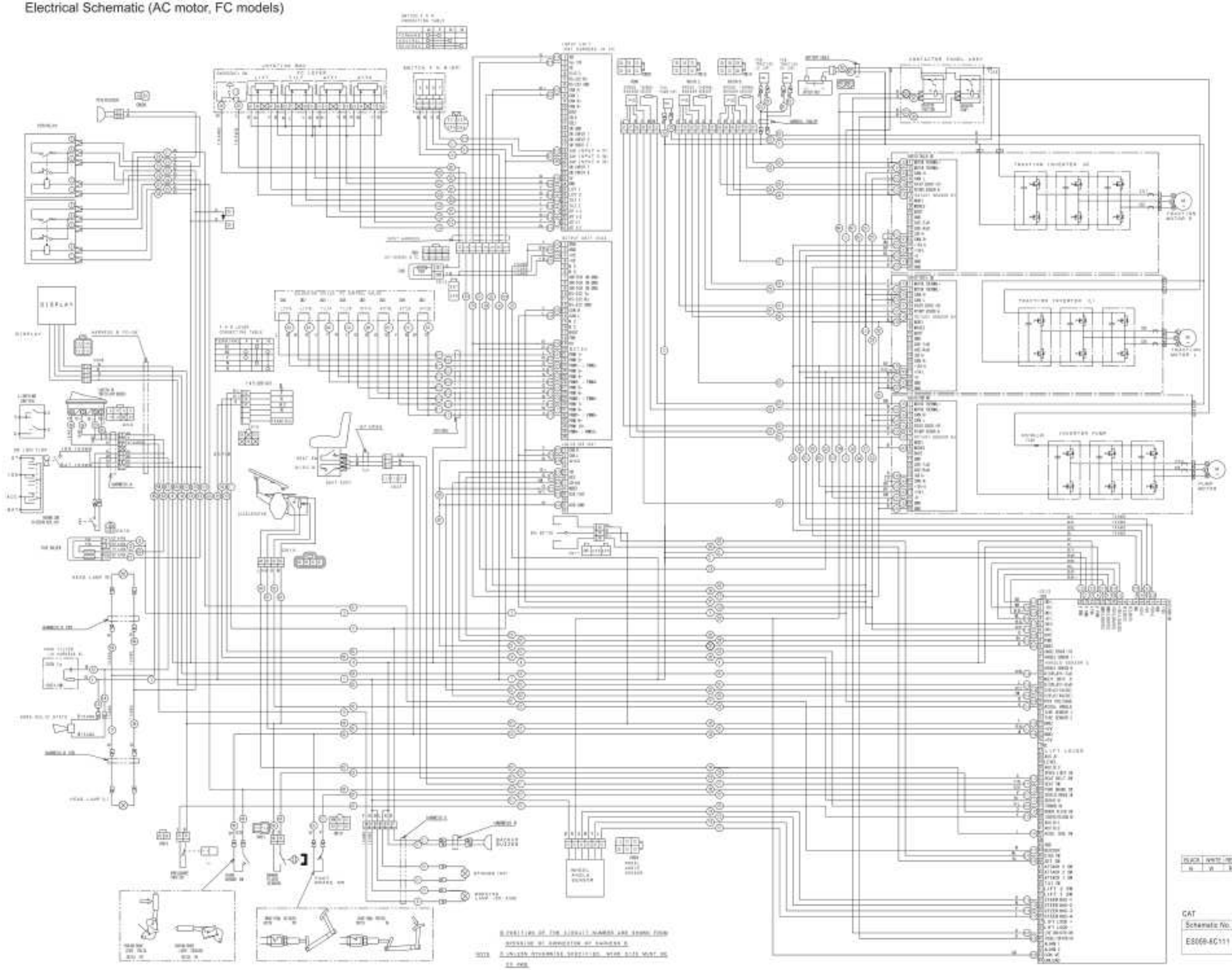
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Electrical Schematic (AC motor, FC models)



CAT			
Schematic No.	Used for	Truck Model	Serial No.
ES059-6C111	99759-6C111	EP16NT EP18NT EP20NT	ET811-20511-up ET813-20511-up ET813-70691-up

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