

Chapter 4

TRUCK BODY AND SPECIAL EQUIPMENT INSTALLATION PROCEDURE AND PRECAUTIONS

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3. FIRE SHIELD
4. CLEARANCE BETWEEN CAB AND REAR BODY OR EQUIPMENT
5. SPACE FOR MAINTENANCE OF BATTERY
6. FUEL TANK
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25. INSTALLING EQUIPMENT ON THE CAB ROOF
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The following instructions are recommended for proper installing rear body or equipment on Hino chassis.
Failure to follow these recommendations, it may be cause of serious damage to Hino chassis.

1. GENERAL PRECAUTION

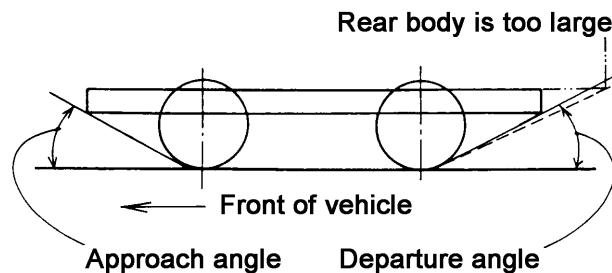
Any deviation from the original Hino chassis specifications will become the responsibility of the subsequent stage manufacturer or installer.

The final stage manufacturer has responsibility to certify that the completed vehicle conforms to all applicable CMVSS.

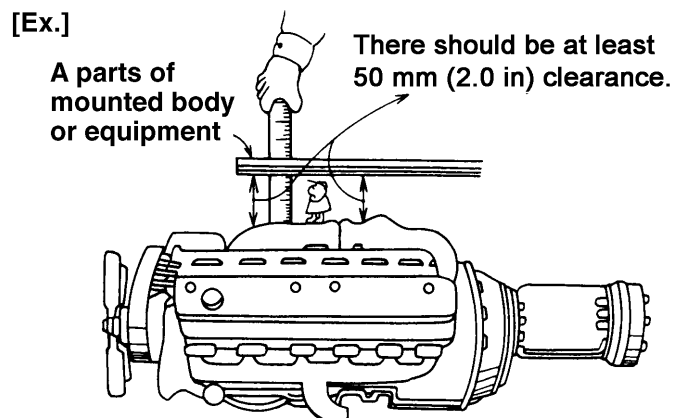
The rear body installed on chassis frame must have adequate strength. In order to prevent insufficient efficiency of brake or abnormal wear of tires, enough care is necessary to the weight distribution to be loaded as evenly as possible onto right and left wheels.

When installing the rear body, be sure that all the wheels are on the same horizontal plane so that the chassis is not inclined. (No difference in height from the ground on right and left sides.)

When rear body or equipment are mounted on the front or rear overhang, it is desirable that mounted position is not inside the approach and departure angle.

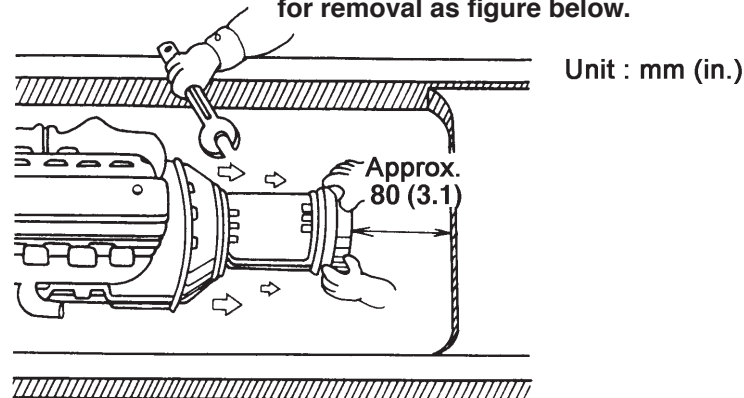


When installing rear body or equipment near the engine, clutch and transmission, allow a clearance at least 50 mm (2.0 in.).



When removing the transmission assembly from the engine, it is necessary to move the transmission assembly rearward about 80 mm (3.1 in.) in order to pull out the clutch spline. Therefore, proper consideration should be given to the arrangement of the fittings of body or equipment.

No fitting should be installed to ensure a space of 80 mm (3.1 in.) long for the clutch and transmission assembly to be withdrawn for removal as figure below.



The fuel tank bracket and battery case should not be fitted with the side guard and anything like that which may give shock and external force to them.

When mounting the superstructure, sufficient considerations are needed so that there will no trouble in carrying out daily inspection and maintenance.

- Engine oil inspection, oil supply and discharge
- Cooling water inspection, water supply and discharge
- Air cleaner inspection
- Transmission oil inspection, oil supply and discharge (Special care is needed when installing P.T.O.)
- Differential oil inspection, oil supply and discharge (Care is needed when spare tire is mounted on the rear overhang.)
- Grease up (Special care is needed when shifting the fuel tank on vehicles.)
- Battery liquid inspection, water supply and discharge.
- Supply of fuel and DEF
- Attaching and detaching the spare tire




After a vehicle has been properly fitted out, make sure that it is free from any defects such as the vibration of the cab and noise before delivering it.

When mounting all the required component parts on a vehicle, be careful not to damage to the sides of chassis or impair its proper functioning.

Do not alter the component parts of the front axle, steering and suspension.

When mounting the superstructure, be careful not to damage the chassis frame or impair its functioning. (For instance do not step on piping, wiring, fuel tank and other chassis frame component.)

Be careful that the mounted superstructure may not interfere with the front and rear field of vision.

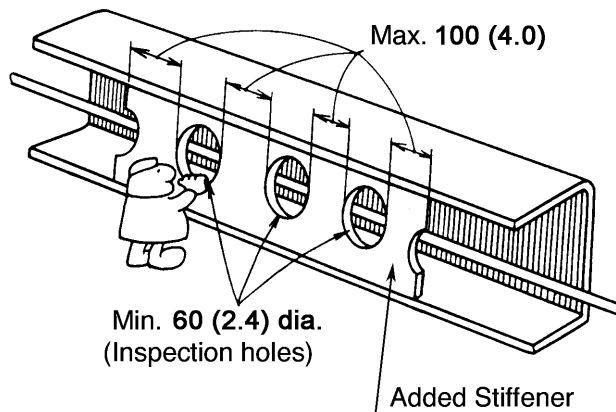
When a concentrated load is applied locally or the body is long, the amount of deflection may pose problems in some cases. So, it is advisable to use  or  or  shaped steel beams as the main sill, and joint them securely to the side members in order to obtain sufficient overall strength and rigidity.

When a body with a great rigidity is mounted, please make reference to the paragraph devoted to the main sill to prevent a weak point appearing at the rear of the cab.

Cautions when mounting the superstructure near brake pipe lines

- When a corrosive property is loaded on the rear body, use appropriate protective means to protect the pipe lines.
- Be careful to ensure sufficient clearance at least 30 mm (1.2 in.) between the brake pipe lines and the parts for rear body.
- Make the inspection and working holes if the side rail is stiffened as a closed section.

Unit : mm (in.)



Cautions needed when mounting the superstructure above exhaust pipe

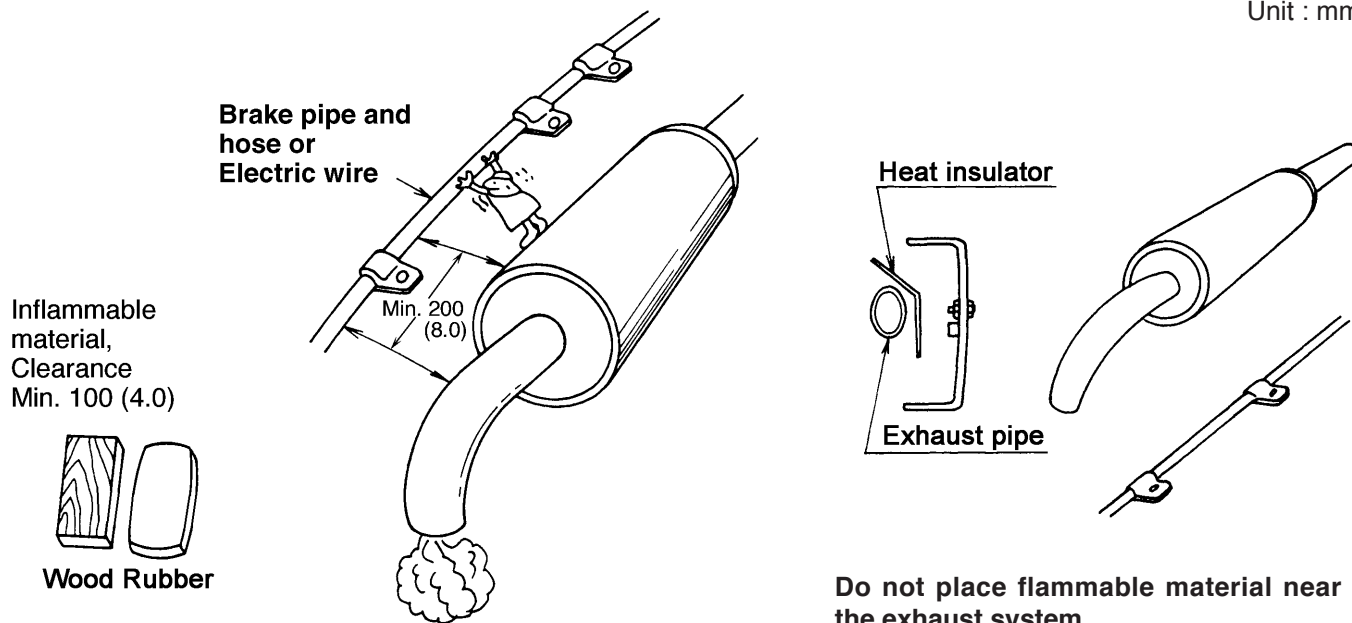
- There must be the following clearances between exhaust pipe and others to be mounted on the vehicle.

More than 100 mm (4.0 in.) from wood, rubber, cloth, resins and the like.

More than 200 mm (8.0 in.) from electric wire and brake hose or pipe.

When it is impossible to provide the above clearances, use the heat insulator.

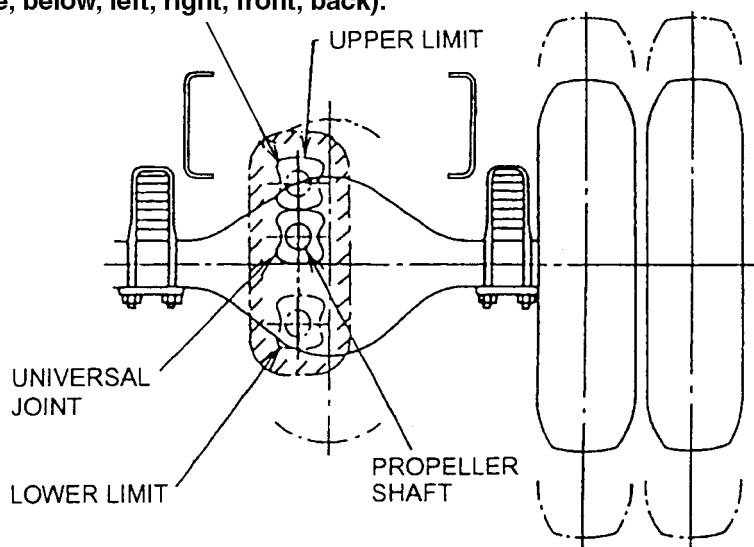
Unit : mm (in.)



- Care must be taken that there is no rope or sheet hanging close to the exhaust system. Do not place the rope hook near the exhaust system.

To prevent an interference of propeller shafts with the body parts due to the movement of propeller shafts, keep enough clearance at least 50 mm (2.0 in.) between propeller shaft (including joints) and body parts. (dump pump, brackets, etc.)

Allow 50 mm (2.0 in) clearance from limit of displacement of the propeller shaft (above, below, left, right, front, back).



2. WEIGHT DISTRIBUTION AND CENTER OF GRAVITY

Recommended Weight Distribution on Front Axle

To ensure satisfactory stability of the vehicle under all conditions, proper weight distribution on front axle must be considered at the planning of body mounting.

In the case of 2-axle vehicle, ensure a minimum of 30% of the gross vehicle weight is on the front axle.

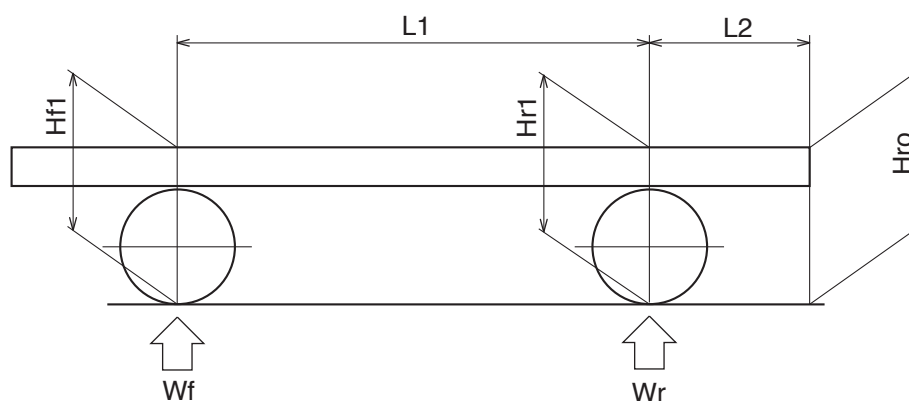
The permissible front axle load must not be exceeded.

Calculation for Height of Frame Upper Surface from Ground

Before mounting rear body or equipment on chassis, must calculate height of frame upper surface from ground.

In order to confirm the vehicle posture as frame end upper surface from ground slightly higher than front end to ensure vehicle stability.

Following are as formula for how to calculate.



Wf : Load on front axle (kg, lb.)

Wr : Load on rear axle (kg, lb.)

Hf1 : Height of frame upper surface from ground on front axle datum line (mm, inc.)

Hr1 : Height of frame upper surface from ground on rear axle datum line (mm, inc.)

Hro : Height of frame upper surface from ground on frame end (mm, inc.)

L1 : Distance from front axle datum line to rear axle loading center (mm, inc.)

L2 : Frame rear overhung (mm, inc.) · · · From rear loading center to frame end.

$$Hro = Hr1 + \frac{(Hr1 - Hf1)}{L1} \times L2$$

NOTE

- Refer to the next page for how to calculate Hf1 and Hr1.
- The calculation formula is not considered the deflection of tire.
- Hf1 and Hr1 must add the deflection of tire based on local standards.

<CALCULATION FORMULA OF Hf1 & Hr1>

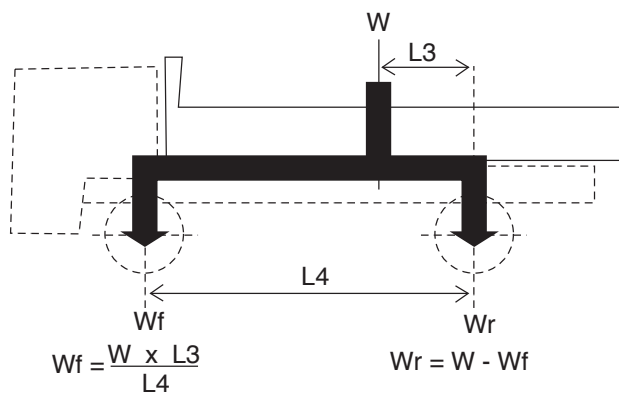
<CALCULATION DATA TO BE REFERED>

ITEM	CHAPTER TO BE REFERED		ELEMENT	
	CHAPTER	NAME OF SECTION	FRONT	REAR
SPRING CONSTANT (kgf/mm, lb/in.)	12	SUSPENSION DEFLECTION CHART	Tf	Tr
HIGHT OF FRAME UPPER SURFACE FROM GROUND (mm, inc.)	9	CHASSIS DRAWINGS	Hf	Hr

<CALCULATION DATA TO BE PROVIDED>

ITEM	ELEMENT	
	FRONT	REAR
MASS DISTRIBUTION OF BODY OR EQUIPMENT(kg, lb.) *Mass of payload must calculate mass distribution, Front and Rear, if need.	Wf	Wr

CALCULATION FORMULA OF MASS DISTRIBUTION



W : BODY (EQUIPMENT) MASS
 Wf : FRONT DISTRIBUTION MASS OF BODY (EQUIPMENT)
 Wr : REAR DISTRIBUTION MASS OF BODY (EQUIPMENT)
 L3 : GRAVITY CENTER OF BODY (EQUIPMENT) MASS
 L4 : WHEELBASE

<CALCULATION FORMULA OF Hf1>

$$Hf1 = Hf - \left(\frac{Wf}{2} \div Tf \right)$$

<CALCULATION FORMULA OF Hr1>

$$Hr1 = Hr - \left(\frac{Wr}{2} \div Tr \right)$$

Permissible Height of Center of Gravity of the Completed Vehicle with Payload

The height of center of gravity of the completed vehicle must be considered at the planning of body mounting.

The height of center of gravity from the ground to the completed vehicle with payload should not exceed the guidelines as shown in the table.

If the body is mounted in such a way that the height of center of gravity exceeds the guideline, the directional stability at braking and roll stability at cornering or rolling will be adversely affected.

GUIDELINE

Unit : mm (in.)

Model	Height of center of gravity from ground
ALL Models	Less than 1600 (63)

[NOTE]

This guideline is applied to the truck body only.

3. FIRE SHIELD

When a flat bed or similar body has been mounted, a fire shield should be fitted across the gap between the cab rear end and the front end of the load platform frame to prevent fires that may be caused by flammable materials falling off from the load platform onto the exhaust pipe. See figure below.

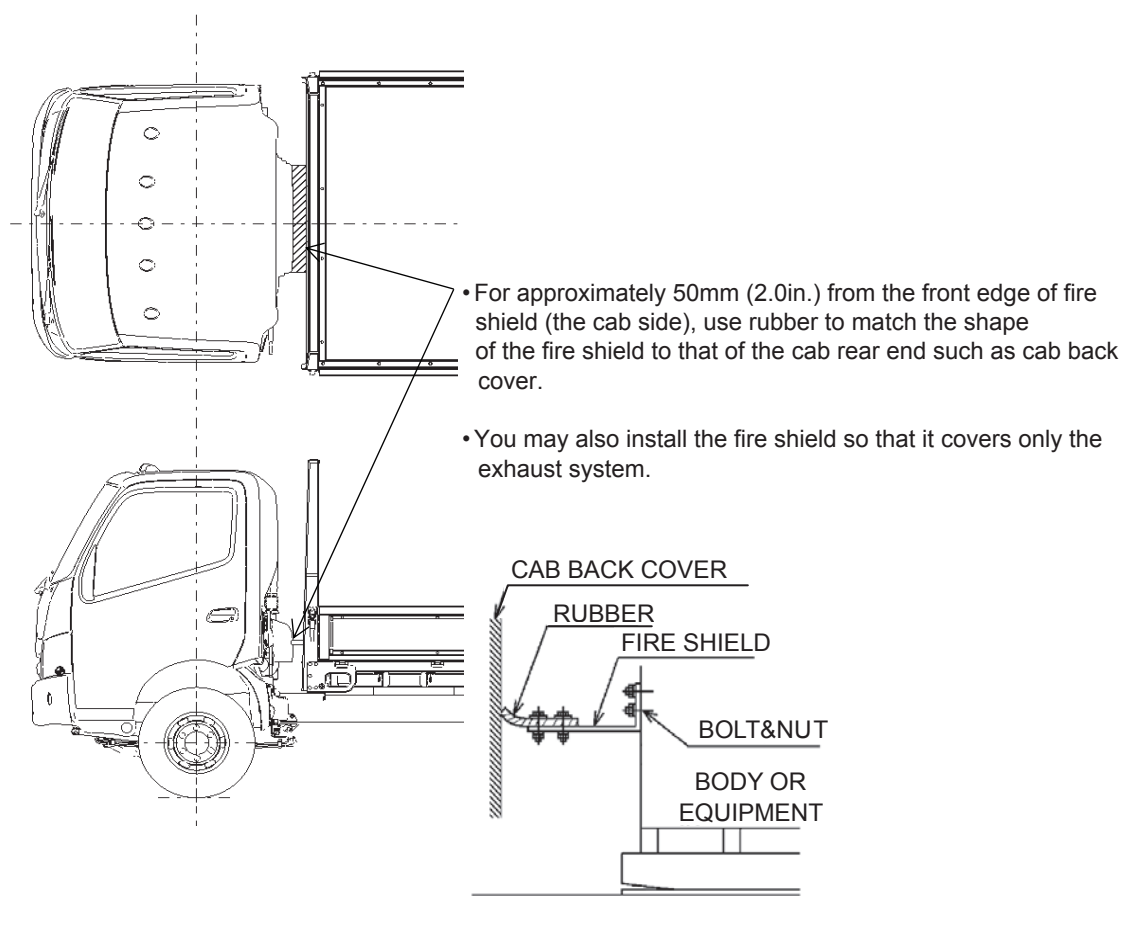
A fire shield is not necessary if the body is fitted with a sheet carrier attached directly to the top of the front guard.

A fire shield is also not necessary for such bodies as aluminum vans, where there is no danger of flammable materials falling off.

[NOTE]

When you mount the fire shield, use bolts, etc., that can be taken out to allow for replacement of the chassis parts which are located at the rear parts of cab.

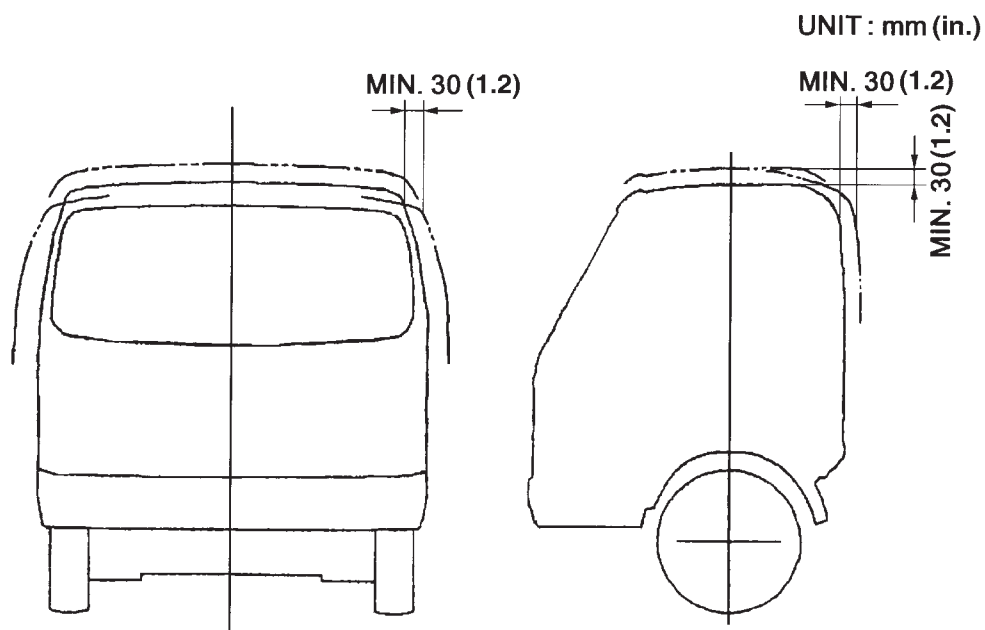
- When the cab is tilted, the fire shield must not interfere with cab back cover.
- The rubber installed in the front of fire shield must not damage cab back cover.



