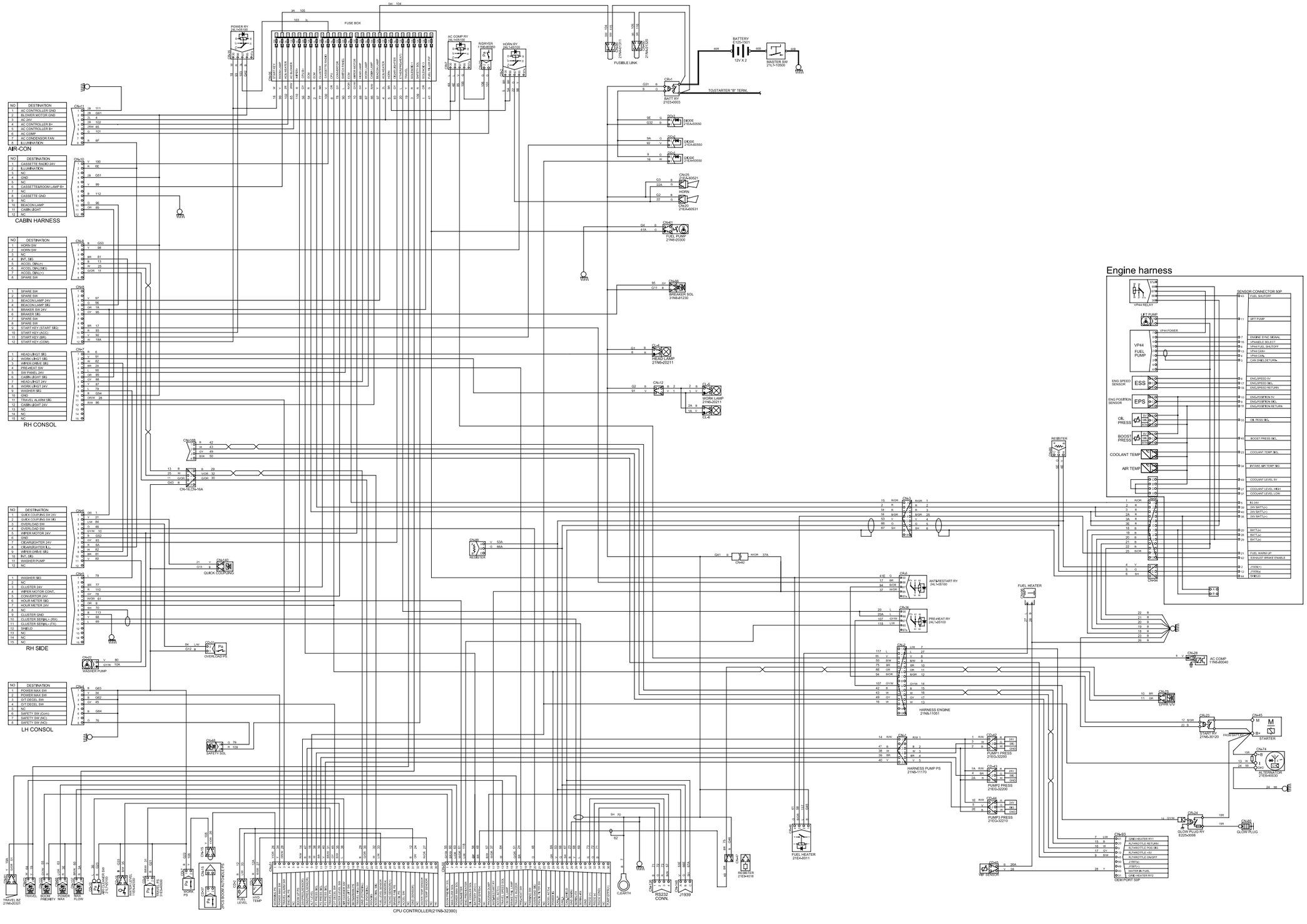
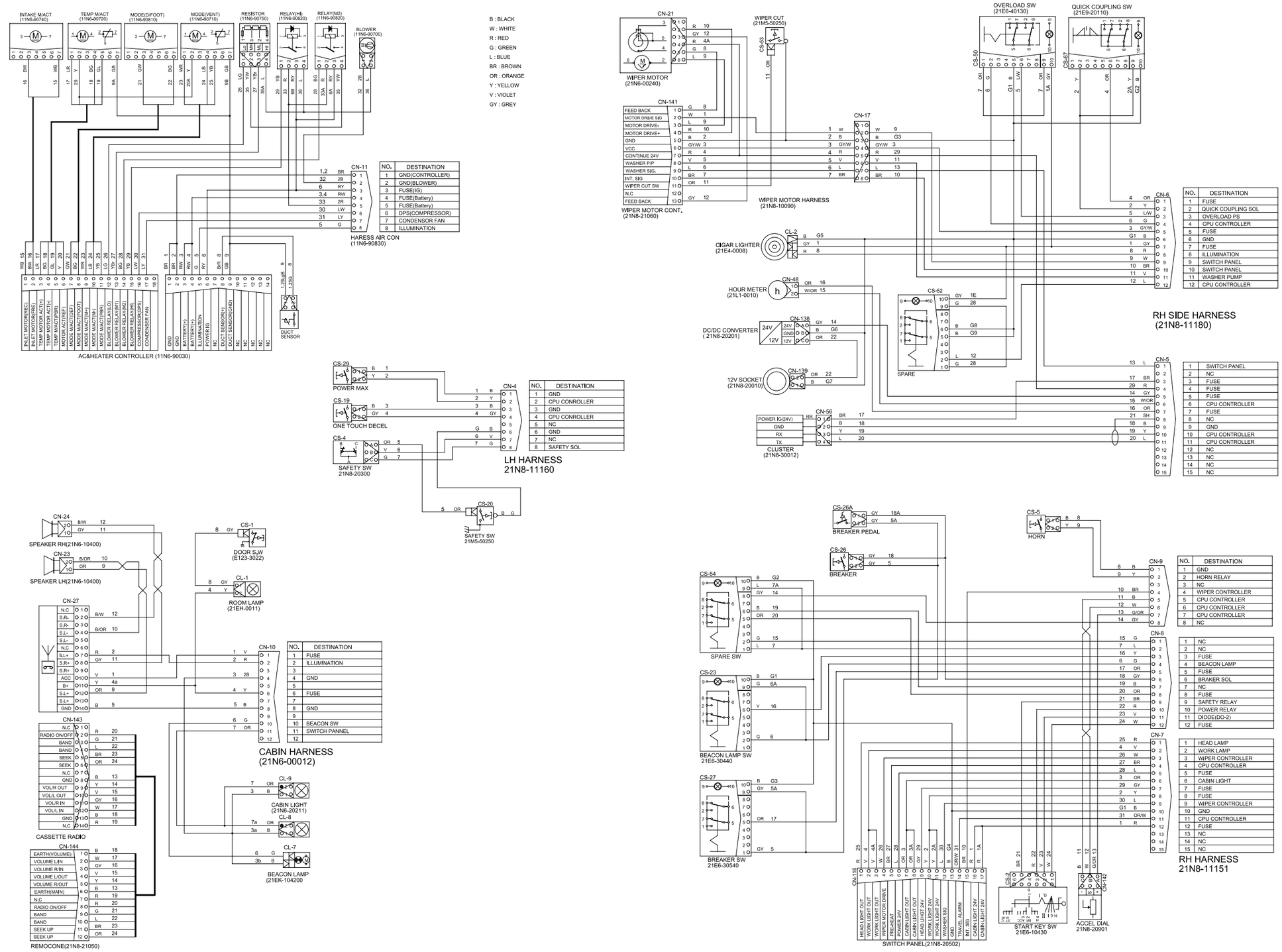
GROUP 5 ELECTRICAL CIRCUIT (1/2, #0112 and up, TIER II)



