

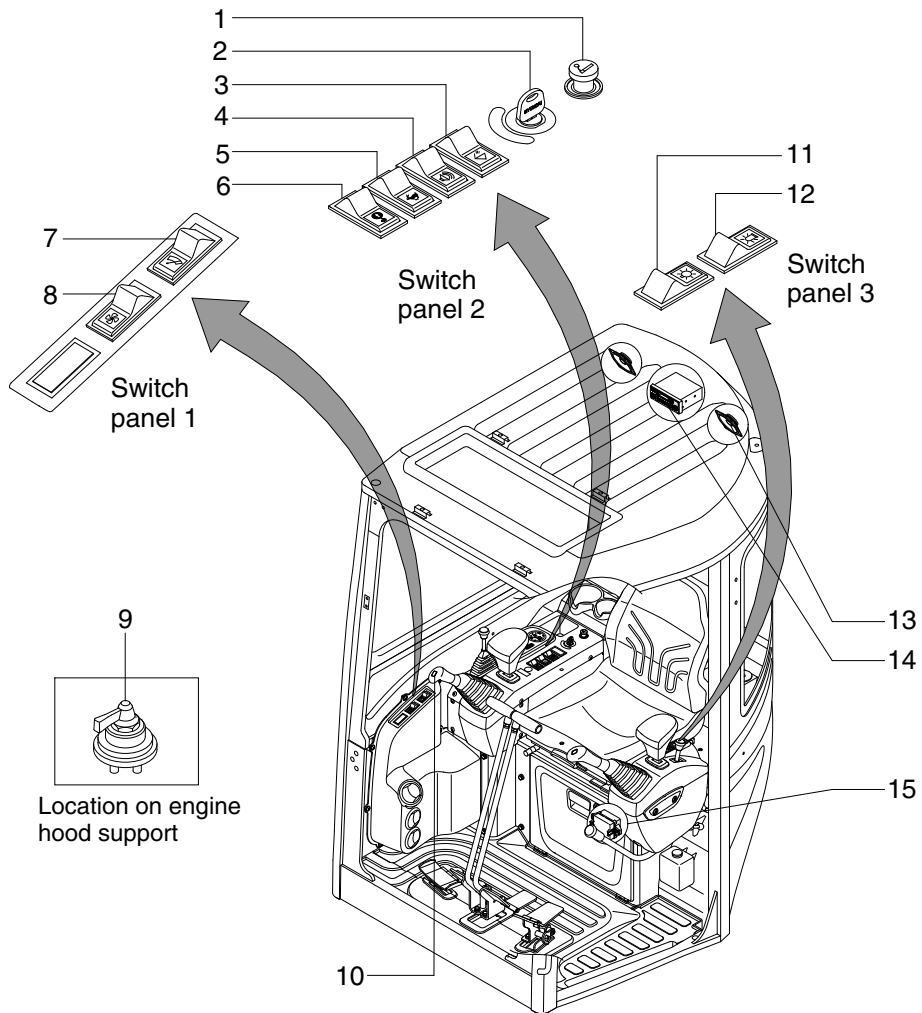
SECTION 4 ELECTRICAL SYSTEM

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SECTION 4 ELECTRICAL SYSTEM

GROUP 1 COMPONENT LOCATION

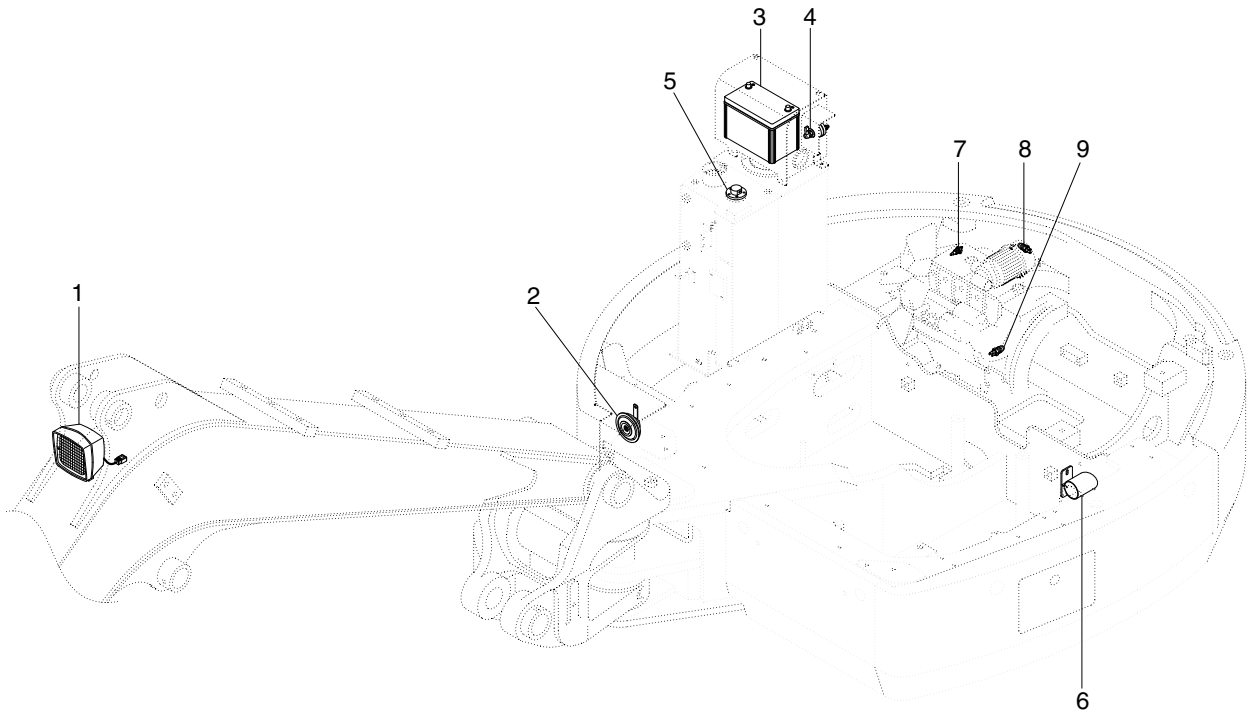
1. LOCATION 1



R25Z9A4EL02

- | | | |
|-------------------------------|-----------------------|-----------------------|
| 1 Cigar light | 6 Overload switch | 11 Main light switch |
| 2 Start switch | 7 Washer/wiper switch | 12 Beacon switch |
| 3 Quick clamp switch | 8 Heater switch | 13 Speaker |
| 4 Travel alarm switch | 9 Master switch | 14 Radio & USB player |
| 5 Travel speed control switch | 10 Horn switch | 15 Fuse box |

2. LOCATION 2



R27Z94EL20

1 Work lamp
2 Horn
3 Battery

4 Master switch
5 Fuel sender
6 Travel alarm buzzer

7 Water temperature sender
8 Air cleaner pressure switch
9 Engine oil pressure switch

GROUP 2 MONITORING SYSTEM

1. OUTLINE

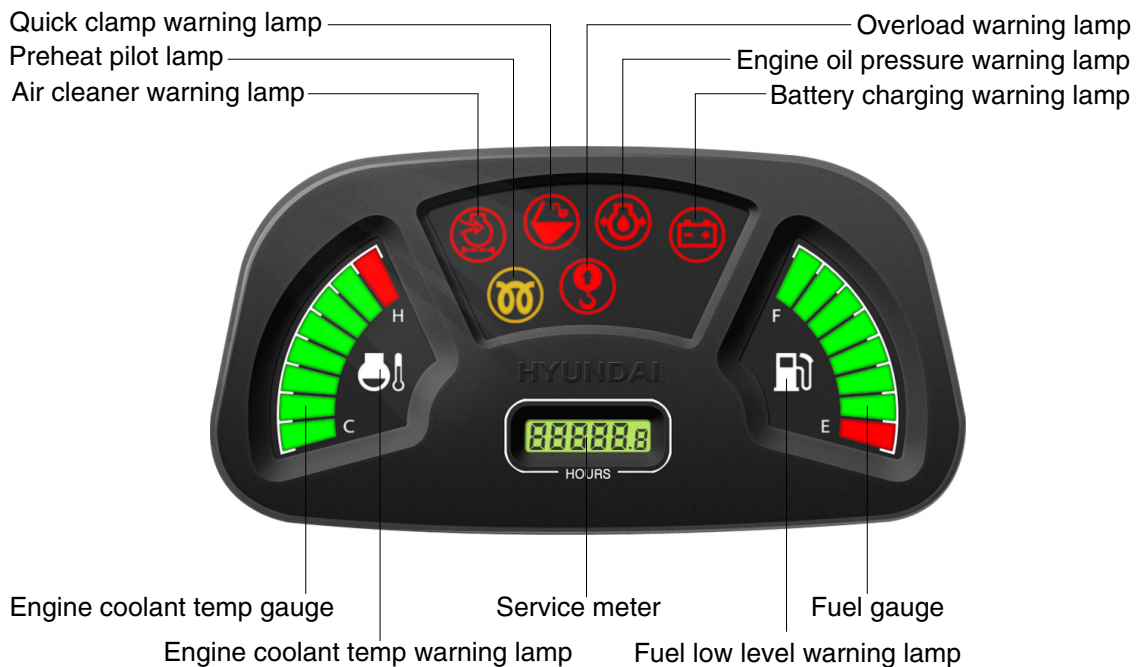
Monitoring system consists of the monitor part and switch part.

The monitor part gives warnings when any abnormality occurs in the machine and informs the condition of the machine.

Various select switches are built into the monitor panel, which act as the control portion of the machine control system.

2. CLUSTER (MACHINE SERIAL NO.: ~#0305)

1) MONITOR PANEL



R25Z9A3CD01

2) CLUSTER CHECK PROCEDURE

(1) Start key : ON

- ① Check monitor initial 6 seconds
 - a. All lamps light up.
- ② Check monitor after 2 seconds : Indicate machine condition
 - a. Tachometer : 0 rpm
 - b. Fuel gauge : Pointed at appropriate level
 - c. Engine coolant temperature gauge : Pointed at appropriate level
 - d. Warning lamp

※ **During start key ON the engine oil pressure lamp and battery charging lamp go on, but it is not abnormal.**

(2) Start of engine

- ① Check machine condition
 - a. Tachometer pointed at present rpm
 - b. Gauge and warning lamp : Indicate at present condition.

