

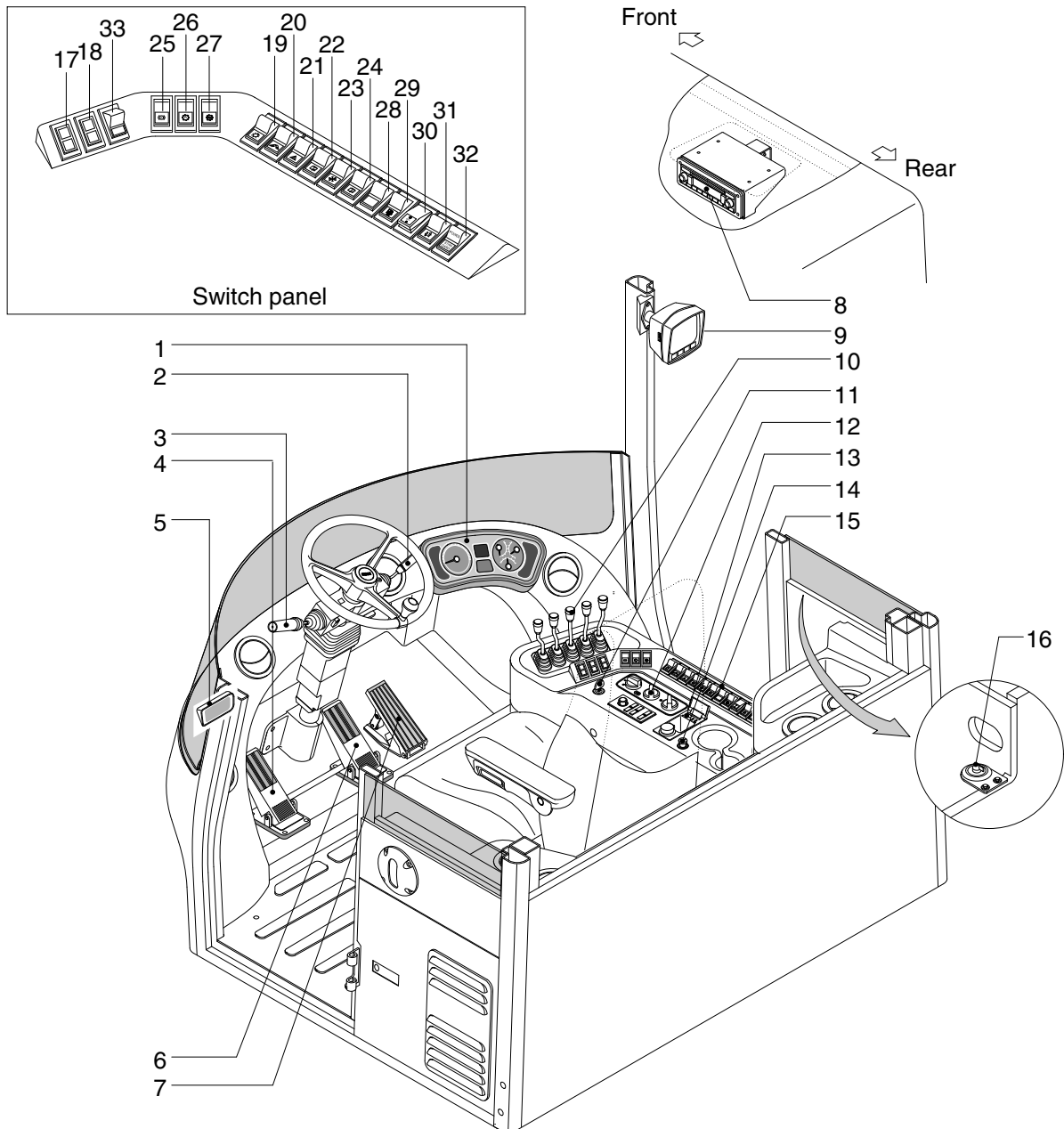
SECTION 7 ELECTRICAL SYSTEM

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SECTION 7 ELECTRICAL SYSTEM

GROUP 1 COMPONENT LOCATION (-#0041)

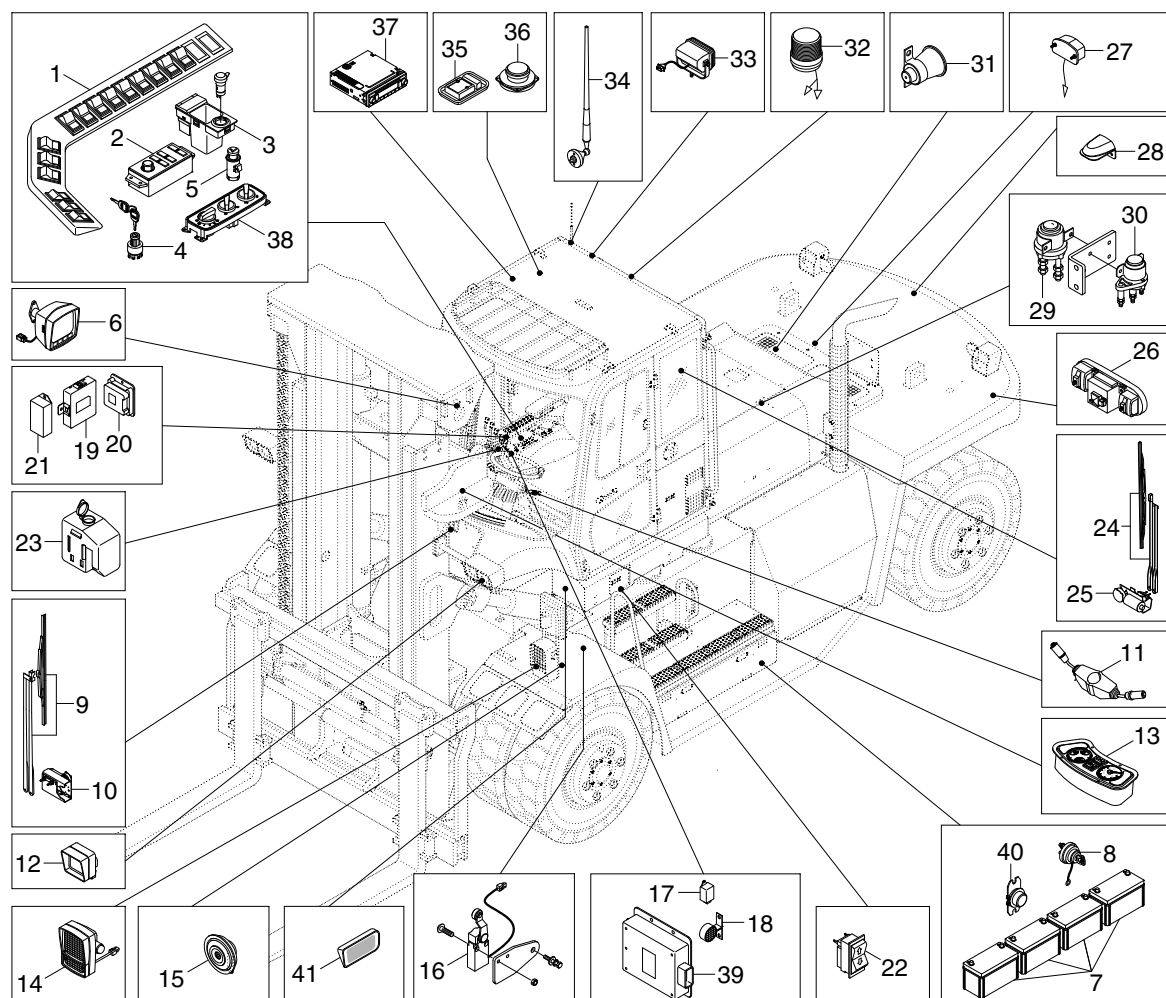
1. LOCATION 1



250D9EL01

- | | | |
|------------------------------|------------------------------|--------------------------------|
| 1 Cluster | 12 Aircon & heater switch | 23 Airconditioner switch |
| 2 Multi function switch | 13 Handsfree (opt) | 24 Top wiper/washer switch |
| 3 Gear selector lever | 14 Cigar lighter | 25 Parking with lock switch |
| 4 Inching pedal | 15 Switch board | 26 Auto/Manual select switch |
| 5 Transmission error display | 16 Master switch | 27 Inching switch |
| 6 Brake pedal | 17 SCR cleaning/inhibit lamp | 28 Seat heat switch |
| 7 Accelerator pedal | 18 HEST lamp | 29 Fuel heater switch |
| 8 Radio and USB player | 19 Main light switch | 30 SCR switch |
| 9 Monitor (opt) | 20 Work lamp switch | 31 Inc/Decrement switch |
| 10 Remote control lever | 21 Hazard switch | 32 Engine mode switch |
| 11 Starting switch | 22 Rear wiper/washer switch | 33 Air compressor switch (opt) |

2. LOCATION 2



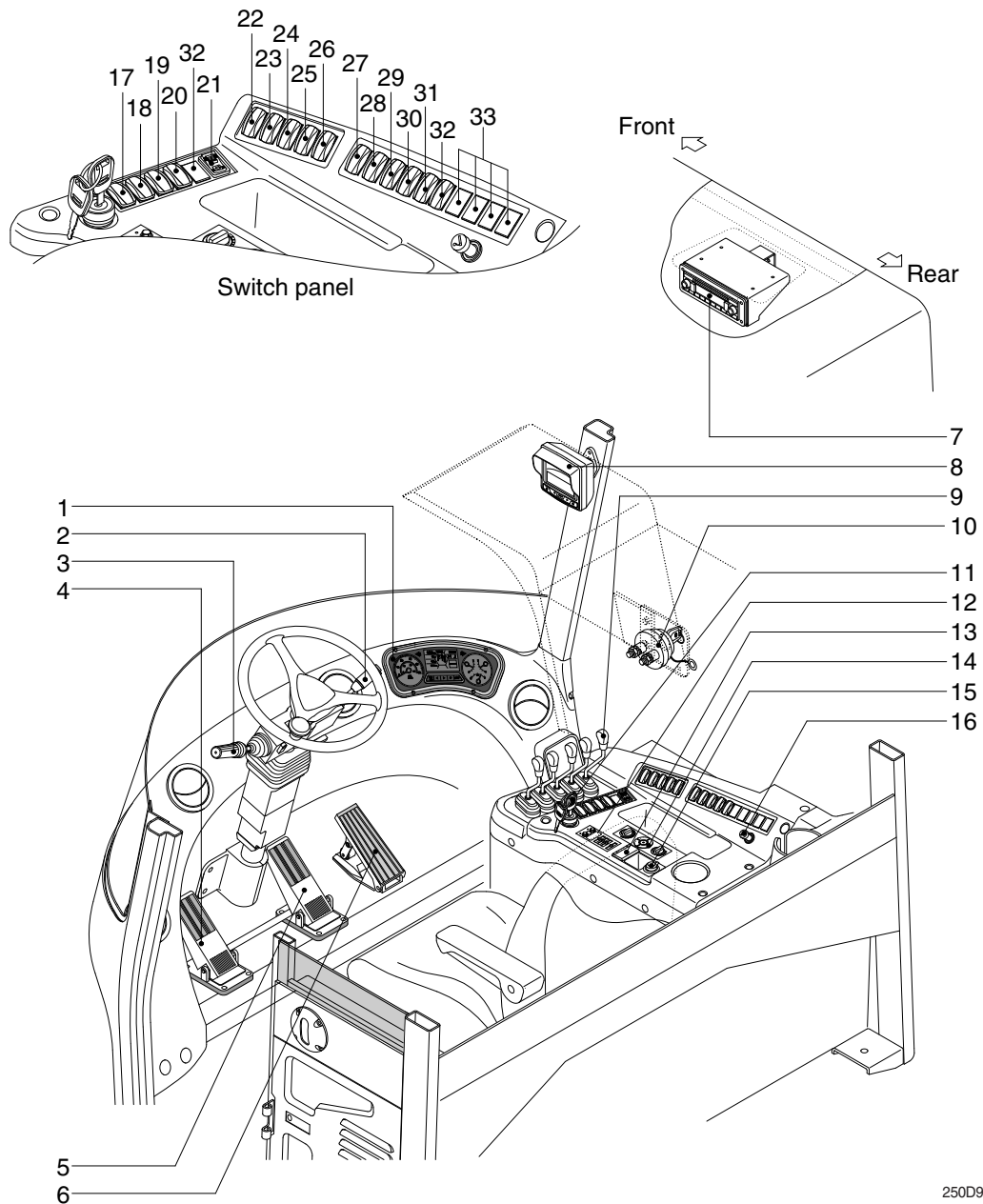
250D9EL02

- | | | |
|-------------------------|----------------------------|-----------------------------------|
| 1 Switch panel | 15 Horn | 29 Start relay |
| 2 Remote controller | 16 Tilt limit switch | 30 Heater relay |
| 3 USB & socket assembly | 17 Int wiper relay | 31 Travel alarm buzzer |
| 4 Start switch | 18 Alarm | 32 Beacon lamp |
| 5 Cigar lighter | 19 Handsfree control relay | 33 Work lamp assembly |
| 6 Monitor assembly | 20 OPSS unit | 34 Antenna |
| 7 Battery | 21 Converter | 35 Room lamp |
| 8 Master switch | 22 Cabin tilt switch | 36 Speaker assembly |
| 9 Wiper assembly | 23 Washer reservoir tank | 37 Radio and USB player |
| 10 Wiper motor | 24 Rear wiper assembly | 38 Aircon/Heater controller panel |
| 11 Multifunction switch | 25 Rear wiper motor | 39 MCU |
| 12 Front turn lamp | 26 Rear combination lamp | 40 Battery relay |
| 13 Cluster | 27 License lamp | 41 T/M display |
| 14 Head lamp | 28 Rear camera kit | |

SECTION 7 ELECTRICAL SYSTEM

GROUP 1 COMPONENT LOCATION (#0042-)

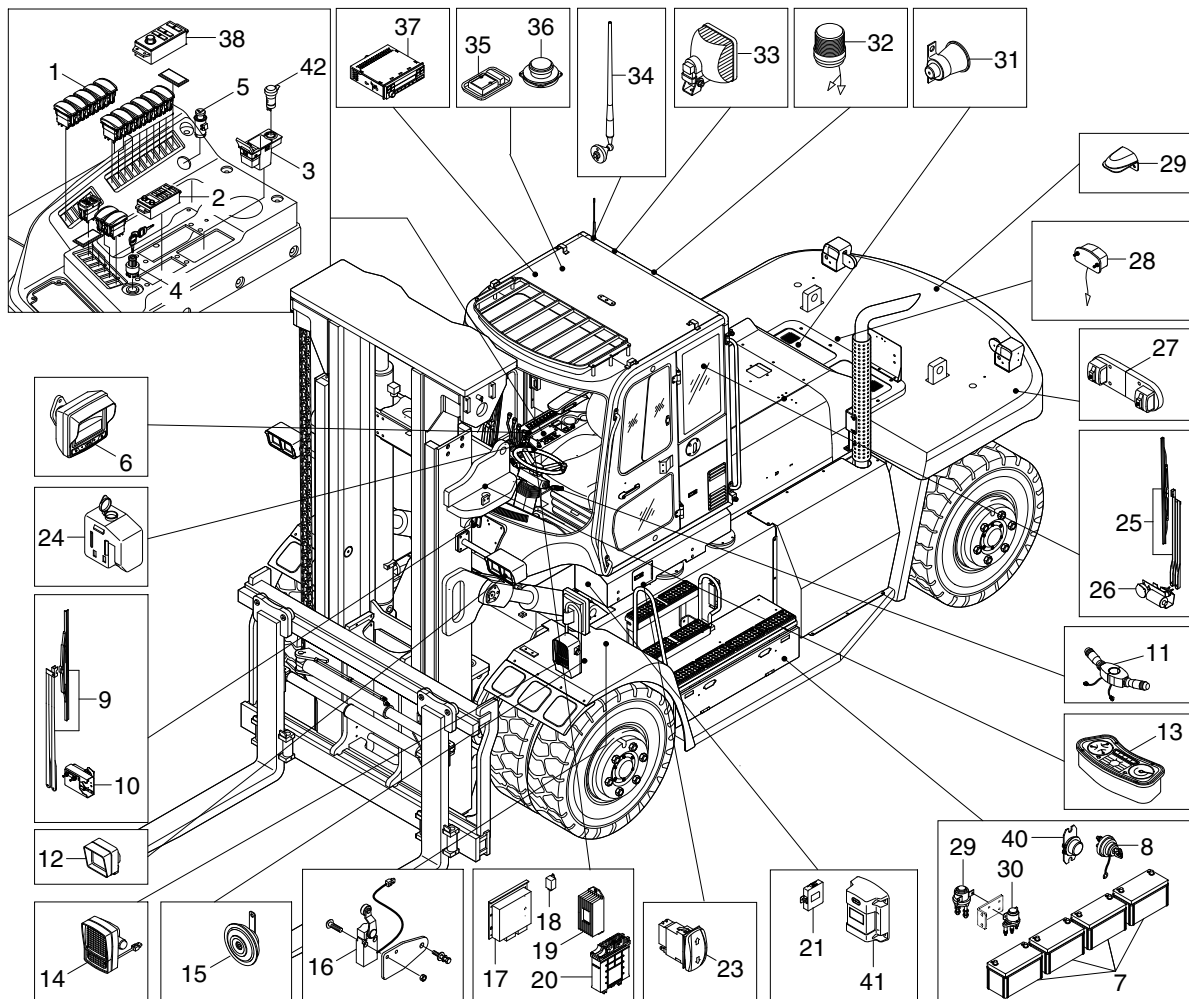
1. LOCATION 1



250D9EL01-1

1 Cluster	12 Remote controller (opt)	23 Inching switch
2 Multi function switch	13 Handsfree (opt)	24 Fuel warmer switch
3 Gear selector lever	14 Aircon & heater switch	25 Inc/Dec switch
4 Inching pedal	15 USB socket	26 SCR cleaning switch
5 Brake pedal	16 Cigar lighter	27 Engine mode switch
6 Accelerator pedal	17 Main light switch	28 Rear wiper/washer switch
7 Radio and USB player	18 Rear work lamp switch	29 Top wiper/washer switch (opt)
8 Monitor (opt)	19 Hazard switch (opt)	30 Air compressor switch (opt)
9 Remote control lever	20 Beacon lamp switch (opt)	31 Seat heat switch
10 Master switch (opt)	21 Parking brake switch	32 Cooling fan control switch (opt)
11 Starting switch	22 Auto/Manual select switch	33 Cover

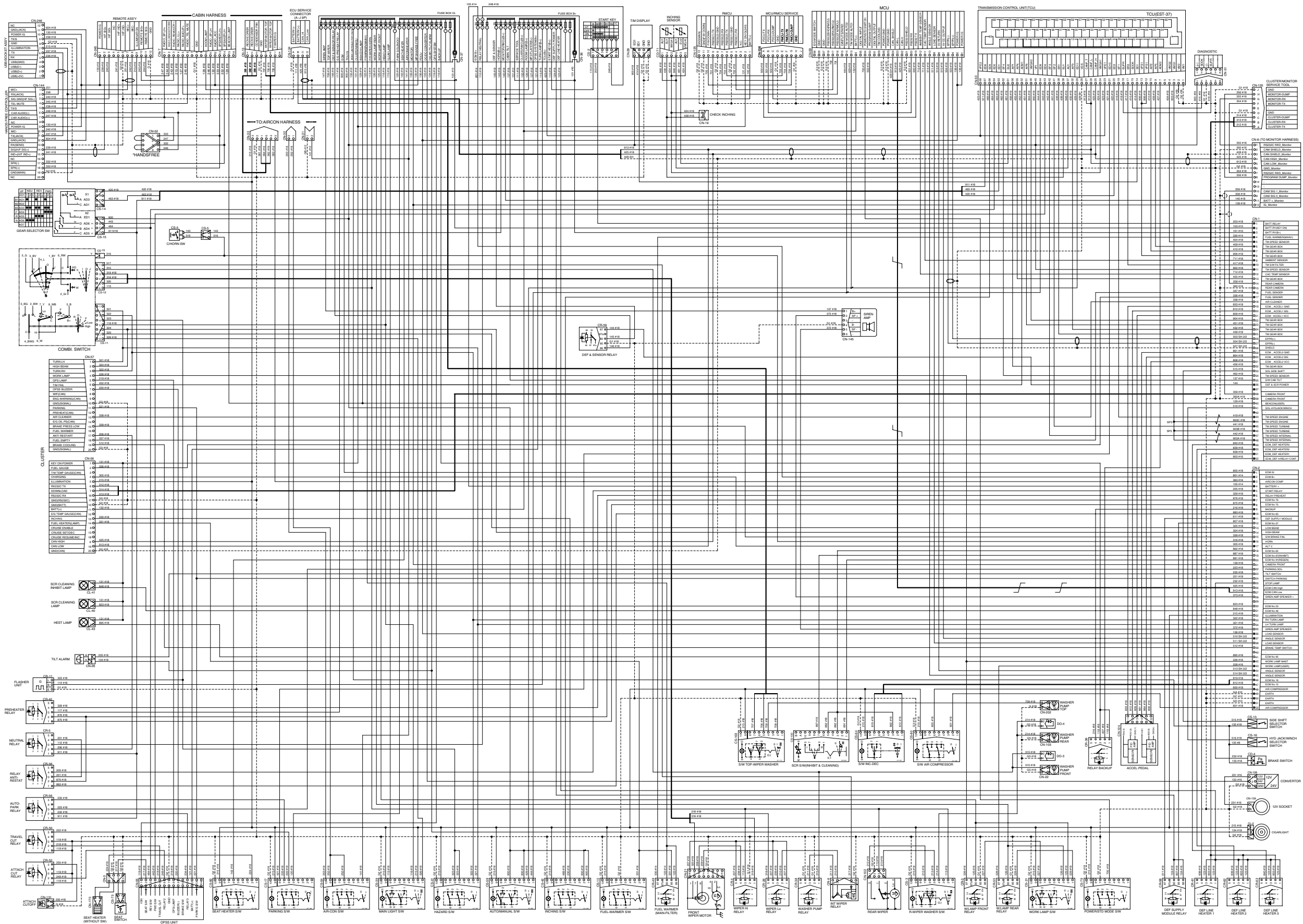
2. LOCATION 2



250D9EL02-2

1	Switch panel	15	Horn	29	Start relay
2	Remote controller	16	Tilt limit switch	30	Heater relay
3	USB & socket assembly	17	MCU	31	Travel alarm buzzer
4	Start switch	18	Int wiper relay	32	Beacon lamp
5	Cigar lighter	19	DC-DC converter	33	Work lamp assembly
6	Monitor assembly	20	TCU	34	Antenna
7	Battery	21	Handsfree control relay	35	Room lamp
8	Master switch	23	Cabin tilt switch	36	Speaker assembly
9	Wiper assembly	24	Washer reservoir tank	37	Radio and USB player
10	Wiper motor	25	Rear wiper assembly	38	Aircon/Heater switch
11	Multifunction switch	26	Rear wiper motor	40	Battery relay
12	Front turn lamp	27	Rear combination lamp	41	RMCU
13	Cluster	28	License lamp	42	12V socket
14	Head lamp	29	Rear camera kit		

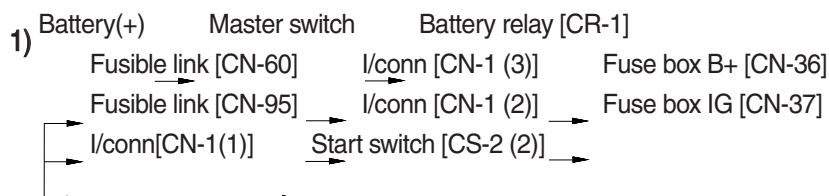
GROUP 2 ELECTRICAL CIRCUIT (-#0041)





1. POWER CIRCUIT The negative terminal of the battery is grounded to the machine chassis.
When the start switch is in the off position, the current flows from the positive battery terminal.

OPERATING FLOW



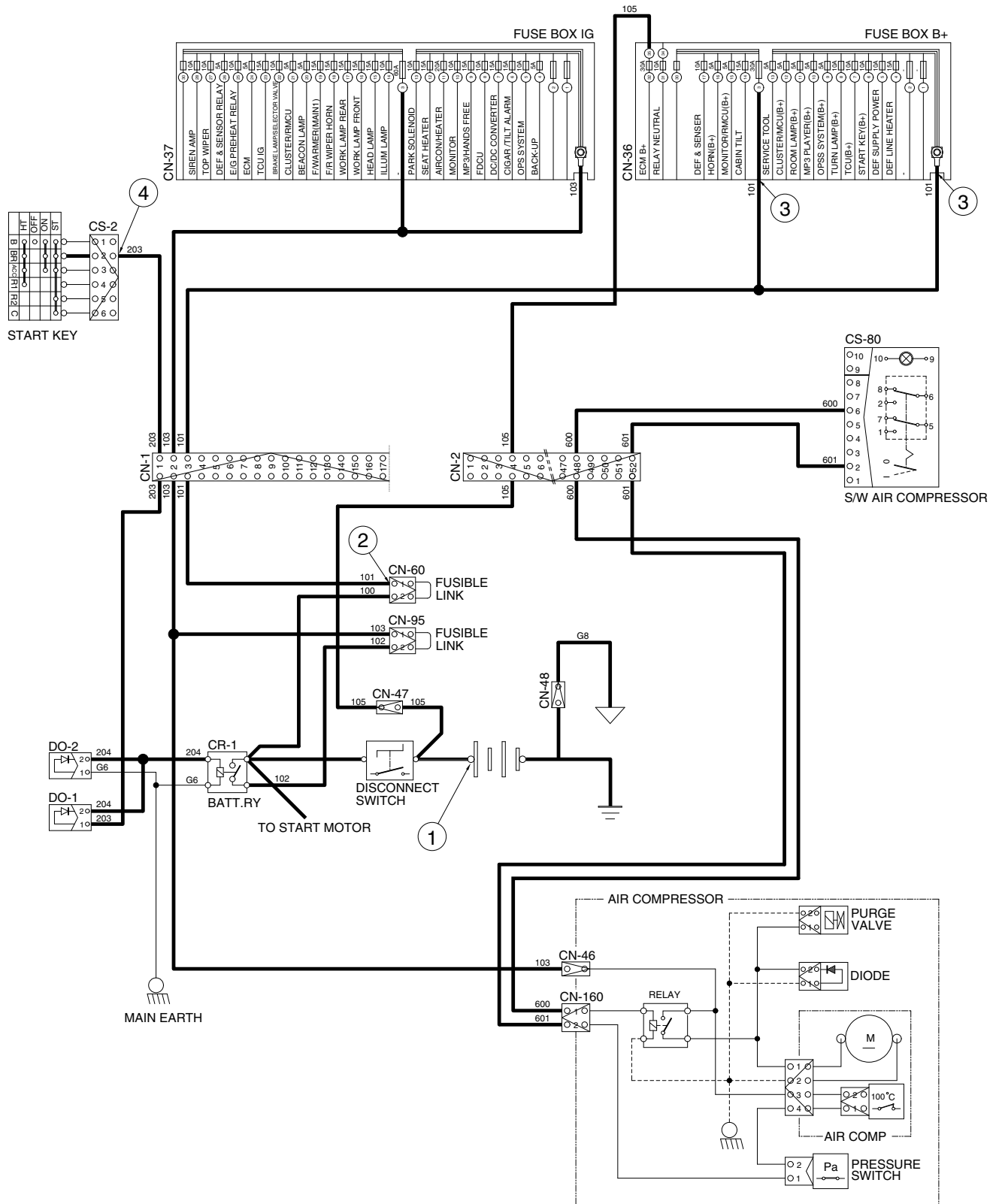
2) CHECK POINT

Engine	Key switch	Check point	Voltage
OFF	OFF	① - GND (Battery (+)) ② - GND (Fusible link) ③ - GND (Fuse) ④ - GND (Start key)	24V

※ GND : Ground

※ The circuit diagram may differ from the equipment, so please check before a repair.

POWER CIRCUIT



250D9EL05

※ The circuit diagram may differ from the equipment, so please check before a repair.

2. STARTING CIRCUIT

1) OPERATING FLOW

Battery (+) terminal → Master Switch → Battery relay [CR-1]

└─ I/conn [CN-1 (1)] → Start switch [CS-2 (2)]

└─ Start motor [CN-45 (B+)] → Start relay [CR-23 (1)]

※ The engine can be started only when the gearshift is in neutral position.

(1) When start key switch is in ON position

Start switch ON [CS-2 (1)] → Fuse box B+ [CN-36 (6)] → Power ON

When start key switch is START position

(2) Start switch START [CS-2 (5)] → Fuse box B+ [CN-36 (34 → 31)]

└─ Neutral relay [CR-5 (3 → 4)] → I/conn [CN-2 (5)] → Start relay [CR-23 (2)]

└─ Neutral relay [CR-5 (1)] → Gear selector [CS-15 (D)]

└─ TCU [CN-50 (67)]

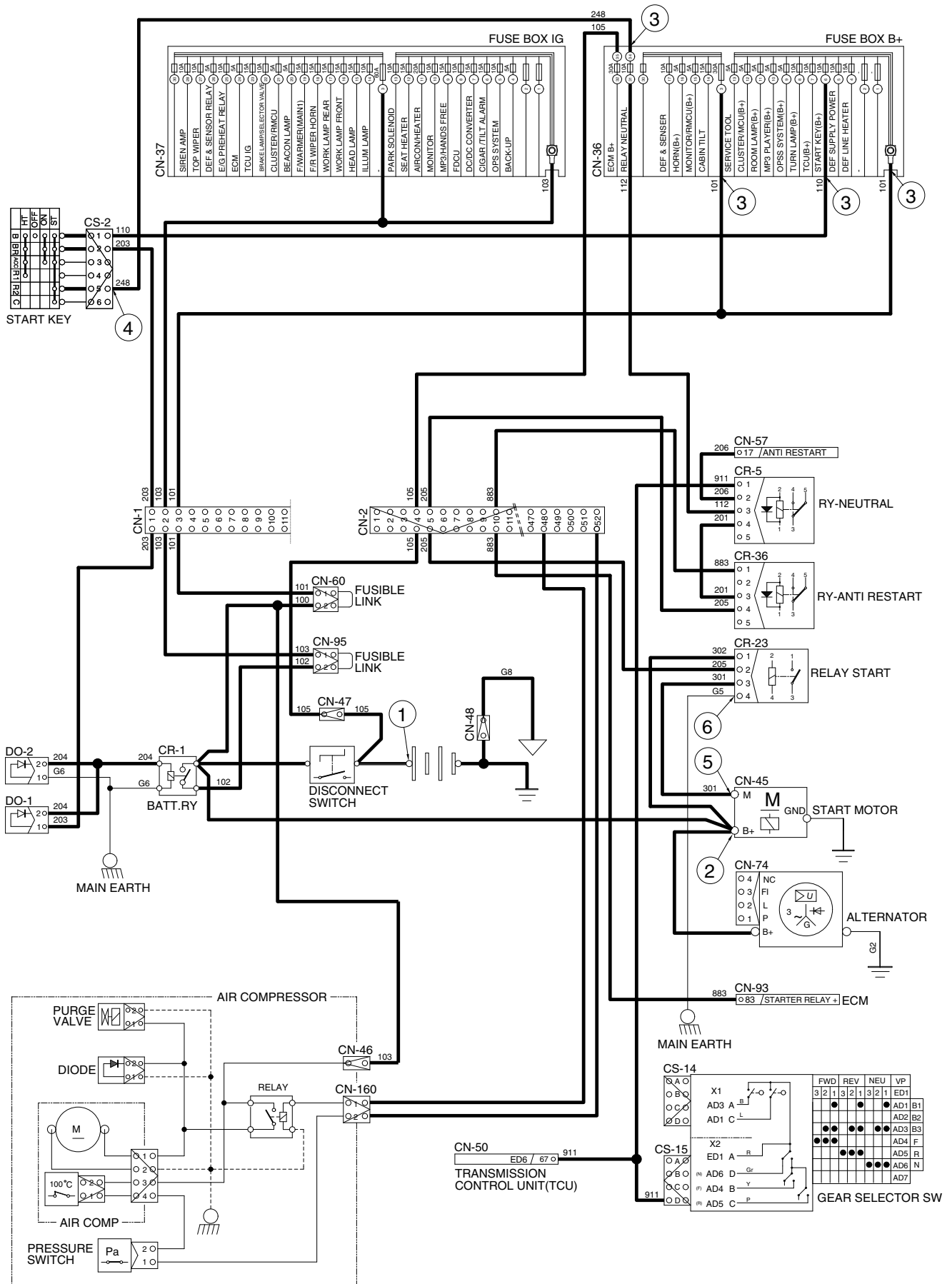
2) CHECK POINT

Engine	Key switch	Check point	Voltage
Running	ON	① - GND (Battery B+) ② - GND (Start motor B+) ③ - GND (Fuse box) ④ - GND (Start key) ⑤ - GND (Start motor M) ⑥ - GND (Start relay)	24V

※ GND : Ground

※ The circuit diagram may differ from the equipment, so please check before a repair.

STARTING CIRCUIT



※ The circuit diagram may differ from the equipment, so please check before a repair.

3. CHARGING CIRCUIT

When the starter is activated and the engine is started, the operator release the start 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 through the fusible link (CN-60) and the fuse box.

1) OPERATING FLOW

(1) Warning flow

Alternator [CN-74 (L)] → I/conn [CN-2 (17)]
→ Cluster charging warning lamp ON [CN-56 (4)]

(2) Charging flow

Alternator [CN-74 (B+)] → Start motor [CN-45 (B+)] → Battery relay [CR-1]
→ Master switch → Battery (+) terminal → Charging
→ Fusible link [CN-95] → I/conn [CN-1 (2)] → Fuse box IG [CN-37]

2) CHECK POINT

Engine	Key switch	Check point	Voltage
ON	ON	① - GND (Battery B+) ② - GND (ALT B+) ③ - GND (ALT L) ④ - GND (Cluster) ⑤ - GND (Fuse box)	24V

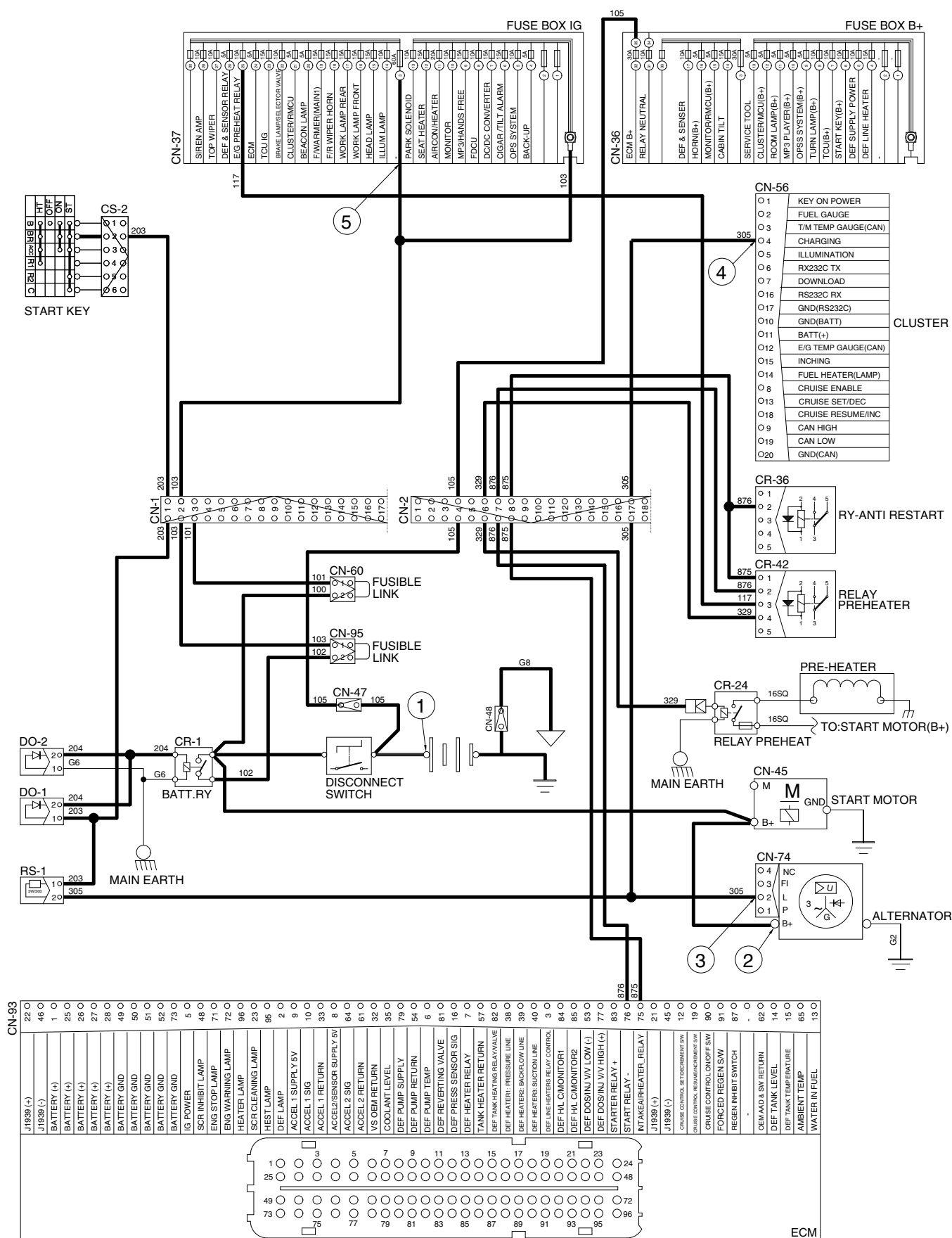
※ GND : Ground

※ Cautions

1. When using an arc welder, always disconnect the ground lead from the battery to prevent alternator or battery damage.
2. Attach the welding ground clamp as close to the weld area as possible to prevent welding current from damaging the bearings of the alternator.
3. Do not disconnect the battery when the engine is running. The voltage surge can damage the diode and resistors in the electrical system.
4. Do not disconnect an electric wire before the engine is stopped and the switches are OFF.

※ The circuit diagram may differ from the equipment, so please check before a repair.

CHARGING CIRCUIT



250D9EL07

※ The circuit diagram may differ from the equipment, so please check before a repair.

4. PREHEATING CIRCUIT

Combustion chamber glow plugs are used in order to give satisfactory starting of low ambient temperatures.

1) OPERATING FLOW

Battery (+) terminal → Master Switch → Battery relay [CR-1] → Fusible link [CN-95]
→ I/conn [CN-1 (2)] → Fuse box IG [CN-37 (1)]

※ When you turn the start switch to the ON position, the glow relay makes the glow plugs operated and the glow lamp of the cluster turned ON.

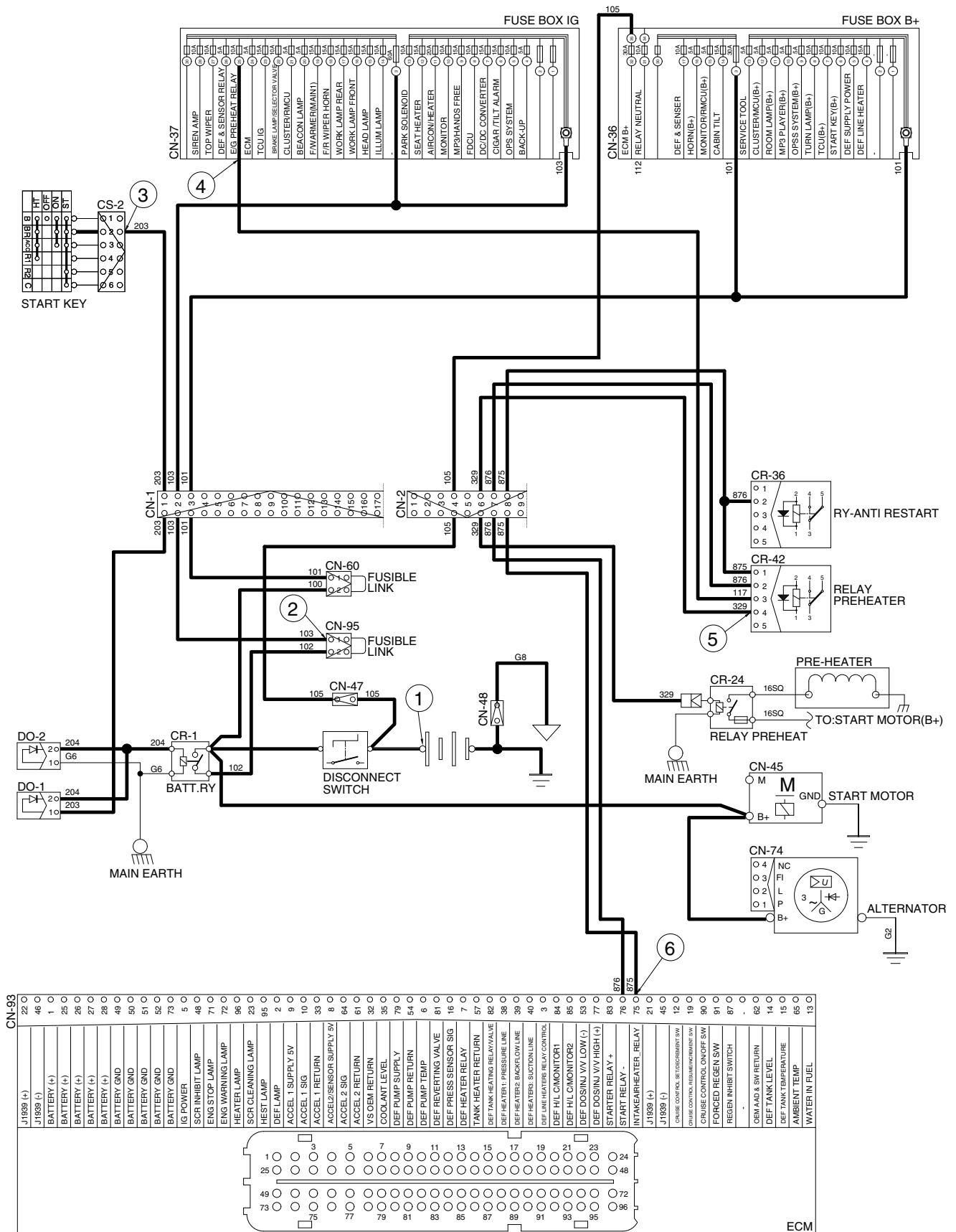
Fuse box IG [CN-37 (1)] → Pre-heater relay [CR-42 (3 → 4)] → I/conn [CN-2 (6)]
→ Pre-heater relay [CR-24] → Pre-heater ON
→ Pre-heater relay [CR-42 (1)] → I/conn [CN-2 (8)] → ECU [CN-93 (75)]

2) CHECK POINT

Engine	Key switch	Check point	Voltage
Stop	HEAT	① - GND (Battery B+) ② - GND (Fusible link) ③ - GND (Start switch) ④ - GND (Fuse box) ⑤ - GND (Pre-heater relay) ⑥ - GND (ECU)	10 ~ 13V

※ The circuit diagram may differ from the equipment, so please check before a repair.

