

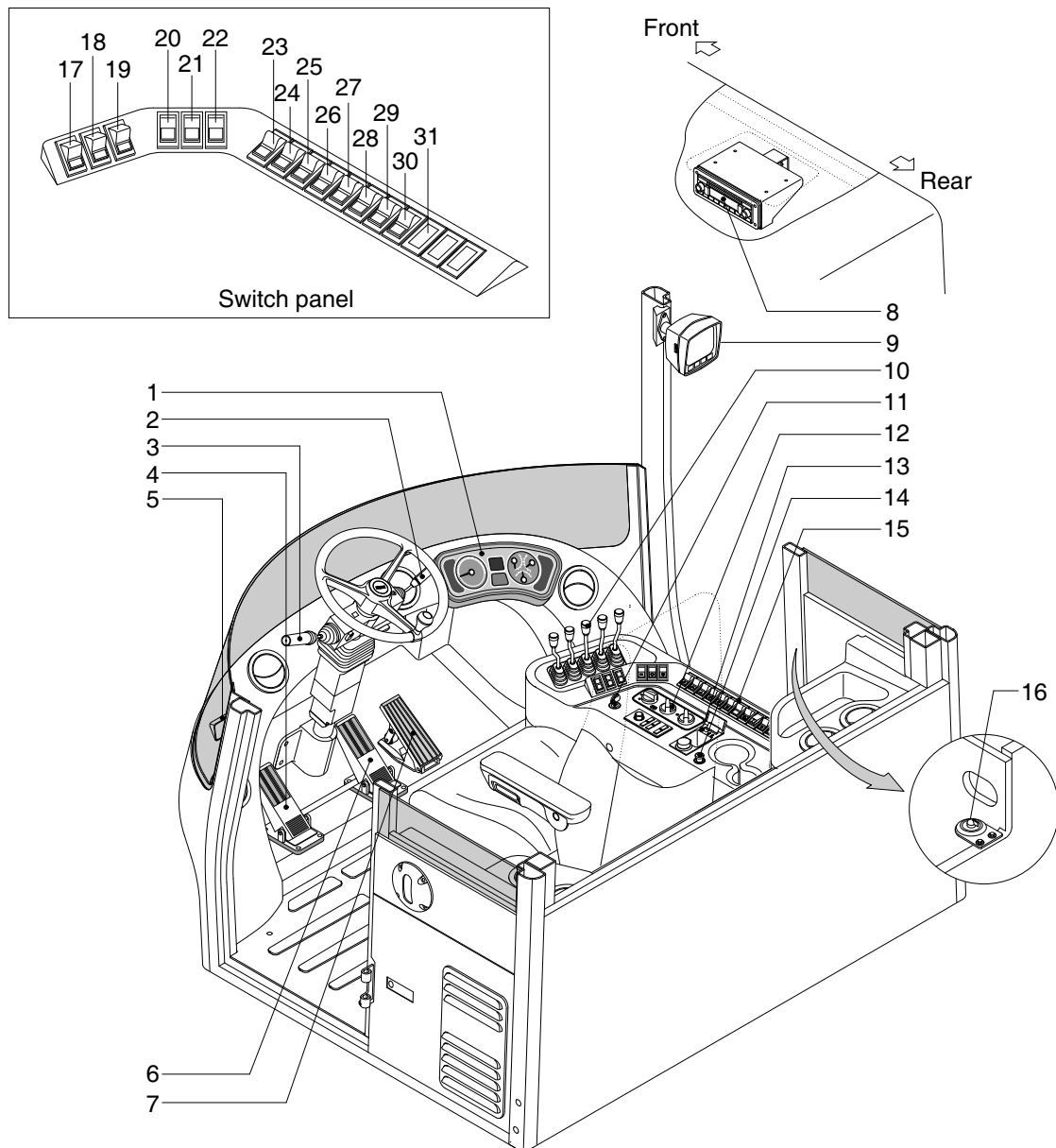
SECTION 7 ELECTRICAL SYSTEM

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SECTION 7 ELECTRICAL SYSTEM

GROUP 1 COMPONENT LOCATION (-#0030)

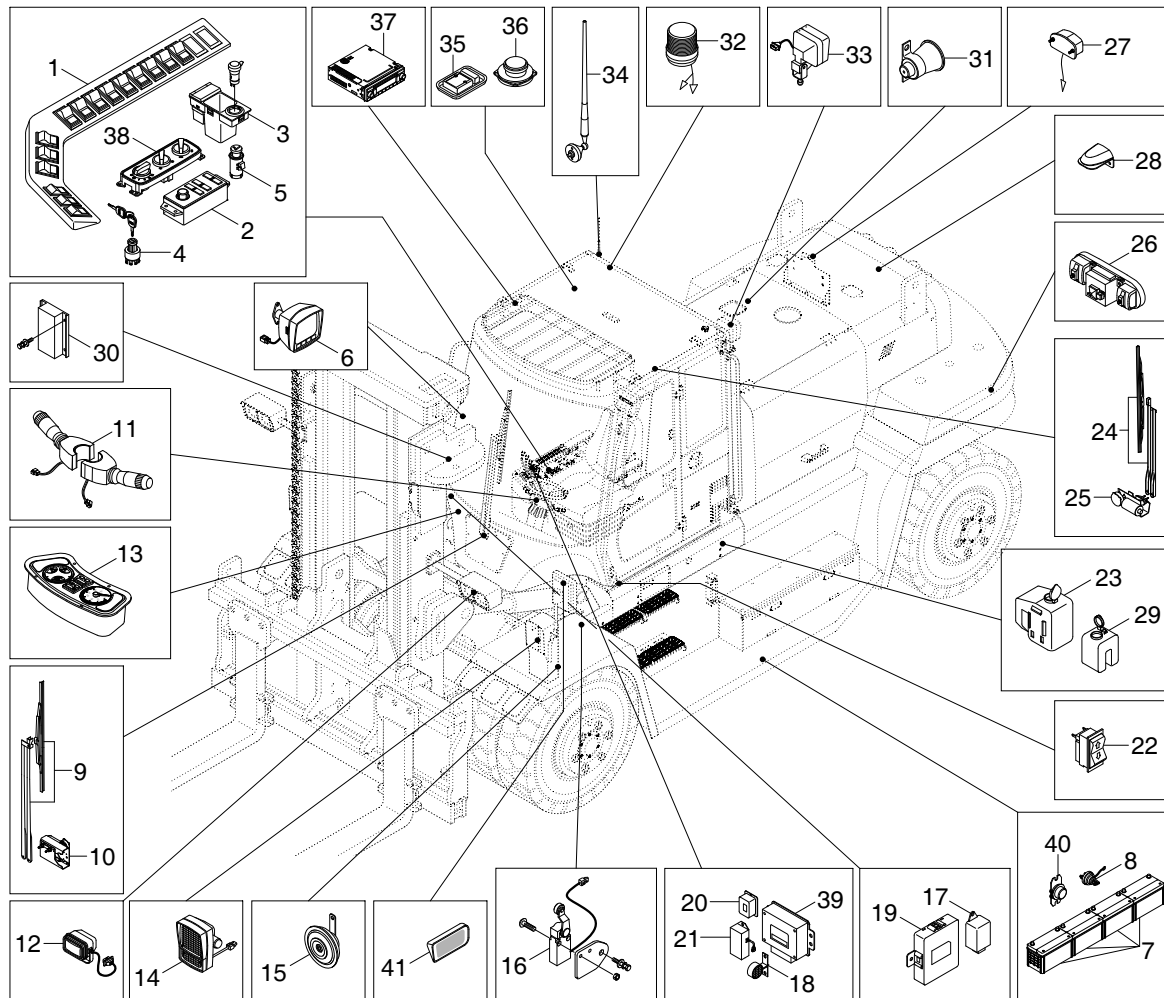
1. LOCATION 1



180D9EL01

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

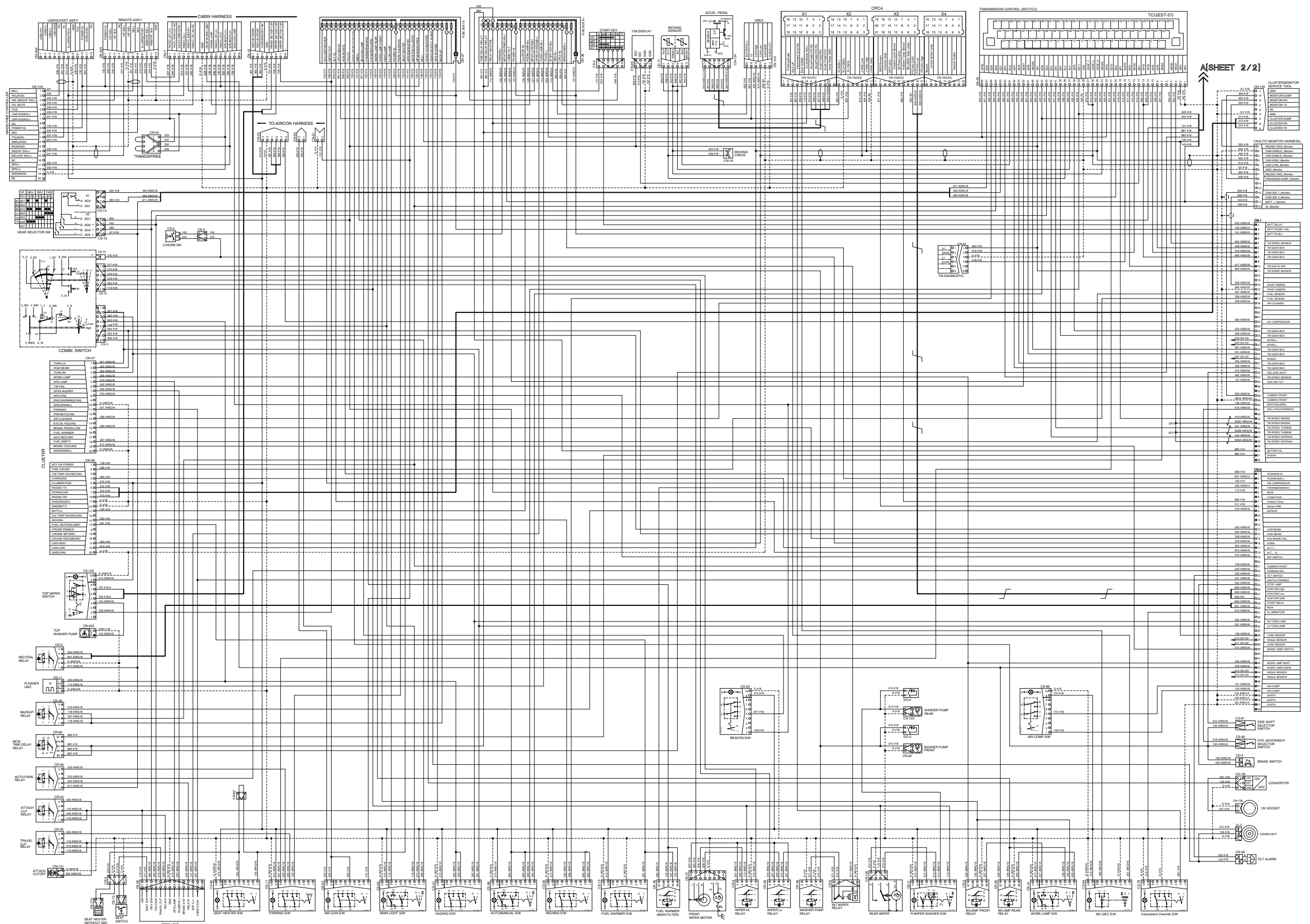
2. LOCATION 2



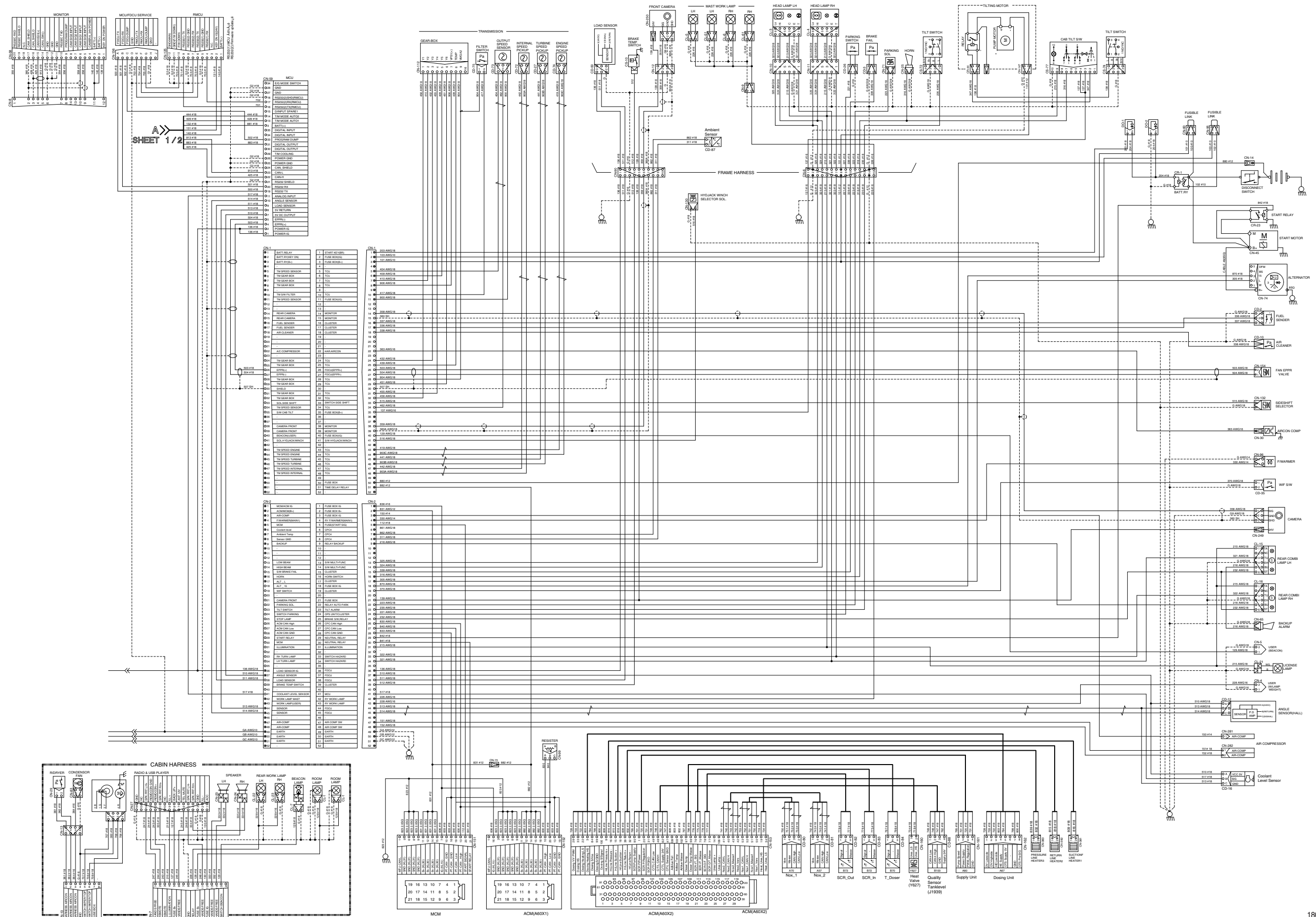
180D9EL02

- | | | |
|-------------------------|----------------------------|-----------------------------------|
| 1 Switch panel | 15 Horn | 29 Washer tank |
| 2 Remote controller | 16 Tilt switch | 30 Remote controller unit |
| 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 Fan drive control unit |
| 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 | |

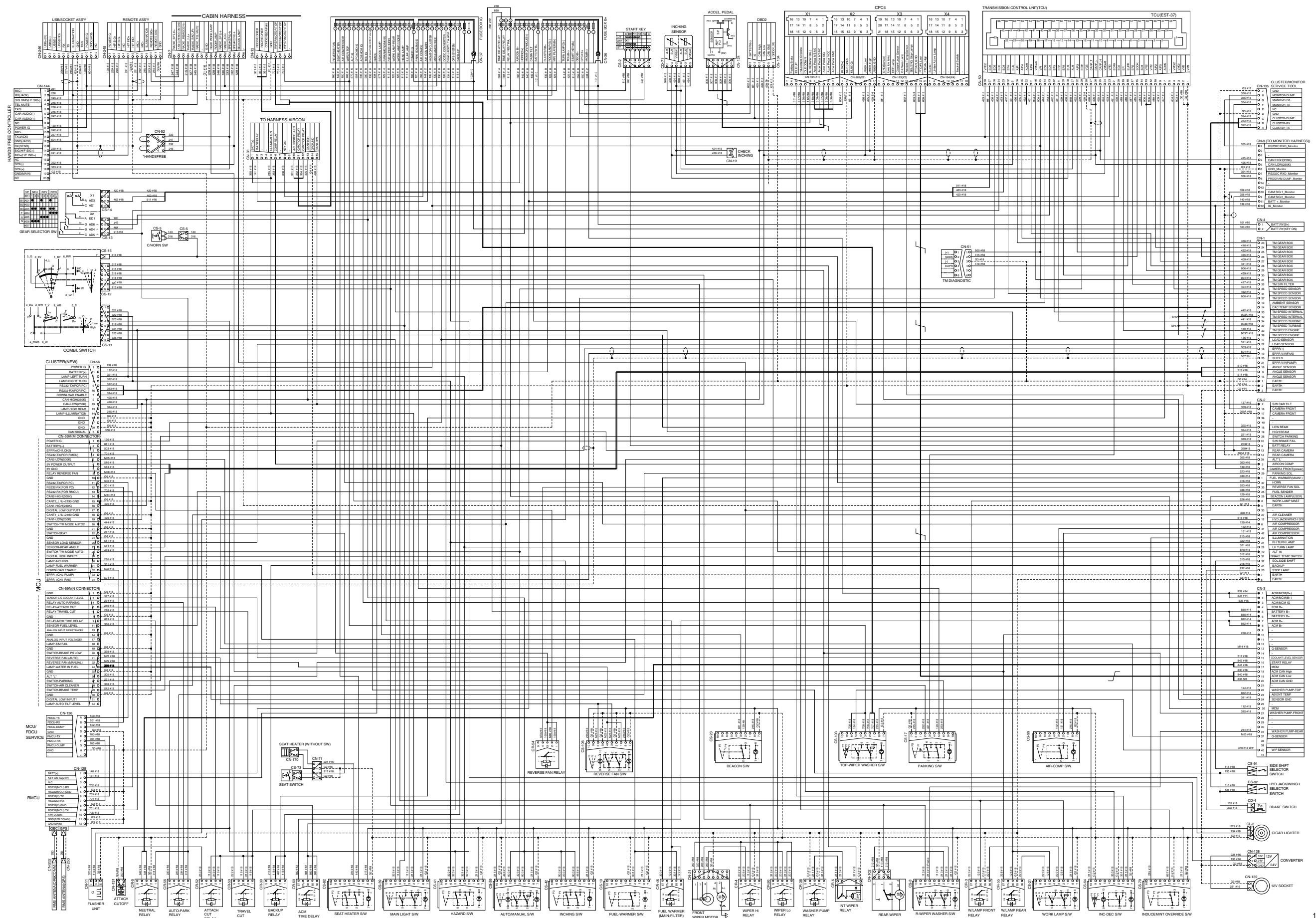
GROUP 2 ELECTRICAL CIRCUIT (1/2, -#0030)



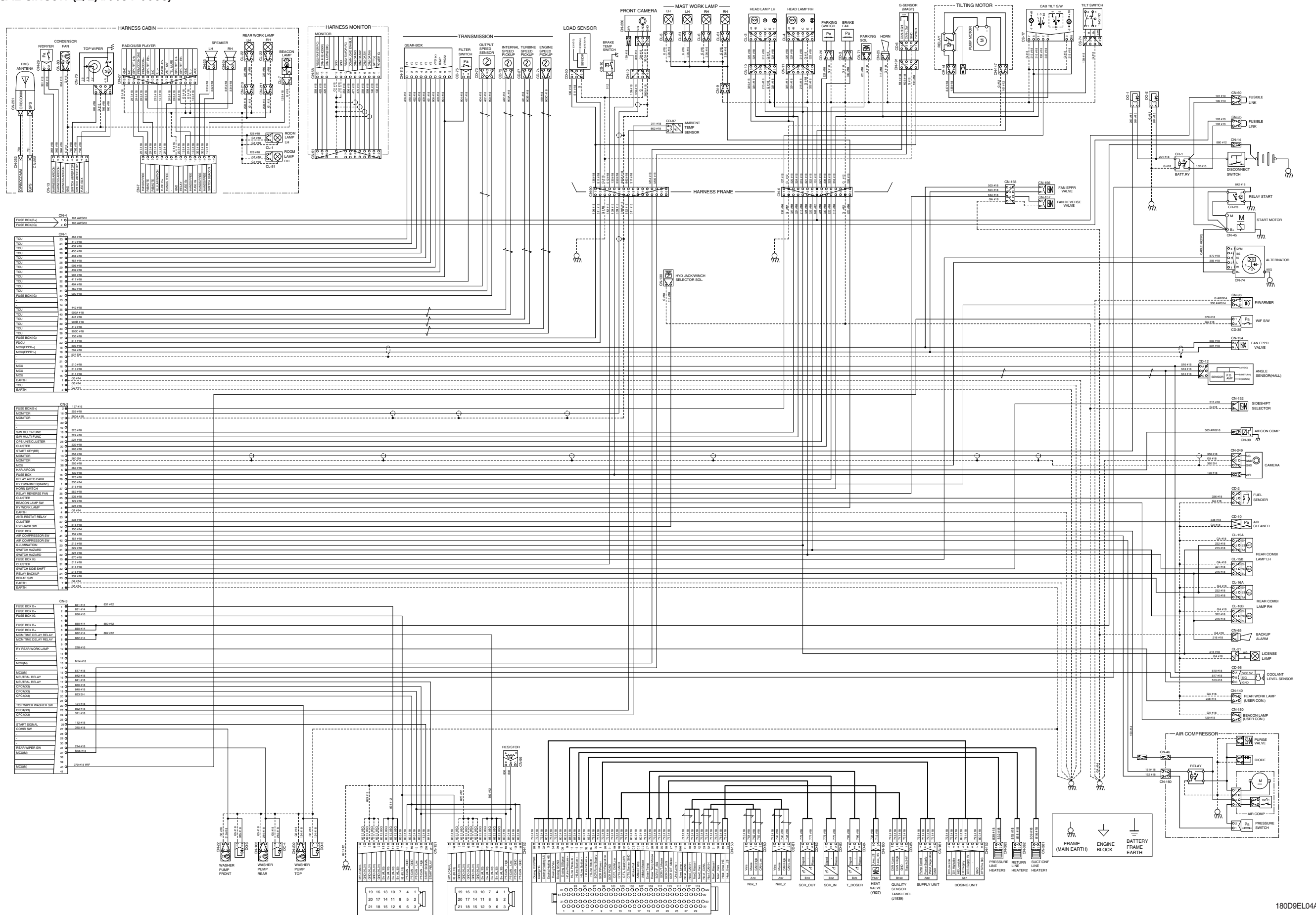
ELECTRICAL CIRCUIT (2/2, ~#0030)



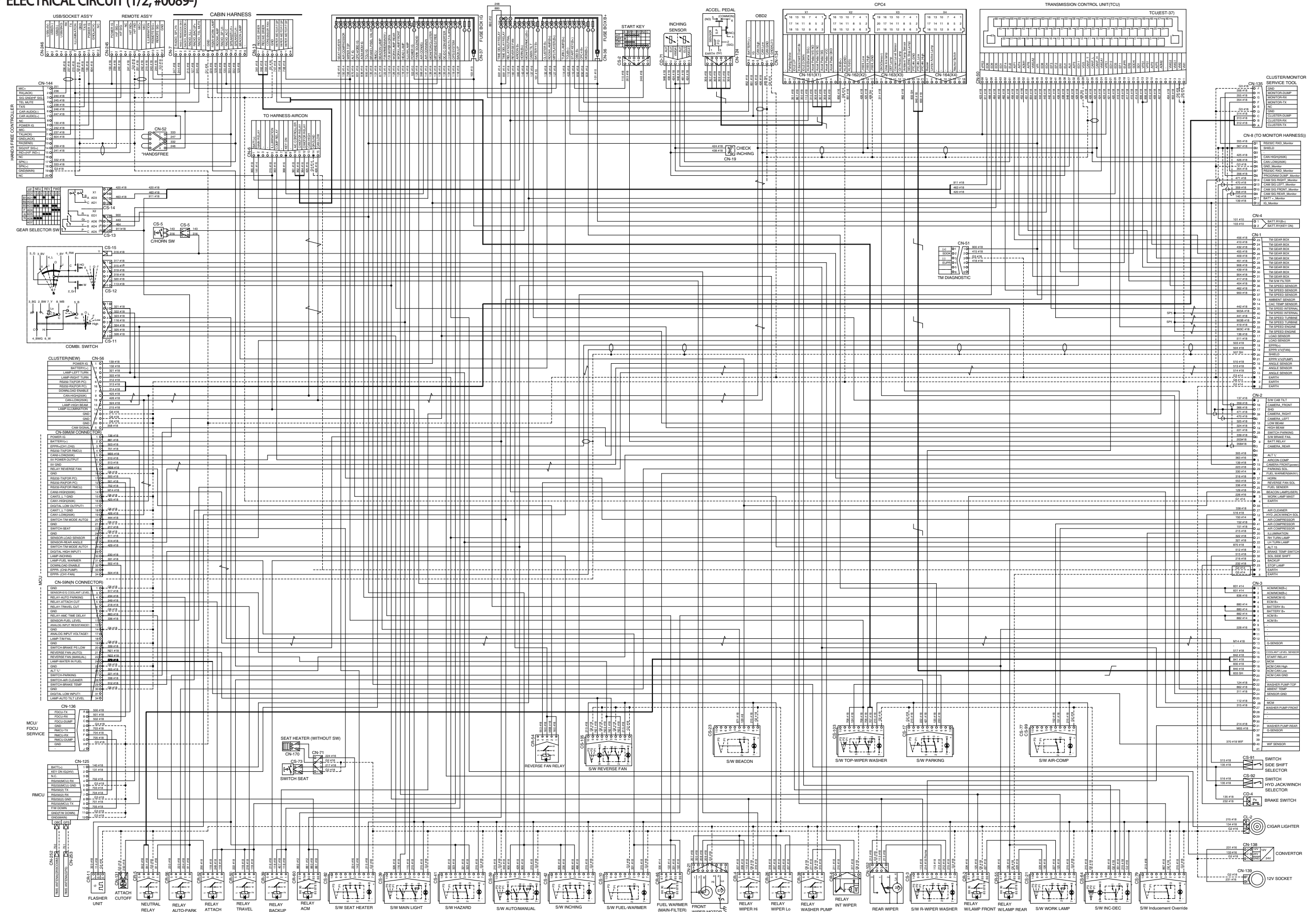
ELECTRICAL CIRCUIT (1/2, #0031-0088)



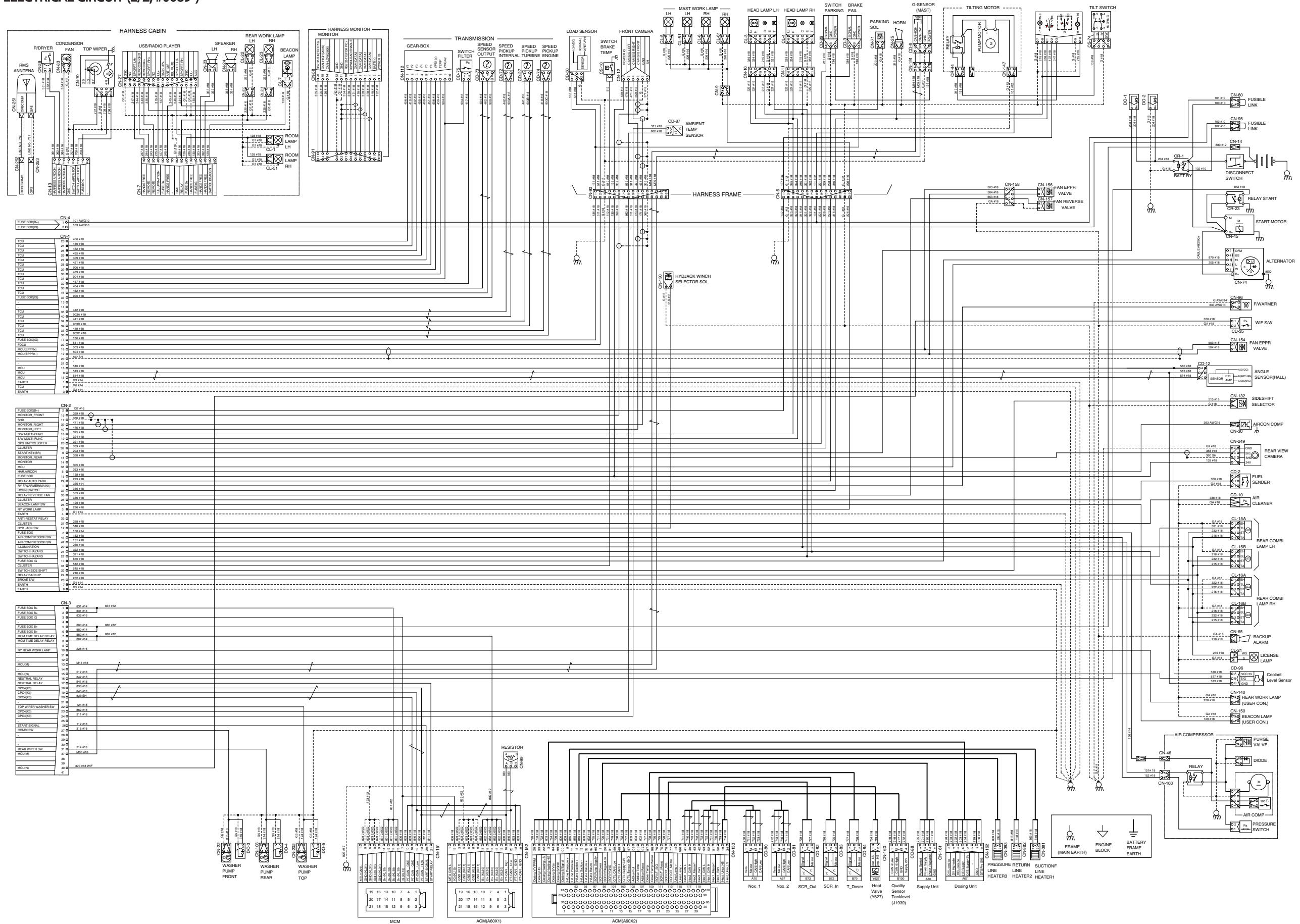
ELECTRICAL CIRCUIT (2/2, #0031-0088)



ELECTRICAL CIRCUIT (1/2, #0089-)



ELECTRICAL CIRCUIT (2/2, #0089-)



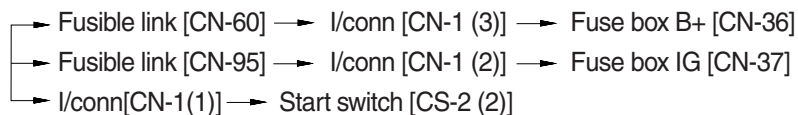
1. POWER CIRCUIT

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.

1) OPERATING FLOW

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



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.