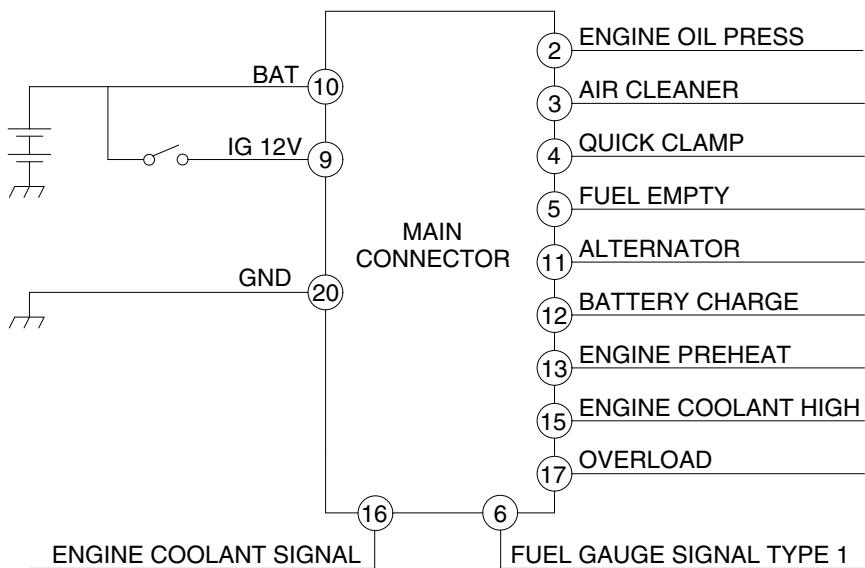
※ When normal condition : All warning lamp OFF
- ② When abnormal condition
 - a. The lamp lights up.
 - b. The lamp light up until normal condition.

3) CLUSTER CONNECTOR

1) CONNECTOR

CN-56	
RESERVED	1 ○
ENG OIL PS	2 ○
AIR CEANER	3 ○
QUICK COUPLER	4 ○
FUEL EMPTY	5 ○
FUEL LEVEL SIG 1	6 ○
FUEL LEVEL SIG 2	7 ○
FUEL LEVEL POW	8 ○
IG 12V	9 ○
BATT.12V	10 ○
ALT LEVEL	11 ○
BATT. CHARGE	12 ○
PREHEAT INPUT	13 ○
RESERVED	14 ○
OVERHEAT	15 ○
WATER TEMP SIG	16 ○
OVER LOAD SIG	17 ○
RESERVED	18 ○
RESERVED	19 ○
GND	20 ○

2) CLUSTER DETAIL



4) CLUSTER FUNCTION

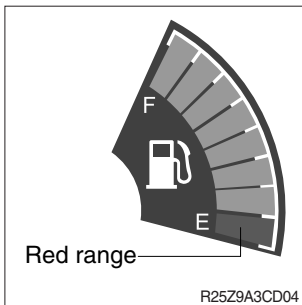
1) GAUGES AND DISPLAYS



(1) Service meter



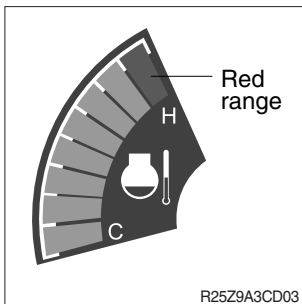
- ① This meter shows the total operation hours of the machine.
- ② Always ensure the operating condition of the meter during the machine operation.
Inspect and service the machine based on hours as indicated in chapter 6, maintenance.


(2) Fuel gauge



- ① This gauge indicates the amount of fuel in the fuel tank.
- ② Fill the fuel when the red range or warning lamp  ON.
* If the gauge illuminates the red range or warning lamp  ON even though the machine is on the normal condition, check the electric device as that can be caused by the poor connection of electricity or sensor.

(3) Engine coolant temperature gauge



- ① This indicates the temperature of coolant.
· Red range : Above 110°C (230°F)
- ② When the red range pointed or warning lamp  ON, engine do not abruptly stop but run it at medium speed to allow it to cool gradually, then stop it.
Check the radiator and engine.
* If the engine is stopped without cooled down running, the temperature of engine parts will rise suddenly, this could cause severe engine trouble.

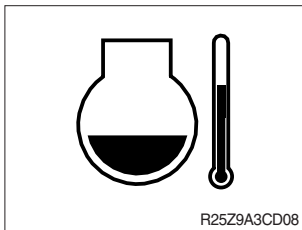
2) WARNING AND PILOT LAMPS

(1) Fuel low level warning lamp



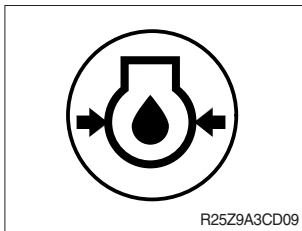
- ① This lamp blinks when the level of fuel is low.
- ② Fill the fuel immediately when the lamp blinks.

(2) Engine coolant temperature warning lamp



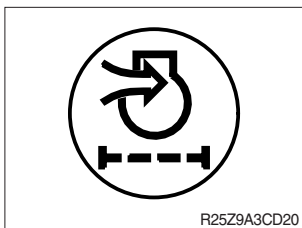
- ① This lamp blinks when the temperature of coolant is over the normal temperature 110°C (230°F) .
- ② Check the cooling system when the lamp blinks.

(3) Engine oil pressure warning lamp



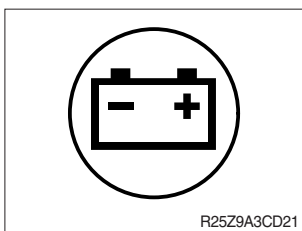
- ① This lamp blinks after starting the engine because of the low oil pressure.
- ② If the lamp blinks during engine operation, shut OFF engine immediately. Check oil level.

(4) Air cleaner warning lamp



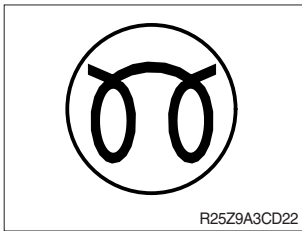
- ① This lamp blinks when the filter of air cleaner is clogged.
- ② Check the filter and clean or replace it.

(5) Battery charging warning lamp



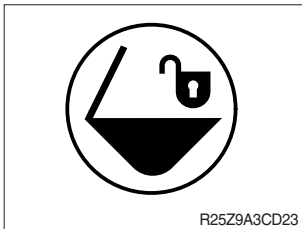
- ① This lamp blinks when the starting switch is ON, it is turned OFF after starting the engine.
- ② Check the battery charging circuit when this lamp blinks during engine operation.

(6) Preheat pilot lamp



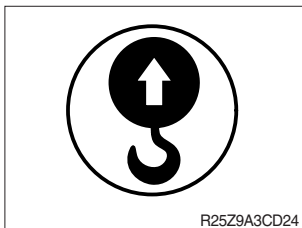
- ① This lamp lights ON when start switch is turned clockwise to the ON position.
- ② When the lamp goes out the operator should start cranking the engine

(7) Quick clamp warning lamp



- ① When the quick clamp switch turned ON, this lamp turn ON and the buzzer sounds.
- ② This lamp turned OFF and the buzzer stop when the quick clamp switch turned OFF.

(8) Overload warning lamp



- ① When the machine is overload, this lamp blinks during the overload switch is ON.
- ② Reduce the machine load.

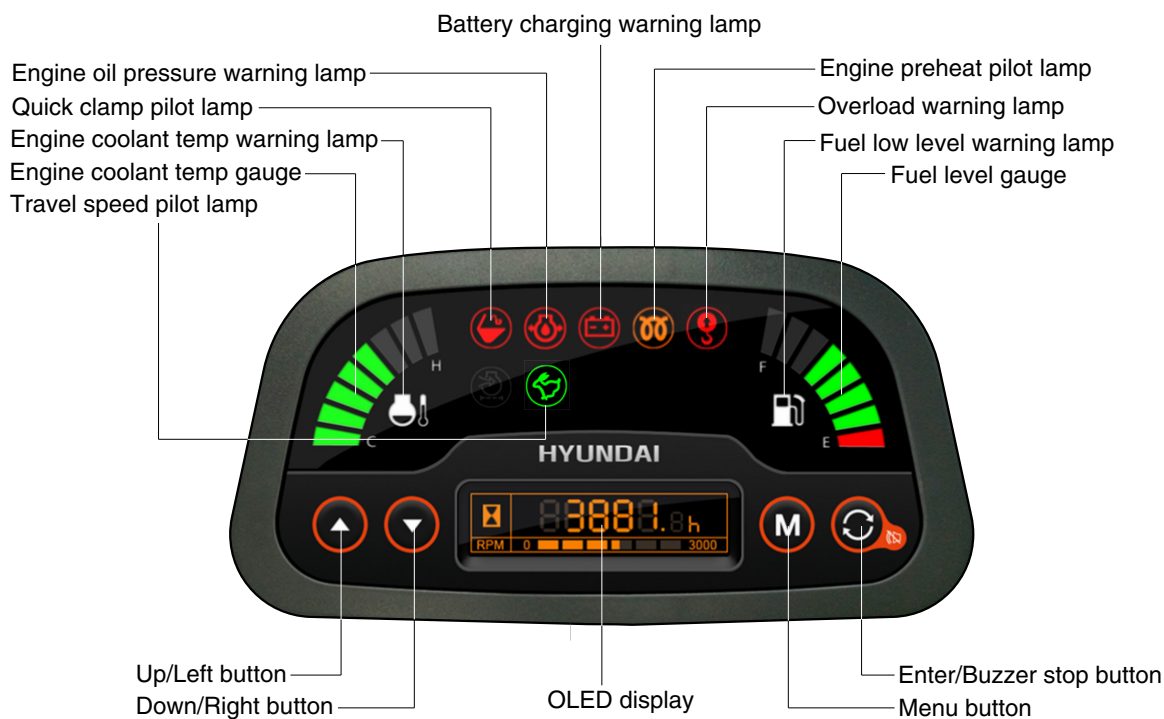
CLUSTER (MACHINE SERIAL NO.: #0306~)

The cluster consists of gauges and lamps as shown below, to warn the operator in case of abnormal machine operation or conditions for the appropriate operation and inspection.

- Gauges : Indicate operating status of the machine.
- Warning lamp : Indicate abnormality of the machine (red).
- Pilot lamp : Indicate operating status of the machine.

※ The cluster installed on this machine does not entirely guarantee the condition of the machine. Daily inspection should be performed according to chapter 6, Maintenance.

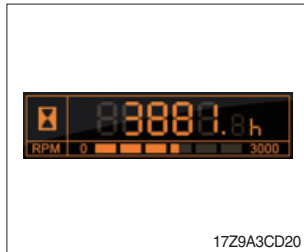
※ When the cluster provides a warning, immediately check the problem and perform the required action.



