SEN06577-02

Shop Manual

BULLDOZER

D61EX -24
D61PX -24

SERIAL NUMBERS D61EX- 40001 and up
D61PX- 40001

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6: High pressure selector check valve
7: Parking brake
8: Speed sensor
9: Hydraulic tank

SPECIFICATIONS OF HST MOTOR

Model: KMV200

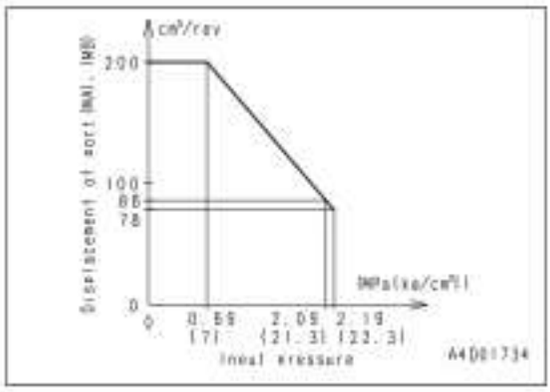
Type: Continuously variable displacement clinoaxis type piston motor

Theoretical displacement: 86 to 200 cm^3/rev

Charge relief valve set pressure: 2.67 MPa {27.2 kg/cm^2} or above

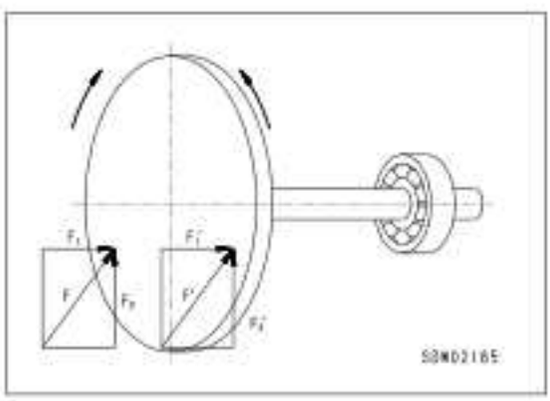
FUNCTION OF HST MOTOR

- This motor maximizes the capacity when the servo piston is at the lowest position.
- This motor minimizes the capacity when the servo piston is at the highest position.
- This motor determines the capacity corresponding to the control pressure from EPC valve when the servo piston is in between.
- The relationship between the pilot pressure and displacement volume is as shown in the figure.

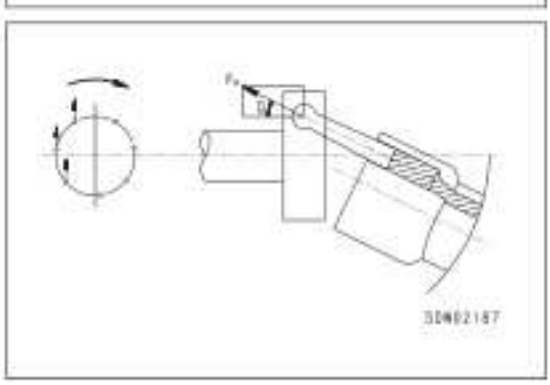


OPERATION PRINCIPLE OF HST MOTOR

1. Given that the shaft of the disc is supported and enabled to rotate freely, when force (F) is applied to the disc diagonally, force (F) is divided into vertical force to the disc (F1) and circumferential force (F2). (F1) pushes the disc to axis direction, and (F2) rotates the disc.
2. Instead, when force (F'), not force (F) is applied to the disc, the force (F') is also divided into (F'1) and (F'2), and the disc is rotated by force (F'2).



1. The pressurized oil sent from the main piston pump enters the piston motor through the inlet port, and the oil pressure is applied to the back of piston, and drive shaft rotates by inclination (Q) of piston and cylinder block.



OPERATION OF HST MOTOR

The capacity of the piston motor changes according to the command current to EPC valve (2).