· ELECTRICAL CIRCUIT (2/2, #0112 and up, TIER II)



1. POWER CIRCUIT (#0112 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〔CN-60〕

- → Fuse box〔No.1〕 → I/conn〔CN-8(12)〕 → Start switch〔CS-2(1)〕
  - → Power relay〔CR-35(30)]
- → Fuse box〔No.2〕 → I/conn〔CN-10(6)〕
  - → Room lamp〔CL-1(2)〕 → Door switch〔CS-1〕
  - → Cassette radio〔CN-27(11)〕
- → Fuse box〔No.3〕 → I/conn〔CN-11(4)〕 → AC & Heater controller〔CN -116(3, 4)〕
- → Fuse box〔No.4〕 → I/conn〔CN-11(5)〕 → Relay(Hi, M2)
- → Fuse box〔No.5〕 → I/conn〔CN - 5(4)〕 → I/conn〔CN -17(5)〕
  - → Wiper motor controller〔CN-141(7)〕
  - → Wiper motor〔CN-21(4)〕
- → Fuse box〔No.6〕 → CPU controller〔CN-50(7)〕

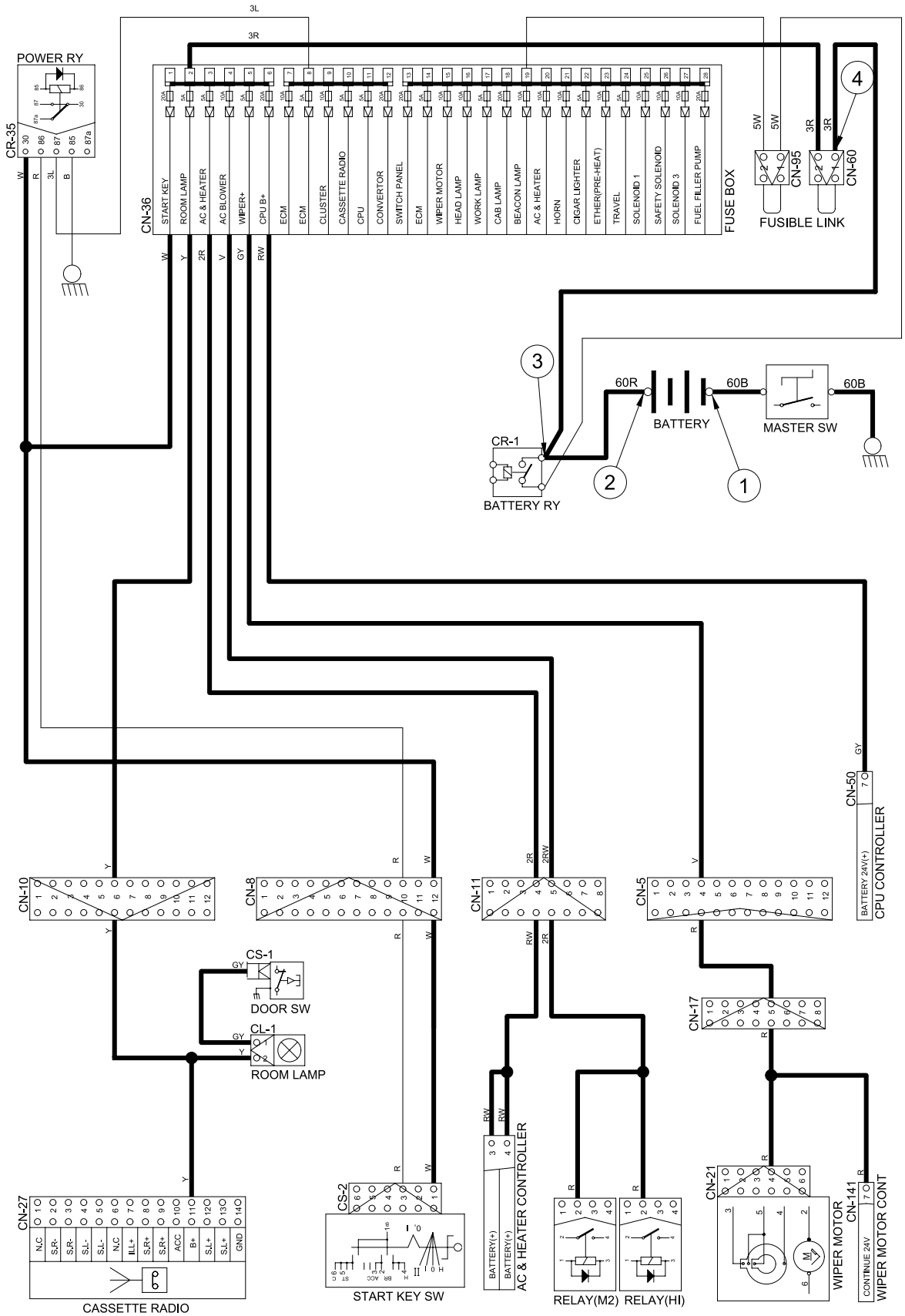
※ I/conn : Intermediate connector

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 (Reset button)	20~25V

※ GND : Ground

POWER CIRCUIT (#0112 and up, TIER II)