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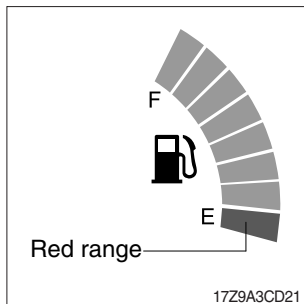
1) GAUGES AND DISPLAYS



(1) Service meter



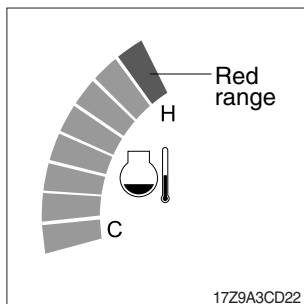
- ① This meter shows the total operation hours of the machine.
- ② Always ensure the operating condition of the meter during the machine operation.
Inspect and service the machine based on hours as indicated in chapter 6, maintenance.


(2) Fuel gauge



- ① This gauge indicates the amount of fuel in the fuel tank.
- ② Fill the fuel when the red range or warning lamp  ON.
* **If the gauge illuminates the red range or warning lamp  ON even though the machine is on the normal condition, check the electric device as that can be caused by the poor connection of electricity or sensor.**

(3) Engine coolant temperature gauge



- ① This indicates the temperature of coolant.
· Red range : Above 115°C (239°F)
- ② When the red range pointed or warning lamp  ON, engine do not abruptly stop but run it at medium speed to allow it to cool gradually, then stop it.
Check the radiator and engine.
* **If the engine is stopped without cooled down running, the temperature of engine parts will rise suddenly, this could cause severe engine trouble.**

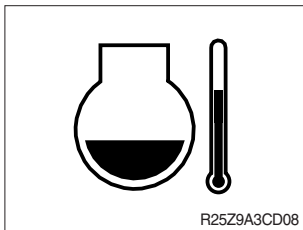
2) WARNING AND PILOT LAMPS

(1) Fuel low level warning lamp



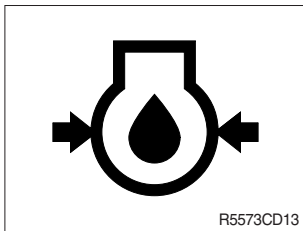
- ① This lamp blinks and buzzer sounds when the level of fuel is low.
- ② Fill the fuel immediately when the lamp blinks.

(2) Engine coolant temperature warning lamp



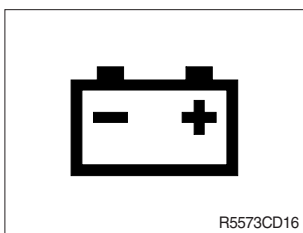
- ① This lamp blinks and buzzer sounds when the temperature of coolant is over the normal temperature 115°C (239°F) .
- ② Check the cooling system when the lamp blinks.

(3) Engine oil pressure warning lamp



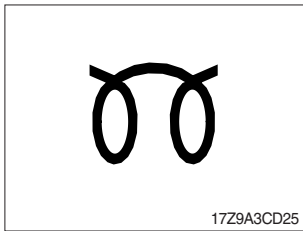
- ① This lamp blinks and buzzer sounds after starting the engine because of the low oil pressure.
- ② If the lamp blinks during engine operation, shut OFF engine immediately. Check oil level.

(4) Battery charging warning lamp



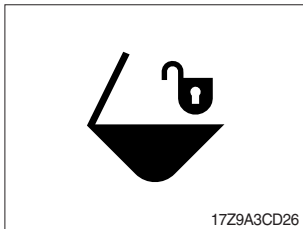
- ① This lamp blinks and buzzer sounds when the starting switch is ON, it is turned OFF after starting the engine.
- ② Check the battery charging circuit when this lamp blinks during engine operation.

(5) Engine preheat pilot lamp



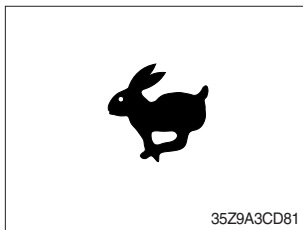
- ① When the start switch turn to HEAT position, pilot lamp comes ON.
- ② Refer to the page 4-4 for details.

(6) Quick clamp lock pilot lamp



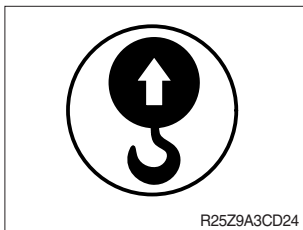
- ① When the quick clamp switch turned ON, this lamp turn ON and the buzzer sounds.
- ② This lamp turned OFF and the buzzer stop when the quick clamp switch turned OFF.

(7) Travel speed pilot lamp



- ① When this lamp turned ON, the machine travel high speed.
- ② Refer to the travel speed control switch in page 3-9 for details.

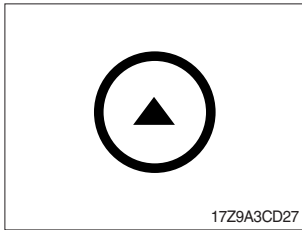
(8) Overload warning lamp



- ① When the machine is overload, this lamp blinks during the overload switch is ON.
- ② Reduce the machine load.

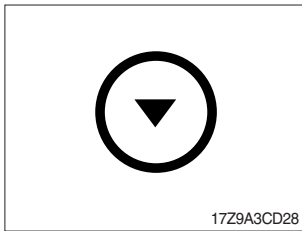
3) BUTTONS

(1) Up/left button



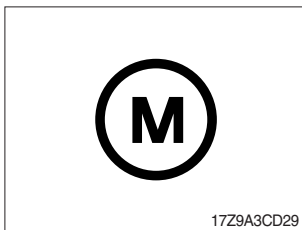
- ① Move in menu (up, left)
- ② Increase input value.

(2) Down/right button



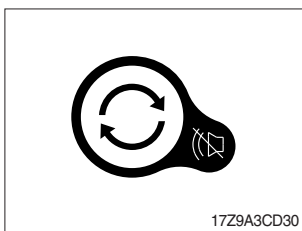
- ① Move in menu (down, right)
- ② Decrease input value.

(3) Menu button



- ① Current display to next display.

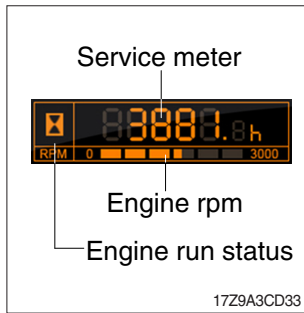
(4) Enter and buzzer stop button



- ① Select menu (enter).
- ② Stop buzzer sound when sound is ON.

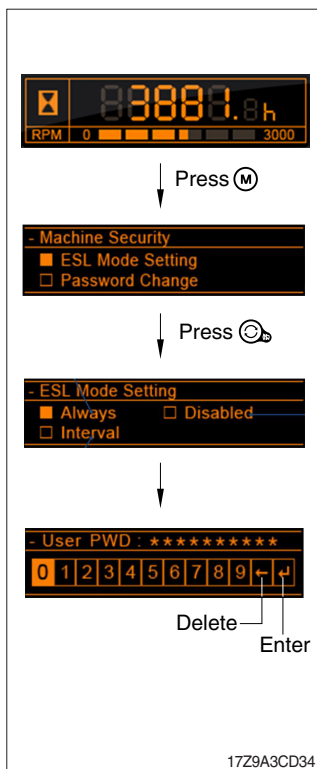
4) OLED display

(1) Main display



- ① **Service meter** : This meter shows the total operation hours of the machine.
- ※ **Always ensure the operating condition of the service meter during the machine operation.**
- ② **Engine rpm** : This displays the engine speed.
- ③ **Engine run status** : This displays the engine run status.

(2) Machine security



① ESL (Engine Starting Limit) mode setting

- ESL mode is designed to be a theft deterrent or will prevent the unauthorized operation of the machine.
- If the ESL mode was selected Always, the password will be required when the start switch is turned ON.
- Disable : Not used ESL function.

Always: The password is required whenever the operator start engine.

Interval : The password is required when the operator start engine first. But the operator can restart the engine within the interval time without inputting the password.

The interval time can be set maximum 2 days.

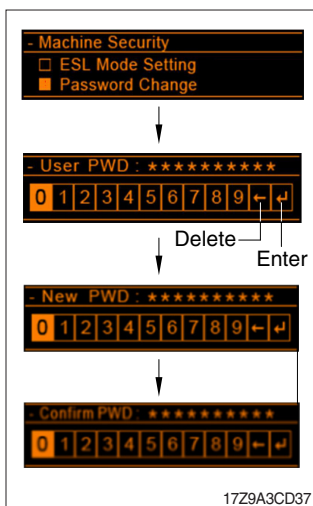
· Interval time

- If set interval time to 5 minutes, ESL system is activated after 5 minutes. Therefore, the password does not need to restart engine within 5 minutes.