PREHEATING CIRCUIT

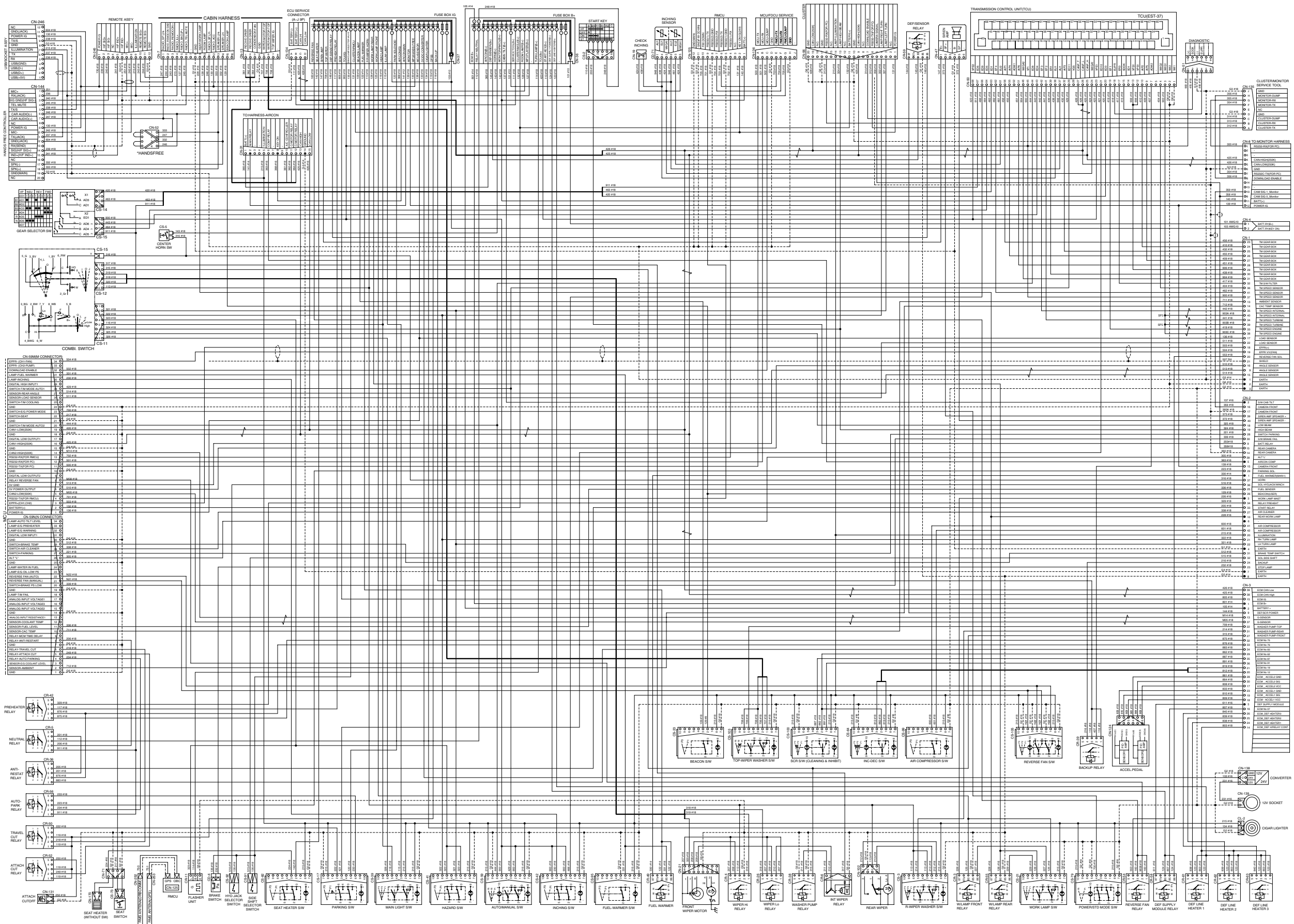


250D9EL10

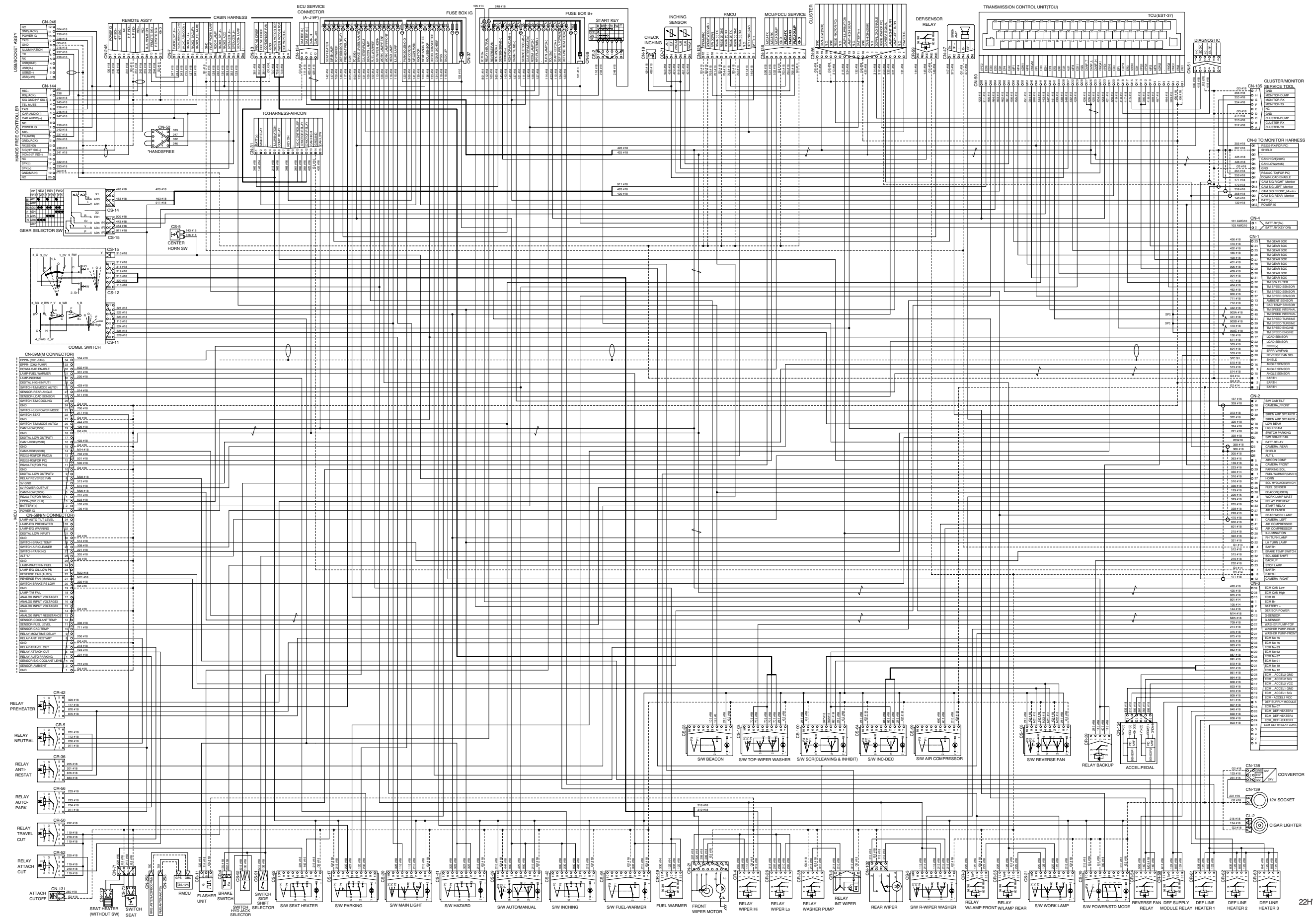
※ The circuit diagram may differ from the equipment, so please check before a repair.

GROUP 2 ELECTRICAL CIRCUIT (#0042-)

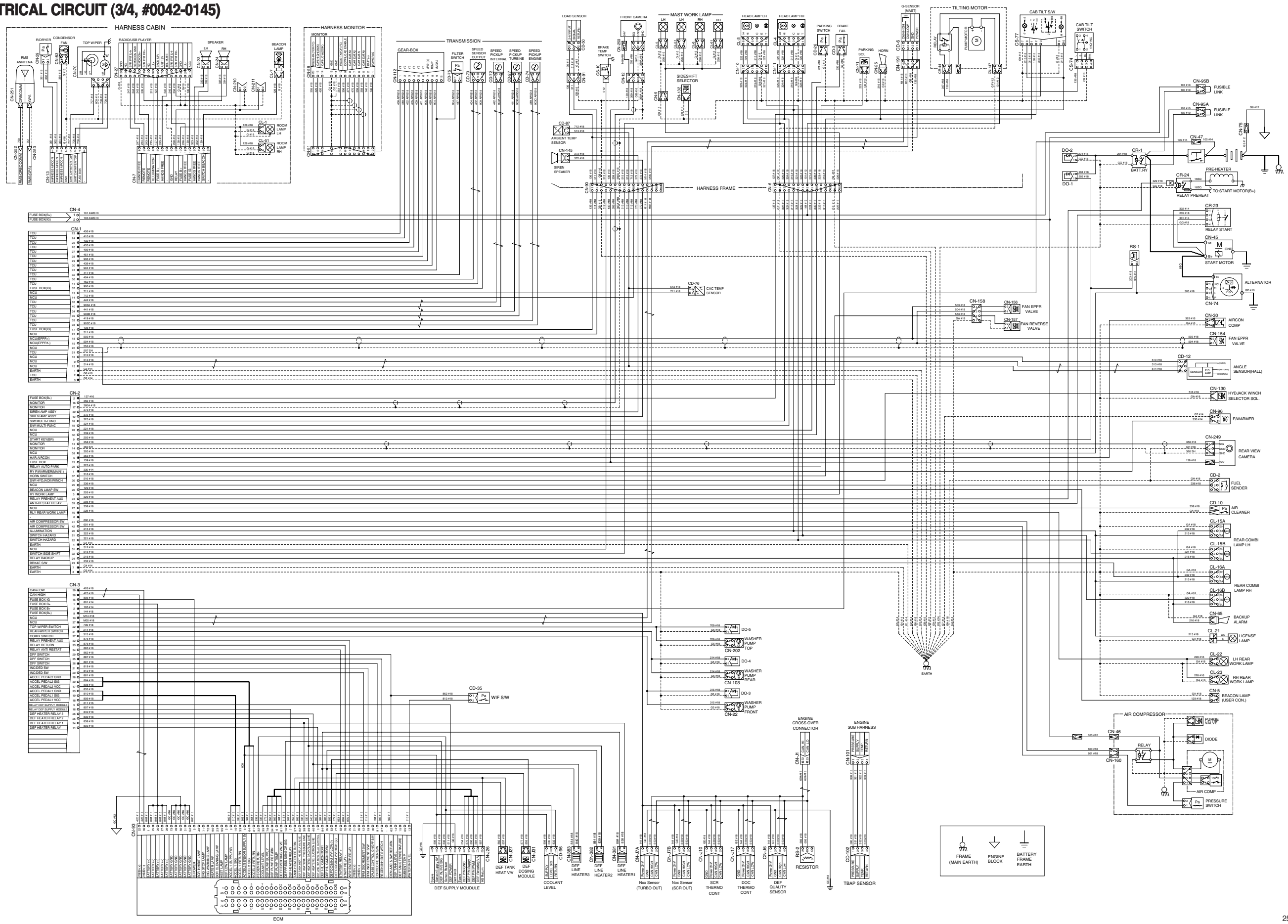
ELECTRICAL CIRCUIT (1/4, #0042-0145)



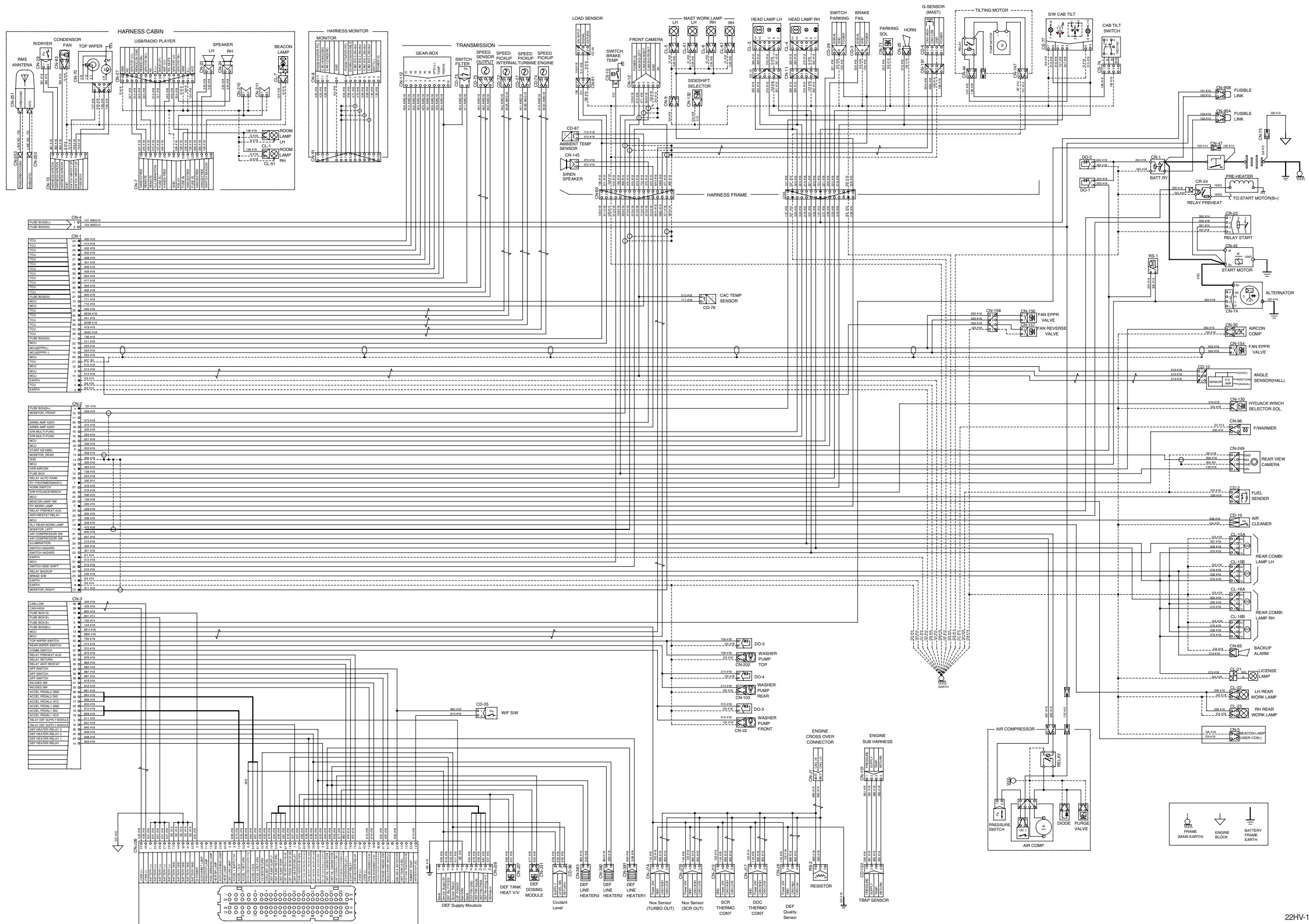
ELECTRICAL CIRCUIT (2/4, #0146-)



ELECTRICAL CIRCUIT (3/4, #0042-0145)



ELECTRICAL CIRCUIT (4/4, #0146-)



MEMORANDUM

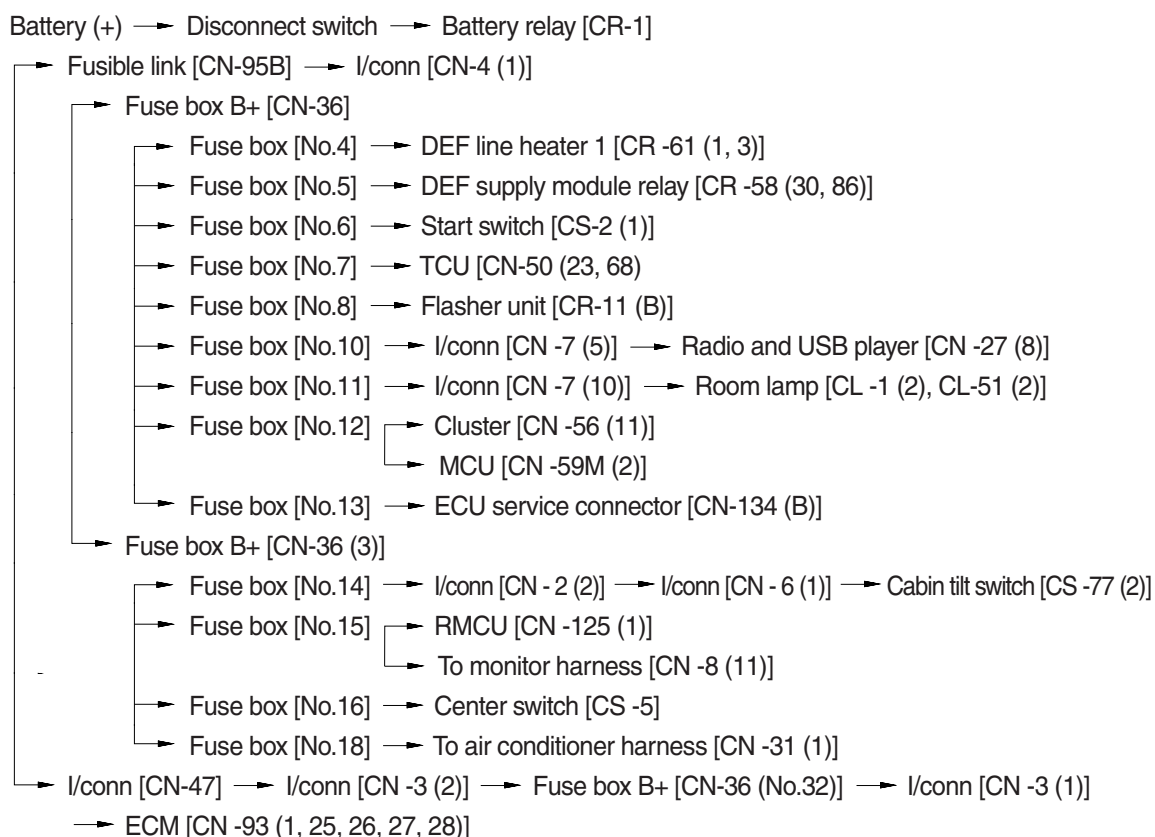


1. POWER CIRCUIT

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

When the start switch is in the off position, the current flows from the positive battery terminal.

1) OPERATING FLOW



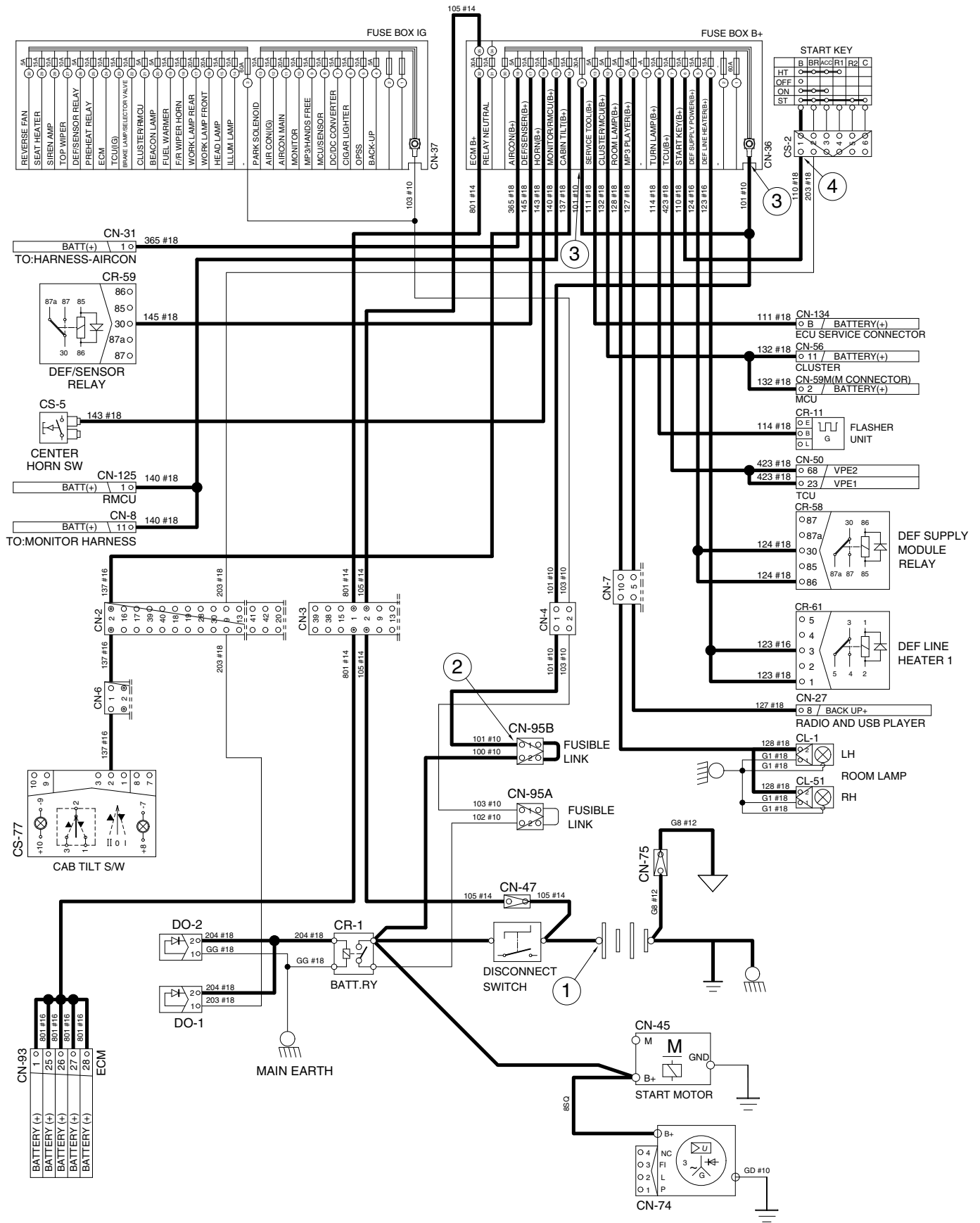
2) CHECK POINT

Engine	Start switch	Check point	Voltage
Stop	OFF	① - GND (Battery (+)) ② - GND (Fusible link) ③ - GND (Fuse) ④ - GND (Start key)	24V

※ GND : Ground

※ The circuit diagram may differ from the equipment, so please check before a repair.

POWER CIRCUIT



250D9EL05A

※ The circuit diagram may differ from the equipment, so please check before a repair.

2. STARTING CIRCUIT

1) OPERATING FLOW

Battery (+) terminal → Disconnect switch → Battery relay [CR-1]
└→ Fusible link [CN-95B → I/conn [CN-4 (1)] → Fuse box [No.6] → Start switch [CS-2 (1)]
└→ Start motor [CN-45 (B+)] → Start relay [CR-23 (1)]

※ The engine can be started only when the gear selector lever is in neutral position.

(1) When start switch is in ON position

Start switch ON [CS-2 (2)] → I/conn [CN-2 (9)] → Battery relay [CR-1] → Fusible link [CN-95A]
→ I/conn [CN-4 (2)] → Fuse box IG (all power is supplied with the electric components)

(2) When start switch is START position

Start switch START [CS-2 (5)] → Fuse box B+ [CN-36 (34) → (31)]
→ Neutral relay [CR-5 (3 → 4)] → Anti start relay [CR-36 (3) → (4)] → I/conn [CN-2 (33)]
→ Start relay [CR-23 (2)] → Start motor operating

2) CHECK POINT

Engine	Start switch	Check point	Voltage
Running	START	① - GND (Battery B+) ② - GND (Start motor B+) ③ - GND (Fuse box) ④ - GND (Start key) ⑤ - GND (Start motor M) ⑥ - GND (Start relay)	24V

※GND : Ground

※ The circuit diagram may differ from the equipment, so please check before a repair.

※ The circuit diagram may differ from the equipment, so please check before a repair.



3. CHARGING CIRCUIT

When the starter is activated and the engine is started, the operator release the start 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 through the fusible links (CN-95A, CN-95B) and the fuse boxes.

1) OPERATING FLOW

(1) Warning flow

Alternator [CN-74 (2)] → I/conn [CN-2 (38)] → MCU alternator level [CN-59N (26)]
→ Cluster charging warning lamp ON [Via CAN interface]

(2) Charging flow

Alternator [CN-74 (B+)] → Start motor [CN-45 (B+)] → Battery relay [CR-1]
→ Disconnect switch → Battery (+) terminal → Charging
→ Fusible link [CN-95A] → I/conn [CN-4 (2)] → Fuse box IG [CN-37]
→ Fusible link [CN-95B] → I/conn [CN-4 (1)] → Fuse box B+ [CN-36]

2) CHECK POINT

Engine	Start switch	Check point	Voltage
Run	ON	① - GND (Battery B+) ② - GND (ALT B+) ③ - GND (ALT L) ④ - GND (Cluster) ⑤ - GND (Fuse box)	24V

※ GND : Ground

※ Cautions

1. When using an arc welder, always disconnect the ground lead from the battery to prevent alternator or battery damage.
2. Attach the welding ground clamp as close to the weld area as possible to prevent welding current from damaging the bearings of the alternator.
3. Do not disconnect the battery when the engine is running. The voltage surge can damage the diode and resistors in the electrical system.
4. Do not disconnect an electric wire before the engine is stopped and the switches are OFF.

※ The circuit diagram may differ from the equipment, so please check before a repair.

※ The circuit diagram may differ from the equipment, so please check before a repair.



4. PREHEATING CIRCUIT

Combustion chamber glow plugs are used in order to give satisfactory starting of low ambient temperatures.

1) OPERATING FLOW

Battery (+) terminal → Disconnect switch → Battery relay [CR-1] → Fusible link [CN-95A]
→ I/conn [CN-4 (2)] → Fuse box IG [CN-37 (25)] → Pre-heater relay [CR-42 (3)]

※ When you turn the start switch to the ON position, the glow relay makes the glow plugs operated and the glow lamp of the cluster turned ON.

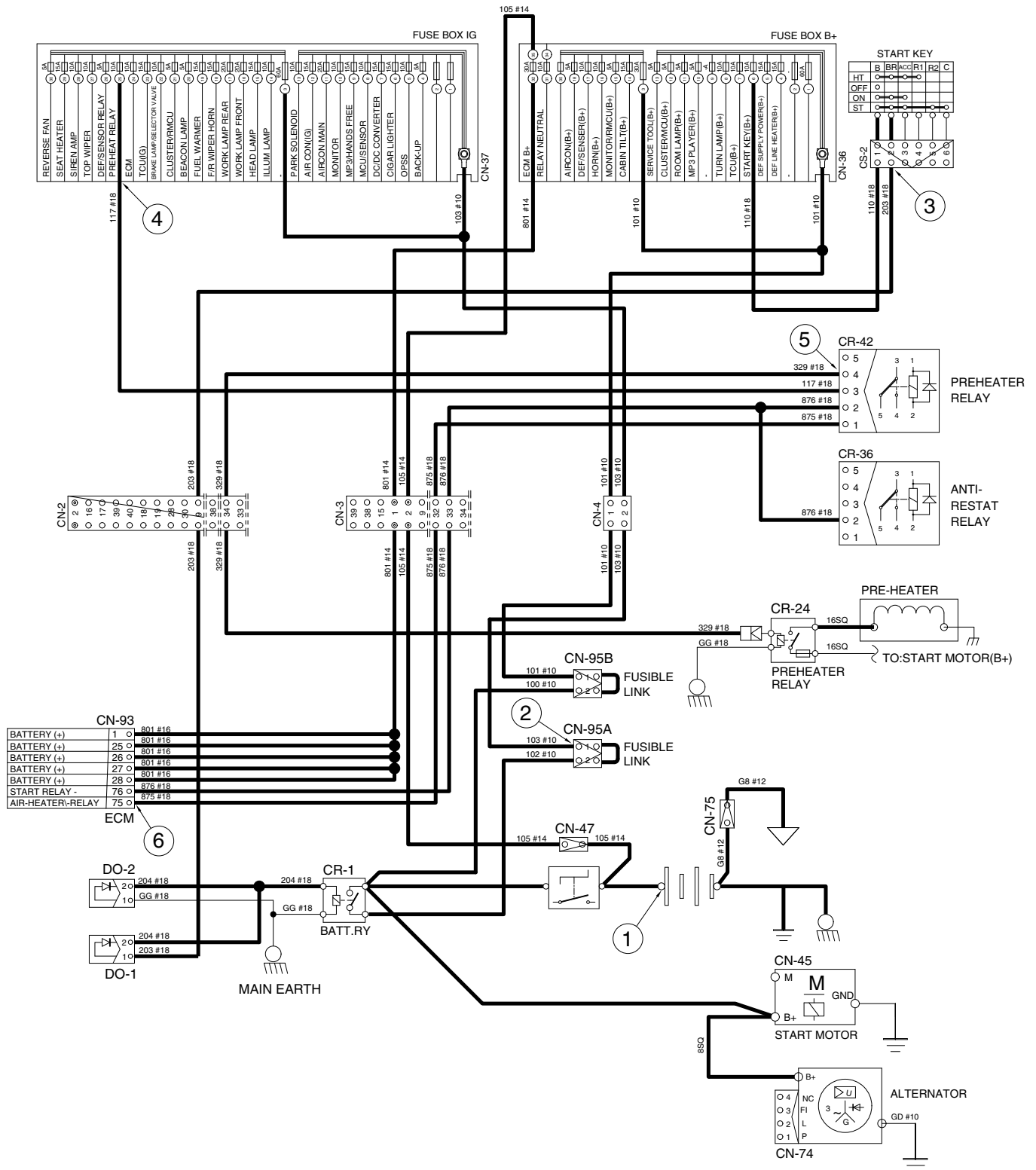
ECM [CN-93 (75)] → I/conn [CN-3 (32)] → Pre-heater relay [CR-42 (1 → 4)]
→ I/conn [CN-2 (34)] → Pre-heater relay [CR-24] → Pre-heater ON

2) CHECK POINT

Engine	Start switch	Check point	Voltage
Stop	ON	① - GND (Battery B+) ② - GND (Fusible link) ③ - GND (Start switch) ④ - GND (Fuse box) ⑤ - GND (Pre-heater relay) ⑥ - GND (ECM)	10 ~ 13V

※ The circuit diagram may differ from the equipment, so please check before a repair.

PREHEATING CIRCUIT



※ The circuit diagram may differ from the equipment, so please check before a repair.

5. HEAD LIGHT AND WORK LIGHT CIRCUIT

1) OPERATING FLOW

(1) Head light

Fuse box (No.15) → Main light switch [CS-39 (5)] → Switch ON, 2nd step [CS-39 (6)]
 → Multi function switch [CS-11 (8)]

- Multi function switch MIDDLE [CS-11 (7)] → I/conn [CN-2 (18)] → I/conn [CN-6 (3)]
 - I/conn [CN-10 (6)] → LH Head light low beam ON [CL-3 (6)]
 - I/conn [CN-11 (6)] → RH Head light low beam ON [CL-4 (6)]
- Multi function switch DOWN [CS-11 (6)]
 - Cluster high beam pilot lamp ON [CN-56 (13)]
 - I/conn [CN-2 (19)] → I/conn [CN-6 (4)]
 - I/conn [CN-10 (4)] → LH Head light high beam ON [CL-3 (4)]
 - I/conn [CN-11 (4)] → RH Head light high beam ON [CL-4 (4)]

(2) Front work light

Fuse box (No.16) → Front work lamp relay [CR-3 (30)]
 → Work light switch [CS-21 (2)] → Switch ON, 1nd step [CS-21 (3)]
 → Front work lamp relay [CR-3 (86→87)] → I/conn [CN-2 (3)]
 → I/conn [CN-6 (15)] → I/conn [CN-9 (1)]
 → Mast work light ON [CL-5, 6, 51, 61 (2)]

(3) Rear work light

Fuse box (No.17) → Rear work lamp relay [CR-55 (30)]
 → Work light switch [CS-21 (5)] → Switch ON, 2nd step [CS-21 (6)]
 → Rear work lamp relay [CR-55 (86→87)]

- I/conn [CN-2 (10)] → LH rear work light ON [CL-22 (2)]
 → RH rear work light ON [CL-23 (2)]
- I/conn [CN-7 (9)] → I/conn [CN-210 (1)], User application
 → I/conn [CN-211 (1)], User application

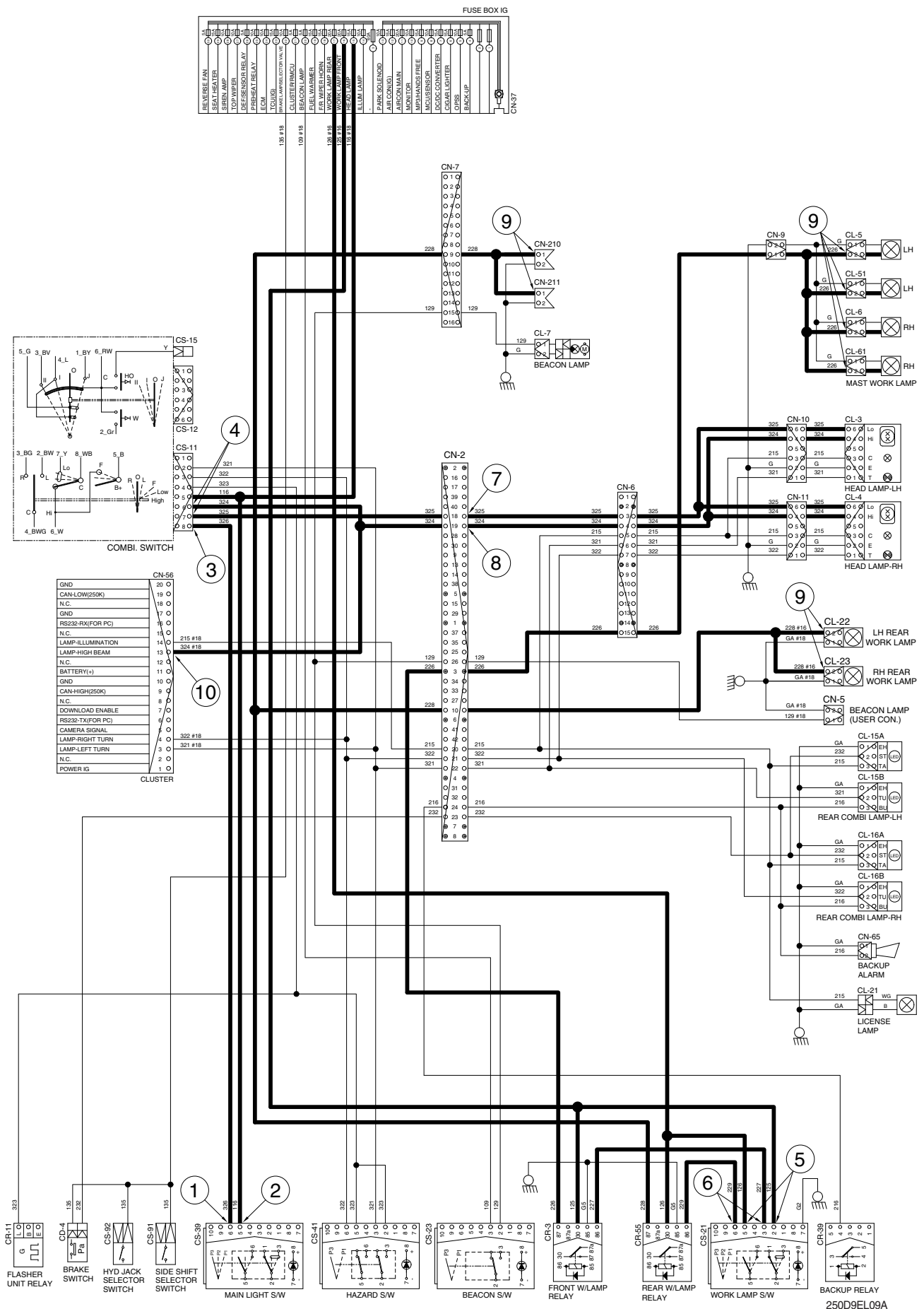
2) CHECK POINT

Engine	Start switch	Check point	Voltage
Stop	ON	① - GND (Main light switch input) ② - GND (Main light switch output) ③ - GND (Multifunction switch input) ④ - GND (Multifunction switch output) ⑤ - GND (Work light switch input) ⑥ - GND (Work light switch output) ⑦ - GND (Low beam) ⑧ - GND (High beam) ⑨ - GND (Work light) ⑩ - GND (Cluster high beam pilot lamp input)	20~25V

※ GND : Ground

※ The circuit diagram may differ from the equipment, so please check before a repair.

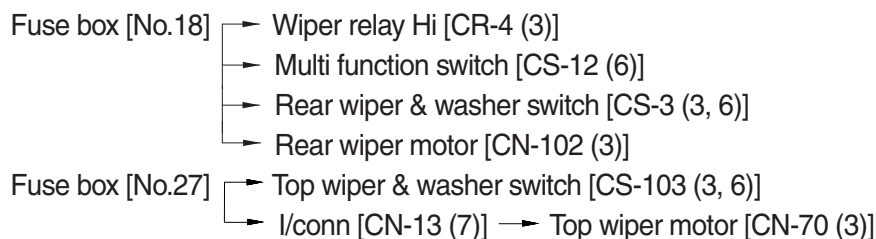
HEAD LIGHT AND WORK LIGHT CIRCUIT



※ The circuit diagram may differ from the equipment, so please check before a repair.

6. WIPER AND WASHER CIRCUIT

1) OPERATING FLOW



(1) Front washer switch ON

- ① Washer switch ON [CS-12 (6)→(2)]
- I/conn [CN-3 (27)] → Front washer tank [CN-22 (2)] → Front washer operating
 - Washer pump relay [CR-38 (1)→(3)] → Int wiper relay Lo [CR-6 (1)→(2)]
 - Wiper relay Lo [CR-26 (2)→(3)] → Front wiper motor [CN-21 (2)]
 - Wiper motor operating (low)

(2) Front wiper switch ON

- ① INT position
- Wiper switch ON [CS-12 (6)→(1)] → Int wiper relay [CR-6 (3)→(2)]
 - Wiper relay Lo [CR-26 (2)→(3)] → Front wiper motor [CN-21 (2)]
 - Front wiper motor intermittently operating
- ② Lo position
- Wiper switch ON [CS-12 (6)→(4)] → Wiper relay Lo [CR-26 (5)→(3)] → Front wiper motor [CN-21 (2)] → Front wiper motor operating (low)
- ③ Hi position
- Wiper switch ON [CS-12 (6)→(3)] → Wiper relay Hi [CR-4 (1)→(4)] → Front wiper motor [CN-21 (4)] → Front wiper motor operating (high)

(3) Auto-parking (when switch OFF)

Switch OFF [CS-12 (4)] → Wiper relay Lo [CR-26 (5)→(3)] → Front wiper motor [CN-21 (2)] → Wiper motor stop

(4) Rear wiper and washer switch

- ① Wiper switch ON (1st step)
- Wiper switch ON [CS-3 (3)→(2)] → Rear wiper motor [CN-102 (4)] → Rear wiper motor operating
- ② Washer switch ON (2nd step)
- Washer switch ON [CS-3 (6)→(5)] → I/conn [CN-3 (31)] → Rear washer tank [CN-103 (2)] → Washer operating
 - Wiper switch ON [CS-3 (3)→(2)] → Rear wiper motor [CN-102 (4)] → Rear wiper motor operating

(5) Top wiper and washer switch

- ① Wiper switch ON (1st step)
- Wiper switch ON [CS-103 (3)→(2)] → I/conn [CN-13 (6)] → Top wiper motor [CN-70 (4)] → Top wiper motor operating
- ② Washer switch ON (2nd step)
- Washer switch ON [CS-103 (6)→(5)] → I/conn [CN-3 (22)] → Top washer tank [CN-202 (2)] → Washer operating
 - Wiper switch ON [CS-103 (3)→(2)] → I/conn [CN-13 (6)] → Top wiper motor [CN-70 (4)] → Top wiper motor operating

※ The circuit diagram may differ from the equipment, so please check before a repair.

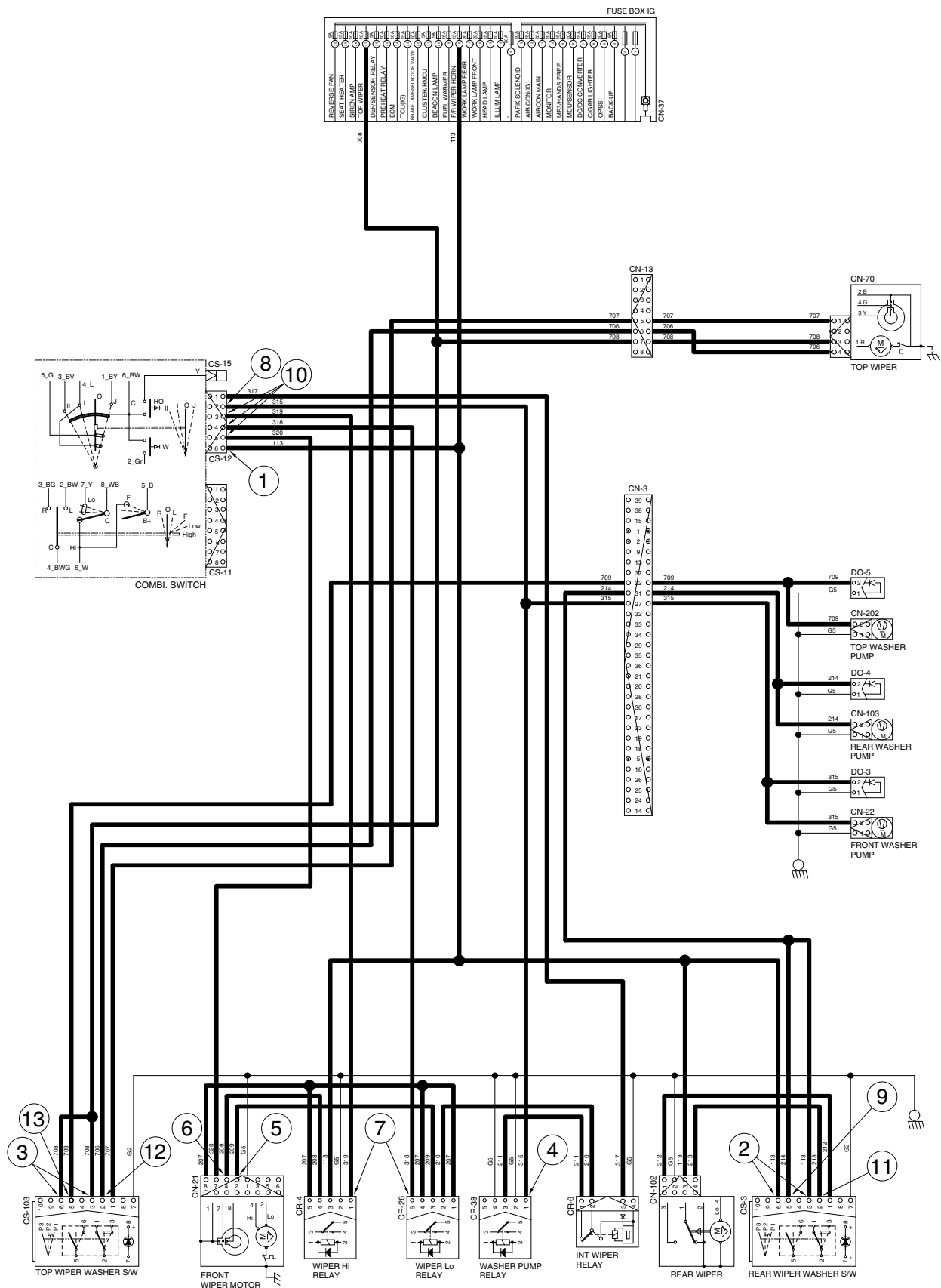
2) CHECK POINT

Engine	Start switch	Check point	Voltage
Stop	ON	① - GND (Front wiper switch power input) ② - GND (Rear wiper switch power input) ③ - GND (Top wiper switch power input) ④ - GND (Washer pump relay power input) ⑤ - GND (Front wiper motor Lo power input) ⑥ - GND (Front wiper motor High power input) ⑦ - GND (Wiper relay power input) ⑧ - GND (Front washer power output) ⑨ - GND (Rear washer power output) ⑩ - GND (Front wiper motor power output) ⑪ - GND (Rear wiper motor power output) ⑫ - GND (Top washer power output) ⑬ - GND (Top wiper motor power output)	20~25V

※ GND : Ground

※ The circuit diagram may differ from the equipment, so please check before a repair.

