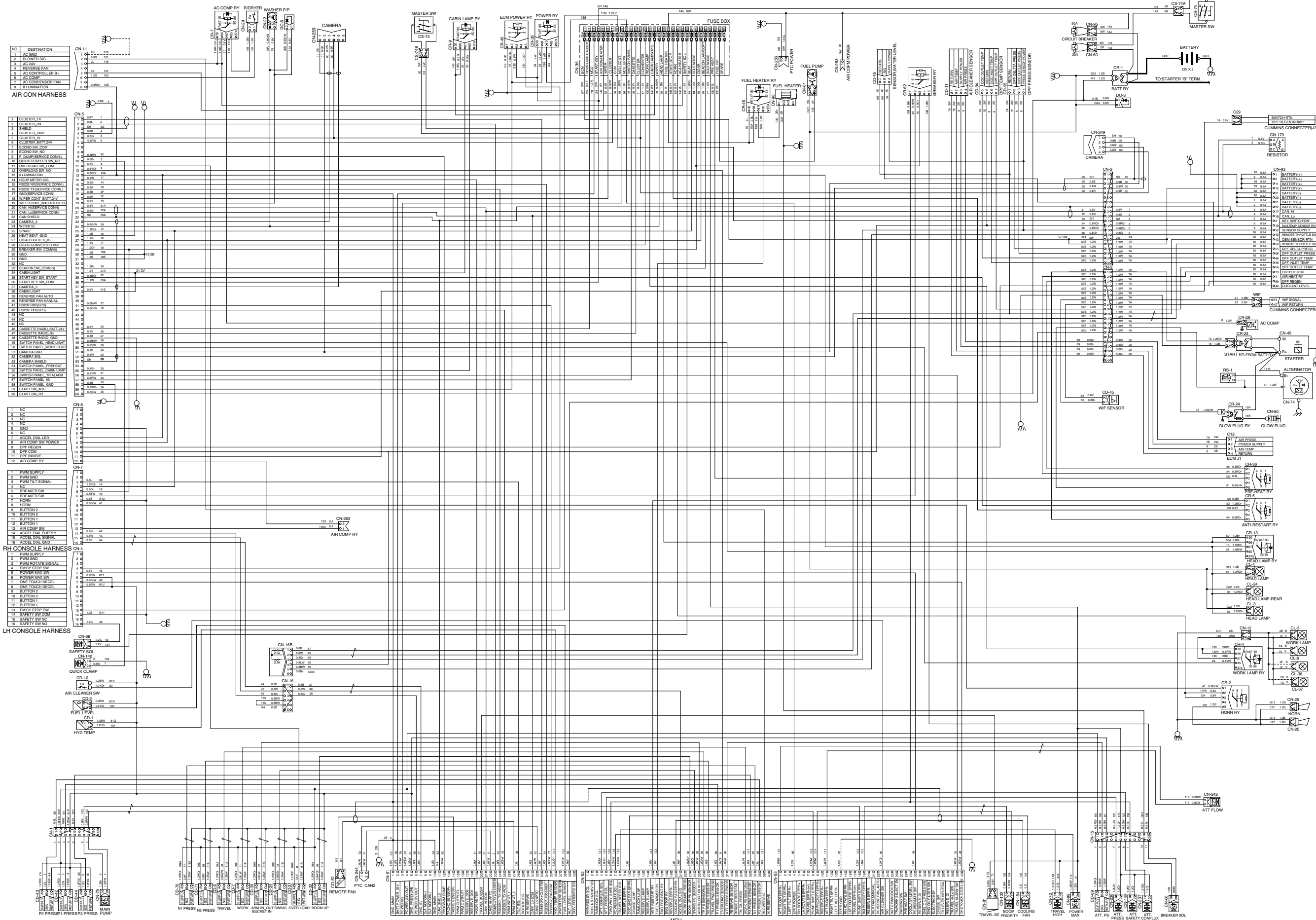


GROUP 2 ELECTRICAL CIRCUIT

ELECTRICAL CIRCUIT (1/2)



AIR CON HARNESS

NO	DESTINATION
1	AC GND
2	BLOWER SW
3	REVERSE FAN
4	AC CONTROLLER BL
5	AC COMP
6	AC COMPRESSOR FAN
8	ILLUMINATION

RH CONSOLE HARNESS

1	CLUSTER TX
2	CLUSTER RX
3	SHIELD
4	CLUSTER GND
5	CLUSTER IS
6	CLUSTER BATT SW
7	ECOND SW COM
8	ECOND SW NC
9	PC COMP(SERVICE CONN)
10	OVERLOAD SW NO
11	OVERLOAD SW COM
12	OVERLOAD SW NC
13	ILLUMINATION
14	HOUR METER SW
15	RESID RAS(SERVICE CONN)
16	RESID TMS(SERVICE CONN)
17	UNGSERVICE CONN
18	WIPER CONT. BATT SW
19	WIPER CONT. WASHER PIP SW
20	CAN RAS(SERVICE CONN)
21	CAN LMS(SERVICE CONN)
22	CAN SLS(SERVICE CONN)
23	CAMERA 2
24	WIPER SW
25	SPARK
26	HEAT BEAT GND
27	COOLER FAN SW IS
28	DC-DC CONVERTER SW
29	BREAKE(SW CONN)
30	GND
31	IGN
32	NC
33	BEACON SW (COM)
34	CABIN LIGHT
35	START KEY SW START
36	START KEY SW COM
37	CAMERA 3
38	CABIN LIGHT
39	REVERSE FAN AUTO
40	REVERSE FAN MANUAL
41	RESID RAS(S)
42	RESID TMS(S)
43	NC
44	NC
45	NC
46	CASSETTE RADIO BATT SW
47	CASSETTE RADIO GND
48	CASSETTE RADIO SW
49	SWITCH PANEL HEAD LIGHT
50	SWITCH PANEL WORK LIGHT
51	CAMERA SW
52	CAMERA SW
53	CAMERA SHIELD
54	SWITCH PANEL PREHEAT
55	SWITCH PANEL CABIN LAMP
56	SWITCH PANEL TRILLUMIN
57	SWITCH PANEL IS
58	SWITCH PANEL GND
59	START SW ACC
60	START SW BN

LH CONSOLE HARNESS

1	NC
2	NC
3	NC
4	NC
5	GND
6	NC
7	ACCEL DIAL LED
8	AIR COMP SW POWER
9	DIFF PRESS
10	DIFF CON
11	DIFF INHIBIT
12	AIR COMP RY

PNW SUPPLY

1	PNW SUPPLY
2	PNW GND
3	PNW TLY SIGNAL
4	NC
5	BREAKE(SW)
6	BREAKE(SW)
7	HORN
8	HORN
9	NC
10	NC
11	NC
12	NC
13	NC
14	NC
15	NC
16	NC

