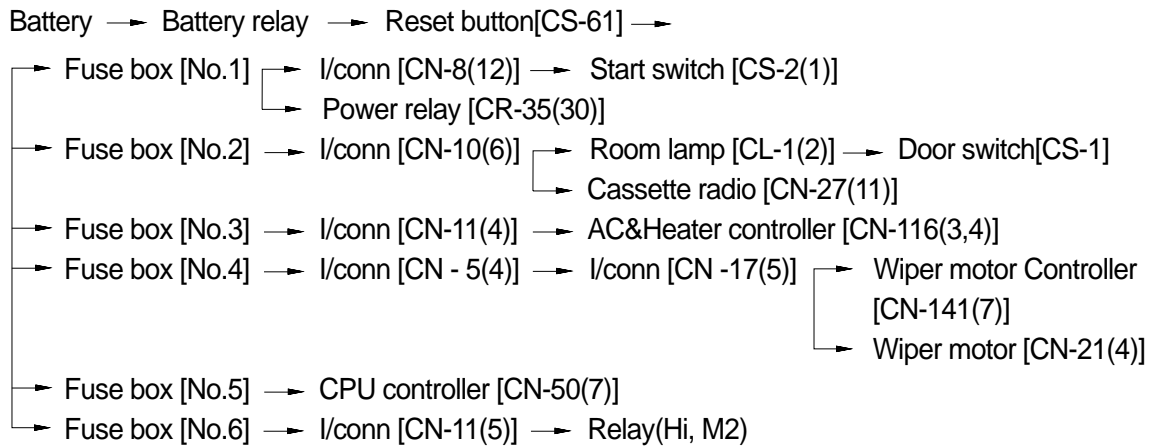


## 1. POWER CIRCUIT (up to #0179)

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 1 EA) ② - GND (Battery 2 EA) ③ - GND (Battery 2 EA) ④ - GND (Reset button)	10~12.5V 20~25V 20~25V 20~25V

i GND : Ground

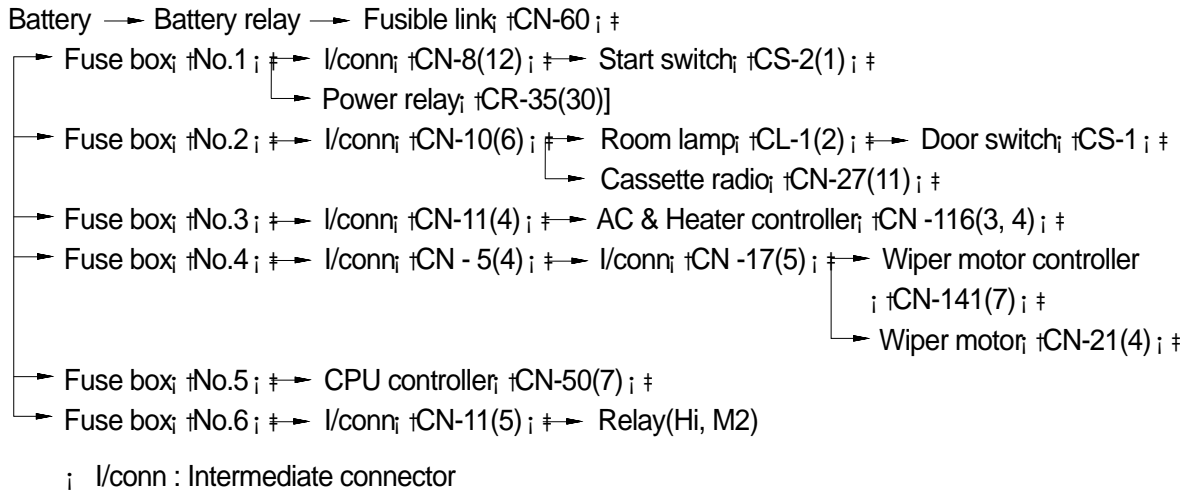


## 1. POWER CIRCUIT (from #0180 to #1000)

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

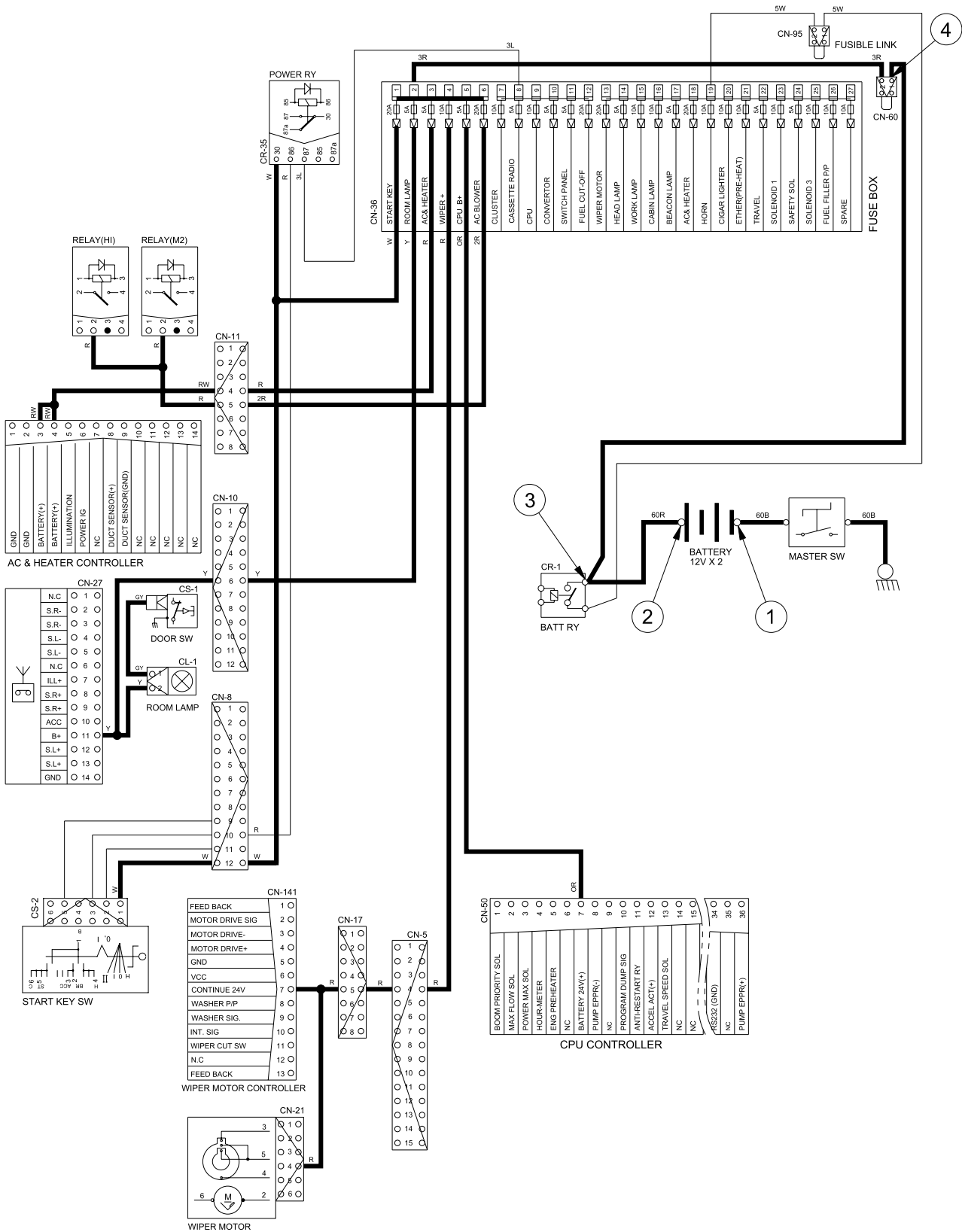


### 2) CHECK POINT

Engine	Start switch	Check point	Voltage
OFF	OFF	□ - GND (Battery 1EA)	10~12.5V
		□ E- GND (Battery 2EA)	20~25V
		□ Ø- GND (Battery 2EA)	20~25V
		□ ☒ - GND (Fusible link)	20~25V