WIPER AND WASHER CIRCUIT



250D9EL10A

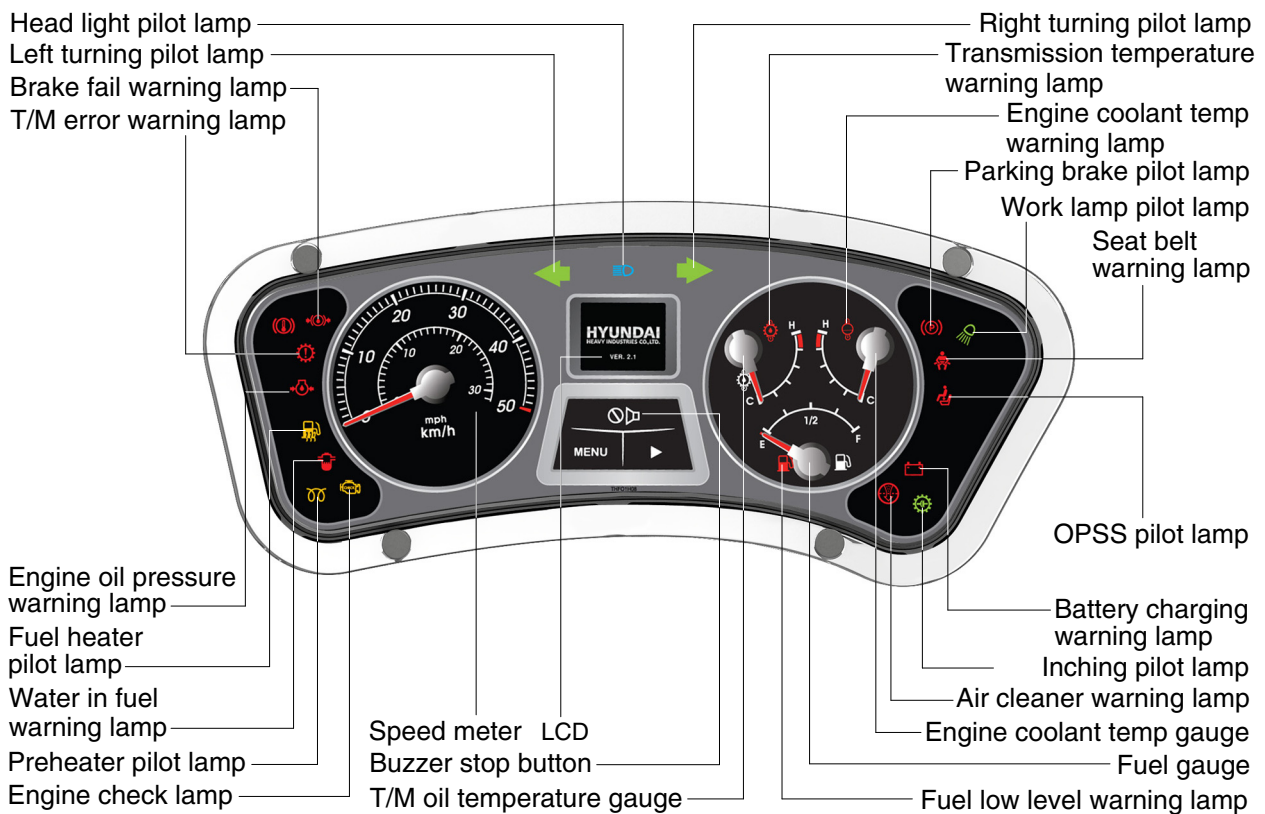
※ The circuit diagram may differ from the equipment, so please check before a repair.

GROUP 3 CLUSTER (-#0041)

1) STRUCTURE

The gauges panel consists of gauges and monitors as shown below, to warn the operator in case of abnormal truck operation or conditions for the appropriate operation and inspection.

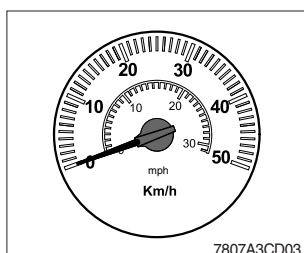
- Gauges : Indicate operating status of the truck.
- Warning lamp : Indicate abnormality of the truck.
- Pilot lamp : Indicate operating status of the truck.
- ※ **The monitor installed on this truck does not entirely guarantee the condition of the truck. Daily inspection should be performed according to chapter 7. PLANNED MAINTENANCE AND LUBRICATION of operator's manual.**
- ※ **When the monitor provides a warning immediately check the problem, and perform the required action.**



160D7ECD02

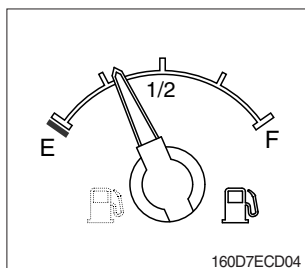
2) GAUGE

(1) Speed meter



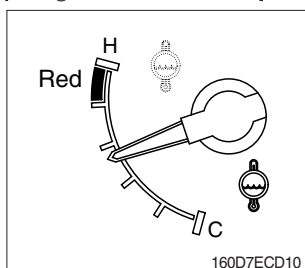
- ① The speedmeter displays the speed of truck in mph and km/h.

(2) Fuel gauge



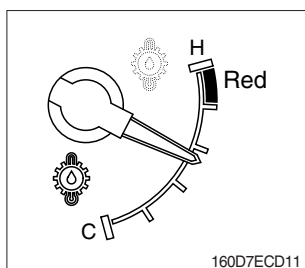
- ① This gauge indicates the amount of fuel in the fuel tank.
- ② Fill the fuel when the indicator moves E point, refuel as soon as possible to avoid running out of fuel.
- ※ If the gauge indicates below E point even though the truck is on the normal condition, check the electric device as that can be caused by the poor connection of electricity or sensor.

(3) Engine coolant temperature gauge



- ① This indicates the temperature of coolant.
 - Red range : Above 104°C (219°F)
- ② Keep idling engine at low speed until the indicator is in the operating range.
- ③ If the indicator is in the red range, turn OFF the engine, check the radiator and engine.

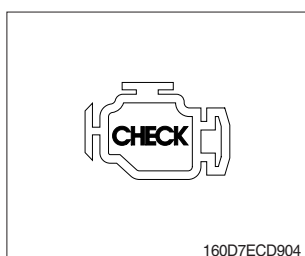
(4) Transmission oil temperature gauge



- ① This range indicates the temperature of transmission oil.
 - Red range : Above 107°C (225°F)
- ② Keep idling engine at low speed until the indicator is in the operating range.
- ③ If the indicator is in the red range, it means the transmission is overheated. Be careful that the indicator does not move into the red range.

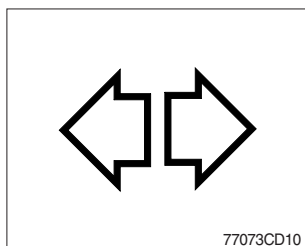
3) WARNING AND PILOT LAMP

(1) Engine check lamp



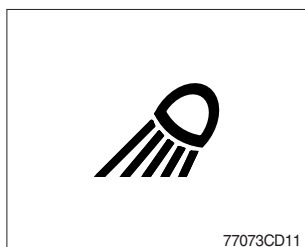
- ① This lamp light ON during a nonfatal engine system error. The engine can still be run, but the fault should be corrected as soon as possible.

(2) Direction pilot lamp



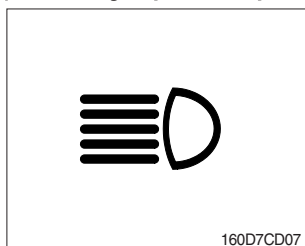
- ① This lamp flashes when the signal indicator lever is moved.

(3) Work lamp pilot lamp (front / rear)



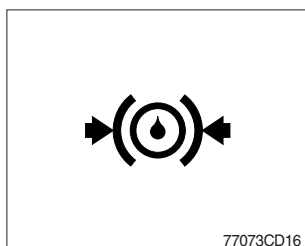
- ① This lamp lights ON when cabin work lamp switch is pressed.

(4) Head light pilot lamp



- ① This lamp comes ON when the main light switch is operated to 2nd step.

(5) Brake fail warning lamp



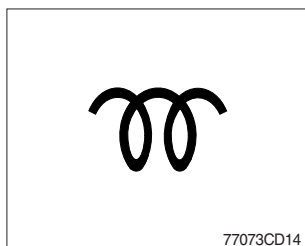
- ① The lamp lights ON when the oil pressure of service brake drops below the normal range.
- ② When the lamp is ON, stop the engine and check for its cause.
- ※ Do not operate until the problems are corrected.

(6) Parking brake pilot lamp



- ① When the parking brake is actuated, the lamp lights ON.
- ※ Check the lamp is OFF before driving.

(7) Preheater pilot lamp



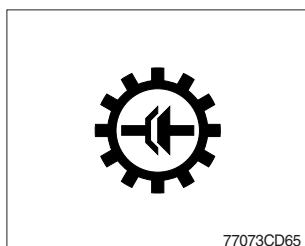
- ① This lamp lights ON when start switch is turned clockwise to the ON position. Light will turn off after approximately 15~45 seconds, depending on engine temperature, indicating that preheating is completed.
- ② When the lamp goes out the operator should start cranking the engine.

(8) OPSS pilot lamp (option)



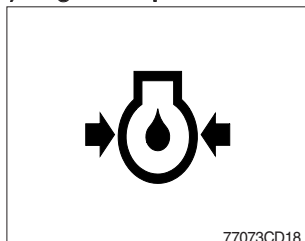
- ① This signal lamp lights ON when the operator leaves the seat.
- ② Powered travel movement of the truck shall be possible only if the operator is in the normal operating position. Transmission will automatically shift to neutral upon the exiting of the operator.
- ③ The forward/Reverse lever must be cycled through neutral with the operator in the normal operating position to regain powered direction control.

(9) Inching pilot lamp



- ① When the inching switch is pressed, the lamp lights ON.

(10) Engine oil pressure warning lamp



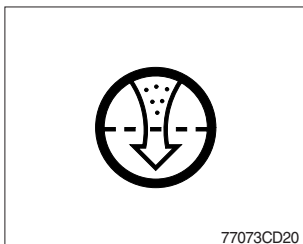
- ① This lamp is comes ON for a while after starting the engine because of the low oil pressure.
- ② If the lamp comes ON during engine operation, shut OFF engine immediately. Check oil level.

(11) Transmission error warning lamp



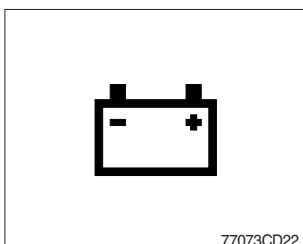
- ① This lamp lights ON and the T/M message display shows the error codes when an error occurs in the transmission.
 - ② Immediately pull the truck to a convenient stop. Stop the engine. Investigate the cause.
- ※ Consult a HYUNDAI dealer to investigate the cause.
※ Do not operate until the cause has been corrected.

(12) Air cleaner warning lamp



- ① This lamp operates by the vacuum caused inside when the filter of air cleaner is clogged.
- ② Check the filter and clean or replace it when the lamp is ON.

(13) Battery charging warning lamp



- ① This lamp is ON after key switch is turned ON.
- ② Check the battery charging circuit when this lamp comes ON during engine operation.

(14) Fuel low level warning lamp



- ① Fill the fuel immediately when the lamp is turned ON.

(15) Water in fuel warning lamp



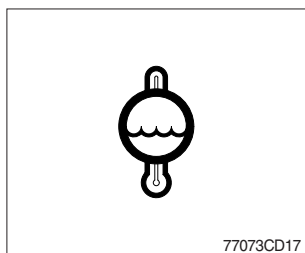
- ① This lamp lights up when the water separator is full of water or malfunctioning.
- ※ When this lamp lights up, stop the truck and spill water out of the separator.

(16) Seat belt warning lamp



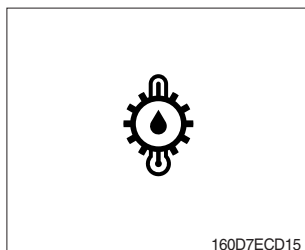
- ① This lamp lights ON for the first five seconds after starting the truck.

(17) Engine coolant temperature warning lamp



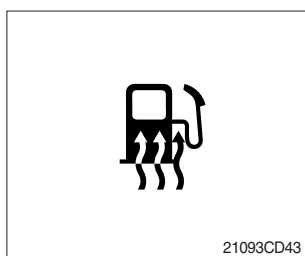
- ① This lamp is turned ON when the temperature of cooling water is over the normal temperature (104°C, 219°F).
- ② Check the cooling system when the lamp is ON.

(18) Transmission oil temperature warning lamp



- ① This lamp informs the operator that transmission oil is above the specified temperature.
 - Transmission oil temperature warning lamp ON : Abnormal
 - Transmission oil temperature warning lamp OFF : Normal
- ※ When this lamp lights up during operation, stop the engine and check the machine.

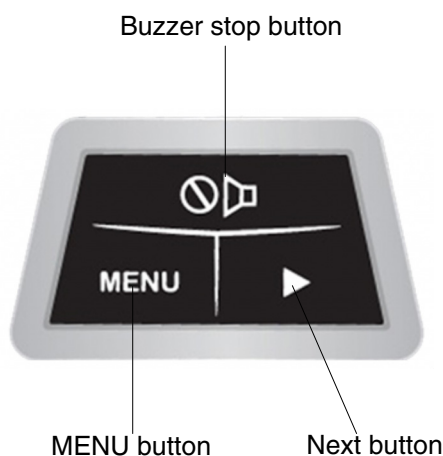
(19) Fuel heater pilot lamp



- ① This lamp is turned ON when the coolant temperature is below 10°C (50°F) or the hydraulic oil temperature 20°C (68°F).
- ② The automatic fuel warming is cancelled when the engine coolant temperature is above 60°C, or the hydraulic oil temperature is above 45°C since the start switch was ON position.

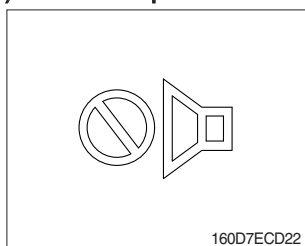
4) CLUSTER BUTTON

Each button has the following function.



160D7ECD121E

(1) Buzzer stop button



- ① This switch is used to stop the buzzer sound.
- ② Stop the buzzer when the switch is pressed.

(2) Menu and next button

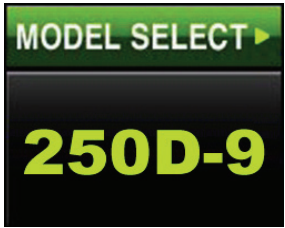
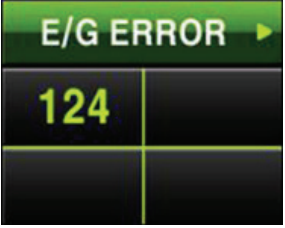


- ① This switches are used to choose the model or display the engine error on the LCD.
- ② Model select mode
 - The model is displayed on the LCD when the menu button  and next button  are pressed simultaneously for some longer seconds.
 - Please don't change your truck model identity because it is already pre-set on the truck before delivery.
- ③ Engine error display
 - The engine error is displayed on the LCD when the menu  button is pressed.
 - On pressing the next button  , next page is displayed in case the error was occurred 5 or more.
 - On pressing the next button  once more, the LCD gets back to normal display status.

5) LCD

LCD has the functions to display start mode, standby mode, cruise function, model select and engine error.

NO	Display	Name	Description
1		Start mode	– Display initialization state with HYUNDAI logo and program version.
2		Standby mode	– Displays on the idle state. – Displays rpm, odometer and hourmeter
3			– Odometer is on, ODO is activated.
4			– Hourmeter is on,  is activated.

NO	Display	Name	Description
5		Model select	- On model select mode, displays like this image. ※ Refer to the page 7-20.
		Engine error display	- In case of below 4 engine errors displays like this image. ※ Refer to the page 7-20.
			In case of over 4 engine errors displays like this image.
			To display next page in case of over 4 errors, press .

GROUP 3 CLUSTER (#0042-)

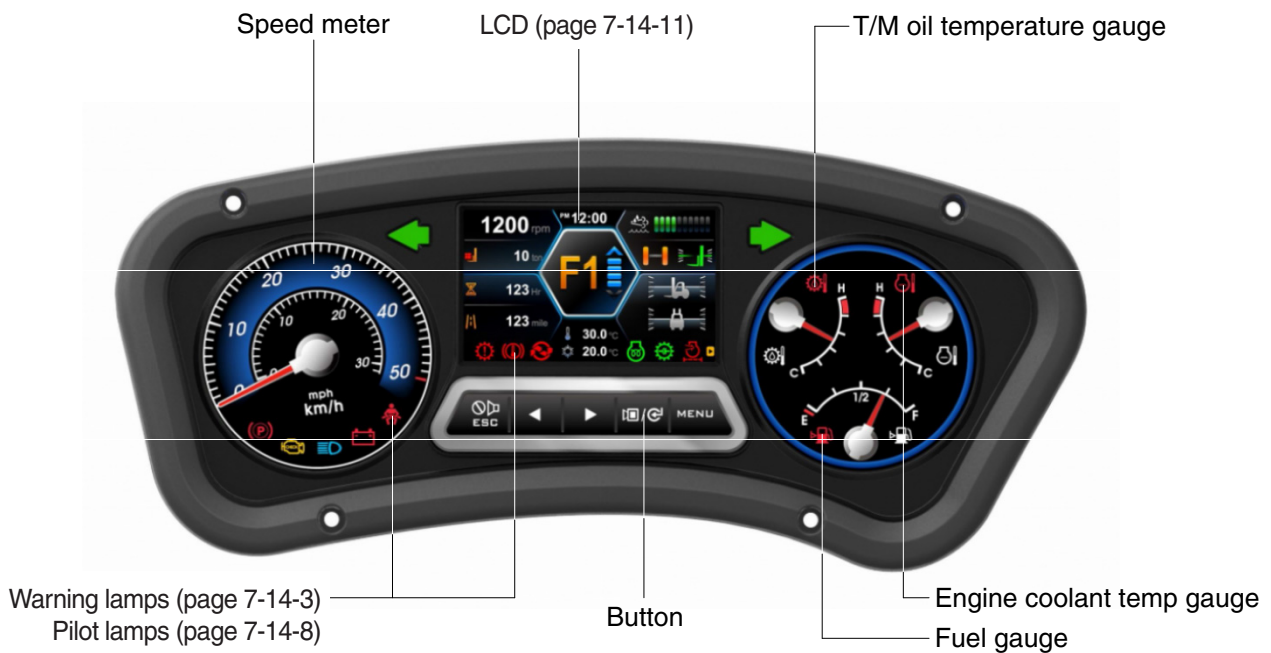
1) STRUCTURE

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

- Gauges : Indicate operating status of the truck.
- Warning lamps : Indicate abnormality of the truck.
- Pilot lamps : Indicate operating status of the truck.
- LCD : Display the truck model, error code and engine speed etc.
- Buttons : Select the truck model, error code and engine speed etc and stop the buzzer sound.

※ The cluster installed on this truck does not entirely guarantee the condition of the truck. Daily inspection should be performed according to chapter 7. PLANNED MAINTENANCE AND LUBRICATION of the operator's manual.

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



180D9CD03

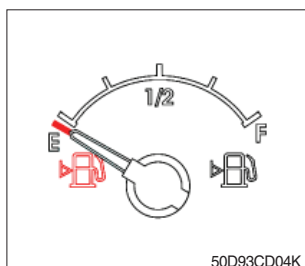
2) GAUGE

(1) Speed meter



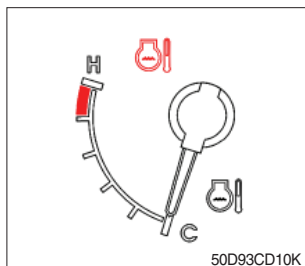
- ① The speed meter displays the speed of truck in mph and km/h.
 - 0~50 km/h
 - 0~31 mph

(2) Fuel gauge



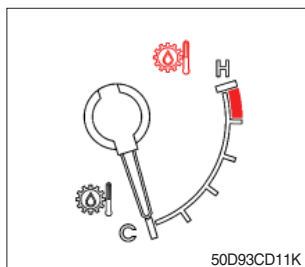
- ① This gauge indicates the amount of fuel in the fuel tank.
- ② Fill the fuel when the indicator moves E point, refuel as soon as possible to avoid running out of fuel.
- ※ If the gauge indicates below E point even though the truck is on the normal condition, check the electric device as that can be caused by the poor connection of electricity or sensor.

(3) Engine coolant temperature gauge



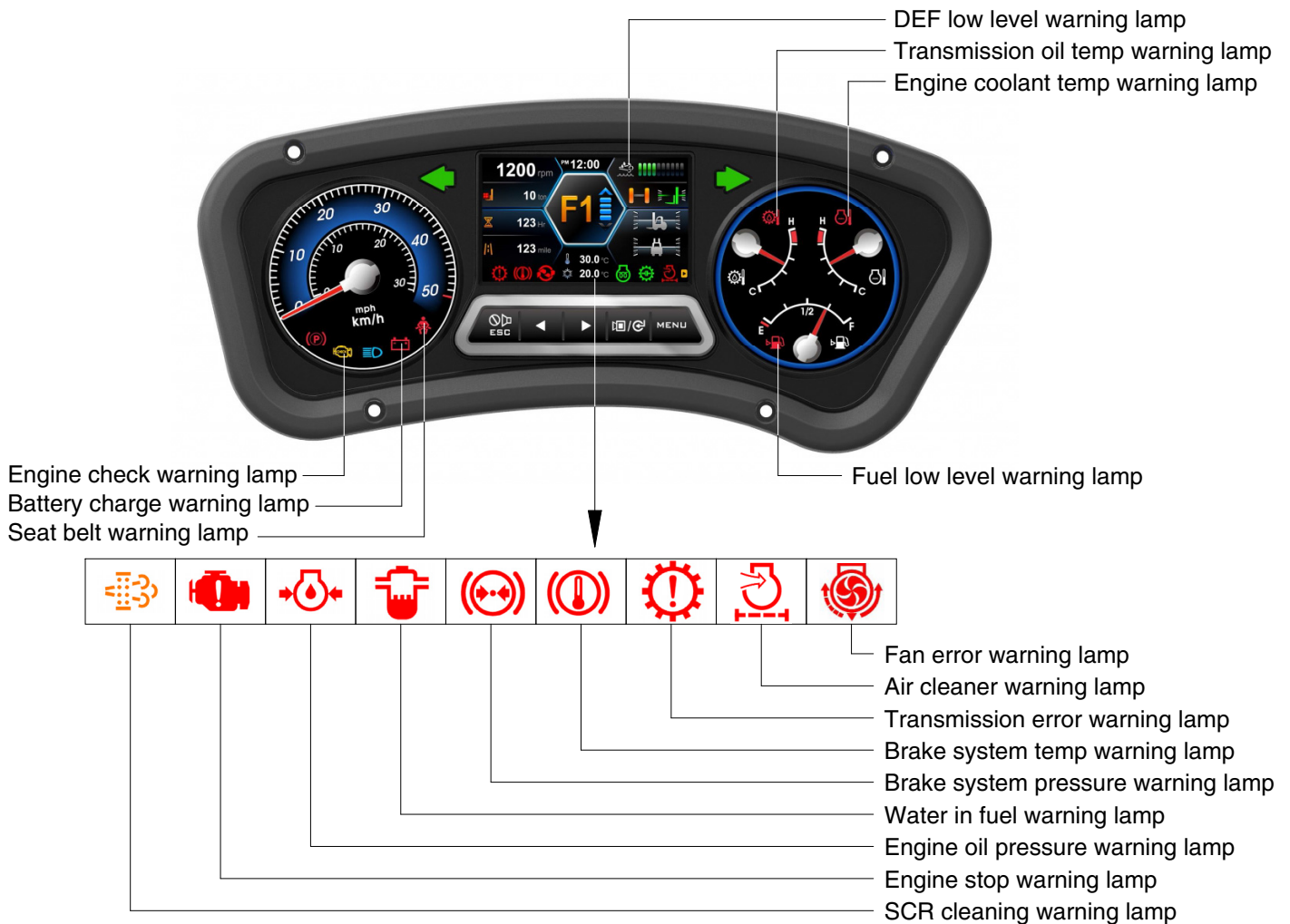
- ① This indicates the temperature of coolant.
 - White range : 40~115 °C (104~239 °F)
 - Red range : Above 115 °C (239 °F)
- ② Keep idling engine at low speed until the indicator is in the operating range.
- ③ If the indicator is in the red range, turn OFF the engine and check the radiator and engine.
- ※ If the gauge indicates red range even though the truck is on the normal condition, check the electric device as that can be caused by the poor connection of electricity or sensor.

(4) Transmission oil temperature gauge



- ① This range indicates the temperature of transmission oil.
 - White range : 40~107 °C (104~225 °F)
 - Red range : Above 107 °C (225 °F)
- ② Keep idling engine at low speed until the indicator is in the operating range.
- ③ If the indicator is in the red range, it means the transmission is overheated. Be careful that the indicator does not move into the red range.

3) WARNING LAMPS



250D9CD02-1

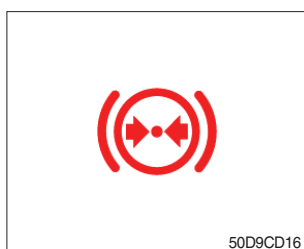
※ When the warning and pilot lamps are illuminated more than display, you can display next lamps by push the button (▶).

(1) Engine check lamp



- ① This lamp lights ON during a nonfatal engine system error.
- ② The engine can still be run, but the fault should be corrected as soon as possible.

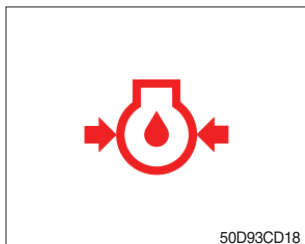
(2) Brake fail warning lamp



- ① The lamp lights ON when the oil pressure of service brake drops below the normal range.
- ② When the lamp is ON, stop the engine and check for its cause.

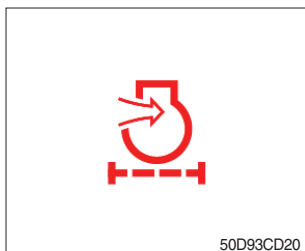
※ Do not operate until the problems are corrected.

(3) Engine oil pressure warning lamp



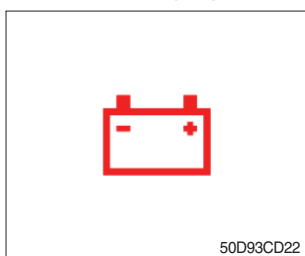
- ① This lamp comes ON for a while after starting the engine because of the low oil pressure.
- ② If the lamp comes ON during engine operation, shut OFF engine immediately. Check oil level.

(4) Air cleaner warning lamp



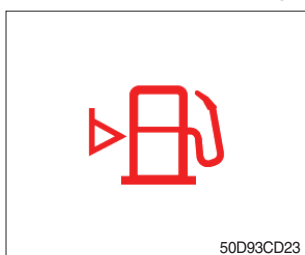
- ① This lamp operates by the vacuum caused inside when the filter of air cleaner is clogged.
- ② Check the filter and clean or replace it when the lamp is ON.

(5) Battery charging warning lamp



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

(6) Fuel low level warning lamp



- ① Fill the fuel immediately when the lamp is turned ON.

(7) Water in fuel warning lamp



- ① This lamp lights up when the prefilter is filled with water or malfunctioning.
- ※ **When this lamp lights up, stop the truck and spill water out of the prefilter.**

(8) Seat belt warning lamp



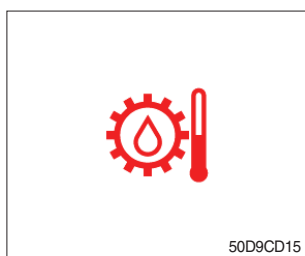
- ① This lamp lights ON for the first five seconds after starting the engine.

(9) Engine coolant temperature warning lamp



- ① This lamp is turned ON when the temperature of cooling water is over the normal temperature (115 °C, 239 °F).
- ② Check the cooling system when the lamp is ON.

(10) Transmission oil temperature warning lamp



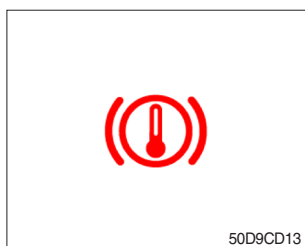
- ① This lamp informs the operator that transmission oil is above the specified temperature (107 °C, 225 °F).
 - Lamp ON : Abnormal
 - Lamp OFF : Normal
- ※ **When this lamp lights up during operation, stop the engine and check the truck.**

(11) Transmission error warning lamp



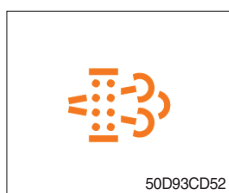
- ① This lamp lights ON and the information window of the LCD shows the error code when an error occurs in the transmission.
 - ② Immediately pull the truck to a convenient stop. Stop the engine. Investigate the cause.
- ※ **Consult a HYUNDAI dealer to investigate the cause.**
- ※ **Do not operate until the cause has been corrected.**

(12) Brake system temperature warning lamp



- ① This lamp is turned ON when the brake oil temperature is too high.
- ② When the lamp is ON, stop the engine and check for its cause.

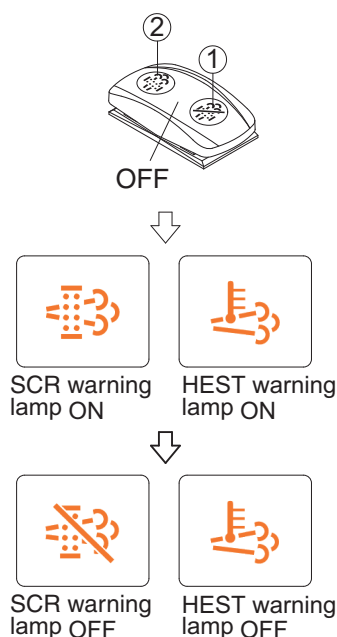
(13) SCR (Selective Catalytic Reduction) CLEANING WARNING LAMP



① This lamp lights ON when the SCR cleaning is needed and lamp flashes when manual SCR cleaning is activated as table below.

Condition	Warning lamp				Remark
	SCR cleaning lamp	DEF Low Lamp	Engine Check Lamp	Engine Stop Lamp	
SCR needs to be cleaned	On	-	-	-	1. Change to a more challenging duty cycle. 2. Perform manual SCR cleaning.
SCR needs to be cleaned immediately	On	-	On	-	Manual SCR cleaning is required.
Stationary SCR cleaning status	Flash	-	-	-	-
DEF level initial warning	-	On	-	-	DEF level 10% Engine error code 3497
DEF level critical warning	-	Flash	-	-	DEF level 5% Engine error code 3498
DEF level initial warning	-	Flash	On	-	DEF level 2.5% Engine error code 1673, 25% derate
DEF level secondary derate warning	-	Flash	On	-	DEF level 0% Engine error code 3547, 3714 50% derate, 30 min.
DEF level final derate warning	-	Flash	On	On	Engine error code 3712 Contact Hyundai service center or dealer.

※ Manual SCR cleaning method



50D93CD143

※ Manual SCR cleaning applies if the machine is in a fireproof area and there is no plan to turn off the machine during the SCR cleaning.

① Stop and park the machine.

② Push the switch to position ② to initiate the manual SCR cleaning.

※ Refer to the page 7-27-6 for the switch operation.

※ The engine speed may increase during SCR cleaning and it will take approximately 20~60 minutes depending on condition.

③ The SCR cleaning lamp flash and HEST warning lamp will light on during the manual SCR cleaning function is operating.

④ The SCR cleaning and/or HEST warning lamp will light OFF when the SCR cleaning function is completed.

(14) DEF (Diesel Exhaust Fluid) low warning lamp



- ① This warning lamp indicates, when illuminated or flashing, that the diesel exhaust fluid level is low.
- ※ **Add the diesel exhaust fluid into DEF tank.**
- ※ **Refer to the page 7-14-10 for detail.**

(15) Engine stop warning lamp



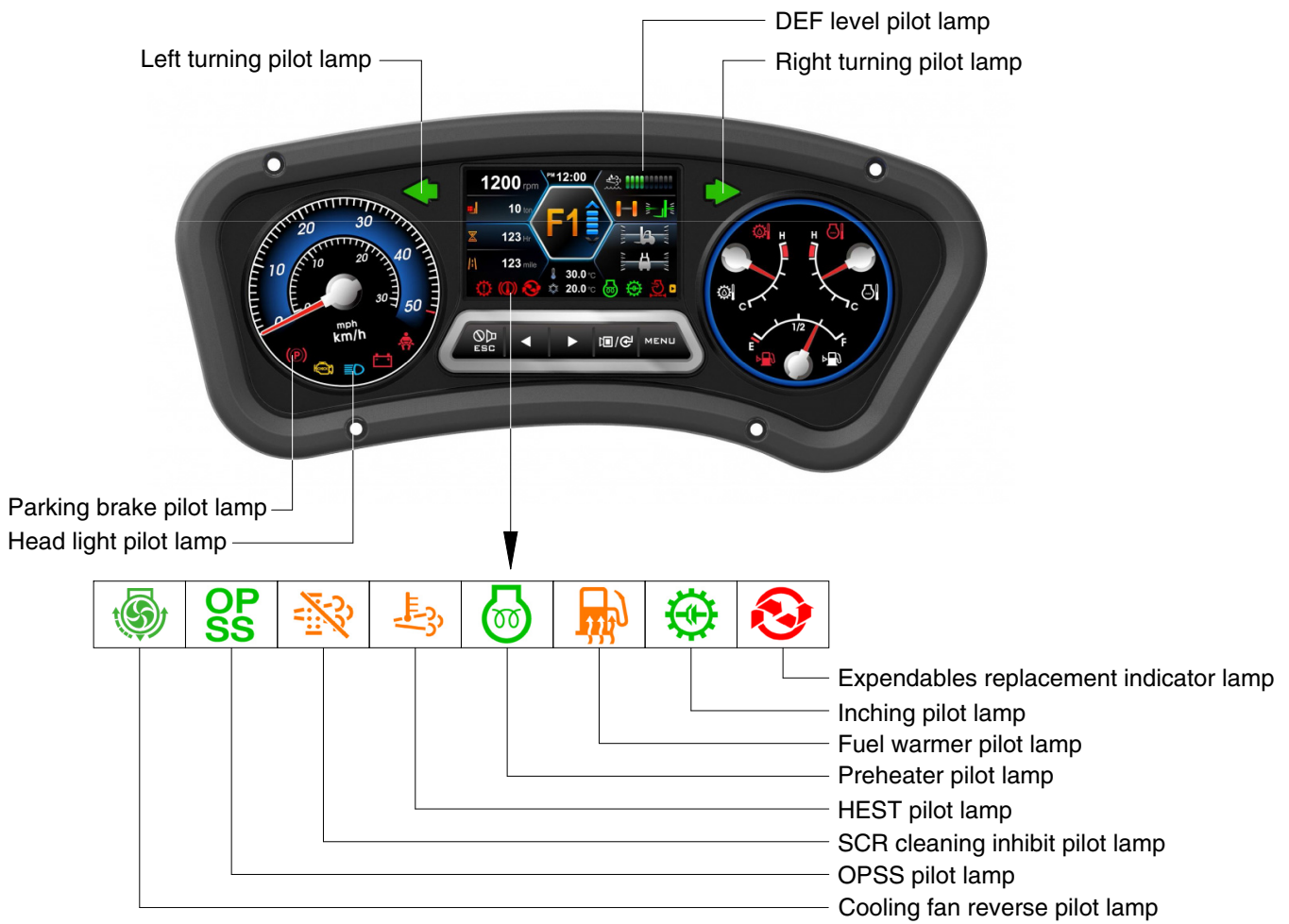
- ① When this warning lamp lights ON, stop the engine immediately and check the DEF level and related parts of the engine.
- ※ **Please contact your Hyundai service center or local dealer.**

(16) Fan error warning lamp



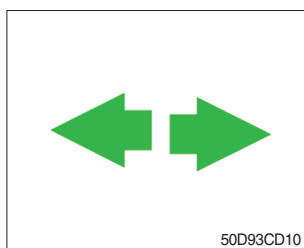
- ① This lamp is turned ON when the cooling fan error occurs.

4) PILOT LAMPS



※ When the warning and pilot lamps are illuminated more than display, you can display next lamps by push the button (▶).

(1) Direction pilot lamp



① This lamp flashes when the signal indicator lever is moved.

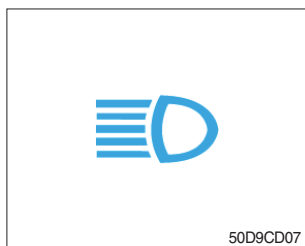
(2) Parking brake pilot lamp



① When the parking brake is actuated, the lamp lights ON.

※ Check the lamp is OFF before driving.

(3) Head light pilot lamp



- ① This lamp comes ON when the main light switch is operated to 2nd step.

(4) Preheater pilot lamp



- ① This lamp lights ON when start switch is turned clockwise to the ON position. Light will turn off after approximately 15~45 seconds, depending on engine coolant temperature, indicating that preheating is completed.
- ② When the lamp goes out the operator should start cranking the engine.

※ Refer to page 5-12 of the operator's manual.

(5) Inching pilot lamp



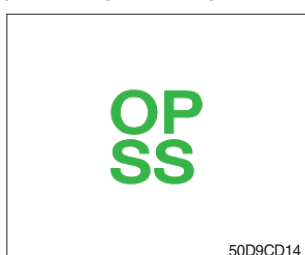
- ① When the inching switch is pressed, the lamp lights ON.

(6) Fuel warmer pilot lamp



- ① Illuminates when the hydraulic fluid temperature is below 20 °C (68 °F) or engine coolant temperature is below 10 °C (50 °F).
- ② If the engine coolant temperature is above 60 °C (140 °F) or hydraulic fluid temperature is above 45 °C (113 °F) the start switch is in the ON position, automatic fuel heating is canceled.

(7) OPSS pilot lamp



- ① This signal lamp lights ON when the operator leaves the seat.
- ② Powered travel movement of the truck shall be possible only if the operator is in the normal operating position. Transmission will automatically shift to neutral upon the exiting of the operator.
- ③ The gear selector lever must be cycled through neutral with the operator in the normal operating position to regain powered direction control.

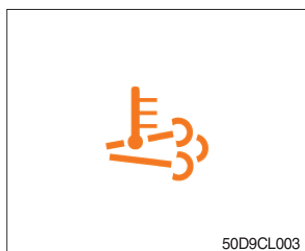
(8) SCR cleaning inhibit pilot lamp



- ① This pilot lamp lights ON when the SCR cleaning switch is pushed inhibit position, therefore automatic and manual SCR cleaning can not occur. It should be inhibited, before caused fire due to the exhaust gas in high temperature.

※ Refer to the page 7-27-6 for the SCR cleaning switch.

(9) HEST (High exhaust system temperature) pilot lamp

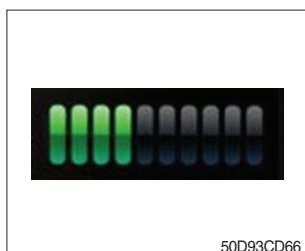


- ① This warning lamp indicates, when illuminated, that exhaust temperatures are high due to SCR cleaning.
- ② The lamp will also illuminate during a manual SCR cleaning.
- ③ When this lamp is illuminated, be sure the exhaust pipe outlet is not directed at any surface or material that can melt, burn, or explode.

▲ When this lamp is illuminated, the exhaust gas temperature could reach 800 °C [1500 °F], which is hot enough to ignite or melt common materials, and to burn people.

※ The lamp does not signify the need for any kind of equipment or engine service; It merely alerts the equipment operator to high exhaust temperatures. It will be common for the lamp to illuminate on and off during normal equipment operation as the engine completes the SCR cleaning.

(10) DEF (Diesel Exhaust Fluid) level pilot lamp



- ① This gauge indicates the level of DEF (10 steps).
- ② Fill the DEF when the level is low.

(11) Expendables replacement indicator lamp



- ① This lamp lights ON if expendables which must be replaced exist.
- ② The lamp will light up only 3 minutes since KEY ON, and then light off.
- ③ Please check the expendables management list in maintenance menu.

(12) Cooling fan reverse rotation pilot lamp

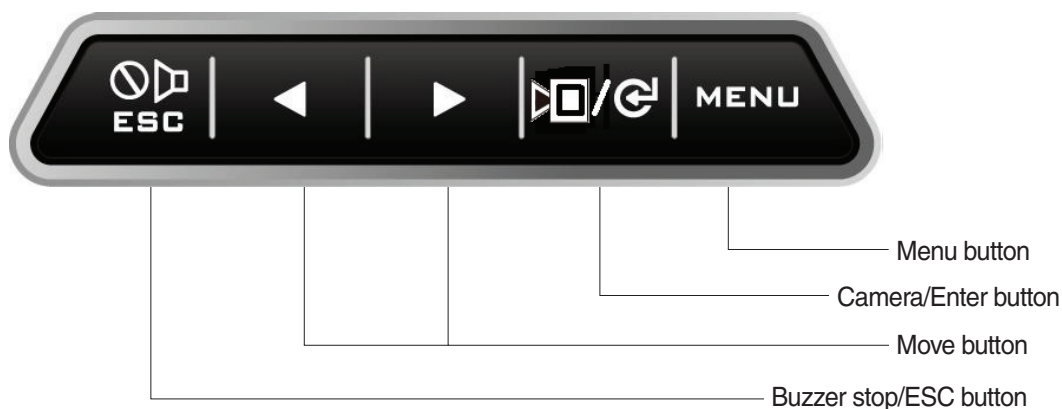


- ① This lamp lights ON when the cooling fan is operated to the reverse rotation.

※ Refer to page 7-27-7 for the operation of the cooling fan.

4) CLUSTER BUTTON

Each button has the following function.



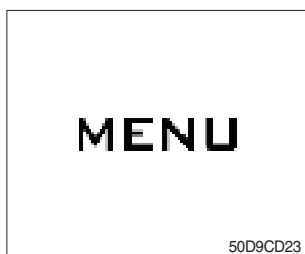
50D9CD121

(1) Buzzer stop/ESC button



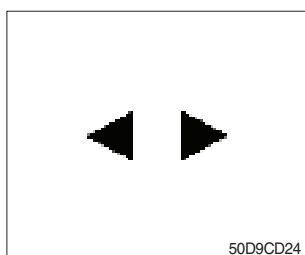
- ① This button is used to stop the buzzer sound.
- ② If another alarm condition occurs after this button has been pressed, the alarm buzzer will re-sound.

(2) Menu button



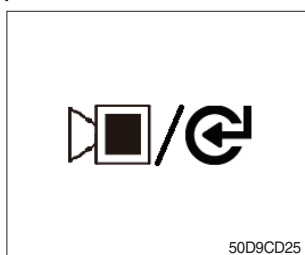
- ① Move in menu (left, up / right, down).