PNW SUPPLY

1	PNW SUPPLY
2	PNW GND
3	PNW ROTATE SIGNAL
4	EMERY STOP SW
5	POWER MAX SW
6	POWER MAX SW
7	ONE TOUCH DECEL
8	ONE TOUCH DECEL
9	NC
10	NC
11	NC
12	NC
13	EMERY STOP SW
14	SAFETY SW COM
15	SAFETY SW NO
16	SAFETY SW NC

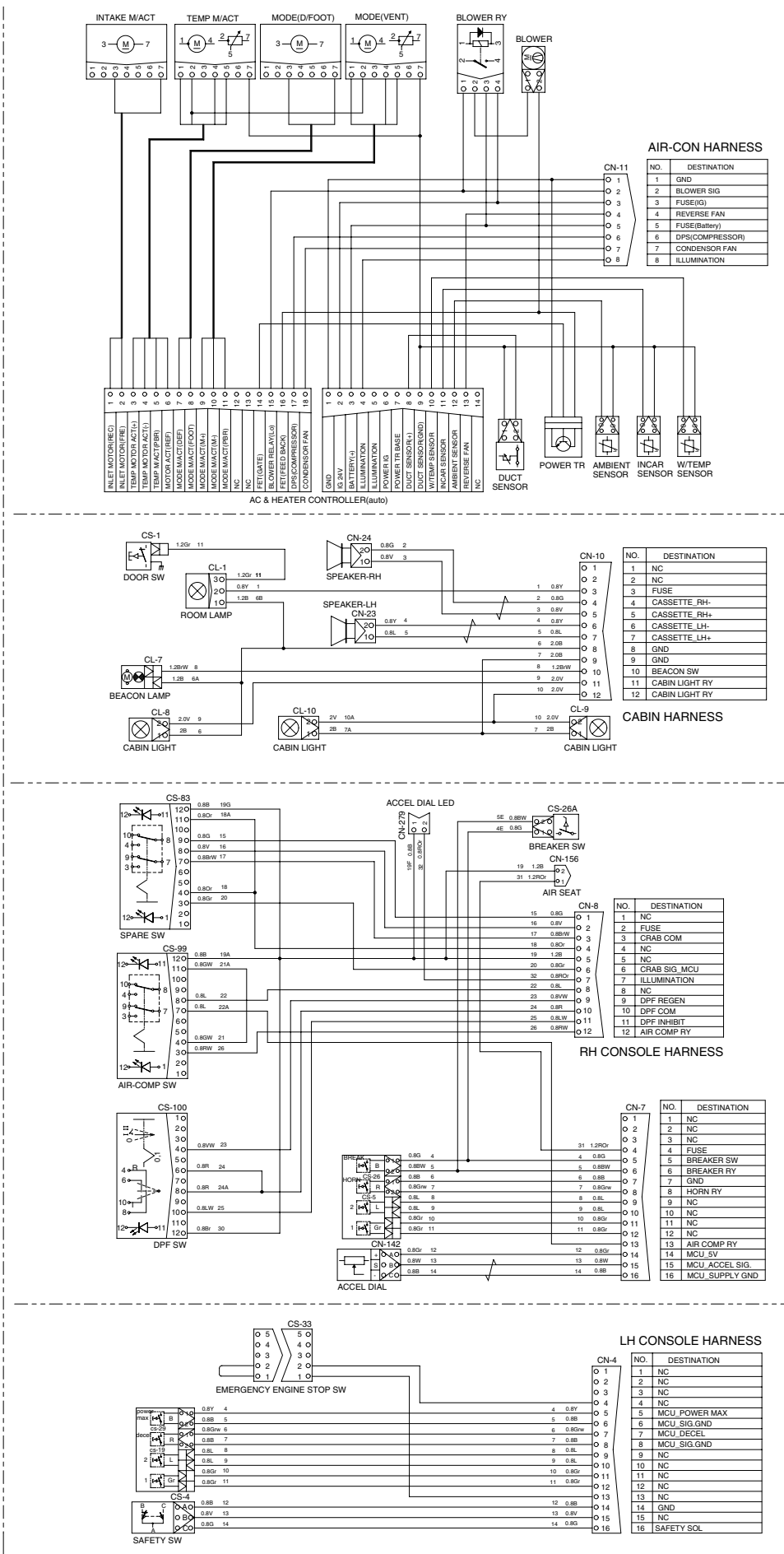
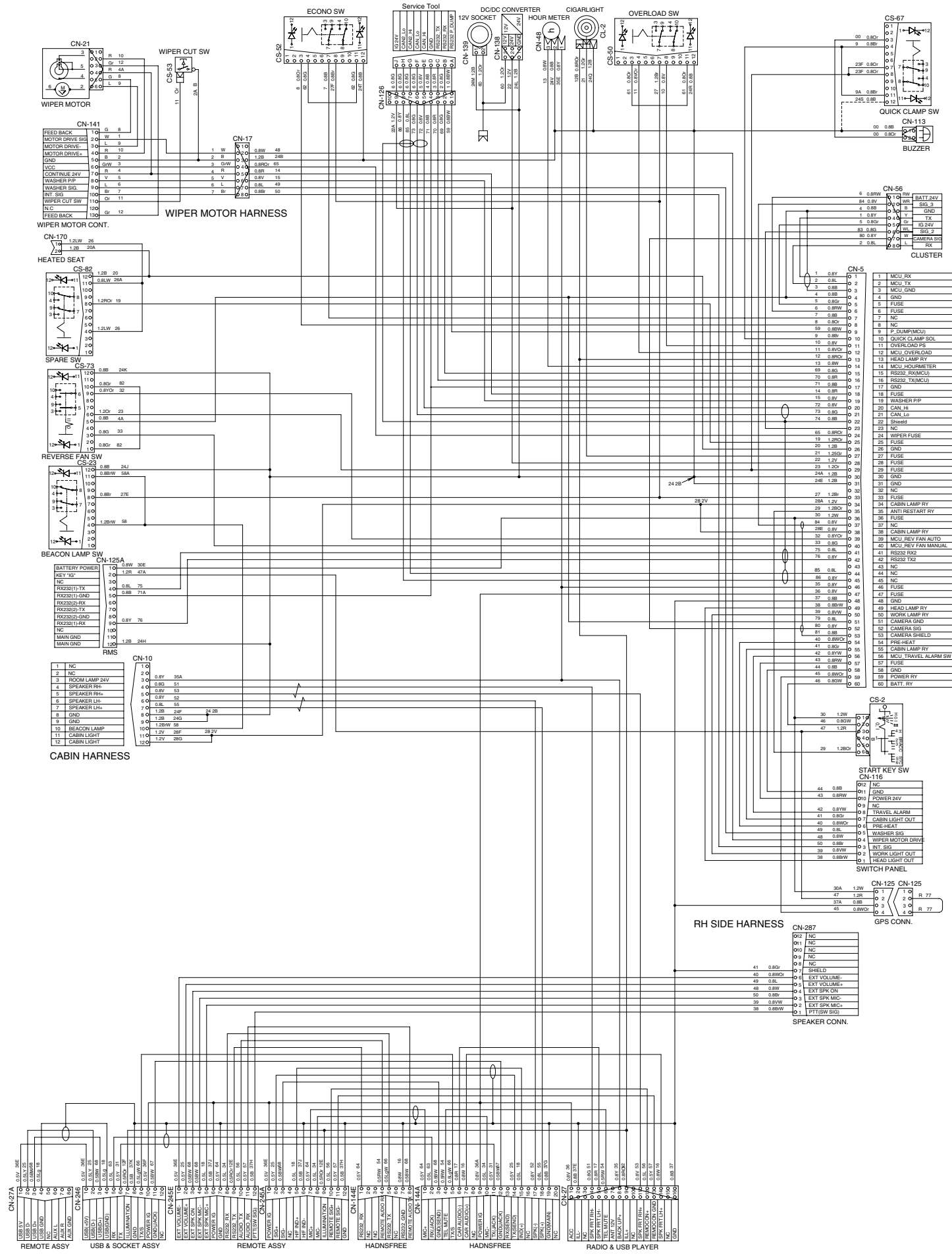
SAFETY SW

