

**N-Series for Europe****BODY BUILDERS GUIDE****September 2013**

This material is a summary of engineering data related to body mounting of the following models.

Common notes which do not depend on the vehicle type and destination are brought together as " I General Precautions".

For the body builders, to work on an appropriate condition of making the best use of the characteristic of this vehicle when examining and working in addition to experience use of its company, it is strongly encouraged to refer to this guide.

Model year	2014
Vehicle model	NLR,NMR,NNR,NPR
Conformity regulation	Follow UN/EEC
Conformity No.	WVTA No.e4*2007/46*0323
	WVTA No.e4*2007/46*0324 and others
Certification date	Consult ISUZU dealerships

**ISUZU MOTORS LIMITED**

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## INTRODUCTION

The purpose of this **Body Builder's Guide** (hereinafter referred to as "guide") is to provide information and guidance to the body builders that take charge of the final stage of vehicle manufacture by mounting their vehicle bodies on the cab chassis (incomplete vehicles) provided by ISUZU MOTORS LIMITED. The body builders are encouraged to refer to the information in this guide in order to perform rear body mounting at suitable conditions with good use of their own experiences.

- The body builders are fully responsible to comply with the national regulations with respect to their vehicle bodies, cab chassis modification incidental to rear body mounting, and completed vehicles after body mounting.
- It is not that ISUZU MOTORS guarantee the quality of construction or the safety and running performance of the modified complete vehicle which remodeling done according to this guide.
- The manufacturing responsibility of completed vehicles after body mounting is in the body builders. ISUZU MOTORS does not owe the obligation.
- For body mounting and remodeling according to mounting, the body builders must design and manufacture so that there is no influence on safety, the running performance, and the function of genuine devices.
- This guide is a summary of a technical content for body mounting and remodeling according to mounting of ISUZU MOTORS chassis.
- ISUZU MOTORS is not responsible for any human injury or instrument damage due to using this guide.

Note: This guide is made commonly for various destination. There may be equipment or function described which is not developed depending on destination.

Follow the owner's manual for handling the vehicle or the equipments on vehicle.

The content of this guide might change without a previous notice. Contact ISUZU MOTORS LIMITED. and the ISUZU dealership for exact details of latest information.

# **I . GENERAL PRECAUTIONS**

## **Chapter 1 GENERAL**

### **1.1. PRECAUTIONS FOR INSTALLING BODY**

- 1.1.1. Weight of body
- 1.1.2. Cab
- 1.1.3. Consideration to chassis maintenance
- 1.1.4. Other

### **1.2. PRECAUTIONS AT INSTALLING**

- 1.2.1. Preparation
- 1.2.2. At work
- 1.2.3. Starting up engine
- 1.2.4. Moving the vehicle

### **1.3. PRECAUTIONS FOR BOLT TIGHTENING**

## 1.1. PRECAUTIONS FOR INSTALLING BODY

When designing and examining body, consider regulation control in use country and agreement to regulation, and safety and prevention of accidents of vehicle, and follow instructions below.

### 1.1.1. Weight of body

- Design the rear body to evenly distribute the load of rear body on chassis frame.

Installation of special equipments on a chassis frame can change the said load distribution. Therefore, such special equipments must be installed, taking load distribution into account, otherwise stress concentration in particular part of the chassis frame may occur, possibly resulting in cracks in chassis frame members or other problems even if the total weight of these special equipments falls within allowable range. Confirm that there is no problem in safety in chassis frame member before the examination.

- If there is any equipment addition (ex. fuel tank addition) or weight trend to one side (ex. side door installation of the van body), adjust right and left weight difference on rear body.

Chassis frame ground height on "II SPECIFIC INFORMATION" is described as standard equipment (full fuel) described in the shipment car type with there no right and left difference.

### 1.1.2. Cab

- Give appropriate rust prevention treatment to the inside and surrounding the hole when drilling hole the inside or outside of the cab. Do similar processing when the surface of the cab is mistakenly damaged.
- When installing lever or switch to control rear body in the cab, maintain enough clearance from other levers and switches of existing and install it in the cab so as not to come in contact at operation.
- Place a plate or a label on the lever and the switch newly added to distinguish the purpose of use.
- When installing warning buzzer of the rear body device in the cab, install one with a buzzer sound different from the safe warning sound of other warning buzzers such as buzzers for the brake.

### 1.1.3. Consideration to chassis maintenance

Rear bodies must be designed or mounted on chassis so as not to obstruct maintenance.

- Checking, feeding and draining engine oil
- Level checking, feeding and draining cooling water
- Checking, feeding and draining transmission oil
- Adjustment and detaching of fan belt
- Checking and replenishment of battery liquid, detaching of battery or battery cover
- Refueling to fuel tank, check and maintenance around fuel tank
- Detaching of drain of air tank
- Checking air dryer, relay valve, brake booster, and other valves related to brake system and accessories and replenishments
- Checking and air bleeding from brake system, clutch system, and servo unit
- Operation of spare tire carrier including detaching spare tire
- Filter detaching of DPD and detaching of piping
- Checking of lamps of rear body and exchange of valves
- Other check work

### 1.1.4. Other

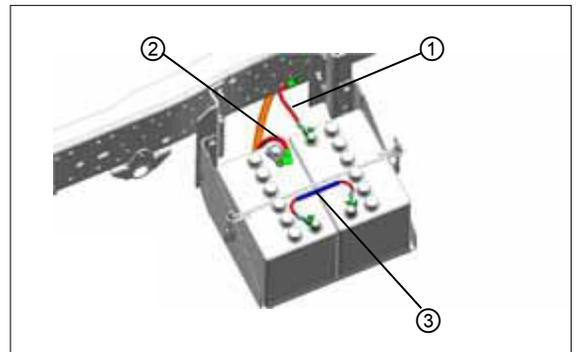
- Make sure the cargo does not disturb forward and the side views, nor the views such as rearview mirrors and under mirrors.
- Do not install components likely to drop out by the vibration of the vehicle in the vicinity of the driver's seat, since it might obstruct the driving operation.
- Do not install rear body (especially, components impact or the outside force may be applied such as side guard) on to underbody accessories such as fuel tank support and air tank support, etc.
- No projection or sharp edges on iron plates of rear body which may give scratch.

## 1.2. PRECAUTIONS AT INSTALLING

Note the following instructions when installing , and work safely. Please refer to the owner's manual of a vehicle concerned for the handling of the vehicle and devices.

### 1.2.1. Preparation

- Stop the engine, apply the parking brake, and set sprag on the tire, to prevent the vehicle from moving.
- When installing, make sure no inclination of rear body at horizontal place.
- Observe the instruction of the caution plate stuck on the cab chassis with the cab strictly.
- When you disconnect the battery cable, to prevent short circuit, do according to the following procedure. Connect battery cables following the procedure for cable disconnection in reverse order.
  - Turn off all the switches.
  - Disconnect the ground cable ①.
  - Disconnect the positive cable ②.
  - Disconnect the battery cable ③.
  - When you connect the battery cable, to prevent battery terminals from corroding, clean them and lightly apply grease on them.



Partially protect the chassis if necessary.

### 1.2.2. At work

- Do not get on valves and equipments related to the brake, the brake pipes, the fuel tanks, the fuel pipes, the air tanks, the brake boosters, the batteries, wirings, the transmission control cable and the relay boxes, etc. to lead to damage and the breakdown of the equipment.
- Use the grip and the step, etc. to prevent from slipping and falling when getting on and off of the cab.
- When tilting the cab, Give a necessary safety precaution like certain fixation of the cab stopper stay etc.
- In the case of the tilt cab car, when heavy load is installed on the cab roof or inside the cab, descending speed quicken. Be careful not to get caught in between.
- Do not leave tools or Waste cloth, etc. behind in the engine room.

### 1.2.3. Starting up engine

- Confirm whether the gear shift lever is in neutral or parking (when there is parking range).
- Start up an engine while stepping on the clutch pedal.
- Turn off PTO if there is.
- Do not put the combustible in the direction of the exhaust and the vicinity of the hot section.
- If starting engine inside, install exhaust device to release the exhaust gas outdoor.
- Do not work in the direction of the exhaust or place where the exhaust gas collect easily.
- When the engine is on, be careful with the rotation part and the hot section, and not to touch, get caught in, or get burnt.

#### Example of rotation part and high temperature section

Rotation part	High temperature section
Cooling fan and belt Pulley PTO output axis and flange Alternator and belt Cooler compressor, and belt  etc.	Exhaust manifold Turbo-charger Intake manifold Intercooler Oil pan Radiator and radiator cap Water hose Exhaust pipe and exhaust silencer/DPD Brake drum and retarder immediately after running  etc.

### 1.2.4. Moving the vehicle

- Do not put anything obstacle of the driving operation such as tools and parts.
- Idle rotate the engine, and move the vehicle after confirming all the warning lamps have gone off.
- Follow the instruction of owner's manual when warning lamp does not go off.

### 1.3. PRECAUTIONS FOR BOLT TIGHTENING

Note the following when fixing with bolt.

- Do not fix together the accessories and equipments for rear body with same bolt.
- Use the bolts of the same strength division when using the bolt with length same size, strength class and different length.
- Follow the following tightening torque when re-installing each part on the chassis.
- Follow the work book when re-use prohibition and tightening torque are specified.

Unit: N•m [kgf•m]

Strength class	4.8	8.8		9.8
		Thermal refining	None-thermal refining	
Bolt head				
Thread pitch (Diameter × Pitch)				
M6 × 1	3.9 to 7.8 {0.4 to 0.8}	4.9 to 9.8 {0.5 to 1.0}		
M8 × 1.25	7.8 to 17.7 {0.8 to 1.8}	11.8 to 22.6 {1.2 to 2.3}		16.7 to 30.4 {1.7 to 3.1}
M10 × 1.25	20.6 to 34.3 {2.1 to 3.5}	27.5 to 46.1 {2.8 to 4.7}		37.3 to 62.8 {3.8 to 6.4}
*M10 × 1.5	19.6 to 33.4 {2.0 to 3.4}	27.5 to 45.1 {2.8 to 4.6}		36.3 to 59.8 {3.7 to 6.1}
M12 × 1.25	49.1 to 73.6 {5.0 to 7.5}	60.8 to 91.2 {6.2 to 9.3}		75.5 to 114 {7.7 to 11.6}
*M12 × 1.75	45.1 to 68.7 {4.6 to 7.0}	56.9 to 84.4 {5.8 to 8.6}		71.6 to 107 {7.3 to 10.9}
M14 × 1.5	76.5 to 115 {7.8 to 11.7}	93.2 to 139 {9.5 to 14.2}		114 to 171 {11.6 to 17.4}
*M14 × 2	71.6 to 107 {7.3 to 10.9}	88.3 to 131 {9.0 to 13.4}		107 to 160 {10.9 to 16.3}
M16 × 1.5	104 to 157 {10.6 to 16.0}	135 to 204 {13.8 to 20.8}		160 to 240 {16.3 to 24.5}
*M16 × 2	100 to 149 {10.2 to 15.2}	129 to 194 {13.2 to 19.8}		153 to 230 {15.6 to 23.4}
M18 × 1.5	151 to 226 {15.4 to 23.0}	195 to 293 {19.9 to 29.9}		230 to 345 {23.4 to 35.2}
*M18 × 2.5	151 to 226 {15.4 to 23.0}	196 to 294 {20.0 to 30.0}		231 to 346 {23.6 to 35.3}
M20 × 1.5	206 to 310 {21.0 to 31.6}	270 to 405 {27.5 to 41.3}		317 to 476 {32.3 to 48.5}
*M20 × 2.5	190 to 286 {19.4 to 29.2}	249 to 375 {25.4 to 38.2}		293 to 440 {29.9 to 44.9}
M22 × 1.5	251 to 414 {25.6 to 42.2}	363 to 544 {37.0 to 55.5}		425 to 637 {43.3 to 64.9}
*M22 × 2.5	218 to 328 {22.2 to 33.4}	338 to 507 {34.5 to 51.7}		394 to 592 {40.2 to 60.4}
M24 × 2	359 to 540 {36.6 to 55.0}	431 to 711 {43.9 to 72.5}		554 to 831 {56.5 to 84.7}
*M24 × 3	338 to 507 {34.5 to 51.7}	406 to 608 {41.1 to 62.0}		521 to 782 {53.1 to 79.7}

\* Used for internal thread of soft material such as casting.

## Chapter 2 MODIFICATION OF CHASSIS

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- 2.1.2. Cross member
- 2.1.3. Gusset
- 2.1.4. Other cautions at work

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- 2.14.1. Precautions before affixing decals
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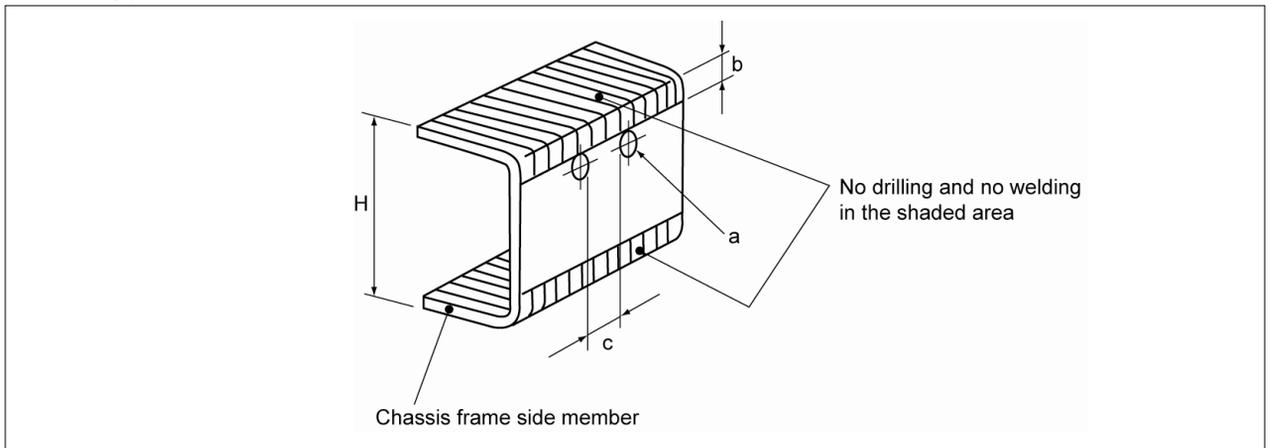
## 2.1. DRILLING OR WELDING A CHASSIS FRAME

Drilling holes and welding fluctuate stresses in various parts of a chassis frame and negate the frame's load condition, possibly resulting in deformation or cracks. To install any special equipment, follow the instructions below.

### 2.1.1. Side member

- Do not drill a hole or make a notch in or weld the shaded areas (flange area) in the below figure.
- Use drill to drill holes. Gas cut prohibited.

#### Machining prohibited areas of side member



	"a" in the above figure (Allowable maximum hole diameter)	"b" in the above figure (Work-prohibited area)		"c" in the above figure (Minimum required distance)
Heavy duty	$\phi 17\text{mm}$	H/5 (Welding)	H/7 (Hole)	40mm
Medium duty	$\phi 15\text{mm}$			
Light duty	$\phi 11\text{mm}$	20mm		

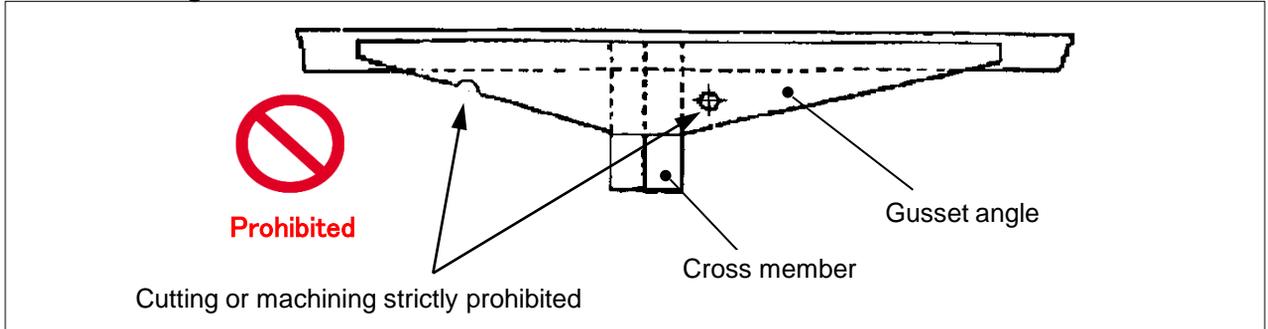
### 2.1.2. Cross member

- Alligator type: Hole drilling, notch making and welding are prohibited.
- Channel-shaped type: "b" and "c" shown in figure above depend on the side member. Allowable maximum hole diameter "a" is 9mm, and this hole should be used only for piping or harness routing.

### 2.1.3. Gusset

Hole drilling, notch making and welding are prohibited.

#### Modification on gusset



### 2.1.4. Other cautions at work

- When making a hole, use drilling machine.
- Length of a weld should be 30mm to 50mm, and welds should be spaced a minimum of 40mm.
- Be sure that weld beads do not protrude over holes. Welding should be done away from the edge of holes by the distance "c" in the table in previous page.
- When making a notch by using gas, finish the cut surface by grinding.
- Cold rivet only.

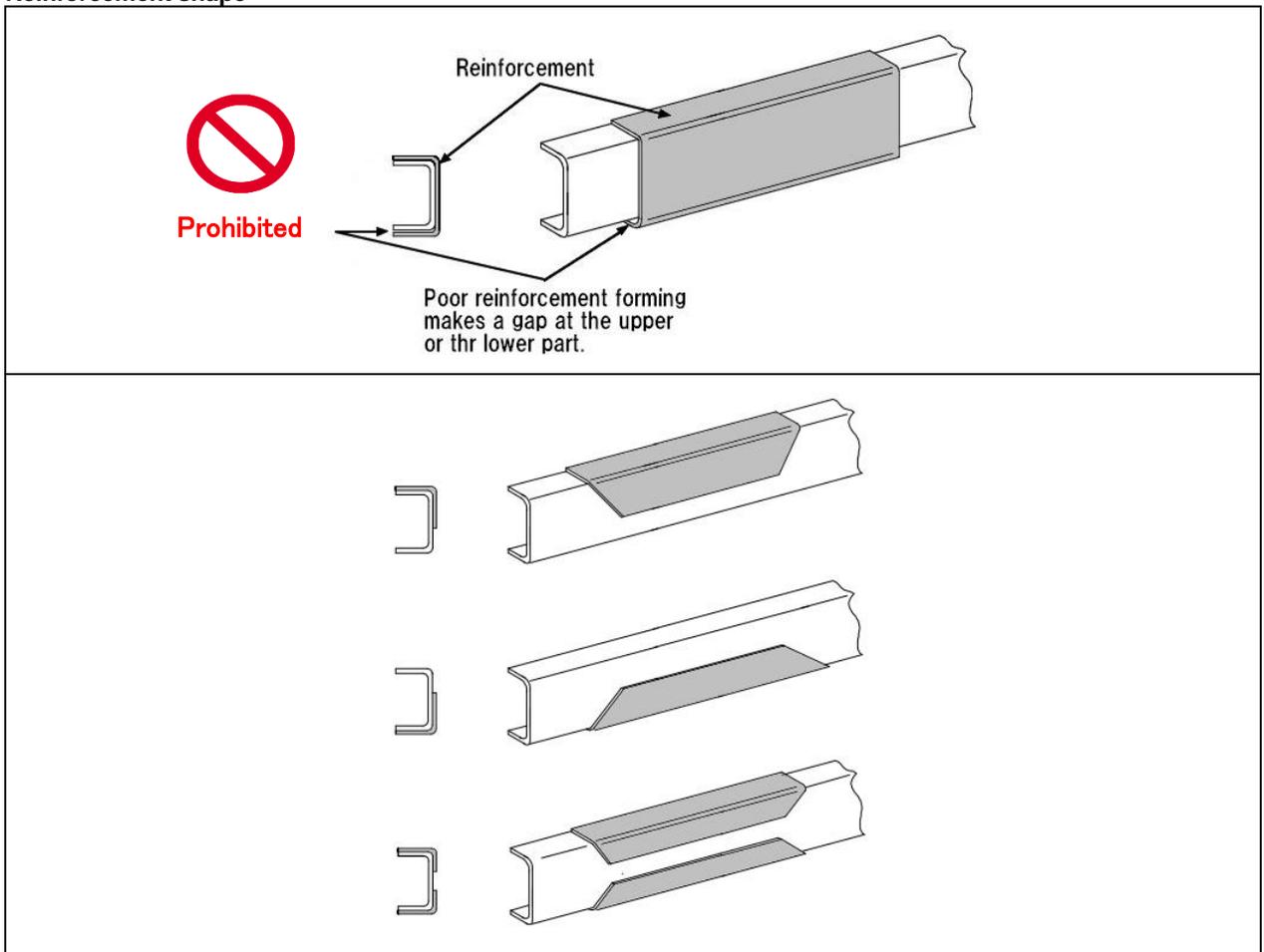
## 2.2. REINFORCING A CHASSIS FRAME SIDE MEMBER

When reinforcing a chassis frame side member, follow the instructions below to prevent an acute change in the section modulus and stress concentration due to welding, since it might cause deform or crack.

### 2.2.1. Reinforcement material

- The reinforcement material should be equivalent to that of side members. Refer to "II-4.3. FRAME SECTION MODULUS" of the target vehicle model.
- Thickness and shape of the reinforcement material should be selected according to rear body mounting and vehicle usage condition.
- Use L-shaped reinforcement material.
- Channel-shaped reinforcement is not recommended.
  - It is difficult to match the shape of a channel-shaped reinforcement with a chassis frame side member, and difference in shape between a reinforcement and a side member results in slacking and reinforcing effect.

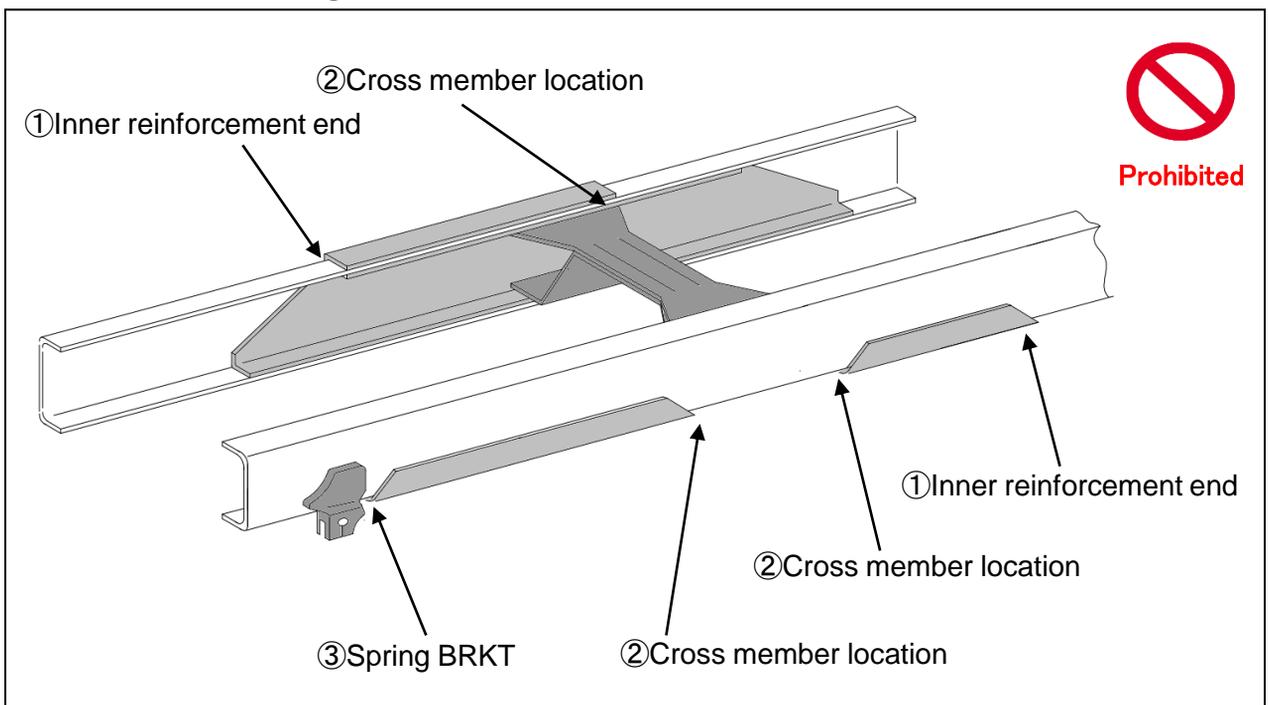
#### Reinforcement shape



### 2.2.2. Installing reinforcement material

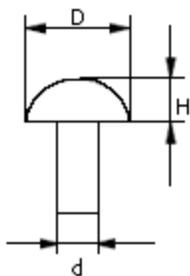
- Ends of outer reinforcement and inner reinforcement should not overlap.
- An end of outer reinforcement and cross member should not overlap.
- An end of outer reinforcement and spring bracket should not overlap.
- Secure a reinforcement by riveting or plug welding.
- When performing plug welding, be sure that electrical components such as electric harnesses on the inner side of a chassis frame side member are a minimum of 50mm apart from welding site.
- When inserting a rivet in a hole from which another rivet has previously been removed, the rivet should be 1 or 2mm larger in diameter than the removed one. Cold rivet only.

#### Prohibited areas for installing reinforcement



### 2.2.3. Size of rivet

#### Rivet size detail



Vehicle type	Rivet Diameter ( d )	Diameter (D)	Unit ; mm
			Height (H)
Light duty	10	16	7
Medium duty	11	18	7.7
Heavy duty	13	21	11

## 2.3. MODIFYING REAR OVERHANG OF A CHASSIS FRAME

If a rear body constrains a sub frame to necessarily protrude outward from the rear end of a chassis frame by 300mm or more, lengthen rear overhang of the chassis frame according to need. If it is absolutely necessary to cut a side member of a chassis frame for modification, make sure that the cut line does not split existing holes.

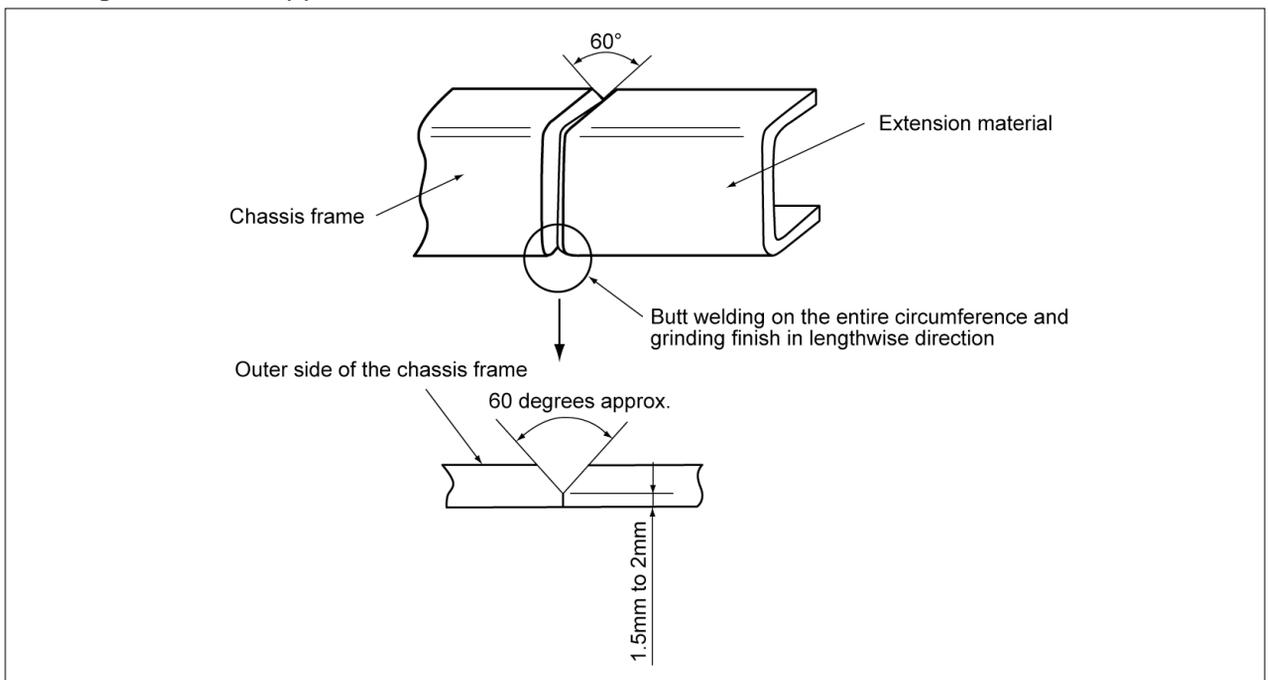
### 2.3.1. Extension material

- The extension material should be equivalent to that of side members. Refer to " II -4.3. FRAME SECTION MODULUS" of the object vehicle model.
- Thickness and bending R of the extension material should be the same as that of side members. Refer to " II -10.1. CHASSIS FRAME DRAWINGS" of the object vehicle model.

### 2.3.2. Installing extension material

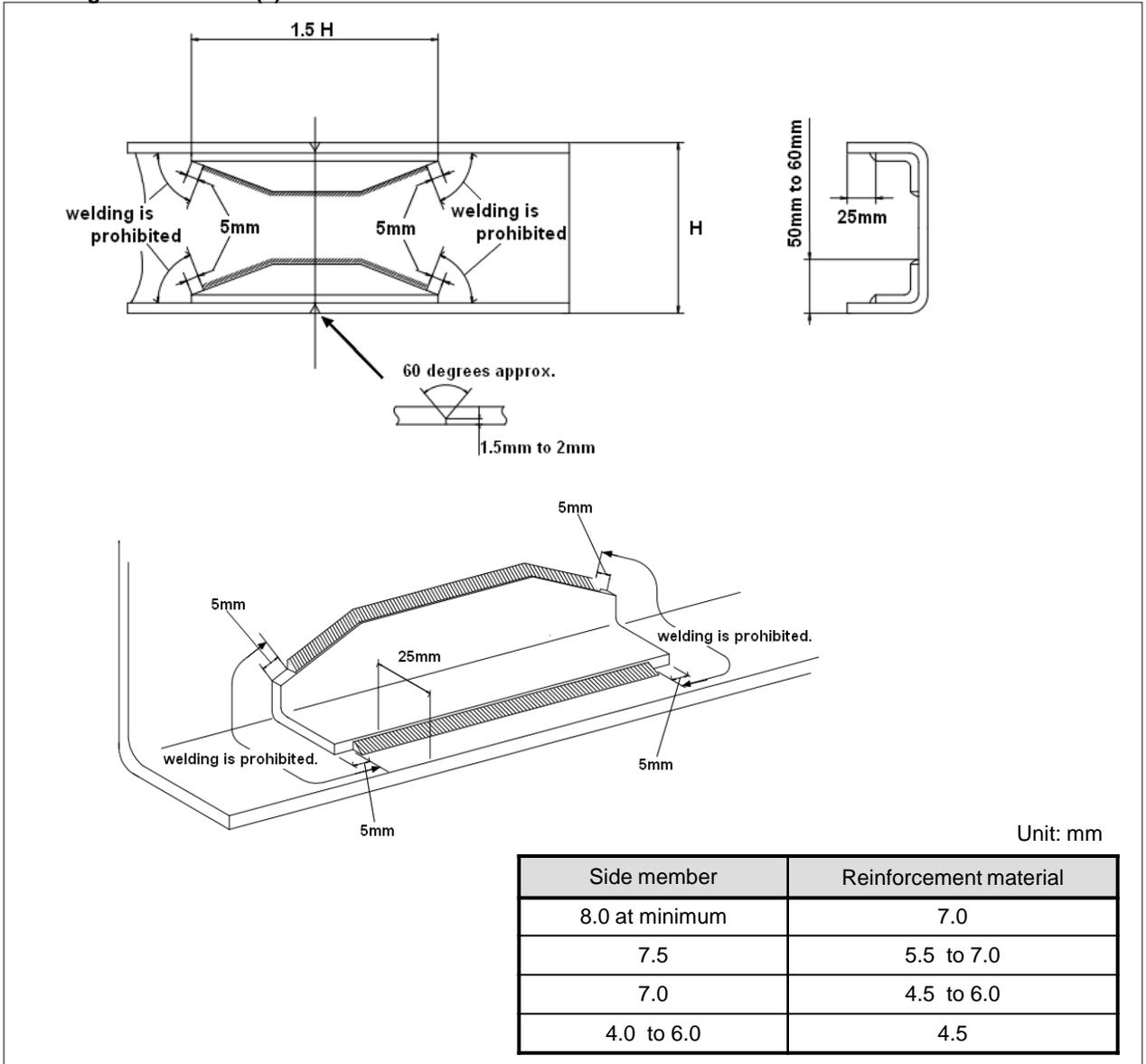
- In case that extension material is 300mm or shorter:
  - Join an extension material and a chassis frame by continuous butt welding. After welding, grind finish weld surface.

#### Installing reinforcement (1)



- In case that extension material is longer than 300mm:
  - Join an extension material and a chassis frame by butt welding, and then fit a reinforcement on the inner side of them.

**Installing reinforcement (2)**



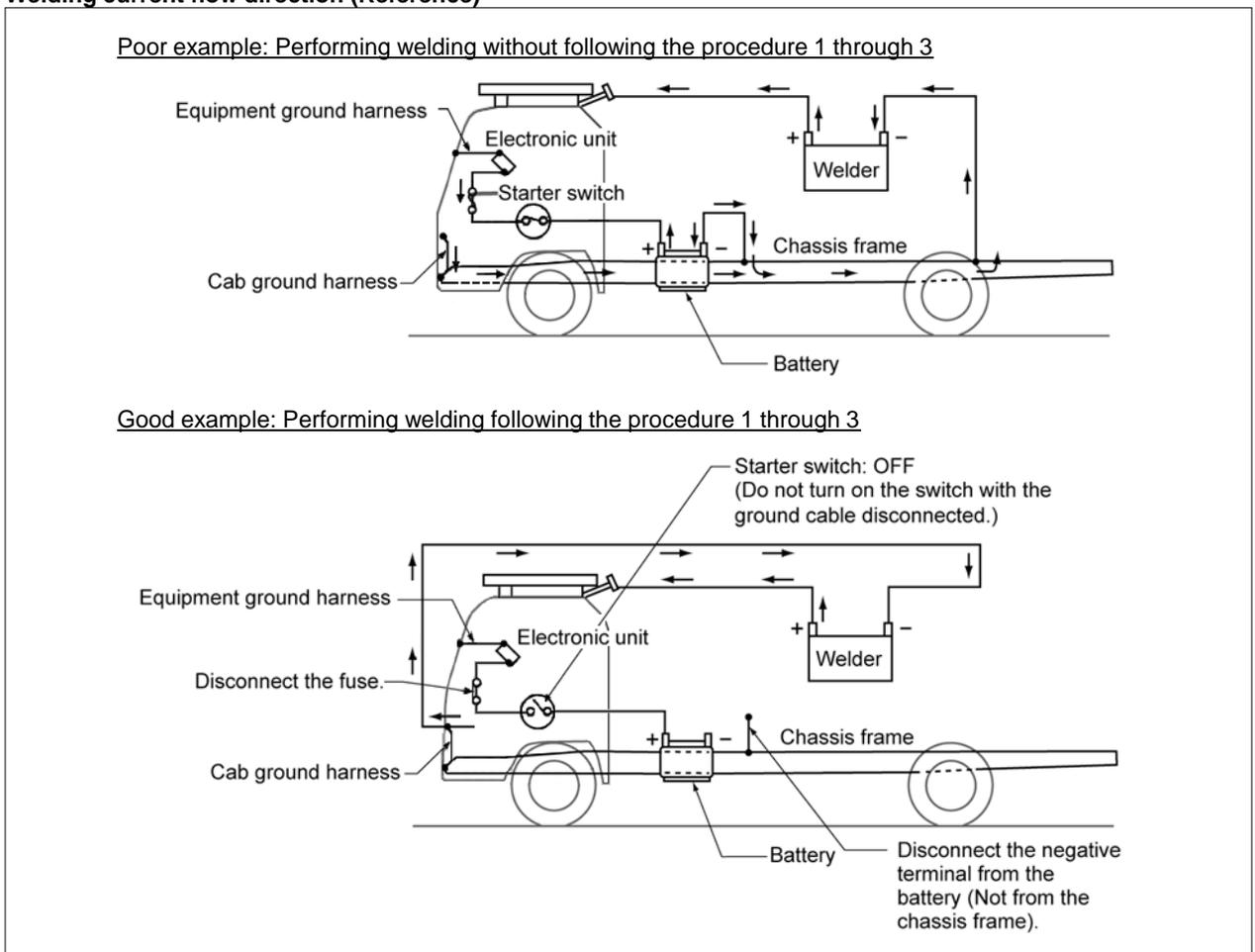
## 2.4. PRECAUTIONS FOR WELDING

Be cautious of following when electric welding. Welding current may damage electronic devices installed in a vehicle.

### 2.4.1. Before welding

- Turn off a starter key switch.
- Disconnect a negative battery terminal.
- Disconnect all electronic harness wirings form control unit.
- Cab welding
  - Attach the welder's ground cable to a plated bolt or metallic part of the cab in the vicinity of welding site. Before securing the ground cable on such a metallic part, peel off the paint on the area to reveal its base.
- Chassis welding
  - Attach the welder's ground cable to a plated bolt or a chassis frame member in the vicinity of welding site. Before securing the cable on the chassis frame member, peel off the paint on the area to reveal its base.

### Welding current flow direction (Reference)



- Do not attach the ground cable to a chassis spring, otherwise the spring may break.
- Remove the paint coating and dry the area where welding is to be performed.
- To prevent the following components from being damaged by welding spatters or heat, cover them up or temporarily relocate them to somewhere reasonably distant. In particular, if welding any area within 200mm from a fuel tank, remove the fuel tank beforehand.
  - Plastic parts
  - Air intake duct
  - Intercooler
  - Tire
  - Rubber parts
  - Radiator hose
  - Pipes
  - Electric harnesses
  - Radiator
  - Chassis springs
- To minimize impact of heat on peripheral area and to assure welding quality, select a suitable welding torch and perform welding at suitable welding conditions.
- No weld defect such as undercuts, overlaps, and pin holes.

#### 2.4.2. After welding

- Welded area must not be rapidly cooled.
- Apply anticorrosion paint with the same color, if the paint is removed.
- After completing welding, put the disconnected components such as fuses and negative battery terminal back in place exactly as before the disconnection and check operation of equipments.

#### 2.4.3. Welding electrode

When the material of the chassis frame side member to be welded is either one of the following, use a 55kgf/mm<sup>2</sup> ilmenite welding electrode (KOBEL STEEL, LTD.'s BW-52 or equivalent).

High tensile steel	HT540 (ISUZU standard) Tensile strength: 540Mpa{55kgf/mm <sup>2</sup> }
Steel for general frame	JSH440 (ISUZU standard) Tensile strength: 440Mpa {45kgf/mm <sup>2</sup> }

## 2.5. PRECAUTIONS FOR HYDRAULIC OR AIR PIPING

Since the air pressure and the hydraulic piping of the brake system and the steering system are important parts, modification is prohibited. If there is necessity to add pipes for body building, follow the instructions below for safety assurance.

### 2.5.1. Working efficiency

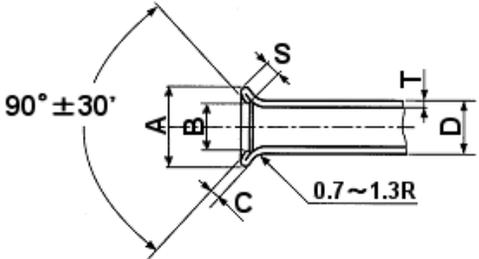
- Checking and detaching of equipment installed at remodeling area (hydro master, air master, brake oil tank, etc.) should not be obstructed.
- Do not interfere with movable body of special purpose vehicle.

### 2.5.2. Pipe forming

- It is not allowed to cut and reconnect steel pipes.
- When damaged, do not repair, use new pipe.
- Do not bend the same portion of a pipe more than once. Do not perform heat flare forming and heat bending.
- Before and after forming a pipe, for safety assurance, check the surface of the pipe for damage, deformation, or dent, and make sure of no foreign substance inside..
- Clean inside the pipe after forming.

#### Flare forming and dimensions

Unit: mm

Type	Double flare					
Shape	 <p>Dimension 'S' is the width of flat seat (inside flare face) coming into contact with mating seat</p>					
Nominal Diameter	D	A	B	T	C	S (at minimum)
4.76	4.76	6.6 to 7.1	3.0 to 3.7	0.7	1.4	±0.2
6.35	6.35	8.6 to 9.1	4.5 to 5.2	0.7	1.4	
8	8	10.5 to 11.0	6.2 to 6.9	0.7	1.4	
10	10	13.0 to 13.5	8.2 to 8.9	0.7	1.4	
12	12	15.0 to 15.7	9.8 to 10.5	0.9	1.8	
15	15	18.1 to 18.8	12.7 to 13.4	1.0	2.0	

#### Remarks

- The decentering with the center of the seat side and the tube is assumed to be 0.15mm or less.
- For the double steel pipe, peeling in the inside part of the flare must be 1/3 or less of the dimension "S".

**Tightening torque**

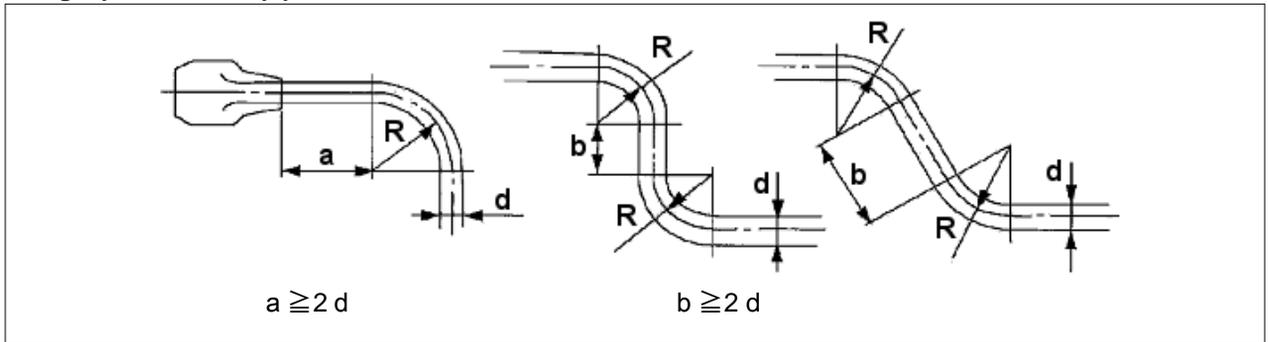
Nominal diameter of applied pipe	Flare nut Width across flats (mm)	Screw size	Tightening torque value N·m{kgf·m}	Remarks
4.76	10	M10 x 1.0	Iron:13 to18{1.3 to1.8} Non-iron:9 to15 {0.9 to1.5}	Tightening torque values selected depending on mating materials. Non-iron: Aluminum and brass
6.35	12	M12 x 1.0	25 to 35{2.6 to 3.6}	
8	14	M14 x 1.5	29 to 39{3.0 to 4.0}	
10	17	M16 x 1.5	45 to 55{4.6 to 5.6}	

• Minimum bending R should be as shown below.

Unit: mm

Pipe Nominal Size	4.76	6.35	8	10	12	15
Bending Radius	20	20	25	30	35	40

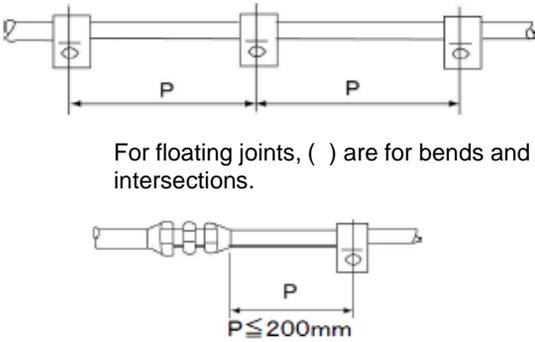
**Straight portion of the pipe**



### 2.5.3. Routing steel pipes

- Pipes should be considered not to contact with other components, heat influence, and vibration.
- Protect pipes from dust, sand, water, and other foreign substances fly up from road.
- Clip fix pipes at straight piping line. Refer to following

#### Clip distance



For floating joints, ( ) are for bends and intersections.

$P \leq 200\text{mm}$

Unit: mm

Pipe diameter	P
4.76 / 6.35	500 or less(400 or less)
8 / 10	600 or less(500 or less)
12 / 15	800 or less(600 or less)

- Do not fix by shape that moisture collects because moisture in the tube might freeze.

#### Poor example of fixing pipe

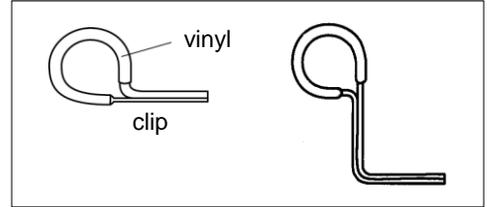
<Poor example>

Pipe bended at an inappropriate angle

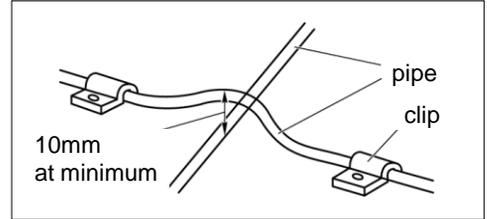


Moisture in the compressed air accumulates here.

- Apply rust-proofing on clips. Apply vinyl or rubber coating to the part of the clips where pipes may contact. (Usage of genuine ISUZU clips is recommended.)



- When the steel pipes intersect, secure 10mm or more at crossing point, and clip fix at straight part and point off the bending R.



- Secure the distance between a steel pipes or a pipe and other components according to the following Fig.

**Distance between metal pipe and other components**

<p>Bolt head or rivet head on chassis frame member</p> <p>10mm at minimum</p> <p>Rivet head</p> <p>Bolt head</p>	<p>Hole in the panel</p> <p>8mm at minimum</p> <p>Panel</p> <p>Grommet</p>
<p>Edge</p> <p>10mm at minimum</p>	<p>Moving components such lever, link and arm: 30mm (moving range +30mm)</p> <p>30mm at minimum</p>
<p>Pipes arranged in parallel</p> <p>10mm at minimum</p> <p>20mm at minimum</p>	<p>Silencer and exhaust pipe</p> <p>① In case that the pipe and the component intersect with each other -- 80mm at minimum</p> <p>Silencer or exhaust pipe</p>
<p>Flare nut</p> <p>20mm at minimum</p>	<p>② In case that the pipe and the component are placed in parallel – 200mm at minimum (180mm if a heat insulation panel is provided.)</p> <p>There may be individual values provided. Refer to "II SPECIFIC INFORMATION" of target vehicle type.</p>

## 2.6. NYLON AIR TUBES AND PUSH-IN CONNECTOR

Since the air pressure piping of the brake system is important parts, remodeling is prohibited. If there is necessity to add piping for body building, note the instructions below.

### 2.6.1. Nylon air tube

- Nylon tube is weak to heat (93°C). Remove before welding.
- Nylon tube is weak to acid. Do not use waste cloth or globes with battery fluid.
- Keep distance from high-pressure cleaner nozzle (MIN 100mm).
- When removing it, make sure not to bend the tube. When damaged, use new tube.
- Do not use any nylon tubes other than the genuine ISUZU nylon tubes.  
Followings are specifications of nylon tubes for reference.

Standard	Manufacturer	Type
DIN Standard	Nitta Moore or Reflex & Allen	Push-in type

Outer Diameter (mm)	Inner Diameter (mm)	Minimum bending R (mm)	Purpose
6	4	50	Air suspension seat
8	6	80	Accessory line
12	9	100	Brake line

### 2.6.2. Nylon tube connector

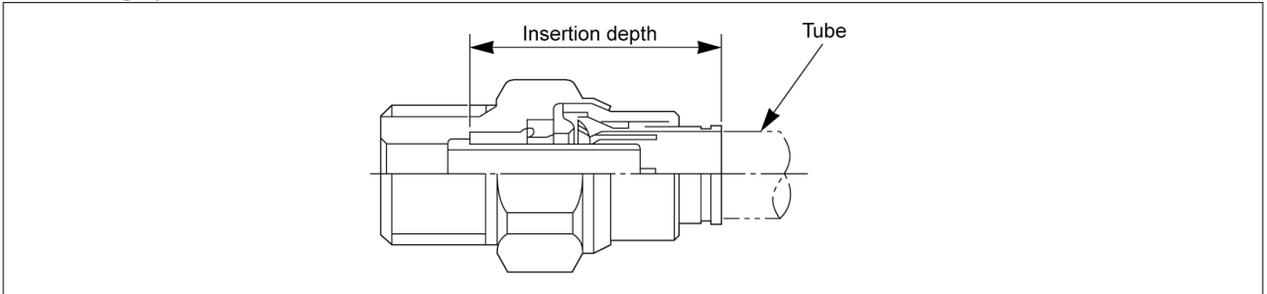
- To disconnect nylon tube, push the release collar and pull out the nylon tube.
- If the nylon tube is frequently connected and disconnected, purchase genuine ISUZU products from ISUZU dealerships.

Part name	Part number
Nylon tube remover	185239-0080

- When using steel connector, use connectors with following treatment to prevent pipes from corrosion.
  - Surface treatment: Zinc chromate plating
  - Plating thickness: 4μm (MIN)
  - Anti corrosion test with salt water spray: no corrosion for 240 hours

- Check the inside of the connector. If there is any extraneous matter, blow air into it to remove it.
- If there is friction marks from connector on nylon tube, cut off that portion. Confirm there is no scratch on tube after cutting. If there is, cut off that part.
- Check the insertion length before inserting the nylon tube. Paint the position and insert to the mark. Insertion depth differs by connector makers. Firmly insert the nylon tube to the end.

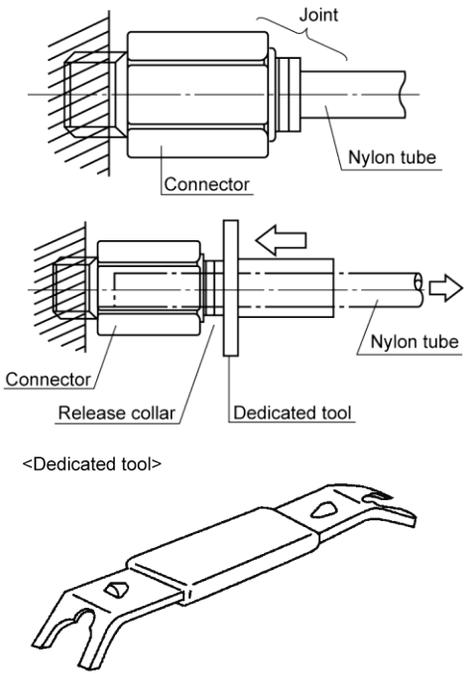
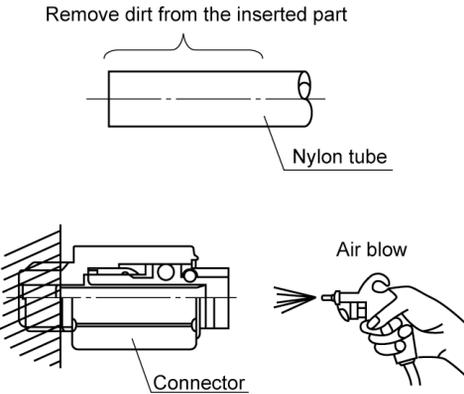
**Connecting nylon tubes**



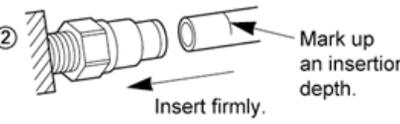
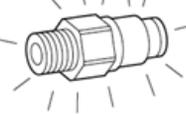
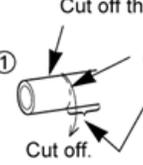
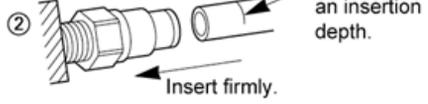
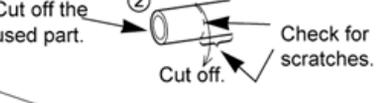
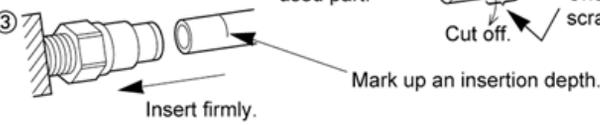
**Assembling new nylon tube**

<p>Proper connectin</p>	<ul style="list-style-type: none"> <li>• Confirm that the part of a nylon tube, which is to be inserted into a connector is free of scratches, warping and dirt.</li> <li>• Lightly apply lubricant (e.g. Engine oil) on the outer surface of the end of the nylon tube.</li> <li>• Mark up an insertion depth on the tube with paint or something, and then insert the tube into the connector up to the marking.</li> </ul> <p>Note: Some resistance may be encountered when the tube passes the O-ring and the retainer inside the connector. Be sure to insert the tube up to the marking.</p>
	<ul style="list-style-type: none"> <li>• After completing the tube insertion, hold the connector and at the same time pull the tube to confirm secure connection.</li> <li>• Confirm that there is no air leakage.</li> </ul>

Disconnecting nylon tube

 <p>&lt;Dedicated tool&gt;</p>	<ul style="list-style-type: none"> <li>• Before removing a tube, check a joint for adhesion of dirt, and remove it if there is any.</li> </ul> <p>Note: If the joint is so dirty that a release collar is stuck, replace both the tube and the connector with new ones.</p> <ul style="list-style-type: none"> <li>• Push the release collar by using a dedicated tool (nylon tube remover) to pull out the nylon tube <u>by hand</u>.</li> <li>• When using a tool other than the above dedicated tool, be sure to use a tool that does not scratch the nylon tube (e.g. Monkey wrench).</li> </ul> <p>Dedicated tool (nylon tube remover) part number: 185239-0080</p>
<p>Remove dirt from the inserted part</p> 	<ul style="list-style-type: none"> <li>• Check the inserted part of the removed nylon tube for adhesion of dirt. If there is any, remove it. Thoroughly blow air into the connector to remove extraneous matter.</li> <li>• Cover the removed nylon tube and connector with vinyl bags (lint-free bag) to protect them from scratches and dirt.</li> </ul>

Connecting nylon tube and connector

	Combination of tube and connector	How to connect
1	<p>New tube</p>  <p>Reused connector</p> 	<p>①</p>  <p>Check inside for cleanness. Remove dirt by blowing air on it.</p> <p>②</p>  <p>Mark up an insertion depth. Insert firmly.</p>
2	<p>Reused tube</p>  <p>New connector</p> 	<p>①</p>  <p>Cut off the used part. Check for scratches. Cut off.</p> <p>②</p>  <p>Mark up an insertion depth. Insert firmly.</p>
3	<p>Reused tube</p>  <p>Reused connector</p> 	<p>①</p>  <p>Check inside for cleanness. Remove dirt by blowing air into it.</p> <p>②</p>  <p>Cut off the used part. Check for scratches. Cut off.</p> <p>③</p>  <p>Mark up an insertion depth. Insert firmly.</p>

**2.6.3. Band clips**

- Use 66-nylon band clip.
- Use clips only to hold nylon tube, not to restrict the direction of nylon tube.
- Fix the clip directly on to chassis frame. Brackets are allowed.
- Do not use galvanized zinc brackets. Otherwise, chemical change will damage nylon clips.

**2.6.4. Protection corrugated tube**

- When nylon tube contacts chassis frame or other components, cover the nylon tube with corrugated tube.
- Wrap tape on both end of corrugated tube to prevent from moving.

## 2.7. NYLON TUBE ROUTING AND FIXING

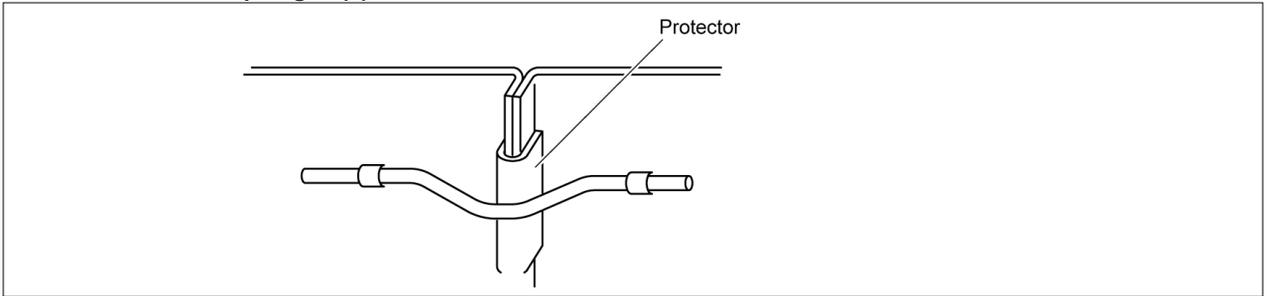
### 2.7.1. Precautions

- To prevent wearing and damaging, nylon tube should not interfere with other tube or component.
- At routing, prevent the nylon tube from twisting and note to suppress the vibration of the nylon tube to the minimum.
- Ambient temperature of nylon tube routing area should be from -40°C to +93°C.
- When nylon tube is needed to be routed in areas where mechanical damage, heat damage, chemical damage may be received, provide a protector in this area to protect the tube.
- When routing around high temperature are such as engine, place heat insulator and confirm that the ambient temperature is in between tolerance temperature. Areas enclosed for such a noise insulation requires extra attention because the temperature of these areas tend to be high.
- Route the nylon tube where exhaust emission would not hit even when the gas leaked from exhaust pipe by corrosion or damage.
- Maintain sufficient clearance from vibrating components such as transmission.
- Do not bundle nylon tube with starter cable.
- When nylon tube is clipped together with harness, consider the clip distance so tube and harness would not be rubbed by vibration.
- Clip distance to be 600mm or less.
- Do not cross nylon tube and electric wiring as possible.
- When routing nylon tube around battery, be sure that battery fluid (or leaked battery fluid) does not adhere to them while checking the vehicle is running.
- Multiple tubes bundled together can control the vibration effectively than single tube.
- When single tube branches out from a bundle, fix the bundle at branch point to prevent from rubbing.
- When nylon tubes intersect, clip fix each tube individually to avoid interference.

### 2.7.2. Measure around sharp edges

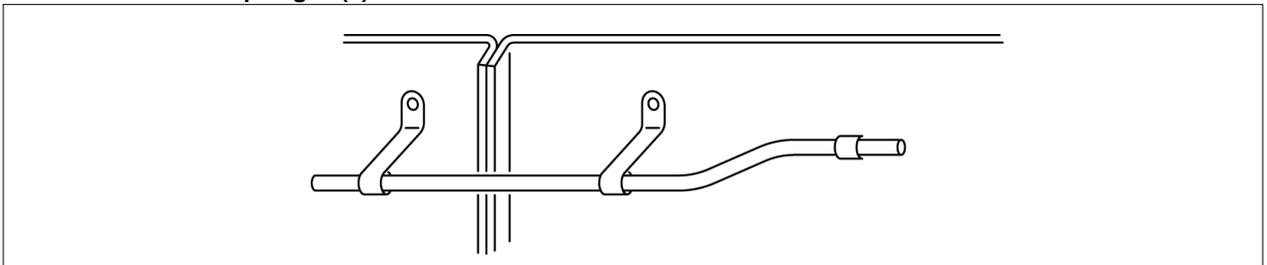
Do measure appropriately by referring to the following example.

#### Measure around sharp edges (1)



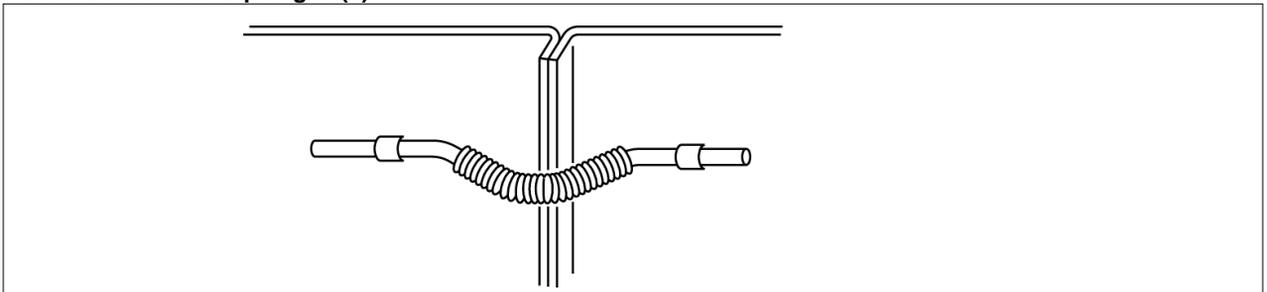
- Cover the sharp edge with protection.

#### Measure around sharp edges (2)



- Use F-clip to avoid from contact.

#### Measure around sharp edges (3)

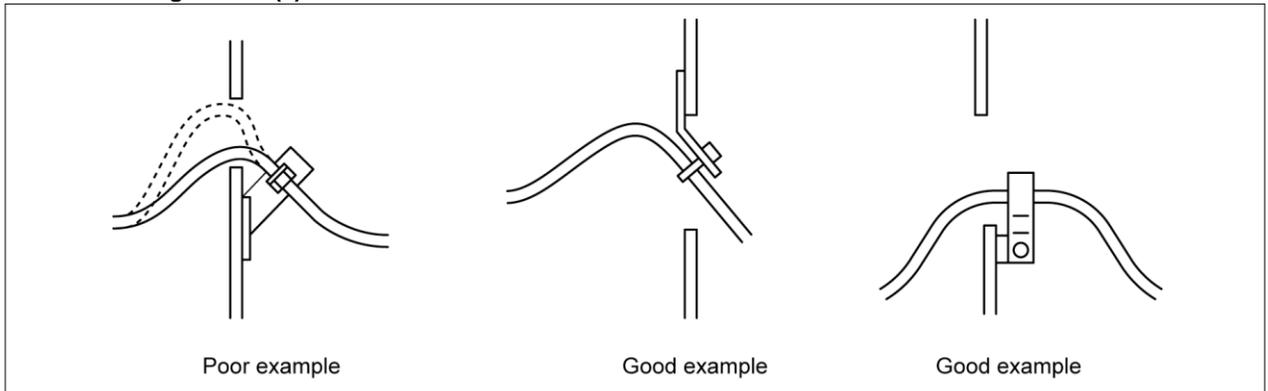


- Cover the tube with corrugated tube and clip fix the tube to avoid corrugate tube to be scratched.

### 2.7.3. Measure through holes

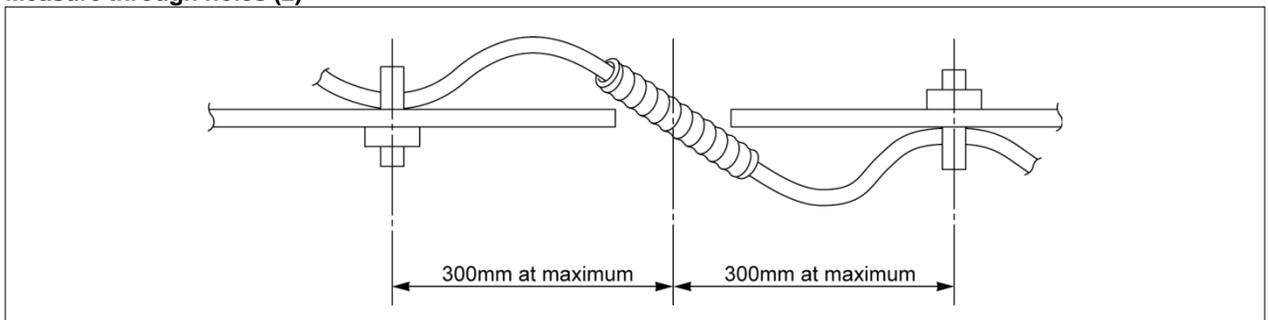
- Prevent the tube from interfering the edge of the hole when you pass the tube through the hole of the cross member.

#### Measure through holes (1)



- When passing the tube through a hole of chassis frame member, protect the tube in the Corrugated tube, and fix the nylon tube so that the tube does not contact with the edge of the hole.

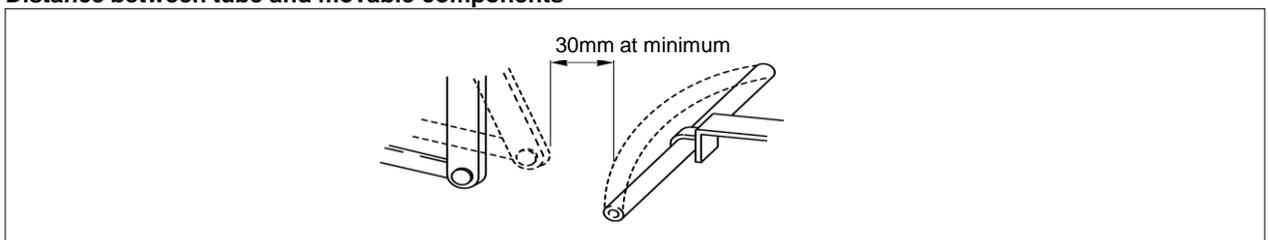
#### Measure through holes (2)



### 2.7.4. Distance between tube and movable components

The tube near the movable component such as the lever, the drag links, and arms must be fixed with distance of 30mm or more from them.

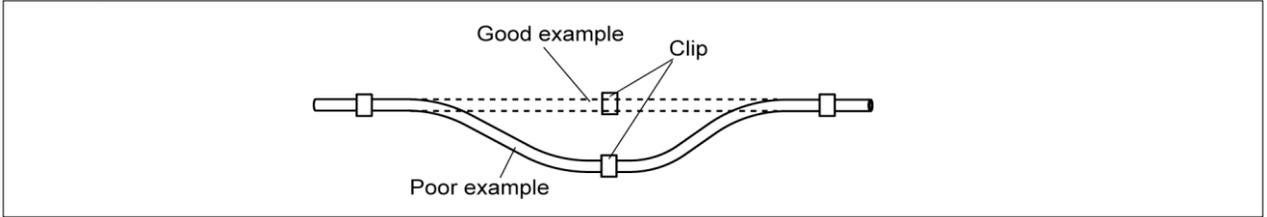
#### Distance between tube and movable components



### 2.7.5. Freeze proofing

Do not fix by shape that moisture collects because moisture in the tube might freeze.

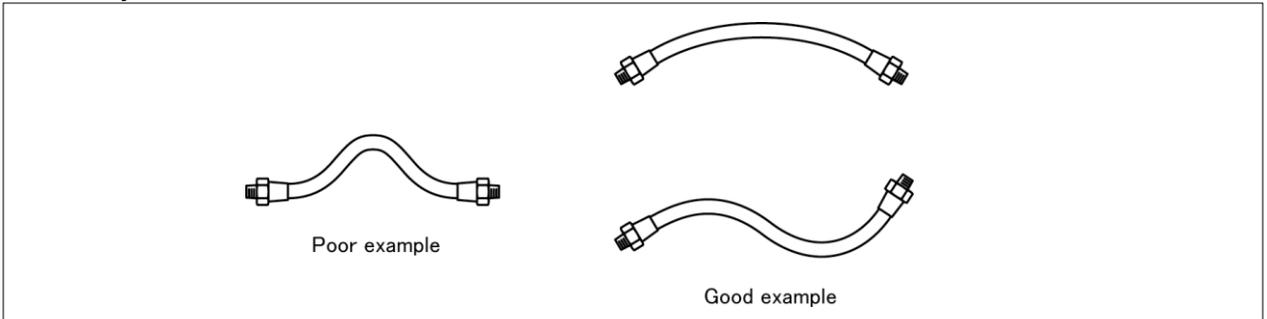
#### Loose nylon tube



### 2.7.6. Installation length

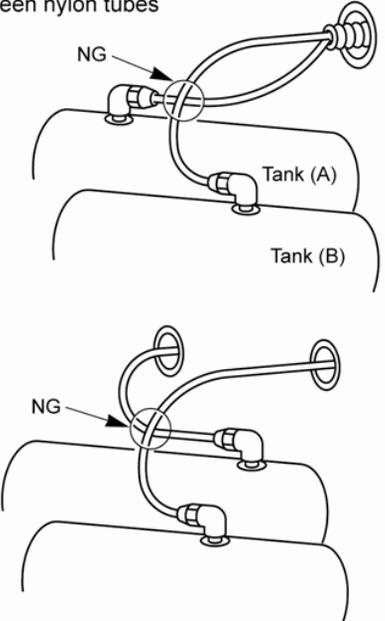
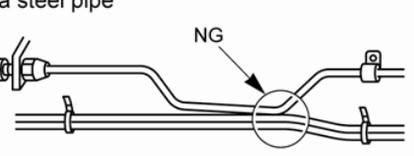
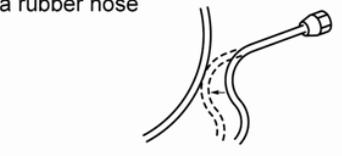
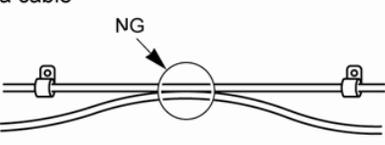
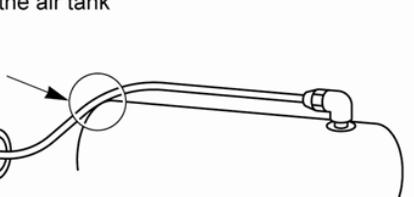
The tube expands and contracts according to the temperature change. Install it with enough length.

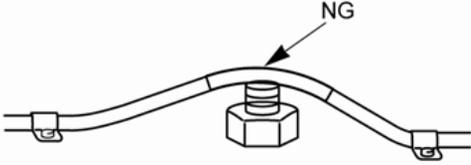
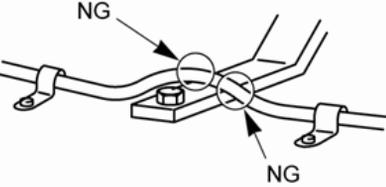
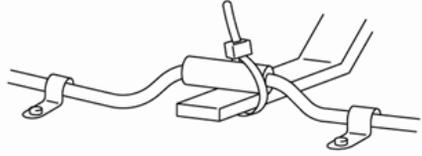
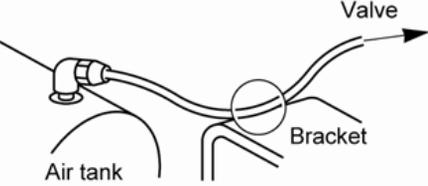
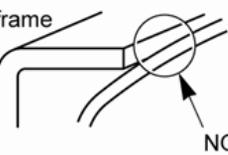
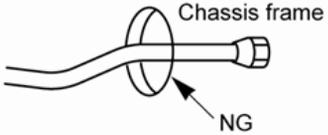
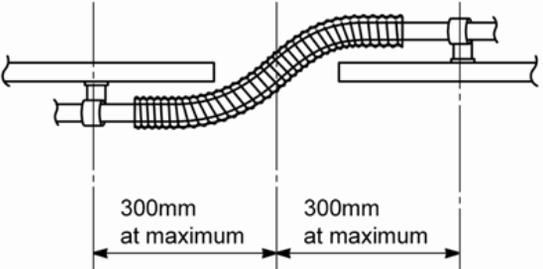
#### Installed nylon tube

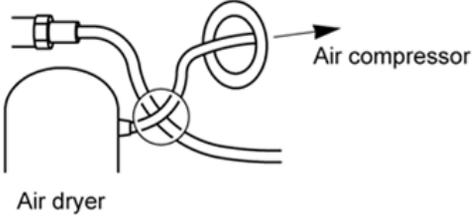
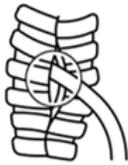
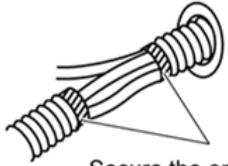
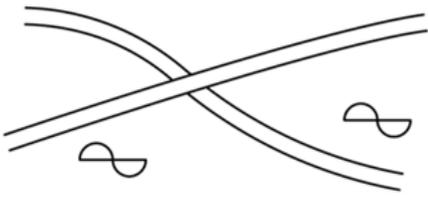


**2.7.7. Example of defective installation**

Poor example is shown below. Do necessary preventive measures referring to the example of measures.

Poor example	Corrective measures
<p>Contact between nylon tubes</p> 	<p>Wrap the nylon tubes with the rubber sleeve, and clamp a with band clip.</p>
<p>Contact with a steel pipe</p> 	<p>Wrap the steel pipe with a rubber sleeve, and clamp with band clip.</p>
<p>Contact with a rubber hose</p> 	<p>Wrap the nylon tube with a rubber sleeve and clamp it with a band clip, provide a minimum of 30mm clearance between the nylon tube and the rubber hose.</p>
<p>Contact with a cable</p> 	<p>Provide a minimum of 10mm clearance between the nylon tube and the cable, or secure the nylon tube with band clips.</p>
<p>Contact with the air tank</p> 	<p>Provide a minimum of 10mm clearance between the nylon tube and the air tank, or wrap the nylon tube with a rubber sleeve and clamp with a band clip.</p>

Poor example	Corrective measures
<p>Contact with a bolt or a nut</p> 	<p>Provide a minimum of 10mm clearance between the nylon tube and the bolt or the nut, or wrap the nylon tube with a rubber sleeve or a corrugated tube.</p>
<p>Contact with a bracket connector or a valve union</p> 	<p>Clamp the rubber sleeve with a band clip.</p> 
	<p>Provide a minimum of 10mm clearance between the nylon tube and the bracket, connector or wrap the nylon tube with a rubber sleeve or a corrugated tube.</p>
<p>Contact with an edge of a cross member or a chassis frame member</p> 	<p>Provide a minimum of 10mm clearance between the nylon tube and the edge, or wrap the nylon tube and clamp with a band clip.</p>
<p>Through hole</p> 	<p>Wrap the nylon tube with a corrugated tube, and secure it at the points within 300mm from the center of the through hole.</p> 

Poor example	Corrective measures
<p>Contact with a hot object such as air charge pipe, power steering oil pipe, and battery cable.</p>  <p>Air compressor</p> <p>Air dryer</p>	<p>Provide a minimum of 10 mm between the nylon tube and the adjacent objects at all times even in a state of vibration, and accordingly secure the nylon tube in place with clips, or change the route of the tube.</p>
<p>Contact with an edge of a corrugated tube</p> 	<p>To prevent the nylon tube from being damaged, split the corrugated tube and tape its ends.</p>  <p>Secure the ends by taping.</p>
<p>Contact between vibrating nylon tubes</p> 	<p>Wrap the nylon tubes with rubber sleeves and clamp them with band clips.</p>

## 2.8. RELOCATION OR ADDITION OF A FUEL TANK

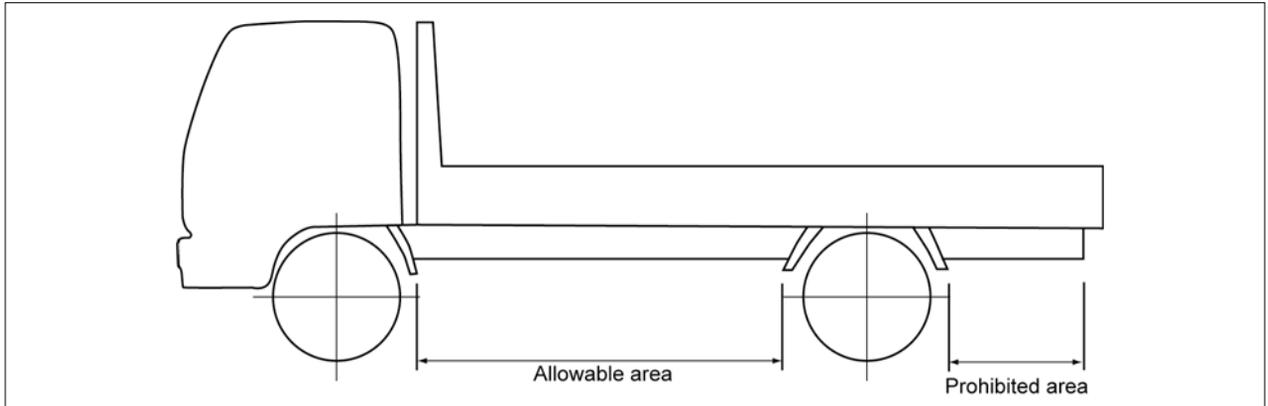
When relocating or adding a fuel tank is necessary, follow the local regulations.

When installing an additional fuel tank, be sure that the total amount of fuel does not exceed the regulation.

### 2.8.1. Location of a fuel tank

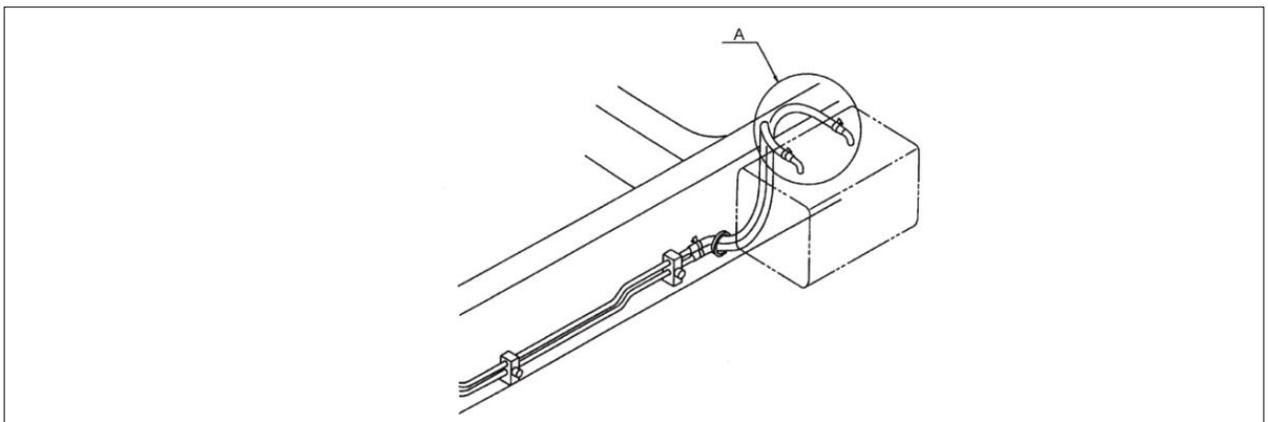
- Place a fuel tank somewhere between wheelbase. Do not place it in rear overhang area.

#### Location of fuel tank



- When lowering the position of the fuel tank, carefully determine the ground height of a fuel tank not to contact the ground with particular attention to the conditions of use.
- Be sure that the breather opening of the relocated fuel tank will not be subjected to water. There are two types of the breather: One of them is fitted on a fuel tank body, which can be opened with a hose, and the other type is at a filler cap.
- Maintain sufficient clearances between the hoses for a fuel tank ("A" in the figure below) and the object to be mounted on a chassis frame such as sub frame, U-bolt and double ended bracket. If contact is anticipated, wrap the hoses with corrugated tubes or protectors.

#### Hose for fuel tank



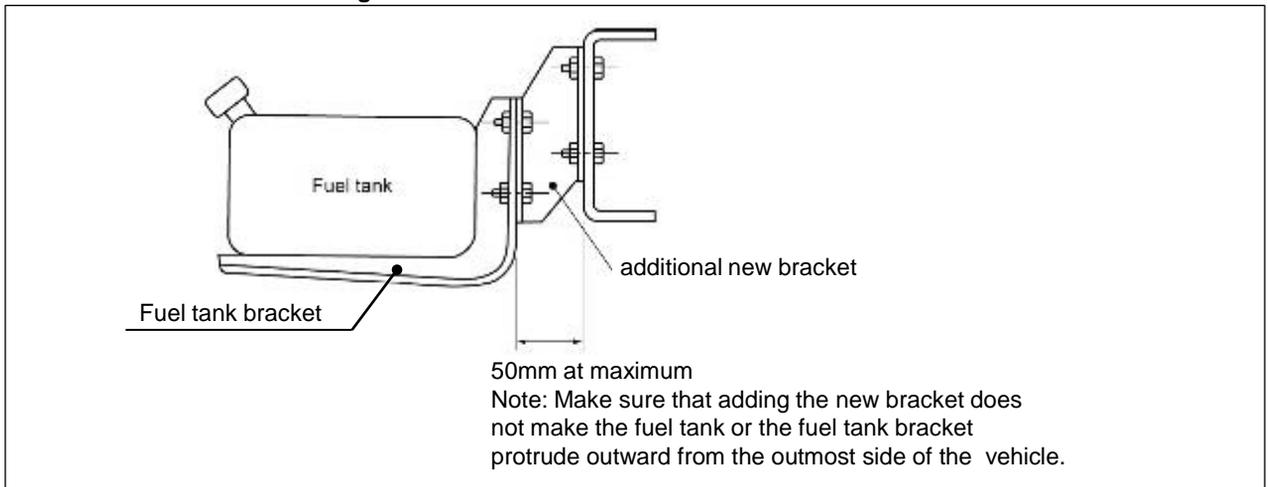
- Be sure that the relocated tank is sufficiently apart from any movable or projecting object.
- The fill opening of a fuel tank should be easily accessible so that its cap can be removed or attached and fuel can be fed without problems.
- Maintain a reasonable clearance between an exhaust system component (front pipe, silencer and tail pipe) and a fuel tank or a fuel tube.

### 2.8.2. Installation of fuel tank

Individual method such as the reinforcement of the intraframe might be provided by the vehicle type. Confirm " II SPECIFIC INFORMATION" of the targeted vehicle type.

- When relocating a fuel tank, make sure whether there are free holes in a chassis frame side member adjacent to the area to which the fuel tank is to be relocated, so that these holes can be used for fitting a bracket. Using these holes is recommended rather than making new holes.
- If more holes are required, see the section " I -2.1. DRILLING OR WELDING A CHASSIS FRAME" for details.
- When moving the fuel tank vertically, make bracket referring below drawing.
  - Do not fit the bracket together with other equipment by sharing same hole.
  - Do not make hole pitch smaller than the original bracket hole pitch vertically or horizontally.

#### Additional bracket for relocating fuel tank



- Be sure to air bleed after detaching tank or hose.
- If nylon lock nut is used for band fixing fuel tank, do not reuse it, change to new one.
- When installing an additional fuel tank, follow the instructions below to prevent vehicle fire.
  - Use a genuine ISUZU fuel tank.
  - Fuel must be supplied from the main tank.
  - In cold regions, to prevent a fuel hose from sagging due to snow, secure the fuel hose on any retaining component such as stay attached to a tank hanger bracket.

### 2.8.3. Fuel hoses and pipes

- When changing a fuel hose, use a fuel hose of the same material as the factory-installed one's. Especially for portion where rubber hose is used, do not replace with polyvinyl chloride hose or add polyvinyl chloride hose to lengthen.
  - Polyvinyl chloride hose is used for feed (hose sending fuel from tank to engine).
  - Rubber hose is mainly used for return (hose from engine to fuel tank).
  - Return (fuel from engine to tank) may become high temperature. When polyvinyl chloride hose is used, fuel may leak from connection due to heat swelling of the hose.
- Use genuine ISUZU polyvinyl chloride hose or rubber hose.

#### Feed side fuel hose

Unit: mm

Vehicle type	Nominal size	Inner diameter	Outer diameter
Light duty	09	9.3±0.4	17.0±0.7
Medium duty	10	9.5±0.4	14.5±0.7
Heavy duty	12	11.3±0.5	19.0±0.8

#### Return side fuel hose

Unit: mm

Vehicle type	Nominal size	Inner diameter	Outer diameter
Light duty	05	5.8±0.4	12.2±0.7
Light duty(Q-Series)	06	5.8±0.4	13.5±0.7
Medium duty	08	7.5±0.3	13.5±0.7
Heavy duty	10	9.5±0.4	14.5±0.7

- Use fuel pipes size shown below.

Inner surface	Copper plating (Thickness: 3μ at minimum)
Outer surface	Galvanization (Thickness: 13μ at minimum) and Organic coating (*)

Note: \* Corrosion resistance: 2,500hrs. at minimum before reddish brown corrosion appears after salt spray test.

Perform bulge forming or spool forming on both ends of the said steel pipes as follows:

Bulge forming

Spool forming

Unit: mm

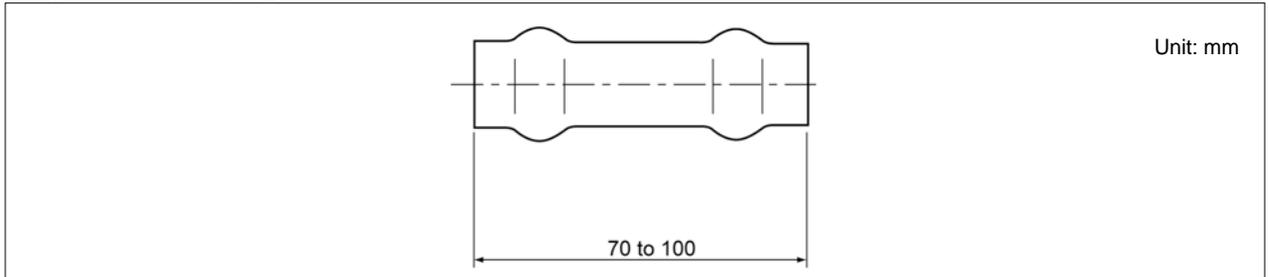
Hose Nominal Size	D	A	B
05/06	6.35	7.4±0.3	6.1±0.3
08	8	9.3±0.3	7.9±0.3
10	10	11.5±0.3	10.0±0.3
12	12	13.5±0.3	12.0±0.3

Hose Nominal Size	D	A	B
05/06	6.35	7.4±0.3	6.35
08	8	9.3±0.3	8
10	10	11.5±0.3	10
12	12	13.5±0.3	12

### 2.8.4. Precautions for connecting pipes

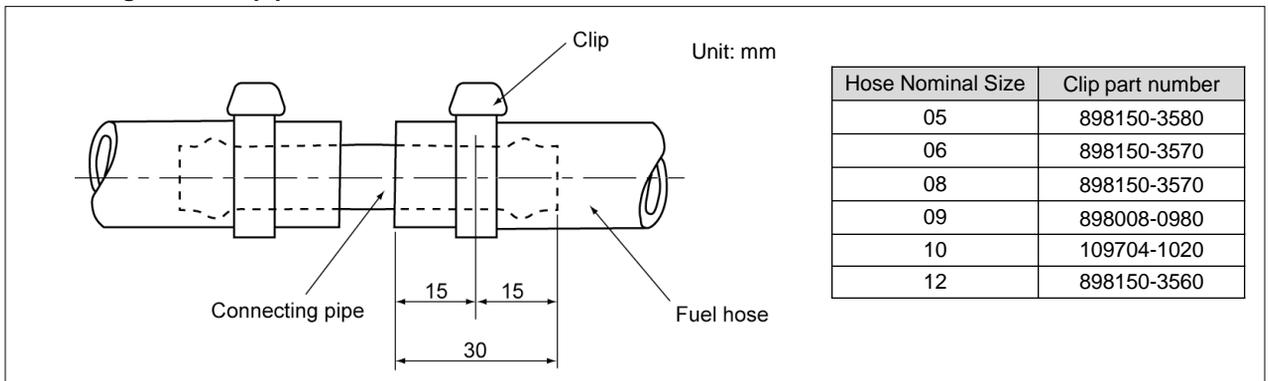
- Do not connect two or more hoses to lengthen a single hose.
- Fabricate a connecting pipe from a steel pipe. Perform bulge forming or spool forming on both ends of this pipe.

#### Length of connecting pipe



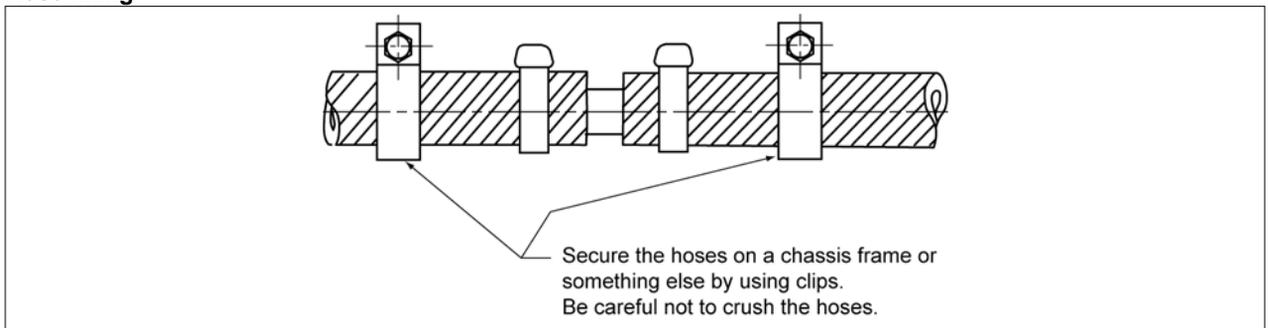
- Insert this connecting pipe into hoses by more than 30mm, and secure with clips.

#### Connecting hose and pipe



- If bulge forming and spool forming are impossible, the insertion depth should be 35mm or more.
- Secure the hoses on a chassis frame or something with clips.

#### Hose fixing



- Hose joints must not be located above an exhaust system.
- After completing the hose connection, confirm that there is no fuel leakage.
- Do not join a fuel hose to the factory-installed one to take out fuel. Fuel must not be taken out from a branched hose.

## 2.9. PRECAUTIONS FOR TOWING HOOK

Follow the instructions below when relocating towing hook installed at delivery.

### 2.9.1. Location

- For straight frame: locate towing hook leveled with frame.
- For kick-up frame: locate towing hook incline 15° downward from frame to avoid effect to rear body or poor operativity from the hook located higher.

### 2.9.2. Installation

- For drilling holes on frame, see the section " I -2.1. DRILLING OR WELDING A CHASSIS FRAME" for details.
- Hole diameter and tightening torque is as follows.

Vehicle type	Location	Hole doameter	Torque (N·m)	Remarks
Light duty	Lower	φ11	51±7	—
	Side	φ15	157±32	—
Medium duty	Side	φ15	133±26	Others FV series only
		φ17	193±39	
Heavy duty	Side	φ17	193±39	—

## 2.10. PRECAUTIONS FOR MODIFICATION OF THE ELECTRICAL SYSTEM

Careless remodeling may result in fire or equipment breakdown.

- Modification to the factory-installed electrical components such as wires, fuses and relays are prohibited.
- Do not tear protective corrugated tubes and pull out inside wires to connect add-on equipments because this may damage the remaining harnesses.
- When removing chassis harness for body building, be sure to restore it as it was originally.
- If the shape of the rear body of a completed vehicle constrains rain or vehicle washing water to concentrate into particular portions of the vehicle, be sure to keep connectors, relay box, and other factory-installed or add-on electric equipments away from such water. In this case, attach panels, gutters, etc. to disperse or directly lead water out of the vehicle.
  - Exposing connectors, relay box, and electric equipments to such water may cause water intrusion into electric components or internal condensation, resulting in problems such as operational malfunction, and in the worst case, a vehicle fire.

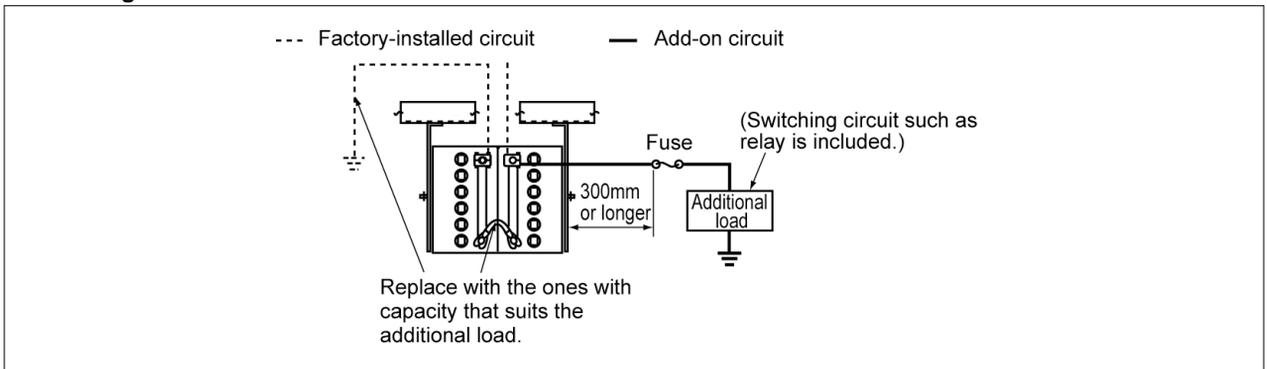
### 2.10.1. Additional power supply (standby power supply) and ground wiring

Sizes and shapes of terminals and electric wires used for the increase must use the one that corresponded to the increased load. Select the battery and ACG that corresponds to the electric load when installing body with high electric load (fire engine and refrigerator car, etc.). Refer to "II SPECIFIC INFORMATION".

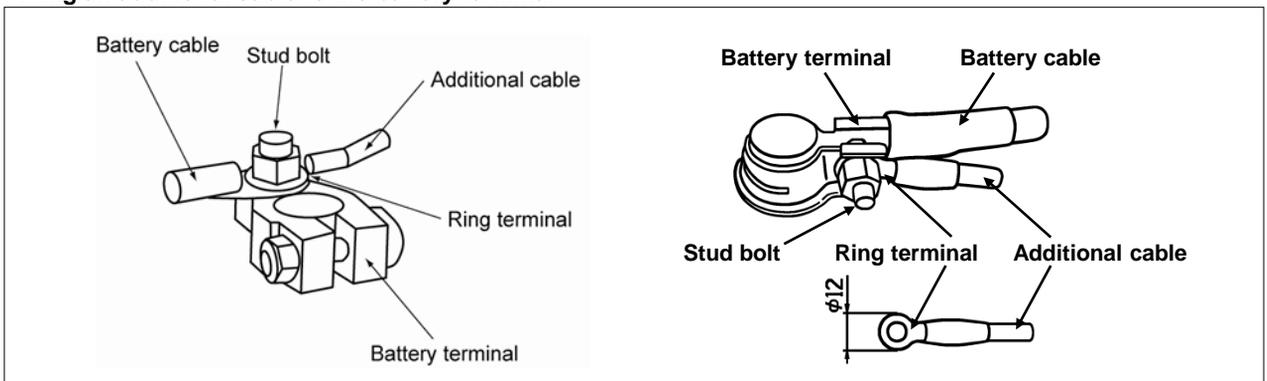
- How to extract power from the factory-installed wires (when the capacity of additional power supply does not exceed the allowable capacity of standby power supply)
  - Do not extract power other than from the extraction of the standby power supply prepared in the vehicle.
  - Maintain the power below the ratings capacity of the standby power supply.
  - Refer to "II SPECIFIC INFORMATION" of the targeted vehicle type for the position and the rating capacity of the standby power supply.
  - Do not connect ground wire of additional power supply with the existing harness. Connect it with either the standby power supply, minus terminal of the battery, or the frame.

- How to extract power from the positive battery terminal (when the capacity of additional power supply exceed the allowable capacity of standby power supply)
  - Provide a fuse in each power extraction circuit.
  - Fuses must be a minimum of 300mm apart from the battery (volatile gas may come out of the battery) and protected from water.
  - Do not put a fuse directly on the battery body or on the reverse side of the battery cover, otherwise the battery will be damaged or explode.
  - Use the round type terminal to extract from battery, fix it together with battery terminal to prevent loosening.
  - Only one terminal may be added to prevent loosening.
  - Do not connect ground wire of additional power supply with the existing harness. Connect it with minus terminal of the battery.
  - When using a cable of 5mm<sup>2</sup> or larger, solder the pressured part of the wire terminal, and then wrap the area with a heat shrink tubing.
  - Extracted power is always energized, does not depend on the state of the key switch on the underbody. This can cause the battery go flat. Take the necessary measures such as appending to the caution label or the manual.

#### Connecting an additional cable



#### Fitting an additional cable to the battery terminal



**2.10.2. Ground wiring**

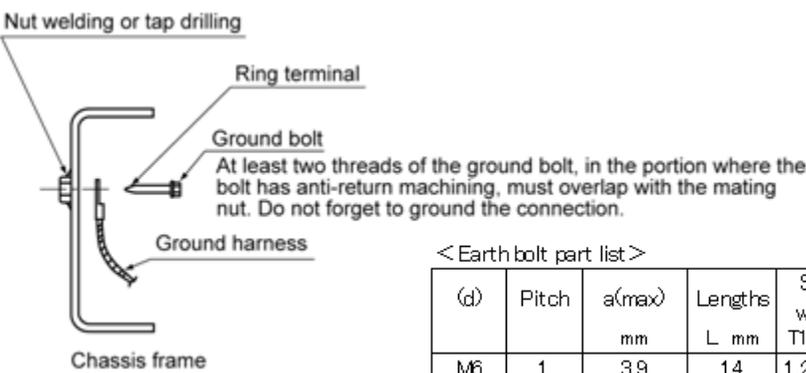
Careless remodeling may result in fire or equipment breakdown.

Relocating the ground points of the factory-installed ground cables and lengthening or shortening these wires or cables is prohibited, because doing any of these may result in breakdown of electrical equipments or electronics devices due to surge, etc.

Follow the bellow instructions when adding ground wire for bodies or additional equipments.

- How to connect the ground wire to a chassis frame
  - The ground wire or cable of an add-on equipment should be connected to the chassis frame member to which the negative battery cable is connected.
  - Do not secure the ground wire or cable of add-on equipment together with a factory installed ground wire or cable because the fixing bolt will loosen and contact failure will occur.
  - Use a ground bolt to secure the ring terminal.
  - Weld a mating nut on the chassis frame or directly tap the chassis frame.

**Addition of ground wiring**

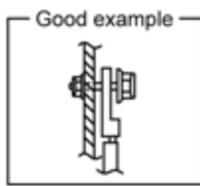


< Earth bolt part list >

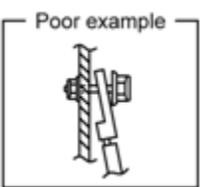
(d)	Pitch	a(max) mm	Lengths L mm	Spring washer T1 × ΦD1	Plan washer T2 × ΦD2	Lock lengths d mm	Lock Position La mm
M6	1	3.9	14	1.2×11.3	1.6×12	3.5	6
M6	1	5.4	16	1.2×11.3	1.6×12	4	7.5
M6	1	5.4	20	1.2×11.3	1.6×12	4	10
M6	1	5.4	25	1.2×11.3	1.6×12	4	16.5
M6	1	5.4	40	1.2×11.3	1.6×12	4	31
M6	1	3.9	14	1.2×11.3	1.6×12	3.5	6
M6	1	3.9	14	1.2×11.3	1.6×12	3.5	6
M6	1	2.6	14	None	1.6×12	4	5
M8	1.25	6.5	20	1.6×14.3	1.6×16	4	10
M8	1.25	4.7	16	1.6×14.3	1.6×16	4	6
M8	1.25	6.5	25	1.6×14.3	1.6×16	4	15
M8	1.25	6.5	30	1.6×14.3	1.6×16	4	20
M8	1.25	3	14	None	1.6×16	4	5
M8	1.25	3	18.5	None	1.6×16	6.5	6
M8	1.25	3	24	None	1.6×16	10	7
M10	1.25	5.9	25	1.8×17.4	2×20	5	10
M10	1.25	7.2	30	1.8×17.4	2×20	5	17.5

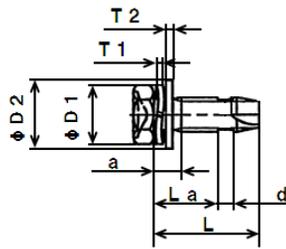
< Connecting a ring terminal >

Good example



Poor example





Refer to the above table the dimensions of each symbol.

### 2.10.3. Wire size and fuse volume

Improper use of wires may result in fire or equipment breakdown.

If additional wires are required, select appropriate wires according to the load current to be added, the circuit length, and the harness route.

Use electric wires for automobiles (JIS-certified wires such as AV, AVS, AVX, AEX, or equivalent).

When using an AEX wire, parts used with it such as protection tube, corrugated tube, vinyl tape, etc. should also be heat-protected.

When using a wire whose size is 5sq or larger, solder the pressured part inside the wire terminal to prevent it from heating.

#### Permissible temperature and current of electric wire

Wire type	Allowable temperature	Allowable current (ampere)							Remarks
		0.5sq	0.85sq	1.25sq	2sq	3sq	5sq	8sq	
AV	80°	9A	11A	14A	20A	27A	36A	47A	Standard
AVS	80°	8A	11A	14A	19A	26A	35A	No spec.	Standard
AVX	90°	8A	10A	13A	17A	24A	33A	43A	for high temp.
AEX	110°	7A	9A	12A	17A	23A	32A	42A	for high temp.

Note: “Allowable temperature” means “Ambient temperature” + “Self-heating temperature”.

“Allowable current” indicates the current that is allowed to flow into a wire when the “Self-heating temperature” is approximately 20°C.

#### • Fuse volume, wire size and circuit length

- Fuse value on the power source side determines usable wire size and circuit length.
- Select appropriate wire size in consideration of the fuse value on the power source side and the wire route. If a wire is connected to an equipment that produces relative movement, the size of the wire should be 0.85sq or larger so as to prevent wire breaking.

#### Permissible current, wire size and circuit length of fuse

Fuse			Wire size and circuit length						
Type	Rating capacity	Allowable continuous current	0.5sq	0.85sq	1.25sq	2sq	3sq	5sq	8sq
Blade fuse	5A	3.5A	Max.25m	Max.40m	–	–	–	–	–
	7.5A	5.2A	Max.15m	Max.25m	Max.40m	–	–	–	–
	10A	7.0A	Max.10m	Max.20m	Max.30m	–	–	–	–
	15A	10.5A	Max.5m	Max.10m	Max.15m	Max.30m	Max.45m	–	–
	20A	14.0A	×	Max.5m	Max.10m	Max.20m	Max.30m	–	–
	25A	17.5A	×	×	Max.10m	Max.15m	Max.25m	Max.40m	–
SBF (Slow-blow fuse)	30A	15.0A	×	×	×	Max.10m	Max.15m	Max.30m	Max.45m
	40A	20.0A	×	×	×	×	Max.10m	Max.20m	Max.30m
	50A	25.0A	×	×	×	×	×	Max.15m	Max.25m
	60A	30.0A	×	×	×	×	×	Max.15m	Max.20m
	80A	40.0A	×	×	×	×	×	×	Max.15m
	100A	50.0A	×	×	×	×	×	×	Max.10m

Legend: ×: Cannot be used      –: 50m at maximum

### 2.10.4. Lengthening or shortening an electric wire or a cable

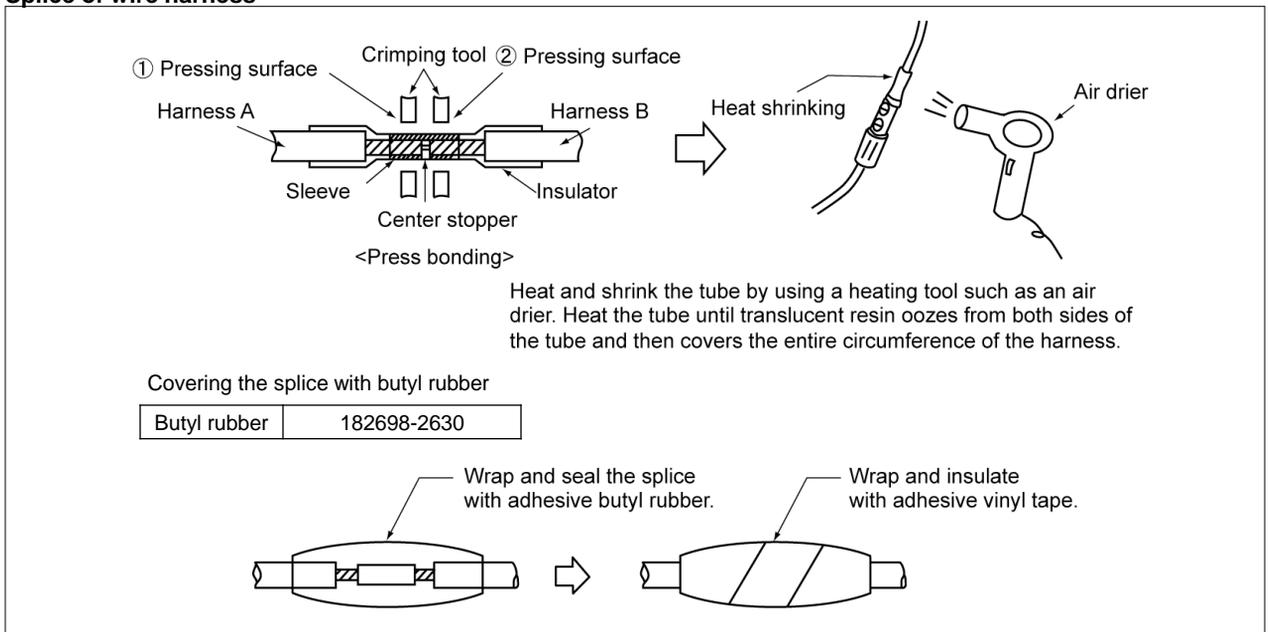
- Do not change the length of a battery cable by splicing a different cable to it or cutting it.
- When lengthening a wire, splice a new wire with the same section area and color as those of the wire to be lengthened.
- When splicing a wire to an end of another wire, for secure connection, twist them together and then solder the area or clamp with a crimping terminal by using a specified crimping tool. After that, to insulate the area, remove burrs and wrap with an adhesive lined heat shrink tubing. As for the area where spliced wires may be subject to vibration, splicing with crimping terminals is recommended rather than soldering because solder may seep into the inside of the wires, making them harden and lose flexibility, resulting in separation.
- Do not splice the wires by only twisting them together without soldering.
- When splicing wires outside a cab, for example on the chassis frame, apply appropriate coating (e.g. Epoxy resin coating) on the splice in order for waterproofing and insulation.

#### Example of waterproofing and insulation (joint terminal)

Joint terminal	Color	Wire size
897169-4730	Yellow	0.3 to 0.5
897169-4740	Red	0.75 to 1.25
898169-4750	Blue	2.0

Note: Use specialized tool (587410-6470) for crimping tool.

#### Splice of wire harness

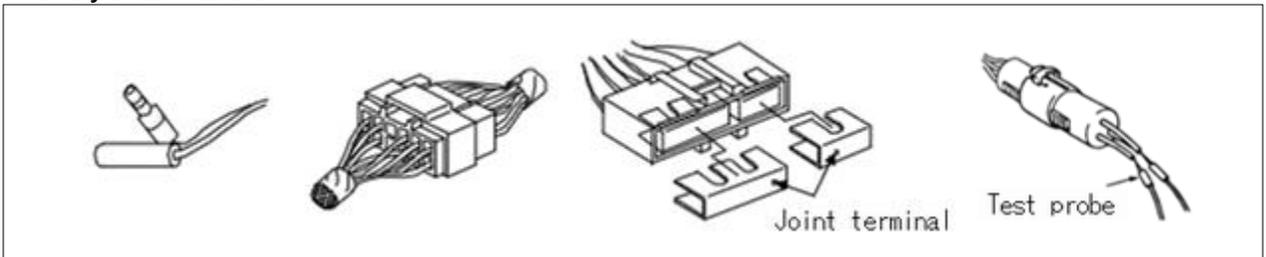


- When splicing wires outside a cab, for example on the chassis frame, apply appropriate coating (e.g. Epoxy resin coating) on the splice in order for waterproofing and insulation.
- When shortening a wire or a harness, do not cut it but tie its redundancy with a vinyl tape, and then bind it to the factory-installed harnesses or something else.

### 2.10.5. Connectors

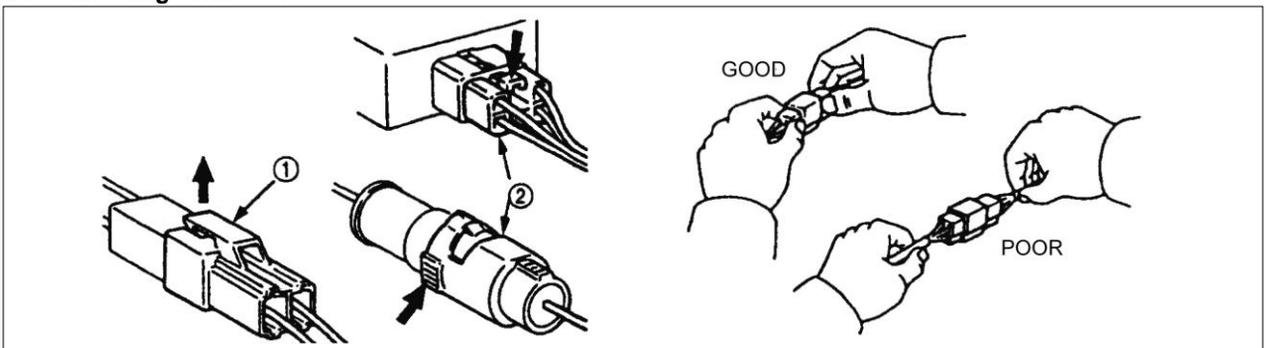
- Use water-proof connectors for the harnesses placed outside a cab.
- Do not unnecessarily disconnect these waterproof connectors, otherwise continuity failure will occur.
- When disconnecting waterproof connectors, to prevent foreign substances such as water and metal chips from getting into the joint, or to protect the sealed part from being damaged, cover the disconnected connectors with vinyl bags or something. If water or any foreign substance get into the joint, dry up the joint or remove such foreign substance before connecting the connectors.

#### A variety of connectors

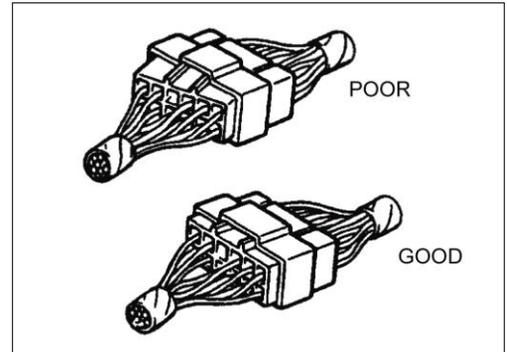


- As for the area where connectors may be subjected to vibration, use connectors with a detach-safe lock.
- When using a “GIBOSHI” type plug, be sure that its socket connector (female) with insulation cover is connected to the wire from the power source, to prevent it from shorting when the plug comes off and contacts with vehicle body.
- Disconnecting connectors
  - Certain types of connectors have a tang lock that prevents these connectors from coming off when vehicle is running.
  - Some tang locks can be released by pulling (①) while the others by pushing in (②). Check which type of tang lock the connectors have.
  - To prevent harnesses from coming off from the connector or breaking, when disconnecting connectors, do not pull the harnesses but securely hold both connectors (male and female), release the tang lock, and then separate the connectors with care.

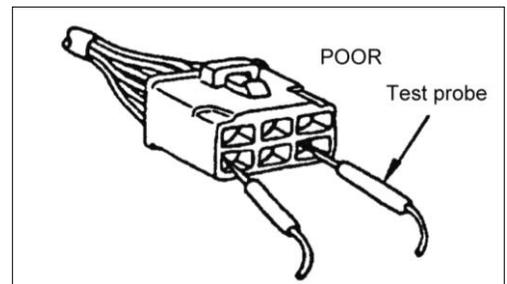
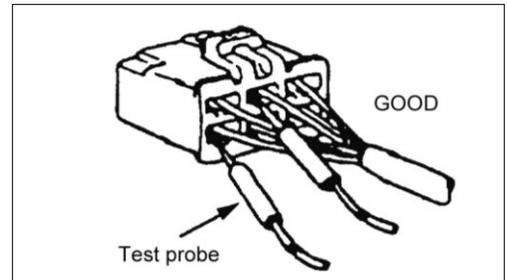
#### Disconnecting connectors



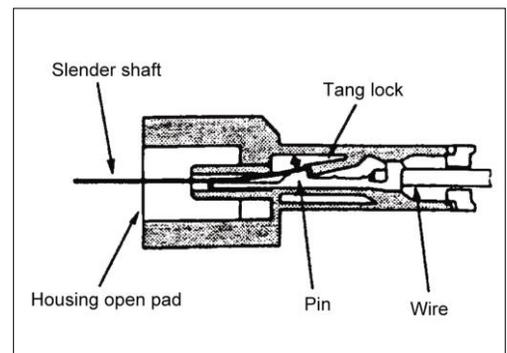
- Connecting connectors
  - Securely hold both connectors (male and female) and check whether the connector pins and the cavities match. Also, check whether the connectors are aligned.
  - Securely hold the connectors and carefully engage them by pushing until the connectors click.



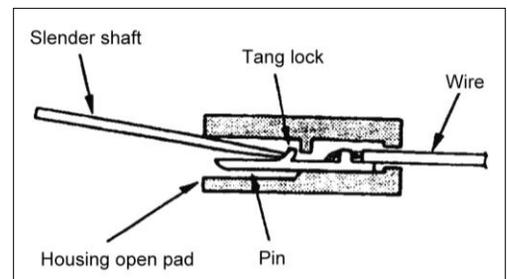
- Checking connectors
  - Use a circuit tester to check the continuity of a connector. Insert test probes of the circuit tester from the side where wires are to be connected.
  - When doing a continuity check, do not insert the test probes into the cavities of the connector. This will deform the connector terminal and cause continuity failure.
  - After check confirm there is no damage to the lead wire and the connector, with the lead stick.