; GND : Ground

# POWER CIRCUIT (from #0180 to #1000)



## 2. STARTING CIRCUIT(up to #1000)

### 1) OPERATING FLOW

Battery(+) terminal → Battery relay[CR-1] → Reset button[CS-61] → Fuse box [No.1]  
 → I/conn [CN-8(12)] → Start key [CS-2(1)]

i Start switch : ON

→ Start switch ON [CS-2(2)] → I/conn [CN-8(11)] → Diode[DO-2] →  
 Battery relay [CR-1];Battery relay operating(All power is supplied with the electric component)  
 → Start switch ON [CS-2(3)] → I/conn [CN-8(10)]→ Power relay [CR-35(86) ; (87)]  
 → Fuse box [No.12] → I/conn [CN-1(5)] → Fuel cut-off [CN-79(1)]

i Start switch : START

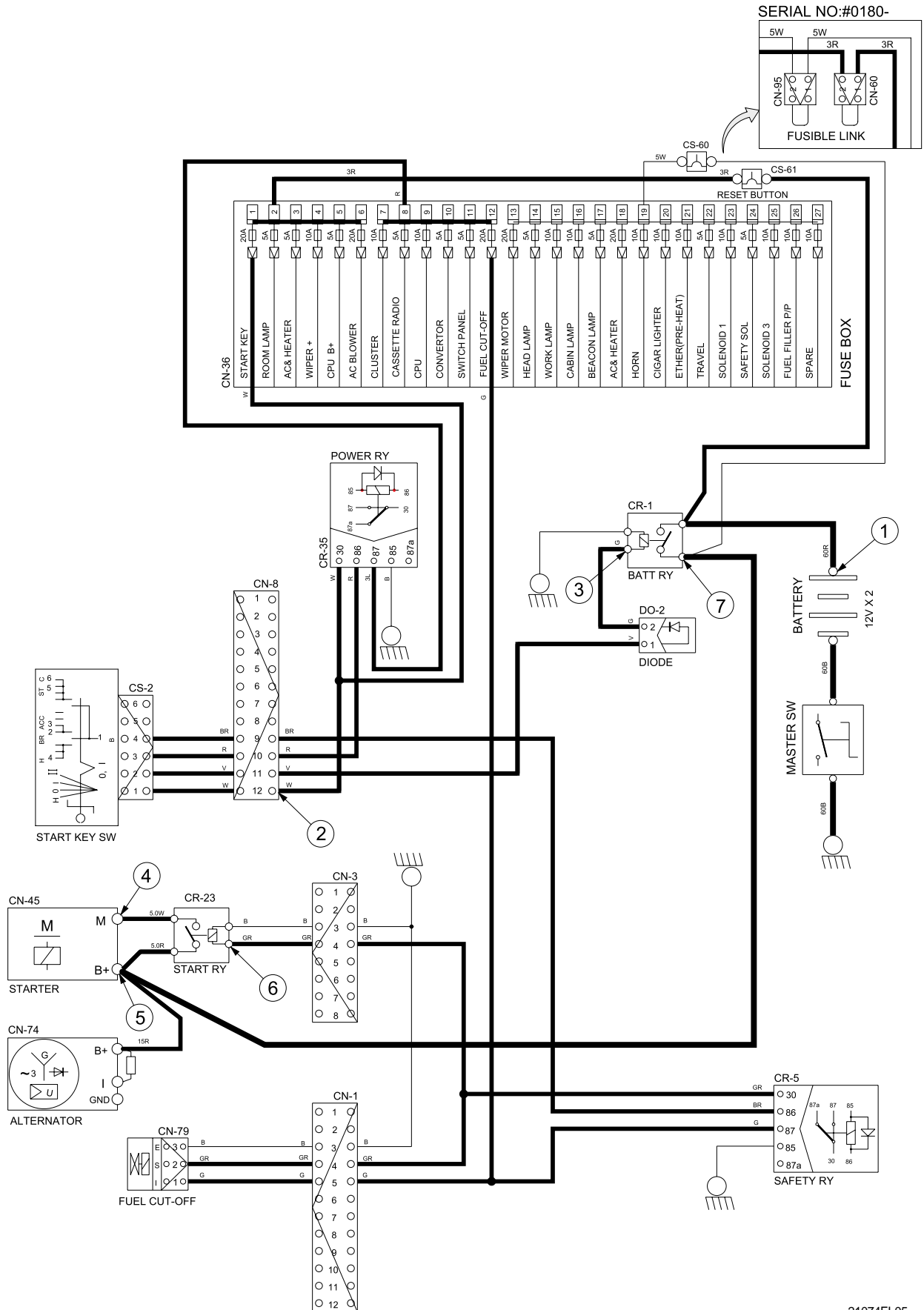
Start switch START [CS-2(5)] → I/conn [CN-8(9)] → Safety relay [CR-5(86) ; (30)]  
 → I/conn [CN-3(4)] → Start relay [CR-23]  
 → I/conn [CN-1(4)] → Fuel cut off [CN-79(2)]

### 2) CHECK POINT

Engine	Start switch	Check point	Voltage
Operating	Start	<ul style="list-style-type: none"> <li>□ GND (Battery)</li> <li>□ Ǝ GND (Start key)</li> <li>□ ∅ GND (Battery relay M4)</li> <li>□ Ⓔ GND (Starter B<sup>+</sup>)</li> <li>□ ° GND (Starter M)</li> <li>□ GND (Start relay)</li> <li>□ GND (Battery relay M8)</li> </ul>	20 ~ 25V

i GND : Ground

# STARTING CIRCUIT(up to #1000)



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### 3. CHARGING CIRCUIT(up to #1000)

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 I<sub>1</sub> terminal → I<sub>1</sub> connector (CN-3(6)) → CPU Controller [CN-51(9)] → Cluster warning lamp (Via serial interface)

##### (2) Charging flow

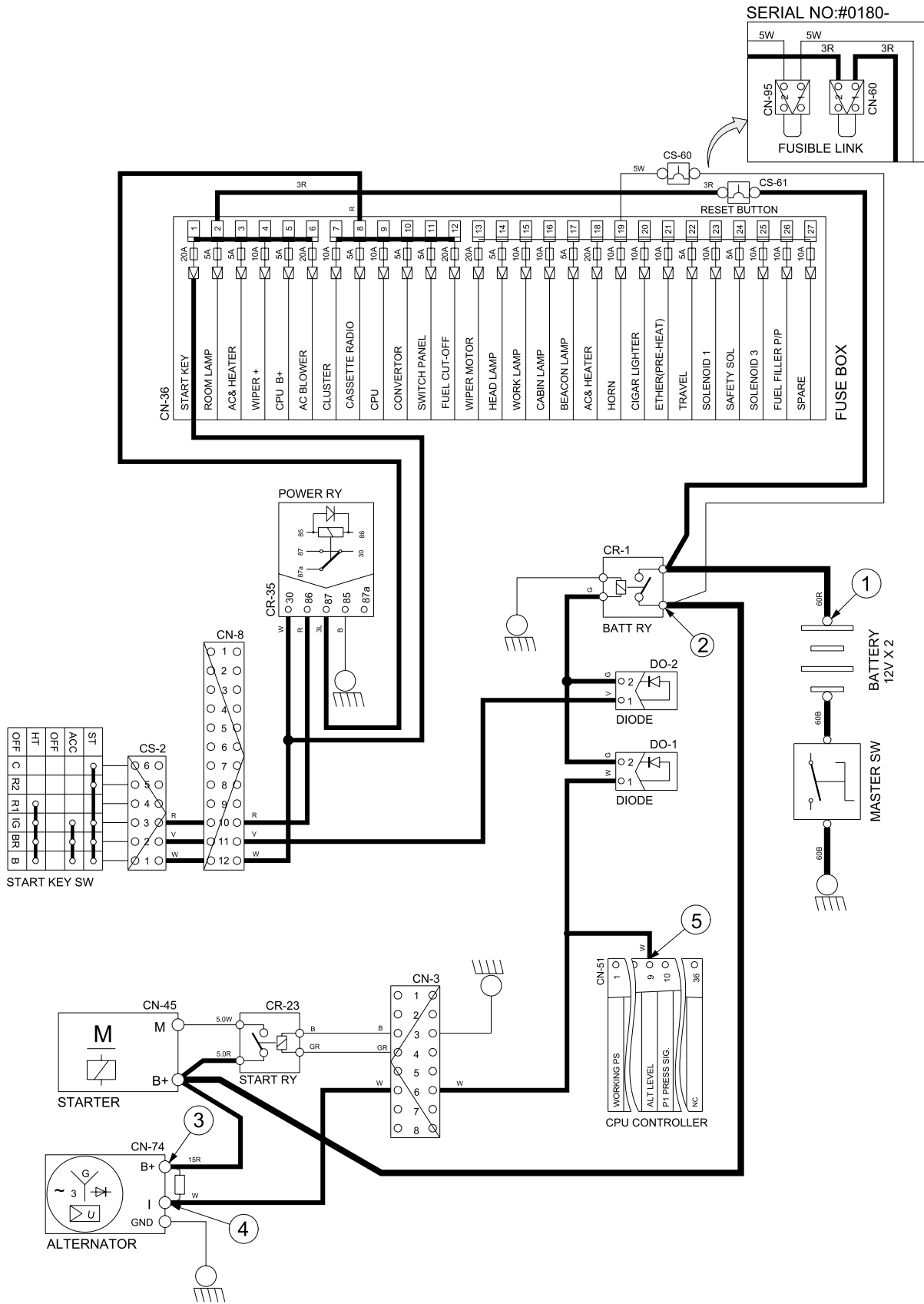
Alternator "B+" terminal → Battery relay(M8) → Battery(+) terminal  
 → Reset button[CS-61] → Fuse box

#### 2) CHECK POINT

Engine	Start switch	Check point	Voltage
ON	ON	□ - GND (Battery voltage) □ L- GND (Battery relay) □ Ø- GND (Alternator B <sub>1</sub> terminal) □ E- GND (Alternator I terminal) □ ° - GND (CPU)	20~27V

□ GND : Ground

# CHARGING CIRCUIT(up to #1000)



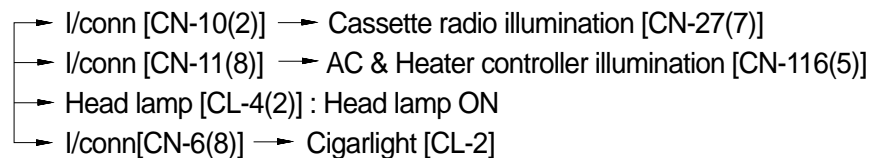
#### 4. HEAD LAMP CIRCUIT(up to #1000)

