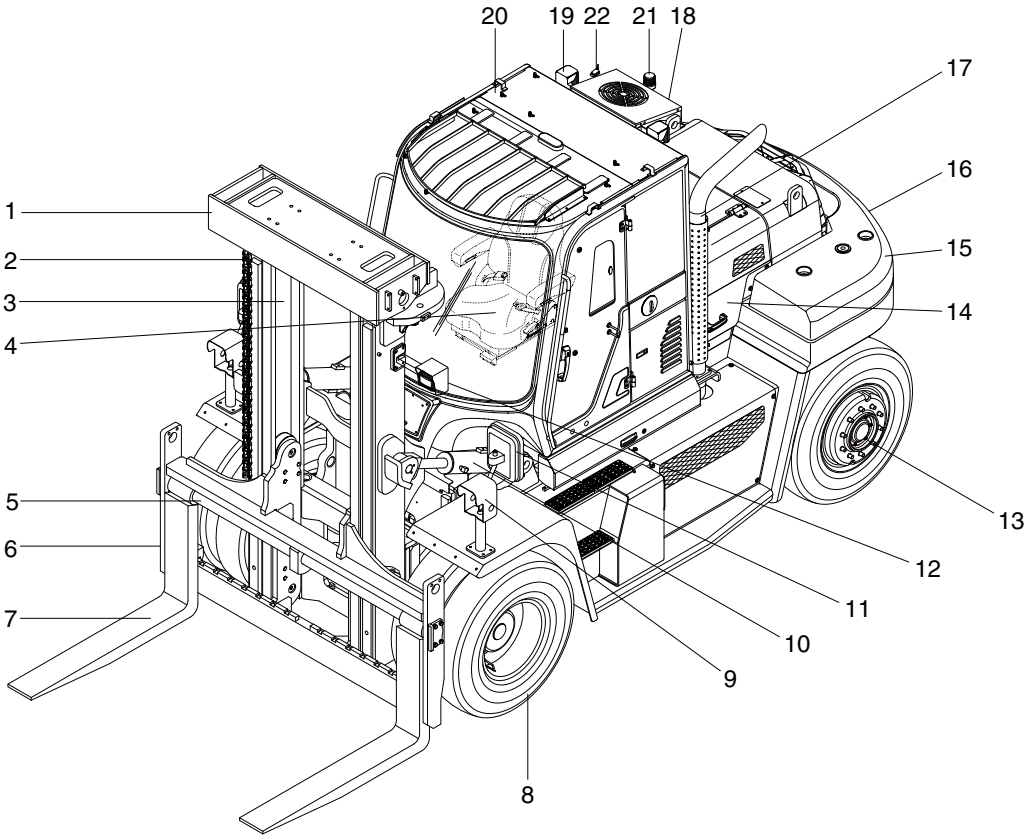
1. GENERAL LOCATIONS

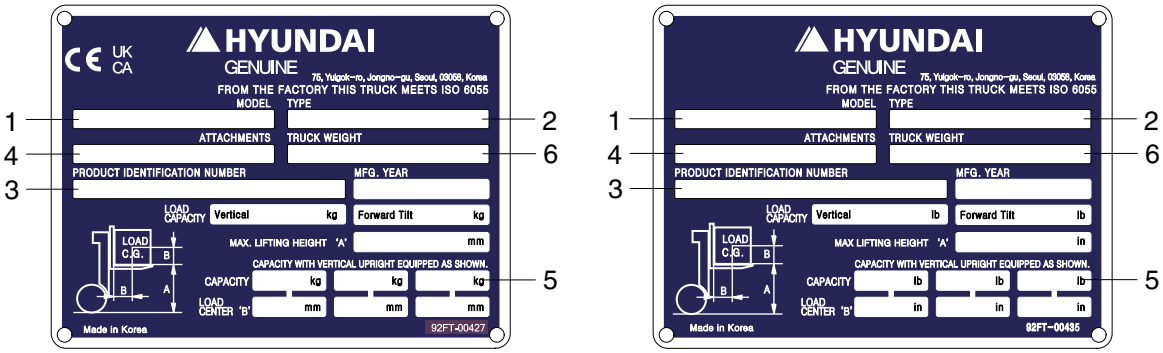


160D9V3CD10

1	Mast	9	Head lamp-fender	17	Silencer
2	Lift chain	10	Tilt cylinder	18	Air conditioner (opt)
3	Lift cylinder	11	Rear view mirror	19	Rear work lamp
4	Operator's seat	12	Work lamp-mast	20	Cabin
5	Fork positioner cylinder	13	Rear wheel	21	Beacon lamp (opt)
6	Carriage	14	Bonnet	22	Mobile antenna (opt)
7	Forks	15	Counterweight		
8	Front wheel	16	Rear combination lamp		

2. NAME PLATE AND SAFETY WARNING DECAL

1) NAME PLATE



92FT-00427

(1) Truck model number or registered name

(2) Truck type

The type is indicated a type of the truck such as diesel, LPG or battery.

(3) Truck serial number

An identification number assigned to this particular truck and should be used when requesting information or ordering service parts for this truck from your authorized HYUNDAI dealer. The serial number is also stamped on the frame.

(4) Attachment description (If any installed)

The user must see that the truck is marked to identify the attachment (s), including the weight of the truck/attachment combination and truck capacity with the attachment.

(5) Capacity rating, load center, and lifting height data

Shows the maximum load capacity of this truck with relation to load centers and fork heights (See diagram on plate). Personal injury and damage to the truck can occur if these capacities are exceeded.

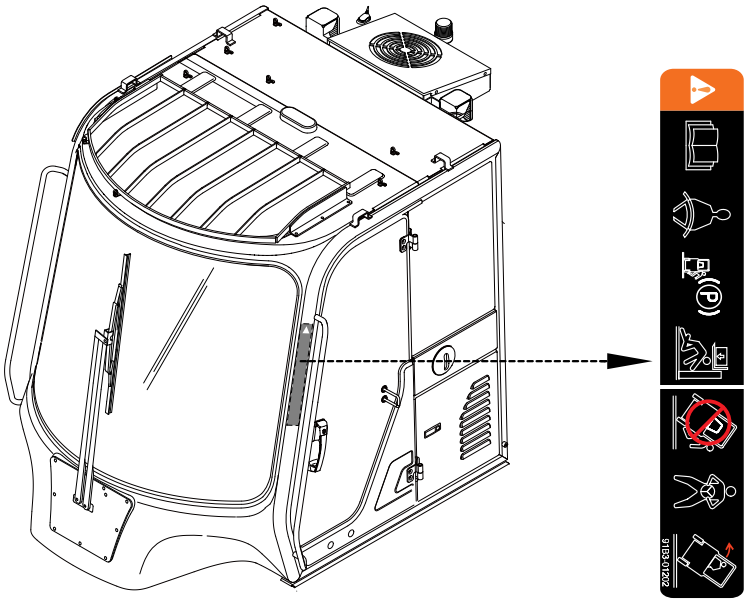
Do not exceed the maximum capacity specified.

(6) Truck weight

The approximate weight of the truck without a load on the forks. This weight plus the weight of the load must be considered when operating on elevators, elevated floors, etc. to be sure they are safe.

⚠ **Before modifications that affect the stability of safety systems are made written approval from HYUNDAI. Contact your authorized HYUNDAI dealer for a new nameplate showing the revised capacity.**

2) OPERATOR SAFETY WARNING DECAL



160D9V3CD11

⚠ Safety and warning decals are placed in conspicuous locations on the truck to remind you of essential procedures or to prevent you from making an error that could damage the truck or possibly cause personal injury. You should know, understand, and follow these instructions. Safety and warning decals. Should be replaced immediately if missing or defaced (Damaged or illegible). Refer to the page 0-6 for the location of all decals.

⚠ Operator/Tip-over warning decal

This decal is located on cabin's upper-left side frame. Its purpose is to remind the operator that staying in the seat provides the best chance of avoiding injury in the event of a truck-tipping or driving off a dock mishap.

Lift trucks can be tipped over if operated improperly. Experience with lift truck accidents has shown that the driver cannot react quickly enough to jump clear of the truck and cabin as the truck tips. To protect operators from severe injury or death in the event of a tip over, it is best to be held securely in the seat. So, please, always buckle up when driving your lift truck.

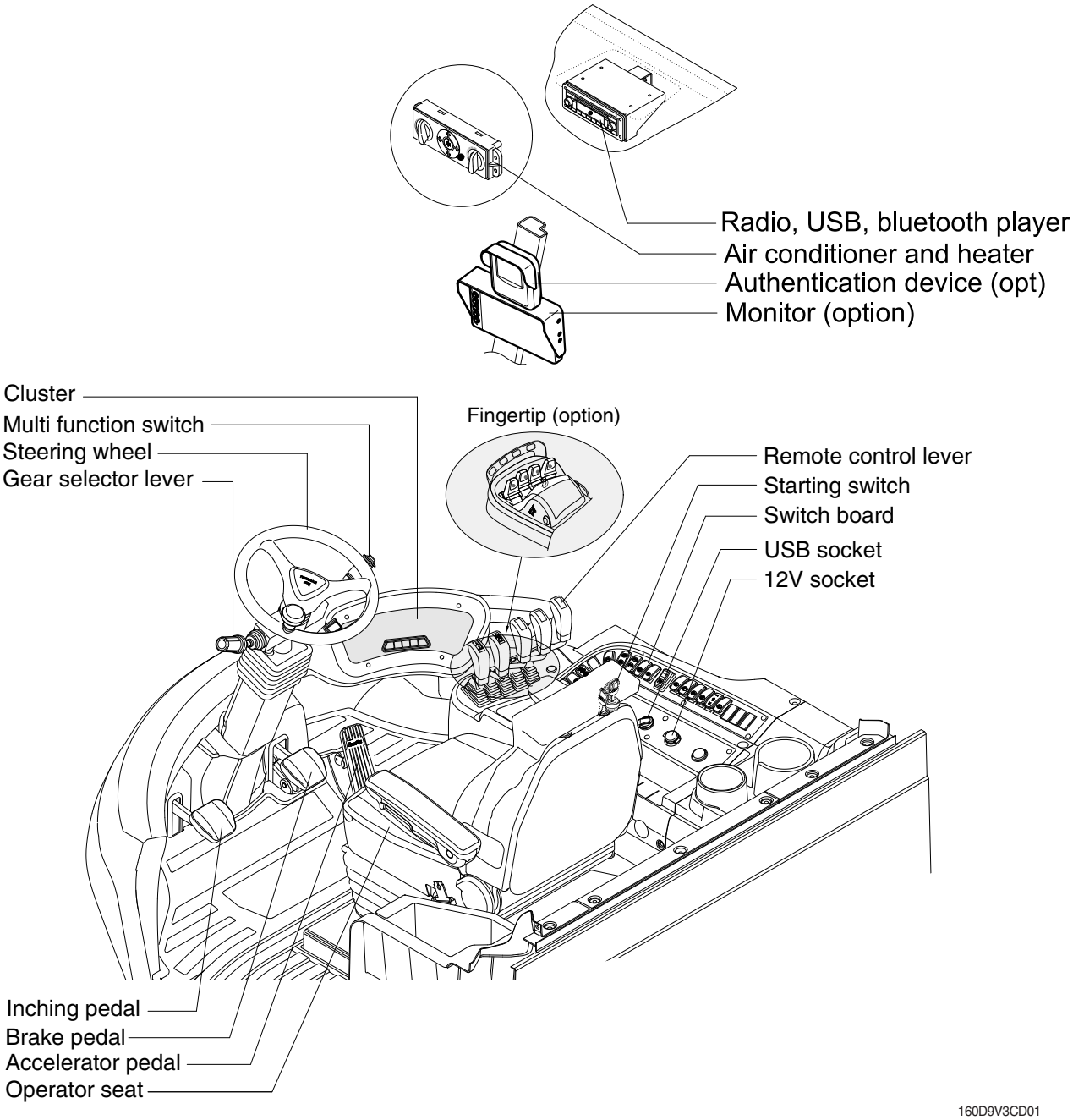
3. CAB DEVICES

1) The ergonomically designed console box and suspension type seat provide the operator with comfort.

2) ELECTRONIC MONITOR SYSTEM

(1) The centralized electronic monitor system allows the status and conditions of the truck to be monitored at a glance.

(2) It is equipped with a safety warning system for early detection of truck malfunction.



4. CLUSTER

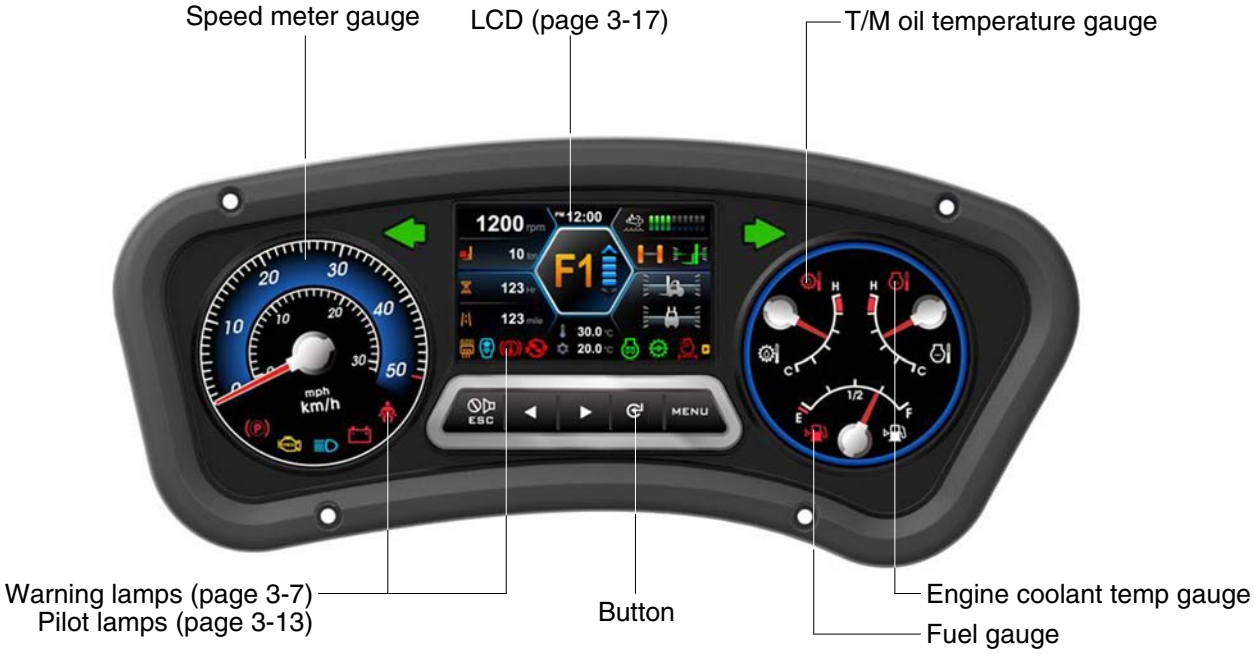
1) STRUCTURE

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.**

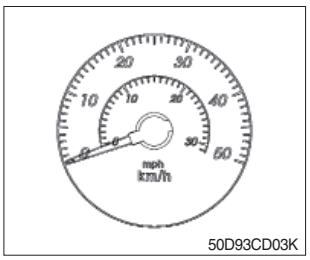
※ **When the cluster provides a warning immediately check the problem, and perform the required action.**



160D9V3CD03

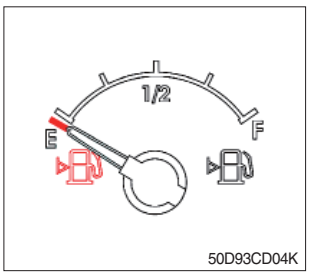
2) GAUGE

(1) Speed meter gauge



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

(2) Fuel gauge

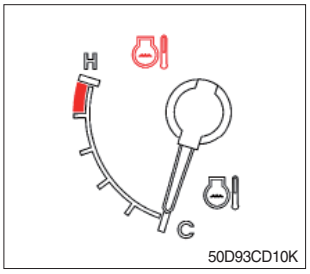


① This gauge indicates the amount of fuel in the fuel tank.

② Fill the fuel when the warning lamp lights ON or 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



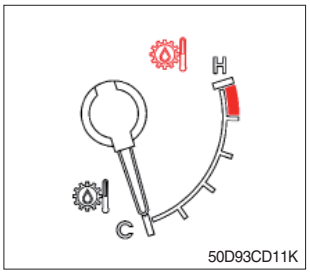
① This indicates the temperature of coolant.
- · White range : 40~107 ˚C (104~225 ˚F)
- · Red range : Above 107 ˚C (225 ˚F)

② Keep idling engine at low speed until the indicator is in the operating range.

③ If the indicator is in the red range, 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

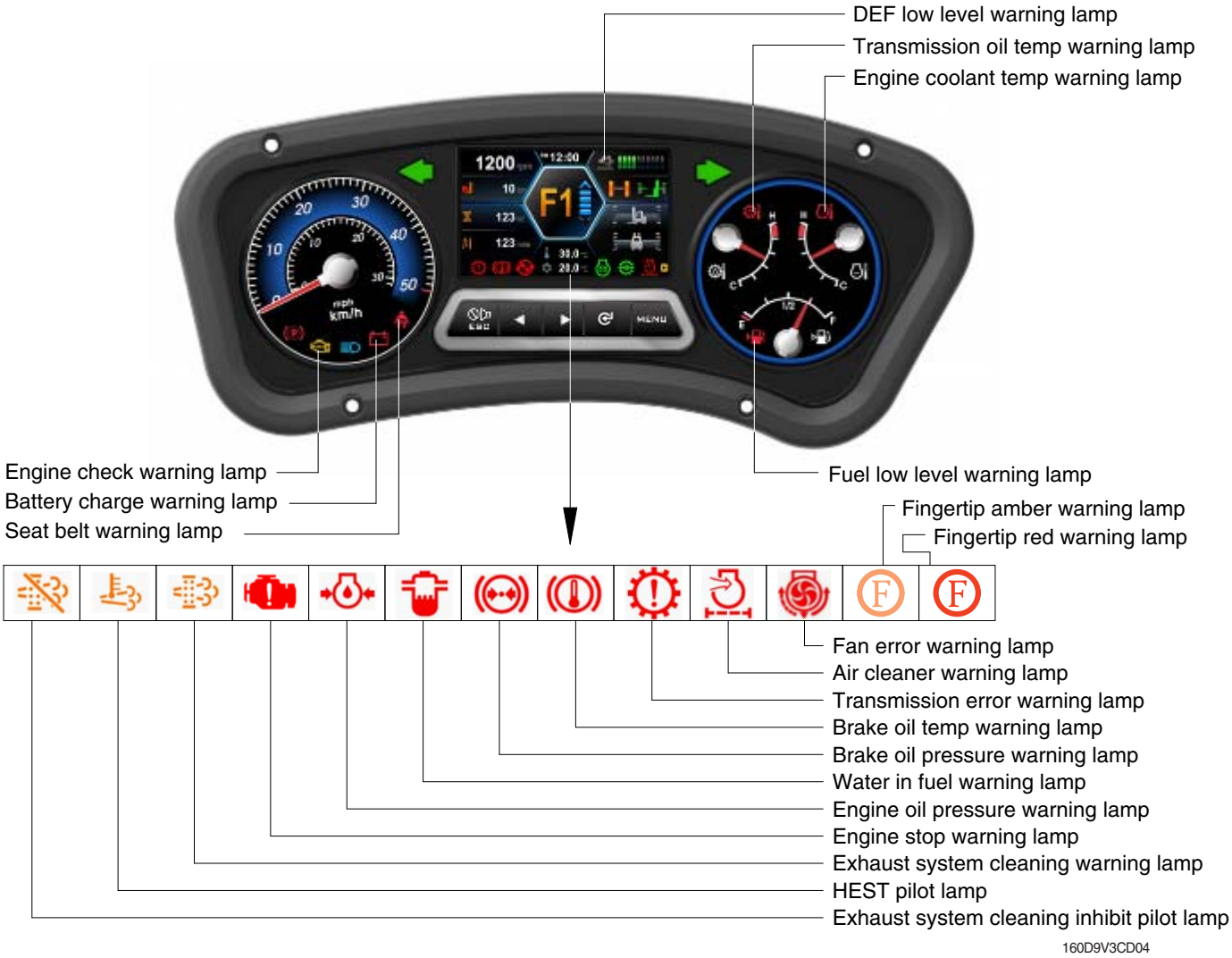


① This range indicates the temperature of transmission oil.
- · White range : 40~107 ˚C (104~225 ˚F)
- · Red range : Above 107 ˚C (225 ˚F)

② Keep idling engine at low speed until the indicator is in the operating range.

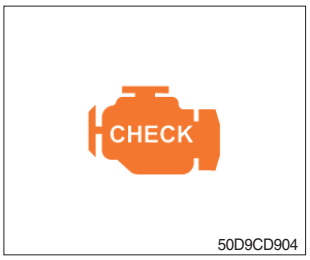
③ If the indicator is in the red range, it means the transmission is overheated. Be careful that the indicator does not move into the red range.

3) WARNING LAMPS



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

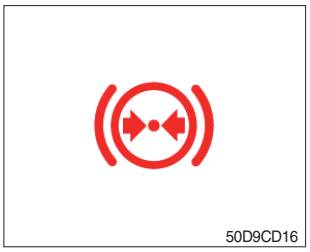
(1) Engine check warning lamp



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 oil pressure warning lamp

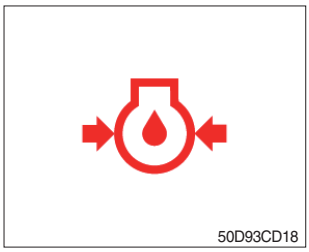


① The lamp lights ON when the oil pressure of service brake drops below the normal range.

② When the lamp is ON, stop the engine and check for its cause.

※ **Do not operate until the problems are corrected.**

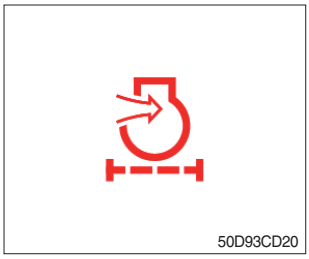
(3) Engine oil pressure warning lamp



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.

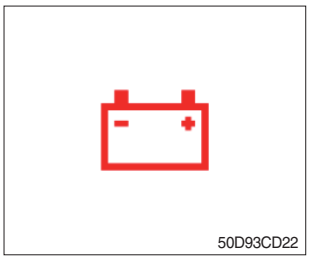
(4) Air cleaner warning lamp



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.

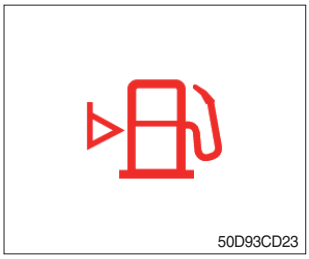
(5) Battery charging warning lamp



① This lamp is ON after key switch is turned ON, it is turned OFF after starting the engine.

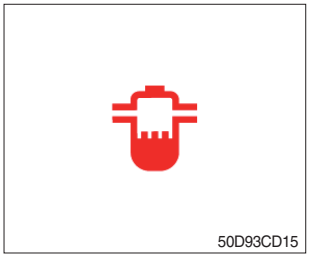
② Check the battery charging circuit when this lamp comes ON during engine operation.

(6) Fuel low level warning lamp



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

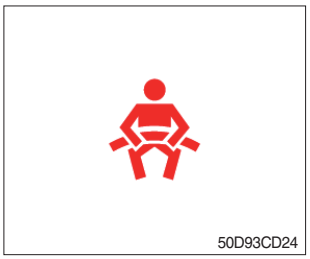
(7) Water in fuel warning lamp



① Light up when water in fuel.

② Stop the engine and please drain the water of the fuel prefilter.

(8) Seat belt warning lamp



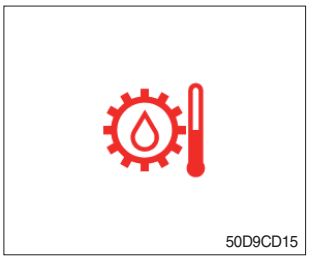
① This lamp lights ON for the first five seconds after starting the engine.

(9) Engine coolant temperature warning lamp

① This lamp is turned ON when the temperature of cooling water is over the normal temperature (108 °C, 226 °F).

② Check the cooling system when the lamp is ON.

(10) Transmission oil temperature warning lamp



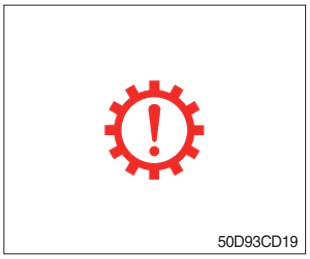
① This lamp informs the operator that transmission oil is above the specified temperature (107 ˚C, 225 ˚F).

· 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



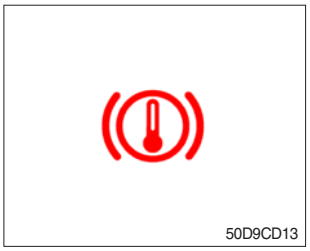
① This lamp lights ON and the information window of the LCD shows the error code when an error occur in the transmission.

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.**

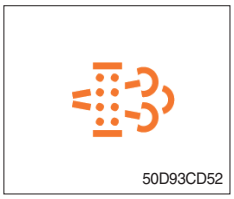
(12) Brake oil temperature warning lamp



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.

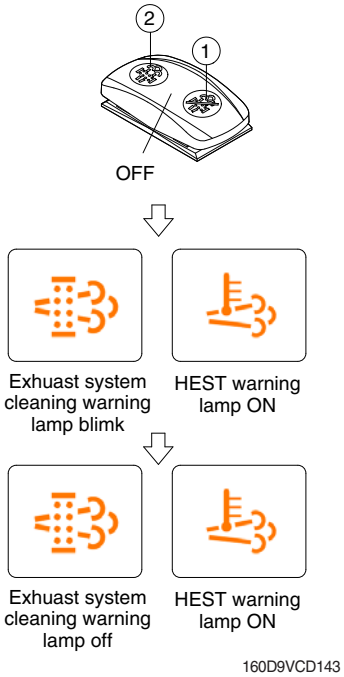
(13) Exhaust system cleaning warning lamp



① This warning lamp lights ON or flashes when exhaust system cleaning is needed as seen in the table below

Warning lamp				Remark
Exhaust warning lamp	DEF low lamp	Engine check lamp	Engine stop lamp	
On	-	-	-	1. Changing to a more challenging duty cycle. 2. Performing a manual (stationary) exhaust system cleaning.
On	-	On	-	1. The aftertreatment exhaust system needs to be cleaned immediately. 2. Engine power will be reduced automatically if action is not taken.
-	-	-	On	1 These lamps will be on when a manual (stationary) exhaust system cleaning is not performed 2. Stop the engine immediatary 3. Please contact your hyundai service center or local dealer
Flash	-	-	-	The status of a manual (stationary) exhaust system cleaning when the exhaust system cleaning switch has been activated.
-	On	-	-	DEF level initial warning DEF level 10% (engine error code 3497)
-	Flash	-	-	DEF level critical warning DEF level 5% (engine error code 3498)
-	Flash	On	-	DEF level first derate warning DEF level 2.5% (engine error code 1673, 25% derate)
-	Flash	On	-	DEF level secondary derate warning DEF level 0% (error code 3547, 3714, 50% derate, 30 min)
-	Flash	On	On	DEF level final derate warning Engine error code 3712 Contact Hyundai Service conter or dealer

※ Manual exhaust system cleaning



※ Manual exhaust system cleaning must be operated in a fireproof area.

