

# ***HYUNDAI TRUCK***

# **BODY BUILDER BOOK**



2005. 6

**HYUNDAI MOTOR COMPANY**  
**COMMERCIAL VEHICLE ENGINEERING & RESEARCH CENTER**

## INTRODUCTION

Thanks for you to use HMC products consistently. This book provides general work instructions for vehicles needed for all sorts of structure modifications by using the trucks produced in the HMC. This book describes cautions needed for installation, modification, or alteration on the HMC Chassis with cab. Comply with instructions of this book to secure safety and serviceability of vehicles. Also, this book describes regulations and standards.

1. In case the details of this book don't conform to the those of VEHICLE MODEL BOOK, the latter shall prevail.
2. In case revision or additional details happen to detailed information, they are notified by the workshop communication and option revising communication. Therefore details previously published should be revised or added.
3. If you find any error or mistake in writing, or have any questions about installation of bodies on the HMC chassis, please contact with HMC freely.
4. Detailed information in this book can be altered without notice beforehand according to engineering revision

HMC all the time endeavors to improve technology and to manufacture perfect vehicles. HMC wishes that this book did good to you, and is appreciative of you to make habitual use of its vehicles regularly.

HYUNDAI MOTOR COMPANY  
COMMERCIAL VEHICLE ENGINEERING & RESEARCH CENTER

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## 1. GENERAL

### 1-1. Cautions regarding installation, modification or alteration

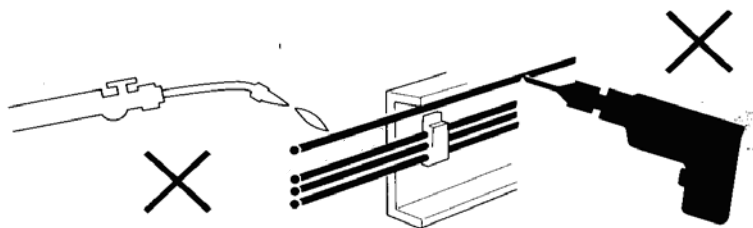
#### 1-1-1. Cautions needed for planning

After investigating on safety, rapidity, maintenance and applicable regulation fully, HMC sends out goods. When installing, modification, or alteration, be careful not to give a damage to the function here above stated.

- 1) Be careful not to give a revision to the security parts and the parts for measure to noise. Be free from heavy accident and regulation violation.
- 2) Be careful to strength, rigidity, regulation and safety of the installed , modified parts as well as light weight.
- 3) For weight difference between the left and right of fittings, the left/right slant to be within the standard.
- 4) Install the installation · modification parts in order that operation, detachment and check/repair be easily done.
- 5) Install the installation · modification parts in order that front view be prevented.

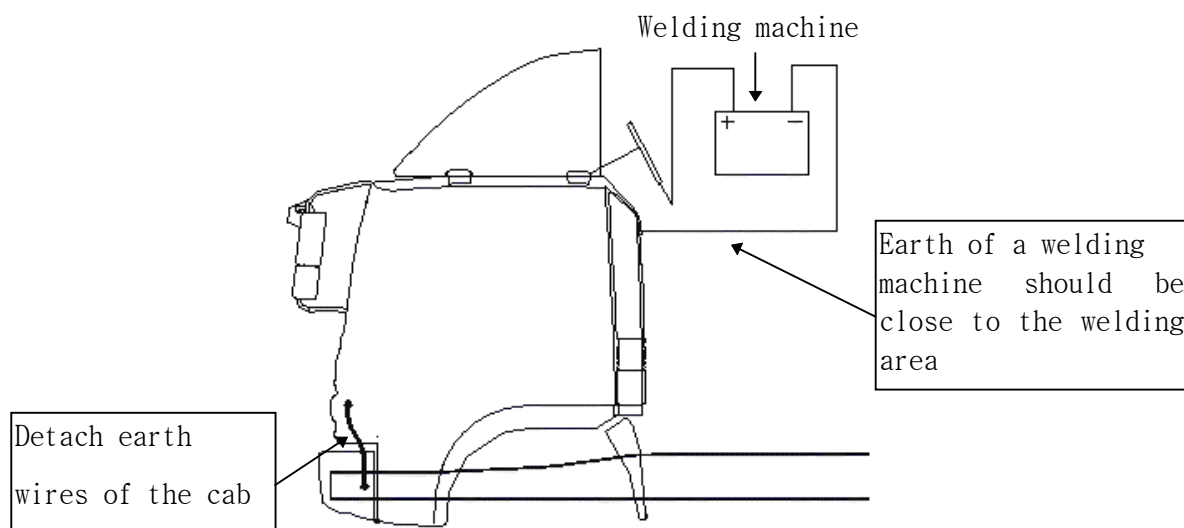
#### 1-1-2 Cautions needed for work procedures

Considering damage to Chassis components, be free from damage in function. Because particularly damage of the brake device, pipe wiring and security component results in heavy accident, be free from damage securely.

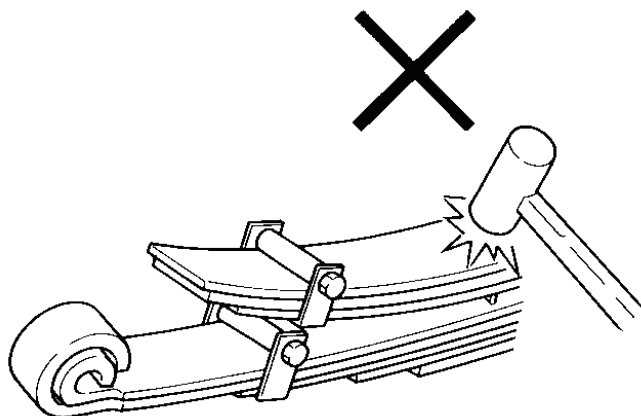


1)With a view to preventing a damage of an electrical equipment in electric welding, conform to the followings without fail.

- (1)'Off' of the starter switch
- (2)Disconnect the minus(-) terminal of battery, place covers
- (3)Detach earth wires of the cab to chassis
- (4)Detach the connector(control unit etc.)
- (5)Earth of a welding machine should be close to the welding area by all means.



2)In detaching the leaf spring, the anticorrosive applied to the leaf surface not to be damaged.



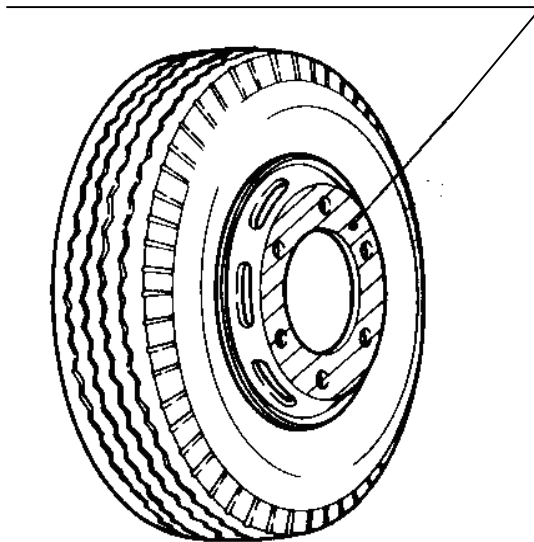
3)Before the painting, cover the followings with a masking tape etc.

- (1)The contact face of disc wheel and brake drum, the contact face between disc wheels in double tires.
- (2)The contact face of wheel nut (p/shaft, PTO output shaft)
- (3)Matching flange of drive shaft
- (4)Piston rod of hydraulic pressure and air pressure cylinder
- (5)Each control valve of air line
- (6)Bleeder of transmission and axle
- (7)Disc brake
- (8)Caution plate, name plate etc.
- (9)Entrance of air cleaner air duct

In drying paint, the temperature of painted parts should be less than 80 ° C.

When detaching wheels for painting repair, assemble them , as conforming to the fastening torque of wheel nuts.

In case of a double tire, don't paint shaded area.



4) For the purpose of preventing the damage and a fire of battery related equipment, conform to the followings in treating battery.

- (1) During the revolution of engine, don't disconnect the terminal of a battery cable, or take it out.
- (2) When starting by traction (prohibition in an automatic vehicle), connect the battery by all means.
- (3) In case of a rapid charging of battery, detach a cable from the both terminal (+), (-) of battery.
- (4) The cables which are wired close to exhaust system to be prevented with heat resisting external material.
- (5) In wiring a cable, be free from mutual contact.

### 1-1-3. Cautions needed for finishing and sending out products

When finishing procedure, after checking that a little performance and function are secured , send out products.

- 1)After the practical driving, check securely that there are strange vibration on driving, noise, incompleteness of driving safety and other defects.
- 2)In case working, maintenance/repair, etc. on the HMC chassis are revised by the installation, modification, or alteration, make out the WORKSHOP MANUAL, and attach the label for warning signal and loading to the vehicle.

## 1-2. Standard fastening torque

- 1) Use the bolt and nut specified by regulations, and fasten the area which is not mentioned particularly with the torque of the following table.
- 2) Screw section and connected area should be drying condition.
- 3) In case of the strength classification of nuts and bolts (or stud bolt) differs, fasten with the torque of the bolt side.

HEXAGON bolt, Stud bolt

Unit : N · m(kgf · m)

| Strength<br>Dia(mm) | 4T                                                                                                                                                                    |                                                                                    | 7T                                                                                                                                                                    |                                                                                     | 8T                                                                                                                                                                        |                                                                                      |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                     |   |  |   |  |   |  |
| M5                  | 2~3<br>(0.2~0.3)                                                                                                                                                      | —                                                                                  | 4~6<br>(0.4~0.6)                                                                                                                                                      | —                                                                                   | 5~7<br>(0.5~0.7)                                                                                                                                                          | —                                                                                    |
| M6                  | 4~6<br>(0.4~0.6)                                                                                                                                                      | —                                                                                  | 7~11<br>(0.7~1.1)                                                                                                                                                     | —                                                                                   | 8~12<br>(0.8~1.2)                                                                                                                                                         | —                                                                                    |
| M8                  | 9~14<br>(0.9~1.4)                                                                                                                                                     | —                                                                                  | 17~26<br>(1.7~2.6)                                                                                                                                                    | —                                                                                   | 20~29<br>(2.0~3.0)                                                                                                                                                        | —                                                                                    |
| M10                 | 19~28<br>(1.9~2.8)                                                                                                                                                    | 18~26<br>(1.8~2.7)                                                                 | 36~52<br>(3.5~5.5)                                                                                                                                                    | 33~49<br>(3.5~5.0)                                                                  | 45~60<br>(4.5~6.0)                                                                                                                                                        | 41~59<br>(4.3~6.9)                                                                   |
| M12                 | 34~50<br>(3.4~5.0)                                                                                                                                                    | 31~46<br>(3.1~4.7)                                                                 | 70~95<br>(7.0~9.5)                                                                                                                                                    | 65~85<br>(6.5~8.5)                                                                  | 85~110<br>(8.5~11)                                                                                                                                                        | 75~100<br>(7.5~10)                                                                   |
| M14                 | 60~85<br>(6.0~8.5)                                                                                                                                                    | 55~75<br>(5.5~7.5)                                                                 | 120~160<br>(12~16)                                                                                                                                                    | 110~140<br>(11~14)                                                                  | 130~180<br>(13~18)                                                                                                                                                        | 120~160<br>(12~17)                                                                   |
| M16                 | 90~130<br>(9.5~13)                                                                                                                                                    | 90~120<br>(9.0~12)                                                                 | 180~240<br>(18~24)                                                                                                                                                    | 160~220<br>(16~22)                                                                  | 200~270<br>(20~27)                                                                                                                                                        | 190~260<br>(19~26)                                                                   |
| M18                 | 140~190<br>(14~19)                                                                                                                                                    | 120~160<br>(12~16)                                                                 | 260~340<br>(25~35)                                                                                                                                                    | 220~290<br>(22~30)                                                                  | 290~390<br>(30~40)                                                                                                                                                        | 260~340<br>(26~35)                                                                   |
| M20                 | 190~260<br>(19~26)                                                                                                                                                    | 170~230<br>(17~23)                                                                 | 350~470<br>(36~48)                                                                                                                                                    | 320~420<br>(32~43)                                                                  | 410~550<br>(41~56)                                                                                                                                                        | 370~490<br>(37~50)                                                                   |
| M22                 | 260~340<br>(26~35)                                                                                                                                                    | 230~300<br>(23~31)                                                                 | 470~640<br>(48~65)                                                                                                                                                    | 430~570<br>(43~58)                                                                  | 550~740<br>(56~75)                                                                                                                                                        | 490~670<br>(50~68)                                                                   |
| M24                 | 340~450<br>(34~46)                                                                                                                                                    | 290~390<br>(29~40)                                                                 | 630~840<br>(63~86)                                                                                                                                                    | 530~730<br>(55~74)                                                                  | 730~980<br>(74~100)                                                                                                                                                       | 630~840<br>(64~86)                                                                   |

# HEXAGON FLANGE BOLT

Unit : N · m(kgf · m)

| Strength | 4T                                                                                |                                                                                   | 7T                                                                                |                                                                                    | 8T                                                                                  |                                                                                     |
|----------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|          |  |  |  |  |  |  |
| Dia(mm)  |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |
| M6       | 4~6<br>(0.4~0.6)                                                                  | —                                                                                 | 8~12<br>(0.8~1.2)                                                                 | —                                                                                  | 9~14<br>(0.9~1.4)                                                                   | —                                                                                   |
| M8       | 10~15<br>(1.0~1.5)                                                                | —                                                                                 | 19~28<br>(1.9~2.8)                                                                | —                                                                                  | 22~32<br>(2.2~3.3)                                                                  | —                                                                                   |
| M10      | 21~30<br>(2.1~3.1)                                                                | 20~28<br>(1.9~2.9)                                                                | 39~58<br>(3.9~6.0)                                                                | 37~53<br>(3.6~5.4)                                                                 | 50~65<br>(5.0~6.5)                                                                  | 45~65<br>(4.5~6.5)                                                                  |
| M12      | 38~54<br>(3.8~5.5)                                                                | 35~51<br>(3.4~5.2)                                                                | 80~110<br>(8.0~11)                                                                | 70~95<br>(7.0~9.5)                                                                 | 90~120<br>(9.0~12)                                                                  | 85~110<br>(8.5~11)                                                                  |

# HEXAGON NUT

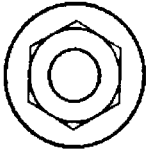
Unit : N · m(kgf · m)

| Strength<br>Dia(mm) | 4T                                                                                  |                   | 6T                                                                                                                                                                                                                                                                                                                                                     |                   |
|---------------------|-------------------------------------------------------------------------------------|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
|                     |  |                   |     |                   |
|                     | standard screw                                                                      | bottle-neck screw | standard screw                                                                                                                                                                                                                                                                                                                                         | bottle-neck screw |
| M5                  | 2~3 (0.2~0.3)                                                                       | —                 | 4~6 (0.4~0.6)                                                                                                                                                                                                                                                                                                                                          | —                 |
| M6                  | 4~6 (0.4~0.6)                                                                       | —                 | 7~11 (0.7~1.1)                                                                                                                                                                                                                                                                                                                                         | —                 |
| M8                  | 9~14 (0.9~1.4)                                                                      | —                 | 17~26 (1.7~2.6)                                                                                                                                                                                                                                                                                                                                        | —                 |
| M10                 | 19~28 (1.9~2.8)                                                                     | 18~26 (1.8~2.7)   | 36~52 (3.5~5.5)                                                                                                                                                                                                                                                                                                                                        | 33~49 (3.5~5.0)   |
| M12                 | 35~50 (3.5~5.0)                                                                     | 31~46 (3.1~4.7)   | 70~95 (7.0~9.5)                                                                                                                                                                                                                                                                                                                                        | 65~85 (6.5~8.5)   |
| M14                 | 60~85 (6.0~8.5)                                                                     | 55~75 (5.5~7.5)   | 120~160 (12~16)                                                                                                                                                                                                                                                                                                                                        | 110~140 (11~14)   |
| M16                 | 90~130 (9.5~13)                                                                     | 90~120 (9.0~12)   | 180~240 (18~24)                                                                                                                                                                                                                                                                                                                                        | 160~220 (16~22)   |
| M18                 | 140~190 (14~19)                                                                     | 120~160 (12~16)   | 260~340 (25~35)                                                                                                                                                                                                                                                                                                                                        | 220~290 (22~30)   |
| M20                 | 190~260 (19~26)                                                                     | 170~230 (17~23)   | 350~470 (36~48)                                                                                                                                                                                                                                                                                                                                        | 320~420 (32~43)   |
| M22                 | 260~340 (26~35)                                                                     | 230~300 (23~31)   | 470~640 (48~65)                                                                                                                                                                                                                                                                                                                                        | 430~570 (43~58)   |
| M24                 | 340~450 (34~46)                                                                     | 290~390 (29~40)   | 630~840 (63~86)                                                                                                                                                                                                                                                                                                                                        | 540~730 (55~74)   |



# HEXAGON FLANGE NUT

Unit : N · m(kgf · m)

| <div>Strength</div> <div>Dia(mm)</div> | 4T                                                                                |                   |
|----------------------------------------|-----------------------------------------------------------------------------------|-------------------|
|                                        |  |                   |
|                                        | standard screw                                                                    | bottle-neck screw |
| M6                                     | 4~6 (0.4~0.6)                                                                     | –                 |
| M8                                     | 10~15 (1.0~1.5)                                                                   | –                 |
| M10                                    | 21~30 (2.1~3.1)                                                                   | 20~28 (1.9~2.9)   |
| M12                                    | 38~54 (3.8~5.5)                                                                   | 35~51 (3.4~5.2)   |

## 1-3. PL (Product Liability) confrontation

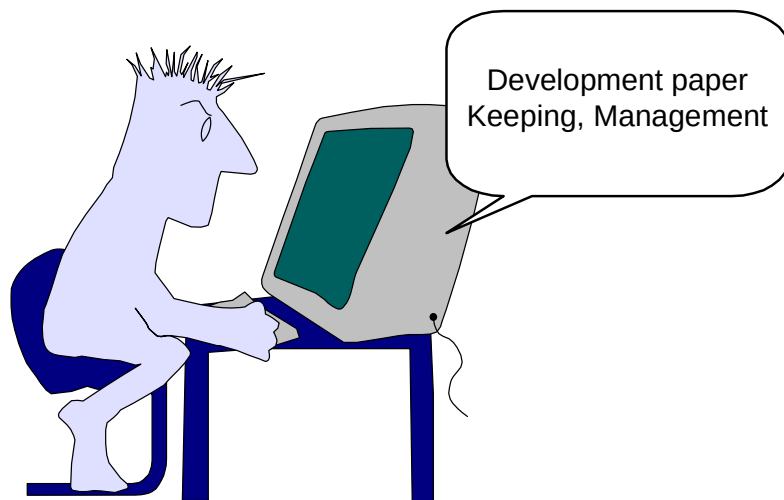
HMC does not guarantee for the extensive damage resulted from defects of installed components (fittings, modified or altered components on the HMC chassis). Therefore install · modify or alter according to the followings.

### 1)Safety engineering

- (1)Enough guarantee of safety/trust and maintenance service of safety device.
- (2)Safe-keeping of technical data, drawings and documents used in developing.

## 2)Manufacturing quality

- (1)Be free from wrong production, defective parts and assembling badness. And secure quality
- (2)Performance of quality validation check and safe-keeping of check record.



## 3)Revision of workshop manual and warning signals

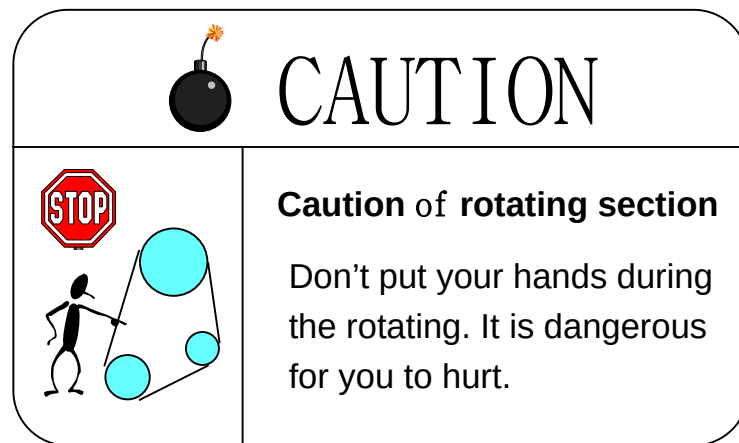
### (1)Workshop manual

Record an effect on bodies, vehicles and others concretely, when making wrong installation. (Be free from obscure expressions which cause misunderstanding)

## (2)Warning signals

Attach warning signals with comprehensible sentences, large letters and pictures to the position where the Body and Equipment.

Manufactures can take a look at them securely in order to use vehicle more safely.



## 2. BODY AND EQUIPMENT INSTALLATION PRECAUTIONS

### 2-1. Fittings and chassis parts

#### 2-1-1. Caution needed for the rear end of the cab and the front end of the rear body

Since the cab-over type truck has the cab tilt locking mechanism at the rear of the cab (including the safety lever), power steering oil reservoir or radiator water reservoir, ENG. oil filler, oil dipstick, check · refilling of oil for the auto T/M, be sure that the clearance between the rear end of the cab and the front end of the rear body is larger than the clearance indicated in the particular instructions 'Vehicle Model Book' to facilitate maintenance servicing.

But, install protectors to prevent goods on board from dropping into between the rear wall of the cab and the deck in the dump trucks.