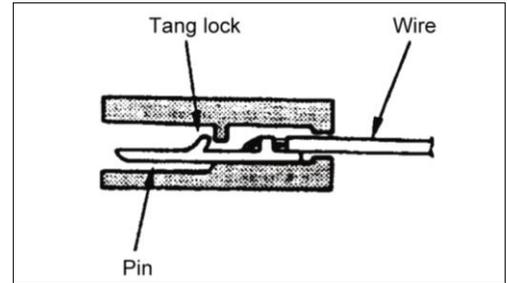
- Removing a connector pin (Built-in tang lock)
  - Insert a slender shaft into the opening of the connector housing.
  - Push up the tang lock in the direction of an arrow in the figure. Pull out the wire and the connector pin from connector.



- Pin-type tang lock
  - Insert a slender shaft into the opening of the connector housing.
  - Push the tang lock toward the wire so as to make it flat. Pull out the wire and the connector pin from the connector.



- Inserting a connector pin
  - Check if the tang lock is upright.
  - Insert a connector pin into the connector cavity for wires. Push the pin until the tang lock is securely engaged.
  - Gently pull the wire to check if the pin is securely in place.
- Using a “GIBOSHI” type plug



When using a “GIBOSHI” type plug, be sure that its socket connector (female) with insulation cover is connected to the wire from the power source and its plug connector (male) to the wire from the electric load. This prevents disconnected “GIBOSHI” type plug from shorting when it comes off and contacts with vehicle body.

### 2.10.6. Harness routing

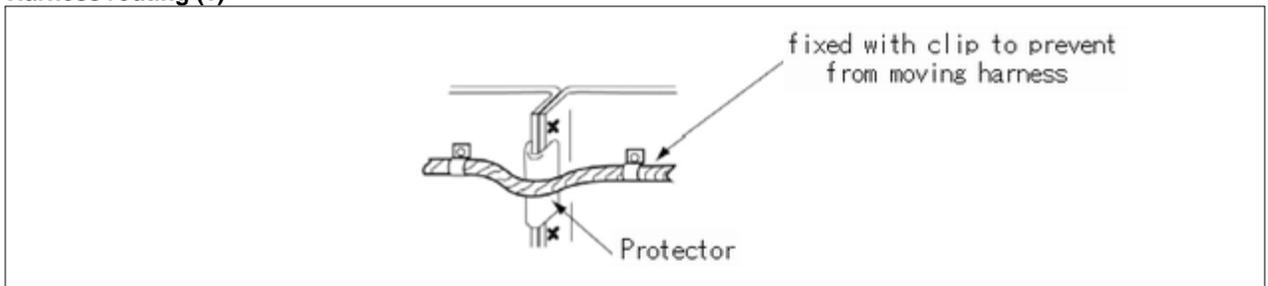
- When laying additional wires, be sure that they will not restrict inspection or maintenance of the vehicle components.
- To increase reliability of wires, protect all add-on wires and harnesses with corrugated tubes or PVC tubes.
- When handling the wires, do not pull them hard.
- Add-on harnesses should be laid along and secured on rear body members or on chassis frame. Do not pass them in the air.
- Securely fix the harnesses in place so that they will not contact with moving parts or sharp objects.

#### Distance between harness and object

Object	Required distance between harness and object
Moving part	10mm (0.4in.) at minimum
Sharp object	10mm (0.4in.) at minimum

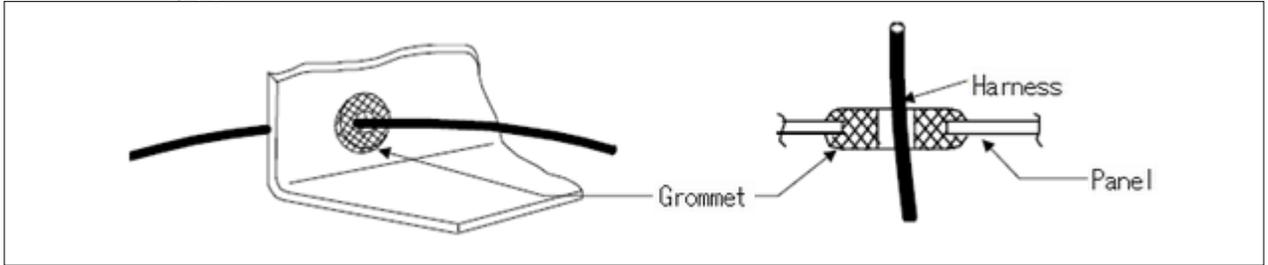
- If there is possibility that a harness contacts with a sharp edge of a metal part, secure the harness somewhere distant from the sharp edge by using clips, or cover the sharp edge with a protector, otherwise vibration will damage the harness coating.

#### Harness routing (1)



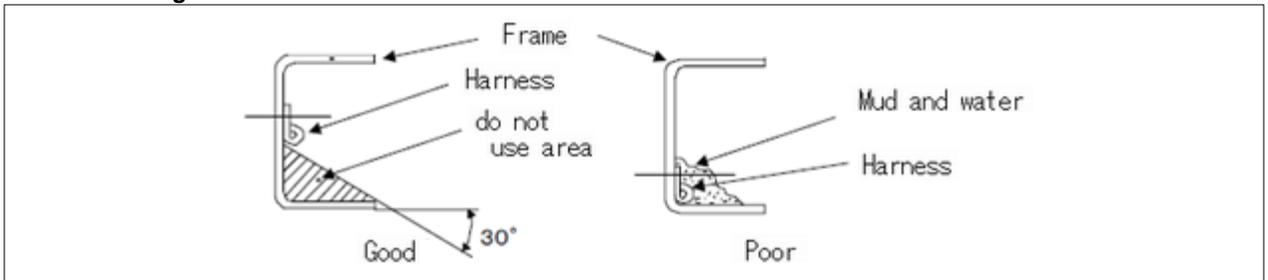
- To prevent harness coating from being damaged, attach grommets to the through holes in steel plates.

**Harness routing (2)**



- Do not put any harness on top, underside or outer side of chassis frame members because someone may step on it or flying gravels may damage it.
- Do not put any harness in the lower part of the inner side of chassis frame members because harness may be damaged or freeze due to mud, snow, water, etc. that may be built up in this area.

**Harness routing of chassis frame members**



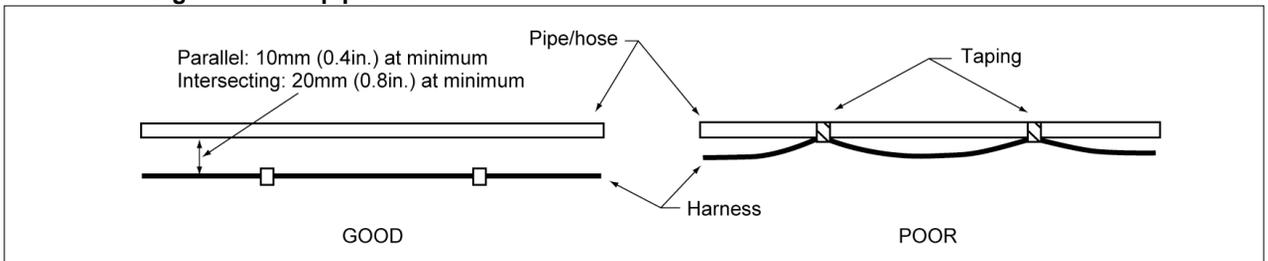
- If there are factory-installed harnesses nearby, secure add-on harness on them with tapes or nylon clips. Do not tape wrap an add-on harness directly on a metal pipe or a rubber hose including the brake pipe and the fuel pipe. Provide sufficient clearance between such pipe, hose and a harness.

**Distance between harness and pipe/hose**

Positional relation	Clearance between harness and pipe/hose
Parallel	10mm (0.4in.) at minimum
Intersecting	20mm (0.8in.) at minimum

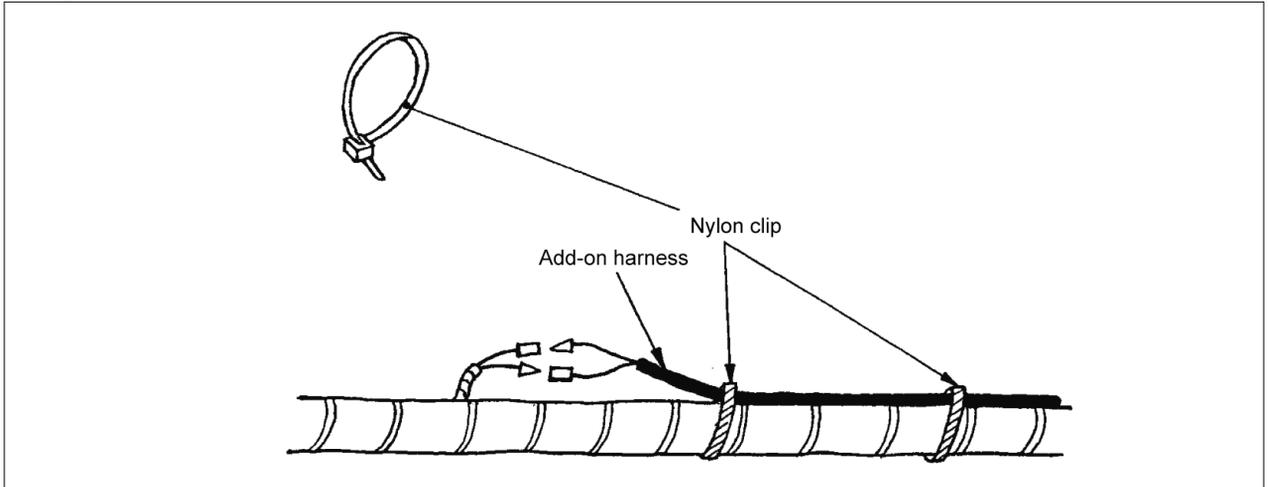
- When the Corrugated tube and the air tube vibrate while interfering, the air tube will damage. Arrange the tube maintaining enough space.

**Harness routing of near the pipe/hose**



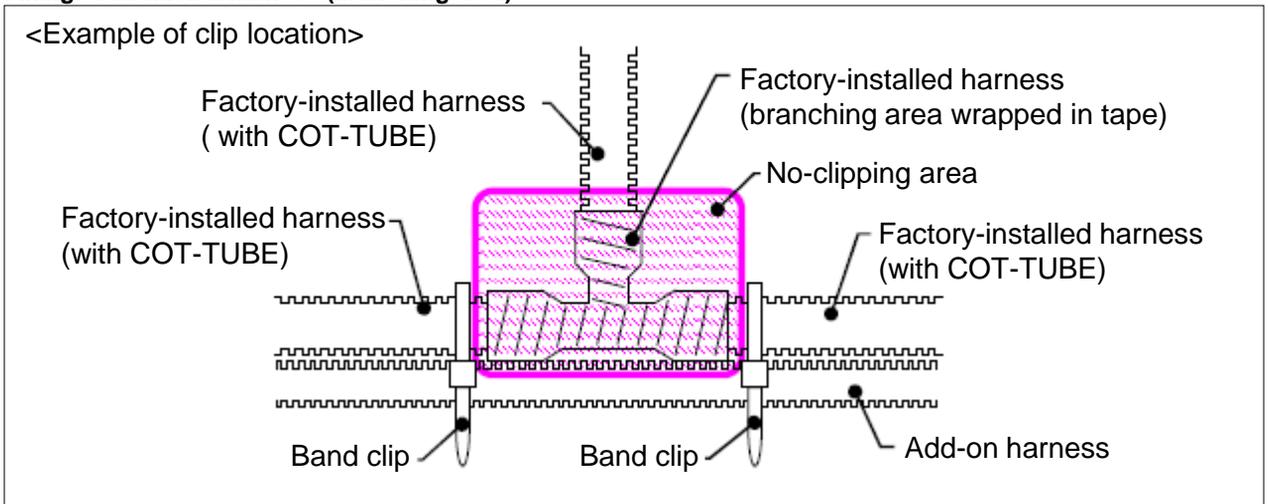
- Note the following when fixing together to factory-installed harness with band clips.
  - Put the additional harness in the vinyl chloride tube or the Corrugate tube, use tape or nylon clip to fix along the wiring for the vehicle.

**Fixing of additional harness**



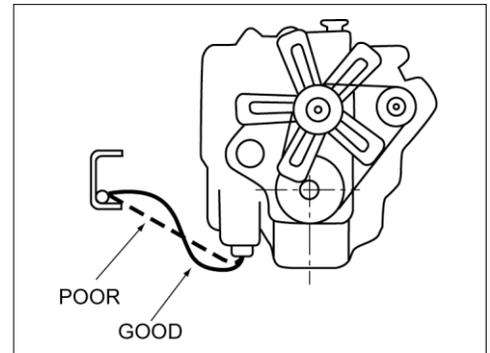
- If an add-on harness is to be laid along the factory-installed harnesses, it should be firmly secured so as to avoid flip-flop movement induced by vibration of engine and vehicle, protecting factory-installed harnesses from being damaged. If clips are to be secured at a place subject to water or mud (e.g. somewhere outside the vehicle), the portion of the factory-installed harness which is protected by the materials such as COT-TUBE, PVC.TUBE, hard tube, and protector, should be chosen to do so.

**Fixing of additional harness (branching area)**



• Moving harness

- When connecting an additional harness to any equipment that produces relative vibration against chassis frame, such as engine and transmission, reasonably slacken the harness and lay it along the factory-installed harnesses so as to absorb the relative vibration. Be sure that the add-on harness does not contact with adjacent parts or equipments.
- As for the factory-installed harnesses connected to the equipments that produce relative vibration against chassis frame, such as engine and transmission, do not change the way how they are secured, the clipping points, and the sagging volume.



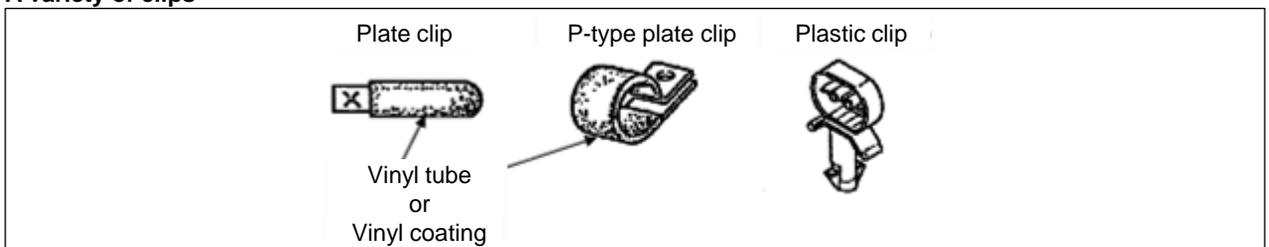
• Heat protection

Harnesses must sufficiently be distant from heat source (e.g. Exhaust pipe). Be sure that the temperature of the harnesses does not exceed their allowable temperature limit (80° C in principle). There may be for an individual value provided according to the auto vehicle exhaust emission device kind . Refer to " II SPECIFIC INFORMATION".

• Clip

- Use resin clips, or vinyl- or rubber-coated clips whose base material is rust-proofed. Use clips and connectors manufactured for automobiles.

A variety of clips



- Clip distance are as follows:

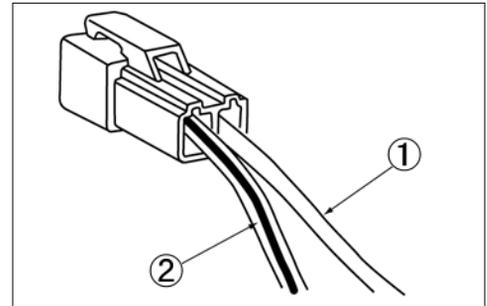
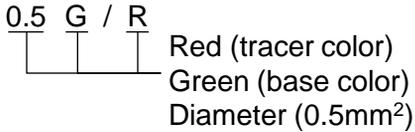
Distance of harness clip

Harness diameter	Clip distance
5mm or less	300mm at max.
5mm to 10mm	400mm aprox.
10mm to 20mm	500mm aprox.

- Adhesive clips should be used only as supplemental parts. (Do not use at places with relative displacement or vibration)
- Especially, in such a place like the engine room where ambient temperature is high, use rubber- or vinyl-coated plate clips or band clips. Do not use non-heat-proof vinyl tape or adhesive clips to bind add-on harnesses to the factory-installed harnesses because they will come unstuck due to heat aging.

### 2.10.7. Wire color

Every wire is covered with insulation material with specific color code. The main wires used for systems are in solid color ① while the sub wires are with electric tracers ②.



#### Color code of wire harness

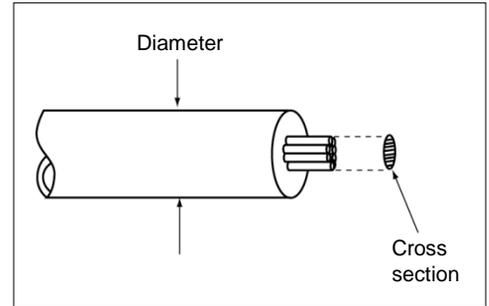
Color code	Color	Color code	Color	Color code	Color
B	Black	L	Blue	P	Pink
W	White	O	Orange	LB	Light Blue
R	Red	BR	Brown	V	Violet
G	Green	LG	Light Green		
Y	Yellow	GR	Grey		

- Use the JIS-certified electric wires for automobiles, or equivalent
  - For common area: AV (Low-voltage wire for automobile) or AVS (Thin-walled low-voltage wire for automobile)
  - For the area that needs heat protection: AVX (Cross-linked vinyl insulated heat resistant low-voltage wire for automobile) or AEX (Cross-linked polyethylene insulated heat resistant low-voltage wire for automobile)
- Application of each wire is as follows:

#### Meaning of wire color

Code	B	W	R	G	Y	L	Br	Lg
Wire color	Black	White	Red	Green	Yellow	Blue	Brown	Light green
Application	Starting, Grounding	Charger	Light	Signal	Meter	Wiper	Auxiliary	Others

- The size of each wire to be used in a circuit is determined by the current amount (ampere) that will flow into the wire, the circuit length, the allowable voltage drop amount, etc.
- The following table shows sizes, allowable temperature and allowable current of AV, AVS, AVX and AEX wires. AWG (American Wire Gauge) also specifies wire sizes and allowable current. The nominal size of a wire means its section area.



**Wire size**

Wire size (※)	Cross sectional area (mm <sup>2</sup> )	External diameter (mm)	Allowable current (A)
0.3	0.372	1.8	9
0.5	0.563	2.0	12
0.85	0.885	2.2	16
1.25	1.287	2.5	21
2.0	2.091	2.9	28
3.0	3.296	3.6	37.5
5.0	5.227	4.4	53
8.0	7.952	5.5	67
15.0	13.36	7.0	75
20.0	20.61	8.2	97

Note: ※ Rough sectional area

## 2.11. ENGINE OUTPUT CHARACTERISTIC (PTO WORK OUTPUT) AND THE CONTROL

There are 2 types of mode in the accelerator throttle position of electronic controlled engine and engine output. Running Characteristic (driving mode) and Working Characteristic (work mode).

### 2.11.1. Conditions for switching working modes

When the instruction signal greater than idling is output from the external engine control after satisfying of the following conditions, it is driven in the working mode.

- External engine control: Connected
- Status of vehicle: Stopped
- Engine speed: Higher than the idle speed.
- Shift lever position: Neutral
- Acceleration pedal position: Released
- External engine control lever position: IDLE

### 2.11.2. Conditions for ending working mode (return to driving mode)

- Shift lever position: Non-neutral
- Detecting the vehicle speed signal
- Instruction signal : Acceleration > External engine control

Amplification of mode switching

When stopping the engine while using an external control, to drive in the work mode after re-starting, the switch condition to the work mode should be satisfied again.

Instruction signal : Acceleration < External engine control

Driven in the work mode.

### 2.11.3. Precautions

- After completing any work with use of PTO, be sure to return the external engine control lever to IDLE. Keep this in mind because leaving the external engine control lever opened may cause unexpected increase in the engine speed.
- It is prohibited to input an electric signal directly to the external engine control signal terminal. Use the specified external engine control and connected harness.
- Do not perform any modification which may influence control, e.g. adding Interlock mechanism.

Confirm engine control by "II-2. PRINCIPAL SPECIFICATIONS OF VARIOUS VEHICLE MODELS" of the target vehicle type.

Engine and PTO work output characteristic diagram, external engine control, and connected harness are different according to the vehicle type and the engine model. Confirm "II-6. PTO AND GOVERNOR CHARACTERISTICS CURVES" of the targeted vehicle type.

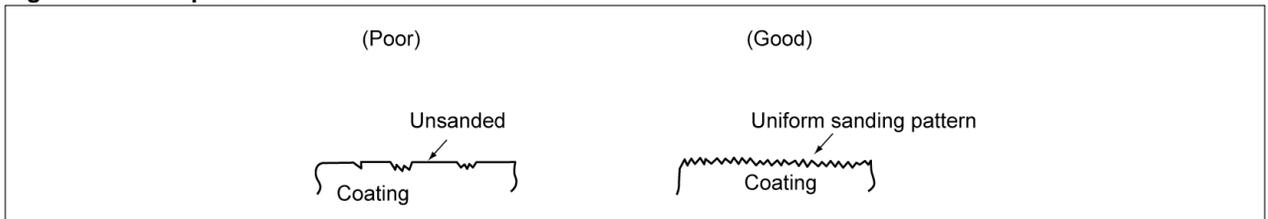
## 2.12. PRECAUTIONS FOR PAINTING

There are cab and the chassis component which marketability is dropped due to the heat from painting and drying, and likely to become the cause of a serious accident.

### 2.12.1. Cab painting

- Precautions before and after painting
  - When cleaning a cab, do not use thinner and gasoline but IPA (isopropyl alcohol).
  - To enhance coating adhesion, thoroughly sand undercoat surface (See Fig.1). Be sure that the sanding pattern is uniform, and the sealant at the joints of steel plates must not be removed.

Fig.1 Good and poor sanded surface conditions



### 2.12.2. Paint

- Urethane paint is recommended for its high luster and distinctness-of-image gloss, and it allows low-temperature baking.
- Inquire ISUZU dealerships for cab color.

### 2.12.3. Components that should be removed before painting

- Remove the following components before painting to secure painting quality. Be sure to re-attach them after painting.
- For the components installed with the bolt with the adhesive such as assist grip, do not reuse the bolts because it causes slacking.
  - Assist grip on front panel
  - Mirrors (except for Stay)
  - Air intake duct
  - Fender step covers
  - Fender rubber
  - Side panel covers
  - Wiper
  - Nozzle
  - Turn signal lamp (side)
- When re-attaching components after completion of painting, follow the instructions below.
  - Re-attach the components after the paint completely hardens.
  - For the scratches that can be made during unfastening and fastening screws, bolts, or nuts, touch them up with a brush soaked in clear lacquer, etc.
  - When re-attaching removed mirror, be sure to tighten the bolt with appropriate torque.

### 2.12.4. Rust prevention with Ziebart's

The United States' Ziebart's rust-proofing agent is globally popular in protection from road snow melting agent, salty wind, etc. Apply this Ziebart's rust-proofing agent on cab under floor area, inner sides of fenders, outer side of a front panel, lower parts of doors, and joints of panels.

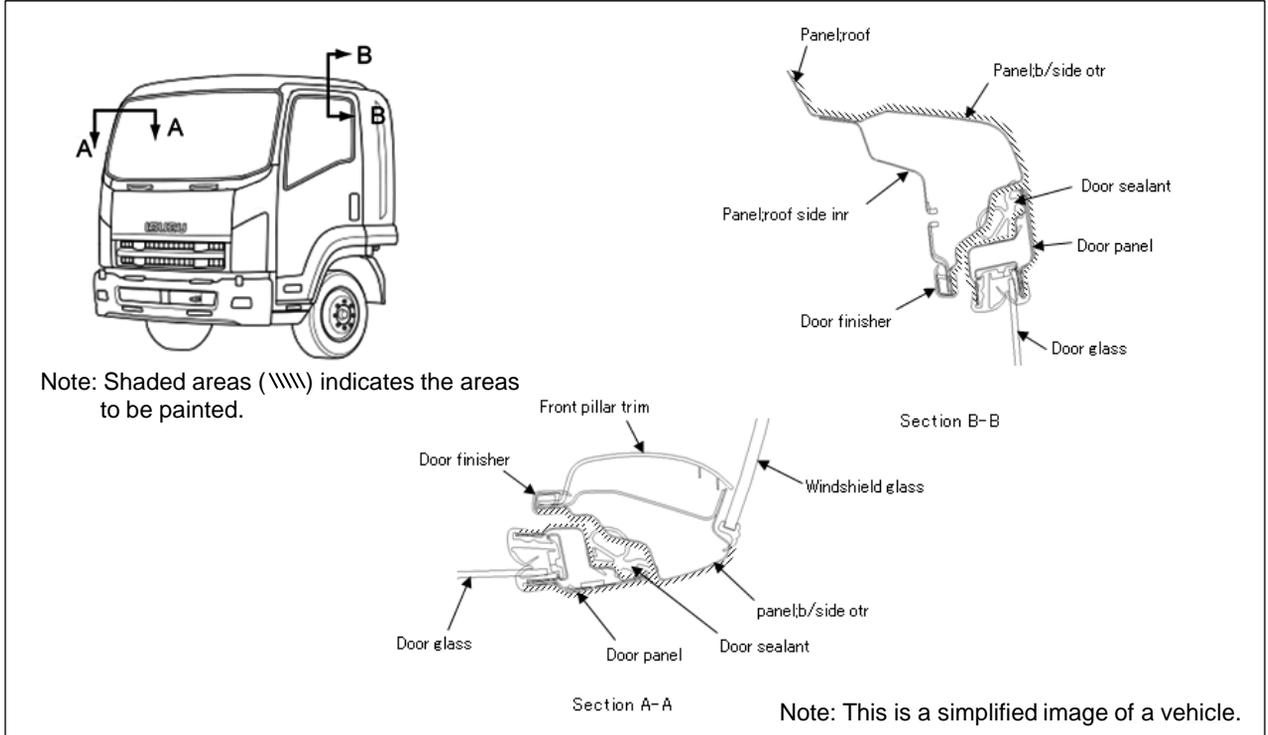
Follow the instructions below.

- Before applying the agent, cover the drain holes in the doors and in other areas with tape in order to prevent them from being plugged up with the agent. Also cover the air bleeding holes in air valves, etc. with tape to protect them from blockage.
- After completion of the agent application, remove the tapes and check the weep holes for blockage. Since a cab is made from thin steel plates, if the drain holes are plugged up by something such as rust-proofing agent, water or salty water may consequently corrode the panels, in the worst case making holes in them or weakening the strength of the members that are assuring the strength of the cab.

### 2.12.5. Paint boundary

- The range shown in the figure below is recommended as a range of the painting boundary.
- Shaded areas indicate the areas to be painted.
- Painting boundary may differ according to vehicle model. Refer to "II SPECIFIC INFORMATION" of target vehicle.

#### Paint boundary



### 2.12.6. Paint drying

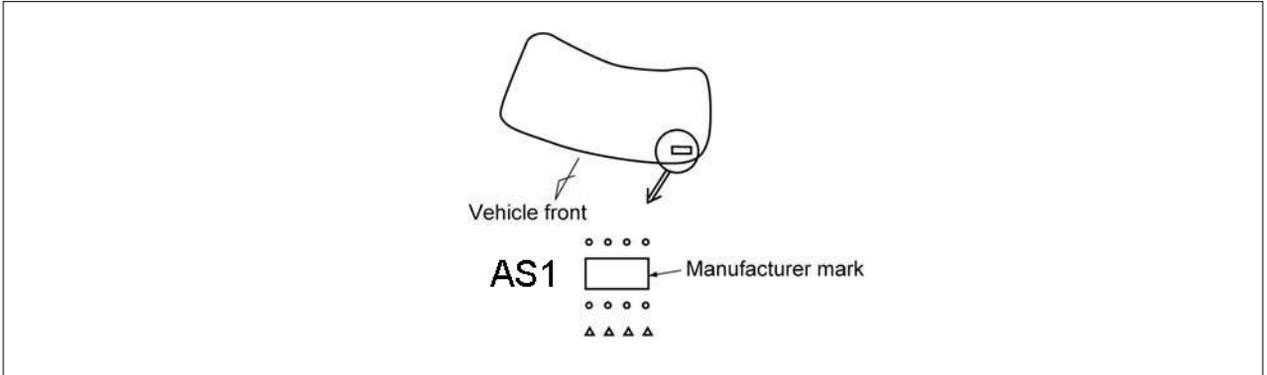
- When conducting high temperature forced drying, be sure that the atmospheric temperature of painted surface does not exceed 80°C.
  - Drying temperature over 80°C may deform rubber and resin parts, and result in separation of adhesive-bonded joints.
- Remove bed mat.
- If the air cylinder for cab suspension is equipped, protect them from high temperature with heat insulation sheet, blanket, etc.
- If the drying temperature inevitably exceeds 80°C, follow the instructions below.
  - Remove components or protect them from high temperature with heat insulation sheet, blanket, etc.
  - Remove all the control units.
- Refer to "II SPECIFIC INFORMATION" for limit temperatures of the main resin components on cab.

### 2.12.7. Laminated glass

A laminated glass consists of two thermal-bonded glasses between which a polyvinyl butyral film is sandwiched. In hot and humid conditions during paint drying, follow the instructions below. Failure to follow these instructions may result in problems such as peeling of the polyvinyl butyral film and bubbles between the glasses.

- When conducting forced infrared drying, work limit within 30 minutes at temperature no higher than 120°C.
- If the temperature during such forced drying inevitably exceeds 120°C, before starting the forced drying, cover the glass to prevent the temperature of the glass surface from exceeding 120°C, or remove it.
- Laminated glasses can be identified by “LP”, “LS”, “L”, “AS1” or “LAMINATE” printed at the lower left corner. Partially tempered glasses have a “Z” print.

#### Location of the print on a laminated glass



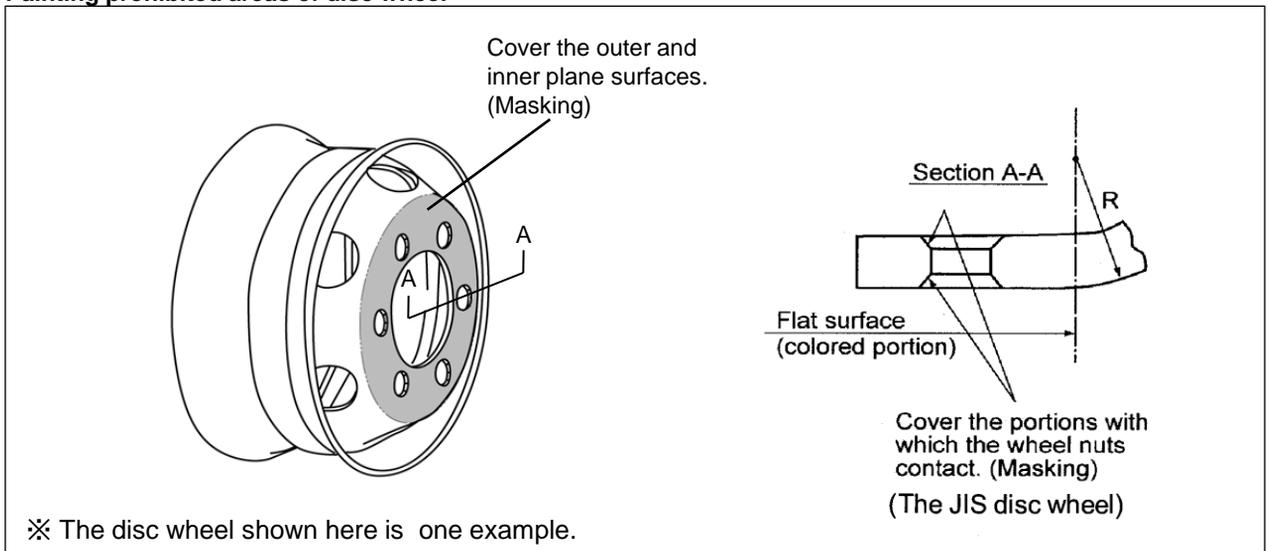
### 2.12.8. Painting-prohibited components or equipments

Following describes the common items that doesn't depend on the vehicle type and destination. There may be other prohibited parts and devices other than the following depending on the destination or specification, confirm " II SPECIFIC INFORMATION" of the targeted vehicle type.

- Disc wheel

Do not apply additional painting on the contact faces of a mating disc wheel and a hub, and the portions with which wheel nuts contact because thickening the painting possibly slack or damage wheel nuts.

#### Painting prohibited areas of disc wheel



- Components related to braking system such as brake hose and brake booster
- Rubber hose and vinyl hose
- Electric wiring and connectors
- Components and equipments related to suspension, steering, such as these made of rubber or plastic. Especially painting on the air bellows is strictly prohibited.
- Cab power tilt related components
- Wiper blade and washer nozzle
- Reserve tanks for cooling water and washer tank
- Caution plates and number plates
- Rubber and plastic components around window
- Lattice part in radiator grill (black part)

## 2.13. EMBLEMS

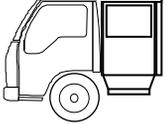
### 2.13.1. Precautions before affixing emblems

- If there is any extraneous matter on a bonding surface(cab, panel) such as water, oil and dust, emblems will not firmly stick to the surface. If there is any, wipe them off completely with a clean cloth soaked in IPA (isopropyl alcohol). Remove wax if the wax has adhered.
- The ideal ambient temperature for adhesion is 30°C to 50°C. Make the temperature of the bonding surface fall within this temperature range as much as possible.
- Follow the below instructions when using an organic solvent.
  - Work in an airy place.
  - Fire strictly prohibited.
  - Be careful do not get into eyes.
  - Stop working immediately when the physical condition worsens.
  - Follow instructions of the organic solvent used in detail.

### 2.13.2 Precautions at affixing emblems

- As for affixing emblem, set the alignment that came with a chassis on the front lid of a cab, and then stick each letter sticker by using cut-outs of the alignment as a guide.
- The sticky side of emblem requires pressurization for bonding. To firmly stick the stickers, apply sufficient and uniform pressure on the emblem. Use of a roller is recommended as they provide uniform pressurization. The pressure of the roller should be no less than 5kg.
- Exposing the sticky side of emblem to the air for long hours weakens their adhesivity due to adhesion of dust, etc. To protect the sticky side, do not remove a release-paper until immediately before use.
- Since this sticky-side has very strong adhesive property, once emblems are affixed, peeling them off is not easy. Before sticking them, carefully check sticking position.

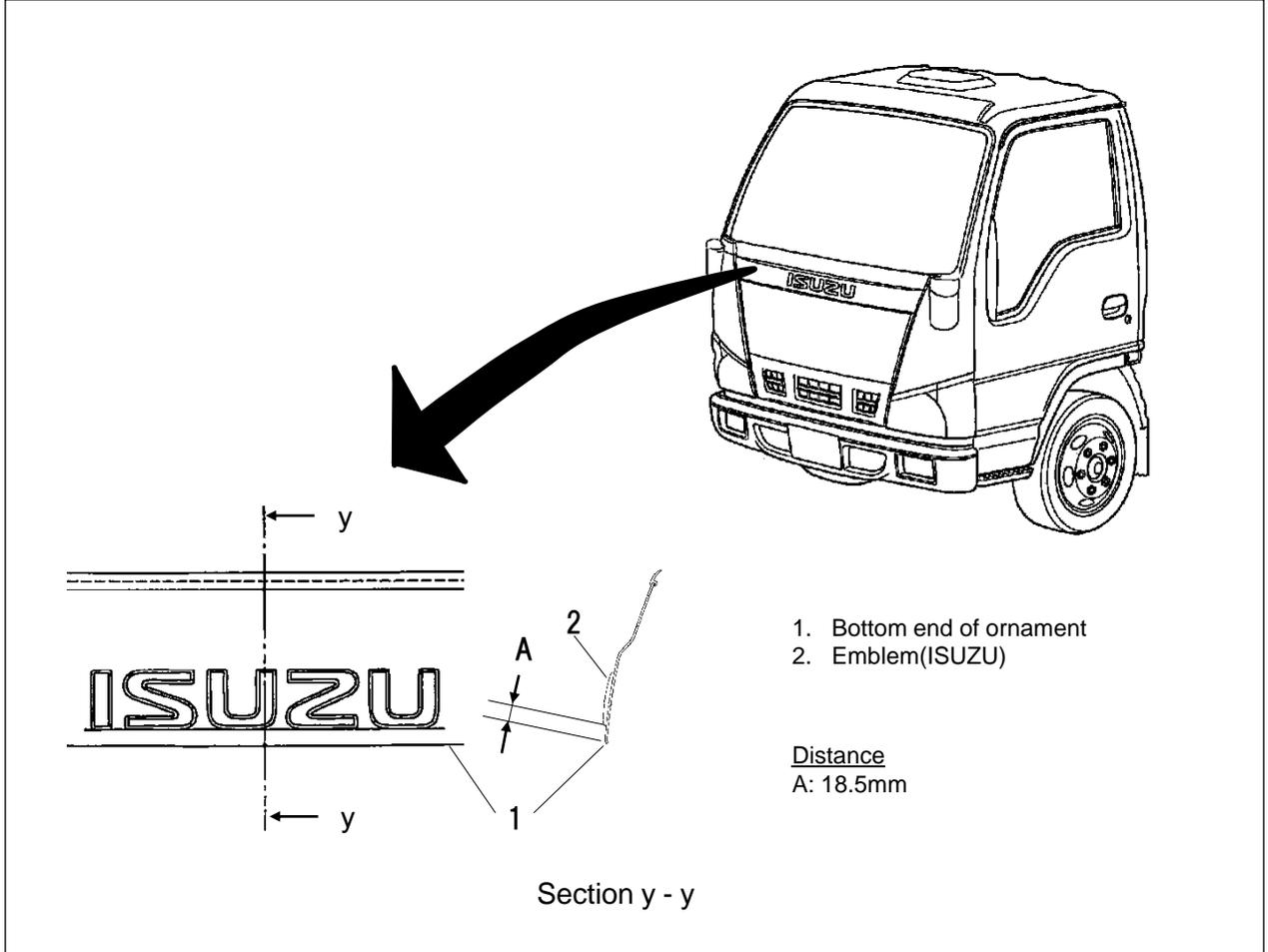
List of cab type

VEHICLE MODEL	CAB TYPE	CAB * WIDTH (mm)	SINGLE CAB		CREW CAB
			Bed less	Sleeper	
N-series	NKR/QKR	1,695			
	1X	1,695			
	2X	1,770			
	3X	1,995			
F-series	4X	2,120			
	5X	2,320			
FX/GX/FY-series		2,320			
C&E-series		2,420			

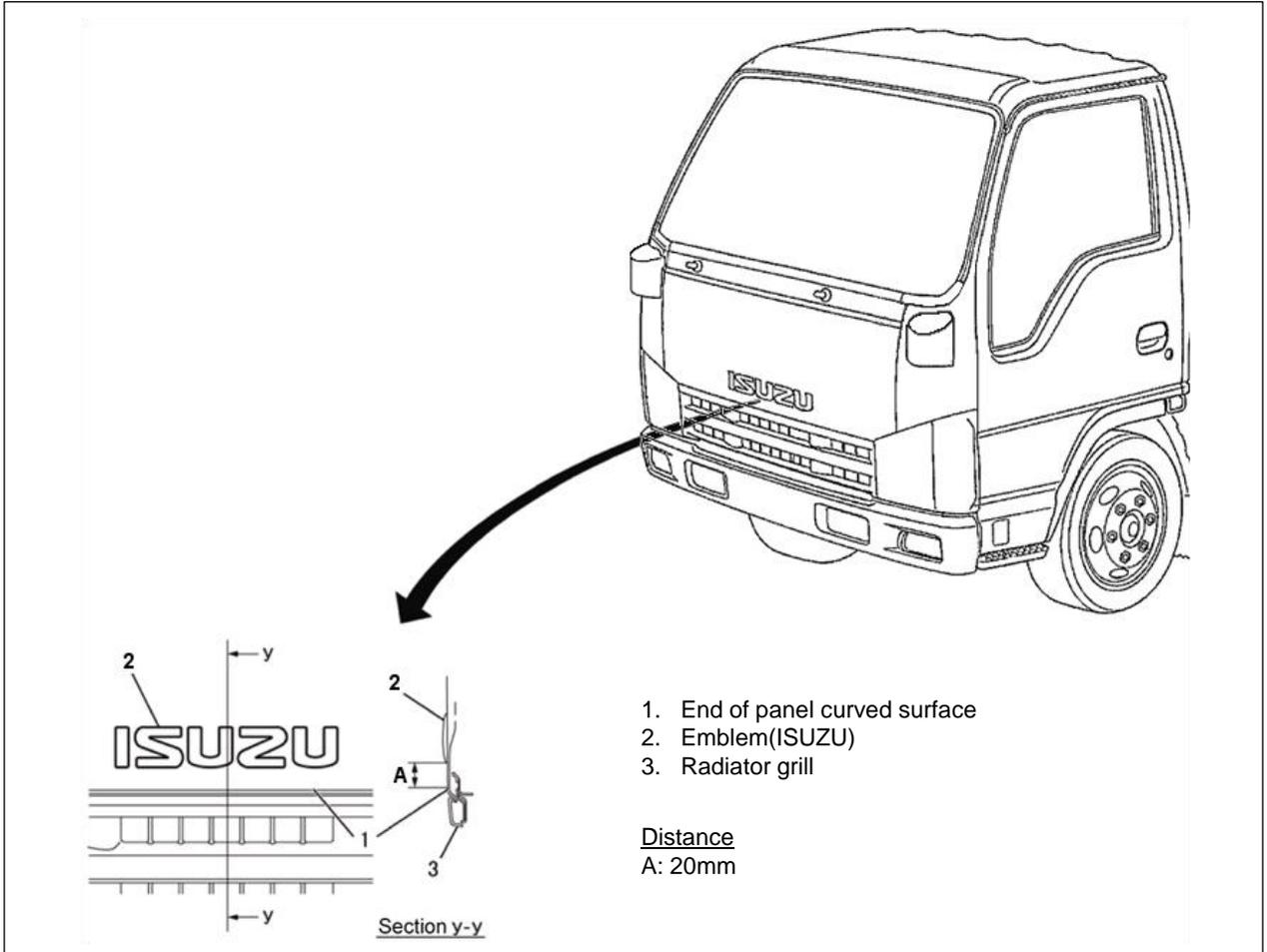
\*: CAB WIDTH shows most outer width of cab panel, does not include fender or turn signal lamp. Confirm " II SPECIFIC INFORMATION" for overall width of the vehicle.

Next figures show emblem location for various types of cab.

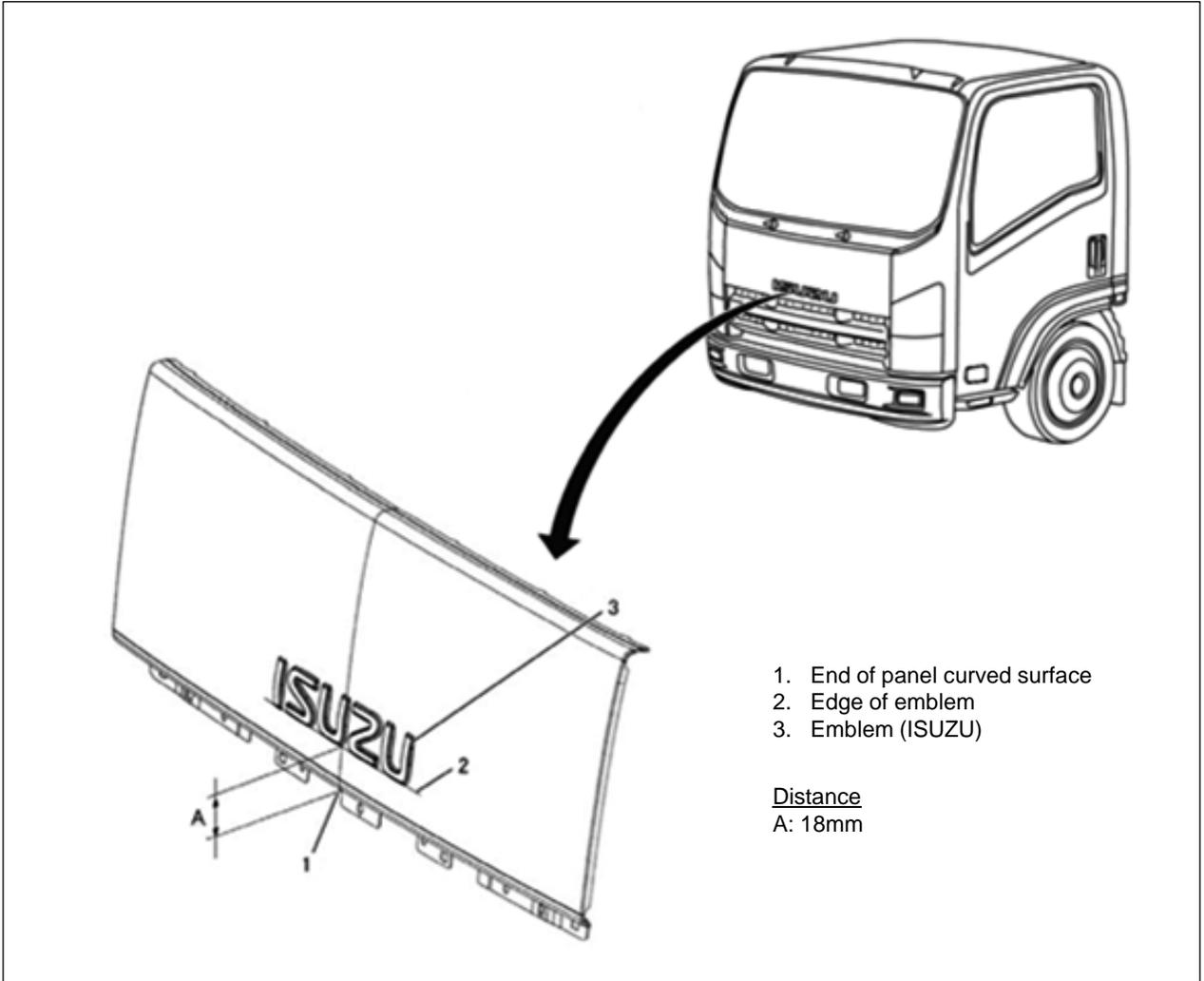
Light duty (NKR series)



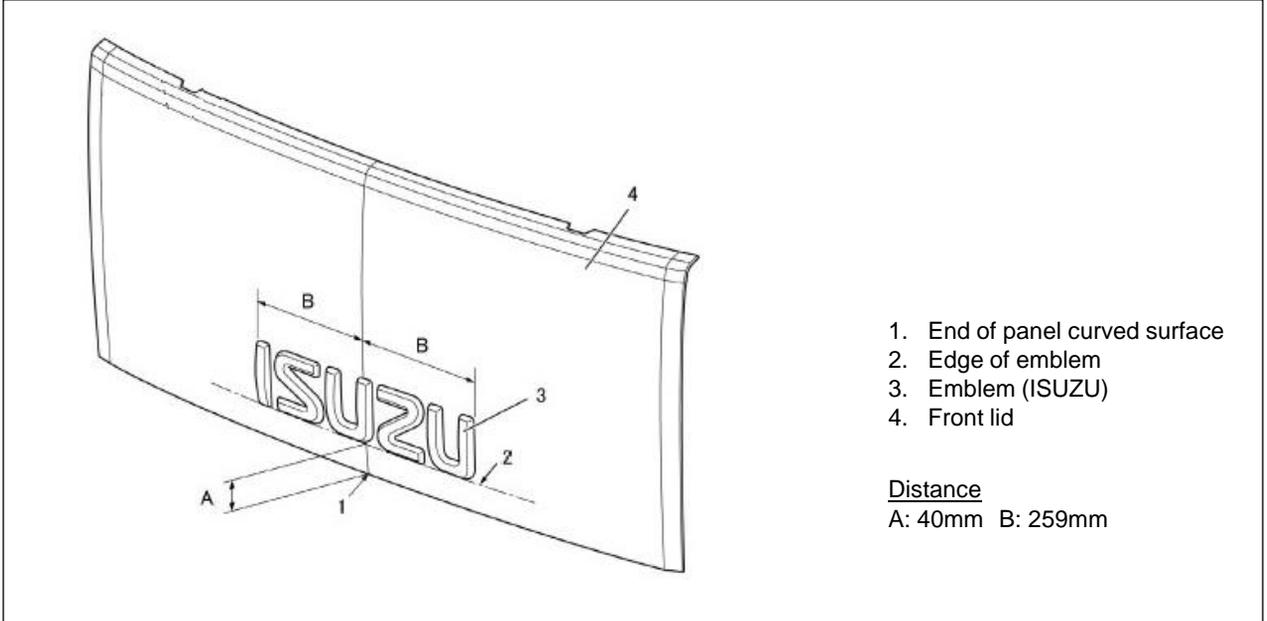
Light duty (1X cab)



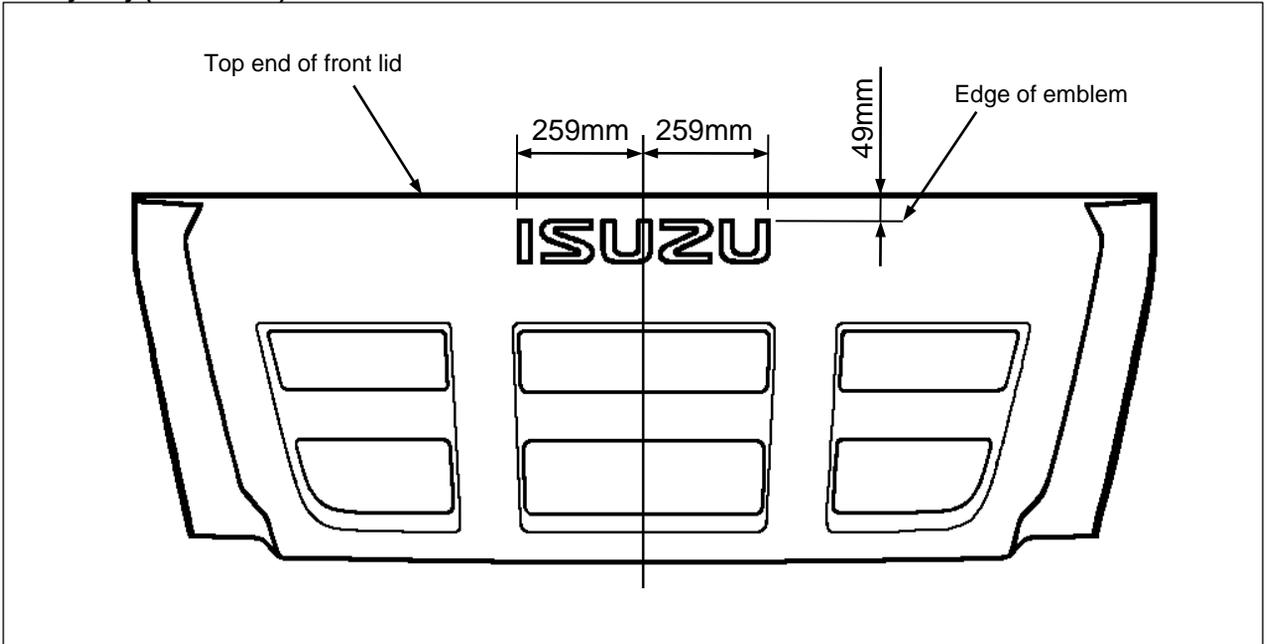
Light duty (2X/3X cab)



Medium duty(4X/5X cab) and heavy duty (FX/GX/FY-series)



Heavy duty (C&E-series)



## 2.14. DECALS

The base material of a decal is thin, soft and stretchable vinyl chloride. Therefore, strictly follow the procedure to firmly affix decals without making wrinkles, bubbles or stretching.

Refer to "II SPECIFIC INFORMATION" for location of affixing decal.

### 2.14.1. Precautions before affixing decals

- Confirm the material of bonding surface. There is possibility that the decals may not stick at all or may come off shortly after being affixed on following materials.
  - Low polarity plastic such as polyethylene, polypropylene, and teflon
  - Rough surfaces such as cloth, whetstone, sandpapers, and plastic emboss finished goods
  - When a mold lubricant, a plasticizer, and other additives to the surface of the plastic molding.
  - Hygroscopicity plastic such as ABS, noryl, and urethanes
- Remove wax if the wax has adhered.
- If there is any extraneous matter on a bonding surface (cab, panel) such as water, oil and dust, emblems will not firmly stick to the surface. If there is any, wipe them off completely with a clean cloth soaked in IPA (isopropyl alcohol). Remove wax if the wax has adhered. If the matter cannot be removed, completely wipe it off with lacquer thinner, etc., and then wipe the surface again with IPA.

### 2.14.2. Precautions at affixing decals

- The ambient temperature should be 10°C or more.
- Begin working after leaving in atmosphere above 10°C for one hour or more, when the decal or the bonding body was kept at 10°C or less.

**2.14.3. How to affix a decal**

	Dry type (Use paper carrier tape)	Wet type (Use neutral detergent solution)
Decal size	Small area 300 X 300mm or less Narrow width 50mm or less	Large area 300 X 300mm or more Wide width 50mm or more
Prepared apparatus and material	squeegee (spatula) cutter knife waste cloth needle IPA (iso-propyl alcohol) ※1 dryer for heating tape ※2	squeegee (spatula) cutter knife waste cloth needle IPA (iso-propyl alcohol) ※1 dryer for heating tape ※2 neutral detergent solution ※3 spray bottle

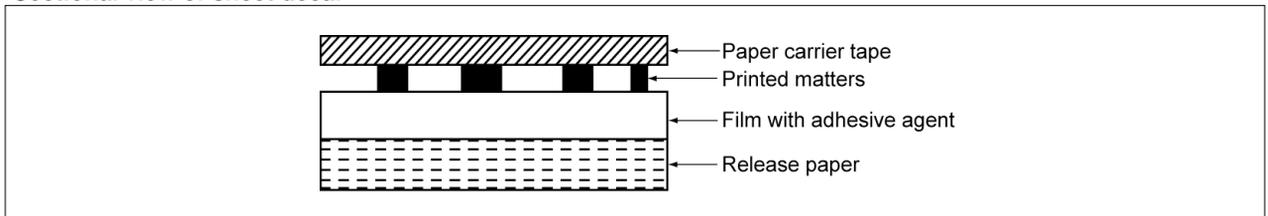
※1 When it is not possible to wipe off with IPA (iso-propyl alcohol) etc. used for the cleaning, it is necessary to prepare lacquer thinner.

※2 Tape is used for alignment. Prepare NITTO paper adhesive tape No.720 or equivalent.

※3 Use home liquid neutral detergent for the neutral detergent solution .

- Dry type (For sheet decals such as signature, mark, and stickers)
  - Prepare decal with paper carrier tape pasted to the printing surface.

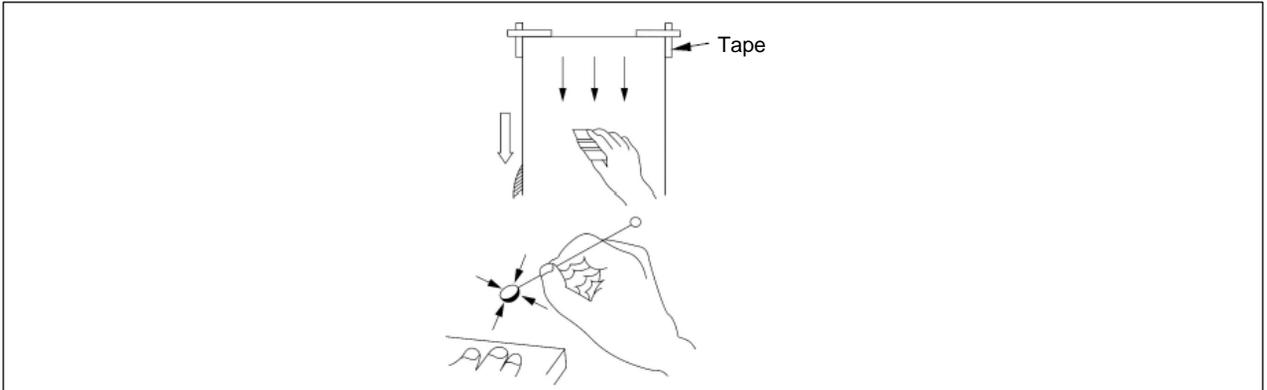
**Sectional view of sheet decal**



- Without removing a release paper, temporarily place the decal in position, and mark the position with tape.
- Peel off the release paper from the edge approximately 20mm, and then fold down the paper 180°.
- Align to the positioning tape, press and paste up the 20mm area with squeegee first. Temporarily fix the other edges with tape so that the decal will not move.
- Slowly peel off the release paper, and press the decal carefully.

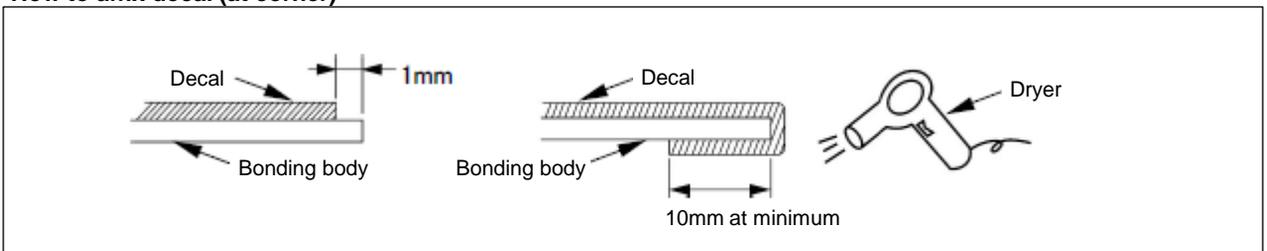
- Basically , move the squeegee in same direction, downward or right to left.
- When you are sure with no meandering or mispositioning, remove the positioning tapes.
- If there are bubbles trapped inside the decal, pop it with needle and press them out to flatten.
- Press the entire surface hard for the last time, and then carefully remove the paper carrier tape in 180° angle.

**How to affix decal**



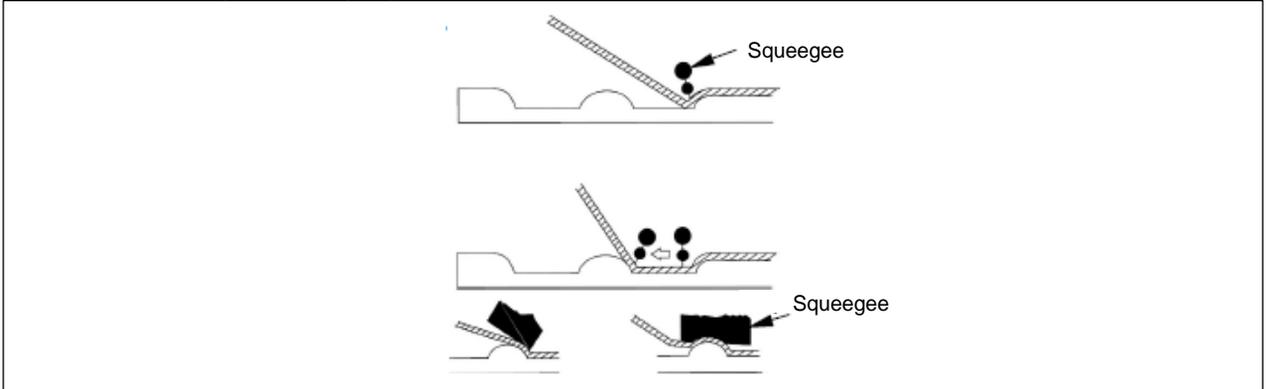
- Dry type (decals with cut characters or stripes)
  - Same way with the sheet decal.  
By putting half pulling out slit in the released paper beforehand, it becomes easier to temporarily fix the decal. Moreover, note that loosening is not caused in the decal when it puts on pressure by the squeegee enough when it is long. Press and stick the loosen decal, wrinkle and the bubble may occur.
- Dry type (fitting on corner area)
  - Cut or roll it inside. Make it 1mm shorter from the corner when cutting, or bend it 10mm or more when rolling it in, and press it heating with dryer.

**How to affix decal (at corner)**



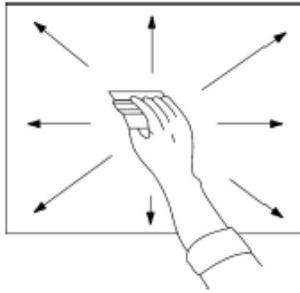
- Dry type (fitting on uneven part)
  - Press-fit concave part by using the edge of the squeegee. Please move right and left and work about the squeegee. Note that the decal does not loosen.
  - Press-fit toward next concave part by the squeegee. Note that the decal does not stretch.
  - Press-fit the convex part by using the squeegee as shown in figure. Press enough so that the squeegee deforms.
  - Fitting on a globular uneven part is impossible.

**How to affix decal (at uneven part)**



- Wet type (fitting on other than corner area)
  - Stretch prevention and the alignment of the decal become easy by using neutral detergent solution, the paper career tape is not needed. Fitting on a ruggedness part is impossible with wet type.
  - Put neutral detergent solution in spray bottle.
  - Without removing a release paper, temporarily place the decal in position, and fix the two corners of the decal with adhesive tape.
  - Spray neutral detergent solution evenly on adherence face and adhesive coated surface of decal after removing released paper.
  - Place the entire decal on the adherence body at the same time. Remove tape after confirming position.
  - To improve sliding of the squeegee, and to prevent the friction scar, spray the neutral detergent solution on the decal surface evenly.
  - Press-fit while pushing the spray liquid out from the center toward the edge by squeegee.
  - When the convex part is found after pushing out with the squeegee, the spray liquid remaining in the part. Make hole with a needle and push out the spray liquid.

How to affix decal (wet type)



- Wet type (fitting on corner area)
  - Same way with the dry type.

**2.14.4. Precautions for removing a decal**

- How to remove a decal (affixed less than one week)
  - Lift the edge of the decal with a spatula and pull it gradually.
  - After peeling the edge about 2cm, pull the decal slowly and gently.
  - Wipe with toluene to remove remaining adhesive agent on a bonding surface.
  - Wipe again with isopropyl alcohol after it dry, and wipe with waste cloth at the last.
- How to remove a decal (affixed more than one week)
  - The degree of adhesion rises as for the decal that passes one week or more after affixing, peeling off is considerably difficult. Proceed work carefully.
  - Coat the decal with toluene to expand the decal.
  - Shave off the decal with a spatula.
  - Wipe with toluene to remove remaining adhesive agent on a bonding surface.
  - Wipe again with isopropyl alcohol after it dry, and wipe with waste cloth at the last.

## **Chapter 3 REAR BODY MOUNTING**

### **3.1. CONSIDERATION TO PROPER LOAD**

### **3.2. CLEARANCE BETWEEN AN EQUIPMENT OR A COMPONENT ON A CAB CHASSIS AND A REAR BODY**

**3.2.1. Engine**

**3.2.2. Transmission**

**3.2.3. Front and center propeller shafts**

**3.2.4. Rear propeller shaft and rear axle**

**3.2.5. Exhaust system**

**3.2.6. Slide shackle rear suspension**

**3.2.7. Cab**

### **3.3. SUB FRAME SIDE MEMBERS**

**3.3.1. Shape of the front end of sub frame side members**

**3.3.2. Measure against sub frame**

**3.3.3. Front end of a sub frame**

### **3.4. FIXING OF A REAR BODY**

**3.4.1. Location and pitch of bolts**

**3.4.2. Attachment prohibited areas**

**3.4.3. Fastening U-bolts for fitting a sub frame on a chassis frame**

**3.4.4. Fitting double-ended brackets for fitting a sub frame on a chassis frame**

**3.4.5. Caution at using anti-sifting or anti-sliding**

### 3.1. CONSIDERATION TO PROPER LOAD

- For a body which generates partial load and concentric load in chassis frame, distribute the load by adding sub frame or main sill structure to prevent the transformation and the crack of chassis frame.
- When installing a sub frame, allot the generated bend stress by calculating the combination beam.
- Stress of chassis frame  
Follow the table below about the stress generated in chassis frame at time when the maximum payload was installed.

Unit: Mpa (kgf/mm<sup>2</sup>)

	Light duty	Medium duty	Heavy duty
Flat bed, van, etc.	64(6.5) at max	78(8.0) at max	
Dump, mixer, garbage	44(4.5) at max	64(6.5) at max 44(4.5) at max (Dump)	
Condition of frame tensile strength	440(45) at min	540(55) at min	

Note: The table is at 1G reaction force.

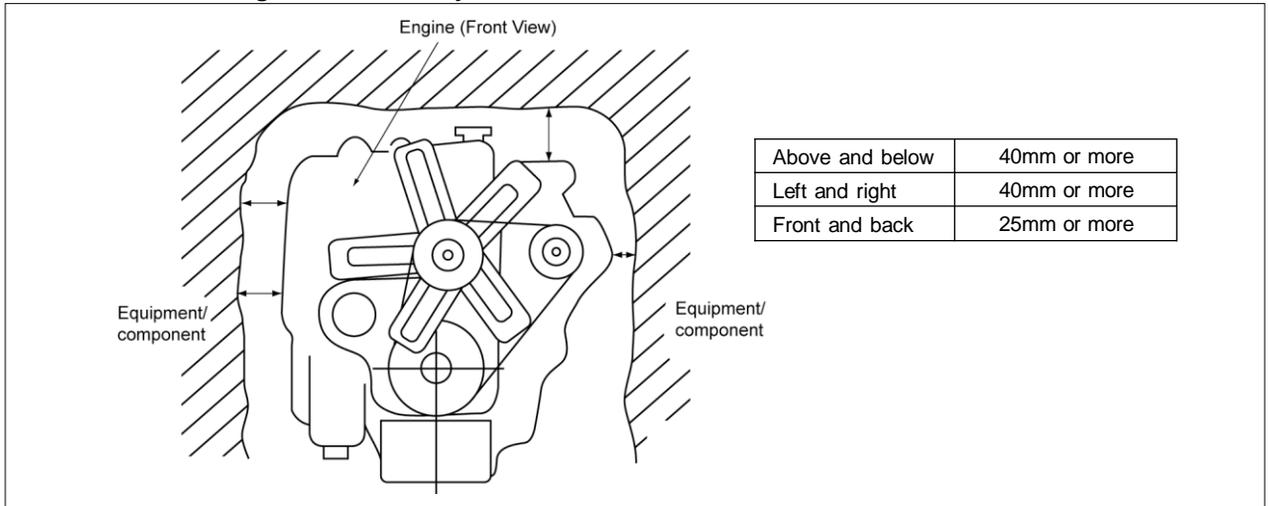
A peculiar value to the frame tensile strength and the permissible stress value might be indicated according to the vehicle type and destination. Confirm the frame section coefficient diagram etc. of "II SPECIFIC INFORMATION" of the vehicle type targeted without fail.

### 3.2. CLEARANCE BETWEEN AN EQUIPMENT OR A COMPONENT ON A CAB CHASSIS AND A REAR BODY

#### 3.2.1. Engine

- When installing any equipment or component around an engine, provide the following clearances from the engine.
- Do not place any object in front of the radiator and the inter cooler, otherwise cooling efficiency of the radiator and the inter cooler may be impaired.

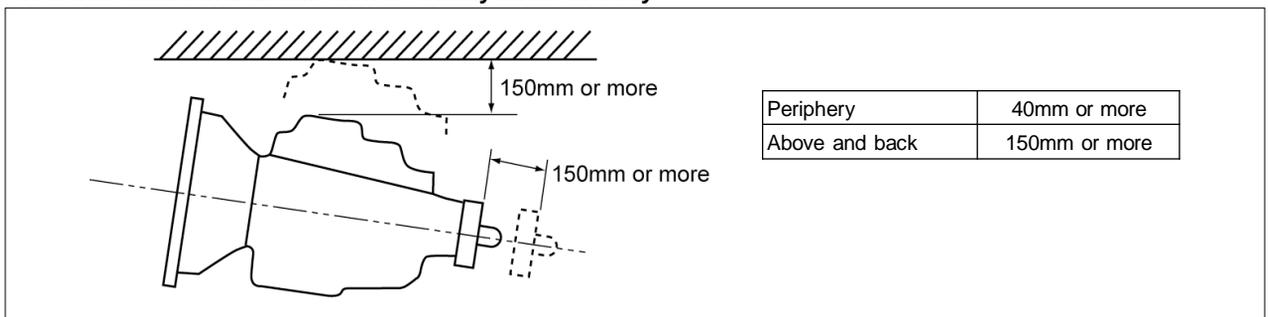
#### Clearance between engine and rear body



#### 3.2.2. Transmission

- Since transmission moves in unison with the engine, maintain a minimum of 40mm clearance around it.
- Transmission is to be retracted when removed. Therefore, not to contact anything, the transmission assembly must have a minimum of 150mm clearance behind it.
- Provide a minimum of 150mm clearance above the transmission assembly for check-ups and maintenance.

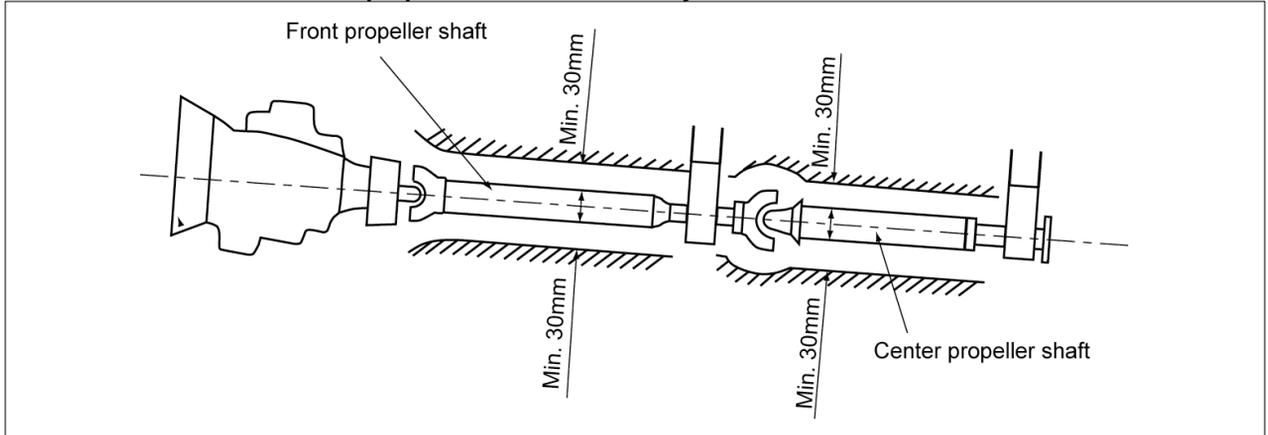
#### Clearance between transmission assembly and rear body



### 3.2.3. Front and center propeller shafts

- Provide a minimum of 30mm clearance around front and center propeller shafts.
- Equipment that emits high heat should be distant from the propeller shafts. If such equipment has to be placed near a propeller shaft, provide a heat insulation between them.

#### Clearance between front/center propellar shaft and rear body

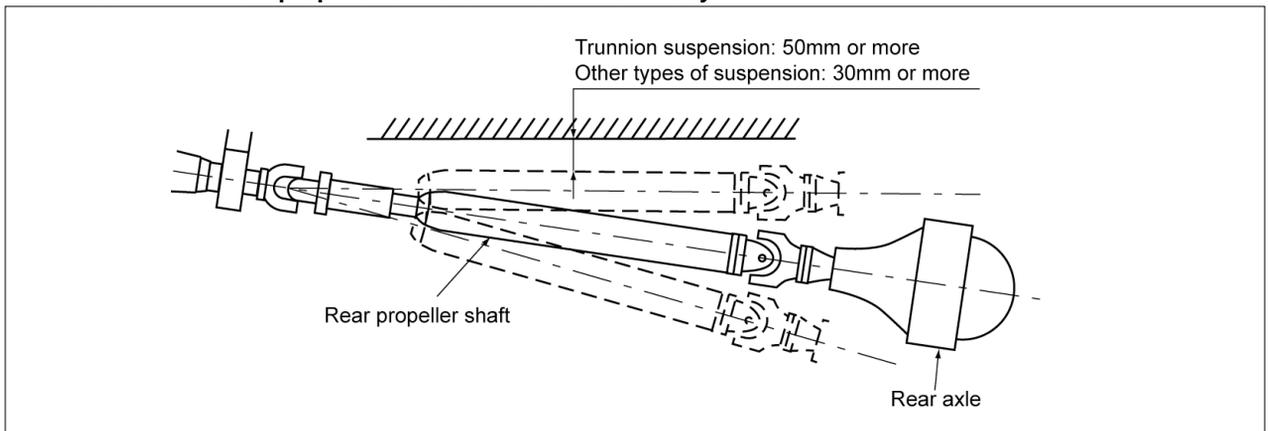


### 3.2.4. Rear propeller shaft and rear axle

- There should be the following minimum clearance around rear propeller shaft and rear axle.

Trunnion suspension	50mm or more
Other types of suspension	30mm or more

#### Clearance between rear propellar shaft/rear axle and rear body

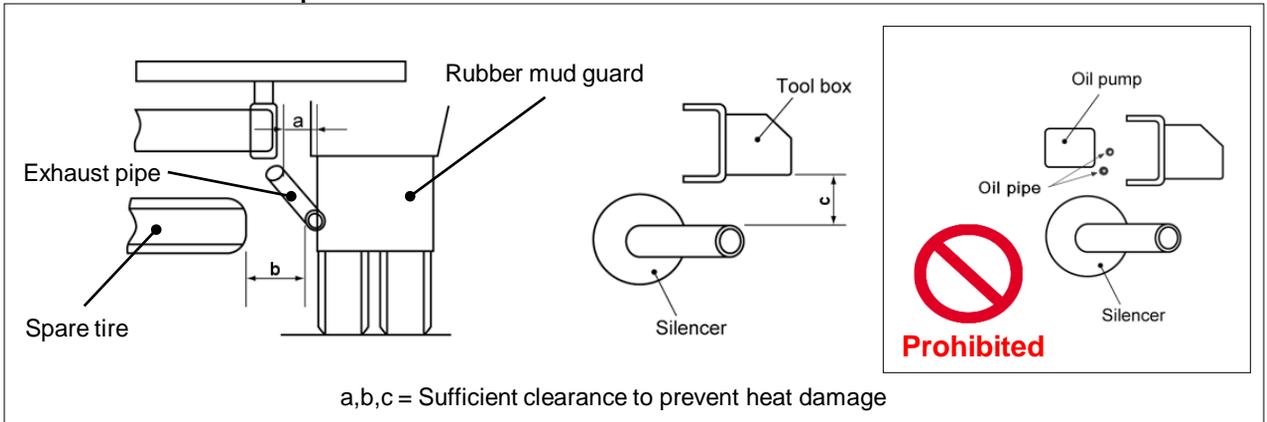


- Clearance between rear axle and chassis frame from spring deflection differs in each vehicle model. Refer to "II SPECIFIC INFORMATION" of target vehicle model.

### 3.2.5. Exhaust system

- If a rear body is partially made of combustible materials such as wood and rubber, provide a requisite clearance between the rear body and an exhaust pipe, a silencer or catalytic converter.
- If such clearance cannot be assured, provide a heat insulation between them.
- An oil pump or its piping for the equipments or the hydraulic system on a rear body must not be placed above exhaust system components such as a silencer or catalytic converter.
  - Smoking and the ignition when the leakage occurs in the hydraulic system.

#### Clearance of exhaust components

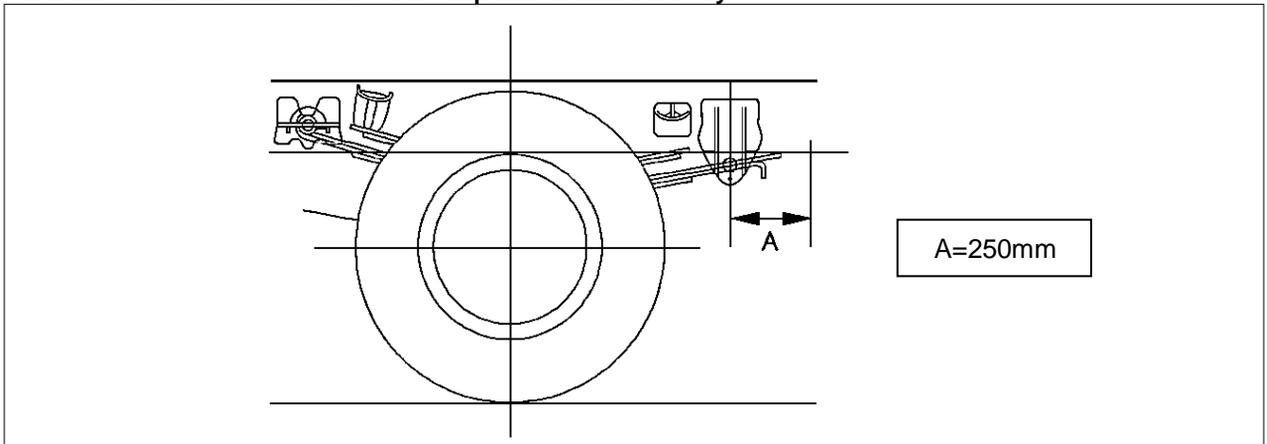


- The condition of exhaust emission device may be individually shown by the form and the vehicle type, and refer to " II SPECIFIC INFORMATION" of the targeted vehicle type.

### 3.2.6. Slide shackle rear suspension

As for slide shackle rear suspension, the rear end of the spring stretches out. Therefore, the rear body must not be mounted on the portion 'A' shown in the drawing below:

#### Clearance between slide shackle rear suspension and rear body



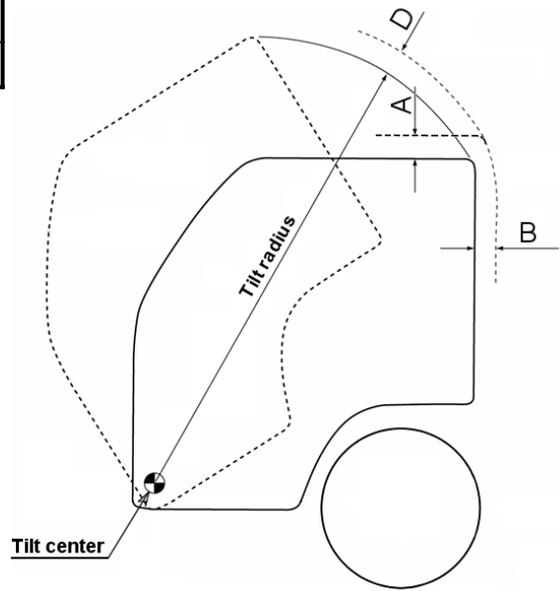
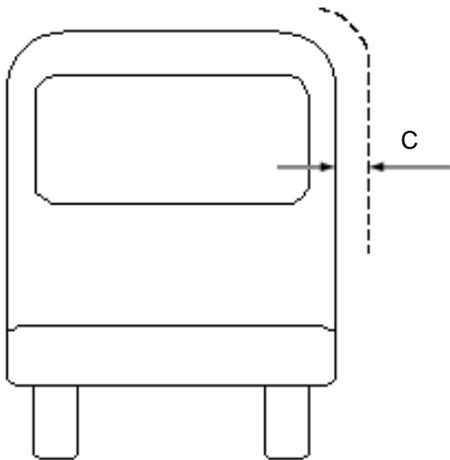
**3.2.7. Cab**

When the vehicle is moving, the whole cab moves in various directions in conjunction with cab suspension. Also, when a cab tilts, rear body may contact with the cab or cab chassis components such as an air inlet duct attached to the cab. Taking these into account, provide sufficient clearances between them as shown below to prevent the cab from contacting with anything.

**Clearance of cab**

Vehicle type	A	B	C	D
Heavy duty	40	50	60	50
Medium duty				
Light duty	20	50	50	50

Unit: mm

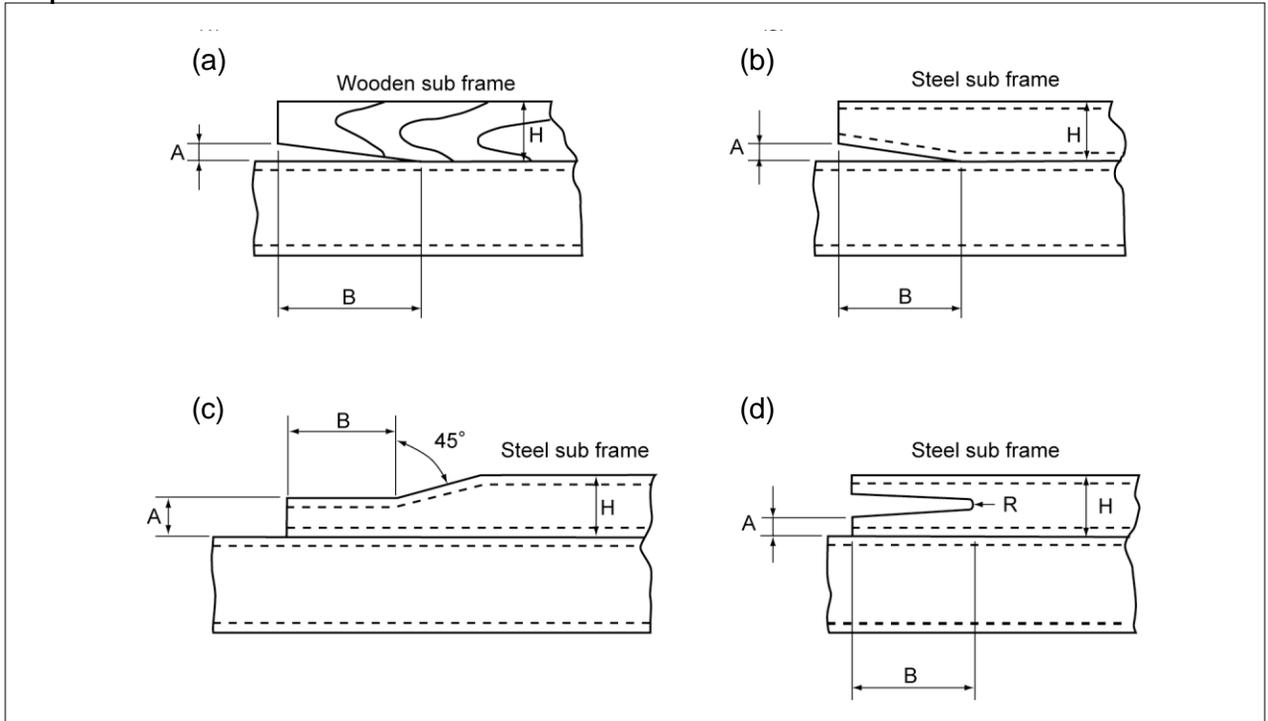


### 3.3. SUB FRAME SIDE MEMBERS

#### 3.3.1. Shape of the front end of sub frame side members

The sub frame prevents load concentration in chassis frame when mounting rear body. Since load stress tends to concentrate in the area near the cross member right behind cab back (2<sup>nd</sup> cross member), appropriately proceed shape the ends of sub frame side members suited to rear body referring to the figure below so that the sub frame produces no acute change in the frame section.

Shape of the front end of sub frame



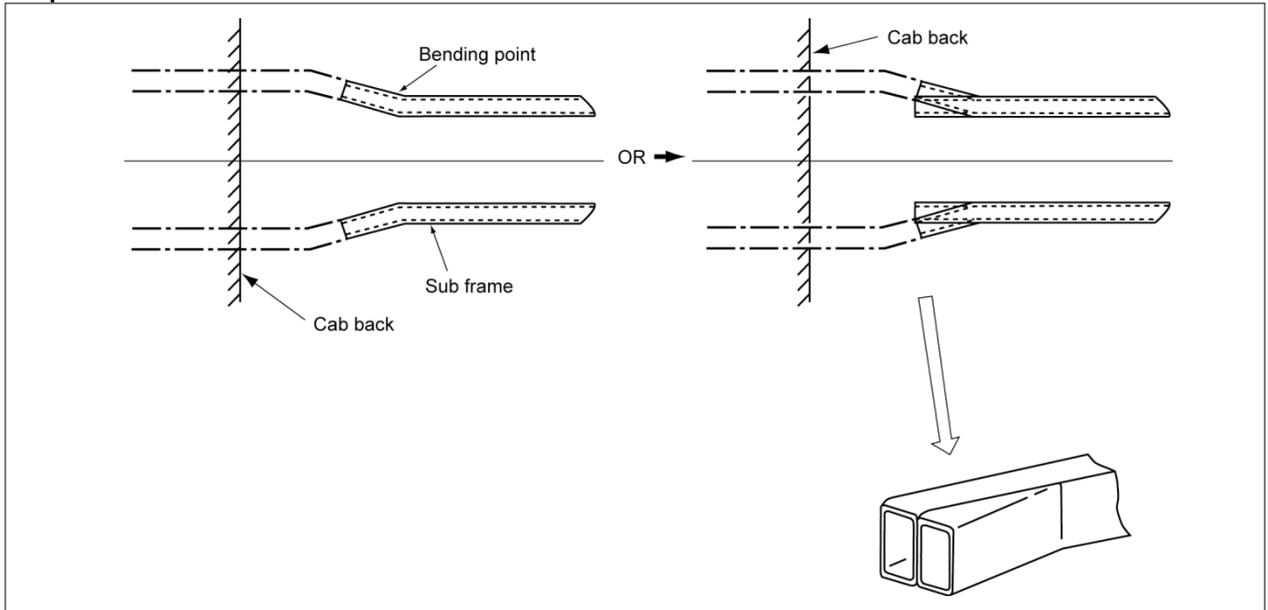
Unit: mm

	A	B	R
a	5	H/2 to H	—
b	5	Longer than H	—
c	H/3	Longer than H	—
d	H/4 to H/5	H to 1.5 times H	15 to 20

### 3.3.2. Measure against sub frame

When fitting a sub frame on a chassis frame, covering the area where the width between chassis frame side members begin to change, sub frame side members need to be carefully formed so that they will follow the shape and the dimensions of the bending portion of the chassis frame side members.

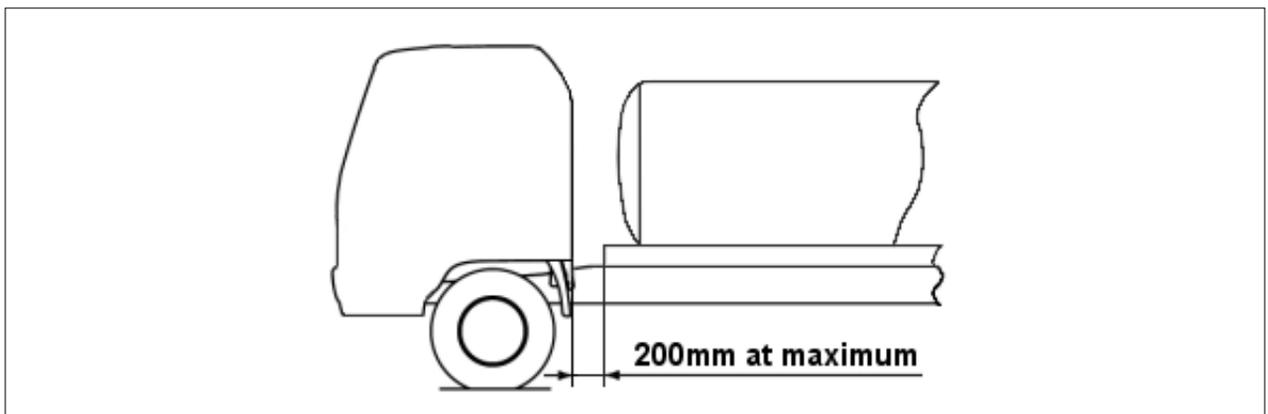
#### Shape of the chassis frame and sub frame



### 3.3.3. Front end of a sub frame

Mislocation of the front end of a sub frame may result in cracks in a chassis frame in that area, or deterioration in ride comfort. The distance between the rear face of cab back and the front end of a sub frame should be no longer than 200mm.

#### Position of the sub frame front end



### 3.4. FIXING OF A REAR BODY

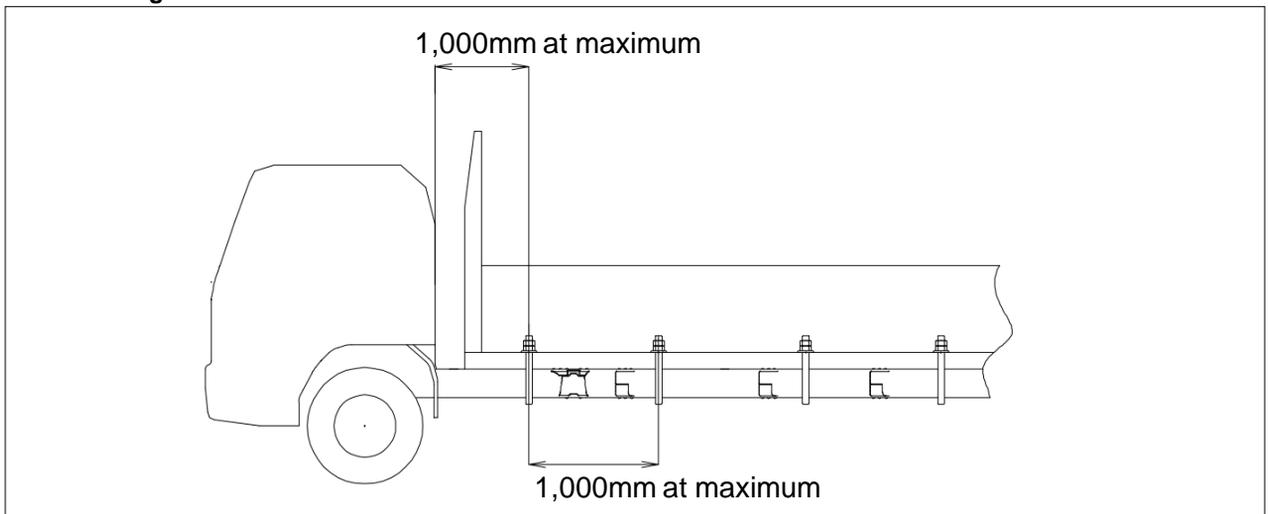
Fixing with U-bolt is recommended in ISUZU MOTORS.

Do not weld the sub frame with chassis frame directly or bolt on flange to fix Rr body.

#### 3.4.1. Location and pitch of bolts

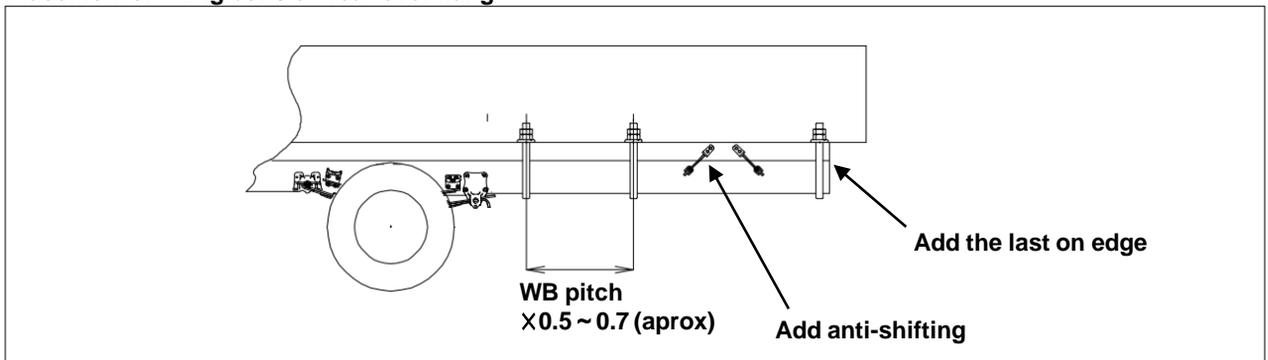
- The first fixing bolt
  - Bolts should be distant from the cab back by 1,000mm or less.
  - Follow the recommended location described in each vehicle model.
- Bolt pitch of fixing bolt
  - Fixing bolts other than those fitted in the rear axle area should be spaced no longer than 1,000mm. Securely fasten them on a chassis frame.

#### Pitch of fixing bolts



- Deflection of rear overhang grows larger compared to wheelbases. Change bolt pitch or add stopper considering a length of the carrier, rear overhang, and wheelbase ratio etc.

#### Placement of fixing bolts on rear over hang

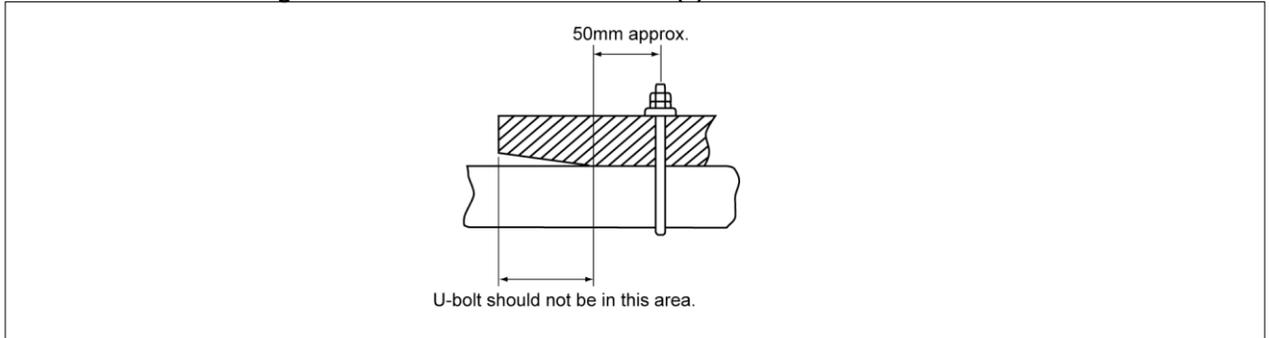


### 3.4.2. Attachment prohibited areas

When mounting a sub frame on a chassis frame, do not use fixing bolts and double-ended brackets in the following areas:

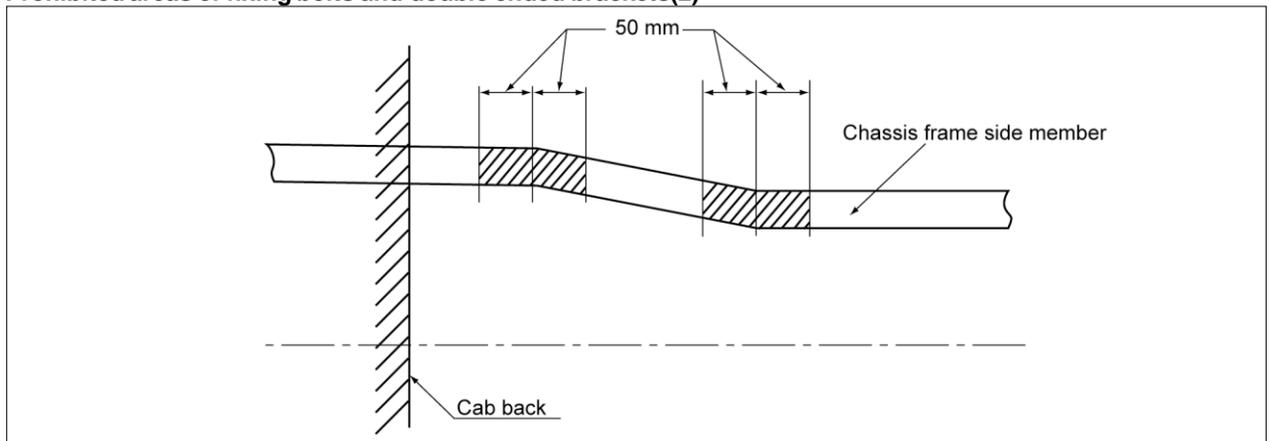
- Area from the front end of a sub frame side members to the first U-bolt located approximately 50mm posterior to a kick-up point.

#### Prohibited areas of fixing bolts and double ended brackets (1)



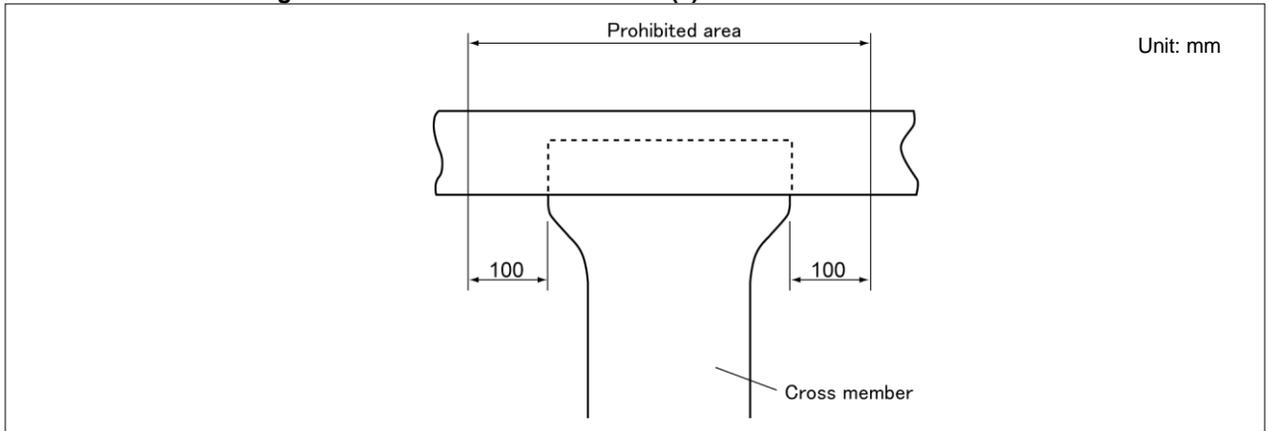
- Areas within 50mm anterior or posterior to the point where the width between chassis frame side members begin to change.

#### Prohibited areas of fixing bolts and double ended brackets(2)



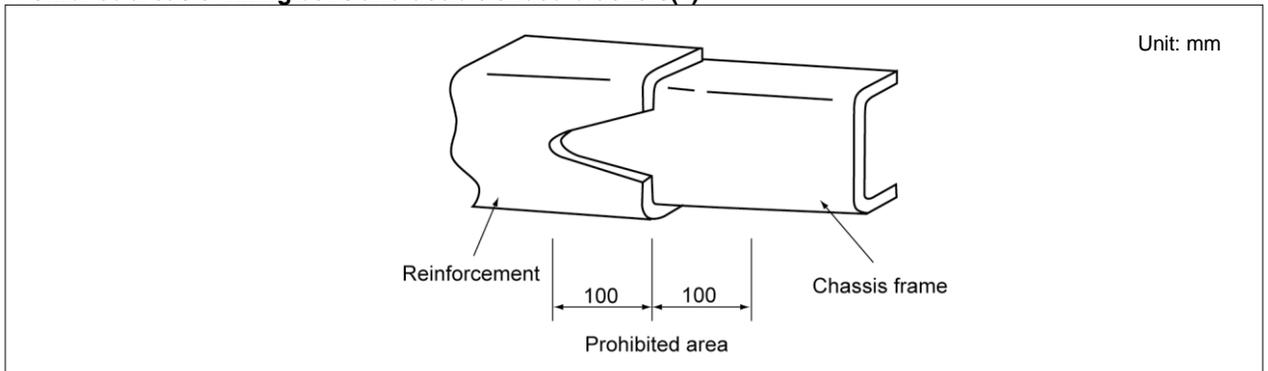
- Areas within 100mm anterior or posterior to each cross member.

**Prohibited areas of fixing bolts and double ended brackets(3)**



- Areas within 100mm anterior or posterior to the end of a reinforcement fitted on the inner side or outer side of a chassis frame.

**Prohibited areas of fixing bolts and double ended brackets(4)**



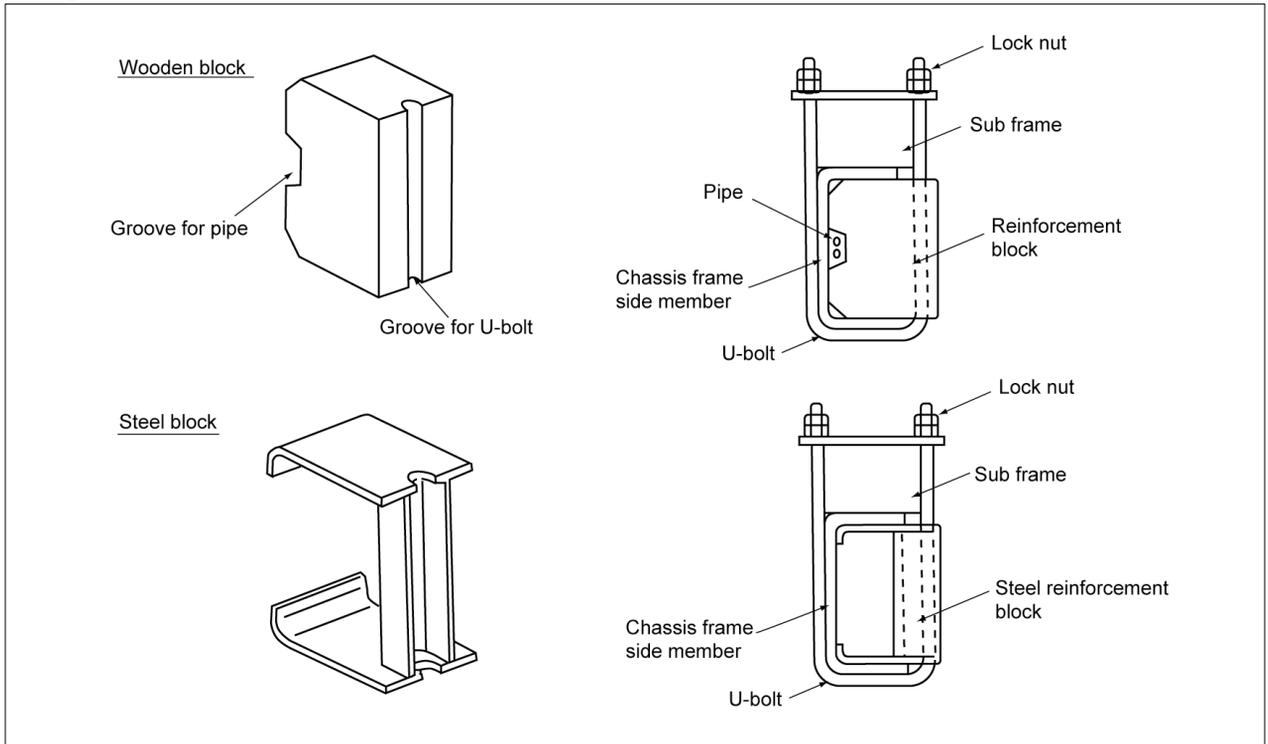
- Areas within 100mm anterior or posterior to end of a reinforcement fitted on the inner side or outer side of rear suspension components.

### 3.4.3. Fastening U-bolts for fitting a sub frame on a chassis frame

When using U-bolts to fit a sub frame on a chassis frame, fit a reinforcement block on the inner side of chassis frame side members.

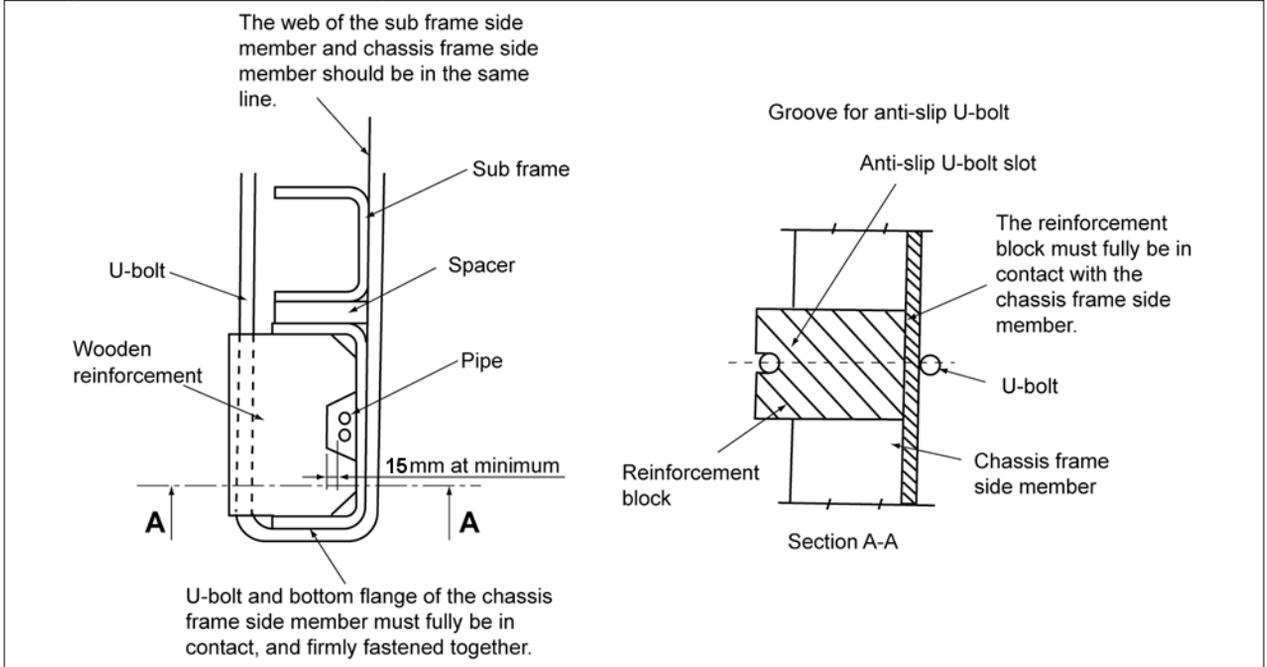
The following figures show typical reinforcement blocks and the way how they are fitted:

#### Fitting of reinforcement blocks (1)



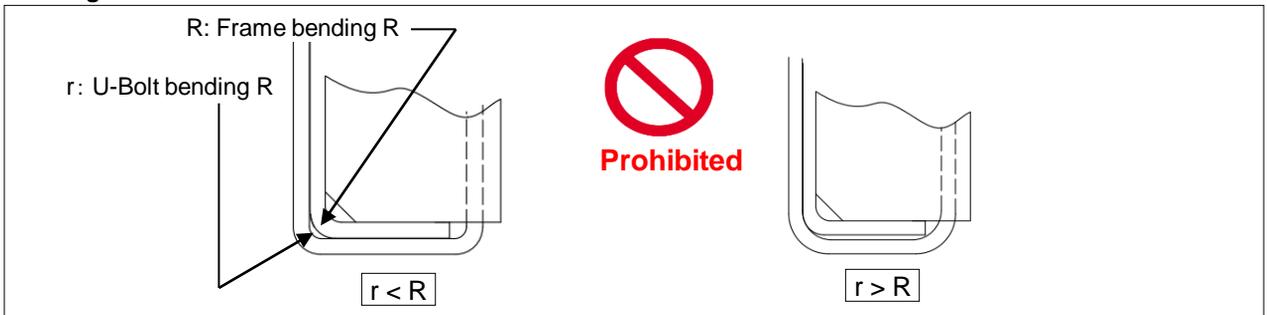
- The fitting direction of U-bolts should be either downward or upward.
- It is recommended to use steel blocks for the area near exhaust system components. If wooden blocks are preferable, be sure to provide a sufficient clearance between a wooden block and an exhaust system component.
- If any pipe or harness is located near a reinforcement block, maintain a minimum of 10mm clearance between the block and fixed part or unmoving part of such pipe or harness, and a minimum of 40mm between the block and moving part of the pipe or the harness.

**Fitting of reinforcement blocks (2)**



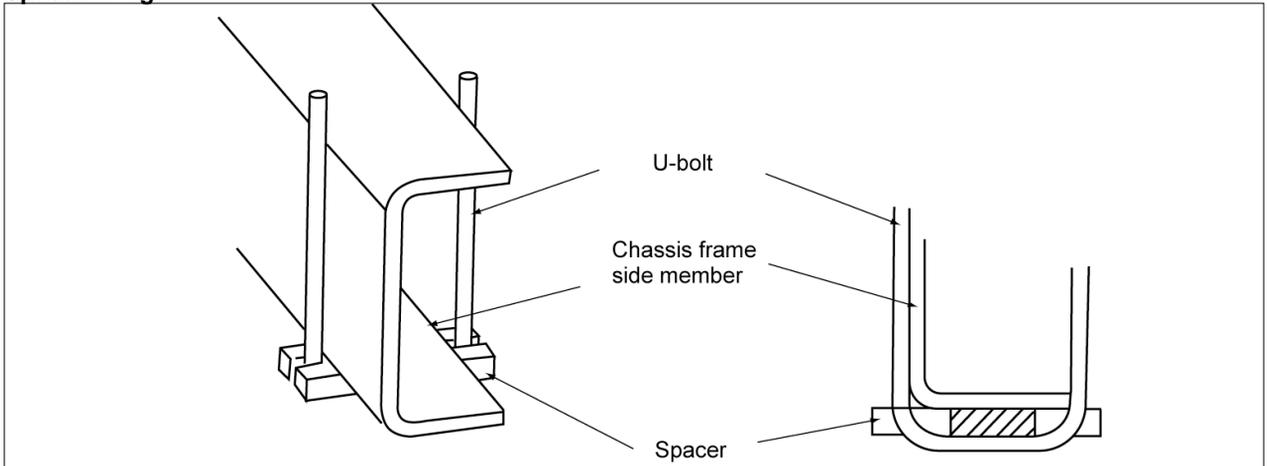
- U-bolts should be tightened with contacting under face of side member .
- Use U-bolts with bending radius smaller then that of chassis frame side member.

**Bending R of U-bolt**



- Insert a spacer as shown below if a U-bolt with bending R smaller than that of chassis frame side member is difficult to obtain.

**Spacer fixing**

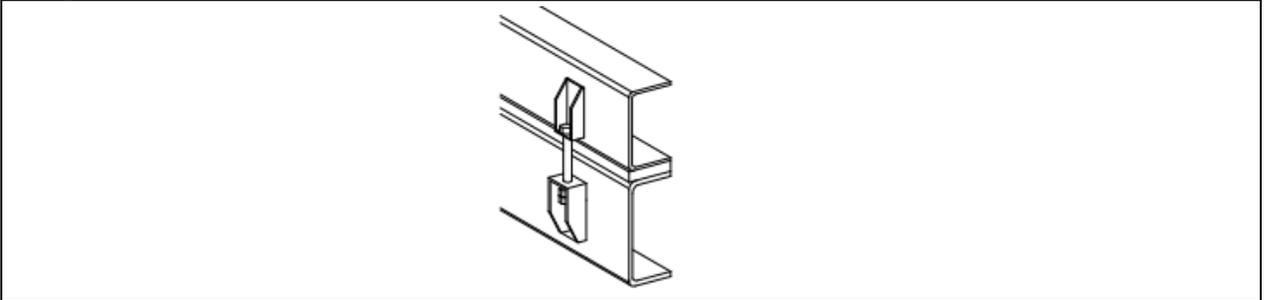


#### 3.4.4. Fitting double-ended brackets for fitting a sub frame on a chassis frame

Double-ended brackets are mainly used for the carrier to absorb the movement of horizontal direction. ISUZU is recommending the use of U-bolt to fastening the carrier. Note the following when using the double-ended brackets due to various restrictions.

- Use fastening bolt vertically.

##### Fitting of double-ended brackets



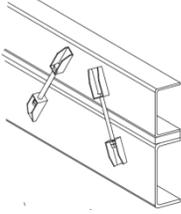
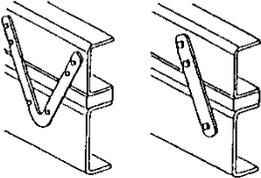
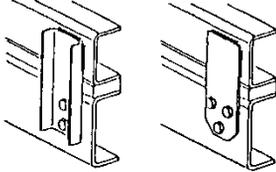
- Do not weld. Only fastening bolts on chassis frame.
- Follow " I -2.1. DRILLING OR WELDING A CHASSIS FRAME" for hole location, etc.
- For the location of such bolts, see " I -3.4.2. Attachment prohibited areas" and do not drill holes or weld in that area.

### 3.4.5. Caution at using anti-sifting or anti-sliding

The general characteristic of fastening device used to absorb the horizontal and twist movement of the carrier is shown.

Be aware of the characteristic, the mounting direction, and the method, especially for the installation to the chassis frame for suitable use.

Follow the instructions in " I -3.4.2. Attachment prohibited areas" and " I -2.1. DRILLING OR WELDING A CHASSIS FRAME" for location and fitting.