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



180D9EL05

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]

※ 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

(2) When start key switch is START position

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

└─ Neutral relay [CR-5 (3→4)] └─ I/conn [CN-2 (23)] → Start relay [CR-23 (1)]

└─ I/conn [CN-2 (30)] → MCM [CN-151 (21)]

└─ Neutral relay [CR-5 (1)] └─ Gear selector [CS-13]

└─ TCU [CN-50]

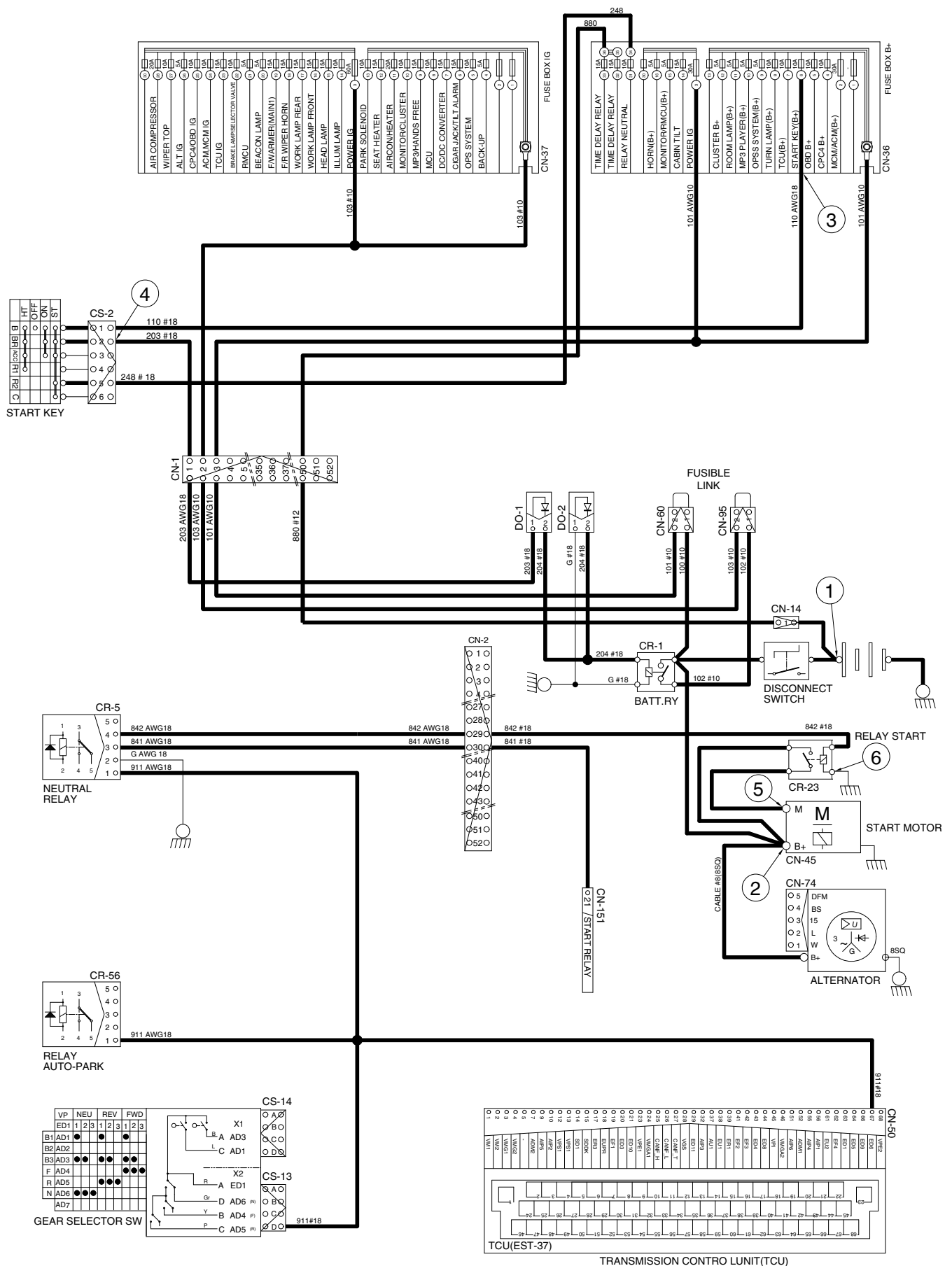
2) CHECK POINT

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

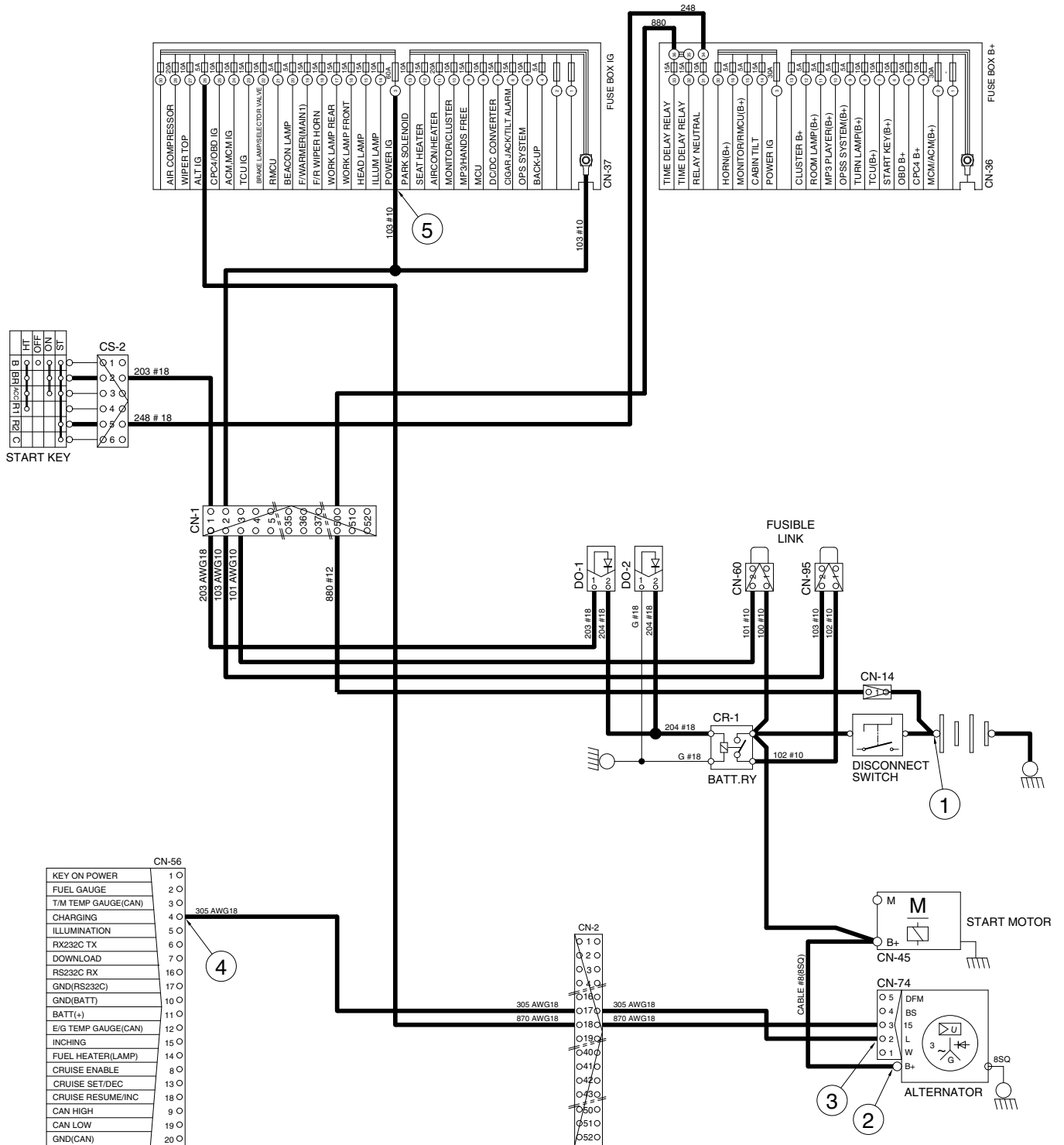
※ GND : Ground

※ 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



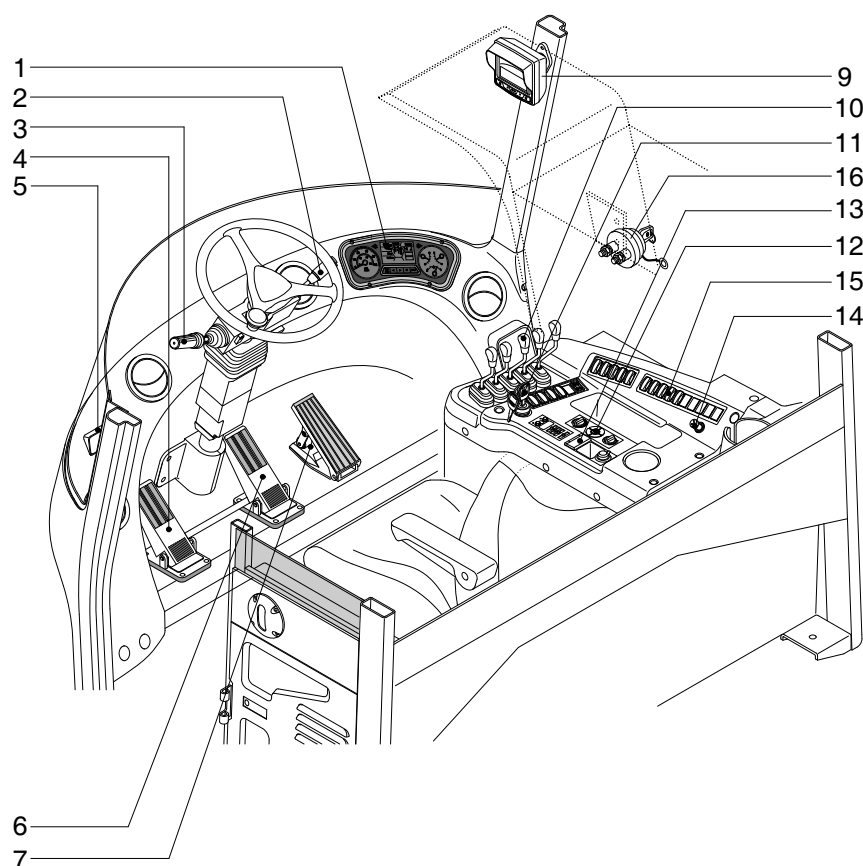
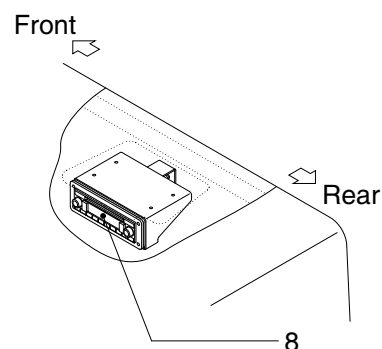
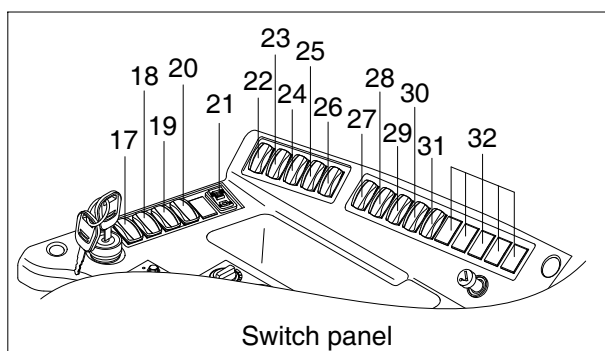
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※ The circuit diagram may differ from the equipment, so please check before a repair.

SECTION 7 ELECTRICAL SYSTEM

GROUP 1 COMPONENT LOCATION (#0031-)

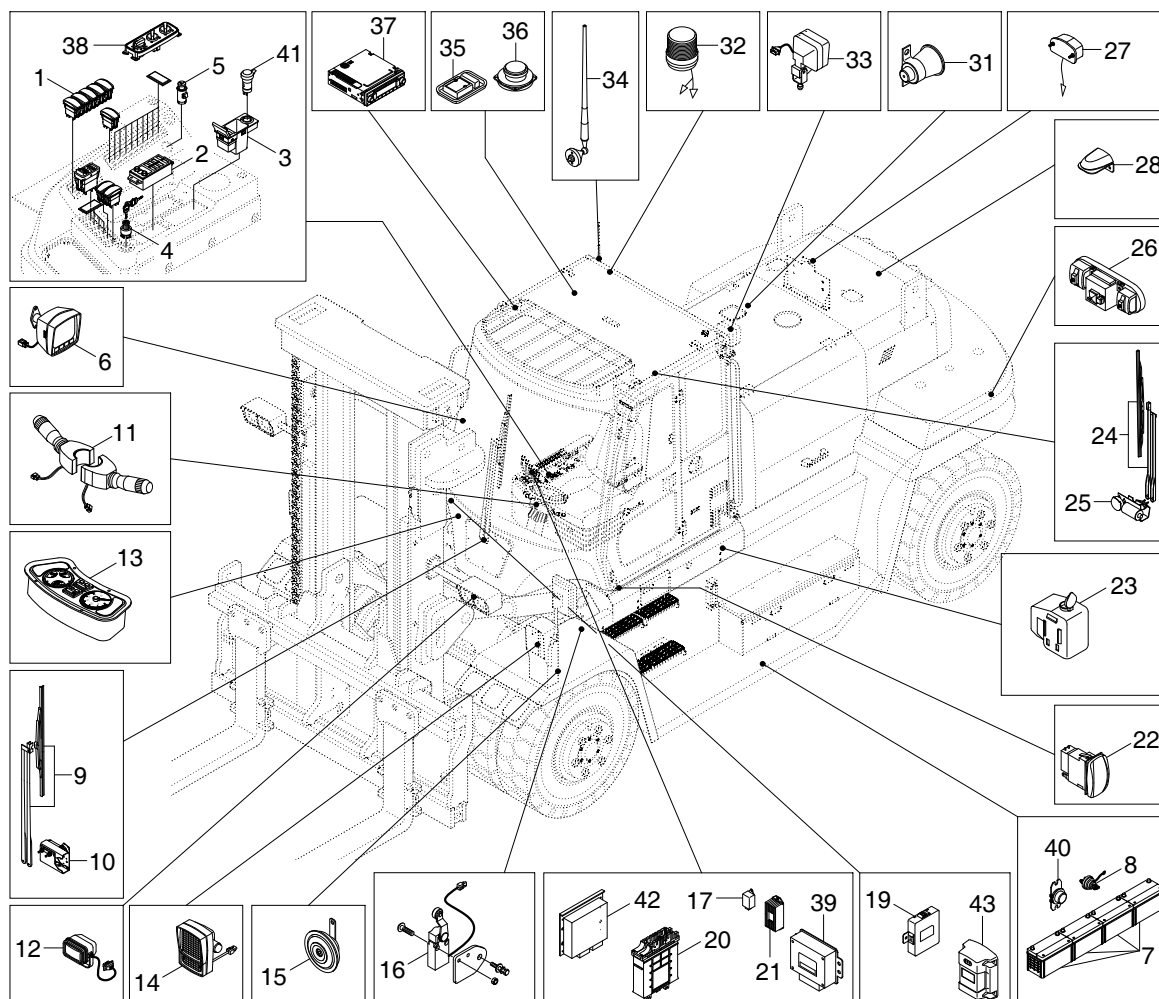
1. LOCATION 1



180D9EL01-1

- | | | |
|------------------------------|----------------------------------|-------------------------------------|
| 1 Cluster | 12 Aircon & heater switch | 23 Inching switch |
| 2 Multi function switch | 13 Handsfree (opt) | 24 Fuel warmer switch |
| 3 Gear selector lever | 14 Cigar lighter | 25 In/decrement switch |
| 4 Inching pedal | 15 Switch panel | 26 Inducement switch |
| 5 Transmission error display | 16 Master switch | 27 Rear wiper/washer switch |
| 6 Brake pedal | 17 Main light switch | 28 Top wiper/washer switch(opt) |
| 7 Accelerator pedal | 18 Rear work lamp switch | 29 Air compressor switch (opt) |
| 8 Radio and USB player | 19 Hazard switch | 30 Seat heater switch (opt) |
| 9 Monitor (opt) | 20 Beacon lamp switch (opt) | 31 Cooling fan control switch (opt) |
| 10 Remote control lever | 21 Parking brake switch | 32 Cover |
| 11 Starting switch | 22 Auto/manual changeover switch | |

2. LOCATION 2



180D9EL02-1

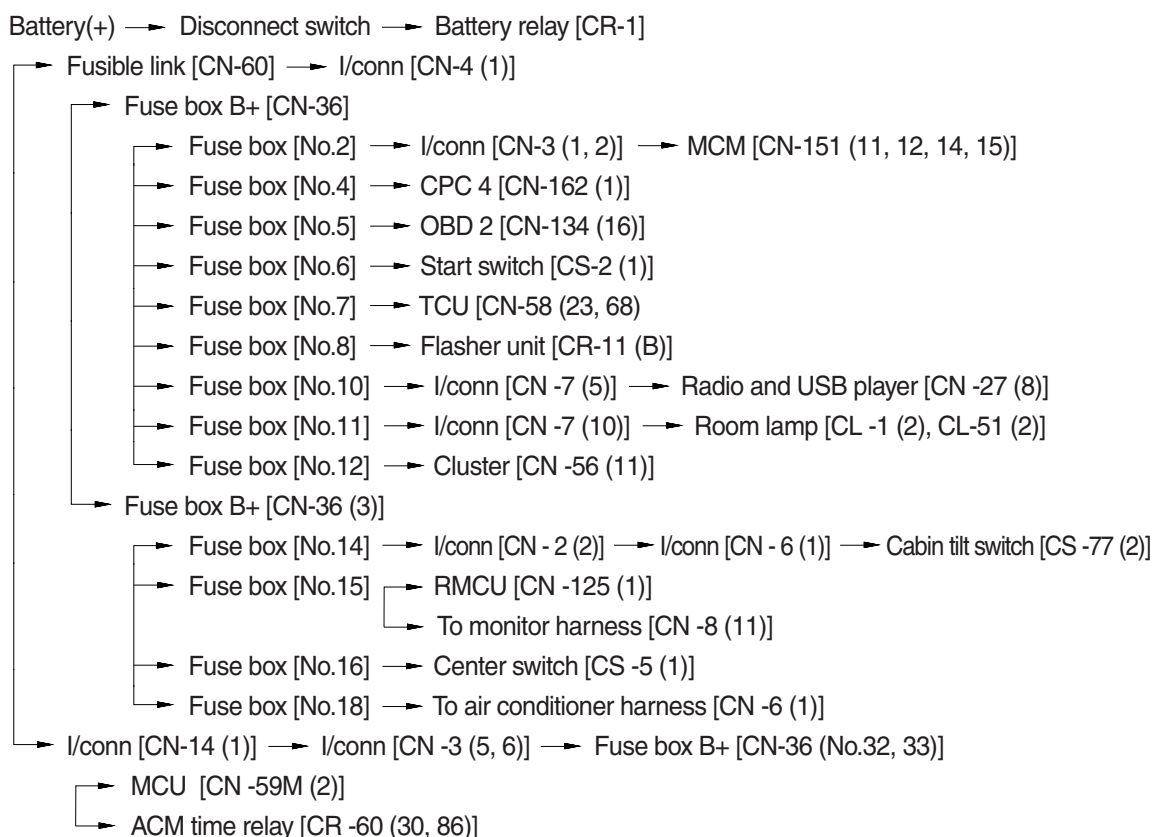
- | | | |
|-------------------------|----------------------------|-----------------------------------|
| 1 Switch panel | 15 Horn | 32 Beacon lamp |
| 2 Remote controller | 16 Tilt switch | 33 Work lamp assembly |
| 3 USB & socket assembly | 17 Int wiper relay | 34 Antenna |
| 4 Start switch | 19 Handsfree control relay | 35 Room lamp |
| 5 Cigar lighter | 20 TCU | 36 Speaker assembly |
| 6 Monitor assembly | 21 DC-DC converter | 37 Radio and USB player |
| 7 Battery | 22 Cabin tilt switch | 38 Aircon/Heater controller panel |
| 8 Master switch | 23 Washer tank | 39 Fan drive control unit |
| 9 Wiper assembly | 24 Rear wiper assembly | 40 Battery relay |
| 10 Wiper motor | 25 Rear wiper motor | 41 12V socket |
| 11 Multifunction switch | 26 Rear combination lamp | 42 MCU |
| 12 Front turn lamp | 27 License lamp | 43 RMCU |
| 13 Cluster | 28 Rear camera kit | |
| 14 Head lamp | 31 Travel alarm buzzer | |

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



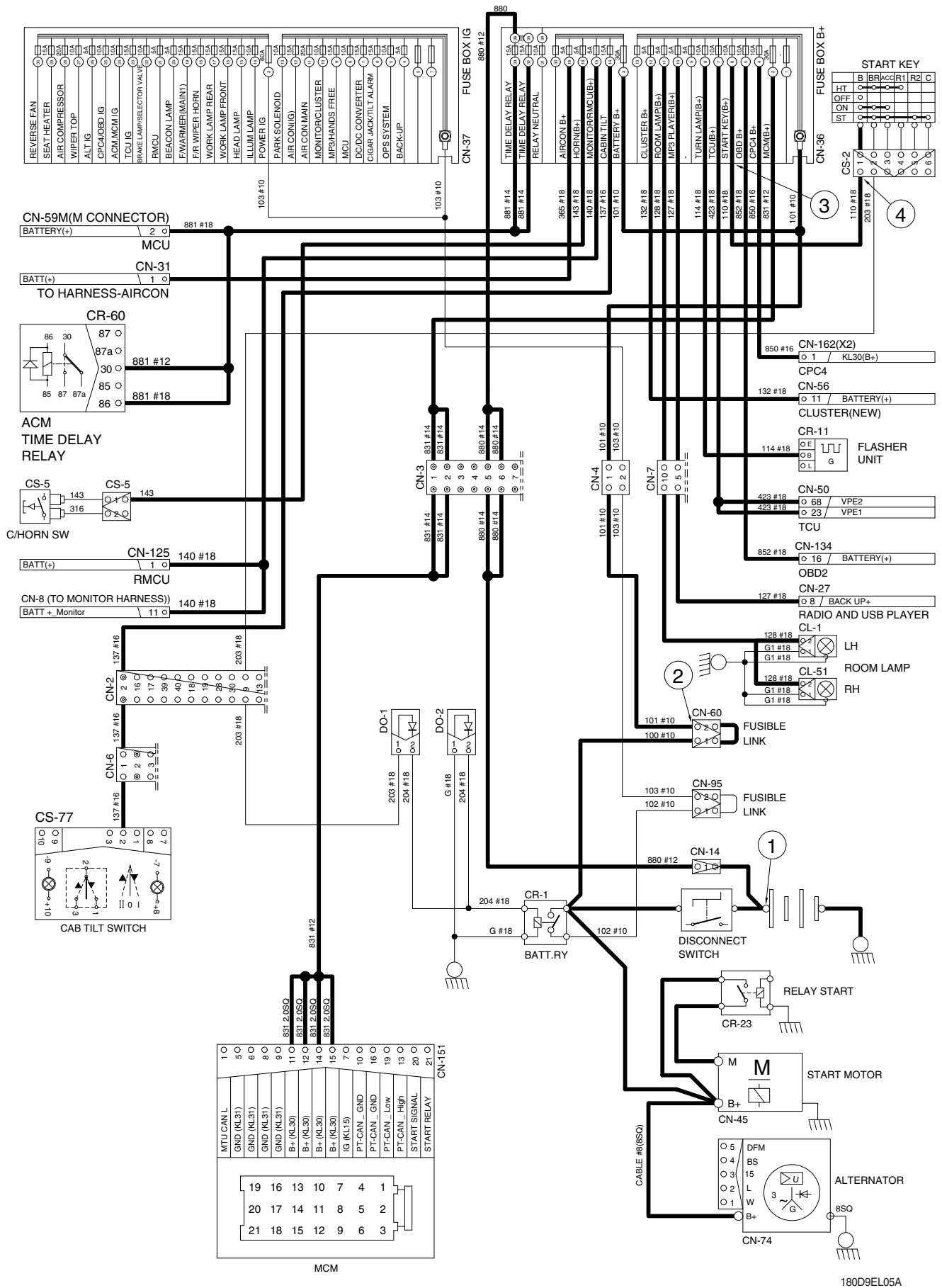
2) CHECK POINT

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



※ 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-60] → Start motor [CN-45 (B+)] → Start relay [CR-23]
→ I/conn [CN-4 (1)] → Fuse box [No.6] → Start switch [CS-2 (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-95]
→ 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)]
→ CPC 4 [CN-161 (18)]
→ MCM [CN-151 (20 → 21)] → I/conn [CN-3 (17)] → Neutral relay [CR-5 (3 → 4)]
→ I/conn [CN-2 (16)] → Start relay [CR-23 (1)] → Start motor operating

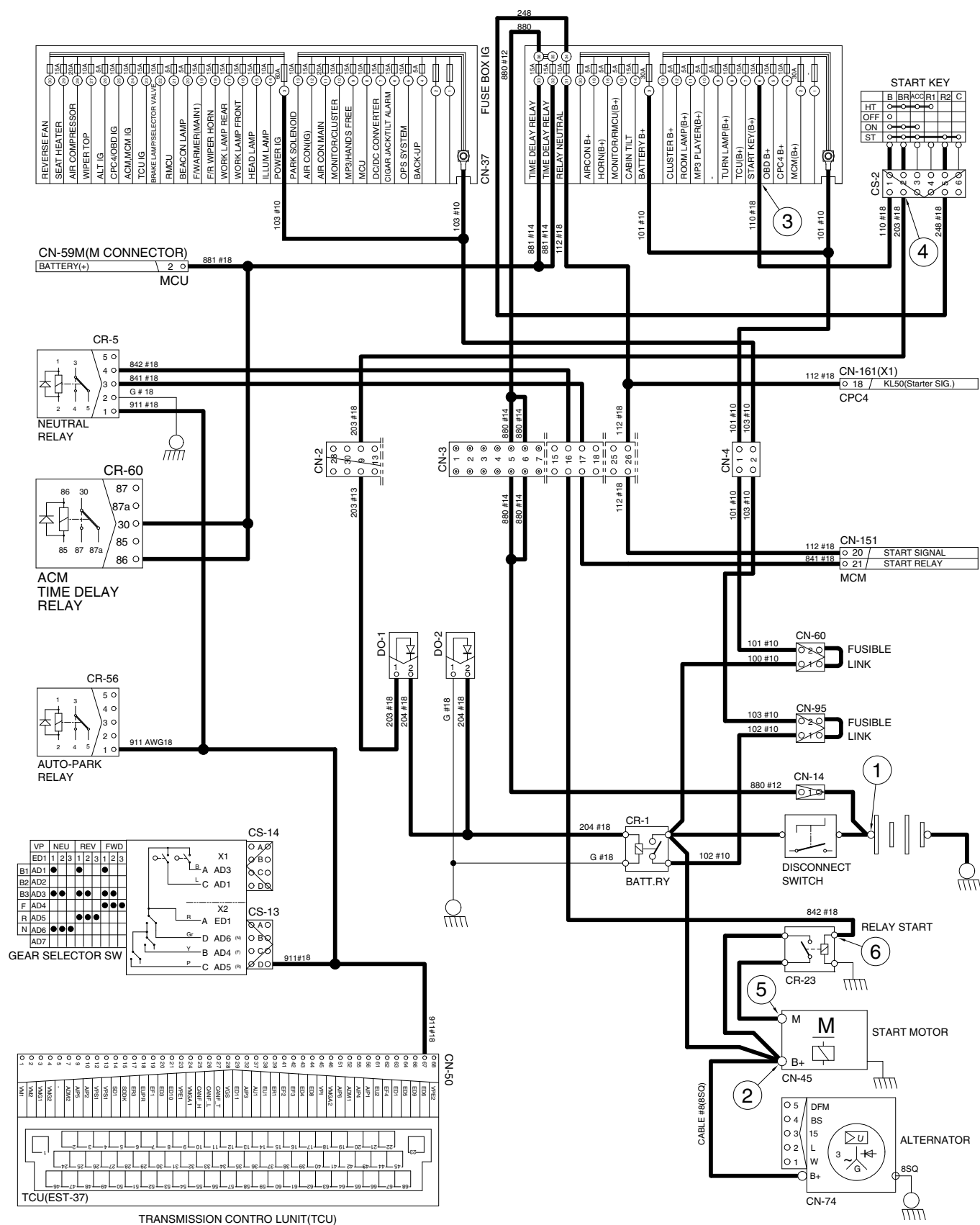
2) CHECK POINT

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.

STARTING CIRCUIT



180D9EL06A

※ 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-60, CN-95) and the fuse boxes.

1) OPERATING FLOW

(1) Warning flow

Alternator [CN-74 (2)] → I/conn [CN-2 (36)] → 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-95] → I/conn [CN-4 (2)] → Fuse box IG [CN-37]
→ Fusible link [CN-60] → 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 (MCU) ⑤ - GND (Fuse box)	24V

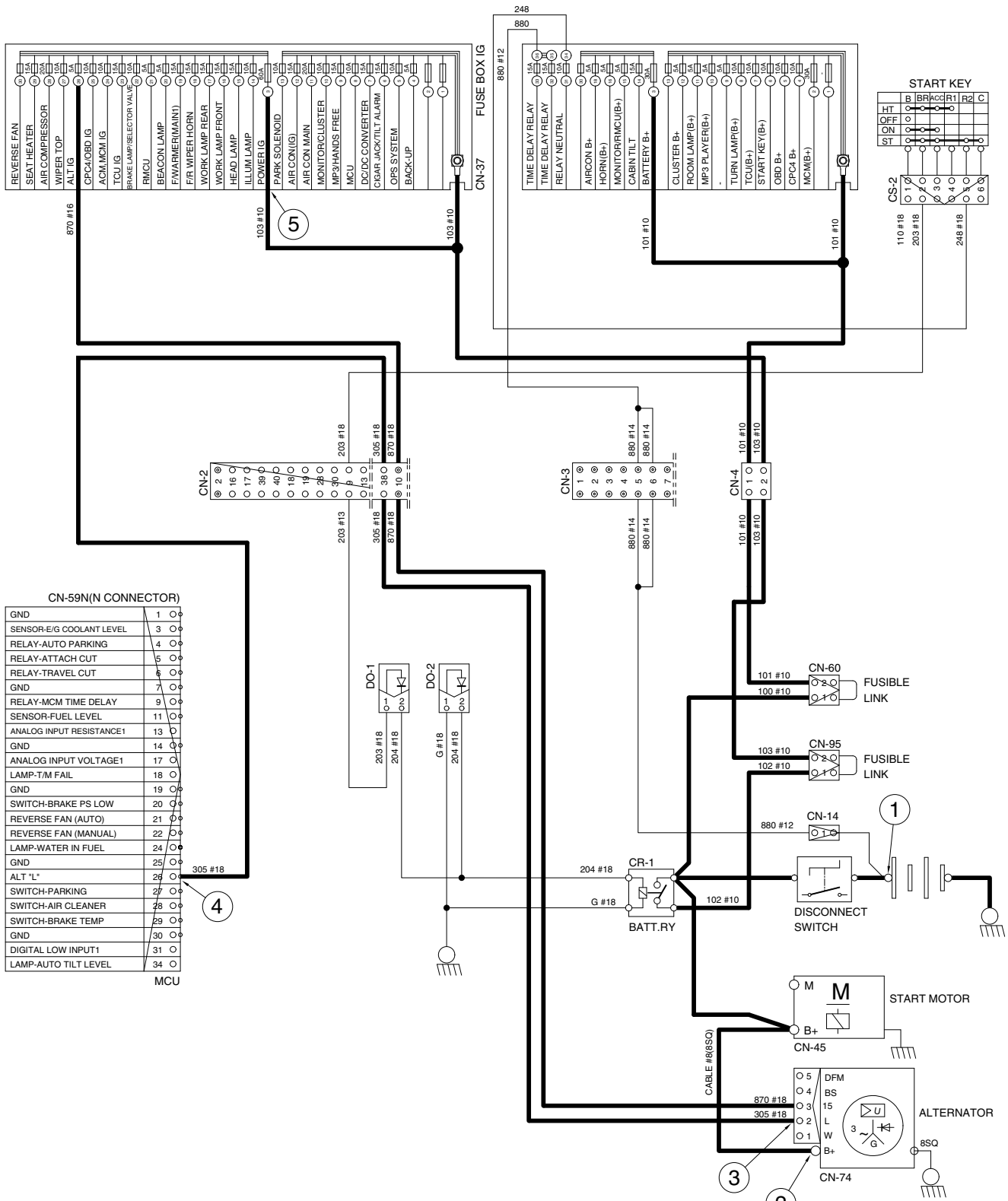
※ GND : Ground

※ 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



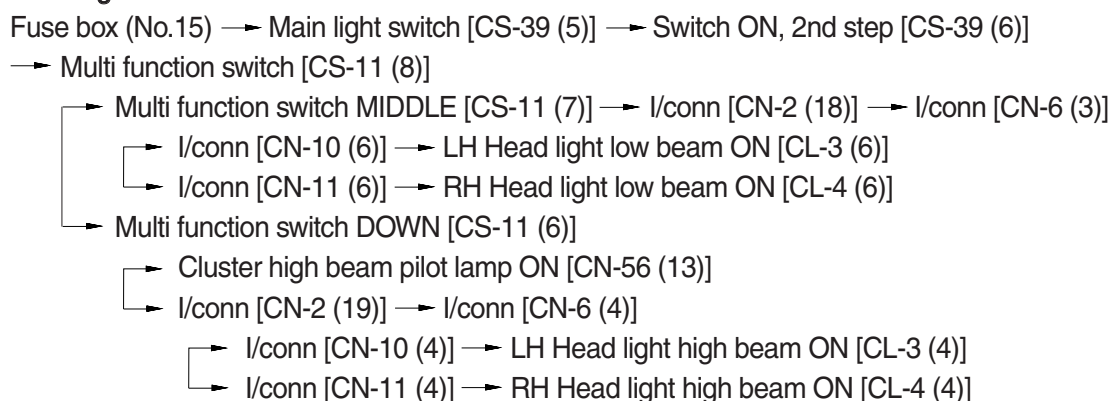
180D9EL07A

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

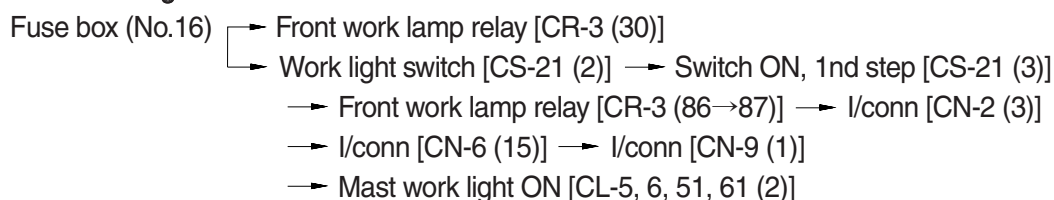
4. HEAD LIGHT AND WORK LIGHT CIRCUIT

1) OPERATING FLOW

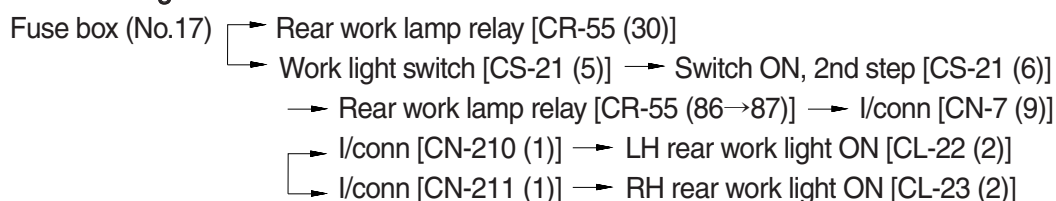
(1) Head light



(2) Front work light



(3) Rear work light



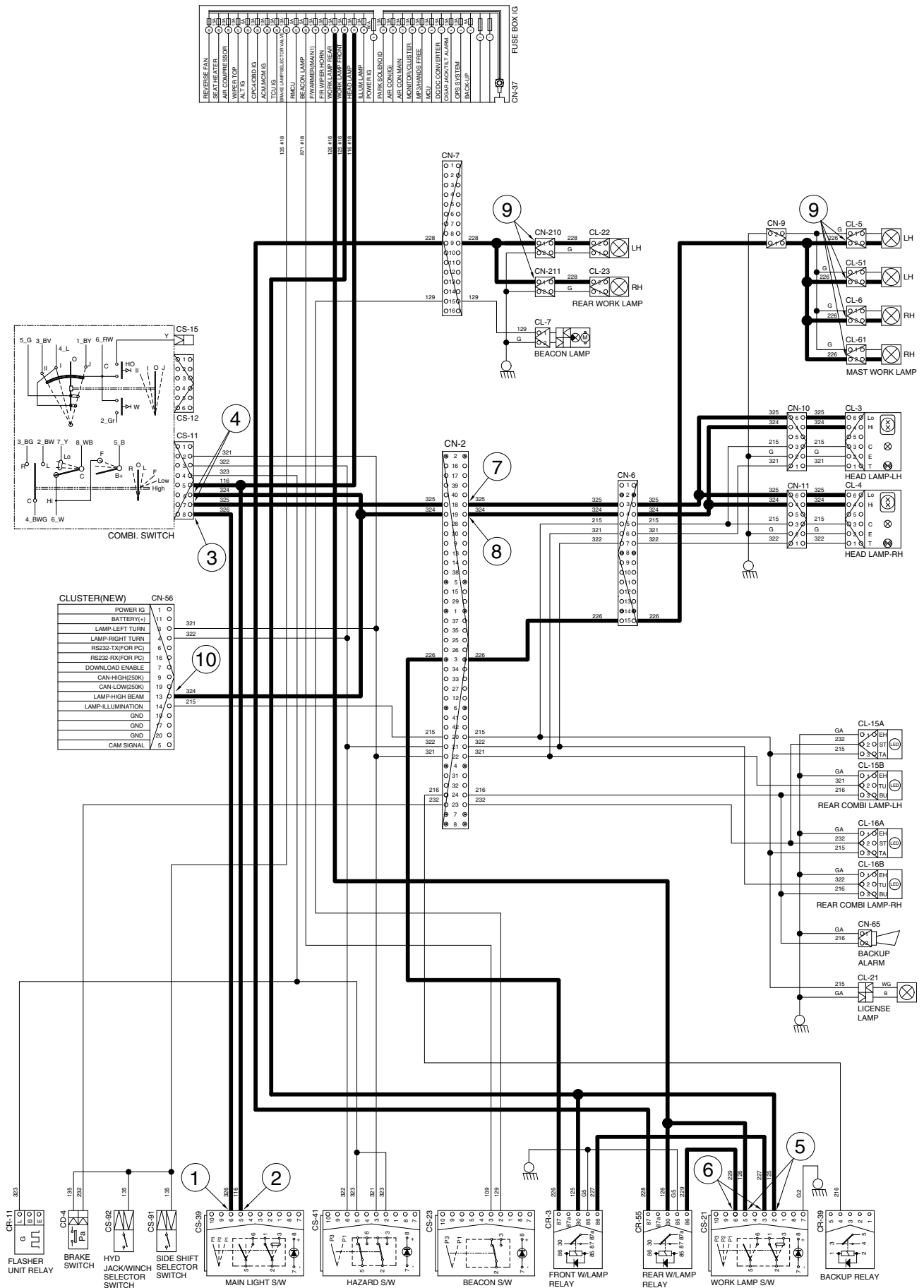
2) CHECK POINT

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.

