SEN06581-07

Shop Manual

WHEEL LOADER **WA500-8**

SERIAL NUMBERS 90001 and up



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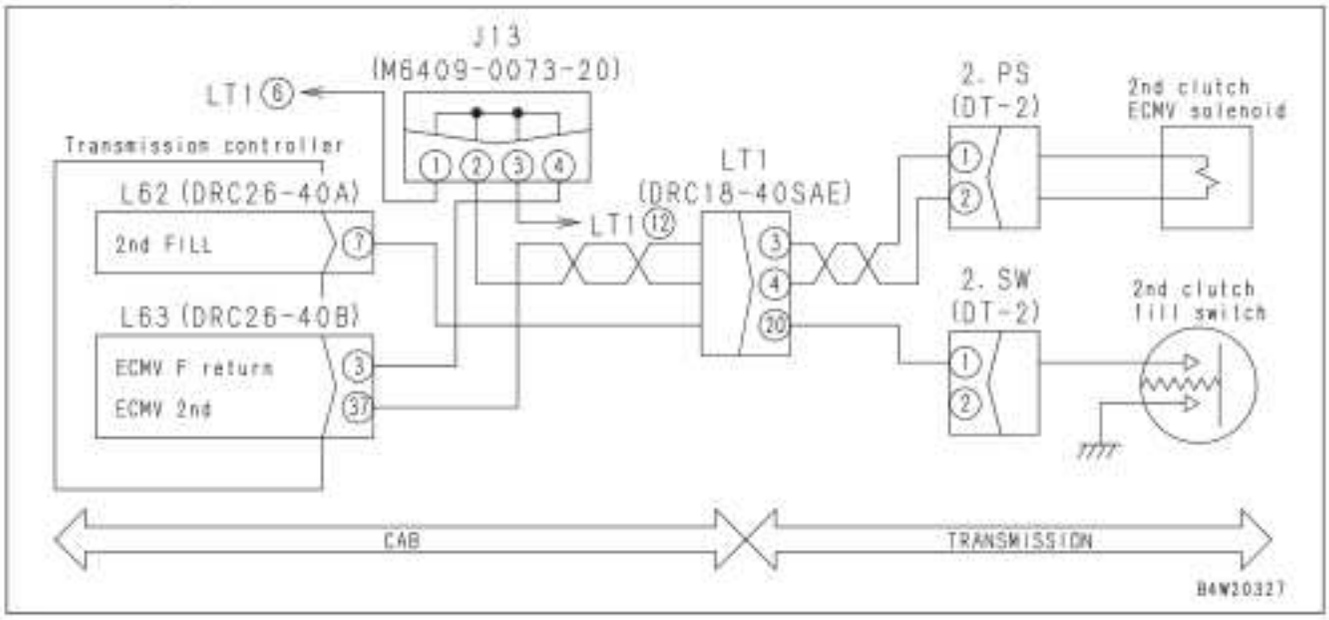
FAILURE CODE [CA356]

Action level	Failure code	Failure	Mass Air Flow Sensor High Error (Engine controller system)
L03	CA356		
Detail of failure	High frequency input error occurs in signal circuit of mass air flow sensor.		
Action of controller	• Sets mass air flow to fixed value (10 kg/min) for operation. • Closes EGR valve. • Derates engine power for operation. • Stops regeneration control.		
Phenomenon on machine	Engine output lowers.		
Related information	• 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 it. • If failure code [CA3419] or [CA3421] is also displayed, perform troubleshooting for it first. • Since sensor output is approximately 5 V pulse voltage, it cannot be measured by using multimeter. • Mass air flow sensor and intake air temperature sensor are provided as a unit. • After completion of repair, check that the failure code is cleared by the following procedure. Procedure: Turn the starting switch to ON position. • Engine power deration is canceled by turning starting switch to OFF position after this failure code is cleared. (This deration is not canceled by simply failure code being cleared.)		