1	SAFETY SW
2	QUICK CLAMP
3	AIR CLEANER SW
4	FUEL LEVEL
5	HYD TEMP

MAIN

1	MAIN
2	MAIN
3	MAIN
4	MAIN
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100	MAIN

ELECTRICAL CIRCUIT (2/2)



MEMORANDUM

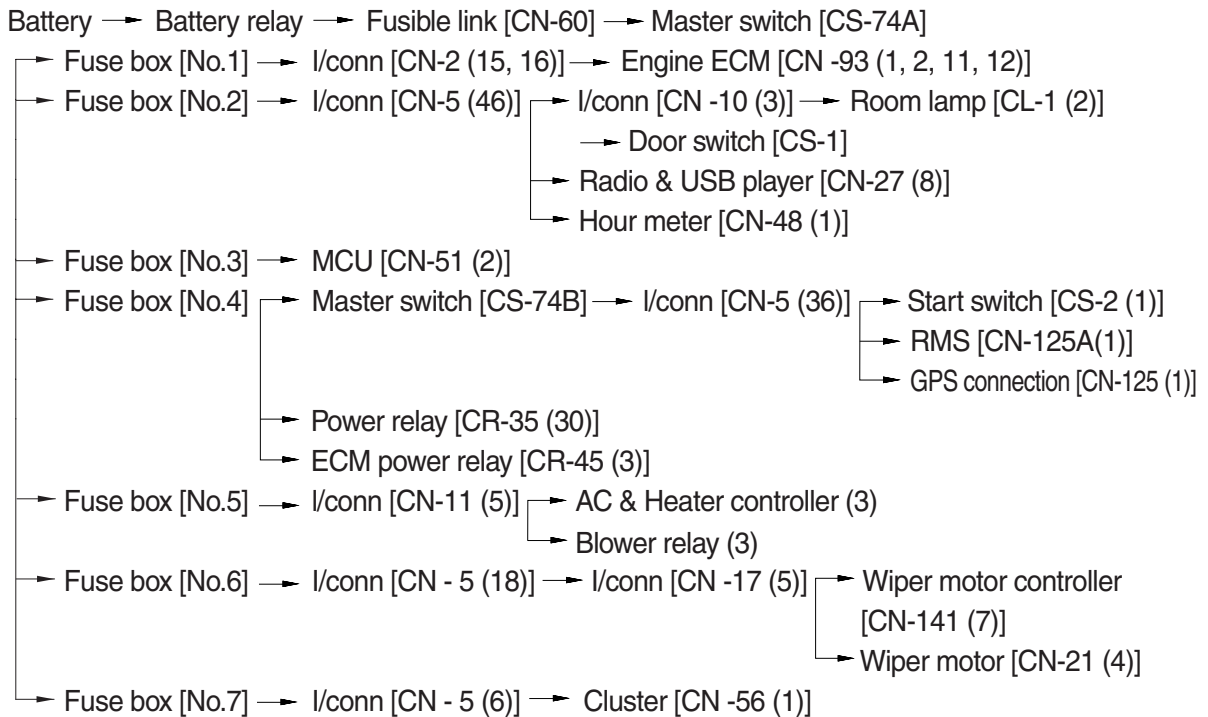
HYUNDAI HEAVY INDUSTRIES CO., LTD
CONSTRUCTION EQUIPMENT DIV.