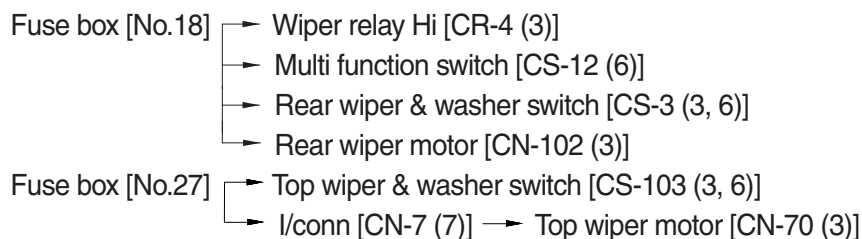
HEAD LAMP AND WORK LIGHT CIRCUIT



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

5. 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-4 (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-39 (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.

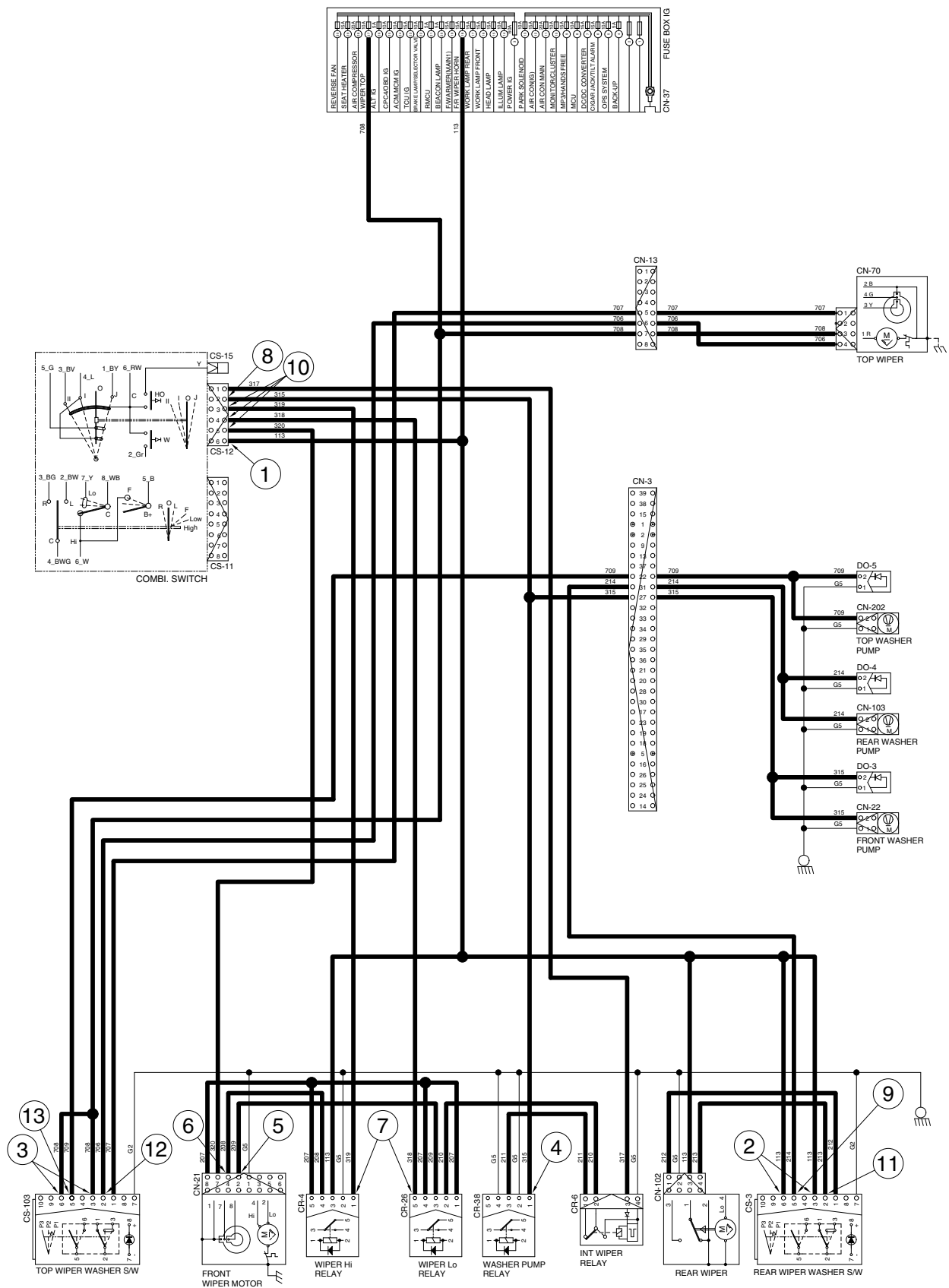
2) CHECK POINT

Engine	Key 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



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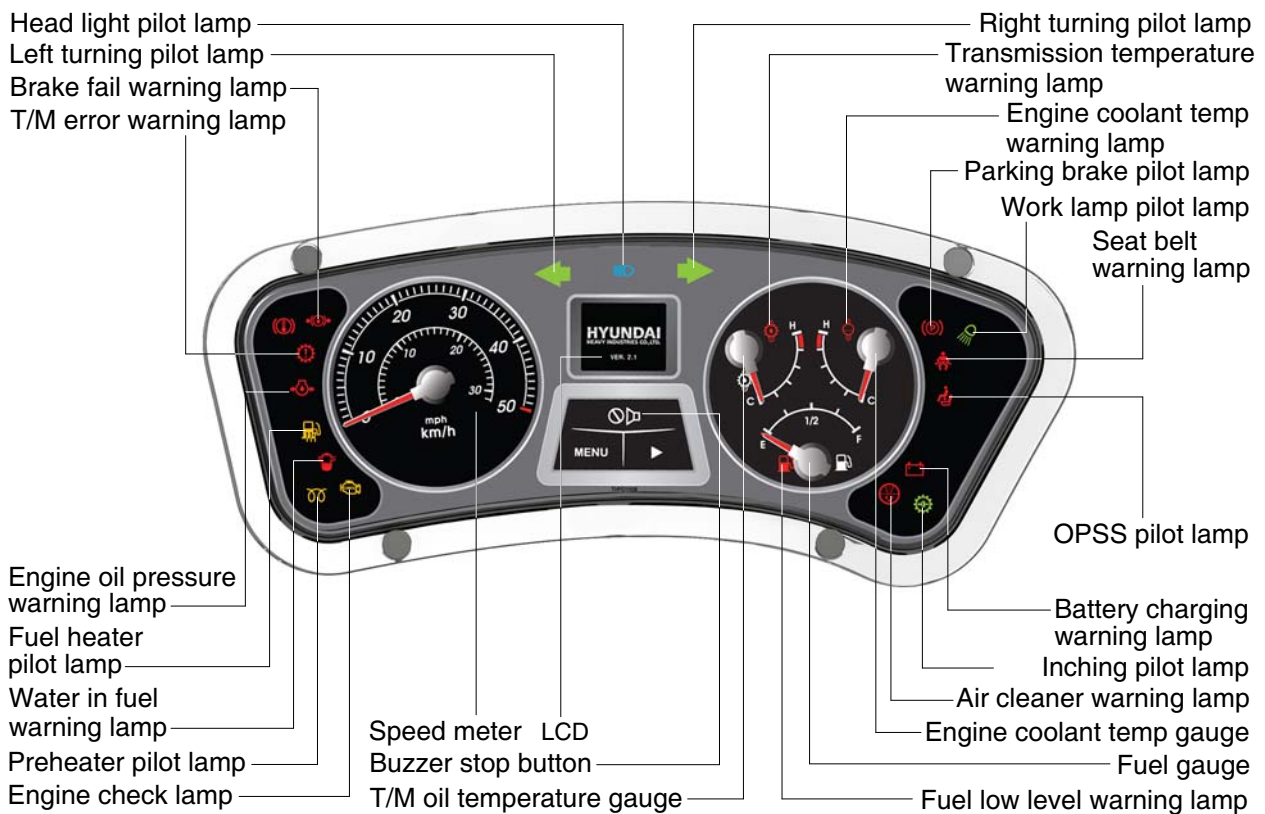
※ The circuit diagram may differ from the equipment, so please check before a repair.

GROUP 3 CLUSTER (-#0030)

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.

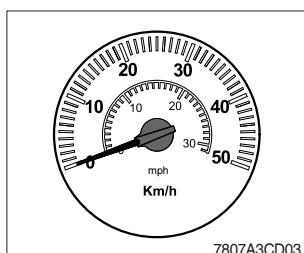
- Gauges : Indicate operating status of the truck.
- Warning lamp : Indicate abnormality of the truck.
- Pilot lamp : Indicate operating status of the truck.
- ※ **The monitor installed on this truck does not entirely guarantee the condition of the truck. Daily inspection should be performed according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



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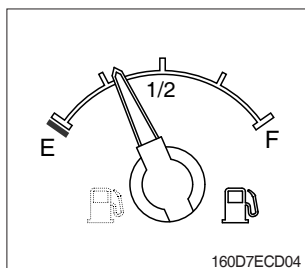
2) GAUGE

(1) Speed meter



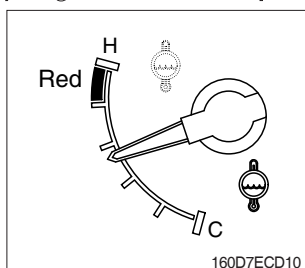
- ① The speedmeter displays the speed of truck in mph and km/h.

(2) Fuel gauge



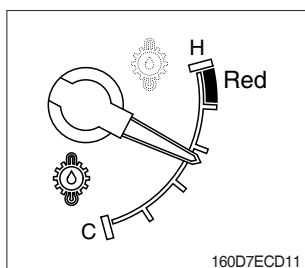
- ① This gauge indicates the amount of fuel in the fuel tank.
- ② Fill the fuel when the indicator moves E point, refuel as soon as possible to avoid running out of fuel.
- ※ If the gauge indicates below E point even though the truck is on the normal condition, check the electric device as that can be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

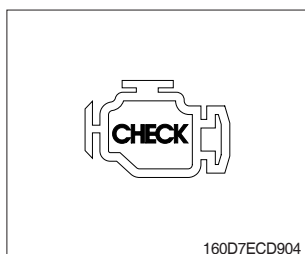
(4) Transmission oil temperature gauge



- 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.

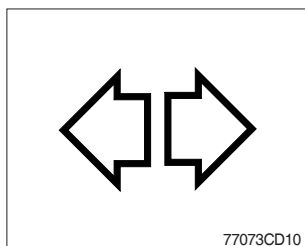
3) WARNING AND PILOT LAMP

(1) Engine check lamp



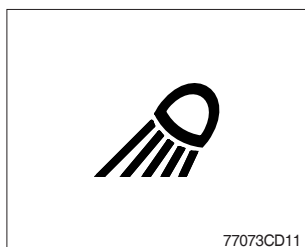
- ① This lamp light ON during a nonfatal engine system error. The engine can still be run, but the fault should be corrected as soon as possible.

(2) Direction pilot lamp



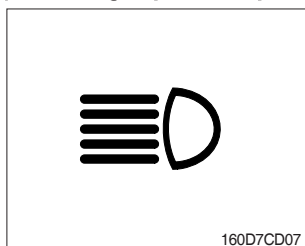
- ① This lamp flashes when the signal indicator lever is moved.

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



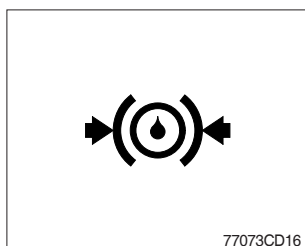
- ① This lamp lights ON when cabin work lamp switch is pressed.

(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



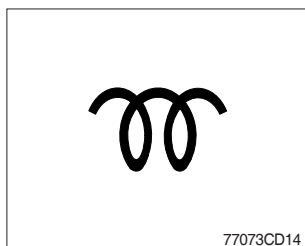
- ① The lamp lights ON when the oil pressure of service brake drops below the normal range.
- ② When the lamp is ON, stop the engine and check for its cause.
- ※ Do not operate until the problems are corrected.

(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



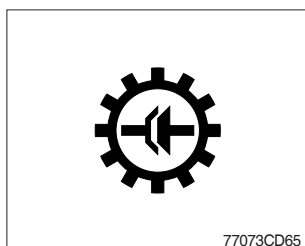
- ① This lamp lights ON when start switch is turned clockwise to the ON position. Light will turn off after approximately 15~45 seconds, depending on engine temperature, indicating that preheating is completed.
- ② When the lamp goes out the operator should start cranking the engine.

(8) OPSS pilot lamp (option)



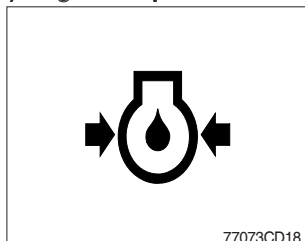
- ① This signal lamp lights ON when the operator leaves the seat.
- ② Powered travel movement of the truck shall be possible only if the operator is in the normal operating position. Transmission will automatically shift to neutral upon the exiting of the operator.
- ③ The forward/Reverse lever must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



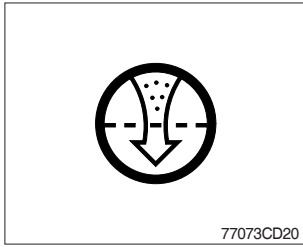
- ① This lamp is comes ON for a while after starting the engine because of the low oil pressure.
- ② If the lamp comes ON during engine operation, shut OFF engine immediately. Check oil level.

(11) Transmission error warning lamp



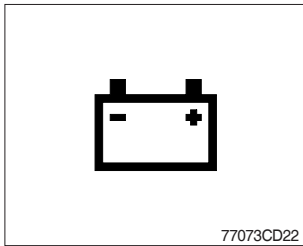
- ① This lamp lights ON and the T/M message display shows the error codes when an error occurs in the transmission.
 - ② Immediately pull the truck to a convenient stop. Stop the engine. Investigate the cause.
- ※ Consult a HYUNDAI dealer to investigate the cause.
- ※ Do not operate until the cause has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

(12) Air cleaner warning lamp



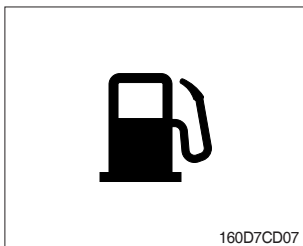
- ① This lamp operates by the vacuum caused inside when the filter of air cleaner is clogged.
- ② Check the filter and clean or replace it when the lamp is ON.

(13) Battery charging warning lamp



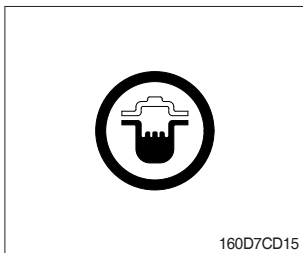
- ① This lamp is ON after key switch is turned ON.
- ② Check the battery charging circuit when this lamp comes ON during engine operation.

(14) Fuel low level warning lamp



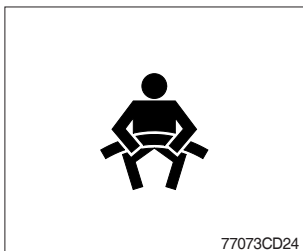
- ① Fill the fuel immediately when the lamp is turned ON.

(15) Water in fuel warning lamp



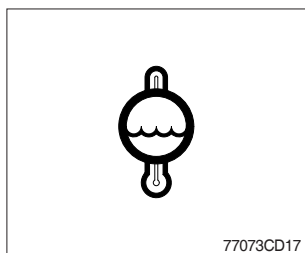
- ① This lamp lights up when the water separator is full of water or malfunctioning.
- ※ When this lamp lights up, stop the truck and spill water out of the separator.

(16) Seat belt warning lamp



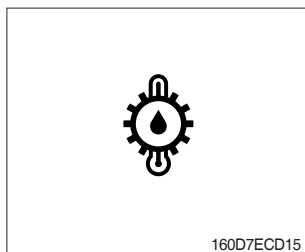
- ① This lamp lights ON for the first five seconds after starting the truck.

(17) Engine coolant temperature warning lamp



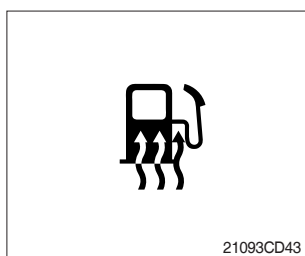
- ① This lamp is turned ON when the temperature of cooling water is over the normal temperature (104°C, 219°F).
- ② Check the cooling system when the lamp is ON.

(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.

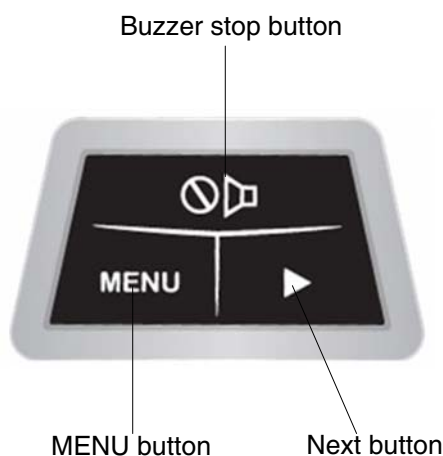
(19) Fuel heater pilot lamp



- 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.

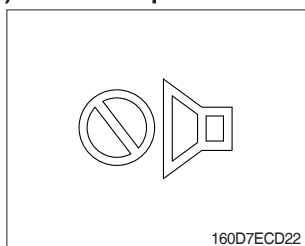
4) CLUSTER BUTTON

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

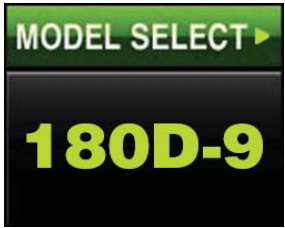


- ① This switches are used to choose the model or display the engine error on the LCD.
- ② Model select mode
 - The model is displayed on the LCD when the menu button  and next button  are pressed simultaneously for some longer seconds.
 - Please don't change your truck model identity because it is already 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 7-18.
		Engine error display	- In case of below 4 engine errors displays like this image. ※ Refer to the page 7-18.
			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 (#0031-)

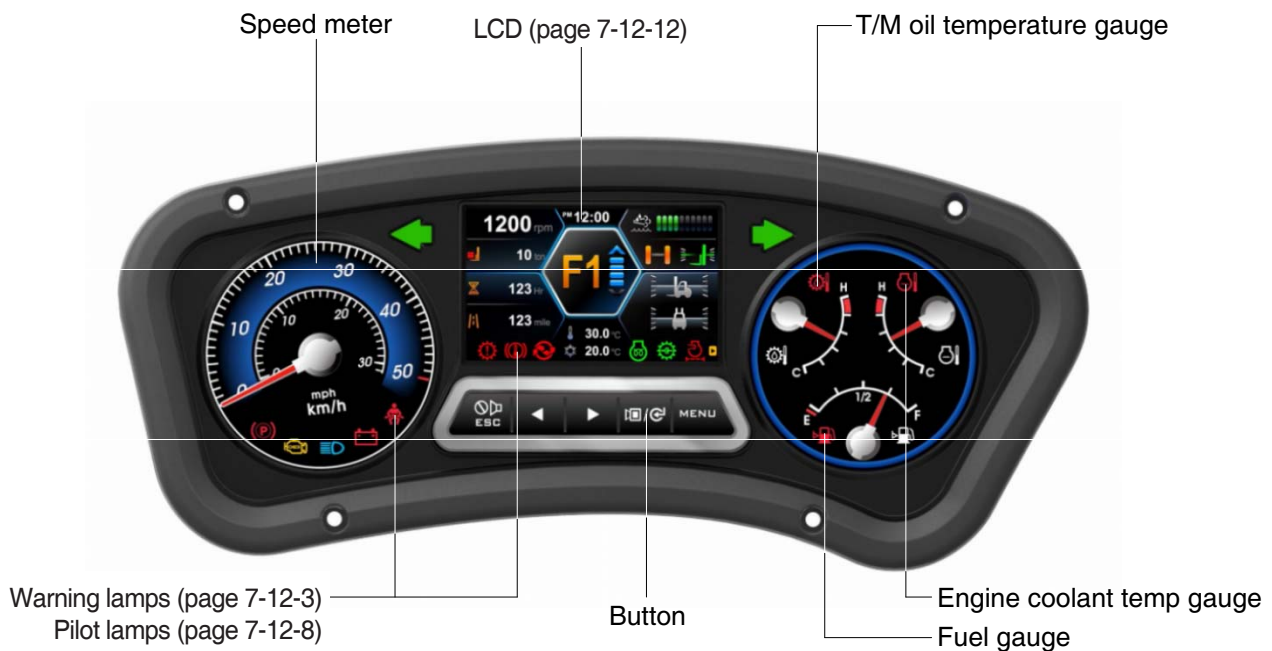
1) STRUCTURE

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

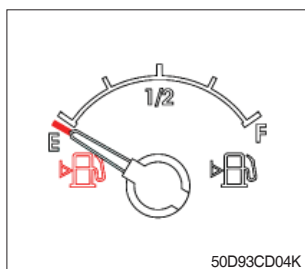
2) GAUGE

(1) Speed meter



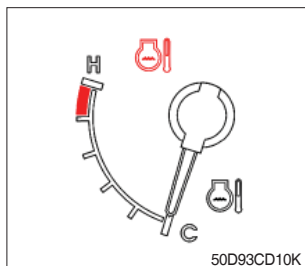
- ① The speed meter displays the speed of truck in mph and km/h.
 - 0~50 km/h
 - 0~31 mph

(2) Fuel gauge



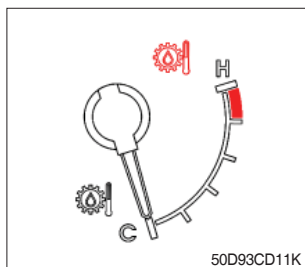
- ① This gauge indicates the amount of fuel in the fuel tank.
- ② Fill the fuel when the indicator moves E point, refuel as soon as possible to avoid running out of fuel.
- ※ If the gauge indicates below E point even though the truck is on the normal condition, check the electric device as that can be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

(3) Engine coolant temperature gauge



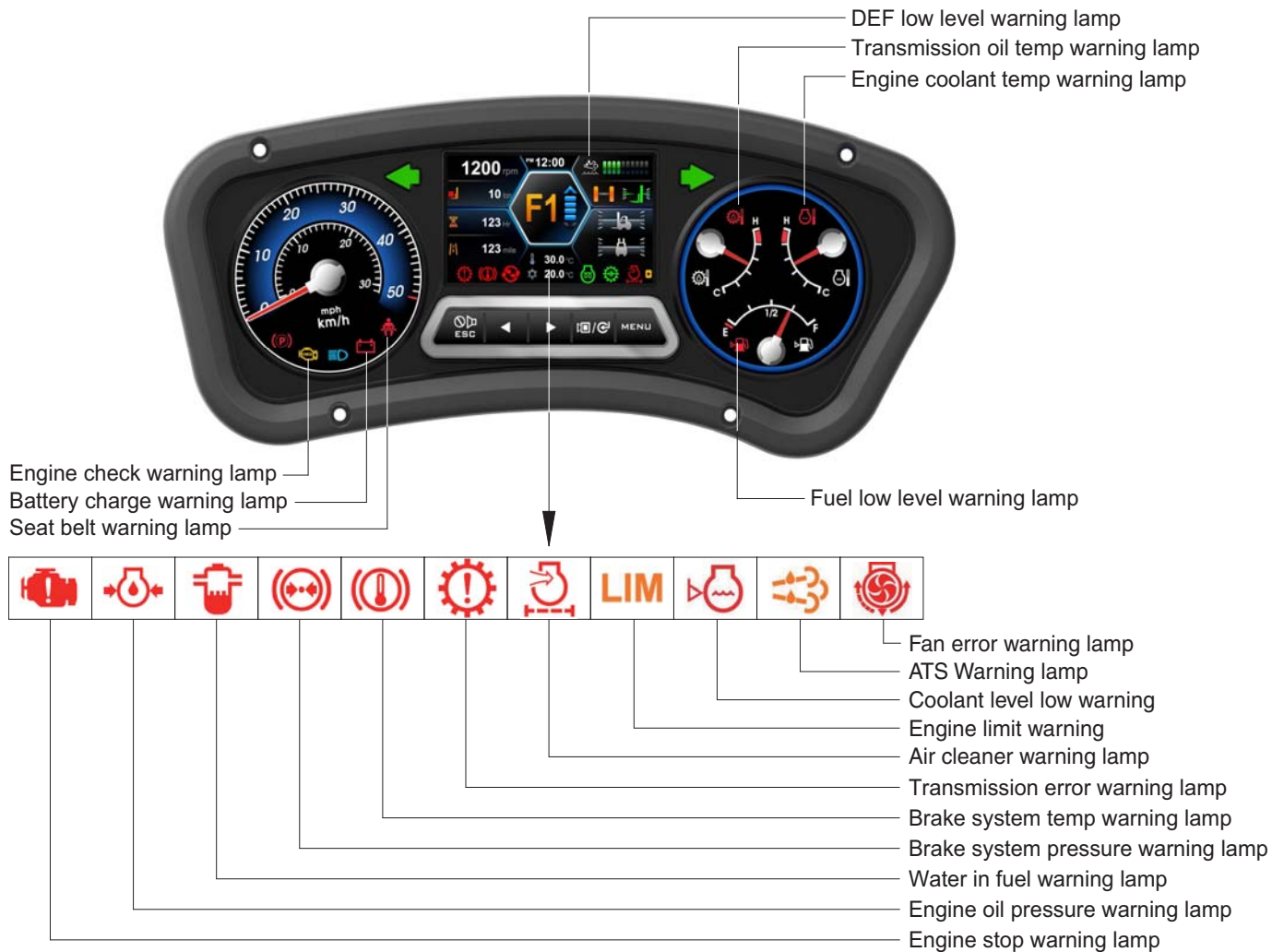
- ① This indicates the temperature of coolant.
 - White range : 40~115 °C (104~239 °F)
 - Red range : Above 115 °C (239 °F)
- ② Keep idling engine at low speed until the indicator is in the operating range.
- ③ If the indicator is in the red range, turn OFF the engine and check the radiator and engine.
- ※ 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



180D9CD03-1

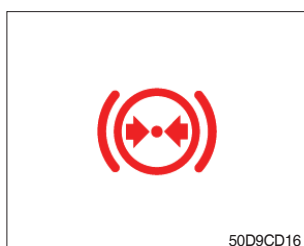
※ When the warning and pilot lamps are illuminated more than display, you can display next lamps by push the button (▶).

(1) Engine check warning 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.

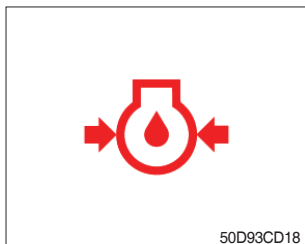
(2) Brake fail warning lamp



- 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.

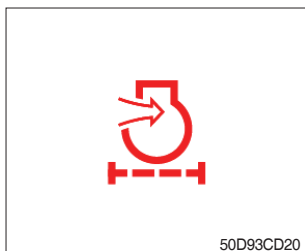
※ Do not operate until the problems are corrected.

(3) Engine oil pressure warning lamp



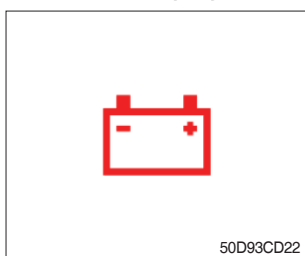
- ① This lamp comes ON for a while after starting the engine because of the low oil pressure.
- ② If the lamp comes ON during engine operation, shut OFF engine immediately. Check oil level.

(4) Air cleaner warning lamp



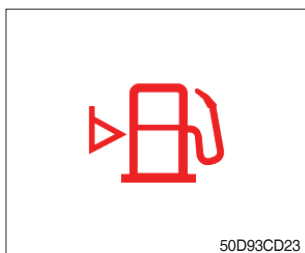
- ① This lamp operates by the vacuum caused inside when the filter of air cleaner is clogged.
- ② Check the filter and clean or replace it when the lamp is ON.

(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



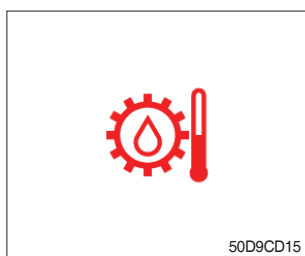
- ① This lamp lights ON for the first five seconds after starting the engine.

(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



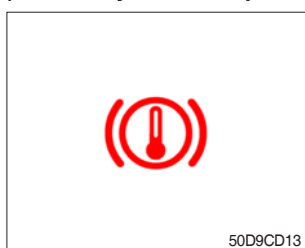
- ① This lamp informs the operator that transmission oil is above the specified temperature (107 °C, 225 °F).
 - Lamp ON : Abnormal
 - Lamp OFF : Normal
- ※ **When this lamp lights up during operation, stop the engine and check the truck.**

(11) Transmission error warning lamp



- ① This lamp lights ON and the information window of the LCD shows the error code when an error occur 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) DEF (Diesel Exhaust Fluid) low warning lamp



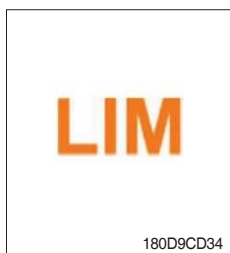
- ① This warning lamp indicates, when illuminated or flashing, that the diesel exhaust fluid level is low.
- ※ **Add the diesel exhaust fluid into DEF tank.**

(14) Engine stop warning lamp



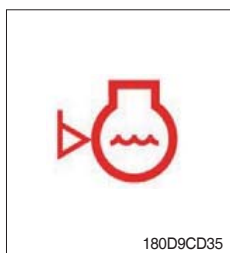
- ① When this warning lamp lights ON, stop the engine immediately and check the DEF level and related parts of the engine.
- ※ **Please contact your Hyundai service center or local dealer.**

(15) Engine limit warning lamp



- ① Illuminates during torque and engine speed operating restriction.

(16) Coolant level low warning lamp



- ① Illuminates when coolant level is too low.
- ※ Replenish the coolant.

(17) ATS (After Treatment System) warning lamp



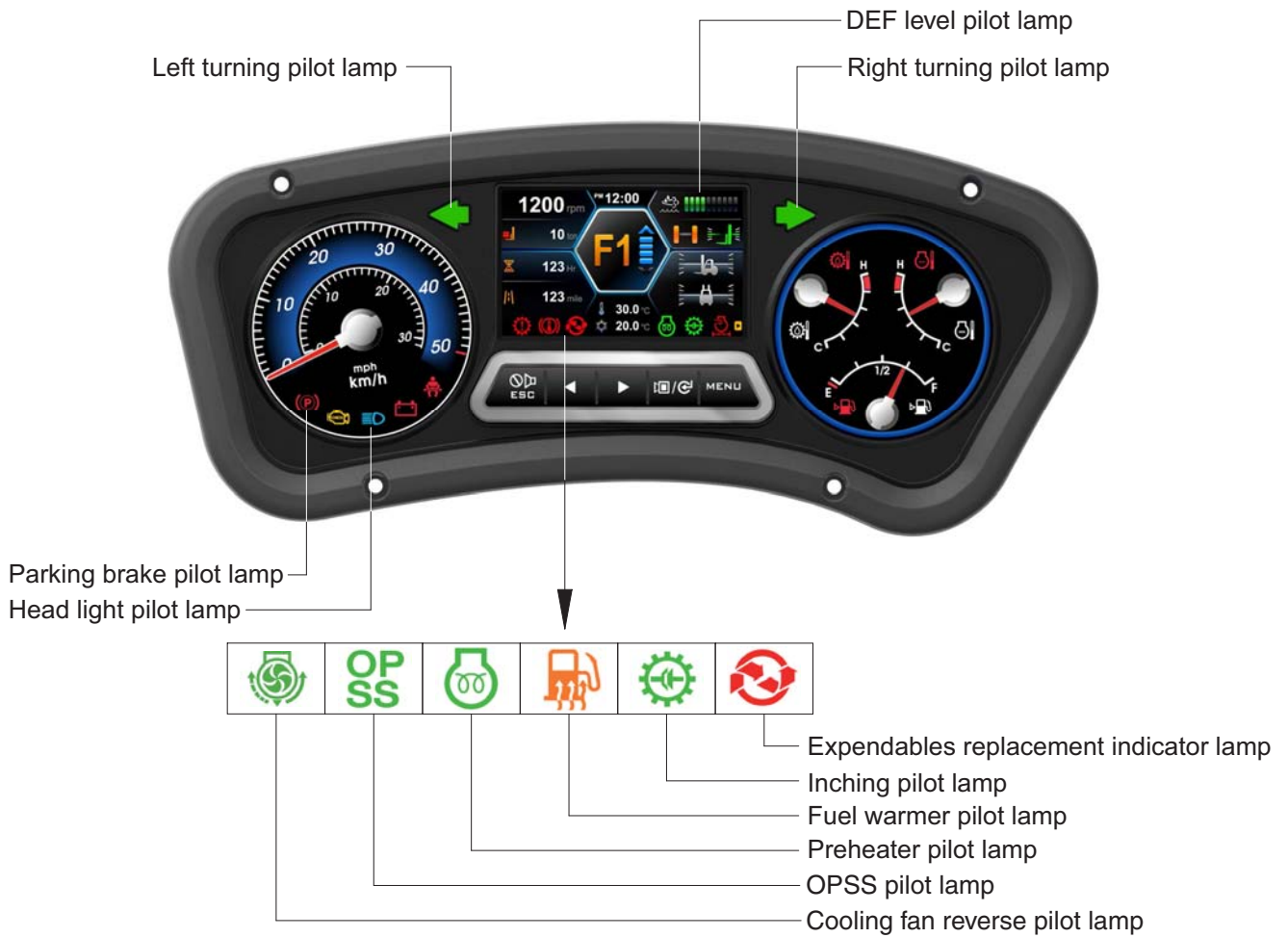
- ① Illuminates during emissions-relevant malfunction of the exhaust gas after-treatment system or DEF.

