

INTRODUCTION

This guidebook contains descriptions of various basic matters required for and cautions to be exercised when body-building or making alterations to the base vehicles in cab and chassis conditions.

All body-builders are requested to use this guidebook in design and conducting their body-building and alteration work, always keeping in mind the direct or indirect effect that the body-building or alteration job is expected to have on the component parts and the system of the base vehicles.

The description in this guidebook is aimed at the vehicles manufactured up to August, 2001. Note that all the vehicles manufactured subsequently may be covered by different descriptions due to specification changes, etc. This guidebook does not contain any service data or any description on methods of repair.

**Overseas C&A Products Division
TOYOTA MOTOR CORPORATION**

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Please use the attached application form for the method for inquiry.

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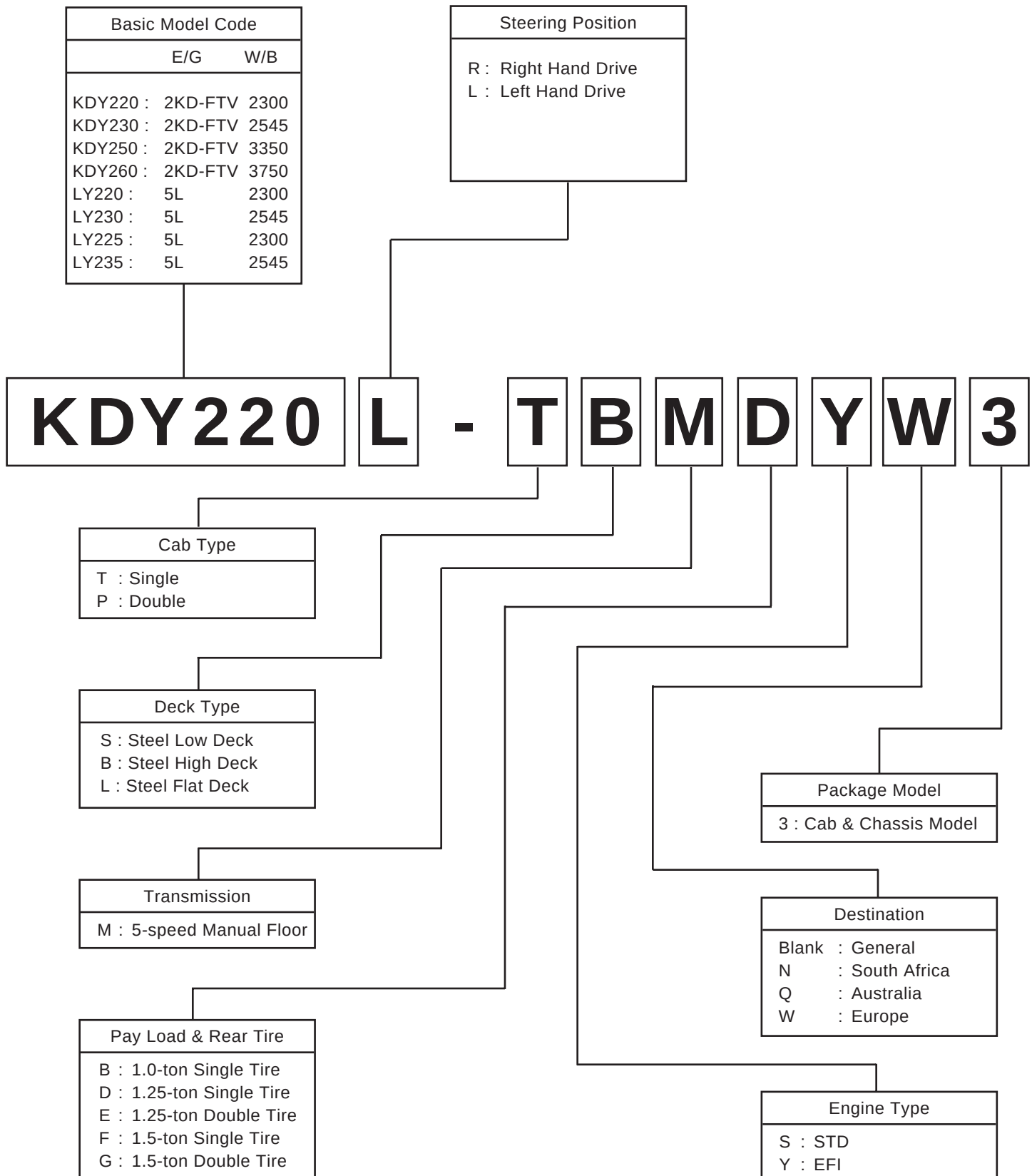
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【1】 MODEL STRUCTURE

1. Meaning of model code



2. List of vehicle models

Engine	Wheel Base	Steering wheel Position	Cab Type	Rear Tire	Destination					
					Australia		Europe			
					Single		Single		Double	
					Single	Double	Single	Double	Single	Double
2KD-FTV	2300	LH					KDY220L-TBMDYW3			
	2545	RH						KDY230R-TBMGYW3		
		LH						KDY230L-TBMGYW3	KDY230L-PSMBYW3	KDY230L-PSMEYW3
	3350	RH						KDY250R-TBMGYW3		
		LH						KDY250L-TBMGYW3		KDY250L-PBMEYW3
	3750	LH						KDY260L-TBMGYW3		KDY260L-PBMEYW3
5L	2300	RH			LY220R-TBMDSQ3					
		LH								
	2545	RH				LY230R-TBMGSQ3				
		LH								

Engine	Wheel Base	Steering wheel Position	Cab Type	Rear Tire	Destination	
					General	
					Single	Double
2KD-FTV	2300	LH				
	2545	RH				
		LH				
	3350	RH				
		LH				
	3750	LH				
5L	2300	RH			LY225R-TBMDS3	
		LH			LY225L-TBMDS3	
	2545	RH			LY235R-TBMFS3	LY230R-TBMGSN3
		LH			LY235L-TBMFS3	

【2】 BASIC MATTERS FOR BODY-BUILDING AND ALTERATIONS

1. Compliance with laws and regulations

Body builders are required to design and fabricate their vehicles in such a manner that the vehicles built or altered by them conform to the laws and regulations including safety and exhaust gas standards applied to finished vehicles of their respective countries.

- In making alterations to vehicles, care should be taken to design and fabricate them in such a manner as to satisfy various related laws and regulations with an ample allowance.
(Such laws and regulations always represent the minimum limit of requirements to be met by the particular body-building or alteration work.)
- Be sure that the materials used for body-building or alterations sufficiently meet the legal requirements, the performance and safety standards, and that the resulting vehicle should be as lightweight as possible.
- After body-building or alteration work is complete, check to see whether the materials or parts used for such work are produced as designed and satisfy predetermined performance requirements and functions, and also whether they contain no defects.

2. Securing basic performance and safety requirements

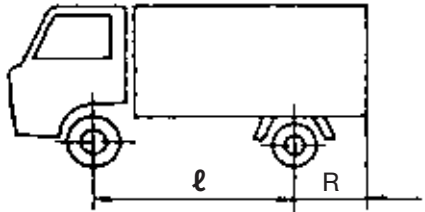
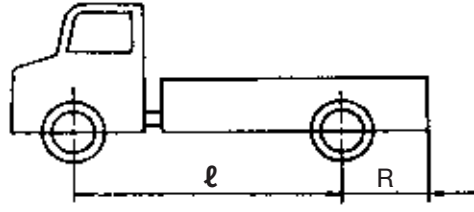
All body-builders are required to make sure that the inherent functions of the base vehicle are not lost by the particular body-building or alterations. Also, make sufficient study to make sure that any changes of the standard parts are free of functional problems from both technical and safety points of view.

- The forward field of view should not be blocked by the body-building or alterations.
- The chassis should not be damaged by the body-building or alterations.
- No difference in weight between right and left wheels should occur due to the body-building or alterations.
- All body-building job should be conducted in a manner avoiding local concentration of the load on the chassis frame. In order to distribute the load over the frames, all the wheels should be located on the same plane without distorting the frame.
- The materials and parts involved in the body-building or alteration work should be designed and fabricated to facilitate the inspection and maintenance of the chassis parts after they are mounted on the vehicles.

Limitations are set for the length, width, height and weight of the parts mounted according to the particular base vehicle. Any restrictions which may be imposed in each country should be complied with.

[1] Rear overhang

The rear overhang should be as shown in the following depending on the body style and the length of the wheelbase of the base vehicle.

Body style	Rear overhang
Vehicle with cargo not protruding from rear end Ex: Van	$R \leq \frac{2}{3} \ell$  Y-088
Vehicle with cargo protruding from rear end Ex: Cargo truck	$R \leq \frac{1}{2} \ell$  Y-089

The rear overhang is defined as the horizontal distance from the rear axle center to the rear end.

[2] Limitation of front axle load ratio (when loaded with cargo)

In order to secure running safety, the ratio of the load exerted on the front axle should be set as follows (Distribute the cargo weight uniformly over the whole vehicle).

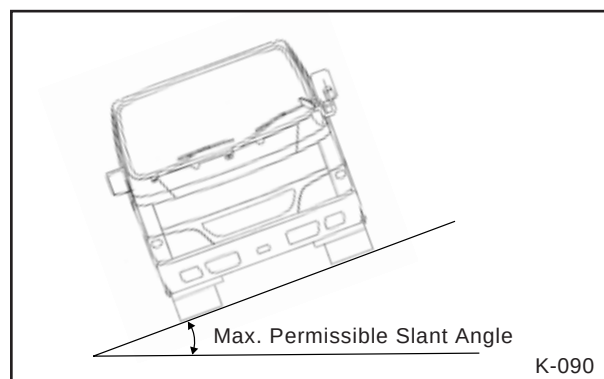
$$\text{Limit: Front axle load ratio(\%)} = \left(\frac{\text{Front axle weight}}{\text{Total vehicle weight}} \right) \times 100 \% \geq 20\%$$

[3] Maximum permissible slant angle

This means the maximum slant angle at which the vehicle remains unoverturned when unloaded.

The longer the tread is, or the lower the center of gravity is, the larger this angle is.

The maximum permissible slant of completed vehicle with special equipment should be more than 35°.



[4] Height of gravity center

Install heavy building components in the vicinity of gravity center.

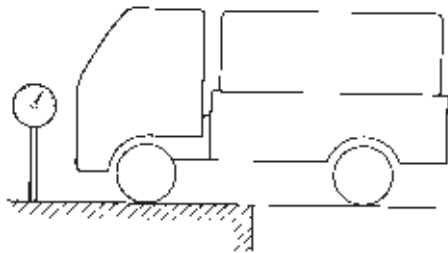
Models	* Gravity center height of base vehicle (C & C) mm
KDY220L-TBMDYW3	605
KDY230R-TBMGYW3	605
KDY230L-TBMGYW3	605
KDY230L-PBMEYW3	655
KDY230L-PSMBYW3	655
KDY250R-TBMGYW3	605
KDY250L-TBMGYW3	605
KDY250L-PBMEYW3	655
KDY260L-TBMGYW3	605
KDY260L-PBMEYW3	655
LY220R-TBMDSQ3	605
LY230R-TBMGSQ3	605
LY230R-TBMGSN3	605
LY225R-TBMDS3	635
LY225L-TBMDS3	635
LY235R-TBMFS3	635
LY235L-TBMFS3	635

*No passengers

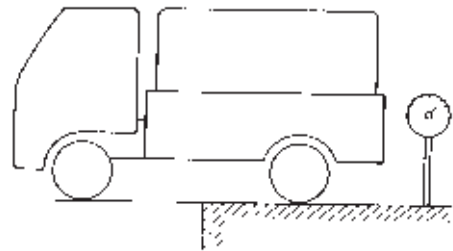
[6] Weight

(1) Weight check

Measure and determine the curb weight of the built or altered vehicle. Take a measurement of the front axle weight and the rear axle weight separately. (Each value must not be more than their respective tolerances.)



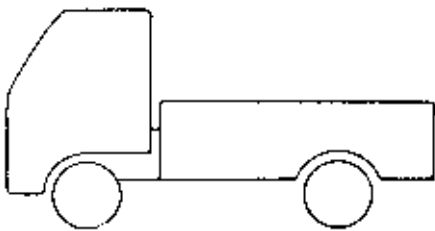
Distribution of front wheel weight



Distribution of rear wheel weight

U-088 U-089

Curb weight

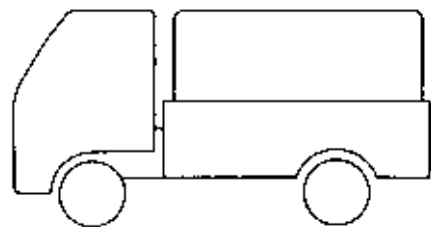


With all optional parts, equipment and the rear body with the fuel tank filled up

U-090

Overall vehicle weight

Overall front axle weight + Overall rear axle weight



With all optional parts, equipment and the rear body with the fuel tank filled up

+

All passengers and cargo to full capacity

U-091

(2) Relation between building or alteration weight and load

Item	Model	KDY220L-TBMDYW3
C.W.of base vehicle (C&C)		1445
Special equipment accessories, permanent attachment		A
Total weight of passenger, cargos and baggages		B
G.V.W.of finished vehicle		3000

In the case where the weight of the finished vehicle [C.W. of base vehicle (C&C) + A] increases, the maximum allowable load is reduced as the G.V.W. is fixed.

C.W.of base vehicle (C&C)	Weight of built or altered equipment	Passengers and cargo	G.V.W.			
1445	+	A	+	B	≦	3000

(3) Relation between overall vehicle weight and maximum allowable axle weight

(F) = Front axle weight after building or alteration $\leq$ Front G.A.W.R.

(R) = Rear axle weight after building or alteration $\leq$ Rear G.A.W.R.

(F) + (R) $\leq$ G.V.W.

(4) Range of C.W. of finished vehicle (Admissible weight for the Emission Regulation)

Models	C.W.of finished vehicle
KDY230R-TBMGYW3 KDY230L-TBMGYW3	$1795 < \text{C.W.} \leq 2070$

3. No alterations to important safety parts

The important safety parts and components (such as the front axle, steering-related and brake-related parts) must not be modified (either by welding, reinforcement, machining, heating or otherwise).

4. Preparation of operation manual and/or maintenance & inspection manual and their installation on vehicles

- In the event that the body-building or alterations cause a change in the procedure for operation, maintenance, inspection or adjustment of the standard vehicle, an operation manual should be prepared and installed on the vehicle.
- An operation manual and/or a maintenance & inspection manual specifying the procedure for the operation, maintenance, inspection and adjustment including inspection intervals of the particular building or alterations should be prepared and installed in the vehicle.

5. Establishing after-sale service system

Take adequate care to establish an after-sale service system for the parts built or altered.

【3】 DAMAGE WARNINGS ON MECHANISMS AND SYSTEMS IN BODY-BUILDING OR MAKING ALTERATIONS

1. Engine and engine compartment

【1】 No shared fastening of bolts

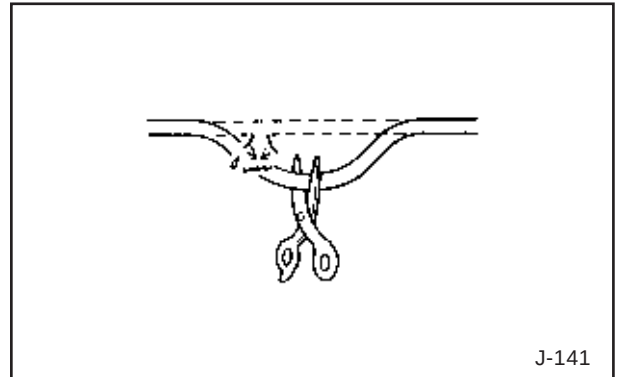
The bolts making up the engine except for those used for the cylinder head and the seals must not be fastened together with the built or altered parts.

Ex: Fittings of intake manifold, water outlet and inlet

【2】 No interference resulting from body-building or alterations

(1) Processing and arrangement change of pipes and wirings

The piping or wiring between the engine and the chassis (body) has no margin allowing for the assembly variations and movement. Therefore, no alterations or building work should be made (for example, the hose shortened or fixed) to shorten the piping or wiring.



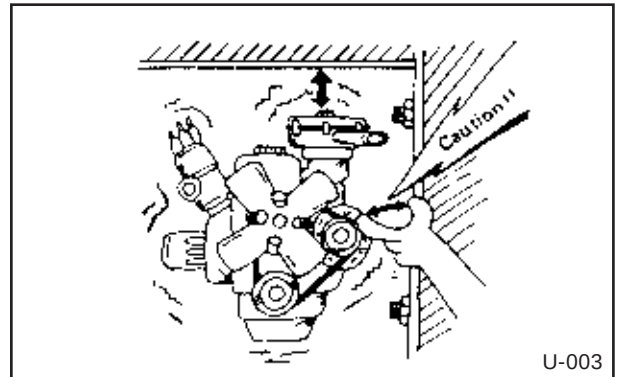
(2) Mounting built or altered parts

Don't make any alterations which cause interference with the piping or wiring on any parts subjected to relative motions.

(3) Securing appropriate clearance with engine body

See to it that the clearance of 40 mm minimum is secured around the engine.

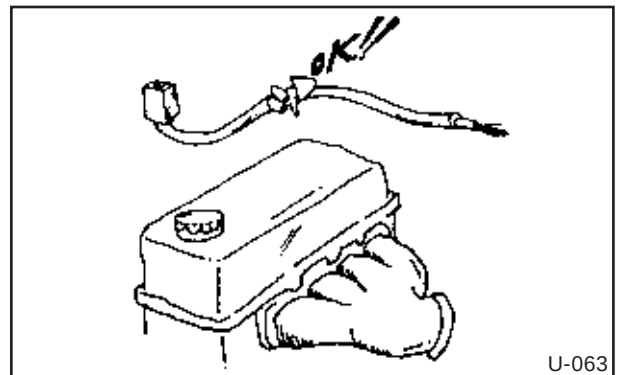
- Remember that the engine is movable in all directions including longitudinal, lateral, vertical and rotational directions.



【3】 Heat consideration

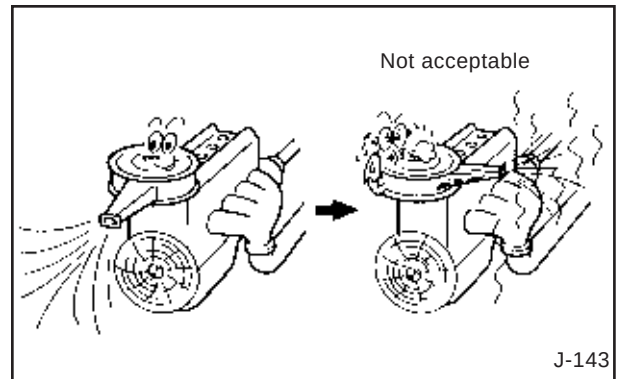
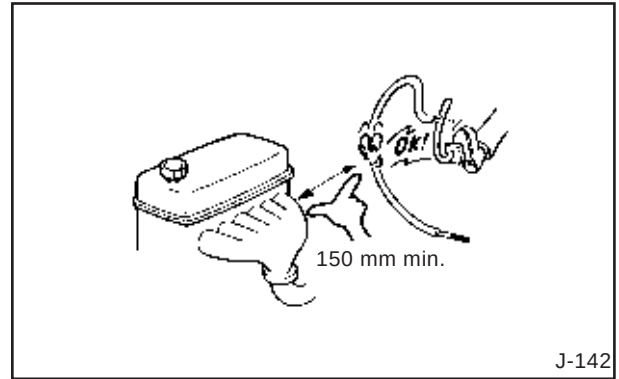
(Piping and wiring, resin clamp, accelerator wire, fuel system, etc.)

- 1 When installing any of the above-described parts in the vicinity of the exhaust manifold, exhaust or EGR system, take adequate care of heat resistance.



【3】-1. Engine and engine compartment

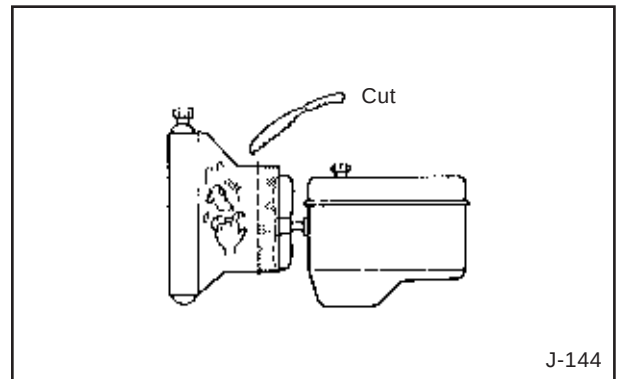
- Secure a construction free of interference in case of assembly variations or clamp dislocation. In particular, secure a sufficient clearance for the axle wire from the heat source (150 mm at minimum from the exhaust pipe).
 - In the event that the defined clearance is unavailable, protect against heat by means of a heat insulating plate or the like.
- 2 The resin clamp may be softened by the heat from the engine compartment and may be dislocated. Take good care.
 - 3 Don't make any alterations which may cause an increased temperature of intake air or fuel supplied to the injection pump.



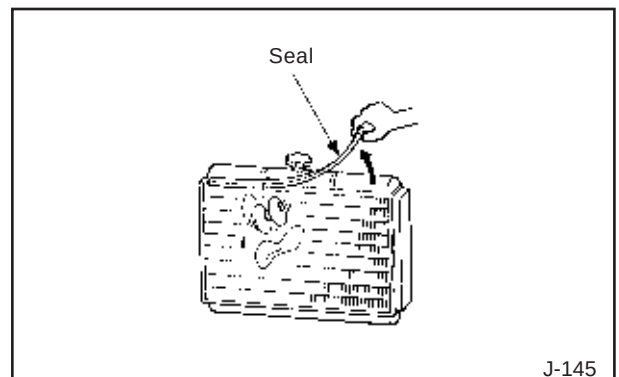
[4] Cooling

Don't make any building or alterations which may reduce the cooling performance.

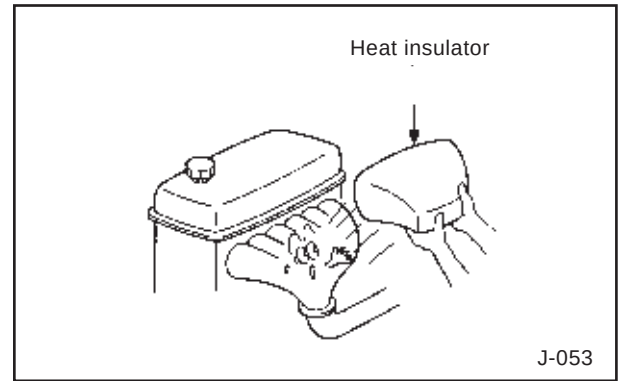
- 1 Don't mount any parts at a position where the exhaust manifold is exposed to less air.
- 2 Don't change the fan shroud coverage on the fan nor add any fan shroud cut as it would deteriorate the cooling performance.



- 3 The seals (sponge, rubber plate and the like) around the radiator are mounted for the purpose of securing the cooling performance. Don't remove them or cut a recess in them.



- 4 Don't take off or cut the protector, cover, heat insulator or the like mounted around the engine.



[5] No alterations to increase intake or exhaust air resistance

- 1 Don't make any alterations to the air cleaner.
- 2 Don't extend or make any alterations to the arrangement of the air hose.
- 3 Don't extend or make any alterations to the arrangement of the exhaust pipe.
- 4 Don't make any alterations to the muffler.

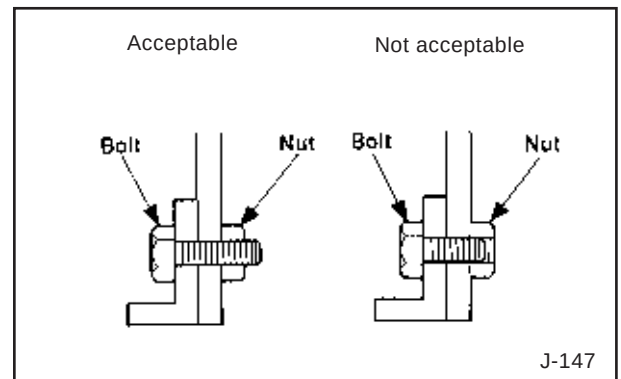
[6] Building or alterations of other parts

(1) Building on engine body

In mounting a part on the engine body, place it nearer to the engine (with a smaller overhang) and reduce the weight as far as possible.

(2) Mounting bolts

Make sufficient study of the lap allowance and the bottom fitting of the bolt to be mounted.

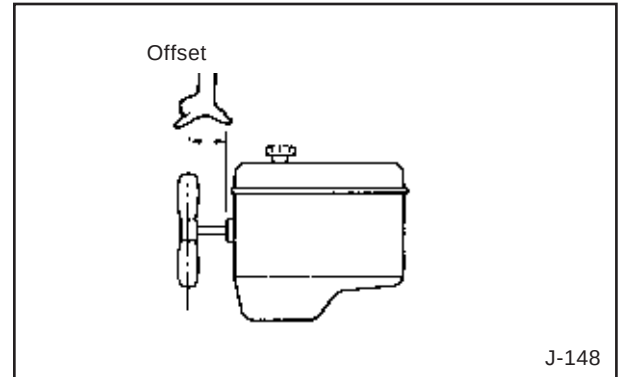


(3) Belt change

Don't reduce the number of existing belts and avoid the case of a belt being shared.

(4) Pulley addition

- When adding a crank pulley, minimize the offset from the mounting position and reduce the weight as far as possible.
- Don't excessively advance the fan (coupling) as a result of pulley addition as it could deteriorate the durability of the water pump.



[7] Mounting and demounting engine parts

In reassembling an engine part, always make sure to comply with the repair manual issued by the Overseas Service Division.

(Don't reuse the gasket, strictly conform to the fastening torque requirement, etc.)

[8] Serviceability

See to it that the following jobs are not adversely affected by the particular building or alterations.

- Oil level check
- Oil change (oil drain or injection)
- Change of oil filter
- Adjustment of fan belt tension
- Change of air cleaner element
- Change of fuel filter
- Change of spark plug
- Adjustment of ignition timing
- Adjustment of idle rpm and CO
- Adjustment of valve clearance
- Adjustment of injection timing
- Change of injection nozzle
- Change of glow plug

2. Frames

Avoid drilling holes and welding as far as possible as it would seriously affect the frame strength. Inappropriate drilling or welding may result in frame breakage. When the drilling or welding is unavoidable, take adequate care of the following points.

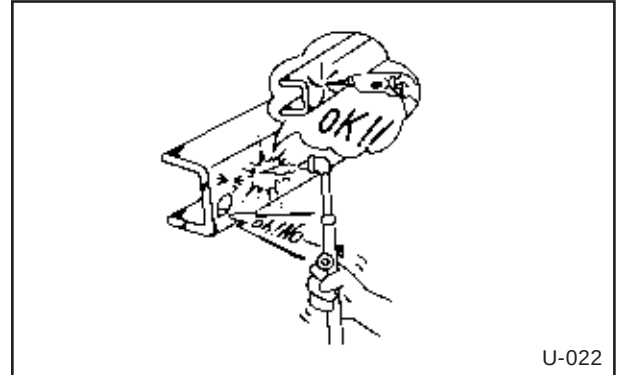
[1] Processing

Use bolts or rivets for fastening and avoid welding as far as practicable.

(1) Drilling

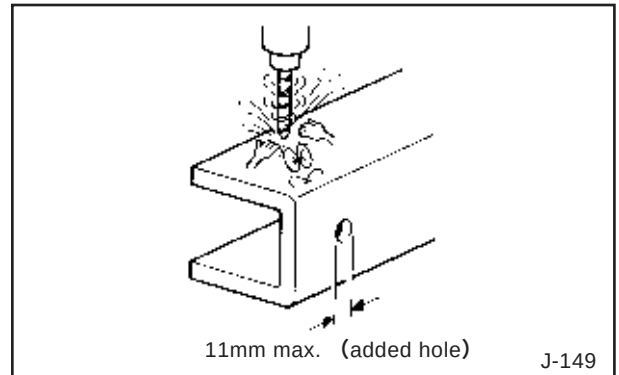
Don't use gas or heat to form a hole but always use a drilling machine.

- After drilling, always finish with chamfering.

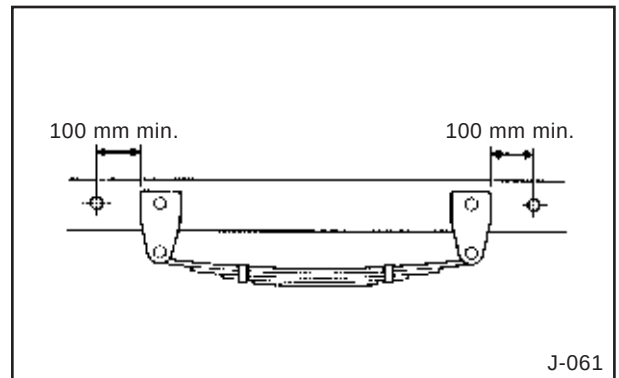


〈1〉 Drilling side member

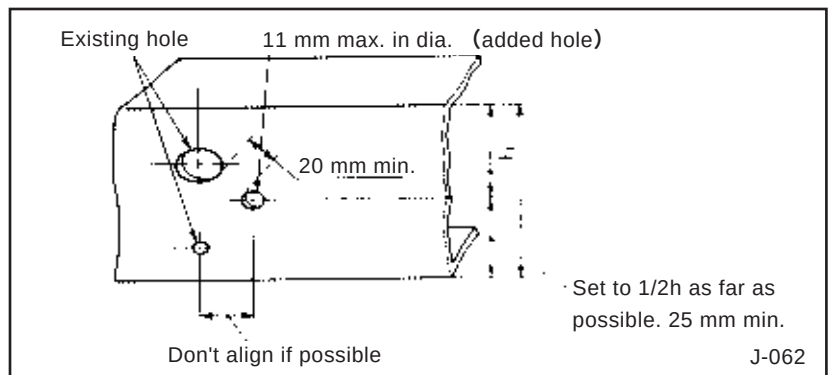
- 1 Don't weld in the upper or lower surface of the flange.
- 2 Make sure that the hole drilled is 11 mm maximum.
- 3 Channel-shaped section



- (a) When drilling a hole in the web surface, secure a distance of 100 mm minimum from the spring bracket.

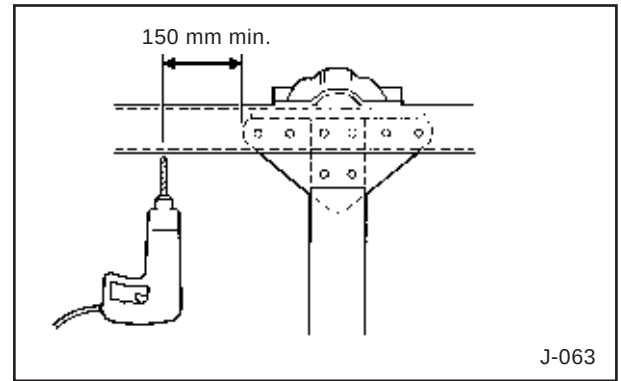


- (b) Set the inter-hole distance and position the holes as shown in the drawing.

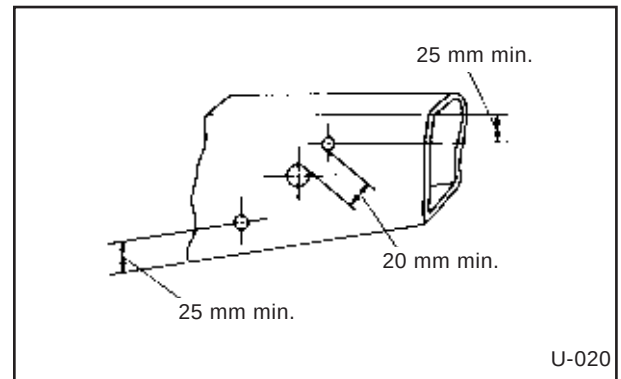


4 Square-shaped section

- (a) When drilling a hole in the side surface, secure a distance of 150 mm minimum from a high-stress source such as the spring bracket weld zone and the cross member.



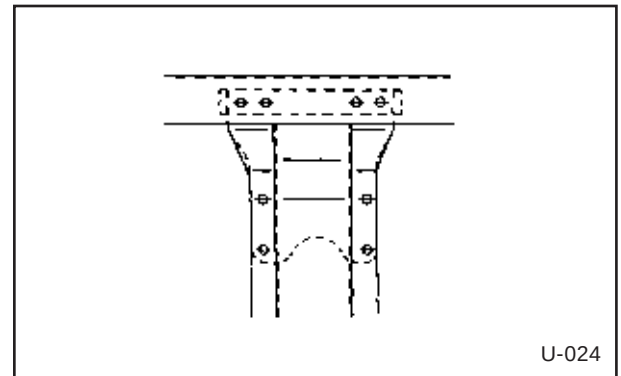
- (b) Keep the inter-hole distance and position the holes as shown in the drawing.



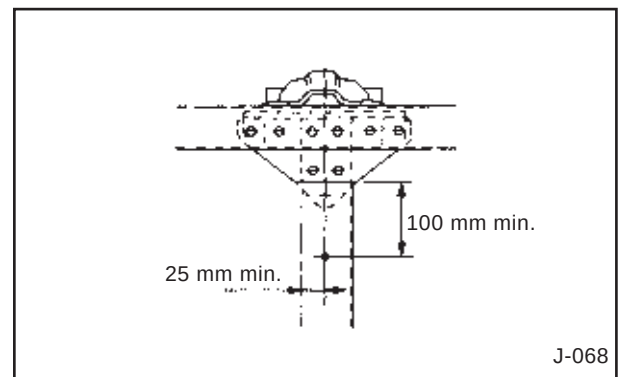
- (c) In the case of a dump truck, don't drill a hole in the inner channel between the trunnion bracket and the tension arm bracket.

〈2〉 Drilling cross member

- 1 Don't drill a hole in or make alterations otherwise to the alligator cross member.



- 2 When making alterations to the channel-shaped cross member by drilling or otherwise, be sure to locate the hole or the alteration 25 mm minimum from the cross member edge and 100 mm minimum from the bracket edge of the side member.



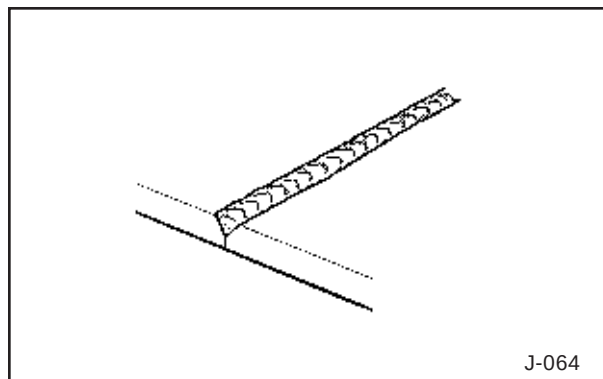
(2) Welding

1 Preparations

- (a) Before carrying out the welding work, remove the brake-related parts, fuel-related parts and wirings as far as possible in order for the chassis parts not to be exposed to welding sparks.
- (b) Clean the welding zone sufficiently beforehand.
- (c) Check to see that the welding rod is suitable for the material of the welding zone.
 - Make sure that the tensile strength and the yield point of the welding rod are identical to those of the base material.
- (d) During the welding work, always be sure to ground the parts involved at a point in the vicinity of the weld zone of the side member.

2 Operation

- (a) Maintain a constant welding rate with an optimum current in order to avoid fusion irregularities.



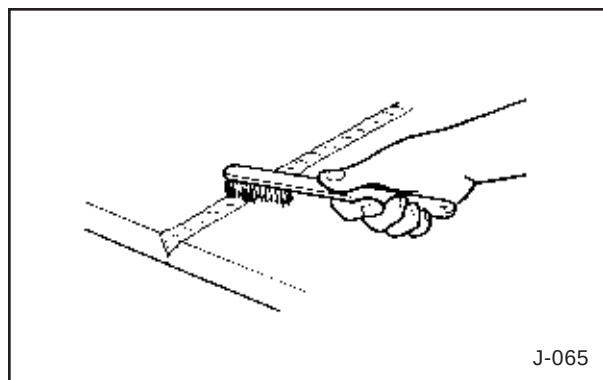
- (b) See to it that there is no welding defects such as incomplete welding, undercut, slug inclusion, blow hole or crackings.
- (c) In order to reduce the stress caused by welding, the welding length should be as short as possible and the welding volume should be kept at a required minimum to secure the strength.
- (d) Avoid concentration or proximity of welding joints as far as possible. Don't carry out the welding work on edges or bent portions as it demands a considerable welding skill.

3 After operation (anticorrosive treatment of weld zone)

Take an appropriate anticorrosive measure after welding a corrosive portion.

《Anticorrosive measure》

- (a) Brush off dust from the weld zone.



(b) Primer surfacer (primer coating)

Apply the wash primer.

- A major portion of the wash primer is composed of vinyl butyral resin and zinc chromate (anticorrosive pigment).
- The dry film thickness is 5 to 10 microns/coat.

(c) Top coating

Use a natural dry type paint or a double coat type paint in top coating.

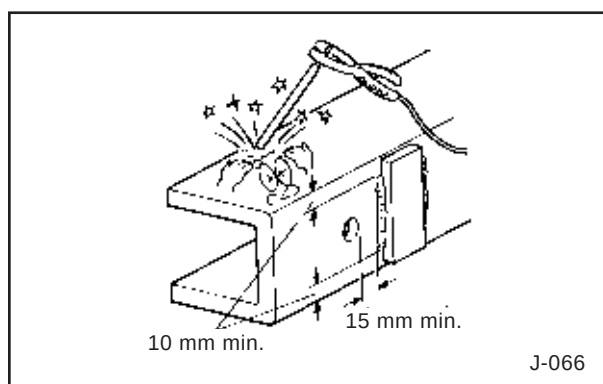
- The dry film thickness is 20 microns/coat minimum.

(d) Salt spray resistance

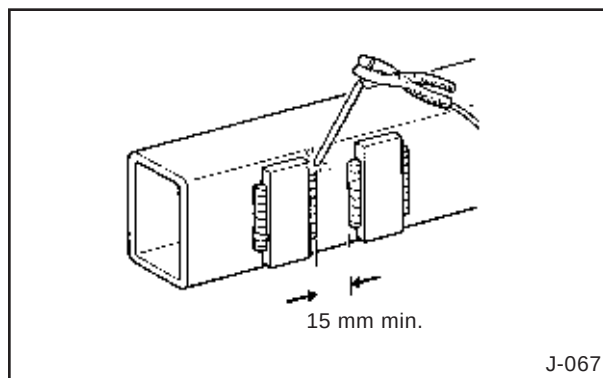
Conduct the salt spray test for 840 hours in succession according to ASTM B117. Make sure that no rust settles on the general surface other than the weld beads.

(3) Welding side members

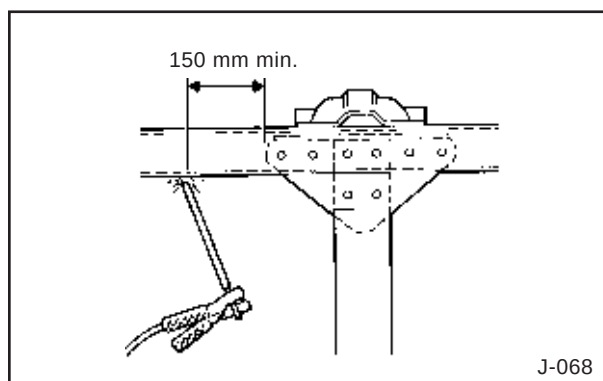
- 1 Don't weld in the upper or lower surface of the flange.
- 2 Keep the welding point away from the flange bend by 10 mm minimum.
- 3 Be sure that the welding bead is distant by 15 mm minimum from the hole edge.
- 4 Welding square-shaped section



- (a) See to it that the weld zone is away from the bead by 15 mm minimum.



- (b) The cross member and the spring bracket should be distant by 150 mm minimum from the weld zone.



- (c) In the case of dump truck, don't weld the inner channel between the trunnion bracket and the tension arm bracket.

[2] Side member reinforcement

The breakage or cracking of the side member is usually caused by stress concentration due to a local cut, welding or concentrated load or sudden rigidity change caused by upper parts rather than by the maximum stress which would be exerted in calculation. For this reason, the reinforcement by an outer or inner stiffener is not generally required.

- The large-scale repair of the side member should be avoided as far as possible.
- In the case where reinforcement is unavoidable due to special building/alteration or operating conditions, take adequate care of the following points.

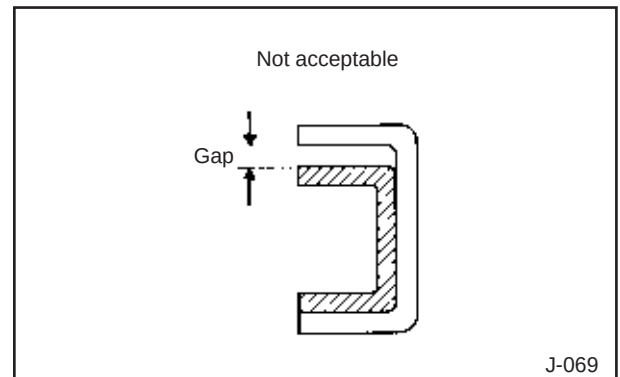
(1) Material of reinforcing member

When the outer side of the side member is reinforced, use a material at least equivalent to the main and inner materials.

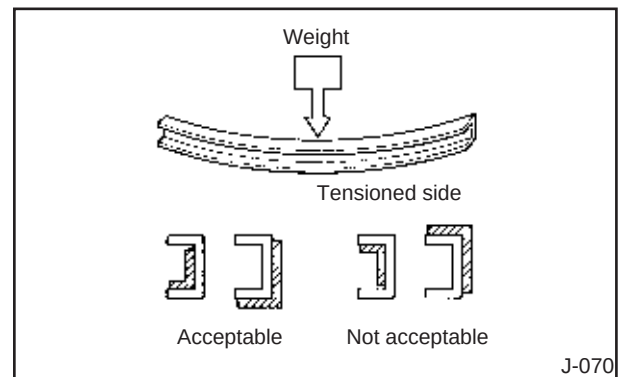
In applying a reinforcing plate on the inside of the side member, use a general frame steel plate (Toyota standard SHP45 with tensile strength of 45 kg/mm²) or an item equivalent to SS41P.

(2) Shape and orientation of reinforcing member

The channel-shaped reinforcing member, if low in machining precision, develops a gap with the flange and has an adverse effect when fitted in the side member. The reinforcing member, therefore, should be L-shaped as far as possible.



- 1 The L-shaped stiffener should be set in such a position that the flange is located on the tensioned side under side member stress.

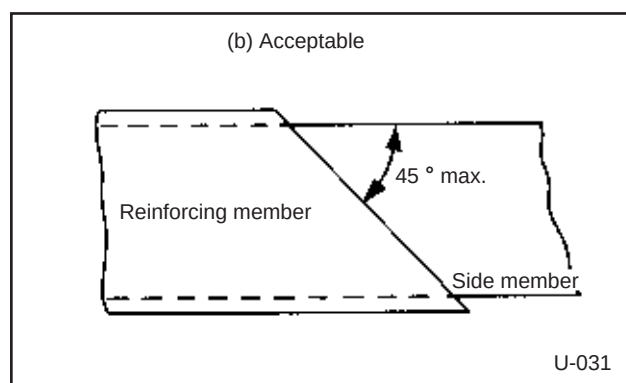
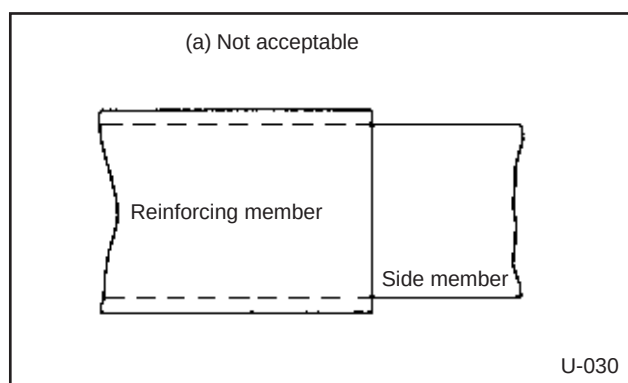


- 2 If the end of the outer stiffener is registered with the end of the inner stiffener or the portion of the cross beam or spring bracket subjected to a sudden rigidity change or load concentration, a cracking is liable to occur more easily. Take adequate care in determining the position of the stiffener end.

(3) Avoiding load concentration

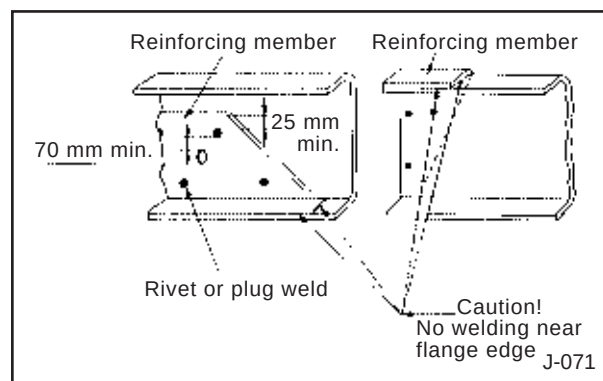
Reinforcement with an outer or an inner stiffener reduces the relative strength of the unreinforced portions. The rigidity gap which may result causes breakage of the particular part. Full study is required, therefore, on the range of reinforcement.

- 1 Generally, care should be taken of the clearance between the cab and the rear body for the side member of the truck. In the case where a large load is concentrated immediately after the cabin, reinforcement is required from the vicinity of the front wheel.
- 2 The end of the reinforcing member should not be raised sharply as shown in (a). Take care that the sectional slope is gentle with the angle of at least less than 45 degrees as shown in (b).



(4) Coupling reinforcing member and side member

Use rivets for coupling the reinforcing member and the side member. When welding is unavoidable, however, don't weld to the flange but to the web. (Apply plug welding in principle.)

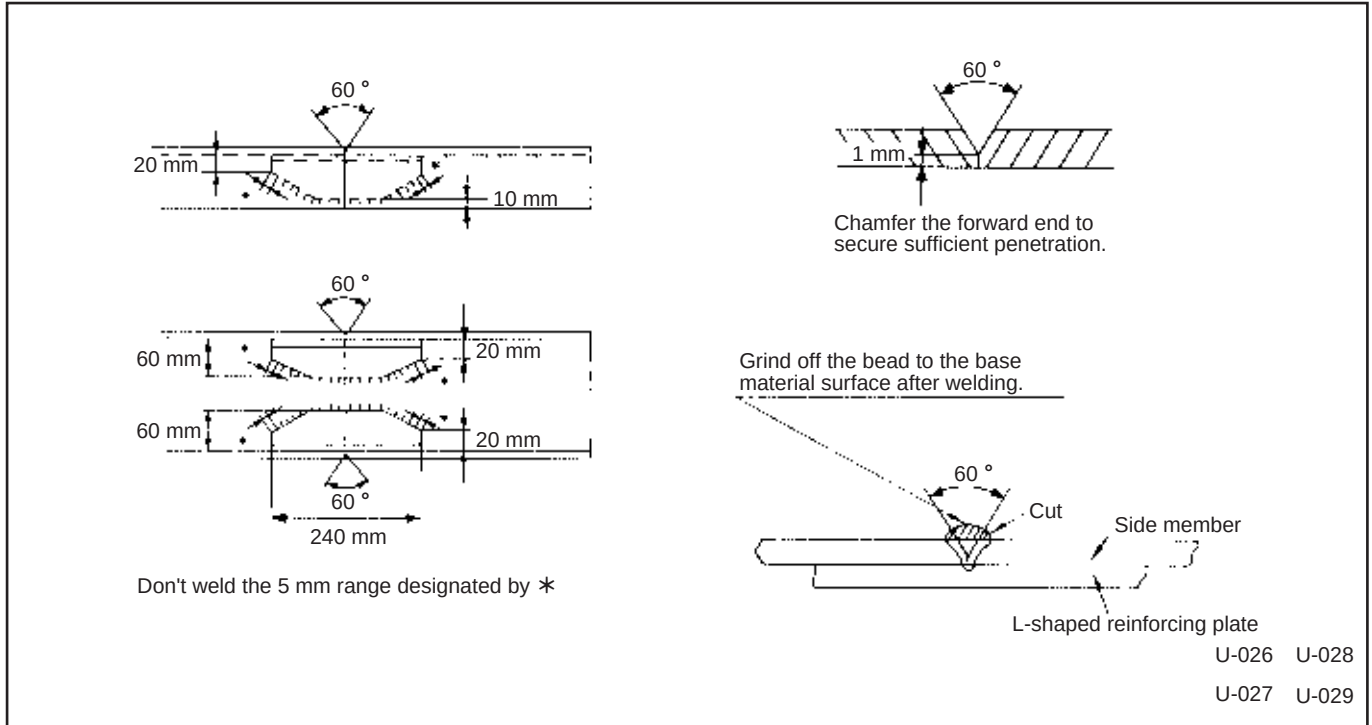


- 1 Before repeated riveting, correct the hole by drilling and apply a sufficient pressure.
 - In the case where the number of sheets fastened is increased by setting a reinforcing member, use a rivet having the next larger diameter.
 - After riveting work, see that the rivet is not heated by gas flame or the like.
- 2 In conducting the plug welding work, keep the plug welding hole away from the end of the reinforcing member by 25 mm minimum and from the bolt and the rivet hole by 70 mm minimum.
 - The hole diameter should be in the range of 14 to 20 mm in principle.

(5) Extension of side member rear end

The rear end of the side member should be extended according to the method shown in the figures below.

- Extension by welding



- In the case where the side member extension exceeds 350 mm, an auxiliary cross member is required.

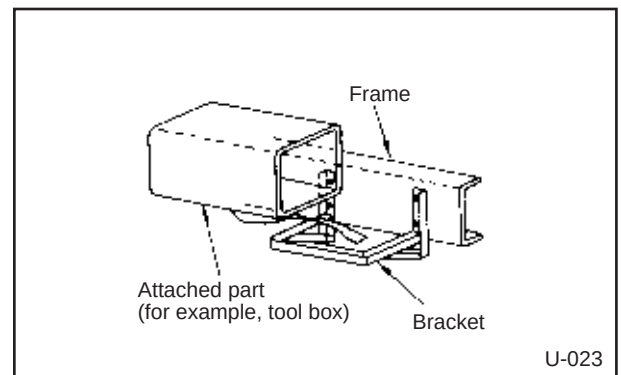
(6) Mounting a part on the side member

- 1 Mount a part always using a bracket.

- The offset should be minimized.
- Connect the bracket with bolt or rivet but not by welding as far as possible.

- 2 Tool box should be kept away from the exhaust pipe by 200 mm minimum and from the muffler by 300 mm minimum.

- In the case where a sufficient clearance is not available, provide an appropriate heat-protection measure using a heat insulating plate or the like.

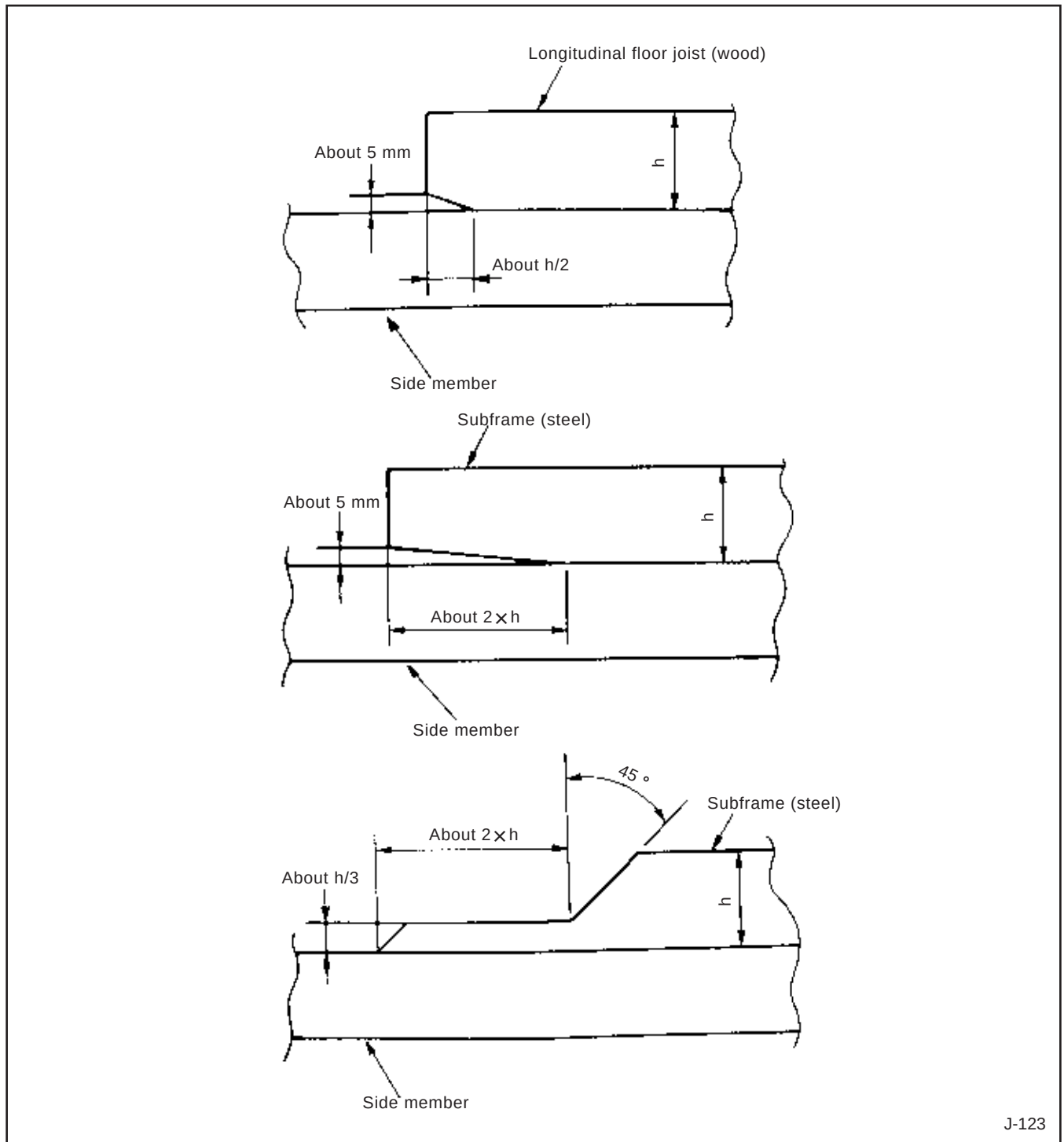


[3] Floor joist

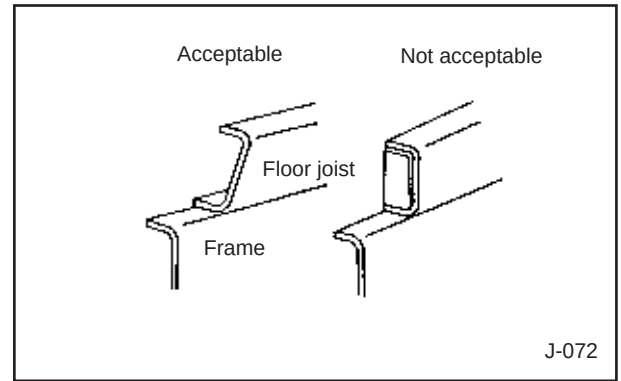
(1) Front end style

Avoid load concentration at the front end of the floor joist in contact with the side member as shown in the drawing. The shown shapes of the floor joist and the subframe are those for the common rear body, dump truck or tank lorry.

- 1 In the case of special alterations to upper parts, determine the shape taking adequate care not to cause any adverse effect such as stress concentration.

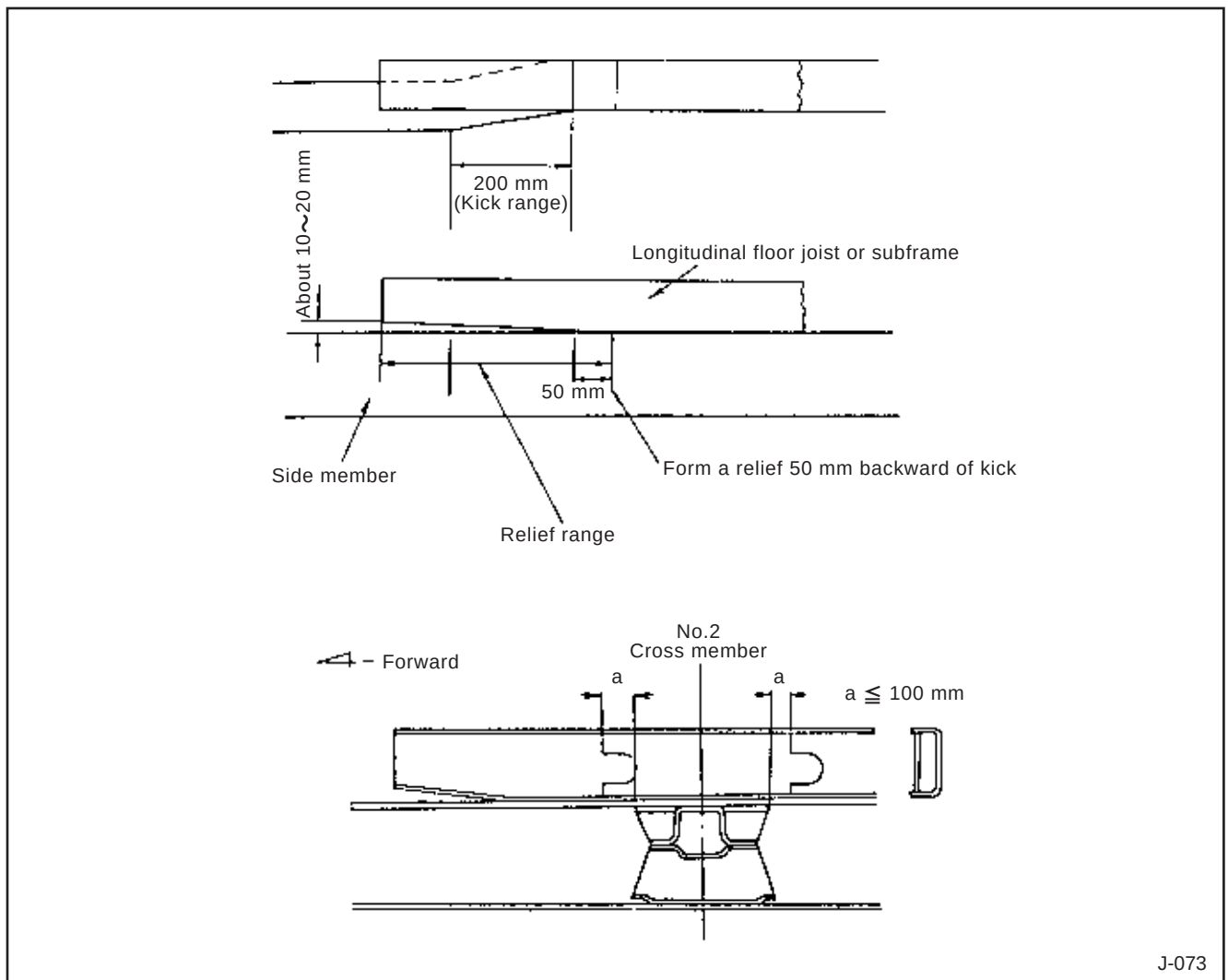


- 2 When lightweight formed steel or the like is used as a floor joist, keep open as shown.
The floor joist, even if made of steel, should not be fixed on the frame by welding or bolting on the frame flange.



(2) Side members in kicked state

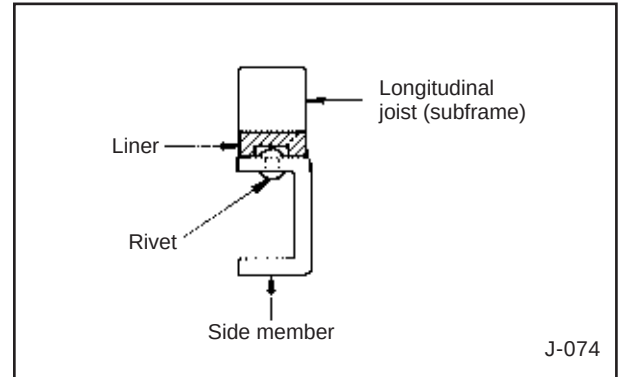
- 1 When a longitudinal floor joist made of iron is used for vehicles or dump trucks with the side members kicked (misaligned) on the cab-back, the longitudinal joists should be provided along the side members, while avoiding load concentration.
- 2 In the case of a wooden joist which is difficult to arrange along the side members, a relief should be formed at a point 50 mm backward of the kick as shown.



(3) Insertion of liner

When inserting a liner between the longitudinal joist or subframe and the side member in order to relieve the trunnion cassette or rivet head, a steel liner should be used as far as possible for the upper parts which are liable to be exposed to such a concentrated load as generated by a concrete mixer.

- The combined width of the upper parts should be identical to that of the side member.



[4] Rear body length and dimensions of longitudinal joist

- 1 The sizes of the upper surface of the side member and the undercarriage of the rear body (or the lower surface of the fender) are required to be determined in such a manner as not to interfere with the tires with reference to the bound limit of the tires and the differential (P.46 ~ 48) and the wheel house (P.74).

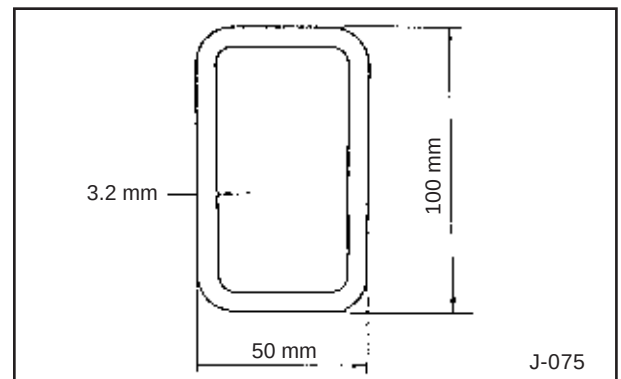
- For the vehicles having a long rear body, the sectional area of the longitudinal joist of the rear body should be set to a value greater than shown in the drawing.

- 2 A steel joist should be used for the long-wheel base vehicles.

- The use of a wooden or aluminum joist may bend the side members, often making the rear deck gate inoperable.

- With regard to heavy duty trucks or vehicles with a concentrated load having a long wheelbase, use the standard pressure - rolled structural steel material SS41 (100 high by 50 wide by 3.2 thick) or the like.

- In the case of using a lip-formed (channel-shaped) steel for the longitudinal or lateral joist, water may deposit in the formed steel often causing rust. Form a drain hole at a place where no strength problem is posed.



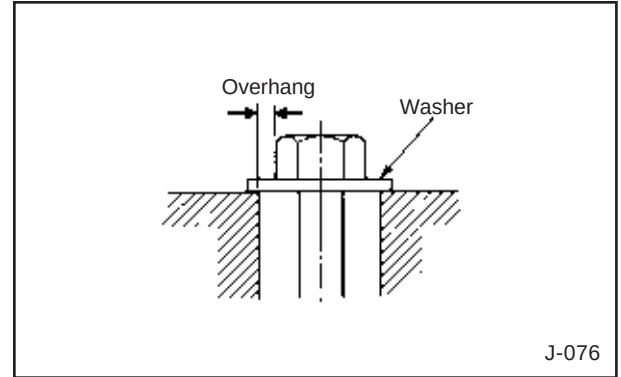
[5] Fastening bolts

- 1 For fastening the bolts of 7T or higher class, use a plain washer or the like.

- Don't use the mild steel washer or spring washer.

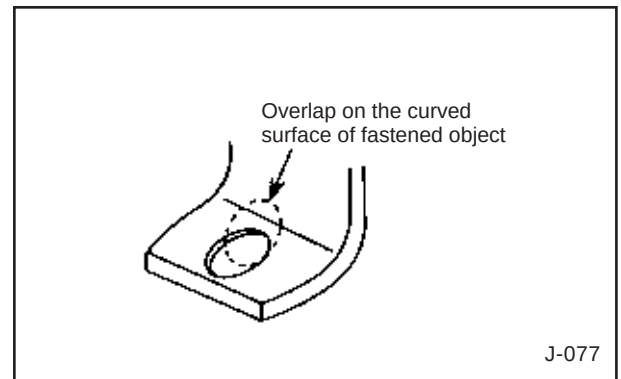
- 2 Don't apply the sealer or vinyl chloride sol or rubber (resin) for the washer or coupling surface.

- 3 As shown in the drawing at the right, take care not to cause any overhang between the lower hole diameter and the washer.



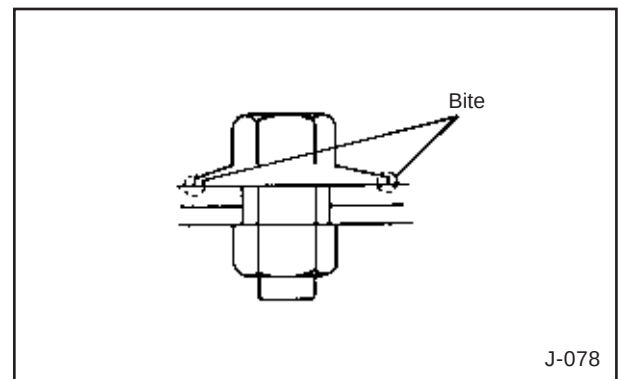
- 4 In order to prevent the curved surface of the fastened object from being overlapped on the washer, the washer should be sized taking the flat portion into consideration.

- In the case where the lower hole is elongate, the overlap may occur due to endwise misalignment of the washer.



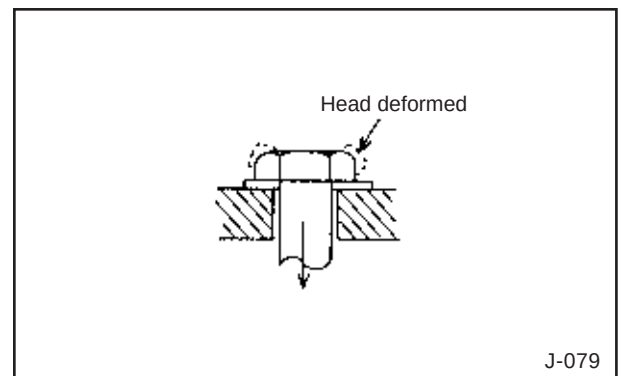
- 5 When the bolt and nut are used for fastening, tighten (turn) by the nut but not by the bolt.

- 6 When fastening by turning the bolt, the mild steel plate may be undesirably ground by the flange edge. Don't fasten the mild steel plate directly with a bolt having a flange.

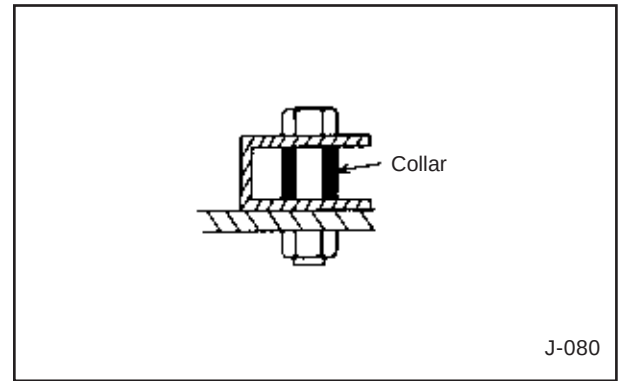


- 7 Don't reduce the thickness of the bolt head.

- If the bolt head is reduced in thickness to avoid interference or the like inconvenience, the head may be deformed often resulting in breakage.



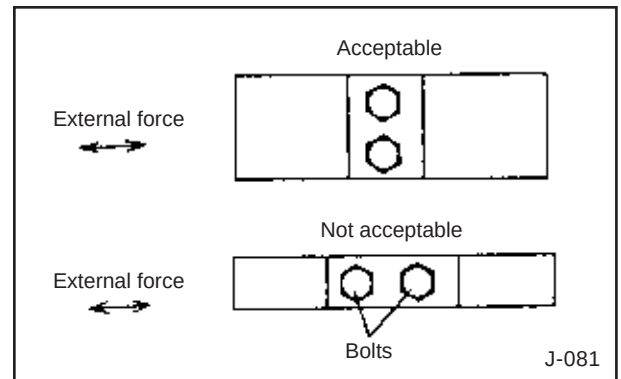
- 8 Don't fasten the alterations together with the bolt on the chassis.
- 9 In the event that deformation of a member is threatened by fastening of a bolt, always be sure to insert a collar.



: Be sure to use brand-new bolts and nuts.

- Never reuse bolts or nuts.

A Install a bolt perpendicularly to the external force as shown.



B Don't fail to apply masking so as not to allow deposit of paint on the threads of bolts.

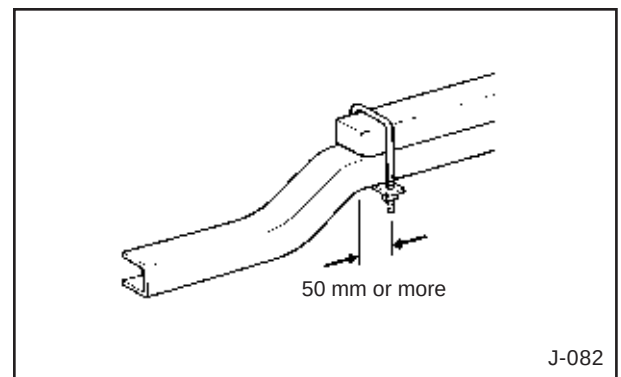
C In case of painting a portion fastened with a bolt, don't fail to apply paint after completing the fastening.

- Don't conduct painting before bolt tightening to prevent deposit of paint on joint surfaces and threaded surfaces.

[6] Fixing longitudinal joists

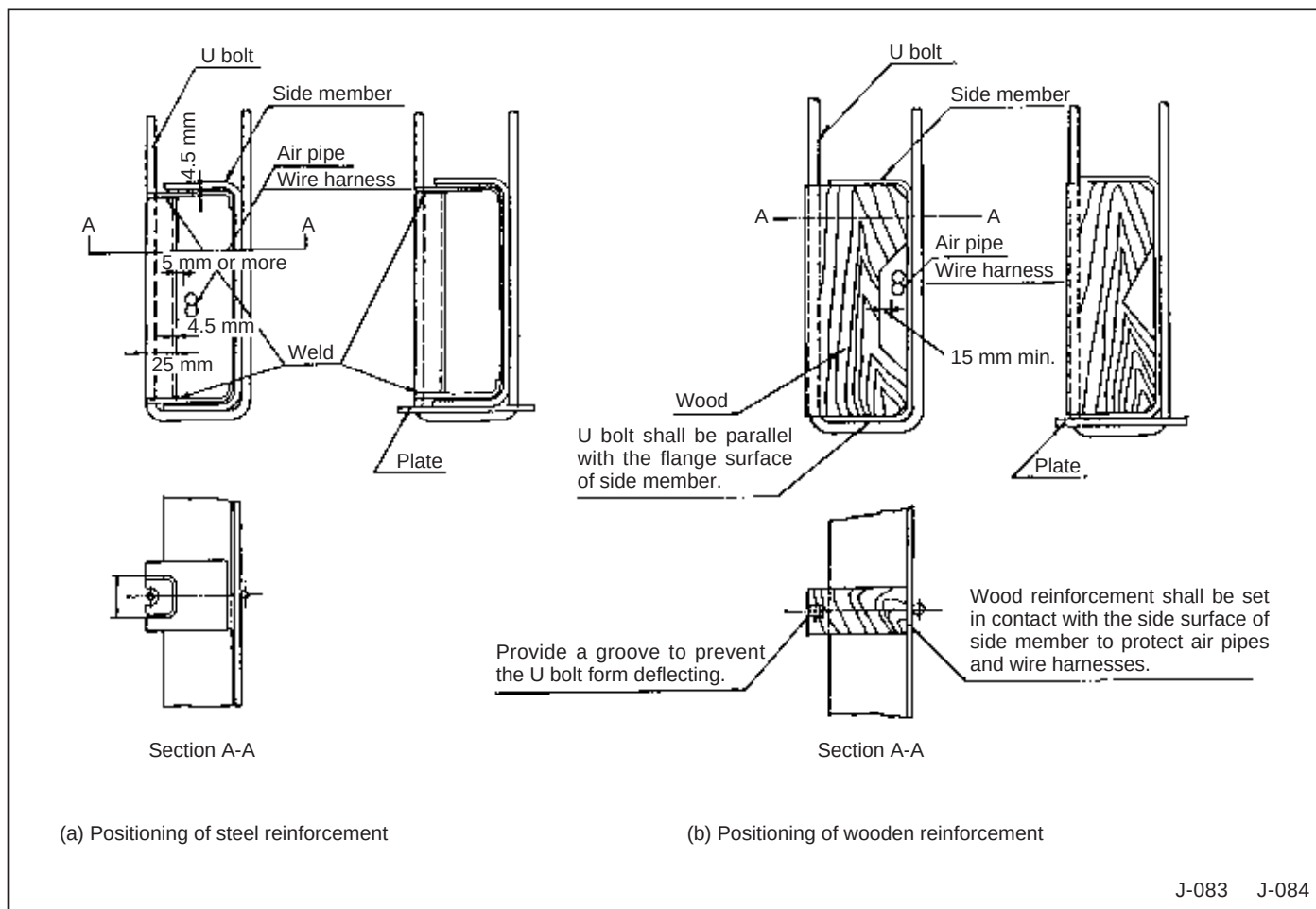
(1) How to fasten a U bolt

- 1 Position a U bolt 50mm minimum away from the frame kick point where the frame height changes.



2 Use of reinforcement

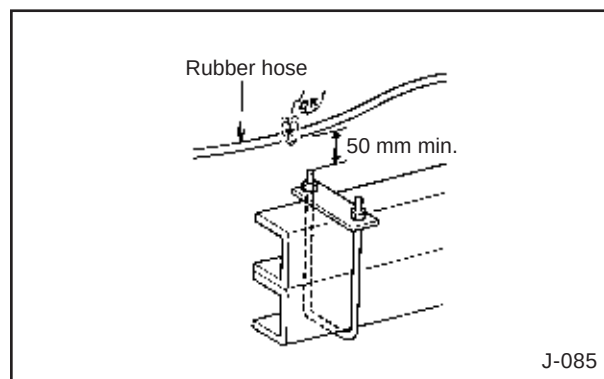
For the side member which is fastened with a U bolt, insert a wooden reinforcement in the fastened area so that the reinforcement pushes the frame from the inside to prevent deformation of the lower side flange. In an area close to the muffler, use a steel reinforcement instead to prevent burning.



(2) Interference with U bolt

Provide a sufficient clearance on the longitudinal joist and U bolt for fastening the joist so that those do not contact brake pipe, brake hose, fuel pipe, fuel hose, and wire harnesses.

