SEN06627-03

Shop Manual

WHEEL LOADER **WA200-8**

SERIAL NUMBERS 85001 and up

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Machine model				WA200-8				
Engine				SAA4D107E-3				
Item	Testing conditions		Unit	Standard value for new machine	Repair limit	Measured value	Good	No good
Engine speed at hydraulic stall	• Engine coolant temperature: 60 to 100 °C • HST oil temperature: 45 to 55 °C • Accelerator pedal: Fully depressed(High idle) • Work equipment: Relieved in bucket tilt back operation		rpm	1970 to 2170	1870 to 2270			
Engine speed at full stall (HST stall + hydraulic stall)	• Engine coolant temperature: 60 to 100 °C • HST oil temperature: 45 to 55 °C • Work equipment: Relieved in bucket tilt back operation		rpm	1860 to 2170	1760 to 2270			
Engine oil pressure	• Engine coolant temperature: 60 to 100 °C • Each control lever: NEUTRAL position • Engine oil (*2) EO10W30-LA, EO15W40-LA, EOS5W30-LA, EOS5W40-LA	Accelerator pedal: Fully depressed (High idle)	MPa {kg/cm^2}	Min. 0.29 {Min. 3.0}	Min. 0.25 {Min. 2.5}			
		Accelerator pedal: Not depressed (Low idle)		Min. 0.1 {Min. 1.0}	Min. 0.07 {Min. 0.7}			
Blowby pressure	• Engine coolant temperature: 60 to 100 °C • HST oil temperature: 45 to 55 °C • At full stall • With KCCV circuit disconnected		kPa {mmH$_2$O}	Max. 0.98 {Max. 100}	Max. 1.96 {Max. 200}			
Boost pressure (*1) (*3)	• Engine coolant temperature: 60 to 100 °C • HST oil temperature: 45 to 55 °C • At full stall • Monitored value (absolute pressure)		kPa {mmHg}	Min. 254.3 {Min. 1910}	Min. 228.3 {Min. 1710}			

*1: Item that can be checked in monitoring function of the machine monitor.

*2: KES diesel engine oil

*3: The absolute pressure is obtained by adding ambient pressure of 101.3 kPA {760 mmHg} at 0 m above sea level to the gauge pressure.

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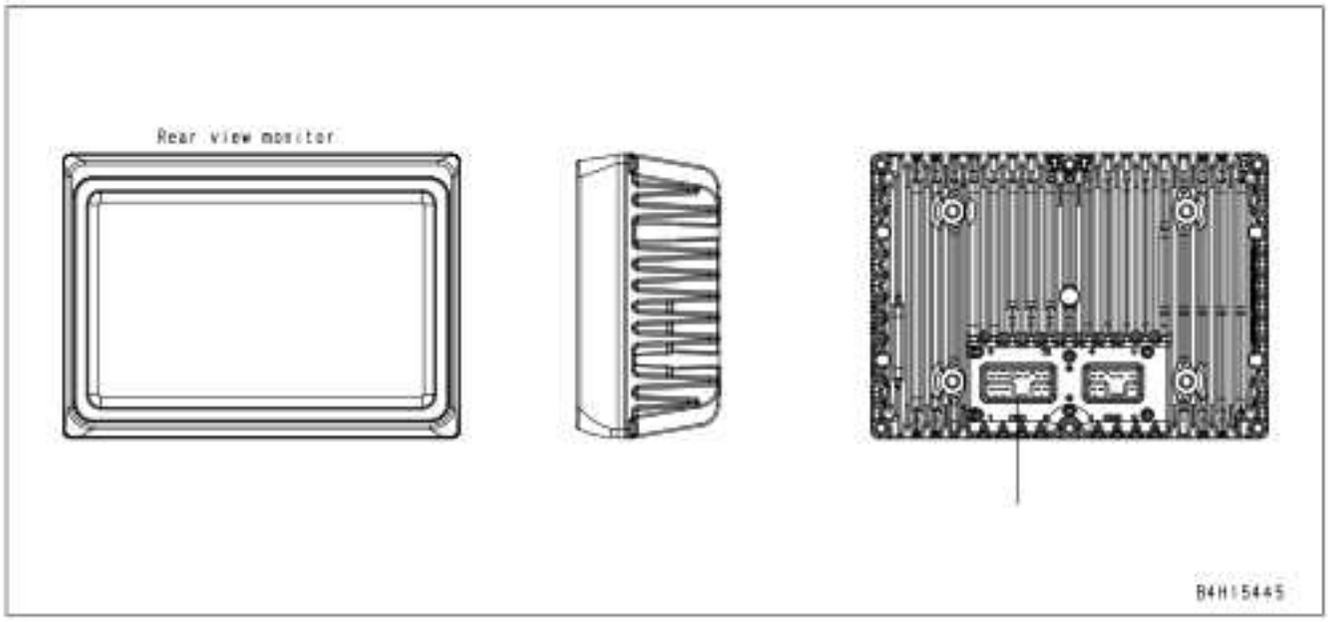
FAILURE CODE [CA3681]