(18) Fan error warning lamp



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

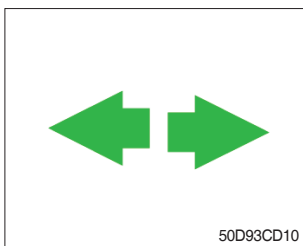
4) PILOT LAMPS



180D9CD03-2

※ 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.

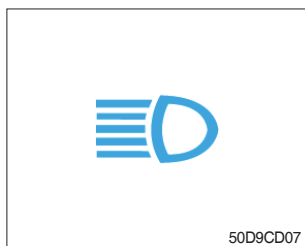
(2) Parking brake pilot lamp



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



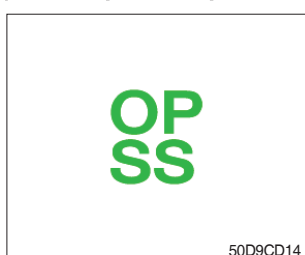
- ① When the inching switch is pressed, the lamp lights ON.

(6) Fuel warmer pilot lamp



- ① 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 (140 °F) , or the hydraulic oil temperature is above 45 °C (113 °F) since the start switch was ON position.

(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) 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.

(9) Expendables replacement indicator lamp



- ① This lamp lights ON if expendables which must be replaced are 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.

(10) Cooling fan reverse pilot lamp



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

※ Refer to page 7-25-6 for the operation of the cooling fan.

4) CLUSTER BUTTON

Each button has the following function.



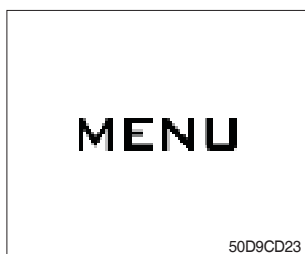
50D9CD121

(1) Buzzer stop/ESC button



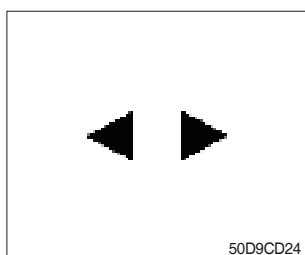
- ① This button is used to stop the buzzer sound.
- ② If another alarm condition occurs after this button has been pressed, the alarm buzzer will re-sound.

(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



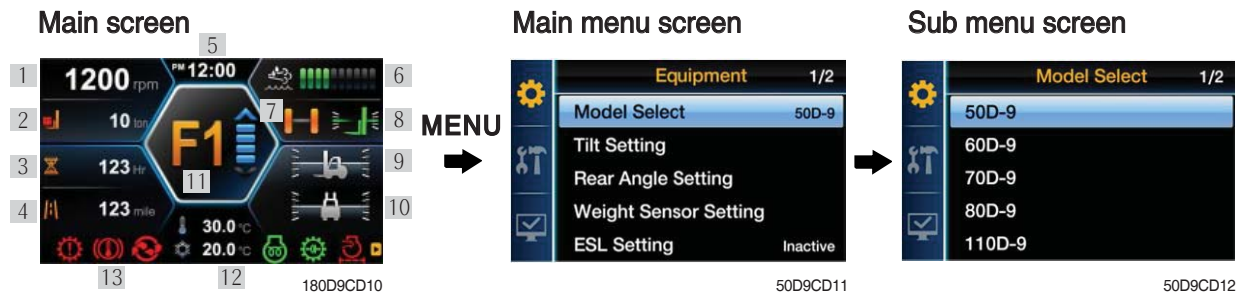
- ① Change the camera screen on main
- ② This button is used to select menu.

5) LCD

(1) Main screen

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

※ Please refer to the page 7-12-11 for the selection and change of the menu and input value.



- | | |
|--------------------------|--|
| 1 Engine rpm | 8 Mast angle (opt) |
| 2 Load indicator (opt) | 9 Vehicle angle X (opt) |
| 3 Hour meter | 10 Vehicle angle Y (opt) |
| 4 Odometer | 11 T/M info (error code, gear, warning) |
| 5 Current time | 12 Temperature (outdoor temp., setting temp) (cabin opt) |
| 6 DEF level gauge | 13 Warning and pilot lamps |
| 7 Rear wheel angle (opt) | |

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)

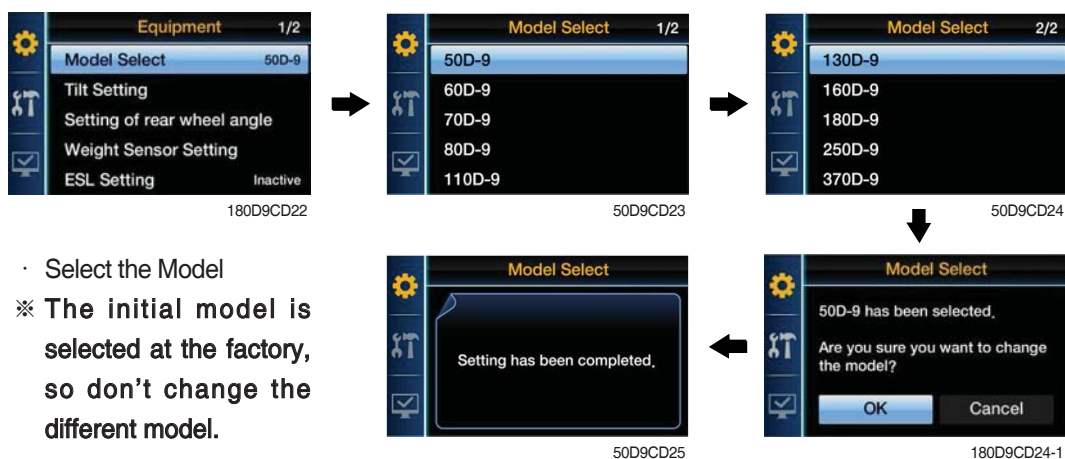
(3) Equipment

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



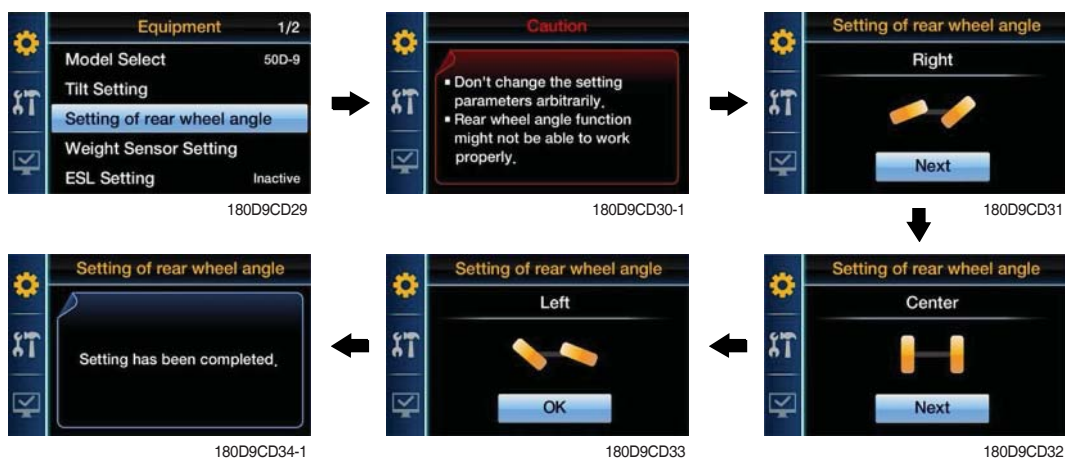
- Select the Model
- ※ The initial model is selected at the factory, so don't change the different model.

③ Tilt setting



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

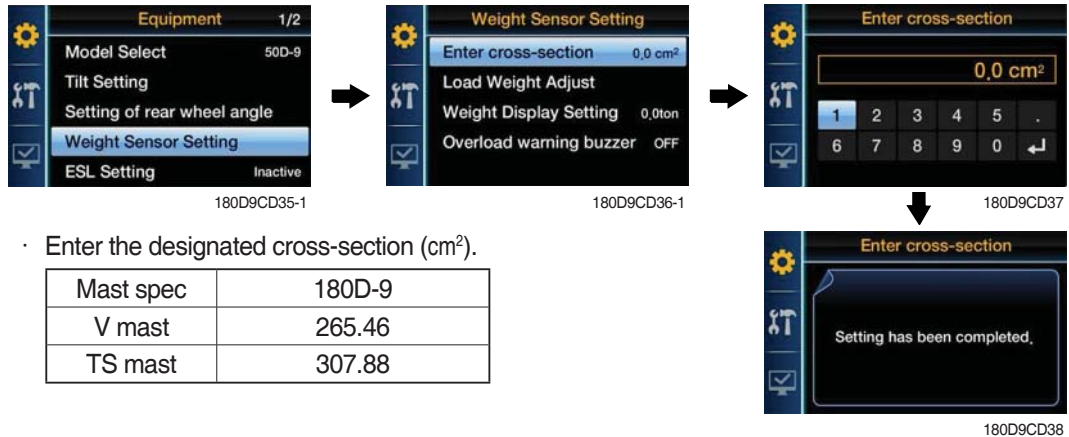
④ Setting for rear wheel angle



- 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



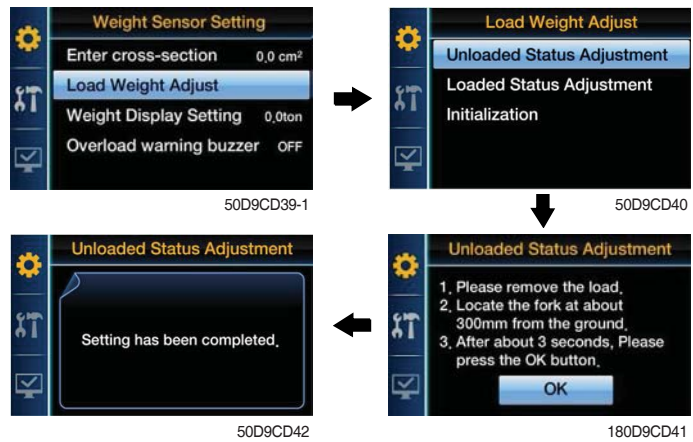
- Enter the designated cross-section (cm²).

Mast spec	180D-9
V mast	265.46
TS mast	307.88

b. Load weight adjust

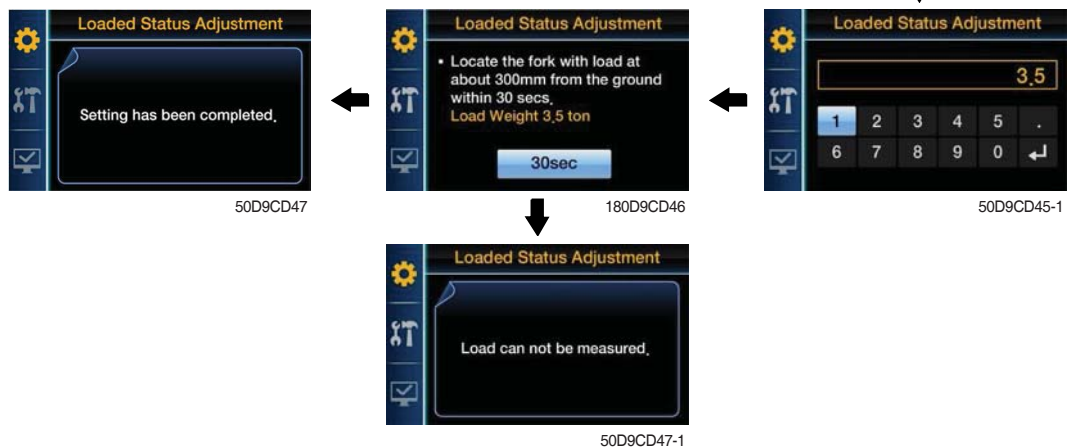
- Unloaded status adjustment

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.





- Initialization
It is initialized loaded status and unloaded status.

c. Weight display setting



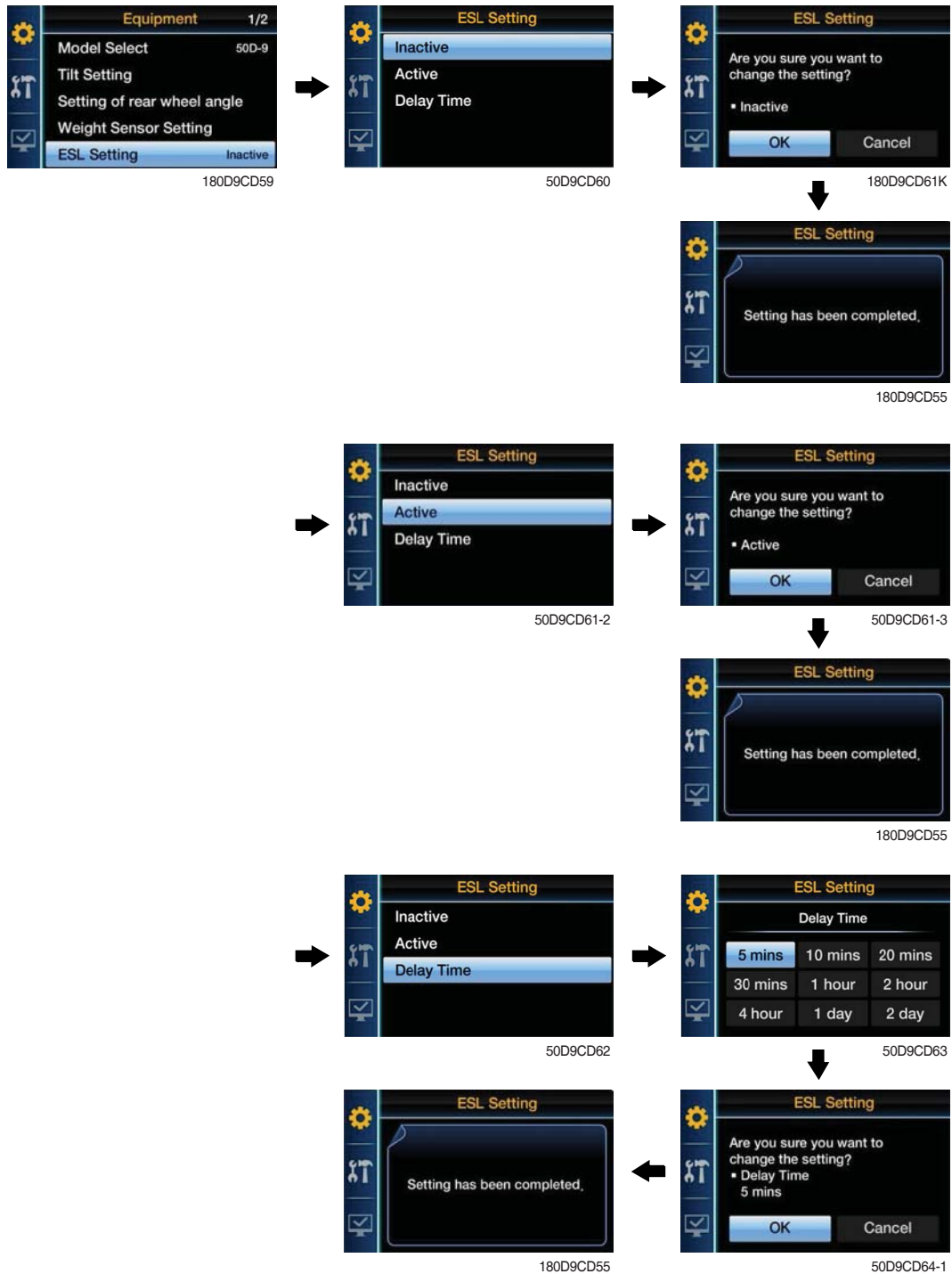
- Select the number of points of weight value display.

d. Overload warning buzzer



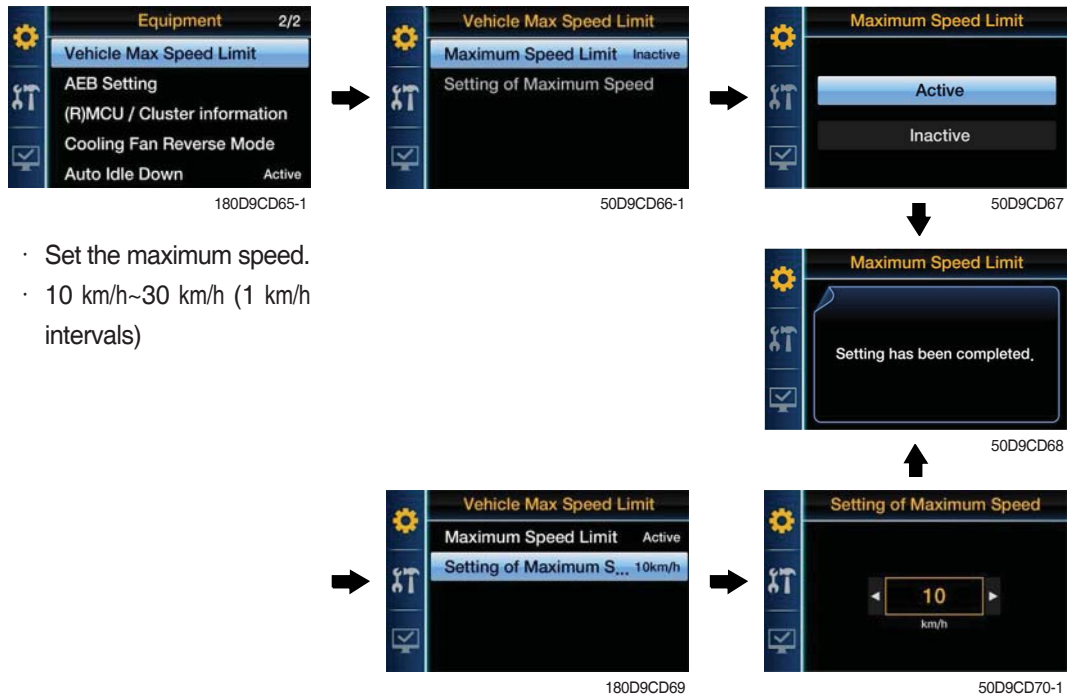
- Choose using buzzer when over weight.

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



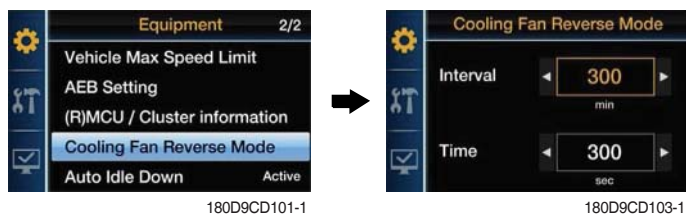
- Press OK button, then calibration will be started, for cancel, press Menu/ECS/Enter button.
- When it is finished (OK sign at gear box), Press Menu/ECS/Enter button.
- Start the engine : AEB start
- KEY ON : Brake pedal sensor calibration

⑨ (R) MCU / Cluster information



- Software version check for MCU/Cluster/RMCU.

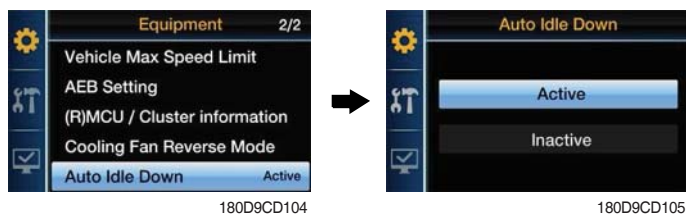
⑩ Cooling fan reverse mode



- 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 7-25-6 for the cooling fan control switch.

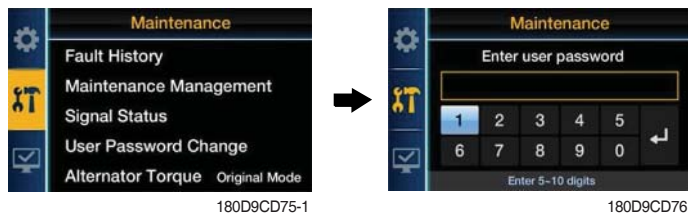
⑪ Auto ilde down



- On/off to the auto idle down function.

(4) Maintenance

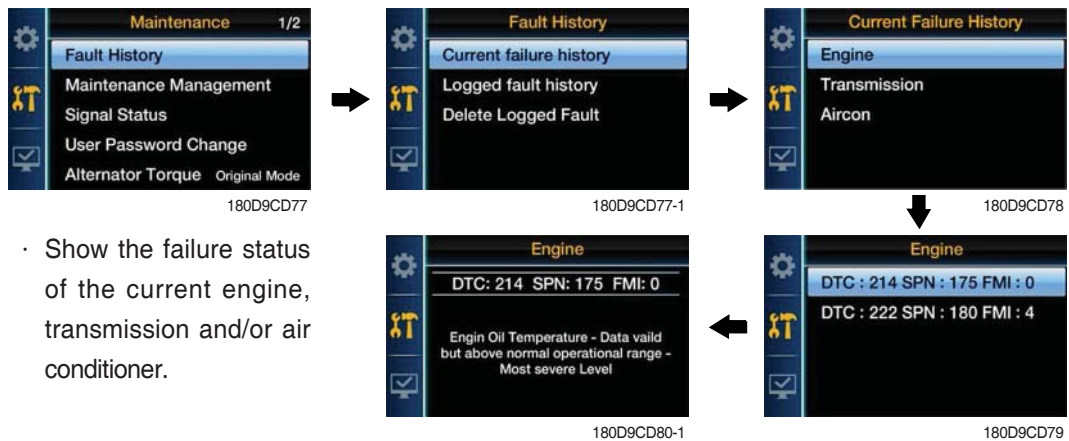
① Choose the maintenance



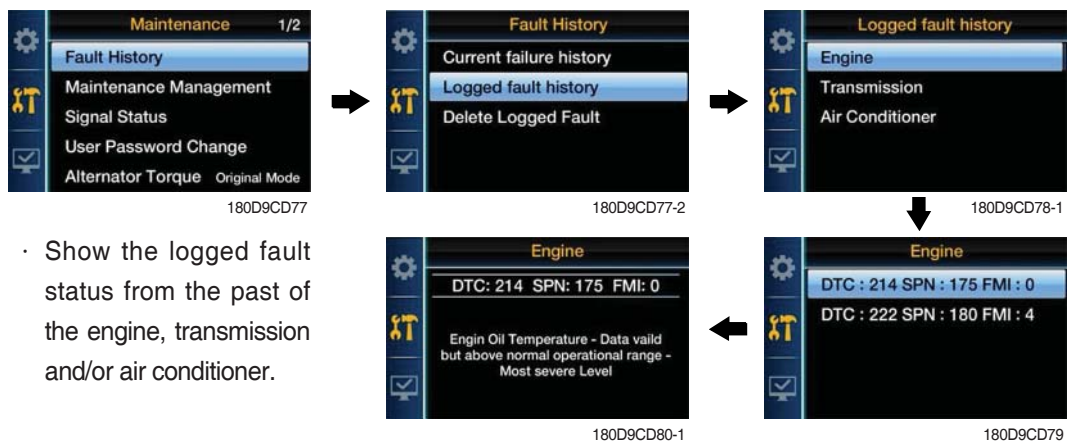
- To enter the Menu, you must input user password.
- Default password is '00000'
- You should set password by five to ten digit.

② Failure history

a. Current failure history



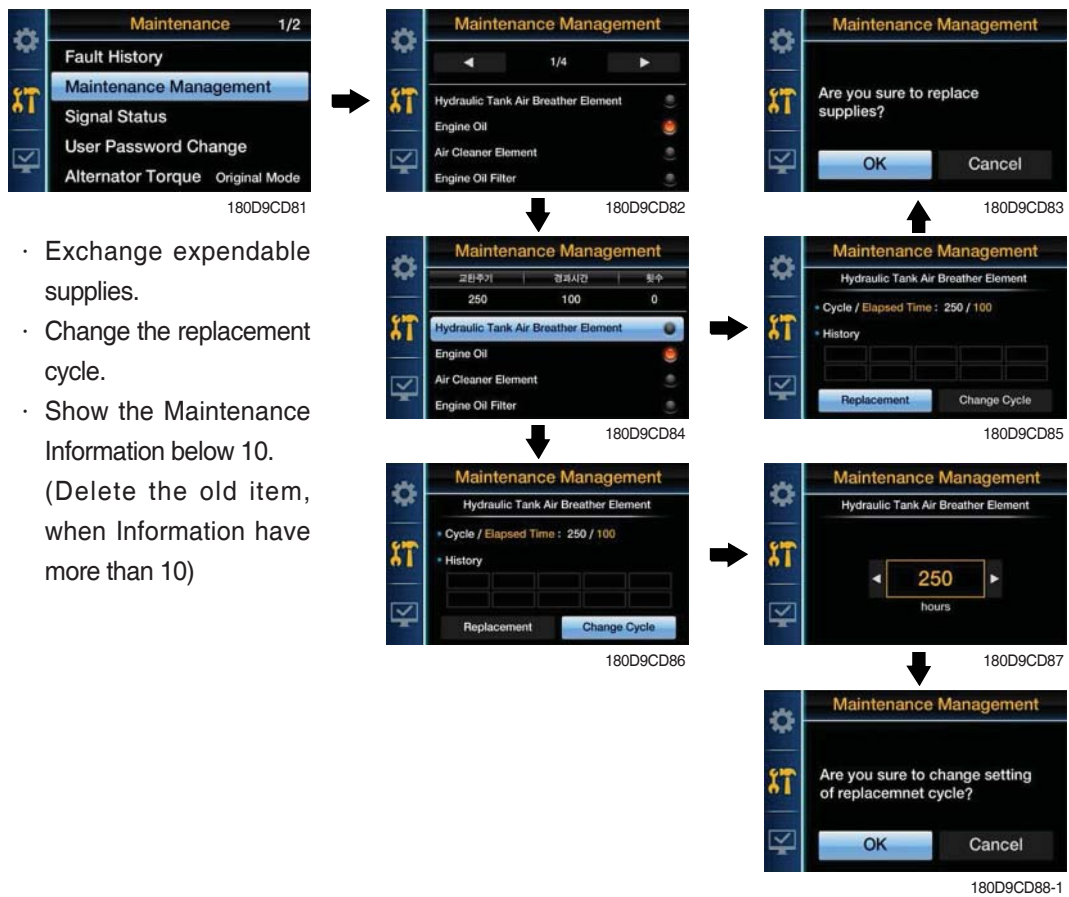
b. Logged fault history



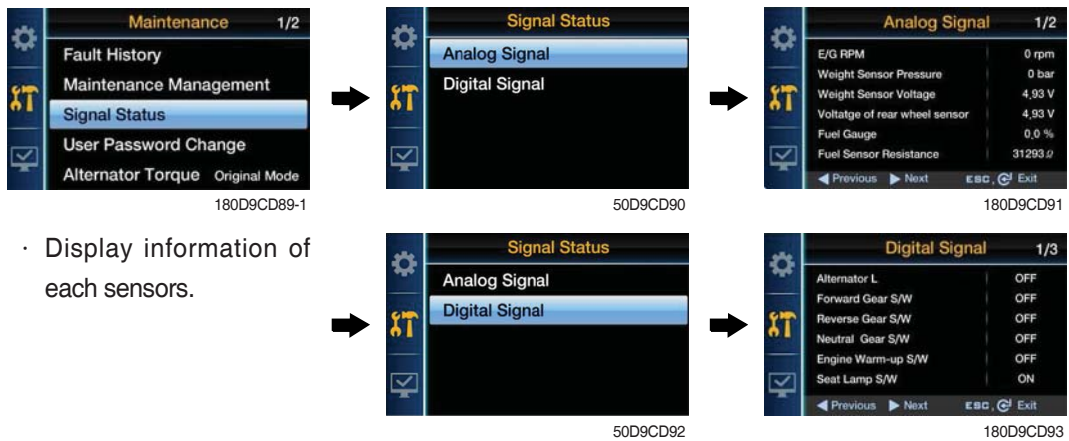
c. Delete logged fault



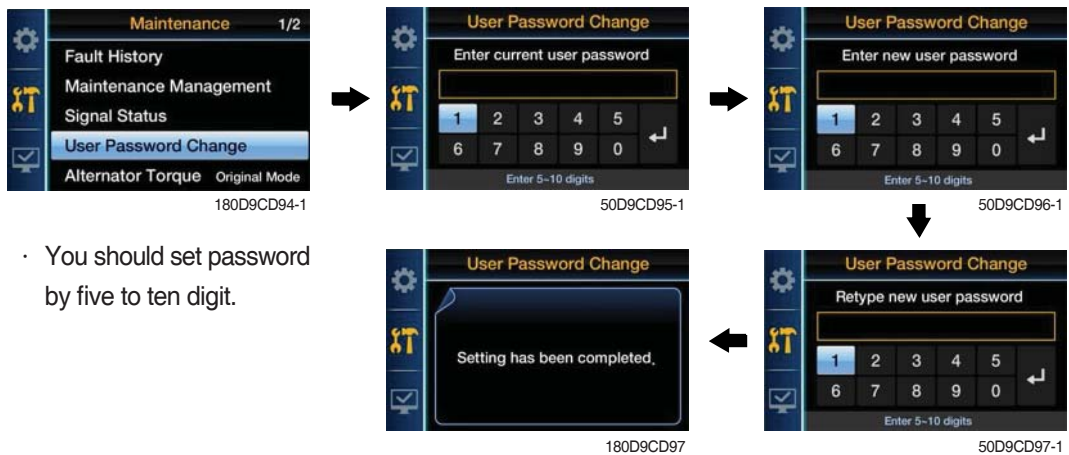
③ Maintenance management



④ Signal status



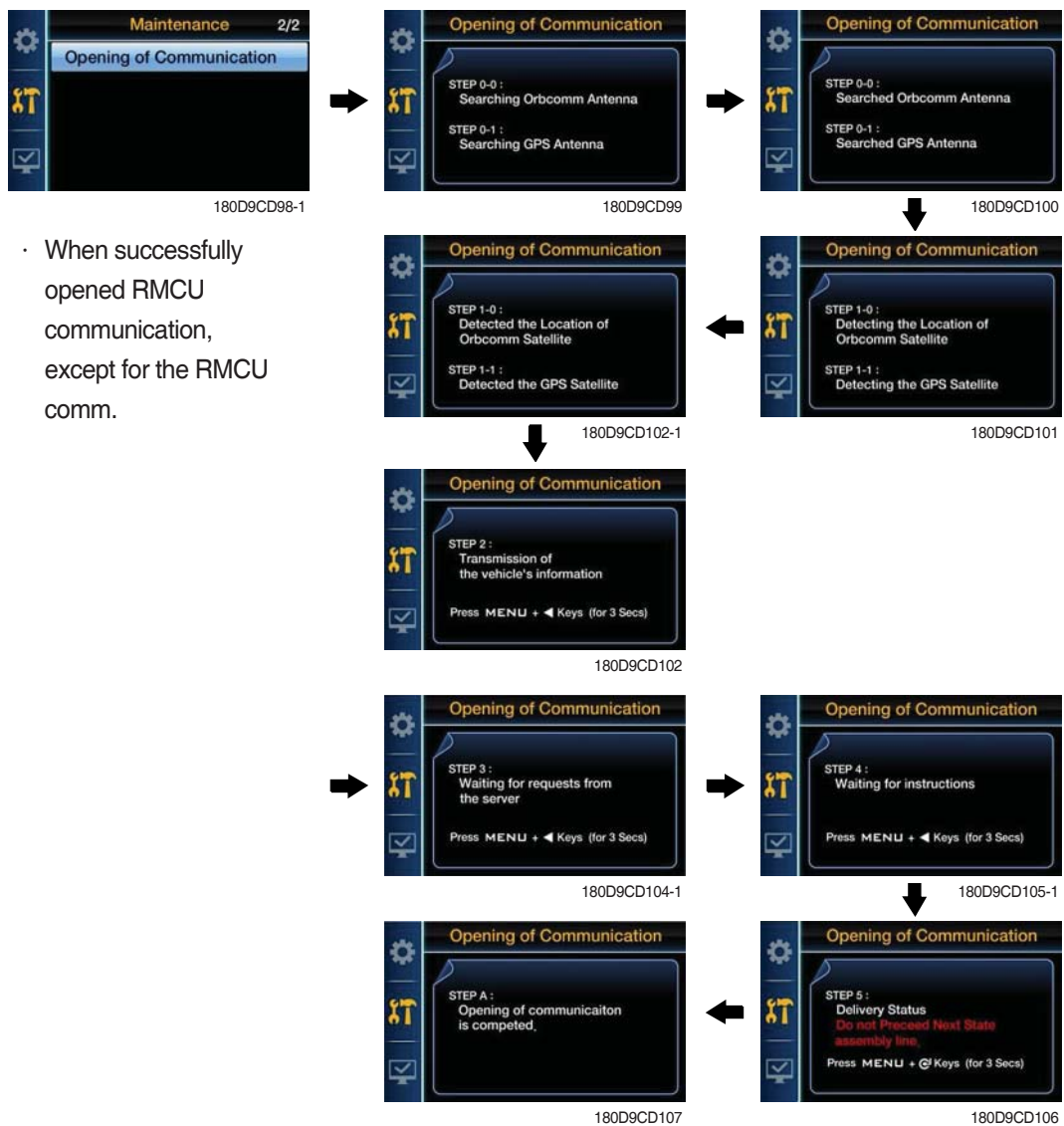
⑤ User password change



⑥ Alternate torque



⑦ Opening of communication



(5) Display setting

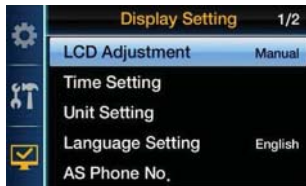
① Choose the display setting



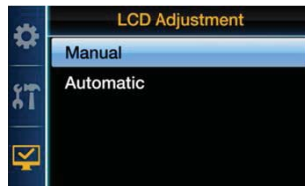
180D9CD108

- No password is required.