- 1 In the case where a sufficient clearance with the chassis is not obtained, use a plate type U bolt and the like to secure a proper clearance.
- 2 The clearances between the U bolt and rubber hose and between the U bolt and air pipe or valve shall be 50mm minimum and 15mm or more respectively to prevent interference.

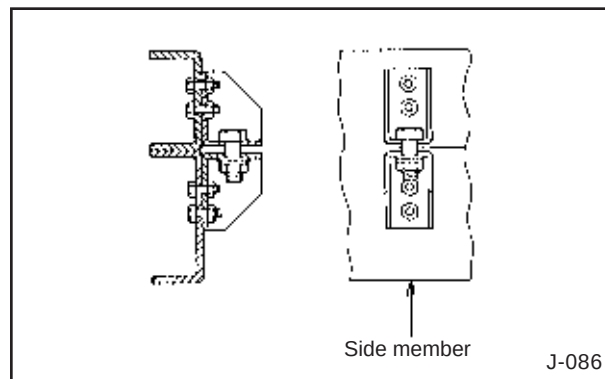


- 3 In the case where a reinforcement is used, sufficient care shall be taken to prevent interference with brake pipe, brake hose, fuel pipe and fuel hose. Particularly, a clearance margin shall be provided considering the movement of rubber hose.
- 4 As regards the clearance with U bolts used for cab rear side and rear axle, refer to the cautions provided in the respective procedures for body building.

(3) Use of opposed brackets

Follow the cautions below in the case where it is unavoidable to use opposed brackets because of the inability of installing a U bolt due to the body structure.

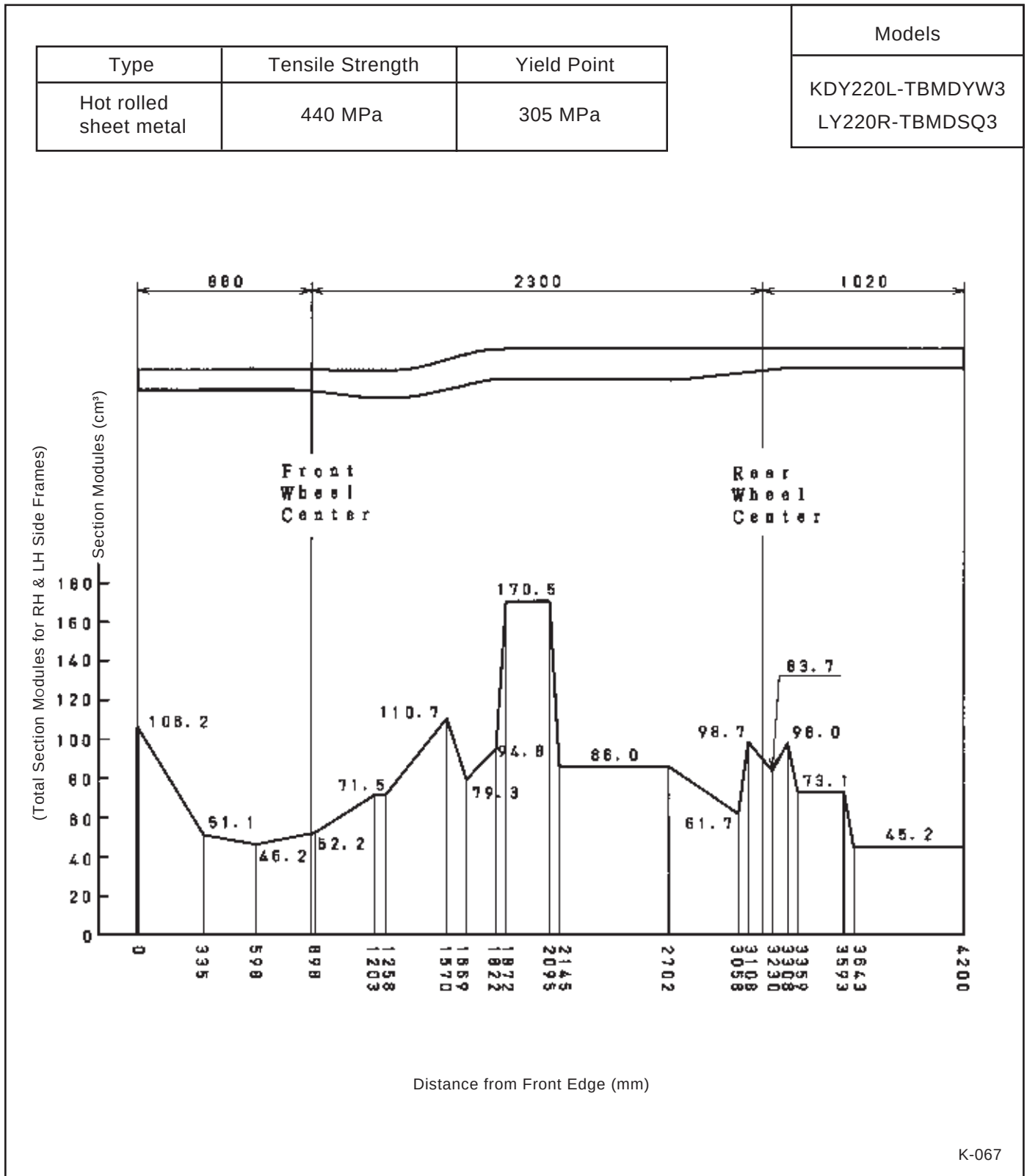
- 1 Position the opposed brackets at a position 200mm away from the end of cross member.
 - In the case where the position to install a set of opposed brackets would be close to a cross member, fix the brackets at the center of cross member.



- 2 As regards the opposed bracket on the side member side, use bolts when fixing it.
 - When drilling a hole in side member, take sufficient care so as not to give any damage to brake pipe, fuel pipe and wire harnesses.

[7] Data for calculating frame strength

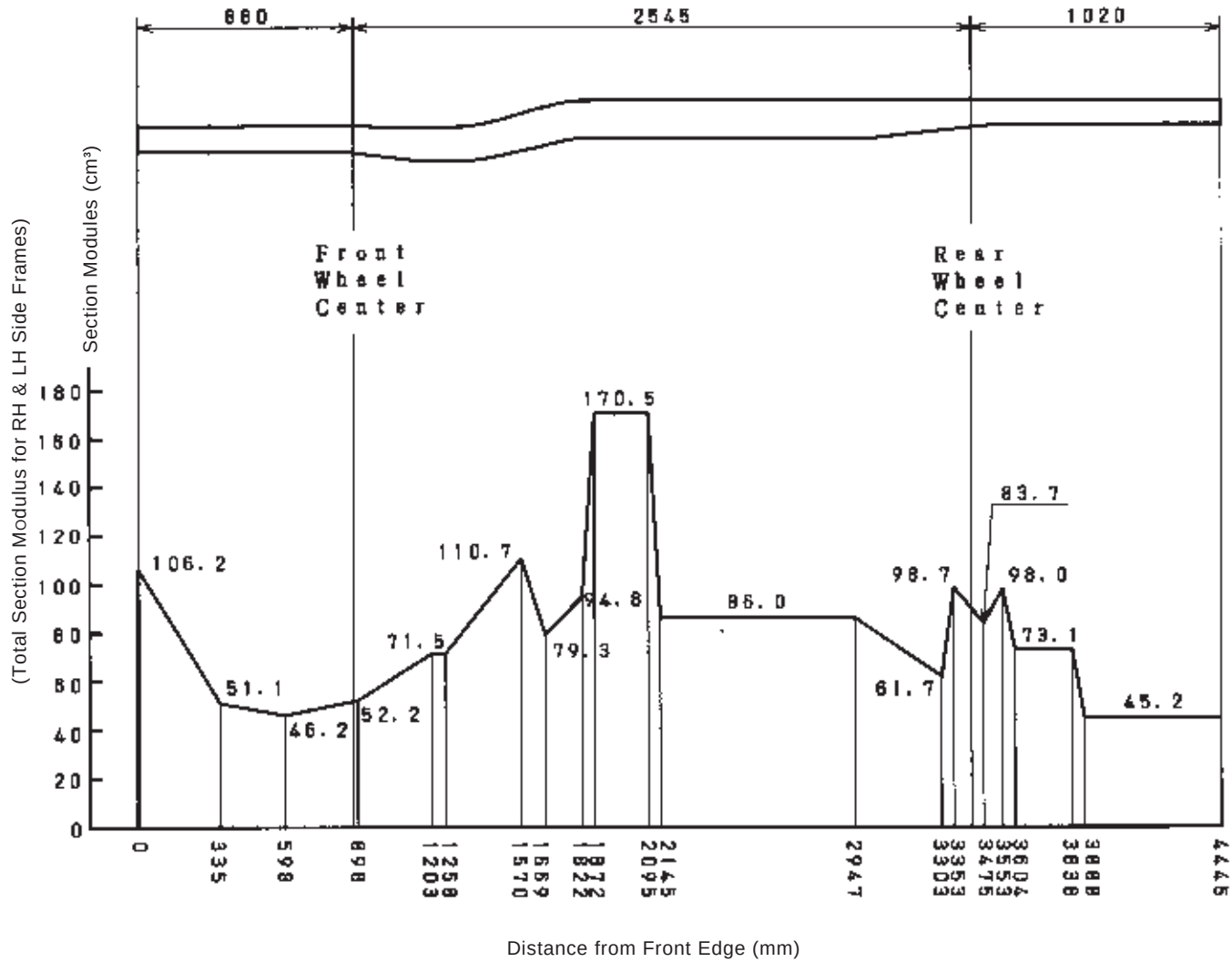
(1) Table of frame section modulus



K-067

Type	Tensile Strength	Yield Point
Hot rolled sheet metal	440 MPa	305 MPa

Models
KDY230R-TBMGYW3
KDY230L-TBMGYW3
-PBMEYW3
-PSMBYW3
LY230R-TBMGSQ3
-TBMGSN3



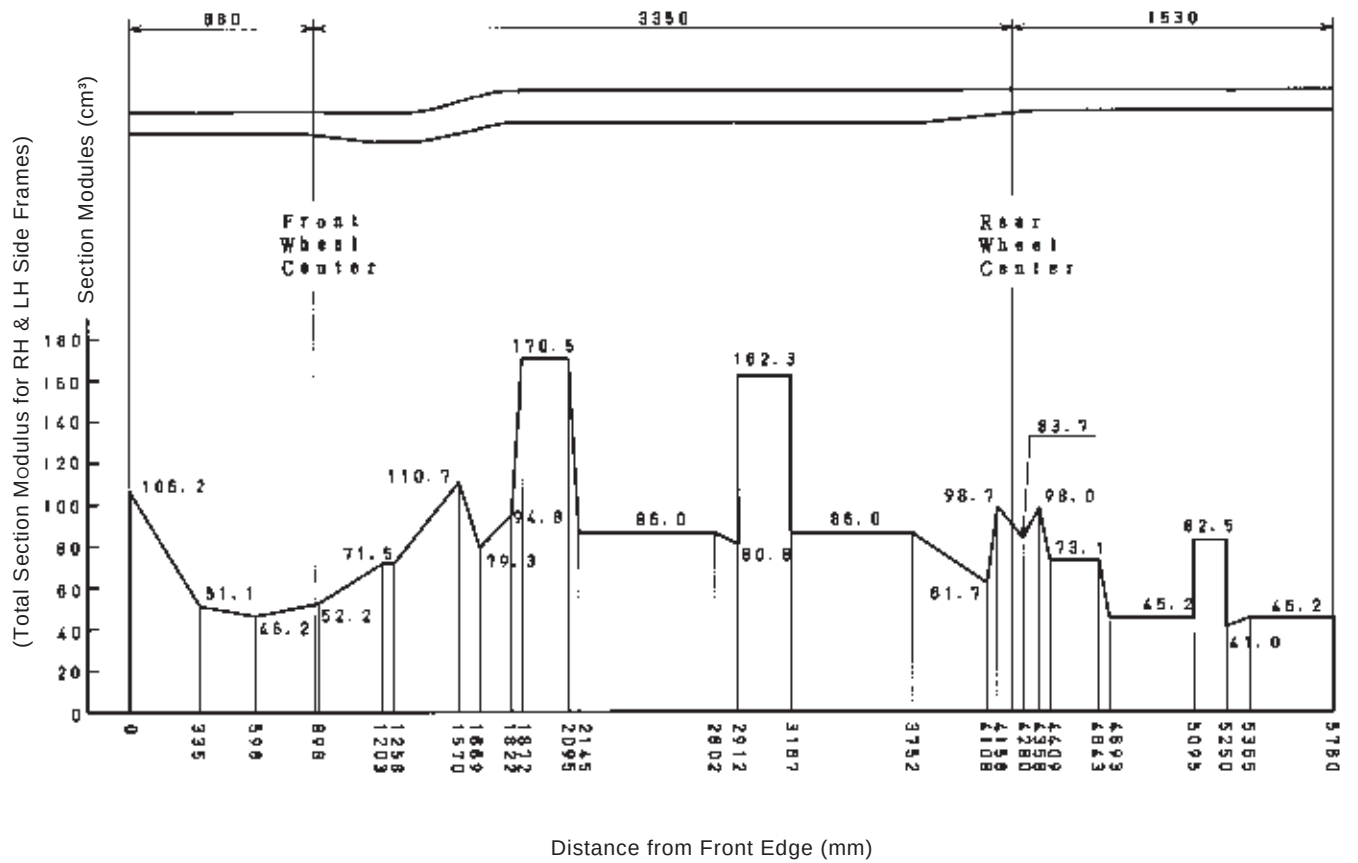
K-068

【3】-2. Frames

Type	Tensile Strength	Yield Point
Hot rolled sheet metal	440 MPa	305 MPa

Models

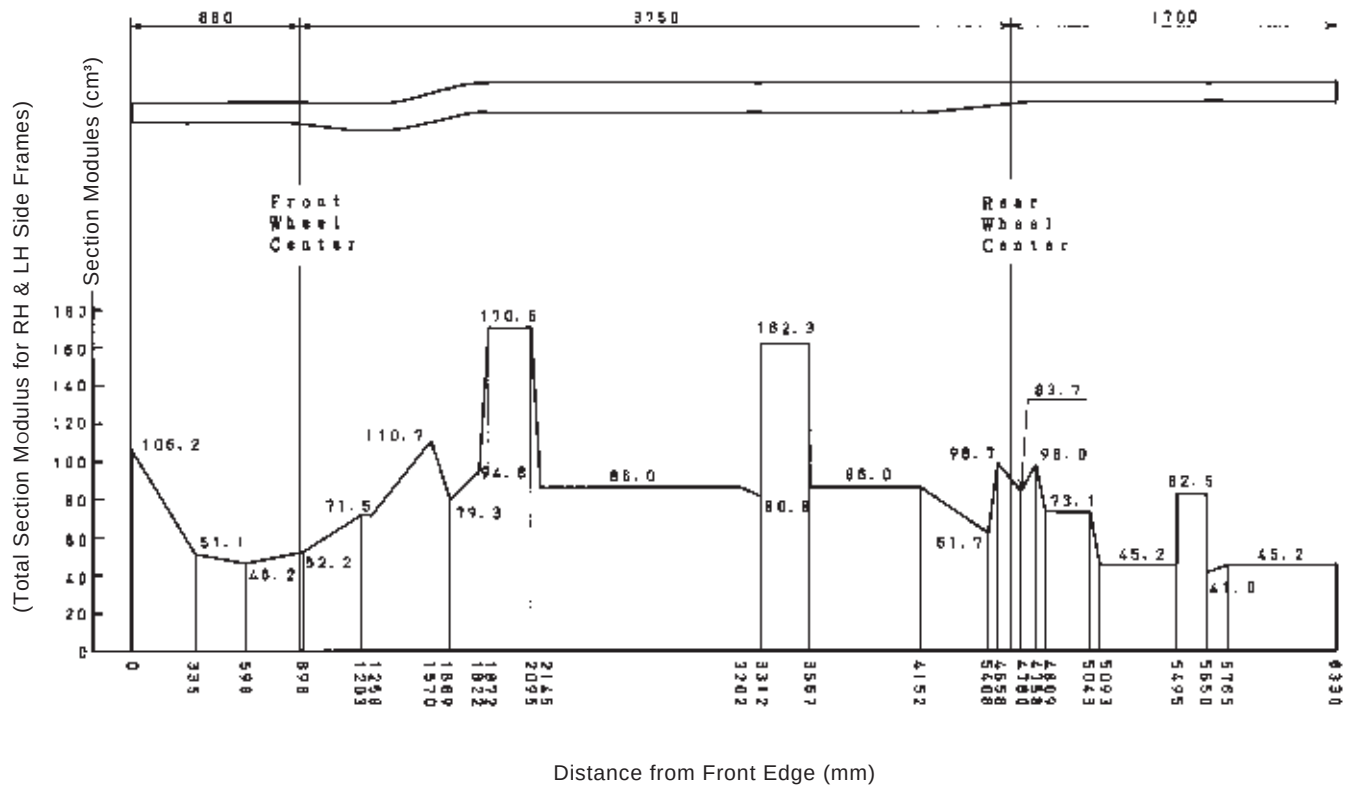
KDY250R-TBMGYW3
KDY250L-TBMGYW3
-PBMEYW3



Y-069

Type	Tensile Strength	Yield Point
Hot rolled sheet metal	440 MPa	305 MPa

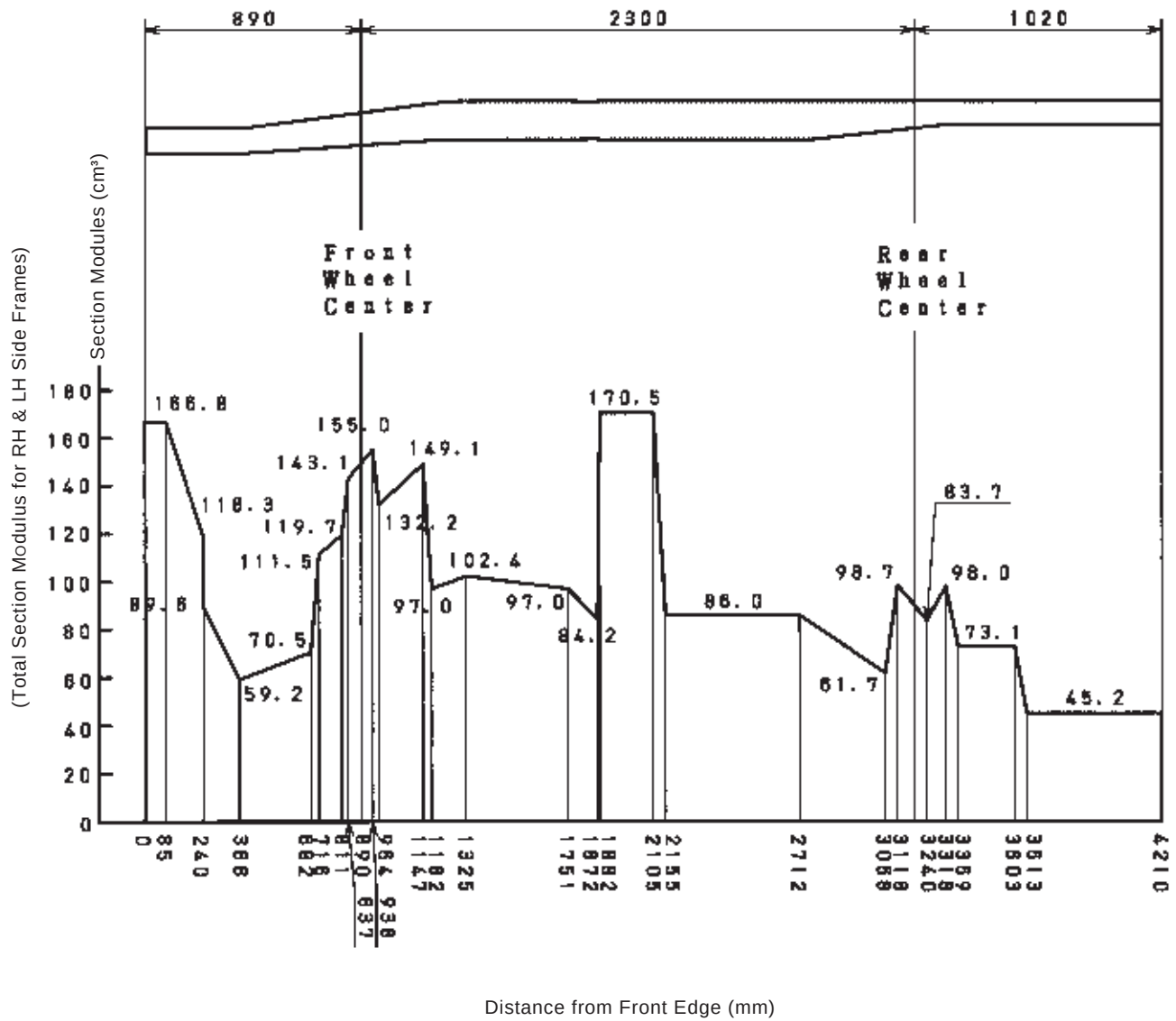
Models
KDY260L-TBMGYW3 -PBMEYW3



K-070

Type	Tensile Strength	Yield Point
Hot rolled sheet metal	440 MPa	305 MPa

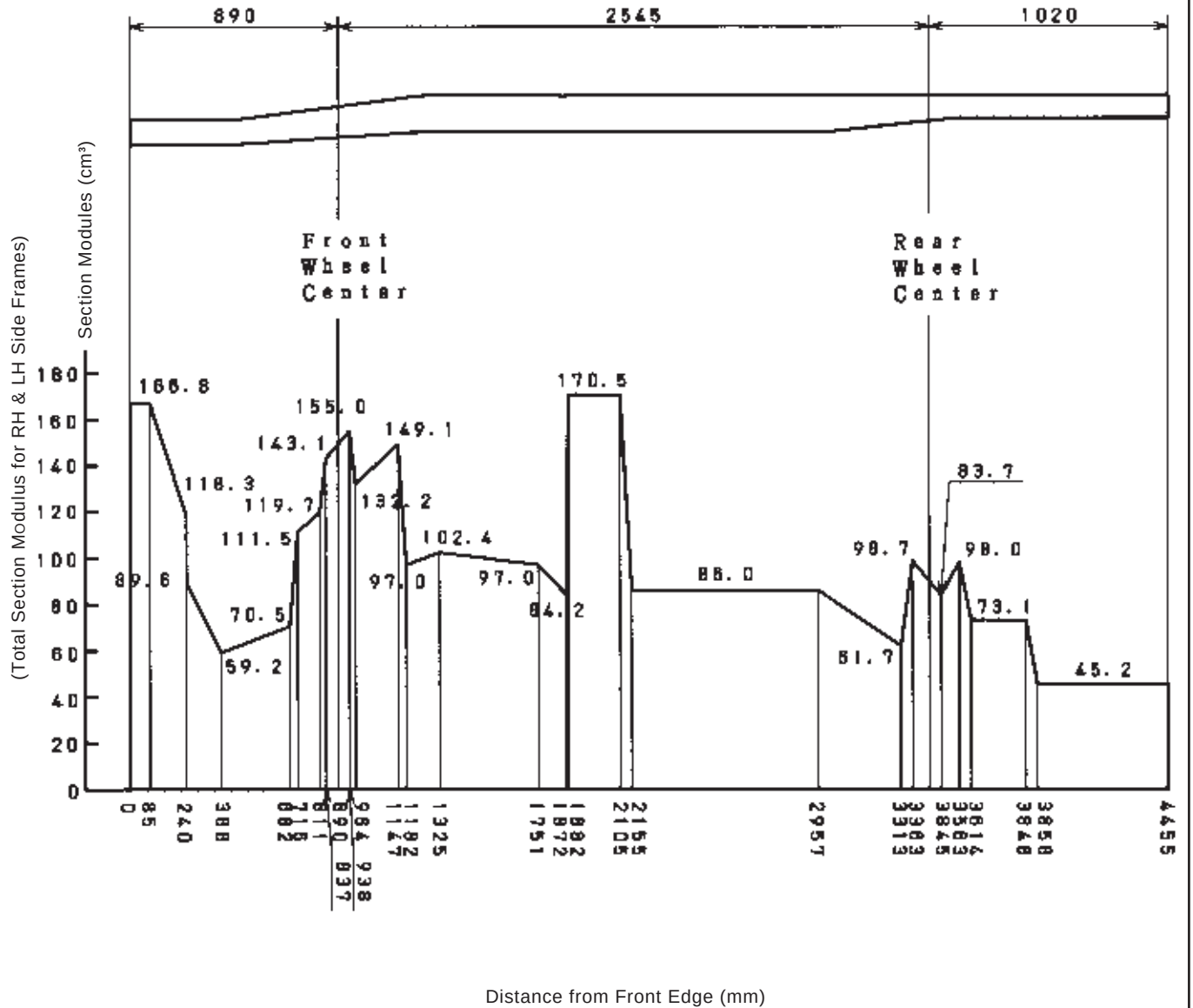
Models
LY225R-TBMDS3
LY225L-TBMDS3



Y-071

Type	Tensile Strength	Yield Point
Hot rolled sheet metal	440 MPa	305 MPa

Models
LY235R-TBMFS3
LY235L-TBMFS3



(2) Load distribution of chassis with cab

Applicable Models
DYNA 100 • Weight of occupants 225kg(75 kg x 3) Place the following weights. FR Cab Mounts 65 kg RR Cab Mounts 160 kg • Load for KDY220L-TBMDYW3 is specified.

No.	Item	Weight (kg)	Distance from front axle (mm)	Moment (kg・mm)
1	Fr bumper	7.6	-960.0	-6688.0
2	Cab FR mount	202.0	-874.0	-176548.0
3	Steering Gear box	2.9	-780.0	-2262.0
4	Radiator	9.2	-435.0	-4002.0
5	Steering Linkage related parts	11.2	-271.0	-3035.2
6	FR suspension related parts	13.2	0.0	0.0
7	Engine FR mount	205.9	114.0	23472.6
8	Cab RR mount	197.0	355.0	69935.0
9	Air cleaner	3.2	415.0	1328.0
10	Battery	25.9	890.0	23077.7
11	Engine RR mount	106.1	899.0	95383.9
12	Torsion bar related parts	9.6	960.0	9216.0
13	Fuel tank	69.0	1149.0	79281.0
14	Muffler & Exhaust pipe	17.8	1675.0	29815.0
15	"Frame, etc"	160.2	—	—
		Front axle	Rear axle	Total
Sprung weight (kg)		905	220	1125
Unsprung weight (kg)		130	190	320
Cab and Chassis weight (kg)		1035	410	1445
Wheel base (mm)		2300		

【3】-2. Frames

Applicable Models
DYNA 150 • Weight of occupants 225kg(75 kg x 3) Place the following weights. FR Cab Mounts 65 kg RR Cab Mounts 160 kg • Load for KDY230R-TBMGYW3 and KDY230L-TBMGYW3 is specified.

No.	Item	Weight (kg)	Distance from front axle (mm)	Moment (kg・mm)
1	Fr bumper	7.6	-960.0	-6688.0
2	Cab FR mount	202.0	-874.0	-176548.0
3	Steering Gear box	2.9	-780.0	-2262.0
4	Radiator	9.2	-435.0	-4002.0
5	Steering Linkage related parts	11.2	-271.0	-3035.2
6	FR suspension related parts	13.2	0.0	0.0
7	Engine FR mount	219.4	114.0	25011.6
8	Cab RR mount	197.0	355.0	69935.0
9	Air cleaner	3.2	415.0	1328.0
10	Battery	25.9	890.0	23077.7
11	Engine RR mount	112.6	899.0	101227.4
12	Torsion bar related parts	9.6	960.0	9216.0
13	Fuel tank	89.2	1392.5	124211.0
14	Muffler & Exhaust pipe	18.3	1698.0	31073.4
15	"Frame, etc"	163.9	—	—
		Front axle	Rear axle	Total
Sprung weight (kg)		970	205	1175
Unsprung weight (kg)		130	335	465
Cab and Chassis weight (kg)		1100	540	1640
Wheel base (mm)		2545		

【3】-2. Frames

Applicable Models
DYNA 150 • Weight of occupants 450kg(75 kg x 6) Place the following weights. FR Cab Mounts 65 kg CTR Cab Mounts 205 kg RR Cab Mounts 180 kg • Load for KDY230L-PBMEYW3 is specified.

No.	Item	Weight (kg)	Distance from front axle (mm)	Moment (kg・mm)
1	Fr bumper	7.6	-960.0	-6688.0
2	Cab FR mount	183.5	-874.0	-160379.0
3	Steering Gear box	2.9	-780.0	-2262.0
4	Radiator	9.2	-435.0	-4002.0
5	Steering Linkage related parts	11.2	-271.0	-3035.2
6	FR suspension related parts	13.2	0.0	0.0
7	Engine FR mount	219.4	114.0	25011.6
8	Cab CTR mount	183.5	355.0	65142.5
9	Air cleaner	3.2	415.0	1328.0
10	Battery	21.2	890.0	18885.8
11	Engine RR mount	112.6	899.0	101227.4
12	Torsion bar related parts	9.6	960.0	9216.0
13	Cab RR mount	183.5	1181.0	216713.5
14	Fuel tank	89.2	1392.5	124211.0
15	Muffler & Exhaust pipe	18.3	1698.0	31073.4
16	"Frame, etc"	165.6	—	—
		Front axle	Rear axle	Total
Sprung weight (kg)		1050	265	1315
Unsprung weight (kg)		130	335	465
Cab and Chassis weight (kg)		1180	600	1780
Wheel base (mm)		2545		

【3】-2. Frames

Applicable Models
DYNA 100 • Weight of occupants 450kg(75 kg x 6) Place the following weights. FR Cab Mounts 65 kg CTR Cab Mounts 205 kg RR Cab Mounts 180 kg • Load for KDY230L-PSMBYW3 is specified.

No.	Item	Weight (kg)	Distance from front axle (mm)	Moment (kg・mm)
1	Fr bumper	7.6	-960.0	-6688.0
2	Cab FR mount	183.5	-874.0	-160379.0
3	Steering Gear box	2.9	-780.0	-2262.0
4	Radiator	9.2	-435.0	-4002.0
5	Steering Linkage related parts	11.2	-271.0	-3035.2
6	FR suspension related parts	13.2	0.0	0.0
7	Engine FR mount	205.9	114.0	23472.6
8	Cab CTR mount	183.5	355.0	65142.5
9	Air cleaner	3.2	415.0	1328.0
10	Battery	21.2	890.0	18885.8
11	Engine RR mount	106.1	899.0	95383.9
12	Torsion bar related parts	9.6	960.0	9216.0
13	Cab RR mount	183.5	1181.0	216713.5
14	Fuel tank	89.2	1392.5	124211.0
15	Muffler & Exhaust pipe	18.3	1698.0	31073.4
16	"Frame, etc"	165.6	—	—
		Front axle	Rear axle	Total
Sprung weight (kg)		1000	280	1280
Unsprung weight (kg)		130	190	320
Cab and Chassis weight (kg)		1130	470	1600
Wheel base (mm)		2545		

【3】-2. Frames

Applicable Models
DYNA 150 • Weight of occupants 225kg(75 kg x 3) Place the following weights. FR Cab Mounts 65 kg RR Cab Mounts 160 kg • Load for KDY250R-TBMGYW3 and KDY250L-TBMGYW3 is specified.

No.	Item	Weight (kg)	Distance from front axle (mm)	Moment (kg・mm)
1	Fr bumper	7.6	-960.0	-6688.0
2	Cab FR mount	202.0	-874.0	-176548.0
3	Steering Gear box	2.9	-780.0	-2262.0
4	Radiator	9.2	-435.0	-4002.0
5	Steering Linkage related parts	11.2	-271.0	-3035.2
6	FR suspension related parts	13.2	0.0	0.0
7	Engine FR mount	219.4	114.0	25011.6
8	Cab RR mount	197.0	355.0	69935.0
9	Air cleaner	3.2	415.0	1328.0
10	Battery	25.9	890.0	23077.7
11	Engine RR mount	112.6	899.0	101227.4
12	Torsion bar related parts	9.6	960.0	9216.0
13	Fuel tank	89.2	1392.5	124211.0
14	Muffler & Exhaust pipe	20.5	2350.0	48175.0
15	"Frame, etc"	200.9	—	—
		Front axle	Rear axle	Total
Sprung weight (kg)		985	240	1225
Unsprung weight (kg)		130	335	465
Cab and Chassis weight (kg)		1115	575	1690
Wheel base (mm)		3350		

【3】-2. Frames

Applicable Models
DYNA 150 • Weight of occupants 450kg(75 kg x 6) Place the following weights. FR Cab Mounts 65 kg CTR Cab Mounts 205 kg RR Cab Mounts 180 kg • Load for KDY250L-PBMEYW3 is specified.

No.	Item	Weight (kg)	Distance from front axle (mm)	Moment (kg・mm)
1	Fr bumper	7.6	-960.0	-6688.0
2	Cab FR mount	183.5	-874.0	-160379.0
3	Steering Gear box	2.9	-780.0	-2262.0
4	Radiator	9.2	-435.0	-4002.0
5	Steering Linkage related parts	11.2	-271.0	-3035.2
6	FR suspension related parts	13.2	0.0	0.0
7	Engine FR mount	219.4	114.0	25011.6
8	Cab CTR mount	183.5	355.0	65142.5
9	Air cleaner	3.2	415.0	1328.0
10	Battery	21.2	890.0	18885.8
11	Engine RR mount	112.6	899.0	101227.4
12	Torsion bar related parts	9.6	960.0	9216.0
13	Cab RR mount	183.5	1181.0	216713.5
14	Fuel tank	89.2	1392.5	124211.0
15	Muffler & Exhaust pipe	20.5	2350.0	48175.0
16	"Frame, etc"	202.6	—	—
		Front axle	Rear axle	Total
Sprung weight (kg)		1075	290	1365
Unsprung weight (kg)		130	335	465
Cab and Chassis weight (kg)		1205	625	1830
Wheel base (mm)		3350		

【3】-2. Frames

Applicable Models
DYNA 150 • Weight of occupants 225kg(75 kg x 3) Place the following weights. FR Cab Mounts 65 kg RR Cab Mounts 160 kg • Load for KDY260L-TBMGYW3 is specified.

No.	Item	Weight (kg)	Distance from front axle (mm)	Moment (kg・mm)
1	Fr bumper	7.6	-960.0	-6688.0
2	Cab FR mount	202.0	-874.0	-176548.0
3	Steering Gear box	2.9	-780.0	-2262.0
4	Radiator	9.2	-435.0	-4002.0
5	Steering Linkage related parts	11.2	-271.0	-3035.2
6	FR suspension related parts	13.2	0.0	0.0
7	Engine FR mount	219.4	114.0	25011.6
8	Cab RR mount	197.0	355.0	69935.0
9	Air cleaner	3.2	415.0	1328.0
10	Battery	25.9	890.0	23077.7
11	Engine RR mount	112.6	899.0	101227.4
12	Torsion bar related parts	9.6	960.0	9216.0
13	Fuel tank	89.2	1392.5	124211.0
14	Muffler & Exhaust pipe	21.5	2650.0	56975.0
15	"Frame, etc"	208.7	—	—
		Front axle	Rear axle	Total
Sprung weight (kg)		1000	240	1240
Unsprung weight (kg)		130	335	465
Cab and Chassis weight (kg)		1130	575	1705
Wheel base (mm)		3750		

【3】-2. Frames

Applicable Models
DYNA 150 • Weight of occupants 450kg(75 kg x 6) Place the following weights. FR Cab Mounts 65 kg CTR Cab Mounts 205 kg RR Cab Mounts 180 kg • Load for KDY260L-PBMEYW3 is specified.

No.	Item	Weight (kg)	Distance from front axle (mm)	Moment (kg・mm)
1	Fr bumper	7.6	-960.0	-6688.0
2	Cab FR mount	183.5	-874.0	-160379.0
3	Steering Gear box	2.9	-780.0	-2262.0
4	Radiator	9.2	-435.0	-4002.0
5	Steering Linkage related parts	11.2	-271.0	-3035.2
6	FR suspension related parts	13.2	0.0	0.0
7	Engine FR mount	219.4	114.0	25011.6
8	Cab CTR mount	183.5	355.0	65142.5
9	Air cleaner	3.2	415.0	1328.0
10	Battery	21.2	890.0	18885.8
11	Engine RR mount	112.6	899.0	101227.4
12	Torsion bar related parts	9.6	960.0	9216.0
13	Cab RR mount	183.5	1181.0	216713.5
14	Fuel tank	89.2	1392.5	124211.0
15	Muffler & Exhaust pipe	21.5	2650.0	56975.0
16	"Frame, etc"	210.3	—	—
		Front axle	Rear axle	Total
Sprung weight (kg)		1100	280	1380
Unsprung weight (kg)		130	335	465
Cab and Chassis weight (kg)		1230	615	1845
Wheel base (mm)		3750		

【3】-2. Frames

Applicable Models
DYNA 100 • Weight of occupants 204kg(68 kg x 3) Place the following weights. FR Cab Mounts 59kg RR Cab Mounts 145 kg • Load for LY220R-TBMDSQ3 is specified.

No.	Item	Weight (kg)	Distance from front axle (mm)	Moment (kg・mm)
1	Fr bumper	7.6	-960.0	-6688.0
2	Cab FR mount	202.0	-874.0	-176548.0
3	Steering Gear box	2.9	-780.0	-2262.0
4	Radiator	9.2	-435.0	-4002.0
5	Steering Linkage related parts	11.2	-271.0	-3035.2
6	FR suspension related parts	13.2	0.0	0.0
7	Engine FR mount	221.0	39.6	8751.6
8	Cab RR mount	197.0	355.0	69935.0
9	Air cleaner	3.2	415.0	1328.0
10	Battery	26.5	890.0	23585.0
11	Engine RR mount	94.6	899.0	85045.4
12	Torsion bar related parts	9.6	960.0	9216.0
13	Fuel tank	69.0	1149.0	79281.0
14	Muffler & Exhaust pipe	20.3	1675.0	34002.5
15	"Frame, etc"	160.2	—	—
		Front axle	Rear axle	Total
Sprung weight (kg)		860	210	1070
Unsprung weight (kg)		130	190	320
Cab and Chassis weight (kg)		990	400	1390
Wheel base (mm)		2300		

【3】-2. Frames

Applicable Models
DYNA 150 - Weight of occupants 204kg(68 kg x 3) Place the following weights. FR Cab Mounts 59kg RR Cab Mounts 145 kg - Load for LY230R-TBMGSQ3 is specified.

No.	Item	Weight (kg)	Distance from front axle (mm)	Moment (kg・mm)
1	Fr bumper	7.6	-960.0	-6688.0
2	Cab FR mount	202.0	-874.0	-176548.0
3	Steering Gear box	2.9	-780.0	-2262.0
4	Radiator	9.2	-435.0	-4002.0
5	Steering Linkage related parts	11.2	-271.0	-3035.2
6	FR suspension related parts	13.2	0.0	0.0
7	Engine FR mount	234.5	39.6	9286.2
8	Cab RR mount	197.0	355.0	69935.0
9	Air cleaner	3.2	415.0	1328.0
10	Battery	26.5	890.0	23585.0
11	Engine RR mount	101.1	899.0	90888.9
12	Torsion bar related parts	9.6	960.0	9216.0
13	Fuel tank	89.2	1392.5	124211.0
14	Muffler & Exhaust pipe	20.8	1698.0	35318.4
15	"Frame, etc"	163.9	—	—
		Front axle	Rear axle	Total
Sprung weight (kg)		910	205	1115
Unsprung weight (kg)		130	335	465
Cab and Chassis weight (kg)		1040	540	1580
Wheel base (mm)		2545		

【3】-2. Frames

Applicable Models
DYNA 150 • Weight of occupants 225kg(75kg x 3) Place the following weights. FR Cab Mounts 65kg RR Cab Mounts 160 kg • Load for LY230R-TBMGSN3 is specified.

No.	Item	Weight (kg)	Distance from front axle (mm)	Moment (kg・mm)
1	Fr bumper	7.6	-960.0	-6688.0
2	Cab FR mount	202.0	-874.0	-176548.0
3	Steering Gear box	2.9	-780.0	-2262.0
4	Radiator	9.2	-435.0	-4002.0
5	Steering Linkage related parts	11.2	-271.0	-3035.2
6	FR suspension related parts	13.2	0.0	0.0
7	Engine FR mount	234.5	39.6	9286.2
8	Cab RR mount	197.0	355.0	69935.0
9	Air cleaner	3.2	415.0	1328.0
10	Battery	26.5	890.0	23585.0
11	Engine RR mount	101.1	899.0	90888.9
12	Torsion bar related parts	9.6	960.0	9216.0
13	Fuel tank	69.0	1149.0	79281.0
14	Muffler & Exhaust pipe	20.8	1698.0	35318.4
15	"Frame, etc"	163.9	—	—
		Front axle	Rear axle	Total
Sprung weight (kg)		910	205	1115
Unsprung weight (kg)		130	335	465
Cab and Chassis weight (kg)		1040	540	1580
Wheel base (mm)		2545		

【3】-2. Frames

Applicable Models
DYNA 100 • Weight of occupants 225kg(75kg x 3) Place the following weights. FR Cab Mounts 65kg RR Cab Mounts 160 kg • Load for LY225R-TBMDS3 and LY225L-TBMDS3 is specified.

No.	Item	Weight (kg)	Distance from front axle (mm)	Moment (kg・mm)
1	Fr bumper	7.6	-960.0	-6802.0
2	Cab FR mount	202.0	-874.0	-176548.0
3	Steering related parts	17.1	-761.9	-13028.5
4	Radiator	9.2	-265.0	-2438.0
5	Engine FR mount	201.9	160.0	32304.0
6	Cab RR mount	197.0	355.0	69935.0
7	Air cleaner	3.2	415.0	1328.0
8	Engine RR mount	88.7	899.0	79741.3
9	Fuel tank	69.0	1149.3	79301.7
10	Battery	25.4	1210.0	30734.0
11	Muffler & Exhaust pipe	17.3	1675.0	28977.5
12	"Frame, etc"	142.3	—	—
		Front axle	Rear axle	Total
Sprung weight (kg)		830	210	1040
Unsprung weight (kg)		150	190	340
Cab and Chassis weight (kg)		980	400	1380
Wheel base (mm)		2300		

【3】-2. Frames

Applicable Models
DYNA 150 • Weight of occupants 225kg(75kg x 3) Place the following weights. FR Cab Mounts 65kg RR Cab Mounts 160 kg • Load for LY235R-TBMFS3 and LY235L-TBMFS3 is specified.

No.	Item	Weight (kg)	Distance from front axle (mm)	Moment (kg・mm)
1	Fr bumper	7.6	-960.0	-6802.0
2	Cab FR mount	202.0	-874.0	-176548.0
3	Steering related parts	17.1	-761.9	-13028.5
4	Radiator	9.2	-265.0	-2438.0
5	Engine FR mount	215.9	160.0	34544.0
6	Cab RR mount	197.0	355.0	69935.0
7	Air cleaner	3.2	415.0	1328.0
8	Engine RR mount	94.7	899.0	85135.3
9	Fuel tank	69.0	1149.3	79301.7
10	Battery	25.4	1210.0	30734.0
11	Muffler & Exhaust pipe	17.8	1698.0	30224.4
12	"Frame, etc"	145.8	—	—
		Front axle	Rear axle	Total
Sprung weight (kg)		850	250	1100
Unsprung weight (kg)		150	210	360
Cab and Chassis weight (kg)		1000	460	1460
Wheel base (mm)		2545		

3. Suspension

[1] Front suspension

Don't alter the component parts of the front suspension in any event. Also, don't change the specifications as it would adversely affect the vehicle performance.

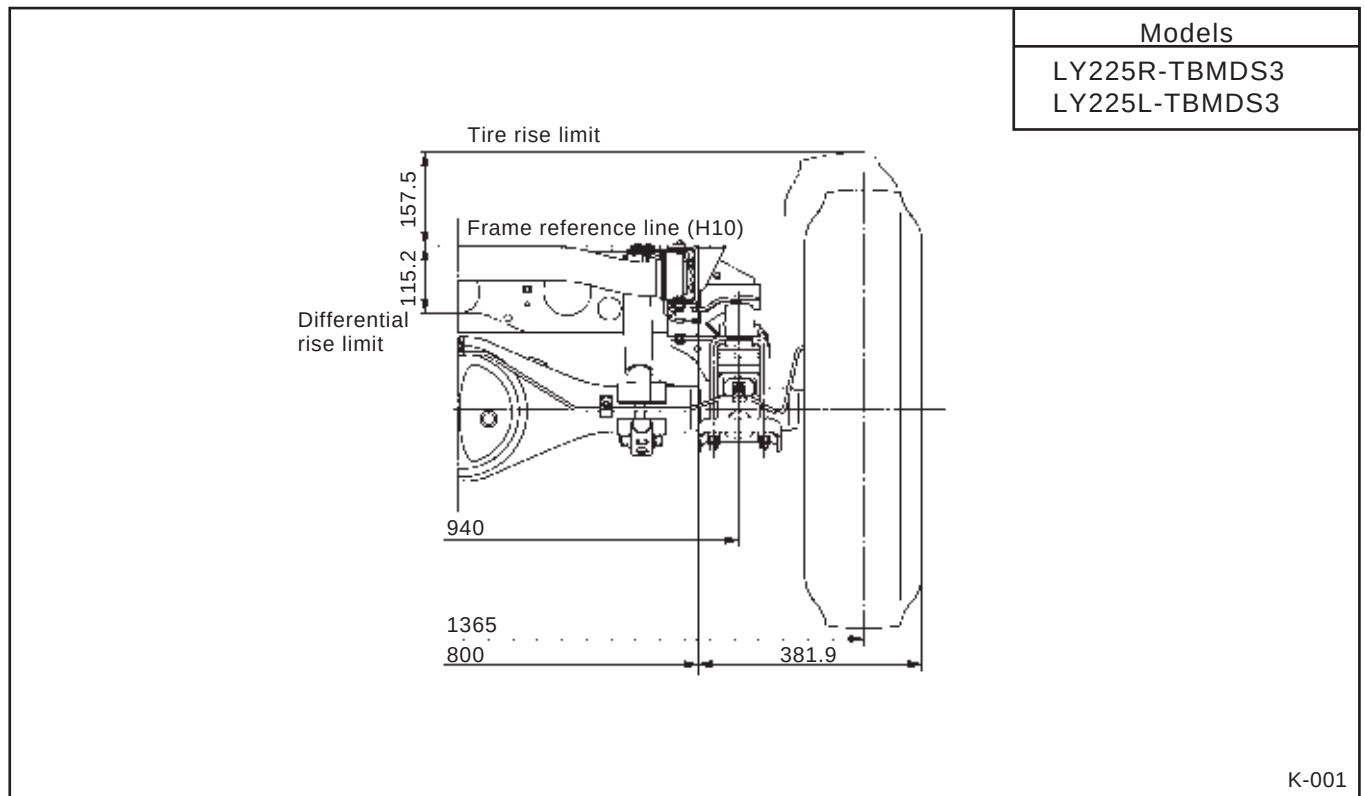
[2] Rear suspension

- 1 Make alterations taking into consideration the upper bound limit of the differential carrier and the tire so that the tire does not interfere with the body, etc. when the vehicle bounds on rough roads. For vehicles destined for districts where installation of the tire chain is required, add the tire chain clearance to the upper limit consideration. (For more details, refer to the wheel house, P.74)
- 2 In the case where the vehicle is equipped with a rear axle breather and a hose, take care not to bend, distort or enclose them or otherwise interfere with normal "breathing" of the rear axle.
- 3 In building or making alterations to the vehicle, take adequate care not to damage the leaf spring. Should the leaf spring be damaged, change the whole assembly. (Don't change individual spring plate units, and don't reuse spring plates.)
- 4 The leaf spring should be installed at a point distant from the exhaust pipe by 50 mm minimum and from the muffler by 150 mm minimum.
 - In the case where these distances cannot be secured, protect the vehicle against heat using a heat insulating plate or the like.

[3] Tire

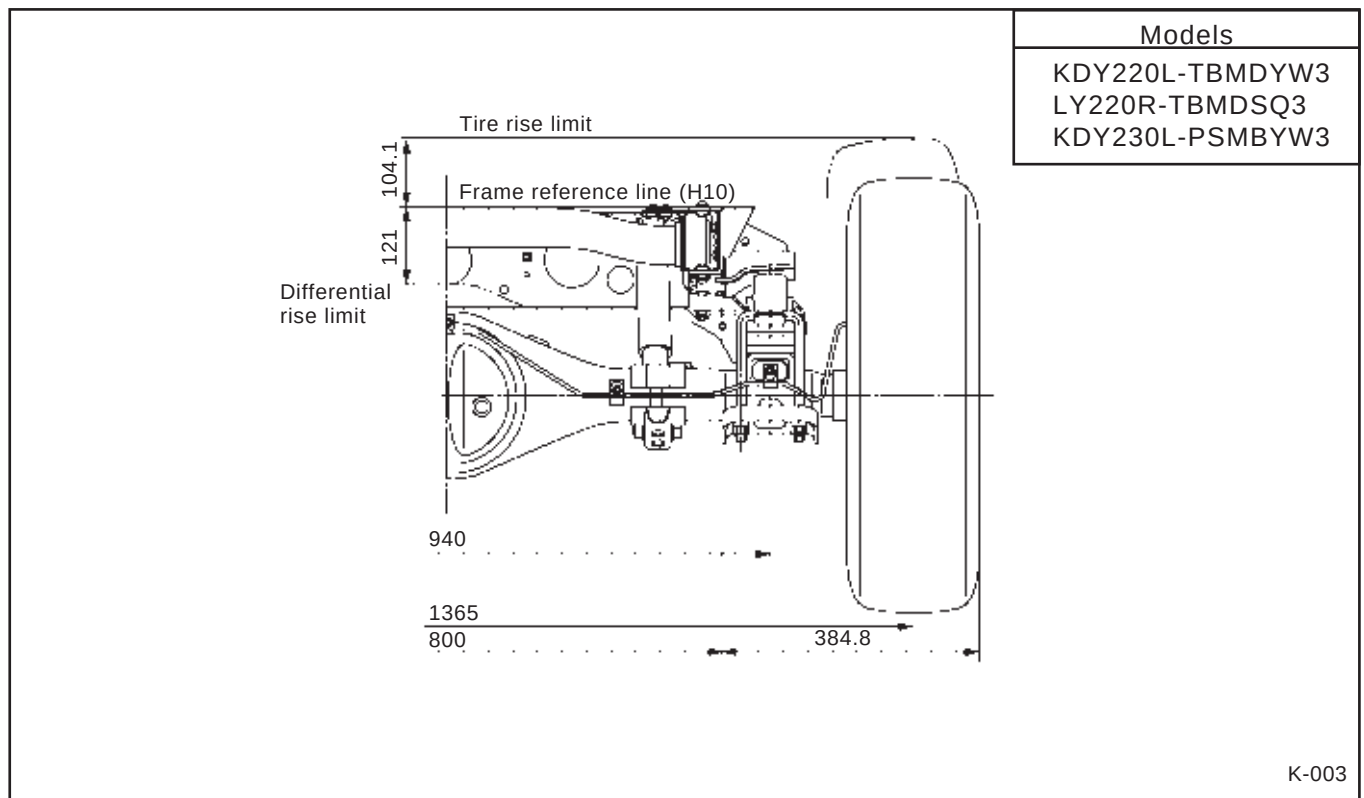
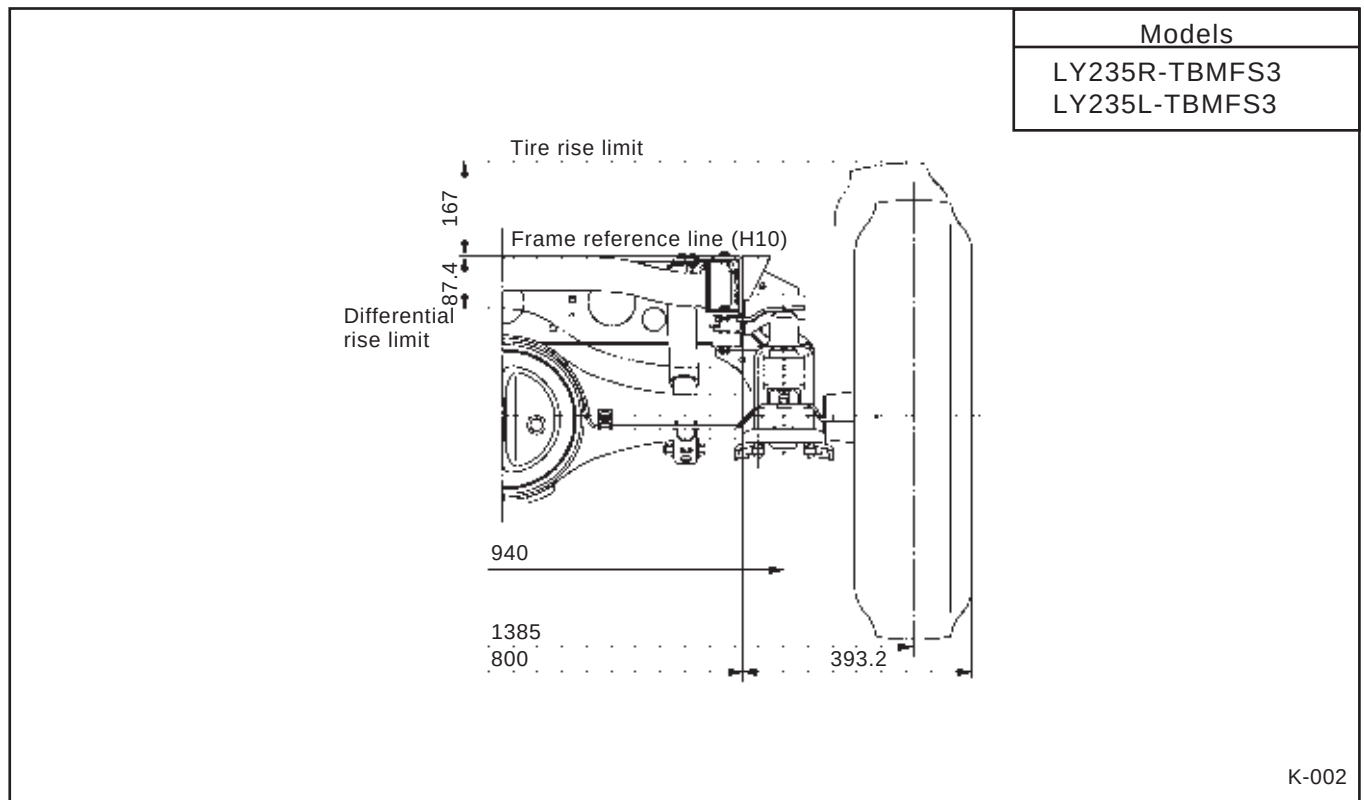
Don't use any tire or disc wheel other than specified for the particular vehicle.

[4] Bound limit of tire and differential

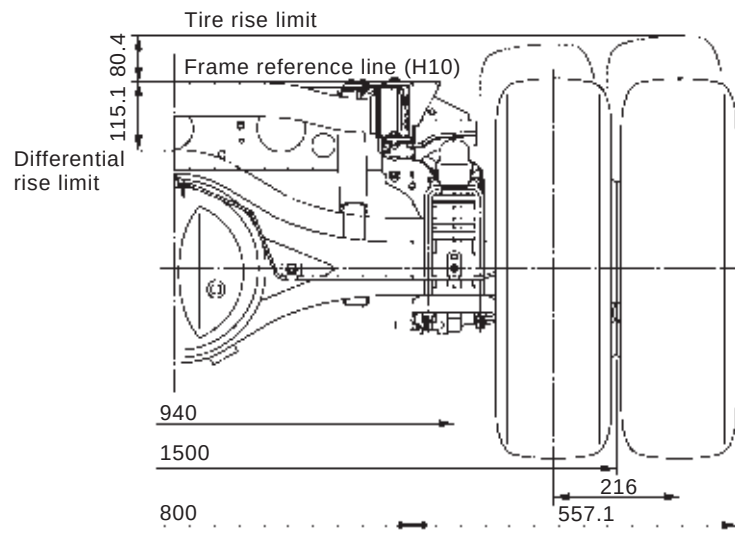


K-001

【3】-3. Suspension



【3】-3. Suspension



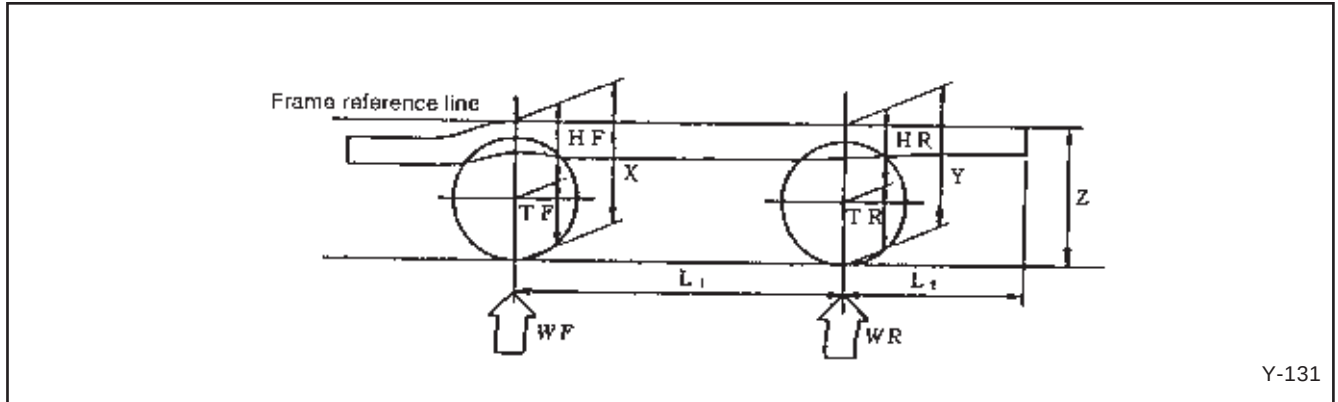
Model

KDY230R-TBMGYW3
 KDY230L-TBMGYW3
 -PBMEYW3
 LY230R-TBMGSN3
 -TBMGSQ3
 KDY250R-TBMGYW3
 KDY250L-TBMGYW3
 -PBMEYW3
 KDY230L-TBMGYW3
 -PBMEYW3
 KDY260L-TBMGYW3
 -PBMEYW3

K-004

[5] Data for calculating the ground clearance of frame reference line

The ground clearance of the frame reference line should be calculated using the following formulae.



$$X = HF + TF$$

$$Y = HR + TR$$

$$Z = Y + \frac{(Y - X) \times L_2}{L_1}$$

X	Ground clearance of frame reference line at front wheel center line (mm)
Y	Ground clearance of frame reference line above rear wheel center line (mm)
Z	Ground clearance of frame reference line of frame rear end (mm)
WF	Front axle load (kg)
WR	Rear axle load (kg)
L ₁	Wheelbase (mm)
L ₂	Frame rear overhang (mm)
TF	Front tire radius (mm)
TR	Rear tire radius (mm)
HF	Distance from front wheel center to frame reference line (mm)
HR	Distance from rear wheel center to frame reference line (mm)

(1) How to determine the distance from wheel center to frame reference line

The distance from the wheel center to the frame reference line should be determined by calculating the single-wheel sprung loads and then either by reading from the spring characteristic curve or calculating according to the following equations.

$$W_f = \frac{WF - W_1}{2}$$

$$W_r = \frac{WR - W_2}{2}$$

$$HF = H_0 - \frac{W_f}{K}$$

$$HR = H_0 - \frac{W_r}{K}$$

Wf	Single-wheel sprung load (front wheel) (kg)
Wr	Single-wheel sprung load (rear wheel) (kg)
WF	Front axle load (kg)
WR	Rear axle load (kg)
W ₁	Unsprung load (front axle) (kg)
W ₂	Unsprung load (rear axle) (kg)
H ₀	Distance from wheel center to frame reference line with 0-kg single-wheel sprung load (mm)
K	Spring constant (kg/mm)

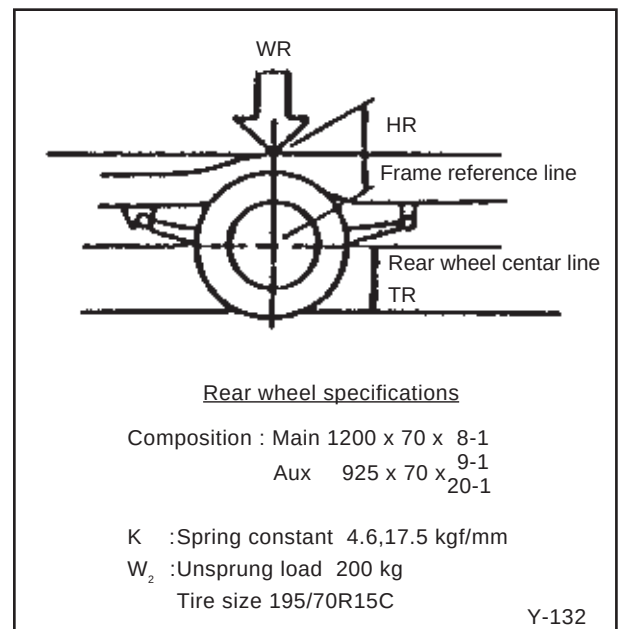
(2) Example of calculation

Let us calculate the frame reference line height from ground, Y, at the rear wheel center after rebuilding using the model KDY220L-TBMDYW3 as an example. Suppose the rear axle weight after rebuilding as 590kg.

- 1 Obtain the single wheel sprung load for rear wheel, W_r, using the following equation.

ex.

$$W_r = \frac{WR - W_2}{2} = \frac{590 - 190}{2} = 200 \text{ kg}$$



2 Obtain the distance from the rear wheel center to the frame reference line HR.

$Wr \leq 299 \text{ kg}$

$$HR = H_0 - \frac{Wr}{K} = 383.8 - \frac{200}{4.6} = 340.3$$

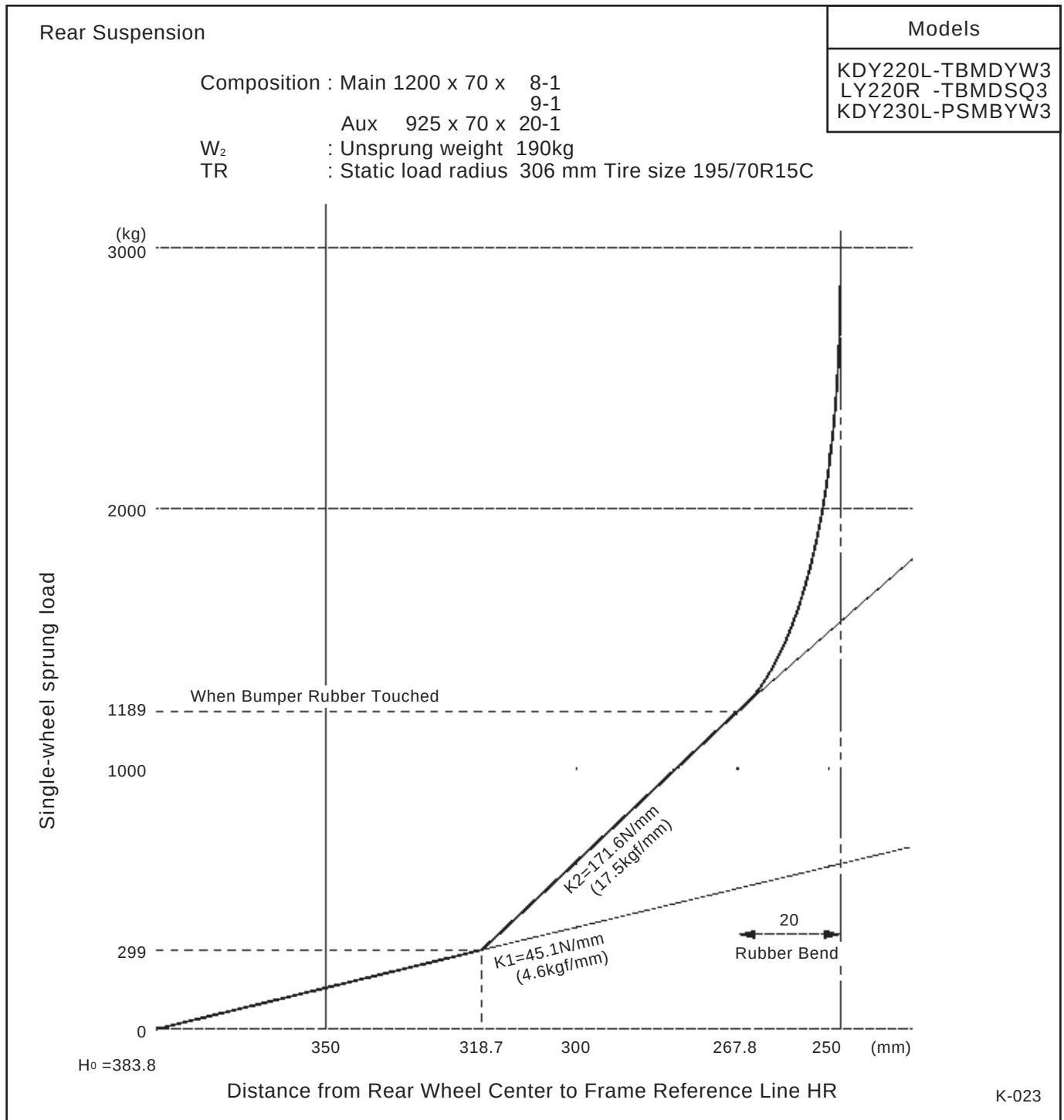
$Wr > 299 \text{ kg}$

$$HR = H_0 - \frac{Wr'}{K}$$

$K = 17.5$

$H_0 = 318.7$

$Wr' = Wr - 299$



3 By adding the distance from rear wheel center to frame reference line to the obtained value of static load radius for rear wheel with 195/70R15C tire, obtain the frame reference line height from ground at rear wheel center.