※ To stop a manual exhaust system cleaning before it has completed, set to the exhaust system cleaning switch to the inhibit or turn OFF engine.

① Stop and park the truck.

② Push the switch to position ② to initiate the manual exhaust system cleaning.

※ Refer to the page 3-44 for the exhaust system cleaning swtich operation.

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

③ The exhaust system cleaning warning lamp will flash and HEST warning lamp will light on during the exhaust system cleaning is operation.

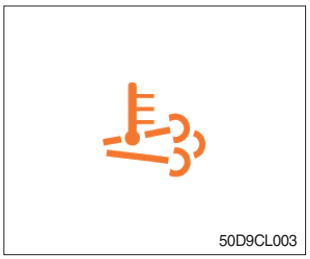
④ The exhaust system cleaning and/or HEST warning lamp will light OFF when the exhaust system cleaning is completed.

(14) Exhaust system cleaning inhibit warning lamp

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

※ Refer to the page 3-44 for the exhaust system cleaning switch.

(15) HEST (High exhaust system temperature) warning lamp



① This warning lamp indicates, when illuminated, that exhaust temperatures are high due to exhaust system cleaning.

② The lamp will also illuminate during a manual exhaust system cleaning.

③ When this lamp is illuminated, be sure the exhaust pipe outlet is not directed at any surface or material that can melt, burn, or explode.

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

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

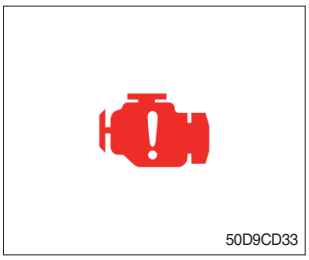
(16) DEF (Diesel Exhaust Fluid) low warning lamp

① This warning lamp indicates, when illuminated or flashing, that the diesel exhaust fluid level is low.

※ **Add the diesel exhaust fluid into DEF tank.**

※ **Refer to the page 3-10 for detail.**

(17) Engine stop warning lamp



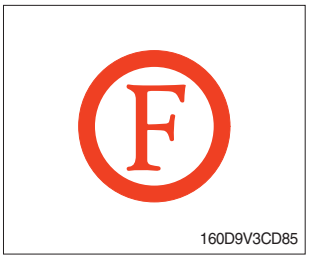
① When this warning lamp lights ON, stop the engine immediately and and check the DEF level and related parts of the engine.

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

(18) Fan error warning lamp

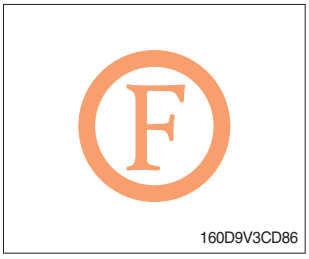
① This lamp is turned ON when the cooling fan error occurs.

(19) Fingertip red warning lamp



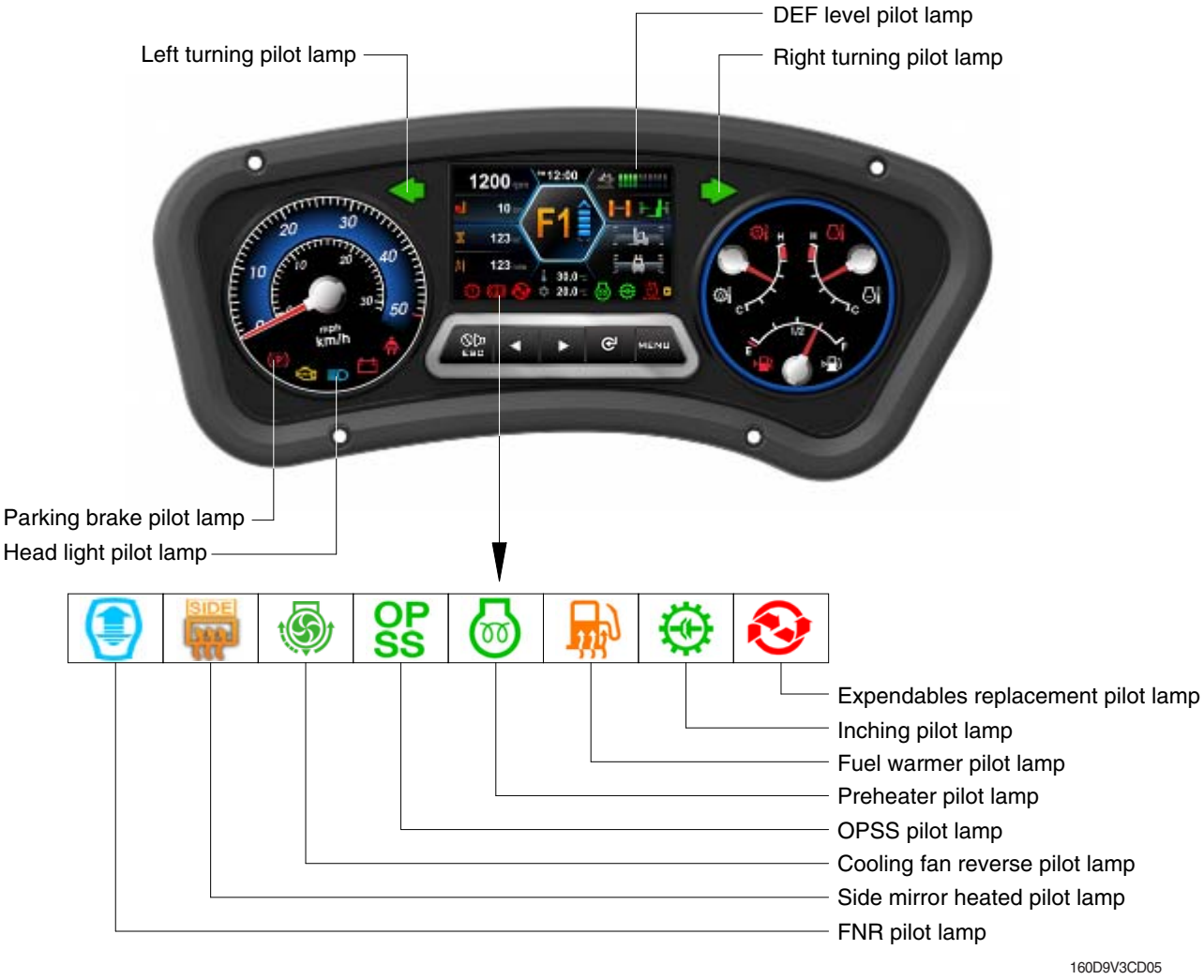
① This lamp lights ON when the forklift truck is in a condition that is serious enough to stop it.

(20) Fingertip amber warning lamp



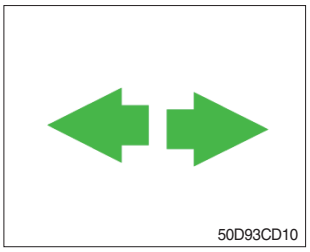
① This lamp lights ON when there is a problem with the forklift truck system, but the vehicle does not need to be stopped immediately.

4) PILOT LAMPS



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

(1) Direction pilot lamp



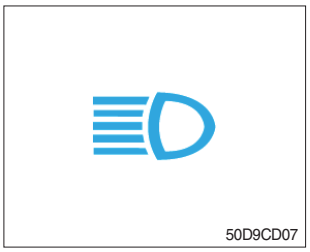
① This lamp flashes when the signal indicator lever is moved.

(2) Parking brake pilot lamp

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

※ Check the lamp is OFF before driving.

(3) Head light pilot lamp



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

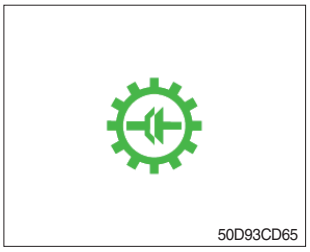
(4) Preheater pilot lamp

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

② When the lamp goes out the operator should start cranking the engine.

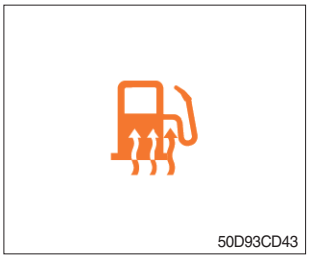
※ **Refer to page 5-16.**

(5) Inching pilot lamp



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

(6) Fuel warmer pilot lamp



① Illuminates when the hydraulic fluid temperature is below 20 °C (68 °F) or engine coolant temperature is below 10 °C (50 °F).

② If the engine coolant temperature is above 60 °C (140 °F) or hydraulic fluid temperature is above 45 °C (113 °F) the start switch is in the ON position, automatic fuel heating is canceled.

(7) OPSS pilot lamp

① This signal lamp lights ON when the operator leaves the seat.

② Powered travel movement of the truck shall be possible only if the operator is in the normal operating position. Transmission will automatically shift to neutral upon the exiting of the operator.

③ The gear selector lever must be cycled through neutral with the operator in the normal operating position to regain powered direction control.

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

50D93CD66

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

(9) Expendables replacement pilot lamp

50D93CD31

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 rotation pilot lamp

180D9CD30

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

※ **Refer to page 3-45 for the operation of the cooling fan.**

(11) Side mirror heated pilot lamp (option)

160D9V3CD87

① When the heated mirror is operating, the lamp lights ON.

(12) FNR pilot lamp (option)

160D9V3CD88

① This lamp lights ON when the 2nd FNR is activated.
② This function is optional.

※ **Refer to page 3-45 for the FNR switch.**

4) CLUSTER BUTTON

Each button has the following function.

160D9VCD121

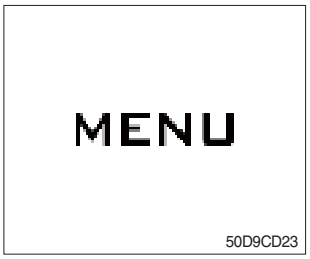
(1) Buzzer stop/ESC button

50D9CD22

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.

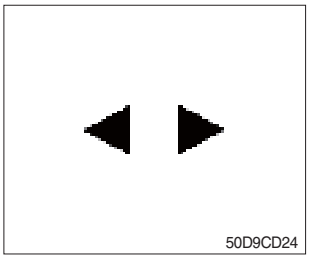
(2) Menu button



50D9CD23

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

(3) Move button



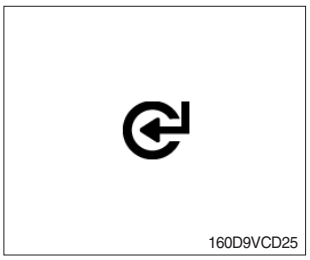
50D9CD24

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



160D9VCD25

① This button is used to select menu.

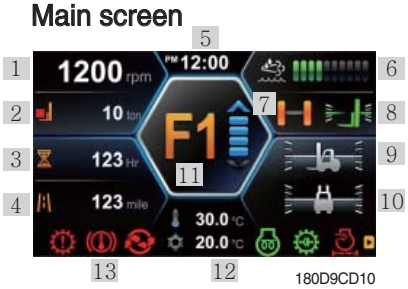
5) LCD

(1) Main screen

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

※ Please refer to the page 3-16 for the selection and change of the menu and input value.

Main screen



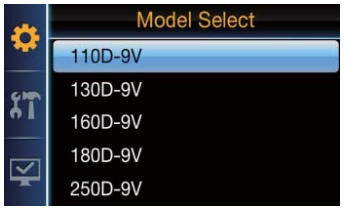
180D9CD10

MENU

Main menu screen

160D9VCD11

Sub menu screen



160D9V3CD30

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

Communication error

180D9CD13

※ 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.

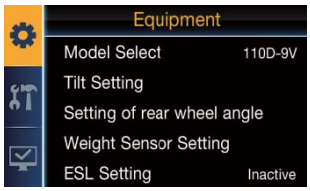
(Warning lamp : Engine ( ), Transmission (and Air conditioner ( ).

(2) 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 Seat belt interlock (option) Finger tip setting (option)	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 Active, inactive Lever setting, valve setting
2	 Maintenance 50D9CD15K	Failure history Maintenance management Signal statue User password change 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) 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



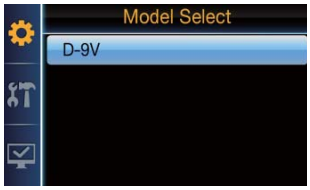
160D9V3CD19

160D9V3CD20

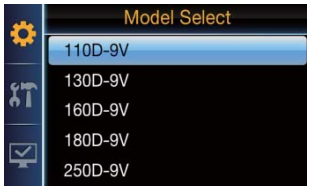
- To enter the menu, you must input user password.
- Default password is '00000'
- You should set password by five to ten digit.

② Model select

160D9VCD11



160D9V3CD21



160D9V3CD22

- Select the Model

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

160D9V3CD23

300D9CD305

③ Tilt setting

160D9VCD26 50D9CD27 180D9CD28

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

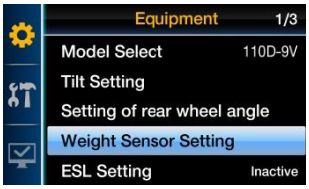
④ Setting for rear wheel angle

160D9VCD29 180D9CD30-1 160D9V3CD31 160D9V3CD32 160D9V3CD33 180D9CD34-1

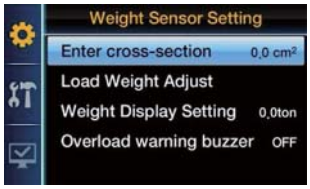
· The user revises a forklift truck steering angle.
· Display set to approve a condition.
  – Right set rear wheel calibration.
  – Center set rear wheel calibration.
  – Left set rear wheel calibration.

⑤ Weight sensor setting

a. Cross-section

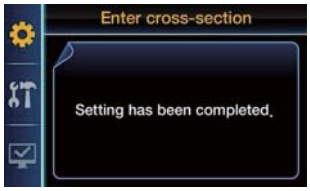


160D9VCD35



180D9CD36-1

180D9CD37



180D9CD38

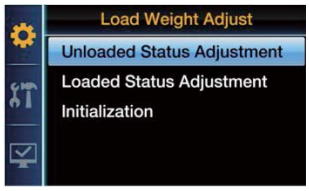
· Enter the designated cross-section (cm²).

Mast spec	120/130D-9V	160D-9V
V-Mast	190.07	226.19
VS-Mast	226.19	265.46
TS-Mast	226.19	265.46

b. Load weight adjust

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

50D9CD39-1

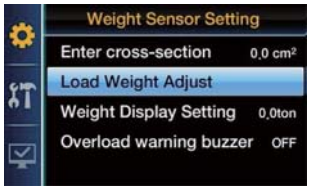


50D9CD40

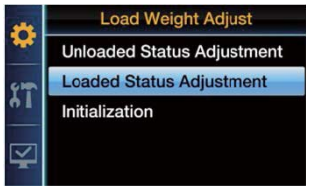
180D9CD41

50D9CD42

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



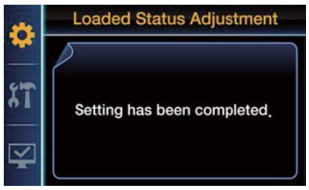
50D9CD39-1



50D9CD44

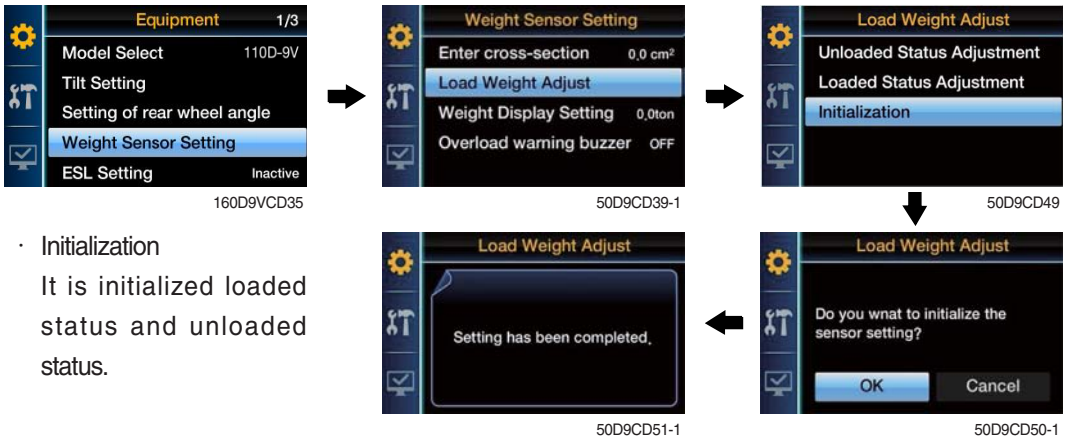
50D9CD45-1

180D9CD46



50D9CD47

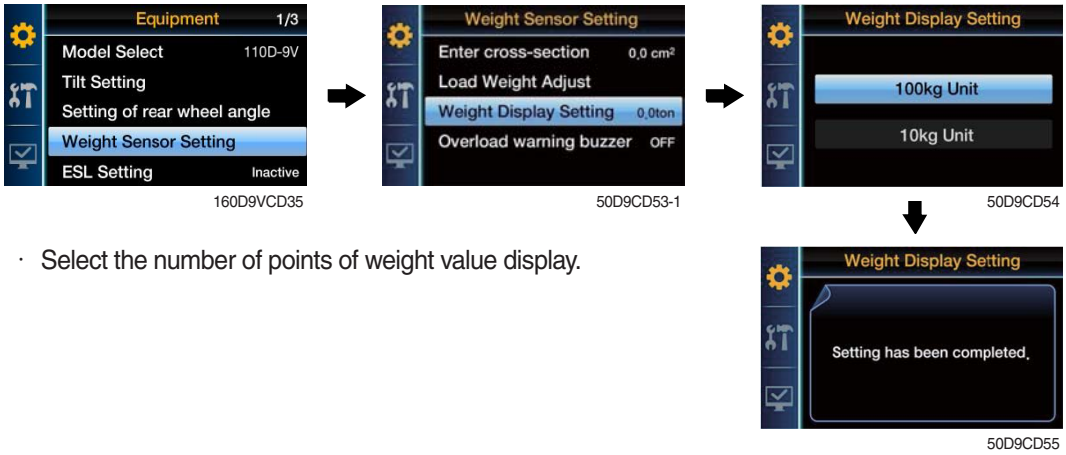
50D9CD47-1



160D9VCD35 50D9CD39-1 50D9CD49 50D9CD50-1 50D9CD51-1

· Initialization
It is initialized loaded status and unloaded status.

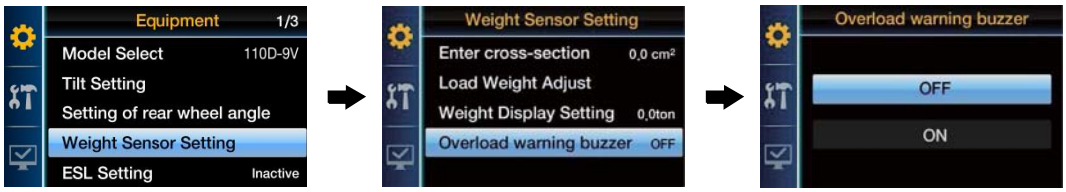
c. Weight display setting



160D9VCD35 50D9CD53-1 50D9CD54 50D9CD55

· Select the number of points of weight value display.

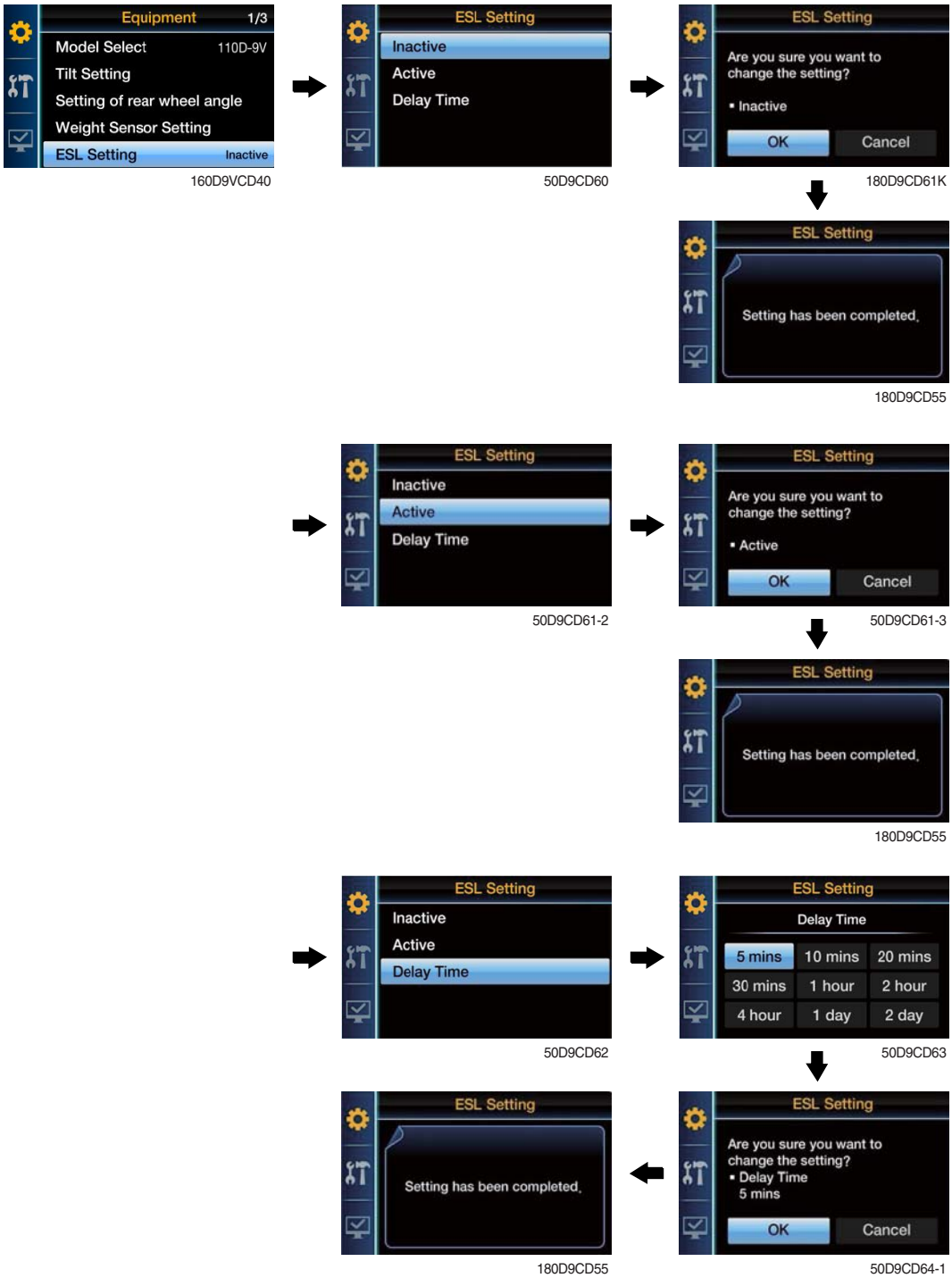
d. Overload warning buzzer



160D9VCD35 50D9CD57-1 50D9CD58-1

· Choose using buzzer when over weight.

⑥ ESL setting

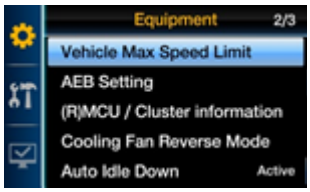


· Set ON/OFF function for using limitation of ignition and time for starting.

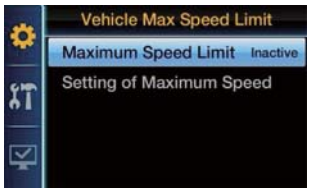
· Set time 5 minutes for starting :

In 5 minutes you can restart without password, but after 5 minutes, you should input password for starting.

⑦ Vehicle max speed limit



160D9V3CD41

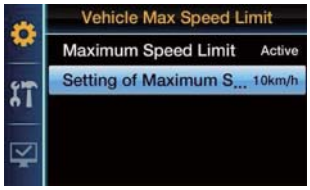


50D9CD66-1

50D9CD67

50D9CD68

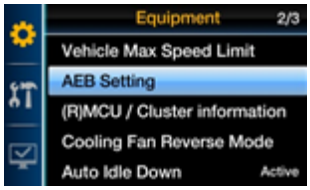
- Set the maximum speed.
- 10 km/h~30 km/h (1 km/h intervals)



180D9CD69

50D9CD70-1

⑧ AEB setting

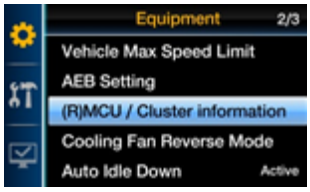


160D9V3CD42

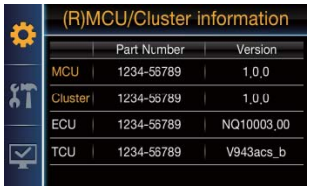
180D9CD72

- 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

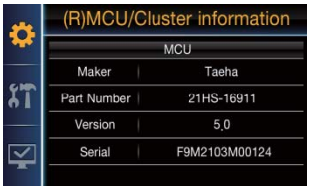
⑨ (R) MCU / Cluster information



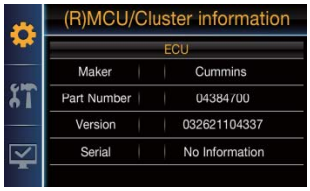
160D9V3CD43



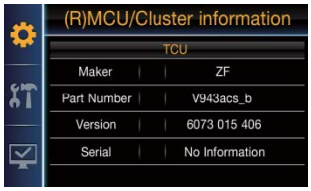
160D9V3CD44



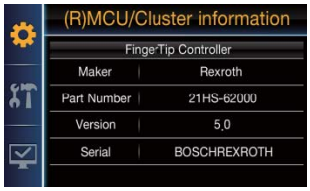
160D9V3CD45



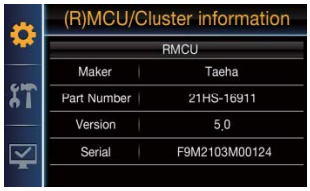
160D9V3CD46



160D9V3CD47



160D9V3CD48



160D9V3CD49

- Software version check for MCU/Cluster/RMCU.

⑩ Cooling fan reverse mode

180D9CD101-1 180D9CD103-1

- 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 3-45 for the cooling fan control switch.**

⑪ Seat belt interlock (option)

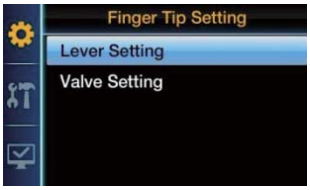
160D9V3CD50 160D9V3CD51

- Turns on/off the seat belt interlock function.
- In the seat belt interlock option applied equipment, the menu is displayed only when the belt is fastened.

