KEBM662102

Shop Manual

KOMATSU®

D51EXi-24

D51PXi-24

CRAWLER DOZER

SERIAL NUMBERS **D51EXi-24 B20001 and up**
D51PXi-24 B20001 and up

ENGINE **4D107E-3**

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REMARK

Specified capacity means the total amount of oil including the oil in the tank and the piping. Refill capacity means the amount of oil needed to refill the system during inspection and maintenance.

Note 1: KDPF engine oil for cold district is deteriorated easily than that for normal area (replace every 500 hours), so replace oil and filter cartridge every 250 hours. For changing the maintenance time of machine monitor, ask your Komatsu distributor to perform the work.

Note 2: Hyper grease (G2-TE) has a high performance. When it is necessary to improve the lubricating ability of the grease in order to prevent squeaking of pins and bushings, the use of G2-TE is recommended.

Note 3: Non-Amine Engine Coolant (AF-NAC)

1. The coolant has the important function of preventing corrosion as well as preventing freezing.
   Even in the areas where freezing is not an issue, the use of coolant is essential.
   Komatsu recommends the use of Non-Amine Engine Coolant (AF-NAC). If you use another coolant, it may cause serious problems in the cooling system, including the engine.
   Komatsu machines are supplied with Non-Amine Engine Coolant (AF-NAC). Non-Amine Engine Coolant (AF-NAC) has excellent anti-corrosion, antifreeze and cooling properties and can be used continuously for 2 years or 4000 hours.
   Non-Amine Engine Coolant (AF-NAC) is strongly recommended wherever available.
2. For the density of Non-Amine Engine Coolant (AF-NAC), see "Coolant density table".
   Non-Amine Engine Coolant (AF-NAC) is supplied already diluted. In this case, fill up the tank with pre-diluted fluid. (Never dilute the Non-Amine Engine Coolant with ordinary water.)

Coolant density table

Min. atmospheric temperature	°C	-10 or more	-15	-20	-25	-30	-35	-40	-45	-50
	°F	14 or more	5	-4	-13	-22	-31	-40	-49	-58
Density(%)		30	36	41	46	50	54	58	61	64

Note 4: The DEF freezes at -11 °C {12.2 °F} . If thawing is necessary, the DEF system is automatically heated to thaw DEF after the engine is started.

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FAILURE CODE [CA1887]

Action level	Failure code	Failure	SCR Outlet NOx Sensor Circuit Error (Engine controller system)
L01	CA1887		
Detail of failure	SCR outlet NOx sensor does not display the value due to internal circuit error of SCR outlet NOx sensor.		
Action of controller	• Operates at default NOx value (0 ppm).		
Phenomenon on machine	• SCR outlet NOx concentration cannot be detected.		
Related information	⚠ **SCR assembly, sensor fitting piping, and sensor probe are heated to 400 °C or higher. Be careful not to get burn injury.** ⚠ **As for the sensor probe, be careful not to get burn injury even if the surroundings are not hot, because sensor itself is heated.** • If failure code [CA2771] is displayed, perform troubleshooting for that code first. • If failure code [CA1776] or [CA1777] is displayed, perform troubleshooting for that code first. • SCR outlet NOx sensor is smart sensor which communicates with engine controller with other sensors through CAN communication. • SCR outlet NOx sensor operates when 19302 "SCR outlet temperature" is 200 °C or higher (19210 "SCR Outlet NOx Sensor State" is "1"). • SCR outlet NOx sensor does not operate when 19302 "SCR Outlet Temperature" is 200 °C or lower, and correct value is not displayed (the sensor does not operate by simply turning the starting switch to ON position even when it is normal). • On "Pre-defined Monitoring" screen, items related to SCR sensor are used. (The numbers below denote monitoring codes). • SCR sensor related 19120 AdBlue/DEF Injection Quantity 19202 Turbo Outlet NOx Corrected 19209 SCR Outlet NOx Corrected 19203 Turbo Outlet NOx Sensor State 19210 SCR Outlet NOx Sensor State **NOTICE** **For this failure code, after investigating the cause of the problem and completing the repair, perform "Loaded Diagnostics Operation To Clear Failure Code" to make sure the failure code is cleared.**		

