

GROUP 2 ELECTRICAL CIRCUIT(1/2)

AIR-CON HARNESS

NO.	DESTINATION	CN-11
1	ALC LAMP	129
2	REVERSE SIG	129
3	AC 24V	129
4	REVERSE FAN	129
5	AC CONTROLLER B+	129
6	AC COMP	150
7	AC CONDENSOR FAN	150
8	ILLUMINATION	10E

1	CLUSTER TX	1
2	CLUSTER RX	2
3	SMILE	3
4	CLUSTER GND	4
5	CLUSTER BATT 24V	5
6	ECONO SW COM	6
7	ECONO SW NO	7
8	P DUMP(SERVICE CONN)	8
9	QUICK COOLER SW HD	9
10	OVERLOAD SW COM	10
11	OVERLOAD SW NO	11
12	ILLUMINATION	12
13	HOUR METER SIG	13
14	RESIZ TRX(SERVICE CONN)	14
15	RESIZ TRX(SERVICE CONN)	15
16	RESIZ TRX(SERVICE CONN)	16
17	RESIZ TRX(SERVICE CONN)	17
18	WIPER CONT. BATT 24V	18
19	WIPER CONT. WASH/SERVE	19
20	CAN. H(SERVICE CONN)	20
21	CAN. H(SERVICE CONN)	21
22	CAN. SHIELD	22
23	CAMERA 2	23
24	WIPER LG	24
25	SPARE	25
26	HEAT GND	26
27	CLEAR LIGHTER IG	27
28	DC CONVENTER SW	28
29	BREAKER SW COM(AC)	29
30	GND	30
31	GND	31
32	REACON SW COM(SIG)	32
33	CABIN LIGHT	33
34	START KEY SW START	34
35	START KEY SW COM	35
36	CAMERA 3	36
37	CABIN LIGHT	37
38	REVERSE FAN AUTO	38
39	REVERSE FAN MANUAL	39
40	RESIZ RXZ(SPS)	40
41	RESIZ RXZ(SPS)	41
42	NC	42
43	NC	43
44	NC	44
45	NC	45
46	CASSETTE RADIO BATT 24V	46
47	CASSETTE RADIO IG	47
48	CASSETTE RADIO GND	48
49	SWITCH PANEL HEAD LIGHT	49
50	SWITCH PANEL WORK LIGHT	50
51	CAMERA GND	51
52	CAMERA SIG	52
53	CAMERA SHIELD	53
54	SWITCH PANEL PREHEAT	54
55	SWITCH PANEL CABIN LAMP	55
56	SWITCH PANEL TRAIL LAMP	56
57	SWITCH PANEL IG	57
58	SWITCH PANEL GND	58
59	START SW ACC	59
60	START SW BR	60

RH CONSOLE HARNESS

1	NC	1
2	NC	2
3	NC	3
4	NC	4
5	NC	5
6	NC	6
7	ACCEL DIAL LED	7
8	AIR COMP SW POWER	8
9	DPF PRESEN	9
10	DPF COM	10
11	DPF INHIBT	11
12	AIR COMP RV	12

LH CONSOLE HARNESS

1	PWM SUPPLY	1
2	PWM GND	2
3	PWM TLY SIGNAL	3
4	NC	4
5	BREAKER SW	5
6	BREAKER SW	6
7	HORN	7
8	HORN	8
9	BUTTON 2	9
10	BUTTON 2	10
11	BUTTON 1	11
12	BUTTON 1	12
13	AIR COMP SW	13
14	ACCEL DIAL SUPPLY	14
15	ACCEL DIAL SIGNAL	15
16	ACCEL DIAL GND	16

QUICK COUPLER

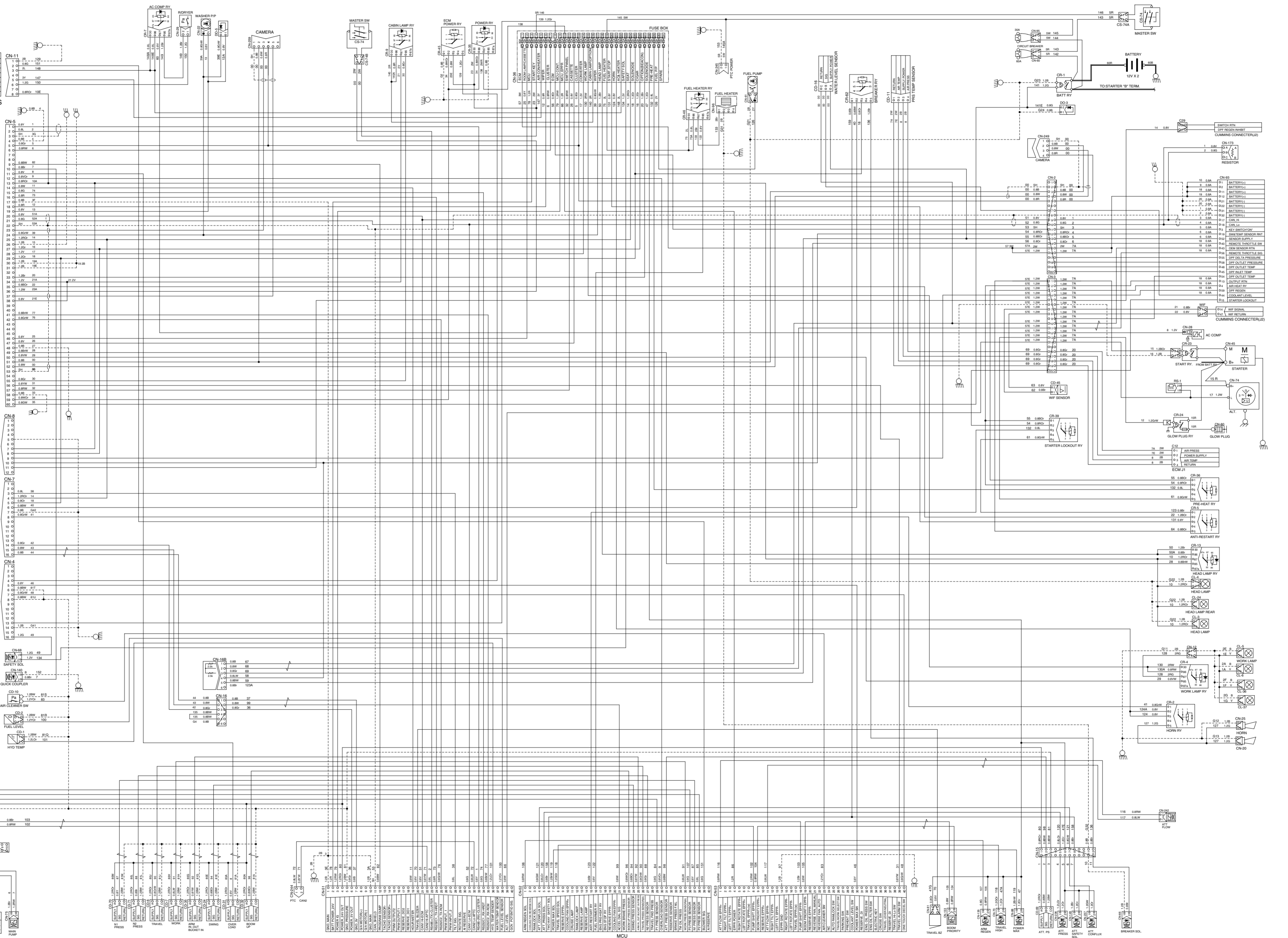
1	SAFETY SW	1
2	SAFETY SW	2
3	SAFETY SW	3
4	SAFETY SW	4
5	SAFETY SW	5
6	SAFETY SW	6
7	SAFETY SW	7
8	SAFETY SW	8
9	SAFETY SW	9
10	SAFETY SW	10
11	SAFETY SW	11
12	SAFETY SW	12
13	SAFETY SW	13
14	SAFETY SW	14
15	SAFETY SW	15
16	SAFETY SW	16