(3) Move button



- ① Move in menu (left, up / right, down).
- ② Decrease / Increase input value.
- ③ When the warning and pilot lamps occur over six, you can display next lamps by push the button (▶).

(4) Enter button



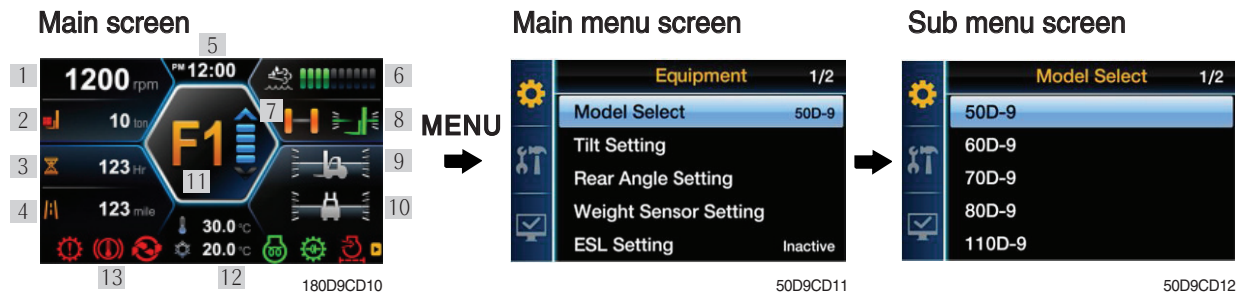
- ① Change the camera screen on main
- ② This button is used to select menu.

5) LCD

(1) Main screen

※ You can select or set the menu by the button of the cluster.

※ Please refer to the page 7-14-11 for the selection and change of the menu and input value.



- 1 Engine rpm
- 2 Load indicator (opt)
- 3 Hour meter
- 4 Odometer
- 5 Current time
- 6 DEF level gauge
- 7 Rear wheel angle (opt)

- 8 Mast angle (opt)
- 9 Vehicle angle X (opt)
- 10 Vehicle angle Y (opt)
- 11 T/M info (error code, gear, warning)
- 12 Temperature (outdoor temp., setting temp) (cabin opt)
- 13 Warning and pilot lamps

Communication error



※ Main screen when occurred communication error between the cluster and TCU/ MCU / ECU

Occurrence of the truck fault

While illuminates the engine, transmission or air conditioner warning lamp, when you press right button (▶) in the cluster button for about 4 seconds, it directly connected to the current failure screen.

(Warning lamp : Engine (), Transmission ( and Air conditioner ().

(2) Camera screen

- ① Depending on the gear, if the gear is rear position, screen is changed to camera screen.
- ② If the camera is not mounted or the camera signal is abnormal, the current screen remains.

(3) Main menu

No.	Main menu	Sub menu	Description
1	 Equipment 50D9CD14K	Model select Tilt setting Rear angle setting Weight sensor setting ESL setting Vehicle max speed limit AEB setting (R) MCU/cluster information Cooling fan control Auto idle down	Model select Tilt setting (mast and vehicle angle) Rear angle setting Cross-section, load weight adjust, weight display setting, load indicator buzzer ESL setting Vehicle max speed limit (10~30 km) AEB setting (R)MCU/cluster information Rotation direction, reverse interval and time Auto idle down ON/OFF
2	 Maintenance 50D9CD15K	Failure history Maintenance management Signal statue User password change Alternate torque Opening of communication	Current history, logged history and delete logged fault Replacement, Change interval oils and filters Display information of sensors User password change (5~10 digit) Alternate torque mode Orbcomm, GPS antenna
3	 Display setting 50D9CD16K	LCD adjustment Time setting Unit setting Language setting AS phone number ESL password change Maintenance management	LCD brightness setting Time setting Unit setting (temp, speed, weight, pressure) Language setting (13 languages) Check and change AS phone number ESL password change (5~10 digit) Maintenance information (cycle, elapsed time, change count, alarm info)

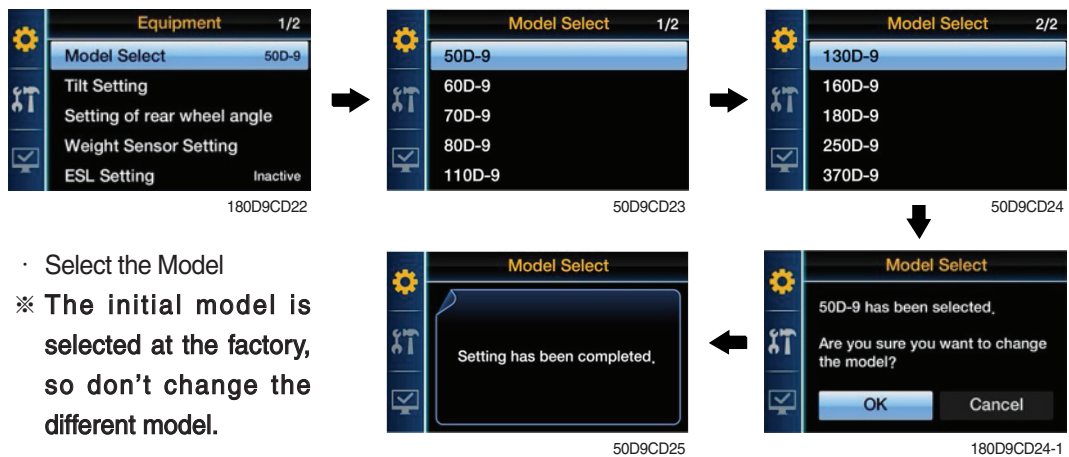
(3) Equipment

① Choose the equipment



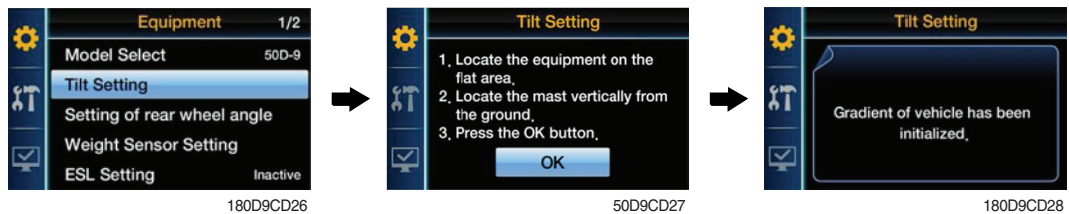
- To enter the menu, you must input user password.
- Default password is '00000'
- You should set password by five to ten digit.

② Model select



- Select the Model
- ※ The initial model is selected at the factory, so don't change the different model.

③ Tilt setting



- Set the offset about mast angle sensors and vehicle angle sensors.

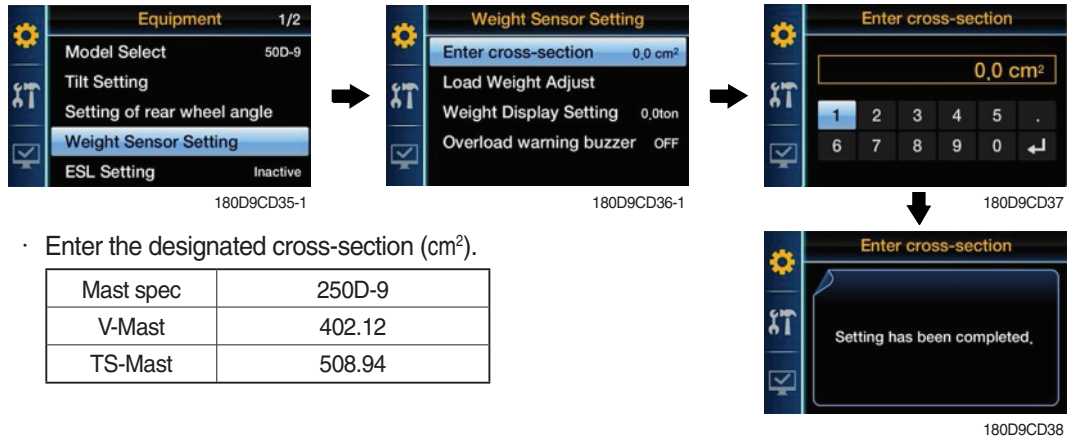
④ Setting for rear wheel angle



- The user revises a forklift truck steering angle.
- Display set to approve a condition.
 - Right set rear wheel calibration.
 - Center set rear wheel calibration.
 - Left set rear wheel calibration.

⑤ Weight sensor setting

a. Cross-section



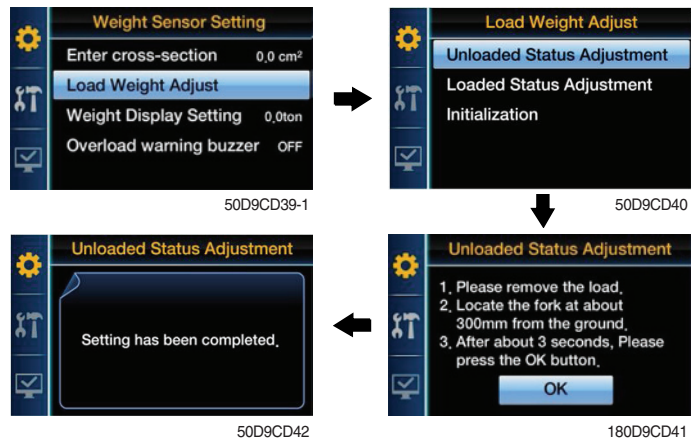
- Enter the designated cross-section (cm²).

Mast spec	250D-9
V-Mast	402.12
TS-Mast	508.94

b. Load weight adjust

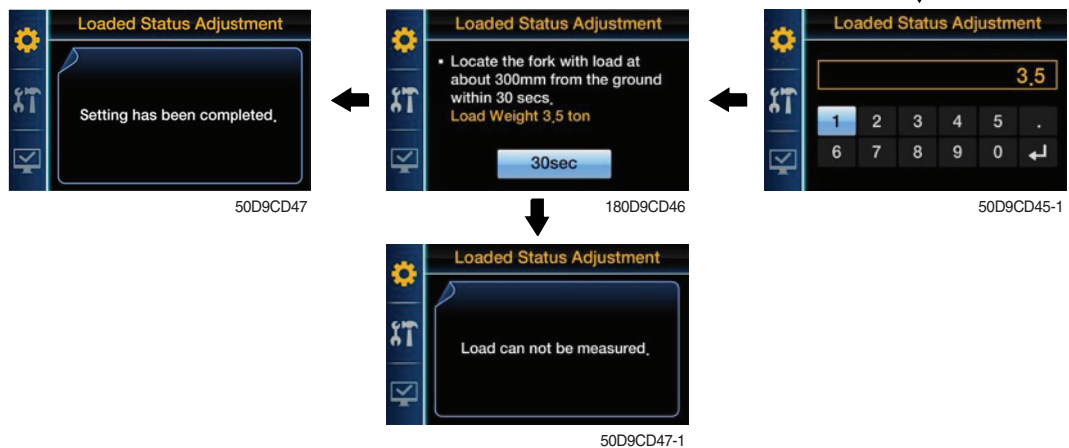
- Unloaded status adjustment

In the unloaded from the ground waiting 5 seconds after lift 30 cm, and tare ON.



- Loaded status adjustment

Loaded enter the weight.
 -> In the loaded from the ground waiting 5 seconds after lift 30 cm.
 -> Weight correction ON.





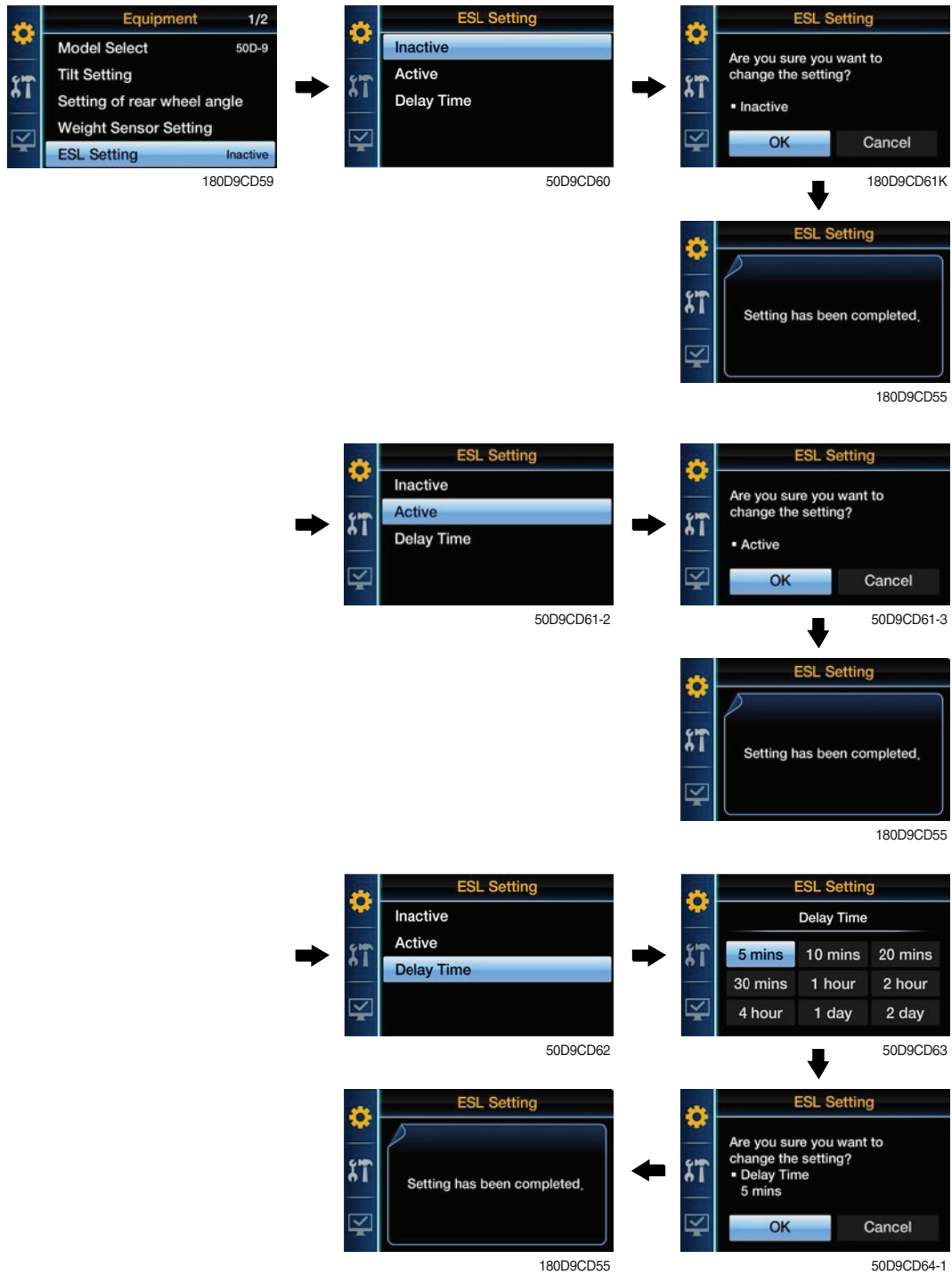
c. Weight display setting



d. Overload warning buzzer

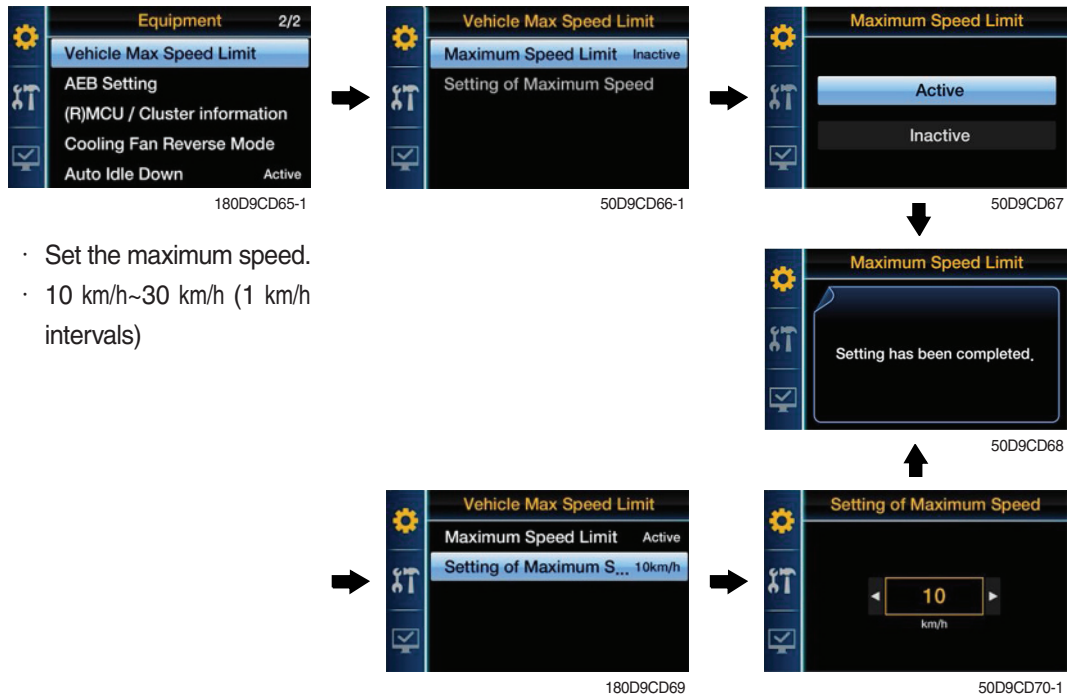


⑥ ESL setting



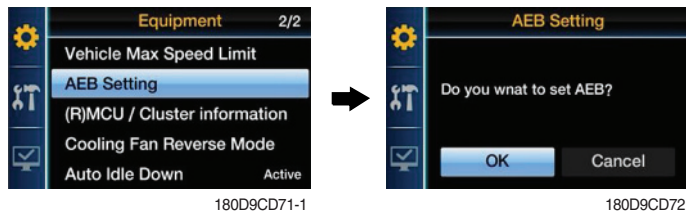
- Set ON/OFF function for using limitation of ignition and time for starting.
- Set time 5 minutes for starting :
In 5 minutes you can restart without password, but after 5 minutes, you should input password for starting.

⑦ Vehicle max speed limit



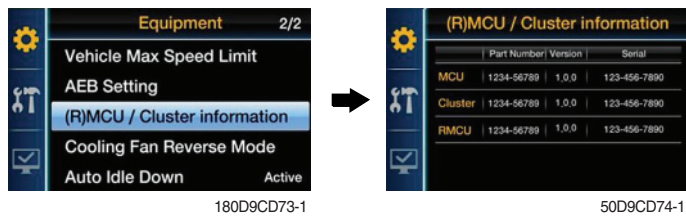
- Set the maximum speed.
- 10 km/h~30 km/h (1 km/h intervals)

⑧ AEB setting



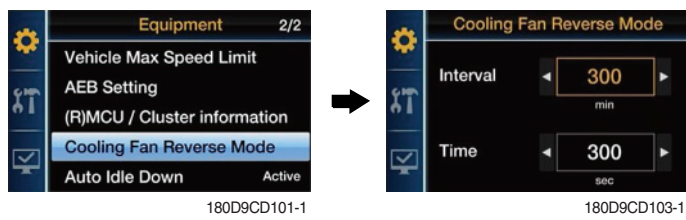
- Press OK button, then calibration will be started, for cancel, press Menu/ECS/Enter button.
- When it is finished (OK sign at gear box), Press Menu/ECS/Enter button.
- Start the engine : AEB start
- KEY ON : Brake pedal sensor calibration

⑨ (R) MCU / Cluster information



- Software version check for MCU/Cluster/RMCU.

⑩ Cooling fan reverse mode

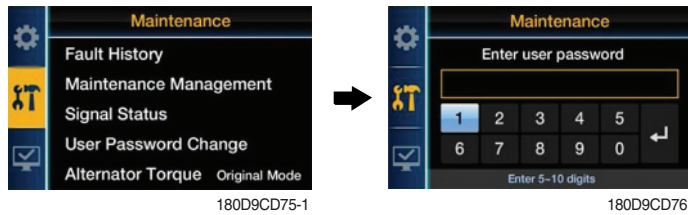


- Manual : The fan only rotate in reverse direction while you hold down the manual button.
- Automatic : The fan rotate in reverse direction at pre-set interval.
 - Interval : 30 minutes ~ 5 hours
 - Time : 30 seconds ~ 5 minutes

※ Refer to the page 7-27-7 for the cooling fan control switch.

(4) Maintenance

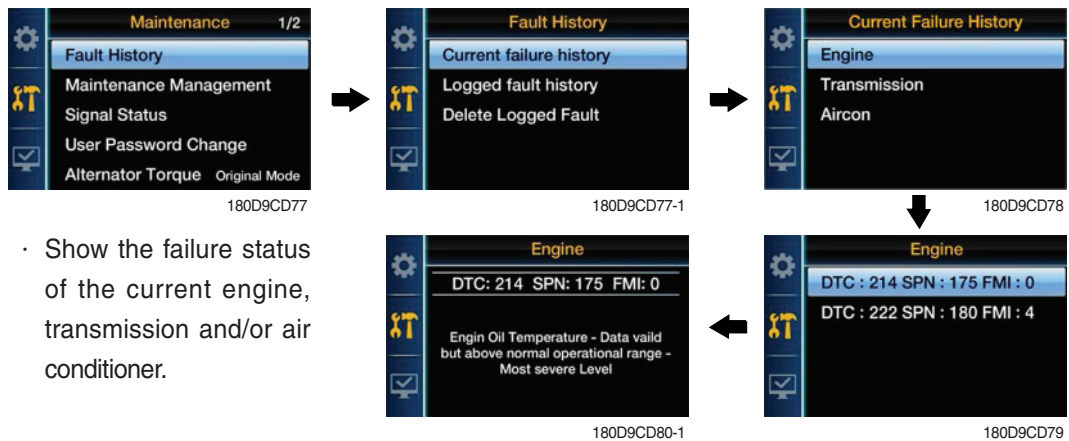
① Choose the maintenance



- To enter the Menu, you must input user password.
- Default password is '00000'
- You should set password by five to ten digit.

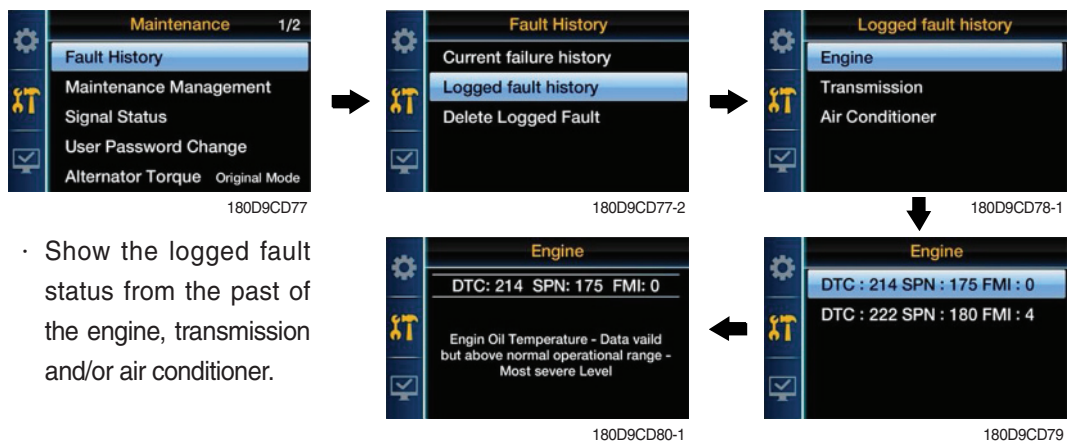
② Failure history

a. Current failure history



- Show the failure status of the current engine, transmission and/or air conditioner.

b. Logged fault history

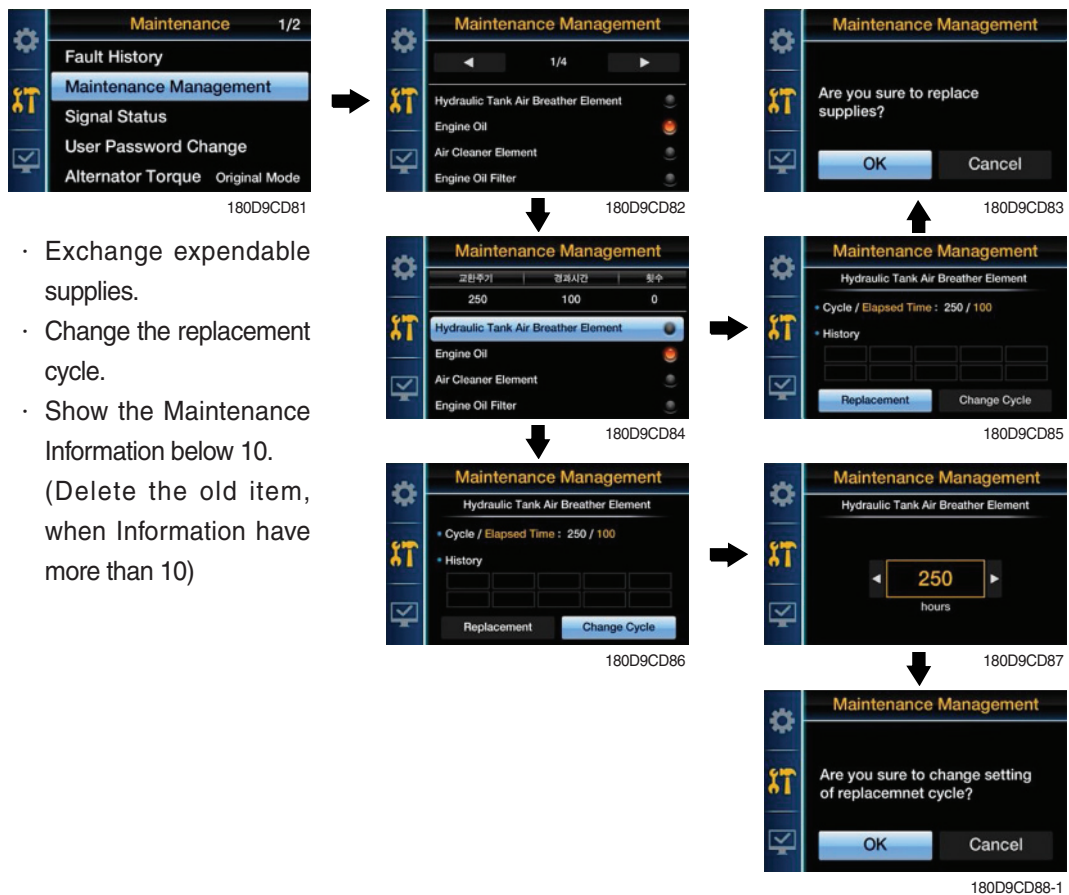


- Show the logged fault status from the past of the engine, transmission and/or air conditioner.

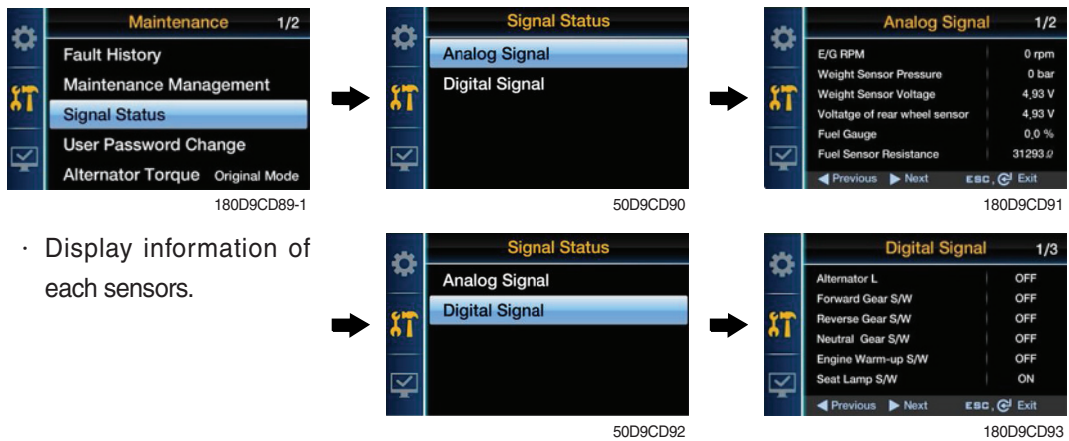
c. Delete logged fault



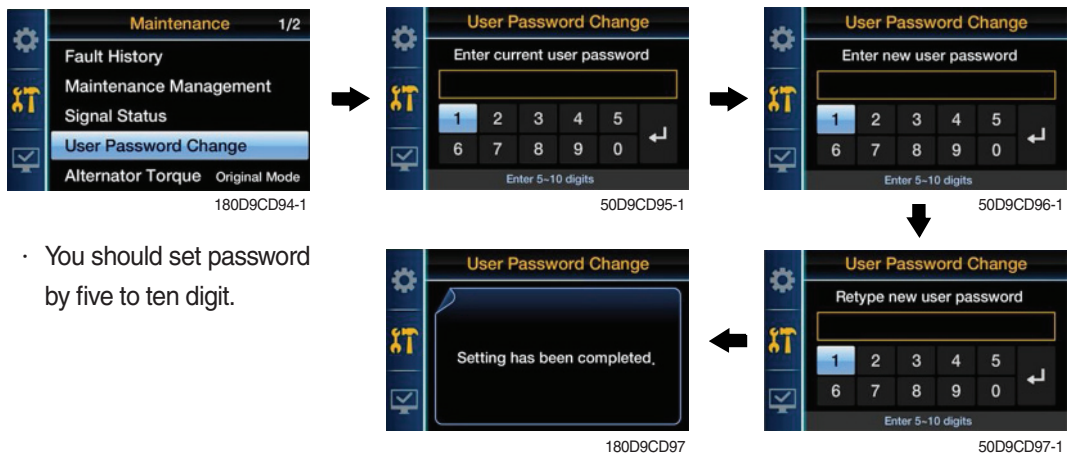
③ Maintenance management



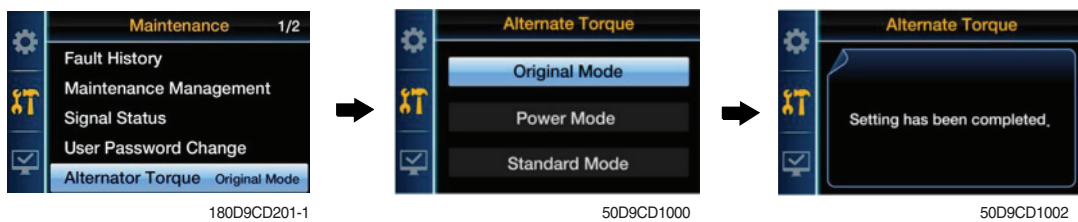
④ Signal status



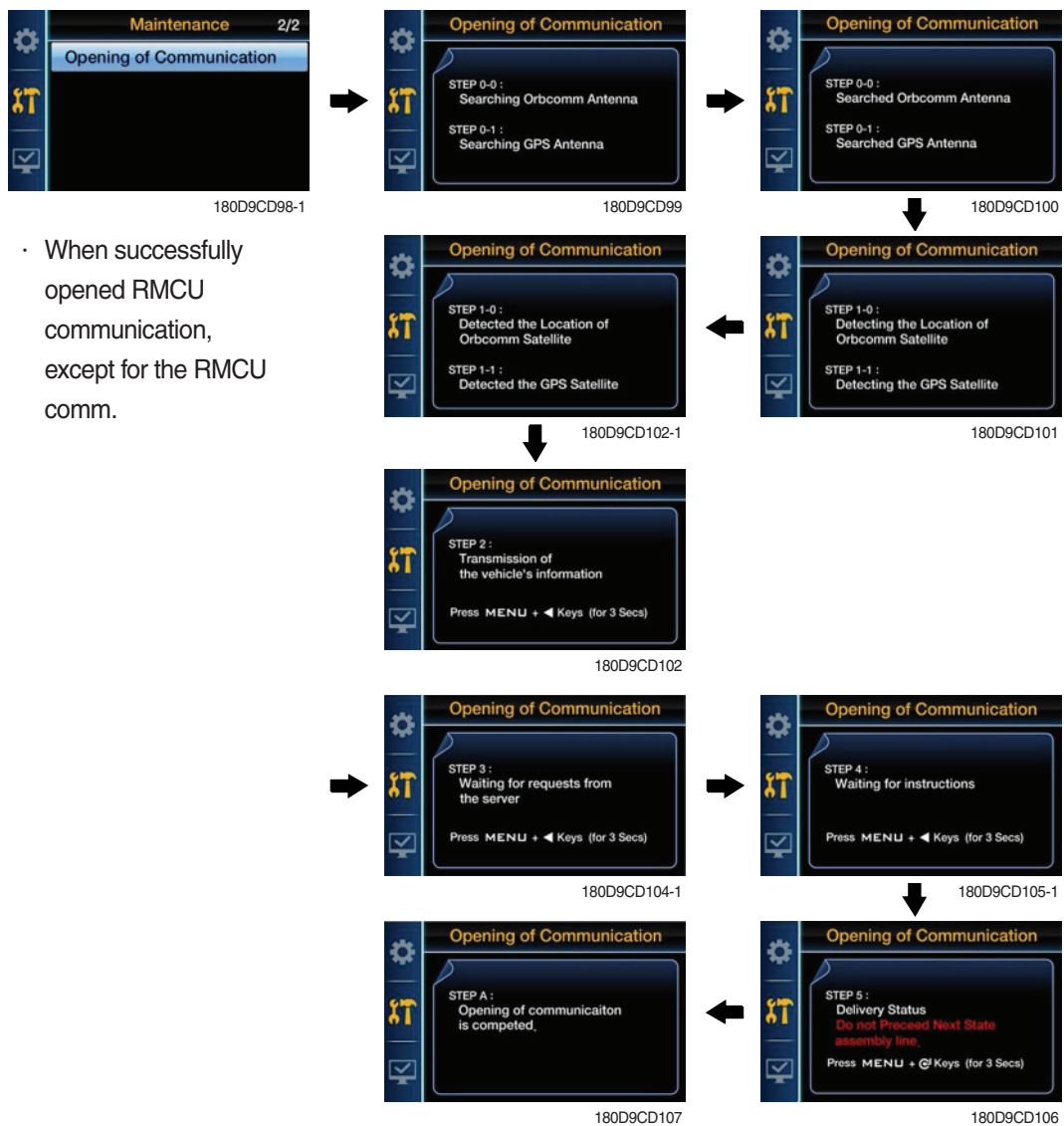
⑤ User password change



⑥ Alternate torque

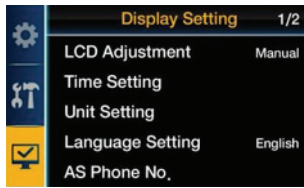


⑦ Opening of communication



(5) Display setting

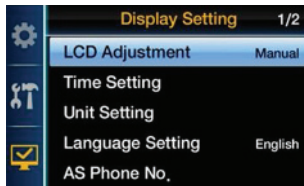
① Choose the display setting



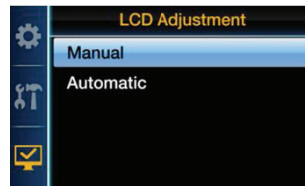
180D9CD108

- No password is required.

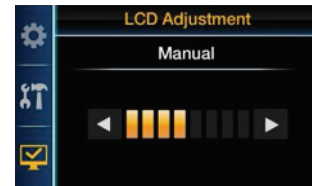
② LCD adjustment



180D9CD109



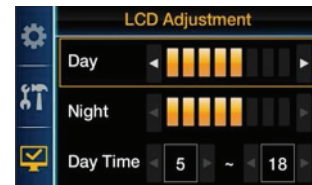
50D9CD110



180D9CD111

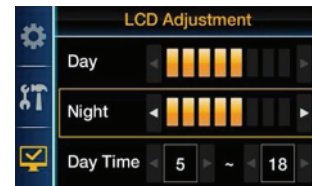


50D9CD112

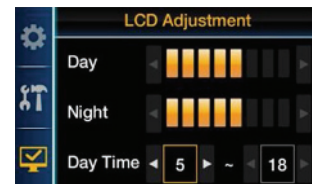


180D9CD113

- Manual : Manual setting for LCD brightness.
- Automatic : Automatic control of LCD brightness as set level of Day/Night.
- Setting day time : Set the time for daylight.
(If you set the time for daylight, the rest time will be night.)

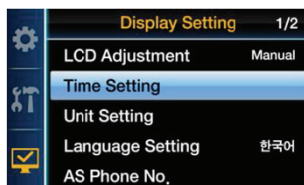


180D9CD114

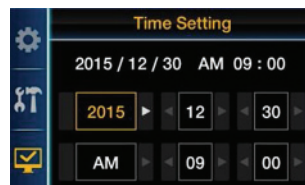


180D9CD115

③ Time setting



50D9CD116



180D9CD117

- Set the time (Year, Month, Day, Hour, Minute, AM/PM).

④ Unit setting



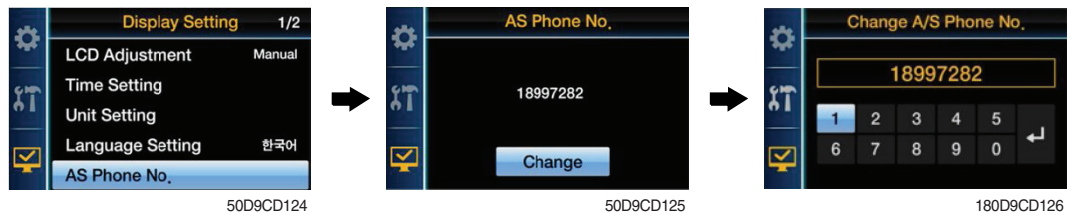
- Change units of temperature / speed / wight / pressure.

⑤ Language setting



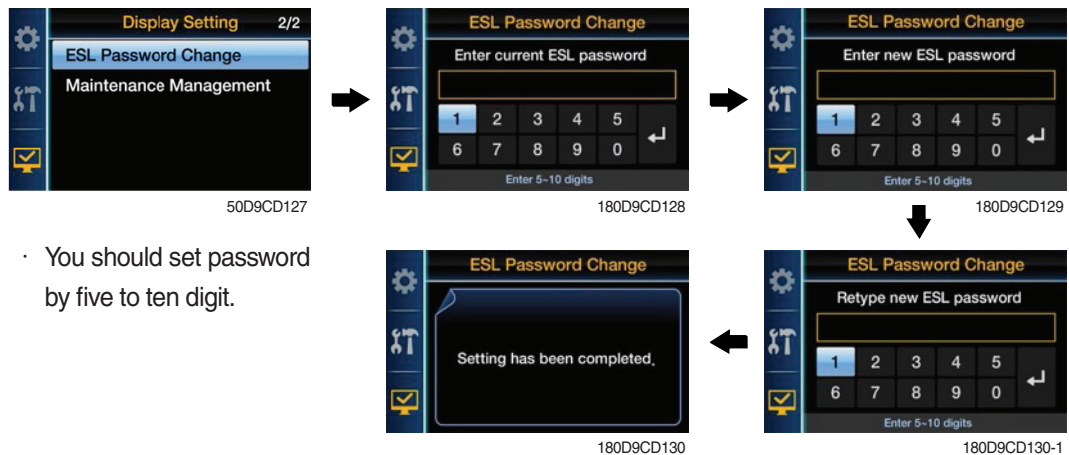
- Set the language used by your device.
(13 Multiple language)

⑥ A/S phone number



- Check and change of contact information for customer service.

⑦ ESL password change



- You should set password by five to ten digit.

⑧ Maintenance management



- Show the maintenance information (replacement cycle, elapsed time, change count, alarm information).

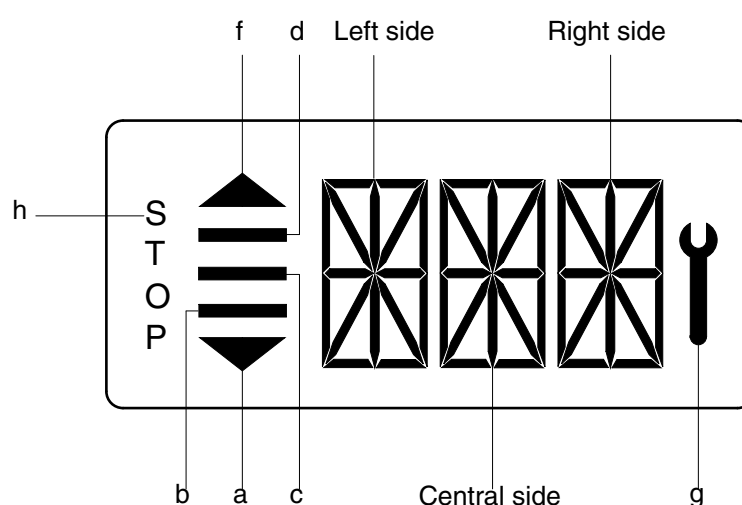
GROUP 4 TRANSMISSION MESSAGE INDICATOR (-#0041)

1) TRANSMISSION ERROR DISPLAY

(1) Function

The display can be used with the gear selector. It indicates speed and driving direction as well as the activated inching.

When driving in the automatic mode, a bar indicator gives additionally also information about the selected driving range ; The automatic range is symbolized by arrows above and below the bar indicator. In case of possible errors in the system, a wrench appears on the display, combined with indication of the error number. Also sporadically occurring errors can be indicated.



D507CD33

1	Bars	a, f	Automatic range(up and down shiftion)
		b, c, d,	Preselected gear
2	Left side		For the moment still without function
3	Central and Right side		On the two alphanumeric 16-segment display, the electric control unit issues the actual state of gear and driving direction. Besides, a two digit error code will be indicated via these two segment
4	Spanner	g	Electronic control unit recognized an error, is flashing
5	Letters STOP	h	Immediate stop is required(at the moment not activated)

(2) Abbreviations

OC : Open circuit
 SC : Short circuit
 OP mode : Operating mode
 TCU : Transmission control unit
 EEC : Electronic engine controller
 PTO : Power take off

2) DO AEB WORK

- (1) Start engine after parking the machine on flat floor and blocking wheels.
 - (2) Release parking brake.
 - (3) With stepping on the service brake, operate T/M STALL (3 stage).
(To avoid defect of clutch pack, repeat 10 sec of operation and 10 sec of placing neutral)
 - (4) When the T/M oil temperature reaches 75~80°C, lock the parking brake and then shift gear to neutral position to keep the machine at LOW RPM.
 - (5) Connect the AEB STARTER to T/M controller.
 - (6) Push AEB STARTER over 3 seconds.
 - (7) Confirm the status of AEB from the DISPLAY.
 - Normal operation shows "ST, KR, KV, K1, K2, K3" orderly for 3~5minutes.
 - After the succesful completion, it displays "OK".
 - With a new controller, it may display "F6" error code before AEB, it will disappear.
 - (8) In case of abnormal running, it may display "STOP" with the appropriate error code.
 - (9) After truobleshooting, start the machine again to repeat above.
- ※ As the STALL operation has to be done, the SERVICE BRAKE must be locked perfectly to avoid the fatal accident.
- ※ AEB mode : It controls the disc internal of the transmission, automatically.