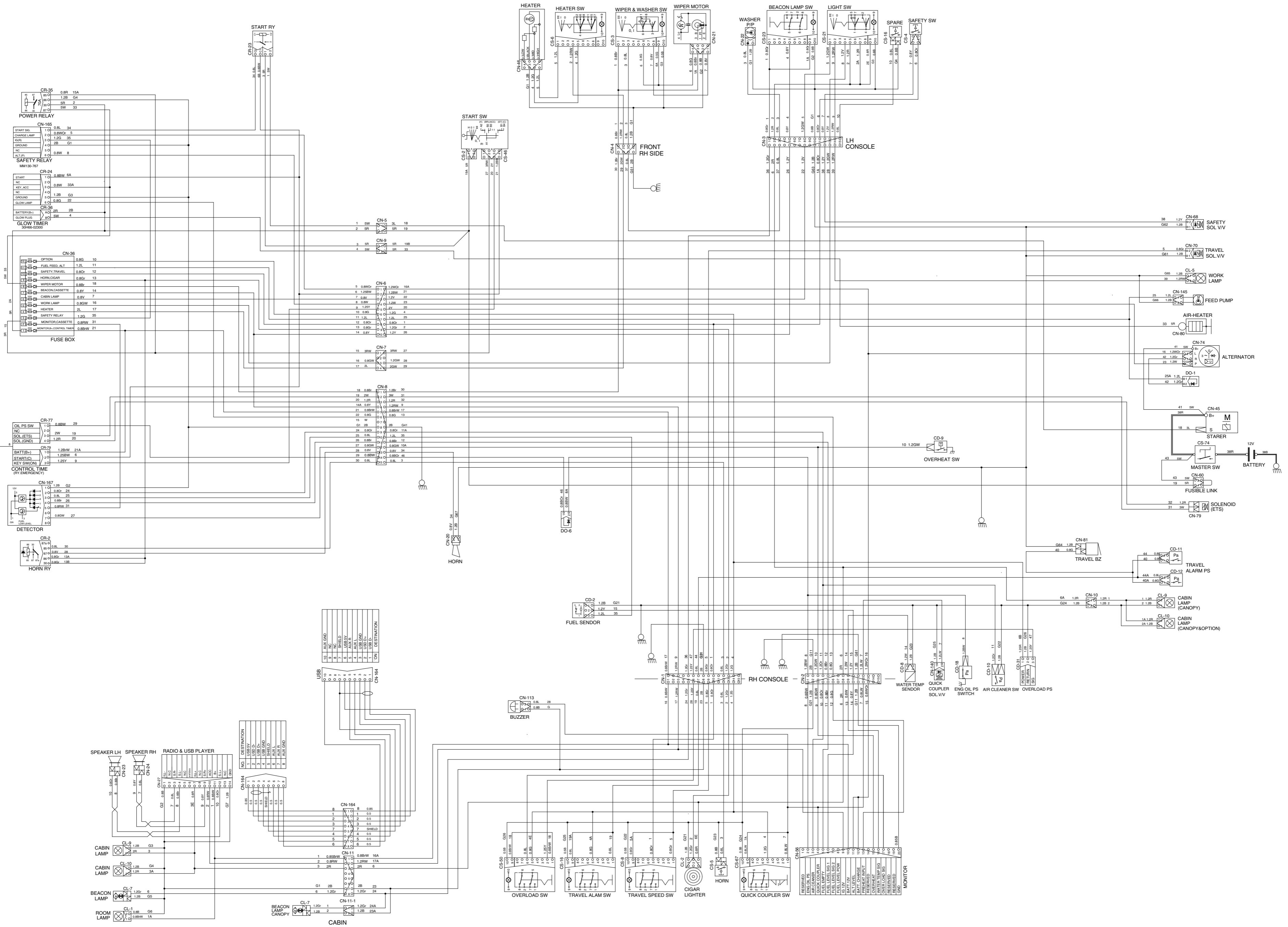
※ **Default password : 00000**

② Password change

- Input 5 to 10 digits and press Enter.



GROUP 3 ELECTRICAL CIRCUIT



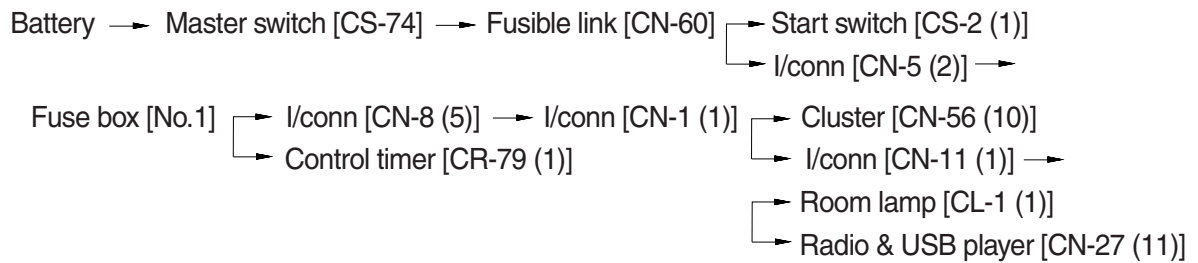


1. POWER CIRCUIT

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

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

1) OPERATING FLOW



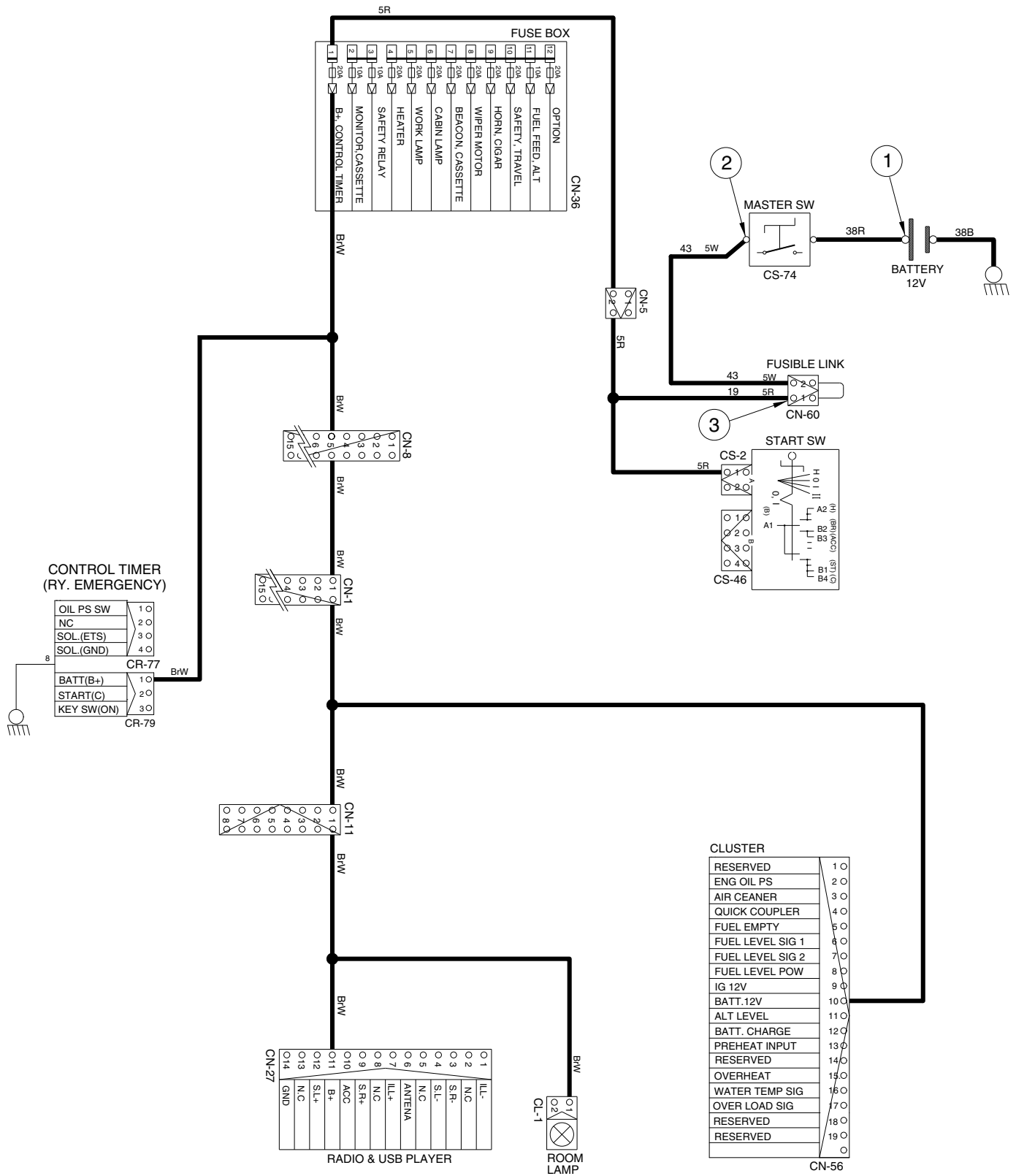
※ I/conn : Intermediate connector

2) CHECK POINT

Engine	Start switch	Check point	Voltage
OFF	OFF	① - GND (Battery) ② - GND (Master switch) ③ - GND (Fusible link)	10~12.5 V

※ GND : Ground

POWER CIRCUIT

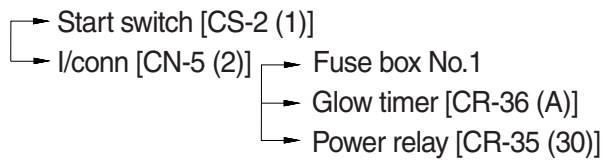


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2. STARTING CIRCUIT

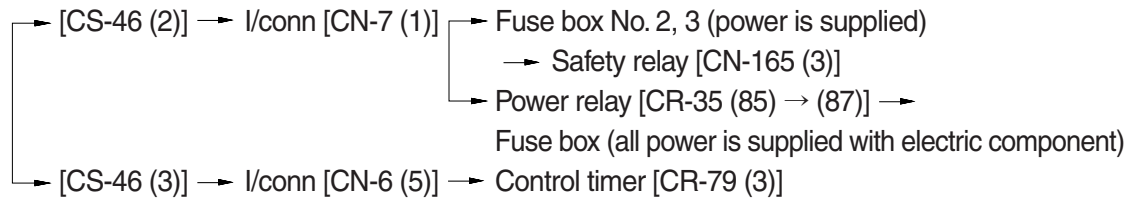
1) OPERATING FLOW

Battery(+) terminal → Master switch [CS-74] → Fusible link [CN-60]



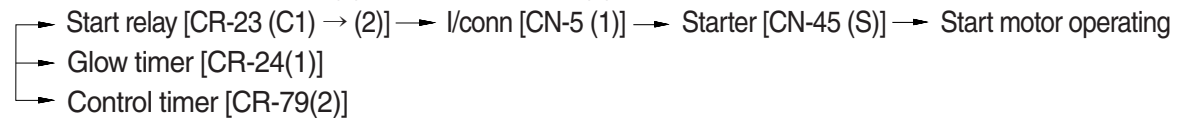
※ Start switch : ON

Start switch ON



※ Start switch : START

Start switch START [CS-46 (4)] → I/conn [CN-6 (2)]