No.	Cause	Procedure, measuring location, criteria and remarks		
1	Defective mass air flow and temperature sensor	1. Turn the starting switch to OFF position. 2. Disconnect connector MAF. 3. Turn the starting switch to ON position.		
		If this failure code changes from [CA356] to [CA357], mass air flow and temperature sensor is defective.		
2	Open circuit in wiring harness	1. Turn the starting switch to OFF position. 2. Disconnect connectors J1 and MAF, and connect T-adapter to each female side.		
		Resistance	Between J1 (female) (56) and MAF (female) (3)	Max. 1 Ω
3	Short circuit in wiring harness	1. Turn starting switch to OFF position. 2. Disconnect connectors J1 and MAF, and connect T-adapters to female side of J1.		
		Continuity	Between J1 (female) (32) and each pin other than J1 (32) pin.	No continuity
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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Circuit diagram related to 2nd Clutch ECMV



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H-4 TRAVEL SPEED IS SLOW, BUCKET THRUST FORCE IS WEAK, GRADABILITY IS LOW, OR GEAR SPEED DOES NOT SHIFT

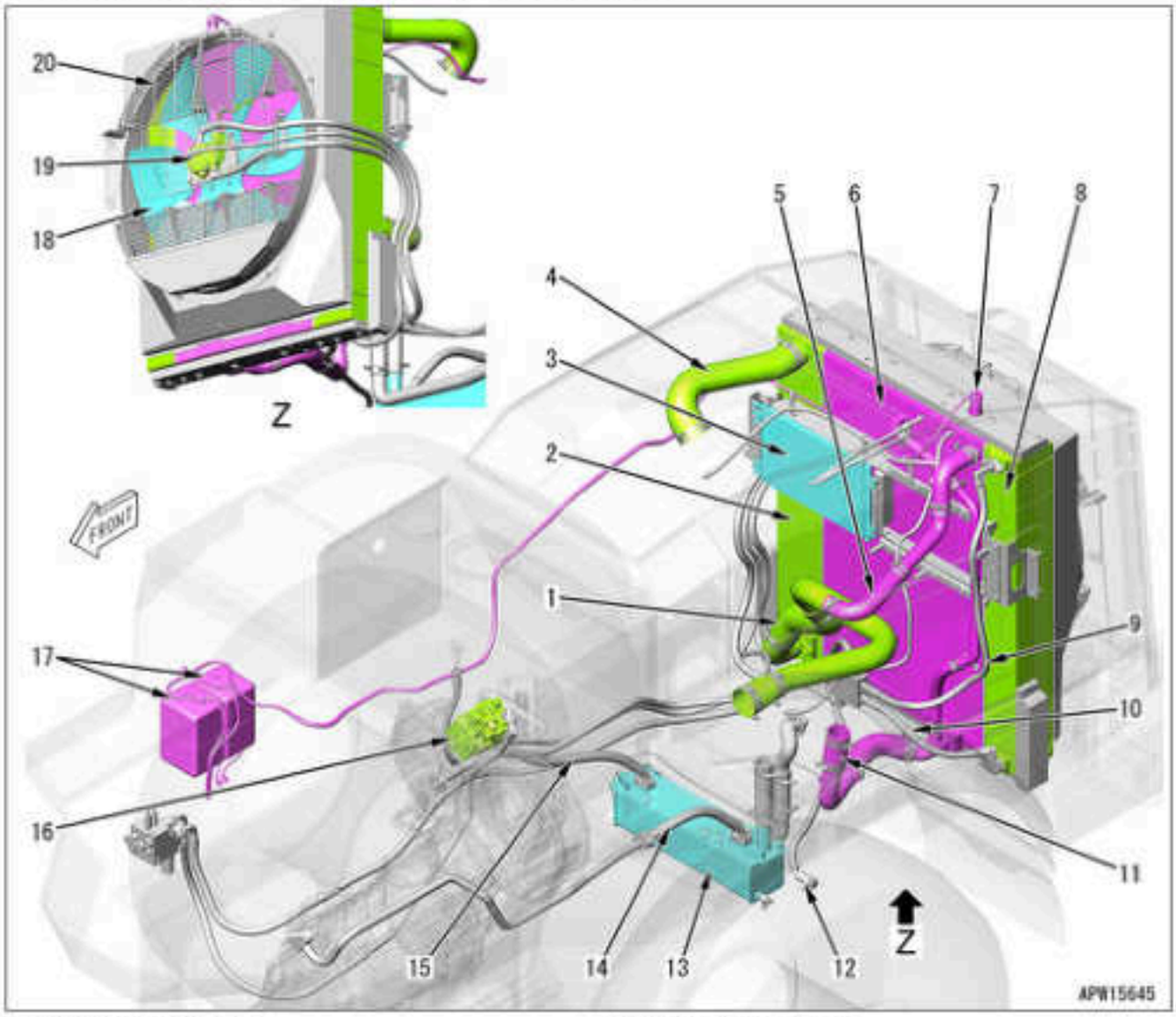
Failure	Travel speed is slow, bucket thrust force is weak, gradability is low, or gear speed does not shift.
Related information	• If any failure code is displayed, perform troubleshooting for that failure code first. ([15SAL1],[15SALH],[15SBL1],[15SBLH],[15SEL1],[15SELH],[15SFL1],[15SFLH], [15SGL1],[15SGLH],[15SHL1],[15SHLH]) • Check that wheel brake or parking brake is not dragged. • Torque converter oil pressure can be checked with monitoring. (Code:32601 (inlet pressure), 32603 (outlet pressure))