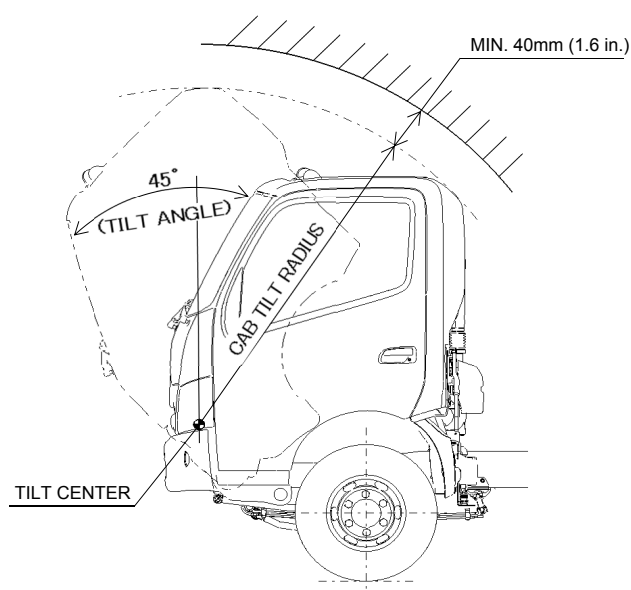
4. CLEARANCE BETWEEN CAB AND REAR BODY OR EQUIPMENT

Even under normal driving conditions, when the cab is not tilted, it moves back and front, right and left, and up and down. The body or equipment must not interfere with cab movement.

Allow at least 30 mm (1.2 in.) clearance between the cab and rear body or equipment.

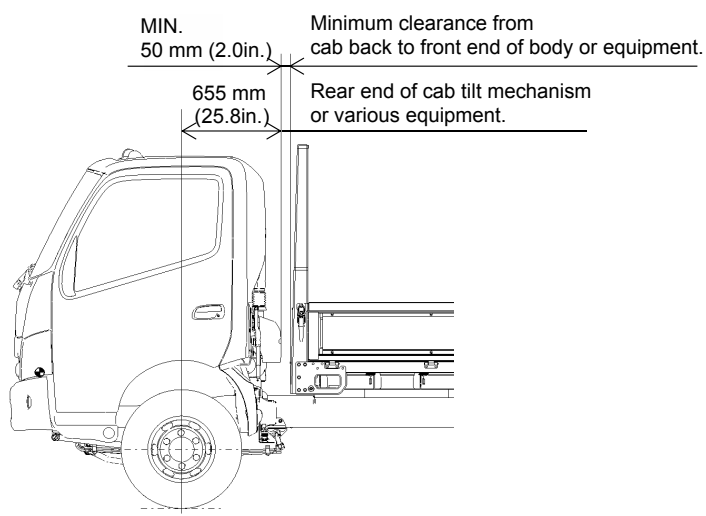


When the cab is tilted, allow at least 40 mm (1.6 in.) clearance the cab and rear body or equipment.



The rear parts of the cab contains the cab lock mechanism and the tilt mechanism, as well as the engine cylinder block or other various equipment.

When mounting the body or equipment, allow at least the minimum clearance between the rear end of the cab and the front end of the rear body or equipment, to avoid obstructing the operation and maintenance of these mechanisms or various equipment.



For details of cab dimensions, see chassis drawings.

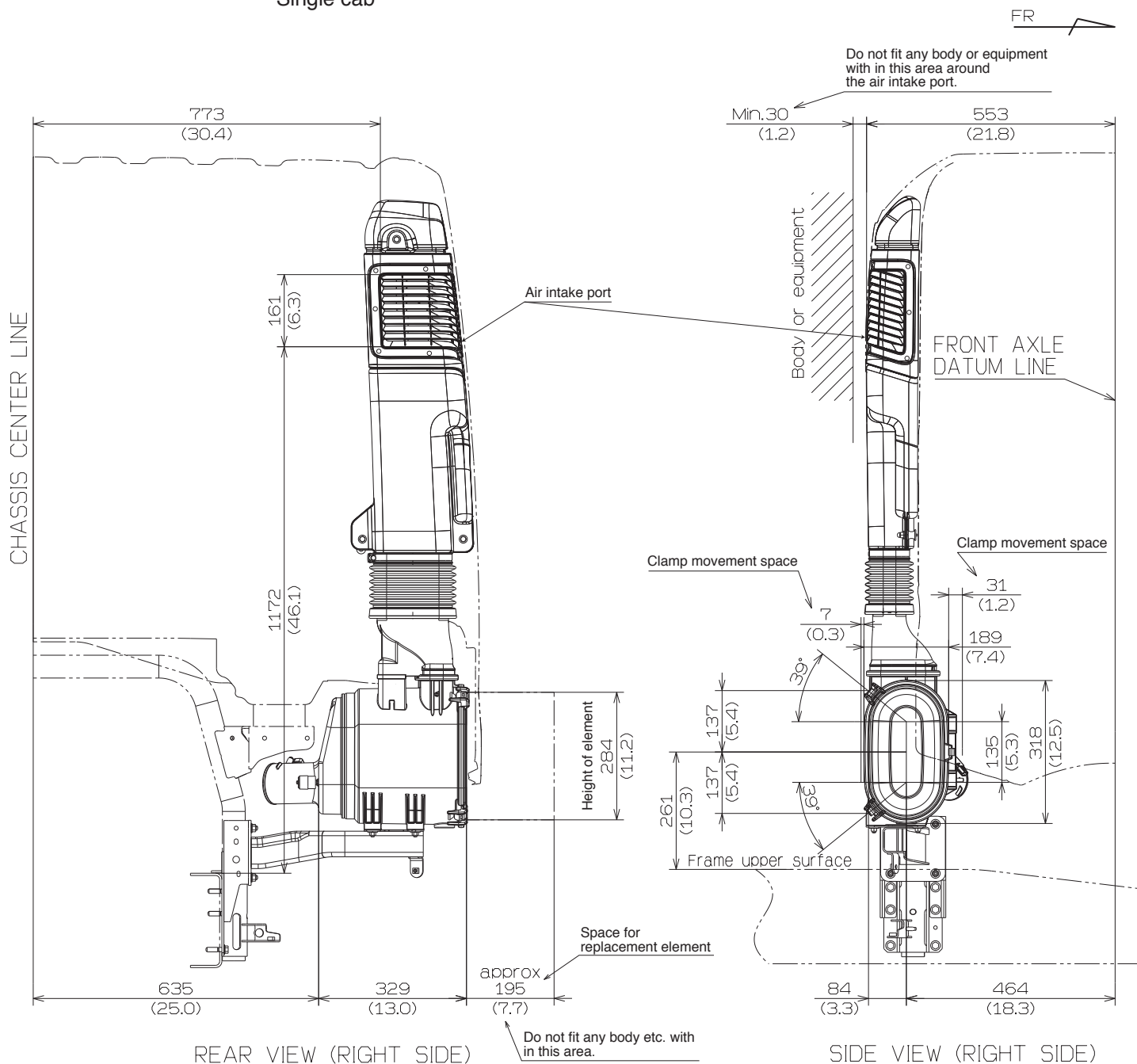
[EXAMPLE]

EQUIPMENT	OPERATION, MAINTENANCE, ETC.
• CAB LOCK MECHANISM AND LEVER	CAB LOCK OPERATION
• CAB LOCK SAFETY LEVER	CAB TILT OPERATION
• POWER STEERING OIL RESERVOIR	INSPECTION & REPLENISH THE OIL
• COOLING WATER HEADER TANK	INSPECTION & REPLENISH THE COOLING WATER
• ENGINE OIL LEVEL GAUGE	INSPECTION OF OIL LEVEL
• ENGINE OIL FILLER	REPLENISH THE OIL
• OIL LEVEL GAUGE & FILLER OF AUTO-T/M	INSPECTION & REPLENISH THE OIL
• AIR CLEANER	INSPECTION & CLEANING OF ELEMENT
• HYDRAULIC OIL TANK	INSPECTION & REPLENISH THE OIL

- Measurement of the Engine Air Intake Port

Unit : mm (in.)

Single cab

**[CAUTION]**

Do not alter and modify the air intake system.

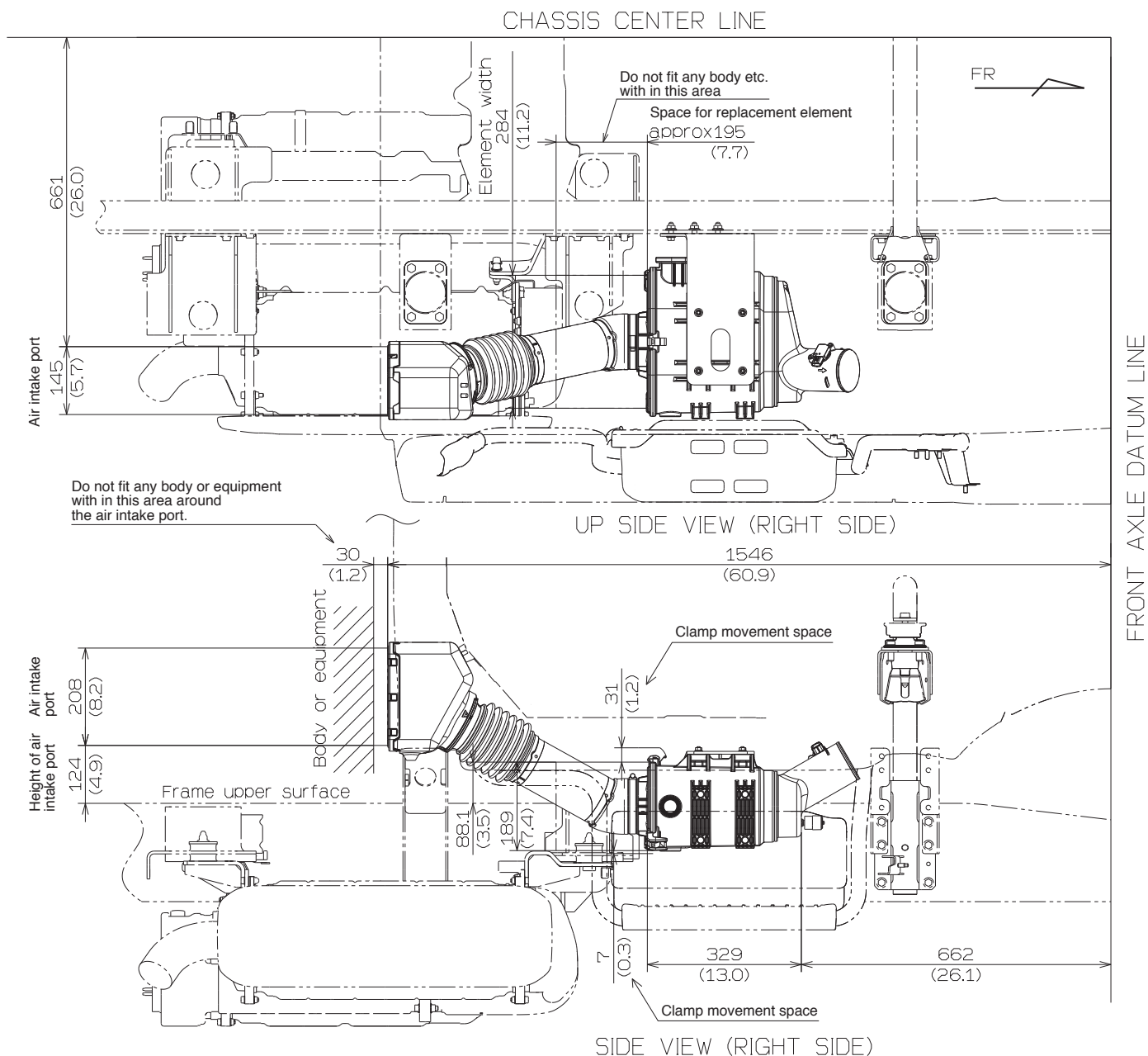
If need to alter or modify them, please consult HMC or Hino authorized dealer.

[NOTE]

The blocking of the smooth flow of air into the air intake pipe caused by any materials such as ropes, pieces of cloth, leads to the increase of exhaust temperature if driven long intervals. The increase in exhaust temperature is caused by the decreased efficiency in the combustion process, as the proportion of air in the combustion chamber is also decreased by the above mentioned factor. This situation will lead to major malfunctions such as the cracking of the exhaust manifold and the breaking down of the turbocharger. To avoid such malfunctions, please keep the air intake pipe free from any blocking materials at all times.

Unit : mm (in.)

Double cab

**[CAUTION]**

Do not alter and modify the air intake system.

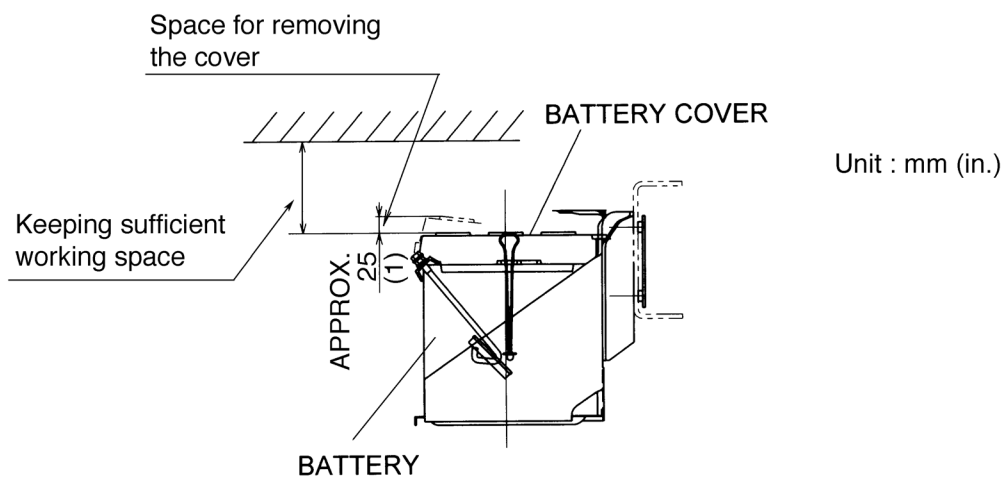
If need to alter or modify them, please consult HMC or Hino authorized dealer.

[NOTE]

The blocking of the smooth flow of air into the air intake pipe caused by any materials such as ropes, pieces of cloth, leads to the increase of exhaust temperature if driven long intervals. The increase in exhaust temperature is caused by the decreased efficiency in the combustion process, as the proportion of air in the combustion chamber is also decreased by the above mentioned factor. This situation will lead to major malfunctions such as the cracking of the exhaust manifold and the breaking down of the turbocharger. To avoid such malfunctions, please keep the air intake pipe free from any blocking materials at all times.

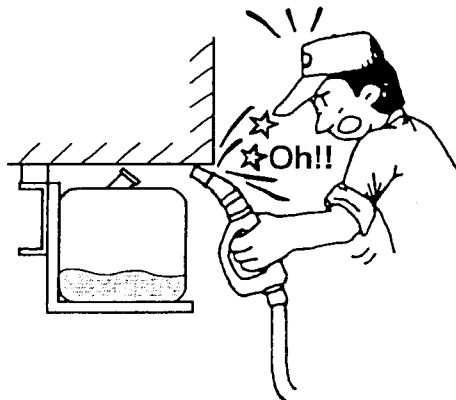
5. SPACE FOR MAINTENANCE OF BATTERY

When mounting the body or equipment, make sure that allow sufficient working space for inspection and replacement with battery cover and battery.



6. FUEL TANK

When mounting body or equipment, make sure that allow sufficient clearance with fuel filler, and enough working space for filling the fuel.



Allow space to open the filler cap and fill fuel.

7. CAUTION LABEL OF FUEL TANK

Instruction to use ultra low sulfur diesel fuel is requirement of Part 86 of Title 40, Code of Federal Regulations (40 CFR 86).

The Caution Label is stuck near the filling port of fuel tank.

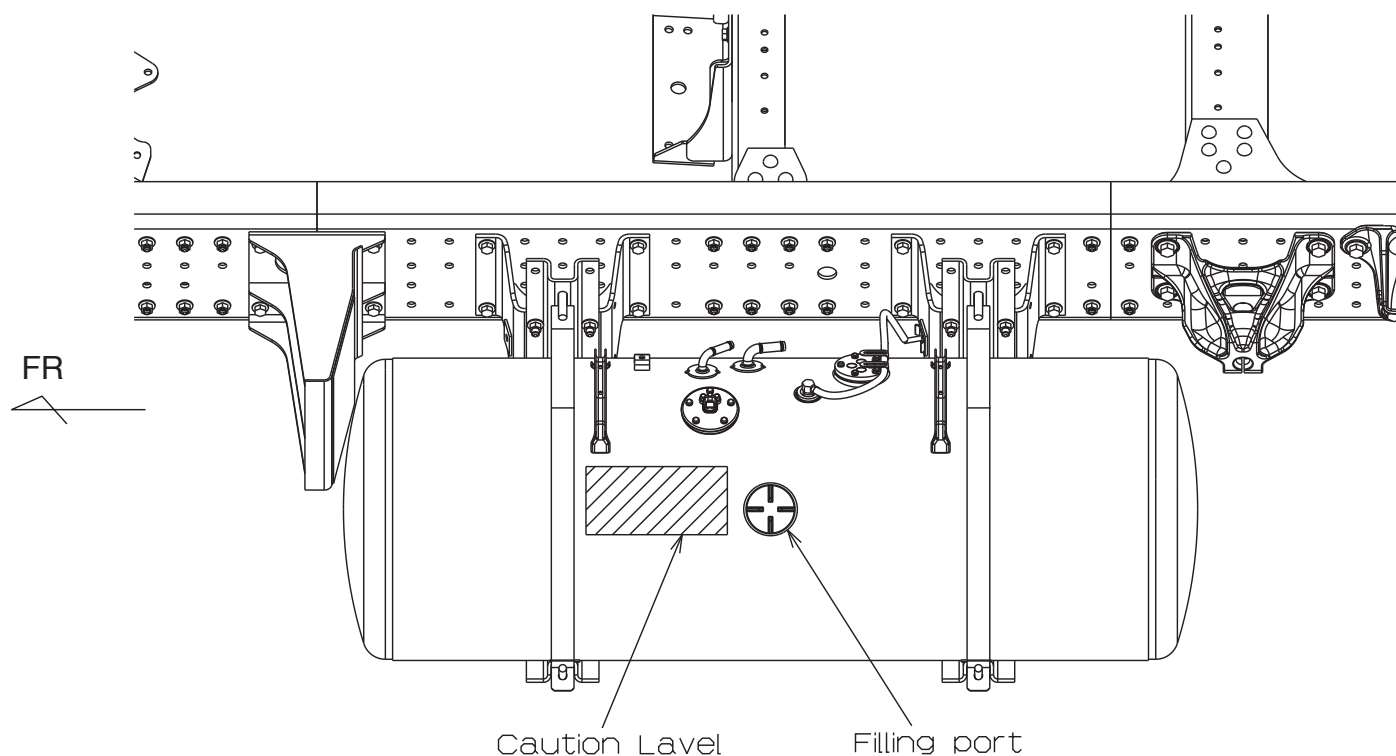
Be sure to observe the following instructions when installing body or equipment.

- Do not remove the caution label.
- Do not block the caution label by body or equipment.
 - The caution label must remain visible at all time.
- Mask the caution label completely when painting.
- Do not use thinner or solvent when wiping off the caution label.
- If the caution label becomes dirty or scratched, replace with a new caution label.

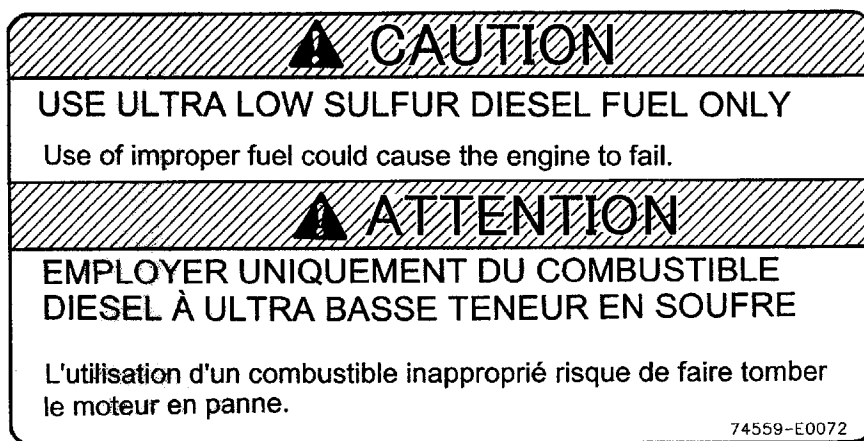
Please contact HMC or Hino authorized dealer if a new caution label is required.

Refer to “FUEL TANK” in Chapter 10 for installing position of Fuel Tank.

- Location of Caution Label



- Detail of Caution Label



PART No. 74559-E0072

8. INSTALLATION OF FENDER AND MUDGUARD

Refer to “MOUNTING OF REAR FENDER AND MUDGUARD” in Chapter 6, determine the dimensions of the fender and the underside of the floor so that the fender will not contact the tires.

The use of tire chains also should be taken into consideration.

The mudguards also should be installed by referring to the above-mentioned chapter.

9. WELDING WORK

Turn the starter switch to “LOCK” position, wait at least 10 minutes, and disconnect the negative terminal of battery before start welding work.

Electric equipments such as ABS-ECU integrated hydro unit and Engine control computer and other electric parts which always need electric power are connected directly to the battery and the ground.

If the welding is performed in this condition, an electric current of welding may flow reversely into the electric parts from their ground circuit resulting in damage to the electric parts.

Since welded parts becomes extremely hot and sparks are present, dismount the fuel tank or batteries when welding near those units. Make sure that there are no items present such as harnesses, nylon tubes, pipes, resin clips for piping, suspension components such as spring brackets and spring leaves which may be damaged.

Do not arc strike on the chassis frame flanges.

Do not weld any components such as engine, transmission, axle, spring, propeller shaft or steering. Do not weld any body parts or mounting brackets on the chassis frame for mounting of the rear body.

Avoid welding additional parts onto the chassis frame except for parts used for the purpose of reinforcement.

The ground of the arc welding machine must be connected to a low resistance parts such as the side rail.

Never connect the ground to plated parts such as fuel pipes, brake pipes or exhaust pipe.

When ground to the side rail, be sure to scrape off the paint and apply under coat paint after work.

Welding processing to avoid damaging of Hino chassis electric parts.
Be sure to observe the following precautions when operating electric welding

Welding Process

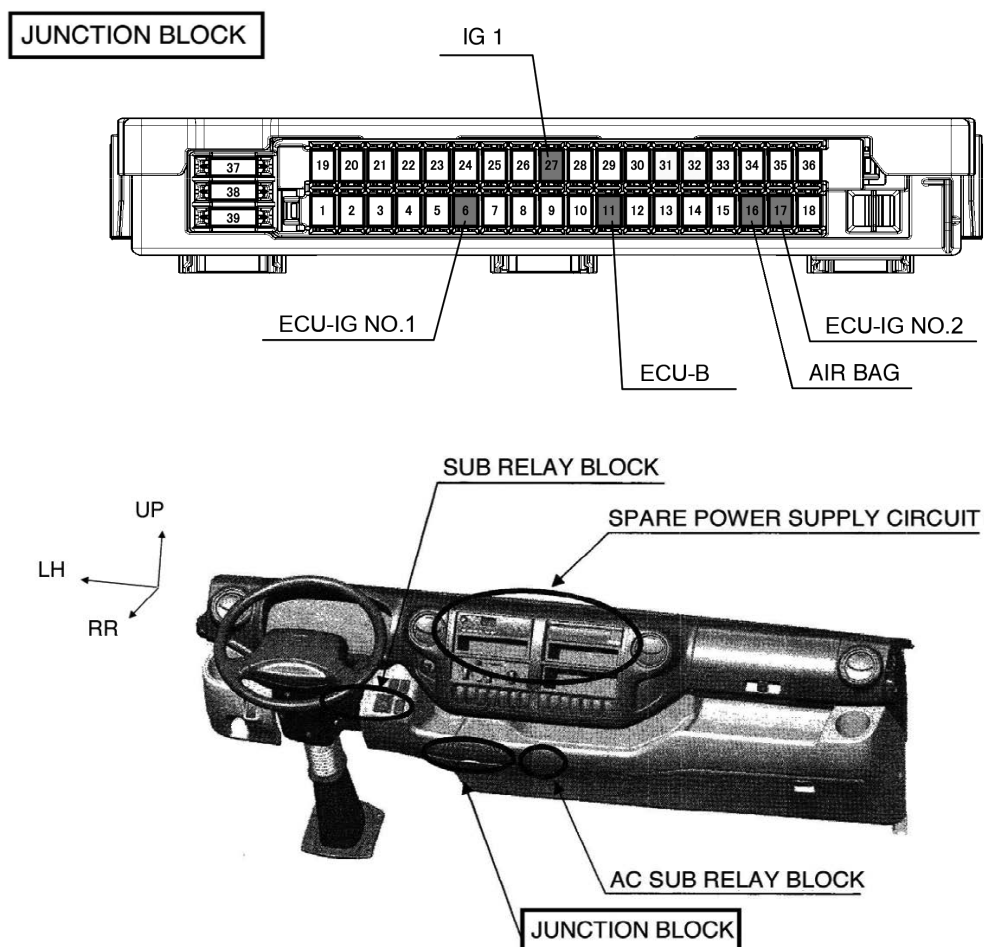
FOR DIESEL VEHICLE

Procedure before Welding

- Turn the starter switch to “LOCK” position.
- Wait 10 minutes.
- Disconnect the negative terminal of the battery.
- Disconnect fuse of SRS air bag and ECU of each electric equipment.
- Disconnect the ABS-ECU integrated hydro unit connector.