2. STARTING CIRCUIT (#0112 and up, TIER II)

1) OPERATING FLOW

Battery(+) terminal → Battery relay〔CR-1〕 → Fusible link〔CN-60〕 → 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.8〕

(2) When start key switch is in START position

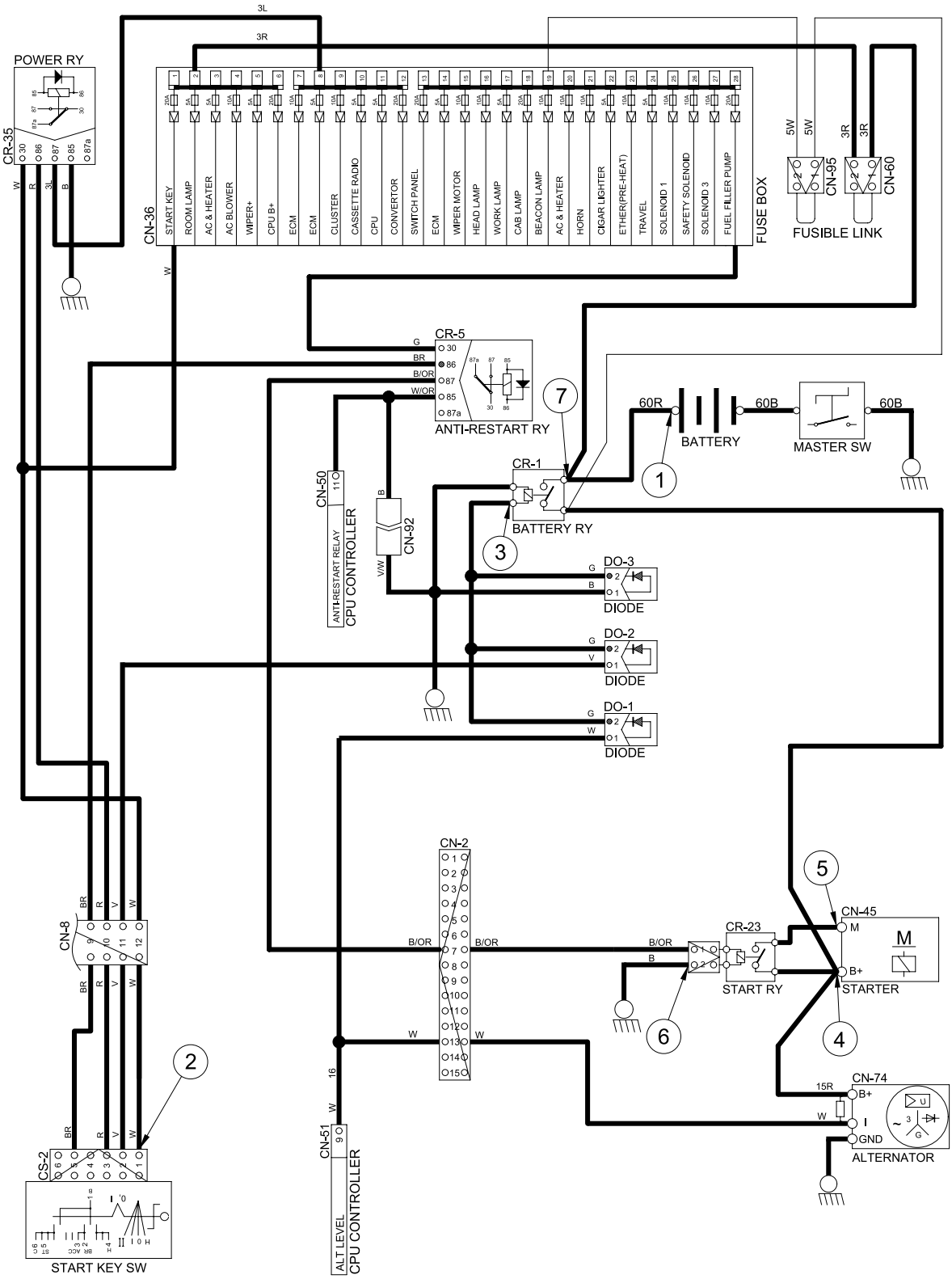
Start switch START〔CS-2(5)〕 → I/conn〔CN-8(9)〕 → Safety relay〔CR-5(86) → (87)〕
→ I/conn〔CN-2(7)〕 → Start relay〔CR-23〕

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

※ GND : Ground

STARTING CIRCUIT (#0112 and up, TIER II)



3. CHARGING CIRCUIT (#0112 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-2(13)〕→ CPU alternator level〔CN-51(9)〕
Cluster charging warning lamp(Via serial interface)