#### 2-1-2. Clearance between the rear parts of the ENG., T/M and fittings

Secure that the clearance between the rear parts of the ENG., T/M and fittings is the following dimensions.

|                                       | Minimum clearance                                                                    | N.B.                                                                            |
|---------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| Near parts of the engine and fittings | Up and Down 40mm<br>Left and Right 30mm<br>Front and rear 25mm                       | Particularly, cable wiring should be attention in the dump and mixer type truck |
| Near parts of the T/M and fittings    | 25mm                                                                                 | Exclusion the back side of T/M                                                  |
| Detachment of the clutch and T/M      | Large-sized vehicle 160mm<br>Medium-sized vehicle 140mm<br>Small-sized vehicle 100mm | To pull out the clutch spline shaft in accordance with slant                    |
| Detachment of the T/M upper cover     | Large-sized vehicle 150mm<br>Medium-sized vehicle 120mm<br>Small-sized vehicle 100mm |                                                                                 |

### 2-1-3. Clearance between the exhaust system and fittings

- 1) Make sure that the clearance between the installation and the inflammable materials (such as wood, rubber), the muffler and the exhaust pipe is 100mm MIN.

If otherwise, install the heat insulator.

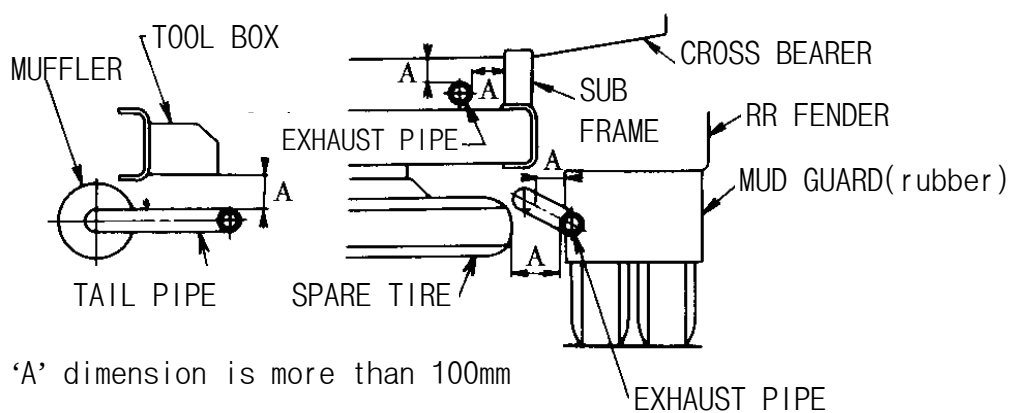


FIG 2-1-1

- 2) For the clearance between the installation and any body or other equipment or device except those here above stated, electric wiring, control valve of hydraulic equipment, hydraulic hose, refer to the 3-1-5 'exhaust system'.
- 3) Don't install an installation to the outlet direction of the exhaust pipe.
- 4) In modifying or altering the exhaust pipe, the pipe opening section to be rear direction (left to be within  $30^{\circ}$ , right and up not to be allowed). And be free from heat loss of the near parts due to exhaust gas.

#### 2-1-4. Clearance of the propeller shaft and fittings

Clearance of the propeller shaft (including the flange) and installation to be 50mm MIN. in large-sized trucks and 25mm MIN. (up and down, left and right) in small-sized/medium-sized trucks in contrast with the floating quantity of P/Shaft. Refer to the 'Body Builder Drw'g' for the floating quantity of rear axle.

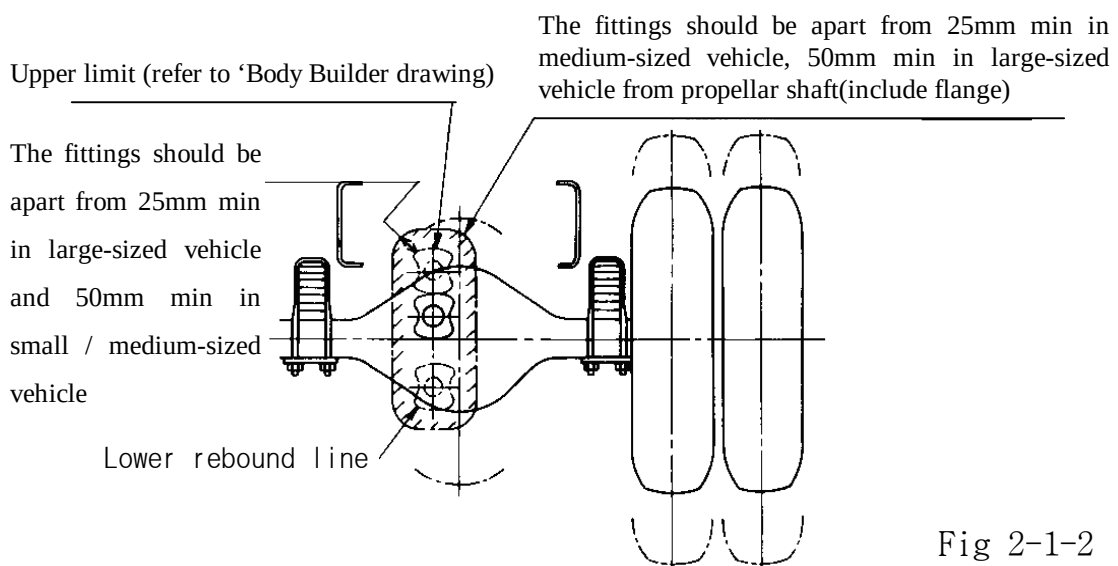


Fig 2-1-2

#### 2-1-5. Regarding to the rear axle

In case the pipe and the wiring of the brake hose and the electric harness are fitted over the rear axle, sufficient clearance is required in order not to contact with the fittings although the axle gets to be metal condition.

For details, refer to the dimensions of the 'Vehicle Model Book'.

#### 2-1-6. Fuel tank filler cab

Make sure that other fittings don't interfere with pouring fuel into the fuel tank and with the manipulation of the filler cab. If pouring fuel is difficult due to the side guard which is in the near parts of the fuel tank inevitably, be careful not to interfere with pouring fuel into the fuel tank by cutting a part of the side guard or changing the shape.

#### 2-1-7. Cautions needed for the installation of the near parts of the brake air master

In case of the air over hydraulic type brake used in the large-sized · medium-sized trucks, oil reservoir is installed in the near parts of the brake air master.

Therefore installed fittings should not interfere with the work of oil level check, refilling oil and air bleeding.

#### 2-1-8. Cautions needed for the installation of the air dryer

As the air dryer is equipped with an aid to dryness in the inside, periodical check and exchange are required. At this time the fittings should be prevented from interfering with the detaching work of the air

dryer

#### 2-1-9. Cautions needed for the installation of the near parts of the battery

The fittings should be prevented from interfering with battery check · detachment and the detaching work of the battery cover.

#### 2-1-10. Clearance between the rear spring and fittings

As the leaf and the auto grease tube of the rear of the main spring move while driving, fittings should not be installed within the 'A' dimensions indicated in the figure.

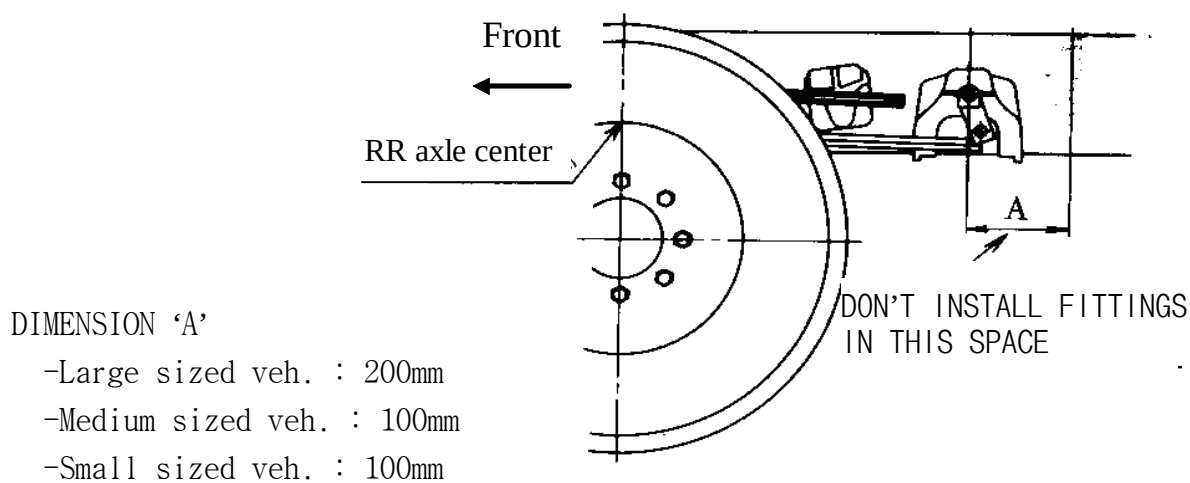


Fig. 2-1-3



## 2-2. Installation of the rear body

### 2-2-1. General precautions regarding the strength

#### 1) Concentrated load by fittings

(1) In case of the fittings resulting in partial load, concentrated load, or heavy load on the chassis frame during the stoppage work, install the Sub-frame and allot the load.

(2) In case of installing sub-frame, stress allotment should be calculated by mixed quantity. In this case, allot the load, with chassis and Sub frame united. Make sure that chassis frame and Sub-frame should be united securely.

(3) Apply chassis load distribution and the frame sectional coefficient indicated in the 'Vehicle Model Book' to the stress calculation of the chassis frame and the Sub-frame.

(4) Stress of the chassis should conform to the following table

|                                  | Static stress                                                     |                                                                |                                                                   |                                                                |
|----------------------------------|-------------------------------------------------------------------|----------------------------------------------------------------|-------------------------------------------------------------------|----------------------------------------------------------------|
|                                  | Large-sized vehicle                                               |                                                                | Medium                                                            | Small                                                          |
| Material<br>Driving condition    | High tension steel plate<br>(normal stress 55kg/mm <sup>2</sup> ) | Steel plate for frame<br>(normal stress 45kg/mm <sup>2</sup> ) | High tension steel plate<br>(normal stress 55kg/mm <sup>2</sup> ) | Steel plate for frame<br>(normal stress 45kg/mm <sup>2</sup> ) |
| good condition<br>road drive car | less than 9.0kg/mm <sup>2</sup>                                   | less than 7.5kg/mm <sup>2</sup>                                | less than 9.0kg/mm <sup>2</sup>                                   | less than 7.5kg/mm <sup>2</sup>                                |
| bad condition<br>road drive car  | less than 6.5kg/mm <sup>2</sup>                                   | less than 5.5kg/mm <sup>2</sup>                                | less than 6.5kg/mm <sup>2</sup>                                   | less than 5.5kg/mm <sup>2</sup>                                |

## 2-2-2. Combined section of the rear body and chassis frame

- 1) When installing a sub frame, gradually reduce rigidity toward the front in order to avoid stress concentration due to sudden change in the rigidity of the frame as illustrated below.

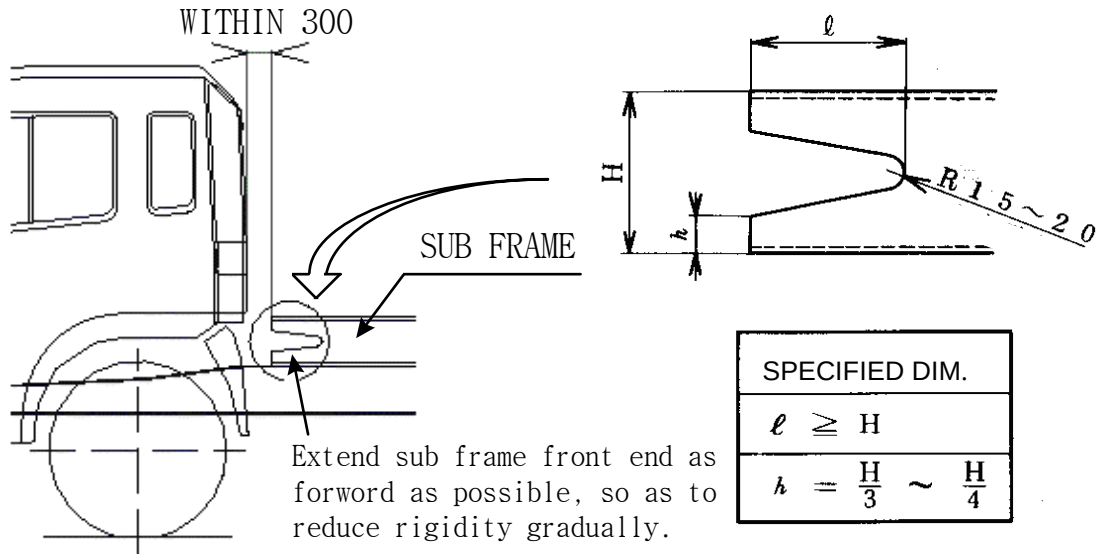


Fig 2-2-1

The method here above stated is the most desirable shape of the sub frame. But the process as shown in Fig. 2-2-2 may be used if the cab back permits space.

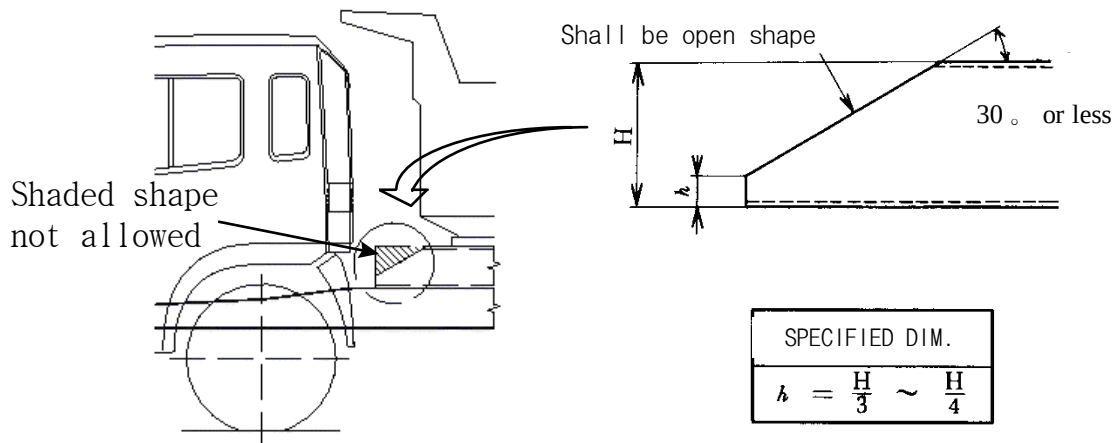


Fig 2-2-2

- 2) In case of short wheel base vehicle, add cross member for

support among sub frames.

- 3) If in terms of installation, it's difficult to shape the front end of sub frame as described above, grind it to the shape as shown in figure below before installation so that load point changes by bend of the side frame .

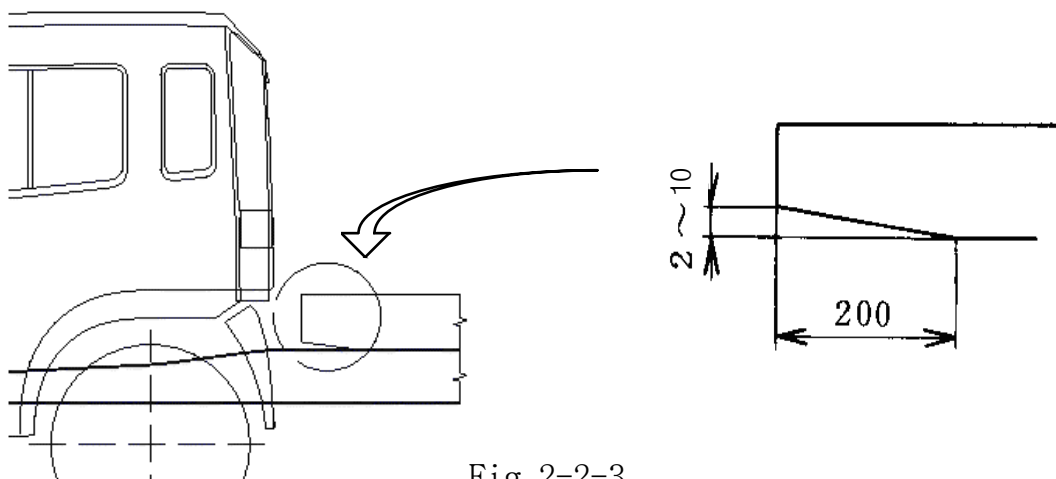


Fig 2-2-3

- 4) When using wood liner, form its front end as shown in figure below so as to release stress concentration.

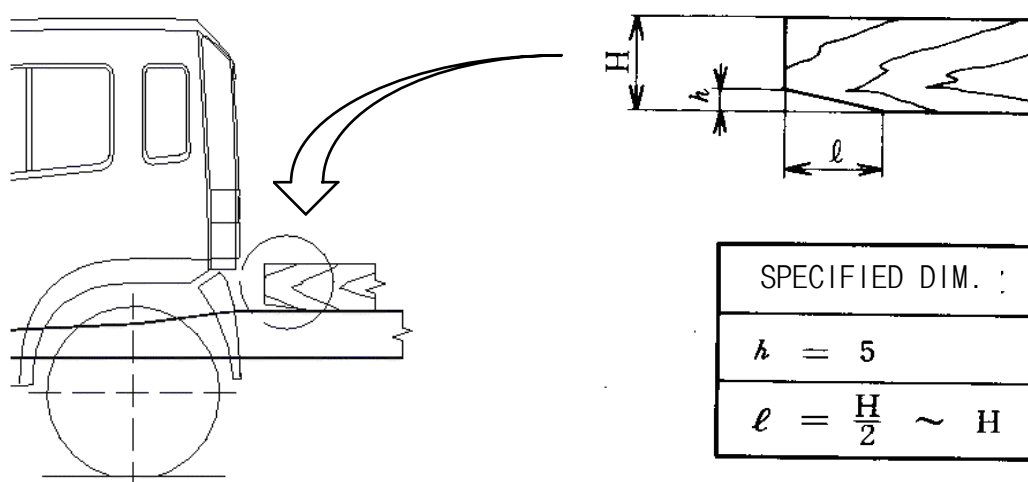


Fig 2-2-4

- 5) In case of large-sized cab over truck, there is *taper-cut*

*portions* (width of frame changes into 840 to 940mm) close to the cab back face as shown in figure below. When liner sub frame gets stuck in this area, unite it with chassis frame.

Also, reinforce the *taper-cut portions* of the liner and sub frame by using steel plates to the inside and outside.

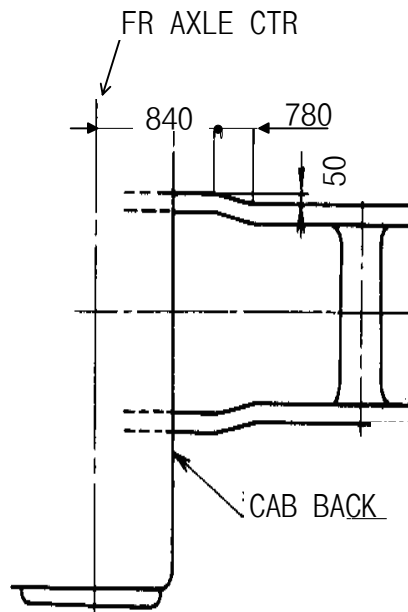


Fig 2-2-5

6) In case of the distance between the rear face of the cab and the front end of the fittings is wide in assembling sub frame.

(1) For installation of fittings with extremely great rigidity such as tank lorry, bulk, van and the like, it is necessary to select allowing attachment of the fitting close to the cab back face.

(2) If it is necessary to provide a large distance between the cab and fittings because of weight distribution, the sub frame should be extended as close to the cab as possible and be attached rigidly to the chassis frame again as described above.

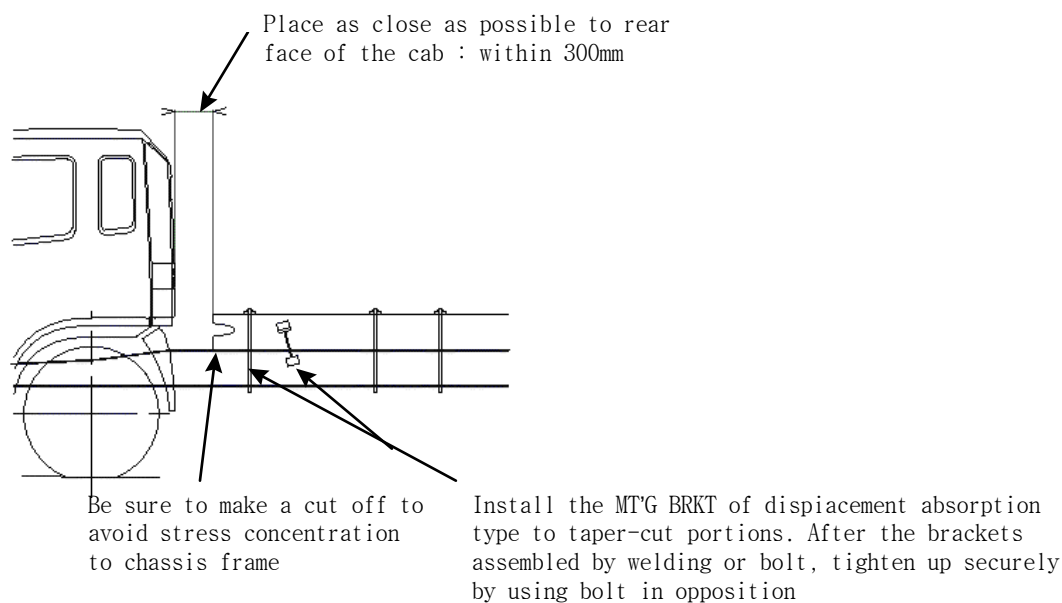


Fig 2-2-6

(3) In long wheel base vehicles, avoid installation of the welding type brace in trunion base area, and tighten up the MT'G BRKT of displacement absorption type or U-bolts.

#### 7) Sliding prevention of before and behind and left and right

In assembling sub frame by 'U' bolts and brackets, install the sliding prevention of before and behind in the rear end of the sub frame, the sliding prevention of left and right in the front end each one.