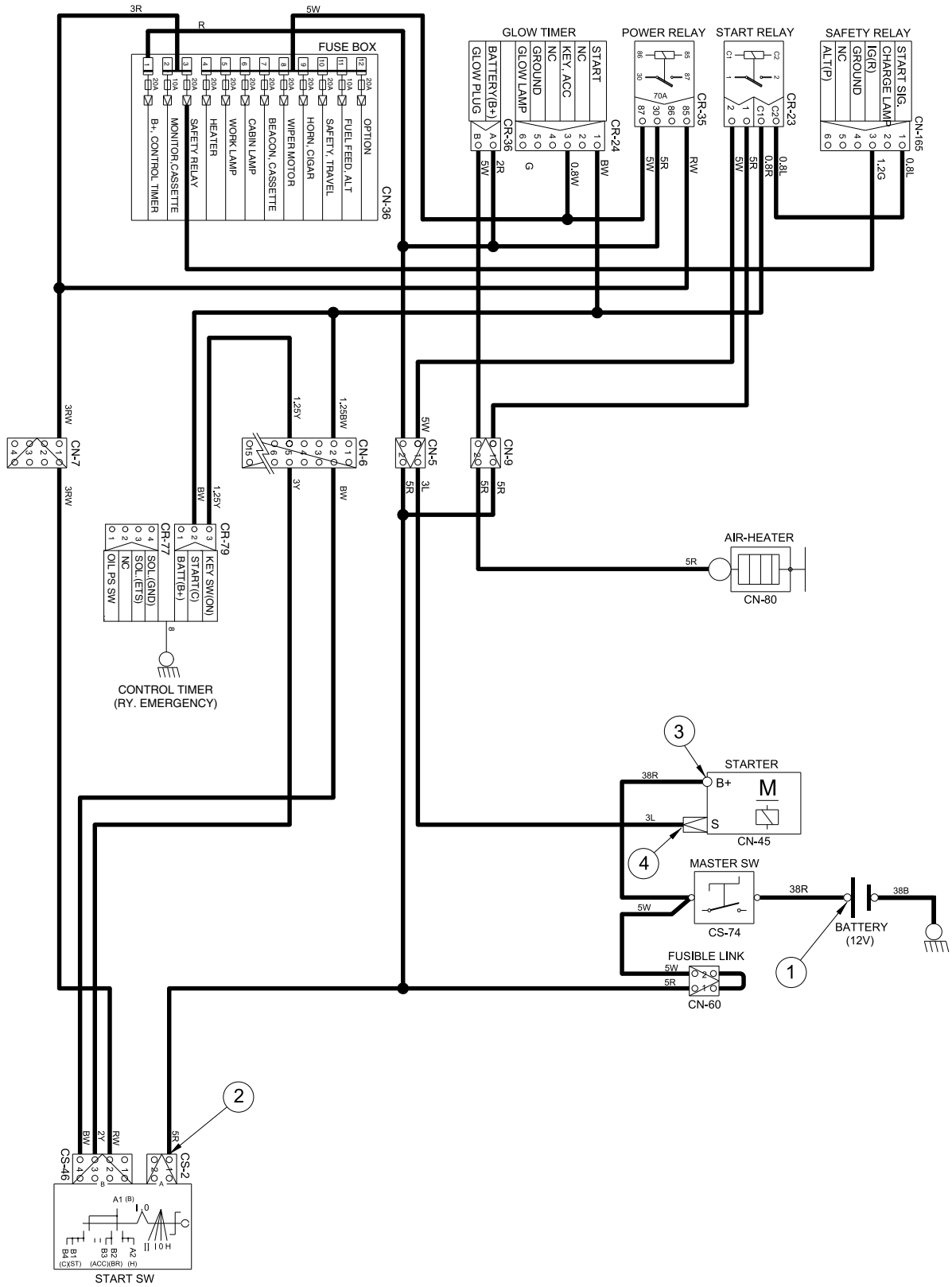


2) CHECK POINT

Engine	Start switch	Check point	Voltage
Operating	Start	① - GND (Battery) ② - GND (Start switch) ③ - GND (Starter B ⁺) ④ - GND (Starter M)	10~12.5 V

※ GND : Ground

STARTING CIRCUIT



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.

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-2 (13)] → Cluster [CN-56 (3)] → Cluster warning lamp ON

(2) Charging flow

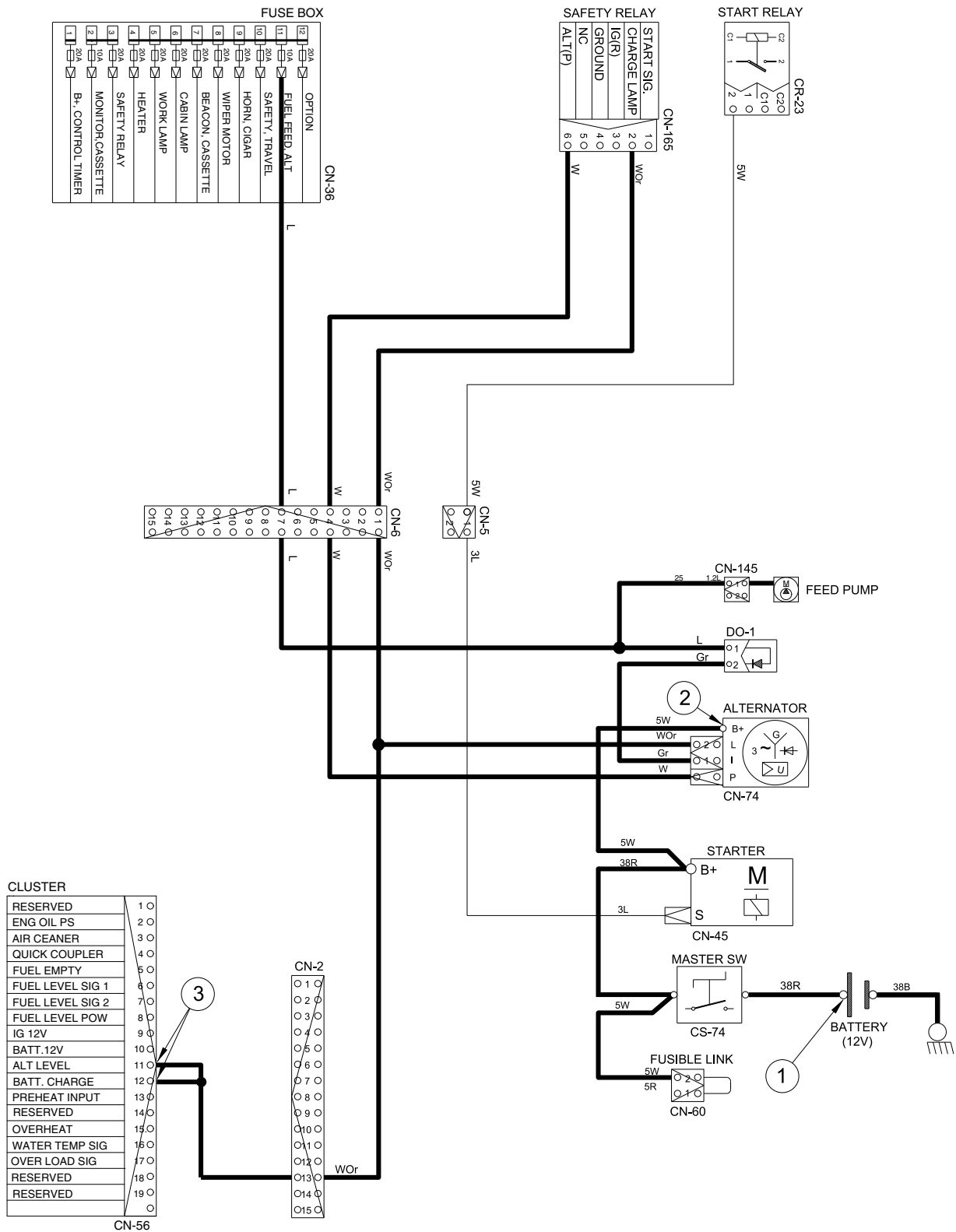
Alternator "B+" terminal → Battery(+) terminal

2) CHECK POINT

Engine	Start switch	Check point	Voltage
ON	ON	① - GND (Battery voltage) ② - GND (Alternator B ⁺ terminal) ③ - GND (Cluster)	10~12.5 V

※ GND : Ground

CHARGING CIRCUIT



R25Z9A4EL06

4. HEAD AND WORK LIGHT CIRCUIT

1) OPERATING FLOW

Fuse box (No.6) → Light switch [CS-21 (1)]

Fuse box (No.5) → Light switch [CS-21 (4)]

(1) Main light switch ON : 1st step

Cabin light switch ON [CS-21 (5,7)] → I/conn [CN-3 (2)] → I/conn [CN-2 (8)]

└─ Cigar light illumination ON [CL-2]

└─ I/conn [CN-11 (3)] └─ Cabin Lamp ON [CL-9,10 (2)]

└─ Radio & USB player illumination ON [CN-27 (7)]

(2) Main light switch ON : 2nd step

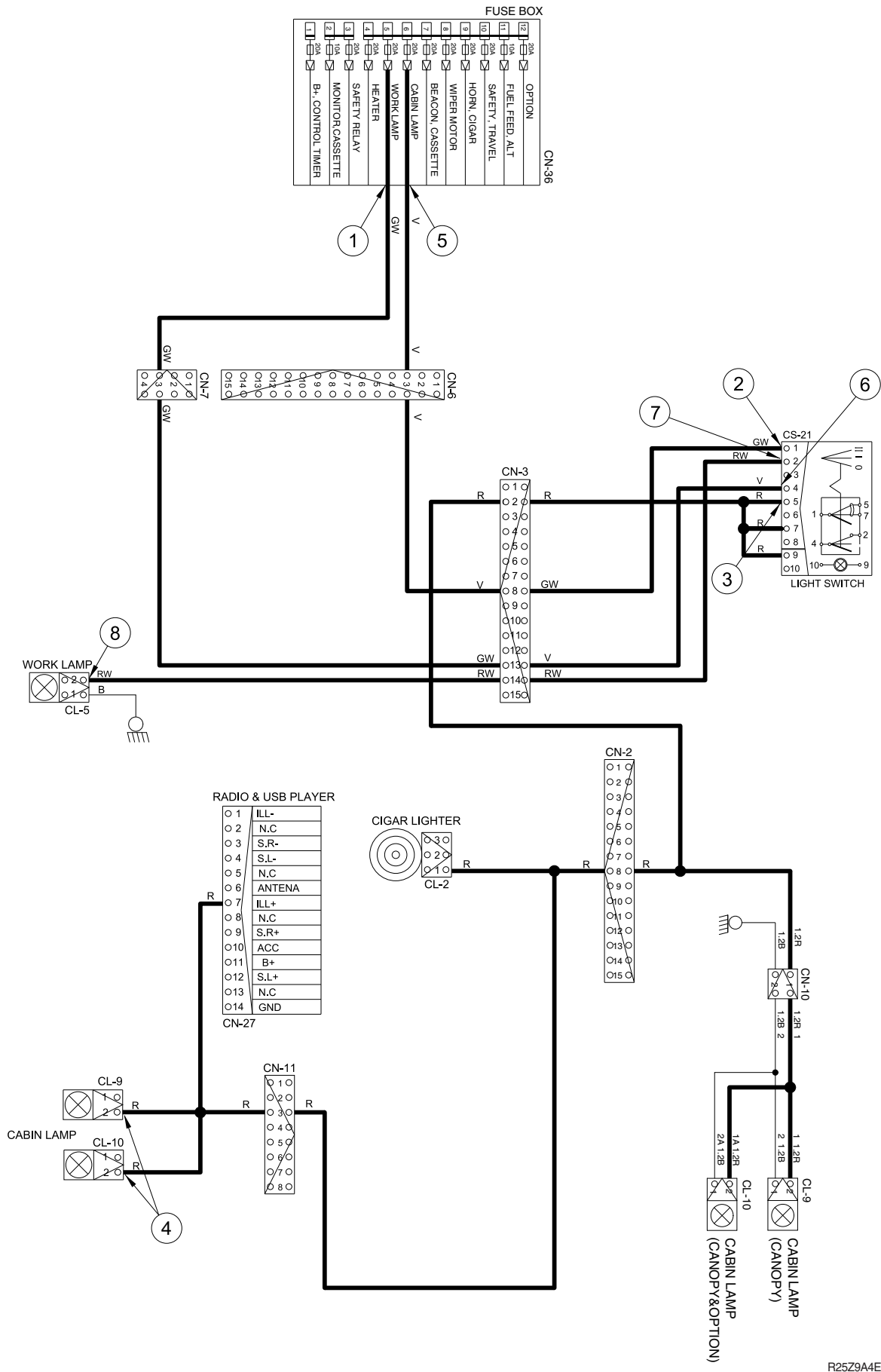
Work light switch ON [CS-21 (2)] → I/conn [CN-3 (14)] → Work light ON [CL-5 (2)]