No.	Cause	Procedure, measuring location, criteria and remarks
1	Defective SCR outlet NOx sensor	1. Turn the starting switch to OFF position. 2. Replace the SCR outlet NOx sensor since NOx sensor is irreparable. 3. Turn the starting switch to ON position. 4. Perform Loaded Diagnostics Operation To Confirm Failure Correction. **REMARK** Offset/drift may occur due to sulfur-poisoned SCR outlet NOx sensor.
		If this failure code is not displayed, the original SCR outlet NOx sensor is defective. (Since this is an internal defect, troubleshooting cannot be performed.)
2	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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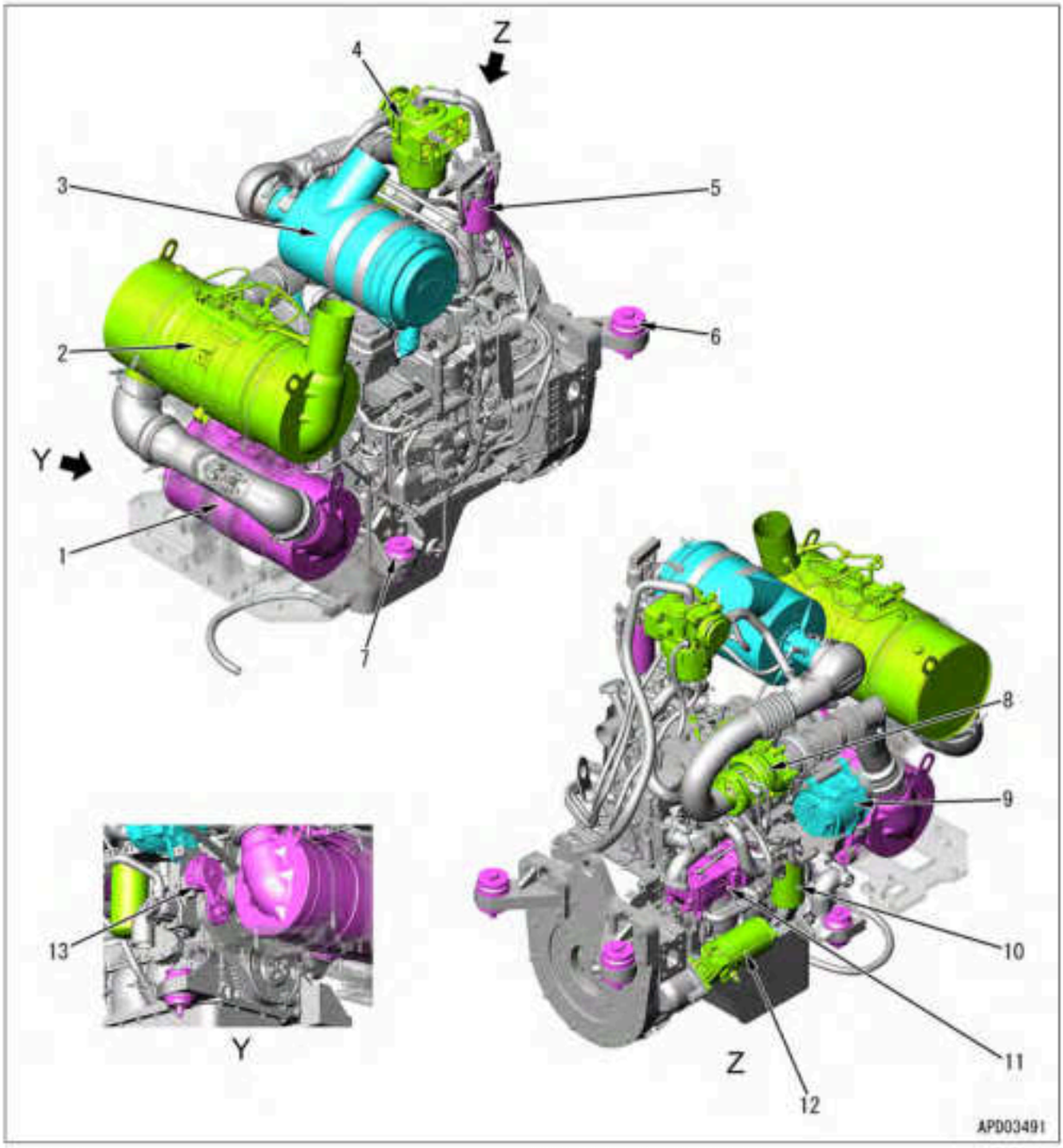
<table>
<tr><th>No.</th><th>Cause</th><th colspan="4">Procedure, measuring location, criteria and remarks</th></tr>
<tr><td rowspan="3">4</td><td rowspan="3">Ground fault in wiring harness (contact with ground circuit)</td><td colspan="4">If there is no failure in check on cause 2, this check is not required.
1. Turn the starting switch to OFF position
2. Disconnect connectors OFS1 and IB2, and connect T-adapter to either female side.</td></tr>
<tr><td rowspan="2">Resistance</td><td colspan="2">Between OFS2 (female) (1) or IB2 (female) (15) and ground</td><td>Min. 1 MΩ</td></tr>
<tr><td colspan="2">Between OFS2 (female) (3) or IB2 (female) (5) and ground</td><td>Min. 1 MΩ</td></tr>