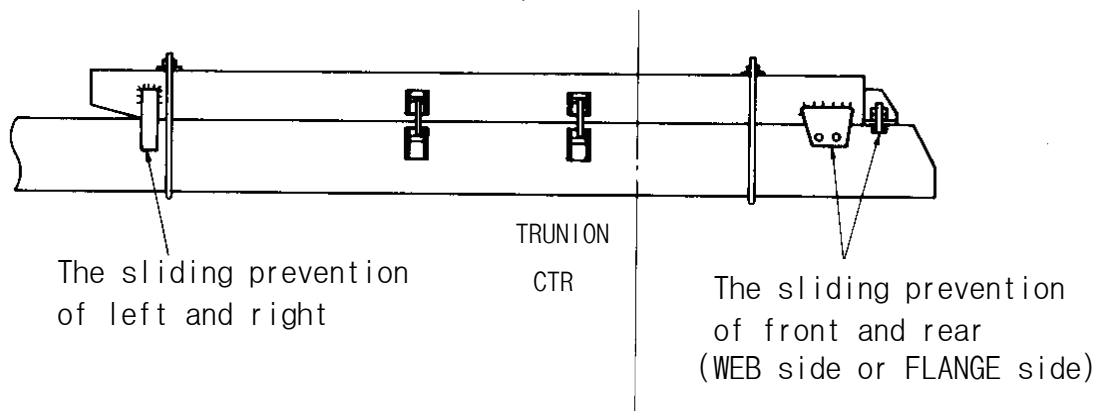


Fig 2-2-7

## 8)Cautions needed for installing liner

In case rivet head isn't installed on the flange side, add the sliding prevention of liner.

### 2-2-3. Cautions needed for fastening 'U'- Bolts

- 1)Give sufficient clearance to prevent the 'U' bolt for fastening sub frame and liner from contacting pipes, hoses, cables, and harness wires.
- 2)Refer to the data described in respective 'Vehicle Model Book' for locations where the 'U' bolts are used. Also, don't fasten 'U' bolt to the taper-cut portion of sub frames and liner.
- 3)When tightening 'U' bolt, place a wooded spacer inside the flange

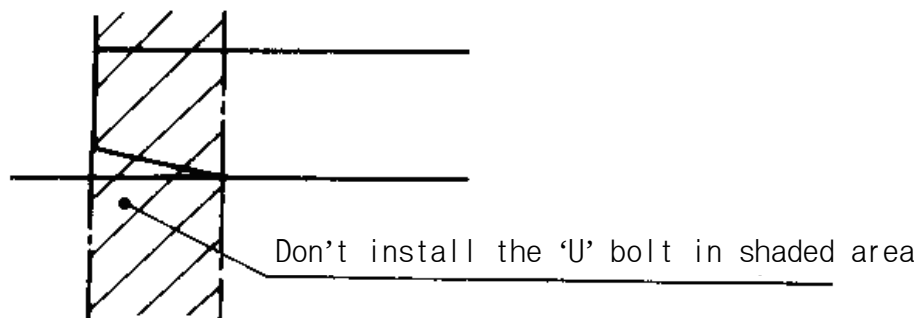


Fig 2-2-8

of side frame to prevent its deformation. But, use metal spacer in locations subject to heat such as near the muffler.

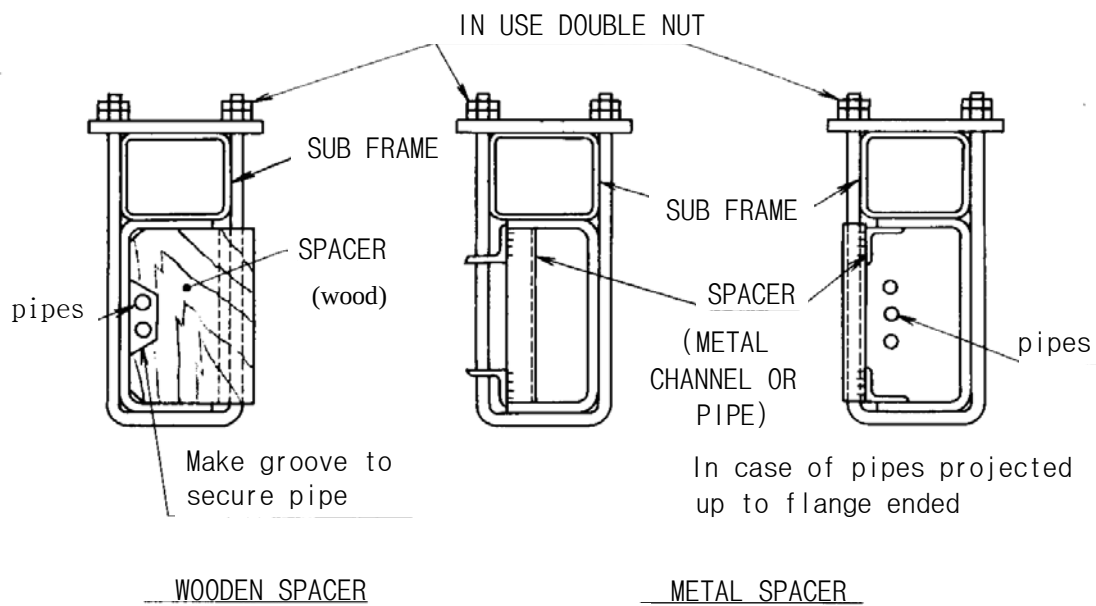


Fig 2-2-9

4) When it's difficult to use 'U' bolt because of mounted tanks, attach brackets.

(1) Attach the brackets in opposition to the chassis frame with bolts as a rule, and in accordance with paragraph '3-1-1 chassis frame precessing'

(2) Don't attach brackets to crossmember ends, gusset ends, stiffener, or near the bend of the frame.

Don't install bracket in shaded area

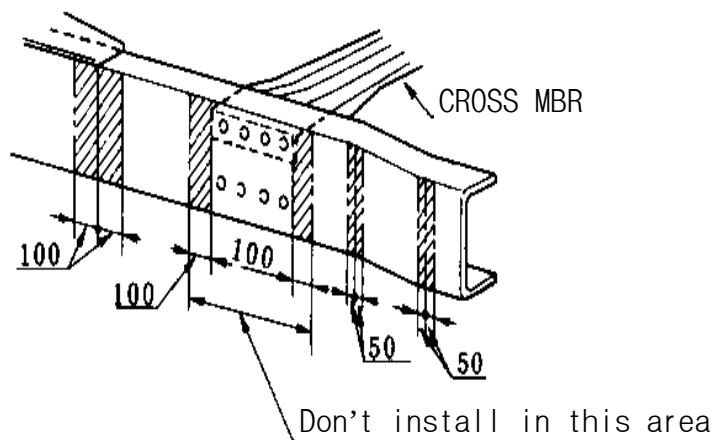


Fig 2-2-10

5) When rigidity of fittings is insufficient in long wheel base

vehicle

In long wheel base vehicles, when installing decks which are insufficient in rigidity such as low floor deck and deck for transporting light materials, which causes torsion vibration, be sure to observe the cautions described in the following items.

(1) Sub frame

As steel material (pipes or channel), use dimensions not less than those specified in figure 2-2-12.

(2) Liner

Use apiton or steel band. Don't use soft materials such as rubber belt and cotton belt, which cause insufficient fastening force of the 'U' bolt.

(3) 'U' bolt and opposition bracket

Tighten wooden liner to chassis frame securely, with 'U' bolt and opposed bracket arranged as shown in figure below

The direction of opposition bracket as follows.

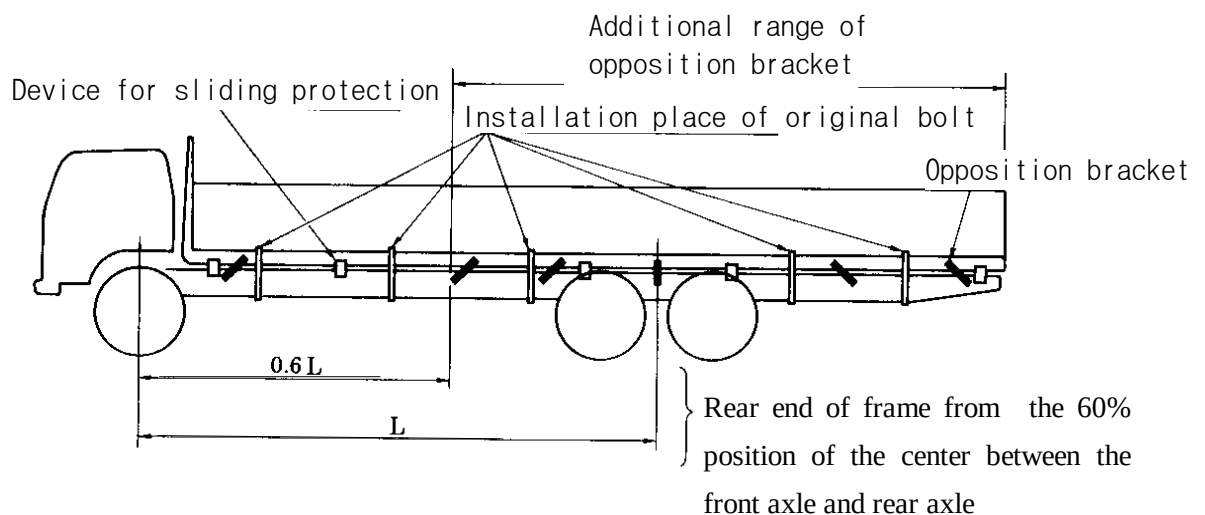


Fig 2-2-11

(4) Apply the MT'G parts which can absorb torsion and vibration to



crossmember NO.2 .

#### 2-2-4. Other cautions needed for installing rear body

##### 1)Sub frame for large-sized vehicle with long wheel base

When a vehicle with a long wheel base is used to transport heavy materials (steel bars, steel plates, timbers) causing nonuniform weight distribution, insufficient rigidity of the rear body causes greater load concentration on the chassis frame resulting in lesser strength.

Therefore, always use sub frames of cross sectional dimensions not less than those specified in figure below.

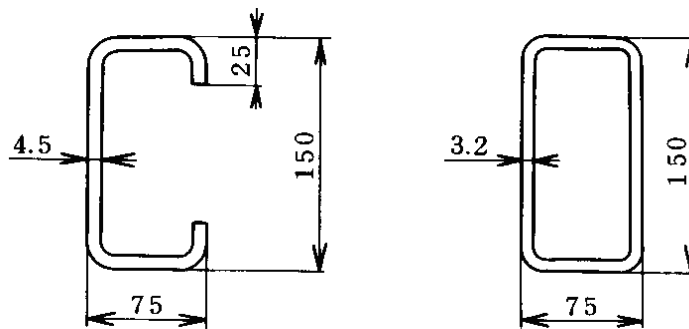


Fig 2-2-12

##### 2)Sub frame for large-sized vehicle with low floor

The height of sub frames of vehicles need installing the low floor rear body is required to be low. But when used to transport heavy materials, maintain the same strength and rigidity as here above stated. Also, absolutely be free from installation without sub frames causing greater load concentration on the chassis frame resulting in damages.

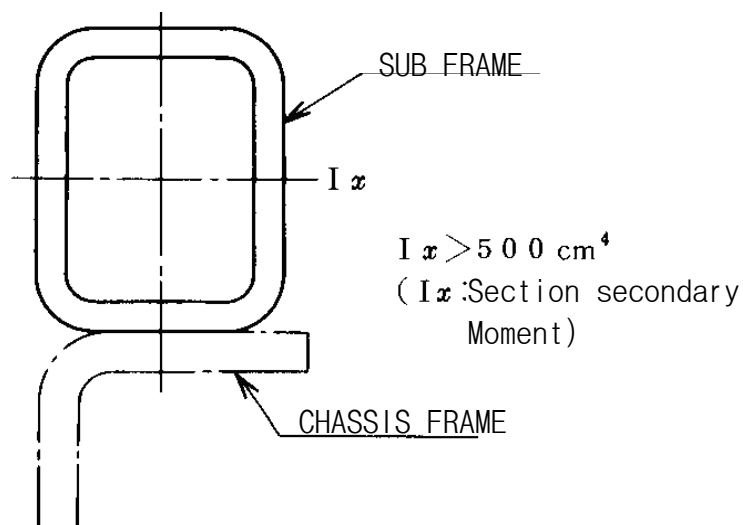


Fig 2-2-13

### 3)Center post

(1)When installing two-piece side gate rear body, vehicles used to transport heavy materials and insufficient deck, the center post should be installed in front of the rear front axle in order to prevent slacking of frame and allow smooth opening & closing of the side gate smooth in loading.

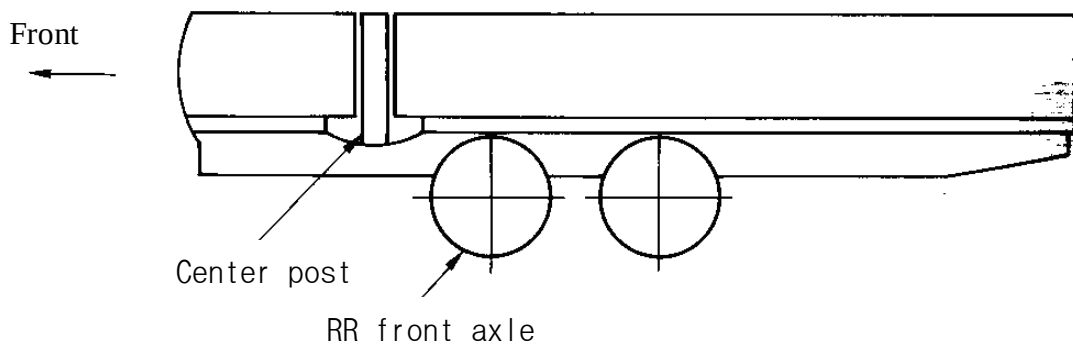


Fig 2-2-14

(2)When installing center posts in vehicle with long wheel base, frame is sometimes bent greatly. Therefore the clearance between the center post and the gate should be 2mm to allow smooth opening & closing of the side gate.

#### 4)Frame related data

##### (1)Rivet dimensions

When installing spare holes in sub frame, use the frame related rivet dimensions as shown in the following table

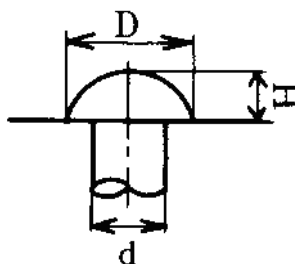


Fig 2-2-15

| Rivet diameter(d) | Head diameter(D) | Head Height(H) | Using line                                                                                                |
|-------------------|------------------|----------------|-----------------------------------------------------------------------------------------------------------|
| $\Phi 10$         | $\Phi 16.5$      | 8              | Side frame of middle-sized vehicle : a side                                                               |
| $\Phi 11$         | $\Phi 18$        | 9              | Side frame of Large/Medium-sized vehicle : upper,lower,side<br>Side frame of small-sized vehicle : a side |
| $\Phi 13$         | $\Phi 21$        | 10             | Side frame of Large/Medium-sized vehicle : upper,lower,side                                               |

##### (2) Tolerance of frame width and height

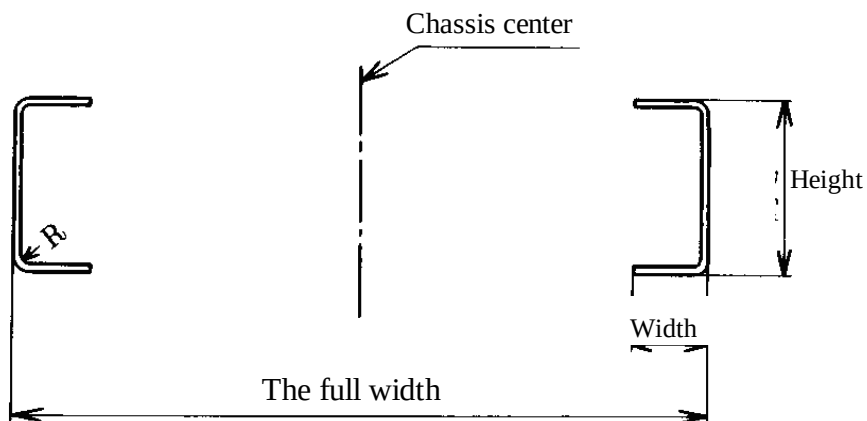


Fig 2-2-16

| vehicle              | Full width | height  | width      | R  |
|----------------------|------------|---------|------------|----|
| large-sized vehicle  | $\pm 3$    | +1<br>0 | $\pm 3$    | 12 |
| medium-sized vehicle |            | +1<br>0 | +3<br>-0.5 | 10 |
| small-sized vehicle  | $\pm 1$    | +1<br>0 | +2<br>0    | 7  |

### 5)Lateral Inclination

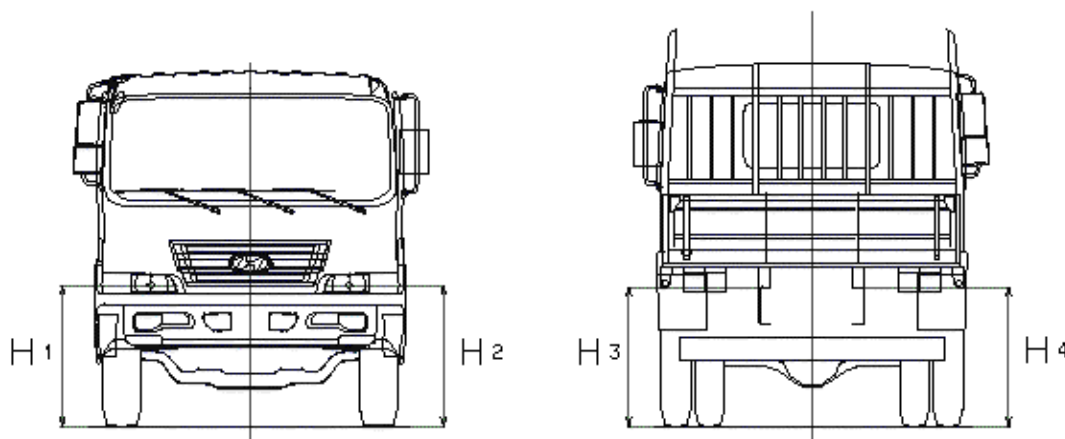


Fig 2-2-17

(1)The height difference allowed between the left and right sides for kerb weight due to weight difference is shown in the table below.

| Location                                                                   | Symbol | Allowance      |
|----------------------------------------------------------------------------|--------|----------------|
| Headlamp (measured at centers of lights right and left sides respectively) | H1-H2  | less than 15mm |
| Frame Rear ends(left and right ends)                                       | H3-H4  | less than 15mm |

(2)Vehicles installed with rear bodies (including passengers, full fuel, with or without load) should also satisfy the

allowance specified the lateral inclination table above. When mounting rear bodies, check the inclination (using the formulas given in Vehicle Model Book on the base of the measurement for the chassis with cab

6)Install covers for water protection and splash board

Install water protection covers for transmission breathers, clutch power cylinders, clutch boosters, air masters, batteries, etc. When a large quantity of water may possibly pour over them. Install the covers allowing for easy servicing or inspection of the pipings connected to the air tank.

An example of installing covers on a tank-truck is shown in figure below.

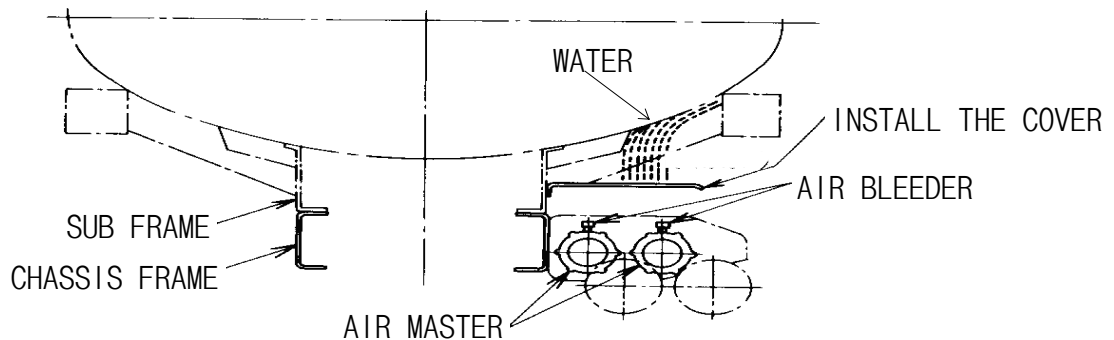


Fig 2-2-18

7)When installing fittings around the chassis number stamping position of the forward side of the side frame, the chassis number should be identified from the side of vehicle.

8)Most end cross member of large-sized vehicle

The most end cross member of dump and a part of long wheel base

vehicles is installed with bolt fastening to facilitate installation work.

But in shifting the cross member, be sure to observe the cautions described in the following items.

(1)How to install the cross member in side frame after shifting it

- ①In case of installing the cross member with bolt, enlarge the hole and then use the 7T-M12 bolt. Also the bolt used for temporal fastening before shifting should not be used absolutely.
- ②In case of installing the cross member with rivet, use the  $\Phi 11$  rivet

9)How to install protecting plate of large-sized short wheel base vehicle

(1)Protecting plate used for splashed stone

In case of the vehicle with misgivings that pipes and device or equipment around air tank can be damaged by the stones splashed by the rear wheel, driving on the off-road many times, install protecting plate in the side guard stay by the main principle shown in figure below.

(2)Preventing plate used for freezing

In case of the vehicle with misgivings that it is hard to detach spare tire due to snow and mud which is splashed by the rear wheel and attached to near spare tire in cold place, as shown in figure below, install protecting plate

in the side guard stay of the left in vehicle also.