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FAILURE CODE [CA3751] SCR Catalyst Degradation Error

Action level	Failure code	Failure	SCR Catalyst Degradation Error (Engine controller system)
L03	CA3751		
Detail of failure	Denitration efficiency does not increase though the AdBlue/DEF injection amount is sufficient.		
Action of controller	None in particular		
Phenomenon on machine	It is possible that the NOx emission increases, or ammonia is discharged due to insufficient denitration efficiency.		
Related information	⚠ **The temperature of aftertreatment devices such as SCR assembly and AdBlue/DEF mixing piping becomes high (Min. 400 °C). Be careful not to get burned.** ⚠ **Be careful of the attachment of AdBlue/DEF because AdBlue/DEF leaks when removing AdBlue/DEF mixing piping or AdBlue/DEF injector.** **REMARK** • This failure code occurs only in the "SCR Denitration Efficiency Test" implemented to locate the failure points when a failure code such as [CA3151], [CA3543], and [CA3582] is displayed. • The SCR catalyst cannot be replaced alone. (SCR assembly needs to be changed) **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. (This failure code is not cleared by only turning ON the starting switch.)**		

No.	Cause	Procedure, measuring location, criteria and remarks
1	Defective SCR catalyst (Deterioration, dissolution, damage)	1. Deterioration, dissolution, or damage of SCR catalyst can be suspected. Replace the SCR assembly. 2. Perform "Loaded Diagnostics Operation To Clear failure Code".
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.)

Loaded Diagnostics Operation to Clear Failure Code

Check if the repair has been completed with the following procedure:

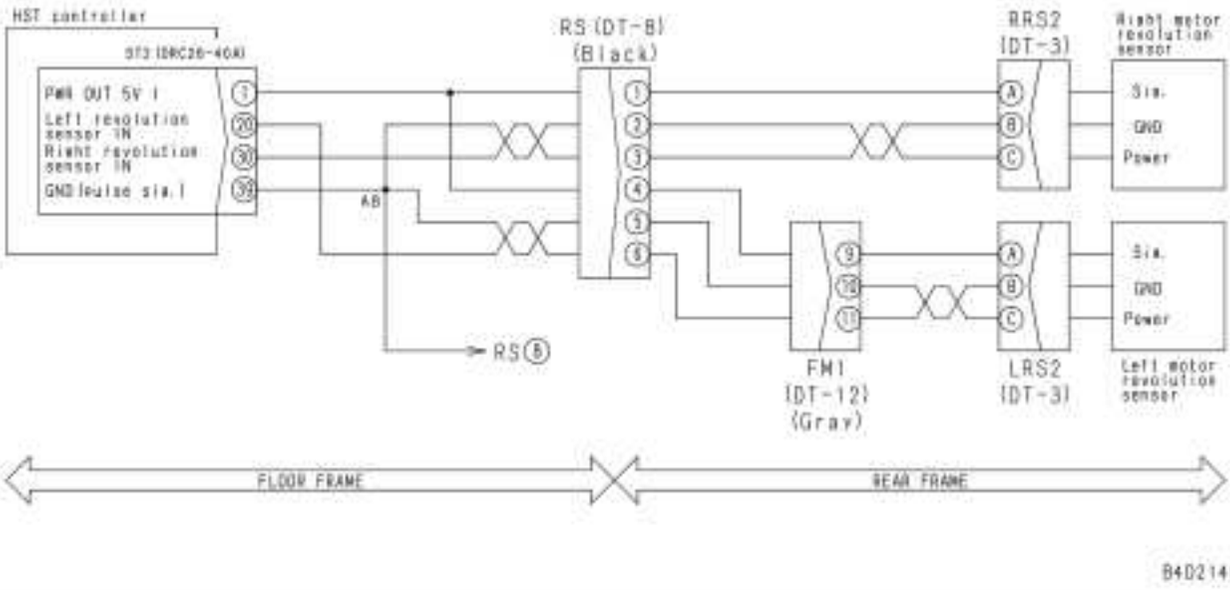
(Make sure this failure code is cleared after this procedure.)

1. Turn the starting switch to OFF position, and shut down the engine controller.
2. Turn the starting switch to ON position, and start engine.
3. Run the engine at low idle speed for approximately 1 minute.
4. See "TESTING AND ADJUSTING", "Service mode" and "Test menu (SCR Service Test)" in "SETTING AND OPERATION OF MACHINE MONITOR" to perform "SCR removal efficiency test" (maximum duration of the removal efficiency: 1.5 h).
5. The test condition on the monitor changes from "0" to "10", then to "20". ("14" may be shown during few minutes due to temperature transition)
6. When the test is completed after the test condition on the monitor shows "20", stop the engine and shut down the engine controller (wait for a few minutes after the shutdown, then the starting switch to OFF position).
7. Turn the starting switch to ON position again to check if this failure code is cleared. If the failure code is cleared, repair work is completed.