Method	Feature and notes
<p>Anti-slack bolt forward and backward direction</p> 	<ul style="list-style-type: none"> <li>• Use in inverted v shape is general. It is effective in restricting sideways and twisting, but the original aim is anti-slacking.</li> <li>• Principally weld on to sub frame and bolt fix to chassis frame.</li> </ul>
<p>"I" "V" type anti-slack bracket for forward and backward direction</p> 	<ul style="list-style-type: none"> <li>• "I" bracket is always used in pairs. When fixing a pair of brackets, do not fix them in parallel on frame member.</li> <li>• Both "V" and "I" types are fixed with bolts.</li> <li>• Tightening with the body cannot be expected. Use U-bolt for installing body.</li> </ul>
<p>anti-slack bracket for right and left direction</p> 	<ul style="list-style-type: none"> <li>• Weld on to sub frame and bolt fix to chassis frame.</li> <li>• Do not weld on to chassis frame.</li> <li>• Tightening with the body cannot be expected. Use U-bolt for installing body.</li> </ul>

## **II . SPECIFIC INFORMATION**

## **Chapter 1 OUTLINE**

### **1.1. IDENTIFYING A CAB CHASSIS**

1.1.1. ID plate

1.1.2. ID code components of various vehicle models

1.1.3. VIN (Vehicle Identification Number)

1.1.4. Location for carving a vehicle number and an engine model number

1.1.5. Vehicle model code chart

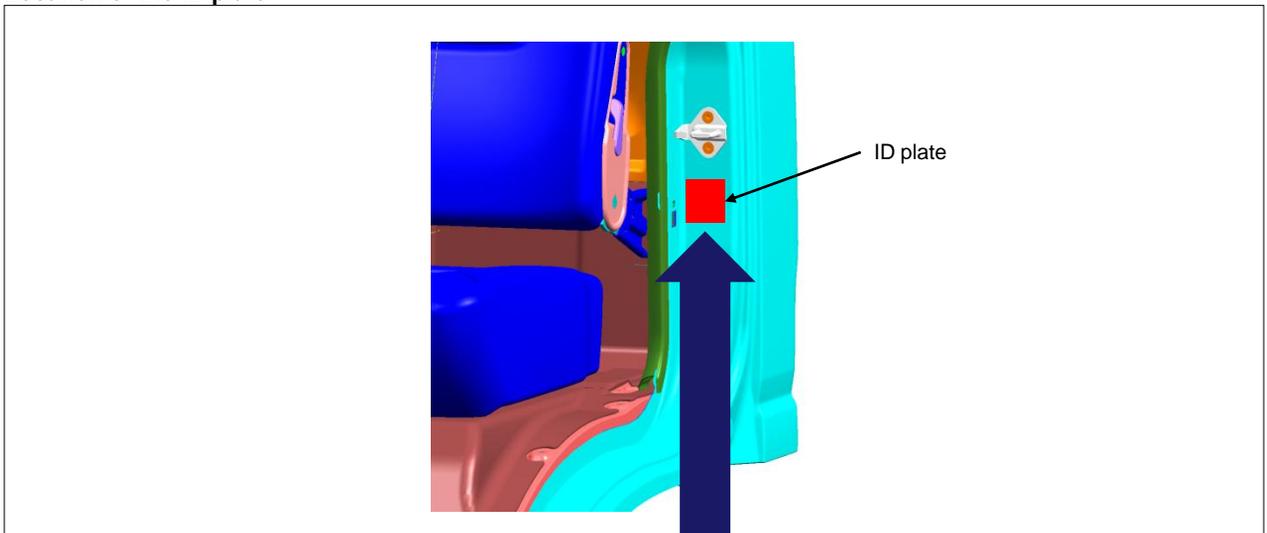
## 1.1. IDENTIFYING A CAB CHASSIS

This section provides information necessary to identify vehicle models and basic specifications of the cab chassis subject to rear body mounting. Consult the ISUZU dealerships about application of the some devices (optional parts).

### 1.1.1. ID plate

The following figures show a sample ID plate with vehicle model information and basic specifications of a cab chassis, and location of the ID plate in a cab.

#### Location of the ID plate



#### Detail view

ISUZU MOTORS LTD. JAPAN											
V. I. N	<1>										
M. D.	<2>				<3>						
ENGINE	<4>/<12>				RR AXLE		<5>				
TRANS.	<6>				FINAL		<7>				
TIRE	<8>						<9>				
B. COLOR / TRIM	<10>										
OPTION											
<11>											

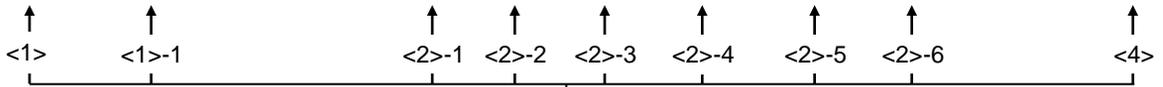
See the following pages for details of the fields <1> through <12> of the above sample ID plate. Option codes are entered in the OPTION fields <11>.

1.1.2. ID code components of various vehicle models

Euro 5b+ model

LHD vehicle model

No.	Vehicle model	Rear wheel	Model	Cab width	Drive system	Handle position	Cab type	GVW (kg)	Wheelbase (mm)		Engine Model
1	NLR85AL -ED1AYEN	Single axle with single tires	Light duty truck	2X M	4x2 R	LHD 6	SINGLE CAB S	3,500 E	2,490	24W	4JJ1-TCC RDU
2	NLR85AL -ED5AYEN								2,480	24W	
4	NLR85L -ED5AYEN	3,350							33W		
3	NLR85AL -HD5AYEN										
5	NLR85L -HD5AYEN	5,500							2,480	24W	
6	NLR85L -HD5WYEN										
7	NMR85L -EH5AYEN	5,500							2,480	24W	
8	NMR85L -HH5AYEN										
9	NNR85L -FD5AYEN	3,500							2,800	27W	
10	NNR85L -HD5AYEN										
11	NNR85L -HD5WYEN	CREW CAB W									

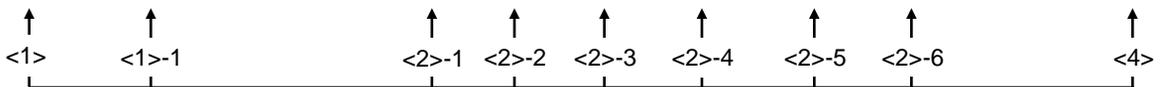


ID code components

Euro VI model

LHD vehicle model

No.	Vehicle model	Rear wheel	Model	Cab width	Drive system	Handle position	Cab type	GVW (kg)	Wheelbase (mm)		Engine Model		
1	NLR85AL -FD5AYE	Single axle with dual tires	Light duty truck	2X M	4x2 R	LHD 6	SINGLE CAB S	3,500 E	2,760	28W	4JJ1-TCS LFB		
2	NLR85AL -HD5AYE								3,350	33W			
3	NLR85L -HD5AYE												
4	NMR85L -HH5AYE								5,500	N			
5	NNR85L -HD5AYE												
6	NPR85L -HH5AYE								3,395	33W			
7	NPR85L -HJ5AYE												
8	NPR85L -HL5VAYE								7,500	N		3,365	33W
9	NPR85L -KJ5AYE											3,845	38W
10	NPR85L -KL5VAYE								7,500	N		3,815	38W
11	NPR85L -ML5VAYE											4,475	44W
12	NPR75L -HL5VAYE								3,365	33W			
13	NPR75L -KL5VAYE											3,815	38W
14	NPR75L -ML5VAYE								4,475	44W			
15	NPR75L -ML5VWYE											CREW CAB W	

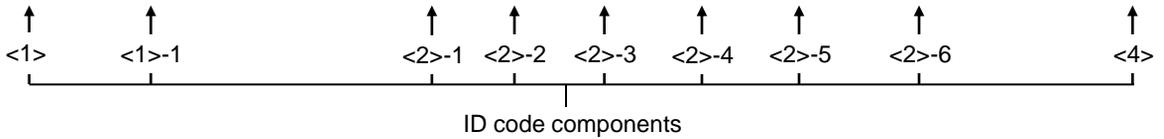


ID code components

**Euro 5b+ model**

**RHD vehicle model**

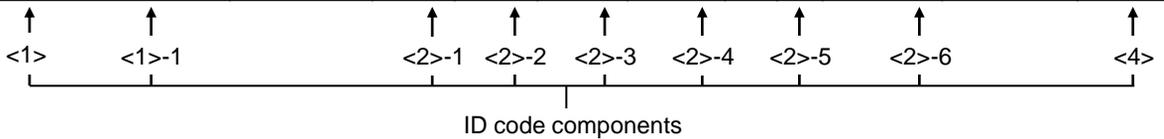
No.	Vehicle model	Rear wheel	Model	Cab width	Drive system	Handle position	Cab type	GVW (kg)	Wheelbase (mm)		Engine model							
1	NLR85AU -ED1AYEN	Single axle with single tires	Light duty truck	2X	4X2	RHD	SINGLE CAB	3,500	2,490	24W	4JJ1-TCC RDU							
2	NLR85U -ED5AYEN	Single axle with dual tires							N	M		R	5	CREW CAB W	5,500	2,480	24W	
3	NLR85U -HD5AYEN															3,350	33W	
4	NLR85U -HD5WYEN																	3,500
5	NMR85U -EH5AYEN															3,350	33W	
6	NMR85U -HH5AYEN																	3,500
7	NNR85U -FD5AYEN															3,395	33W	
8	NNR85U -HD5AYEN																	SINGLE CAB



**Euro VI model**

**RHD vehicle model**

No.	Vehicle model	Rear wheel	Model	Cab width	Drive system	Handle position	Cab type	GVW (kg)	Wheelbase (mm)		Engine model		
1	NLR85U -HD5AYE	Single axle with dual tires	Light duty truck	2X	4x2	RHD	SINGLE CAB	3,500	N	3,350	33W	4JJ1-TCS LFB	
2	NMR85U -HH5AYE			M				5,500	N				
3	NNR85U -HD5AYE			3,500				E	3,395				33W
4	NPR85U -HH5AYE												
5	NPR85U -HJ5AYE			6,500				7,500	3,845				38W
6	NPR85U -HL5VAYE												
7	NPR85U -KJ5AYE			3,815				38W					
8	NPR85U -KL5VAYE								4,475				44W
9	NPR85U -ML5VAYE			7,500				3,365					
10	NPR75U -HL5VAYE								3,815				38W
11	NPR75U -KL5VAYE			4,475				44W					
12	NPR75U -ML5VAYE								N				4,475
13	NPR75U -ML5VWYE			CREW CAB				W					



**<1> 6-character vehicle descriptor section “VDS”**

A VDS is made up by the first five characters of <1> and the first character of <1>-a which indicates a wheelbase type.

(Example NPR75L-ML5VWYE (Vehicle model) ⇒ NPR75M (VDS))

For the string composition of a VIN (Vehicle Identification Number), see the next subsection 1.1.3 VIN (Vehicle Identification Number).

**<2> 6-character model designator “MD”**

<2>-1 through <2>-6 are consecutively arranged. (Example) NMR5SE

**<3> Manufacture year and month**

Manufacture date is alphabetized as follows and stated in the order of year (2-character) and month (2-character).

0	1	2	3	4	5	6	7	8	9	(Example 1) December 2009 (12/09) → AD/BC
A	B	C	D	E	F	G	H	I	J	(Example 2) September 2013 (09/13) → BD/AJ

**<4> 3-character engine option code (Example) “RDQ”**

**<5> 3-character rear axle option code (Example) “6CP”**

**<6> 3-character transmission option code (Example) “RST”**

**<7> 4-character final gear option code (Example) “RU1”**

**<8> 3-character tire option code (Example) “CVS”**

**<9> 3-character destination option code (Example) “E09” for Europe**

**<10> Cab exterior/interior color option code (3-character each)**

(Example) “729” for ARC WHITE, “890” for MARINE BLUE

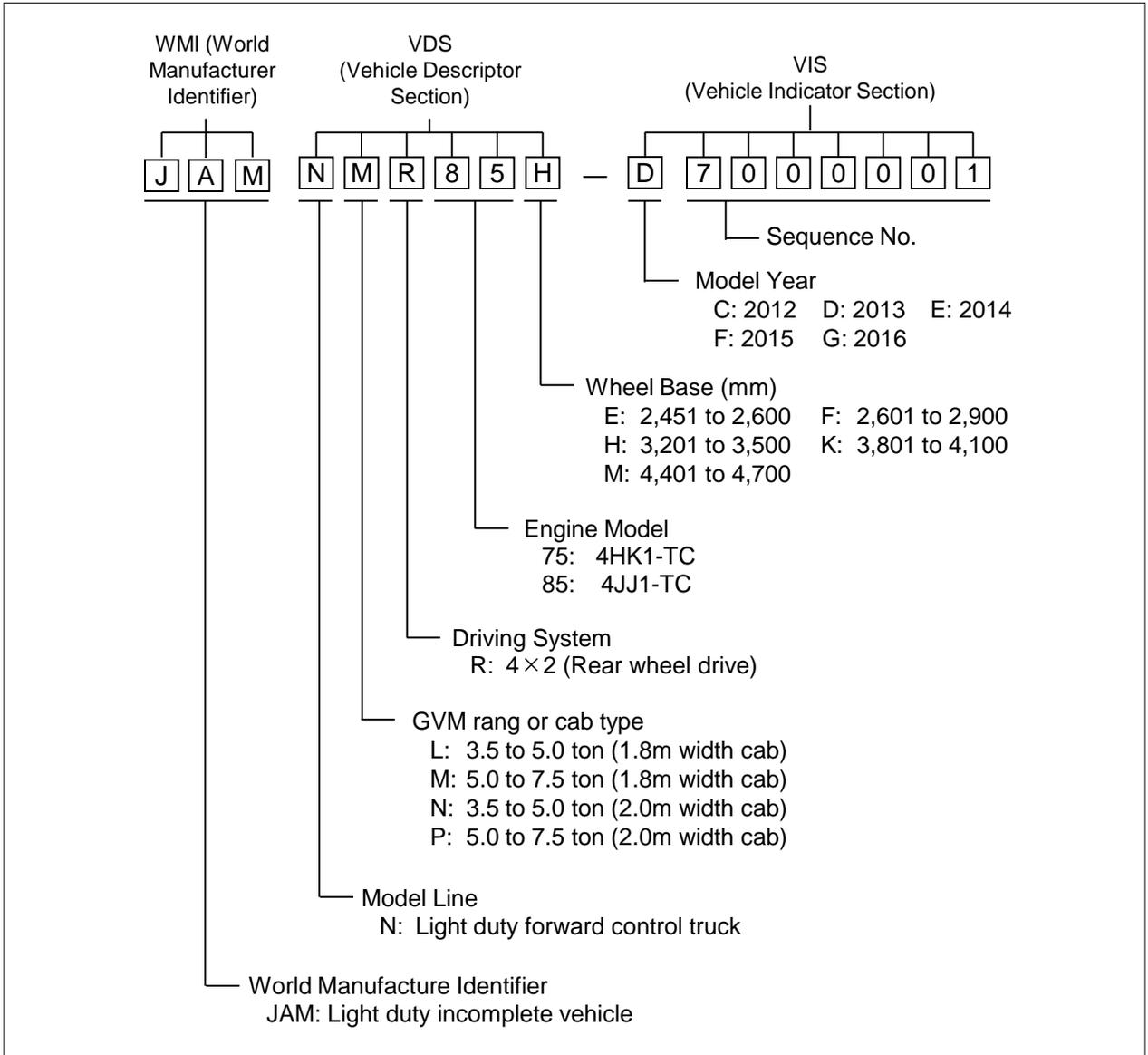
**<11> 3-character regular option code**

(Example) “7KZ” for CUP HOLDER, “EG5” for ASSIST GRIP

**<12> 4-character engine model code (Example) “4HK1”**

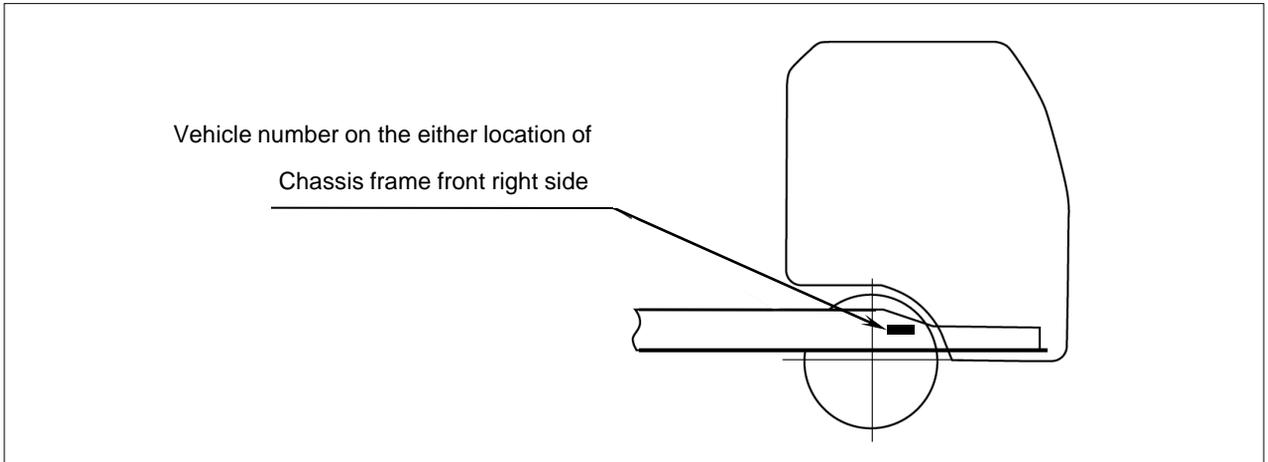
**1.1.3. VIN (Vehicle Identification Number)**

The following is an example of a VIN to be entered in the field <1> of ID plate:

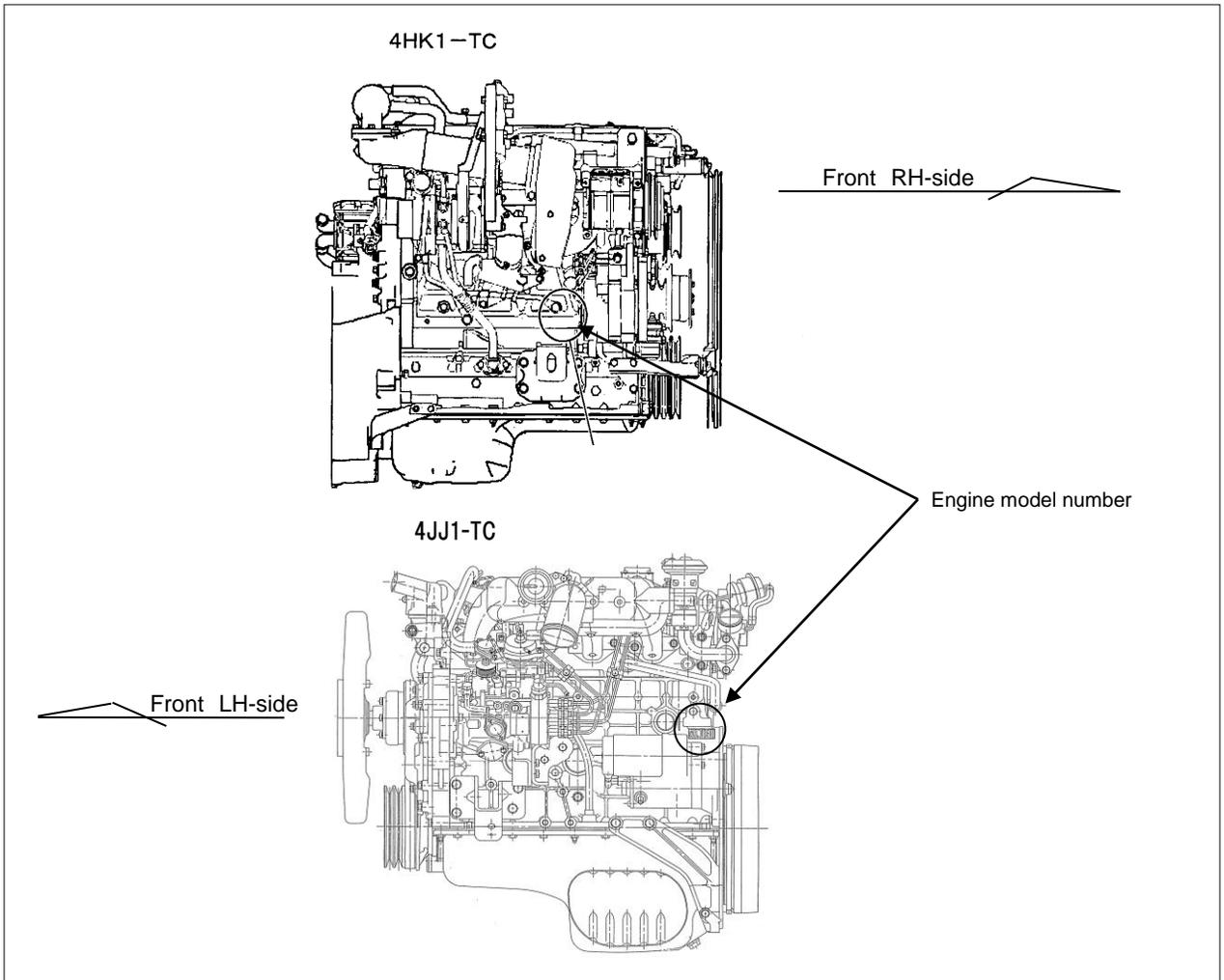


### 1.1.4. Location for carving a vehicle number and an engine model number

#### Vehicle number



#### Engine model number



**1.1.5. Vehicle model code chart**

The following is the definition of vehicle model code. If there is no applicable code, truncate the blank.

Basic Model Code						Model Code Suffix								
N	L	R	85	—	U	—	H	D	5	—	W	Y	E	N
①	②	③	④	⑤	⑥		⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭

<b>① Model Line</b>	
N	Light duty forward control chassis cab

<b>② GVW Rating or Cab Type</b>	
L	3.5 to 5.0 ton (1.8m width cab)
M	5.0 to 7.5 ton (1.8m width cab)
N	3.5 to 5.0 ton (2.0m width cab)
P	5.0 to 7.5 ton (2.0m width cab)

<b>③ Driving System</b>	
R	Rear wheel drive (4X2)
S	All wheel drive (4X4)

<b>④ Engine Type</b>	
75	4HK1-TCN/TCS for vacuum pump
85	4JJ1-TCC/TCS

<b>⑤ Suspension Type and Main Brake System</b>	
— (No code)	FRT and RR rigid axle and hydraulic vacuum brake
A	FRT independent suspension, RR rigid axle and hydraulic vacuum brake

<b>⑥ Steering Location</b>	
U	Right hand drive (RHD)
L	Left hand drive (LHD)

<b>⑦ Wheel Base (mm)</b>			
E	2,451 to 2,600	K	3,801 to 4,100
F	2,601 to 2,900	L	4,101 to 4,400
H	3,201 to 3,500	M	4,401 to 4,700

<b>⑧ GVW (ton) [N series]</b>			
D	3.5 to 4.0	H	5.0 to 5.5
J	6.0 to 6.5	L	7.0 to 7.5

<b>⑨ Tire [N series]</b>	
1	Rear wheel single tire (High deck)
5	Rear dual tire (High deck)

<b>⑩ Frame Type</b>	
— (No code)	Standard frame
V	N series 850mm width straight frame

<b>⑪ Cab Configuration</b>	
— (No code)	Single cab (w/o bed, w/o tilt)
A	Single cab (w/o bed, w/ tilt)
W	Crew cab (w/o tilt)

<b>⑫ Rear Body Configuration [N series]</b>	
Y	Cab chassis (w/o rear body)

<b>⑬ Destination</b>	
E	Europe

<b>⑭ Engine horse power version</b>	
N	Multiple horse power/ Low horse power

## **Chapter 2 PRINCIPAL SPECIFICATIONS OF VARIOUS VEHICLE MODELS**

### **2.1. PRINCIPAL SPECIFICATIONS OF THE CAB CHASSIS**

## 2.1. PRINCIPAL SPECIFICATIONS OF THE CAB CHASSIS

The specifications given herein are based on the latest information available at the time this guide is released, and may be changed at any time without prior notice. For inquiry of latest information, contact ISUZU dealerships.

Main specification table for LHD EURO 5b+ (1/3)

Vehicle Model		NLR85AL-ED1AYEN	NLR85AL-ED5AYEN	NLR85AL-HD5AYEN	NLR85L-ED5AYEN	Remarks	
GVW	kg	3,500	3,500	3,500	3,500		
GCW	kg	7,000	7,000	7,000	7,000		
Axle capacity	FRT	2,600	2,600	2,600	2,900	As for G.A.W. details, refer to "II -4.1."	
	RR	2,650	2,650	2,650	2,650		
Wheelbase	mm	2,490	2,480	3,350	2,480		
Tread	FRT	1,395	1,395	1,395	1,475		
	RR	1,395	1,425	1,425	1,425		
Steering Angle	Inner (Outer)	42° (38° )	42° (38° )	39° (30° )	39° (30° )		
Engine	Type	4JJ1-TCC	4JJ1-TCC	4JJ1-TCC	4JJ1-TCC		
	Emission	EURO5b+	EURO5b+	EURO5b+	EURO5b+		
	Displacement	cc	2,999	2,999	2,999	2,999	
	Max Power	kw/rpm	88 / 2,800	88 / 2,800	88 / 2,800	88 / 2,800	
	Max Torque	Nm/rpm	300 / 1,600 - 2,800	300 / 1,600 - 2,800	300 / 1,600 - 2,800	300 / 1,600 - 2,800	
Frame width		700	700	700	700		
Transmission		MYY5T	MYY5T	MYY5T	MYY5T		
T/M Control: Power Assist		OPT	OPT	OPT	OPT		
AMT		N/A	N/A	N/A	N/A		
PTO		OPT (Side PTO)	OPT (Side PTO)	OPT (Side PTO)	OPT (Side PTO)		
Final Gear Ratio		3.909	3.909	3.909	3.909		
Clutch Size		Φ300	Φ300	Φ300	Φ300		
Axle	FRT	FI026	FI026	FI026	F029		
	RR	R026	R026	R026	R026		
P/Shaft	1st /2nd	P26	P26	P26 /P26	P26		
Tire	FRT&RR	Tire	205/75R16C	195/75R16C (205/75R16C)	195/75R16C (205/75R16C)	195/75R16C (205/75R16C)	
		Disc Wheel	16X5.5J-85	16X5.5J-116.5	16X5.5J-116.5	16X5.5J-116.5	
Brake	System	Vacuum	Vacuum	Vacuum	Vacuum		
	Park Brake	Center Brake	Center Brake	Center Brake	Center Brake		
	FRT (Disc)	mm	Φ265x35V	Φ293x40V	Φ293x40V	Φ293x40V	
	RR	mm	Φ290x75 D2L (Drum)	Φ275x30V (Disc)	Φ275x30V (Disc)	Φ275x30V (Disc)	
	ABS (W/EBD)+ESC		STD	STD	STD	STD	
	ASR		STD	STD	STD	STD	
	LSPV		N/A	N/A	N/A	N/A	
	EXH Brake		N/A	N/A	N/A	N/A	
Air Tank Capacity	Diameter (mm)-L	N/A	N/A	N/A	N/A		
Power Steering		STD	STD	STD	STD		
Suspension	Leaf span x Width (mm)	FRT	Φ21 × 400(Coil Spring)	Φ21 × 400(Coil Spring)	Φ21 × 400(Coil Spring)	1,140 X 60	
		RR	1,200 X 70	1300 × 70	1300 × 70	1,300 X 70	
Fuel Tank Capacity	L	63 (75)	63 (75)	63 (100)	63 (75)		
EXH Silencer	Elongated Round-Entire Length	mm	210x150x420	210x150x420	210x150x420		
EXH Emission Purifier "DPD"			STD	STD	STD		
ACG	STD	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)		
Battery Capacity	STD	65D23L (OPT:80D26L) x2	65D23L (OPT:80D26L) x2	65D23L (OPT:80D26L) x2	65D23L (OPT:80D26L) x2		
Starter Output Power		24V-4.0KW	24V-4.0KW	24V-4.0KW	24V-4.0KW		
CAB	Crew	3	3	3	3		
	Cab type	2X	2X	2X	2X	Refer to " I -2.13.2"	

Note: N/A is short for "Not available".

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Main specification table for LHD EURO 5b+ (2/3)

Vehicle Model		NLR85L-HD5AYEN	NLR85L-HD5WYEN	NMR85L-EH5AYEN	NMR85L-HH5AYEN	Remarks
GVW	kg	3,500	3,500	5,500	5,500	
GCW	kg	7,000	7,000	9,000	9,000	
Axle capacity	FRT	2,900	2,900	2,900	2,900	As for G.A.W. details, refer to "II -4.1."
	RR	2,650	2,650	5,000	5,000	
Wheelbase	mm	3,350	3,350	2,480	3,350	
Tread	FRT	1,475	1,475	1,475	1,475	
	RR	1,425	1,425	1,425	1,425	
Steering Angle	Inner (Outer)	39° (30° )	39° (30° )	39° (30° )	39° (30° )	
Engine	Type	4JJ1-TCC	4JJ1-TCC	4JJ1-TCC	4JJ1-TCC	
	Emission	EURO5b+	EURO5b+	EURO5b+	EURO5b+	
	Displacement	cc	2,999	2,999	2,999	2,999
	Max Power	kw/rpm	88 / 2,800	88 / 2,800	88 / 2,800	88 / 2,800
	Max Torque	Nm/rpm	300 / 1,600 - 2,800	300 / 1,600 - 2,800	300 / 1,600 - 2,800	300 / 1,600 - 2,800
Frame width		700	700	700	700	
Transmission		MYY5T	MYY5T	MYY5T	MYY5T	
T/M Control: Power Assist		OPT	OPT	OPT	OPT	
AMT		N/A	N/A	N/A	N/A	
PTO		OPT (Side PTO)	OPT (Side PTO)	OPT (Side PTO)	OPT (Side PTO)	
Final Gear Ratio		3.909	3.909	4.100	4.100	
Clutch Size		Φ300	Φ300	Φ300	Φ300	
Axle	FRT	F029	F029	F029	F029	
	RR	R026	R026	R050	R050	
P/Shaft	1st /2nd	P26 /P26	P26 /P26	P26	P26 /P26	
Tire	FRT&RR	Tire	195/75R16C (205/75R16C)	195/75R16C (205/75R16C)	205/75R16C	205/75R16C
		Disc Wheel	16X5.5J-116.5	16X5.5J-116.5	16X5.5J-116.5	16X5.5J-116.5
Brake	System	Vacuum	Vacuum	Vacuum	Vacuum	
	Park Brake	Center Brake	Center Brake	Center Brake	Center Brake	
	FRT (Disc)	mm	Φ293x40V	Φ293x40V	Φ293x40V	Φ293x40V
	RR	mm	Φ275x30V (Disc)	Φ275x30V (Disc)	Φ293x40V (Disc)	Φ293x40V (Disc)
	ABS (W/EBD)+ESC		STD	STD	STD	STD
	ASR		STD	STD	STD	STD
	LSPV		N/A	N/A	N/A	N/A
	EXH Brake		N/A	N/A	N/A	N/A
Air Tank Capacity	Diameter (mm)-L	N/A	N/A	N/A	N/A	
Power Steering		STD	STD	STD	STD	
Suspension	Leaf span x Width (mm)	FRT	1,140 X 60	1,140 X 60	1,140 X 60	1,140 X 60
		RR	1,300 X 70	1,300 X 70	1,300 X 70	1,300 X 70
Fuel Tank Capacity	L	63 (100)	63 (75)	75	100	
EXH Silencer	Elongated Round-Entire Length	mm	210x150x420	210x150x420	210x150x420	210x150x420
EXH Emission Purifier "DPD"			STD	STD	STD	STD
ACG	STD	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	
Battery Capacity	STD	65D23L (OPT:80D26L) x2	65D23L (OPT:80D26L) x2	65D23L (OPT:80D26L) x2	65D23L (OPT:80D26L) x2	
Starter Output Power		24V-4.0KW	24V-4.0KW	24V-4.0KW	24V-4.0KW	
CAB	Crew	3	6	3	3	
	Cab type	2X	2X Crew Cab	2X	2X	Refer to "I -2.13.2"

Note: N/A is short for "Not available".

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Main specification table for LHD EURO 5b+ (3/3)

Vehicle Model		NNR85L-FD5AYEN	NNR85L-HD5AYEN	NNR85L-HD5WYEN	Remarks
GVW	kg	3,500	3,500	3,500	
GCW	kg	7,000	7,000	7,000	
Axle capacity	FRT	3,100	3,100	3,100	As for G.A.W. details, refer to "II-4.1."
	RR	5,000	5,000	5,000	
Wheelbase	mm	2,800	3,395	3,395	
Tread	FRT	1,680	1,680	1,680	
	RR	1,485	1,485	1,485	
Steering Angle	Inner (Outer)	48° (35° )	48° (35° )	48° (35° )	
Engine	Type	4JJ1-TCC	4JJ1-TCC	4JJ1-TCC	
	Emission	EURO5b+	EURO5b+	EURO5b+	
	Displacement	cc	2,999	2,999	2,999
	Max Power	kw/rpm	88 / 2,800	88 / 2,800	88 / 2,800
	Max Torque	Nm/rpm	300 / 1,600 - 2,800	300 / 1,600 - 2,800	3 300 / 1,600 - 2,800
Frame width		750	750	750	
Transmission		MYY5T	MYY5T	MYY5T	
T/M Control: Power Assist		OPT	OPT	OPT	
AMT		N/A	N/A	N/A	
PTO		OPT (Side PTO)	OPT (Side PTO)	OPT (Side PTO)	
Final Gear Ratio		3.909	3.909	3.909	
Clutch Size		Φ300	Φ300	Φ300	
Axle	FRT	F031	F031	F031	
	RR	R050	R050	R050	
P/Shaft	1st /2nd	P26	P26 /P26	P26 /P26	
Tire	FRT&RR	Tire	195/75R16C (205/75R16C)	195/75R16C (205/75R16C)	195/75R16C (205/75R16C)
		Disc Wheel	16X5.5J-116.5	16X5.5J-116.5	16X5.5J-116.5
Brake	System	Vacuum	Vacuum	Vacuum	
	Park Brake	Center Brake	Center Brake	Center Brake	
	FRT (Disc)	mm	Φ293x40V	Φ293x40V	Φ293x40V
	RR	mm	Φ275x30V (Disc)	Φ275x30V (Disc)	Φ275x30V (Disc)
	ABS (W/EBD)+ESC		STD	STD	STD
	ASR		STD	STD	STD
	LSPV		N/A	N/A	N/A
	EXH Brake		N/A	N/A	N/A
Air Tank Capacity	Diameter (mm)-L	N/A	N/A	N/A	
Power Steering		STD	STD	STD	
Suspension	Leaf span x Width (mm)	FRT	1,300 X 70	1,300 X 70	1,300 X 70
		RR	1,300 X 70	1,300 X 70	1,300 X 70
Fuel Tank Capacity	L	63 (100)	63 (100)	63 (100)	
EXH Silencer	Elongated Round-Entire Length	mm	210x150x420	210x150x420	210x150x420
EXH Emission Purifier "DPD"			STD	STD	STD
ACG	STD	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	
Battery Capacity	STD	65D23L (OPT:80D26L) x2	65D23L (OPT:80D26L) x2	65D23L (OPT:80D26L) x2	
Starter Output Power		24V-4.0KW	24V-4.0KW	24V-4.0KW	
CAB	Crew	3	3	7	
	Cab type	3X	3X	3X Crew Cab	Refer to "I-2.13.2"

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Main specification table for LHD EURO VI (1/4)

Vehicle Model		NLR85AL-HD5AYE	NLR85L-HD5AYE	NMR85L-HH5AYE	Remarks
GVW	kg	3,500	3,500	5,500	
GCW	kg	7,000	7,000	9,000	
Axle capacity	FRT	2,600	2,900	2,900	As for G.A.W. details, refer to "II-4.1."
	RR	5,000	5,000	5,000	
Wheelbase	mm	3,350	3,350	3,350	
Tread	FRT	1,395	1,475	1,475	
	RR	1,425	1,425	1,425	
Steering Angle	Inner (Outer)	42° (38°)	39° (30°)	39° (30°)	
Engine	Type	4JJ1-TCS	4JJ1-TCS	4JJ1-TCS	
	Emission	EURO VI	EURO VI	EURO VI	
	Displacement	cc	2,999	2,999	2,999
	Max Power	kw/rpm	110 / 2,800	110 / 2,800	110 / 2,800
	Max Torque	Nm/rpm	375 / 1,600 – 2,800	375 / 1,600 – 2,800	375 / 1,600 – 2,800
Frame width		700	700	700	
Transmission		MYY5A	MYY5A	MYY5A	
T/M Control: Power Assist		OPT	OPT	OPT	
AMT		OPT	OPT	OPT	
PTO		OPT (Side PTO)	OPT (Side PTO)	OPT (Side PTO)	
Final Gear Ratio		3.909	3.909	4.300(4.556)	
Clutch Size		Φ300	Φ300	Φ300	
Axle	FRT	FI026	F029	F029	
	RR	R050	R050	R050	
P/Shaft	1st /2nd	P26 /P26	P26 /P26	P26 /P26	
Tire	FRT&RR	Tire	205/75R16C	195/75R16C (205/75R16C)	205/75R16C
		Disc Wheel	16X5.5J-116.5	16X5.5J-116.5	16X5.5J-116.5
Brake	System	Vacuum	Vacuum	Vacuum	
	Park Brake	Center Brake	Center Brake	Center Brake	
	FRT (Disc)	mm	Φ293x40V	Φ293x40V	Φ293x40V
	RR	mm	Φ275x30V (Disc)	Φ275x30V (Disc)	Φ293x40V (Disc)
	ABS (W/EBD)+ESC		STD	STD	STD
	ASR		STD	STD	STD
	LSPV		N/A	N/A	N/A
	EXH Brake		STD	STD	STD
Air Tank Capacity	Diameter (mm)-L	N/A	N/A	N/A	
Power Steering		STD	STD	STD	
Suspension	Leaf span x Width (mm)	FRT	Φ21 × 400(Coil Spring)	1,140 X 60	1,140 X 60
		RR	1300 × 70	1,300 X 70	1,300 X 70
Fuel Tank Capacity	L	63 (100)	63 (100)	100	
EXH Silencer	Elongated Round-Entire Length (DPD/SCR) mm	Φ258-780 / Φ243-578	Φ258-780 / Φ243-578	Φ258-780 / Φ243-578	
EXH Emission Purifier "DPD & SCR"		STD	STD	STD	
ACG	STD	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	
Battery Capacity	STD	80D26L x2	80D26L x2	80D26L x2	
Starter Output Power		24V-4.0KW	24V-4.0KW	24V-4.0KW	
CAB	Crew	3	3	3	
	Cab type	2X	2X	2X	Refer to "I-2.13.2"

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Main specification table for LHD EURO VI (2/4)

Vehicle Model		NNR85L-HD5AYE	NPR85L-HH5AYE	NPR85L-HJ5AYE	NPR85L-KJ5AYE	Remarks
GVW	kg	3,500	5,500	6,500	6,500	
GCW	kg	7,000	9,000	10,000	10,000	
Axle capacity	FRT	3,100	3,100	3,100	3,100	As for G.A.W. details, refer to "II -4.1."
	RR	5,000	5,000	6,000	6,000	
Wheelbase	mm	3,395	3,395	3,395	3,845	
Tread	FRT	1,680	1,680	1,680	1,680	
	RR	1,485	1,485	1,525	1,525	
Steering Angle	Inner (Outer)	48° (35° )	48° (35° )	43° (33° )	43° (33° )	
Engine	Type	4JJ1-TCS	4JJ1-TCS	4JJ1-TCS	4JJ1-TCS	
	Emission	EURO VI	EURO VI	EURO VI	EURO VI	
	Displacement	cc	2,999	2,999	2,999	
	Max Power	kw/rpm	110 / 2,800	110 / 2,800	110 / 2,800	
	Max Torque	Nm/rpm	375 / 1,600 – 2,800	375 / 1,600 – 2,800	375 / 1,600 – 2,800	
Frame width		750	750	750	750	
Transmission		MYY5A	MYY5A	MYY6S	MYY6S	
T/M Control: Power Assist		OPT	OPT	OPT	OPT	
AMT		OPT	OPT	OPT	OPT	
PTO		OPT (Side PTO)	OPT (Side PTO)	OPT (Side PTO)	OPT (Side PTO)	
Final Gear Ratio		3.909	4.300 (4.556)	4.556	4.556	
Clutch Size		Φ300	Φ300	Φ300	Φ300	
Axle	FRT	F031	F031	F031	F031	
	RR	R050	R050	R060	R060	
P/Shaft	1st /2nd	P26/P26	P26/P26	P26/P26	P26/P26	
Tire	FRT&RR	Tire	195/75R16C(205/75R16C)	205/75R16C	215/75R17.5	215/75R17.5
		Disc Wheel	16X5.5J-116.5	16X5.5J-116.5	17.5X6.00-127	17.5X6.00-127
Brake	System	Vacuum	Vacuum	Power Assist	Power Assist	
	Park Brake	Center Brake	Center Brake	Center Brake	Center Brake	
	FRT (Disc)	mm	Φ293x40V	Φ293x40V	Φ293x40V	Φ293x40V
	RR	mm	Φ275x30V (Disc)	Φ293x40V (Disc)	Φ293x40V (Disc)	Φ293x40V (Disc)
	ABS (W/EBD)+ESC		STD	STD	STD	STD
	ASR		STD	STD	STD	STD
	LSPV		N/A	N/A	N/A	N/A
	EXH Brake		STD	STD	STD	STD
Air Tank Capacity	Diameter (mm)-L	N/A	N/A	N/A	N/A	
Power Steering		STD	STD	STD	STD	
Suspension	Leaf span x Width (mm)	FRT	1,300 X 70	1,300 X 70	1,300 X 70	1,300 X 70
		RR	1,300 X 70	1,300 X 70	1,300 X 70	1,300 X 70
Fuel Tank Capacity	L	100	100	100	100	
EXH Silencer	Elongated Round-Entire Length (DPD/SCR)	mm	Φ258-780 / Φ243-578	Φ258-780 / Φ243-578	Φ258-780 / Φ243-578	Φ258-780 / Φ243-578
EXH Emission Purifier "DPD & SCR"			STD	STD	STD	STD
ACG	STD	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	
Battery Capacity	STD	80D26L x2	80D26L x2	80D26L x2	80D26L x2	
Starter Output Power		24V-4.0KW	24V-4.0KW	24V-4.0KW	24V-4.0KW	
CAB	Crew	3	3	3	3	
	Cab type	3X	3X	3X	3X	Refer to "I -2.13.2"

Note: N/A is short for "Not available".

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Main specification table for LHD EURO VI (3/4)

Vehicle Model		NPR85L-HL5VAYE	NPR85L-KL5VAYE	NPR85L-ML5VAYE	NPR75L-HL5VAYE	Remarks
GVW	kg	7,500	7,500	7,500	7,500	
GCW	kg	11,000	11,000	11,000	11,000	
Axle capacity	FRT	3,100	3,100	3,100	3,100	As for G.A.W. details, refer to "II -4.1."
	RR	6,600	6,600	6,600	6,600	
Wheelbase	mm	3,365	3,815	4,475	3,365	
Tread	FRT	1,680	1,680	1,680	1,680	
	RR	1,650	1,650	1,650	1,650	
Steering Angle	Inner (Outer)	43° (33° )	43° (33° )	43° (33° )	43° (33° )	
Engine	Type	4JJ1-TCS	4JJ1-TCS	4JJ1-TCS	4HK1-TCS	
	Emission	EURO VI	EURO VI	EURO VI	EURO VI	
	Displacement	cc	2,999	2,999	2,999	5,193
	Max Power	kw/rpm	110 / 2,800	110 / 2,800	110 / 2,800	140 / 2,600
	Max Torque	Nm/rpm	375 / 1,600 – 2,800	375 / 1,600 – 2,800	375 / 1,600 – 2,800	510 / 1,600
Frame width		850	850	850	850	
Transmission		MY6S	MY6S	MY6S	MZZ6F	
T/M Control: Power Assist		OPT	OPT	OPT	OPT	
AMT		OPT	OPT	OPT	OPT	
PTO		OPT (Side PTO)	OPT (Side PTO)	OPT (Side PTO)	OPT (Side PTO)	
Final Gear Ratio		5.571	5.571	5.571	4.100	
Clutch Size		Φ300	Φ300	Φ300	Φ325	
Axle	FRT	F031	F031	F031	F031	
	RR	R066	R066	R066	R066	
P/Shaft	1st /2nd	P26/P26	P26/P26	P30 /P30 ( AMT: P26 / P26)	P30 /P30	
Tire	FRT&RR	Tire	215/75R17.5	215/75R17.5	215/75R17.5	215/75R17.5
		Disc Wheel	17.5X6.00-127	17.5X6.00-127	17.5X6.00-127	17.5X6.00-127
Brake	System	Power Assist	Power Assist	Power Assist	Power Assist	
	Park Brake	Center Brake	Center Brake	Center Brake	Center Brake	
	FRT (Disc)	mm	Φ310x42V	Φ310x42V	Φ310x42V	Φ310x42V
	RR	mm	Φ310x42V (Disc)	Φ310x42V (Disc)	Φ310x42V (Disc)	Φ310x42V (Disc)
	ABS (W/EBD)+ESC		STD	STD	STD	STD
	ASR		STD	STD	STD	STD
	LSPV		N/A	N/A	N/A	N/A
	EXH Brake		STD	STD	STD	STD
Air Tank Capacity	Diameter (mm)-L	N/A	N/A	N/A	N/A	
Power Steering		STD	STD	STD	STD	
Suspension	Leaf span x Width (mm)	FRT	1,300 X 70	1,300 X 70	1,300 X 70	1,300 X 70
		RR	1,300 X 70	1,300 X 70	1,300 X 70	1,300 X 70
Fuel Tank Capacity	L	100	100	100	100	
EXH Silencer	Elongated Round-Entire Length (DPD/SCR)	mm	Φ258-780 / Φ243-578	Φ258-780 / Φ243-578	Φ258-780 / Φ243-578	Φ258-780 / Φ243-578
EXH Emission Purifier "DPD & SCR"			STD	STD	STD	STD
ACG	STD	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	
Battery Capacity	STD	80D26L x2	80D26L x2	80D26L x2	80D26L x2	
Starter Output Power		24V-4.0KW	24V-4.0KW	24V-4.0KW	24V-4.5KW	
CAB	Crew	3	3	3	3	
	Cab type	3X	3X	3X	3X	Refer to " I -2.13.2"

Note: N/A is short for "Not available".

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Main specification table for LHD EURO VI (4/4)

Vehicle Model		NPR75L-KL5VAYE	NPR75L-ML5VAYE	NPR75L-ML5VWYE	Remarks	
GVW	kg	7,500	7,500	7,500		
GCW	kg	11,000	11,000	11,000		
Axle capacity	FRT	3,100	3,100	3,100	As for G.A.W. details, refer to "II-4.1."	
	RR	6,600	6,600	6,600		
Wheelbase	mm	3,815	4,475	4,475		
Tread	FRT	1,680	1,680	1,680		
	RR	1,650	1,650	1,650		
Steering Angle	Inner (Outer)	43° (33° )	43° (33° )	43° (33° )		
Engine	Type	4HK1-TCS	4HK1-TCS	4HK1-TCS		
	Emission	EURO VI	EURO VI	EURO VI		
	Displacement	cc	5,193	5,913	5,913	
	Max Power	kw/rpm	140 / 2,600	140 / 2,600	140 / 2,600	
	Max Torque	Nm/rpm	510 / 1,600	510 / 1,600	510 / 1,600	
Frame width		850	850	850		
Transmission		MZZ6F	MZZ6F	MZZ6F		
T/M Control: Power Assist		OPT	OPT	OPT		
AMT		OPT	OPT	OPT		
PTO		OPT (Side PTO)	OPT (Side PTO)	OPT (Side PTO)		
Final Gear Ratio		4.100	4.100	4.100		
Clutch Size		Φ325	Φ325	Φ325		
Axle	FRT	F031	F031	F031		
	RR	R066	R066	R066		
P/Shaft	1st /2nd	P30 /P30	P30 /P30	P30 /P30		
Tire	FRT&RR	Tire	215/75R17.5	215/75R17.5	215/75R17.5	
		Disc Wheel	17.5X6.00-127	17.5X6.00-127	17.5X6.00-127	
Brake	System	Power Assist	Power Assist	Power Assist		
	Park Brake	Center Brake	Center Brake	Center Brake		
	FRT (Disc)	mm	Φ310x42V	Φ310x42V	Φ310x42V	
	RR	mm	Φ310x42V (Disc)	Φ310x42V (Disc)	Φ310x42V (Disc)	
	ABS (W/EBD)+ESC		STD	STD	STD	
	ASR		STD	STD	STD	
	LSPV		N/A	N/A	N/A	
	EXH Brake		STD	STD	STD	
Air Tank Capacity	Diameter (mm)-L	N/A	N/A	N/A		
Power Steering		STD	STD	STD		
Suspension	Leaf span x Width (mm)	FRT	1,300 X 70	1,300 X 70	1,300 X 70	
		RR	1,300 X 70	1,300 X 70	1,300 X 70	
Fuel Tank Capacity	L	100	100	100		
EXH Silencer	Elongated Round-Entire Length (DPD/SCR) mm	Φ258-780 / Φ243-578	Φ258-780 / Φ243-578	Φ258-780 / Φ243-578		
EXH Emission Purifier "DPD & SCR"		STD	STD	STD		
ACG	STD	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)		
Battery Capacity	STD	80D26L x2	80D26L x2	80D26L x2		
Starter Output Power		24V-4.5KW	24V-4.5KW	24V-4.5KW		
CAB	Crew	3	3	7		
	Cab type	3X	3X	3X Crew Cab	Refer to "I-2.13.2"	

Note: N/A is short for "Not available".

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Main specification table for RHD EURO 5b+ (1/2)

Vehicle Model		NLR85AU-ED1AYEN	NLR85U-ED5AYEN	NLR85U-HD5AYEN	NLR85U-HD5WYEN	Remarks
GVW	kg	3,500	3,500	3,500	3,500	
GCW	kg	7,000	7,000	7,000	7,000	
Axle capacity	FRT	2,600	2,900	2,900	2,900	As for G.A.W. details, refer to "II -4.1."
	RR	2,650	2,650	2,650	2,650	
Wheelbase	mm	2,490	2,480	3,350	3,350	
Tread	FRT	1,395	1,475	1,475	1,475	
	RR	1,395	1,425	1,425	1,425	
Steering Angle	Inner (Outer)	42° (38° )	42° (38° )	39° (30° )	39° (30° )	
Engine	Type	4JJ1-TCC	4JJ1-TCC	4JJ1-TCC	4JJ1-TCC	
	Emission	EURO5b+	EURO5b+	EURO5b+	EURO5b+	
	Displacement	cc	2,999	2,999	2,999	2,999
	Max Power	kw/rpm	88 / 2,800	88 / 2,800	88 / 2,800	88 / 2,800
	Max Torque	Nm/rpm	300 / 1,600 - 2,800	300 / 1,600 - 2,800	300 / 1,600 - 2,800	300 / 1,600 - 2,800
Frame width		700	700	700	700	
Transmission		MYY5T	MYY5T	MYY5T	MYY5T	
T/M Control: Power Assist		OPT	OPT	OPT	OPT	
AMT		N/A	N/A	N/A	N/A	
PTO		OPT (Side PTO)	OPT (Side PTO)	OPT (Side PTO)	OPT (Side PTO)	
Final Gear Ratio		3.909	3.909	3.909	3.909	
Clutch Size		Φ300	Φ300	Φ300	Φ300	
Axle	FRT	F1026	F029	F029	F029	
	RR	R026	R026	R026	R026	
P/Shaft	1st /2nd	P26	P26	P26 /P26	P26 /P26	
Tire	FRT&RR	Tire	205/75R16C	195/75R16C (205/75R16C)	195/75R16C (205/75R16C)	195/75R16C (205/75R16C)
		Disc Wheel	16X5.5J-85	16X5.5J-116.5	16X5.5J-116.5	16X5.5J-116.5
Brake	System	Vacuum	Vacuum	Vacuum	Vacuum	
	Park Brake	Center Brake	Center Brake	Center Brake	Center Brake	
	FRT (Disc)	mm	Φ265x35V	Φ293x40V	Φ293x40V	Φ293x40V
	RR	mm	Φ290x75 D2L (Drum)	Φ275x30V (Disc)	Φ275x30V (Disc)	Φ275x30V (Disc)
	ABS (W/EBD)+ESC		STD	STD	STD	STD
	ASR		STD	STD	STD	STD
	LSPV		N/A	N/A	N/A	N/A
	EXH Brake		N/A	N/A	N/A	N/A
Air Tank Capacity	Diameter (mm)-L	N/A	N/A	N/A	N/A	
Power Steering		STD	STD	STD	STD	
Suspension	Leaf span x Width (mm)	FRT	Φ21 × 400(Coil Spring)	1,140 X 60	1,140 X 60	1,140 X 60
		RR	1,200 X 70	1,300 X 70	1,300 X 70	1,300 X 70
Fuel Tank Capacity	L	63 (75)	63 (75)	63 (100)	63 (75)	
EXH Silencer	Elongated Round-Entire Length	mm	210x150x420	210x150x420	210x150x420	210x150x420
EXH Emission Purifier "DPD"			STD	STD	STD	STD
ACG	STD	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	
Battery Capacity	STD	65D23L (OPT:80D26L) x2	65D23L (OPT:80D26L) x2	65D23L (OPT:80D26L) x2	65D23L (OPT:80D26L) x2	
Starter Output Power		24V-4.0KW	24V-4.0KW	24V-4.0KW	24V-4.0KW	
CAB	Crew	3	3	3	6	
	Cab type	2X	2X	2X	2X Crew Cab	Refer to " I -2.13.2"

Note: N/A is short for "Not available".

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Main specification table for RHD EURO 5b+ (2/2)

Vehicle Model		NMR85U-EH5AYEN	NMR85U-HH5AYEN	NNR85U-FD5AYEN	NNR85U-HD5AYEN	Remarks
GVW	kg	5,500	5,500	3,500	3,500	
GCW	kg	9,000	9,000	7,000	7,000	
Axle capacity	FRT	2,900	2,900	3,100	3,100	As for G.A.W. details, refer to "II -4.1."
	RR	5,000	5,000	5,000	5,000	
Wheelbase	mm	2,480	3,350	2,800	3,395	
Tread	FRT	1,475	1,475	1,680	1,680	
	RR	1,425	1,425	1,485	1,485	
Steering Angle	Inner (Outer)	39° (30° )	39° (30° )	48° (35° )	48° (35° )	
Engine	Type	4JJ1-TCC	4JJ1-TCC	4JJ1-TCC	4JJ1-TCC	
	Emission	EURO5b+	EURO5b+	EURO5b+	EURO5b+	
	Displacement	cc	2,999	2,999	2,999	2,999
	Max Power	kw/rpm	88 / 2,800	88 / 2,800	88 / 2,800	88 / 2,800
	Max Torque	Nm/rpm	300 / 1,600 - 2,800	300 / 1,600 - 2,800	300 / 1,600 - 2,800	300 / 1,600 - 2,800
Frame width		700	700	750	750	
Transmission		MYY5T	MYY5T	MYY5T	MYY5T	
T/M Control: Power Assist		OPT	OPT	OPT	OPT	
AMT		N/A	N/A	N/A	N/A	
PTO		OPT (Side PTO)	OPT (Side PTO)	OPT (Side PTO)	OPT (Side PTO)	
Final Gear Ratio		4.100	4.100	3.909	3.909	
Clutch Size		Φ300	Φ300	Φ300	Φ300	
Axle	FRT	F029	F029	F031	F031	
	RR	R050	R050	R050	R050	
P/Shaft	1st /2nd	P26	P26 /P26	P26	P26 /P26	
Tire	FRT&RR	Tire	205/75R16C	205/75R16C	195/75R16C (205/75R16C)	195/75R16C (205/75R16C)
		Disc Wheel	16X5.5J-116.5	16X5.5J-116.5	16X5.5J-116.5	16X5.5J-116.5
Brake	System	Vacuum	Vacuum	Vacuum	Vacuum	
	Park Brake	Center Brake	Center Brake	Center Brake	Center Brake	
	FRT (Disc)	mm	Φ293x40V	Φ293x40V	Φ293x40V	Φ293x40V
	RR	mm	Φ293x40V (Disc)	Φ293x40V (Disc)	Φ275x30V (Disc)	Φ275x30V (Disc)
	ABS (W/EBD)+ESC		STD	STD	STD	STD
	ASR		STD	STD	STD	STD
	LSPV		N/A	N/A	N/A	N/A
	EXH Brake		N/A	N/A	N/A	N/A
Air Tank Capacity	Diameter (mm)-L	N/A	N/A	N/A	N/A	
Power Steering		STD	STD	STD	STD	
Suspension	Leaf span x Width (mm)	FRT	1,140 X 60	1,140 X 60	1,300 X 70	1,300 X 70
		RR	1,300 X 70	1,300 X 70	1,300 X 70	1,300 X 70
Fuel Tank Capacity	L	75	100	63 (100)	63 (100)	
EXH Silencer	Elongated Round-Entire Length	mm	210x150x420	210x150x420	210x150x420	210x150x420
EXH Emission Purifier "DPD"		STD	STD	STD	STD	
ACG	STD	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	
Battery Capacity	STD	65D23L (OPT:80D26L) x2	65D23L (OPT:80D26L) x2	65D23L (OPT:80D26L) x2	65D23L (OPT:80D26L) x2	
Starter Output Power		24V-4.0KW	24V-4.0KW	24V-4.0KW	24V-4.0KW	
CAB	Crew	3	3	3	3	
	Cab type	2X	2X	3X	3X	Refer to "I -2.13.2"

Note: N/A is short for "Not available".

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Main specification table for RHD EURO VI (1/3)

Vehicle Model		NLR85U-HD5AYE	NMR85U-HH5AYE	NNR85U-HD5AYE	NPR85U-HH5AYE	Remarks
GVW	kg	3,500	5,500	3,500	5,500	
GCW	kg	7,000	9,000	7,000	9,000	
Axle capacity	FRT	2,900	2,900	3,100	3,100	As for G.A.W. details, refer to "II-4.1."
	RR	5,000	5,000	5,000	5,000	
Wheelbase	mm	3,350	3,350	3,395	3,395	
Tread	FRT	1,475	1,475	1,680	1,680	
	RR	1,425	1,425	1,485	1,485	
Steering Angle	Inner (Outer)	39° (30° )	39° (30° )	48° (35° )	48° (35° )	
Engine	Type	4JJ1-TCS	4JJ1-TCS	4JJ1-TCS	4JJ1-TCS	
	Emission	EURO VI	EURO VI	EURO VI	EURO VI	
	Displacement	cc	2,999	2,999	2,999	2,999
	Max Power	kw/rpm	110 / 2,800	110 / 2,800	110 / 2,800	110 / 2,800
	Max Torque	Nm/rpm	375 / 1,600 – 2,800	375 / 1,600 – 2,800	375 / 1,600 – 2,800	375 / 1,600 – 2,800
Frame width		700	700	750	750	
Transmission		MYY5A	MYY5A	MYY5A	MYY5A	
T/M Control: Power Assist		OPT	OPT	OPT	OPT	
AMT		OPT	OPT	OPT	OPT	
PTO		OPT (Side PTO)	OPT (Side PTO)	OPT (Side PTO)	OPT (Side PTO)	
Final Gear Ratio		3.909	4.300 (4.556)	3.909	4.300 (4.556)	
Clutch Size		Φ300	Φ300	Φ300	Φ300	
Axle	FRT	F029	F029	F031	F031	
	RR	R050	R050	R050	R050	
P/Shaft	1st /2nd	P26/P26	P26/P26	P26/P26	P26/P26	
Tire	FRT&RR	195/75R16C (OPT:205/75R16C)	205/75R16C	195/75R16C (OPT:205/75R16C)	205/75R16C	
	Disc Wheel	16X5.5J-85	16X5.5J-116.5	16X5.5J-116.5	16X5.5J-116.5	
Brake	System	Vacuum	Vacuum	Vacuum	Vacuum	
	Park Brake	Center Brake	Center Brake	Center Brake	Center Brake	
	FRT (Disc)	mm	Φ293x30V	Φ293x40V	Φ293x40V	Φ293x40V
	RR	mm	Φ293x40V (Disc)	Φ293x40V (Disc)	Φ275x30V (Disc)	Φ293x40V (Disc)
	ABS (W/EBD)+ESC		STD	STD	STD	STD
	ASR		STD	STD	STD	STD
	LSPV		N/A	N/A	N/A	N/A
	EXH Brake		STD	STD	STD	STD
Air Tank Capacity	Diameter (mm)-L	N/A	N/A	N/A	N/A	
Power Steering		STD	STD	STD	STD	
Suspension	Leaf span x Width (mm)	FRT	1,140 X 60	1,140 X 60	1,300 X 70	1,300 X 70
		RR	1,300 X 70	1,300 X 70	1,300 X 70	1,300 X 70
Fuel Tank Capacity	L	63 (100)	100	100	100	
EXH Silencer	Elongated Round-Entire Length (DPD/SCR) mm	Φ258-780 / Φ243-578	Φ258-780 / Φ243-578	Φ258-780 / Φ243-578	Φ258-780 / Φ243-578	
EXH Emission Purifier "DPD & SCR"		STD	STD	STD	STD	
ACG	STD	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	
Battery Capacity	STD	80D26L x2	80D26L x2	80D26L x2	80D26L x2	
Starter Output Power		24V-4.0KW	24V-4.0KW	24V-4.0KW	24V-4.0KW	
CAB	Crew	3	3	3	3	
	Cab type	2X	2X	3X	3X	Refer to "I-2.13.2"

Note: N/A is short for "Not available".

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Main specification table for RHD EURO VI (2/3)

Vehicle Model		NPR85U-HJ5AYE	NPR85U-KJ5AYE	NPR85U-HL5VAYE	NPR85U-KL5VAYE	NPR85U-ML5VAYE	Remarks	
GVW	kg	6,500	6,500	7,500	7,500	7,500		
GCW	kg	10,000	10,000	11,000	11,000	11,000		
Axle capacity	FRT	3,100	3,100	3,100	3,100	3,100	As for G.A.W. details, refer to "II-4.1."	
	RR	6,000	6,000	6,600	6,600	6,600		
Wheelbase	mm	3,395	3,845	3,365	3,815	4,475		
Tread	FRT	1,680	1,680	1,680	1,680	1,680		
	RR	1,525	1,525	1,650	1,650	1,650		
Steering Angle	Inner (Outer)	43° (33° )	43° (33° )	43° (33° )	43° (33° )	43° (33° )		
Engine	Type	4JJ1-TCS	4JJ1-TCS	4JJ1-TCS	4JJ1-TCS	4JJ1-TCS		
	Emission	EURO VI						
	Displacement	cc	2,999	2,999	2,999	2,999	2,999	
	Max Power	kw/rpm	110 / 2,800	110 / 2,800	110 / 2,800	110 / 2,800	110 / 2,800	
	Max Torque	Nm/rpm	375 / 1,600 – 2,800	375 / 1,600 – 2,800	375 / 1,600 – 2,800	375 / 1,600 – 2,800	375 / 1,600 – 2,800	
Frame width		750	750	850	850	850		
Transmission		MYY6S	MYY6S	MYY6S	MYY6S	MYY6S		
T/M Control: Power Assist		OPT	OPT	OPT	OPT	OPT		
AMT		OPT	OPT	OPT	OPT	OPT		
PTO		OPT (Side PTO)						
Final Gear Ratio		4.556	4.556	5.571	5.571	5.571		
Clutch Size		Φ300	Φ300	Φ300	Φ300	Φ300		
Axle	FRT	F031	F031	F031	F031	F031		
	RR	R060	R060	R066	R066	R066		
P/Shaft	1st /2nd	P26/P26	P26/P26	P26/P26	P26/P26	P30 /P30 (AMT:P26/ P26)		
Tire	FRT&RR	Tire	215/75R17.5	215/75R17.5	215/75R17.5	215/75R17.5	215/75R17.5	
		Disc Wheel	17.5X6.00-127	17.5X6.00-127	17.5X6.00-127	17.5X6.00-127	17.5X6.00-127	
Brake	System	Power Assist						
	Park Brake	Center Brake	Center Brake	Center Brake	Center Brake	Center Brake		
	FRT (Disc)	mm	Φ293x40V	Φ310x42V	Φ293x40V	Φ310x42V	Φ310x42V	
	RR	mm	Φ293x40V (Disc)	Φ293x40V (Disc)	Φ310x42V (Disc)	Φ310x42V (Disc)	Φ310x42V (Disc)	
	ABS (W/EBD)+ESC		STD	STD	STD	STD	STD	
	ASR		STD	STD	STD	STD	STD	
	LSPV		N/A	N/A	N/A	N/A	N/A	
	EXH Brake		STD	STD	STD	STD	STD	
Air Tank Capacity	Diameter (mm)-L	N/A	N/A	N/A	N/A	N/A		
Power Steering		STD	STD	STD	STD	STD		
Suspension	Leaf span x Width (mm)	FRT	1,300 X 70	1,300 X 70	1,300 X 70	1,300 X 70	1,300 X 70	
		RR	1,300 X 70	1,300 X 70	1,300 X 70	1,300 X 70	1,300 X 70	
Fuel Tank Capacity	L	100	100	100	100	100		
EXH Silencer	Elongated Round-Entire Length (DPD/SCR)	mm	Φ258-780 / Φ243-578	Φ258-780 / Φ243-578	Φ258-780 / Φ243-578	Φ258-780 / Φ243-578	Φ258-780 / Φ243-578	
EXH Emission Purifier "DPD & SCR"			STD	STD	STD	STD	STD	
ACG	STD	24V-80A (OPT: 24V-50A)						
Battery Capacity	STD	80D26L x2						
Starter Output Power		24V-4.0KW	24V-4.0KW	24V-4.0KW	24V-4.0KW	24V-4.0KW		
CAB	Crew	3	3	3	3	3		
	Cab type	3X	3X	3X	3X	3X	Refer to "I-2.13.2"	

Note: N/A is short for "Not available".

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Main specification table for RHD EURO VI (3/3)

Vehicle Model		NPR75U-HL5VAYE	NPR75U-KL5VAYE	NPR75U-ML5VAYE	NPR75U-ML5VWYE	Remarks	
GVW	kg	7,500	7,500	7,500	7,500		
GCW	kg	11,000	11,000	11,000	11,000		
Axle capacity	FRT	3,100	3,100	3,100	3,100	As for G.A.W. details, refer to "II-4.1."	
	RR	6,600	6,600	6,600	6,600		
Wheelbase	mm	3,365	3,815	4,475	4,475		
Tread	FRT	1,680	1,680	1,680	1,680		
	RR	1,650	1,650	1,650	1,650		
Steering Angle	Inner (Outer)	43° (33° )	43° (33° )	43° (33° )	43° (33° )		
Engine	Type	4HK1-TCS	4HK1-TCS	4HK1-TCS	4HK1-TCS		
	Emission	EURO VI	EURO VI	EURO VI	EURO VI		
	Displacement	cc	5,193	5,193	5,193		
	Max Power	kw/rpm	140 / 2,600	140 / 2,600	140 / 2,600	140 / 2,600	
	Max Torque	Nm/rpm	510 / 1,600	510 / 1,600	510 / 1,600	510 / 1,600	
Frame width		850	850	850	850		
Transmission		MZZ6F	MZZ6F	MZZ6F	MZZ6F		
T/M Control: Power Assist		OPT	OPT	OPT	OPT		
AMT		OPT	OPT	OPT	OPT		
PTO		OPT (Side PTO)	OPT (Side PTO)	OPT (Side PTO)	OPT (Side PTO)		
Final Gear Ratio		4.100	4.100	4.100	4.100		
Clutch Size		Φ325	Φ325	Φ325	Φ325		
Axle	FRT	F031	F031	F031	F031		
	RR	R066	R066	R066	R066		
P/Shaft	1st /2nd	P30 /P30	P30 /P30	P30 /P30	P30 /P30		
Tire	FRT&RR	Tire	215/75R17.5	215/75R17.5	215/75R17.5	215/75R17.5	
		Disc Wheel	17.5X6.00-127	17.5X6.00-127	17.5X6.00-127	17.5X6.00-127	
Brake	System	Power Assist	Power Assist	Power Assist	Power Assist		
	Park Brake	Center Brake	Center Brake	Center Brake	Center Brake		
	FRT (Disc)	mm	Φ310x42V	Φ310x42V	Φ310x42V	Φ310x42V	
	RR	mm	Φ310x42V (Disc)	Φ310x42V (Disc)	Φ310x42V (Disc)	Φ310x42V (Disc)	
	ABS (W/EBD)+ESC		STD	STD	STD	STD	
	ASR		STD	STD	STD	STD	
	LSPV		N/A	N/A	N/A	N/A	
	EXH Brake		STD	STD	STD	STD	
Air Tank Capacity	Diameter (mm)-L	N/A	N/A	N/A	N/A		
Power Steering		STD	STD	STD	STD		
Suspension	Leaf span x Width (mm)	FRT	1,300 X 70	1,300 X 70	1,300 X 70	1,300 X 70	
		RR	1,300 X 70	1,300 X 70	1,300 X 70	1,300 X 70	
Fuel Tank Capacity	L	100	100	100	100		
EXH Silencer	Elongated Round-Entire Length (DPD/SCR)	mm	Φ258-780 / Φ243-578	Φ258-780 / Φ243-578	Φ258-780 / Φ243-578	Φ258-780 / Φ243-578	
EXH Emission Purifier "DPD & SCR"			STD	STD	STD	STD	
ACG	STD	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)	24V-80A (OPT: 24V-50A)		
Battery Capacity	STD	80D26L(OPT:115E41L) x2	80D26L(OPT:115E41L) x2	80D26L(OPT:115E41L) x2	80D26L(OPT:115E41L) x2		
Starter Output Power		24V-4.5KW	24V-4.5KW	24V-4.5KW	24V-4.5KW		
CAB	Crew	3	3	3	7		
	Cab type	3X	3X	3X	3X	Refer to "I-2.13.2"	

Note: N/A is short for "Not available".

## **Chapter 3 PRECAUTIONS FOR REAR BODY MOUNTING**

- 3.1. SRS AIRBAG**
- 3.2. DPD**
- 3.3. DPD-UREA SCR EMISSION RELATED DEVICE**
- 3.4. ABS/ESC**
- 3.5. AMT**
- 3.6. INSTALLATION OR RELOCATION OF A HEAVY OBJECT ON/TO THE LATERAL SIDE OF A CHASSIS FRAME**
- 3.7. HOLES IN A CHASSIS FRAME**
- 3.8. CHASSIS FRAME FOR CREW CAB**
- 3.9. INSTALLING EQUIPMENTS ON A ROOF**
- 3.10. THROUGH HOLES INSIDE A CAB FOR HARNESSSES OR AN ANTENNA CABLE**
- 3.11. HANDLING OF SIDE TURN SIGNAL LAMP AT BODY MOUNTING**

### 3.1. SRS AIRBAG

SRS (Supplemental Restraint System) Airbag is installed on all vehicle models.

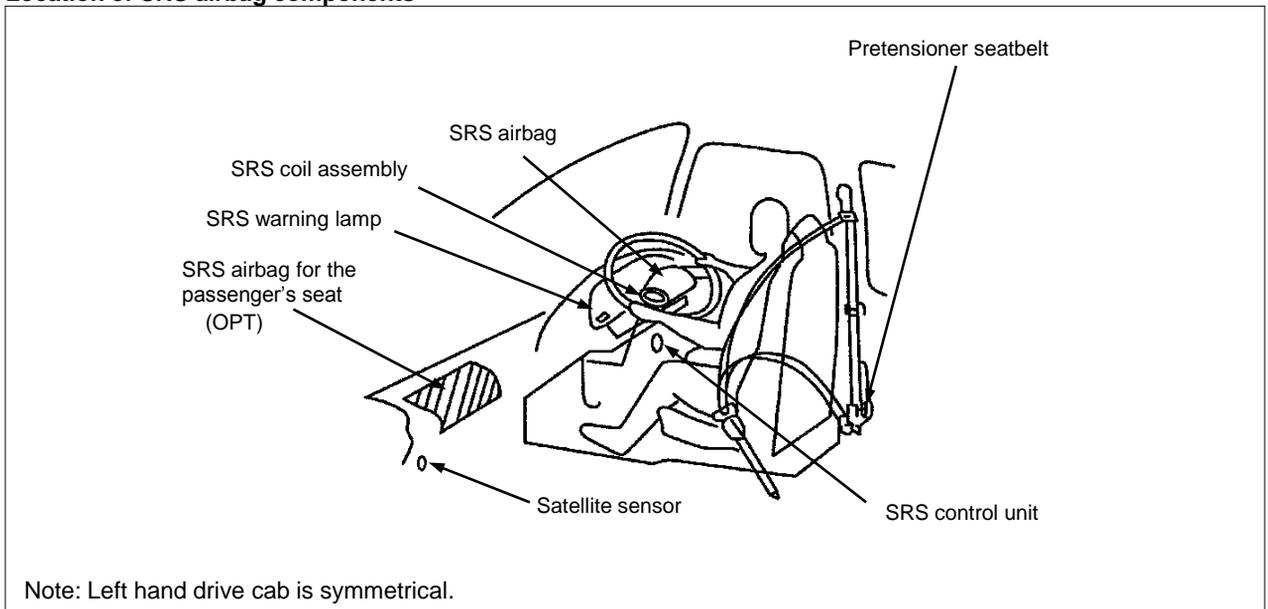
SRS airbag is an auxiliary seatbelt equipment which deploys to reduce and disperse a shock to occupants' bodies when the front end of a vehicle gets such a strong jolt that may seriously harm the driver or the passenger.

- For vehicles equipped with an SRS airbags, "SRS AIRBAG" is indicated on the center pad of the steering wheel.

[System components]

SRS airbag system consists of an SRS control unit, airbag assembly, SRS coil assembly, seatbelt pretensioner, a satellite sensor, an SRS airbag warning lamp, and an SRS harness that connects these components. This SRS harness is either wrapped with a yellow tube or partially wrapped with yellow tape.

#### Location of SRS airbag components



[Activation summary]

- The SRS control unit fitted on the steering support determines whether SRS airbags should be activated.
- G-sensor which is housed in the SRS control unit and a satellite sensor determine the degree (deceleration rate) of collision impact on vehicle. If it exceeds pre-specified conditions, ignition current is supplied to the inflator inside the airbag assembly in order to allow the ignited inflator to immediately produce gas that will make the airbags swell and deploy.

**WARNING**

When mounting a rear body or modifying a chassis, follow the instructions below. Any works without following these instructions will result in malfunction of airbag when in collision or unexpected deployment of airbag. Be extremely cautious because such failures can seriously harm vehicle occupants or plant workers or put their lives at risk.

[Prohibition at body building and chassis remodeling]

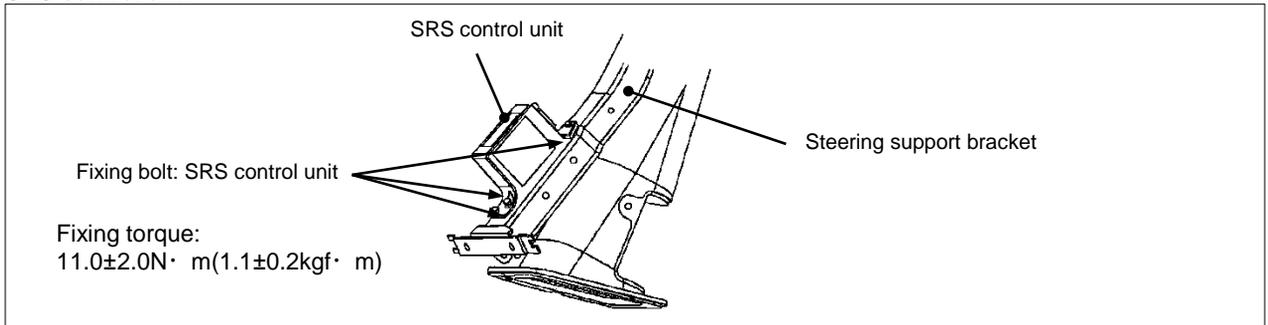
- Do not perform the following:
  - Relocating a bumper forward or extending its length
  - Fitting any work components (e.g. Snow plow) in fore part of a vehicle
  - Fitting any components such as winch, spare tire and bush bar in fore part of a vehicle
  - Putting away any high-place work vehicle components (e.g. Basket and crane boom) in fore part of a vehicle
- Do not modify meter cluster assembly, steering column shaft assembly, floor panels, and side panels.
- Do not disable or modify SRS control unit, airbag assembly, SRS coil assembly, pretensioner seatbelt, satellite sensor, and SRS harness.

[Cautions at installation works]

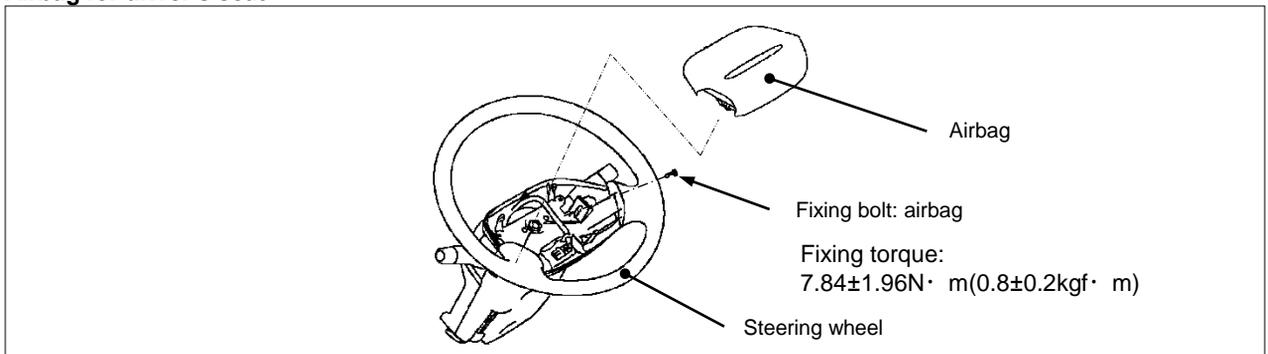
- Before modifying any electrical equipments, cab or steering area, be sure to disconnect the negative battery terminal and wait for a minimum of 15 seconds.
- Before performing arc welding to the cab, make sure that the SRS control unit connector is disconnected.
- Before removing SRS control unit, disconnect the negative battery terminal to cut a power supply, wait for a minimum of 15 seconds, and then disconnect connectors.
- Before fitting SRS control unit, disconnect the negative battery terminal. After completing the installation, reconnect the battery cable.
- Before applying heat higher than 85°C to a cab in order for welding, coating, etc., remove SRS control unit, airbag assembly, SRS coil assembly, pretensioner seatbelt, satellite sensor, and SRS harness. Contact the ISUZU dealership for details on removal of the components.
- Removed airbag assembly must be put with its horn pad side up at all times.
- Do not drop or give a shock to SRS control unit, airbag assembly, SRS coil assembly, pretensioner seatbelt, satellite sensor, and SRS harness. If these SRS Airbag components are dropped or given any shock, replace them with new ones even if they do not look damaged.
- Before doing any work in the vicinity of the steering support bracket, disconnect the negative battery terminal. After completing the work, reconnect the battery cable.
- Do not use an electric tester for diagnosing SRS circuit.
- When reconnecting the SRS harness connector, be sure to connect it securely.
- Do not connect a power harness of any other equipment to the airbag fuse.
- Do not unnecessarily turn the SRS coil assembly, regardless of whether it is fitted on the steering wheel or not, because doing so may damage a harness inside the assembly. Even when it needs to be turned, do not turn it either way more than three times from neutral point.
- Before disconnecting the joint of the steering shaft from the steering unit in order to mount or dismount a cab or for other reasons, be sure to lock the starter key switch. If the joint is disconnected without locking the starter key switch and with the steering wheel unremoved, the steering shaft turns due to the self weight of the steering wheel, possibly breaking the SRS coil assembly.
- Before putting the steering wheel back in place, be sure that the front wheels are facing straight forward, and to align the turning part of the SRS coil assembly with the neutral point.
  - To align the adjustment mark ( $\Delta$ ) with the neutral point mark ( $\diamond$ ), fully turn the turning part of the SRS coil assembly clockwise and then turn it counterclockwise approximately 3.3 times.
- Since every SRS airbag component is paired with a vehicle number, if you remove any SRS airbag component, be sure to put it back on its mating vehicle.

- Because any kind of mishandling or malfunction while disconnecting a pretensioner seatbelt or during any other works may cause a blowout of hot gas, do not turn the gas jet of the pretensioner seatbelt cylinder on people.
- For replacing or disposing of the airbag assembly, or dismantling the SRS airbag installed vehicle, contact ISUZU dealership at all times.
- For detailed information on SRS Airbag System, refer to the instruction manual, or the repair manual, or consult ISUZU dealership.
- When putting SRS airbag components back in place, tighten their bolts with the following tightening torque.

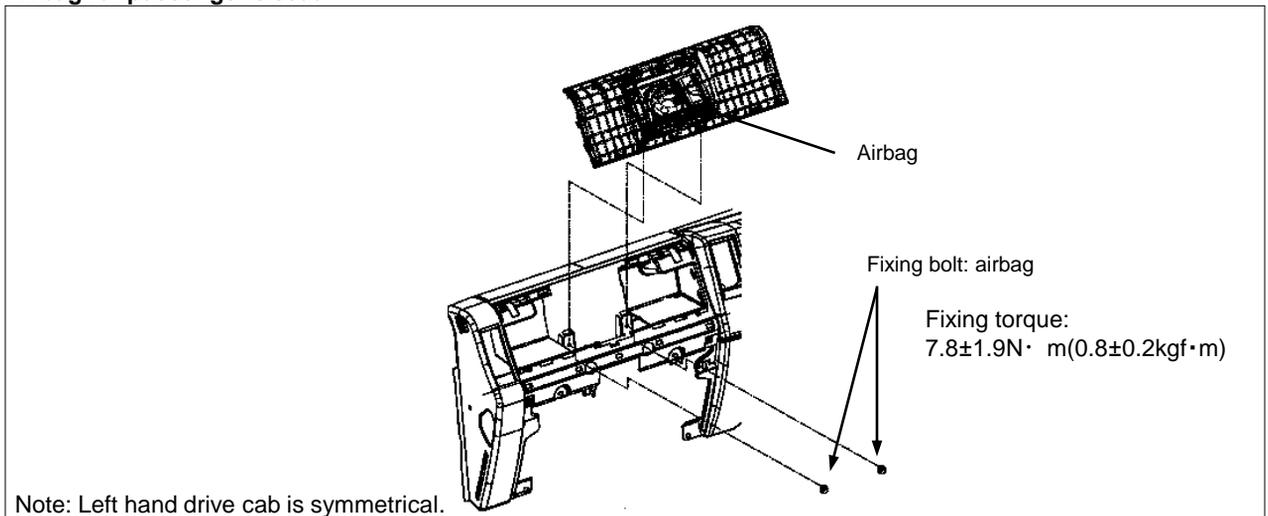
**SRS control unit**



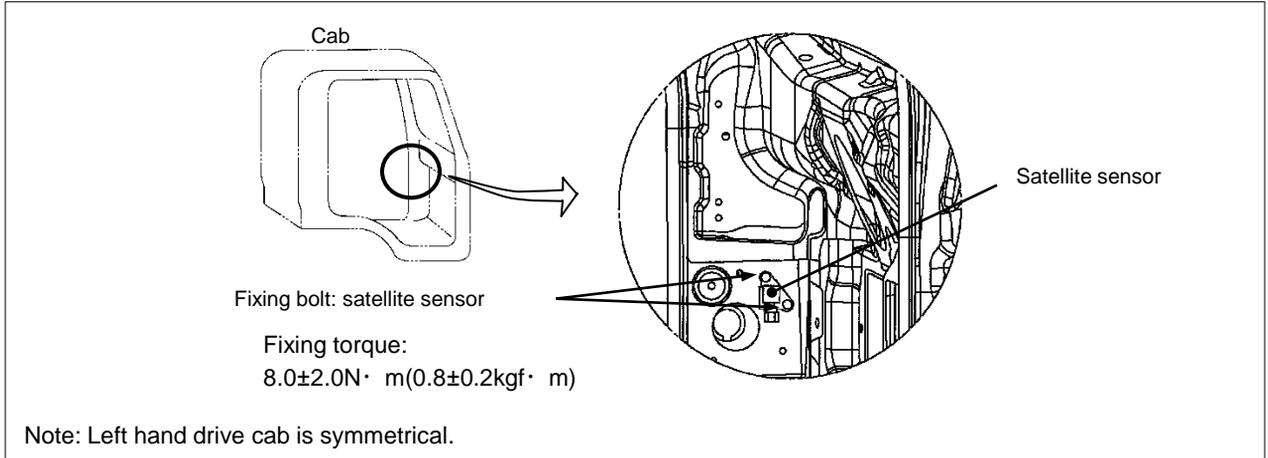
**Airbag for driver's seat**



**Airbag for passenger's seat**



Satellite sensor



Note: Tightening torque of the ground bolts on a cab or on the chassis frame:

$11.8 \pm 2.0 \text{ N} \cdot \text{m} (1.2 \pm 0.2 \text{ Kgf} \cdot \text{m})$

### 3.2. DPD

Target vehicle model : Euro5b+

DPD (Diesel Particulate Defuser) is installed. This DPD collects PM (Particulate Matter) in exhaust gas, and automatically regenerate (combust) the collected PM.

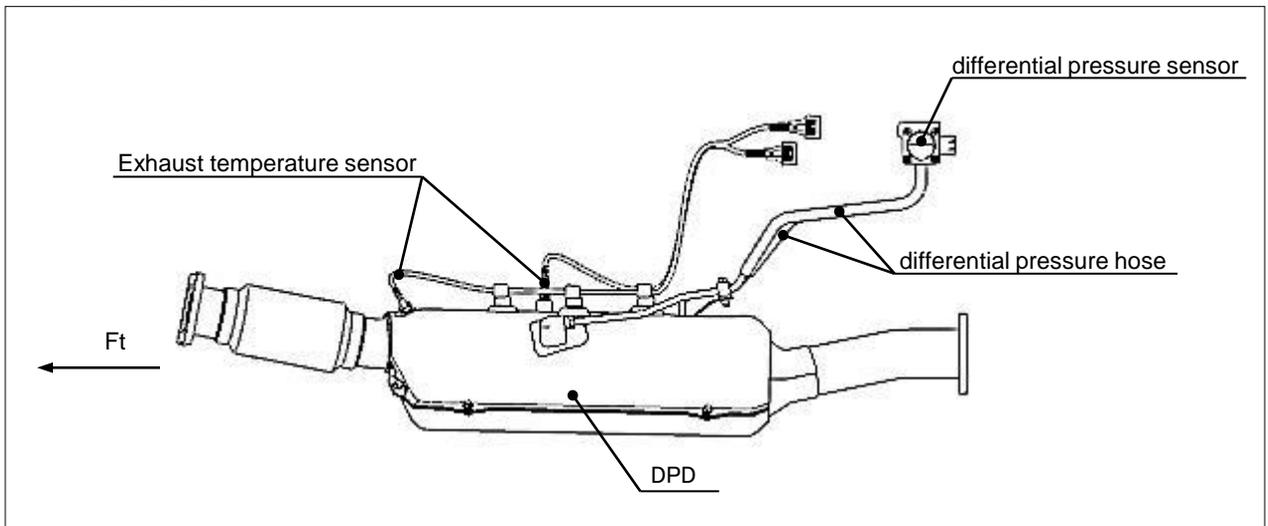
#### [Prohibition]

- Do not modify or relocate DPD and the differential pressure sensor, etc.

#### [Cautions]

- There are piping for exhaust pressure, the exhaust temperature sensor, and the differential pressure sensor installed on the main body of DPD. Note the following matter enough so as not to give shock at mounting rear body.
  - The catalyst is used in DPD. The catalyst move or damage when DPD is placed vertically or the impact by the dropping and the collision is given. Be careful with handling.
  - Precise circuit board (IC) is built in the differential pressure sensor. Do not give shock at mounting rear body.
- The main body of DPD is removed for maintenance. Mount rear body so that there is no obstacle in the removing working efficiency.

#### DPD and sensors

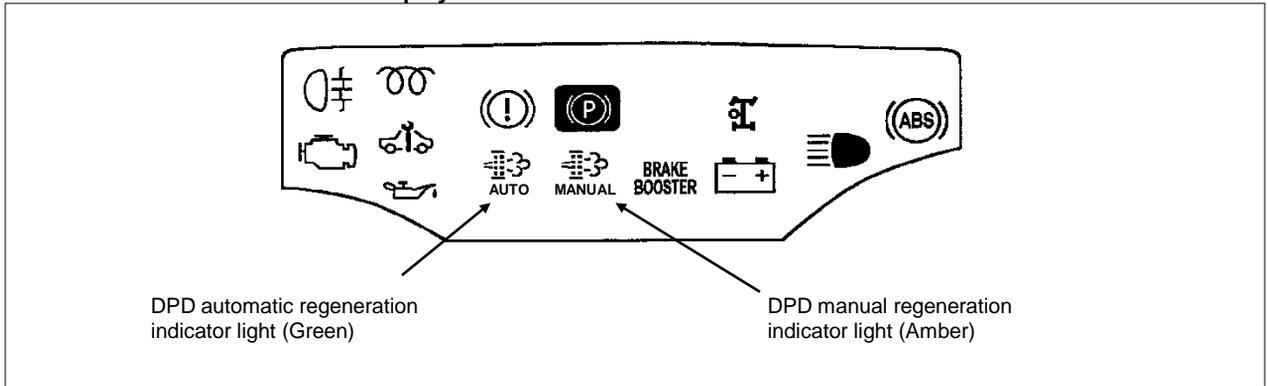


[Regeneration of DPD]

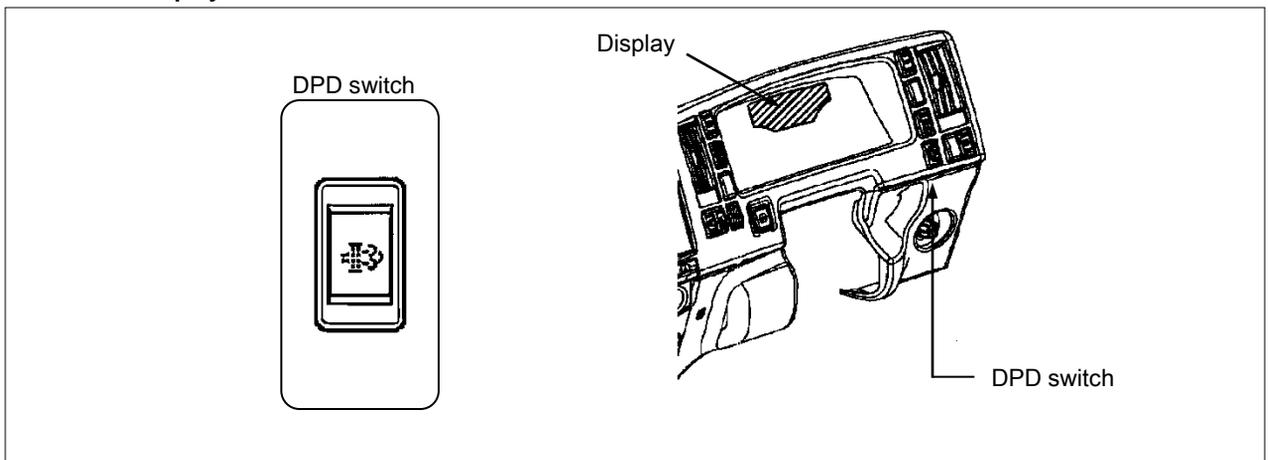
DPD collects PM (Particulate Matter) in exhaust gas, and automatically regenerate (combust) the PM when certain amount is collected.

The layout of meter is shown as follows.

**Meter without multi-information display**



**Location of display and DPD switch**



• Auto regeneration

At auto-regeneration, symbol mark “AUTO” (green) in the meter turns on.

When regeneration does not complete due to driving condition, symbol mark “MANUAL” (amber) in the meter flashes. (aprox. 1 /sec)

- Though normal driving is possible until the sign change to fast blinking (aprox. 3 times/sec), take the procedure according to the below “Manual regeneration procedure” when you end operation or park.  
(This is to recover the function of DPD, and not a breakdown. )
- When the sign change to fast blinking (aprox. 3 times/sec), stop the vehicle in the safe place as promptly as possible and take the regeneration procedure. DPD is clogged, and the normal driving time limit is decreased.

- Manual regeneration procedure of DPD
  - Stop the vehicle in the safe place without combustible material such as dry grasses and waste papers. White smoke might be generated while the manual operation is regeneration. Do not operate indoors in bad ventilation .
  - Confirm there is no combustible around the silencer, DPD, and the exhaust tube to guard against fires. Moreover, confirm other people (especially, children) are not around the silencer, DPD, and the exhaust tube for the prevention of accidents. Do not part from the car while regenerating.
  - Do not approach the vicinity of the exhaust tube while regenerating. You may get burnt with the high temperature exhaust gas.
  - Shift the gear-change a neutral, and operate the handbrake surely.
  - Put the engine into the state of idling. Lower the engine rotation to the lower bound when the idling rotational speed is raised with the idling control knob.
  - The PTO installation vehicle must stop the operation of PTO. Turn off the PTO switch, and return the external accelerator control to neutral.
  - Press the DPD switch.

The symbol mark “MANUAL” (amber) in the meter change from blinking to lighting, the engine rotation increases automatically and the regeneration starts. Do not part from the vehicle while regenerating. Regeneration completes in 15 to 20 minutes. When the symbol mark “MANUAL” (amber) in the meter goes off, regeneration is finished.

- PTO installed vehicle and manual regeneration

When the vehicle is driven or continued the PTO work with the DPD lamp in the meter blinking, the check lamp turns on and the output is limited to prevent DPD being damaged.

To avoid the blinking the DPD lamp when operating PTO, do manual regeneration after confirming the following DPD regeneration necessity when operating PTO for a long time by fixation.

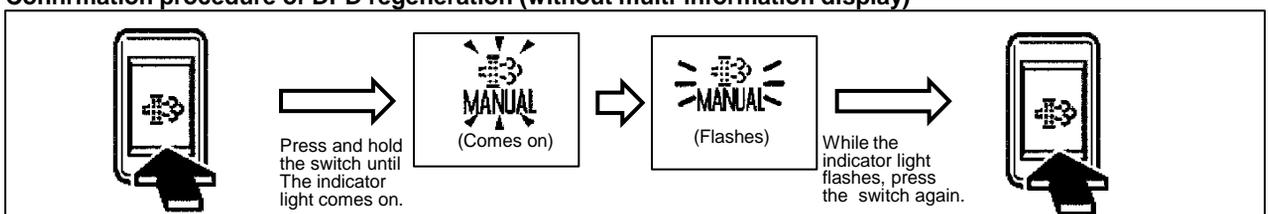
**【Necessity confirmation of DPD regeneration】**

- ① Press DPD switch.
- ② Confirm the diagnostic result on the display.

If the symbol mark “MANUAL” (amber) is blinking, press the DPD switch again to manually start regeneration.

If symbol mark “MANUAL” (amber) turns off after blinking, DPD regeneration is not needed yet. (PTO can be operated as it is.)

**Confirmation procedure of DPD regeneration (without multi-information display)**



### 3.3. DPD-UREA SCR EMISSION RELATED DEVICE

Target vehicle model : Euro VI

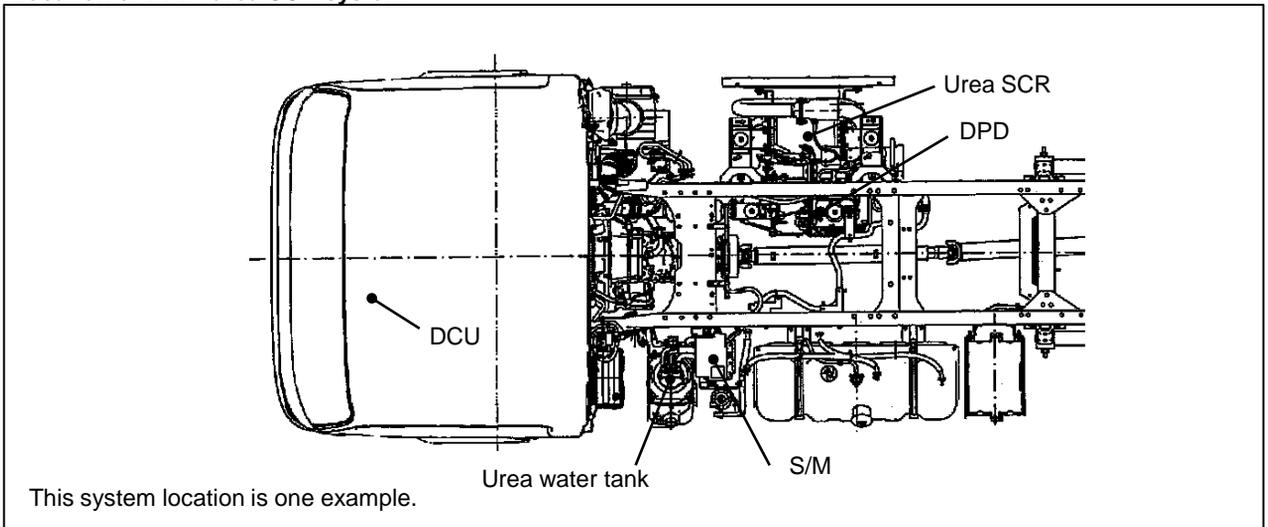
DPD (Diesel Particulate Defuser) and urea SCR (Selective Catalytic Reduction) are installed in this vehicle.

DPD collects PM (Particulate Matter) in exhaust gas, and automatically combust the collected PM. Urea SCR resolves NOx to water and nitrogen by jetting the urea water in exhaust gas.

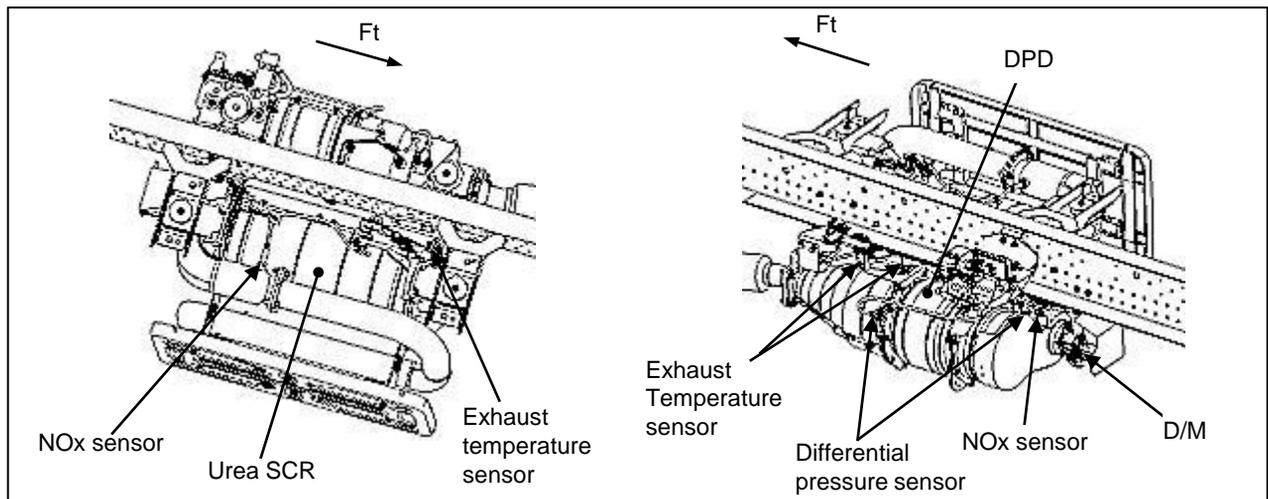
[Prohibition]

- Do not modify or relocate DPD-urea SCR (including sensors), DCU (Dosing Control Unit), the urea water tank, S/M (Supply Module), D/M (Dosing Module), intake and exhaust system, since they will have bad influence to exhaust performance or engine itself.
- Do not get on sensors, DCU, S/M, and D/M.
- Do not paint the components related to DPD-urea SCR, including urea water piping.

#### Location of DPD- urea SCR system



#### Location of DPD- urea SCR, D/M and sensors



[Cautions]

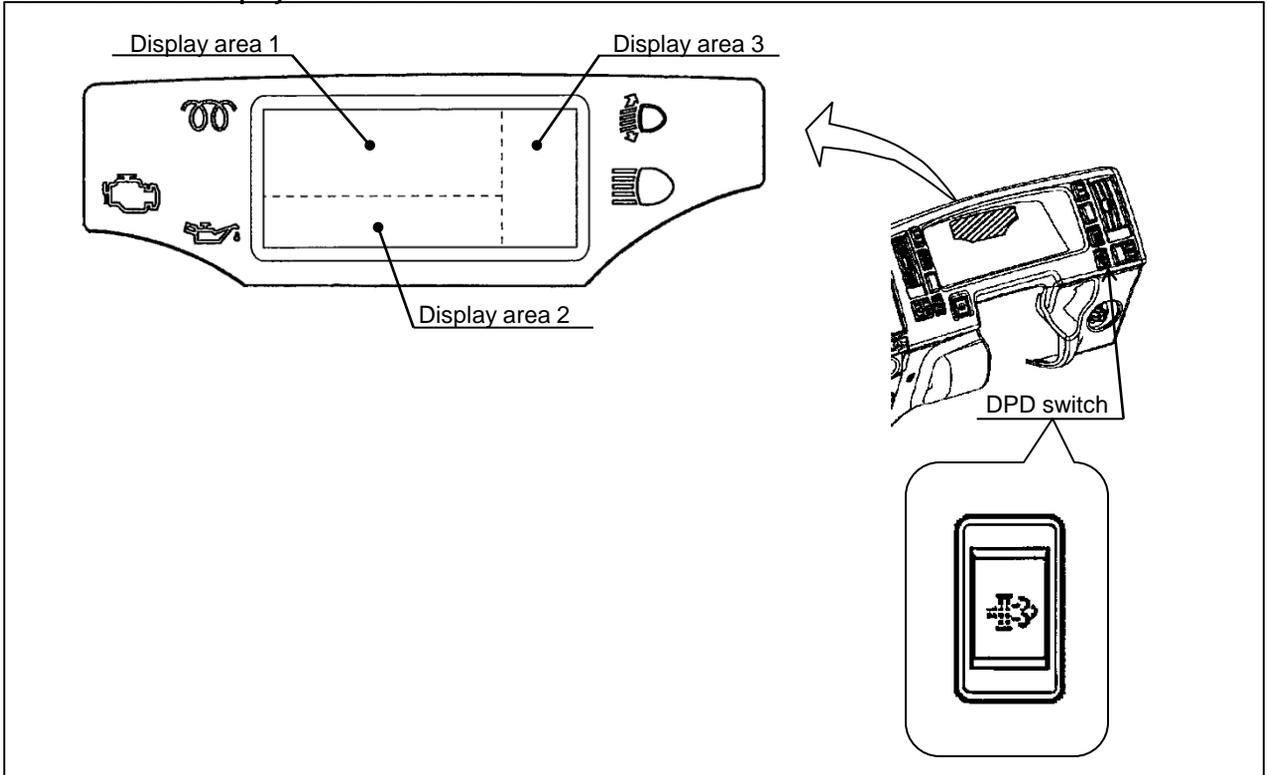
- The temperature of DPD-urea SCR rises by exhaust gas. Be cautious with heat damage of rear body.
- The catalyst is used in DPD-urea SCR. When the shock by the collision is given to DPD-urea SCR, the catalyst might be damaged. Be careful with handling.
- The exhaust pressure taking out piping, the exhaust temperature sensor, the differential pressure sensor, the NOx sensor, and D/M are installed on DPD-urea SCR. Especially, the precision instrument is built in the differential pressure sensor, the NOx sensor, and D/M. Be careful not to give shock at mounting rear body.
- For DPD-urea SCR, mount rear body so there is no obstacle in the removing working efficiency for maintenance. Refer to the paragraph of [Maintenance space] for space necessary for maintenance.
- When performing electrical welding on chassis frame, remove connectors for harness of sensors, DCU, S/M, D/M. Follow the instructions in " I -2.4. PRECAUTIONS FOR WELDING".
- Do not detach the connector of the battery cable and the system until the after run operation is completed. Mount rear body after completing the after run operation.
  - The after run is a system to returns the urea water to the tank after key OFF for the freeze proofing. It takes about two minutes. Meanwhile, the pump drive sound is heard.
- Do not spray water directly in the exhaust pipe so as not to infiltrate volumes of water in DPD-urea SCR. It will lead to the damage of the NOx sensor installed inside.

[Regeneration of DPD]

DPD collects PM (Particulate Matter) in exhaust gas, and automatically regenerate (combust) the PM when certain amount is collected.

- At auto-regeneration, DPD lamp (green) in the meter turns on.  
When regeneration does not complete due to driving condition, DPD lamp (orange) in the meter flashes. (aprox. 1 /sec)
- Though normal driving is possible until the sign change to fast blinking (aprox. 3 times/sec), take the procedure according to the below “Manual regeneration procedure” when you end operation or park.  
(This is to recover the function of DPD, and not a breakdown. )
- When the sign change to fast blinking (aprox. 3 times/sec), stop the vehicle in the safe place as promptly as possible and take the regeneration procedure. DPD is clogged, and the normal driving time limit is decreased.
- Manual regeneration procedure of DPD
  - Stop the vehicle in the safe place without combustible material such as dry grasses and waste papers. White smoke might be generated while the manual operation is regeneration. Do not operate indoors in bad ventilation .
  - Confirm there is no combustible around the silencer, DPD, and the exhaust tube to guard against fires. Moreover, confirm other people (especially, child) are not around the silencer, DPD, and the exhaust tube for the prevention of accidents. Do not part from the car while regenerating.
  - Do not approach the vicinity of the exhaust tube while regenerating. You may get burnt with the high temperature exhaust gas.
  - Shift the gear-change a neutral, and operate the handbrake surely.
  - Press the DPD switch.  
The DPD lamp (amber) in the meter change from blinking to lighting, the engine rotation increases automatically and the regeneration starts. Do not part from the vehicle while regenerating. Regeneration completes in 15 to 20 minutes. When the DPD lamp (amber) in the meter goes off, regeneration is finished.

**Multi-information display / DPD switch location**



**Multi-information display (Warning light display)**

Display information	Display area 1	Display area 2	Display area 3	color
Automatic regeneration of DPD				Green
PM level being checked for selectable DPD regeneration				Amber
Manual regeneration of DPD in progress				Amber
Push DPD switch				Amber

• PTO installed vehicle and manual regeneration

When the vehicle is driven or continued the PTO work with the DPD lamp in the meter blinking, the check lamp turns on and the output is limited to prevent DPD being damaged.

To avoid the blinking the DPD lamp when operating PTO, do manual regeneration after confirming the following DPD regeneration necessity when operating PTO for a long time by fixation.

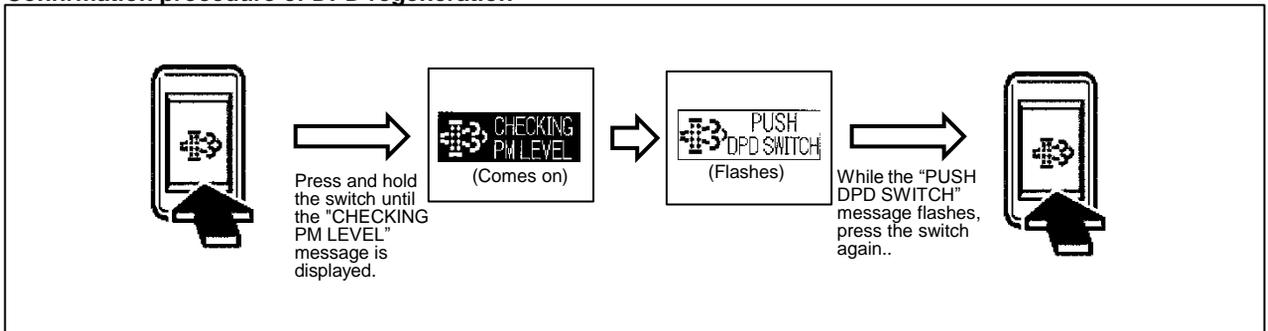
【Necessity confirmation of DPD regeneration】

- ① Press DPD switch.
- ② Confirm the diagnostic result on display.

If there is “PUSH DPD SWITCH” displayed, press the DPD switch again to manually start regeneration.

If there is no sign, DPD regeneration is not needed yet. (PTO can be operated as it is.)

Confirmation procedure of DPD regeneration

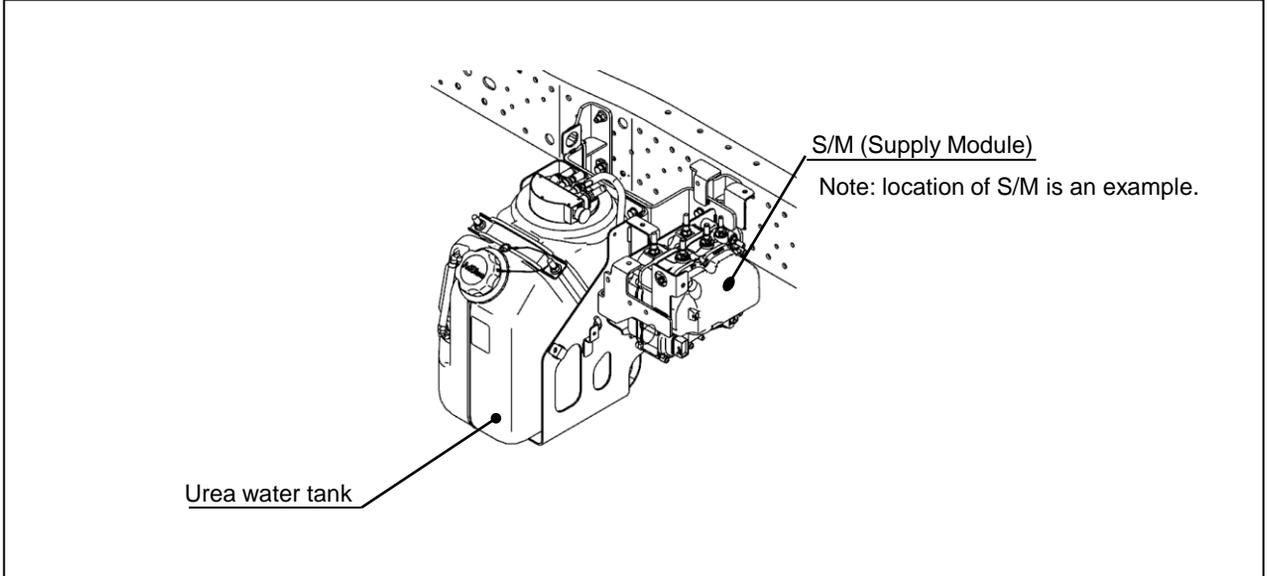


[Maintenance space]

Secure the following maintenance space between each device and rear body.

- Urea water tank

**Location of urea water tank**

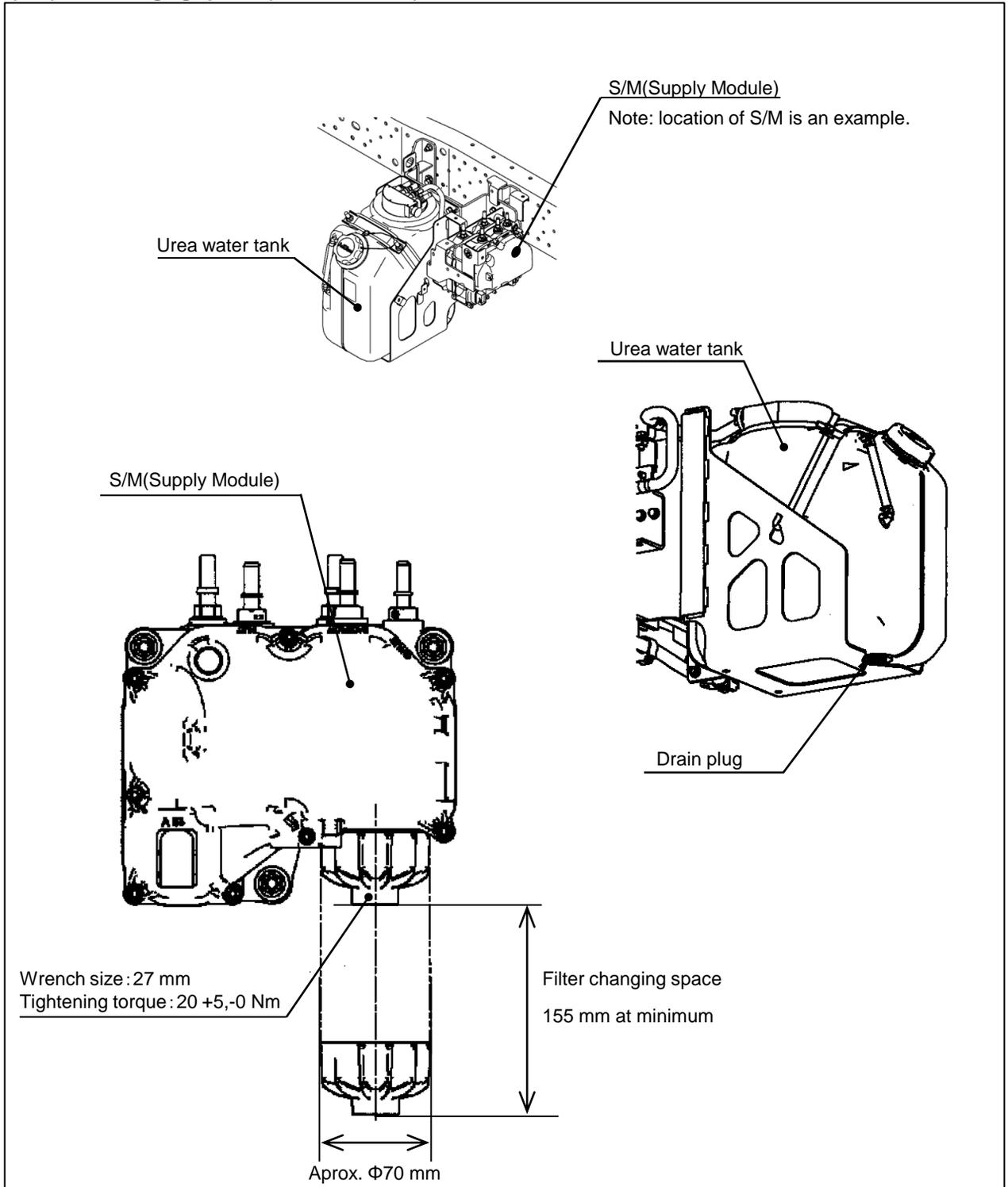


- When installing rear body around urea water (AdBlue) tank, note that neither the injection port (cap) nor the level gauge are concealed so as not to become an obstruction at the urea water filler gun insertion.
- Secure the space of 30mm or more when installing components such as mudguards around the urea water tank forward and backward the urea water tank and outside of the vehicle.
- Do not install parts directly on the urea water tank bracket.