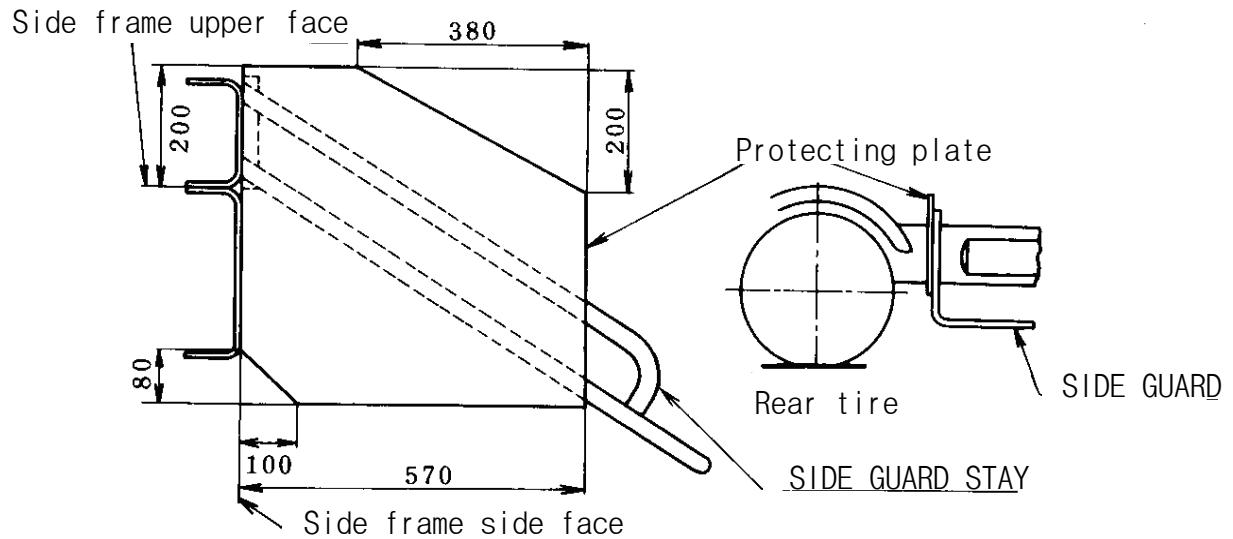


Fig 2-2-19

10) So care should be taken not to damage harnesses and pipes, in fixing the fittings.

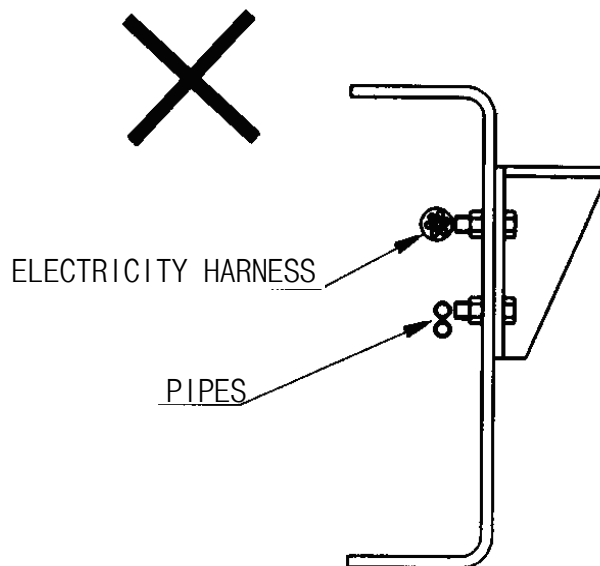


Fig 2-2-20

#### 2-2-5. Cautions needed for fender installation

##### 1) Rear fender

The clearance between the Rear fender and the tire should be decided in accordance with the rear axle upper rebound limit “h” specified in Vehicle Model Book as shown in figure.

- (1) The shape of the rear fender outside should be bent to raise safety and strength. Also as cracks happen easily at edges of the rear fender, make bends on the inside.

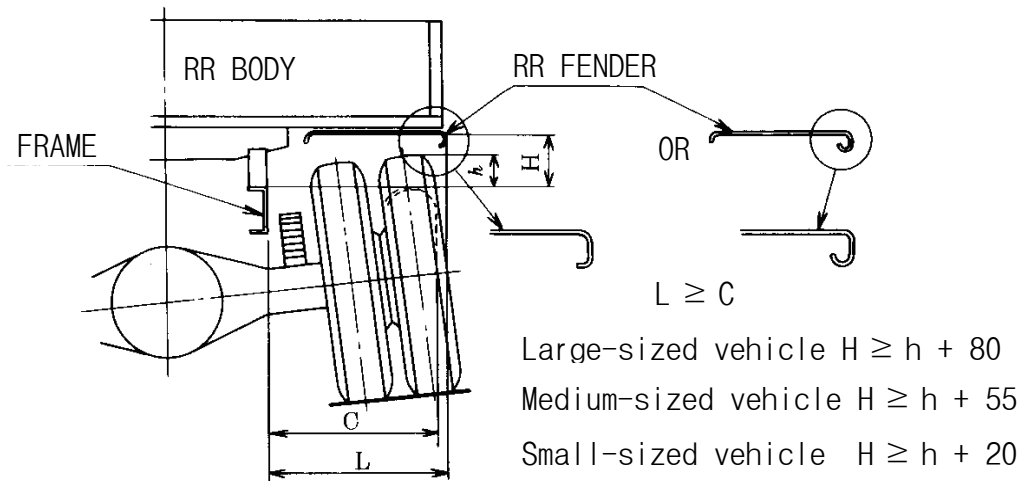


Fig 2-2-21

- (2) In installing rear fender, observe the following items

- ① Overall width of fender should be 2,500mm MAX.
- ② The outer edge of the fender should be placed outside of the rotating part of the tire. And cover the range of the front 30° and rear 50° line by all means. So care should be taken, because the regulating items as to the pedestrian's safety measures have been decided.



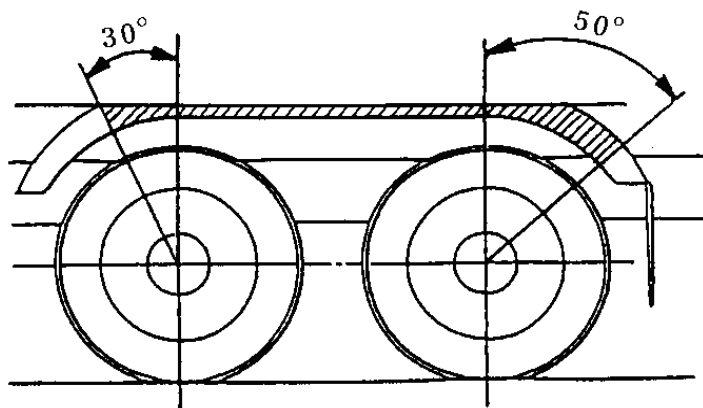


Fig 2-2-22

## 2)Front fender

Cautions needed for installation fender in the front two-axle vehicle.

- (1)After watching the moving of tires carefully when steering, install fenders.
- (2)The cross bearer shape and position of rope hook near fender must conform to the moving of tires.

## 2-2-6. Rear fender mudguard rubber

- 1)Install mudguards, depending upon the fender or in consideration of splash protection or preventing roll-in with wheels.

(Unit : mm)

|                 | LARGE-SIZED | MEDIUM-SIZED | SMALL-SIZED |
|-----------------|-------------|--------------|-------------|
| A               | 200 ~ 250   | 150 ~ 200    | 130 ~ 200   |
| B<br>(Unloaded) | 300 ~ 400   | 200 ~ 350    | 200 ~ 300   |

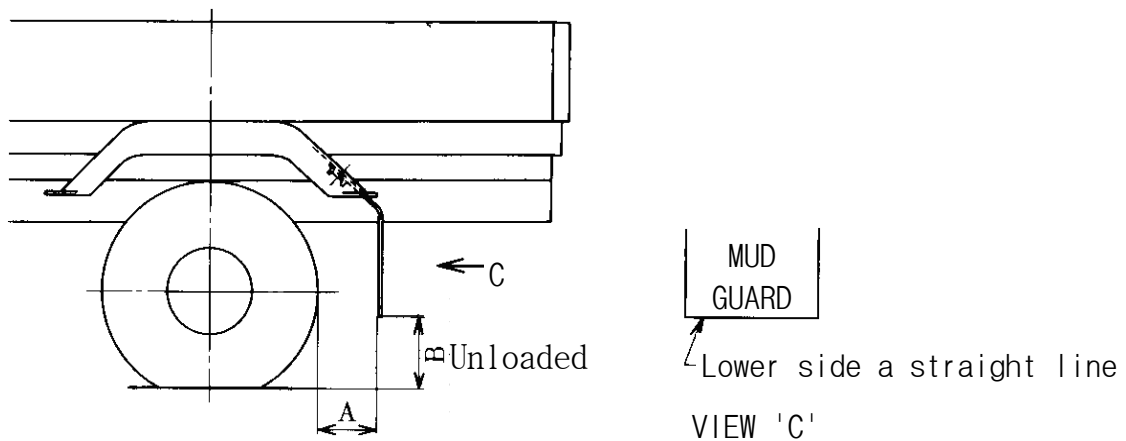


Fig 2-2-23

2)When installing long mudguards, work out a countermeasure to keep rubbers away from the tire.

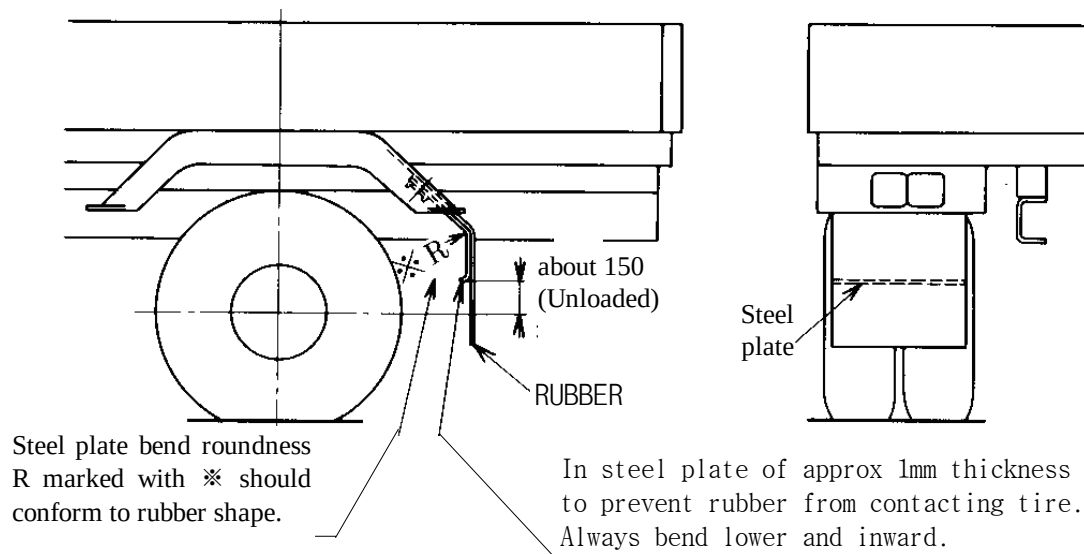


Fig 2-2-24

## 2-2-7. Rear bumper

### 1) Vehicle model which needs installing rear bumper

In the ordinary vehicles supplied for goods transport, the vehicles that GVW is more than 8ton or payload is more than 5ton (excluding tractor).

### 2) How to install rear bumper

(1) Rear bumpers and stays installed in sending out Chassis conform to the Korea Safety Standards, Article 19 Clause 3, Performance and Strength condition. If nothing happens in installing, install in this position. After making sure that the position of rear bumper installation conforms to the dimensions indicated in figure below, make a use. But, when sending out chassis, since rear bumpers have not been installed regularly to prevent pedestrians danger while transporting goods, install them in the legal direction.

(2) Even when installing in legal position in special bodies, move and install rear bumpers by the followings when they are suitable for the following dimensions.

- ① The installation of the rear bumper and stay should be assembled with the standard bolt of the Chassis section.
- ② Install stay in the chassis frame.
- ③ Be careful not to interfere with the mark of the registered number check and a light type.
- ④ Within the limits of meeting the following dimension,

make the departure angle large as much as possible .

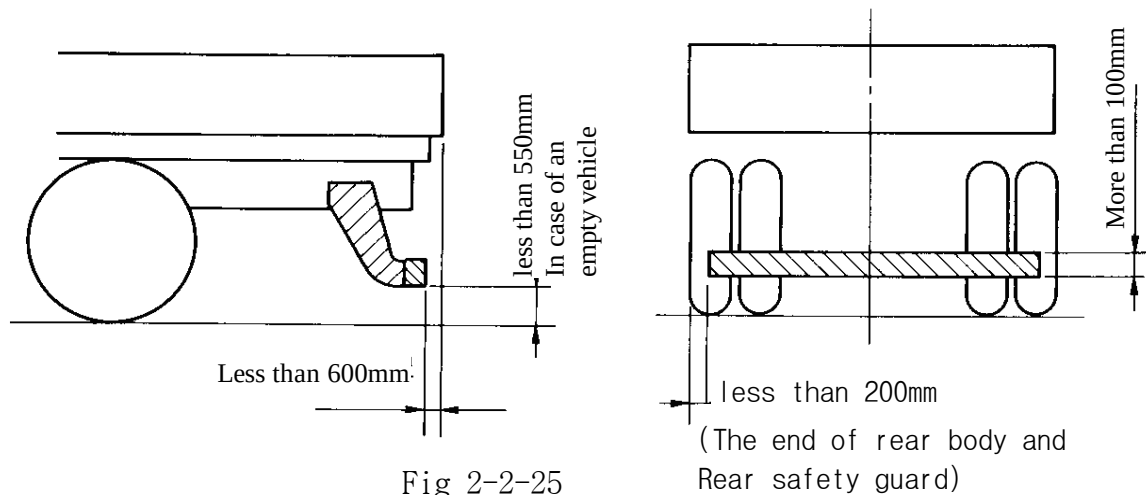


Fig 2-2-25

(3)The following items should conform to the performance and strength condition of the Korea Safety Standards, Article 19 Clause 3.

- ①In case of modifying or altering the rear bumper or stay installed in chassis
- ②In case of manufacturing rear bumper or stay newly
- ③Instead of installing the rear bumper and stay with a normal bolt, In case of installing them by welding
- ④In case of inserting spacer between the rear bumper and stay

## 2-2-8. Rear reflector

1)Vehicle model which needs installing a rear reflector

In the ordinary vehicles supplied for goods transport, the vehicles that GVW is more than 8ton or payload is more than 5ton.

2)How to install rear reflector

(1)The rear reflector installed in sending out Chassis

conform to performance of the Safety Standards, Article 49 Clause 2.

(2)Installing position

- ①The installing position to be left and right symmetry from the center line of vehicle, the center point of the reflected section should be within upper more than 250 ~ less than 1500mm from ground.
- ②The area of a reflected section to be 800cm<sup>2</sup> MIN., the area of fluorescent section to be 400cm<sup>2</sup> MIN.

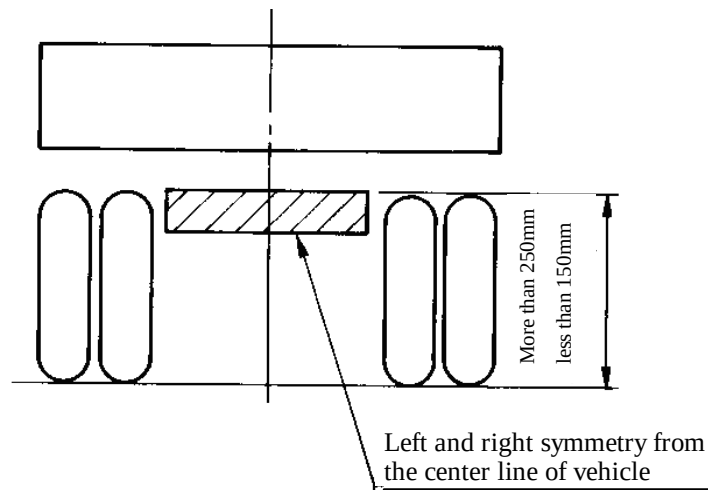


Fig 2-2-26

2-2-9. Side guard

1)Vehicle model which needs installing a side guard

- (1)In the ordinary vehicles supplied for goods transport, the vehicles that GVW is more than 8ton or payload is more than 5ton
- (2)For details, reference should be made the Safety Standards Article 19 Clause 3.

## 2)Cautions needed for installation

Be free from impediment, when checking, supplying and detaching the following device or equipment of chassis frame side.

- (1)Battery, switch box
- (2)Fuel tank
- (3)Brake oil tank
- (4)Vacuum tank, air master, air tank
- (5)Tool box (oil jack should be fixed with strap)
- (6)Spare tire
- (7)In case of installing the side guard of a channel and plate type, pay due attention to operation of the air tank drain cock. In case hand doesn't touch with the air tank drain cock, operate it with chain and wire connected as shown in figure below. Make sure that ground clearance should be kept not to be caught in projections of road surface in attaching to chain.

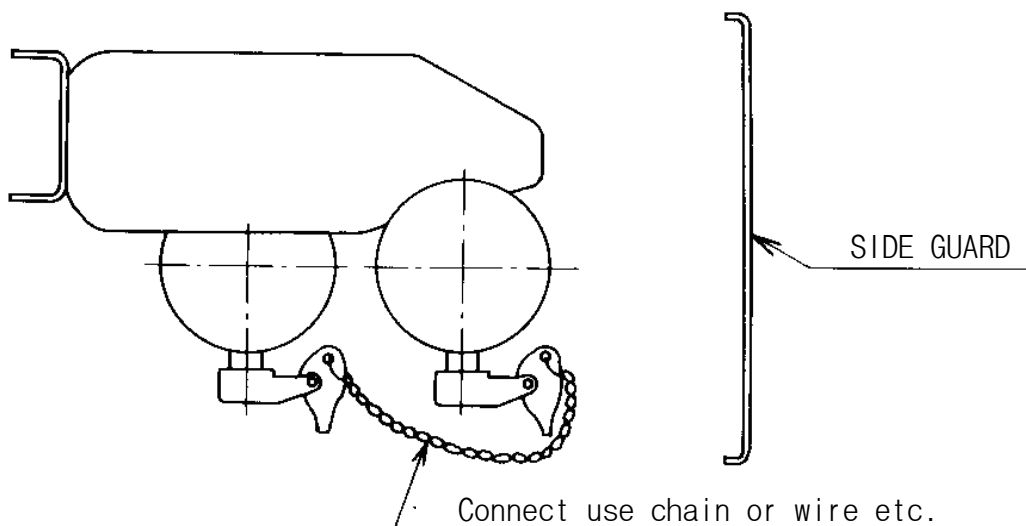


Fig 2-2-27

- (8) In case the device such as fuel tank and the like is disposed at the outside rather than side straight section of the side guard.