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



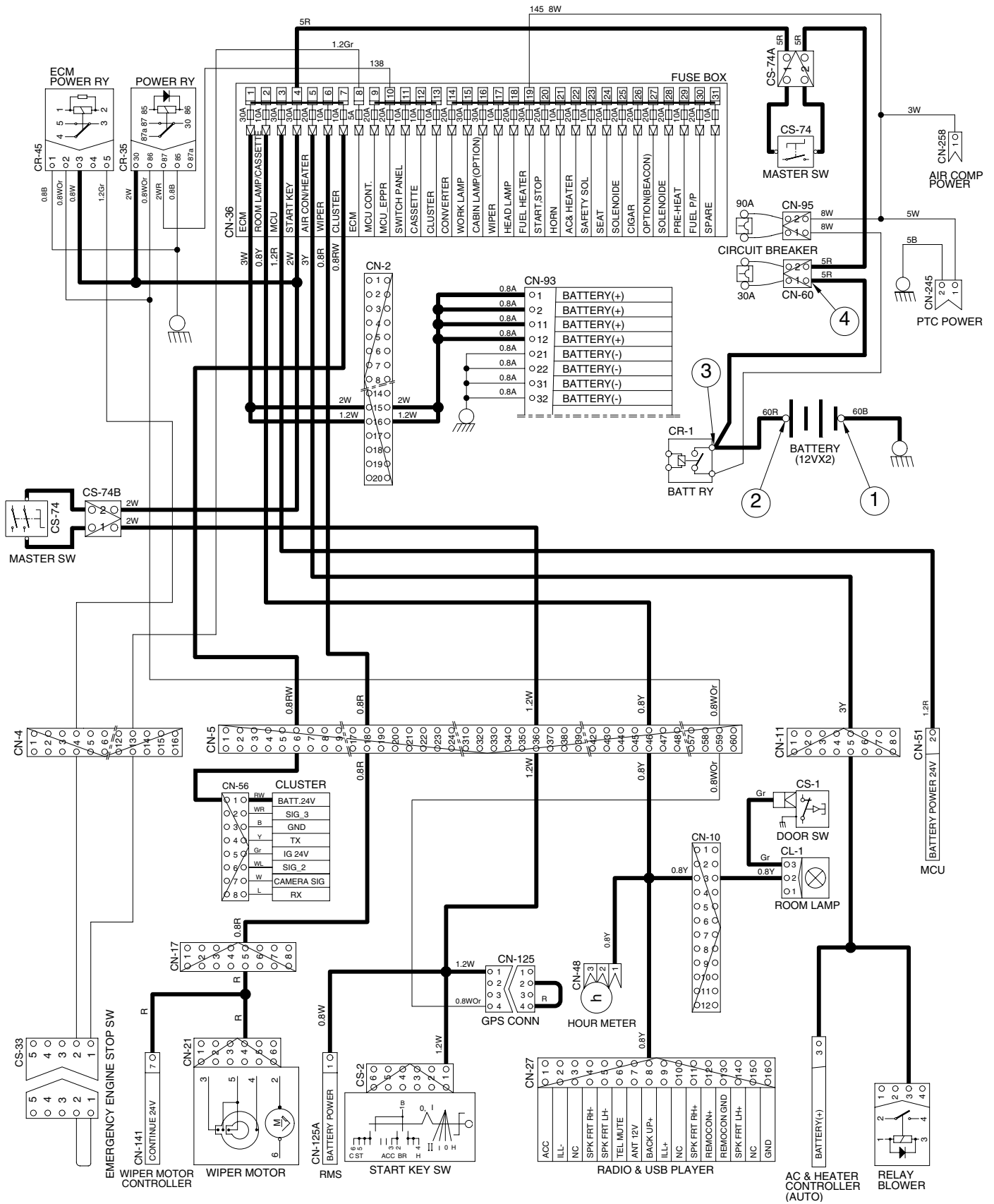
※ I/conn : Intermediate connector

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



3809A4EL05

2. STARTING CIRCUIT

1) OPERATING FLOW

Battery(+) terminal → Battery relay [CR-1] → Fusible link [CN-60] → Master switch [CS-74A]
 → Fuse box [No.4] → Master switch [CS-74B] → 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)] → GPS 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)] → Fuse box [No.8]

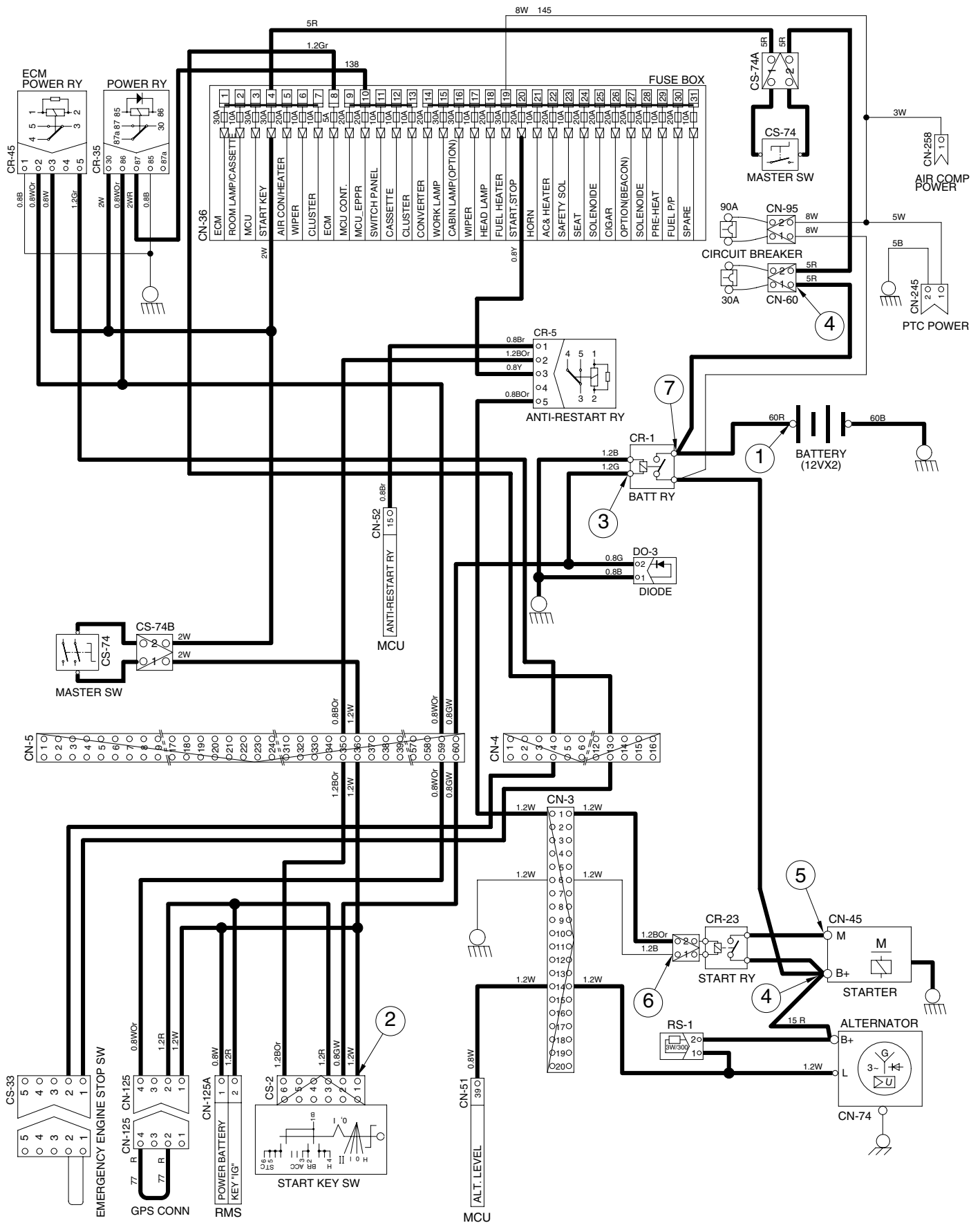
(2) When start key switch is in START position