Note: AdBlue is a registered trademark of VDA (Verband der Deutschen Automobilindustrie).

- Supply module and urea water tank
  - Secure space for the filter exchange under supply module.
  - Secure the space of the drain work of the urea water tank.

**(S/M) filter changing space / (Urea water tank) drain location**



### 3.4. ABS/ESC

ABS (Anti-Lock Brake System) and ESC (Electronic Stability Control) are installed.

ABS prevents the wheels from being locked or slipping when a vehicle is braked, so as to assure safety and steering performance of the vehicle.

ESC suppresses the wheel spin by electronically controlling the engine power and the brake power when running and accelerating in a slippery road, and contributes to the prevention of slipping sideways.

#### [Prohibition]

The following is prohibited irrespective of the reason.

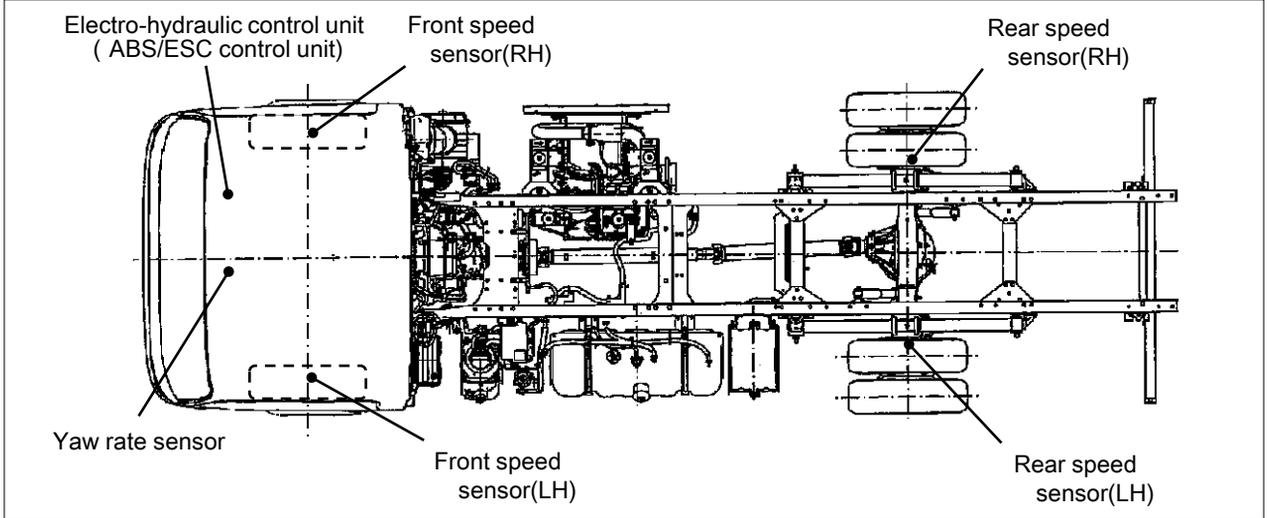
- Relocating an electro-hydraulic control unit
- Remodeling electrical harness and connector of ABS/ESC
- Remodeling an electro-hydraulic control unit
- Running with combination of tires other than ISUZU factory specification.
  - ABS/ESC is controlled based on the rotational speed difference of front and rear tires under braking, and a set value of the tire diameter is memorized in the control unit.
  - When the diameter of tire change greatly or the difference between front and rear tire differs from the set value, necessary braking power may not be demonstrated or ABS/ESC may not operate normally.
- Extracting power of accessories and ground wiring from ABS/ESC apparatus wirings.
- Relocation and changing installation direction of yaw rate sensor
  - Position of yaw rate sensor has restriction between the wheelbase and the vehicle center of gravity position, and has directionality. Normal operation of ESC might be ruined when relocating it.
- Changing wheel base
  - Changing wheel base may impair the ESC control.

#### [Cautions]

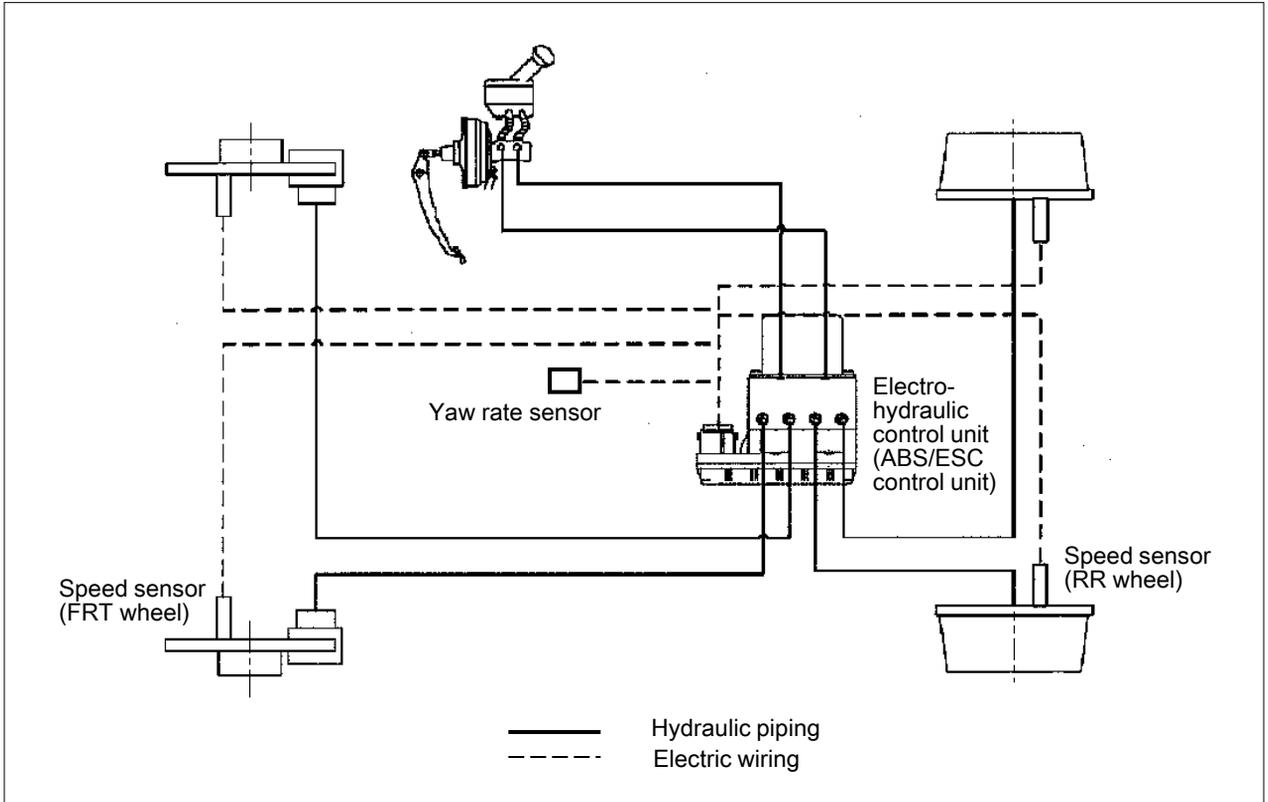
- When performing electrical welding at body mounting, follow the instructions in "I -2.4. PRECAUTIONS FOR WELDING".
- When installing following components in the vicinity of ABS/ESC apparatus (control unit, electro-hydraulic sensor, speed sensor, yaw rate sensor, etc.), maintain 100mm clearance from them.
  - Radio machine and its antenna
  - Motor, relay, and other devices which generate noise
- Wiring for ABS apparatus is in vehicle harness. Do not place wiring for wireless antenna along with vehicle harness, since it might affect the ABS wiring.
- In ESC, the center position of the steering wheel angle is learned. Therefore, the learning of the center position is needed again when the following modifying and repairing is done.
  - Replacing steering sensor
  - Desorption of steering related components

Consult ISUZU dealerships for learning of steering central position.

**Component layout**



**ABS/ESC system**



### 3.5. AMT

AMT (Automated Manual Transmission) is optionally installed.

AMT is a device which adds mechanism of the automatic gear shifting to a standard manual transmission and contributes to operativeness and the economy.

Many pipes, harnesses and accessories associated with AMT are installed in the vicinity of transmission and inside cab.

#### [Cautions]

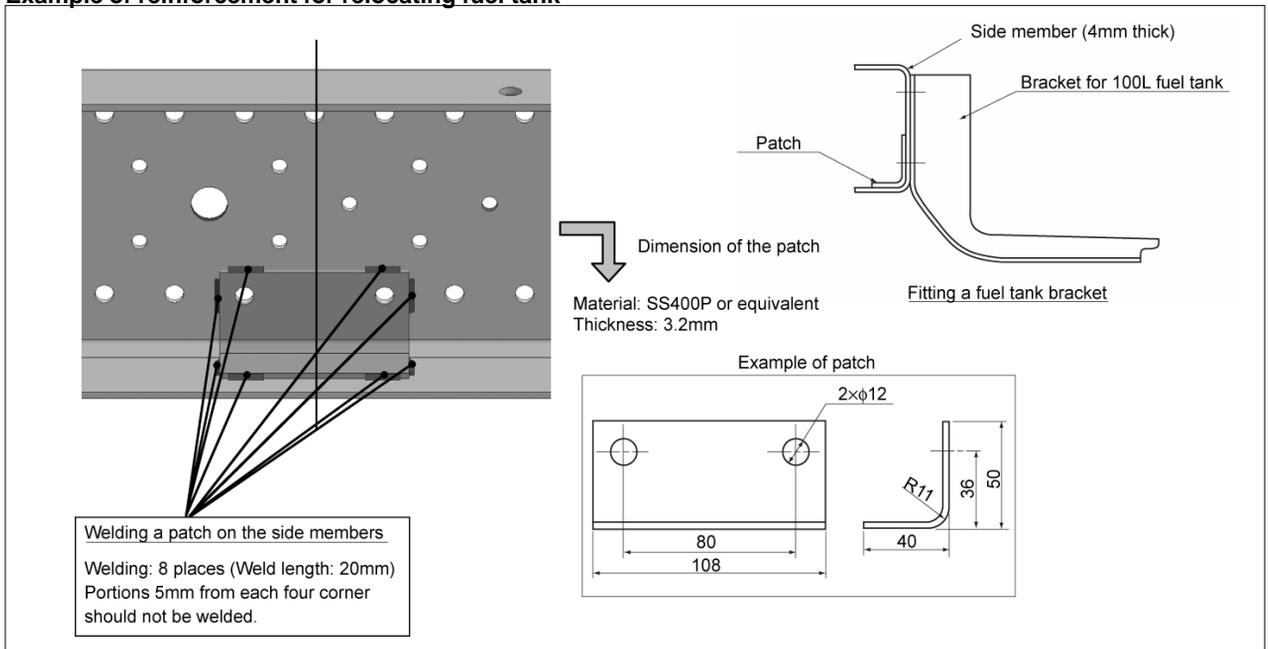
- When performing electrical welding at body mounting, follow the instructions in " I -2.4. PRECAUTIONS FOR WELDING".
- Cover the entire transmission with a heat insulation sheet when welding around the device.
- Do not modify pipes and harnesses which compose the device.
  - Since it is installed only for the control of the transmission, it may not operate normally.
  - When extracting power, follow the instructions in " I -2.10.1. Additional power supply (standby power supply) and ground wiring".
- Do not pour water directly on the control unit and the change lever when cleaning inside the cab.
  - The control unit installed behind instrument cover.
- When installing following components in the vicinity of AMT apparatus (control unit, change lever, gear shift unit, etc.), maintain 100mm clearance from them.
  - Radio machine and its antenna
  - Motor, relay, and other devices which generate noise
- Wiring for AMT apparatus is in vehicle harness. Do not place wiring for wireless antenna along with vehicle harness, since it might affect the AMT wiring.

### 3.6. INSTALLATION OR RELOCATION OF A HEAVY OBJECT ON/TO THE LATERAL SIDE OF A CHASSIS FRAME

When installing or relocating any heavy object such as fuel tank on/to the lateral side of a chassis frame, a reinforcement may be required depending on vehicle type (frame specification). Apply necessary reinforcement referring to the following.

Model	Side member thickness (mm)	Inner reinforcement	Measure
NLR NMR	4.0	Without	Add inner reinforcement
		With	unnecessary
	over 4.0	—	unnecessary

#### Example of reinforcement for relocating fuel tank



#### [Cautions]

When removing a bracket secured together with frame cross member, be sure to reattach the cross member following below instructions.

Size	M10 × 1.25
Strength	Bolt: 8.8 / Nut: 9N
Tightening torque	44 to 59N·m (4.5 to 6.1kgf·m)

Do not apply grease on bolt, nut, or mounting surfaces.

### 3.7. HOLES IN A CHASSIS FRAME

In the chassis frame side members between wheelbase,  $\Phi 11$ mm module holes are available for installing accessories, mounting bracket, etc.

[Prohibition]

The following modifications are prohibited :

- Drilling a new hole between module holes
- Enlarging a module hole

[Other cautions]

Some of the holes may have already been used. Check free holes on actual vehicle.

[Position of the holes in a chassis frame]

**Target vehicle model: NLR/NMR**

Side member Unit: mm

Chassis frame width	Side member thickness	A	B
700	4.0	180	30

Hole for harness routing and piping:  $\phi 9$

**Target vehicle model: NNR/NPR**

Side member Unit: mm

Chassis frame width	Side member thickness	A	B
750	5.0	214	32
850	6.0	216	33

Hole for harness routing and piping:  $\phi 9$

### 3.8. CHASSIS FRAME FOR CREW CAB

Chassis with long wheelbase tend to vibrate. Especially, crew cabs have that tendency. Follow the examples below to reinforce the chassis frame depending on rear body.

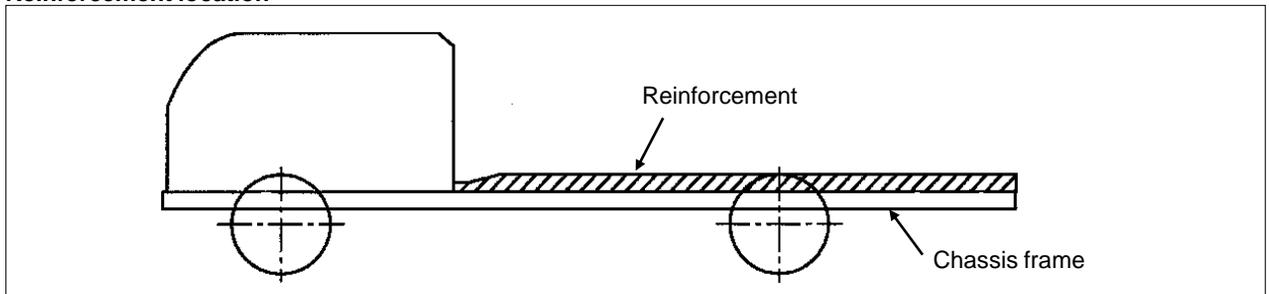
- Fit the sub frame on a chassis frame from the cab back to the rear end.
- Secure the sub frame on the chassis frame by using U-bolts or fixing brackets.

(For details, see " I -3.3. SUB FRAME SIDE MEMBERS" and " I -3.4. FIXING OF A REAR BODY". )

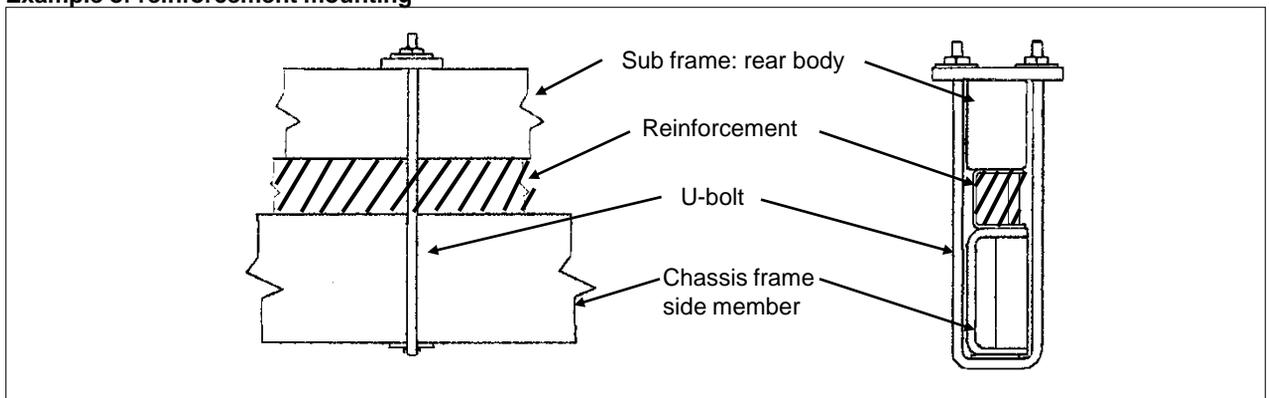
#### Example of reinforcement

Shape of reinforcement member		Yield strength (Mpa)	Web length (mm)	Flange length (mm)	Thickness (mm)	Section modulus (mm <sup>3</sup> )
C-Channel		248	101.6	40.1	4.7	39.8×10 <sup>6</sup>
		248	127.0	63.5	3.6	45.1×10 <sup>6</sup>
Square pipe		345	50.8	76.2	6.4	40.9×10 <sup>6</sup>

#### Reinforcement location



#### Example of reinforcement mounting



### 3.9. INSTALLING EQUIPMENTS ON A ROOF

[Cautions]

- In view of the strength of a roof, any works and walking on a roof panel are basically prohibited.
- The installing load to the roof must not exceed 45Kg including careers.
- Do not use the factory-installed dummy bolts on the roof for fitting equipments.

[Installing equipments on a roof]

- For installation of equipments (e.g. Air deflector), a total of eight welded mounting nuts as shown in the Fig.1 are available on the left and right edges of a cab roof (four each). See the Fig.2 and Fig.3 for the location of the nuts.
- Before fitting equipments on a roof, remove the factory-installed dummy bolts from nuts. Do not use the removed dummy bolts for fitting equipments because they do not have sufficient strength.
- When fitting a rear body, be careful not to damage the roof, and for rust-proofing, be sure to insert a packing between the rear body and the roof.
- To prevent crack in the packing due to ozone, the material of such packing should be neoprene rubber or EPDM rubber.
- Use anticorrosive M8 nickel chrome stainless steel bolts, and washers.
- After tightening bolts, to prevent water leakage, apply silicone sealant on the entire circumference of the bolts.

Fig.1 Equipment attachment with M8 bolt

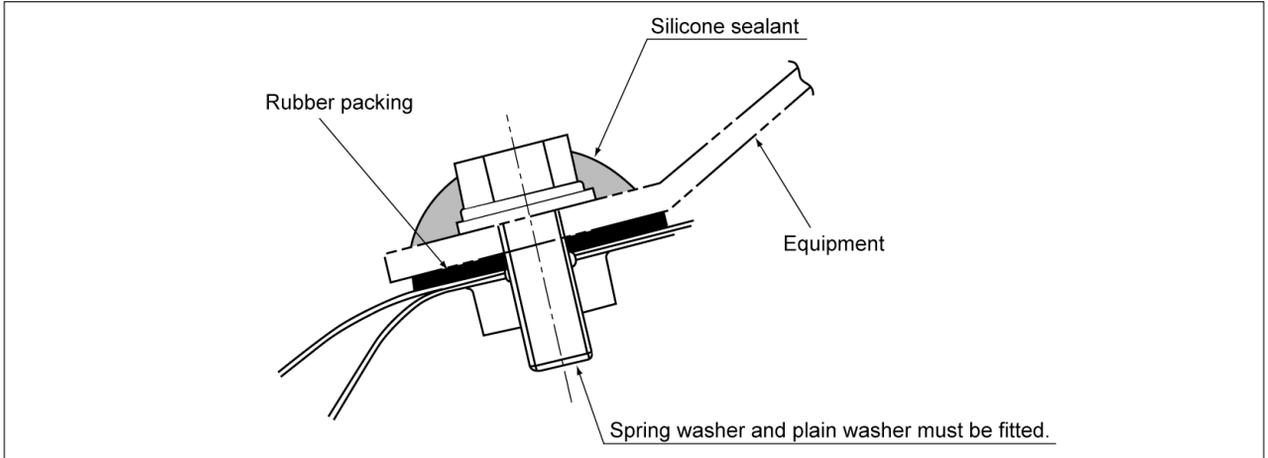


Fig.2 Location of the M8 bolts on the cab roof (single cab)

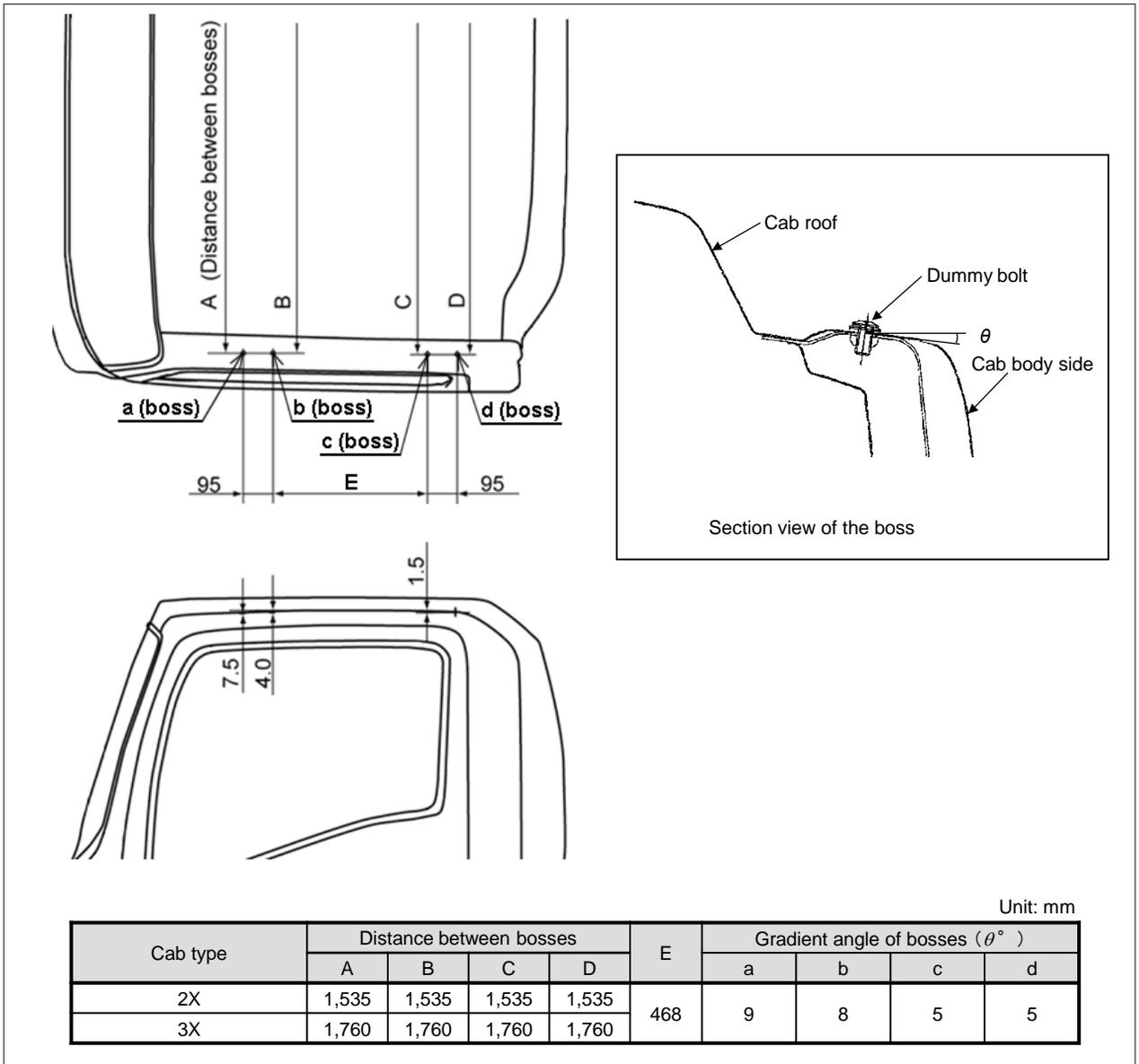
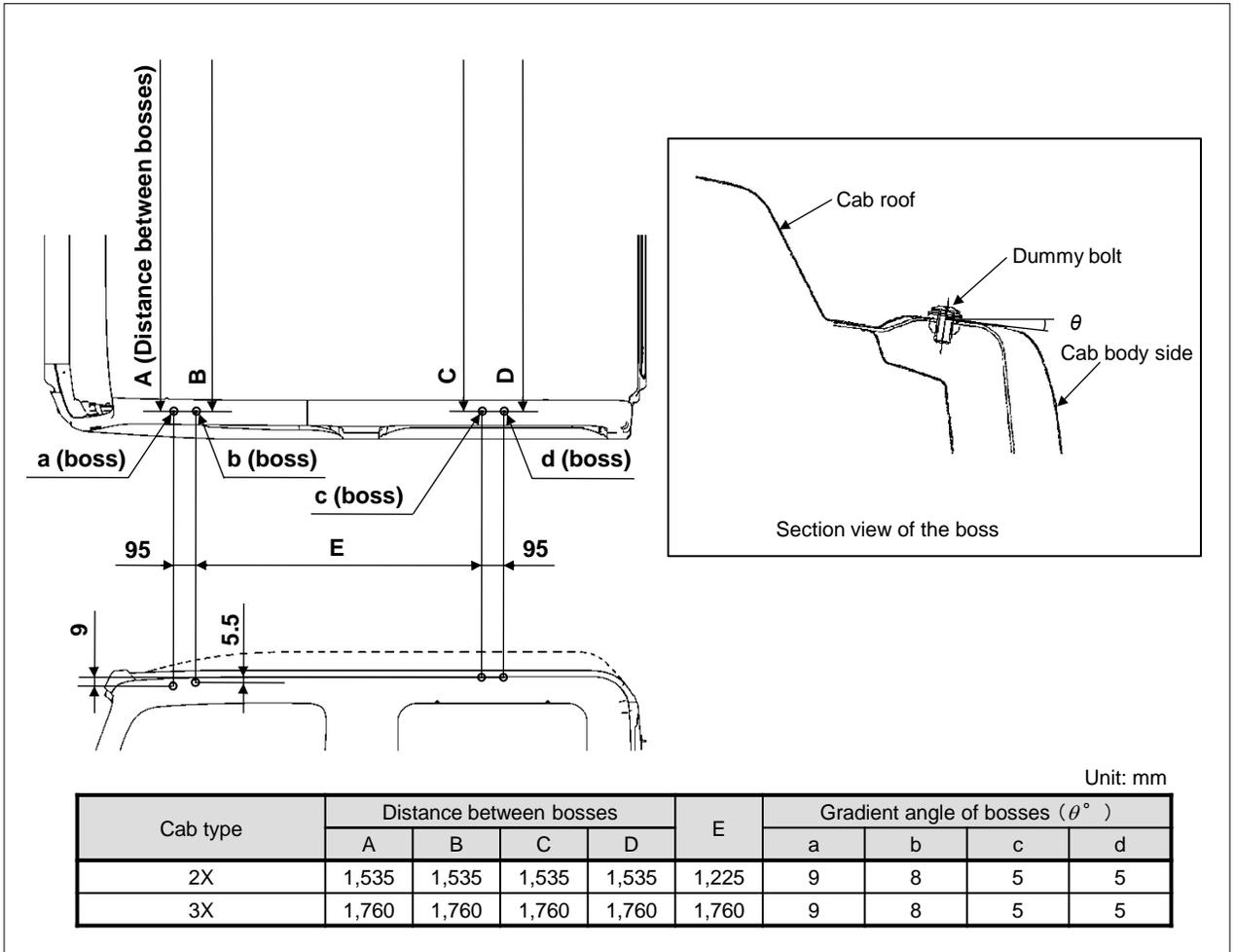


Fig.3 Location of the M8 bolts on the cab roof (crew cab)

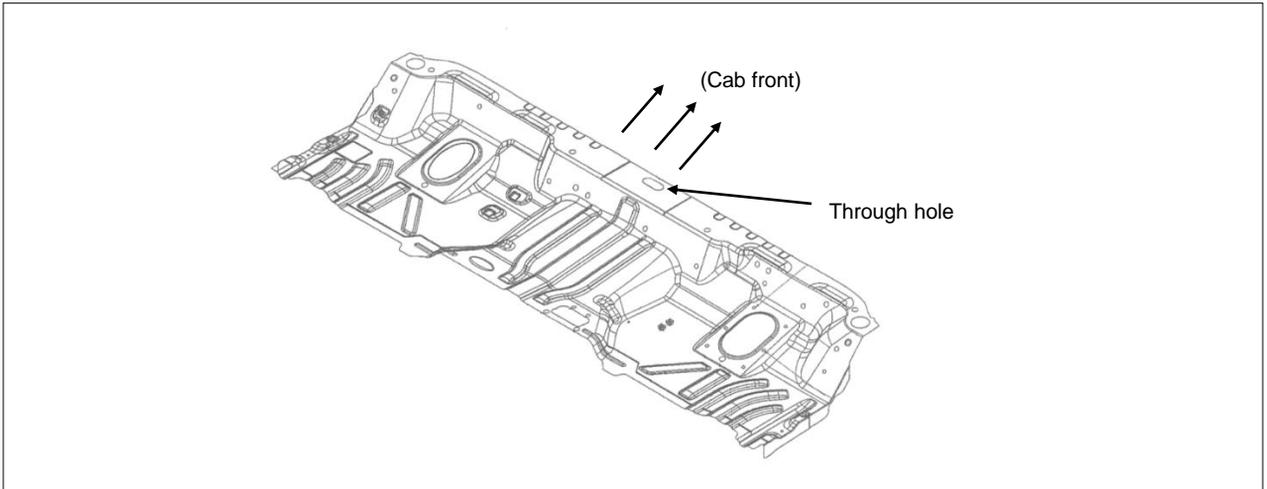


### 3.10. THROUGH HOLES INSIDE A CAB FOR HARNESES OR AN ANTENNA CABLE

- Through hole for harnesses

As shown in the Fig.1, in a floor panel in a cab, there is a through hole for harnesses.

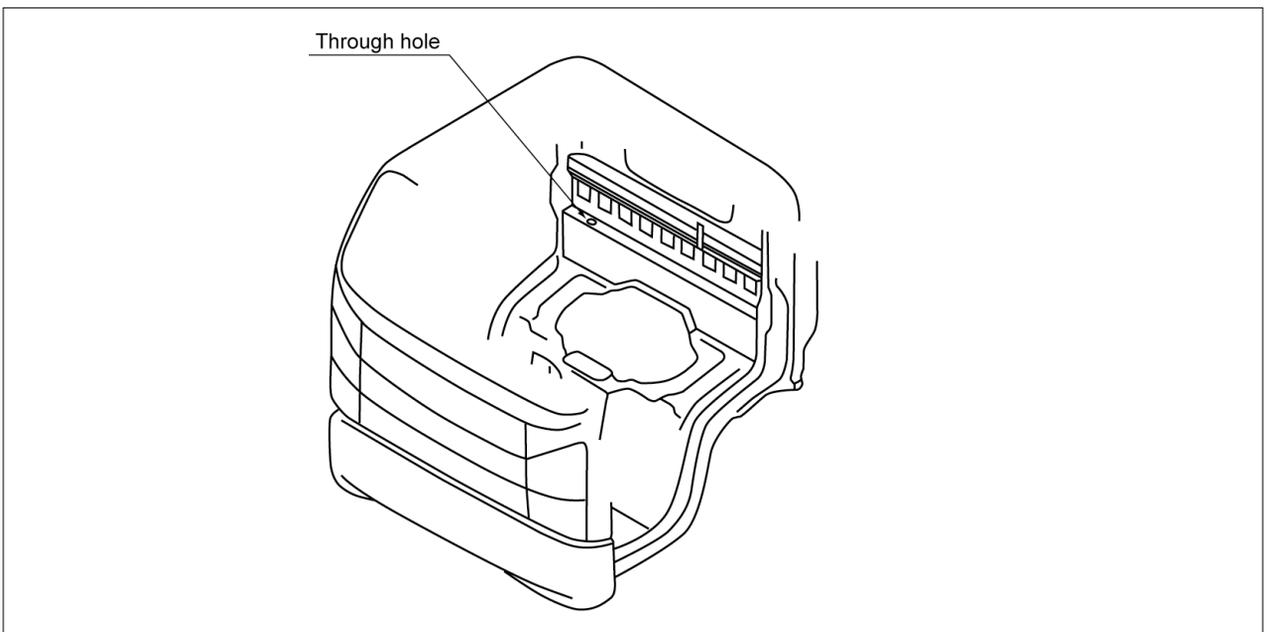
**Fig.1** Through hole in a floor panel in a cab



- Through hole for an antenna cable (RHD vehicle only)

As shown in the Fig.2, in the upper part of the rear mounting rail behind driver's seat in a cab, there is a through hole ( $\Phi 25\text{mm}$ ) for an antenna cable.

**Fig.2** Through hole in the upper part of the rear mounting rail



### 3.11. HANDLING OF SIDE TURN SIGNAL LAMP AT BODY MOUNTING

The width of rear body has influence by regulations in the side turn signal lamp. (regulations : UN6, UN48)

When mounting rear body, respond to the following.

Cab	Vehicle model	Rear body width / 2 L (mm)	Regulation (UN6, UN48)	Measure (Side combination lamp)
Single	NLR, NMR, NLS	0 ~ 988	Satisfy	—
		999 ~	Not satisfy	Relocation or addition
	NNR, NPR, NQR, NPS	0 ~ 1,110	Satisfy	—
		1,111 ~	Not satisfy	Relocation or addition
Crew	NLR, NMR, NLS	0 ~ 1,085	Satisfy	—
		1,086 ~	Not satisfy	Impossible to install Body
	NNR, NPR, NQR, NPS	0 ~ 1,196	Satisfy	—
		1,197 ~	Not satisfy	Impossible to install Body

• Single cab

- Adjust the width of rear body to following size:  
 NLR, NMR, NLS : 998mm or less  
 NNR, NPR, NQR, NPS : 1,110mm or less

- When the width exceed this size, following is needed.

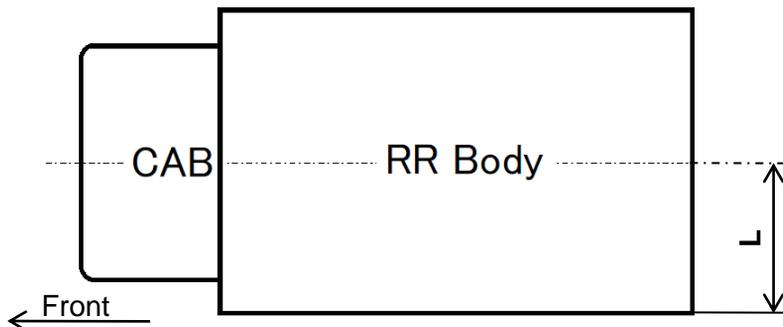
Alt. 1: Transfer the side turn signal lamp to rear body within 1,800mm from front of the vehicle. Adjust the height of the lamp at 500 to 1,500mm from the ground.

Alt. 2: Add the side turn signal lamp to rear body within 1,800mm from front of the vehicle. Adjust the height of the lamp at 500 to 1,500mm from the ground. Change the flasher unit. (Refer to “II - 7.5. Additional turn signal lamps”)

• Crew cab

- Adjust the width of rear body to following size:  
 NLR, NMR, NLS : 1,085mm or less  
 NNR, NPR, NQR, NPS : 1,196mm or less

Rear body width exceeding this size can not be mounted.



## **Chapter 4 CURB WEIGHT DATA AND FRAME STRENGTH CALCULATION**

### **4.1. CURB WEIGHT AND AXLE CAPACITY**

### **4.2. WEIGHT DISTRIBUTION**

### **4.3. FRAME SECTION MODULUS**

## 4.1. CURB WEIGHT AND AXLE CAPACITY

### 【LHD model-Euro5b+】

#### (LHD-Euro5b+)NLR series

Vehicle model		NLR85AL-ED1AYEN	NLR85AL-ED5AYEN	NLR85AL-HD5AYEN	NLR85L-ED5AYEN	NLR85L-HD5AYEN	NLR85L-HD5WYEN
Curb weight (kg)	Front axle	1,435	1,445	1,455	1,425	1,435	1,550
	Rear axle	440	495	535	495	535	625
	Total	1,875	1,940	1,990	1,920	1,970	2,175
Axle capacity (kg)	Front axle	2,600			2,900		
	Rear axle	2,650					
Allowable tire load (kg)	Tire size	205/75R16C - 110/108					
	Front axle	2,120					
	Rear axle	2,120	4,000				
GVW (kg)		3,500					
GCW (kg)		7,000					
GAW (kg)	GAW; front axle	2,120					
	GAW; rear axle	2,120	2,650				

- GAW is the lightest allowable load determined by comparing the allowable load of axle and the allowable load of tire installed in respective vehicle models.
- The curb weight includes following:  
Occupant(75kg), fuel (90%), specified amount of oil and coolant, spare tire and required tools
- The actual curb weight may be different. Measure the weight of the cab chassis before conducting rear body mounting, if required.
- Allowable load on tires comply with ETRTO(The European Tyre and Rim Technical Organisation).

**【LHD model-Euro5b+】****(LHD-Euro5b+) NMR/NNR series**

Vehicle model		NMR85L-EH5AYEN	NMR85L-HH5AYEN	NNR85L-FD5AYEN	NNR85L-HD5AYEN	NNR85L-HD5WYEN
Curb weight (kg)	Front axle	1,505	1,495	1,505	1,510	1,685
	Rear axle	600	655	610	635	720
	Total	2,105	2,150	2,115	2,145	2,405
Axle capacity (kg)	Front axle	2,900		3,100		
	Rear axle	5,000				
Allowable tire load (kg)	Tire size	205/75R16C - 110/108				
	Front axle	2,120				
	Rear axle	4,000				
GVW (kg)		5,500		3,500		
GCW (kg)		9,000		7,000		
GAW (kg)	GAW; front axle	2,120				
	GAW; rear axle	4,000				

- GAW is the lightest allowable load determined by comparing the allowable load of axle and the allowable load of tire installed in respective vehicle models.
- The curb weight includes following:  
Occupant(75kg), fuel (90%), specified amount of oil and coolant, spare tire and required tools
- The actual curb weight may be different. Measure the weight of the cab chassis before conducting rear body mounting, if required.
- Allowable load on tires comply with ETRTO(The European Tyre and Rim Technical Organisation).

**【LHD model-Euro VI】****(LHD-Euro VI) NLR/NMR/NNR series**

Vehicle model		NLR85AL- HD5AYE		NLR85L- HD5AYE		NMR85L- HH5AYE		NNR85L- HD5AYE	
			AMT		AMT		AMT		AMT
Curb weight (kg)	Front axle	1,500	1,525	1,480	1,505	1,560	1,585	1,560	1,585
	Rear axle	635	645	635	645	720	730	695	705
	Total	2,135	2,170	2,115	2,150	2,280	2,315	2,255	2,290
Axle capacity (kg)	Front axle	2,600		2,900				3,100	
	Rear axle	5,000							
Allowable tire load (kg)	Tire size	205/75R16C - 110/108							
	Front axle	2,120							
	Rear axle	4,000							
GVW (kg)		3,500				5,500		3,500	
GCW (kg)		7,000				9,000		7,000	
GAW (kg)	GAW; front axle	2,120							
	GAW; rear axle	4,000							

- GAW is the lightest allowable load determined by comparing the allowable load of axle and the allowable load of tire installed in respective vehicle models.
- The curb weight includes following:  
Occupant(75kg), fuel (90%), specified amount of oil and coolant, spare tire and required tools
- The actual curb weight may be different. Measure the weight of the cab chassis before conducting rear body mounting, if required.
- Allowable load on tires comply with ETRTO(The European Tyre and Rim Technical Organisation).

**【LHD model-EuroVI】****(LHD-EuroVI) NPR series (1)**

Vehicle model		NPR85L-HH5AYE		NPR85L-HJ5AYE		NPR85L-KJ5AYE		NPR85L-HL5VAYE		NPR85L-KL5VAYE			
			AMT		AMT		AMT		AMT		AMT		
Curb weight (kg)	Front axle	1,615	1,640	1,670	1,695	1,660	1,685	1,665	1,690	1,695	1,720		
	Rear axle	795	805	845	855	885	895	955	965	945	955		
	Total	2,410	2,445	2,515	2,550	2,545	2,580	2,620	2,655	2,640	2,675		
Axle capacity (kg)	Front axle	3,100											
	Rear axle	5,000				6,000				6,600			
Allowable tire load (kg)	Tire size	205/75R16C - 110/108		215/75R17.5 - 126/124									
	Front axle	2,120				3,400							
	Rear axle	4,000				6,400							
GVW (kg)		5,500		6,500				7,500					
GCW (kg)		9,000		10,000				11,000					
GAW (kg)	GAW; front axle	2,120		3,100									
	GAW; rear axle	4,000		6,000				6,400					

- GAW is the lightest allowable load determined by comparing the allowable load of axle and the allowable load of tire installed in respective vehicle models.
- The curb weight includes following:  
Occupant(75kg), fuel (90%), specified amount of oil and coolant, spare tire and required tools
- The actual curb weight may be different. Measure the weight of the cab chassis before conducting rear body mounting, if required.
- Allowable load on tires comply with ETRTO(The European Tyre and Rim Technical Organisation).

**【LHD model-EuroVI】****(LHD-EuroVI) NPR series (2)**

Vehicle model		NPR85L-ML5VAYE		NPR75L-HL5VAYE		NPR75L-KL5VAYE		NPR75L-ML5VAYE		NPR75L-ML5VWYE	
			AMT		AMT		AMT		AMT		AMT
Curb weight (kg)	Front axle	1,765	1,790	1,830	1,855	1,860	1,885	1,930	1,955	2,090	2,115
	Rear axle	930	940	1,000	1,010	990	1,000	975	985	1,070	1,080
	Total	2,695	2,730	2,830	2,865	2,850	2,885	2,905	2,940	3,160	3,195
Axle capacity (kg)	Front axle	3,100									
	Rear axle	6,600									
Allowable tire load (kg)	Tire size	215/75R17.5 - 126/124									
	Front axle	3,400									
	Rear axle	6,400									
GVW (kg)		7,500									
GCW (kg)		11,000									
GAW (kg)	GAW; front axle	3,100									
	GAW; rear axle	6,400									

- GAW is the lightest allowable load determined by comparing the allowable load of axle and the allowable load of tire installed in respective vehicle models.
- The curb weight includes following:  
Occupant(75kg), fuel (90%), specified amount of oil and coolant, spare tire and required tools
- The actual curb weight may be different. Measure the weight of the cab chassis before conducting rear body mounting, if required.
- Allowable load on tires comply with ETRTO(The European Tyre and Rim Technical Organisation).

**【RHD model-Euro5b+】****(RHD-Euro5b+) NLR series**

Vehicle model		NLR85AU-ED1AYEN	NLR85U-ED5AYEN	NLR85U-HD5AYEN	NLR85U-HD5WYEN
Curb weight (kg)	Front axle	1,435	1,425	1,435	1,550
	Rear axle	440	490	530	620
	Total	1,875	1,915	1,965	2,170
Axle capacity (kg)	Front axle	2,600	2,900		
	Rear axle	2,650			
Allowable tire load (kg) ( ) : optional tire	Tire size	205/75R16C - 110/108	195/75R16C-107/105 (205/75R16C -110/108)	195/75R16C-107/105	
	Front axle	2,120	1,950(2,120)	1,950	
	Rear axle	2,120	3,700(4,000)	3,700	
GVW (kg)		3,500			
GCW (kg)		7,000			
GAW (kg) ( ) : optional tire	GAW; front axle	2,120	1,950(2,120)	1,950	
	GAW; rear axle	2,120	2,650(2,650)	2,650	

- GAW is the lightest allowable load determined by comparing the allowable load of axle and the allowable load of tire installed in respective vehicle models.
- The curb weight includes following:  
Occupant(75kg), fuel (90%), specified amount of oil and coolant, spare tire and required tools
- The actual curb weight may be different. Measure the weight of the cab chassis before conducting rear body mounting, if required.
- Allowable load on tires comply with ETRTO(The European Tyre and Rim Technical Organisation).

**【RHD model-Euro5b+】****(RHD-Euro5b+) NMR/NNR series**

Vehicle model		NMR85U-EH5AYEN	NMR85U-HH5AYEN	NNR85U-FD5AYEN	NNR85U-HD5AYEN
Curb weight (kg)	Front axle	1,505	1,495	1,505	1,510
	Rear axle	600	655	605	630
	Total	2,105	2,150	2,110	2,140
Axle capacity (kg)	Front axle	2,900		3,100	
	Rear axle	5,000			
Allowable tire load (kg)	Tire size	205/75R16C - 110/108		195/75R16C - 107/105	
	Front axle	2,120		1,950	
	Rear axle	4,000		3,700	
GVW (kg)		5,500		3,500	
GCW (kg)		9,000		7,000	
GAW (kg)	GAW; front axle	2,120		1,950	
	GAW; rear axle	4,000		3,700	

- GAW is the lightest allowable load determined by comparing the allowable load of axle and the allowable load of tire installed in respective vehicle models.
- The curb weight includes following:  
Occupant(75kg), fuel (90%), specified amount of oil and coolant, spare tire and required tools
- The actual curb weight may be different. Measure the weight of the cab chassis before conducting rear body mounting, if required.
- Allowable load on tires comply with ETRTO(The European Tyre and Rim Technical Organisation).

**【RHD model-EuroVI】****(RHD-EuroVI) NLR/NMR/NNR series**

Vehicle model		NLR85U-HD5AYE		NMR85U-HH5AYE		NNR85U-HD5AYE	
Remarks			AMT		AMT		AMT
Curb weight (kg)	Front axle	1,480	1,505	1,560	1,585	1,560	1,585
	Rear axle	630	640	720	730	690	700
	Total	2,110	2,145	2,280	2,315	2,250	2,285
Axle capacity (kg)	Front axle	2,900				3,100	
	Rear axle	5,000					
Allowable tire load (kg)	Tire size	195/75R16C - 107/105		205/75R16C - 110/108		195/75R16C - 107/105	
	Front axle	1,950		2,120		1,950	
	Rear axle	3,700		4,000		3,700	
GVW (kg)		3,500		5,500		3,500	
GCW (kg)		7,000		9,000		7,000	
GAW (kg)	GAW; front axle	1,950		2,120		1,950	
	GAW; rear axle	3,700		4,000		3,700	

- GAW is the lightest allowable load determined by comparing the allowable load of axle and the allowable load of tire installed in respective vehicle models.
- The curb weight includes following:  
Occupant(75kg), fuel (90%), specified amount of oil and coolant, spare tire and required tools
- The actual curb weight may be different. Measure the weight of the cab chassis before conducting rear body mounting, if required.
- Allowable load on tires comply with ETRTO(The European Tyre and Rim Technical Organisation).

**【RHD model-EuroVI】****(RHD-EuroVI) NPR series (1)**

Vehicle model		NPR85U-HH5AYE		NPR85U-HJ5AYE		NPR85U-KJ5AYE		NPR85U-HL5VAYE		NPR85U-KL5VAYE	
			AMT		AMT		AMT		AMT		AMT
Curb weight (kg)	Front axle	1,615	1,640	1,670	1,695	1,660	1,685	1,665	1,690	1,695	1,720
	Rear axle	795	805	845	855	885	895	955	965	945	955
	Total	2,410	2,445	2,515	2,550	2,545	2,580	2,620	2,655	2,640	2,675
Axle capacity (kg)	Front axle	3,100									
	Rear axle	5,000		6,000				6,600			
Allowable tire load (kg)	Tire size	205/75R16C - 110/108		215/75R17.5 - 126/124							
	Front axle	2,120		3,400							
	Rear axle	4,000		6,400							
GVW (kg)		5,500		6,500				7,500			
GCW (kg)		9,000		10,000				11,000			
GAW (kg)	GAW; front axle	2,120		3,100							
	GAW; rear axle	4,000		6,000				6,400			

- GAW is the lightest allowable load determined by comparing the allowable load of axle and the allowable load of tire installed in respective vehicle models.
- The curb weight includes following:  
Occupant(75kg), fuel (90%), specified amount of oil and coolant, spare tire and required tools
- The actual curb weight may be different. Measure the weight of the cab chassis before conducting rear body mounting, if required.
- Allowable load on tires comply with ETRTO(The European Tyre and Rim Technical Organisation).

**【RHD model-EuroVI】****(RHD-EuroVI) NPR series (2)**

Vehicle model		NPR85U-ML5VAYE		NPR75U-HL5VAYE		NPR75U-KL5VAYE		NPR75U-ML5VAYE		NPR75U-ML5VWYE	
			AMT		AMT		AMT		AMT		AMT
Curb weight (kg)	Front axle	1,765	1,790	1,830	1,855	1,860	1,885	1,930	1,955	2,090	2,115
	Rear axle	930	940	1,000	1,010	990	1,000	975	985	1,070	1,080
	Total	2,695	2,730	2,830	2,865	2,850	2,885	2,905	2,940	3,160	3,195
Axle capacity (kg)	Front axle	3,100									
	Rear axle	6,600									
Allowable tire load (kg)	Tire size	215/75R17.5 - 126/124									
	Front axle	3,400									
	Rear axle	6,400									
GVW (kg)		7,500									
GCW (kg)		11,000									
GAW (kg)	GAW; front axle	3,100									
	GAW; rear axle	6,400									

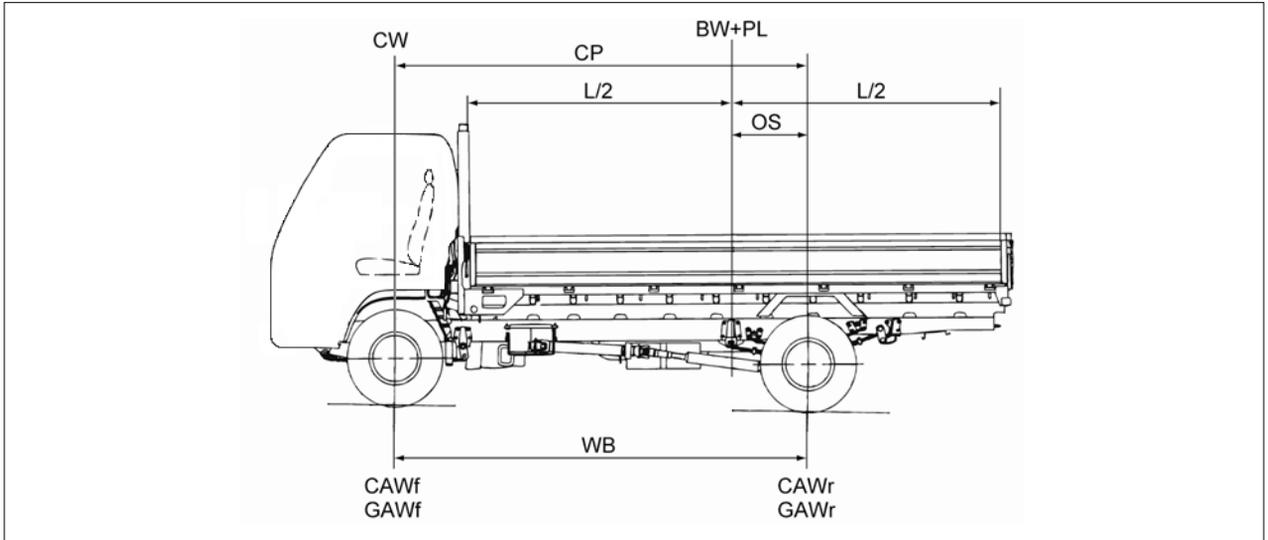
- GAW is the lightest allowable load determined by comparing the allowable load of axle and the allowable load of tire installed in respective vehicle models.
- The curb weight includes following:  
Occupant(75kg), fuel (90%), specified amount of oil and coolant, spare tire and required tools
- The actual curb weight may be different. Measure the weight of the cab chassis before conducting rear body mounting, if required.
- Allowable load on tires comply with ETRTO(The European Tyre and Rim Technical Organisation).

## 4.2. WEIGHT DISTRIBUTION

- Formula for determining load distribution on NLR/NMR/N N R/NPR vehicle models (Single cab)

The assumption condition of this calculating formula is as follows.

- Assume that the center of gravity of the total weight of the rear body and cargo is located in the center of the overall length of the rear body.
- Rear body weight is regarded as load evenly distributed on the chassis frame.



- WB: Wheelbase (mm)  
 OS: Offset of the combined center of gravity of the rear body and cargo from the rear axle center (mm)  
 CP: Distance from occupant to the rear axle center (mm)  
 L/2: Half length of the cargo bed (mm)  
 BW: Rear body weight (kg)  
 PL: Cargo weight (kg)  
 CW: Occupants weight (kg)  
 CAWf: Chassis front axle weight (kg)  
 CAWr: Chassis rear axle weight (kg)  
 GAWf: Vehicle front axle weight (kg)  
 GAWr: Vehicle rear axle weight (kg)  
 GVW: Gross vehicle weight (kg)

### Basic formula

$$(a) \text{ GVW} = \text{GAWf} + \text{GAWr}$$

$$= \text{CAWf} + \text{CAWr} + \text{BW} + \text{PL} + \text{CW}$$

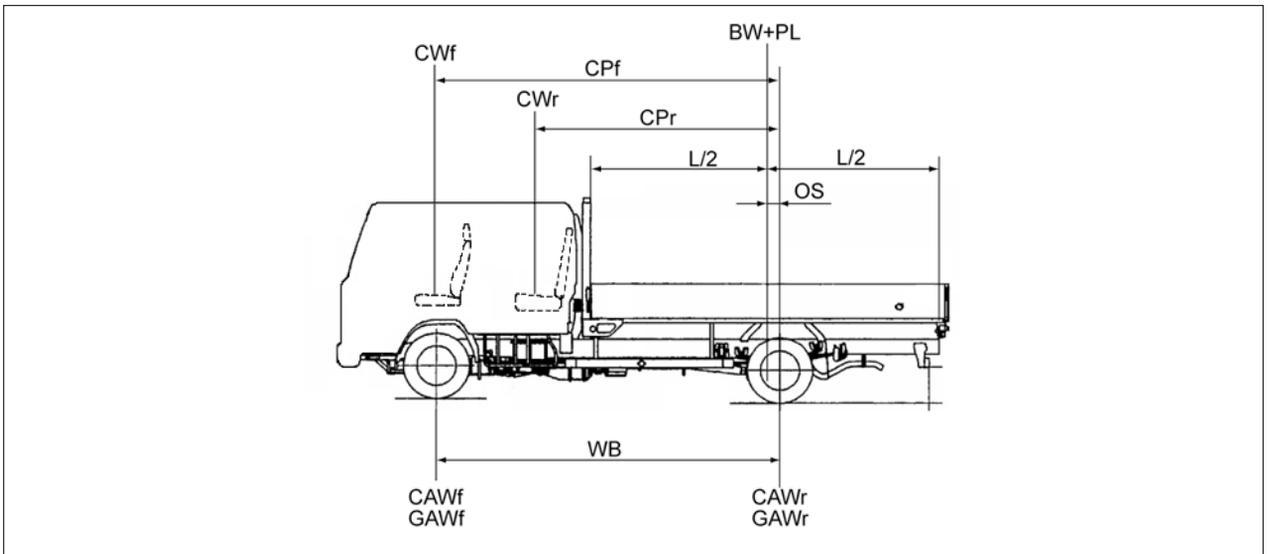
$$(b) \text{ GAWf} = \text{CAWf} + \{(\text{BW} + \text{PL}) \times \text{OS} / \text{WB}\} + \{\text{CW} \times \text{CP} / \text{WB}\}$$

$$(c) \text{ GAWr} = \text{CAWr} + \{(\text{BW} + \text{PL}) \times (\text{WB} - \text{OS}) / \text{WB}\} + \{\text{CW} \times (\text{WB} - \text{CP}) / \text{WB}\}$$

- Formula for determining load distribution on NLR/NNR/NPR vehicle models (Crew cab)

The assumption condition of this calculating formula is as follows.

- Assume that the center of gravity of the total weight of the rear body and cargo is located in the center of the overall length of the rear body.
- Rear body weight is regarded as load evenly distributed on the chassis frame.



- WB: Wheelbase (mm)  
 OS: Offset of the combined center of gravity of the rear body and cargo from the rear axle center (mm)  
 CPf: Distance from occupant in the front seat to the rear axle center (mm)  
 CPr: Distance from occupant in the rear seat to the rear axle center (mm)  
 L/2: Half length of the cargo bed (mm)  
 BW: Rear body weight (kg)  
 PL: Cargo weight (kg)  
 CWf: Weight of occupants in the front seat (kg)  
 CWr: Weight of occupants in the rear seat (kg)  
 CAWf: Chassis front axle weight (kg)  
 CAWr: Chassis rear axle weight (kg)  
 GAWf: Vehicle front axle weight (kg)  
 GAWr: Vehicle rear axle weight (kg)  
 GVW: Gross vehicle weight (kg)

#### Basic formula

$$(a) \text{GVW} = \text{GAWf} + \text{GAWr}$$

$$= \text{CAWf} + \text{CAWr} + \text{BW} + \text{PL} + \text{CWf} + \text{CWr}$$

$$(b) \text{GAWf} = \text{CAWf} + \{(\text{BW} + \text{PL}) \times \text{OS} / \text{WB}\} + \{(\text{CWf} \times \text{CPf}) + (\text{CWr} \times \text{CPr})\} / \text{WB}$$

$$(c) \text{GAWr} = \text{CAWr} + \{(\text{BW} + \text{PL}) \times (\text{WB} - \text{OS}) / \text{WB}\} + \{(\text{CWf} \times (\text{WB} - \text{CPf}) + \text{CWr} \times (\text{WB} - \text{CPr})) / \text{WB}\}$$

## 4.3. FRAME SECTION MODULUS

No.	Vehicle Model	Drawing	SRS Air bag	Remarks
1	NLR85AL/AU-ED1AYEN	Fig.4-3-1	△	
2	NLR85AL-ED5AYEN	Fig.4-3-2	△	
3	NLR85AL-HD5AYEN NLR85AL-HD5AYE	Fig.4-3-3	△	
4	NLR85L/U-ED5AYEN	Fig.4-3-4	△	W/O Air bag
		Fig.4-3-5		W/ Air bag
5	NMR85L/U-EH5AYEN	Fig.4-3-5	○	
6	NLR85L/U-HD5AYEN NLR85L/U-HD5WYEN NLR85L/U-HD5AYE	Fig.4-3-6	△	W/O Air bag
		Fig.4-3-7		W/ Air bag
7	NMR85L/U-HH5AYEN NMR85L/U-HH5AYE	Fig.4-3-7	○	
8	NNR85L/U-FD5AYEN	Fig.4-3-8	△	W/O Air bag
		Fig.4-3-9		W/ Air bag
9	NNR85L/U-HD5AYEN NNR85L/U-HD5AYE NNR85L-HD5WYEN	Fig.4-3-10	△	W/O Air bag
		Fig.4-3-11		W/ Air bag
10	NPR85L/U-HH5AYE NPR85L/U-HJ5AYE	Fig.4-3-11	○	
11	NPR85L/U-KJ5AYE	Fig.4-3-12	○	
12	NPR85L/U-HL5VAYE NPR75L/U-HL5VAYE	Fig.4-3-13	○	
13	NPR85L/U-KL5VAYE NPR75L/U-KL5VAYE	Fig.4-3-14	○	
14	NPR85L/U-ML5VAYE NPR75L/U-ML5VAYE	Fig.4-3-15	○	
15	NPR75L/U-ML5VWYE	Fig.4-3-16	○	

Legend ○: Standard equipment △: Option

Fig. 4-3-1 Frame Section Modulus NLR85AL/AU-ED1AYEN

Parts name	Material	Tensile strength Mpa (kg/mm <sup>2</sup> )	Yield point Mpa (kg/mm <sup>2</sup> )
Side member-①	JSH440J	440(45)	305(31)
Reinforce-②	JSH440J	440(45)	305(31)
Stiffener-③	JSH440J	440(45)	305(31)

Unit: mm

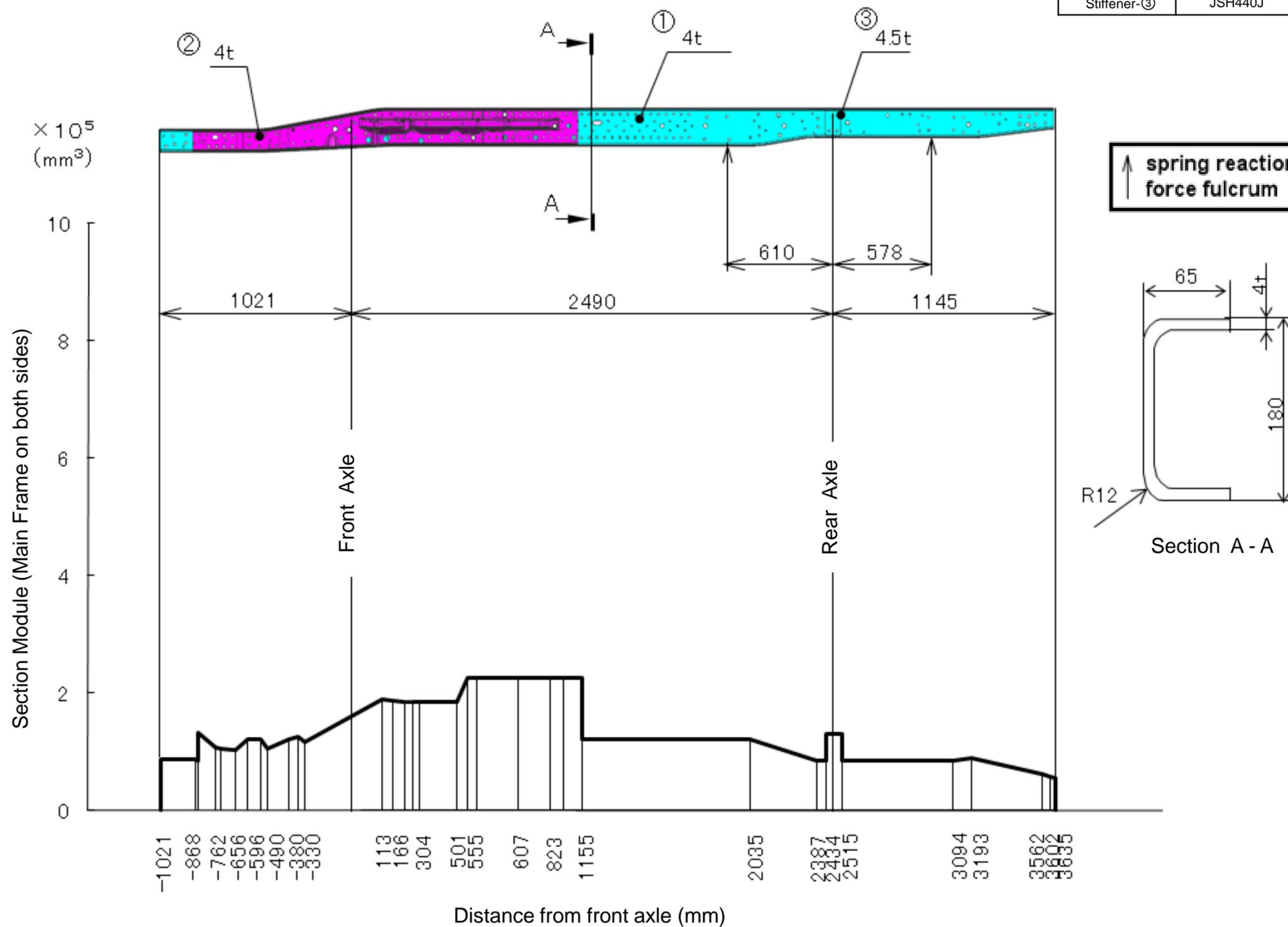


Fig. 4-3-2 Frame Section Modulus NLR85AL-ED5AYEN

Parts name	Material	Tensile strength Mpa (kg/mm <sup>2</sup> )	Yield point Mpa (kg/mm <sup>2</sup> )
Side member-①	JSH440J	440(45)	305(31)
Reinforce-②	JSH440J	440(45)	305(31)
Stiffener-③	JSH270C (-P)	270(28)	175(18)

Unit: mm

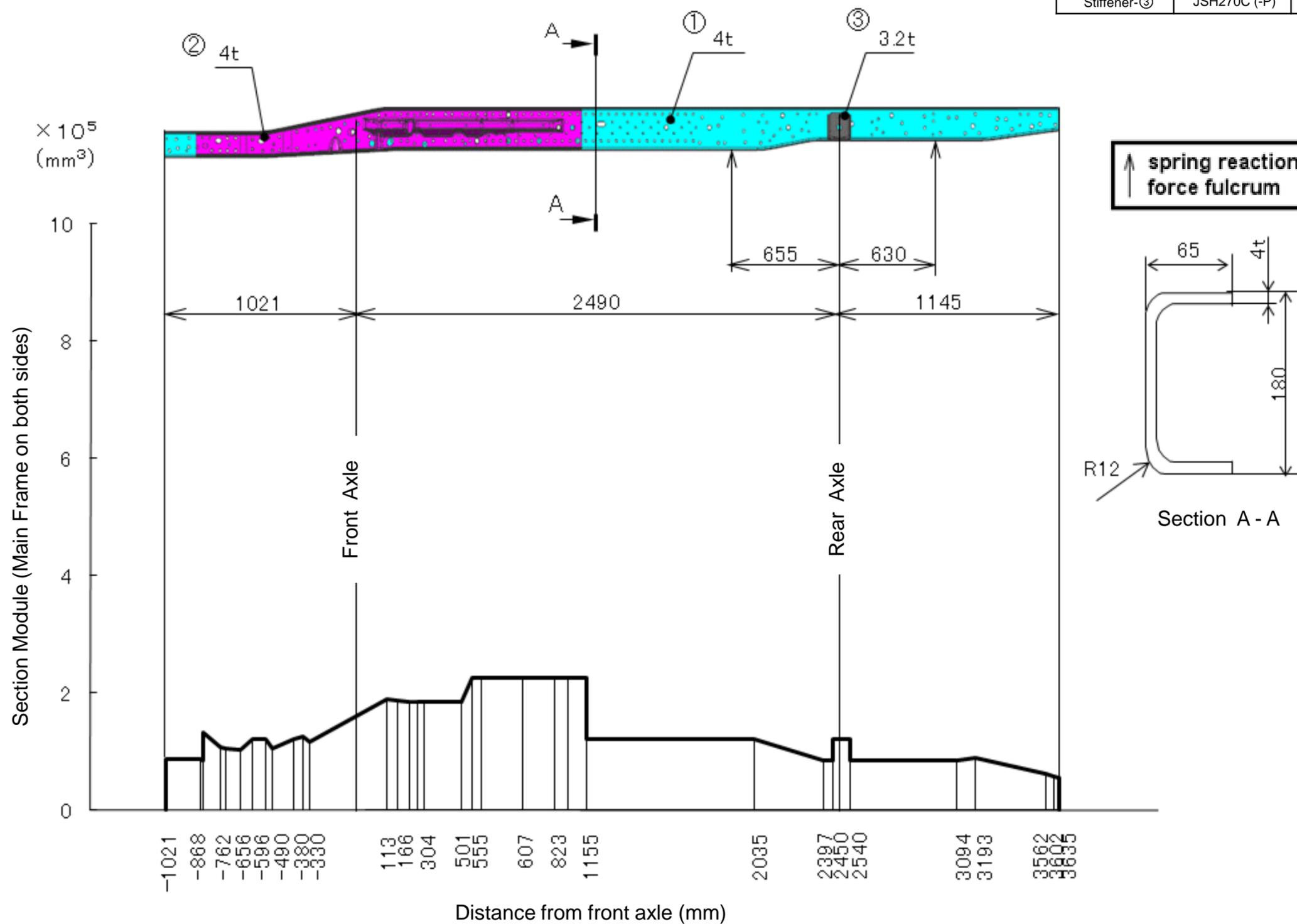


Fig. 4-3-3 Frame Section Modulus NLR85AL-HD5AYEN, HD5AYE

Parts name	Material	Tensile strength Mpa (kg/mm <sup>2</sup> )	Yield point Mpa (kg/mm <sup>2</sup> )
Side member-①	JSH440J	440(45)	305(31)
Reinforce-②	JSH440J	440(45)	305(31)
Stiffener-③	JSH270C (-P)	270(28)	175(18)

Unit: mm

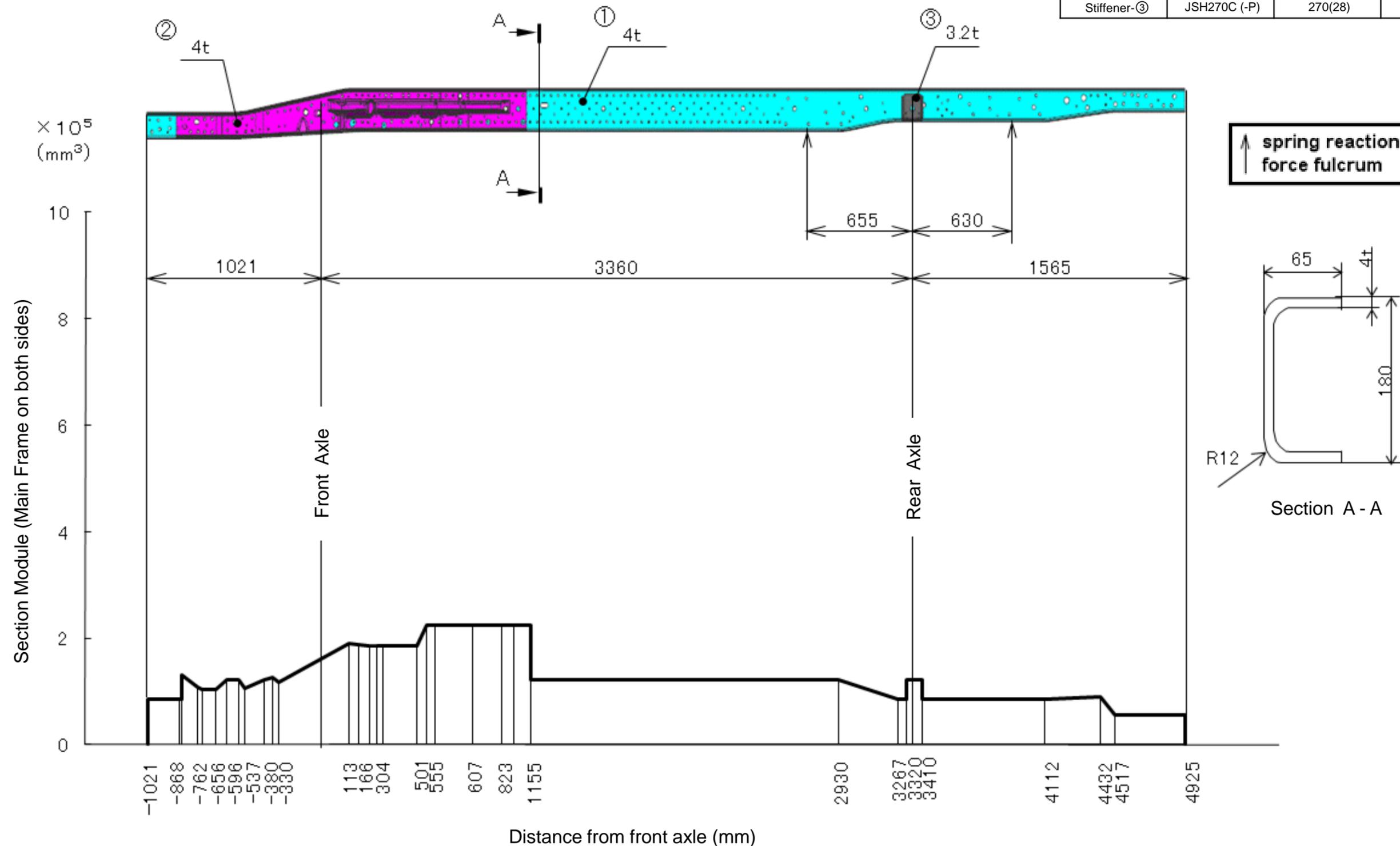


Fig. 4-3-4 Frame Section Modulus NLR85L/U-ED5AYEN (W/O Air bag)

Parts name	Material	Tensile strength Mpa (kg/mm <sup>2</sup> )	Yield point Mpa (kg/mm <sup>2</sup> )
Side member-①	JSH440J	440(45)	305(31)
Reinforce-②	JSH400W	400(41)	225(23)
Stiffener-③	JSH270C (-P)	270(28)	175(18)

Unit: mm

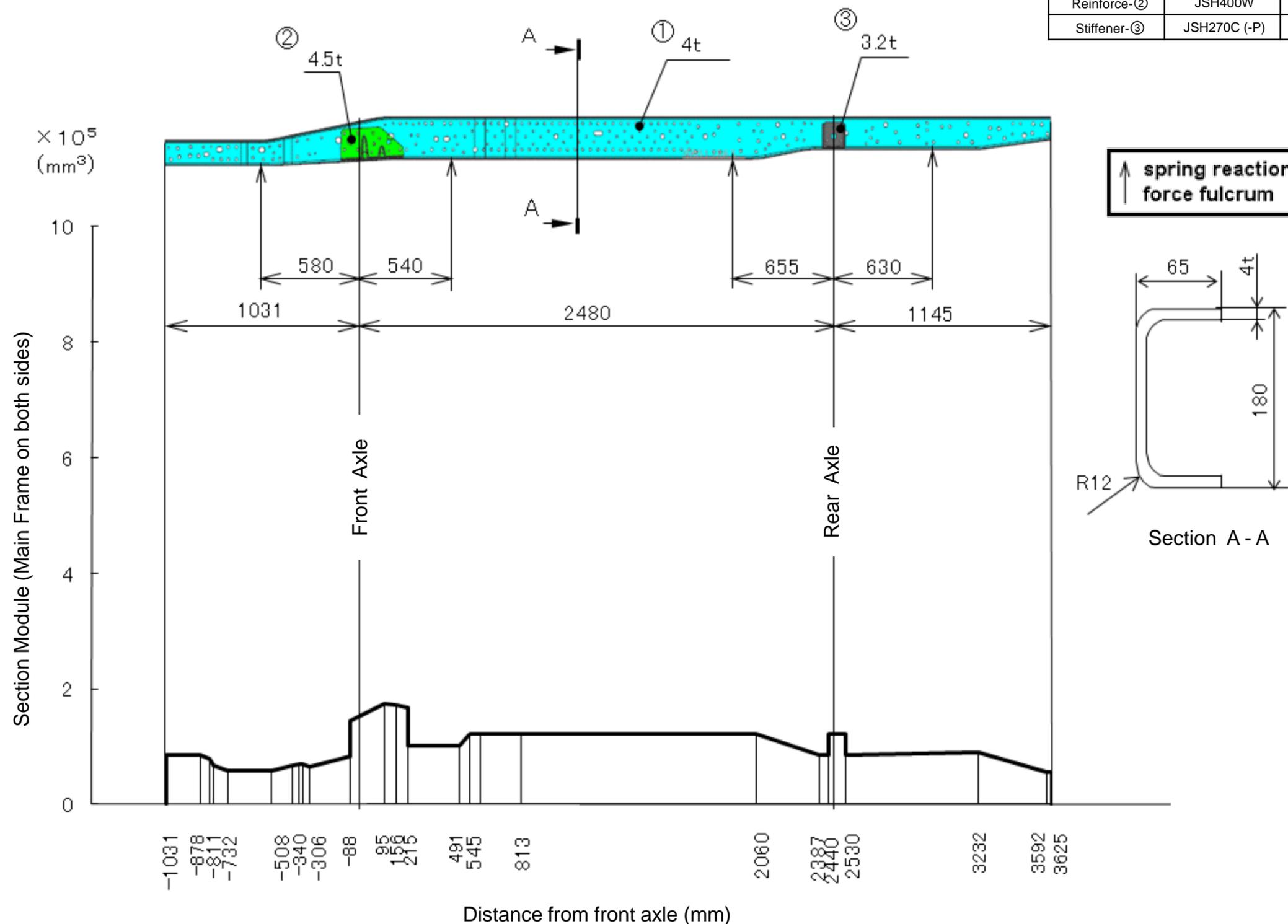


Fig. 4-3-5 Frame Section Modulus NLR85L/U-ED5AYEN, NMR85L/U-EH5AYEN (W/ Air bag)

Parts name	Material	Tensile strength Mpa (kg/mm <sup>2</sup> )	Yield point Mpa (kg/mm <sup>2</sup> )
Side member-①	JSH440J	440(45)	305(31)
Reinforce-②	JSH440J	440(45)	305(31)
Stiffener-③	JSH270C (-P)	270(28)	175(18)

Unit: mm

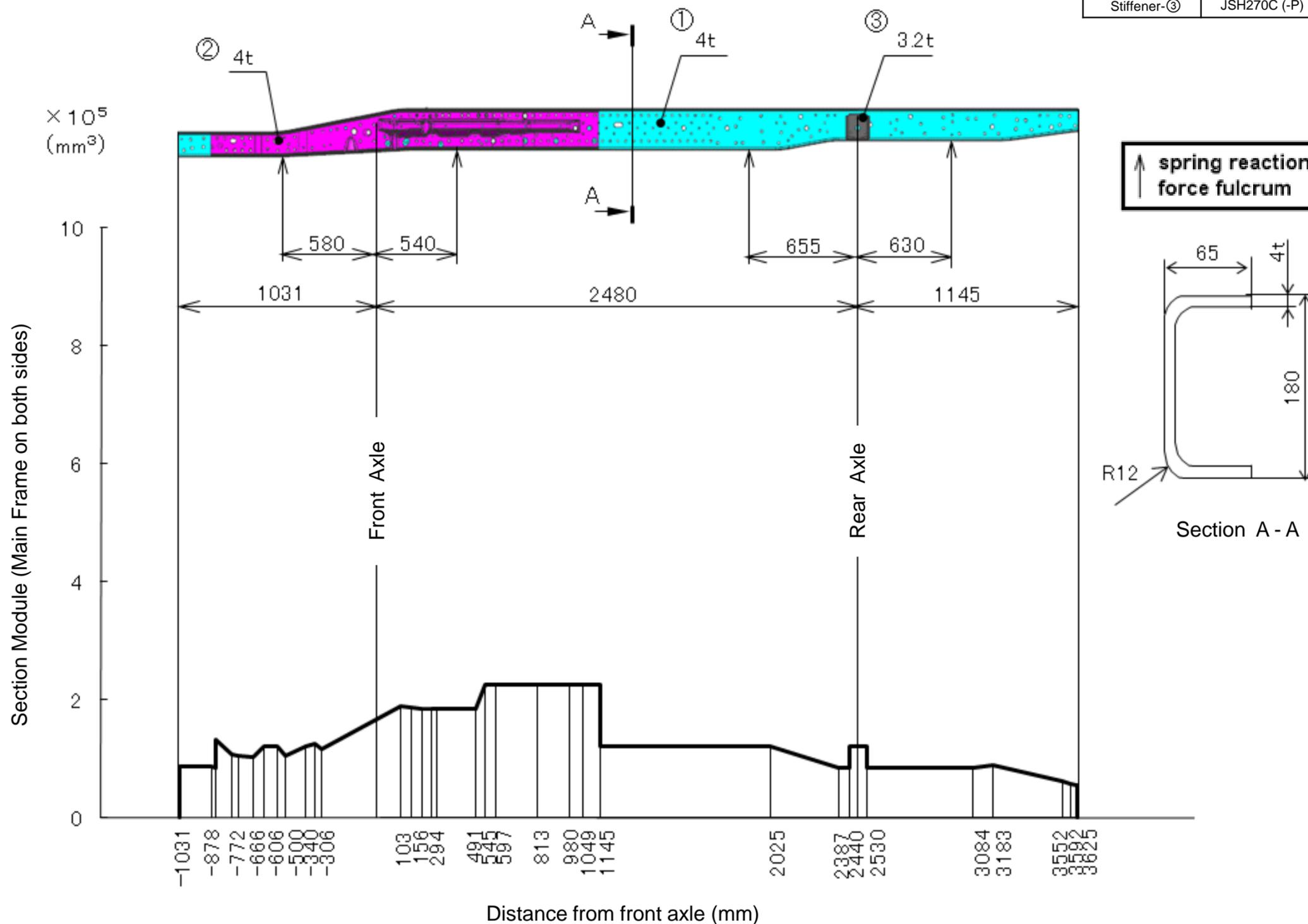


Fig. 4-3-6 Frame Section Modulus NLR85L/U-HD5AYEN, HD5WYEN, HD5AYE (W/O Air bag)

Parts name	Material	Tensile strength Mpa (kg/mm <sup>2</sup> )	Yield point Mpa (kg/mm <sup>2</sup> )
Side member-①	JSH440J	440(45)	305(31)
Reinforce-②	JSH400W	400(41)	225(23)
Stiffener-③	JSH270C (-P)	270(28)	175(18)

Unit: mm

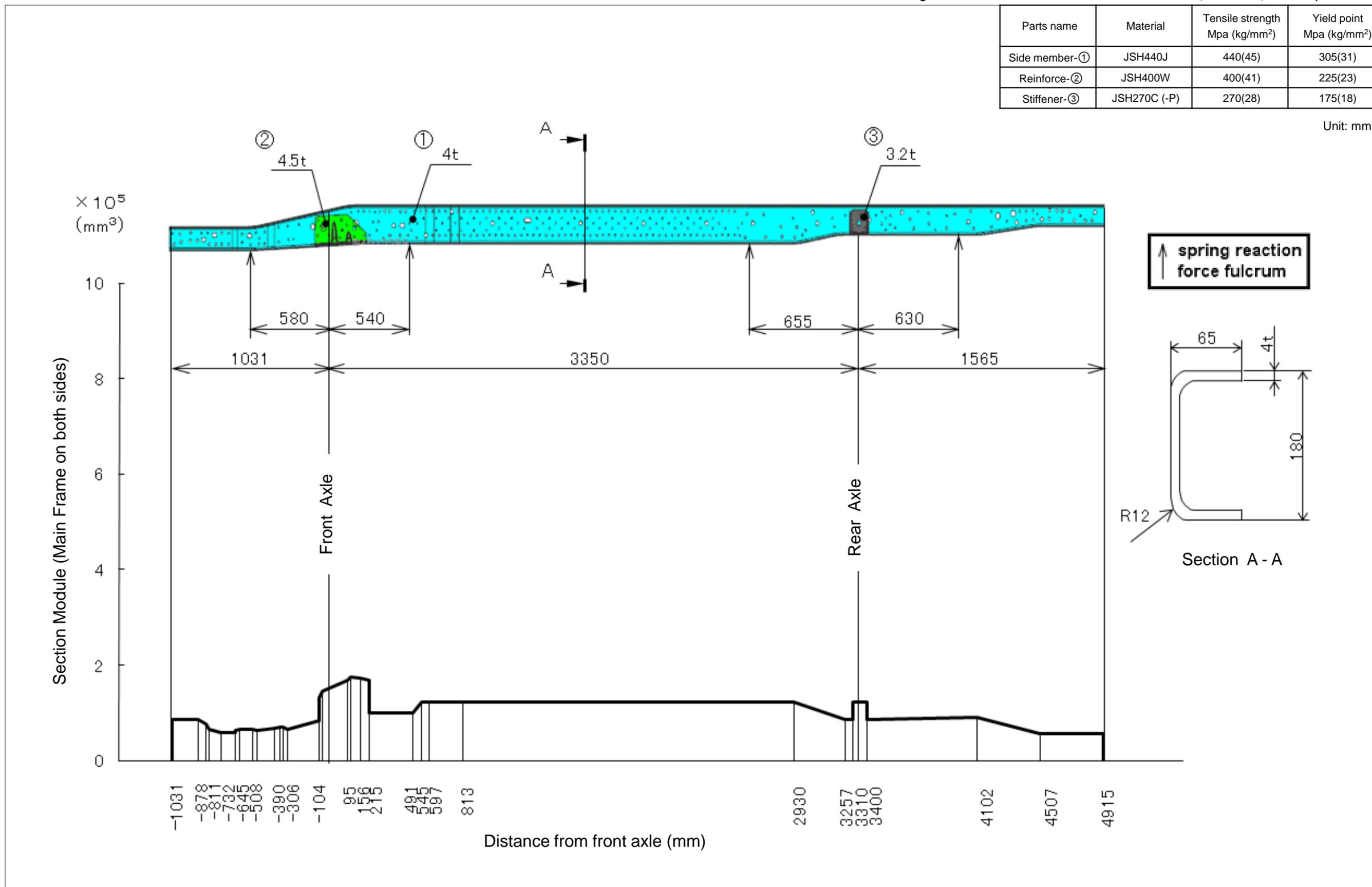


Fig. 4-3-7 Frame Section Modulus NLR85L/U-HD5AYEN, HD5WYEN, HD5AYE, NMR85L/U-HH5AYEN, HH5AYE (W/Air bag)

Parts name	Material	Tensile strength Mpa (kg/mm <sup>2</sup> )	Yield point Mpa (kg/mm <sup>2</sup> )
Side member-①	JSH440J	440(45)	305(31)
Reinforce-②	JSH440J	440(45)	305(31)
Stiffener-③	JSH270C (-P)	270(28)	175(18)

Unit: mm

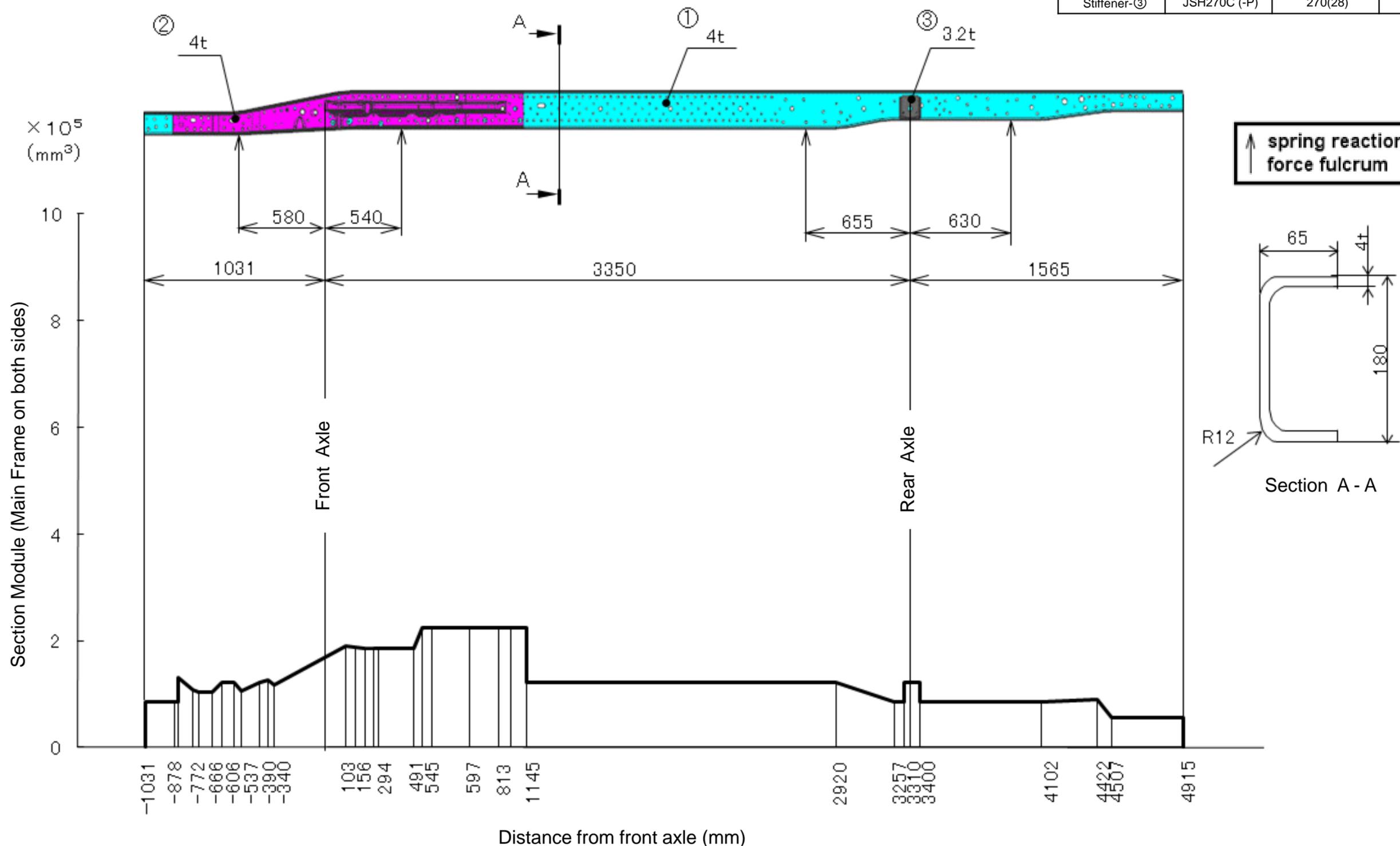


Fig. 4-3-8 Frame Section Modulus NNR85L/U-FD5AYEN (W/O Air bag)

Parts name	Material	Tensile strength Mpa (kg/mm <sup>2</sup> )	Yield point Mpa (kg/mm <sup>2</sup> )
Side member-①	JSH440J	440(45)	305(31)
Extension-②	JSH440J (-P)	440(45)	305(31)
Reinforce-③	JSH440J	440(45)	305(31)
Stiffener-④	JSH270C (-P)	270(28)	175(18)

Unit: mm

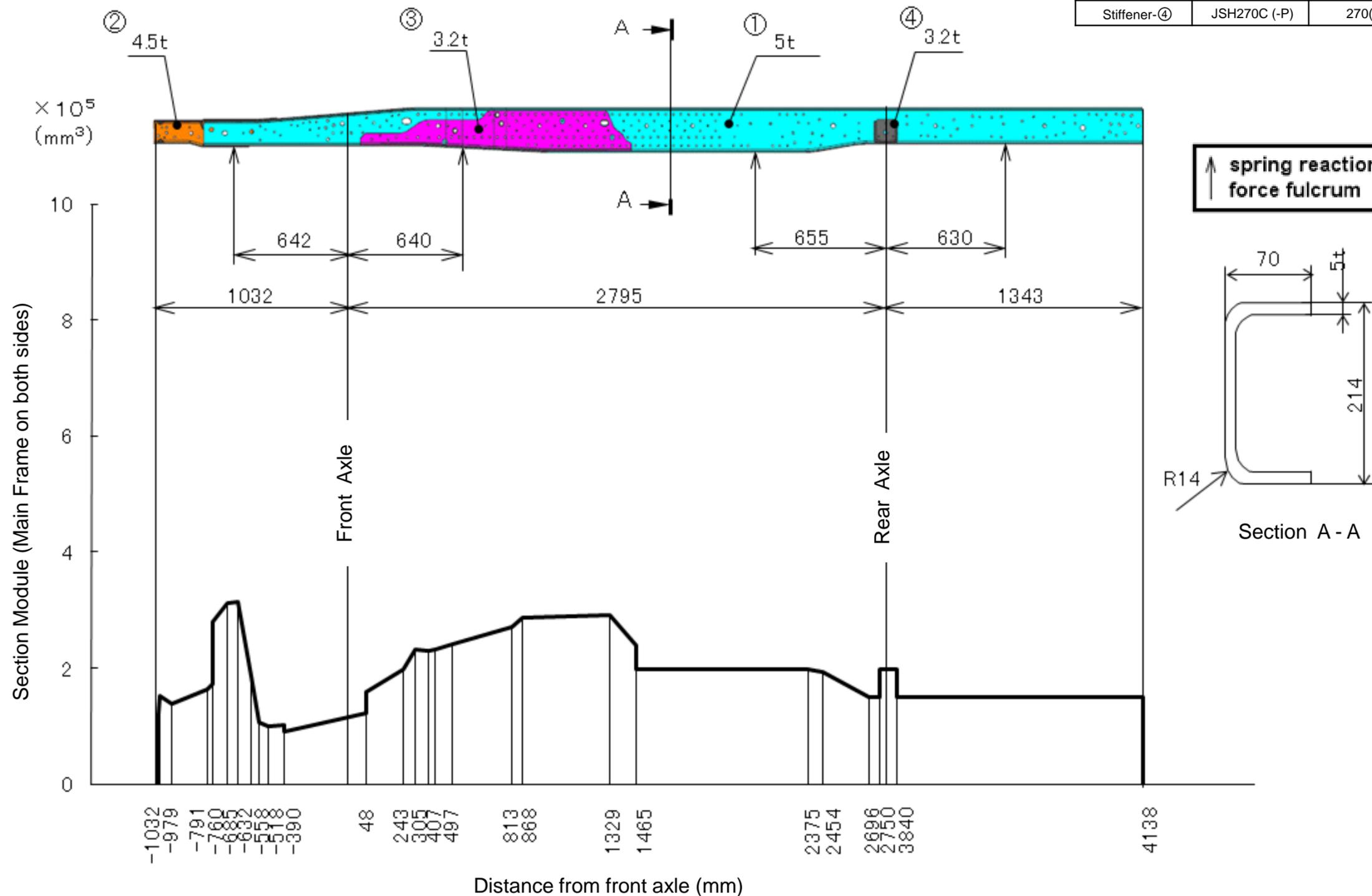


Fig. 4-3-9 Frame Section Modulus NNR85L/U-FD5AYEN (W/Air bag)

Parts name	Material	Tensile strength Mpa (kg/mm <sup>2</sup> )	Yield point Mpa (kg/mm <sup>2</sup> )
Side member-①	JSH440J	440(45)	305(31)
Extension-②	JSH440J (-P)	440(45)	305(31)
Stiffener-③	JSH440J	440(45)	305(31)
Reinforce-④	JSH440J	440(45)	305(31)
Stiffener-⑤	JSH270C (-P)	270(28)	175(18)

Unit: mm

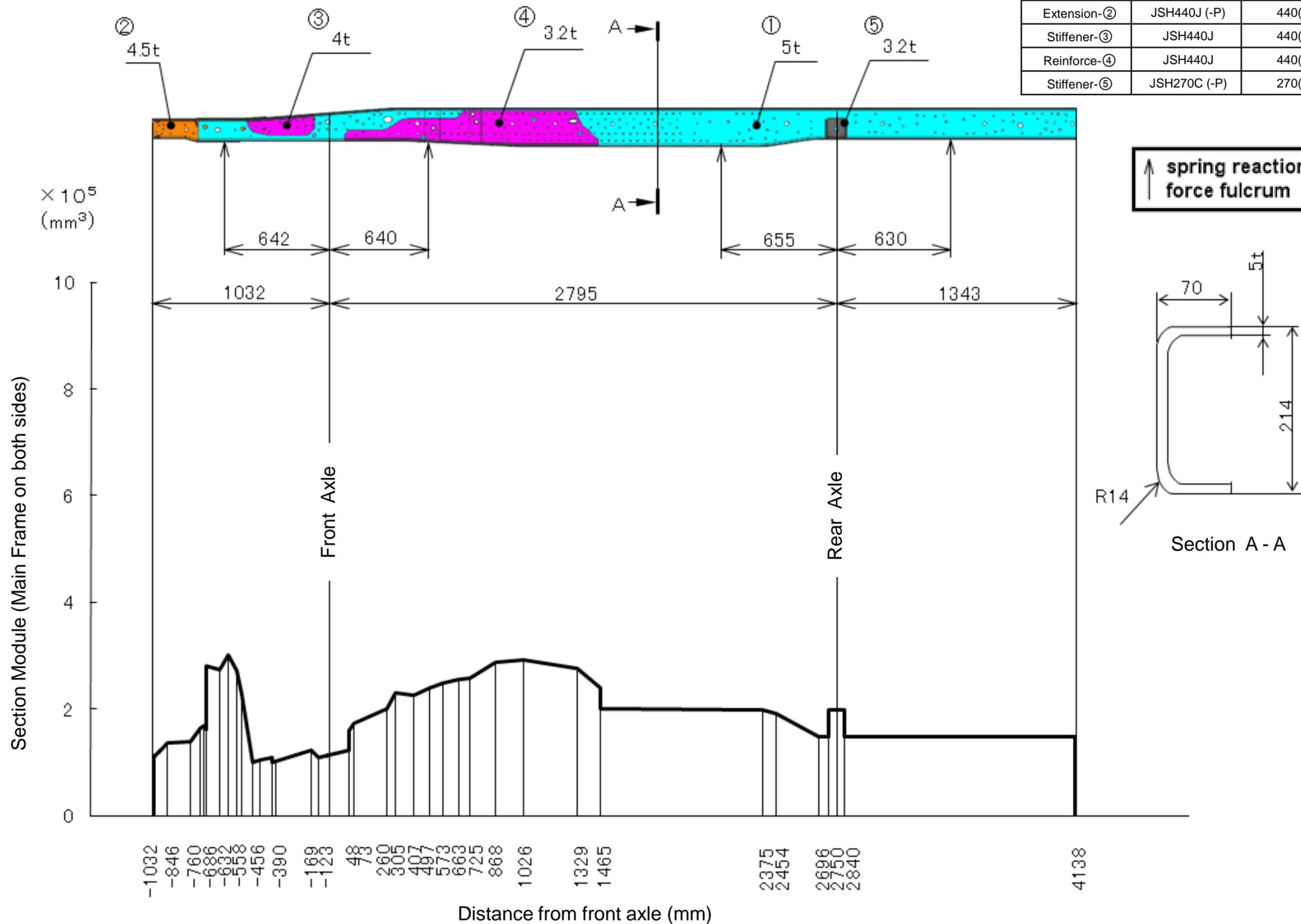


Fig. 4-3-10 Frame Section Modulus NNR85L/U-HD5AYEN, HD5AYE, NNR85L-HD5WYEN (W/O Air bag)

Parts name	Material	Tensile strength Mpa (kg/mm <sup>2</sup> )	Yield point Mpa (kg/mm <sup>2</sup> )
Side member-①	JSH440J	440(45)	305(31)
Extension-②	JSH440J (-P)	440(45)	305(31)
Stiffener-③	JSH440J	440(45)	305(31)
Stiffener-④	JSH270C (-P)	270(28)	175(18)

Unit: mm

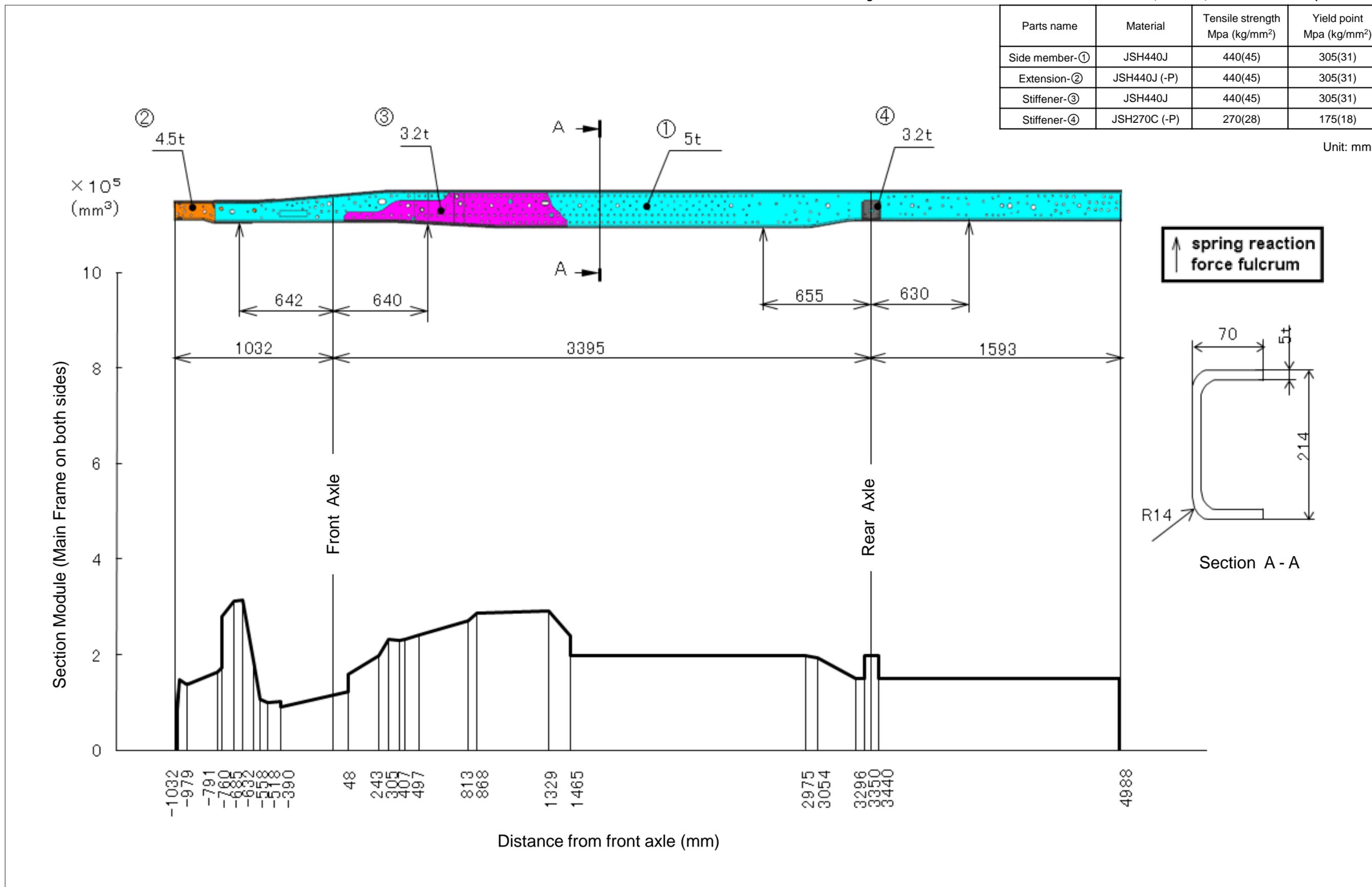


Fig. 4-3-11 Frame Section Modulus NNR85L/U-HD5AYEN, HD5AYE, NNR85L-HD5WYEN, NPR85L/U-HH5AYE, HJ5AYE (W/Air bag)

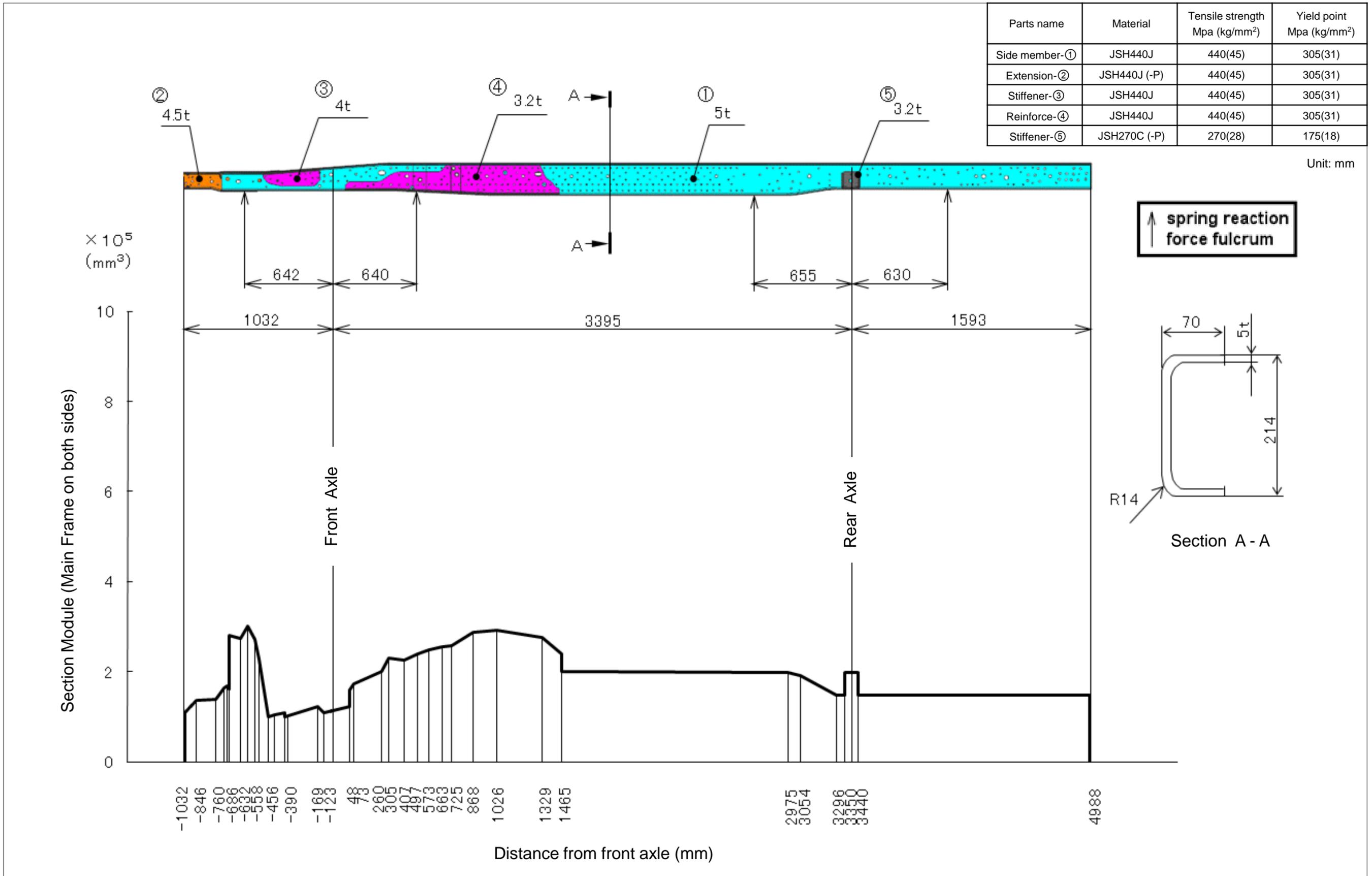


Fig. 4-3-12 Frame Section Modulus NPR85L/U-KJ5AYE

Parts name	Material	Tensile strength Mpa (kg/mm <sup>2</sup> )	Yield point Mpa (kg/mm <sup>2</sup> )
Side member-①	JSH440J	440(45)	305(31)
Extension-②	JSH440J (-P)	440(45)	305(31)
Stiffener-③	JSH440J	440(45)	305(31)
Reinforce-④	JSH440J	440(45)	305(31)
Stiffener-⑤	JSH270C (-P)	270(28)	175(18)

Unit: mm

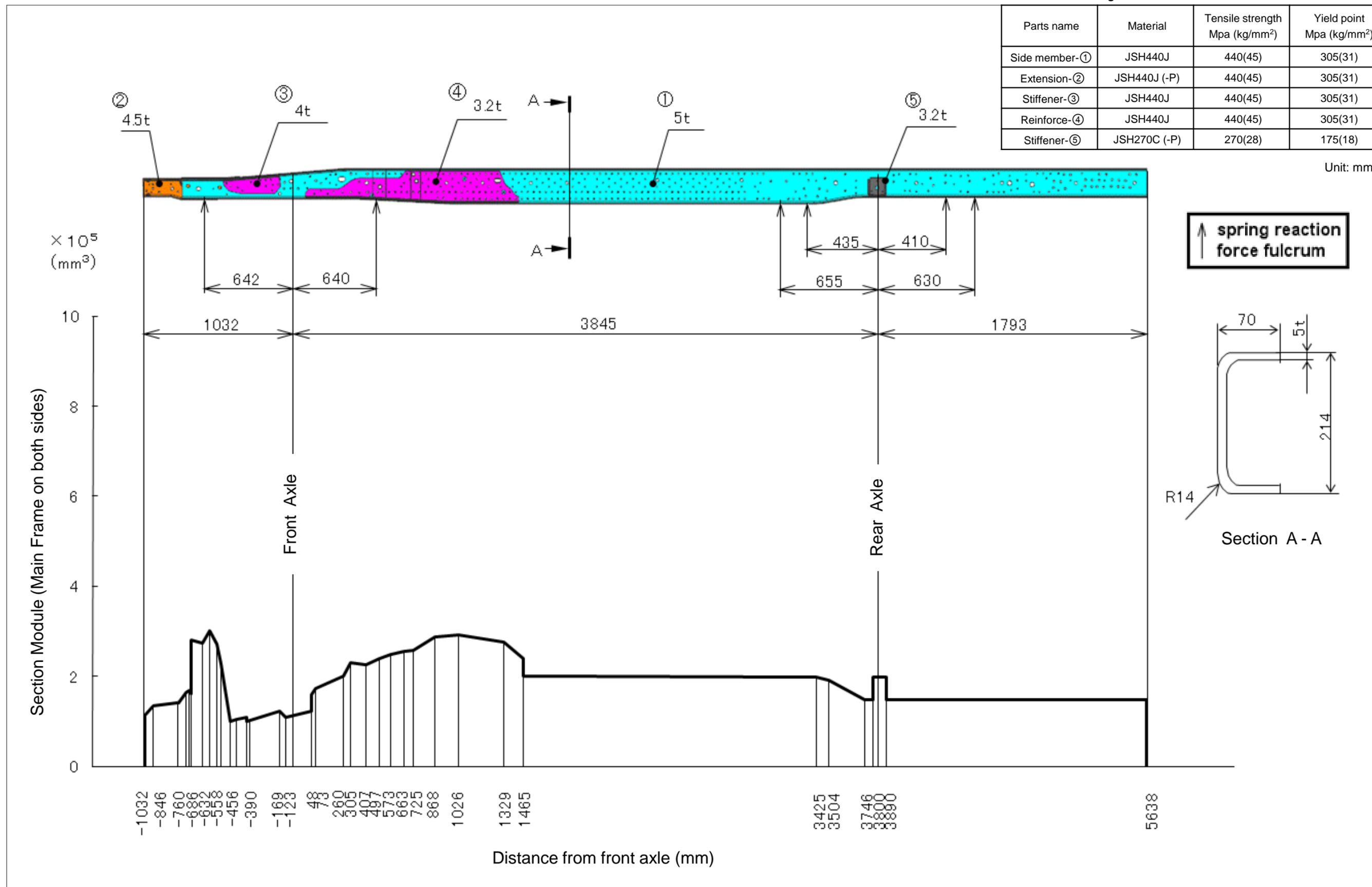


Fig. 4-3-13 Frame Section Modulus NPR85L/U-HL5VAYE, NPR75L/U-HL5VAYE

Parts name	Material	Tensile strength Mpa (kg/mm <sup>2</sup> )	Yield point Mpa (kg/mm <sup>2</sup> )
Side member-①	JSH440J	440(45)	305(31)
Extension-②	JSH440J (-P)	440(45)	305(31)
Stiffener-③	JSH440J	440(45)	305(31)
Stiffener-④	SS400P	400(41)	245(25)
Stiffener-⑤	JSH270C (-P)	270(28)	175(18)