(2) Charging flow

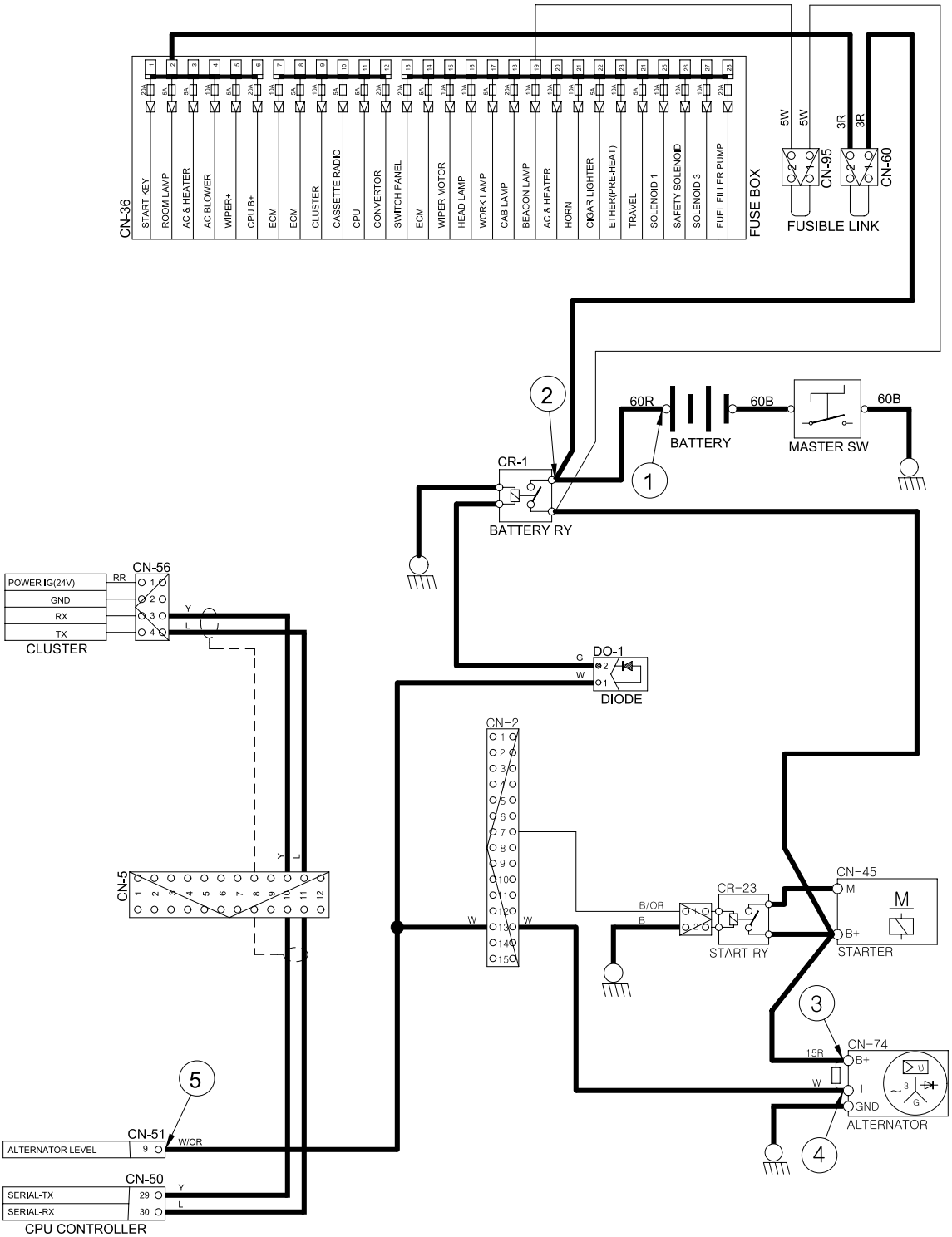
Alternator "B^+" terminal → Battery relay(M8) → Battery(+) terminal
Battery relay(M8) → Fusible link〔CS-60〕→ Fuse box

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 I terminal) ⑤ - GND(CPU)	20~30V

※ GND : Ground

CHARGING CIRCUIT (#0112 and up, TIER II)



4. HEAD AND WORK LIGHT CIRCUIT (#0112 and up, TIER II)

1) OPERATING FLOW

Fuse box (No.16) → I/conn〔CN-7(7)〕→ Switch panel〔CN-116(9)〕
Fuse box (No.17) → I/conn〔CN-7(8)〕→ Switch panel〔CN-116(10,11)〕

(1) Head light switch ON

Head light switch ON〔CN-116(1)〕→ I/conn〔CN-7(1)]
- → Head light ON〔CL-4(1)〕
- → I/conn〔CN-10(2)〕→ Cassette radio illumination ON〔CN-27(7)〕
- → I/conn〔CN-11(8)〕→ AC & Heater controller illumination ON
- → I/conn〔CN-6(8)〕→ Cigarlight〔CL-2〕

(2) Work light switch ON

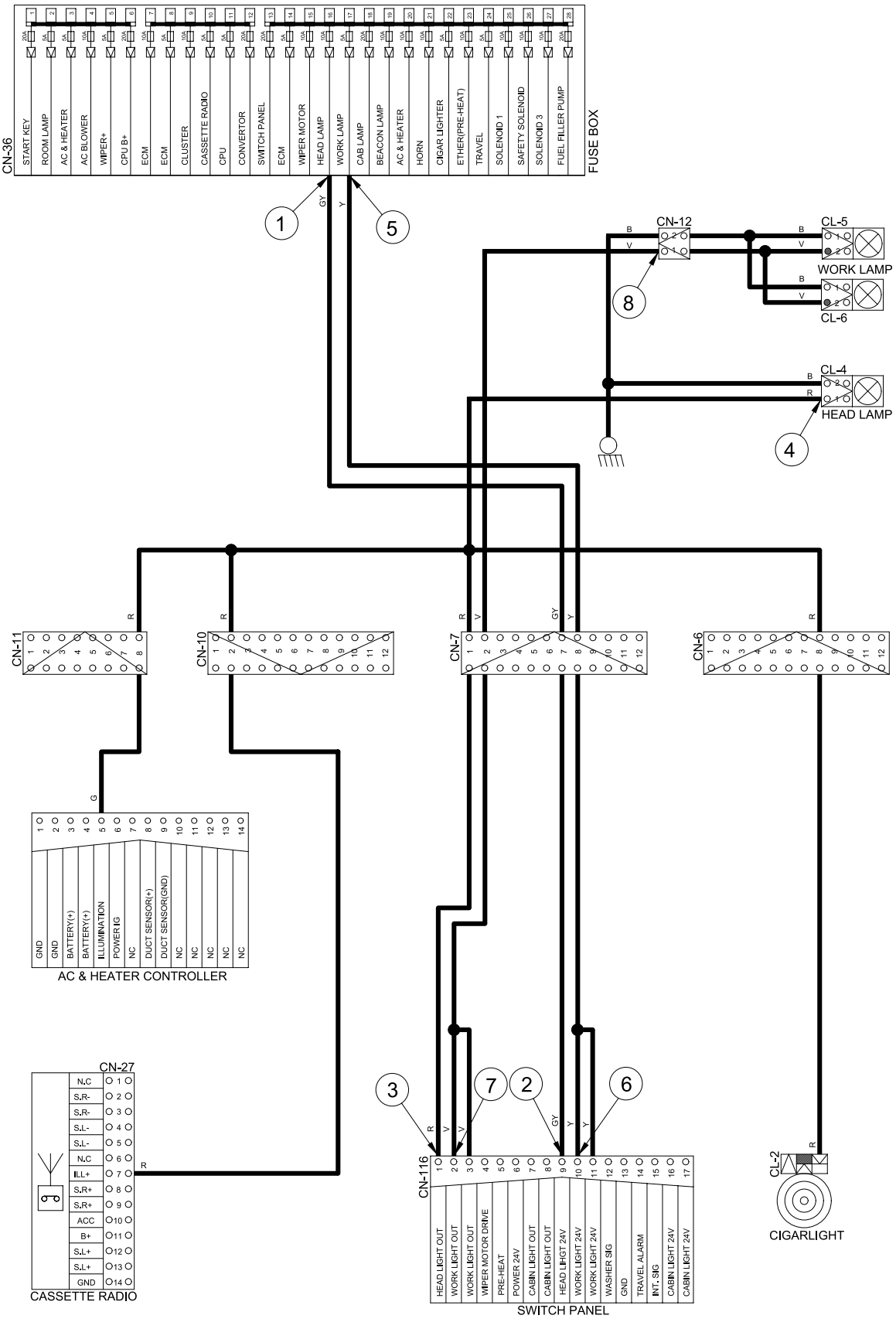
Work light switch ON〔CN-116(2,3)〕→ I/conn〔CN-7(2)〕→ I/conn〔CN-12(1)〕
→ Work light ON〔CL-5(2), CL-6(2)〕