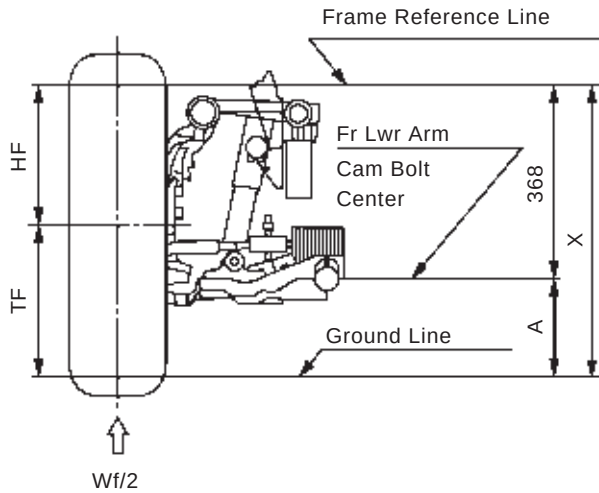
$$Y = HR + TR = 340.3 + 306 = 642.3$$

(3) Spring characteristics curve diagram

Front suspension

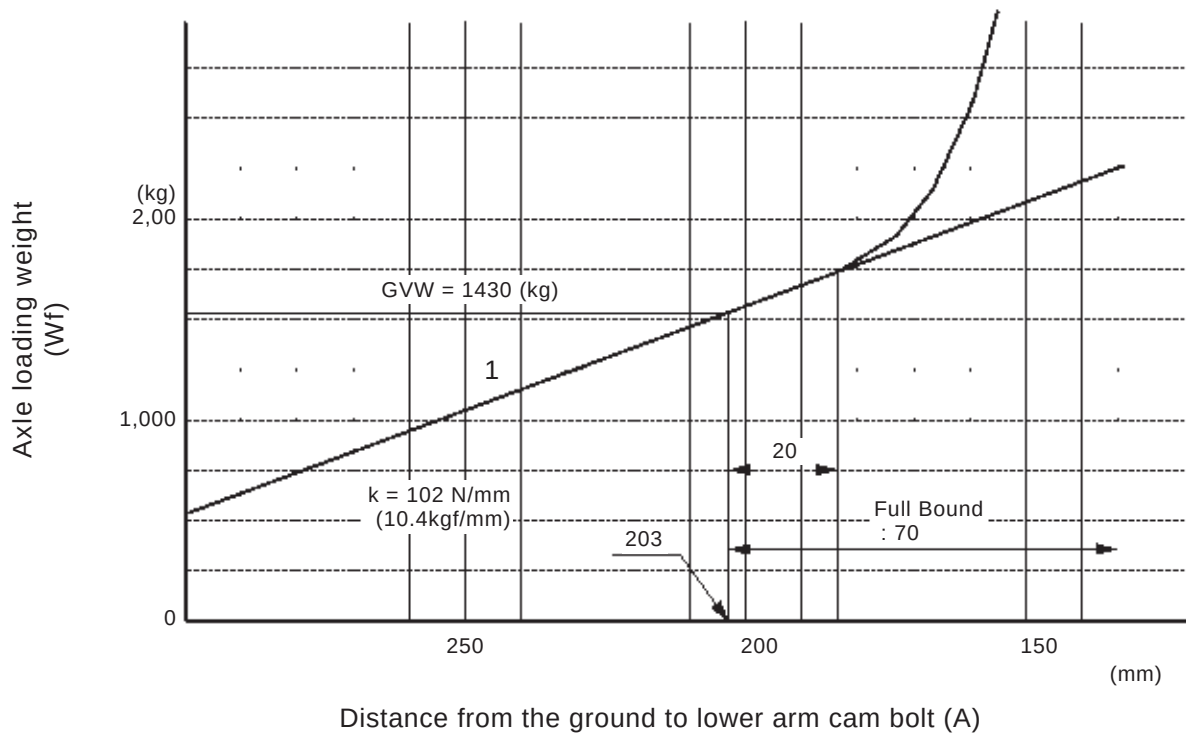
Model

KDY220L-TBMDYW3



Spring Rate : 51.0 N/mm (5.2kgf/mm)
 Cab & Chassis Average
 Unladen Vehicle Weight
 905(kg)
 Unsprung Weight : 130(kg)

Tire size PR-LT	Mark	Spring Line	Dimension A (mm)		Tire Static
			0 kg (Wf)	Cab & Chassis Unladen Vehicle	Load Radius (TF)
195/70R15C	1	—————	340	241	306



K-009

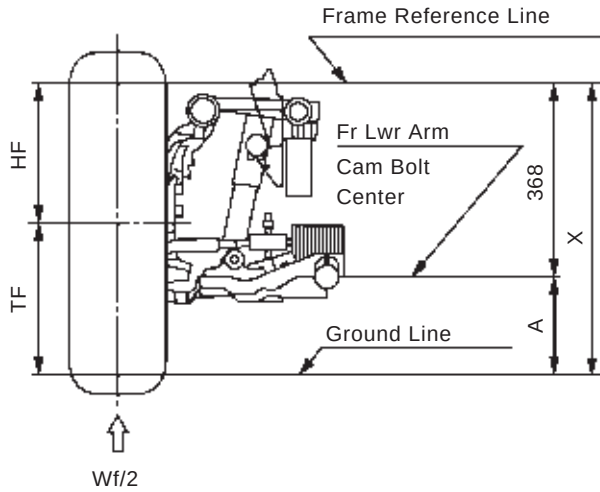
[3] -3. Suspension

Front suspension

Model

KDY230R-TBMGYW3

KDY230L-TBMGYW3



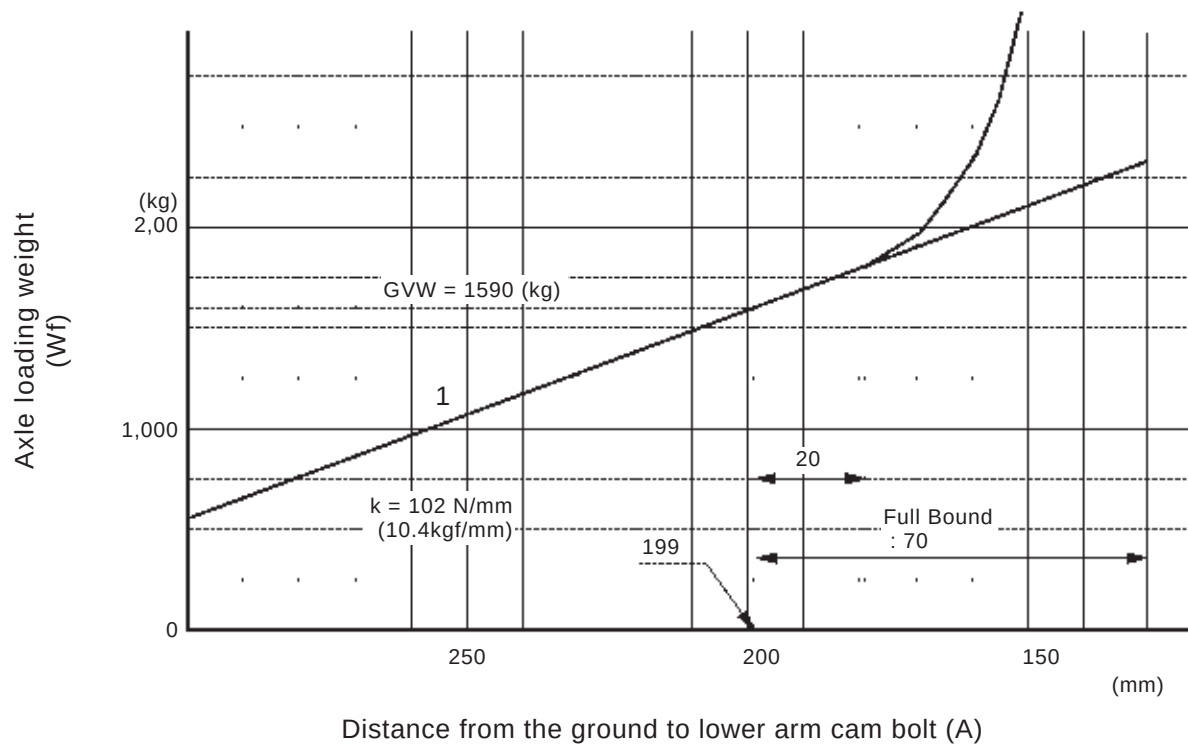
Spring Rate : 51.0 N/mm (5.2kgf/mm)

Cab & Chassis Average

Unladen Vehicle Weight
970(kg)

Unsprung Weight : 130(kg)

Tire size PR-LT	Mark	Spring Line	Dimension A (mm)		Tire Static
			0 kg (Wf)	Cab & Chassis Unladen Vehicle	Load Radius (TF)
195/70R15C	1	—————	356	250	306

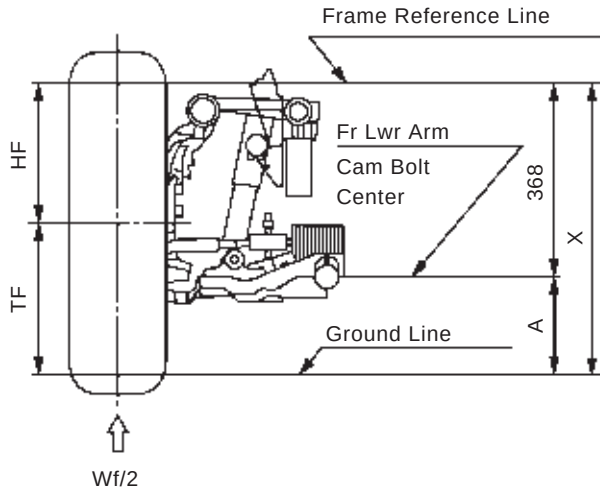


K-010

Front suspension

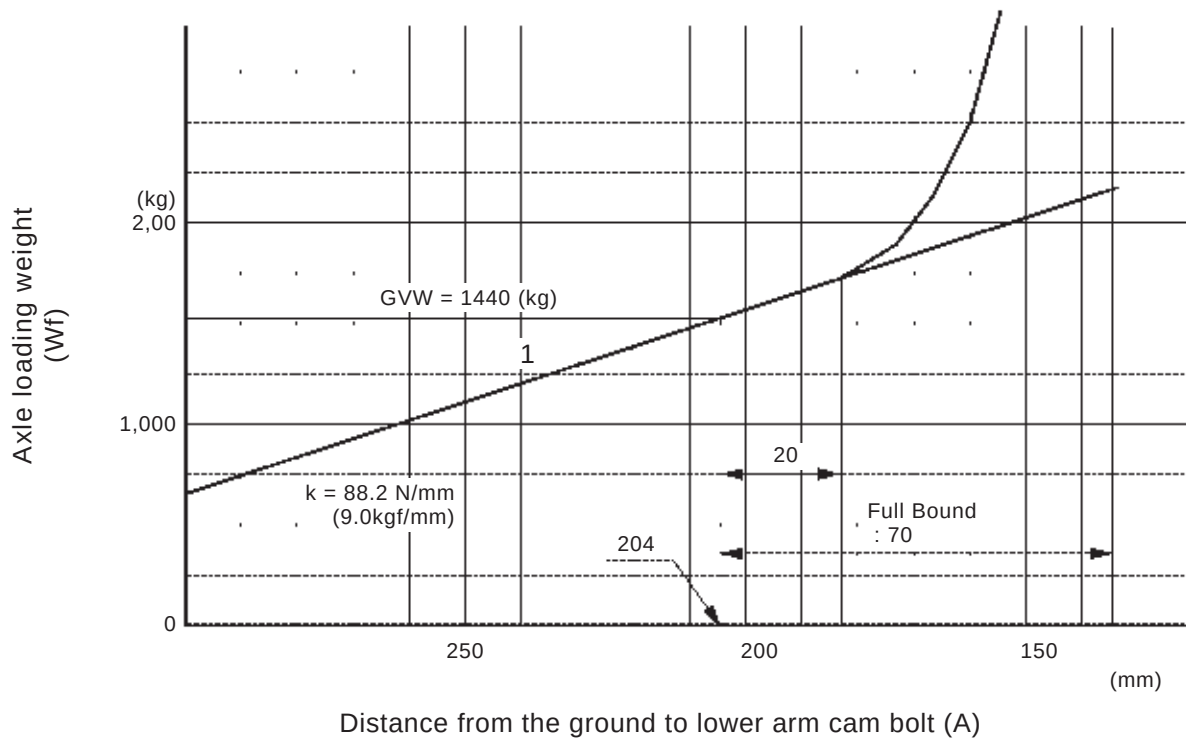
Model

KDY230L-PSMBYW3



Spring Rate : 44.1 N/mm (4.5kgf/mm)
 Cab & Chassis Average
 Unladen Vehicle Weight
 1000(kg)
 Unsprung Weight : 130(kg)

Tire size PR-LT	Mark	Spring Line	Dimension A (mm)		Tire Static
			0 kg (Wf)	Cab & Chassis Unladen Vehicle	Load Radius (TF)
195/70R15C	1	—————	365	239	306

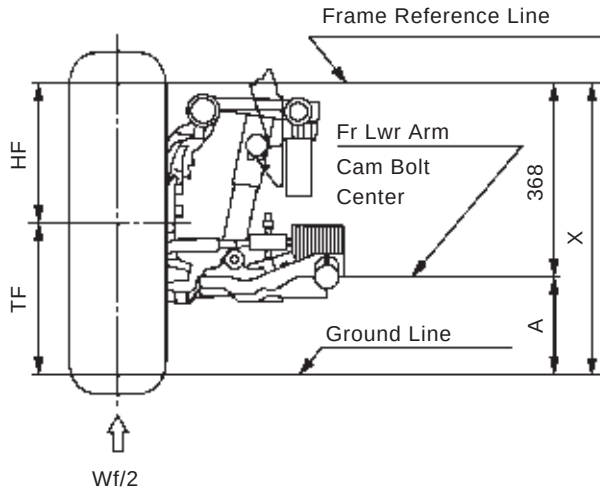


K-012

Front suspension

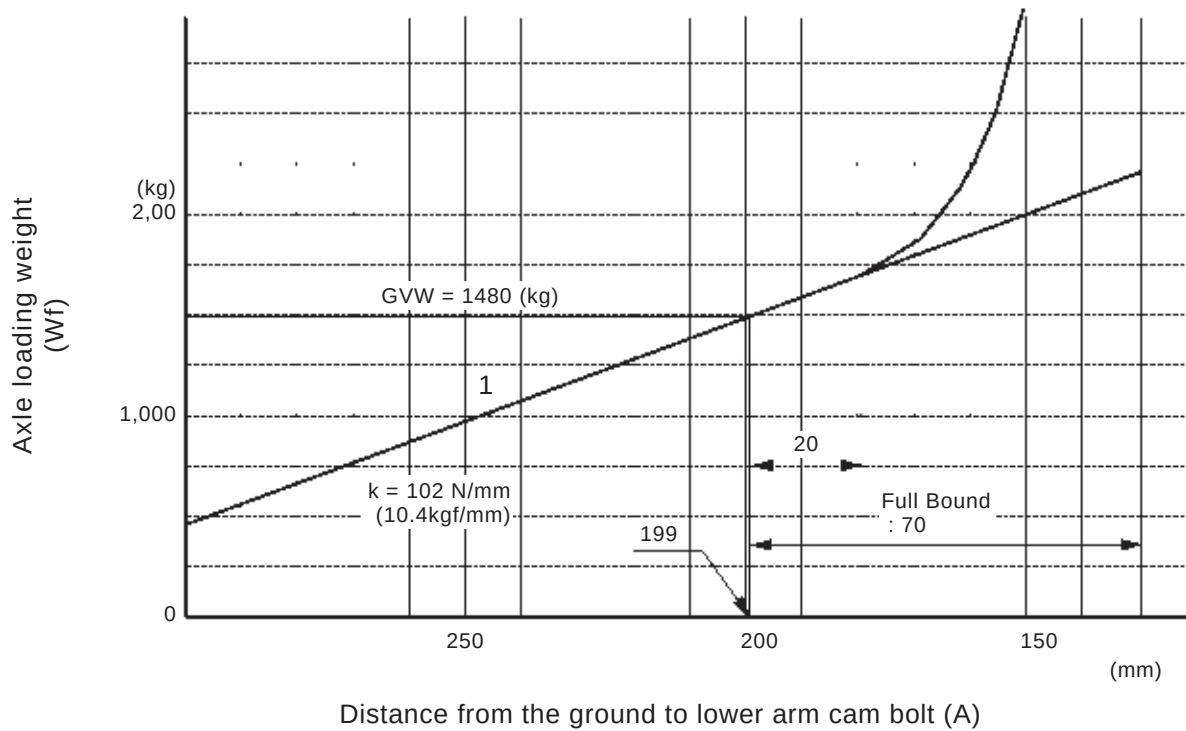
Model

KDY230L-PBMEYW3



Spring Rate : 51.0 N/mm (5.2kgf/mm)
 Cab & Chassis Average
 Unladen Vehicle Weight
 1050(kg)
 Unsprung Weight : 130(kg)

Tire size PR-LT	Mark	Spring Line	Dimension A (mm)		Tire Static
			0 kg (Wf)	Cab & Chassis Unladen Vehicle	Load Radius (TF)
195/70R15C	1	—————	343	230	306



K-011

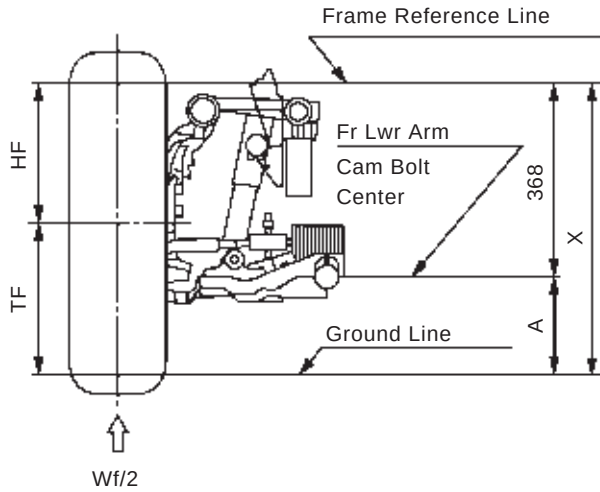
[3] -3. Suspension

Front suspension

Model

KDY250R-TBMGYW3

KDY250L-TBMGYW3



Spring Rate : 51.0 N/mm (5.2kgf/mm)

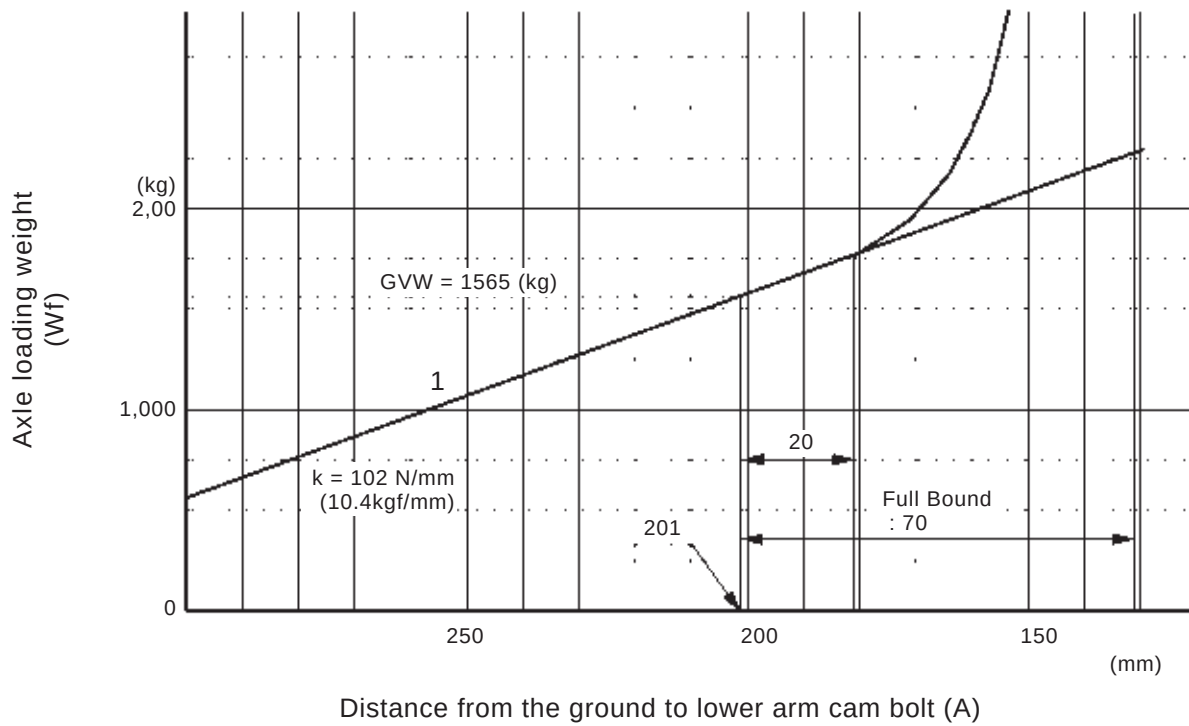
Cab & Chassis Average

Unladen Vehicle Weight

985(kg)

Unsprung Weight : 130(kg)

Tire size PR-LT	Mark	Spring Line	Dimension A (mm)		Tire Static
			0 kg (Wf)	Cab & Chassis Unladen Vehicle	Load Radius (TF)
195/70R15C	1	—————	356	248	306

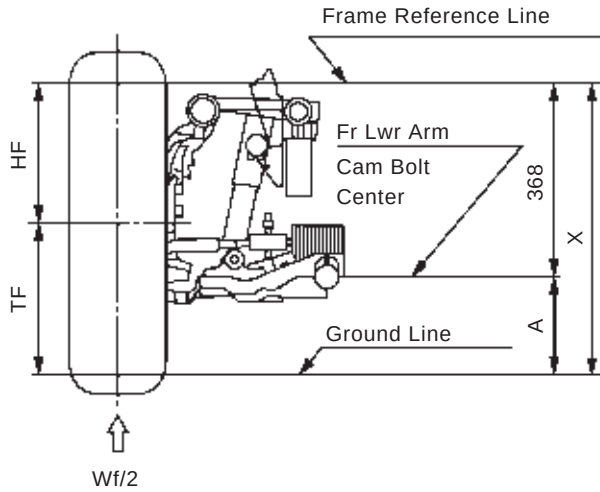


K-013

Front suspension

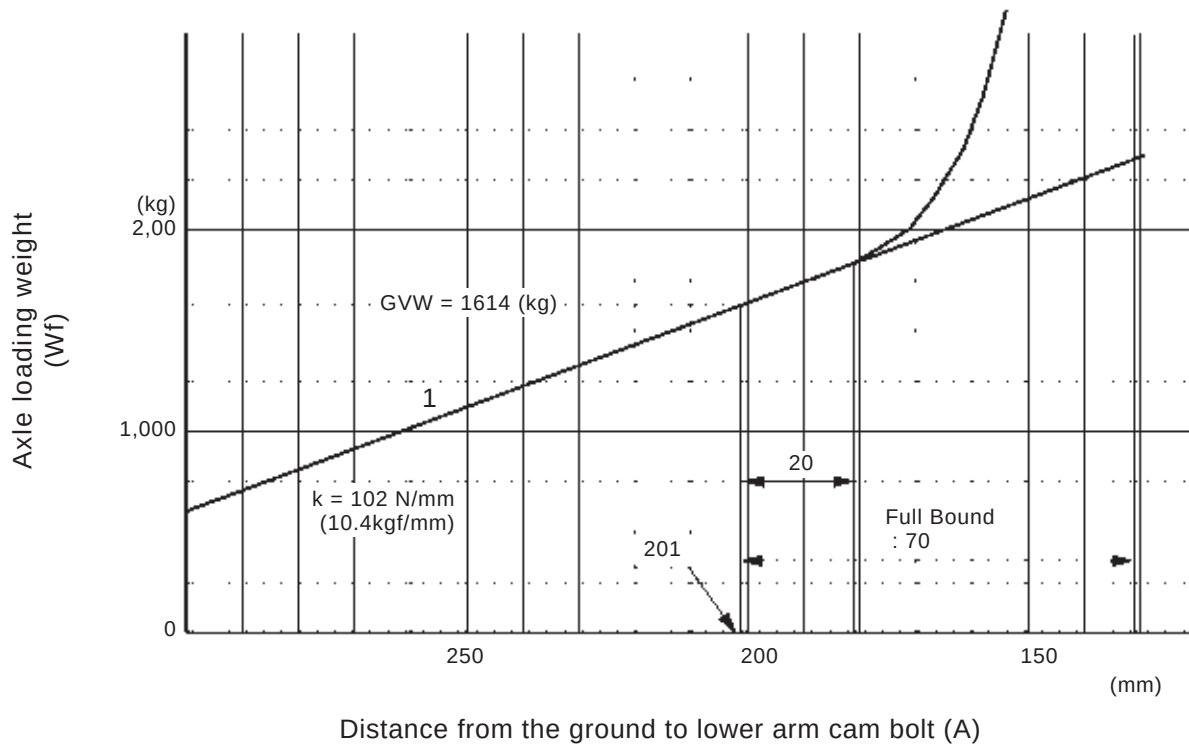
Model

KDY250L-PBMEYW3



Spring Rate : 51.0 N/mm (5.2kgf/mm)
 Cab & Chassis Average
 Unladen Vehicle Weight
 1075(kg)
 Unsprung Weight : 130(kg)

Tire size PR-LT	Mark	Spring Line	Dimension A (mm)		Tire Static
			0 kg (Wf)	Cab & Chassis Unladen Vehicle	Load Radius (TF)
195/70R15C	1	—————	360	244	306



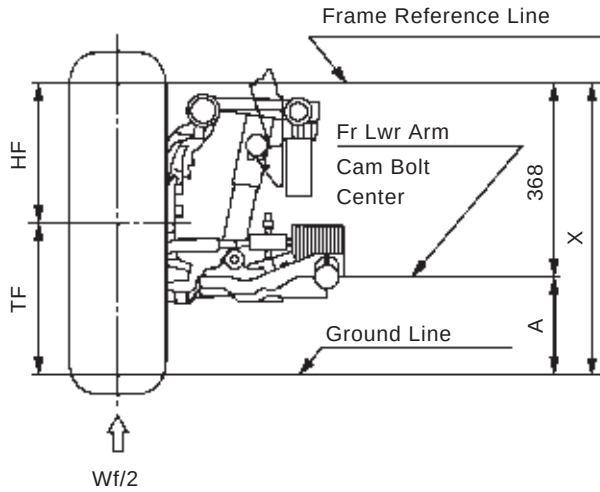
K-014

【3】-3. Suspension

Front suspension

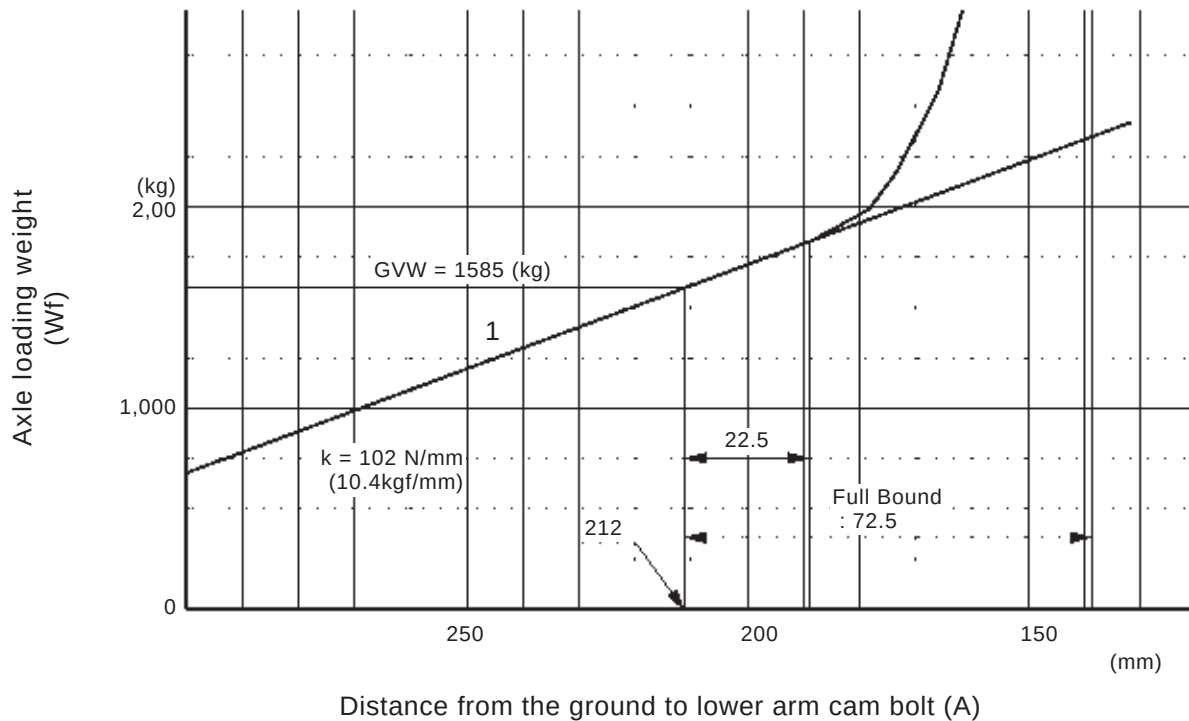
Model

KDY260L-TBMGYW3



Spring Rate : 51.0 N/mm (5.2kgf/mm)
 Cab & Chassis Average
 Unladen Vehicle Weight
 1000(kg)
 Unsprung Weight : 130(kg)

Tire size PR-LT	Mark	Spring Line	Dimension A (mm)		Tire Static
			0 kg (Wf)	Cab & Chassis Unladen Vehicle	Load Radius (TF)
195/70R15C	1	—————	368	260	306

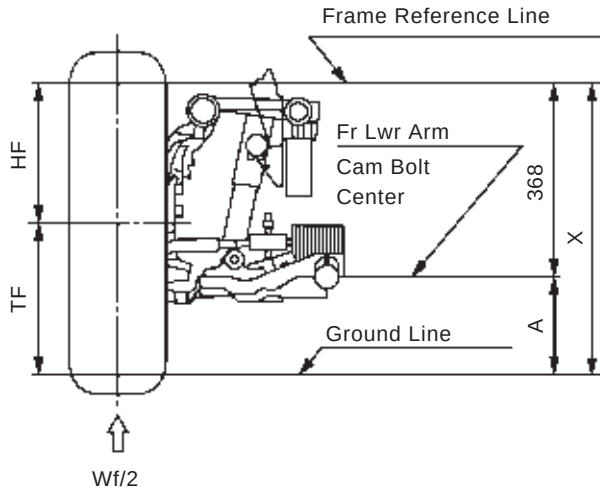


K-015

Front suspension

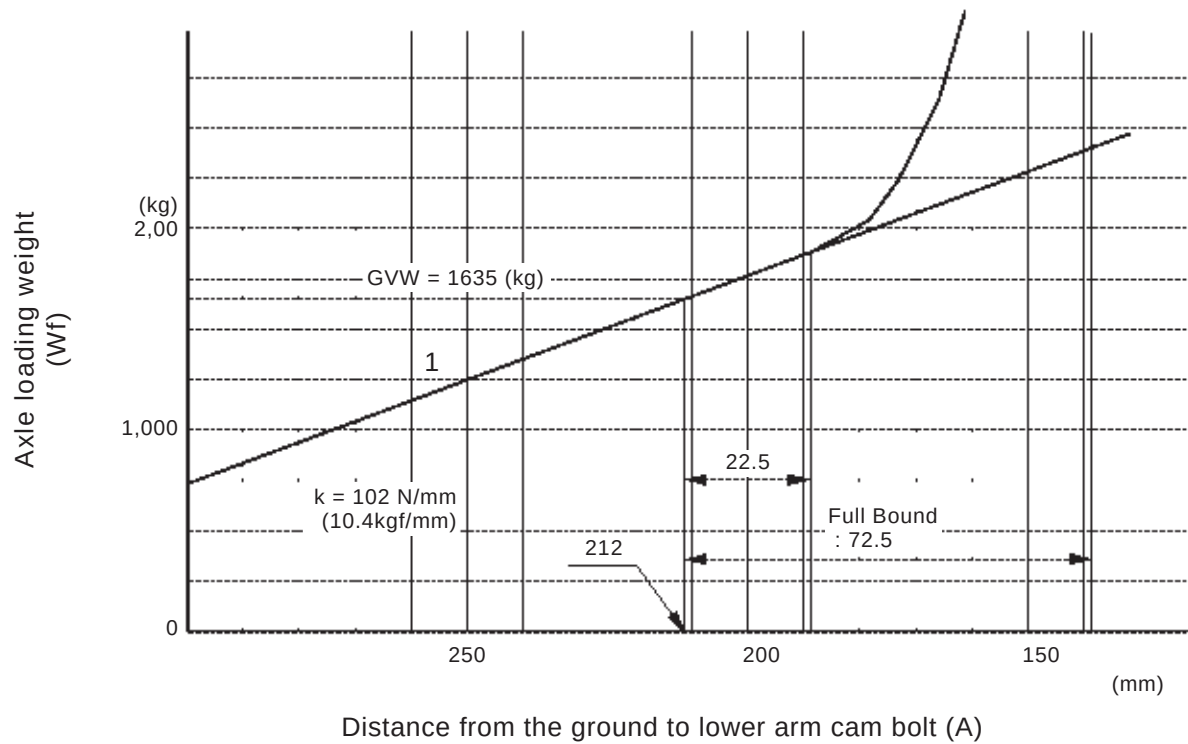
Model

KDY260L-PBMEYW3



Spring Rate : 51.0 N/mm (5.2kgf/mm)
 Cab & Chassis Average
 Unladen Vehicle Weight
 1100(kg)
 Unsprung Weight : 130(kg)

Tire size PR-LT	Mark	Spring Line	Dimension A (mm)		Tire Static
			0 kg (Wf)	Cab & Chassis Unladen Vehicle	Load Radius (TF)
195/70R15C	1	—————	373	255	306



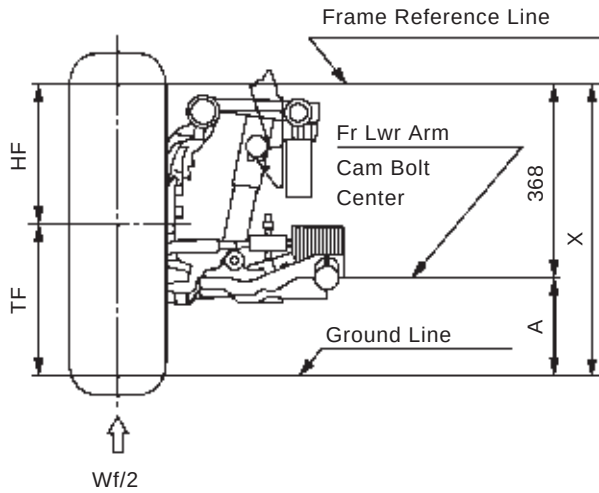
K-016

[3]-3. Suspension

Front suspension

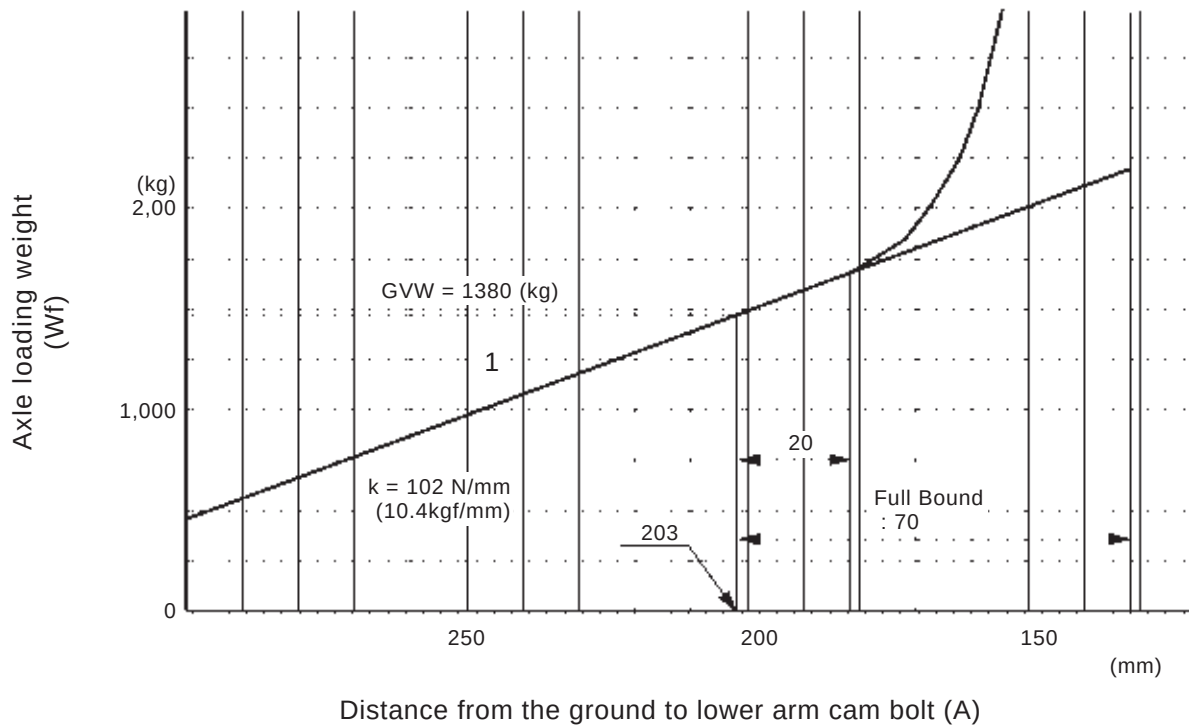
Model

LY220R-TBMDSQ3



Spring Rate : 51.0 N/mm (5.2kgf/mm)
 Cab & Chassis Average
 Unladen Vehicle Weight
 860(kg)
 Unsprung Weight : 130(kg)

Tire size PR-LT	Mark	Spring Line	Dimension A (mm)		Tire Static
			0 kg (Wf)	Cab & Chassis Unladen Vehicle	Load Radius (TF)
195/70R15C	1	—————	336	241	306

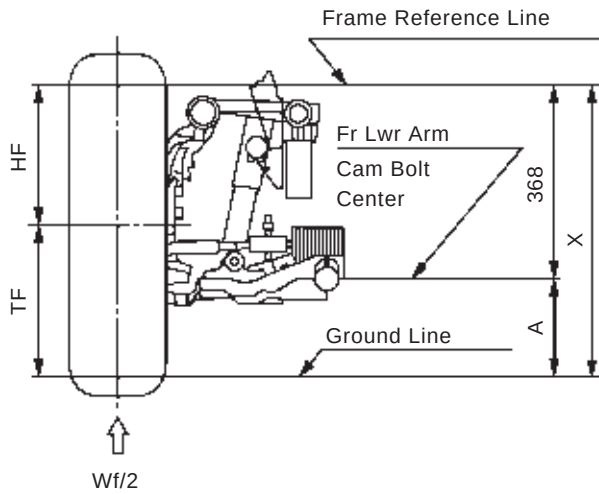


K-006

Front suspension

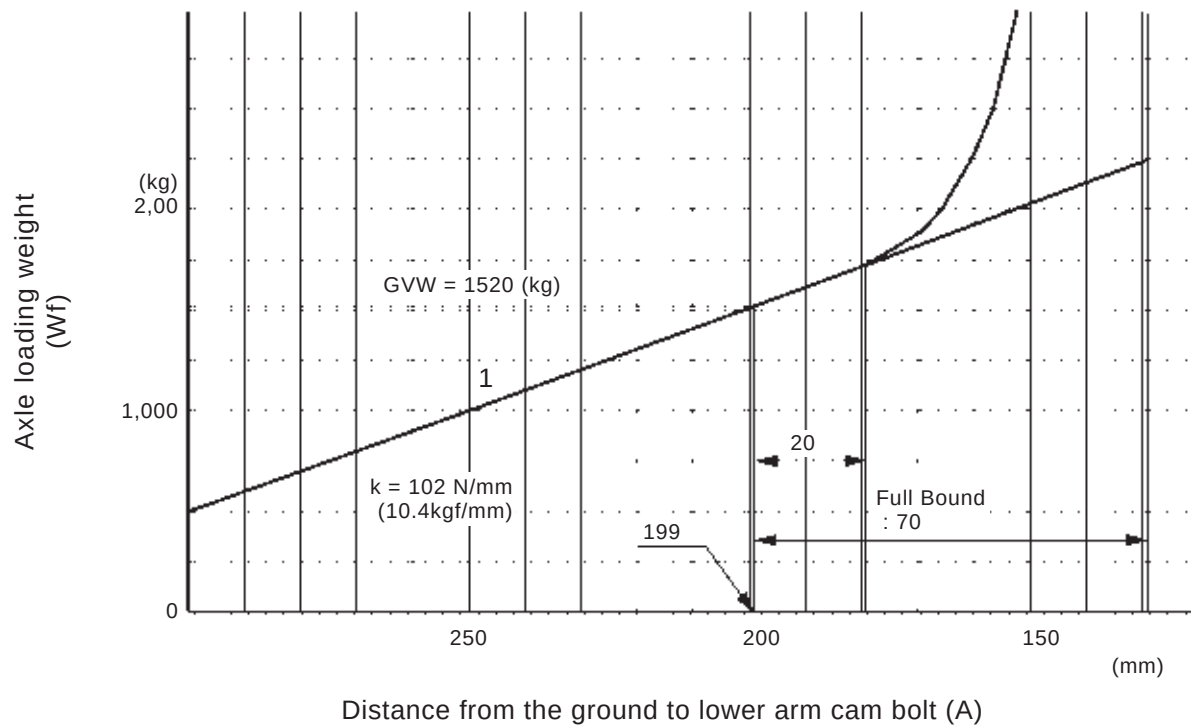
Model

LY230R-TBMGSQ3



Spring Rate : 51.0 N/mm (5.2kgf/mm)
 Cab & Chassis Average
 Unladen Vehicle Weight
 910(kg)
 Unsprung Weight : 130(kg)

Tire size PR-LT	Mark	Spring Line	Dimension A (mm)		Tire Static
			0 kg (Wf)	Cab & Chassis Unladen Vehicle	Load Radius (TF)
195/70R15C	1	—————	349	249	306

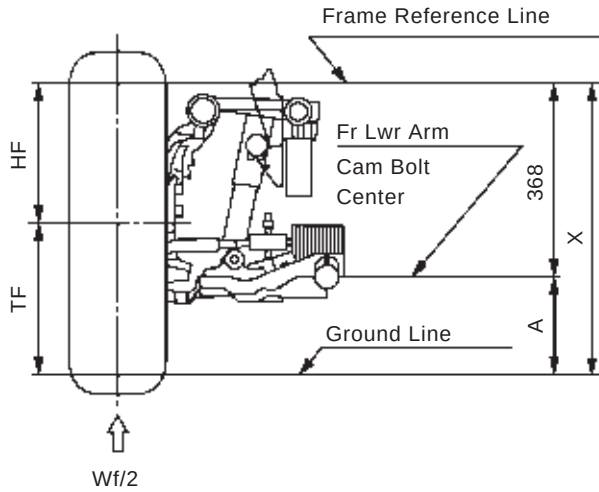


K-007

Front suspension

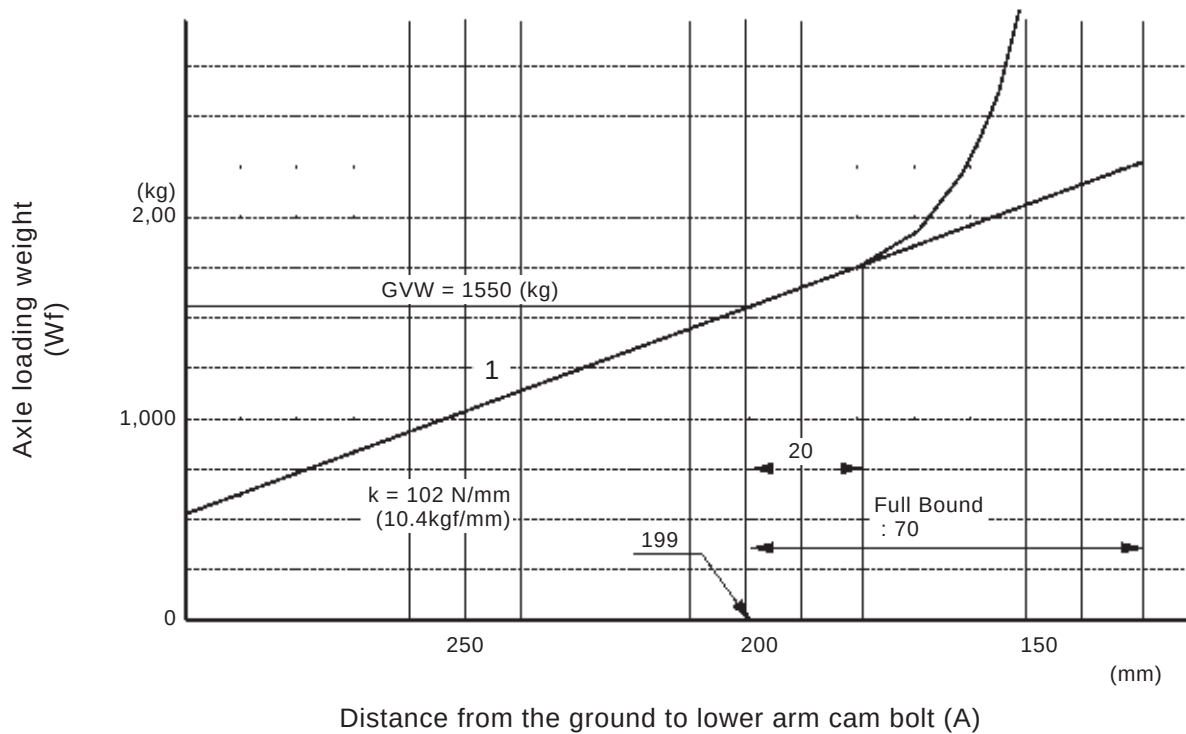
Model

LY230R-TBMGSN3



Spring Rate : 51.0 N/mm (5.2kgf/mm)
 Cab & Chassis Average
 Unladen Vehicle Weight
 910(kg)
 Unsprung Weight : 130(kg)

Tire size PR-LT	Mark	Spring Line	Dimension A (mm)		Tire Static
			0 kg (Wf)	Cab & Chassis Unladen Vehicle	Load Radius (TF)
195/70R15C	1	—————	352	252	306



K-008

Front Suspension

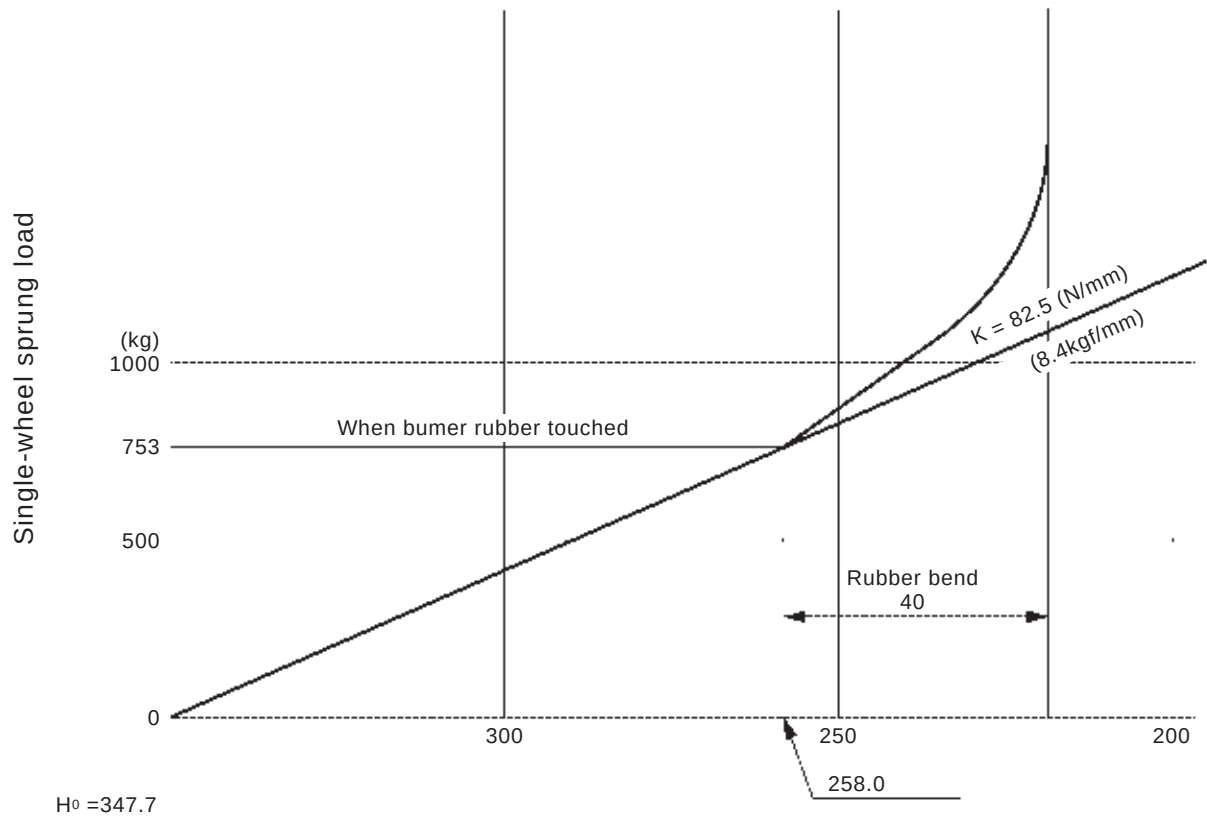
Model

LY225L-TBMDS3

Composition : 1150 x 70 x 8-1
9-3

W_1 : Unsprung weight 150 kg

TF : Static load radius 329 mm Tire size 600R-15-8PR



Distance from Front Wheel Center to Frame Reference Line HF

K-017

Front Suspension

Model

LY225R-TBMDS3

Composition : 1150 x 70 x 8-1
9-3

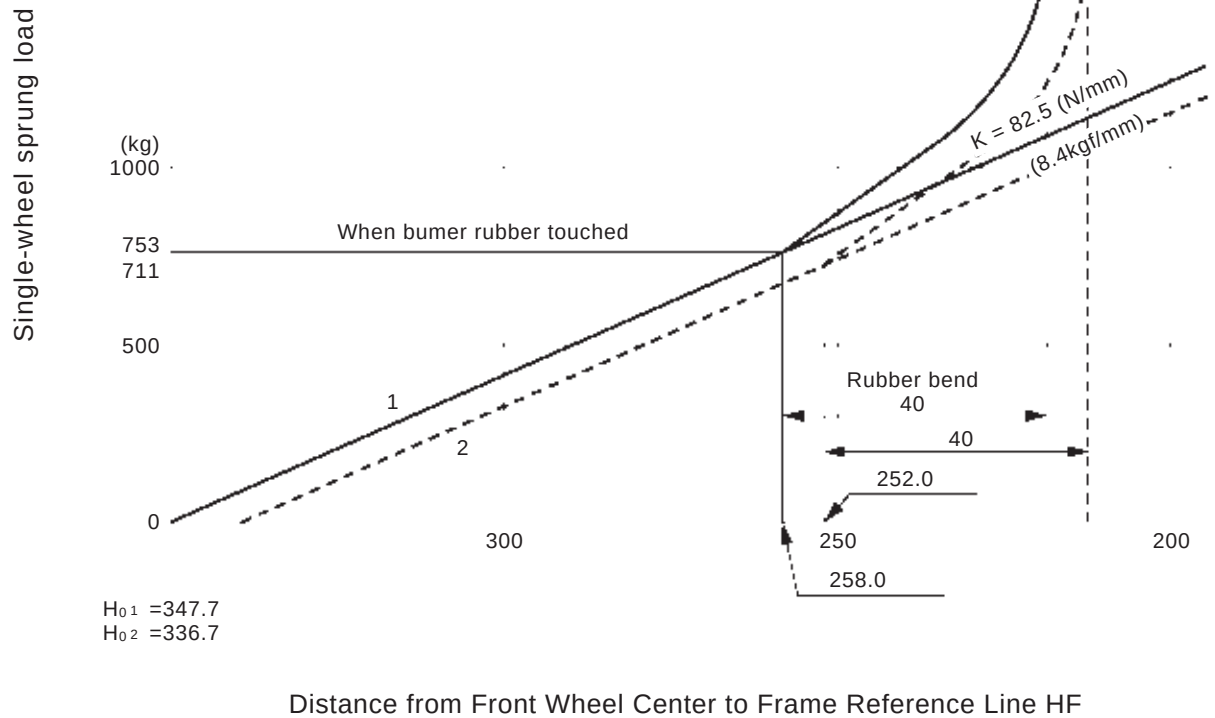
W_1 : Unsprung weight 150 kg

TF : Static load radius 329 mm Tire size 600R-15-8PR

1 ——— : RH

2 - - - - - : LH

$K_{1,2} = 82.5 \text{ (N/mm)}$
 (8.4 kgf/mm)



K-018

Front Suspension

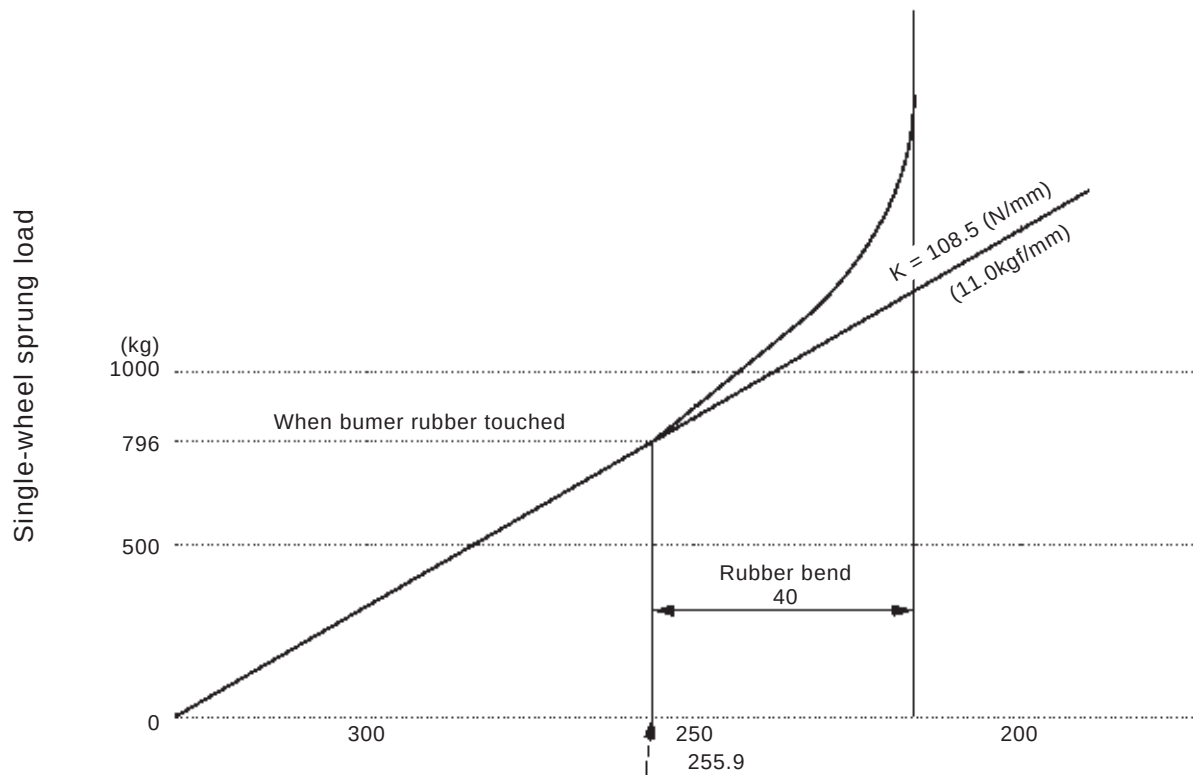
Model

LY235L-TBMFS3

Composition : 1150 x 70 x $\frac{9-2}{10-2}$

W_1 : Unsprung weight 150 kg

TF : Static load radius 329 mm Tire size 600R-15-8PR



$H_0 = 328.3$

Distance from Front Wheel Center to Frame Reference Line HF

K-019

Front Suspension

Model

LY235R-TBMFS3

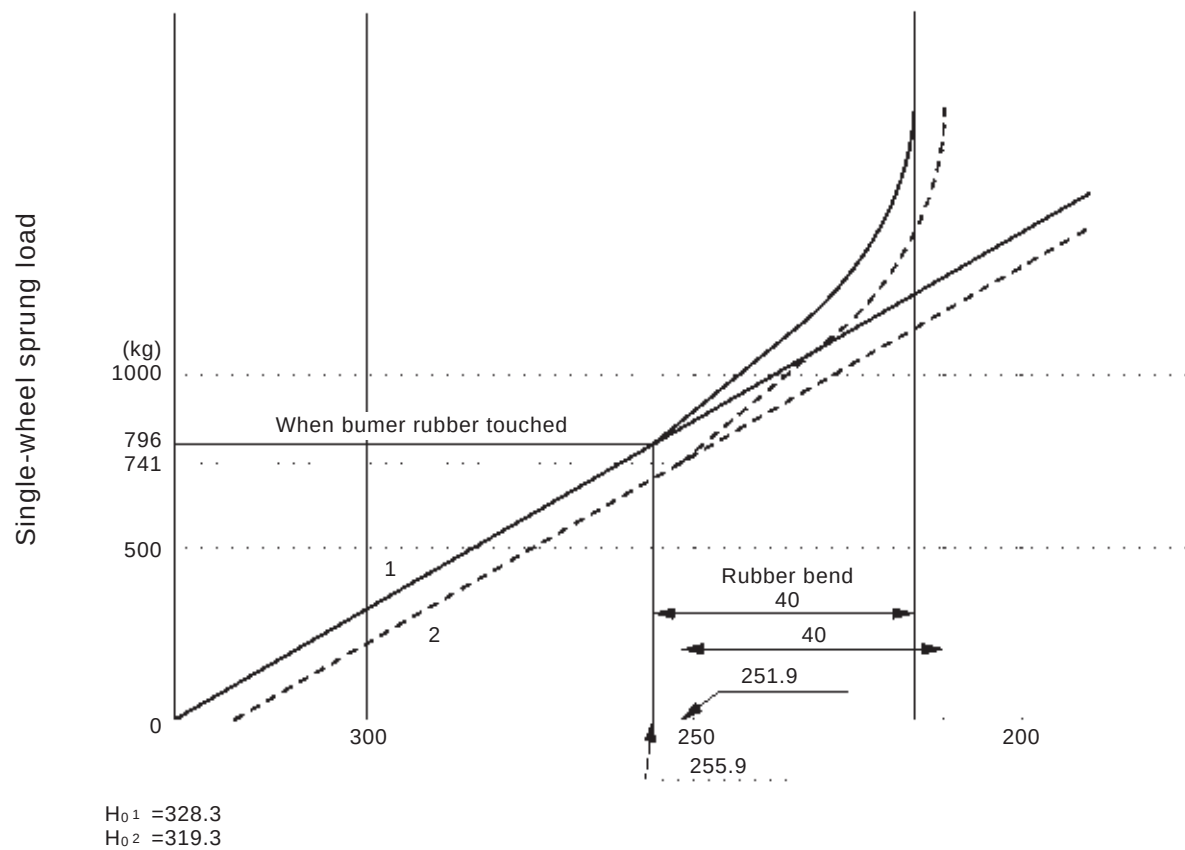
Composition : 1150 x 70 x $\frac{9-2}{10-2}$

W₁ : Unsprung weight 150 kg
TF : Static load radius 329 mm Tire size 600R-15-8PR

$$1 \text{ ————— } : \text{RH}$$

2 ----- : LH

$K_{12} = 108.5 \text{ (N/mm)}$
 (11.0 kgf/mm)



Distance from Front Wheel Center to Frame Reference Line HF

K-020

Rear Suspension

Models

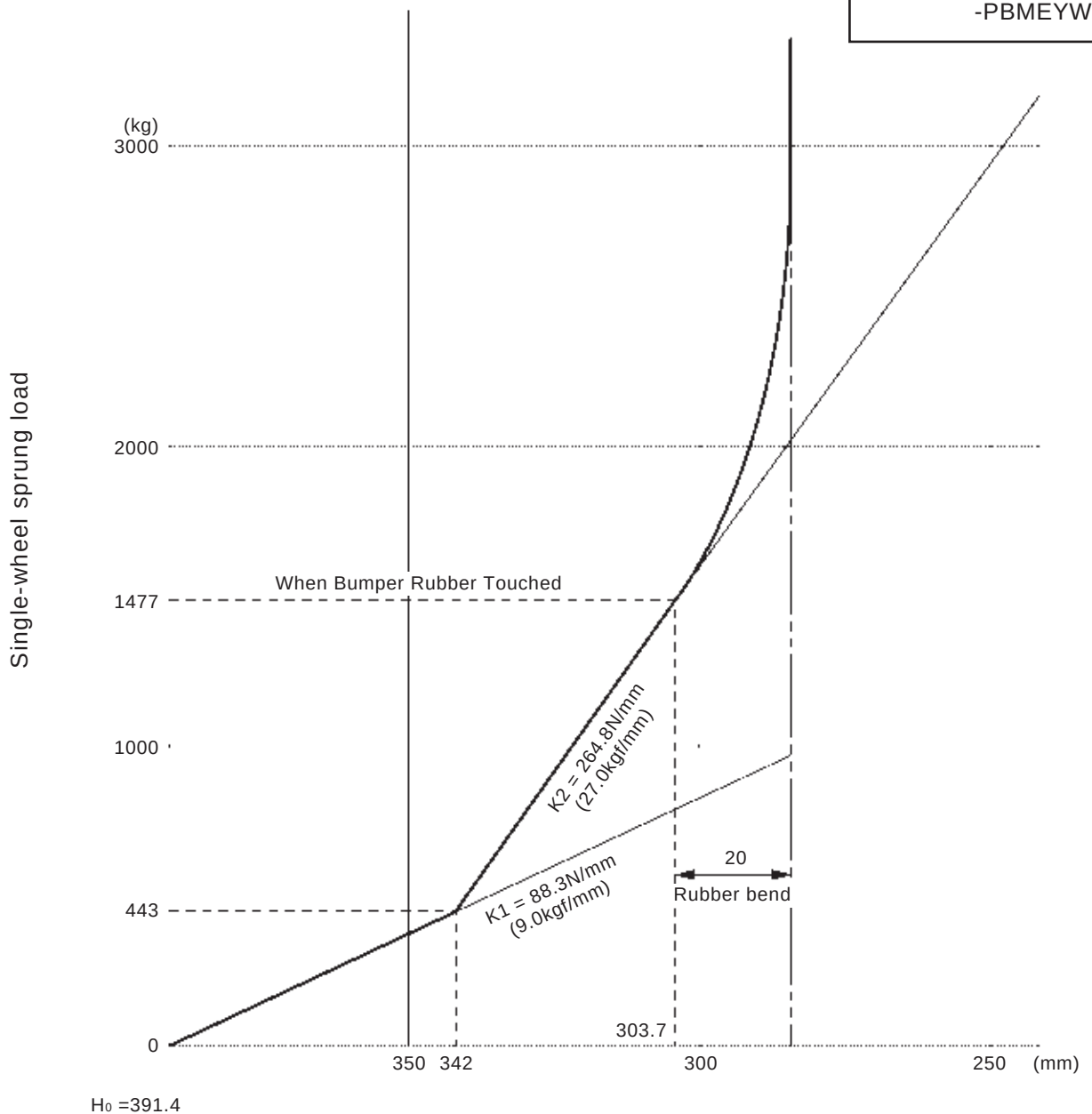
KDY230R-TBMGYW3
 KDY230L-TBMGYW3
 -PBMEYW3
 LY230R-TBMGSN3
 -TBMGSQ3
 KDY250R-TBMGYW3
 KDY250L-TBMGYW3
 -PBMEYW3
 KDY260L-TBMGYW3
 -PBMEYW3

Composition : Main 1200 x 70 x $\frac{10-1}{11-1}$

Aux 910 x 70 x 22-1

W_2 : Unsprung weight 335kg

TR : Static load radius 307 mm Tire size 195/70R15C



Distance from Rear Wheel Center to Frame Reference Line HR

K-021

Rear Suspension

Models

LY235R-TBMFS3

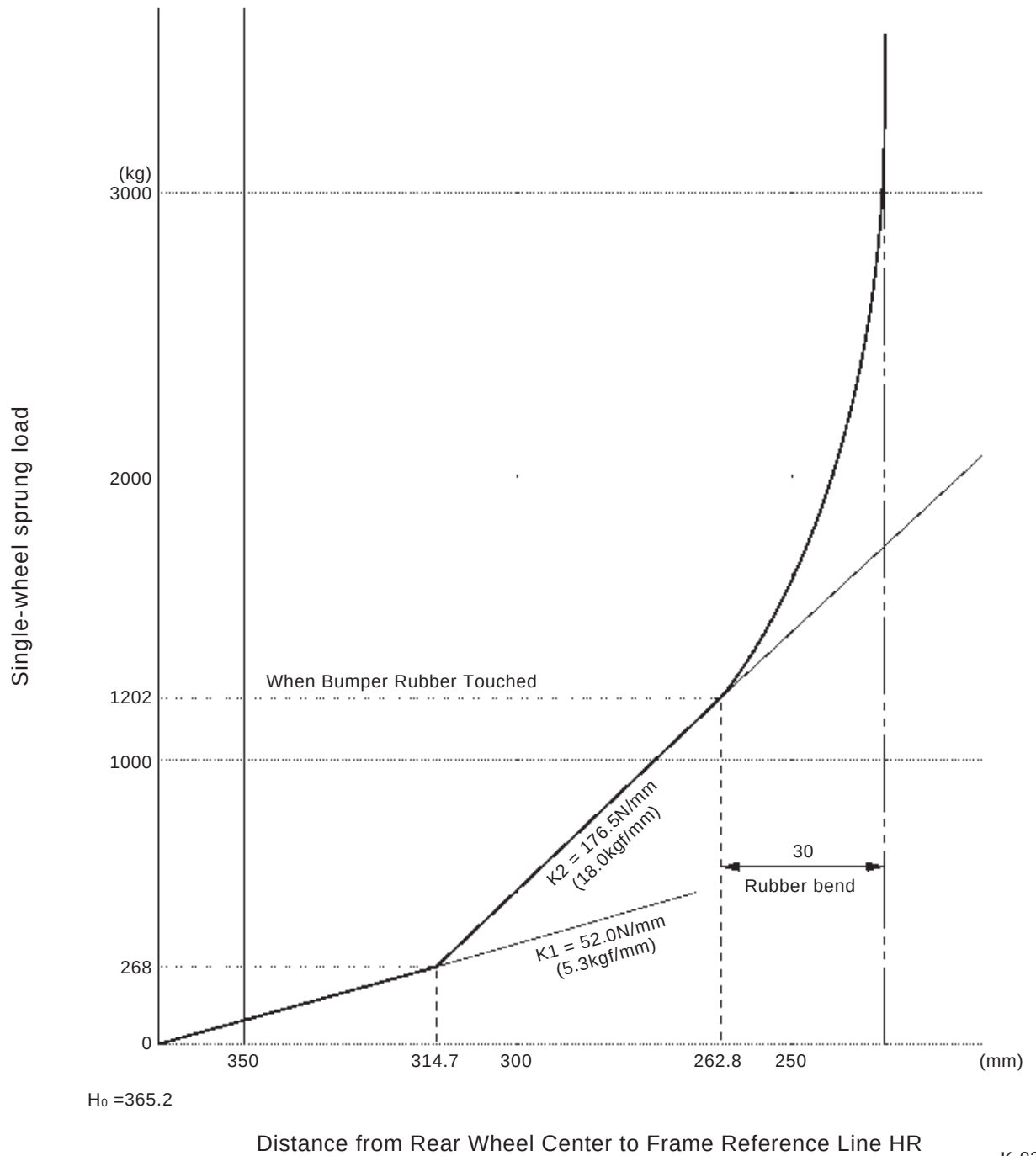
LY235L-TBMFS3

Composition : Main 1200 x 70 x 8-3

Aux 900 x 70 x 14-2

W_2 : Unsprung weight 210kg

TR : Static load radius 350 mm Tire size 7.00R15-10



K-022

Rear Suspension

Models

KDY220L-TBMDYW3

LY220R -TBMDSQ3

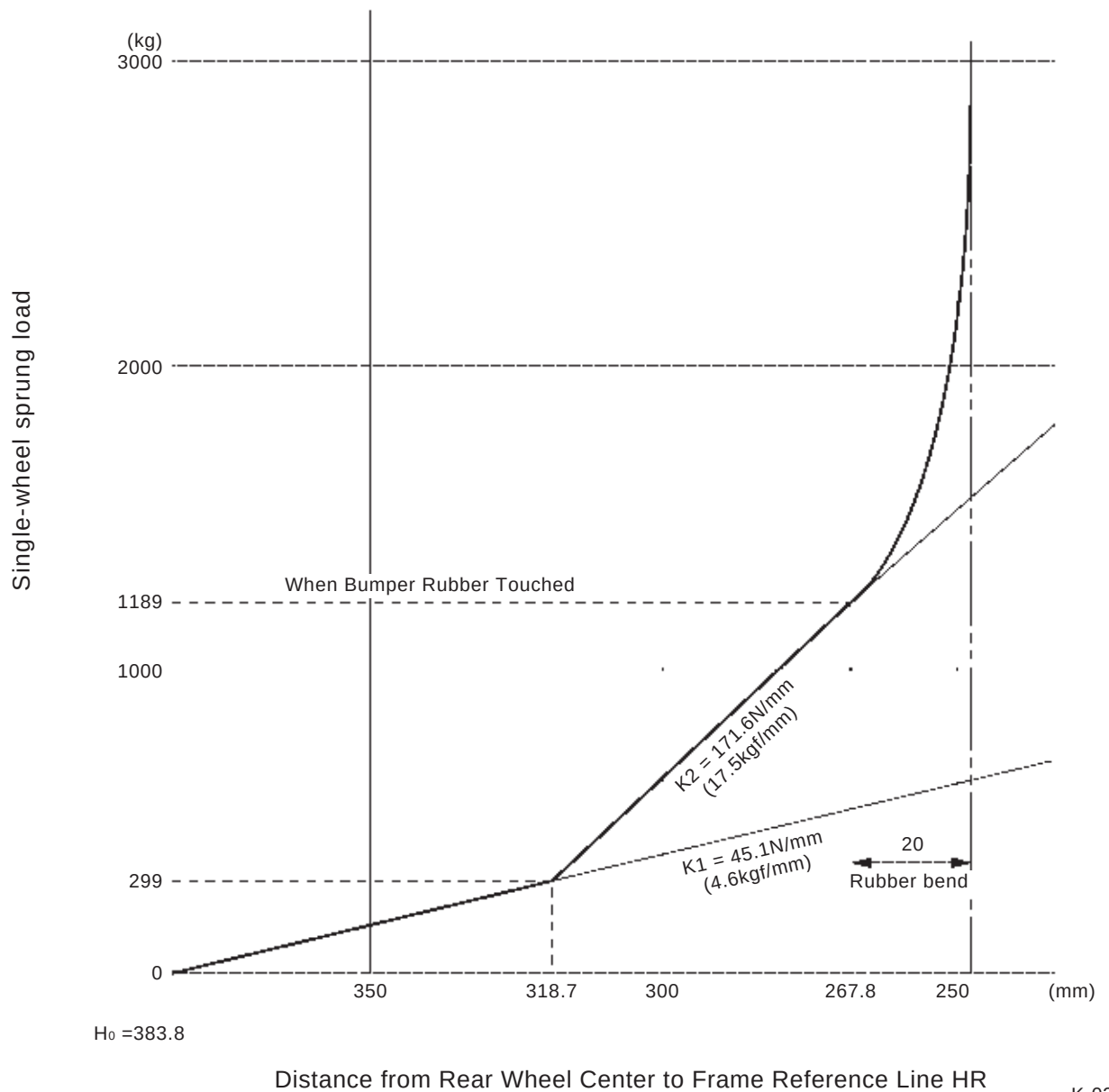
KDY230L-PSMBYW3

Composition : Main 1200 x 70 x $\frac{8-1}{9-1}$

Aux 925 x 70 x 20-1

W_2 : Unsprung weight 190kg

TR : Static load radius 306 mm Tire size 195/70R15C



K-023

Rear Suspension

Models

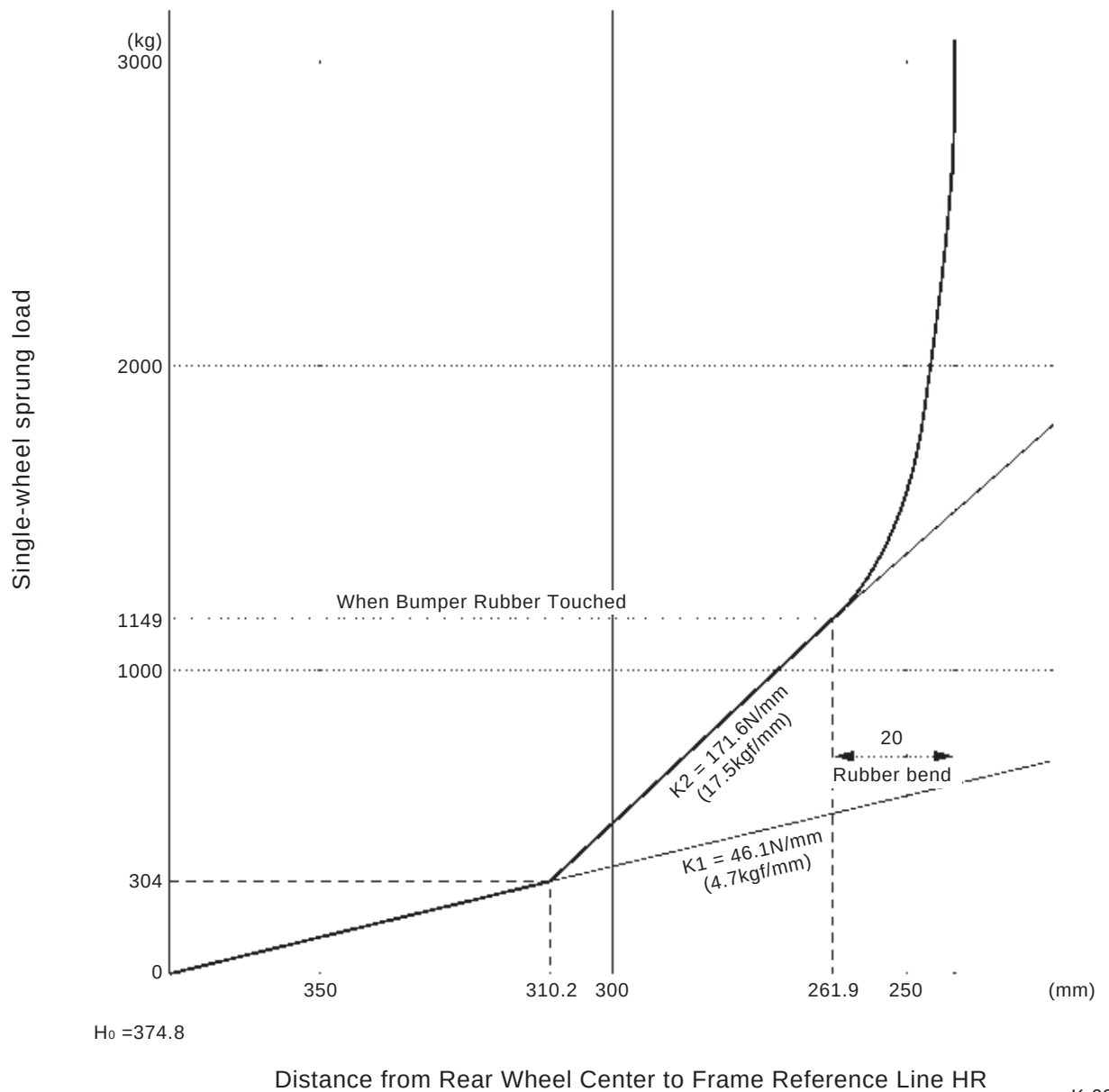
LY225R-TBMDS3

LY225L-TBMDS3

Composition : Main 1200 x 70 x $\frac{7-1}{8-2}$

Aux 900 x 70 x 14-2
 W_2 : Unsprung weight 190kg

TR : Static load radius 350 mm Tire size 7.00R15-8



K-024

(4) Tire radius

Static load radius	6.00R15	329 ± 7	JATMA
	7.00R15	350 ± 7	
	175R14	296 ± 7	
	185R14	302 ± 7	
	155R12	257 ± 7	
	195/70R15C	306 ± 6	ETRTO

When the double tire is used, add 1 mm to the above-mentioned static load radius.

(5) Tire load table

JATMA

(kg)

Tire size	Pressure Installation	kPa	300	325	350	375	400	425	450	475	500	525	550
		kgf/cm ²	3.00	3.25	3.50	3.75	4.00	4.25	4.50	4.75	5.00	5.25	5.50
6.00R15	Single		615	640	670	700	730	755	780 (8PR)	—	—	—	—
7.00R15	Single		770	805	840	875	910	945	980 (8PR)	1015	1050	1080 (10PR)	1115

JATMA

(kg)

Tire size	Pressure Installation	kPa	180	200	220	240	260	280	300	325	350	375	400
		kgf/cm ²	1.80	2.00	2.20	2.40	2.60	2.80	3.00	3.25	3.50	3.75	4.00
175R14	Single		450	480	510	535	560	585	610	640	665 (6PR)	695	720
185R14	Single		490	520	550	580	610	635	665	695	725 (6PR)	755	785
155R12	Double		315	335	350	370	390	405	420	440	460 (6PR)	480	500

ETRTO

(kg)

Tire size	Pressure Installation	kPa	200	225	250	275	300	325	350	375	400	425	450
		kgf/cm ²	2.00	2.25	2.50	2.75	3.00	3.25	3.50	3.75	4.00	4.25	4.50
195/70R15C 104/102S	Single		470	515	560	605	650	695	735	780	820	860	900
	Double		445	490	530	575	615	655	695	735	775	810	850

4.Body

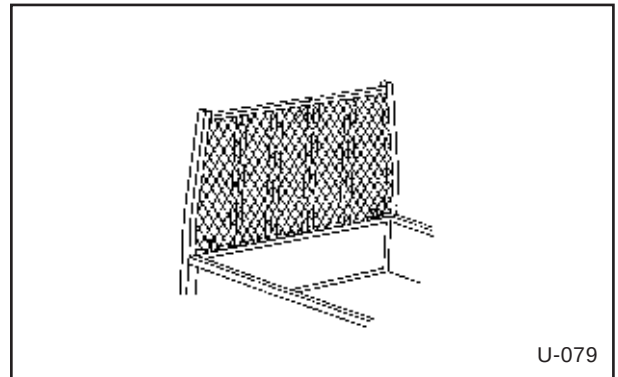
- In order to prevent intrusion of exhaust gas into the cab, surely seal all the holes and apertures in the cab including the floor.
- Don't remove the heat insulator from the base vehicle.

[1] Building and alterations to rear body and deck

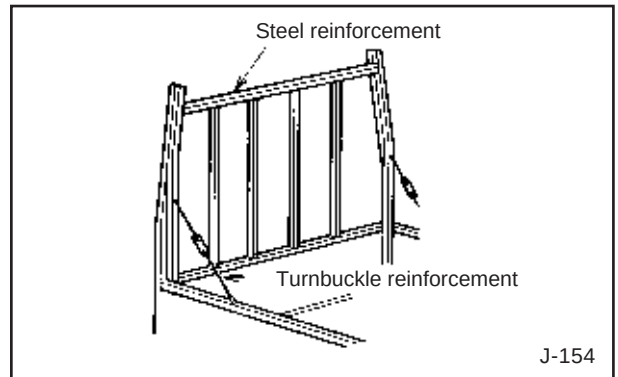
(1) Prevention of cargo drop

Each customer (driver) is responsible for preventing his/her cargo from falling. The body-builder therefore is required to take a measure for cargo-fall prevention most suitable for the normal cargo of the particular customer.

- 1 Since the cargo can be bound only laterally, the front portion of the deck is effectively covered with a wire mesh or iron sheets.

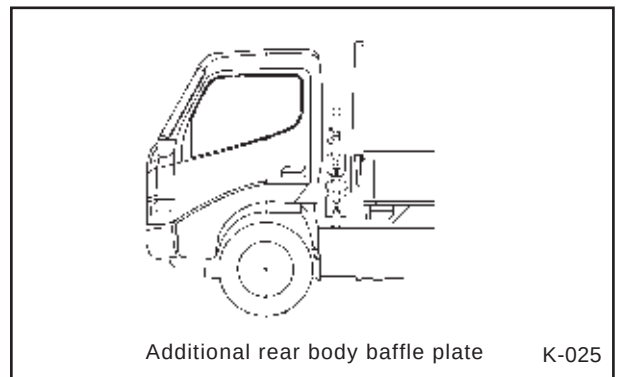


- 2 In the case of vehicles for carrying long or heavy objects, take adequate care in reinforcing the guard frame and the connection between the guard frame and the floor.



(2) Clearance between cab back and alteration (rear body, deck, etc.)

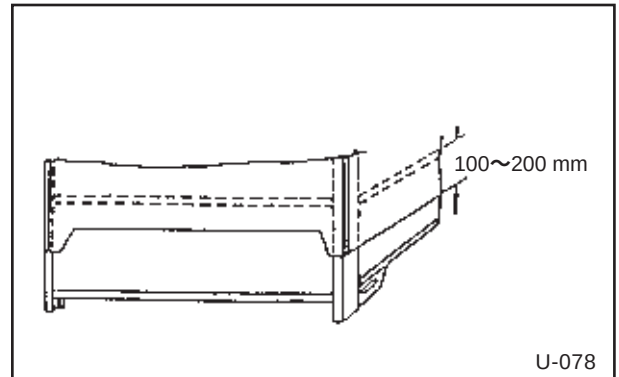
Clearance	Preventive measure
60 mm min	Reinforce with auxiliary plate or the like so that no foreign matters fall.
Less than 60mm	Take care that cab does not interfere with built or altered part (such as rear body)



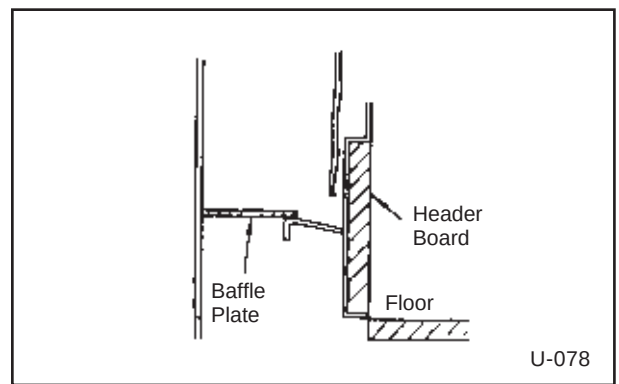
[2] Building deck with hood

(1) No water penetration

- 1 Make the hood cover the deck by about 100 to 200 mm to prevent intrusion of water from the hood tail.