FUEL LEVEL

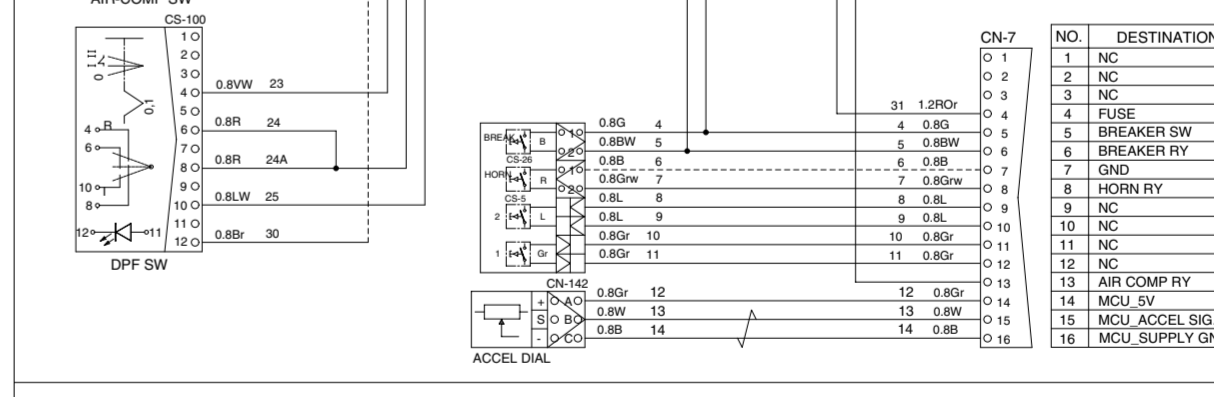
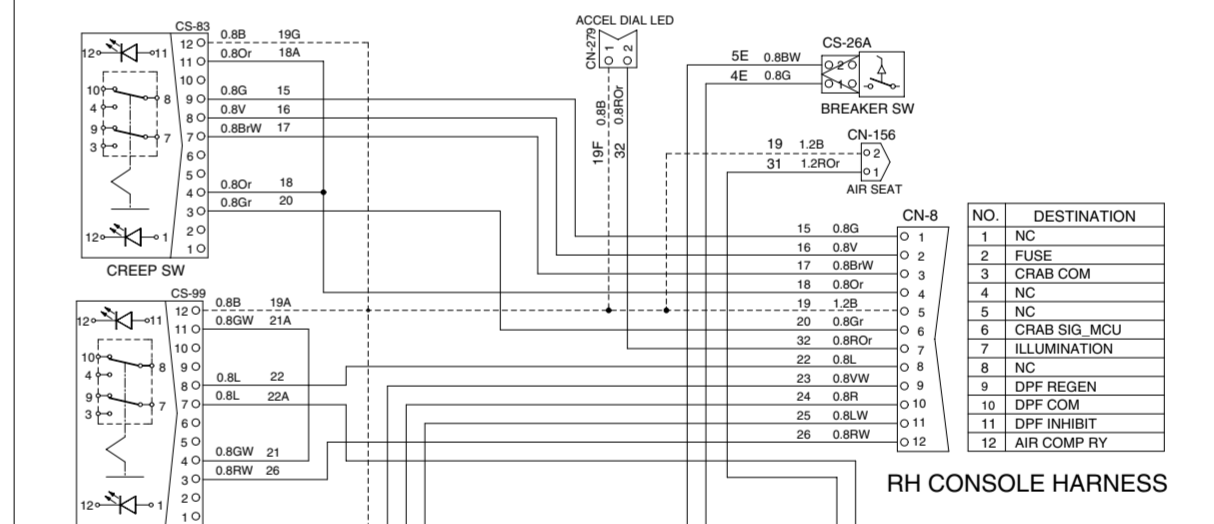
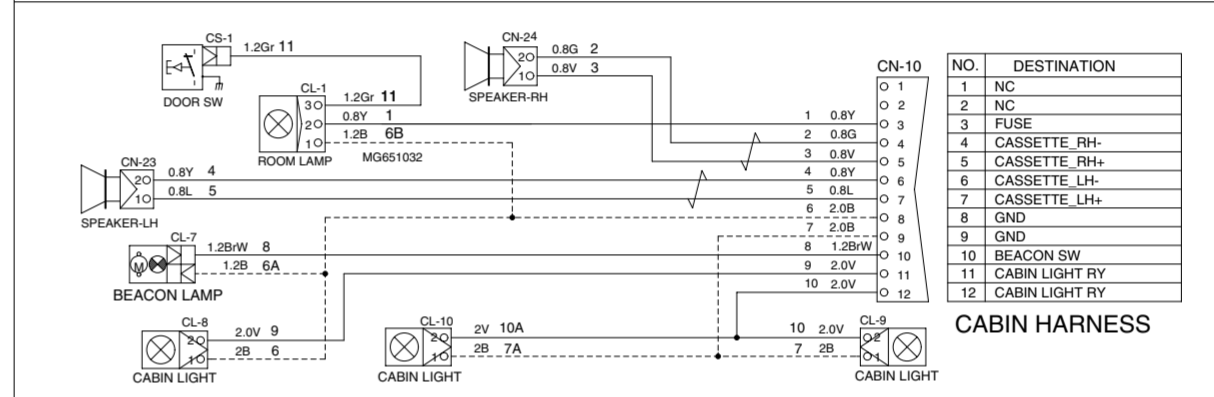
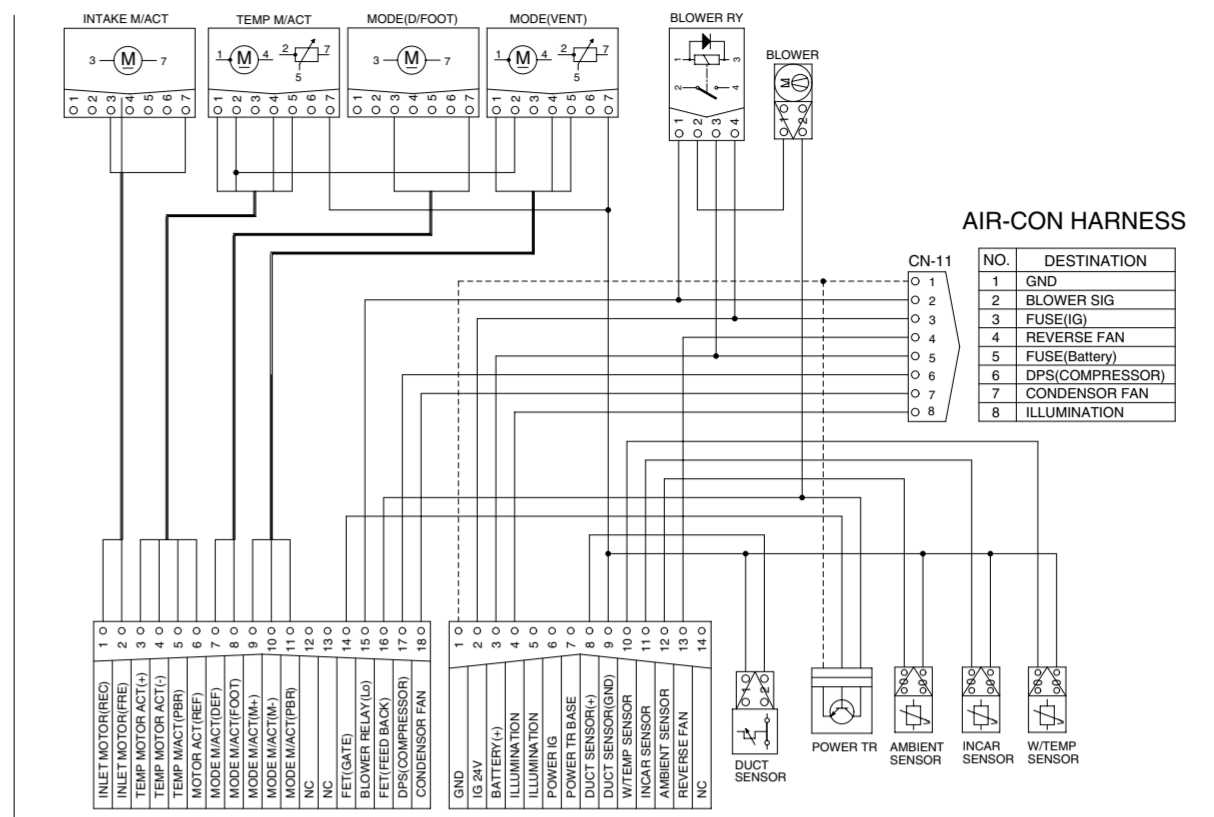
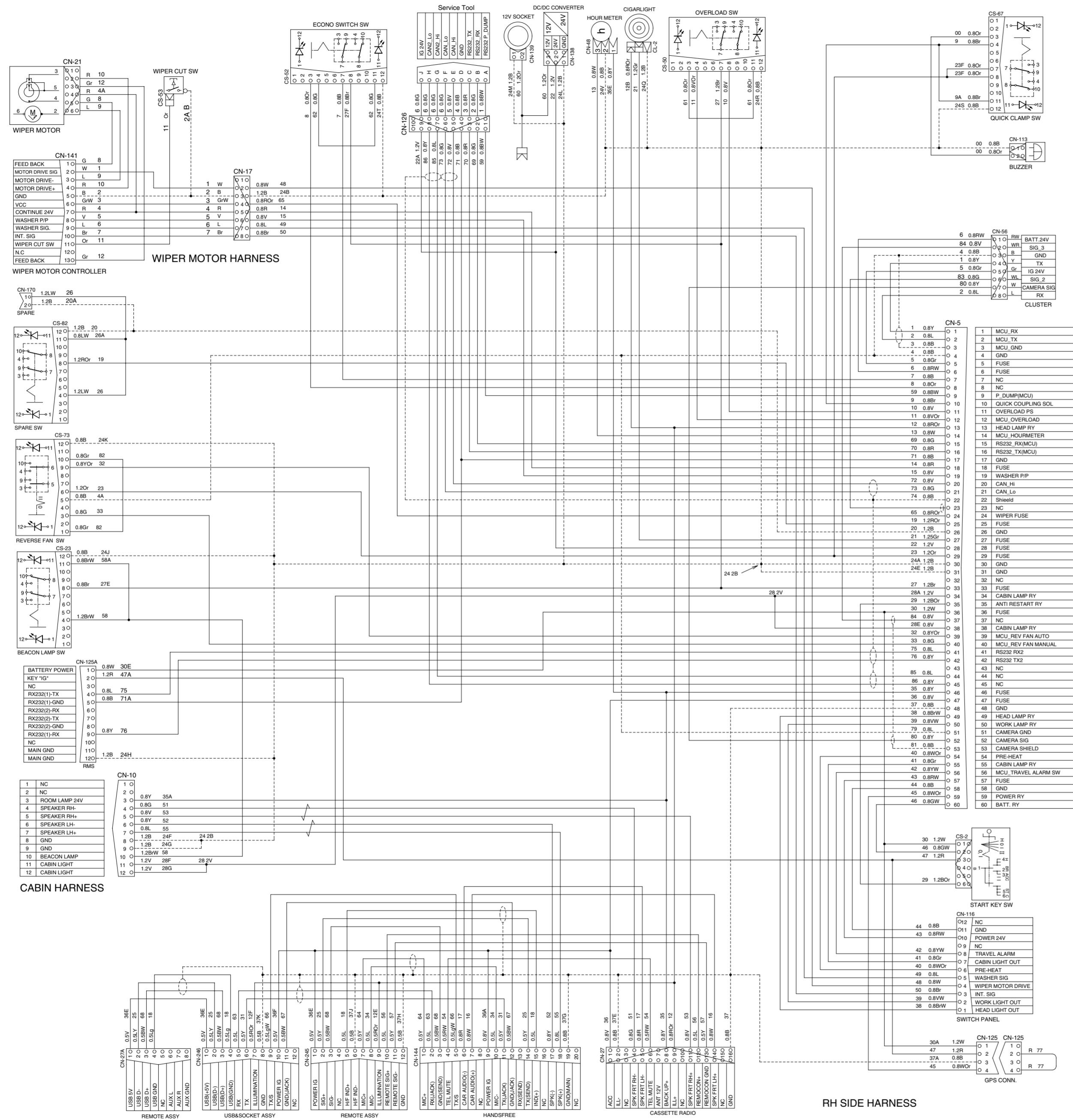
1	FUEL LEVEL	1
2	FUEL LEVEL	2
3	FUEL LEVEL	3
4	FUEL LEVEL	4
5	FUEL LEVEL	5
6	FUEL LEVEL	6
7	FUEL LEVEL	7
8	FUEL LEVEL	8
9	FUEL LEVEL	9
10	FUEL LEVEL	10
11	FUEL LEVEL	11
12	FUEL LEVEL	12
13	FUEL LEVEL	13
14	FUEL LEVEL	14
15	FUEL LEVEL	15
16	FUEL LEVEL	16

