August 2004

BBG

BODY BUILDER'S GUIDE
HILUX

TOYOTA

Pub. No. BBGN1005

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, 2004. 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 Division
TOYOTA MOTOR CORPORATION

Inquiry on Attachment Installation

Please contact the following addresses for inquiries and approval concerning attachment installation:

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(Please contact OCAD to receive your password and the account number.)

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

CONTENTS

【1】 MODEL STRUCTURE

1. Meaning of model code

KUN 15 R - T R M D Y T 3

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩

①	Engine	
	TGN	1TR-FE (2L, Petrol)
		2TR-FE (2.7L, Petrol)
	KUN	1KD-FTV (3L, Diesel)
		2KD-FTV (2.5L, Diesel)
	GGN	1GR-FE (4L, Petrol)
②	Drive System & Wheel Base	
	15	4x2, Long Wheel Base
	16	4x2, Long Wheel Base
	25	4x4, Long Wheel Base
	26	4x4, Long Wheel Base
	35	Prerunner (4x2), Long Wheel Base
	36	Prerunner (4x2), Long Wheel Base
③	Steering Position	
	R	Right Hand Drive
	L	Left Hand Drive
④	Cab Type	
	T	Single Cab, Pick Up
	P	Double Cab, Pick Up
	C	Extra Cab, Pick Up
⑤	Deck Type	
	R	Standard Deck
⑥	Transmission	
	M	5-speed Manual, Floor
	P	4-speed Automatic, Floor
	A	5-speed Automatic, Floor
⑦	Grade	
	D	DLX
⑧	Engine System	
	K	Compact Twincam EFI
	Y	Direct Injection Diesel Turbo EFI
	H	High Performance Direct Injection Diesel Turbo EFI
⑨	Destination	
	G	Central & South America
	L	ANCOM (Andean Community)
	N	Africa
	T	Thailand
	Q	Australia
	W	Europe
⑩	Package Model	
	3	Cab & Chassis Model

2. List of vehicle models

Destination	Engine	2WD		
		Long Wheel Base		
		Single Cab	Double Cab	Extra Cab
Africa	1TR-FE	TGN15R -TRMDKN3		
ANCOM (Andean Community)	2TR-FE	TGN36L -TRMDKL3※		
	2KD-FTV	KUN35L -TRMDHL3※		
Australia	2TR-FE	TGN16R -TRMDKQ3		
	1KD-FTV	KUN16R -TRMDYQ3		
	1GR-FE	GGN15R -TRMDKQ3		
		GGN15R -TRADKQ3		
Central & South America	2TR-FE	TGN36L -TRMDKG3※		
	2KD-FTV	KUN35L -TRMDHG3※		
Europe	2KD-FTV	KUN15L -TRMDYW3	KUN15L -PRMDYW3	KUN15L -CRMDYW3
Thailand	2KD-FTV	KUN15R -TRMDYT3		

※ : Prerunner(2WD)

Destination	Engine	4WD		
		Long Wheel Base		
		Single Cab	Double Cab	Extra Cab
Africa	1TR-FE			
ANCOM (Andean Community)	2TR-FE	TGN26L -TRMDKL3		
	2KD-FTV			
Australia	2TR-FE			
	1KD-FTV	KUN26R -TRMDYQ3	KUN26R -PRMDYQ3	KUN26R -CRMDYQ3
		KUN26R -TRPDYQ3		
	1GR-FE	GGN25R -TRMDKQ3		
		GGN25R -TRADKQ3		
Central & South America	2TR-FE			
	2KD-FTV	KUN25L -TRMDHG3		
Europe	2KD-FTV	KUN25L -TRMDHW3	KUN25L -PRMDHW3	KUN25L -CRMDHW3
Thailand	2KD-FTV			

【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.

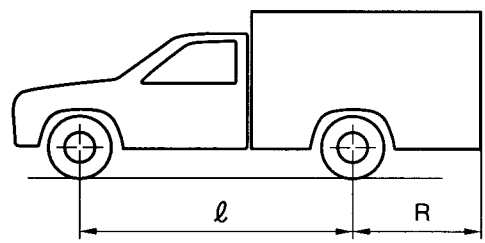
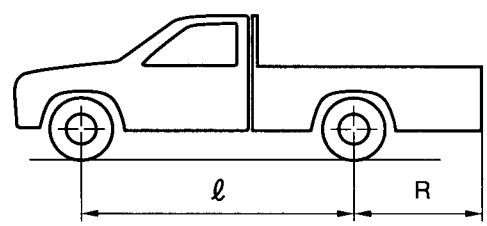
Limitations are set for the length, width, height and weight of the parts mounted according to the particular base vehicle. Any restrictions which may be imposed in each country should be complied with.

[1] Vehicle width

In order to secure safe drive, the overhang of a mounted part should be 100 mm maximum on each side as measured from the outermost point of the cab of the base vehicle (not including the outside mirror). Compliance with laws and regulation is required. (i.e. outside mirror visibility requirement)

[2] 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	$R \leqq \frac{2}{3} \ell$  Y-088
Vehicle with cargo protruding from rear end Ex: Cargo truck	$R \leqq \frac{1}{2} \ell$  Y-089

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

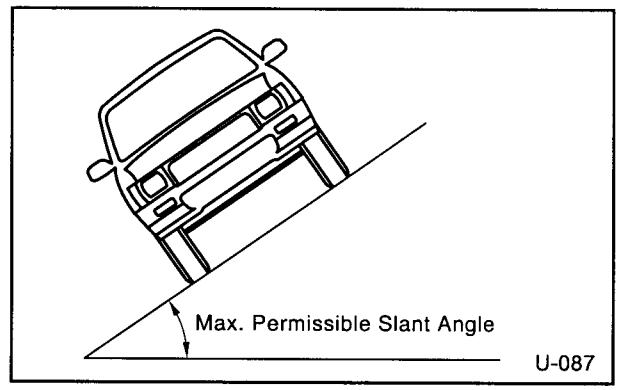
[3] Limitation of front axle load ratio (when loaded with cargo)

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).

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

[4] 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°.

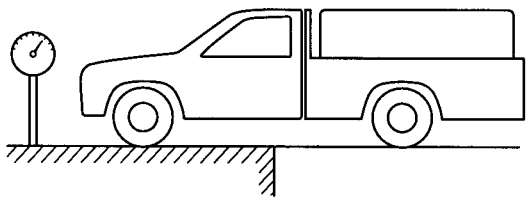
[5] Height of gravity center

Model		Gravity center height of base vehicle (C&C) mm
2WD	Single cab	560
	Extra cab	570
	Double cab	585
Prerunner	Single cab	660
	Extra cab	670
	Double cab	685
4WD	Single cab	645
	Extra cab	655
	Double cab	670

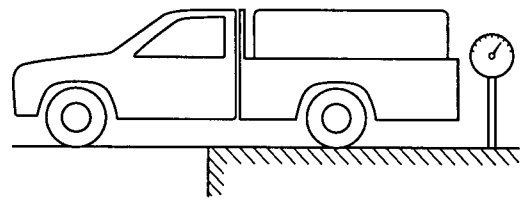
[6] Weight

(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.)



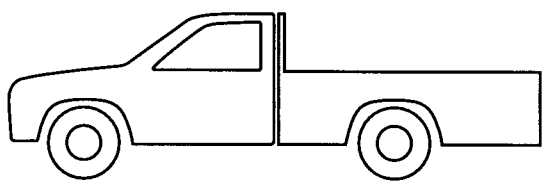
Distribution of front wheel weight



Distribution of rear wheel weight

U-088 U-089

Curb weight

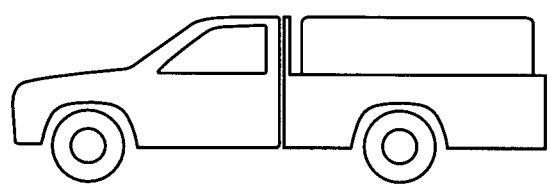


With all optional parts, equipment and the rear body with the fuel tank filled up

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	KUN15R-TRMDYT3
C.W.of finished vehicle (min.) (Reference)	1,525
C.W.of base vehicle (C&C) (Reference)	1,505 ~ 1,525
Special equipment, accessories, permanent attachment	A
Total weight of passneger, cargos and baggages	B
G.V.W.of finished vehicle	2,875

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 finished vehicle (min)	C.W.of base vehicle (C&C)	Weight of built or altered equipment	Passengers and cargo	G.V.W.
1,525 ≦	(1,505 ~ 1,525)	+ A +	B ≦	2,875

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

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

(R) = Rear axle weight after building or alteration≦ Rear G.A.W.R.

(F) + (R)≦ G.V.W.

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

Models	Admissible weight for the Emission Regulation (Kg)
TGN15R -TRMDKN3	1660
KUN16R -TRMDYQ3	1770
TGN16R -TRMDKQ3	
TGN26L -TRMDKL3	
TGN36L -TRMDKG3	
TGN36L -TRMDKL3	
GGN15R - TRADKQ3	1880
GGN15R - TRMDKQ3	
GGN25R - TRADKQ3	
GGN25R - TRMDKQ3	
KUN15L -CRMDYW3	
KUN15L -PRMDYW3	

Models	Admissible weight for the Emission Regulation (Kg)
KUN15L -TRMDYW3	1880
KUN15R -TRMDYT3	
KUN25L -CRMDHW3	
KUN25L -PRMDHW3	
KUN25L -TRMDHG3	
KUN25L -TRMDHW3	
KUN35L -TRMDHG3	
KUN35L -TRMDHL3	
KUN26R -CRMDYQ3	1955
KUN26R -TRMDYQ3	
KUN26R -PRMDYQ3	
KUN26R - TRPDYQ3	

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

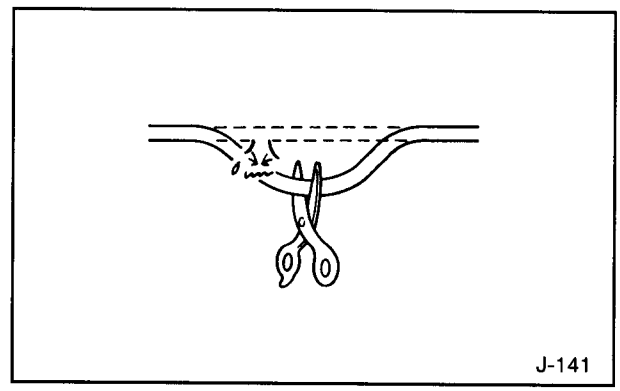
[1] No shared fastening of bolts

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.


J-141

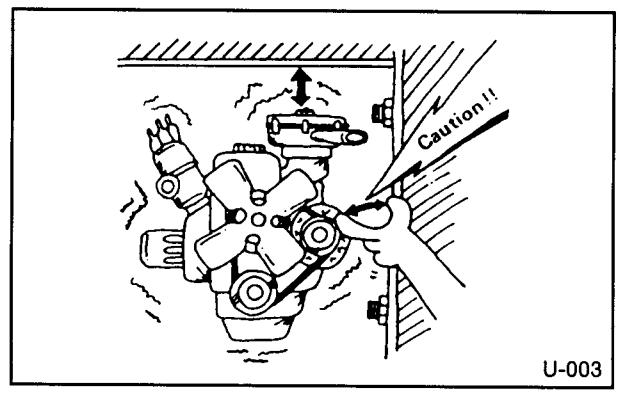
(2) Mounting built or altered parts

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.

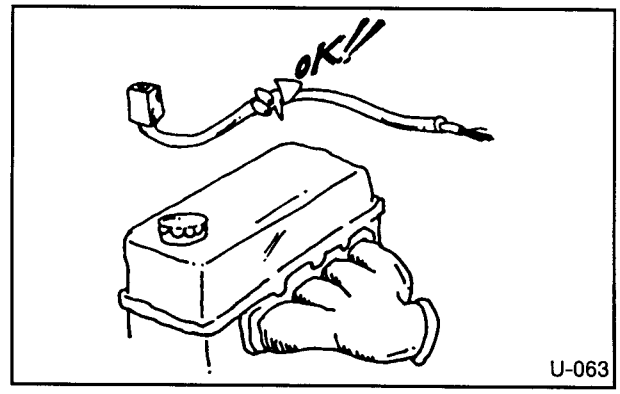


U-003

[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.

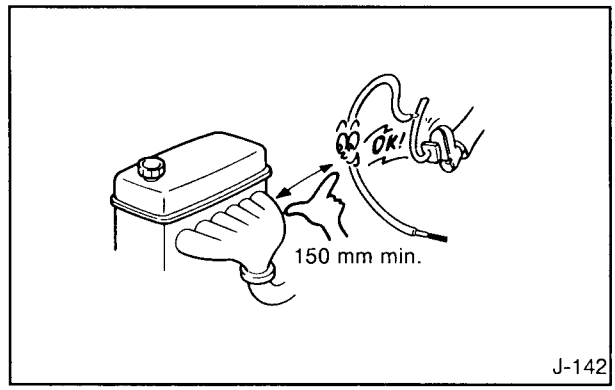


U-063

· 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).

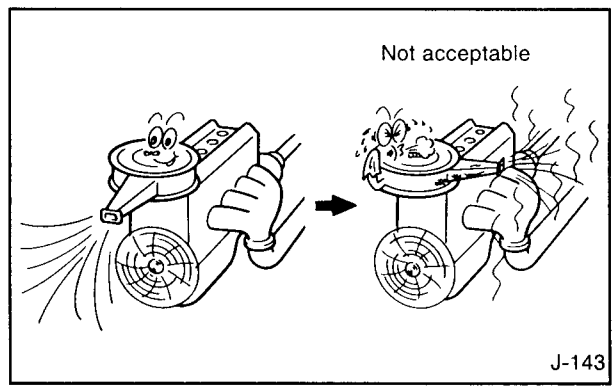
· In the event that the defined clearance is unavailable, protect against heat by means of a heat insulating plate or the like.

② The resin clamp may be softened by the heat from the engine compartment and may be dislocated. Take good care.



J-142

③ Don't make any alterations which may cause an increased temperature of intake air or fuel supplied to the injection pump.



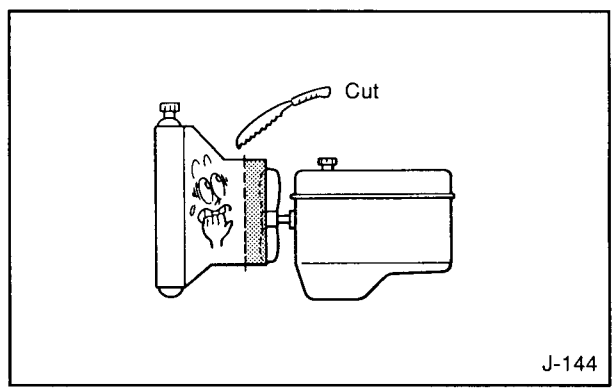
J-143

[4] Cooling

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

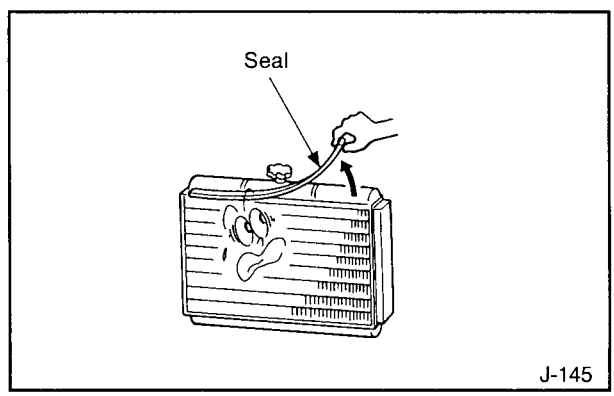
① Don't mount any parts at a position where the exhaust manifold is exposed to less air.

② Don't change the fan shroud coverage on the fan nor add any fan shroud cut as it would deteriorate the cooling performance.



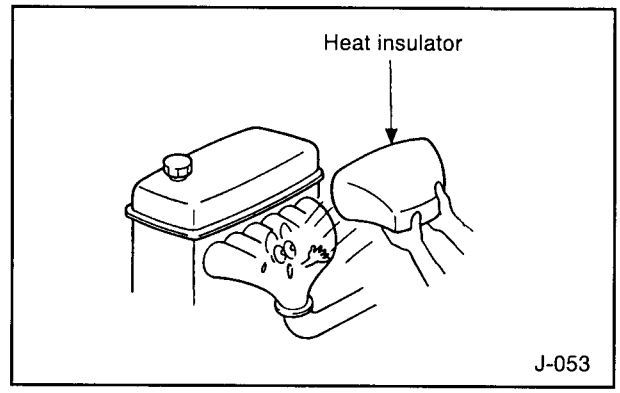
J-144

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.



J-145

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.

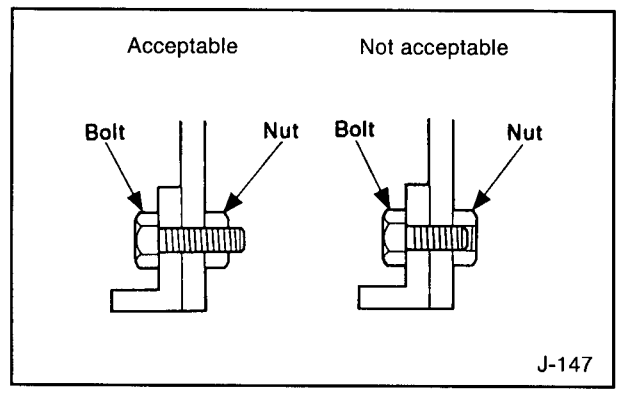
[6] Building or alterations of other parts

(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.

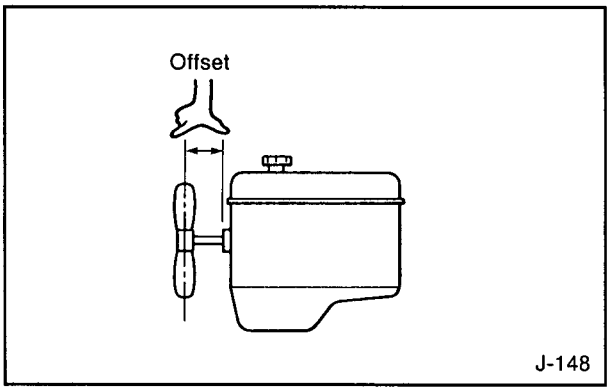


(3) Belt change

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.

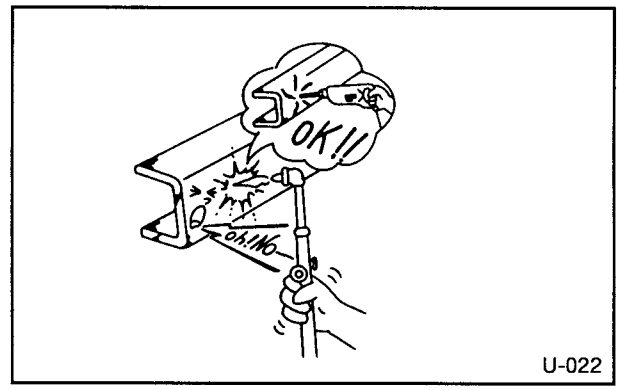
[1] Processing

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.



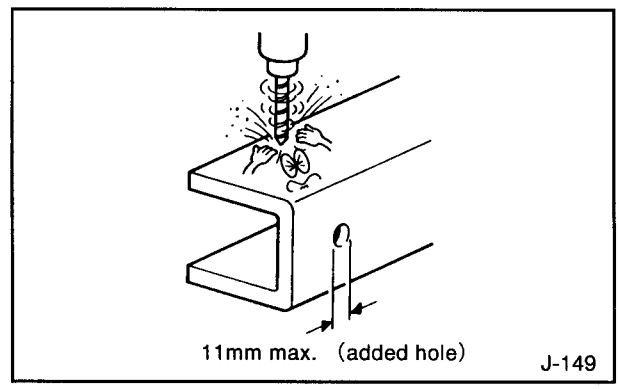
U-022

〈1〉 Drilling side member

① Don't weld in the upper or lower surface of the flange.

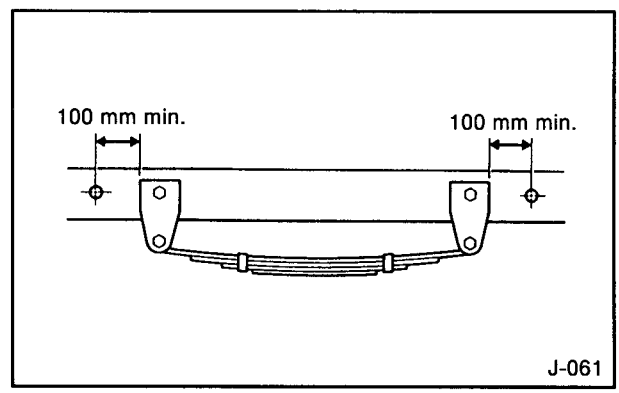
② Make sure that the hole drilled is 11 mm maximum.

③ Channel-shaped section



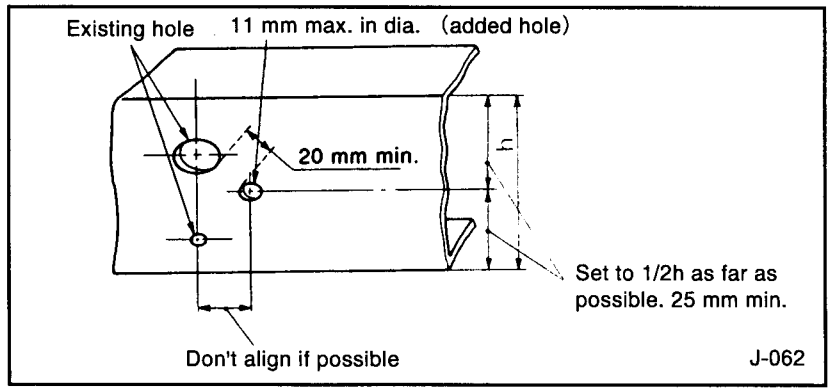
J-149

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



J-061

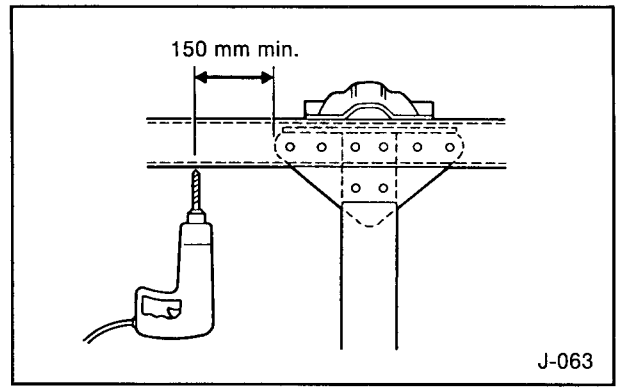
(b) Set the inter-hole distance and position the holes as shown in the drawing.



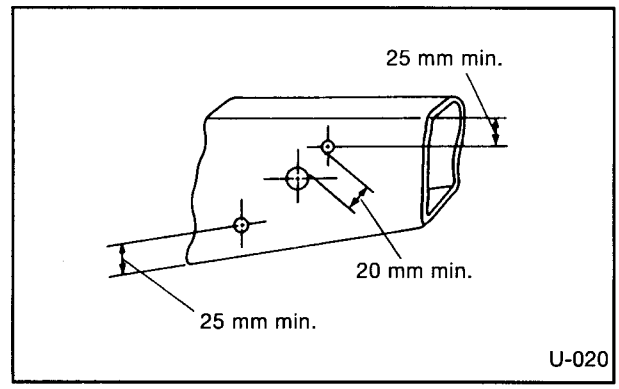
J-062

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.



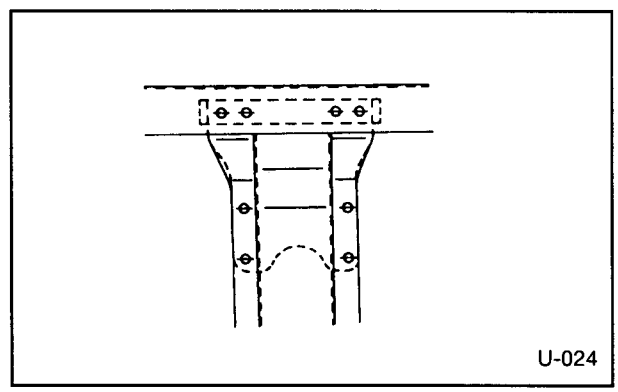
(b) Keep the inter-hole distance and position the holes as shown in the drawing.



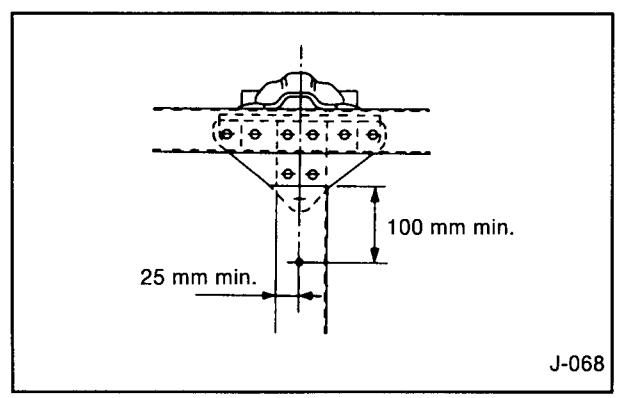
(c) In the case of a dump truck, don't drill a hole in the inner channel between the trunnion bracket and the tension arm bracket.

〈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.

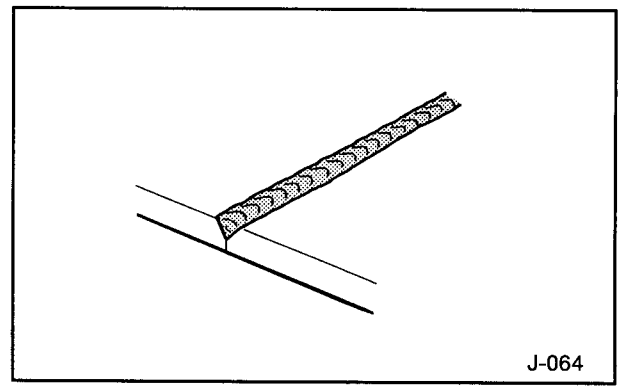
(c) Check to see that the welding rod is suitable for the material of the welding zone.

· 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.


J-064

(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.

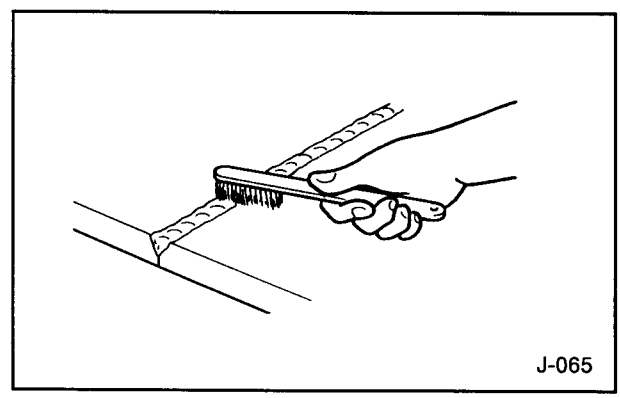
(d) Avoid concentration or proximity of welding joints as far as possible. Don't carry out the welding work on edges or bent portions as it demands a considerable welding skill.

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.


J-065

(b) Primer surfacer (primer coating)
Apply the wash primer.

- A major potion 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.

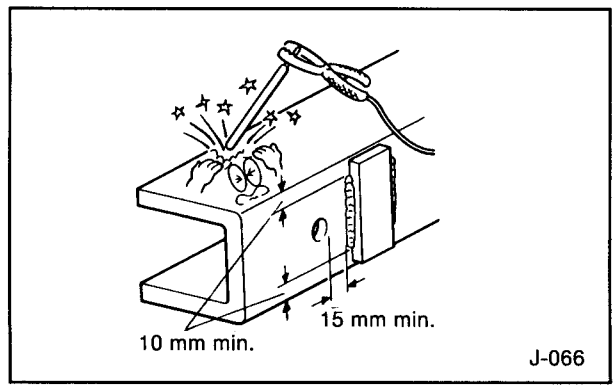
(3) Welding side members

① Don't weld in the upper or lower surface of the flange.

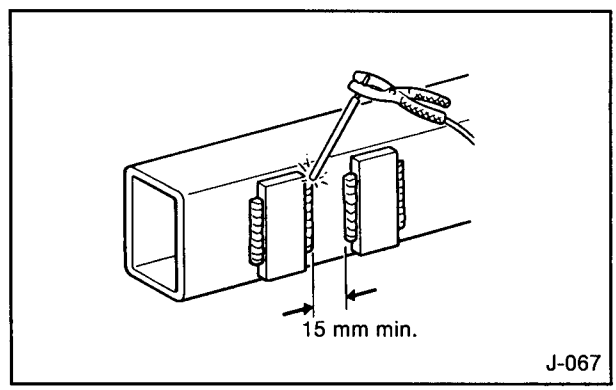
② Keep the welding point away from the flange bend by 10 mm minimum .

③ Be sure that the welding bead is distant by 15 mm minimum from the hole edge.

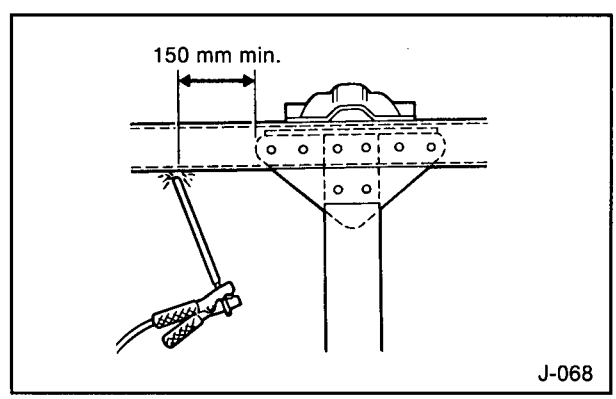
④ Welding square-shaped section



(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.

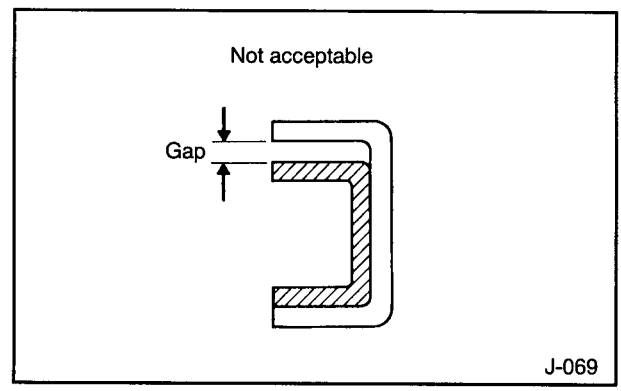
(1) Material of reinforcing member

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

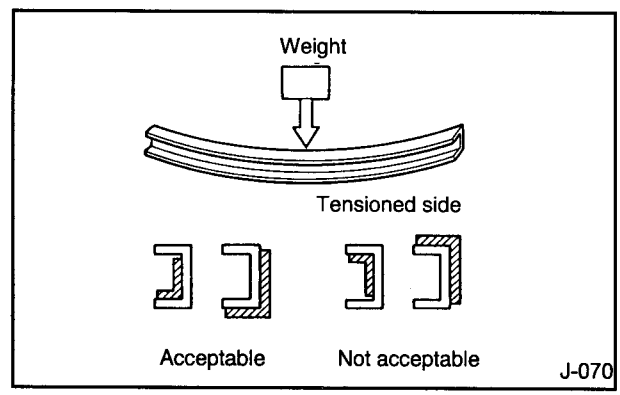
In applying a reinforcing plate on the inside of the side member, use a general frame steel plate (Toyota standard SHP45 with tensile strength of 45 kg/mm^2) or an item equivalent to SS41P.

(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.



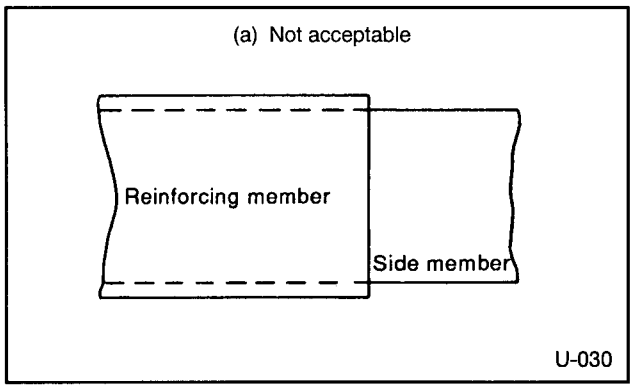
② If the end of the outer stiffener is registered with the end of the inner stiffener or the portion of the cross beam or spring bracket subjected to a sudden rigidity change or load concentration, a cracking is liable to occur more easily. Take adequate care in determining the position of the stiffener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

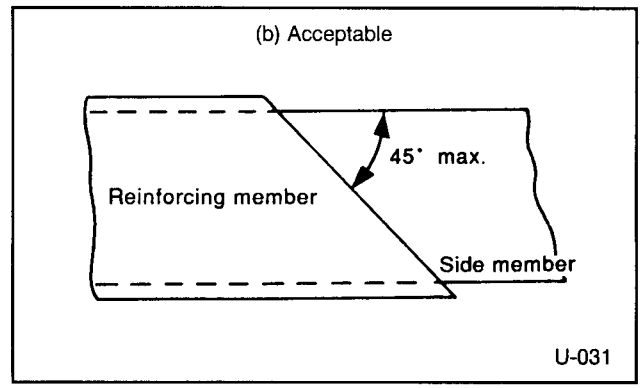
(3) Avoiding load concentration

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.

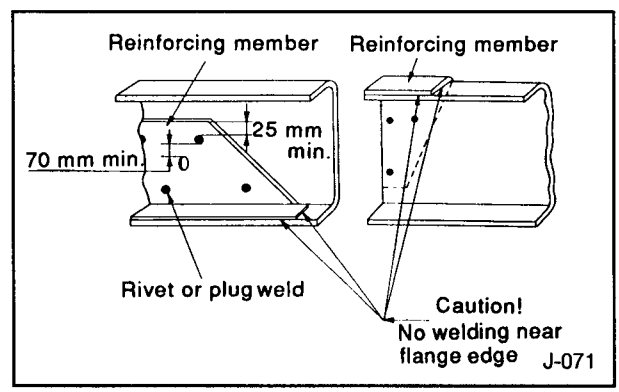
② The end of the reinforcing member should not be raised sharply as shown in (a). Take care that the sectional slope is gentle with the angle of at least less than 45 degrees as shown in (b).





(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.

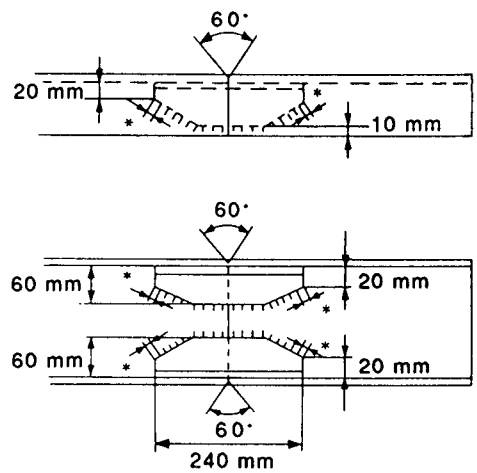
② In conducting the plug welding work, keep the plug welding hole away from the end of the reinforcing member by 25 mm minimum and from the bolt and the rivet hole by 70 mm minimum.

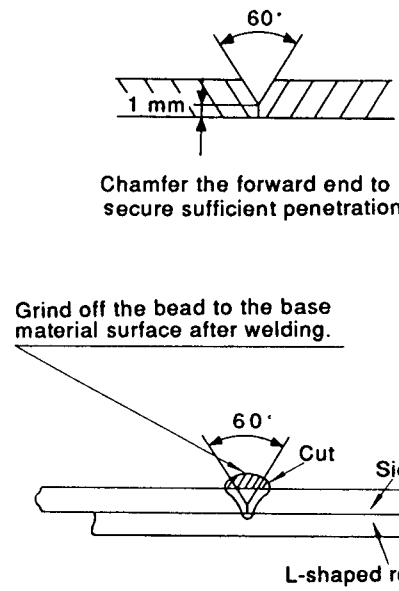
- The hole diameter should be in the range of 14 to 20 mm in principle.

(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





U-026 U-028
U-027 U-029

· 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

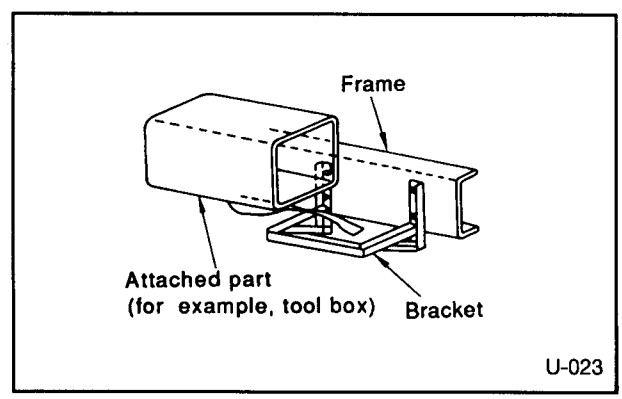
① Mount a part always using a bracket.

· 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.



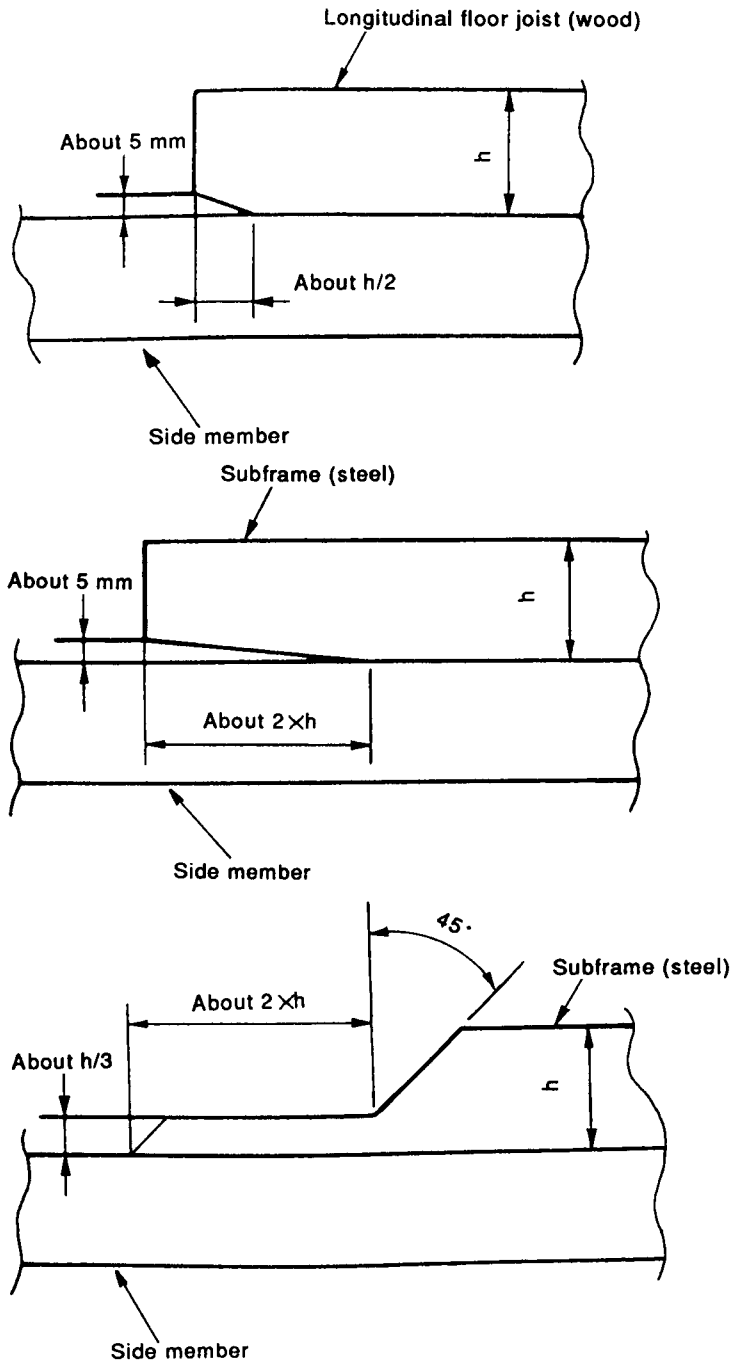
U-023

[3] Floor joist

(1) Front end style

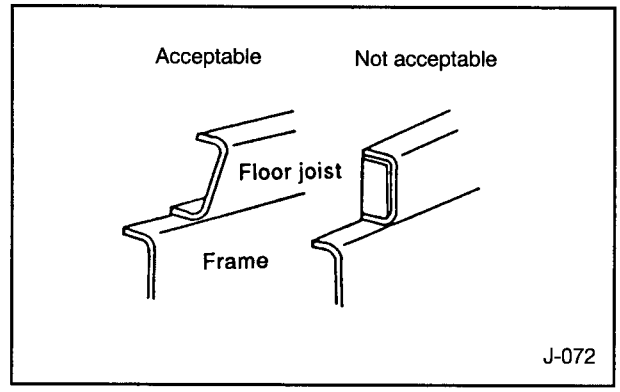
Avoid load concentration at the front end of the floor joist in contact with the side member as shown in the drawing. The shown shapes of the floor joist and the subframe are those for the common rear body, dump truck or tank lorry.

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.



J-123

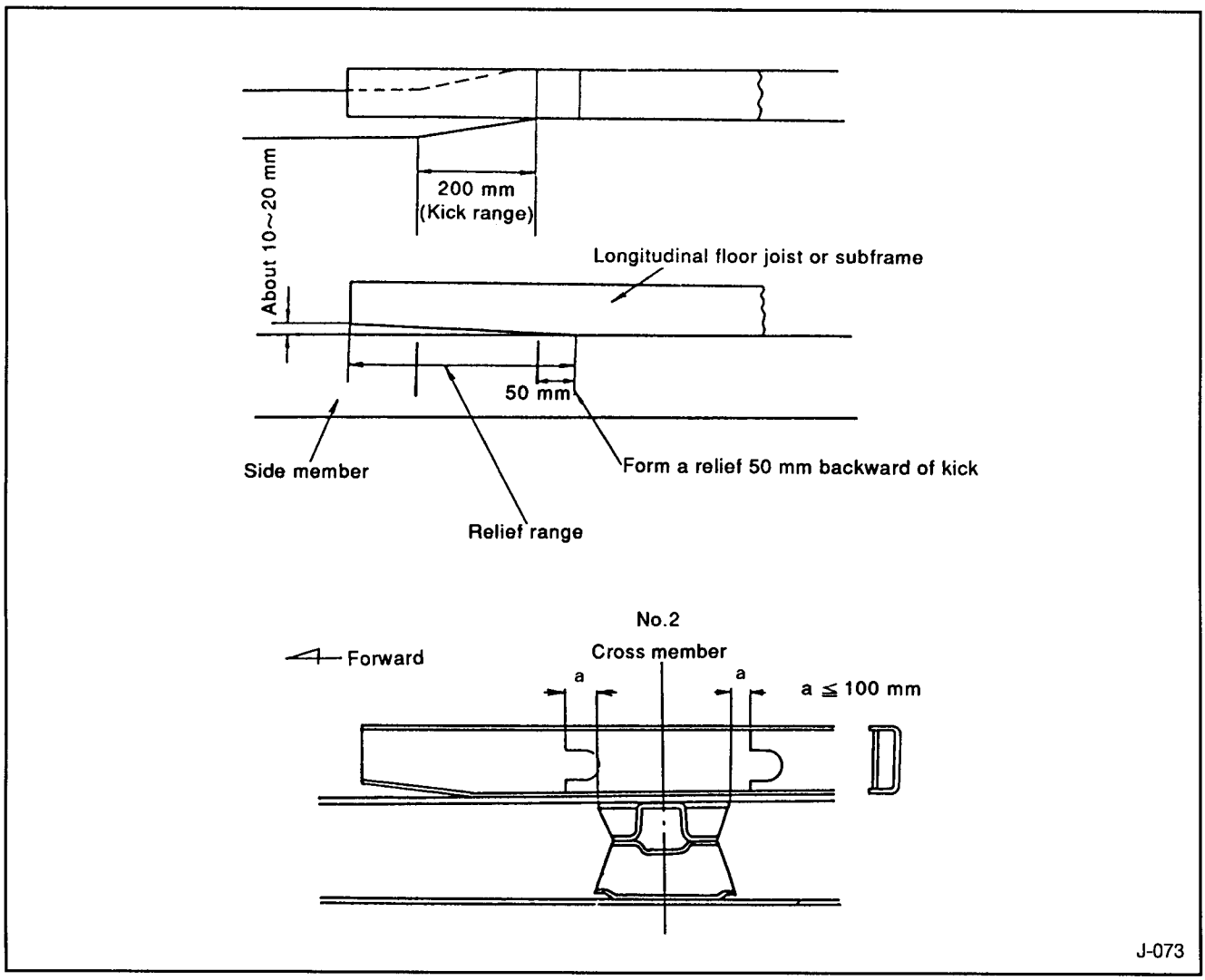
② When lightweight formed steel or the like is used as a floor joist, keep open as shown.
The floor joist, even if made of steel, should not be fixed on the frame by welding or bolting on the frame flange.



(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.