See the figure below for the detail of position of fuse.

Position of fuse for SRS AIR BAG & ECU



Ground of the Welding Equipment

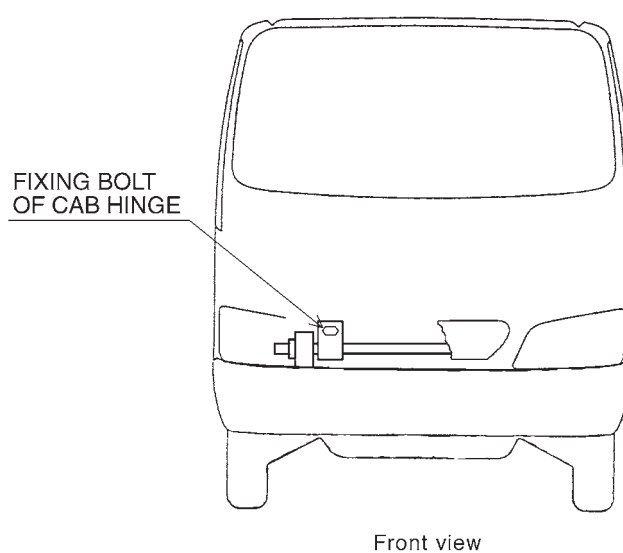
Connect the ground of the welding equipment near the location to be welded.

Welding to the chassis frame

- Connect the ground to the bolt (plating bolt) or chassis frame near the place where to be welded.
- Remove component finish to be welded.
- Do not connect the ground to the chassis spring to prevent damage of spring.

Welding to the cab body

- Connect the ground to the fixing bolt of cab hinge after remove the front grille or to the cab body.

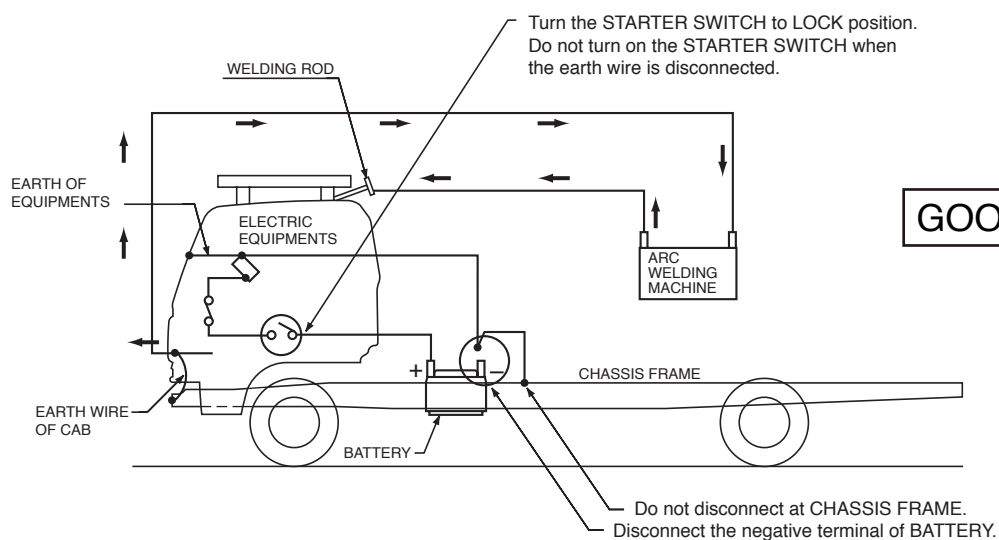


Front view

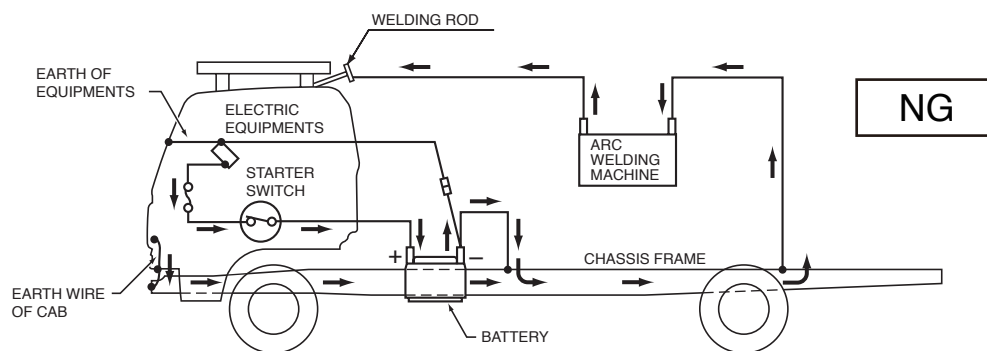
Other Precautions

- To protect ancillary equipment from sparks during welding, place fire-resistant covers over the rubber hoses, wire harness, pipes, chassis spring and tires, etc.
- Weld under proper conditions.
Minimize the heat generation of the work area as much as possible to maintain the weld integrity.

<Example current flow of electric welding when weld to cab body>

Case of disconnecting the negative terminal of BATTERYCase of connecting the negative terminal of BATTERY

ELECTRIC EQUIPMENTS will be damaged.



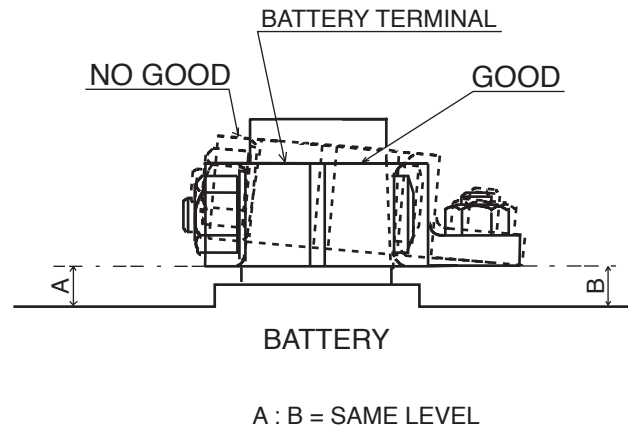
<The electric current of welding>

WELDING ROD → CAB → ELECTRIC EQUIPMENTS → BATTERY → EARTH of ARC WELDING MACHINE

→ EARTH WIRE OF CAB

After Welding

- Be sure to connect the ABS-ECU integrated hydro unit connector.
- Reinstall fuses (s).
- Be sure to connect the negative terminal of the battery, and the terminal should be horizontal.



- Replace finish carried out in previous step where welding work was carried out. Finish should be of equal or greater quality and remain the same color.

Final Inspection after Welding

- Reinstall each electronic equipment to original place.
- Inspect the operation and function of all electric equipment.
- For the detail of inspection's procedure, please consult HMC or Hino authorized dealer.

FOR HYBRID VEHICLE

Also, follow “BODY MOUNTING WORK FOR HYBRID VEHICLE MODEL XFC SERIES ONLY” in chapter 4.

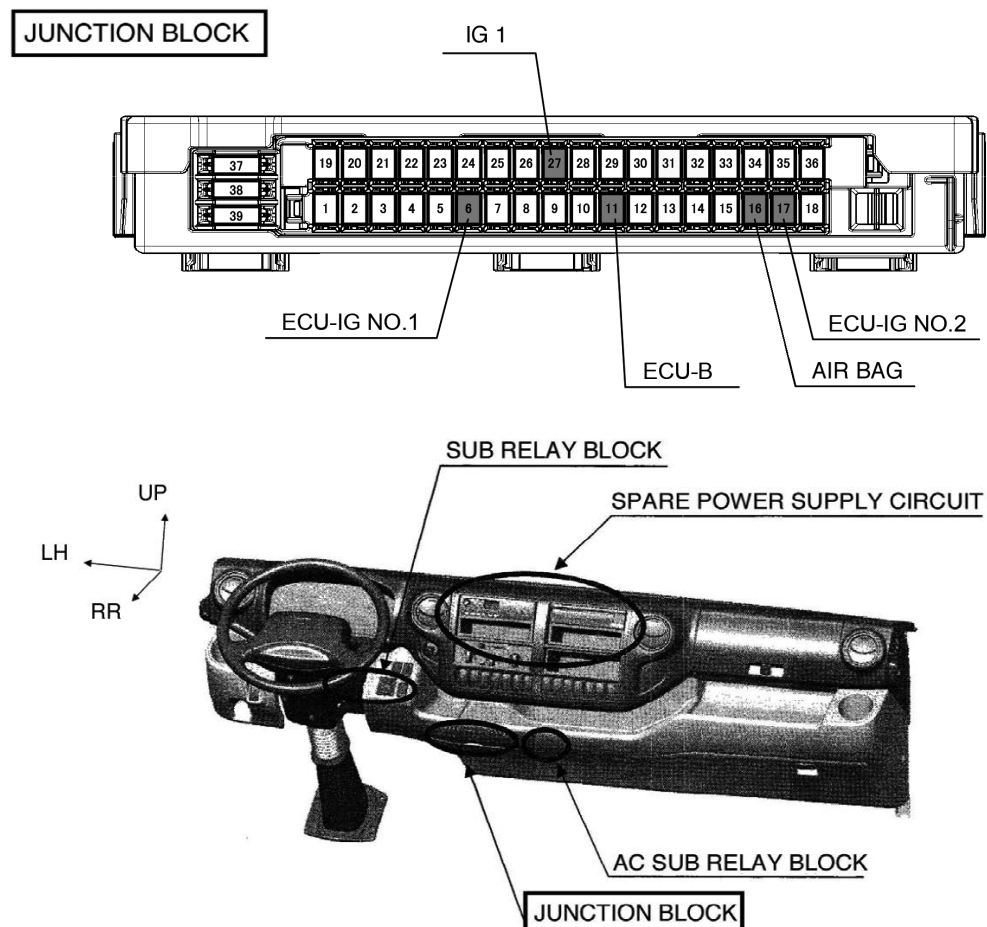
Procedure before Welding

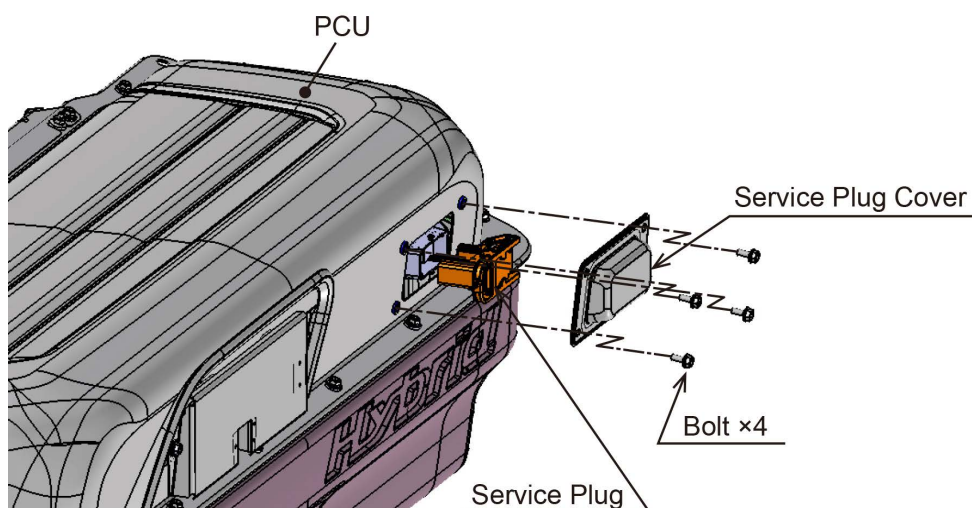
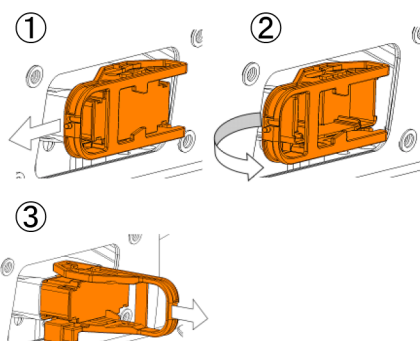
- Be sure to wear the electric insulation equipment such as insulation rubber groves during working.
- Turn the starter switch to “LOCK” position.
- Wait 10 minutes.
- Pull out a service plug of PCU and must wait 7 minutes for discharging electricity of a high - voltage condenser in the motor and generator control inverter.
(See the “DETAIL OF SERVICE PLUG”.)

Strictly observe above working manner to avoid getting an electric shock.

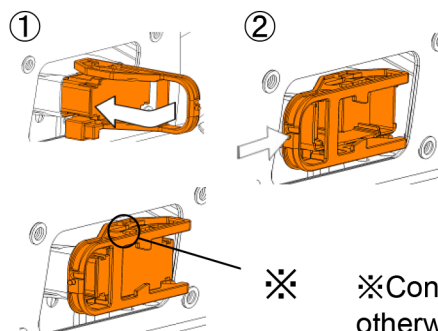
- Disconnect the negative terminal of the battery.
- Disconnect fuse of SRS air bag and ECU of each electric equipment.
- Disconnect the ABS-ECU integrated hydro unit connector.
- Disconnect all the signal circuit connectors in PCU after took off the connector cover of PCU.
(See the “DETAIL OF SIGNAL CIRCUIT CONNECTOR”.)

See the figure below for the detail of position of fuse.

Position of fuse for SRS AIR BAG & ECU

DETAIL OF SERVICE PLUG**•Procedure of the SERVICE PLUG removal**

- ① Slide the grip to the left.
- ② Raise the grip.
- ③ Extract the SERVICE PLUG.

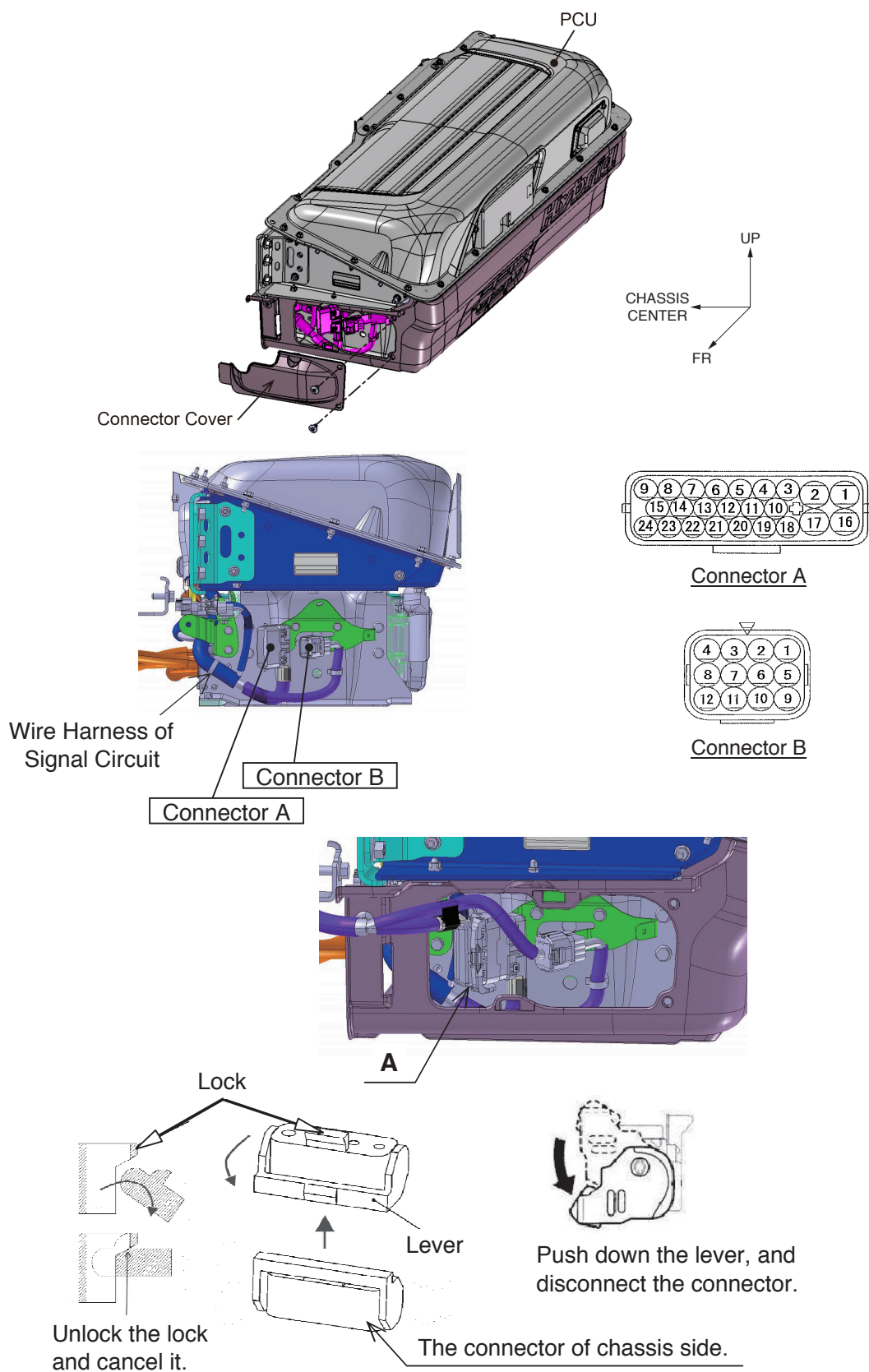
•Procedure of the SERVICE PLUG reinstallation

- ① Insert the SERVICE PLUG.
- ② Push down the grip, and Slide the grip to the right certainly till it is locked.



※ Confirm that the projection fit in a hole, otherwise engine doesn't start.

Do not put back the service plug until the end of welding operation.

DETAIL OF SIGNAL CIRCUIT CONNECTOR**DETAIL OF A**

- When reinstall connectors, in reverse manner the following above instructions.

Ground of the Welding Equipment

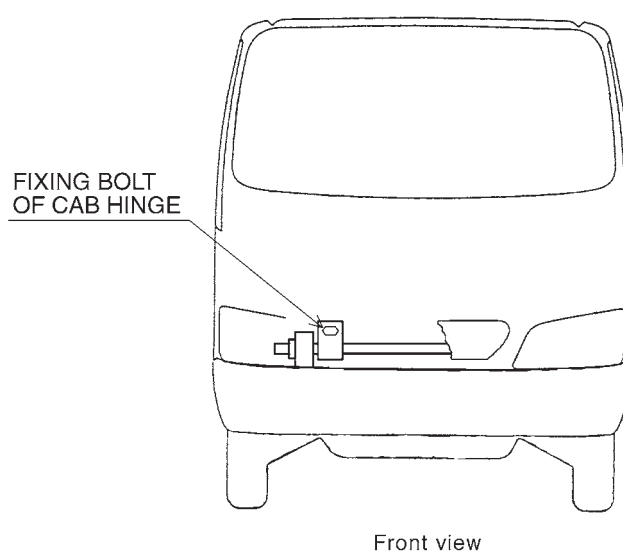
Connect the ground of the welding equipment near the location to be welded.

Welding to the chassis frame

- Connect the ground to the bolt (plating bolt) or chassis frame near the place where to be welded.
- Remove component finish to be welded.
- Do not connect the ground to the chassis spring to prevent damage of spring.

Welding to the cab body

- Connect the ground to the fixing bolt of cab hinge after remove the front grille or to the cab body.

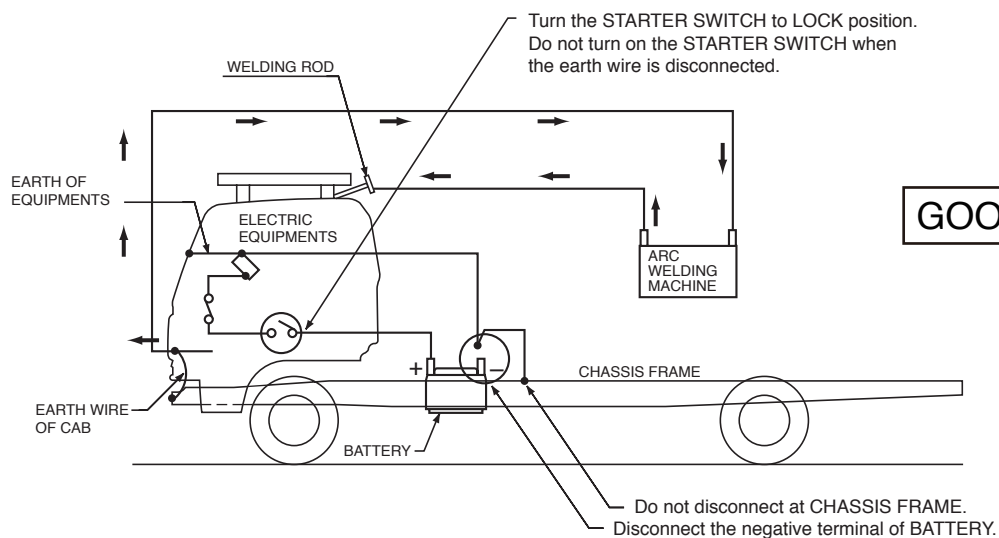


Front view

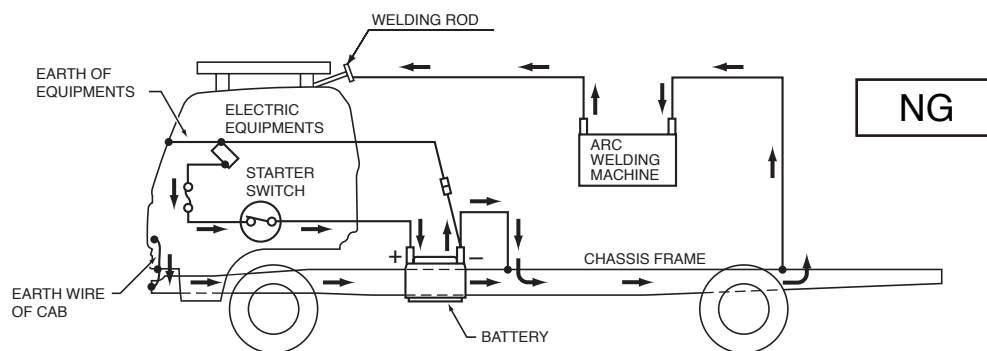
Other Precautions

- To protect ancillary equipment from sparks during welding, place fire-resistant covers over the rubber hoses, wire harness, pipes, chassis spring and tires, etc.
- Weld under proper conditions.
Minimize the heat generation of the work area as much as possible to maintain the weld integrity.

<Example current flow of electric welding when weld to cab body>

Case of disconnecting the negative terminal of BATTERYCase of connecting the negative terminal of BATTERY

ELECTRIC EQUIPMENTS will be damaged.