3) DISPLAY DURING AEB-MODE

Symbol	Meaning	Remarks
PL	AEB-starter is plugged at the diagnostic plug	
ST	AEB-Starter-button is pressed	
K1.....K3 KV, KR	Calibrating clutch K1...K3, KV or KR resp.	
_and Kx	Wait for start, initialization of clutch Kx, x : 1, 2, 3, V, R	
≡and Kx	Fast fill time determination of clutch Kx	
=and Kx	Compensating pressure determination of clutch Kx	
OK	Calibration for all clutches finished	Transmission stays in neutral, you have to restart the TCU(ignition off/on) after removing AEB-Starter
STOP	AEB canceled(activation stopped)	Transmission stays in neutral, you have to restart the TCU(ignition off/on)
STOP and Kx	AEB stopped, clutch Kx can't be calibrated	Transmission stays in neutral, you have to restart the TCU(ignition off/on)
Spanner and Kx	Kx couldn't be calibrated, AEB finished	Transmission stays in neutral, you have to restart the TCU(ignition off/on)
△E	Engine speed too low → raise enging speed	
▽E	Engine speed too high → lower enging speed	
△T	Transmission oil temperature too low → heat up transmission	
▽T	Transmission oil temperature too high → cool down transmission	
FT	Transmission temperature not in defined range during calibration	Transmission stays in neutral, you have to restart the TCU(ignition off/on)
FB	Operating mode not NORMAL or transmission temperature sensor defective or storing of Calibrated values to EEPROM-has failed.	Transmission stays in neutral, you have to restart the TCU(ignition off/on)
FO	Output speed_not_zero	Transmission stays in neutral, you have to restart the TCU(ignition off/on)
FN	Shift lever not in Neutral position	Transmission stays in neutral, you have to restart the TCU(ignition off/on)
FP	Park brake_not_applied	Transmission stays in neutral, you have to restart the TCU(ignition off/on)
STOP	AEB-Starter was used incorrect or is defective. Wrong device or wrong cable used.	Transmission stays in neutral, you have to restart the TCU(ignition off/on)

4) INITIALIZING THE INCHING SENSOR

- (1) Start engine after parking the machine on flat floor and blocking wheels.
- (2) Release parking brake and keep neutral gear shift.
- (3) Adjust the inching sensor linkage so that the regular voltage is supplied to inching sensor when operating the pedal.
 - ※ Regular voltage ; Before pedal operation ($1 \pm 0.1V$), After pedal operation ($3.5 \pm 0.1V$).
- (4) Stop the engine and then just KEY ON. (Release parking brake, keep neutral gear)
- (5) Connect the AEB STARTER to the T/M controller.
- (6) Push AEB STARTER over 3 seconds.
- (7) If display shows "▼IP", Step on the pedal fully.
- (8) If display shows "▲IP", release "OK"
- (9) After the successful completion, it displays "OK".
- (10) In case of abnormal running, it may display "STOP" with the appropriate error code.
- (11) After troubleshooting, start the machine again to repeat above.
 - ※ Above works are to be done with the parking brake released, so machine's wheels must be blocked for safety.

5) DISPLAY DURING INCHPEDAL CALIBRATION

Symbol	Meaning	Remarks
▼IP	Push down the pedal slowly until endposition is reached and hold this position	
▲IP	Release the pedal slowly until endposition is reached	
IP blink	A problem occurred, release the pedal slowly until endposition is reached	If the expected endposition could not be reached, release the pedal and try again
OK	Finished inchpedal calibration successful	
FN and Stop	Shift lever not in Neutral position	Calibrations is aborted
FS and Stop	Sensor supply voltage AU1 is out of the specified range	Calibrations is aborted
FO and Stop	Outputspeed_not_zero	Calibrations is aborted
SL and Stop	Sensor voltage below specified range	Calibrations is aborted
SU and Stop	Sensor voltage below specified range	Calibrations is aborted
IL and Stop	Sensor position for released pedal out of specified range	Calibrations is aborted
IU and Stop	Sensor position for released pedal out of specified range	Calibrations is aborted
TO and Stop	Time-out calibration, pedal not moved after calibration start	Calibrations is aborted
DL and Stop	Angle between pedal positions released and pressed to small	Calibrations is aborted
DU and Stop	Angle between pedal positions released and pressed to small	Calibrations is aborted
FI and Stop	Sensor signal 1 and 2 don't match together	Calibrations is aborted

GROUP 4 TRANSMISSION MESSAGE DISPLAY (#0042-)

1) FUNCTION

The display can be used with the gear selector (DW-3). It indicates speed and driving direction. When driving in the automatic mode, a bar indicator gives additionally also information about the selected driving range; The automatic range is symbolized by arrows above and below the bar indicator. In case of possible errors in the system, a wrench appears on the display, combined with indication of the error number. Also sporadically occurring errors can be indicated.

Transmission message display



180D93ACD33

※ If it happens error codes, consult with Hyundai service center to repair the fault.

2) DISPLAY DURING AEB-MODE

Symbol	Meaning	Remarks
K1.....K3 KV, KR	Calibrating clutch K1...K3, KV or KR resp.	
_and Kx	Wait for start, initialization of clutch Kx, x : 1, 2, 3, V, R	
≡and Kx	Fast fill time determination of clutch Kx	
=and Kx	Compensating pressure determination of clutch Kx	
OK	Calibration for all clutches finished	Transmission stays in neutral, you have to restart the TCU(ignition off/on) after removing AEB-Starter
STOP	AEB canceled(activation stopped)	Transmission stays in neutral, you have to restart the TCU(ignition off/on)
STOP and Kx	AEB stopped, clutch Kx can't be calibrated	Transmission stays in neutral, you have to restart the TCU(ignition off/on)
Spanner and Kx	Kx couldn't be calibrated, AEB finished	Transmission stays in neutral, you have to restart the TCU(ignition off/on)
△E	Engine speed too low → raise enging speed	
▽E	Engine speed too high → lower enging speed	
△T	Transmission oil temperature too low → heat up transmission	
▽T	Transmission oil temperature too high → cool down transmission	
FT	Transmission temperature not in defined range during calibration	Transmission stays in neutral, you have to restart the TCU(ignition off/on)
FB	Operating mode not NORMAL or transmission temperature sensor defective or storing of Calibrated values to EEPROM-has failed.	Transmission stays in neutral, you have to restart the TCU(ignition off/on)
FO	Output speed_not_zero	Transmission stays in neutral, you have to restart the TCU(ignition off/on)
FN	Shift lever not in Neutral position	Transmission stays in neutral, you have to restart the TCU(ignition off/on)
FP	Park brake_not_applied	Transmission stays in neutral, you have to restart the TCU(ignition off/on)
STOP	AEB-Starter was used incorrect or is defective. Wrong device or wrong cable used.	Transmission stays in neutral, you have to restart the TCU(ignition off/on)

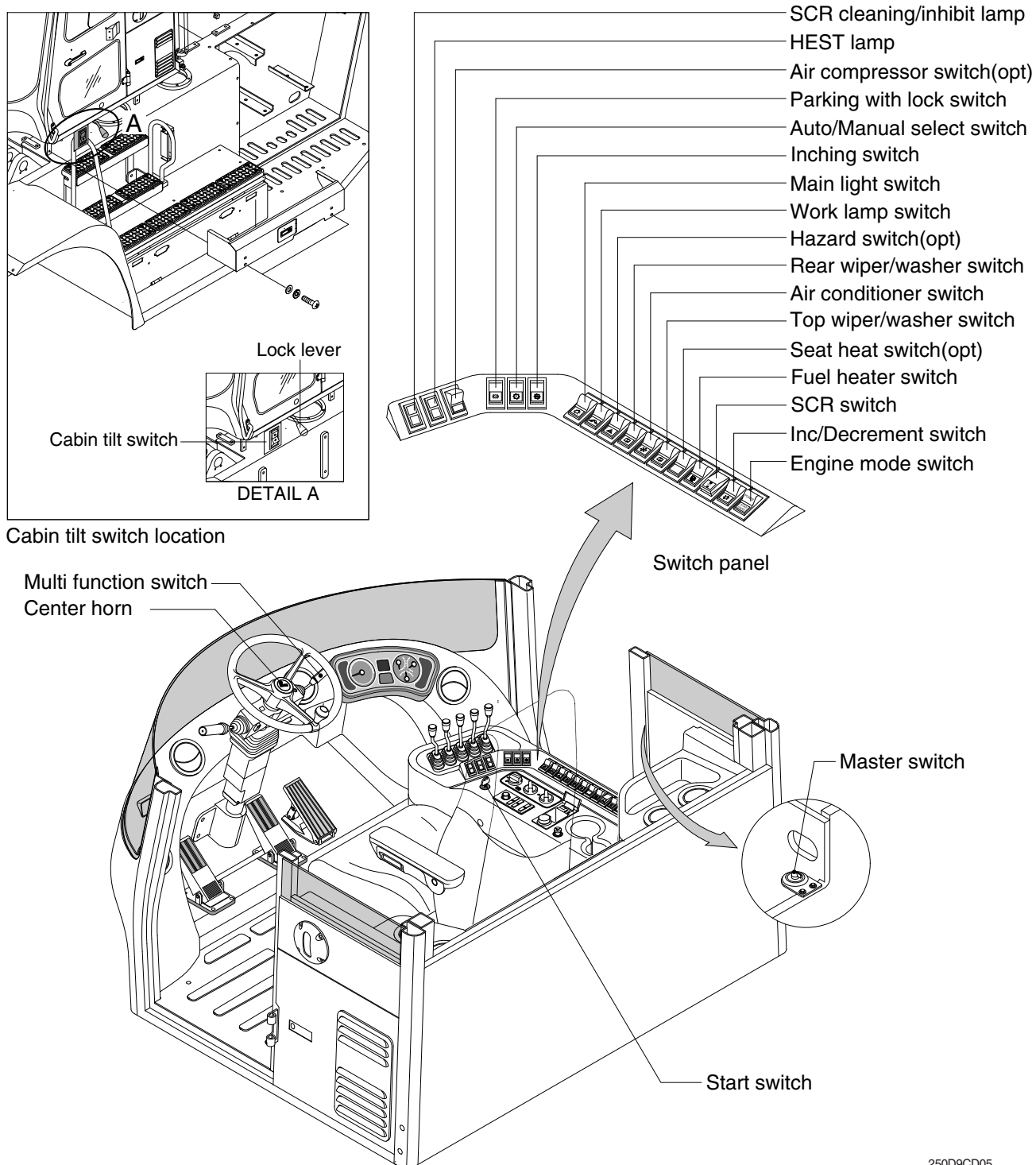
3) INITIALIZING THE INCHING SENSOR

- (1) Start engine after parking the machine on flat floor and blocking wheels.
- (2) Release parking brake and keep neutral gear shift.
- (3) Adjust the inching sensor linkage so that the regular voltage is supplied to inching sensor when operating the pedal.
 - ※ Regular voltage ; Before pedal operation ($1 \pm 0.1V$), After pedal operation ($3.5 \pm 0.1V$).
- (4) Stop the engine and then just KEY ON. (Release parking brake, keep neutral gear)
- (5) Connect the AEB STARTER to the T/M controller.
- (6) Push AEB STARTER over 3 seconds.
- (7) If display shows "▼IP", Step on the pedal fully.
- (8) If display shows "▲IP", release "OK"
- (9) After the successful completion, it displays "OK".
- (10) In case of abnormal running, it may display "STOP" with the appropriate error code.
- (11) After troubleshooting, start the machine again to repeat above.
 - ※ Above works are to be done with the parking brake released, so machine's wheels must be blocked for safety.

4) DISPLAY DURING INCHPEDAL CALIBRATION

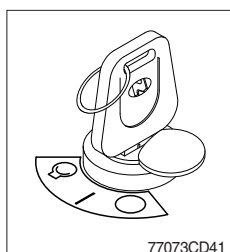
Symbol	Meaning	Remarks
▼IP	Push down the pedal slowly until endposition is reached and hold this position	
▲IP	Release the pedal slowly until endposition is reached	
IP blinkt	A problem occurred, release the pedal slowly until endposition is reached	If the expected endposition could not be reached, release the pedal and try again
OK	Finished inchpedal calibration successful	
FN and Stop	Shift lever not in Neutral position	Calibrations is aborted
FS and Stop	Sensor supply voltage AU1 is out of the specified range	Calibrations is aborted
FO and Stop	Outputspeed_not_zero	Calibrations is aborted
SL and Stop	Sensor voltage below specified range	Calibrations is aborted
SU and Stop	Sensor voltage below specified range	Calibrations is aborted
IL and Stop	Sensor position for released pedal out of specified range	Calibrations is aborted
IU and Stop	Sensor position for released pedal out of specified range	Calibrations is aborted
TO and Stop	Time-out calibration, pedal not moved after calibration start	Calibrations is aborted
DL and Stop	Angle between pedal positions released and pressed to small	Calibrations is aborted
DU and Stop	Angle between pedal positions released and pressed to small	Calibrations is aborted
FI and Stop	Sensor signal 1 and 2 don't match together	Calibrations is aborted

GROUP 5 SWITCHES (-#0041)



250D9CD05

1) START SWITCH



(1) There are three positions, OFF, ON and START.

- ○ (OFF) : None of electrical circuits activate.
- | (ON) : All the systems of truck operate.
- ○ (START) : Use when starting the engine.

Release key immediately after starting.

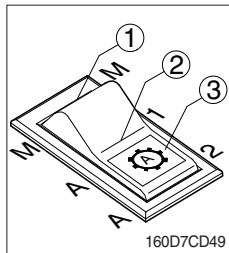
※ After engine start, electric circuit of start intercepted. Increase the durability of start motor after engine start, electric circuit of starting intercepted.

2) PARKING WITH LOCK SWITCH



- (1) This switch is used to lock or release parking brake of the truck.
 - (2) If this switch is pressed, the parking brake is applied and the gauge panel warning lamp will come ON.
- ※ **When operating the gear selector lever, be sure to release the parking brake. If the truck is operated with the parking brake engaged, the brake will overheat and may cause the brake system to go out of order.**

3) AUTO/MANUAL SELECT SWITCH



(1) Manual mode(①)

Press the top of the switch for the manual mode of the autoshift function. The operator selects the desired speed and the desired direction in the manual mode with the gear selector lever.

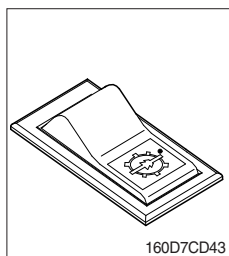
(2) Automatic 1st mode(②)

Place the switch in the middle position for the autoshift function changing from 1st to 3rd gear shift mode.

(3) Automatic 2nd mode(③)

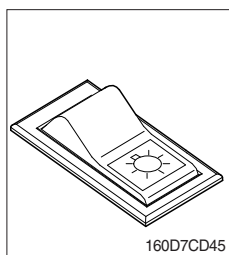
Press the bottom of the switch fully for the autoshift function changing from 2nd to 3rd gear shift mode.

4) INCHING SWITCH



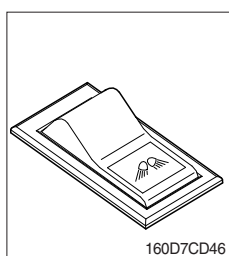
- (1) If this switch is pressed, inching operation is applied to inching pedal.
- (2) Also, inching lamp on the cluster is illuminated.

5) MAIN LIGHT SWITCH



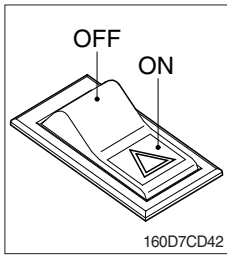
- (1) This switch is used to operate the clearance lamp and head light by two steps.
 - First step : Clearance lamp and cluster illumination lamp comes ON. Also, all of the indicator lamps of switches come ON.
 - Second step : Head light comes ON.

6) WORK LAMP SWITCH



- (1) This switch is used to operate the front and rear work lamps by two steps.
 - First step : Front work lamp comes ON.
 - Second step : Rear work lamp comes ON.

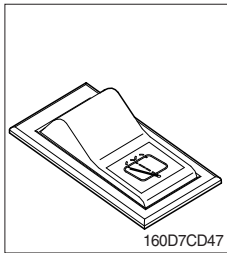
7) HAZARD SWITCH (option)



(1) Use for parking, or loading truck.

※ If the switch is left ON for a long time, the battery may be discharged.

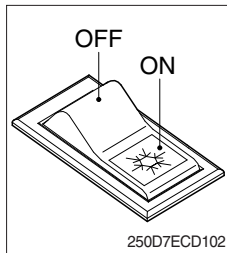
8) REAR WIPER AND WASHER SWITCH



(1) This switch is used to operate the rear wiper and washer by two steps.

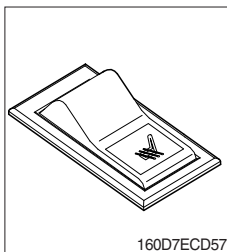
- First step : The rear wiper operates.
- Second step : The washer liquid is sprayed and the rear wiper is operated only while pressing. If release the switch, return to the first step position.

9) AIR CONDITIONER SWITCH



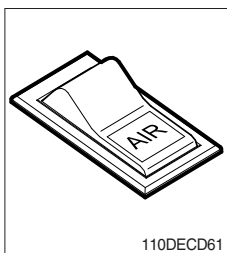
(1) This switch is used to turns ON or OFF the air conditioner .

10) SEAT HEAT SWITCH (option)



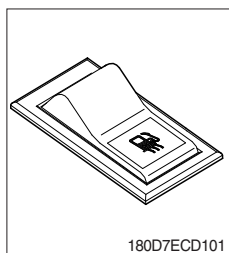
(1) This switch is used to heat the seat.

11) AIR COMPRESSOR SWITCH (option)



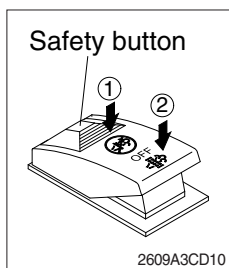
(1) This switch is used to operate air compressor.

12) FUEL HEATER SWITCH



- (1) This switch is used for the fuel heater of the pre-heater assy.

13) SCR (Selective Catalytic Reduction) SWITCH



- (1) This switch is used to select the cleaning function of the SCR.

(2) Inhibit position (①)

- ① The inhibit position disallows any automatic or manual SCR cleaning.
- ② This may be used by operator to prevent SCR cleaning when the machine is operating in a hazardous environment is concerned about high temperature.
- ③ It is strongly recommended that the this position is only activated when high temperatures may cause a hazardous condition.

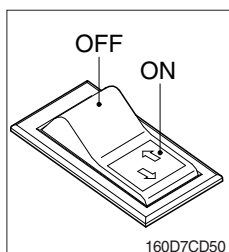
(3) OFF position

This position will initiate a automatic SCR cleaning when needed.

(4) Manual SCR cleaning position (②)

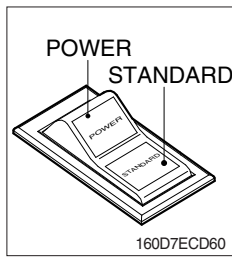
- ① This position will only initiate a manual SCR cleaning and the SCR cleaning lamp is illuminated.
- ② HEST lamp will be illuminated during the entire SCR cleaning.
- ※ Refer to the page 7-34 for details.
- ※ This switch can be move to the manual SCR cleaning position (②) only when the safety button is pulled to backward.
- ※ Also, this switch return to the OFF position when released the manual SCR cleaning position (②).

14) INC/DECREMENT SWITCH



- (1) When engine running, the low rpm of engine increase or decrease by 25 rpm by operating this switch.
- (2) Engine low rpm returns to normal value when engine restarted.

15) ENGINE MODE SWITCH



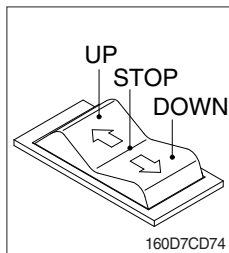
(1) This switch offers two selectable operating mode.

The operator can adjust the machine's performance with this selection switch.

(2) Function

- ① **STANDARD MODE** : This mode provides maximum fuel efficiency for general loading.
- ② **POWER MODE** : This mode provides maximum power output for heavy loading or hill climb.

16) CABIN TILT SWITCH



(1) **Tilting UP cabin**

Press the top of the switch fully to tilt the cabin upward.

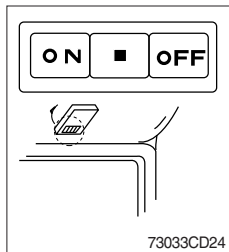
(2) **STOP the tilting operation (Default)**

Release the switch to stop the tilting operation.

(3) **Tilting DOWN cabin**

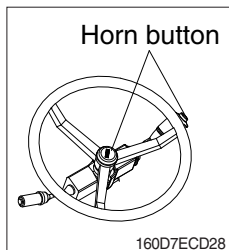
Press the bottom of the switch fully to tilt the cabin downward.

17) CAB LAMP SWITCH



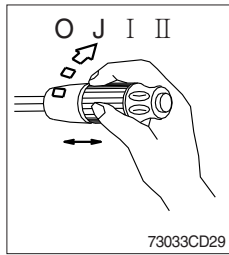
(1) This switch turns ON the cab room lamp.

18) CENTER HORN



(1) If you press the button on the top of the multifunction switch and the center of the steering wheel, the horn will sound.

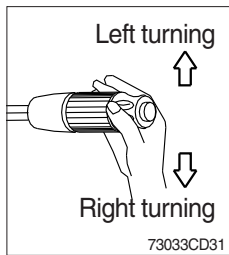
19) MULTI FUNCTION SWITCH



(1) Front wiper and washer switch

- ① When the switch is in J position, the wiper moves intermittently.
- ② When placed in I or II position, the wiper moves continuously.
- ③ If you push the grip of the lever, washer liquid will be sprayed and the wiper will be activated 2-3 times.

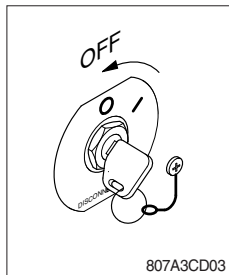
※ **Check the quantity of washer liquid in the tank. If the level of the washer liquid is LOW, add the washer liquid (In cold, winter days) or water. The capacity of the tank is 1 liter.**



(2) Turning switch

- ① This switch is used to warn or signal the turning direction of the truck to other vehicles or equipment.
- ② Push the lever up for turning left, pull the lever down for turning right.

20) MASTER SWITCH

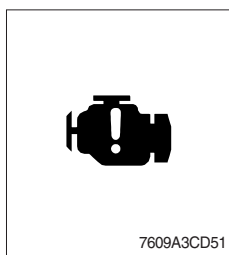


- (1) This switch is used to shut off the entire electrical system. When the machine is not operated for a long time, turn OFF the master switch for the safety purpose.

- (2) I : The battery remains connected to the electrical system.
O : The battery is disconnected to the electrical system.

※ **Never turn the master switch to OFF with the engine running. Engine and electrical system damage could result.**

21) ENGINE STOP WARNING LAMP

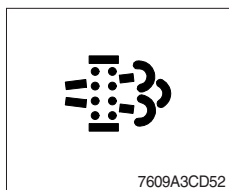


- ① If the lamp lights ON, stop the engine immediately and check the engine.

- ② Check the fault codes on the monitor.

※ **Please contact your Hyundai service center or local dealer.**

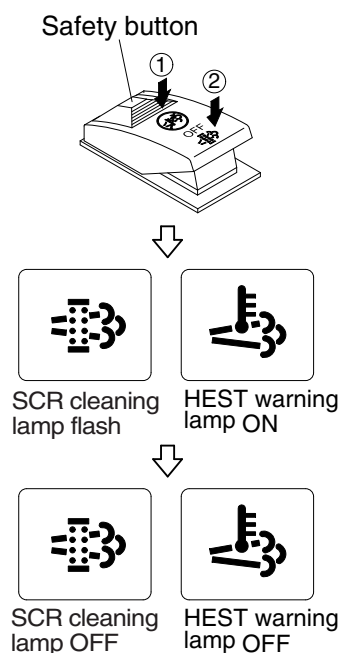
22) SCR (Selective Catalytic Reduction) CLEANING LAMP



- ① This lamp lights ON when the SCR cleaning is needed and lamp flashes when manual SCR cleaning is activated as table below.

Condition	Warning lamp				Remark
	SCR cleaning lamp 	DEF Low Lamp 	Engine Check Lamp 	Engine Stop Lamp 	
SCR needs to be cleaned	On	-	-	-	1. Change to a more challenging duty cycle. 2. Perform manual SCR cleaning.
SCR needs to be cleaned immediately	On	-	On	-	Manual SCR cleaning is required.
Stationary SCR cleaning status	Flash	-	-	-	-
DEF level initial warning	-	On	-	-	DEF level 10% Engine error code 3497
DEF level critical warning	-	Flash	-	-	DEF level 5% Engine error code 3498
DEF level initial warning	-	Flash	On	-	DEF level 2.5% Engine error code 1673, 25% derate
DEF level secondary derate warning	-	Flash	On	-	DEF level 0% Engine error code 3547, 3714 50% derate, 30 min.
DEF level final derate warning	-	Flash	On	On	Engine error code 3712 Contact Hyundai service center or dealer.

※ Manual SCR cleaning method



※ Manual SCR cleaning applies if the machine is in a fireproof area and there is no plan to turn off the machine during the SCR cleaning.

① Stop and park the machine.

② Pull the safety button and push the switch to position ② to initiate the manual SCR cleaning.

※ Refer to the page 7-30 for the switch operation.

※ The engine speed may increase during SCR cleaning and it will take approximately 20~60 minutes depending on condition.

③ The SCR cleaning lamp flash and HEST warning lamp will light on during the manual SCR cleaning function is operating.

④ The SCR cleaning and/or HEST warning lamp will light OFF when the SCR cleaning function is completed.

23) SCR CLEANING INHIBIT LAMP



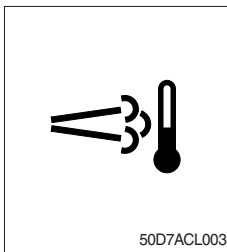
- ① This warning lamp indicates, when illuminated, the SCR cleaning switch is pushed inhibit position, therefore automatic and manual SCR cleaning can not occur.

24) DEF (Diesel Exhaust Fluid) LOW LAMP



- ① This warning lamp indicates, when illuminated or flashing, that the diesel exhaust fluid level is low.
- ※ **Add the diesel exhaust fluid into DEF tank.**
- ※ **Refer to the page 7-33 for detail.**

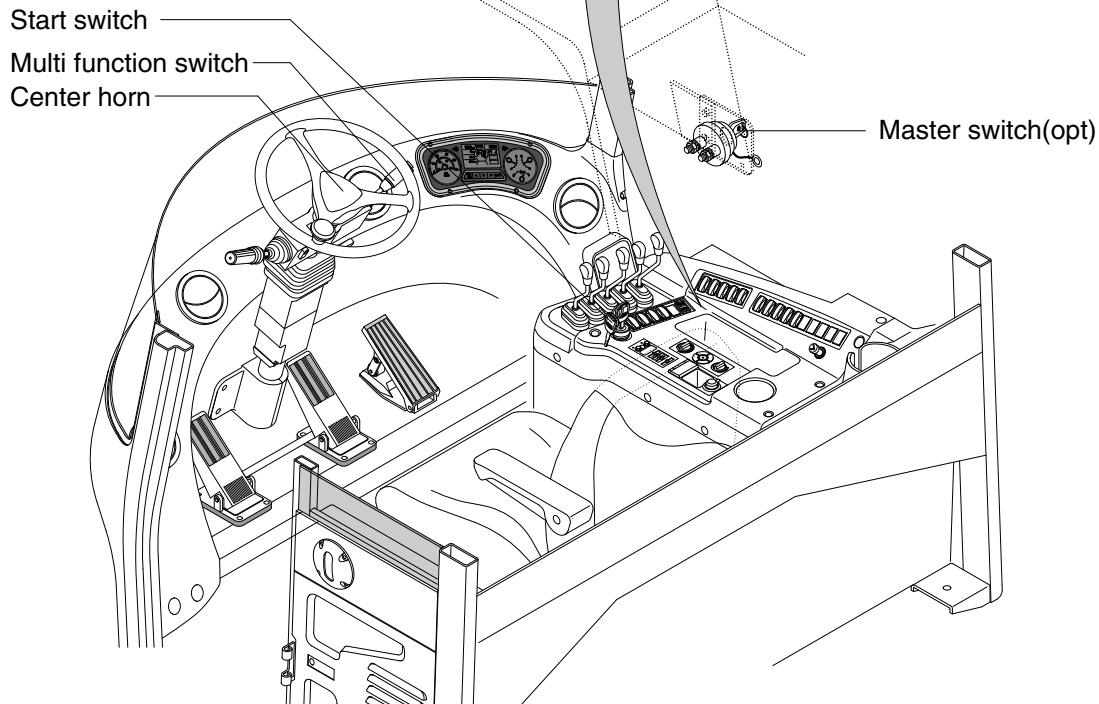
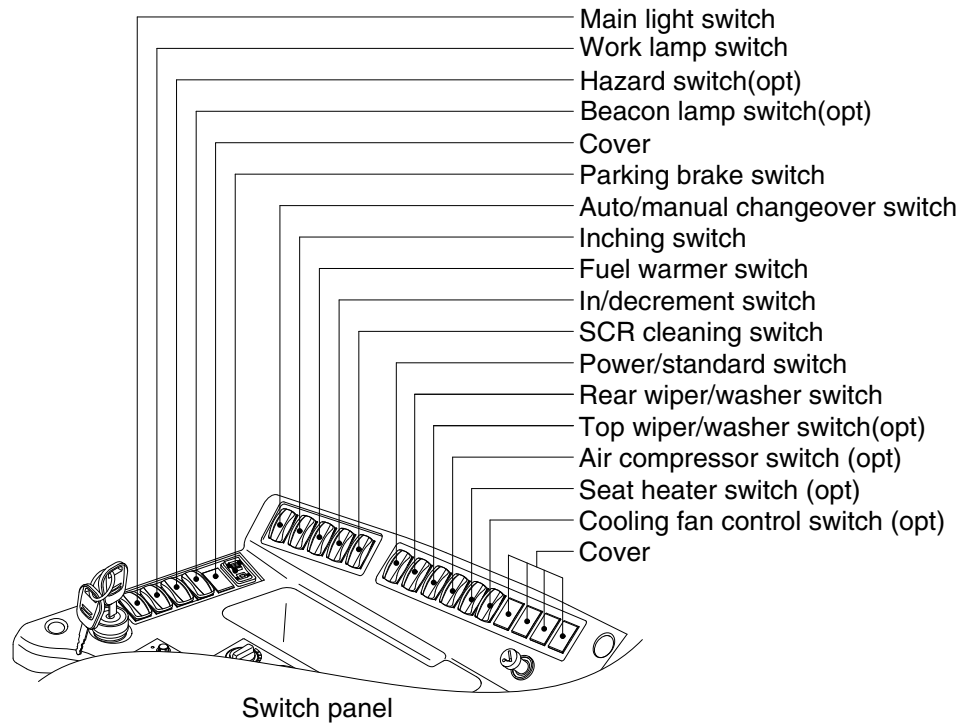
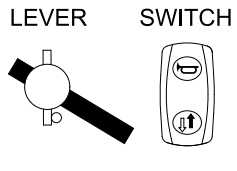
25) HEST (High exhaust system temperature) WARNING LAMP



- ① This warning lamp indicates, when illuminated, that exhaust temperatures are high due to SCR cleaning.
 - ② The lamp will also illuminate during a manual SCR cleaning.
 - ③ When this lamp is illuminated, be sure the exhaust pipe outlet is not directed at any surface or material that can melt, burn, or explode.
- ▲ When this lamp is illuminated, the exhaust gas temperature could reach 800°C [1500°F], which is hot enough to ignite or melt common materials, and to burn people.**
- ※ **The lamp does not signify the need for any kind of equipment or engine service; It merely alerts the equipment operator to high exhaust temperatures. It will be common for the lamp to illuminate on and off during normal equipment operation as the engine completes regeneration.**

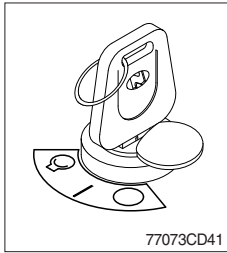
GROUP 5 SWITCHES (#0042-)

CABIN TILT



250D9CD06

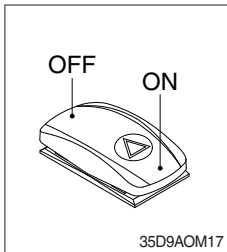
1) START SWITCH



(1) There are three positions, OFF, ON and START.

- ○ (OFF) : None of electrical circuits activate.
- | (ON) : All the systems of truck operate.
- ⦿ (START) : Use when starting the engine.
Release key immediately after starting.

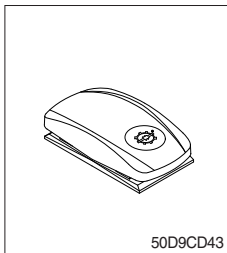
2) HAZARD SWITCH (OPTION)



(1) Use for parking, or loading truck.

※ If the switch is left ON for a long time, the battery may be discharged.

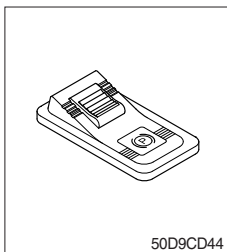
3) INCHING SWITCH



(1) If this switch is pressed, inching operation is applied to inching pedal.

(2) Also, inching lamp on the cluster is illuminated.

4) PARKING BRAKE SWITCH

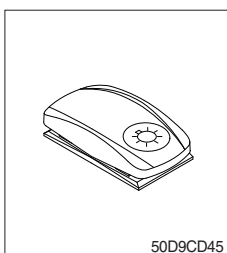


(1) This switch is used to parking brake lock or release.

(2) If this switch is pressed, the parking brake is applied and the warning lamp on the cluster will comes ON.

※ When operating the gear selector lever, be sure to release the parking brake. If the truck is operated with the parking brake engaged, the brake will overheat and may cause the brake system to go out of order.

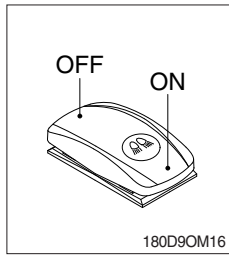
5) MAIN LIGHT SWITCH



(1) This switch is used to operate the head light by one steps.

- ① First step : Clearance lamp and cluster illumination lamp comes ON. Also, all of the pilot lamps of switches come ON.
- ② ON.
Second step : Head lamp comes ON.

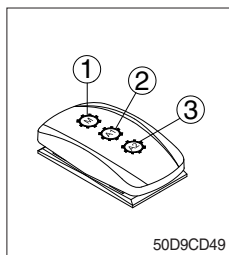
6) WORK LAMP SWITCH



(1) This switch is used to operate the work lamps by two steps.

- ① First step : Front work lamp comes ON.
- ② Second step : Rear work lamp comes ON.

7) AUTO/MANUAL CHANGEOVER SWITCH



(1) Manual mode (①)

Press the top of the switch for the manual mode of the autoshift function. The operator selects the desired speed and the desired direction in the manual mode with the gear selector lever.

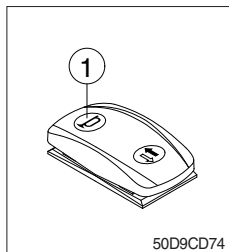
(2) Automatic 1st mode (②)

Place the switch in the middle position for the autoshift function changing from 1st to 3rd gear shift mode.

(3) Automatic 2nd mode (③)

Press the bottom of the switch fully for the autoshift function changing from 2nd to 3rd gear shift mode.

8) CABIN TILT SWITCH



(1) Horn (🔊)

By pressing position ①, the horn sounds and by releasing, the horn stops.

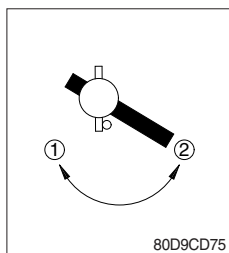
▲ Sound the horn to warn near by personnel, before tilting the cabin.

(2) Tilting of the cabin (⬆, ⬇)

Press the cabin tilt switch in order to tilt the cabin to right side or return to original location.

※ Refer to page 7-18 of the operator's manual for the tilting method of the cabin.

9) HAND PUMP LEVER

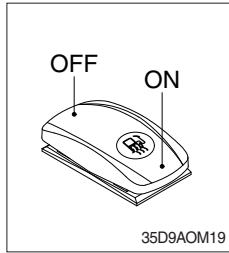


(1) This lever is used when tilting the cabin.

(2) Turn the hand pump lever to counterclockwise direction (①), the cabin shall be tilted to right side by the cabin tilt switch.

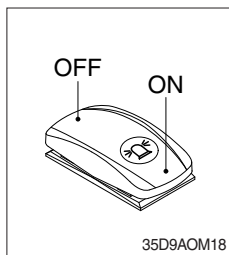
(3) Turn the hand pump lever to clockwise direction (②), the cabin shall be returned to original location by the cabin tilt switch.

10) FUEL WARMER SWITCH



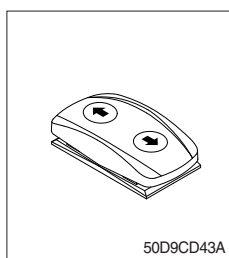
- (1) This switch is used to heat the fuel of pre-heater.

11) BEACON SWITCH (OPTION)



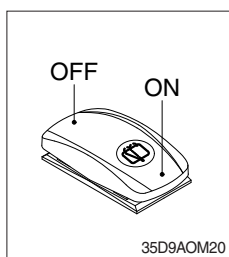
- (1) This switch turn ON the strobe light.

12) INC/DECREMENT SWITCH



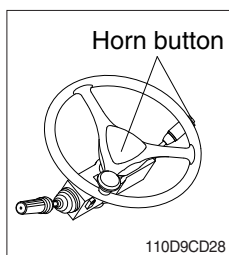
- (1) When engine running, the low rpm of engine increase or decrease by 25 rpm by operating this switch.
(2) Engine low rpm returns to normal value when engine restarted.

13) TOP WIPER AND WASHER SWITCH (OPTION)



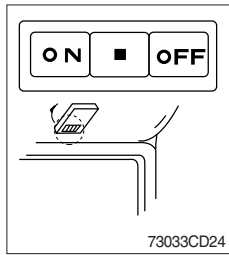
- (1) This switch is used to operate the wiper and washer on the top of the cab.
(2) The washer liquid is sprayed and the wiper is operated only while pressing this switch.

14) HORN BUTTON



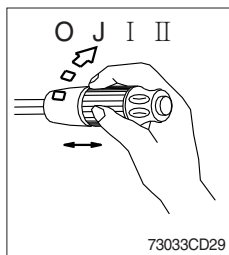
- (1) If you press the button on the top of the multifunction switch and the center of the steering wheel, the horn will sound.

15) CAB LAMP SWITCH



- (1) This switch turns ON the cab room lamp.

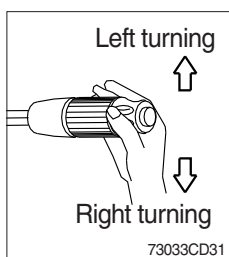
16) MULTI FUNCTION SWITCH



- (1) Front wiper and washer switch

- ① When the switch is in J position, the wiper moves intermittently.
- ② When placed in I or II position, the wiper moves continuously.
- ③ If you push the grip of the lever, washer liquid will be sprayed and the wiper will be activated 2-3 times.

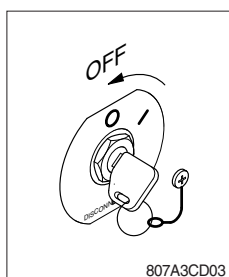
※ **Check the quantity of washer liquid in the tank. If the level of the washer liquid is LOW, add the washer liquid (In cold, winter days) or water. The capacity of the tank is 1 liter.**



- (2) Turning switch

- ① This switch is used to warn or signal the turning direction of the truck to other vehicles or equipment.
- ② Push the lever up for turning left, pull the lever down for turning right.

17) MASTER SWITCH (OPTION)

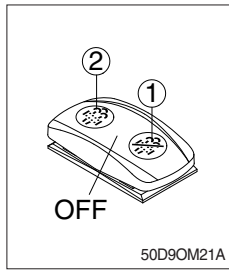


- (1) This switch is used to shut off the entire electrical system.
When the machine is not operated for a long time, turn OFF the master switch for the safety purpose.

- (2) I : The battery remains connected to the electrical system.
O : The battery is disconnected to the electrical system.

※ **Never turn the master switch to O (OFF) with the engine running. Engine and electrical system damage could result.**

18) SCR (Selective Catalytic Reduction) CLEANING SWITCH



(1) This switch is used to select the cleaning function of the SCR.

(2) Inhibit position (①)

- ① The inhibit position disallows any automatic or manual SCR cleaning.
- ② This may be used by operator to prevent SCR cleaning when the machine is operating in a hazardous environment is concerned about high temperature.
- ③ It is strongly recommended that the this position is only activated when high temperatures may cause a hazardous condition.

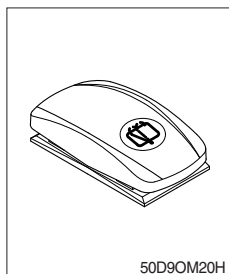
(3) OFF position

This position will initiate a automatic SCR cleaning when needed.

(4) Manual SCR cleaning position (②)

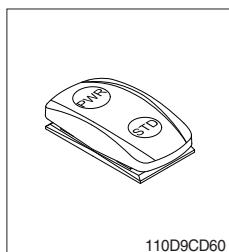
- ① This position will only initiate a manual SCR cleaning and the SCR cleaning lamp is illuminated.
- ② HEST lamp will be illuminated during the entire SCR cleaning.
- ※ Refer to the page 7-14-10 for details.
- ※ This switch can be move to the manual SCR cleaning position (②) only when the safety button is pulled to backward.
- ※ Also, this switch return to the OFF position when released the manual SCR cleaning position (②).

19) REAR WIPER/WASHER SWITCH



- (1) This switch is used to operate the wiper and washer on the rear of the cab.
- (2) The washer liquid is sprayed and the wiper is operated only while pressing this switch.

20) ENGINE MODE SWITCH



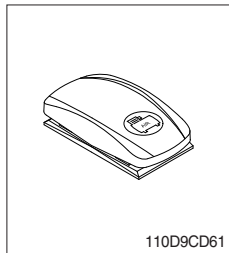
- (1) This switch offers two selectable operating mode.

The operator can adjust the machine's performance with this selection switch.

(2) Function

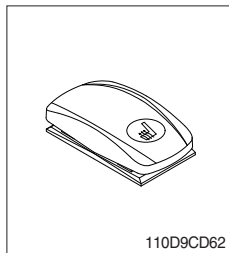
- ① STANDARD MODE : This mode provides maximum fuel efficiency for general loading.
- ② POWER MODE : This mode provides maximum power output for heavy loading or hill climb.

21) AIR COMPRESSOR SWITCH (option)



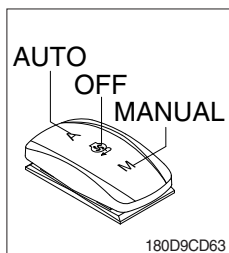
(1) This switch is used to activate the air compressor.

22) SEAT HEAT SWITCH



(1) This switch is used to heat the seat.

23) COOLING FAN CONTROL SWITCH (option)



(1) This switch use to control the cooling fan.

(2) This switch has three positions.

- AUTO : The fan automatically work in reverse according to set up interval and time of the cooling fan reverse mode.

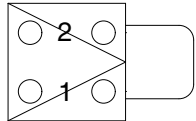
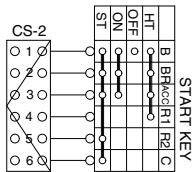
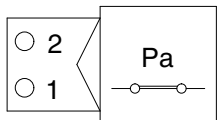
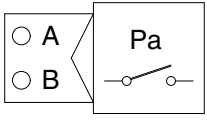
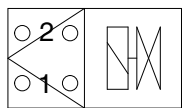
※ **Refer to page 7-14-19 to set of the cluster.**

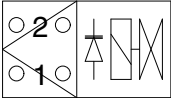
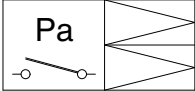
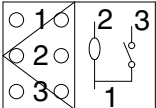
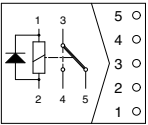
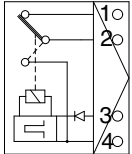
- OFF : Only forward rotation is possible.
- MANUAL : The fan rotates reverse only while pressing this position.