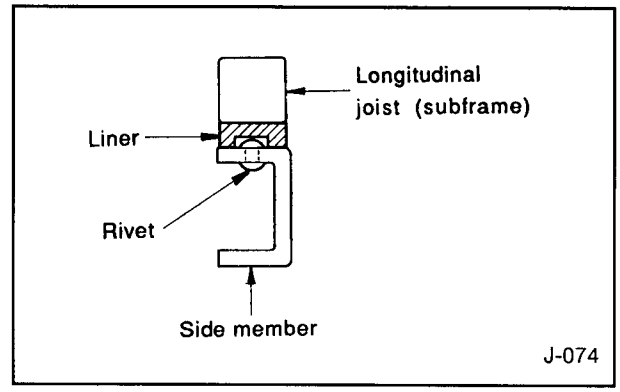
② In the case of a wooden joist which is difficult to arrange along the side members, a relief should be formed at a point 50 mm backward of the kick as shown.



(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.31 ~ 33) and the wheel house (P.55).

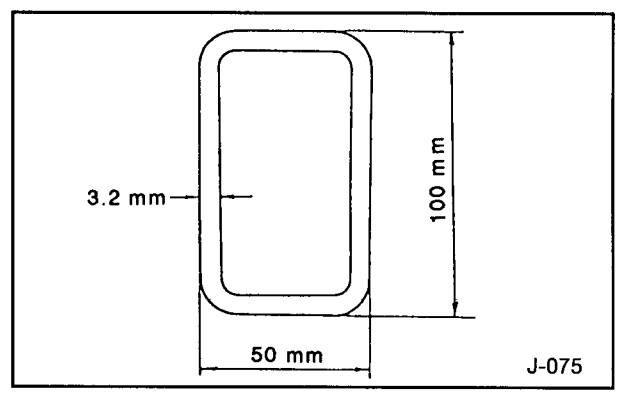
- For the vehicles having a long rear body, the sectional area of the longitudinal joist of the rear body should be set to a value greater than shown in the drawing.

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.



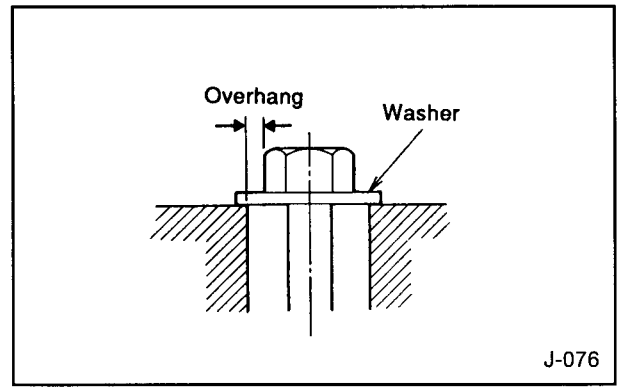
[5] Fastening bolts

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.

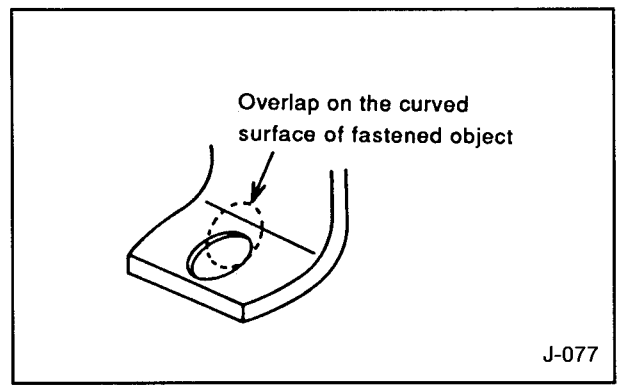
② Don't apply the sealer or vinyl chloride sol or rubber (resin) for the washer or coupling surface.

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



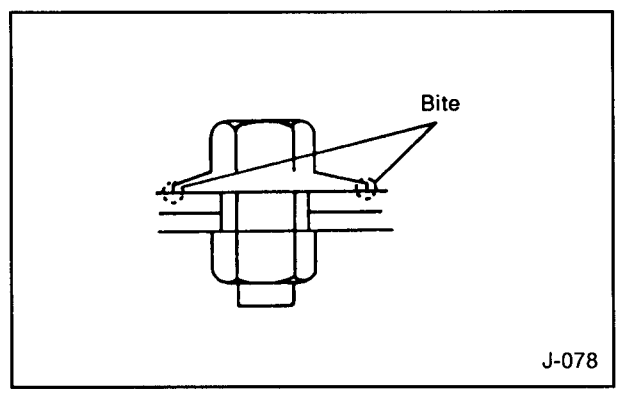
④ In order to prevent the curved surface of the fastened object from being overlapped on the washer, the washer should be sized taking the flat portion into consideration.

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



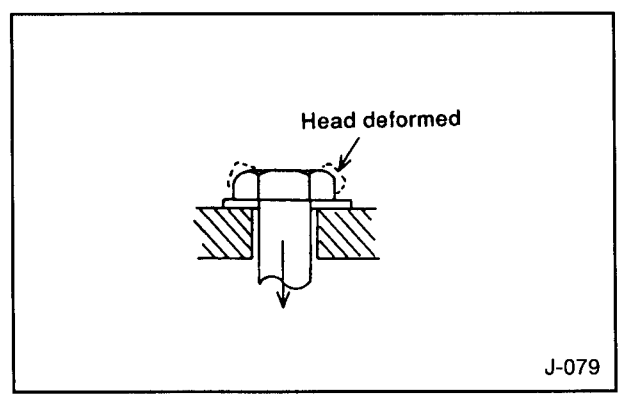
⑤ When the bolt and nut are used for fastening, tighten (turn) by the nut but not by the bolt.

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.



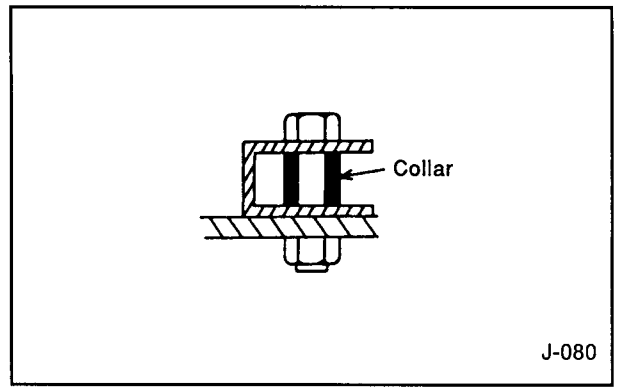
⑦ Don't reduce the thickness of the bolt head.

· 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.

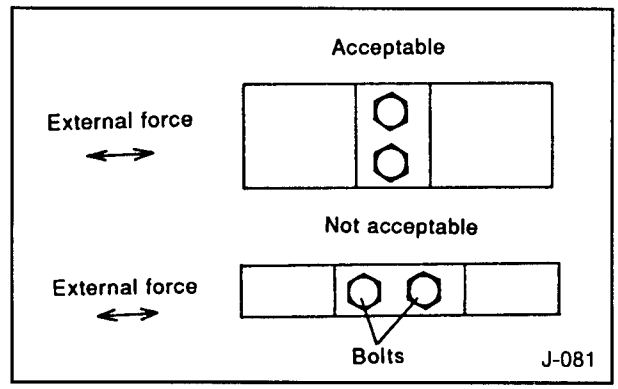
⑨ In the event that deformation of a member is threatened by fastening of a bolt, always be sure to insert a collar.



⑩ Be sure to use brand-new bolts and nuts.

· Never reuse bolts or nuts.

⑪ Install a bolt perpendicularly to the external force as shown.



⑫ Don't fail to apply masking so as not to allow deposit of paint on the threads of bolts.

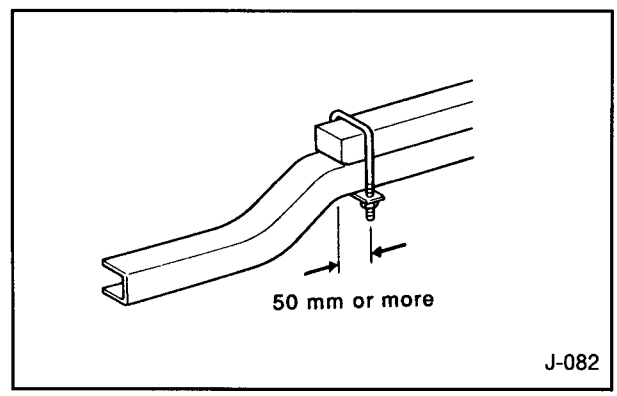
⑬ In case of painting a portion fastened with a bolt, don't fail to apply paint after completing the fastening.

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

[6] Fixing longitudinal joists

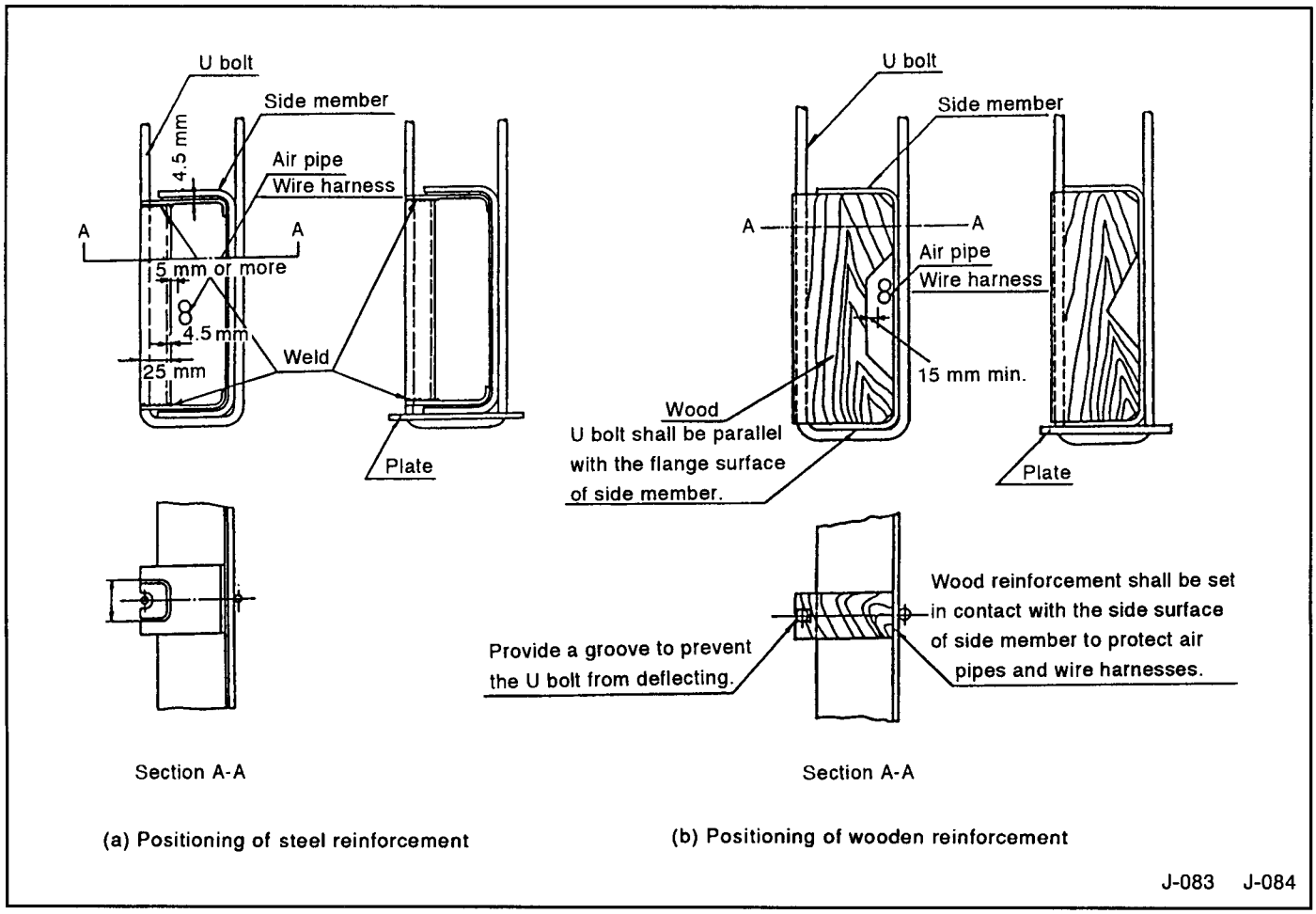
(1) How to fasten a U bolt

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.

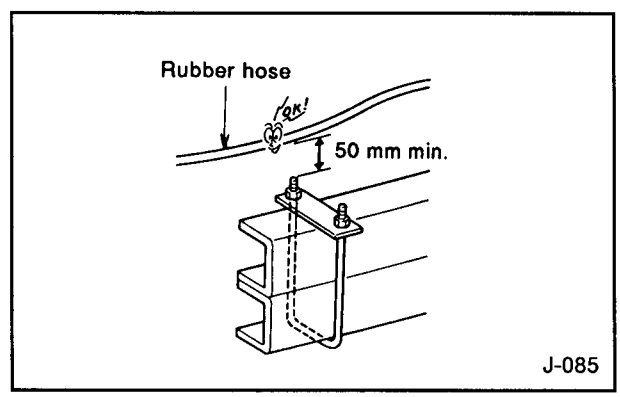


(2) Interference with U bolt

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.

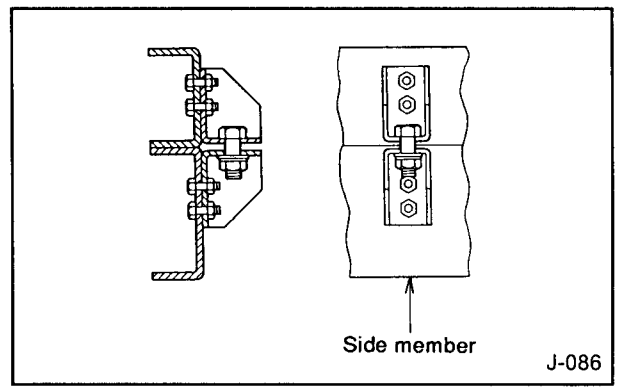
④ As regards the clearance with U bolts used for cab rear side and rear axle, refer to the cautions provided in the respective procedures for body building.

(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.

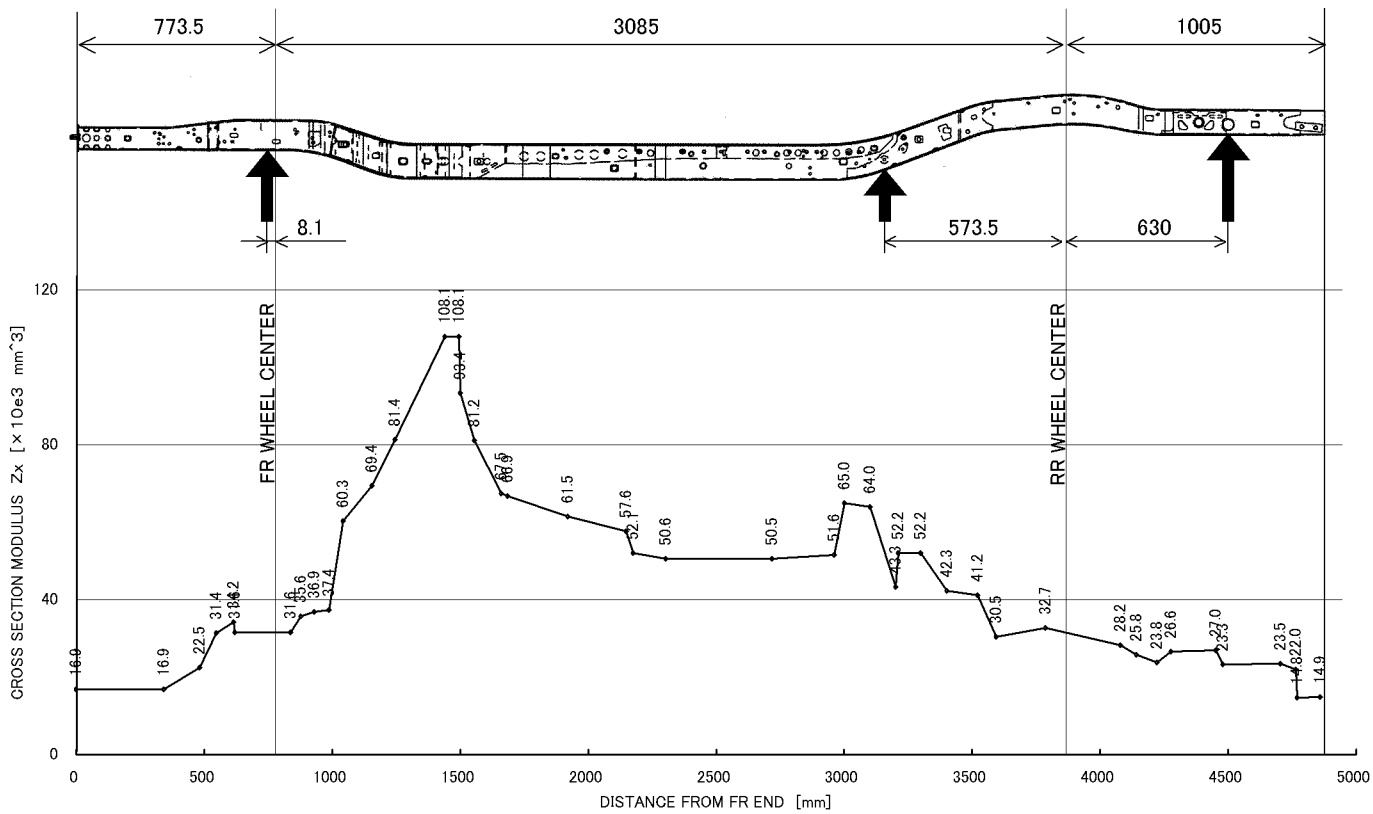
- When drilling a hole in side member, take sufficient care so as not to give any damage to brake pipe, fuel pipe and wire harnesses.

[7] Data for calculating frame strength

(1) Table of frame section modulus

TYPE	TENSILE STRENGTH	YIELD POINT
HOT ROLLED STEEL PLATES SHEET AND STRIP IN LENGTH	RAIL 440 Mpa INNER 440 Mpa	RAIL 305 MPa INNER 305 MPa

〔 2WD 〕

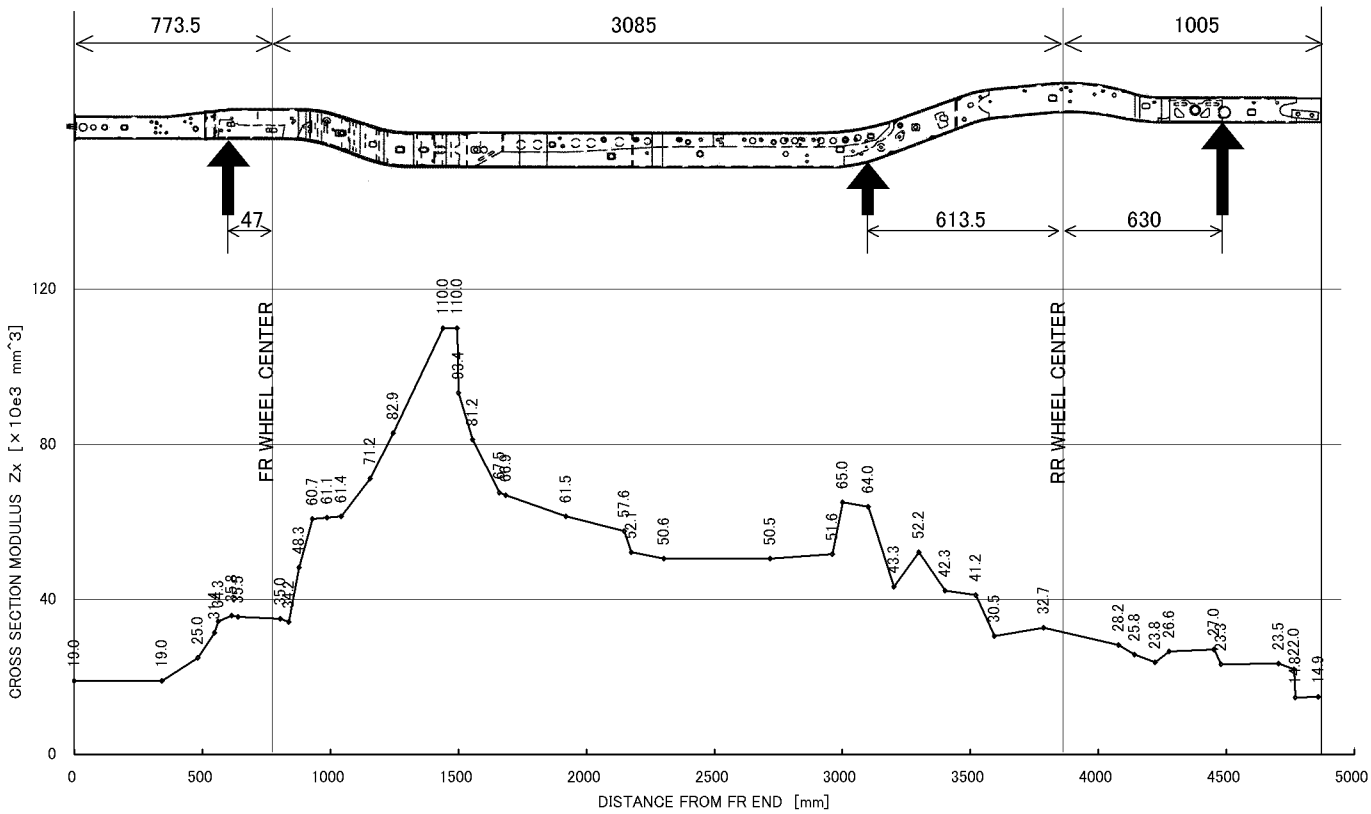


[7] Data for calculating frame strength

(1) Table of frame section modulus

TYPE	TENSILE STRENGTH	YIELD POINT
HOT ROLLED STEEL PLATES SHEET AND STRIP IN LENGTH	RAIL 440 Mpa INNER 440 Mpa	RAIL 305 MPa INNER 305 MPa

〔 4WD 〕



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.)

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.

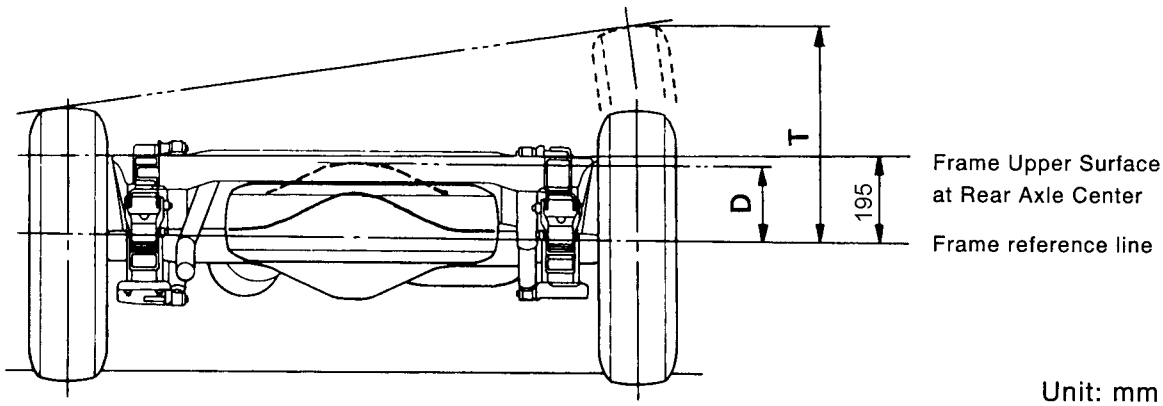
- In the case where these distances cannot be secured, protect the vehicle against heat using a heat insulating plate or the like.

[3] Tire

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

[4] Bound limit of tire and differential

[2WD]



Unit: mm

N-151

2WD			
Models	Tire Size	T	D
TGN15R -TRMDKN3	195R14C	364	114.5
TGN16R -TRMDKQ3	195R14C 205/70R15C 6JJ *	195R14C=364 205/70R15C=369.9	
KUN16R -TRMDYQ3			
GGN15R -TRMDKQ3	205/70R15C 6JJ		
GGN15R -TRADKQ3			
KUN15L -TRMDYW3	195R14C 205/70R15C 6JJ *		
KUN15L -PRMDYW3			
KUN15L -CRMDYW3			
KUN15R -TRMDYT3	195R14C		

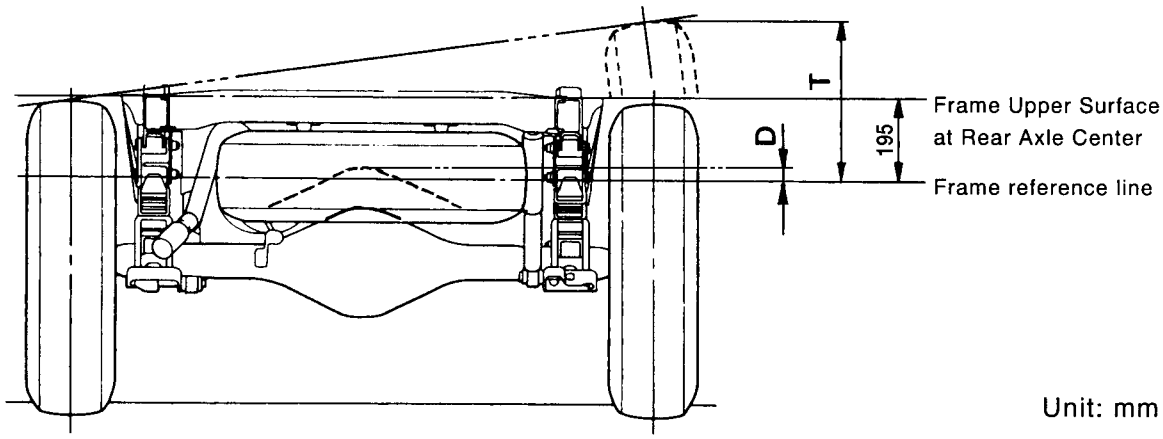
T:Tire Bounding Limit

D:Differential Bounding Limit

*:Optional Tire

[4] Bound limit of tire and differential

[4WD & Prerunner]



N-152

4WD & Prerunner			
Models	Tire Size	T	D
TGN26L -TRMDKL3	205R16C 6JJ 255/70R15C 7JJ *	205R16C=319.6 255/70R15C=327.3	31.5
TGN36L -TRMDKL3			
KUN35L -TRMDHL3			
KUN26R -TRMDYQ3			
KUN26R -PRMDYQ3			
KUN26R -CRMDYQ3			
KUN26R -TRPDYQ3			
GGN25R -TRMDKQ3			
GGN25R -TRADKQ3			
TGN36L -TRMDKG3			
KUN35L -TRMDHG3			
KUN25L -TRMDHG3			
KUN25L -TRMDHW3			
KUN25L -PRMDHW3			
KUN25L -CRMDHW3			

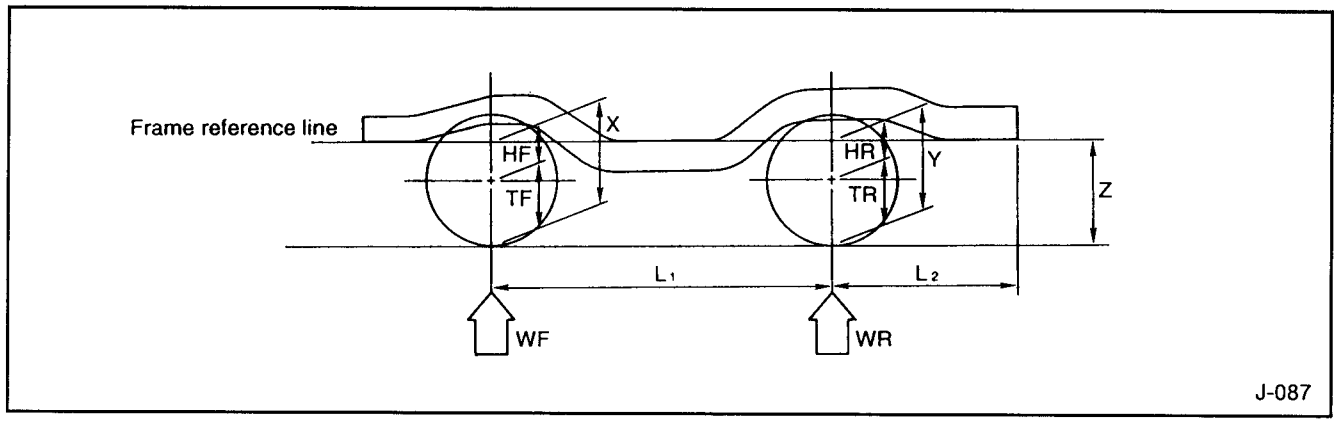
T:Tire Bounding Limit

D:Differential Bounding Limit

*:Optional Tire

[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.



$X = HF + TF$

$Y = HR + TR$

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

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.

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

$$Wr = \frac{WF - W_2}{2}$$

$$HF = H_{load} - \frac{Wf}{K_i}$$

$$HR = H_{load} - \frac{Wr}{K_i}$$

Wf	Single-wheel sprung load (front wheel) (N)
Wr	Single-wheel sprung load (rear wheel) (N)
WF	Front axle load (N)
WR	Rear axle load (N)
W_1	Unsprung load (front axle) (N)
W_2	Unsprung load (rear axle) (N)
H_{load}	Distance from wheel center to frame reference line with load of Gross Vehicle Weight (mm)
K_1, K_2	Spring constant (N/mm)
M	Load at the cross point of K_1 line and K_2 line
C_{load}	Leaf Camber at H_{load}

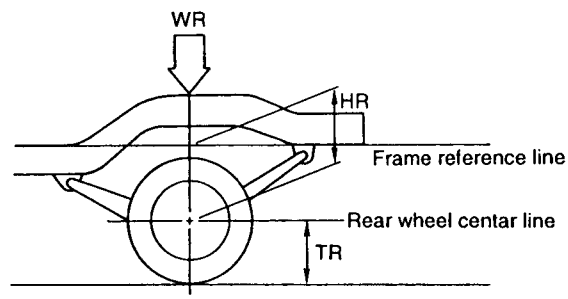
(2) Example of calculation

Let us calculate the frame reference line height from ground, Y, at the rear wheel center after rebuilding using the model TGN16R-TRMDKQ3 as an example. Suppose the rear axle weight after rebuilding as 16500N.

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

ex.

$$Wr = \frac{WR - W_2}{2} = \frac{16500 - 1800}{2} = 7350\ N$$



Rear wheel specifications

Composition : 1509 x 60 x 8 – 1
1289 x 60 x 8 – 1
1025 x 60 x 8 – 1
845 x 60 x 14 – 1
590 x 60 x 13 – 1

K_i :Spring constant 40.2 ~ 118.0 N/mm
W_2 :Unsprung load 1800 N
Tire size 195R14C

Y-132

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

※ H_{load} = 129.5 mm common value of 2WD
C_{load} = 19.0 mm
M = 3850 N

1) Wr > 3850 N

$$HR = H_{load} - \frac{Wr - 7350}{K_2}$$

at the time of Wr = 5000 N

$$HR = 129.5 - \frac{5000 - 7350}{118} = 149.4 \text{ mm}$$

2) Wr < 3850 N

$$HR = \frac{7350 - 3850}{118} + 129.5 + \frac{3850 - Wr}{K_1}$$

$$= 158.9 + \frac{3850 - Wr}{K_1}$$

at the time of Wr = 2000 N

$$HR = 158.9 + \frac{3850 - 2000}{40.2} = 199.1 \text{ mm}$$

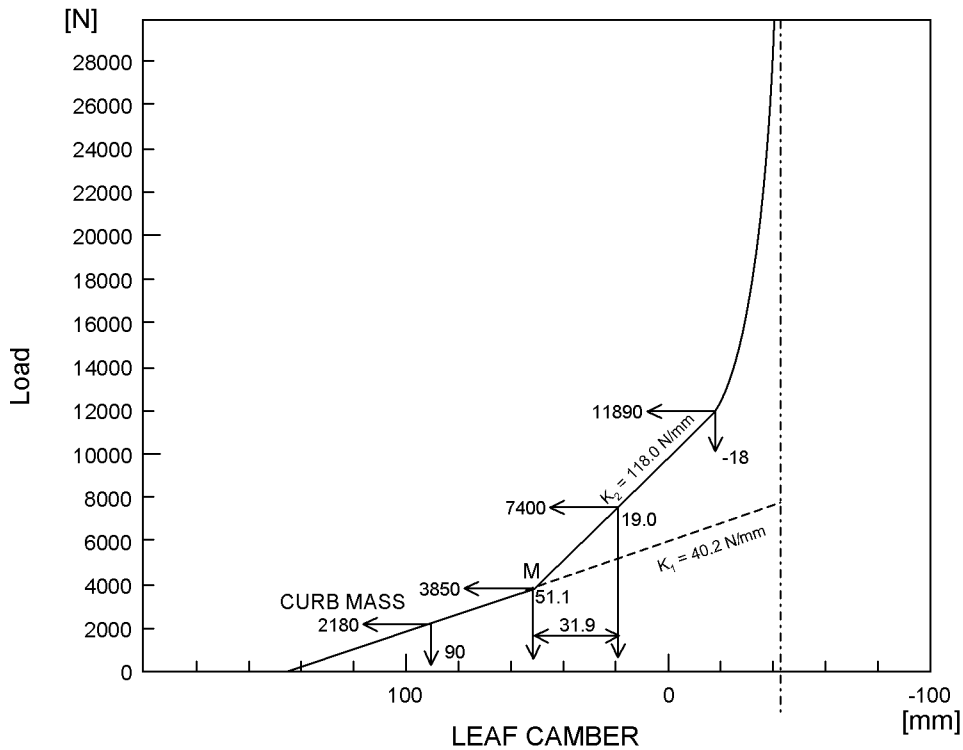
※ H_{load} = 148.5 mm common value of 4WD

Rear Suspension

Model
TGN16R-TRMDKQ3

Composition : 1509 x 60 x 8 – 1
1289 x 60 x 8 – 1
1025 x 60 x 8 – 1
845 x 60 x 14 – 1
590 x 60 x 13 – 1

W2 : Unsprung weight 1800N
TR : Static load radius 325 mm Tire size 195R14C



③By adding the distance from rear wheel center to frame reference line to the obtained value of static load radius for rear wheel with 195R14C tire, obtain the frame reference line height from ground at rear wheel center.

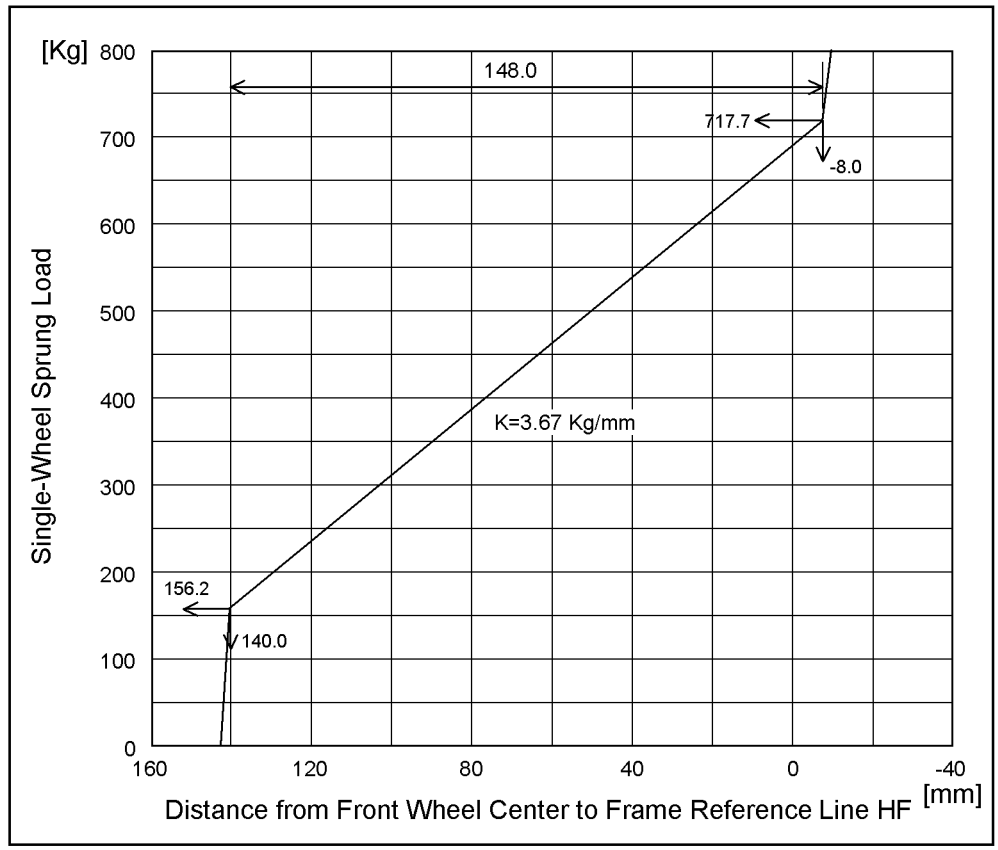
At the time of Wr = 2000N
Y = HR + TR = 199.1 + 325 = 524.1 mm
At the time of Wr = 5000N
Y = HR + TR = 149.4 + 325 = 474.4 mm

(3) Spring characteristics curve diagram

[2WD Front Suspension]

Applicable Model:

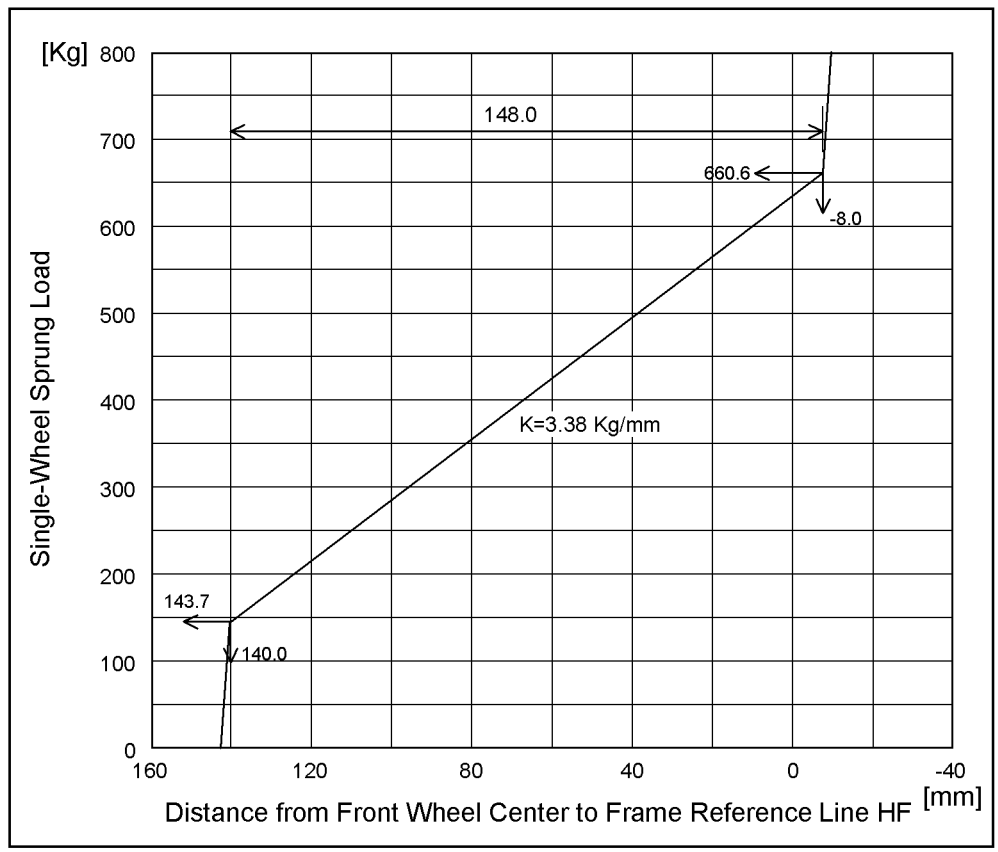
KUN15R -TRMDYT3
KUN16R -TRMDYQ3
KUN15L -TRMDYW3



[2WD Front Suspension]

Applicable Model:

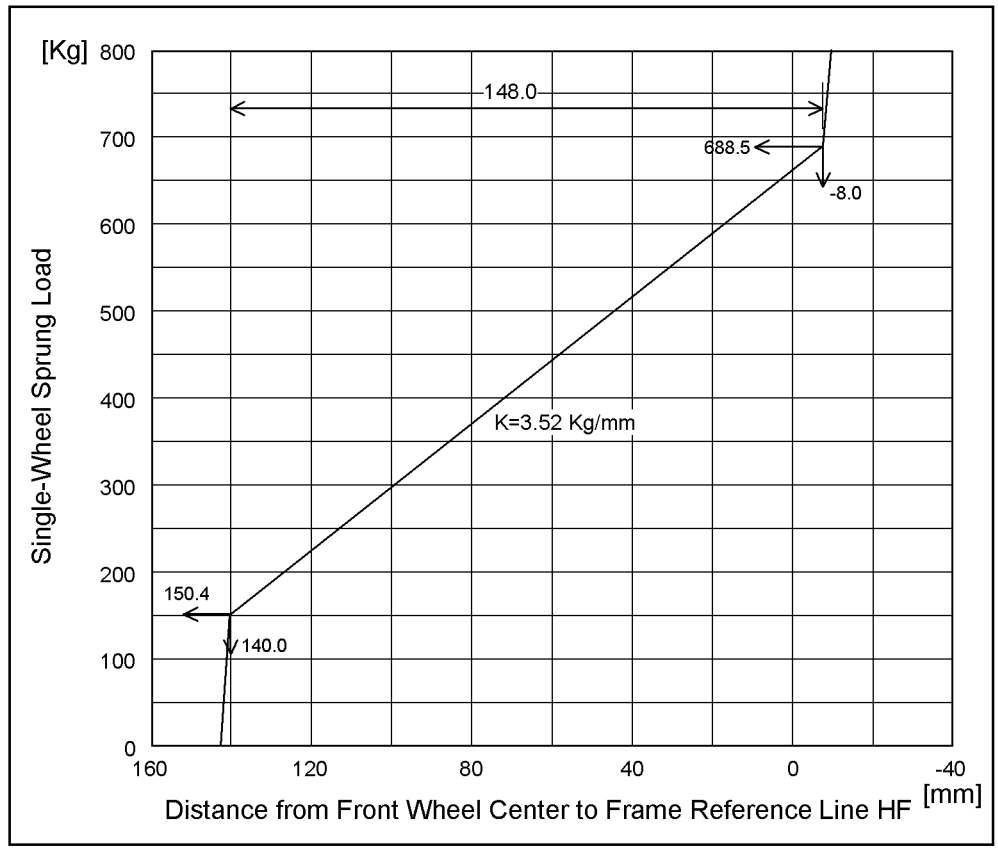
TGN16R -TRMDKQ3
TGN15R -TRMDKN3



[2WD Front Suspension]

Applicable Model:

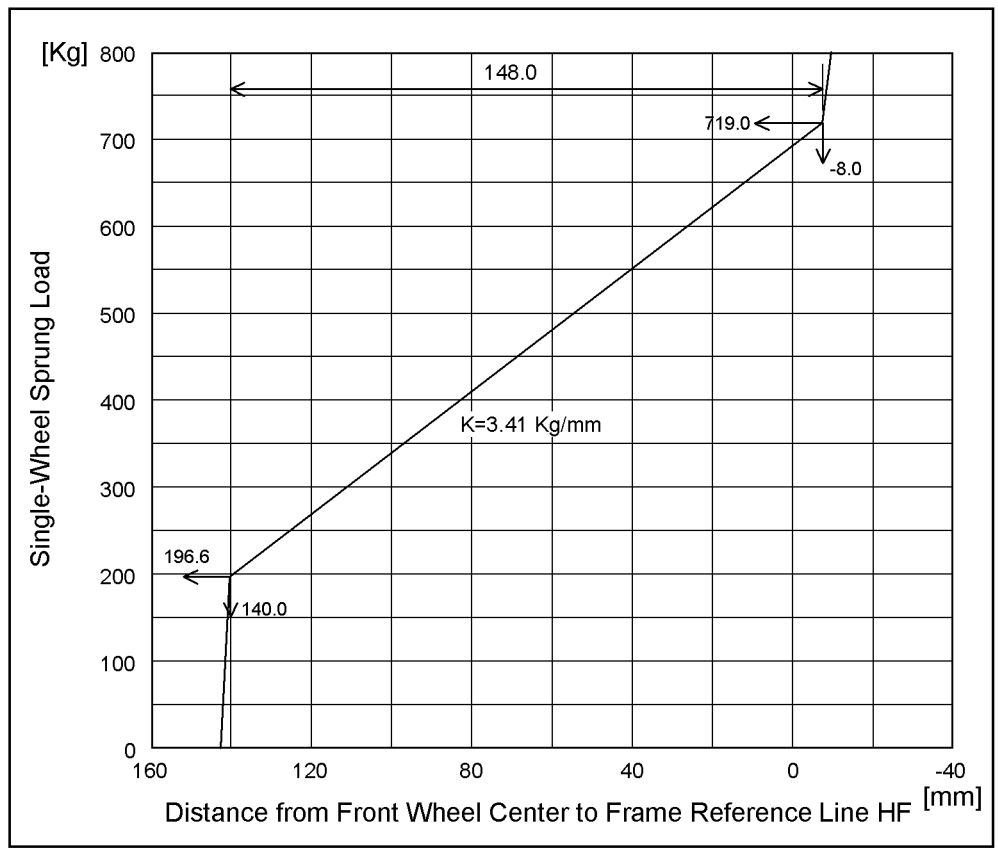
GGN15R -TRMDKQ3
GGN15R -TRADKQ3
KUN15L -CRMDYW3