⑪ Finger tip setting (option)

a. Lever position setting

50D9CD400



50D9CD401

50D9CD402

50D9CD403

50D9CD404

50D9CD405

50D9CD406

50D9CD407

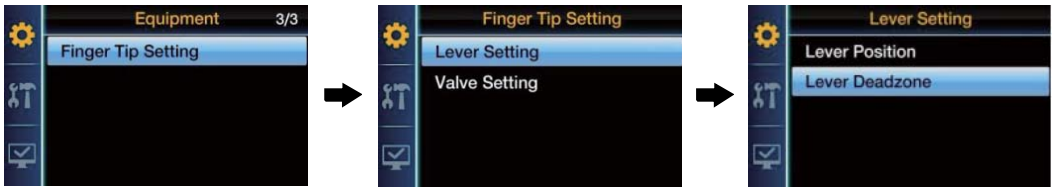
50D9CD408

50D9CD409

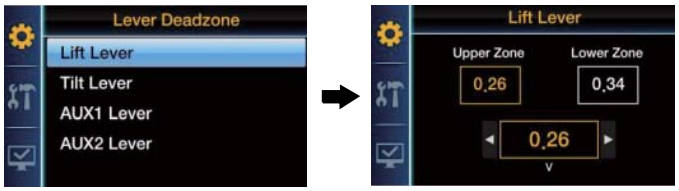
50D9CD410

- Ability to set up the maximum Pull, Push (Min, Max) value and neutral value (Mid) of lever.
- Finger Tip lever set up about 0.5V~2.5V~4.5V.
  You must be to move with actual Lever. (Unit V)
  ex) Min 0.48, Mid 2.52, Max 4.52

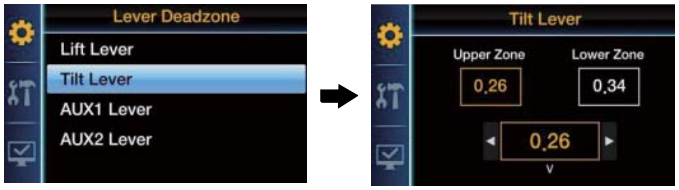
b. Lever deadzone setting



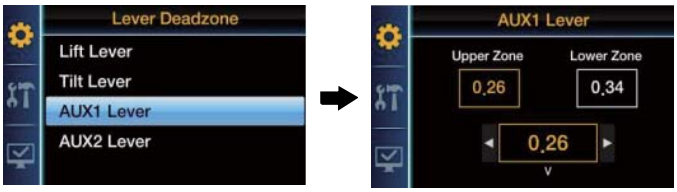
50D9CD400 50D9CD401 50D9CD411



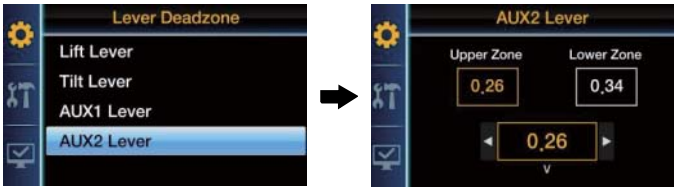
50D9CD412 50D9CD413



50D9CD414 50D9CD415



50D9CD416 50D9CD417



50D9CD418 50D9CD419

· Lever deadzone

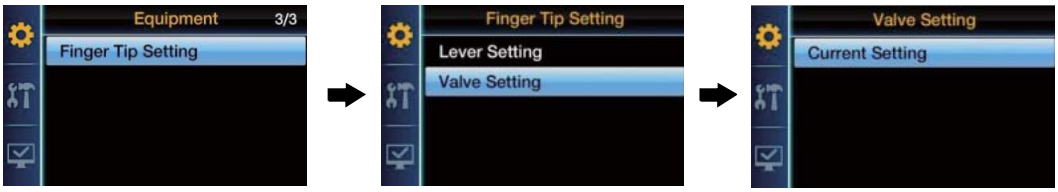
- Ability to prevent the valve output due to a tiny error of the neutral Lever state (2.5V)
- It is not set below 0.20.

ex) If you set up the Upper : 0.26, Lower : 0.24, Lever operating range will be

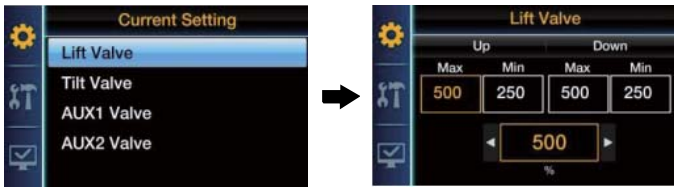
Upper zone : 2.76V (2.5+0.26) ~ 4.5V (Lever Max value)

Lower zone : 2.26V (2.5-0.24) ~ 0.5V (Lever Min value)

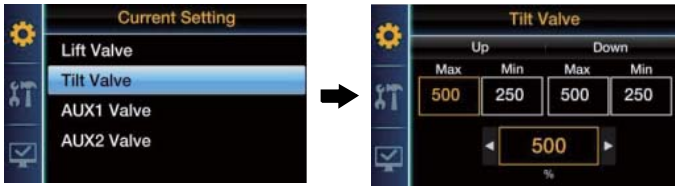
c. Valve setting



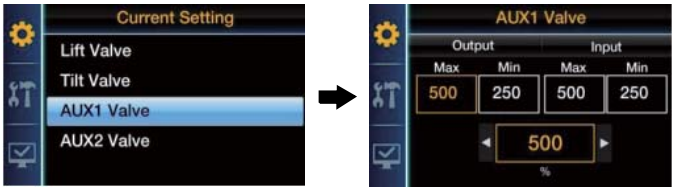
50D9CD400 50D9CD420 50D9CD421



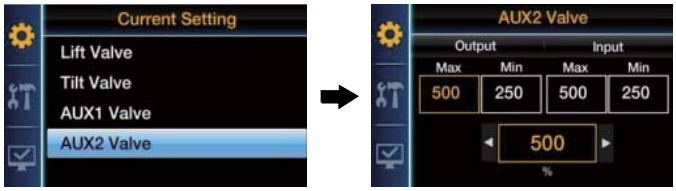
50D9CD422 50D9CD423



50D9CD424 50D9CD425



50D9CD426 50D9CD427



50D9CD428 50D9CD429

· Current Setting : Current setting for input each Valve Coil, it is to set up each maximum value of movements according ot the current value (unit, %)
ex) If the Max value increase, the maximum speed will also increase.
If the Min value increase, the minimum speed will also increase.

(4) Maintenance

① Choose the maintenance

180D9CD75-1

180D9CD76

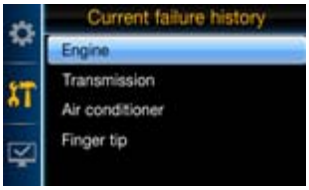
- To enter the Menu, you must input user password.
- Default password is '00000'
- You should set password by five to ten digit.

② Failure history

a. Current failure history

180D9CD77

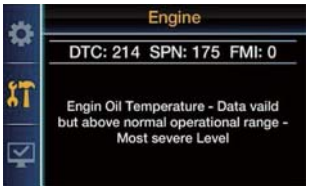
180D9CD77-1



160D9V3CD60

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

180D9CD79



180D9CD80-1

b. Logged fault history

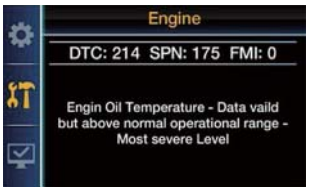
180D9CD77

180D9CD77-2

160D9V3CD61

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

180D9CD79

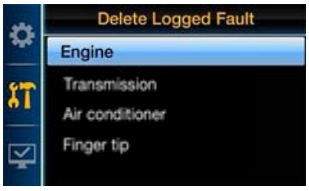


180D9CD80-1

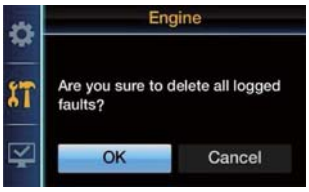
c. Delete logged fault

180D9CD77

180D9CD77-3



160D9V3CD62



180D9CD79-1

- Initialize of the past logged fault history.

③ Maintenance management

180D9CD81

180D9CD82

180D9CD83

180D9CD84

180D9CD85

180D9CD86

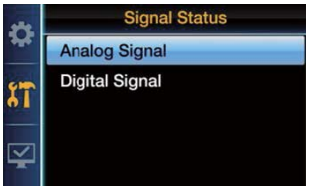
180D9CD87

180D9CD88-1

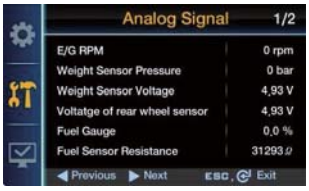
- Exchange expendable supplies.
- Change the replacement cycle.
- Show the Maintenance Information below 10. (Delete the old item, when Information have more than 10)

④ Signal status

180D9CD89-1

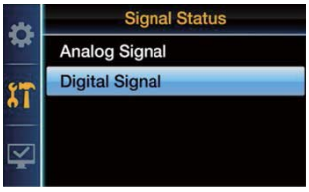


50D9CD90



180D9CD91

· Display information of each sensors.



50D9CD92

180D9CD93

⑤ User password change

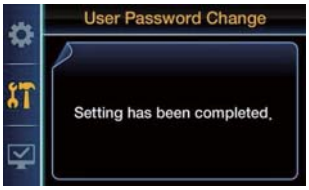
180D9CD94-1

50D9CD95-1

50D9CD96-1

· You should set password by five to ten digit.

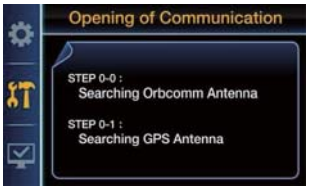
50D9CD97-1



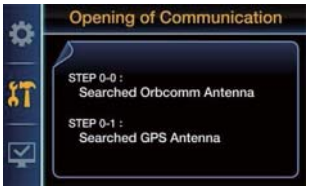
180D9CD97

⑥ Opening of communication

180D9CD98-1



180D9CD99



180D9CD100

- When successfully opened RMCU communication, except for the RMCU comm.

180D9CD101

180D9CD102-1

180D9CD102

180D9CD104-1

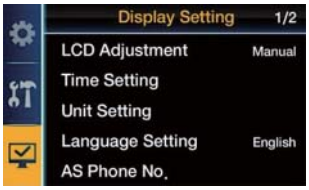
180D9CD105-1

180D9CD106

180D9CD107

(5) Display setting

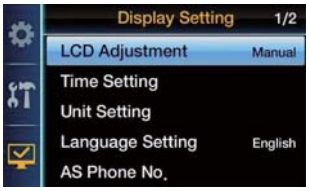
① Choose the display setting



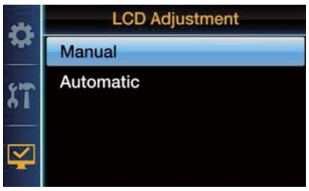
180D9CD108

· No password is required.

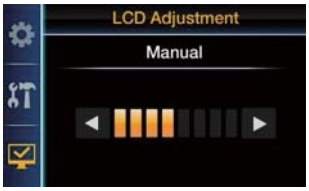
② LCD adjustment



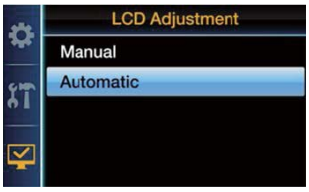
180D9CD109



50D9CD110



180D9CD111



50D9CD112

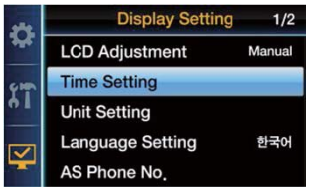
180D9CD113

180D9CD114

180D9CD115

· 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.)

③ Time setting



50D9CD116

180D9CD117

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

④ Unit setting

180D9CD118

50D9CD118-1

50D9CD119

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

⑤ Language setting

180D9CD120

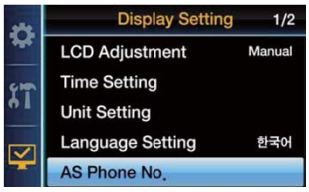
180D9CD121

180D9CD122

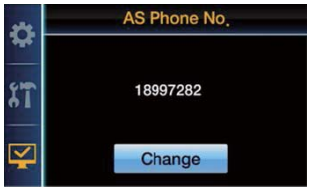
· Set the language used by your device.
(13 Multiple language)

50D9CD123

⑥ A/S phone number



50D9CD124

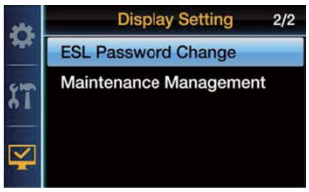


50D9CD125

180D9CD126

· Check and change of contact information for customer service.

⑦ ESL password change

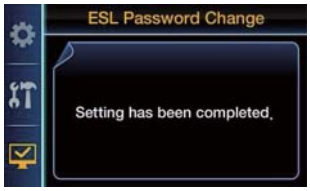


50D9CD127

180D9CD128

180D9CD129

· You should set password
by five to ten digit.



180D9CD130

180D9CD130-1

⑧ Maintenance management

50D9CD131 50D9CD132-1 50D9CD133-1

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

5.TRANSMISSION MESSAGE DISPLAY

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)

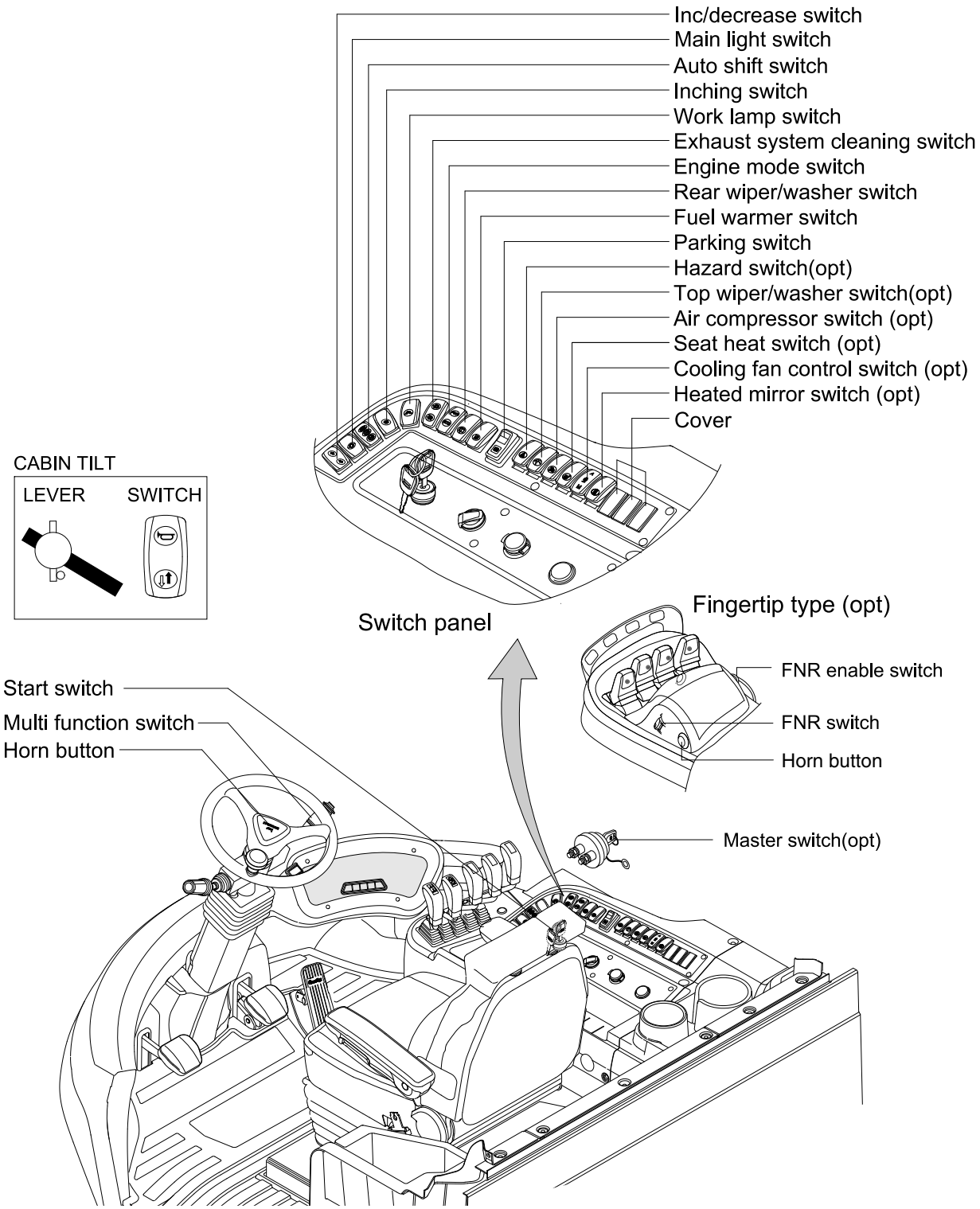
3) INITIALIZING THE INCHING SENSOR

(1) Start engine after parking the truck on flat floor and blocking wheels.
(2) Release parking brake and keep neutral gear shift.
(3) Adjust the inching setting bolt so that the regular voltage is sullied to inching sensor when operating the pedal.
※ Regular voltage : Before pedal operation (1.0±0.3V)
After pedal operation (3.3±0.3V)
(4) Stop the engine and then just KEY ON. (Release parking brake, keep neutral gear)
(5) Go into the AEB setting in the cluster menu. (refer to page 3-24)
(6) Push OK button and execute as below.
(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 truck again to repeat above.
※ Above works are to be done with the parking brake released, so truck's wheels must be blocked for safety.

4) DISPLAY DURING INCHPEDAL CALIBRATION

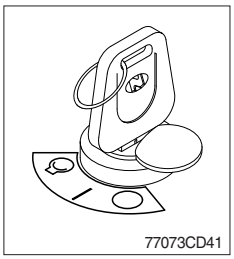
Symbol	Meaning	Remarks
▼IP	Push down the pedal slowly until endposition is reached and hold this position	
▲IP	Release the pedal slowly until endposition is reached	
IP blinkt	A problem occurred, release the pedal slowly until endposition is reached	If the expected endposition could not be reached, release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

6. SWITCHES



160D9V3CD06

1) START SWITCH



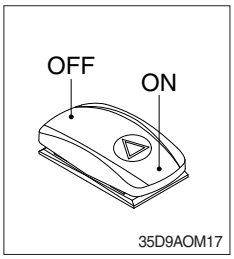
(1) There are three positions, OFF, ON and START.

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

※ **Before starting, set gear selector lever at NEUTRAL and place parking brake switch to LOCK position.**

※ **Key must be in the ON position with engine running to maintain electrical and hydraulic function and prevent serious truck damage.**

2) HAZARD SWITCH (OPTION)



(1) Use for parking, or loading truck.

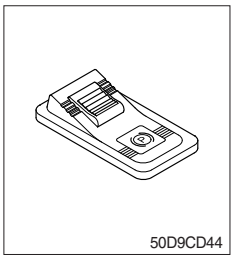
※ **If the switch is left ON for a long time, the battery may be discharged.**

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

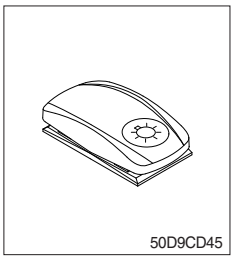


(1) This switch is used to parking brake lock or release.

(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.

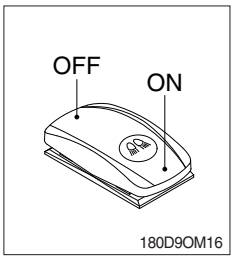
① First step : Clearance lamp and cluster illumination lamp comes ON. Also, all of the pilot lamps of switches come

② ON.

Second step : Head lamp comes ON.

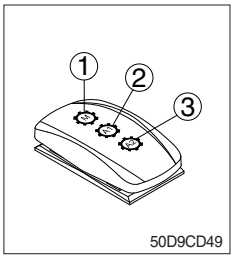
※ **Refer to page 3-43 for head lamp.**

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 SHIFT 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.

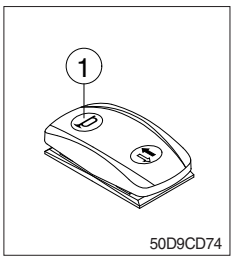
(2) Automatic 1st mode (②)

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.

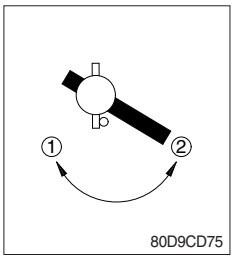
⚠ Sound the horn to warn near by personnel, before tilting the cabin.

(2) Tilting of the cabin (⬆ , ⬇)

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

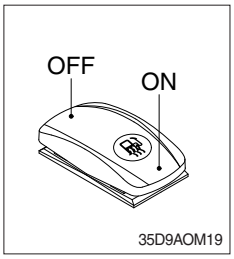
※ **Refer to page 7-16 for the tilting method of the cabin.**

9) HAND PUMP LEVER



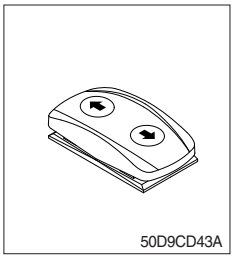
(1) This lever is used when tilting the cabin.
(2) Turn the hand pump lever to clockwise direction (①), the cabin shall be tilted to right side by the cabin tilt switch.
(3) Turn the hand pump lever to counterclockwise direction (②), the cabin shall be returned to original location by the cabin tilt switch.

10) FUEL WARMER SWITCH



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

11) INC/DECREMENT SWITCH

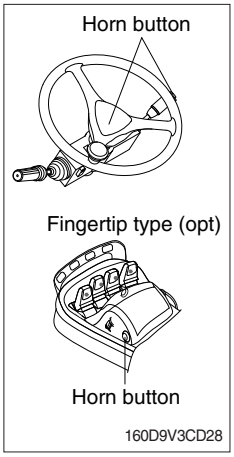


(1) When engine running, the low idle rpm of engine increase or decrease by 25 rpm by operating this switch.
(2) Engine low idle rpm returns to normal value when engine restarted.

12) TOP WIPER AND WASHER SWITCH (OPTION)

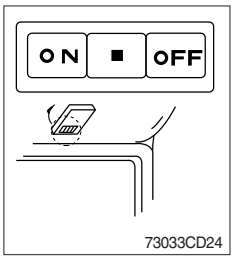
(1) This switch is used to operate the wiper and washer on the top of the cab.
(2) The washer liquid is sprayed and the wiper is operated only while pressing this switch.

13) HORN BUTTON



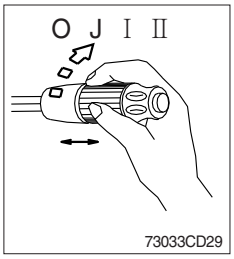
(1) If you press the button on the top of the multifunction switch, the center of the steering wheel and the button on the fingertip body (option), the horn will sound.

14) CAB LAMP SWITCH



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

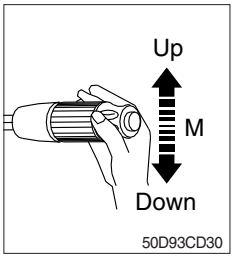
15) MULTI FUNCTION SWITCH



(1) Front wiper and washer switch

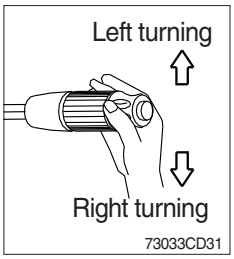
① When the switch is in J position, the wiper moves intermittently.
② When placed in Ⅰ or Ⅱ position, the wiper moves continuously.
③ If you push the grip of the lever, washer liquid will be sprayed and the wiper will be activated 2-3 times.

※ **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) Dimmer switch

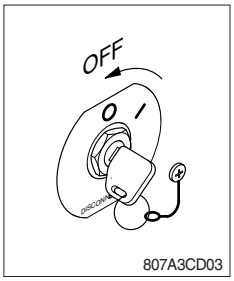
① This switch is used to turn the head light direction.
② Switch positions
· Up : To flash for passing
· Middle : Head light low beam ON
· Down : Head light high beam ON
③ If you release the switch when it's in up position, the switch will return to middle.



(3) Turning signal 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.

16) MASTER SWITCH (OPTION)

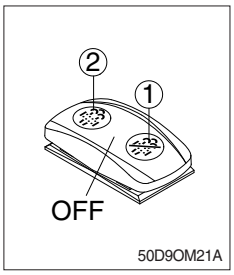


(1) This switch is used to shut off the entire electrical system.
When the truck is not operated for a long time, turn OFF the master switch for the safety purpose.

(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.**

17) EXHAUST SYSTEM CLEANING SWITCH



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

(2) Inhibit position (①)

① The inhibit position disallows any automatic or manual exhaust system cleaning.

② This may be used by operator to prevent exhaust system cleaning when the truck is operating in a hazardous environment is concerned about high temperature.

③ It is strongly recommended that the this position is only activated when high temperatures may cause a hazardous condition.

(3) OFF position

This position will initate a automatic exhaust system cleaning when needed.

(4) Manual position (②)

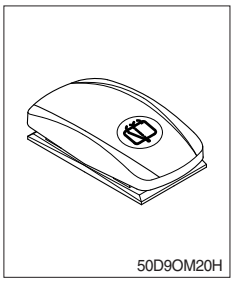
① This position will only initate a manual exhaust system cleaning and the exhaust system cleaning lamp is illuminated.

② HEST lamp will be illuminated during the entire exhaust system cleaning.

※ Refer to the page 3-11 for details.

※ This switch return to the OFF position when released the manual position (②).

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) ENGINE MODE SWITCH

(1) This switch offers two selectable operating mode.
The operator can adjust the truck's performance with this selection switch.

(2) Function

① STANDARD MODE : This mode provides maximum fuel efficiency for general loading.

② POWER MODE : This mode provides maximum power output for heavy loading or hill climb.

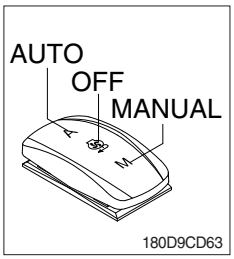
20) AIR COMPRESSOR SWITCH (option)

(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.

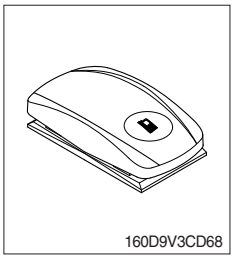
(2) This switch has three positions.

- AUTO : The fan automatically work in reverse according to set up interval and time of the cooling fan reverse mode.
  ※ **Refer to page 3-21-1 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.

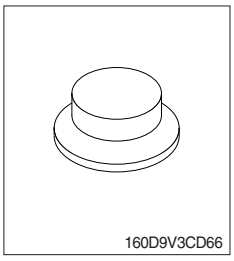
※ **The reverse rotation pilot lamp lights up on the area of the warning and pilot lamp of the LCD when the cooling fan is operated to the reverse rotation.**

23) HEATED MIRROR SWITCH (option)



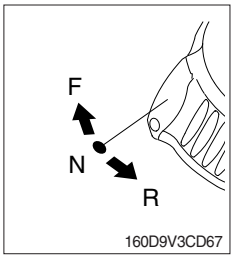
(1) This switch is used to heat the mirror.

