CEBM031702

Shop Manual

KOMATSU®

PC360LCi-11

PC390LCi-11

HYDRAULIC EXCAVATOR

SERIAL NUMBERS **PC360LCi-11 A38001 and up**

PC390LCi-11 A31001 and up

ENGINE **6D114E-6**

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FAILURE CODE [CA3562]

Action level	Failure code	Failure	AdBlue/DEF LineHeater Relay 1 Voltage High Error (Engine controller system)
L01	CA3562		
Detail of failure	High voltage error occurs in the AdBlue/DEF line heater relay 1 circuit.		
Action of controller	None in particular		
Phenomenon on machine	• AdBlue/DEF line stops thawing. • NOx emission increases because AdBlue/DEF injection is disabled at low temperature.		
Related information	• The AdBlue/DEF line heater relay 1 operates in AdBlue/DEF supply system thawing, warning, or implementation of AdBlue/DEF line heater relay 1 test. • The AdBlue/DEF line heater relay 1 is built in the AdBlue/DEF heater relay. • Troubleshooting of this failure code covers circuits from engine controller through AdBlue/DEF heater relay to power supply. • This failure code is detected only when the AdBlue/DEF line heater relay 1 is ON. • After repairing, check if the failure code is cleared by the following procedure. Procedure: Starting the engine at low temperature (ambient temperature of 5 °C or less) or see "Service mode" and "Testing menu (SCR service test) - Operate" of Setting and operating machine monitor to perform "AdBlue/DEF line heater relay 1 test".		

No.	Cause	Procedure, measuring location, criteria and remarks		
1	Defective wiring harness connector	1. See descriptions of wiring harness and connectors in "Electrical equipment" in "CHECKS BEFORE TROUBLESHOOTING" of "RELATED INFORMATION ON TROUBLESHOOTING", and check them. 2. Start the engine in low temperature (ambient temperature of 5 °C or lower) or perform "AdBlue/DEF Line Heater Relay 1 Test". For details, see SET AND OPERATE MACHINE MONITOR, "SERVICE MODE" and "METHOD FOR SETTING WITH TESTING MENU (SCR SERVICE TEST)".		
		If this failure code is cleared, the wiring harness connector is defective.		
2	Hot short circuit in wiring harness	1. Turn the starting switch to OFF position. 2. Disconnect connector R53A, and connect T-adapter to female side. 3. Turn the starting switch to ON position (with connector R53A disconnected).		
		Voltage	Between R53A (female) (10) and (12)	Max. 3 V
3	Defective AdBlue/DEF heater relay	1. Turn starting switch to OFF position. 2. Check that system operating lamp does not light up, and then turn the battery disconnect switch OFF. 3. Disconnect connector R53A and R53B, and replace AdBlue/DEF heater relay. 4. Turn the battery disconnect switch ON. 5. Start the engine in low temperature (ambient temperature of 5 °C or below) or see "SERVICE MODE" of "SETTING AND OPERATION OF MACHINE MONITOR", and "METHOD FOR SETTING WITH TESTING MENU (SCR SERVICE TEST)" to perform "AdBlue/DEF Line Heater Relay 1 Test".		
		If this failure code is cleared, the original AdBlue/DEF heater relay is defective.		
4	Defective engine controller	If no failure is found by above checks, engine controller is defective. (Since this is an internal defect, troubleshooting cannot be performed.)		