Action level	Failure code	Failure	SCR outlet NOx sensor power voltage error (Engine controller system)
L01	CA3681		
Detail of failure	SCR outlet NOx sensor cannot detect the value due to defective power supply of SCR outlet NOx sensor.		
Action of controller	Operates the engine at default NOx value (0 ppm).		
Phenomenon on machine	SCR outlet NOx concentration cannot be detected.		
Related information	⚠ **KDOC assembly, the sensor fitting piping, and the sensor probe become hot (500 °C or higher). Be careful not to get burn injury.** ⚠ **SCR assembly, the sensor fitting piping, and the sensor probe become hot (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.** • Connectors of electrical parts around engine may be defective due to heat and vibration. See descriptions of wiring harness and connectors in "Electrical equipment" in "CHECKS BEFORE TROUBLESHOOTING" of "RELATED INFORMATION ON TROUBLESHOOTING", and check them. • If failure code [CA1776], [CA1777] or [CA2771] is displayed, perform troubleshooting for that code first. • 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 is smart sensor which communicates with engine controller with other sensors through CAN communication. • SCR outlet NOx sensor does not operate when 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 basic machine operation and SCR sensor are used. (The numbers below denote monitoring codes). • Operation standard 01002 Engine Speed 18600 Inject Fueling Command 19200 Exhaust Gas Flow Rate 47300 KDOC 1 Inlet Temperature 19300 SCR Temperature 19302 SCR Outlet Temperature • SCR sensor related items 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** **This failure code requires "Loaded Diagnostics Operation to Clear 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. (Even if this failure code is not displayed with starting switch in ON position, completion of repair cannot be determined unless exhaust temperature becomes high.)**		

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No.	Cause	Procedure, measuring location, criteria and remarks		
4	Ground fault in wiring harness (contact with ground circuit)	1. Turn the starting switch to OFF position. 2. Disconnect connector RVM1, and connect T-adapter to female side. 3. Remove fuse No.5 in fuse box FS1.		
		Resistance	Between ground and RVM1 (female) (1) or FS1-5	Min. 1 MΩ
5	Defective rearview monitor	If no failure is found by preceding checks, rearview monitor is defective.		
6	Defective wiring harness	If you cannot perform the troubleshooting of wiring harness for open circuit, wiring harness may be defective.		