24) FNR ENABLE SWITCH (option)



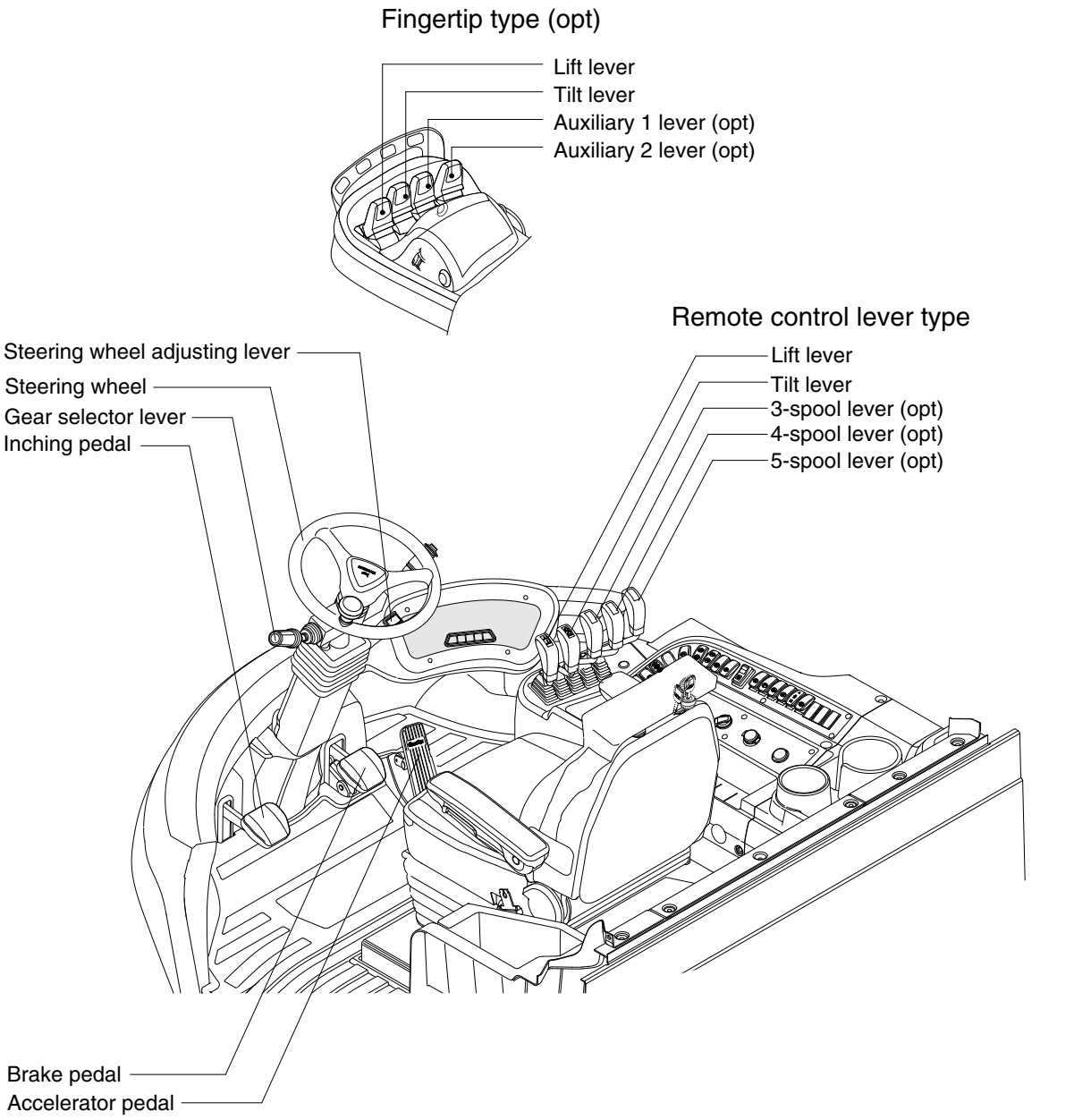
(1) This switch makes FNR to enable when the fingertip is equipped as an option.

25) FNR SWITCH (option)

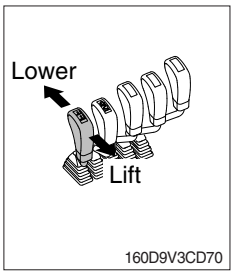


(1) This switch changes travel direction of truck only when the FNR enable switch is selected ON.
- F : Truck moves forward
- N : Neutral position
- R : Truck moves backward

7. CONTROL DEVICE



1) LIFT LEVER



(1) Lift

Pull the lever back to lift the forks.

(2) Lower

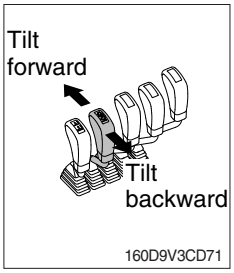
Push the lever forward to lower the load.

(3) Holding

When the lever is released, the lifting or lowering action stops.

※ Lifting speed is controlled by lift lever and accelerator pedal. Lowering speed is controlled by lever only.

2) TILT LEVER



(1) Tilt forward

Push the lever forward to tilt mast forward.

(2) Tilt backward

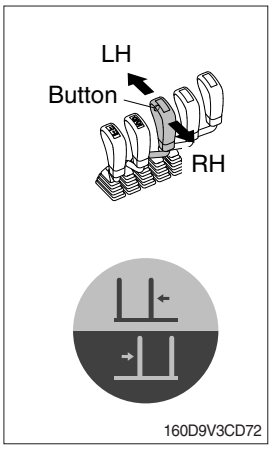
Pull the lever back to tilt mast backward.

(3) Holding

When the lever is released, tilting action stops.

※ Forward and backward tilting speeds are controlled by tilt lever and accelerator pedal.

3) LEVER FOR SIDE SHIFT



(1) LH movement

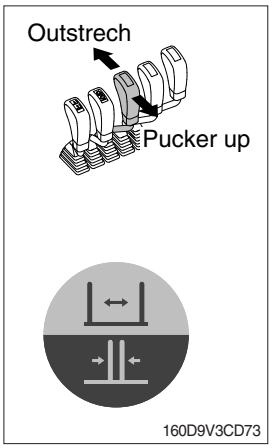
Press the button on the 3rd lever then push the lever forward to move the left hand for the side shift.

(2) RH movement

Press the button on the 3rd lever then pull the lever backward to move the right hand for the side shift.

4) LEVER FOR SIDE SHIFT WITH FORK POSITIONER

(1) Fork positioner (synchronizer type)



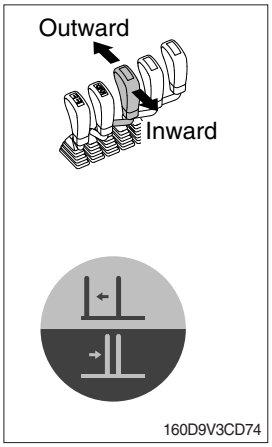
① **Outstrech the forks**

Push the lever forward to outstrech simultaneously outward of the both forks.

② **Pucker up the forks**

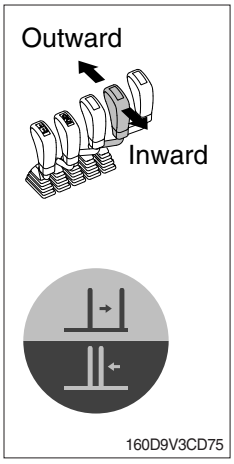
Pull the lever backward to pucker up simultaneously inward of the both forks.

(2) Fork positioner (independent type)



① **LH fork movement**

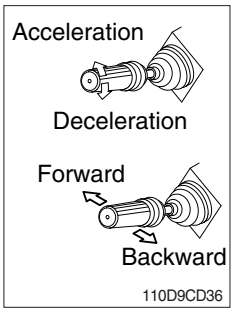
- Push the lever forward to move outward for the LH fork.
- Pull the lever backward to move inward for the LH fork.



② **RH fork movement**

- Push the lever forward to move outward for the RH fork.
- Pull the lever backward to move inward for the RH fork.

5) GEAR SELECTOR LEVER

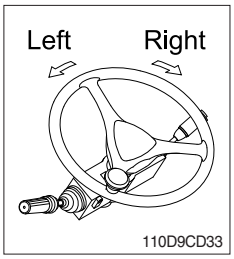


(1) This lever is used for gear selection, forward 3 stages and reverse 3 stages.

(2) If you push the gear selector lever, the truck moves forward, but pulling the gear selector lever, the truck moves backward.

(3) If you turn the gear selector lever forward, the truck increases the speed, but if you turn the gear selector lever backward, the truck reduces the speed.

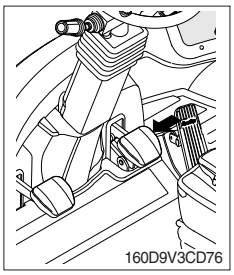
6) STEERING WHEEL



(1) A steering cylinder of the steering axle will operate the steering function.

(2) Turning the steering wheel left, the truck moves to the left side and turning it right, the truck moves to the right side.

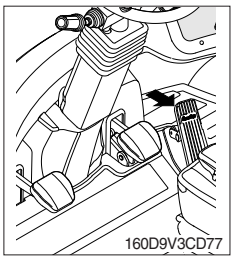
7) BRAKE PEDAL



(1) If the pedal is pushed, braking force is generated and bring the truck to a stop.

※ **Do not operate the truck with stepping on the brake pedal unnecessarily, or bring premature wear of brake disc.**

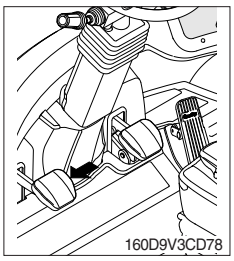
8) ACCELERATOR PEDAL



(1) This pedal controls the engine speed. The engine speed will increase in proportion to the degree of force applied to this pedal.

(2) Unless this pedal is pressed, the truck will run at low idling.

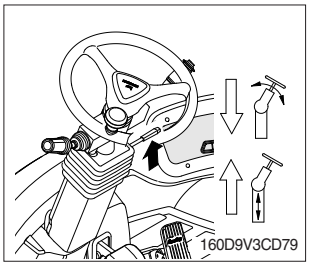
9) INCHING PEDAL



(1) Inching pedal is used for fine control of forward and reverse movement when lifting up or putting down loads.

※ **Do not put your foot on the inching pedal or brake pedal unless using it.**

10) STEERING WHEEL ADJUSTING LEVER



(1) By pulling down the lever, the wheel is adjustable to tilt.
- Tilting angle : 40˚

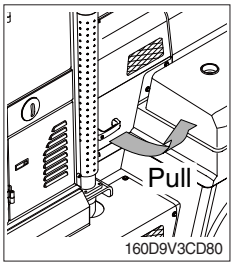
(2) By pulling up the lever, the wheel is adjustable to telescope.
- Telescopic stroke : 80 mm

(3) Release the lever to lock the steering wheel in the desired position.

※ **After adjusting, try to move the steering wheel backward and forward to check that it is locked in the selected position.**

⚠ **Always carry out the adjustment with the truck stopped. Never try to adjust the steering wheel when the truck is moving.**

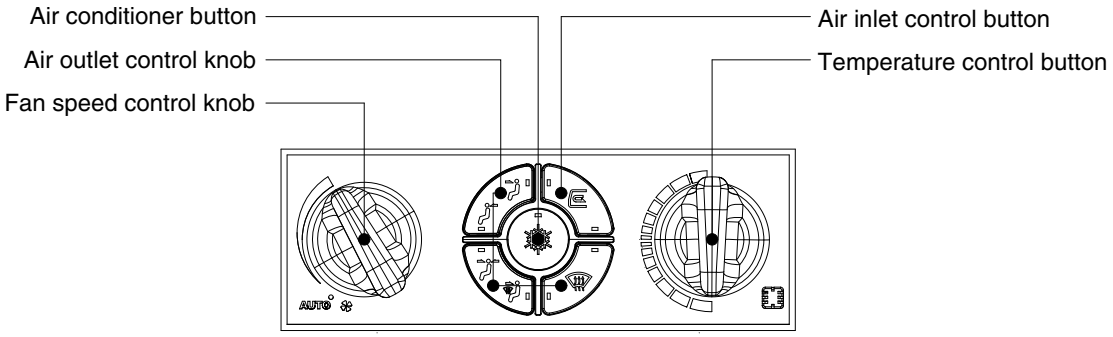
11) ENGINE HOOD



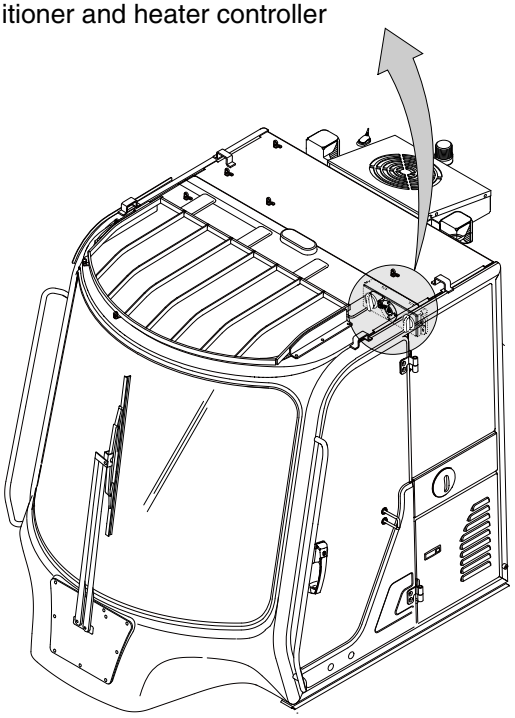
(1) Pull the handle attached on the bolt side of engine hood to open it.

8. AIR CONDITIONER AND HEATER

Full auto air conditioner and heater are equipped for pleasant operation against outside temperature and defrost on window glass.



Air conditioner and heater controller



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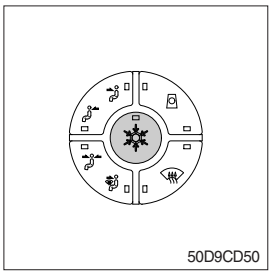
1) AIR CONDITIONER BUTTON



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(1) When you push this button, air conditioner system is operated.

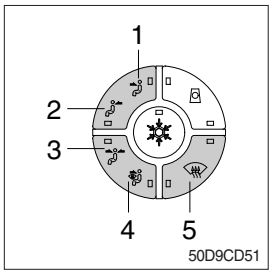
(2) Determines whether to perform a cooling function of air conditioner.

① Pilot lamp ON : Air conditioner operation

② Pilot lamp OFF : Fan only

※ **The AUTO pilot lamp ON when this button is pushed.**

2) OUTLET CONTROL BUTTON

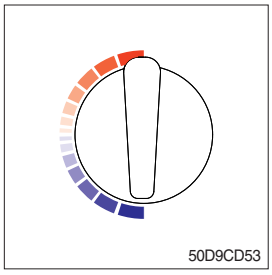


There are five kinds of air flow.

① Foot
② Rear
③ Foot and rear
④ Foot and defrost
⑤ Defrost

※ **The pilot lamp is turned ON when the button is pushed.**

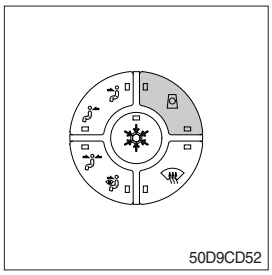
3) TEMPERATURE CONTROL KNOB



This knob regulates the temperature of air.

① Right side (red zone) : Cool down air temperature
② Left side (blue zone) : Heat up air temperature

4) AIR INLET CONTROL BUTTON

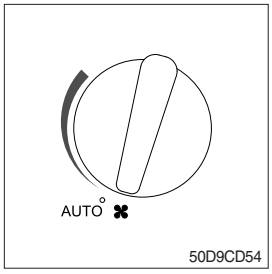


This button selects the inlet air.

① Pilot lamp ON : Fresh air intake.
② Pilot lamp OFF : The air circulates in the cab.

※ **The pilot lamp is turned ON when the button is pushed.**
※ **Check out the fresh air filter periodically to keep a good efficiency.**
※ **Change air occasionally when using recirculation for a long time.**
※ **Check out the recirculation filter periodically to keep a good efficiency.**

5) FAN SPEED CONTROL KNOB



① Fan speed is controlled automatically by set temperature.
※ **The AUTO pilot lamp ON when the air conditioner button is pushed.**

② This knob controls fan speed manually.
※ **The AUTO pilot lamp OFF when this knob is operated.**

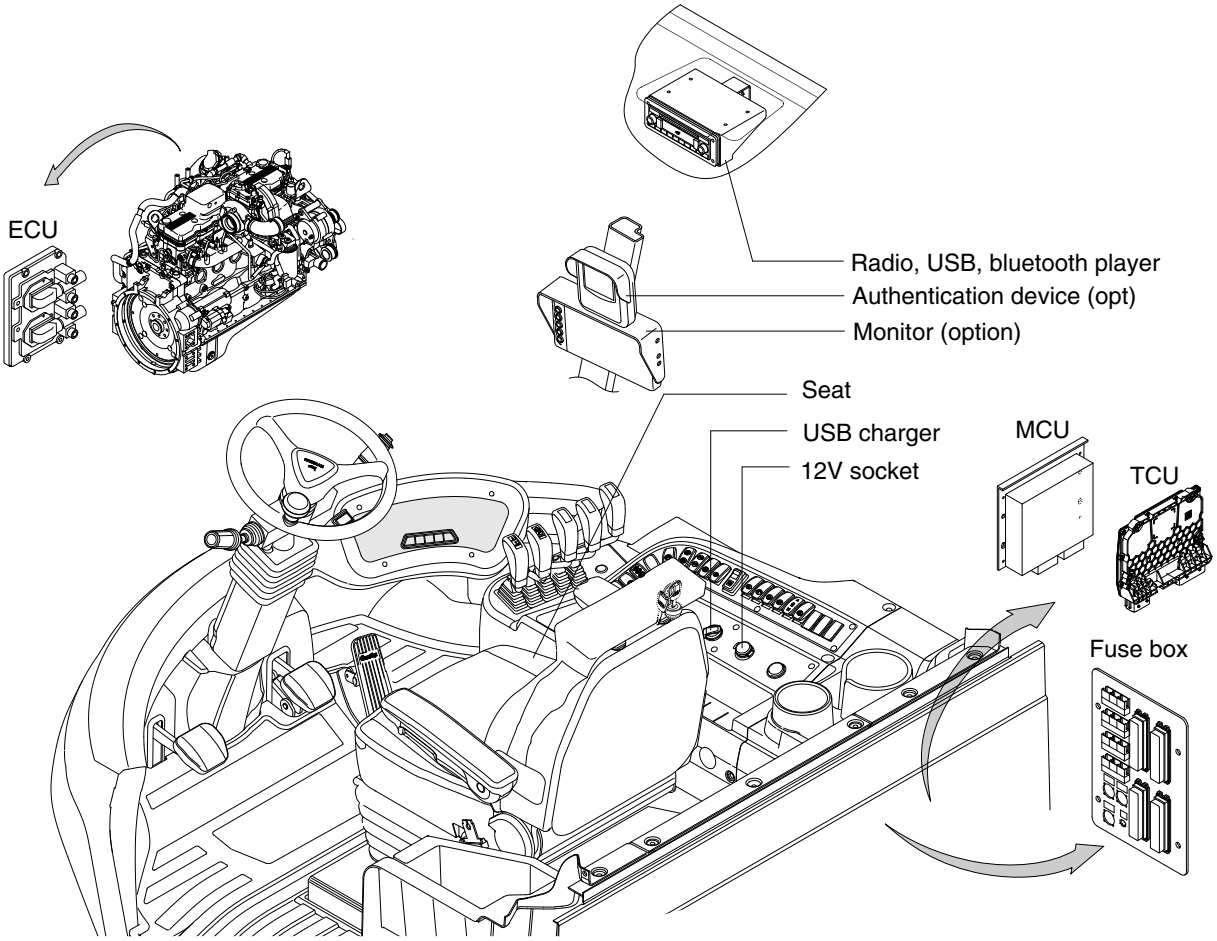
③ This knob makes the system ON.

④ The fan is stopped when this knob is pointed to the ✱ position.

6) DIAGNOSIS AND MEASURES BY ERROR

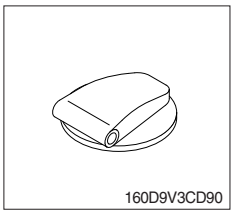
Error	Meaning
Ambient sensor open	1. Check assembly status. 2. Ambient temperature sensor exchange after single item check.
Ambient sensor short	
In-cabin temperature sensor open	1. Check assembly status. 2. In-cabin temperature sensor exchange after single item check.
In-cabin temperature sensor short	
Evap. sensor open	1. Check assembly status. 2. Evap. sensor exchange after single item check.
Evap. sensor short	
Water valve sensor open	1. Check assembly status. 2. Mix actuator exchange after single
Gauge pressure circuit error	1. Check assembly status. 2. Please refer to the type of fault diagnosis using gauge. 3. Failure diagnosis and measures. Failure diagnosis of gauge type.

9. OTHERS



160D9V3CD09

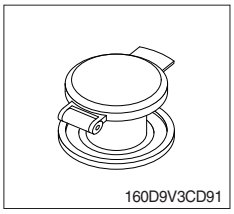
1) USB CHARGER



160D9V3CD90

(1) This is possible to use a USB cable to connect a device to a power supply.

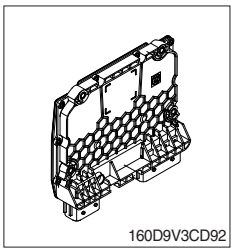
2) 12V SOCKET



160D9V3CD91

(1) Utilize the power of 12 V as your need and do not exceed power of 12 V, 120 W.

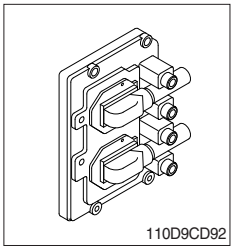
3) TRANSMISSION CONTROL UNIT (TCU)


160D9V3CD92

(1) The control unit is shifting the required speeds fully-automatically under consideration of the following criteria.

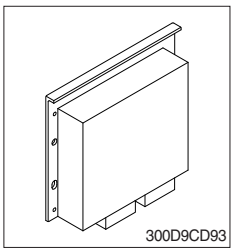
- Gear selector lever position
- Driving speed
- Load level

4) ENGINE CONTROL MODULE (ECM)


110D9CD92

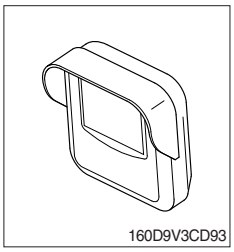
The engine control module (ECM) is the control center of the engine system.

5) MACHINE CONTROL UNIT (MCU)


300D9CD93

It consists of electronic parts and controls all lamps and buzzers on cluster in accordance with signals transmitted from the switches, the ECM, TCU, the engine and the hydraulic pressure sensors.

6) AUTHENTICATION DEVICE (option)


160D9V3CD93

(1) This is used for RF ID tagging by touching the ID card or entering pin number as an option.
Also, it is possible to manage driver and safety.

※ **Refer to page 3-91 for details.**

7) RADIO AND USB PLAYER (WITH BLUETOOTH)

9403CD100

■FRONT PANEL PRESENTATION

1 Power ON/OFF,
Volume UP/DOWN button

2 ------ Manual UP/DOWN Tuning,
File search, SEL button

3 ------ Mode button,
Audio mute button

4 ------ Call & Pair button

5 ------ Call end button

6 ------ Station preset 1
DIS ---------Display button

7 ------ Station preset 2

8 ------ Station preset 3
RPT ---------Repeat play button

9 ------ Station preset 4
RDM ---------Random play button

10 ------ Station preset 5
DIR- --------- Directory down button

11 ------ Station preset 6
DIR+ --------- Directory up button

12 ------ Scan play button (SCAN)
Best station memory (BSM) button

13 ------ Auto tune up, Seek up button

14 Auto tune down, Track down button

15 ------ USB connector

16 AUX IN Jack

17 MIC hole

■GENERAL

(1) Power and volume button

9403CD102

① **Power ON / OFF button**

Press power button (1) to turn the unit on or off.

② **Volume UP/DOWN control knob**

Turn VOL knob (1) right to increase the volume level.
Turn VOL knob (1) left to decrease the volume.
After 5 seconds the display will return to the previous display mode.

③ **Initial volume level set up**

I-VOL is the volume level the unit will play at when it is next turned on. To adjust the I-VOL level, press and hold VOL button (1) for longer than 2 seconds. The current volume level displays on the display panel.
Then turn button (1) right or left to set the volume level as the I-VOL level.

④ **Clock ON/OFF control**

The CLOCK was default at off status. To turn CLOCK ON, press and hold VOL button (1) for longer than 2 seconds to display I-VOL, then short press VOL again, turn VOL knob while CLOCK OFF display, then the CLOCK ON will be displayed.

※ **Due to time tolerance, the clock display on the Audio unit might have slight difference.**

⑤ **Clock adjustment**

With CLOCK ON selected, press VOL knob again after CLOCK ON display, the hour will blink, turn VOL knob right or left to adjust hour.
Simply press VOL again, the minute will blink, turn VOL knob to adjust minute. Then press VOL again to confirm the clock once finished.

(2) Menu Selection

9403CD103

① This button can adjust the effect of the sound and other things. Each time you press this button (2), LCD displays as follows :

BAS ➔ TREB ➔ BAL L=R ➔ FAD F=R ➔ EQ ➔ LOUD ON ➔ BEEP 2ND

On each setting, the level can be controlled by turning TUNE knob (2). When the last adjustment is made, after 5 seconds, the display will automatically return to the previous display mode.

② **Bass control**

To adjust the bass tone level, first select the bass mode by pressing SEL button (2) repeatedly until BASS appears on the display panel. Then turn knob (2) right or left within 5 seconds to adjust the bass level as desired. The bass level will be shown on the display panel from a minimum of BASS-7 to a maximum of BASS+7.

③ **Treble control**

To adjust the treble tone level, first select the treble mode by pressing SEL button (2) repeatedly until TREB appears on the display panel. Then turn knob (2) right or left within 5 seconds to adjust the treble level as desired. The treble level will be shown on the display panel from a minimum of TREB -7 to a maximum of TREB +7.

④ **Balance control**

To adjust the left-right speaker balance, first select the balance mode by pressing SEL button (2) repeatedly until BAL indication appears on the display panel. Then turn knob (2) right or left within 5 seconds to adjust the balance as desired. The balance position will be shown by the bars on the display panel from BAL 10R (full right) to BAL 10L (full left).

⑤ **Fader control**

To adjust the front-rear speaker balance, first select the fader mode by pressing SEL button (2) repeatedly until FADER indication appears on the display panel. Then turn knob (2) right or left within 5 seconds to adjust the front-rear speaker level as desired. The fader position will be shown by the bars on the display panel from FAD 10F (full front) to FAD 10R (full rear).

⑥ **EQ control**

You can select an equalizer curve for 4 music types (CLASSIC, POP, ROCK, JAZZ). Press button (2) until EQ is displayed, then turn knob (2) right or left to select the desired equalizer curve. Each time you turn the knob, LCD displays as follows :

EQ OFF ➔ CLASSIC ➔ POP ➔ ROCK ➔ JAZZ

※ **When the EQ mode is activated, the BASS and TREBLE modes are not displayed.**

⑦ Loud control

When listening to music at low volume levels, this feature will boost the bass and treble response. This action will compensate for the reduction in bass and treble performance experienced at low volume.

To select the loudness feature, press button (2) until LOUD is displayed, then turn knob (2) right or left to activate or deactivate loudness.