② LCD adjustment



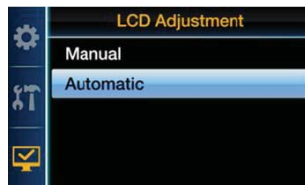
180D9CD109



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.)

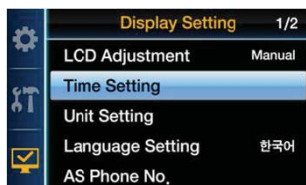


180D9CD114



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).

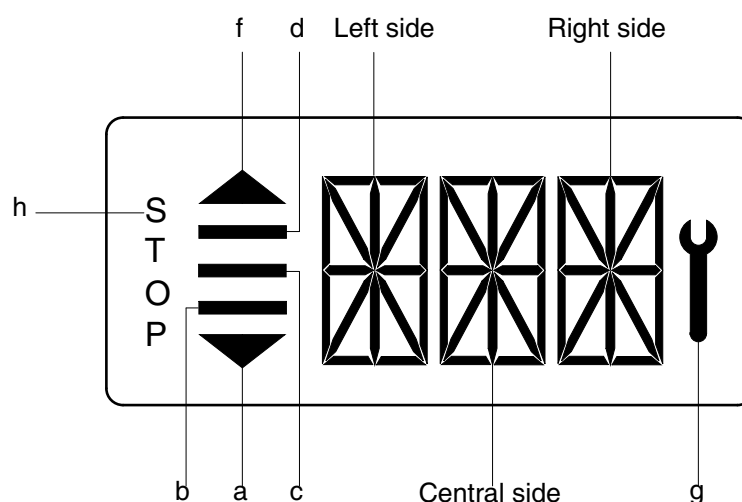
GROUP 4 TRANSMISSION MESSAGE INDICATOR (-#0030)

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 alphanumerica 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 (#0031-)

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)

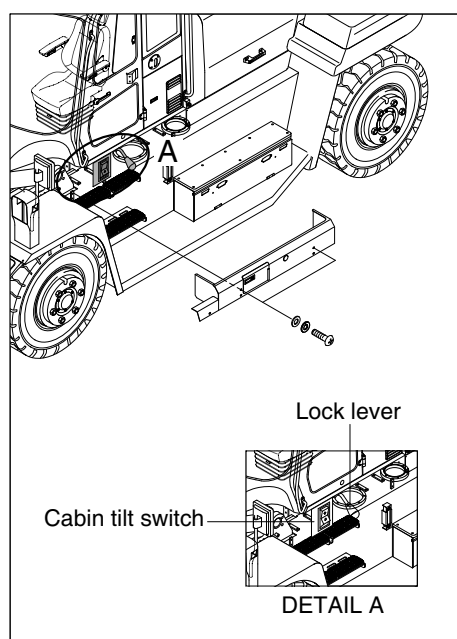
3) INITIALIZING THE INCHING SENSOR

- (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

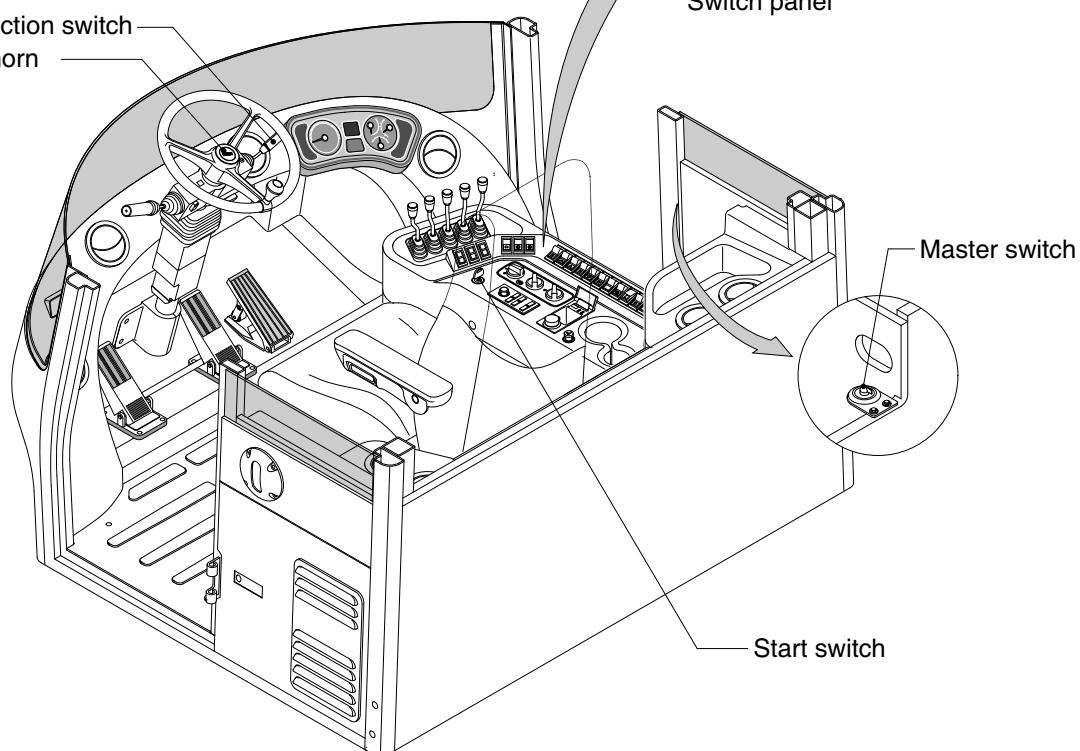
Symbol	Meaning	Remarks
▼IP	Push down the pedal slowly until endposition is reached and hold this position	
▲IP	Release the pedal slowly until endposition is reached	
IP blinkt	A problem occurred, release the pedal slowly until endposition is reached	If the expected endposition could not be reached, release 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 (-#0030)



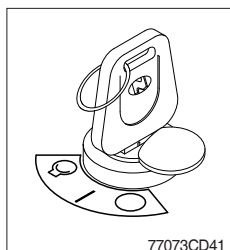
Cabin tilt switch location

Multi function switch
Center horn



Parking with lock switch
Auto/manual select switch
Inching switch
Main light switch
Work lamp switch
Hazard switch
Beacon lamp switch
Rear wiper/washer switch
Air conditioner switch
Seat heat switch
Fuel heater switch
Inc/decrement switch
Inducement override switch
Air compressor switch
Top wiper/washer switch
Cover

1) START SWITCH



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

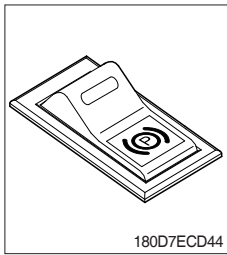
- ○(OFF) : None of electrical circuits activate.
- | (ON) : All the systems of truck operate.
- ○(START) : Use when starting the engine.

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.

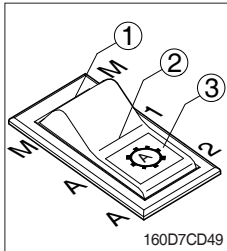
180D9CD05

2) PARKING WITH LOCK SWITCH



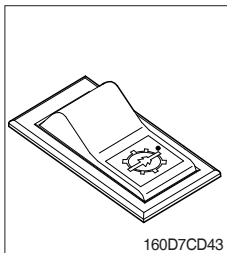
- (1) This switch is used to lock or release parking brake of the truck.
 - (2) If this switch is pressed, the parking brake is applied and the gauge panel warning lamp will come ON.
- ※ When operating the gear selector lever, be sure to release the parking brake. If the truck is operated with the parking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

3) AUTO/MANUAL SELECT SWITCH



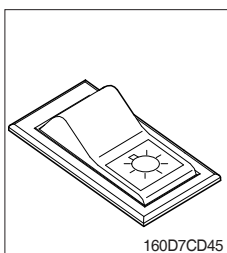
- (1) **Manual mode (①)**
Press the top of the switch for the manual mode of the autoshift function. The operator selects the desired speed and the desired direction in the manual mode with the gear selector lever.
- (2) **Automatic 1st mode (②)**
Place the switch in the middle position for the autoshift 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



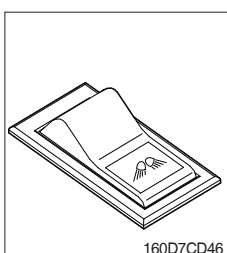
- (1) If this switch is pressed, inching operation is applied to inching pedal.
- (2) Also, inching lamp on the cluster is illuminated.

5) MAIN LIGHT SWITCH



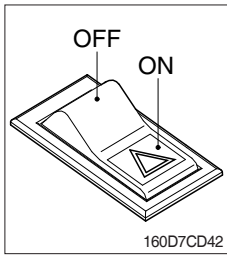
- (1) This switch is used to operate the clearance lamp and head light by two steps.
 - First step : Clearance lamp and cluster illumination lamp comes ON. Also, all of the indicator lamps of switches come ON.
 - Second step : Head light comes ON.

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.

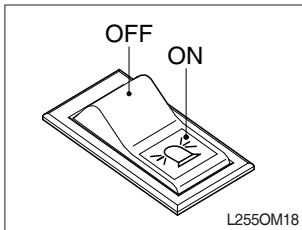
7) HAZARD SWITCH (option)



(1) Use for parking, or loading truck.

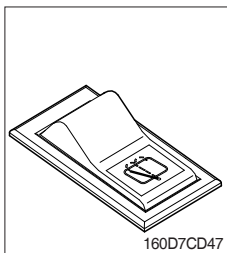
※ If the switch is left ON for a long time, the battery may be discharged.

8) BEACON SWITCH (option)



(1) This switch turn ON the rotary light.

9) REAR WIPER AND WASHER SWITCH

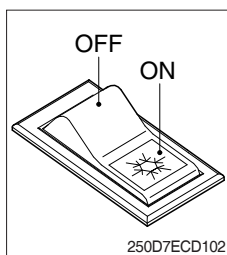


(1) This switch is used to operate the rear wiper and washer by two steps.

·First step : The rear wiper operates.

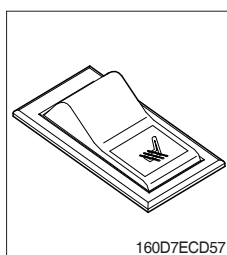
·Second step : The washer liquid is sprayed and the rear wiper is operated only while pressing. If release the switch, return to the first step position.

10) AIR CONDITIONER SWITCH



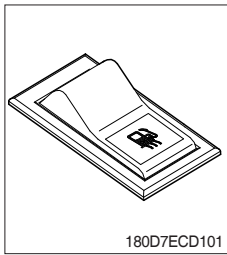
(1) This switch is used to turns ON or OFF the air conditioner.

11) SEAT HEAT SWITCH (option)



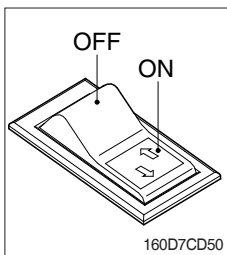
(1) This switch is used to heat the seat.

12) FUEL HEATER SWITCH



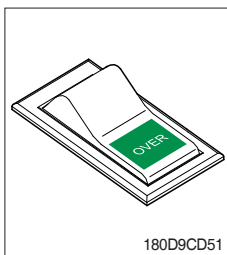
- (1) This switch is used for the fuel heater of the pre-heater assy.

13) INC/DECREMENT SWITCH



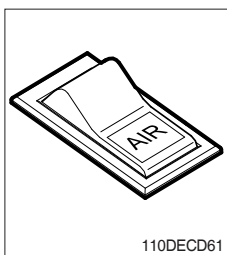
- (1) When engine running, the low rpm of engine increase or decrease by 25 rpm by operating this switch.
- (2) Engine low rpm returns to normal value when engine restarted.

14) INDUCEMENT OVERRIDE SWITCH



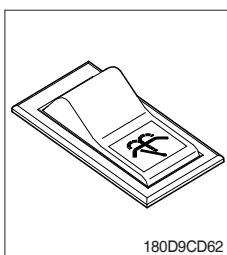
- (1) If an emission-related malfunction of the exhaust gas aftertreatment system or DEF/AdBlue® supply is detected, this will lead to operating restrictions (engine torque and engine speed limitation)
- (2) In emergencies, this switch can be operated to override the operating restriction. This means that full engine power is available for a minimum of 30 minutes. this emergency function by operating the switch can be activated a maximum of three times.

15) AIR COMPRESSOR SWITCH (option)



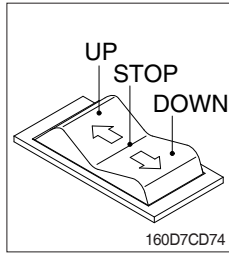
- (1) This switch is used to operate air compressor.

16) TOP WIPER/WASHER SWITCH



- (1) This switch is used to operate top wiper.

17) 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)

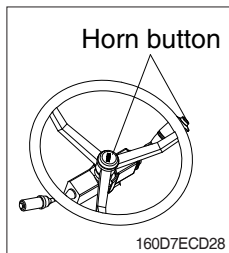
Release the switch to stop the tilting operation.

(3) Tilting DOWN cabin

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

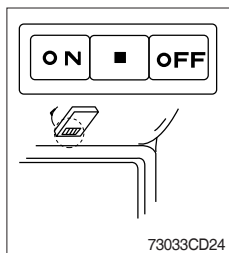
※ Refer to page 7-17 of operator's manual for cabin tilting procedure.

18) HORN BUTTON



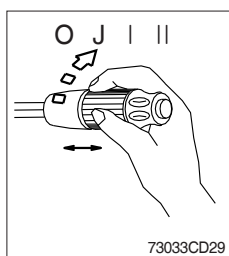
- (1) If you press the button on the top of the multifunction switch and the center of the steering wheel, the horn will sound.

19) CAB LAMP SWITCH



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

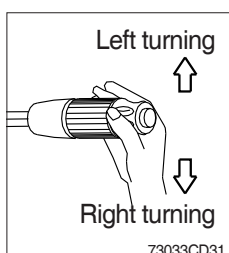
20) MULTI FUNCTION SWITCH



(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.

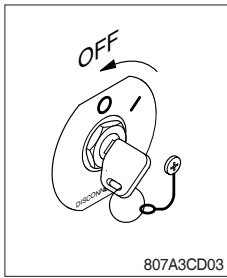
※ Check the quantity of washer liquid in the tank. If the level of the washer liquid is LOW, add the washer liquid (In cold, winter days) or water. The capacity of the tank is 1 liter.



(2) Turning switch

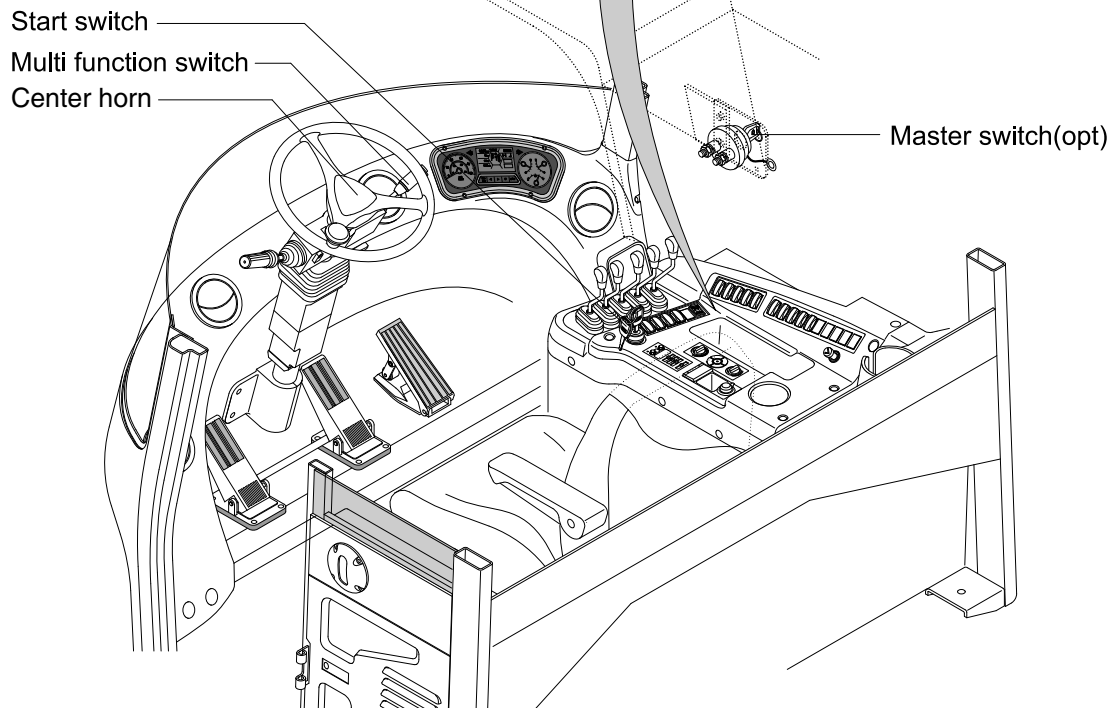
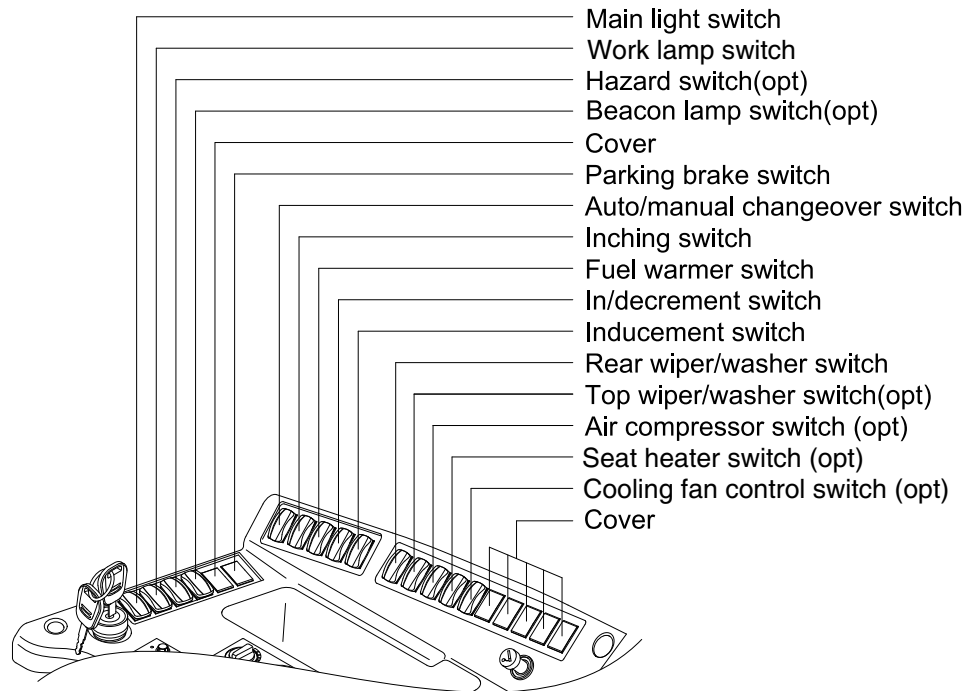
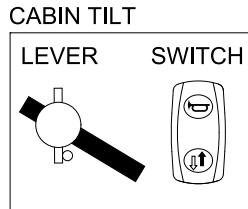
- ① This switch is used to warn or signal the turning direction of the truck to other vehicles or equipment.
- ② Push the lever up for turning left, pull the lever down for turning right.

21) MASTER SWITCH



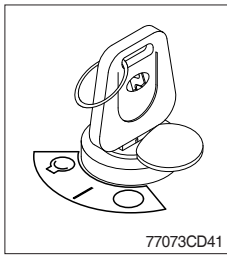
- (1) This switch is used to shut off the entire electrical system.
When the machine is not operated for a long time, turn OFF the master switch for the safety purpose.
 - (2) I : The battery remains connected to the electrical system.
O : The battery is disconnected to the electrical system.
- ※ **Never turn the master switch to OFF with the engine running. Engine and electrical system damage could result.**

GROUP 5 SWITCHES (#0031-)



180D9CD04

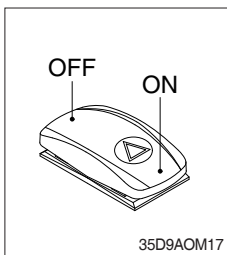
1) START SWITCH



(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.

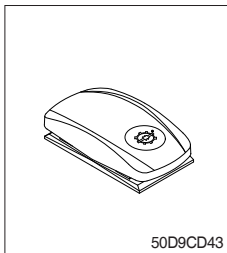
2) HAZARD SWITCH (OPTION)



(1) Use for parking, or loading truck.

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

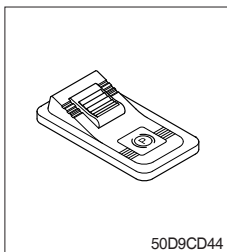
3) INCHING SWITCH



(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

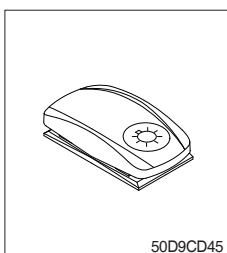


(1) This switch is used to parking brake lock or release.

(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



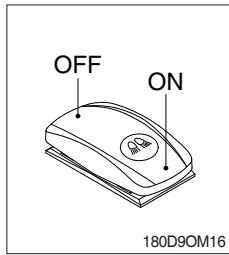
(1) This switch is used to operate the head light by one steps.

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

② ON.

Second step : Head lamp comes ON.

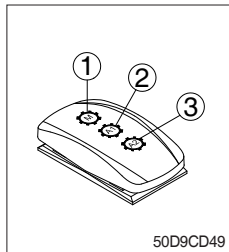
6) WORK LAMP SWITCH



(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.

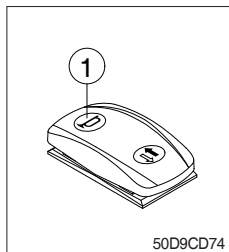
(2) Automatic 1st mode (②)

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.

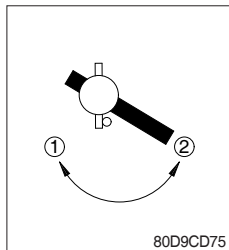
▲ Sound the horn to warn near by personnel, before tilting the cabin.

(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

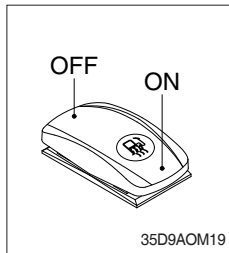


(1) This lever is used when tilting the cabin.

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

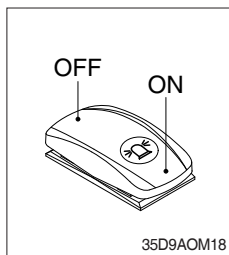
(3) Turn the hand pump lever to clockwise direction (②), the cabin shall be returned to original location by the cabin tilt switch.

10) FUEL WARMER SWITCH



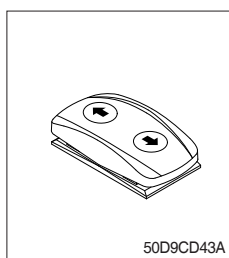
(1) This switch is used to heat the fuel of pre-heater.

11) BEACON SWITCH (OPTION)



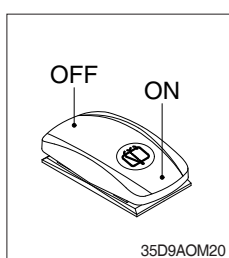
(1) This switch turn ON the strobe light.

12) INC/DECREMENT SWITCH



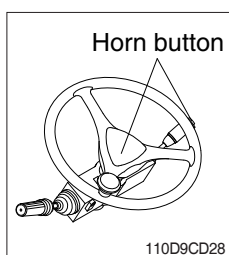
- (1) When engine running, the low rpm of engine increase or decrease by 25 rpm by operating this switch.
- (2) Engine low rpm returns to normal value when engine restarted.

13) TOP WIPER AND WASHER SWITCH (OPTION)



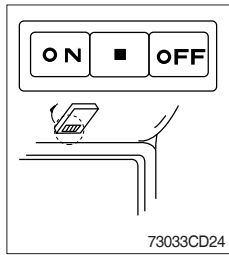
- (1) This switch is used to operate the wiper and washer on the top of the cab.
- (2) The washer liquid is sprayed and the wiper is operated only while pressing this switch.

14) HORN BUTTON



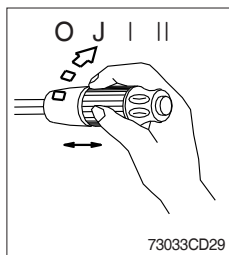
- (1) If you press the button on the top of the multifunction switch and the center of the steering wheel, the horn will sound.

15) CAB LAMP SWITCH



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

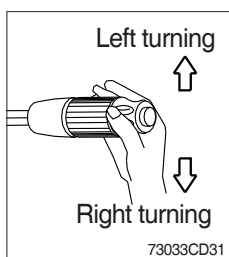
16) MULTI FUNCTION SWITCH



- (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.

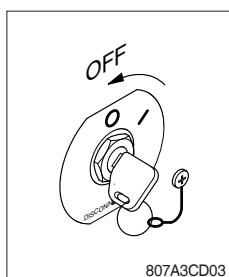
※ **Check the quantity of washer liquid in the tank. If the level of the washer liquid is LOW, add the washer liquid (In cold, winter days) or water. The capacity of the tank is 1 liter.**



- (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)

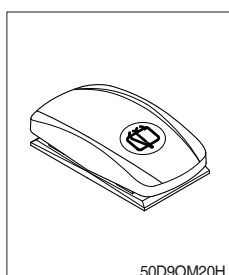


- (1) This switch is used to shut off the entire electrical system.
When the machine is not operated for a long time, turn OFF the master switch for the safety purpose.

- (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) REAR WIPER/WASHER SWITCH



- (1) This switch is used to operate the wiper and washer on the rear of the cab.

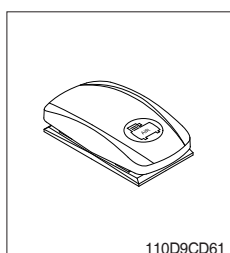
- (2) The washer liquid is sprayed and the wiper is operated only while pressing this switch.

19) INDUCEMENT OVERRIDE



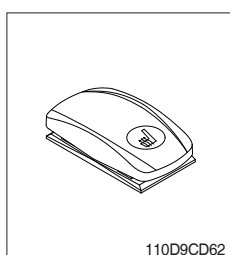
- (1) If an emission-related malfunction of the exhaust gas aftertreatment system or DEF supply is detected, this will lead to operating restrictions. (engine torque and engine speed limitation)
- (2) In emergencies, this switch can be operated to override the operating restriction. this means that full engine power is available for a minimum of 30 minutes. this emergency function by operating the switch can be activated a maximum of three times.

20) AIR COMPRESSOR SWITCH (option)



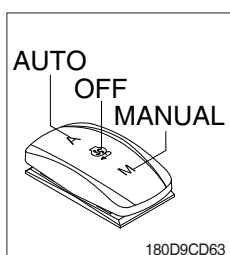
- (1) This switch is used to activate the air compressor.

21) SEAT HEAT SWITCH (option)



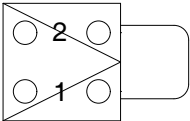
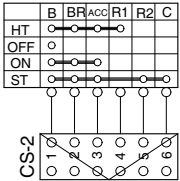
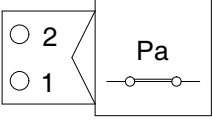
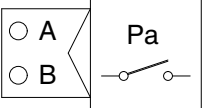
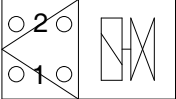
- (1) This switch is used to heat the seat.

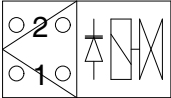
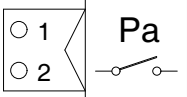
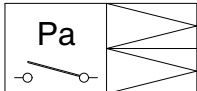
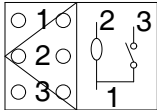
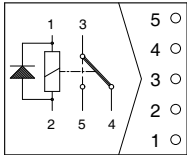
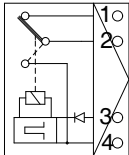
22) COOLING FAN CONTROL SWITCH (option)

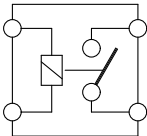
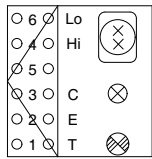
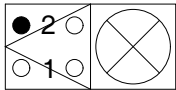
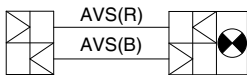
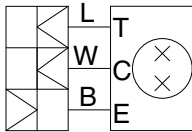
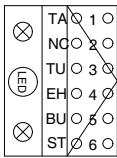


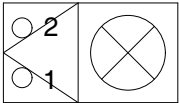
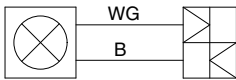
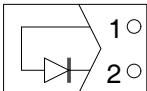
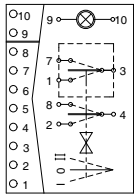
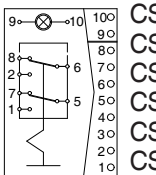
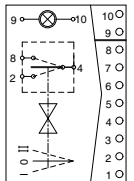
- (1) This switch use to control the cooling fan.
- (2) This switch has three positions.
 - AUTO : The fan automatically work in reverse according to set up interval and time of the cooling fan reverse mode.
※ **Refer to page 7-12-8 to set of the cluster.**
 - OFF : Only forward rotation is possible.
 - 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.**

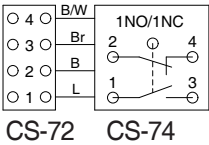
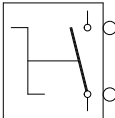
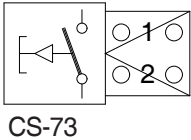
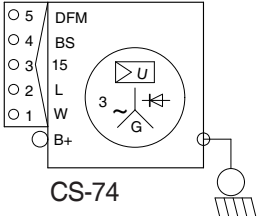
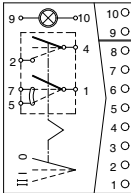
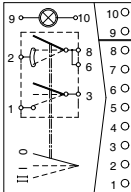
GROUP 6 ELECTRICAL COMPONENT SPECIFICATION (-#0030)

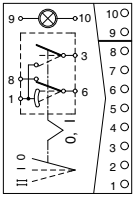
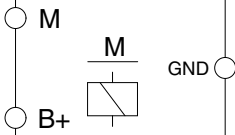
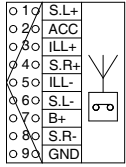
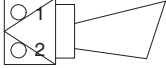
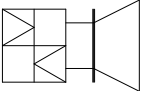
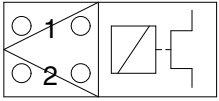
Part name	Symbol	Specifications	Check
Battery		12V × 140Ah (2EA)	※ When checking the battery charging indicator, Green : Normal condition Black : Discharge condition Transparency : change
Fusible link	 CN-60 CN-95	CN-60 : 24V 45A CN-95 : 24V 45A	※ Check disconnection Normal : 0Ω (Connect ring terminal and check resistance between terminal 1 and 2)
Start key	 CS-2	DC24V	※ 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 CD-75	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

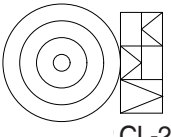
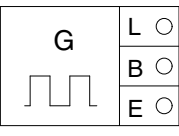
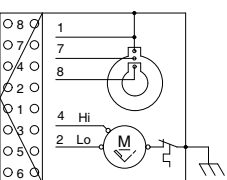
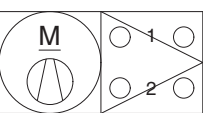
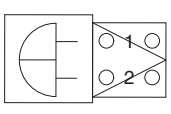
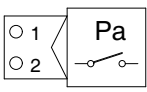
Part name	Symbol	Specifications	Check
Solenoid valve (cabin up solenoid, cabin down solenoid, parking solenoid)	 CN-71 CN-133 CN-135	24V max 1.5A	※ Check resistance About 24Ω
Water in fuel switch Brake switch Parking switch Brake fail switch	 CD-3 CD-4 CD-26 CD-35	N.O type	※ Check contact Normal : ∞Ω(open)
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-26 CR-38 CR-39 CR-50 CR-52 CR-56	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)

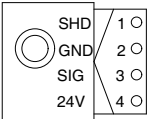
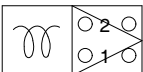
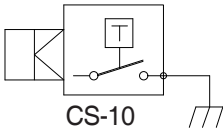
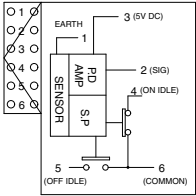
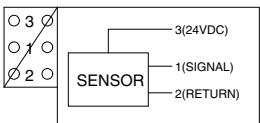
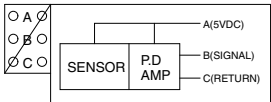
Part name	Symbol	Specifications	Check
Battery relay	 CR-1	24V 100A/1000A Rated ampere : 100A (continue) 1000A (30 second) Exciting current : 0.5A	※ Check resistance Normal : 10Ω (Between coil) : ∞Ω (Terminal ring term)
Head lamp	 CL-3 CL-4	24V, H4 75/70W	※ Check resistance Abnormal : ∞Ω (6-2, 4-2, 3-2, 1-2)
Rear work lamp	 CL-22 CL-23	24V 65W H3 bulb	※ Check disconnection Normal : A fewΩ
Beacon lamp	 CL-7	24V 15W (Strobe type)	※ Check disconnection Normal : A fewΩ Abnormal : ∞Ω
Combination lamp	 CL-24 CL-25	24V 1W (tail) 24V 21W (turn)	※ Check disconnection Normal : A fewΩ Abnormal : ∞Ω
Rear combination lamp	 CL-15 CL-16	24V 1W (tail) 24V 10W (stop) 24V 21W (backup) 24V 21W (turn)	※ Check disconnection Normal : A fewΩ Abnormal : ∞Ω