MCU

1	MCU	1
2	MCU	2
3	MCU	3
4	MCU	4
5	MCU	5
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9	MCU	9
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99	MCU	99
100	MCU	100



ELECTRICAL CIRCUIT(2/2)



MEMORANDUM

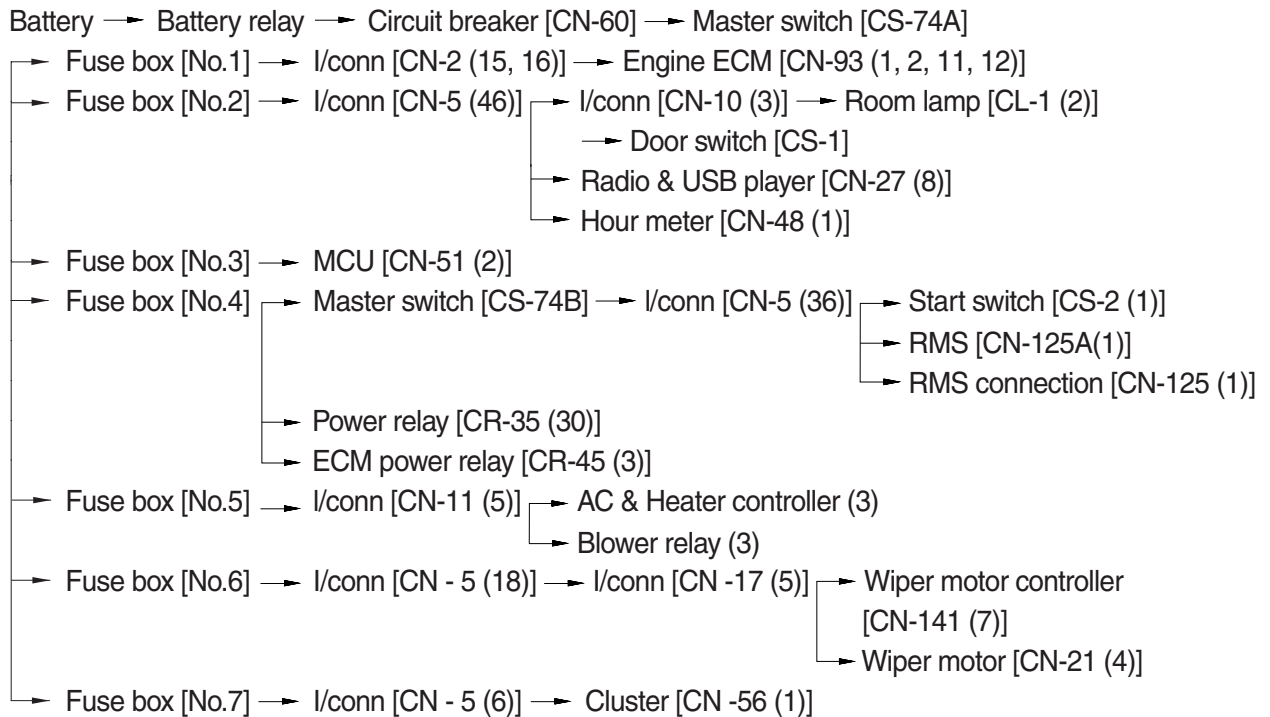
HYUNDAI HEAVY INDUSTRIES CO., LTD
CONSTRUCTION EQUIPMENT DIV.