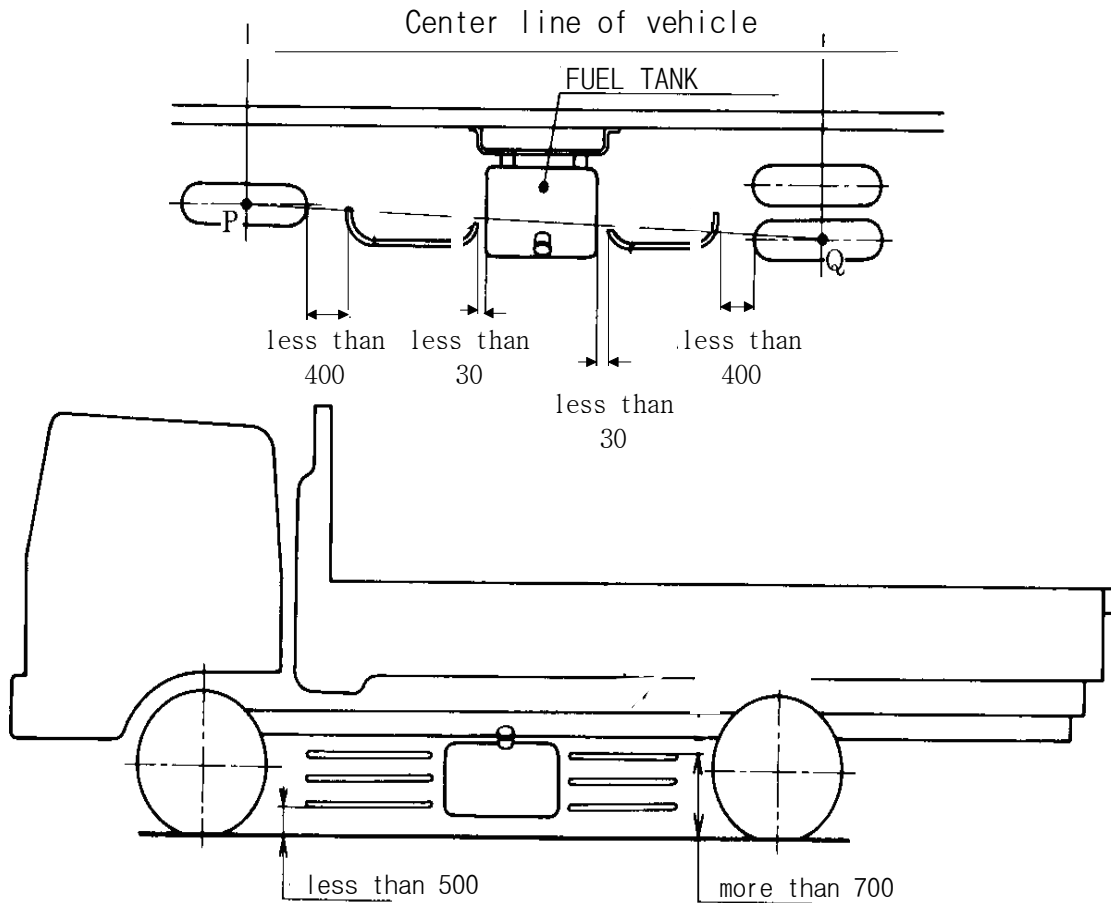


Fig 2-2-28

### 3) Installation of stay

#### (1) In case of installing stay in cross bearer

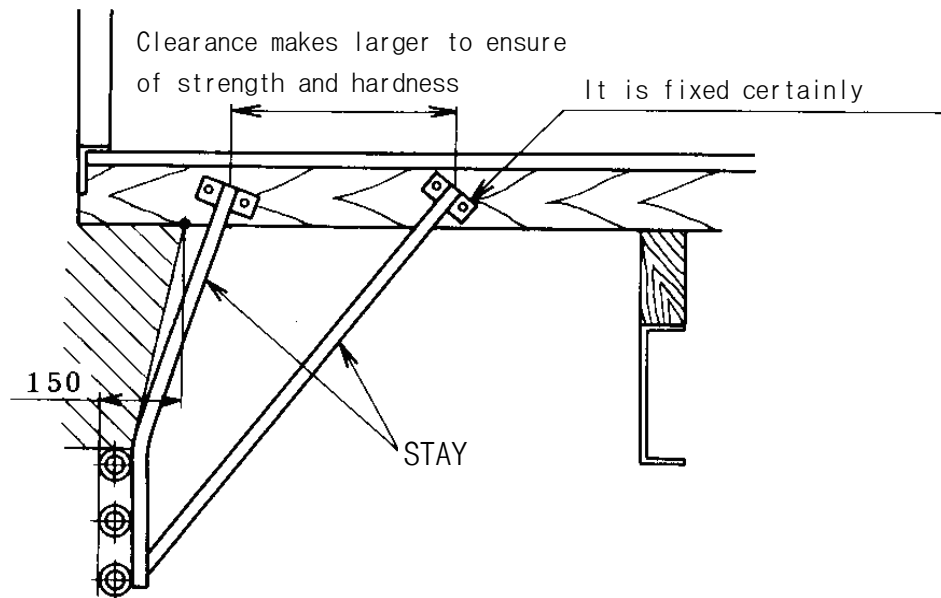


Fig 2-2-29

#### (2) In case of installing stay in sub frame

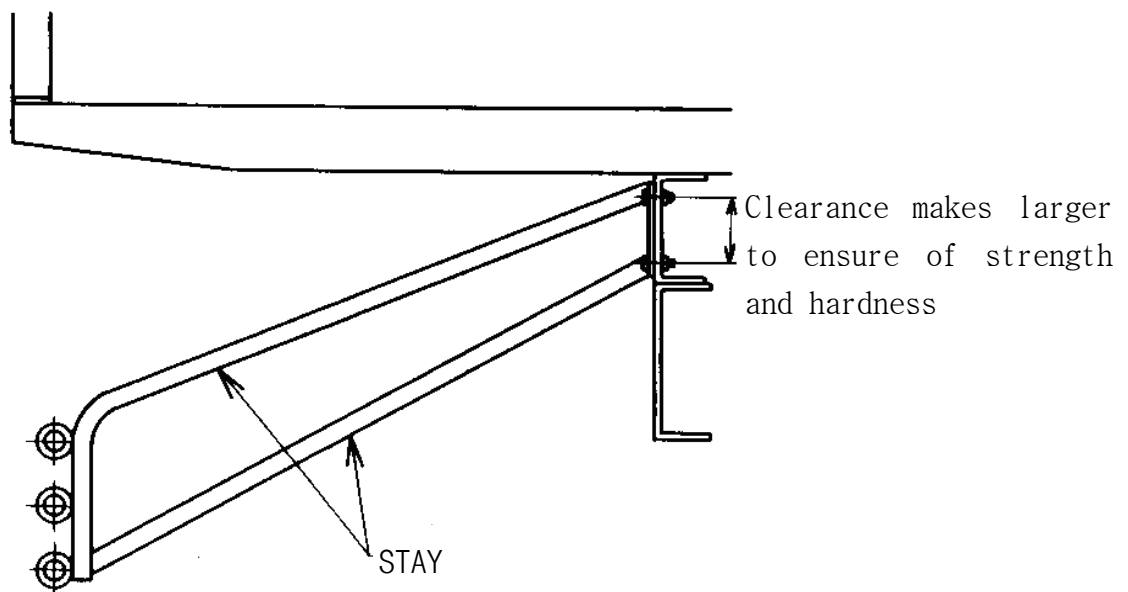


Fig 2-2-30





### 3. MODIFICATION OR ALTERATION PRECAUTIONS

#### 3-1. Chassis modifications

##### 3-1-1. Chassis frame machining

When machining on the chassis frame, be sure to observe the cautions described in the following items.

##### 1)Generals needed in drilling hole through the frame

- (1)Be sure to use a drill in making holes, never use a gas torch.

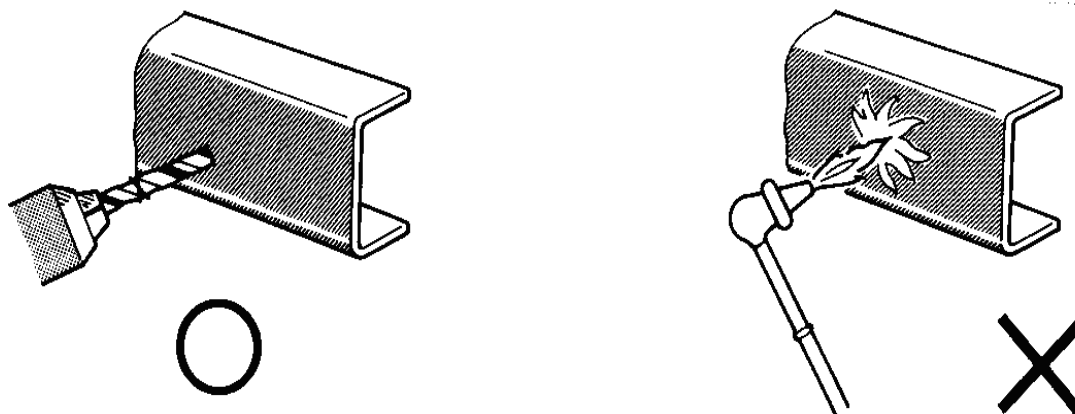


Fig 3-1-1

- (2)Holes should be deburred after drilling.

- (3)When drilling holes, fuel hose, cable type, and tube type should be protected against damage.

##### 2)Cautions needed in drilling holes through the side frame

- (1)The size of holes and distance between holes should conform to the following table. The conventional holes (bolt and rivet hole)should conform to the following table.

| VEHICLE          | HOLE DIA : a                                                                                          |                                                                                        | CORNER~<br>HOLE END<br>(b) | HOLE END~<br>HOLE<br>(c)                                                                                       |
|------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------|----------------------------|----------------------------------------------------------------------------------------------------------------|
|                  | Hole for tension bolt<br>(In case of bolt has<br>a tension force and<br>compression force<br>applied) | Hole for shearing<br>bolt<br>(In case of bolt only<br>has a shearing force<br>applied) |                            |                                                                                                                |
| Large-sized veh. | less than $\Phi 13$                                                                                   | less than $\Phi 17$                                                                    | more than 30               | less than $\Phi 13$ ~ more than 30<br>less than $\Phi 15$ ~ more than 45<br>less than $\Phi 17$ ~ more than 60 |
| Medium-sized veh | less than $\Phi 13$                                                                                   | less than $\Phi 13$                                                                    |                            |                                                                                                                |
| Small-sized veh. | less than $\Phi 11$                                                                                   | less than $\Phi 11$                                                                    | more than 20               | less than $\Phi 11$ ~ more than 20                                                                             |

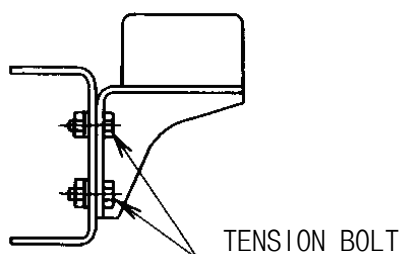


Fig 3-1-2

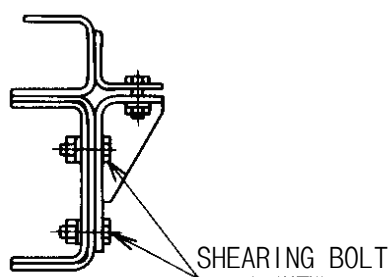


Fig 3-1-3

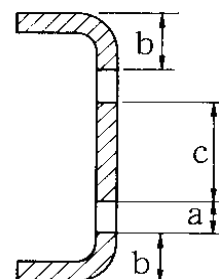


Fig 3-1-4

(2)The hole more than  $\Phi 15$  for shearing bolts should be applied to the double frame lying in the sub frame. The section applicable to the weight decrease hole should be welded with a reinforced plate attached as shown in figure below.

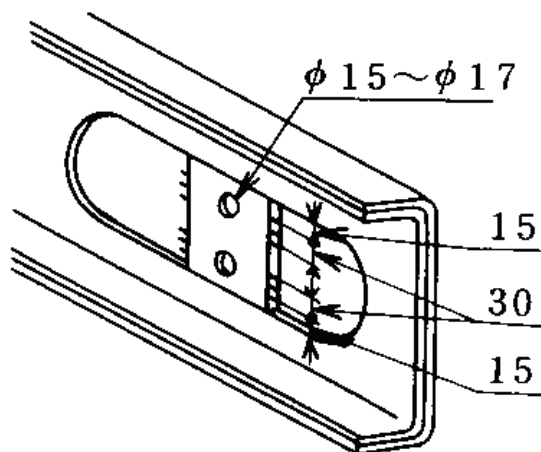


Fig 3-1-5

- (3) Don't drill holes through the trunnion stiffener and cross member gussette.

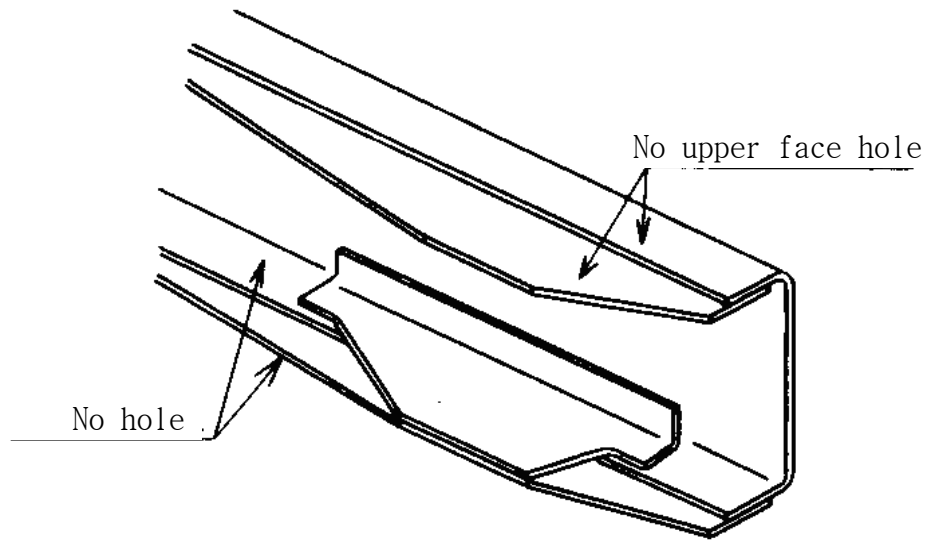


Fig 3-1-6

- (4) In case of the super frame (Web type frame)  
Do not drill the side frame upper or lower flanges by all means.

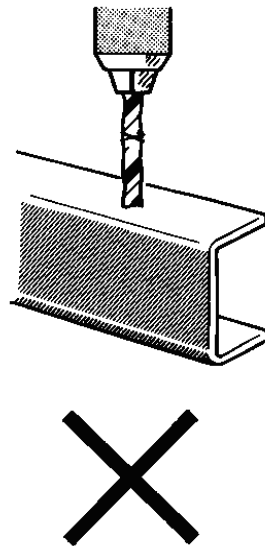


Fig 3-1-7

- (5) When drilling holes except for the super frame (Web type frame)

- ① Do not drill the lower flange between wheel base and the

upper flange of the rear over hang.

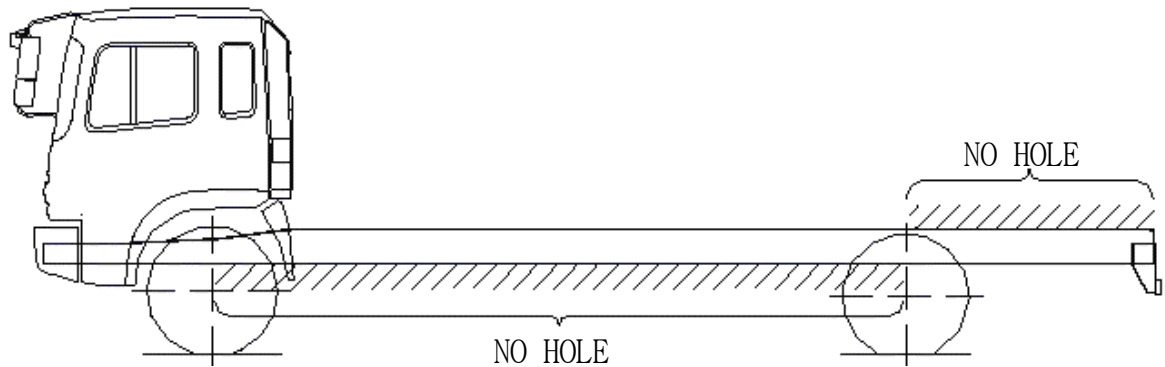


Fig 3-1-8

②A hole on the flange surface for a horizontal direction.

And observe the following dimensions.

| vehicle             | HOLE a              | PLATE ended~<br>HOLE ended b | CORNER section~<br>HOLE ended c | HOLE ended~<br>HOLE ended d |
|---------------------|---------------------|------------------------------|---------------------------------|-----------------------------|
| Large-sized vehicle | less than $\Phi 13$ | more than 30                 | more than 30                    | more than 30                |

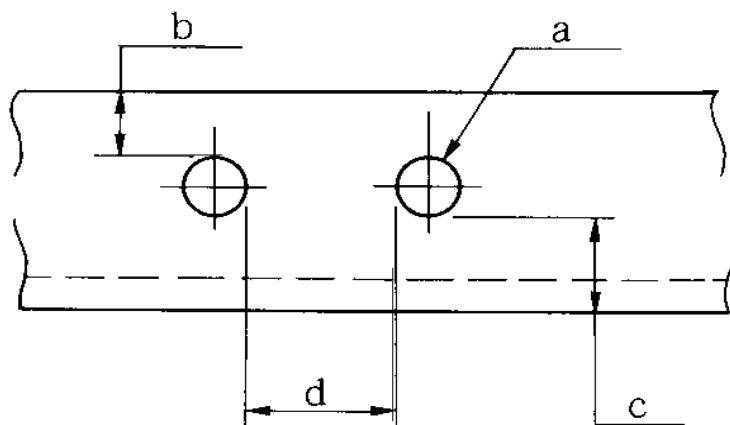


Fig 3-1-9

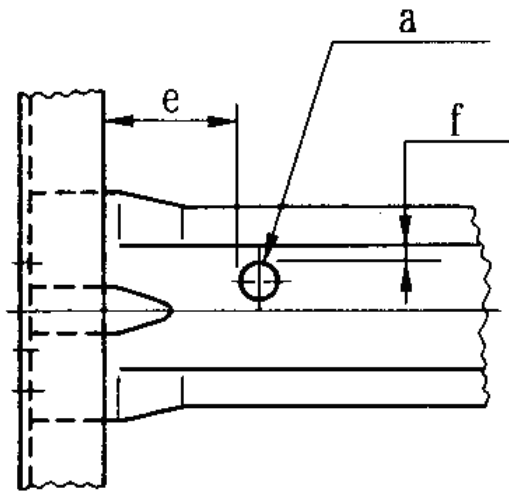
|                     |                     |              |              |              |
|---------------------|---------------------|--------------|--------------|--------------|
| Small-sized vehicle | less than $\Phi 11$ | more than 20 | more than 20 | more than 20 |
|---------------------|---------------------|--------------|--------------|--------------|

3)Cautions needed in drilling holes through the cross member

For hole diameters and distance between holes should conform to the following table. The conventional holes (bolt and rivet hole) should conform to the following table

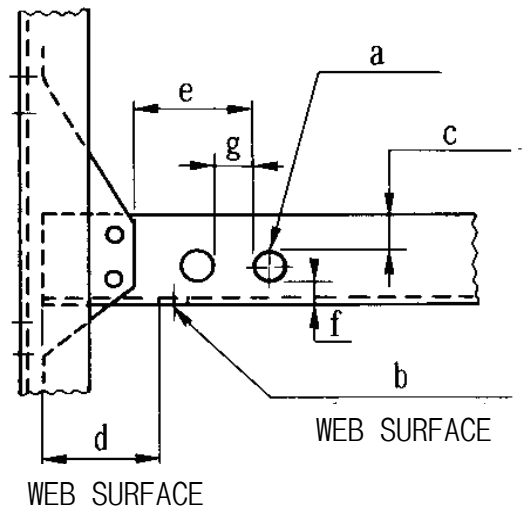
(Unit: mm)

| VEHICLE                        | HOLE DIA               |                        | PLATE END~HOLE END |                 | SIDE FRM or<br>GUSSETTE ~<br>HOLE END: e | CORNER<br>~END: f | END ~END<br>: g |
|--------------------------------|------------------------|------------------------|--------------------|-----------------|------------------------------------------|-------------------|-----------------|
|                                | FLANGE<br>FACE: a      | WEB<br>FACE: b         | FLANGE<br>FACE: a  | WEB<br>FACE: b  |                                          |                   |                 |
| MEDIUM/LARGE-<br>SIZED VEHICLE | LESS THAN<br>$\Phi 11$ | LESS THAN<br>$\Phi 13$ | MORE THAN<br>30    | MORE THAN<br>50 | MORE THAN<br>100                         | MORE THAN<br>25   | MORE THAN<br>30 |
| SMALL-<br>SIZED VEHICLE        | LESS THAN<br>$\Phi 9$  |                        | MORE THAN<br>20    |                 |                                          | MORE THAN<br>20   | MORE THAN<br>20 |



ELLIGATE TYPE CROSS MEMBER

Fig 3-1-10



CHANNEL TYPE CROSS MEMBER

Fig 3-1-11

#### 4) General warning when welding the frame

When welding the frame, refer to the '1-1. Cautions regarding installation, modification, or alteration'

- (1) Avoid welding on the side frame upper or lower flanges.

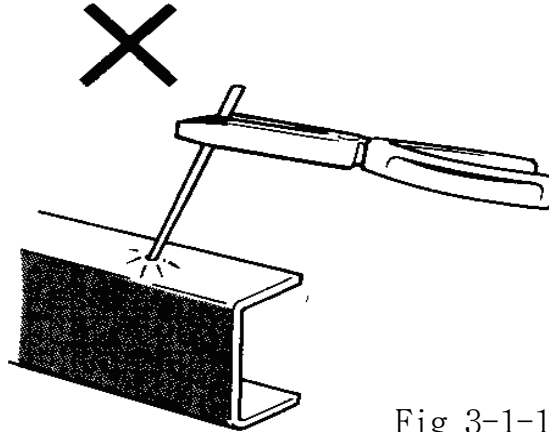


Fig 3-1-12

(2) Avoid welding on the trunnion stiffener and cross member gusset.

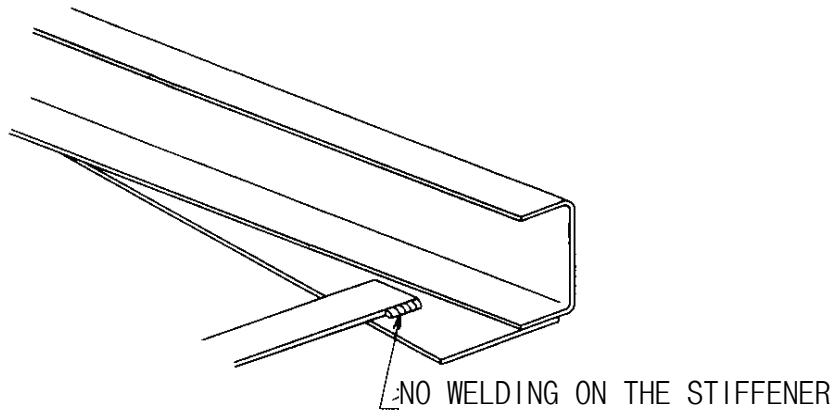


Fig 3-1-13

(3) Be free from the welding of the web side within the 20mm from corner, and 30mm from the hole edge.

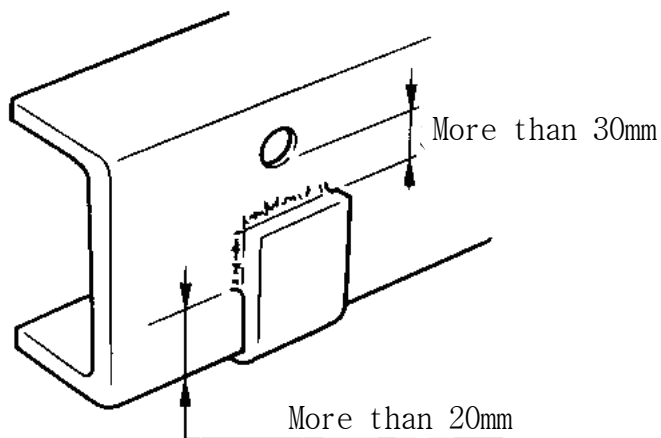


Fig 3-1-14

- (4) The up and down consecutive welding length between the wheel base should be less than a third of the side frame height.

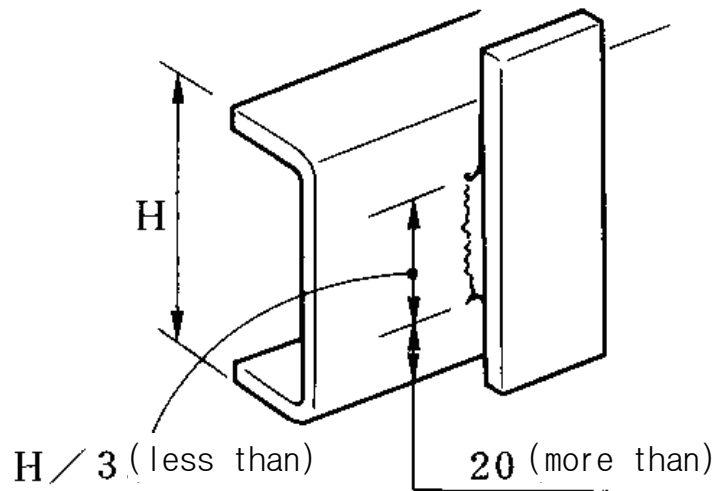


Fig 3-1-15

- (5) Don't weld to install the fittings in the frame temporarily.
- (6) Give welded parts a good cleaning beforehand.
- (7) Use the welding rod for the iluminite system 5~6kg/mm<sup>2</sup>.  
In case of a wet welding rod, use it after drying the wet welding rod by all means.
- (8) Be free from the welding sludge securely.
- (9) Be free from welding defects in welding, under cut, a blow hole, pit etc.
- (10) In case the shape of the welding beads is not good, which results in stress concentration and has an effect on fatigue strength, grind with a grinder.
- (11) In order to prevent the damage caused by spots of welding operation, take protective measures on the hoses, nylon tubes, harnesses, chassis spring, etc. by means of covers.