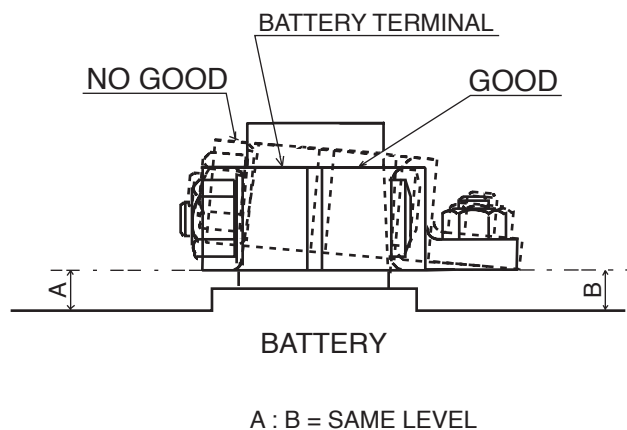
<The electric current of welding>

WELDING ROD → CAB → ELECTRIC EQUIPMENTS → BATTERY → EARTH of ARC WELDING MACHINE

→ EARTH WIRE OF CAB →

After Welding

- Be sure to connect the ABS-ECU integrated hydro unit connector.
- Be sure to connect all the signal connectors in PCU.
- Reinstall fuses (s).
- Be sure to connect the negative terminal of the battery, and the terminal should be horizontal.



- Replace finish carried out in previous step where welding work was carried out. Finish should be of equal or greater quality and remain the same color.

Final Inspection after Welding

- Reinstall each electronic equipment to original place.
- Put back a service plug to PCU.
(See the "DETAIL OF SERVICE PLUG".)
- Inspect the operation and function of all electric equipment.
- For the detail of inspection's procedure, please consult HMC or Hino authorized dealer.

Summary of the TE system for Engine Control

The TE system (Total Electronic system) is installed in this vehicle.

This is a total electric control system developed for the purpose of totally controlling running condition of the engine and of developing the power of the engine to the maximum extent. The type of the system used on this vehicle is named “Common-rail Type Fuel Injection System”. As you will notice from this name, it uses a computer. Therefore, you are kindly requested to observe the above when welding.

See the following diagram for the outline of the system.

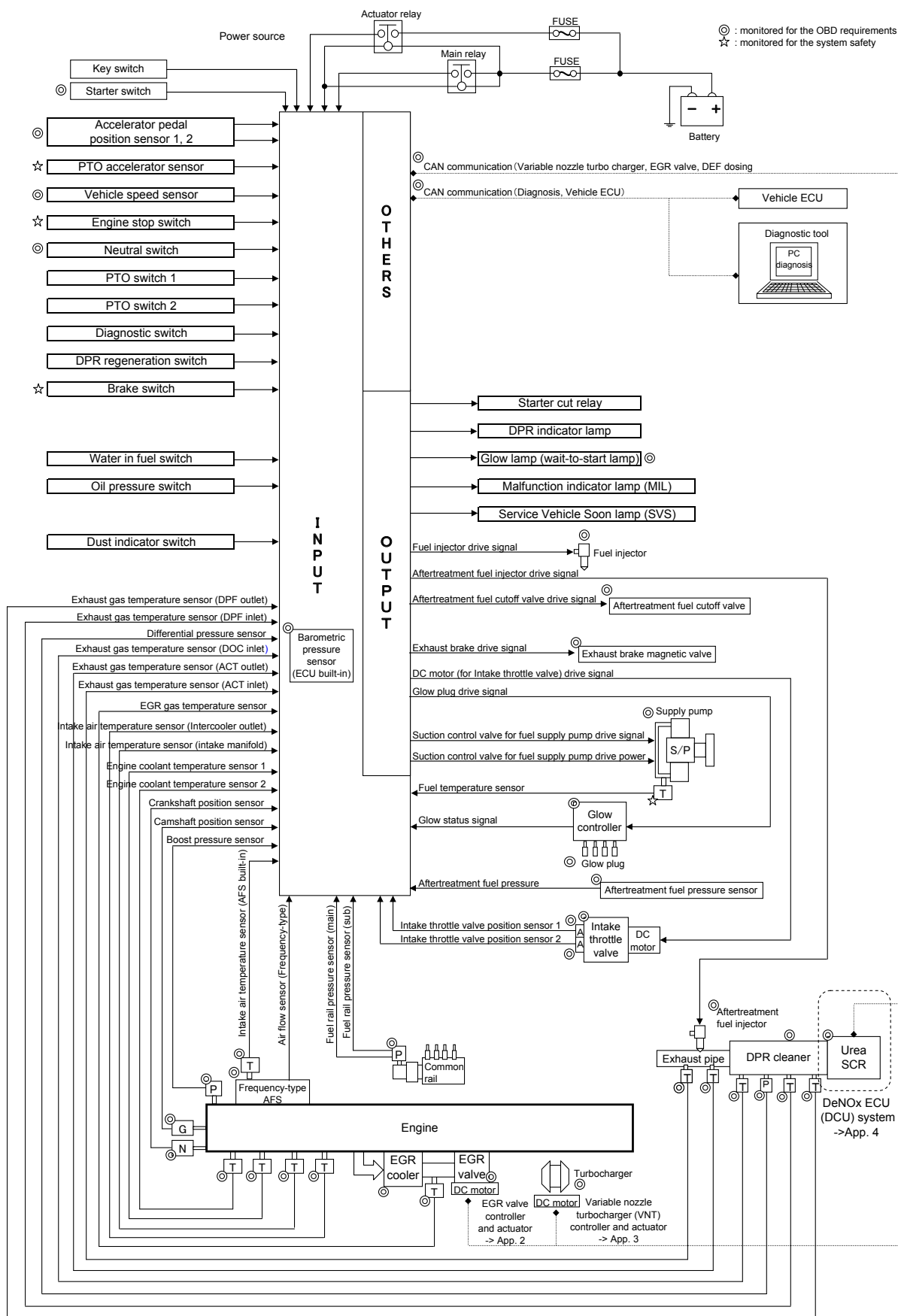
FEATURE COMBINATION TABLE

MODEL	ENGINE	COMMON-RAIL FUEL INJECTION	TACHOMETER DRIVE PULSE
ALL MODEL	J05E	●	●

When executing inspection services and repair works of your vehicle, be sure to observe the following instructions in order to protect the computer, harness wires, sensors, etc. of the TE system.

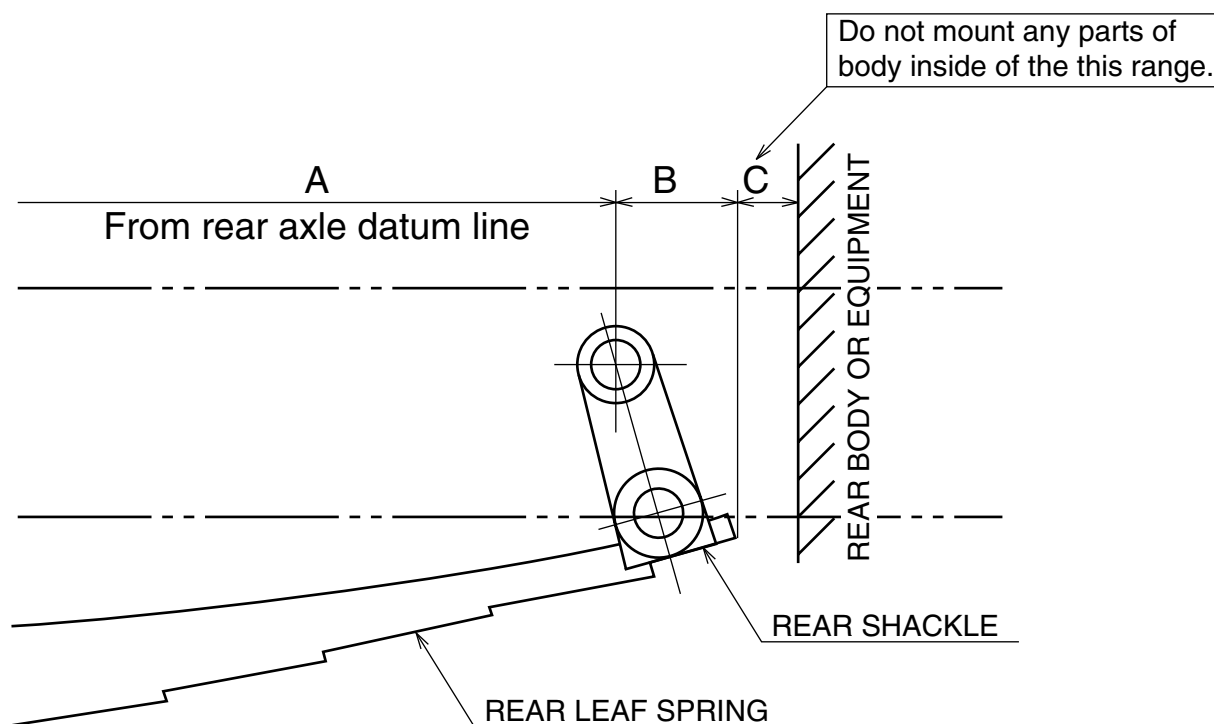
- Be sure to follow the all instruction to be described to “WELDING WORK” in Chapter 4 before performing any electric welding.
- Be sure to turn the starter switch to “LOCK” position before taking out or putting in a connector when proceeding to the said operation.
- Do not apply any modification to the computer, harness wires and sensors.
- Do not equip your vehicle with any illegal appliances, such as a high-output wireless, etc.

TE SYSTEM DIAGRAM (FOR ALL MODEL)



10. MINIMUM CLEARANCE WITH REAR SPRING AND REAR SPRING HANGER

To prevent interference with rear spring, don't install a rear body or equipment and shortening of the frame in the following range.



Unit : mm (in.)

MODEL	A	B	C
ALL MODEL	650 (25.6)	88.3 (3.48)	30 (1.2)

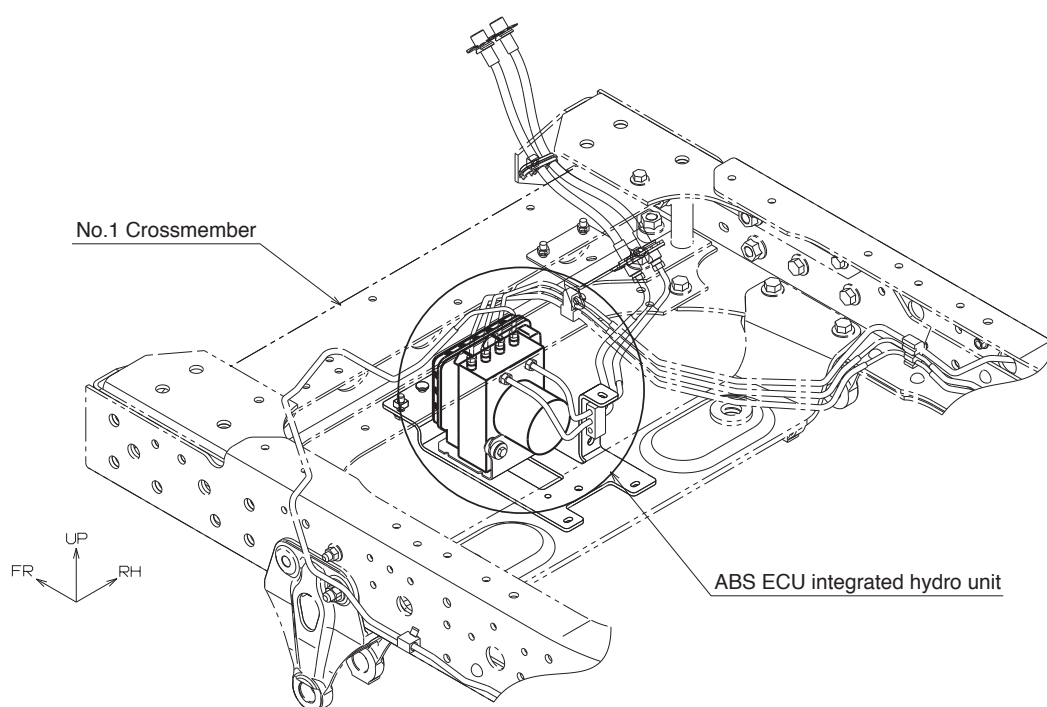
11. HANDLING OF ABS

Be sure to observe the following instructions when mounting body or equipment.

- Do not move, alter and modify ABS-ECU integrated hydro unit, brake piping and ABS-ECU harness.
- Do not use ABS-ECU harness as power supply for audio device and auxiliary light.
- Do not change the tire size, because the information of tire size has been installed in ABS-ECU.

The meter indicates different speed from actual speed if changed a tire which size is not specified by HML.

- Do not give any shock to ABS-ECU, because it is a delicate device.
- When washing vehicle, avoid watering directly with high pressure to ABS-ECU.



Installing position

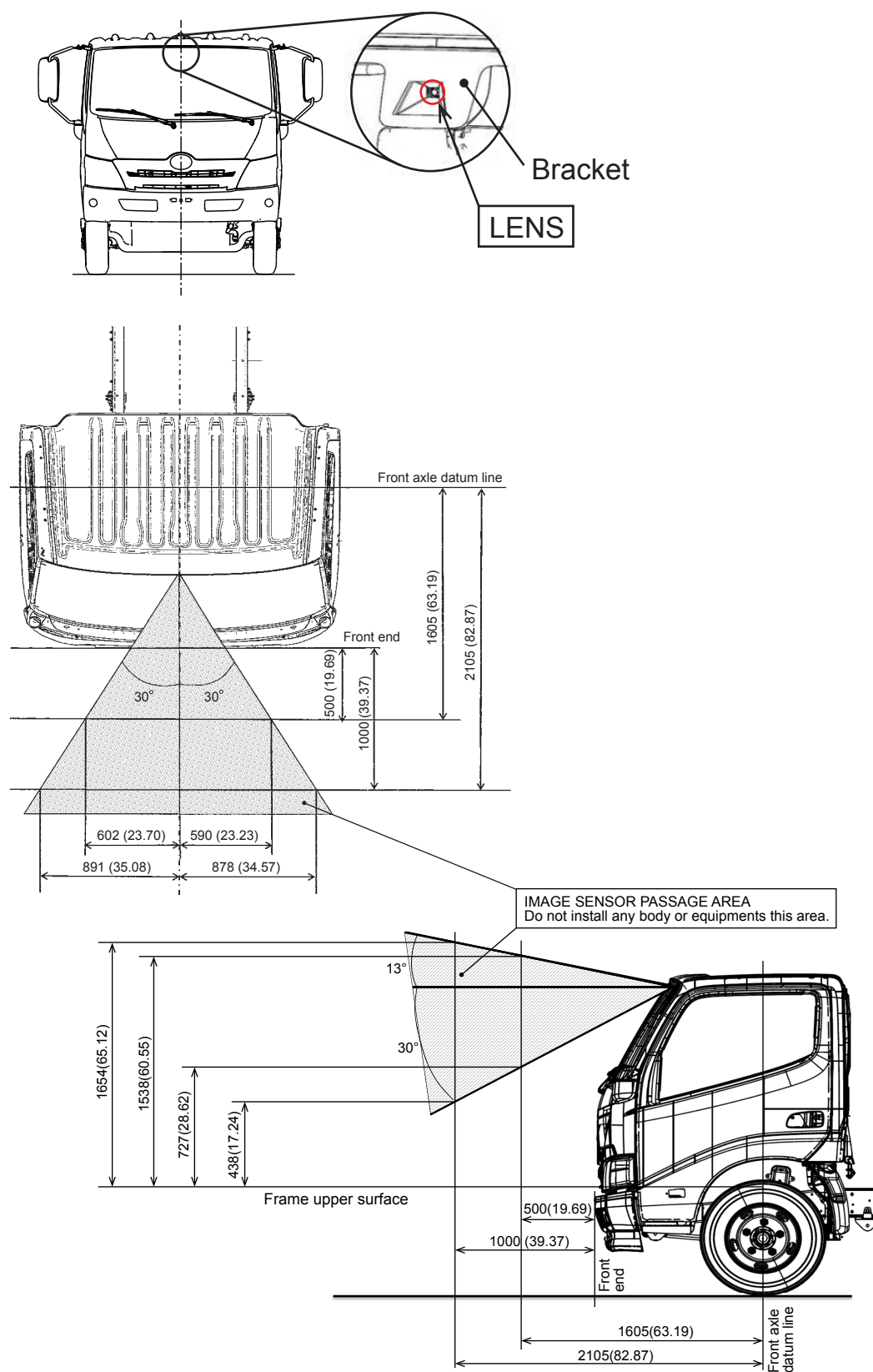
12. PRECAUTION FOR LDW

The lane recognition sensor as the LDW (Lane Departure Warning) is installed on the upper parts of windshield when shipping chassis. See the figure for installing position of LDW.

Be sure to observe the following precautions for proper operation of LDW when mounting body.

- Do not install equipments such as obstructing the front of the lane recognition sensor lens. Also, must avoid the radio wave passage area when installing equipments around the sensor. If there are any obstacles in front of the sensor, the radio wave will be blocked and the system does not operate properly.
The radio wave passage area is indicated by hatching in the figures.
- Do not move, alter and modify the lane recognition sensor.
- Do not remove the cover of lane recognition sensor.
If the lane recognition sensor bracket is damaged, should change the windshield assembly.
- Be sure to connect the connector of the sensors if disconnected when mounting body.
- Do not alter the wheelbase length to avoid malfunction of LDW.
- Beam axis initial adjustment of the lane recognition sensor is needed after mounting body because the vehicle posture is changed by mounted body. Please consult HMC for beam axis initial adjustment of the lane recognition sensor.

Unit : mm (in.)

The Lane Recognition Sensor

13. RE-PROGRAMMING VEHICLE'S CONTROL ECU

For hybrid models, it need to conduct default adjustment for proper generation of the inclining information after mounted body because of starting slope smoothly.

Be sure to observe the following instructions when mounting body or equipment.

Preparation

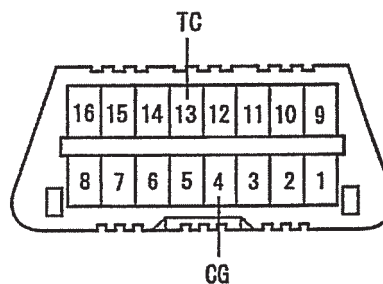
Make sure that the vehicle is the following conditions.

- Parking the vehicle on the horizontal place.
- The starter switch is on but the engine is off.
- The parking brake is pulled.

Short-circuit between TC and CG of DLC connector by harness wire.

See the connector below.

Refer to the next page for the position of DLC connector.



In the above conditions, push the HINO STOP & START cancel switch more than 3 seconds.
See “Layout of switches” in Chapter7.

Re- programming of vehicle posture

When above operation is conducted, re-programming will start.

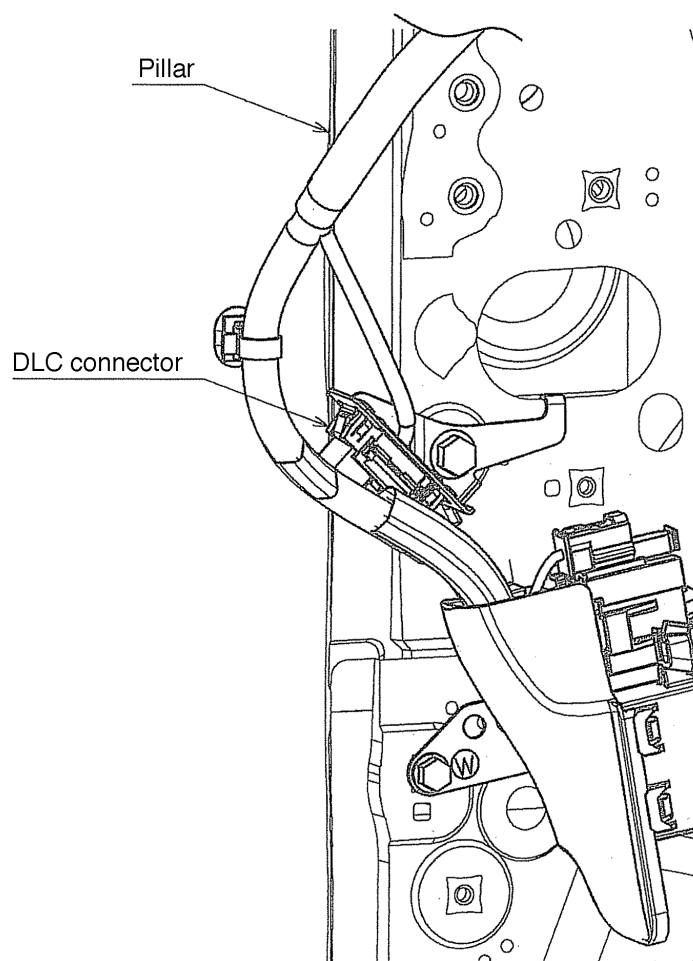
Make sure that the buzzer shows such as the following.

- The buzzer sounds and stops.

Completion of inclining default adjustment

When the buzzer into above condition, release the HINO STOP & START cancel switch, and then process is completed in about one second.

DLC connector position



Detail A

14. SYSTEM CONTROL COMPUTERS

Auto transmission control computer is installed on the left side of the instrument panel as described following figure.

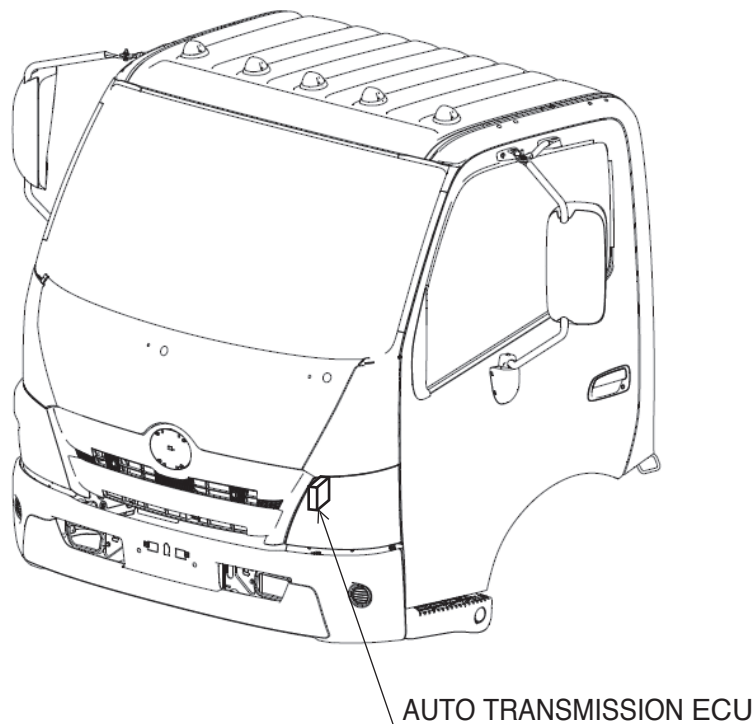
Therefore, give great care to the computer when performing any body mounting work or modification as following points.

- Be sure to follow the all instruction to be described to “WELDING WORK” in Chapter 4 before performing any electric welding.
- Be sure to cover the computer to protect from water penetration when performing cleaning up the inside of cab.
- When installing such device as radiophone and wireless communication device, must use the device that built-in noise-killer such as condenser or diode, and install it on the place where from the computers and its harness as far as possible.

Do not install any high output (over 50W) device.

Be sure to check that no abnormal electric wave or electromagnetic wave is found, after having installed the device, which affects on the electronic signals passing through in computer harness.

- Do not alter the computer, harness wire and sensors (ex. acceleration sensor).
- Do not shock to the computer.