No.	Cause	Procedure, measuring location, criteria and remarks			
1	Defective strainer of transmission charge pump	Check strainer for clogging.			
2	Air sucked in on suction side of transmission charge pump	Check suction piping for cracks, etc.			
3	Defective main relief valve of transmission charge pump	Measure it referring to TESTING AND ADJUSTING.			
		Transmission main relief pressure	Engine speed	Low idle	3.34 ± 0.15 MPa {34 ± 1.5 kg/cm^2}
				1900 rpm	3.44 ± 0.15 MPa {35.1 ± 1.5 kg/cm^2}
		When oil pressure is not normal even after adjustment, check if there is malfunction of main relief valve (fatigue of spring), or internal defect (defective valve seat), etc.			
4	Defective transmission charge pump	• If measured oil pressure is unusual in check on defective transmission charge pump main relief valve, and relief pressure is abnormal even after main relief valve is adjusted or replaced, disconnect transmission charge pump outlet hose, crank the engine, and check if oil flows out. • Check line filter for sticking foreign material such as metal chips.			
5	Clogged last chance filter	If no failure is found in check on defective transmission charge pump main relief valve, and lockup oil pressure is low or "0", check if the last chance filter is clogged.			
6	Defective torque converter relief valve	Measure it referring to TESTING AND ADJUSTING.			
		Torque converter inlet oil pressure	Max. 0.98 MPa {Max. 10.0 kg/cm^2}		
		Torque converter outlet oil pressure	0.32 to 0.72 MPa {3.3 to 7.3 kg/cm^2}		
		• If oil pressure does not become normal after adjustment, check relief valve for malfunction (fatigued spring), internal defect (defective valve seat), etc. • If torque converter outlet pressure is low, oil cooler may be broken. Check it.			

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COOLING SYSTEM

LAYOUT DRAWING OF COOLING SYSTEM



1: Aftercooler inlet hose
2: Aftercooler
3: Condenser
4: Aftercooler outlet hose
5: Radiator inlet hose
6: Radiator
7: Radiator cap
8: Hydraulic oil cooler
9: Hydraulic oil cooler inlet hose
10: Hydraulic oil cooler outlet hose
11: Radiator outlet hose
12: Coolant drain valve
13: Power train oil cooler
14: Power train oil cooler inlet hose
15: Power train oil cooler outlet hose
16: Brake and cooling fan pump
17: Reservoir tank (with built-in coolant level sensor)
18: Cooling fan
19: Cooling fan motor
20: Fan guard