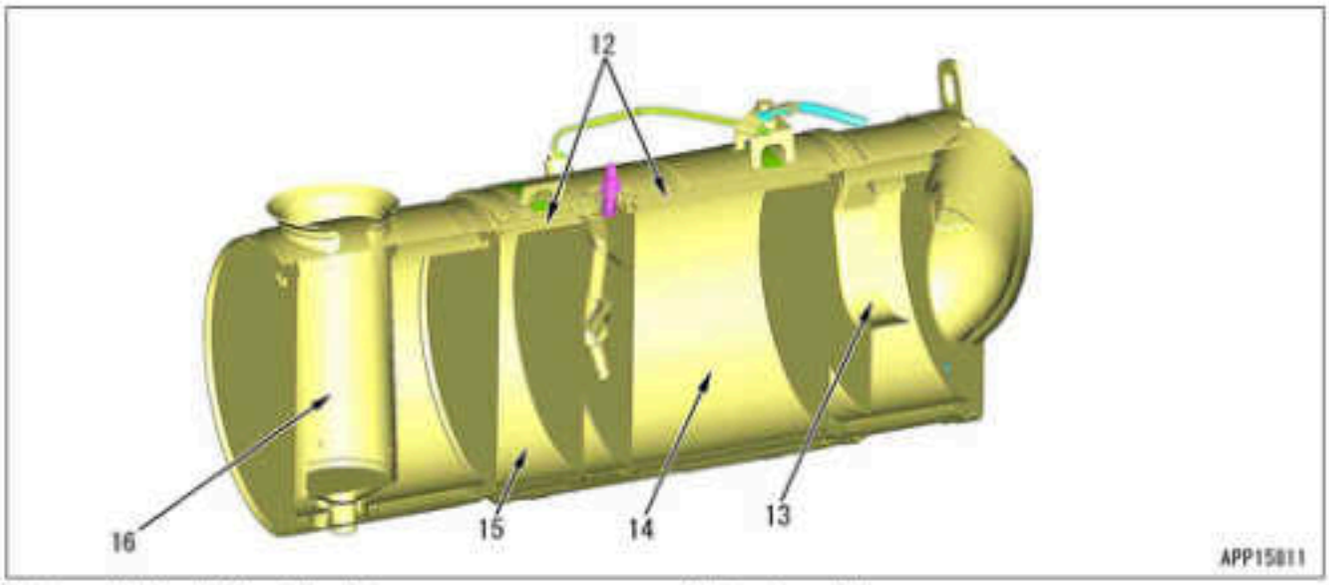
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No.	Cause	Procedure, measuring location, criteria and remarks		
4	Ground fault in wiring harness (contact with ground circuit)	If no failure is found by check on cause 2, this check is not required. 1. Turn the starting switch to OFF position. 2. Disconnect connectors ST2 and RRS2, and connect T-adapter to either female side.		
		Resistance	Between ST2 (female) (30) and (39) or between RRS2 (female) (C) and (B)	Max. 1 Ω
			Between ST2 (female) (30) and ground, or between RRS2 (female) (C) and ground	Max. 1 Ω
5	Defective R.H. HST motor speed sensor (internal defect)	If no failure is found by preceding checks, R.H. HST motor speed sensor is defective.		
6	Defective HST controller	If no failure is found by preceding checks, HST controller is defective. (Since this is an internal defect, troubleshooting cannot be performed.)		

Circuit diagram related to R.H. HST motor speed sensor



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A: From AdBlue/DEF mixing tube
1: SCR body
2: SCR temperature sensor
3: SCR outlet NOx sensor
4: SCR outlet temperature sensor
5: Temperature sensor controller
6: Ammonia sensor
7: Hanger plate
8: water baffle
9: Water drain port
B: To exhaust pipe
10: Sensor table
11: Sensor table band
12: Catalyzer hold mat
13: Water dam
14: Downstream SCR catalyst and ammonia oxidation catalyst (integrated type)
15: Upstream SCR catalyst
16: Rectifier tube