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



3809A4EL06

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

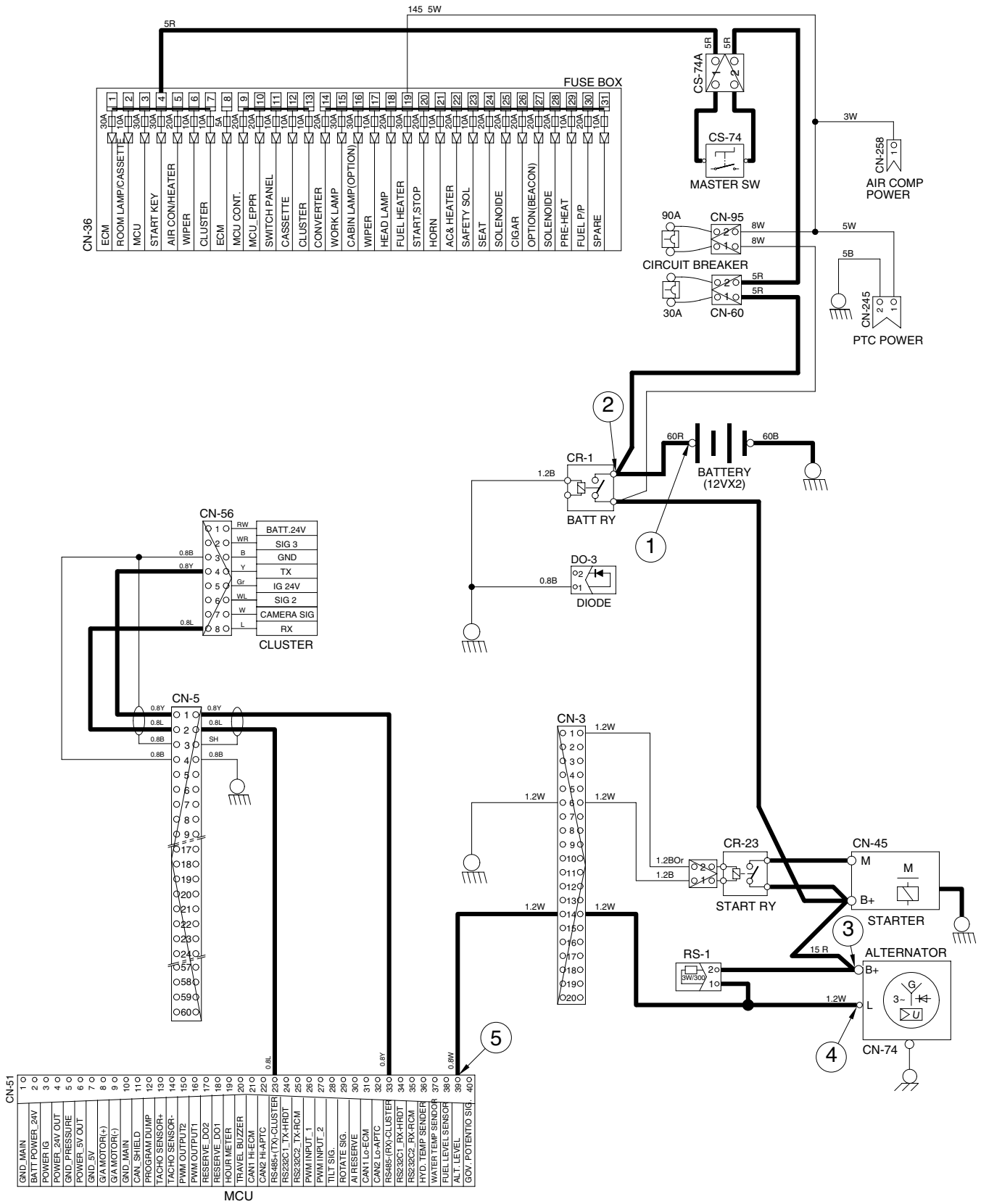
Alternator "B+" terminal → Battery relay(M8) → Battery(+) terminal
 → Fusible link [CN-60] → Master switch [CS-74A]
 → Fuse box

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



3809A4EL07

4. HEAD AND WORK LIGHT CIRCUIT

1) OPERATING FLOW

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

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

→ Head light ON [CL-3 (2), CL-4 (2), CL-24 (2)]

→ I/conn [CN-11 (8)] → AC & Heater controller illumination ON [4]

→ I/conn [CN-5 (13)] → Remote controller illumination ON [CN-245A (9)]

→ Cigar light [CL-2]

→ USB & Socket illumination ON [CN-246 (7)]

→ Radio & USB player illumination ON [CN-27 (9)]

(2) Work light switch ON

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

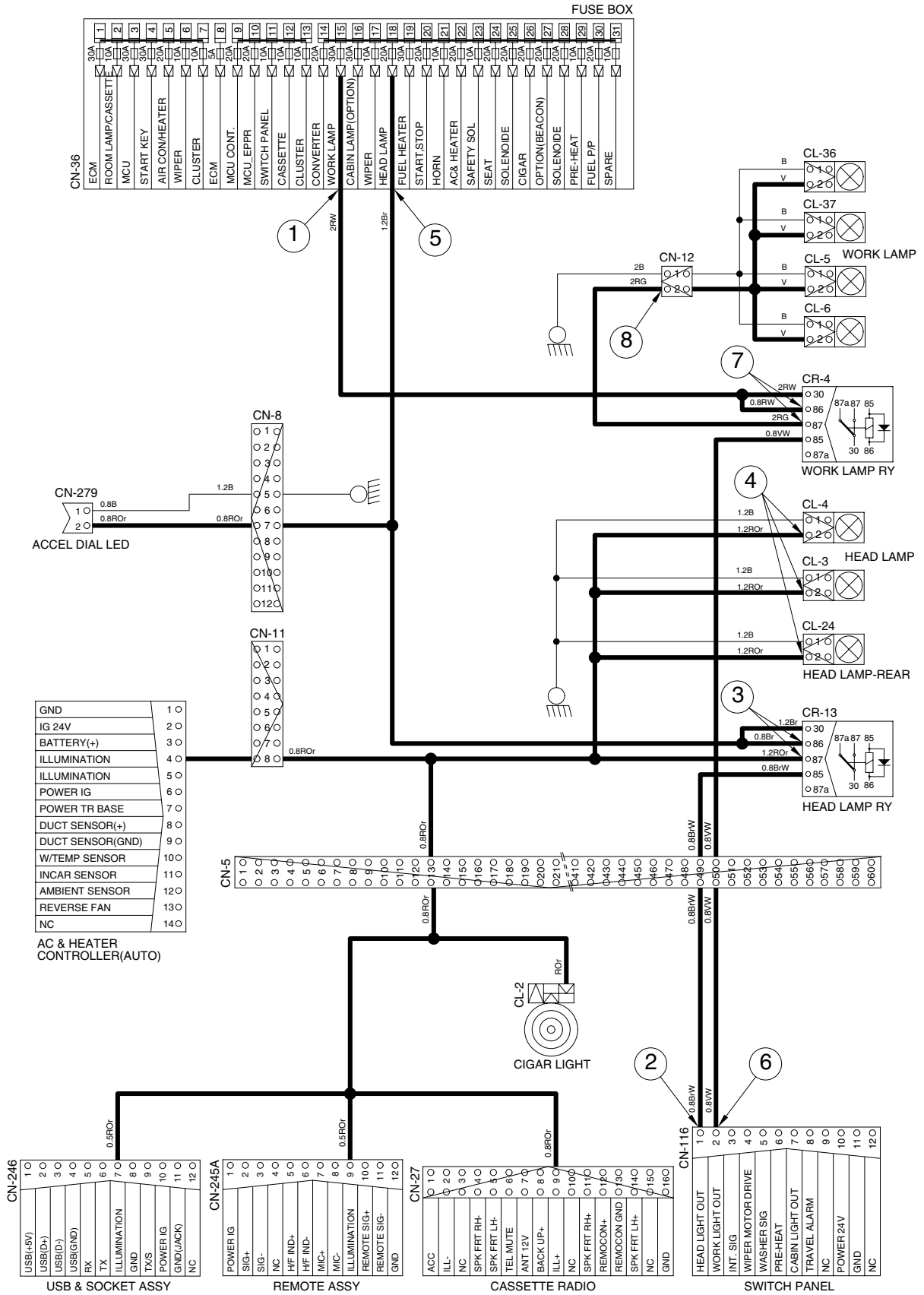
→ I/conn [CN-12 (2)] → Work light ON [CL-5 (2), CL-6 (2), CL-36 (2), CL-37 (2)]