1. POWER CIRCUIT

The negative terminal of battery is grounded to the machine chassis through master switch.

When the start switch is in the OFF position, the current flows from the positive battery terminal as shown below.

1) OPERATING FLOW



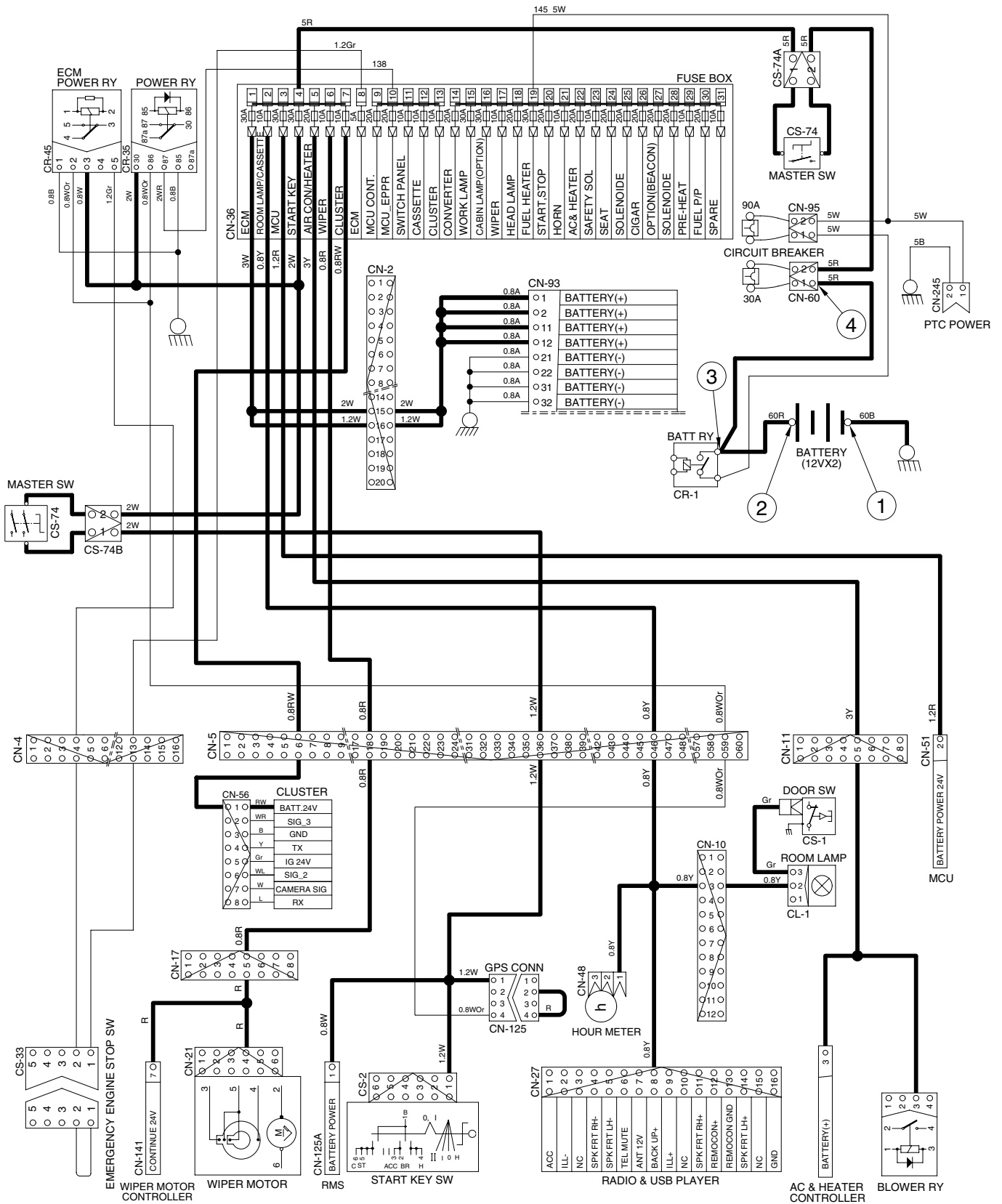
※ I/conn : Intermediate connector

2) CHECK POINT

Engine	Start switch	Check point	Voltage
OFF	OFF	① - GND (battery 1EA)	10~12.5V
		② - GND (battery 2EA)	20~25V
		③ - GND (battery 2EA)	20~25V
		④ - GND (fusible link)	20~25V

※ GND : Ground

POWER CIRCUIT



2209A4EL05

2. STARTING CIRCUIT

1) OPERATING FLOW

Battery(+) terminal → Battery relay [CR-1] → Circuit breaker [CN-60] → Master switch [CS-74]
 → Fuse box [No.4] → I/conn [CN-5(36)] → Start switch [CS-2(1)]

(1) When start key switch is in ON position

→ Start switch ON [CS-2 (2)] → I/conn [CN-5 (60)] → Battery relay [CR-1]
 → Battery relay operating (all power is supplied with the electric component)
 → Start switch ON [CS-2 (3)] → RMS [CN-125A (2)]
 → RMS conn [CN-125 (2)→(4)] → I/conn [CN-5 (59)]
 → Power relay [CR-35 (86) → (87)] → Fuse box [No.10]
 → ECM power relay [CR-45 (2) → (5)] → I/conn [CN-4 (4)]
 → Emergency engine stop sw [CS-33 (2) → (1)] → I/conn [CN-4 (13)] → Fuse box [No. 8]

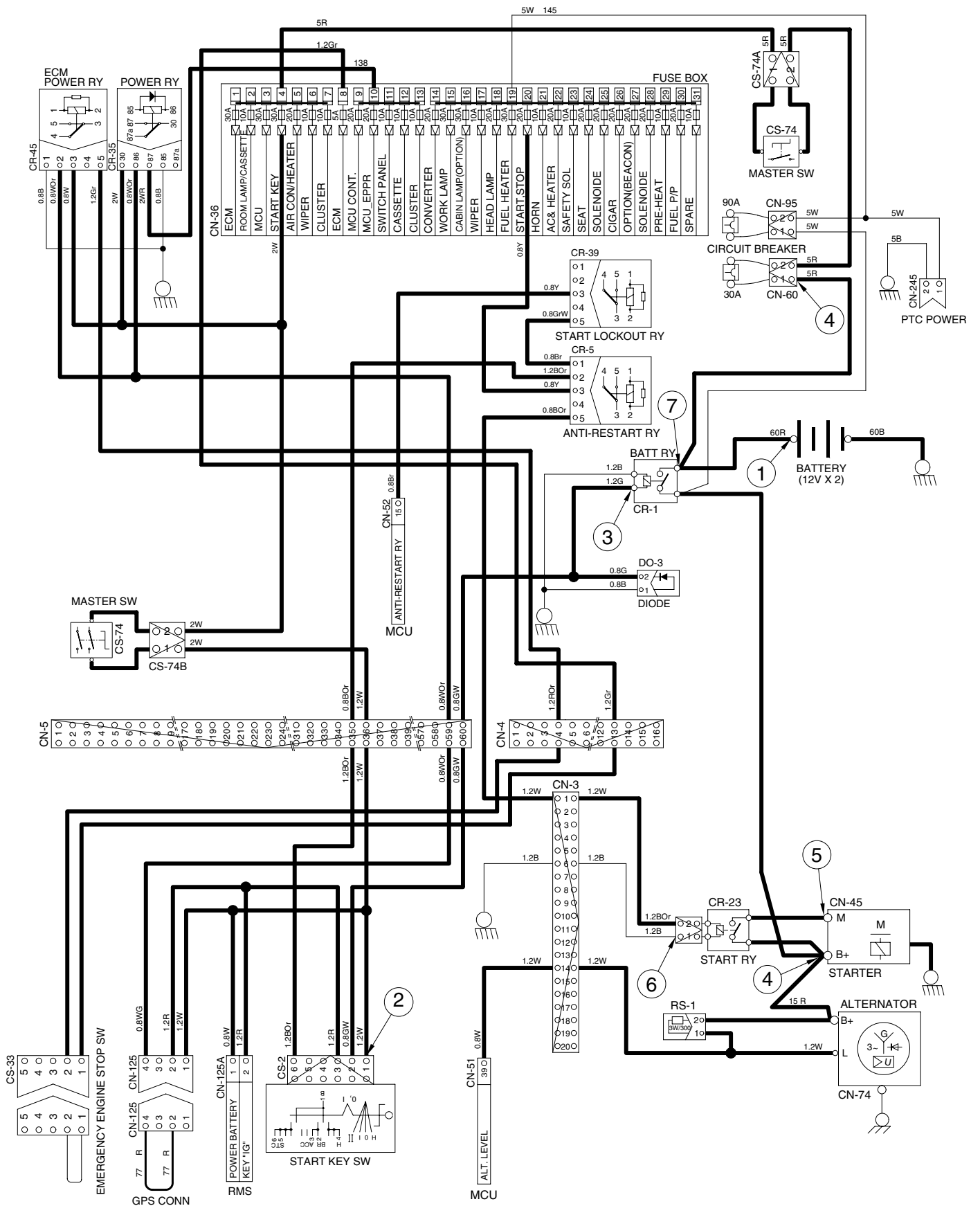
(2) When start key switch is in START position