Engine control computer

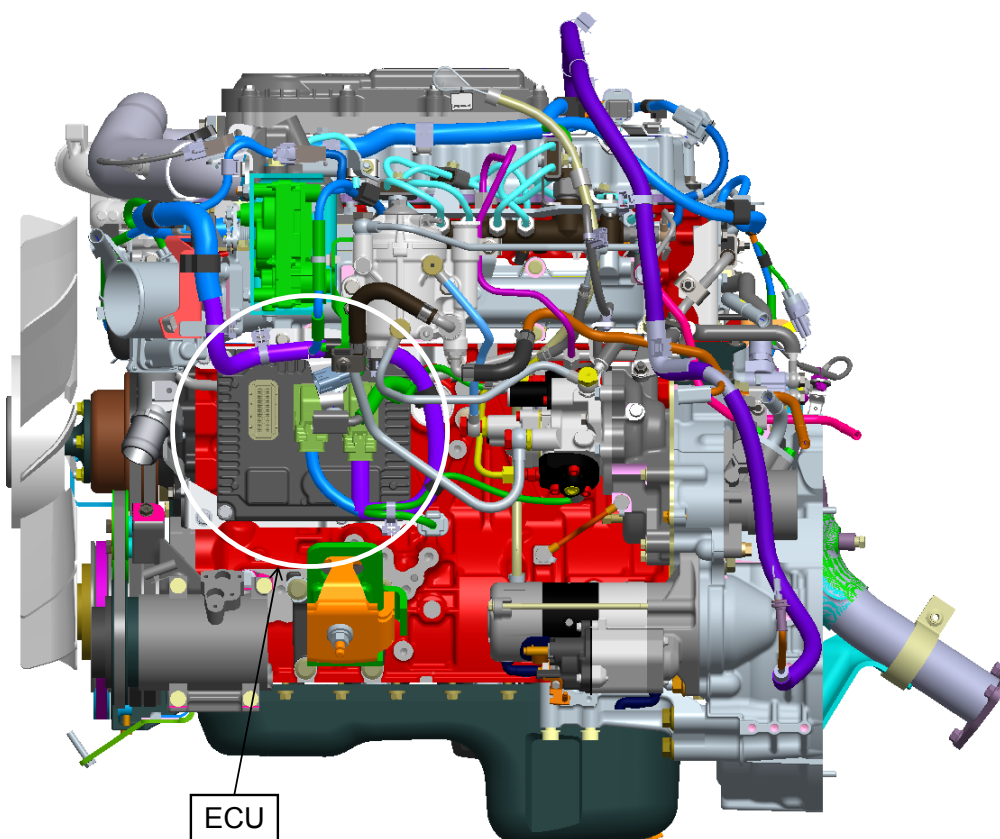
The engine control computer (hereinafter termed ECU), the connector and harness are installed in the left side of the cylinder block.

Never do the following work to the ECU, connector and harness.

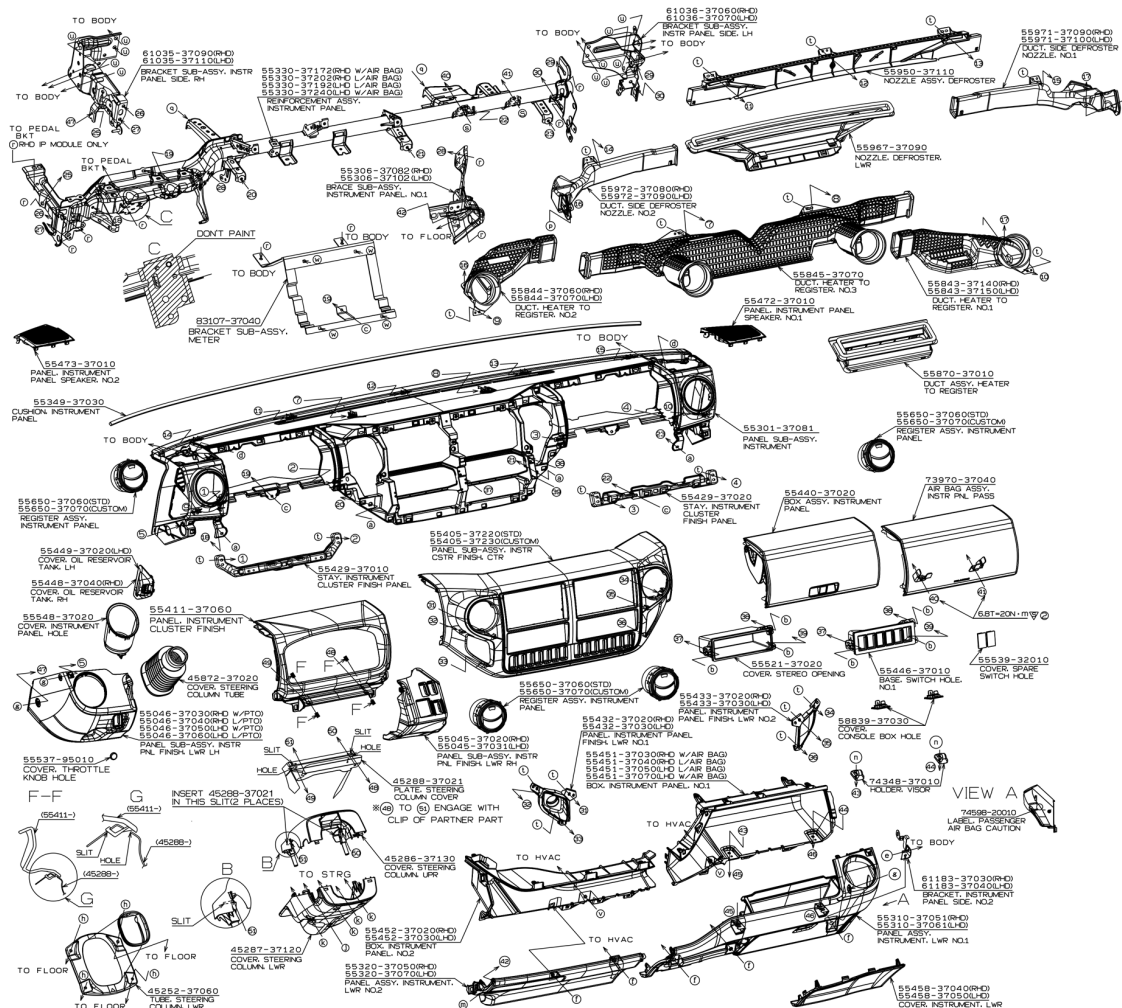
- Alteration
- Remove
- Movement
- Paint






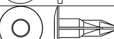




Be sure to observe the following instructions when mounting body or equipment.







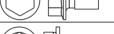
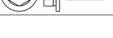

- Do not give any shock to the ECU.
- Should put a cover on the ECU and connector to avoid a paint adhere to it when painting the engine.
- Do not put a cover around of the ECU to prevent deteriorating function by heat.
- Should put a cover on the ECU and connector to protect from water when washing the engine with water.



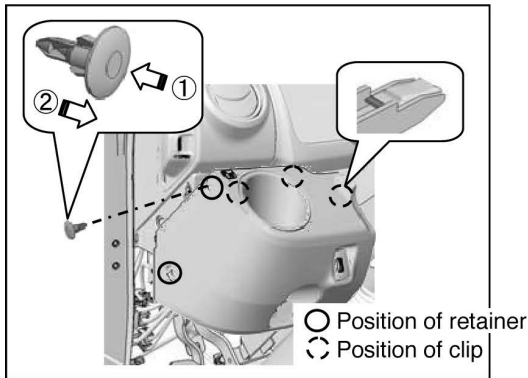
LEFT SIDE VIEW



SYM	PART NO	NAME	SHAPE	TOTAL	
(a)	91635-60618	BOLT		4	5530(14)
(b)	93567-15016	SCREW		6	55448(3)5552(3)
(c)	90179-06009	NUT		2	5530(1)1.55429(1)
(d)	55394-37010	BOLT		2	5530(2)
(e)	91551-80614	BOLT		1	61183(1)
(f)	90159-60382	BOLT		5	55320(2)55310(3)
(g)	90467-07041	CLIP		3	55046(2)55310(1)
(h)	91626-80620	BOLT		4	45252(4)
(j)	93269-54012	SCREW		1	45287(1)
(k)	93566-15514	SCREW		4	45287(4)

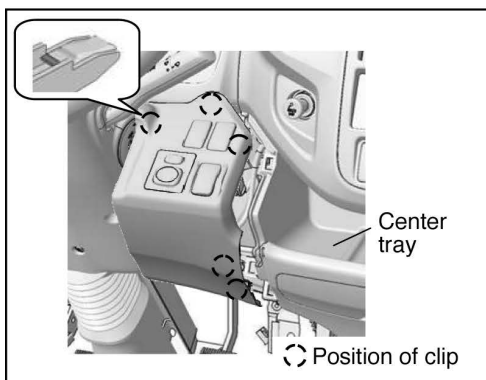
SYM	PART NO	NAME	SHAPE	TOTAL	
(m)	90467-07191	CLIP		1	55320(1)
(n)	93540-55020	SCREW		2	74348(2)
(p)	90467-07117	CLIP		2	55971(1),55972(1)
(q)	90179-08132	NUT		2	55330(2)
(r)	91551-80816	BOLT		RHD-9(CKD-8)	55330(7),CKD-6),55306(2)
				LHD-8	55330(6),55306(2),83010(7)(2)
(s)	91551-80820	BOLT		2	73970(2)
(t)	93568-55014	SCREW		19	55971(1),55972(1),55843(1) 55844(1),55845(2),55950(3) 55432(3),79543(3),55422(9)(4)
(u)	91551-80814 or 91551-80816	BOLT		11	61035(5),61036(6)
(v)	90119-06448	BOLT		2	55452(2),55451(1)

Be sure to observe the following instructions when removing the instrument panel cover.



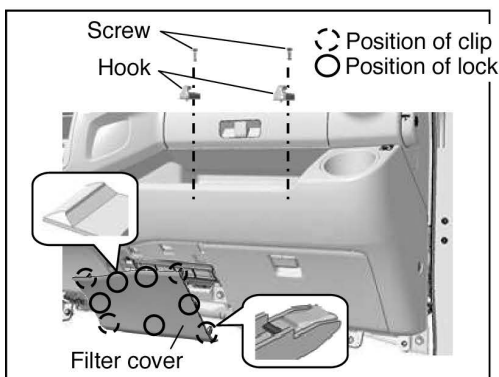
Removing the lower cover of driver side (out side)

- Remove the two retainers of the side surface then hold the bottle holder and pull back it towards you and remove the lower cover (out side). (Remove the three clips.)



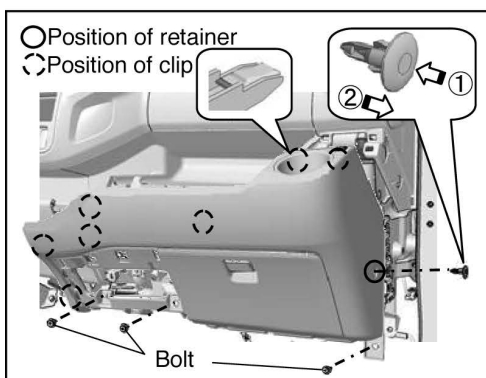
Removing the lower cover of driver side (in side)

- Hold the lower parts of lower cover (in side) then pull back it towards you. (Remove the two clips of lower parts.)
- Hold the side surface of center tray side then pull back the lower cover (in side) towards you and remove it. (Remove the three clips of upper parts.)

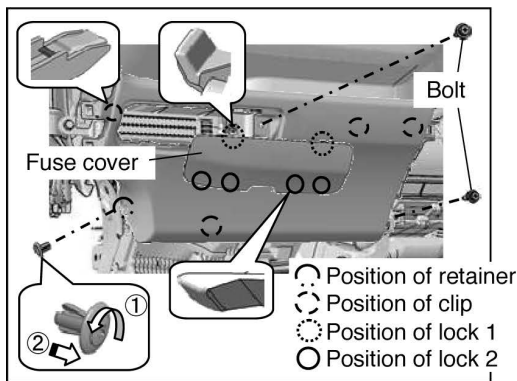


Removing the lower cover of passenger side


- Remove the two screws and remove the two convenience hooks.
- Hold the lower parts of filter cover then pull back it towards you and remove it. (Remove the four clips and unlock the five locks.)

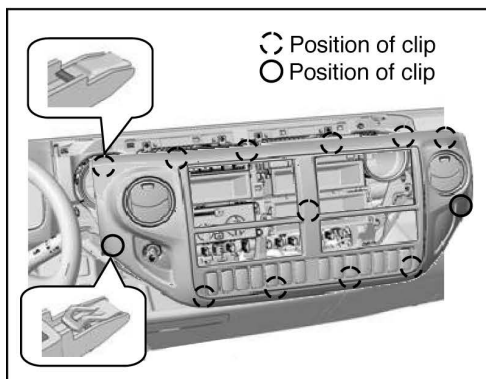


- Remove the retainer of side surface, two bolts of filter cover and bolt of lower parts.
- Hold the bottle holder and the upper of lower cover then pull back it towards you and remove the lower cover of passenger side. (Remove the seven clips.)



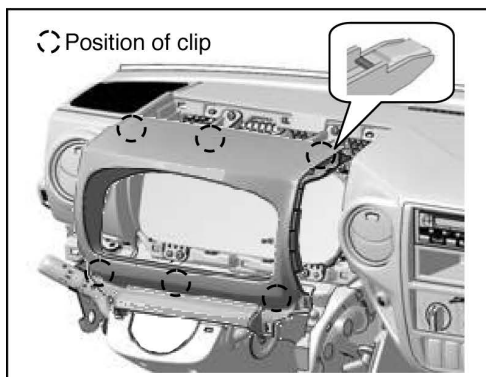
Removing the lower cover of center

- Put your finger on the  parts of lower parts of fuse cover then pull back it towards you and unlocked the four locks then pull down and remove the fuse cover.
- Remove the retainer of side surface of driver side, bolt of fuse cover and bolt of end of passenger side.
- Hold the upper parts of lower cover then pull back it towards you and remove it.
(Remove the four clips.)




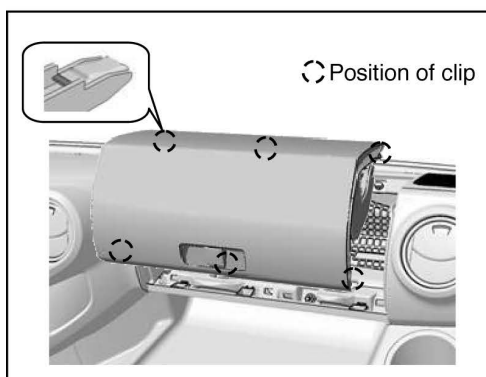
Removing the center cluster

- Hold the lower parts of center cluster then pull back it towards you.
(Remove the four clips of lower parts and three clips of middle parts.)
- Hold the side surface of center cluster pull back it towards you and remove it.
(Remove the six clips of upper parts.)



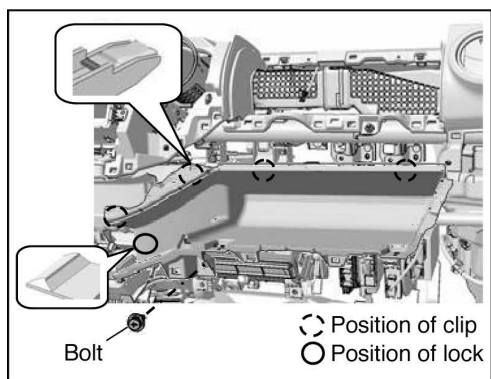
Removing the meter cluster

- Pull back the lower parts of meter cluster towards you.
(Remove the three clips of lower parts.)
- Hold the  of upper parts of meter panel then pull back a meter cluster towards you and remove it.
(Remove the three clips of upper parts.)



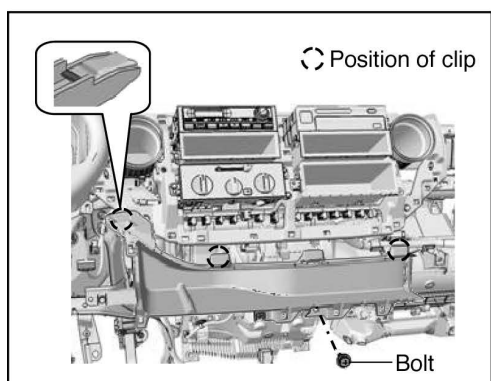
Removing the upper box of passenger side

- Pull back the lower parts of upper box towards you.
(Remove the three clips of lower parts.)
- Hold the side of upper box of passenger side pull back it towards you and remove it.
(Remove the three clips of upper parts.)



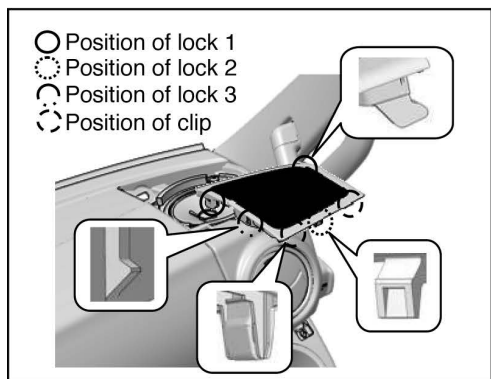
Removing the tray of passenger side

- Remove the bolt of lower parts then pull back the tray of passenger side towards you and remove it. (Remove the four clips and unlock the lock.)



Removing the tray of center

- Remove the bolt of lower parts then pull back the tray of center towards you and remove it. (Remove the three clips.)



Removing the speaker grille

- Pull up the lower back side of the speaker grille. (Remove the two clips of back side and unlock the two locks.)
- Pull back the speaker grille towards you and remove it.

※ When reassemble the instrument panel, in a reverse manner the following above instructions.

16. REINSTALLING WASHER TANK INLET

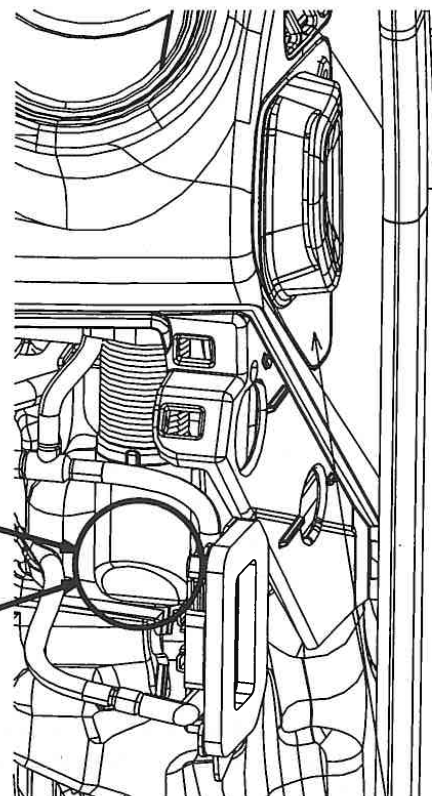
When remove the instrument panel, also should remove a washer tank bezel and inlet tube.
Be sure to observe the following instructions when reinstall washer tank bezel and inlet tube after installed instrument panel.
If reinstalling position of washer tank inlet is not completed, the washer liquid may leaking or the worst case is the engine doesn't start.

FOR WIDE CAB

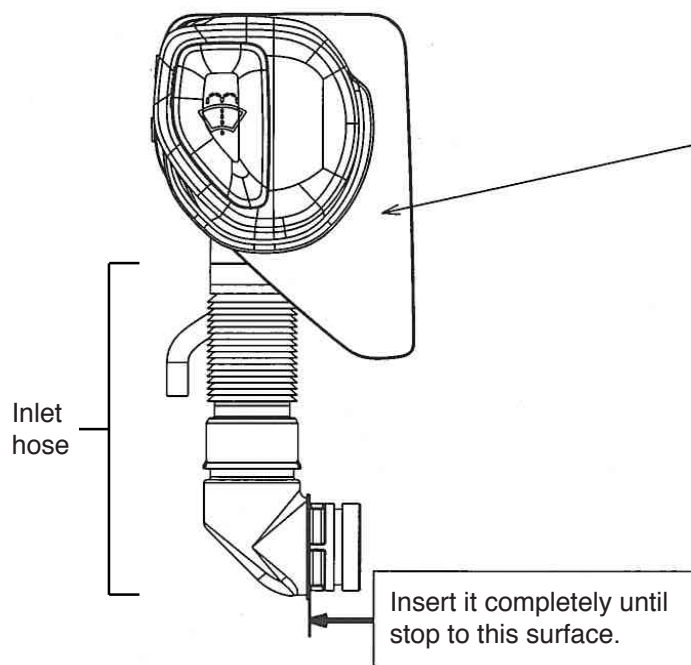
- Do not remove a bezel.
- Remove the inlet hose from washer tank.
- Should follow the instructions below when removing the inlet hose.

Pull out this parts horizontally to back side the vehicle when removing the inlet tube.

Insert this parts horizontally to washer tank socket, and then push it until stop when reinstalling.



Washer tank inlet
(Bezel)



Insert it completely until
stop to this surface.

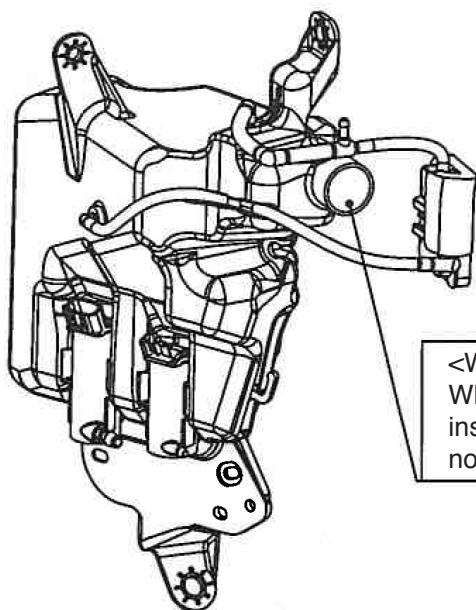
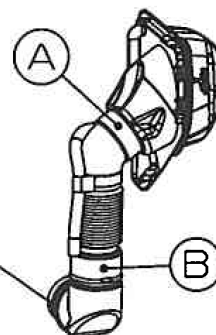
[NOTE]

Should separate at the position in figure below when removing inlet tube from washer tank.
Do not separate the parts of A and parts of B.

The separating position.

<Inlet side>

When reinstalling, check the O ring that there is no scratch, no dirt, no twisting and no sticking foreign matter.
And check the parts of inserting to washer tank that there is no scratch, no dirt and no sticking foreign matter.



<Washer tank side>

When reinstalling, check the parts of inserting to inlet that there is no scratch, no dirt and no sticking foreign matter.

17. ADDITIONAL WIRING IN THE ENGINE COMPARTMENT

Since the engines in HINO trucks are covered with sound arrest plates, the engine compartment tends to heat up.

Avoid wiring in the engine compartment if possible.

Additional wiring harness or cable(s) should be kept away from heated elements, and should be routed along the original chassis harness.

18. EXHAUST SYSTEM

The effect and interference of the heat from the exhaust system have a significant influence to safety. Maintain adequate clearances between component of the exhaust system and a body or equipment, measure the temperature of the component as necessary to check for safe operation.

Clearances between Exhaust System Parts and Other Parts

The exhaust system become very hot during operation, therefore, be sure to observe the following instructions to prevent a unexpected problem.

- Clearance from body parts
Should follow the precautions for mounting of exhaust system.
- Clearance from fuel system parts
Maintain a clearance at least 200 mm (8.0 in.) between the fuel tank, fuel hose or pipes and the hot parts of the exhaust system.
If cannot maintain a clearance 200 mm (8.0 in.), should fit the heat insulators to protect the fuel tank and fuel hose or pipes.
When arranging the fuel piping, make sure that even if a fuel line break and fuel leaks out, fuel should not contact with hot parts of the exhaust system.
Do must not make a joints of the fuel piping above the hot parts of the exhaust system.
When moving the fuel tank or installing an additional tank, make sure that the filling port is at least 300 mm (12.0 in.) away from mouth of the tail pipe and at least 200 mm (8.0 in.) away from exposed electrical terminals.
- Clearance from other chassis parts
Maintain the clearance shown the table below.
If cannot maintain these clearance, should fit the heat insulators.