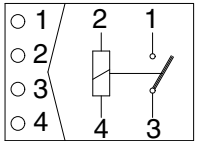
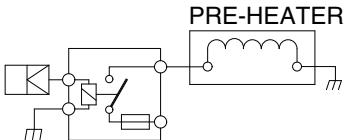
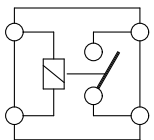
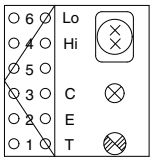
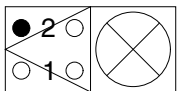
(3) If release the switch, return to the OFF position.

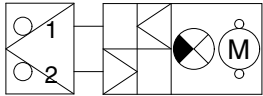
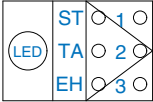
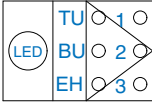
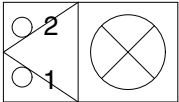
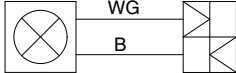
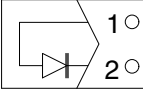
※ **The reverse rotation pilot lamp lights up on the area of the warning and pilot lamp of the LCD when the cooling fan is operated to the reverse rotation.**

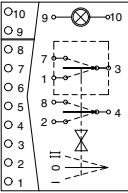
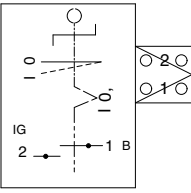
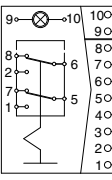
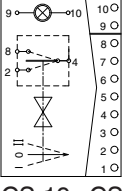
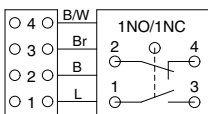
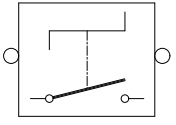
GROUP 6 ELECTRICAL COMPONENT SPECIFICATION (-#0041)

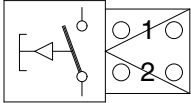
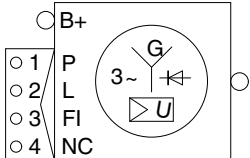
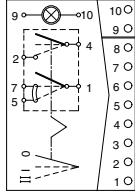
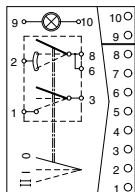
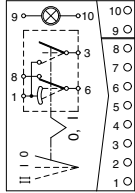
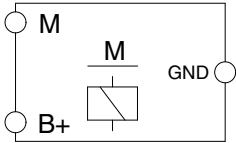
Part name	Symbol	Specifications	Check
Battery		12V × 112Ah (4EA)	※ When checking the battery charging indicator, Green : Normal condition Black : Discharge condition Transparency : change
Fusible link	 CN-60 CN-95	CN-60 : 24V 45A CN-95 : 24V 45A	※ Check disconnection Normal : 0Ω (Connect ring terminal and check resistance between terminal 1 and 2)
Start key		DC 24V	※ Check contact OFF : ∞Ω (For each terminal) ON : 0Ω (For terminal 1-2, 1-3) ∞Ω (For terminal 1-5) START : 0Ω (For terminal 1-2, 1-3 and 1-5)
Pressure switch	 CD-3 CD-26	N.C type	※ Check contact Normal : 0Ω (CLOSE)
Pressure switch	 CD-4 CN-29 CS-6 CD-75 CD-35	N.O type	※ Check contact Normal : ∞Ω (OPEN)
Solenoid valve (fan EPPR valve)	 CN-71 CN-154 CN-156	24V 300A	※ Check resistance About 24Ω

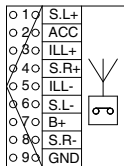
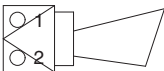
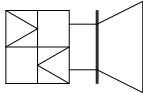
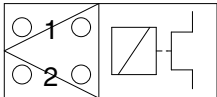
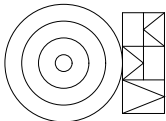
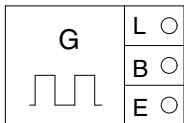
Part name	Symbol	Specifications	Check
Solenoid valve (cabin up solenoid, cabin down solenoid, parking solenoid)	 CN-133 CN-135	24V max 1.5A	※ Check resistance About 24Ω
Air cleaner pressure switch	 'CD-10	Pressure : 635mmH ₂ O (N.O type)	※ Check contact Normal : ∞Ω
Fuel sender	 CD-2	Reed switch : Magnetic type	※ Check resistance Full : About 50Ω Low level : About 700Ω
Relay (5pin)	 CR-4 CR-5 CR-39 CR-42 CR-45 CR-50 CR-52 CR-53 CR-54 CR-56 CR-12 CR-26 CR-38 CR-46 CR-3 CR-55 CR-47	24V 3-4 : 15A (85 °C) 3-5 : 10A (85 °C)	※ Check resistance Normal : 0Ω (For terminal 3-4) : ∞Ω (For terminal 3-5)
Int wiper relay	 CR-6	24V 5A Operating time : 2.5±1 sec	※ Check resistance Normal : 0Ω (For terminal 1-2) : ∞Ω (For terminal 2-4)

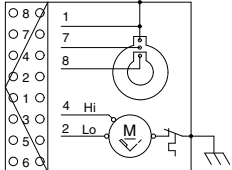
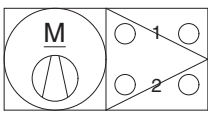
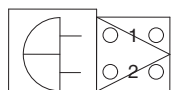
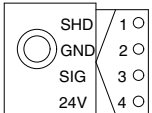
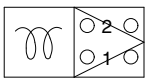
Part name	Symbol	Specifications	Check
Start relay	 CR-23	24V 300A Exciting current : 2.3A	※ Check resistance Normal : 10Ω (For terminal 2-4) : ∞Ω (For terminal 1-3)
Preheat relay	 CR-24	24V 200A Exciting current : 2.3A	※ Check resistance Normal : 10Ω (For terminal coil) : ∞Ω (Between ring term)
Battery relay	 CR-1	24V 100A/1000A Rated ampere : 100A (continue) 1000A (30 second) Exciting current : 0.5A	※ Check resistance Normal : 10Ω (Between coil) : ∞Ω (Terminal ring term)
Head lamp	 CL-3 CL-4	24V, H4 75/70W	※ Check resistance Abnormal : ∞Ω (6-2, 4-2, 3-2, 1-2)
Work lamp	 CL-22 CL-23	24V 65W H3 bulb	※ Check disconnection Normal : A few Ω

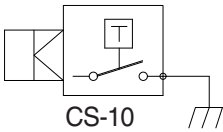
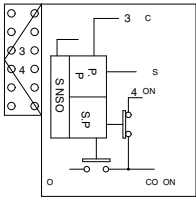
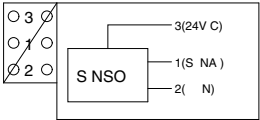
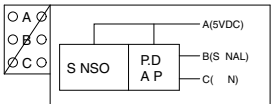
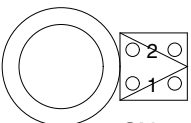
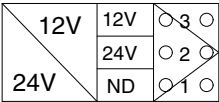
Part name	Symbol	Specifications	Check
Beacon lamp	 CL-7	24V 15W (Strobe type)	※ Check disconnection Normal : A few Ω Abnormal : $\infty \Omega$
Combination lamp	 CL-15A CL-16A  CL-15B CL-16B	24V 1W(tail) 24V 21W(turn)	※ Check disconnection Normal : A few Ω Abnormal : $\infty \Omega$
Room lamp	 CL-1	24V 10W	※ Check resistance Normal : A few Ω Abnormal : $\infty \Omega$
License lamp	 CL-21	24V 10W (1EA)	※ Check resistance Normal : A few Ω Abnormal : $\infty \Omega$
Diode	 DO-1 DO-2 DO-3 DO-4	Diode spec : 1N5406	-

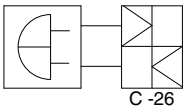
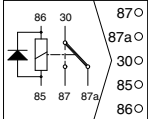
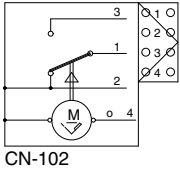
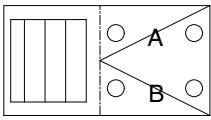
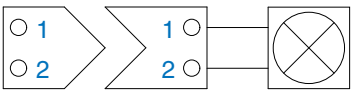
Part name	Symbol	Specifications	Check
Switch (Cabin tilt)	 CS-77	24V 8A	※ Check contact I : 0Ω (2-4, 1-3) ∞Ω (8-4, 7-3) II : 0Ω (8-4, 7-3) ∞Ω (2-4, 1-3) 0 : ∞Ω (7-3, 1-3, 8-4, 2-4)
Switch (Cabin tilt)	 CS-78	24V 20A	※ Check contact 0 : ∞Ω (1-2) I : 0Ω (1-2)
Switch (Locking type)	 CS-10 CS-17 CS-18 CS-34 CS-41 CS-42 CS-54 CS-79 CS-82	24V 8A	※ Check contact OFF : ∞Ω (For terminal 1-5, 2-6) : 0Ω (For terminal 5-7, 6-8) ON : ∞Ω (6-8, 5-7) 0Ω (2-6, 1-5)
Switch (Non-locking type)	 CS-19 CS-64	24V 8A	※ Check contact 0 : ∞Ω (For terminal 2-4, 1-7) I : 0Ω (2-4) II : 0Ω (4-8)
Tilt switch	 CS-72	24V 8A	※ Check contact S/W open : ∞Ω (For terminal NO-COM) : 0Ω (For terminal NC-COM) S/W closed : 0Ω (For terminal NO-COM) : ∞Ω (For terminal NC-COM)
Master switch		6~36V Continuous Capacity : 180Amp Push in capacity : 1000Amp	※ Check contact OFF : ∞Ω

Part name	Symbol	Specifications	Check
Seat switch	 CS-73	24V 8A	※ Check contact OFF : $\infty \Omega$
Alternator	 CS-74	Delco Remy 24SI 24V 70A	※ Check voltage Normal : 24~28V
Switch	 CS-21 CS-39	24V 8A	※ Check contact 0 : $\infty \Omega$ (2-4, 1-7, 1-5) I : $\infty \Omega$ (2-4) 0 Ω (1-7, 1-5) II : 0 Ω (2-4, 1-7, 1-5)
Switch	 CS-59	24V 8A	※ Check contact 0 : $\infty \Omega$ (2-8, 2-6, 1-3) I : 0 Ω (2-8, 2-6) $\infty \Omega$ (1-3) II : 0 Ω (2-8, 2-6, 1-3)
Switch	 CS-3	24V 8A	※ Check contact 0 : $\infty \Omega$ (3-8, 3-1) 0 Ω (8-6) I : $\infty \Omega$ (3-8, 3-1) 0 Ω (6-1) II : 0 Ω (3-1, 6-1)
Start motor	 CN-45	DENSO 24V 3.7kW	※ Operating or not

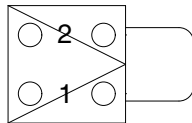
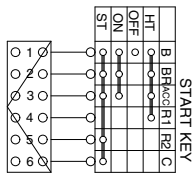
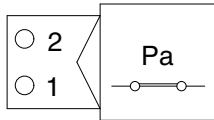
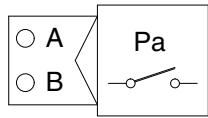
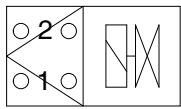
Part name	Symbol	Specifications	Check
Radio/USB player	 CN-27	DC28V 40Ohm×2	※ Check resistance Power ON : 4Ω + 4Ω (For terminal 1-6, 4-8)
Horn	 CN-25 CN-65	20~28V 100~115dB (A) (at 25V 2m) Max. 1.5A (at 24V)	※ Check operation Supply power(24V) to each terminal and connect ground.
Speaker	 CN-23(LH) CN-24(RH)	4Ω 20W	※ Check resistance Normal : 50Ω
Air conditioner compressor	 CN-30	24V 79W	※ Check contact Normal : 13.4Ω
Cigar lighter	 CL-2	24V 5A	-
Flasher	 CR-11	24V 85~190 C/M 50dB	-

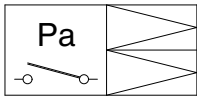
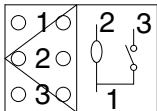
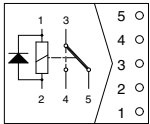
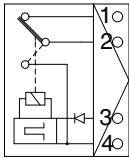
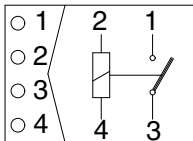
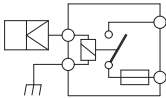
Part name	Symbol	Specifications	Check
Wiper motor	 CN-21	24V 1A 2-speed Auto parking	-
Washer pump	 CN-22 CN-103 CN-83	24V 2.5A	※ Check contact Normal : 26.4Ω (For terminal 1-2)
Warning buzzer	 CN-26	18~32V 115±3dB(A) at 1m	-
Camera	 CN-249 CN-250	24V 2.5W Signaling : NTSC Angle of view : 145 °C	-
Fuel warmer	 CN-96 CN-97	24V 15A	※ Check resistance Abnormal : ∞ Ω

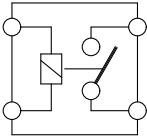
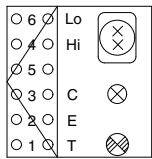
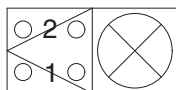
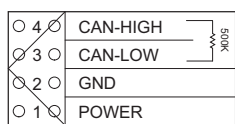
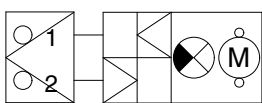
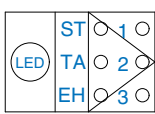
Part name	Symbol	Specifications	Check
Brake temp switch	 CS-10	N.O type	※ Check resistance Normal : $\infty \Omega$
Accel pedal	 CN-124	5V, hall sensor	※ Check voltage 0.5~3.9V (2-1)
Load sensor	 CD-50	24V, hall sensor	※ Check voltage 0.5~4.5 VDC (1-2)
Angle sensor	 CD-12	5V, hall sensor	※ Check voltage 0.4~4.5 VDC (B-C)
12V-socket	 CN-139	12V 120W Rated ampere : 10A	※ Check resistance Normal : A few Ω (1-2)
DC/DC converter	 CN-138	24V 10A Output voltage : 13 ± 1 VDC	※ Check resistance Normal : A few Ω (1-2, 1-3)

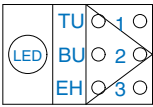
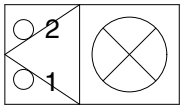
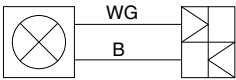
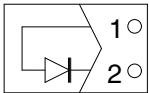
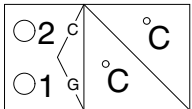
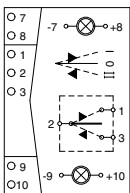
Part name	Symbol	Specifications	Check
Tilt alarm	 C-26	24V 0.2A 90dB $\pm$ 5dB	※ Check resistance Normal : A few Ω
Relay	 CR-3 CR-46 CR-55	24V 30-87 : 20A 30-87a : 15A	※ Check resistance Normal : A few Ω (86-85) 0 Ω (30-87a) $\infty \Omega$ (30-87)
Rear wiper	 CN-102	24V 1A 1-Speed Auto parking	-
Seat heater	 CN-170	24V	-
Mast work	 CL-5 CL-51 CL-6 CL-61	24V 65W H3	-

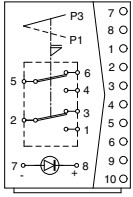
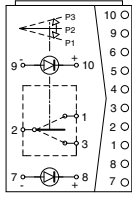
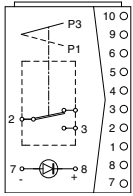
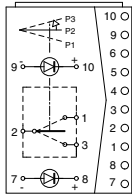
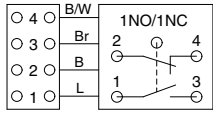
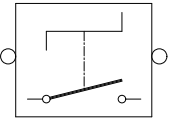
GROUP 6 ELECTRICAL COMPONENT SPECIFICATION (#0042-)

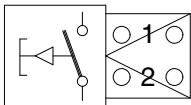
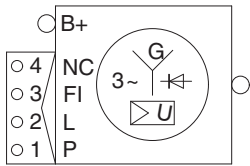
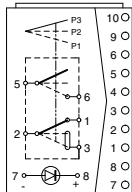
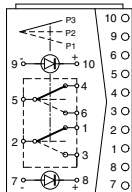
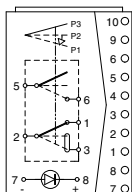
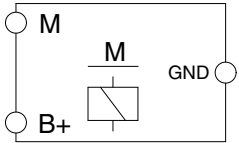
Part name	Symbol	Specifications	Check
Battery		12V × 80Ah (4EA)	※ When checking the battery charging indicator, Green : Normal condition Black : Discharge condition Transparency : Change
Fusible link	 CN-95A CN-95B	CN-95A : 24V 30A CN-95B : 24V 30A	※ Check disconnection Normal : 0Ω (Connect ring terminal and check resistance between terminal 1 and 2)
Start key	 CS-2	DC 24V	※ Check contact OFF : ∞Ω (For each terminal) ON : 0Ω (For terminal 1-2, 1-3) ∞Ω (For terminal 1-5) START : 0Ω (For terminal 1-2, 1-3 and 1-5)
Pressure switch	 CD-3 CD-4 CD-26	N.C type	※ Check contact Normal : 0Ω (CLOSE)
Pressure switch	 CD-29 CD-75 CD-35	N.O type	※ Check contact Normal : ∞Ω (OPEN)
Solenoid valve (fan EPPR valve)	 CN-71 CN-131 CN-154 CN-156 CN-157	24V 300A	※ Check resistance About 24Ω

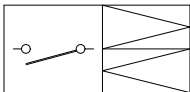
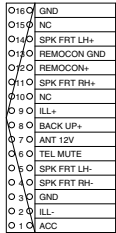
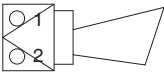
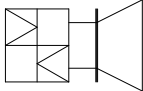
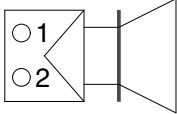
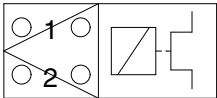
Part name	Symbol	Specifications	Check
Air cleaner pressure switch	 CD-10	Pressure : 635mmH ₂ O (N.O type)	※ Check contact Normal : $\infty \Omega$
Fuel sender	 CD-2	Reed switch : Magnetic type	※ Check resistance Full : About 50 Ω Low level : About 700 Ω
Relay (5pin)	 CR-4 CR-5 CR-26 CR-36 CR-38 CR-39 CR-42 CR-50 CR-52 CR-54 CR-56 CR-61 CR-62 CR-63	24V 3-4 : 15A (85°C) 3-5 : 10A (85°C)	※ Check resistance Normal : 0 Ω (For terminal 3-4) : $\infty \Omega$ (For terminal 3-5)
Int wiper relay	 CR-6	24V 5A Operating time : 2.5 ± 1 sec	※ Check resistance Normal : 0 Ω (For terminal 1-2) : $\infty \Omega$ (For terminal 2-4)
Start relay	 CR-23	24V 300A Exciting current : 2.3A	※ Check resistance Normal : 10 Ω (For terminal 2-4) : $\infty \Omega$ (For terminal 1-3)
Preheat relay	 CR-24	24V 200A Exciting current : 2.3A	※ Check resistance Normal : 10 Ω (For terminal coil) : $\infty \Omega$ (Between ring term)

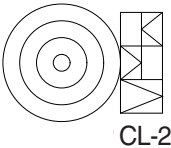
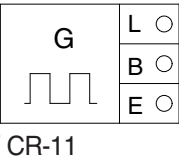
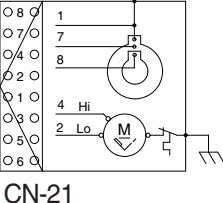
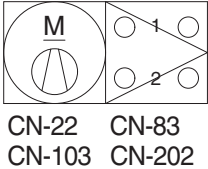
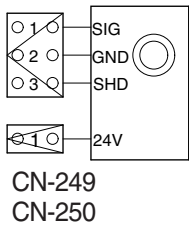
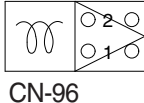
Part name	Symbol	Specifications	Check
Battery relay	 CR-1	24V 100A/1000A Rated ampere : 100A (continue) 1000A (30 second) Exciting current : 0.5A	※ Check resistance Normal : 10Ω (Between coil) : ∞Ω (Terminal ring term)
Head lamp	 CL-3 CL-4	24V, H4 75/70W	※ Check resistance Abnormal : ∞Ω (6-2, 4-2, 3-2, 1-2)
Rear work lamp	 CL-22 CL-23	24V 65W H3 bulb	※ Check disconnection Normal : A few Ω
G-sensor	 CD-6	24V, 5W	-
Beacon lamp	 CL-7	24V 15W (Strobe type)	※ Check disconnection Normal : A few Ω Abnormal : ∞Ω
Rear combination lamp	 CL-15A CL-16A	24V 1W (tail) 24V 21W (stop)	※ Check disconnection Normal : A few Ω Abnormal : ∞Ω

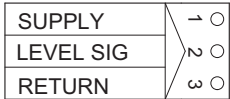
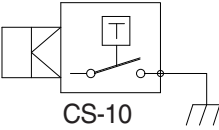
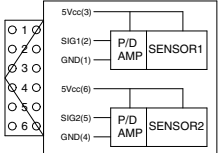
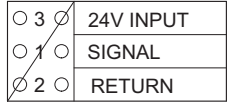
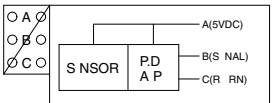
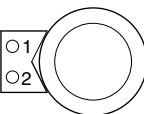
Part name	Symbol	Specifications	Check
Rear combination lamp	 CL-15B CL-16B	24V 21W (backup) 24V 21W (turn)	※ Check disconnection Normal : A few Ω Abnormal : $\infty \Omega$
Room lamp	 CL-1 CL-51	24V 10W	※ Check resistance Normal : A few Ω Abnormal : $\infty \Omega$
License lamp	 CL-21	24V 10W (1EA)	※ Check resistance Normal : A few Ω Abnormal : $\infty \Omega$
Diode	 DO-1 DO-2 DO-3 DO-4 DO-5	Diode spec : 1N5406	-
Temperature sensor (Ambient, CAC)	 CD-76 CD-87	-	-
Switch (Cabin tilt)	 CS-77	24V 8A	※ Check contact I : 0 Ω (For terminal 2-1) $\infty \Omega$ (For terminal 2-3) II : 0 Ω (For terminal 2-3) $\infty \Omega$ (For terminal 2-1) 0 : $\infty \Omega$ (For terminal 2-1, 2-3)

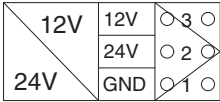
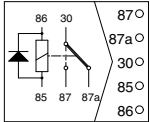
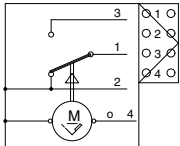
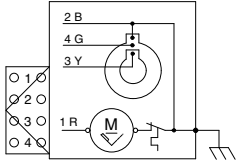
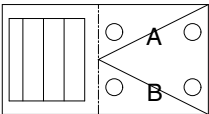
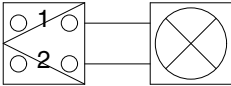
Part name	Symbol	Specifications	Check
Switch (Locking type)	 CS-17 CS-41 CS-42 CS-79 CS-82	24V 8A	※ Check contact P3 : $\infty \Omega$ (For terminal 5-6, 2-3) : 0Ω (For terminal 5-4, 2-1) P1 : $\infty \Omega$ (5-4, 2-1) : 0Ω (5-6, 2-3)
Switch (Non-locking type)	 CS-64	24V 8A	※ Check contact P2 : $\infty \Omega$ (For terminal 2-1, 2-3) P3 : 0Ω (2-1) P1 : 0Ω (2-3)
Switch	 CS-23 CS-95 CS-99	24V 8A	※ Check contact P3 : $\infty \Omega$ (For terminal 2-3) P1 : 0Ω (For terminal 2-3)
Switch	 CS-100	24V 8A	※ Check contact P2 : $\infty \Omega$ (For terminal 2-1, 2-3) P3 : 0Ω (For terminal 2-1) P1 : 0Ω (For terminal 2-3)
Canbin tilt switch	 CS-74	24V 8A	※ Check contact S/W open : $\infty \Omega$ (For terminal NO-COM) : 0Ω (For terminal NC-COM) S/W closed : 0Ω (For terminal NO-COM) : $\infty \Omega$ (For terminal NC-COM)
Master switch		6~36V Continuous Capacity : 180Amp Push in capacity : 1000Amp	※ Check contact OFF : $\infty \Omega$

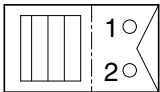
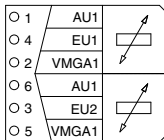
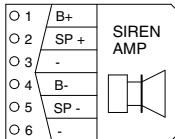
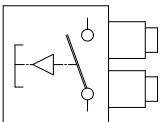
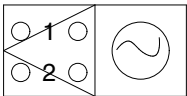
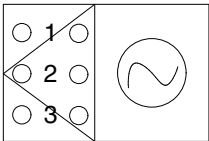
Part name	Symbol	Specifications	Check
Seat switch	 CS-73	24V 8A	※ Check contact OFF : $\infty \Omega$
Alternator	 CN-74	24V 70A	※ Check voltage Normal : 24~28V
Switch	 CS-21	24V 8A	※ Check contact P3 : $\infty \Omega$ (For terminal 5-6, 2-3) P2 : $\infty \Omega$ (For terminal 5-6, 2-1) 0 Ω (For terminal 2-3) P1 : 0 Ω (For terminal 5-6, 2-3)
Switch	 CS-105	24V 8A	※ Check contact P3 : $\infty \Omega$ (For terminal 5-6, 2-3) P1 : 0 Ω (For terminal 5-6, 2-3) $\infty \Omega$ (For terminal 5-4, 2-1)
Switch	 CS-3 CS-39 CS-59 CS-103	24V 8A	※ Check contact P3 : $\infty \Omega$ (For terminal 5-6, 2-3) P2 : $\infty \Omega$ (For terminal 5-6, 2-1) 0 Ω (For terminal 2-3) P1 : 0 Ω (For terminal 5-6, 2-3)
Start motor	 CN-45	DENSO 24V 7.8kW	※ Operating or not

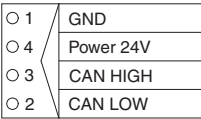
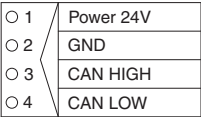
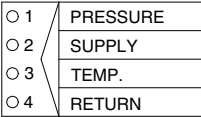
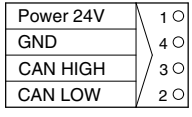
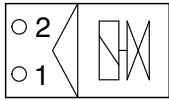
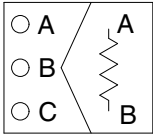
Part name	Symbol	Specifications	Check
Switch (side shift selector, hyd jack selector)	 CS-91 CS-92	N.O type	※ Check contact Normal : $\infty \Omega$
Radio & USB player	 CN-27	DC27.8V 200W × 2	※ Check resistance Power ON : $4\Omega + 4\Omega$ (For terminal 1-6, 4-8)
Horn	 CN-25 CN-65	20~28V 100~115dB (A) (at 25V 2m) Max. 1.5A (at 24V)	※ Check operation Supply power(24V) to each terminal and connect ground.
Speaker	 CN-23(LH) CN-24(RH)	4Ω 20W	※ Check resistance Normal : 50Ω
Siren speaker	 CN-145	24V	-
Air conditioner compressor	 CN-30	24V 79W	※ Check contact Normal : 13.4Ω

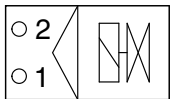
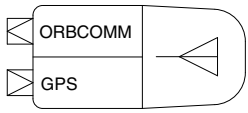
Part name	Symbol	Specifications	Check
Cigar lighter	 CL-2	24V 5A	-
Flasher unit	 CR-11	24V 85~190 C/M 50dB	-
Front wiper motor	 CN-21	24V 1A 2-speed Auto parking	-
Washer pump	 CN-22 CN-83 CN-103 CN-202	24V 2.5A	※ Check contact Normal : 26.4Ω (For terminal 1-2)
Camera	 CN-249 CN-250	24V 2.5W Signaling : NTSC Angle of view : 145°C	-
Fuel warmer	 CN-96	24V 15A	※ Check resistance Abnormal : ∞Ω

Part name	Symbol	Specifications	Check
Coolant level sensor	 CD-96	4.75~5.25V 12.5mA	-
Brake temp switch	 CS-10	N.O type	※ Check resistance Normal : $\infty \Omega$
Accelerator pedal	 CN-124	5V, hall sensor	※ Check voltage 0.5~3.9V (2-1)
Load sensor	 CD-50	24V, hall sensor	※ Check voltage 0.5~4.5 VDC (1-2)
Angle sensor	 CD-12	5V, hall sensor	※ Check voltage 0.4~4.5 VDC (B-C)
12V-socket	 CN-139	12V 120W Rated ampere : 10A	※ Check resistance Normal : A few Ω (1-2)

Part name	Symbol	Specifications	Check
DC/DC converter	 CN-138	24V 10A Output voltage : $13 \pm 1\text{VDC}$	※ Check resistance Normal : A few Ω (1-2, 1-3)
Relay (5 pin)	 CR-3 CR-49 CR-55 CR-58 CR-59	24V 30-87 : 20A 30-87a : 15A	※ Check resistance Normal : A few Ω (86-85) 0Ω (30-87a) $\infty\Omega$ (30-87)
Rear wiper motor	 CN-102	24V 1A 1-Speed Auto parking	-
Top wiper motor	 CN-70	24V 1.5A 1-speed Auto parking	-
Seat heater	 CN-170	24V	-
Mast work lamp	 CL-5 CL-6 CL-51 CL-61	24V 65W H3	-

Part name	Symbol	Specifications	Check
DEF Line heater	 CN-381 CN-382 CN-383	-	-
Inching sensor	 CD-71	-	-
Siren amp	 CN-47	24V	-
Center horn switch	 CS-5	24V	-
Transmission speed pick up sensor (Internal, Turbine, Engine)	 CD-27 CD-74 CD-72	-	-
Transmission speed sensor (output)	 CD-73	-	-

Part name	Symbol	Specifications	Check
Engine sensor (SCR, DOC)	 CN-J10 CN-J17	-	-
DEF quality sensor	 CN-J6	-	-
TBAP sensor	 CD-102	-	-
NOx sensor (turbo out, SCR out)	 CN-J7A CN-J7B	-	-
Solenoid (DEF tank heater valve, DEF dosing module)	 CN-J27 CN-J31	-	-
Resistor	 RS-2	-	-

Part name	Symbol	Specifications	Check
Solenoid (side shift selector, hyd jack/winch selector)	 CN-130 CN-132	24V 1.2A	※ Check LED lamp ※ Check resistance About 24Ω
RMS antenna	 CN-251	3.0~5.0V 20mA	-

GROUP 7 CONNECTORS (-#0041)

1. CONNECTOR DESTINATION

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-1	KET	52	I/conn(Engine harness-Main harness)	MG643241	MG613245
CN-2	KET	52	I/conn(Main harness-Engine harness)	MG643241	MG613245
CN-3	DEUTSCH	4	Seat switch	-	DT04-4P
CN-5	DEUTSCH	2	Beacon	DT06-2S	DT04-2P
CN-6	AMP	15	I/conn (Frame harness-Engine harness)	2-85262-1	368301-1
CN-7	AMP	16	I/conn (Cabin harness-Main harness)	368047-1	368050-1
CN-8	KET	14	I/conn (Main harness-Monitor harness)	-	MG640352
CN-9	DEUTSCH	2	I/conn (Frame harness-Master W/Lamp harness)	DT06-2S	DT04-2P
CN-10	DEUTSCH	6	I/conn (Frame harness-Fender harness)	-	DT04-6P
CN-11	DEUTSCH	6	I/conn (Frame harness-Fender harness)	-	DT04-6P
CN-12	DEUTSCH	4	Front camera	DT06-4S	DT04-4P
CN-12	AMP	3	Rear camera	174357-2	174359-2
CN-12	AMP	1	Rear camera	174877-2	174879-2
CN-13	KET	8	I/conn (Cabin harness-Main harness)	174982-2	-
CN-14	KET	6	Cabin harness	MG610049	MG620048
CN-15	KET	6	Aircon harness	MG610049	
CN-16	DEUTSCH	2	Mast work lamp harness	DT06-2S	DT04-2P
CN-19	KET	2	Inching potentiometer	MG610320	-
CN-20	KET	2	Engine harness	MG610331	MG640333
CN-21	DEUTSCH	8	Front wiper	D106-8S	-
CN-22	KET	2	Front washer	MG610320	-
CN-23	KET	2	Speaker LH	MG610070	
CN-24	KET	2	Speaker RH	MG610070	
CN-25	Molex	2	Horn	35825-0211	
CN-26	KET	1	Tilt alarm	ST730018-3	ST750036-3
CN-27	KUM	16	USB & MP3	PK145-16017	-
CN-28	AMP	8	T/M display	929504-3	-
CN-29	KET	2	Receiver dryer	MG640795	-
CN-30	KET	2	Compressor	MG610043	-
CN-31	AMP	2	Aircon harness	176146-2	-
CN-32	AMP	2	Aircon harness	-	174354-2
CN-33	AMP	6	Aircon harness	-	174264-2
CN-36	QPL	-	Fuse box B+	21HN-55010	-
CN-37	QPL	-	Fuse box IG	21HN-55010	-
CN-45	Ring term	1	Start motor	S820-31200	-
CN-45	Ring term	1	Start motor	S820-20500	-
CN-46	KET	1	Engine harness-Air compressor	MG640944-5	MG650943-5

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-47	AMP	2	Speaker	S816-002002	S816-102002
CN-47	KET	1	Master switch	MG640944-5	MG650943-5
CN-50	AMP	68	Transmission control unit	963598-1	-
CN-51	AMP	6	T/M diagnostic	-	926682-3
CN-52	KET	4	Handsfree controller	MG610331	-
CN-55	KET	14	OPSS unit	MG610350	-
CN-56	AMP	20	Cluster	174047-2	-
CN-57	AMP	20	Cluster	175967-2	-
CN-58	KET	14	Monitor	MG610250	
CN-59	AMP	36	MCU	344111	-
CN-60	KET	2	Fusible link	-	MG620558
CN-65	DEUTSCH	2	Back-up buzzer	DT06-2S	-
CN-71	DEUTSCH	2	Parking solenoid	DT06-2S	-
CN-74	PACKARD	4	Alternator	12186568	-
CN-75	KET	1	Battery terminal(-)	MG640944-5	-
CN-83	KUM	2	Condenser fan	PB625-02027	-
CN-90	AMP	12	Frame harness	174982-2	174663-2
CN-91	DEUTSCH	3	Fender-RH	-	DT04-3P
CN-92	DEUTSCH	4	ECU connector(J3)	DT06-4S-EP06	-
CN-93	DELPHI	96	ECU connector(J2)	13964577	-
CN-94	FRAMATOME	24	Alternate droop (breakout connector)	F25400	-
CN-95	OPL/KET	2	Fusible link	21N4-01310	MG600558
CN-96	PACKARD	2	Fuel warmer	15300027	-
CN-97	PACKARD	2	Fuel warmer(main filter)	15300027	-
CN-98	DEUTSCH	3	I/conn	DT063S-EP06	-
CN-101	SUMITOMO	4	TBAP sensor	-	6098-0144
CN-102	AMP	4	Rear wiper motor	180900	-
CN-103	KET	2	Rear washer	MG610320	-
CN-112	ZF	16	Gear box	21L7-60290	-
CN-124	AMP	6	Accel pedal	174162-2	-
CN-125	DEUTSCH	12	RMCU	DT06-12S	DT04-12P
CN-130	DEUTSCH	2	Hydrojack/ winch select solenoid	DT06-2S	-
CN-131	DEUTSCH	2	Attach cut off	DT06-2S	-
CN-132	DEUTSCH	2	Side shift select solenoid	DT06-2S	-
CN-133	AMP	2	Cabin down solenoid	-	174354-2
CN-134	DEUTSCH	4	ECU service connector	-	HD10-9-1939P
CN-135	DEUTSCH	9	Cluster/Monitor service tool	-	HD10-9-96P
CN-136	DEUTSCH	9	MCU/RMCU service	-	HD10-9-96P
CN-138	KET	3	DC/DC converter	MG610045	-
CN-139	KET	2	12V socket	MG610043	-

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-144	KET	20	Handsfree controller	MG610240	-
CN-145	KET	2	Siren speaker	MG610049	-
CN-147	KET	2	Cabin tilt pump motor	MG640188-4	-
CN-154	DEUTSCH	2	Fan motor EPPR valve	DT06-2S	-
CN-169	KET	4	Program dump	DT06-4S-EP06	DT04-4P-E005
CN-202	AMP	2	Top washer pump	172130-1	-
CN-245	AMP	12	Remote assy	368542	-
CN-246	AMP	12	USB & Socket assy	174045-2	-
CN-381	TYCO	2	DEF line heater 1	936059-1	-
CN-382	TYCO	2	DEF line heater 2	936059-1	-
CN-383	TYCO	2	DEF line heater 3	936059-1	-
CN-J6	1TT CAN NON	4	DEF quality sensor	121583-0000	-
CN-J7A	TYCO	4	DOC nox sensor	2-1418390-1	-
CN-J7B	TYCO	4	SCR nox sensor	1-1418390-1	-
CN-J10	TYCO	4	SCR thermo cont	3-1418390-1	-
CN-J17	TYCO	4	DOC thermo cont	4-1418390-1	-
CN-J26	TYCO	12	DEF supply module	2-1703639-1	-
CN-J27	DEUTSCH	2	DEF tank heat valve	DT06-2S	-
CN-J31	TYCO	2	DEF dosing module	936059-1	-
Switch					
CS-2	KET	6	Start key	MG610335	-
CS-3	DAEDONG	10	Rear wiper washer switch	250-10PRG	-
CS-5	KET	2	Horn switch	MG610320	-
CS-6	KET	2	Center horn	-	MG640322
CS-10	DAEDONG	10	Fuel warmer switch	250-10PRG	-
CS-10	KET	1	Brake cooling switch	ST720018-3	-
CS-11	KET	8	Combination switch	MG610339	-
CS-12	KET	6	Combination switch	MG610335	-
CS-13	KET	1	Side shift selector switch	ST730018-3	ST30036-3
CS-14	PACKARD	4	Gear selector	-	12010974
CS-15	KET	1	Gear selector	ST730018-3	-
CS-15	KET	4	Gear selector	12015797	-
CS-16	KET	1	Hyd. jack/winch selector switch	ST730018-3	ST30036-3
CS-17	DAEDONG	10	Parking switch	250-10PRG	-
CS-18	DAEDONG	10	Cruise switch	250-10PRG	-
CS-19	DAEDONG	10	Cruise set/resume switch	250-10PRG	-
CS-21	DAEDONG	10	Work lamp switch	250-10PRG	-
CS-23	DAEDONG	10	Beacon switch	250-10PRG	-
CS-34	DAEDONG	10	Diagnostic switch	250-10PRG	-
CS-39	DAEDONG	10	Main switch	250-10PRG	-

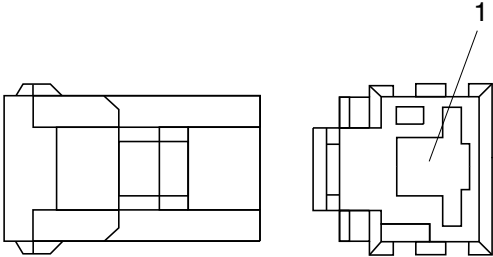
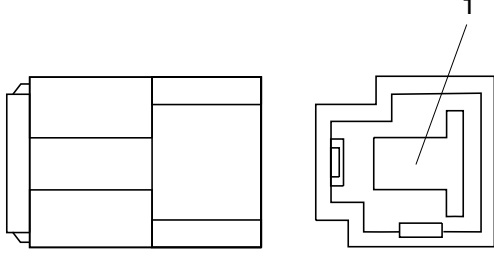
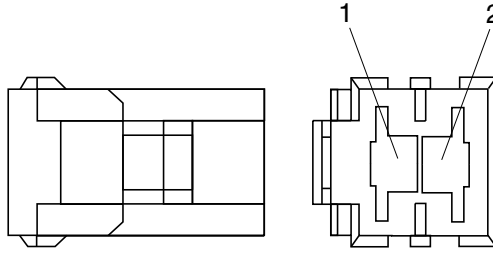
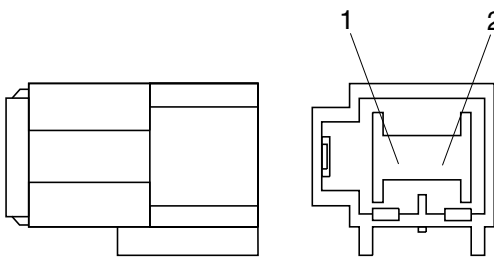
Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CS-41	DAEDONG	10	Hazard switch	250-10PRG	-
CS-42	DAEDONG	10	Inching switch	250-10PRG	-
CS-54	DAEDONG	10	Aircon switch	250-10PRG	-
CS-59	DAEDONG	10	Auto/manual switch	250-10PRG	-
CS-64	DAEDONG	10	Inc/dec switch	250-10PRG	-
CS-72	DEUTSCH	4	Tilt switch	-	DT04-4P
CS-74	DEUTSCH	4	Tilt switch	-	DT04-4P
CS-77	DAEDONG	10	Tilt operation	250-10PRG	-
CS-78	KET	2	Cabin tilt	MG610320	-
CS-79	DAEDONG	10	Power/STD switch	250-10PRG	174354-2
CS-80	DAEDONG	10	Air compressor switch	250-10PRG	-
CS-82	DAEDONG	10	Seal heat switch	250-10PRG	-
CS-100	SWF	12	DEF regen inhibit switch	589790	-
CS-103	DAEDONG	10	Top wiper switch	250-10PRG	-
Lamp					
CL-1	KET	2	Room lamp	-	MG610392
CL-2	KET	1	Cigar lighter	ST175036-3	ST730018-3
CL-3	DEUTSCH	6	Head lamp LH	DT06-6S	-
CL-4	DEUTSCH	6	Head lamp RH	DT06-6S	-
CL-5	DEUTSCH	2	Mast lamp-LH	DT06-2S	-
CL-6	DEUTSCH	2	Mast lamp-RH	DT06-2S	-
CL-7	-	6	Beacon lamp	S822-014000	S822-114000
CL-15	KLM	6	Rear combi LH	PB625-06027	-
CL-15A	AMP	3	Illuminate/ stop lamp	282087-1	-
CL-15B	AMP	3	Turn/ back up lamp	282087-2	-
CL-16	KLM	6	Rear combi RH	PB625-06027	-
CL-16A	AMP	3	Illuminate/ stop lamp	282087-1	-
CL-16B	AMP	3	Turn/ back up lamp	282087-2	-
CL-21	KET	1	License lamp	ST730018-3	ST750036-3
CL-22	DEUTSCH	2	R/ work RH	DT06-2S	DT04-2P
CL-23	DEUTSCH	2	R/ work LH	DT06-2S	-
CL-24	-	1	Flasher lamp LH	S822-014000	S822-114000
CL-30	KET	2	Room lamp	MG610392	-
CL-40	SWF	2	SCR cleaning lamp	913328	-
CL-41	SWF	2	SCR cleaning inhibit lamp	913328	-
CL-42	SWF	2	E/G stop lamp	913328	-
CL-43	SWF	2	HEST lamp	913328	-
CL-50	SWF	2	DEF low temp	913328	-
CL-51	DEUTSCH	2	Mast lamp-LH	DT06-2S	-
CL-61	DEUTSCH	2	Mast lamp-RH	DT06-2S	-