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) ⑤ - GND (Fuse box) ⑥ - GND (Switch power input) ⑦ - GND (Switch power output) ⑧ - GND (Work light)	10~12.5 V

※ GND : Ground

HEAD AND WORK LAMP CIRCUIT



R25Z9A4EL07

5. BEACON LAMP CIRCUIT

1) OPERATING FLOW

Fuse box (No.7) → I/conn [CN-6 (10)] → I/conn [CN-3 (5)] → Beacon lamp switch [CS-23 (5)]

(1) Beacon lamp switch ON

Beacon lamp switch ON [CS-23 (1)]

→ Switch Indicator lamp ON [CS-23 (9)]

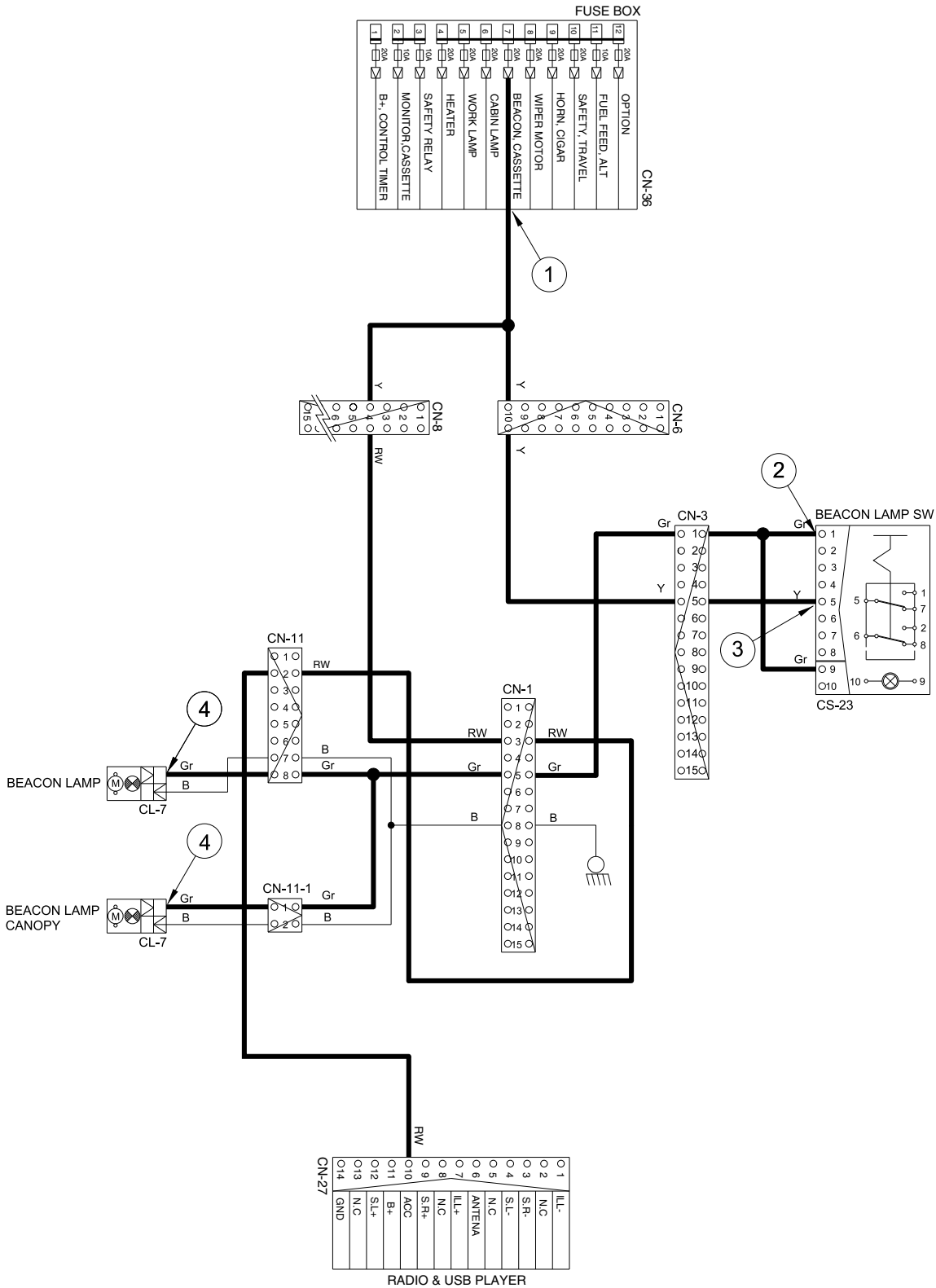
→ I/conn [CN-3 (1)] → I/conn [CN-1 (5)] → I/conn [CN-11 (8)] → Beacon lamp ON [CL-7]

2) CHECK POINT

Engine	Start switch	Check point	Voltage
STOP	ON	① - GND (Fuse box) ② - GND (Switch power output) ③ - GND (Switch power input) ④ - GND (Beacon lamp)	10~12.5 V

※ GND : Ground

BEACON LAMP CIRCUIT



R25Z9A4EL08

6. WIPER AND WASHER CIRCUIT

1) OPERATING FLOW

(1) Start switch ON

Fuse box (No.8) → I/conn [CN-8 (1)] → I/conn [CN-4 (1)]

└─ Wiper and washer switch [CS-3 (1)]

└─ Wiper motor [CN-21 (3)]

(2) Wipe switch ON : 1st step (low speed)

Wiper switch ON [CS-3 (6)] └─ Wiper motor operating [CN-21 (4)]

└─ Wiper & washer switch lamp ON [CS-3 (9)]

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

Wiper switch ON [CS-3 (6)] → Wiper motor operating [CN-21 (4)]

Wiper switch ON [CS-3 (3)] → I/conn [CN-4 (3)] → I/conn [CN-3 (3)]

→ Washer pump operating [CN-22 (2)]

(4) Auto parking (when switch OFF)

Switch OFF → Wiper motor [CN-21 (1)] → Wiper switch [CS-3 (8) → (6)]

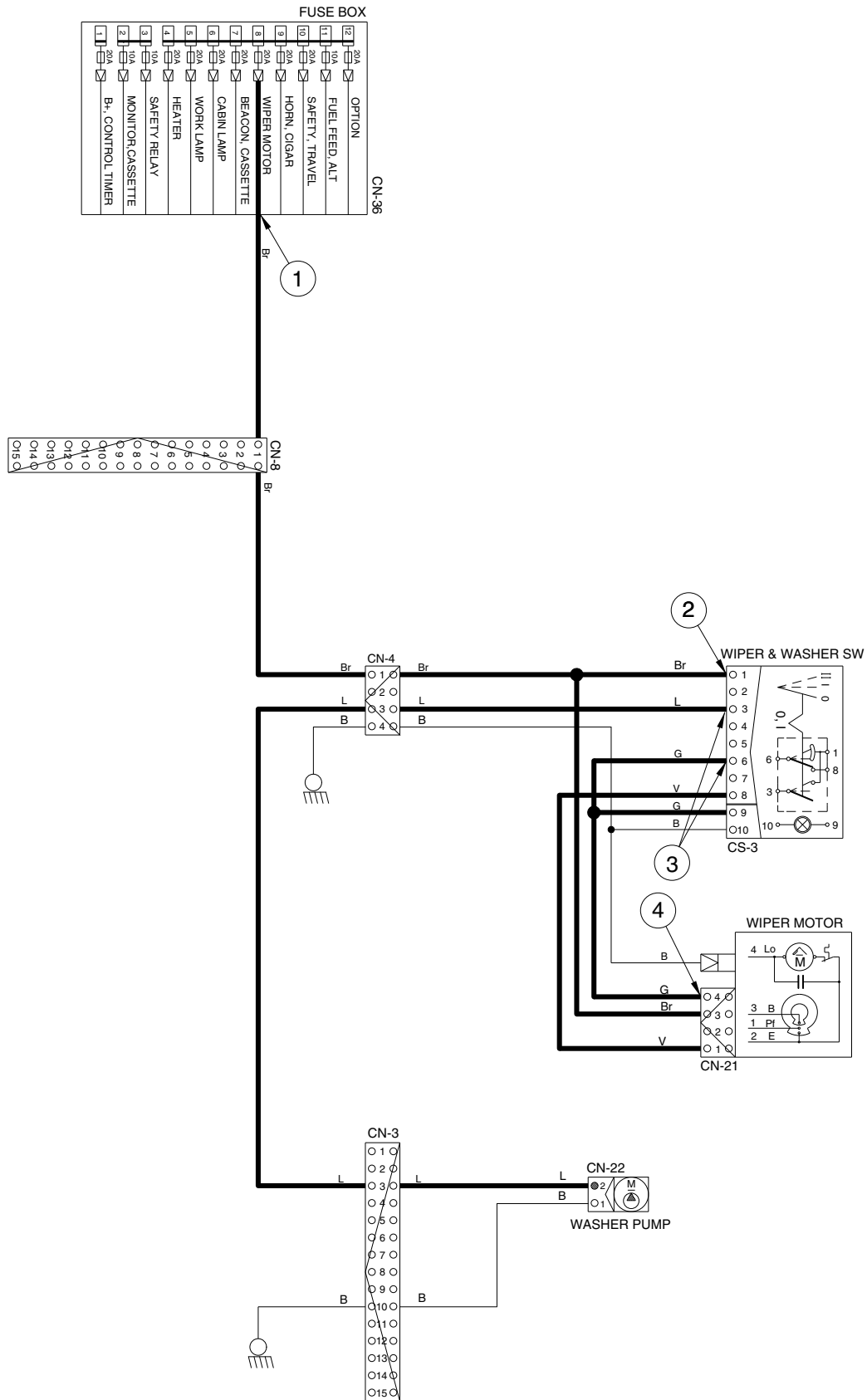
→ Wiper motor [CN-21 (4)] → Wiper motor parking position by wiper motor controller

2) CHECK POINT

Engine	Start switch	Check point	Voltage
STOP	ON	① - GND (Fuse box) ② - GND (Switch power input) ③ - GND (Switch power output) ④ - GND (Wiper motor)	10~12.5 V