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(Head light)	20~25V
STOP	ON	⑤ - GND(Fuse box) ⑥ - GND(Switch power input) ⑦- GND(Switch power output) ⑧ - GND(Work light)	20~25V

※ GND : Ground

HEAD AND WORK LIGHT CIRCUIT (#0112 and up, TIER II)



5. BEACON LAMP AND CAB LIGHT CIRCUIT (#0112 and up, TIER II)

1) OPERATING FLOW

Fuse box (No.19) → I/conn〔CN-8(3)〕→ Beacon lamp switch〔CN-23(6)〕
Fuse box (No.18) → I/conn〔CN-7(12)〕→ Switch panel〔CN-116(16, 17)〕

(1) Beacon lamp switch ON

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

(2) Cab light switch ON

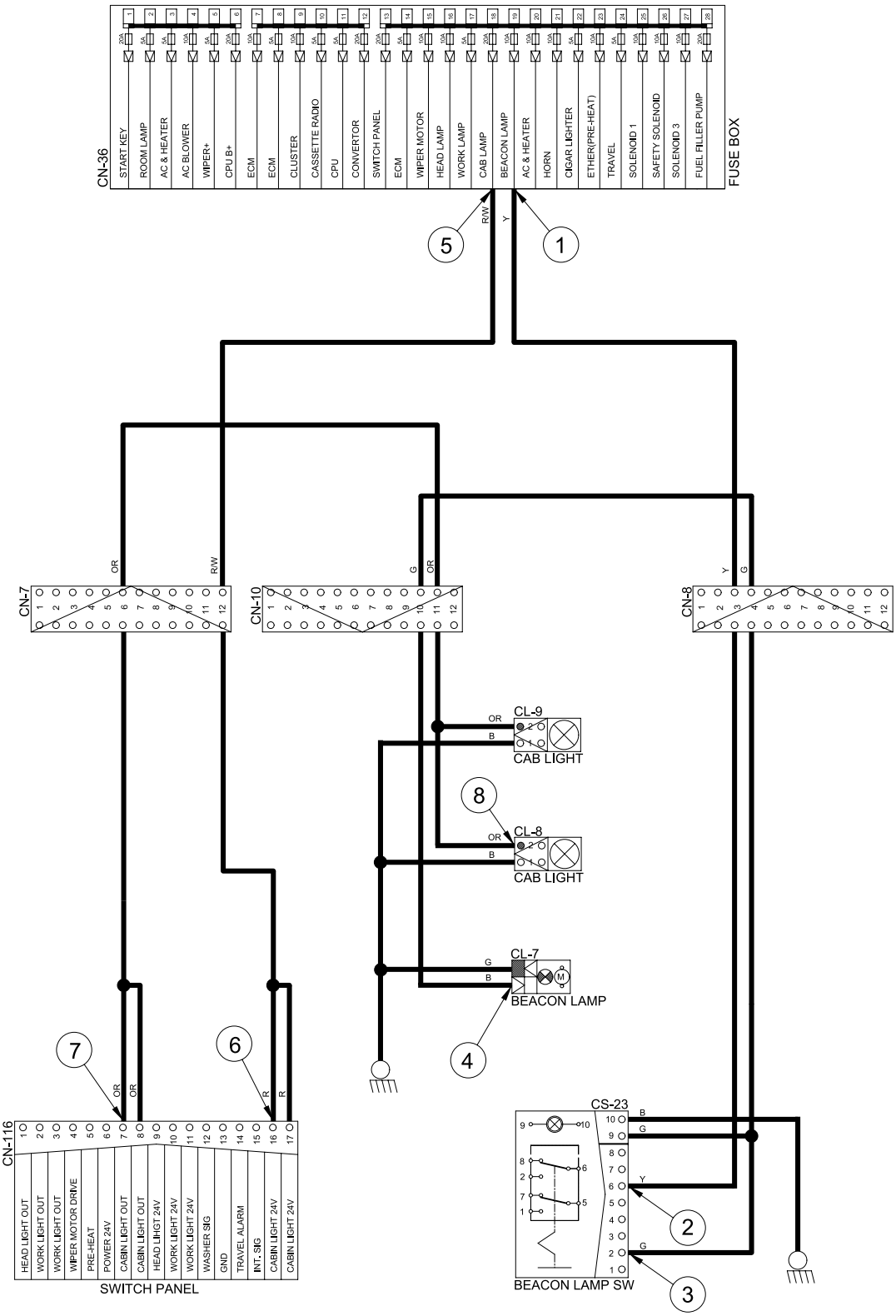
Cab light switch ON〔CN-116(7, 8)〕→ I/conn〔CN-7(6)〕→ I/conn〔CN-10(11)〕
→ Cab light ON〔CL-8(2), CL-9(2)〕

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(Beacon lamp)	20~25V
STOP	ON	⑤ - GND(Fuse box) ⑥ - GND(Switch power input) ⑦ - GND(Switch power output) ⑧ - GND(Cab light)	20~25V

※ GND : Ground

BEACON LAMP AND CAB LIGHT CIRCUIT (#0112 and up, TIER II)



6. WIPER AND WASHER CIRCUIT (#0112 and up, TIER II)

1) OPERATING FLOW

(1) Key switch ON

Fuse box (No.13) → I/conn〔CN-7(5)〕→ Switch panel〔CN-116(6)〕

Fuse box (No.5) → I/conn〔CN-5(4)〕→ I/conn〔CN-17(5)〕→ Wiper motor controller〔CN-141(7)〕
→ Wiper motor〔CN-21(4)〕

Fuse box (No.16) → I/conn〔CN-6(5)〕→ 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(15)〕→ I/conn〔CN-9(4)〕→ I/conn〔CN-6(10)〕→ 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(Low speed)