##### 1) OPERATING FLOW

Fuse box (No.14) → I/conn [CN-7(7)] → Switch panel [CN-116(9)]

i When lamp switch ON

Switch panel [CN-116(1)] → I/conn [CN-7(1)] →

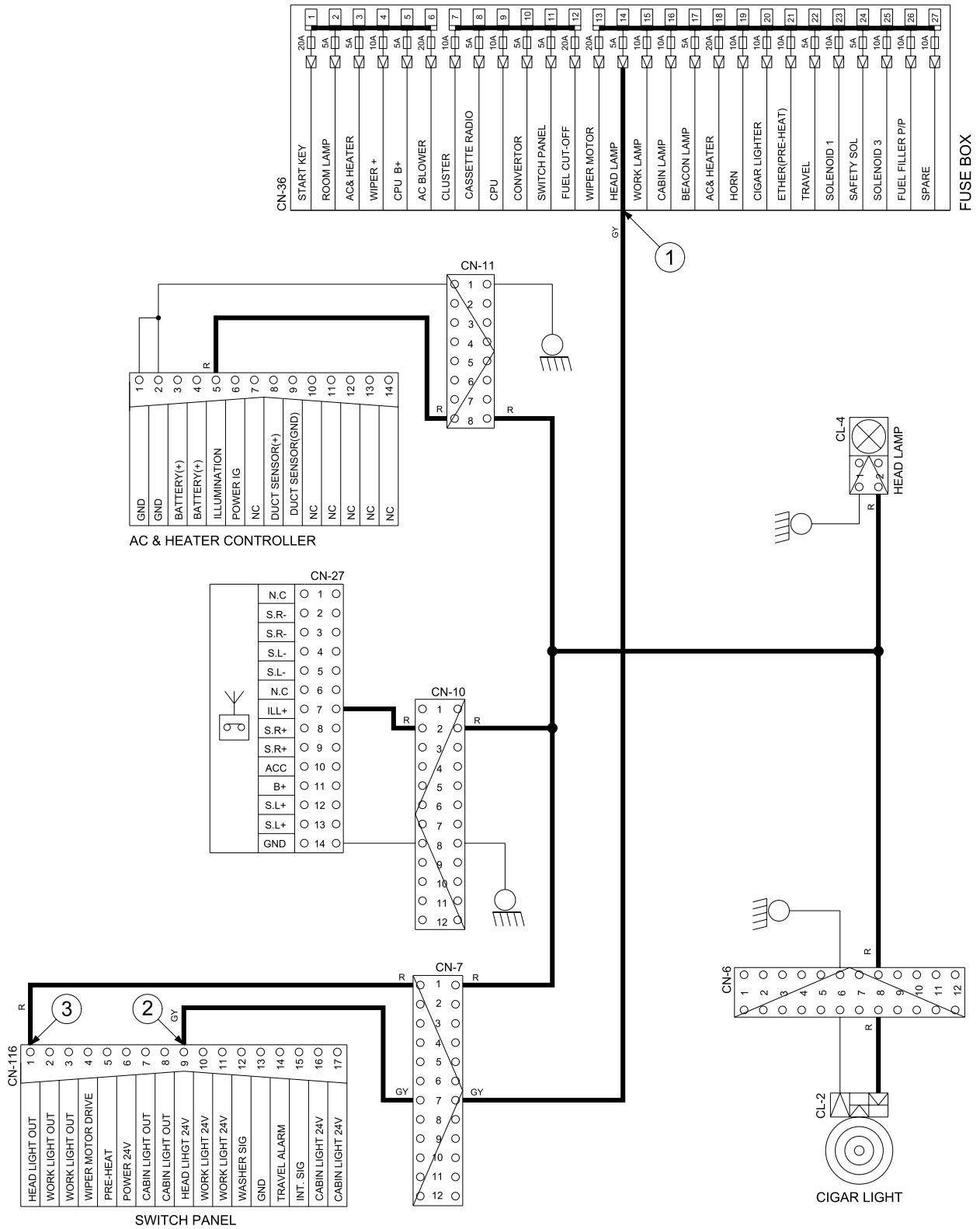


##### 2) CHECK POINT

Engine	Key switch	Check point	Voltage
STOP	ON	□ - GND (Fuse box) □ <sub>⊕</sub> - GND (Switch power input) □ <sub>∅</sub> - GND (Switch power output)	20~25V

i GND : Ground

# HEAD LAMP CIRCUIT(up to #1000)



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## 5. WORK LAMP CIRCUIT(up to #1000)

### 1) OPERATING FLOW

Fuse box (No.15) → I/conn [CN-7(8)] → Switch panel [CN-116(10,11)]

i When work lamp switch ON

Work lamp switch ON [CN-116(2,3)] → I/conn [CN-7(2)] → I/conn [CN-12(1)]

→ Work lamp ON [CL-5(2), CL-6(2)]

### 2) CHECK POINT

Engine	Key switch	Check point	Voltage
STOP	ON	□ - GND (Fuse box) □L- GND (Switch power input) □Ø- GND (Switch power output) □Ⓔ- GND (Work lamp)	20~25V

i GND : Ground



## 6. CAB LAMP CIRCUIT(up to #1000)

### 1) OPERATING FLOW

Fuse box (No.16) → I/conn; †CN-7(12) † → Switch panel [CN-116(16,17)]

i When Lamp switch ON

Lamp switch ON [CN-116(7, 8)] → I/conn [CN-7(6)] → I/conn [CN-10(11)] →  
Cab light ON [CL-8(2), CL-9(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 (Cab lamp)	20 ~ 25V

※ GND : Ground





## 7. BEACON LAMP CIRCUIT(up to #1000)

### 1) OPERATING FLOW

Fuse box (No.17) → I/conn [CN-8(3)] → Beacon lamp switch [CN-23(6)]

i When lamp switch ON

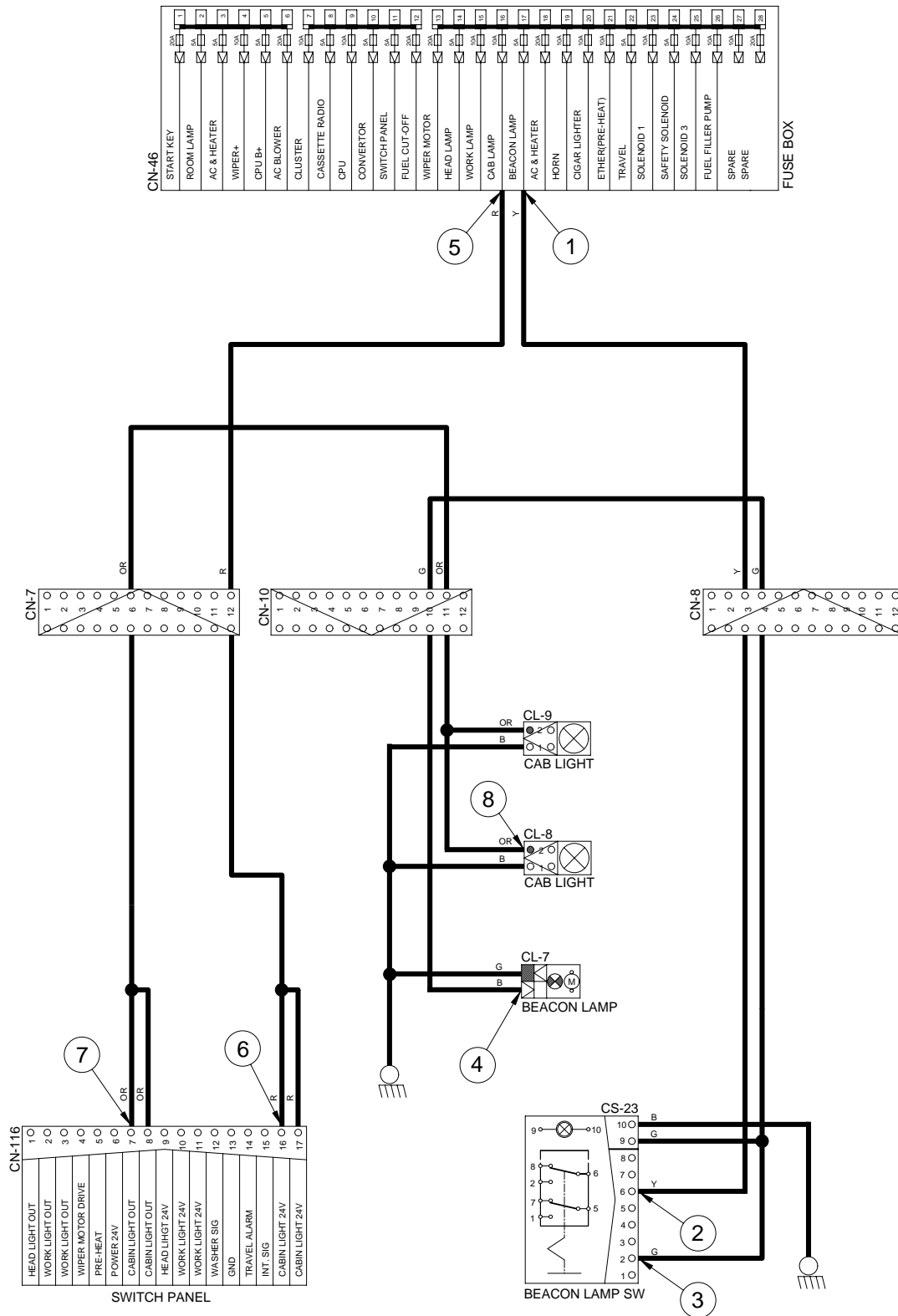
Beacon lamp switch ON [CS-23(2)] → Switch Indicator lamp ON [CS-23(9)]  
 Beacon lamp switch ON [CS-23(2)] → I/conn [CN-8(4)] → I/conn [CN-10(10)]  
 → Beacon lamp ON [CL-7]