- SCR assembly consists of rectifier tube (16) equalizing the distribution of flow speed by leading exhaust gas, upstream SCR catalyst (15), downstream SCR catalyst, ammonia oxidation catalyst (14), and water dam which prevents rain water from entering into downstream SCR catalyst and ammonia oxidation catalyst (14) while exhausting gas.
- Ammonia oxidation catalyst (a part of 14) oxidizes ammonia to water and nitrogen with ammonia oxidation catalyst (a part of 14) to prevent ammonia which is supplied to SCR assembly from being released out because SCR catalyst (a part of 14, 15)cannot completely consume it.
- Each 1 piece of SCR temperature sensor (2), SCR outlet temperature sensor (4), ammonia sensor (6), and SCR outlet NOx sensor (3) are installed. These sensors are usable for various troubleshooting, such as they are used to control the feedback of denitration efficiency or they monitor that SCR catalyst properly functions or not.
- Rectifying tube (16) equalizes the distribution of exhaust gas flow speed.
- SCR catalyst (15, a part of 14) uses the ceramic honeycomb.
- The catalyzer holding mat (12) is made of a specific fiber and protects the ceramic catalyst against vibrations by the engine and the machine body. It also protects the outer periphery of SCR assembly against a heat transfer of the ceramics during operation.
- Water dam (13) is located at the upstream side of the outlet and prevents rainwater from entering into downstream SCR catalyst unit and ammonia oxidation catalyst (14).
- Water baffle (8) is located at the downstream side of the outlet and prevents rainwater at outlet from splashing over the detection part of NOx sensor.

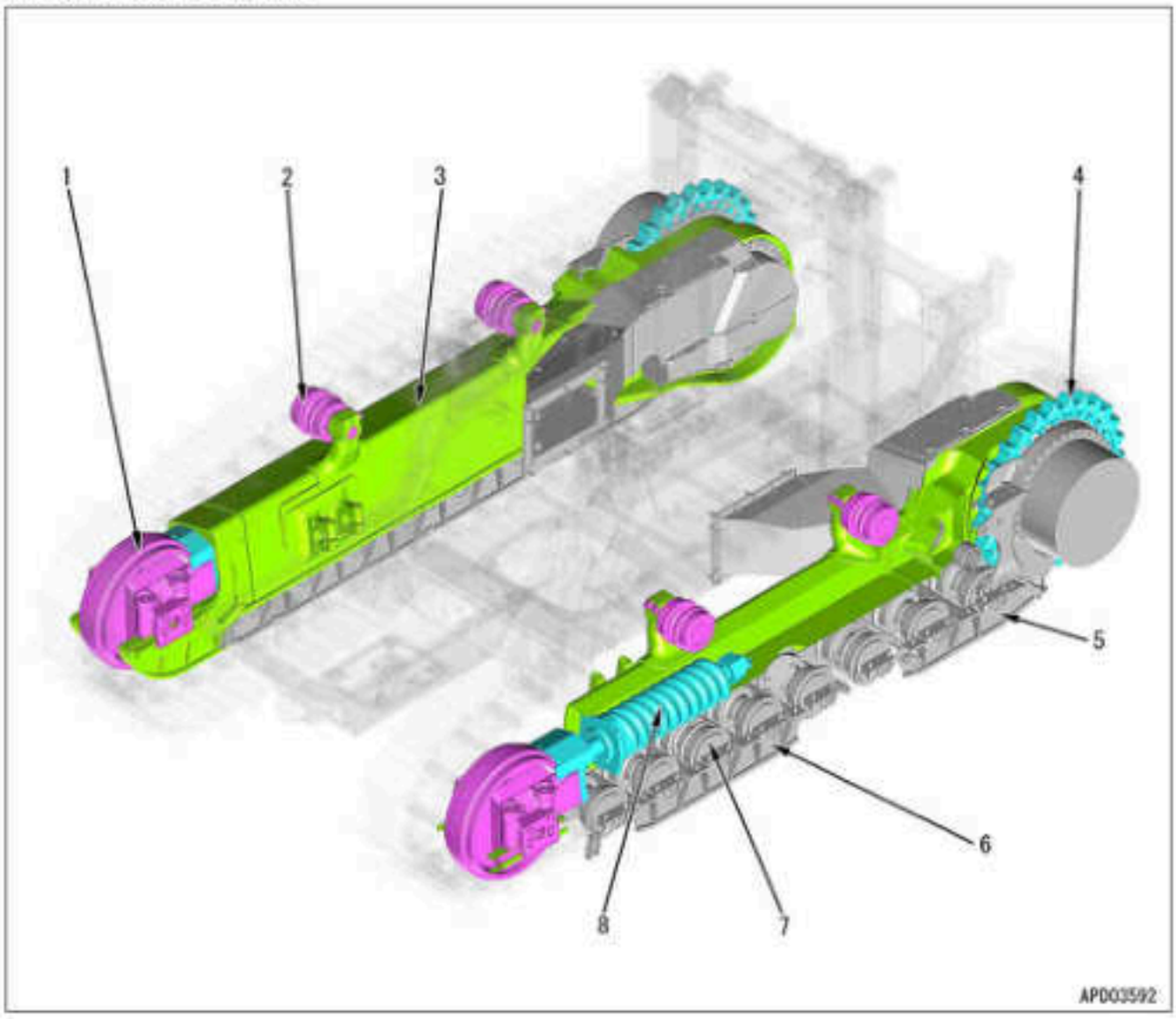
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TRACK FRAME AND IDLER CUSHION

STRUCTURE OF TRACK FRAME AND IDLER CUSHION

General view and sectional view

The figure shows D61EX-24.