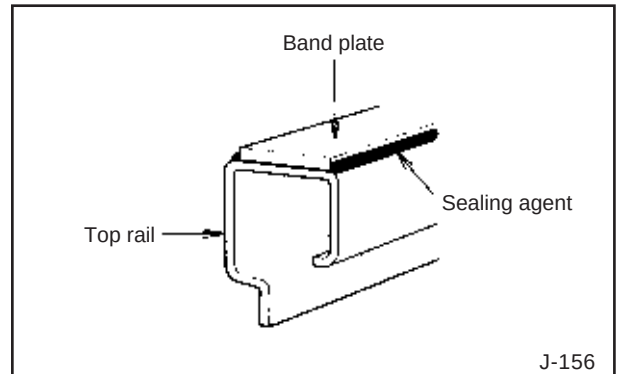


- 2 Design the hood at deck front in such a manner that the lower edge of the hood does not interfere with the baffle plate.



(2) After drilling a hole or welding the top rail, always be sure to apply anticorrosive treatment

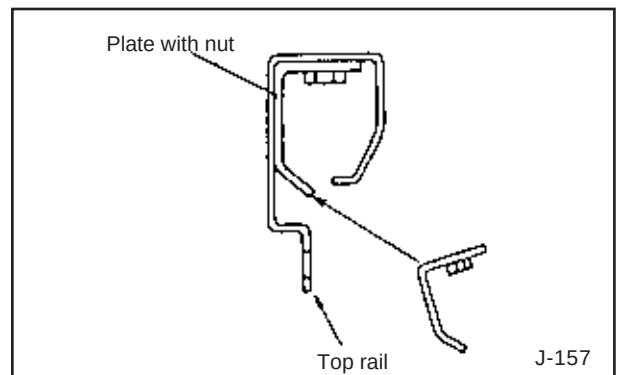
Use a galvanized steel sheet as a band plate. The joint between the band plate and the top rail should be coated with a sealing agent (a normally-dry sealer or the like) to prevent water penetration into the joint.



(3) Mounting the hood frame rail (bolting to side gate)

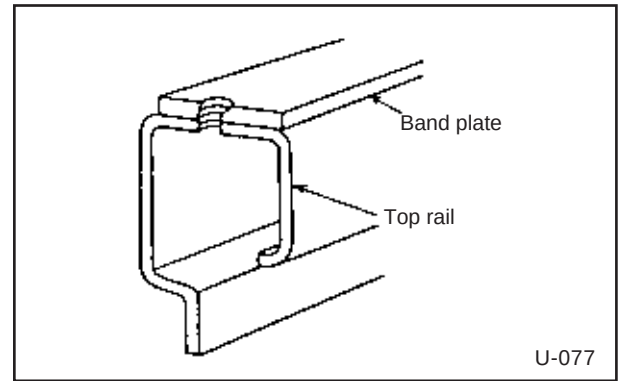
- 1 When using plate with nut

As shown at the right, prepare a plate with nut doubling as a stopper. Insert and mount it in the top rail.



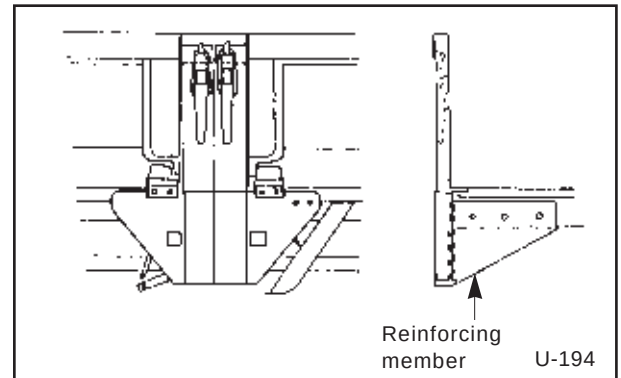
2 When using band plate

Mount on the upper surface of the top rail and the band plate (t = 2.3 to 3.2) by welding and tapping.



[3] Building side gates of separate type

In changing the side gate from wooden type to separate type, reinforce the center pole as shown at the right.



[4] Securing rear wheel house space

Make sure to secure a required space for the wheel house.

Vertical	Bound limit of tire	+25mm
Horizontal	Outer surface of tire	+30mm
	Inner surface of tire	+40mm

In attaching the tire chain, secure a larger clearance.

[5] Protection against thermal effect of exhaust system

With a sufficient clearance secured between the exhaust-related parts and the built or altered parts, measure the temperature as required to see that there is no safety problem.

Thermal effect of exhaust system

Required clearance		Related parts
Exhaust pipe	Muffler	
50mm	150mm	Mud guard (rear), heater hose
100mm	200mm	Mud guard (front)

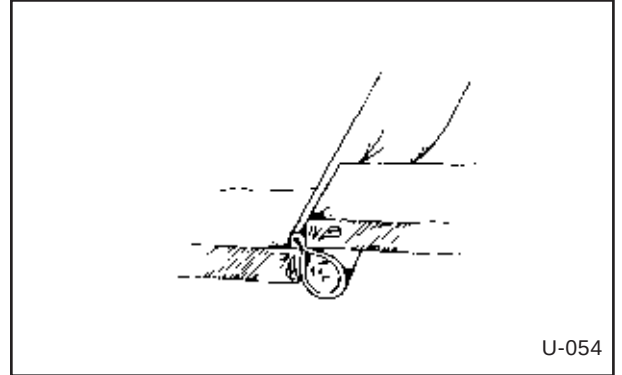
- In the case where no clearance is made available, protect against the heat with such means as a heat insulating plate.

5. Brake

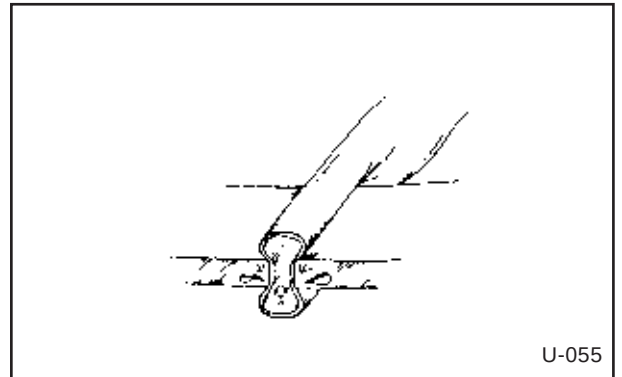
[1] Interference with piping

The brake piping system constitutes an important safety part. Strictly comply with the following instructions in body-building or alterations.

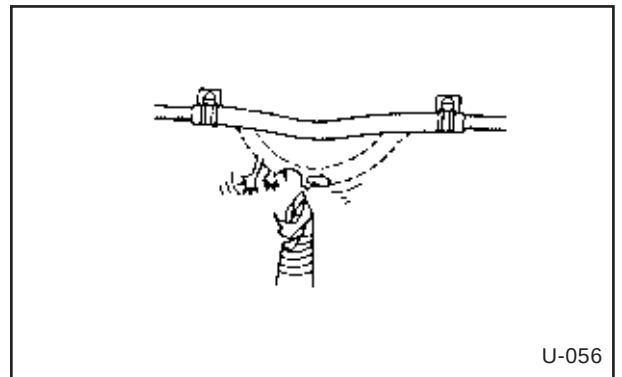
- 1 Take care that the piping is not caught by other parts.



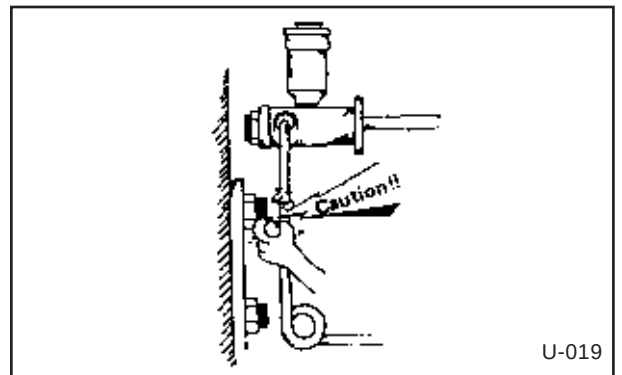
- 2 Be sure that the piping is not flattened.



- 3 See to it that the piping is not in contact with the sharp-angle portion of other parts.

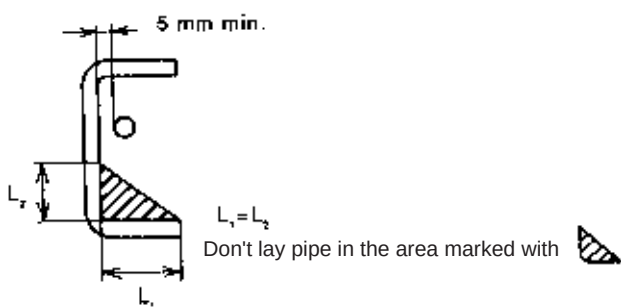
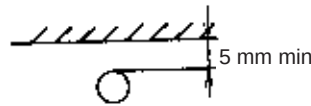
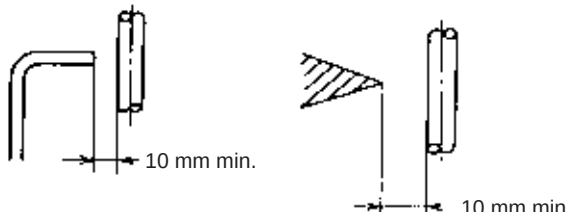
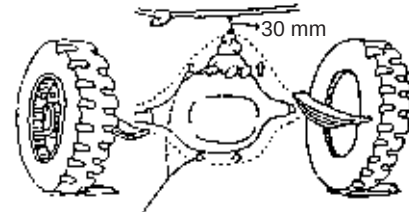


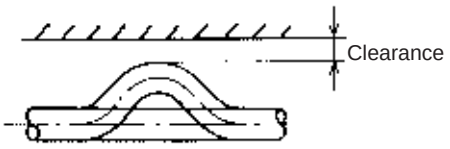
- 4 Pay attention to the displacement of the brake hose connected to the front and rear wheels while the vehicle is running.



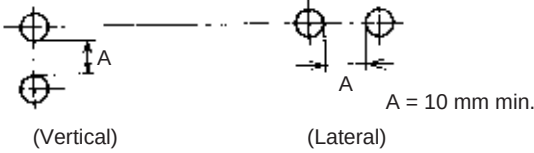
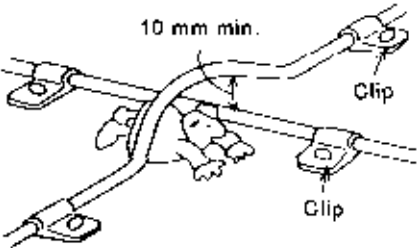
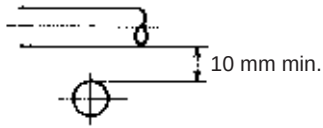
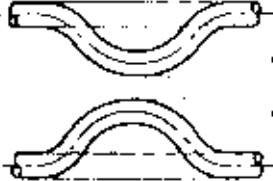
- 5 Secure a sufficient clearance between the brake piping and the alterations.

- Clearance between piping and alterations

No.	Portion	Clearance
1	Clearance between tube and frame	 5 mm min. $L_1 = L_2$ Don't lay pipe in the area marked with  J-092
2	Clearance between tube and flat metal surface	 5 mm min. J-093
3	Clearance between tube and metal corner edge	 10 mm min. 10 mm min. J-094
4	Clearance between tube and structure • Piping on movable portions  30 mm Amount of total movement J-095	10mm min Clearance with movable portions should be the amount of total movement plus 30 mm min.

No.	Portion	Clearance
5	Clearance between hose and structure	For the brake hose connecting to the wheels, provide an additional 50 mm clearance from the maximum displacement point considering the movement encountered when the tire is steered full during running. 《Other hose》 10 mm min. from flat portion under maximum displacement, 30 mm min. from corner or edge under maximum displacement.  J-096
6	Clearance with electrical equipment • Clearance between tube and battery cable • Clearance between tube and electrical equipment terminal	 J-097
7	Clearance between tube and wire harness	• 10 mm min. between the tube and parallel wire under maximum displacement. • 20 mm min. between the tube and crossed wire.

- Inter-pipe clearance

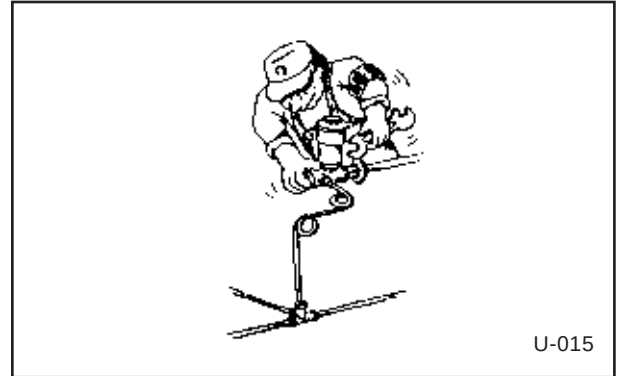
No.	Portion	Clearance
	Inter-tube clearance • Parallel pipes	 (Vertical) (Lateral) A = 10 mm min. J-099
	• Crossed pipes  10 mm min. Clip J-098	 10 mm min. Clip near the crossing to eliminate instability J-100
	Inter-hose clearance	 20 mm min. under maximum displacement

[2] Avoiding effect of exhaust heat

- 1 Locate the brake hose and the brake tube 100 mm minimum from the exhaust pipe and 200 mm minimum from the muffler under normal conditions; and 150 mm minimum from the exhaust pipe and 250 mm minimum from the muffler under maximum displacement.
 - When the specified clearance can not be made available, protect against heat by such means as a heat insulating plate.
- 2 Locate the parking brake outer cable 100 mm minimum from the exhaust pipe and 200 mm minimum from the muffler.
 - When the specified clearance can not be provided, protect them against heat by such means as a heat insulating plate.

[3] Serviceability

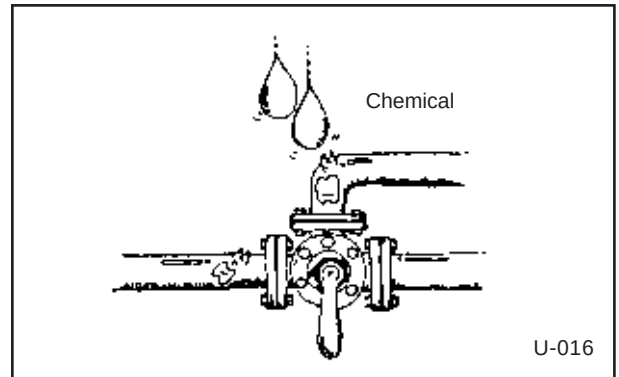
- 1 Secure such a structure that refastening, maintenance, inspection and replacement are possible of the brake-related parts even after the particular building or alteration.



- 2 Considering the position of the air bleeder of the piping, construct the brake piping to permit air bleeding.

[4] Antidewing and anticorrosion of brake tube

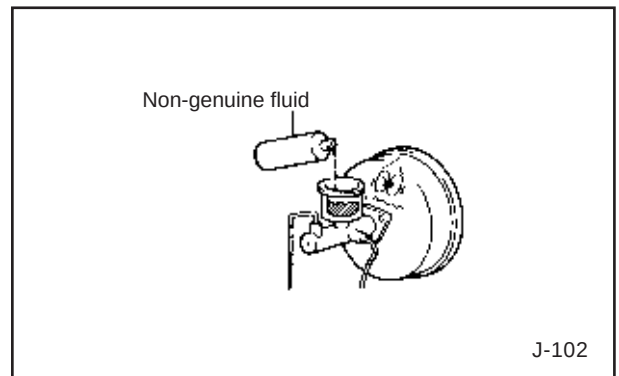
Corrosion of the brake tube for the special rear bodies of the liquid oxygen truck, the vacuum tank truck or fresh fish truck is promoted by the dew or water at low-temperature portions (such as the liquid oxygen inlet/outlet). Keep the brake tube away from or cover it with a protective plate at portions where dew forms or water drops easily.



[5] Refilling brake fluid

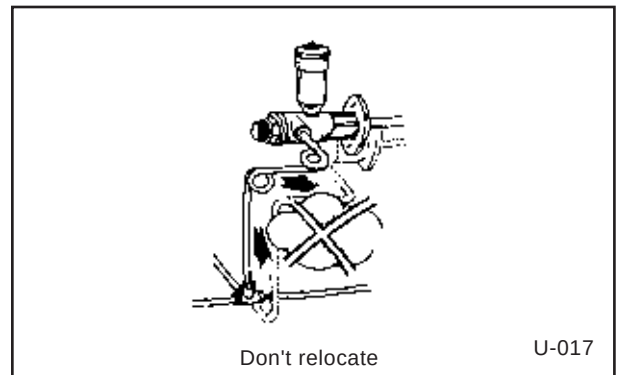
In changing the brake fluid, use Toyota genuine brake and clutch fluid (Toyota Brake Fluid 2500H).

- Don't reuse the fluid that has been drained.
- Never use mineral oil or a mixture with other brands.



[6] Relocation of brake-related parts

Don't relocate the brake-related parts or change the pipe shape.



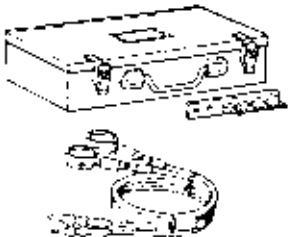
[7] Readjustment of LSPV

A load sensing proportioning valve (LSPV) is mounted on the base vehicle for stabilizing the brake performance in accordance with the change of load.

- Adjust LSPV after building or alteration (on completion of the vehicle).
- Readjustment of a LSPV demounted is always necessary.

(1) LSPV readjustment procedure

1 SST, tools and measuring instruments

SST		09709-29017	Gage set, LSPV
Instrument	Axle load gage		

2 Preparation for adjustment

(a) Measure the rear axle load using the axle load gage.

Standard rear axle load for adjustment

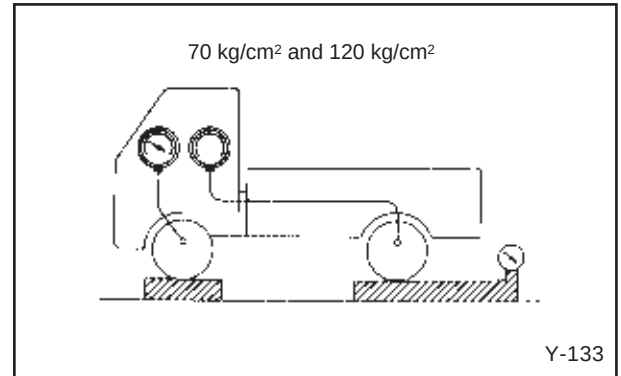
Classification			Standard rear axle load for adjustment (kgf)
DYNA100	General, Australia		800
	Europe	Single cab	1200
		Double cab	1100
DYNA150	Australia		1400
	General		850
	Europe	w/o ABS	1500
		w/ ABS	1700
	South Africa		1400

<Procedure>

With one person in driver's seat, place a weight on the vehicle to adjust the rear axle load.

- When adjusting the rear axle load, set the weight to a value higher than the expected load by about 60 kgf. Reduce the weight slowly for final adjustment.
- See to it that there is no lateral imbalance.

(b) Mounting the LSPV gage set, bleed air from the gage.



3 Measurement of hydraulic pressure

- (a) Depress the brake pedal until the oil pressure in the front wheel cylinder reaches 70 kgf/cm², 120 kgf/cm².
- Don't depress the brake pedal a number of times.
 - When the oil pressure in the front wheel cylinder exceeds 70 kgf/cm², 120 kgf/cm², release the pedal completely and then depress it again.
- (b) After holding the oil pressure in the front wheel cylinder at (70 kgf/cm², 120 kgf/cm²) for two seconds, measure the oil pressure in the rear wheel cylinder.

Standard rear liquid pressure

Adjusted Standard Front Liquid Pressure (kgf/cm ²)			70	120
Rear Liquid Pressure (kgf/cm ²)	DYNA100	General	39 ± 5	49 ± 7
		Australia	↑	↑
		Europe	↑	↑
	DYNA150	General	39 ± 5	49 ± 7
		Australia	59 ± 5	77 ± 7
		Europe	↑	↑
		S. Africa	↑	↑

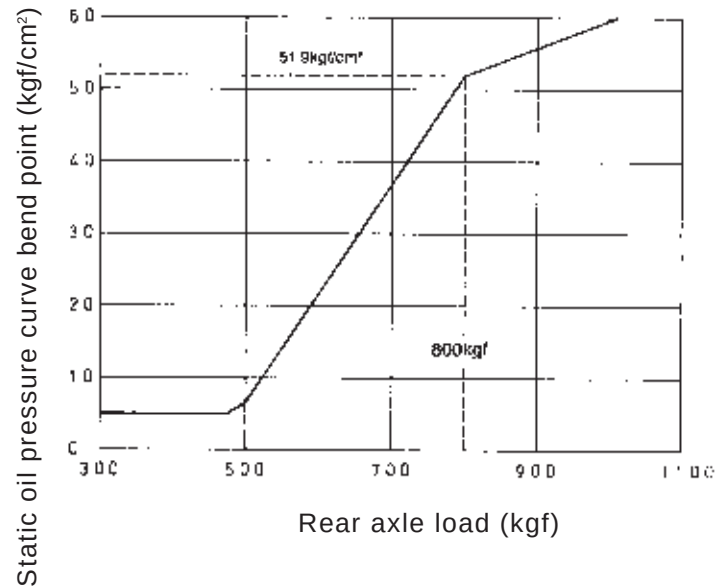
4 How to determine standard oil pressure in rear wheel cylinder

Only in the case where the rear axle load can not be adjusted to a value shown as the standard axle load, adjust the oil pressure in the rear wheel cylinder using the diagram shown below.

- (a) Plotting the rear axle load along the abscissa of a static oil pressure curve bend point diagram, determine a bend point of oil pressure.

Ex: For the rear axle load of 800 kgf, the oil pressure bend point is 51.9 kgf/cm².

Static oil pressure curve bend point diagram

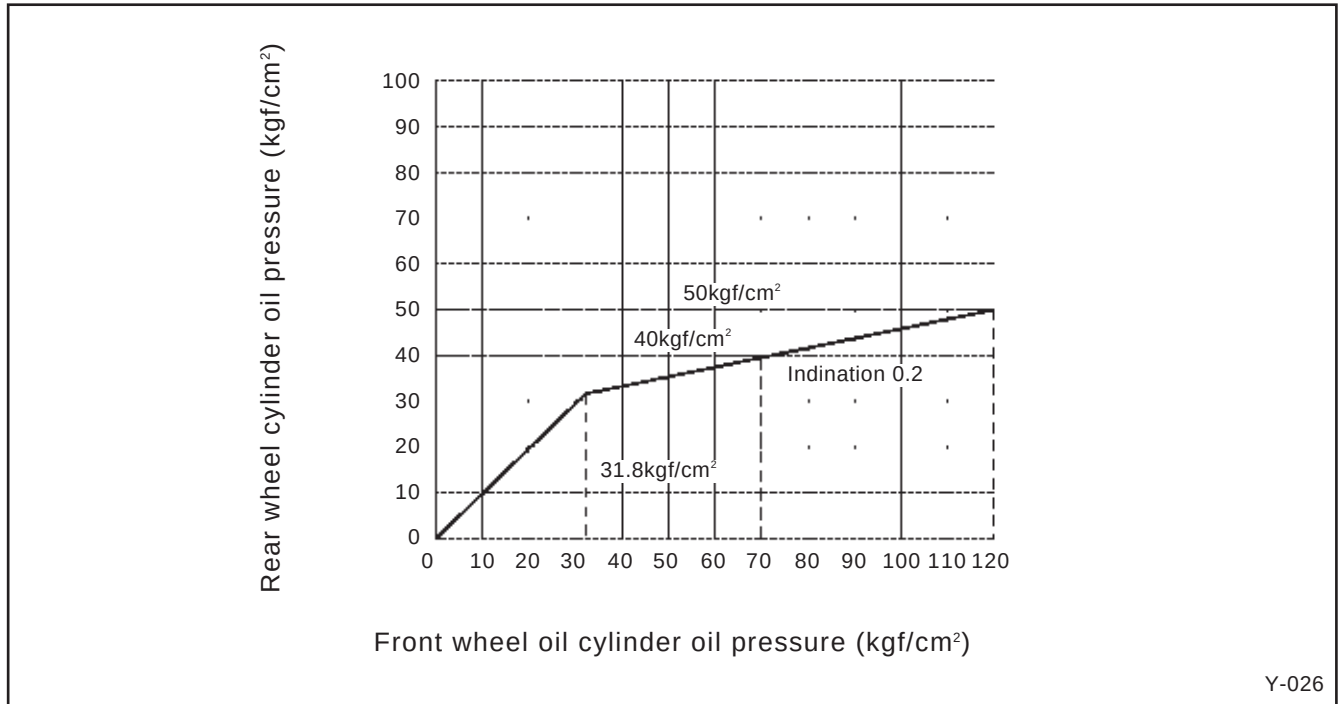


Y-075

- (b) After the value for the bend point of oil pressure is determined, plot the performance line (a line parallel to the valve unit performance line extending from the bend point of oil pressure), and read the rear wheel cylinder oil pressure at the time when the front wheel cylinder pressure is at 70 kgf/cm², 120 kgf/cm².

Ex: In the case where the bend point of oil pressure stands at 31.8 kgf/cm², the standard value for rear wheel cylinder oil pressure becomes 40 kgf/cm², 50 kgf/cm² at the time when the front wheel cylinder pressure is at 70 kgf/cm², 120 kgf/cm².

LSPV performance curve diagram



Y-026

How to calculate standard oil pressure

When the break point (x) is known, the oil pressure in the rear wheel cylinder against that in the front wheel oil cylinder is determined by the following equation:

Ex : Rear wheel cylinder oil pressure for front axle load of 70 kgf/cm²

DNYA100	General, Australia, Europe	$= x + (70 - x) \times 0.2$
DNYA150	General, Australia, Europe, S Africa	$= x + (70 - x) \times 0.37$

Rear wheel cylinder oil pressure for front axle load of 120 kgf/cm²

DNYA100	General, Australia, Europe	$= x + (120 - x) \times 0.2$
DNYA150	General, Australia, Europe, S Africa	$= x + (120 - x) \times 0.37$

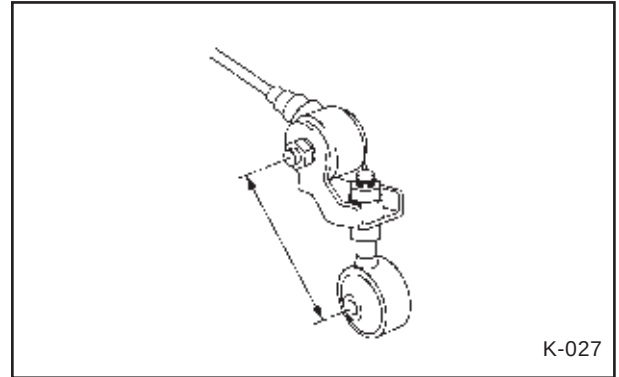
5 Oil pressure adjustment

If the oil pressure measurement fails to satisfy the standard value, adjust the oil pressure as follows.

(a) Adjust the length of shackle No.2 (Dimension A).

When the oil pressure is low,
increase the Dimension A.
(Turn the shackle counterclockwise.)

When the oil pressure is high,
decrease the Dimension A.
(Turn the shackle clockwise.)



Standard Dimension A	78 mm
Adjustment range	72mm ~ 84mm

- Lock nut fastening torque T = 250 kgf cm.

Oil pressure change adjusted per lock nut rotation

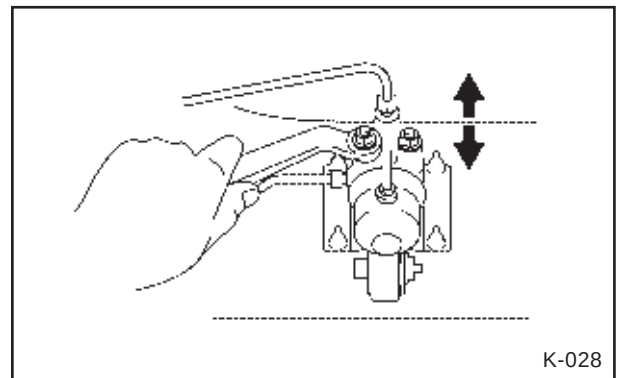
Vehicle type		Change (per rotation)
DYNA100		About 1.85 kgf/cm ²
DYNA150	Single type	About 1.85 kgf/cm ²
	Double type	About 4.91 kgf/cm ²

(b) Adjustment with LSPV body

When adjustment is impossible with the length of shackle No.2, move the LSPV body vertically to attain the standard oil pressure.

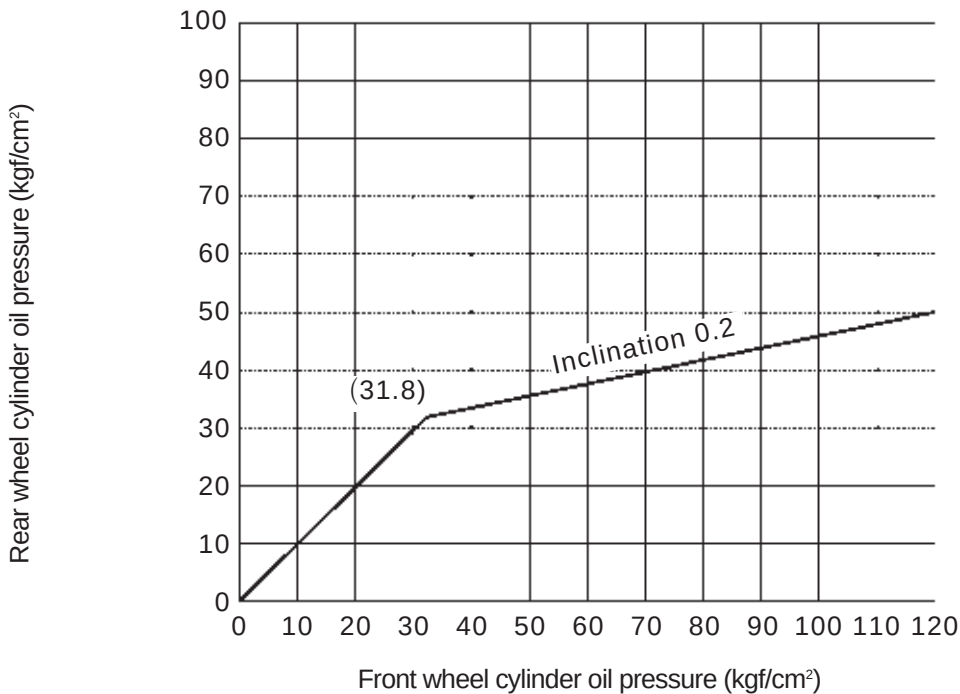
When oil pressure is low, lower the LSPV body.

When oil pressure is high, raise the LSPV body.

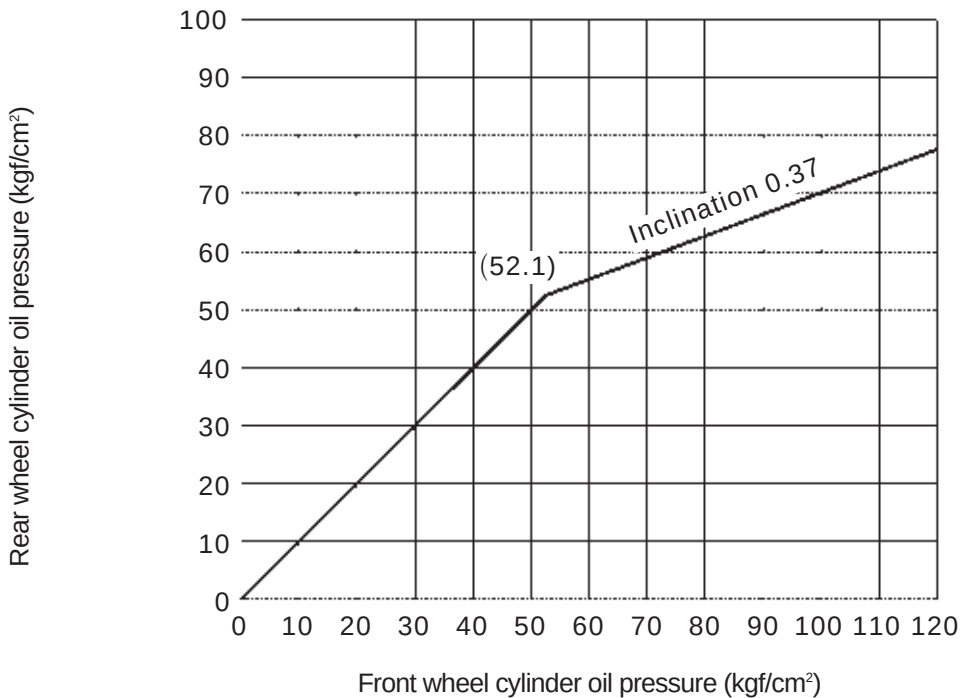


- Set nut fastening torque T = 130 kgf cm.
- After adjusting with LSPV body, readjust the length (Dimension A) of the shackle No.2.

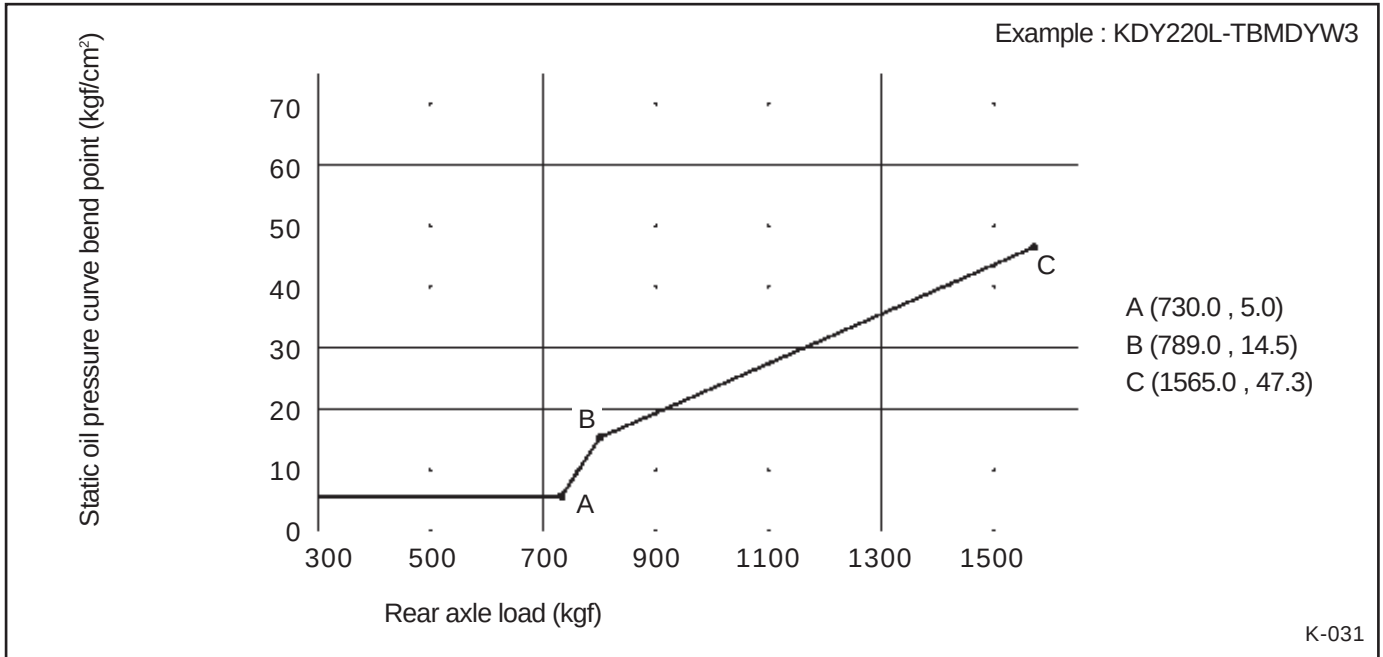
(2) LSPV performance curve diagram



TCA00141Y



TCA00140Y



MODELS	ABS	A [kgf , kgf/cm ²]	B [kgf , kgf/cm ²]	C [kgf , kgf/cm ²]
KDY220L-TBMDYW3	W/O ABS	730.0 , 5.0	789.0 , 14.5	1565.0 , 47.3
	W/ ABS	↑	↑	↑
KDY230R-TBMGYW3	W/O ABS	1100.0 , 5.0	1224.0 , 32.1	1960.0 , 85.6
	W/ ABS	1167.0 , 5.0	1224.0 , 17.5	1960.0 , 71.1
KDY230L-TBMGYW3	W/O ABS	1100.0 , 5.0	1224.0 , 32.1	1960.0 , 85.6
	W/ ABS	1167.0 , 5.0	1224.0 , 17.5	1960.0 , 71.1
KDY230L-PBMEYW3	W/O ABS	1100.0 , 5.0	1224.0 , 32.1	2110.0 , 96.5
	W/ ABS	1167.0 , 5.0	1224.0 , 17.5	2110.0 , 82.0
KDY230L-PSMBYW3	W/O ABS	704.0 , 5.0	789.0 , 18.7	1620.0 , 53.8
	W/ ABS	↑	↑	↑
KDY250R-TBMGYW3	W/O ABS	1100.0 , 5.0	1224.0 , 32.1	1900.0 , 81.2
	W/ ABS	1167.0 , 5.0	1224.0 , 17.5	1900.0 , 66.7
KDY250L-TBMGYW3	W/O ABS	1100.0 , 5.0	1224.0 , 32.1	1900.0 , 81.2
	W/ ABS	1167.0 , 5.0	1224.0 , 17.5	1900.0 , 66.7
KDY250L-PBMEYW3	W/O ABS	1100.0 , 5.0	1224.0 , 32.1	1850.0 , 77.6
	W/ ABS	1167.0 , 5.0	1224.0 , 17.5	1850.0 , 63.1
KDY260L-TBMGYW3	W/O ABS	1100.0 , 5.0	1224.0 , 32.1	1895.0 , 80.9
	W/ ABS	1167.0 , 5.0	1224.0 , 17.5	1895.0 , 66.3
KDY260L-PBMEYW3	W/O ABS	1100.0 , 5.0	1224.0 , 32.1	1845.0 , 77.2
	W/ ABS	1167.0 , 5.0	1224.0 , 17.5	1845.0 , 62.7
LY220R-TBMDSQ3	—	625.0 , 5.0	789.0 , 31.4	1620.0 , 66.5
LY230R-TBMGSQ3	—	1067.0 , 5.0	1224.0 , 39.4	1980.0 , 94.3
LY230R-TBMGSN3	—	1067.0 , 5.0	1224.0 , 39.4	2000.0 , 95.8
LY225R-TBMDS3	—	627.0 , 5.0	797.0 , 31.7	1610.0 , 66.0
LY225L-TBMDS3	—	↑	↑	↑
LY235R-TBMFS3	—	584.0 , 5.0	745.0 , 27.5	1990.0 , 78.7
LY235L-TBMFS3	—	↑	↑	↑

6. Drive units

[1] Transmission

- 1 Sufficient clearance should be provided between transmission and an altered part because the two parts move relatively.
- 2 It is necessary to shift transmission rearward to pull out the clutch spline shaft when removing and reinstalling clutch and transmission. Therefore, don't locate any attachment and equipment in the area within 120mm behind the transmission.
- 3 For the breather tube installed on automatic transmission, strictly observe the following points.
 - Never alter the position of the breather tube.
 - Never collapse nor break the breather tube.
 - Never plug the opening of the breather tube.

[2] Propeller shaft

- 1 Provide clearance of at least 25mm between propeller shaft and any altered parts taking account of the full bound movement of the propeller shaft.
 - In the case where it is impossible to provide a suitable clearance, install a heat protection fixture using a heat insulating plate or the like.

7. Exhaust pipe

The thermal effect and interference of the exhaust-related parts including the exhaust pipe and the muffler poses a very serious safety problem. Strictly comply with the following instructions.

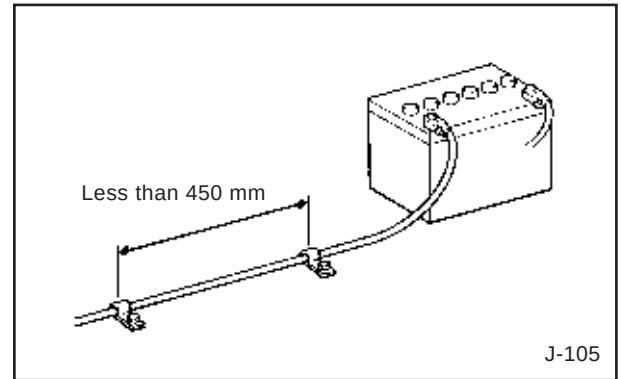
- Don't change the structure of exhaust system and the muffler capacity.
- Secure a sufficient clearance between the exhaust-related parts and the building or alteration (refer to respective instructions for each device). Measure the temperature as required and make sure that there is no safety problem. In the case where sufficient clearance is not made available, protect against heat with a heat insulating plate or the like.
- When changing the position of the exhaust pipe outlet, see to it that the body or other parts are not exposed to the exhaust gas, and keep it a way from the passenger region (ventilators, windows, doors or vehicle body openings or their vicinity).

8. Battery

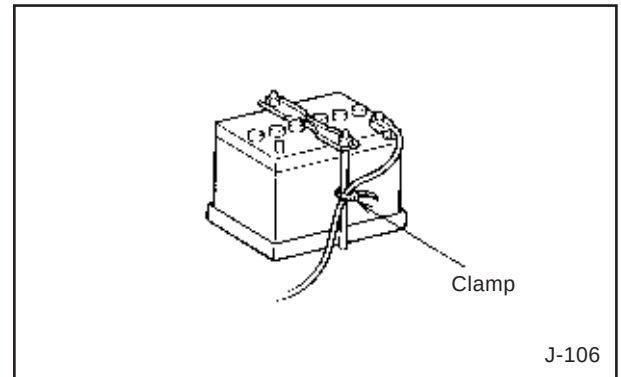
The battery is an item which, if handled inappropriately, may cause a malfunction of the electrical components of the vehicle or an engine trouble or a fire. Strictly observe the instructions on the battery and battery cable.

[1] Wiring precautions

- 1 In order to prevent damage from water or other objects, protect the battery appropriately.
- 2 The battery cable, whether in or out of position, should not be in contact with a sharp edge of other portions.
- 3 Clip the battery cable at intervals of less than 450 mm.
(Always use a clip lined with rubber.)
 - Be sure that the clip is not freely movable.
 - Keep the clips away from other portions.



- 4 Don't bend the battery cable to a radius smaller than ten times the cable diameter.
- 5 If the terminal is moved under the mounting tension of the battery cable, the terminal would become loose or normal engine start would become impossible, often leading to a battery failure. Always securely fix the battery cable on the battery tray.
- 6 Set the route of the battery cable downward so that no leverage action is exerted to loosen the connector.

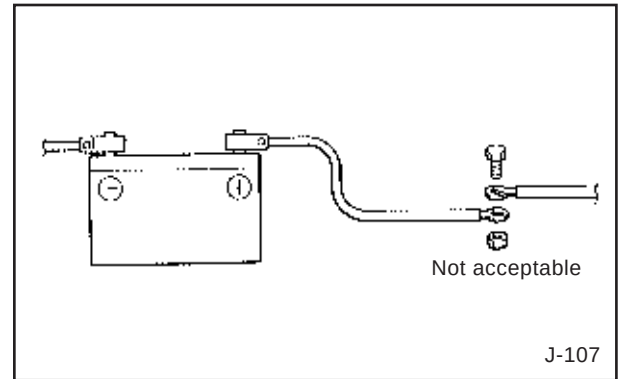


[2] Change of battery mounting position

- 1 Install the battery at a position where the air flow is sufficient to release into the atmosphere the gas generated during the temperature increase or the charging operation.
- 2 Keep the battery away from a heat source by 200 mm minimum. When this distance is not available, protect the battery from heat using a heat insulating plate or the like.
- 3 Determine the battery position using the existing battery cable.

[3] No overlaid connection of battery cables

Never connect battery cables by overlaying them one on another.



[4] Replacement battery cable

Replacing the battery cable poses an engine start problem and causes the loss of other key systems. Comply with the following instructions strictly.

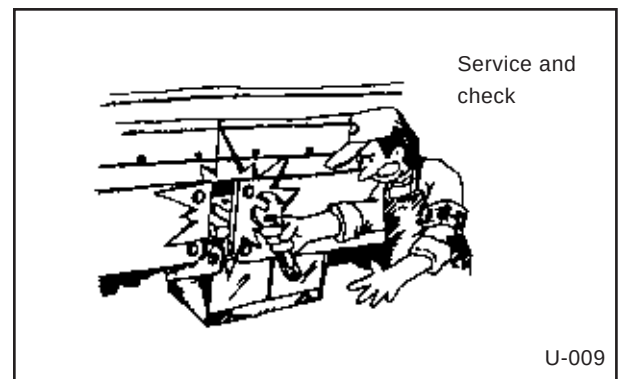
- 1 In order to secure the appropriate functions of the battery cable, use a cable with the following specifications.

Thickness (gage)	Length (mm)	Material
4	1600	Copper
2	2600	Copper
0	4200	Copper

- 2 When a minus cable is installed on the frame as a result of battery relocation, connect a cable of substantially the same size as the plus cable between the frame and the engine to cope with a large electric load of the starting circuit.

[5] Serviceability

- 1 During the service or check work, secure a sufficient space or insulation in order not to cause any accident such as short circuit.



- 2 Attach a terminal polarity marking, a caution label and an gravity meter (mark) at an easily visible position.

9. Fuel tank

[1] Addition and relocation of fuel tank

- 1 Don't add or relocate a fuel tank.
- 2 When a subtank is necessary, use the appropriate one of the options offered by the suppliers for the specific vehicle model.

[2] Mounting position of fuel tank

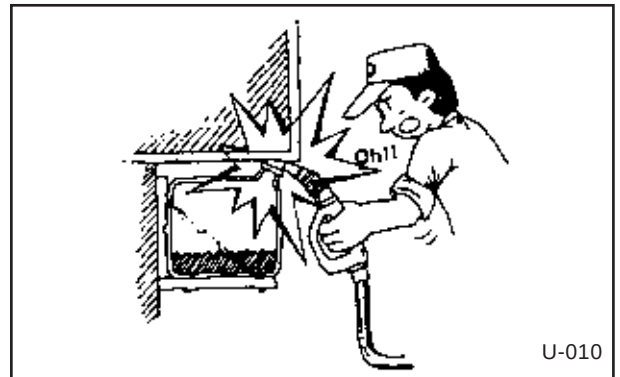
- 1 Keep the fuel tank 100 mm minimum away from the exhaust pipe and 200 mm minimum away from the muffler.
 - When the specified clearance can not be made available or if necessary for heat consideration, protect against heat by providing a heat insulating plate or the like.
- 2 Keep other parts with a sufficient clearance from the fuel-related parts as follows.

Clearance: 25 mm minimum from the fuel tank
25 mm minimum from the fuel pipe
30 mm minimum from the fuel hose

- Confirming the motion of the other part in question, see to it that a sufficient clearance is secured even when the particular part is moved.

[3] Serviceability

Provide means for facilitating the supplying fuel to or draining water from the fuel tank.

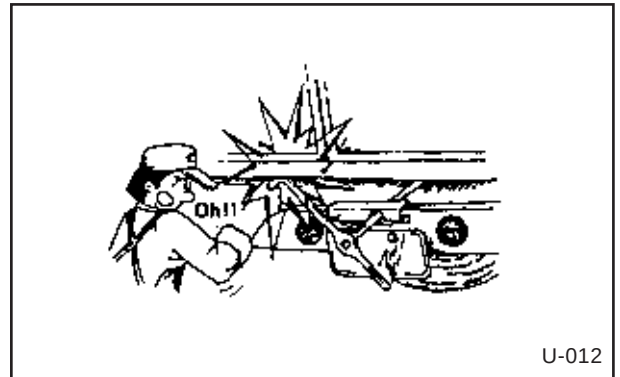


10. Spare tire carrier

In order to support the spare tire safely, take the following preventive measures when the spare tire carrier is added or modified.

[1] General preventive measures

- 1 Construct the vehicle in such a way as to facilitate the mounting and demounting of the spare tire by a single person.
- 2 Construct the vehicle with the spare tire not in contact with the parts other than the stopper when mounted.
- 3 Be sure that the chain or the like is not caught up when the tire is wound up.
- 4 Don't install the built or altered equipment within the operating range of the spare tire carrier handle.

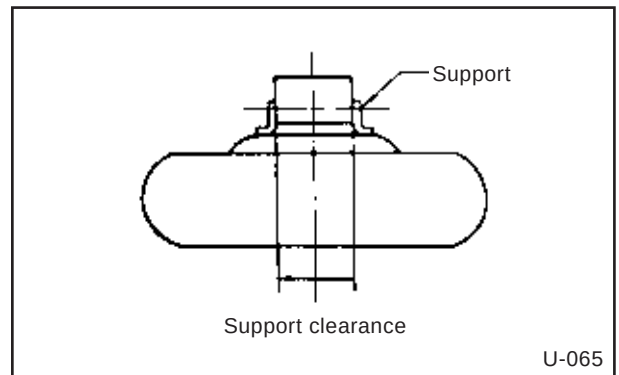


- 5 Construct the spare tire carrier in such a way that even a punctured tire can be fixed securely.
- 6 The construction should be such that the tire is stored within the outermost side of the vehicle.
- 7 Construct the spare tire carrier in such a manner that the tire is fixed at a position 100 mm minimum away from the exhaust pipe and 200 mm minimum away from the muffler.
 - In the case where no sufficient clearance is available, take an appropriate measure to protect the spare tire carrier against heat by a heat insulating plate or the like.
- 8 Attach the caution plate for the spare tire at a position easily visible from the operating point.

[2] Preventive measure for addition or alteration to spare tire carrier of wind-up type

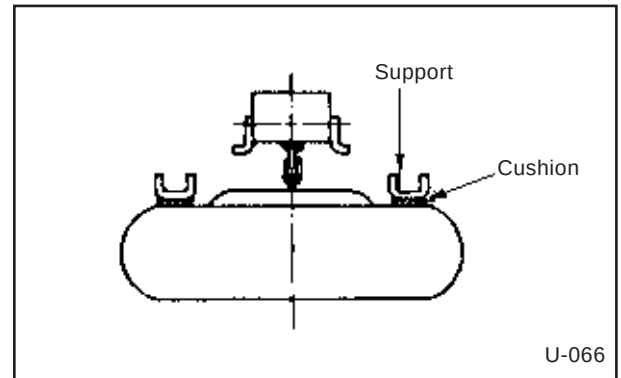
(1) Disc wheel support

The support should be so constructed as not to be deformed with a sufficient contact area with the disc wheel.



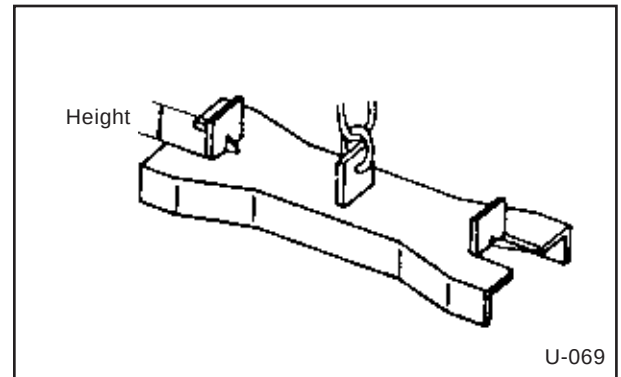
(2) How to support tires

- 1 In order to ensure that the spare tire carrier produces a tightening reaction force even in case a punctured tire is stored, construct the spare tire carrier in such a manner that the tire rim can surely rests on the support.
- 2 When a cushion is used, securely fix it on the support.



(3) Height of guide

To facilitate the raising of plate platform, make the guide have a height exceeding 10mm.



(4) Torque for tightening a tire

Tighten the tire with a standard tightening torque of 462.5 kg cm or more. Tighten the handle with a force of 25 kg or more.

(5) Tension load

At the stage of building the body, apply a tension load of 500kg minimum to the chain.

(6) Caution plate

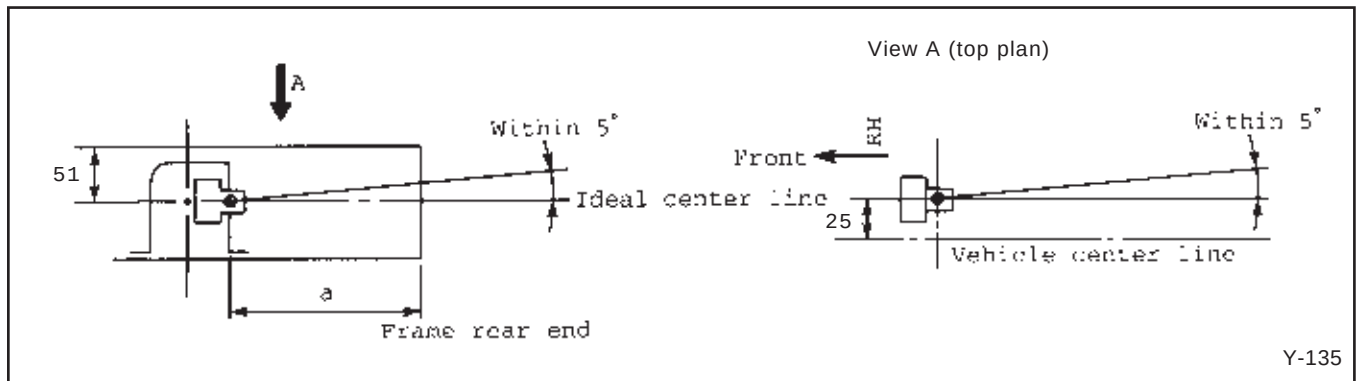
In order to make the operator observe the torque as specified, attach the caution plate showing the recommended tightening torque at the position that can be seen from the operating position.

[3] Handle rod guide

(1) Position of the spare tire carrier

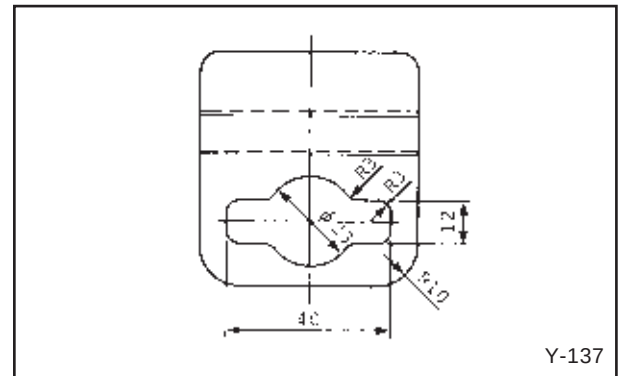
Please mount the handle rod guide so that the angle of the center line of the handle rod to the ideal center line is within 5° . For mounting, please consider the position of the spare tire carrier as shown below.

MODELS	KDY220L -TBMDYW3 KDY230R-TBMGYW3 KDY230L-TBGYW3 -PBMEYW3 -PSMBYW3 LY220R -TBMDSQ3	LY230R -TBMGSQ3 -TBMGSN3 LY225R -TBMD53 LY225L -TBMD53 LY235R -TBMFS3 LY235L -TBMFS3	KDY250R-TBMGYW3 KDY250L-TBMGYW3 -PBMEYW3	KDY260L-TBMGYW3 -PBMEYW3
a	339.1		224.1	394.1



(2) Handle rod guide hole

Please shape the guide hole as specified in the right-hand drawing. Other external shape of the handle rod guide may be formed as desired.



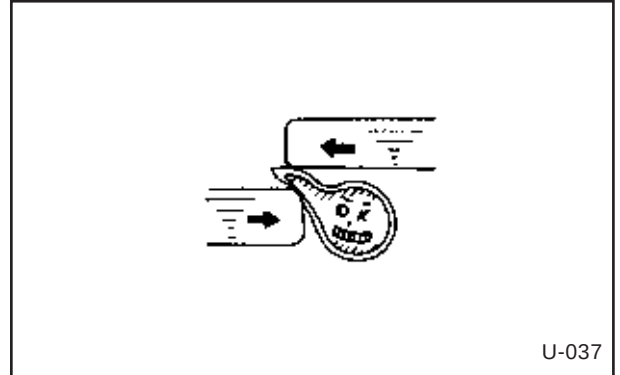
11. Electrical wirings

The electrical wirings of the vehicle are specified taking the operating load and the operating frequency into consideration. When adding wirings for body-building or alterations, make sure that there is no safety problem.

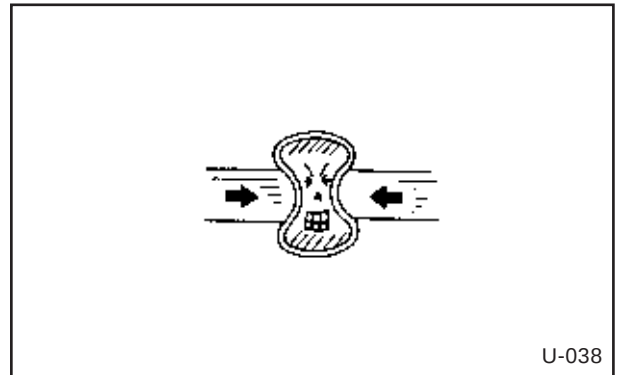
[1] Consideration of existing vehicle wirings

(1) Interference

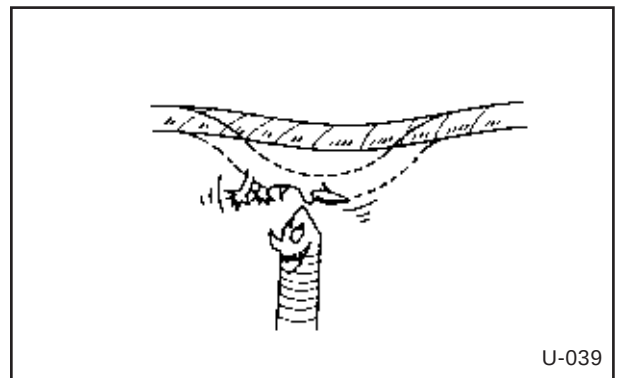
- 1 Be sure that no wiring is caught between other parts.



- 2 Take care that the wiring is not flattened.

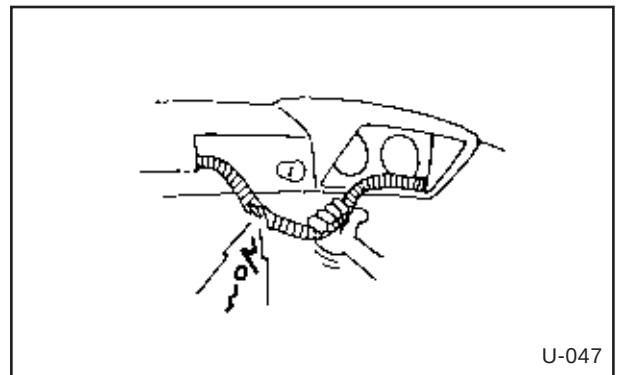


- 3 See to it that the wiring is not in contact with a sharp object.



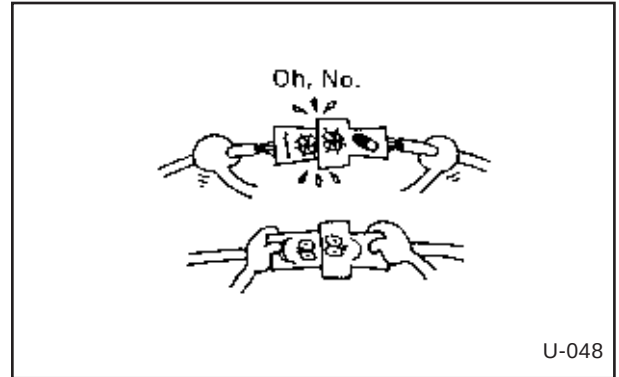
(2) Wiring arrangement

Don't pull the wiring forcibly.



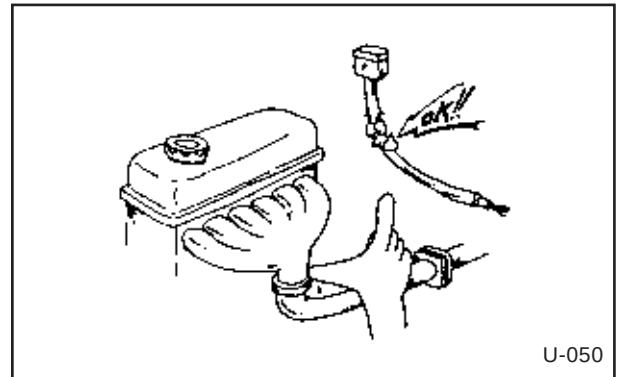
(3) Mounting and demounting the connector

When removing the connector, don't pull the wire harness but by holding the connector body.



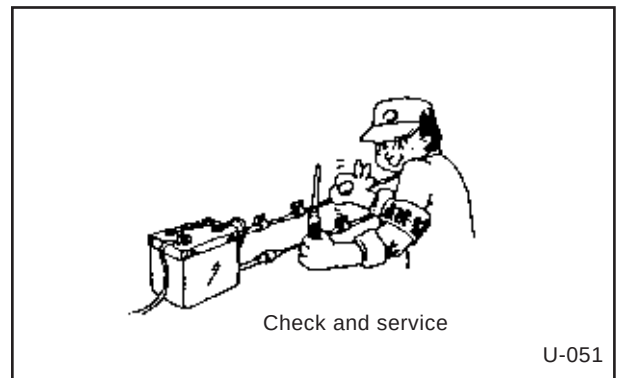
(4) Heat consideration

- 1 Secure an adequate clearance with the high-temperature parts.
 - 2 Measure the temperature whenever required to eliminate the safety problems.
- Don't lay the wiring in the vicinity of the exhaust pipe or muffler or where the wiring is exposed directly to the exhaust gas.



(5) Serviceability

Make sure that the inspection and maintenance work on the wirings and electrical equipment can be conducted easily after the particular building or alterations.



(6) Mounting additional buzzer

When mounting a buzzer or the like on the alterations, always be sure that the sound of the buzzer is different from and does not double as that of any of the existing buzzers.

[2] Wiring addition

(1) Wire harness

- 1 When extending the wiring, use the low-voltage wiring for vehicles specified according to JIS or JASO.

(Reference)

Features of low-voltage wirings for vehicles.

- The copper wire is wound with soft vinyl coating.
- Somewhat thinner than common electrical wirings for low-voltage applications.
- Very easy to bend.

Tolerable current (A)	Number/diameter (mm) of strands	Sectional area (mm ²)	Outer diameter (mm)	Finished outer diameter (mm)
9	7/0.32	0.5629	1.0	2.2
12	11/0.32	0.8846	1.2	2.4
15	16/0.32	1.287	1.5	2.7
20	26/0.32	2.091	1.9	3.1
28	41/0.32	3.297	2.4	3.8

The Automobile Standard JASO D609-75, AV (maximum tolerable conductor temperature 60 °C) for the ambient temperature of 40 °C was quoted as the tolerable current.P

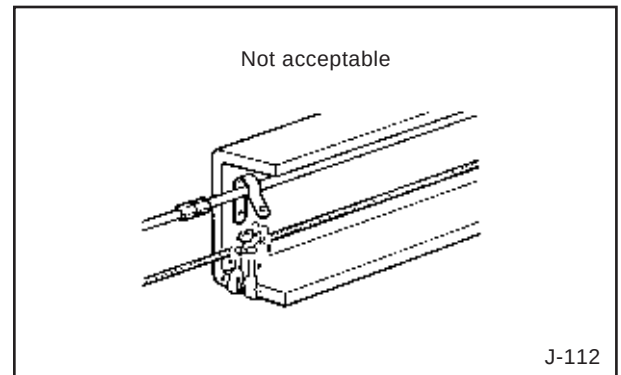
- 2 When extending the wiring, use the extension having the same sectional area and the same color as the existing one.
 - Don't extend the wiring in a corrugated tube.
- 3 Apply a cover of vinyl chloride tube or corrugated tube on the additional wiring in principle.

(2) Connection

Secure connection by means of a pressure-fit terminal or by brazing with a sufficient insulating covering.

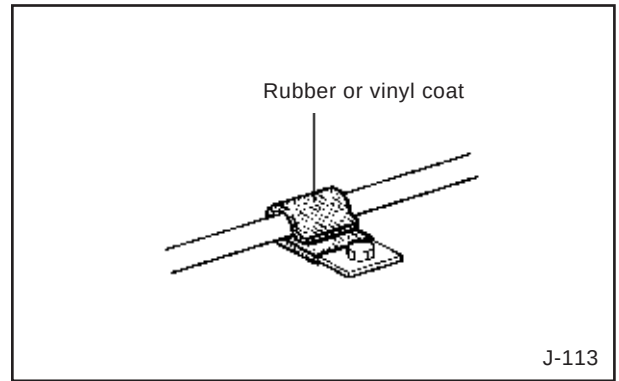
(3) Wiring arrangement

- 1 Securely clamp the wiring with an appropriate clearance so that the wiring does not sag coming into contact with other parts.
 - The wiring should be arranged along a frame or a body member. Never clamp or tape it together with the fuel pipe or the brake pipe.

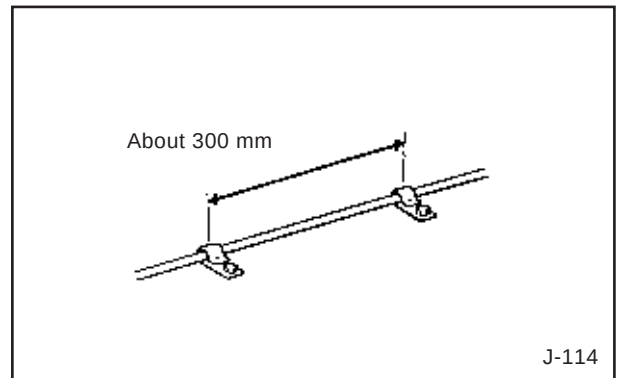


【3】-11. Electrical wirings

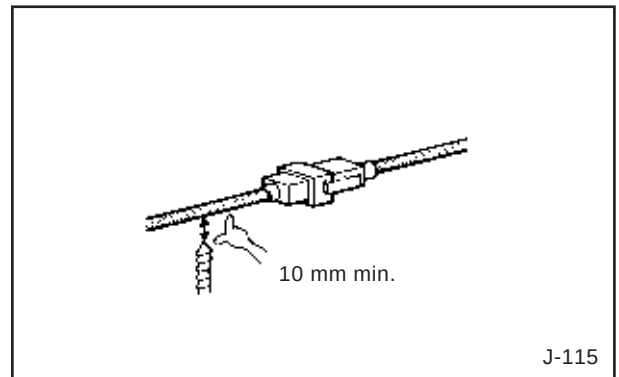
- Use a clamp made of rubber or coated with vinyl.



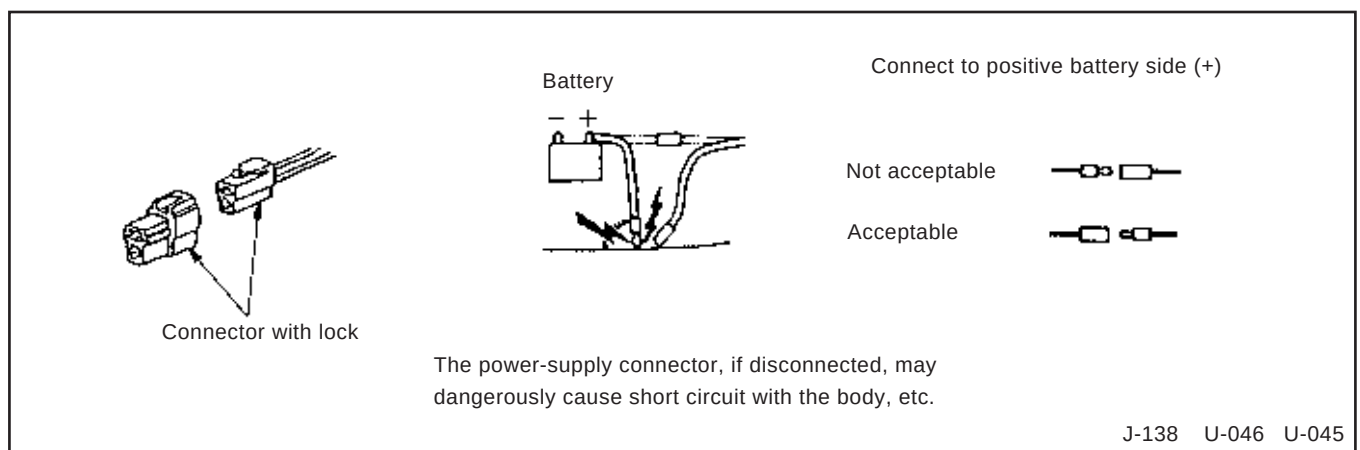
- Secure the inter-clamp interval of about 300 mm.



- Secure a clearance of 10 mm minimum between the wiring and a moving part or a sharp object.



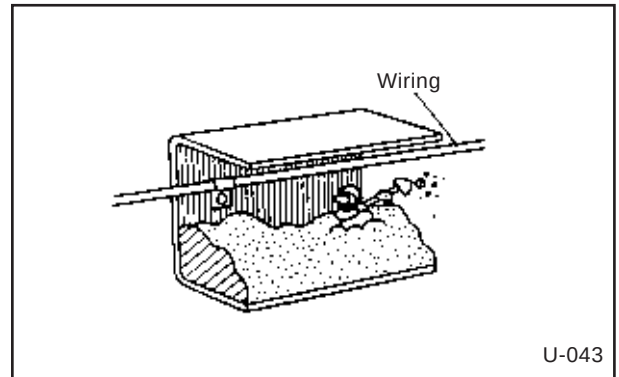
- 2 Always use a connector with lock. Don't use a plug-type connector as far as possible. If the use of a plug-type connector is unavoidable, set the female side as the positive power supply (+) in order for the connector not to come off and cause short circuit.



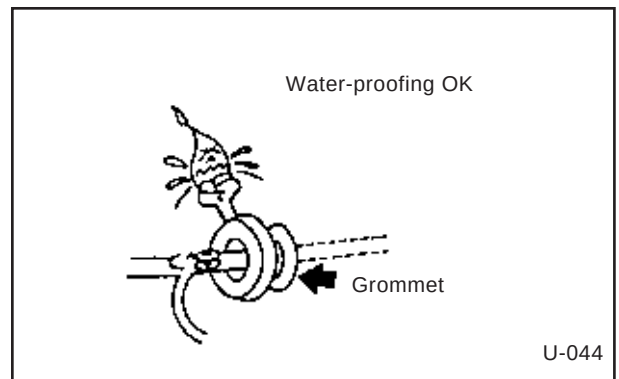
- 3 When mounting an additional electrical part, always attach a fusible link and the earth.

(4) Protection against water and dust

- 1 Install the wiring at a (upper) position where the wiring is not likely to be damaged by water, dust, mud or snow pile, freezing or flying stones, or where it is not buried under dust or sand.

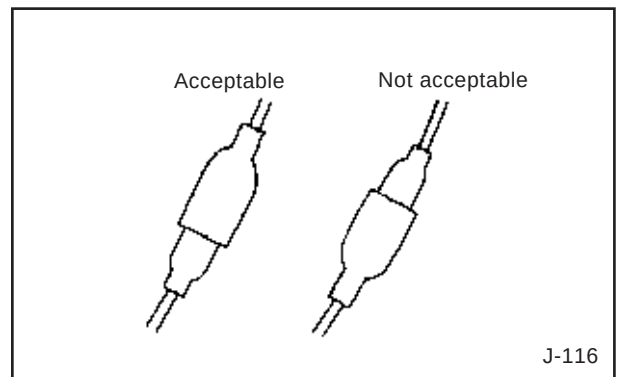


- 2 Always use a grommet at a metal plate through hole to protect the wiring against water entry or damage.



- 3 Mount a cover or a protector to prevent water entry along the wiring.

- A water-proof boot should be installed facing down.

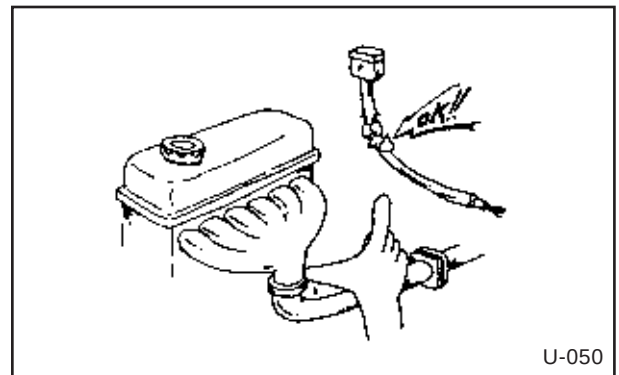


- 4 A connector, if used at a position exposed to water, should always be of water-proof type.

(5) Heat consideration

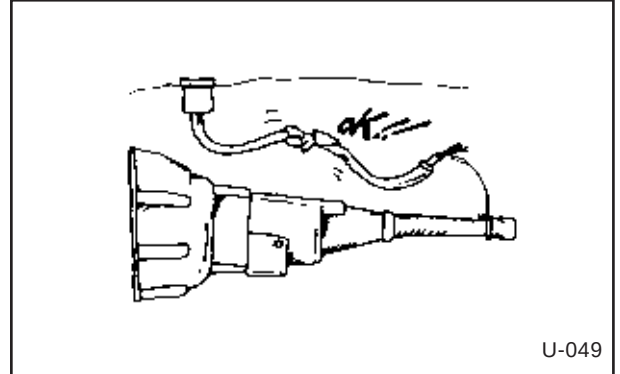
Keep the wiring away from the exhaust pipe by 150 mm minimum, and from the muffler by 250 mm minimum.

- When no clearance is made available, protect against heat with a heat insulating plate or the like.



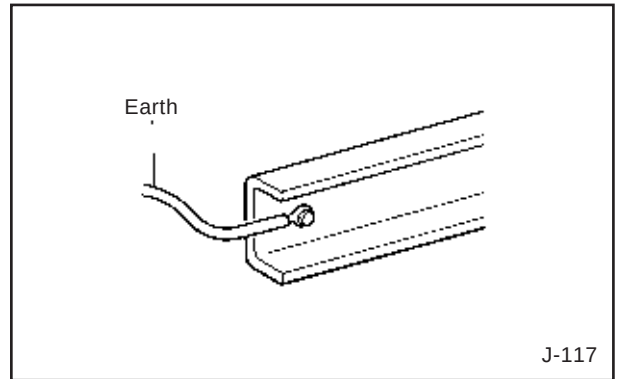
(6) Interference

- 1 Take care that the wiring is not damaged by contact with the rotating or vibrating parts of the alteration or building.
- 2 The wiring of the parts mounted on the engine or transmission should be laid along the existing wire harness with a sag of 30 to 50 mm in a manner to absorb relative motions while taking care that it does not come in contact with other parts.



(7) Earth

- 1 Install the earth for an additional power supply always on the engine or frame.
- 2 Mount the earth terminal securely in the form of a circular plate terminal.