[2WD Front Suspension]

Applicable Model:

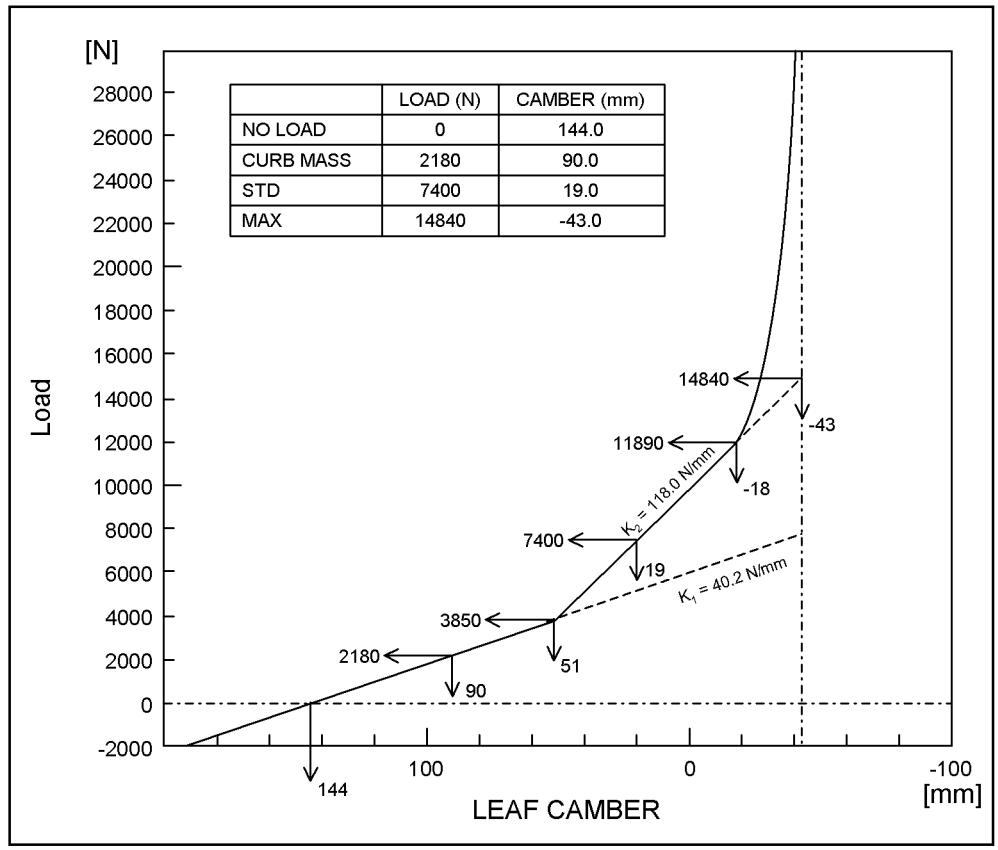
KUN15L -PRMDYW3



[2WD Rear Suspension]

Applicable Model:

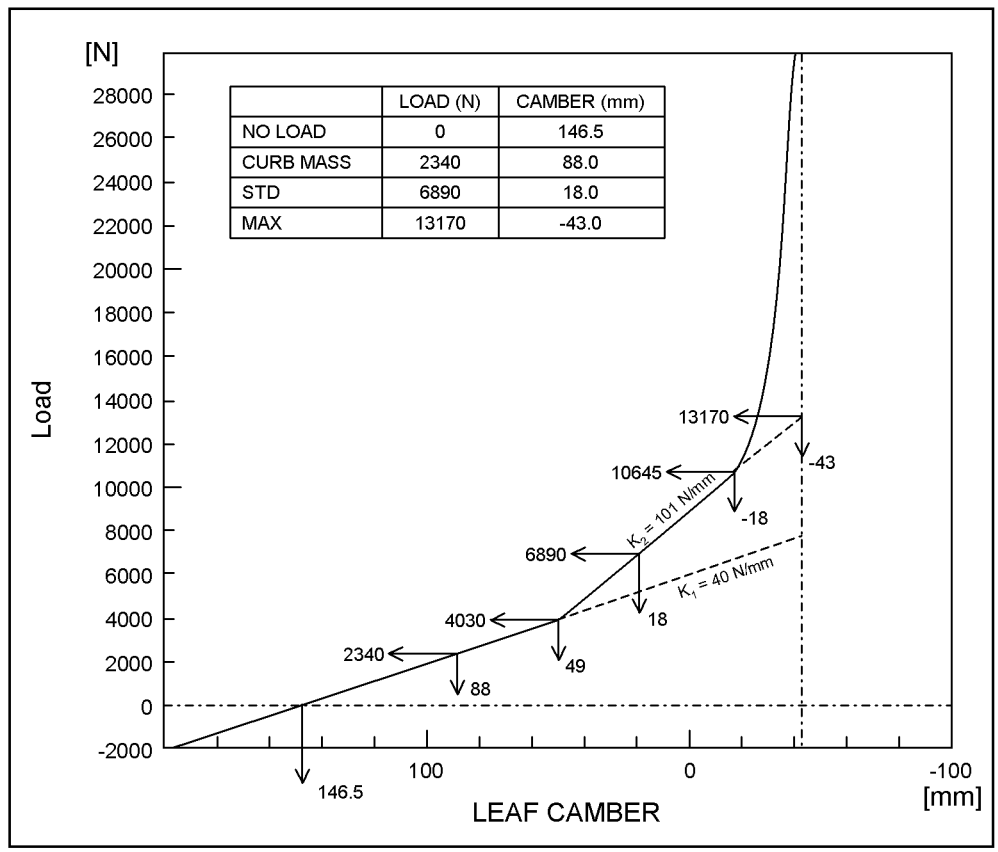
KUN15R -TRMDYT3
TGN16R -TRMDKQ3
KUN16R -TRMDYQ3
GGN15R -TRMDKQ3
GGN15R -TRADKQ3
KUN15L -TRMDYW3
TGN15R -TRMDKN3



[2WD Rear Suspension]

Applicable Model:

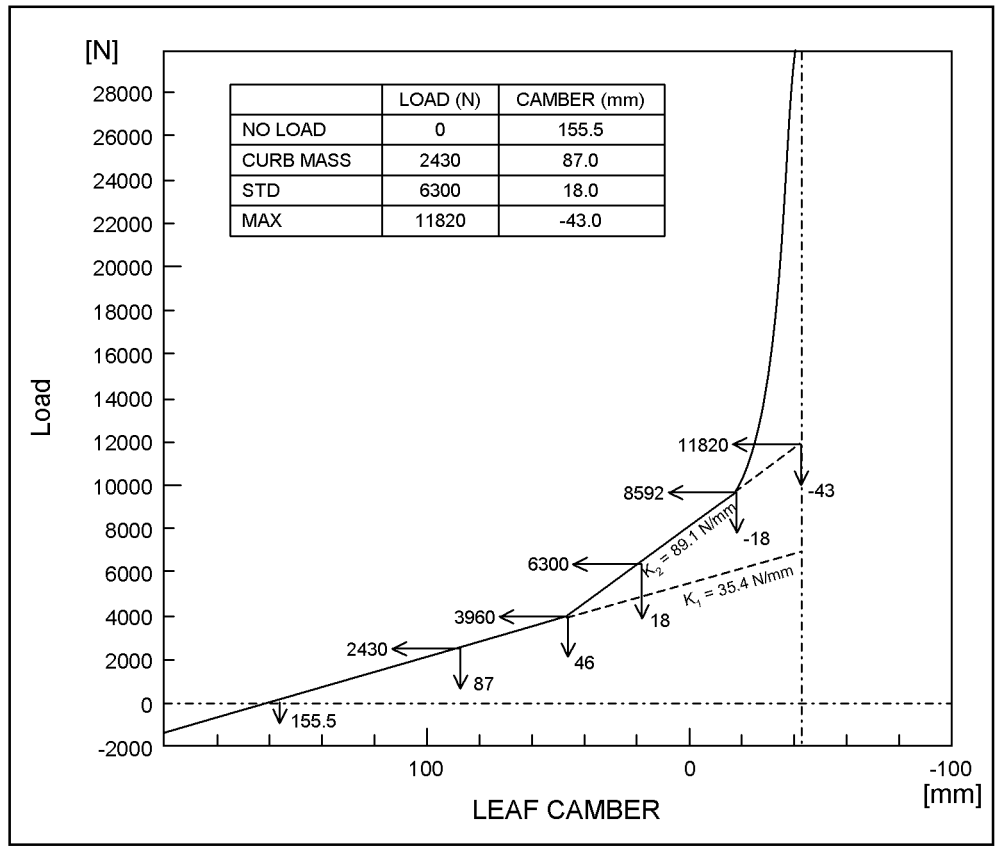
KUN15L -CRMDYW3



[2WD Rear Suspension]

Applicable Model:

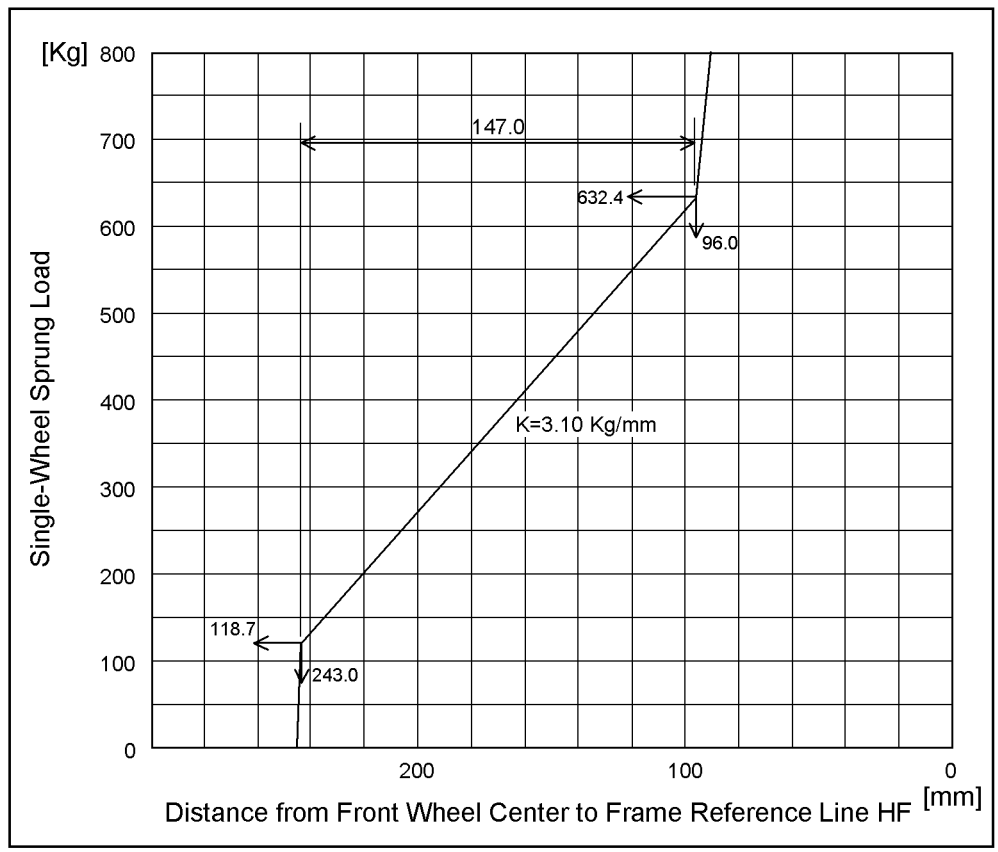
KUN15L -PRMDYW3



[2WD Prerunner Front Suspension]

Applicable Model:

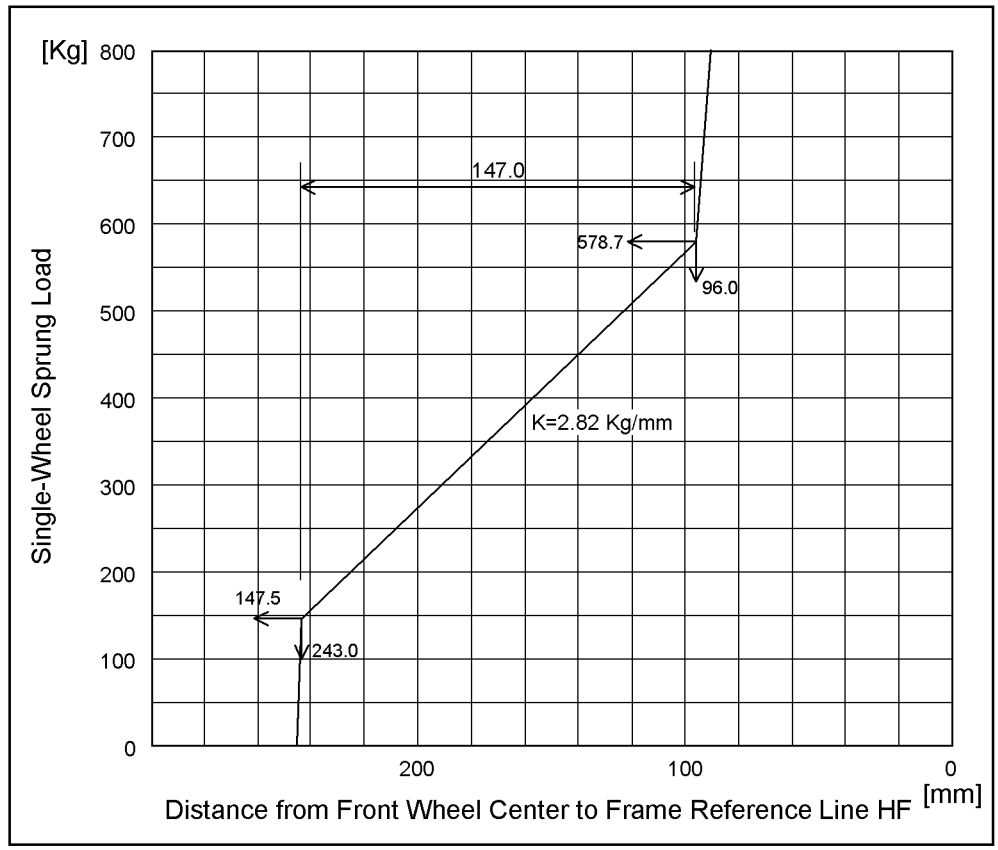
KUN35L -TRMDHG3
KUN35L -TRMDHL3



[2WD Prerunner Front Suspension]

Applicable Model:

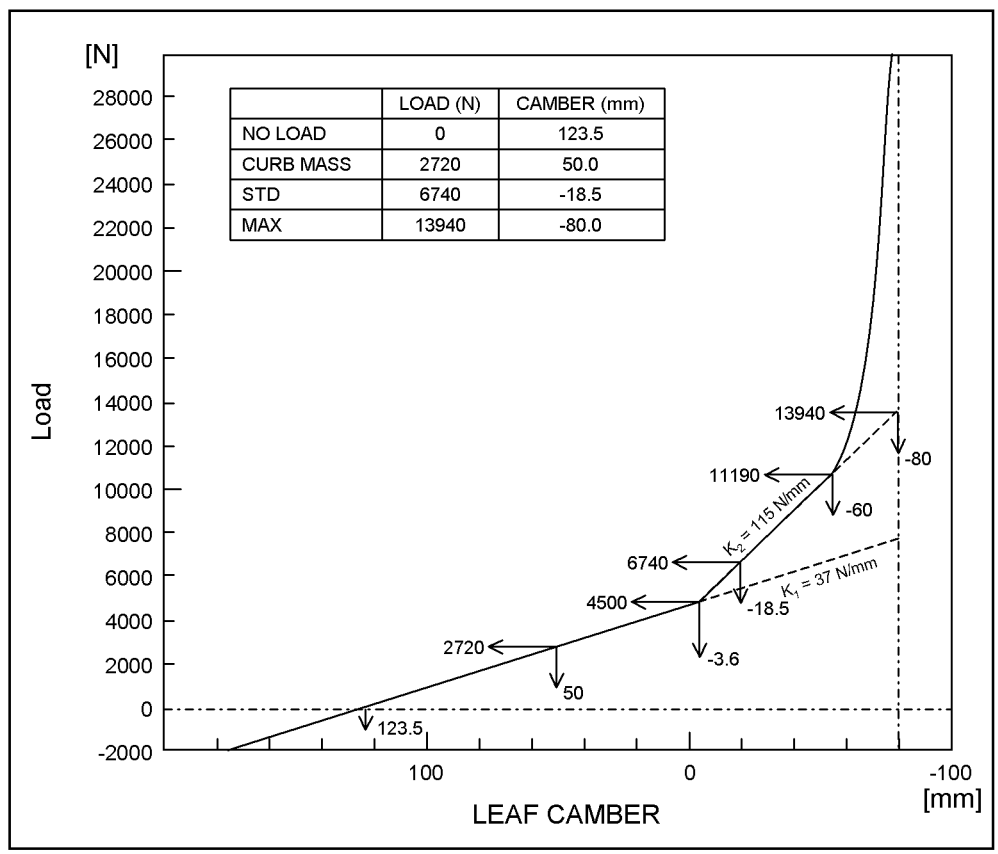
TGN36L -TRMDKG3
TGN36L -TRMDKL3



[2WD Prerunner Rear Suspension]

Applicable Model:

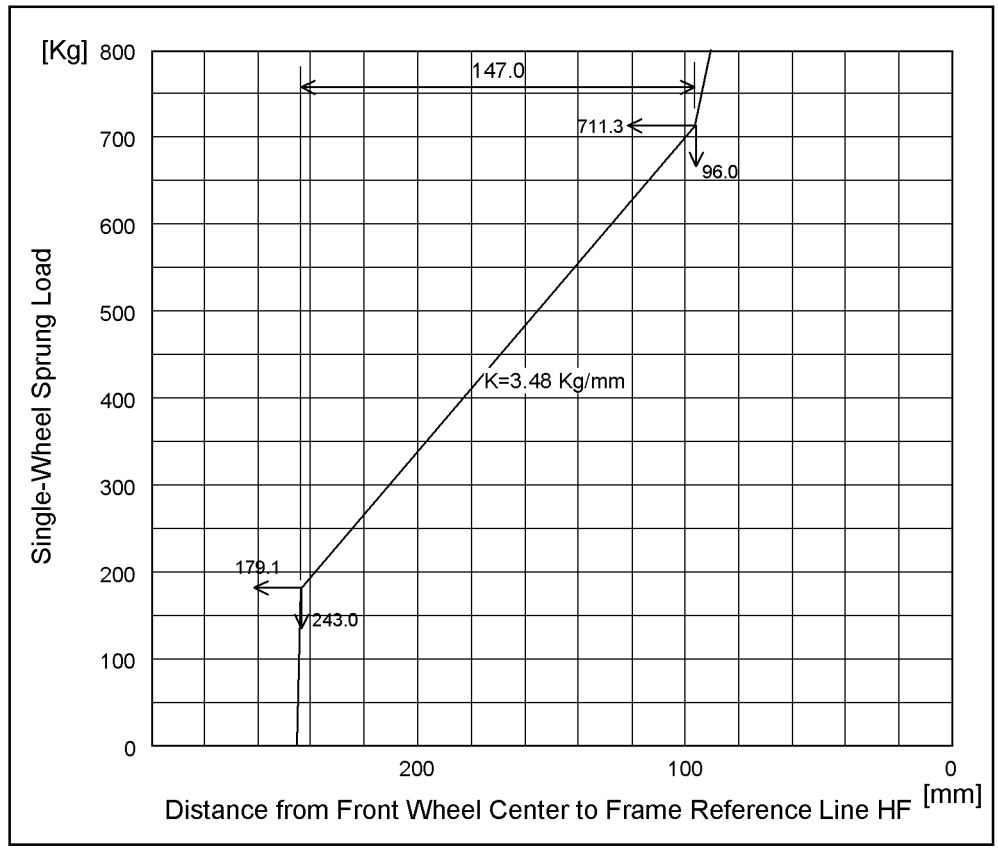
TGN36L -TRMDKG3
KUN35L -TRMDHG3
TGN36L -TRMDKL3
KUN35L -TRMDHL3



[4WD Front Suspension]

Applicable Model:

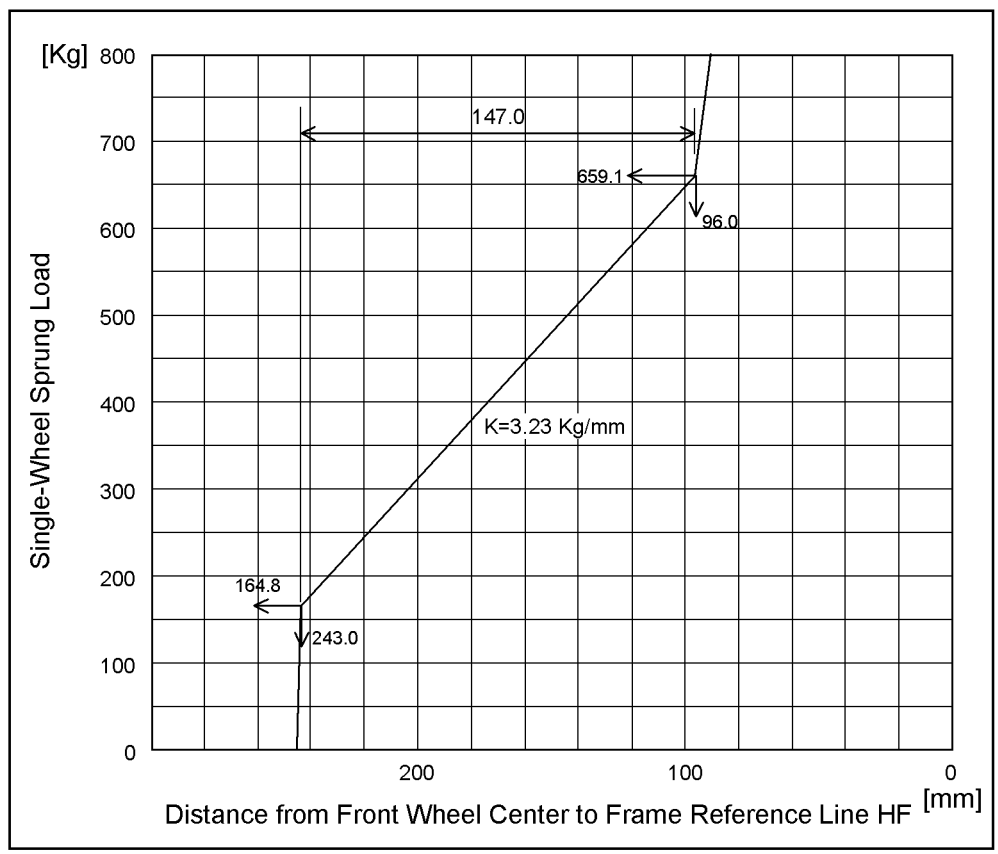
KUN26R -TRMDYQ3
KUN26R -TRPDYQ3
KUN26R -PRMDYQ3
KUN26R -CRMDYQ3



[4WD Front Suspension]

Applicable Model:

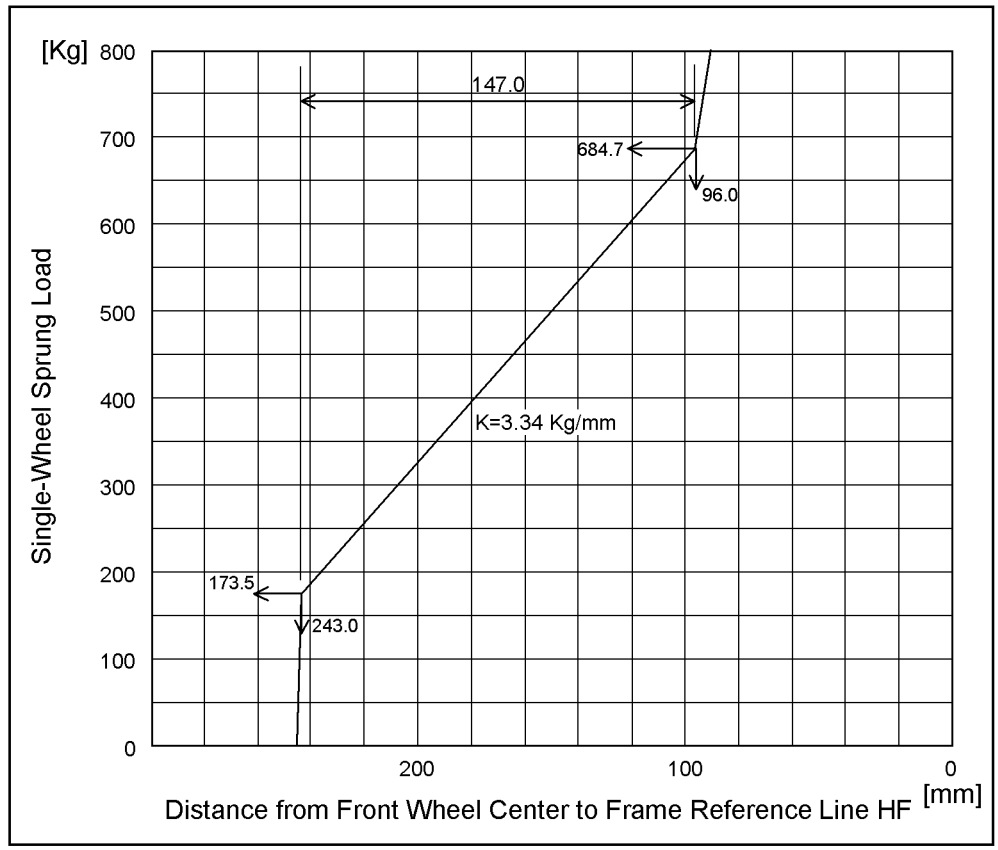
GGN25R -TRMDKQ3
GGN25R -TRADKQ3



[4WD Front Suspension]

Applicable Model:

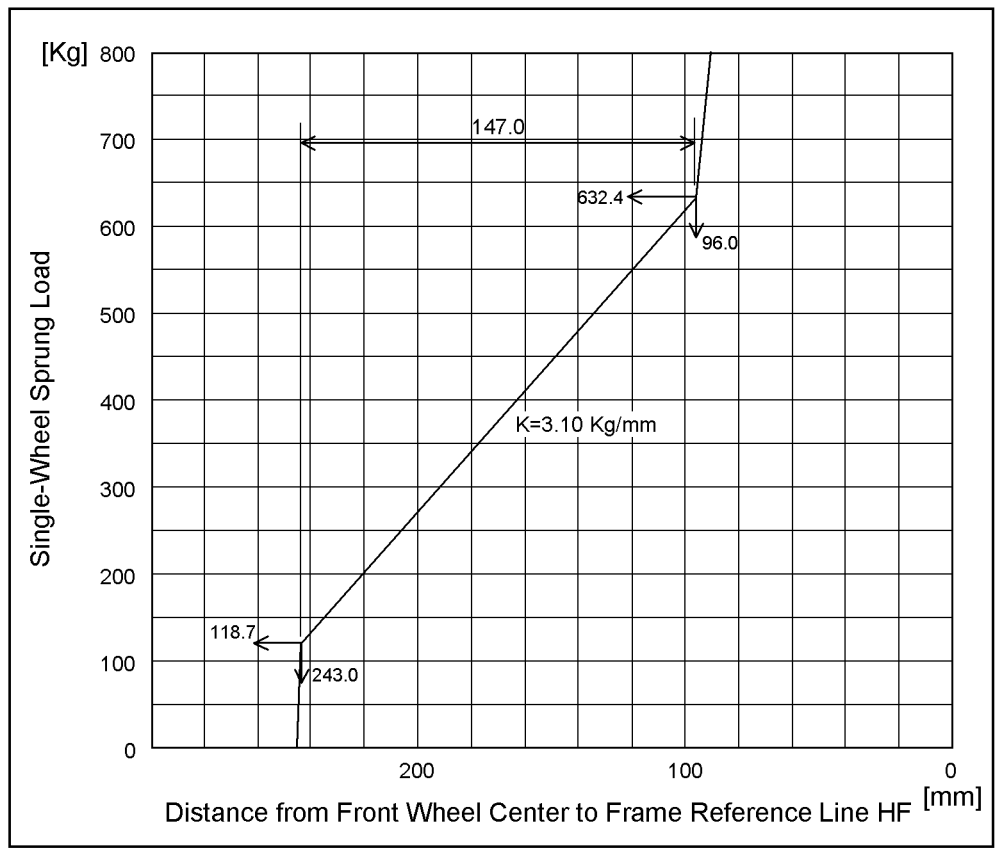
KUN25L -TRMDHG3
KUN25L -CRMDHW3
KUN25L -TRMDHW3
KUN25L -PRMDHW3



[4WD Front Suspension]

Applicable Model:

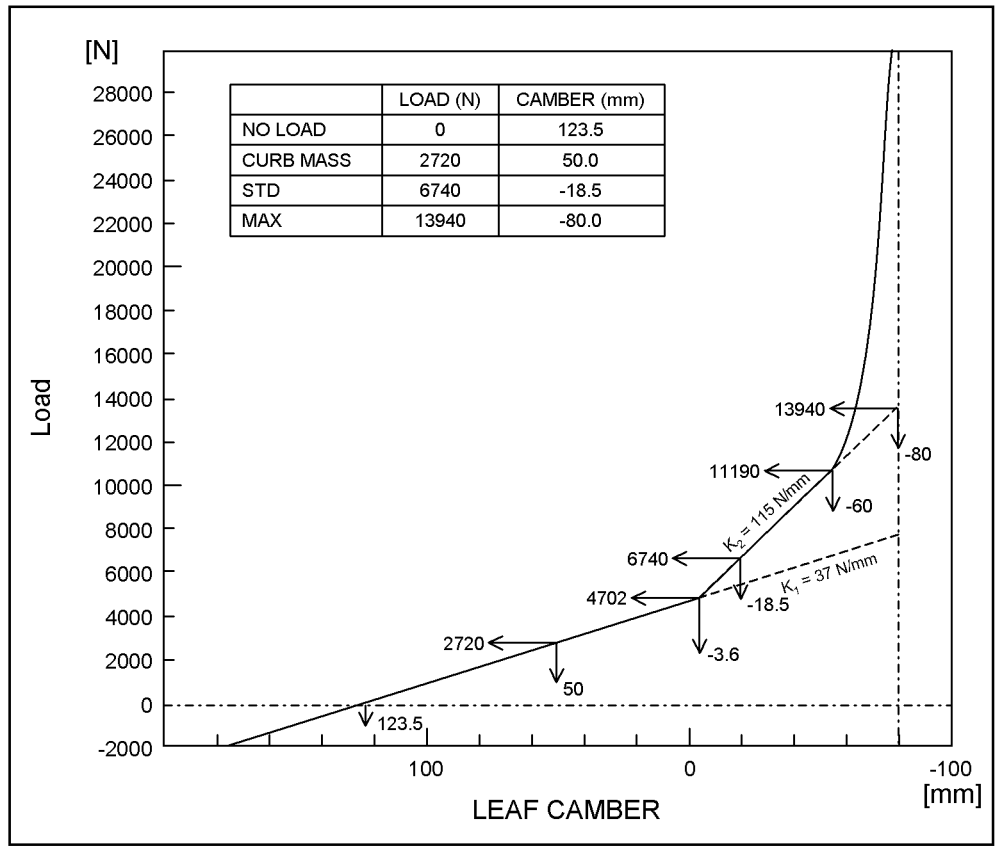
TGN26L -TRMDKL3



[4WD Rear Suspension]

Applicable Model:

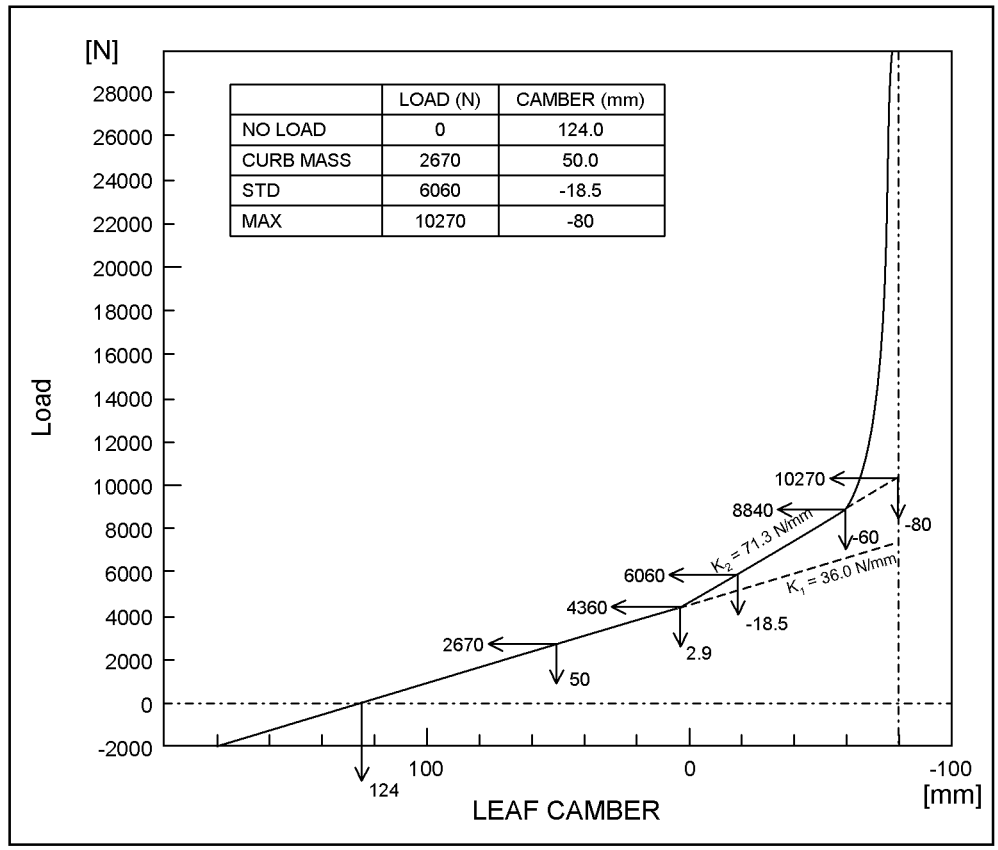
KUN26R -TRMDYQ3
KUN26R -TRPDYQ3
GGN25R -TRMDKQ3
GGN25R -TRADKQ3
KUN25L -TRMDHG3
TGN26L -TRMDKL3
KUN25L -TRMDHW3



[4WD Rear Suspension]

Applicable Model:

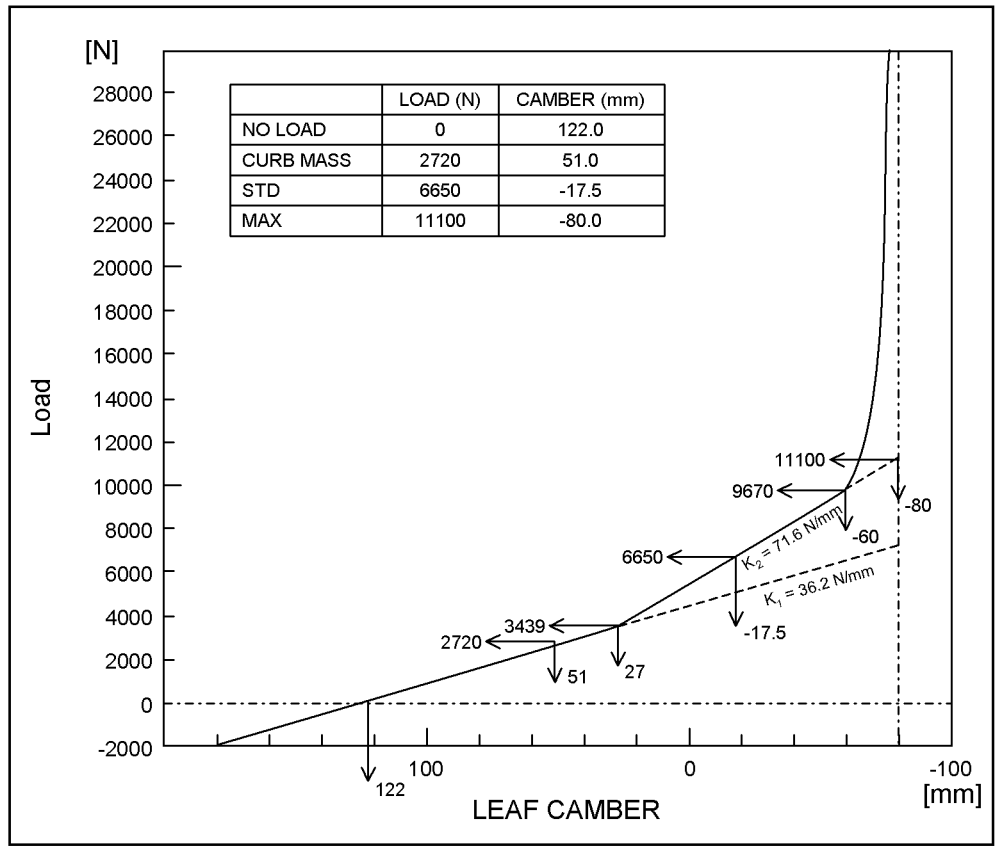
KUN26R -CRMDYQ3
KUN25L -CRMDHW3



[4WD Rear Suspension]

Applicable Model:

KUN26R -PRMDYQ3
KUN25L -PRMDHW3



4. TIRE INFLATION PRESSURE

2WD

Cab Type	Tire Size	Tire Inflation Pressure			
		Unloaded(kPa)		Loaded(kPa)	
		Front	Rear	Front	Rear
Single Cab	195R14C	240	300	240	450
	205/70R15C	240	330	240	450
Extra Cab	195R14C	260	260	260	400
	205/70R15C	260	290	260	400
Double Cab	195R14C	260	260	260	350
	205/70R15C	260	290	260	350

4WD & Prerunner

Cab Type	Tire Size	Tire Inflation Pressure			
		Unloaded(kPa)		Loaded(kPa)	
		Front	Rear	Front	Rear
Single Cab	205R16C	240	240	240	320
	255/70R15C	200	200	200	250
Extra Cab	205R16C	240	240	240	320
	255/70R15C	200	200	200	250
Double Cab	205R16C	240	240	240	320
	255/70R15C	200	200	200	250

1) All tire inflation pressure indicated are in the cold condition.
2) Adjust the inflation pressure of the spare tire to the rear tire loaded condition.

4.Body

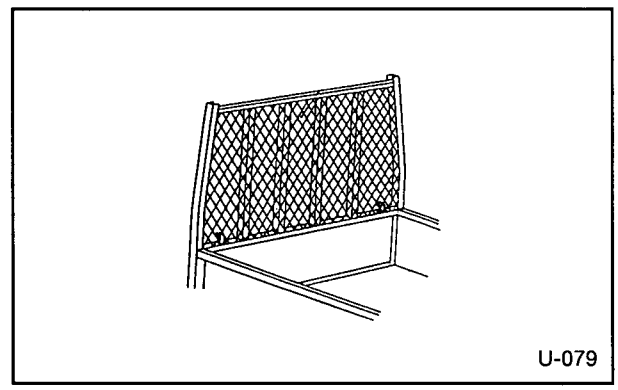
- In order to prevent intrusion of exhaust gas into the cab, surely seal all the holes and apertures in the cab including the floor.
- Don't remove the heat insulator from the base vehicle.

[1] Building and alterations to rear body and deck

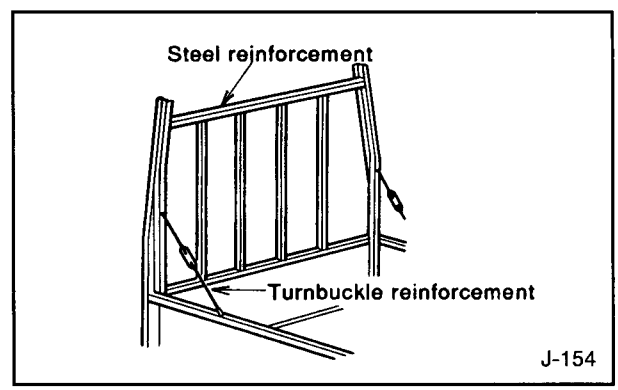
(1) Prevention of cargo drop

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] 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.

[3] 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.

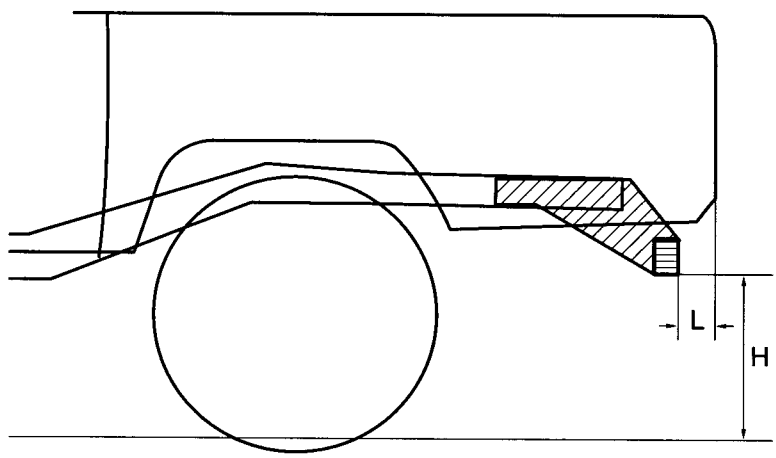
Thermal effect of exhaust system

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.

[4] Attachment of rear underrun protective device

Vehicle for the European market must install rear underrun protection for
EEC type-approval (81/333/EEC)
The lower edge of the device must be less than 55cm(H) above the ground.
The horizontal distance between the rear of the device and the rear extremity of the vehicle must not exceed 40cm(L).

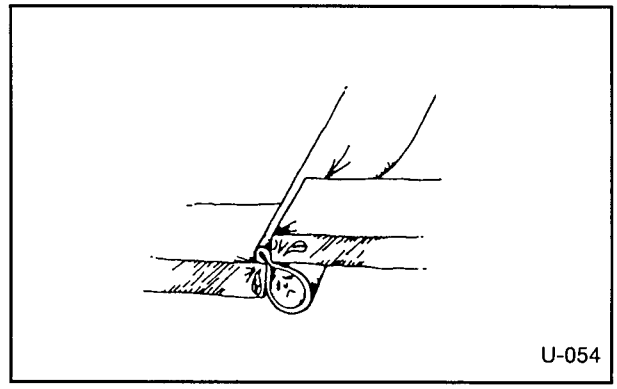


5. Brake

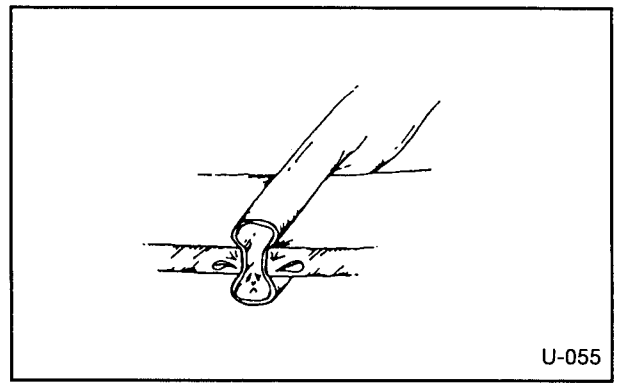
[1] Interference with piping

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

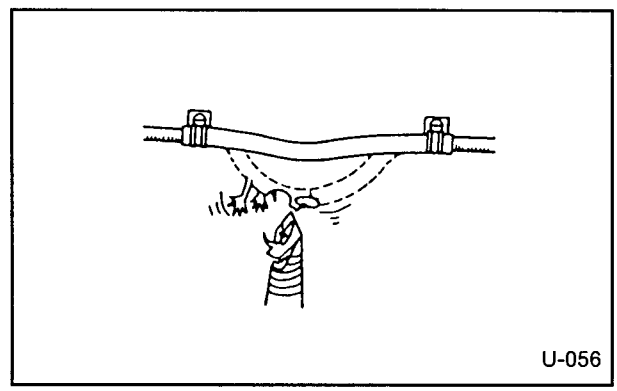
① Take care that the piping is not caught by other parts.



② Be sure that the piping is not flattened.

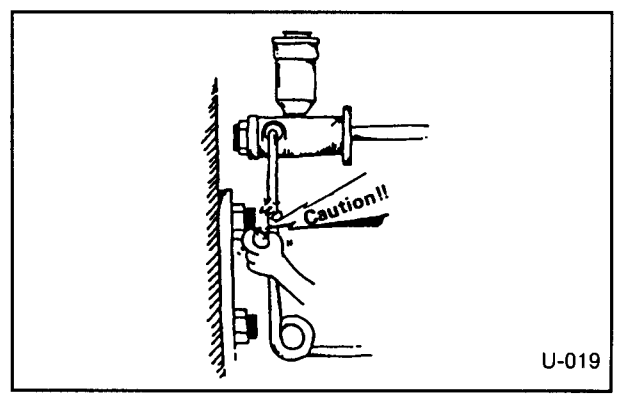


③ See to it that the piping is not in contact with the sharp-angle portion of other parts.