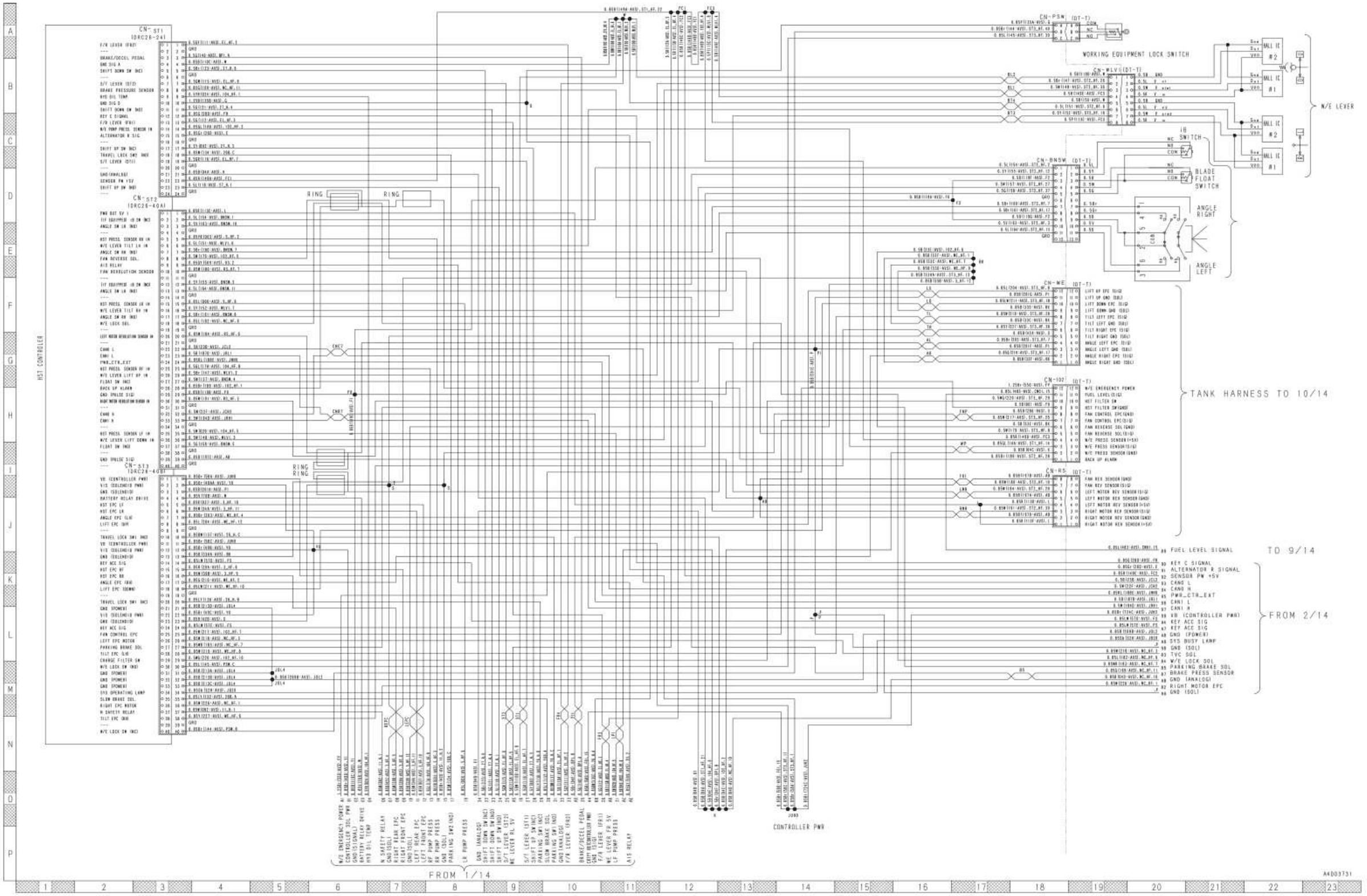
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ELECTRICAL CIRCUIT DIAGRAM (3/14)

D61EX-24, D61PX-24

REMARK

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



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