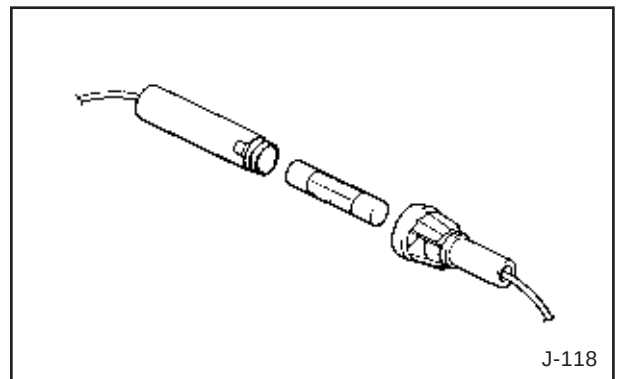
【3】 Fuse

- 1 Fuses of optimum capacity must be used for vehicles considering the operating load and the operating frequency. Don't add any load from accessories to the existing fuses.
- 2 Always be sure to insert a fuse in an added wiring circuit. Use a vinyl-coated clamp, taking adequate care against short circuit.

- The fuse capacity should be about 1.4 times the load current.

Ex: For the load current of 3A,
 $3 \times 1.4 = 4.2$

Therefore, the standard fuse capacity of 5A is the best choice.



Fuse rated current against load (Automobile Standard JASO D610-75)

Load current, A	below 7	7 min. and below 11	11 min. and below 14	14 min. and below 21
Fuse rated current, A	10	15	20	30

A 5A fuse can be used for the load current of 3.5A maximum.

[4] Switch

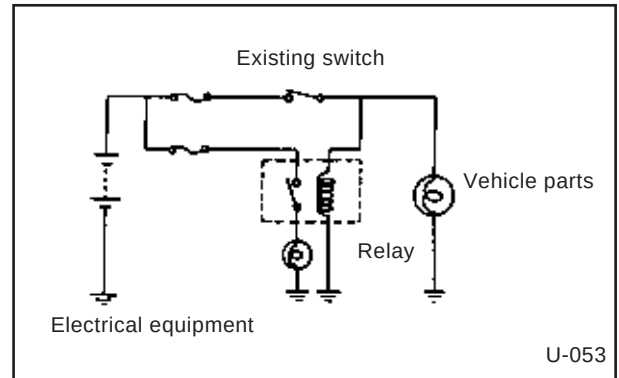
Each switch has a tolerable current. When a current of more than this value flows, the switch generates heat shortening its life. In extreme cases, it may melt down.

In the worst case, a vehicle fire may be caused. Always comply with the specified tolerable current value of the switch.

- When using the existing switch, take care that the total of the load on the vehicle side and that of the added electrical equipment does not exceed the tolerable current of the particular switch.

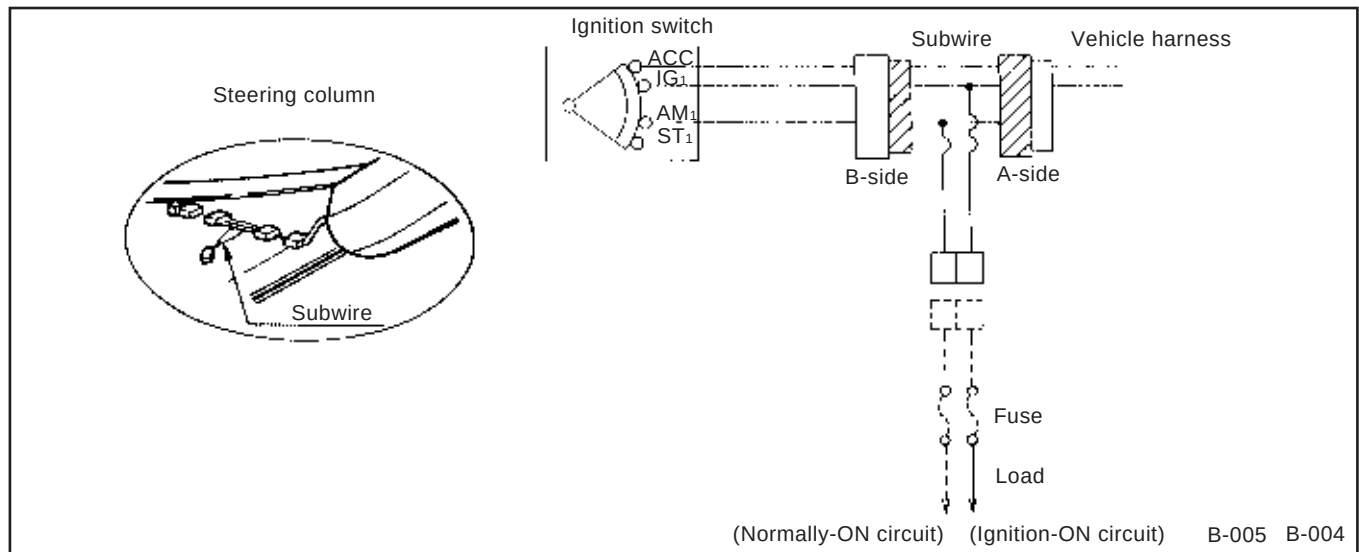
$$\boxed{\text{Vehicle}} + \boxed{\text{Added electrical equipment}} < \boxed{\text{Switch}}$$

- In the case where the required current is larger than the tolerable current value of the particular switch, provide a relay commensurate with the load current of the electrical equipment to pass the current of the electrical equipment through a different circuit.



[5] Power supply

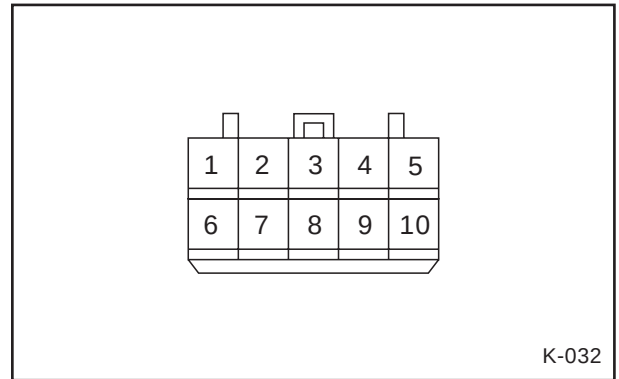
(1) Power supply



- Instructions
- Interpose a subwire (with the wire of more than AV3 from subwire to fuse) between the ignition switch and the vehicle wire harness behind the combination meter to take out power.
- The allowable load current must be 5A in total.
- If the current exceeds 5A, use the battery as an electric power supply via a relay.

(2) Connector style and wiring arrangement

•A-side connector (Part No.90980-11537)



Connector arrangement		1	2	3	4	5	6	7	8	9	10
Power supply		—	—	ST1	ACC	AM2	—	—	IG2	AM1	IG1
Wire class	General	—	—	2B-W	2R-B	0.5W-R	—	—	0.5B-O	2W-L	2B-R
	Australia Europe	—	—	↑	↑	↑	—	—	↑	↑	↑

•Note: B-side connector (male side) part No.90980-11536

12. Headlamp-levelling controls

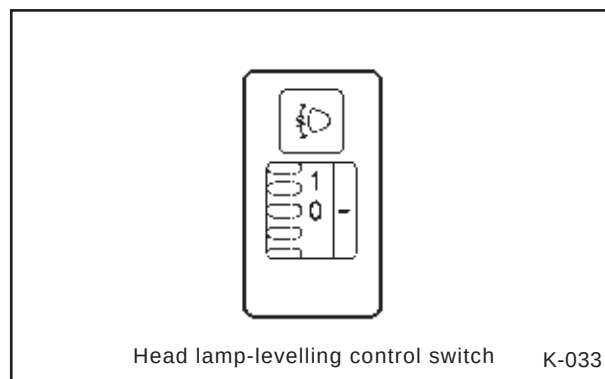
This vehicle is equipped with a headlamp-levelling control system to minimize dazzling of other road users.

The alignment of the headlamps can be adjusted by rotating the headlamp-levelling control switch from the driver's seat.

Before turning on the headlamps, please adjust correctly the headlamp-levelling control switch according to the following table.

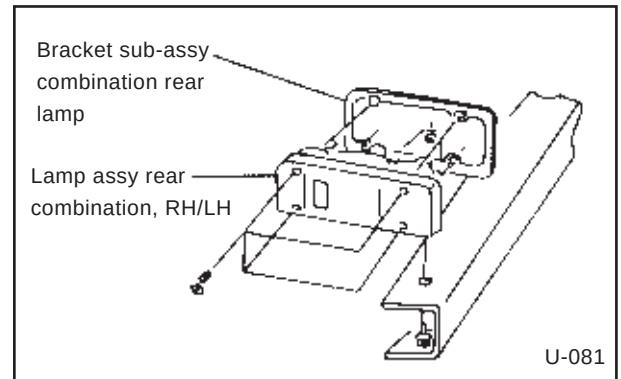
Loading condition	Indication figure of control switch
Without load	0
Driver and full luggage loading to the luggage room	3

Note : initial adjustment 1.2%

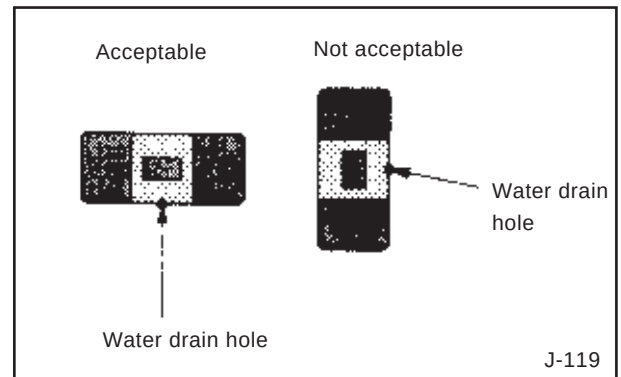


13. Mounting rear combination lamp

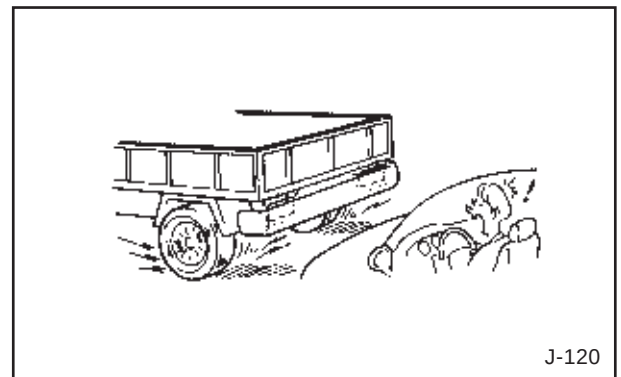
In the case of the cab & chassis model, the rear combination lamp is mounted as a rear combination lamp subassembly (for land transportation) shown in the drawing.



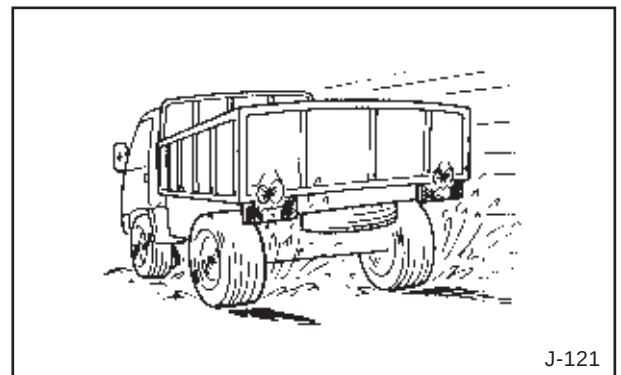
- 1 Make sure that the rear combination lamp is mounted according to the laws and regulations of the countries concerned.
- 2 See to it that the water drain hole of the rear combination lamp is located just under the lamp.



- 3 Take care that no object which blocks the field of view is located before the rear combination lamp.



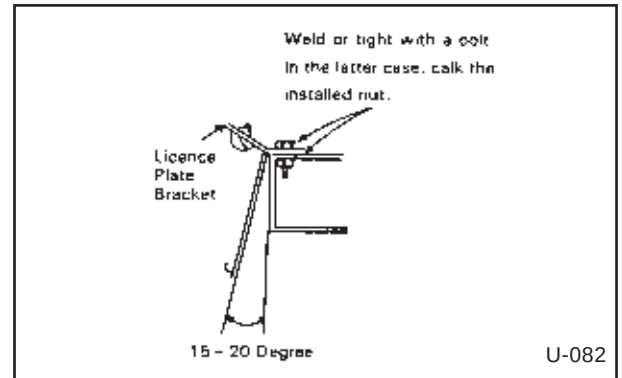
- 4 Install a water guard plate in order to prevent direct exposure to water splashed up from the rear wheels.



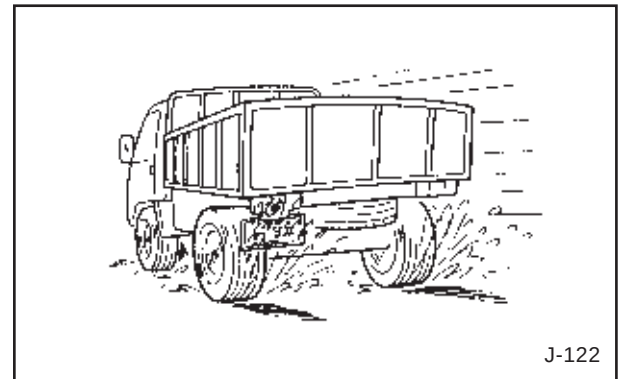
14. Licence plate and licence lamp

A provisional licence plate and a provisional licence lamp are attached to the cab & chassis model being shipped. When attaching an official licence plate, conform with the related laws and regulations of the country concerned.

- 1 Fix the licence plate by welding or bolting.
 - When bolting, be sure to stake or weld the screw after mounting.



- 2 Don't attach the licence plate or the licence lamp at a position where the rear bumper or the rear combination lamp is hidden or the operation of the spare tire carrier is adversely affected.
- 3 Mount the licence lamp at such a position where it is not exposed directly to the water splashed by the rear wheels.



- 4 For the dimensions of the licence plate and the licence lamp, refer to the separate sheet.

15. Reflector

In the case where the reflector is not included in the rear combination lamp, mount a rear reflector of stand-alone type.

- Mount the side reflector according to the laws and regulations of the country concerned.

16. PAINTING

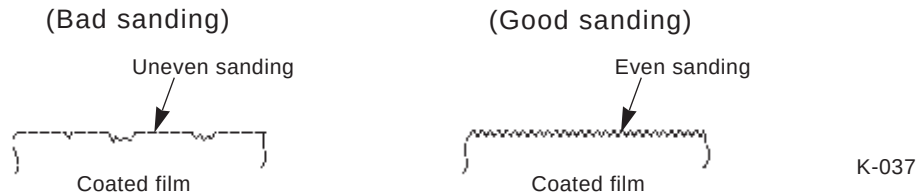
[1] TOP COAT PAINTING

Take a care to the following points, when required to repaint it by a customer.

(1) Sanding

When repainting, perform to sand the original coat carefully not to be left any part no-sanded, in order to improve the adhesion of top coat paint. And, never remove off sealant, adhesive agent at connecting parts of the metal sheet.

[Sanding surface]



K-037

(2) How to Choose Top Coat Paint

1 When painting on the metal parts

TOYOTA recommends urethane-type, natural air drying paint to be used, which have superior characteristics as in painting finish quality, color fade-out, comparing with lacquer-type paint. The top coat should be at least 30 μ thick.

Recommendation brand	Nihon paint NAX-M-G2
	Kansai Paint RETAN PG-60
	Dainihon paint V-Top

2 When painting on the resin parts

- TOYOTA recommends paint for the resin parts to be used, which is best matched to the characteristics of the resin parts (step rubber, front-grill, front garnish, etc.) and also, can prevent to lowering the shock resistant force at low temperature.

Recommendation brand	Nihon B chemical (NBC) { R240 A R225 Hardener.....B
	Kansai paint { RETAN PG60 base A RETAN PG plastic hardener.....B
[Caution] Above listed 2 brands respectively, mix A and B by a rate of 4 : 1.	

- Then, Avoid to paint backside of the resin parts as its shock resistant force lowers further down with the both side to be painted, of the resin parts.
- Cab step, made of polypropylene material, can not be painted.

[2] PRECAUTION OF TOP COAT PAINTING FOR CAB

(1) Cautions for Cab Painting

When painting the cab, take a caution to the following points, other than above.

- 1 The place and parts to be omitted from painting for cab and mounting body as well as adhesion of all kinds of oil:
 - Various kinds of the ornaments, marks
 - Various kinds of caution plates, labels.
 - Relating equipments and parts to the brake as well as a brake hose.
 - Various types of rubber hoses.
 - Electrical wiring, connectors, electrical lamps, electrical switch, relating equipments and parts.
 - Back-up buzzer, noise emitting hole of electric horn.
 - Rubber and plastic parts of cab, engine, chassis suspension and steering system.
 - Rubber hose for cab-tilt, piston rod of the cylinder for cab-tilt. (The vehicle with a hydraulic cab-tilt, driven by an electrical motor)
 - Batteries
 - Wiper blade, washer nozzle.
 - Installing surface of disc to the disc wheel. (Including the hub to be contacted and contacting surface of drum, disk wheel as well as contacting surface of hub nuts.) Then, when stained paint to the inner part of the cab, cleaning it with a neutral detergent, do not use gasoline or thinner,

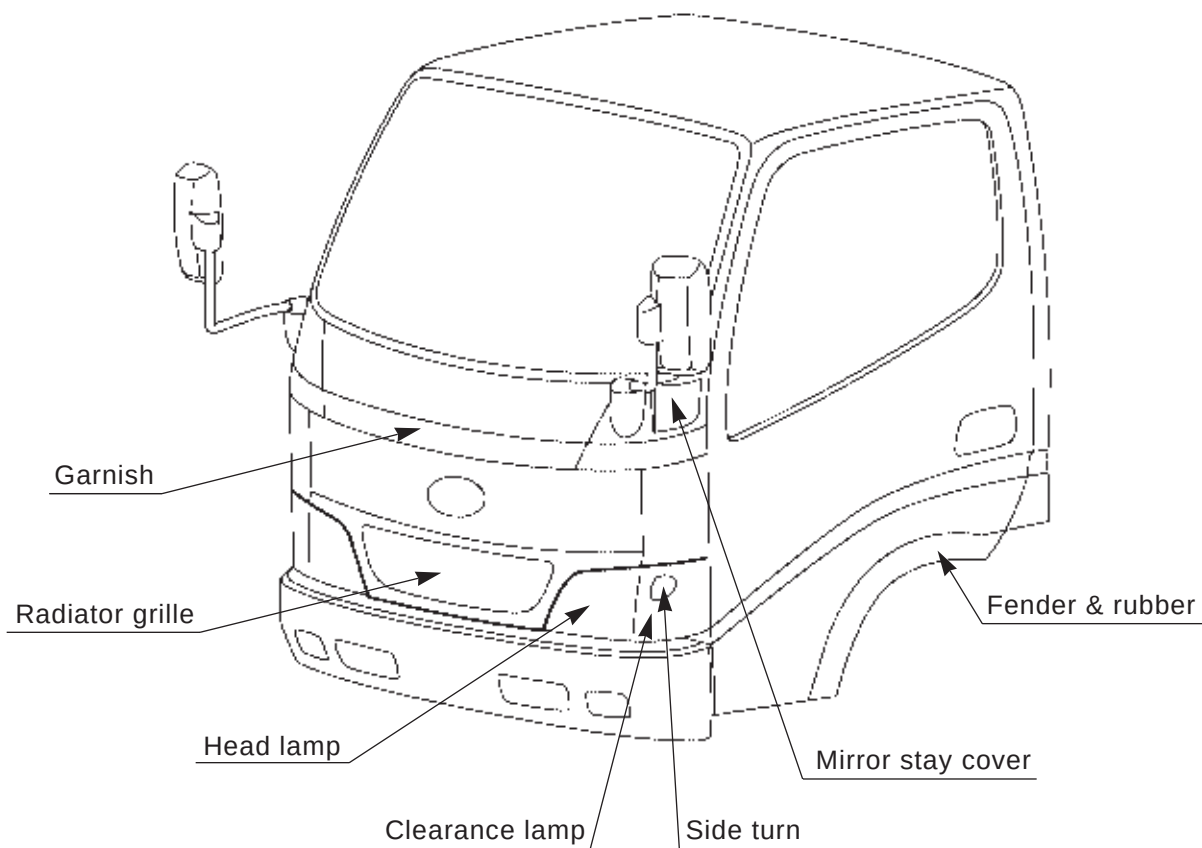
(2) Caution when Drying

- When you use forced drying, a temperature on the surface of any parts to be painted must be 80°C as an upper limit. Removing off any plastic parts, rubber parts from the vehicle, paint them when you use a forced drying at over 80°C. (Refer to the figure as shown below.) Take care to those as plastic parts like fender, air cleaner, etc. are much used.
- When a vehicle with air-conditioning whose all piping and hosing are heated at abnormal temperature (more than 100°C), a pressure safety valve may function and come out refrigerant gas.

- When removing off a air-cleaner assy, seal completely the inlet port side of engine to prevent any penetration of dirt, paint or etc.

Also, install hoses securely and clamp them firmly when mounting them.

- Remove off the parts shown below when painting at over 80°C.



K-038

[Note] Remove off the radiator grille in accordance with Article 4.

[3] HANDLING OF LAMINATED WINDSHIELD

A laminated glass is produced in such order that polyvinyl butyral film is inserted between 2 glasses and pressed with heat.

Under driving general condition, there is no problem. But under a hot temperature and a high moisture when painting, intermediate film is fallen off or such defective occur as foaming may be caused. Therefore, a special caution needs to be taken.

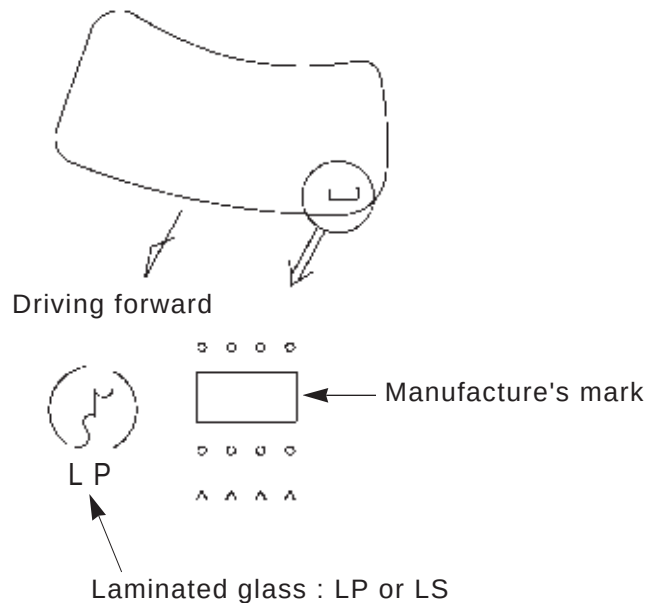
(1) Caution when Painting

There is no problem when you use a natural drying. But when a forced drying is used with infrared ray lamp, etc., be sure that the drying should be implemented within 30 minutes at less than 120°C.

When drying at the temperature of more than 120°C, remove off the windshield glass or cover over the glass with something so that the temperature on the glass surface should not go up more than 120°C.

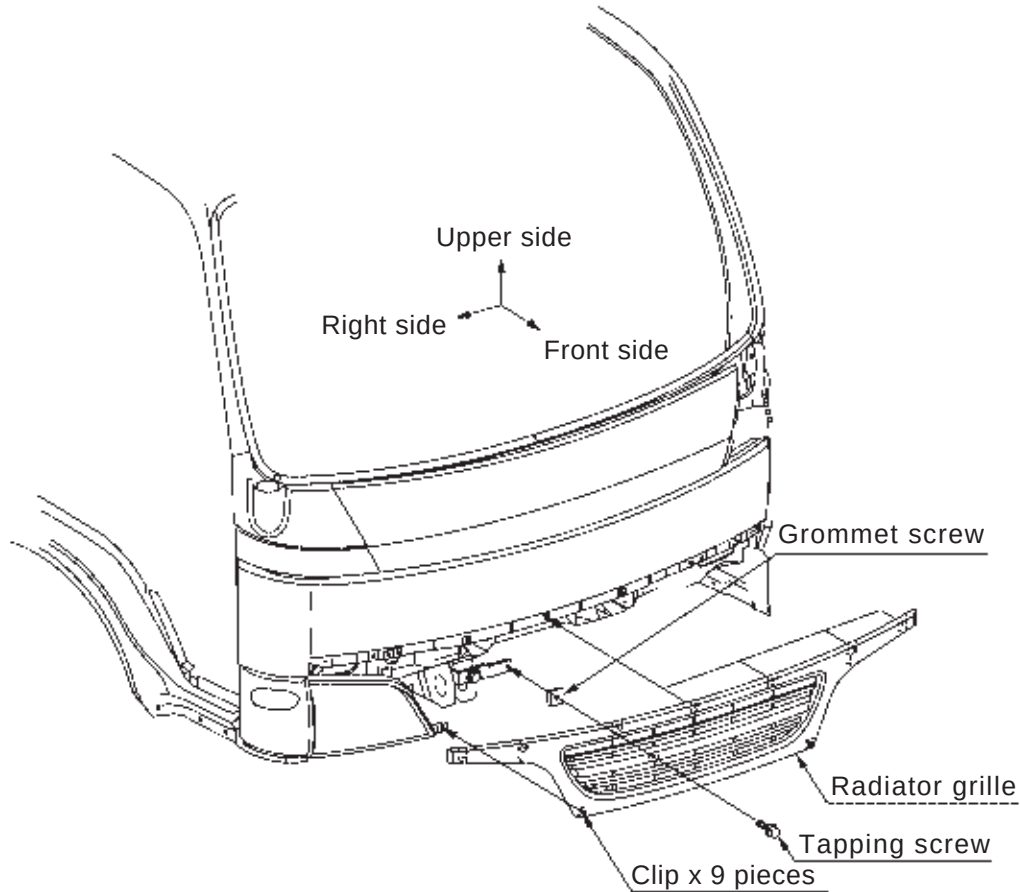
(2) How to Identify the Laminated Glass.

JIS and Manufacturer Marks are specified at the left bottom of the windshield as shown in the following figure. You can identify it with the specified mark as the mark LP or LS is specified at the underneath of JIS mark in case of the laminated glass. (Partial tempered glass is specified by Z.)



K-039

[4] HOW TO REMOVE THE RADIATOR GRILLE



K-040

(1) How to Remove Off the Radiator Grille

- Loosen the tapping screw, in the central part.
- Inserting your fingers into the clips underneath to pull them toward you, remove the clips.
- Remove the clips in the same manner at the side.

*Remove the clips from right side of the vehicle (left side when viewed in front of the vehicle).

(2) How to Install the Radiator Grille

- Install the clips on the radiator grille.
- Install the radiator grille on the cab body by matching the clips holes and pushing it in the order from the bottom to the upper side.
- Install the tapping screw at the central part.

(3) Caution

- After confirming that there are no damages at nail part, etc., of the clips, install them.

[5] THE KIND AND THE ATTACHING POSITION OF MARK AND ORNAMENT

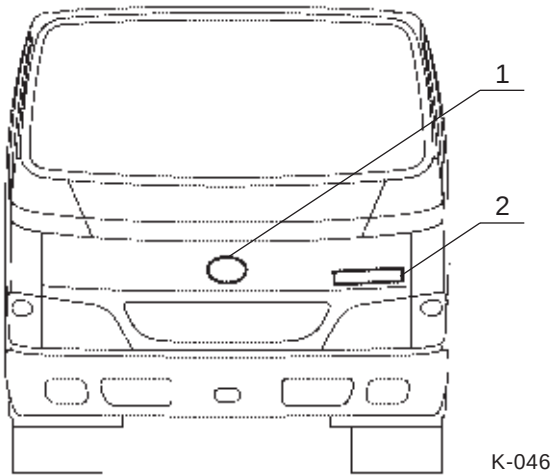
The kind and the position to be attached of marks and ornaments on the cab as well as the chassis are specified in the chart below. Implement masking them completely when repainting the cab or the body. When the marks and the ornaments to be attached on cab are packed separately and shipped out together with the vehicle, or when attaching them after complete painting, attach them at the specified places in accordance with the attaching position chart and the attaching procedure.

ATTACHING PLACE		KIND OF MARK	No.	NAME OF MARK	PART No.
Cab	Front	Symbol mark	1	 K-041	75315-25010
		Model mark	2	Europe :  K-044	75311-25070
			2	Except Europe :  K-042	75311-25051
	Side	D-4D mark	3	Europe :  K-045	75362-25090
Rear body	Back	Model mark	4	 K-043	75471-25030

[Note] Parts numbers are changeable always. Accordingly, for confirmation, get in contact with nearest TOYOTA sales dealer or distributor when you place an order for necessary parts.

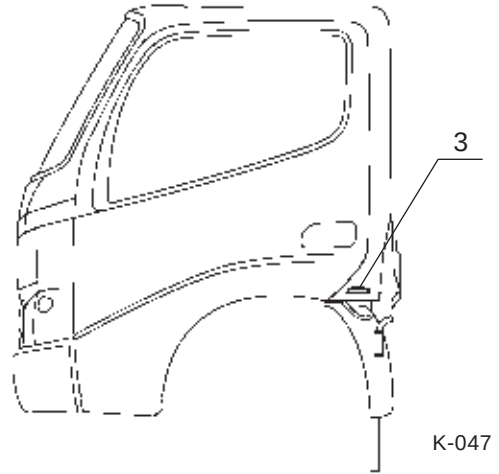
(1) Attaching Place and Procedure for Each Mark and Ornament

Refer to the detailed figure of the attaching position for 1 to 4 of the attachments on the cab.

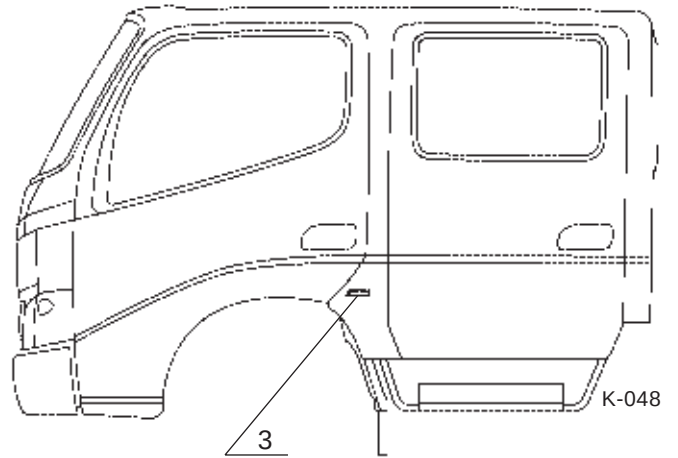


(FRONT VIEW OF CAB)

Single Cab :

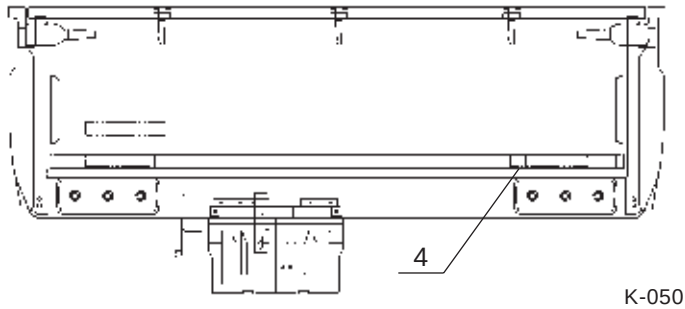


Double Cab :

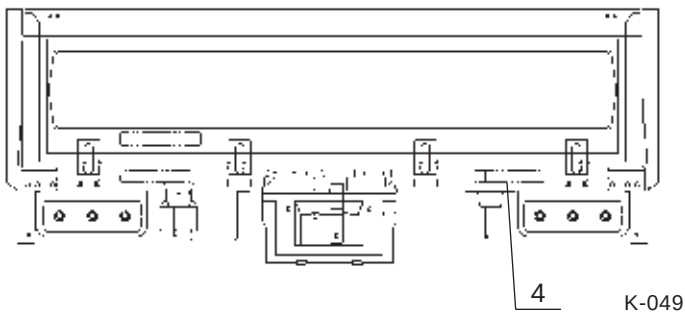


(SIDE VIEW OF CAB)

Steel Low Deck :



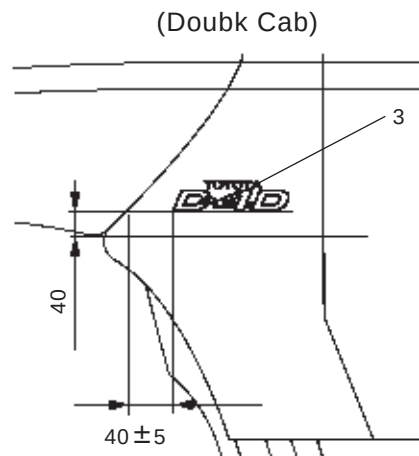
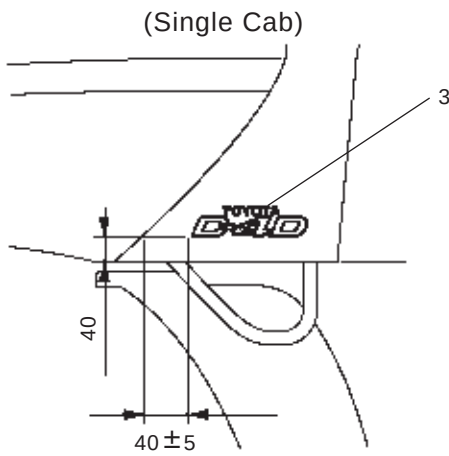
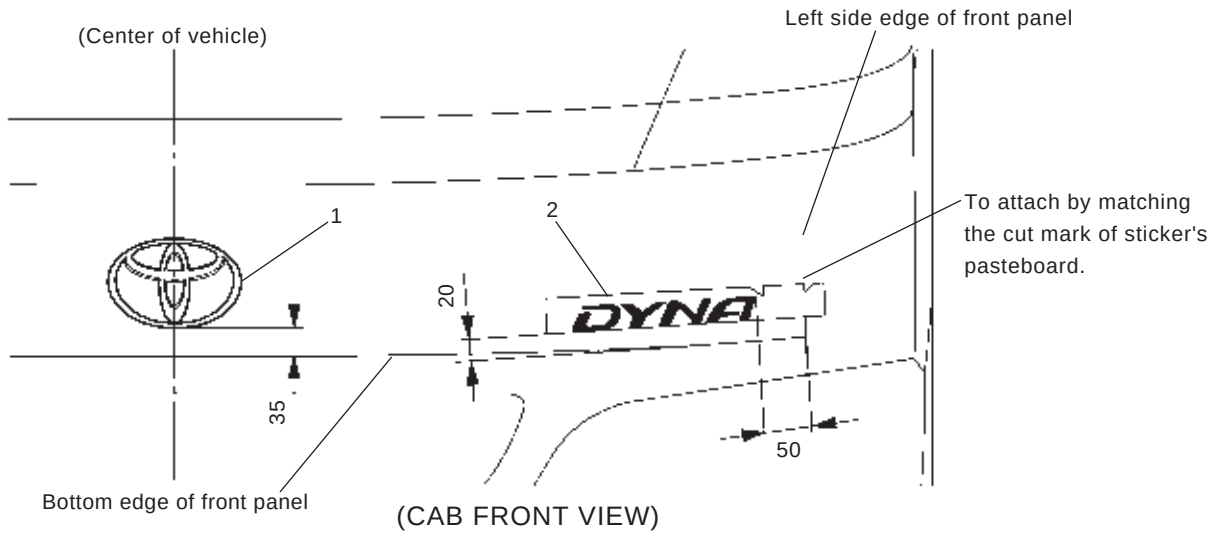
Except steel Low Deck :



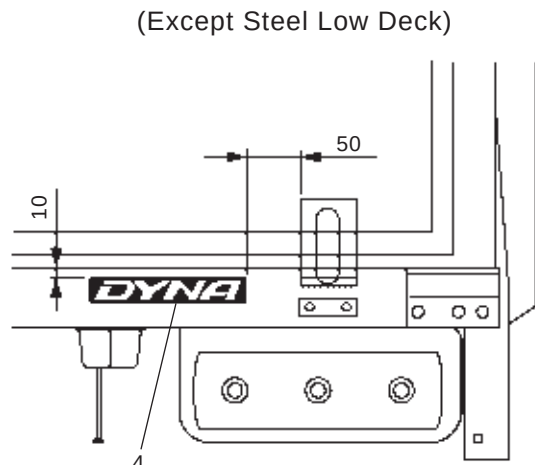
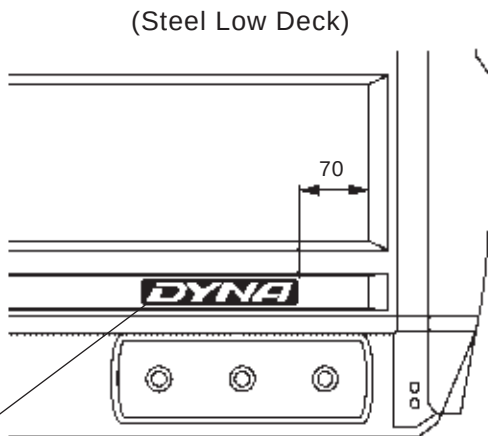
(REAR VIEW OF VEHICLE)

(2) Attachment of Each Mark and Ornament

1 The detail of attaching position



(SIDE OF VEHICLE)



(REAR VIEW)

[6] PRECAUTIONS FOR FITTING AND STORING THE CAUTION PLATE

(1) How to Stick It

- a. Stick the caution plate to a dry place which is free from dust and dirt after the paint has completely dried up.
- b. Clean your hand and don't use cotton work gloves, etc..
- c. Completely remove water, oil, dust, etc. from the surface to stick (surface of cab) with ethyl alcohol if they are found remaining there.
- d. When the temperature is less than 10°C, warm up the surface to stick as well as the caution plate with warm wind of more than 20°C before sticking the caution plate.
- e. After sticking the caution plate, press it with a roller, etc., with a force of approximately 49 N/cm² {5 kgf/cm²}.
- f. Remove liner paper (backing paper) just before using it.
- g. When air remains inside, make a tiny hole with a needle or a cutter knife and press it out with your fingers from the bubble area.

(2) How to Store It

When storing the caution plate, select a dry place with an ambient temperature (of 20 to 25°C) and without dust, dirt and stain.

Also, store the caution plate at a flat place such as a shelf, etc., and do not place anything on it.

(3) Other Precautions for the Caution Plate

- a. As the caution plate is made from vinyl chloride, it is thin, soft and easily extendible.

Therefore, take utmost care for handling it.

- b. When removing the caution plate, etc., be careful not to damage the painted surface with a sharp knife, etc.

On the other hand, removal of the caution plate can be done more easily by pulling the caution plate in perpendicular direction to the sticking surface while heating it with a hair dryer.

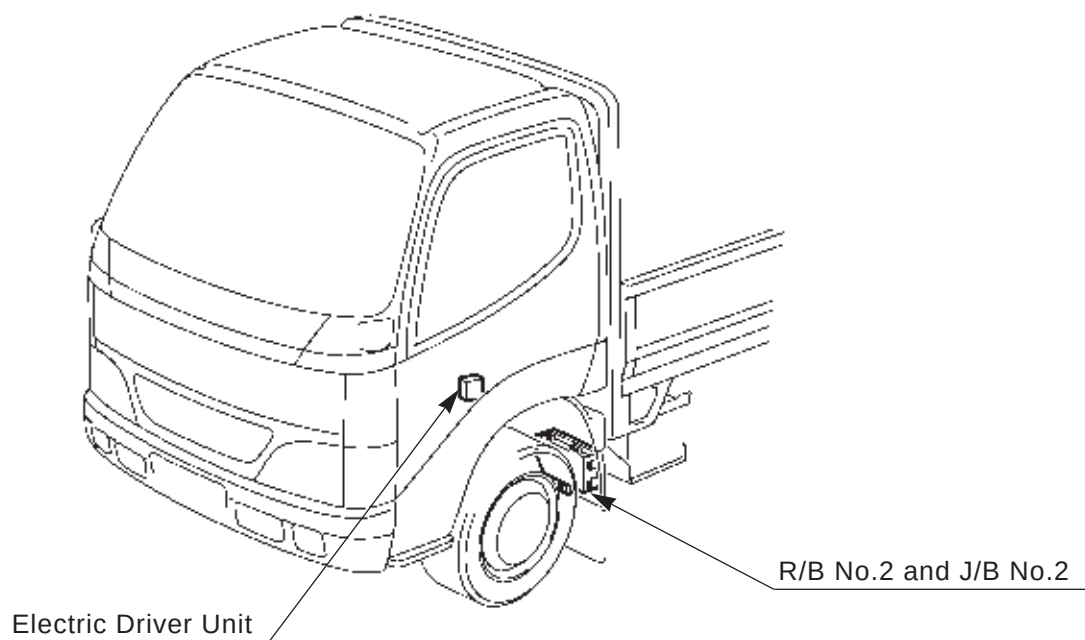
- c. Do not throw the caution plates away but keep them together to compare with new caution plates and to prevent mixing up with the new ones.

17. ELECTRICAL SYSTEM

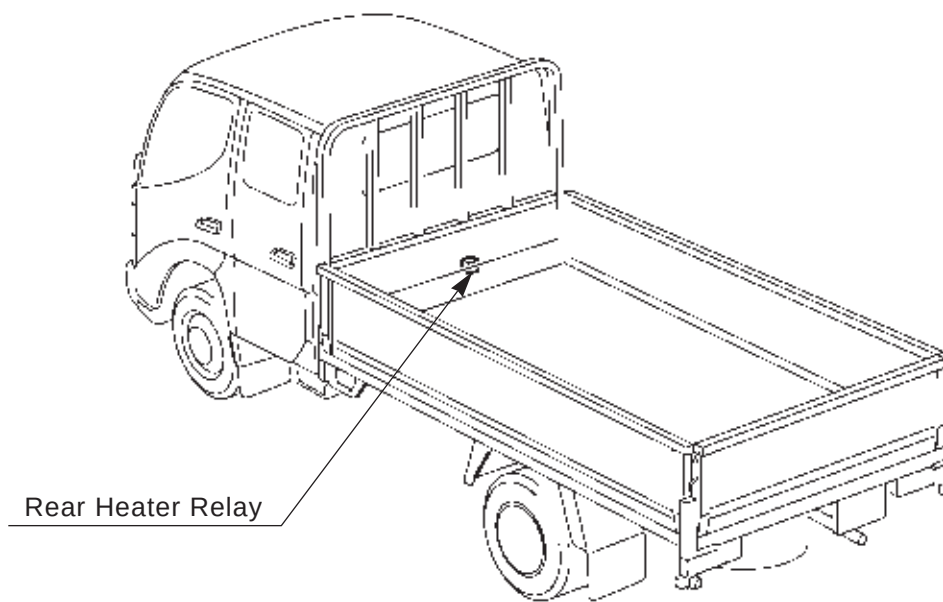
[1] FUSE AND RELAY

(1) Location

Engine Compartment

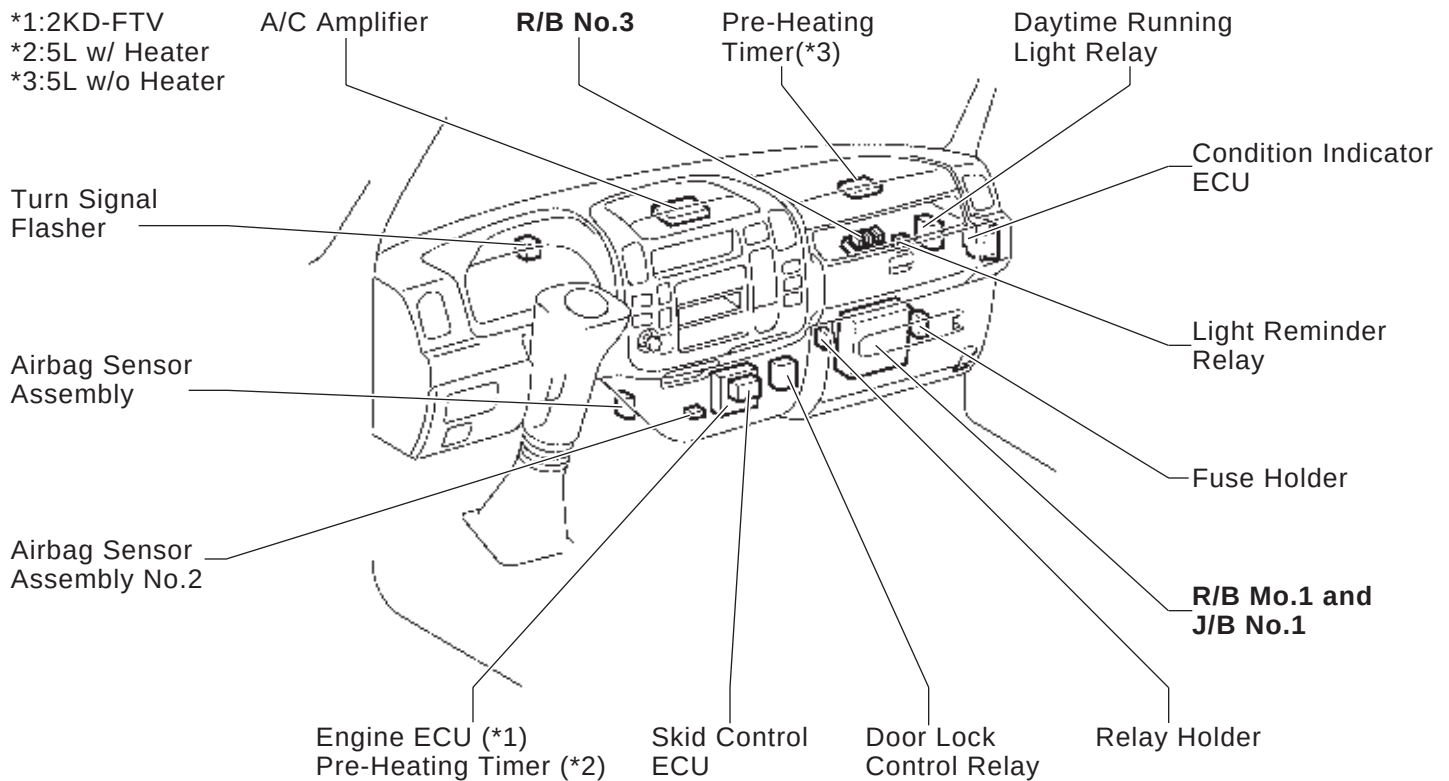


Body

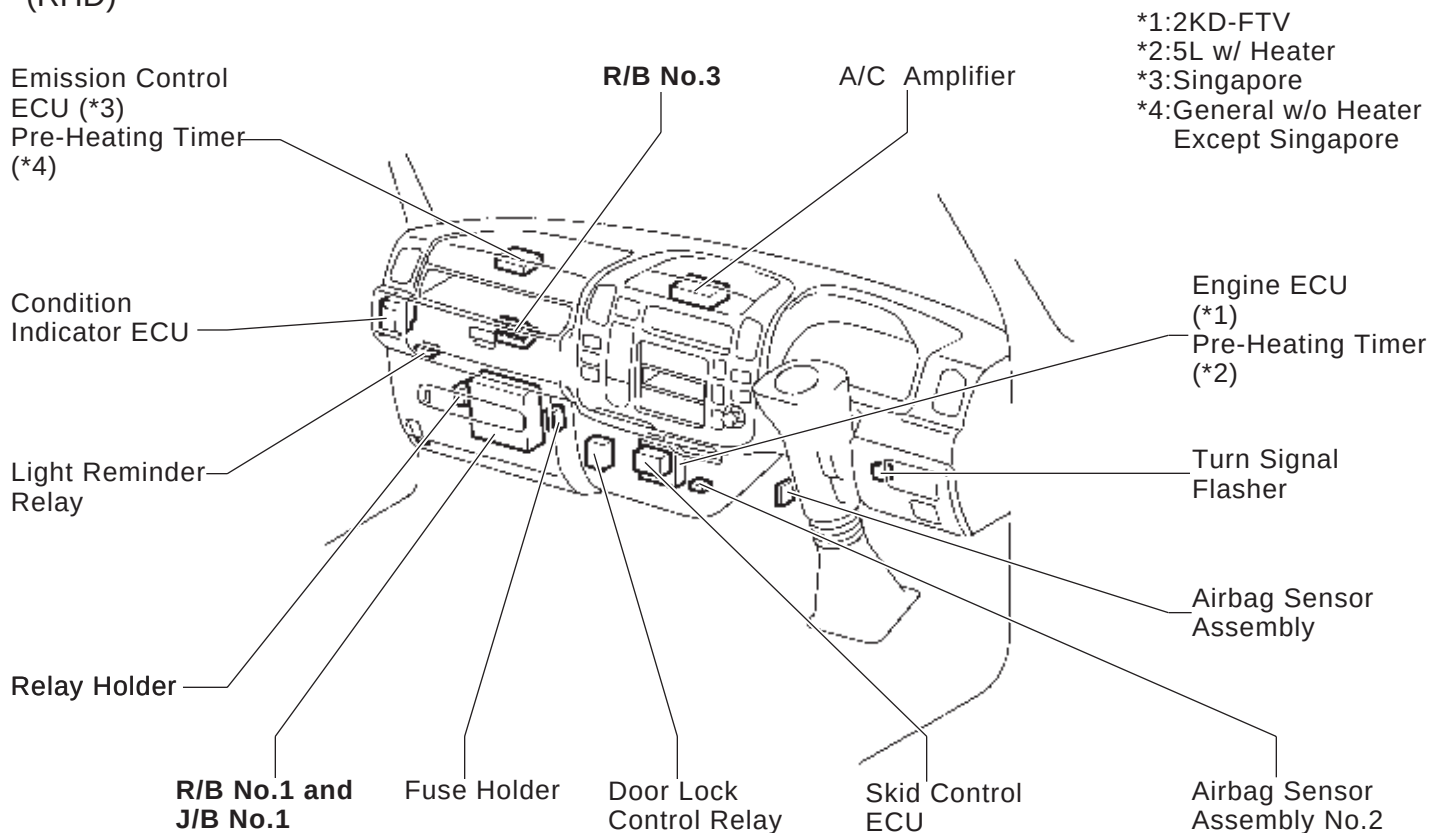


Instrument Panel

(LHD)

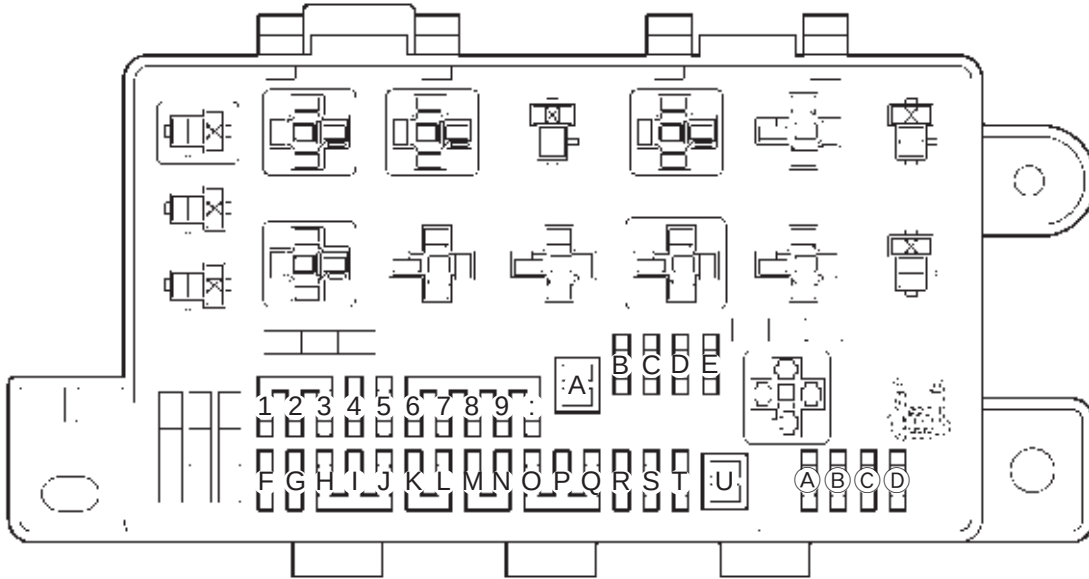


(RHD)



(2) Fuse

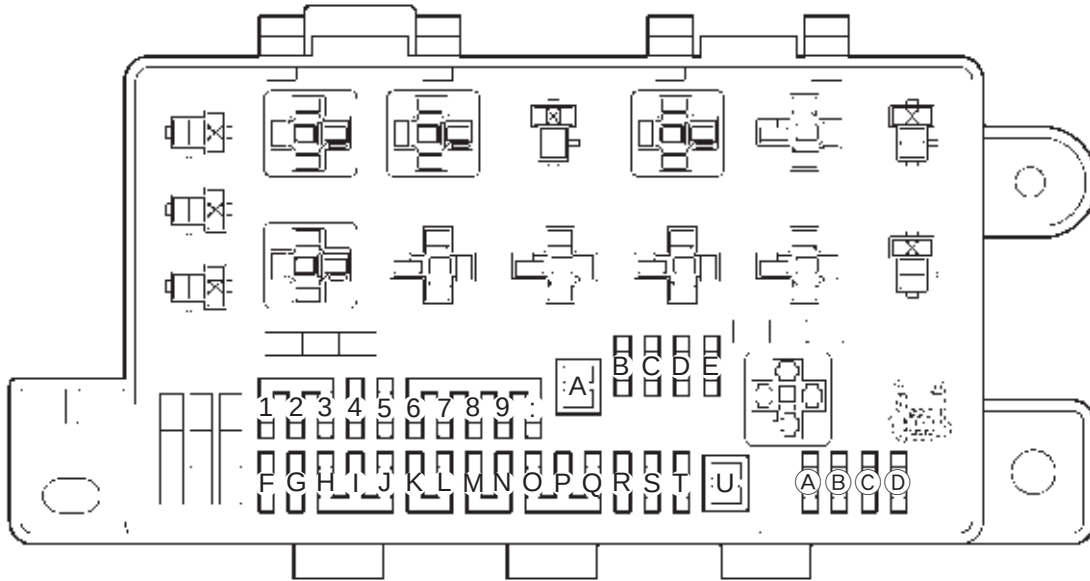
1 RELAY BLOCK NO.1(Europe,Australia,South Africa)



No.	DESCRIPTION	CAPACITY		
		Europe STD	Europe w/DRL ^{*1}	Australia,South Africa
1	—	—	—	—
2	AIR BAG	15A	15A	—
3	CIGARETTE LIGHTER	15A	15A	15A
4	DOOR	30A	30A	—
5	GAUGE	10A	10A	10A
6	WIPER	20A	20A	20A
7	A/C	10A	10A	10A
8	—	—	—	—
9	TURN	7.5A	7.5A	7.5A
10	ECU-IG	10A	10A	—
11	POWER	30A	30A	—
12	—	—	—	—
13	OBD	7.5A	7.5A	—
14	ECU-B	5A	5A	—
15	DOME LAMP	7.5A	7.5A	7.5A
16	—	—	—	—
17	—	—	—	—
18	—	—	—	—
19	—	—	—	—
20	TAIL LAMP	15A	15A	15A
21	HEAD LAMP(LL)	—	10A	—
22	HEAD LAMP(RL)	—	10A	—
23	HEAD LAMP(LH)	15A	10A	15A
24	HEAD LAMP(RH)	15A	10A	15A
25	HORN	7.5A	7.5A	7.5A
26	HAZARD	10A	10A	10A
27	STOP	7.5A	7.5A	7.5A
28	STARTER	5A	5A	5A
29	ECU-IG2	5A	5A	—
30	—	—	—	—
31	—	—	—	—
A	SPARE FUSE	5A	5A	5A
B		7.5A	7.5A	7.5A
C		10A	10A	10A
D		15A	15A	15A

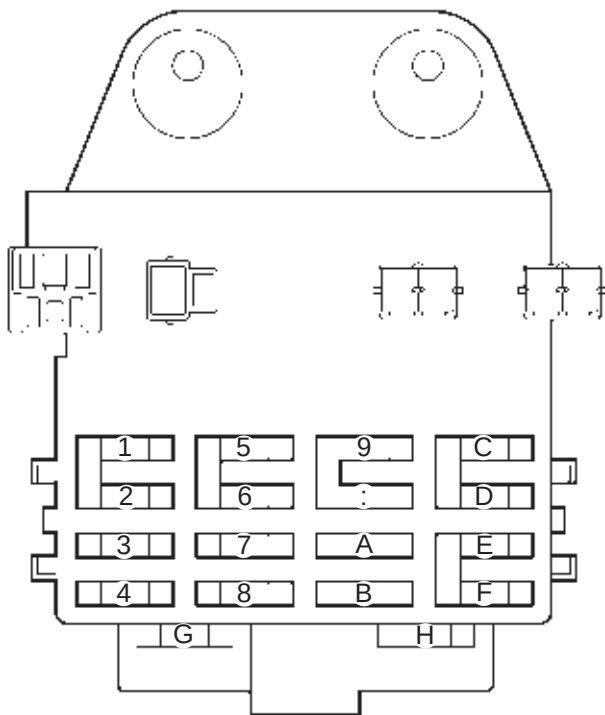
*1:DRL(Daytime Running Light)

2 RELAY BLOCK NO.1 (General w/ Heater)



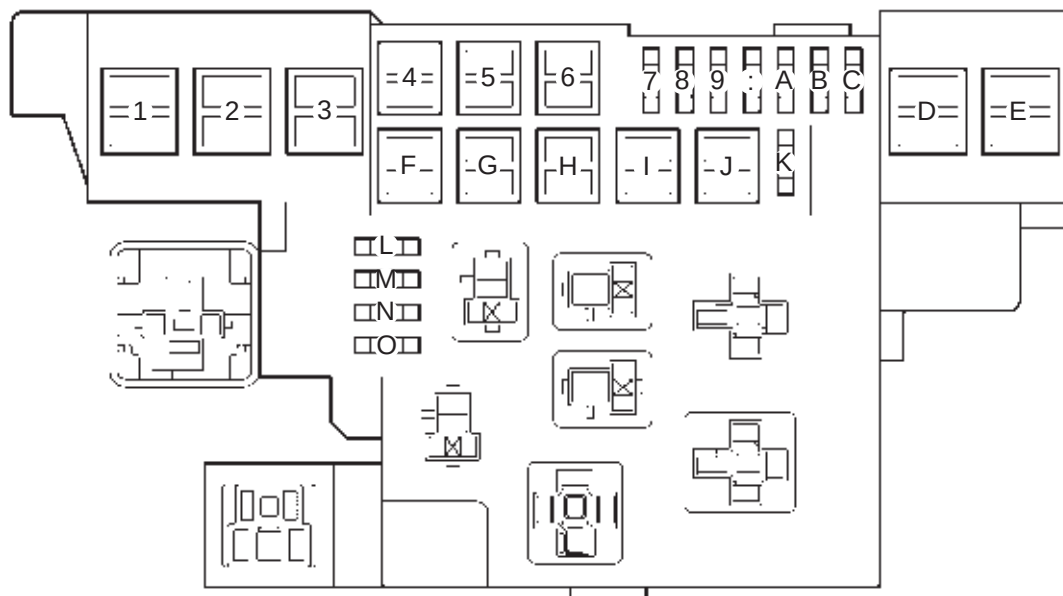
No.	DESCRIPTION	CAPACITY
1	-	-
2	-	-
3	CIGARETTE LIGHTER	15A
4	-	-
5	GAUGE	10A
6	WIPER	20A
7	-	-
8	-	-
9	TURN	7.5A
10	-	-
11	MAIN3	40A
12	-	-
13	-	-
14	FOG LAMP	15A
15	DOME LAMP	7.5A
16	-	-
17	-	-
18	-	-
19	-	-
20	TAIL LAMP	15A
21	-	-
22	-	-
23	HEAD LAMP(LH)	15A
24	HEAD LAMP(RH)	15A
25	AM2	7.5A
26	HAZARD-HORN	15A
27	STOP	7.5A
28	STARTER	5A
29	-	-
30	-	-
31	-	-
A	SPARE FUSE	5A
B		7.5A
C		10A
D		15A

3 RELAY BLOCK NO.1 (General w/o Heater)



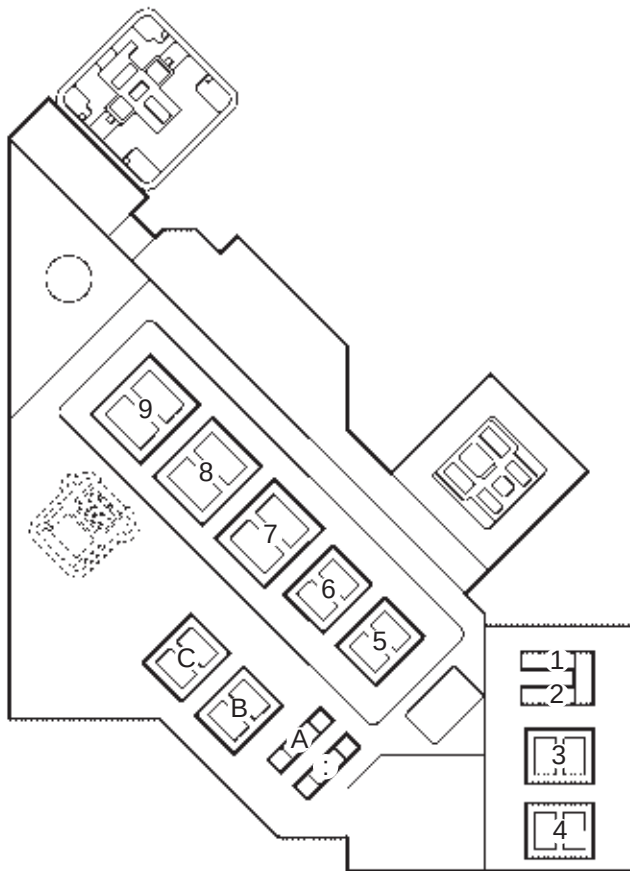
No.	DESCRIPTION	CAPACITY
1	HAZARD-HORN	15A
2	STOP	7.5A
3	-	-
4	AM2	7.5A
5	FRONT FOG LAMP	15A
6	DOMELAMP	7.5A
7	-	-
8	TAIL LAMP	10A
9	HEAD LAMP(RH)	10A
10	HEAD LAMP(LH)	10A
11	STARTER	7.5A
12	CIGARETTE LIGHTER	15A
13	WIPER	20A
14	TURN	7.5A
15	GAUGE	10A
16	ECU-IG	10A
17	SPARE FUSE	10A
18		15A

4 RELAY BLOCK NO.2 (Europe,Australia,South Africa)



No.	DESCRIPTION	CAPACITY	
		Europe	Australia,South Africa
1	MAIN3	50A	50A
2	MAIN2	50A	50A
3	ALT	120A	120A
4	AM1	30A	30A
5	HEAD LAMP	40A	40A
6	MAIN1	30A	30A
7	FOG LAMP	15A	-
8	FRONT HEATER	30A	-
9	EFI	15A	-
10	ALT-S	7.5A	7.5A
11	AM2	10A	10A
12	-	-	-
13	-	-	-
14	GLW	80A	80A
15	STARTER	60A	60A
16	ABS	50A	-
17	HEATER	40A	40A
18	CDS	30A	30A
19	REAR HEATER (Double Cab only)	50A	-
20	ABS2	30A	-
21	-	-	-
22	ST NO.2	5A	-
23	-	-	-
24	-	-	-
25	-	-	-

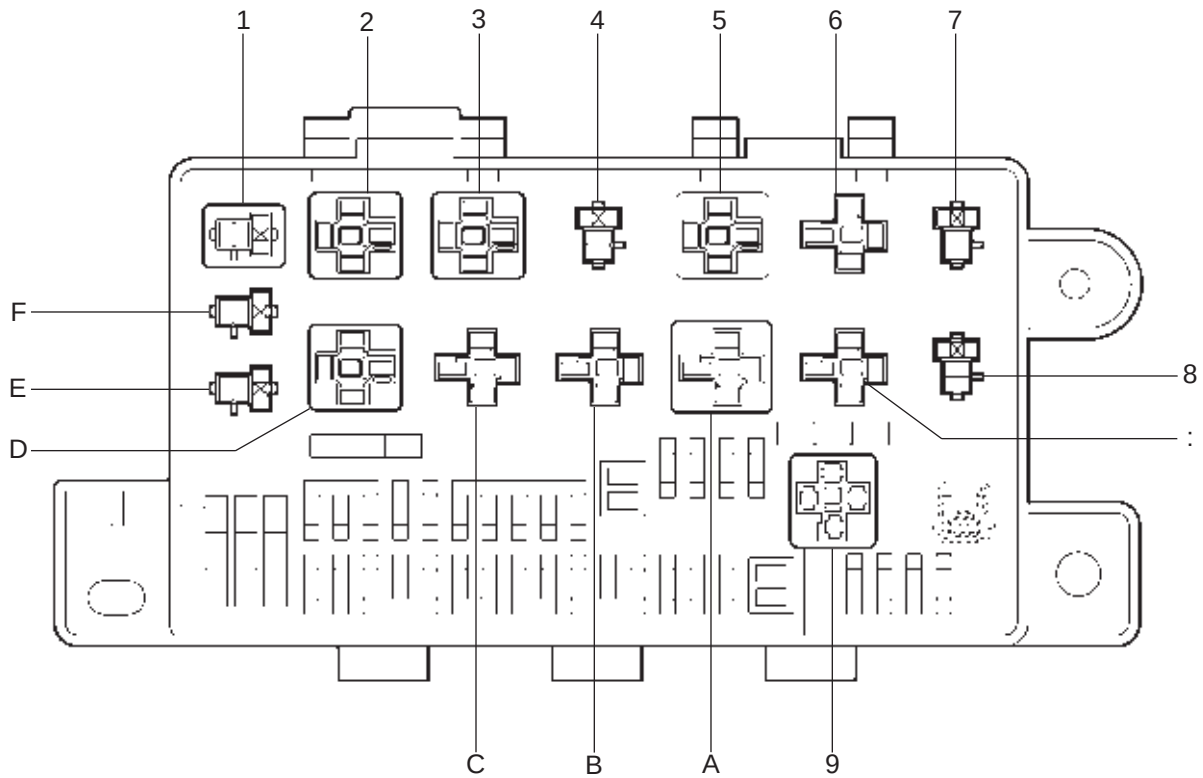
5 RELAY BLOCK NO.2 (General)



No.	DESCRIPTION	CAPACITY
1	ST NO.2	5A
2	—	—
3	HEATER	40A
4	—	—
5	MAIN2	50A
6	MAIN1	30A
7	GLOW	80A
8	ALT	100A
9	—	—
10	—	—
11	ALT-S	7.5A
12	HEAD LAMP	40A
13	AM1	30A

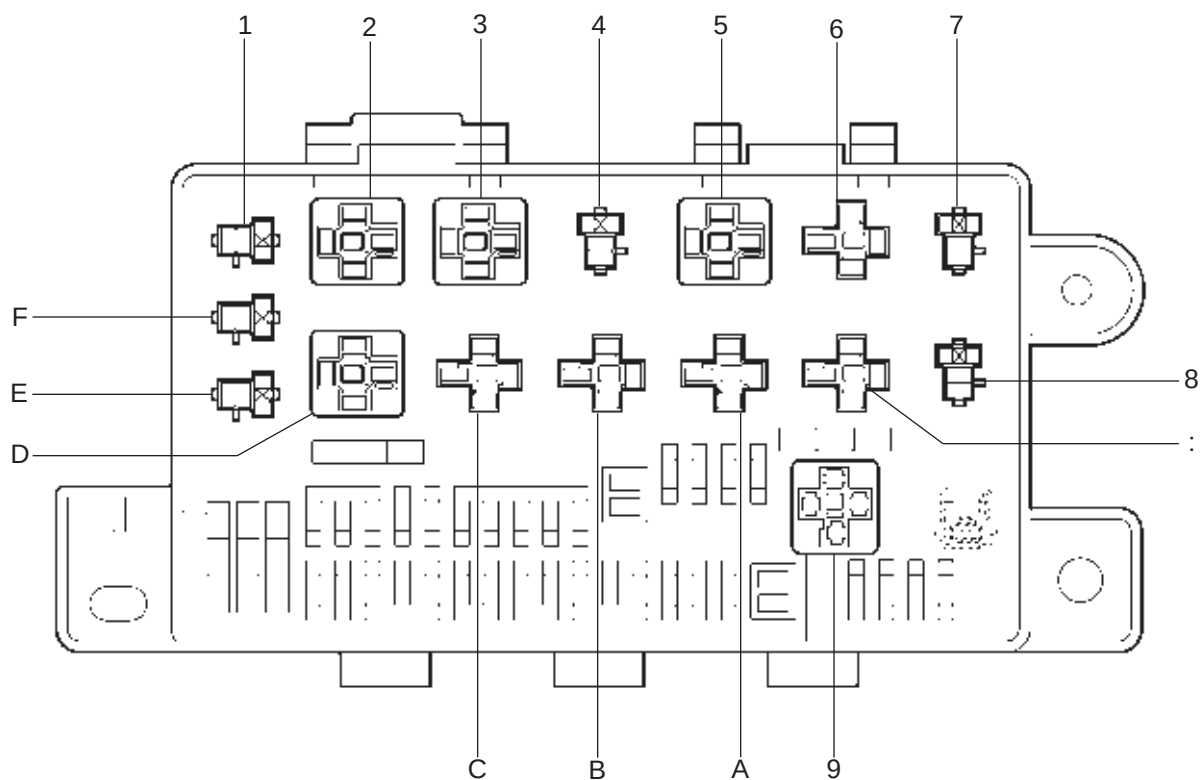
(2) RELAY

1 RELAY BLOCK NO.1 (Europe,Australia,South Africa)



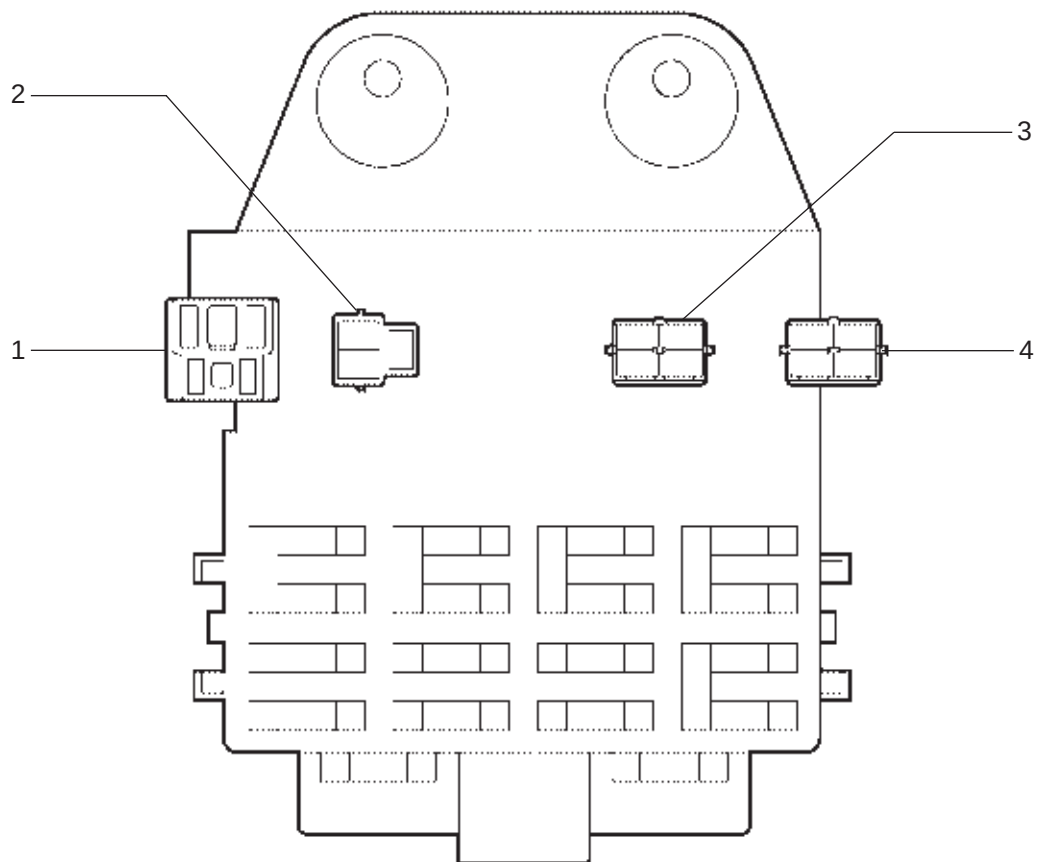
No.	Europe	Australia,South,Africa
1	HORN	-
2	HTR	HTR
3	DIMMER	-
4	-	-
5	H-LP	H-LP
6	-	-
7	-	-
8	-	-
9	TAIL	TAIL
10	-	-
11	POWER	-
12	-	-
13	-	-
14	IG1	IG1
15	-	-
16	-	-

2 RELAY BLOCK NO.1 (General w/ Heater)



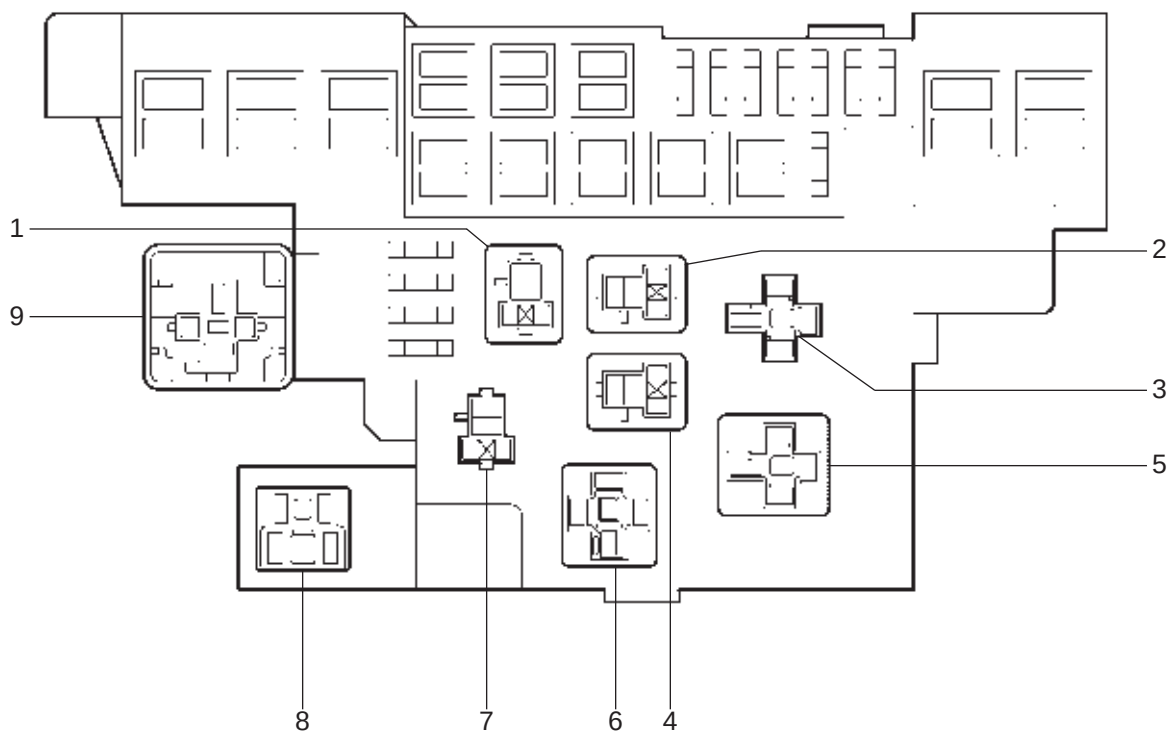
No.	General
1	-
2	HTR
3	FOG
4	-
5	H-LP
6	-
7	-
8	-
9	TAIL
10	-
11	-
12	-
13	-
14	IG1
15	-
16	-