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
Relay					
CR-1	RING TERMINAL	1	Battery relay	S820-104000 S820-308000	-
CR-3	HELLA	5	Front w/lamp relay	8JA003526-001	-
CR-4	AMP	5	Wiper HI relay	VCFM-1002	-
CR-5	AMP	5	Netural relay	VCFM-1002	-
CR-6	KET	4	Internal wiper relay	MG610047	-
CR-11	HELLA	3	Flasher unit	8JA003526-001	-
CR-12	AMP	5	Fan motor relay	VCFM-1002	-
CR-23	KET	4	Starter relay	MG610047	-
CR-24	RING TERMINAL	-	Preheat relay	S820-106000	-
	KET	1	Preheat relay	ST730018-3	-
CR-26	AMP	5	Wiper low speed relay	VCFM-1002	-
CR-36	AMP	5	Anti-restart relay	VCFM-1002	-
CR-38	AMP	5	Washer pump relay	VCFM-1002	-
CR-39	AMP	5	Backup relay	VCFM-1002	-
CR-42	AMP	5	Preheat relay	VCFM-1002	-
CR-44	AMP	2	Cabin tilt relay	174352-2	-
CR-45	HELLA	5	ECM relay	8JA003526-001	-
CR-46	HELLA	5	Fuel warmer relay	8JA003526-001	-
CR-47	HELLA	5	Fuel warmer relay	8JA003526-001	-
CR-49	HELLA	5	Fuel warmer relay	8JA003526-001	-
CR-50	AMP	5	Travel cut relay	VCFM-1002	-
CR-52	AMP	5	Attach cut relay	VCFM-1002	-
CR-53	AMP	5	Cruise control relay	VCFM-1002	-
CR-54	AMP	5	Brake switch relay	VCFM-1002	-
CR-55	HELLA	5	Rear w/lamp relay	8JA003526-001	-
CR-56	AMP	5	Auto park relay	VCFM-1002	-
CR-58	HELLA	5	DEF supply module relay	8JA003526-001	-
CR-59	HELLA	5	DEF sensor relay	8JA003526-001	-
CR-61	AMP	5	DEF line heater 1 relay	VCFM-1002	-
CR-62	AMP	5	DEF line heater 2 relay	VCFM-1002	-
CR-63	AMP	5	DEF line heater 3 relay	VCFM-1002	-
Sensor and pressure switch					
CD-2	KET	3	Fuel sender	MG610045	-
CD-3	DEUTSCH	2	Switch accumulator fail	-	DT04-2P
CD-4	QPL	1	Brake switch	171809-2	-
CD-8	AMP	2	Temp sender	827551-3	-
CD-10	KET	1	Air cleaner switch	ST730057-2	-
CD-12	DEUTSCH	3	Angle sensor	DT06-3S	DT04-3P

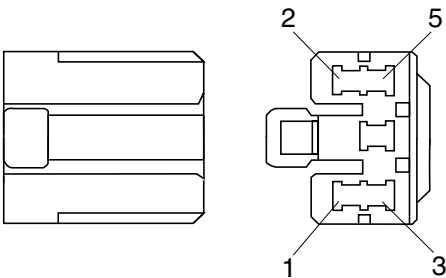
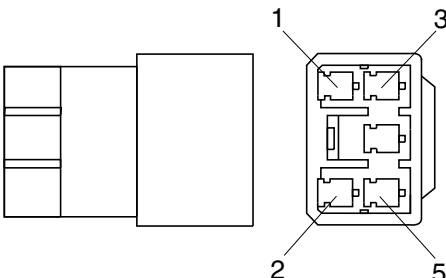
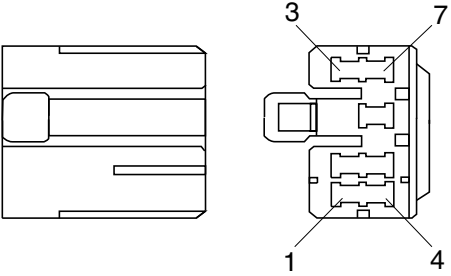
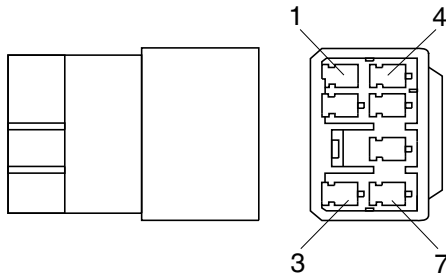
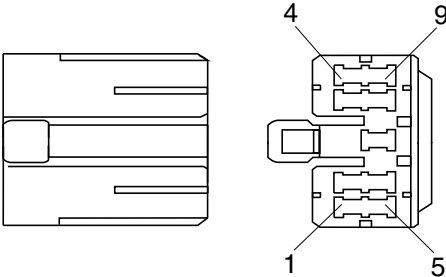
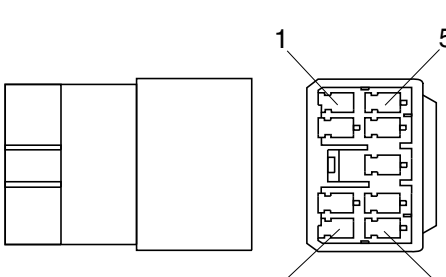
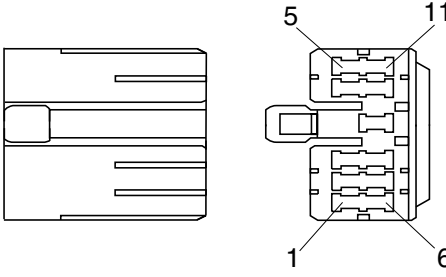
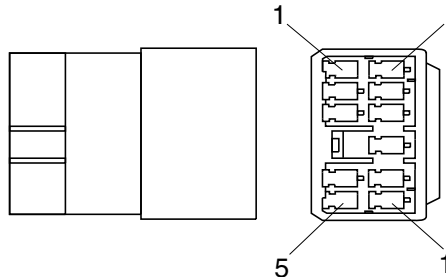
Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CD-18	AMP	1	Engine oil pressure switch	S819-010122	-
CD-26	DEUTSCH	2	Parking pressure switch	-	DT04-2P
CD-27	AMP	2	Turbine speed pick-up	963040-2	-
CD-29	ZF	2	Temp sender	21FF-10170	-
CD-35	DEUTSCH	2	Water in fuel switch	DT06-2S	-
CD-50	DEUTSCH	3	Load sensor	DT06-3S	
CD-55	KET	2	RCV pressure switch	MG640795	-
CD-71	AMP	5	Inching sensor	1-967616-1	-
CD-72	AMP	2	Internal speed pick-up	963040-3	-
CD-73	AMP	3	Output speed sensor	282087-1	-
CD-74	AMP	2	Engine speed pick-up	963040-3	-
CD-75	AMP	2	Filter switch	282080-1	-
CD-76	AMP	2	Air temp. sensor	963040-3	-
CD-87	KET	2	Ambient temp. sensor	MG610320	-
CD-96	PACKARD	3	Coolant level sensor	12110293	-
CD-102	FRAMATOME	4	FCI	54200415	-
DO-01	QPL	-	Diode	21EA-50550	-
DO-02	QPL	-	Diode	21EA-50550	-
DO-03	QPL	-	Diode	21EA-50550	-
DO-04	QPL	-	Diode	21EA-50550	-

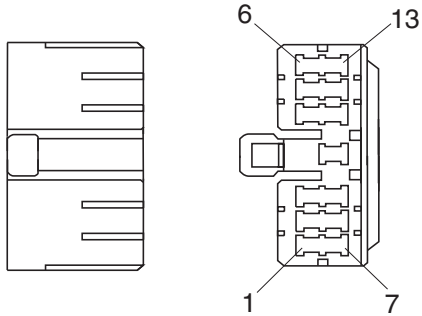
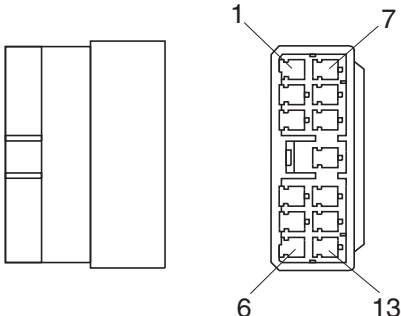
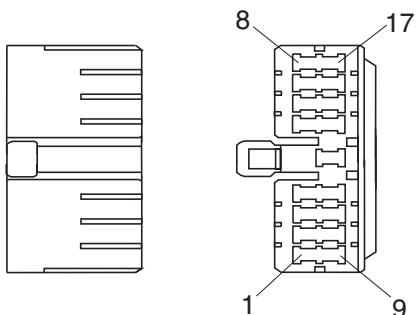
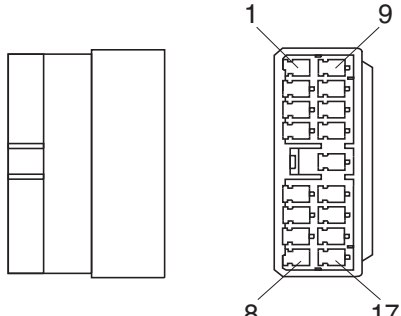
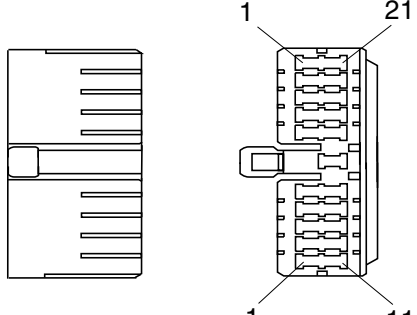
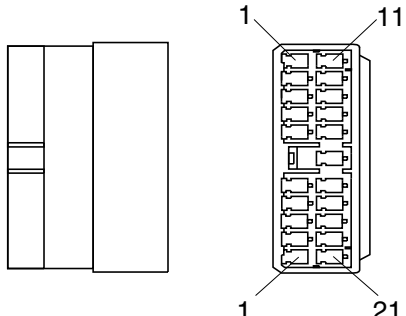
2. CONNECTION TABLE FOR CONNECTORS

1) 58-L TYPE CONNECTOR

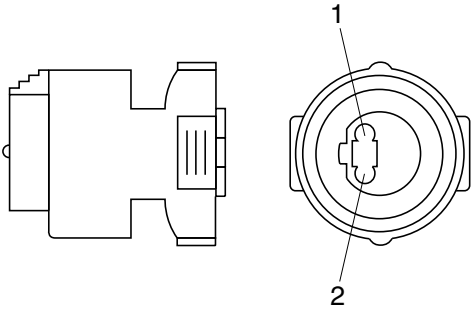
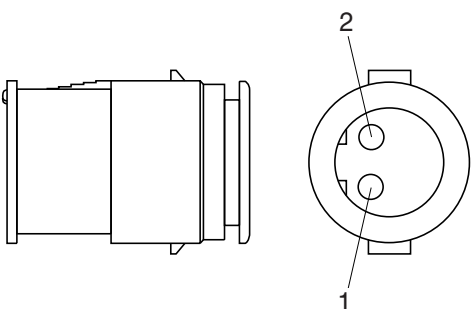
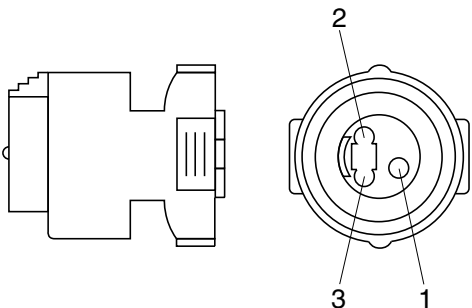
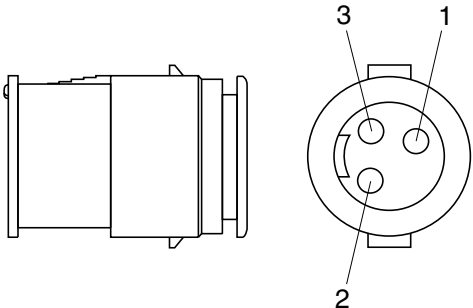
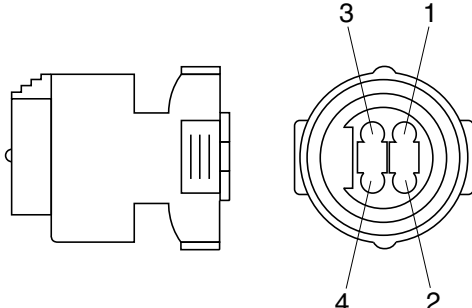
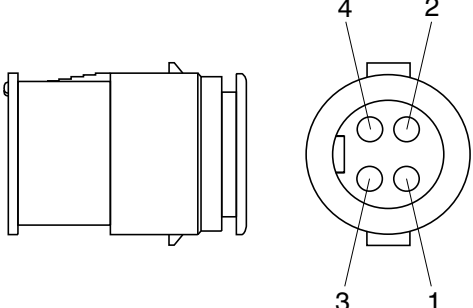
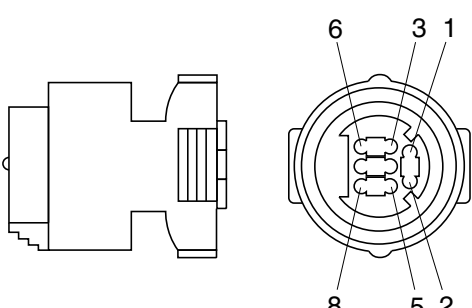
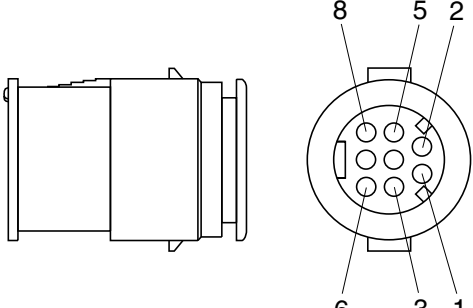
No. of pin	Receptacle connector (Female)	Plug connector (Male)
1	 S813-030100	 S813-130100
2	 S813-030200	 S813-130200

2) PA TYPE CONNECTOR

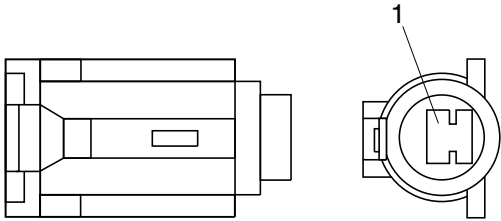
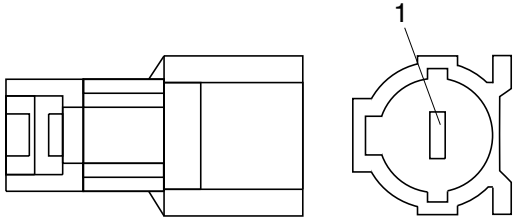
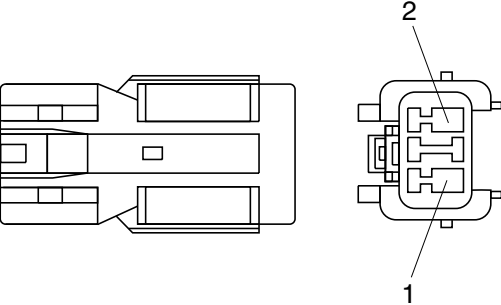
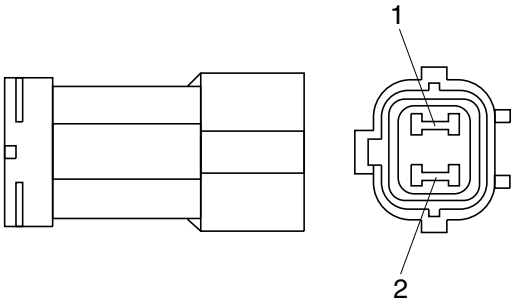
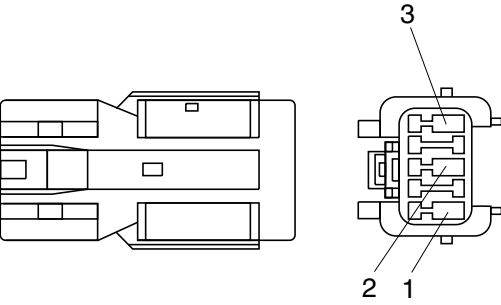
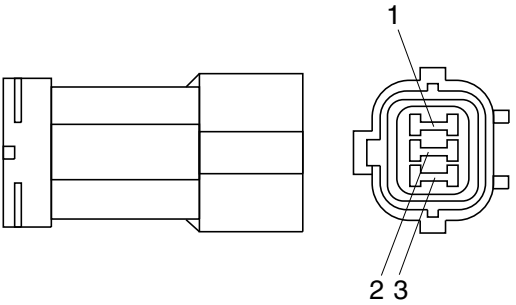
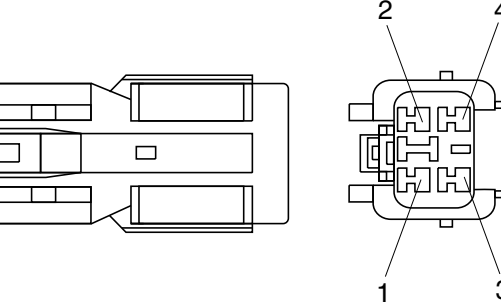
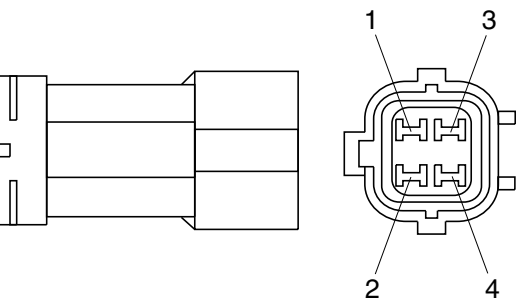
No. of pin	Receptacle connector (Female)	Plug connector (Male)
5	 S811-005002	 S811-105002
7	 S811-007002	 S811-107002
9	 S811-009002	 S811-109002
11	 S811-011002	 S811-111002

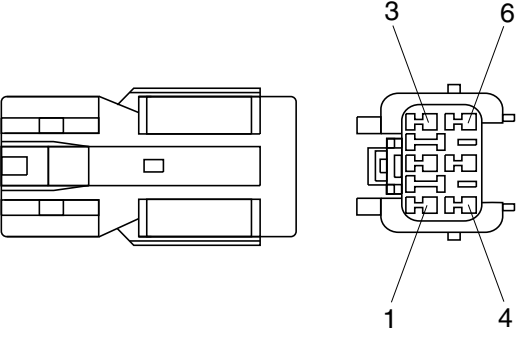
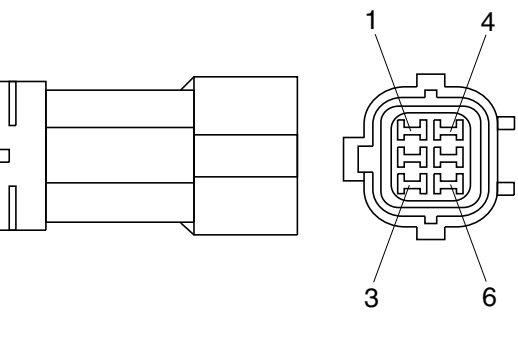
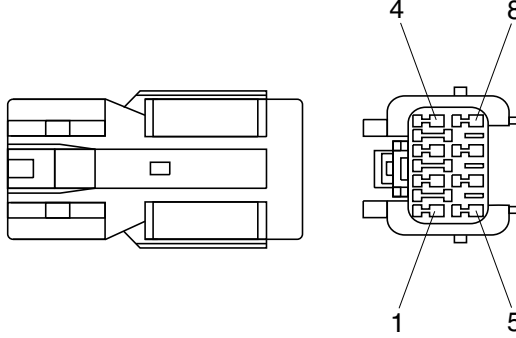
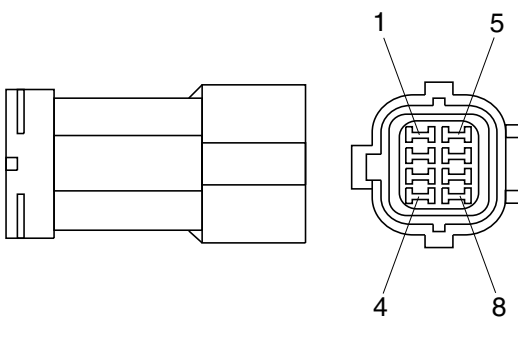
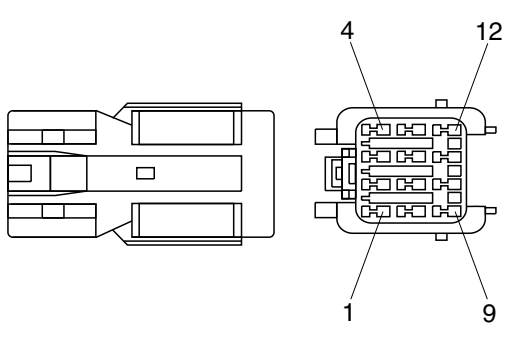
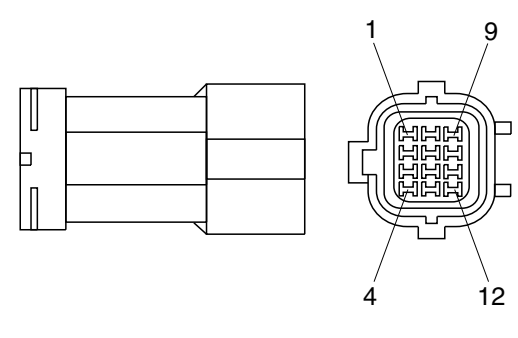
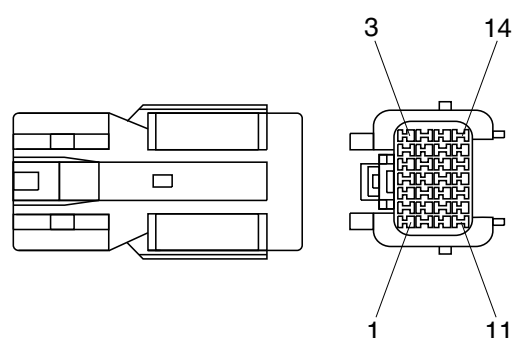
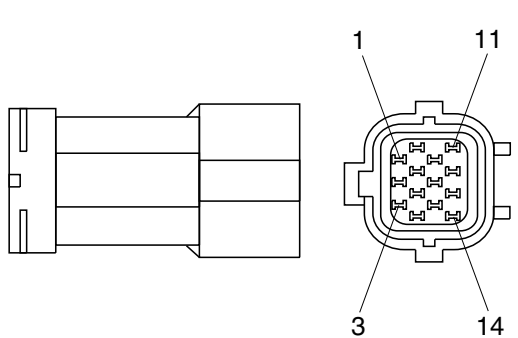
No. of pin	Receptacle connector (Female)	Plug connector (Male)
13	 S811-013002	 S811-113002
17	 S811-017002	 S811-117002
21	 S811-021002	 S811-121002

3) J TYPE CONNECTOR

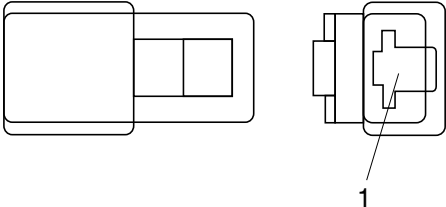
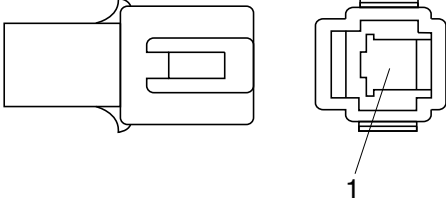
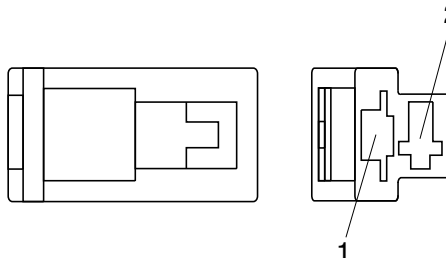
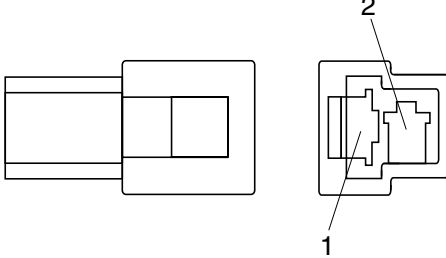
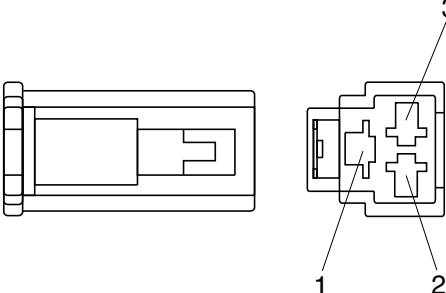
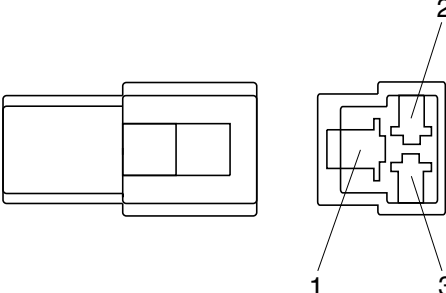
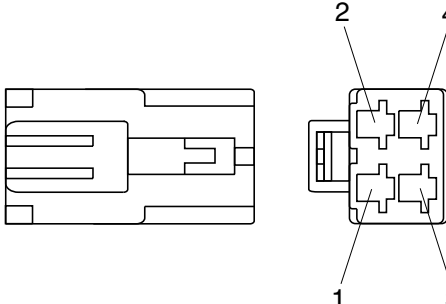
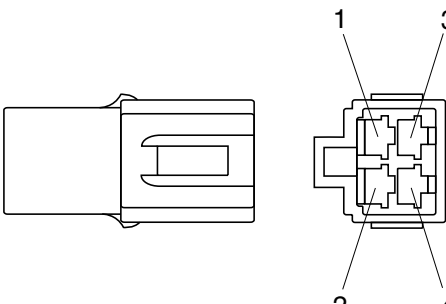
No. of pin	Receptacle connector (Female)	Plug connector (Male)
2	 S816-002001	 S816-102001
3	 S816-003001	 S816-103001
4	 S816-004001	 S816-104001
8	 S816-008001	 S816-108001

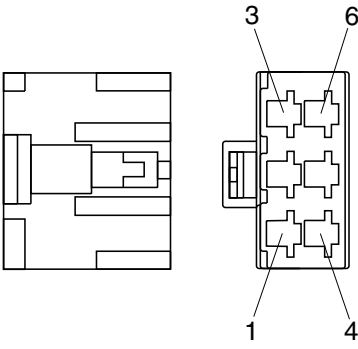
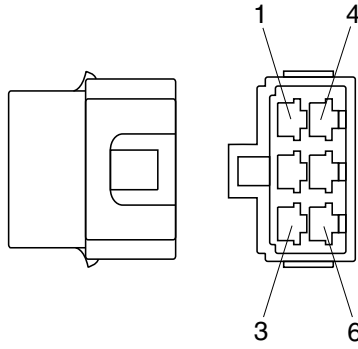
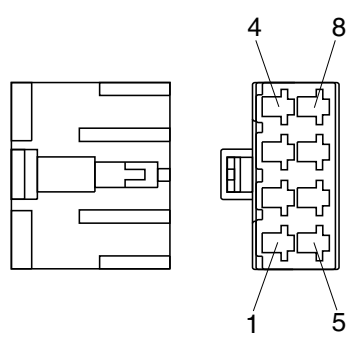
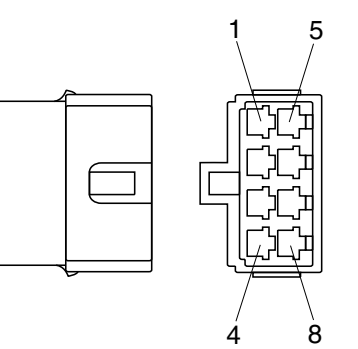
4) SWP TYPE CONNECTOR

No. of pin	Receptacle connector (Female)	Plug connector (Male)
1	 S814-001000	 S814-101000
2	 S814-002000	 S814-102000
3	 S814-003000	 S814-103000
4	 S814-004000	 S814-104000

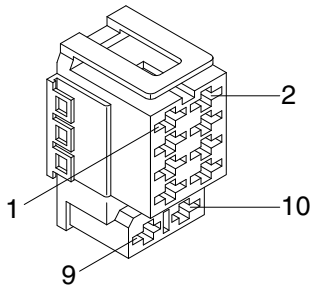
No. of pin	Receptacle connector (Female)	Plug connector (Male)
6	 S814-006000	 S814-106000
8	 S814-008000	 S814-108000
12	 S814-012000	 S814-112000
14	 S814-014000	 S814-114000

5) CN TYPE CONNECTOR

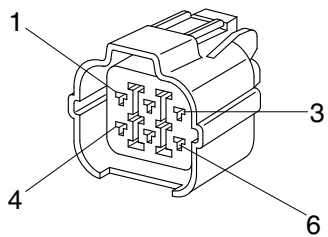
No. of pin	Receptacle connector (Female)	Plug connector (Male)
1	 S810-001202	 S810-101202
2	 S810-002202	 S810-102202
3	 S810-003202	 S810-103202
4	 S810-004202	 S810-104202

No. of pin	Receptacle connector (Female)	Plug connector (Male)
6	 S810-006202	 S810-106202
8	 S810-008202	 S810-108202

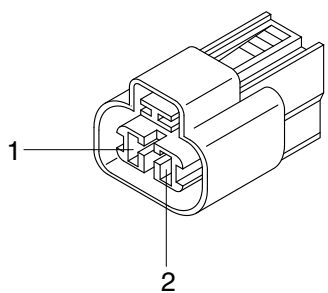
6) ITT SWF CONNECTOR

No. of pin	Receptacle connector (Female)	Plug connector (Male)
10	 SWF593757	

7) HW090 SEALED CONNECTOR

No. of pin	Receptacle connector (Female)	Plug connector (Male)
6	 6189-0133	

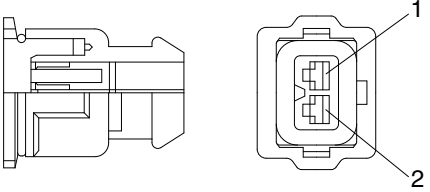
8) MWP02F-B CONNECTOR

No. of pin	Receptacle connector (Female)	Plug connector (Male)
2	 PH805-02028	

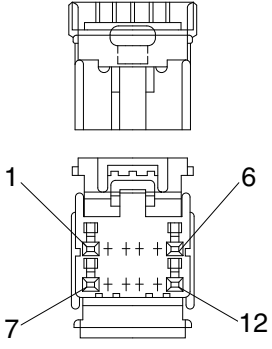
9) AMP ECONOSEAL CONNECTOR

No. of pin	Receptacle connector(Female)	Plug connector(Male)
36	344111-1	344108-1

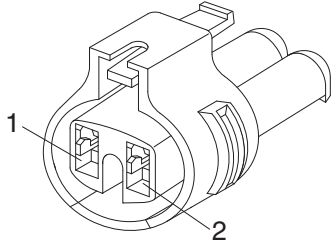
10) AMP TIMER CONNECTOR

No. of pin	Receptacle connector(Female)	Plug connector(Male)
2	 85202-1	

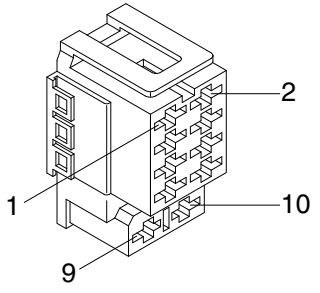
11) AMP 040 MULTILOCK CONNECTOR

No. of pin	Receptacle connector(Female)	Plug connector(Male)
12	 174045-2	

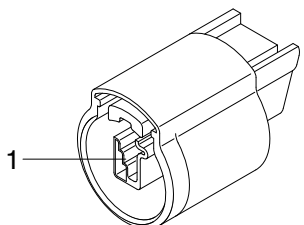
12)KET 090 WP CONNECTORS

No. of pin	Receptacle connector (Female)	Plug connector (Male)
2	 MG640795	

13)ITT SWF CONNECTOR

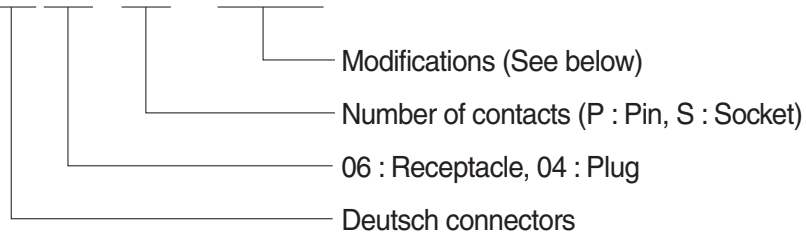
No. of pin	Receptacle connector (Female)	Plug connector (Male)
10	 SWF593757	

14)MWP NMWP CONNECTOR

No. of pin	Receptacle connector (Female)	Plug connector (Male)
1	 NMWP01F-B	

15) DEUTSCH DT CONNECTORS

DT 06 - 3S - ★★★★★



※ Modification

E003 : Standard end cap - gray

E004 : Color of connector to be black

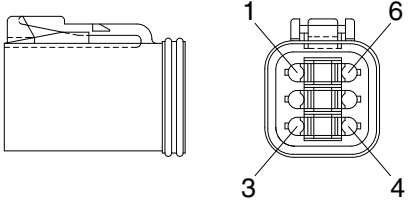
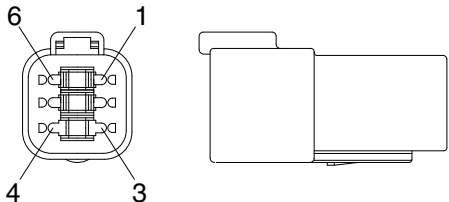
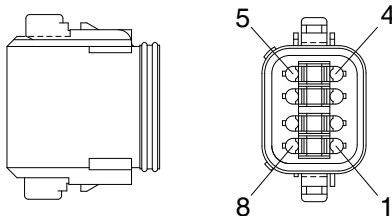
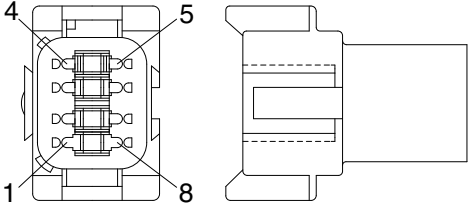
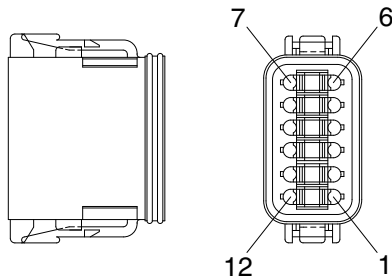
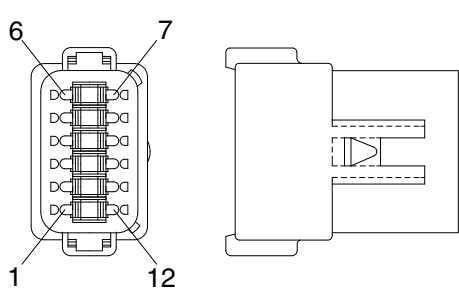
E005 : Combination - E004 & E003

EP04 : End cap

EP06 : Combination P012 & EP04

P012 : Front seal enhancement - connectors color to black for 2, 3, 4 & 6pin

No. of pin	Receptacle connector (Female)	Plug connector (Male)
2	DT06-2S	DT04-2P
3	DT06-3S	DT04-3P
4	DT06-4S	DT04-4P

No. of pin	Receptacle connector(Female)	Plug connector(Male)
6	 DT06-6S	 DT04-6P
8	 DT06-8S	 DT04-8P
12	 DT06-12S	 DT04-12P

GROUP 7 CONNECTORS (#0042-)

1. CONNECTOR DESTINATION

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-1	AMP	42	I/conn (Engine harness-Main harness)	936421	936429
CN-2	AMP	42	I/conn (Main harness-Engine harness)	936421	936429
CN-3	AMP	42	I/conn (Engine harness-Main harness)	936421	936429
CN-4	KET	2	I/conn (Engine harness-Main harness)	MG642928	MG652934-5
CN-5	DEUTSCH	2	Beacon	DT06-2S	DT04-2P
CN-6	AMP	15	I/conn (Main harness-Engine harness)	2-85262-1	368301-1
CN-7	AMP	16	I/conn (Main harness-Cabin harness)	368047-1	368050-1
CN-8	KET	14	I/conn (Main harness-Monitor harness)	MG610350	MG640352
CN-9	DEUTSCH	2	I/conn (Frame harness-Master W/Lamp harness)	DT06-2S	DT04-2P
CN-10	DEUTSCH	6	I/conn (Frame harness-Fender harness)	-	DT04-6P
CN-11	DEUTSCH	6	I/conn (Fender harness-Frame harness)	-	DT04-6P
CN-12	DEUTSCH	4	Front camera	DT06-4S	DT04-4P
CN-12	AMP	3	Rear camera	174357-2	174359-2
CN-12	AMP	1	Rear camera	174877-2	174879-2
CN-13	AMP	8	I/conn (Main harness-Cabin harness)	174982-2	-
CN-14	KET	6	Cabin harness	MG610049	MG620048
CN-15	KET	6	Aircon harness	MG610049	
CN-16	DEUTSCH	2	Mast work lamp harness	DT06-2S	DT04-2P
CN-19	KET	2	Inching check	MG610320	MG640322
CN-20	KET	2	Engine harness	MG610331	MG640333
CN-21	DEUTSCH	8	Front wiper	D106-8S	-
CN-22	KET	2	Front washer pump	MG610320	-
CN-23	KET	2	Speaker LH	MG610070	
CN-24	KET	2	Speaker RH	MG610070	
CN-25	Molex	2	Horn	35825-0211	
CN-26	KET	1	Tilt alarm	ST730018-3	ST750036-3
CN-27	KUM	16	USB & MP3	PK145-16017	-
CN-28	AMP	8	T/M display	929504-3	-
CN-29	KET	2	Receiver dryer	MG640795	-
CN-30	KET	2	Compressor	MG610043	-
CN-31	AMP	2	Aircon harness	176146-2	-
CN-32	AMP	2	Aircon harness	-	174354-2
CN-33	AMP	6	Aircon harness	-	174264-2
CN-36	QPL	-	Fuse box (B+)	21HN-55010	-
CN-37	QPL	-	Fuse box (IG)	21HN-55010	-
CN-45	Ring term	-	Start motor (M)	S820-31200	-

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-45	Ring term	-	Start motor (B+)	S820-20500	-
CN-46	KET	1	Engine harness-Air compressor	MG640944-5	MG650943-5
CN-47	-	1	Master switch (B+)	S820-312000	-
CN-47	KET	1	Master switch	MG640944-5	MG650943-5
CN-47	AMP	4	Speaker	174257-2	174259-2
CN-50	AMP	68	Transmission control unit	963598-1	-
CN-51	AMP	6	TCU service tool	480704-0	926682-3
CN-52	KET	4	Handsfree controller	MG610331	-
CN-55	KET	14	OPSS unit	MG610350	-
CN-56	AMP	20	Cluster	174047-2	-
CN-57	AMP	20	Cluster	175967-2	-
CN-58	KET	14	Monitor	MG610250	
CN-59M	AMP	34	MCU	4-1437290-0	-
CN-59N	AMP	34	MCU	4-1437290-1	-
CN-60	KET	2	Fusible link	-	MG620558
CN-65	DEUTSCH	2	Back-up buzzer	DT06-2S	-
CN-71	DEUTSCH	2	Parking solenoid	DT06-2S	-
CN-71	DEUTSCH	4	Seat switch	-	DT04-4P
CN-74	PACKARD	4	Alternator	12186568	-
CN-75	KET	1	Battery terminal(-)	MG640944-5	-
CN-83	KUM	2	Condenser fan	PB625-02027	-
CN-90	AMP	16	I/conn (Engine harness-Frame harness)	368047-1	-
CN-91	DEUTSCH	3	Fender-RH	-	DT04-3P
CN-92	DEUTSCH	4	ECU connector(J3)	DT06-4S-EP06	-
CN-93	DELPHI	96	ECU connector(J2)	13964577	-
CN-94	FRAMTIME	24	Alternate droop (breakout connector)	F25400	-
CN-95A/B	QPL/KET	2	Fusible link	21N4-01310	MG600558
CN-96	PACKARD	2	Fuel warmer	15300027	-
CN-97	PACKARD	2	Fuel warmer(main filter)	15300027	-
CN-98	DEUTSCH	3	I/conn	DT063S-EP06	-
CN-101	FRAMTIME	4	TBAP sensor	-	54200415
CN-102	AMP	4	Rear wiper motor	180900	-
CN-103	KET	2	Rear washer pump	MG610320	-
CN-112	ZF	16	Gear box	21L7-60290	-
CN-124	AMP	6	Accelerator pedal	174162-2	-
CN-125	DEUTSCH	12	RMCU	DT06-12S	DT04-12P
CN-130	DEUTSCH	2	Hydrojack/ winch select solenoid	DT06-2S	-
CN-131	DEUTSCH	2	Attach cut off	DT06-2S	-
CN-132	DEUTSCH	2	Side shift select solenoid	DT06-2S	-
CN-133	AMP	2	Cabin down solenoid	-	174354-2

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-134	DEUTSCH	9	ECU service tool	-	HD10-9-1939P
CN-135	DEUTSCH	9	Cluster/Monitor service tool	-	HD10-9-96P
CN-136	DEUTSCH	9	MCU/RMCU service tool	-	HD10-9-96P
CN-138	KET	3	DC/DC converter	MG610045	-
CN-139	KET	2	12V socket	MG610043	-
CN-144	KET	20	Handsfree controller	MG610240	-
CN-145	KET	2	Siren speaker	MG610049	-
CN-147	KET	2	Cabin tilt pump motor	MG640188-4	-
CN-154	DEUTSCH	2	Fan motor EPPR valve	DT06-2S	-
CN-156	DEUTSCH	2	Fan EPPR valve	DT06-2S	-
CN-157	AMP	2	Fan reverse valve	85202-5	-
CN-158	AMP	4	I/conn (Engine harness-Cooling fan harness)	174257-2	174259-2
CN-160	DEUTSCH	2	Engine harness-Air compressor	DT06-2S	-
CN-169	KET	4	Program dump	DT06-4S-EP06	DT04-4P-E005
CN-191	KET	4	G-sensor	174257-2	174259-2
CN-202	KET	2	Top washer pump	MG610043	-
CN-245	AMP	12	Remote assy	368542	-
CN-246	AMP	12	USB & Socket assy	174045-2	-
CN-249	AMP	3	Rear camera	174357-2	174359-2
CN-249	AMP	1	Rear camera	174877-2	174879-2
CN-381	AMP	2	DEF line heater 1	936059-1	-
CN-382	AMP	2	DEF line heater 2	936059-1	-
CN-383	AMP	2	DEF line heater 3	936059-1	-
CN-J6	ITT CANNON	4	DEF quality sensor	121583-0000	-
CN-J7A	AMP	4	DOC NOx sensor	2-1418390-1	-
CN-J7B	AMP	4	SCR NOx sensor	1-1418390-1	-
CN-J10	AMP	4	SCR thermistor	3-1418390-1	-
CN-J17	AMP	4	DOC thermistor	4-1418390-1	-
CN-J26	AMP	12	DEF supply module	2-1703639-1	-
CN-J27	DEUTSCH	2	Coolant valve	DT06-2S	-
CN-J31	AMP	2	DEF dosing module	936059-1	-
Switch					
CS-2	KET	6	Start key	MG610335	-
CS-3	CARLING	10	Rear wiper washer switch	21HN-56300	-
CS-5	KET	2	Center horn switch	-	MG640322
CS-5A	KET	2	Center horn switch	MG610320	-
CS-5B	-	1	Center horn switch	-	S820-105000
CS-10	KET	1	Brake temperature switch	ST720018-3	-
CS-11	KET	8	Multifunction switch	MG610339	-
CS-12	KET	6	Multifunction switch	MG610335	-