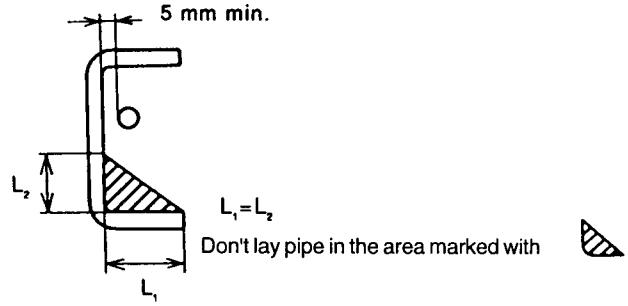
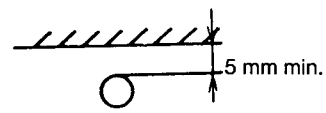
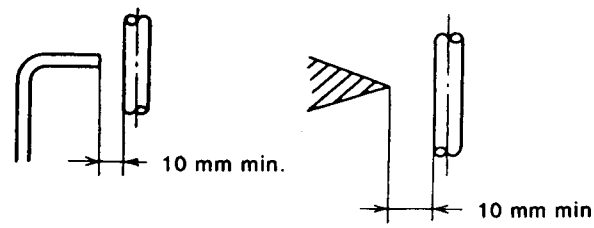


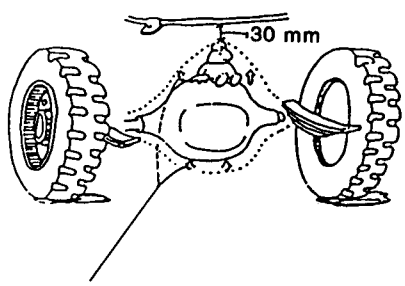
④ Pay attention to the displacement of the brake hose connected to the front and rear wheels while the vehicle is running.

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

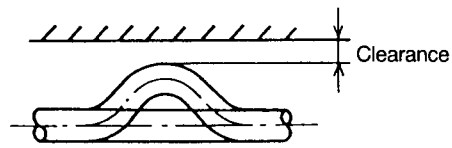
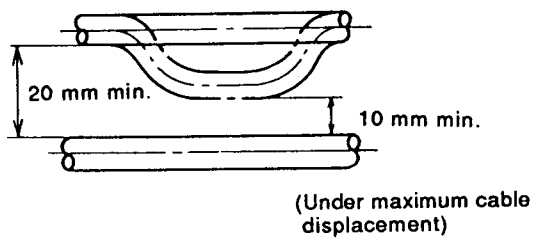


· Clearance between piping and alterations

No.	Portion	Clearance
1	Clearance between tube and frame	 J-092
2	Clearance between tube and flat metal surface	 J-093
3	Clearance between tube and metal corner edge	 J-094
4	Clearance between tube and structure · Piping on movable portions	10mm min Clearance with movable portions should be the amount of total movement plus 30 mm min.

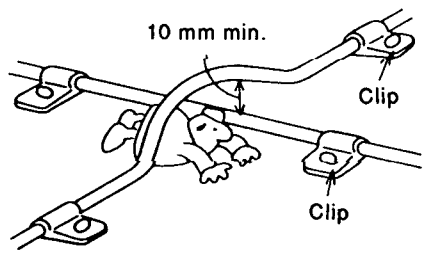


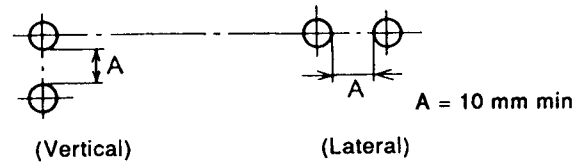
J-095

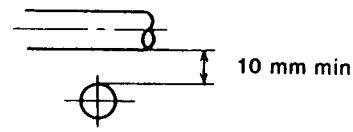
No.	Portion	Clearance
5	Clearance between hose and structure	For the brake hose connecting to the wheels, provide an additional 50 mm clearance from the maximum displacement point considering the movement encountered when the tire is steered full during running. 《Other hose 》 10 mm min. from flat portion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

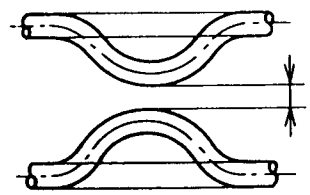
· Inter-pipe clearance

<table>
<tr><th>No.</th><th>Portion</th><th>Clearance</th></tr>
<tr><td>1</td><td>Inter-tube clearance
· Parallel pipes

· Crossed pipes
 

J-098</td><td> 

J-099
 

Clip near the crossing to eliminate instability
J-100</td></tr>
<tr><td>2</td><td>Inter-hose clearance</td><td> 

J-101</td></tr>
</table>

[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

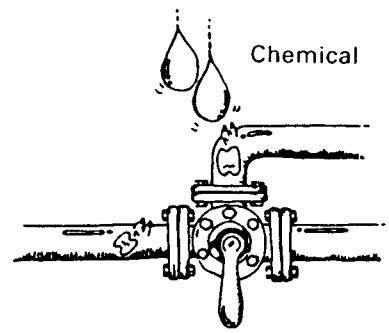
① Secure such a structure that refastening, maintenance, inspection and replacement are possible of the brake-related parts even after the particular building or alteration.

U-015

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.

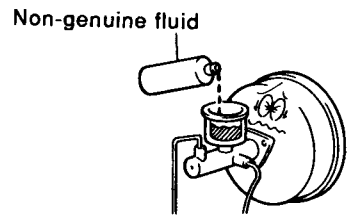


U-016

[5] Refilling brake fluid

In changing the brake fluid, use Toyota genuine brake and clutch fluid (Toyota Brake Fluid 2400H).

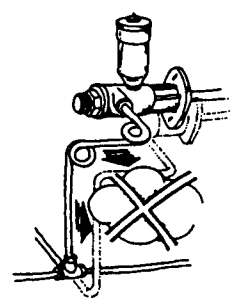
- Don't reuse the fluid that has been drained.
- Never use mineral oil or a mixture with other brands.



J-102

[6] Relocation of brake-related parts

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



U-017

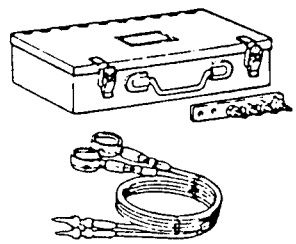
[7] Readjustment of LSPV

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	 J-017	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

Chassis	Body	Models	Rear axle load [Kg]
2WD	Single cab	KUN15R -TRMDYT3	800
		TGN16R -TRMDKQ3	
		KUN16R -TRMDYQ3	
		GGN15R -TRMDKQ3	
		GGN15R -TRADKQ3	
		KUN15L -TRMDYW3	
		TGN15R -TRMDKN3	
	Extra cab	KUN15L -CRMDYW3	850
	Double cab	KUN15L -PRMDYW3	900
Prerunner	Single cab	TGN36L -TRMDKG3	1000
		KUN35L -TRMDHG3	
		TGN36L -TRMDKL3	

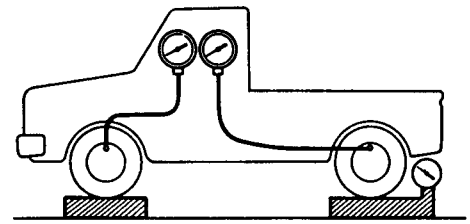
Chassis	Body	Models	Rear axle load [Kg]
4WD	Single cab	KUN26R -TRMDYQ3	1000
		KUN26R -TRPDYQ3	
		GGN25R -TRMDKQ3	
		GGN25R -TRADKQ3	
		KUN25L -TRMDHG3	
		TGN26L -TRMDKL3	
		KUN25L -TRMDHW3	
Prerunner		KUN35L -TRMDHL3	
4WD	Double cab	KUN26R -PRMDYQ3	
		KUN25L -PRMDHW3	
	Extra cab	KUN26R -CRMDYQ3	
		KUN25L -CRMDHW3	

<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.



N-027

③ Measurement of hydraulic pressure

(a) Depress the brake pedal until the oil pressure in the front wheel cylinder reaches 10 MPa ,

- Don't depress the brake pedal a number of times.
- When the oil pressure in the front wheel cylinder exceeds 10 MPa , release the pedal completely and then depress it again.

(b) After holding the oil pressure in the front wheel cylinder at (10 MPa) for two seconds, measure the oil pressure in the rear wheel cylinder.

Standard rear liquid pressure

2WD	5.26±0.49 Mpa	**4WD**	4.45±0.49 Mpa

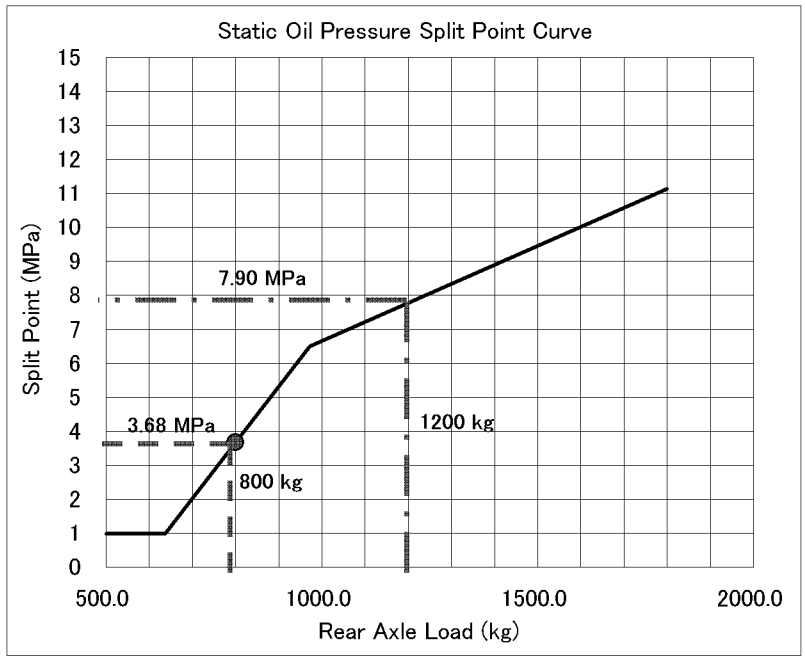
④ How to determine standard oil pressure in rear wheel cylinder

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 1200 kgf, the oil pressure bend point is 7.90 MPa .

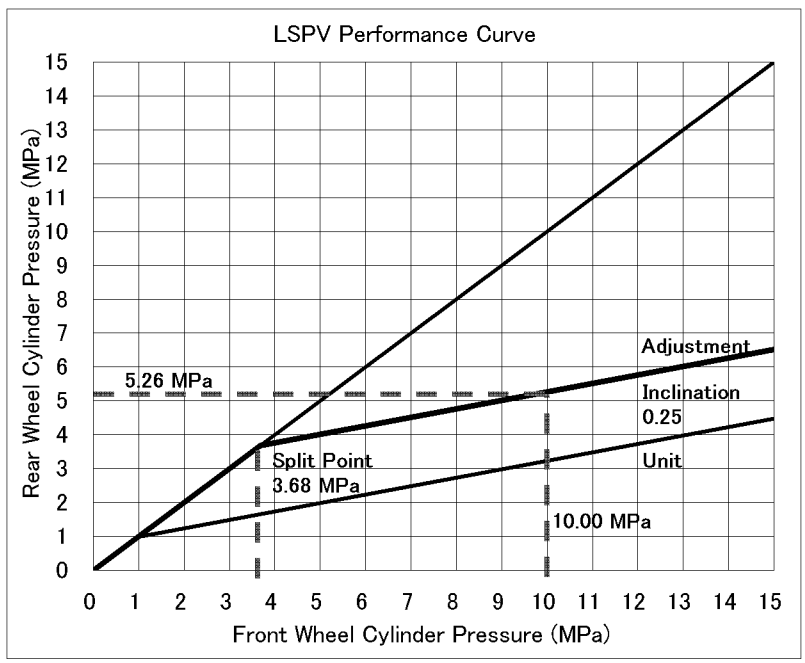
Static oil pressure curve bend point diagram



(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 10 MPa.

Ex: In the case where the bend point of oil pressure stands at 3.68 MPa, the standard value for rear wheel cylinder oil pressure becomes 5.26 MPa, at the time when the front wheel cylinder pressure is at 10 MPa.

LSPV performance curve diagram



How to calculate standard oil pressure

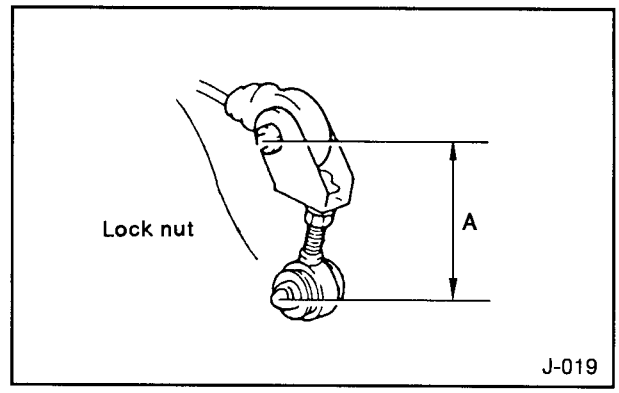
When the break point (x) is known, the oil pressure in the rear wheel cylinder against that in the front wheel oil cylinder is determined by the following equation:

Ex : Rear wheel cylinder oil pressure for front axle load of 10 MPa

Inclination x (X - Ps) + Ps = 0.25 x (10 - 3.68) + 3.68 = 5.26

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.)

2WD	Standard Dimension A	120 mm
	Adjustment range	114 mm ~ 126 mm
4WD Prerunner	Standard Dimension A	190 mm
	Adjustment range	184 mm ~ 196 mm

- Lock nut fastening torque T = 130 kgf cm.

Oil pressure change adjusted per "A" Length

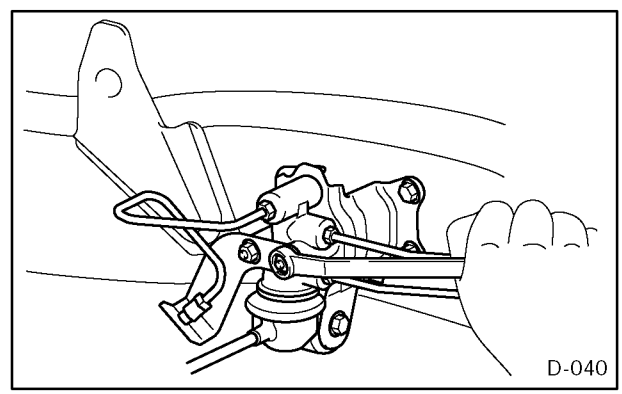
Vehicle type	Change of fluid Pressure per "A" Length
2WD	0.14 MPa/mm
4WD Prerunner	0.12 MPa/mm

(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.

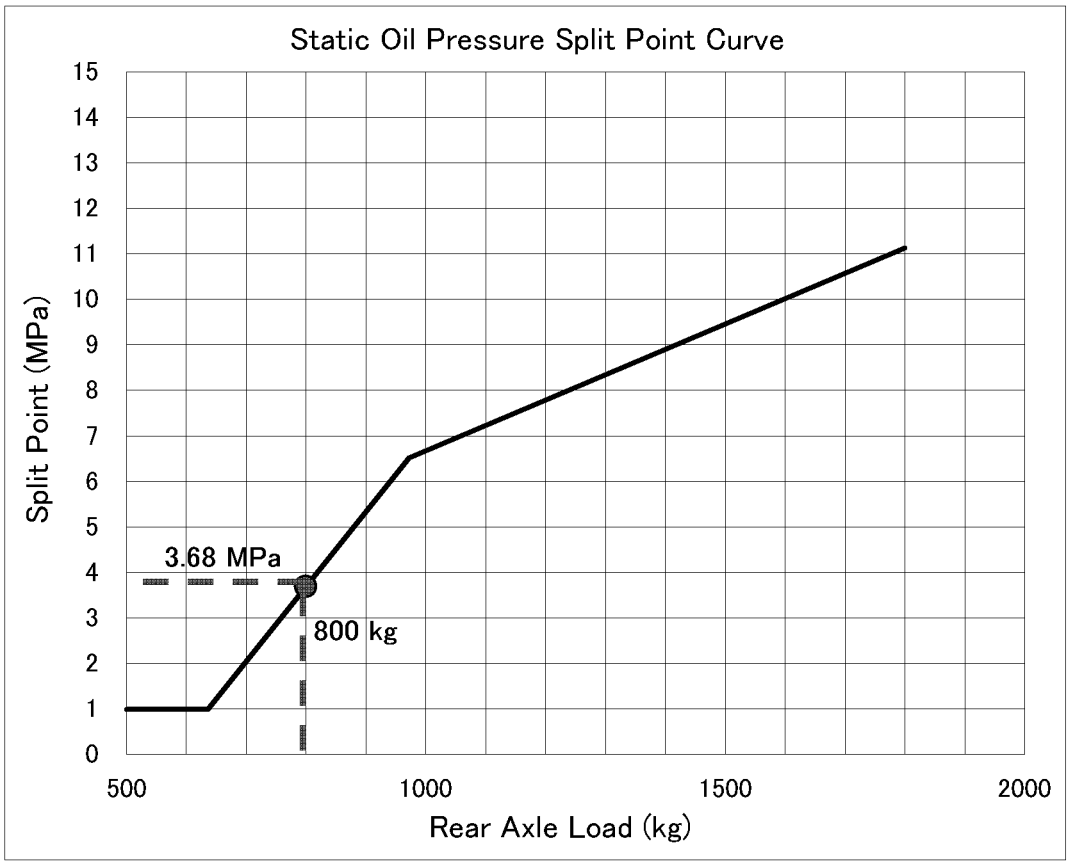
When oil pressure is high, raise the LSPV body.

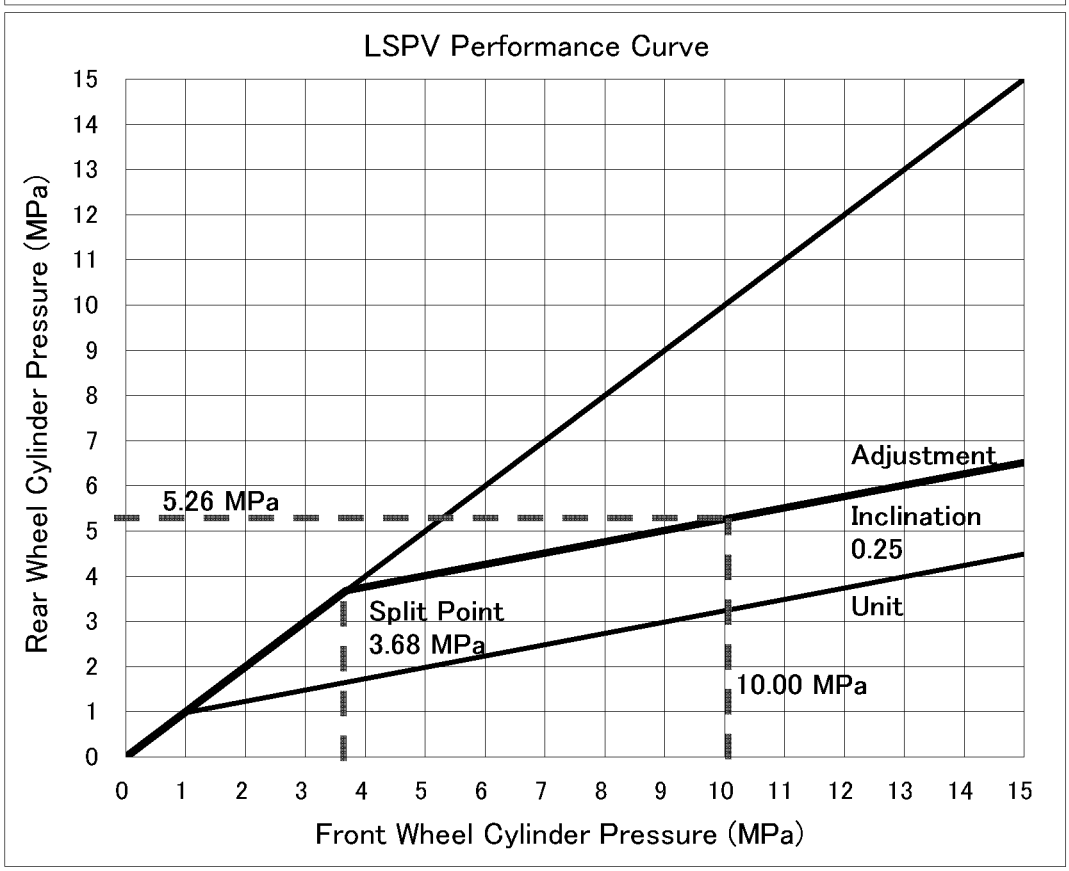


- Set nut fastening torque T = 130 kgf cm.
- After adjusting with LSPV body, readjust the length (Dimension A) of the shackle No.2.

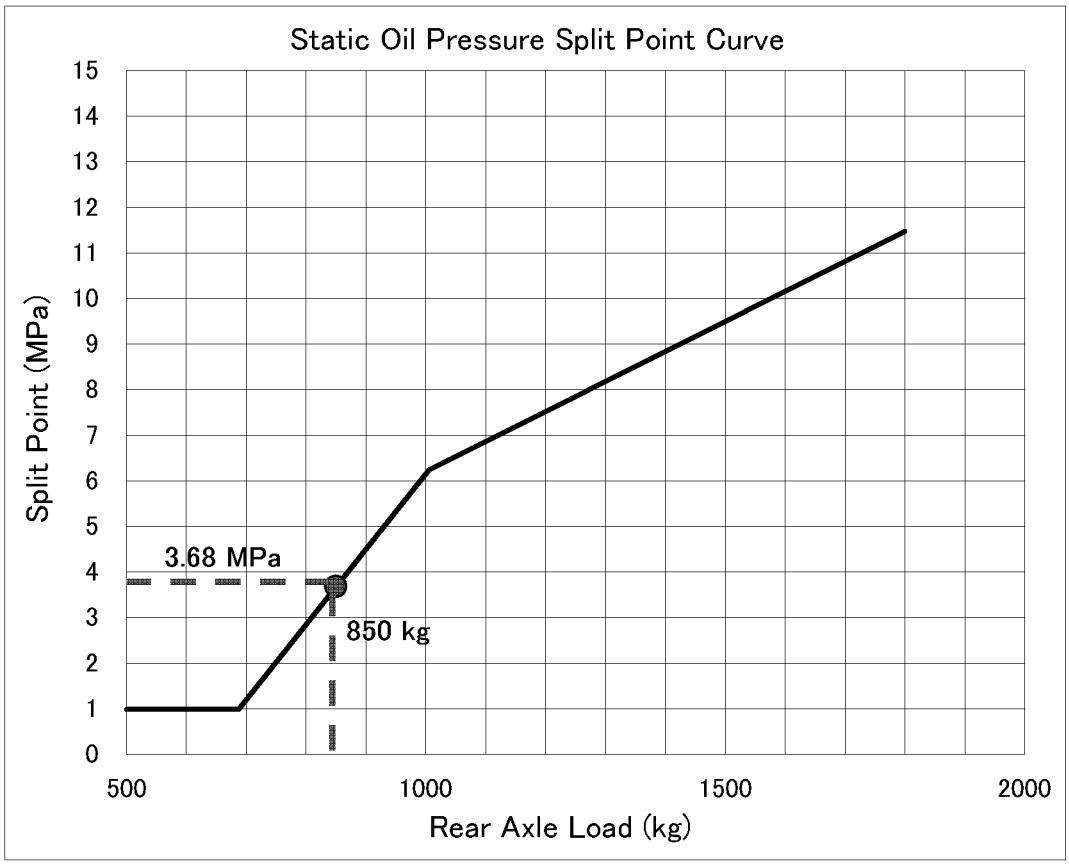
(2) LSPV performance curve diagram

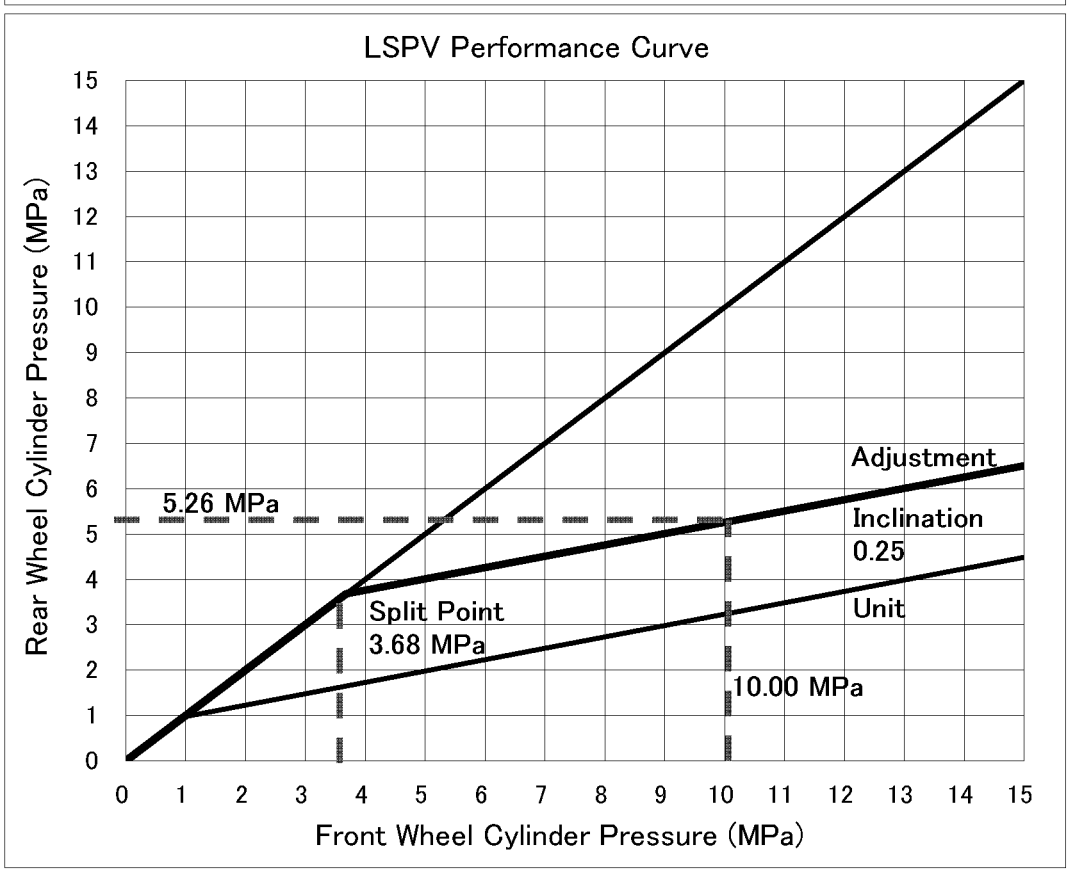
[2WD Single Cab] KUN15R -TRMDYT3 KUN16R -TRMDYQ3 GGN15R -TRADKQ3 TGN15R -TRMDKN3
TGN16R -TRMDKQ3 GGN15R -TRMDKQ3 KUN15L -TRMDYW3



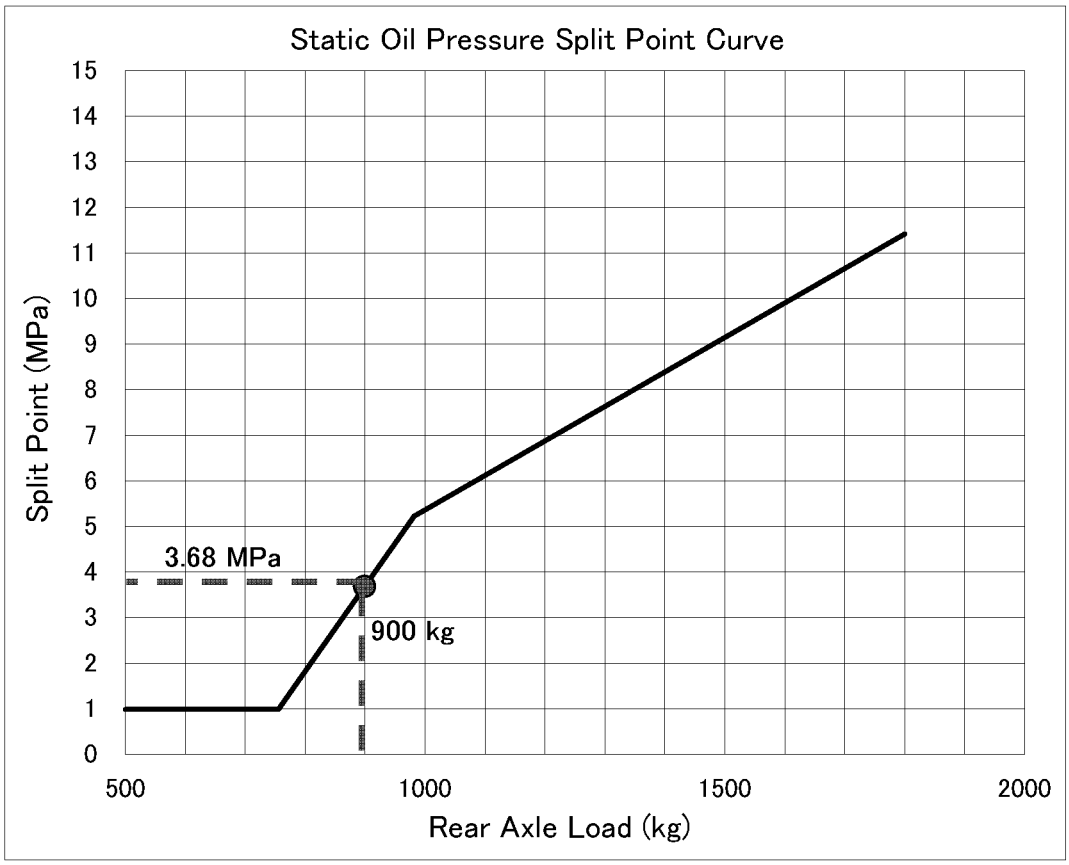


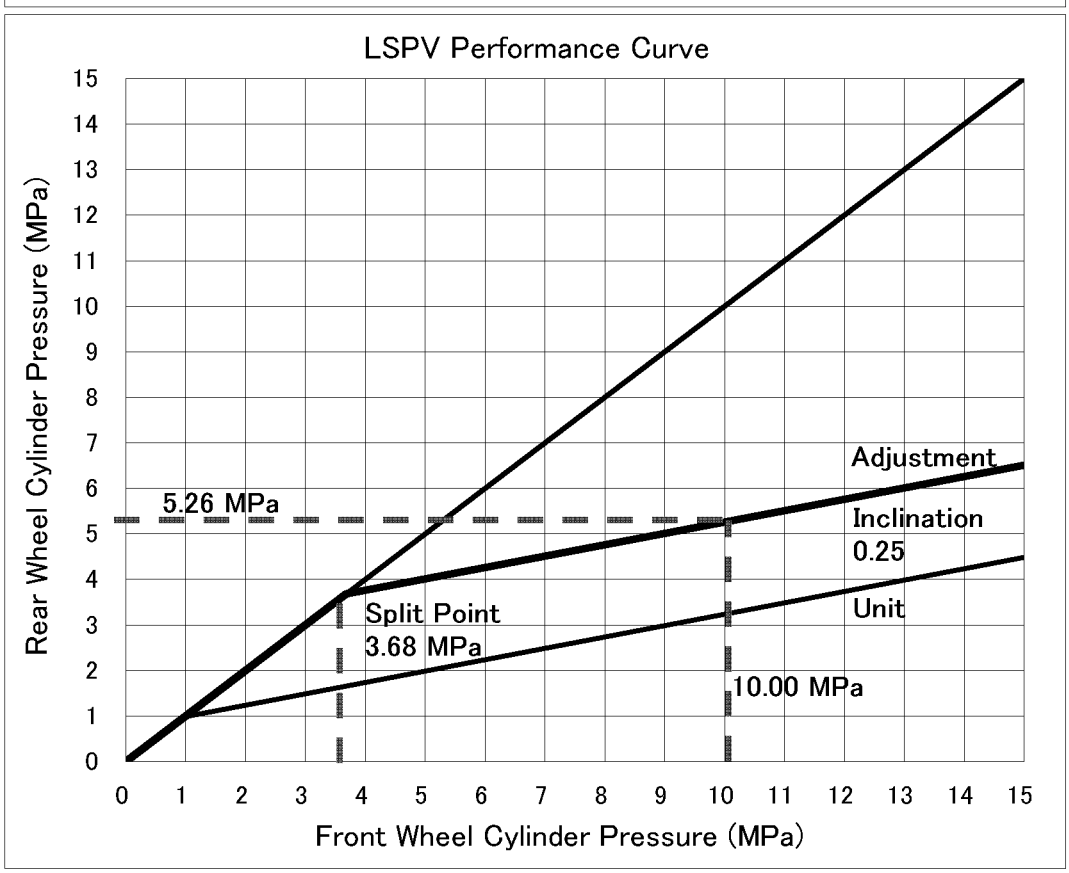
[2WD Extra Cab] KUN15L -CRMDYW3





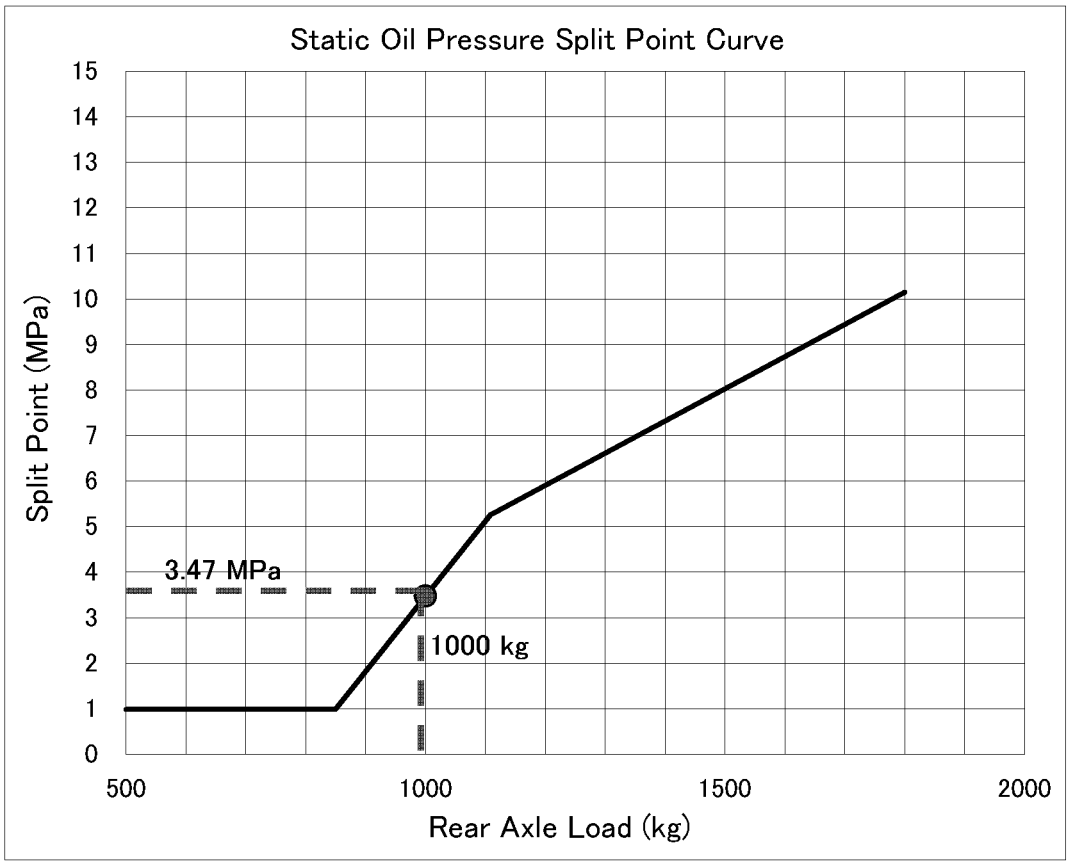
[2WD Double Cab] KUN15L -PRMDYW3

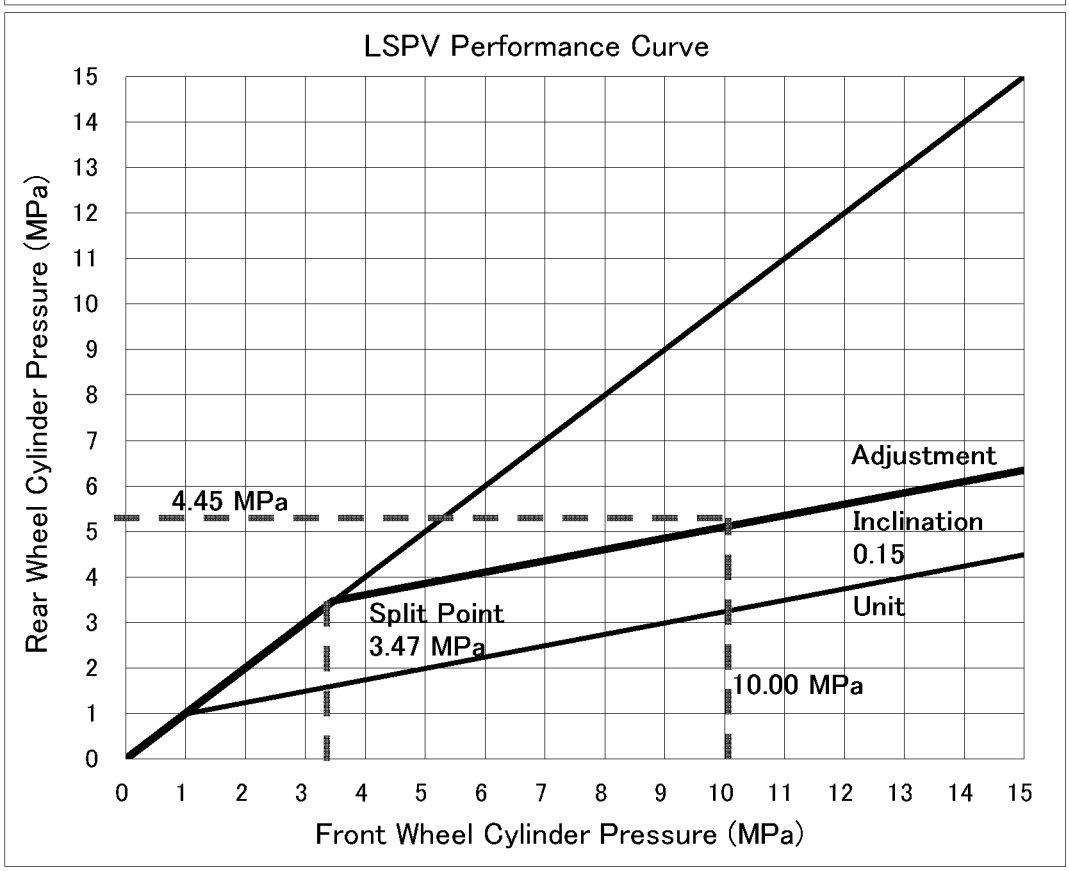




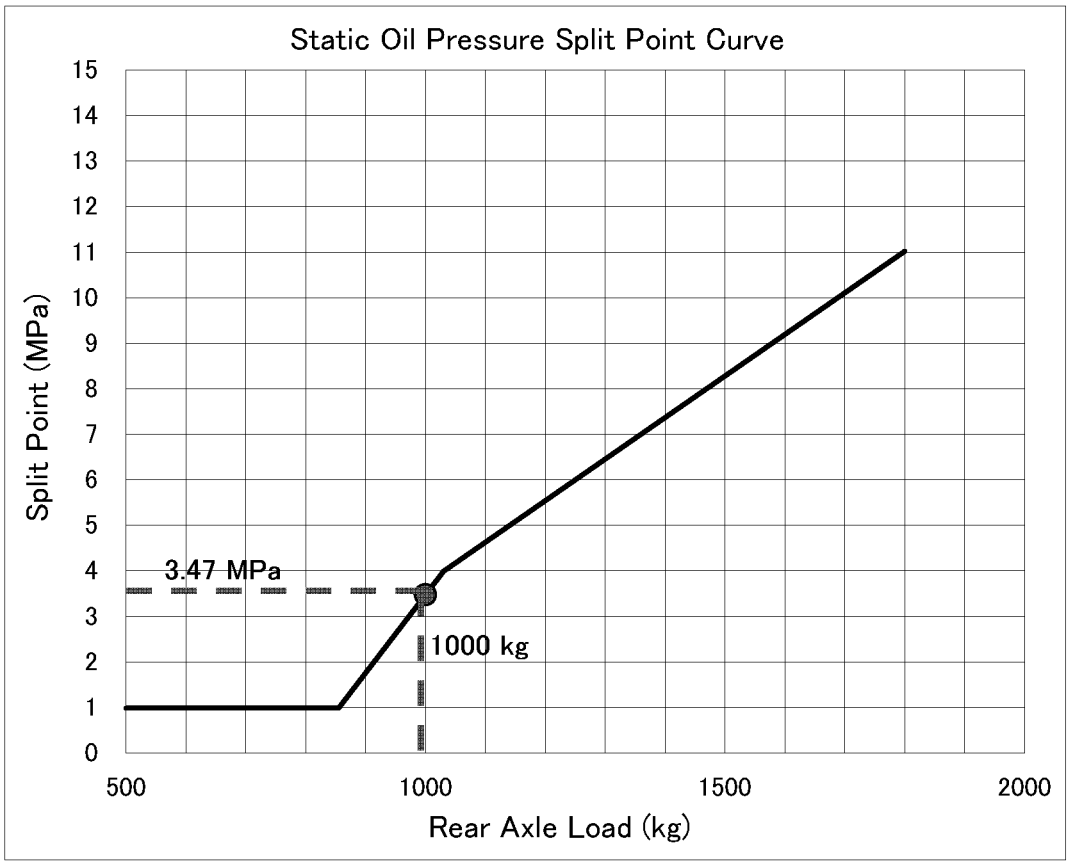
[4WD, PRERUNNER Single Cab]

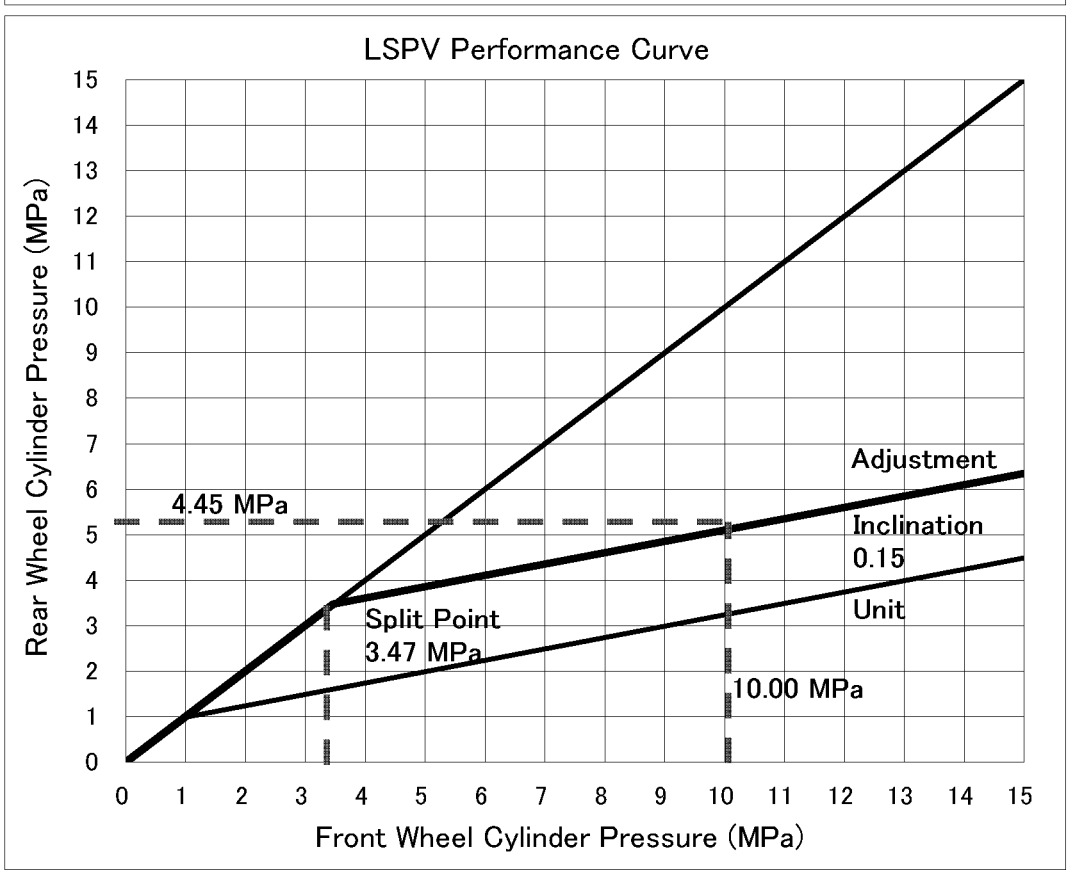
TGN36L -TRMDKG3	KUN26R -TRMDYQ3	GGN25R -TRADKQ3
KUN25L -TRMDHW3	KUN35L -TRMDHG3	KUN26R -TRPDYQ3
KUN25L -TRMDHG3	KUN35L -TRMDHL3	TGN36L -TRMDKL3
GGN25R -TRMDKQ3	TGN26L -TRMDKL3	



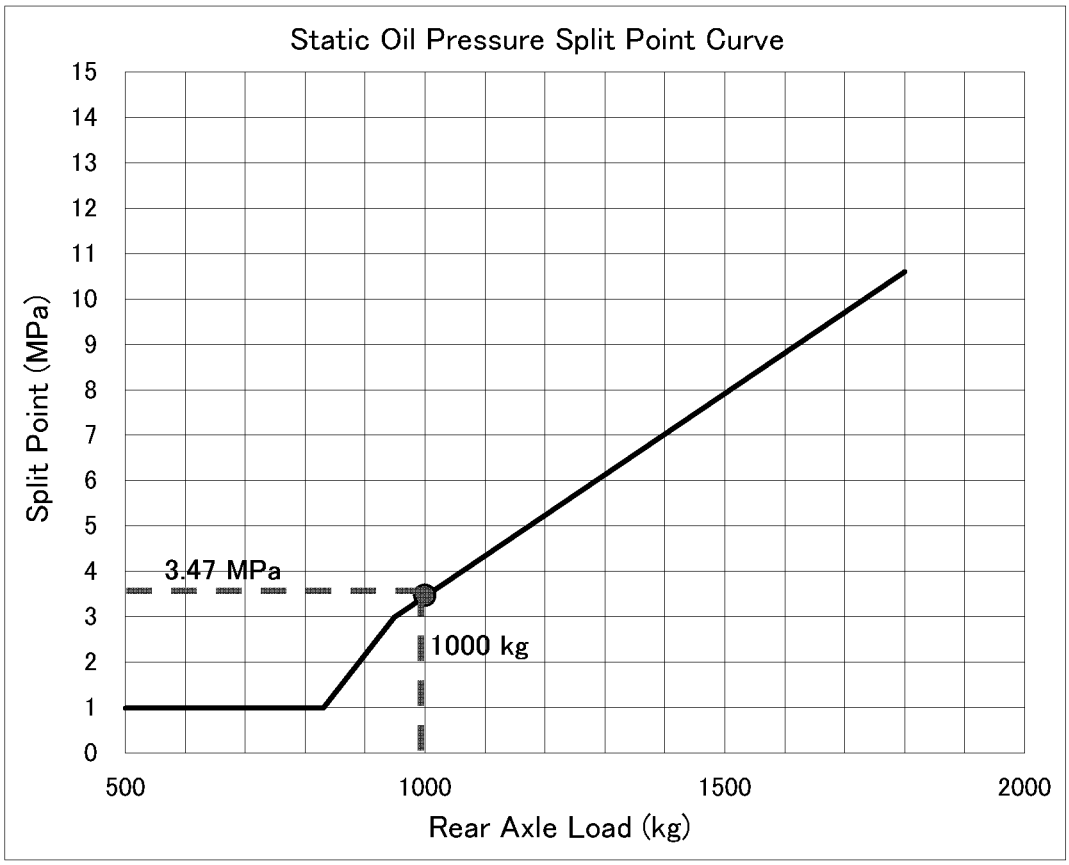


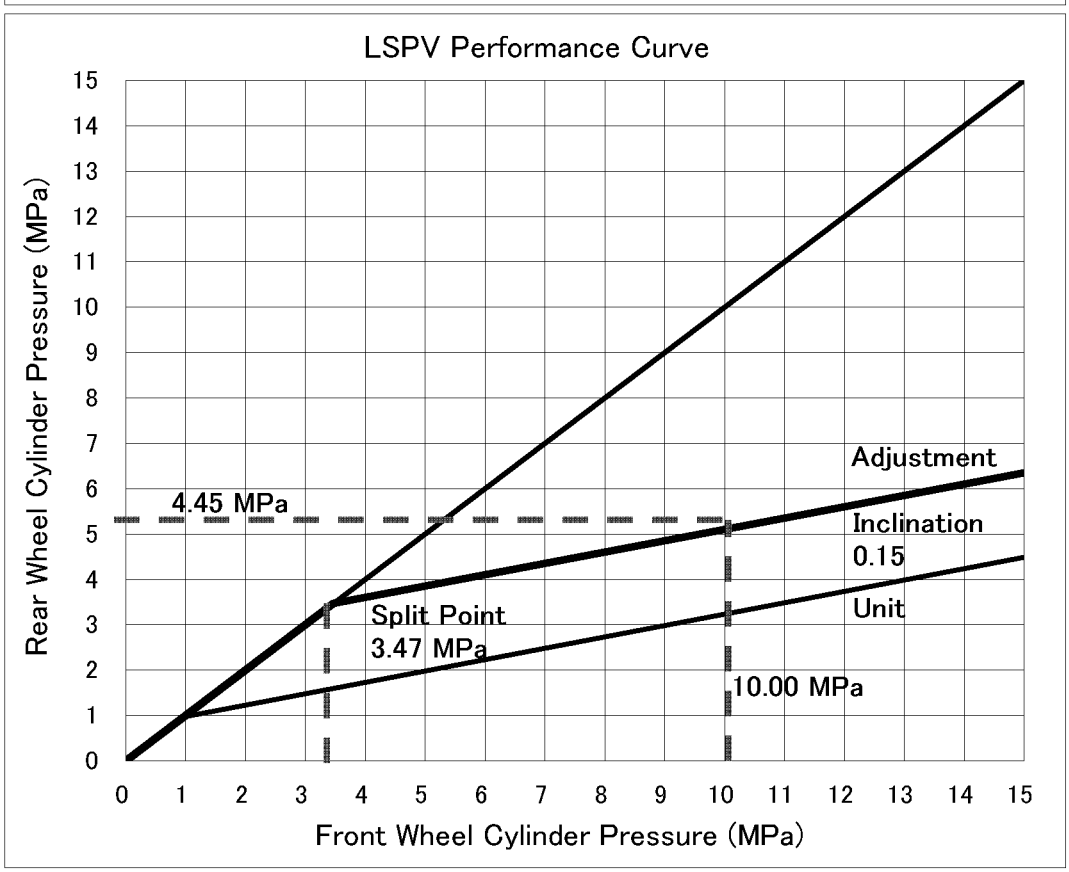
[4WD Extra Cab] KUN26R -CRMDYQ3
KUN25L -CRMDHW3





[4WD Double Cab] KUN26R -PRMDYQ3
KUN25L -PRMDHW3





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 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.