Wiper switch ON〔CN-116(4)〕→ I/conn〔CN-7(3)〕→ I/conn〔CN-6(9)〕→ 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(12)〕→ I/conn〔CN-7(9)〕→ I/conn〔CN-5(1)〕→ I/conn〔CN-17(7)〕
→ Wiper motor controller〔CN-141(9) → (8)〕→ I/conn〔CN-17(6)〕→ I/conn〔CN-6(11)〕
→ Washer pump〔CN-22(1)〕→ Washer operating
Wiper switch ON〔CN-116(4)〕→ I/conn〔CN-7(3)〕→ I/conn〔CN-6(9)〕→ I/conn〔CN-17(2)〕
Wiper motor controller〔CN-141(2) → (4)〕→ Wiper motor operating〔CN-21(2)〕

(5) Auto parking(When switch OFF)

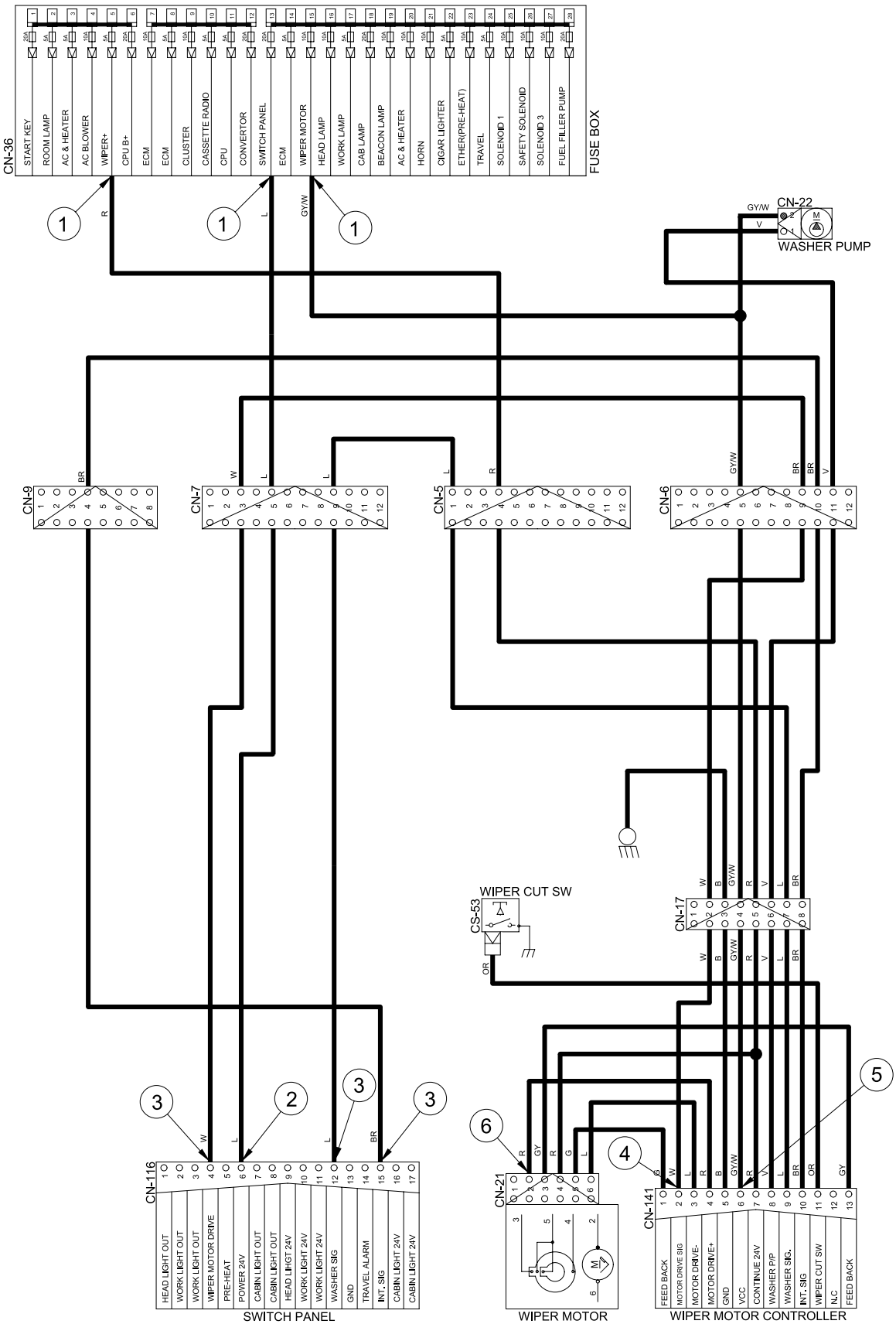
Switch OFF〔CN-116(4)〕→ Wiper motor parking position by wiper motor controller