Unit: mm

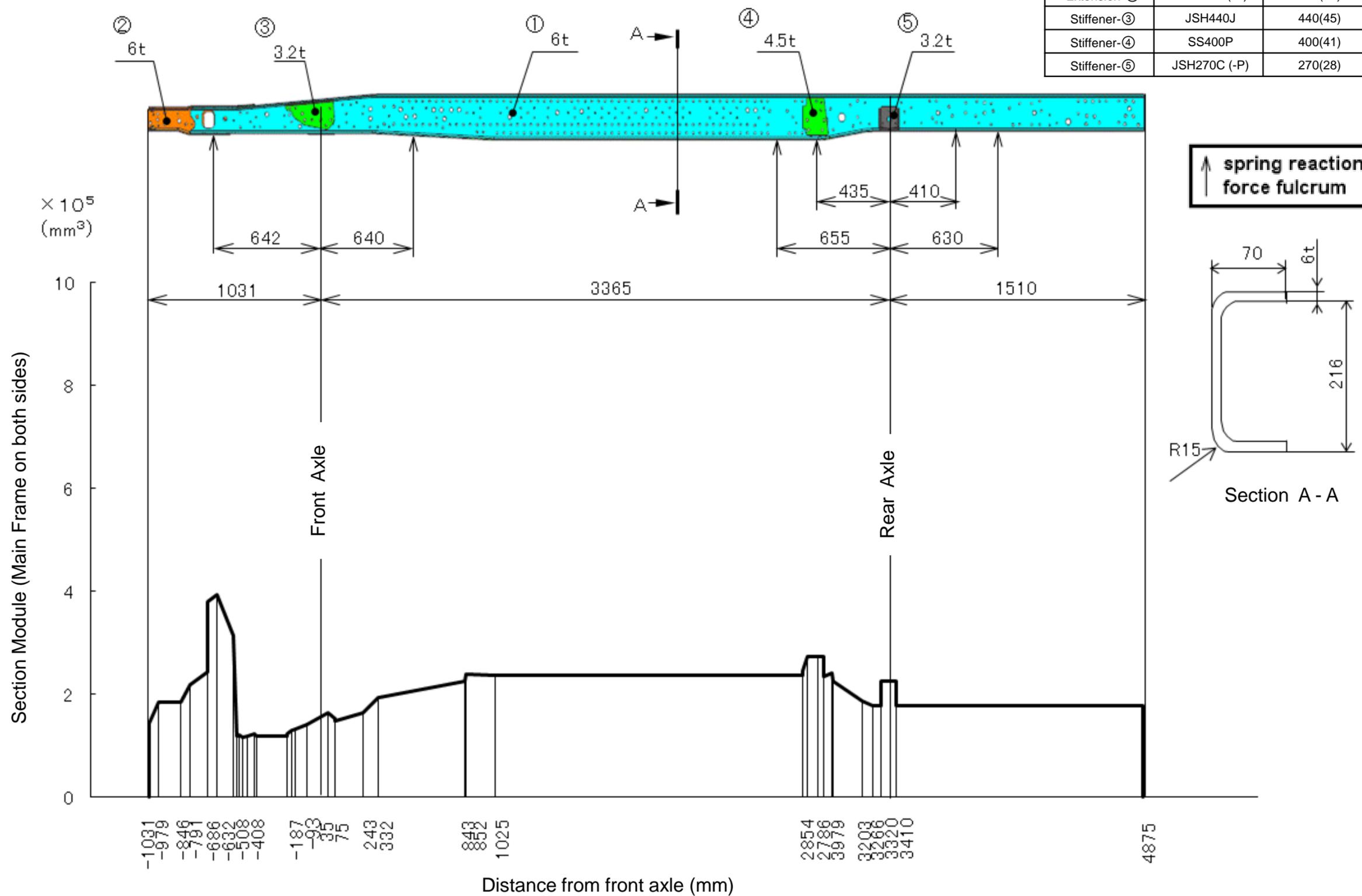


Fig. 4-3-14 Frame Section Modulus NPR85L/U-KL5VAYE, NPR75L/U-KL5VAYE

Parts name	Material	Tensile strength Mpa (kg/mm <sup>2</sup> )	Yield point Mpa (kg/mm <sup>2</sup> )
Side member-①	JSH440J	440(45)	305(31)
Extension-②	JSH440J (-P)	440(45)	305(31)
Stiffener-③	JSH440J	440(45)	305(31)
Stiffener-④	SS400P	400(41)	245(25)
Stiffener-⑤	JSH270C (-P)	270(28)	175(18)

Unit: mm

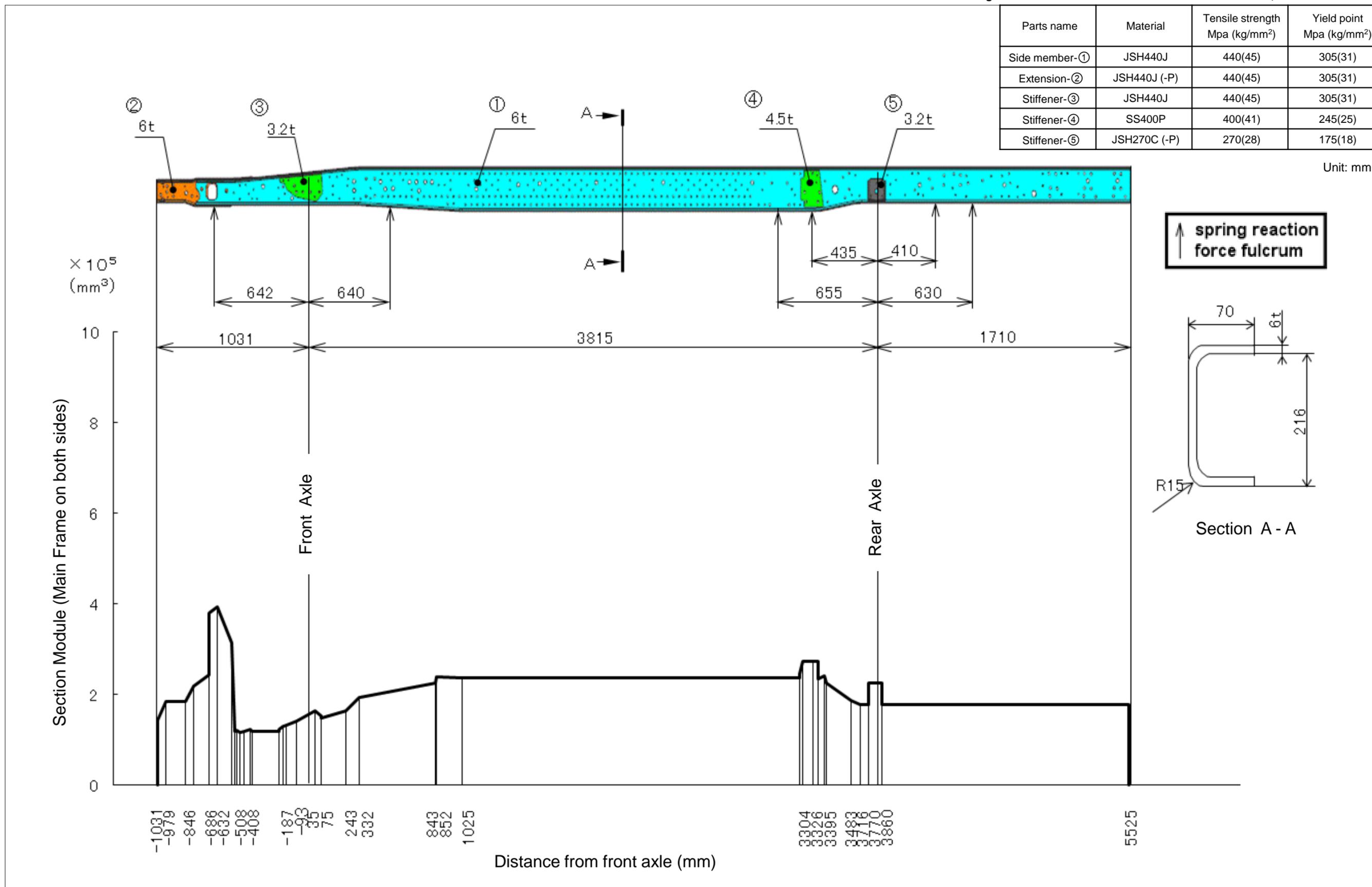


Fig. 4-3-15 Frame Section Modulus NPR85L/U-ML5VAYE, NPR75L/U-ML5VAYE

Parts name	Material	Tensile strength Mpa (kg/mm <sup>2</sup> )	Yield point Mpa (kg/mm <sup>2</sup> )	Parts name	Material	Tensile strength Mpa (kg/mm <sup>2</sup> )	Yield point Mpa (kg/mm <sup>2</sup> )
Side member-①	JSH440J	440(45)	305(31)	Stiffener-④	SS400P	400(41)	245(25)
Extension-②	JSH440J (-P)	440(45)	305(31)	Stiffener-⑤	JSH270C (-P)	270(28)	175(18)
Stiffener-③	JSH440J	440(45)	305(31)	Extension-⑥	SS400P	400(41)	245(25)

Unit: mm

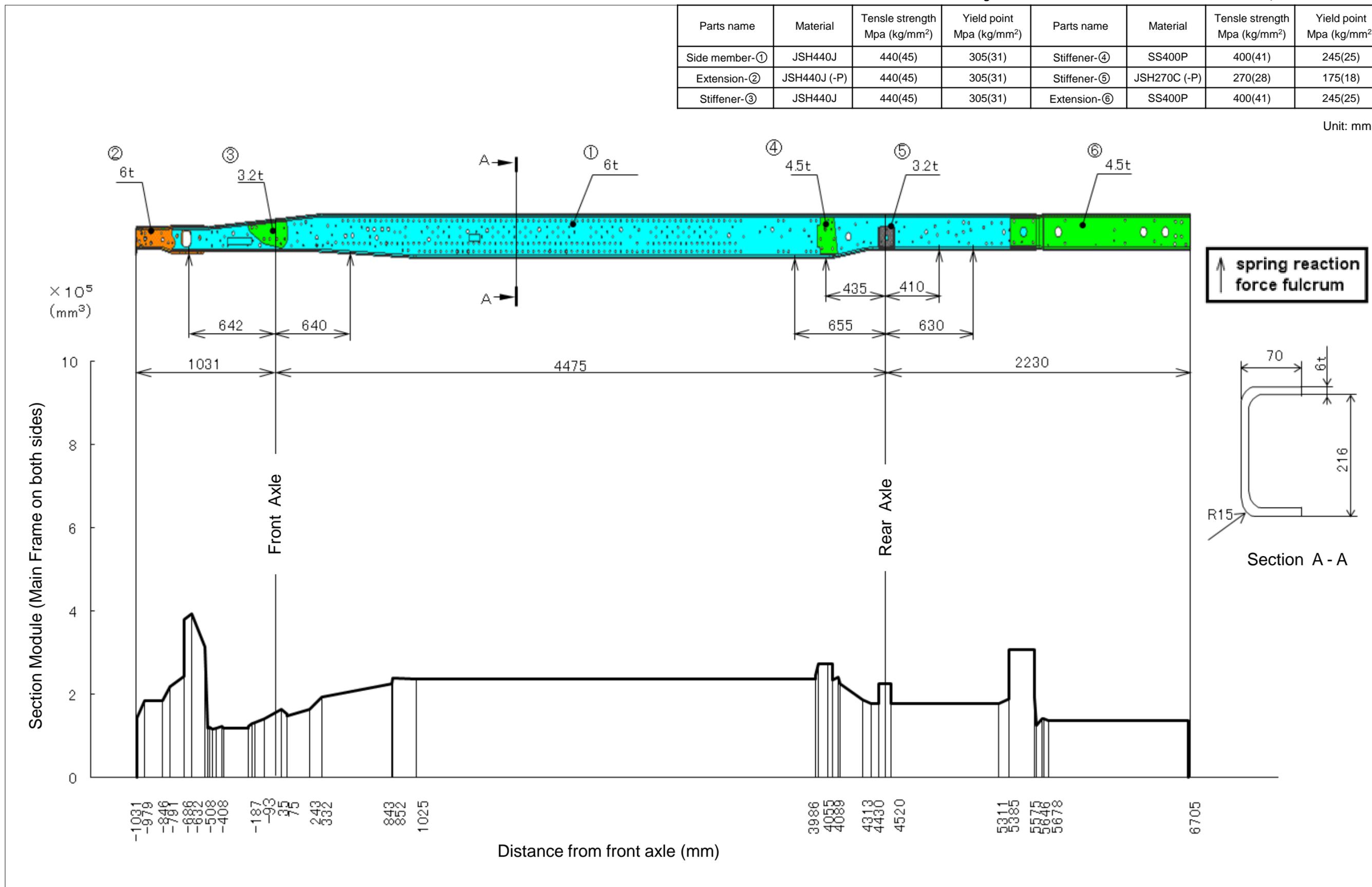
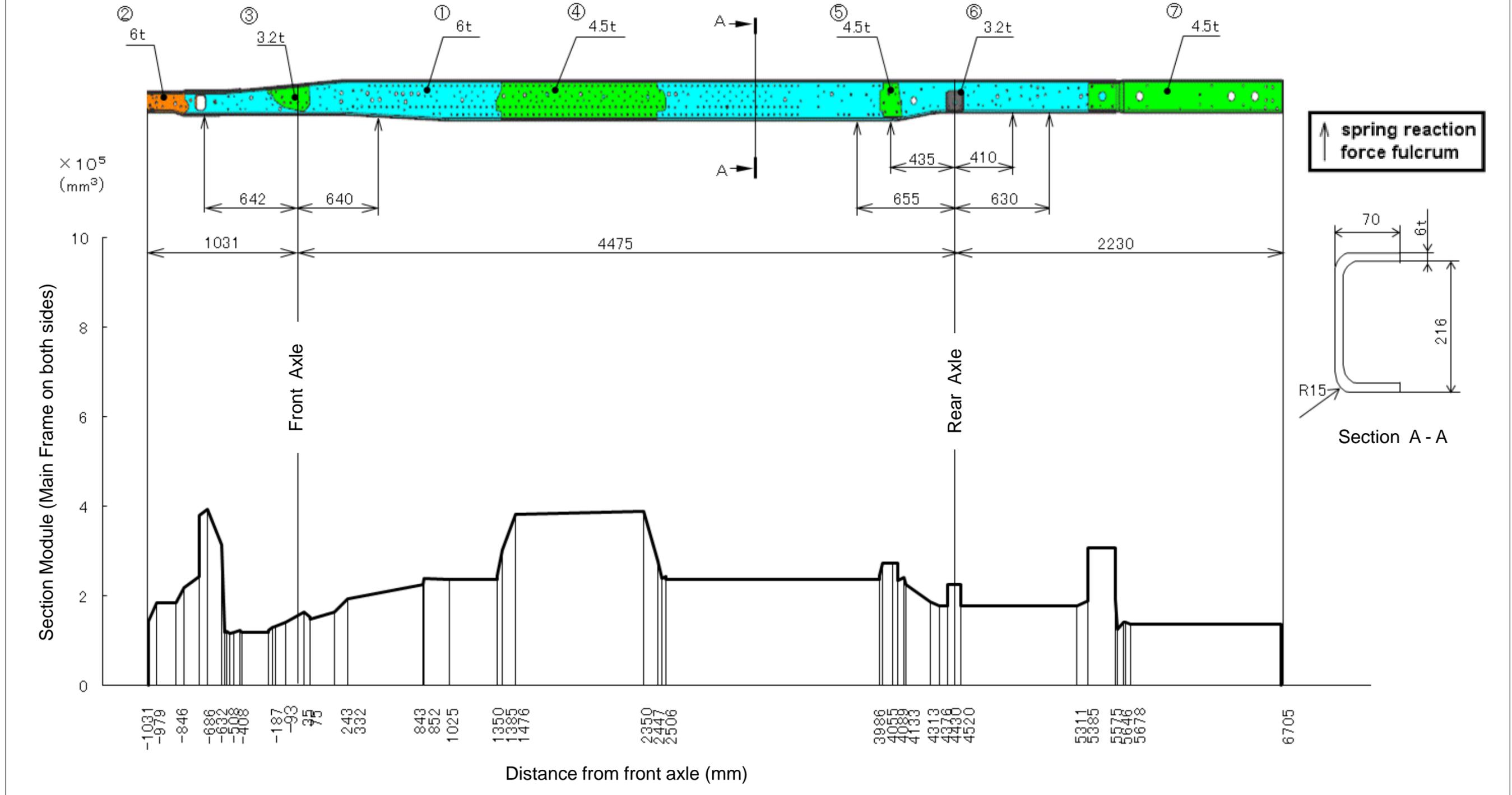


Fig. 4-3-16 Frame Section Modulus NPR75L/U-ML5VWYE

Parts name	Material	Tensile strength Mpa (kg/mm <sup>2</sup> )	Yield point Mpa (kg/mm <sup>2</sup> )	Parts name	Material	Tensile strength Mpa (kg/mm <sup>2</sup> )	Yield point Mpa (kg/mm <sup>2</sup> )
Side member-①	JSH440J	440(45)	305(31)	Stiffener-⑤	SS400P	400(41)	245(25)
Extension-②	JSH440J (-P)	440(45)	305(31)	Stiffener-⑥	JSH270C (-P)	270(28)	175(18)
Stiffener-③	JSH440J	440(45)	305(31)	Extension-⑦	SS400P	400(41)	245(25)
Reinforce-④	SS400P	400(41)	245(25)				

Unit: mm



## **Chapter 5 CHARACTERISTICS OF THE SPRINGS**

### **5.1.SPECIFICATIONS OF SPRINGS**

### **5.2.FORMULA FOR CALCULATING GROUND HEIGHT OF CHASSIS FRAME TOP SURFACE**

### **5.3.MARGIN FOR MOVEMENT OF THE REAR AXLE AND TIRES**

## 5.1. SPECIFICATIONS OF SPRINGS

### Front springs(1)

Vehicle model	Spring type	Spring constant (N/mm)	Spring dimension (mm)			
			Main spring			Helper spring (rubber)
			Wire diameter	Coil diameter	Free length	
NLR85AL/U	COIL SPRING (Independent)	78	21	100	400	75 × 55 × 40

### Front springs(2)

Vehicle model	Spring type	Spring constant (N/mm)	Spring dimension (mm)					
			Main spring			Helper spring		
			Span	Width	Thickness-No. of leaves	Span	Width	Thickness-No. of leaves
NLR85L/U	LEAF SPRING	118	1,140	60	15-1,16-1	—	—	—
NMR85L/U	LEAF SPRING	144	1,140	60	16-1,17-1	—	—	—
NNR85L/U	LEAF SPRING	118	1,300	70	16-1,17.5-1	—	—	—
NPR85L/U-HH5AYE NPR85L/U-*J	LEAF SPRING	133	1,300	70	17-1,18-1	—	—	—
NPR85L/U-*L NPR75L/U	LEAF SPRING	163	1,300	70	15-1, 17-1,16.5-1	—	—	—

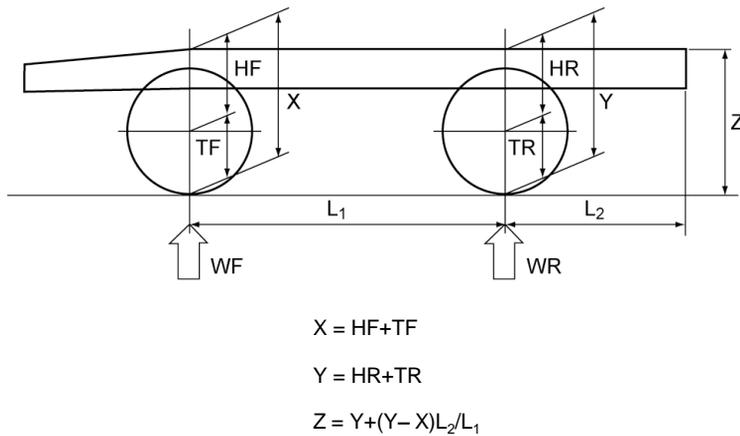
### Rear springs

Vehicle model	Spring type	Spring constant (N/mm) Main/Main+Helper	Spring dimension (mm)					
			Main spring			Helper spring		
			Span	Width	Thickness-No. of leaves	Span	Width	Thickness-No. of leaves
NLR85AL/U-ED1AYEN	LEAF SPRING	60.2/216	1,200	70	13-1	960	70	20.5-1
NLR85AL (except NLR85AL-D1AYEN)	LEAF SPRING	145/204	1,300	70	22-1	1,030	70	17.5-1
NLR85L/U	LEAF SPRING	145/204	1,300	70	22-1	1,030	70	17.5-1
NMR85L/U	LEAF SPRING	143/511	1,300	70	16-1, 17-1	1,100	70	30-1
NNR85L/U	LEAF SPRING	145/204	1,300	70	22-1	1,030	70	17.5-1
NPR85L/U-HH5AYE	LEAF SPRING	143/511	1,300	70	16-1, 17-1	1,100	70	30-1
NPR85L/U -*J	LEAF SPRING	173/589	1,300	70	13-3	850	70	16-2
NPR85L/U-*L NPR75L/U	LEAF SPRING	205/688	1,300	70	11-1, 12-2 11-3	850	70	9-7

## 5.2.FORMULA FOR CALCULATING GROUND HEIGHT OF CHASSIS FRAME TOP SURFACE

Use the following formula to calculate ground height of chassis frame top surface.

Formula for calculating ground height of chassis frame top surface



X: Ground height of chassis frame top surface above front axle (mm)

Y: Ground height of chassis frame top surface above rear axle (mm)

Z: Ground height of chassis frame rear end (mm)

WF: Front axle load (kg)

WR: Rear axle load (kg)

$L_1$ : Wheelbase (mm)

$L_2$ : Chassis frame rear overhang (mm)

TF: Front tire radius (when loaded) (mm)

TR: Rear tire radius (when loaded) (mm)

HF: Distance from chassis frame top surface above front axle to wheel center (mm)

HR: Distance from chassis frame top surface above rear axle to wheel center (mm)

• **Calculating distance between chassis frame top surface and wheel center (HF and HR)**

Assign the coefficients in the table far below to the following formulas to calculate HF and HR of each vehicle:

	Formula	Conditions
HF=	$FA - FK \times WF$	
HR=	$RA1 - RK1 \times WR$	$WR \leq$ Load at helper spring's activating point (kg)
	$RA2 - RK2 \times WR$	$WR >$ Load at helper spring's activating point (kg)

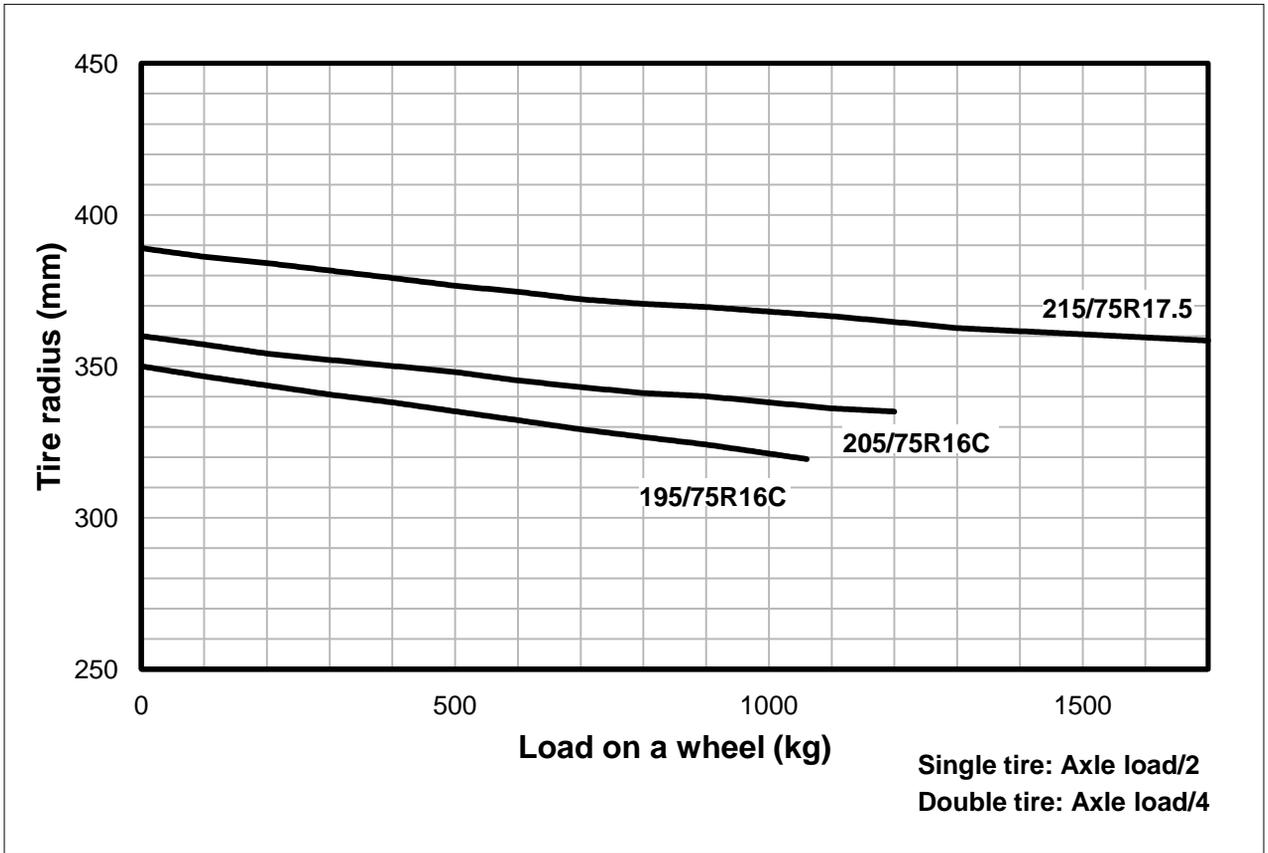
**Coefficients of each vehicle to calculate distance between chassis frame top surface and wheel center**

Vehicle model	Front spring		Rear spring				
	FA	FK	RA1	RK1	Load at helper spring's activating point	RA2	RK2
NLR85AL/U-ED1AYEN	373	0.0625	418	0.0814	1,320	332	0.0227
NLR85AL-ED5	376	0.0625	375	0.0338	1,525	358	0.0240
NLR85AL-HD5	383	0.0625	405	0.0338	1,525	387	0.0240
NLR85L/U-ED5	341	0.0415	375	0.0338	1,525	358	0.0240
NLR85L/U-HD5	351	0.0415	405	0.0338	1,525	387	0.0240
NMR85L/U	345	0.0340	391	0.0343	2,005	341	0.0096
NNR85L/U-FD5*YEN NNR85L/U-HD5*YEN	366	0.0415	384	0.0338	1,585	368	0.0240
NNR85L/U-HD5*YE	371	0.0415	402	0.0338	1,585	386	0.0240
NPR85L/U-HH5AYE	366	0.0368	408	0.0343	2,115	351	0.0096
NPR85L/U-HJ	366	0.0368	393	0.0283	2,305	346	0.0083
NPR85L/U-KJ	366	0.0368	405	0.0283	2,305	358	0.0083
NPR85L/U-*L NPR75L/U	387	0.0301	425	0.0239	2,730	380	0.0071

FA: Distance between chassis frame top surface and front wheel center of a bare cab chassis

RA: Distance between chassis frame top surface and rear wheel center of a bare cab chassis

• Relation of tire radius (TF and TR) and load



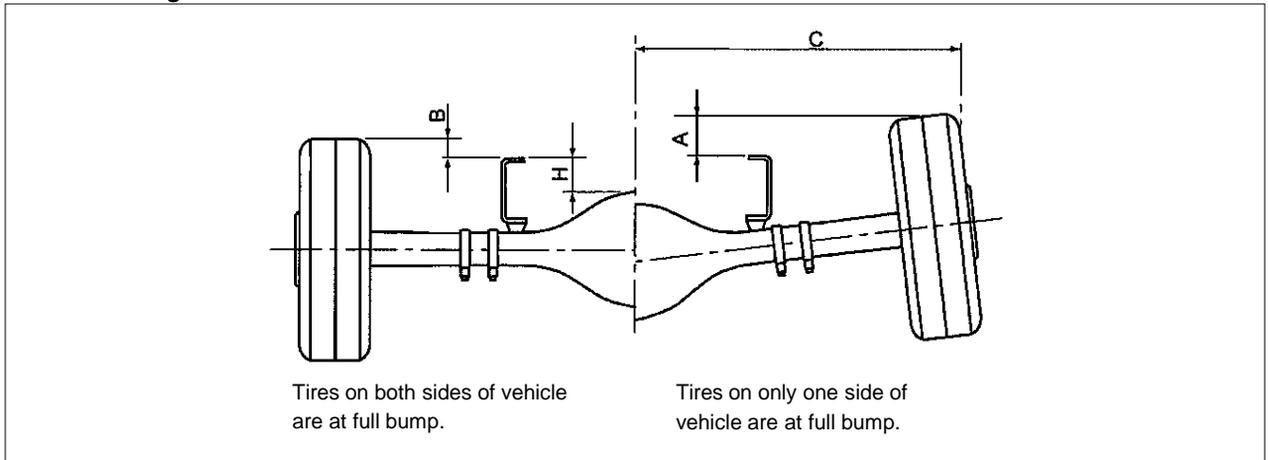
**5.3. MARGIN FOR MOVEMENT OF THE REAR AXLE AND TIRES**

Based on the dimensional data in the table below, determine position and dimension of the rear fender and the tire housing with reasonable clearances to the tires.

For chained tires, add 30mm to “A”, “B” and “C”.

**[Single tire vehicle]**

**Movement range of axle and tire**



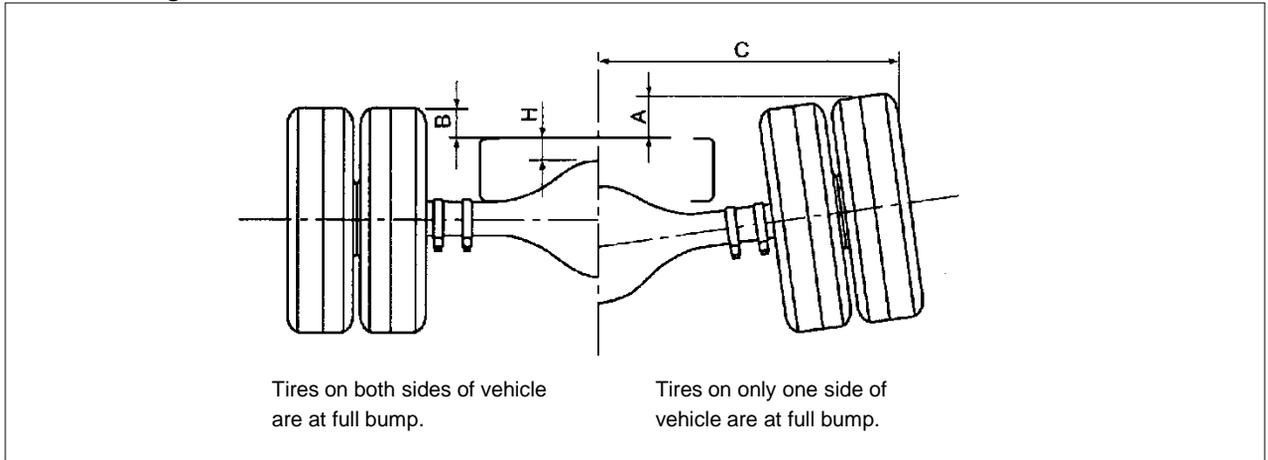
Unit: mm

Vehicle model	Chassis frame depth*	Tire	A	B	C	H
NLR85AL/U-ED1AYEN	140	205/75R16C	179	141	770	79

\*Note: Chassis frame depth at the point where rear axle contacts with the chassis frame.

**[Double tire vehicle]**

**Movement range of axle and tire**



Unit: mm

Vehicle model	Chassis frame depth*	Tire	A	B	C	H
NLR85*L/U-ED5AYEN	140	195/75R16C	182	151	891	61
		205/75R16C	190	159	895	61
NLR85*L/U-HD5*YEN	140	195/75R16C	137	110	891	102
		205/75R16C	145	118	895	102
NLR85*L/U-HD5AYE	140	195/75R16C	127	106	891	75
		205/75R16C	135	114	895	75
NMR85L/U	140	205/75R16C	150	155	895	34
NNR85L/U-*D5*YEN	174	195/75R16C	145	123	923	59
		205/75R16C	153	131	927	59
NNR85L/U-HD5AYE	174	195/75R16C	125	114	923	68
		205/75R16C	133	122	927	68
NPR85L/U-HH5AYE	174	205/75R16C	141	122	927	68
NPR85L/U-*J5AYE	174	215/75R17.5	191	149	961	68
NPR85L/U-*L5VAYE	176	215/75R17.5	164	139	1,029	51
NPR75L/U	176	215/75R17.5	159	139	1,029	51

\*Note: Chassis frame depth at the point where rear axle contacts with the chassis frame.

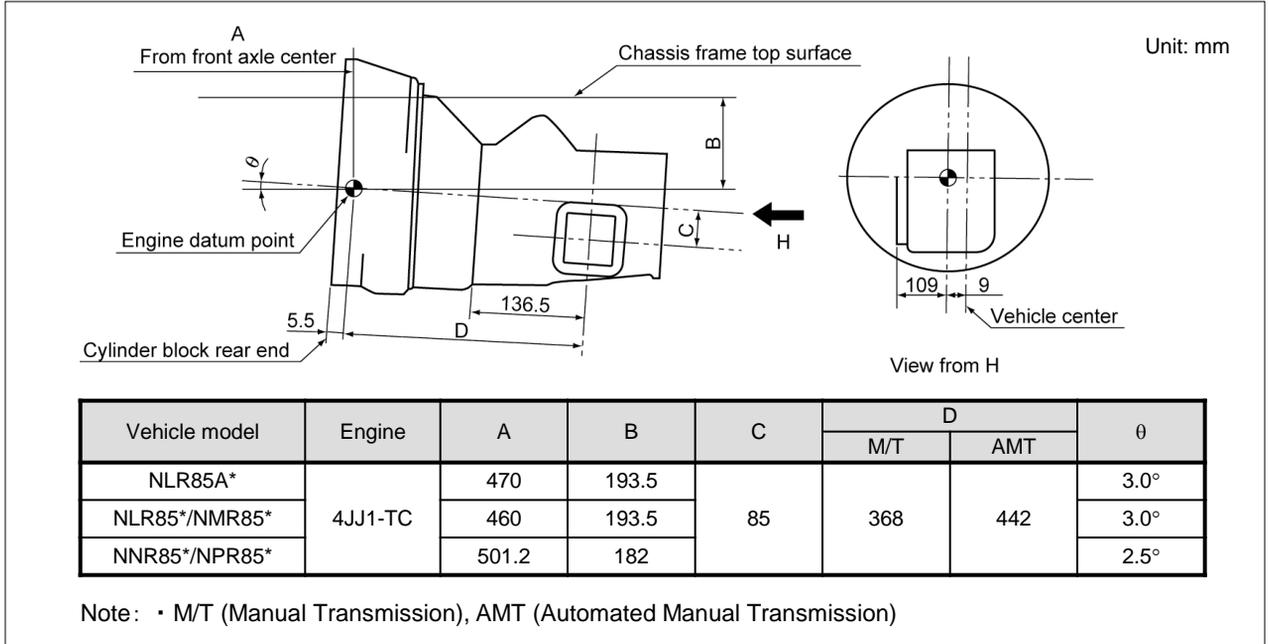
## Chapter 6 PTO AND GOVERNOR CHARACTERISTICS CURVES

### 6.1. LOCATION OF THE TRANSMISSION SIDE PTO

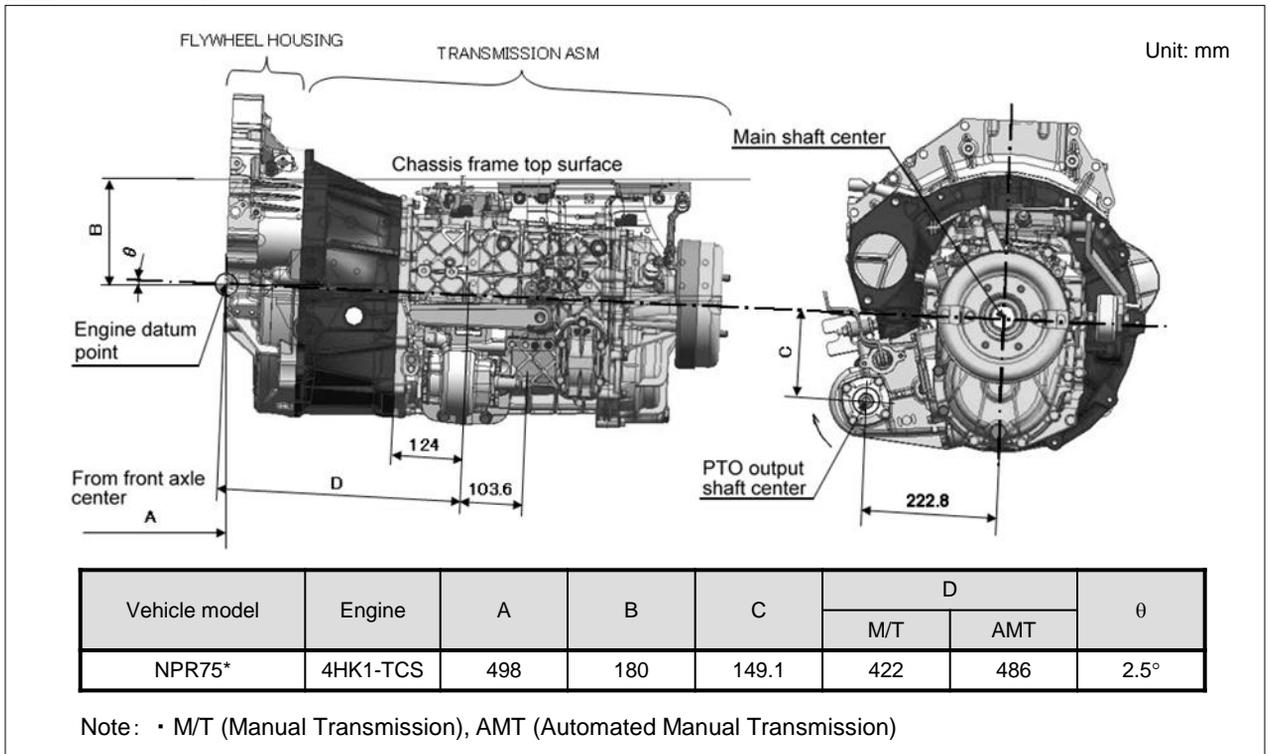
### 6.1. LOCATION OF THE TRANSMISSION SIDE PTO

Refer to the figure below when installing side PTO locally. Inquire uncertain points of the ISUZU dealerships.

#### MYY Transmission



#### MZZ Transmission



## **Chapter 7 ELECTRICAL SYSTEM**

**7.1. ADJUSTING THE POSITION OF LAMPS**

**7.2. WORKING VOLTAGE AND OUTPUT CHARACTERISTICS OF AC  
GENERATORS**

**7.3. FUSE**

**7.4. RELAY**

**7.5. SERVICE TERMINALS**

**7.6. SIDE COMBINATION LAMPS**

**7.7. CIRCUIT DIAGRAMS**

## 7.1. ADJUSTING THE POSITION OF LAMPS

- At the rear end of a chassis frame, there are temporarily fitted triple rear combination lamps consisted of a tail lamp, a stop lamp, a turn signal lamp and a back-up lamp.
- The light axis of the headlamp at shipment is fixed by the definite value on the assumption of the adjustment after body mounting (before certification).

Perform the installation and adjustment in accordance with the following note.

[Rear combination lamp]

- There is a drain hole in the bottom of each lens. For convenience in shipment, these holes have temporarily been turned up and covered with waterproof tape. Before fitting rear combination lamps on a rear body or on a chassis frame, remove this tape.
- To prevent the bulb filaments from breaking due to vibration of the lamp housing, after fitting the lamps on a rear body or on a chassis frame, to absorb vibration, fit a stay with its one end fixed to the bottom center of the lamp housing and the other on the rear body or on the chassis frame.
- Note that the position and the height of the rear combination lamps relative to the outermost side of vehicle must comply with applicable laws and regulations of country.

[Adjusting the light axis of the head lamps]

- The light axis of the head lamps must comply with applicable laws and regulations of country.

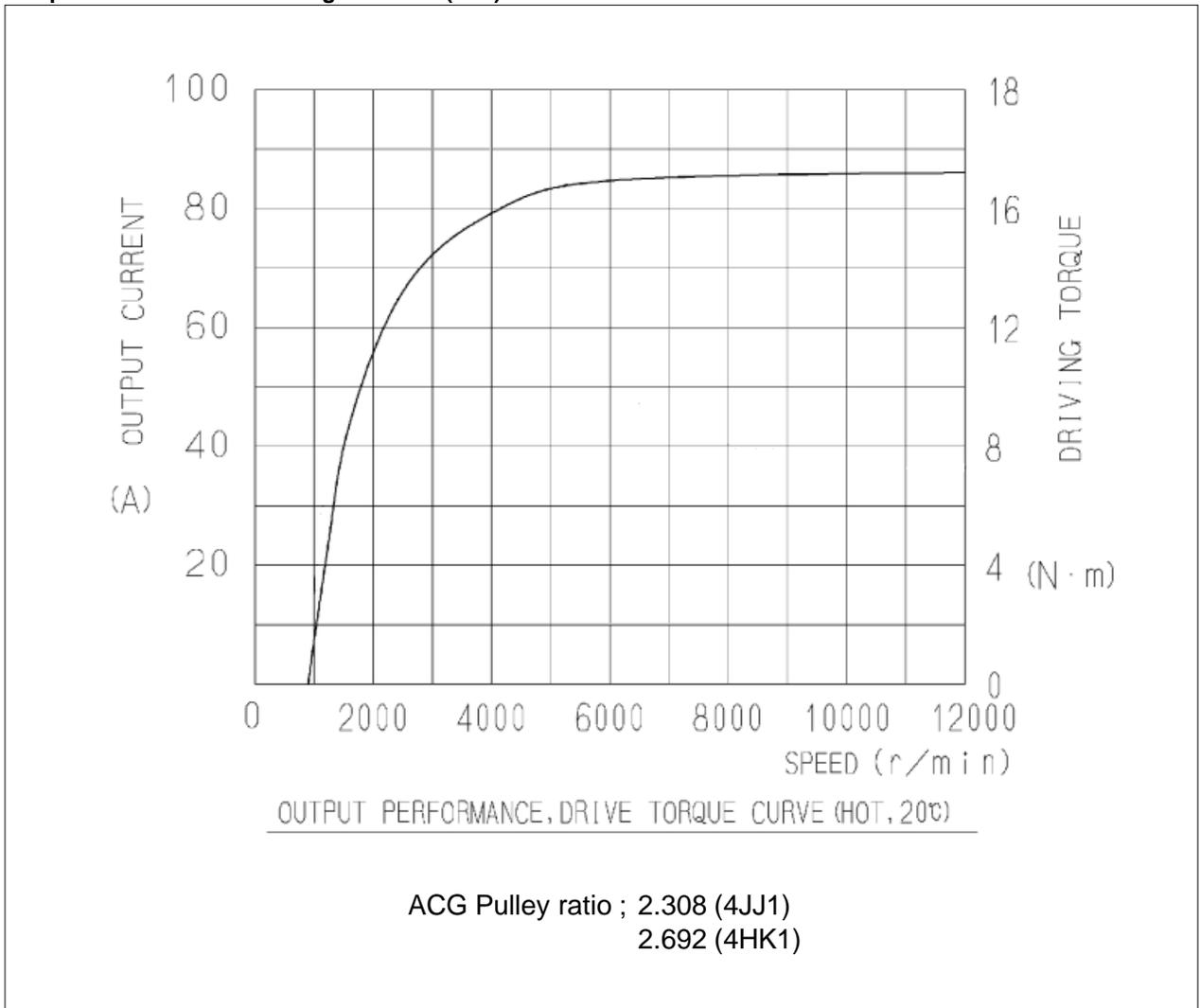
## 7.2. WORKING VOLTAGE AND OUTPUT CHARACTERISTICS OF AC GENERATORS

The following table shows the working voltages and the capacity of the AC generator for the standard vehicle models:

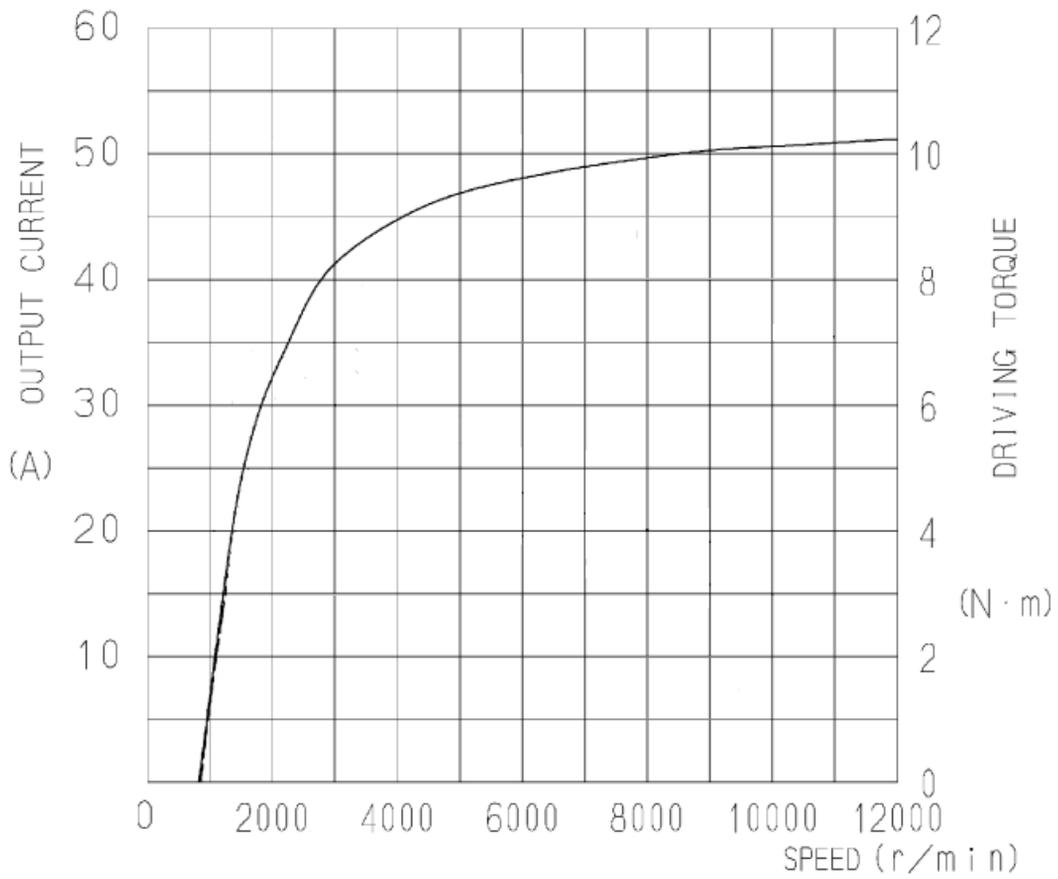
AC generators of vehicle model

Vehicle model	Working voltage	AC generator	
		Standard	Option
NLR85 NMR85 NNR85 NPR85 NPR75	24V	80A	50A

Output characteristics of AC generators (80A)



Output characteristics of AC generators (50A)



OUTPUT PERFORMANCE, DRIVE TORQUE CURVE (HOT, 20°C)

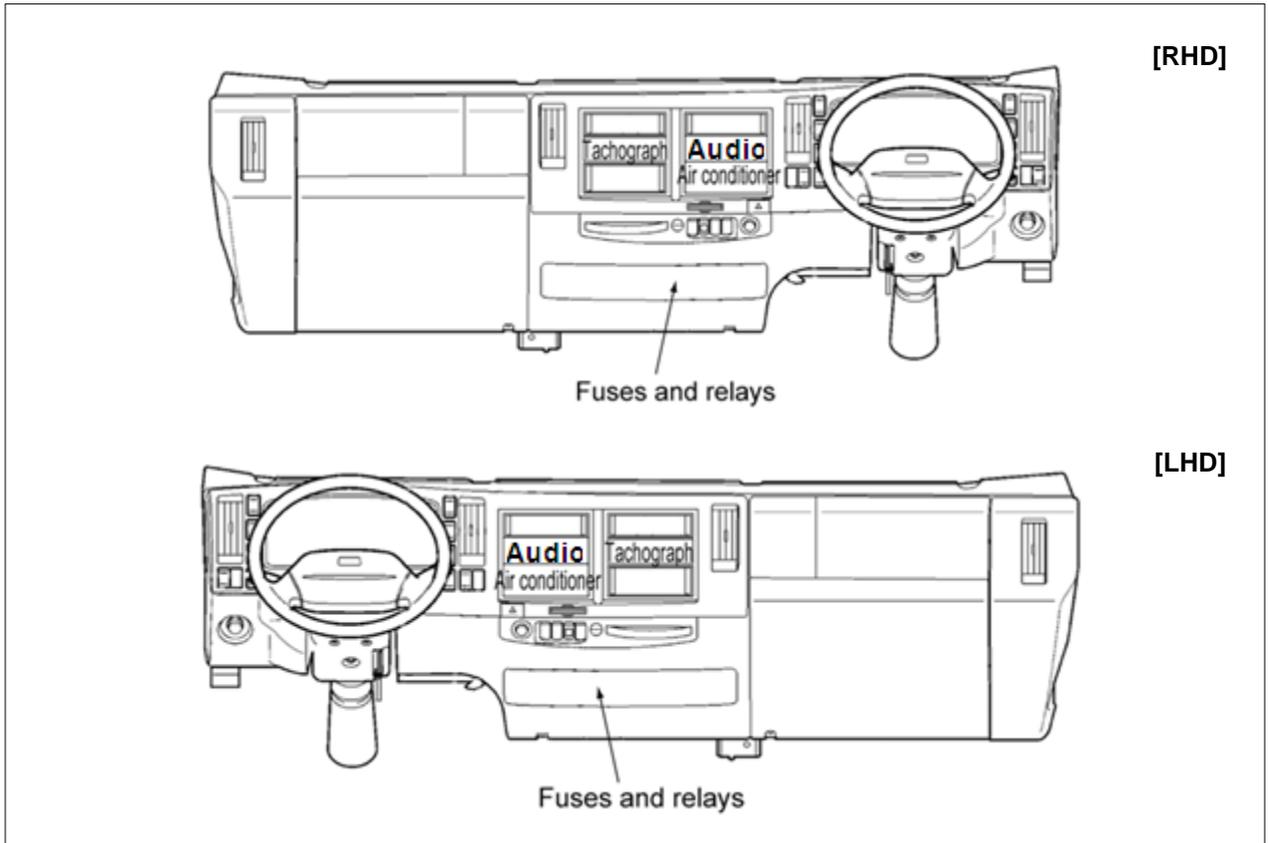
ACG Pulley ratio ; 2.308 (4JJ1)  
2.692 (4HK1)

### 7.3. FUSE

- Location of fuse

The fuses are located in the central part of the dashboard. (Refer to below)

#### Location of the fuses in a cab

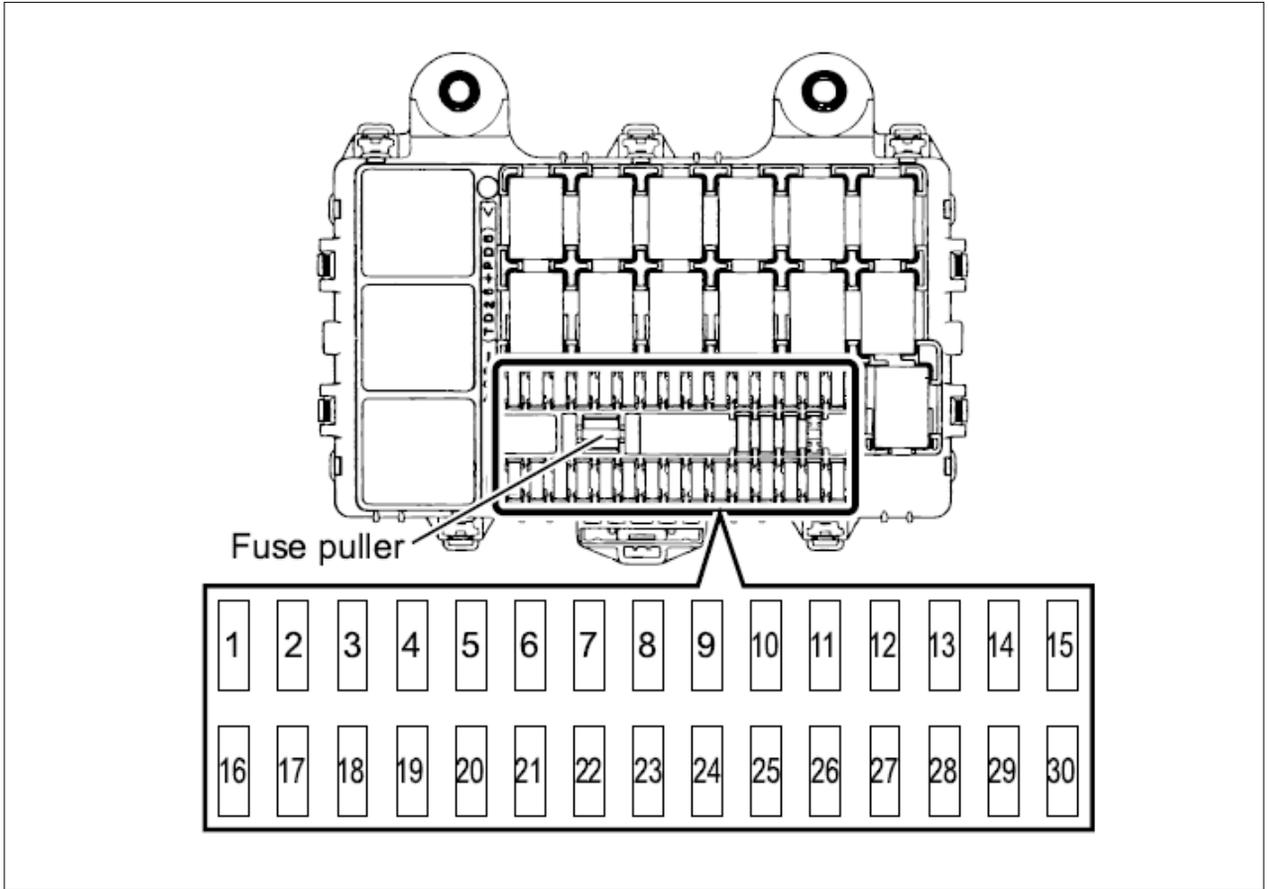


#### [Cautions at replacing fuse]

- Installation of any fuse other than the specified capacity is prohibited.
- Replacement should be performed after actuating the parking brake and positioning the starter switch in "locked" position.
  - Cause a fire or damage if you use wires or anything other than the specified capacity.
  - When exchanged fuses blow too soon or when the cause of blown fuse is un-known, have it repaired at dealer.
  - When replacing the fuse, push the fuse sufficiently to avoid half fit.

• Electric equipments connected to the fuses

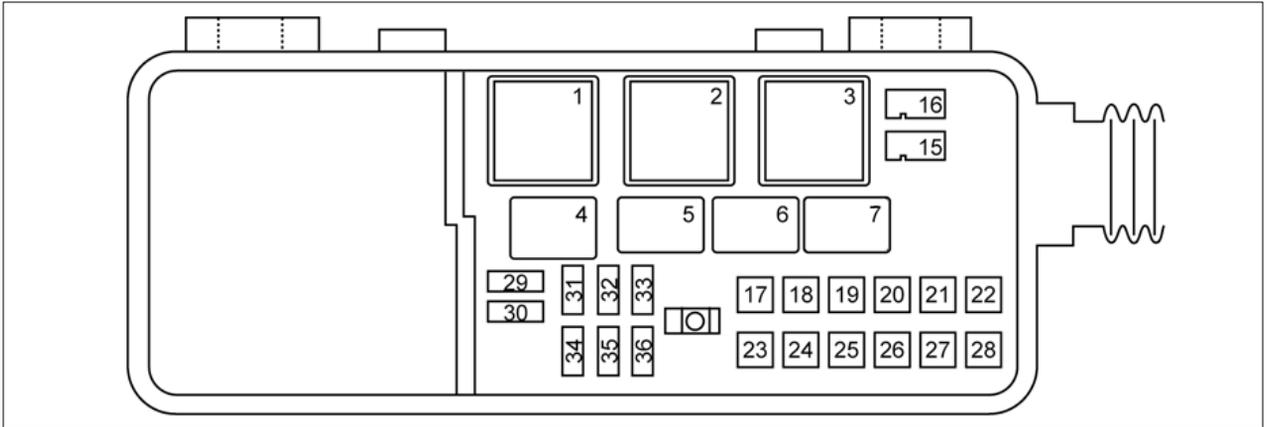
Location of the fuses in a cab



Location of the fuses in a cab

Fuse No.	Current capacity	Label	Major equipments that produce electrical load
1	20A	ELEC PTO (BATT)	Electric power take off (Battery)
2	20A	RR P/WINDOW	Rear power window
3	15A	ROOM LAMP, AUDIO	Doom lamp
4	15A	DOOR LOCK	Door lock actuator
5	10A	FOG LAMP	Front fog lamp
6	20A	P/WINDOW	Power window
7	10A	ABS	Antilock brake system
8	15A	WIPER	Front wiper, washer
9	10A	H/LAMP LO (LH)	Head lamp low (Left side)
10	10A	ECU (BATT)	Engine control unit (Battery)
11	10A	H/LAMP LO (RH)	Head lamp low (Right side)
12	10A	STOP LAMP	Stop light
13	15A	IGNITION 2	Starter key switch 2
14	10A	H/LAMP HI (LH)	Head lamp high (Left side)
15	10A	H/LAMP HI (RH)	Head lamp high (Right side)
16	10A	ELEC PTO (KEY ST)	Electric power take off (Starter key switch)
17	10A	STARTER	
18	15A	IGNITION 1	Starter key switch 1
19	10A	SRS	Supplement restraint system
20	10A	ECM	Engine control module
21	10A	METER	Meter, tachograph, pilot lamp
22	10A	LAMPS (BATT)	Rear lamps (Battery)
23	15A	AUDIO, ACC	Audio, accessory
24	15A	MIRROR	Side mirror
25	15A	HORN	
26	15A	TURN, HAZARD	Turn signal light, hazard warning lamp
27	10A	TAIL LAMPS	
28	10A	ILLUMINATIONS	Illumination lamp
29	10A	CORNERING LAMPS/RR FOG LAMP	Cornering lamp, rear fog lamp
30	20A	BLOWER MOTOR	Air conditioner blower motor

**Location of the fuses in a frame**



**Location of the slow-blow fuses**

17	30A	ECM	23	30A	AMT (EQUIPPED)
18	60A	Starter	24	50A	Headlamp
19	—		25	—	
20	60A	Glow	26	60A	WIPER & HVAC
21	30A	Ignition (AM2)	27	50A	ABS (EQUIPPED)
22	40A	B/Ignition (AM1)	28	60A	Junction block

**Location of the fuses**

29	10A	Marker Lamp	33	—	
30	—		34	10A	BATTERY
31	10A	ECM MAIN (EXCEPT 4JJ1-TCS ENGINE)	35	10A	A/C
32	—		36	20A	SCR (4HK1 ENGINE ONLY)

## 7.4. RELAY

- Purpose of use

Most of the control switches have relays installed in their circuits, for mounting location flexibility, to prevent dropping of voltages input to the equipments due to shortening a load current circuit, and to reduce the load on switches. When adding an equipment or lengthening a circuit, be sure to install an additional relay to protect switches and to prevent voltage drop.

- Location of the relays

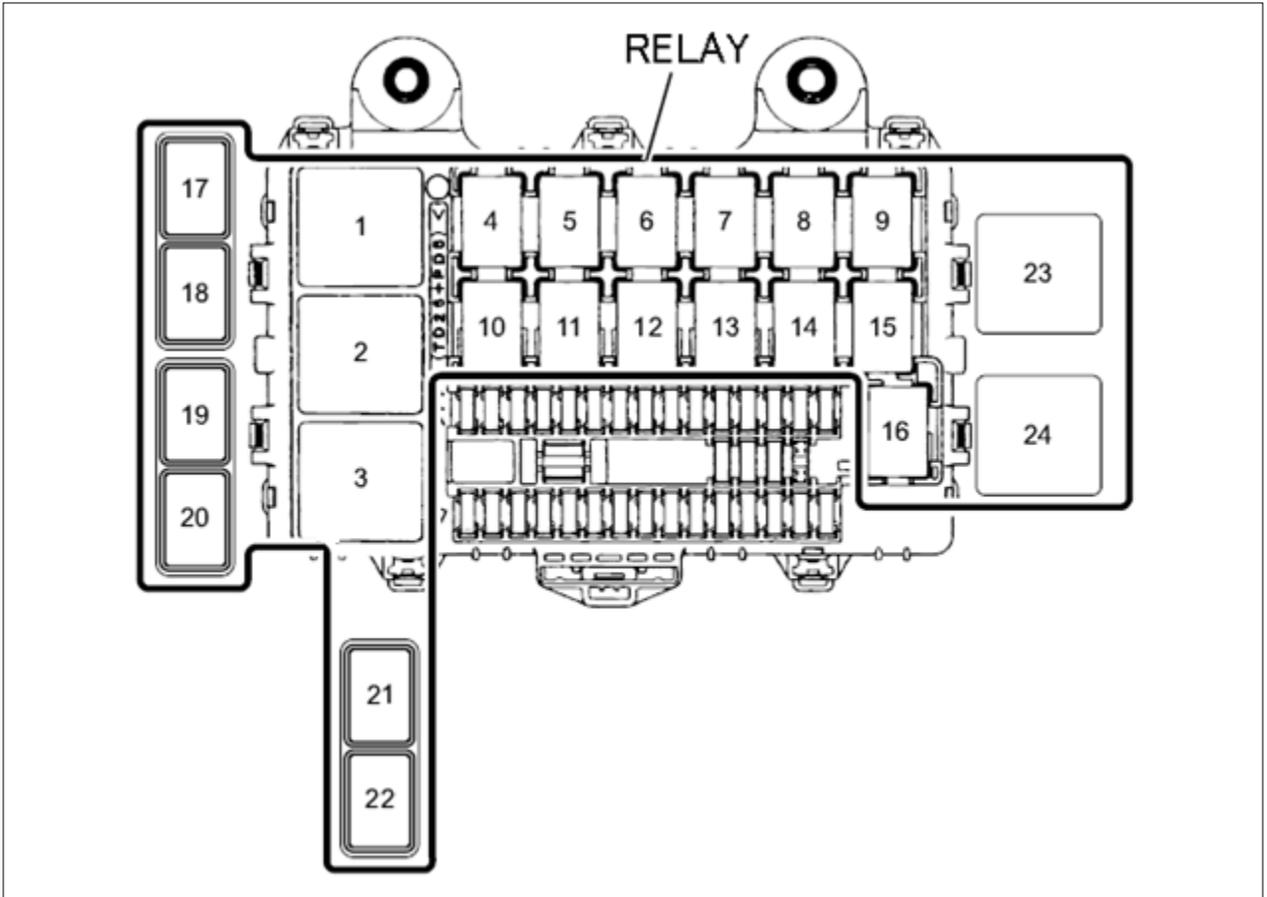
Refer to the previous section "Location of fuse".

- Notes of additional relay

Remodeling and expansion of harnesses is prohibited in the relay box.

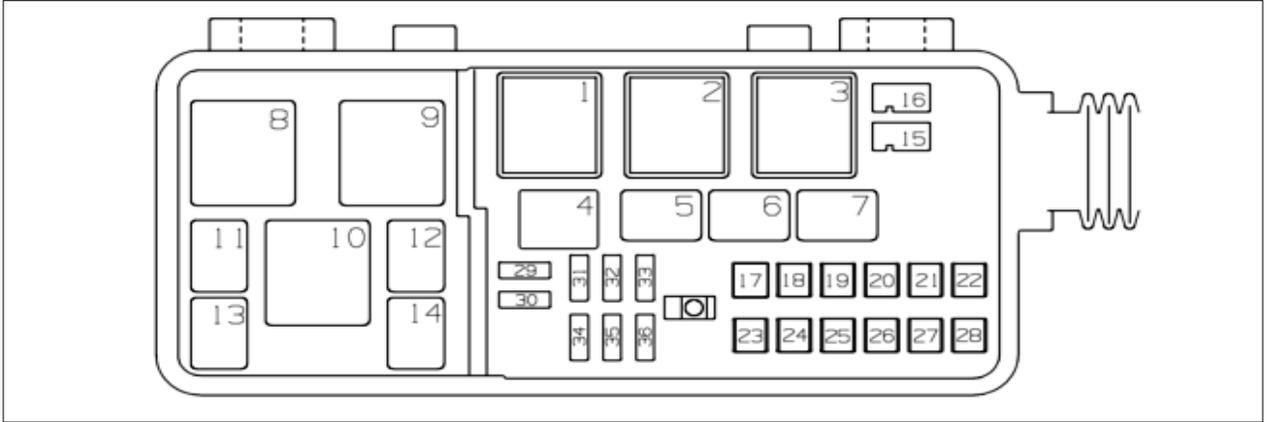
• Location of Relays and main electrical equipment

Location of the relays in the fuse box



1	STOP LAMP	13	HEAD LAMP (LOW)
2	BLOWER MOTOR	14	4WD (N*S VEHICLE ONLY)
3	WIPER KEY ON	15	HEAD LAMP (HI)
4	DOOR LOCK (LOCK) (KEYLESS VEHICLE ONLY)	16	TAIL LAMP
5	REAR FOG LAMP	17	CHARGE (RHD HSA VEHICLE ONLY) TRANSFER IGN (RHD NPS VEHICLE ONLY)
6	WIPER MAIN	18	RR POWER WINDOW (RHD C/CAB VEHICLE ONLY)
7	HORN	19	DRL
8	WIPER (HI/LOW)	20	DRL
9	FOG LAMP	21	CHARGE (LHD HSA VEHICLE ONLY) TRANSFER IGN (LHD NPS VEHICLE ONLY)
10	—	22	RR POWER WINDOW (LHD C/CAB VEHICLE ONLY)
11	DOOR LOCK (UNLOCK) (KEYLESS VEHICLE ONLY)	23	ACC
12	POWER WINDOW	24	IGN MAIN

Location of the relays in the relay box



1	STARTER	8	GEAR SHIFTER (AMT VEHICLE ONLY)
2	ECM MAIN (EXCEPT 4JJ1-TCS ENGINE)	9	—
3	GLOW	10	—
4	A/C COMPRESOR	11	—
5	CONDENSOR FAN	12	—
6	STARTER CUT	13	—
7	MARKER LAMP	14	—

## 7.5. SERVICE TERMINALS

Location of the service terminal on attached to some vehicle models and how to connect equipments with them, refer to following.

(There may be equipment and function described which is not developed depending on vehicle model and specification.)

- Input signal for idling up (The vehicle with PTO and Refrigeration machine)
  - There is a service terminal for controlling the idling of the vehicle with PTO and Refrigeration machine.
  - External idle-up signal input terminal for vehicle models with PTO  
See " II –6.3.3. Lengthening or shortening an electric wire or a cable"
  - External idle-up signal input terminal for vehicle models with refrigerating machine  
See Fig.1 and 2.
  - This vehicle models have the following service terminals near the left side rear cab mounting.

**Fig.1 Location of the idle-up signal input terminals for refrigerating machine and marker lamp terminals**

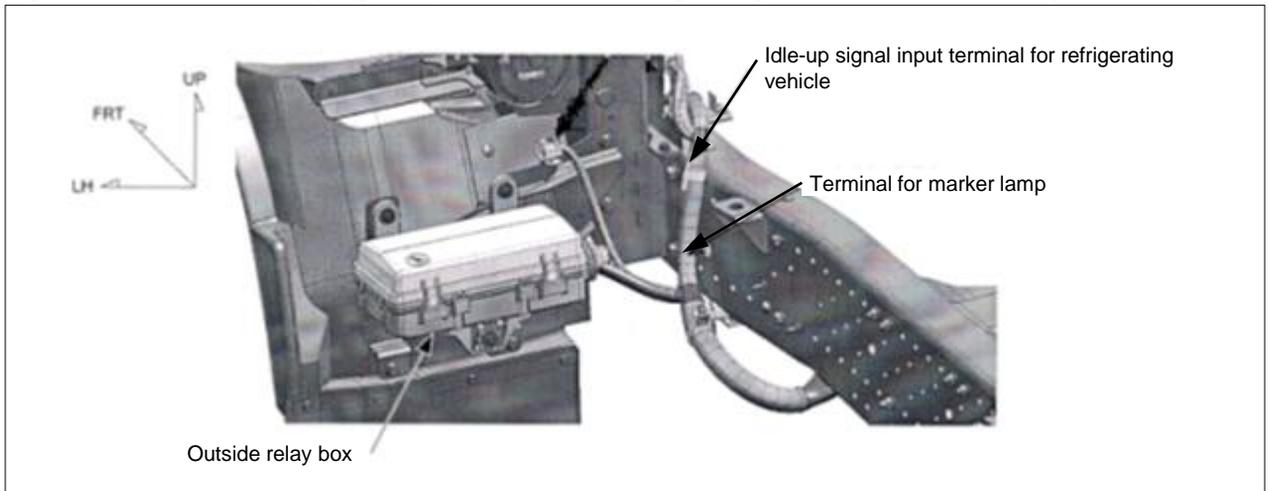
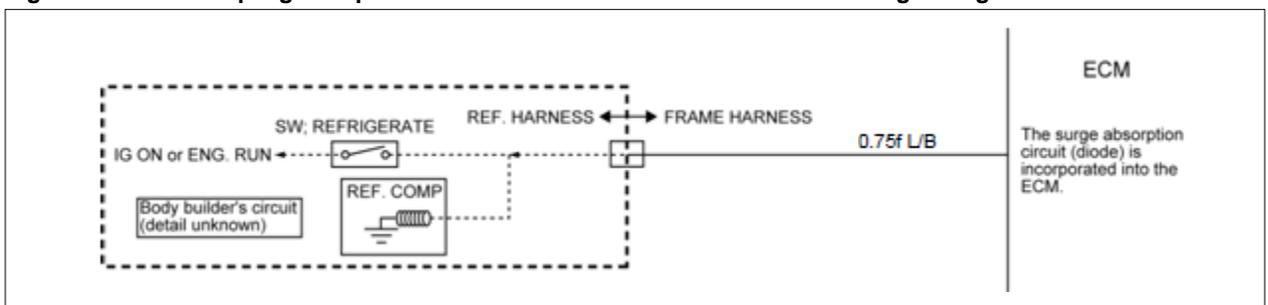


Fig.2 shows the connection circuit of ECU and the compressor on a vehicle model with refrigerating machine.

**Fig.2 External idle-up signal input terminal/circuit on a vehicle model with refrigerating machine**



Connector spec. ; See Fig.11

- Battery power source with small capacity (limited to 7A or less)
  - There is a terminal for battery power source with small capacity.
  - Use with 7A or less.
  - Location is near the third cross member of a chassis frame. (See Fig.3, 4, 5, 6, 7 and 8)
  - Giboshi (female), Wire color is R (red). (See Fig.11)
- Circuit of horn (Audible warning device)
  - There is a circuit to prevent the entrap at van body.
  - It is possible to sound the horn by attach a switch to within van body.
  - Location is near the third cross member of a chassis frame. (See Fig.3, 4, 5, 6, 7 and 8)
  - Giboshi (female), Wire color is R/B (black line on red). (See Fig.11)

Fig.3 Location of the service terminals [ Single CAB (NLR85A\*-ED1AYEN,NLR85\*\*-D5AYEN, NMR85\*-H5AYEN) ]

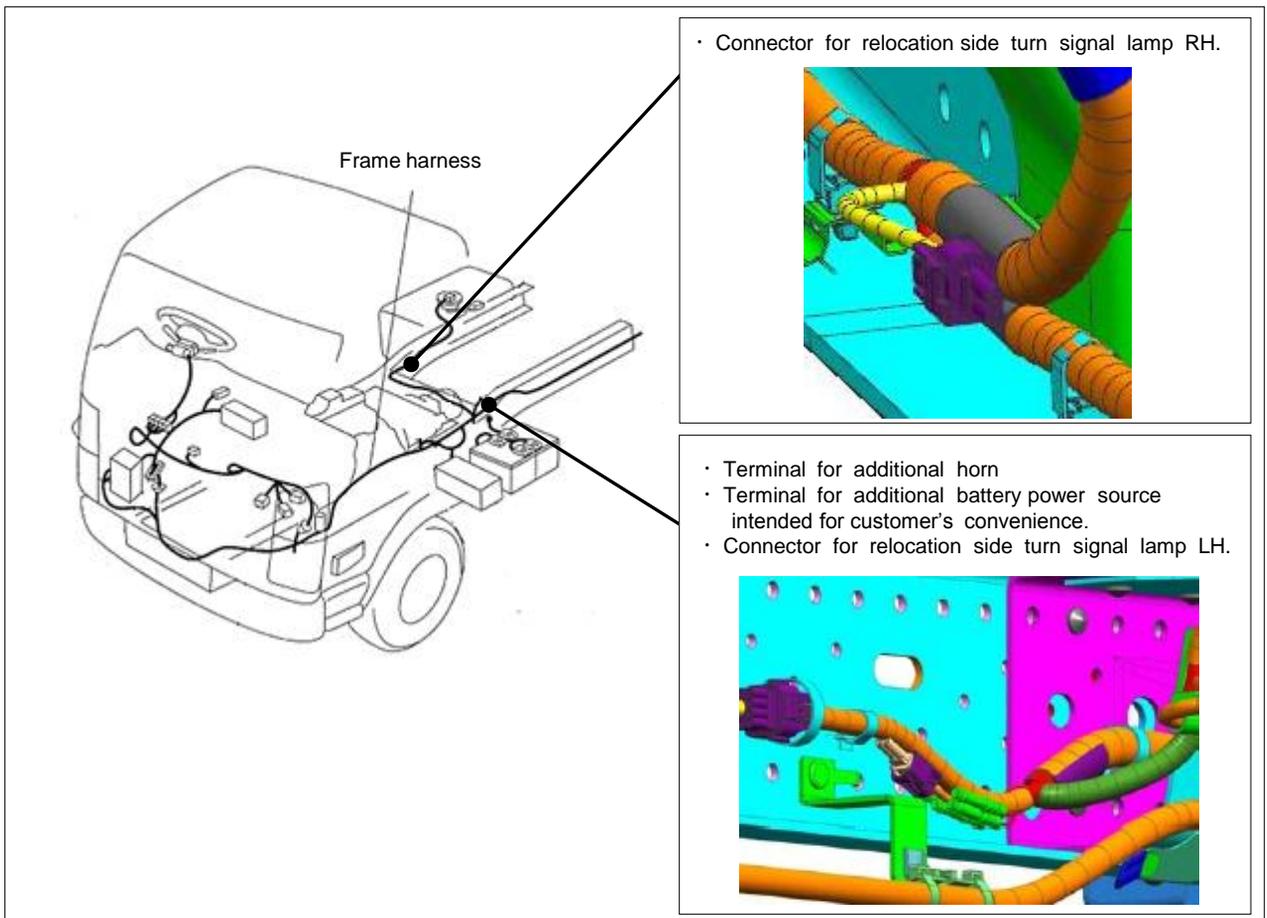


Fig.4 Location of the service terminals [ Single CAB (NLR85\*\*-\*D5AYE,NMR85\*-\*H5AYE) ]

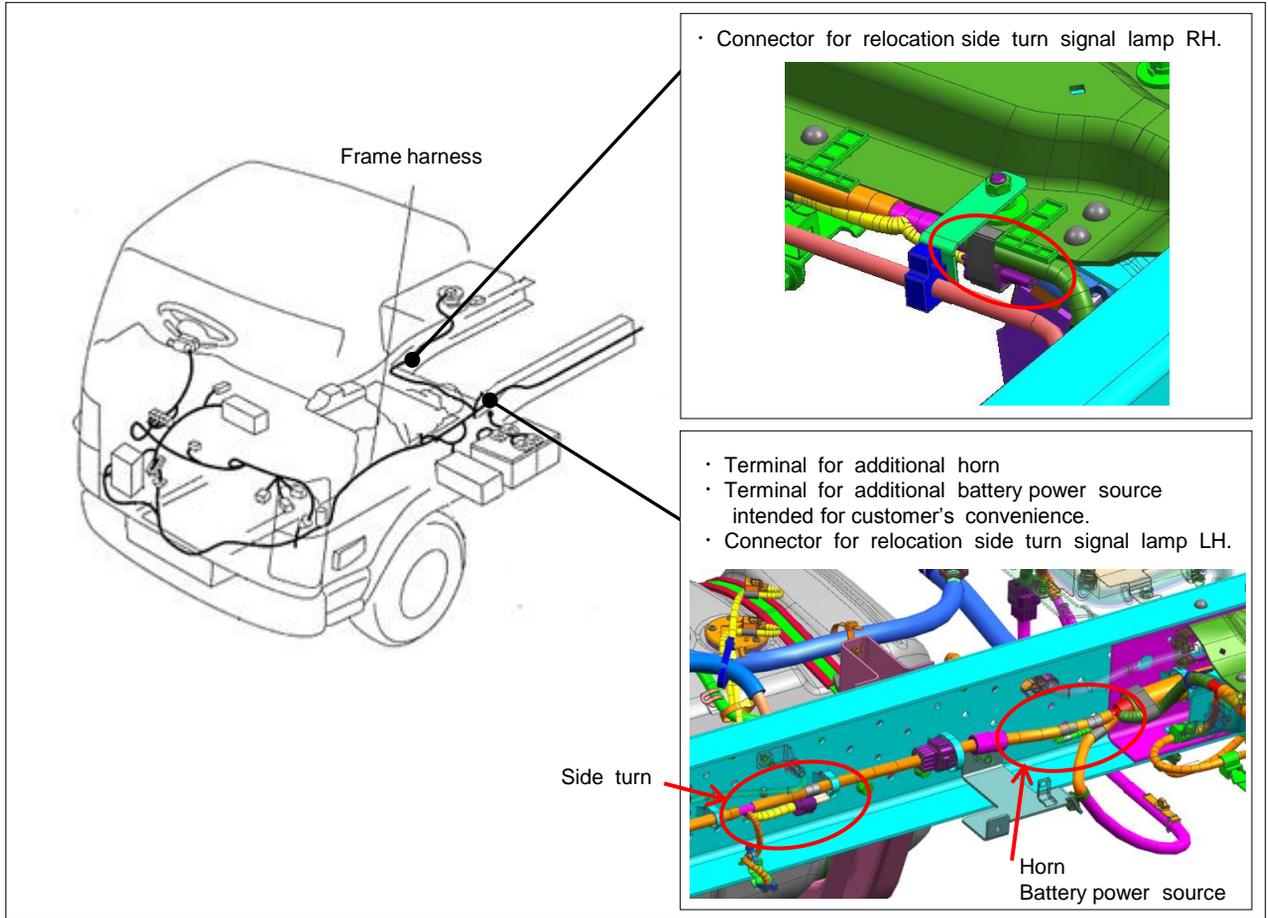


Fig.5 Location of the service terminals [ Crew CAB (NLR85\*\*-\*\*5WYEN) ]

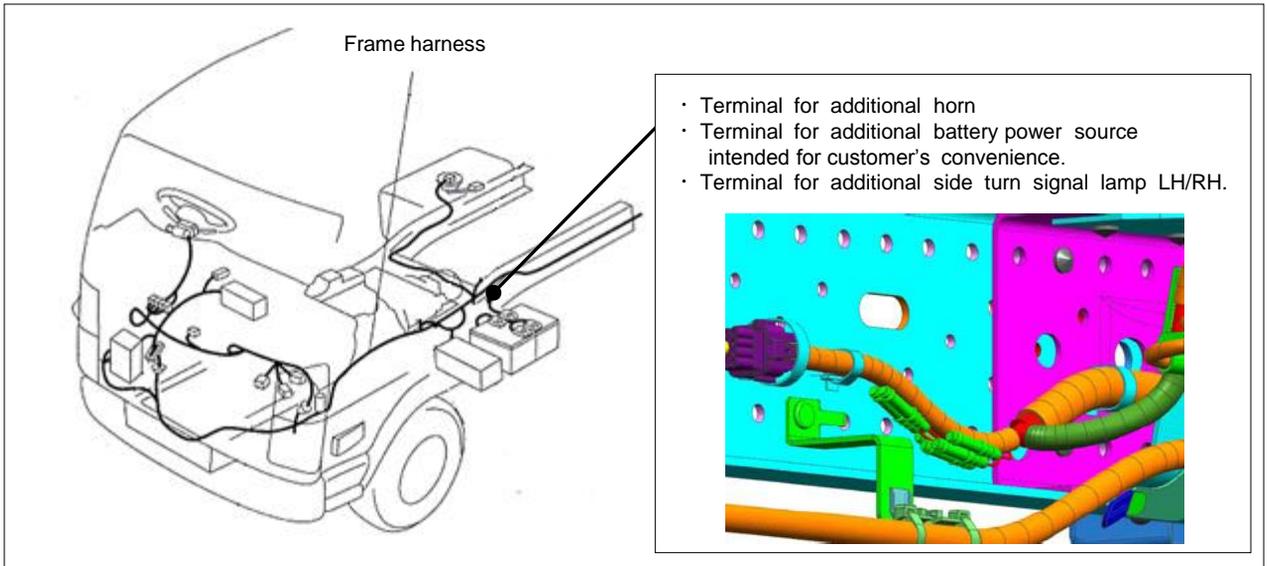


Fig.6 Location of the service terminals [ Single CAB (NNR85\*-\*5AYEN,NPR85\*-\*L5VAYE,NPR75\*-\*L5VAYE) ]

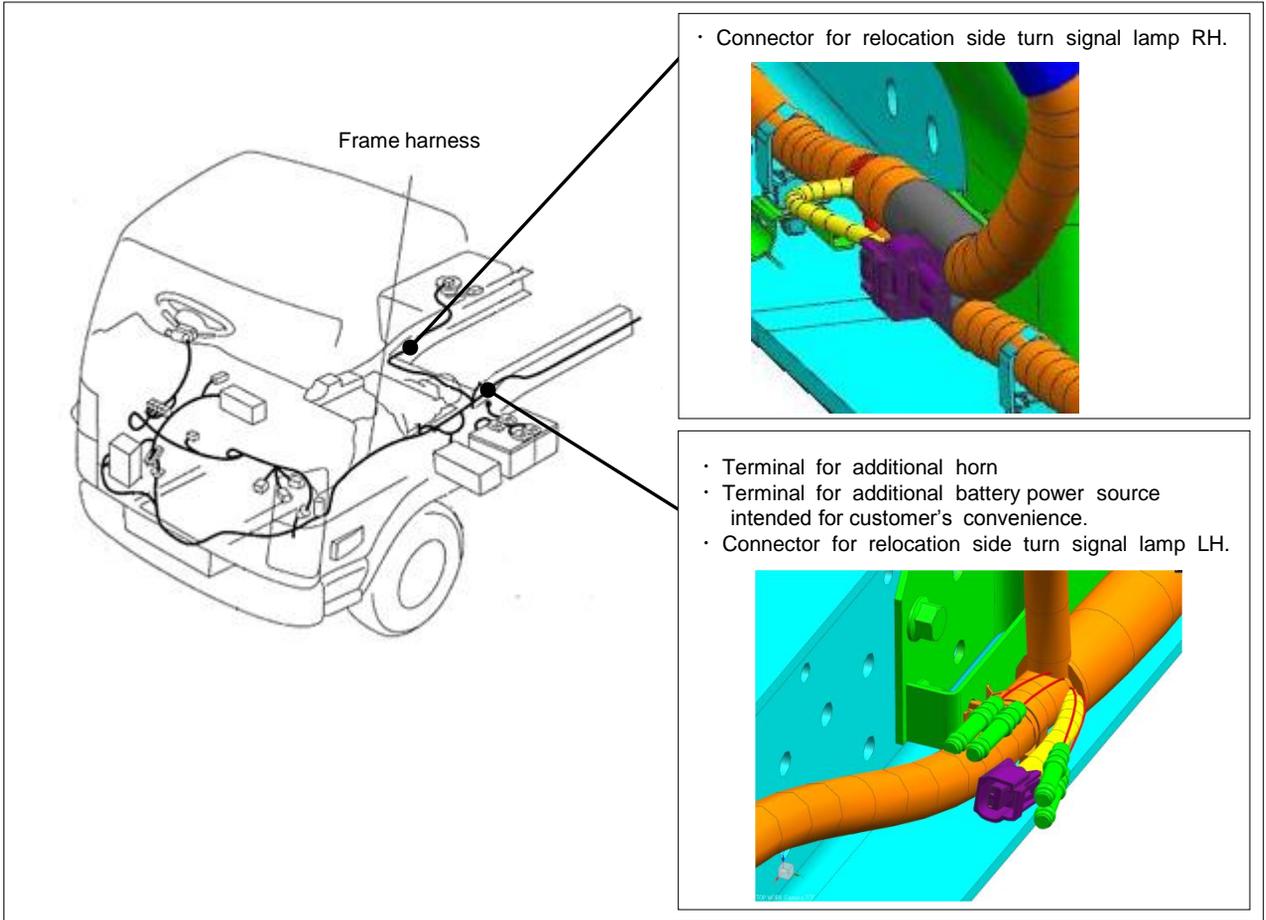


Fig.7 Location of the service terminals [ Single CAB (NNR85\*-\*D5AYE,NPR85\*-\*5AYE) ]

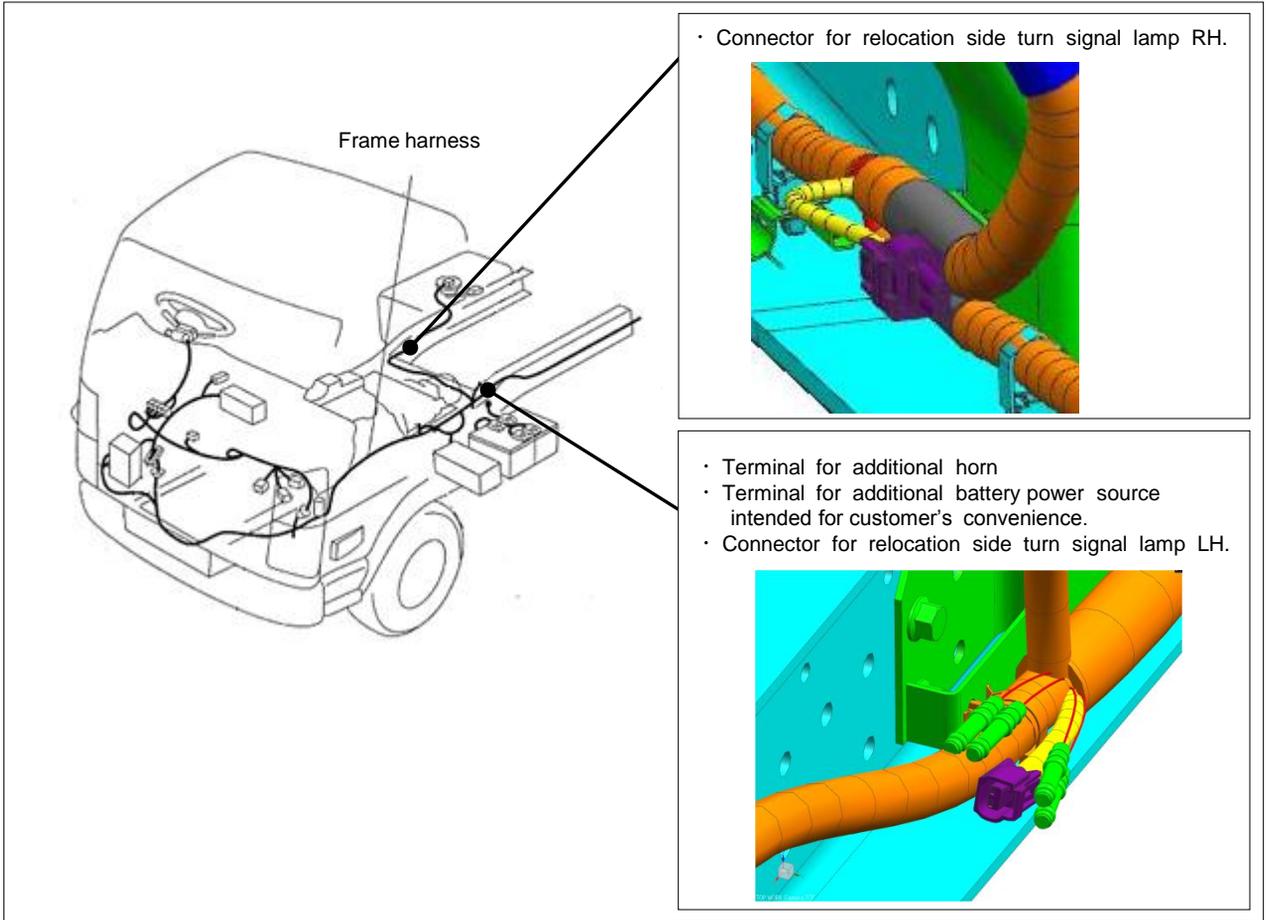
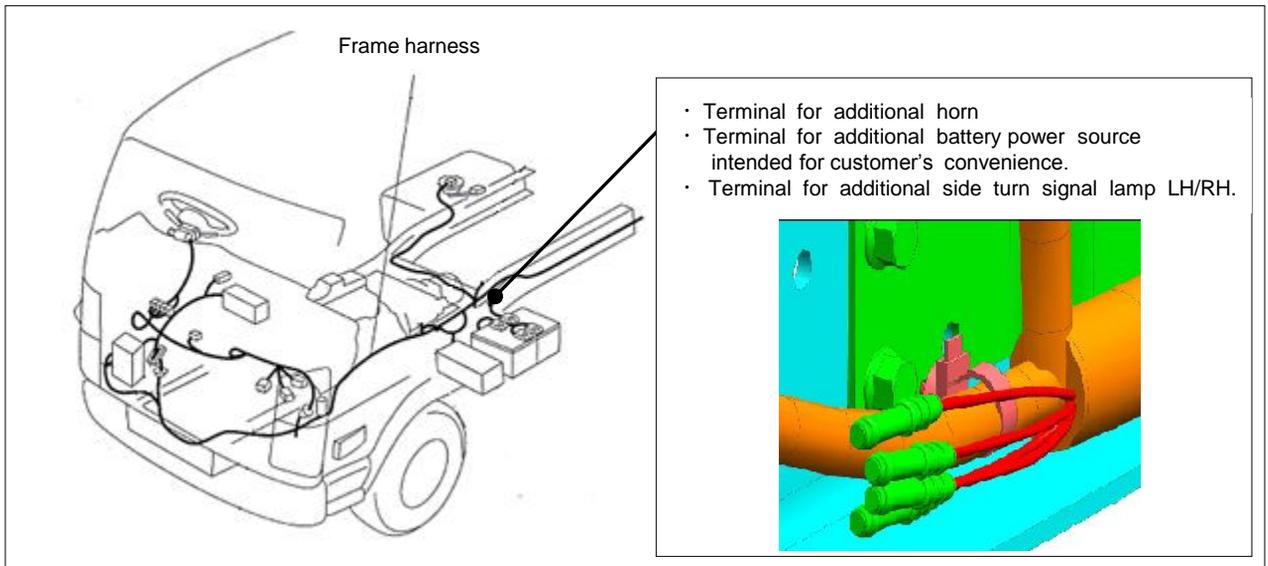


Fig.8 Location of the service terminals [ Crew CAB (NNR85L-HD5WYEN,NPR75\*-ML5VWYE) ]



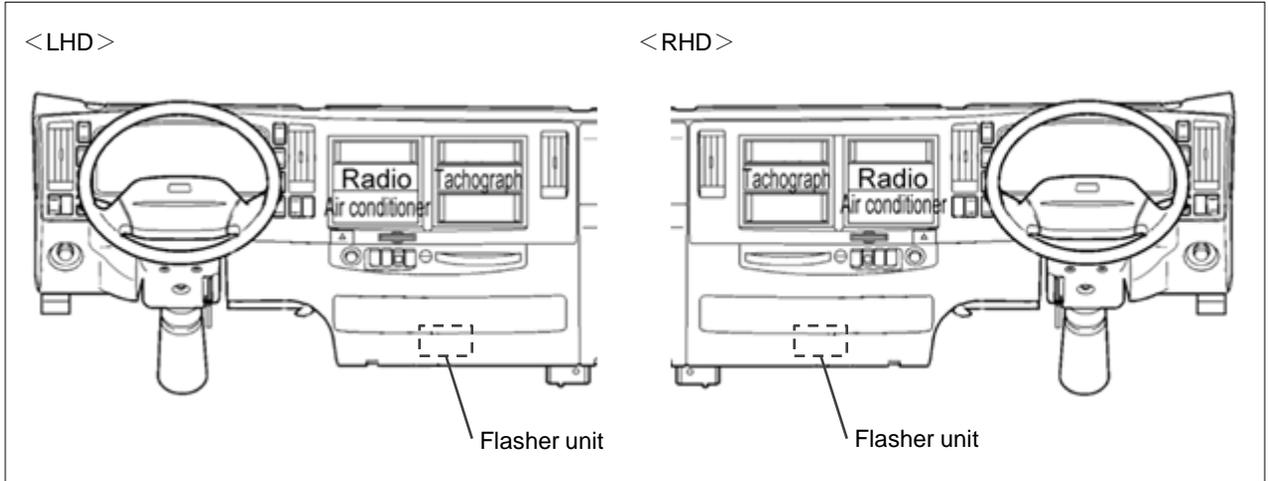
- Additional marker lamps
  - There is a terminal for adding marker lamps.
  - Use with 7A or less.
  - Location is near the left side rear cab mounting.(See Fig.1)
  - Terminals (See Fig.11)
    - Power ... Giboshi(female) , Wire color is LG/B(black line on light green).
    - Earth ... Giboshi(female) , Wire color is B(black).
- Additional turn signal lamps
  - There is a terminal for adding turn signal lamps.
  - Location is near the third cross member of a chassis frame.(See Fig.5 and 8)
  - Terminals (See Fig.11)
    - Right ... Giboshi(female) , Wire color is G/W(white line on green).
    - Left ... Giboshi(female) , Wire color is G/B(black line on green).
- Relocation side turn signal lamps [Single Cab Rear wide body]

There is a additional turn signal lamp terminal for rear wide body.(Single Cab only)

  - Location is near the third cross member of a chassis frame.(See Fig.3, 4, 6, 7)
  - Terminals (See Fig.11)
    - Right ... Connector(2pole, black), Wire color is G/W(white line on green).
    - Left ... Connector(2pole, black), Wire color is G/B(black line on green).

When installing additional flasher lamps, replace the flasher unit with new one according to Fig.10 .(To retain the number of flashings.)  
Fig.9 shows the location of the flasher unit.

**Fig.9 Location of the flasher unit**



**Fig.10 The flasher unit parts number for replace**

ISUZU MOTORS LIMITED Part number	Number of the lamps added on one side of a vehicle	Addition of ground wire
897613-9681	21W, One	Not required

[Precautions for connecting of additional equipments]

- When adding any other equipments or using a large-load equipment for a short time within the capacity of the power generator,
  - Connect such equipment(s) directly to the battery as instructed under " I -2.10.1. How to connect a large-load equipment to the positive battery terminal".
- When fitting add-on equipments, always follow the instructions in this guide because failure to follow these instructions will impair the functions of the vehicle and cause serious problems such as vehicle fire.

Fig.11 Specification of the service terminals (vehicle side)

Service terminal	Connector type	No.	Wire color
External idle-up signal input terminal (Refrigerating)		1	L/B
Battery power source		1	R
Horn		1	R/B
Marker lamps (+)		1	LG/B
Marker lamps (-)		1	B
Side turn lamps RH (+) (Crew Cab)		1	G/W
Side turn lamps LH (+) (Crew Cab)		1	G/B
Side turn lamps RH (+) (S/Cab Rr wide body)		1	G/W
Side turn lamps RH (-) (S/Cab Rr wide body)		2	B
Side turn lamps LH (+) (S/Cab Rr wide body)		1	G/B
Side turn lamps LH (-) (S/Cab Rr wide body)		2	B

## 7.6. SIDE COMBINATION LAMPS

- Replacement of Side Combination Lamps

Side combination lamps are installed on all vehicle models.

When mounting a wide rear body, It may be necessary to change a side turn signal lamps. (Refer to " II -3.11. HANDLING OF SIDE TURN SIGNAL LAMP BY REAR BODY. ")

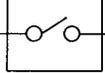
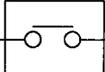
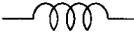
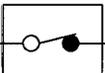
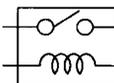
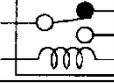
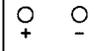
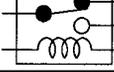
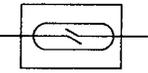
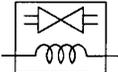
When relocating side turn lamp, Refer to the previous section "• Relocation side turn signal lamps".

### Regulation of side combination lamp

Vehicle Model	Cab	Rear body width / 2 (mm)	Regulation (ADR6/00, ADR13/00)	Measure (Side comb. lamp)
NLR NMR	Single	0 ~ 988	Satisfy	—
		999 ~	Not satisfy	Relocation or addition
NLS	Crew	0 ~ 1085	Satisfy	—
		1086 ~	Not satisfy	Impossible to install Body
NNR NPR	Single	0 ~ 1110	Satisfy	—
		1111 ~	Not satisfy	Relocation or addition
NQR NPS	Crew	0 ~ 1196	Satisfy	—
		1197 ~	Not satisfy	Impossible to install Body

## 7.7. CIRCUIT DIAGRAMS

• Symbols and abbreviations in circuit diagrams

Symbol	Meaning	Symbol	Meaning
	Fuse		Bulb
	Slow-blow fuse		Double filament bulb
	Fusible link wire		Motor
	Switch (Normally open)		Variable resistor rheostat
	Switch		Coil (inductor), solenoid, magnetic valve
	Switch (Normally closed)		Relay (Normally open)
	Wire connection		Relay (Normally closed)
	Battery		Relay (Normally closed)
	Diode		Connector
	Electronic parts		Light emitting diode
	Resistor		Lead switch
	Speaker		Condenser
	Buzzer		Horn
	Circuit breaker		Vacuum switching valve
	Light emitting diode		Grounding point

- Abbreviation in circuit diagrams

For commonization of material, there may be descriptions of device without development.

Abbr.	Full spelling	Abbr.	Full spelling
3A/T	3-speed automatic transmission	IAT	Intake air temperature
4×4	Four-wheel drive	IC	Integrated circuit
4A/T	4-speed automatic transmission	IG	Ignition
A	Ampere	J/T	Joint terminal
A/C	Air conditioner	kW	kilowatt
A/T	Automatic transmission	LH	Left hand
ABS	Anti-lock brake system	LHD	Left hand driver side
AC	Alternating current	LO	Low
ACC	Accessories	LWB	Long wheelbase
ACCEL	Accelerator	M/T	Manual transmission
AMT	Automated Manual Transmission	M/V	Magnetic valve
APP	Accelerator pedal position	MAF	Mass air flow
ASM	Assembly	MIL	Engine check light
ATF	Automatic transmission fluid	OD	Overdrive
AUTO	Automatic	OPT	Option
BRKT	Bracket	PTO	Power Take Off
C/B	Circuit breaker	QOS	Quick on start
CKP	Crankshaft position	R/L	Relay
CMP	Camshaft position	RH	Right hand
COMB	Combination	RHD	Right hand driver side
CONN	Connector	RR/Rr	Rear
CONT	Control	RWAL	Rear wheel anti-lock brake system
CSD	Cold start device	RWD	Rearward
CTR	Center	SCV	Suction control valve
C/U	Control unit	SEN	Sensor
DCL	Data link connector	S/P	Steering power emergency changeover valve
DIS	Direct ignition system	ST	Start
ECGI	Electronic control gasoline injection	STD	Standard
ECM	Electronic control module	SW	Switch
ECT	Engine coolant temperature	SWB	Short wheelbase
ECU	Electronic control unit	TCM	Transmission control module
EFE	Early fuel evaporation	V	Volt
EHGU	Electronic and hydraulic control unit	VSV	Vacuum switching valve
EGR	Exhaust gas recirculation	W	Watt
FL	Fusible link	W/	With
FRT	Front	W/O	Without
FT	Fuel temperature	WOT	Wide open throttle
FWD	Forward	W/S	Weld splice
HI	High	SBF	Slow Blow Fuse
H/L	Head lamp		

- Circuit diagrams

At the end of this chapter, this guide provides circuit diagrams of the following equipments, that are involved in rear body mounting.

Refer to the Work Shop Manual for details.

Electrical work, refer to " I –2.10. PRECAUTIONS FOR MODIFICATION OF THE ELECTRICAL SYSTEM".

"Smoother" in the circuit diagrams should be deemed to be replaced with AMT (Automated Manual Transmission).

Refer to Work Shop Manual for details of Circuit diagrams.

Modification of the other factory-installed electrical equipments is prohibited for the reason of preserving their functions. Therefore, this guide does not provide the circuit diagrams of these electrical equipments.

## **Chapter 8 PAINTING**

### **8.1. CAB PAINTING**

8.1.1. General precautions

8.1.2. Paint boundary

8.1.3. Limit temperature of resin components

### **8.2. PAINTING-PROHIBITED AREA ON COMPONENTS OR EQUIPMENTS**

## 8.1. CAB PAINTING

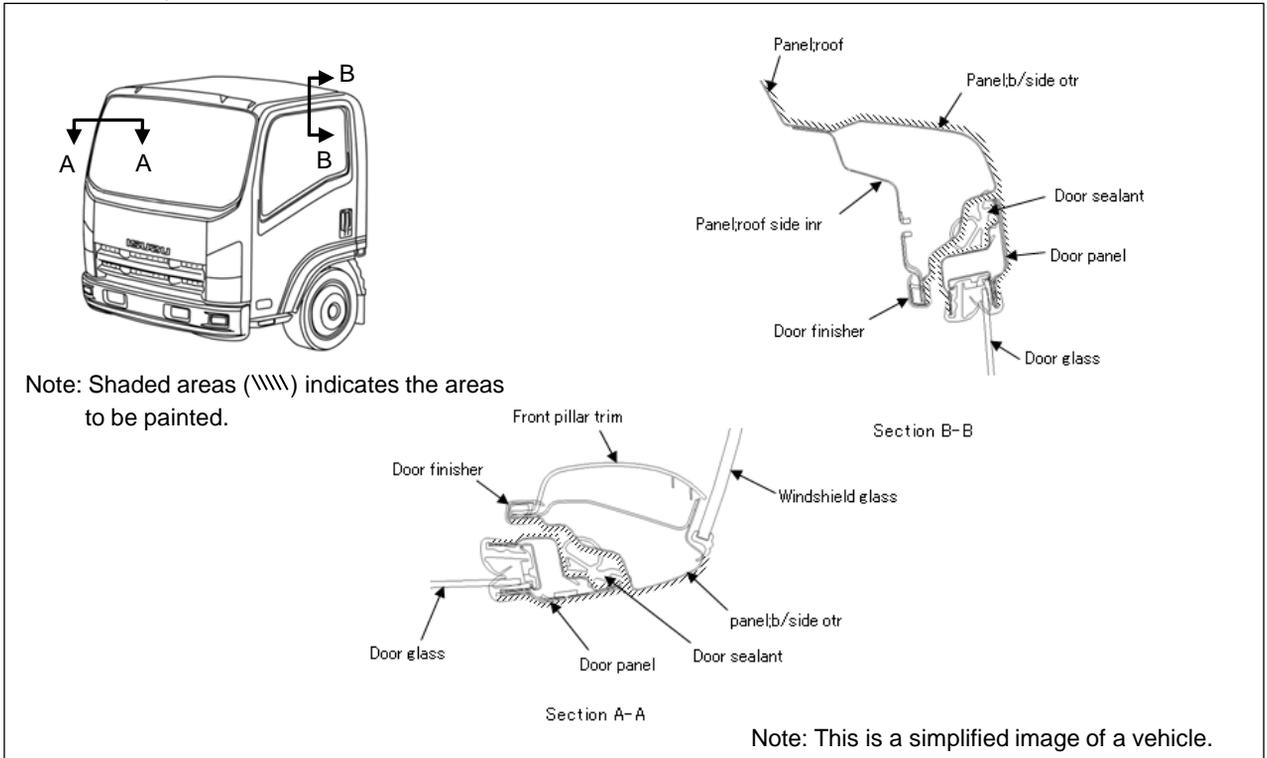
### 8.1.1. General precautions

Refer to " I -2.12. PRECAUTIONS FOR PAINTING".

### 8.1.2. Paint boundary

The range shown in the figure below is recommended as a range of the painting boundary.

#### Paint boundary



### 8.1.3. Limit temperature of resin components

Drying temperature over 80 °C may deform rubber and resin parts, and result in separation of adhesive-bonded joints.

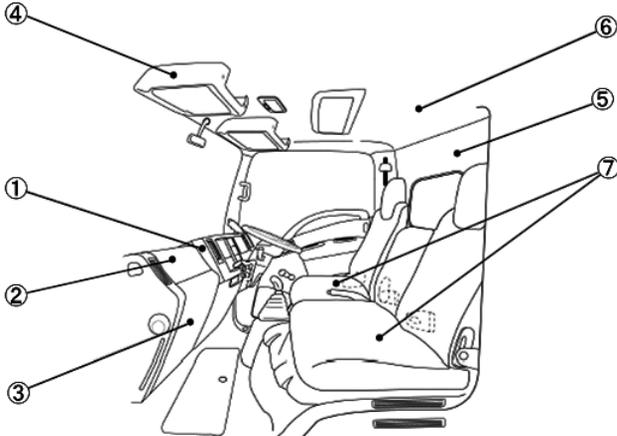
If the drying temperature inevitably exceeds 80 °C, remove components or protect them from high temperature with heat insulation sheet, blanket, etc.

[Reference]

The figure below shows the limit temperatures of the main resin components.

#### N-series(Cab interior)

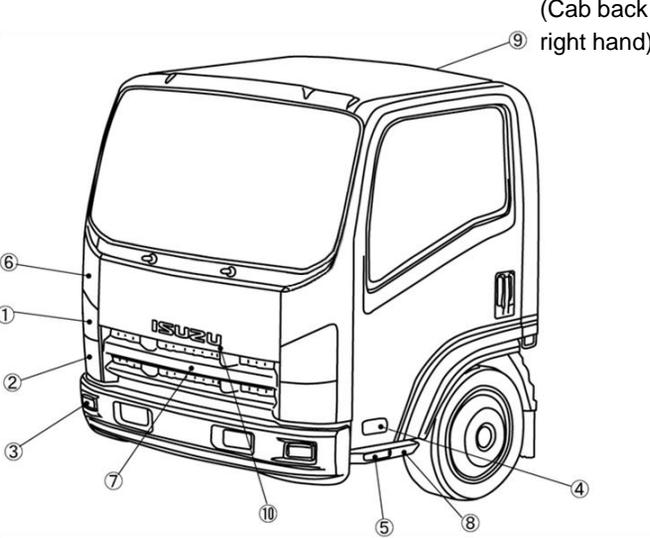
No.	Component name	Material	Allowable temperature limit (°C)
①	Meter cluster	PPF	80
②	Huse lid		
③	Instrument panel cover		
④	Header shelf	PP or PPF	90
⑤	Trim cover		
⑥	Headlining	Standard PET-PP Felt rim PET-PUR	80
⑦	Seat assembly	PP or Other	80



Note: This is a simplified image of a vehicle. Above Fig. shows right handle vehicle. Left handle is mirrored image.

#### N-series(Cab exterior)

No.	Component name	Material	Allowable temperature limit (°C)
①	Turn signal lamp (front)	PMMA	80
②	Head lamp	PC	90
③	Fog lamp	PP (housing)	90
④	Turn signal lamp (side)	PC	90
⑤	Flank reflector	PMMA	80
⑥	Corner panel	ABS	80
⑦	Grill	ASA	80
⑧	Step closing	PP	90
⑨	Air duct	PP	90
⑩	Emblem	PET	90



Note: This is a simplified image of a vehicle.

## 8.2. PAINTING-PROHIBITED AREA ON COMPONENTS OR EQUIPMENTS

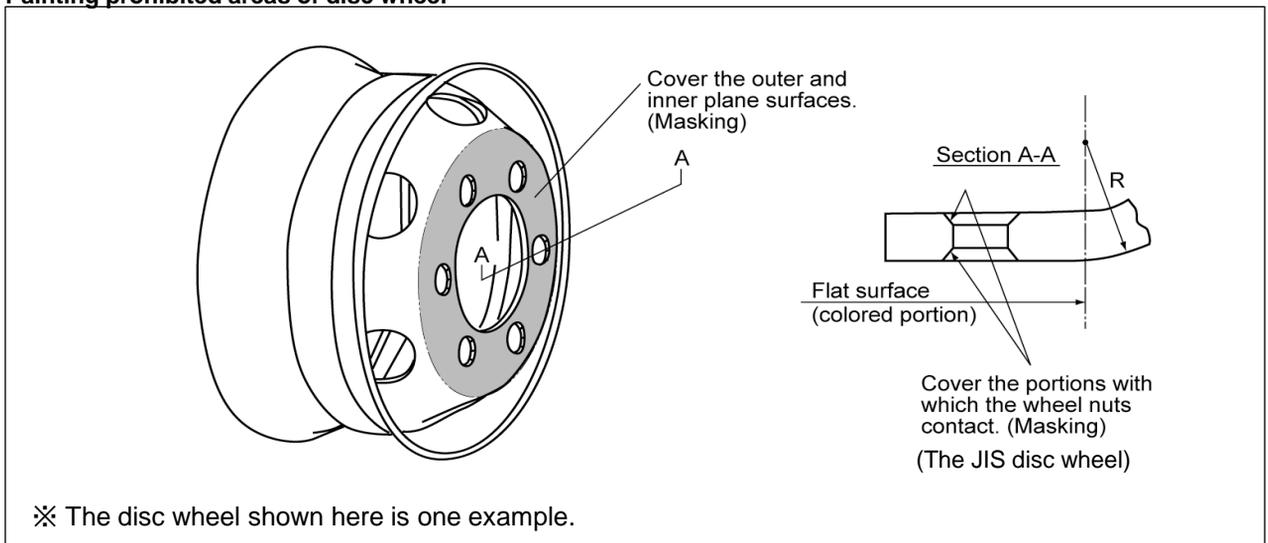
Painting in following areas are prohibited.

- When paint may attach by the painting of the outskirts part, mask it by all means.
- This chapter mainly describes about particular part of this vehicle. For other parts, confirm " I - 2.12. PRECAUTIONS FOR PAINTING".

[Disc wheel]

Do not apply additional painting on the contact faces of a mating disc wheel and a hub, and the portions with which wheel nuts contact because thickening the painting may eventually loosen or damage wheel nuts.

### Painting prohibited areas of disc wheel



[Others]

- Brake hose and brake-related components such as brake booster
- Rubber fuel hose and vinyl hose
- Electric wiring and connectors
- Components and equipments related to suspension, steering, such as these made of rubber or plastic.
- Wiper blade and washer nozzle
- Reserve tanks for cooling water and washer tank
- Caution plates and number plates
- Rubber and plastic components around window
- Lattice part in radiator grill (black part)
- DPD-SCR system (all DPD-urea SCR related components including the urea water piping)

## **Chapter 9 CAB CHASSIS DRAWINGS**

### **9.1. CAB CHASSIS DRAWINGS**

### **9.2. CAB BACK DETAIL DRAWINGS**

## 9.1. CAB CHASSIS DRAWINGS

### Euro5b+

No.	Vehicle model	HANDLE		Drawing
		LHD	RHD	
1	NLR85AL/AU-ED1AYEN	○	○	Fig.9-1-1
2	NLR85AL-ED5AYEN	○		Fig.9-1-2
3	NLR85AL-HD5AYEN	○		Fig.9-1-3
4	NLR85L/U-ED5AYEN	○	○	Fig.9-1-4
5	NLR85L/U-HD5AYEN	○	○	Fig.9-1-5
6	NLR85L/U-HD5WYEN	○	○	Fig.9-1-6
7	NMR85L/U-EH5AYEN	○	○	Fig.9-1-7
8	NMR85L/U-HH5AYEN	○	○	Fig.9-1-8
9	NNR85L/U-FD5AYEN	○	○	Fig.9-1-9
10	NNR85L/U-HD5AYEN	○	○	Fig.9-1-10
11	NNR85L-HD5WYEN	○		Fig.9-1-11

### EuroVI

No.	Vehicle model	HANDLE		Drawing
		LHD	RHD	
1	NLR85AL-HD5AYE	○		Fig.9-1-12
2	NLR85L/U-HD5AYE	○	○	Fig.9-1-13
3	NMR85L/U-HH5AYE	○	○	Fig.9-1-14
4	NNR85L/U-HD5AYE	○	○	Fig.9-1-15
5	NPR85L/U-HH5AYE	○	○	Fig.9-1-16
6	NPR85L/U-HJ5AYE	○	○	Fig.9-1-17
7	NPR85L/U-HL5VAYE	○	○	Fig.9-1-18
8	NPR85L/U-KJ5AYE	○	○	Fig.9-1-19
9	NPR85L/U-KL5VAYE	○	○	Fig.9-1-20
10	NPR85L/U-ML5VAYE	○	○	Fig.9-1-21
11	NPR75L/U-HL5VAYE	○	○	Fig.9-1-22
12	NPR75L/U-KL5VAYE	○	○	Fig.9-1-23
13	NPR75L/U-ML5VAYE	○	○	Fig.9-1-24
14	NPR75L/U-ML5VWYE	○	○	Fig.9-1-25

Note: Cab chassis drawing shows LHD vehicle. The cab is mirror image for RHD vehicle.