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)]

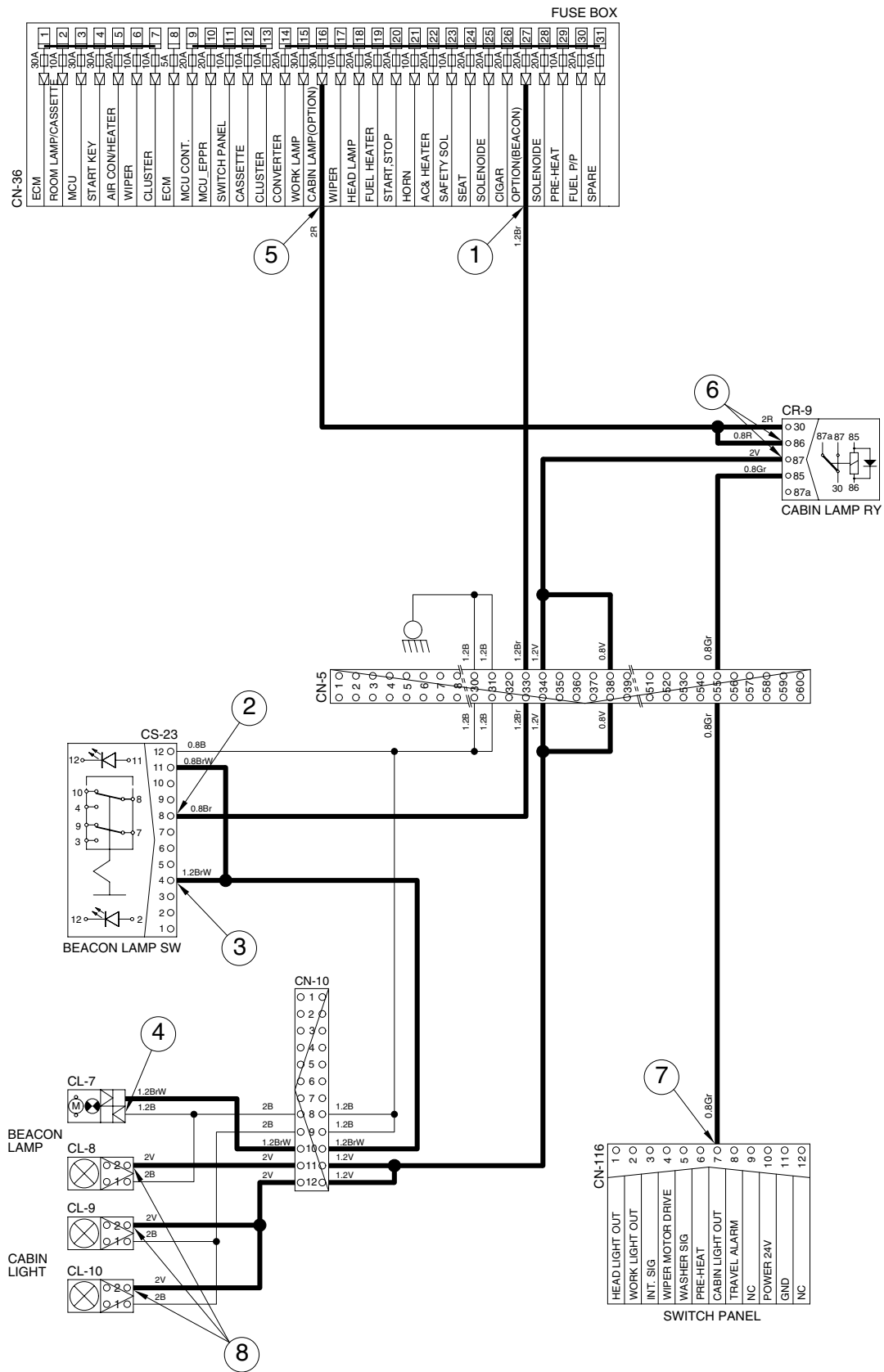
→ I/conn [CN-5 (34, 38)] → I/conn [CN-10 (11)] → Cab light ON [CL-8 (2)]
 → I/conn [CN-10 (12)] → Cab light ON [CL-9 (2), CL-10 (2)]

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



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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)

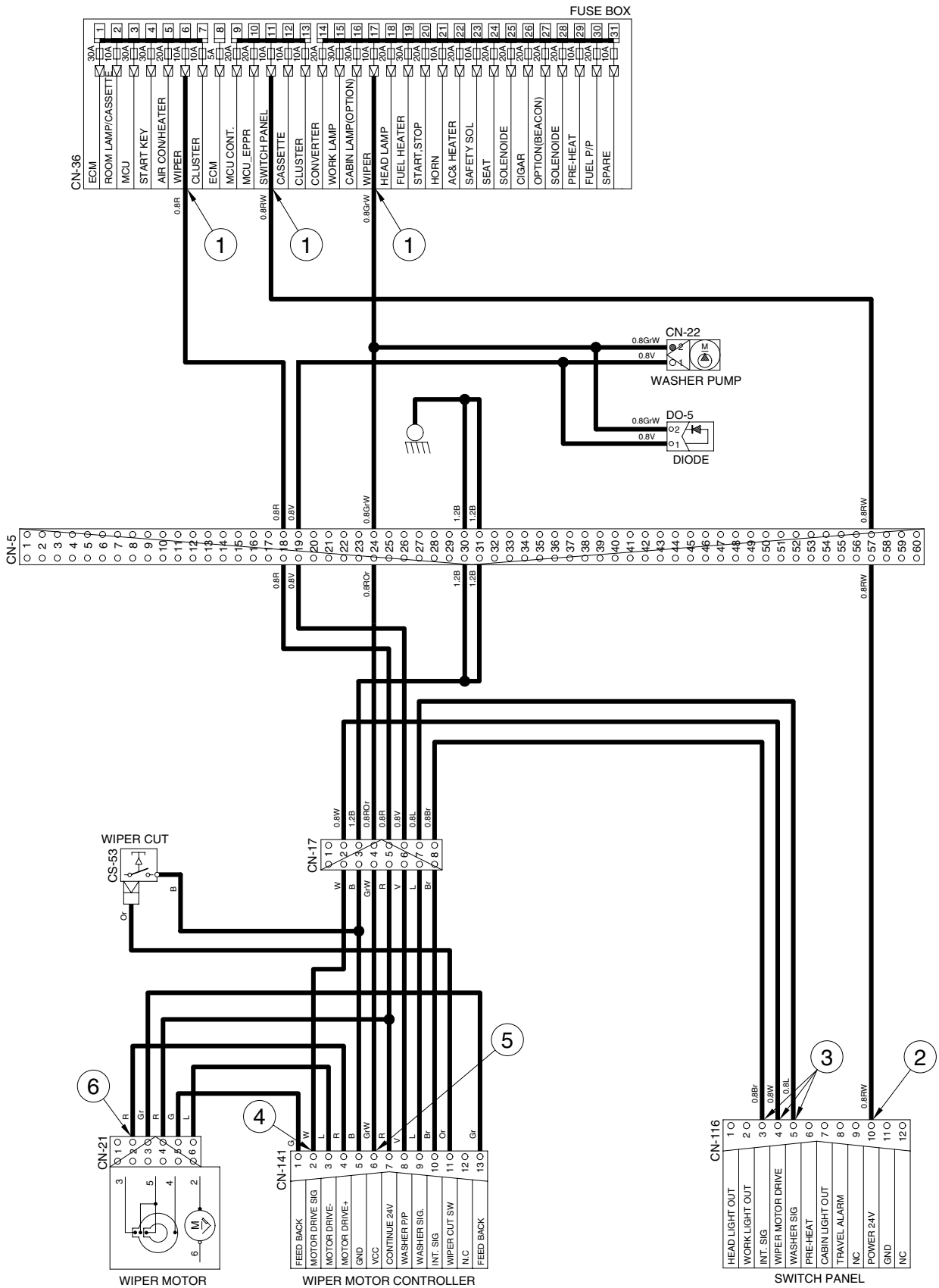
Switch OFF [CN-116 (4)] → Wiper motor parking position by wiper motor controller