### 2) CHECK POINT

Engine	Start switch	Check point	Voltage
STOP	ON	□ - GND(Fuse box) □L- GND(Switch power input) □Ø- GND(Switch power output) □E- GND(Beacon lamp)	20~25V

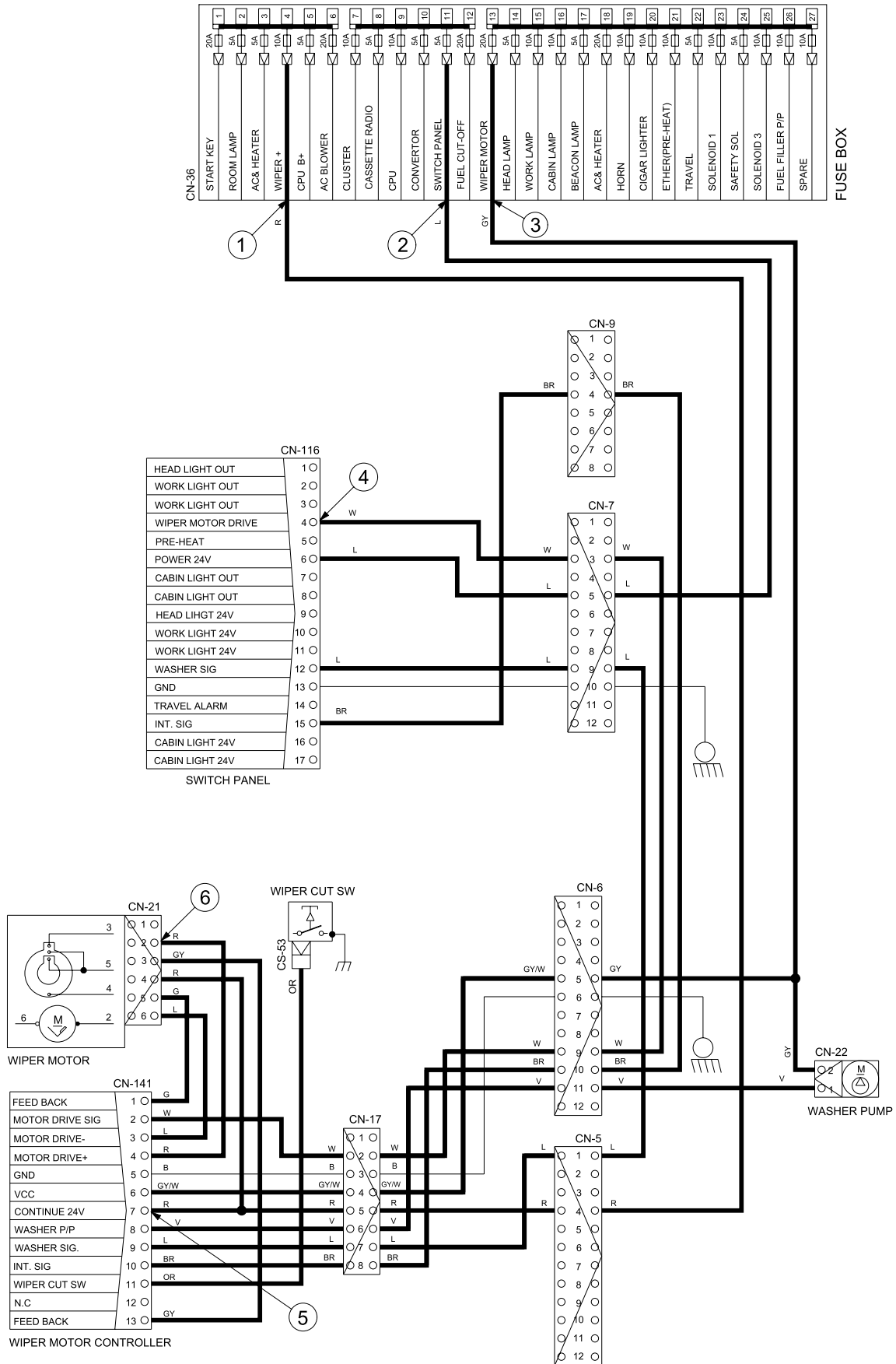
i GND : Ground

# BEACON LAMP CIRCUIT(up to #1000)



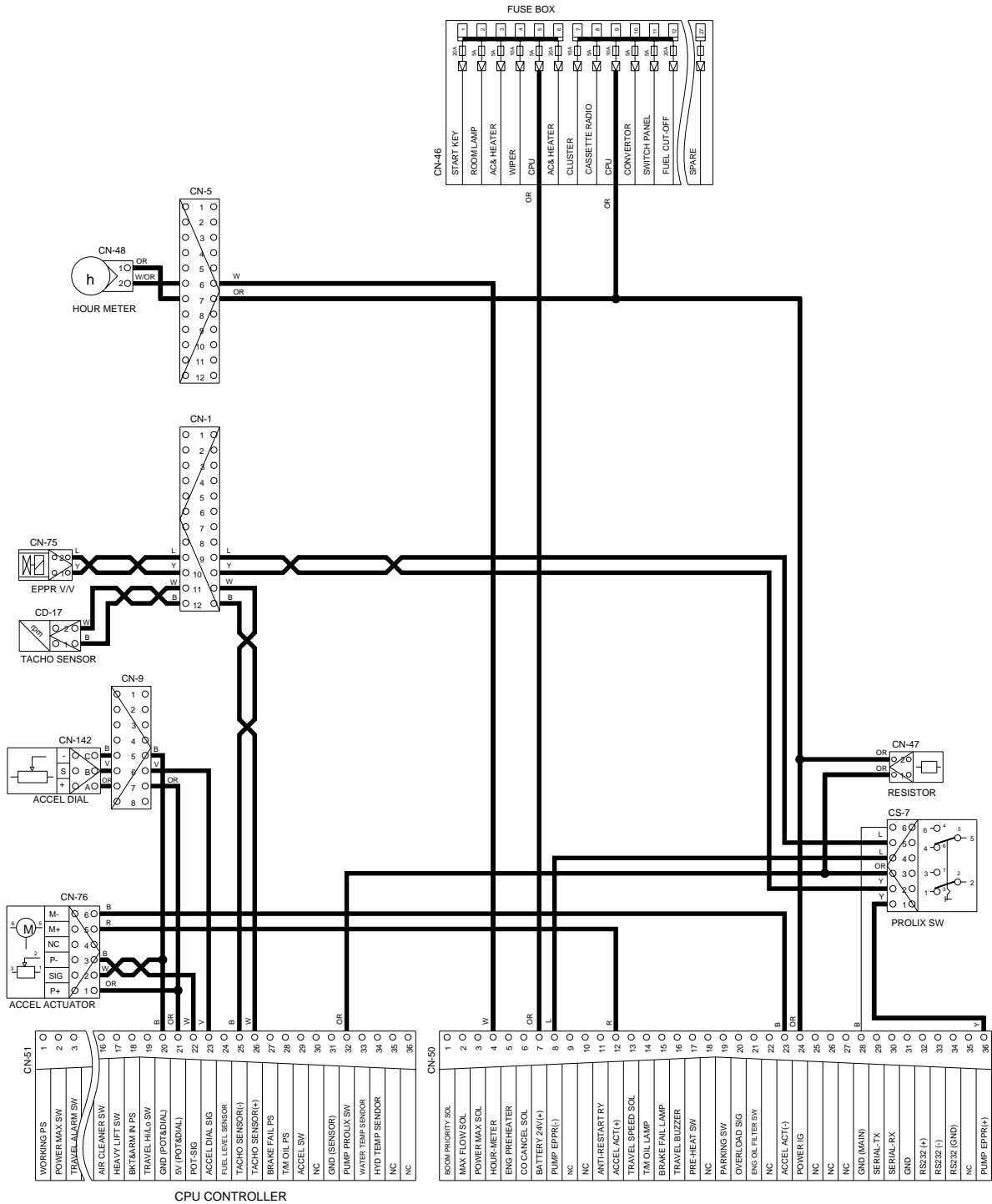