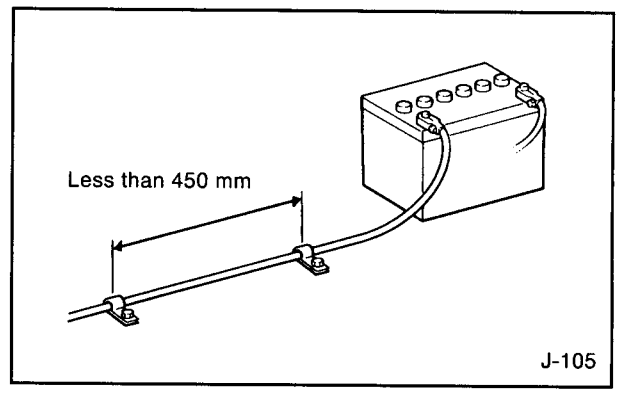
[1] Wiring precautions

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.)

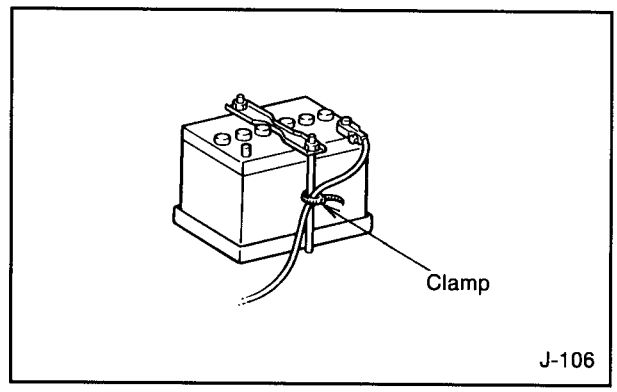
- Be sure that the clip is not freely movable.
- Keep the clips away from other portions.



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

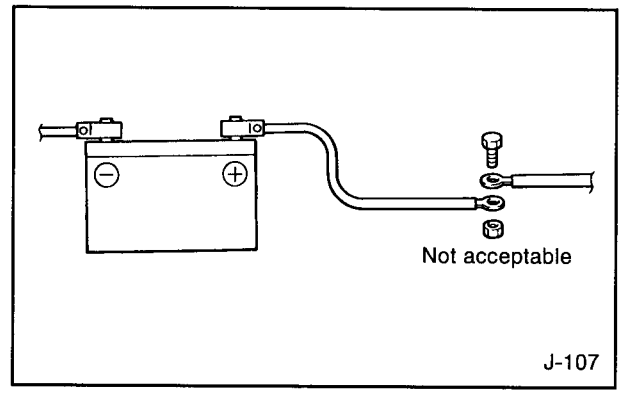
① Install the battery at a position where the air flow is sufficient to release into the atmosphere the gas generated during the temperature increase or the charging operation.

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.

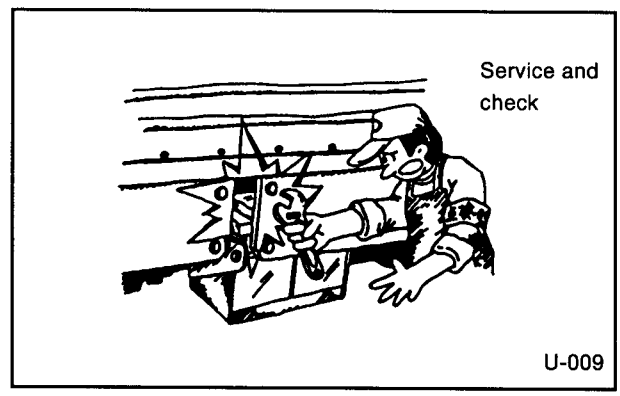
① In order to secure the appropriate functions of the battery cable, use a cable with the following specifications.

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] 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.

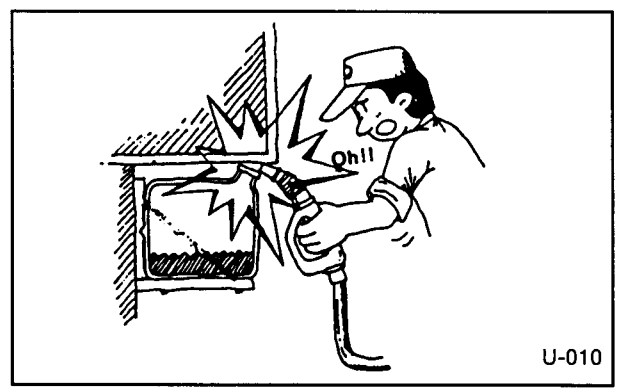
② Keep other parts with a sufficient clearance from the fuel-related parts as follows.

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.



U-010

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.

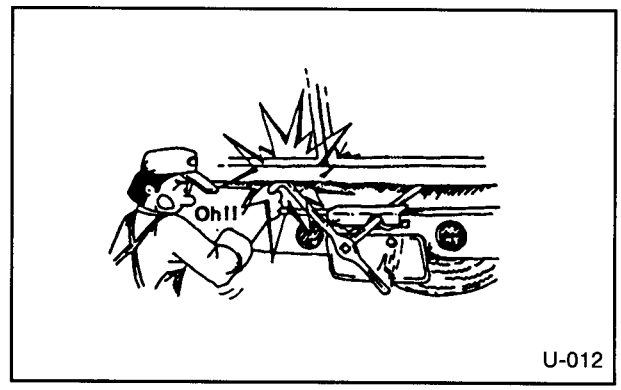
[1] General preventive measures

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.



U-012

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.

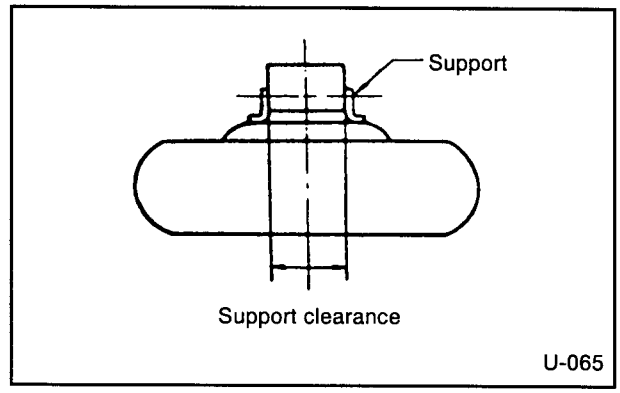
- In the case where no sufficient clearance is available, take an appropriate measure to protect the spare tire carrier against heat by a heat insulating plate or the like.

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

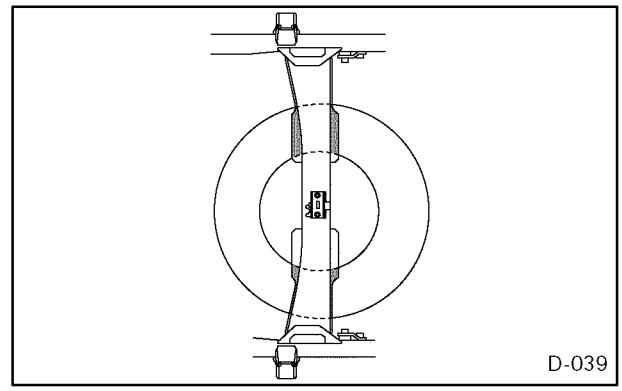
The support should be so constructed as not to be deformed with a sufficient contact area with the disc wheel.



U-065

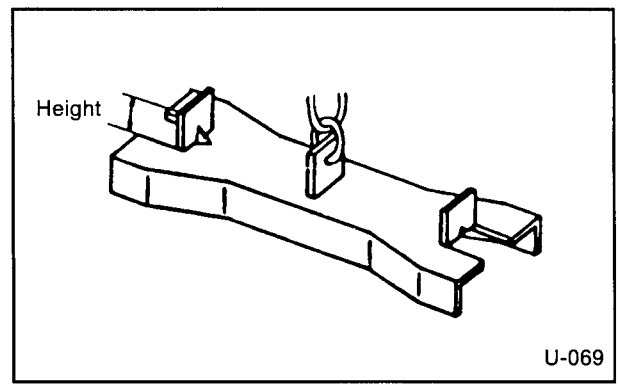
(2) How to support tires

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 hold directly touch with the cross member frange.



(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 29.0 ~ 43.5 Nm.

(5) Tension load

At the stage of building the body, apply a tension load of 1100 N minimum to the chain.

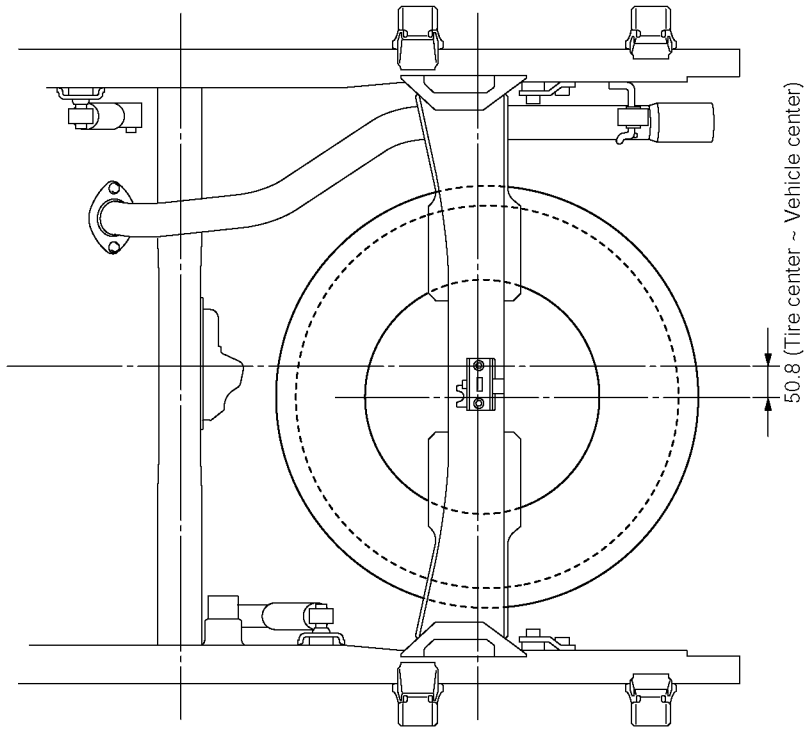
(6) Caution plate

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] Mounting position

[Installation Drawings]

[2WD] [4WD]



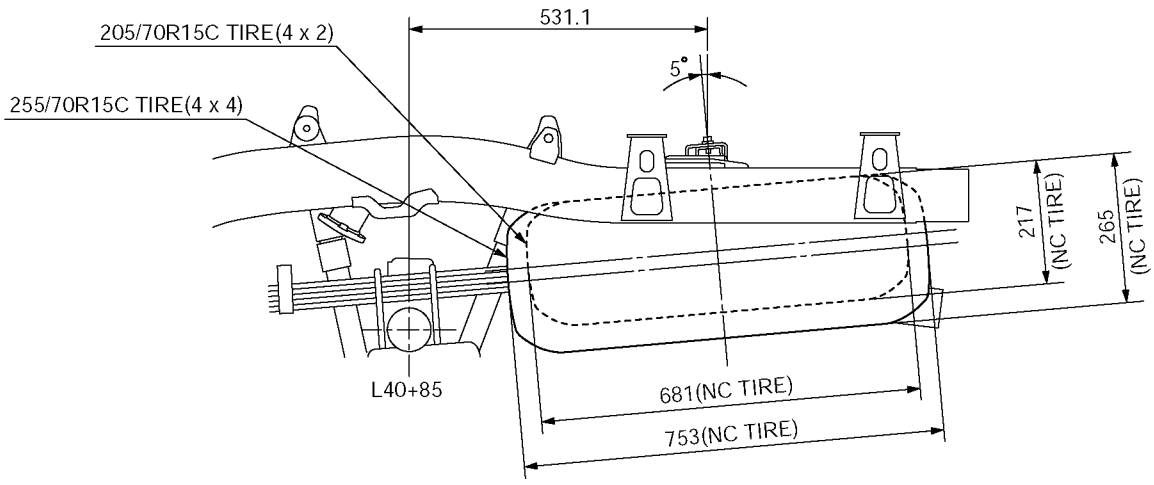


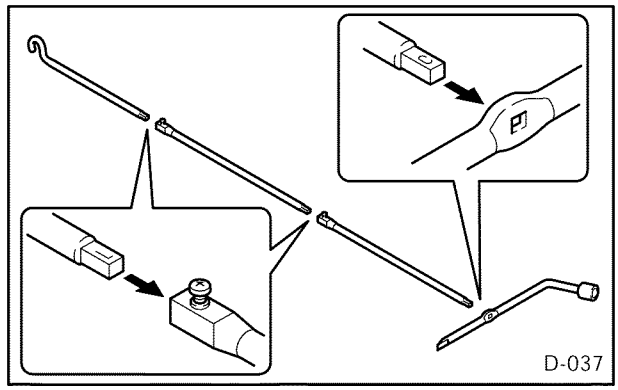
TABLE.1

	PART NO. OF SWC	SIZE OF SPARE WHEEL
2WD	51900-0K010(TH) -0K020(IN) -0K030(SA)	205/70R15C
		195R14C
4WD	51900-0K050(TH) -0K060(SA) -0K070(AR)	205R16C
		255/70R15C
		265/70R16

( ) : Country of production

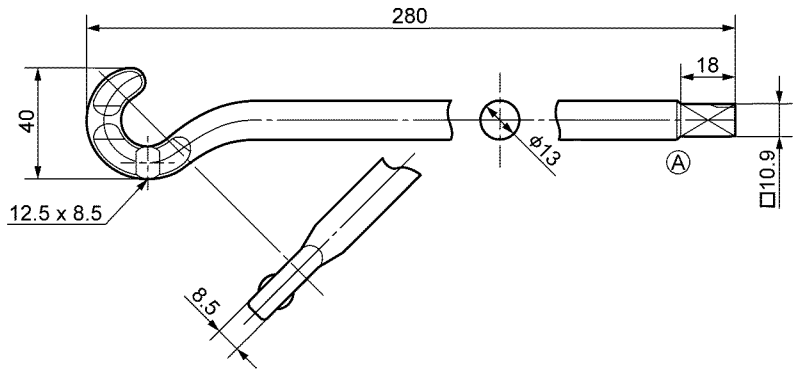
D-028

[4] Spare tire carrier handle (Jack handle)

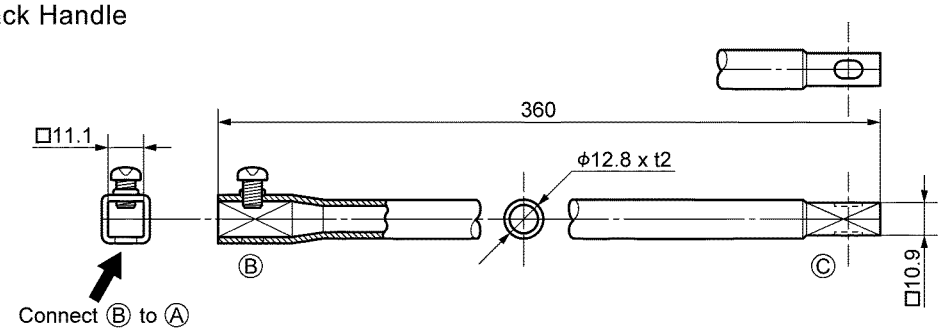


Detail shape is a little bit different by each destination.

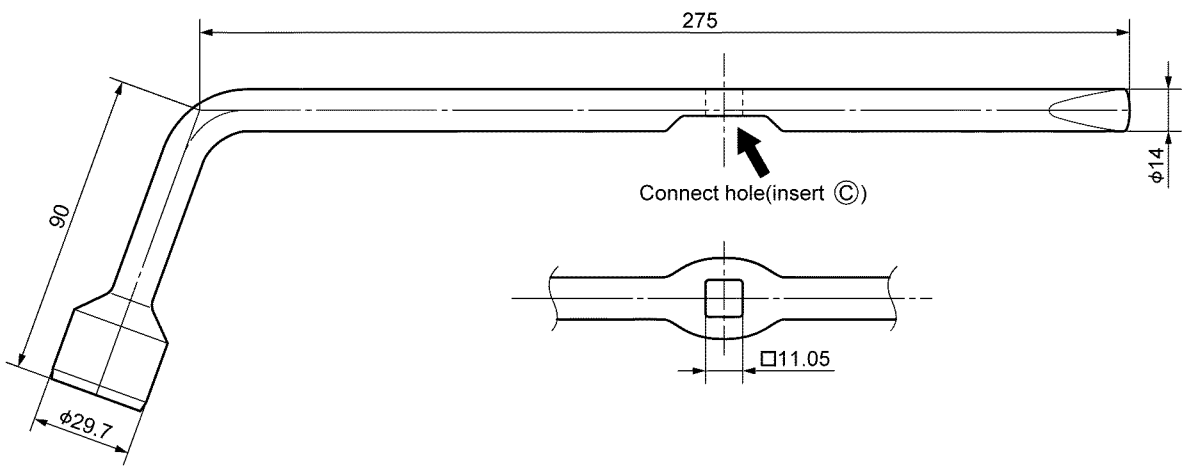
Rod, Jack Handle



Extension, Jack Handle



Wrench, Hub Nut Box



D-038

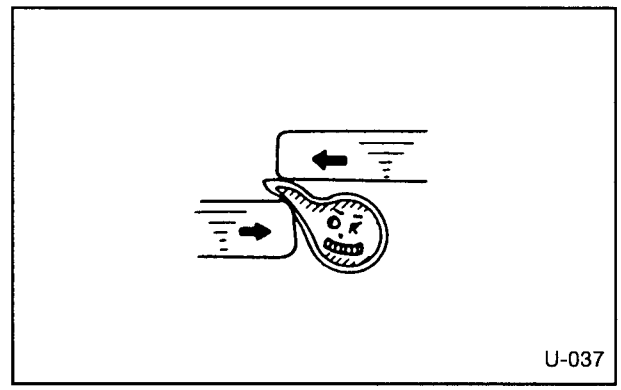
11. Electrical wirings

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

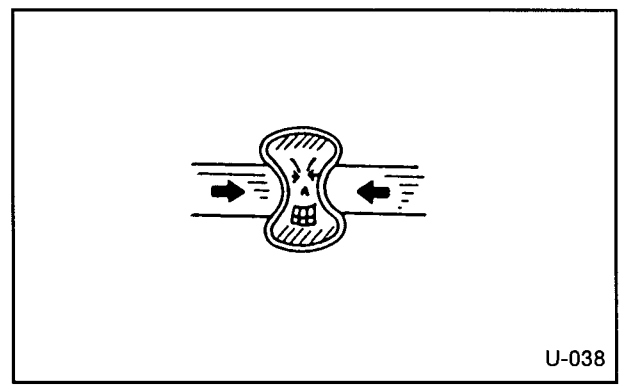
(1) Interference

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

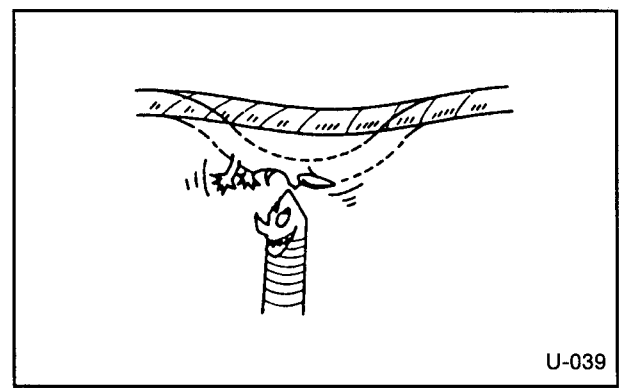


U-037

② Take care that the wiring is not flattened.

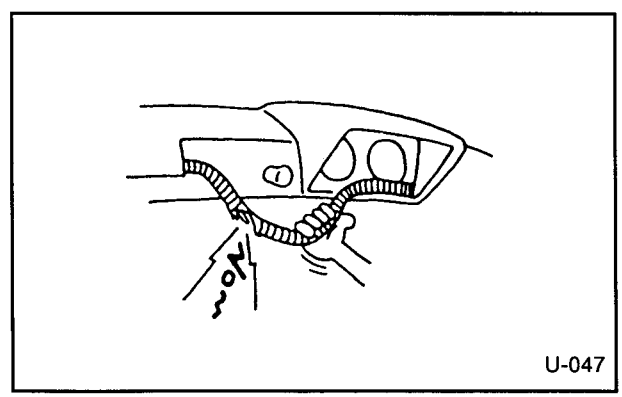

U-038

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


U-039

(2) Wiring arrangement

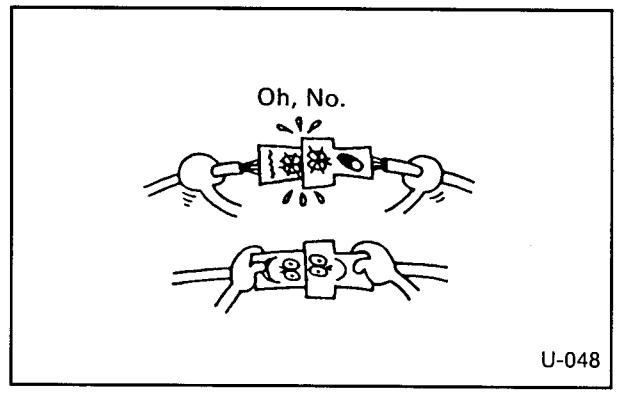
Don't pull the wiring forcibly.



U-047

(3) Mounting and demounting the connector

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



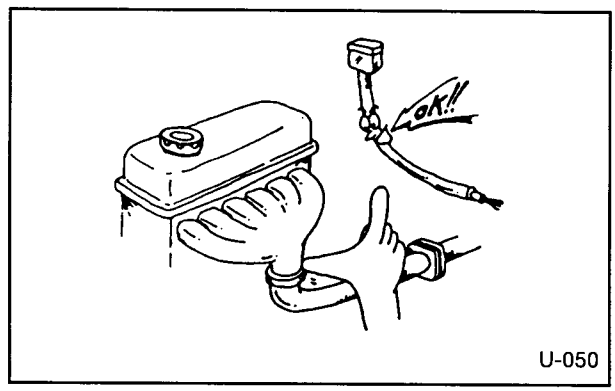
U-048

(4) Heat consideration

① Secure an adequate clearance with the high-temperature parts.

② Measure the temperature whenever required to eliminate the safety problems.

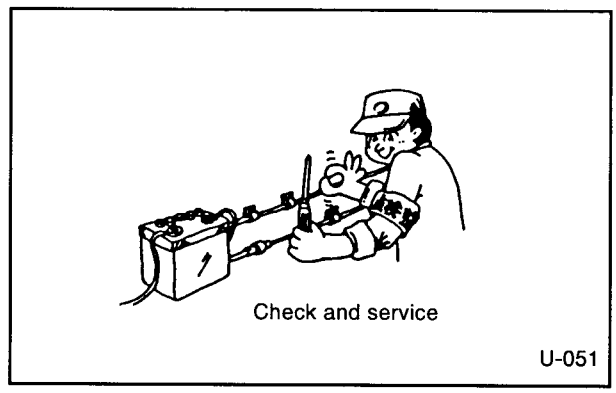
· Don't lay the wiring in the vicinity of the exhaust pipe or muffler or where the wiring is exposed directly to the exhaust gas.



U-050

(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.


Check and service
U-051

(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.

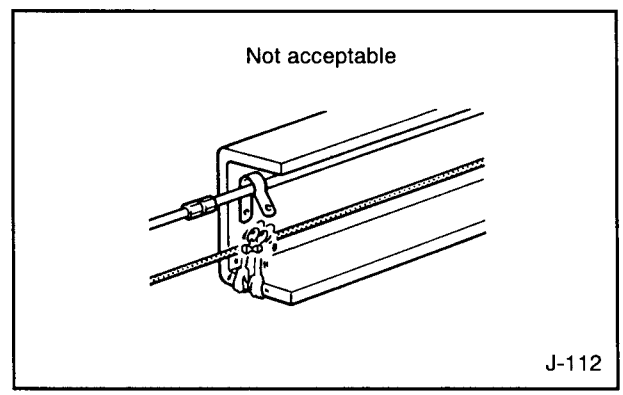
(2) Connection

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

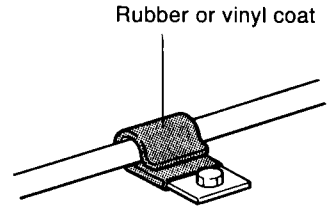
(3) Wiring arrangement

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.

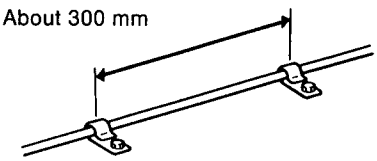


· Use a clamp made of rubber or coated with vinyl.



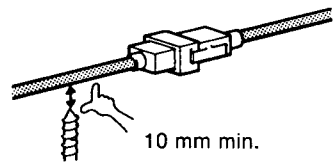
J-113

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



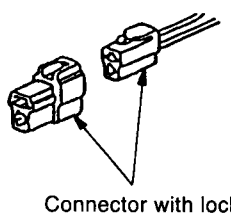
J-114

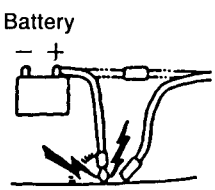
· Secure a clearance of 10 mm minimum between the wiring and a moving part or a sharp object.

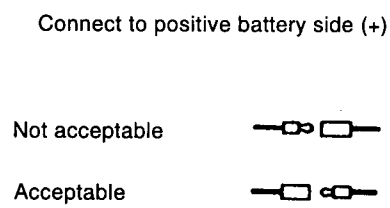


J-115

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.







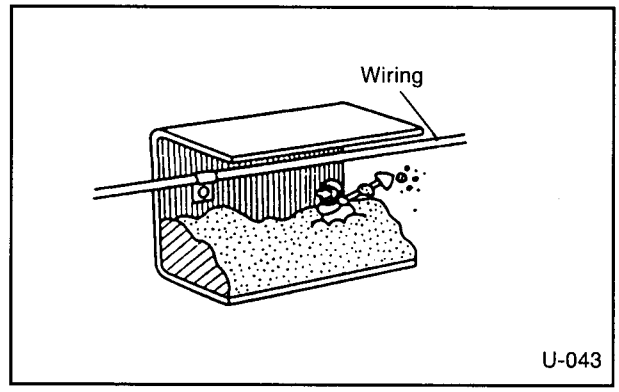
The power-supply connector, if disconnected, may dangerously cause short circuit with the body, etc.

J-138 U-046 U-045

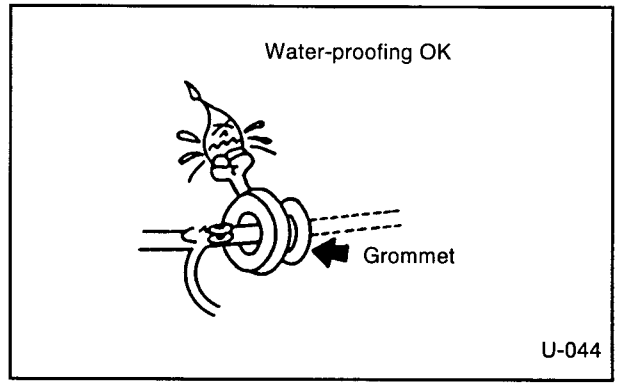
③ When mounting an additional electrical part, always attach a fusible link and the earth.

(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.

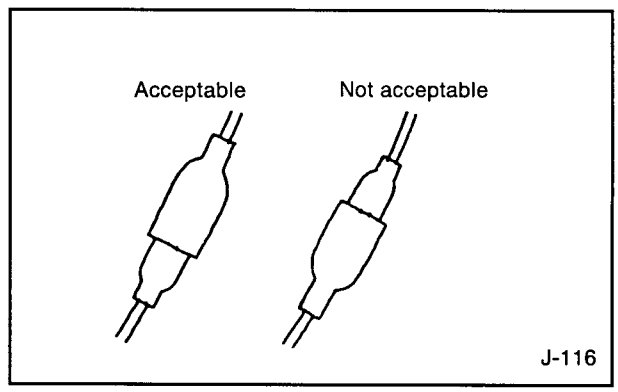


② Always use a grommet at a metal plate through hole to protect the wiring against water entry or damage.



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

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

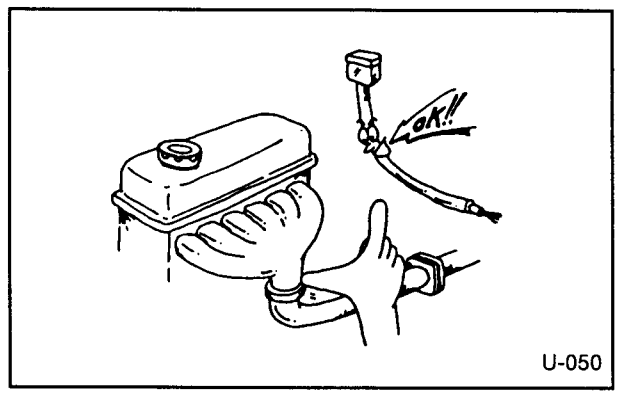


④ A connector, if used at a position exposed to water, should always be of water-proof type.

(5) Heat consideration

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

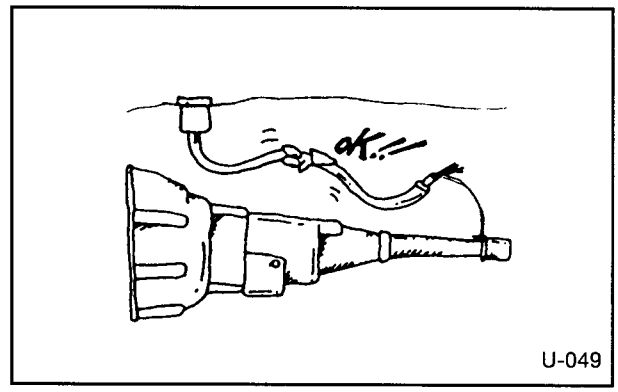
· When no clearance is made available, protect against heat with a heat insulating plate or the like.



(6) Interference

① Take care that the wiring is not damaged by contact with the rotating or vibrating parts of the alteration or building.

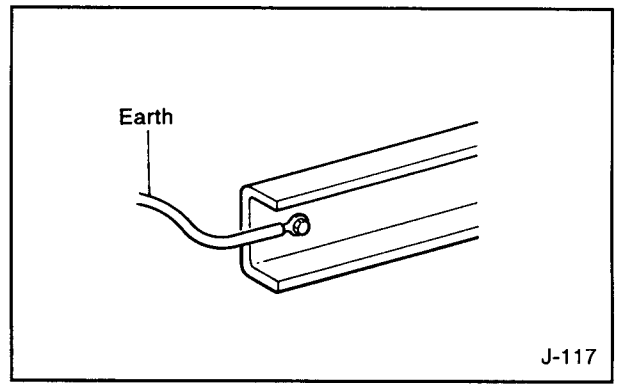
② The wiring of the parts mounted on the engine or transmission should be laid along the existing wire harness with a sag of 30 to 50 mm in a manner to absorb relative motions while taking care that it does not come in contact with other parts.



(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.



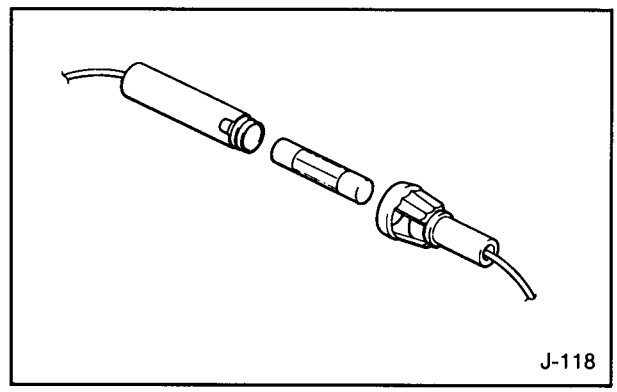
[3] Fuse

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 x 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

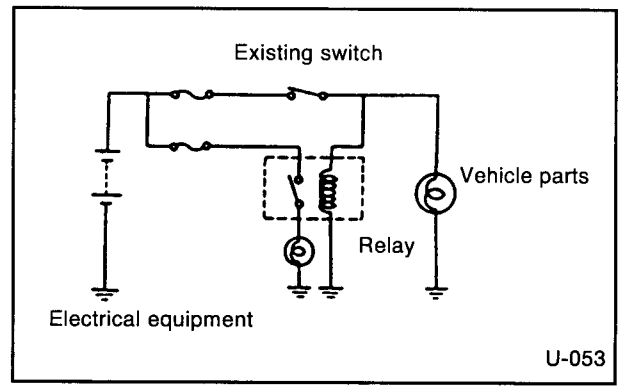
Each switch has a tolerable current. When a current of more than this value flows, the switch generates heat shortening its life. In extreme cases, it may melt down.

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.

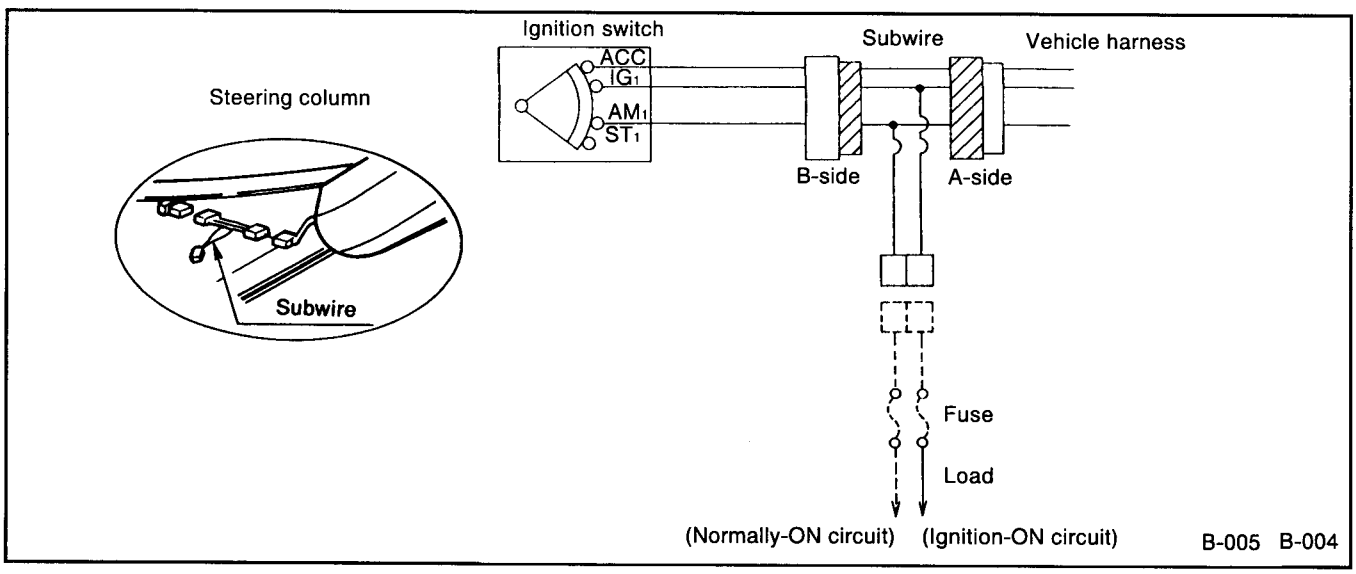
Vehicle	+	Added electrical equipment	<	Switch

- 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

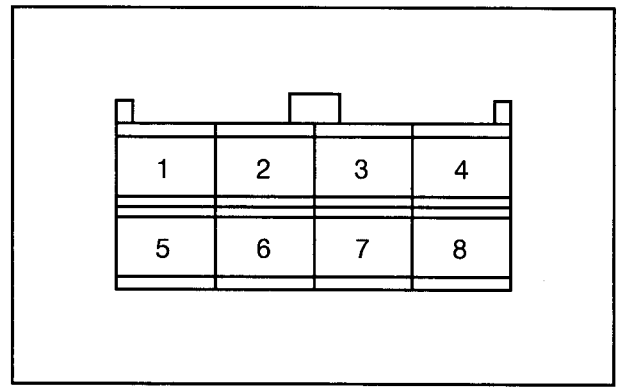


- Instructions

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.

(2) Connector style and wiring arrangement

· A-side connector(Part No.90980-11615)



Connector arrangement	1	2	3	4	5	6	7	8
Power supply	IG1	ACC	–	AM1	AM2	IG2	ST2	–
Wire class	3B-Y	2L-R	–	3B-R	3W-R	2B	2B-W	–

12. Headlamp-levelling controls

The following vehicle models are equipped with a headlamp-levelling control system to minimize dazzling of other road users.

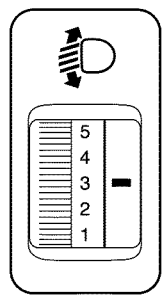
KUN15L	-TRMDYW3
KUN15L	-CRMDYW3
KUN15L	-PRMDYW3
KUN25L	-TRMDHW3
KUN25L	-CRMDHW3
KUN25L	-PRMDHW3

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.

Indication figure of control switch

Variations / Loading condition	KUN15L - TRMDYW3 KUN15L - CRMDYW3	KUN25L - CRMDHW3 KUN25L - PRMDHW3	KUN25L - TRMDHW3 KUN15L - PRMDYW3
Driver only	0	0	0
Driver + full luggage loading to the luggage room	2	3	4

Note : Initial adjustment = 1.0%

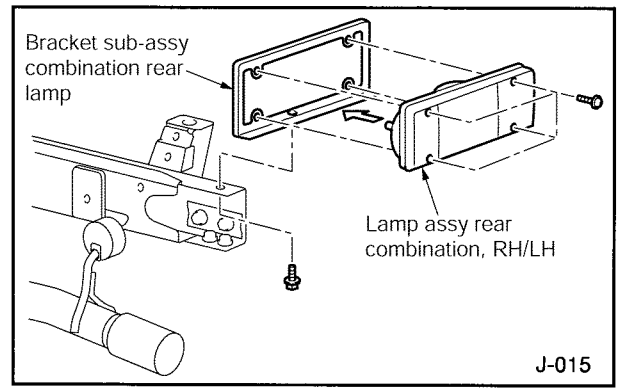


Head lamp-levelling control switch D-031

Headlamp aiming of the other vehicle models is adjusted according to the repair manual.

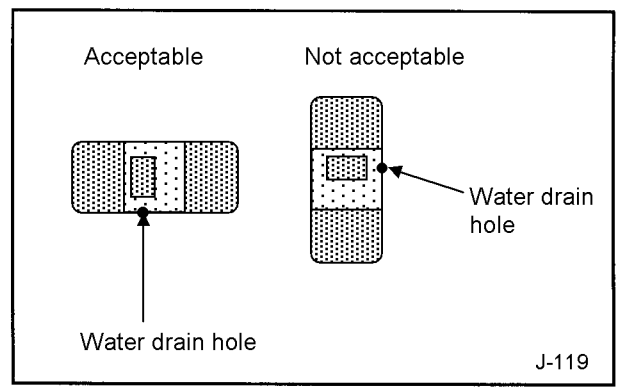
13. Mounting rear combination lamp

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.

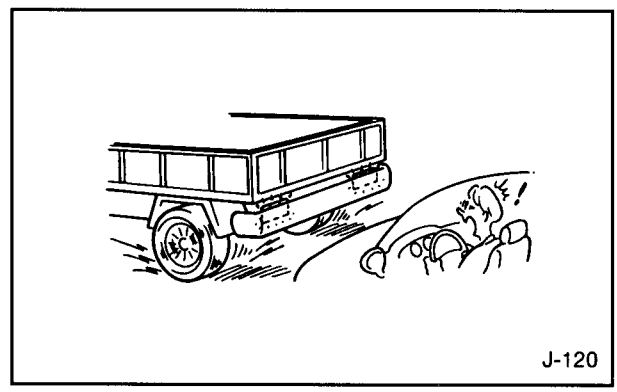


① Make sure that the rear combination lamp is mounted according to the laws and regulations of the countries concerned.