#### 5)Cautions needed in welding the tension plate frame

There is the vehicle model using the tension steel plate for 55kg/mm<sup>2</sup> in the side frame. The welded area of the tension steel plate is apt to harden rather than that of the steel plate(SAPH45 : tension stress 45kg/mm<sup>2</sup>) for frame. Therefore in case of having need of welding the side frame, follow the instructions given below carefully. But, for the vehicle model using the tension steel plate, refer to the frame section coefficient table of the Vehicle Model Book.

(1)Use the welding rod for low hydrogen system absolutely. And particularly for the places needing the strength equivalent to base metal, use the welding rod for the low hydrogen system tension steel plate.

(2)As the welding places where the length of beads is short tear easily and, are not apt to harden, beads should be 40mm. In case of using short beads inevitably, be free from hardening with preheating or postheating treatment.

#### 6)How to extend the frame rear overhang

In case of extending the frame rear overhang, follow the instructions below carefully.

##### (1)Material

| vehicle                    | Extension Material |                          | Reinforcement Material |                     |
|----------------------------|--------------------|--------------------------|------------------------|---------------------|
|                            | material           | plate thickness(mm)      | material               | plate thickness(mm) |
| Large/medium-sized vehicle | SAPH 45            | same as the base vehicle | SAPH 45                | 6                   |
| small-sized vehicle        |                    | same as the base vehicle |                        | 3.2~4.5             |

##### (2)How to extend the frame rear overhang

①In case the length of extension section is less than 300mm

Perform the butt consecutive welding from the outside, and grind the surface with a grinder. There is no necessity for reinforcement for ordinary use. But in case heavy loading works upon the extension section, perform additional reinforcement by the main points shown in figure 3-1-17.

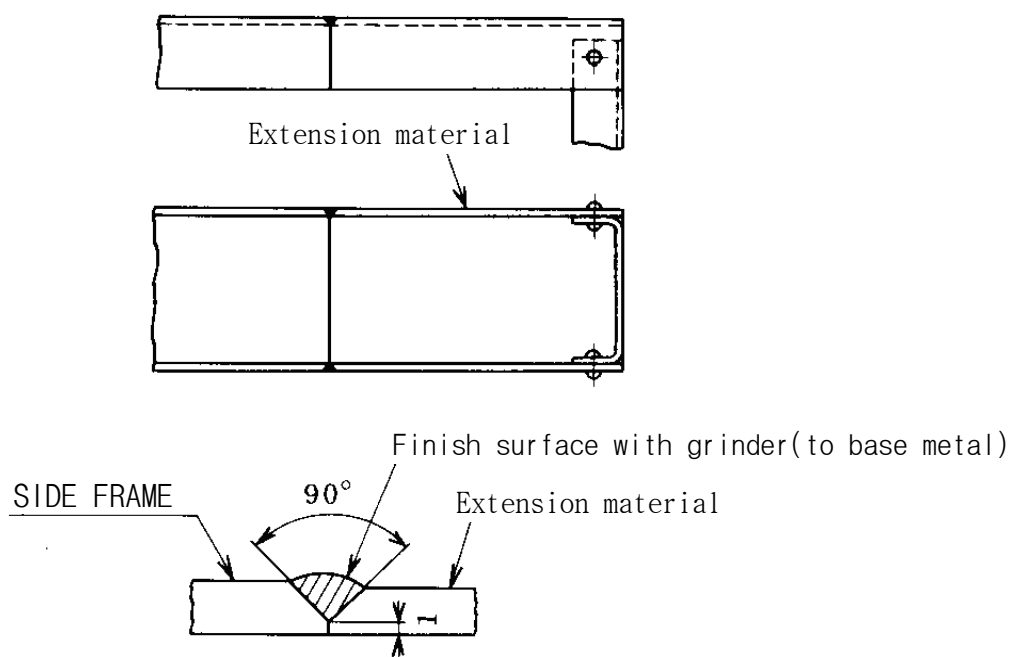


Fig 3-1-16

②In case the length of extension section is more than 300mm.

Add reinforcing material to the inner side of the side frame. Perform the butt consecutive welding onto the side frame and extending material, and grind the welded surface with a grinder.

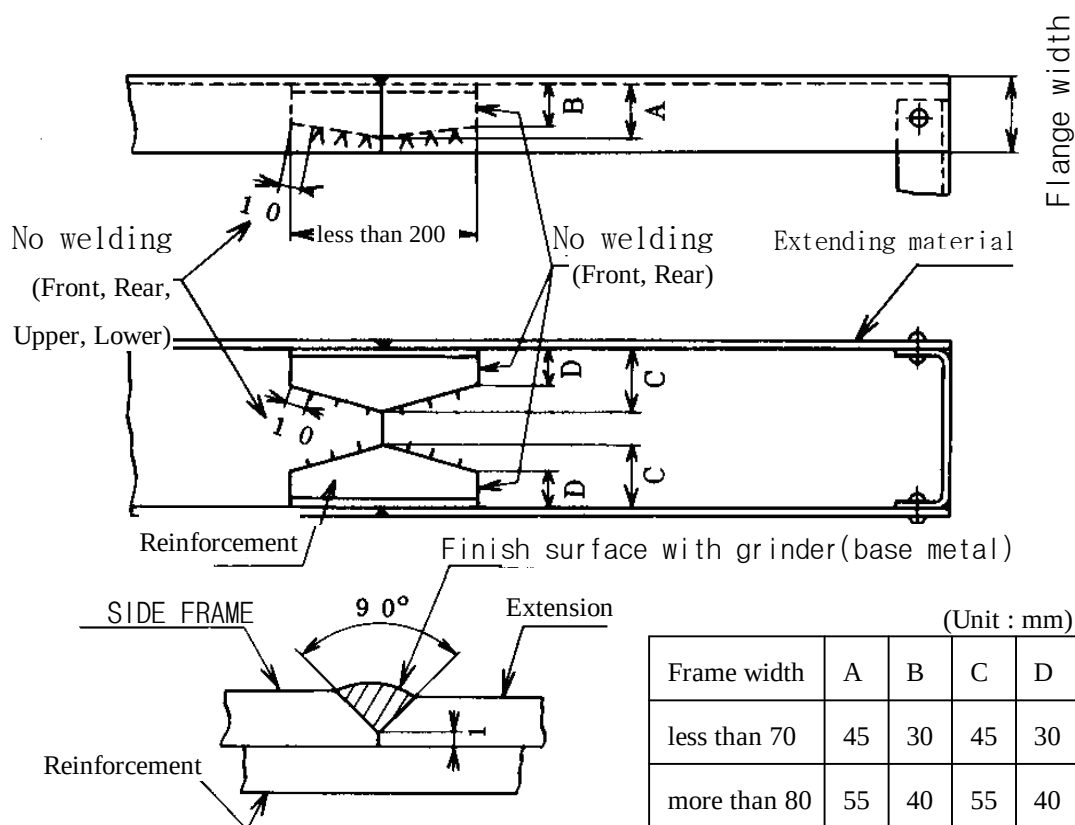


Fig 3-1-17

③In case there is the vehicle model having a taper on the lower

Surface of the side frame rear ends, so care should be taken in cutting perpendicular to or extending(flat to upper surface).

### (3)Cautions

When grinding the flange inside of the butt-welded side frame, make sure of a clean finish by grinding free from under cut, pile up or convexed bead.

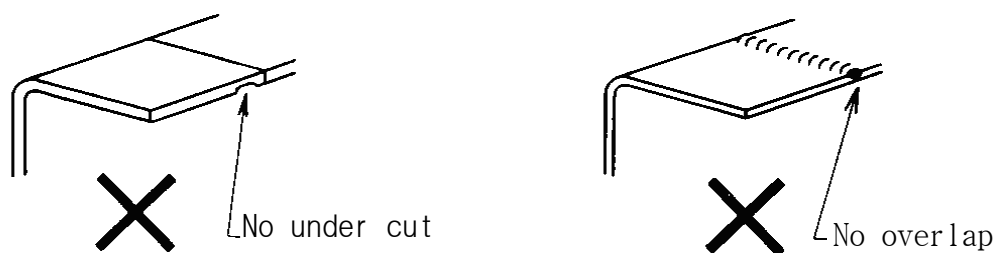


Fig 3-1-18

7)Extension and shortening of the wheel base

Consult with HMC on extension and shortening of the wheel base by all means.

8)Cautions needed in installing the fittings in the side of the side frame

As a rule, do not attach added equipment together with components on the frame side (fuel tank, air tank, air master, battery, etc.).

9)Other notices about frame

(1)Absolutely, do not make notches on the edges of side frames, cross member flanges and trunnion stiffeners, cross member gussette ends like the cutting shown in figure below

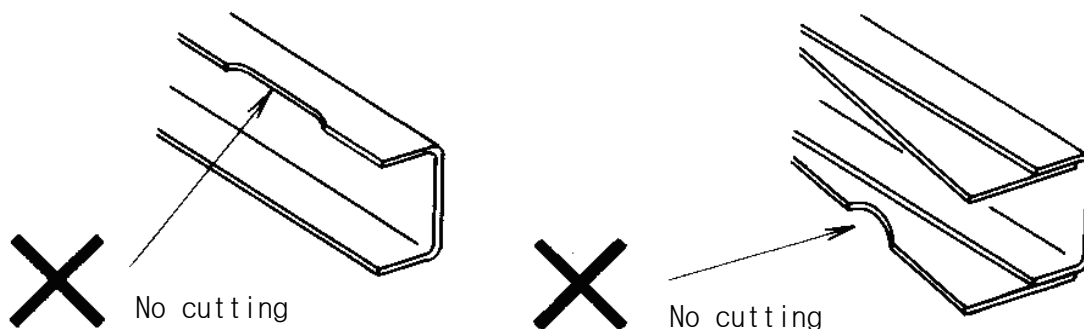


Fig 3-1-19

## (2)Side frame reinforcement

In case of attaching the additional outer stiffeners to the side members, which cause sudden changes of the rigidity at the end of the frame reinforced partially, what's more, cracks on the frame, there is no need for reinforcement in ordinary circumstances. The use of such stiffeners are, however, inevitable due to some special fittings or operating conditions, pay full attentions to the following points.

- ①Do not bring the end of outer stiffener close to the end of the sub side frame in the inner side of the side frame.
- ②The end of stiffener should not be brought close to locations of stress concentration such as cab back face, spring hangers, cross member ends, etc.
- ③Do not cut off stiffeners vertically. It should be cut so that its end has an angle of slope less than  $45^{\circ}$ , and its length should be more than 800mm.
- ④Outer stiffeners should be fixed to the side frame by means of riveting or plug welding on the web.
- ⑤When drilling rivet holes, side frames and outer stiffeners should be processed together. And the difference between the hole and rivet diameter should be less than 0.7mm.
- ⑥Use the  $\Phi 10$  rivet in medium/small-sized vehicles,  $\Phi 11$  in large-sized vehicles, and arrange them in JIG-JAG layout.

- ⑦The identical dia. Rivet should not be riveted again upon the identical position. But, only when the dimension from the edge to the edge of the rivet hole is more than 25mm, it is possible to fasten again after enlarging the  $\Phi 10$  rivet to the  $\Phi 11$  rivet, the  $\Phi 11$  rivet to the  $\Phi 13$ .
- ⑧In order to prevent the damage of the rivets and the bolts caused by plug welding.
- ⑨The hole diameter of plug welding should be  $\Phi 30$ , and arrange them in JIG-JAG layout.
- ⑩The edges of the holes for riveting and plug welding should be 25 to 30mm away from the edge of the outer stiffener.
- ⑪The pitches of riveting and plug welding should be 70~150mm, and the pitch near the edge of the outer stiffener should be of a small size.
- ⑫As  $\sqsubset$ -shaped stiffener can not be strictly fitted to the side frame due to difficulty of machining accuracy, L-shaped stiffener is recommendable
- ⑬When installing a L-shaped stiffener, the flange should be placed onto the tensile side of the side frame's stress.

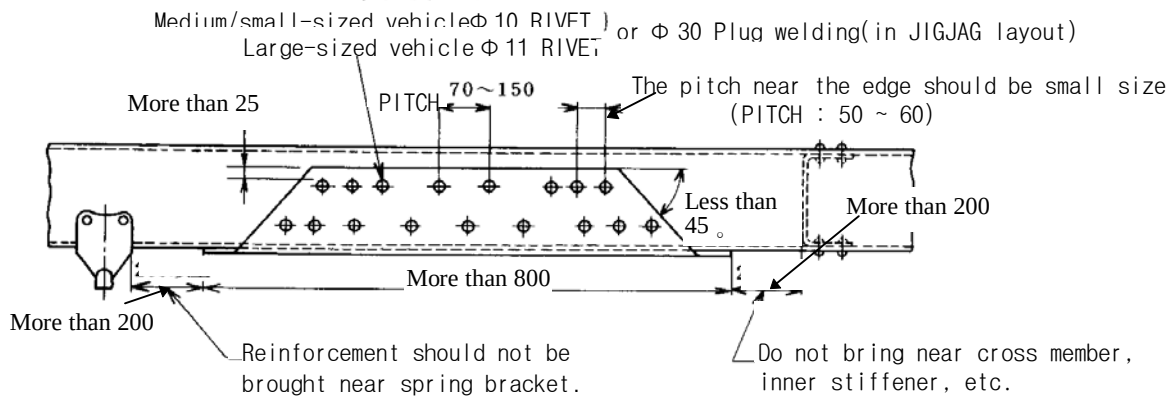


Fig 3-1-20

### 10)Rear hook

When moving rear hook, be sure to observe the instructions below.

#### (1)In case of installing in the side of the frame

In case cross member is not installed in the rear end of the frame, perform intermittent welding (20mm) onto the inner side of the frame with a steel plate(plate thickness 4.5mm, length 150mm, width 100mm). And in case cross member is installed, be sure to install as it is.

#### (2)In case of installing in the lower side of the frame

In case cross member is installed, do not attach added equipment. And In case the rear end of the frame is opened, be sure to install the reinforcing material (plate thickness 4.5mm, length 150mm, width 60mm) in the inner side of the lower frame.

## 3-1-2. Safety part

### 1)Cautions needed in treating

#### (1)Be free from modifying or heating the safety parts such as

front axle, steering relation, brake hose, etc.

(2) Heating-related parts among safety parts as follows

|                             |                                          |
|-----------------------------|------------------------------------------|
| KNUCKLE ARM                 | STEERING UNIVERSAL YOKE                  |
| KNUCKLE ARM BOLT            | STEERING SLEEP JOINT                     |
| TIE ROD                     | STEERING SPIDER                          |
| TIE ROD ARM                 | Related part of STEERING CONNECTING LINK |
| TIE ROD ARM BOLT            | BRAKE HOSE, BRAKE PIPE                   |
| FRONT AXLE                  | WHEEL NUT                                |
| STEERING SHAFT ASS'Y        | SPRING BRACKET (FRONT, REAR)             |
| PITMAN ARM BALL STUD        | SPRING U-BOLT                            |
| STEERING DRAG LINK          | AIR MASTER                               |
| STEERING BALL STUD          | AIR TANK                                 |
| SLAVE LEVER                 | ELECTRIC HARNESS                         |
| SLAVE LEVER BRACKET         |                                          |
| STEERING BOOSTER END SOCKET |                                          |

(3) Cautions regarding brake hose and air hose

The hoses close to front and rear wheel should be maintained 50mm away from the fittings even in the worst state, considering a clearance during vehicle run.

Other hoses should be maintained 40mm away from the fitting. As mutual contact causes early damage and heavy accident, so care should be taken.

### 3-1-3. Part for measure to noise

1) Cautions needed in treating

The parts for measure to noise like a cover for shelter around the engine and T/M, muffler, exhaust pipe between exhaust manifold and muffler should not be modified or altered absolutely.



2) Items regarding a noise as follows, be free from chassis modification except 'BODY BUILDER BOOK'

(1) Change of engine model

(2) Change of reducing gear

(3) Change of shifting gear

(4) Change into unapproved tire

(5) Change of the size of exhaust pipe diameter, clamp and muffler

(6) Change of the size, pitch, number sheets and rotation of a radiator cooling fan

(7) Change of the diameter, shape and length of air intake duct

(8) Chassis modification interfering with cover performance of a cover for shelter around the engine and raising temperature of the inside of the cover

#### 3-1-4. Oil pressure · air piping

As brake system and the oil · air piping of the steering system are safety parts, should not be modified absolutely.

1) Cautions needed in arranging pipes onto installing device or equipment

When connecting air to installing device from pipes of the brake system, since it is necessary to check on safety, using frequency, relation to air supply capability sufficiently.

2) Nylon tube for air piping

In case of modifying the pipes inevitably because of shifting

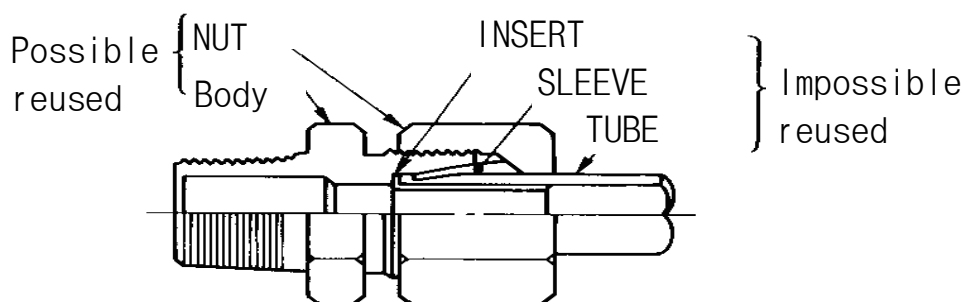
device or equipment, faithfully follow the instructions below.

(1)Cautions needed in laying pipes

- ①Temperature should be within a range from  $-40$  to  $+93^{\circ}\text{C}$ , and pressure be less than  $980\text{kPa}(10\text{kgf}/\text{cm}^2)$ .
- ②When intending to lay pipes less than minimum bend radius, do not use a bent tube once.
- ③Be free from laying pipes along the moving areas on harness and under spring.
- ④In case of laying pipes along the engine room, install a heat insulating plate between high temperature area and the tube.
- ⑤If necessary to prevent above damage of the edge area, install a protection panel.
- ⑥1% deformation is due to an effect in temperature.  
Therefore, maintain proper length in laying pipes.
- ⑦A clearance of clamp should be less than 600mm.
- ⑧The edge shape of clamp should be the shape of flange not to damage tube.
- ⑨If tubes contact with steel pipes, surface of steel pipes take place corrosion. Therefore, layout of tubes do not contact with steel pipes.
- ⑩Absolutely, be free from giving the high temperature of  $100^{\circ}\text{C}$  in the process of drying of painting after placing pipes, as it leads to leakage in joints.
- ⑪Oil like fuel, oil, grease, etc. makes no problem, but battery fluid should not be stained.
- ⑫Do not allow sparks of welding contact.

⑬ Once disassembling nuts, do not reuse insert, sleeve, and use new ones. And connector and nut can be reused.

Assembling nuts temperature should be within  $20 \pm 15^{\circ}\text{C}$ .



| NAME    | Minimum bend radius<br>(mm) | Nominal torque<br>(kg.m) |
|---------|-----------------------------|--------------------------|
| 6x1     | 40                          | 0.98~1.32                |
| 10x1.25 | 60                          | 1.66~2.35                |
| 12x1.5  | 75                          | 3.44~4.56                |

(2) Be sure to purchase the nylon tube related parts by referring to the following part number.

| Part Name  | Part Number |             |             |
|------------|-------------|-------------|-------------|
|            | 1/4 inch    | 3/8 inch    | 1/2 inch    |
| TUBE-NYLON | 17915-4000* | 17916-6000* | 17916-7000* |
| NUT        | 19517-04060 | 19517-06100 | 19517-08130 |
| SLEEVE     | 19502-04000 | 19502-06000 | 19502-08000 |
| INSERT     | 19506-04030 | 19506-06050 | 19506-08080 |

(3) Piping procedure

- ① Attachment connector to device or equipment.
- ② Cut off a tube at sharp angle.
- ③ Put insert in tube, and assemble nut and sleeve.

- ④ Hold tube until it adheres closely to the tube end of the connector, and fasten nut.
- ⑤ After tightening with hands temporarily, tighten tube to nominal torque with a spanner or torque wrench until it is pressed.
- ⑥ Pull tube with hands and check that it comes out, after tightening it.