Start switch START [CS-2 (6)] → I/conn [CN-5 (35)] → Anti-restart relay [CR-5 (2) → (5)]
 → I/conn [CN-3 (1)] → Start relay [CR-23]

2) CHECK POINT

Engine	Start switch	Check point	Voltage
OPERATING	START	① - GND (battery) ② - GND (start key) ③ - GND (battery relay M4) ④ - GND (starter B ⁺) ⑤ - GND (starter M) ⑥ - GND (start relay) ⑦ - GND (battery relay M8)	20~25V

STARTING CIRCUIT



2209A4EL06

3. CHARGING CIRCUIT

When the starter is activated and the engine is started, the operator releases the key switch to the ON position.

Charging current generated by operating alternator flows into the battery through the battery relay [CR-1].

The current also flows from alternator to each electrical component and controller through the fuse box.

1) OPERATING FLOW

(1) Warning flow

Alternator "L" terminal → I/conn [CN-3 (14)] → MCU alternator level [CN-51 (39)]
 → Cluster charging warning lamp (via serial interface)

(2) Charging flow

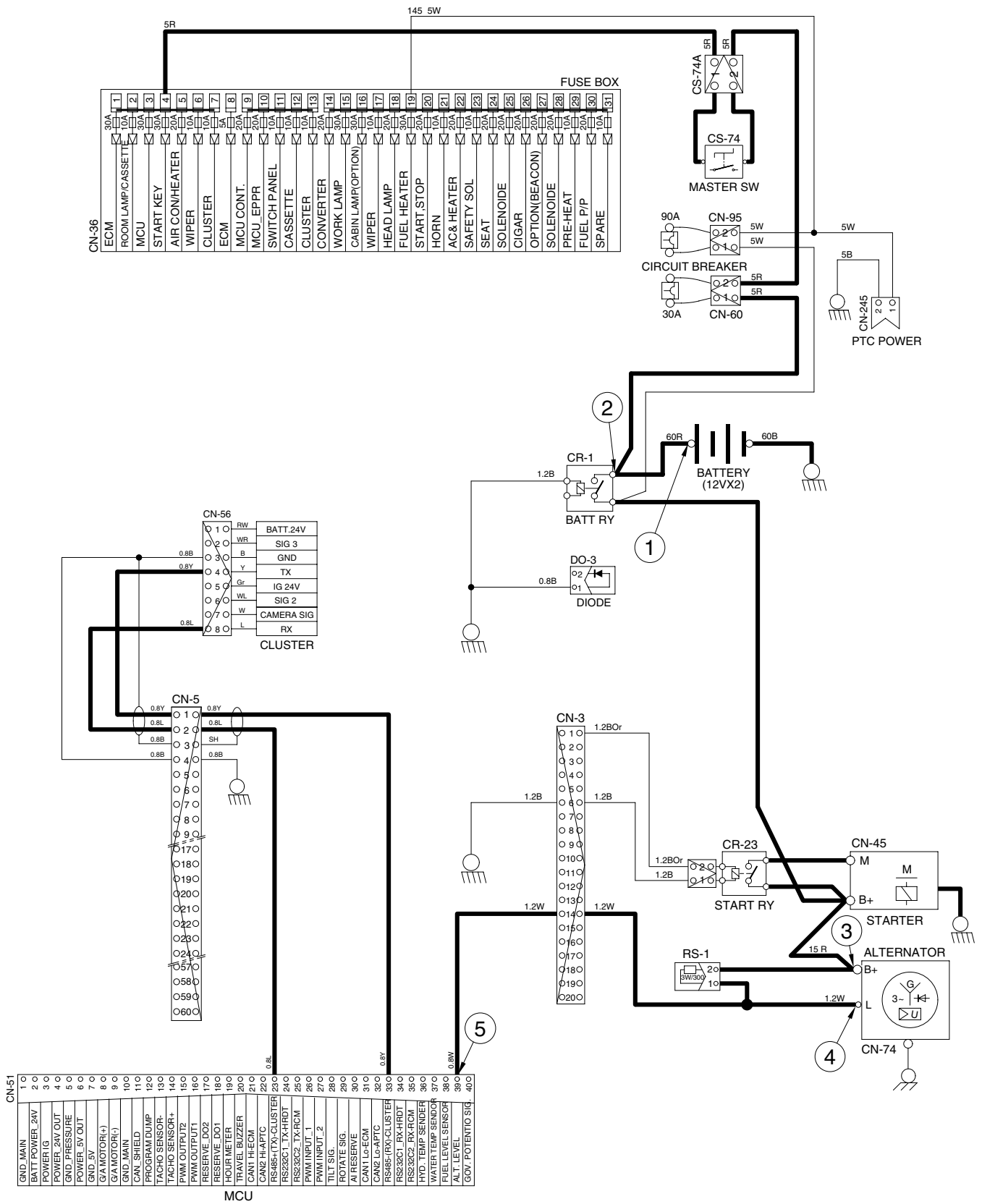
Alternator "B+" terminal → Battery relay(M8) → Battery(+) terminal
 → Circuit breaker [CN-60] → Master switch [CS-74A]
 → Fuse box

2) CHECK POINT

Engine	Start switch	Check point	Voltage
Run	ON	① - GND (battery voltage) ② - GND (battery relay) ③ - GND (alternator B ⁺ terminal) ④ - GND (alternator L terminal) ⑤ - GND (MCU)	20~25V

※ GND : Ground

CHARGING CIRCUIT



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4. HEAD AND WORK LIGHT CIRCUIT

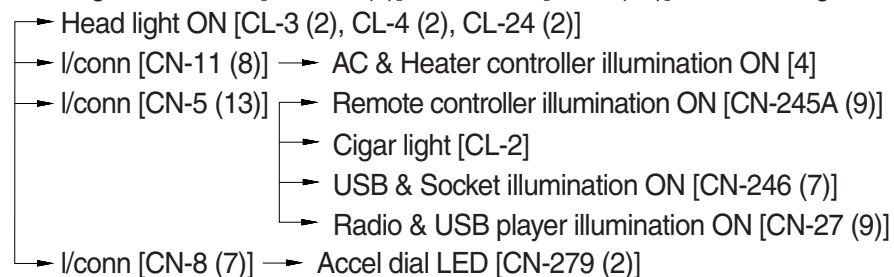
1) OPERATING FLOW

Fuse box (No.18) → Head light relay [CR-13 (30,86)]