SPECIFICATIONS OF COOLING SYSTEM

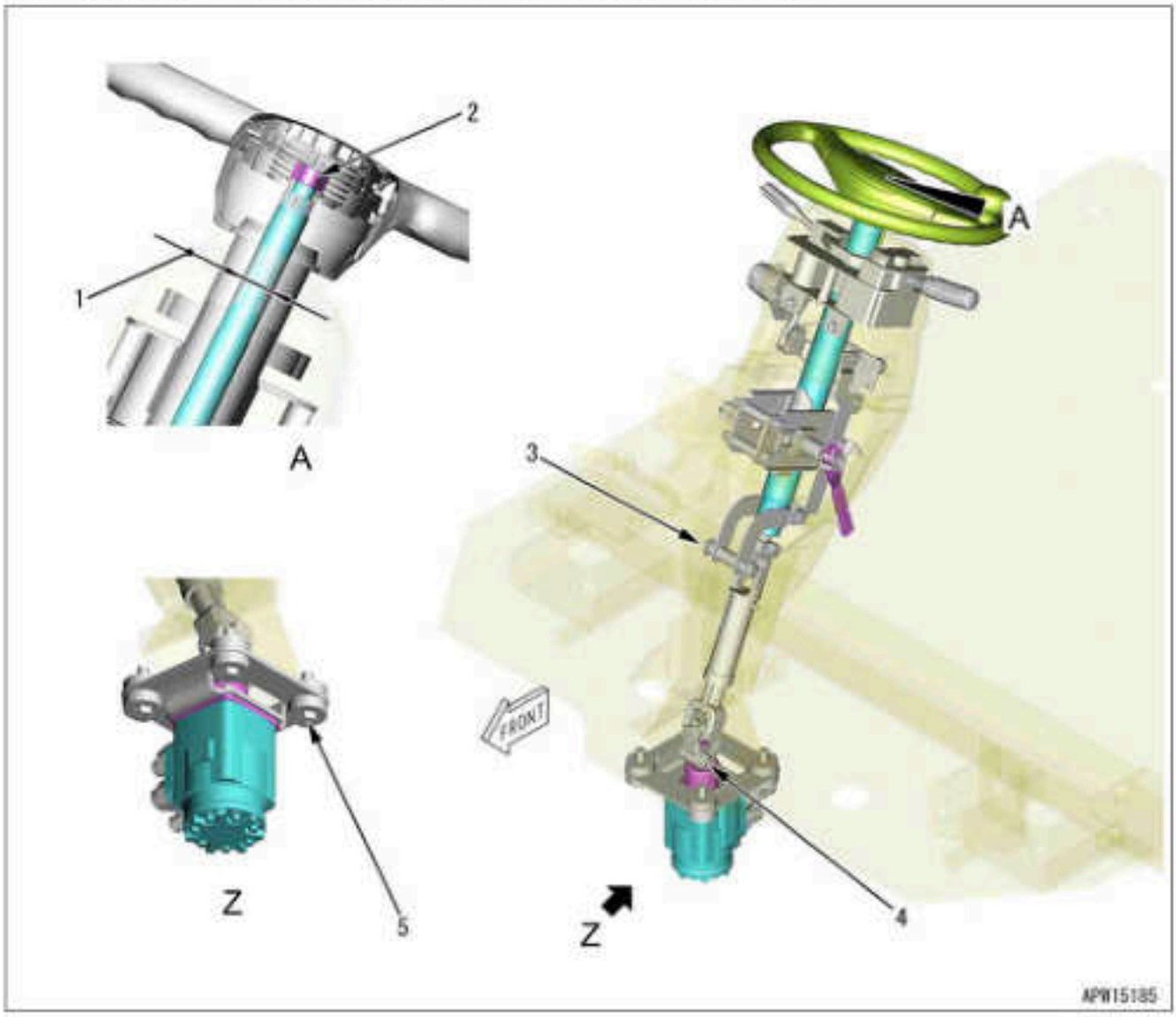
Radiator

Core type: AL WAVE

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STEERING SYSTEM

MAINTENANCE STANDARD OF STEERING COLUMN



Unit: mm

No.	Item	Judgment criteria					Remedy
		Standard dimension	Tolerance		Standard clearance	Allowable clearance	
			Shaft	Hole			
1	Clearance between steering shaft and column bushing	19	0 -0.08	+0.15 +0.05	0.05 to 0.23	0.4	Replace
2	Tightening torque of nut	29.4±2.94 Nm {3.0±0.3 kgm}					Retighten
3	Tightening torque of bolt	11.8 to 24.5 Nm {1.2 to 2.5 kgm}					
4	Tightening torque of bolt	48.1 to 62.8 Nm {4.9 to 6.4 kgm}					
5	Tightening torque of bolt	98 to 123 Nm {10 to 12.5 kgm}					