<tr><td rowspan="3">5</td><td rowspan="3">Short circuit in wiring harness</td><td colspan="4">1. Turn the starting switch to OFF position
2. Disconnect connectors OFS2 and IB2 and connect T-adapter to female side of IB2.</td></tr>
<tr><td rowspan="2">Continuity</td><td colspan="2">Between IB2 (female) (15) and each pin other than (15)</td><td>No continuity
(No sound is heard.)</td></tr>
<tr><td colspan="2">Between IB2 (female) (5) and each pin other than (5)</td><td>No continuity
(No sound is heard.)</td></tr>
<tr><td rowspan="6">6</td><td rowspan="6">Defective ICT sensor controller</td><td colspan="4">If no failure is found by preceding checks, ICT sensor controller is defective. (Since this is an internal defect, troubleshooting cannot be performed).</td></tr>
<tr><td colspan="4">Reference
1. Turn the starting switch to OFF position.
2. Insert T-adapter into connectors IB1 and IB2.
3. Turn the starting switch to ON position.
4. Turn cut/fill offsets switch (Up) ON/OFF to perform troubleshooting.
REMARK
Voltage of approximately 9 V is applied to IB2 pin (15) and IB2 pin (5) through resistor in ICT sensor controller.</td></tr>
<tr><td rowspan="4">Voltage</td><td rowspan="2">Between IB2 (15) and IB1 (10)</td><td>Switch: OFF</td><td>Max. 1 V</td></tr>
<tr><td>Switch: ON</td><td>7 to 11 V</td></tr>
<tr><td rowspan="2">Between IB2 (5) and IB1 (10)</td><td>Switch: OFF</td><td>7 to 11 V</td></tr>
<tr><td>Switch: ON</td><td>Max. 1 V</td></tr>
</table>