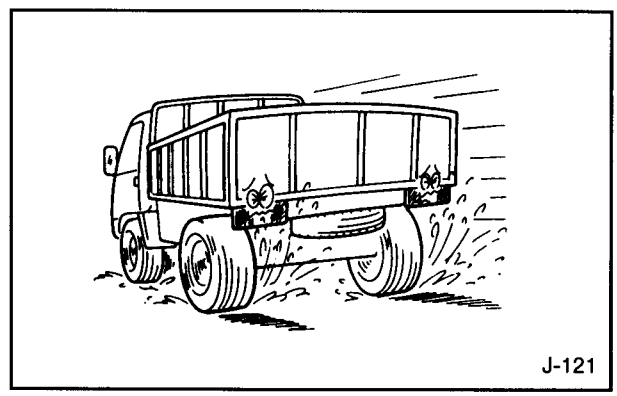
② See to it that the water drain hole of the rear combination lamp is located just under the lamp.



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



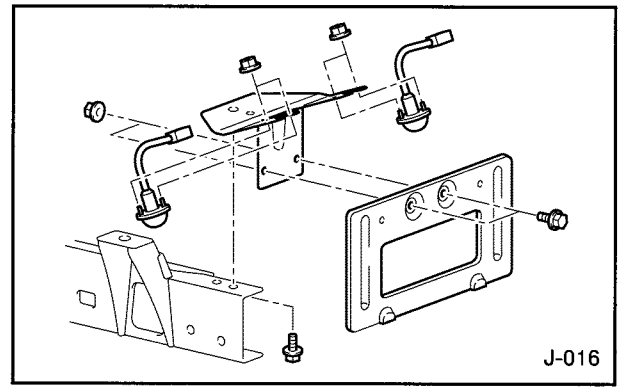
④ Install a water guard plate in order to prevent direct exposure to water splashed up from the rear wheels.



14. Licence plate and licence lamp

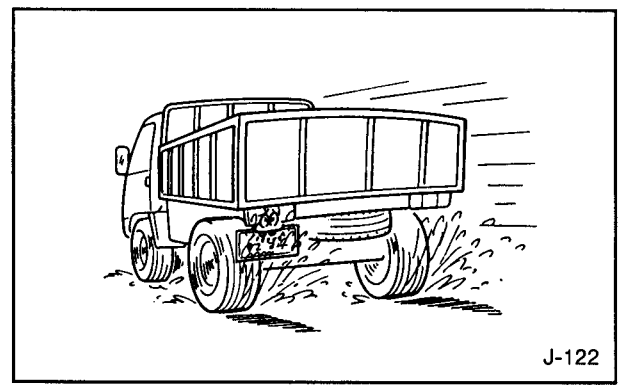
A provisional licence plate and a provisional licence lamp are attached to the cab & chassis model being shipped. When attaching an official licence plate, conform with the related laws and regulations of the country concerned.

① Fix the licence plate by the screw.



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

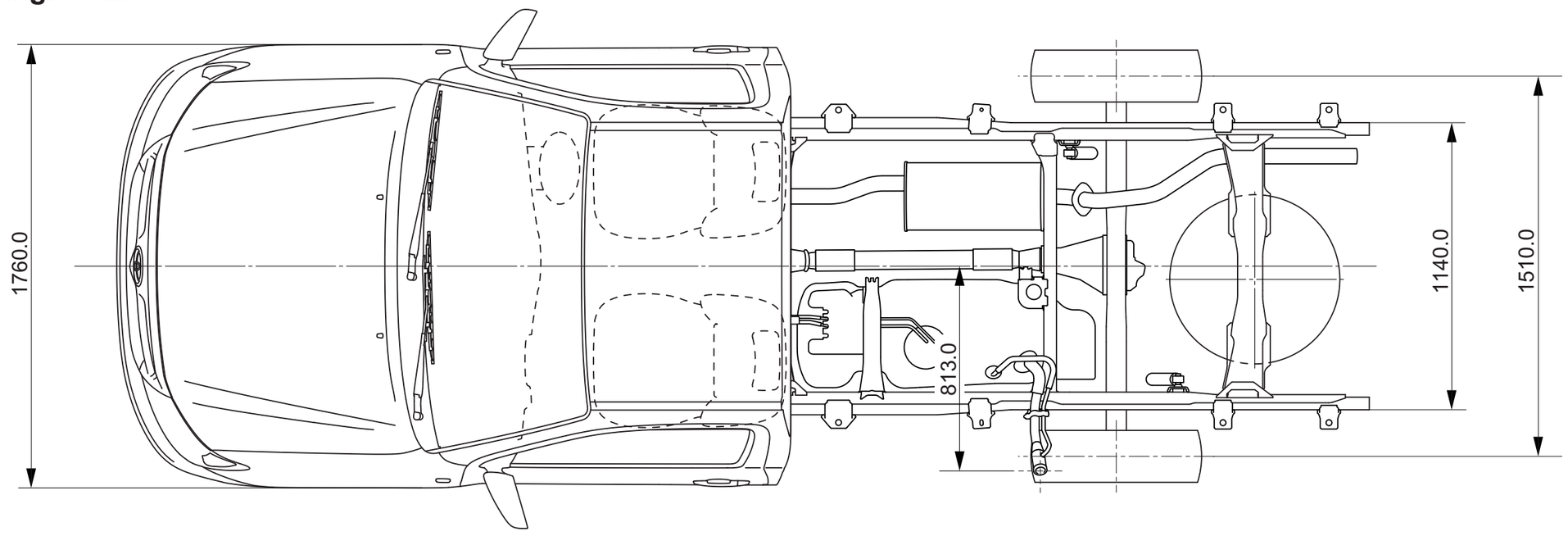
In the case where the reflector is not included in the rear combination lamp, mount a rear reflector of stand-alone type.

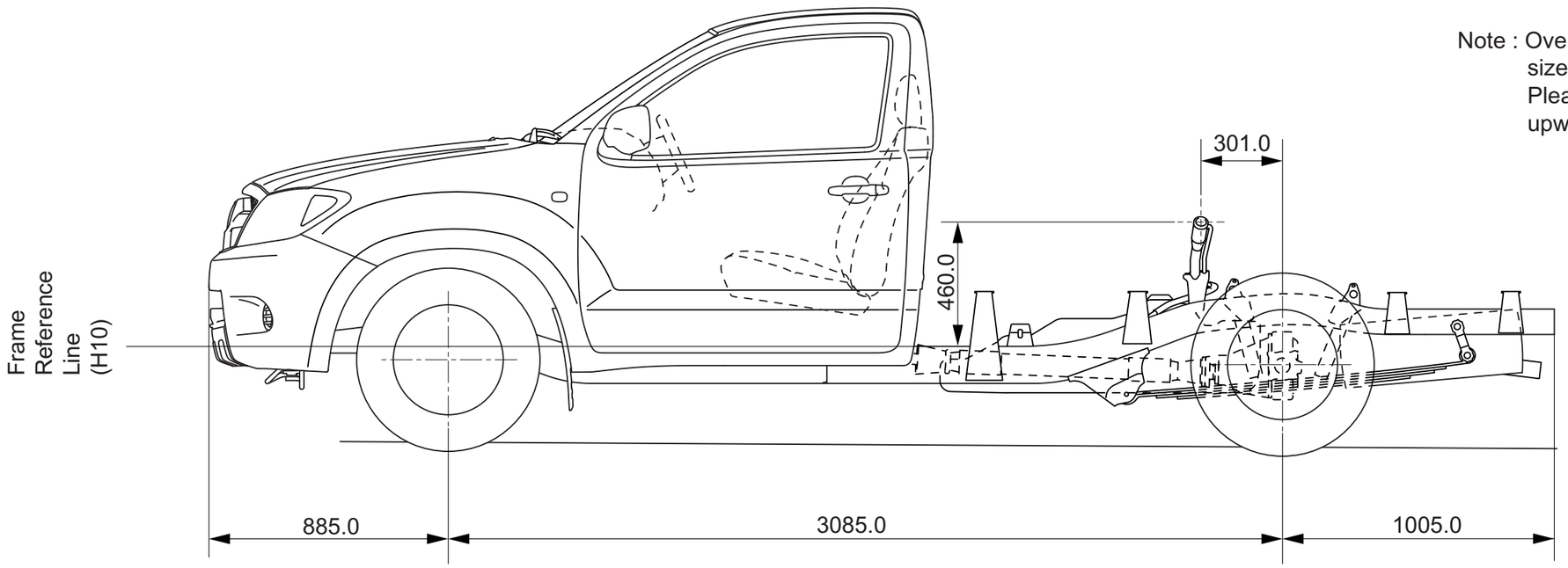
· Mount the side reflector according to the laws and regulations of the country concerned.

【4】 DRAWINGS

1-1. Cab & Chassis drawing (1/20)
2WD Single Cab

MODEL
TGN15R - TRMDKN3
TGN16R - TRMDKQ3
KUN16R - TRMDYQ3
GGN15R - TRMDKQ3
GGN15R - TRADKQ3
KUN15L - TRMDYW3
KUN15R - TRMDYT3

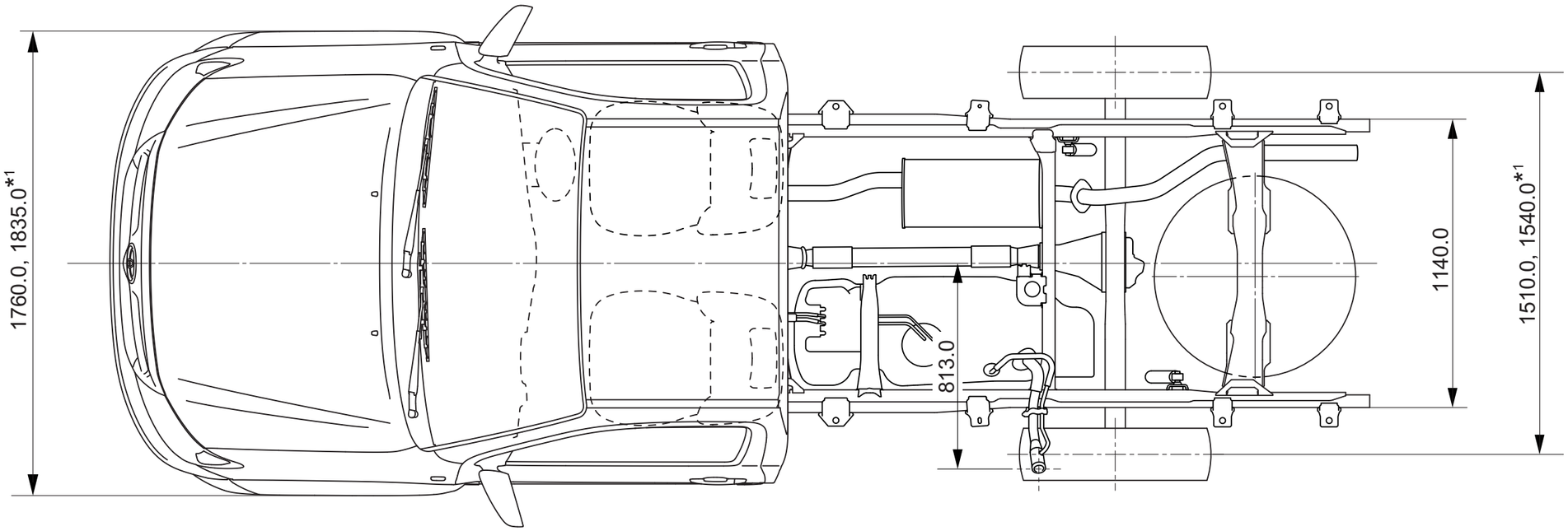




Note : Overall height changes by the terms of tire size, spring ratio, load condition, etc.
Please measure from the Frame Reference Line upward if required.

1-2. Cab & Chassis drawing (1/20)
4WD & Prerunner Single Cab

MODEL
TGN26L -TRMDKL3
KUN26R -TRMDYQ3
KUN26R -TRPDYQ3
GGN25R-TRMDKQ3
GGN25R-TRADKQ3
KUN25L -TRMDHG3
KUN25L -TRMDHW3
TGN36L -TRMDKL3
KUN35L -TRMDHL3
TGN36L -TRMDKG3
KUN35L -TRMDHG3



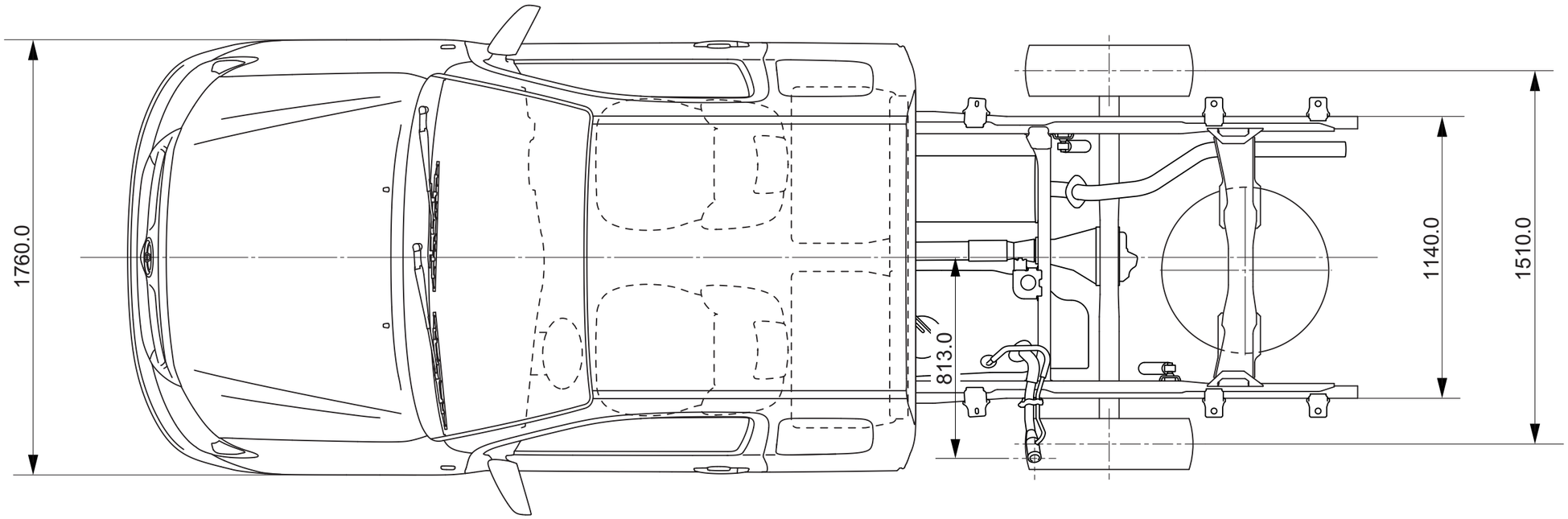
Note : Overall height changes by the terms of tire size, spring ratio, load condition, etc.
Please measure from the Frame Reference Line upward if required.

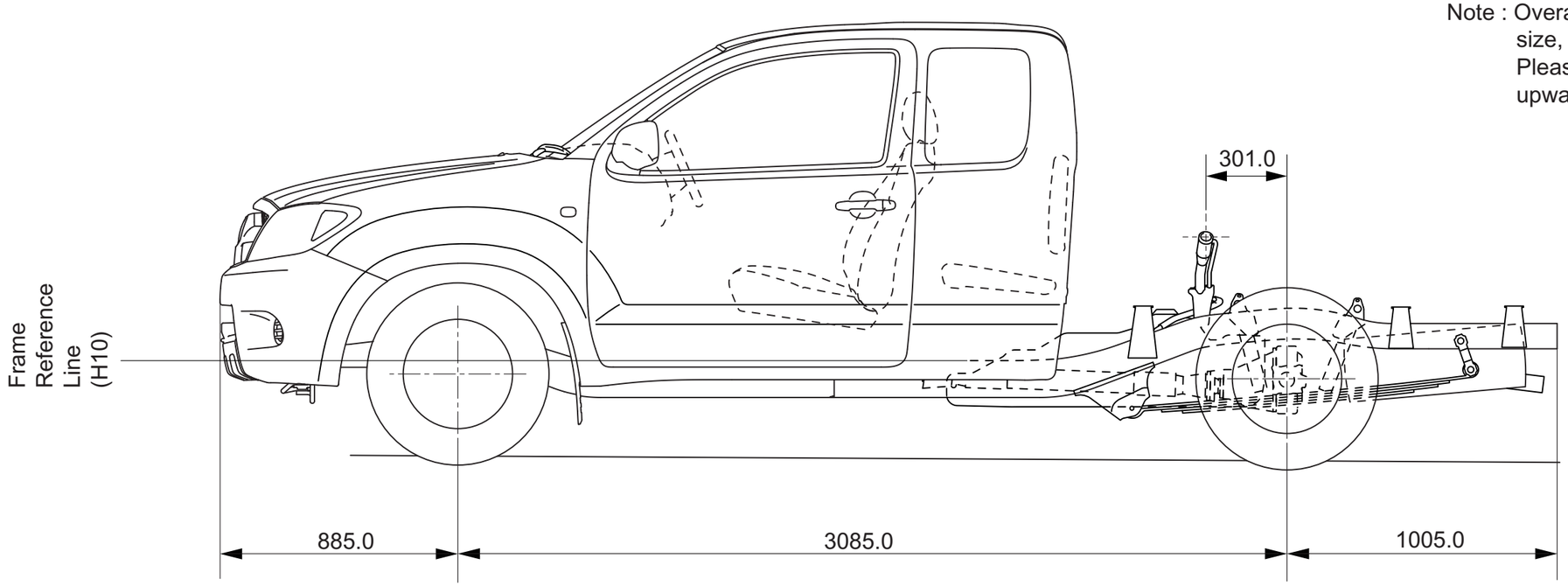
*1 : with Over Fender

D_008

1-3. Cab & Chassis drawing (1/20)
2WD Extra Cab

MODEL
KUN15L-CRMDYW3



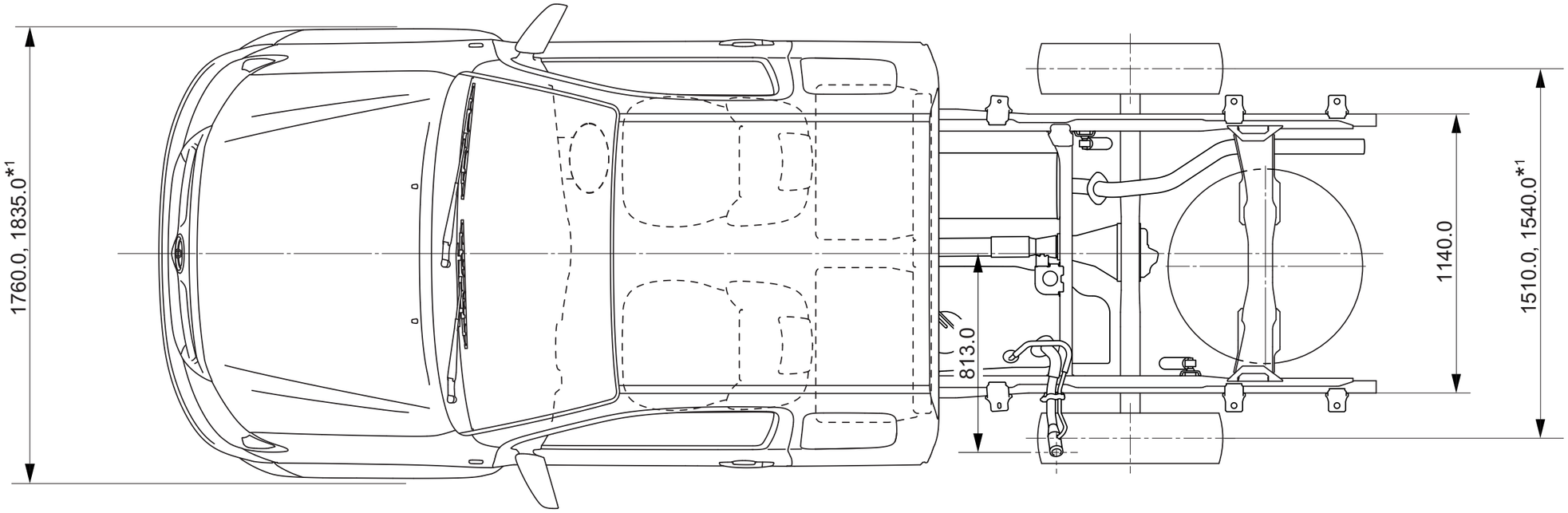


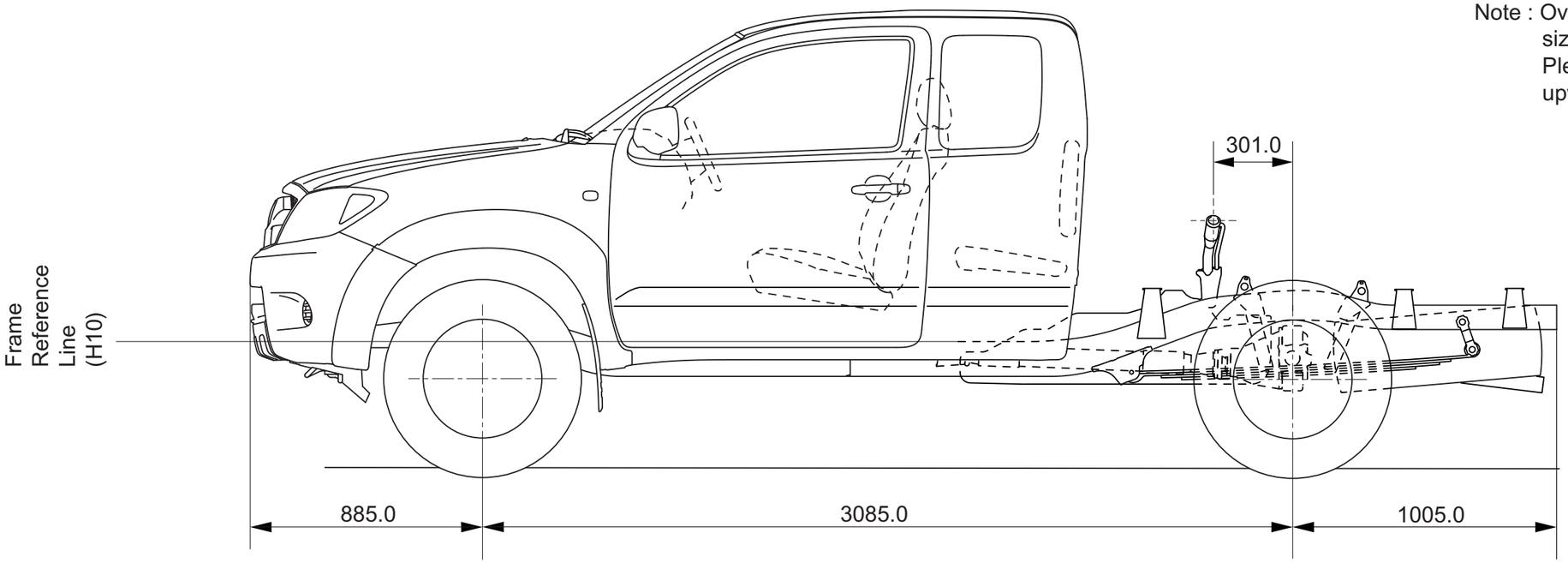
Note : Overall height changes by the terms of tire size, spring ratio, load condition, etc.
Please measure from the Frame Reference Line upward if required.

D_009

1-4. Cab & Chassis drawing (1/20)
4WD Extra Cab

MODEL
KUN26R - CRMDYQ3 KUN25L - CRMDHW3





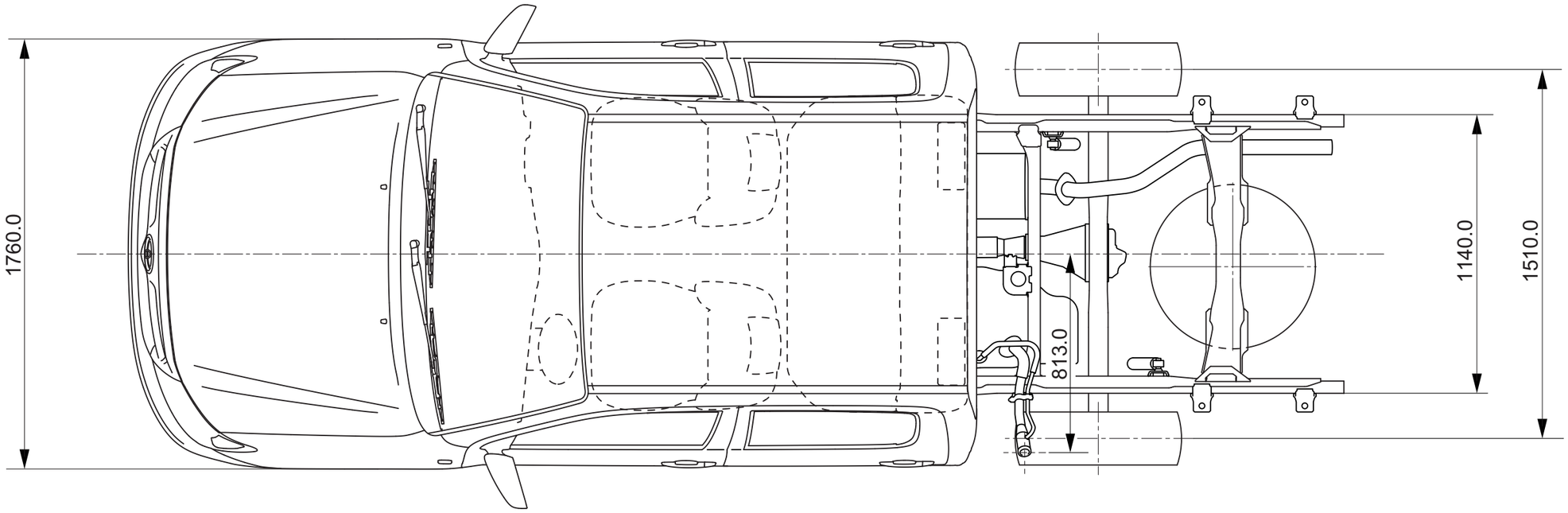
Note : Overall height changes by the terms of tire size, spring ratio, load condition, etc.
Please measure from the Frame Reference Line upward if required.

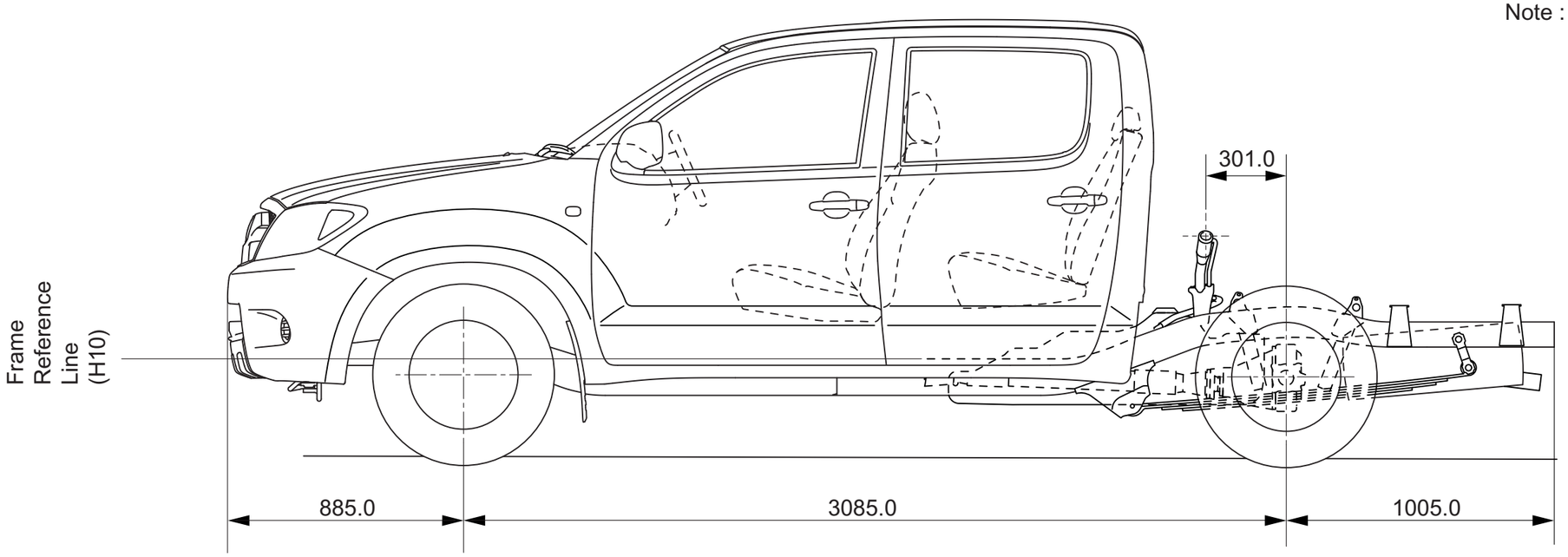
*1 : with Over Fender

D_010

1-5. Cab & Chassis drawing (1/20)
2WD Double Cab

MODEL
KUN15L-PRMDYW3



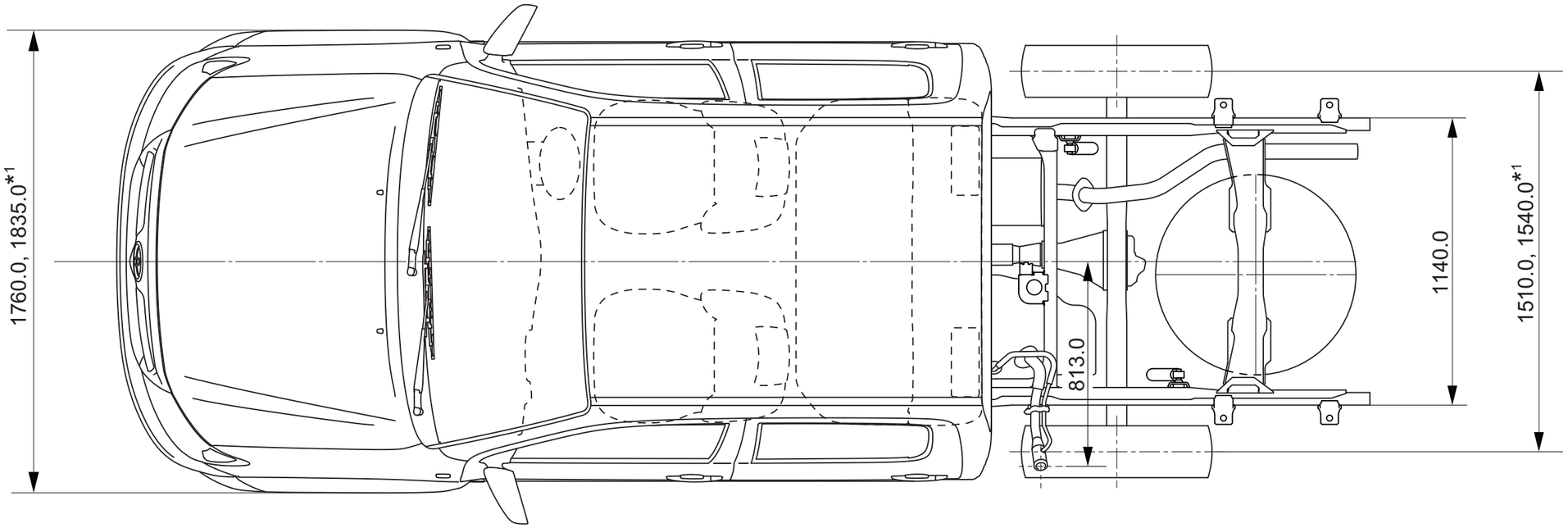


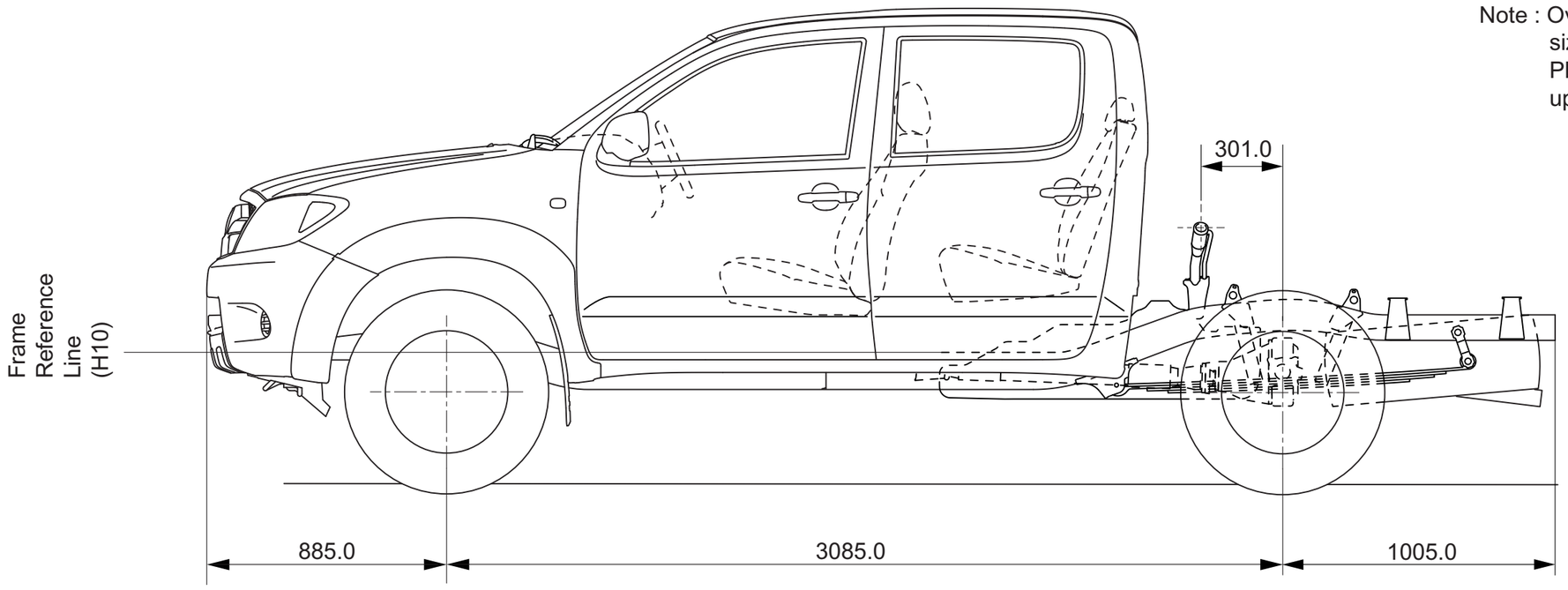
Note : Overall height changes by the terms of tire size, spring ratio, load condition, etc.
Please measure from the Frame Reference Line upward if required.

D_011

1-6. Cab & Chassis drawing (1/20)
4WD Double Cab

MODEL
KUN26R - PRMDYQ3 KUN25L - PRMDHW3





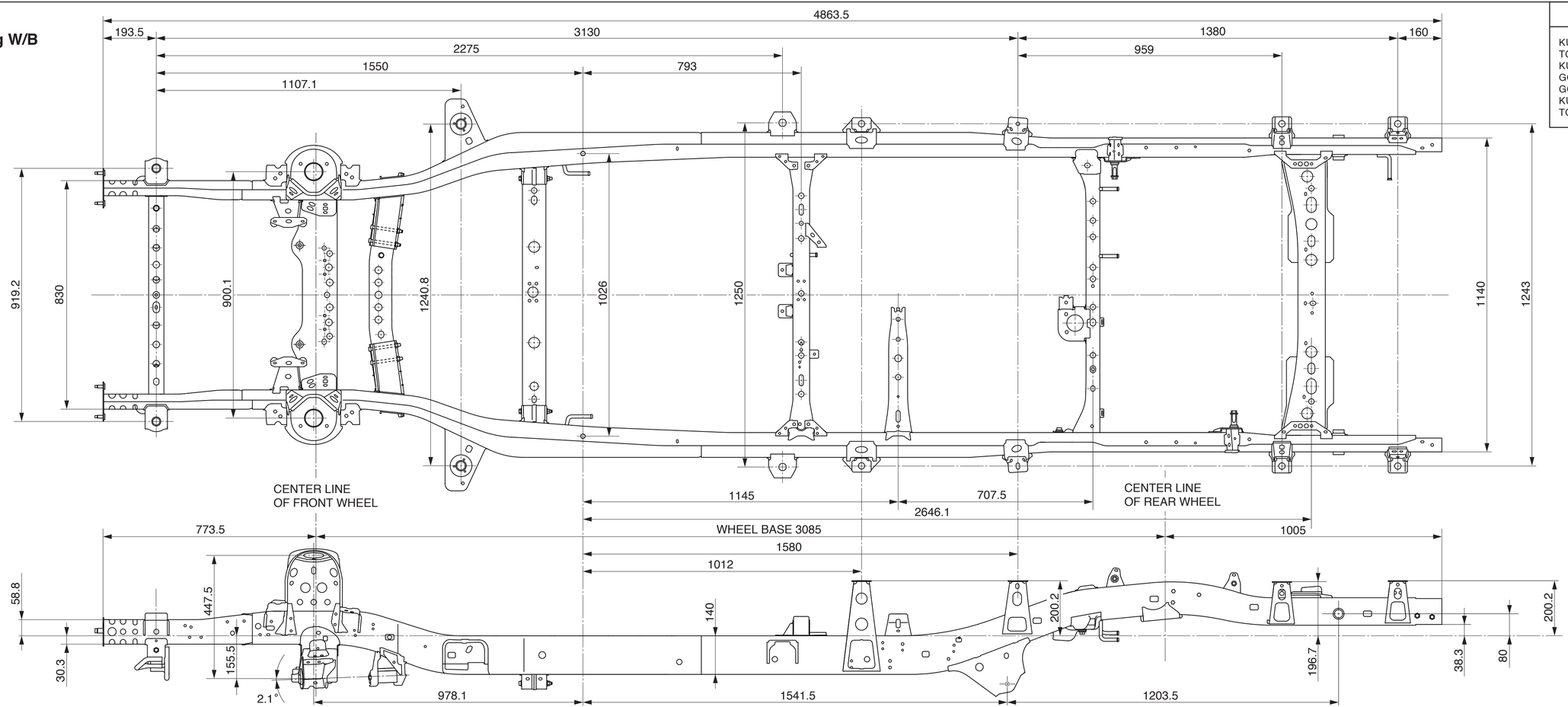
Note : Overall height changes by the terms of tire size, spring ratio, load condition, etc.
Please measure from the Frame Reference Line upward if required.