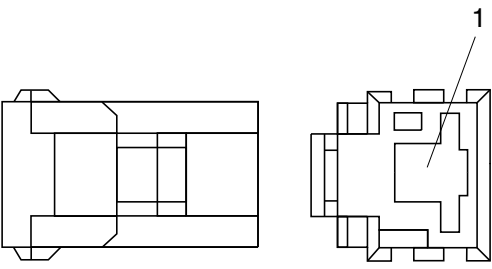
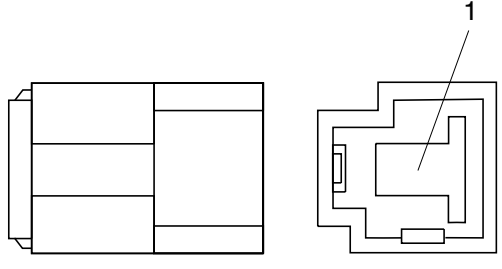
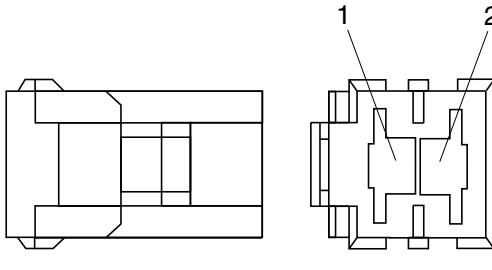
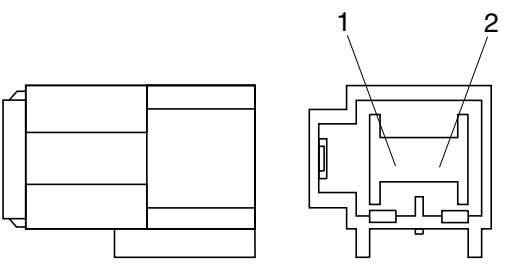
Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CS-14	PACKARD	4	Gear selector switch	-	12010974
CS-15	KET	1	Multi function switch	ST730018-3	-
CS-15	KET	4	Gear selector switch	12015797	-
CS-17	CARLING	10	Parking switch	21HN-56300	-
CS-18	DAEDONG	10	Cruise switch	250-10PRG	-
CS-19	DAEDONG	10	Cruise set/resume switch	250-10PRG	-
CS-21	CARLING	10	Work lamp switch	21HN-56300	-
CS-23	CARLING	10	Beacon switch	21HN-56300	-
CS-34	DAEDONG	10	Diagnostic switch	250-10PRG	-
CS-39	CARLING	10	Main light switch	21HN-56300	-
CS-41	CARLING	10	Hazard switch	21HN-56300	-
CS-42	CARLING	10	Inching switch	21HN-56300	-
CS-54	DAEDONG	10	Aircon switch	250-10PRG	-
CS-59	CARLING	10	Auto/manual switch	21HN-56300	-
CS-64	CARLING	10	Inc/dec switch	21HN-56300	-
CS-72	DEUTSCH	4	Tilt switch	-	DT04-4P
CS-74	DEUTSCH	4	Tilt switch	-	DT04-4P
CS-77	CARLING	10	Tilt operation	21HN-56300	-
CS-78	KET	2	Cabin tilt	MG610320	-
CS-79	CARLING	10	Power/Standard switch	21HN-56300	-
CS-80	DAEDONG	10	Air compressor switch	250-10PRG	-
CS-82	CARLING	10	Seal heat switch	21HN-56300	-
CS-91	KET	1	Side shift selector switch	ST30036-3	ST730018-3
CS-92	KET	1	Hyd. jack selector switch	ST30036-3	ST730018-3
CS-95	CARLING	10	Fuel warmer switch	21HN-56300	-
CS-99	CARLING	10	Air compressor switch	21HN-56300	-
CS-100	CARLING	10	DEF regen inhibit switch	21HN-56300	-
CS-103	CARLING	10	Top wiper switch	21HN-56300	-
CS-105	CARLING	10	Cooling fan switch	21HN-56300	-
Lamp					
CL-1	KET	2	Room lamp	-	MG610392
CL-2	KET	1	Cigar lighter	ST730018-3	ST175036-3
CL-2	AMP	1	Cigar lighter	172128-1	-
CL-3	DEUTSCH	6	Head lamp-LH	DT06-6S	-
CL-4	DEUTSCH	6	Head lamp-RH	DT06-6S	-
CL-5	DEUTSCH	2	Mast lamp-LH	DT06-2S	-
CL-6	DEUTSCH	2	Mast lamp-RH	DT06-2S	-
CL-7	-	6	Beacon lamp	S822-014000	S822-114000
CL-15	KLM	6	Rear combi-LH	PB625-06027	-
CL-15A	AMP	3	Illuminate/ stop lamp	282087-1	-

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CL-15B	AMP	3	Turn/ back up lamp	282087-2	-
CL-16	KLM	6	Rear combi-RH	PB625-06027	-
CL-16A	AMP	3	Illuminate/ stop lamp	282087-1	-
CL-16B	AMP	3	Turn/ back up lamp	282087-2	-
CL-21	KET	1	License lamp	ST730018-3	ST750036-3
CL-22	DEUTSCH	2	Rear work lamp-RH	DT06-2S	-
CL-23	DEUTSCH	2	Rear work lamp-LH	DT06-2S	-
CL-24	-	1	Flasher lamp-LH	S822-014000	S822-114000
CL-30	KET	2	Room lamp	MG610392	-
CL-40	SWF	2	SCR cleaning lamp	913328	-
CL-41	SWF	2	SCR cleaning inhibit lamp	913328	-
CL-42	SWF	2	E/G stop lamp	913328	-
CL-43	SWF	2	HEST lamp	913328	-
CL-50	SWF	2	DEF low temp	913328	-
CL-51	DEUTSCH	2	Mast lamp-LH	DT06-2S	-
CL-61	DEUTSCH	2	Mast lamp-RH	DT06-2S	-
Relay					
CR-1	RING TERMINAL	-	Battery relay	S820-104000 S820-308000	-
CR-3	HELLA	5	Front w/lamp relay	8JA003526-001	-
CR-4	AMP	5	Wiper HI relay	VCFM-1002	-
CR-5	AMP	5	Netural relay	VCFM-1002	-
CR-6	KET	4	Internal wiper relay	MG610047	-
CR-11	HELLA	5	Flasher unit relay	8JA003526-001	-
CR-12	AMP	5	Fan motor relay	VCFM-1002	-
CR-23	KET	4	Starter relay	MG610047	-
CR-24	RING TERMINAL	-	Preheat relay	-	-
	KET	1	Preheat relay	ST730018-3	-
CR-26	AMP	5	Wiper low speed relay	VCFM-1002	-
CR-36	AMP	5	Anti-restart relay	VCFM-1002	-
CR-38	AMP	5	Washer pump relay	VCFM-1002	-
CR-39	AMP	5	Backup relay	VCFM-1002	-
CR-42	AMP	5	Preheat relay	VCFM-1002	-
CR-44	TYCO	2	Cabin tilt relay	174352-2	-
CR-45	HELLA	5	ECM relay	8JA003526-001	-
CR-46	HELLA	5	Fuel warmer relay	8JA003526-001	-
CR-47	HELLA	5	Fuel warmer relay	8JA003526-001	-
CR-49	HELLA	5	Fuel warmer relay	8JA003526-001	-
CR-50	AMP	5	Travel cut relay	VCFM-1002	-
CR-52	AMP	5	Attach cut relay	VCFM-1002	-

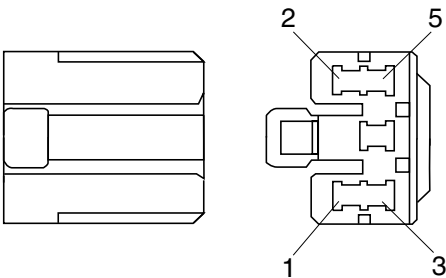
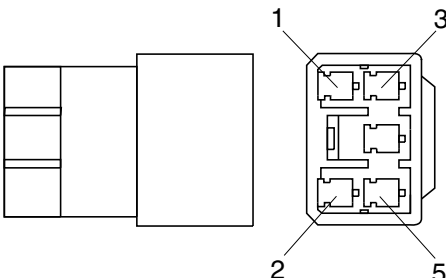
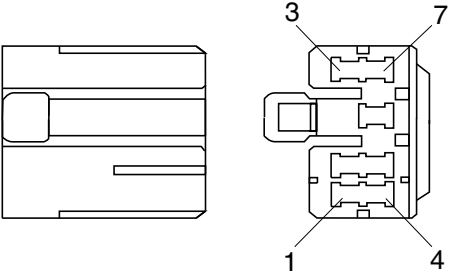
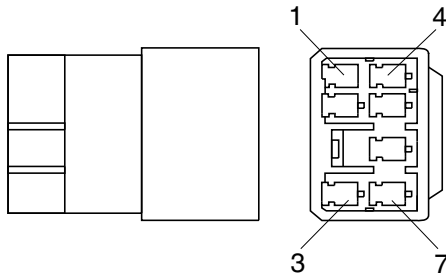
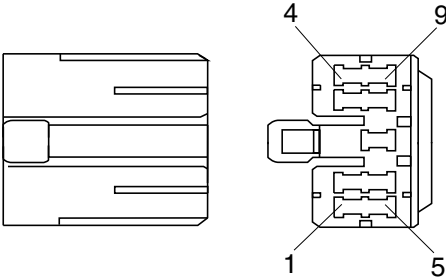
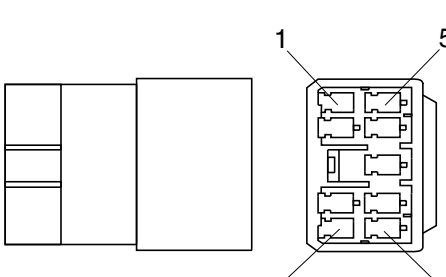
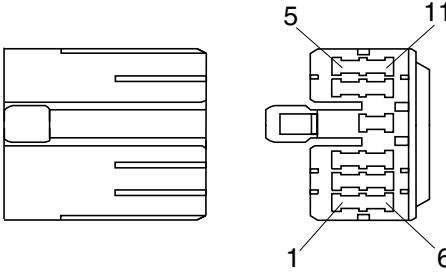
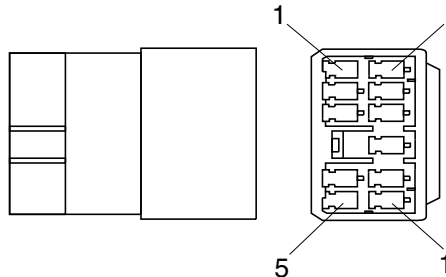
Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CR-53	AMP	5	Cruise control relay	VCFM-1002	-
CR-54	AMP	5	Brake switch relay	VCFM-1002	-
CR-55	HELLA	5	Rear w/lamp relay	8JA003526-001	-
CR-56	AMP	5	Auto park relay	VCFM-1002	-
CR-58	HELLA	5	DEF supply module relay	8JA003526-001	-
CR-59	HELLA	5	DEF sensor relay	8JA003526-001	-
CR-61	AMP	5	DEF line heater 1 relay	VCFM-1002	-
CR-62	AMP	5	DEF line heater 2 relay	VCFM-1002	-
CR-63	AMP	5	DEF line heater 3 relay	VCFM-1002	-
Sensor and pressure switch					
CD-2	KET	3	Fuel sender	MG610045	-
CD-3	DEUTSCH	2	Brake fail switch	-	DT04-2P
CD-4	AMP	1	Brake switch	171809-2	-
CD-8	AMP	2	Temp sender	827551-3	-
CD-10	KET	1	Air cleaner switch	ST730057-2	-
CD-12	DEUTSCH	3	Angle sensor	DT06-3S	DT04-3P
CD-18	AMP	1	Engine oil pressure switch	S819-010122	-
CD-26	DEUTSCH	2	Parking pressure switch	-	DT04-2P
CD-27	AMP	2	Turbine speed pick-up	963040-2	-
CD-29	ZF	2	Temp sender	21FF-10170	-
CD-35	DEUTSCH	2	Water in fuel switch	DT06-2S	-
CD-50	DEUTSCH	3	Load sensor	DTM06-3S	-
CD-55	KET	2	RCV pressure switch	MG640795	-
CD-71	AMP	6	Inching sensor	1-967616-1	-
CD-72	AMP	2	Internal speed pick-up	963040-3	-
CD-73	AMP	3	Output speed sensor	282087-1	-
CD-74	AMP	2	Engine speed pick-up	963040-3	-
CD-75	AMP	2	Filter switch	282080-1	-
CD-76	AMP	2	Air temp. sensor	963040-3	-
CD-84	AMP	3	Tank doser sensor	3-141844-1	-
CD-87	AMP	2	Ambient temp. sensor	968339-3	-
CD-88	AMP	4	Quality sensor	776524-1	-
CD-96	PACKARD	3	Coolant level sensor	12110293	-
CD-102	SUMITOMO	4	TBAP sensor	6098-0144	-
Diode					
DO-01	AMP/QPL	-	Diode	174352-2	21EA-50550
DO-02	AMP/QPL	-	Diode	174352-2	21EA-50550
DO-03	AMP/QPL	-	Diode	174352-2	21EA-50550
DO-04	AMP/QPL	-	Diode	174352-2	21EA-50550
DO-05	AMP/QPL	-	Diode	174352-2	21EA-50550

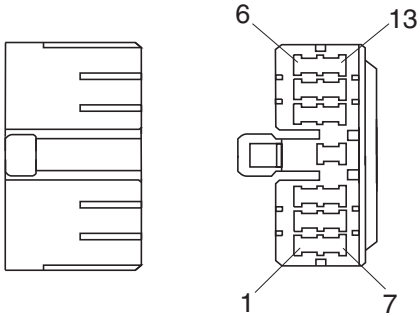
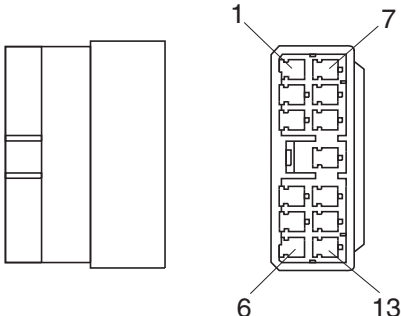
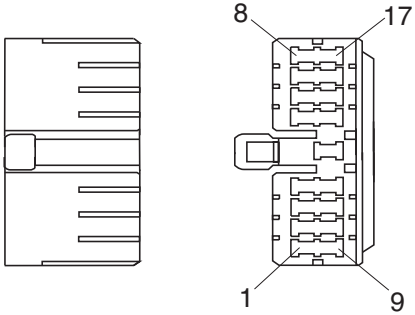
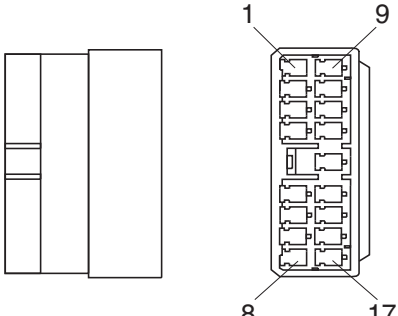
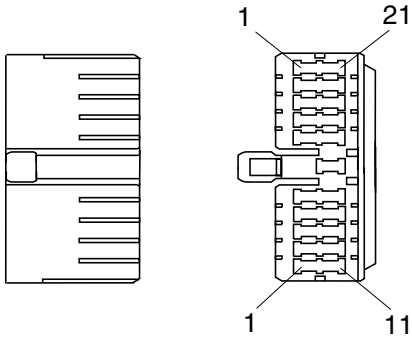
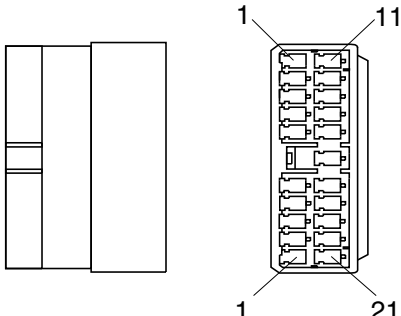
2. CONNECTION TABLE FOR CONNECTORS

1) 58-L TYPE CONNECTOR

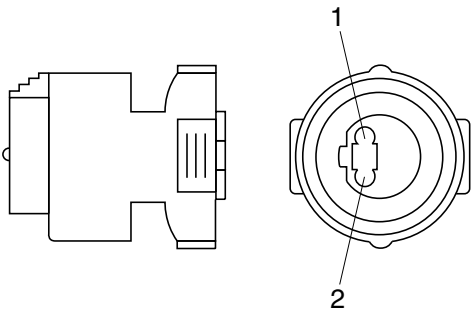
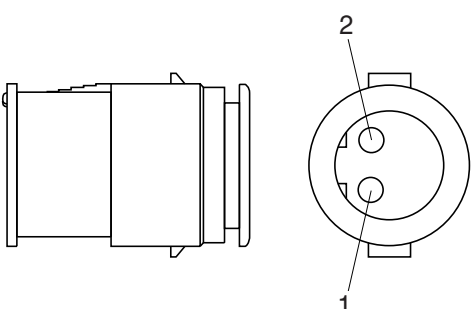
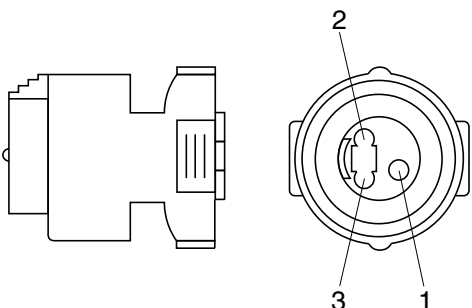
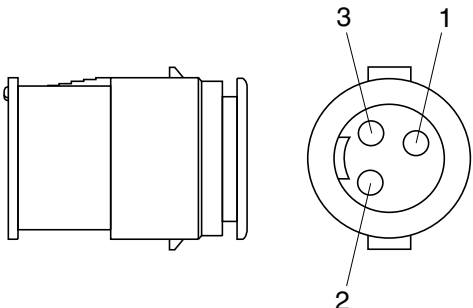
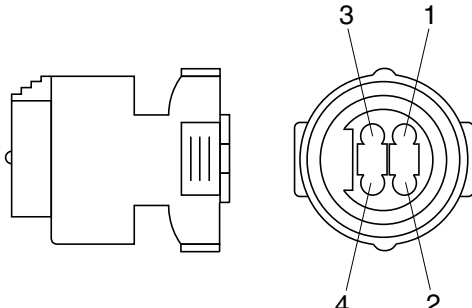
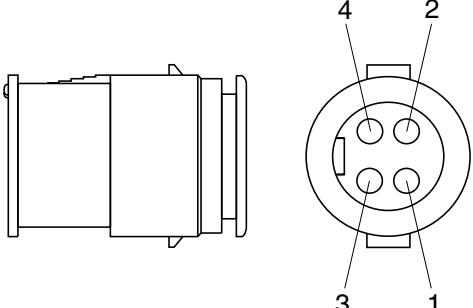
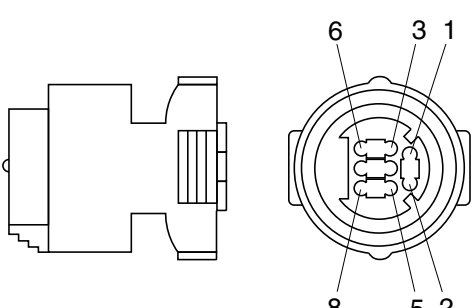
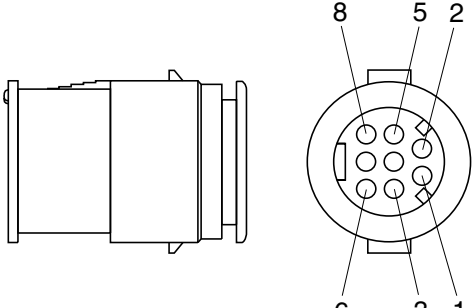
No. of pin	Receptacle connector (Female)	Plug connector (Male)
1	 S813-030100	 S813-130100
2	 S813-030200	 S813-130200

2) PA TYPE CONNECTOR

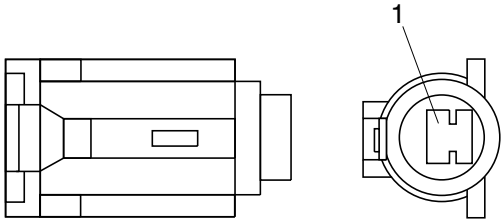
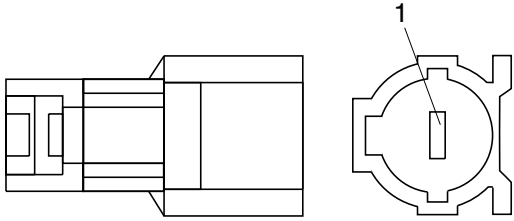
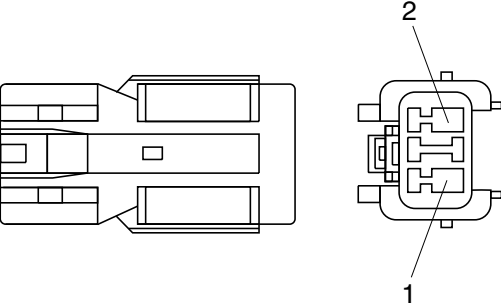
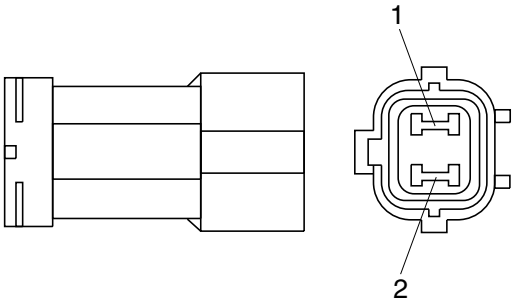
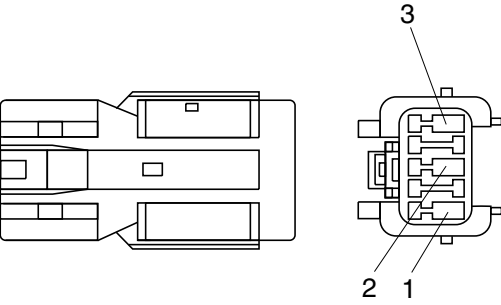
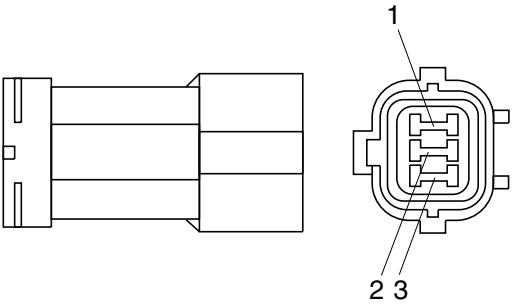
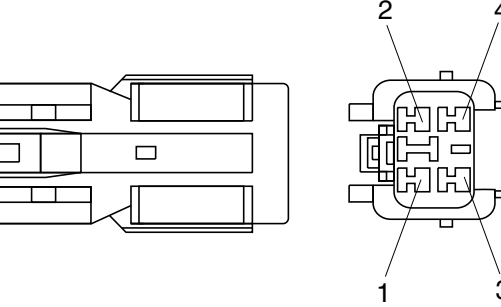
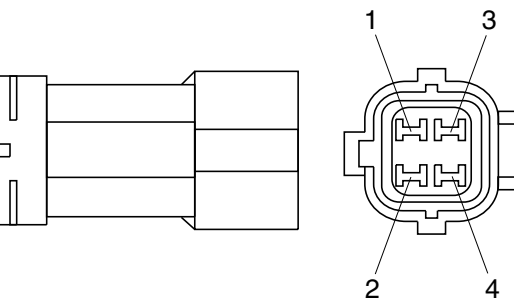
No. of pin	Receptacle connector (Female)	Plug connector (Male)
5	 S811-005002	 S811-105002
7	 S811-007002	 S811-107002
9	 S811-009002	 S811-109002
11	 S811-011002	 S811-111002

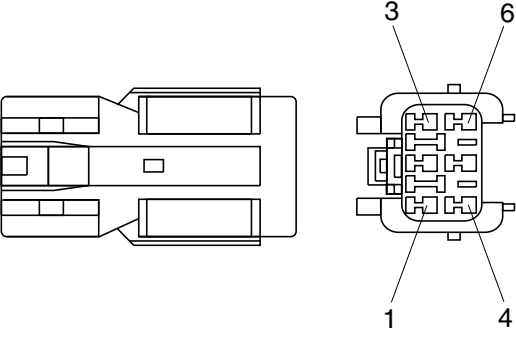
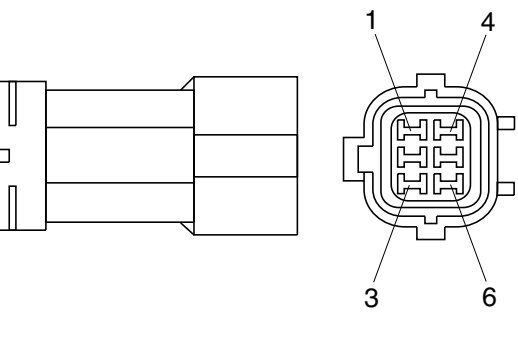
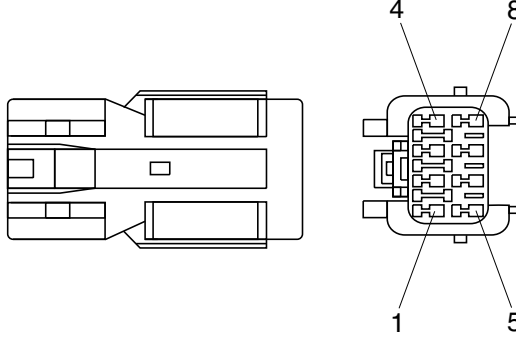
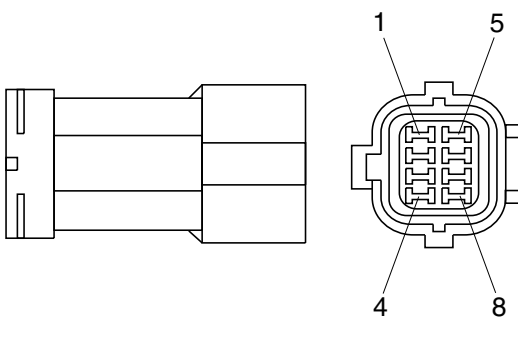
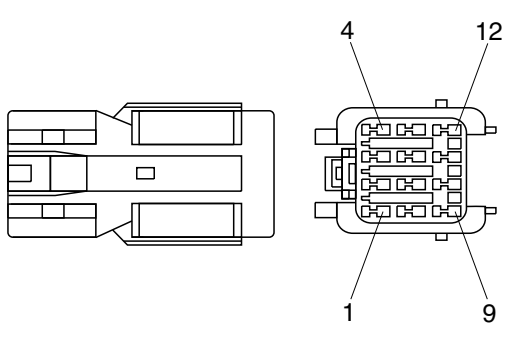
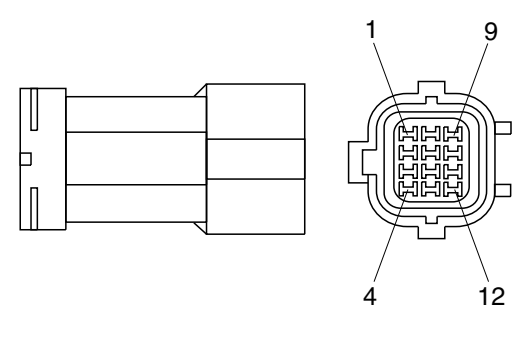
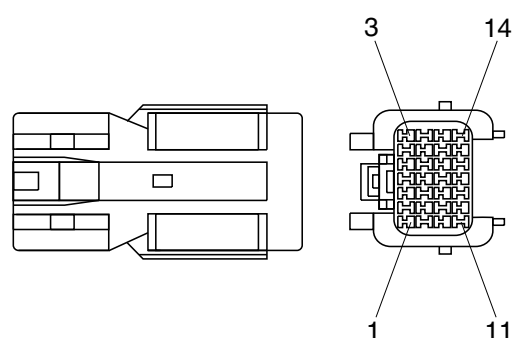
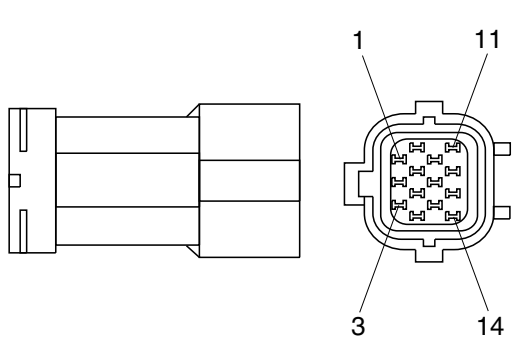
No. of pin	Receptacle connector (Female)	Plug connector (Male)
13	 S811-013002	 S811-113002
17	 S811-017002	 S811-117002
21	 S811-021002	 S811-121002

3) J TYPE CONNECTOR

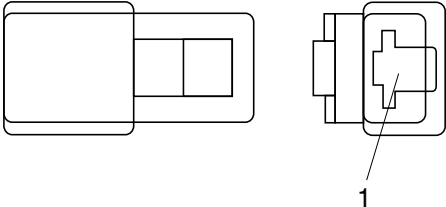
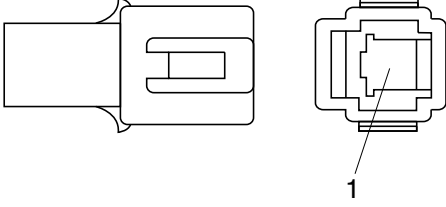
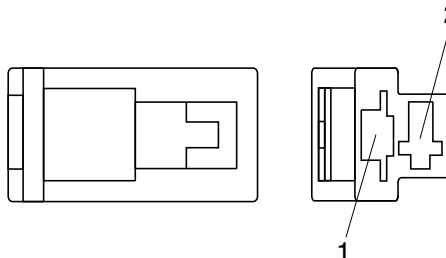
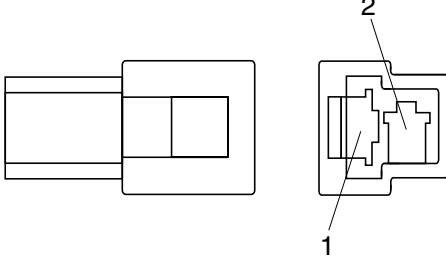
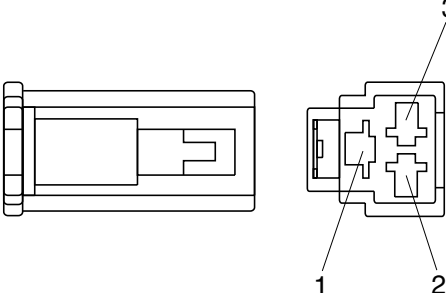
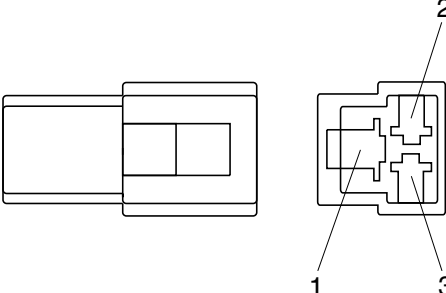
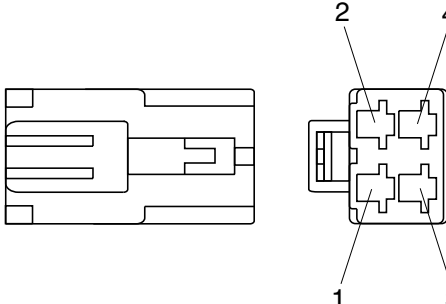
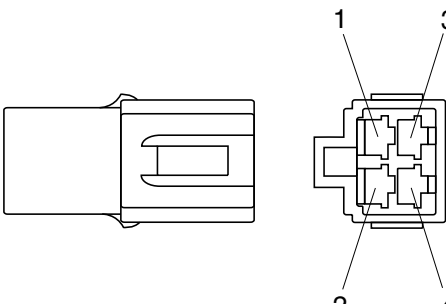
No. of pin	Receptacle connector (Female)	Plug connector (Male)
2	 S816-002001	 S816-102001
3	 S816-003001	 S816-103001
4	 S816-004001	 S816-104001
8	 S816-008001	 S816-108001

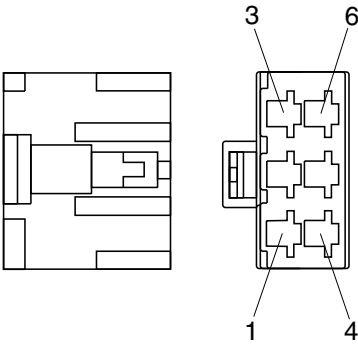
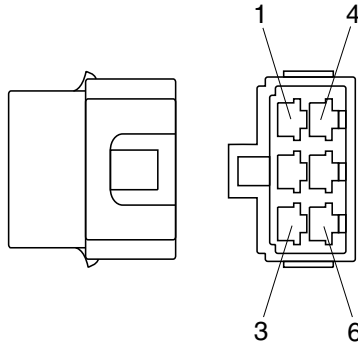
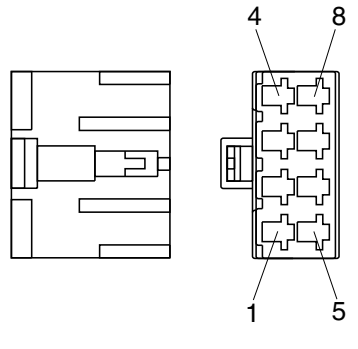
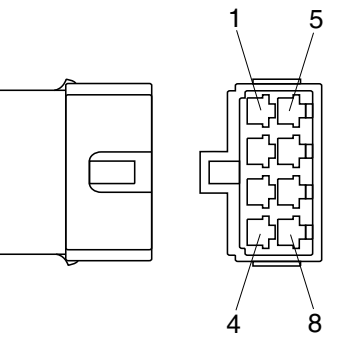
4) SWP TYPE CONNECTOR

No. of pin	Receptacle connector (Female)	Plug connector (Male)
1	 S814-001000	 S814-101000
2	 S814-002000	 S814-102000
3	 S814-003000	 S814-103000
4	 S814-004000	 S814-104000

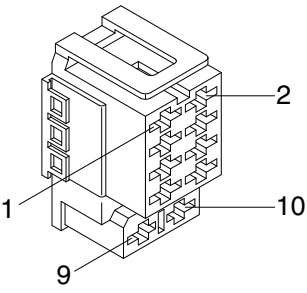
No. of pin	Receptacle connector (Female)	Plug connector (Male)
6	 S814-006000	 S814-106000
8	 S814-008000	 S814-108000
12	 S814-012000	 S814-112000
14	 S814-014000	 S814-114000

5) CN TYPE CONNECTOR

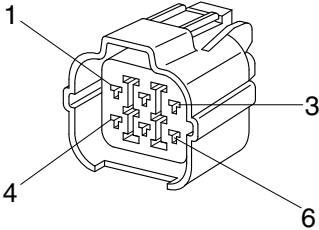
No. of pin	Receptacle connector (Female)	Plug connector (Male)
1	 S810-001202	 S810-101202
2	 S810-002202	 S810-102202
3	 S810-003202	 S810-103202
4	 S810-004202	 S810-104202

No. of pin	Receptacle connector (Female)	Plug connector (Male)
6	 S810-006202	 S810-106202
8	 S810-008202	 S810-108202

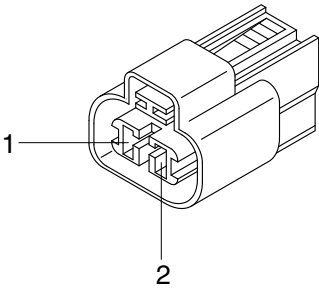
6) ITT SWF CONNECTOR

No. of pin	Receptacle connector (Female)	Plug connector (Male)
10	 SWF593757	

7) HW090 SEALED CONNECTOR

No. of pin	Receptacle connector (Female)	Plug connector (Male)
6	 6189-0133	

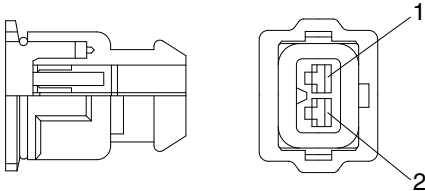
8) MWP02F-B CONNECTOR

No. of pin	Receptacle connector (Female)	Plug connector (Male)
2	 PH805-02028	

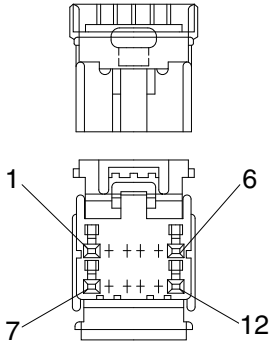
9) AMP ECONOSEAL CONNECTOR

No. of pin	Receptacle connector(Female)	Plug connector(Male)
36	344111-1	344108-1

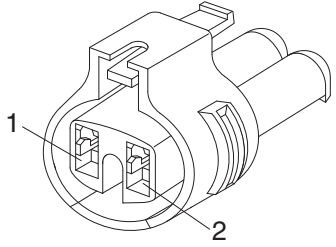
10) AMP TIMER CONNECTOR

No. of pin	Receptacle connector(Female)	Plug connector(Male)
2	 85202-1	

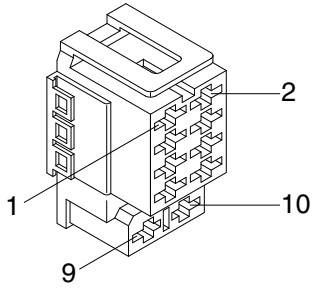
11) AMP 040 MULTILOCK CONNECTOR

No. of pin	Receptacle connector(Female)	Plug connector(Male)
12	 174045-2	

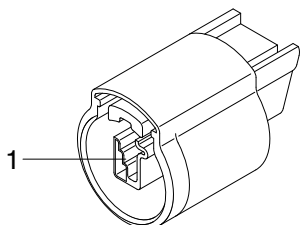
12)KET 090 WP CONNECTORS

No. of pin	Receptacle connector (Female)	Plug connector (Male)
2	 MG640795	

13)ITT SWF CONNECTOR

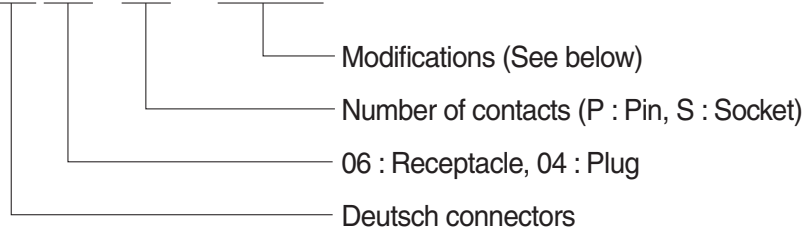
No. of pin	Receptacle connector (Female)	Plug connector (Male)
10	 SWF593757	

14)MWP NMWP CONNECTOR

No. of pin	Receptacle connector (Female)	Plug connector (Male)
1	 NMWP01F-B	

15) DEUTSCH DT CONNECTORS

DT 06 - 3S - ★★★★★



※ Modification

E003 : Standard end cap - gray

E004 : Color of connector to be black

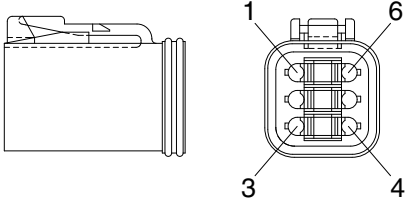
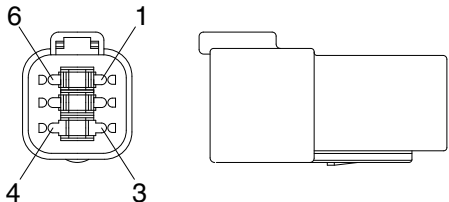
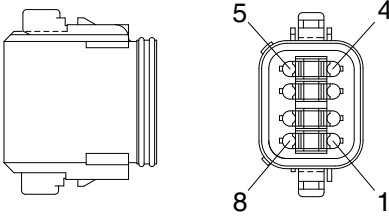
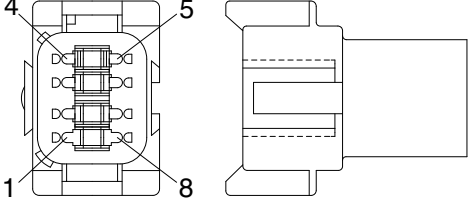
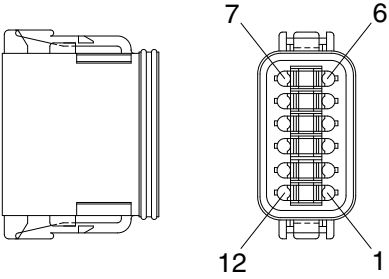
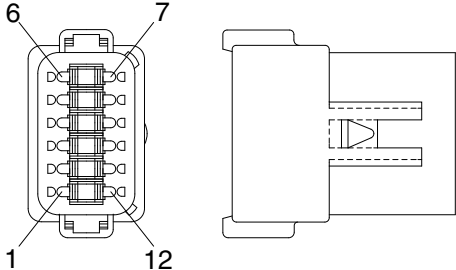
E005 : Combination - E004 & E003

EP04 : End cap

EP06 : Combination P012 & EP04

P012 : Front seal enhancement - connectors color to black for 2, 3, 4 & 6pin

No. of pin	Receptacle connector (Female)	Plug connector (Male)
2	DT06-2S	DT04-2P
3	DT06-3S	DT04-3P
4	DT06-4S	DT04-4P

No. of pin	Receptacle connector(Female)	Plug connector(Male)
6	 DT06-6S	 DT04-6P
8	 DT06-8S	 DT04-8P
12	 DT06-12S	 DT04-12P

GROUP 8 TROUBLESHOOTING

Trouble symptom	Probable cause	Remedy
Lamps dimming even at maximum engine speed.	· Faulty wiring.	· Check for loose terminal and disconnected wire.
Lamps flicker during engine operation.	· Improper belt tension.	· Adjust belt tension.
Charge lamp does not light during normal engine oper.	· Charge lamp defective. · Faulty wiring.	· Replace. · Check and repair.
Alternator makes abnormal sounds.	· Alternator defective.	· Replace
Starting motor fails to run.	· Faulty wiring. · Insufficient battery voltage.	· Check and repair. · Recharge battery.
Starting motor pinion repeats going in and out.	· Insufficient battery voltage.	· Recharge battery.
Excessively low starting motor speed.	· Insufficient battery voltage. · Starting motor defective.	· Recharge battery. · Replace
Starting motor comes to a stop before engine starts up.	· Faulty wiring. · Insufficient battery voltage.	· Check and repair. · Recharge battery.
Heater signal does not become red.	· Faulty wiring. · Glow plug damaged.	· Check and repair. · Replace
Engine oil pressure caution lamp does not light when engine is stopped (with starting switch left in "ON" position).	· Caution lamp defective. · Caution lamp switch defective.	· Replace · Replace