Fuse box (No.15) → Work light relay [CR-4 (30,86)]

(1) Head light switch ON

Head light switch ON [CN-116 (1)] → I/conn [CN-5 (49)] → Head light relay [CR-13 (85) → (87)]



(2) Work light switch ON

Work light switch ON [CN-116 (2)] → I/conn [CN-5 (50)] → Work light relay [CR-4 (85) → (87)]

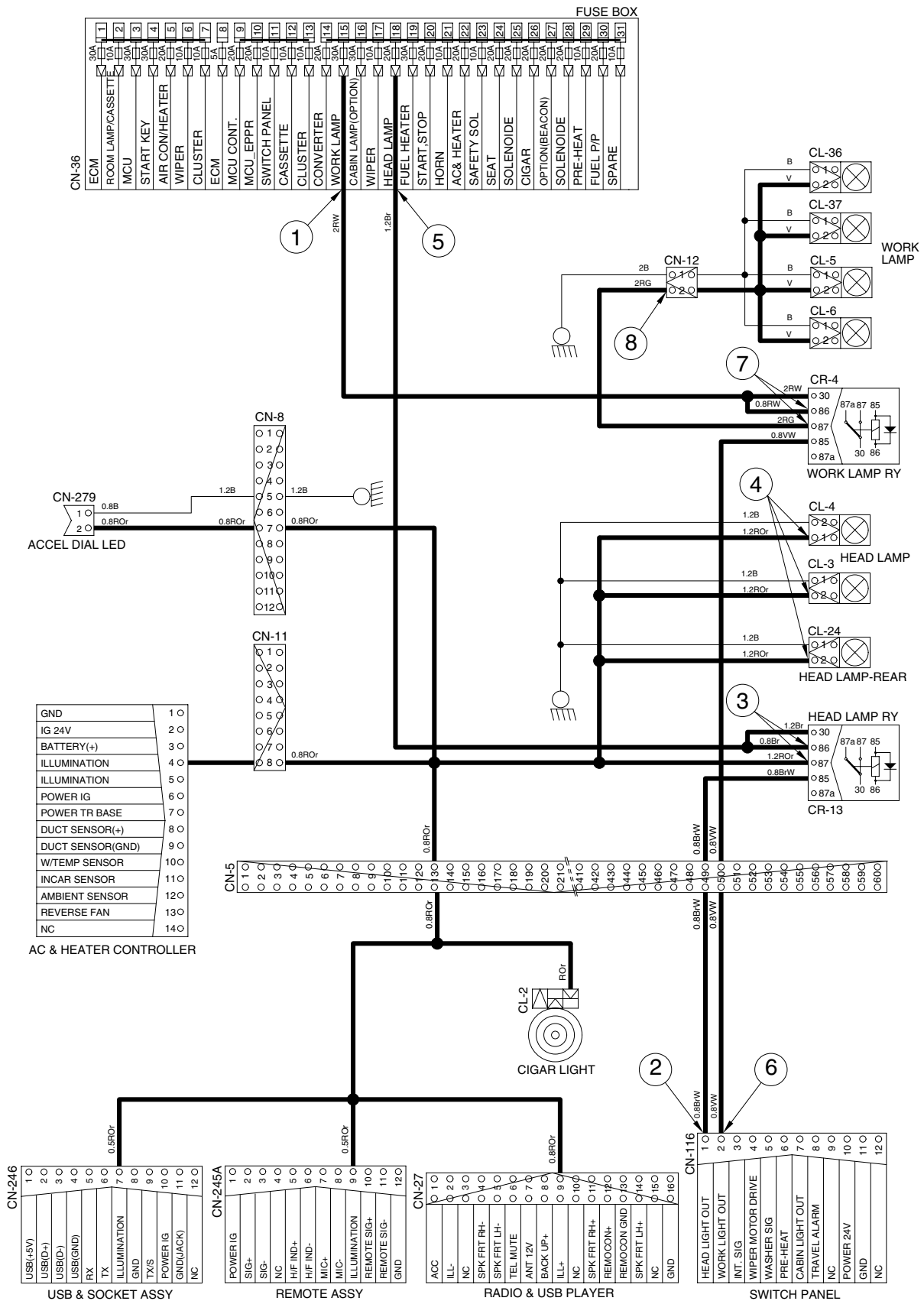
→ I/conn [CN-12 (2)] → Work light ON [CL-5 (2), CL-6 (2), CL-36 (2), CL-37 (2)]

2) CHECK POINT

Engine	Start switch	Check point	Voltage
STOP	ON	① - GND (fuse box) ② - GND (switch power output) ③ - GND (head light relay) ④ - GND (head light) ⑤ - GND (fuse box) ⑥ - GND (switch power output) ⑦ - GND (work light relay) ⑧ - GND (work light)	20~25V

※ GND : Ground

HEAD AND WORK LIGHT CIRCUIT



5. BEACON LAMP AND CAB LIGHT CIRCUIT

1) OPERATING FLOW

Fuse box (No.27) → I/conn [CN-5 (33)] → Beacon lamp switch [CN-23 (8)]

Fuse box (No.16) → Cab light relay [CR-9 (30, 86)]

(1) Beacon lamp switch ON

Beacon lamp switch ON [CS-23 (4)] → Switch indicator lamp ON [CS-23 (11)]
 → I/conn [CN-10 (10)] → Beacon lamp ON [CL-7]

(2) Cab light switch ON

Cab light switch ON [CN-116 (7)] → I/conn [CN-5 (55)] → Cab lamp relay [CR-9 (85) → (87)]

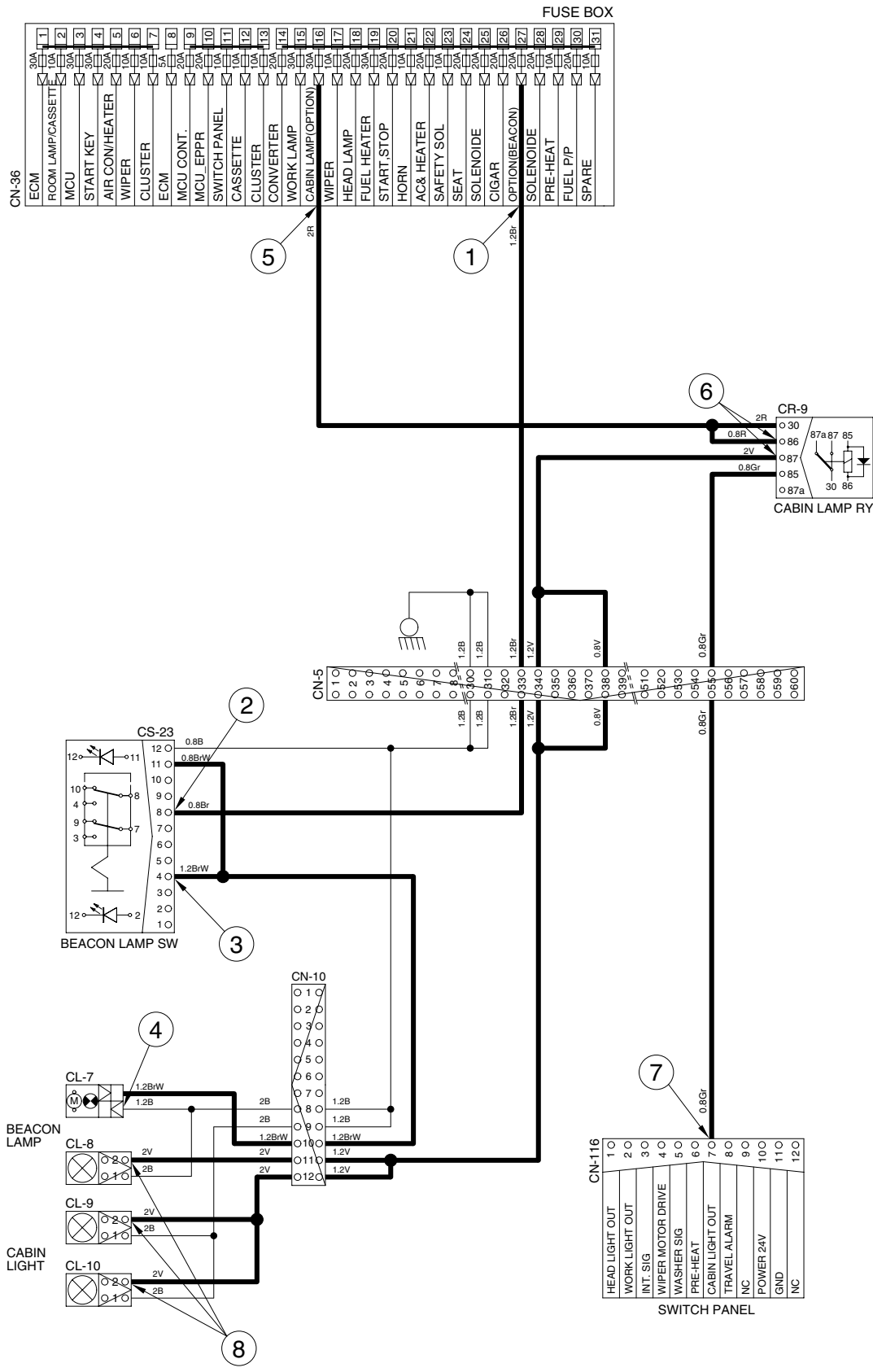
→ I/conn [CN-5 (34, 38)] → I/conn [CN-10 (11)] → Cab light ON [CL-8 (2)]
 → I/conn [CN-10 (12)] → Cab light ON [CL-9 (2), CL-10 (2)]