3 RELAY BLOCK NO.1 (General w/ Heater)



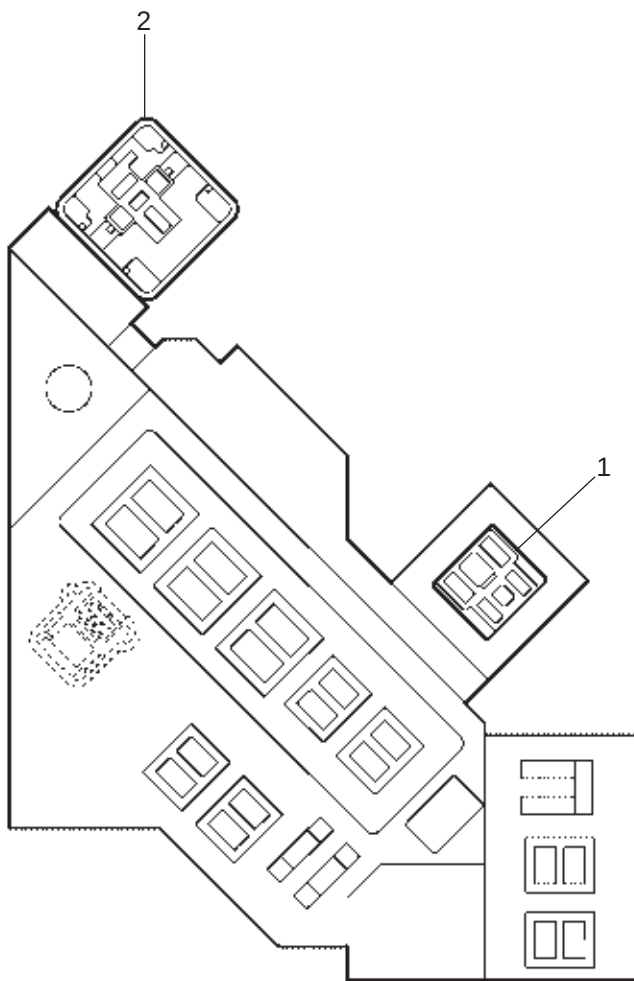
No.	DESCRIPTION
1	HEAD LAMP
2	-
3	TAIL
4	IG1

4 RELAY BLOCK NO.2 (Europe,Australia,South Africa)



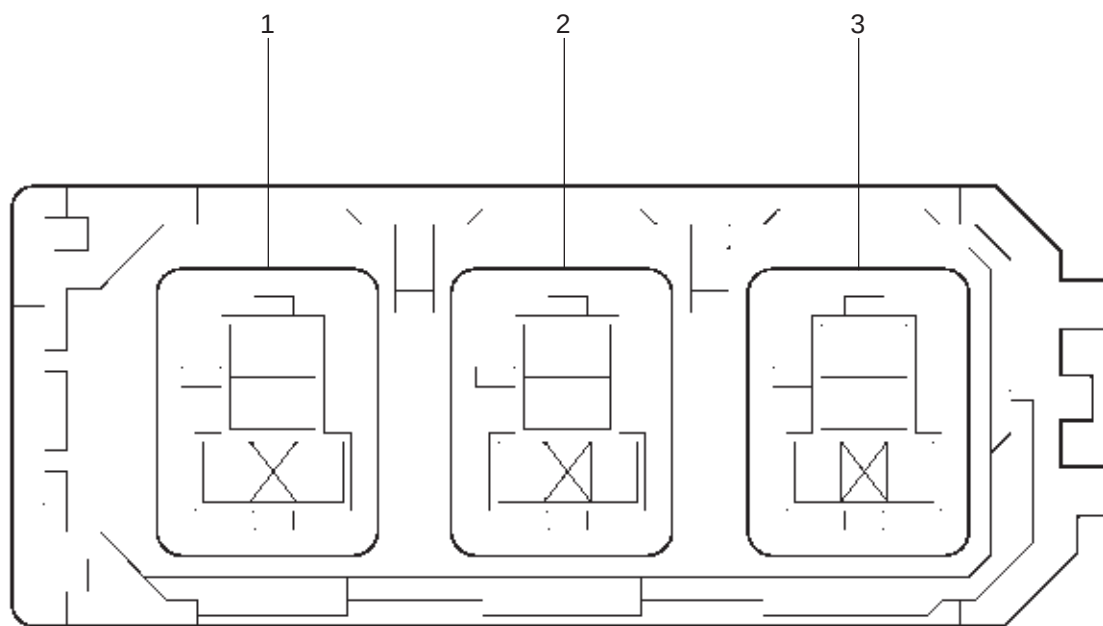
No.	Europe	Australia,South,Africa
1	FUEL HEATER	-
2	EDU	-
3	-	-
4	EFI MAIN	-
5	ABS SOL	-
6	ABS MTR	-
7	-	-
8	GLW MAIN	GLW MAIN
9	STARTER	STARTER

5 RELAY BLOCK NO.2 (General)



No.	DESCRIPTION
1	GLOW
2	STARTER

6 RELAY BLOCK NO.3

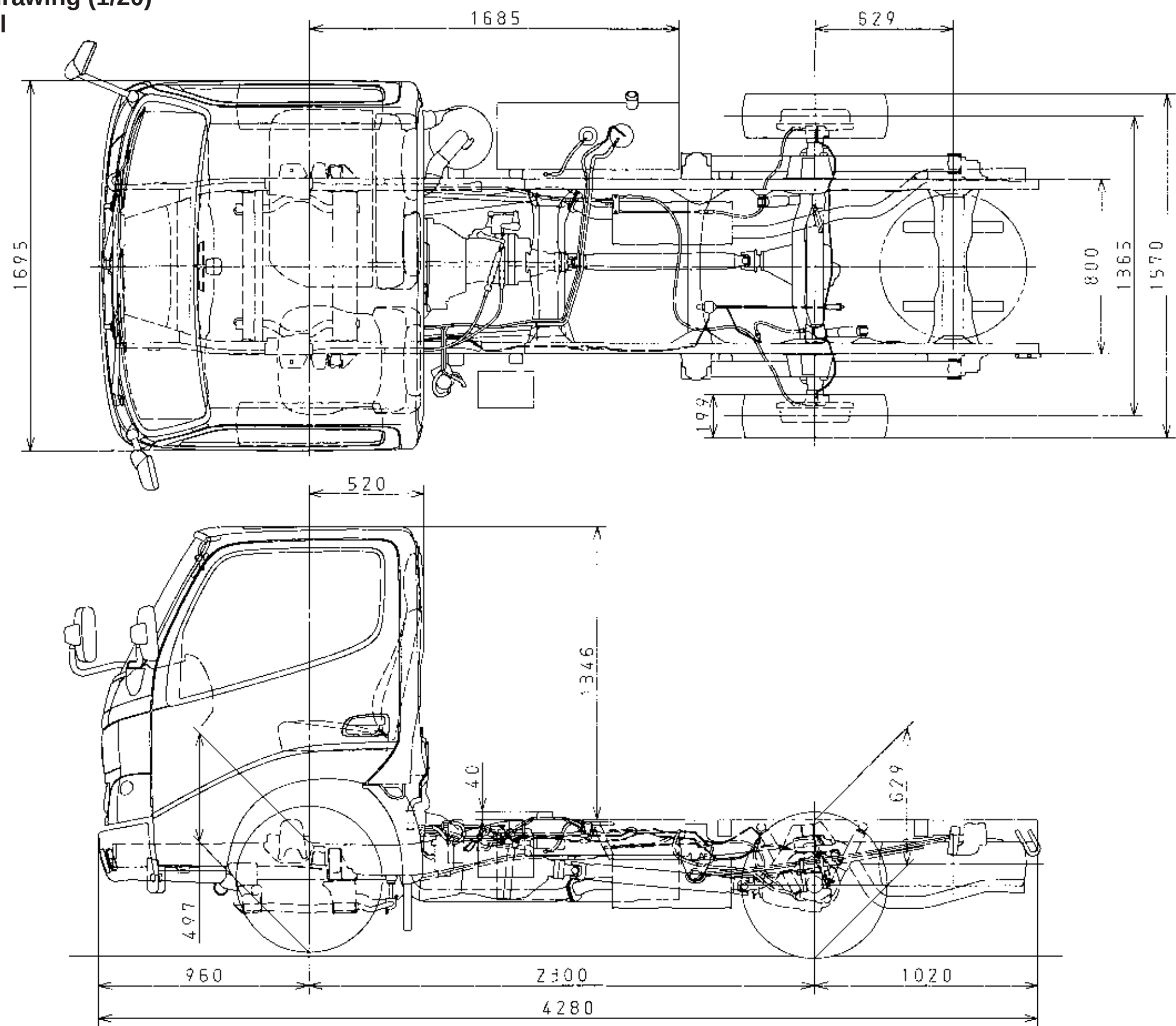


No.	DESCRIPTION
1	COMP
2	FAN NO.2
3	FAN NO.1

[4] DRAWINGS

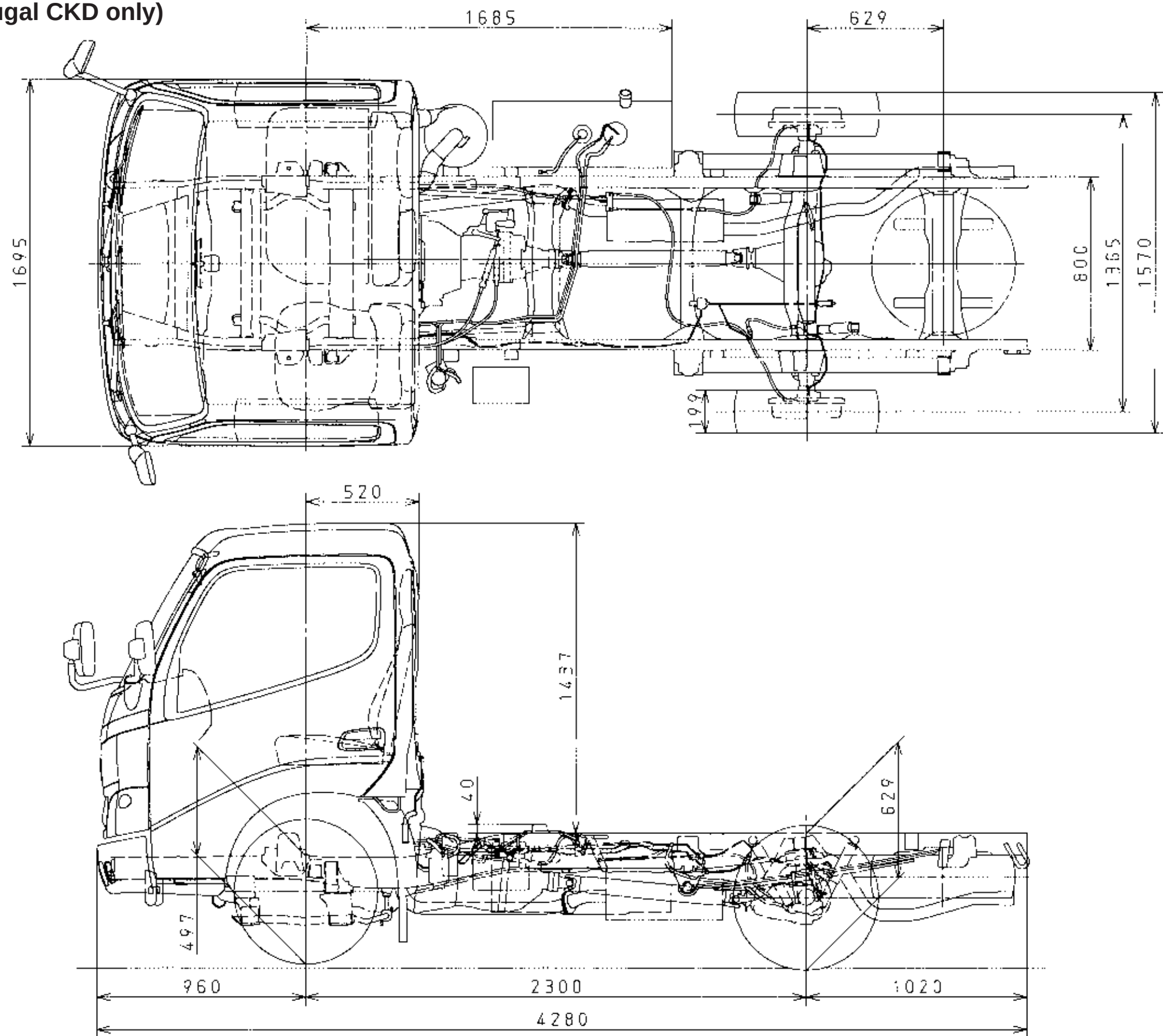
1-1. Cab & Chassis drawing (1/20)
Standard-Roof Model

MODEL
KDY220L-TBMDYW3



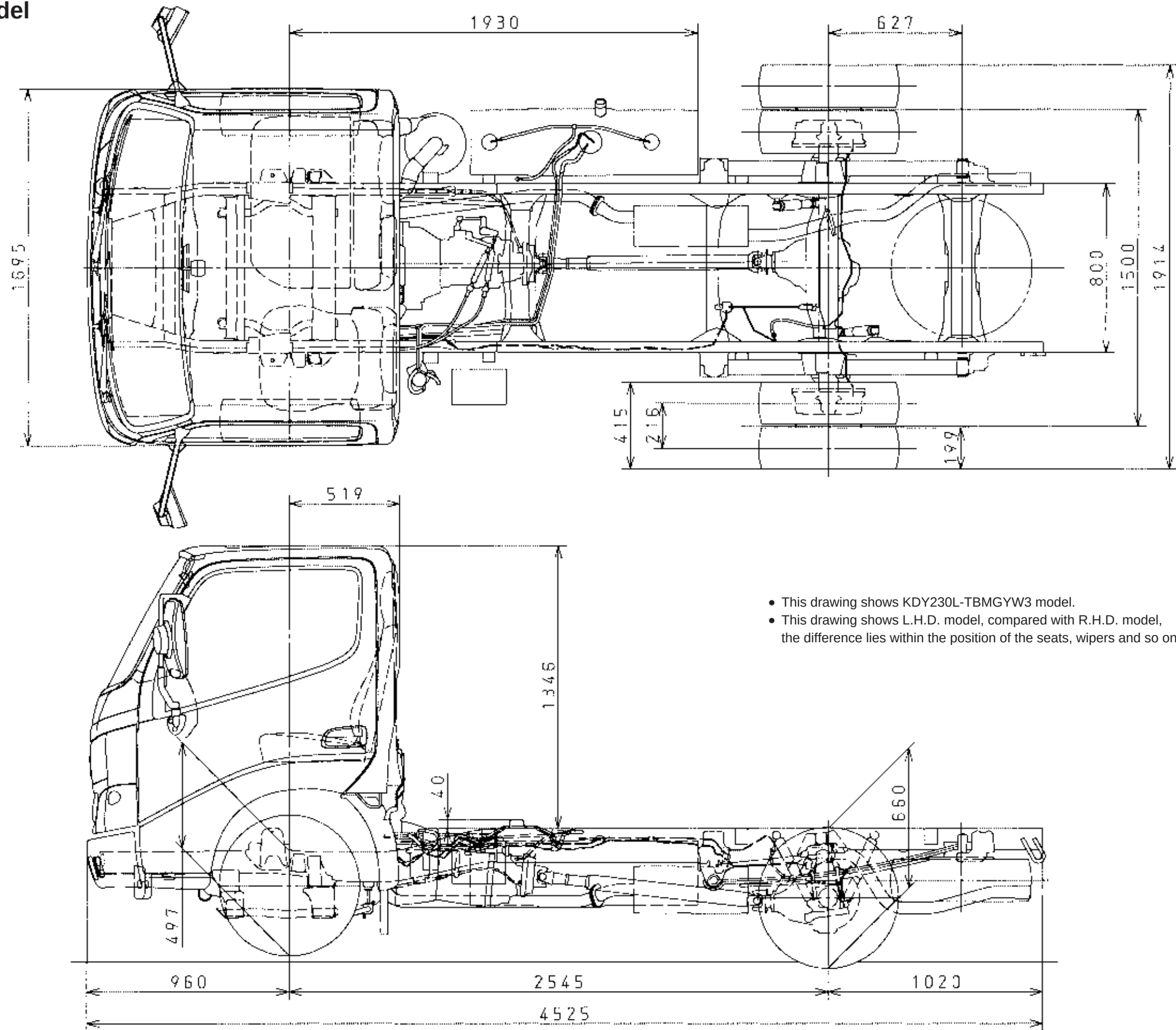
1-2. Cab & Chassis drawing (1/20)
Hi-Roof Model (Portugal CKD only)

MODEL
KDY220L-TBMDYW3



1-3. Cab & Chassis drawing (1/20)
Standard-Roof Model

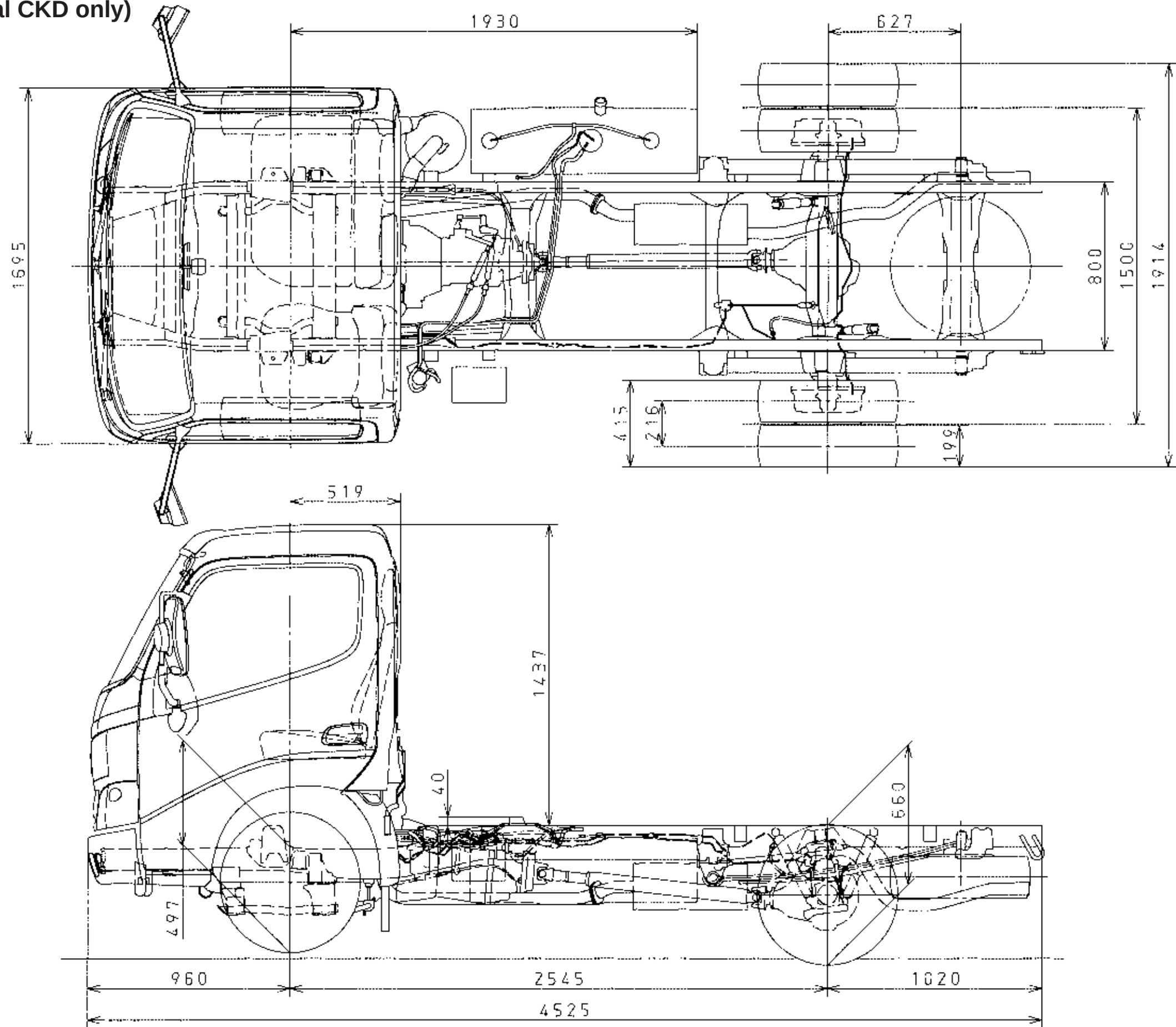
MODELS
KDY230R-TBMGYW3
KDY230L-TBMGYW3



- This drawing shows KDY230L-TBMGYW3 model.
- This drawing shows L.H.D. model, compared with R.H.D. model, the difference lies within the position of the seats, wipers and so on.

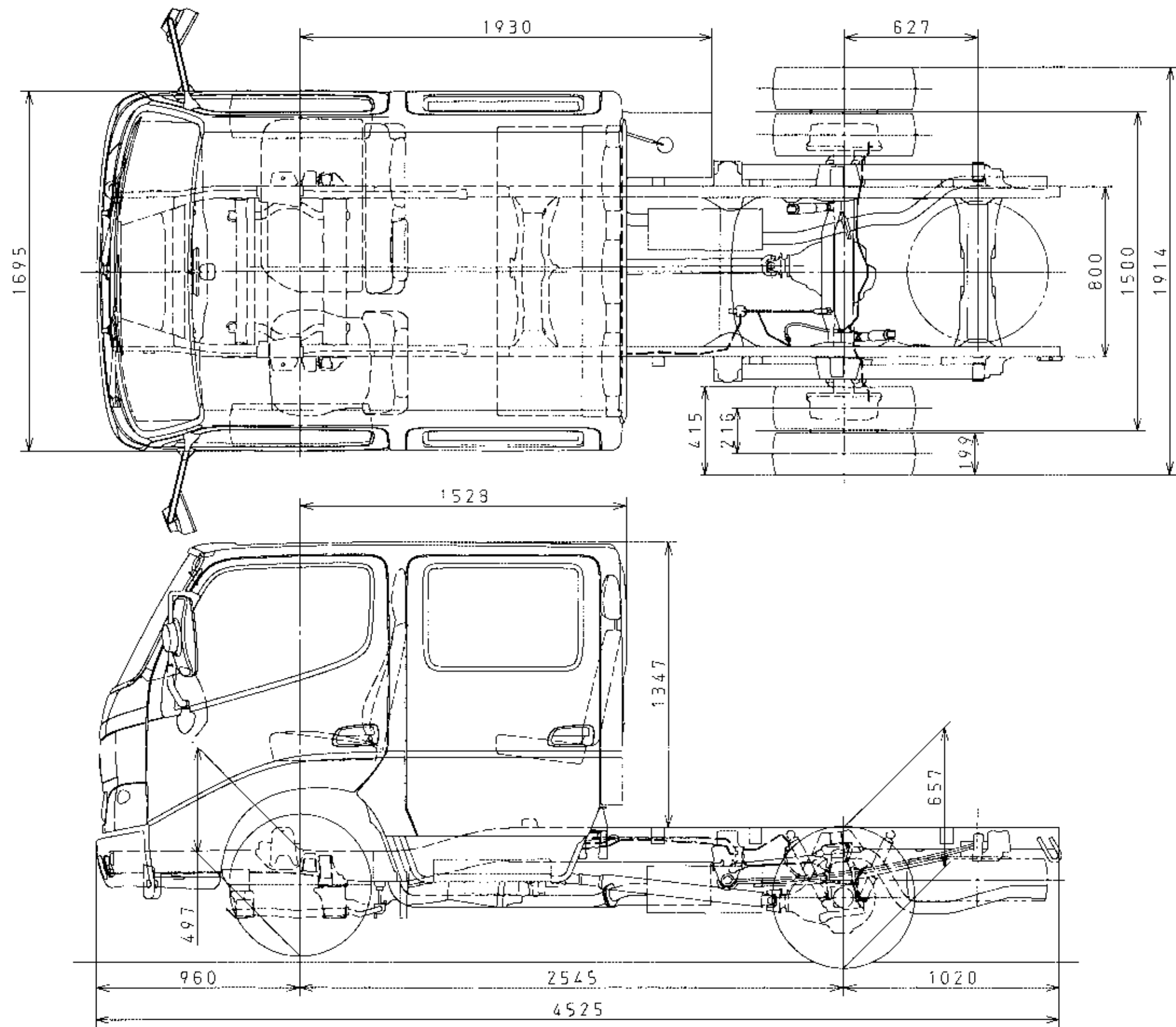
1-4. Cab & Chassis drawing (1/20)
Hi-Roof Model (Portugal CKD only)

MODEL
KDY230L-TBMGYW3



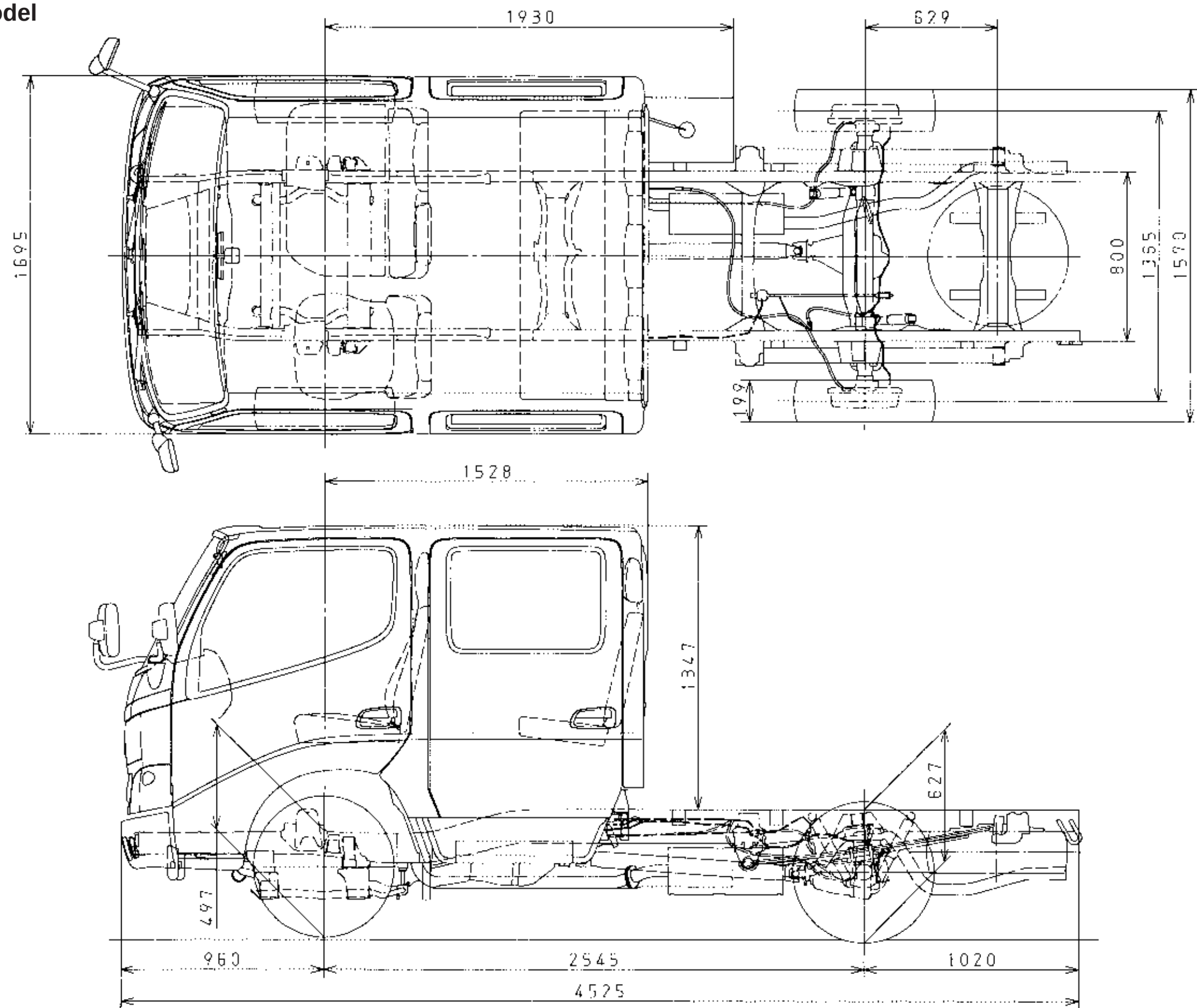
1-5. Cab & Chassis drawing (1/20)

MODEL
KDY230L-PBMEYW3



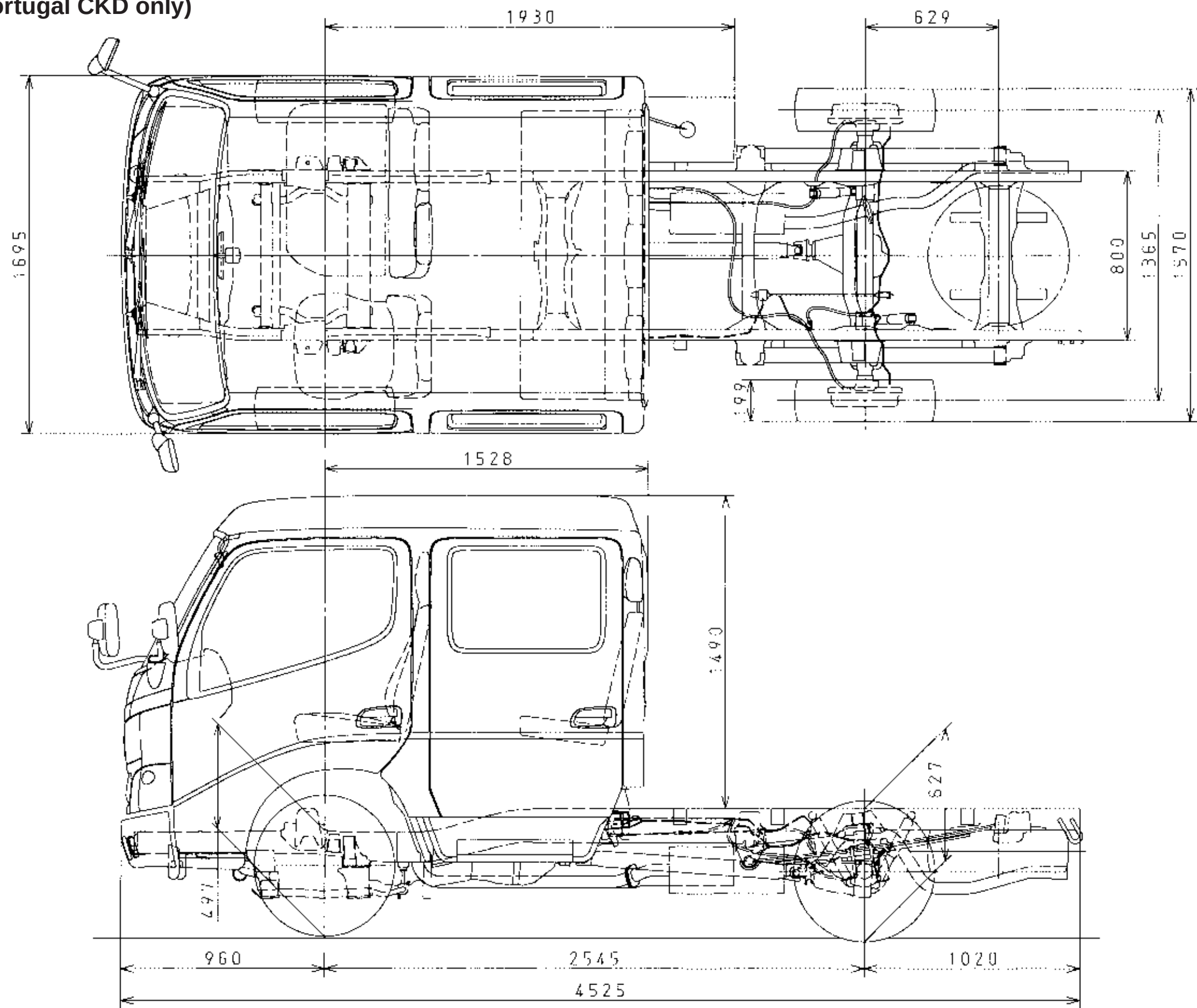
1-6. Cab & Chassis drawing (1/20)
Standard-Roof Model

MODEL
KDY230L-PSMBYW3

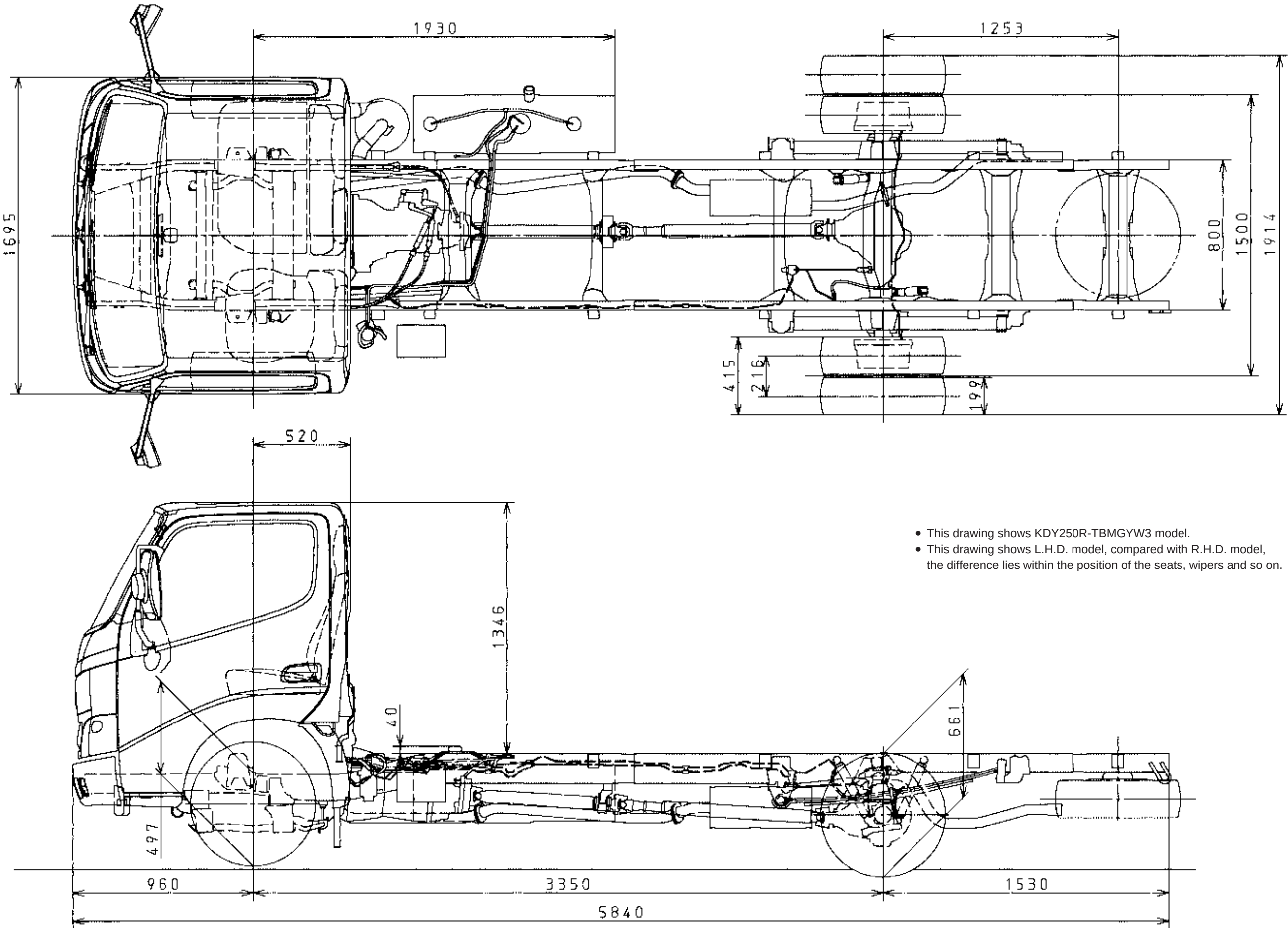


1-7. Cab & Chassis drawing (1/20)
Hi-Roof Model (Portugal CKD only)

MODEL
KDY230L-PSMBYW3



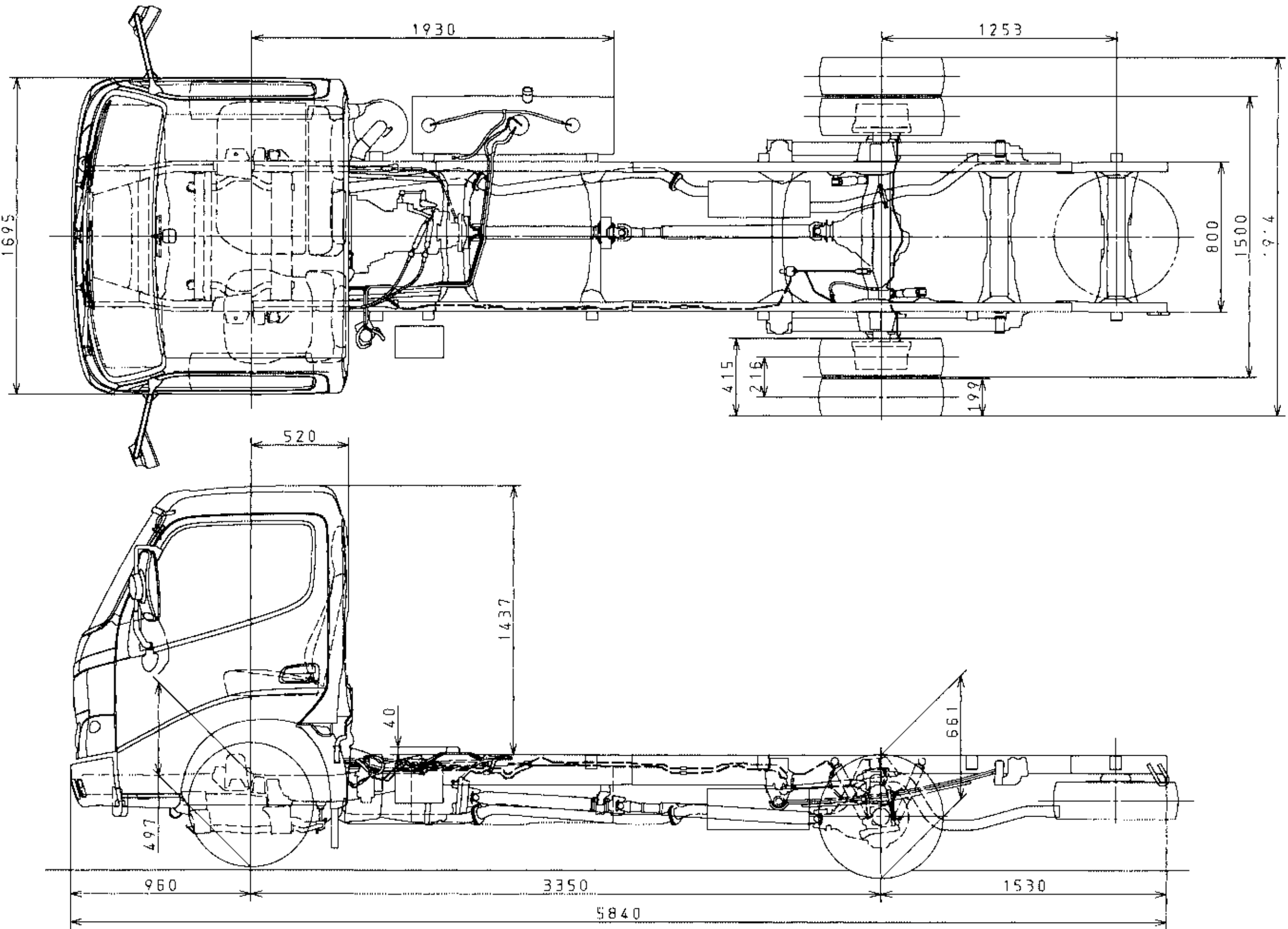
1-8. Cab & Chassis drawing (1/20)
Standard-Roof Model



- This drawing shows KDY250R-TBMGYW3 model.
- This drawing shows L.H.D. model, compared with R.H.D. model, the difference lies within the position of the seats, wipers and so on.

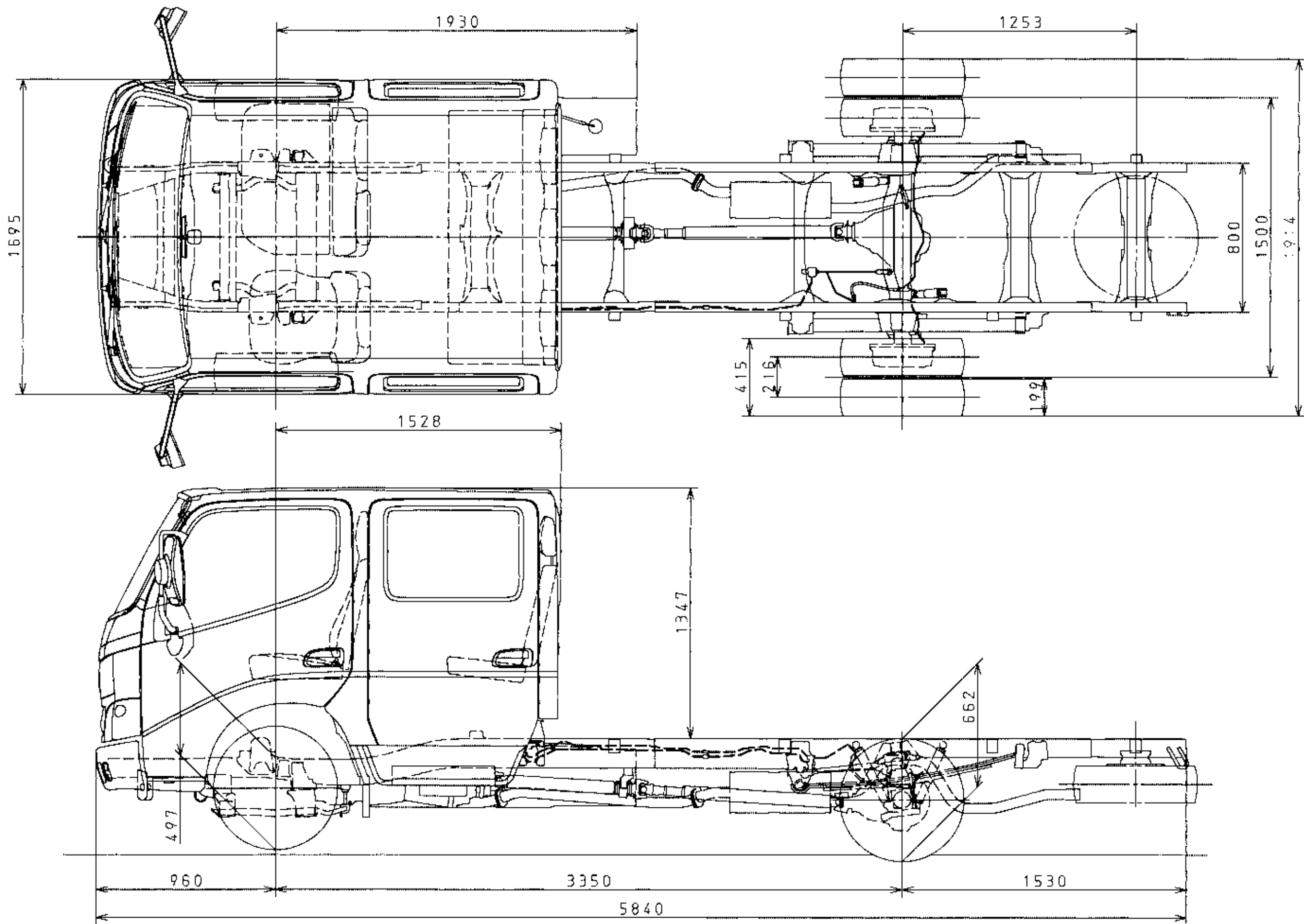
MODELS
KDY250R-TBMGYW3
KDY250L-TBMGYW3

1-9. Cab & Chassis drawing (1/20)
Hi-Roof Model (Portugal CKD only)



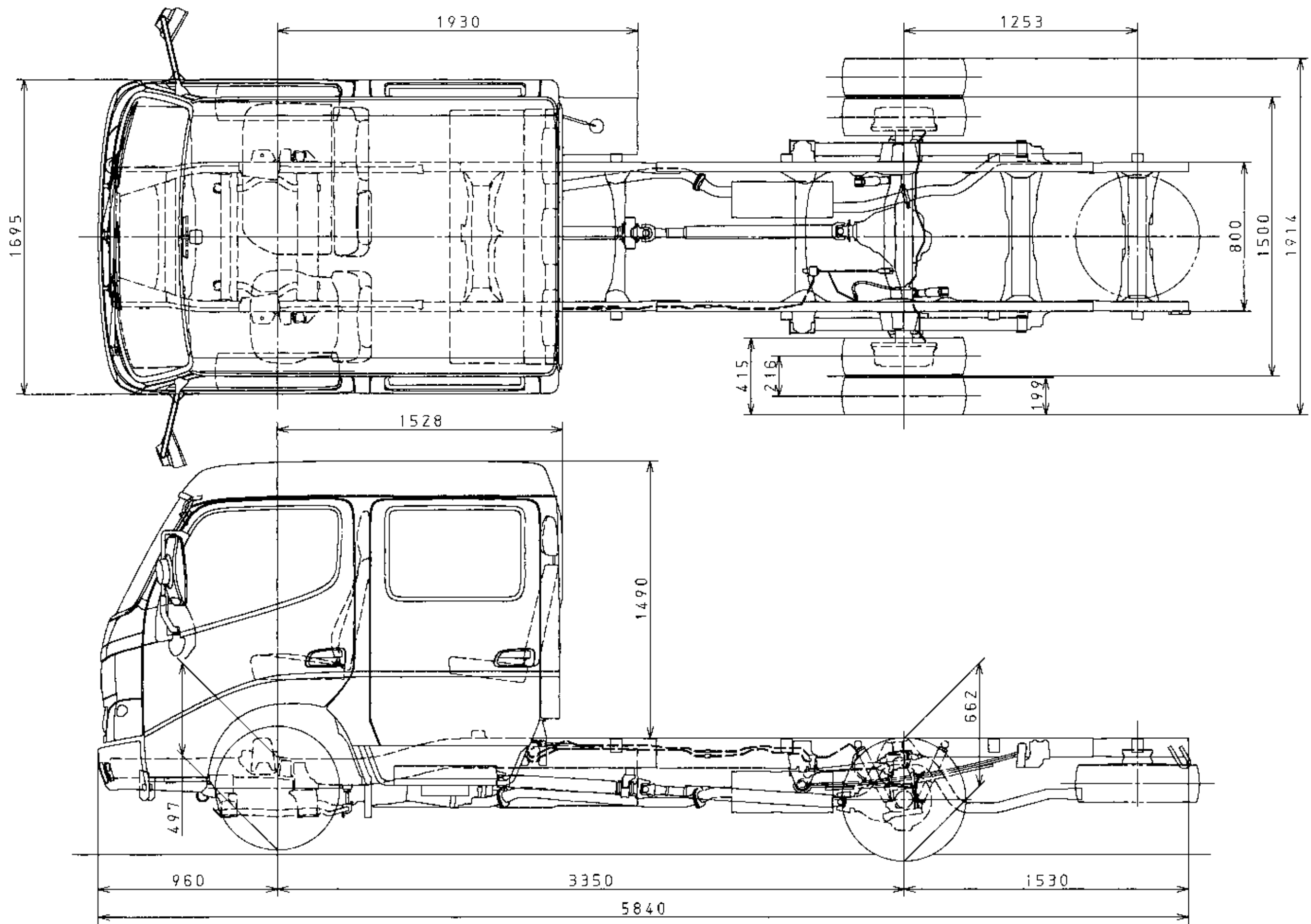
MODEL
KDY250L-TBMGYW3

1-10. Cab & Chassis drawing (1/20)
Standard-Roof Model



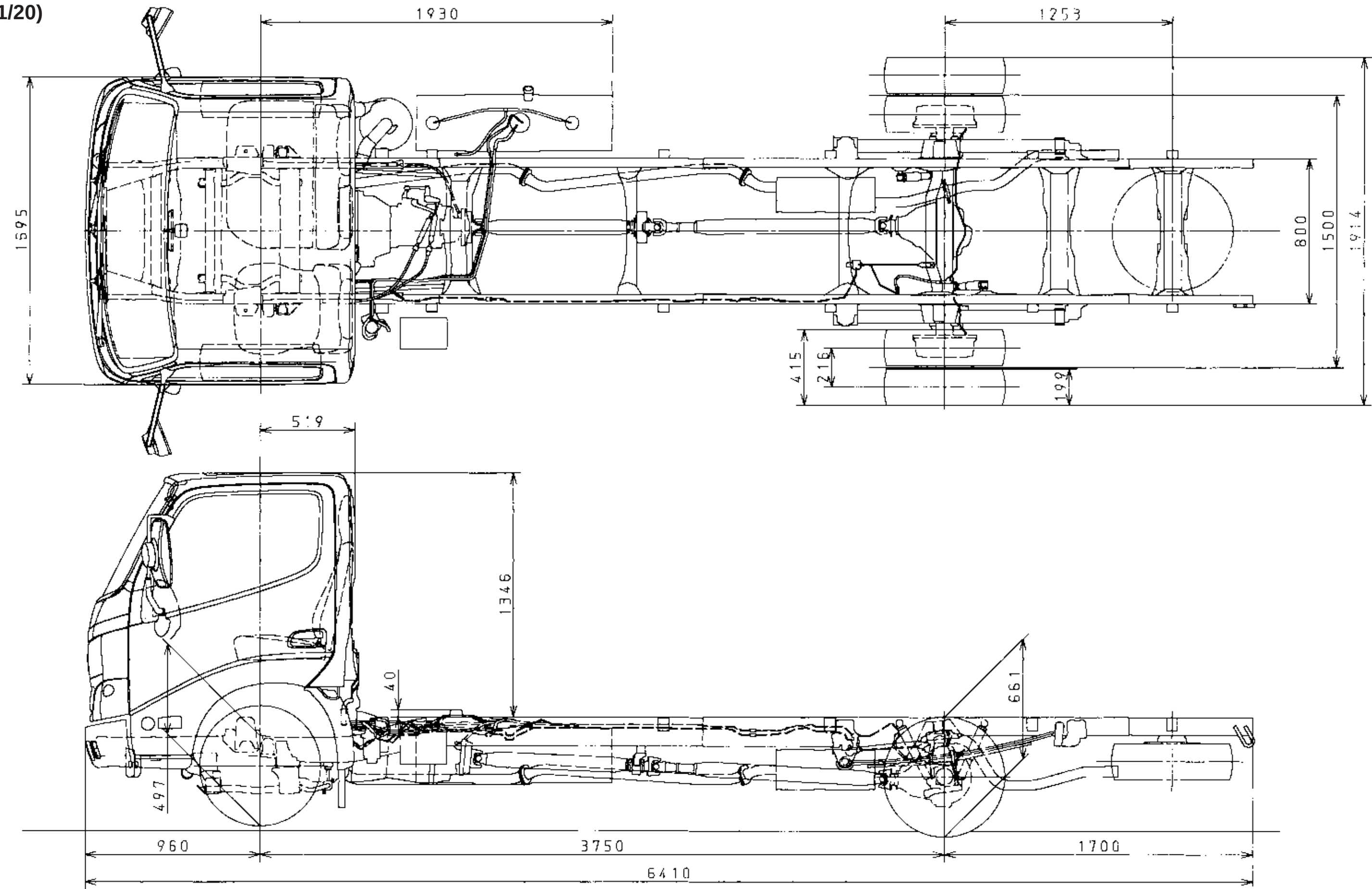
MODEL
KDY250L-PBMEYW3

1-11. Cab & Chassis drawing (1/20)
Hi-Roof Model (Portugal CKD only)



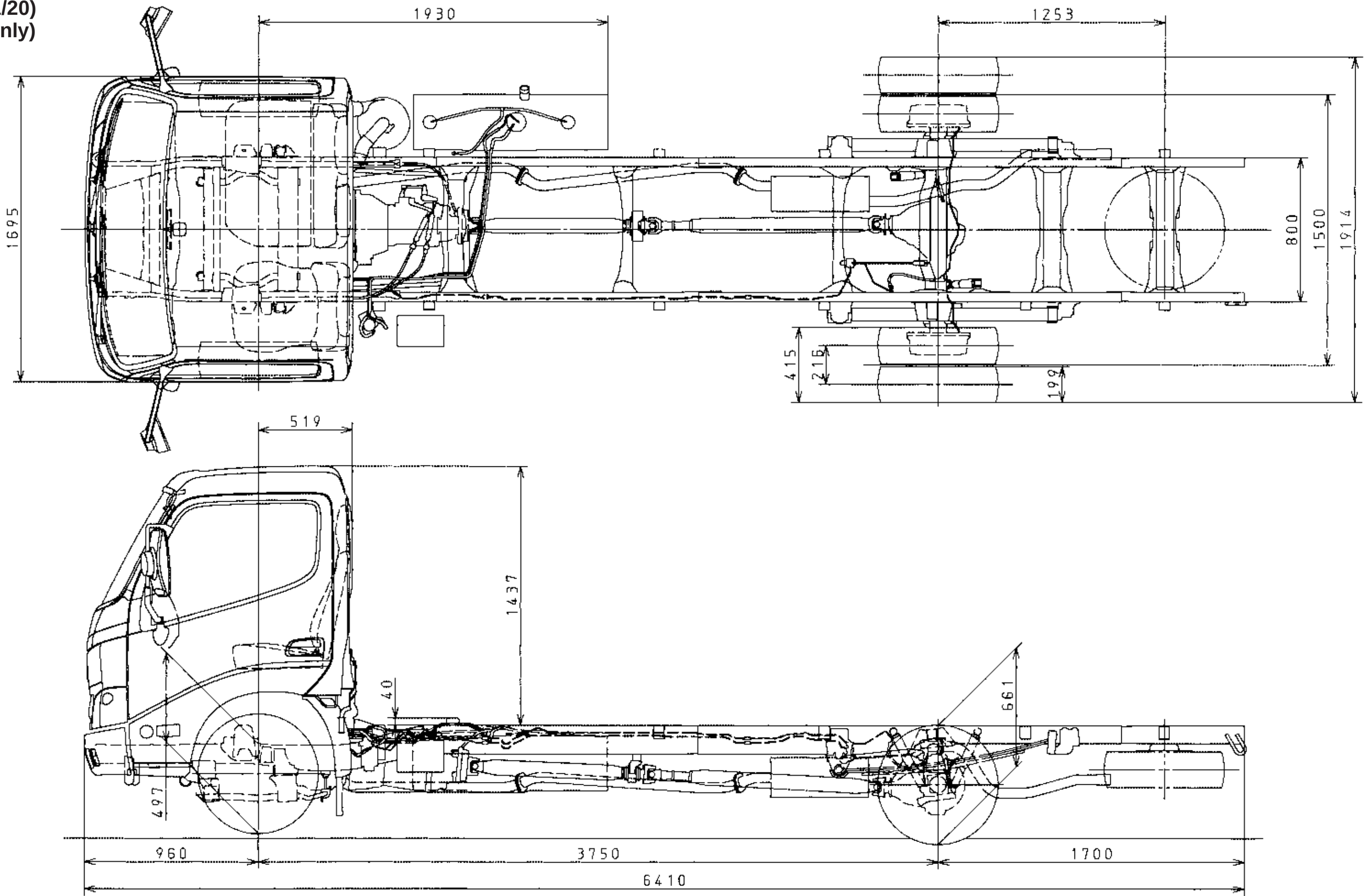
MODEL
KDY250L-PBMEYW3

1-12. Cab & Chassis drawing (1/20)
Standard-Roof Model



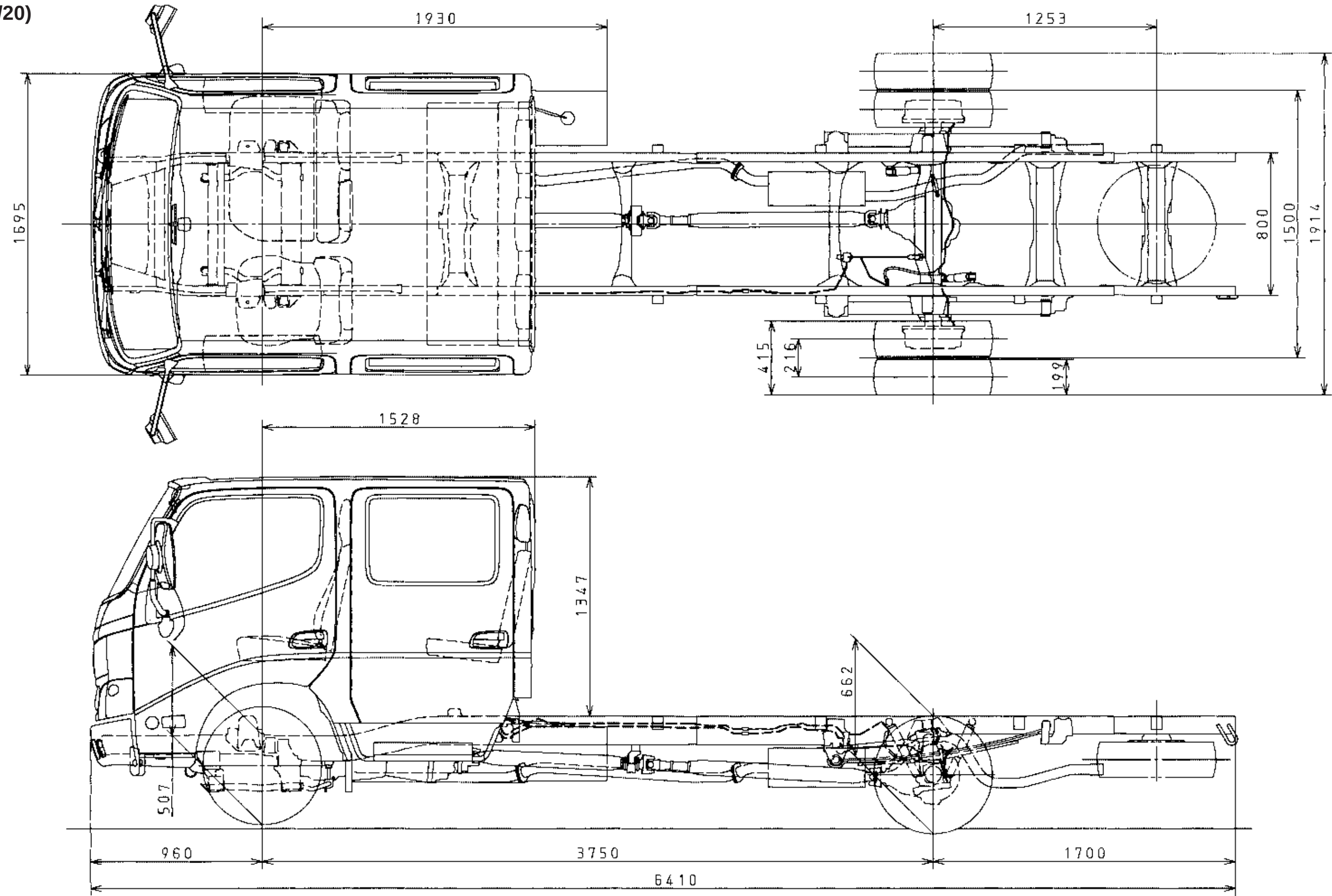
MODEL
KDY260L-TBMGYW3

1-13. Cab & Chassis drawing (1/20)
Hi-Roof Model (Portugal CKD only)



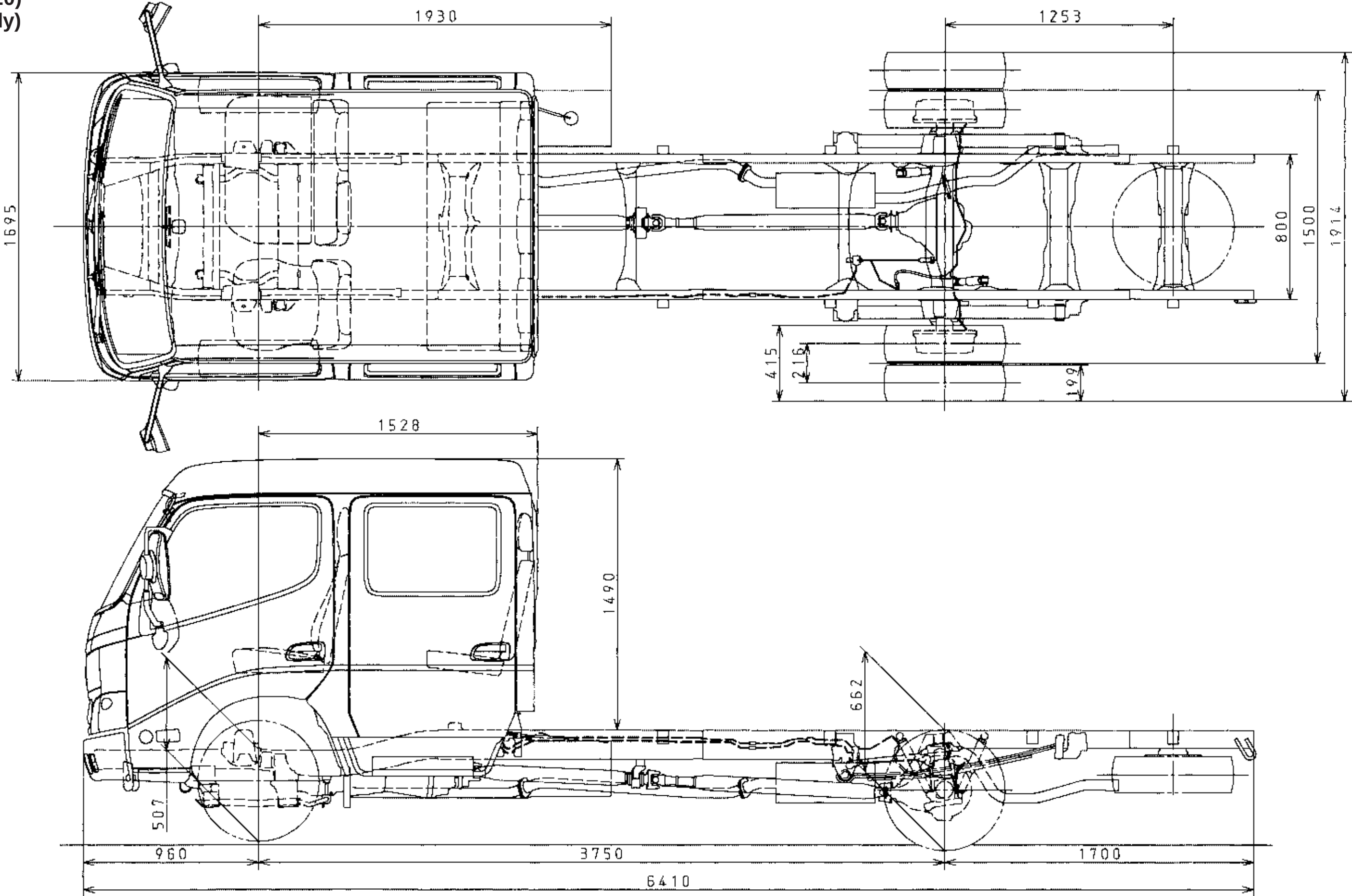
MODEL
KDY260L-TBMGYW3

1-14. Cab & Chassis drawing (1/20)
Standard-Roof Model



MODEL
KDY260L-PBMEYW3

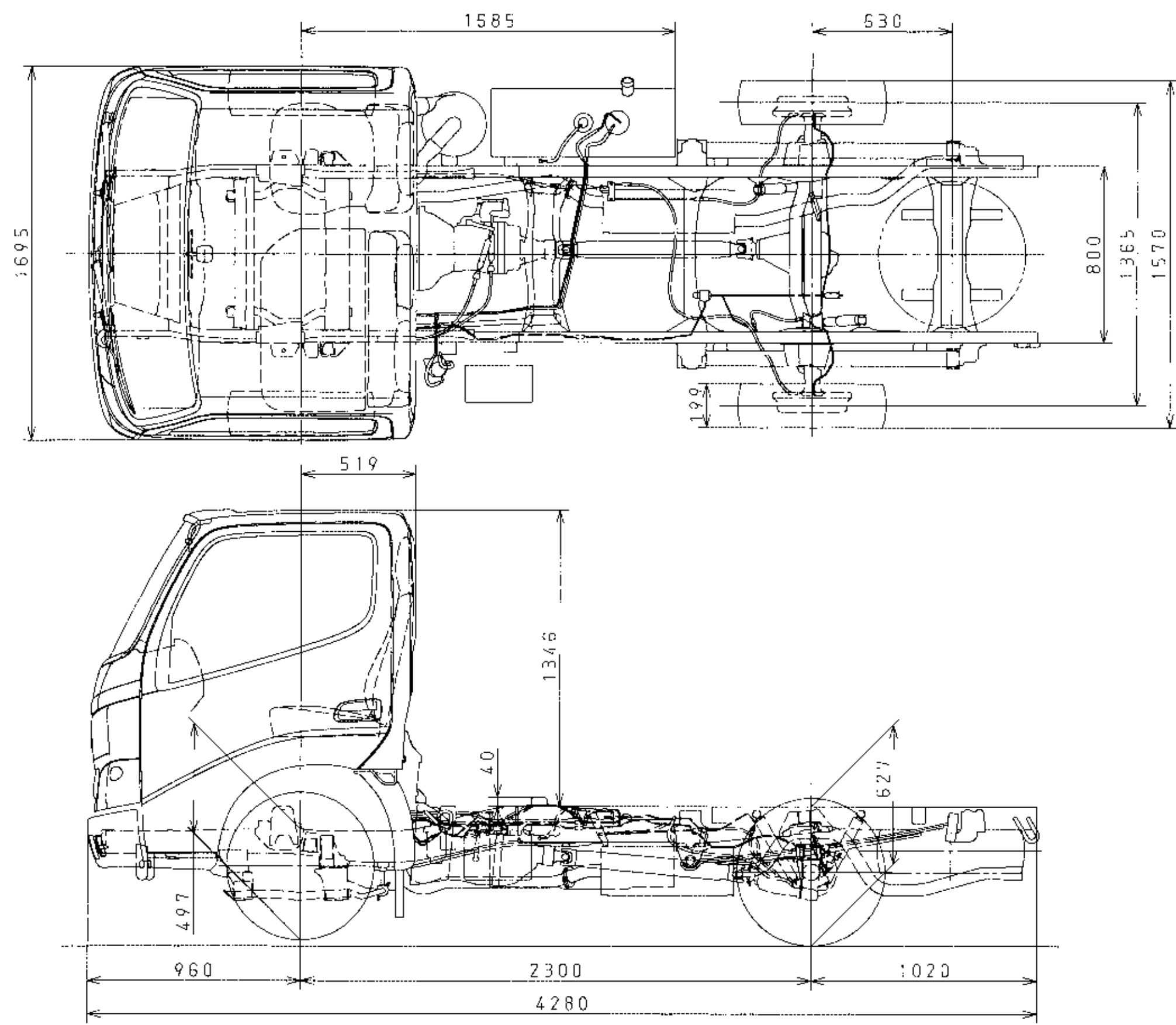
1-15. Cab & Chassis drawing (1/20)
Hi-Roof Model (Portugal CKD only)



MODEL
KDY260L-PBMEYW3

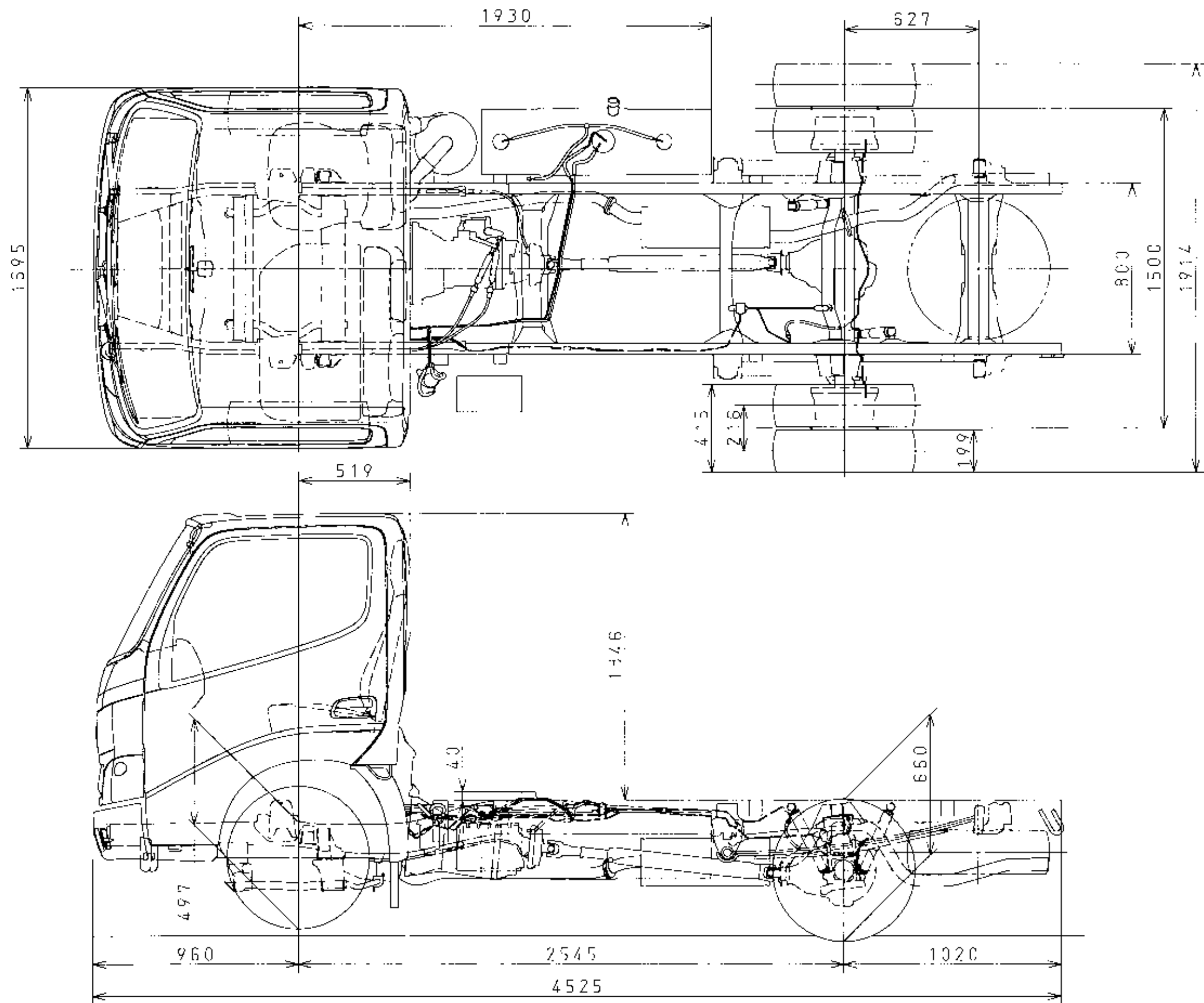
1-16. Cab & Chassis drawing (1/20)

MODEL
LY220R-TBMDSQ3



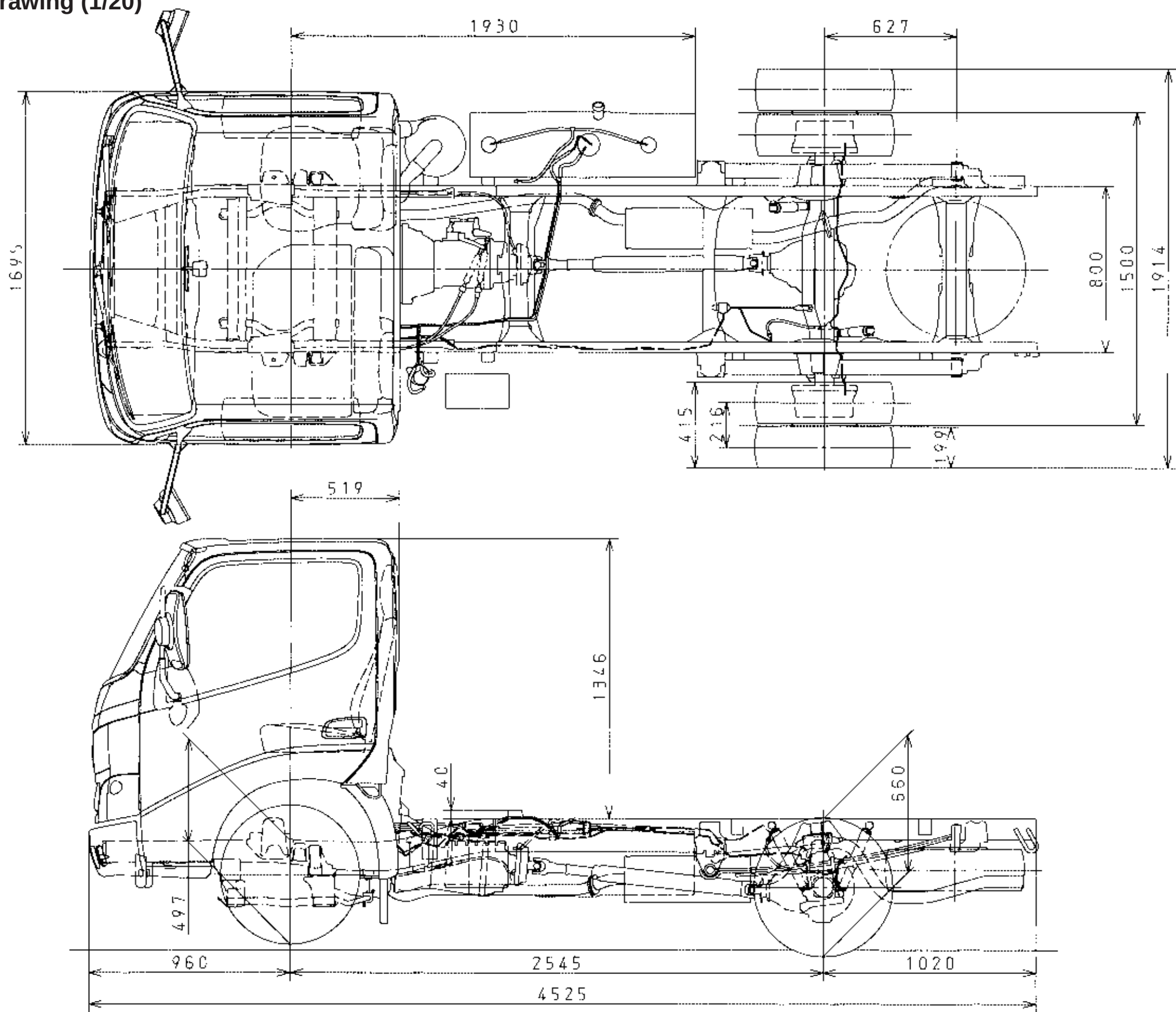
1-17. Cab & Chassis drawing (1/20)

MODEL
LY230R-TBMGSQ3



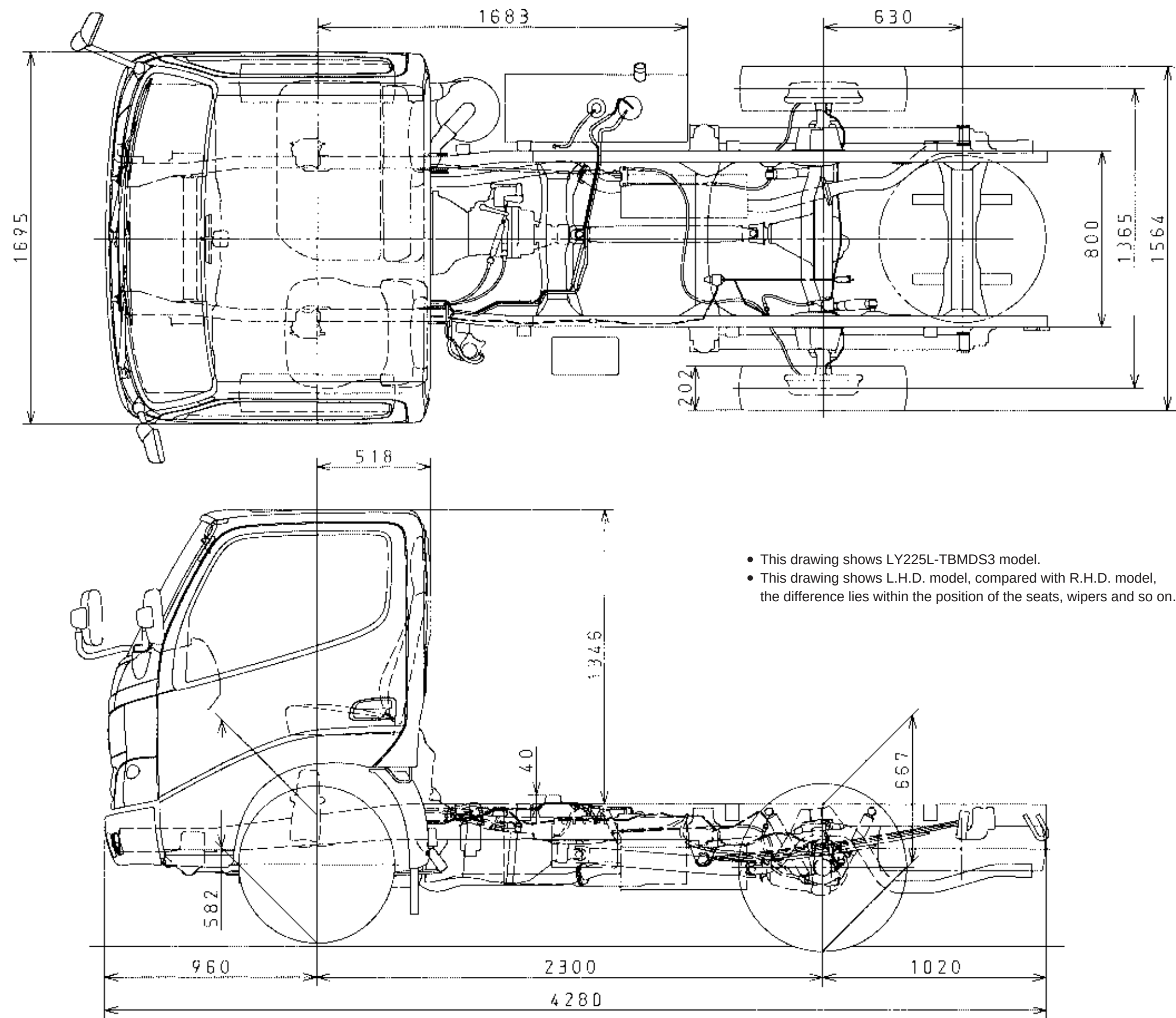
1-18. Cab & Chassis drawing (1/20)

MODEL
LY230R-TBMGSN3



1-19. Cab & Chassis drawing (1/20)

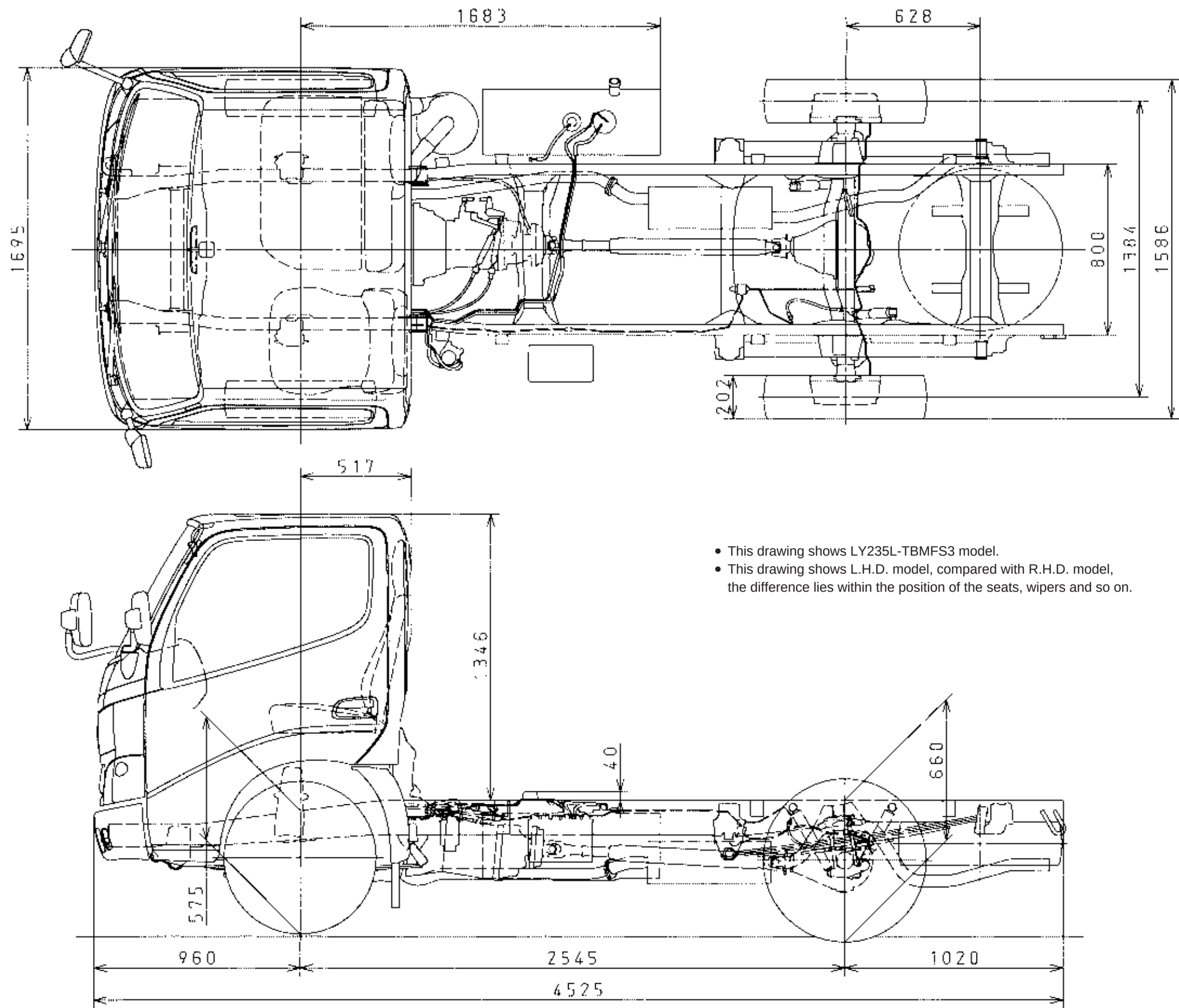
MODELS
LY225R-TBMDS3
LY225L-TBMDS3



- This drawing shows LY225L-TBMDS3 model.
- This drawing shows L.H.D. model, compared with R.H.D. model, the difference lies within the position of the seats, wipers and so on.