⑧ Beep control

To adjust the BEEP mode, first select the BEEP mode by pressing button (2) repeatedly until BEEP indication appears on the display panel. Then turn knob (2) left or right within 5 seconds to select BEEP 2ND, BEEP OFF or BEEP ON.

· BEEP 2ND : You will only hear the beep sound when the buttons are held down for more than 2 seconds.
· BEEP OFF : You can not hear the sound beep when you press the buttons.
· BEEP ON : You can hear the beep sound each time you press the buttons.

(3) Mute control

① Press and hold MUTE button (3) for over 2 seconds to mute sound output and MUTE ON will blink on the LCD. Press the button again to cancel MUTE function and resume to normal playing mode.

(4) Mode selection

① Repeat press MODE button (3) to switch between FM1, FM2, AM, USB, AUX, BT MUSIC.

※ If there is no USB, AUX, Bluetooth Phone connected, it would not display USB, AUX, BT when you press button (3).

■RADIO

(1) Mode button

9403CD104

① Repeat press MODE button to select FM1, FM2 or AM.

(2) Manual tuning button

9403CD105

① To manually tune to a radio station, simply turn encoder TUNE (2) left or right to increase or decrease the radio frequency.

(3) Auto tuning button

9403CD106

9403CD107

① To automatically select a radio station, simply press Seek up or Track down button.

(4) Station preset button

9403CD108

① In radio mode, pressing buttons (6) to (11) will recall the radio stations that are memorized. To store desired stations into any of the 6 preset memories, in either the AM or FM bands, use the following procedure :

a. Select the desired station.
b. Press and hold one of the preset buttons for more than 2 seconds to store the current station into preset memory. Six stations can be memorized on each of FM1, FM2, and AM.

(5) Preset scan (PS) / Best station memory (BSM) button

① Press BSM button (12) momentarily to scan the 6 preset stations stored in the selected band. When you hear your desired station, press it again to listen to it.
Press BSM button (12) for longer than 2 seconds to activate the Best Station Memory feature which will automatically scan and enter each station into memory.

※ **If you have already set the preset memories to your favorite stations, activating the BSM tuning feature will erase those stations and enter into the new ones. This BSM feature is most useful when travelling in a new area where you are not familiar with the local stations.**

■USB PLAYER

(1) USB playback

9403CD110

① The unit was equipped with a front USB jack and also a rear USB Jack.
With a USB device plugged in the front USB jack, it will be detected as front USB mode. And with a USB device plugged in the rear USB jack, it will be detected as rear USB. To get to a USB mode, press MODE (3) button momentarily or insert the USB device in front or rear USB jack.

※ **If there are no mp3 or wma files in USB device, it will revert to the previous mode after displaying NO FILE.**

(2) Track Up / Down button

9403CD106

① Press SEEK up (13) or TRACK down (14) to select the next or previous track. Press and hold the buttons to advance the track rapidly in the forward or backward direction.

9403CD107

(3) MP3 directory / File searching

9403CD111

① Button (2) is used to select a particular directory and file in the device. Turn button (2) right or left to display the available directories. Press button (2) momentarily when the desired directory is displayed, then turn button (2) right or left again to display the tracks in that directory. Press button (2) to begin playback when the desired file is displayed.

(4) Directory Up / Down button

9403CD112

① During MP3/WMA playback, simply press DIR- button (10) to select the previous directory (if available in the device); simply press DIR+ button (11) to select the next directory (if available in the device).

※ **If the USB device does not contain directories, it would play MP3/WMA tracks at 10- file when you press DIR- button (10), and play MP3/WMA tracks at 10+ file when you press DIR+ (11) button.**

(5) Track Scan Play (SCAN) button

9403CD113

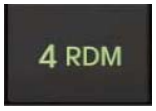
- SCAN playback : Simply press SCAN (12) button to play the first 10 seconds of each track.
- SCAN folder : Press and hold SCAN button for longer than 2 seconds to scan play the tracks in current folder.
- SCAN off : Simply press it again to cancel SCAN feature.

(6) Track Repeat Play (RPT) button

9403CD114

- REPEAT playback : Simply press RPT (8) button to play current track repeatedly.
- REPEAT folder : Press and hold RPT for longer than 2 seconds to repeat play the tracks in current folder.
- REPEAT off : Simply press it again to cancel REPEAT feature.

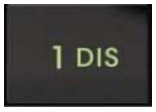
(7) Track Random Play (RDM) button



9403CD115

- RANDOM playback : Simply press RDM (9) button to play the tracks in the device in a random sequence.
- RANDOM folder : Press and hold RDM button for longer than 2 seconds to randomy play the tracks in the current folder.
- RANDOM off : Simply press it again to cancel RANDOM feature.

(8) ID3 v2 (DISP)



9403CD116

① While a MP3 file is playing, press DISP button (6) to display ID3 information. Repeat push DISP button (6) to show directory name / file name and album name / performer / title.

※ If the MP3 disc does not have any ID3 information, it will show NO ID3.

* USB Information and Notice

a. Playback FILE SYSTEM and condition allowance.
   - FAT, FAT12, FAT16 and FAT32 in the file system.
   - V1.1, V2.2 and V2.3 in the TAG (ID3) version.

b. Display up to 32 characters in the LCD display.

c. No support any of MULTI-CARD Reader.

d. No high speed playback but only playing with normal full speed.

※ DRM files in the USB may cause malfunction to playback in the radio unit.

※ In temperatures below -10℃ (14°F), the audio unit with USB hook up may be affected and not play well.

■AUX OPERATION

It is possible to connect your portable media player to the audio system for playback of the audio tracks via the cab speakers.

To get the best results when connecting the portable media to the audio system, follow these steps :

- Use a 3.5 mm stereo plug cable to connect the media player headphone socket at each end as follows.
- Adjust the portable media player to approximately 3/4 volume and start playback.
- Press the MODE button (3) on the audio unit to change into AUX mode.
- The volume and tone can now be adjusted on the audio unit to the desired level.

※ **The audio quality of your media player and the audio tracks on it may not be of the same sound quality as the audio system is CD Player.**

※ **If the sound of the media player is too low compared with the radio or CD, increase the volume of the player.**

※ **If the sound of the media player is too loud and/or distorted, decrease the volume of the player.**

※ **When in AUX mode, only the Volume, Bass, Treble, EQ and Mode functions of the audio unit can be used.**

■BLUETOOTH (if equipped)

(1) Using a bluetooth wireless connection

① Your audio unit supports bluetooth wireless technology. You can set up a wireless link with bluetooth cellular phone.

② Continue to pair the cellular phone with the audio unit. Within a few moments the two should be able to connect.

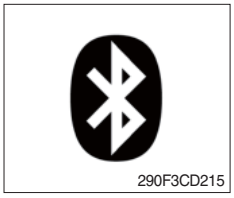
※ Since this audio unit is on standby to connect with your cellular phone via bluetooth wireless technology, using this audio unit without running the engine can result in battery drainage.

※ This audio units phone call reception is on standby when ignition switch is set to ACC OFF or ON.

※ The line-of-sight distance between this audio unit and your cellular phone must be 10 meters or less for sending and receiving voice and data via bluetooth wireless technology. However the transmission distance may become shorter than the estimated distance depending on the environment where it is being used.

※ Digital Noise & Echo suppression system provides the best sound clarity with little or no distortion (Echo & side tone will happen depending on cellular phone or service network).

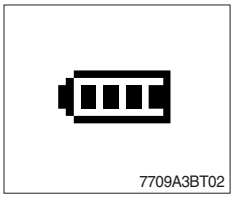
※ To ensure the quality of calling, you should select a proper bluetooth VR level. This audio unit is already equipped with the best bluetooth VR level.



a. Bluetooth icon

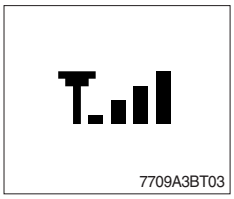
It will blink while establishing the bluetooth pairing.

It will light up after a bluetooth device connected.



b. Battery icon

It indicates the battery status of the connected bluetooth device.



c. Single strength icon

It indicates the signal strength of the connected bluetooth device.

(2) Pairing in hands free modes

9403CD117

① Press and hold CALL button (4) for 2 seconds until you hear beep sound, then PAIR STR will appear on the display.

② For the next procedure, go to cellular phone pairing mode.

③ If it is in pairing status with audio unit and cellular phone, PAIRING will show on the display.

④ If you want to exit pairing mode, press CALL END button (5) briefly while pairing, then it will show PAIR CLR on the display.

⑤ Bluetooth Icon and PAIR OK appear on the display when pairing is successful.

(3) Cellular phone pairing mode

① Browse your cellular phone menu and find the connectivity or bluetooth connection section.

② Select search for a new handsfree device function and allow the phone to find the mobile.

③ HYUNDAI should appear on your cellular phone screen.

④ Press connect menu among the handsfree option on your cellular phone.

⑤ The cellular phone should prompt for a pin code. Insert the pin code 1234.

⑥ The cellular phone should confirm that it has established a new paired connection.

⑦ Close the menu. The pairing is now completed. It appears PAIR FAIL on the display for 3 seconds.

※ Each cellular phone type has distinct phone menu so you may need to refer to your manufactures instruction for the correct procedure on how to connect a new bluetooth device.
※ Please retry the pairing instruction if HYUNDAI does not appear on the cellular phone screen.
※ Please select authorized, if there is authorized menu in the menu of bluetooth connection in your cellular phone.
※ Once the bluetooth pairing is completed between your cellular phone and this audio unit, both units will be automatically recognized on its paring like when you turn on the key in your car even though the audio unit is turned off.
※ This audio unit can store up to 6 phones pairings. If the memory is full, the first stored paired phone will be deleted.
※ The connecting priority will be given to the last connected cellular phone.
※ If you want to change the connecting priority, try to connect this audio unit from the cellular phone you want.

(4) Bluetooth connection and disconnection

① When established bluetooth connection is made between this audio unit and the cellular phone, bluetooth icon on the display appears and then the display shows HF/AV CONN when handsfree & AV profile is connected.

9403CD118

② To disconnect bluetooth link
Press and hold CALL END button (5) for 2 seconds, it shows DIS CON and bluetooth Icon disappears on the display.

9403CD117

③ To connect bluetooth link
Press CALL button (4) briefly, it blinks bluetooth Icon on the display while bluetooth is being connected. If the connection is completed, bluetooth Icon displays on the display.

※ When your cellular phone battery is at low charge, the bluetooth connection may occasionally be lost. To maintain good connectivity ensure that your phone battery is adequately charged.

※ In case of failure of bluetooth pairing :
- **Delete item in paired list on your phone.**
- **Reset both phone by power off/on and the audio unit by ACC off/on.**

※ Connecting priority of handsfree profile is higher than headset profile.

※ The headset mode does not support caller ID, reject call and call Transfer.

(5) Using the audio unit as a handsfree device

① When the audio unit is ringing, it shows CALL and follows with the phone number ********** on the display.

9403CD117/8

② To accept call
Press CALL button (4), ANSWER CALL followed by TALKING will show in the display.

③ To end call
To end call, press CALL END button (5), REJECT appears on the display.

※ If reject call is activated in your phone, then your cellular phone does not support reject call function.

(6) Audio transfer between the audio unit and phone

The audio transfer function is for switching the call from the audio unit to the cellular phone for private conversation.

① Press CALL button (4) briefly during conversation, it appears CALL TRANS on the display. To switch back to the audio unit, press button (4) briefly during private conversation, then it appears CALL TRANS on the display again.

※ **This function will be a cause of disconnection of bluetooth link in some nokia phones, but do not worry, just press button (4) during private conversation, then switch back to the audio unit automatically.**

※ **The quality of calling between cellular phone and audio unit is better than calling between one audio unit and another one.**

(7) Last call number dialing

① Press CALL button (4) briefly, it appears CALL TO on the display, then simply press CALL button once again, it would make the last call with phone number displayed on LCD.
If Reject call is activated in your phone, then your cellular phone does not support Reject Call function.

※ **If you are using SAMSUNG phone, then you may need to press send button once more. With the first press of button it should show contact list in your phone, then if you press again you should be ready to make the last call.**

(8) To make a call by cellular phone

The audio transfer function is for switching the call from the audio unit to the cellular phone for private conversation.

① The audio unit will be activated automatically when you make a call with cellular phone.
② When you make a call processing by cellular phone, it shows CALLING on the display.
③ When you receive a call, the phone number ******** appears on the display.

(9) Using the audio unit as bluetooth music

The audio unit supports A2DP (Audio Advanced Distribution Profile) and AVRCP (Audio Video Remote Control Profile), and both profiles are available to listen music at the audio unit via cellular phone which is supporting the two profiles above.

① To play music, search the menu on your cellular phone as below :
i.e : Menu➛ File manager➛ Music➛ Option➛ Play via bluetooth.
It appears BT MP3 on the display.

② During BT MP3 playing, you could select the previous or next track by pressing SEEK up or TRACK down button on audio unit or operate via your cellular phone.

③ To stop music, press button (5) briefly and it will automatically switch into the previous mode.

④ To resume music playing, press the play button on your cellular phone.

※ This function may be different depending on cellular phone. Please follow the cellular phone menu. Some types of phones need to pair once more for bluetooth MP3 connection.

※ This function will be caused to disconnect A2DP, AVRCP depends on cellular phone.

※ Information about songs (e.g.: the elapsed playing time, song title, song index, etc.) cannot be displayed on this audio unit.

■RESET AND PRECAUTIONS

(1) Reset function

Interfering noise or abnormal compressed files in the MP3 disc or USB instrument may cause intermittent operation (or unit frozen/locking up). It is strongly recommended to use appropriate USB storage to not cause any malfunction to the audio unit. In the unlikely event that the player fails to operate correctly, try to reset unit by any of following two methods.

① press and hold

simultaneously for about 5 seconds. (without Bluetooth)

② Press and hold

simultaneously for about 5 seconds. (with Bluetooth)

※ Take out the fuse for the audio system in the vehicle once and then plug it back in.

※ It will be necessary to re-enter the radio preset memories as these will have been erased when the microprocessor was reset.
After resetting the player, ensure all functions are operating correctly.

(2) Precautions

When the inside of the cab is very cold and the player is used shortly after switching on the heater, moisture may form on the disc or the optical parts of the player and proper playback may not be possible.
If moisture forms on the optical parts of the player, do not use the player for about one hour. The condensation will disappear naturally allowing normal operation.

① Operation voltage : 9~32 volts DC, negative
② Output power : 40 watts maximum (20 watts x 2 channels)
③ Tuning range

Area	Band	Frequency range	Step
USA	FM	87.5~107.9 MHZ	200K
	AM	530~1710 KHZ	10K
EUROPE	FM	87.5~108.0 MHZ	50K
	AM	522~1620 KHZ	9K
ASIA	FM	87.5~108.0 MHZ	100K
	AM	531~1602 KHZ	9K
LATIN	FM	87.5~107.9 MHZ	100K
	AM	530~1710 KHZ	10K

● AREA Selection :
- To select an area, press and hold related buttons at FM1 band for about 3 seconds.
- USA Area: Press and hold mode + 1DIS buttons for 3 seconds
- EUROPE Area: Press and hold mode + 2 buttons for 3 seconds
- ASIA Area: Press and hold mode + 3RPT buttons for 3 seconds
- LATIN Area: Press and hold mode + 4RDM buttons for 3 seconds.

④ USB version : USB 1.1
⑤ Bluetooth version : V2.1
⑥ Bluetooth supported profile :
- A2DP : Advanced Audio Distribution Profile
- AVRCP : Audio/Video Remote Control Profile
- HFP : Hands-Free Profile

8) CAMERA MONITOR (option)

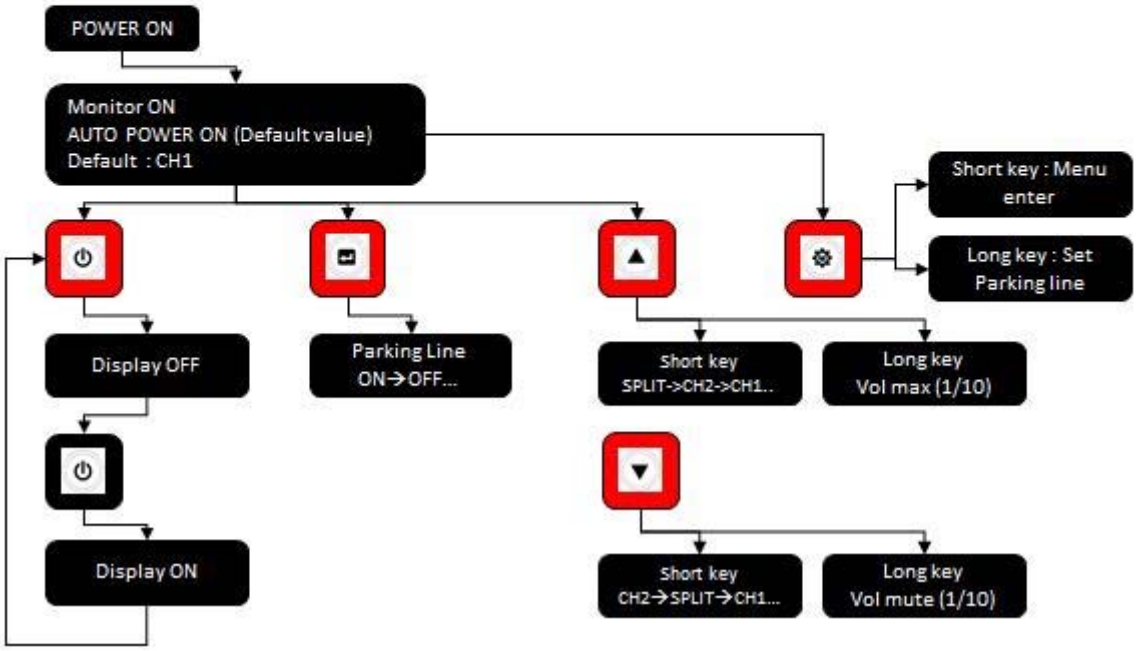
960A3CD65

(1) Summary of key actions

No.	Button	Description	Single Cam mode	Function menu - Single Cam
1		POWER	- Beep stop* - Display On / Off	- Beep stop* - Display On / Off - Menu escape (save & exit)
2		SELECT	Parking guide line On / Off	- 0 : Menu select - 1 : Adjust menu escape
3		**MENU**	- 0 : Menu enter - 1 : Parking guide line adjust (long key/2 sec)	Menu next page
4		**UP**	- S*: Previous view - L*: Adjust to the volumn set in the menu	- Menu Up - Menu Adjust Up
5		DOWN	Next view	- Menu Down - Menu Adjust down

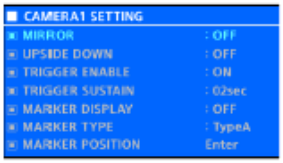
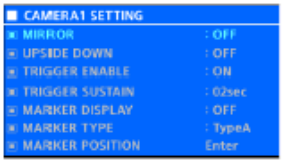
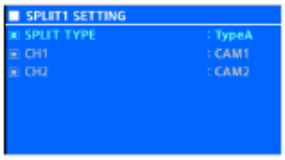
· Beep stop : Operates with Power button during beep (MOD) operation and has the highest priority.
· Beep stop off : Monitor OFF → ON or UP key (L)
· When alarm beep occurs, key beep mute.
· S : Short key
· L : Long key

(2) Operation scenario (Single camera mode)



160D9V3CD100

(3) Function menu tree (Single cam mode)

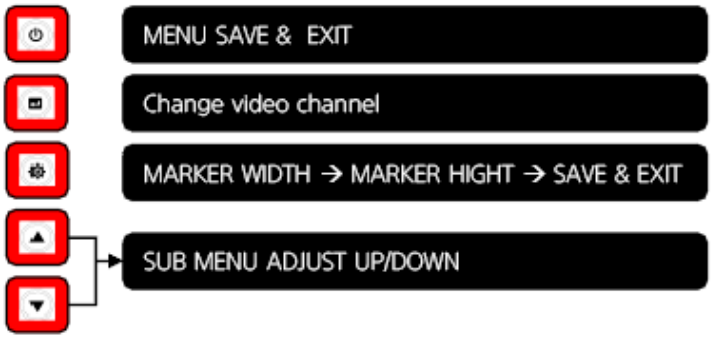
SHORT KEY					
NO	MENU	Pop-up menu	Background video	SETTING VALUE	비고
1	SCREEN COLOR SETTING		Previous view	BRIGHT : 0~60 / 1STEP	DEFAULT : 20
				CONTRAST : 0~60 / 1STEP	DEFAULT : 33
				COLOR : 0~60 / 1STEP	DEFAULT : 30
				SHARPNESS : 0~60 / 1STEP	DEFAULT : 30
				TINT : 0~60 / 1STEP	DEFAULT : 30
2	CAMERA 1 SETTING		CAMERA 1	MIRROR : ON/OFF	
				UPSIDE DOWN : ON/OFF	
				TRIGER ENABLE : ON/OFF	
				TRIGER SUSTAIN : 1~20sec / 1sec	
				MARKER DISPLAY : ALWAYS/TRIGER/OFF	
				MARKER TYPE : TYPE A / TYPE B	
				MARKER POSITION : ENTER	MARKR WIDTH / HIGHT ADJUST
3	CAMERA 2 SETTING		CAMERA 2	MIRROR : ON/OFF	
				UPSIDE DOWN : ON/OFF	
				TRIGER ENABLE : ON/OFF	
				TRIGER SUSTAIN : 1~20sec / 1sec	
				MARKER DISPLAY : ALWAYS/TRIGER/OFF	
				MARKER TYPE : TYPE A / TYPE B	
				MARKER POSITION : ENTER	MARKR WIDTH / HIGHT ADJUST
4	SPLIT 1 SETTING		SPLIT VIEW	SPLIT TYPE : TYPE A / TYPE B	
				CH1 : CAMERA1 / CAMERA 2	
				CH2 : CAMERA1 / CAMERA 2	
5	SYSTEM CONFIG		SPLIT VIEW	AUTO POWER : AUTO / ON / OFF	
				AUTO DIMMER : ON / OFF	
				BEEP VOLUME : 0~10 / 1 STEP	DEFAULT : 5
				LANGUAGE : 한국어 / ENGLISH	DEFAULT : ENGLISH
				FACTORY RESET : Ver x.xx / x.xx	

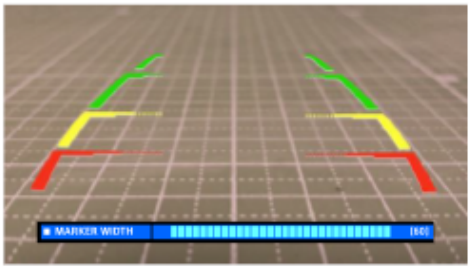
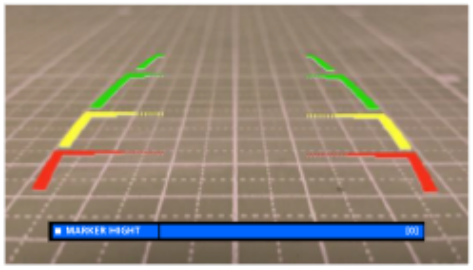
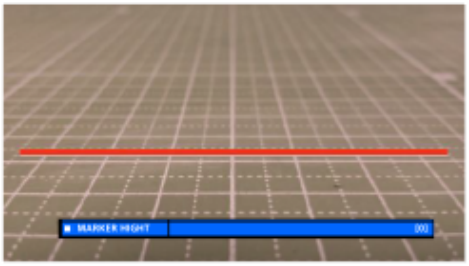
160D9V3CD101

(4) Parking guide line adjust

MENU BUTTON LONG KEY ENTER

CAMERA 1, 2 SETTING [Marker Position] SELECT and ENTER

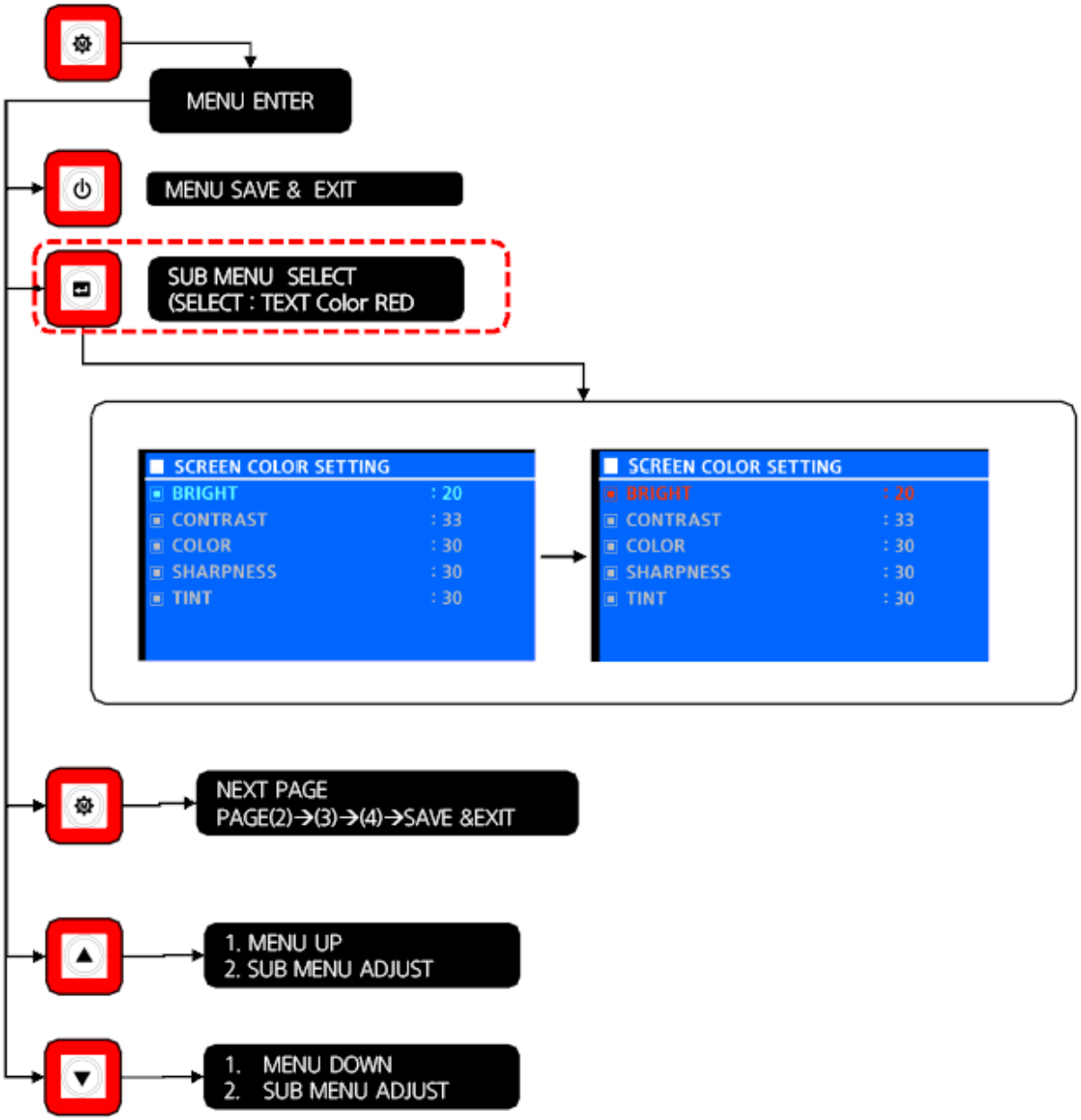


TYPE A		
TYPE B		

1. To set the parking line, [MARKER DISPLAY: ALWAYS or TRIGGER] must be set in Camera 1 or Camera 2 setting.
2. In other modes, the parking line can not be set.
3. [MARKER DISPLAY : OFF]
   1) The parking line positioning menu should not be selected.
   2) Do not enter LONG KEY with the menu button.