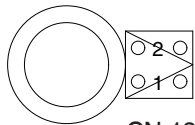
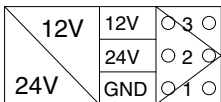
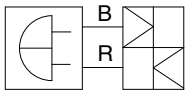
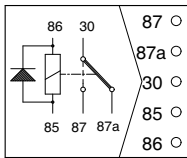
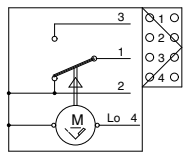
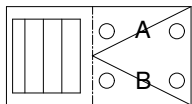
Part name	Symbol	Specifications	Check
Room lamp	 CL-1	24V 10W	※ Check resistance Normal : A few Ω Abnormal : $\infty\Omega$
License lamp	 CL-21	24V 10W (1EA)	※ Check resistance Normal : A few Ω Abnormal : $\infty\Omega$
Diode	 DO-1 DO-2 DO-3 DO-4	Diode spec : 1N5406	-
Switch (Cabin tilt)	 CS-77	24V 8A	※ Check contact I : 0 Ω (2-4, 1-3) $\infty\Omega$ (8-4, 7-3) II : 0 Ω (8-4, 7-3) $\infty\Omega$ (2-4, 1-3) 0 : $\infty\Omega$ (7-3, 1-3, 8-4, 2-4)
Switch (Locking type)	 CS-10 CS-17 CS-34 CS-41 CS-42 CS-54 CS-79 CS-82	24V 8A	※ Check contact OFF : $\infty\Omega$ (For terminal 1-5, 2-6) : 0 Ω (For terminal 5-7, 6-8) ON : $\infty\Omega$ (6-8, 5-7) 0 Ω (2-6, 1-5)
Switch (Non-locking type)	 CS-64	24V 8A	※ Check contact 0 : $\infty\Omega$ (For terminal 2-4, 1-7) I : 0 Ω (2-4) II : 0 Ω (4-8)

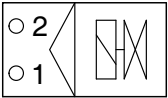
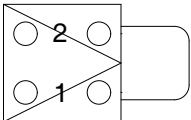
Part name	Symbol	Specifications	Check
Tilt switch	 CS-72 CS-74	24V 8A	※ Check contact S/W open : $\infty\Omega$ (For terminal NO-COM) : 0Ω (For terminal NC-COM) S/W closed : 0Ω (For terminal NO-COM) : $\infty\Omega$ (For terminal NC-COM)
Master switch		6~36V Continuous Capacity : 180Amp Push in capacity : 1000Amp	※ Check contact OFF : $\infty\Omega$
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) 0Ω (1-7, 1-5) II : 0Ω (2-4, 1-7, 1-5)
Switch	 CS-59	24V 8A	※ Check contact 0 : $\infty\Omega$ (2-8, 2-6, 1-3) I : 0Ω (2-8, 2-6) $\infty\Omega$ (1-3) II : 0Ω (2-8, 2-6, 1-3)

Part name	Symbol	Specifications	Check
Switch	 CS-3 CS-103	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
Cassette radio	 CN-27	DC27.8V 200W×2	※ Check resistance Power ON : 4 Ω + 4 Ω (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)	4 Ω 20W	※ Check resistance Normal : 50 Ω
Air conditioner compressor	 CN-30	24V 79W	※ Check contact Normal : 13.4 Ω

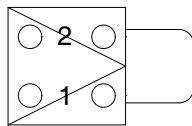
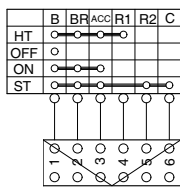
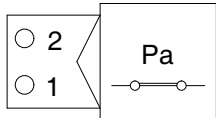
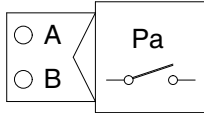
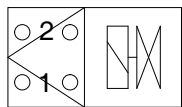
Part name	Symbol	Specifications	Check
Cigar lighter	 CL-2	24V 5A	-
Flasher	 CR-11	24V 85~190 C/M 50dB	-
Wiper motor	 CN-21	24V 1A 2-speed Auto parking	-
Motor	 CN-22 CN-103 CN-83	24V 2.5A	※ Check contact Normal : 26.4Ω (For terminal 1-2)
Warning buzzer	 CN-26	24V 200mA 90±5dB(ℓm)	-
Receiver dryer	 CN-29	N.O type	※ Check resistance Normal : ∞Ω

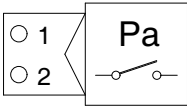
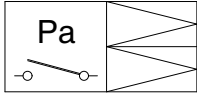
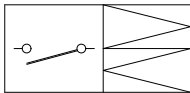
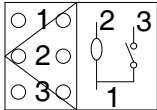
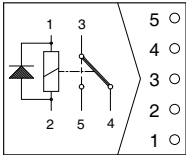
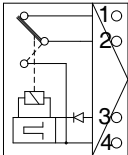
Part name	Symbol	Specifications	Check
Camera	 CN-249 CN-250	24V 2.5W Signaling : NTSC Angle of view : 145. C	-
Fuel warmer	 CN-96	24V 15A	※ Check resistance Abnormal : $\infty\Omega$
Brake temp switch	 CS-10	N.O type	※ Check resistance Normal : $\infty\Omega$
Accel pedal	 CN-124	5V, hall sensor	※ Check 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)

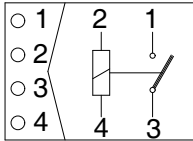
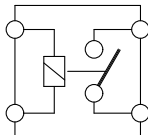
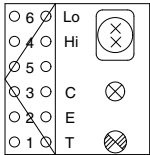
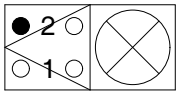
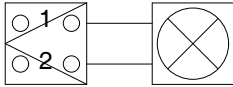
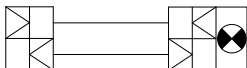
Part name	Symbol	Specifications	Check
12V-socket	 CN-139	12V 120W Rated ampere : 10A	※ Check resistance Normal : A fewΩ(1-2)
DC/DC converter	 CN-138	24V 10A Output voltage : $13 \pm 1\text{VDC}$	※ Check resistance Normal : A fewΩ(1-2, 1-3)
Tilt alarm	 CN-26	24V 0.2A 90dB±5dB	※ Check resistance Normal : A fewΩ
Relay (5 pin)	 CR-3 CR-38 CR-46 CR-55 CR-60	24V 30-87 : 20A 30-87a : 15A	※ Check resistance Normal : A fewΩ(86-85) 0Ω(30-87a) $\infty\Omega$ (30-87)
Rear wiper	 CN-102	24V 1A 1-Speed Auto parking	-
Seat heater	 CN-170	24V	-

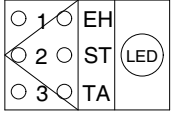
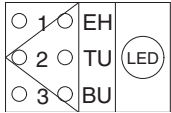
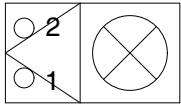
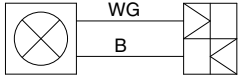
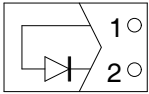
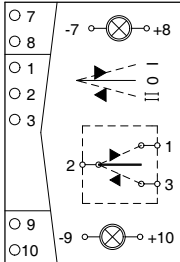
Part name	Symbol	Specifications	Check
Fan EPPR valve Side shift selector	 CN-130, CN-132, CN-154	24V 1.2A	※ Check LED lamp ※ Check resistance About 24Ω
Fusible link	 CN-60 CN-95	CN-60 : 24V 27A CN-95 : 24V 45A	※ Check disconnection Normal : 0Ω (Connect ring terminal and check resistance between terminal 1 and 2)

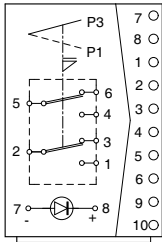
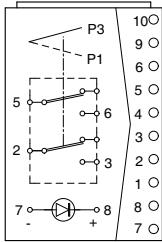
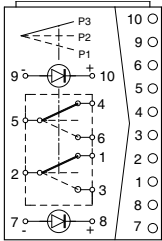
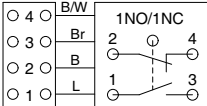
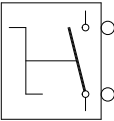
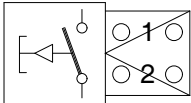
GROUP 6 ELECTRICAL COMPONENT SPECIFICATION (#0031-)

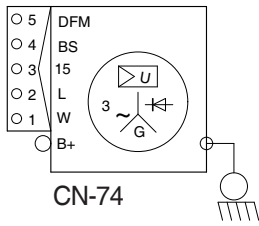
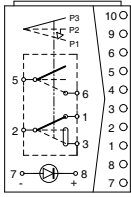
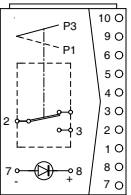
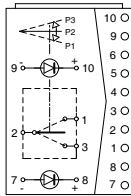
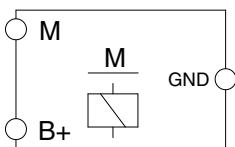
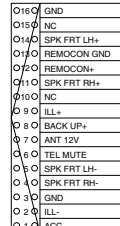
Part name	Symbol	Specifications	Check
Battery		12V × 80Ah (4EA)	※ When checking the battery charging indicator, Green : Normal condition Black : Discharge condition Transparency : Change
Fusible link	 CN-60 CN-95	CN-60 : 24V 30A CN-95 : 24V 30A	※ Check disconnection Normal : 0Ω (Connect ring terminal and check resistance between terminal 1 and 2)
Start key	 CS-2	DC24V	※ 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-75	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

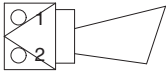
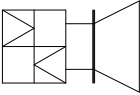
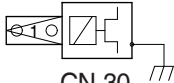
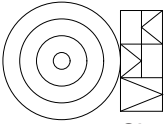
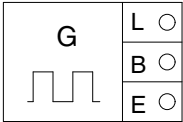
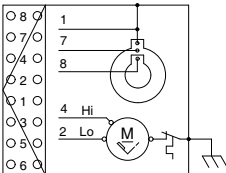
Part name	Symbol	Specifications	Check
Water in fuel switch	 CD-35	N.O type	※ Check contact Normal : $\infty\Omega$ (open)
Air cleaner pressure switch	 'CD-10	Pressure : 635mmH ₂ O (N.O type)	※ Check contact Normal : $\infty\Omega$
Switch (side shift selector switch, hyd jack/winch selector)	 CS-13	N.O 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 (5 pin)	 CR-4 CR-5 CR-26 CR-38 CR-39 CR-50 CR-52 CR-56 CR-54	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 $\pm$ 1 sec	※ Check resistance Normal : 0 Ω (For terminal 1-2) : $\infty\Omega$ (For terminal 2-4)

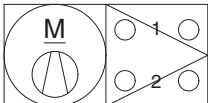
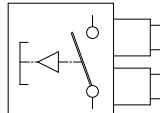
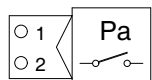
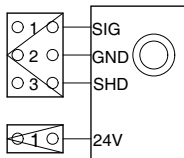
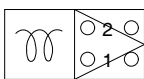
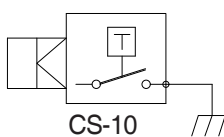
Part name	Symbol	Specifications	Check
Start relay	 CR-23	24V 300A Exciting current : 2.3 A	※ Check resistance Normal : 10Ω (Between coil) : ∞Ω (Between ring tern)
Battery relay	 CR-1	24V 100A/1000A Rated ampere : 100A (continue) 1000A (30 second) Exciting current : 0.5A	※ Check resistance Normal : 10Ω (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 fewΩ
Mast work lamp	 CL-5 CL-6 CL-51 CL-61	24V 65W H3	-
Beacon lamp	 CL-7	24V 15W (Strobe type)	※ Check disconnection Normal : A fewΩ Abnormal : ∞Ω

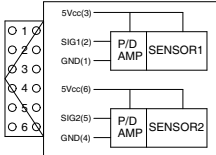
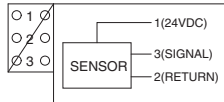
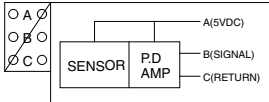
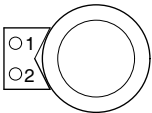
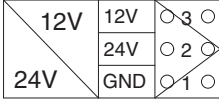
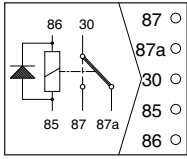
Part name	Symbol	Specifications	Check
Rear combination lamp	 CL-15A CL-16A	24V 1W (tail) 24V 10W (stop)	※ Check disconnection Normal : A fewΩ Abnormal : ∞Ω
Rear combination lamp	 CL-15B CL-16B	24V 21W (backup) 24V 21W (turn)	※ Check disconnection Normal : A fewΩ Abnormal : ∞Ω
Room lamp	 CL-1 CL-51	24V 10W	※ Check resistance Normal : A fewΩ Abnormal : ∞Ω
License lamp	 CL-21	24V 10W (1EA)	※ Check resistance Normal : A fewΩ Abnormal : ∞Ω
Diode	 DO-1 DO-2 DO-3 DO-4 DO-5	Diode spec : 1N5406	-
Switch (cabin tilt)		24V 8A	※ Check contact I : 0Ω(For terminal 2-1) ∞Ω(For terminal 2-3) II : 0Ω(For terminal 2-3) ∞Ω(For terminal 2-1) 0 : ∞Ω(For terminal 2-1, 2-3)

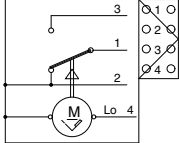
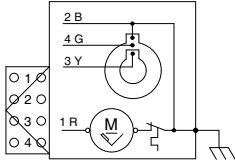
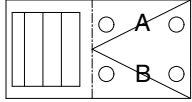
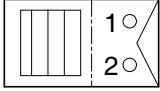
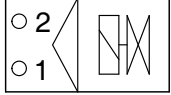
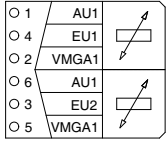
Part name	Symbol	Specifications	Check
Switch	 CS-17	24V 8A	※ Check contact P3 : $\infty\Omega$ (FFor terminal 5-4, 2-1) : 0Ω (FFor terminal 5-6, 2-3) P1 : $\infty\Omega$ (5-4, 2-1) 0Ω (5-6, 2-3)
Switch	 CS-41 CS-42 CS-82	24V 8A	※ Check contact P3 : $\infty\Omega$ (FFor terminal 5-6, 2-3) P1 : 0Ω (5-6, 2-3)
Reverse fan switch	 CS-105	24V 8A	※ Check contact P3 : $\infty\Omega$ (For terminal 5-6, 2-3) : 0Ω (For terminal 5-4, 2-1) P1 : $\infty\Omega$ (For terminal 5-4, 2-1) : 0Ω (For terminal 5-6, 2-3)
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 : $\infty\Omega$
Seat switch	 CS-73	24V 8A	※ Check contact OFF : $\infty\Omega$

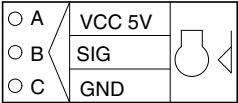
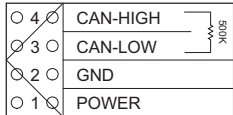
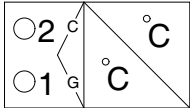
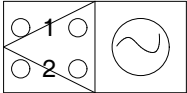
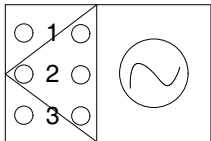
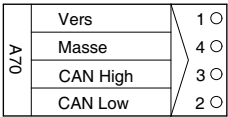
Part name	Symbol	Specifications	Check
Alternator	 CN-74	24V 70A	※ Check voltage Normal : 24~28V
Switch	 CS-3 CS-21 CS-39 CS-59 CS-103	24V 8A	※ Check contact P3 : $\infty\Omega$ (For terminal 5-6, 2-3) P2 : $\infty\Omega$ (For terminal 5-6) 0Ω (For terminal 2-3) P1 : 0Ω (For terminal 5-6, 2-3)
Switch	 CS-10 CS-23 CS-77 CS-79 CS-99	24V 8A	※ Check contact P3 : $\infty\Omega$ (For terminal 2-3) P1 : 0Ω (For terminal 2-3)
Switch	 CS-64	24V 8A	※ Check contact P2 : $\infty\Omega$ (For terminal 2-1, 2-3) P1 : $\infty\Omega$ (For terminal 2-1) 0Ω (2-3) P3 : $\infty\Omega$ (2-3) 0Ω (2-1)
Start motor	 CN-45	DENSO 24V 7.5kW	※ Operating or not
Radio & USB player	 CN-27	DC27.8V 200W×2	※ Check resistance Power ON : $4\Omega + 4\Omega$ (For terminal 1-6, 4-8)

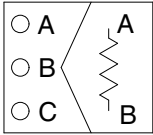
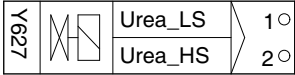
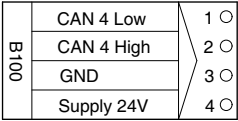
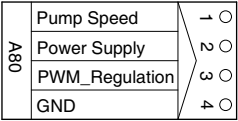
Part name	Symbol	Specifications	Check
Horn	 CN-25 CN-65	20~28V 100~115dB (A) (at 25V 2m) Max. 1.5A (at 24V)	※ Check operation Supply power (24V) to each terminal and connect ground.
Speaker	 CN-23 (LH) CN-24 (RH)	4Ω 20W	※ Check resistance Normal : 50Ω
Air conditioner compressor	 CN-30	24V 79W	※ Check contact Normal : 13.4Ω
Cigar lighter	 CL-2	24V 5A	-
Flasher unit	 CR-11	24V 85~190 C/M 50dB	-
Front wiper motor	 CN-21	24V 1A 2-speed Auto parking	-

Part name	Symbol	Specifications	Check
Motor	 CN-22 CN-103 CN-83 CN-202	24V 2.5A	※ Check contact Normal : 26.4Ω (For terminal 1-2)
Center horn switch	 CS-5	24V	-
Receiver dryer	 CN-29	N.O type	※ Check resistance Normal : ∞Ω
Camera	 CN-249 CN-250	24V 2.5W Signaling : NTSC Angle of view : 145°	-
Fuel warmer	 CN-96	24V 15A	※ Check resistance Abnormal : ∞Ω
Brake temp switch	 CS-10	N.O type	※ Check resistance Normal : ∞Ω

Part name	Symbol	Specifications	Check
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 fewΩ(1-2)
DC/DC converter	 CN-138	24V 10A Output voltage : 13±1VDC	※ Check resistance Normal : A fewΩ(1-2, 1-3)
Relay (5 pin)	 CR-3 CR-38 CR-46 CR-55 CR-60	24V 30-87 : 20A 30-87a : 15A	※ Check resistance Normal : A fewΩ(86-85) 0Ω(30-87a) ∞Ω(30-87)

Part name	Symbol	Specifications	Check
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	-
Line heater (pressure, return, suction)	 CN-381 CN-382 CN-383	-	-
Solenoid (side shift selector, hyd jack/winch selector)	 CN-130 CN-131 CN-132	24V 1.2A	※ Check LED lamp ※ Check resistance About 24Ω
Inching sensor	 CD-71	-	-

Part name	Symbol	Specifications	Check
Coolant level sensor	 CD-96	4.75~5.25V 12.5mA	-
G-sensor (mast)	 CD-6	24V, 5W	-
Ambient temperature sensor	 CD-87	-	-
Transmission speed pick up sensor (internal, turbine, engine)	 CD-27 CD-74 CD-72	-	-
Transmission speed sensor (output)	 CD-73	-	-
Sensor (NOx1, NOx2)	 CD-80 CD-81	-	-

Part name	Symbol	Specifications	Check
Resistor	 CN-99	120Ω	※ Check resistance Normal : 120Ω(A-B)
RMS antenna	 CN-251	3.0~5.0V 20mA	-
Sensor (SCR in, SCR out, T/doser)	 CD-82 CD-83 CD-84	-	-
Heat valve	 CN-160	-	-
Quality sensor (tank level)	 CD-88	-	-
Supply unit	 CN-161	-	-

GROUP 7 CONNECTORS (-#0030)

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-4	DEUTSCH	2	Work lamp	-	DT04-2P
CN-5	DEUTSCH	2	Beacon lamp	-	DT04-2P
CN-6	TYCO	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)	MG613245	MG640352
CN-9	DEUTSCH	2	I/conn (Frame harness-Master W/Lamp harness)	DT04-2S	DT04-2P
CN-10	DEUTSCH	6	I/conn (Frame harness-Fender harness)	DT06-6S	DT04-6P
CN-11	DEUTSCH	6	I/conn (Frame harness-Fender harness)	DT06-6S	DT04-6P
CN-12	AMP	3	To rear camera harness	174357-2	174359-2
CN-13	AMP	8	To condenser fan harness-Cabin harness	174982-2	MG640333
CN-14	KET	1	MCM power	-	MG640280
CN-15	KET	1	Aircon harness	MG640944-5	MG650943-5
CN-16	DEUTSCH	2	Mast work lamp harness	DT06-2S	DT04-2P
CN-19	KET	2	Inching potentiometer	MG610320	MG640322
CN-20	KET	4	Power pack harness	MG610331	MG640383
CN-21	DEUTSCH	8	Front wiper	DT06-8S	-
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	2	Tilt alarm	ST730018-3	ST750036-3
CN-27	KUM	16	Radio & USB player	PK145-16017	-
CN-28	AMP	8	T/M display	929504-3	-
CN-29	KET	2	R/Dryer	MG640795	-
CN-30	AMP	1	Aircon compressor	925324-2	-
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	21HN-55010	-
CN-37	DAEDONG	10	Fuse box	250-10PRG	-
CN-38	QPL	1	Fuse box	21HN-55010	-
CN-45	Ring term	1	Start motor	S820-31200	S820-20500
CN-50	AMP	68	Transmission control unit	963598-1	-

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-51	AMP	6	TCU service tool	480704	926682-3
CN-52	KET	4	Handsfree controller	MG610331	MG640333
CN-55	KET	14	OPSS unit	MG610350	
CN-56	AMP	20	Cluster	174047-2	-
CN-57	AMP	20	Cluster	175967-2	-
CN-58		20	Monitor		
CN-59	AMP	36	MCU	344111-1	-
CN-60	KET	2	Fusible link	-	MG640337
CN-65	DEUTSCH	2	Back-up buzzer	DT06-2S	-
CN-71	DEUTSCH	2	Parking solenoid	DT06-2S	-
CN-74	PACKARD	5	Alternator	18920000000	-
CN-83	KUM	2	Condenser fan	PB625-02027	-
CN-90	TYCO	10	Frame harness	174655-2	174657-2
CN-91	DEUTSCH	3	Fender-RH	DT06-4S	-
CN-92	DEUTSCH	4	ECU connector (J3)	DT06-4S-EP06	-
CN-93	DEUTSCH	50	ECU connector (J2)	DRC26-50S01	-
CN-95	OPL/KET	2	Fusible link	21N4-01310/MG600558	-
CN-96	AMP	4	Fuel warmer	2-967325-3	-
CN-98	DEUTSCH	3	I/conn	DT06-3S-EP06	-
CN-99	DEUTSCH	3	Resistor	DT06-3S-EP06	-
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	Accel pedal	174262-2	-
CN-125	DEUTSCH	12	RMCU	DT06-12S	-
CN-130	DEUTSCH	2	Hyd jack/Winch selector solenoid	DT06-2S	-
CN-131	DEUTSCH	2	Attach cut off	DT06-2S	-
CN-132	DEUTSCH	2	Side shift selector	DT06-2S	-
CN-133	AMP	2	Cabin down solenoid	-	174354-2
CN-134	MOLEX	16	Engine service tool	-	51115-1601
CN-135	DEUTSCH	9	Cluster/Monitor service tool	-	HD10-9-96P
CN-136	DEUTSCH	-	MCU/FDCU 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-151	AMP	21	MCM	1-1355222-1	-
CN-152	AMP	21	ACM	1-1355222-1	-
CN-153	AMP	120	ACM	1418421-1	-
CN-154	DEUTSCH	2	Fan motor EPPR valve	DT06-2S	-

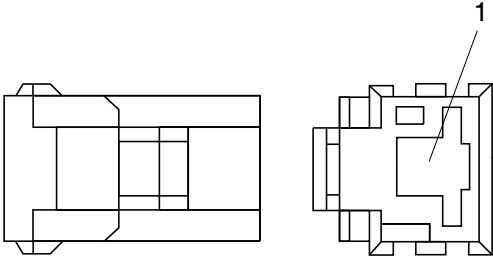
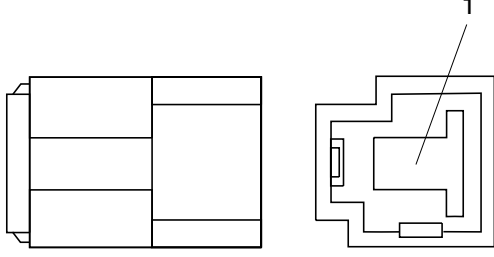
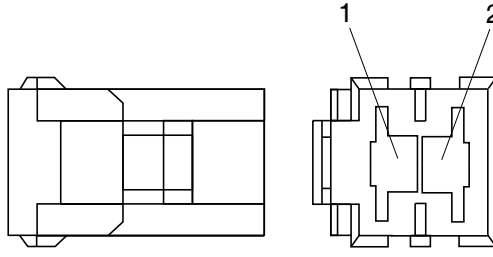
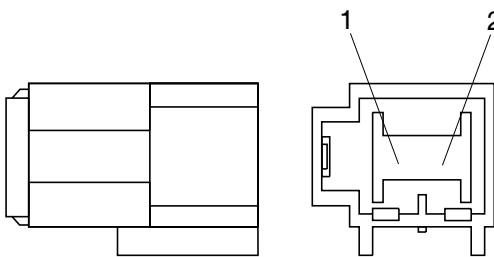
Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-160	-	2	Heat valve	805-120-501	-
CN-161	TYCO	4	Supply unit	2-1418390-1	-
CN-161	AMP	18	CPU 4 (X1)	7-968974-1	-
CN-162	AMP	18	CPU 4 (X2)	8-968974-1	-
CN-162	AMP	8	Dosing unit	1-1418479-1	-
CN-163	AMP	21	CPC 4 (X3)	8-968975-1	-
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	Suction line heater	-	2-1703483-2 2-1670730-2
CN-382	TYCO	2	Return line heater	-	1-1703483-2 1-1670730-2
CN-383	TYCO	2	Pressure line heater	-	3-1703483-2 3-1670730-2
Switch					
CS-2	KET	6	Start key	MG610335	-
CS-3	DAEDONG	10	Rear wiper washer switch	250-10PRG	-
CS-5	KET	2	C/Horn switch	MG610320	MG640322
CS-6	KET	2	Center horn	-	MG640322
CS-10	DAEDONG	10	Fuel warmer switch	250-10PRG	-
CS-11	KET	8	Combination switch	MG610339	-
CS-12	KET	6	Combination switch	MG610335	-
CS-13	PACKARD	4	Gear selector	12015797	-
CS-14	PACKARD	4	Gear selector	-	12010974
CS-17	DAEDONG	10	Parking switch	250-10PRG	-
CS-21	DAEDONG	10	Work lamp switch	250-10PRG	-
CS-23	DAEDONG	10	Beacon switch		-
CS-34	DAEDONG	10	Diagnostic switch	250-10PRG	-
CS-39	DAEDONG	10	Main switch	250-10PRG	-
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	DT06-4S	DT04-4P
CS-74	DEUTSCH	4	Cabin tilt switch	-	DT04-4P
CS-77	DAEDONG	10	Tilt operation	250-10PRG	-
CS-79	DAEDONG	10	Induce override switch	250-10PRG	-

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CS-82	DAEDONG	10	Seat heat switch	250-10PRG	-
CS-91	KET	1	Side shift selector switch	ST730018-3	ST750036-3
CS-92	KET	1	Hyd. Jack/winch selector switch	ST730018-3	ST750036-3
CS-99	DAEDONG	10	Air comp switch	250-10PRG	-
CS-103	DAEDONG	10	Top wiper switch	250-10PRG	-
Lamp					
CL-1	KET	2	Room lamp	-	MG610392
CL-2	KET	1	Cigar light	-	ST750036-3
CL-3	DEUTSCH	6	Head lamp LH	DT06-6S	-
CL-4	DEUTSCH	6	Head lamp RH		
CL-5	DEUTSCH	2	Mast lamp-LH	DT04-2S	DT04-2P
CL-6	DEUTSCH	2	Mast lamp-RH	DT04-2S	DT04-2P
CL-7	-	6	Beacon lamp	S822-014000	S822-114000
CL-15	KUM	6	Rear combi LH	PB625-06027	-
CL-16	KUM	6	Rear combi RH	PB625-06027	-
CL-21	KET	1	License lamp	ST730018-3	ST750036-3
CL-22	DEUTSCH	2	Rear work-RH	DT04-2S	DT04-2P
CL-23	DEUTSCH	2	Rear work-LH	DT04-2S	DT04-2P
CL-24	-	1	Flasher lamp LH	S822-014000	S822-114000
CL-30	KET	2	Room lamp	MG610392	-
Relay					
CR-1		4	Battery relay		
CR-3	OMRON	5	Front w/lamp relay	24L1-05100	-
CR-4	AMP	5	Wiper HI relay	-	MG610047
CR-5	AMP	5	Netural relay	VCFM-1002	-
CR-6	KET	4	Internal wiper relay	MG610047	-
CR-11	TYCO	5	Flasher unit	21LM-01600	-
CR-12	AMP	5	Fan motor relay	VCFM-1002	-
CR-23	KET	1	Starter relay	S820-410000	
CR-26	AMP	-	Wiper low speed relay	VCFM-1002	-
CR-38	AMP	-	Washer pump relay	VCFM-1002	-
CR-39	AMP	5	Backup relay	VCFM-1002	-
CR-42	AMP	5	Preheat relay	VCFM-1002	-
CR-45	HELLA	5	ECM relay	24L1-05100	-
CR-46	OMRON	5	Fuel warmer relay	24L1-05100	-
CR-50	AMP	5	Travel cut relay	VCFM-1002	-
CR-52	AMP	5	Attach cut relay	VCFM-1002	-
CR-60	OMRON	5	MCM time delay relay	24L1-05100	-
CR-54	AMP	5	Brake switch relay	VCFM-1002	-

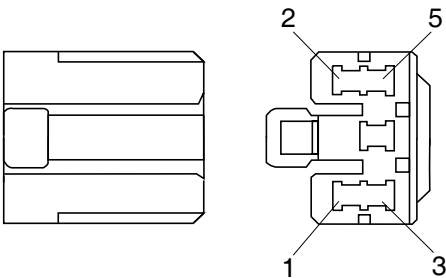
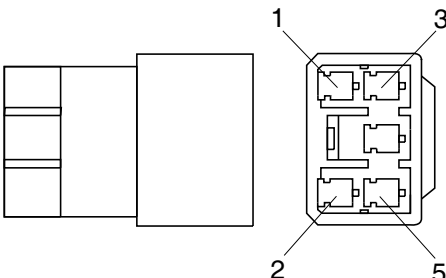
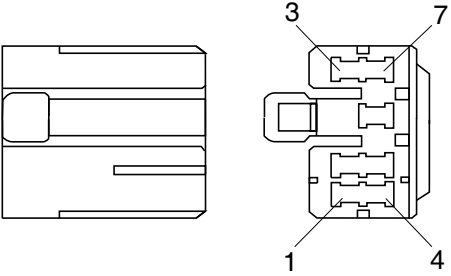
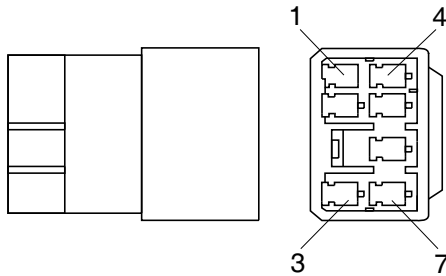
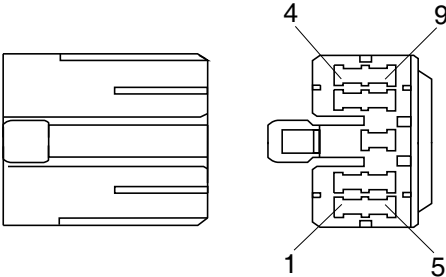
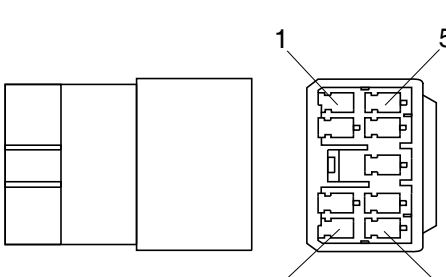
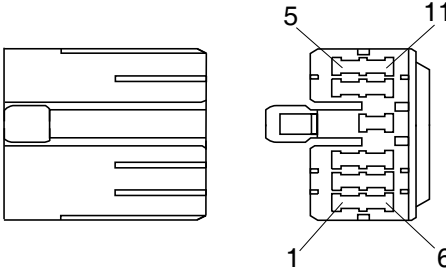
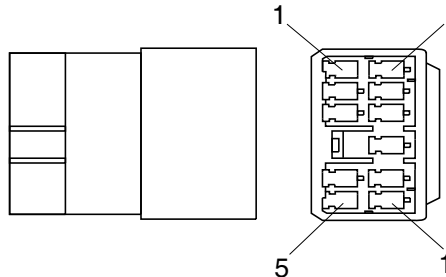
Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CR-55	OMRON	5	Rear work lamp relay	24L1-05100	-
CR-56	AMP	5	Auto park relay	VCFM-1002	-
Sensor and pressure switch					
CD-2	KET	3	Fuel sender	MG610045	-
CD-3	DEUTSCH	2	Brake fail switch	-	DT04-2P
CD-4	AMP	1	Brake switch	171809-2	-
CD-8	AMP	2	Temp sender	827551-3	-
CD-10	Ring term	1	Air cleaner switch	ST730057-2	-
CD-12	DEUTSCH	3	Angle sensor	DT06-3S	-
CD-16		3	Coolant level sensor		
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 potentiometer	1-967616-1	-
CD-72	AMP	2	Internal speed pick-up	963040-3	-
CD-73	AMP	3	Output speed sensor	282080	-
CD-74	AMP	2	Engine speed pick-up	963040-3	-
CD-75	AMP	2	Filter switch	282080-1	-
CD-80	TYCO	4	Nox 1 sensor	2-1418390-1	-
CD-81	TYCO	4	Nox 2 sensor	1-1418390-1	-
CD-82	AMP	3	SCR out sensor	1-1418448-1	-
CD-83	AMP	3	SCR in sensor	2-1418448-1	-
CD-84	AMP	3	Doser sensor	3-1418448-1	-
CD-86	PACKARD	3	Coolant level sensor	12110293	-
CD-87	-	2	Ambient temp sensor	Ambient sensor	-
CD-88	AMP	4	Quality sensor	776524-1	-