2) CHECK POINT

Engine	Start switch	Check point	Voltage
STOP	ON	① - GND (fuse box) ② - GND (switch power input) ③ - GND (switch power output) ④ - GND (beacon lamp) ⑤ - GND (fuse box) ⑥ - GND (cabin light relay) ⑦ - GND (switch power output) ⑧ - GND (cab light)	20~25V

※ GND : Ground

BEACON LAMP AND CAB LIGHT CIRCUIT



6. WIPER AND WASHER CIRCUIT

1) OPERATING FLOW

(1) Key switch ON

Fuse box (No.11) → I/conn [CN-5 (57)] → Switch panel [CN-116 (10)]

Fuse box (No.6) → I/conn [CN-5 (18)] → I/conn [CN-17 (5)] → Wiper motor controller [CN-141(7)]
 → Wiper motor [CN-21(4)]

Fuse box (No.17) → I/conn [CN-5 (24)] → I/conn [CN-17 (4)] → Wiper motor controller [CN-141 (6)]
 → Washer pump [CN-22 (2)]

(2) Wiper switch ON : 1st step (Intermittent)

Wiper switch ON [CN-116 (3)] → I/conn [CN-17 (8)] → Wiper motor controller [CN-141 (10) → (3)]
 → Wiper motor intermittently operating [CN-21 (6)]

(3) Wiper switch ON : 2nd step (continual)

Wiper switch ON [CN-116(4)] → I/conn[CN-17(2)] → Wiper motor controller [CN-141(2) → (4)]
 → Wiper motor operating [CN-21(2)]

(4) Washer switch ON

Washer switch ON [CN-116 (5)] → I/conn [CN-17 (7)] → Wiper motor controller [CN-141 (9) → (8)]
 → I/conn [CN-17 (6)] → I/conn [CN-5 (19)] → Washer pump [CN-22 (1)] → Washer operating
 Wiper switch ON [CN-116 (4)] → I/conn[CN-17 (2)] → Wiper motor controller [CN-141 (2) → (4)]
 → Wiper motor operating [CN-21 (2)]

(5) Auto parking (when switch OFF)

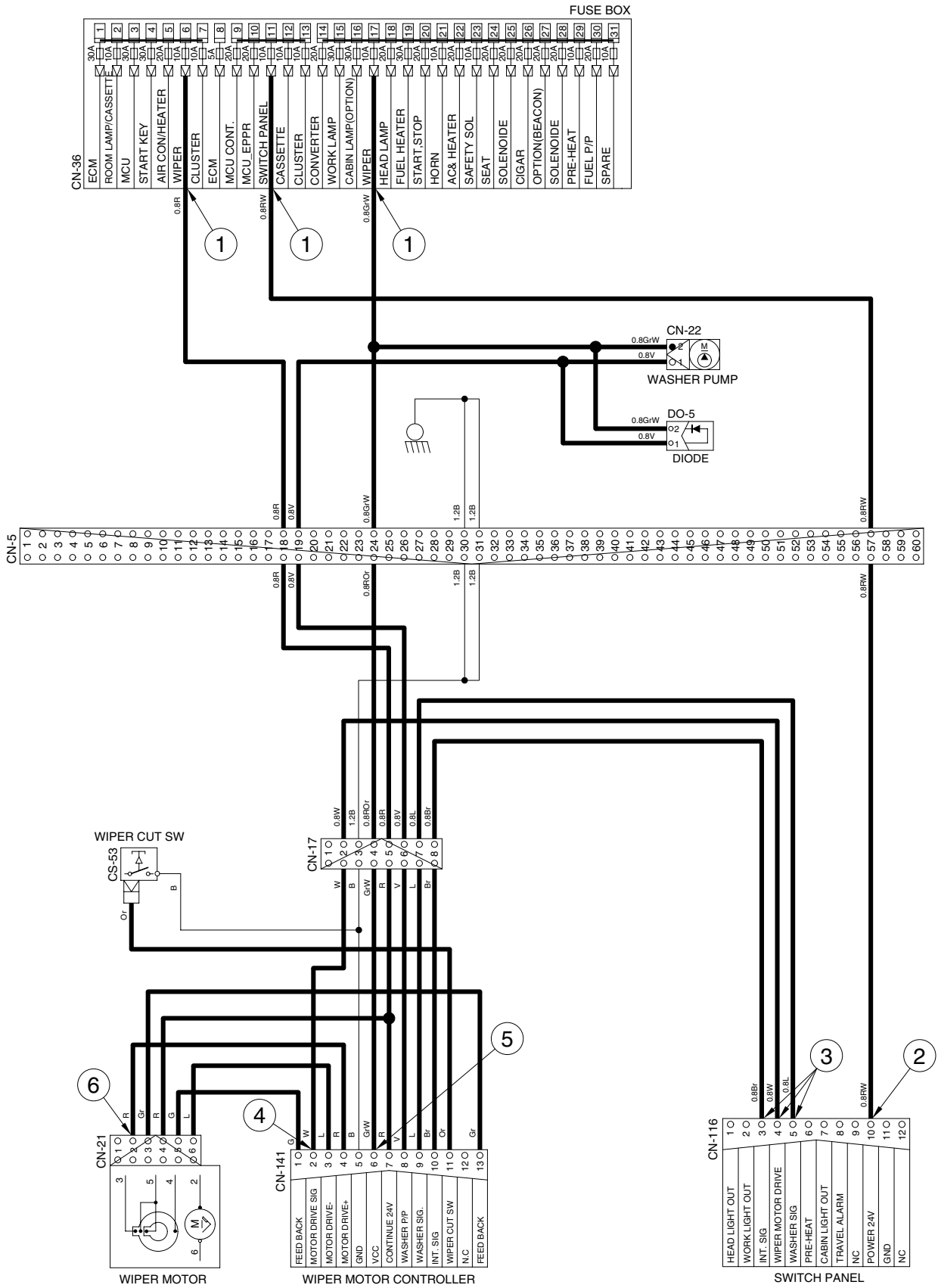
Switch OFF [CN-116 (4)] → Wiper motor parking position by wiper motor controller