*1 : with Over Fender

D_012

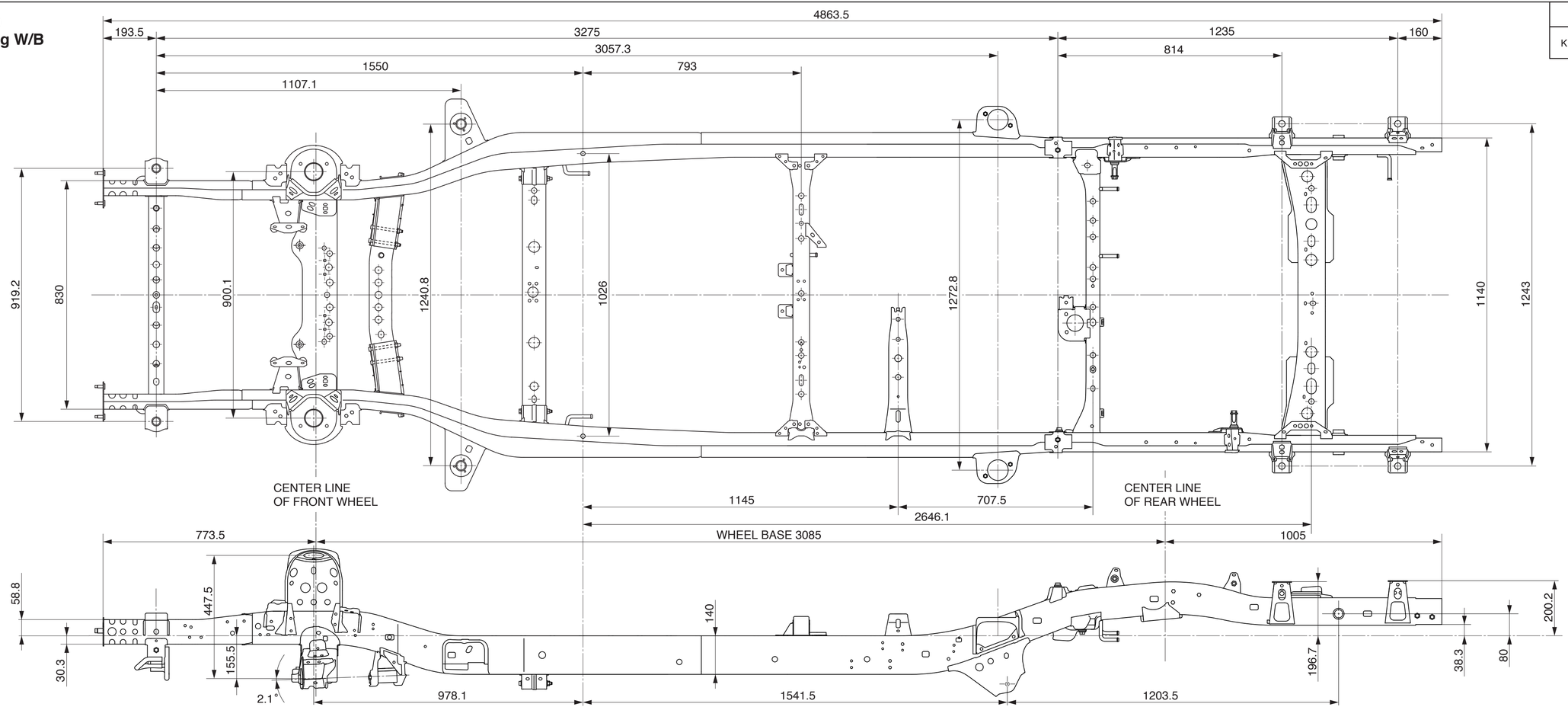
2-1. Frame Drawing (1/10)
2WD Single Cab Long W/B

MODELS
KUN15R - TRMDYT3
TGN16R - TRMDKQ3
KUN16R - TRMDYQ3
GGN15R - TRMDKQ3
GGN15R - TRADKQ3
KUN15L - TRMDYW3
TGN15R - TRMDKN3



2-2. Frame Drawing (1/10)
2WD Double Cab Long W/B

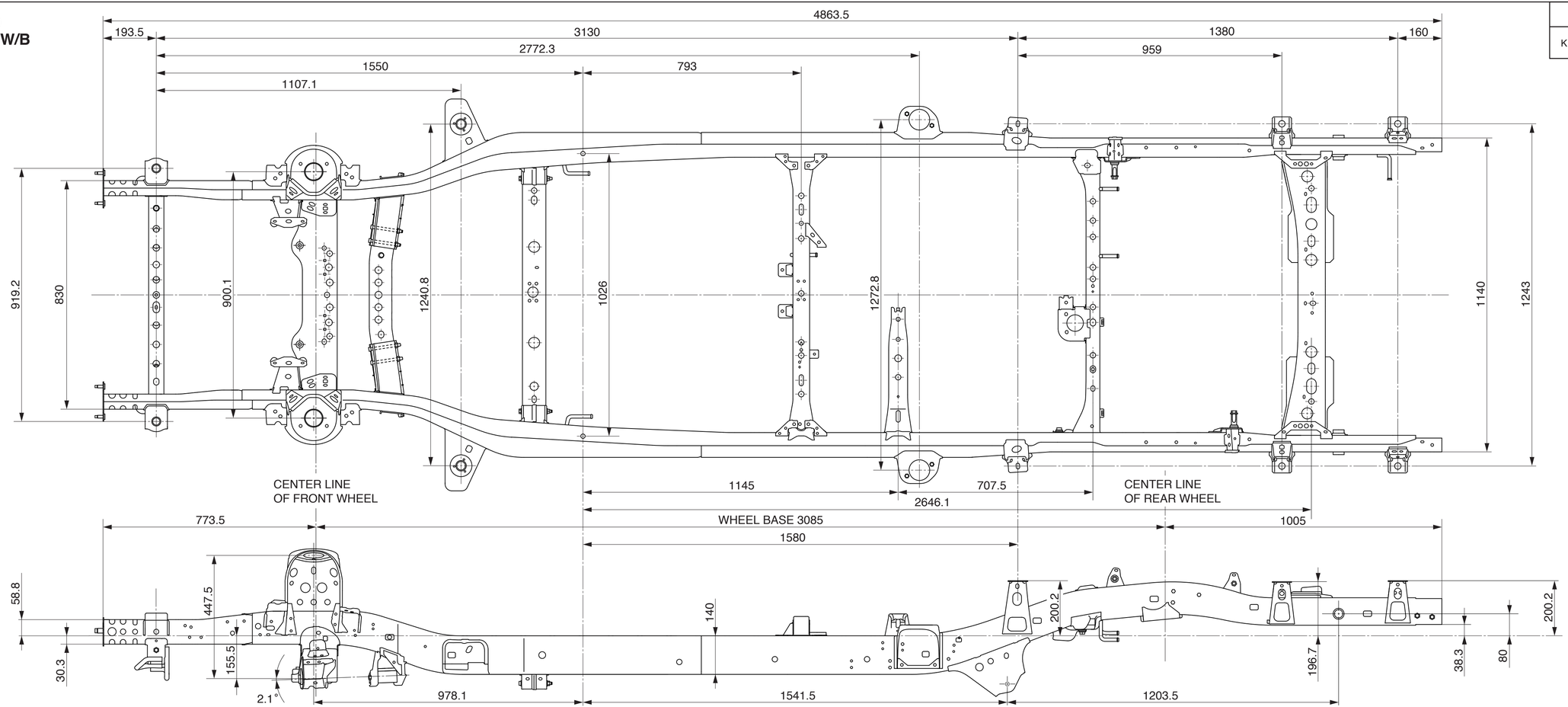
MODELS
KUN15L-PRMDYW3



D_013

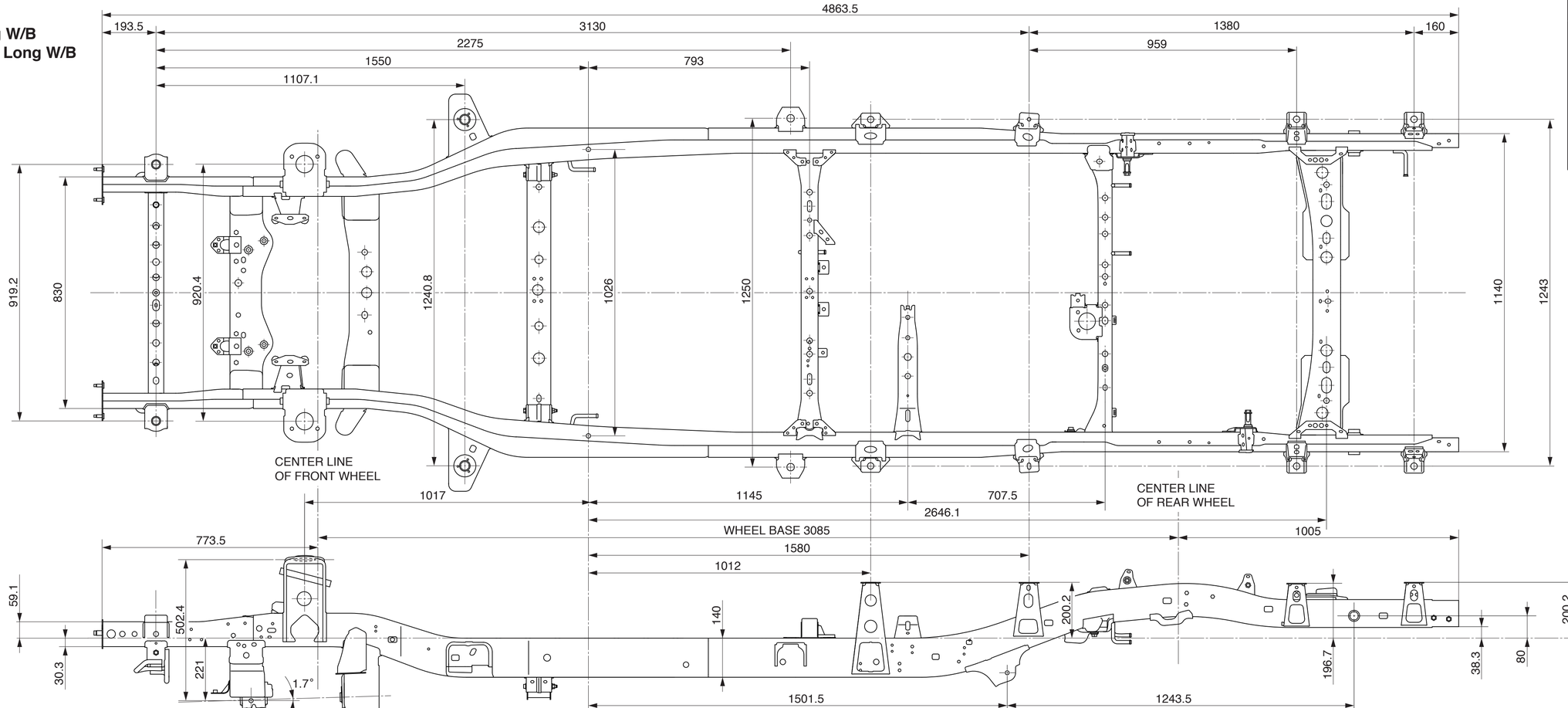
2-3. Frame Drawing (1/10)
2WD Extra Cab Long W/B

MODELS
KUN15L-CRMDYW3



D_015

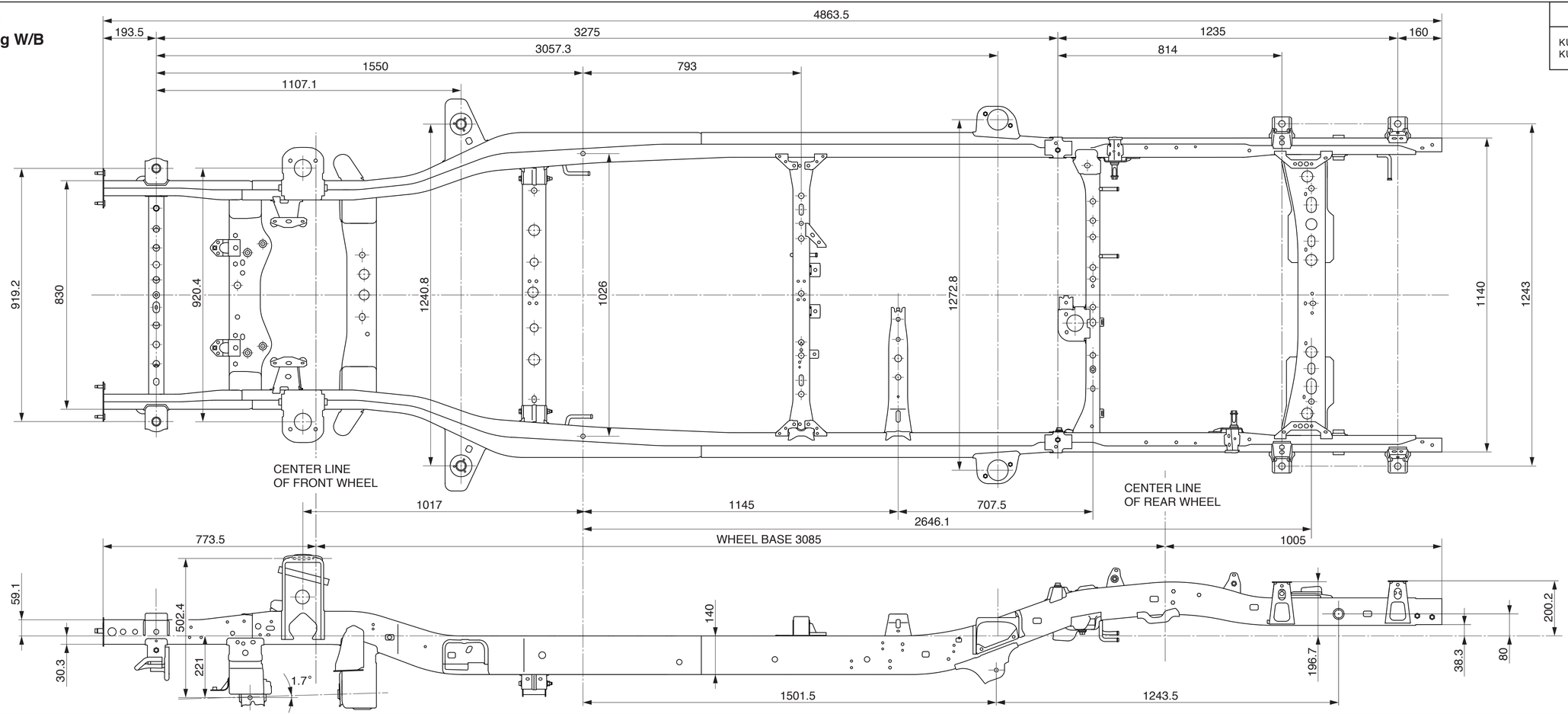
2-4. Frame Drawing (1/10)
4WD Single Cab Long W/B
Prerunner Single Cab Long W/B



MODELS
TGN36L - TRMDKG3
KUN35L - TRMDHG3
KUN35L - TRMDHL3
TGN36L - TRMDKL3
KUN26R - TRMDYQ3
KUN26R - TRPDYQ3
GGN25R - TRMDKQ3
GGN25R - TRADKQ3
KUN25L - TRMDHG3
TGN26L - TRMDKL3
KUN25L - TRMDHW3

2-5. Frame Drawing (1/10)
4WD Double Cab Long W/B

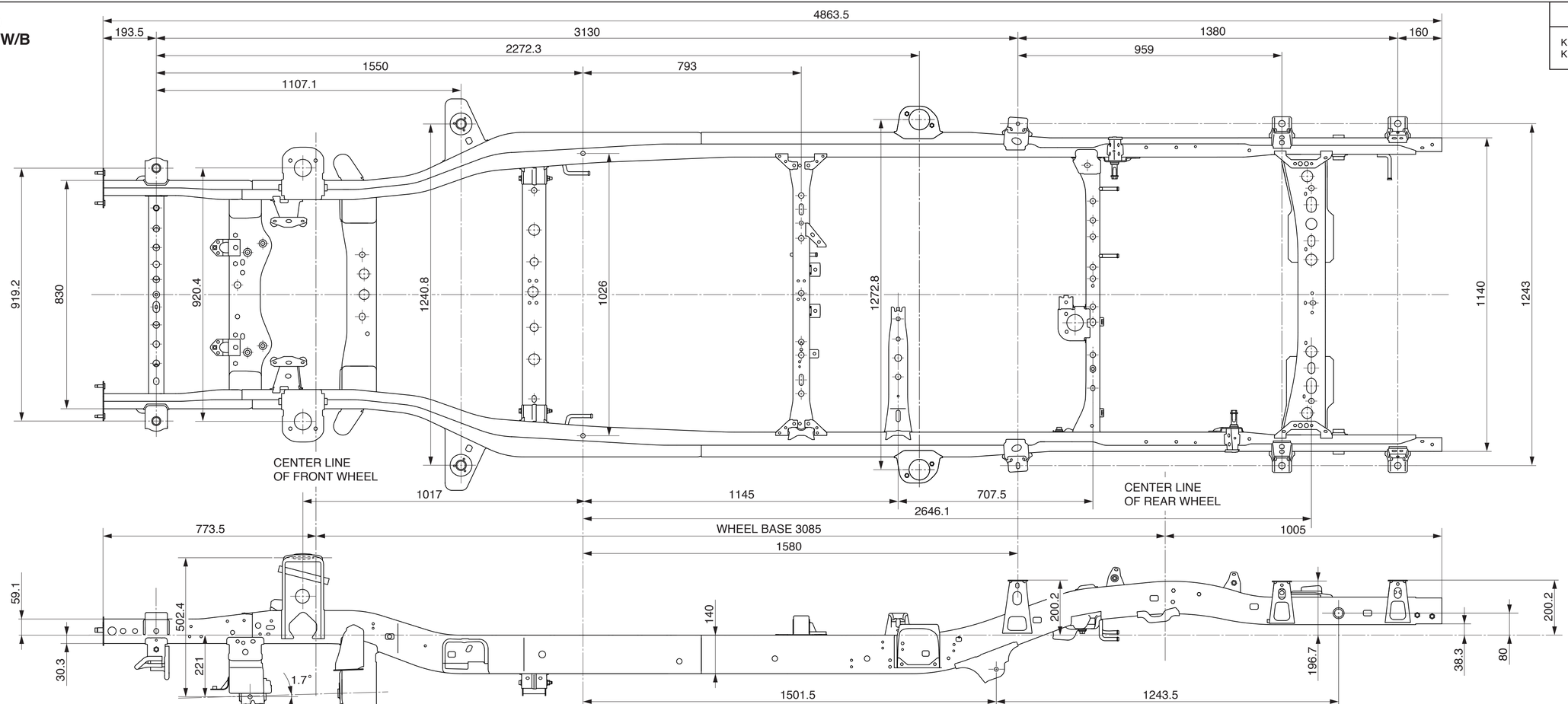
MODELS
KUN26R - PRMDYQ3 KUN25L - PRMDHW3



D_018

2-6. Frame Drawing (1/10)
4WD Extra Cab Long W/B

MODELS
KUN26R-CRMDYQ3 KUN25L-CRMDHW3

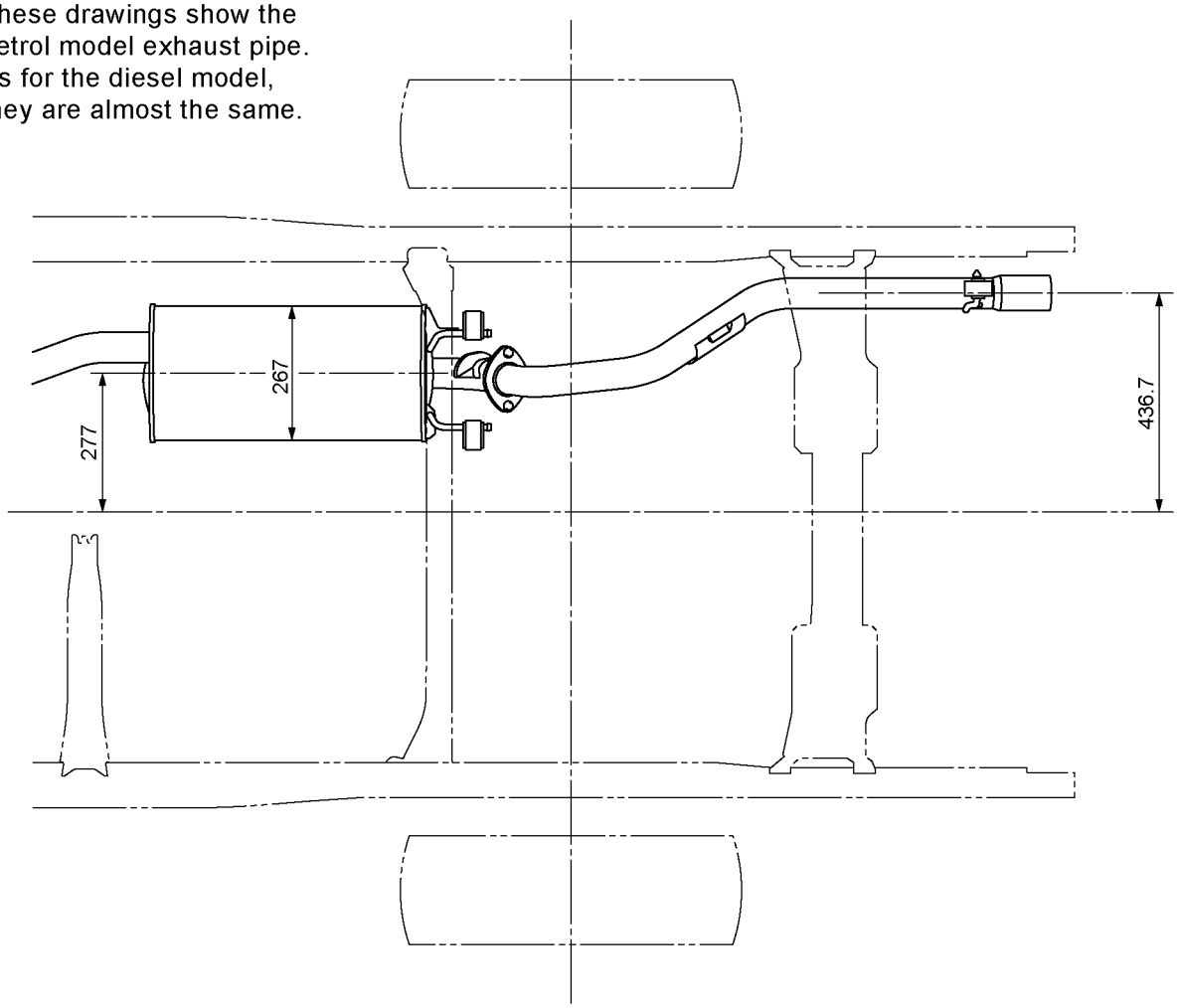


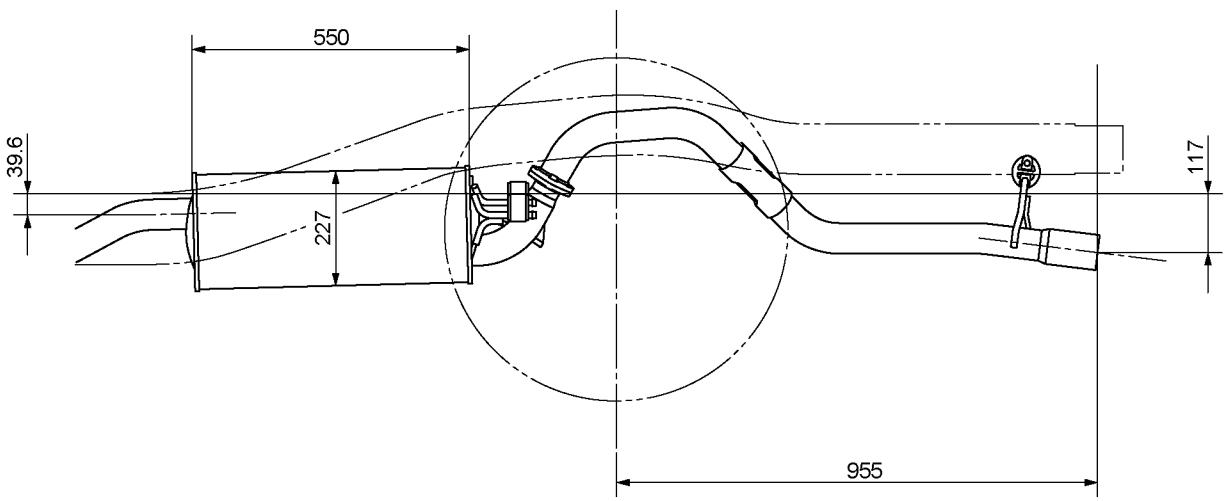
D_017

3-1. Exhaust pipe drawing

Position of Exhaust Pipe End

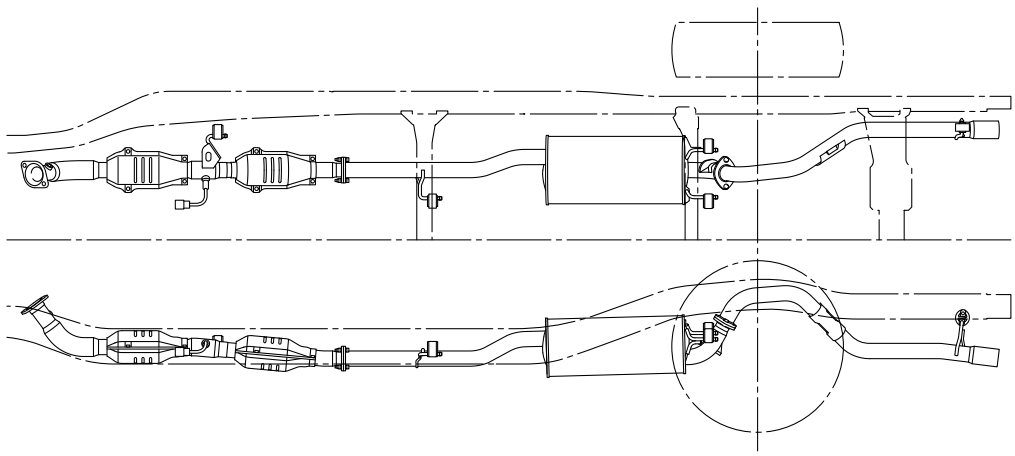
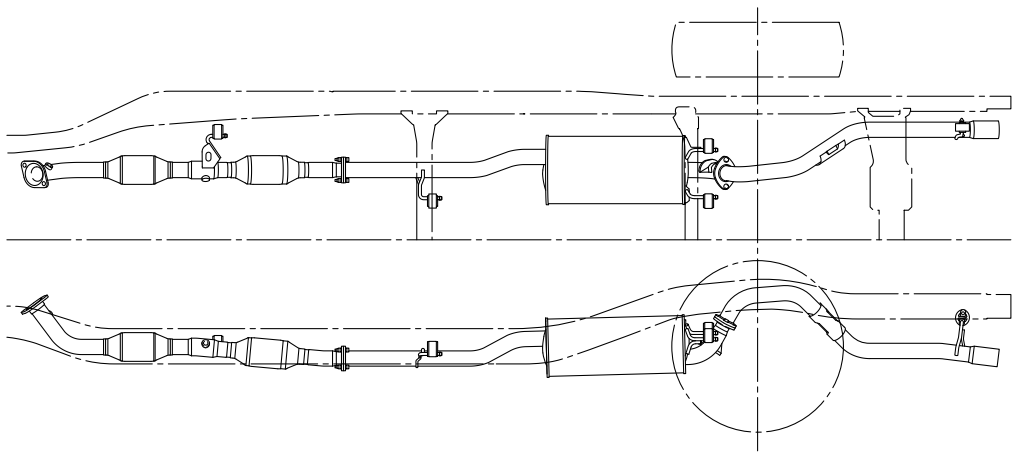
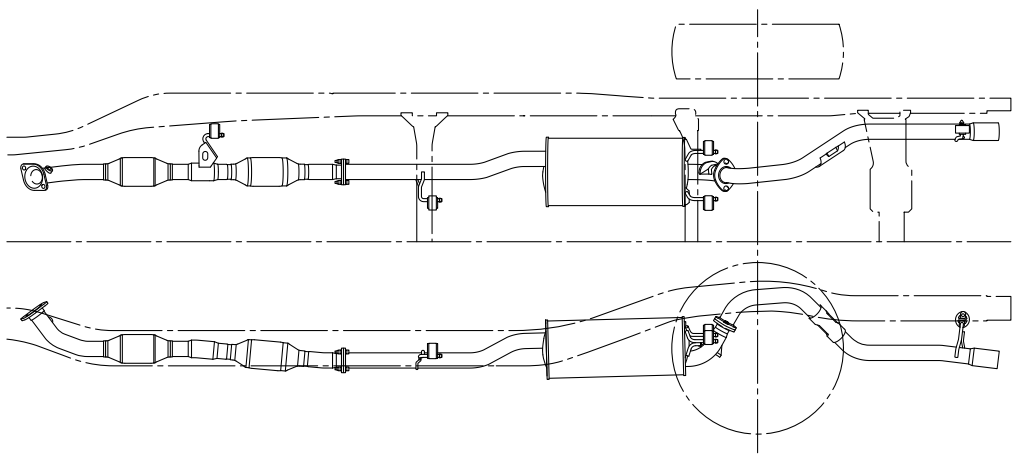
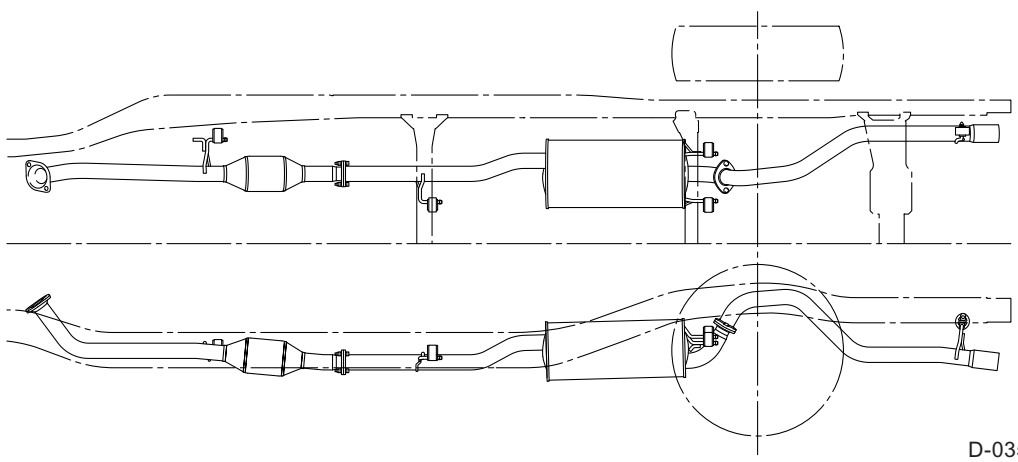
These drawings show the petrol model exhaust pipe. As for the diesel model, they are almost the same.

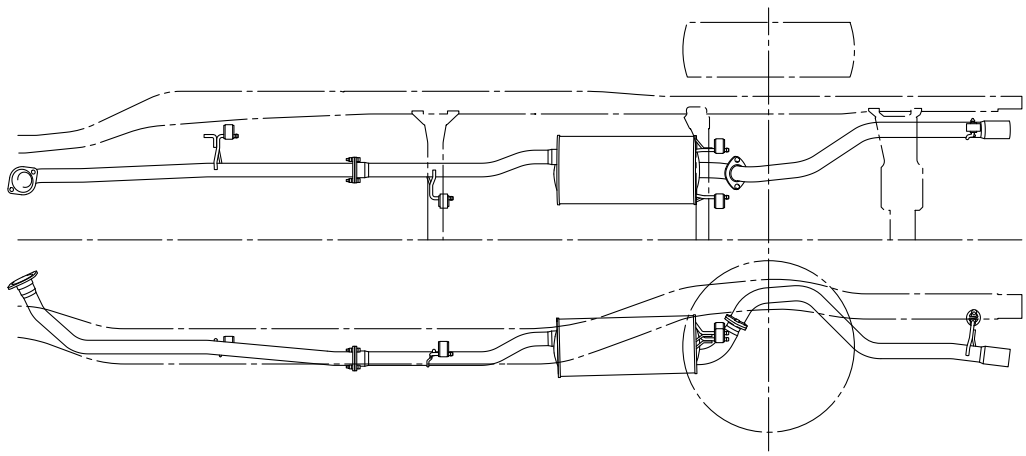
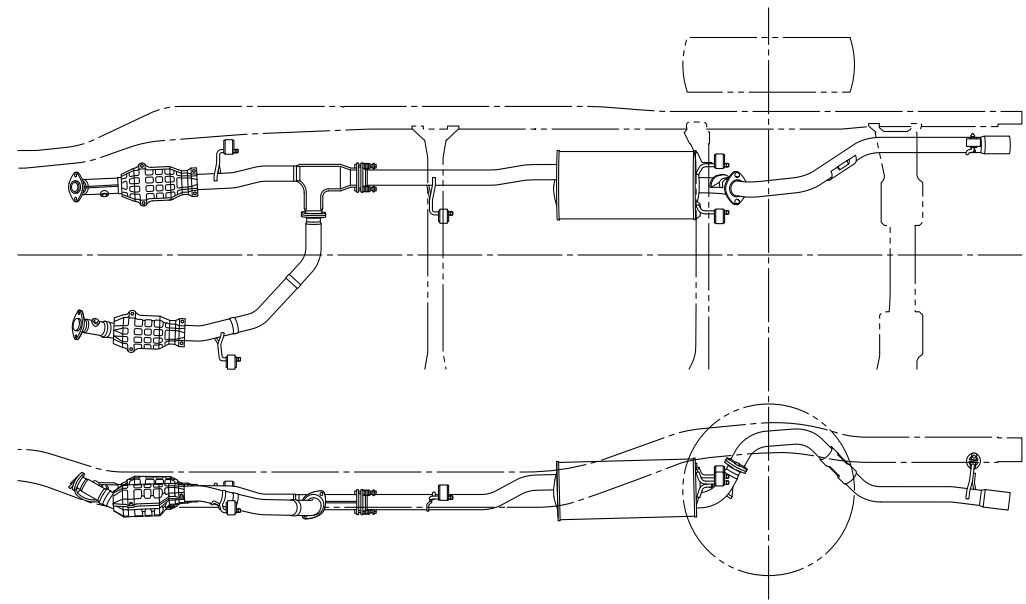
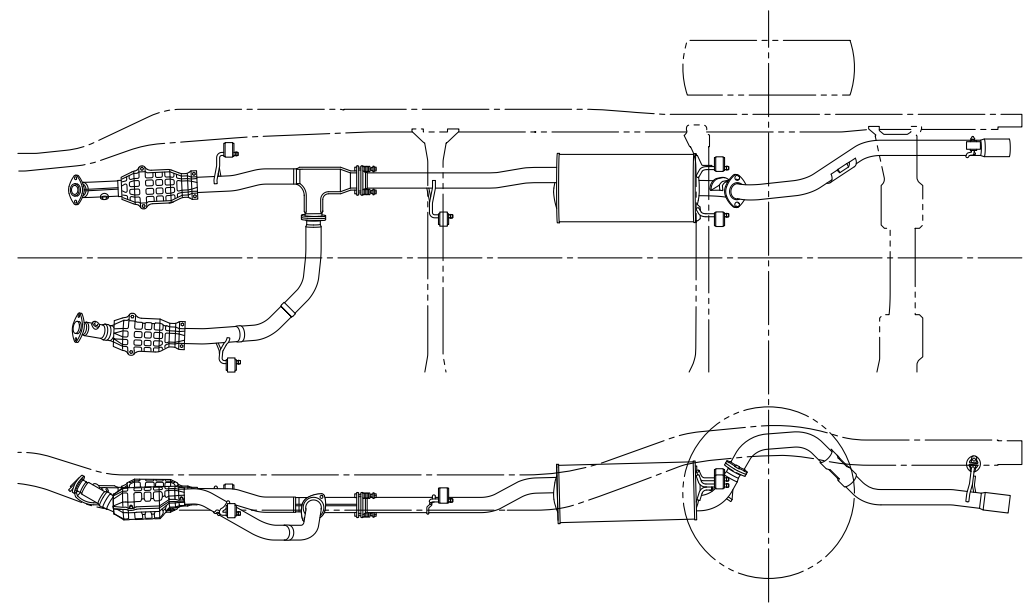




D-034

3-2. Exhaust pipe drawing

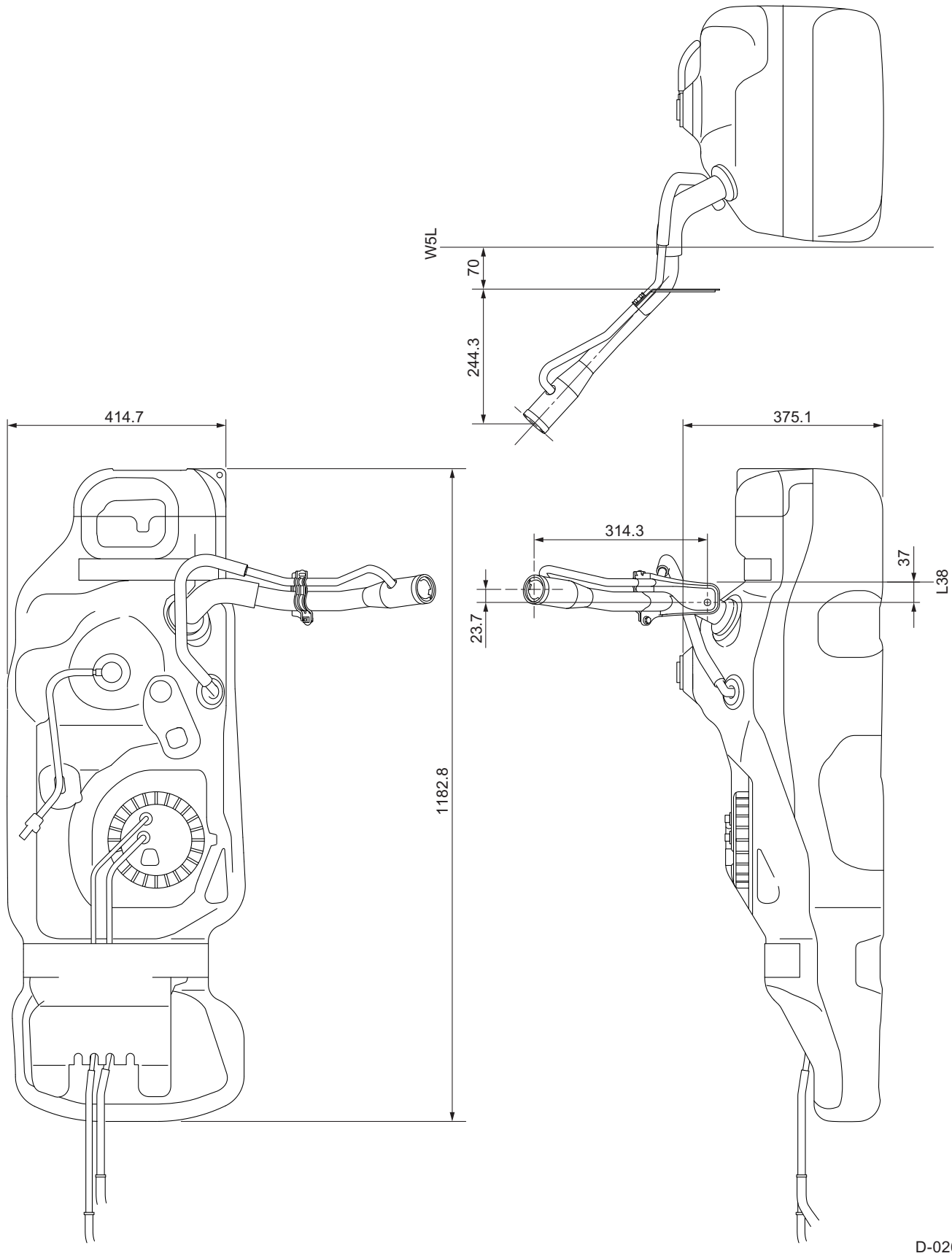
	MODEL	Exhaust pipe drawing
A	TGN16R - TRMDKQ3	
B	TGN36L - TRMDKG3 TGN36L - TRMDKL3 TGN26L - TRMDKL3	
C	TGN15R - TRMDKN3	
D	KUN16R - TRMDYQ3 KUN26R - TRMDYQ3 KUN26R - TRPDYQ3 KUN26R - PRMDYQ3 KUN26R - CRMDYQ3	 D-035

	MODEL	Exhaust pipe drawing
E	KUN15R - TRMDYT3 KUN15L - TRMDYW3 KUN35L - TRMDHG3 KUN15L - PRMDYW3 KUN15L - CRMDYW3 KUN25L - TRMDHG3 KUN25L - CRMDHW3 KUN35L - TRMDHL3 KUN25L - TRMDHW3 KUN25L - PRMDHW3	
F	GGN15R - TRMDKQ3 GGN15R - TRADKQ3	
G	GGN25R - TRMDKQ3 GGN25R - TRADKQ3	

D-036

4-1. Fuel tank installation-related drawing (1/10)

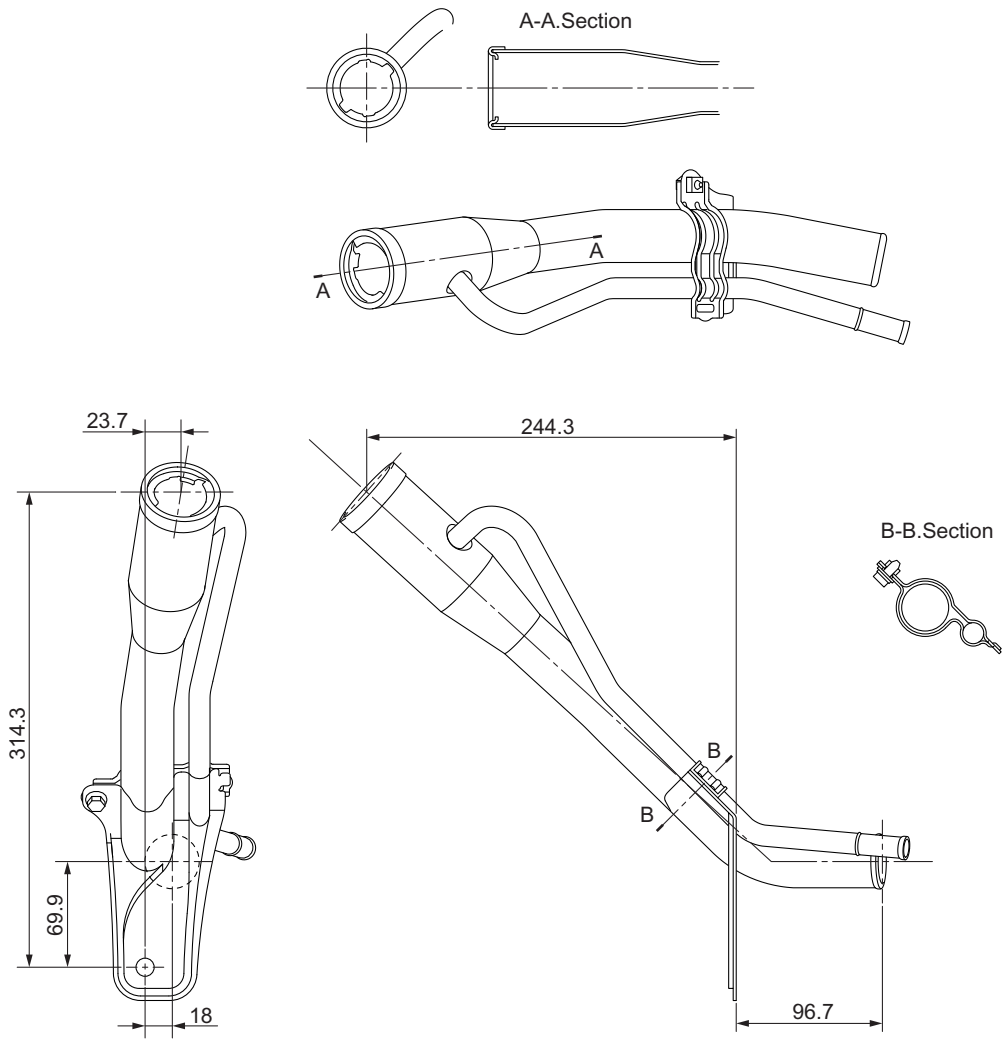
ALL MODELS



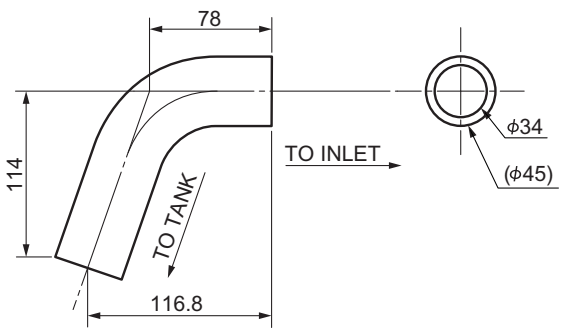
4-2. Fuel tank installation-related drawing (1/5)

ALL MODEL

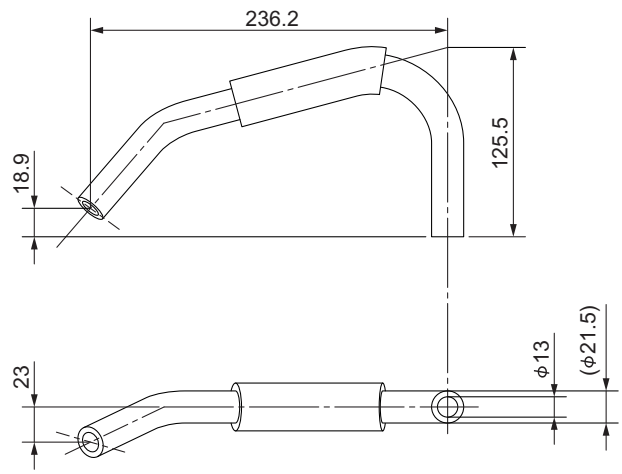
[Fuel tank filler upper pipe]



[Fuel tank to filler pipe hose]



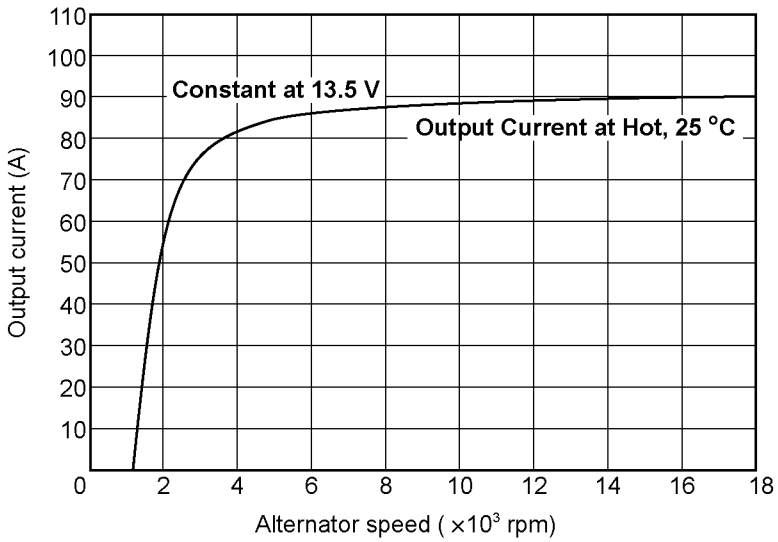
[Breather hose]



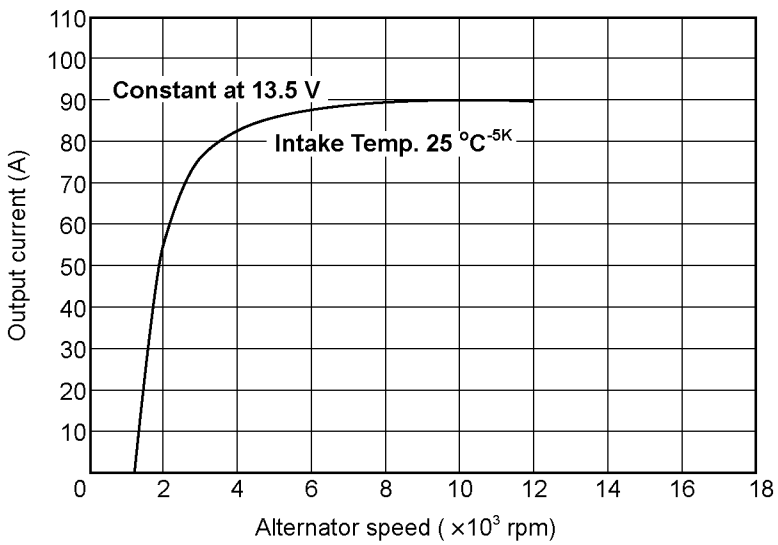
D-027

5-1.Alternator output characteristic

12V - 80A

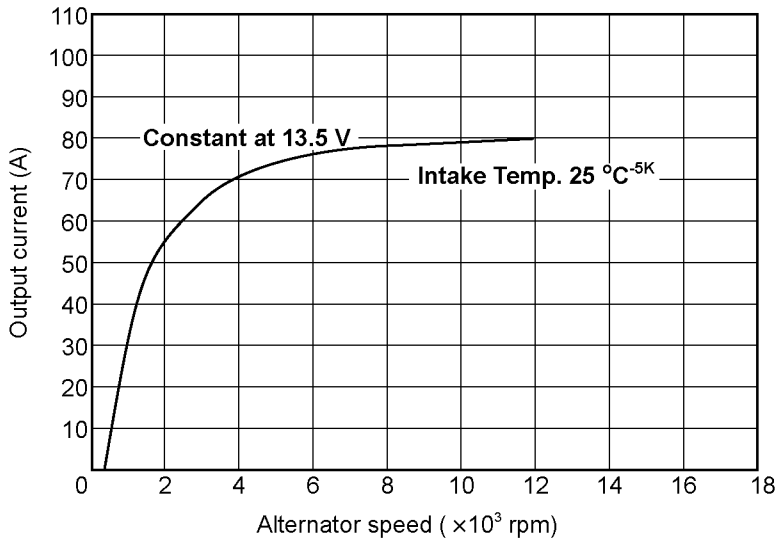


12V - 80A (BOSCH)

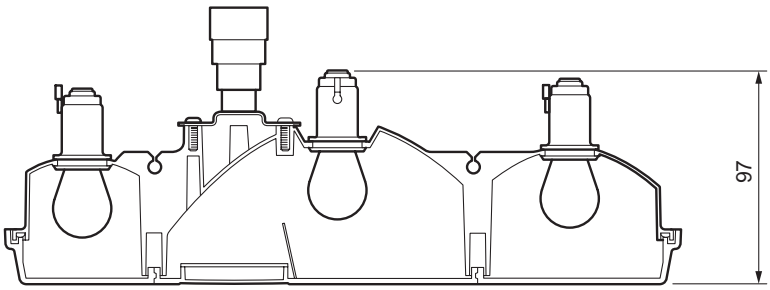


5-2. Alternator output characteristic

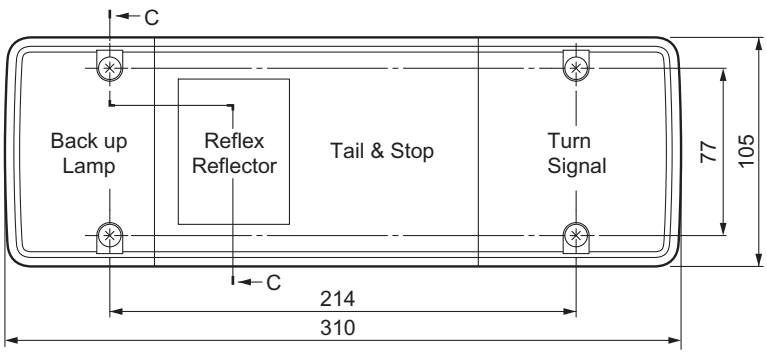
12V - 70A

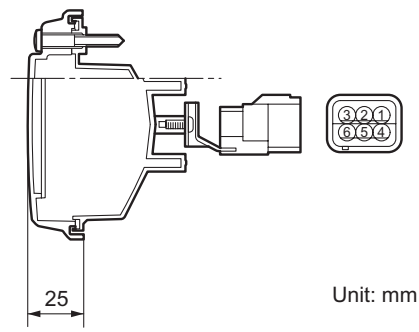


6-1. Rear combination lamp-related chart



These drawings are RH.LH drawings are symmetrically opposite





Unit: mm

C-C.Section

Required terminal voltage on vehicle

Turn Signal Lamp	12.7~14.5V
Tail Lamp	12.7~14.5V
Stop Lamp	12.1~13.7V
Back up Lamp	11.9~14.3V