2) CHECK POINT

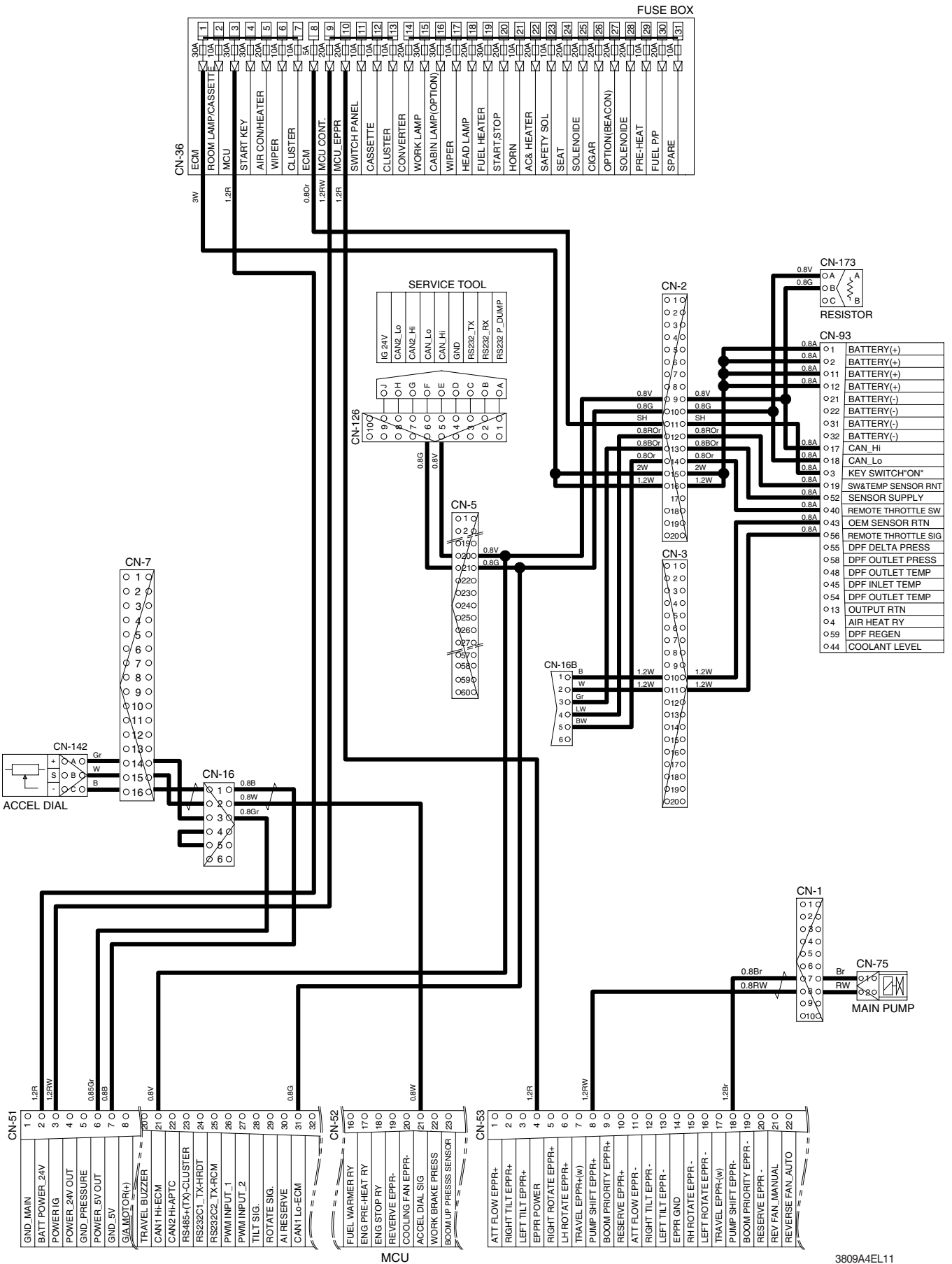
Engine	Start switch	Check point	Voltage
STOP	ON	① - GND (fuse box)	24V
		② - GND (switch power input)	
		③ - GND (switch power output)	0 ~ 5V
		④ - GND (wiper power input)	
		⑤ - GND (wiper power output)	24V
		⑥ - GND (wiper motor)	0 or 24V