2) CHECK POINT

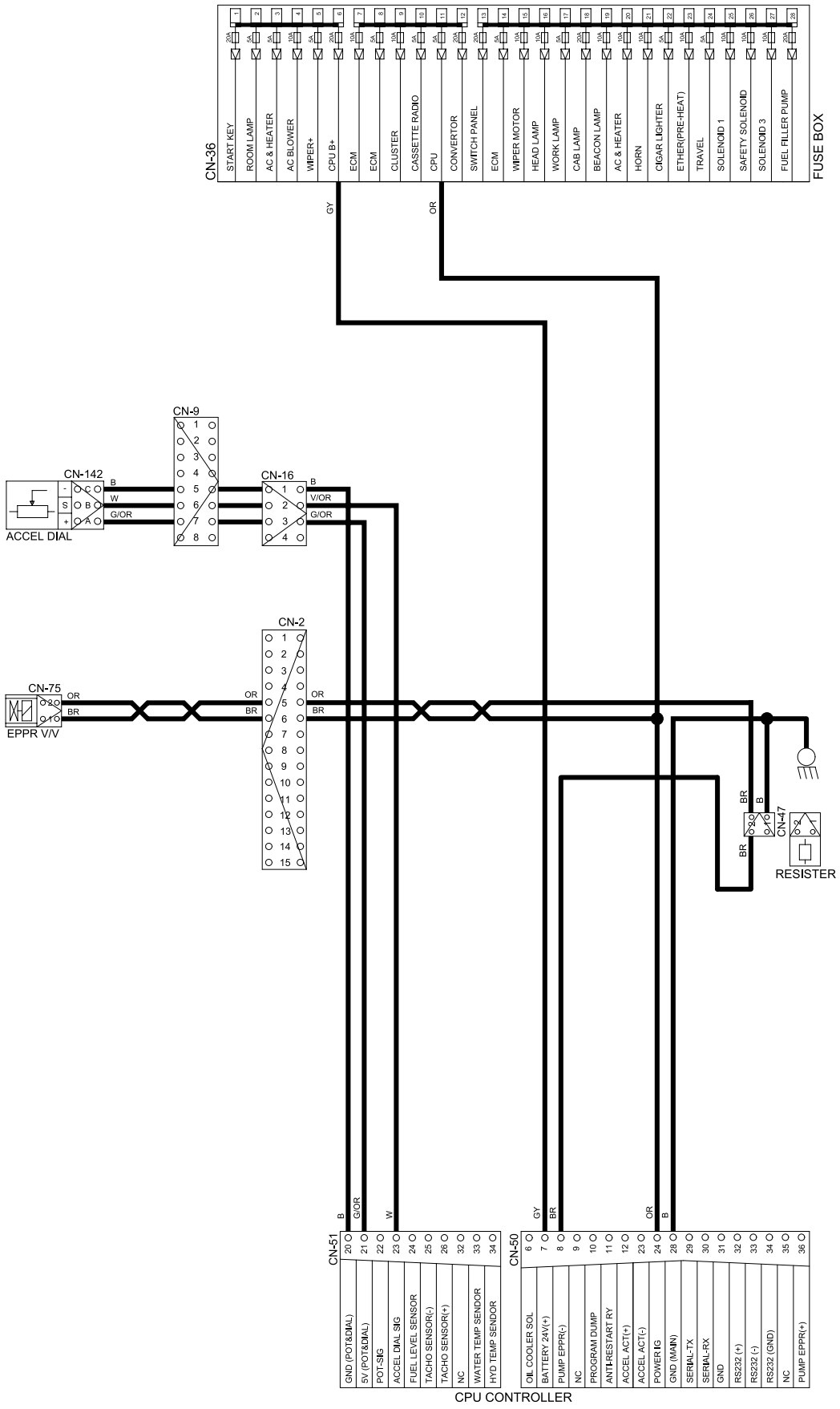
Engine	Start switch	Check point	Voltage
STOP	ON	① - GND(Fuse box) ② - GND(Switch power input)	24V
		③ - GND(Switch power output) ④ - GND(Wiper Power input)	0 ~ 5V
		⑤ - GND(Wiper power output) ⑥ - GND(Wiper motor)	0 or 24V

※ GND : Ground

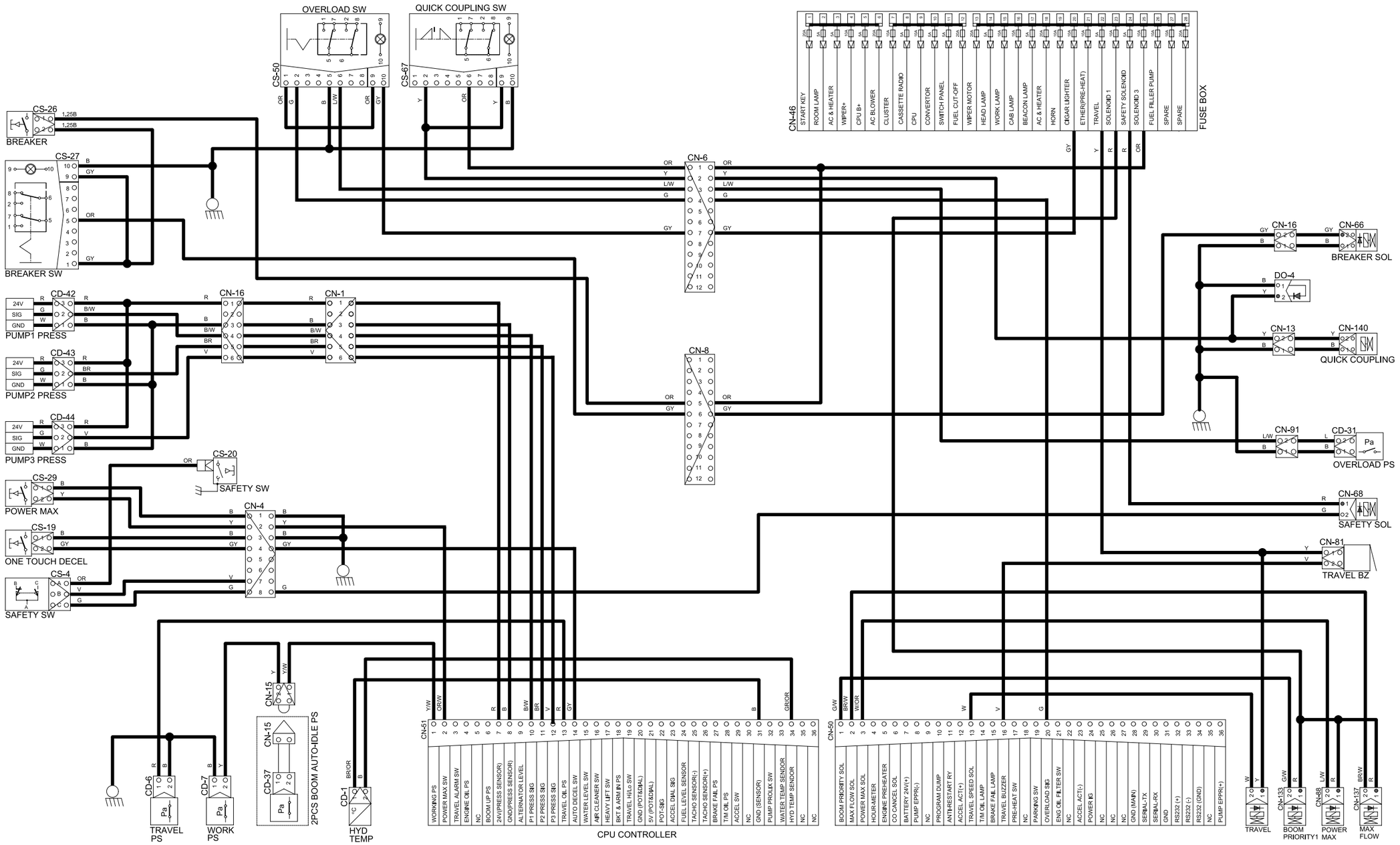
WIPER AND WASHER CIRCUIT (#0112 and up, TIER II)