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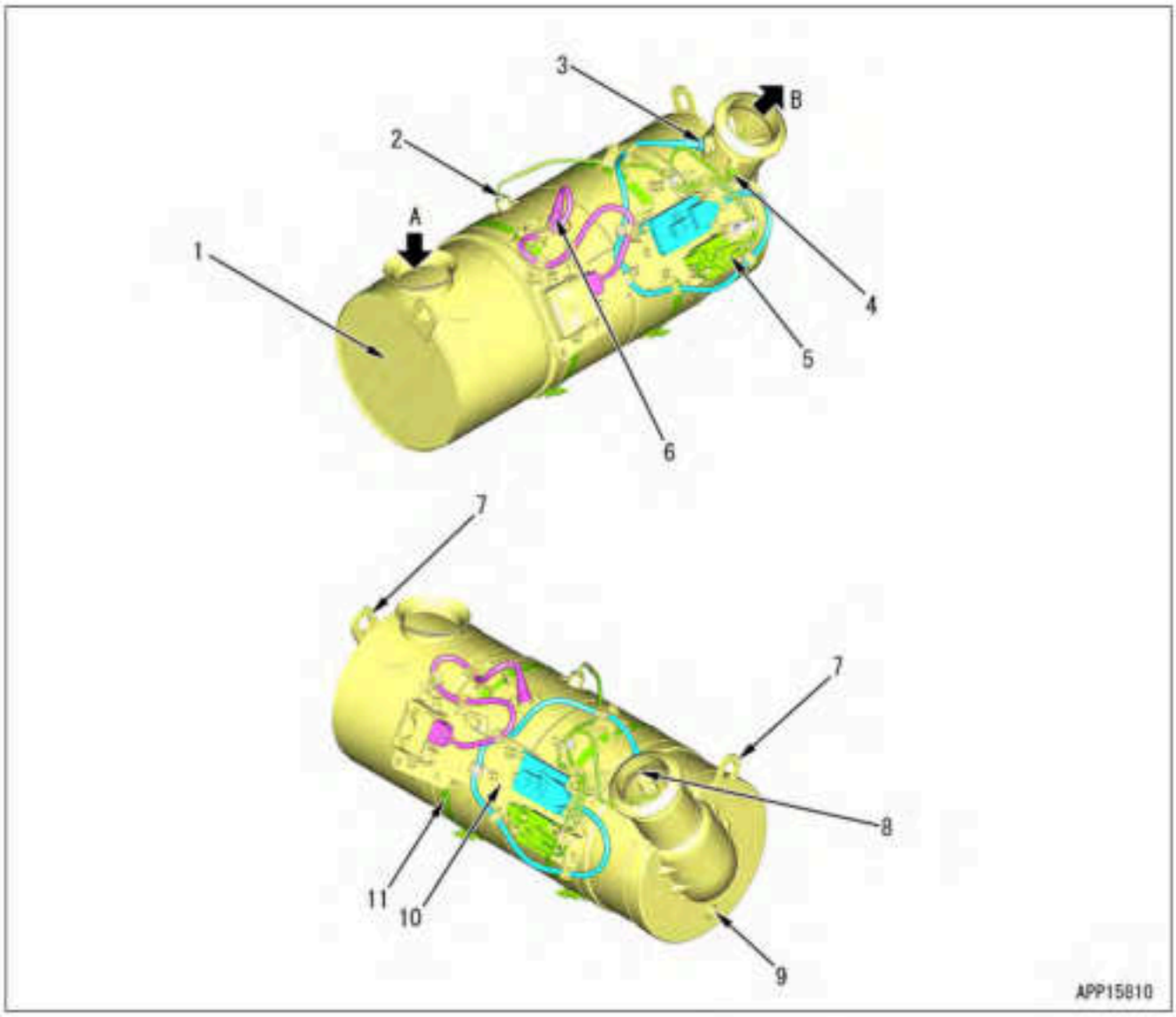
<table>
<tr><th>No.</th><th>Cause</th><th colspan="3">Procedure, measuring location, criteria and remarks</th></tr>
<tr><td rowspan="8">3</td><td rowspan="8">Open or short circuit in wiring harness</td><td colspan="3">CAN communication line
REMARK
CAN terminating resistor of 120 Ω is also located in machine monitor. That is, two CAN terminating resistors of 120 Ω are connected in parallel. When circuit resistance is measured at connector of controller other than machine monitor, if combined resistance is 60 Ω, wiring harness does not have open circuit.
1. Turn starting switch to OFF position, and turn battery disconnect switch to OFF position.
2. Disconnect related connectors, and connect T-adapter to connector to be measured.
REMARK
If short circuit is found (resistance between 2 terminals is 1 Ω or less), disconnect all CAN communication connectors of every controller and check whether short circuit occurs between wiring harnesses or inside controller.</td></tr>
<tr><td rowspan="6">Resistance</td><td>Between CM02 (female) (8) and (9)</td><td>Approx. 120 Ω</td></tr>
<tr><td>Between ECM J2 (female) (22) and (46)</td><td>Approx. 60 Ω</td></tr>
<tr><td>Between CP01 (female) (45) and (64)</td><td>Approx. 60 Ω</td></tr>
<tr><td>Between AC01 (female) (1) and (2)</td><td>Approx. 60 Ω</td></tr>
<tr><td>Between CK01 (female) (10) and (11)</td><td>Approx. 60 Ω</td></tr>
<tr><td>Between K02 (female) (A) and (B)</td><td>Approx. 120 Ω</td></tr>
</table>