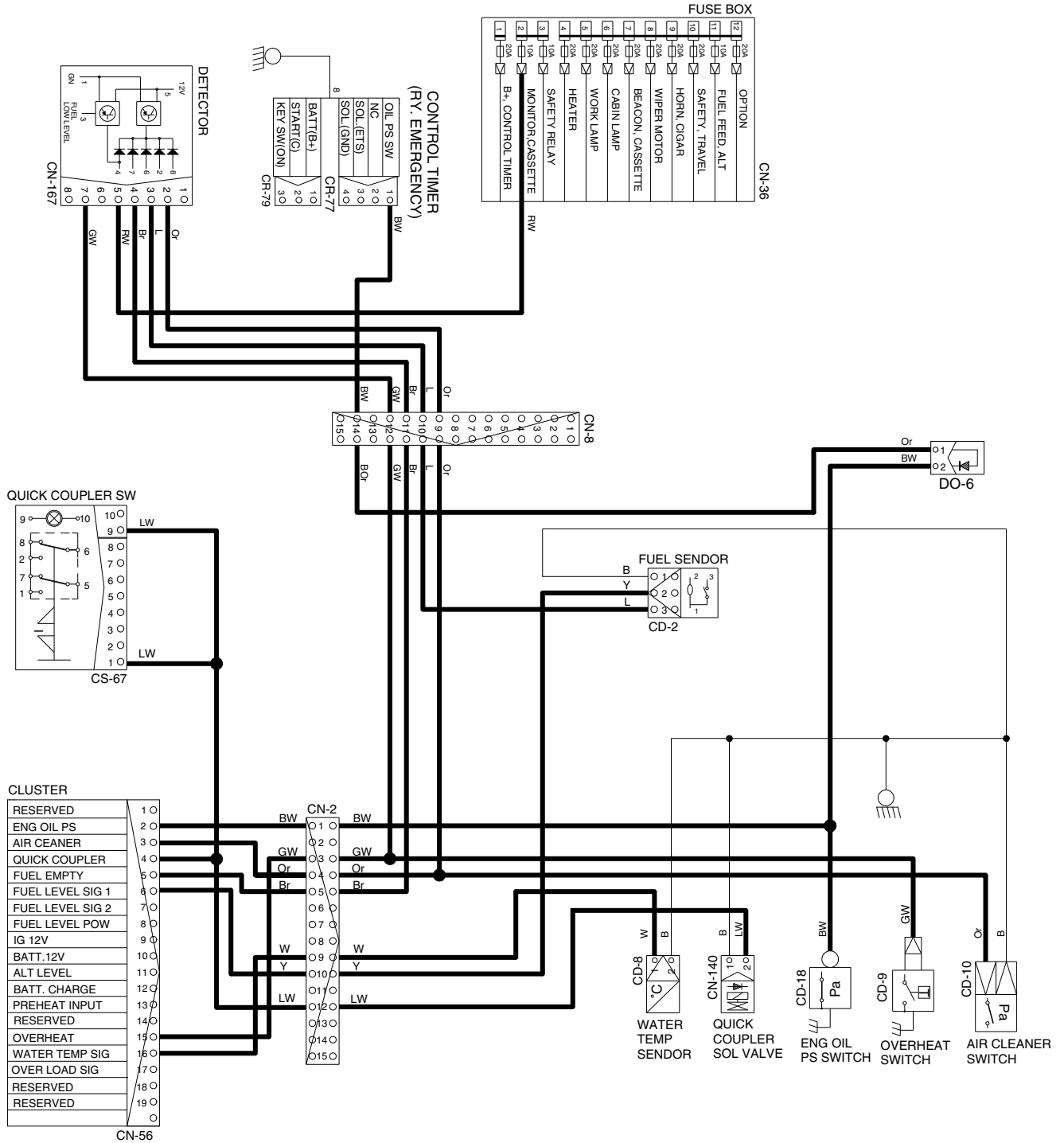
※ GND : Ground

WIPER AND WASHER CIRCUIT



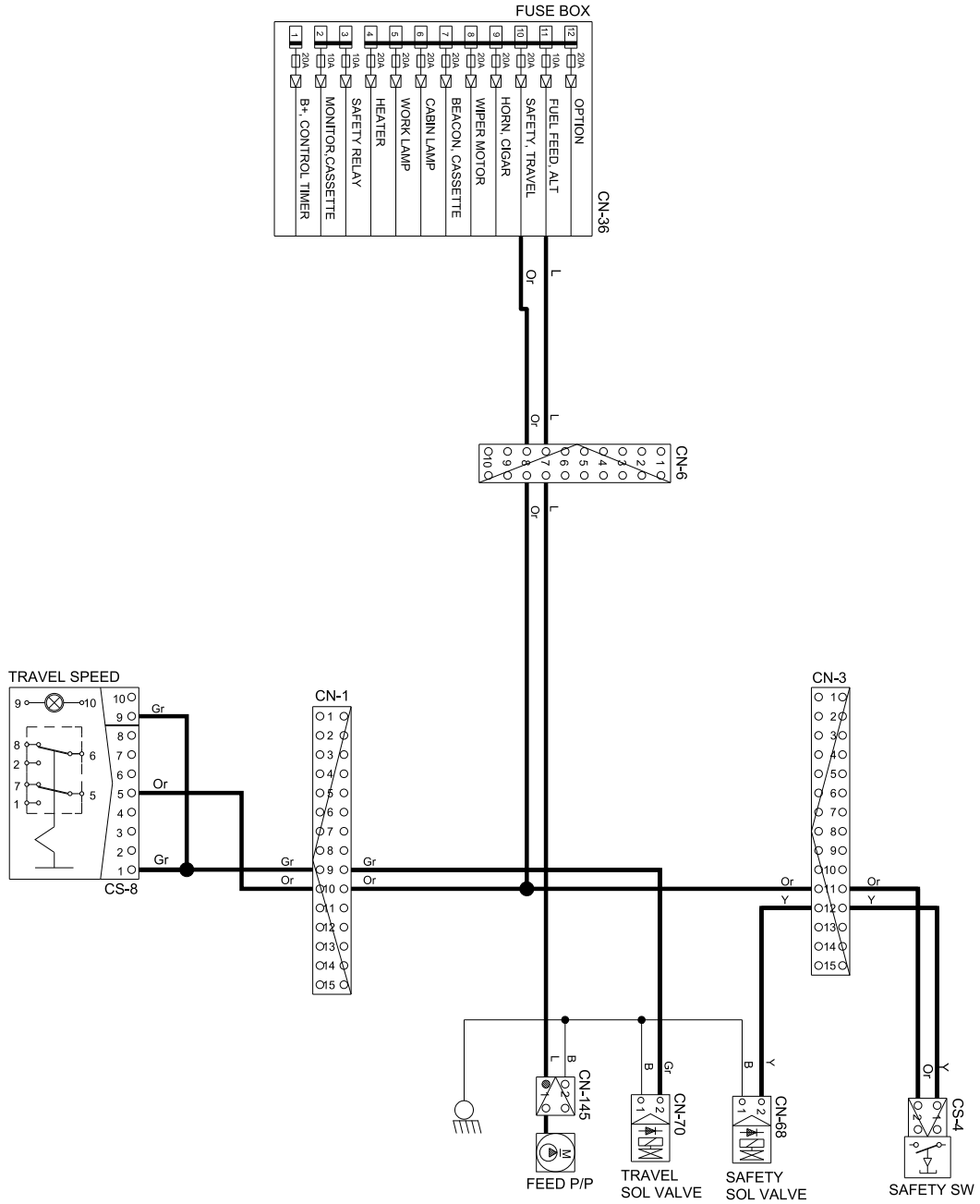
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MONITORING CIRCUIT



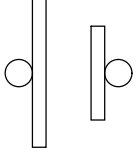
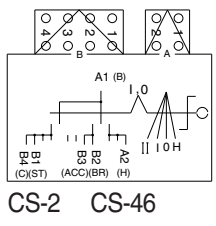
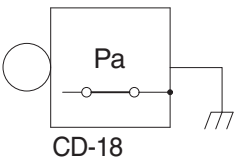
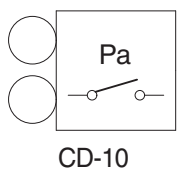
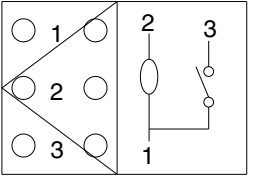
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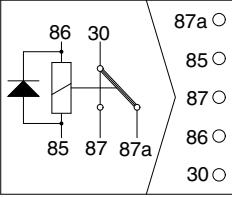
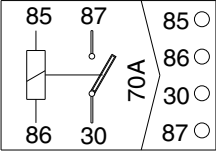
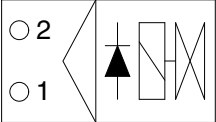
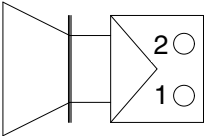
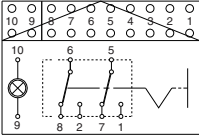
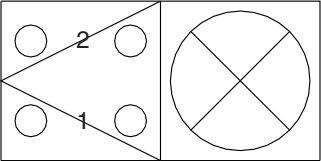
ELECTRIC CIRCUIT FOR HYDRAULIC

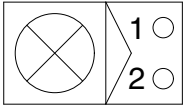
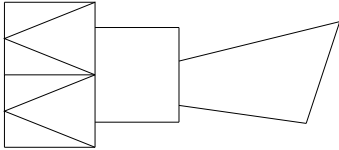
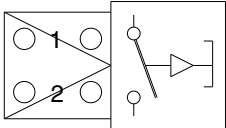
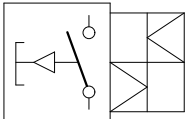
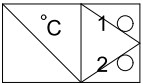
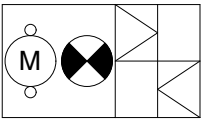


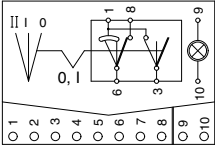
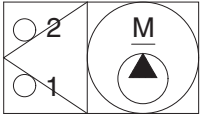
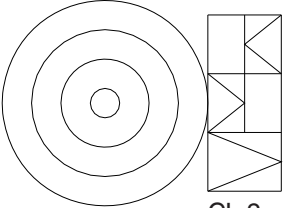
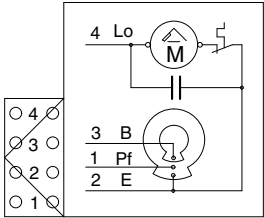
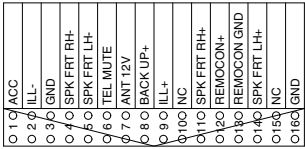
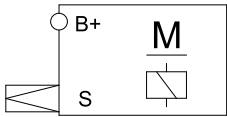
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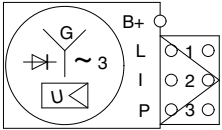
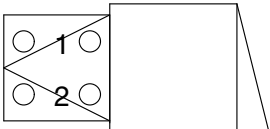
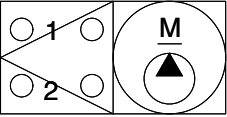
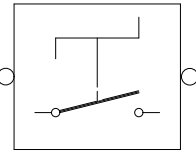
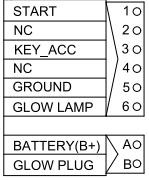
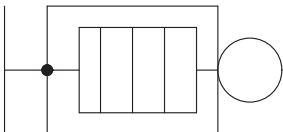
GROUP 4 ELECTRICAL COMPONENT SPECIFICATION