# WIPER AND WASHER CIRCUIT(up to #1000)

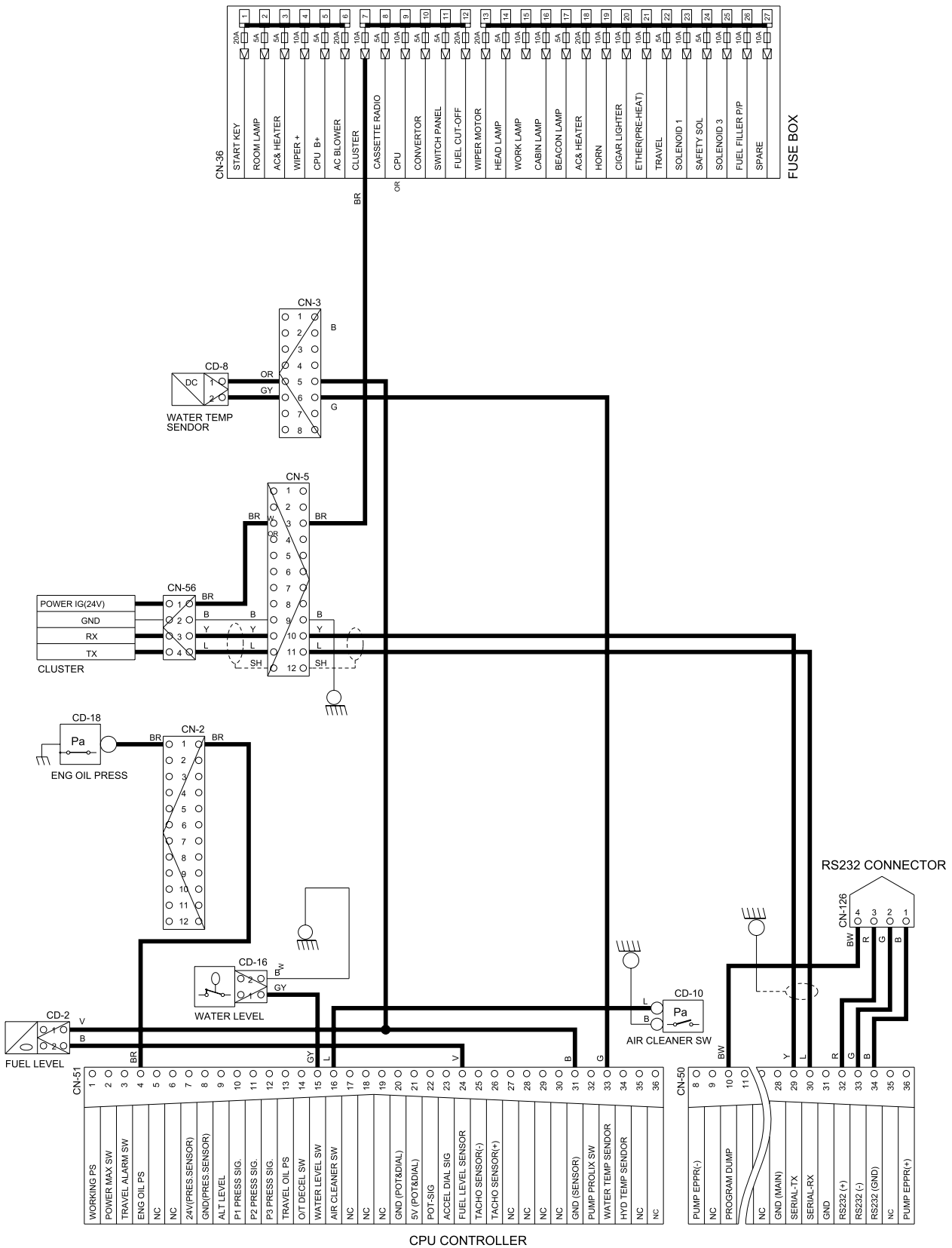


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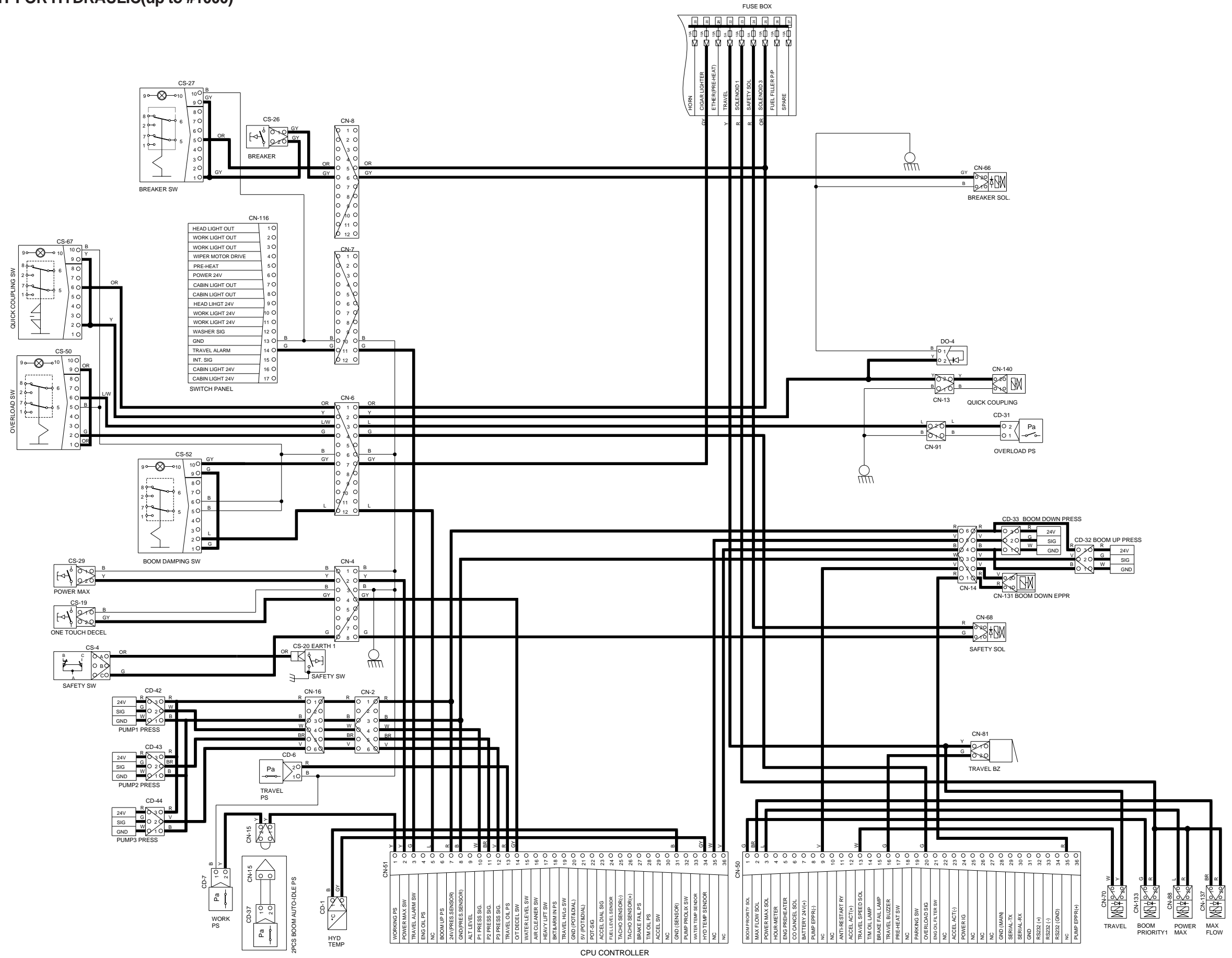
# CONTROLLER CIRCUIT(up to #1000)



# MONITORING CIRCUIT(up to #1000)



# ELECTRIC CIRCUIT FOR HYDRAULIC(up to #1000)



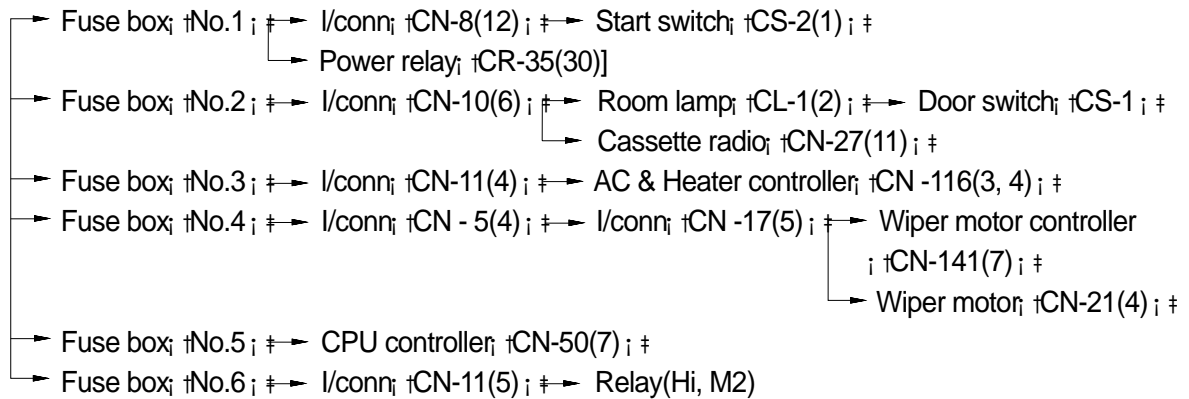
## 1. POWER CIRCUIT (#1001 and up, TIER II)