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ENGINE SYSTEM

LAYOUT DRAWING OF ENGINE SYSTEM

General view



1:KDOC
2: SCR assembly
3: Air cleaner
4: KCCV ventilator
5: Fuel main filter
6: Rear engine mount
7: Front engine mount
8:VGT
9: Alternator
10: Engine oil filter
11: EGR cooler
12: Starting motor

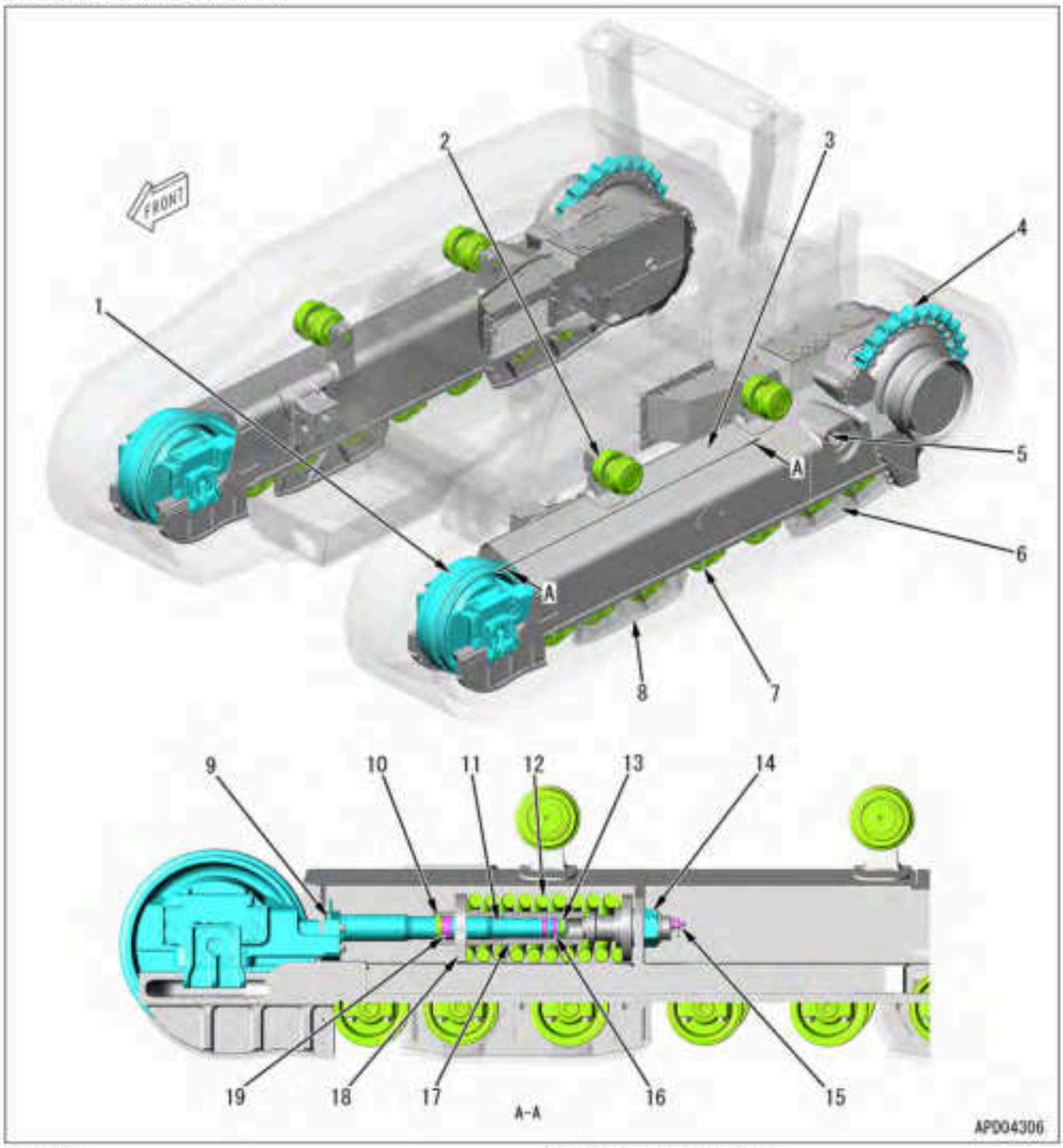
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TRACK FRAME AND IDLER CUSHION

STRUCTURE OF TRACK FRAME AND IDLER CUSHION

General view and sectional view

The figure shows D51PXI-24.