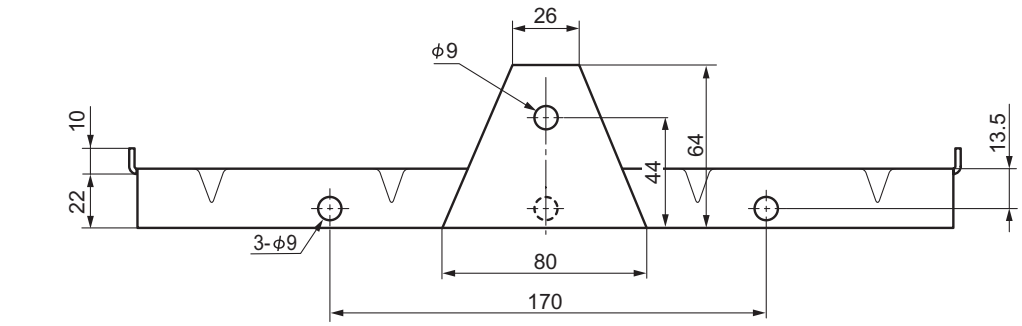
Terminal of Wiring

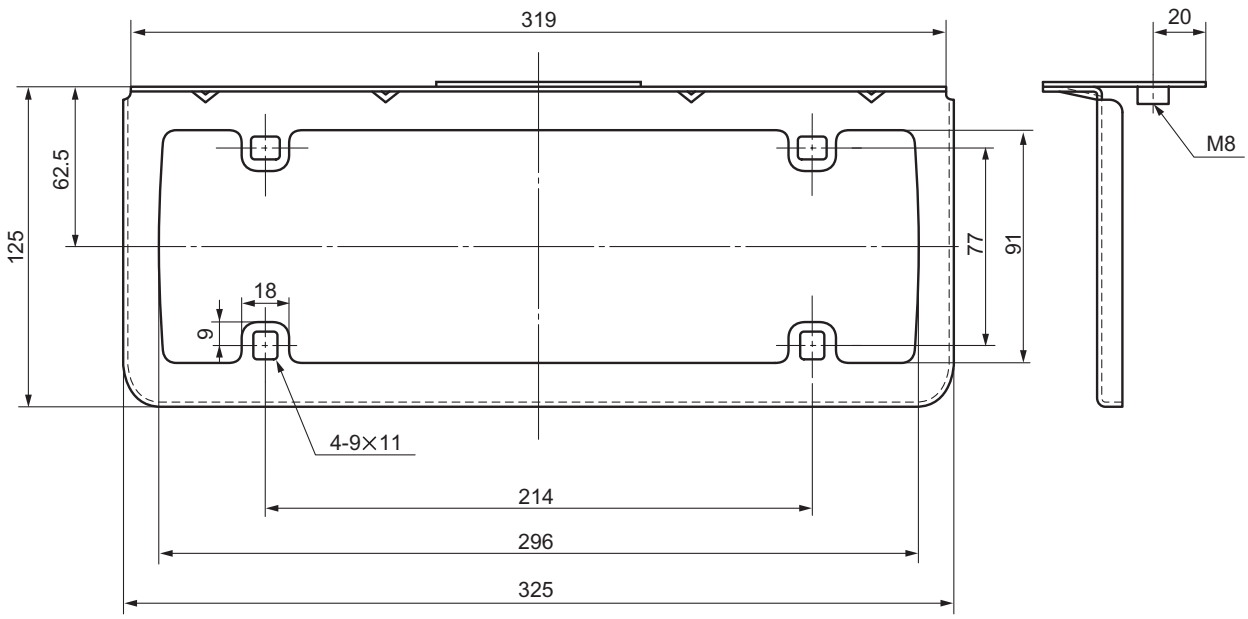
1	Turn Signal Lamp
2	Tail Lamp
3	EARTH
4	Stop Lamp
5	Back up Lamp
6	Space

D-001

6-2. Rear combination lamp-related chart

Lamp Bracket



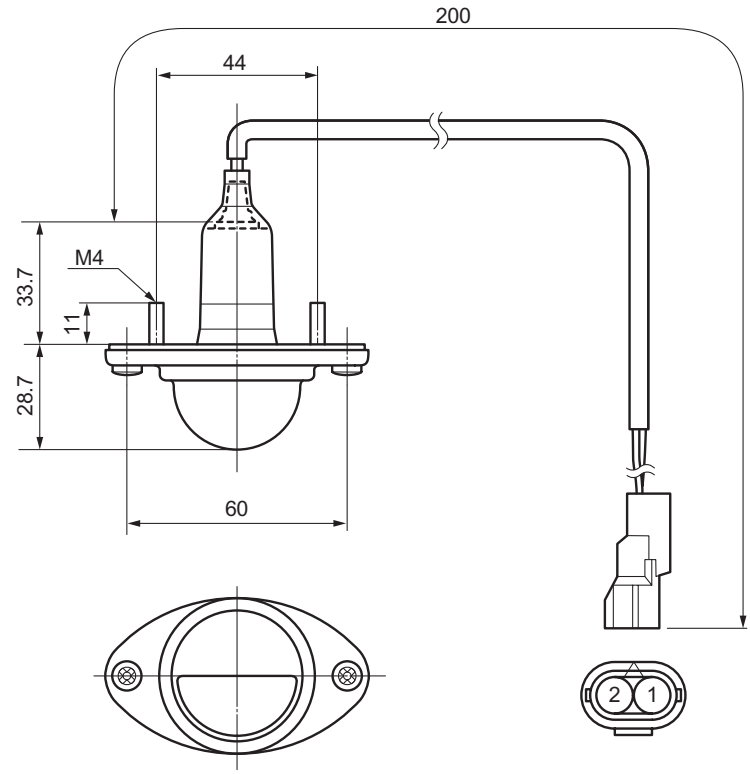


Unit: mm

D-002

7-1. Licence lamp-related chart

Licence Lamp



Terminal of Wiring

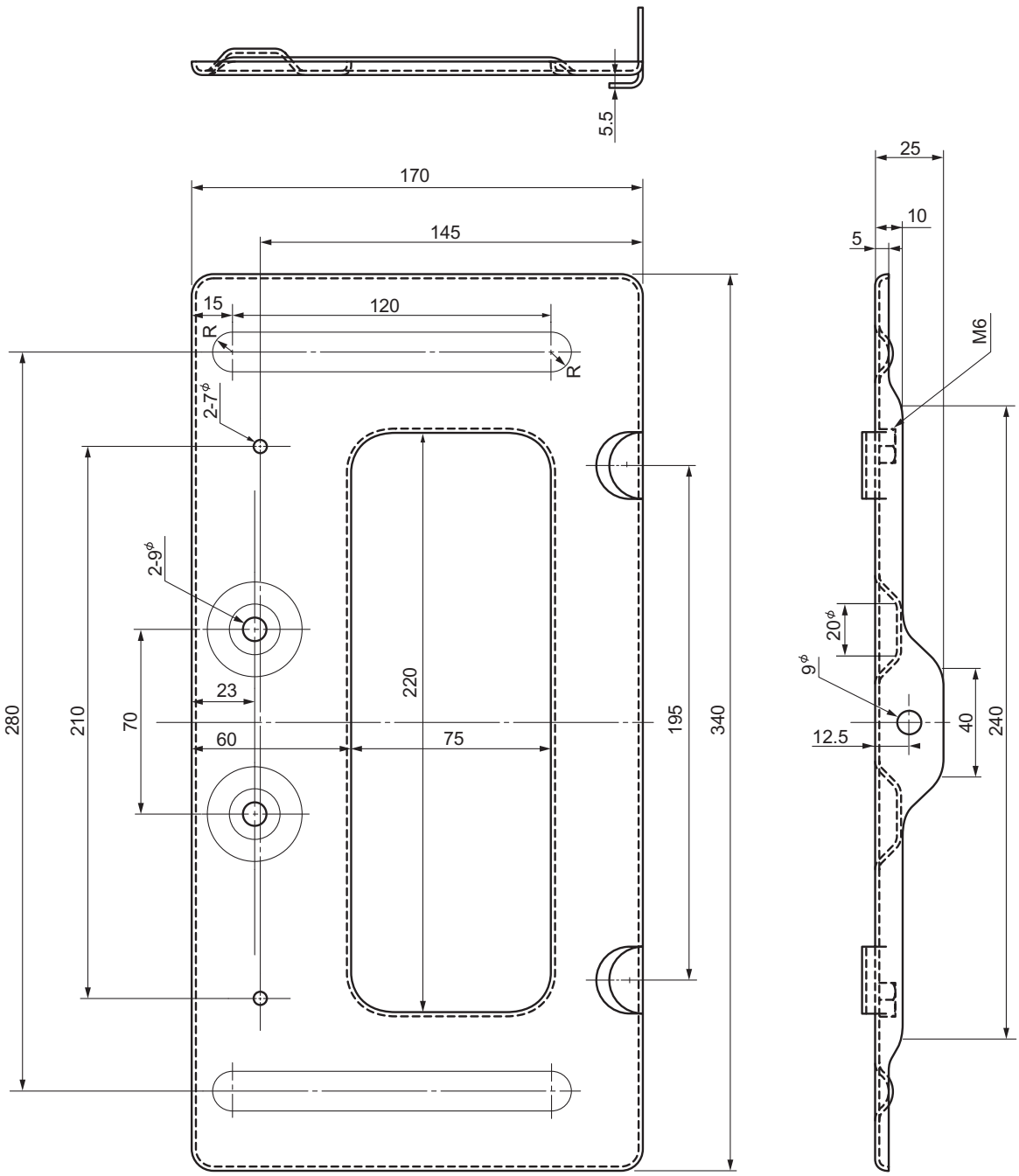
1	Earth
2	License Lamp

Unit: mm

D-003

7-2. Licence lamp-related chart

Licence Plate Bracket

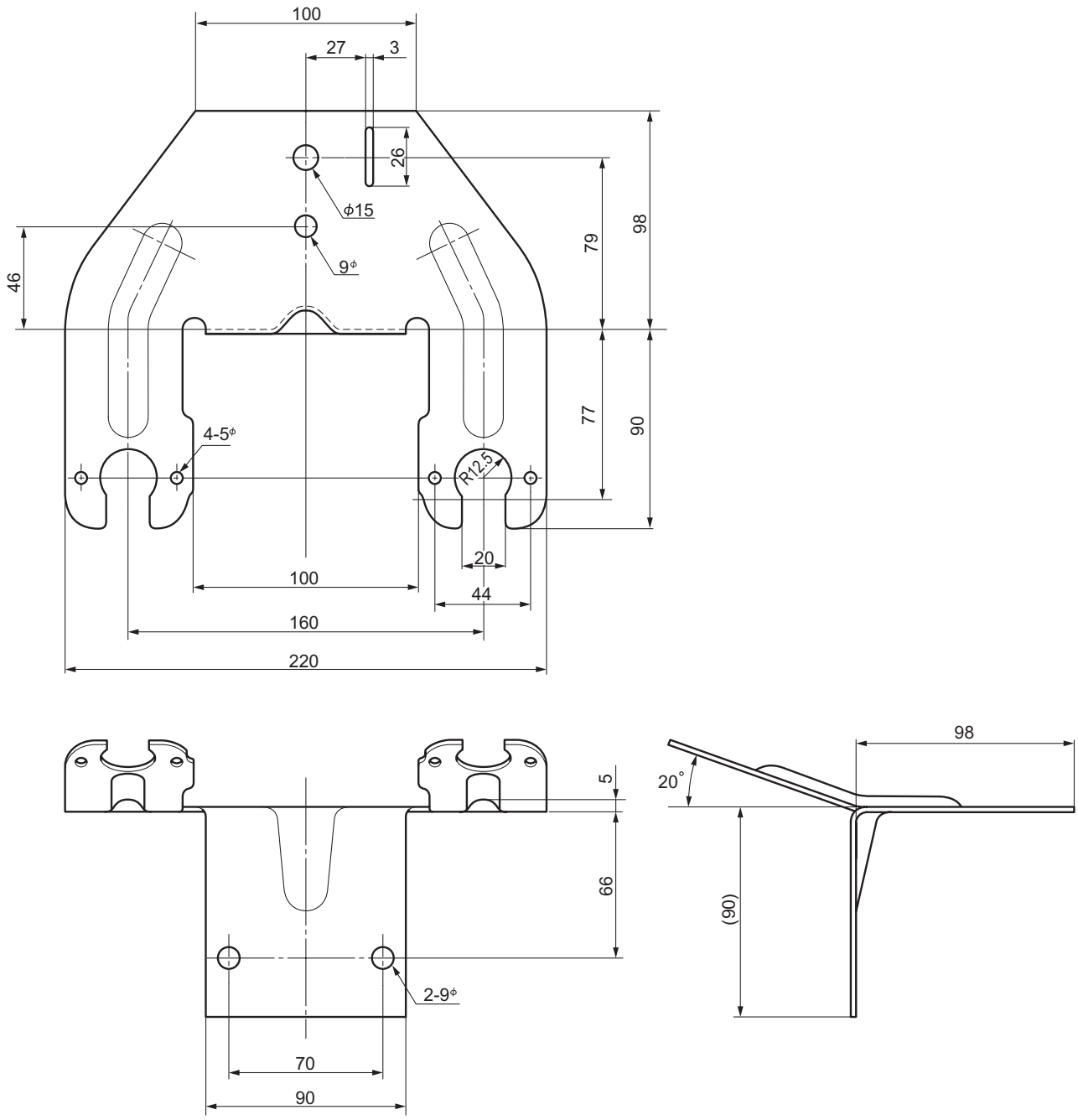


Unit: mm

D-004

7-3. Licence lamp-related chart

Licence Plate Bracket Hanger



Unit: mm

D-005

8-1. Rear fog lamp-related chart

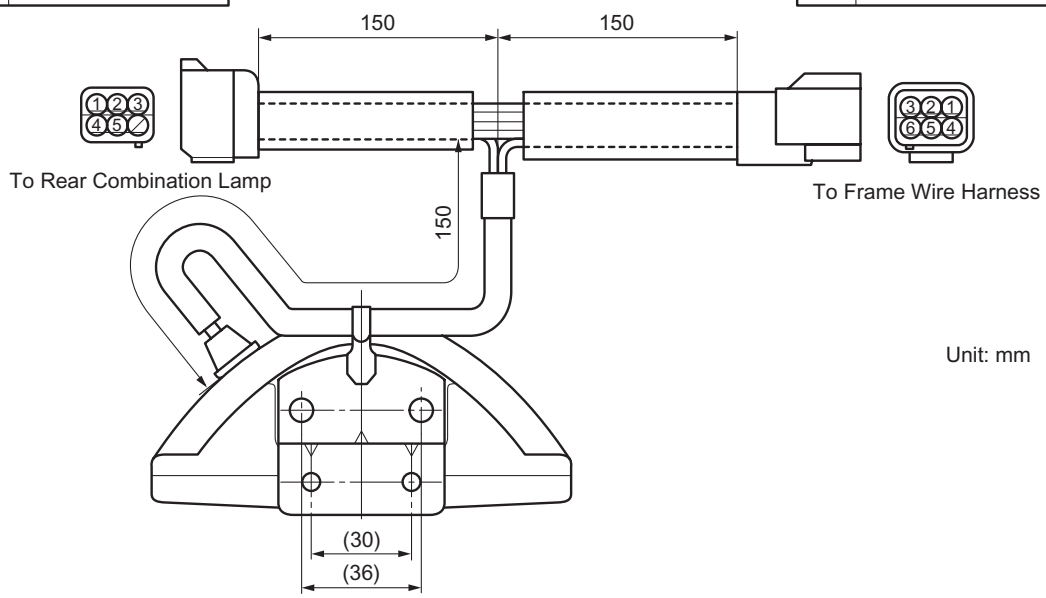
Rear Fog Lamp

Terminal of Wiring

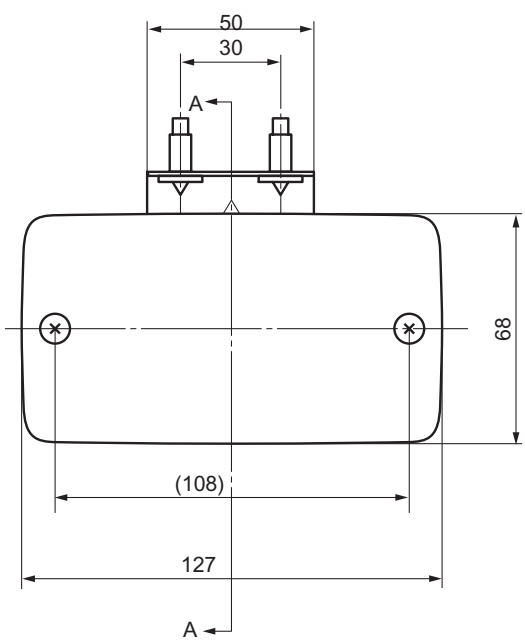
1	Turn Signal Lamp
2	Tail Lamp
3	EARTH
4	Stop Lamp
5	Back up Lamp

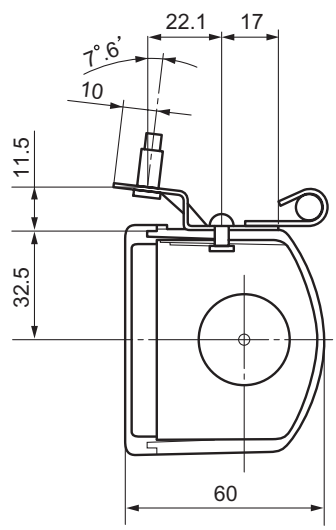
Terminal of Wiring

1	Turn Signal Lamp
2	Tail Lamp
3	EARTH
4	Stop Lamp
5	Back up Lamp
6	Rear Fog Lamp



Unit: mm





A-A Section

D-006

[5] MAJOR TECHNICAL SPECIFICATIONS

	Destination				Africa	ANCOM (Andean Community)		
	Body Type				Single Cab	Single Cab		
	Drive System				4X2	Prerunner	4X4	Prerunner
	Model Code				TGN15R-TRMDKN3	KUN35L-TRMDHL3	TGN26L-TRMDKL3	TGN36L-TRMDKL3
Major Dimension	Overall		Length	mm	5130	5130	5130	5130
			Width	mm	1760	1760, 1835 *1	1760, 1835 *1	1760, 1835 *1
			Height	mm	1680	1795	1795	1795
	Wheel Base			mm	3085	3085	3085	3085
	Tread		Front	mm	1510	1510, 1540 *1	1510, 1540 *1	1510, 1540 *1
			Rear	mm	1510	1510, 1540 *1	1510, 1540 *1	1510, 1540 *1
	Cab End to Rear Axle			mm	1310	1310	1310	1310
	Fuel Tank Capacity			Liters	80	80	80	80
	Seating Capacity			Persons	2	3	3	3
Weights	Unsprung Weight Axle		Front	kg	90	120	120	120
			Rear	kg	180	190	190	190
	Chassis and Cab Curb Weight		Front	kg	810-835	925-950	950-970	860-885
			Rear	kg	620-630	660-670	675-685	655-665
			Total	kg	1430-1465	1585-1620	1625-1655	1515-1550
	Gross Vehicle Weight		Front	kg	1000	1180	1170	1100
			Rear	kg	1750	1550	1580	1550
			Total	kg	2750	2730	2750	2650
	Max. Permissible Axle Capacity		Front	kg	1125	1255	1255	1255
			Rear	kg	1750	1600	1600	1600
	Min. Turning Radius			m	5.9	6.2	6.2	6.2
Engine	Engine	Type			1TR-FE	2KD-FTV	2TR-FE	2TR-FE
		Displacement		cc	1998	2494	2694	2694
		Max. Power		kW/rpm	100/5600	75/3600	118/5200	118/5200
		Max. Torque		N.m/rpm	182/4000	260/1600-2400	241/3800	241/3800
	Battery (20hr, rate)		<Option>	V-A	12-60	12-65	12-60	12-60
	Alternator			V-A	12-80	12-80	12-80	12-80
	Starter		<Option>	V-kw	12-1.7	12-2.5	12-1.7	12-1.7
Chassis	Transmission	Model			G55	R151	R150F	R150
		Gear Ratio	1st		4.452	4.313	3.830	3.830
			2nd		2.619	2.330	2.062	2.062
			3rd		1.517	1.436	1.436	1.436
			4th		1.000	1.000	1.000	1.000
			5th		0.854	0.838	0.838	0.838
			Rev		4.472	4.220	4.220	4.220
	Differential	Gear Ratio			4.555	3.909	4.555	4.555
	Front Suspension	Coil Spring	Size Diameter	mm	157	—*3	—*3	—*3
			Height (set)	mm	191	—*3	—*3	—*3
			Diameter of wire	mm	17	—*3	—*3	—*3
			Rate	N/mm	74.3	—*3	—*3	—*3
	Rear Suspension	Leaf Spring	Size L * W * T-n	mm	#1270*60* 8-1 #1289*60* 8-1 #1025*60* 8-1 # 845*60*14-1 # 590*60*13-1	—*3	—*3	—*3
			Rate	N/mm	40.2～118	—*3	—*3	—*3
	Tire	Size <Option>	Front & Rear		195R14C	205R16C 6JJ <255/70R15C 7JJ>	205R16C 6JJ <255/70R15C 7JJ>	205R16C 6JJ <255/70R15C 7JJ>
		Pressure (*2) <Option>	Front	kPa	240(240)	240(240) <200(200)>	240(240) <200(200)>	240(240) <200(200)>
			Rear	kPa	450(300)	320(240) <250(200)>	320(240) <250(200)>	320(240) <250(200)>
	Service Brake	Control Valve			LSP&BV	LSP&BV	LSP&BV	LSP&BV

*1 With Over Fender
*2 Unloaded vehicle condition
*3 Not available at publication
#:Load Point

	Destination				Australia			
	Body Type				Single Cab			
	Drive System				4X2	4X2	4X2	4X4
	Model Code				TGN16R-TRMDKQ3	GGN15R-TRMDKQ3	GGN15R-TRADKQ3	GGN25R-TRMDKQ3
Major Dimension	Overall		Length	mm	5130	5130	5130	5130
			Width	mm	1760	1760	1760	1760, 1835 *1
			Height	mm	1680	1680	1680	1795
	Wheel Base			mm	3085	3085	3085	3085
	Tread		Front	mm	1510	1510	1510	1510, 1540 *1
			Rear	mm	1510	1510	1510	1510, 1540 *1
	Cab End to Rear Axle			mm	1310	1310	1310	1310
	Fuel Tank Capacity			Liters	76	76	76	76
	Seating Capacity			Persons	3	3	2	3
Weights	Unsprung Weight Axle		Front	kg	90	90	90	120
			Rear	kg	180	180	180	190
	Chassis and Cab Curb Weight		Front	kg	830-855	855-865	880-885	965-980
			Rear	kg	620-665	625-660	630-665	675-710
			Total	kg	1450-1520	1480-1525	1510-1550	1640-1690
	Gross Vehicle Weight		Front	kg	1070	1070	1070	1170
			Rear	kg	1750	1750	1750	1580
			Total	kg	2820	2820	2820	2750
	Max. Permissible Axle Capacity		Front	kg	1125	1125	1125	1255
			Rear	kg	1750	1750	1750	1600
	Min. Turning Radius			m	5.9	5.9	5.9	6.2
Engine	Engine	Type			2TR-FE	1GR-FE	1GR-FE	1GR-FE
		Displacement		cc	2694	3956	3956	3956
		Max. Power		kW/rpm	118/5200	175/5200	175/5200	175/5200
		Max. Torque		N.m/rpm	241/3800	343/2400-4800	376/3800	343/2400-4800
	Battery (20hr, rate)	<Option>		V-A	12-60	12-65	12-65	12-65
	Alternator			V-A	12-80	12-80	12-80	12-80
	Starter	<Option>		V-kw	12-1.6	12-1.6	12-1.6	12-1.6
Chassis	Transmission	Model			R150	R150	A750E	R150F
		Gear Ratio	1st		3.830	3.830	3.520	3.830
			2nd		2.062	2.062	2.042	2.062
			3rd		1.436	1.436	1.400	1.436
			4th		1.000	1.000	1.000	1.000
			5th		0.838	0.838	0.716	0.838
			Rev		4.220	4.220	3.224	4.220
	Differential	Gear Ratio			4.100	3.583	3.583	3.583
	Front Suspension	Coil Spring	Size Diameter	mm	156.2	156.4	156.4	100.8～110.0
			Height (set)	mm	191	191	191	255
			Diameter of wire	mm	16.2	16.4	16.4	15.4
			Rate	N/mm	74.3	77.9	77.9	96.5
	Rear Suspension	Leaf Spring	Size L * W * T-n	mm	1270*60* 8-1 1289*60* 8-1 1025*60* 8-1 845*60*14-1 590*60*13-1	1270*60* 8-1 1289*60* 8-1 1025*60* 8-1 845*60*14-1 590*60*13-1	1270*60* 8-1 1289*60* 8-1 1025*60* 8-1 845*60*14-1 590*60*13-1	1300*60* 8-1 1308*60* 8-1 1040*60* 8-1 840*60*14-1 630*60*14-1
			Rate	N/mm	40.2～118	40.2～118	40.2～118	37.0～115
	Tire	Size <Option>	Front & Rear		195R14C <205/70R15C 6JJ>	205/70R15C 6JJ	205/70R15C 6JJ	205R16C 6JJ <255/70R15C 7JJ>
		Pressure (*2) <Option>	Front	kPa	240(240) <240(240)>	240(240)	240(240)	240(240) <200(200)>
			Rear	kPa	450(300) <450(330)>	450(330)	450(330)	320(240) <250(200)>
	Service Brake	Control Valve			LSP&BV	LSP&BV	LSP&BV	LSP&BV

*1 With Over Fender

*2 Unloaded vehicle condition

#:Load Point

	Destination				Australia			
	Body Type				Single Cab			
	Drive System				4X4	4X2	4X4	4X4
	Model Code				GGN25R-TRADKQ3	KUN16R-TRMDYQ3	KUN26R-TRMDYQ3	KUN26R-TRPDYQ3
Major Dimension	Overall		Length	mm	5130	5130	5130	5130
			Width	mm	1760, 1835 *1	1760	1760, 1835 *1	1760, 1835 *1
			Height	mm	1795	1680	1795	1795
	Wheel Base			mm	3085	3085	3085	3085
	Tread		Front	mm	1510, 1540 *1	1510	1510, 1540 *1	1510, 1540 *1
			Rear	mm	1510, 1540 *1	1510	1510, 1540 *1	1510, 1540 *1
	Cab End to Rear Axle			mm	1310	1310	1310	1310
	Fuel Tank Capacity			Liters	76	76	76	76
	Seating Capacity			Persons	2	3	3	2
Weights	Unsprung Weight Axle		Front	kg	120	90	120	120
			Rear	kg	190	180	190	190
	Chassis and Cab Curb Weight		Front	kg	990-1000	930-950	1045-1060	1065-1080
			Rear	kg	680-715	630-670	680-715	685-720
			Total	kg	1670-1715	1560-1620	1725-1775	1750-1800
	Gross Vehicle Weight		Front	kg	1170	1125	1230	1230
			Rear	kg	1580	1750	1580	1580
			Total	kg	2750	2875	2810	2810
	Max. Permissible Axle Capacity		Front	kg	1255	1125	1255	1255
			Rear	kg	1600	1750	1600	1600
	Min. Turning Radius			m	6.2	5.9	6.2	6.2
Engine	Engine	Type			1GR-FE	1KD-FTV	1KD-FTV	1KD-FTV
		Displacement		cc	3956	2982	2982	2982
		Max. Power		kW/rpm	175/5200	120/3400	120/3400	120/3400
		Max. Torque		N.m/rpm	376/3800	343/1400-3200	343/1400-3200	343/1400-3200
	Battery (20hr, rate)		<Option>	V-A	12-65	12-80	12-80	12-80
	Alternator			V-A	12-80	12-80	12-80	12-80
	Starter		<Option>	V-kw	12-1.6	12-2.2	12-2.2	12-2.2
Chassis	Transmission	Model			A750F	R151	R151F	A340F
		Gear Ratio	1st		3.520	4.313	4.313	2.804
			2nd		2.042	2.330	2.330	1.531
			3rd		1.400	1.436	1.436	1.000
			4th		1.000	1.000	1.000	0.705
			5th		0.716	0.838	0.838	-
			Rev		3.224	4.220	4.220	2.393
	Differential	Gear Ratio			3.583	3.583	3.583	3.727
	Front Suspension	Coil Spring	Size Diameter	mm	100.8～110.0	156.6	101.6～110.0	101.6～110.0
			Height (set)	mm	255	191	255	255
			Diameter of wire	mm	15.4	16.6	15.8	15.8
			Rate	N/mm	96.5	82.0	105.2	105.2
	Rear Suspension	Leaf Spring	Size L * W * T-n	mm	1300*60* 8-1 1308*60* 8-1 1040*60* 8-1 840*60*14-1 630*60*14-1	1270*60* 8-1 1289*60* 8-1 1025*60* 8-1 845*60*14-1 590*60*13-1	1300*60* 8-1 1308*60* 8-1 1040*60* 8-1 840*60*14-1 630*60*14-1	1300*60* 8-1 1308*60* 8-1 1040*60* 8-1 840*60*14-1 630*60*14-1
			Rate	N/mm	37.0～115	40.2～118	37.0～115	37.0～115
	Tire	Size <Option>	Front & Rear		205R16C 6JJ <255/70R15C 7JJ>	195R14C <205/70R15C 6JJ>	205R16C 6JJ <255/70R15C 7JJ>	205R16C 6JJ <255/70R15C 7JJ>
		Pressure (*2) <Option>	Front	kPa	240(240) <200(200)>	240(240) <240(240)>	240(240) <200(200)>	240(240) <200(200)>
			Rear	kPa	320(240) <250(200)>	450(300) <450(330)>	320(240) <250(200)>	320(240) <250(200)>
	Service Brake	Control Valve			LSP&BV	LSP&BV	LSP&BV	LSP&BV

*1 With Over Fender

*2 Unloaded vehicle condition

#:Load Point

	Destination					Australia	
	Body Type					Extra Cab	Double Cab
	Drive System					4X4	4X4
	Model Code					KUN26R-CRMDYQ3	KUN26R-PRMDYQ3
Major Dimension	Overall			Length	mm	5130	5130
				Width	mm	1760, 1835 *1	1760, 1835 *1
				Height	mm	1795	1810
	Wheel Base				mm	3085	3085
	Tread			Front	mm	1510, 1540 *1	1510, 1540 *1
				Rear	mm	1510, 1540 *1	1510, 1540 *1
	Cab End to Rear Axle				mm	810	520
	Fuel Tank Capacity				Liters	76	76
	Seating Capacity				Persons	4	5
Weights	Unsprung Weight Axle			Front	kg	120	120
				Rear	kg	190	190
	Chassis and Cab Curb Weight			Front	kg	1050-1060	1075-1085
				Rear	kg	700-735	735-765
				Total	kg	1750-1795	1810-1850
	Gross Vehicle Weight			Front	kg	1230	1240
				Rear	kg	1480	1540
				Total	kg	2710	2780
	Max. Permissible Axle Capacity			Front	kg	1255	1255
				Rear	kg	1520	1600
	Min. Turning Radius				m	6.2	6.2
Engine	Engine	Type				1KD-FTV	1KD-FTV
		Displacement			cc	2982	2982
		Max. Power			kW/rpm	120/3400	120/3400
		Max. Torque			N.m/rpm	343/1400-3200	343/1400-3200
	Battery (20hr, rate)		<Option>		V-A	12-80	12-80
	Alternator				V-A	12-80	12-80
	Starter		<Option>		V-kw	12-2.2	12-2.2
Chassis	Transmission	Model				R151F	R151F
		Gear Ratio		1st		4.313	4.313
				2nd		2.330	2.330
				3rd		1.436	1.436
				4th		1.000	1.000
				5th		0.838	0.838
				Rev		4.220	4.220
	Differential	Gear Ratio				3.583	3.583
	Front Suspension	Coil Spring	Size	Diameter	mm	101.6～110.0	101.6～110.0
				Height (set)	mm	255	255
				Diameter of wire	mm	15.8	15.8
				Rate	N/mm	105.2	105.2
	Rear Suspension	Leaf Spring	Size	L * W * T-n	mm	1300*60* 8-1 1283*60* 8-1 935*60* 8-1 670*60*11-1 500*60*12-1	1300*60* 8-1 1283*60* 8-1 955*60* 8-1 715*60*12-1 500*60*10-1
				Rate	N/mm	36.0～71.3	36.2～71.7
	Tire	Size <Option>		Front & Rear		205R16C 6JJ <255/70R15C 7JJ>	205R16C 6JJ <255/70R15C 7JJ>
		Pressure (*2) <Option>		Front	kPa	240(240) <200(200)>	240(240) <200(200)>
				Rear	kPa	320(240) <250(200)>	320(240) <250(200)>
	Service Brake	Control Valve				LSP&BV	LSP&BV

*1 With Over Fender

*2 Unloaded vehicle condition

#:Load Point

	Destination					Central & South America		
	Body Type					Single Cab		
	Drive System					Prerunner	4X4	Prerunner
	Model Code					TGN36L-TRMDKG3	KUN25L-TRMDHG3	KUN35L-TRMDHG3
Major Dimension	Overall		Length		mm	5130	5130	5130
			Width		mm	1760, 1835 *1	1760, 1835 *1	1760, 1835 *1
			Height		mm	1795	1795	1795
	Wheel Base				mm	3085	3085	3085
	Tread		Front		mm	1510, 1540 *1	1510, 1540 *1	1510, 1540 *1
			Rear		mm	1510, 1540 *1	1510, 1540 *1	1510, 1540 *1
	Cab End to Rear Axle				mm	1310	1310	1310
	Fuel Tank Capacity				Liters	80	80	80
	Seating Capacity				Persons	3	3	3
Weights	Unsprung Weight Axle		Front		kg	120	120	120
			Rear		kg	190	190	190
	Chassis and Cab Curb Weight		Front		kg	860-870	1010-1025	925-940
			Rear		kg	655-665	680-700	660-675
			Total		kg	1515-1535	1690-1725	1585-1615
	Gross Vehicle Weight		Front		kg	1100	1230	1180
			Rear		kg	1550	1580	1550
			Total		kg	2650	2810	2730
	Max. Permissible Axle Capacity		Front		kg	1255	1255	1255
			Rear		kg	1600	1600	1600
	Min. Turning Radius				m	6.2	6.2	6.2
Engine	Engine	Type				2TR-FE	2KD-FTV	2KD-FTV
		Displacement			cc	2694	2494	2494
		Max. Power			kW/rpm	118/5200	75/3600	75/3600
		Max. Torque			N.m/rpm	241/3800	260/1600-2400	260/1600-2400
	Battery (20hr, rate)			<Option>	V-A	12-60	12-65	12-65
	Alternator				V-A	12-80	12-70	12-70
	Starter			<Option>	V-kw	12-1.7	12-2.5	12-2.5
Chassis	Transmission	Model				R150	R151F	R151
		Gear Ratio		1st		3.830	4.313	4.313
				2nd		2.062	2.330	2.330
				3rd		1.436	1.436	1.436
				4th		1.000	1.000	1.000
				5th		0.838	0.838	0.838
				Rev		4.220	4.220	4.220
	Differential	Gear Ratio				4.555	3.909	3.909
	Front Suspension	Coil Spring	Size	Diameter	mm	110	110	110
				Height (set)	mm	255	255	255
				Diameter of wire	mm	15.3	15.7	16.1
				Rate	N/mm	82.0	91.8	100.5
	Rear Suspension	Leaf Spring	Size	L * W * T-n	mm	—*3	—*3	—*3
				Rate	N/mm	—*3	—*3	—*3
	Tire	Size <Option>		Front & Rear		205R16C 6JJ <255/70R15C 7JJ>	205R16C 6JJ <255/70R15C 7JJ>	205R16C 6JJ <255/70R15C 7JJ>
		Pressure (*2) <Option>		Front	kPa	240(240) <200(200)>	240(240) <200(200)>	240(240) <200(200)>
				Rear	kPa	320(240) <250(200)>	320(240) <250(200)>	320(240) <250(200)>
	Service Brake	Control Valve				LSP&BV	LSP&BV	LSP&BV

*1 With Over Fender
*2 Unloaded vehicle condition
*3 Not available at publication
#:Load Point

	Destination				Europe			
	Body Type				Single Cab		Extra Cab	
	Drive System				4X2	4X4	4X2	4X4
	Model Code				KUN15L-TRMDYW3	KUN25L-TRMDHW3	KUN15L-CRMDYW3	KUN25L-CRMDHW3
Major Dimension	Overall		Length	mm	5130	5130	5130	5130
			Width	mm	1760	1760, 1835 *1	1760	1760, 1835 *1
			Height	mm	1680	1795	1680	1795
	Wheel Base			mm	3085	3085	3085	3085
	Tread		Front	mm	1510	1510, 1540 *1	1510	1510, 1540 *1
			Rear	mm	1510	1510, 1540 *1	1510	1510, 1540 *1
	Cab End to Rear Axle			mm	1310	1310	810	810
	Fuel Tank Capacity			Liters	80	80	76	76
	Seating Capacity			Persons	2	2	4	4
Weights	Unsprung Weight Axle		Front	kg	90	120	90	120
			Rear	kg	180	190	180	190
	Chassis and Cab Curb Weight		Front	kg	890-945	1015-1075	895-945	1015-1050
			Rear	kg	625-640	680-705	660-675	700-735
			Total	kg	1515-1585	1695-1780	1555-1620	1715-1785
	Gross Vehicle Weight		Front	kg	1070	1230	1085	1230
			Rear	kg	1700	1505	1615	1450
			Total	kg	2770	2735	2700	2680
	Max. Permissible Axle Capacity		Front	kg	1125	1255	1125	1255
			Rear	kg	1750	1580	1690	1580
	Min. Turning Radius			m	5.9	6.2	5.9	6.2
Engine	Engine	Type			2KD-FTV	2KD-FTV	2KD-FTV	2KD-FTV
		Displacement		cc	2494	2494	2494	2494
		Max. Power		kW/rpm	75/3600	75/3600	75/3600	75/3600
		Max. Torque		N.m/rpm	200/1400-3200	260/1600-2400	200/1400-3200	260/1600-2400
	Battery (20hr, rate)	<Option>		V-A	12-65<12-65x2>	12-65<12-65x2>	12-65<12-65x2>	12-65<12-65x2>
	Alternator			V-A	12-70	12-70	12-80	12-80
	Starter	<Option>		V-kw	12-2.5<12-2.7>	12-2.5<12-2.7>	12-2.0<12-2.7>	12-2.0<12-2.7>
Chassis	Transmission	Model			G50	R151F	G50	R151F
		Gear Ratio	1st		3.928	4.313	3.928	4.313
			2nd		2.333	2.330	2.333	2.330
			3rd		1.451	1.436	1.451	1.436
			4th		1.000	1.000	1.000	1.000
			5th		0.798	0.838	0.798	0.838
			Rev		4.743	4.220	4.743	4.220
	Differential	Gear Ratio			4.100	3.909	4.100	3.909
	Front Suspension	Coil Spring Size	Diameter	mm	157.4	110	156.4	101.2～110.0
			Height (set)	mm	191	255	191	255
			Diameter of wire	mm	17.4	16.4	16.4	15.6
			Rate	N/mm	82	100.5	77.9	100.5
	Rear Suspension	Leaf Spring Size	L * W * T-n	mm	#1270*60* 8-1 #1130*60* 8-1 # 985*60* 8-1 # 845*60*14-1 # 590*60*13-1	#1300*60* 8-1 #1150*60* 8-1 #1000*60* 8-1 # 840*60*14-1 # 630*60*13-1	1270*60* 8-1 1267*60* 8-1 1005*60* 8-1 800*60*13-1 495*60*13-1	1300*60* 8-1 1283*60* 8-1 935*60* 8-1 670*60*11-1 500*60*12-1
			Rate	N/mm	40.2～118	37.0～115	40.0～101	36.0～71.3
	Tire	Size <Option>	Front & Rear		195R14C <205/70R15C 6JJ>	205R16C 6JJ <255/70R15C 7JJ>	195R14C <205/70R15C 6JJ>	205R16C 6JJ <255/70R15C 7JJ>
		Pressure (*2) <Option>	Front	kPa	240(240) <240(240)>	240(240) <200(200)>	260(260) <260(260)>	240(240) <200(200)>
			Rear	kPa	450(300) <450(330)>	320(240) <250(200)>	400(260) <400(290)>	320(240) <250(200)>
	Service Brake	Control Valve			LSP&BV	LSP&BV	LSP&BV	LSP&BV

*1 With Over Fender

*2 Unloaded vehicle condition

#:Load Point

	Destination				Europe		Thailand
	Body Type				Double Cab		Single Cab
	Drive System				4X2	4X4	4X2
	Model Code				KUN15L-PRMDYW3	KUN25L-PRMDHW3	KUN15R-TRMDYT3
Major Dimension	Overall		Length	mm	5130	5130	5130
			Width	mm	1760	1760, 1835 *1	1760
			Height	mm	1695	1810	1680
	Wheel Base			mm	3085	3085	3085
	Tread		Front	mm	1510	1510, 1540 *1	1510
			Rear	mm	1510	1510, 1540 *1	1510
	Cab End to Rear Axle			mm	520	520	1310
	Fuel Tank Capacity			Liters	80	80	76
	Seating Capacity			Persons	5	5	3
Weights	Unsprung Weight Axle		Front	kg	90	120	90
			Rear	kg	180	190	180
	Chassis and Cab Curb Weight		Front	kg	935-960	1040-1095	885-895
			Rear	kg	730	730-755	620-630
			Total	kg	1665-1690	1770-1850	1505-1525
	Gross Vehicle Weight		Front	kg	1125	1250	1125
			Rear	kg	1520	1510	1750
			Total	kg	2645	2760	2875
	Max. Permissible Axle Capacity		Front	kg	1200	1255	1125
			Rear	kg	1520	1580	1750
	Min. Turning Radius			m	5.9	6.2	5.9
Engine	Engine	Type			2KD-FTV	2KD-FTV	2KD-FTV
		Displacement		cc	2494	2494	2494
		Max. Power		kW/rpm	75/3600	75/3600	75/3600
		Max. Torque		N.m/rpm	200/1400-3200	260/1600-2400	200/1400-3200
	Battery (20hr, rate)	<Option>		V-A	12-65<12-65x2>	12-65<12-65x2>	12-65
	Alternator			V-A	12-70	12-70	12-80
	Starter	<Option>		V-kw	12-2.5<12-2.7>	12-2.5<12-2.7>	12-2.0
Chassis	Transmission	Model			G50	R151F	G50
		Gear Ratio	1st		3.928	4.313	3.928
			2nd		2.333	2.330	2.333
			3rd		1.451	1.436	1.451
			4th		1.000	1.000	1.000
			5th		0.798	0.838	0.798
			Rev		4.743	4.220	4.743
	Differential	Gear Ratio			4.100	3.909	4.100
	Front Suspension	Coil Spring	Size Diameter	mm	157	110	115～122
			Height (set)	mm	197	255	191
			Diameter of wire	mm	17	16.4	16.6
			Rate	N/mm	75.1	100.5	82.0
	Rear Suspension	Leaf Spring	Size L * W * T-n	mm	#1270*60* 8-1 #1085*60* 8-1 # 900*60* 8-1 # 775*60*14-1 # 480*60*13-1	#1300*60* 8-1 #1110*60* 8-1 # 915*60* 8-1 # 715*60*14-1 # 500*60*13-1	1270*60* 8-1 1289*60* 8-1 1040*60* 8-1 845*60*14-1 590*60*13-1
			Rate	N/mm	35.4～89.1	36.2～71.7	40.2～118
	Tire	Size <Option>	Front & Rear		195R14C <205/70R15C 6JJ>	205R16C 6JJ <255/70R15C 7JJ>	195R14C
		Pressure (*2) <Option>	Front	kPa	260(260) <260(260)>	240(240) <200(200)>	240(240)
			Rear	kPa	350(260) <350(290)>	320(240) <250(200)>	450(300)
	Service Brake	Control Valve			LSP&BV	LSP&BV	LSP&BV

*1 With Over Fender

*2 Unloaded vehicle condition

#:Load Point

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

CONVERSION DEPT.
OVERSEAS C&A DIVISION

TOYOTA MOTOR CORPORATION

NISSHIN EDUCATION & TRAINING CENTER

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AICHI 470-0113, JAPAN

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WEBSITE) http://oasis.adm.toyota.co.jp/csin/

(Please contact OCAD to receive your password and the account number.)