※ GND : Ground

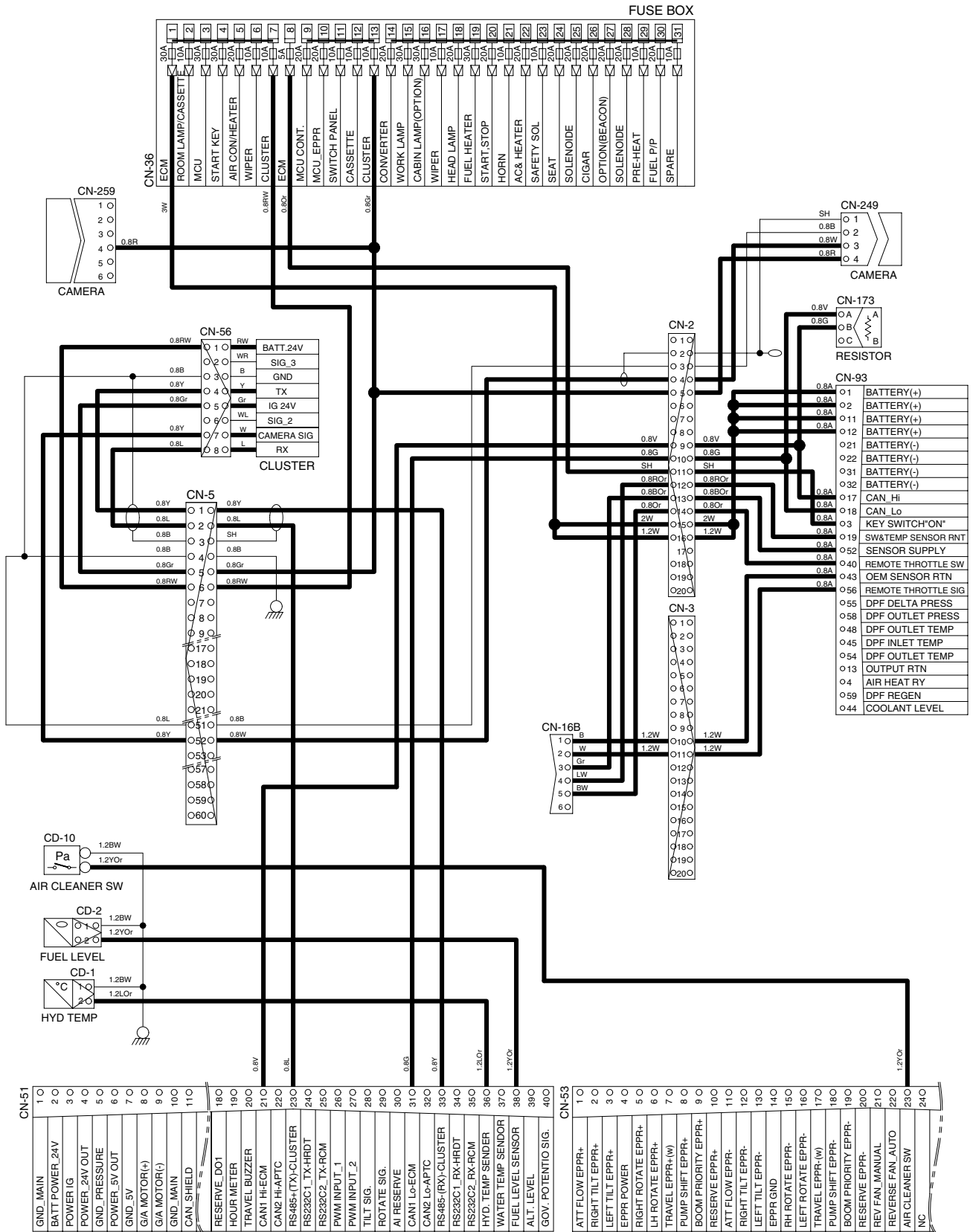
WIPER AND WASHER CIRCUIT



CONTROLLER CIRCUIT

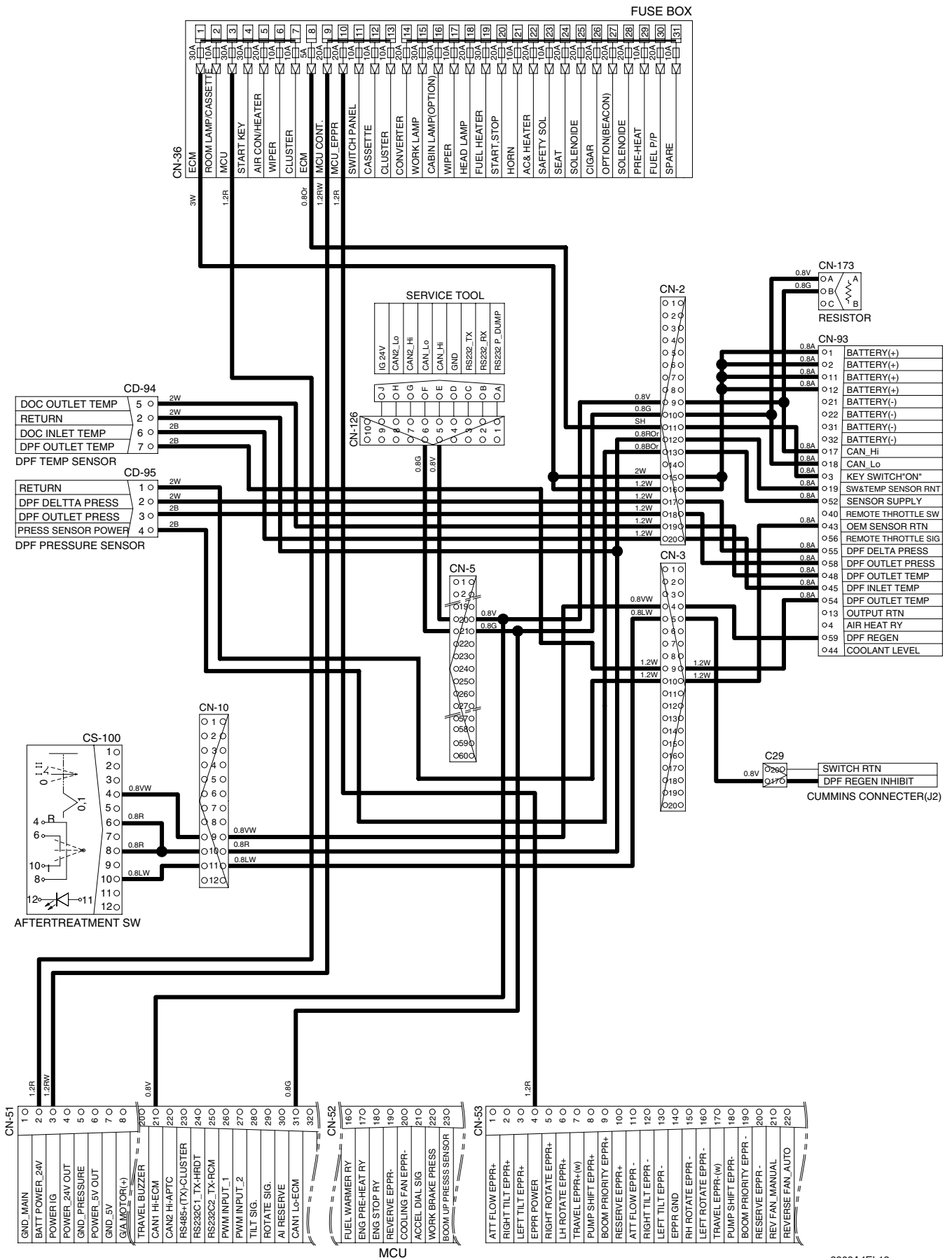


MONITORING CIRCUIT



3809A4EL12

AFTERTREATMENT CIRCUIT



3809A4EL13

ELECTRIC CIRCUIT FOR HYDRAULIC