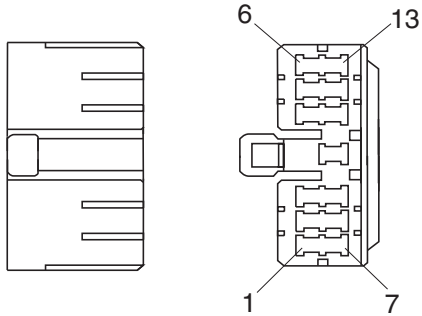
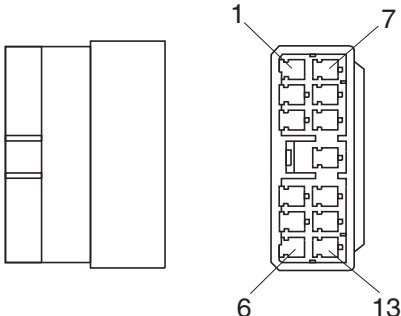
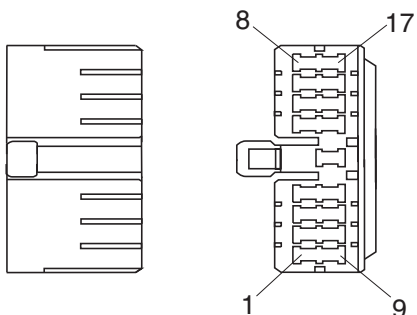
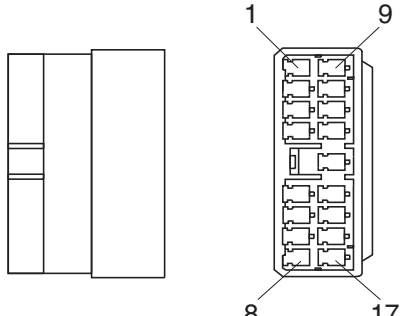
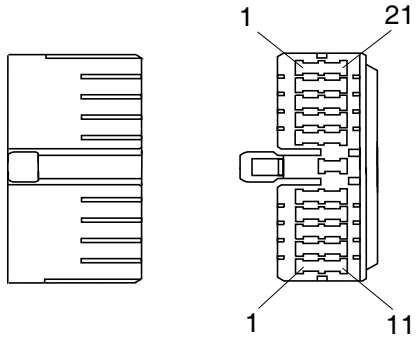
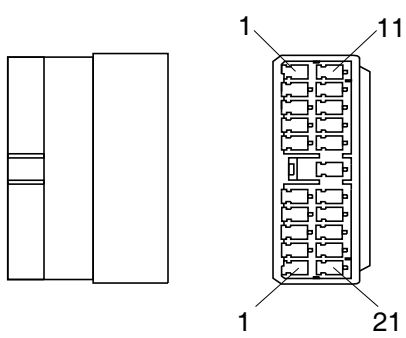
2. CONNECTION TABLE FOR CONNECTORS

1) 58-L TYPE CONNECTOR

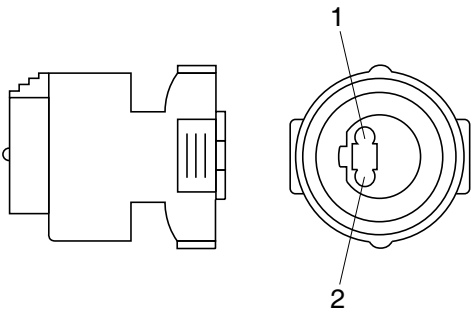
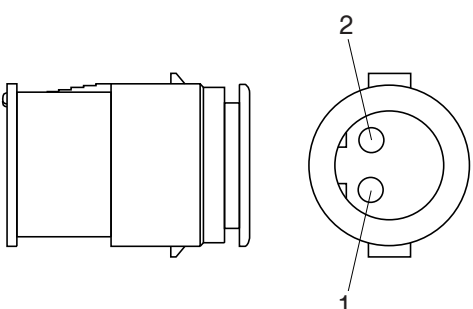
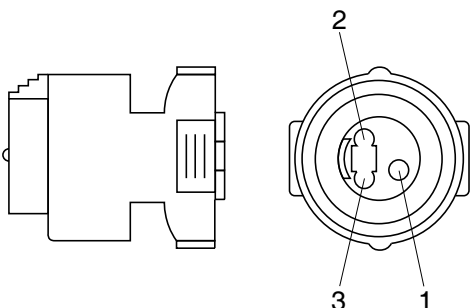
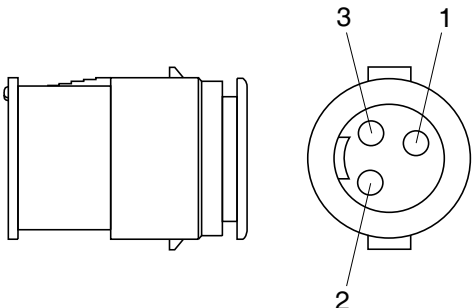
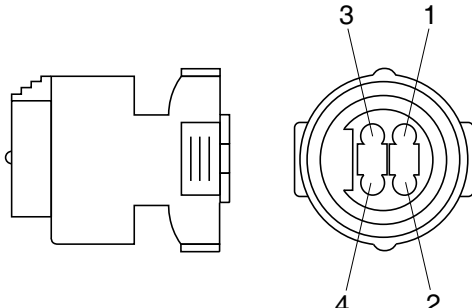
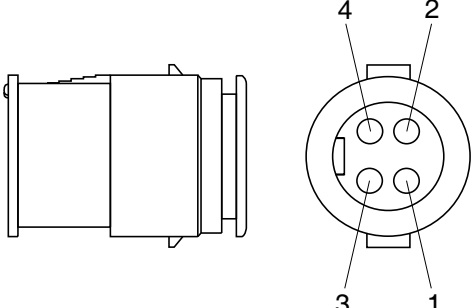
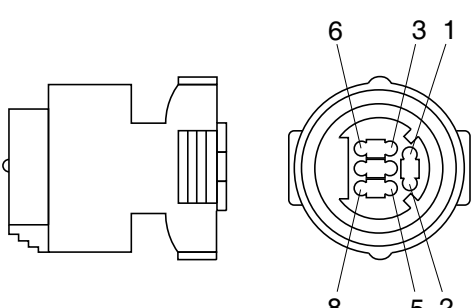
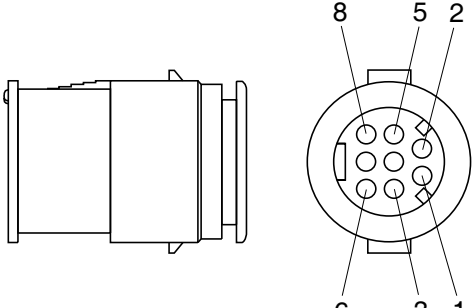
No. of pin	Receptacle connector (Female)	Plug connector (Male)
1	 S813-030100	 S813-130100
2	 S813-030200	 S813-130200

2) PA TYPE CONNECTOR

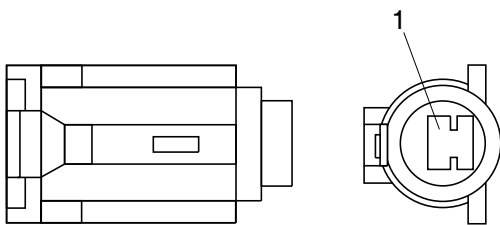
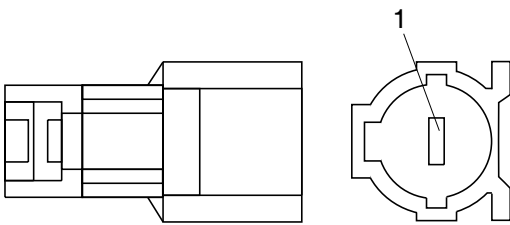
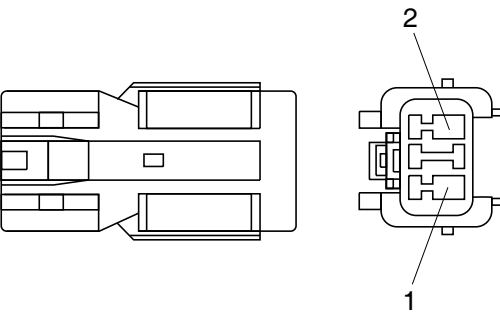
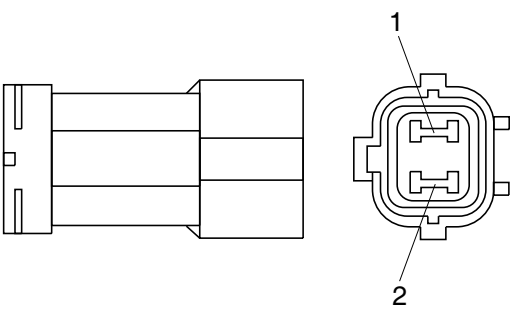
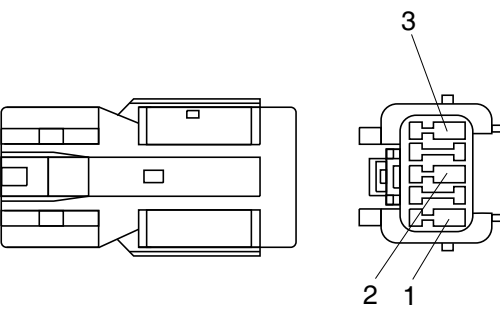
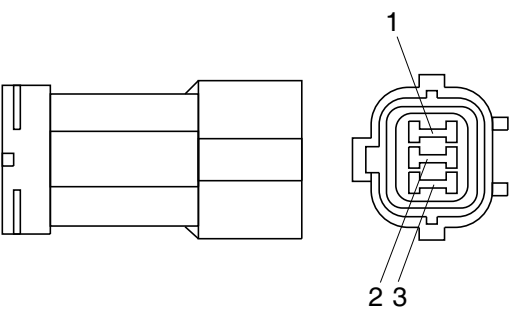
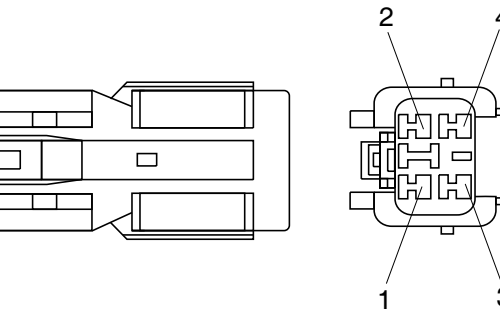
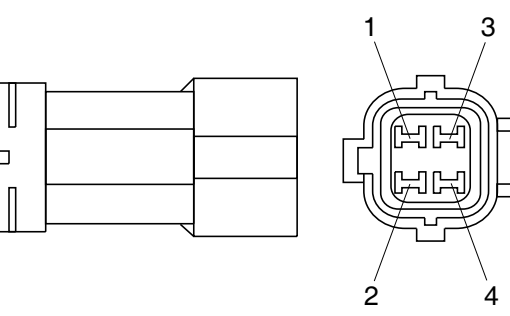
No. of pin	Receptacle connector (Female)	Plug connector (Male)
5	 S811-005002	 S811-105002
7	 S811-007002	 S811-107002
9	 S811-009002	 S811-109002
11	 S811-011002	 S811-111002

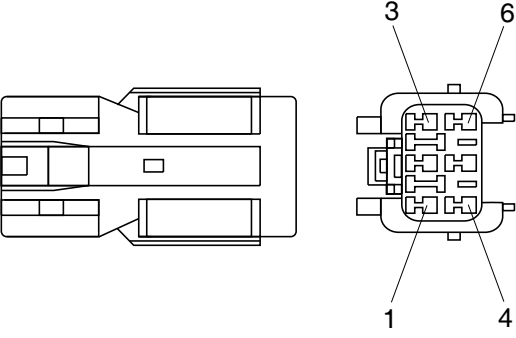
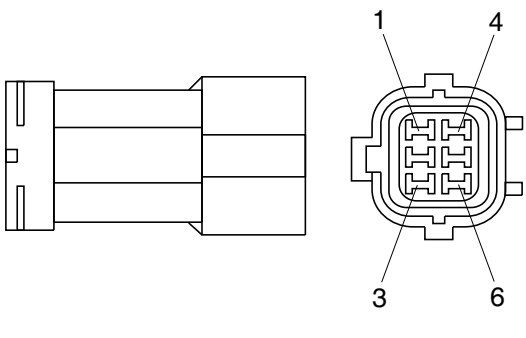
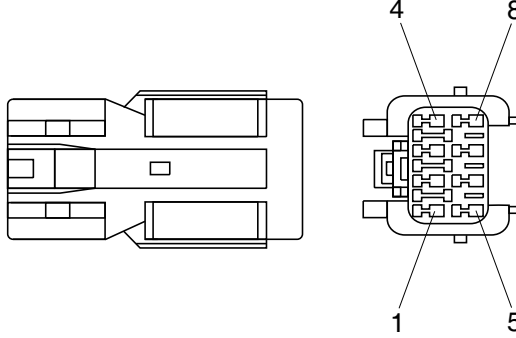
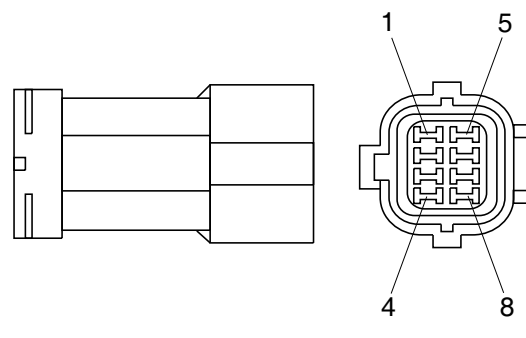
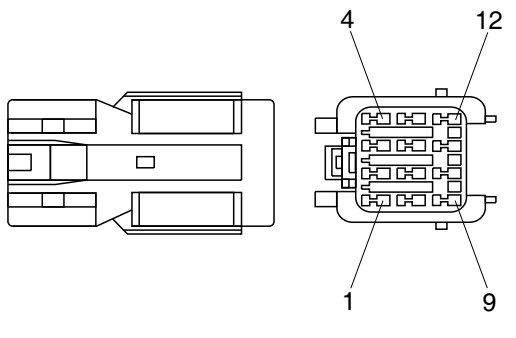
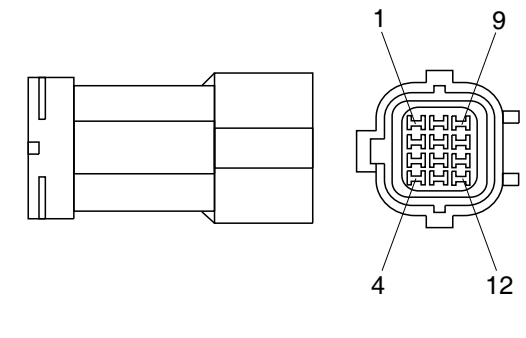
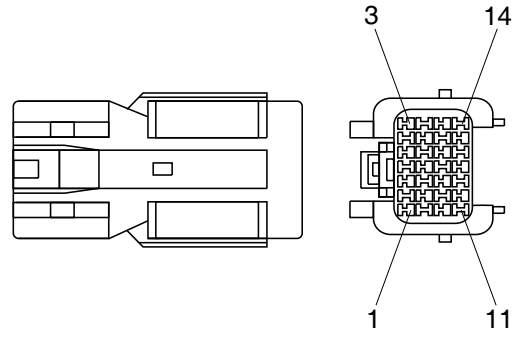
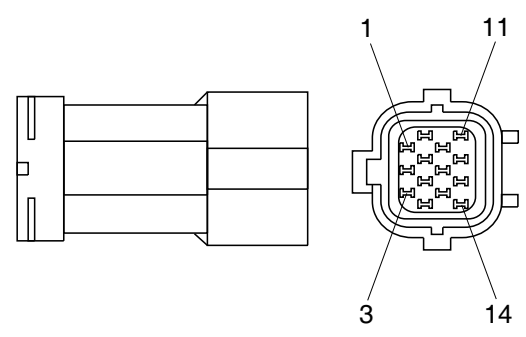
No. of pin	Receptacle connector (Female)	Plug connector (Male)
13	 S811-013002	 S811-113002
17	 S811-017002	 S811-117002
21	 S811-021002	 S811-121002

3) J TYPE CONNECTOR

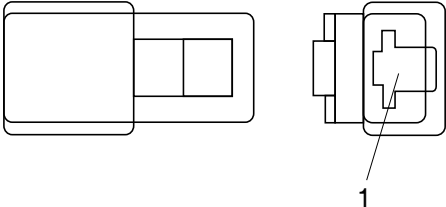
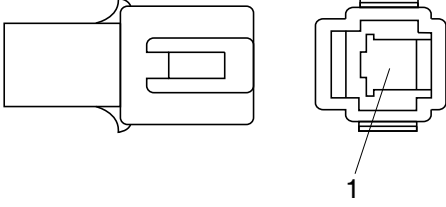
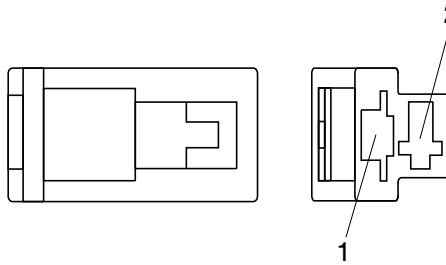
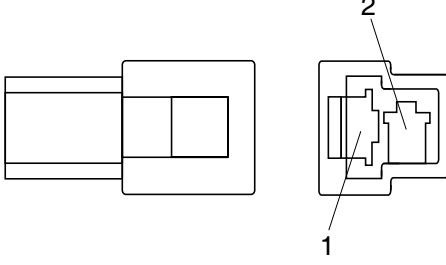
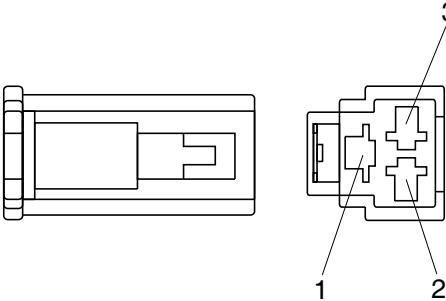
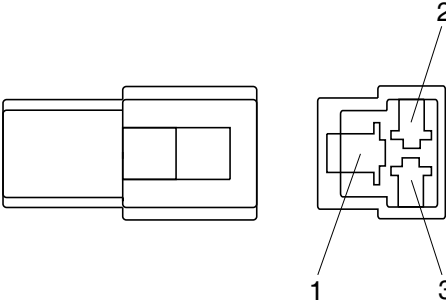
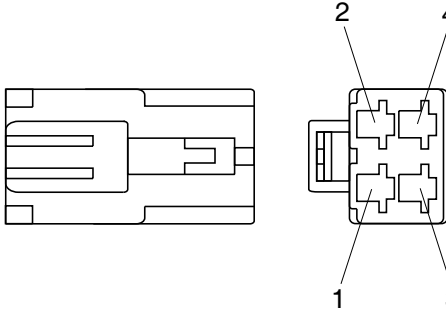
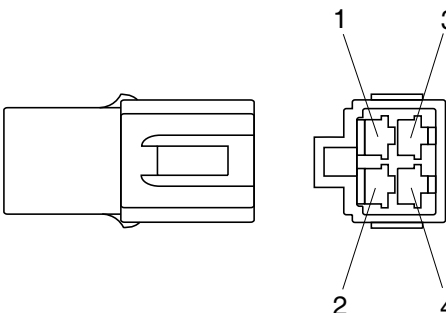
No. of pin	Receptacle connector (Female)	Plug connector (Male)
2	 S816-002001	 S816-102001
3	 S816-003001	 S816-103001
4	 S816-004001	 S816-104001
8	 S816-008001	 S816-108001

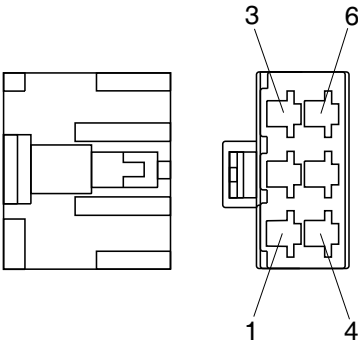
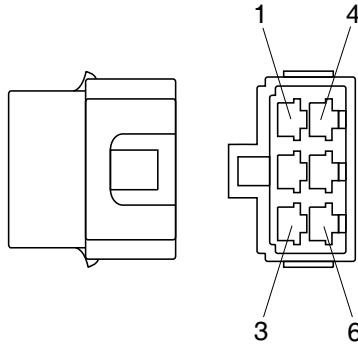
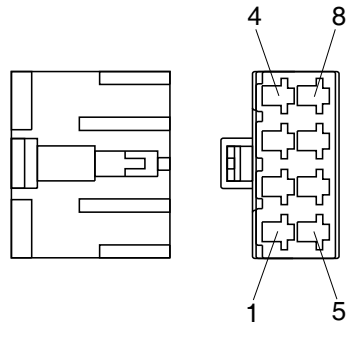
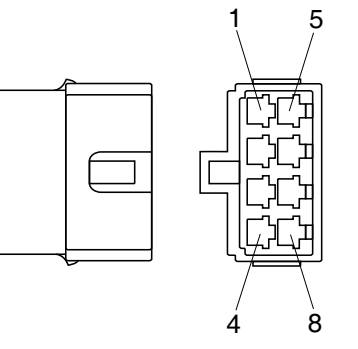
4) SWP TYPE CONNECTOR

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

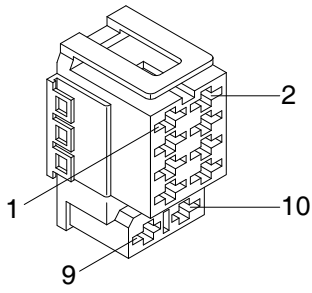
No. of pin	Receptacle connector (Female)	Plug connector (Male)
6	 S814-006000	 S814-106000
8	 S814-008000	 S814-108000
12	 S814-012000	 S814-112000
14	 S814-014000	 S814-114000

5) CN TYPE CONNECTOR

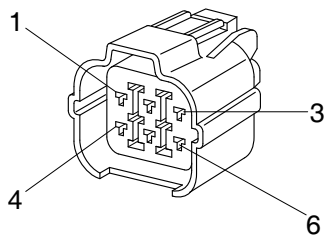
No. of pin	Receptacle connector (Female)	Plug connector (Male)
1	 S810-001202	 S810-101202
2	 S810-002202	 S810-102202
3	 S810-003202	 S810-103202
4	 S810-004202	 S810-104202

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

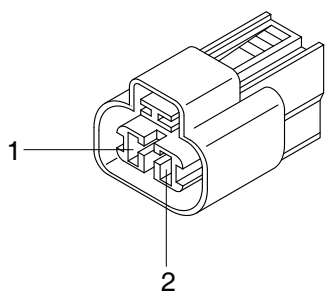
6) ITT SWF CONNECTOR

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	

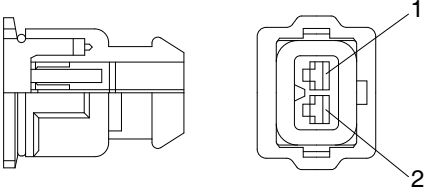
8) MWP02F-B CONNECTOR

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

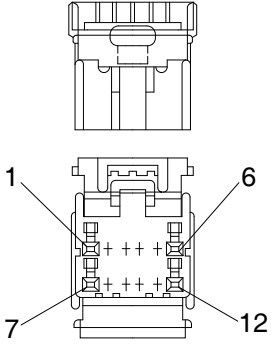
9) AMP ECONOSEAL CONNECTOR

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

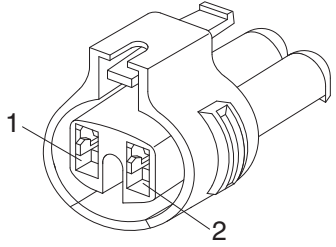
10) AMP TIMER CONNECTOR

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

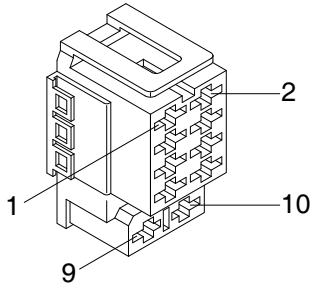
11) AMP 040 MULTILOCK CONNECTOR

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

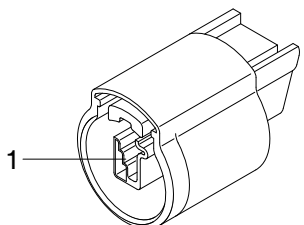
12) KET 090 WP CONNECTORS

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

13) ITT SWF CONNECTOR

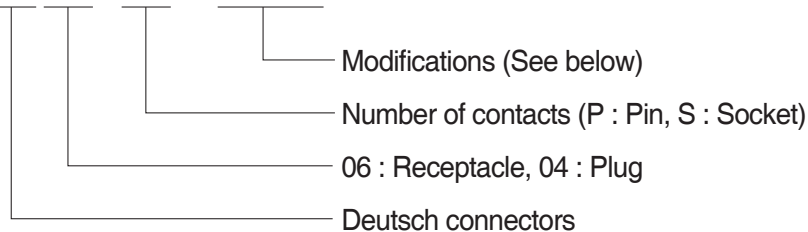
No. of pin	Receptacle connector (Female)	Plug connector (Male)
10	 SWF593757	

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

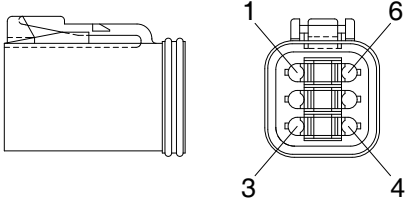
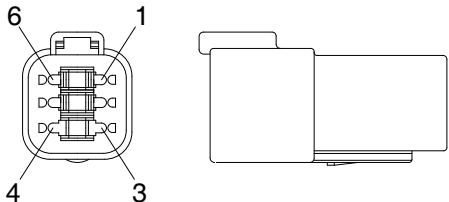
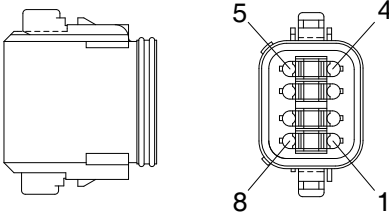
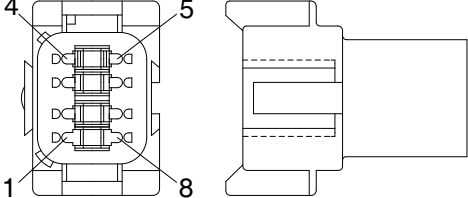
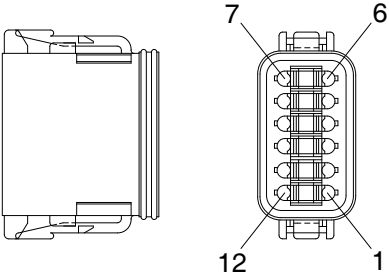
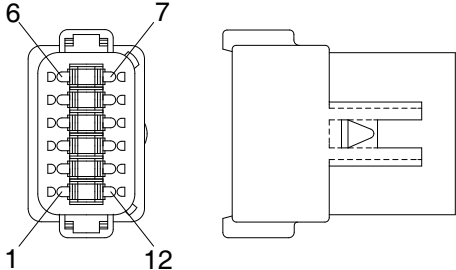
E005 : Combination - E004 & E003

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 (#0031-)

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 (Main harness-Engine harness)	936421	936429
CN-4	KET	2	I/conn (Engine harness-Main harness)	MG642928	MG652934
CN-5	DEUTSCH	2	Beacon lamp	-	DT04-2P
CN-6	AMP	15	I/conn (Frame 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 (Monitor harness-Main harness)	MG610350	MG640352
CN-9	DEUTSCH	2	I/conn (Frame harness-Master W/Lamp harness)	DT04-2S	DT04-2P
CN-10	DEUTSCH	6	I/conn (Frame harness-Fender harness)	DT06-6S	DT04-6P
CN-11	DEUTSCH	6	I/conn (Frame harness-Fender harness)	DT06-6S	DT04-6P
CN-12	AMP	3	To rear camera harness	174357-2	174359-2
CN-13	AMP	8	I/conn (Main harness-Cabin harness)	174982-2	MG640333
CN-14	KET	1	MCM power	-	MG640280
CN-15	KET	1	Aircon harness	MG640944-5	MG650943-5
CN-16	DEUTSCH	2	Mast work lamp harness	DT06-2S	DT04-2P
CN-19	KET	2	Inching check	MG610320	MG640322
CN-20	KET	4	Power pack harness	MG610331	MG640383
CN-21	DEUTSCH	8	Front wiper	DT06-8S	-
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	2	Tilt alarm	ST730018-3	ST750036-3
CN-27	KUM	16	Radio & USB player	PK145-16017	-
CN-29	KET	2	R/Dryer	MG640795	-
CN-30	AMP	1	Aircon compressor	925324-2	-
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	S820-20500
CN-46	KET	1	Air compressor	MG940944-5	MG650943-5

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
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		20	Monitor		
CN-59M	AMP	34	MCU	4-1437290-0	-
CN-59N	AMP	34	MCU	4-1437290-1	
CN-60	QPL/KET	2	Fusible link	-	21N4-01310/MG620558
CN-65	DEUTSCH	2	Back-up buzzer	DT06-2S	-
CN-71	DEUTSCH	2	Parking solenoid	DT06-2S	-
CN-71	DEUTSCH	4	Seat switch	DT06-4S	DT04-4P
CN-74	-	5	Alternator	18920000000	-
CN-83	KUM	2	Condenser fan	PB625-02027	-
CN-90	AMP	16	Engine harness	386047-1	-
CN-91	DEUTSCH	3	Fender-RH	DT06-4S	-
CN-92	DEUTSCH	4	ECU connector (J3)	DT06-4S-EP06	-
CN-93	DEUTSCH	50	ECU connector (J2)	DRC26-50S01	-
CN-95	QPL/KET	2	Fusible link	-	21N4-01310/MG620558
CN-96	TYCO	4	Fuel warmer	2-967325-3	-
CN-98	DEUTSCH	3	I/conn	DT06-3S-EP06	-
CN-99	DEUTSCH	3	Resistor	DT06-3S	-
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	174262-2	-
CN-125	DEUTSCH	12	RMCU	DT06-12S	DT04-12P
CN-130	DEUTSCH	2	Hyd jack/Winch selector solenoid	DT06-2S	-
CN-131	DEUTSCH	2	Attach cut off	DT06-2S	-
CN-132	DEUTSCH	2	Side shift selector	DT06-2S	-
CN-133	AMP	2	Cabin down solenoid	-	174354-2
CN-134	MOLEX	16	CPC4	51115-1601	-
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-140	DEUTSCH	2	Work lamp	DT06-2S	DT04-2P

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CN-144	KET	20	Handsfree controller	MG610240	-
CN-150	DEUTSCH	2	Beacon lamp	DT06-2S	DT04-2P
CN-151	AMP	21	MCM	1-1355222-1	-
CN-152	AMP	21	ACM	1-1355222-1	-
CN-153	AMP	120	ACM	1418421-1	-
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	-	2	Heat valve	805-120-501	-
CN-160	DEUTSCH	1	Air compressor	DT06-2S	-
CN-161	TYCO	4	Supply unit	2-1418390-1	-
CN-161	AMP	18	CPC 4 (X1)	7-968974-1	-
CN-162	AMP	18	CPC 4 (X2)	8-968974-1	-
CN-162	AMP	8	Dosing unit	1-1418479-1	-
CN-163	AMP	21	CPC 4 (X3)	8-968975-1	-
CN-169	KET	4	Program dump	DT06-4S-EP06	DT04-4P-E005
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	1	Rear camera	174877-2	-
CN-249	AMP	3	Rear camera	174357-2	-
CN-381	TYCO	2	Suction line heater 1	-	2-1703483-2 2-1670730-2
CN-382	TYCO	2	Return line heater 2	-	1-1703483-2 1-1670730-2
CN-383	TYCO	2	Pressure line heater 3	-	3-1703483-2 3-1670730-2
Switch					
CS-2	KET	6	Start switch	MG610335	-
CS-3	CARLING	10	Rear wiper washer switch	21HN-56300	-
CS-5A	KET	2	Center horn switch	MG610320	-
CS-5B	-	-	Center horn switch	S820-105000	-
CS-5	KET	2	Center horn switch	-	MG640322
CS-10	CARLING	10	Fuel warmer switch	21HN-56300	-
CS-11	KET	8	Multifunction switch	MG610339	-
CS-12	KET	6	Multifunction switch	MG610335	-
CS-13	PACKARD	4	Gear selector switch	12015797	-
CS-14	PACKARD	4	Gear selectorswitch	-	12010974

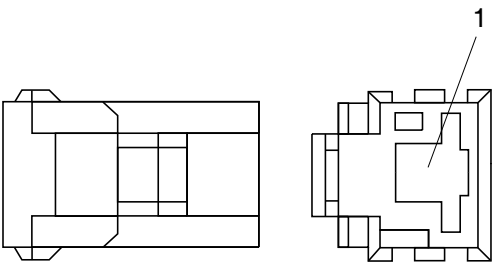
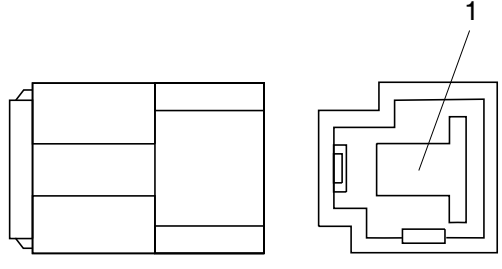
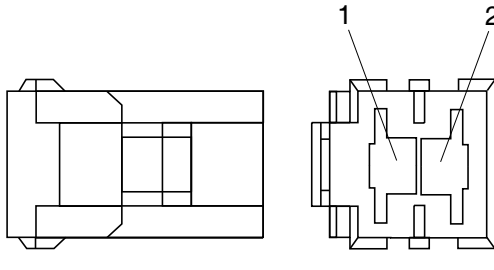
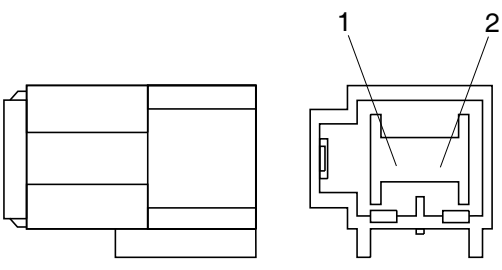
Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CS-15	KET	1	Multi function switch	ST730018-3	-
CS-17	CARLING	10	Parking switch	21HN-56300	-
CS-21	CARLING	10	Work lamp switch	21HN-56300	-
CS-23	CARLING	10	Beacon switch	21HN-56300	-
CS-34	DAEDONG	10	Diagnostic switch	250-10PRG	-
CS-39	CARLING	10	Main 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	DT06-4S	DT04-4P
CS-74	DEUTSCH	4	Cabin tilt switch	-	DT04-4P
CS-77	CARLING	10	Air compressor switch	21HN-56300	-
CS-79	CARLING	10	Induce override switch	21HN-56300	-
CS-82	CARLING	10	Seat heat switch	21HN-56300	-
CS-91	KET	1	Side shift selector switch	ST730018-3	ST750036-3
CS-92	KET	1	Hyd. Jack selector switch	ST730018-3	ST750036-3
CS-99	DAEDONG	10	Air comp switch	250-10PRG	-
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	ST750036-3
CL-2	AMP	1	Cigar lighter	172128-1	-
CL-3	DEUTSCH	6	Head lamp-LH	DT06-6S	-
CL-4	DEUTSCH	6	Head lamp-RH		
CL-5	DEUTSCH	2	Mast lamp-LH	DT04-2S	DT04-2P
CL-6	DEUTSCH	2	Mast lamp-RH	DT04-2S	DT04-2P
CL-7	-	6	Beacon lamp	S822-014000	S822-114000
CL-15A	AMP	3	Rear combi lamp (Illum / stop)-LH	282087-1	-
CL-15B	AMP	3	Rear combi lamp (Turn / backup)-LH	282087-2	-
CL-16A	AMP	3	Rear combi lamp (Illum / stop)-RH	282087-1	-
CL-16B	AMP	3	Rear combi lamp (Turn / backup)-RH	282087-2	-
CL-21	KET	1	License lamp	ST730018-3	ST750036-3
CL-22	DEUTSCH	2	Rear work lamp-RH	DT04-2S	DT04-2P
CL-23	DEUTSCH	2	Rear work lamp-LH	DT04-2S	DT04-2P
CL-24	-	1	Flasher lamp	S822-014000	S822-114000
CL-30	KET	2	Room lamp	MG610392	-

Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
Relay					
CR-1	KET	-	Battery relay	S820-308000	-
CR-3	HELLA	5	Front w/lamp relay	8JA003526-001	-
CR-4	AMP	5	Wiper HI relay	-	MG610047
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	-	Starter relay	S820-410000	-
CR-26	AMP	-	Wiper low speed relay	VCFM-1002	-
CR-38	AMP	-	Washer pump relay	VCFM-1002	-
CR-39	AMP	5	Backup relay	VCFM-1002	-
CR-42	AMP	5	Preheat relay	VCFM-1002	-
CR-45	HELLA	5	ECM relay	24L1-05100	-
CR-46	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-54	AMP	5	Brake switch relay	VCFM-1002	-
CR-55	HELLA	5	Rear work lamp relay	8JA003526-001	-
CR-56	AMP	5	Auto park relay	VCFM-1002	-
CR-60	HELLA	5	MCM time delay relay	8JA003526-001	-
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	-
CD-16		3	Coolant level sensor		
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	-

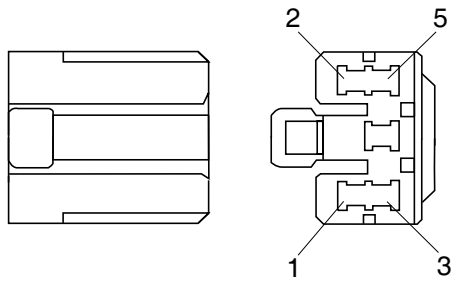
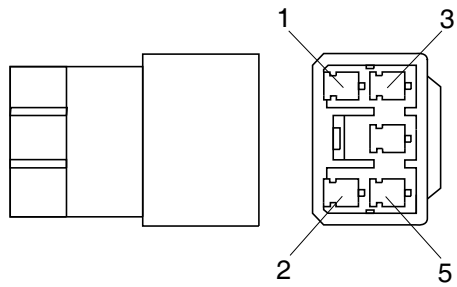
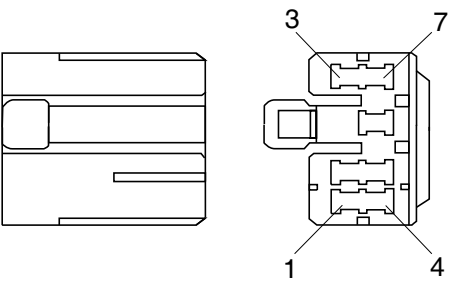
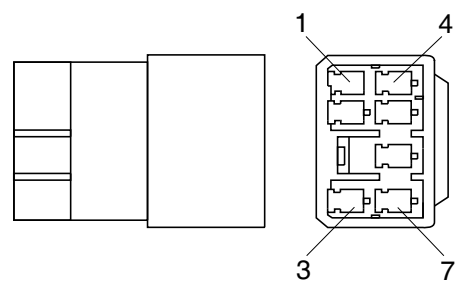
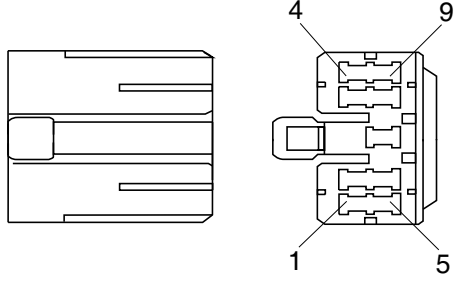
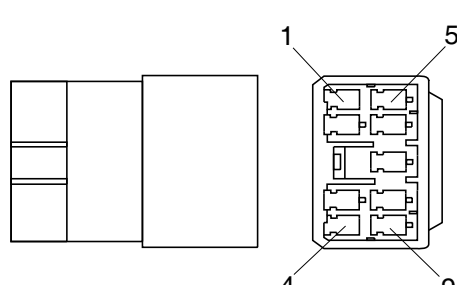
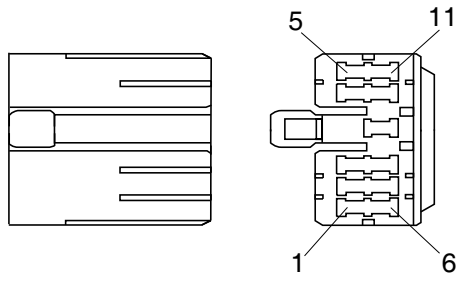
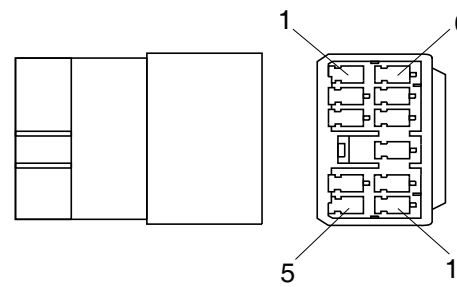
Connector number	Type	No. of pin	Destination	Connector part No.	
				Female	Male
CD-74	AMP	2	Engine speed pick-up	963040-3	-
CD-75	TYCO	2	Filter switch	282080-1	-
CD-80	TYCO	4	NOx 1 sensor	2-1418390-1	-
CD-81	TYCO	4	NOx 2 sensor	1-1418390-1	-
CD-82	AMP	3	SCR out sensor	1-1418448-1	-
CD-83	AMP	3	SCR in sensor	2-1418448-1	-
CD-84	AMP	3	T-doser sensor	3-1418448-1	-
CD-87	-	2	Ambient temp sensor	Ambient sensor	-
CD-88	AMP	4	Quality sensor	776524-1	-
CD-96	PACKARD	3	Coolant level sensor	12110293	-
Diode					
DO-1	TYCO	2	Diode	174352-2	21EA-50550
DO-2	TYCO	2	Diode	174352-2	21EA-50550
DO-3	TYCO	2	Diode	174352-2	21EA-50550
DO-4	TYCO	2	Diode	174352-2	21EA-50550
DO-5	TYCO	2	Diode	174352-2	21EA-50550

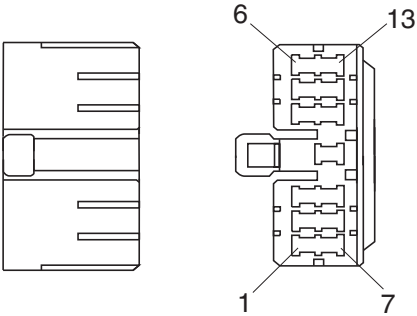
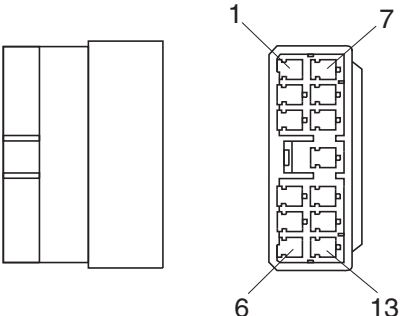
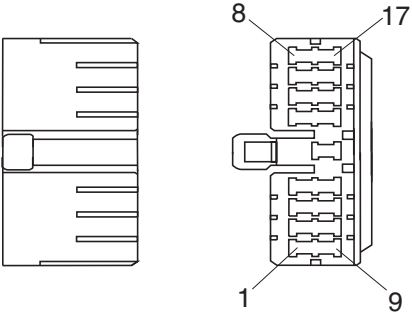
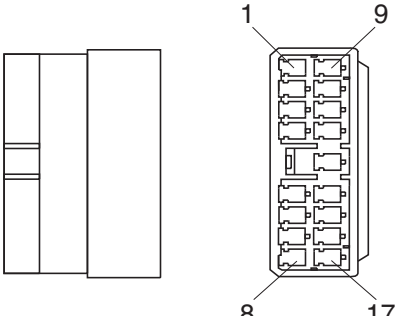
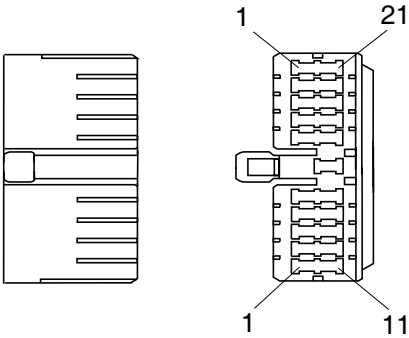
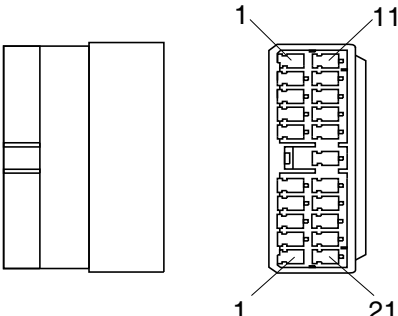
2. CONNECTION TABLE FOR CONNECTORS

1) 58-L TYPE CONNECTOR

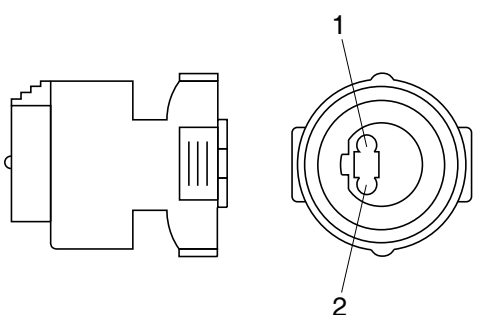
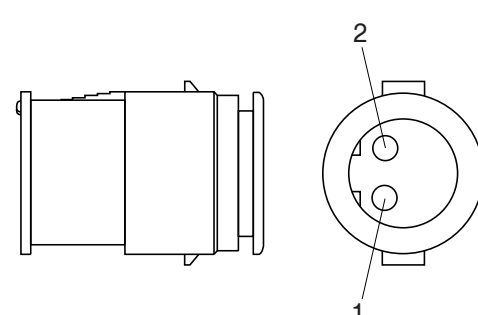
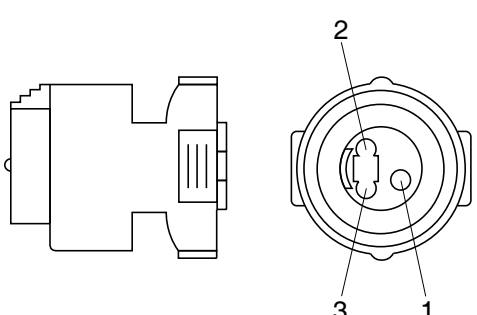
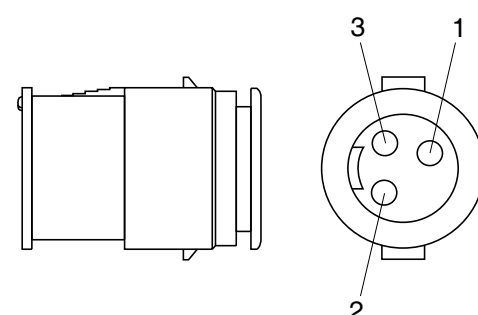
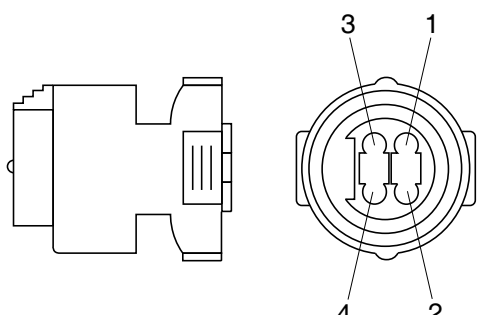
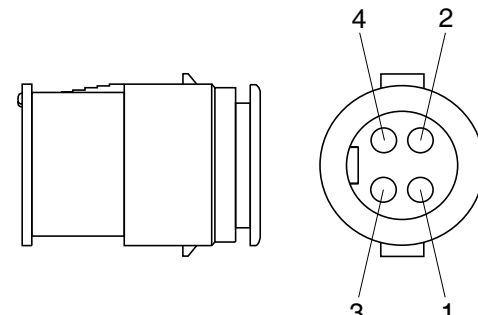
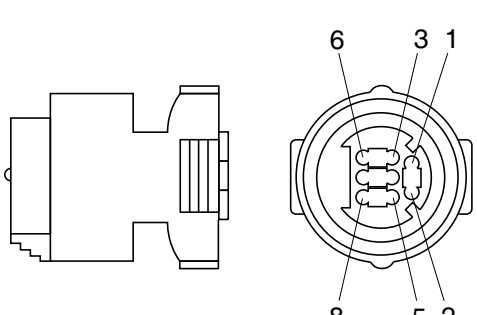
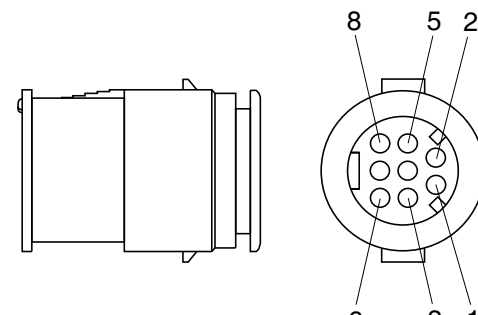
No. of pin	Receptacle connector (Female)	Plug connector (Male)
1	 S813-030100	 S813-130100
2	 S813-030200	 S813-130200

2) PA TYPE CONNECTOR

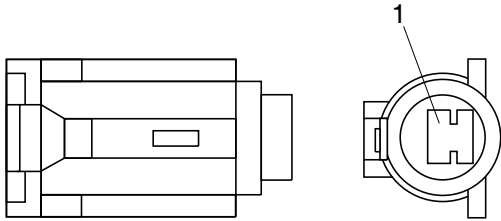
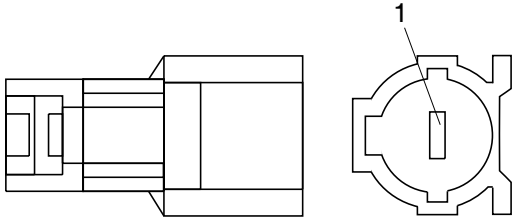
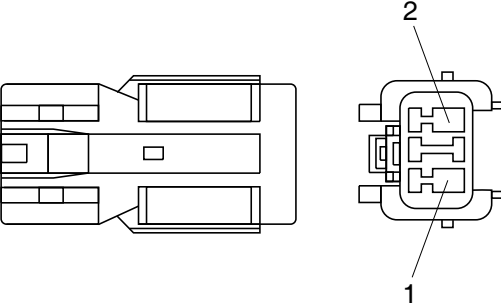
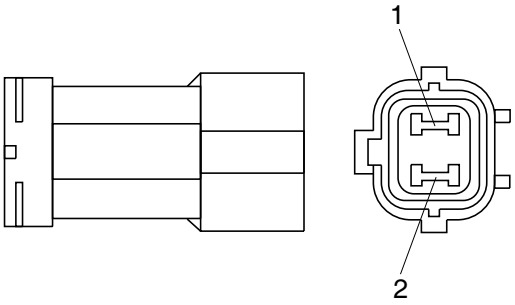
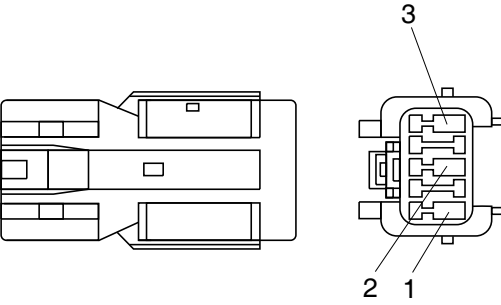
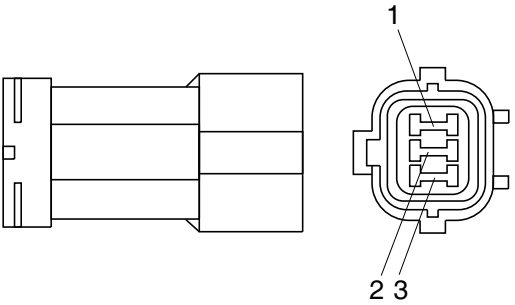
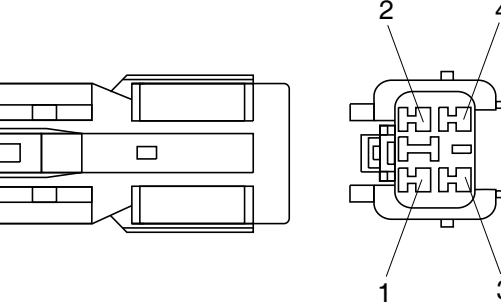
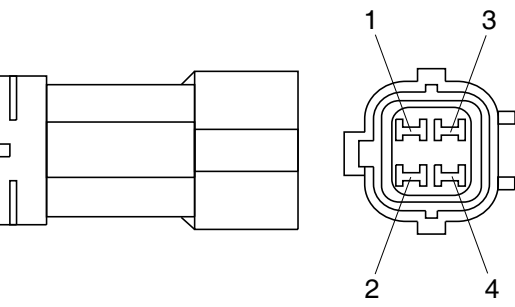
No. of pin	Receptacle connector (Female)	Plug connector (Male)
5	 S811-005002	 S811-105002
7	 S811-007002	 S811-107002
9	 S811-009002	 S811-109002
11	 S811-011002	 S811-111002

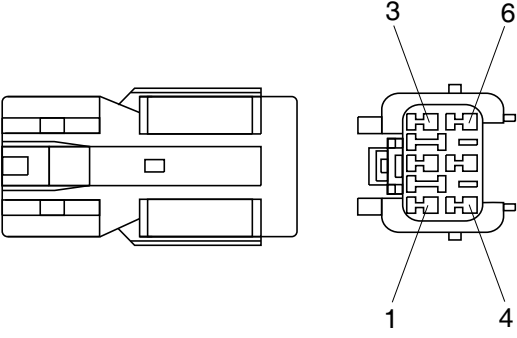
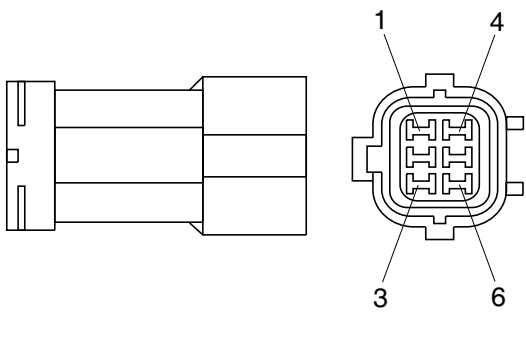
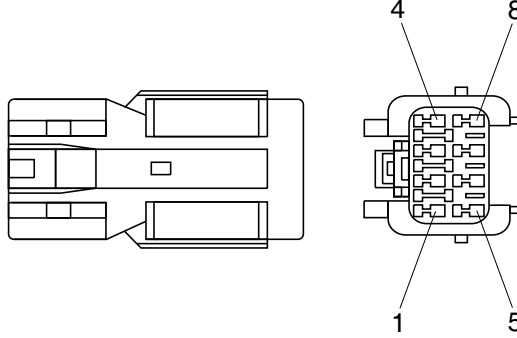
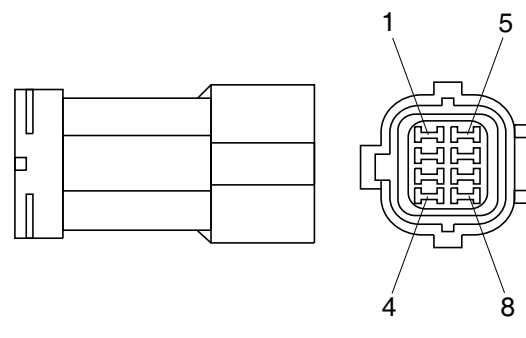
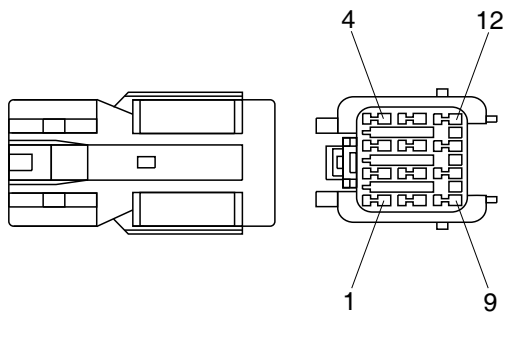
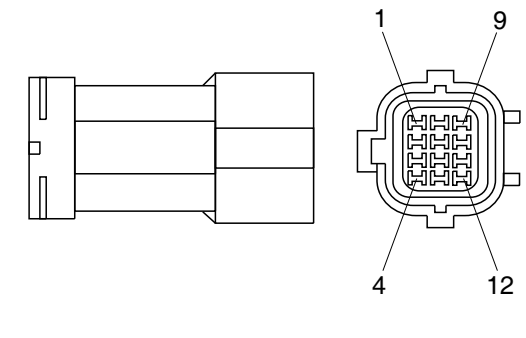
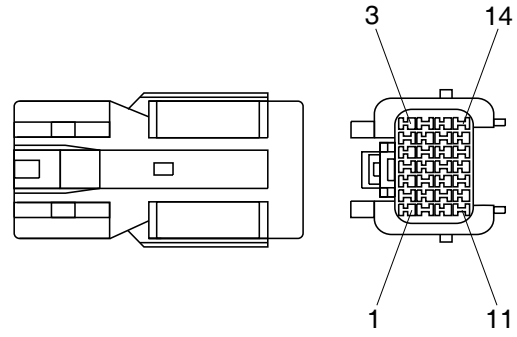
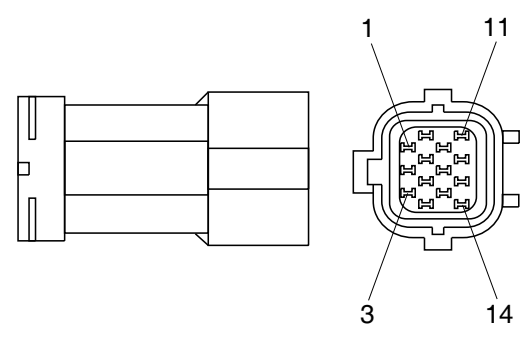
No. of pin	Receptacle connector (Female)	Plug connector (Male)
13	 S811-013002	 S811-113002
17	 S811-017002	 S811-117002
21	 S811-021002	 S811-121002

3) J TYPE CONNECTOR

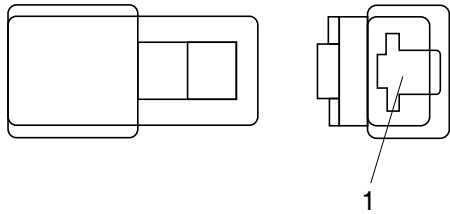
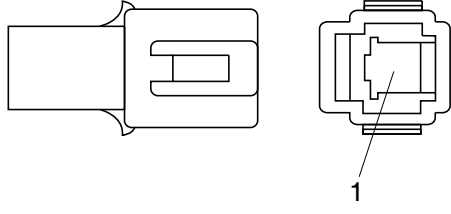
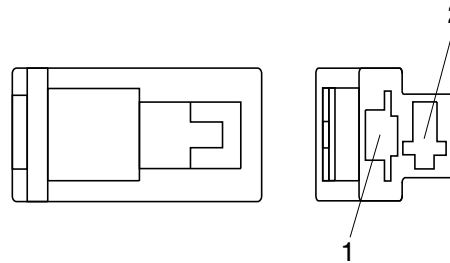
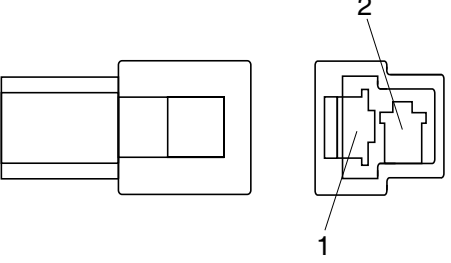
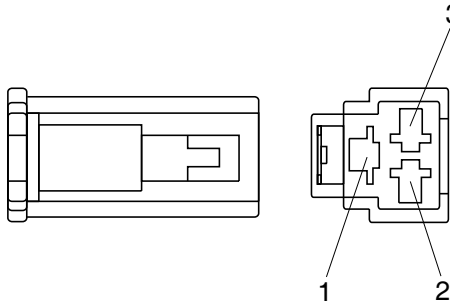
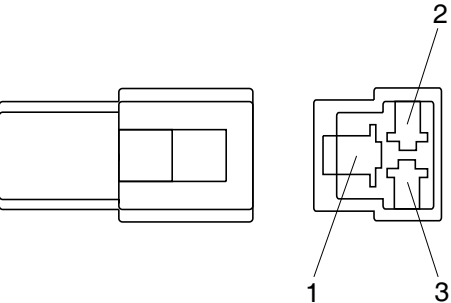
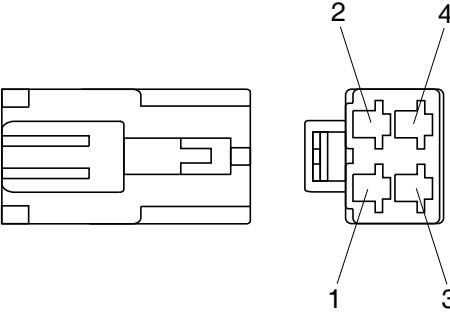
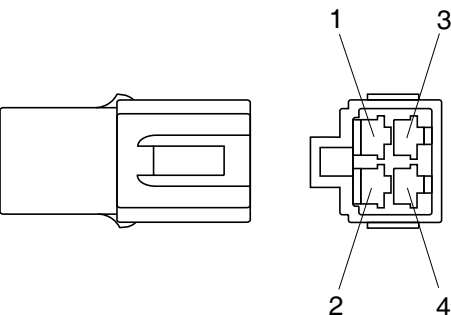
No. of pin	Receptacle connector (Female)	Plug connector (Male)
2	 S816-002001	 S816-102001
3	 S816-003001	 S816-103001
4	 S816-004001	 S816-104001
8	 S816-008001	 S816-108001

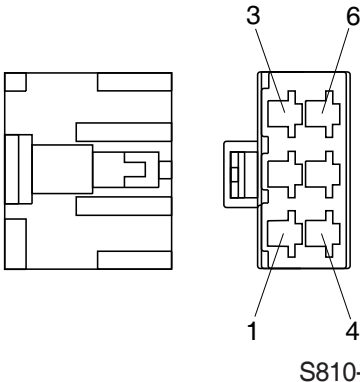
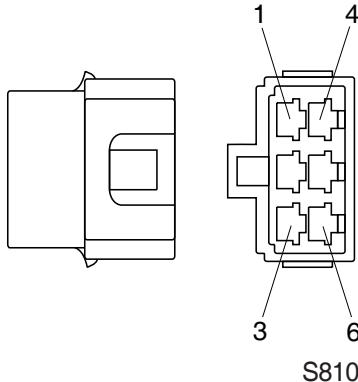
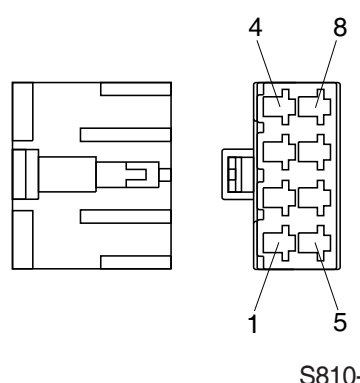
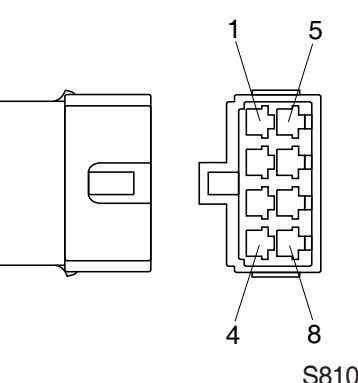
4) SWP TYPE CONNECTOR

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

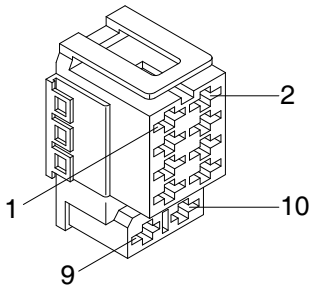
No. of pin	Receptacle connector (Female)	Plug connector (Male)
6	 S814-006000	 S814-106000
8	 S814-008000	 S814-108000
12	 S814-012000	 S814-112000
14	 S814-014000	 S814-114000

5) CN TYPE CONNECTOR

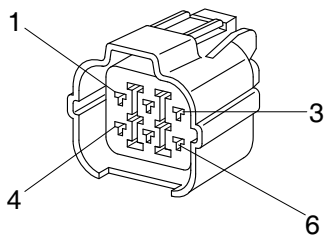
No. of pin	Receptacle connector (Female)	Plug connector (Male)
1	 S810-001202	 S810-101202
2	 S810-002202	 S810-102202
3	 S810-003202	 S810-103202
4	 S810-004202	 S810-104202

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

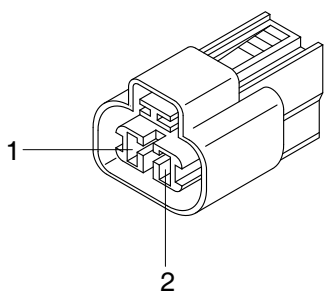
6) ITT SWF CONNECTOR

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	

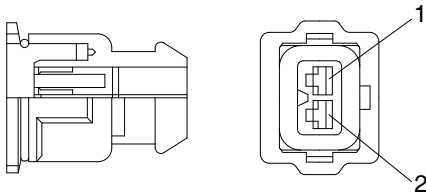
8) MWP02F-B CONNECTOR

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

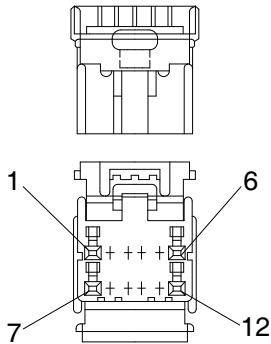
9) AMP ECONOSEAL CONNECTOR

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

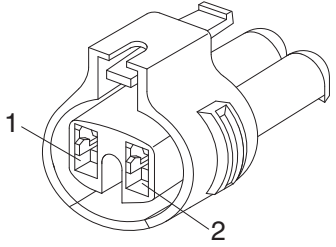
10) AMP TIMER CONNECTOR

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

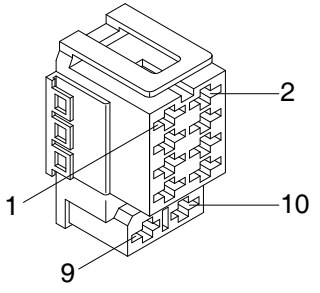
11) AMP 040 MULTILOCK CONNECTOR

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

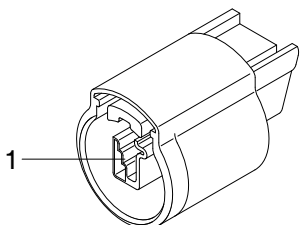
12) KET 090 WP CONNECTORS

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

13) ITT SWF CONNECTOR

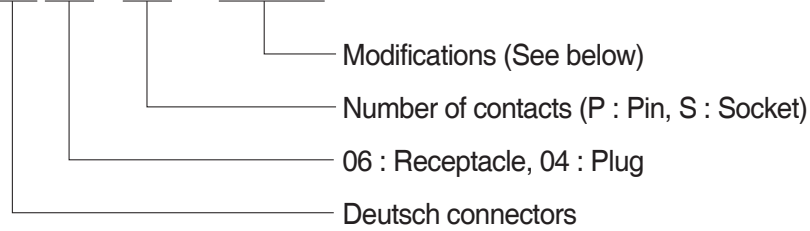
No. of pin	Receptacle connector (Female)	Plug connector (Male)
10	 SWF593757	

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

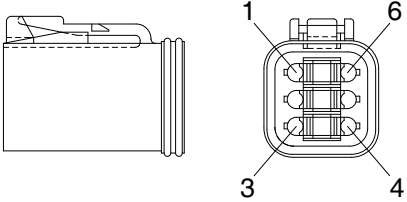
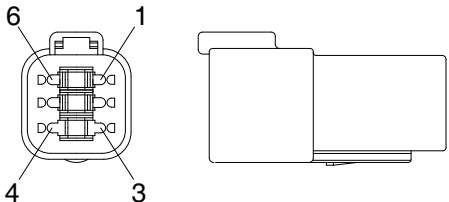
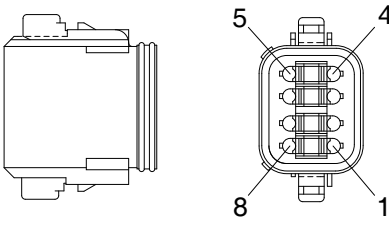
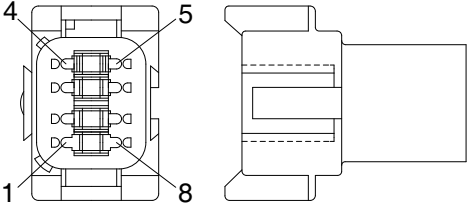
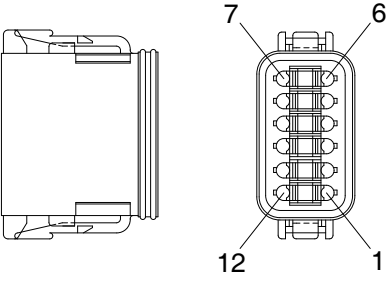
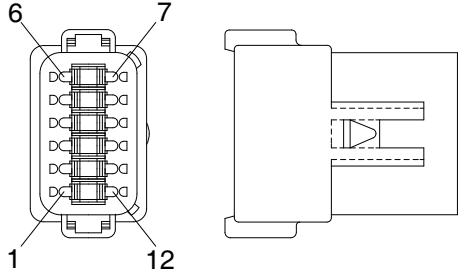
E005 : Combination - E004 & E003

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