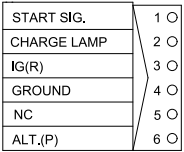
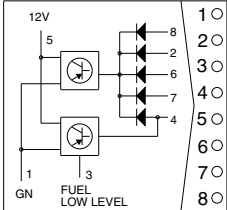
Part name	Symbol	Specification	Check
Battery		12V × 58Ah (5h rating)	※ Check specific gravity 1.280 over : Over charged 1.280 ~ 1.250 : Normal 1.250 below : Recharging
Start key		12V	※ Check contact OFF : ∞Ω (for each terminal) ON : 0Ω (for terminal 1-3 and 1-2) START : 0Ω (for terminal 1-5)
Pressure switch (for engine oil)		0.5 kgf/cm ² (N.C TYPE)	※ Check resistance Normal : 0Ω (CLOSE)
Air cleaner pressure switch		Pressure: 635 mmH ₂ O (N.O TYPE)	※ Check contact Normal : ∞Ω
Fuel sender		-	※ Check resistance Full : 30Ω Low : 100Ω Empty warning : 200Ω

Part name	Symbol	Specification	Check
Horn relay	 <p>CR-2</p>	12V 20A	※ Check resistance Normal : About 200Ω (for terminal 1-3) : 0Ω (for terminal 2-4)
Power relay	 <p>CR-35</p>	12V 70A	※ Rated coil current 1.2±0.3 A
Solenoid valve	 <p>CN-68 CN-70 CN-140</p>	12V 1A	※ Check resistance Normal : 15~25Ω (for terminal 1-2)
Speaker	 <p>CN-23 (LH) CN-24 (RH)</p>	4Ω 20W	※ Check resistance Normal : 4Ω
Switch (Locking type)	 <p>CS-8 CS-16 CS-23 CS-50</p>	12V 16A	※ Check contact Normal OFF - ∞Ω (for terminal 1-5, 2-6) - 0Ω (for terminal 5-7, 6-8)
Lamp	 <p>CL-5 CL-9 CL-10</p>	12V 55W (H3 TYPE)	※ Check disconnection Normal : 1.2Ω

Part name	Symbol	Specification	Check
Room lamp	 CL-1	12V 10W	※ Check disconnection Normal : A few Ω
Horn	 CN-20	12V 6A	132±5 dB
Safety switch	 CS-4	Micro 12V 15A	※ Check contact Normal : 0 Ω Operating : $\infty\Omega$
Horn switch	 CS-5	12V 10A	※ Check contact Normal : 0 Ω
Water temp sender	 CD-8	-	※ Check contact 50°C : 0.748~0.904 Ω 67°C : 0.538~0.650 Ω 102°C : 0.185~0.167 Ω 110°C : 0.143~0.130 Ω 135°C : 0.076~0.100 Ω
Beacon lamp	 CL-7	12V (strobe type)	※ Check disconnection Normal : A few Ω

Part name	Symbol	Specification	Check
Wiper & washer switch	 <p>CS-3</p>	12V 16A	※ Check contact Normal : $\infty\Omega$
Washer pump	 <p>CN-22</p>	12V 3.8A	※ Check contact Normal : 3Ω (for terminal 1-2)
Cigar lighter	 <p>CL-2</p>	12V 10A 1.4W	※ Check coil resistance Normal : About $1M\Omega$ ※ Check contact Normal : $\infty\Omega$ Operating time : 5~15sec
Wiper motor	 <p>CN-21</p>	12V 3A	※ Check contact Normal : 6Ω (for terminal 2-6)
Radio & USB player	 <p>CN-27</p>	12V 20W	※ Check resistance Power ON : $4\Omega \pm 4\Omega$ (for pin 1-6, 4-8)
Starter	 <p>CN-45</p>	12V 1.7kW	※ Check contact Normal : 0.1Ω

Part name	Symbol	Specification	Check
Alternator	 <p>CN-74</p>	12V 40A	※ Check contact Normal : 0Ω (For terminal B ⁺ -1) Normal : 10 ~ 12.5V
Travel alarm	 <p>CN-81</p>	12V	-
Fuel feed pump	 <p>CN-145</p>	12V	-
Master switch	 <p>CN-74</p>	12V 1000A	-
Glow timer	 <p>CR-24, CR-36</p>	12V	-
Air-heater	 <p>CN-80</p>	12V 42A 500W	-

Part name	Symbol	Specification	Check
Safety relay	 <p>CN-165</p>	12V 1400rpm/ Alternator	※ Contact capacity : Rush : 100A Steady-State : 50A (30sec)
Detector	 <p>CN-167</p>	12V	-

GROUP 5 CONNECTORS

1. CONNECTOR DESTINATION

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-1	AMP	15	I/conn (RH console harness-main harness)	2-85262-1	368301-1
CN-2	AMP	15	I/conn (Main harness-RH console harness)	2-85262-1	368301-1
CN-3	AMP	15	I/conn (Main harness-LH console harness)	2-85262-1	368301-1
CN-4	AMP	4	I/conn (Main harness-heater & wiper harness)	S810-004202	S810-104202
CN-5	AMP	2	I/conn (Main harness-relay harness)	S813-030201	S813-130201
CN-6	AMP	10	I/conn (Relay harness-main harness)	174655-2	174657-2
CN-7	AMP	4	I/conn (Relay harness-main harness)	S810-004202	S810-104202
CN-8	AMP	15	I/conn (Main harness-relay harness)	2-85262-1	368301-1
CN-9	AMP	2	I/conn (Relay harness-main harness)	S813-030201	S813-130200
CN-10	AMP	2	I/conn (Main harness-cab lamp harness)	S816-002002	S816-102002
CN-11	AMP	8	I/conn (RH console harness-cab harness)	S816-008202	S816-108202
CN-11-1	AMP	2	I/conn (RH console harness-canopy harness)	S816-002002	S816-102002
CN-20	DEUTSCH	2	Horn	DT06-2S-EP06	-
CN-21	AMP	4	Wiper harness	180900-0	-
CN-22	KET	2	Washer tank	MG640605	-
CN-23	KET	1	Speaker LH	S822-014002	S822-114002
CN-24	KET	1	Speaker RH	S822-014002	S822-114002
CN-27	-	16	Radio & USB player	173852-1	-
CN-36	-	-	Fuse box body	F12890010	-
CN-45	RING TERM	1	Starter	ST710258-2	-
	KET	1	Starter	MG630063	-
CN-46	AMP	4	Heater	180900-0	-
CN-48	AMP	3	Hour meter	S810-003202	-
CN-56	AMP	17	Cluster	172500-1	-
CN-60	AMP	2	Fusible link	-	S813-130200
CN-68	DEUTSCH	2	Safety solenoid	DT06-2S-EP06	-
CN-70	DEUTSCH	2	Travel HI-LO solenoid	DT06-2S-EP06	-
CN-74	YAZAKI	2	Alternator	7123-2228	-
CN-79	-	1	Fuel cut-off solenoid	S822-014000	-
CN-80	RING TERM	1	Pre heater	ST710226-2	-
CN-81	SWP	1	Travel buzzer	S822-014000	S822-114000
CN-140	DEUTSCH	2	Quick clamp	DT06-2S-EP06	DT04-2P-E005
CN-145	AMP	2	Fuel feed pump	S810-002202	-
CN-165	KET	6	Safety relay	MG610049	-
CN-167	AMP	8	Detector	S810-008202	-

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
LAMP					
CL-1	KET	2	Room lamp	MG610392	-
CL-2	AMP	3	Cigar light	S810-003202	-
CL-5	DEUTSCH	2	Work lamp	DT06-2S-EP06	-
CL-7	KET	1	Beacon lamp	S822-014002	S822-114000
CL-9	-	2	Cabin lamp (canopy lamp)	-	DT04-2P-E004
CL-10	-	2	Cabin lamp (canopy lamp)	DT06-2S-PO12	DT04-2P-E004
RELAY					
CR-2	AMP	4	Horn relay	S810-004002	-
CR-23	KET	2	Start relay	MG610043	-
CR-24	SUMITOMO	6	Safety relay	6195-0021	-
CR-35	KET	4	Power relay	MG612017-5	-
CR-36	SUMITOMO	2	Safety relay	6195-0060	-
CR-50	AMP	4	Timer relay	S810-004202	-
CR-51	KET	4	Engine stop sol relay	MG612017-5	-
CR-77	KET	4	Control timer	MG620046	-
CR-79	KET	3	Control timer	MG620044	-
SENSOR					
CD-2	AMP	3	Fuel sender	S816-003002	S816-102002
CD-8	-	1	Water temp sender	ST730135-3	-
CD-9	AMP	1	Water temp switch	172320-2	-
CD-10	-	1	Air cleaner	ST730135-3	-
CD-11	KET	2	Travel pressure switch	MG640795	-
CD-12	KET	2	Travel pressure switch	MG640795	-
CD-18	AMP	1	Engine oil pressure	172320-2	-
DO-3	-	2	Diode	S816-002002	21EA-50570
DO-4	-	2	Diode	S816-002002	21EA-50550
DO-6	-	2	Diode	S816-002002	21EA-50550
SWITCH					
CS-2	-	2	Start key switch	S813-030201	-
CS-3	SWF	10	Wiper & washer switch	593757	-
CS-4	AMP	2	Safety switch	S814-102001	-
CS-5	-	1	Horn-LH switch	S822-014002	-
	-	1		-	S822-114002
CS-6	SWF	10	Heater switch	593757	-
CS-8	SWF	10	Travel speed switch	593757	-
CS-16	SWF	10	Travel alarm switch	593757	-
CS-21	SWF	10	Light switch	593757	-
CS-23	SWF	10	Beacon lamp switch	593757	-

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CS-46	KET	4	Start switch	MG651926	-
CS-67	SWF	10	Quick clamp switch	593757	-
CS-74	RING TERM	1	Battery (+)	ST710287-2	-
CS-83	SWF	10	Spare	593757	-