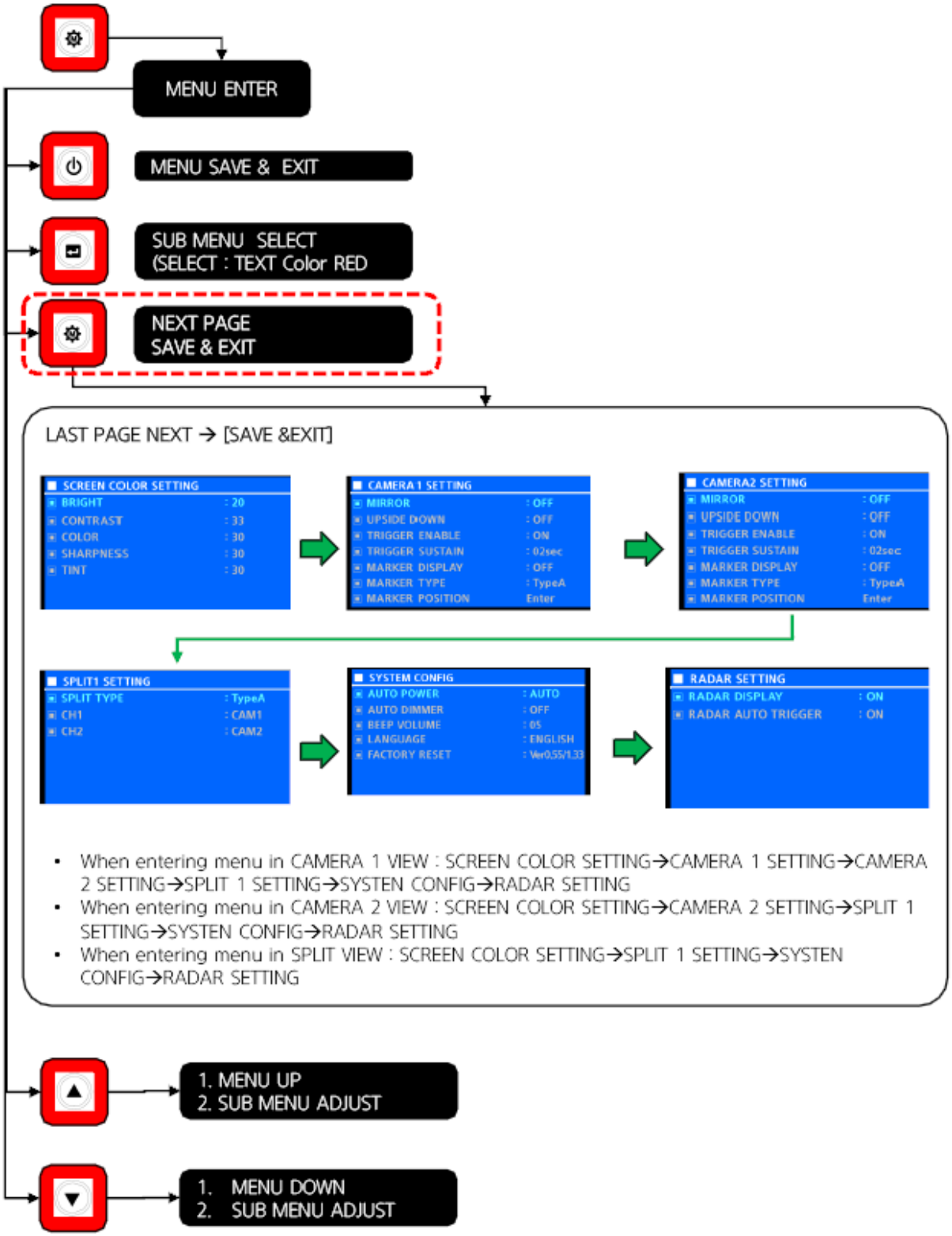
160D9V3CD102

(5) How to set function menu



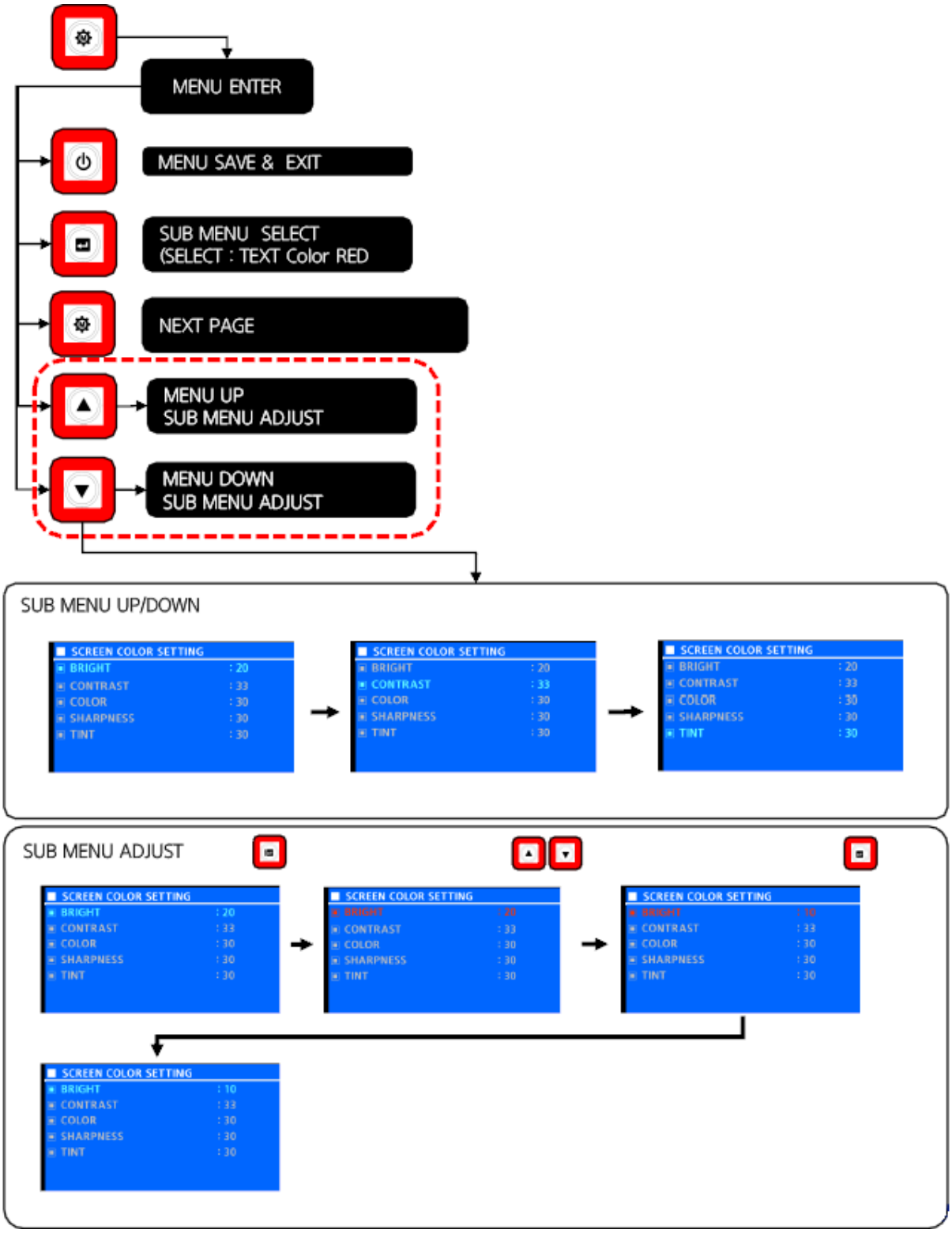
160D9V3CD103

(6) Composition of menu screen



160D9V3CD104

(7) Value adjustment



160D9V3CD105

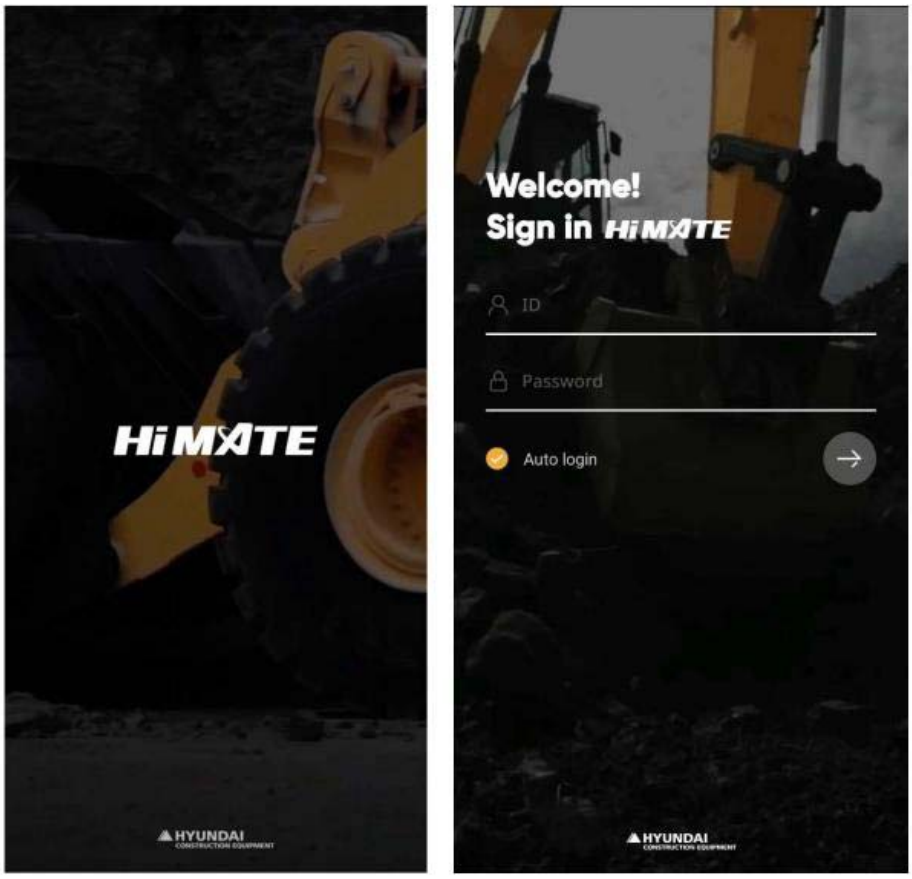
9) HI-MATE (BASIC)

(1) How to connect

① Web : https://himate.hyundai-ce.com

92FT-00426

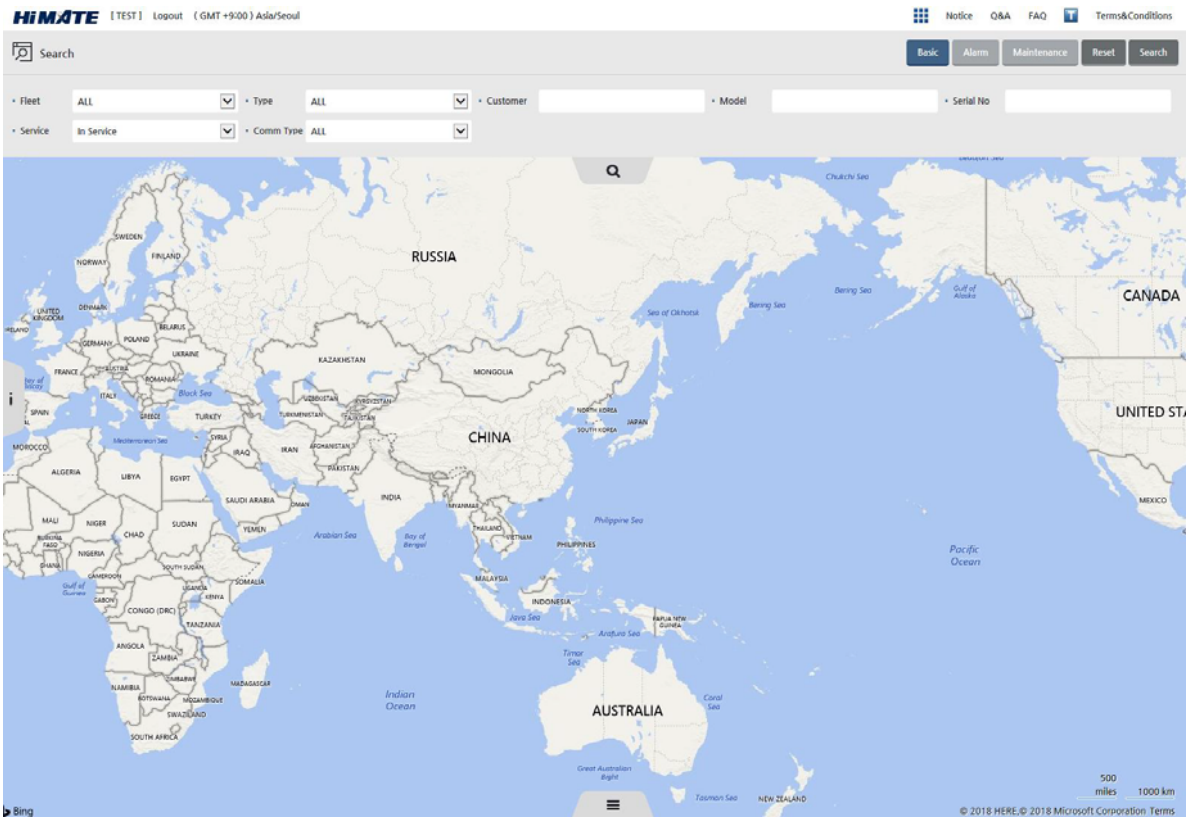
② App : iOS App Store / Google Play Store Search “HiMATE



160D9V3HM02

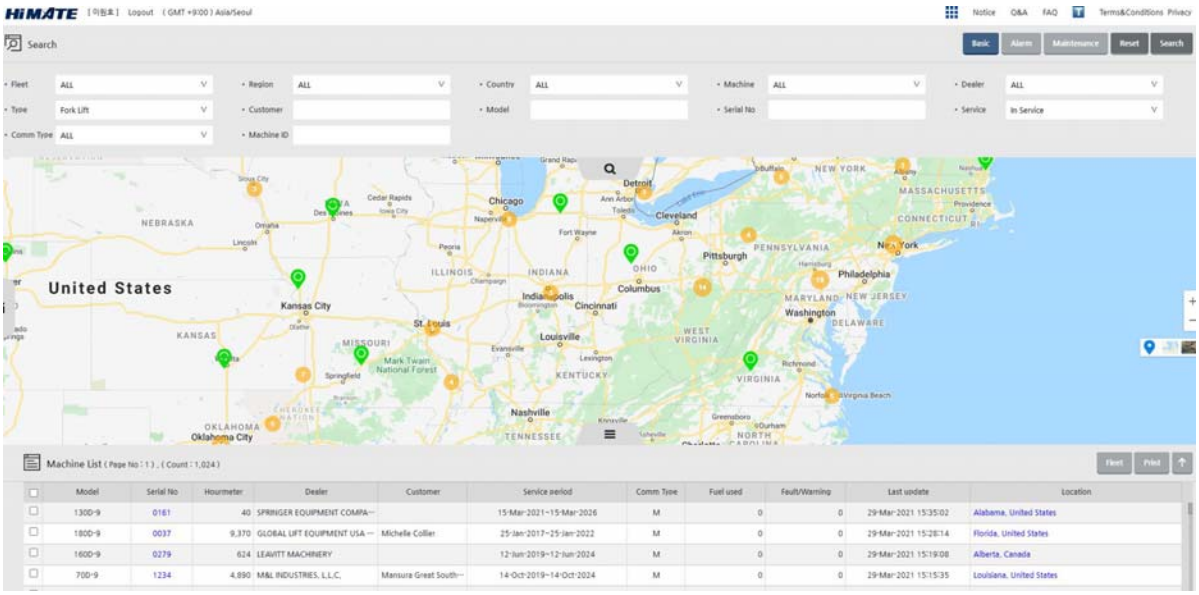
(2) How to search

① You can search, see the result and get additional valuable information at a glance.



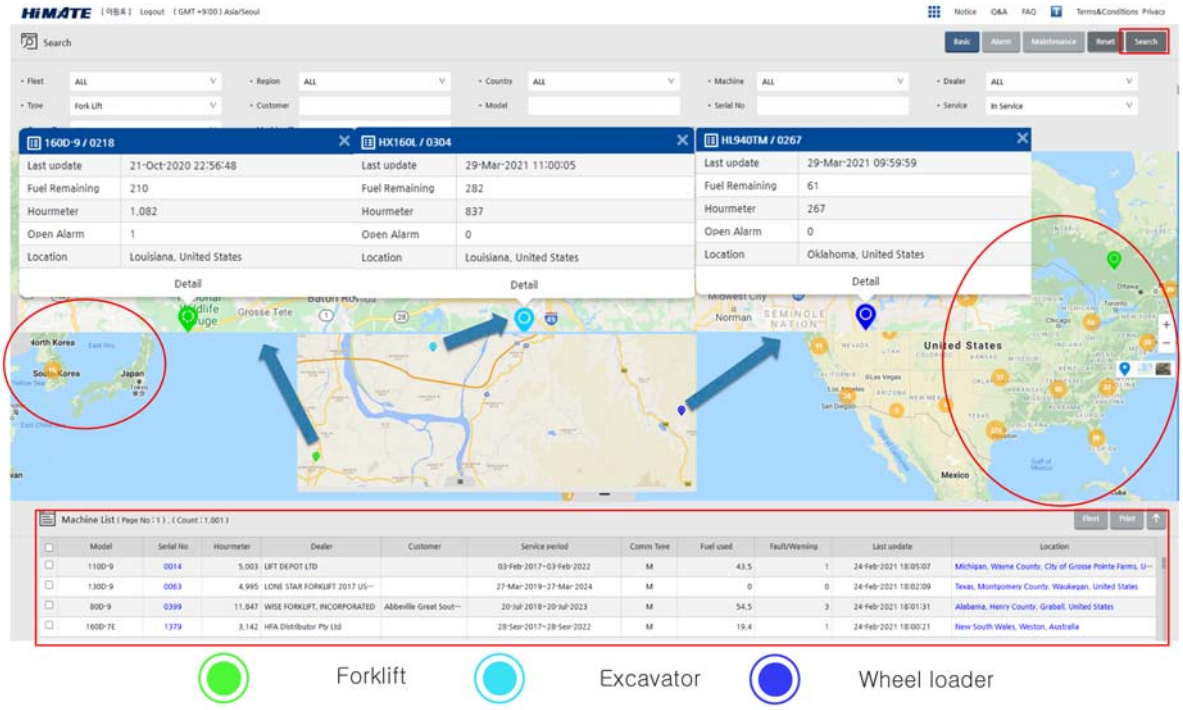
160D9V3HM03

② You can search, see the result and get additional valuable information at a glance.



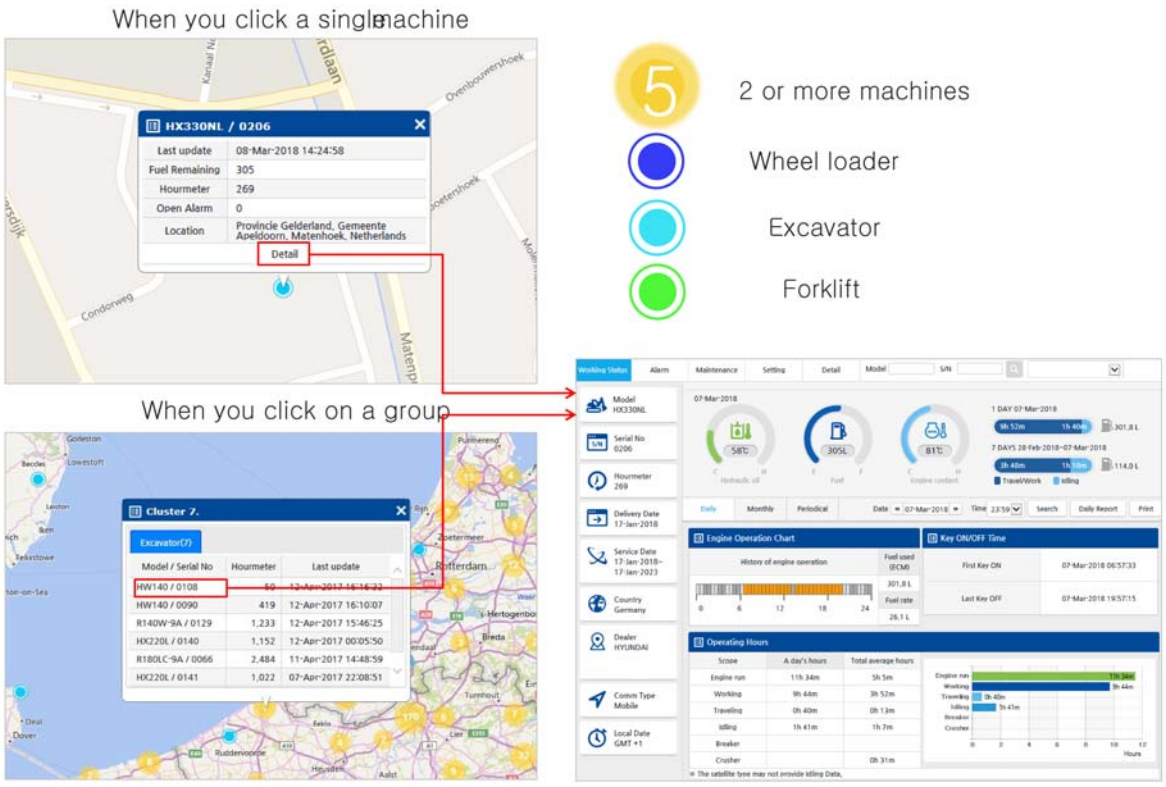
160D9V3HM04

③ After you click the search button, the location (map) and list of the devices that appear as search results appear.
The equipment is expressed in green, sky blue, purple, depending on the type.



160D9V3HM05

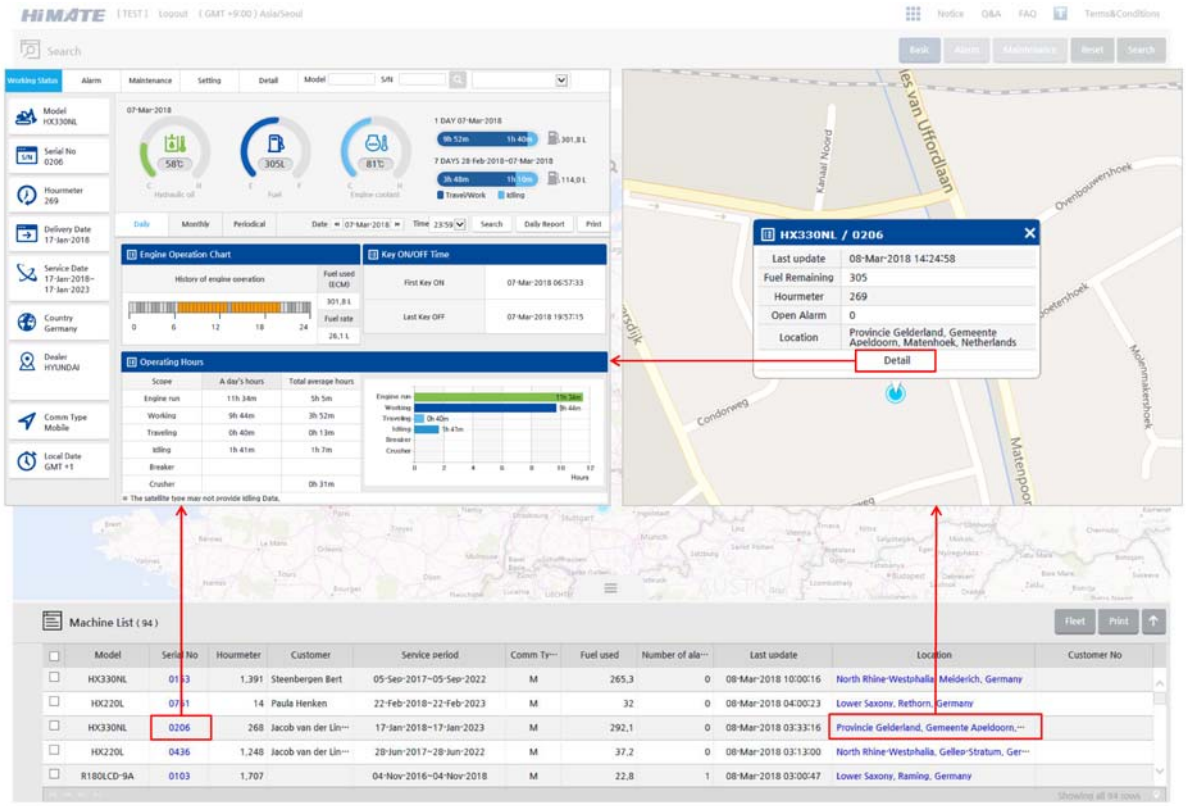
④ The icon of the map refers to different types of equipment by color.



160D9V3HM06

(3) How to search machine list

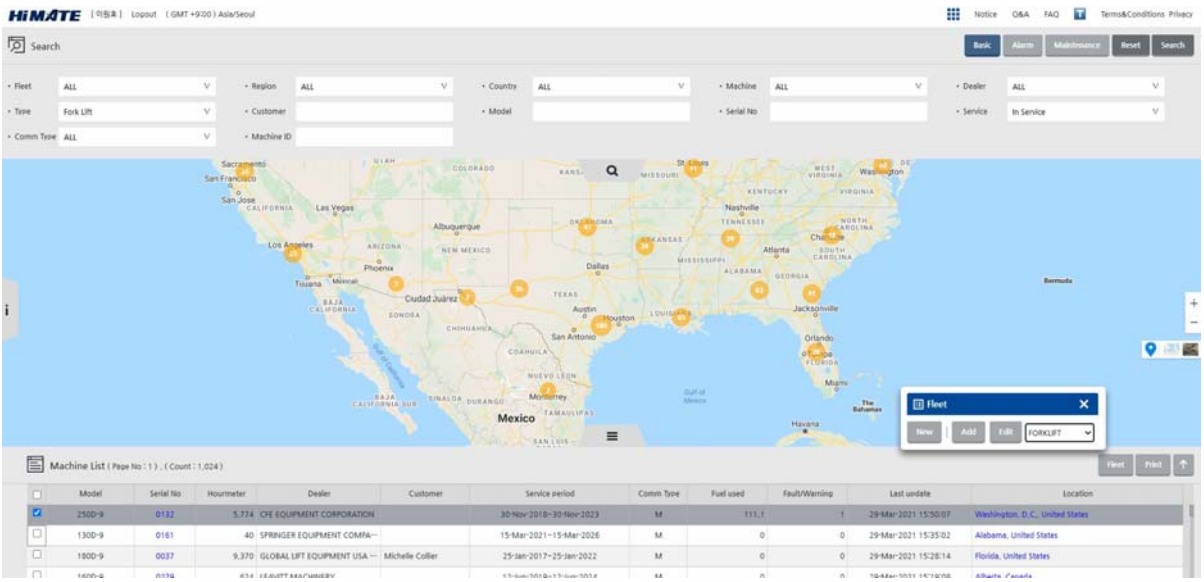
When you click S/N in the list, the details of appliance will be displayed, and when you click the location, the map screen moves to the location of the equipment.