CLEARANCE mm (in.)	CHASSIS PARTS
Min. 100 (4.0)	Vacuum pipes
Min. 150 (5.9)	Components and parts for brake system
Min. 200 (8.0)	Electrical wires, battery, battery cables, rubber parts (hoses, etc.), resin parts, oil pipes, cables

Precautions for Mounting a Body or Equipment

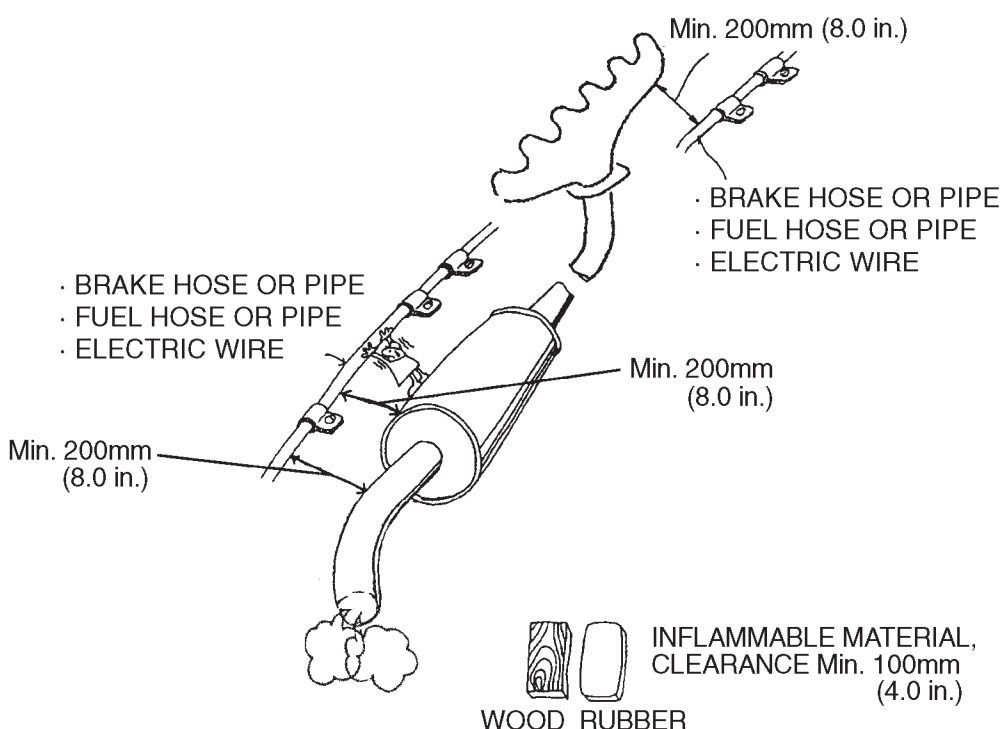
When mounting a body or equipment, maintain the following clearances from the exhaust system.

For wood, rubber, and cloth maintain a clearance at least 100mm (4.0 in.).

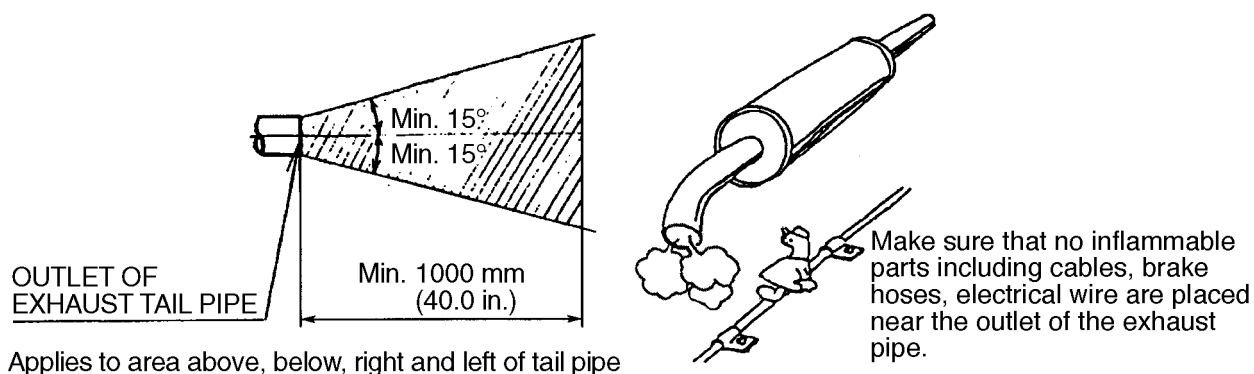
For cables, brake hoses, electrical wire and resin parts maintain a clearance at least 200mm (8.0 in.).

If it is impossible to maintain the above clearances, fit heat insulators or heat shields between the relevant parts, or measure the temperature of the exhaust system to ensure safe operation.

When the heat insulators are removed during installation, be sure to reinstall the heat insulators or heat shields to their original position. Never paint the heat insulators or heat shields.



When mounting equipment (tool box, etc.) or flammable objects behind the outlet of the tail pipe, avoid the shaded area shown below.

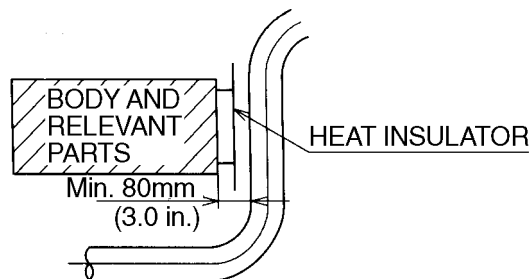


Do not install the rope hook near the high-temperature area, the rope or canvas could droop or touch the exhaust system. Install an insulation plate as necessary.

Install equipment in such a manner that the exhaust system is not exposed to the hydraulic fluid that may leak from the equipment.

When mounting a body or equipment above and ahead of the outlet of exhaust system

When mounting a body and relevant parts near the pipe, maintain a clearance at least 80mm (3.0 in.) from the pipe as shown in figure below. If it is impossible to maintain the clearance at least 80mm (3.0 in.), fit a heat insulator or heat shield between the relevant parts.



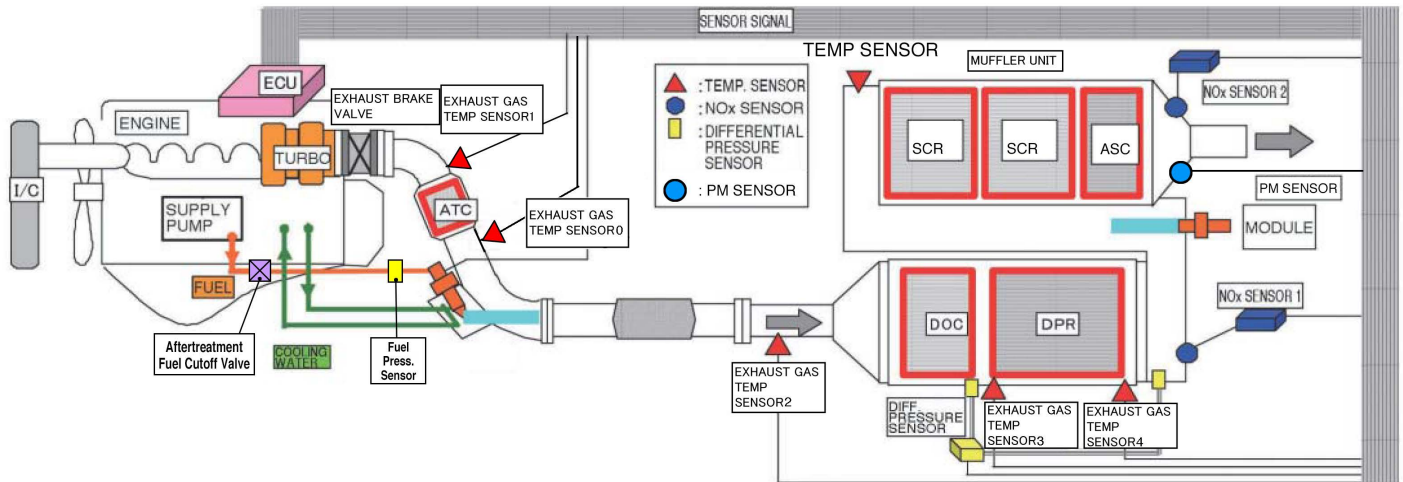
19. DPR FILTER

DPR FILTER

(DPR = Diesel Particulate active Reduction system)

Outline of DPR Filter

Structure of DPR filter is shown following figure.



The DPR filter collects particulate matter found in exhaust gas and automatically burns them.

Be extra careful when refueling, refer to the “Fuel Caution Plate” attached on the instrument panel in the cab and on the fuel tank.

Working condition during driving.

The DPR automatically purifies particulate matter during normal operation.

This system is not negatively effect of vehicle operation.

Working condition during under operation.

- The purification of particulate matter.

When vehicle stops for traffic signal, the DPR may enter filter mode.

At this time, the engine idle speed may temporarily increase causing the exhaust brake to actuate.

- When idling for a long time.

To prevent emission of white smoke, idling speed will increase causing the exhaust brake to actuate if leave vehicle with idling for certain time. (approx. 1 hour.)

Precautions

The DPR filter incorporate a catalyst that may be broken by mishandling or dropping. Take extra care when handling the DPR filter during mounting of a body or equipment. An exhaust gas differential pressure sensor and an exhaust temperature sensor are installed on muffler and a harness is attached to the sensor. When mounting the body, take extra care with these system.

If these parts are damaged, purification of particulate matter may not be performed sufficiently.

Filter may be removed and remounted for maintenance.

Place the parts of the body so that it is easy to remove and mount the filter.

Depending on how vehicle is operated, DPR indicator light may be flashing.

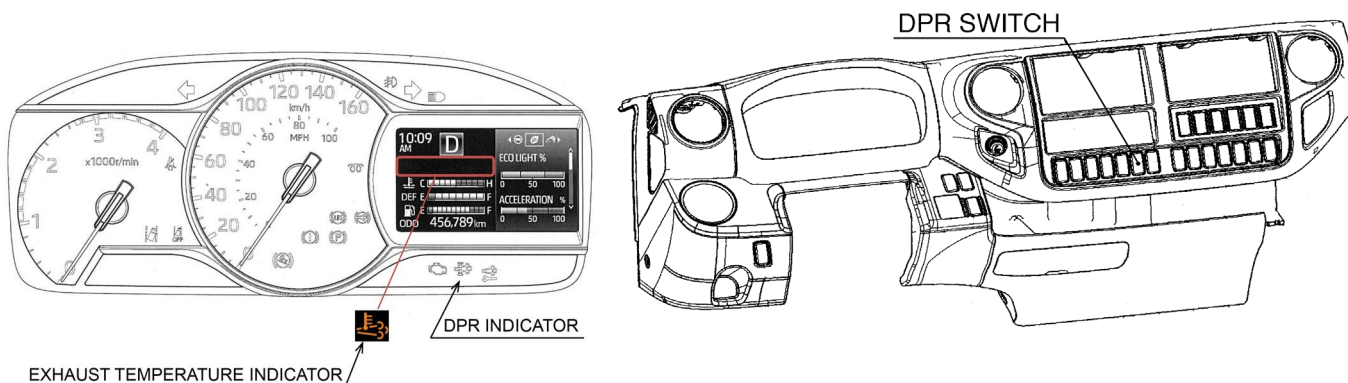
If the DPR indicator light is flashing, follow the instruction below within 150km (93miles).

To prevent fire, make sure there is no flammable matter near the exhaust pipe.

- Park vehicle in safe place.
- Apply the parking brake firmly.
- Put the selector lever in "P" position.
- Do not stop the engine.
- Press the DPR switch shown below.

Confirm that the flashing DPR and EXHAUST TEMPERATURE indicator light turns on and idle speed increases, wait for 15 to 30 minutes.

When the DPR indicator light goes off and the idle speed returns to normal, you can drive normally.



This instruction is to reproduce the function of DPR filter and it does not mean there is a problem.

However, if the vehicle is left with the flashing DPR indicator light on and engine runs long time, the check engine light will turn on and output power will be restricted in order to prevent damage to the DPR. If vehicle is used in one spot for body operation for a long time, it is necessary to make sure the DPR indicator light does not turn on.

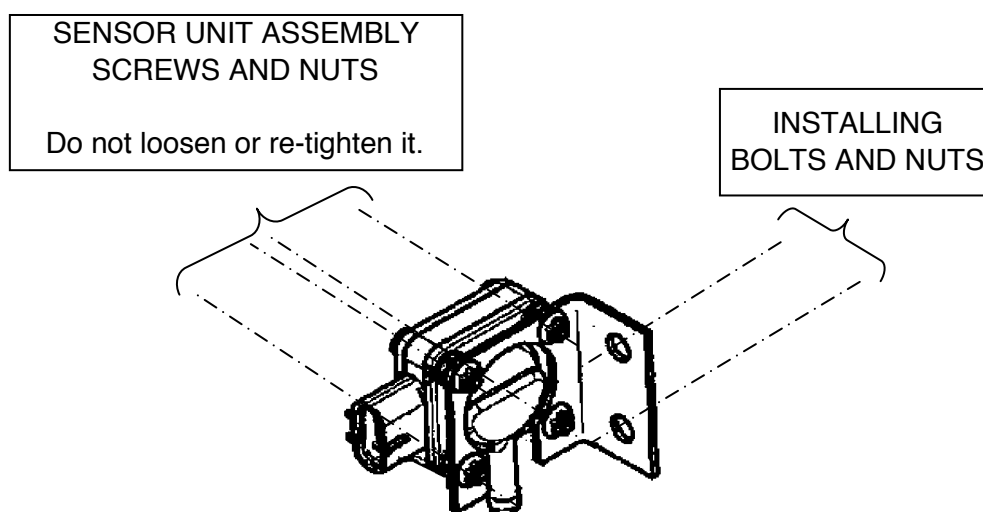
Painting

Never paint the filter (DPR) and pressure sensor.

PRESSURE SENSOR OF DPR FILTER

It is a precision instrument parts, therefore, be sure to observe the following precautions for mounted body or equipment.

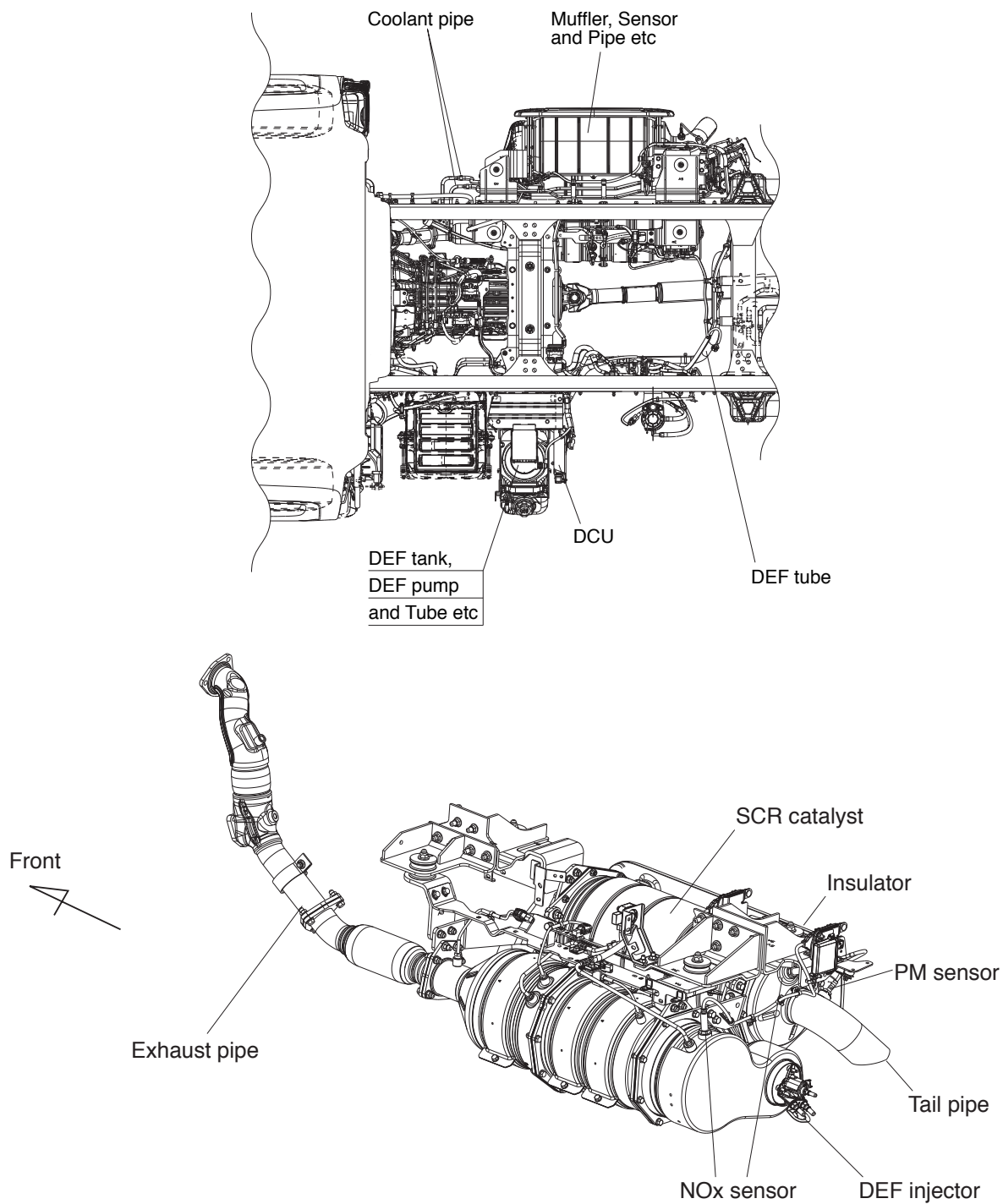
- Do not give any shock to the sensor.
- Use hand tools to tighten or loosen the installing bolt and nut, do not use impact wrenches.
- Do not drop the sensor unit.
- Do not disassembly the sensor unit.



Do not use the sensor which is not handled according to these precautions above.

20. DEF - SCR SYSTEM

Be sure to observe the following instructions when mounting body or equipment.
The DEF (Diesel Exhaust Fluid) - SCR (Selective Catalytic Reduction) system is installed for reducing NOx (nitrogen oxide) emission.
See figure below shows installing position of DEF - SCR.



Precautions when body mounting and welding

WARNING

Removal, installing on different place, painting and modification of any parts of DEF - SCR system is prohibited.

- When mounting body and equipment, cover the whole system not to damage system parts, especially the sensor connectors of DEF, NOx and PM.
- Do not impact each system parts. Be careful not to impact the DEF tank because it is made of resin.

Also, do not impact sensors and DCU (the computer which controls the quantity of DEF injected for the catalyst), and do not pour water.

- When welding work, cover whole system with nonflammable material to avoid the damage by welding spatter, and the influence by heat.

Before welding, turn the starter switch to "LOCK" position, wait at least 10 minutes, and disconnect the negative terminal of battery.

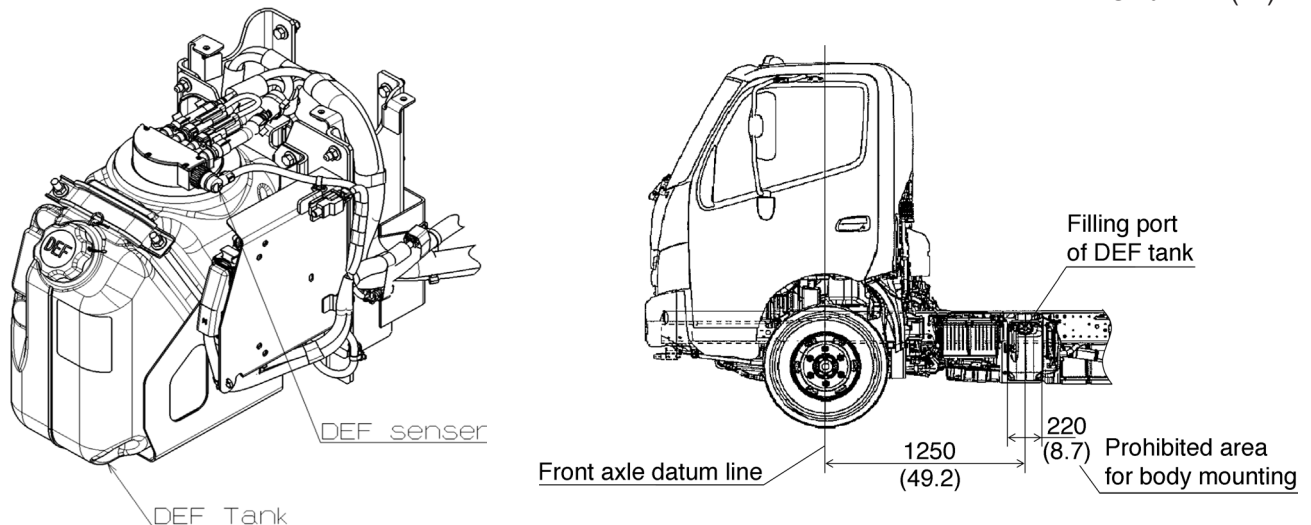
- Be sure to wait for at least ten minutes after the starter switch is turned to "LOCK" position before you disconnect the battery terminals from the battery, as DCU starts working for "After Run" after the starter switch is turned to "LOCK" position.

Otherwise, DCU will not complete working properly (the DEF still remains in the exhaust gas after treatment system), which may result in the malfunction of DEF-SCR system.

What is the meaning of After Run

- After you turn the starter switch to "LOCK" position.
 - To avoid crystallizing of the DEF that remains in the DEF pump, injection and pipes, the exhaust gas after treatment system automatically returns the DEF to the DEF tank.
 - You can hear the sound of the DEF pump after you turn the starter switch to the "LOCK" position is proper actuation.
 - The time when the sound of the DEF pump can be heard may vary.
- If remove the DEF tank temporary when mounting body, should protect DEF sensor connector from water.
 - Around the filling port of DEF tank, body mounting or installing parts should not be done in a way to obstruct replenishing DEF.
See the figure below.
 - If you need to replace any parts related to DEF- SCR system, use of Hino genuine parts is required for the proper function of DEF-SCR system.

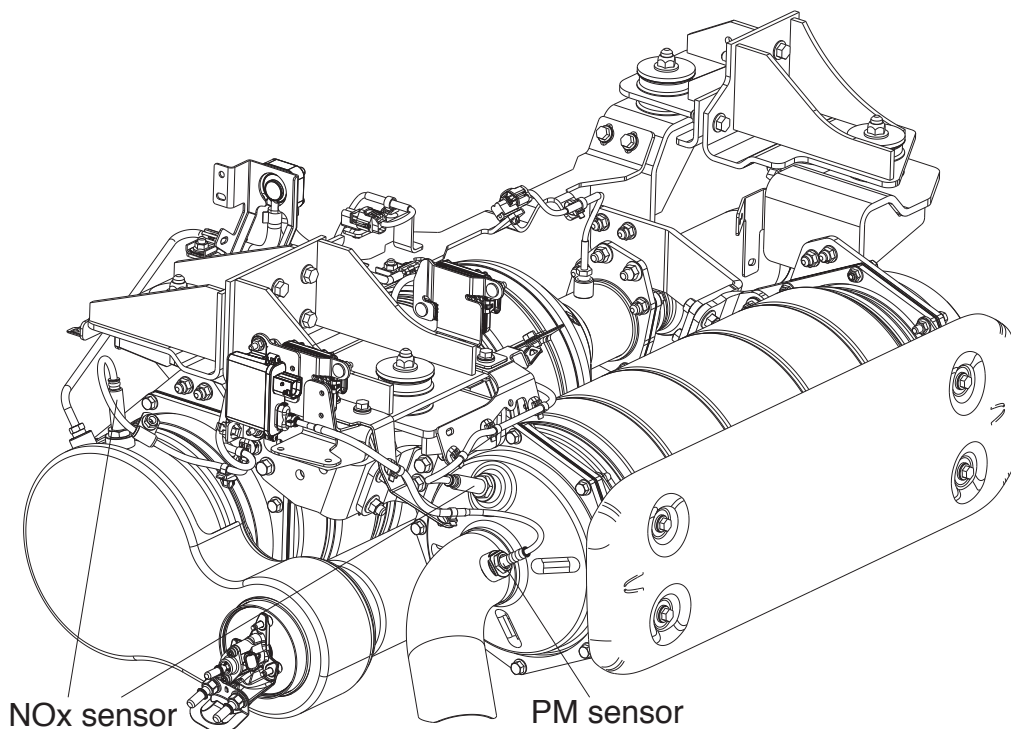
Unit : mm (in.)