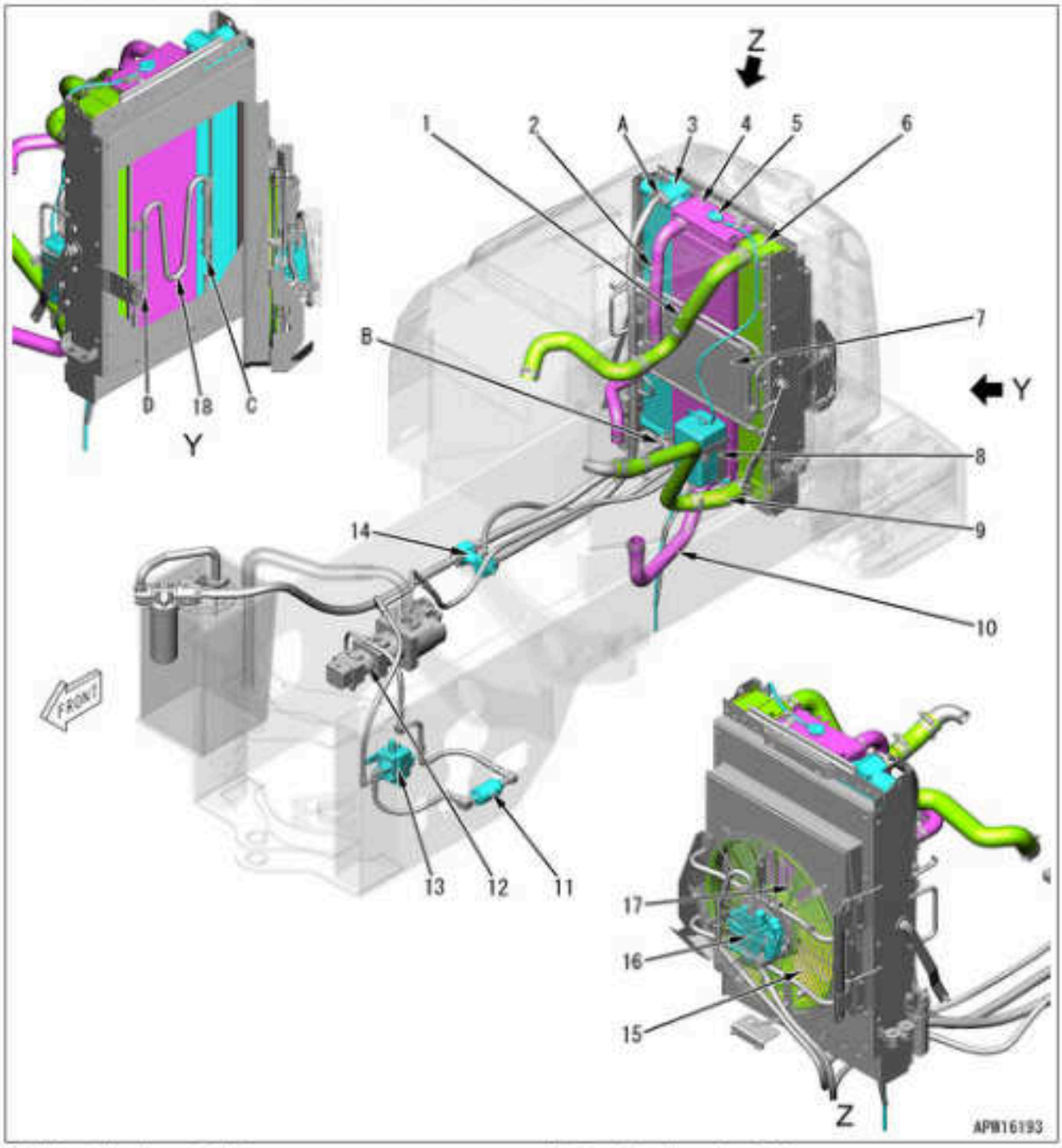
Wiring harness of rearview monitor



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COOLING SYSTEM

LAYOUT DRAWING OF COOLING SYSTEM



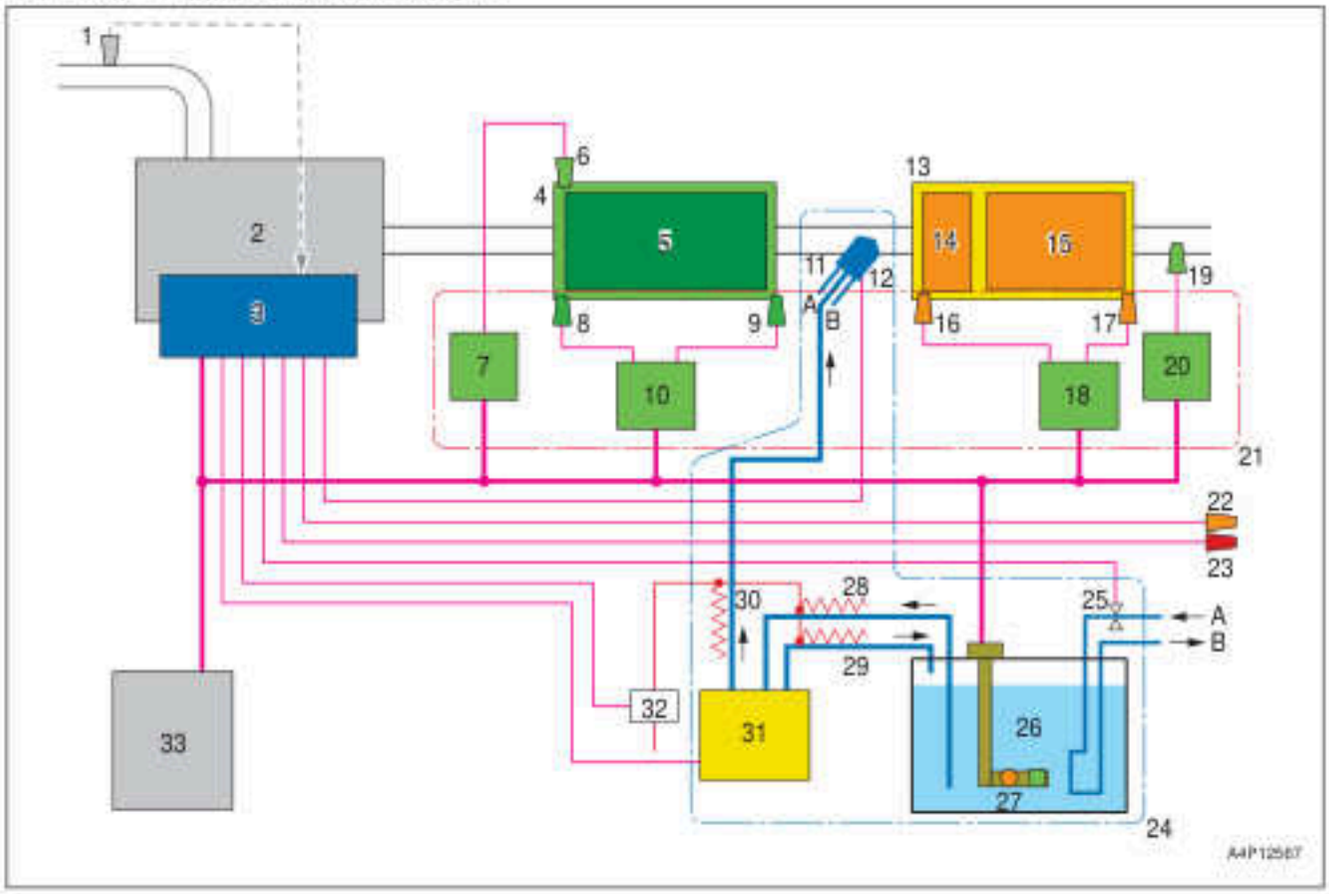
A: Hydraulic oil cooler inlet
B: Hydraulic oil cooler outlet
1: Aftercooler outlet hose
2: Radiator inlet hose
3: Hydraulic oil cooler
4: Radiator
5: Radiator cap
C: Transfer oil cooler inlet
D: Transfer oil cooler outlet
6: Aftercooler
7: Air conditioner condenser
8: Reservoir tank (with built-in coolant level sensor)
9: Aftercooler inlet hose
10: Radiator outlet hose