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

Battery → Battery relay → Fusible link; tCN-60; †



; I/conn : Intermediate connector

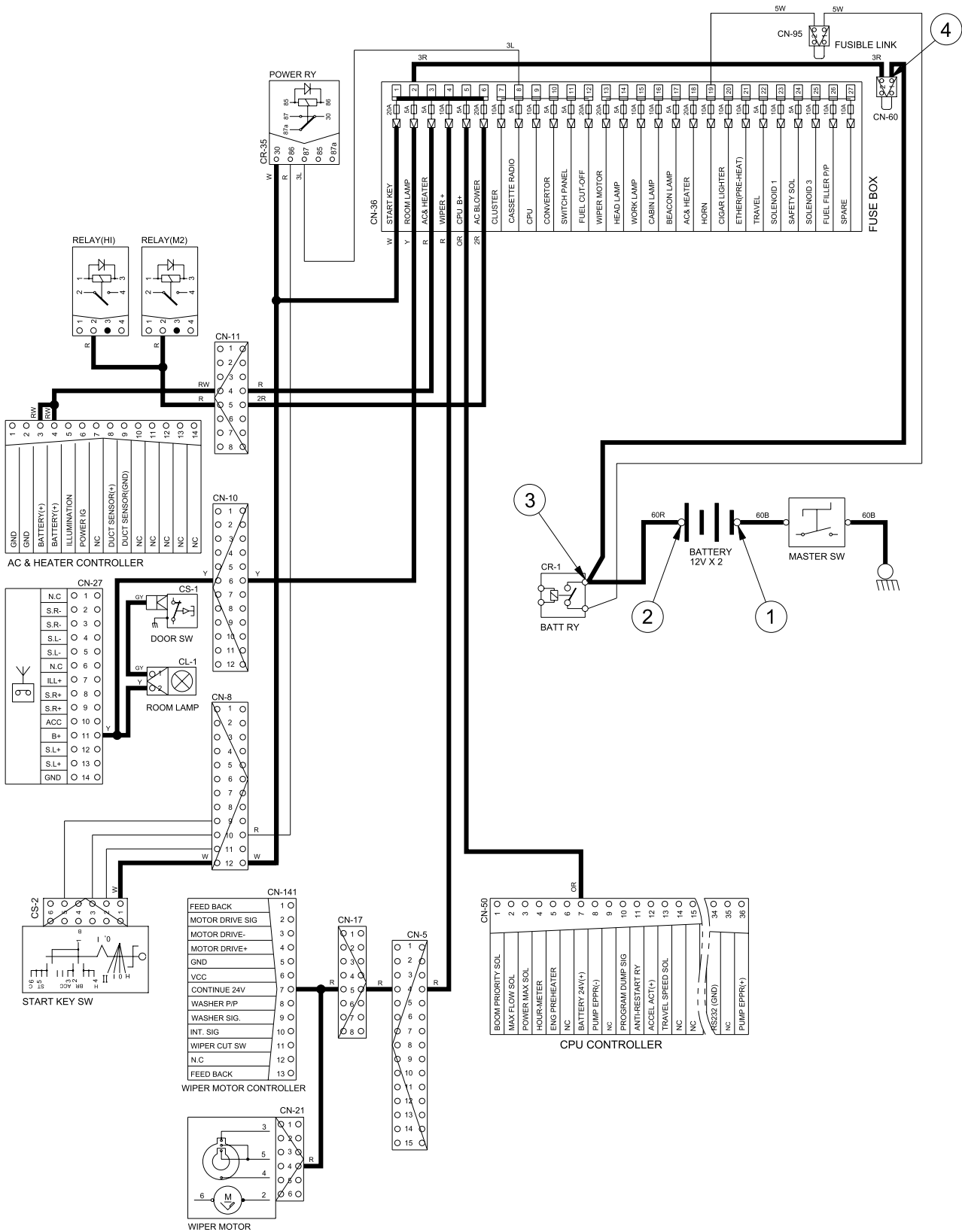
### 2) CHECK POINT

Engine	Start switch	Check point	Voltage
OFF	OFF	□ - GND (Battery 1EA)	10~12.5V
		□E- GND (Battery 2EA)	20~25V
		□Ø- GND (Battery 2EA)	20~25V
		□⊕ - GND (Fusible link)	20~25V

; GND : Ground



# POWER CIRCUIT (#1001 and up, TIER II)



## 2. STARTING CIRCUIT (#1001 and up, TIER II)

### 1) OPERATING FLOW

Battery(+) terminal → Battery relay †CR-1 † → Reset button †CS-61 † → Fuse box †No.1 †  
 → I/conn †CN-8(12) † → Start switch †CS-2(1) †

#### (1) When start key switch is in ON position

→ Start switch ON †CS-2(2) † → I/conn †CN-8(11) † → Battery relay †CR-1 †  
 → Battery relay operating (All power is supplied with the electric component)  
 → Start switch ON †CS-2(3) † → I/conn †CN-8(10) † → Power relay †CR-35(86) † (87) †  
 → Fuse box †No.12 † → I/conn †CN-2(5) † → Fuel cut-off †CN-79(1) †

#### (2) When start key switch is in START position

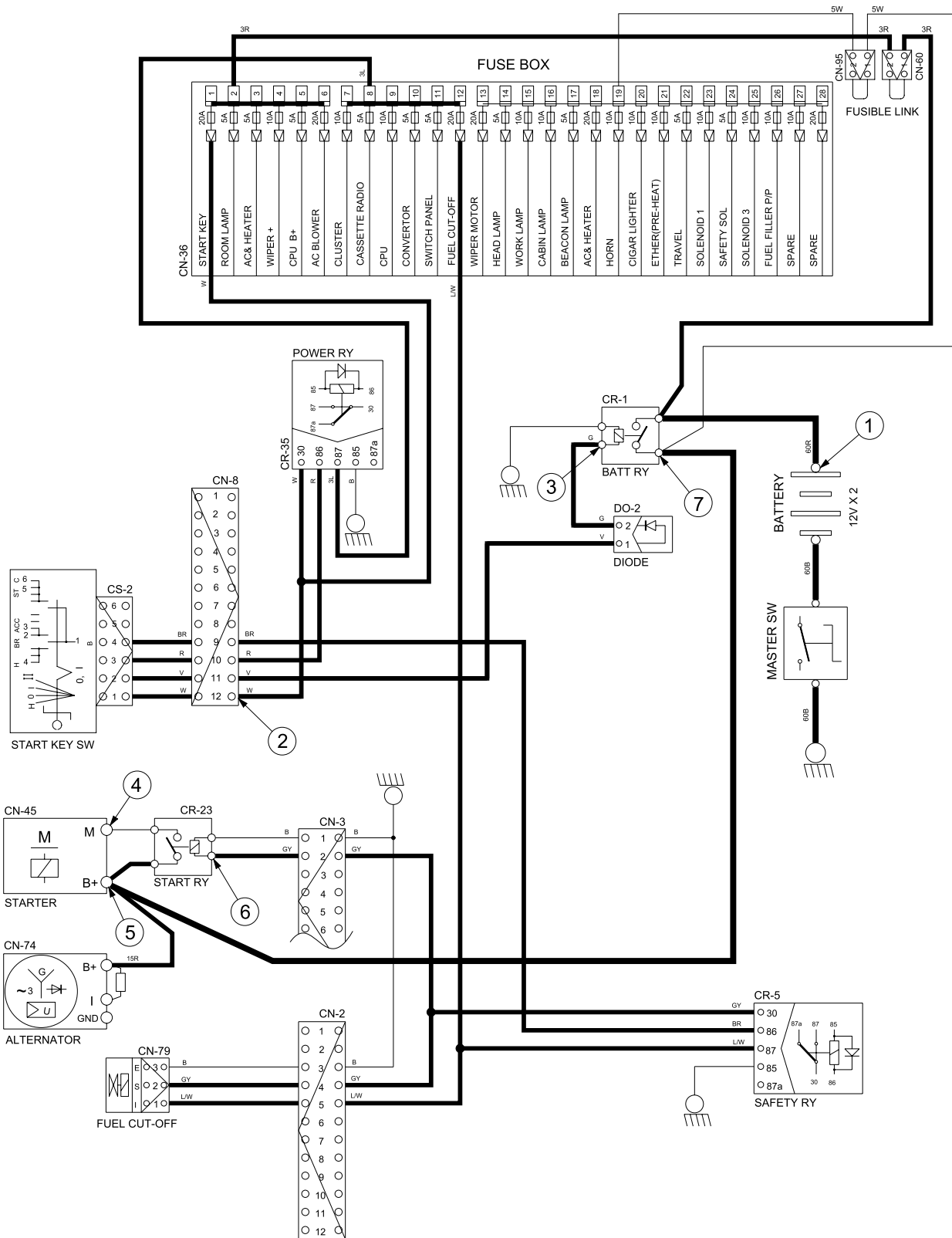
Start switch START †CS-2(5) † → I/conn †CN-8(9) † → Safety relay †CR-5(86) † (30) †  
 → I/conn †CN-3(2) † → Start relay †CR-23 †  
 → I/conn †CN-2(4) † → Fuel cut off †CN-79(2) †