2) CHECK POINT

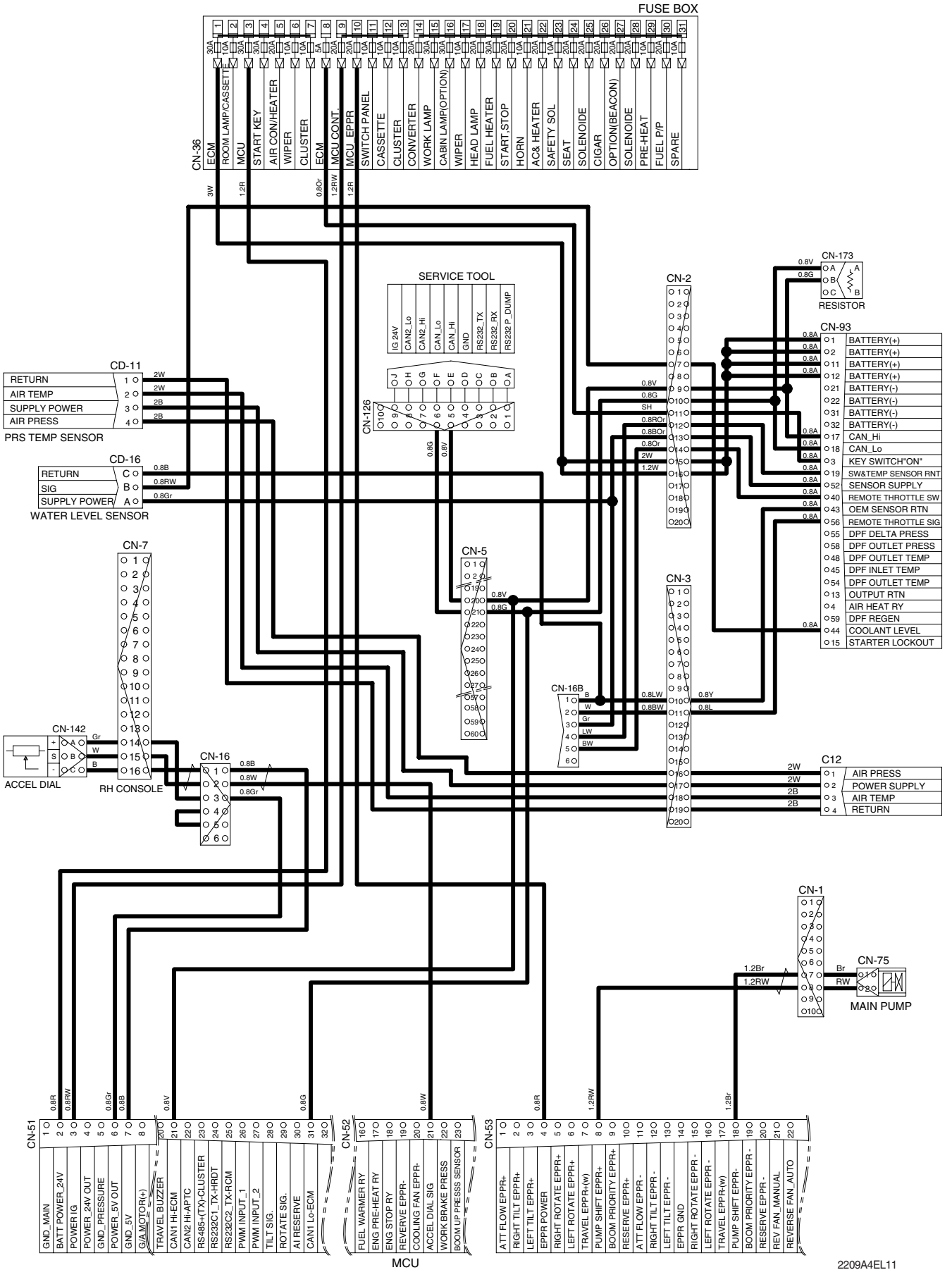
Engine	Start switch	Check point	Voltage
STOP	ON	① - GND (fuse box)	20~25V
		② - GND (switch power input)	
		③ - GND (switch power output)	0 ~ 5V
		④ - GND (wiper power input)	
		⑤ - GND (wiper power output)	24V
		⑥ - GND (wiper motor)	0 or 24V

※ GND : Ground

WIPER AND WASHER CIRCUIT

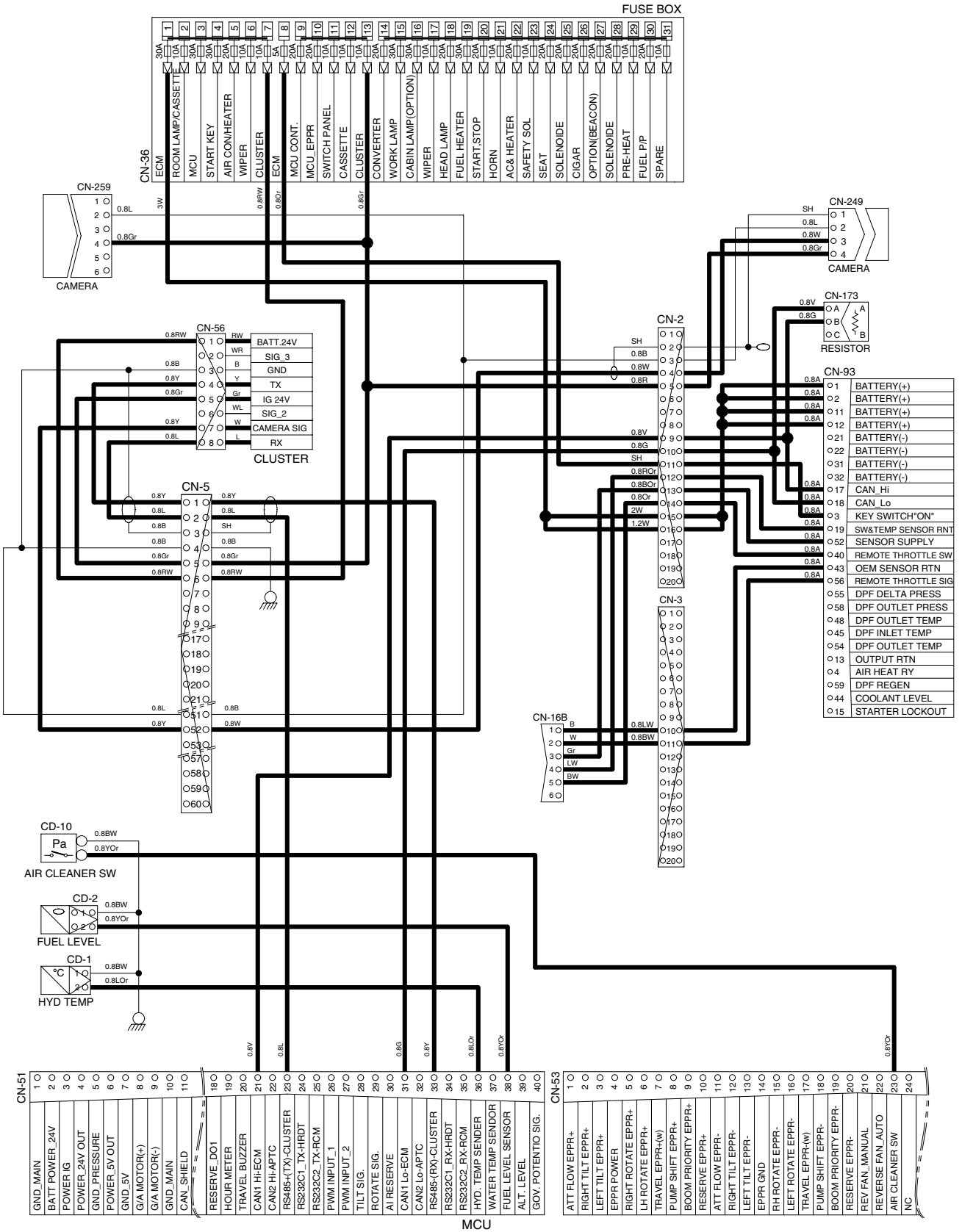


CONTROLLER CIRCUIT



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MONITORING CIRCUIT



ELECTRIC CIRCUIT FOR HYDRAULIC