160D9V3HM07

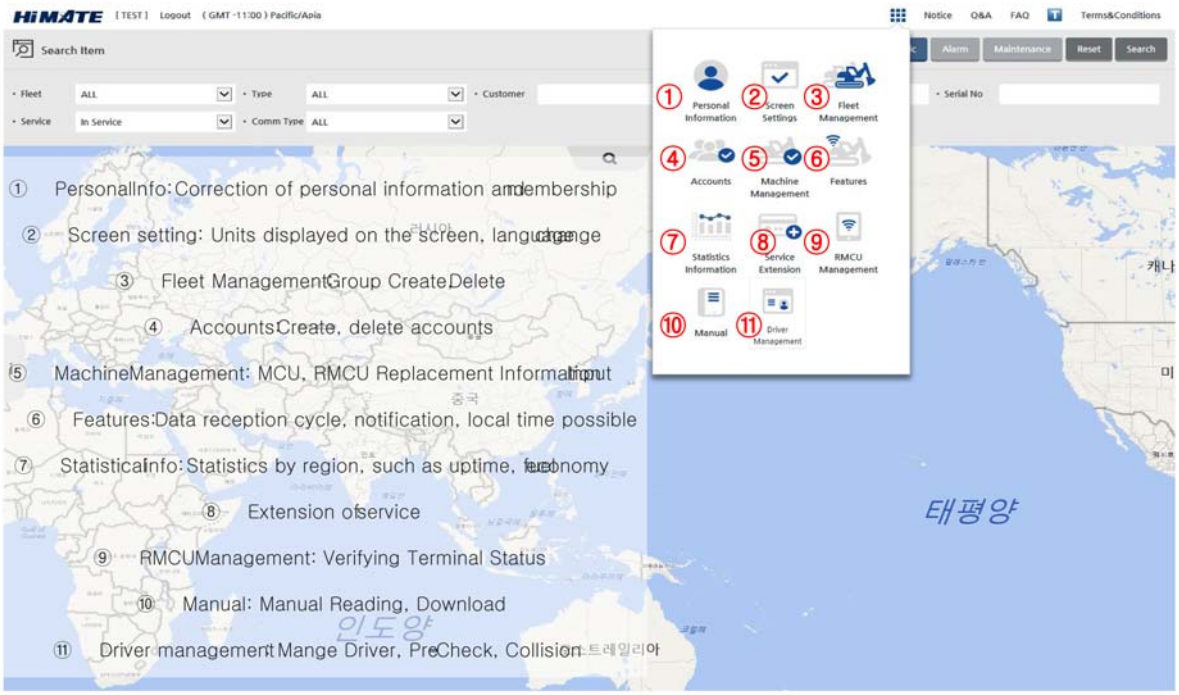
(4) How to create fleet

You can search, see the result and get additional valuable information at a glance.



160D9V3HM08

(5) Application list



160D9V3HM09

(6) Extension of service

Free subscription for New Equipment with RMS option

HCE offers free Hi MATE subscription for equipment purchased with RMS as an option or a standard. The period may differ by communication type and region. If you replace or move the RMCU to another equipment, free subscription is not offered.

Mobile	Satellite	Dual
5 years	2 years	2 years

Forklift is only available for Mobile

Hi MATE subscription starts when one of 4 requirements is met.

- A. 100Hourmeter
- B. Customer registration (Hi MATE)
- C. Delivery report (CERES)
- D. 24months after shipment

How to Extend Hi MATE Subscription

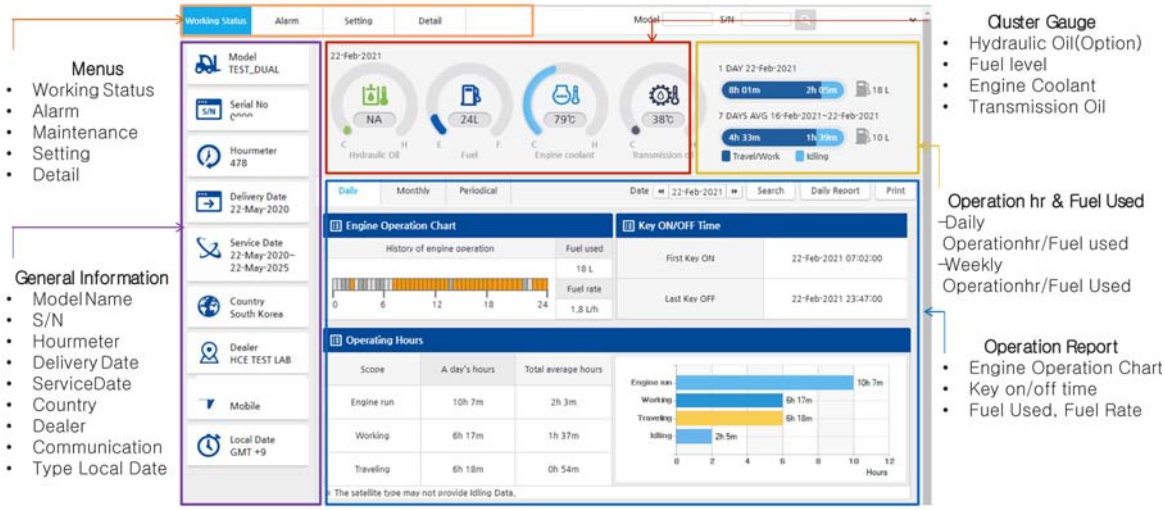
To continue Hi MATE service after termination or to start it for retrofitted RMS, use a service extension card.

Period	Mobile	Satellite	Dual
1 month	21Q8-32360	21Q8-32270	[illegible]
6 months	21Q8-32350	21Q8-32260	[illegible]
1 year	21Q8-32340	21Q8-32250	[illegible]
3 years	21Q8-32330	21Q8-32230	-

160D9V3HM10

(7) Machine details (engine type)

In the working status, you can find more information, including operation information, alarm, and etc.



List	Contents	Remark
Fuel	Current Fuel Tank	
Fuel Used	Cumulative fuel usage(1day)	
Hydraulic Oil	Measuring Oil Temperature	It measure when selected PA01
Engine Coolant	Measuring Oil Temperature	
Transmission Oil	Measuring Oil Temperature	
Engine Run	When engine run	
Working	When measuring above 100kg	
Traveling	When speed above 1km/h	
Idling	When two situations are not(Working, Traveling)	

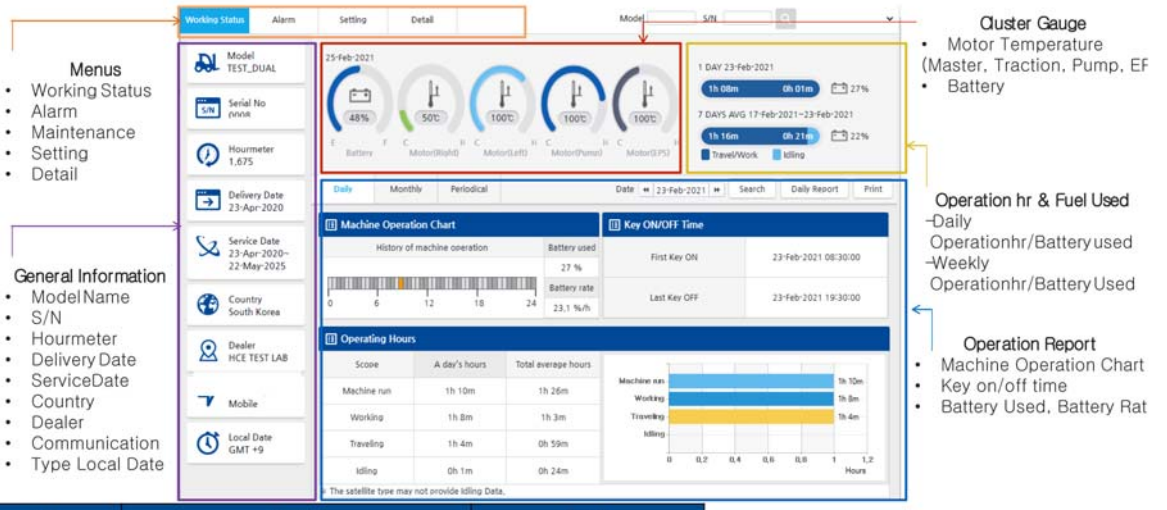
If there is no Load weight sensor
Working time, Weight measurement function can not be used

If you want to function FEH01 or FEH03 must be selected
(weight measurement screen is on 8 page)

160D9V3HM11

(8) Machine details (electric type)

In the working status, you can find more information, including operation information, alarm, and etc.



List	Contents	Remark
Battery	Current Battery(%)	
Battery Used	Cumulative Battery usage(1day)	
Motor(Right)	Measuring Motor Temperature	Master, Traction, Right Master
Motor(Left)	Measuring Motor Temperature	If no motor, show N.A(NOT AVAILABLE)
Pump	Measuring Motor Temperature	
EPS	Measuring Motor Temperature	If no motor, show N.A(NOT AVAILABLE)
Machine Run	When Key on	
Working	When Pump Motor Running	
Traveling	When Traction Motor Running	
Idling	When two situations are not(Working, Traveling)	

If there is no Load weight sensor
Weight measurement function can not be used

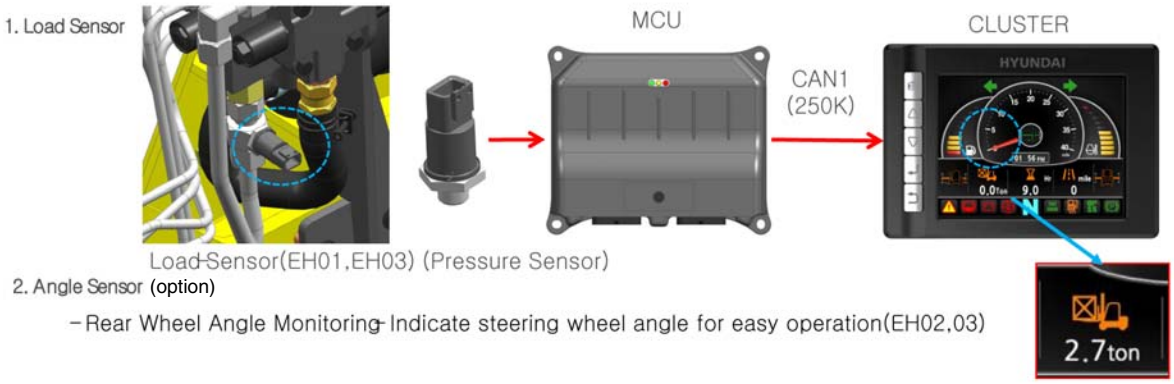
If you want to function FEH01 or FEH03 must be selected
(weight measurement screen is on 8 page)

160D9V3HM12

(9) Load and angle sensor (EH)

9) Load & Angle Sensor(EH)

Option Code	Mean	Type	Detail Mean	Remark
FEH	Load & Angle Sensor	FEH01	Load Sensor	9Ser. All
		FEH03	Load Sensor + Angle Sensor	16~30ton



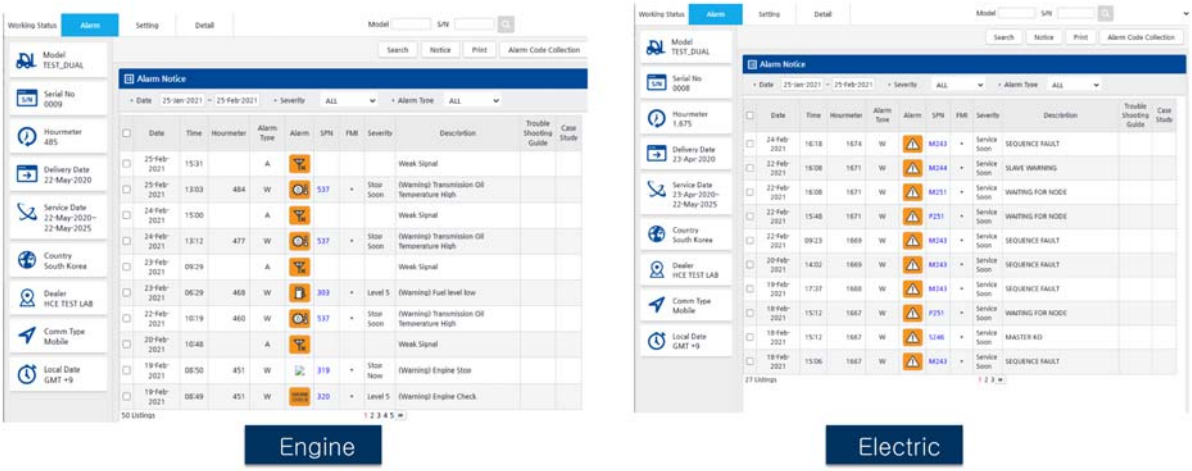
160D9V3HM34A

(10) Machine details (monthly period)

Can check the operating history, temperature distribution, and fuel usage.

160D9V3HM13

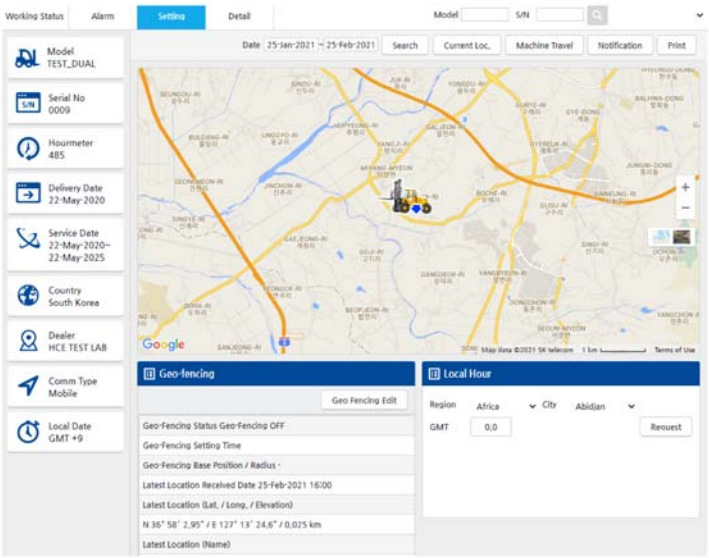
(11) Alarm



Machine issent to HiMate immediately when an alarm occurs. You can check in real time.

160D9V3HM14

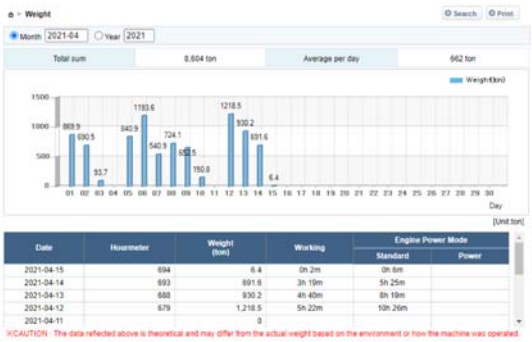
(12) Geo-fencing



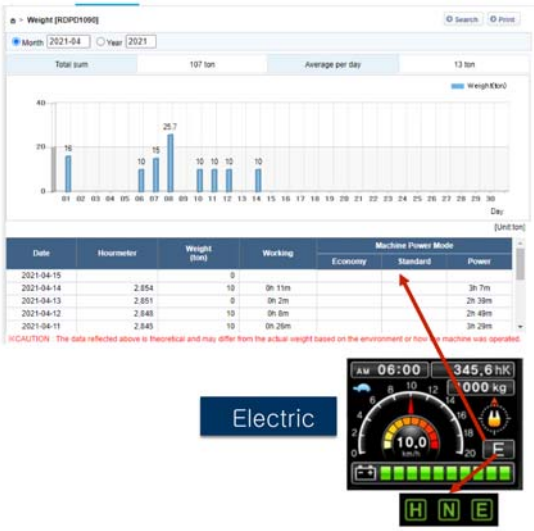
After setting the location range to use to prevent theft from the current position, the alarm occurs when the position is exceeded.(Can be received by E-Mail & SMS)

160D9V3HM15

(13) Alarm



Engine



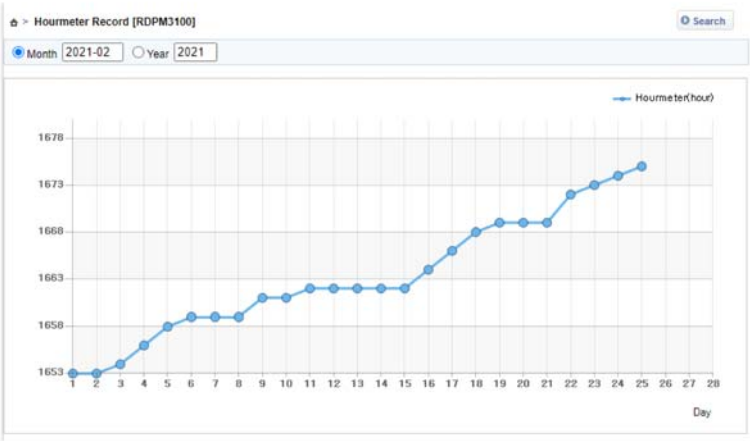
Electric

Weight can be measured up to 99,999ton a day, and workloads are recorded during the day.
Electric: ECONOMY(= E), Standard (N), POWER(= H) mode
Engine: Standard(=Eco), Power(=Standard) mode.

Weight logic: When the weight is more than 100kg, Stacked every second.
When it is less than Weight(ton)= Weight Sum / Count

160D9V3HM16

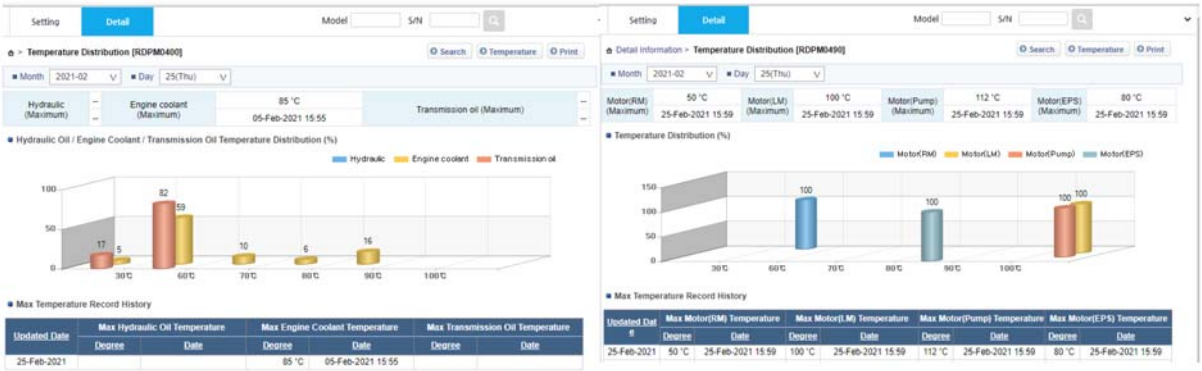
(14) Hourmeter



You can check the daytime HOURMETER to verify that it was excessively used in a specific date.

160D9V3HM17

(15) Temperature (available in dealer accounts)



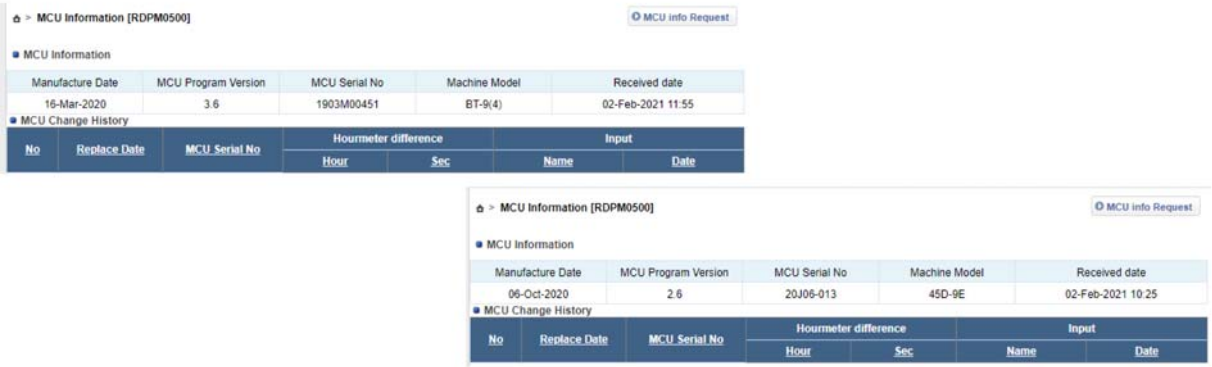
Engine

Electric

The engine type measures the hydraulic, Engine Coolant, Transmission Oil temperature.
The electric type measures the temperature for each motor.
You can measure the temperature distribution from 30℃ to 100℃ to determine whether the equipment is excessively used or there is a problem.
In addition, it is possible to manage the equipment to make sure that the maximum temperature is recorded.

160D9V3HM18

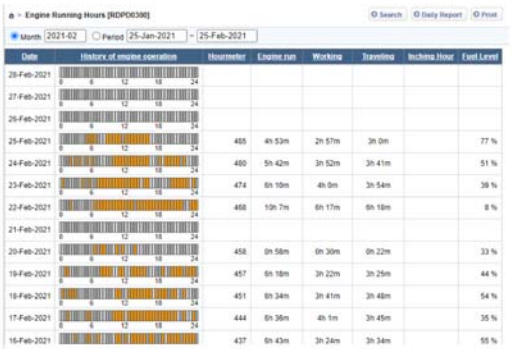
(16) MCU information (available in dealer accounts)



You can check the date of manufacture, MCU Program version, serial number, machinemodel name

160D9V3HM19

(17) Running history (available in dealer accounts)



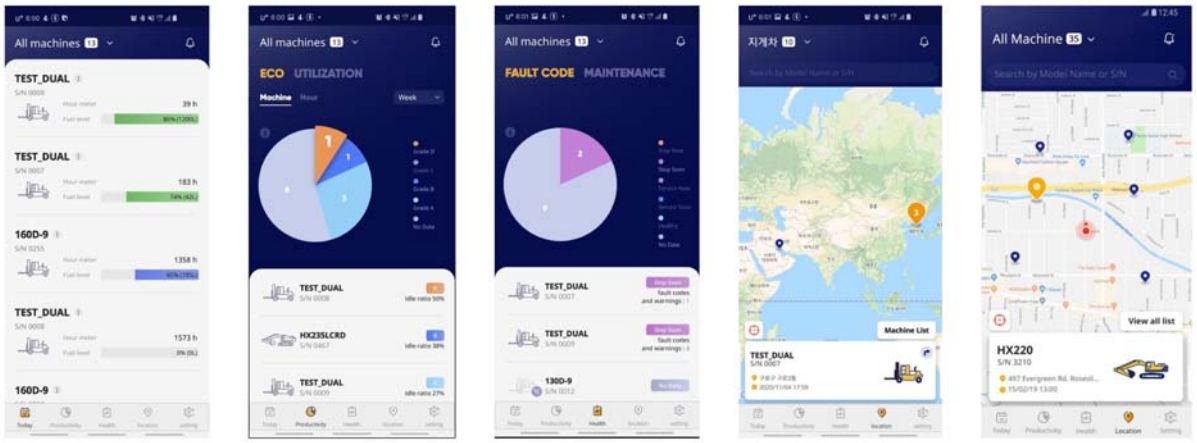
Engine

Electric

You can see how you used theequipmentby date and you can export it with PRINT (Excel, etc.).

160D9V3HM20

(18) Mobile app



You can check equipment status, utilization rate, fault, position etc.

Easy to check

160D9V3HM21

11) HI-MATE (PREMIUM)

(1) Brief benefit

New features
- Built in Impact sensor : Detect and report the truck shock.
- RF ID tag : To use the truck, operator has to touch the ID CARD or enter Pin Nu
  (Login and Logoff time is on reporting via tele communication)

Case1 engine forklift
- During key on: Can't start the engine(disable engine start function)
- During Engine run: Unable to drive/work.(enable travel cut, attach cut)

Case2 Electric forklift:
- During key on(=machine run): cannot drive/work.(truck active : No status)

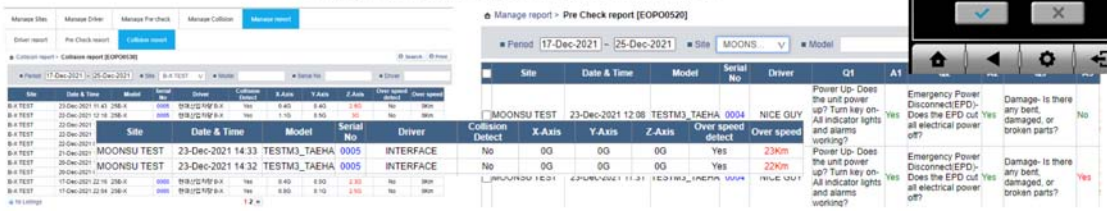
DRIVER MANAGEMENT

It is possible to certify drivers and manage their work through RFID or PIN password.

You can see when the driver has used and stopped the equipment.
You can also see how well the driver used the equipment.
(You can check the operating hours for each driver)

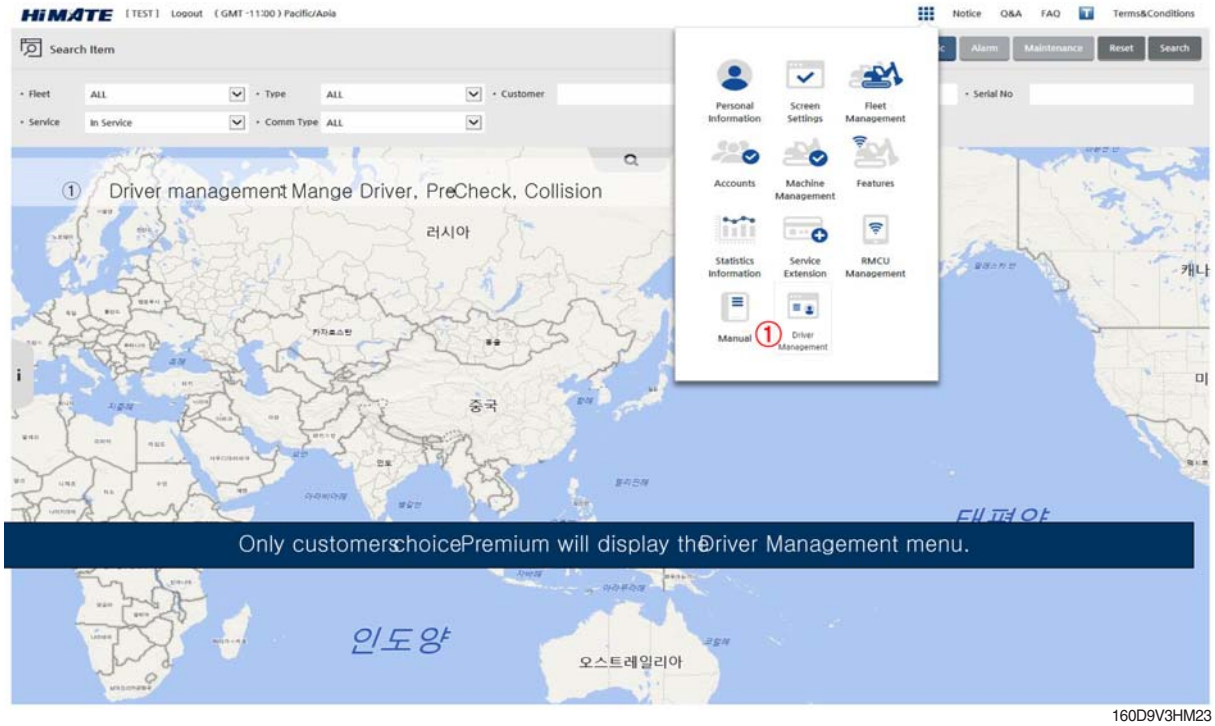
SAFETY MANAGEMENT

It provides a precheck & Collision & Over speed check function
Make sure the driver is ready to work
It provides collision information function
If a impact occurs, the impact event is sent to HMate.