1-20. Cab & Chassis drawing (1/20)

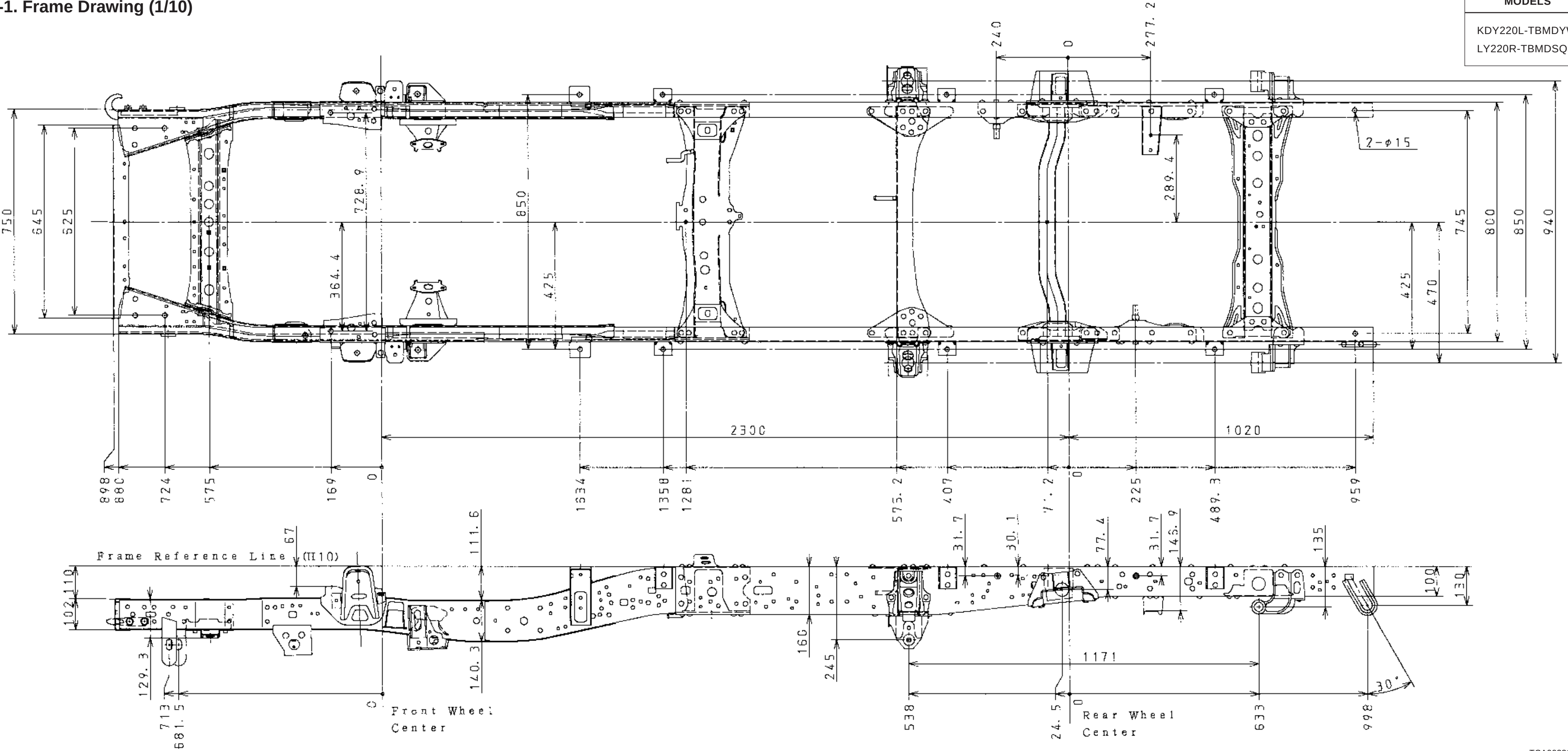
MODELS
LY235R-TBMFS3
LY235L-TBMFS3



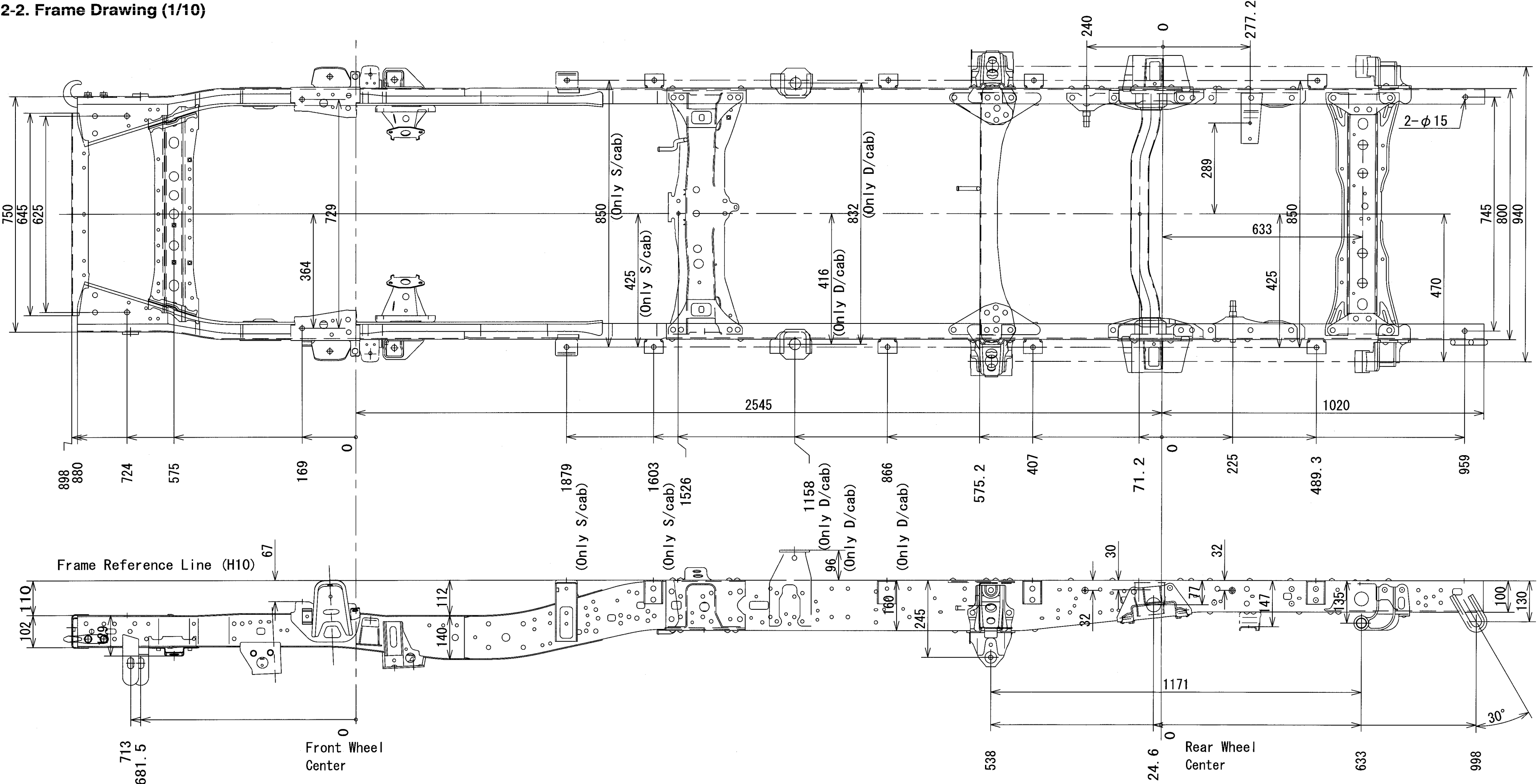
2-1. Frame Drawing (1/10)

MODELS

KDY220L-TBMDYW3
LY220R-TBMDSQ3

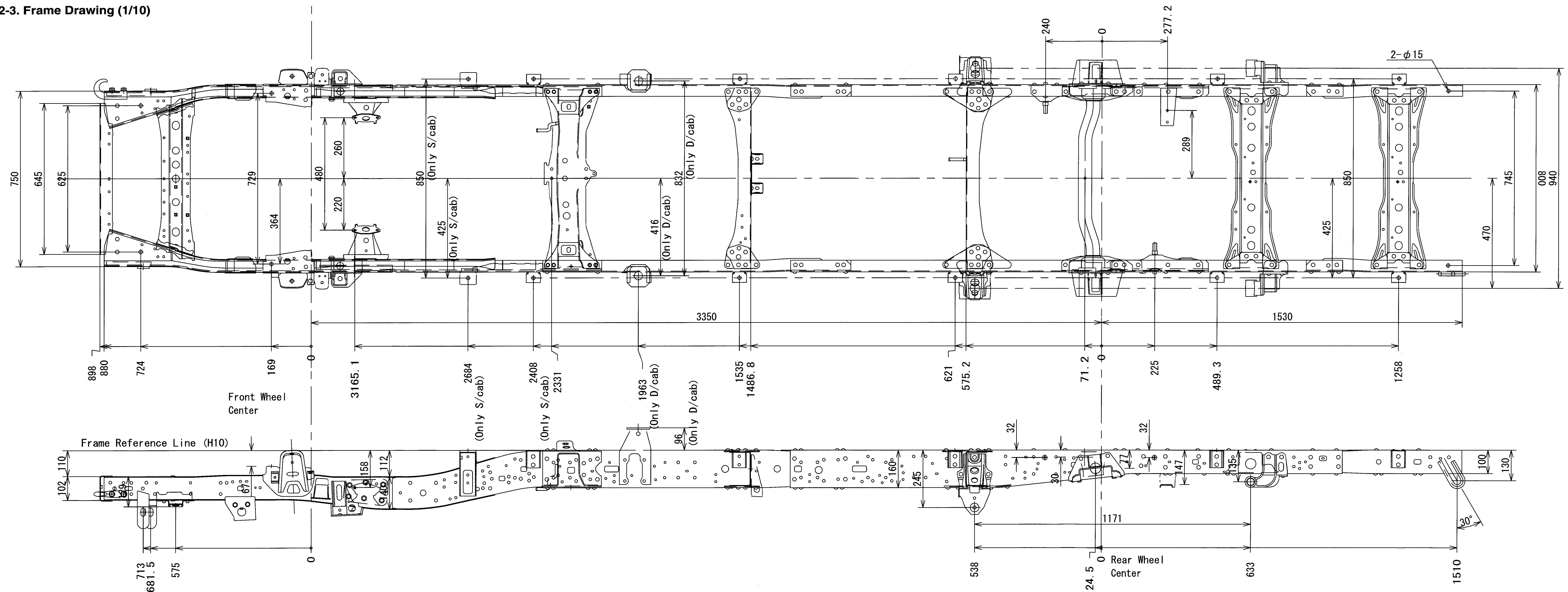


2-2. Frame Drawing (1/10)



MODEL
KDY230L-PSMBYW3
LY230R-TBMGSQ3
LY230R-TBMGSN3
KDY230R-TBMGYW3
KDY230L-TBMGYW3
KDY230L-PBMEYW3

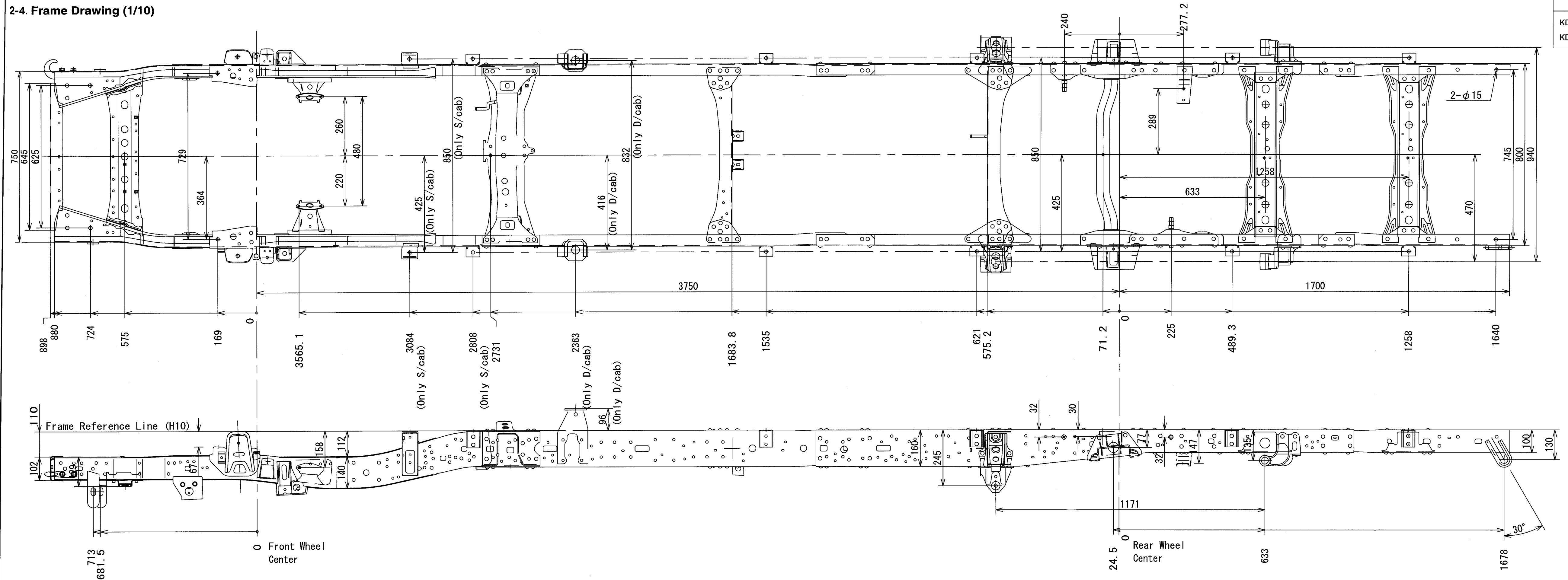
2-3. Frame Drawing (1/10)



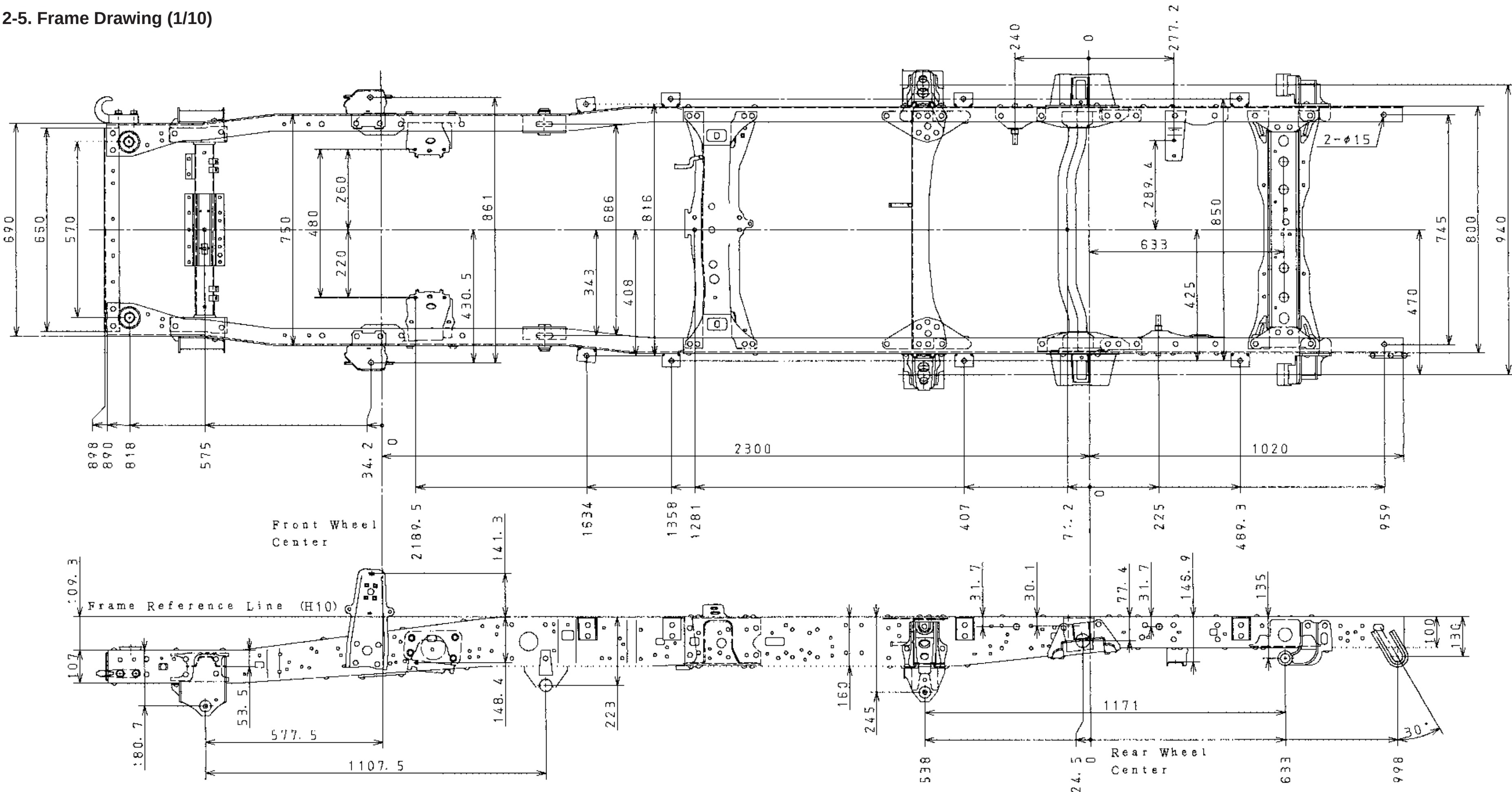
MODEL
KDY250R-TBMGYW3
KDY250L-TBMGYW3
KDY250L-PBMEYW3

2-4. Frame Drawing (1/10)

MODEL
KDY260L-TBMGYW3
KDY260L-PSMEYW3



2-5. Frame Drawing (1/10)



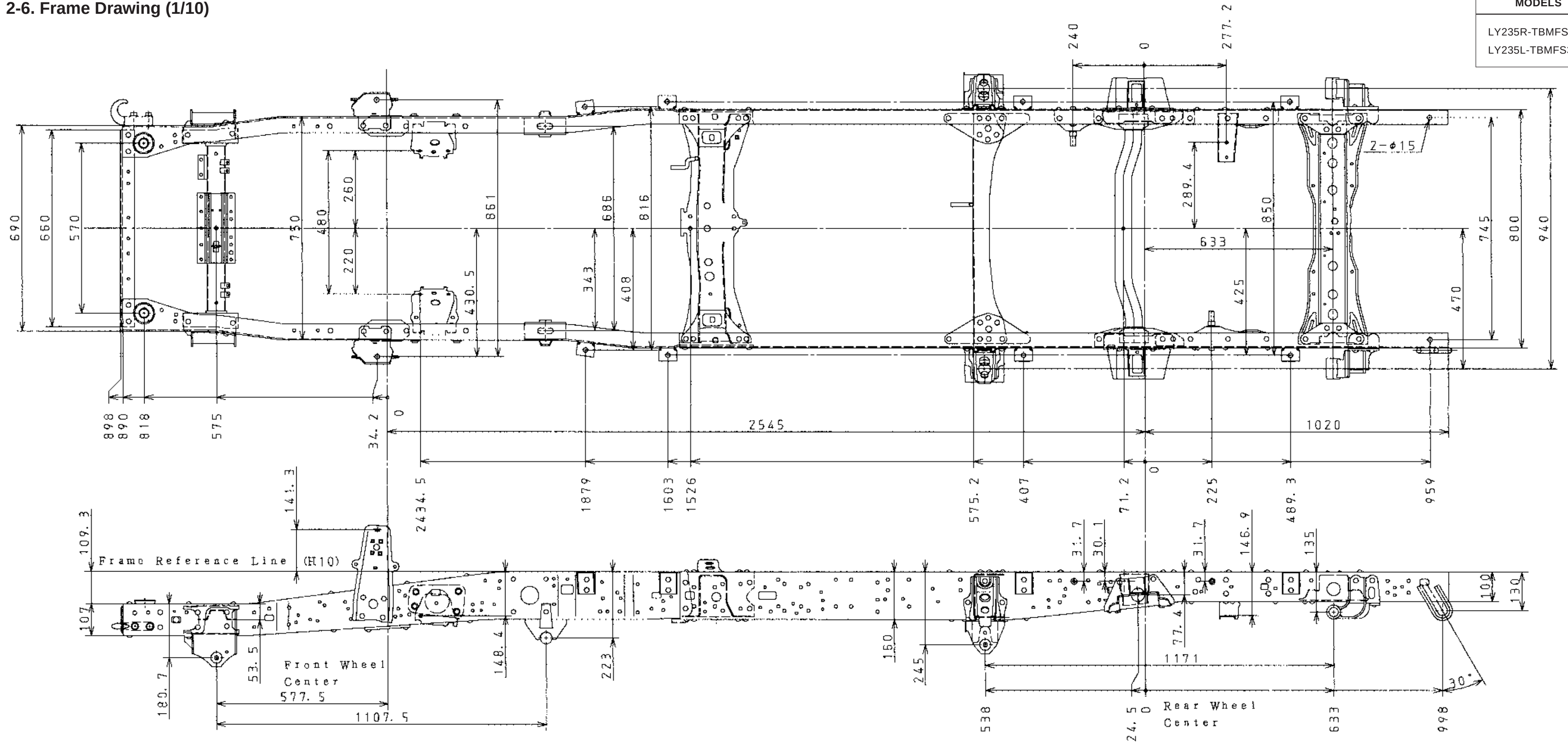
MODELS
LY225R-TBMDS3
LY225L-TBMDS3

2-6. Frame Drawing (1/10)

MODELS

LY235R-TBMFS3

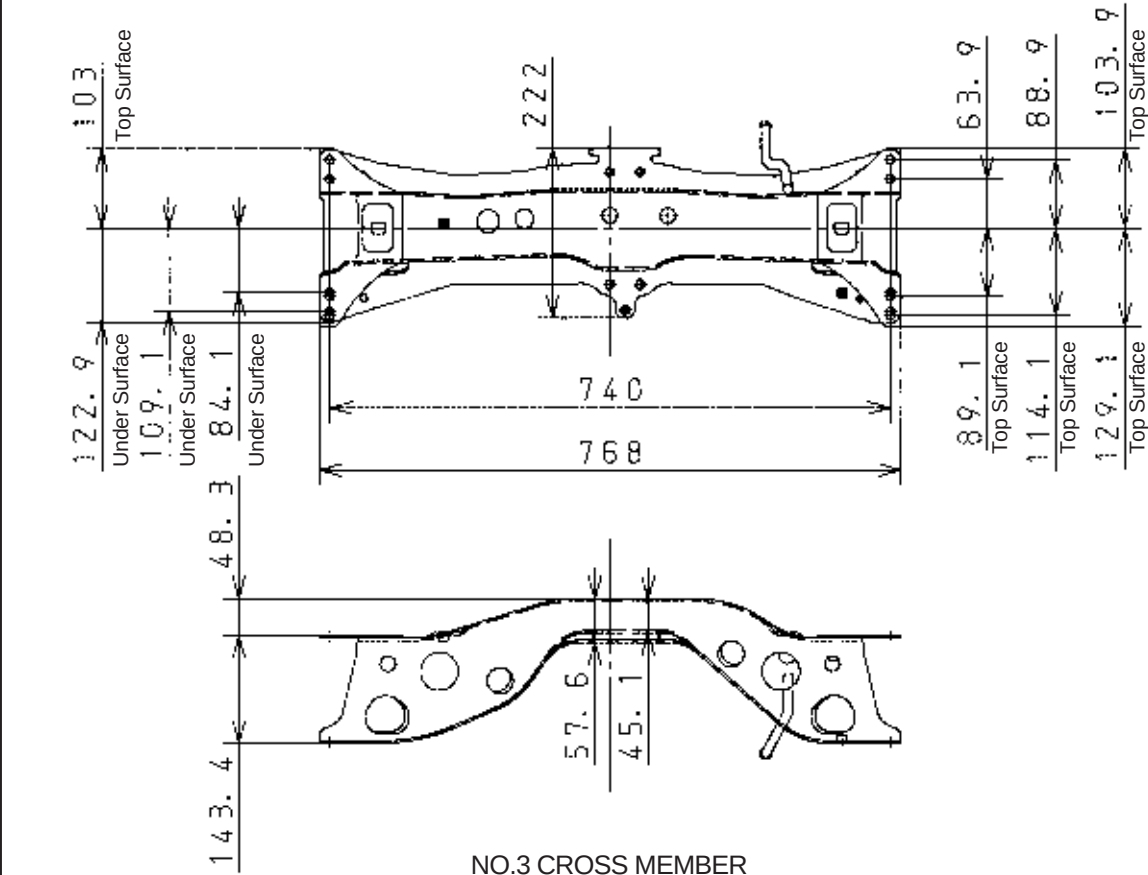
LY235L-TBMFS3



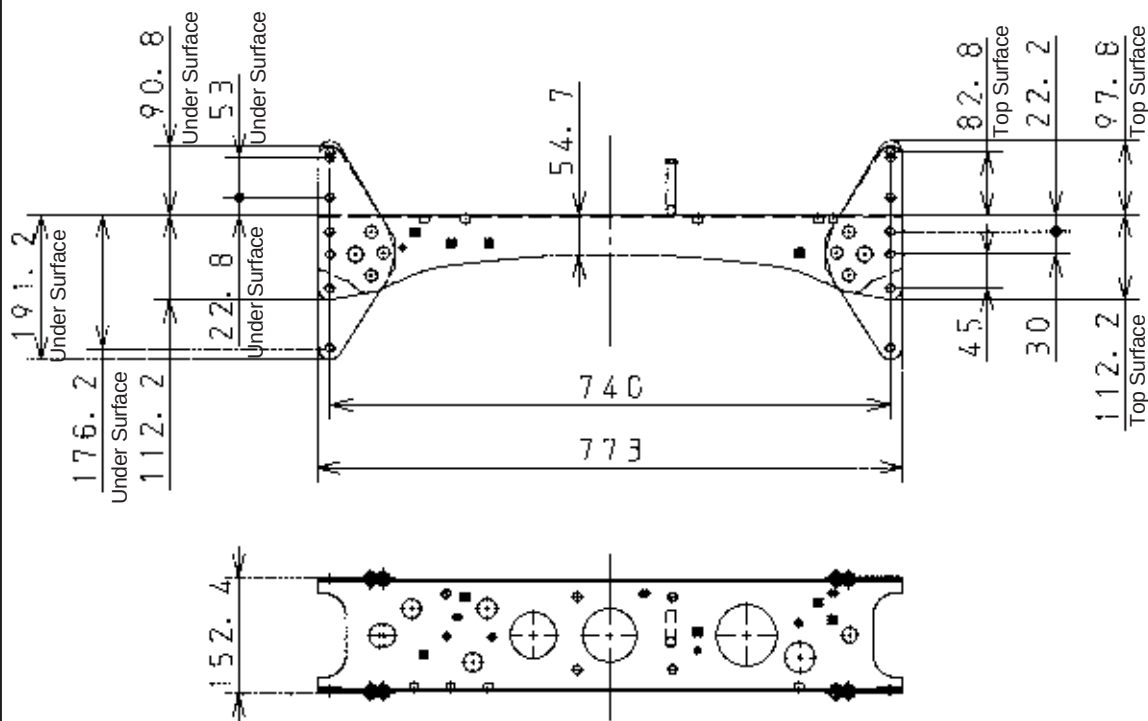
2-7. Frame Drawing (1/10)

Models

KDY220L-TBMDYW3
KDY230L-TBMGYW3
KDY230L-PSMBYW3
KDY250L-TBMGYW3
KDY260L-TBMGYW3



NO.3 CROSS MEMBER



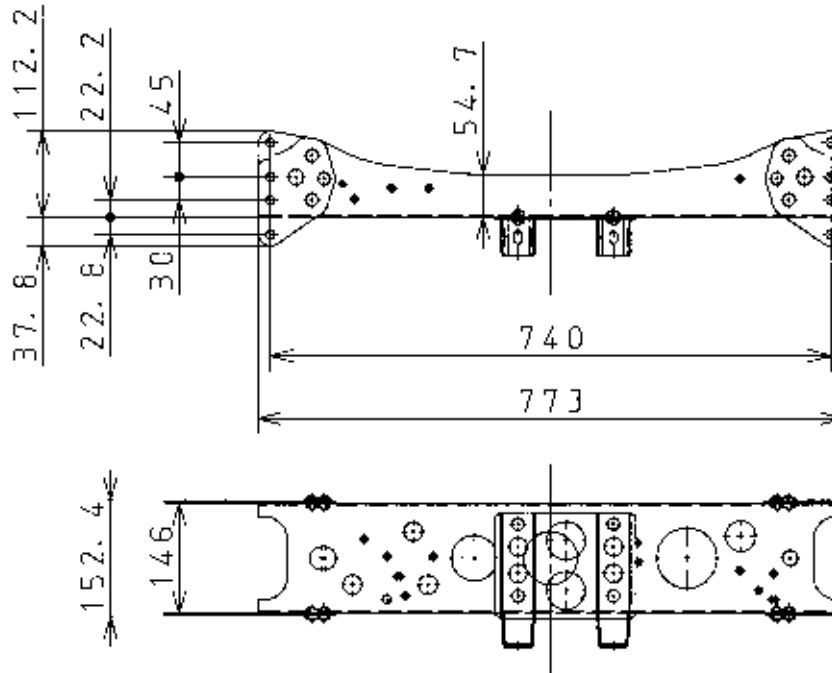
NO.4 CROSS MEMBER

TCA00327Y

2-8. Frame Drawing (1/10)

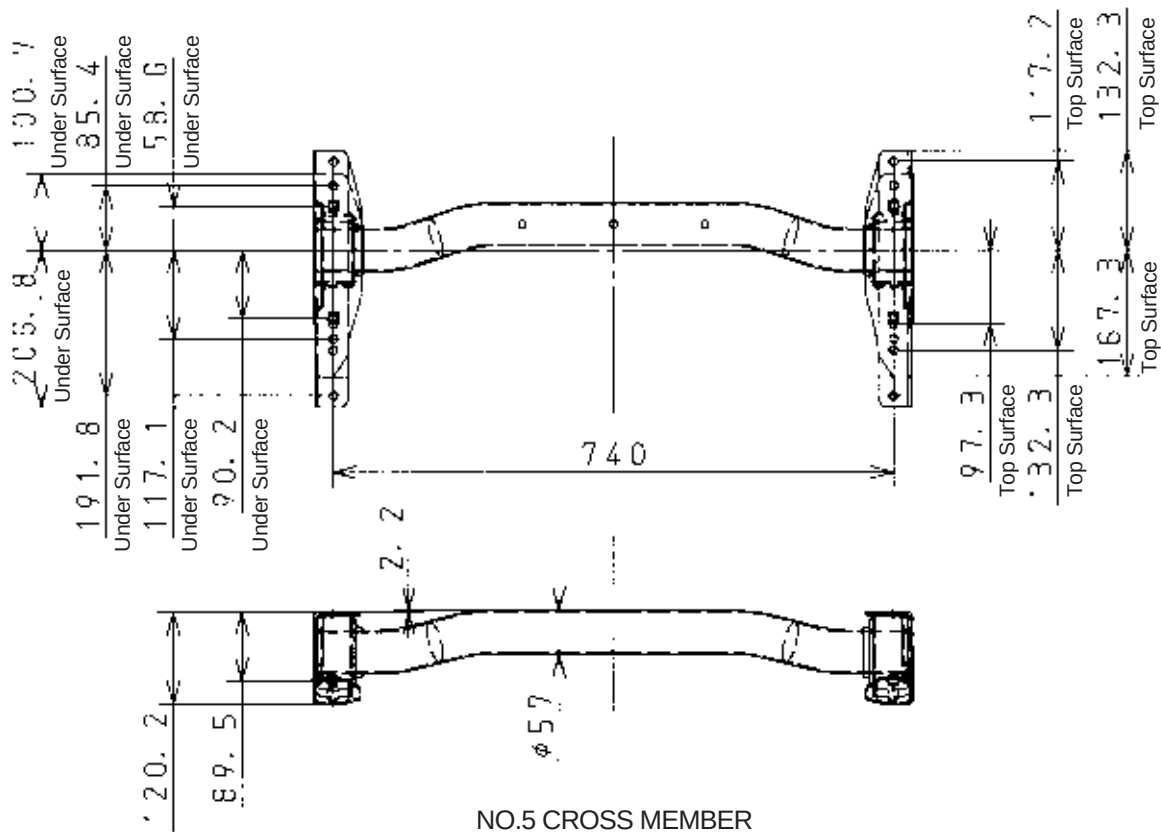
Models

KDY220L-TBMDYW3
 KDY230R-TBMGYW3
 KDY230L-TBMGYW3
 KDY250R-TBMGYW3
 KDY250L-TBMGYW3
 KDY260L-TBMGYW3



NO.4 CROSS MEMBER

(EX. Place No.4 cross member between the S-Long No.3 cross and No.4 cross).



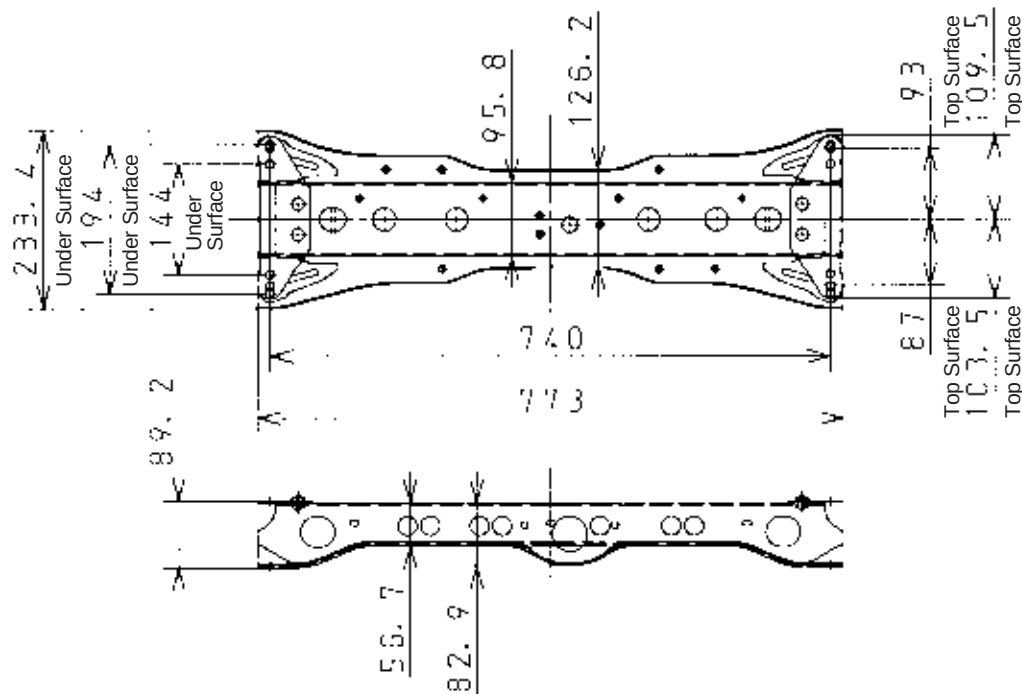
NO.5 CROSS MEMBER

TCA00328Y

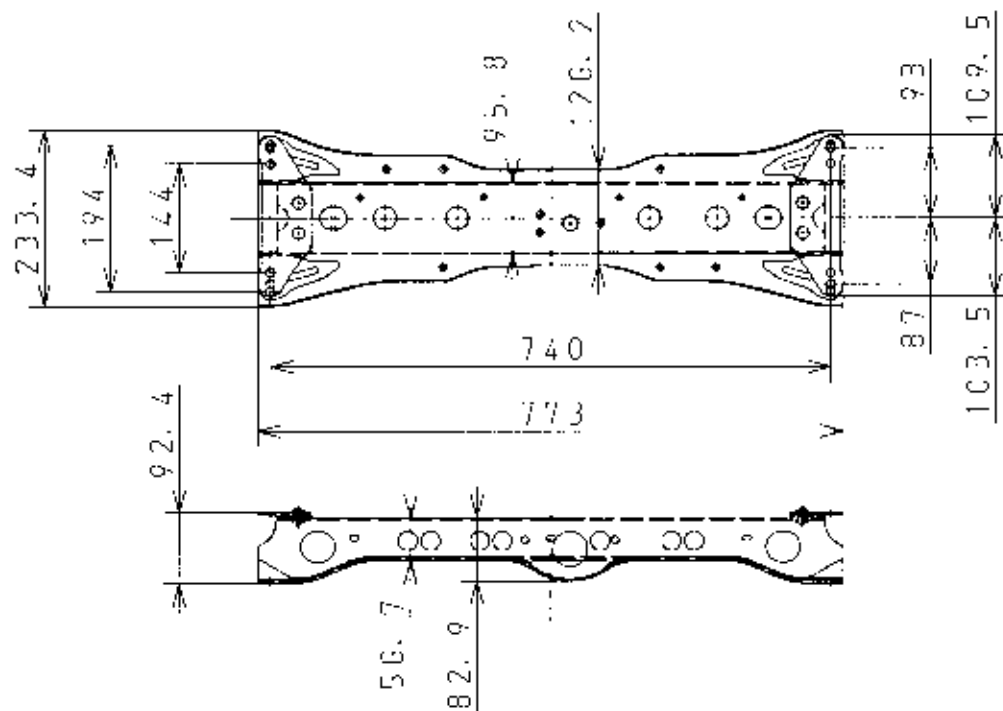
2-9. Frame Drawing (1/10)

Models

KDY230L-PBMEYW3
KDY230R-PSMBYW3
KDY250L-PBMEYW3
KDY260R-PBMEYW3



NO.6 CROSS MEMBER (Double Tire)



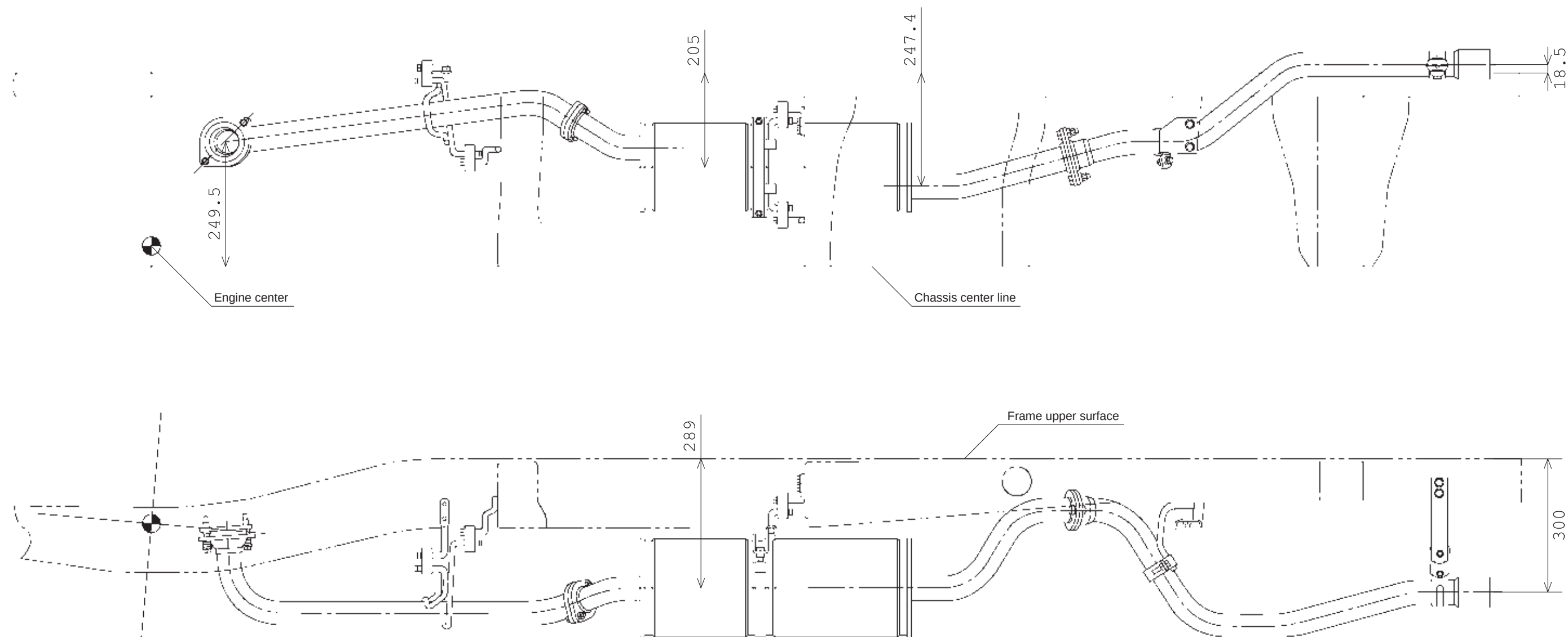
NO.6 CROSS MEMBER (Single Tire)

(EX. S-Long has two No.6 cross members)

TCA00329Y

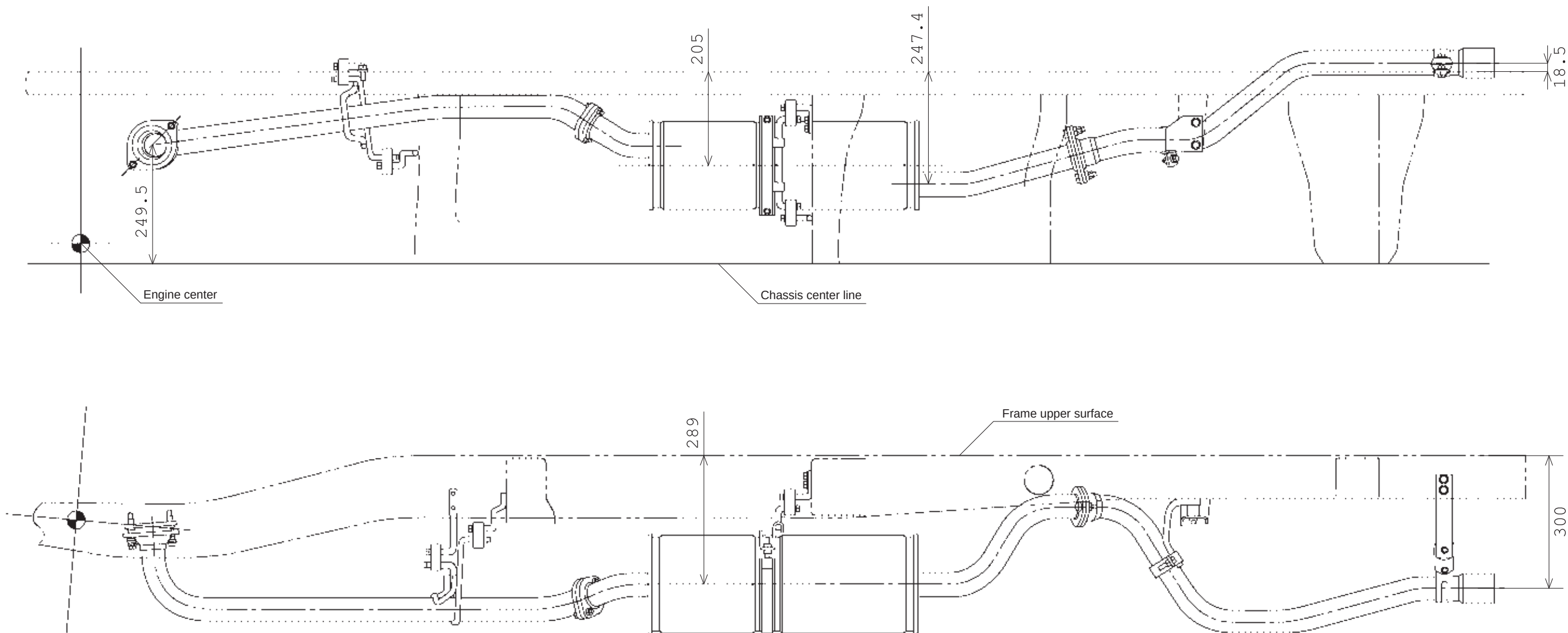
3-1. Exhaust pipe drawing

MODEL
KDY220L-TBMDYW3



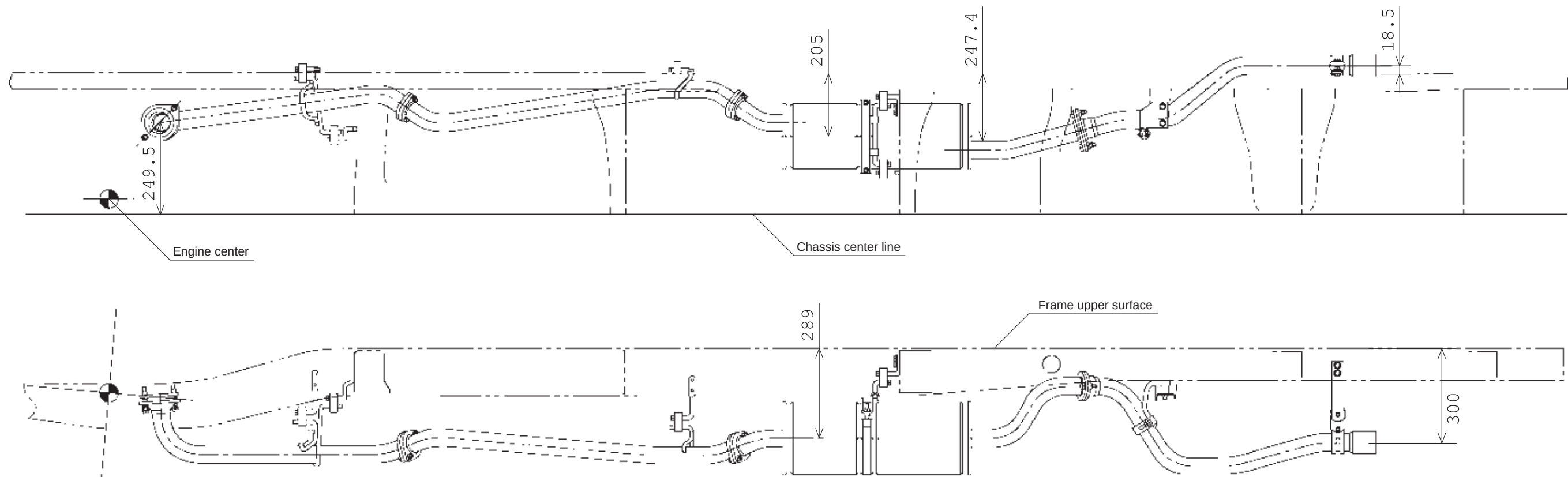
3-2. Exhaust pipe drawing

MODELS
KDY230R-TBMGYW3
KDY230L-TBMGYW3
KDY230L-PBMEYW3
KDY230L-PSMBYW3



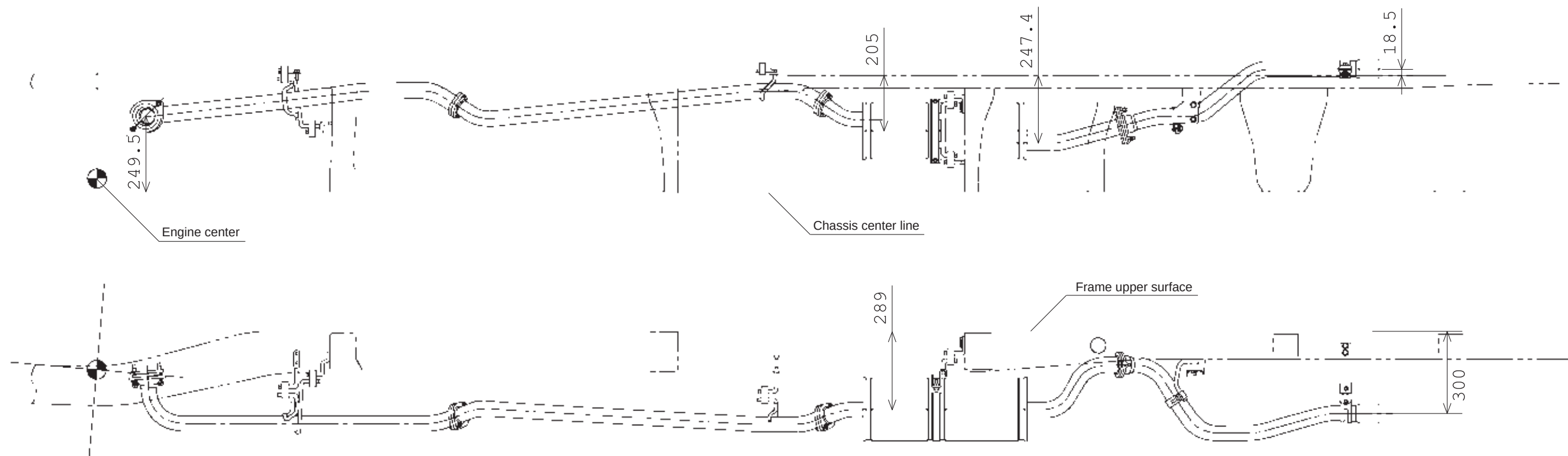
3-3. Exhaust pipe drawing

MODELS
KDY250R-TBMGYW3
KDY250L-TBMGYW3
KDY250L-PBMEYW3



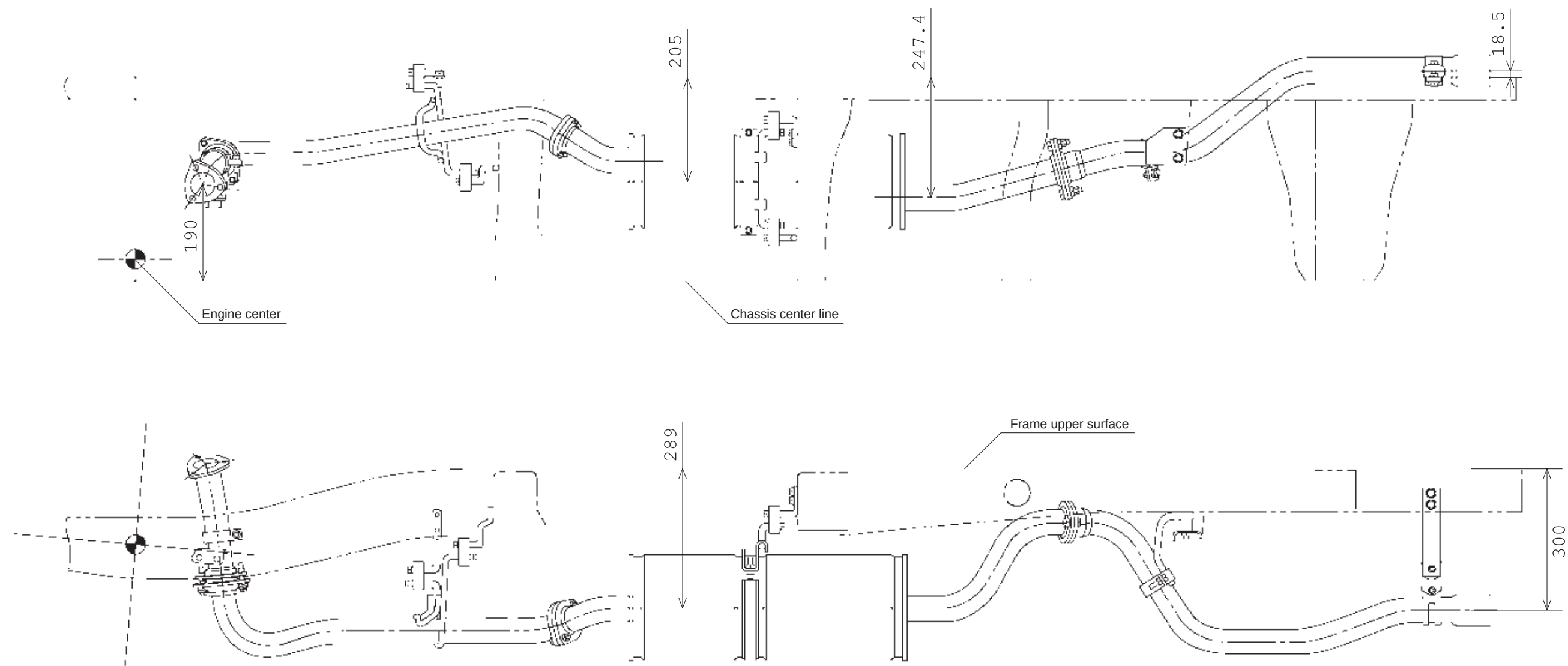
3-4. Exhaust pipe drawing

MODELS
KDY260L-TBMGYW3
KDY260L-PBMEYW3



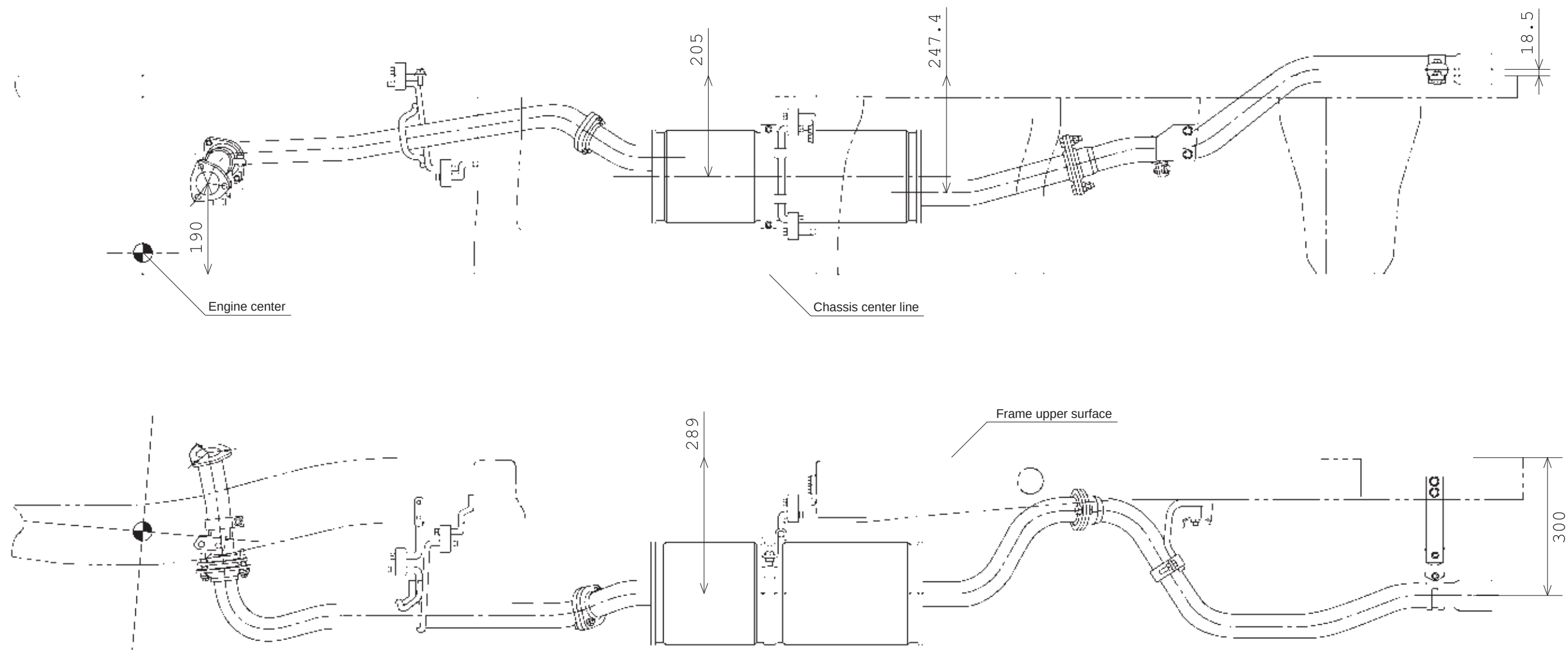
3-5. Exhaust pipe drawing

MODEL
LY220R-TBMDSQ3



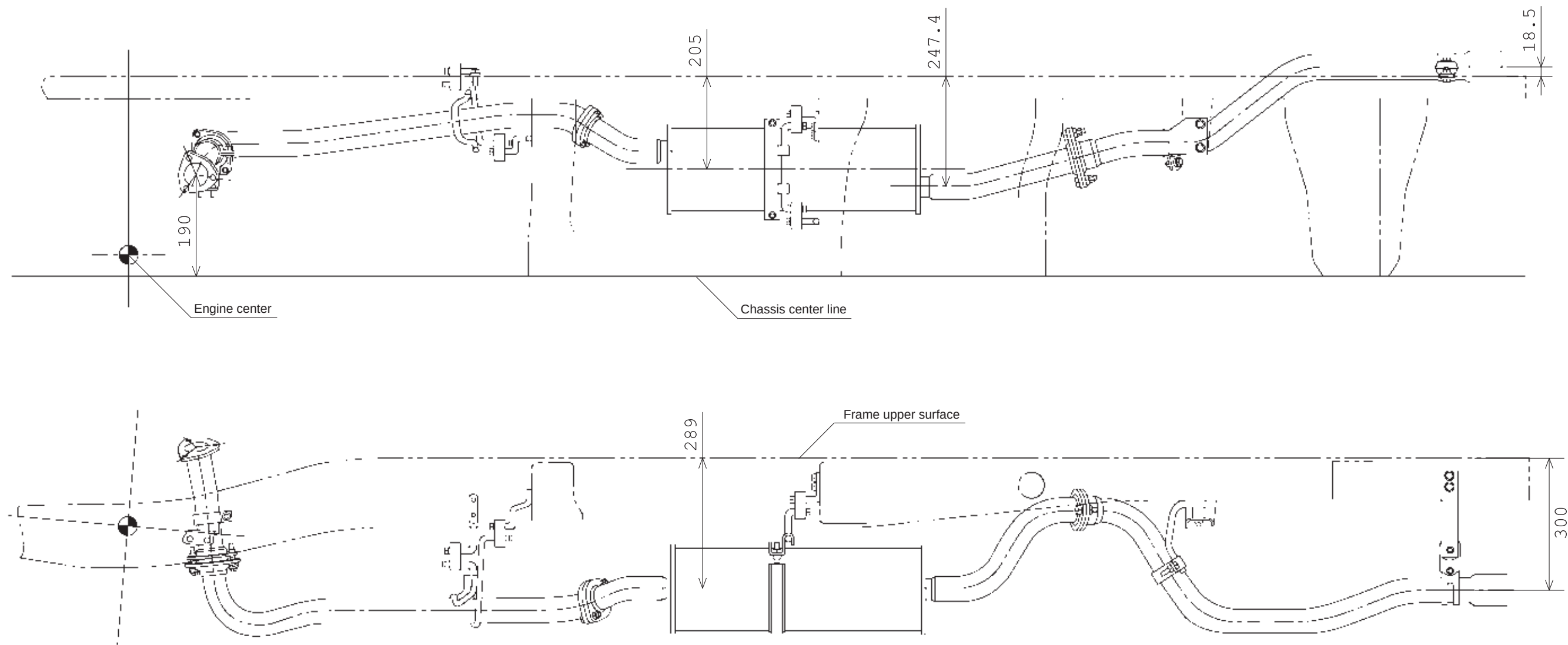
3-6. Exhaust pipe drawing

MODEL
LY230R-TBMGSQ3



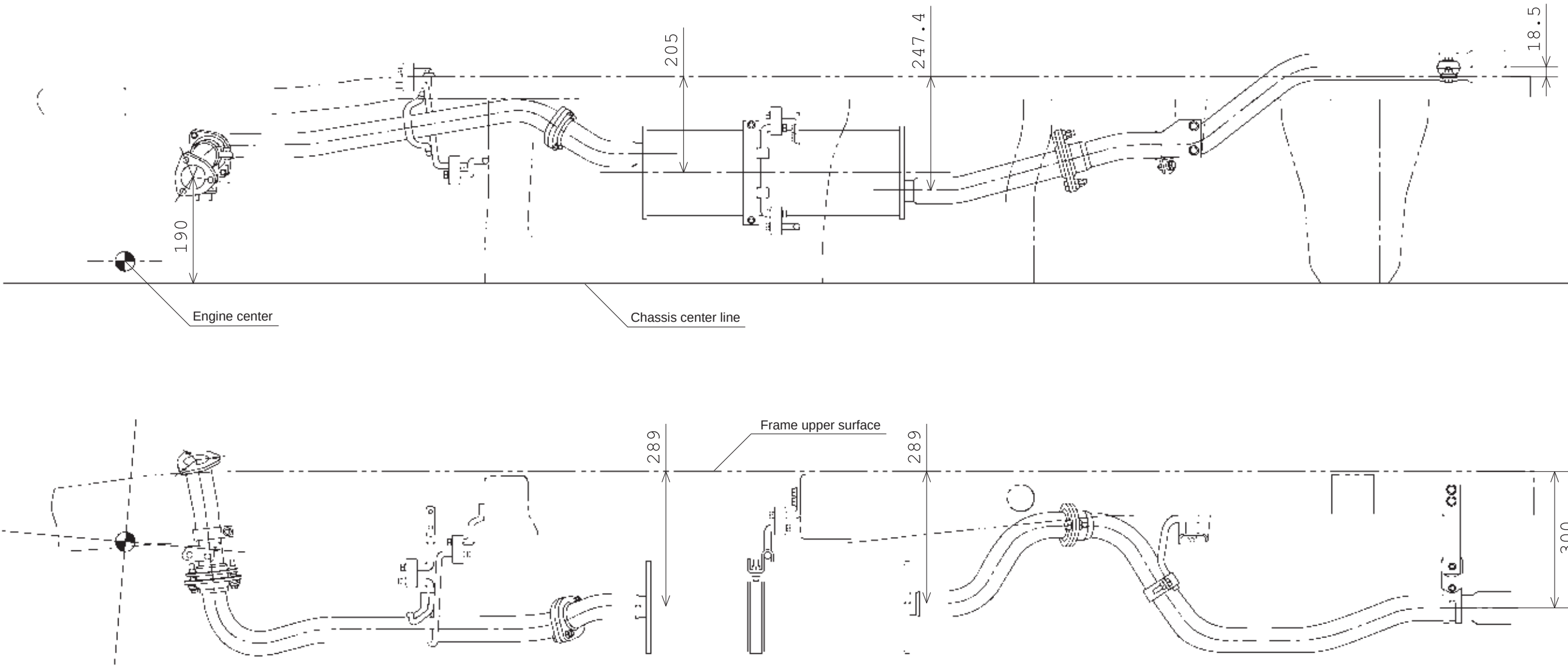
3-7. Exhaust pipe drawing

MODEL
LY230R-TBMGSN3



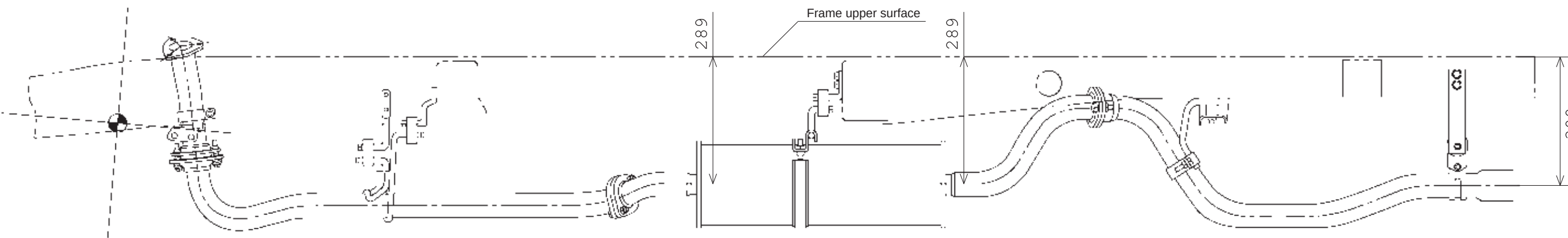
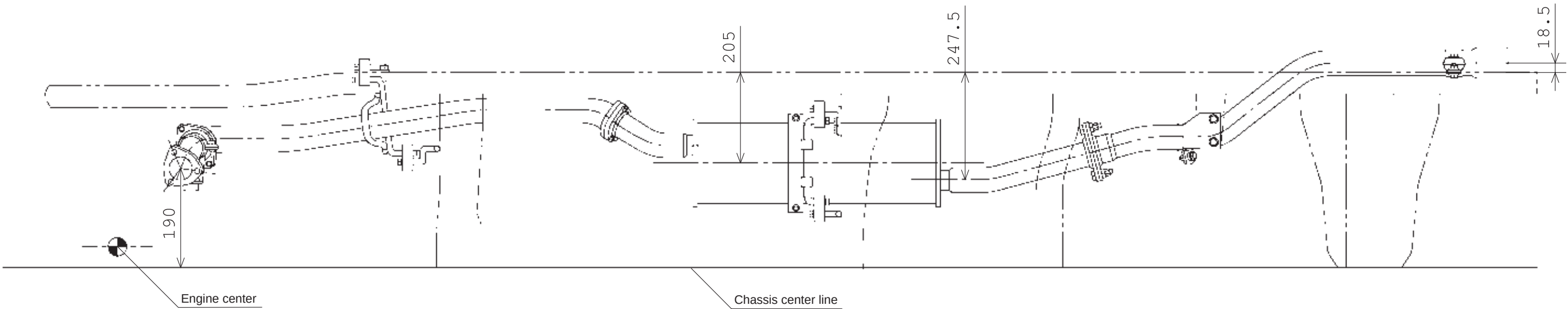
3-8. Exhaust pipe drawing