### 2) CHECK POINT

Engine	Start switch	Check point	Voltage
OPERATING	START	□ - GND(Battery) □L- GND(Start key) □Ø- GND(Battery relay M4) □E- GND(Starter B <sup>+</sup> ) □° - GND(Starter M) □ - GND(Start relay) □ - GND(Battery relay M8)	20~25V

† GND : Ground

# STARTING CIRCUIT (#1001 and up, TIER II)



### 3. CHARGING CIRCUIT (#1001 and up, TIER II)

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 "I" terminal → I/conn; †CN-3(3) † → CPU alternator level; †CN-51(9) †  
Cluster charging warning lamp(Via serial interface)

##### (2) Charging flow

Alternator "B+" terminal → Battery relay(M8) → Battery(+) terminal  
Reset button; †CN-60 † → Fuse box

#### 2) CHECK POINT

Engine	Start switch	Check point	Voltage
Run	ON	□ - GND(Battery voltage) □ 1 - GND(Battery relay) □ 0 - GND(Alternator B <sup>+</sup> terminal) □ E - GND(Alternator I terminal) □ ° - GND(CPU)	20~30V

† GND : Ground



#### 4. HEAD AND WORK LIGHT CIRCUIT (#1001 and up, TIER II)

##### 1) OPERATING FLOW

Fuse box (No.14) → I/conn; tCN-7(7) ; † → Switch panel; tCN-116(9) ; †

Fuse box (No.15) → I/conn; tCN-7(8) ; † → Switch panel; tCN-116(10,11) ; †

##### (1) Head light switch ON

Head light switch ON; tCN-116(1) ; † → I/conn; tCN-7(1)]

- Head light ON; tCL-4(2) ; †. Head lamp ON
- I/conn; tCN-10(2) ; † → Cassette radio illumination ON; tCN-27(7) ; †
- I/conn; tCN-11(8) ; † → AC & Heater controller illumination ON
- I/conn; tCN-6(8) ; † → Cigar light; tCL-2 ; †

##### (2) Work light switch ON

Work light switch ON; tCN-116(2,3) ; † → I/conn; tCN-7(2) ; † → I/conn; tCN-12(1) ; †

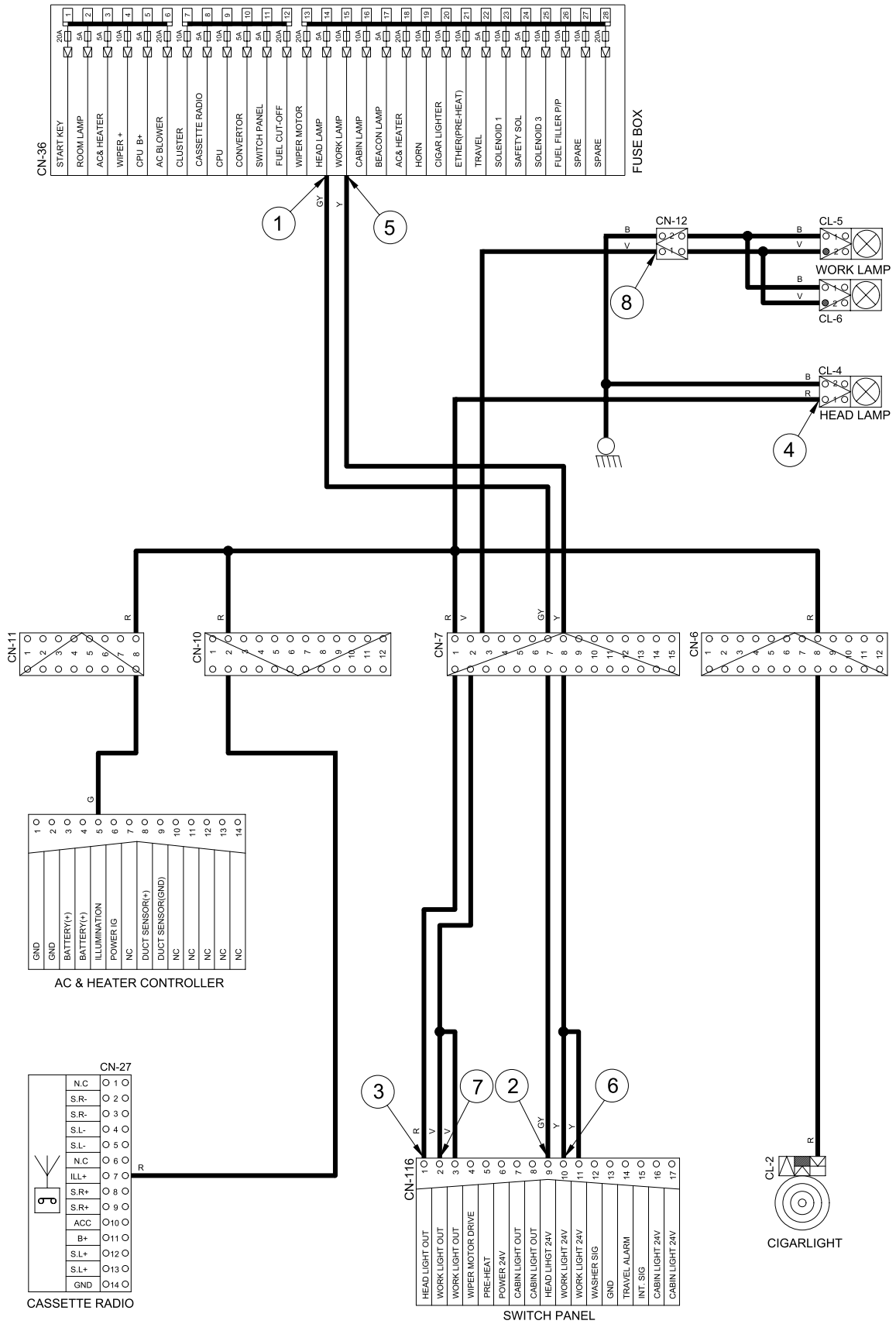
→ Work light ON; tCL-5(2), CL-6(2) ; †

##### 2) CHECK POINT

Engine	Start switch	Check point	Voltage
STOP	ON	<ul style="list-style-type: none"> <li>α - GND(Fuse box)</li> <li>α<sub>E</sub>- GND(Switch power input)</li> <li>α<sub>Ø</sub>- GND(Switch power output)</li> <li>α<sub>E</sub>- GND(Head light)</li> </ul>	20~25V
STOP	ON	<ul style="list-style-type: none"> <li>α ° - GND(Fuse box)</li> <li>α - GND(Switch power input)</li> <li>α -GND(Switch power output)</li> <li>α - GND(Work light)</li> </ul>	20~25V

¡ GND : Ground

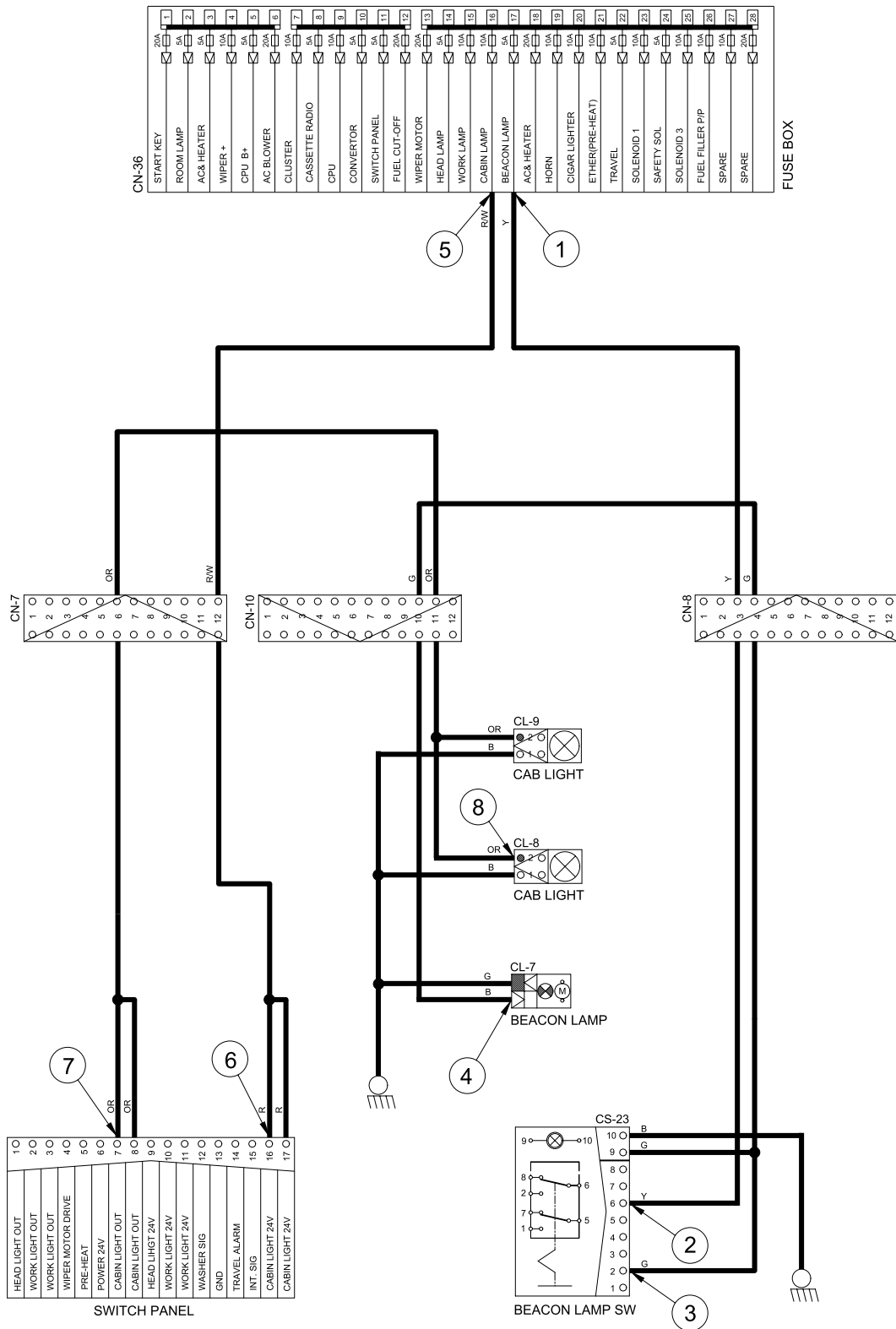
# HEAD AND WORK LIGHT CIRCUIT (#1001 and up, TIER II)