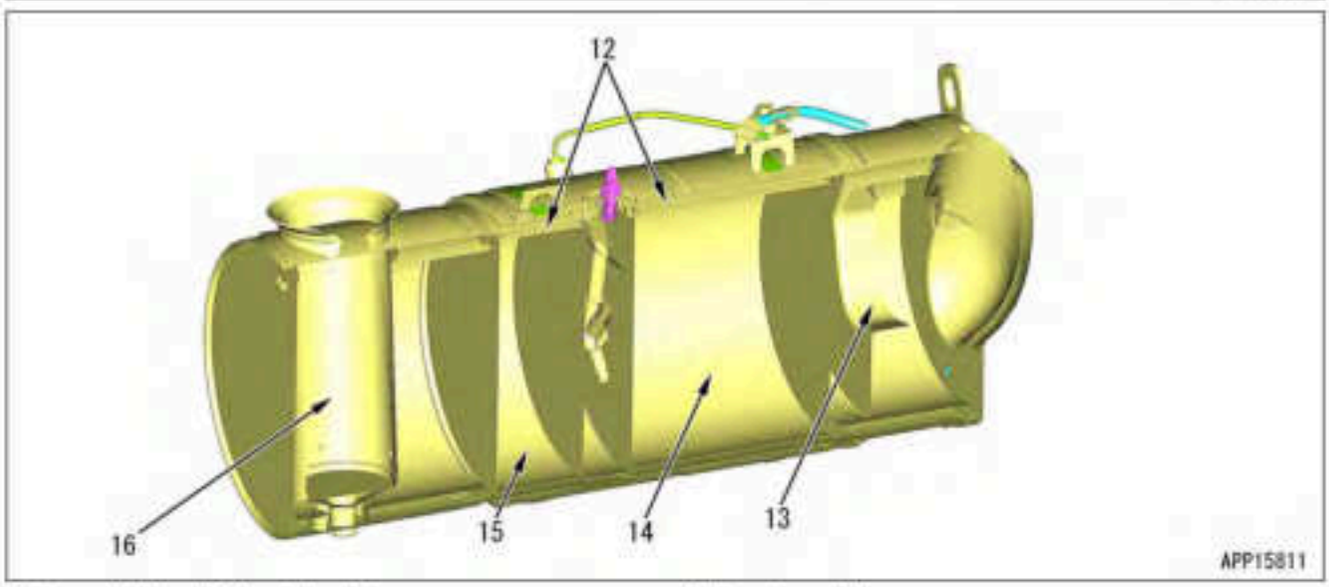
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Unit: mm

No.	Item	Judgment criteria					Remedy
1	Tightening torque of suction valve	137.3 to 156.9 Nm {14.0 to 16.0 kgm}					Retighten
2	Tightening torque of suction safety valve	137.3 to 156.9 Nm {14.0 to 16.0 kgm}					
3	Tightening torque of 2-stage suction safety valve	137.3 to 156.9 Nm {14.0 to 16.0 kgm}					
4	Tightening torque of suction safety valve	137.3 to 156.9 Nm {14.0 to 16.0 kgm}					
5	Tightening torque of 2-stage suction safety valve	137.3 to 156.9 Nm {14.0 to 16.0 kgm}					
6	Tightening torque of LS check valve	19.6 to 27.5 Nm {2.0 to 2.8 kgm}					
7	Tightening torque of LS select valve	107.9 to 147.1 Nm {11.0 to 15.0 kgm}					
8	Suction valve spring	Standard dimensions			Repair limit		Replace the spring if damaged or deformed
		Free height x outside diameter	Installed height	Load at installed height	Free height	Load at installed height	
		46.8 x 7.5	40.6	5.5 N {0.56 kg}	-	4.4 N {0.45 kg}	
9	Check valve spring	11.5 x 4.6	8.5	1.47 N {0.15 kg}	-	1.2 N {0.12 kg}	