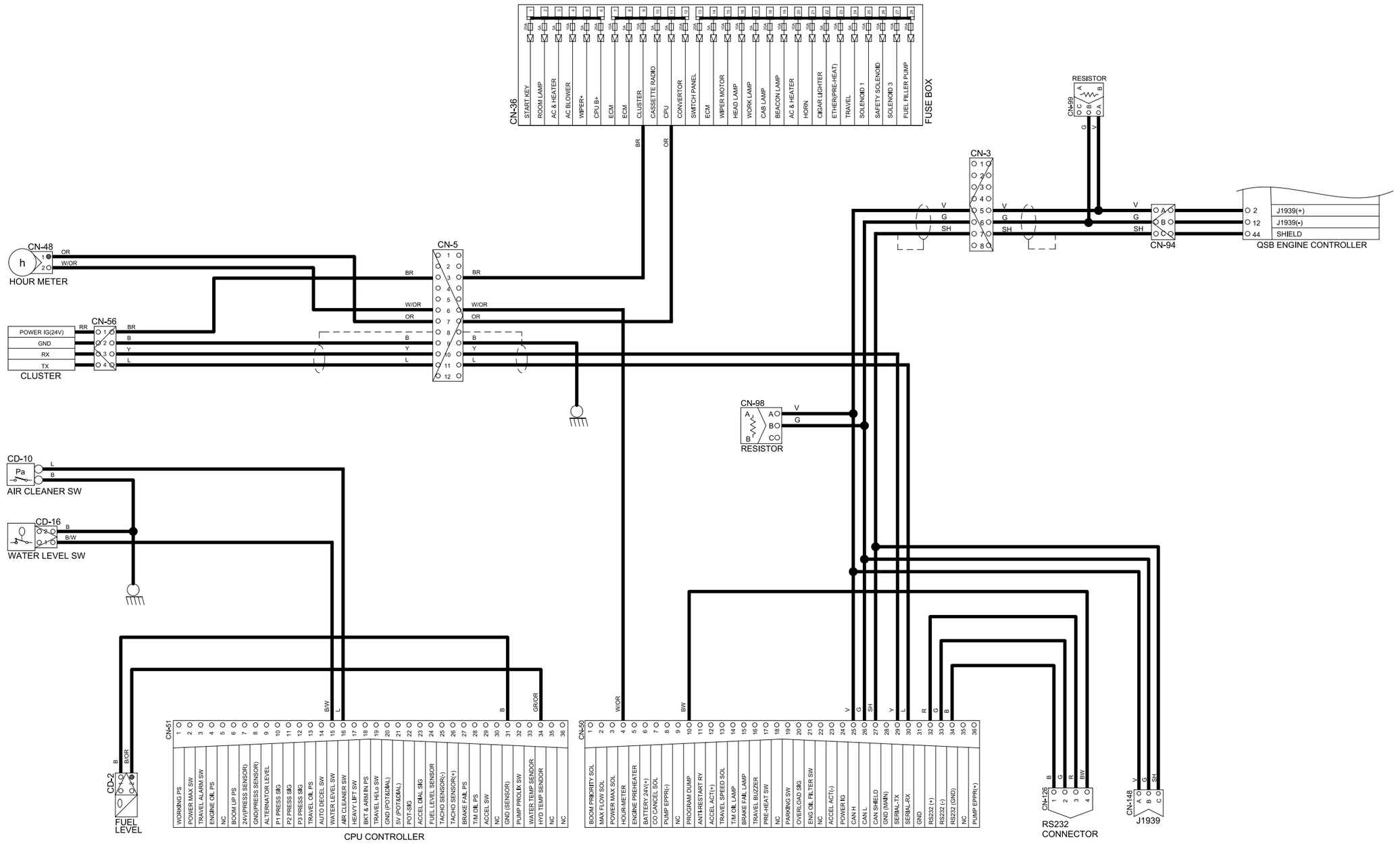
CONTROLLER CIRCUIT (#0112 and up, TIER II)



ELECTRIC CIRCUIT FOR HYDRAULIC (#0112 and up, TIER II)



MONITORING CIRCUIT (#0112 and up, TIER II)



7. CONNECTOR DESTINATION

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-1	Econoseal J	6	Pump pressure harness	S816-006002	S816-106002
CN-2	Econoseal J	15	I/conn(Engine harness 2-main harness)	2-85262-1	368301-1
CN-3	Econoseal J	8	I/conn(Engine harness 1-main harness)	S816-008002	S816-108002
CN-4	Econoseal J	8	I/conn(Wire harness LH-Frame harness)	S816-008002	S816-108002
CN-5	Econoseal J	15	I/conn(Side harness RH-Frame harness)	2-85262-1	368301-1
CN-6	Econoseal J	12	I/conn(Side harness RH-Frame harness)	S816-012002	S816-112002
CN-7	Econoseal J	15	I/conn(Wire harness RH-Frame harness)	2-85262-1	368301-1
CN-8	Econoseal J	12	I/conn(Wire harness RH-Frame harness)	S816-012002	S816-112002
CN-9	Econoseal J	8	I/conn(Wire harness RH-Frame harness)	S816-008002	S816-108002
CN-10	DEUTSCH	12	I/conn(Cab harness-Frame harness)	DT06-12S	DT04-12P
CN-11	DEUTSCH	8	Air-con harness	DT06-8S	DT04-8P
CN-12	DEUTSCH	2	Boom wire harness	DT06-2S	DT04-2P
CN-16	Econoseal J	4	Emergency connector	S816-004002	S816-104002
CN-16B	Econoseal J	4	Emergency connector	S816-004002	S816-104002
CN-17	DEUTSCH	8	I/conn (Side harness RH-Wiper motor harness)	DT06-8S	DT04-8P
CN-80	RING-TERM	-	Glow plug	S820-506000	-
CN-92	SWP	1	Emergency engine starting connector	S814-001001	S814-101001
CN-93	DRC	9	OEM port	DRC26-50S-05	-
CN-94	DEUTSCH	3	ECM	DT06-3S	DT04-3P
CN-95	HD 30	13	ENGINE	HD36-24-23SN	HD34-24-23PN
CN-96	Metri-pack	2	Fuel heater	15300027	15300002
CN-98	DEUTSCH	3	Resistor	DT06-3S	DT04-3P-EP10
CN-99	DEUTSCH	3	Resistor	DT06-3S	DT04-3P-EP10
CN-148	DEUTSCH	3	J 1939	DT06-3S	DT04-3P
· Switch					
CS-20	SHUR-PLUG	1	Safety switch	S822-013000	S822-113000
CS-26A	Econoseal J	2	Breaker pedal	S816-002002	S816-102002
· Sensor, sendor					
CD-45	Metri-pack	2	Water in fuel sensor	12040753	12066016