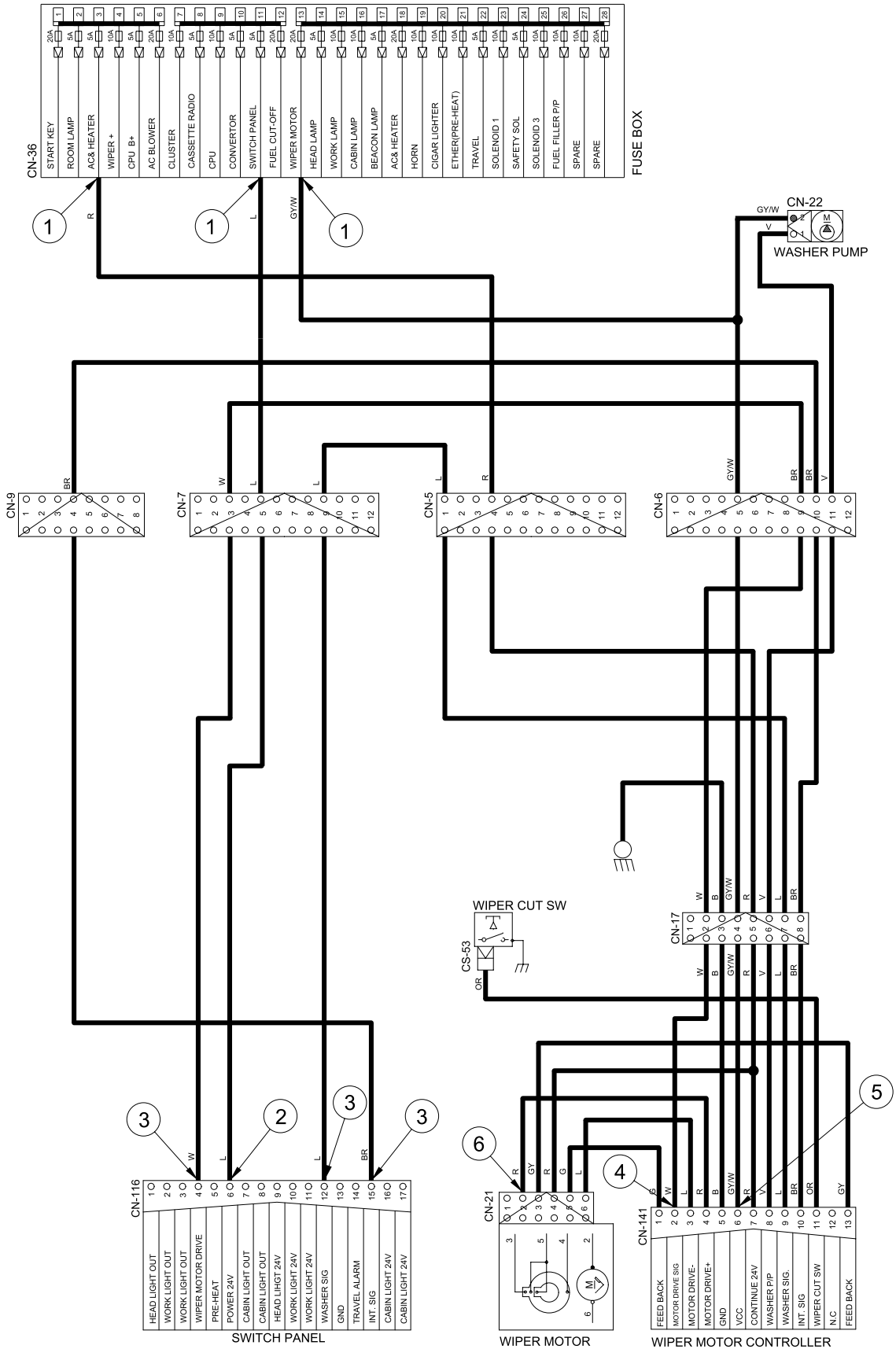


# BEACON LAMP AND CAB LIGHT CIRCUIT (#1001 and up, TIER II)

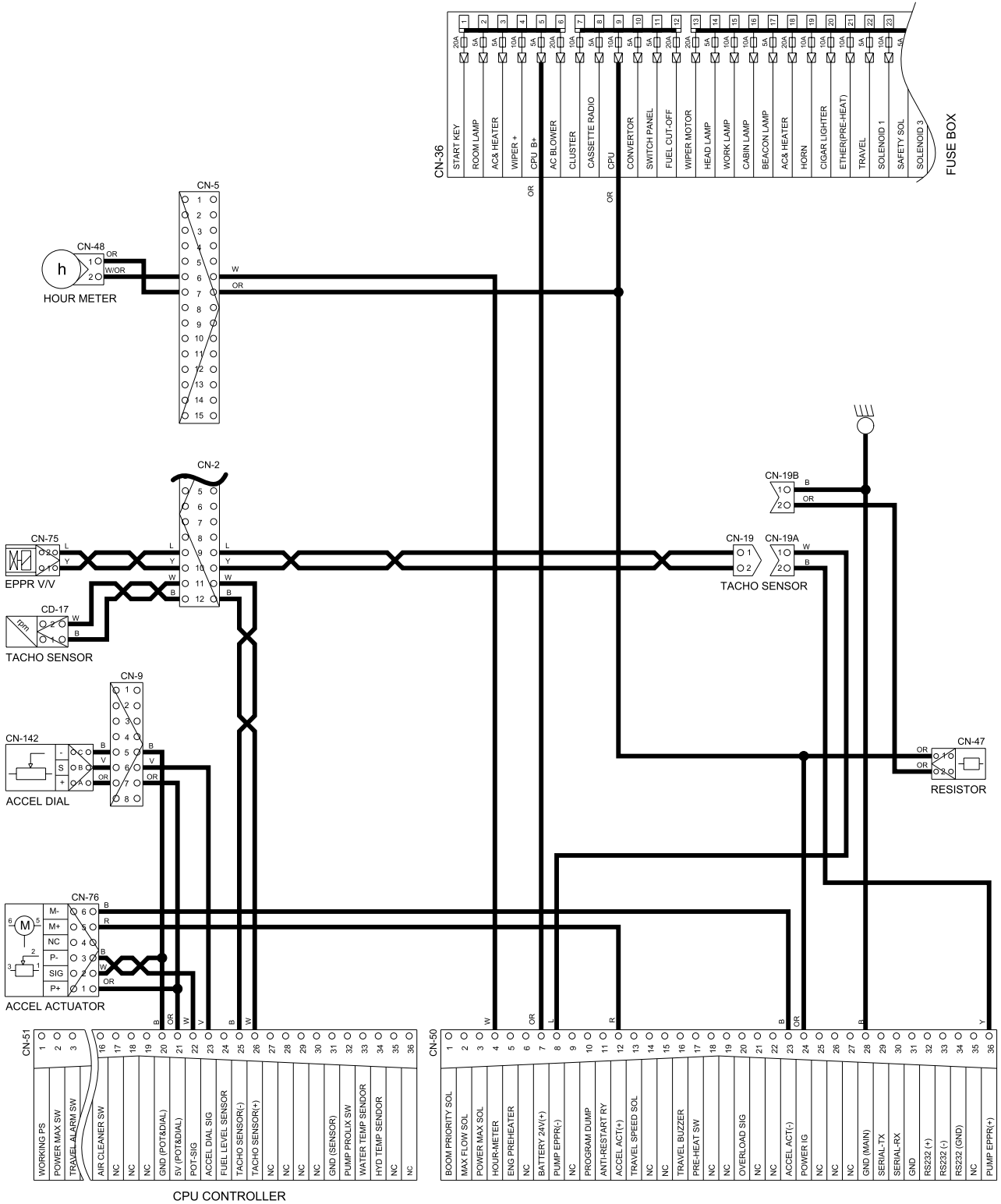




# WIPER AND WASHER CIRCUIT (#1001 and up, TIER II)



# CONTROLLER CIRCUIT (#1001 and up, TIER II)



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# MONITORING CIRCUIT (#1001 and up, TIER II)