Fig. 9-1-1 Cab Chassis Drawing NLR85AL/AU-ED1AYEN

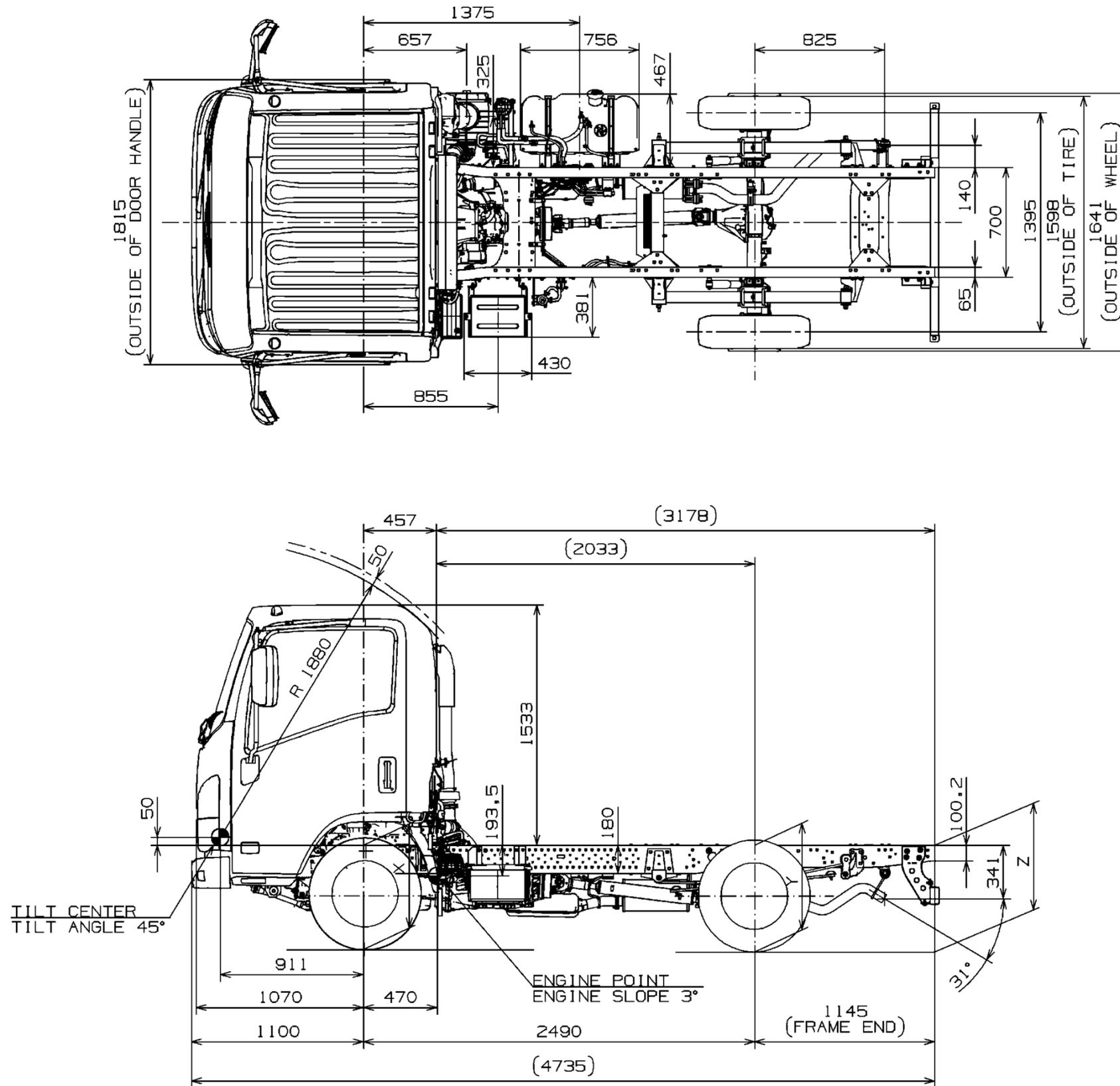


Fig. 9-1-2 Cab Chassis Drawing NLR85AL-ED5AYEN

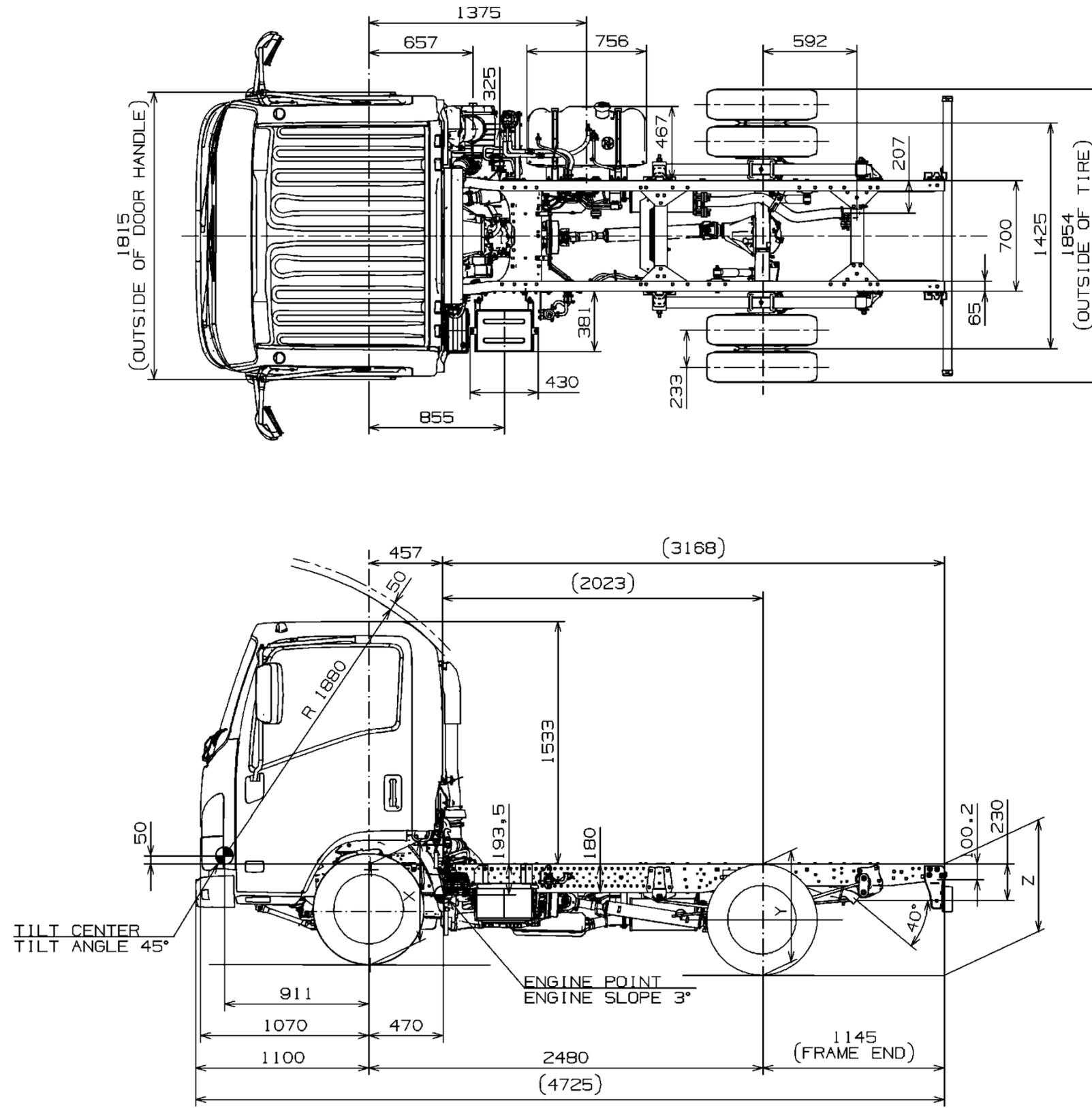


Fig. 9-1-3 Cab Chassis Drawing NLR85AL-HD5AYEN

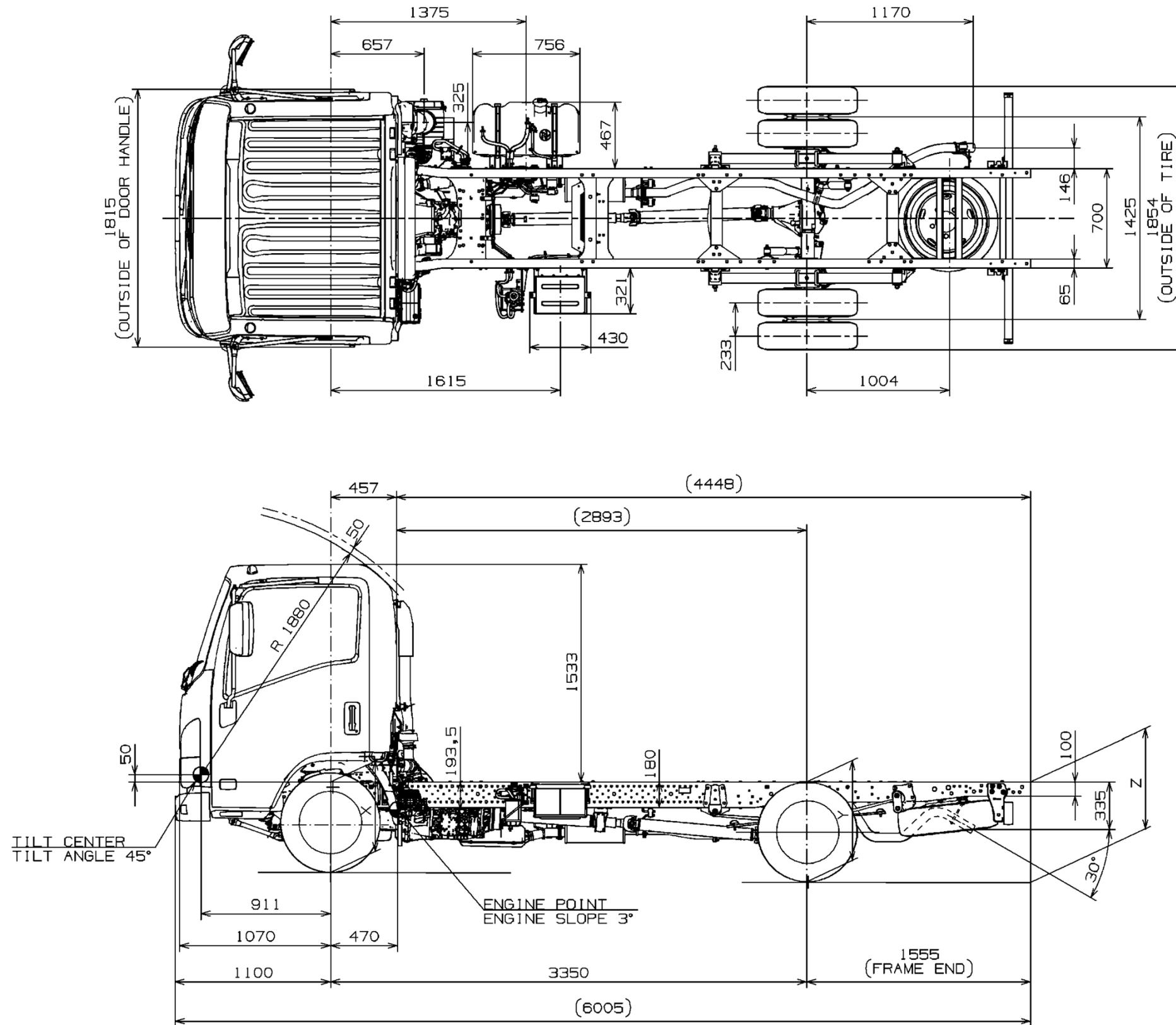


Fig. 9-1-4 Cab Chassis Drawing NLR85L/U-ED5AYEN

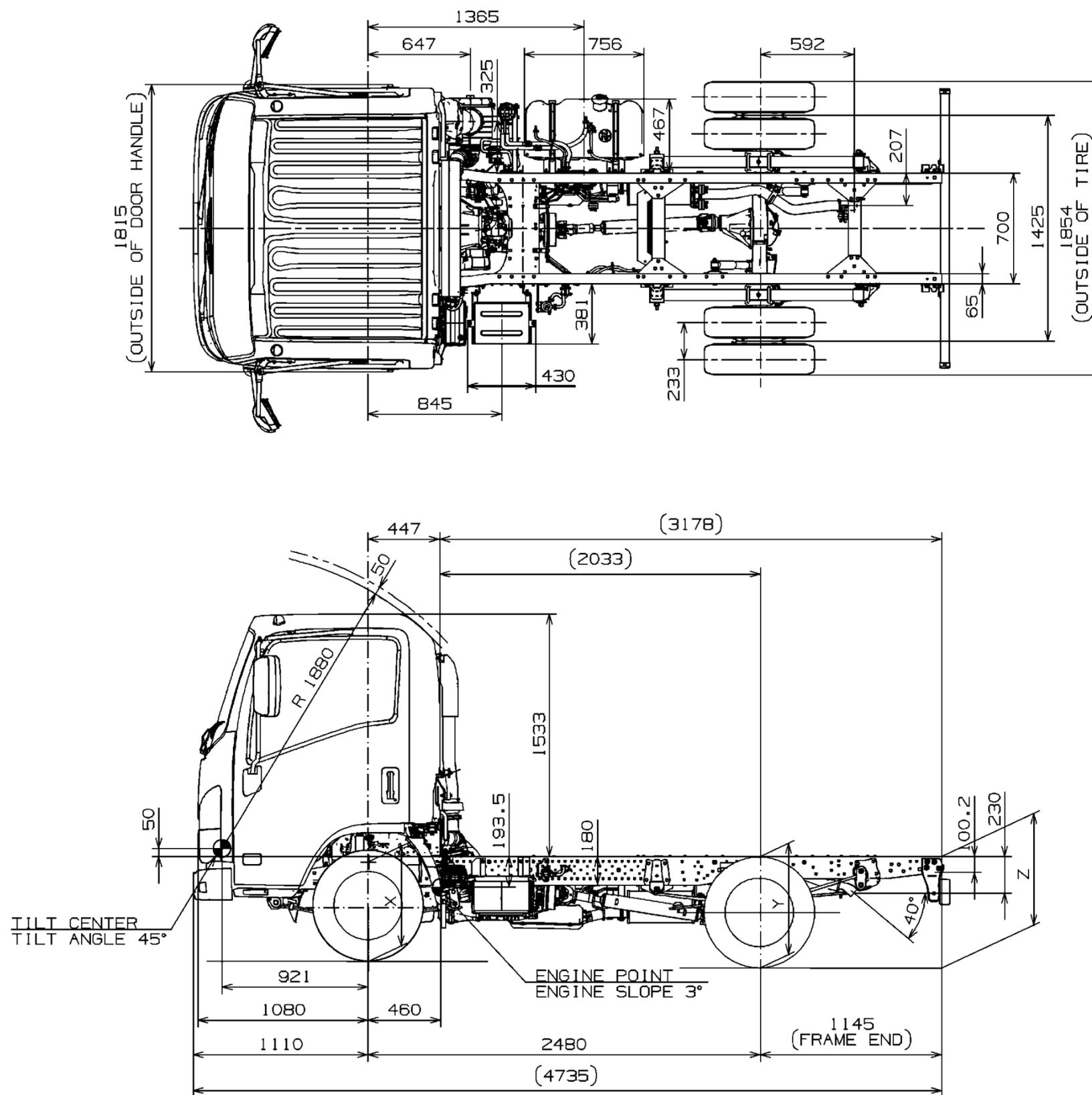


Fig. 9-1-5 Cab Chassis Drawing NLR85L/U-HD5AYEN

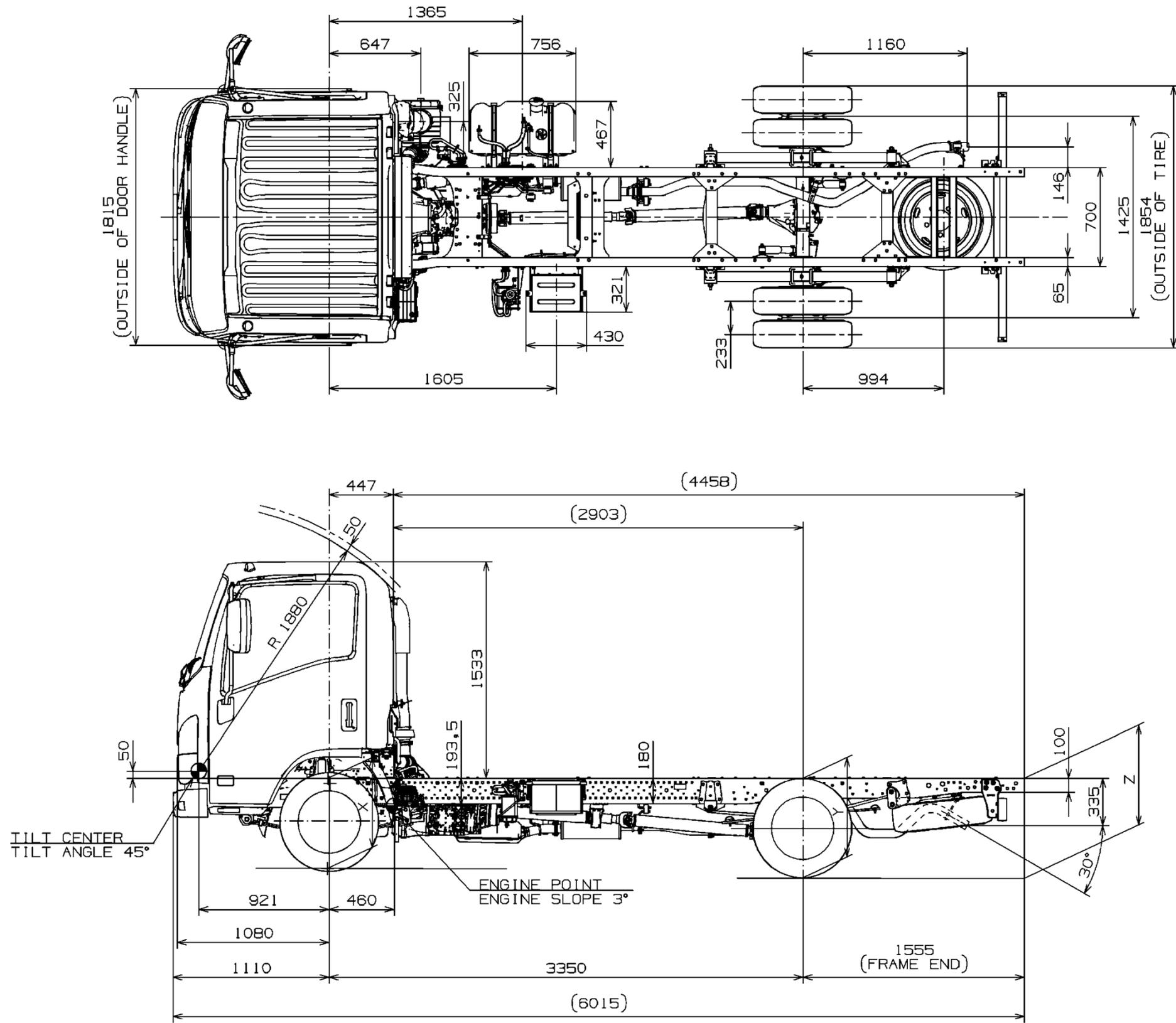


Fig. 9-1-6 Cab Chassis Drawing NLR85L/U-HD5WYEN

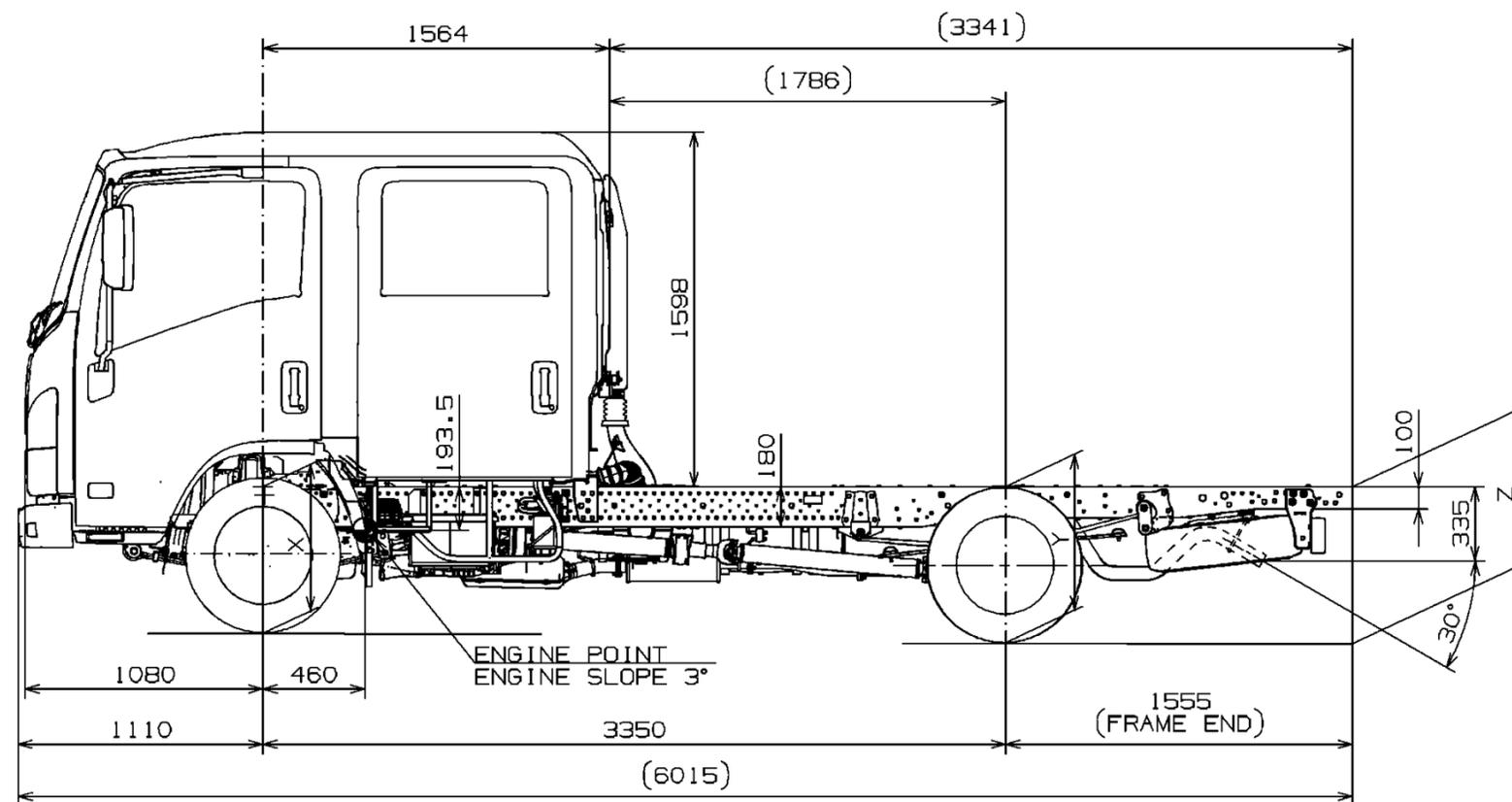
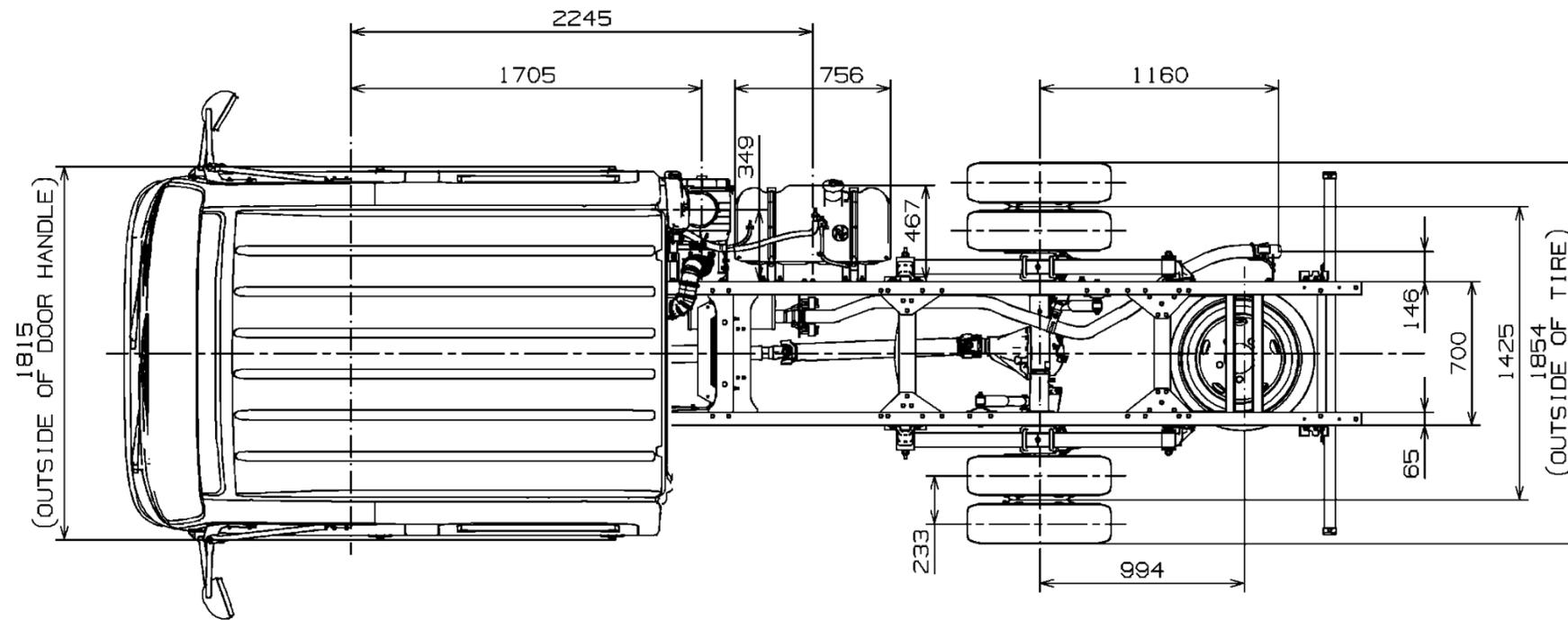


Fig. 9-1-7 Cab Chassis Drawing NMR85L/U-EH5AYEN

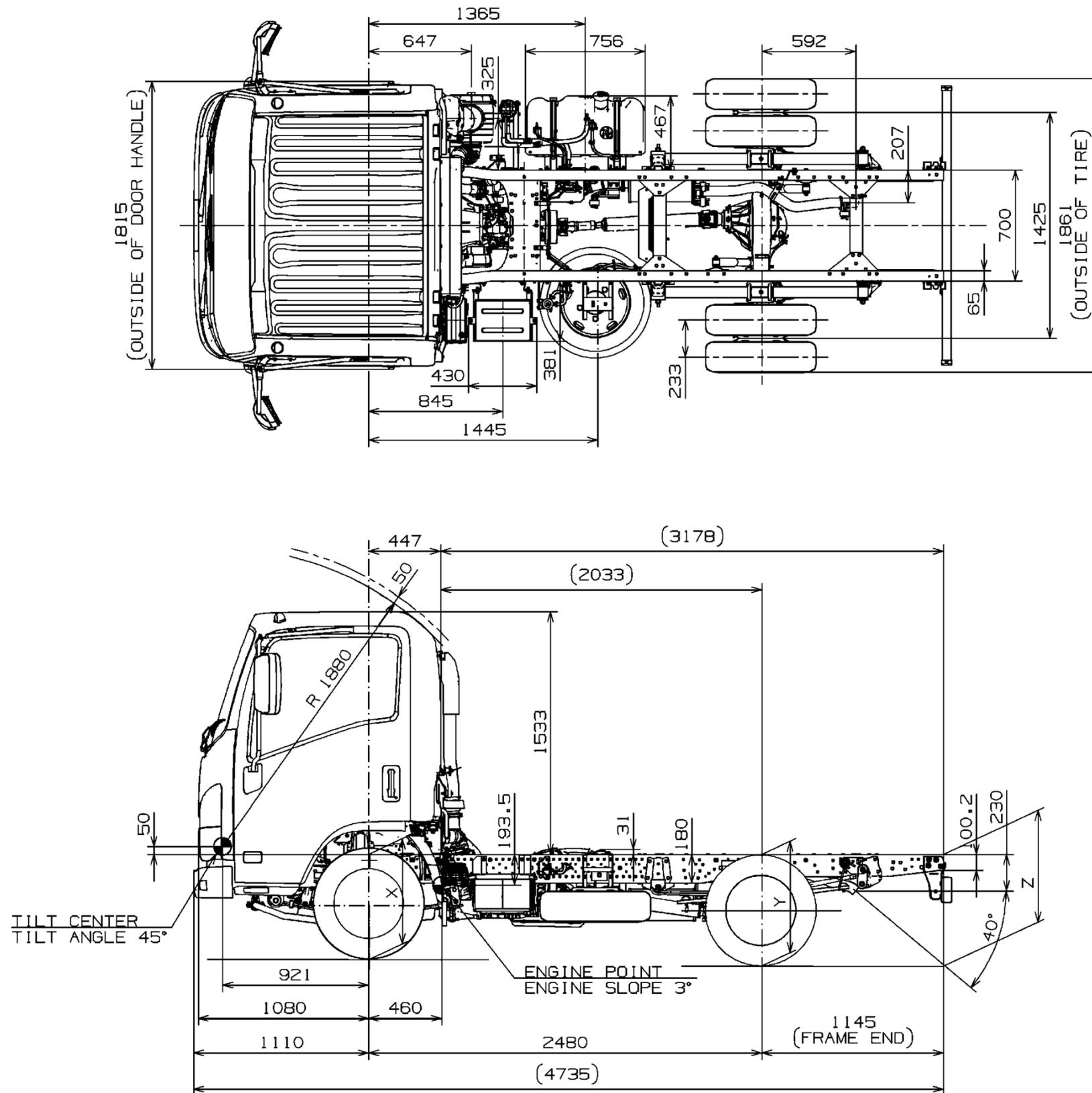


Fig. 9-1-8 Cab Chassis Drawing NMR85L/U-HH5AYEN

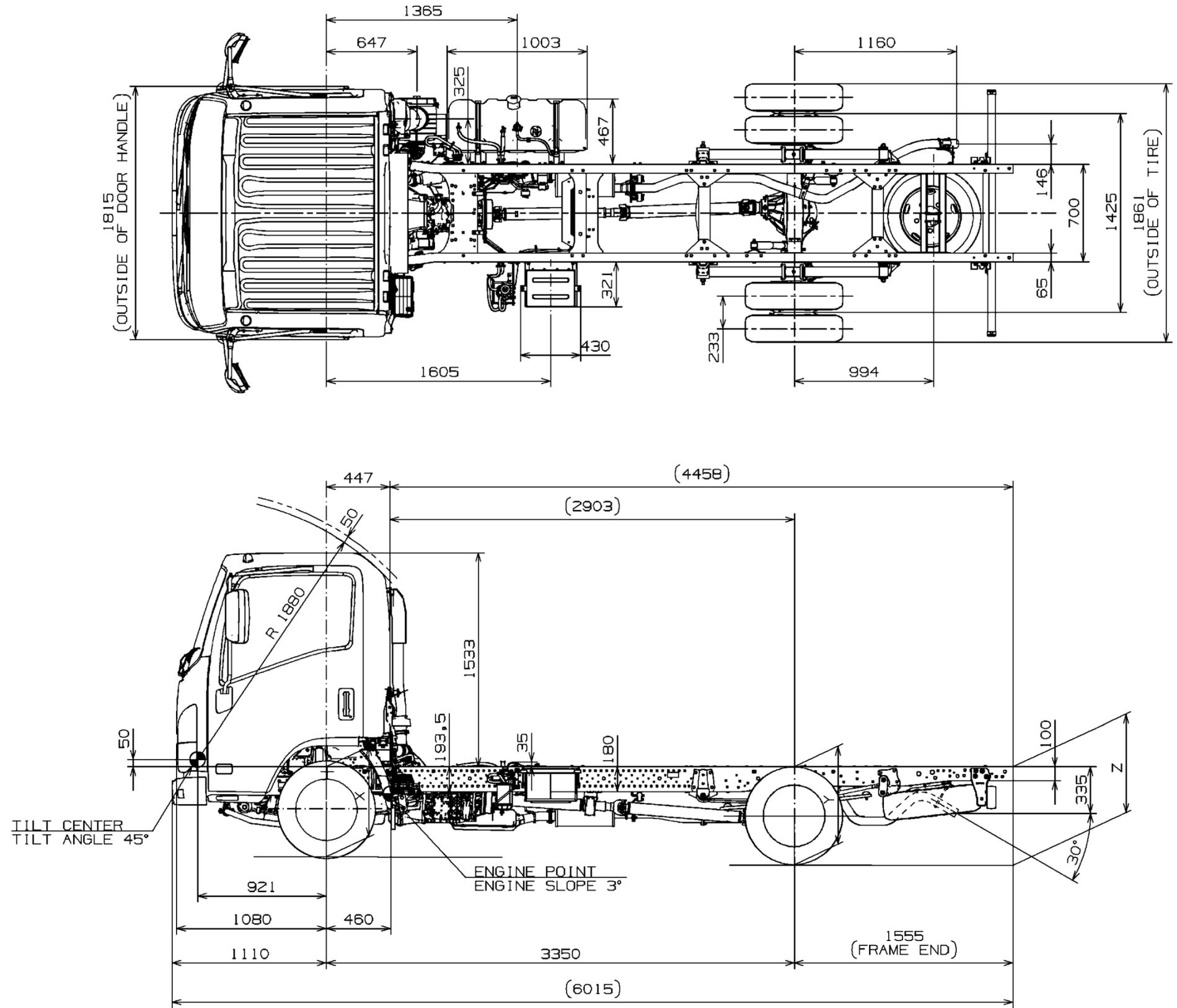


Fig. 9-1-9 Cab Chassis Drawing NNR85L/U-FD5AYEN

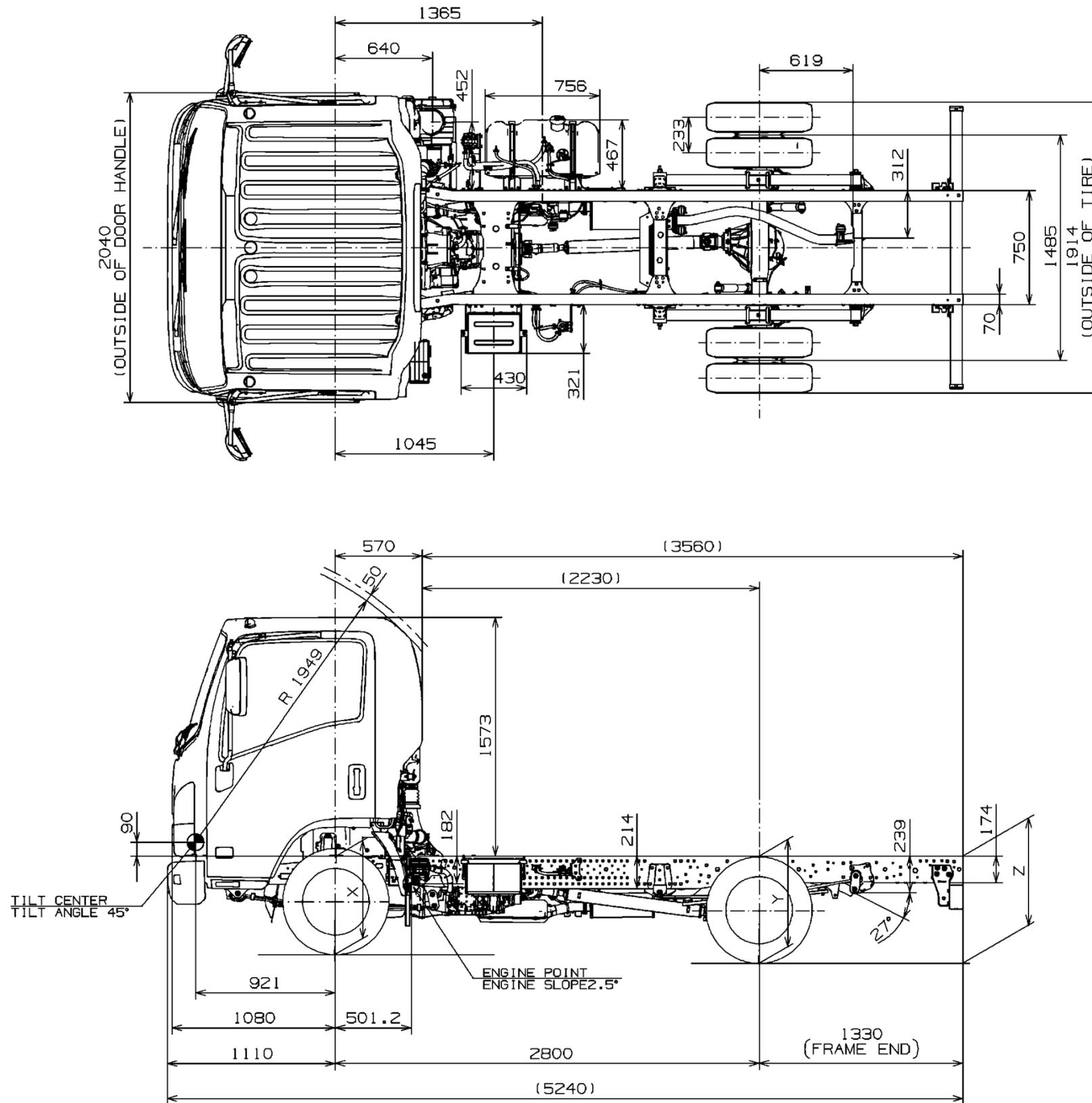


Fig. 9-1-10 Cab Chassis Drawing NNR85L/U-HD5AYEN

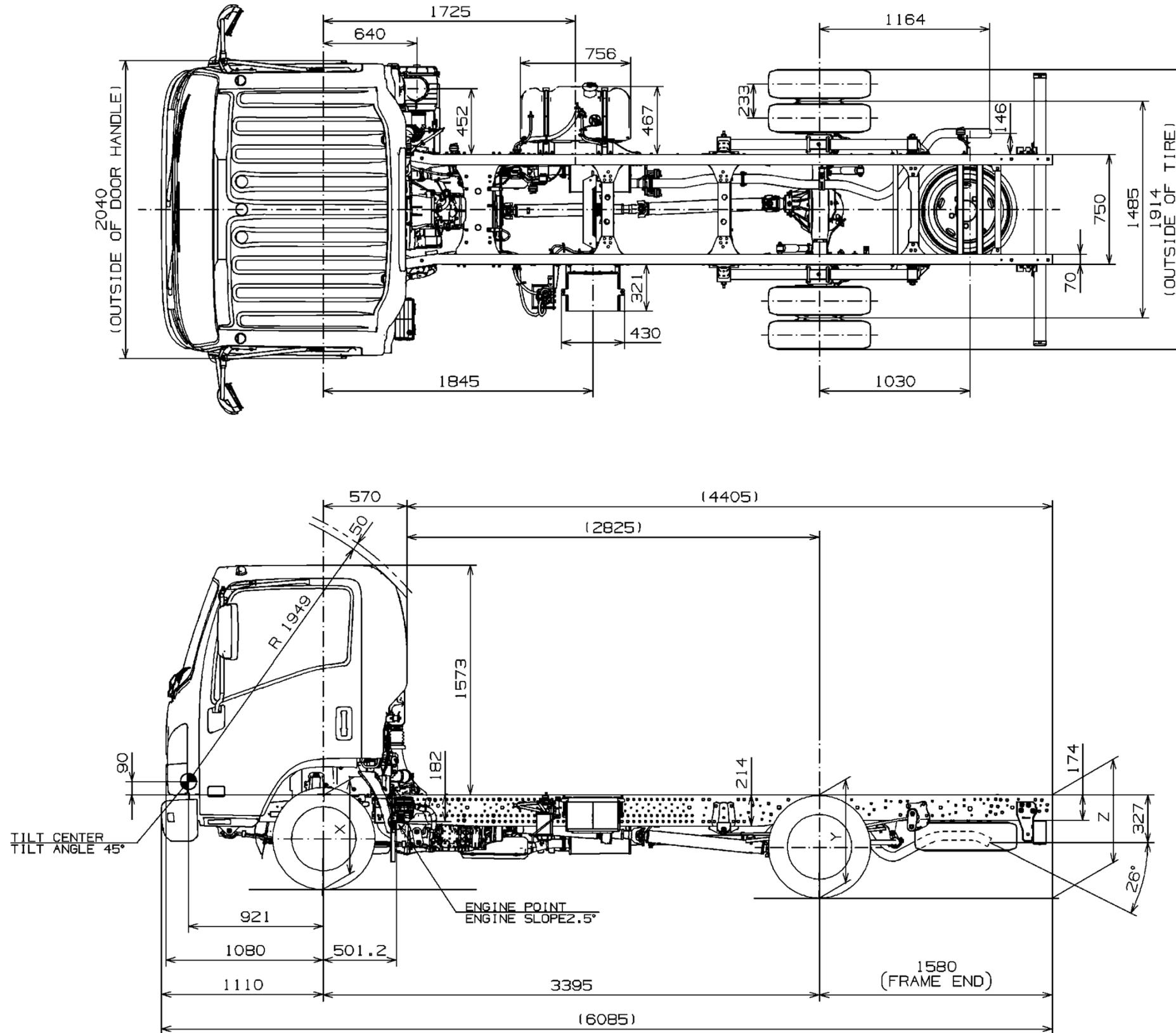


Fig. 9-1-11 Cab Chassis Drawing NNR85L-HD5WYEN

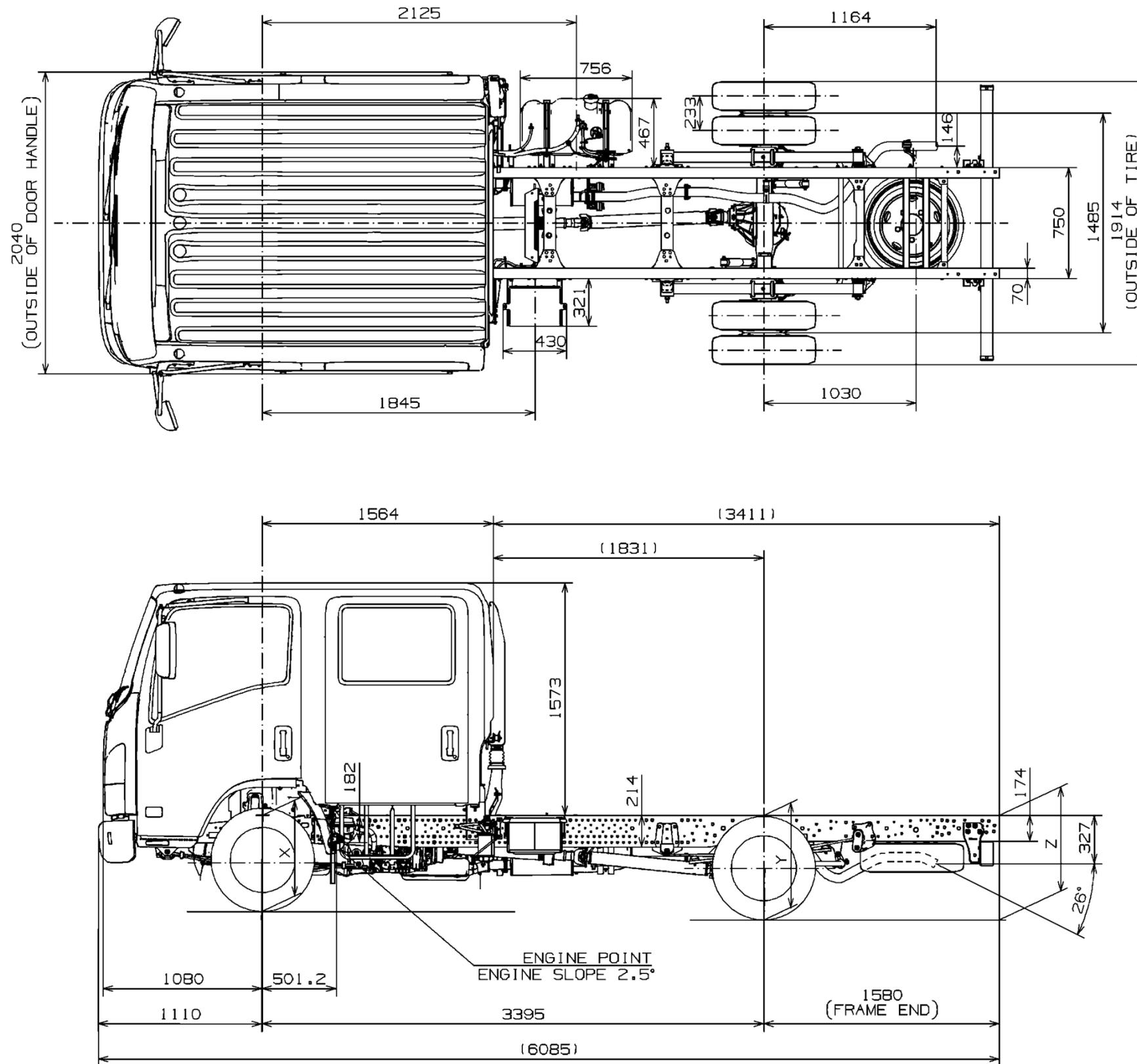


Fig. 9-1-12 Cab Chassis Drawing NLR85AL-HD5AYE

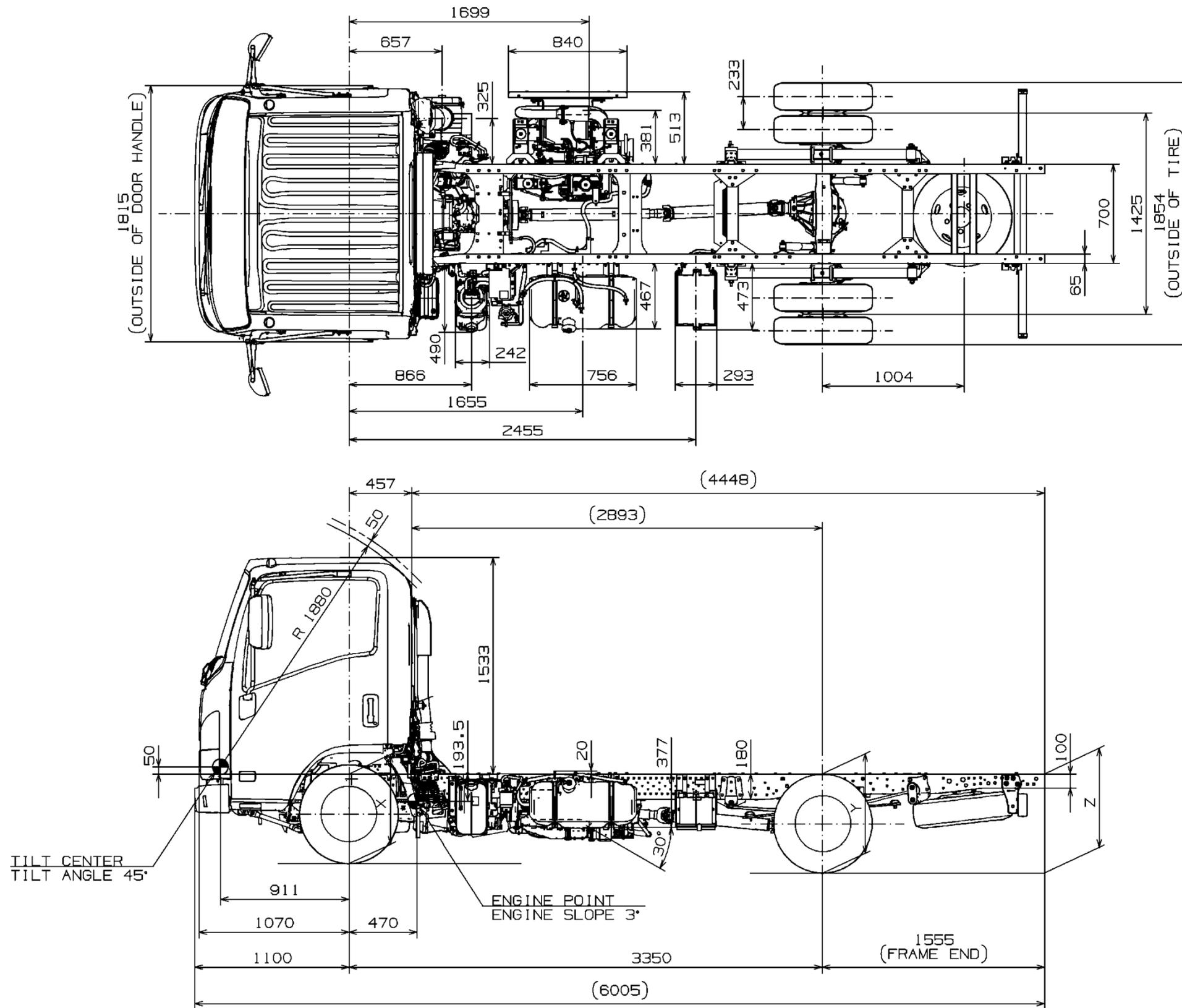




Fig. 9-1-14 Cab Chassis Drawing NMR85L/U-HH5AYE

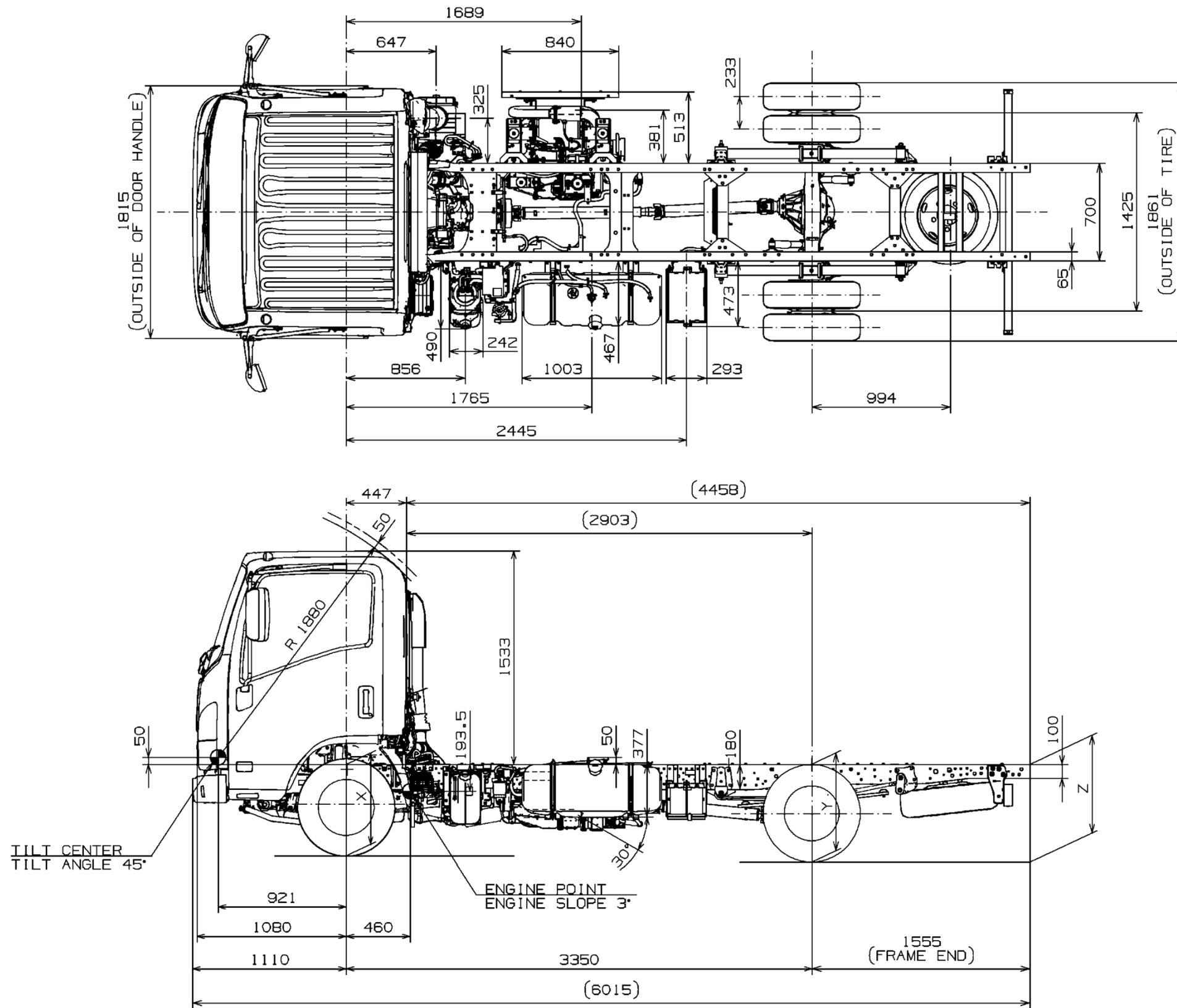




Fig. 9-1-16 Cab Chassis Drawing NPR85L/U-HH5AYE

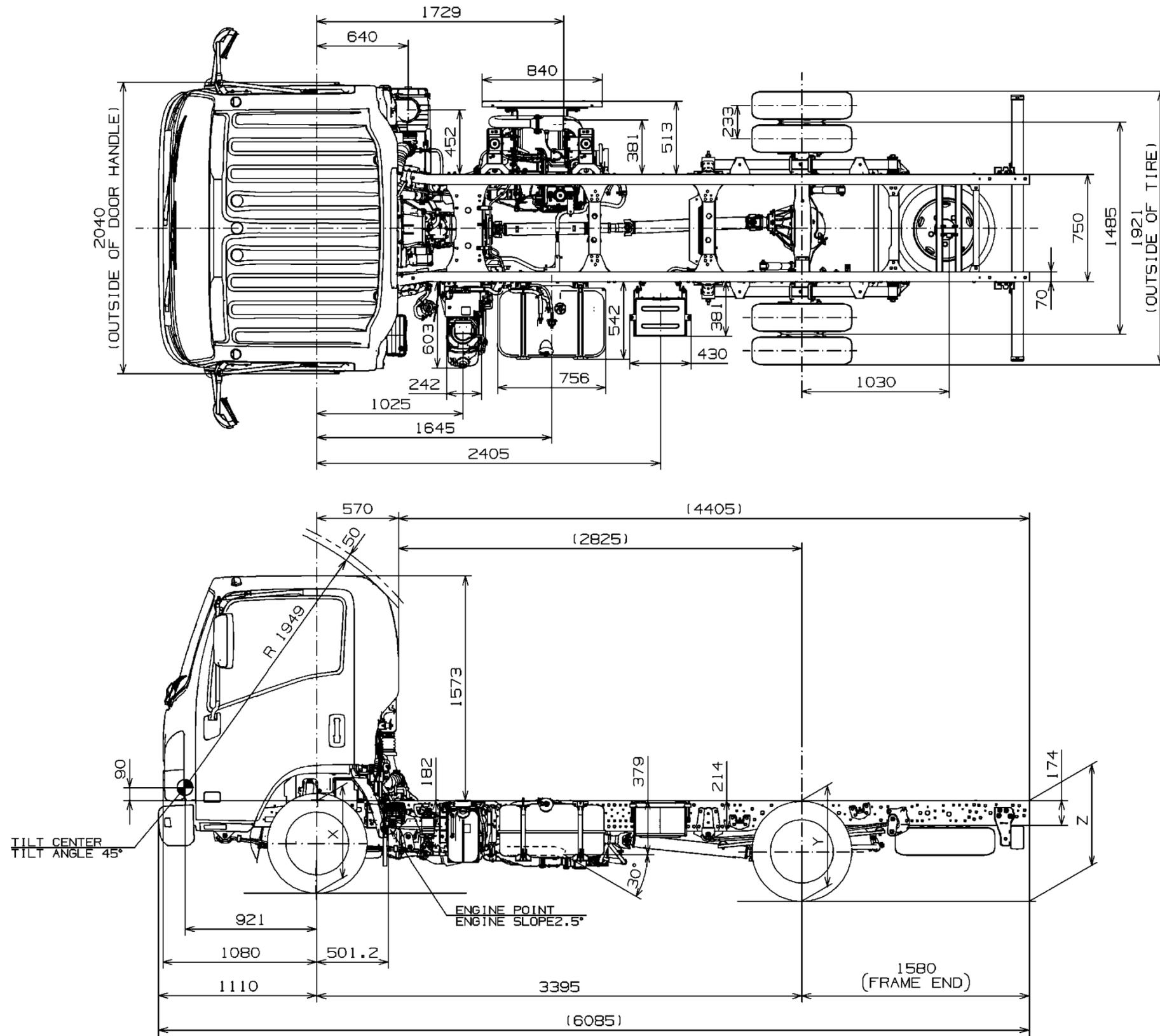




Fig. 9-1-18 Cab Chassis Drawing NPR85L/U-HL5VAYE

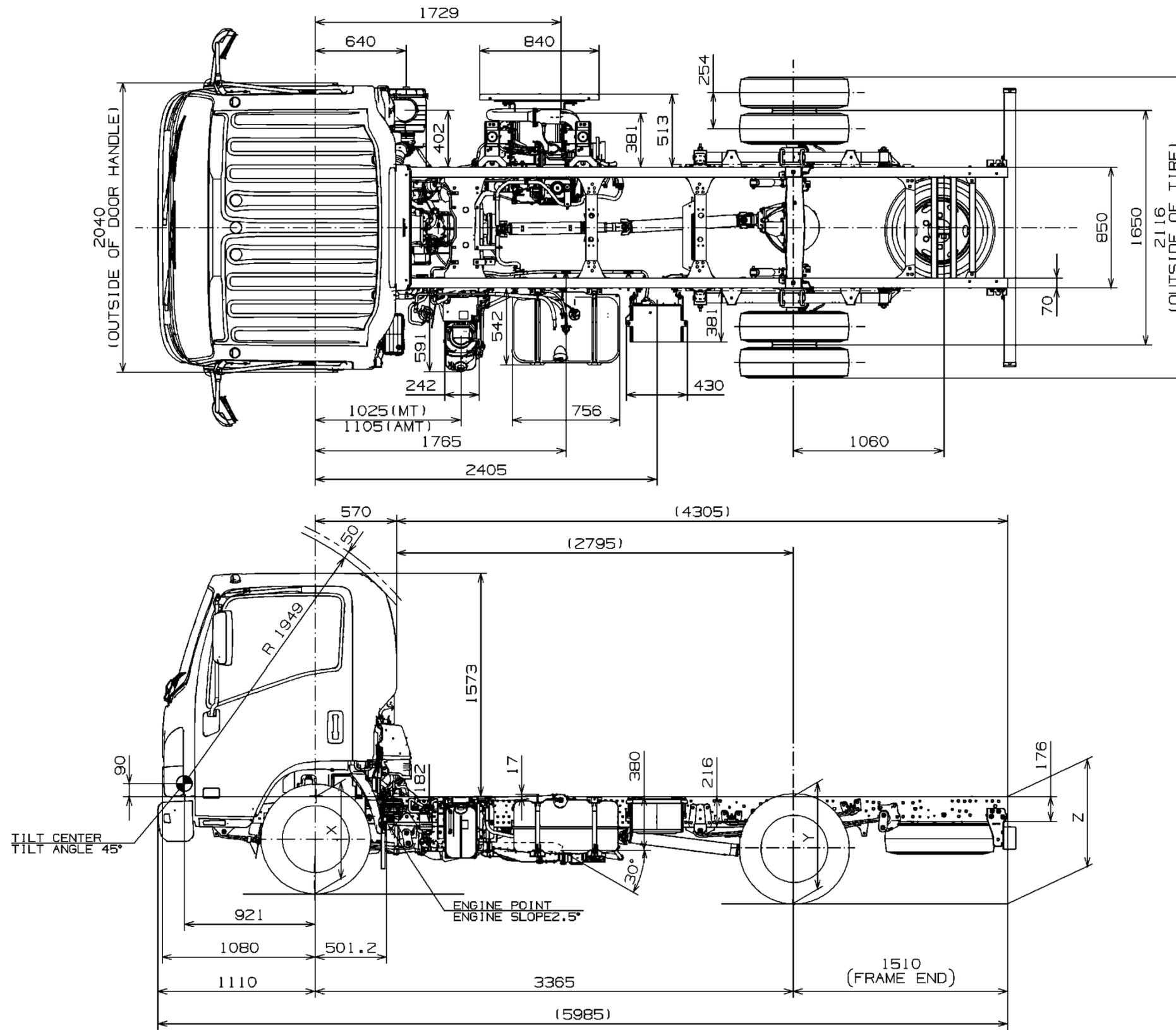


Fig. 9-1-19 Cab Chassis Drawing NPR85L/U-KJ5AYE

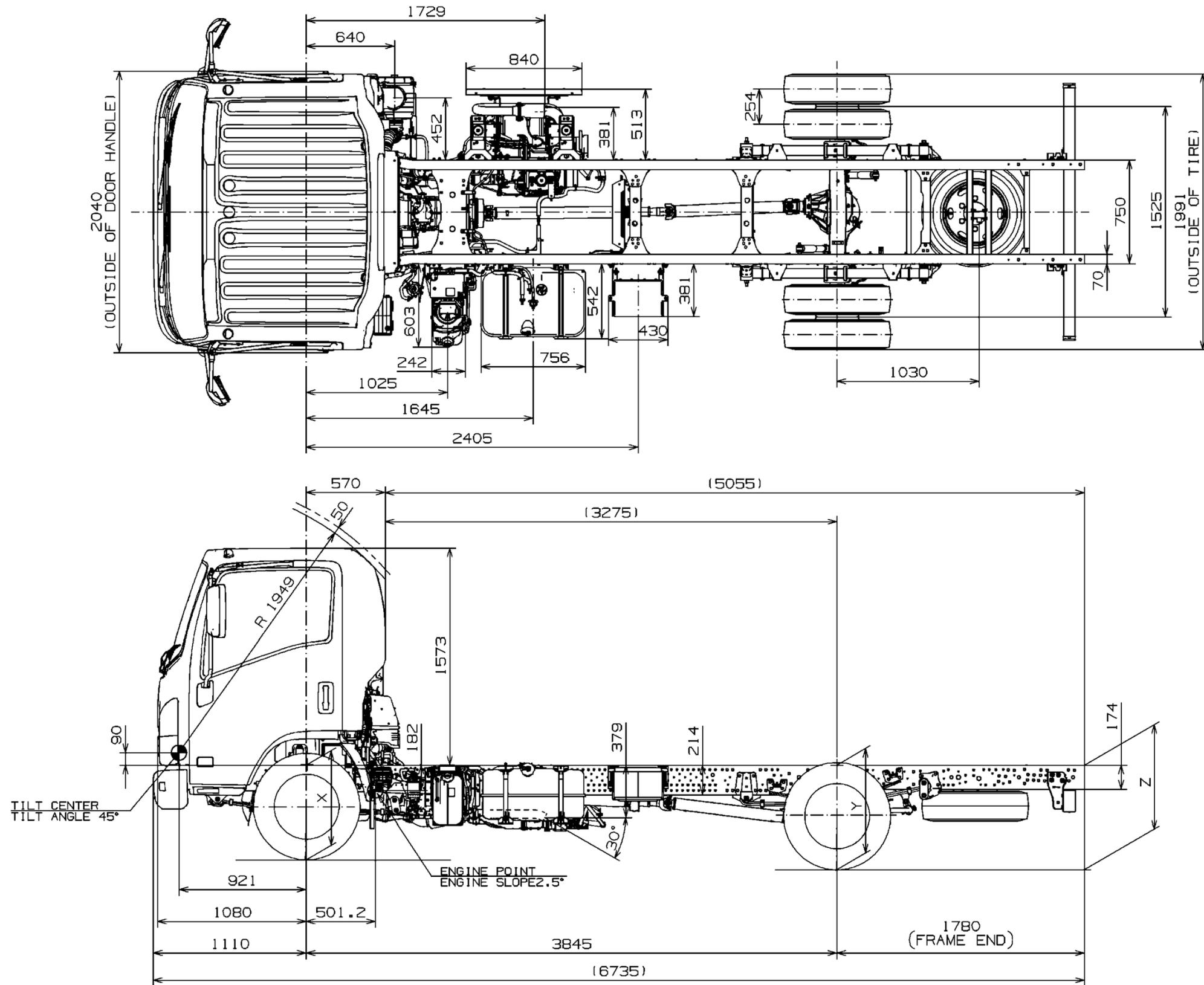


Fig. 9-1-20 Cab Chassis Drawing NPR85L/U-KL5VAYE

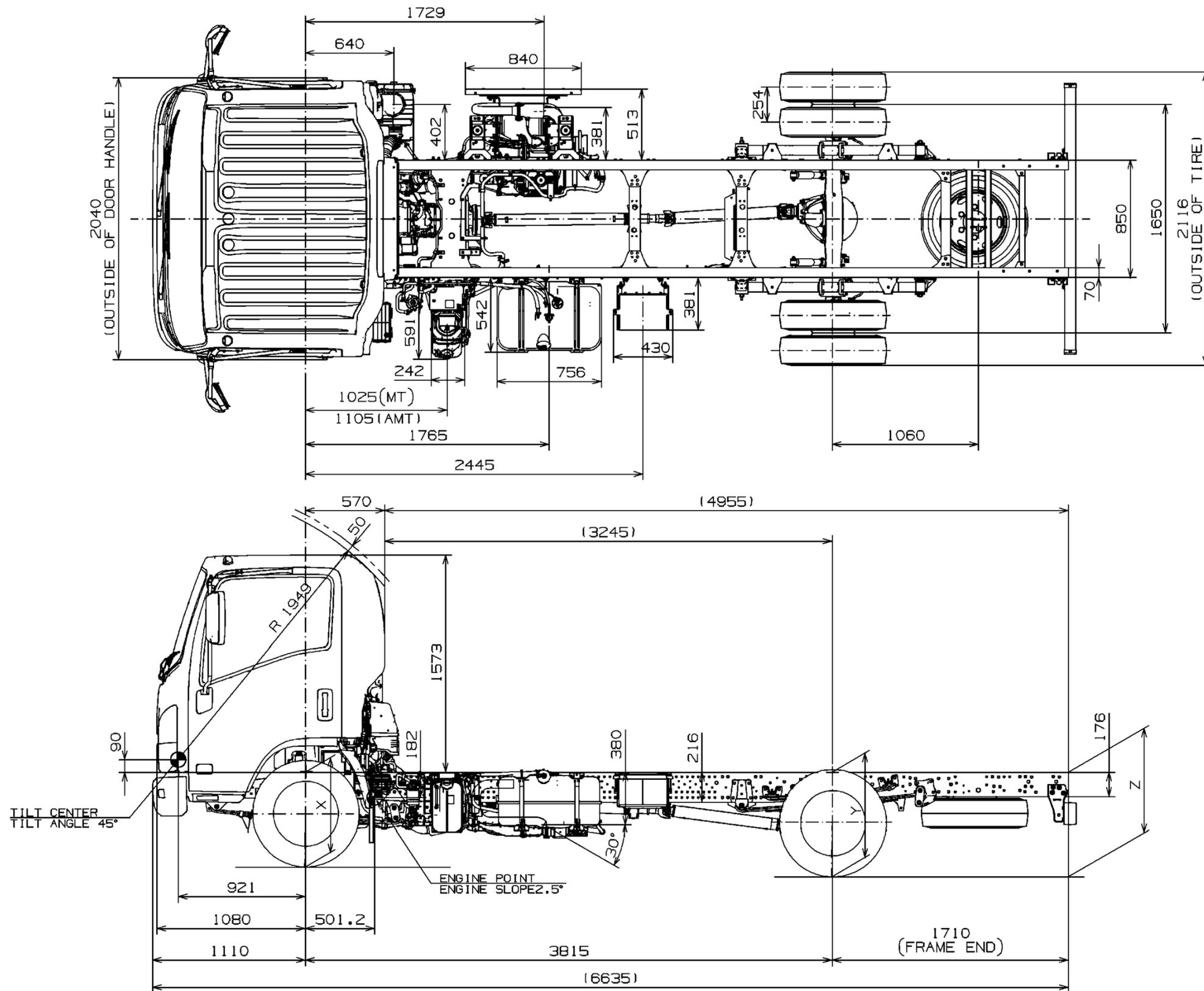


Fig. 9-1-21 Cab Chassis Drawing NPR85L/U-ML5VAYE

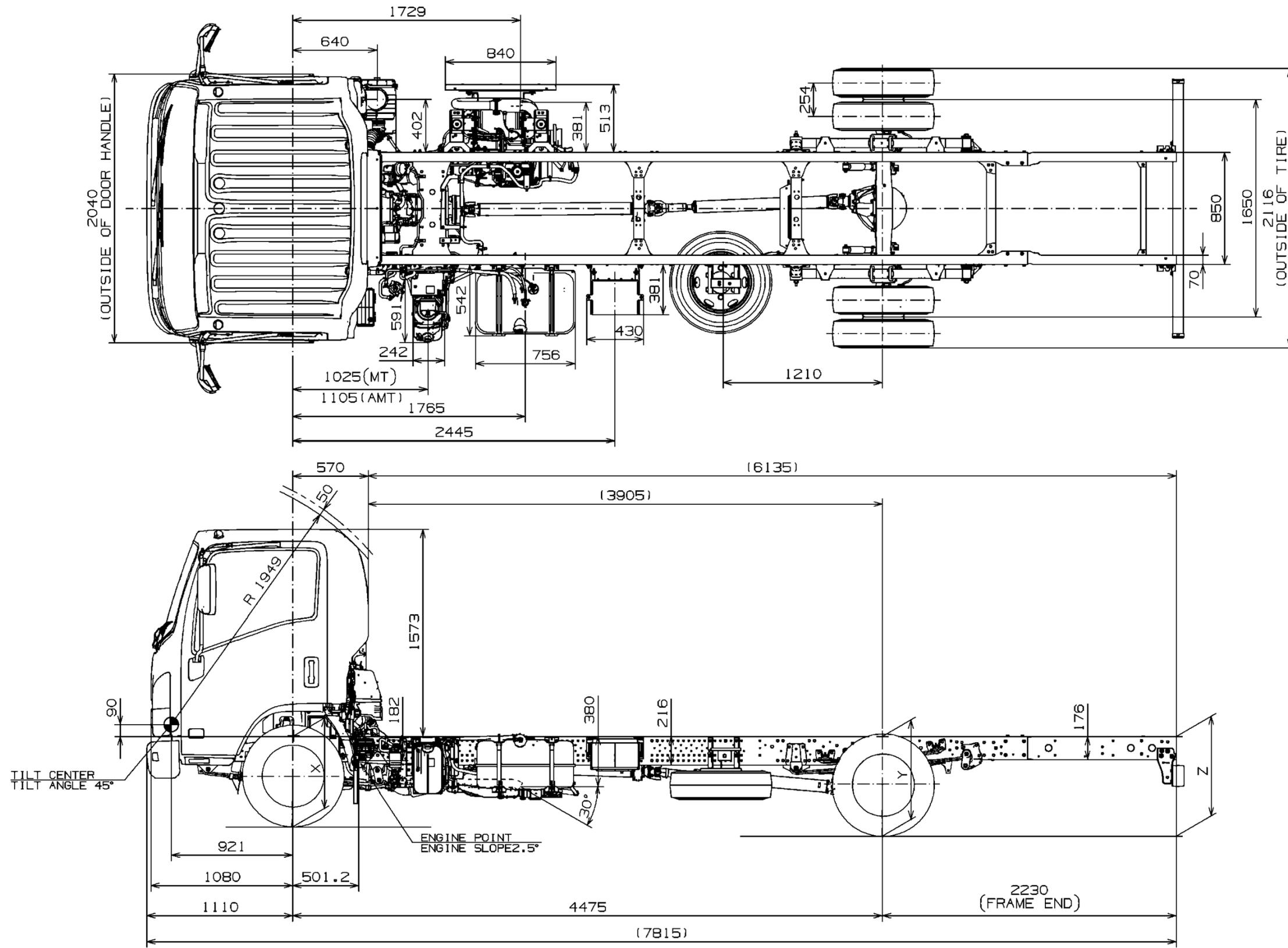




Fig. 9-1-23 Cab Chassis Drawing NPR75L/U-KL5VAYE

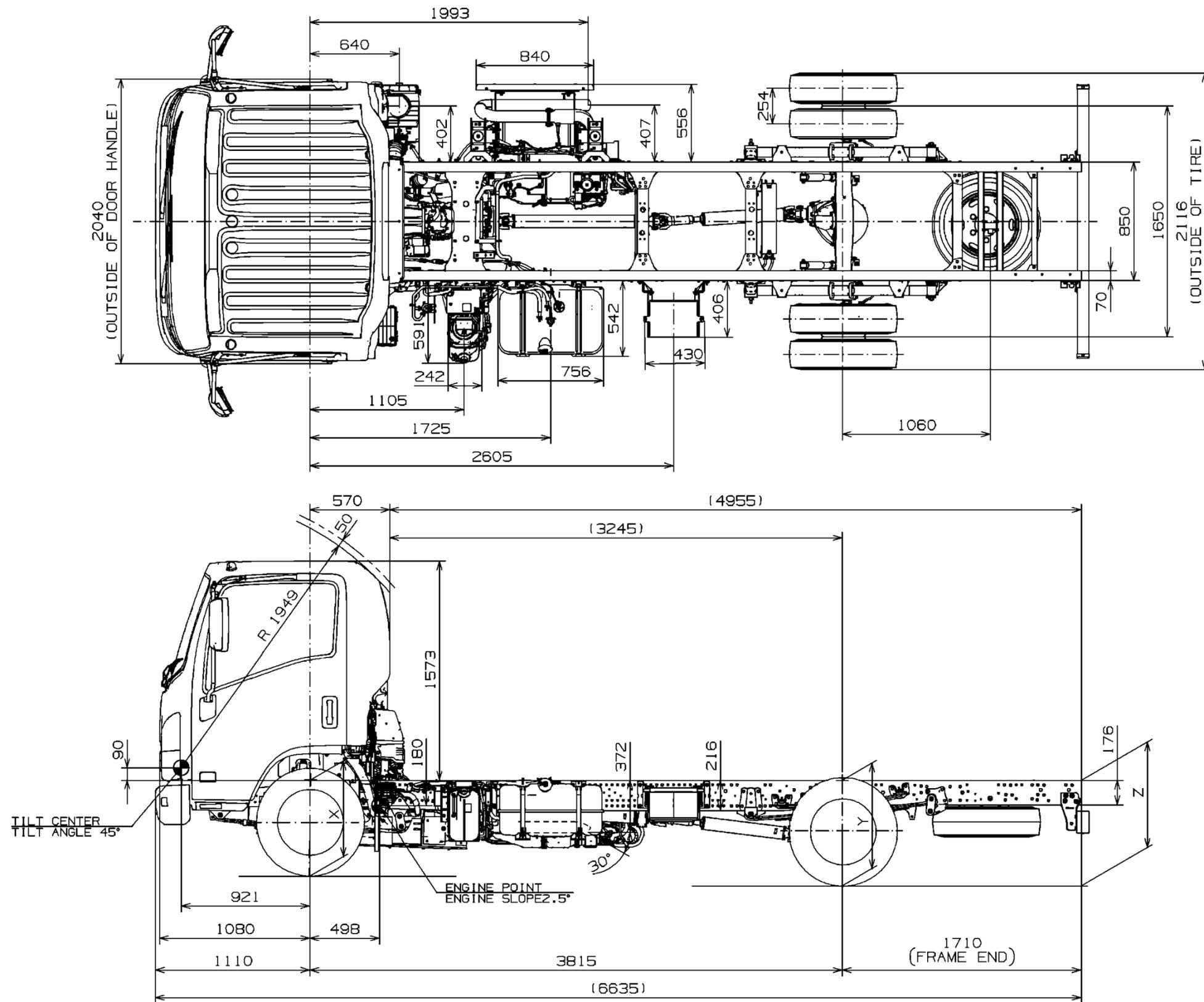


Fig. 9-1-24 Cab Chassis Drawing NPR75L/U-ML5VAYE

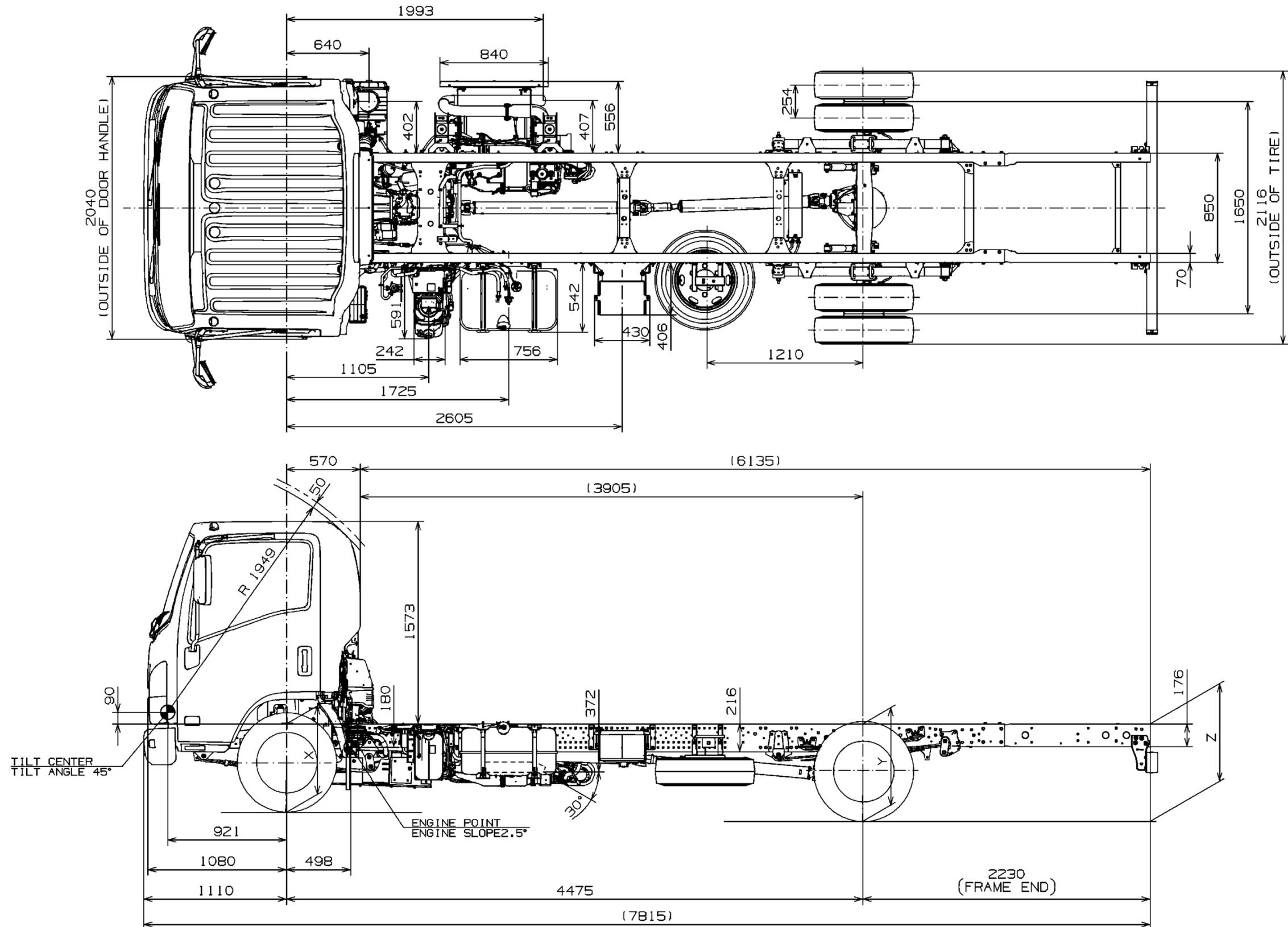
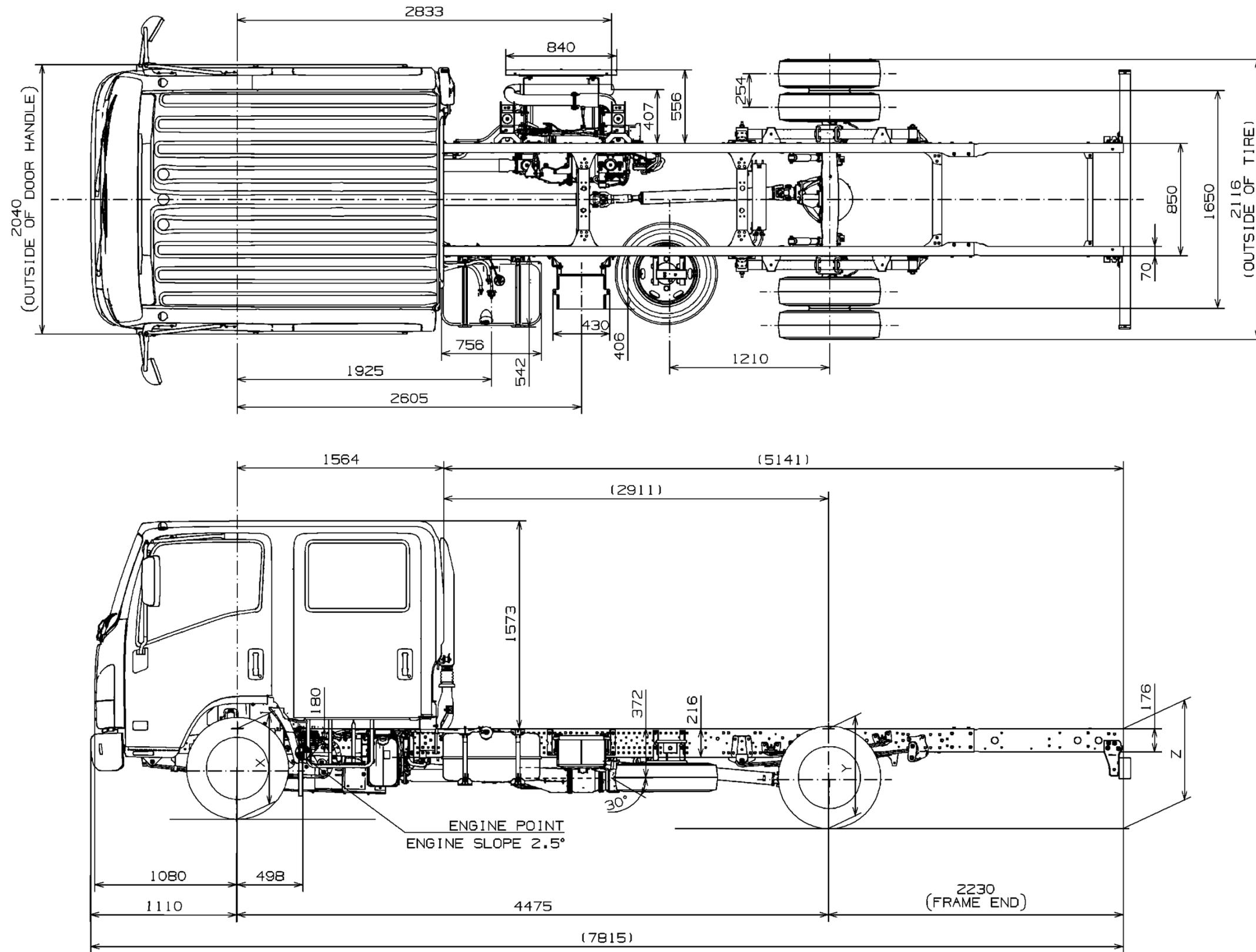


Fig. 9-1-25 Cab Chassis Drawing NPR75L/U-ML5VWYE



## 9.2. CAB BACK DETAIL DRAWINGS

### Euro5b+

No.	Vehicle model	HANDLE		Drawing
		LHD	RHD	
1	NLR85AL/AU-ED1AYEN	○	○	Fig.9-2-1
2	NLR85AL-ED5AYEN	○		
3	NLR85AL-HD5AYEN	○		
4	NLR85L/U-ED5AYEN	○	○	Fig.9-2-2
5	NLR85L/U-HD5AYEN	○	○	
6	NMR85L/U-EH5AYEN	○	○	
7	NMR85L/U-HH5AYEN	○	○	
8	NLR85L/U-HD5WYEN	○	○	Fig.9-2-3
9	NNR85L/U-FD5AYEN	○	○	Fig.9-2-4
10	NNR85L/U-HD5AYEN	○	○	
11	NNR85L-HD5WYEN	○		Fig.9-2-5

### EuroVI

No.	Vehicle model	HANDLE		Drawing
		LHD	RHD	
1	NLR85AL-HD5AYE	○		Fig.9-2-6
2	NLR85L/U-HD5AYE	○	○	Fig.9-2-7
3	NMR85L/U-HH5AYE	○	○	Fig.9-2-8
4	NNR85L/U-HD5AYE	○	○	Fig.9-2-9
5	NPR85L/U-HH5AYE	○	○	Fig.9-2-10
6	NPR85L/U-HJ5AYE	○	○	Fig.9-2-11
7	NPR85L/U-KJ5AYE	○	○	
8	NPR85L/U-HL5VAYE	○	○	Fig.9-2-12
9	NPR85L/U-KL5VAYE	○	○	
10	NPR85L/U-ML5VAYE	○	○	
11	NPR75L/U-HL5VAYE	○	○	Fig.9-2-13
12	NPR75L/U-KL5VAYE	○	○	
13	NPR75L/U-ML5VAYE	○	○	
14	NPR75L/U-ML5VWYE	○	○	Fig.9-2-14