### 3-1-5. Exhaust system

#### 1) Alteration prohibition limits

- (1) Do not modify exhaust system except tail pipes in terms of noise standards

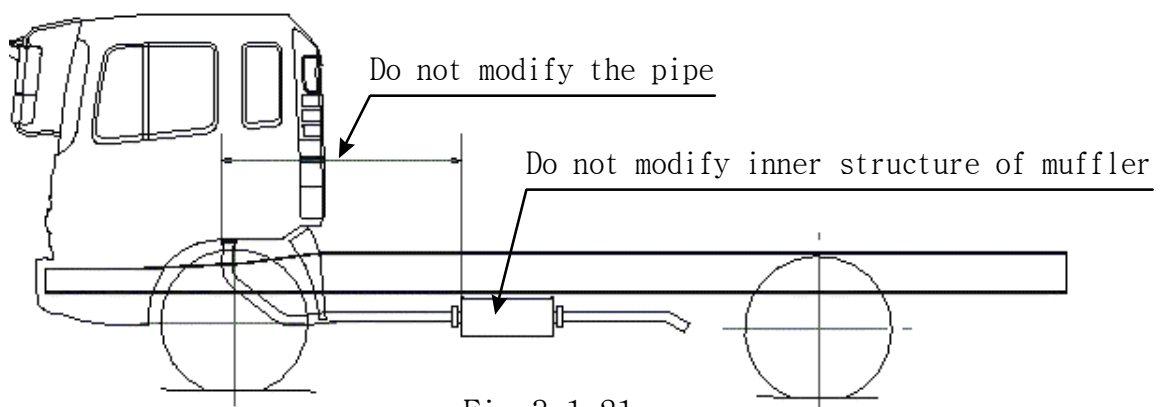


Fig 3-1-21

#### 2) How to modify tail pipes

- (1) Use the same diameter and material as the original pipe.  
(Material of pipe : SEHC or equivalent)
- (2) Do not give consideration to pipe extension.
- (3) The bend radius  $R$  of pipes should be 150 to 250mm.
- (4) Support the pipes elastically with cushion rubber HMC genuine parts, and the distance between the supports

should be less than 1,000 mm.

(5) As a rule, tail pipes should be placed in the direction as shown in figure below.

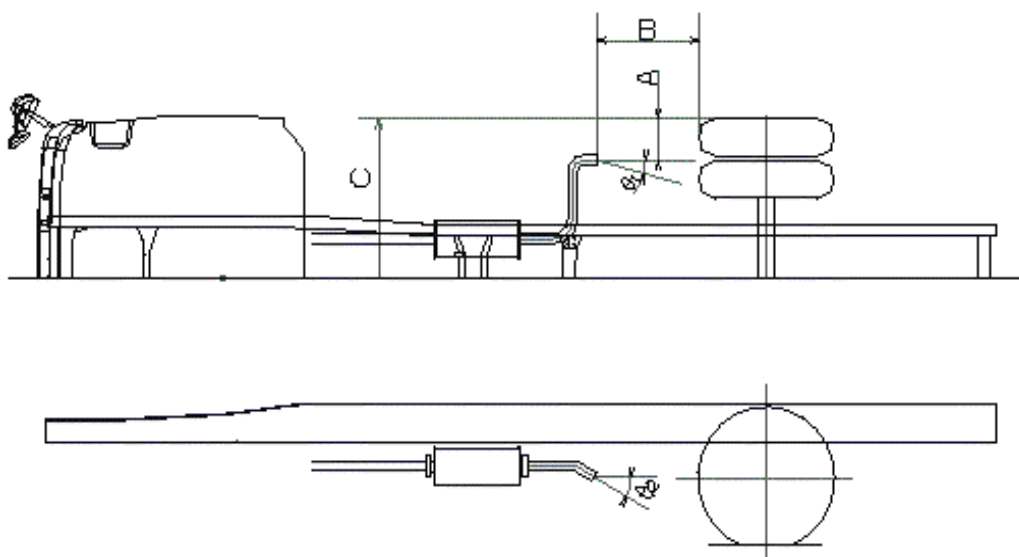


Fig 3-1-22

(Unit : mm)

|                      | A             | B              | C                               | $\theta 1$                            | $\theta 2$             |
|----------------------|---------------|----------------|---------------------------------|---------------------------------------|------------------------|
| Fixed value of maker | less than 100 | less than 1000 | Don't exceed the over all width | $0^{\circ} \sim 15^{\circ}$           | less than $30^{\circ}$ |
| Safety standard      | -             | -              |                                 | Left direction less than $30^{\circ}$ | -                      |

### 3) Clearance between exhaust system and other components

(1) When chassis components and tail pipes are modified, maintain the clearance below. If impossible to maintain clearance, install heat insulators.

(Unit : mm)

| Minimum clearance          |                     | Related chassis components                                                |
|----------------------------|---------------------|---------------------------------------------------------------------------|
| Large/medium-sized vehicle | small-sized vehicle |                                                                           |
| 100                        | 80                  | Air pipe, Air tank, Vacuum tank                                           |
| 150                        | 100                 | Oil pipe, Air master                                                      |
| 200                        | 150                 | Electricity harness, Fuel tank, Battery, Cable, Rubber parts, Resin parts |
| 200                        | 200                 | Fuel pipe                                                                 |
| 250                        | 200                 | Fuel hose                                                                 |

(2) Tail pipes should not be installed under fuel pipes, hose joints and fuel filter drain tubes.

(3) Tail pipe outlet should not be placed in the direction of the filler port of the fuel tanks or it should be more than 300mm.

### 3-1-6. Fuel tank

#### 1) Caution needed for transfer and addition of fuel tanks

(1) When changing fuel hoses, use rubber hoses or steel pipes. Because products of poor quality may cause a fire, use HMC genuine parts by all means.

##### ① Steel pipe

Steel pipes treat rust preventing at inner/outer face and the section of pipe end uses shape like figure below.

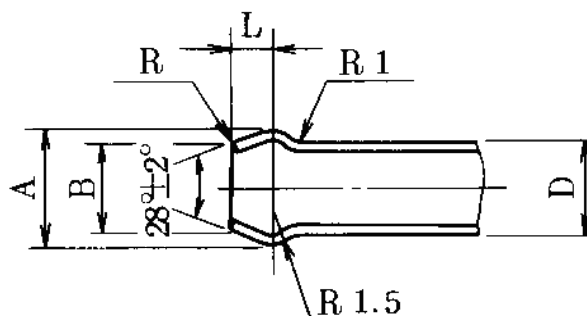
Rust preventing : inner face - copper coating

- thickness : more than 8μ

: outer face - zinc coating

- thickness : more than 8μ

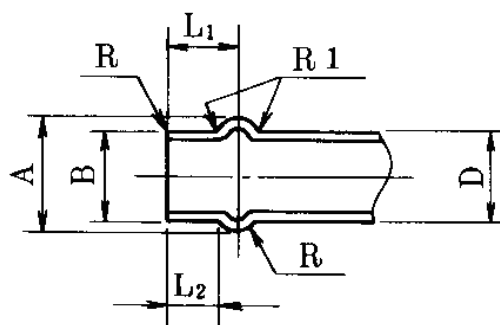
## BULGE TYPE



(Unit : mm)

| Diameter(D) | A         | B        | L(reference) | Rubber hose<br>inner dia.(ref.) |
|-------------|-----------|----------|--------------|---------------------------------|
| 6.35        | 7.1~7.7   | 5.8~6.4  | 2.8          | 5                               |
| 8           | 9.0~9.6   | 7.6~8.2  | 3.2          | 7                               |
| 10          | 11.2~11.8 | 9.7~10.3 | 3.2          | 9                               |

## SPOOL TYPE



(Unit : mm)

| diameter(D) | A         | B    | L1  | L2  | RUBBER HOSE<br>inner dia.(ref.) |
|-------------|-----------|------|-----|-----|---------------------------------|
| 6.35        | 7.1~7.7   | 6.35 | 4.5 | 3.5 | 5                               |
| 8           | 9.0~9.6   | 8    | 4.5 | 3.5 | 7                               |
| 10          | 11.2~11.8 | 10   | 4.5 | 3.5 | 9                               |

(2)Extending fuel hoses is prohibited

(3)Use steel pipes within the engine room

(4)Any change of clips and transfer of clamp locations with

regard to relatively movable parts between the engine and frame are prohibited.

(5)When sharing with the fuel tank for vehicle in order to supply fuel to the engine for a refrigerator, connect from the tank body by all means. Detachment from the engine supply system for vehicle is prohibited, as it interferes with the supply of fuel to the engine.

(6)The filler port of the fuel tanks should be more than 200mm apart from exposed electrical terminals and switches.

## 2)Transfer of fuel tanks

(1)Do not interfere with the side guard and the fuel tank components

(2)Install the fuel tank within the wheel base.

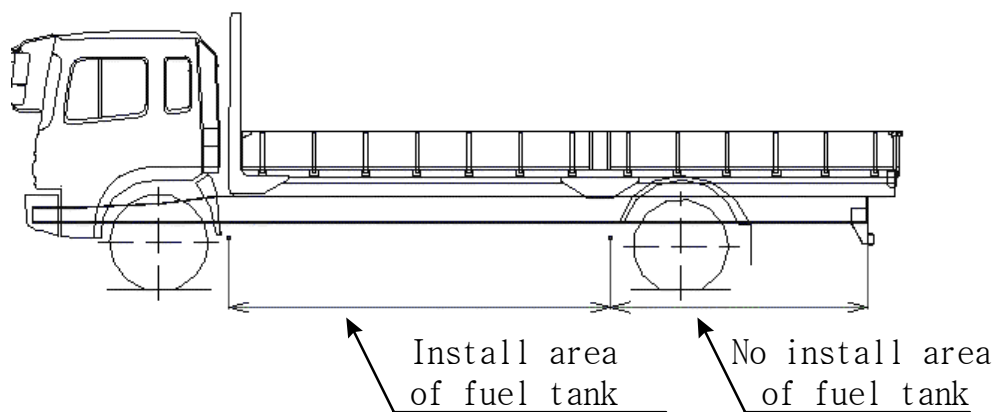


Fig 3-1-23

(3)Clamp fuel hoses at intervals of 400 to 500mm. Do not install hoses along electrical wires or battery cables.

Fuel hoses should be 20mm apart from electrical wires or

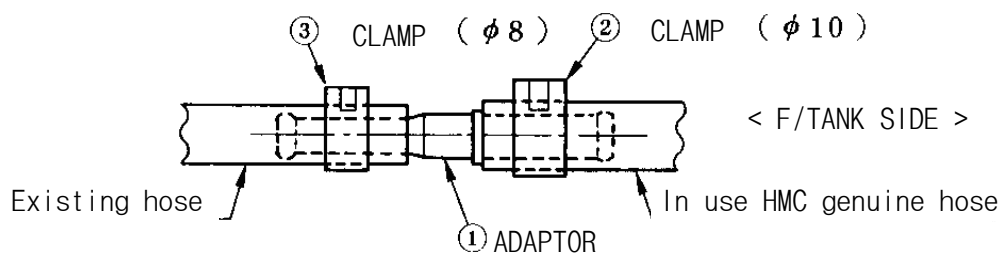


battery cables.

- (4) Fuel pipes should be fastened securely by means of clamps, 15mm apart from the edge of other parts and more than 25mm from relatively moving part.

### 3) Addition of fuel tanks

- (1) When an additional fuel tank is to be installed, use HMC genuine parts.
- (2) When an additional fuel tank is to be installed, a cut-off cock should be provided in the tube connecting each tank. Only use HMC genuine parts.
- (3) When the outer diameter of the return pipe is 10mm (Sent out fuel tank 8mm) in case of exchange installation, pipes should be connected in accordance with the followings.
- ① Cut the return hose which has been already installed halfway, add arranged adaptor.



- ② Do not install the adaptor in the engine, T/M, and between T/M and the frame. Fasten securely with a clamp so that adapter does not sway, and be sure to prevent it from interfering with brake pipes, hoses and electrical

harness.

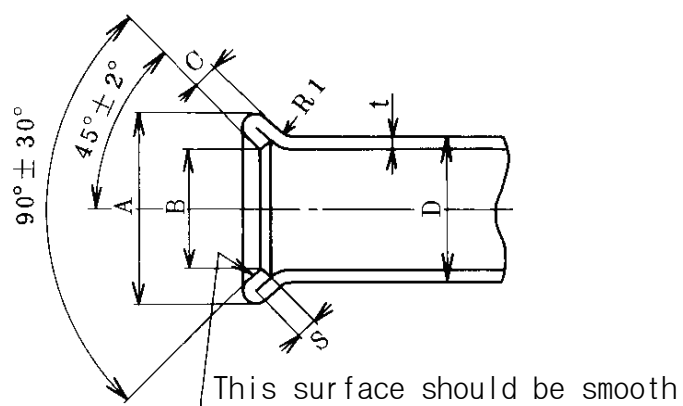
③Feed line and return line should not be turned upside down.

[Reference Data] Pipes for an example

1)The shapes and dimensions of chassis pipes

Use following steel pipes for chassis.

| D<br>Dia. | A         | B       | t   | C   | S<br>Min<br>. | MATERIAL              | TORQUE<br>N · m (kgf · m) |
|-----------|-----------|---------|-----|-----|---------------|-----------------------|---------------------------|
| 4.76      | 6.6~7.1   | 3.0~3.7 | 0.7 | 1.4 | 1.0           | SPCC<br><br>(Fluorine | 13~17(1.3~<br>1.7)        |
| 6.35      | 8.6~9.1   | 4.5~5.2 | 0.7 | 1.4 | 1.0           |                       | 19~26(1.9~<br>2.6)        |
| 8         | 10.5~11.0 | 6.2~6.9 | 0.7 | 1.4 | 1.6           |                       | 29~39(3.0~<br>4.0)        |



|    |           |          |     |     |     |           |                    |
|----|-----------|----------|-----|-----|-----|-----------|--------------------|
| 10 | 13.0~13.5 | 8.2~8.9  | 0.7 | 1.4 | 1.6 | resin     | 39~50(4.0~<br>5.1) |
| 12 | 15.0~15.7 | 9.8~10.5 | 0.9 | 1.8 | 1.6 | coat ing) | 59~78(6.0~<br>8.0) |

|    |           |           |     |     |     |  |                    |
|----|-----------|-----------|-----|-----|-----|--|--------------------|
| 15 | 18.1~18.8 | 12.7~13.4 | 1.0 | 2.0 | 1.6 |  | 69~93(7.0~<br>9.5) |
|----|-----------|-----------|-----|-----|-----|--|--------------------|

## 2)Cautions needed in laying pipes

- (1)When extending pipes, do not let each pipe be stuck together.
- (2)When connecting pipes, join in a flare style, and do not tighten forcedly. Also choose the place which makes retightening work possible.
- (3)Be free from high temperature heating absolutely.
- (4)When pipes passes through frame, insert grommet into the area of passing through, and again fasten securely with a clip. Be sure to prevent pipes from coming in contact with the area of passing through.
- (5)When detaching T/M, as pipes move to the rear in accordance with the engine slant, do not install in front of cross member.
- (6)Install the pipe within the frame and the cross member.
- (7)Do not install joints of the oil and fluid pipes above or near the exhaust system to avoid fire hazard when oil leakage occurs.
- (8)Do not install pipes between spring brackets (The outside of the flange between frames) and within movable part of the spring shackle.
- (9)Do not install pipes near such driving rotation as the propeller shaft or PTO shaft of the chassis side.

- (10) Be free from kick up parts in the course of a piping in order to facilitate air deflecting of the oil and fuel pipe.
- (11) Do not install steel pipe in the place where earth and sand are apt to be piled up and to run down. Also coating rubber with vinyl tube is prohibited, because staying wet causes rust.
- (12) Regarding the shape of air pipes, follow the instructions given below in order to prevent freezing when it's cold.
- (13) The bending of pipes should conform to the requirements below.

① The bending of pipes should be performed with a bender.

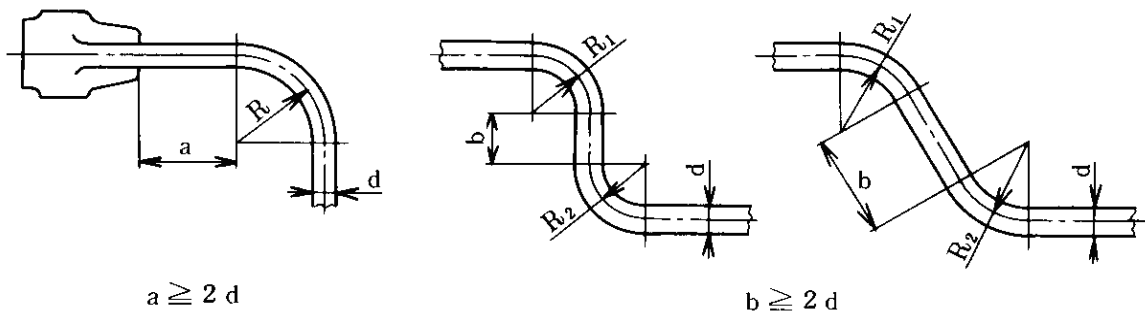
Do not use heat bending.

② The bend radius  $R$  of pipes should be strictly in accordance with the following minimum bend radius.

(unit : mm)

|                         |      |      |    |    |    |    |
|-------------------------|------|------|----|----|----|----|
| Pipe nominal diameter   | 4.76 | 6.35 | 8  | 10 | 12 | 15 |
| Minimum bend radius $R$ | 20   | 30   | 40 | 40 | 50 | 60 |

③ The required length of the straight portion of pipe end and bent portion should be in accordance with the following figure.



- ④Clean and remove foreign matters from inside of the pipes with compressed air blower.

### 3)How to assemble when exchanging pipes

- (1)Pipes in exchanging assemble a joint etc., and flare nut of both ends tightens slightly.
- (2)In assembling pipes, when it's difficult to assemble, forced tightening by spanner is prohibited. Get pipes fixed and assemble them by the main point of the (1) item, with joints fitted properly.

## 3-2. Cab modifications

### 3-2-1. Cautions needed in additional machining and modification of the cab

- 1)When installing the control lever and the like for installation, they should be more than 50mm from the lever and switch types.
- 2)When the cab floor has been drilled or notched in order to install the control lever and the like, pay attention to prevention of reduction in strength of the cab floor. Also perform rust preventing to additional parts in order to prevent rust.
- 3)Take a post measure securely to avoid fire hazard due to the glass wool for soundproofing stained with oil.
- 4)Be free from having an effect on detachment and service of the parts of device or equipment in vehicle.
- 5)Pay attention to identification mark to prevent a wrong operation and confusion of installation related levers,

switches and lamps

### 3-2-2. Roof machining

1)When installing the roof spoiler, roof deck and the like, use genuine parts. But, do not install the deck or cab railing which need drilling holes through the roof panel or the drip rail for an inflow of the interiors and a rust preventing. Installation of genuine parts should be in accordance with 'Vehicle Model Book'

2)Cautions needed in installing the parts except genuine parts

#### (1)Roof area

①When installing exterior device such as roof spoiler, roof deck and the like on the roof, use the exclusive holes provided on the roof.

②The exterior device installed on the roof should be less than 70kg in large-sized vehicle, 50kg in small-sized vehicle

#### (2)Cautions needed for installation

①The bolt and washer made from Nickle-cromium stainless material are recommended.

②Be careful not to give a damage to the body paint in installing exterior device.

③Use packing between the exterior device and the body to prevent rust.

④Recommended material for the packing is R715COP(EPDM), thickness less than 2mm, hole diameter 10mm (in large-sized vehicle).

⑤ Install exterior device by all means after finishing paint.

⑥ Bolt tightening torque 36 to 52N · m (3.5 to 5.5kgf · m).

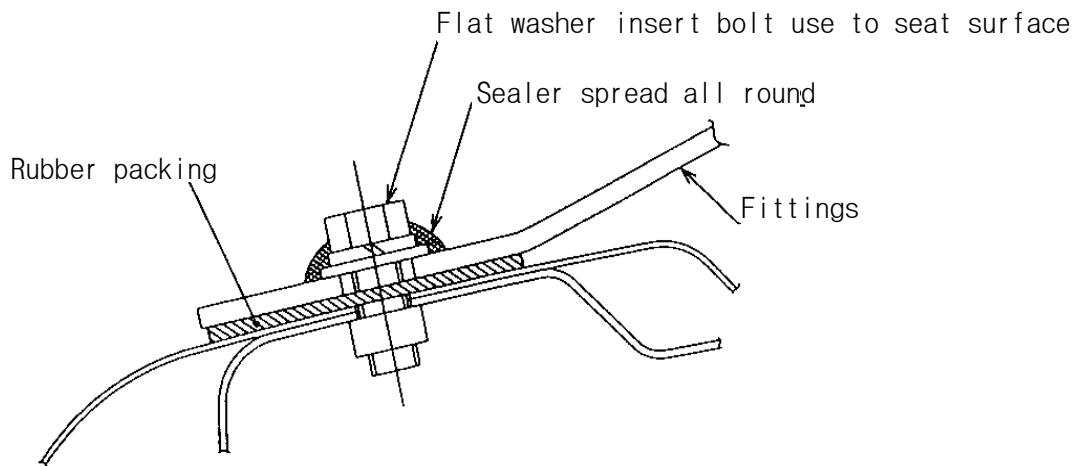


Fig 3-2-1

### 3-2-3. Installation of radio apparatus

#### 1) Cautions needed for installation

- (1) The antenna cable of a wireless device should be away from harnesses · wires. As passing wires close to harnesses · wires causes wrong operation of electrical parts, pass wires 300mm away from harnesses · wires.
- (2) Fasten securely cables passing along the outside of the cab with wire stickers of high durability. Also they should be clipped to prevent them from interfering with the engine.
- (3) Since installing antenna by a tapping screw causes rust, use bolts and nuts. Also the bolt and nut made from Nickle-cromium material are recommended.

## 4. ELECTRICAL PRECAUTIONS

### 4-1. Electrical wiring

Because electrical wiring and fuse are completed and sent out, after checking using load and frequency, and affirming a fire prevention and driving safety, add to and modify electrical wiring in accordance with the requirements below.

#### 4-1-1. Wiring and fittings already installed on the chassis

- 1) Be free from damages by the fittings.
- 2) Be free from coming in contact with sharp parts.
- 3) Be free from pulling by strong power in treating.
- 4) In connecting, do not pull harnesses and perform with the connector held.
- 5) Wiring and fittings should be away from the high-temperature parts.
- 6) Be free from interfering with check and service of the wiring electrical equipment after installing.
- 7) In installing buzzer type for the fittings, common use with the buzzer of chassis and installation of similar sound are prohibited.

#### 4-1-2. General cautions needed for additional wiring or alteration

- 1) The wires to be used

Use the wires equivalent to KS C 3311 (Low pressure wires for vehicle) and JASO D 608 (Heat resisting low pressure wires for vehicle), and the vinyl tapes equivalent to KS C 2306 (Vinyl adhesive tape for electric insulation).