Precaution for NOx sensor and PM sensor

Do not disconnect the connectors of wire harness for DEF-SCR system when electric welding.
If disconnect the connectors, it may be the cause of DEF-SCR system malfunction.

Detail for each position of sensor



A sensor is precision instrument parts, therefore, do not shock and strong vibration to the sensor when mounting body.

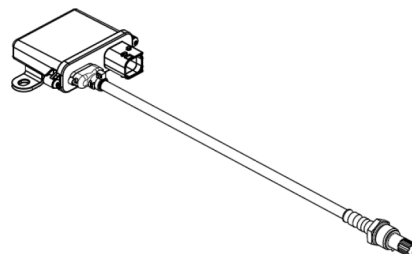
A ceramics element of the NOx SSR and PM SSR sensor's head parts becomes extremely hot approximately 700 °C (1292°F) during the exhaust gas detection operation, and so the element may be quenched and lead to cracking if moisture remains in the metal cover of the sensor's head parts. Therefore, should avoid watering to sensor when using water on vehicles such as washing vehicles.

The following figure shows detail of each sensor.

NOx sensor



PM sensor



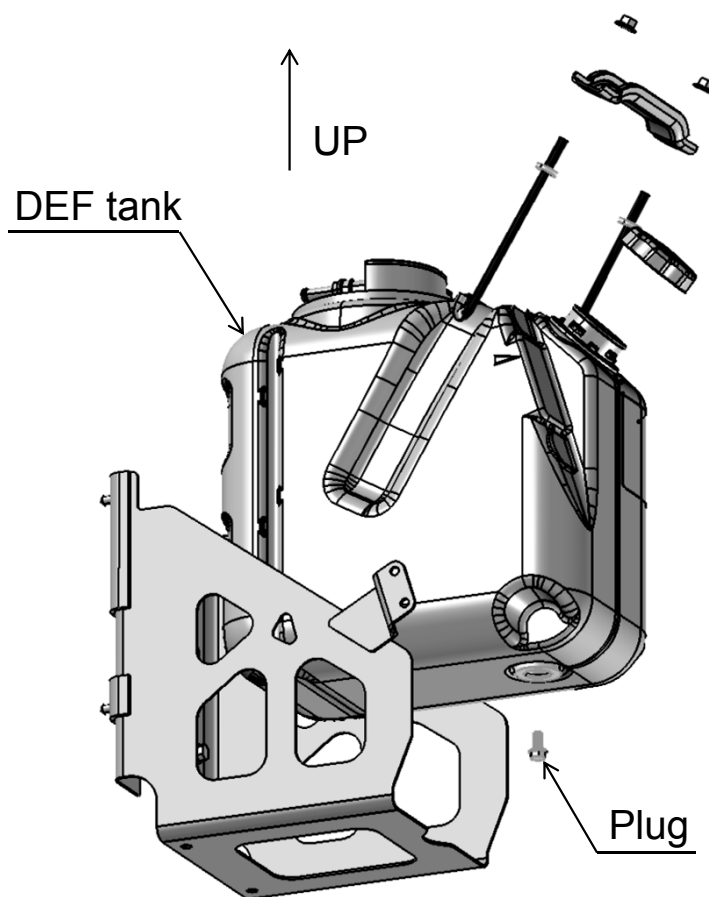
Precautions when painting

In the case of natural drying, in order to prevent adhesion of a paint, cover the whole system.
In the case of forced drying such as drying in dry oven, drying temperature must be under 80°C (176°F) because allowable heat limit of the DEF tank is 80°C (176°F).
Also, extract DEF completely from the DEF tank and cover whole system with heat-resistant material.

Precautions when extract DEF

Extract DEF after finishing After Run.
Do not re-use the extracted DEF.
Caution should be exercised during fluid extraction. If particulate matter is dislodged from the tank during extraction, the particulate matter needs to be removed from the tank. Failure to remove the particulate matter could cause damage other components.
Always use API certified DEF for replenishment of the DEF tank.

See the figure below for detail of DEF tank.



Precautions for DEF

Always use API certified DEF for replenishment of the DEF tank.

Don't replenish the tank with DEF diluted even if it was API certified DEF.

Never replenish the tank with diesel fuel, kerosene, gasoline or other fluid than API certified DEF.

Use of the abovementioned unsuitable fluid causes not only the fall of an exhaust gas purification function but failure of each parts of DEF-SCR system.

If you replenish the tank with the fluid other than API certified DEF by mistake, extract the fluid completely and replenish the tank with API certified DEF before starting engine.

Never heat, dilute and never mix with non-approved or other fluids.

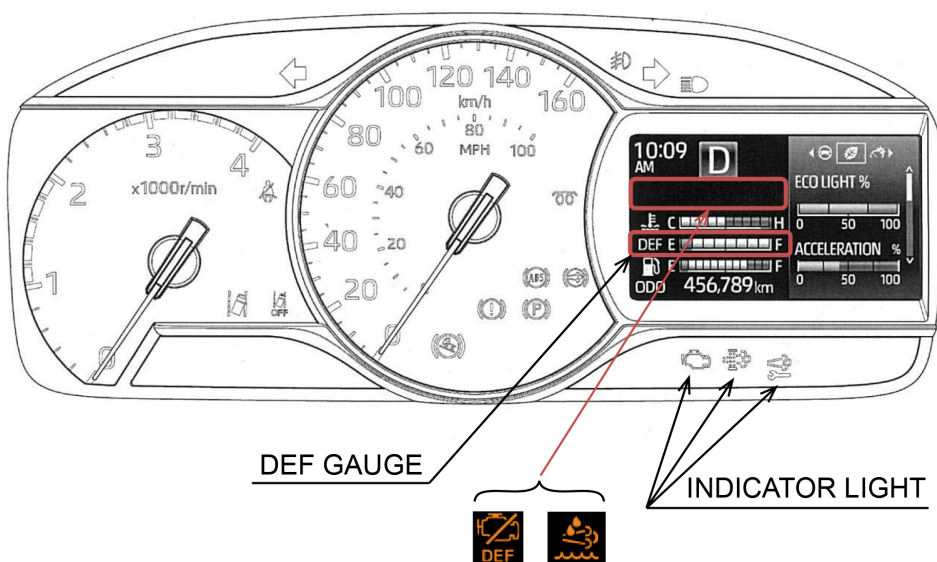
Precautions when handling DEF

Observe the following precautions when handling DEF.

- Put on the appropriate protective equipment (ex. safety goggles, rubber gloves and etc.).
- If DEF goes into eyes or adheres to the skin, wash 15 minutes or more with a lot of effluent immediately, and receive diagnosis of a doctor.
- Although there may be a smell like ammonia in DEF, there is no inconvenience in use.
- Wipe off DEF adhering to the floor, the body, a container, etc. with a rag securely. DEF is dried and crystallized. Crystallized DEF corrodes the metal side where it is not painted if it adheres.
- Do not drain DEF into the environment and it should be treated like an industrial waste.

Indicator light on the meter panel

After finishing body mounting and when starting the engine, if following indicator light on the meter panel goes on do as the instruction of safety label which is attached on the cover of overhead console or contact HMC or Hino authorized dealer.



21. INSTALLATION OF FUEL INLET PIPE

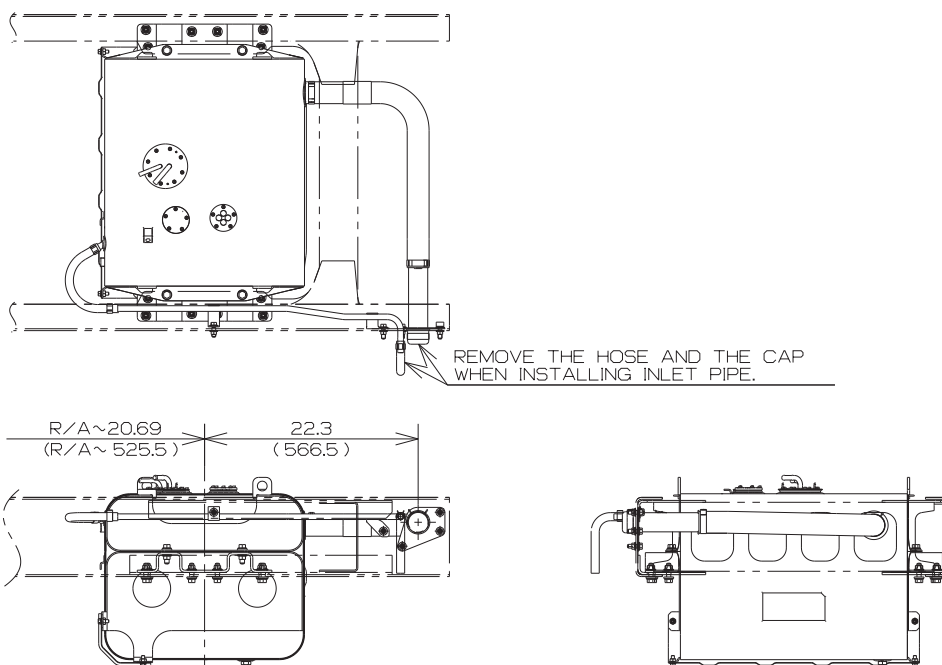
By the vehicle in which the 30 gal fuel tank is installed the fuel inlet pipe should be installed by a body maker. See the following figure.

Install the fuel inlet pipe according to procedures and precautions of next pages.

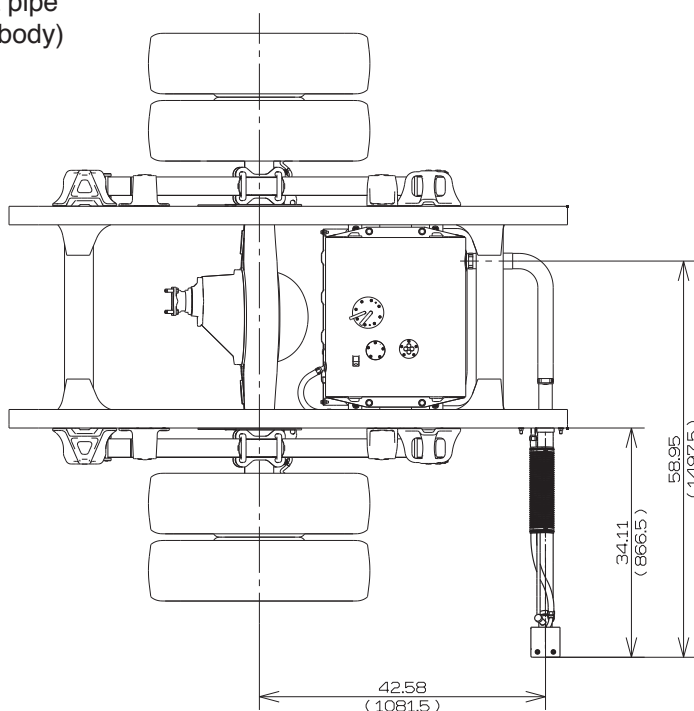
Required parts are packed up and are in the cab. See the table of next page.

- Original condition (befor install Fuel inlet pipe)

Unit : in. (mm)



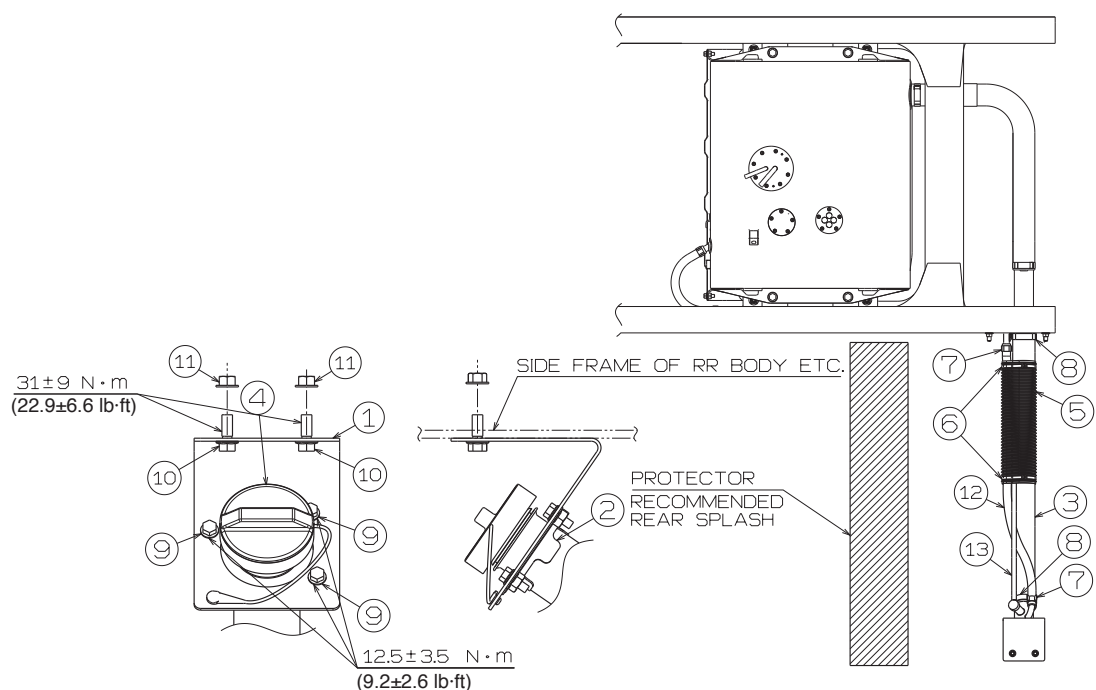
- After installed Fuel inlet pipe
(In case of 102 in. rear body)



FUEL INLET KIT			
ITEM	PART NUMBER	PART NAME	QTY
①	77131-37010	BRACKET, FUEL TANK FILLER PIPE SUPPORT	1
②	77201-37280	PIPE SUB-ASSY, FUEL TANK FILLER	1
③	77213-37040	HOSE, FUEL TANK TO FILLER PIPE	1
④	77300-60010	CAP ASSY, FUEL TANK W/TETHER	1
⑤	77661-37010	COVER, FUEL TANK FILLER HOSE	1
⑥	82711-87028	CLAMP, WIRING HARNESS	2
⑦	90466-23001	CLIP, HOSE	2
⑧	90466-51002	CLIP, HOSE	2
⑨	91551-80616	BOLT, FLANGE	3
⑩	91551-80820	BOLT, FLANGE	2
⑪	94151-80800	NUT, FLANGE	2
⑫	95312-13080	HOSE, BREATHER	1
⑬	95332-06050	HOSE, FUEL	1

Procedures

- Disconnect the negative terminal of battery.
- Remove the cap and hose used in transportation, assemble the Inlet Hose③ and Breather Hose⑫ instead.
Secure the connect section of pipes and hoses by Clips⑦,⑧.
- Install the Filler Plate BKT① to rear body to be parallel to the chassis frame horizontal.
- Secure the Filler Neck② to the Filler Plate BKT① by bolts⑨ with indication torque.
- Connect the rollover valve of Filler Neck② by Rollover Valve Hose⑬.
- Tied up the Inlet Hose③, Breather Hose⑫ and Rollover valve Hose⑬ to a bundle by the Cover⑤. And the Cover⑤ should be tightened by Tie Wrap⑥ with no slip.
- Connect the Inlet Hose③ and Breather Hose⑫ to the Filler Neck②.
- Fix the tether of Filler Cap④ to the Filler plate BKT①.
- Connect the negative terminal of battery.



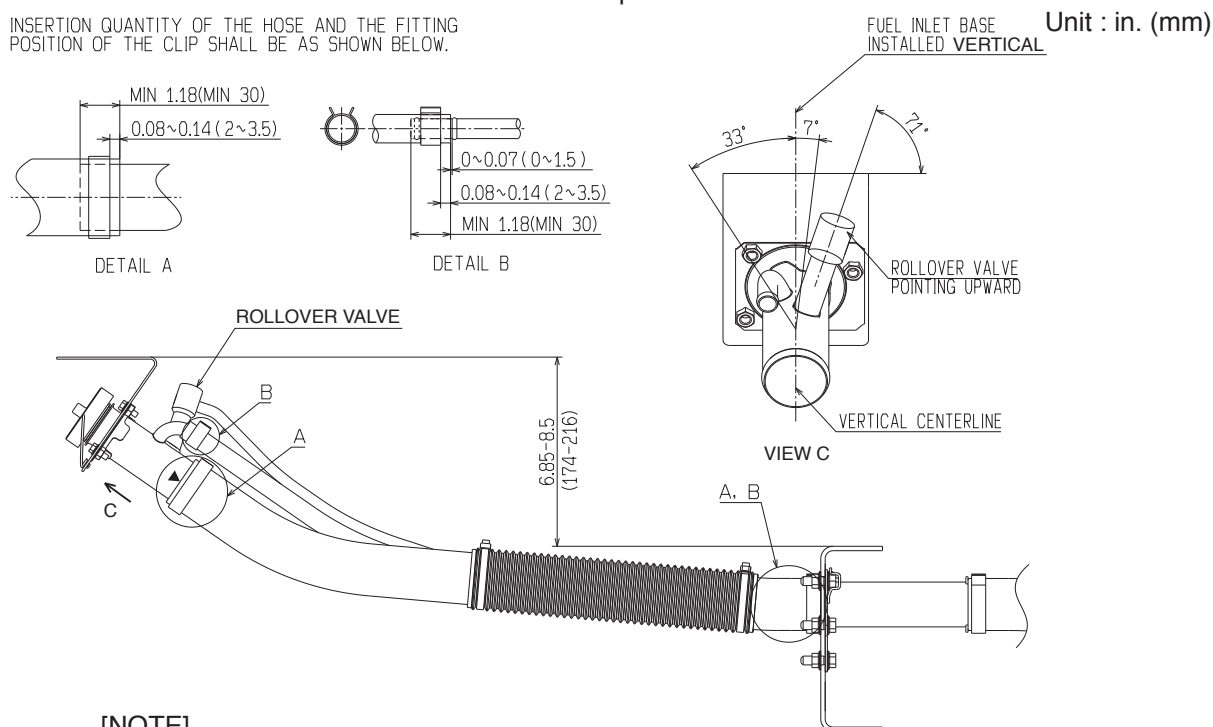
[NOTE]

- Filler Plate BKT① should be installed firmly to rear body by bolts or welding etc..
- Measurement of protection should be made to keep hoses away from road spray for fuel leak could be considered.

Precautions

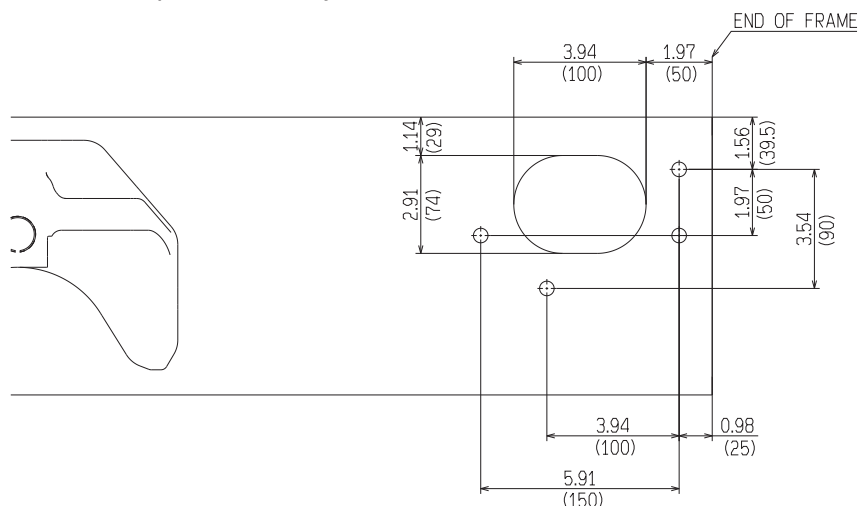
- Filler hoses③⑫⑬ are designed for the 102 inch rear body width. Modify the length of the hoses suitably to fit the width of rear body when using narrower ones.
- The installing position of Filler Plate BKT① must be between 6.85 in. to 8.5 in. above chassis frame.
- Ensure the connect section of pipes and hoses are secured by Clip⑦⑧ and no leakage is allowed.
- Secure the Filler Neck② to the Filler Plate BKT①.
When installing the Filler Plate BKT① with the Filler Neck② to rear body, install them as the rollover valve of the Filler Neck points to upward certainly.
- Ensure that hoses③⑫⑬ do not sag and no fuel accumulation in hose when fueling.
- Set up protective material to keep hoses③⑫⑬ away from road spray.
- Be sure to stick the caution label (Part No. 74559-E0072) near the filling port.
Refer to “CAUTION LABEL OF FUEL TANK” in Chapter 4.

INSERTION QUANTITY OF THE HOSE AND THE FITTING POSITION OF THE CLIP SHALL BE AS SHOWN BELOW.



[NOTE]

- The height of Inlet Hose③ shall conform to the ▼ mark for fuel return could be considered.
- Install the Filler Plate BKT① with the Filler Neck② to rear body as the rollover valve points to upward certainly.



Detail of holes for fuel hose

22. THE FUEL HOSE AND PIPE

Be sure to observe the following instructions, if it will be changed a fuel hose and pipe by a movement or an addition of a fuel tank.

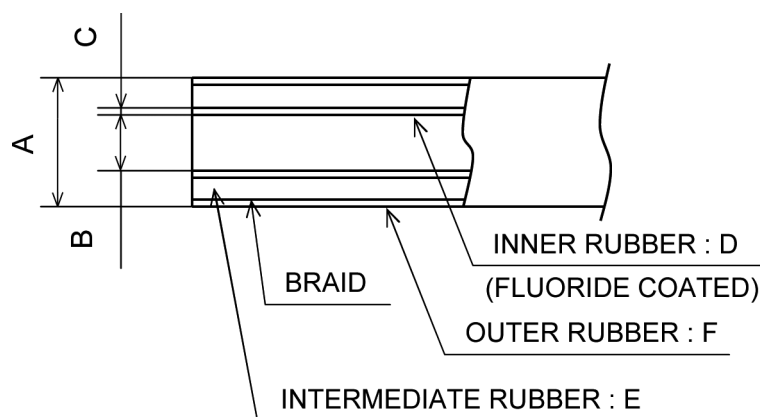
Always use the fuel hose and pipe of the HINO genuine parts.

Fuel hose

The following figure is an example of genuine parts.

(The material and quality of each component are based on the standard of HINO.)

Unit : mm (in.)



Dimension

A	B	C
ø16.5 (0.65)	ø9.5 (0.37)	more than 0.3 (0.01)
ø19.5 (0.77)	ø11.5 (0.45)	

Material

D	E	F
FKM	NBR	GECO

If HINO genuine parts cannot be obtained, please procure the following rubber hoses as a substitute.

- A rubber hoses which dose not contain a metal interior liner.
or
- A rubber hose greater than or equal to original equipment and contain Fluoride coated interior.

Use of unsuitable rubber hose may cause engine damage.

For more detailed information, please contact HMC or Hino authorized dealer.

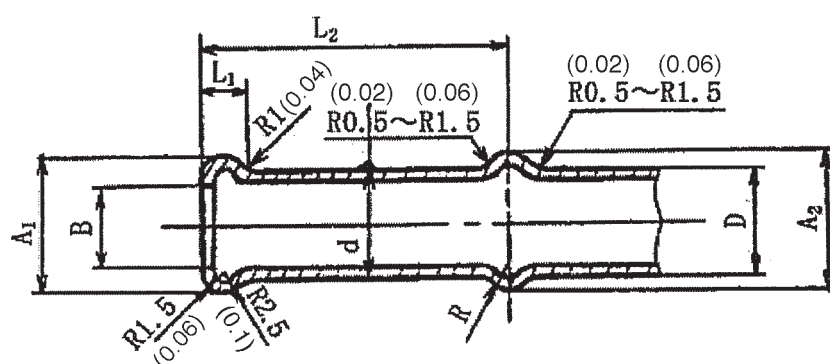
Fuel pipe

Tables below show the material and the end configuration of the pipe used in the Hino chassis.

Dimension

UNIT:mm(in.)