1: Idler
2: Carrier roller
3: Track frame
4: Sprocket
5: Plug (oil filler port)
6: Track roller end guard
7: Track roller
8: Track roller center guard
9: Yoke
10: Seal

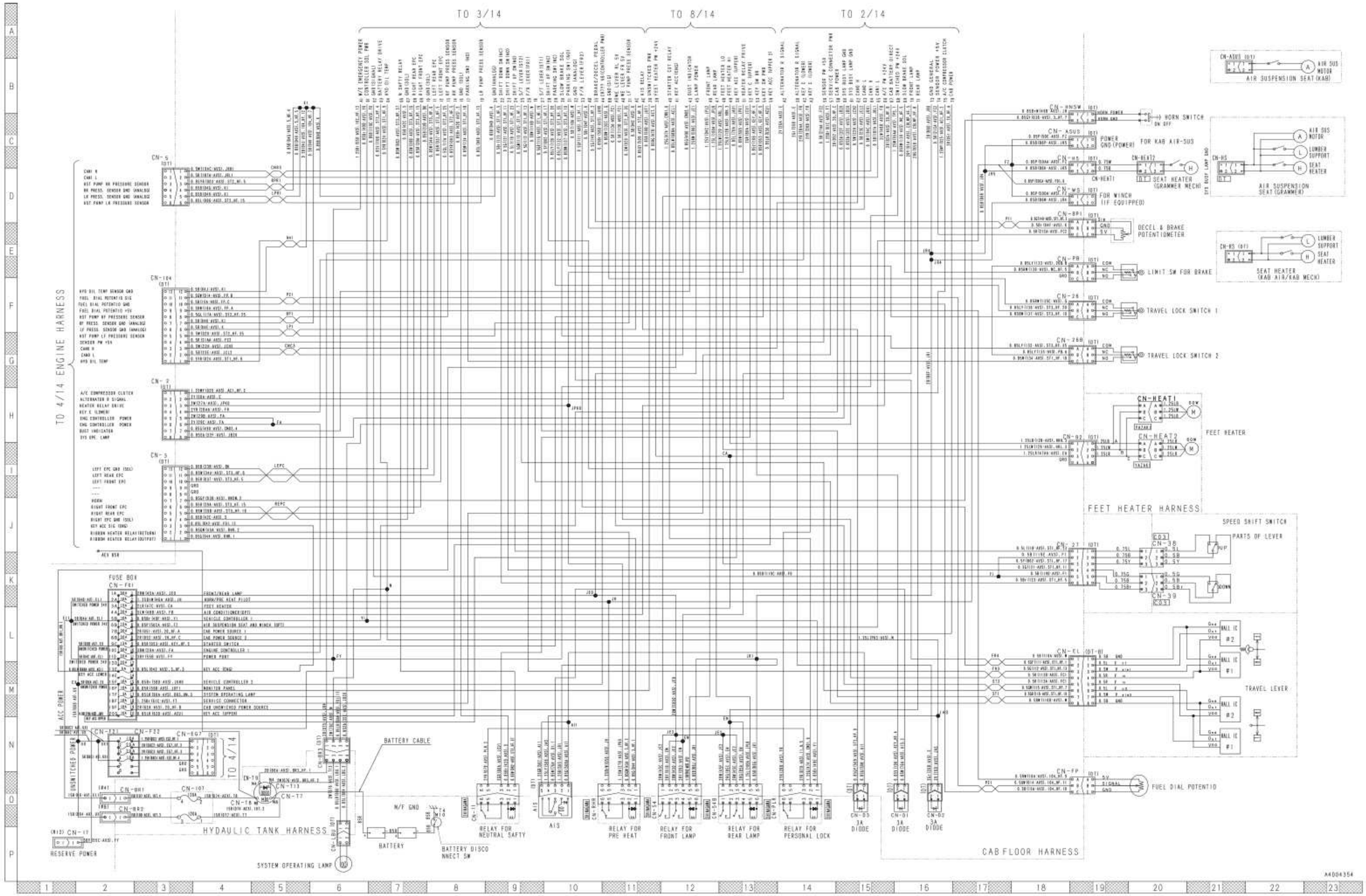
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ELECTRICAL CIRCUIT DIAGRAM (1/14)

D51EXI-24, D51PXI-24

REMARK

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



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