MODELS
LY225R-TBMDS3
LY225L-TBMDS3



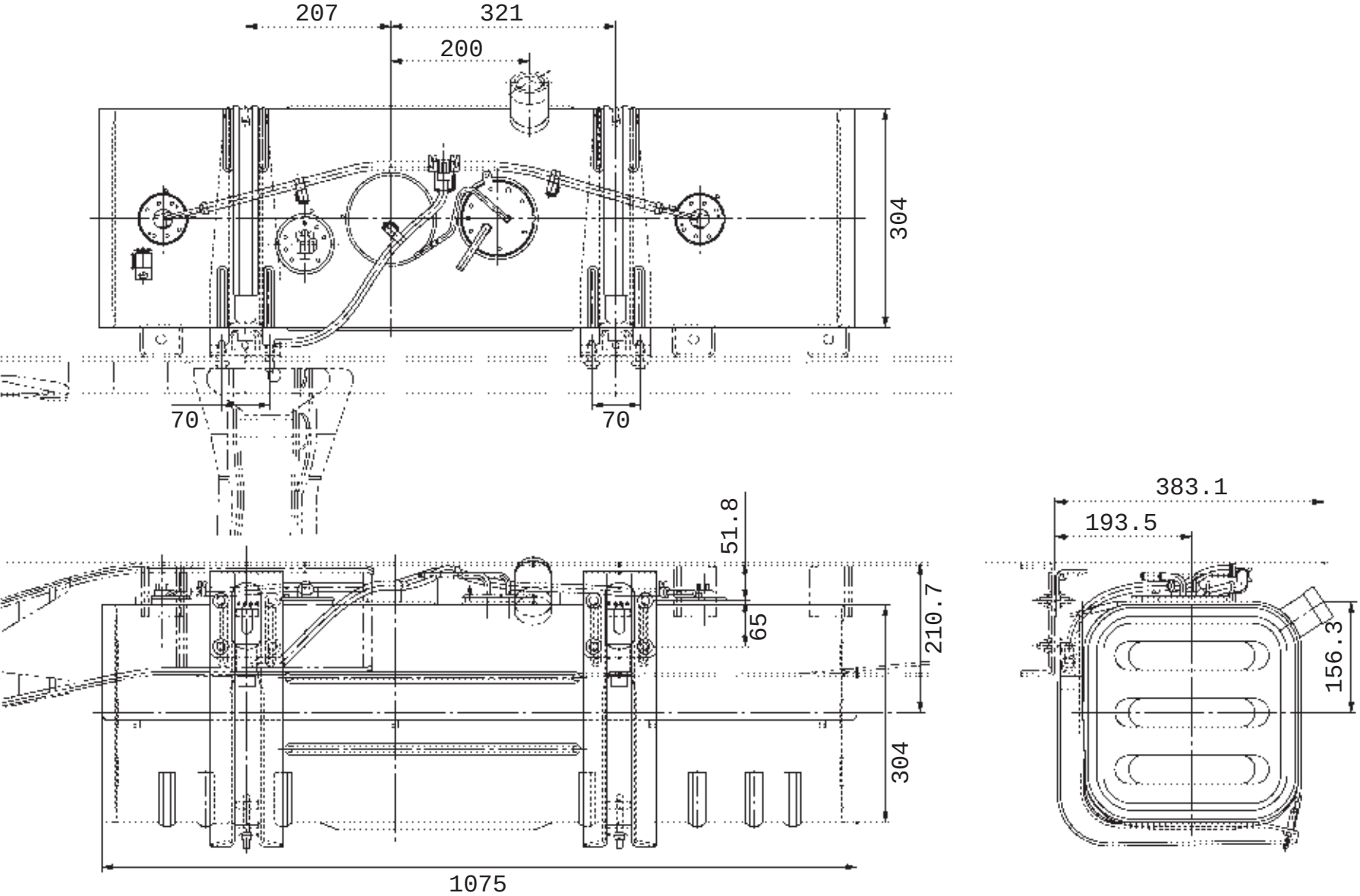
3-9. Exhaust pipe drawing

MODELS
LY235R-TBMFS3
LY235L-TBMFS3



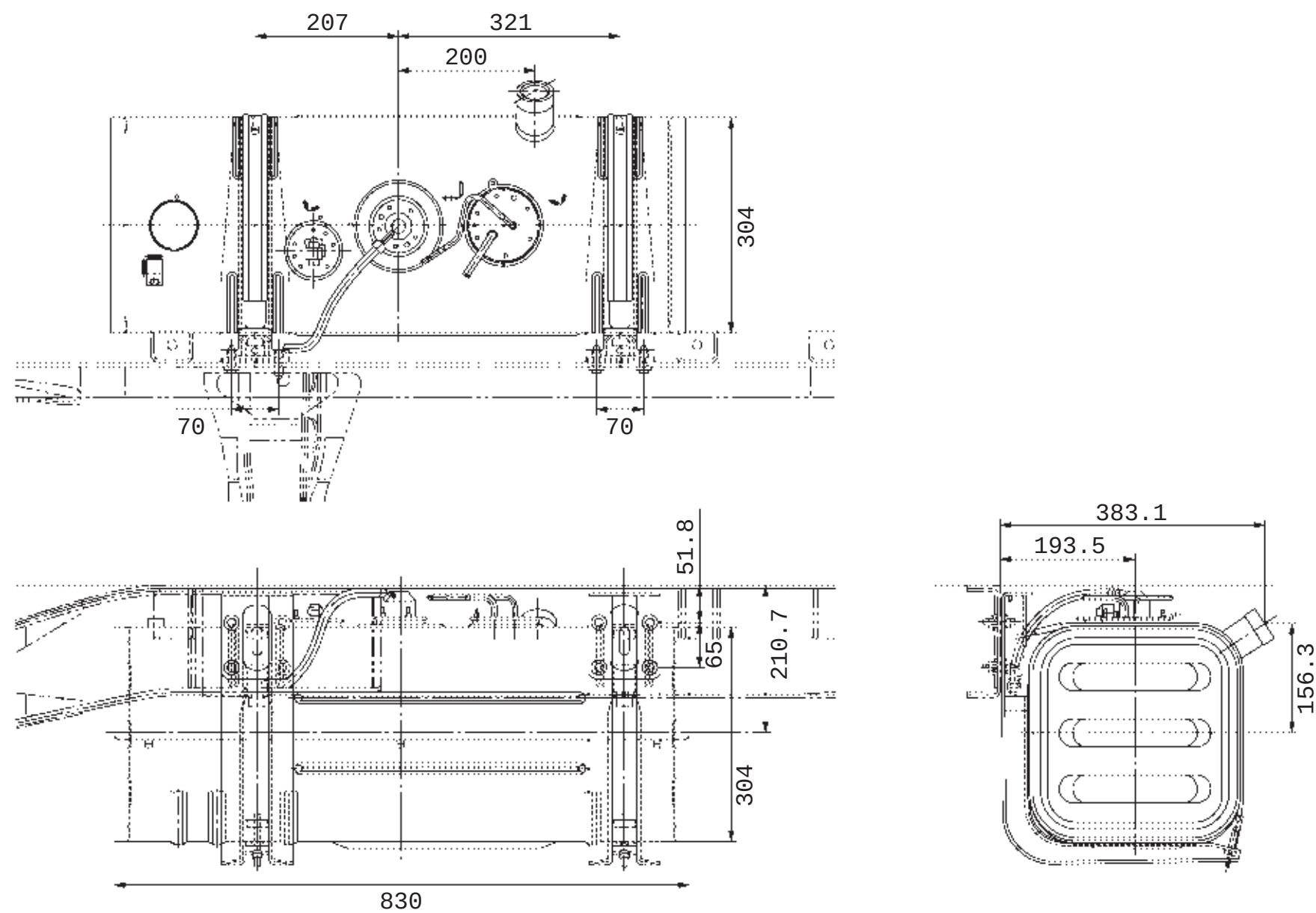
4-1. Fuel tank installation-related drawing

MODELS
KDY230L-PBMEYW3
KDY230L-PSMBYW3
KDY230R-TBMGYW3
KDY250L-PBMEYW3
KDY250L-TBMGYW3
KDY250R-TBMGYW3
KDY260L-PBMEYW3
KDY260L-TBMGYW3
LY230R-TBMGSN3
LY230R-TBMGSQ3
KDY230L-TBMGYW3



4-2. Fuel tank installation-related drawing

MODELS
KDY220L-TBMDYW3
LY220R-TBMDSQ3
LY225L-TBMDS3
LY225R-TBMDS3
LY235L-TBMFS3
LY235R-TBMFS3

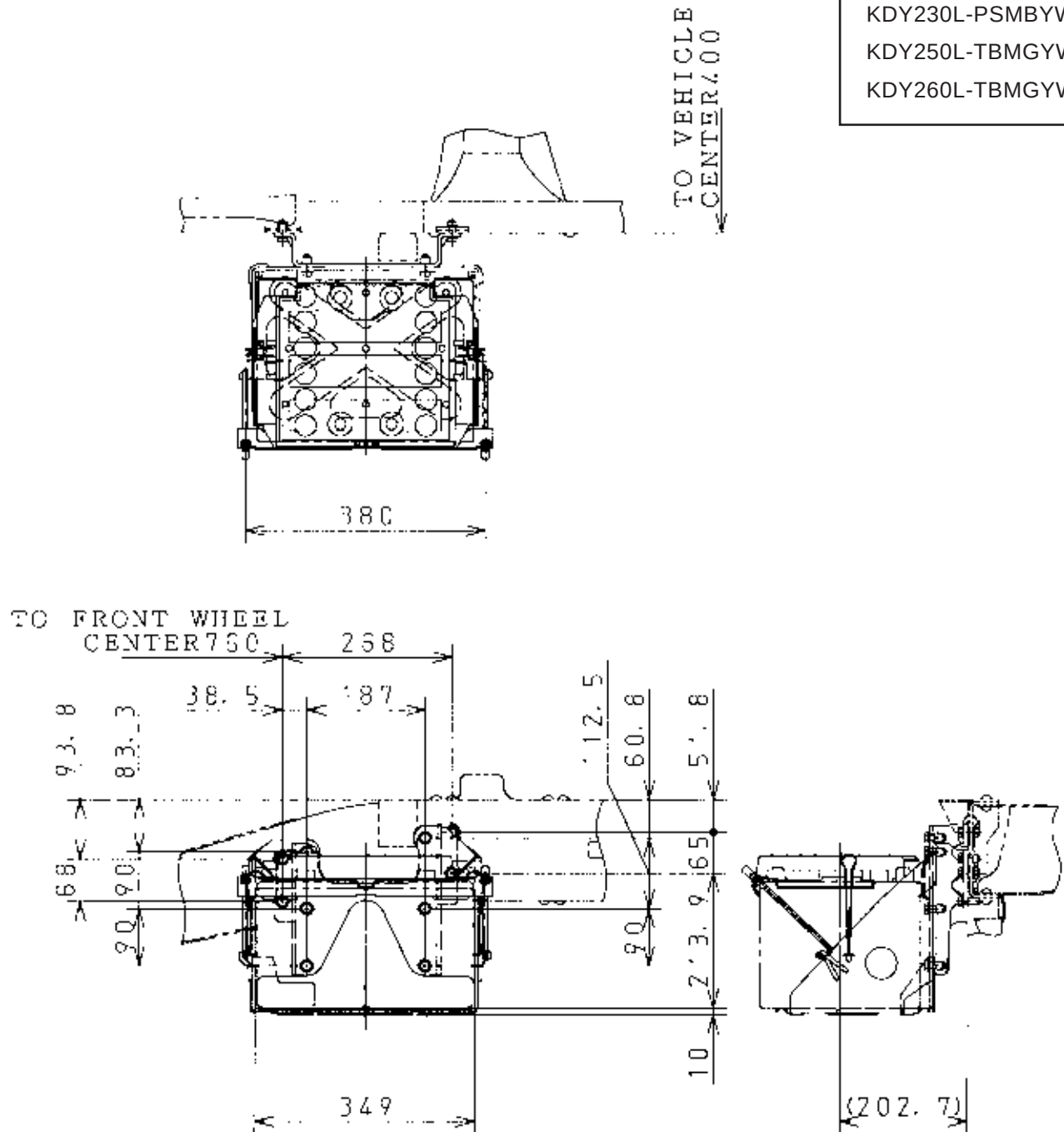


5-1. Battery installation-related drawings

80D26L X 2 (OPT)

Models

KDY220L-TBMDYW3
 KDY230L-TBMGYW3
 KDY230L-PSMBYW3
 KDY250L-TBMGYW3
 KDY260L-TBMGYW3



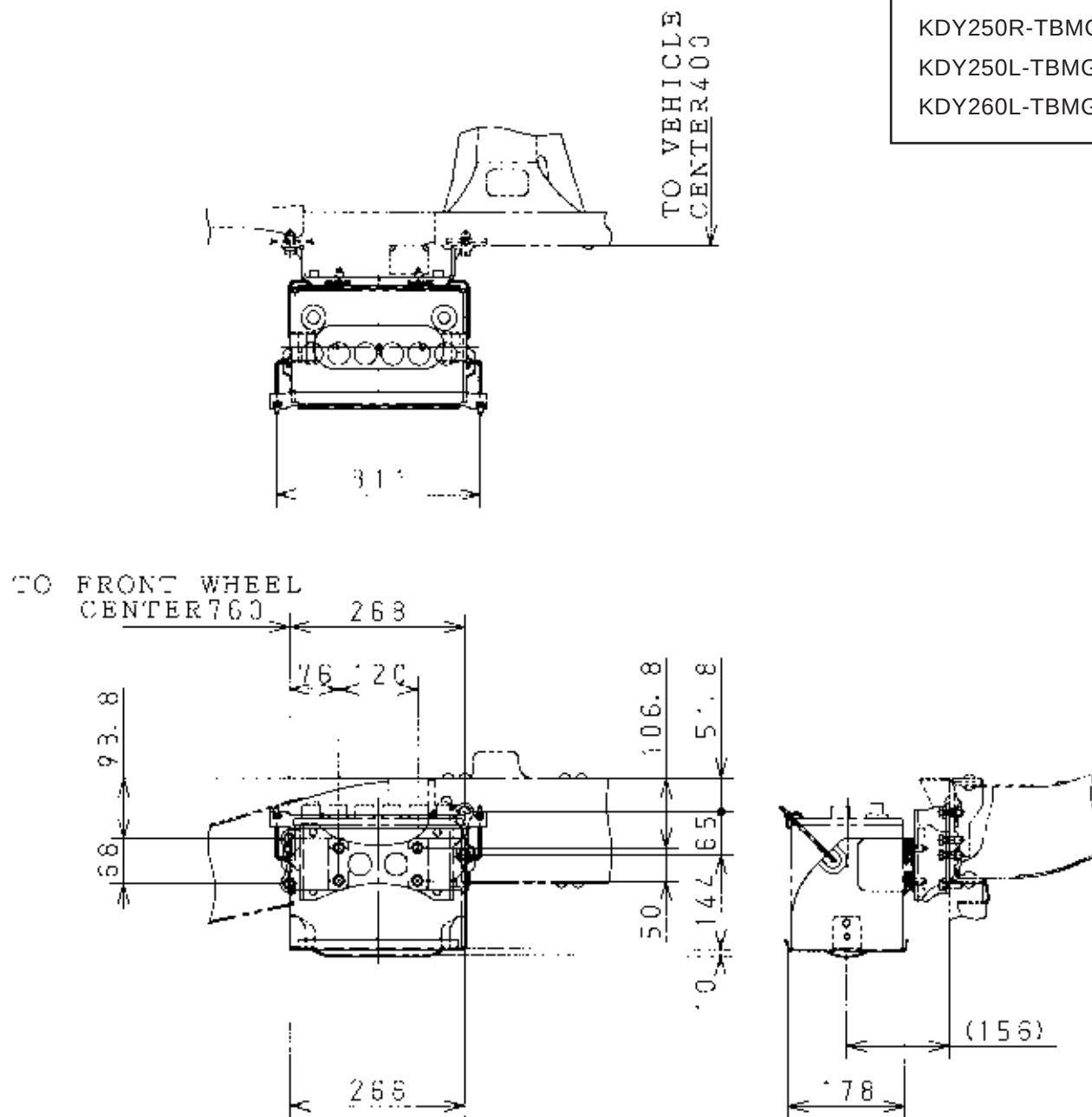
TCA00323Y

5-2. Battery installation-related drawings

80D26L

Models

KDY220L-TBMDYW3
 KDY230R-TBMGYW3
 KDY230L-TBMGYW3
 KDY250R-TBMGYW3
 KDY250L-TBMGYW3
 KDY260L-TBMGYW3



TCA00326Y

5-3. Battery installation-related drawings

80D26L

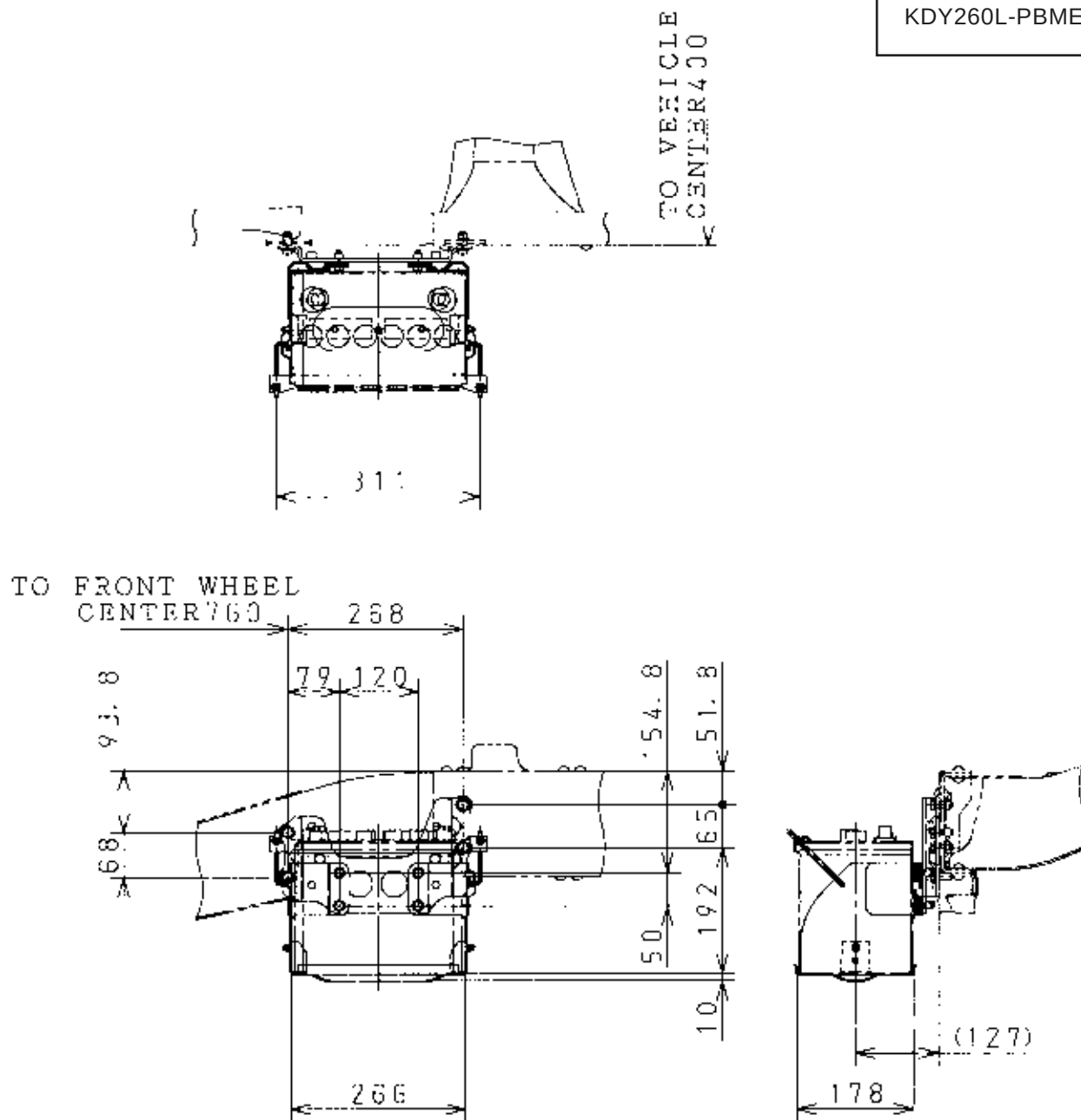
Models

KDY230L-PBMEYW3

KDY230L-PSMBYW3

KDY250L-PBMEYW3

KDY260L-PBMEYW3



TCA00325Y

5-4. Battery installation-related drawings

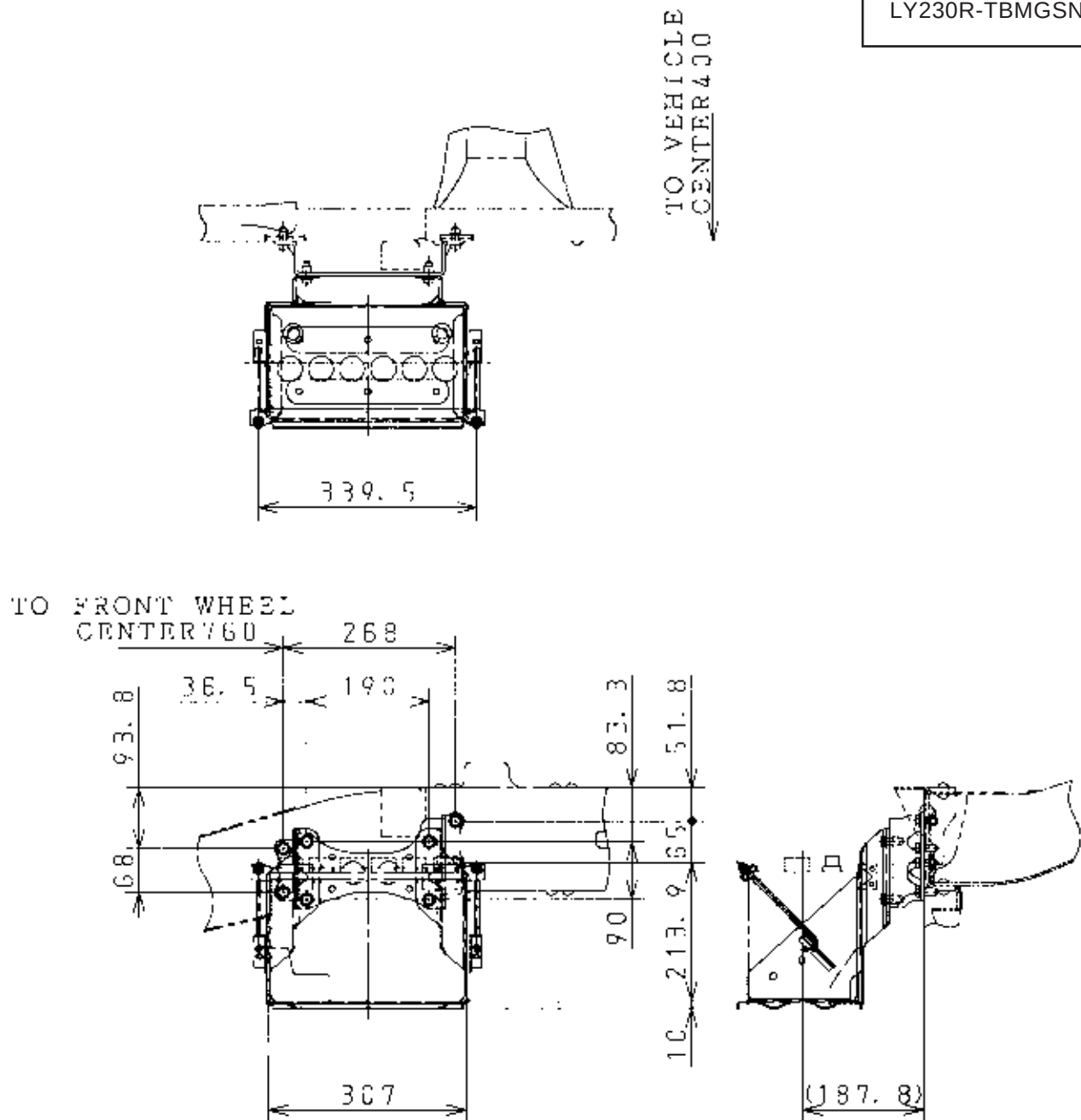
105D31L

Models

LY220R-TBMDSQ3

LY230R-TBMGSQ3

LY230R-TBMGSN3



TCA00324Y

5-5. Battery installation-related drawings

105D31L

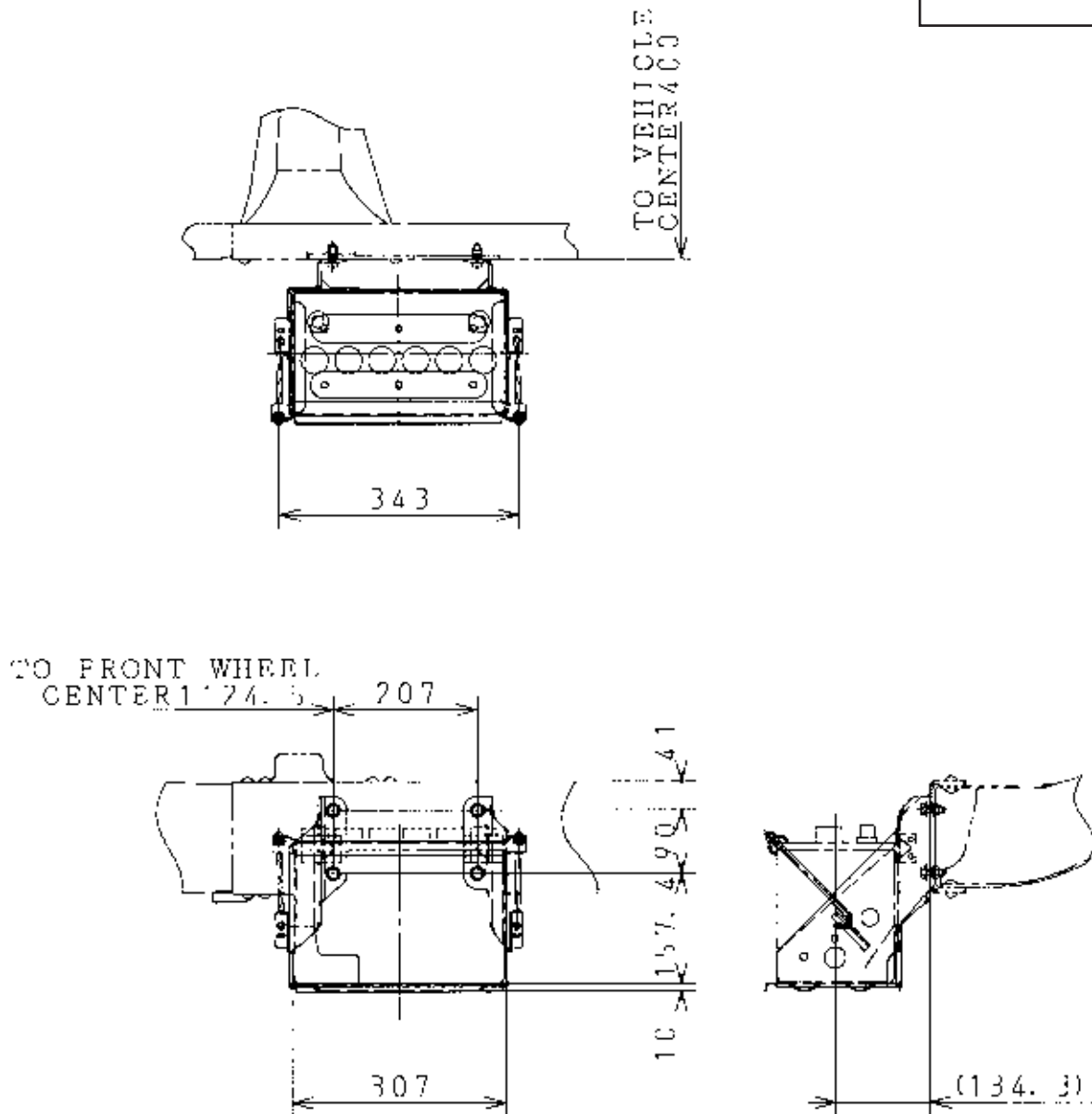
Models

LY225R-TBMDS3

LY225L-TBMDS3

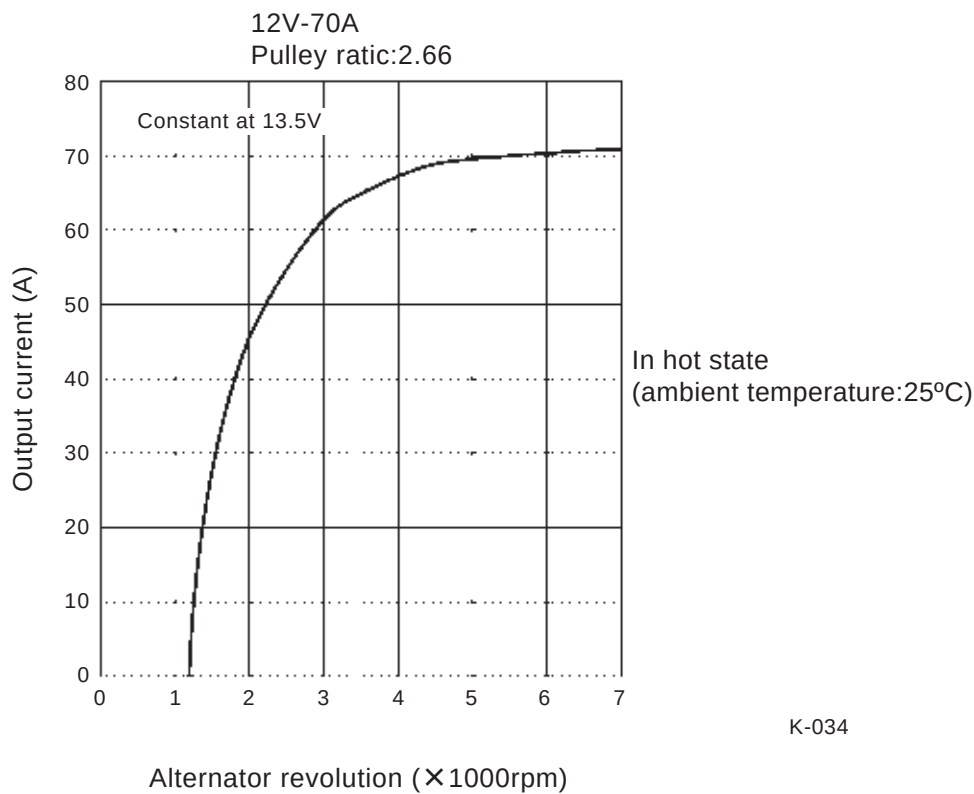
LY235R-TBMFS3

LY235L-TBMFS3



TCA00322Y

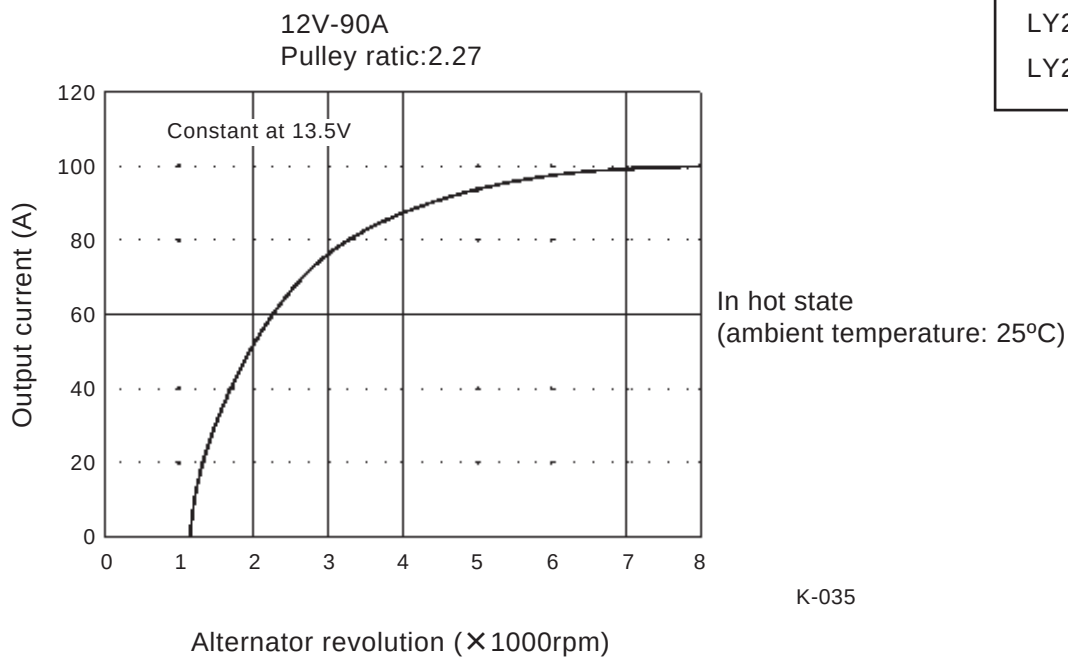
6-1. Altermater output characteristic



K-034

Models

KDY220L-TBMDYW3
KDY230R-TBMGYW3
KDY230L-TBMGYW3
KDY230L-PBMEYW3
KDY230L-PSMBYW3
KDY250R-TBMGYW3
KDY250L-TBMGYW3
KDY250L-PBMEYW3
KDY260L-TBMGYW3
KDY260L-PBMEYW3



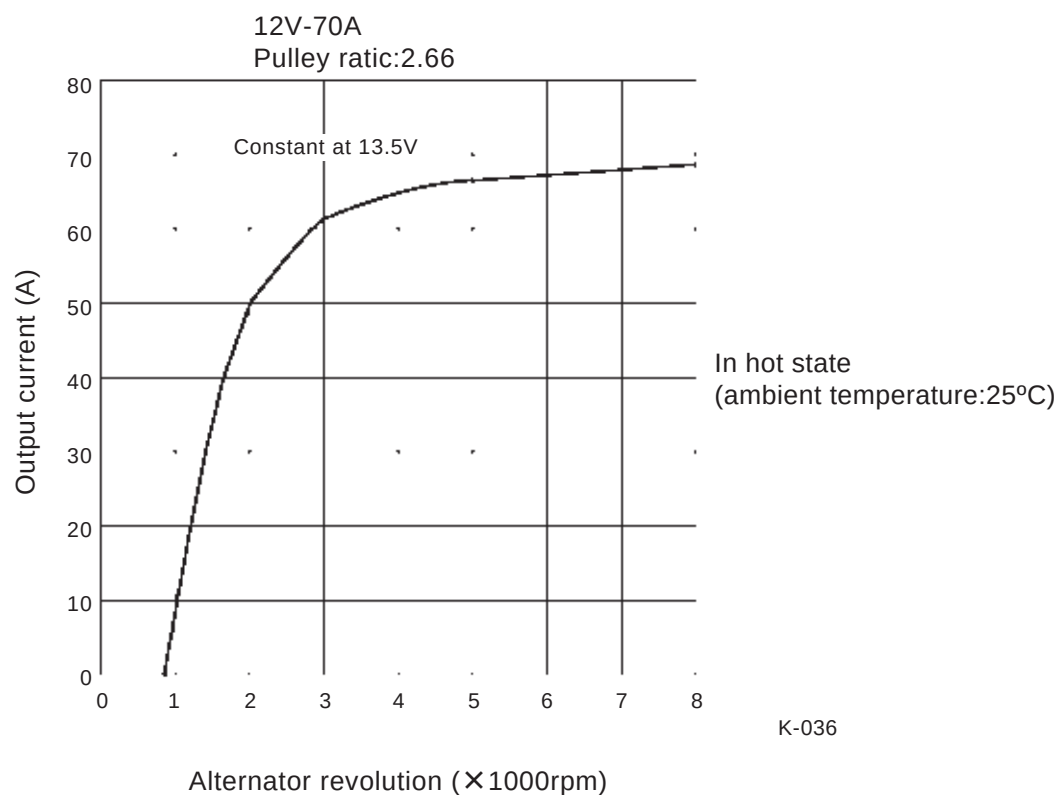
K-035

Models

LY220R-TBMDSQ3
LY230R-TBMGSQ3

6-2. Alternater output characteristic

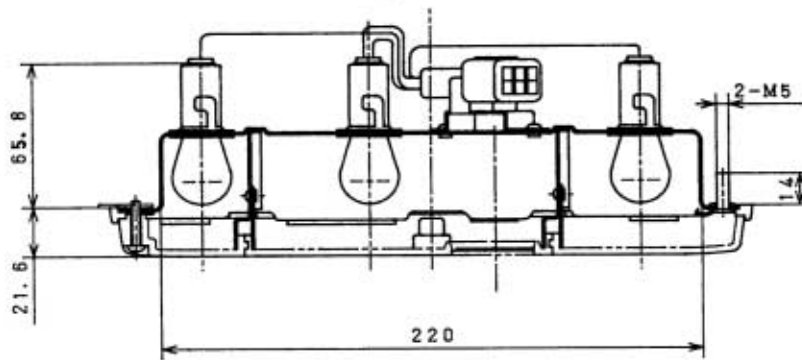
Models
LY225R-TBMDS3
LY225L-TBMDS3
LY235R-TBMFS3
LY235L-TBMFS3



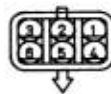
7-1. Rear combination lamp-related chart

Models

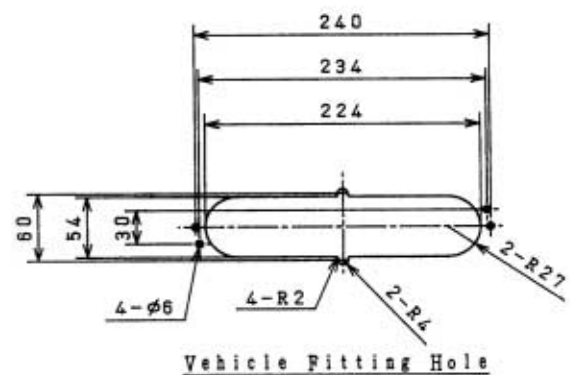
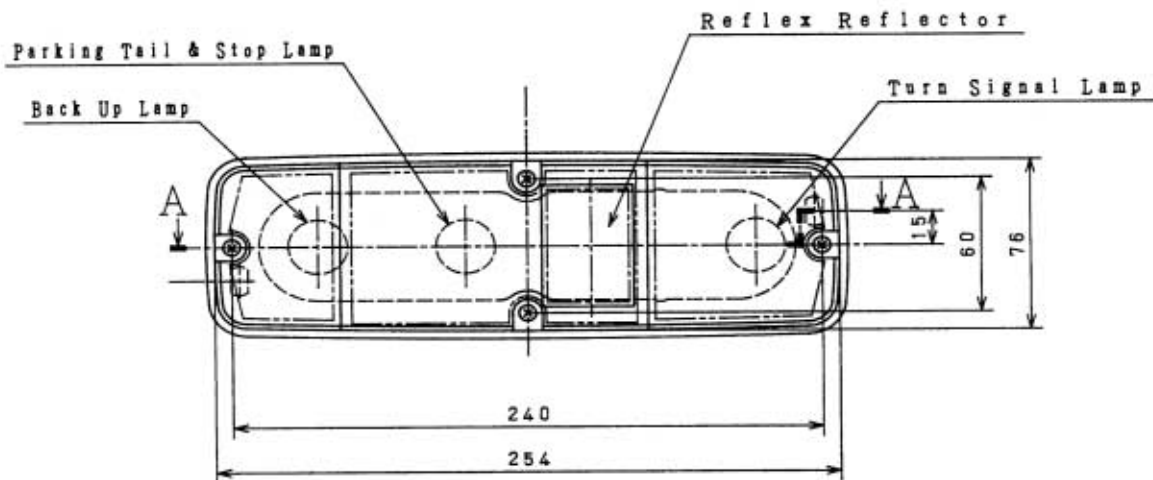
LY225L-TBMDS3
LY225R-TBMDS3
LY235L-TBMFS3
LY235R-TBMFS3



A-A Section



- | | |
|----|------------------|
| 1. | Stop Lamp |
| 2. | Earth |
| 3. | Turn Signal Lamp |
| 4. | Back Up Lamp |
| 5. | Space |
| 6. | Tail & Parking |

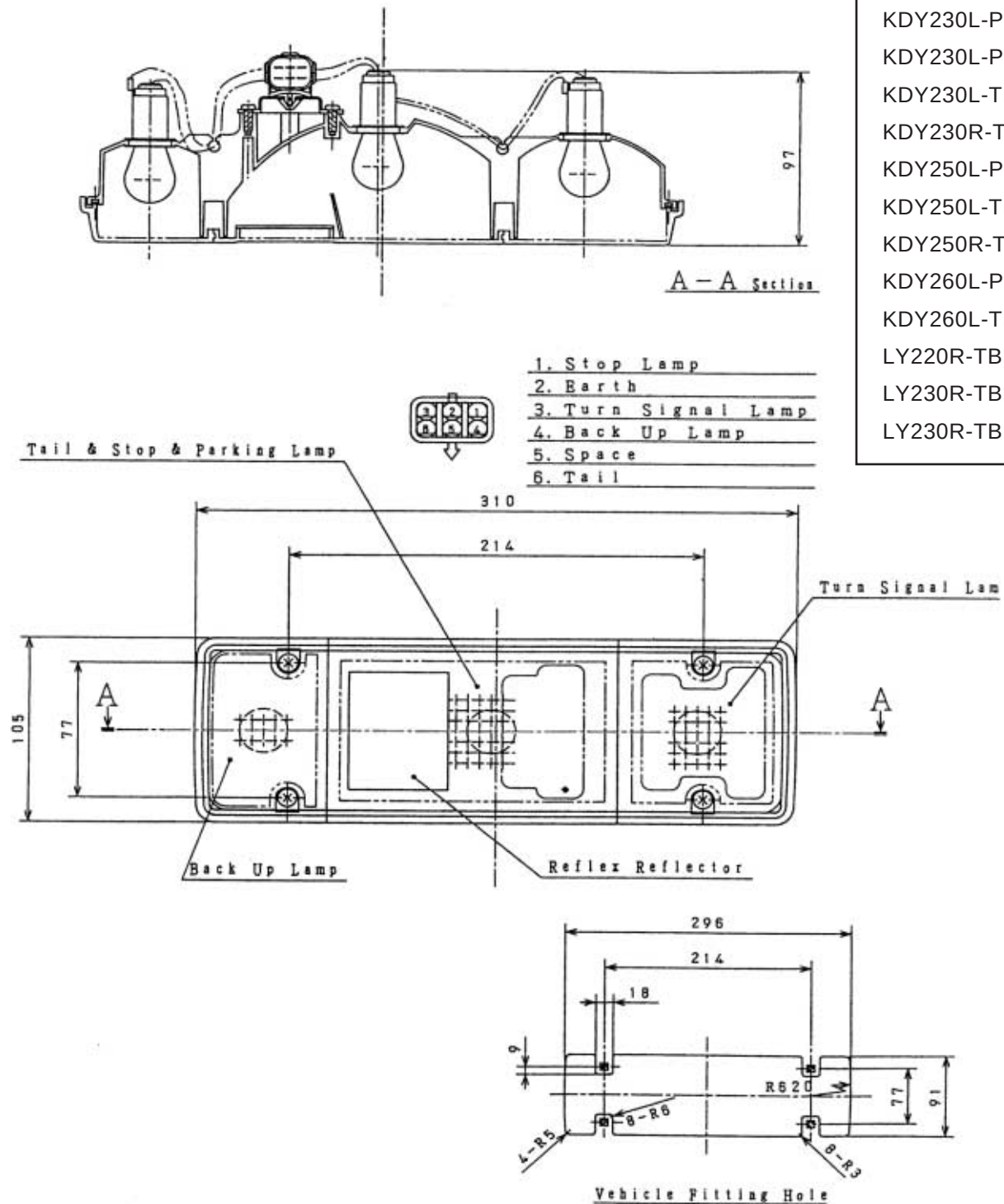


TCA00176Y

7-2. Rear combination lamp-related chart

Models

KDY220L-TBMDYW3
 KDY230L-PBMEYW3
 KDY230L-PSMBYW3
 KDY230L-TBMGYW3
 KDY230R-TBMGYW3
 KDY250L-PBMEYW3
 KDY250L-TBMGYW3
 KDY250R-TBMGYW3
 KDY260L-PBMEYW3
 KDY260L-TBMGYW3
 LY220R-TBMDSQ3
 LY230R-TBMGSN3
 LY230R-TBMGSQ3



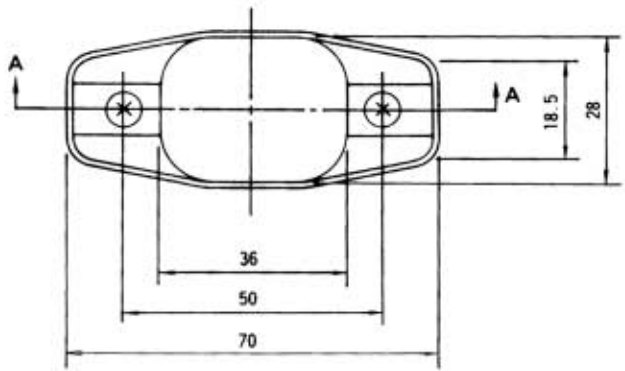
TCA00178Y

8-1. Licence lamp-related chart

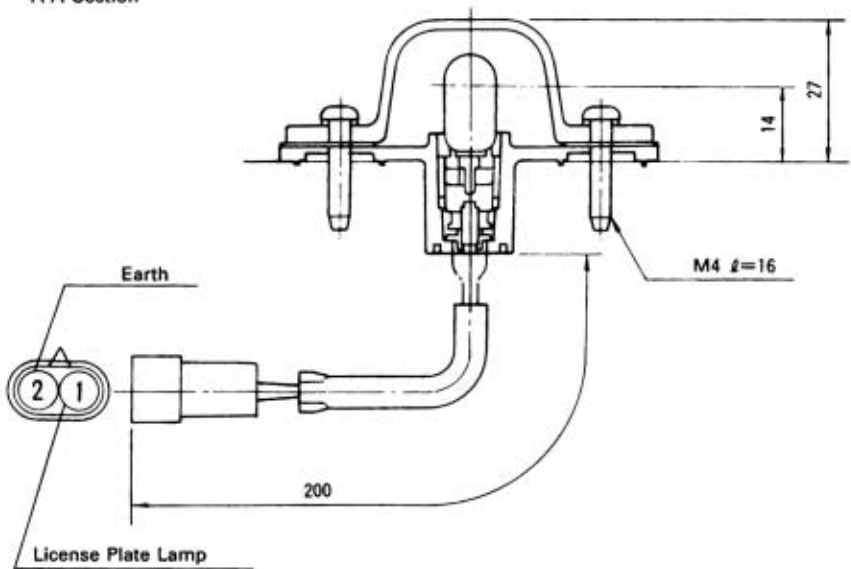
Licence Lamp

Models

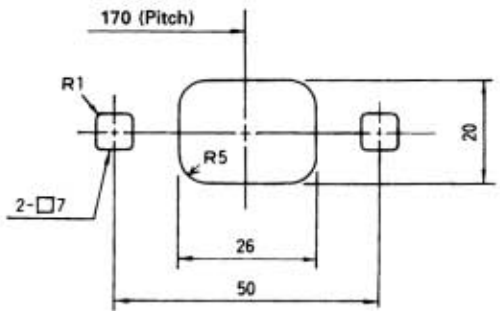
- LY225L-TBMDS3
- LY225R-TBMDS3
- LY235L-TBMFS3
- LY235R-TBMFS3



A-A Section

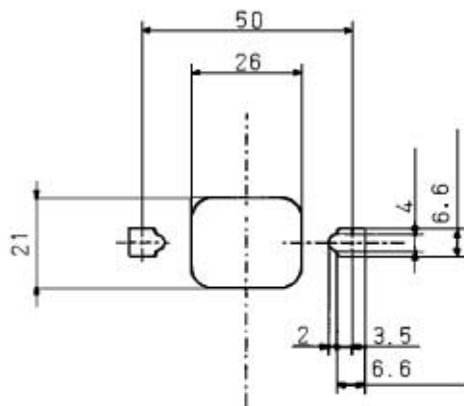
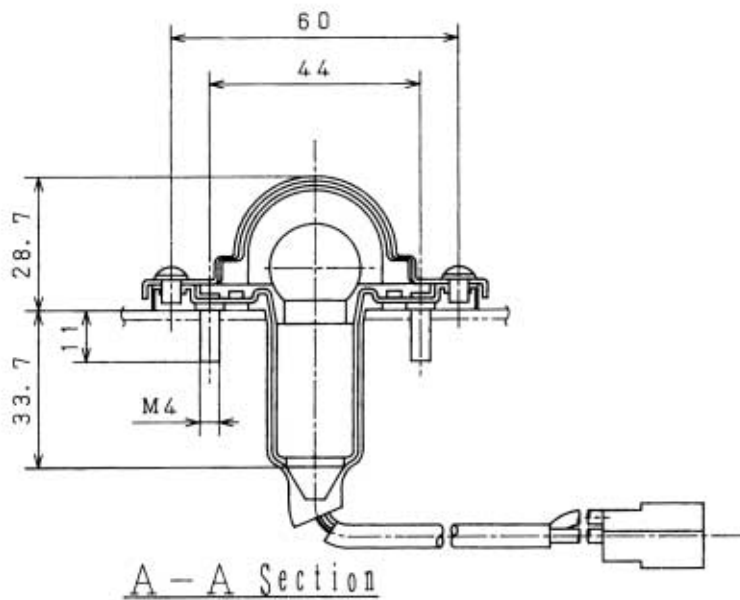
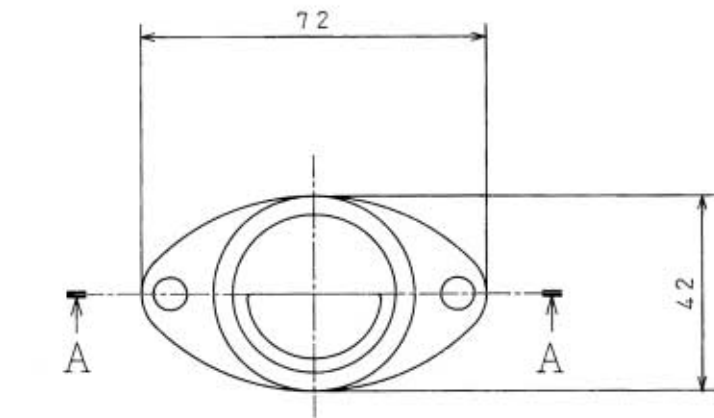


Vehicle Fitting Hole



8-2. Licence lamp-related chart

Licence Lamp



Models

KDY220L-TBMDYW3
 KDY230R-TBMGYW3
 KDY230L-TBMGYW3
 KDY230L-PBMEYW3
 KDY230L-PSMBYW3
 KDY250R-TBMGYW3
 KDY250L-TBMGYW3
 KDY250L-PBMEYW3
 KDY260L-TBMGYW3
 KDY260L-PBMEYW3
 LY220R-TBMDSQ3
 LY230R-TBMGSQ3
 LY230R-TBMGSN3

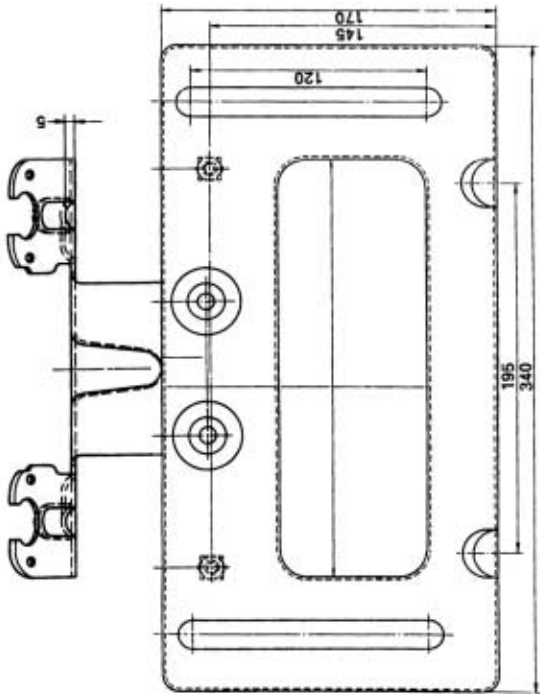
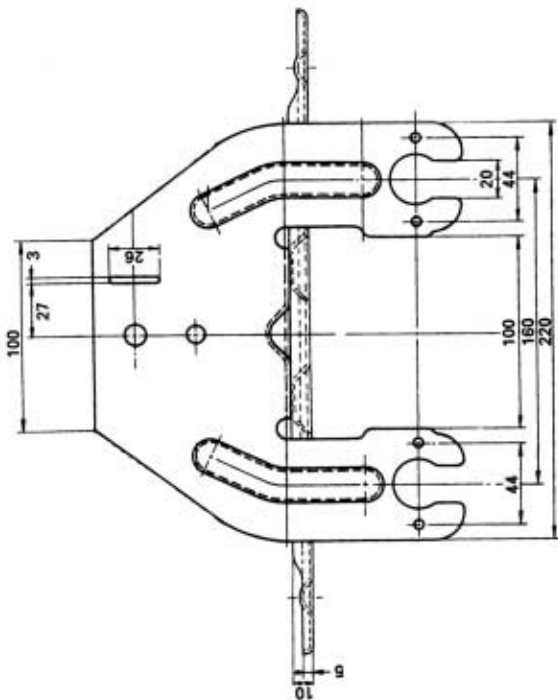
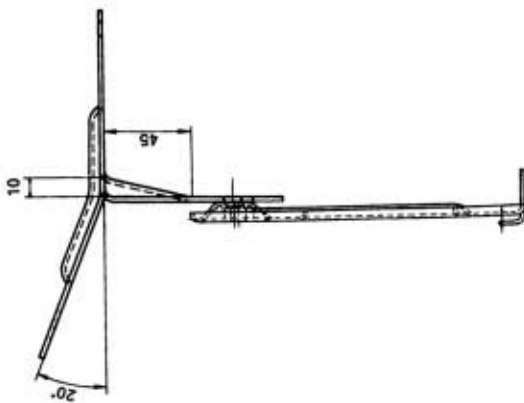
K-091

8-3. Licence lamp-related chart

Licence Lamp

Models

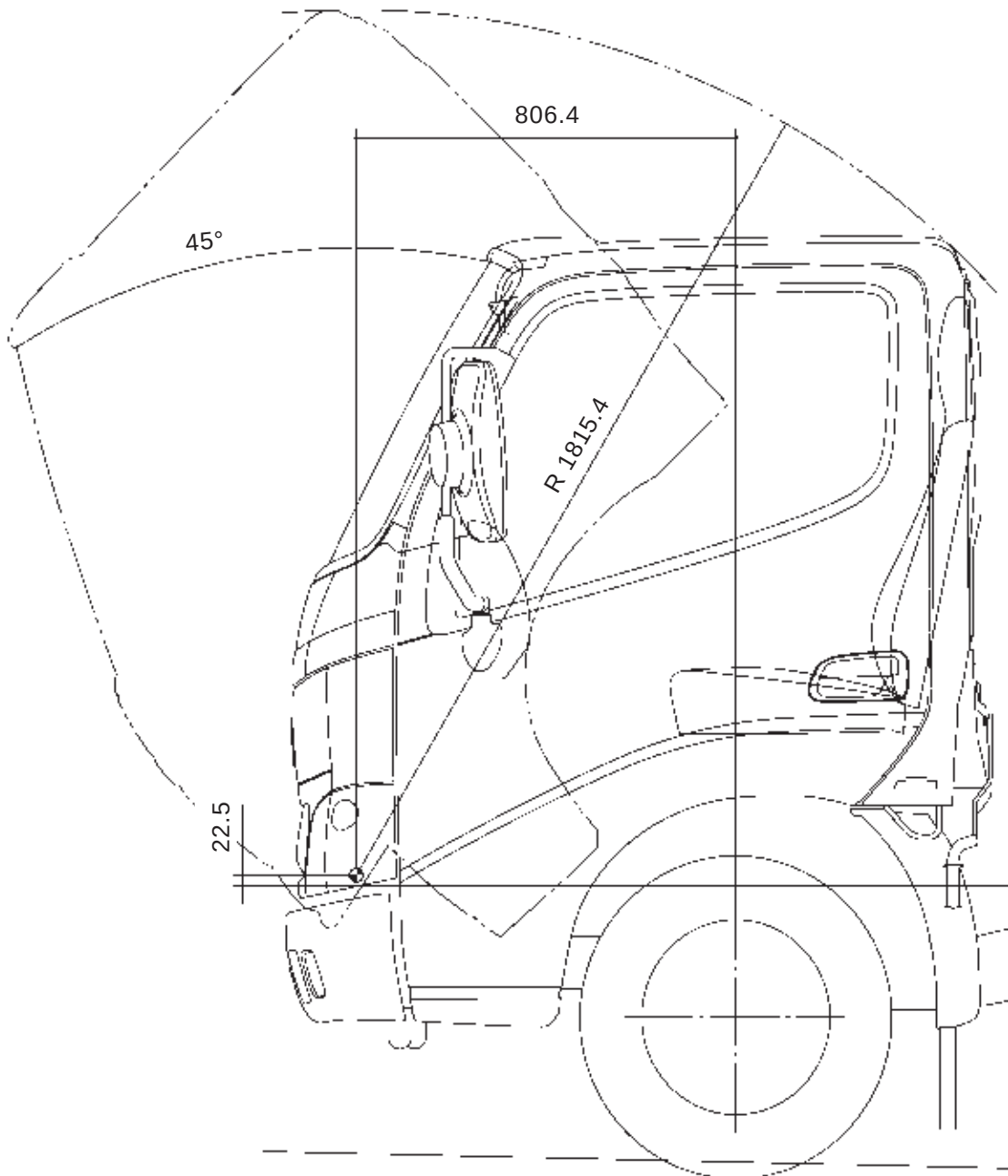
- | | |
|-----------------|-----------------|
| KDY220L-TBMDYW3 | KDY250L-PBMEYW3 |
| KDY230L-PBMEYW3 | KDY250L-TBMGYW3 |
| KDY230L-PSMBYW3 | KDY250R-TBMGYW3 |
| KDY230L-TBMGYW3 | KDY260L-PBMEYW3 |
| KDY230R-TBMGYW3 | KDY260L-TBMGYW3 |
| LY220R-TBMDSQ3 | LY230R-TBMGSQ3 |
| LY230R-TBMGSN3 | |



Y-056

9-1. Detail of cab tilt

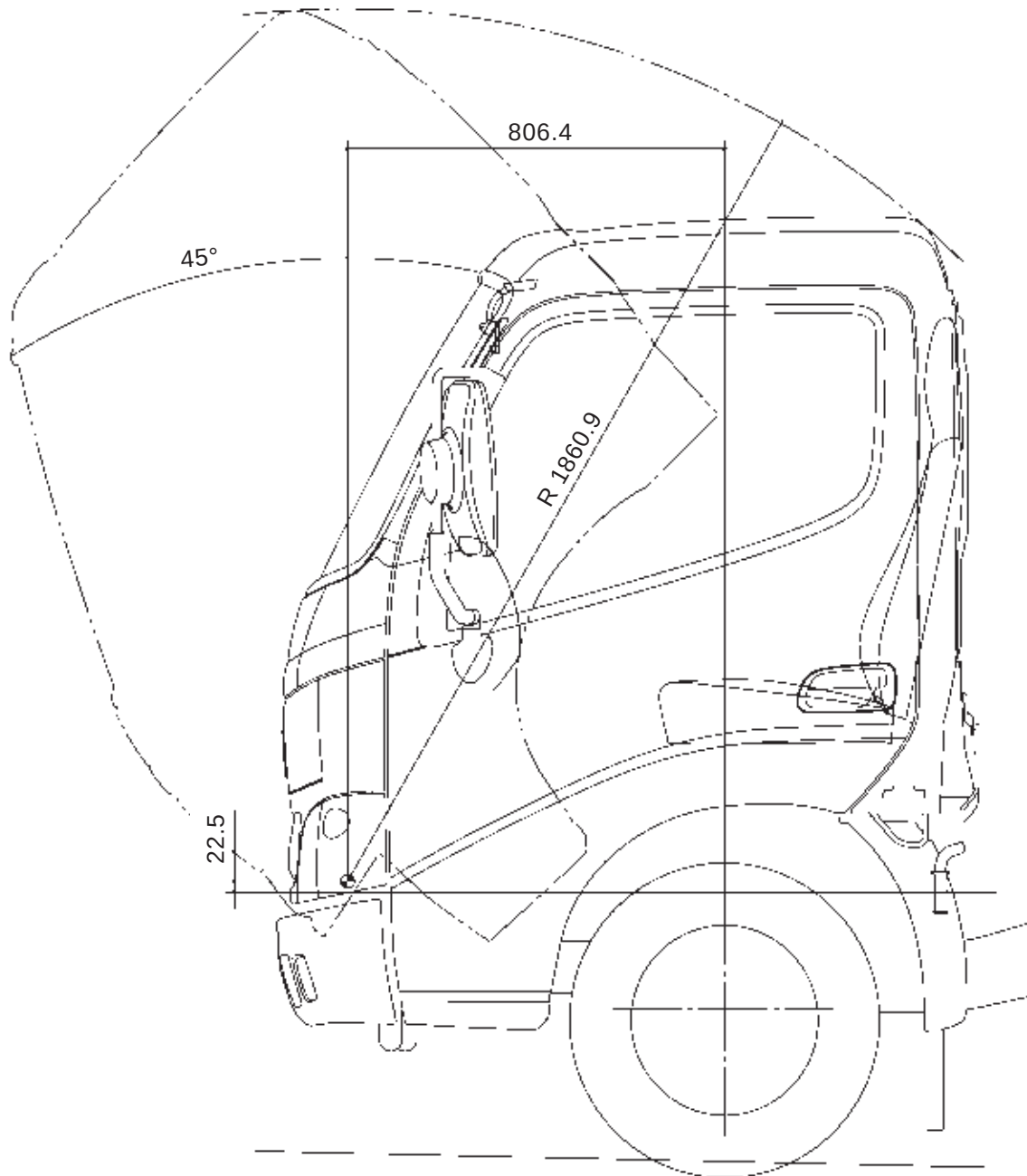
Standard Root:



K-088

9-2. Detail of cab tilt

Hi-Roof:



K-089

[5] Major Technical Specifications

Destination				Australia		Europe						
Engine				5L	←	2KD-FTV	←					
Cab Type				Single	←	←	←					
Model Code		RHD		LY220R-TBMDSQ3	LY230R-TBMGSQ3	—	KDY230R-TBMGYW3					
		LHD		—	—	KDY220L-TBMDYW3	—					
Major Dimension	Overall		Length	mm	4280	4525	4280	4525				
			Width	mm	1695	1900	1695	1900				
			Height	mm	1975	1980	1965	1975				
	Wheel Base		mm	2300	2545	2300	2545					
	Tread		Front	mm	1435	←	←	←				
			Rear	mm	1365	1500	1365	1500				
	Cab End to Rear Axle			mm	1020	←	←	←				
Weights	Fuel Tank Capacity			Liters	60	80	60	80				
	Seating Capacity			Persons	3	←	←	←				
	Unsprung Weight Axle		Front	kg	130	←	←	←				
			Rear	kg	190	335	190	335				
	Chassis and Cab Weight		Front	kg	990	1040	1035	1100				
			Rear	kg	400	540	410	540				
			Total	kg	1390	1580	1445	1640				
	Curb Weight (MIN~MAX)		Front	kg	1020~1040	1080~1120	1065~1085	1100~1125				
			Rear	kg	580~690	680~950	590~705	695~945				
			Total	kg	1600~1730	1760~2070	1655~1790	1795~2070				
	Gross Vehicle Weight		Front	kg	1380	1520	1430	1590				
			Rear	kg	1620	1980	1570	1910				
			Total	kg	3000	3500	3000	3500				
	Max. Permissible Axle Capacity		Front	kg	1800	←	←	←				
			Rear	kg	1800	2550	1800	2550				
	Min. Turning Radius (Outside Front Tire)			m	4.5	4.9	4.5	4.9				
	Engine	Engine		Displacement		cc	2985	←	2494	←		
Max. b.h.p.				SAE NET	kW/rpm	—	—	—	—			
		Max. Torque		EEC	kW/rpm	66/4000	←	65/3800	75/3000			
SAE NET				N.m/rpm	—	—	—	—				
EEC				N.m/rpm	192/2400	←	192/1200-3000	260/1400-2600				
Battery (20hr, rate)			<OPT> V-A	12-80	←	12-65 <12-65x2>	12-65					
Alternator			V-A	12-90	←	12-70	←					
Starter			<OPT> V-kW	12-2.2	←	12-2.0 <12-2.7>	12-2.0					
Chassis	Transmission		Mode		G54		R452	G54	R451			
			Gear Ratio		4.452		5.146	4.452	4.313			
					2.398		2.78	2.398	2.330			
					1.414		1.509	1.414	1.436			
					1.000		←	←	←			
					0.802		0.830	0.802	0.838			
	Differential		Rev		4.472	5.035	4.472	4.220				
			Gear Ratio		4.100	4.300	4.100	4.300				
			Front Suspension		Spring		Size	mm	Torsion bar 200×1060×22.7×2	←	←	←
					Shock Absorber		Rate	N/mm	51.3	←	←	←
							Rebound	N(mm)	2403 (147.5)	←	←	←
	Bound	N(mm)					1079 (147.5)	←	←	←		
	Rear Suspension		Spring		Main		Size (L×W×T-N)	mm	1200×70×8-1 9-1	1200×70×10-1 11-1	1200×70×8-1 9-1	1200×70×10-1 11-1
							Rate	N/mm	45.1	88.3	45.1	88.3
			Aux		Size (L×W×T-N)	mm	925×70×20-1	910×70×22-1	925×70×20-1	910×70×22-1		
					Rate	N/mm	126.5	176.5	126.5	176.5		
			Shock Absorber		Rebound	N(mm)	1804 (192)	1804 (184)	1804 (192)	1804 (184)		
					Bound	N(mm)	979 (192)	979 (184)	979 (192)	979 (184)		
	Tire		Size <OPT>		Front	195/70R15C		←	←	←		
					Rear	195/70R15C		←	←	←		
Presssure <OPT>			Front	kPa	450	←	←	←				
			Rear	kPa	450	350	450	350				
Propeller Shaft		Size (Length×Outer Dia×Inner Dia)		No.1	mm	794×75.0×71.8	1036×75.0×71.8	775×75.0×71.8	1018×68.9×64.3			
		No.2	mm	—	—	—	—	—	—			
Service Brake		Control Valve		LSP&BV		←	←	←	←			

Damping force at 0.3 m/sec. piston speed. Figures in () show stroke values.

Europe						
←	←	←	←	←	←	←
←	Double	←	Single	←	Double	Single
—	—	—	KDY250R-TBMGYW3	—	—	—
KDY230L-TBMGYW3	KDY230L-PBMEYW3	KDY230L-PSMBYW3	—	KDY250L-TBMGYW3	KDY250L-PBMEYW3	KDY260L-TBMGYW3
←	←	←	5840	←	←	6410
←	←	1695	1900	←	←	←
←	←	1960	1965	←	1975	←
←	←	←	3350	←	←	3750
←	←	←	←	←	←	←
←	←	1365	1500	←	←	←
←	←	←	1530	←	←	1700
←	←	←	←	←	←	←
←	6	←	3	←	6	3
←	←	←	←	←	←	←
←	←	190	335	←	←	←
←	1180	1130	1115	←	1205	1130
←	600	470	575	←	625	575
←	1780	1600	1690	←	1830	1705
←	1180~1070	1130~1160	1115~1215	←	1205~1270	1130~1240
←	760~1190	610~720	680~1065	←	705~1010	665~1040
←	1940~2260	1740~1880	1795~2280	←	1910~2280	1795~2280
←	1480	1440	1565	←	1615	1585
←	2020	1470	1935	←	1885	1915
←	←	3210	3500	←	←	←
←	←	←	←	←	←	←
←	←	1800	2550	←	←	←
←	←	←	6.3	←	←	6.9
←	←	←	←	←	←	←
—	—	—	—	—	—	—
←	←	65/3800	75/3000	←	←	←
—	—	—	—	—	—	—
←	192/1200-3000	260/1400-2600	←	←	←	←
12-65 <12-65×2>	12-65	12-65 <12-65×2>	12-65	12-65 <12-65×2>	12-65 <12-65×2>	12-65 <12-65×2>
←	←	←	←	←	←	←
12-2.0 <12-2.7>	12-2.0	12-2.0 <12-2.7>	12-2.0	12-2.0 <12-2.7>	←	←
←	←	G54	R451	←	←	←
←	←	4.452	4.313	←	←	←
←	←	2.398	2.330	←	←	←
←	←	1.414	1.436	←	←	←
←	←	←	←	←	←	←
←	←	0.802	0.838	←	←	←
←	←	4.472	4.220	←	←	←
←	←	4.100	←	←	←	←
←	←	Torsion bar 200×1060×21.9×2	Torsion bar 200×1060×22.7×2	←	←	←
←	←	44.5	51.3	←	←	←
←	←	2157 (147.5)	2403 (147.5)	←	←	←
←	←	981 (147.5)	1079 (147.5)	←	←	←
←	←	1200×70×8-1 9-1	1200×70×10-1 11-1	←	←	←
←	←	45.1	88.3	←	←	←
←	←	925×70×20-1	910×70×22-1	←	←	←
←	←	126.5	176.5	←	←	←
←	←	1587 (197)	1804 (184)	←	←	←
←	←	828 (197)	979 (184)	←	←	←
←	←	←	←	←	←	←
←	←	←	←	←	←	←
←	←	←	←	←	←	←
←	←	450	350	←	←	←
←	←	1019×75.0×71.8	1048×68.9×64.3	←	←	1235×82.6×78.0
—	—	—	1048×68.9×64.3	←	←	1235×82.6×78.0
←	←	←	←	←	←	←

Destination				Europe		General			South Africa					
Engine				2KD-FTV		5L	←	←	←					
Cab Type				Double		Single	←	←	←					
Model Code			RHD		—	LY225R-TBMDS3	—	LY235R-TBMFS3	—					
			LHD		LY260L-PBMEYW3	—	LY225L-TBMDS3	—	LY235L-TBMFS3					
Major Dimension	Overall		Length	mm	6410	4430	←	4690	←					
			Width	mm	1900	1695	←	←	←					
			Height	mm	1980	1990	←	1980	←					
	Wheel Base		mm	3750	2300	←	2545	←						
	Tread		Front	mm	1435	1410	←	←	←					
			Rear	mm	1500	1365	←	1385	←					
	Cab End to Rear Axle		mm	1700	1020	←	←	←						
	Fuel Tank Capacity		Liters	80	60	←	←	←						
	Seating Capacity		Persons	6	3	←	←	←						
	Weights	Unsprung Weight Axle		Front	kg	130	150	←	150	←				
Rear				kg	335	190	←	210	←					
Chassis Cab Weight		Front	kg	1230	980	←	1000	←						
		Rear	kg	615	400	←	460	←						
		Total	kg	1845	1380	←	1460	←						
Curb Weight (MIN~MAX)		Front	kg	1230~1270	—	—	—	1080~1120						
		Rear	kg	710~1010	—	—	—	680~950						
		Total	kg	1940~2280	—	—	—	1760~2070						
Gross Vehicle Weight		Front	kg	1635	1390	←	1510	←						
		Rear	kg	1865	1610	←	1990	←						
		Total	kg	3500	3000	←	3500	←						
Max. Permissible Axle Capacity		Front	kg	1800	←	←	←	←						
		Rear	kg	2550	1850	←	2300	←						
Min. Turning Radius (Outside Front Tire)			m	6.9	4.9	←	5.3	←						
Engine		Engine		Displacement		cc	2494	2985	←	←				
	Max. b.h.p.			SAE NET	kW/rpm	—	—	—	—					
	Max. Torque		EEC	kW/rpm	75/3000	66/4000	←	←	←					
			SAE NET	N.m/rpm	—	—	—	—	—					
			EEC	N.m/rpm	260/1400-2600	192/2400	←	←	←					
	Battery (20hr, rate)			<OPT> V-A	12-65	12-80	←	←	←					
	Alternator			V-A	12-70	←	←	←	←					
Starter			<OPT> V-KW	12-2.0	12-2.2	←	←	←						
Chassis	Transmission		Mode		R451	G54	←	R452	←					
			Gear Ratio		1st	4.313	4.452	←	5.146	←				
					2nd	2.330	2.398	←	2.78	←				
					3rd	1.436	1.414	←	1.509	←				
					4th	1.000	←	←	←	←				
					5th	0.838	0.802	←	0.830	←				
	Differential			Gear Ratio		4.300	4.556	←	4.875	←				
	Front Suspension		Spring		Size	mm	Torsion bar 200X1060X22.7X2	1150X70X8-1 9-3	←	1150X70X9-2 10-2	←			
					Shock Absorber		Rate	N/mm	51.3	82.4	←	107.9	←	
			Rear Suspension		Spring		Size (LXWXT-N)	mm	1200X70X10-1 11-1	1200X70X7-1 8-2	←	1200X70X8-3	←	
														Shock Absorber
	Main				Rate	N/mm	88.3	46.1	←	52.0	←	88.3		
													Size (LXWXT-N)	mm
					Aux		Rate	N/mm	176.5	125.5	←	124.5		
													Shock Absorber	
	Bound		N(mm)	979 (184)	828 (189)	←	979 (184)	←	←					
										Tire		Size <OPT>		Front
	Rear		195/70R15C	7.00R15-8PR	←	7.00R15-10PR	←							
	Presssure <OPT>		Front		kPa	450	←	←	←			←		
			Rear		kPa	350	400	←	525	←				
Propeller Shaft		Size (Length X Outer Dia X Inner Dia)		No.1	mm	1235X82.6X78.0	794X75.0X71.8	←	1036X75.0X71.8	←				
				No.2	mm	1235X82.6X78.0	—	—	—	—				
Service Brake		Control Valve			LSP&BV	LSPV	←	←	←	LSP&BV				

Request

The following application form has been prepared to enable quicker responses to inquiries concerning attachment installation. Please use it effectively.

- ☐ Inquiry on technical information related to attachment installation
- ☐ Request on issuance of manufacturer's certificate (Always enter the information concerning the asterisked (*) items.)

1. Objective and background (importance, urgency, competing model state, etc.)

2. Contents of request

3. Description of attachment*

Attach a drawing or photograph showing the dimensions, weight, weight distribution to front and rear axles, structure, etc. of the attachment.

4. Restrictive conditions*

- 1 Base vehicle model and model year
- 2 Frame No.
- 3 Produced quantity and period
- 4 Name of attachment manufacturer
- 5 Working conditions
 - Road surface status (paved road: % of total, unpaved road: % of total)
 - Traveling speed (normally km/h, high speed: km/h)
 - Traveling distance (km/month)
 - Loading weight (kg)

5. Desired closing date for answer

6 Answering party

- Country
- Address
- Company name
- Department
- Name of person in charge
- Telephone
- Fax