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UREA SCR SYSTEM DIAGRAM

REMARK

Four cylinder engine is shown in the figure.



A: Coolant inlet
B: Coolant outlet
1: Mass air flow and temperature sensor
2: Engine
3: Engine controller
4: KDOC assembly
5: KDOC unit
6: Turbocharger outlet NOx sensor
7: Turbocharger outlet NOx sensor controller
8: KDOC inlet temperature sensor
9: KDOC outlet temperature sensor
10: KDOC temperature sensor controller
11: AdBlue/DEF mixing tube
12: AdBlue/DEF injector
13: SCR assembly
14: Upstream SCR catalyst
15: Downstream SCR catalyst and ammonia oxidation catalyst (integrated type)
16: SCR temperature sensor
17: SCR outlet temperature sensor
18: SCR temperature sensor controller
19: SCR outlet NOx sensor
20: SCR outlet NOx sensor controller
21: Smart sensor
22: Ambient temperature sensor
23: Engine room temperature sensor (*1)
24: AdBlue/DEF system
25: AdBlue/DEF tank heating valve
26: AdBlue/DEF tank
27: AdBlue/DEF tank sensor
28: AdBlue/DEF suction line
29: AdBlue/DEF return line
30: AdBlue/DEF pressure line
31: AdBlue/DEF pump
32: AdBlue/DEF line heater relay
33: Machine monitor
*1: There are some machine models which are not equipped with it.