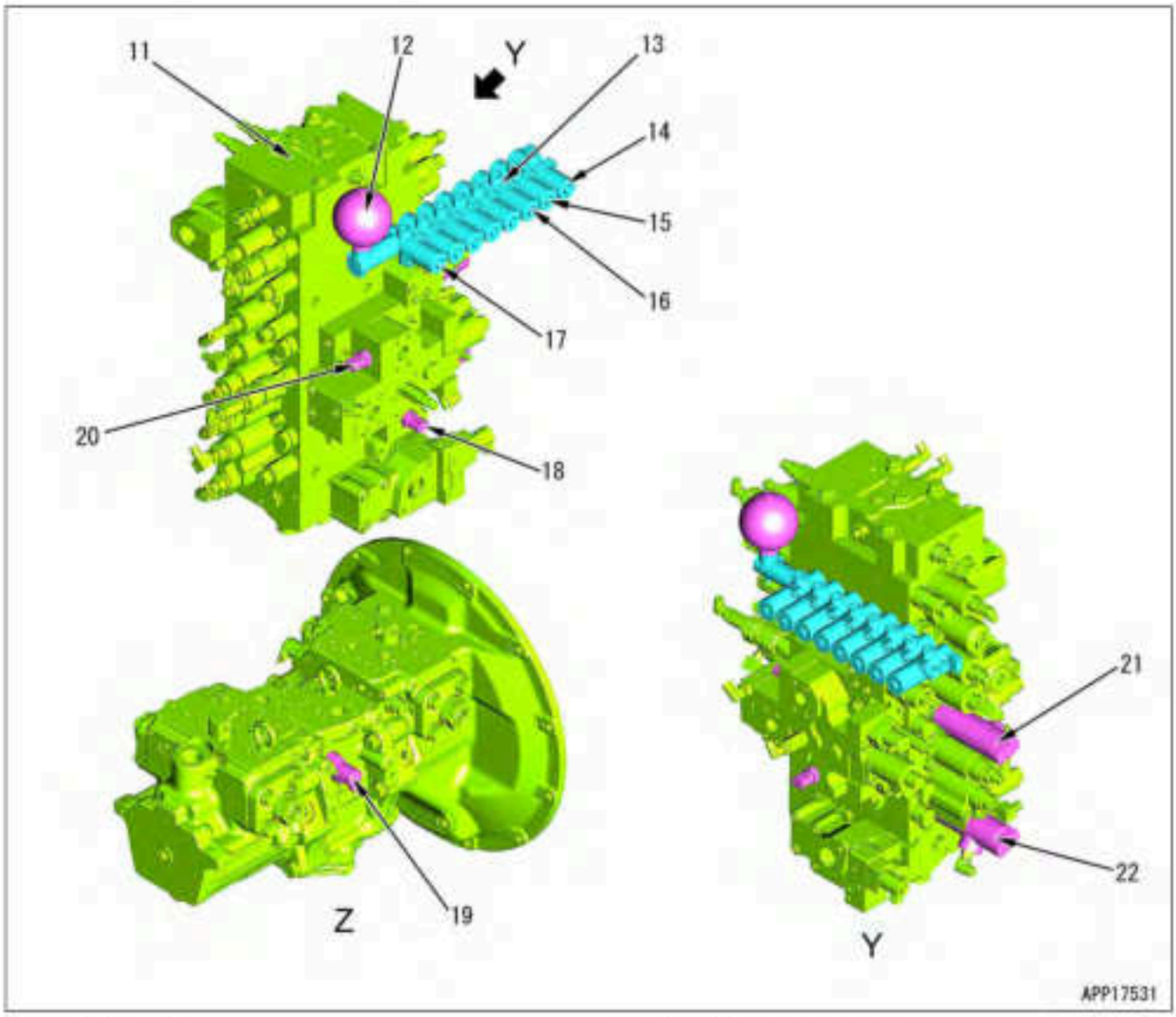
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A: From AdBlue/DEF mixing tube
B: To exhaust pipe
1: SCR body
3: SCR outlet NOx sensor
2: SCR temperature sensor
4: SCR outlet temperature sensor

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11: Control valve
12: Pilot circuit accumulator
13: Solenoid valve
14: 2-stage relief solenoid valve
15: Attachment selector solenoid valve
16: Machine push-up solenoid valve
17: PPC lock solenoid valve
18: Rear pump oil pressure sensor
19: Rear pump PC-EPC valve
20: Front pump oil pressure sensor
21: Boom spool stroke sensor
22: Arm spool stroke sensor