Nominal	Pipe end configuration						
	D	A1	B	A2	L1	L2	d
10 (0.39)	9.9~10.1 (0.39~0.40)	11.2~11.8 (0.44~0.46)	6.7~7.3 (0.26~0.29)	11.0~12.0 (0.43~0.47)	2~4 (0.08~0.16)	31~35 (1.22~1.38)	9.9~10.2 (0.39~0.40)
12 (0.47)	11.9~12.1 (0.47~0.48)	13.2~13.8 (0.52~0.54)	7.7~8.3 (0.30~0.33)	13.0~14.0 (0.51~0.55)			11.9~12.2 (0.47~0.48)



Material

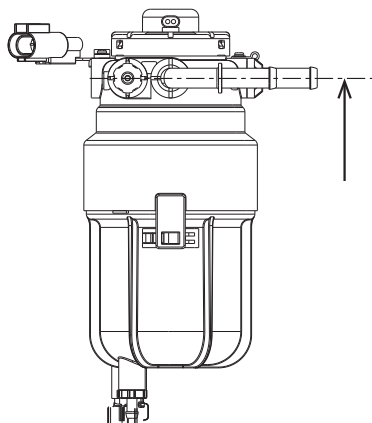
Pipe dia. mm (in.)	Type	Pipe	Surface Treatment	
			Inside	Outside
10, 12 (0.39, 0.47)	Double-wound plated steel pipe	STSW1	MFNiA	MFZnA-C+Plastic or MFZnB-C+Plastic

Surface treatment (plating) code

Plating method	Base material	Type of plating or coating	Grade of plating	Treatment after plating
M → Electric plating	F → Fe	Cu → Copper Zn → Zinc Ni → Nickel	A 25μ A 25μ B 13μ	C Clear cromate

Fuel filter

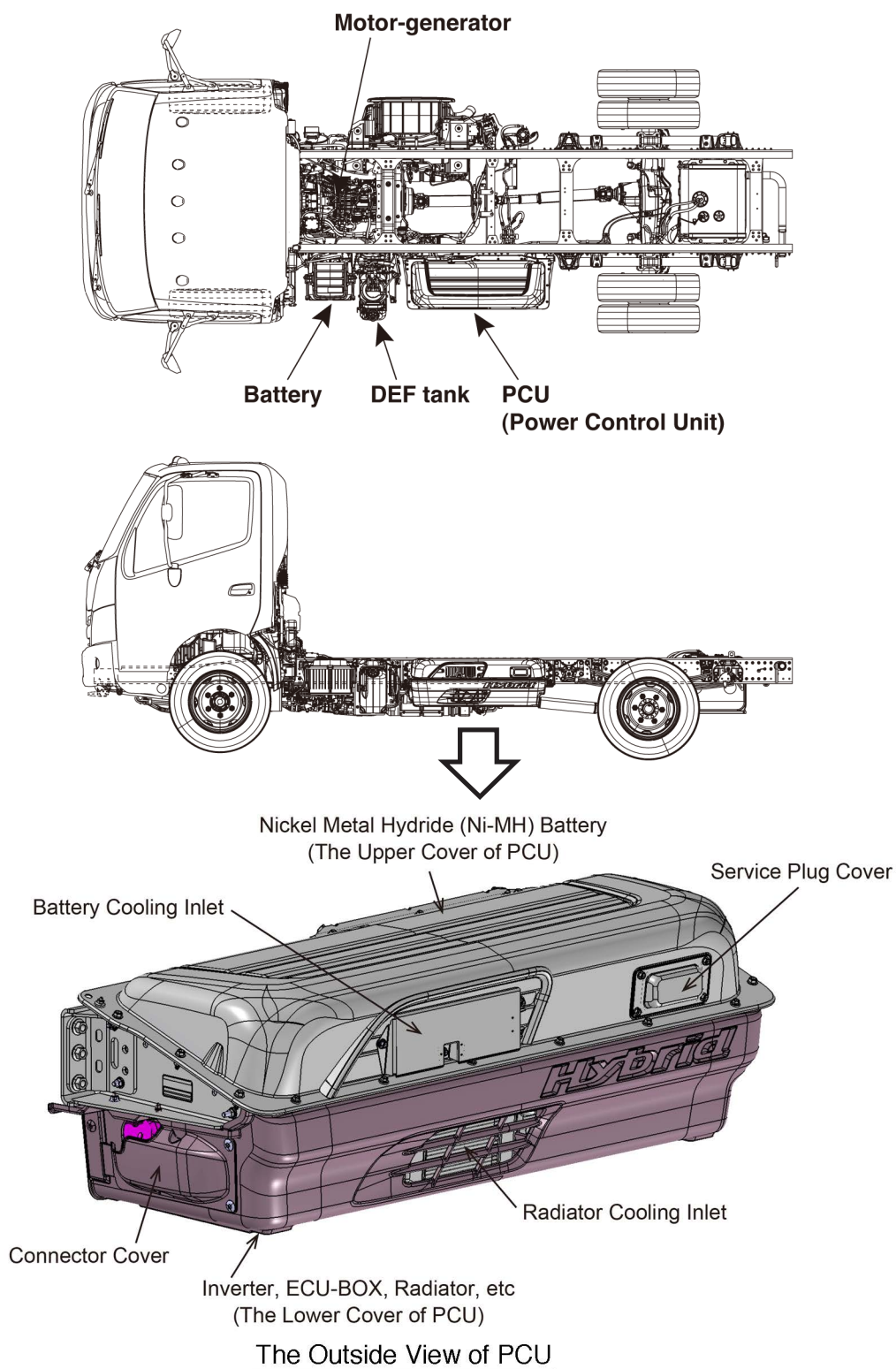
- Do not give any shock to fuel filter case.
- Must stop the engine when operating plug to fuel filter.(e.g. Feed pump)
- No heat damage to fuel filter.
The insulator surface should be 80 °C (176°F) or less.
- Basically do not remove fuel filter.
But if need to remove and reinstall it by mounting body, should follow the installing position as figure below.



When installing fuel filter, the height of the fuel inlet is the same as or higher than upper the surface of the fuel tank.

23. BODY MOUNTING WORK FOR HYBRID VEHICLE MODEL ONLY

Be sure to observe the following instructions when mounting body for hybrid vehicle.
The following figure is the installing position of hybrid system related equipment. Their position may be different based on vehicle model.



Do not modify and relocate PCU

It may have an accident such as fall off PCU caused by installing strength, and get an electric shock by high - voltage.

Precaution for mounting body

- Be sure to wear the electric insulation equipment such as insulation rubber groves during working.
- Turn the starter switch to “LOCK” position, and wait 10 minutes.
- Pull out a service plug of PCU and must wait 7 minutes for discharging electricity of a high - voltage condenser in the motor and generator control inverter, and then disconnect negative terminal of the battery.

Strictly observe above working manner to avoid getting an electric shock.

- Do not touch the orange color harness which is high - voltage wire.
- Do not step and get on the PCU.
- Must protect the PCU with heat - resistant sheet during operation.
- After mounted body, be sure to put back service plug of PCU, and connect the negative terminal of battery.
- Turn the starter switch on, and then check the function of the PCU.
If there is problem of function, please contact HMC or Hino authorized dealer and receive proper advice.

Refer to “WELDING WORK” in Chapter 4 for service plug of PCU.

Precaution for mounting body with welding work

- Follow the precaution above and see “WELDING WORK” in Chapter 4.

Precaution for mounting body around PCU

The PCU has the vent for ventilating and the lid for service as followings.

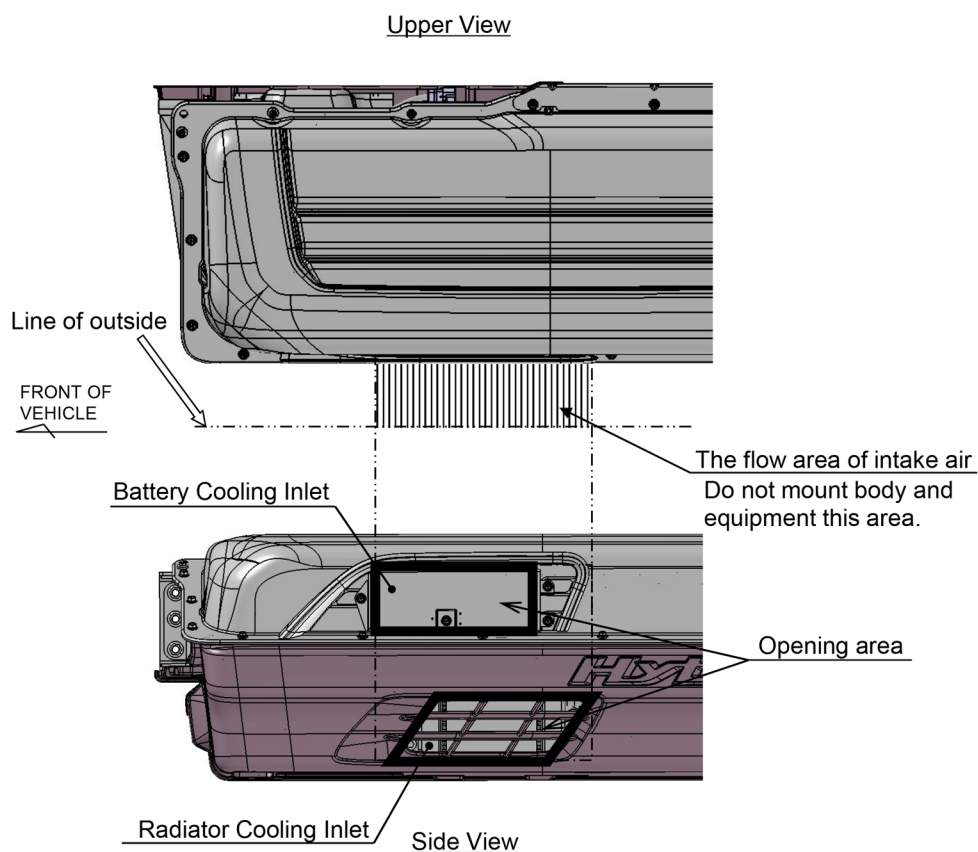
- BATTERY COOLING INLET
- RADIATOR COOLING INLET
- REAR COVER OF VENTILATION
- SERVICE PLUG COVER

Do not cover them by body equipment to avoid deteriorating ventilation.

If cooling capability is decreased, HV function such as assist and charge of HV battery may be affected.

Therefore, be sure to observe the following instructions when mounting body or equipment.

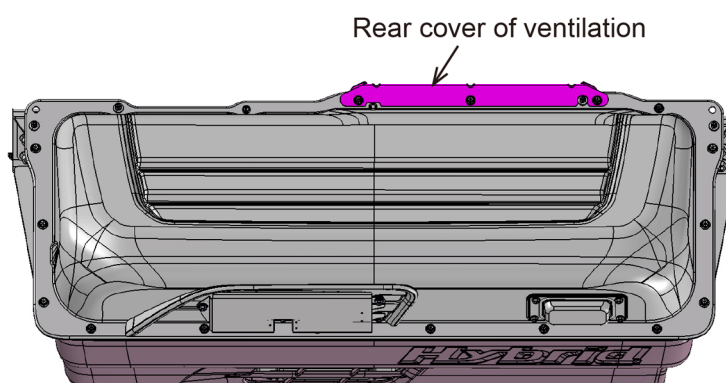
•The cooling inlet



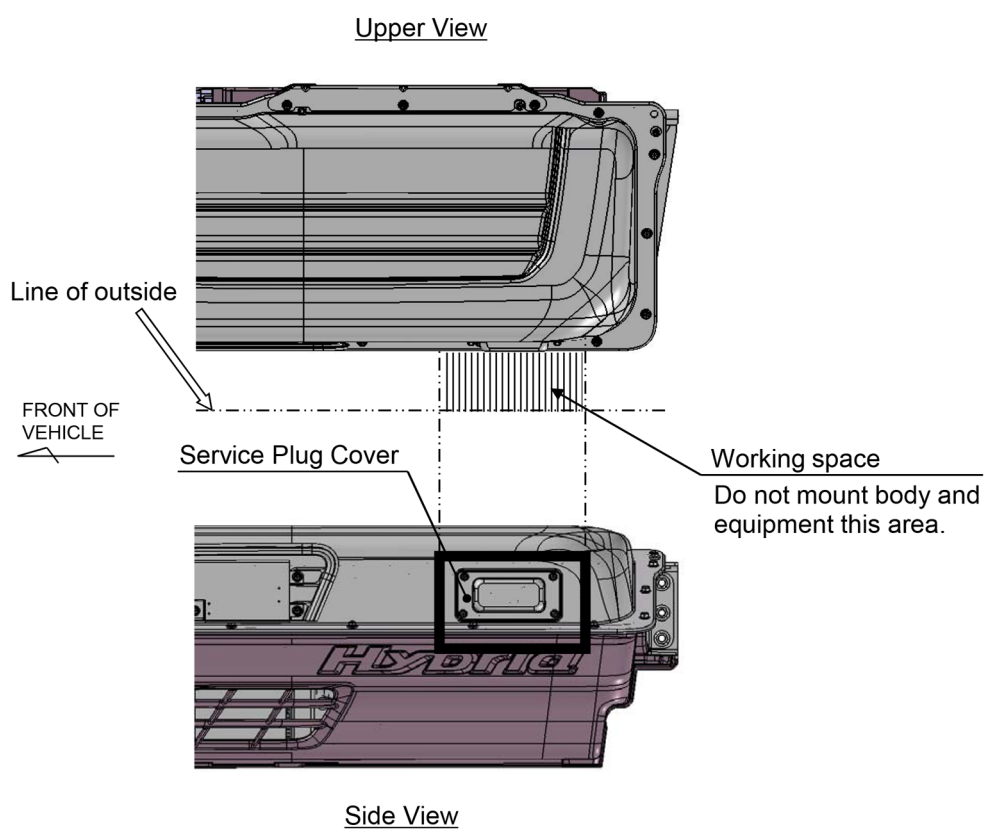
<Reference for opening size of air inlet >

	Battery Cooling Inlet	Radiator Cooling Inlet
Opening Area cm ² (in. ²)	210 (32.6)	220 (34.1)

- The rear cover of ventilation
Do not modify the rear cover.



- The service plug cover



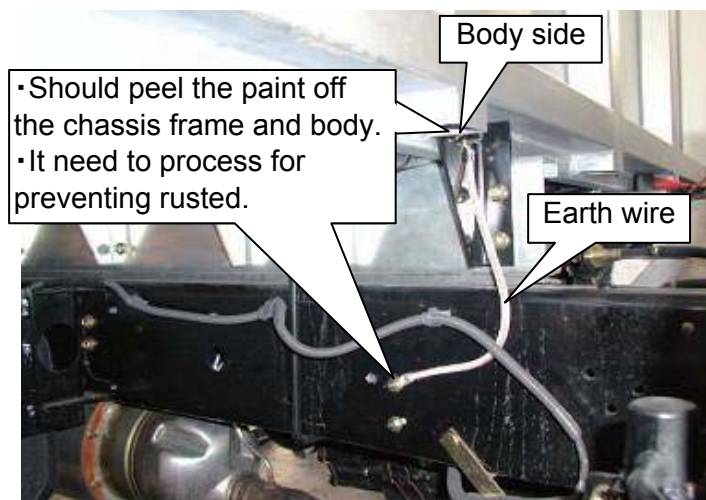
24. PROVISION FOR AM RADIO NOISE

(FOR HYBRID VEHICLE MODEL ONLY)

Be sure to install two earth wires to connect between body and chassis frame and body and motor generator for preventing AM radio noise with hybrid vehicle.

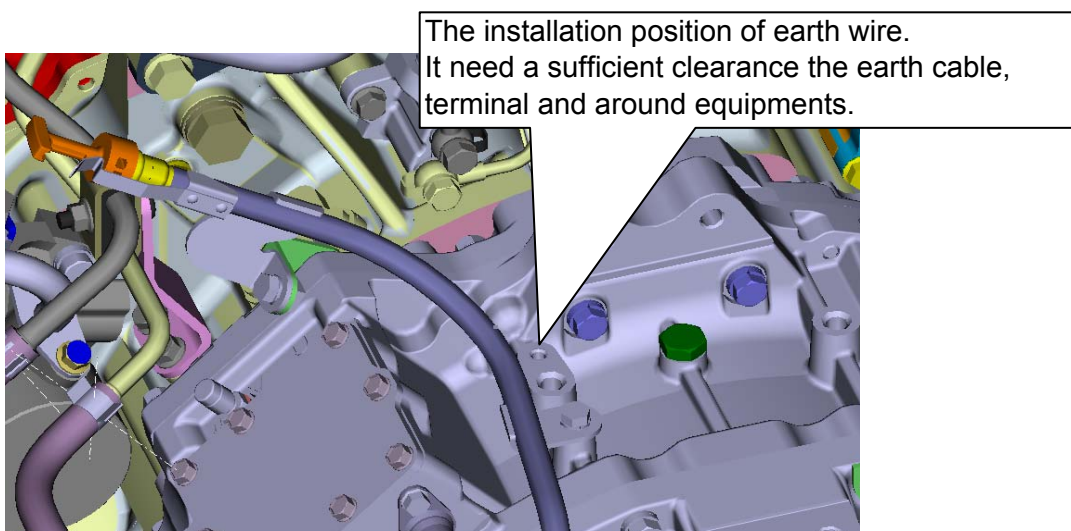
Between body and chassis frame

- It need to install an earth wire which is packed in the cab between the center parts of front end of body and chassis frame.
- Should peel the paint off the terminal fix area on chassis frame side and body for securing electric conductivity.
- Should use an available hole on the chassis frame.
- Be sure to process for preventing rusted after fixed terminal with chassis frame and body.



Between body and motor generator

- Should use a hole as shown below figure for fixing terminal with motor generator.
 - Shape of hole : M8 × 1.25
 The depth of screw : 19 mm (0.75 in.)
 The depth of base hole : 23 mm (0.91 in.)
 - Tightening torque : 16.8 ~ 31.2 N·m (12.4 ~ 23.0 lb·ft)
- It need to install an earth wire which is packed in the cab between the center parts of front end of body and motor generator.
- Should peel the paint off the terminal fix area which it depend on each Body and Equipment Manufacturers on body side.
- Should fix the terminal to the position as shown figure at motor generator side.
- Make sure that a sufficient clearance the earth cable, terminal and around equipments when install them.



Part number of the earth wire.

They are packed in the cab.

- Assembly part number : 82046 - 37201

Part name	Place of installation	Part number
Wire sub-assy, body ground	Between the body and chassis frame	82284 - 37160
	Between the body and motor generator	
Bolt, w/washer	Motor generator	91651 - 60816

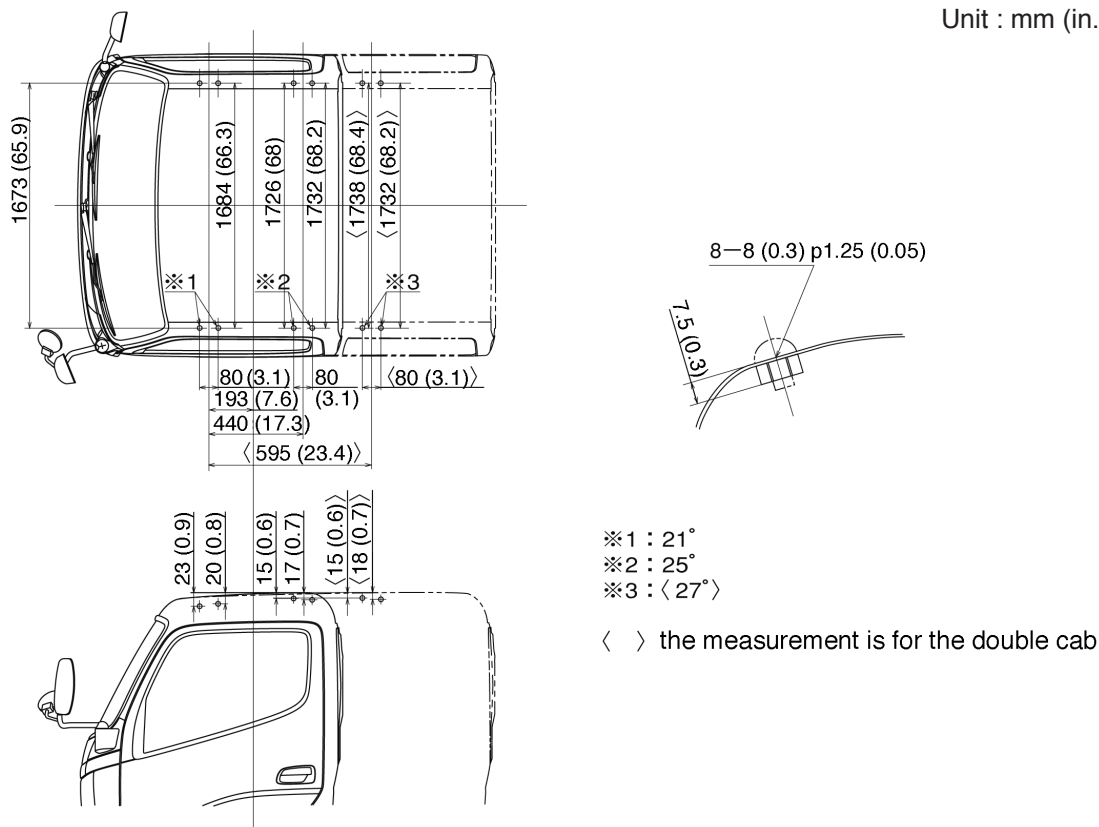
- Body and Equipment Manufacturers should prepare a bolt, nut and washer for installing the earth wire to body side.

25. INSTALLING EQUIPMENT ON THE CAB ROOF

The installation position of the bolt holes for installing equipment on the cab roof.

There are some weld nuts (M8 p 1.25) for making easy installing equipment such as the roof rack and roof step on the cab roof. (See the below figure.)

Unit : mm (in.)



Precaution for the installing equipment.

Be sure to observe the following instructions when installing equipment.

Remove the bolts which were installed temporary at bolt holes, and do not use them for installing equipment.

Should use a nickel chrome stainless for the installation bolt and washer.

It may be rusty if do not use a nickel chrome stainless.

- Size of bolt : M8
- Tightening torque : 300±60 kg·cm (22±4 lb·ft)

Should install equipment after completed final painting.

Do not scratch the painting of the cab body when installing equipment.

Install rubber packing between the equipment and the cab roof for preventing scratch of cab paint, gather rust and penetration of water.

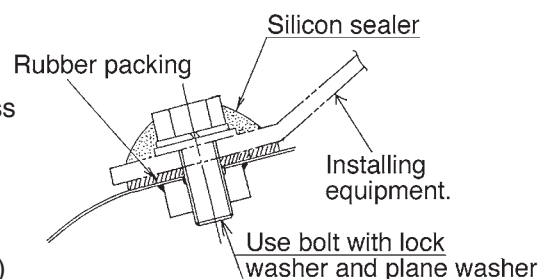
For detail, refer to the right figure.

- The detail of packing :
 - RC711CP (EPDM) equivalent
 - Thickness --- 0.08 inches (2 mm) or less
 - Diameter --- 0.315 inches (8 mm)

Make sure that apply a coat of silicon sealer to all around the bolt for prevention of water after tightening the bolt.

(1211 or 1212 equivalent of Three bond corp..)

If insufficient seal with sealer, it may be the cause of rust.



26. VEHICLE STORAGE

We deliver only the vehicles which have passed our delivery inspection. However, it frequently happens that when the vehicles (chassis with cab) are kept in a storage of the dealers or rear body manufacturers for long periods of time, the vehicles are placed on the irregular-surfaced ground in the manner in which their frames are twisted. If the frame is kept in a twisted state for a long time, it will be permanently deformed, thus becoming a cause of complaints to be lodged later. So, you are requested to make sure that the surface of the ground on which the vehicles are stored be levelled to prevent the twisting the frame.

In case of hybrid vehicle

If store a hybrid vehicle for a long time, a battery will discharge gradually.
To charge the battery, start an engine once a month and idling an engine for approximately 30 minutes.



CAUTION

If the hybrid vehicle is stored for a long time without the process as above, you may not be able to start the engine.