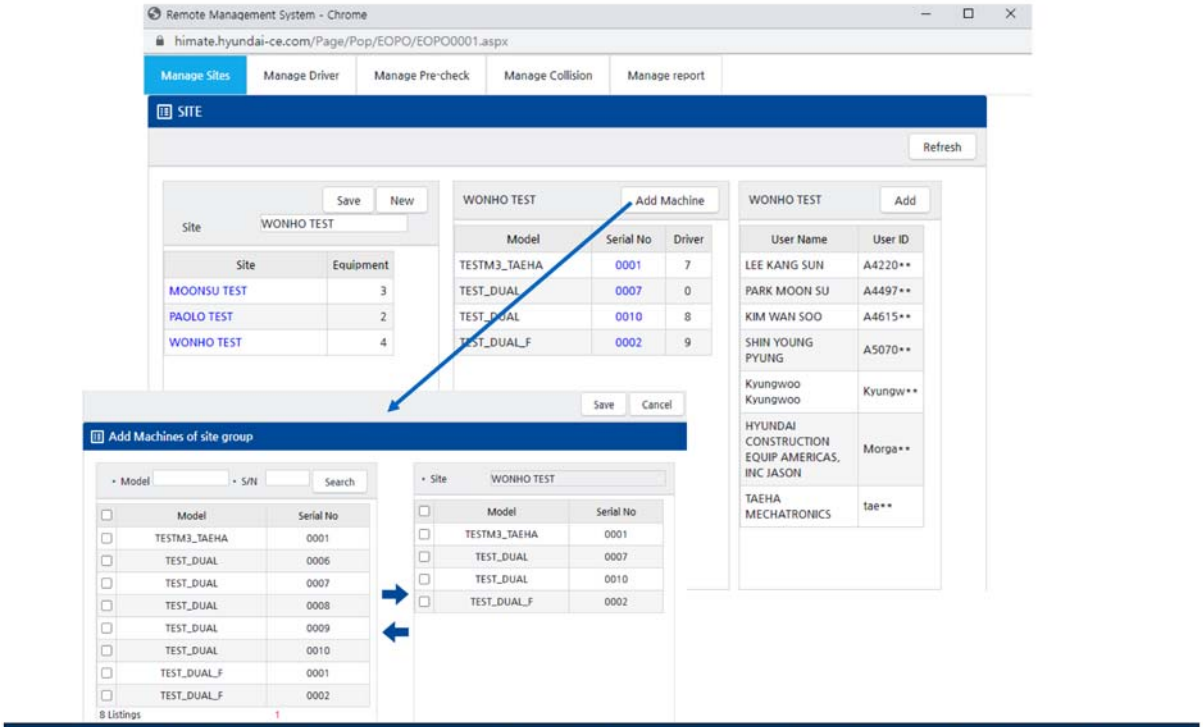
160D9V3HM22

(2) How to access menu



160D9V3HM23

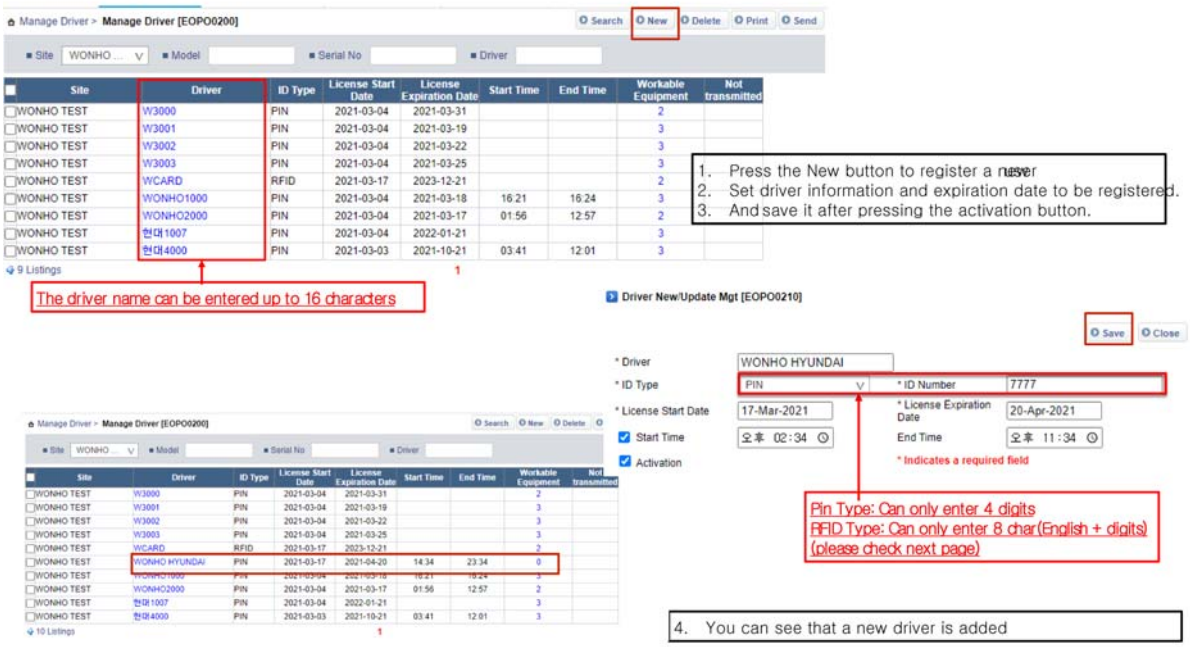
(3) Manage sites



Equipments with the authentication device is queried, and you can register the equipment to the desired site.
You can also register SUB users with Site and manage them together

160D9V3HM24

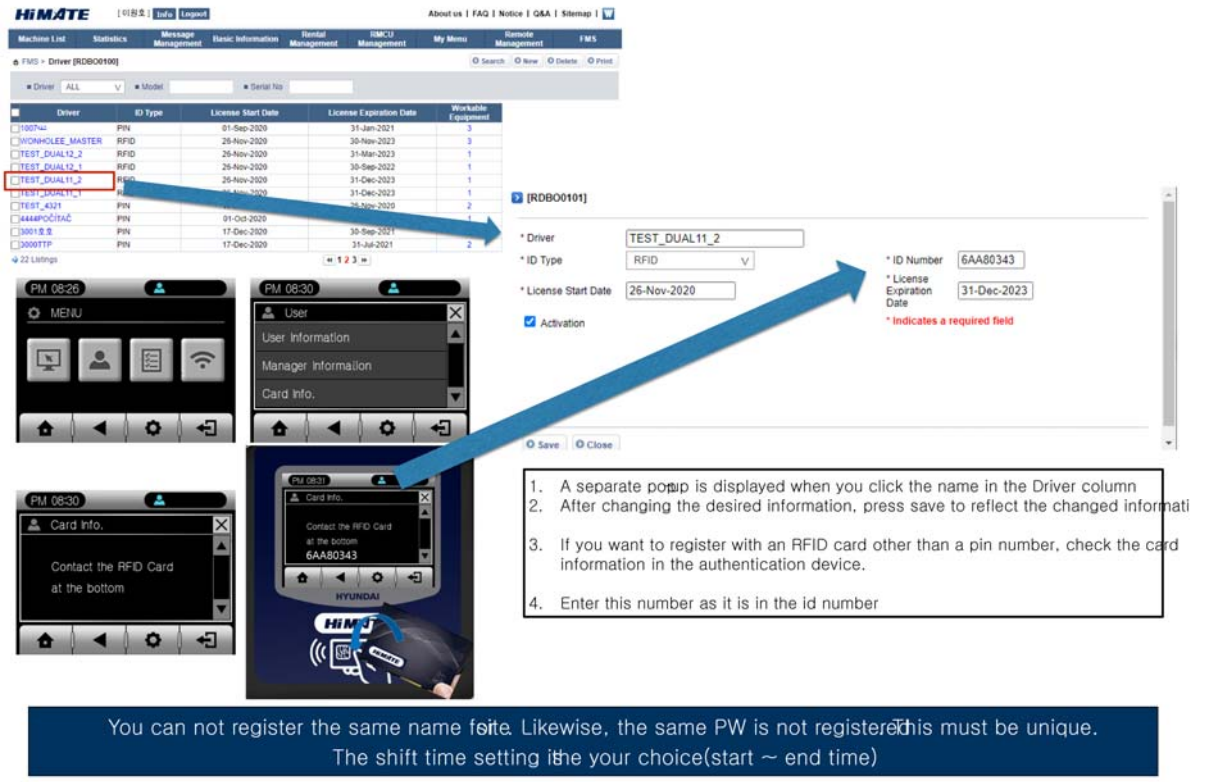
(4) Manage drivers (use pin number)



You can not register the same name for site. Likewise, the same PW is not registered. This must be unique.
The shift time setting is the your choice(start ~ end time)

160D9V3HM25

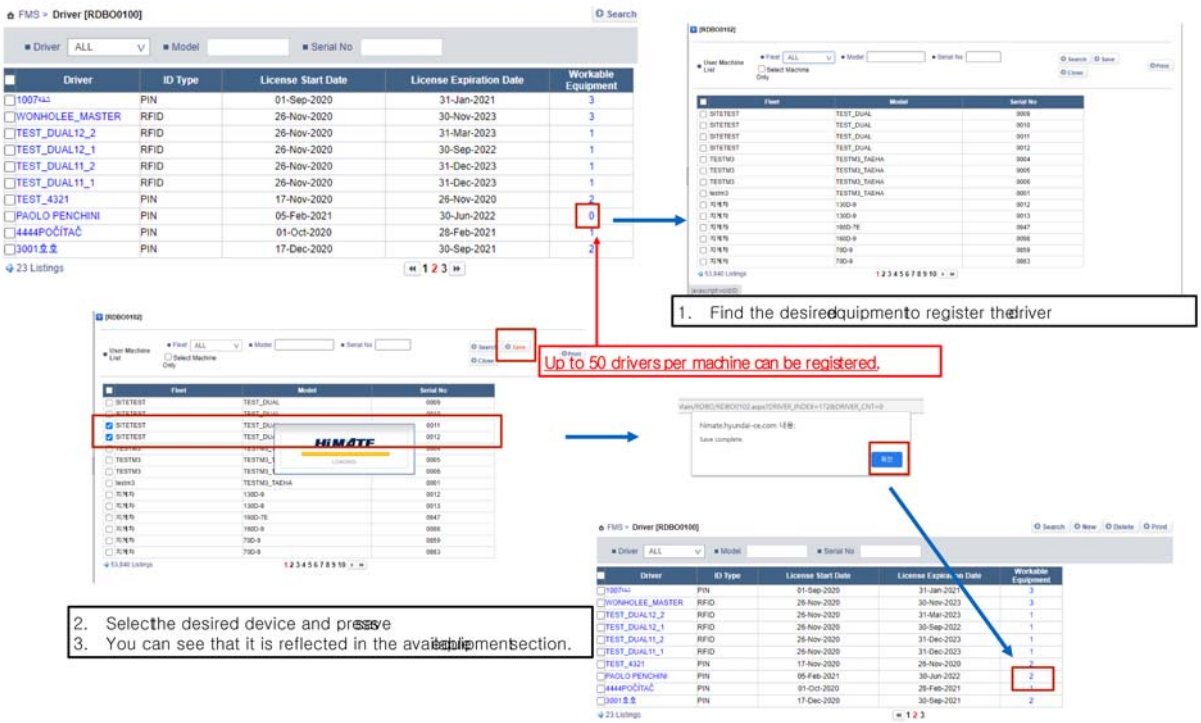
(5) Manage drivers (use RFID number)



You can not register the same name forite. Likewise, the same PW is not registered. This must be unique.
The shift time setting ithe your choice(start ~ end time)

160D9V3HM26

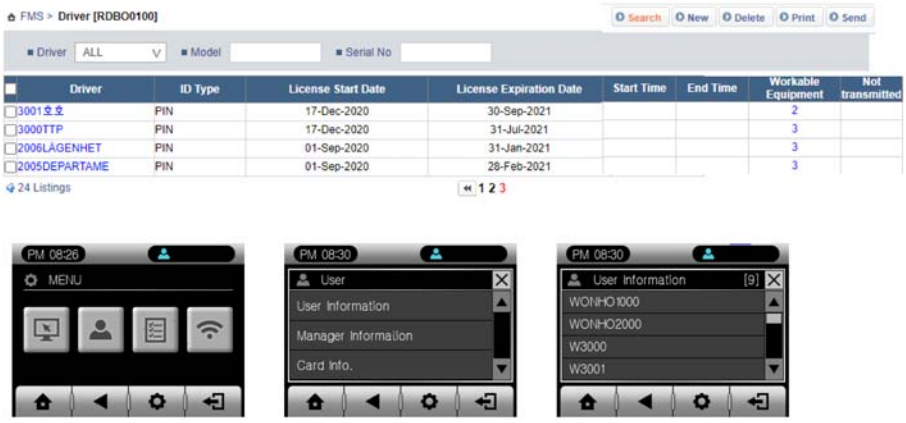
(6) How to register a driver to use the equipment



Machine registered on other sites is not inquiry or register.
If you want, you must release the equipment registered on another site.

160D9V3HM27

(7) How to check driver information in the authentication device

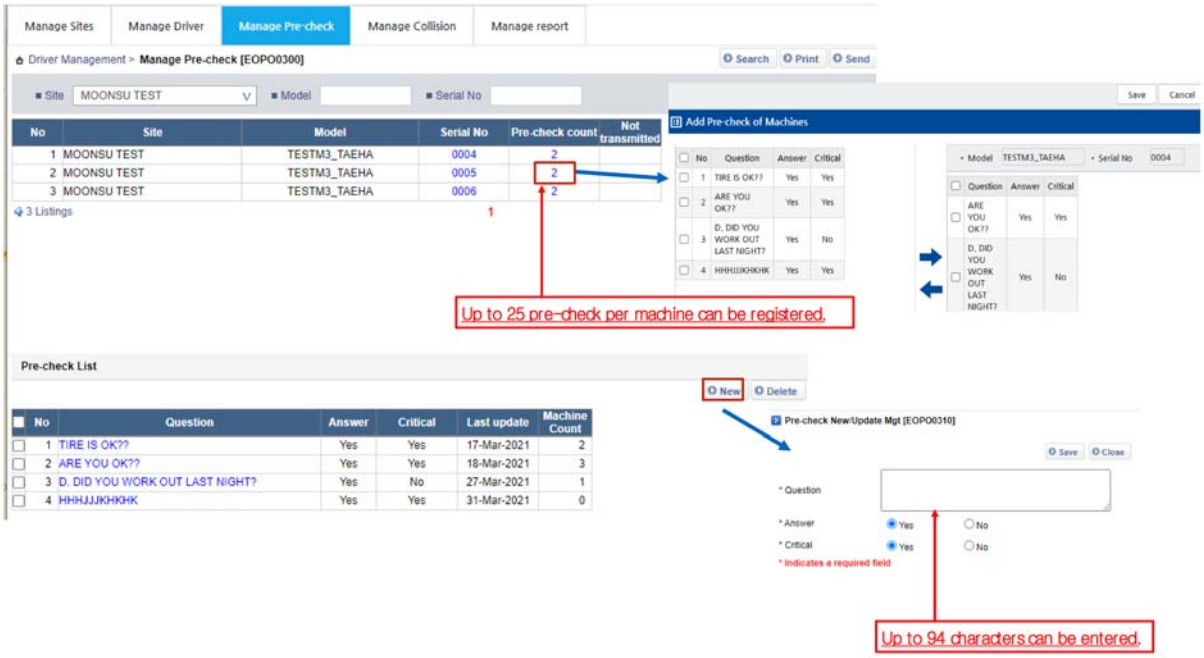


1. When registration is complete, it can be checked at the authentication device
2. For example, yogan see that the driver's name on the web is in user information.

Registered information is stored in the operating state(key on)

160D9V3HM28

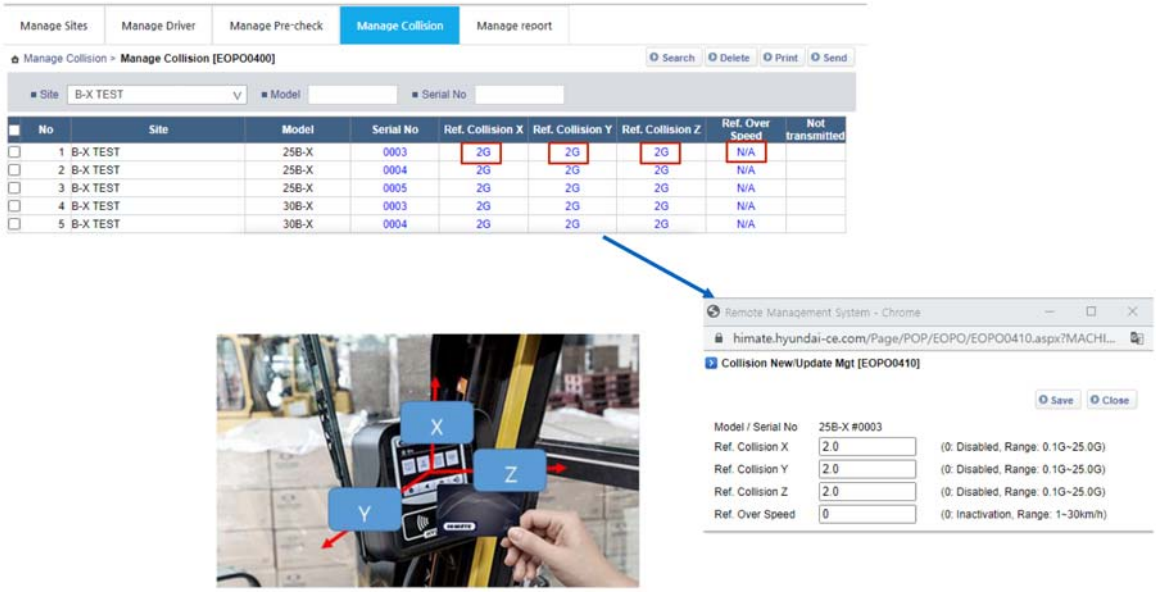
(8) Manage pre-check



Please register the desired phrase first.
When set to CRITIAL, it is logged in to meet the set answer.
If not CRITICAL, it will be logged in as a set answer.

160D9V3HM29

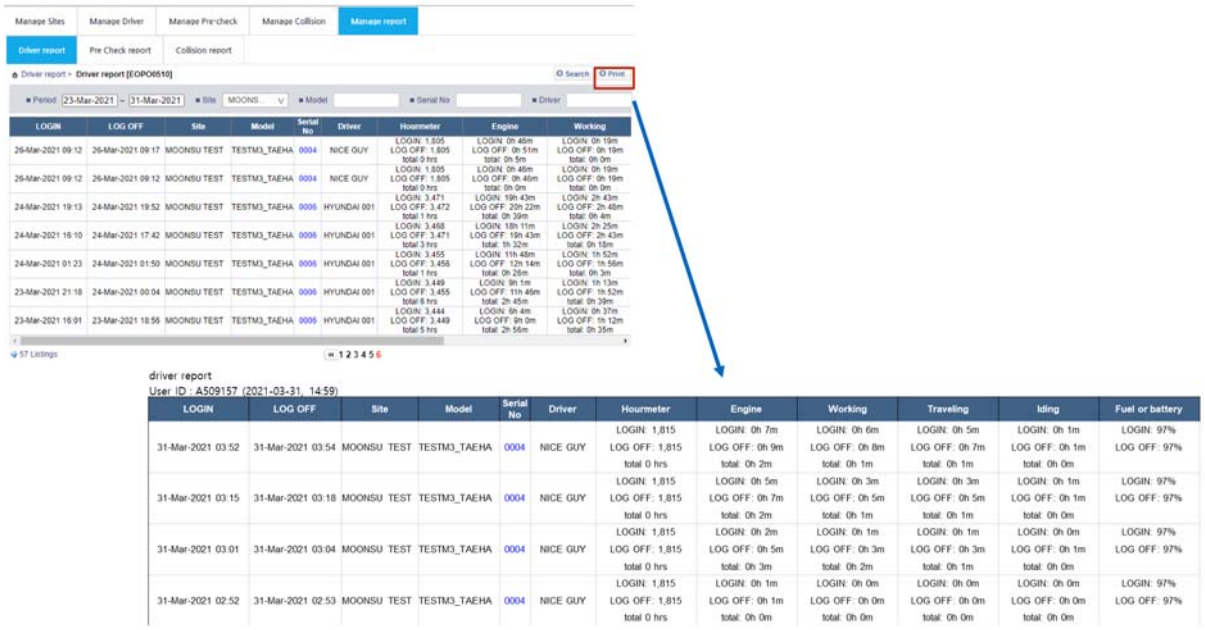
(9) Manage collision and over speed



You can set the 'G' value that the crash or 'Over speed' event occurred.
If the G value is exceeded or the speed is checked, the event will occur immediately
(if it occurs several times in 1 minute, only 1 event will occur respectively)

160D9V3HM30

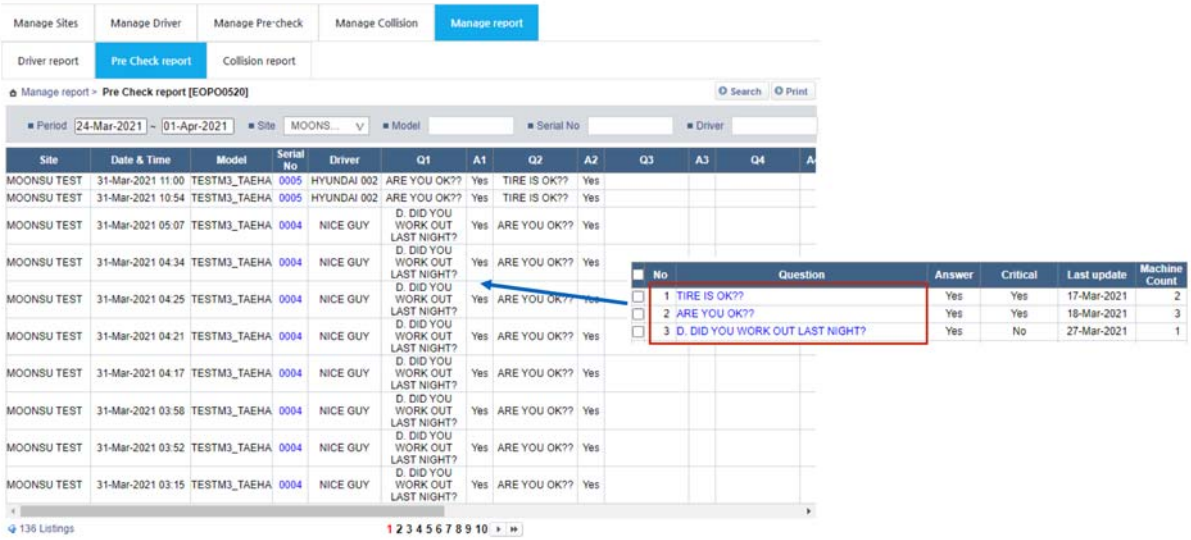
(10) Driver report



You can check the login and logoff information by the driver
This can be easily managed by output by Excel.

160D9V3HM31

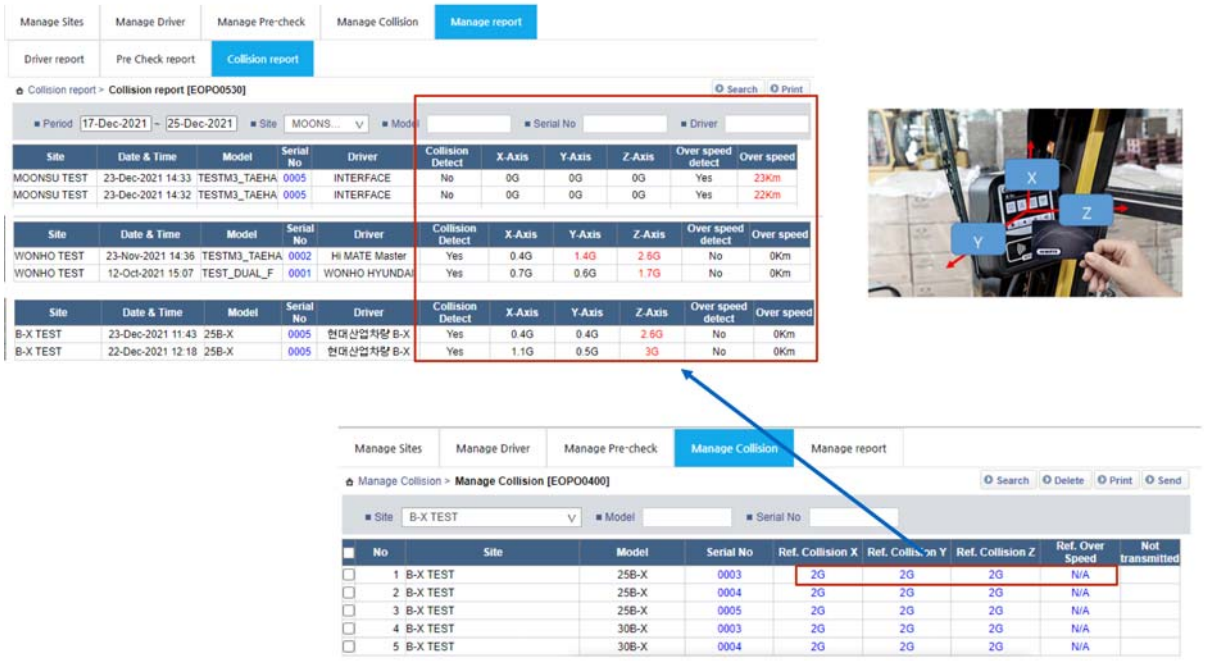
(11) Pre-check report



You can check the response to the registered questions
Questionshow randomly changed.
It is possible to manage with this or one Excel.

160D9V3HM32

(12) Collision and over speed report



Event occurs when a value higher than the registered G value or over speed is measured.
It is possible to manage with this or one Excel.

160D9V3HM33