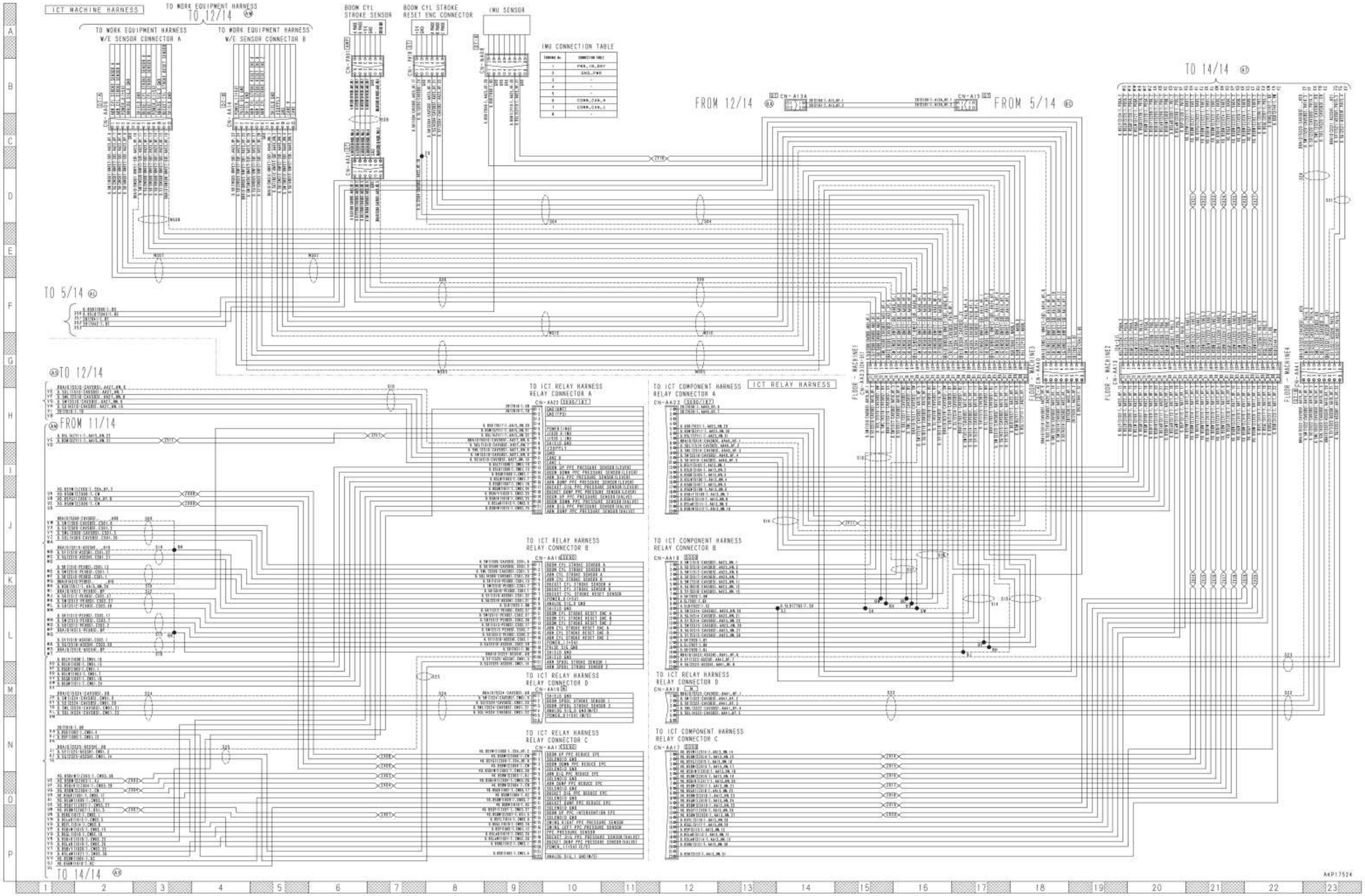
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ELECTRICAL CIRCUIT DIAGRAM (13/14)

PC360LCI-11/PC390LCI-11

REMARK

This figure includes the equipment and device that are unavailable as optional items in some areas.



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