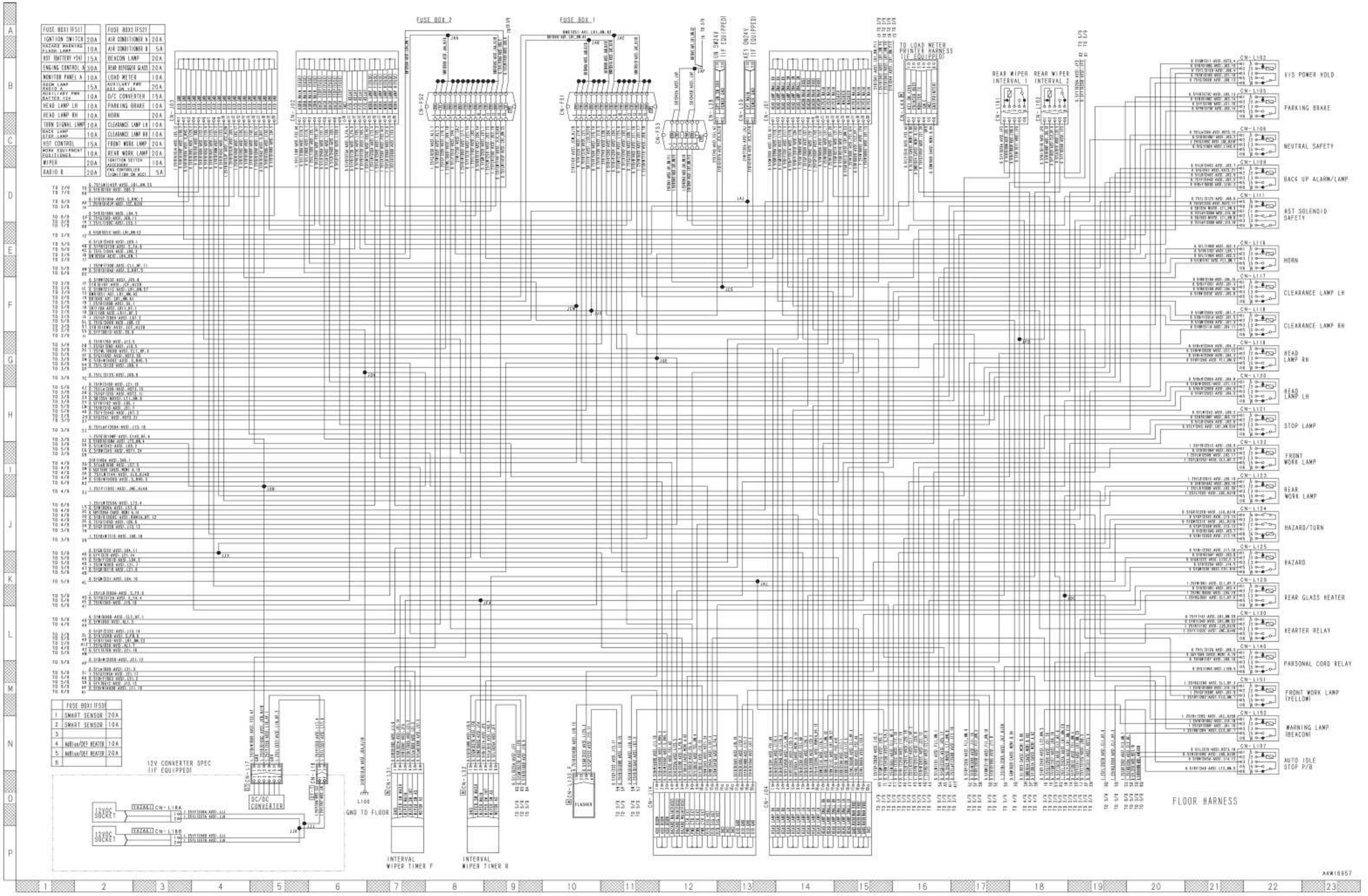
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ELECTRICAL CIRCUIT DIAGRAM OF FLOOR (1/9)

WA200–8

REMARK

This figure covers the equipment and devices that are unavailable as optional items in some areas.



FUSE BOX1 (FS1)		FUSE BOX1 (FS2)	
IGNITION SWITCH	20A	AIR CONDITIONER A	20A
HAZARD WARNING FLASH LAMP	10A	AIR CONDITIONER B	5A
HST BATTERY (+24)	15A	BEACON LAMP	20A
ENGING CONTROL A	30A	REAR DEFOGGER GLASS	20A
MONITOR PANEL A	10A	LOAD METER	10A
ROOM LAMP RADIO A	15A	AUXILIARY PWR B (+ ON +24)	20A
AUXILIARY PWR BATTERY +24	10A	D/C CONVERTER	15A
HEAD LAMP LH	10A	PARKING BRAKE	10A
HEAD LAMP RH	10A	HORN	20A
TURN SIGNAL LAMP	10A	CLEARANCE LAMP LH	10A
BACK LAMP STOP LAMP	10A	CLEARANCE LAMP RH	10A
HST CONTROL	15A	FRONT WORK LAMP	20A
WORK EQUIPMENT POSITIONER	10A	REAR WORK LAMP	20A
WIPER	20A	IGNITION SETTER ACCESSORY	10A
RADIO B	20A	ENG CONTROLLER (+)(+)(ON BK ACC)	5A

	FUSE BOX1 (FS3)	
1	SMART SENSOR	20A
2	SMART SENSOR	10A
3		
4	AIRCON/DEF HEATER	10A
5	AIRCON/DEF HEATER	20A
6		

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