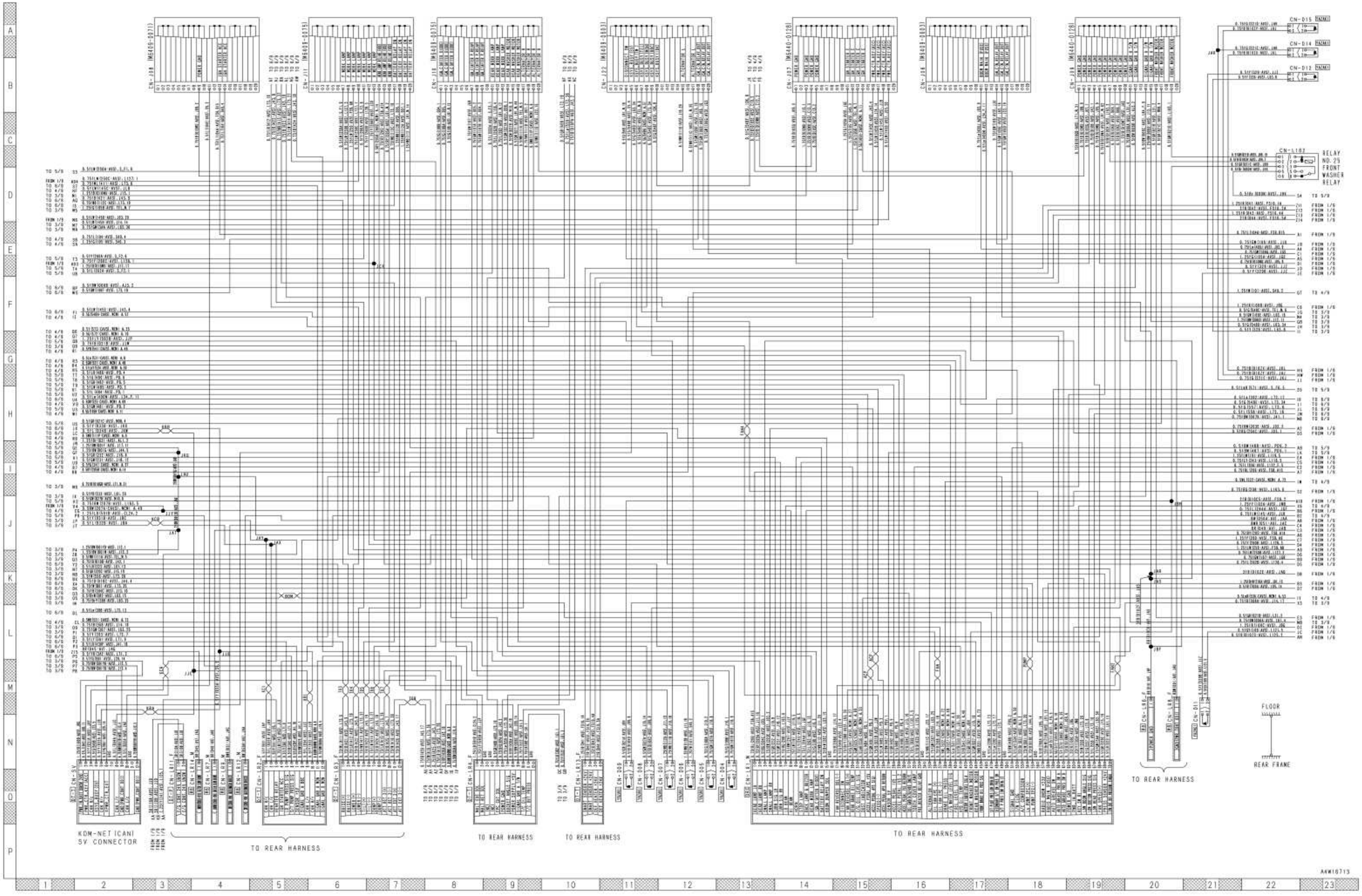
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ELECTRICAL CIRCUIT DIAGRAM OF FLOOR (FOR AJSS SPEC) (2/8)

WA500-8

REMARK

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



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