Fig.9-2-1 NLR85AL/AU <Euro 5b+>

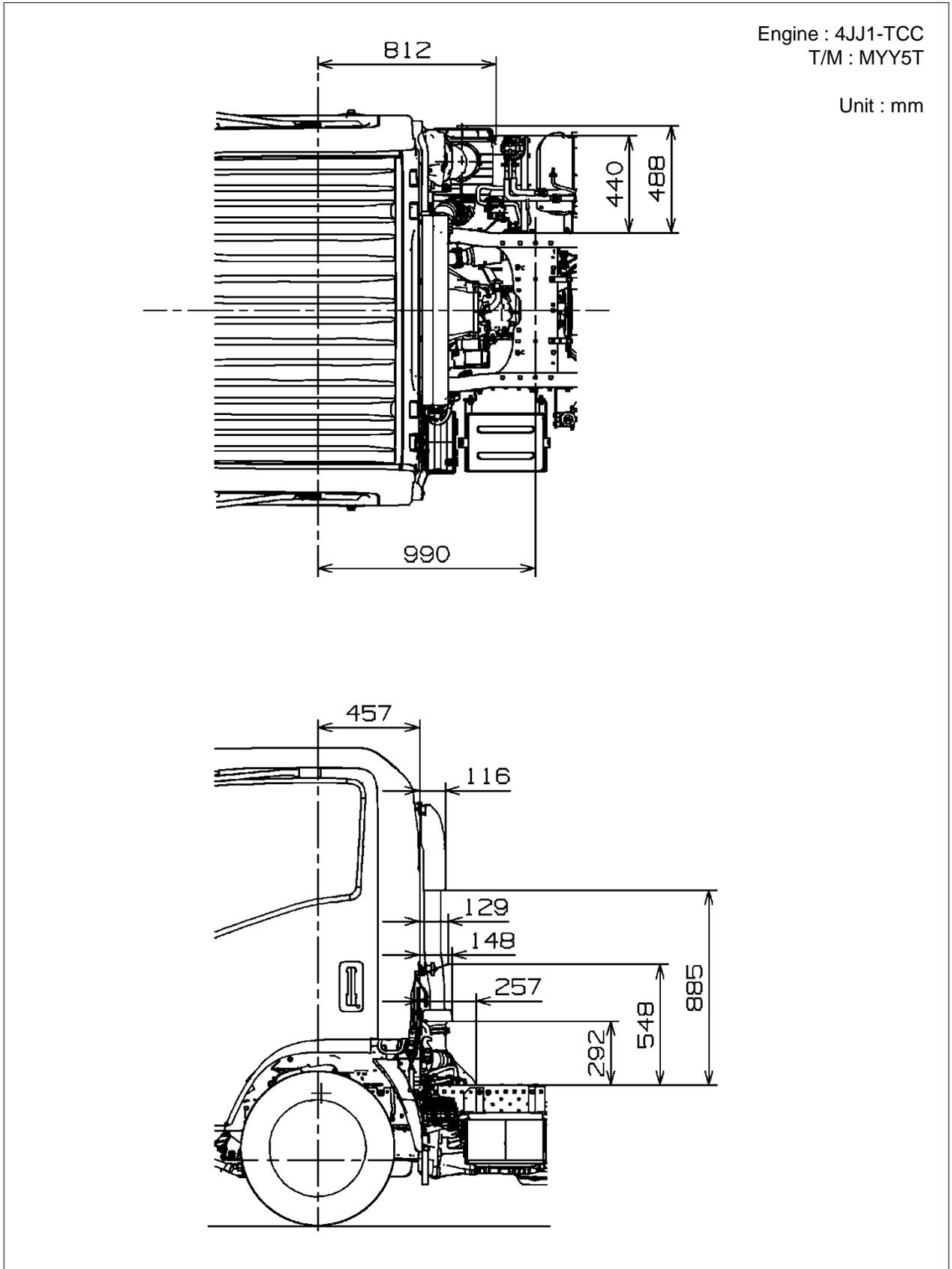


Fig.9-2-2 NLR85L/U-ED/HD(Single cab), NMR85L/U-EH/HH <Euro 5b+>

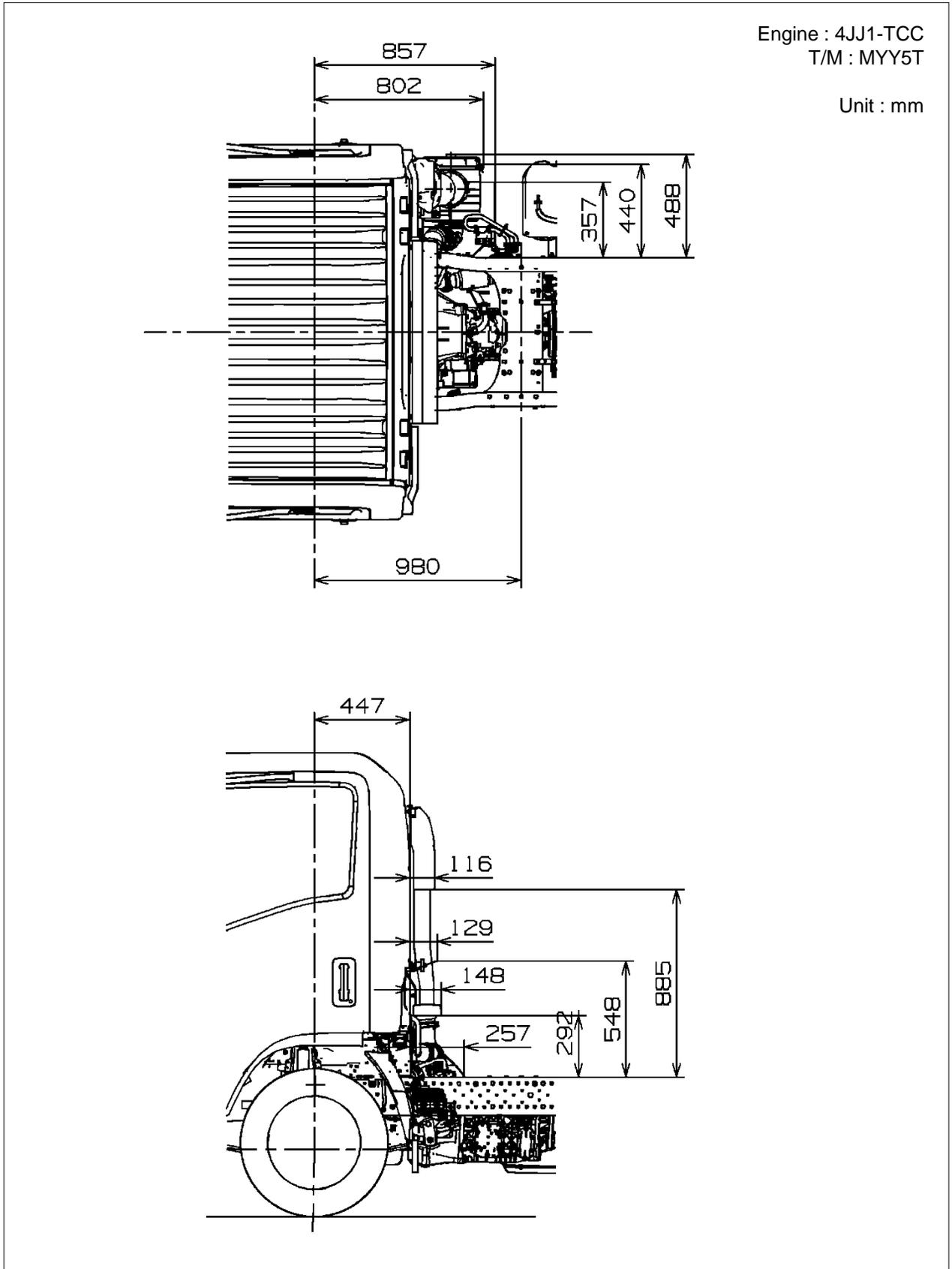


Fig.9-2-3 NLR85L/U-HD(Crew cab) <Euro 5b+>

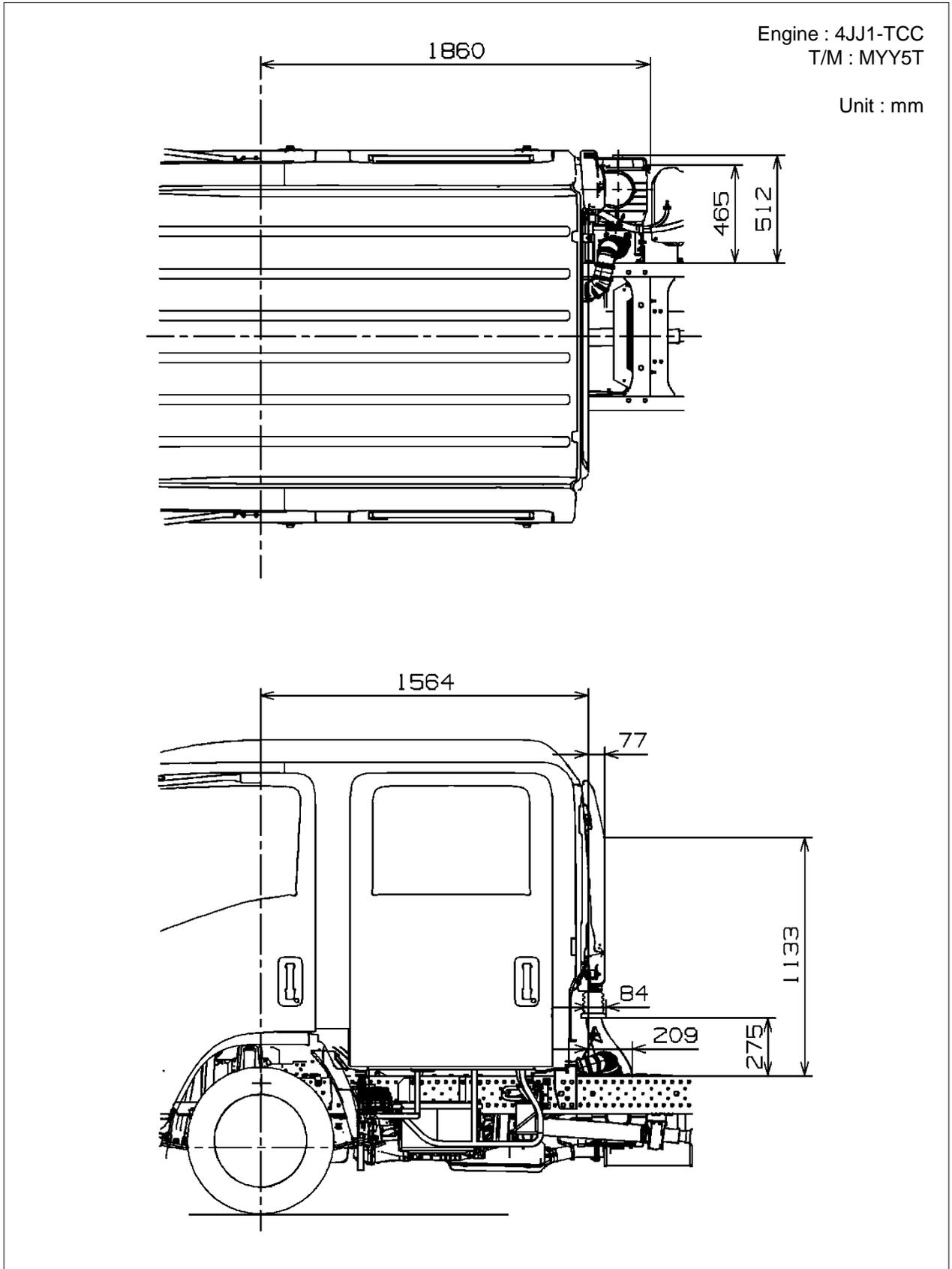


Fig.9-2-4 NNR85L/U-FD/HD(Single cab) <Euro 5b+>

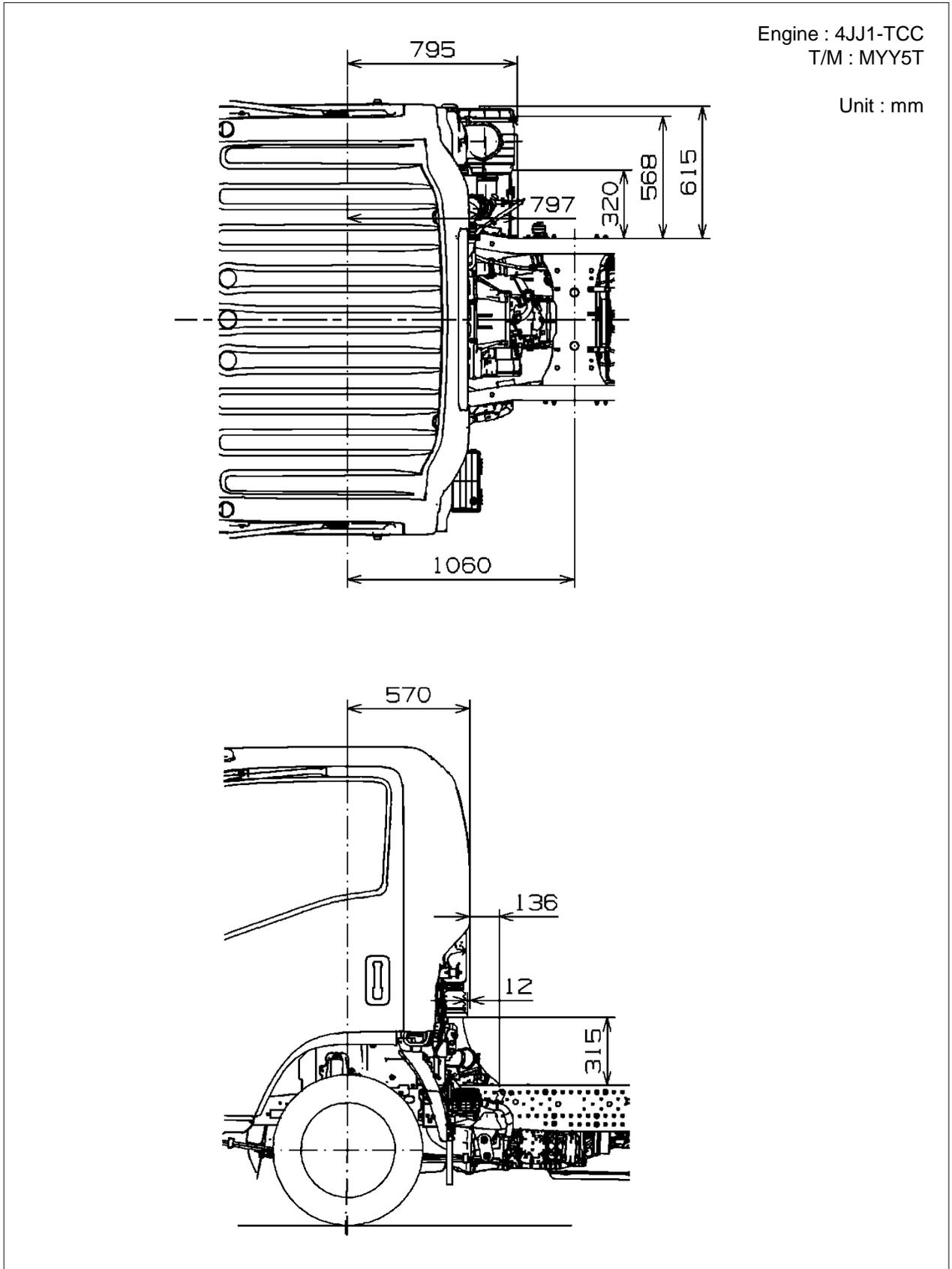


Fig.9-2-5 NNR85L/U-HD(Crew cab) <Euro 5b+>

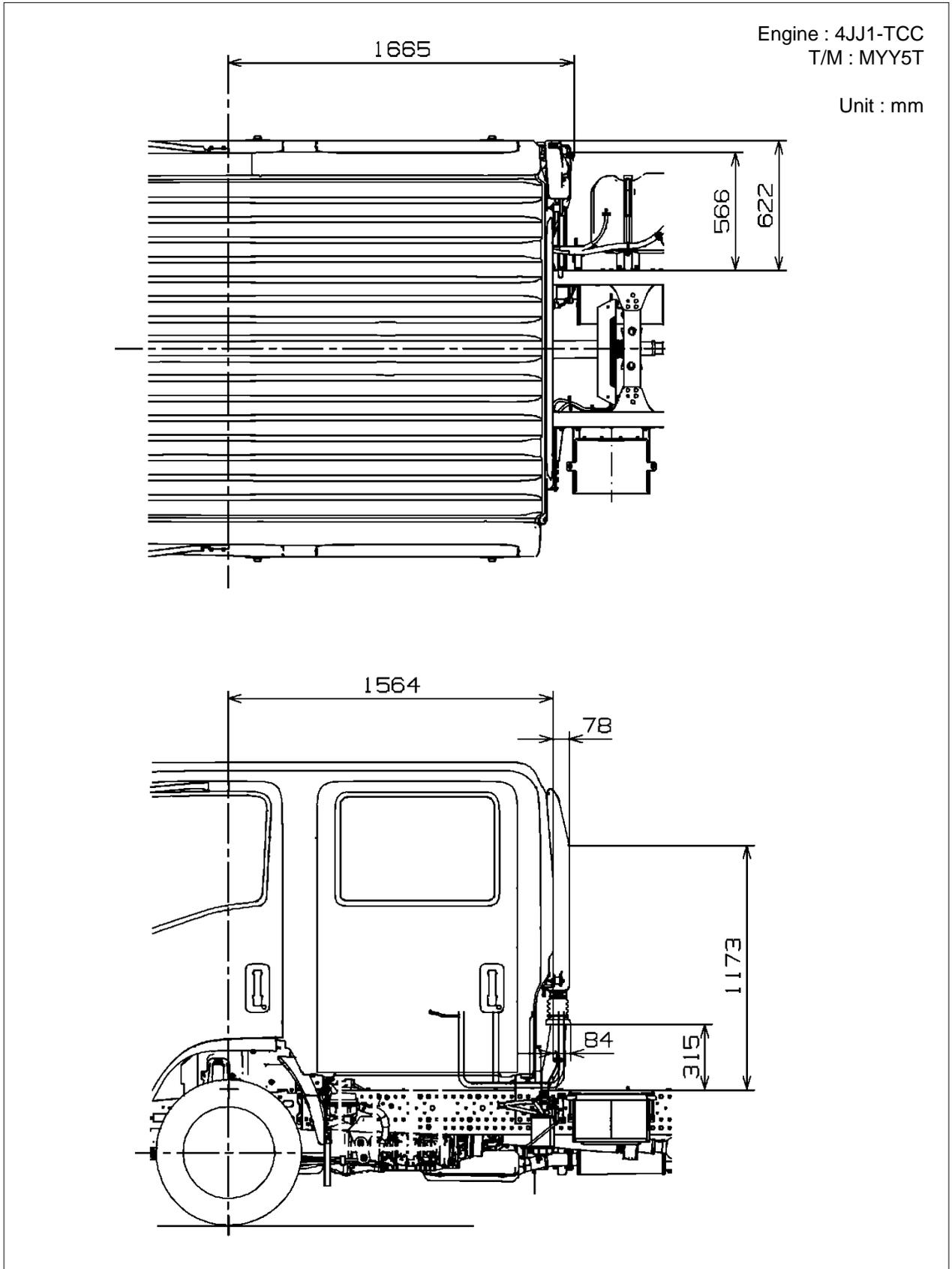


Fig.9-2-6 NLR85AL-HD <Euro VI>

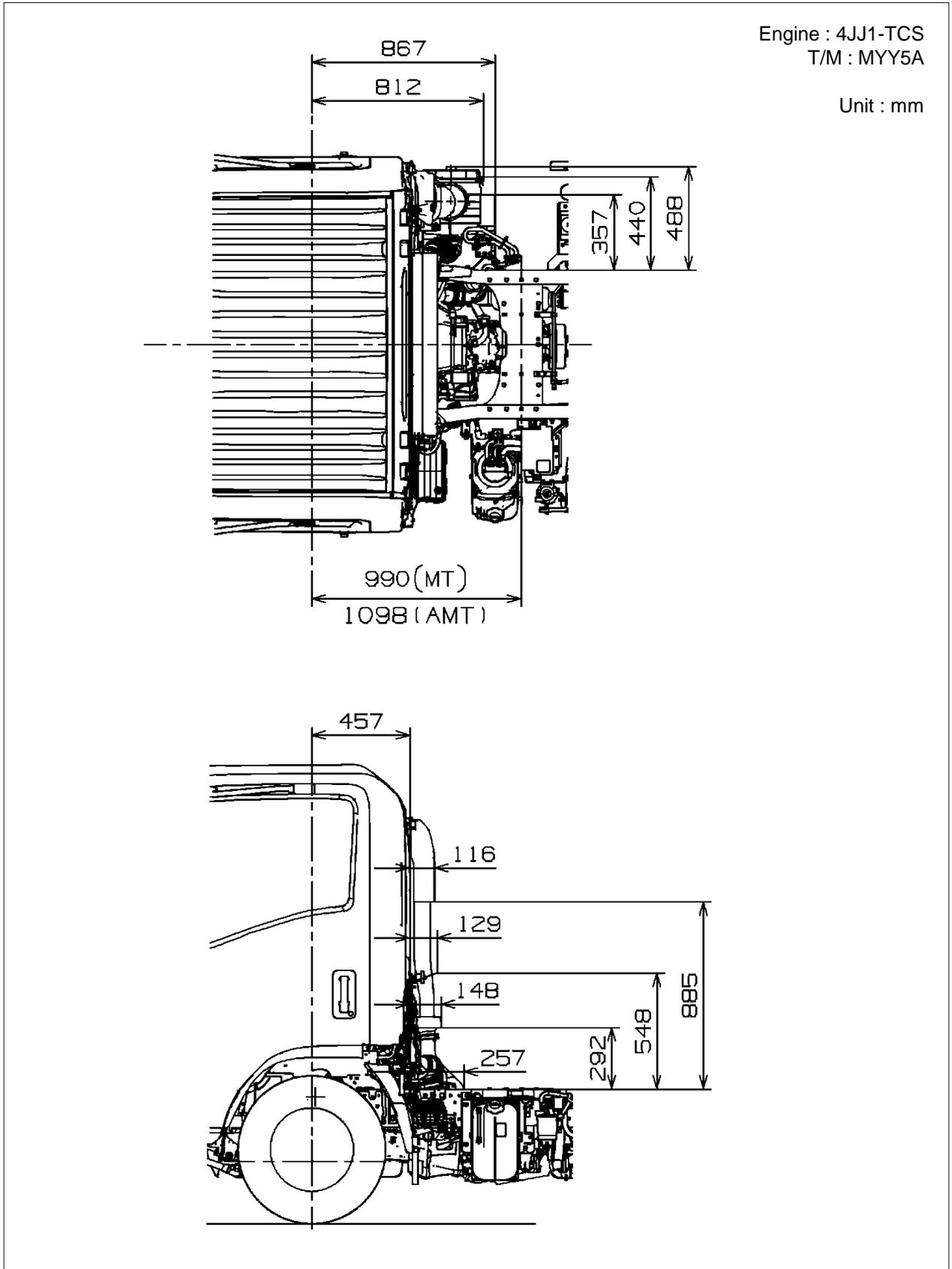


Fig.9-2-7 NLR85L/U-HD <Euro VI>

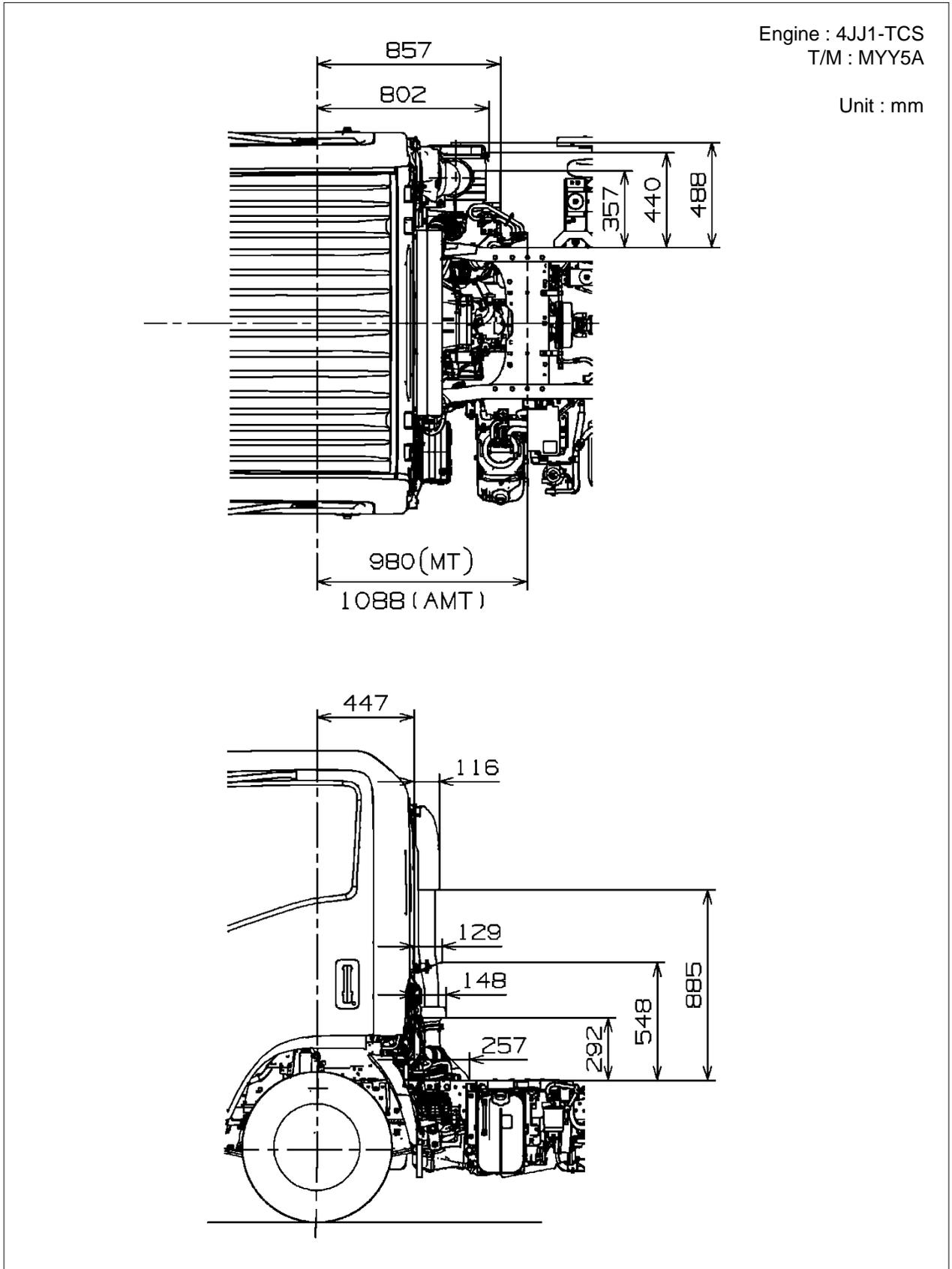


Fig.9-2-8 NMR85L/U-HH <Euro VI>

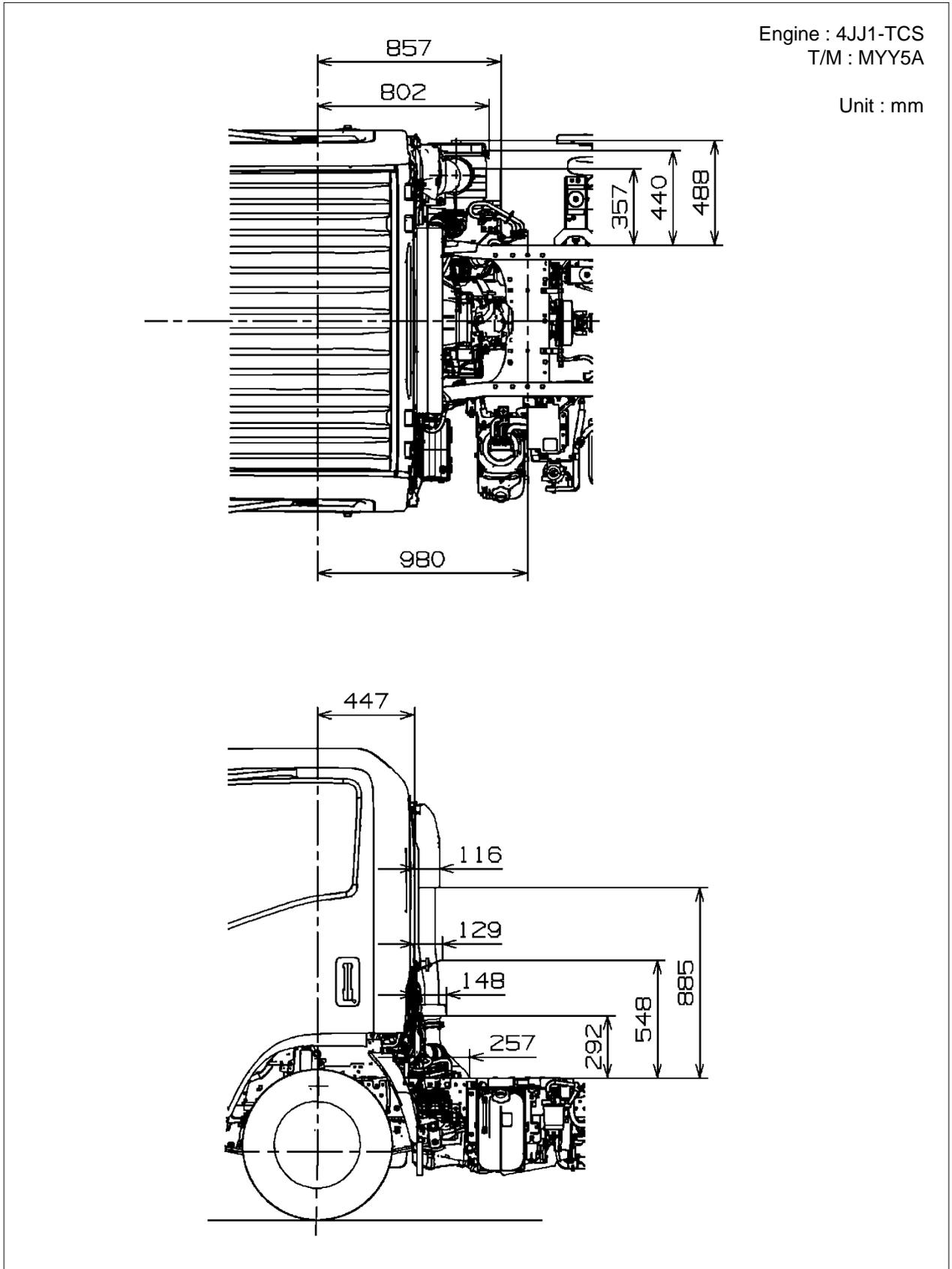


Fig.9-2-9 NNR85L/U-HD <Euro VI>

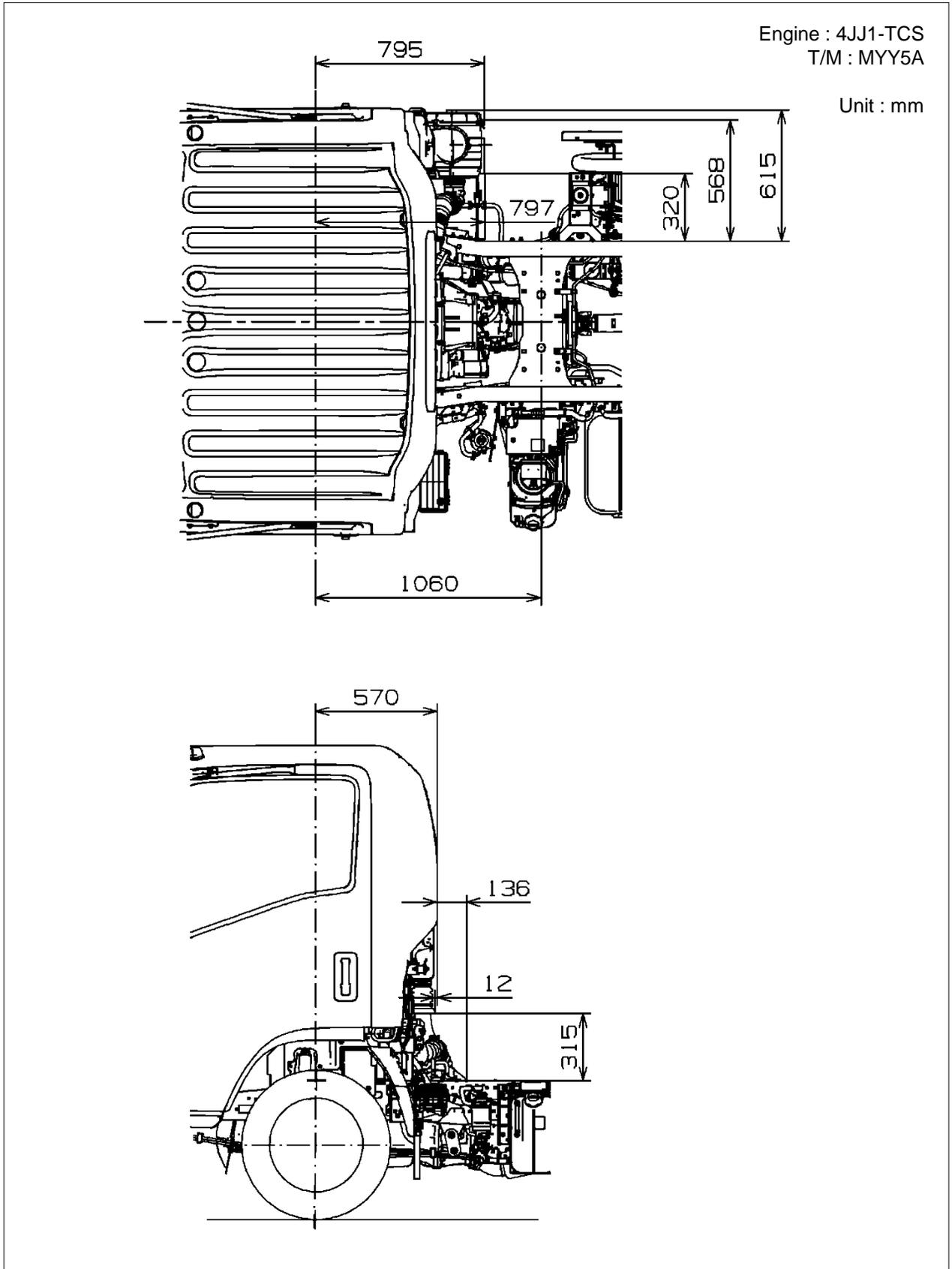


Fig.9-2-10 NPR85L/U-HH <Euro VI>

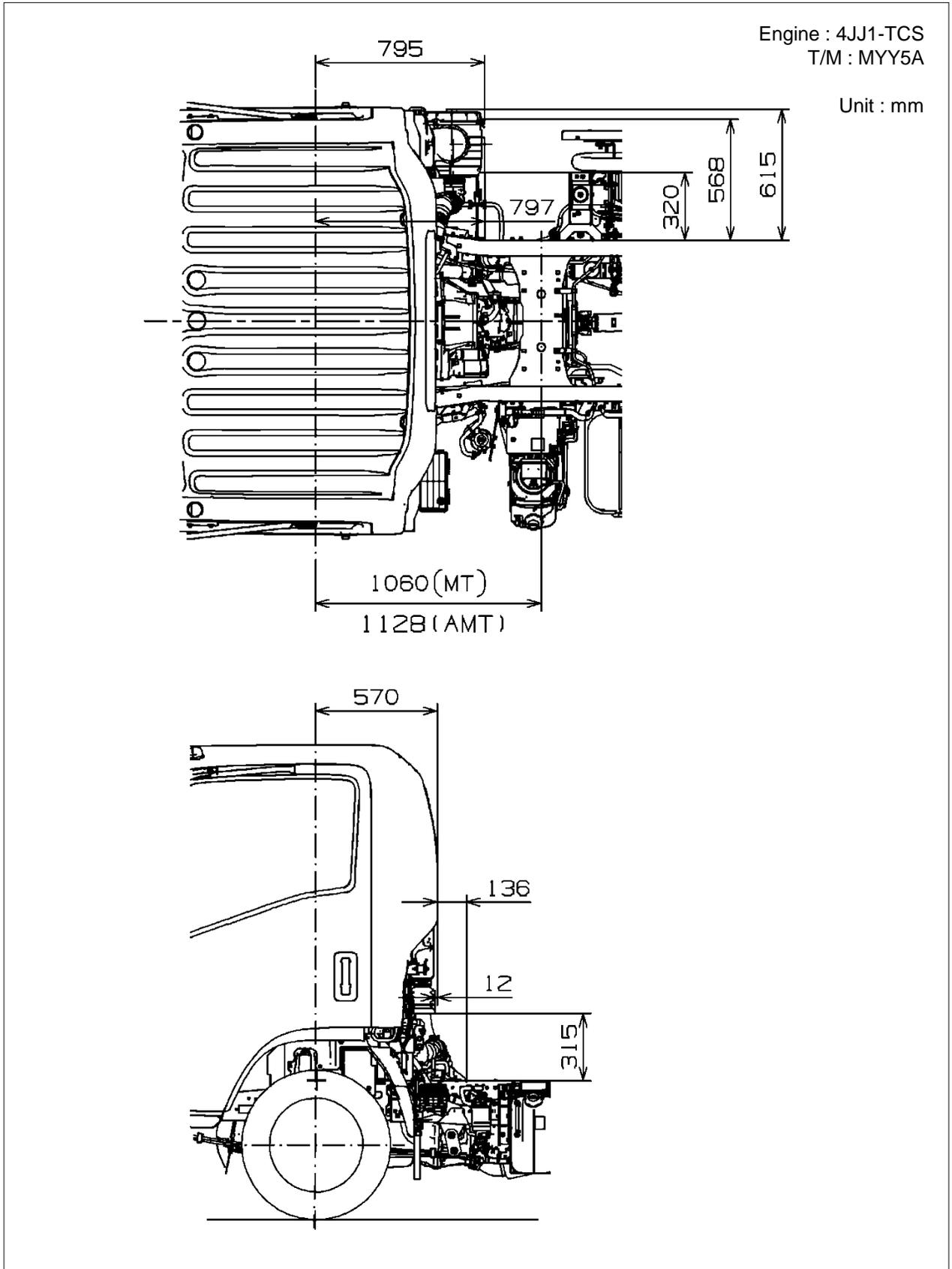


Fig.9-2-11 NPR85L/U-HJ/KJ <Euro VI>

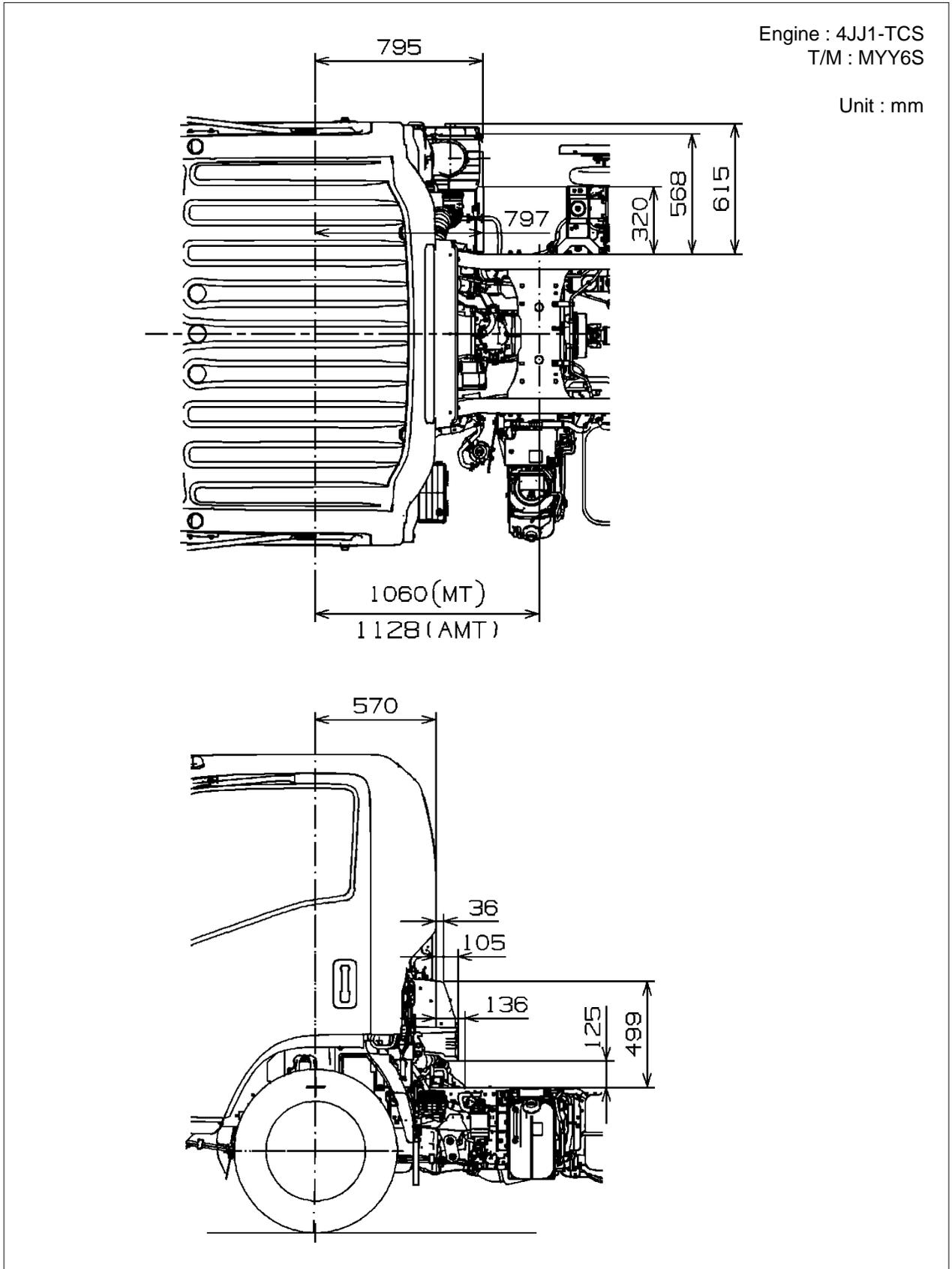


Fig.9-2-12 NPR85L/U-HL/KL/ML <Euro VI>

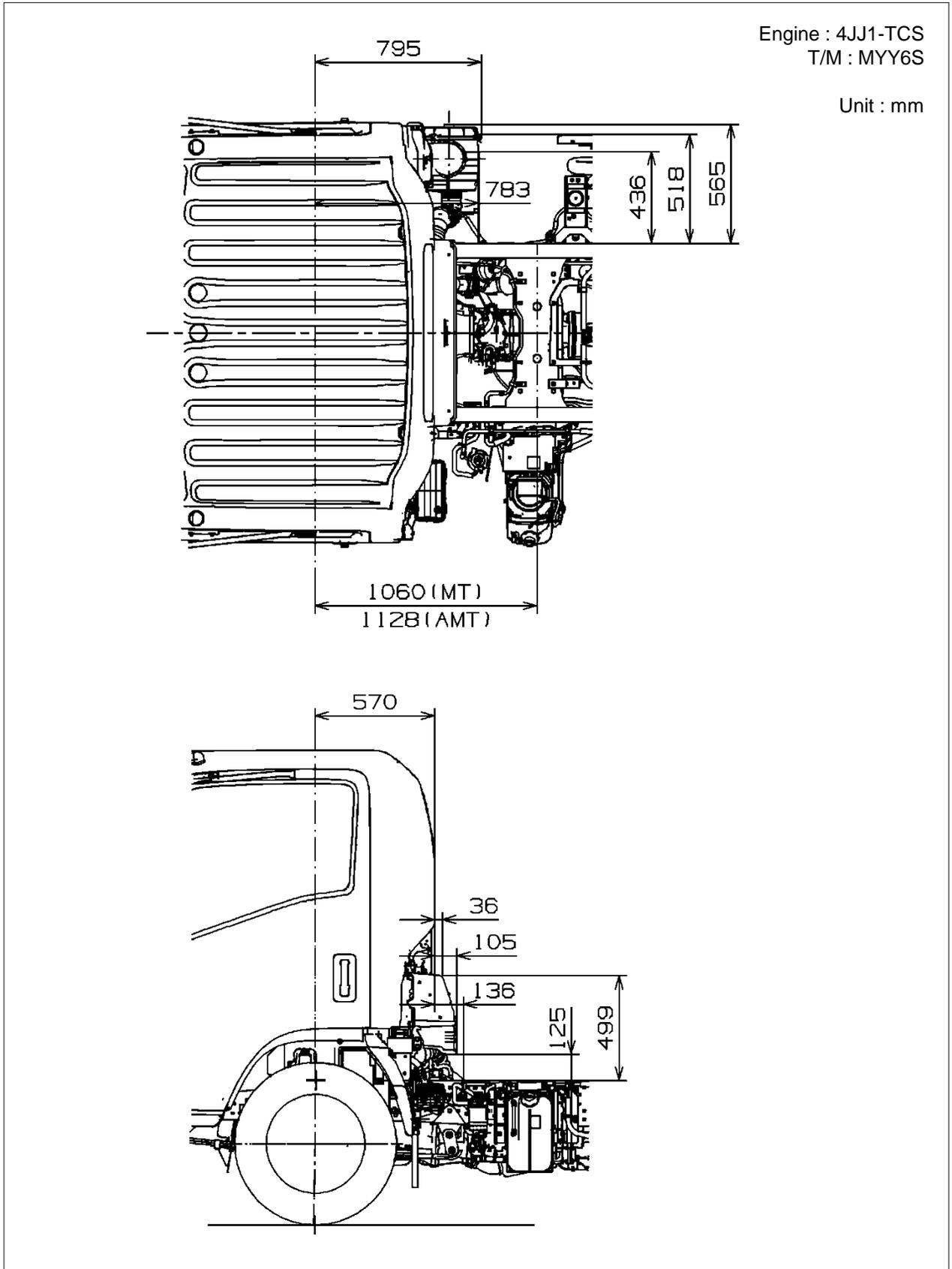


Fig.9-2-13 NPR75L/U-HL/KL/ML(Single cab) <Euro VI>

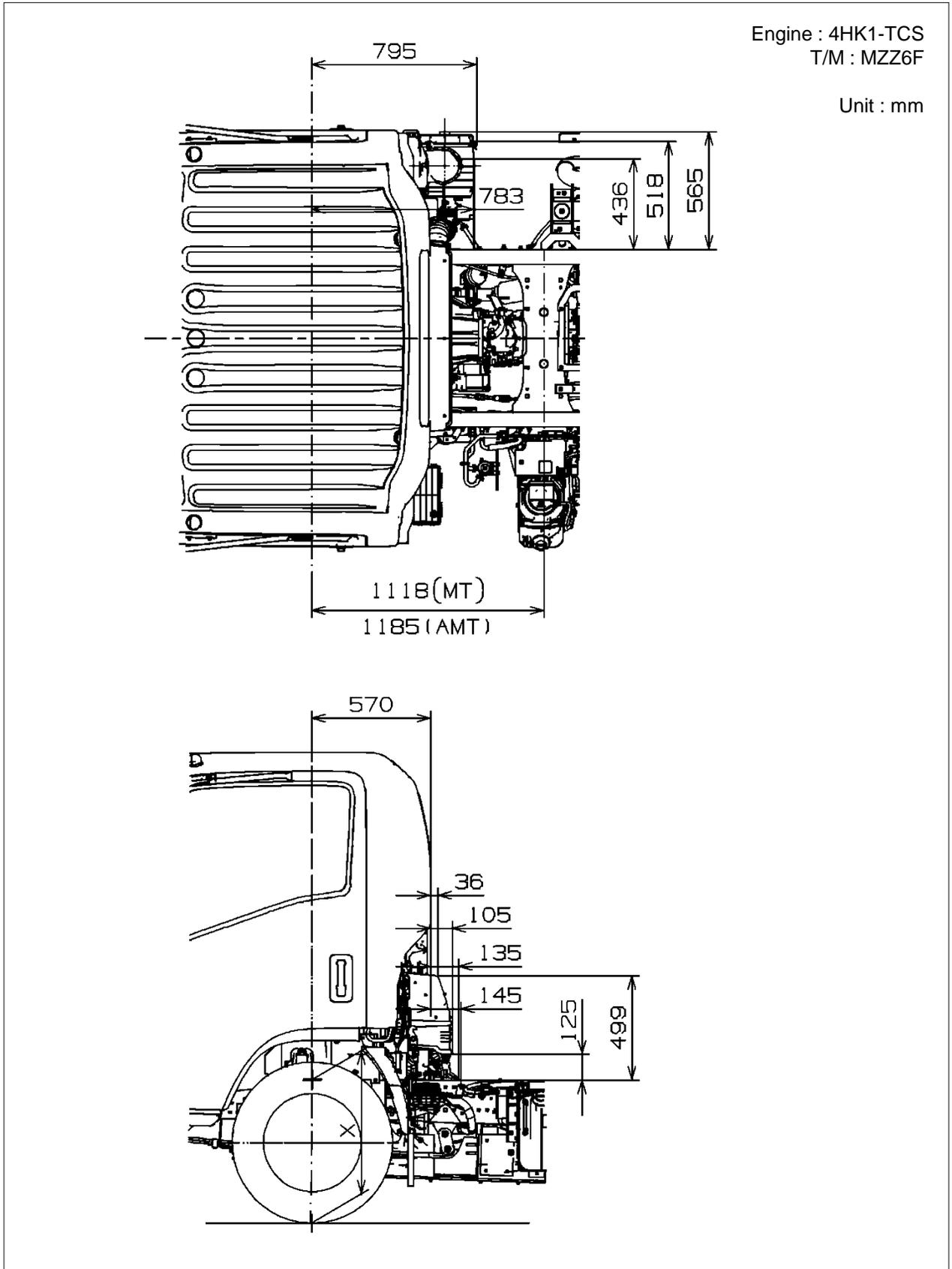
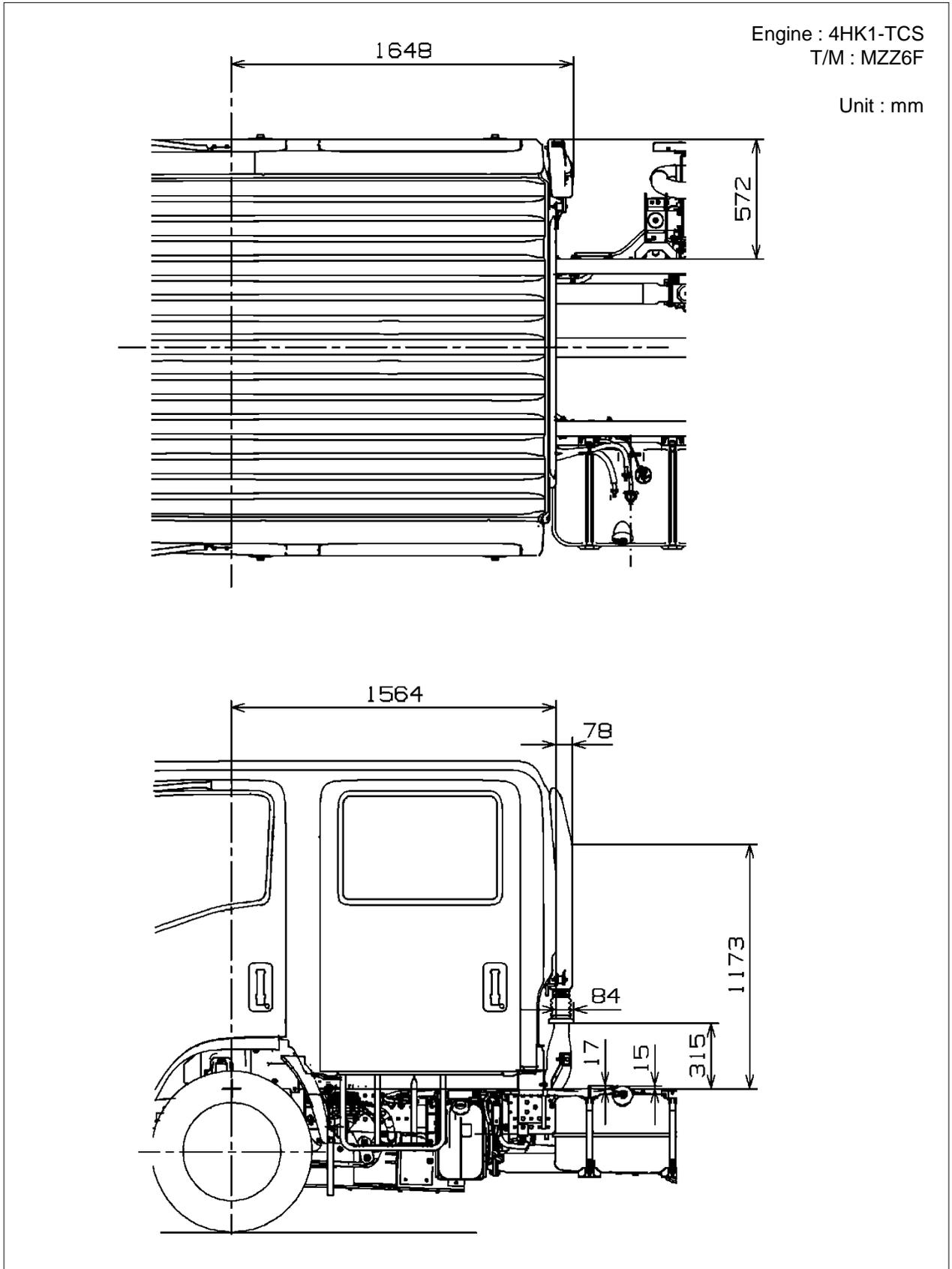


Fig.9-2-14 NPR75L/U-ML(Crew cab) <Euro VI>



## **Chapter 10 CHASSIS FRAME DRAWINGS**

### **10.1. CHASSIS FRAME DRAWINGS**

### **10.2. DETAILED DRAWINGS OF CROSS MEMBERS**

## 10.1. CHASSIS FRAME DRAWINGS

### Euro5b+

No.	Vehicle model	HANDLE		Drawing
		LHD	RHD	
1	NLR85AL/AU-ED1AYEN	○	○	Fig.10-1-1
2	NLR85AL-ED5AYEN	○		Fig.10-1-2
3	NLR85AL-HD5AYEN	○		Fig.10-1-3
4	NLR85L/U-ED5AYEN	○	○	Fig.10-1-4
5	NLR85L/U-HD5AYEN	○	○	Fig.10-1-5
6	NLR85L/U-HD5WYEN	○	○	Fig.10-1-6
7	NMR85L/U-EH5AYEN	○	○	Fig.10-1-7
8	NMR85L/U-HH5AYEN	○	○	Fig.10-1-8
9	NNR85L/U-FD5AYEN	○	○	Fig.10-1-9
10	NNR85L/U-HD5AYEN	○	○	Fig.10-1-10
11	NNR85L-HD5WYEN	○		Fig.10-1-11

### EuroVI

No.	Vehicle model	HANDLE		Drawing
		LHD	RHD	
1	NLR85AL-HD5AYE	○		Fig.10-1-12
2	NLR85L/U-HD5AYE	○	○	Fig.10-1-13
3	NMR85L/U-HH5AYE	○	○	Fig.10-1-14
4	NNR85L/U-HD5AYE	○	○	Fig.10-1-15
5	NPR85L/U-HH5AYE	○	○	Fig.10-1-16
6	NPR85L/U-HJ5AYE			
7	NPR85L/U-HL5VAYE	○	○	Fig.10-1-17
8	NPR85L/U-KJ5AYE	○	○	Fig.10-1-18
9	NPR85L/U-KL5VAYE	○	○	Fig.10-1-19
10	NPR85L/U-ML5VAYE	○	○	Fig.10-1-20
11	NPR75L/U-HL5VAYE	○	○	Fig.10-1-21
12	NPR75L/U-KL5VAYE	○	○	Fig.10-1-22
13	NPR75L/U-ML5VAYE	○	○	Fig.10-1-23
14	NPR75L/U-ML5VWYE	○	○	Fig.10-1-24

Fig. 10-1-1 Chassis Frame Drawing NLR85AL/AU-ED1AYEN

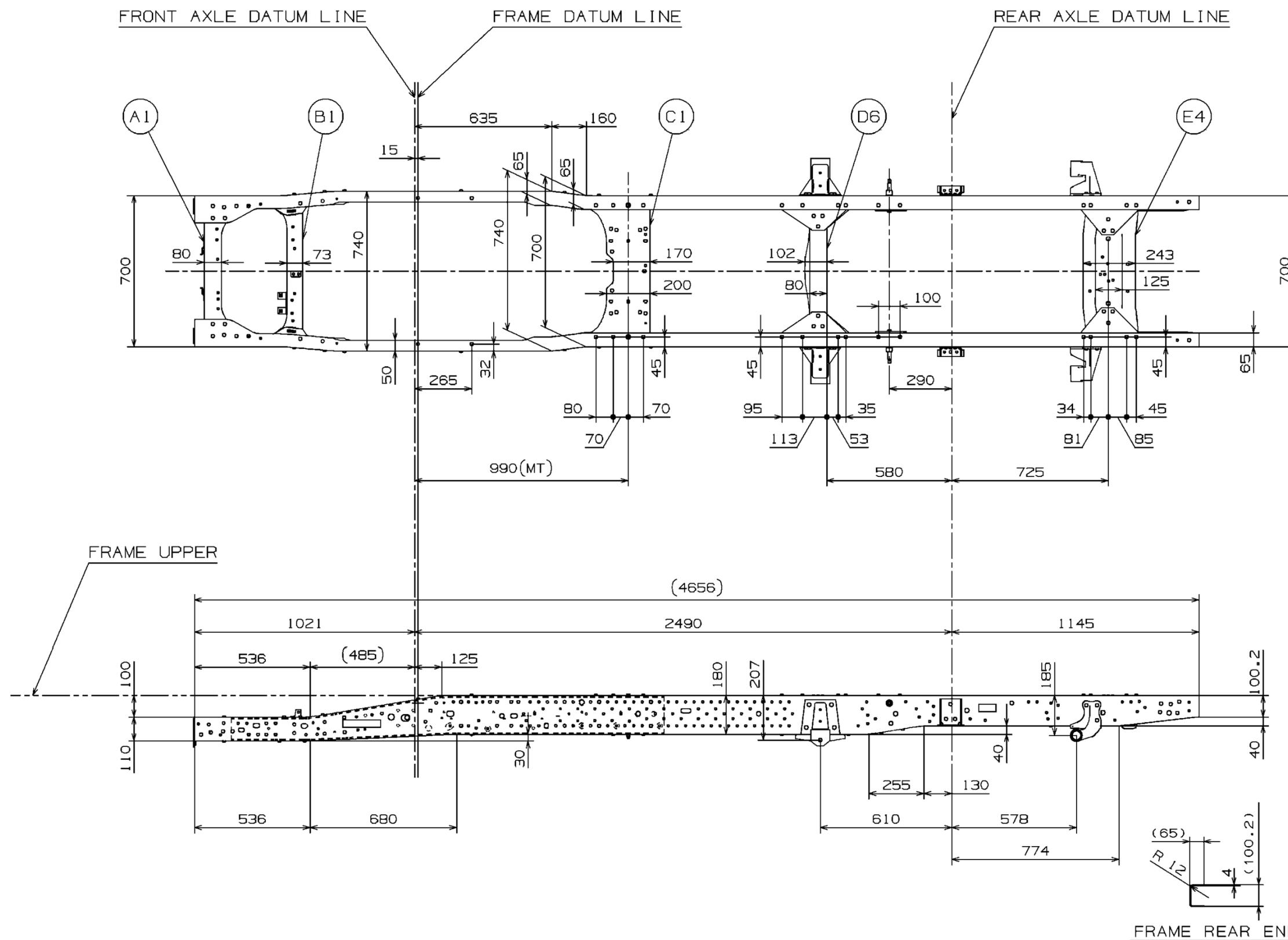


Fig. 10-1-2 Chassis Frame Drawing NLR85AL-ED5AYEN

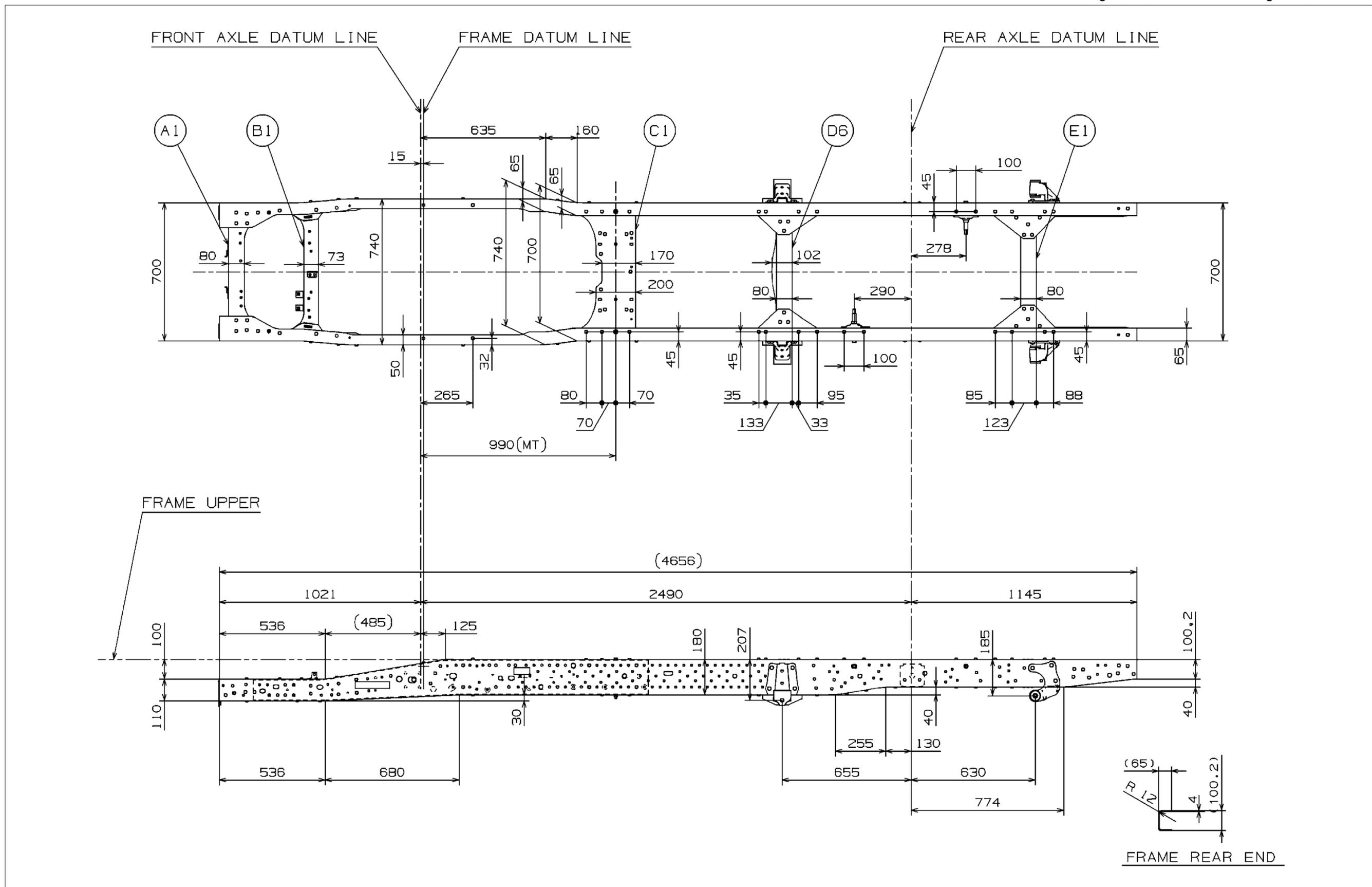




Fig. 10-1-4 Chassis Frame Drawing NLR85L/U-ED5AYEN

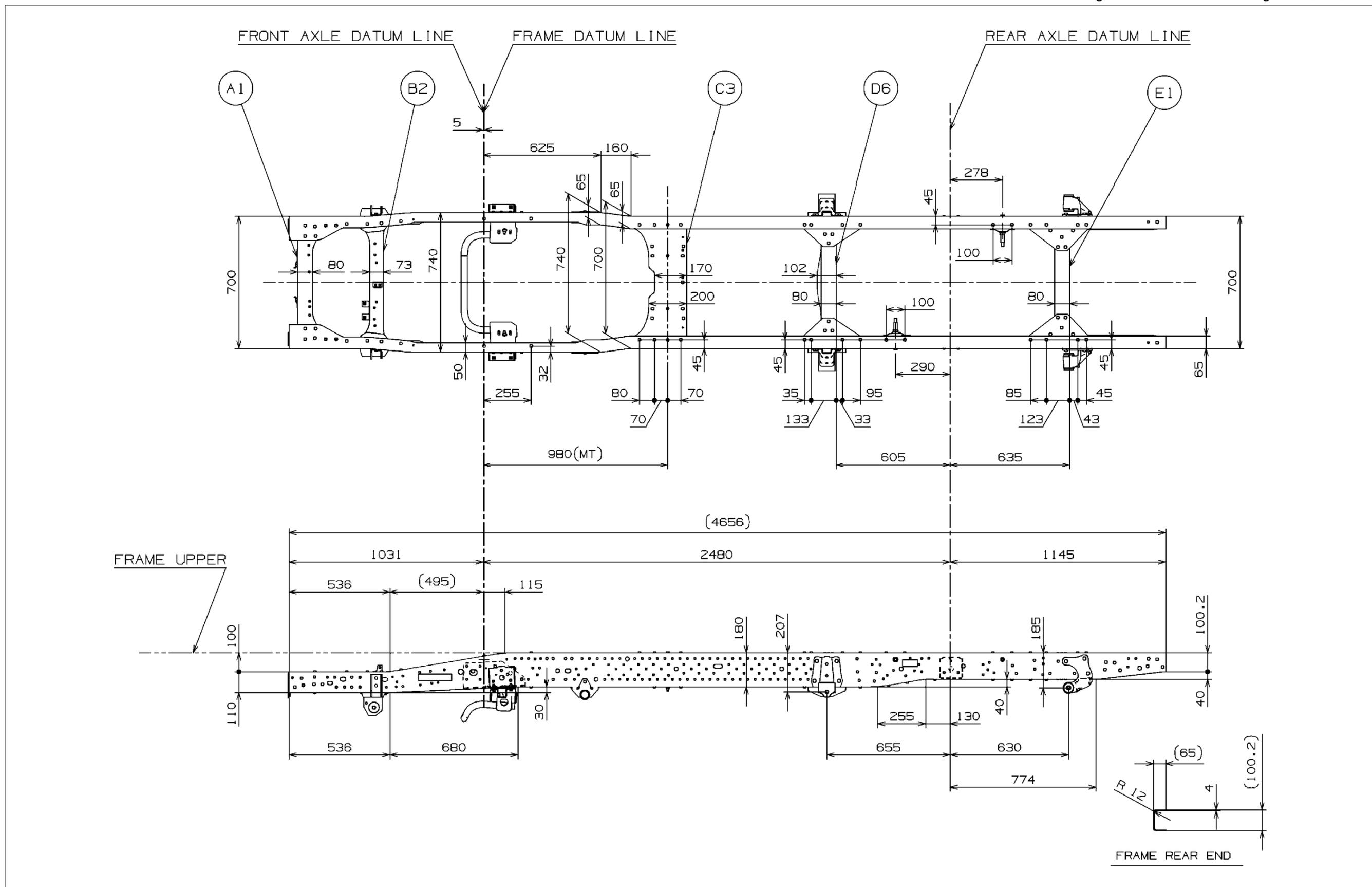


Fig. 10-1-5 Chassis Frame Drawing NLR85L/U-HD5AYEN

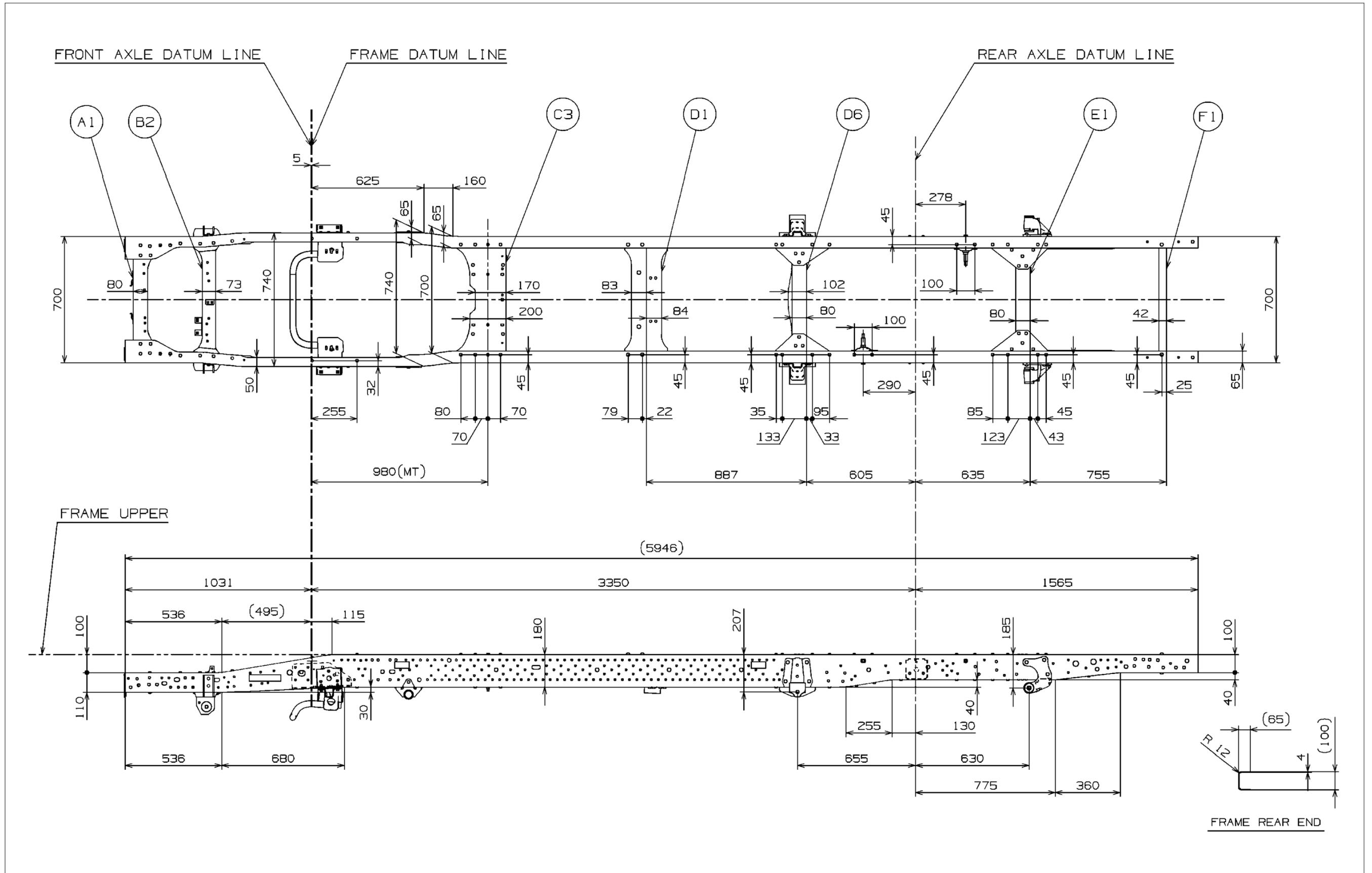


Fig. 10-1-6 Chassis Frame Drawing NLR85L/U-HD5WYEN

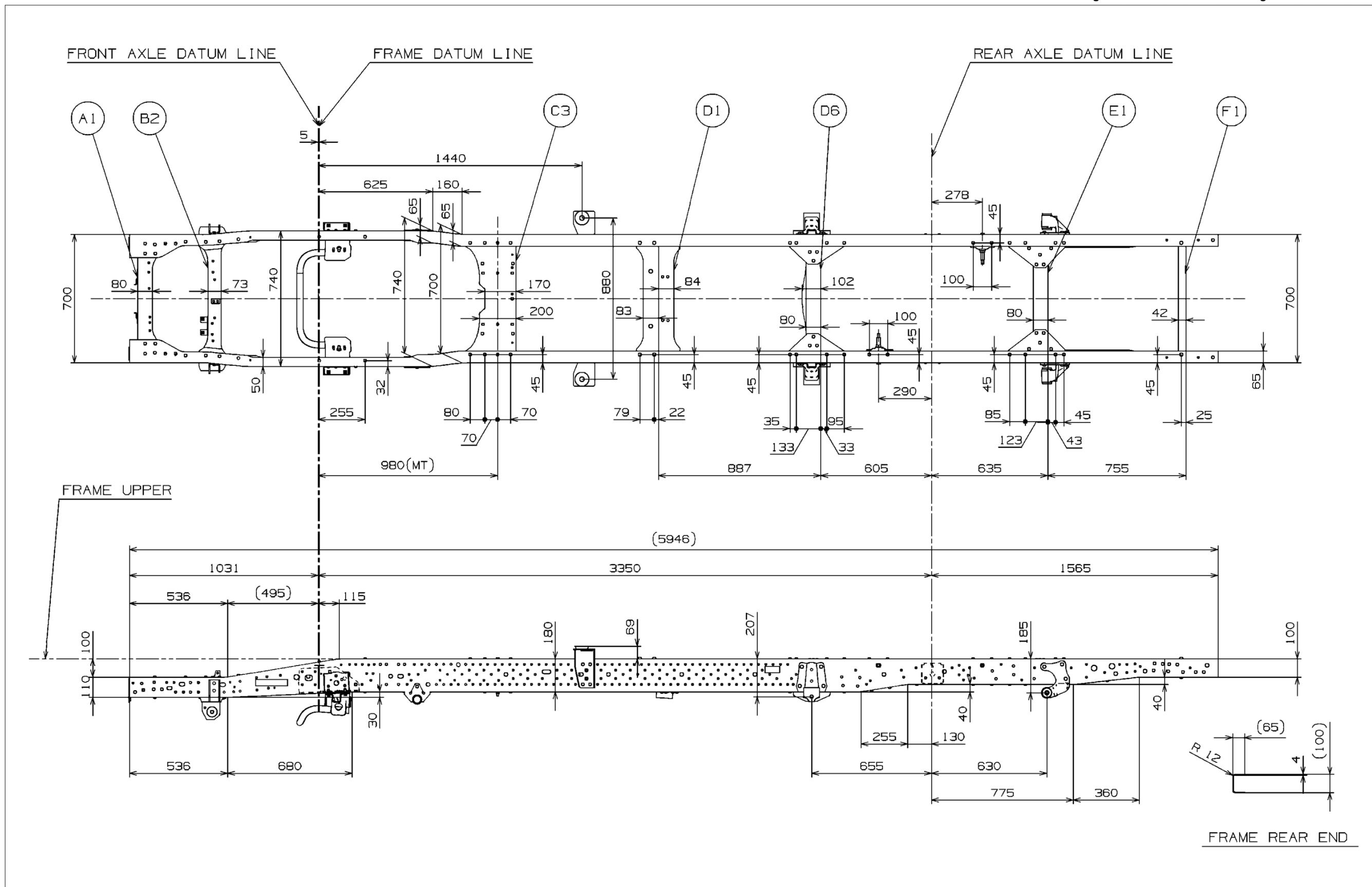


Fig. 10-1-7 Chassis Frame Drawing NMR85L/U-EH5AYEN

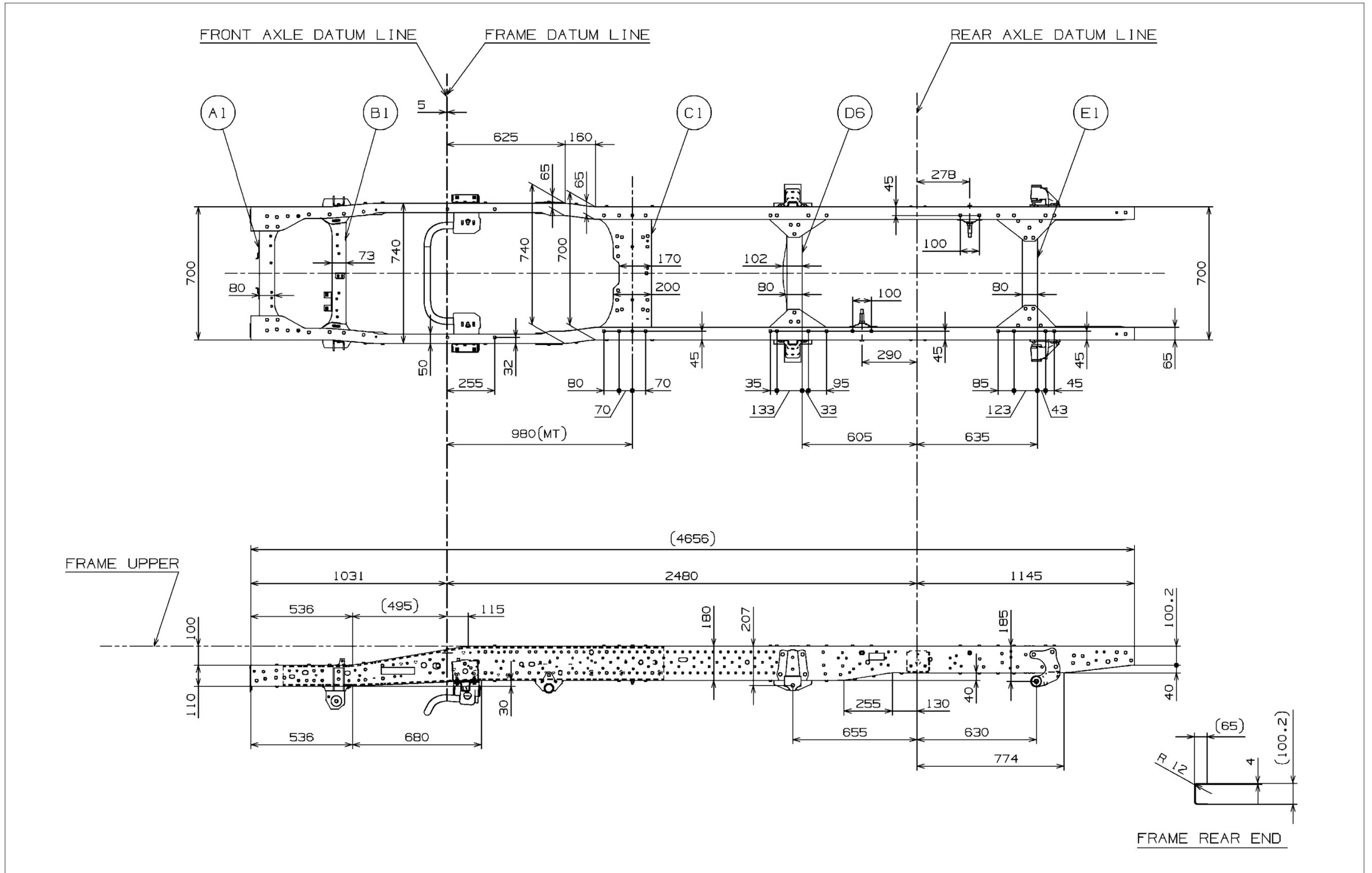


Fig. 10-1-8 Chassis Frame Drawing NMR85L/U-HH5AYEN

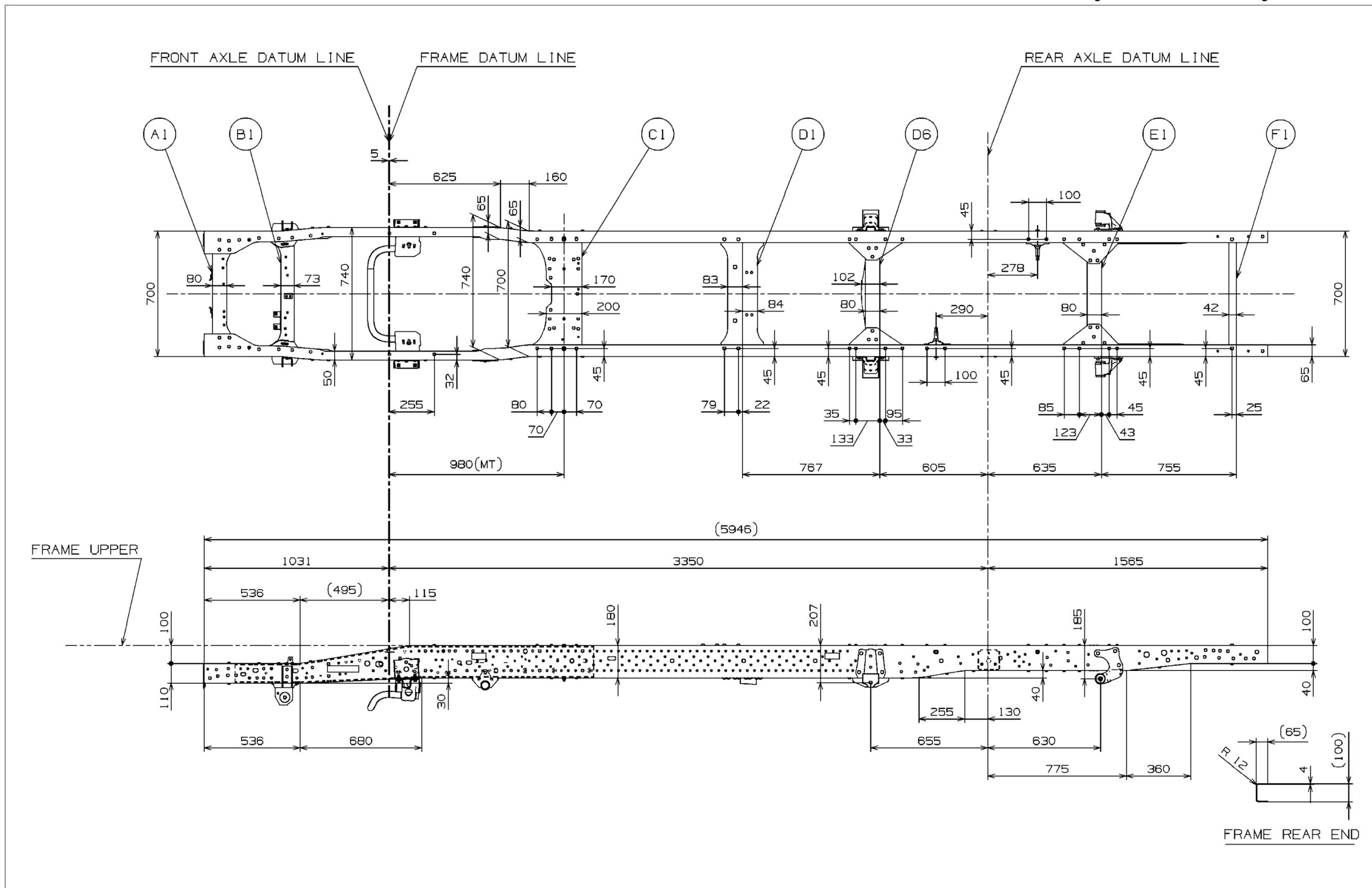


Fig. 10-1-9 Chassis Frame Drawing NNR85L/U-FD5AYEN

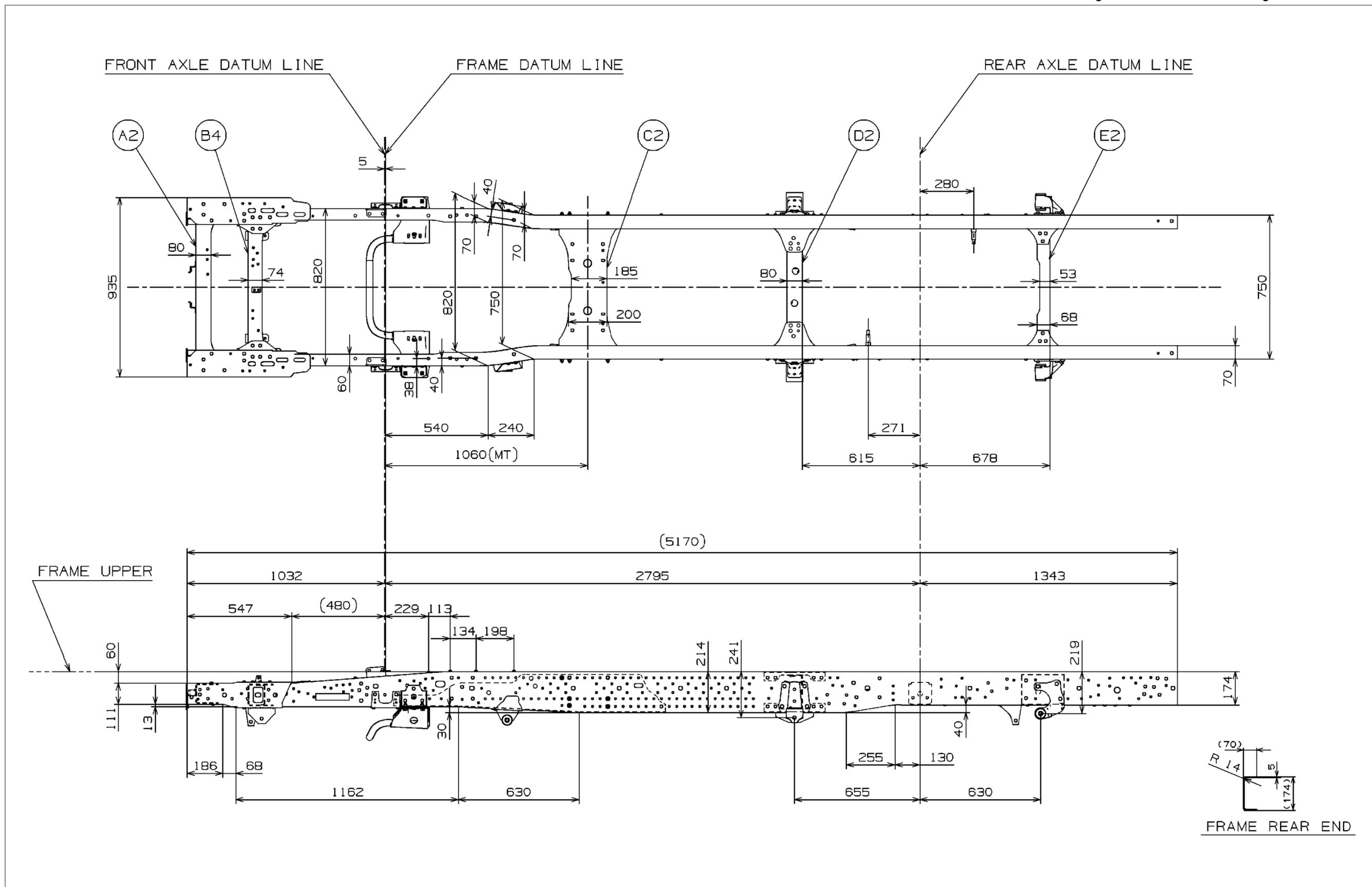


Fig. 10-1-10 Chassis Frame Drawing NNR85L/U-HD5AYEN

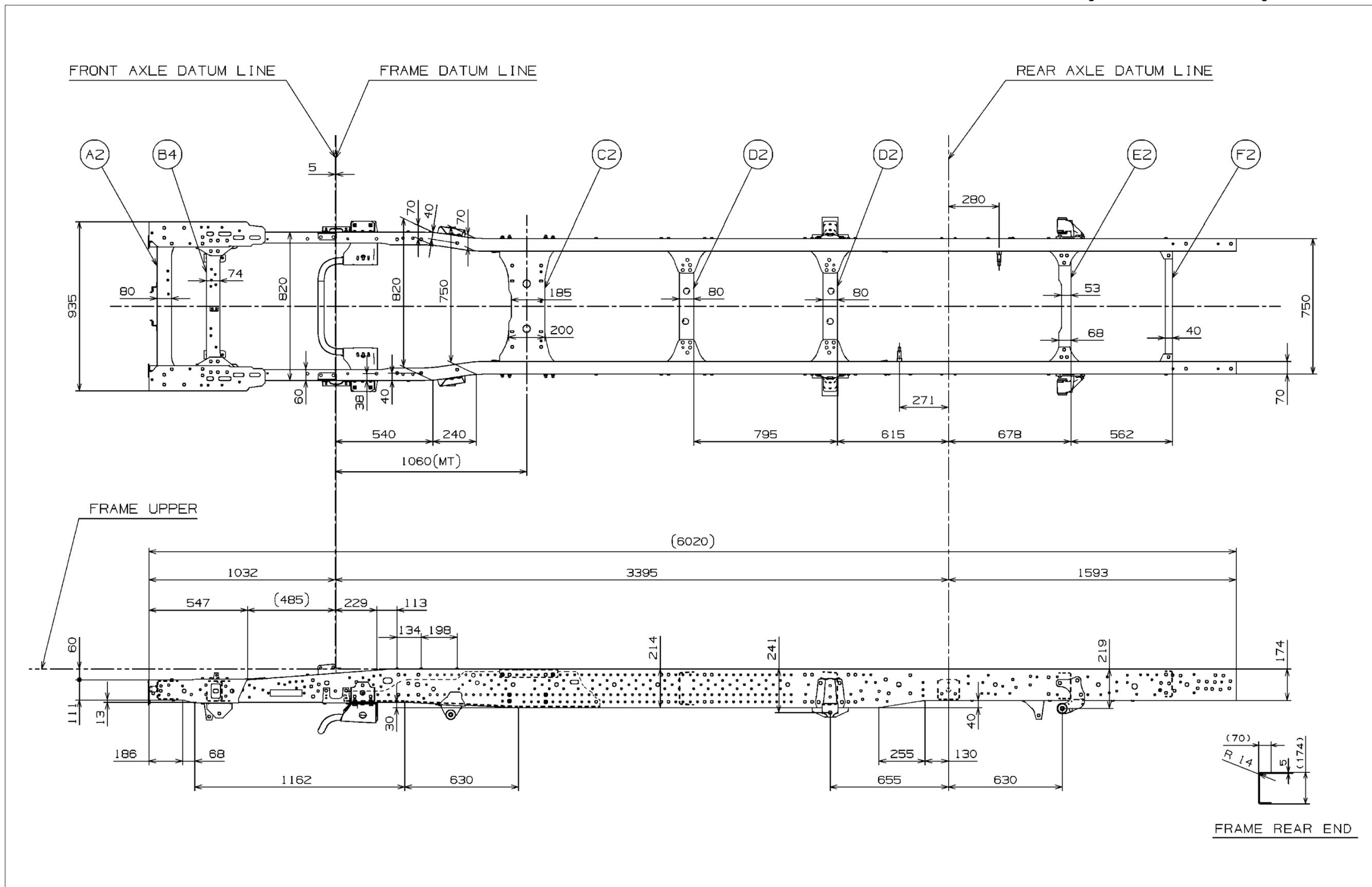


Fig. 10-1-11 Chassis Frame Drawing NNR85L-HD5WYEN

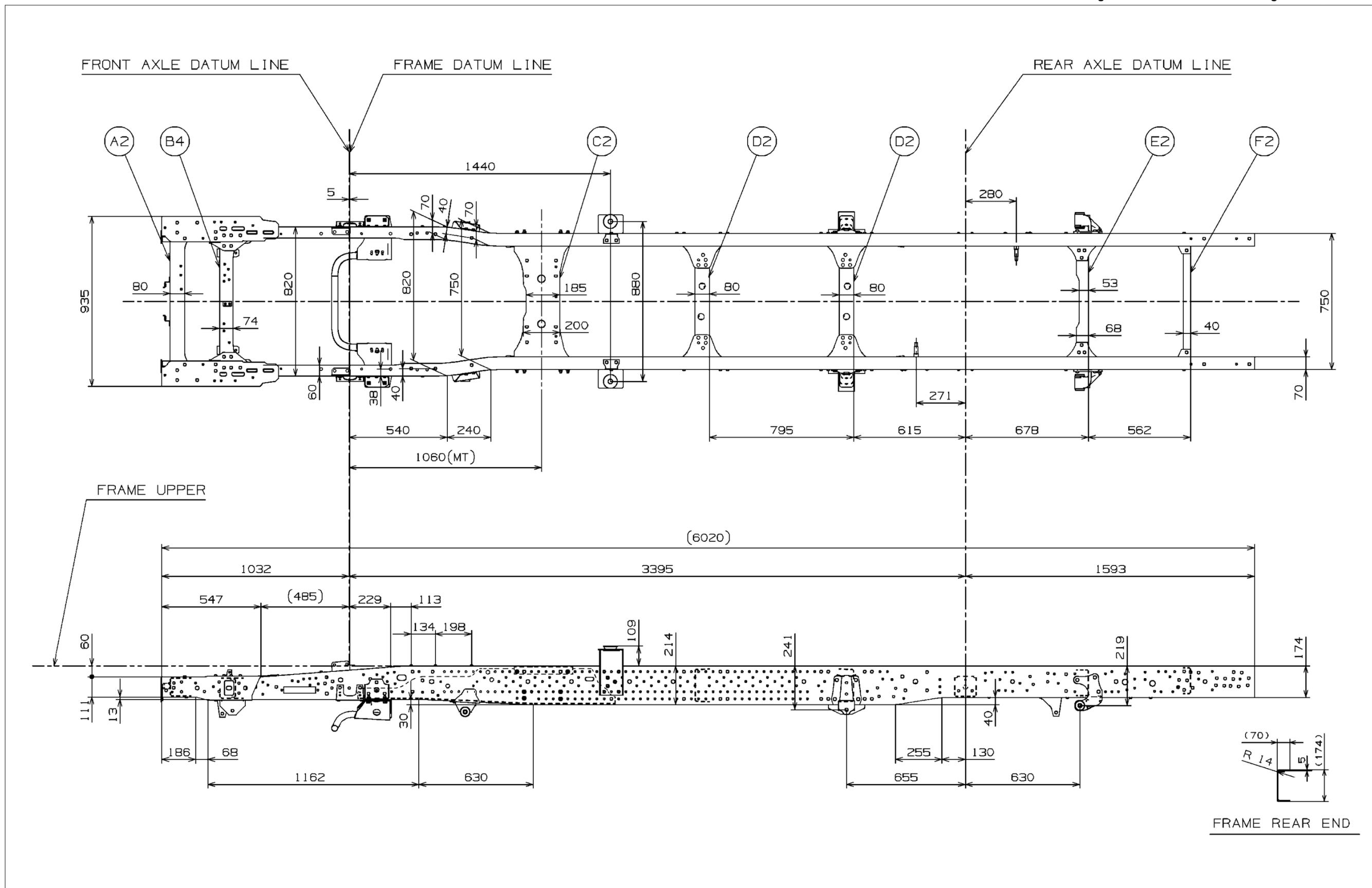


Fig. 10-1-12 Chassis Frame Drawing NLR85AL-HD5AYE

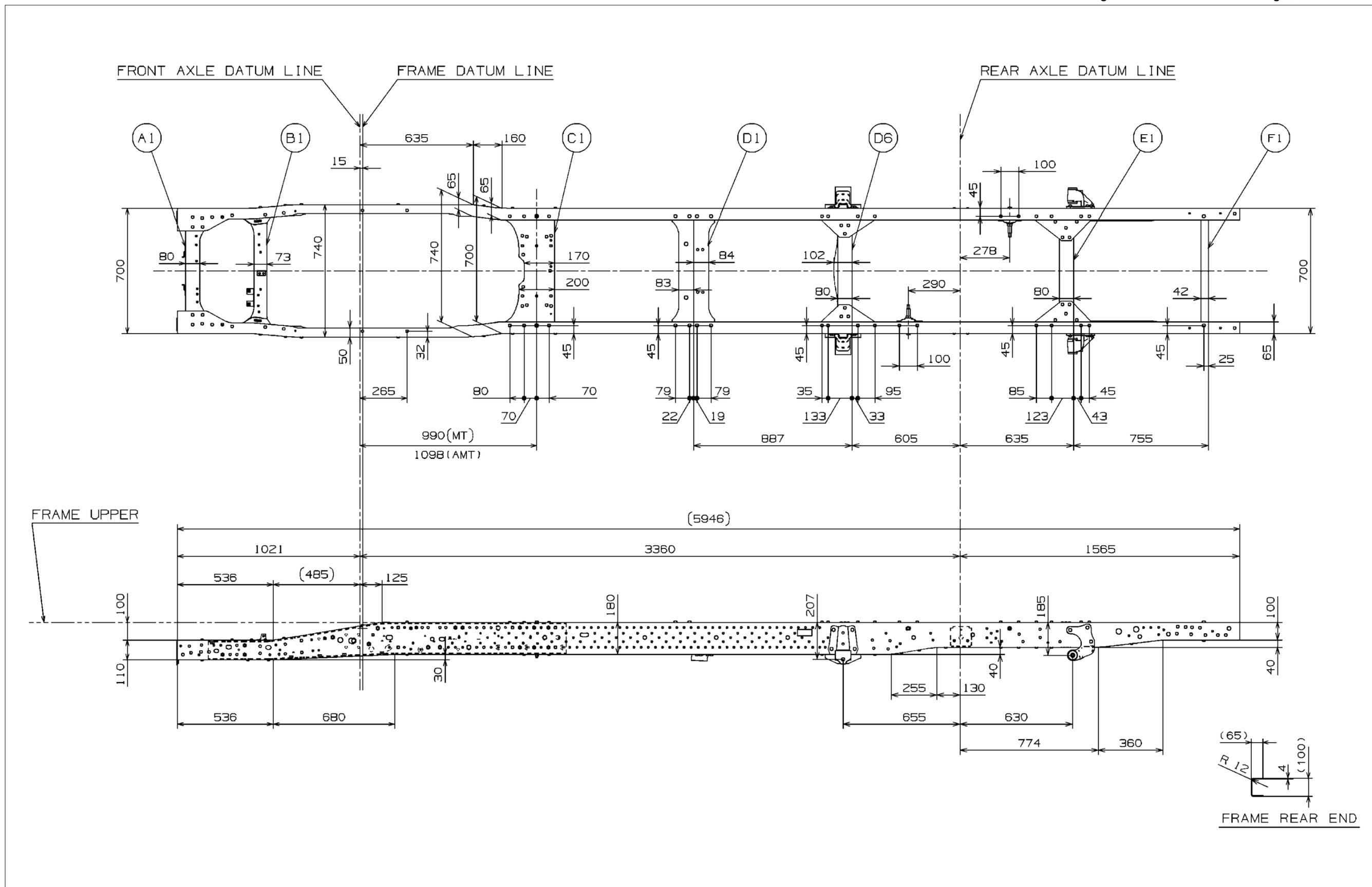




Fig. 10-1-14 Chassis Frame Drawing NMR85L/U-HH5AYE

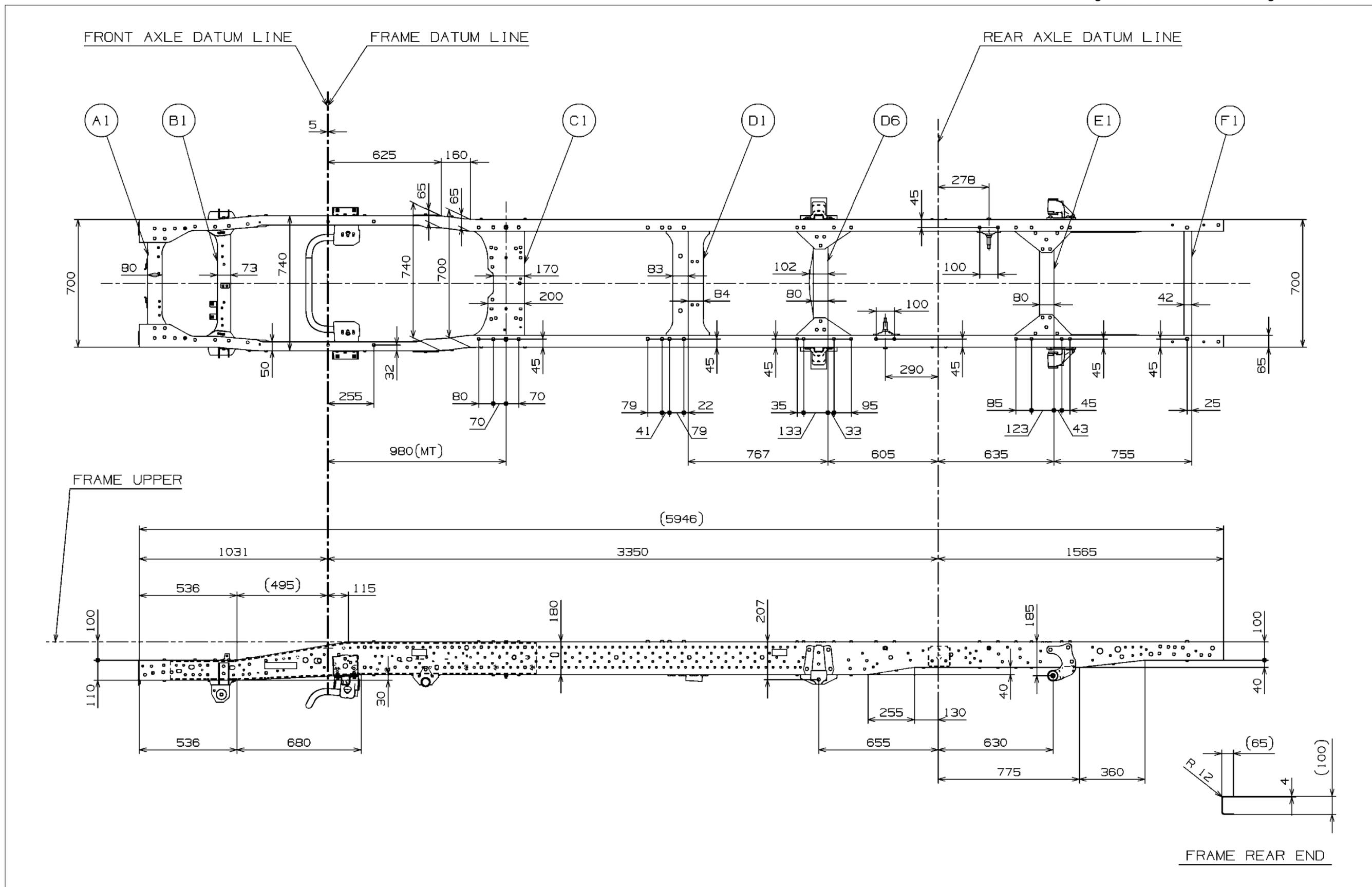


Fig. 10-1-15 Chassis Frame Drawing NNR85L/U-HD5AYE

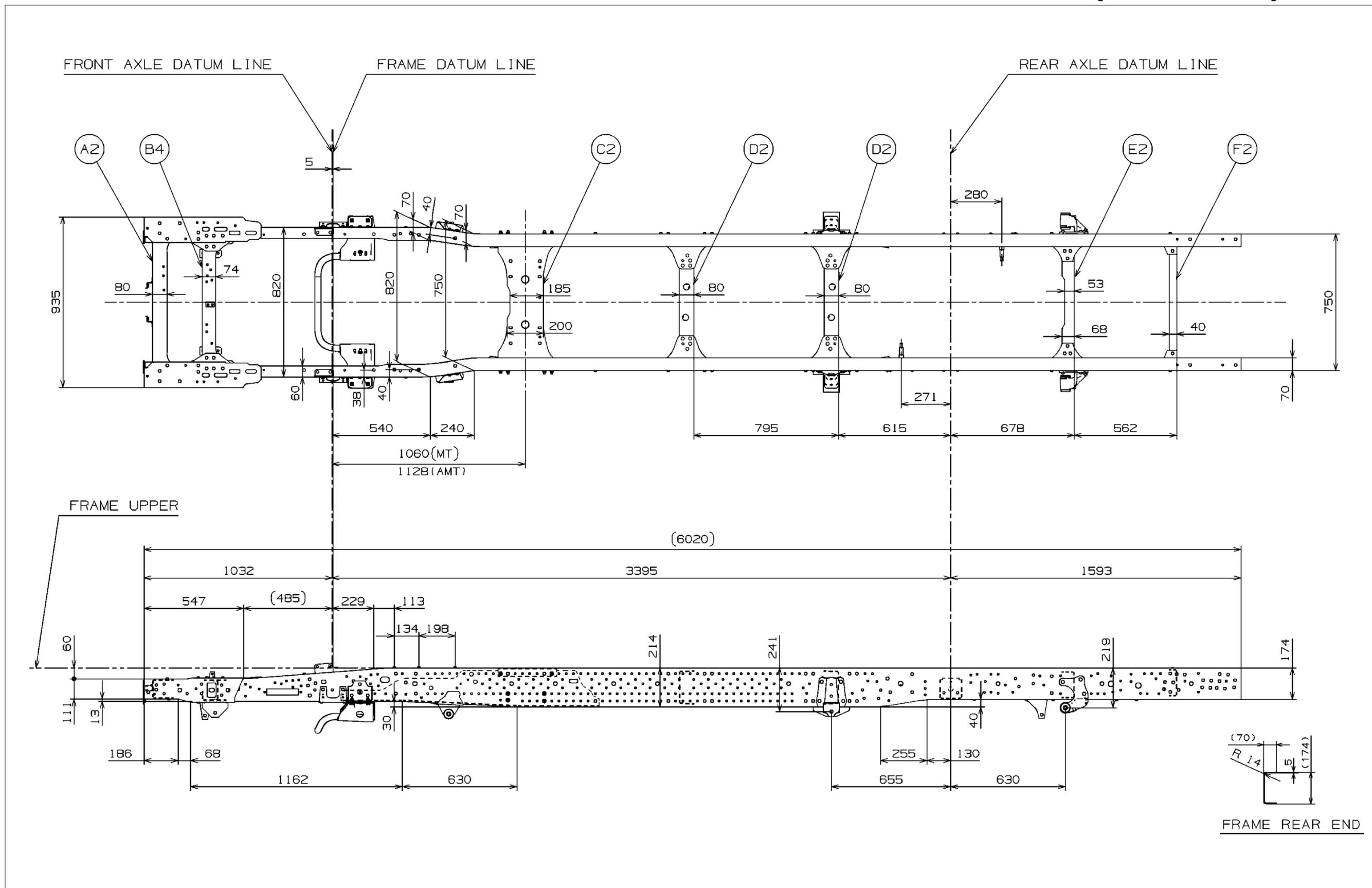


Fig. 10-1-16 Chassis Frame Drawing NPR85L/U-HH5AYE, HJ5AYE

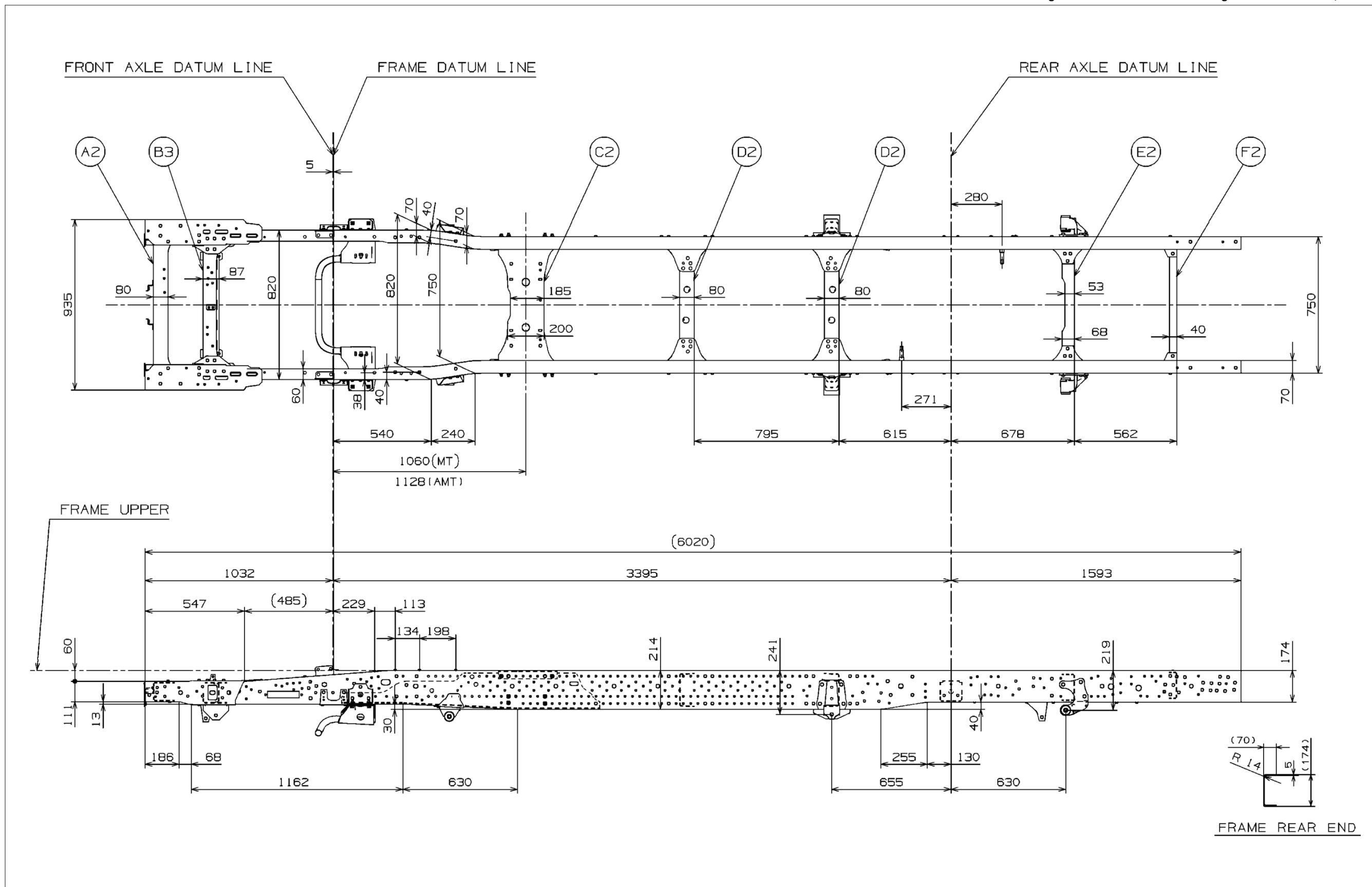


Fig. 10-1-17 Chassis Frame Drawing NPR85L/U-HL5VAYE

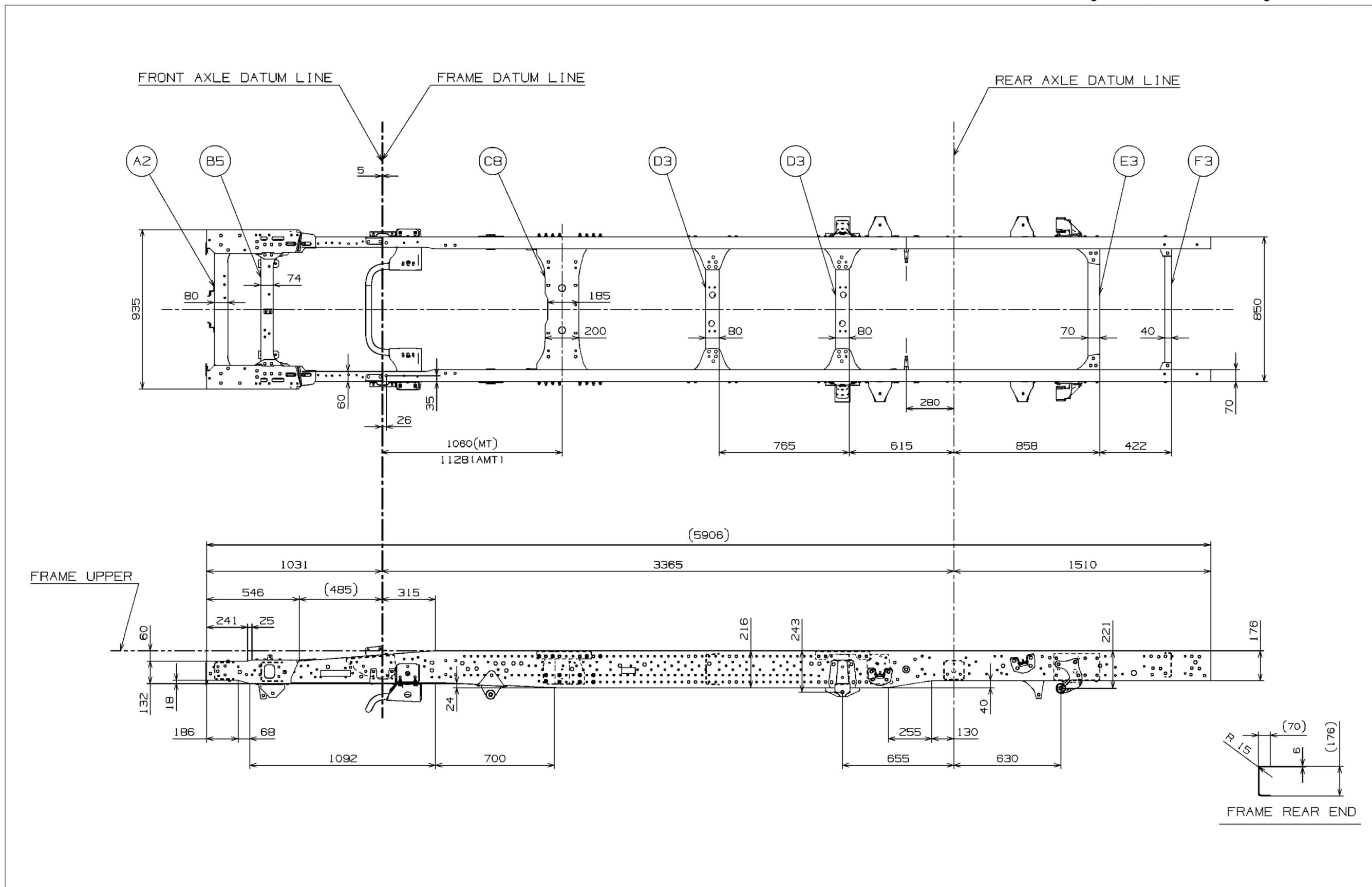




Fig. 10-1-19 Chassis Frame Drawing NPR85L/U-KL5VAYE

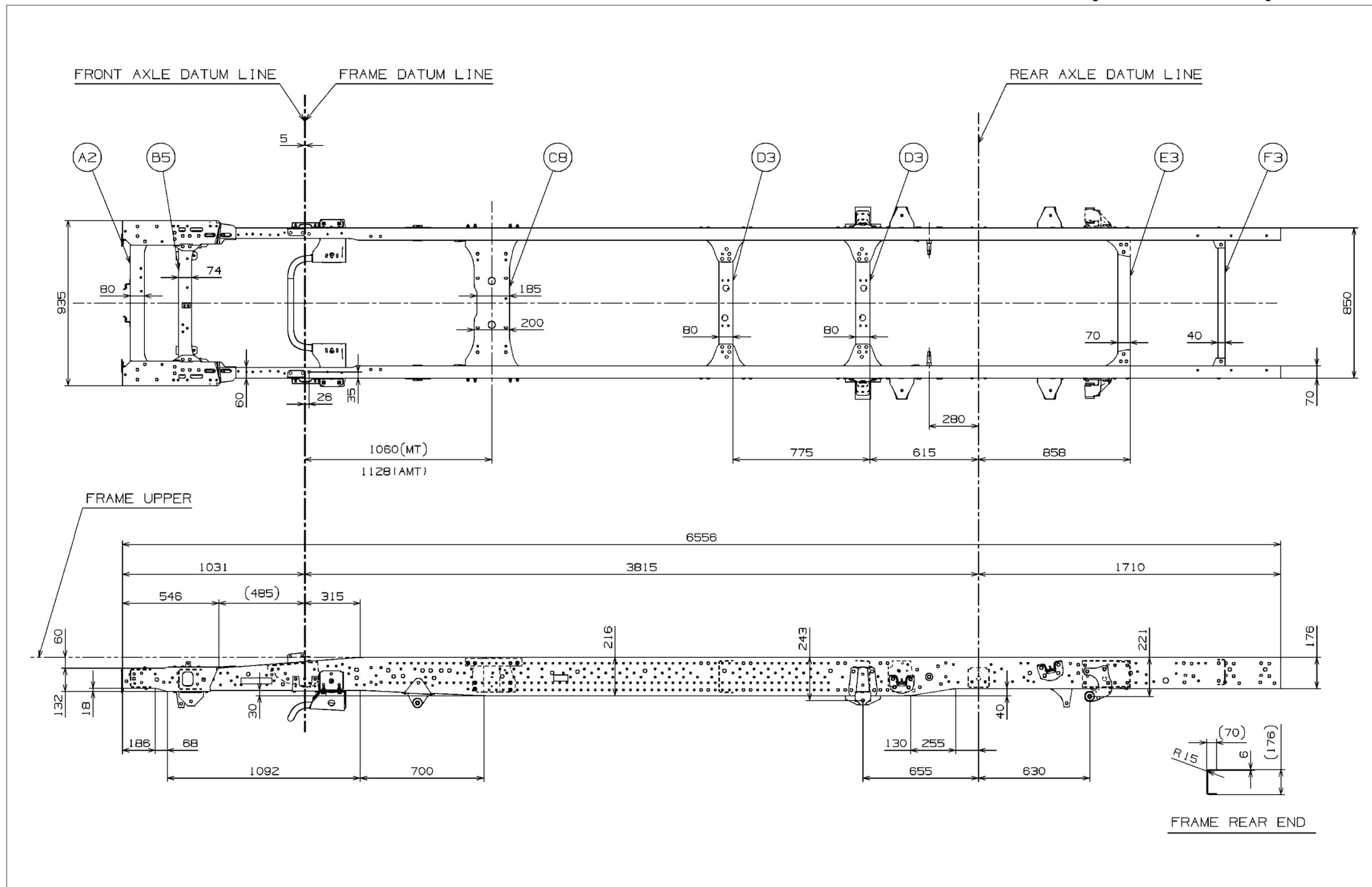


Fig. 10-1-20 Chassis Frame Drawing NPR85L/U-ML5VAYE

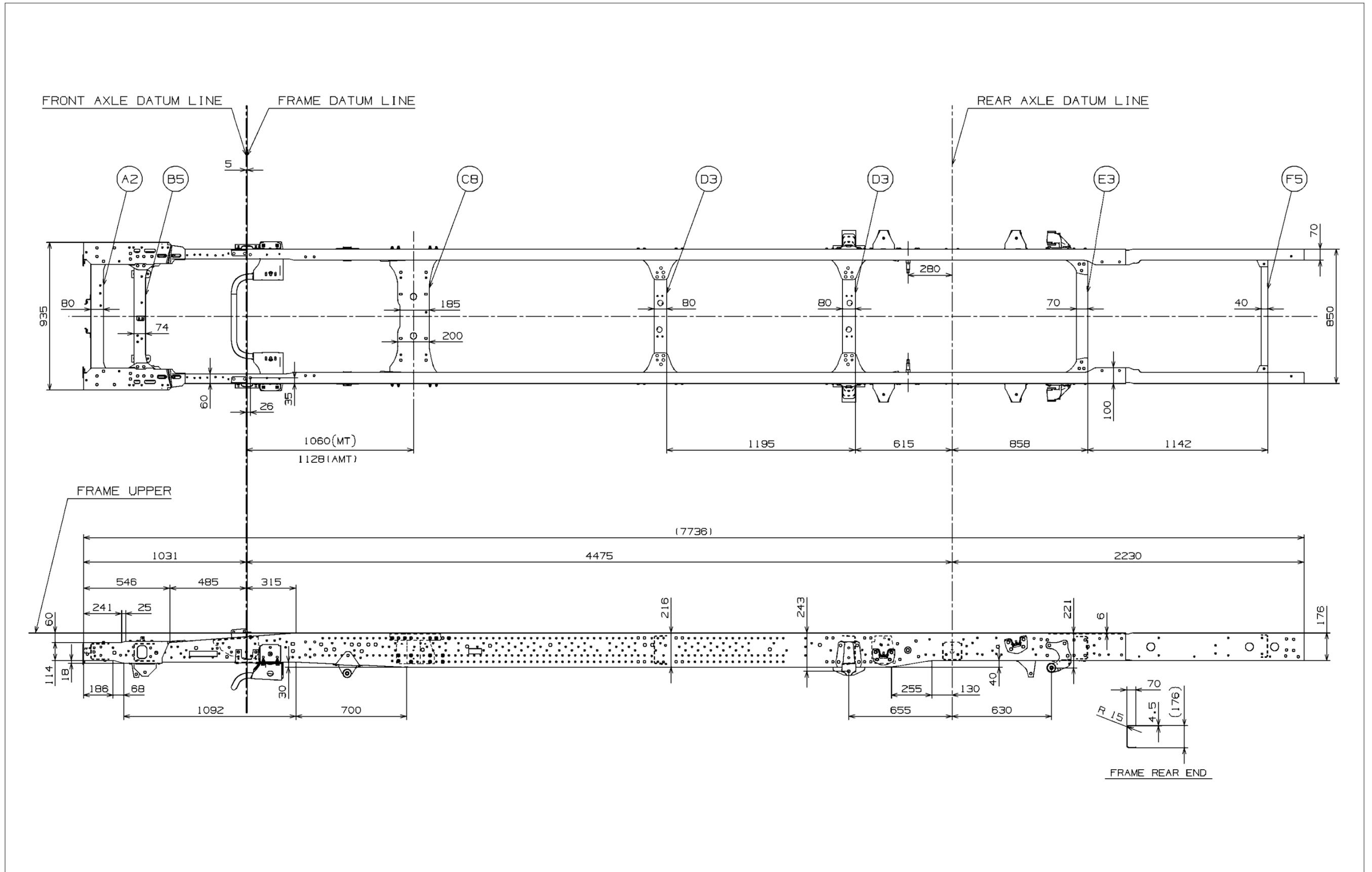


Fig. 10-1-21 Chassis Frame Drawing NPR75L/U-HL5VAYE

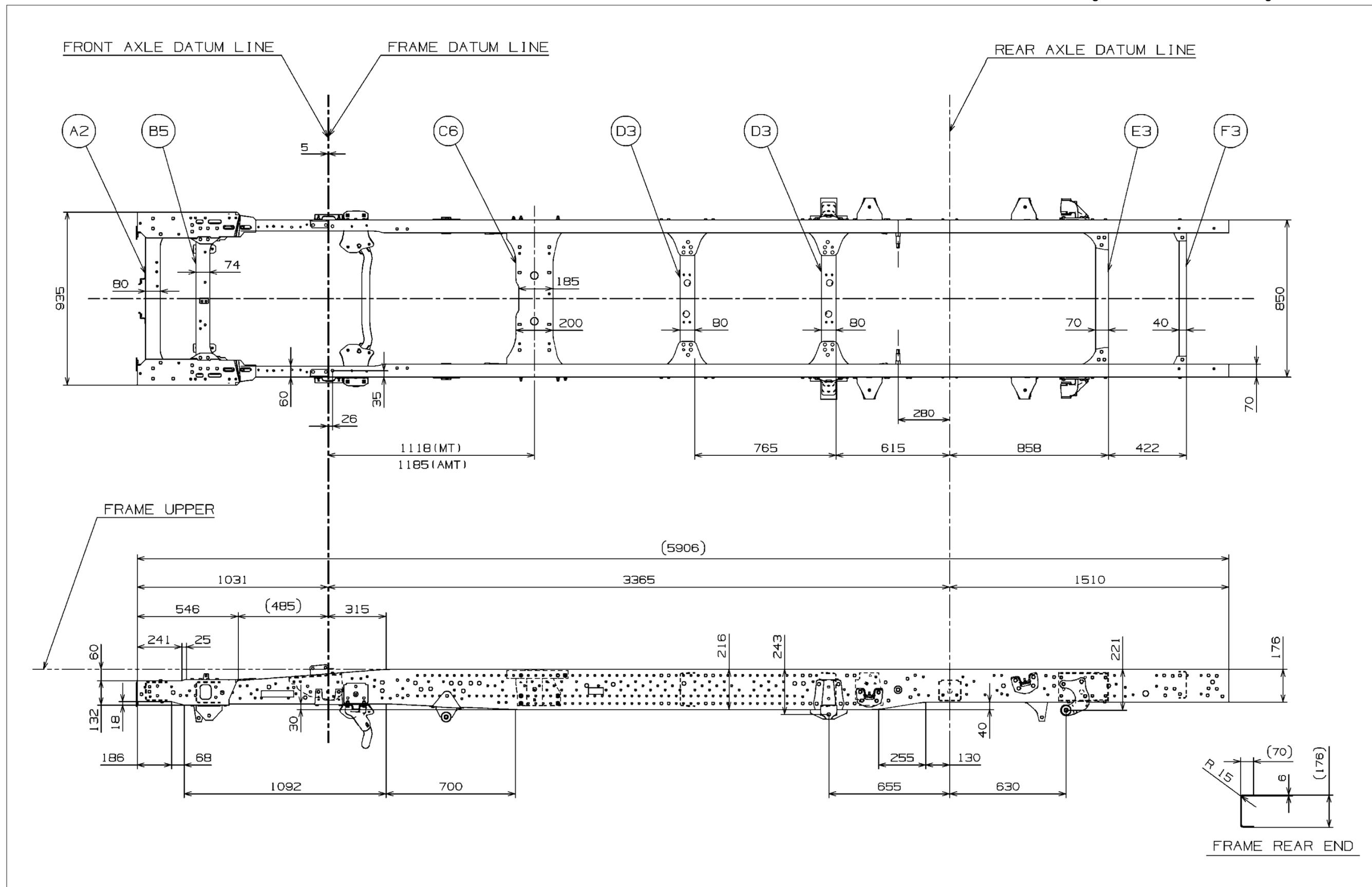


Fig. 10-1-22 Chassis Frame Drawing NPR75L/U-KL5VAYE

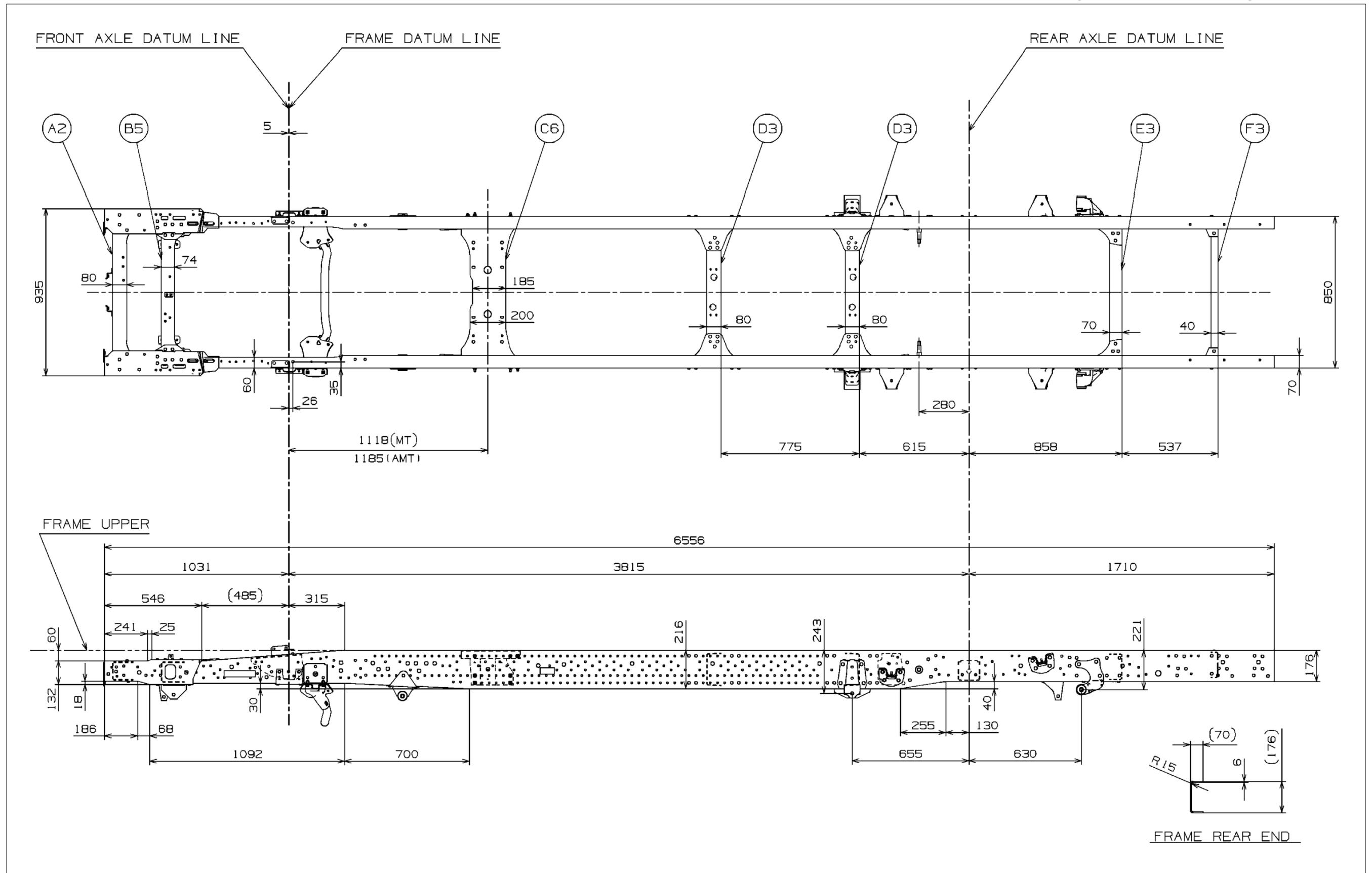


Fig. 10-1-23 Chassis Frame Drawing NPR75L/U-ML5VAYE

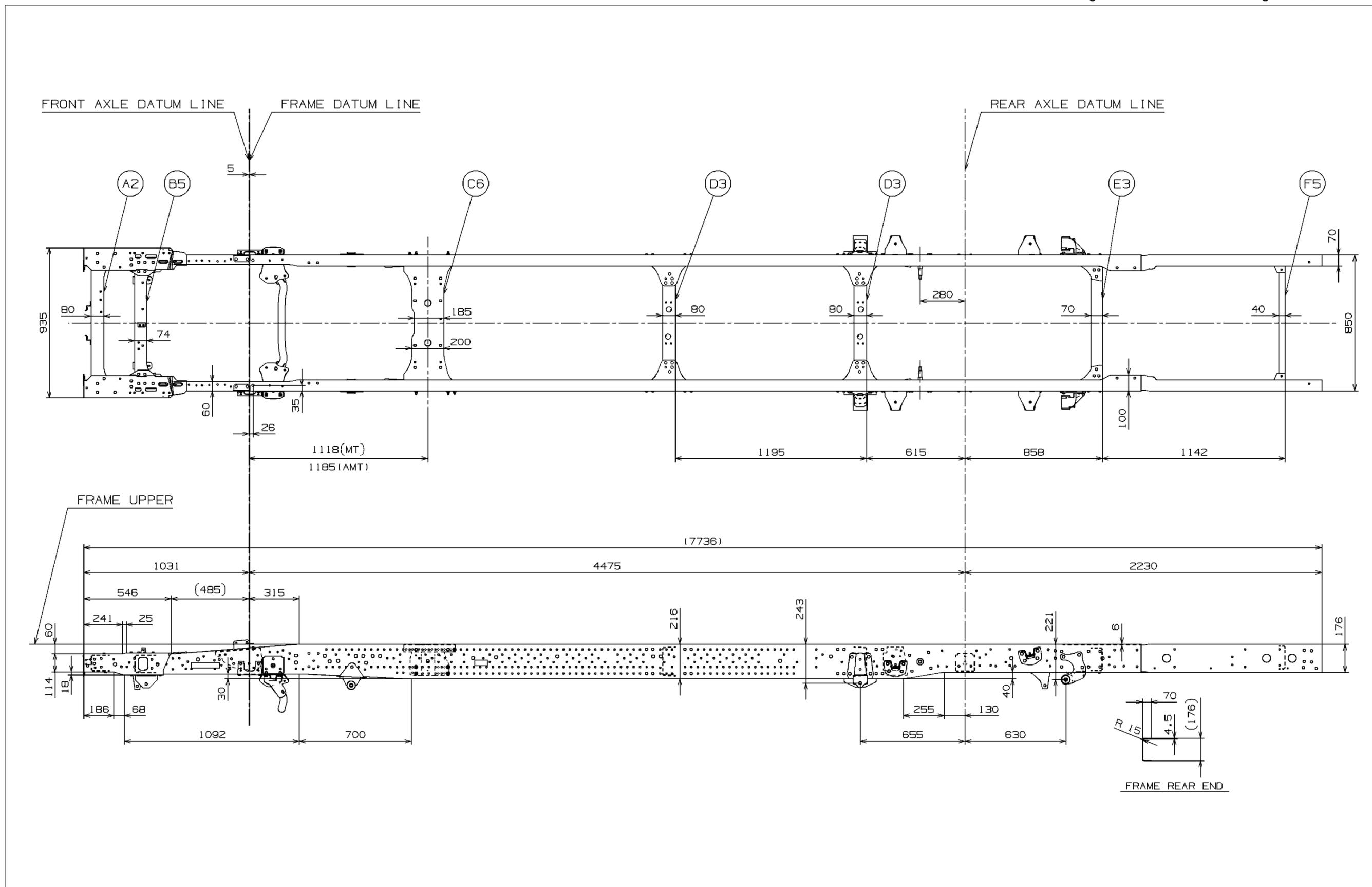
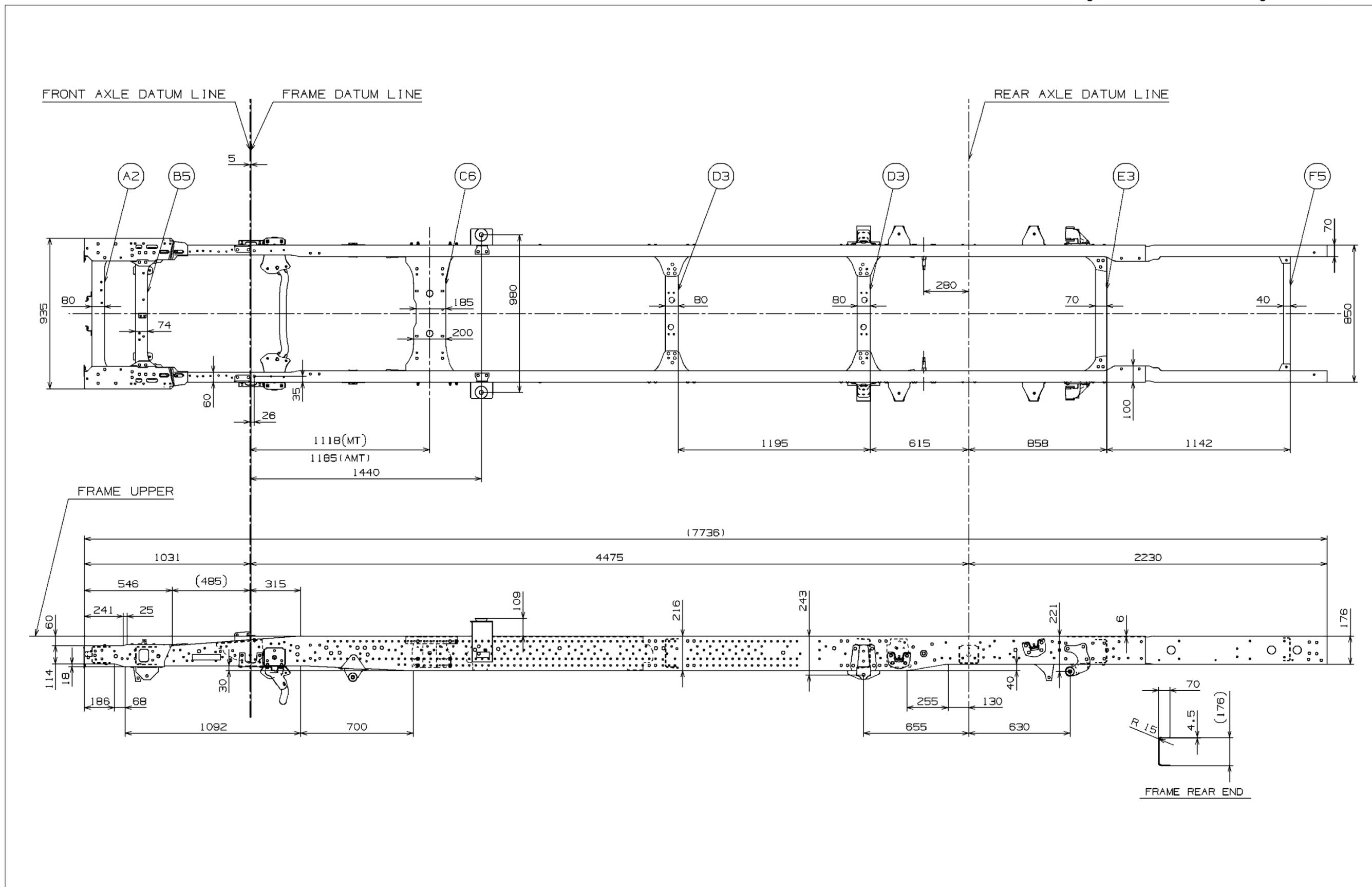
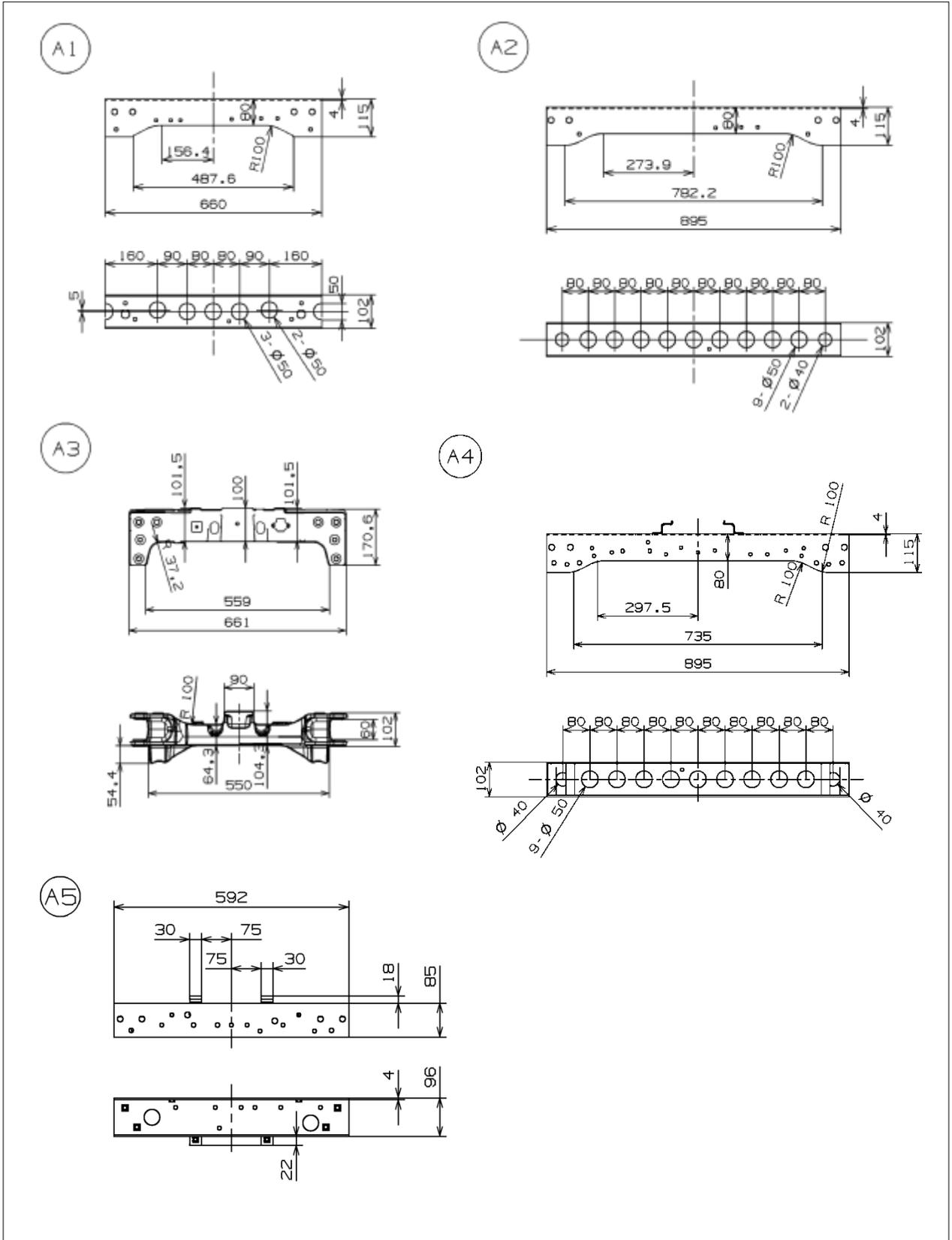
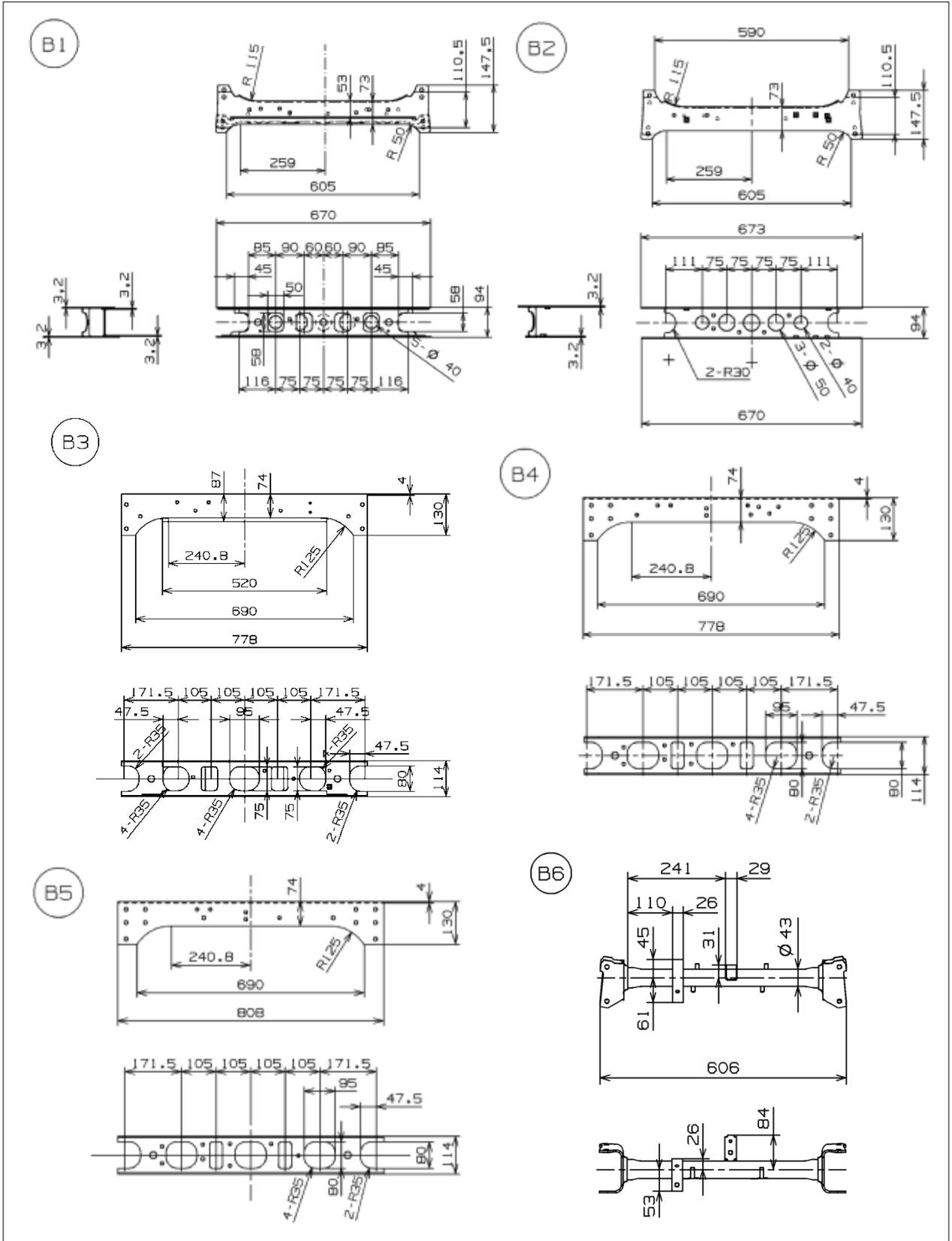


Fig. 10-1-24 Chassis Frame Drawing NPR75L/U-ML5VWYE



10.2. DETAILED DRAWINGS OF CROSS MEMBERS

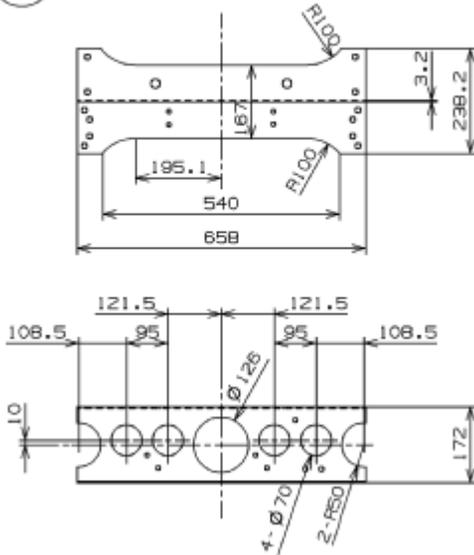




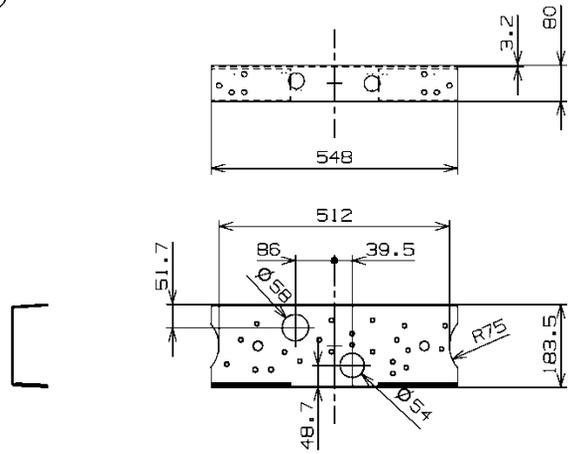




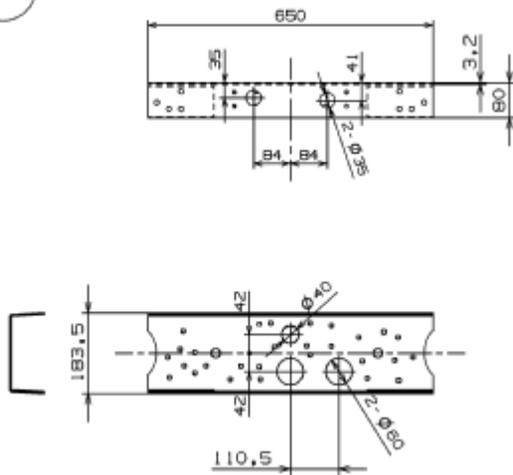
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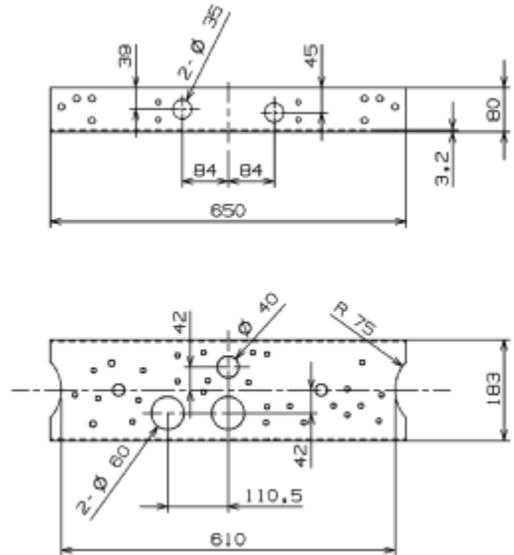
D2



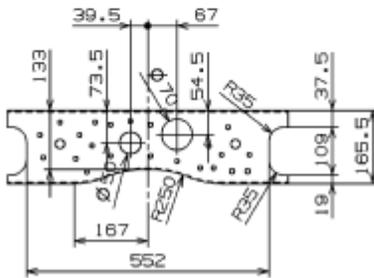
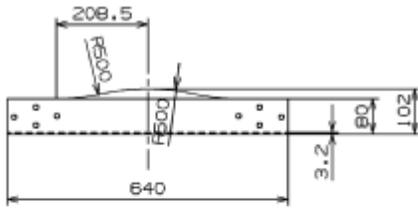
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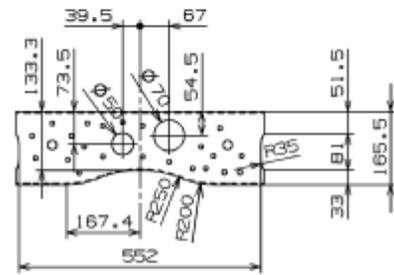
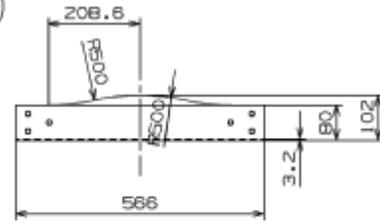
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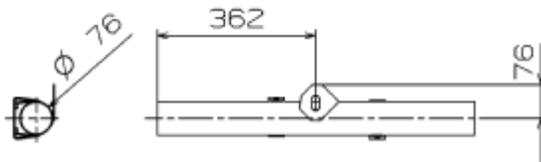
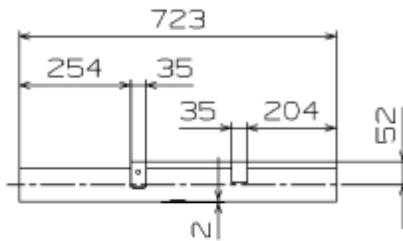
D5



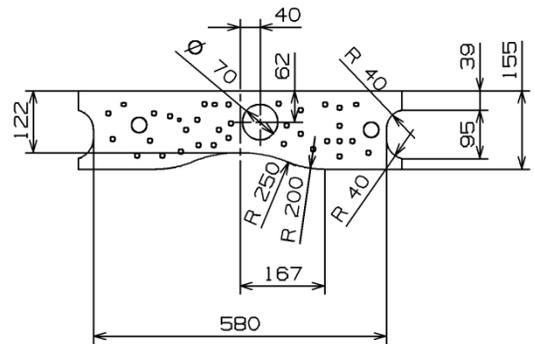
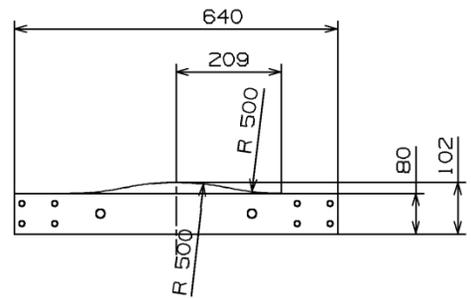
D6



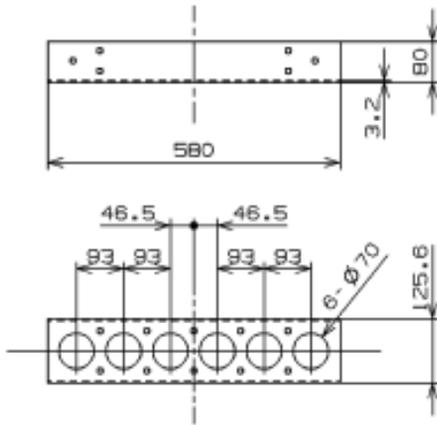
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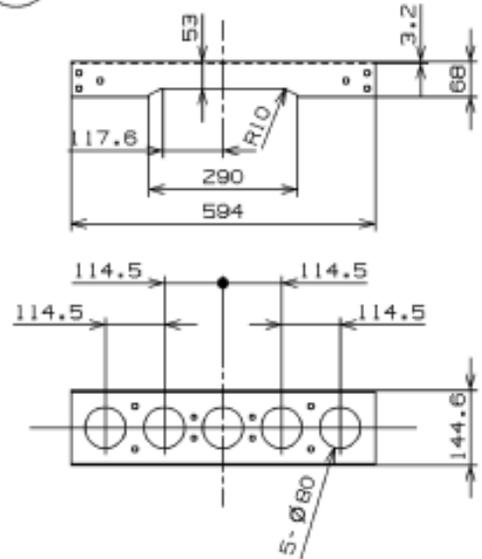
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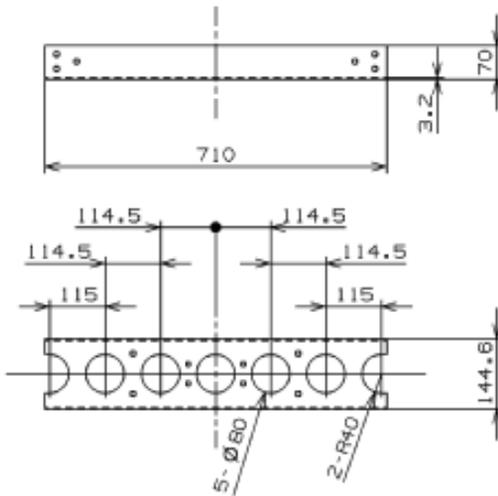
E1



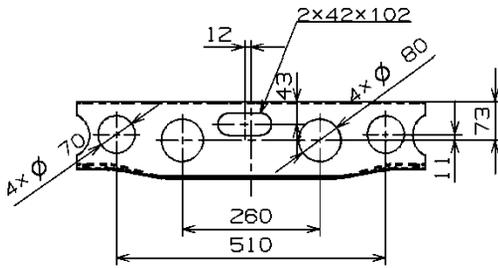
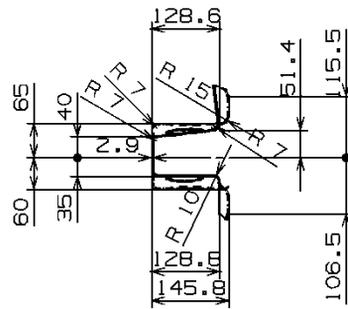
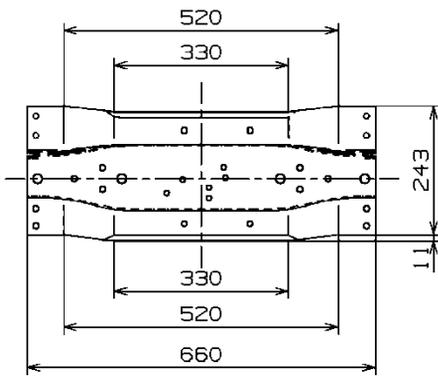
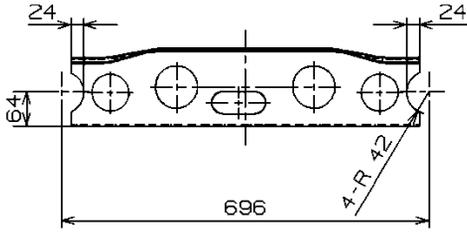
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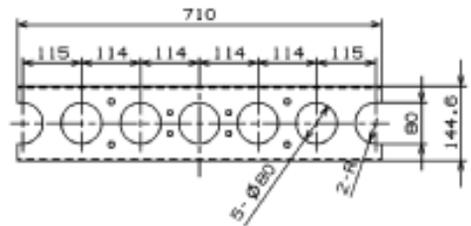
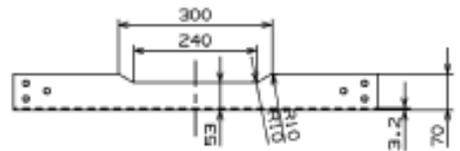
E3



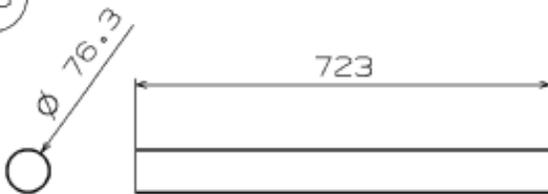
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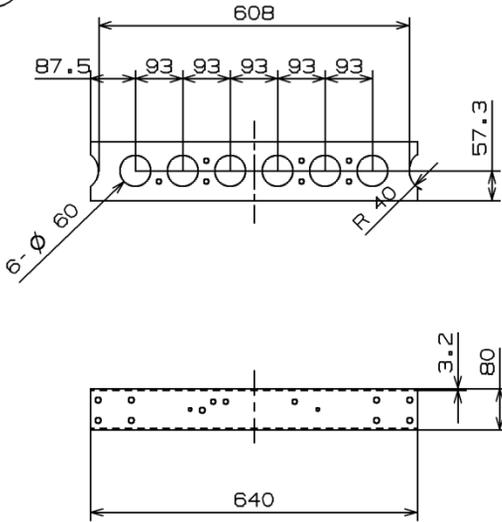
E6



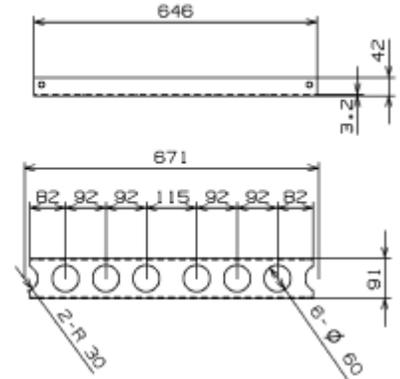
E5



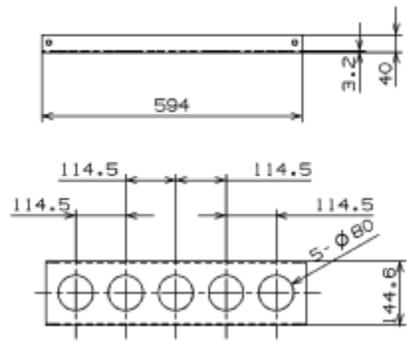
(E7)



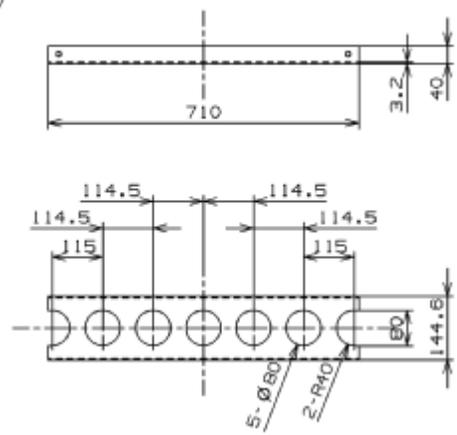
(F1)



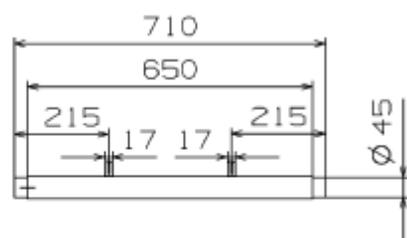
(F2)



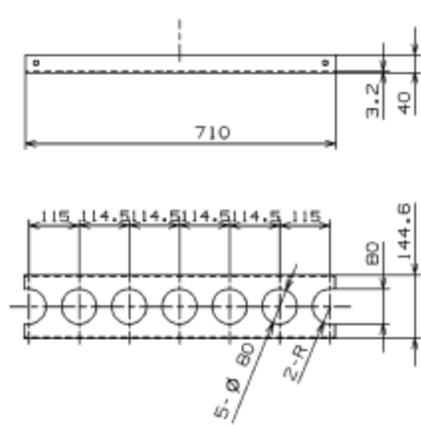
(F3)



(F4)



(F5)



∅ 50.8

## **Chapter 11 LOCATION OF VARIOUS COMPONENTS**

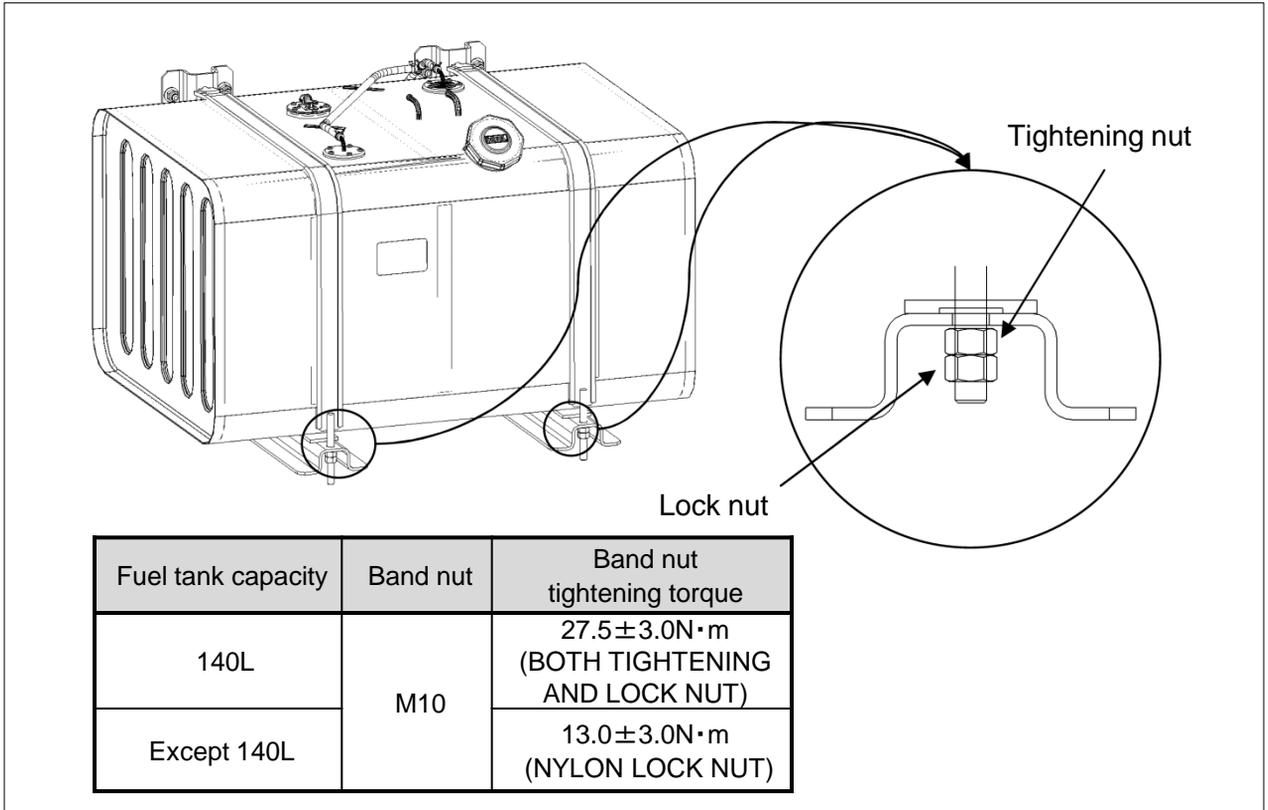
**11.1. LOCATION OF THE FUEL TANK**

**11.2. LOCATION OF THE BATTERY AND THE CARRIER**

**11.3. LOCATION OF THE SPARE TIRE AND THE CARRIER**

### 11.1. LOCATION OF THE FUEL TANK

Note: To protect the fuel tank from heat, when relocating the fuel tank, provide sufficient clearance between the fuel tank and the exhaust pipe or the silencer or alternatively, install a heat protector. Do not fit any components on the fuel tank bracket, such as a stay or a side guard for rear body. When removing the fuel tank and installing it to another place, securely tighten the band again with nuts at the specified torque shown in the table below.



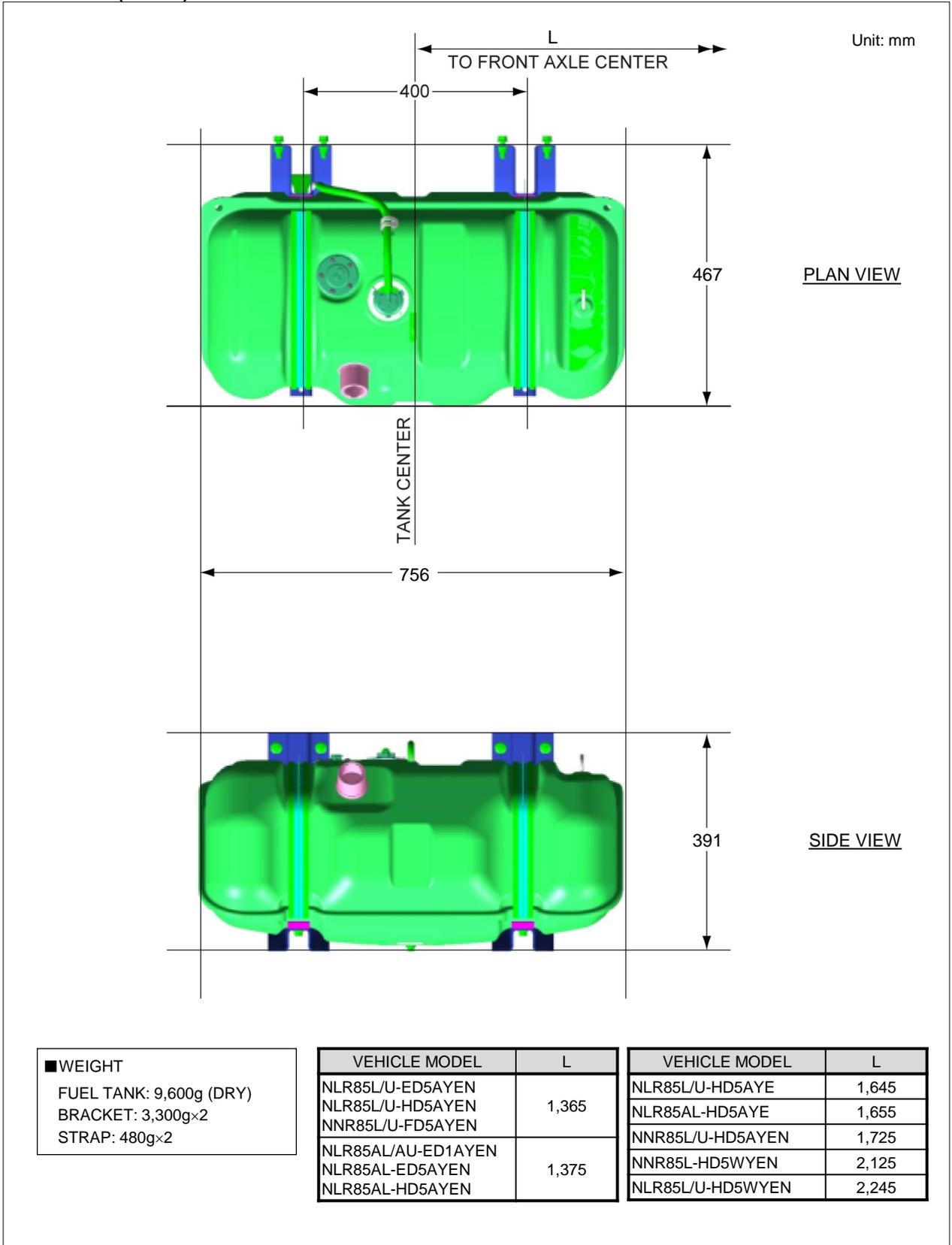
### 11.2. LOCATION OF THE BATTERY AND THE CARRIER

Note: To permit ease of removal of the battery cover, provide a minimum of 50mm clearance above the battery cover.

### 11.3. LOCATION OF THE SPARE TIRE AND THE CARRIER

### 11.1. LOCATION OF THE FUEL TANK

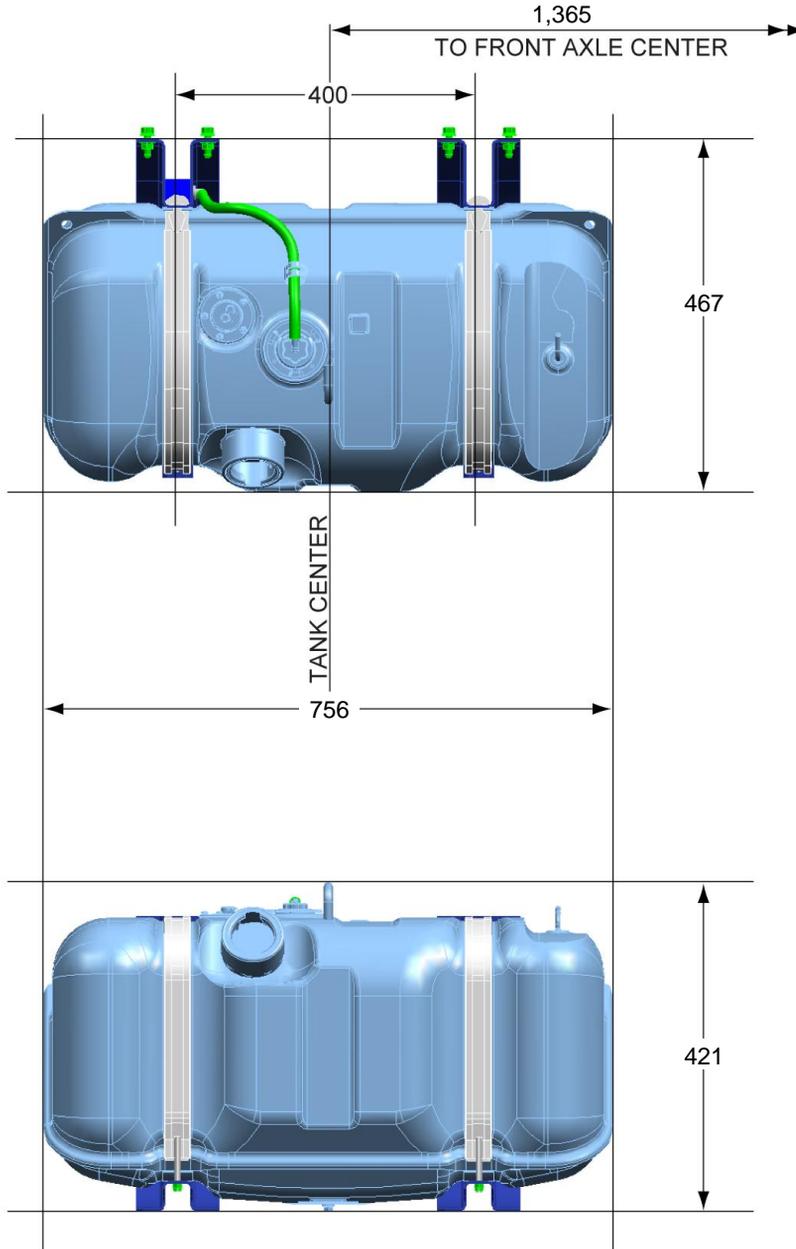
#### 63L fuel tank (narrow)



75L fuel tank

VEHICLE MODEL: NMR85L/U-EH5AYEN

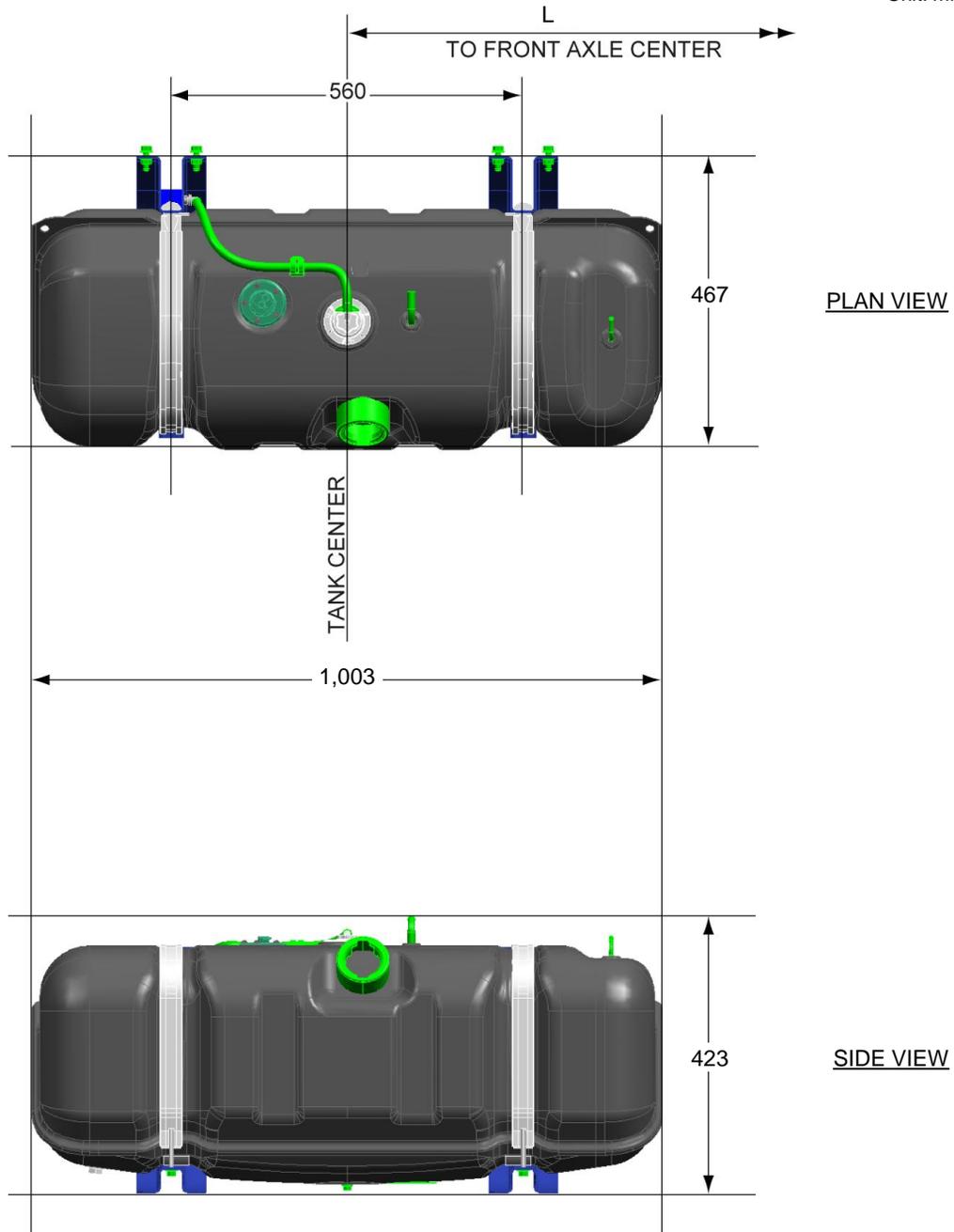
Unit: mm



- **WEIGHT**
- FUEL TANK: 10,700g (DRY)
  - BRACKET: 3,300g×2
  - STRAP: 540g×2

100L fuel tank (narrow)

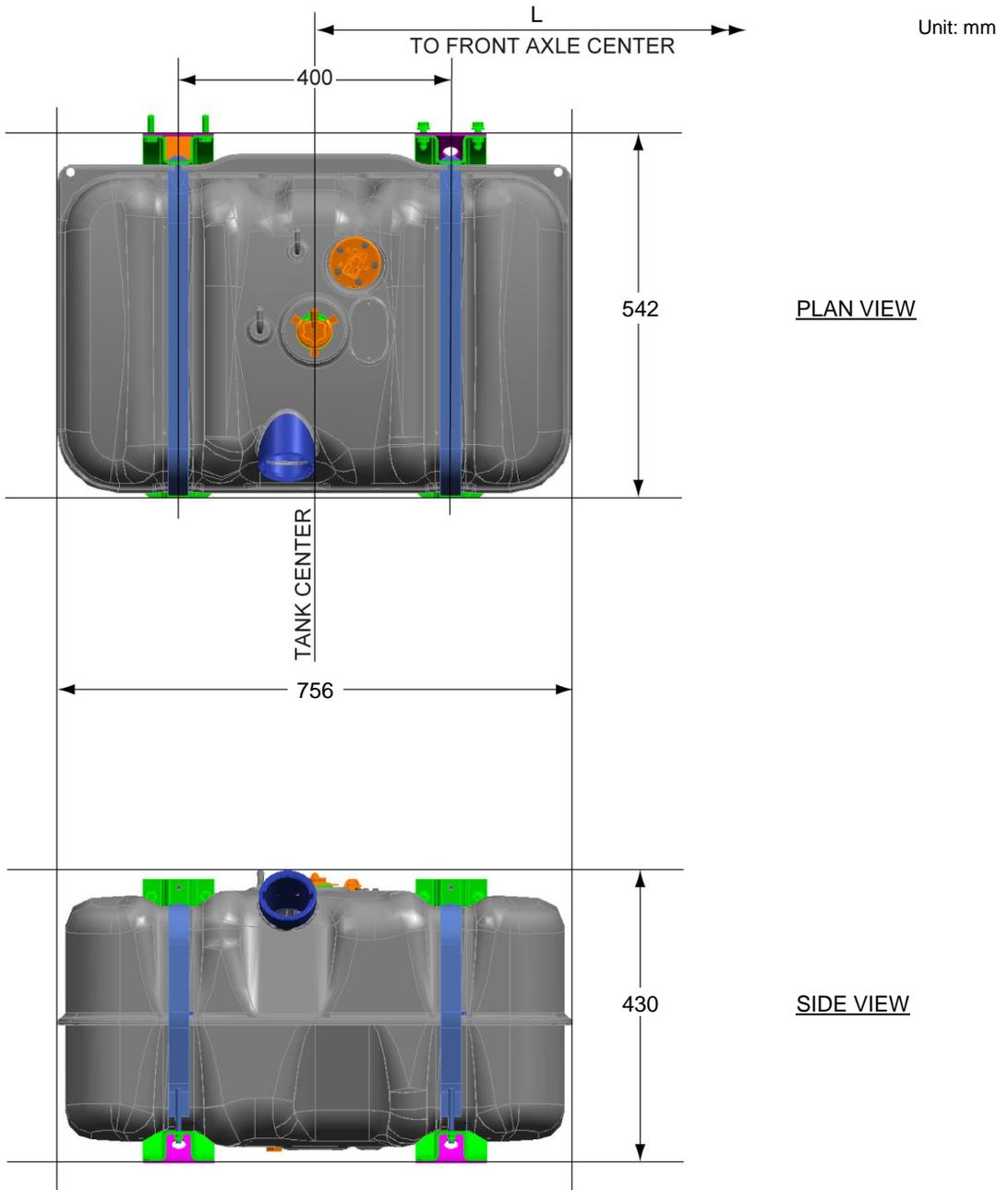
Unit: mm



**■ WEIGHT**  
 FUEL TANK: 13,000g (DRY)  
 BRACKET: 3,300g×2  
 STRAP: 540g×2

VEHICLE MODEL	L
NMR85L/U-HH5AYEN	1,365
NMR85L/U-HH5AYE	1,765

100L fuel tank (wide)



■ WEIGHT

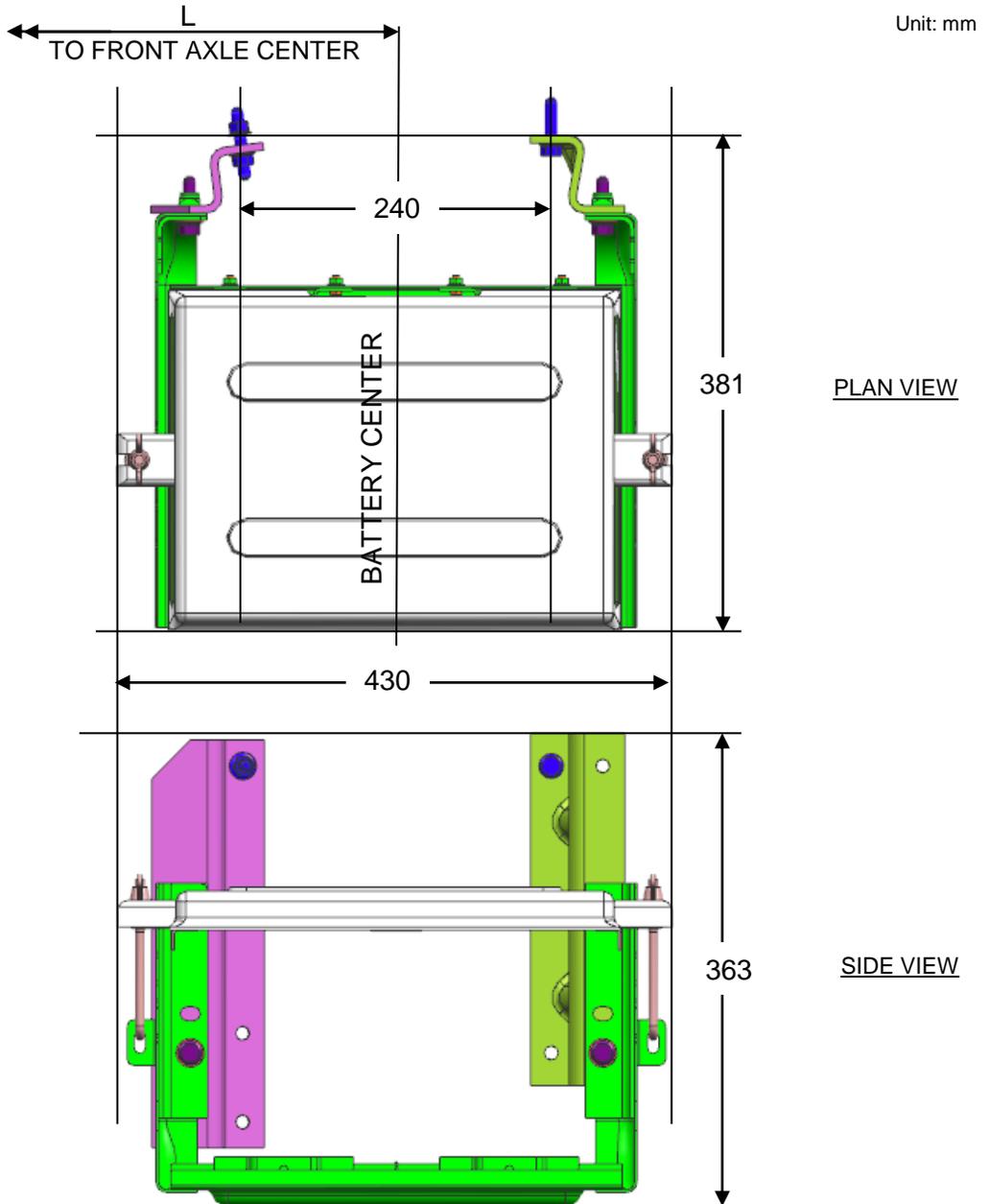
FUEL TANK: 15,500g (DRY)  
BRACKET: 4,840g×2  
STRAP: 550g×2

VEHICLE MODEL	L
NNR85L/U-HD5AYE NPR85L/U-HH5AYE NPR85L/U-HJ5AYE NPR85L/U-KJ5AYE	1,645
NPR85L/U-HL5VAYE NPR85L/U-KL5VAYE NPR85L/U-ML5VAYE	1,765

VEHICLE MODEL	L
NPR75L/U-HL5VAYE NPR75L/U-KL5VAYE NPR75L/U-ML5VAYE	1,725
NPR75L/U-ML5VWYE	1,925

**11.2. LOCATION OF THE BATTERY AND THE CARRIER**

65D/75D/80D battery carrier

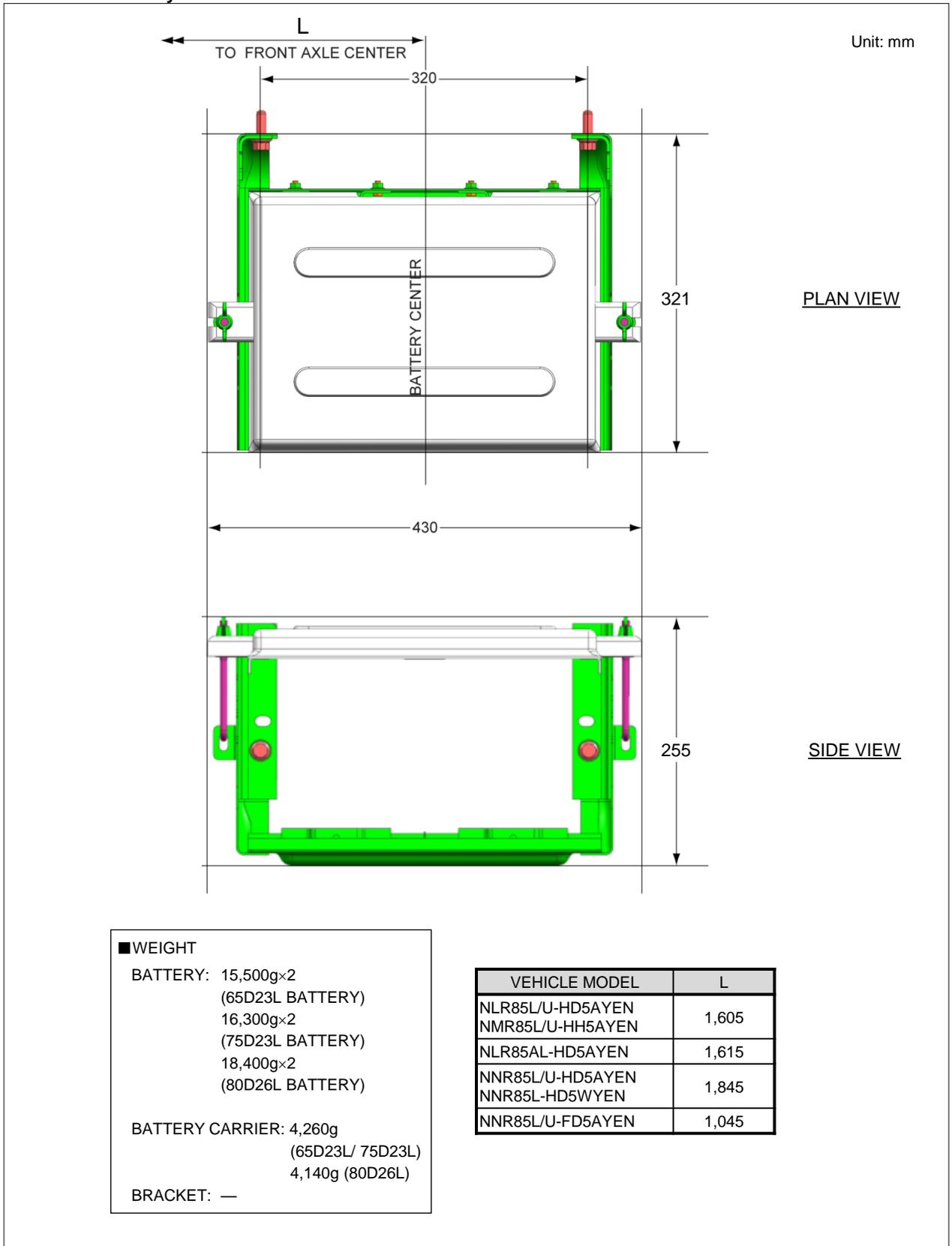


■ WEIGHT

BATTERY: 15,500g×2 (65D23L BATTERY)	BRACKET: 1,800g (FRONT) 1,600g (REAR)
16,300g×2 (75D23L BATTERY)	
18,400g×2 (80D26L BATTERY)	
BATTERY CARRIER: 4,260g (65D23L/ 75D23L) 4,140g (80D26L)	

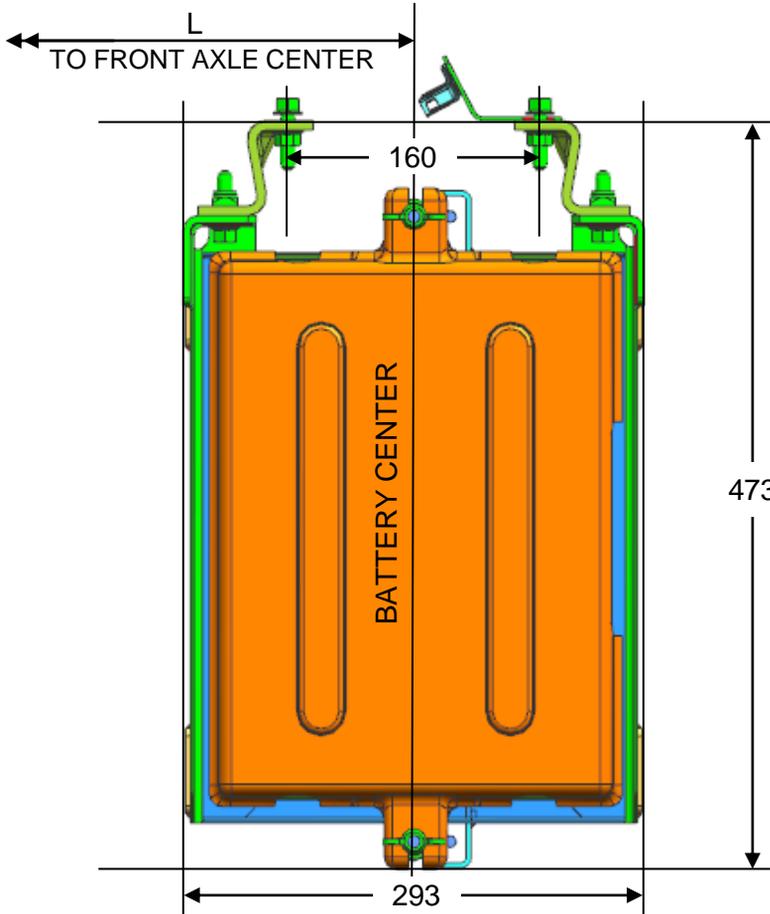
VEHICLE MODEL	L
NLR85L/U-ED5AYEN NLR85L/U-HD5WYEN NMR85L/U-EH5AYEN	845
NLR85AL/AU-ED1AYEN NLR85AL-ED5AYEN	855

65D/75D/80D battery carrier



65D/75D/80D battery carrier

Unit: mm



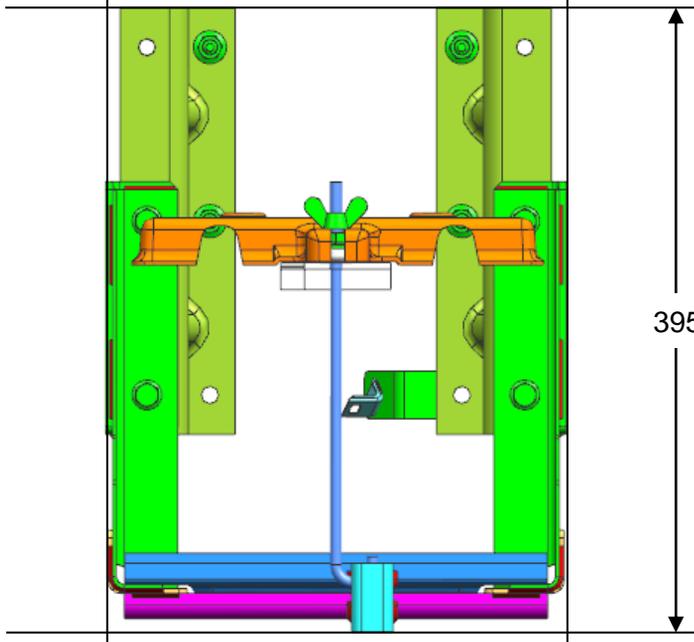
PLAN VIEW

■ WEIGHT

- BATTERY: 15,500g×2  
(65D23L BATTERY)
- 16,300g×2  
(75D23L BATTERY)
- 18,400g×2  
(80D26L BATTERY)

BATTERY CARRIER: 7,430g

BRACKET: 1,600g (FRONT)  
1,650g (REAR)

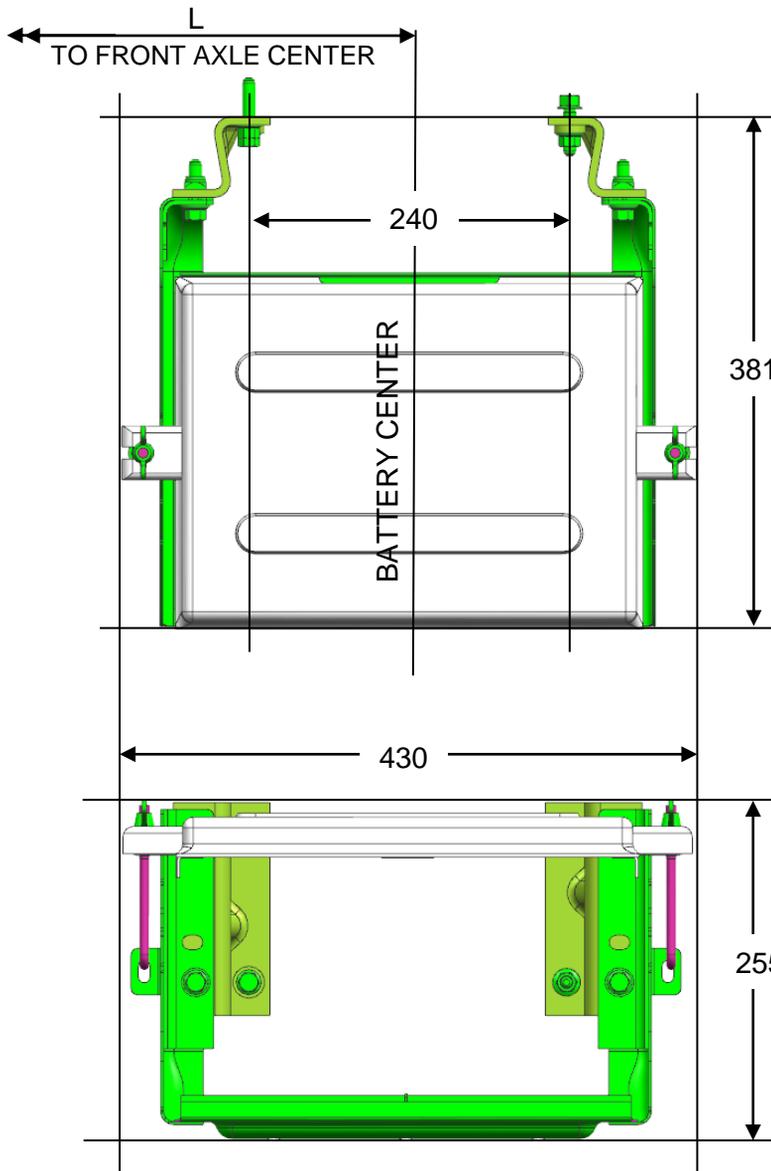


SIDE VIEW

VEHICLE MODEL	L
NLR85L/U-HD5AYE	2,445
NMR85L/U-HH5AYE	2,445
NLR85AL-HD5AYE	2,455

65D/75D/80D battery carrier

Unit: mm



PLAN VIEW

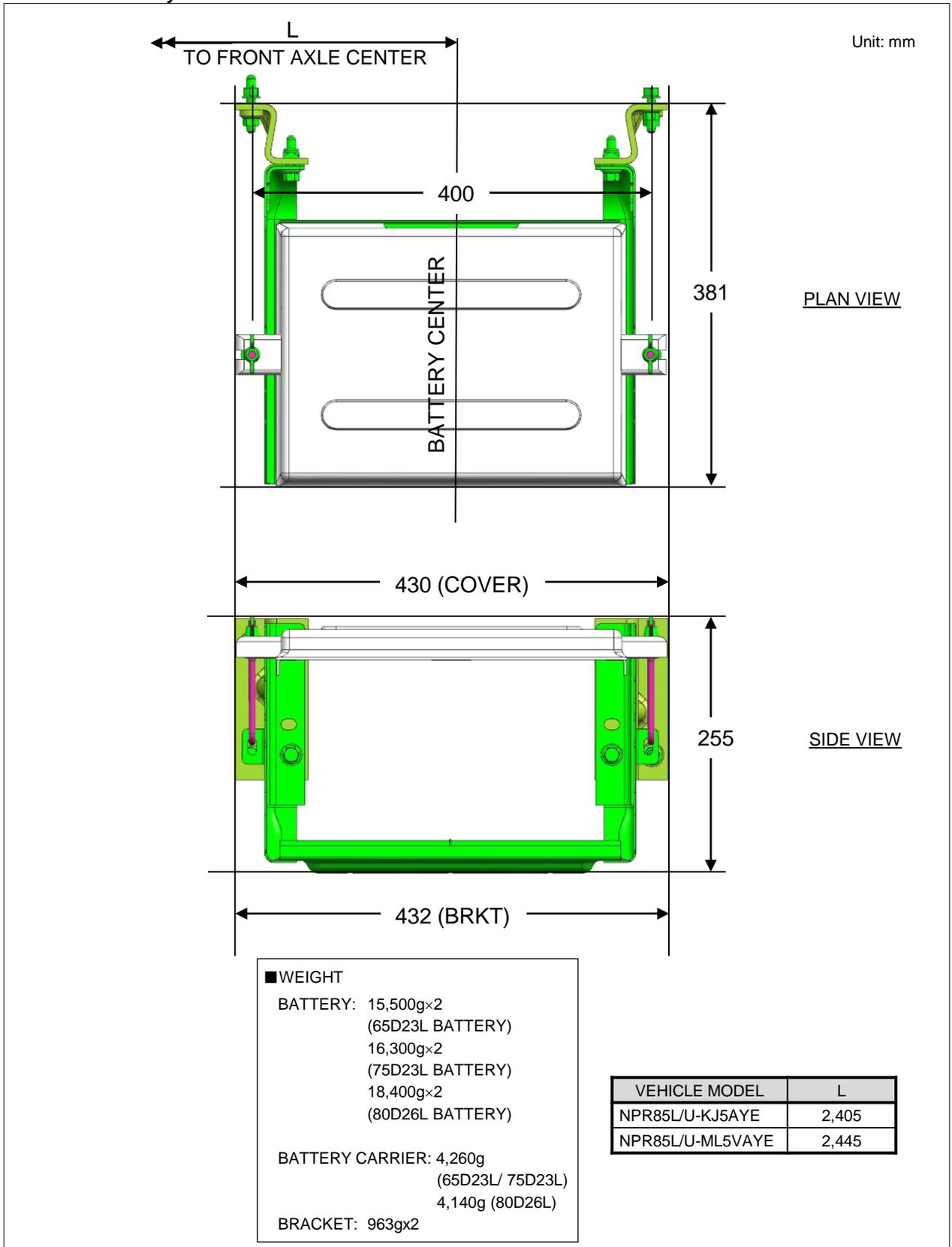
SIDE VIEW

■ WEIGHT

- BATTERY: 15,500g×2  
(65D23L BATTERY)
- 16,300g×2  
(75D23L BATTERY)
- 18,400g×2  
(80D26L BATTERY)
  
- BATTERY CARRIER: 4,260g  
(65D23L/ 75D23L)
- 4,140g (80D26L)
  
- BRACKET: 963g×2

VEHICLE MODEL	L
NNR85L/U-HD5AYE	2,405
NPR85L/U-HH5AYE	
NPR85L/U-HJ5AYE	
NPR85L/U-HL5VAYE	
NPR75L/U-HL5VAYE	2,445
NPR85L/U-KL5VAYE	

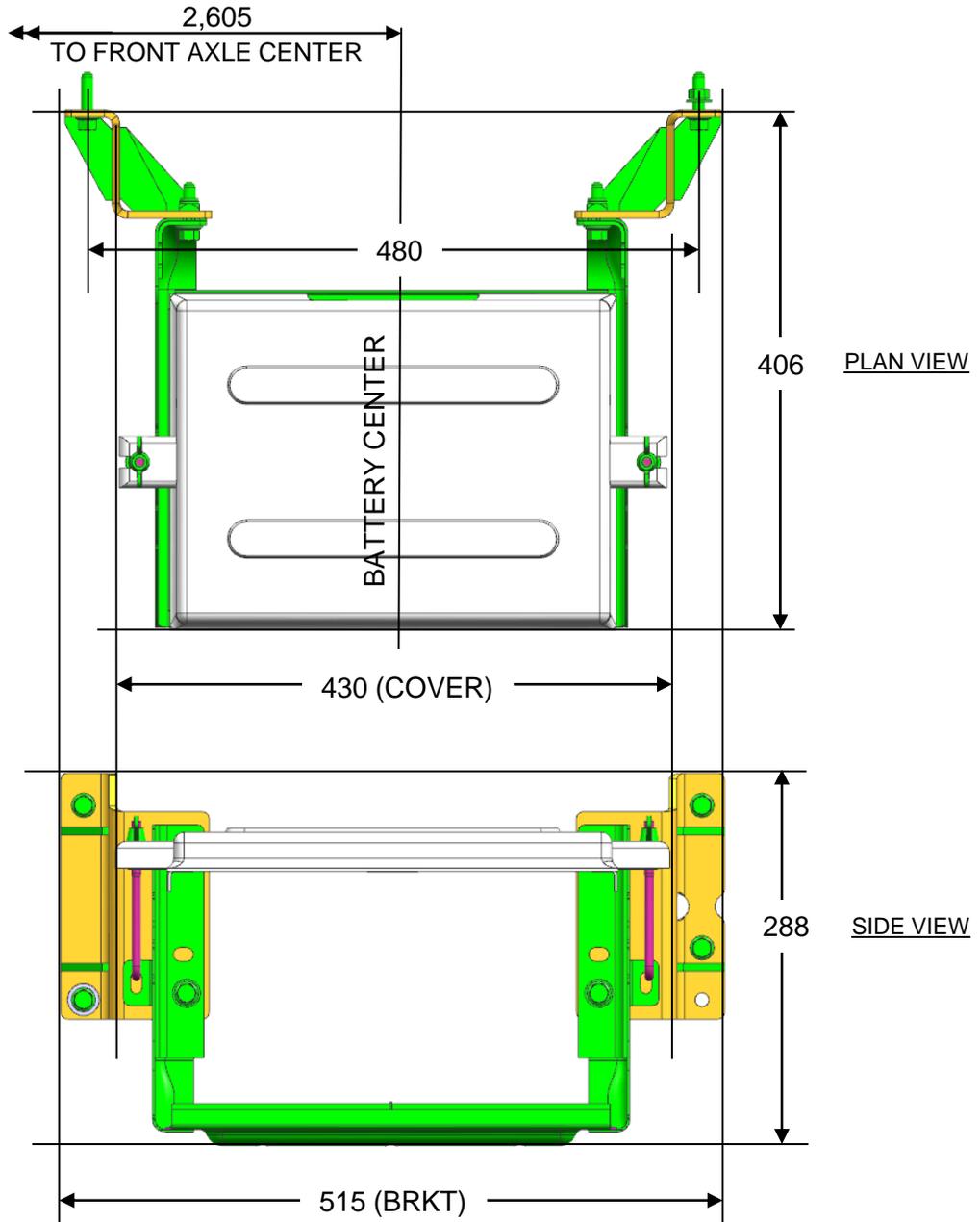
65D/75D/80D battery carrier



80D battery carrier

VEHICLE MODEL: NPR75L/U-KL5VAYE, ML5VAYE, ML5VWYE

Unit: mm



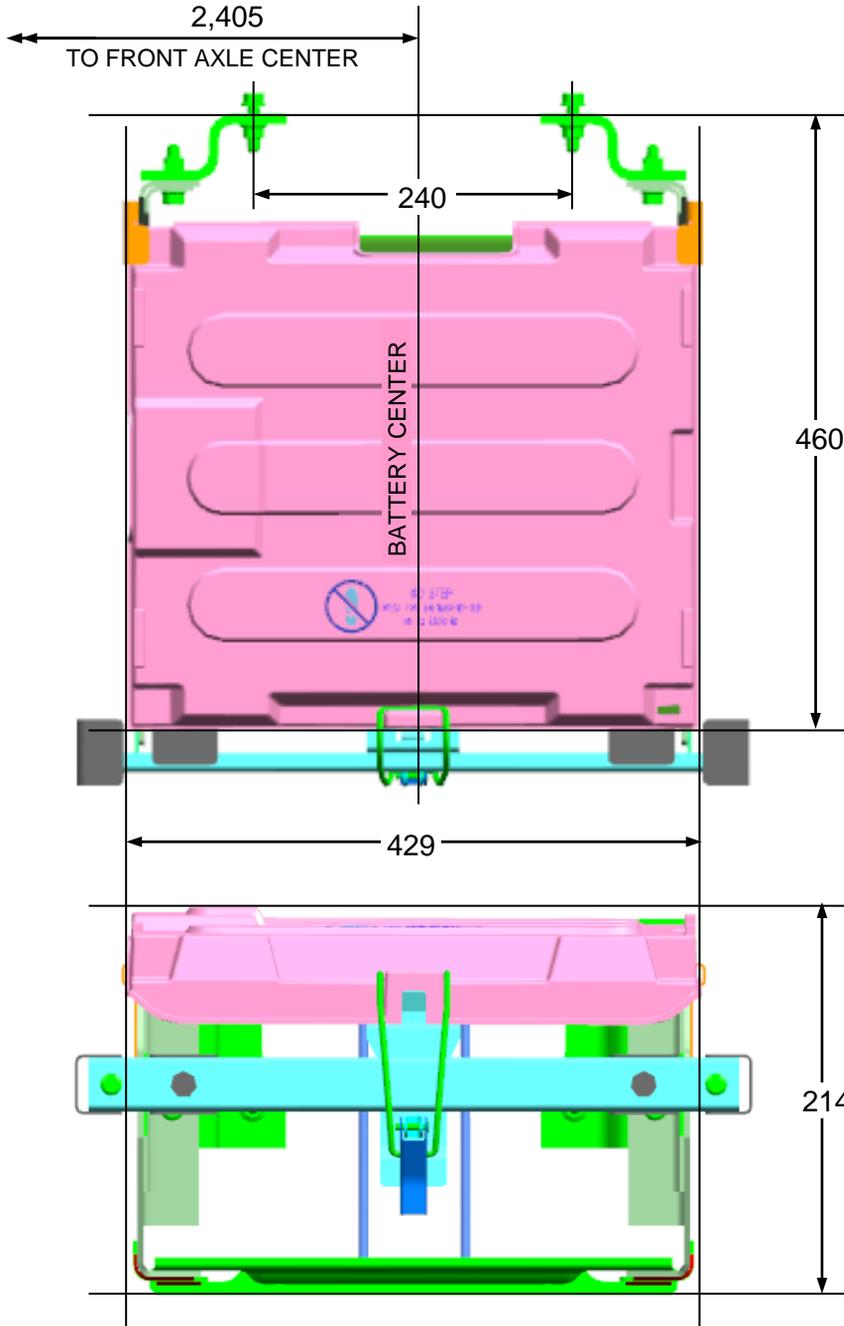
■ WEIGHT

- BATTERY: 18,400g×2 (80D26L BATTERY)
- BATTERY CARRIER: 4,140g (80D26L)
- BRACKET: 1,850g (FRONT)  
1,780g (REAR)

115E battery carrier (Option)

VEHICLE MODEL: NPR75L/U-HL5VAYE

Unit: mm



PLAN VIEW

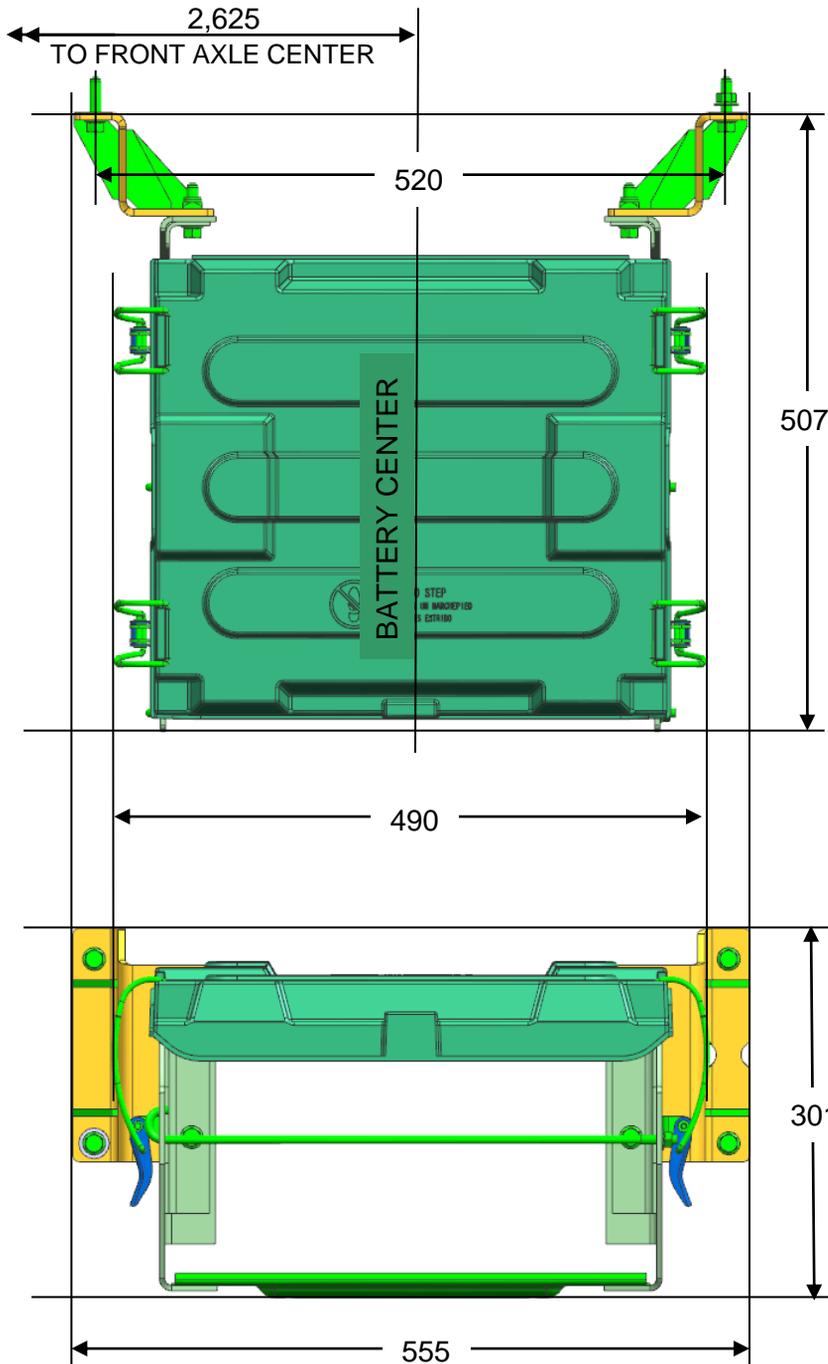
SIDE VIEW

- WEIGHT
- BATTERY: 27,200g×2 (115E41L BATTERY)
- BATTERY CARRIER: 8,500g
- BRACKET: 1,300g×2

115E battery carrier (Option)

VEHICLE MODEL: NPR75L/U-KL5VAYE, ML5VAYE

Unit: mm



PLAN VIEW

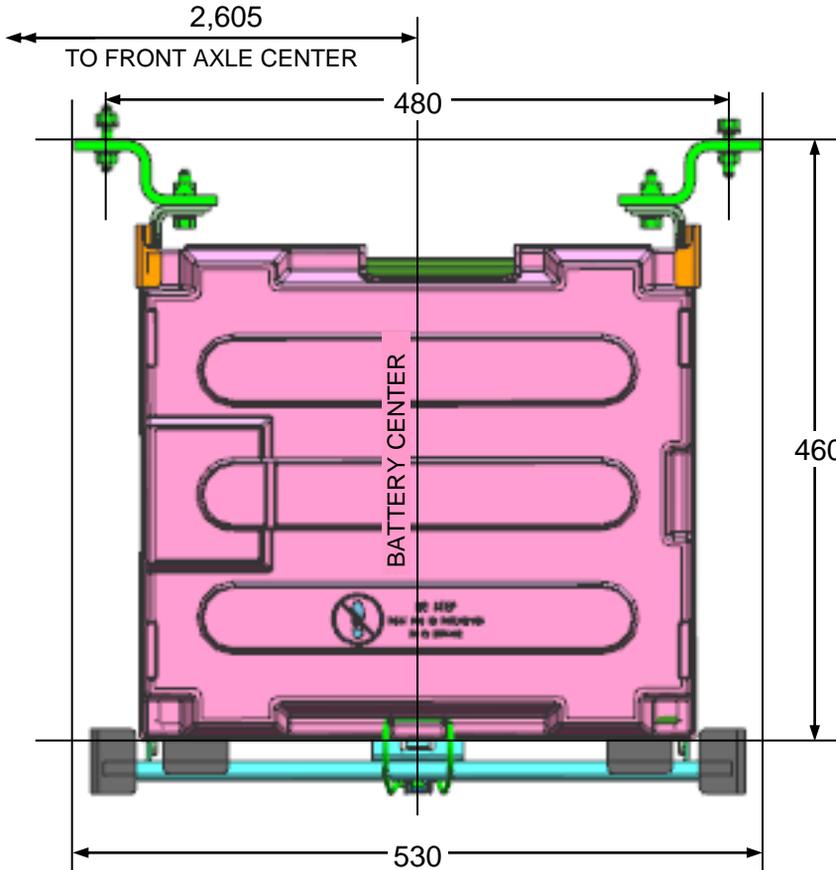
SIDE VIEW

- WEIGHT
- BATTERY: 27,200g×2 (115E41L BATTERY)
- BATTERY CARRIER: 8,500g
- BRACKET: 1,850g (FRONT)  
1,780g (REAR)

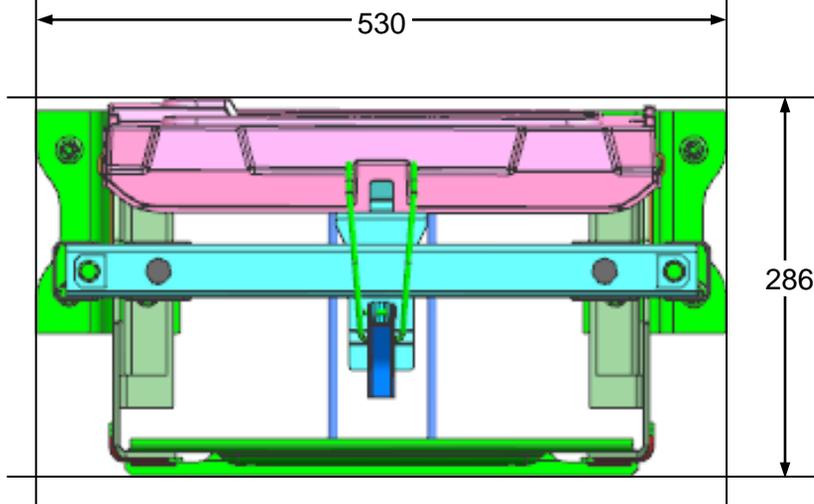
115E battery carrier (Option)

VEHICLE MODEL: NPR75L/U-ML5VWYE

Unit: mm



PLAN VIEW



SIDE VIEW

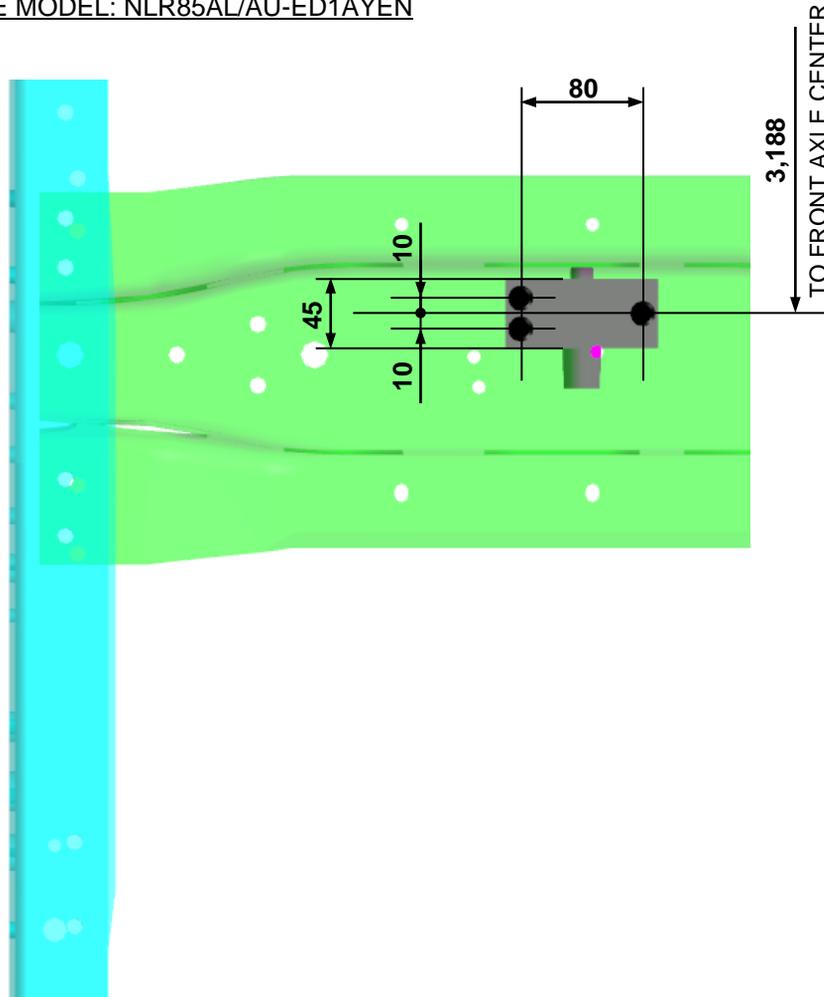
- WEIGHT
- BATTERY: 27,200g×2 (115E41L BATTERY)
- BATTERY CARRIER: 9,770g
- BRACKET: 1,300g×2

### 11.3. LOCATION OF THE SPARE TIRE AND THE CARRIER

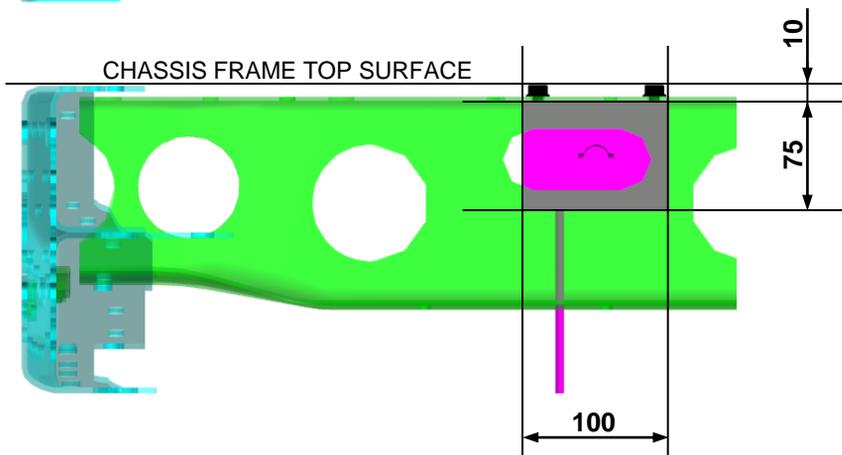
#### Spare tire carrier (ROH)

VEHICLE MODEL: NLR85AL/AU-ED1AYEN

Unit: mm



PLAN VIEW

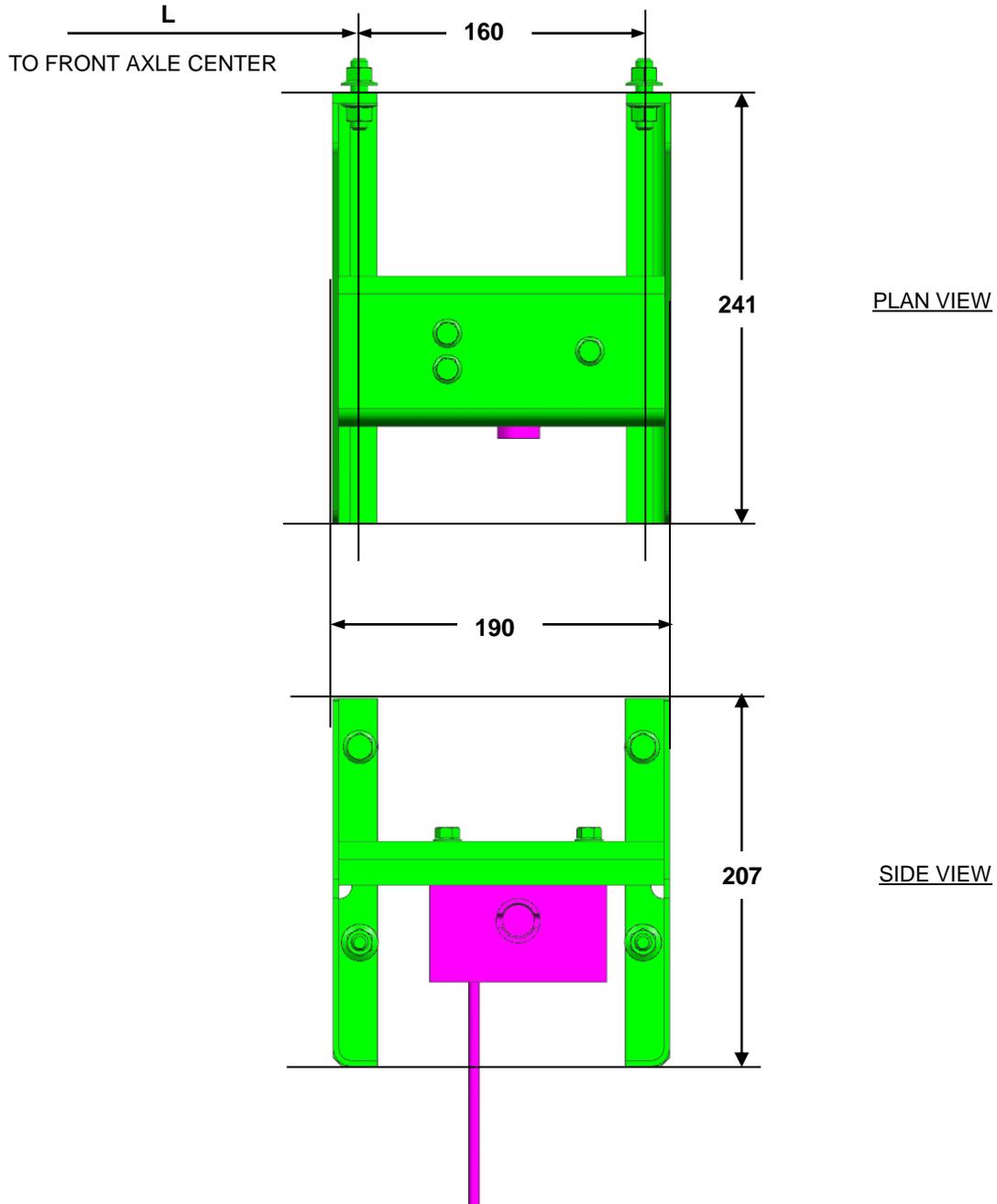


REAR VIEW

■ WEIGHT  
HANGER ASM: 1,950g

Spare tire carrier (Frame side)

Unit: mm

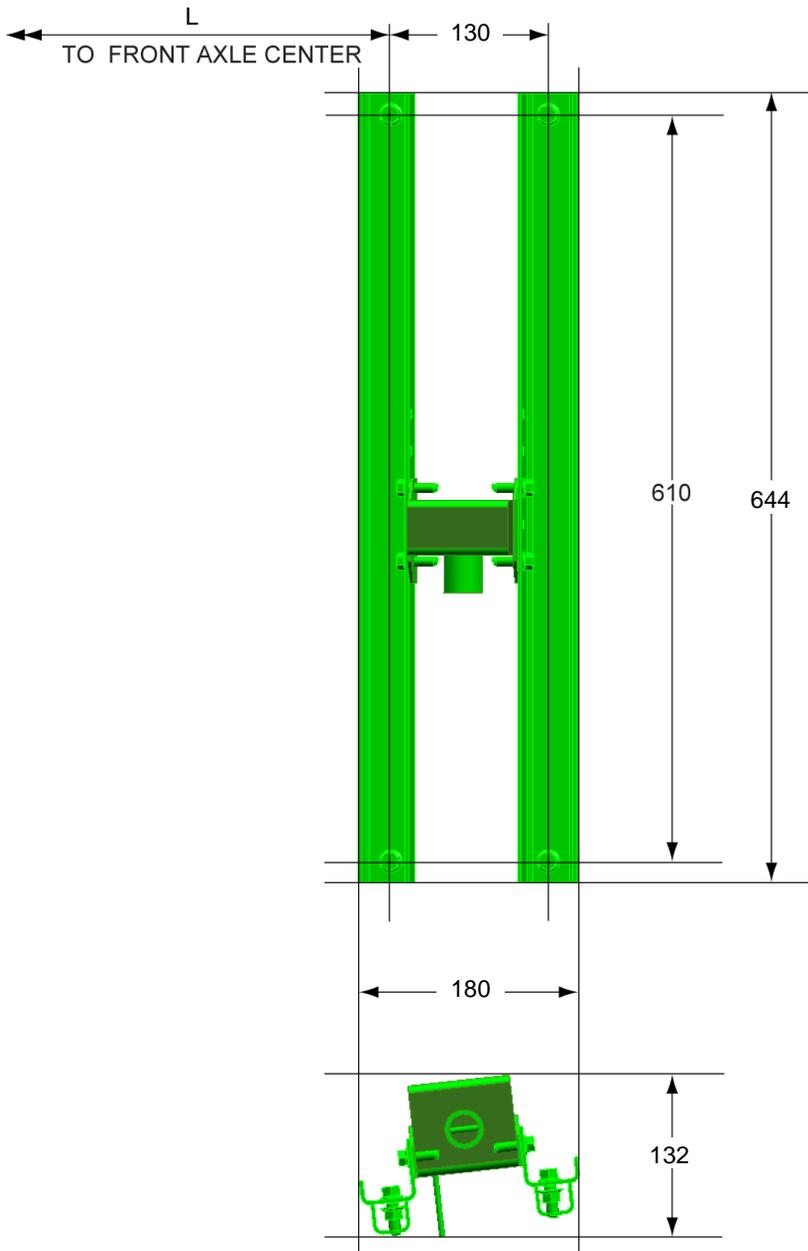


<p>■ WEIGHT                  HANGER ASM: 1,960g                  BRACKET: 3,300g</p>
--

VEHICLE MODEL	L
NLR85L/U-ED5AYEN (Option) NMR85L/U-EH5AYEN	1,365
NLR85AL/AU-ED5AYEN (Option)	1,375

Spare tire carrier (ROH)

Unit: mm



PLAN VIEW

SIDE VIEW

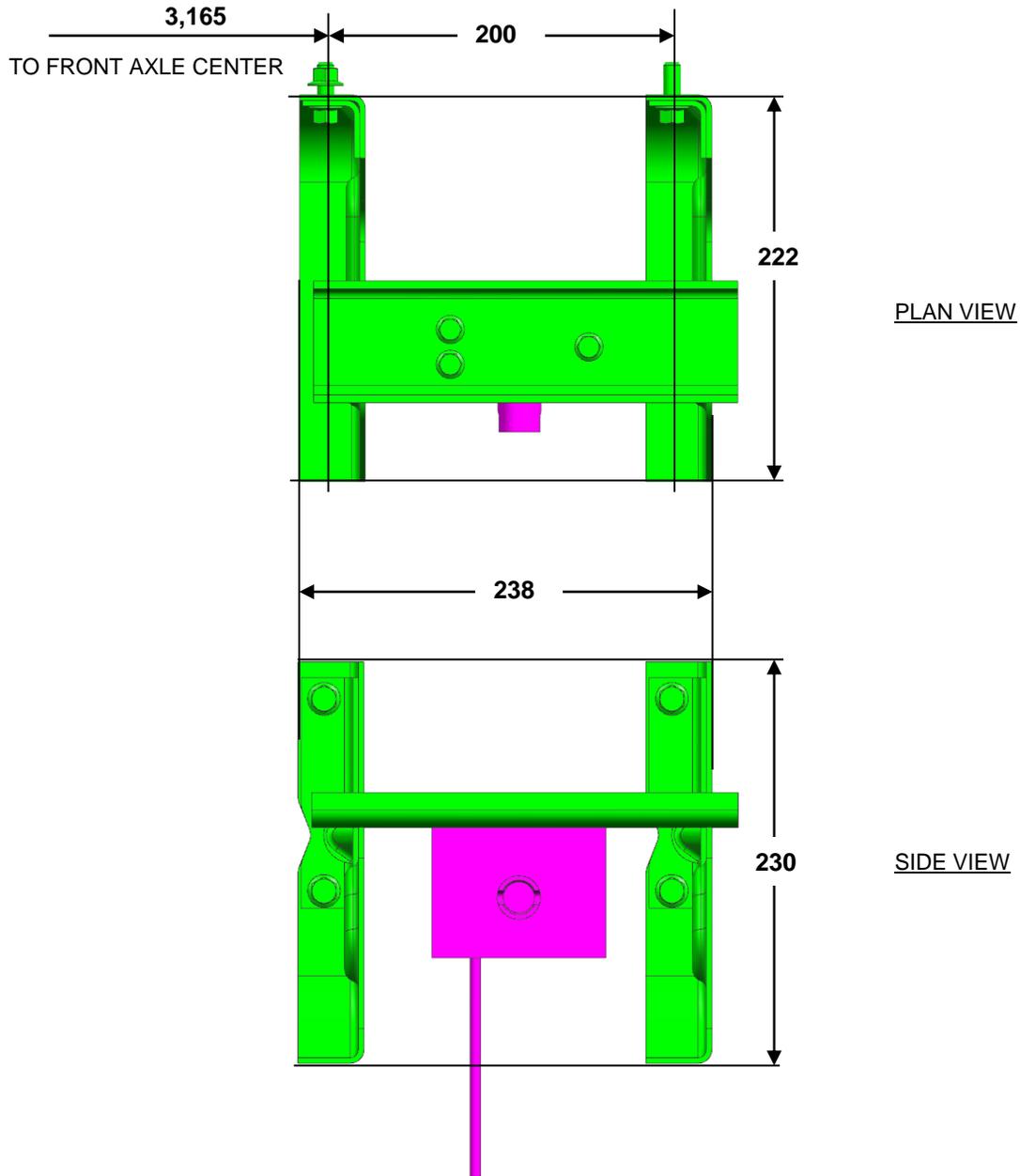
<p>■ WEIGHT</p> <p>HANGER ASM: 1,930g</p> <p>BAR ASM: 2,100g×2</p>
--

VEHICLE MODEL	L
NLR85L/U-HD5AYEN NLR85L/U-HD5WYEN NMR85L/U-HH5AYEN NLR85L/U-HD5AYE NMR85L/U-HH5AYE	4,280
NLR85AL-HD5AYEN NLR85AL-HD5AYE	4,290

Spare tire carrier (Frame side)

VEHICLE MODEL: NPR85L/U-ML5VAYE,  
NPR75L/U-ML5VAYE, NPR75L/U-ML5VWYE

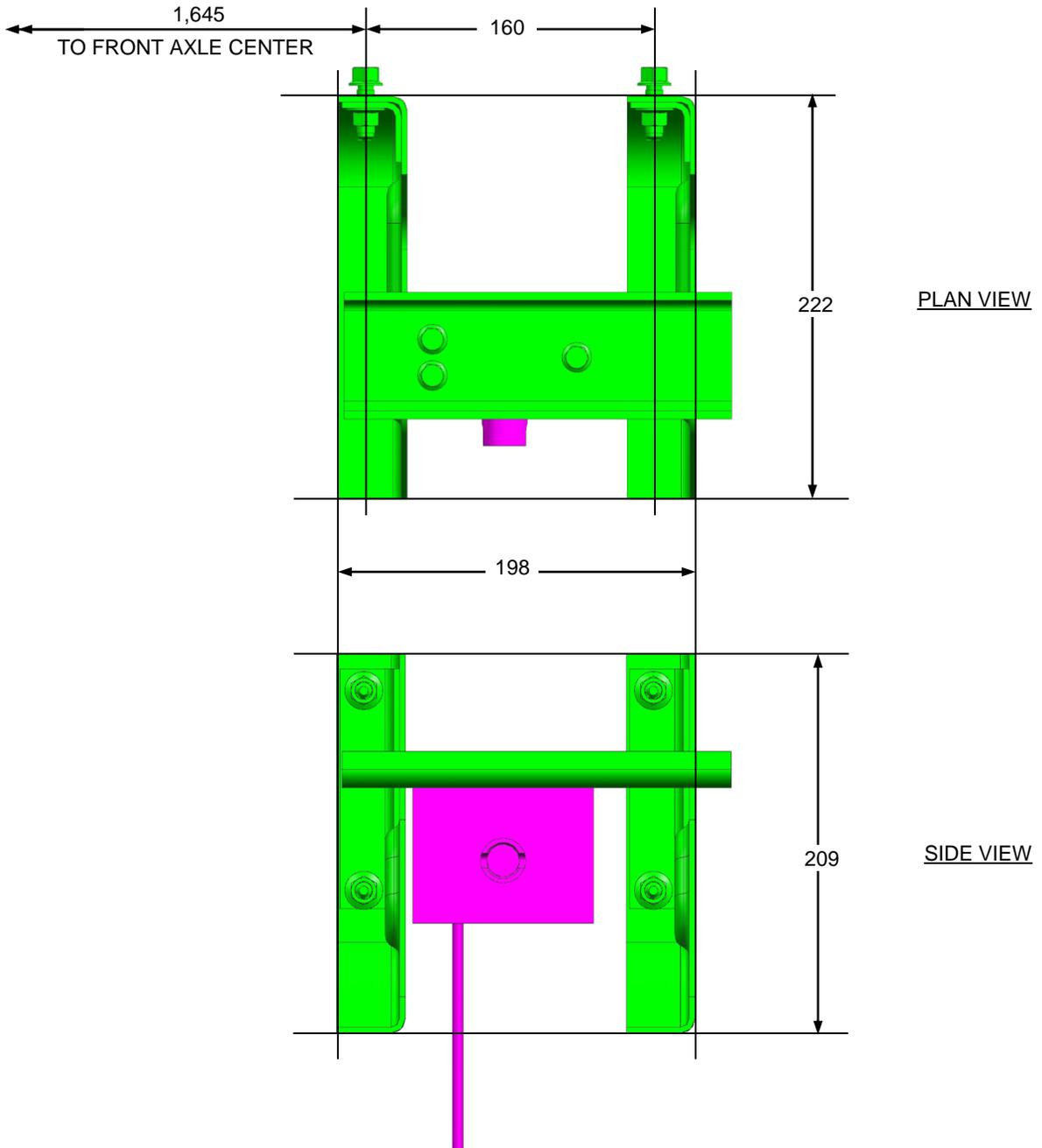
Unit: mm



Spare tire carrier (Frame side)

VEHICLE MODEL: NNR85L/U-FD5AYEN (Option)

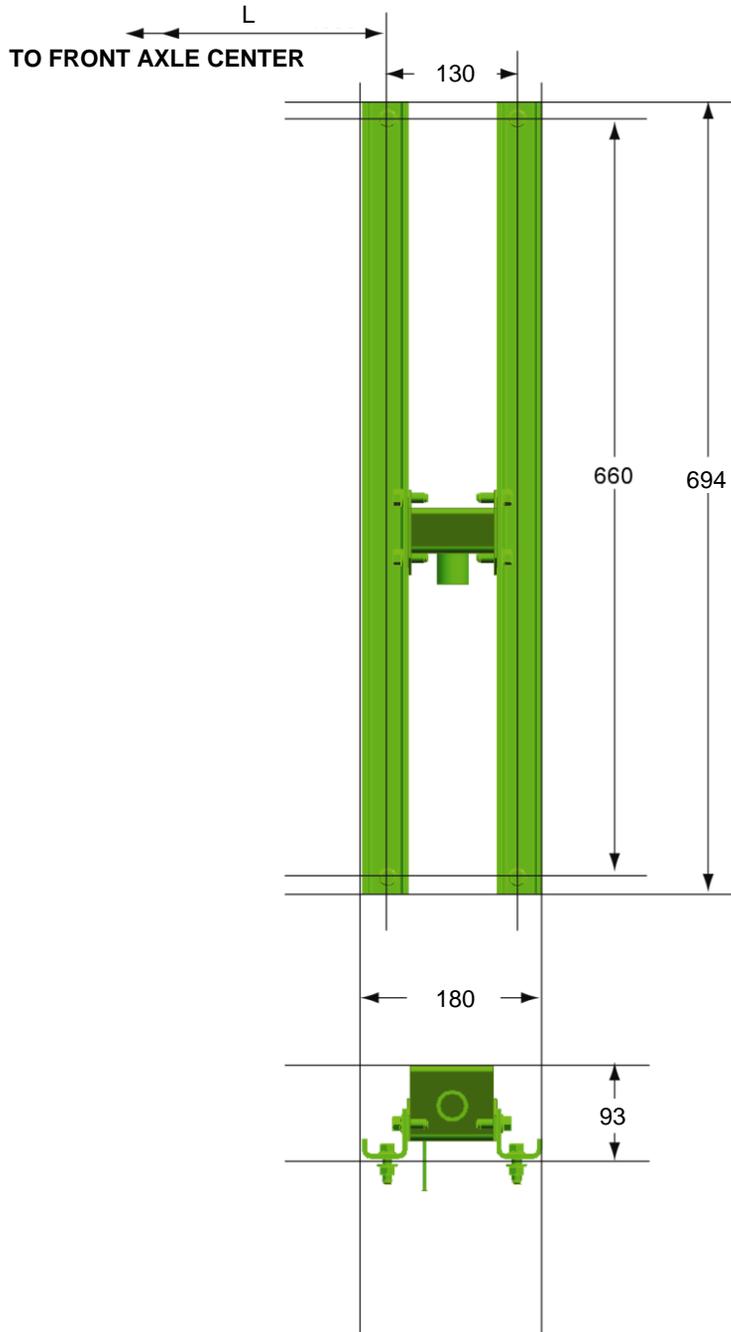
Unit: mm



■ WEIGHT
HANGER ASM: 2,000g
BRACKET: 3,100g

Spare tire carrier (ROH)

Unit: mm



PLAN VIEW

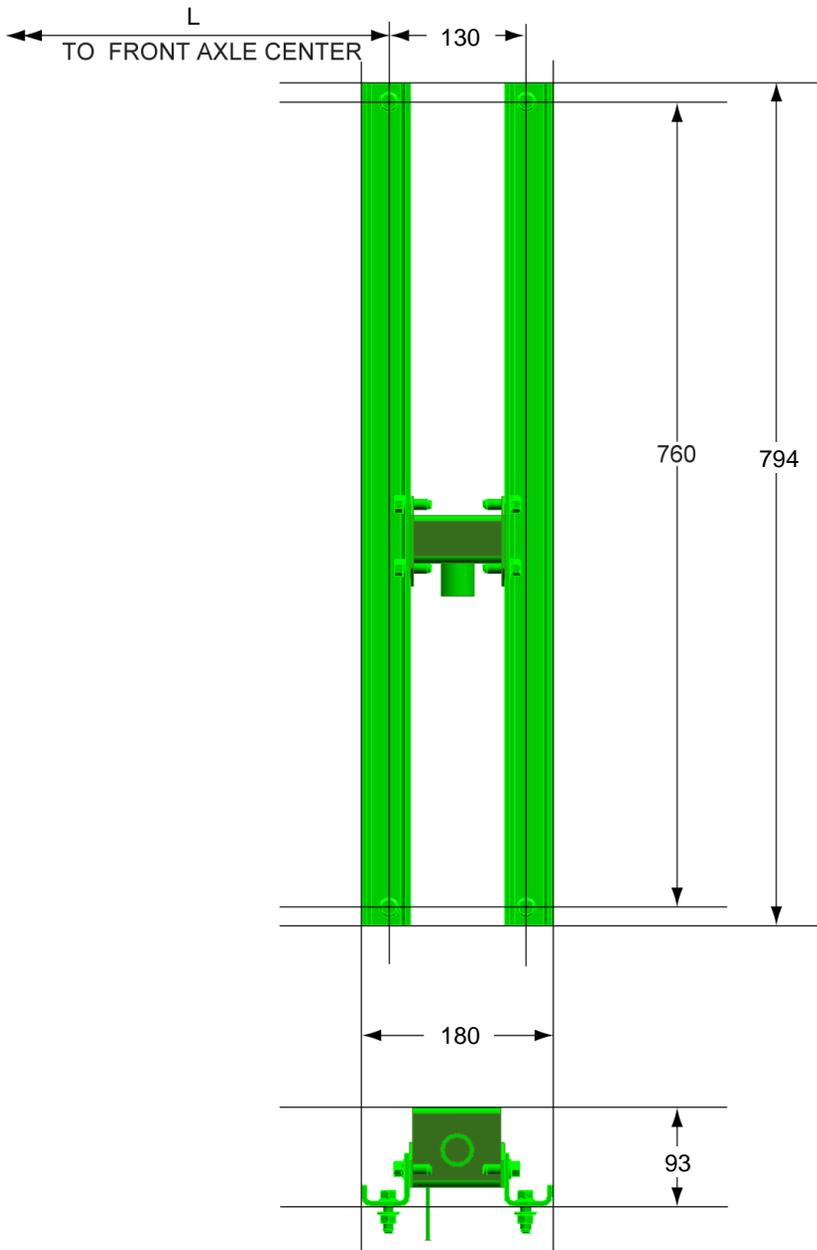
SIDE VIEW

■ WEIGHT  
HANGER ASM: 1,930g  
BAR ASM: 2,200g×2

VEHICLE MODEL	L
NNR85L/U-HD5AYEN	4,360
NNR85L-HD5WYEN	
NNR85L/U-HD5AYE	
NPR85L/U-HH5AYE	
NPR85L/U-HJ5AYE	
NPR85L/U-KJ5AYE	4,810

Spare tire carrier (ROH)

Unit: mm



PLAN VIEW

SIDE VIEW

<p>■ WEIGHT HANGER ASM: 1,930g BAR ASM: 2,570g×2</p>
--

VEHICLE MODEL	L
NPR85L/U-HL5VAYE NPR75L/U-HL5VAYE	4,360
NPR85L/U-KL5VAYE NPR75L/U-KL5VAYE	4,810

## Chapter 12 APPENDIX

### 12.1. PIPING DIAGRAMS

### 12.2. LOCATION OF DECALS

## 12.1. PIPING DIAGRAMS

The piping diagrams provided in this guide are as follows:

Vehicle Model	DWG No.	EMISSION	Specification											
			Brake Type		LSPV	ABS (With EBD)	ASR	Brake Booster		HSA	EXH BRAKE	PA	Power Clutch	
			FRT	RR				M/VAC	HBB					
NLR85AL/AU -ED1AYEN	Fig.12-1-1	Euro5b+	Disc	Drum								-	-	
NLR/NMR/NNR	Fig.12-1-2	Euro5b+	Disc	Disc								-	-	
NLR/NMR/NNR NPR85*-*H5*	Fig.12-1-2	EuroVI	Disc	Disc	-	○	○	○	-	-		○	-	△
NPR*-*J5*/*L5*	Fig.12-1-3	EuroVI	Disc	Disc								○	○	

Legend      ○: Standard equipment      △: Option      -: Not equipped

### Note

See " II -2 PRINSIPAL SPECIFICATIONS OF VARIOUS VEHICLE MODELS" or consult ISUZU dealerships for details of each vehicle.

### Abbreviations

ABS: Anti-lock Brake System  
 ASR: Anti-Slip Regulator  
 EBD: Electronic Brake force Distribution  
 EXH BRAKE: Exhaust Brake  
 HBB: Hydro Brake Booster  
 HSA: Hill Start Aid  
 LSPV: Load Sensing Proportion Valve  
 M/VAC: Master Vac  
 PA: Power Assist Brake

Fig.12-1-1 Piping diagram

BRAKE

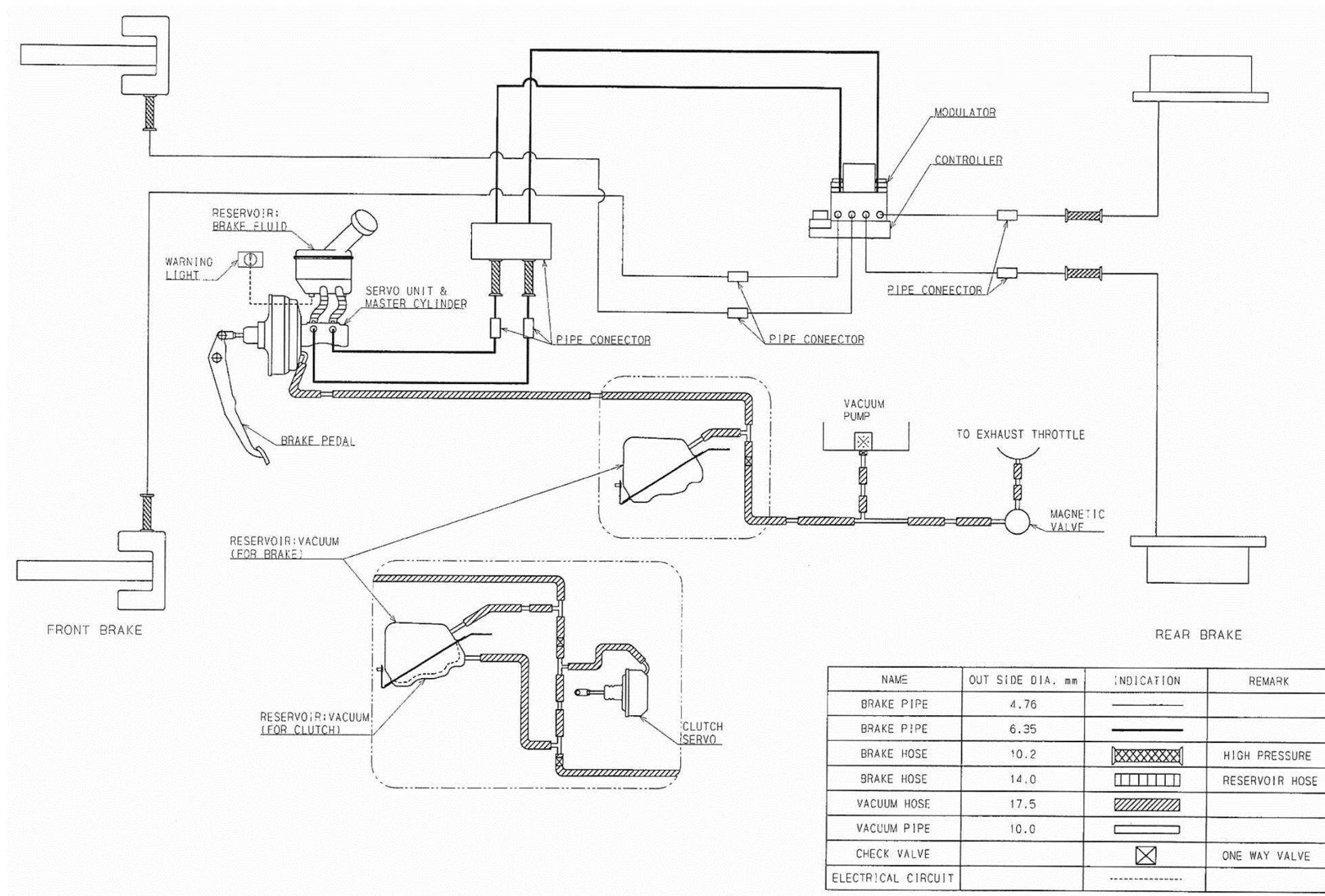


Fig.12-1-2 Piping diagram

**BRAKE**

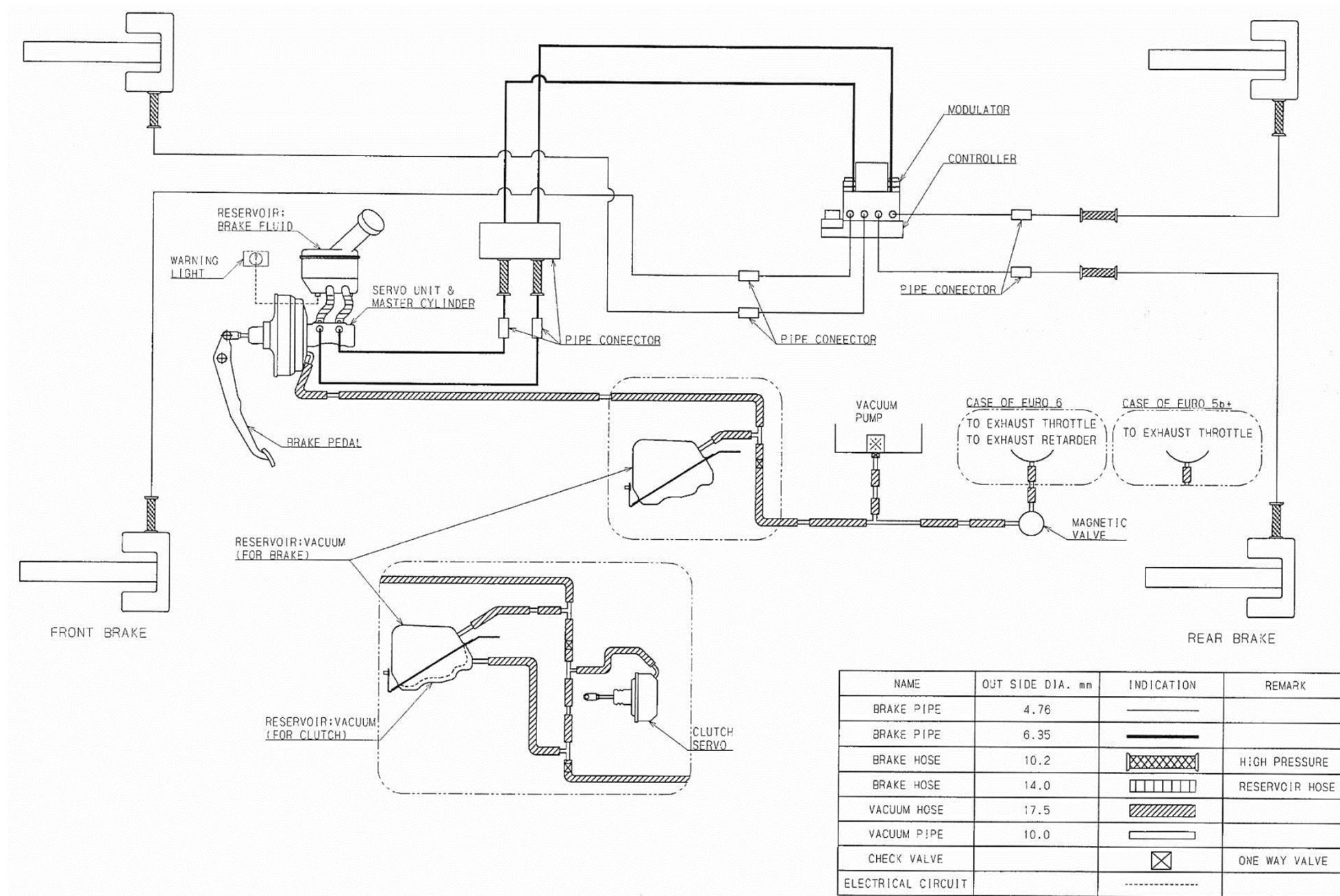
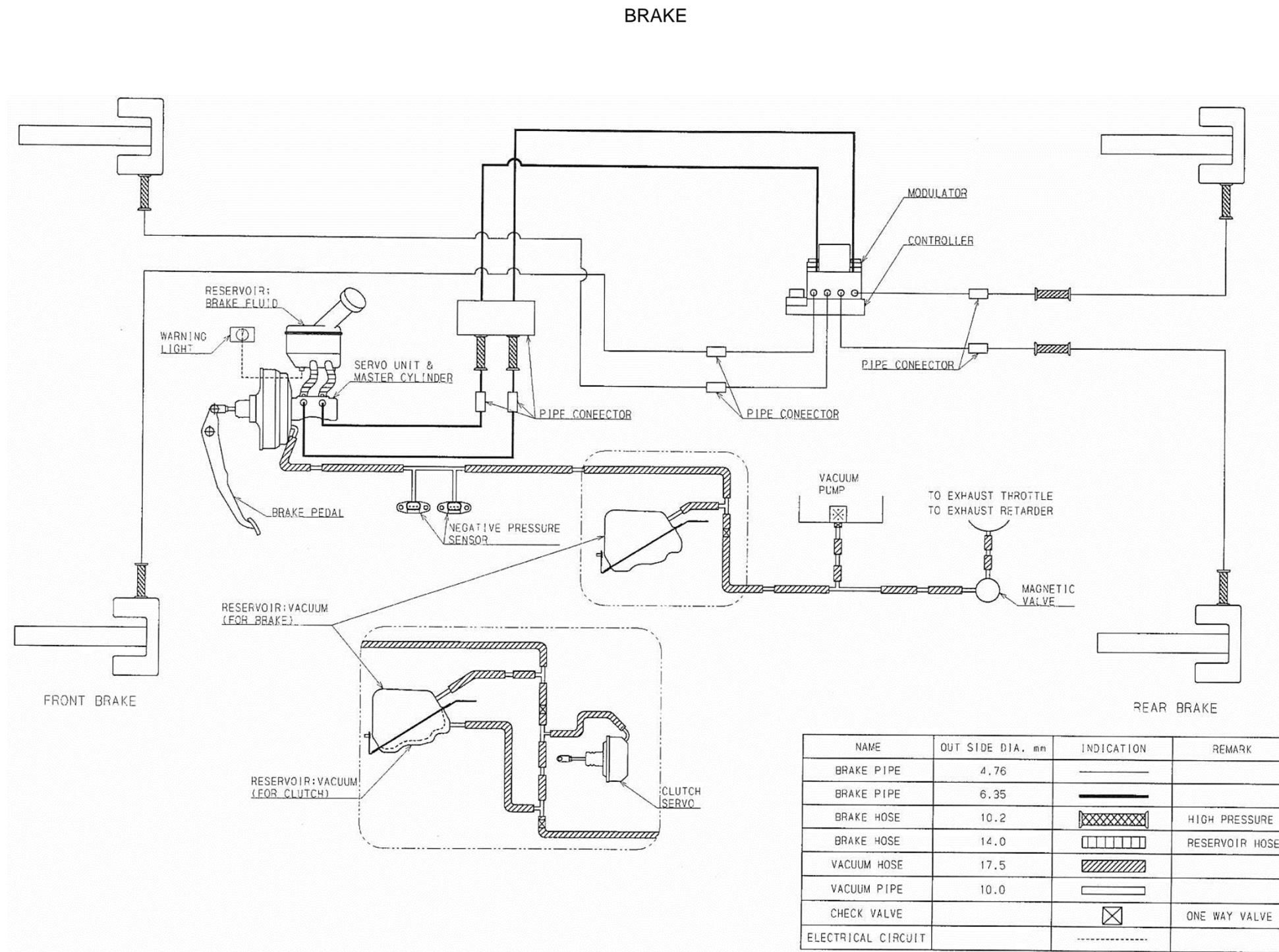


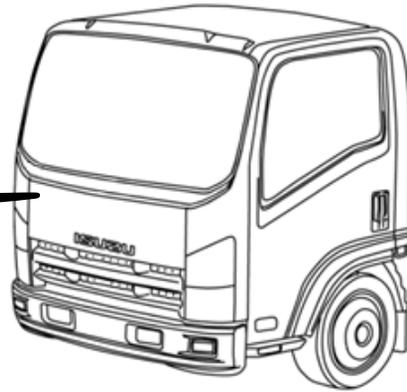
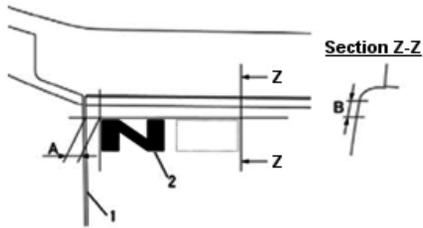
Fig.12-1-3 Piping diagram



## 12.2. LOCATION OF DECALS

Following figure shows the location of decal on cab front body.

### Location of decals



- 1: Edge of the panel
- 2: Decal ("N \*"/"REWARD-N \*"/"REWARD")

#### Distance

- A: 30mm("NL""NM")/34mm("NN""NP""NQ")/  
18mm("REWARD-N \*")/18mm("REWARD")
- B: 19mm