## 2)How to wire

(1)Always pass wires along rear bodies, frames, etc. and do not let them hang free in the air.

(2)All wires should be securely clamped to prevent them from coming in contact with moving parts, vibrating parts and sharp corners on the chassis and fittings. Maintain the following clearance.

| Region                                  | Clearance                               |
|-----------------------------------------|-----------------------------------------|
| The clearance between moving and wiring | When they were closest : more than 25mm |
| The clearance between sharp and wiring  | Minimum clearance : more than 25mm      |

(3)Use grommets whenever penetrating steel plates to prevent electric shorts due to covering damage.

(4)Add clamps to the place where wires can come in contact with the edges of metal parts or insert the protectors into the edges to prevent covering damage due to moving contact.

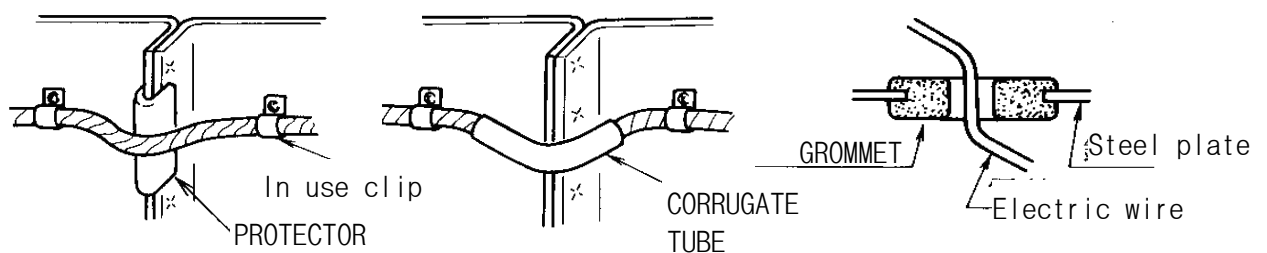


Fig 4-1-1

(5)Tape wiring together with chassis harnesses, if any nearby. Wires should never pass along brake pipes (Including brake hoses), fuel pipes (Including metal sheets, rubber hoses, etc.) and grease pipes. Clearance should be as follows.

| Method of wiring | Clearance      |
|------------------|----------------|
| Parallel         | More than 10mm |
| Crossing         | More than 20mm |

- (6)The clearance between electric wires and the parts of exhaust system should conform to the page 3-1-5-3 'Clearance between exhaust system and other components'.
- (7)Wires should never pass along the place where there are misgivings that harnesses or cables are damaged due to mud, accumulation of snow and the like, freezing and flying stones.
- (8)Connecting electrical wires of peeled covering is prohibited with respect to safety.
- (9)When passing wires along device or equipment, since there are misgivings that waters enter into the inside, seal them securely with grommets and the like. Maintain the terminal of each wire upward.
- (10)Always do not pass wires along water or polluted places.
- (11)Always do not pass wires along the upper face and outside of frames to prevent damage due to flying stones.
- (12)When modifying the wires of the battery cables due to moving of battery, do not extend or shorten the battery cables and discharging circuits of alternator and the like. Especially do not modify clamping, location and slack of wiring connected to components movable relatively to each other between the starter and the frame.
- (13)Wires should be placed more than 200mm away from exhaust system such as tail pipes and mufflers. If otherwise,

provide a heat insulator.

(14) When extending wires, use wires with the same cross sectional area and color as the original wires. Connections should be made secure by soldering or press terminals and completely insulated by coverings. Also never make connections by twisting the ends of the wires. Especially when extending electrical wires of chassis harnesses (Whole harnesses of the cab outside), waterproof and insulation of connections should be made secure.

For example, followings shows the method by the adhesive heat shrinkage tube.

- When using DURACELL tube

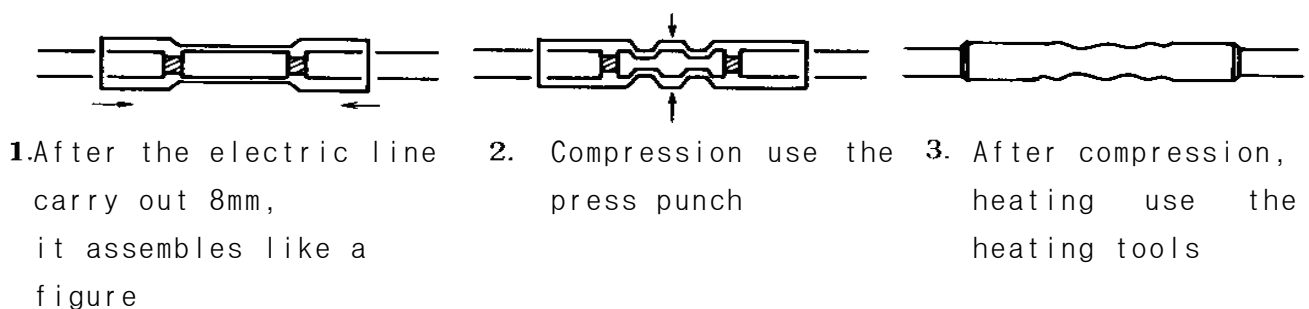


Fig 4-1-2

Use exclusive press punch and heating tools.

- When using MVT tube

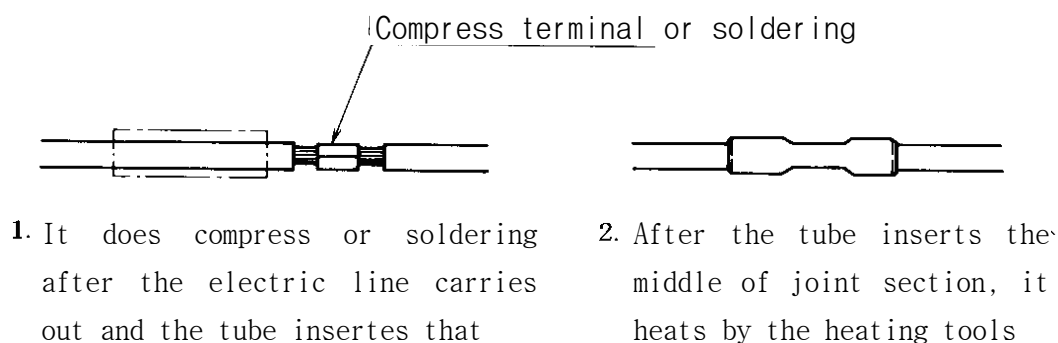
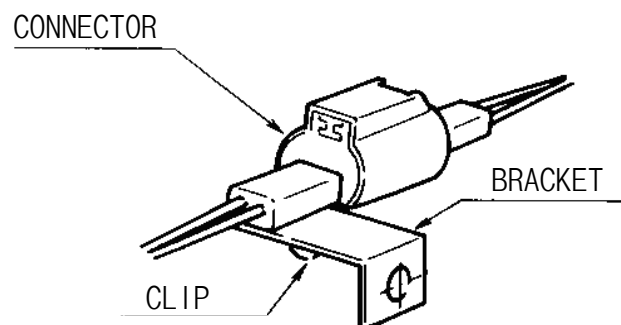


Fig 4-1-3

Use exclusive heating tools.

- (15) In due consideration of cutting off wires, the spare length to be cut off should be clamped to the harnesses already installed with vinyl tape.
- (16) The SWP waterproof connectors such as the license lamp, side turn signal lamp and the like should be fastened with hook type resin or band clips.



( Fixing the bracket etc. )

Fig 4-1-4

- (17) When wiring inside the engine compartment, wires should pass directly along with the chassis harnesses already installed. They should be clamped with vinyl tape, wrapped up widely with thin metal sheets (rubber or vinyl coated). Do not use weak vinyl tape that could soon fall off due to engine heat
- (18) Wires connecting engine and transmission components should be run along the harnesses already installed so as to allow them to absorb relative motions. Also, give them proper slack so as to keep them from contacting other components.
- (19) Clip

① Use coating tapes or protective rubber when clamping

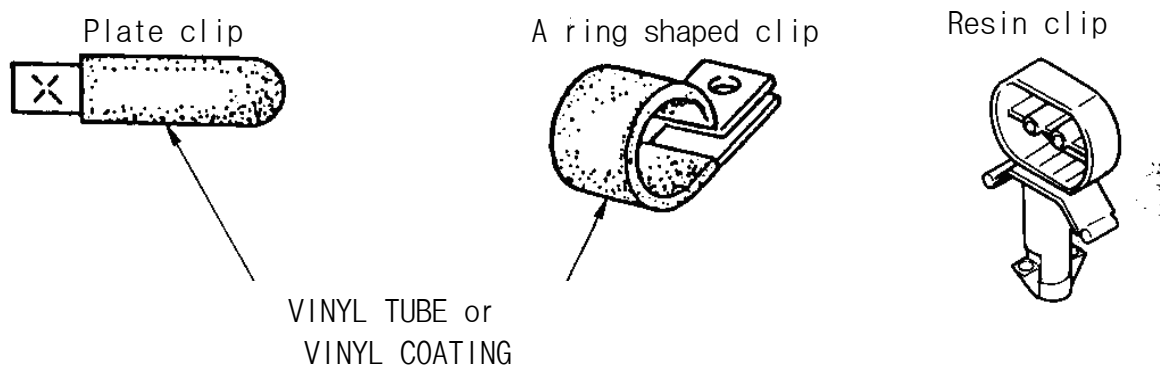


Fig 4-1-5

②Clamp intervals of wirings are given below as stand.

| HARNESS                | CLAMP CLEARANCE |
|------------------------|-----------------|
| less than $\Phi 5$     | less than 350mm |
| $\Phi 5 \sim \Phi 10$  | 350mm           |
| $\Phi 10 \sim \Phi 20$ | 350mm           |

※Clamp clearance of wiring near rounded area is 100~200mm

③Use rubber clamp near moving parts such as dump hinges or the like on the fittings and vibrating parts like engine and transmission.

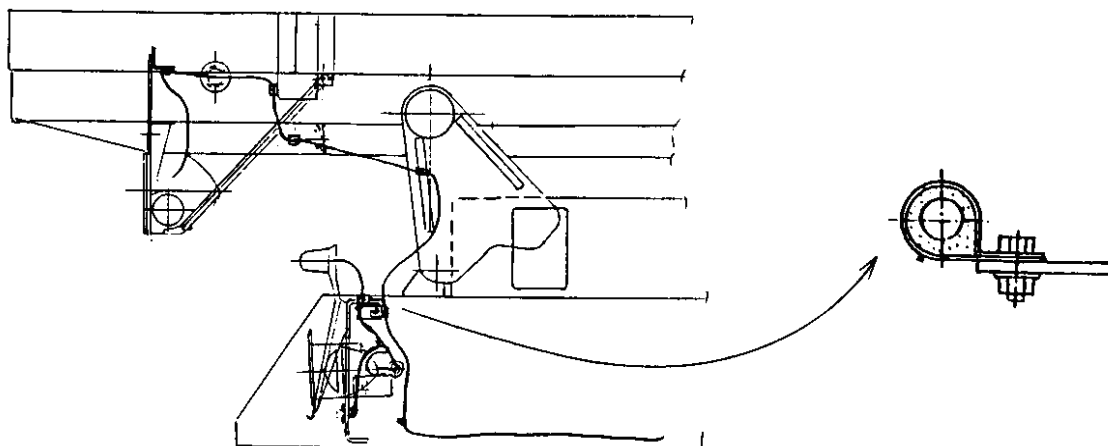


Fig 4-1-6

#### 4-1-3. Earth

1)Earth of increase power source should be the circuit connected to minus (-) terminal of battery by all means. Also, when earthing to frames, use masking parts and the paint removed parts. But, do not earth together with the bolts already installed .

2)Use ring in earth , assemble it securely together with tooth washer.

#### 4-1-4. Fuse

1)Since in due consideration of use load and frequency, the fuse with optimum capacity has been already installed on chassis, when adding electrical components, do not install the parts giving wrong signals to power source and earth line on chassis and do not lay harness wires.

Power supplies for installation related components and lamps should be taken out of fuse or connectors.

2)Do not add wires to the already installed wiring and in order to prevent a fire due to an excessive current draw, do not increase capacity by modifying the fuses on the fuse box.

## 4-2. Cautions in installing electrical equipment

When installing bodies with electronic control system, be sure to observe the instructions below

### 4-2-1. Sort of electronic control system

- 1) Electronic governor
- 2) Electronic timer
- 3) ABS
- 4) ASR
- 5) EGS (Electric Gear Shift)
- 6) Power steering
- 7) Distance Warning System
- 8) Electronic Controlled Auto T/M
- 9) Retarder Control

### 4-2-2. Cautions in installing electrical equipment

Since using electrical components such as sensors, control units, actuators and the like in electronic controlled vehicles and the multipole connectors which are suitable for weak current of electronic circuit, pay attention to the instructions described in below

- 1) Do not eliminate or add connectors unnecessarily, which causes deformation and damage of terminals resulting in insufficient connection.
- 2) Eliminate connectors together with housing by all means.  
Pulling electric wires forcibly or pulling them with them twisted deforming terminals are prohibited.

- 3)When eliminating connectors, do not stain terminals with water, oil and dust causing insufficient connection or unstable current flow.
- 4)After the work, assemble connector securely. Also, when eliminating harness, attach it to the original position securely after servicing.
- 5)Use electrical components such as relays, solenoid valves, motors, etc. , which include only noise absorbing elements like diode, veristar, etc.



### 4-3. Size of electric wire and permitted current

#### 4-3-1. Sort of electric wire

Select by the following table.

| a kind of electric wire                                                                 | using place                                                                 |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| AVSS wire<br>vinyl insulated a low voltage cable for vehicle                            | General                                                                     |
| AVX wire<br>bridge-building heat-resistant a low voltage cable for vehicle              | This cable uses of a highly temperature region ; engine circumference, etc. |
| AEX wire<br>bridge-building polyethylene heat-resistant a low voltage cable for vehicle |                                                                             |

#### 4-3-2. Size of electric wire

Select by the following table.

| nominal section area | wire number/wire diameter(mm) | allowable current(A) |          |          |
|----------------------|-------------------------------|----------------------|----------|----------|
|                      |                               | AVSS wire            | AVX wire | AEX wire |
| 0.5f                 | 20/0.18                       | 8                    | 7        | 7        |
| 0.5                  | 7/0.32                        | 9                    | 8        | 8        |
| 0.85                 | 11/0.32                       | 11                   | 10       | 10       |
| 1.25f                | 50/0.18                       | 14                   | 13       | 13       |
| 1.25                 | 16/0.32                       | 14                   | 14       | 13       |
| 2                    | 26/0.32                       | 20                   | 18       | 18       |
| 3                    | 41/0.32                       | 27                   | 25       | 25       |
| 5                    | 65/0.32                       | 36                   | 34       | 33       |
| 8                    | 50/0.32                       | 47                   | 44       | 43       |

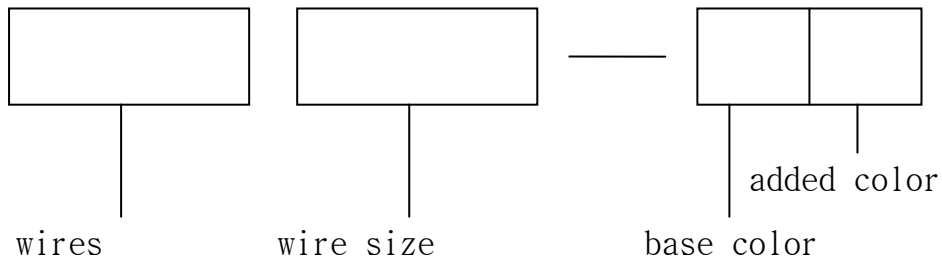
※ f : flexible

Use the flexible wire in moving & vibrating places such as T/M, Engine, Dump Hinge, Cab ~ Chassis etc.

#### 4-3-3. Method of indicating an electric wire and connector

##### 1) Wire size, Method of indicating color

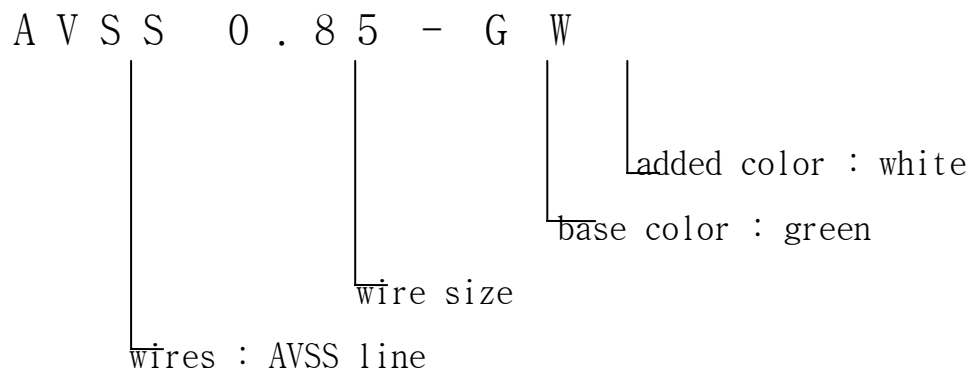
##### (1) Method of indicating



##### Symbol of wire color

| Symbol | Wire color | Symbol | Wire color  |
|--------|------------|--------|-------------|
| W      | WHITE      | L      | BLUE        |
| B      | BLACK      | Br     | BROWN       |
| R      | RED        | Lg     | LIGHT GREEN |
| Y      | YELLOW     | O      | ORANGE      |
| G      | GREEN      |        |             |

##### (2) Example of indication



# HYUNDAI TRUCK

## BODY BUILDER BOOK

(HD65 / HD72 / HD78 TRUCK)



2005. 6.

HYUNDAI MOTOR COMPANY  
COMMERCIAL VEHICLE ENGINEERING & RESEARCH CENTER

# I N D E X

## 1. IDENTIFICATION CODE

## 2. GENERAL SPECIFICATION

## 3. EXTERIOR DRAWING OF THE COMPLETE VEHICLE

## 4. ENGINE PERFORMANCE CURVE

## 5. CAUTIONS REGARDING INSTALLATION, MODIFICATION OR ALTERATION

5-1. Cautions needed for the front structure of the rear body

5-2. Cautions needed for the fastening U-bolt

5-3. Noise prevention parts

## 6. WEIGHT AND FRAME INFORMATION

6-1. Permissible weight

6-2. Side frame material and main section

## 7. P.T.O CONTROL

7-1. Transmission P.T.O

7-2. Dump control lever

## 8. EXTERIOR DRAWING OF THE CAB

## 9. CHASSIS CAB DRAWING

## 10. CAUTIONS NEEDED FOR THE INSTALLATION OF THE PROPELLAR SHAFT

## 11. OTHERS

11-1. Fuel tank

# 1. IDENTIFICATION CODE

## 1. IDENTIFICATION CODE

HD    —

①      ②      ③      ④      ⑤      ⑥      ⑦

| ①     | ②            | ③                | ④          | ⑤             | ⑥           | ⑦          |
|-------|--------------|------------------|------------|---------------|-------------|------------|
| MODEL | VEHICLE TYPE | CAB              | WHEEL BASE |               | ENGINE      | SERIAL NO. |
| 65    | CARGO : C    | · NARROW CAB : N | LONG : L   | HIGH DECK : H | D4AF : F    |            |
| 72    | DUMP : D     | · WIDE CAB       | SHORT : S  | LOW DECK : L  | D4AL : L    |            |
| 78    |              | — STD CAB : S    |            |               | D4DB : B    |            |
|       |              | — SUPER CAB : P  |            |               | D4DB-d : Bd |            |
|       |              | — DOUBLE CAB : D |            |               | D4DC : C    |            |
|       |              |                  |            |               | D4DD : D    |            |

EX) HD65 WIDE SUPER LONG CARGO LOW DECK : HD65CP – LLF

## 2. GENERAL SPECIFICATION

## 2. GENERAL SPECIFICATION

|                  |               |       | WIDE CAB         |            |             |            |            |
|------------------|---------------|-------|------------------|------------|-------------|------------|------------|
|                  |               |       | HD65 STADARD CAB |            |             |            |            |
|                  |               |       | HIGH DECK SHORT  |            |             |            |            |
|                  |               |       | HD65CS-SHF       | HD65CS-SHL | HD65CS-SHBd | HD65CS-SHC | HD65CS-SHD |
| O. A. L          |               | mm    | 5,200            | ←          | ←           | ←          | 5,275      |
| O. A. W          |               | mm    | 2,030            | ←          | ←           | ←          | ←          |
| O. A. H          |               | mm    | 2,335            | ←          | ←           | ←          | ←          |
| BODY<br>INSIDE   | LENTH         | mm    | 3,410            | ←          | ←           | ←          | ←          |
|                  | WIDTH         | mm    | 1,920            | ←          | ←           | ←          | ←          |
|                  | HEIGHT        | mm    | 380              | ←          | ←           | ←          | ←          |
| DECK OFFSET      |               | mm    | 385              | ←          | ←           | ←          | ←          |
| WHEEL BASE       |               | mm    | 2,750            | ←          | ←           | ←          | 2,780      |
| WHEEL<br>TREAD   | FRT           | mm    | 1,665            | ←          | ←           | ←          | 1,680      |
|                  | RR            | mm    | 1,495            | ←          | ←           | ←          | ←          |
| OVER<br>HANG     | FRT           | mm    | 1,075            | ←          | ←           | ←          | 1,120      |
|                  | RR            | mm    | 1,375            | ←          | ←           | ←          | ←          |
| KERB WT          | FRT           | kg    | 1,575            | 1,605      | 1,625       | 1,605      | 1,665      |
|                  | RR            | kg    | 1,120            | 1,140      | 1,140       | 1,140      | 1,180      |
|                  | TTL           | kg    | 2,695            | 2,745      | 2,765       | 2,745      | 2,845      |
| G.V.W            | FRT           | kg    | 2,110            | 2,140      | 2,160       | 2,140      | 2,200      |
|                  | RR            | kg    | 3,280            | 3,300      | 3,300       | 3,300      | 3,340      |
|                  | TTL           | kg    | 5,390            | 5,440      | 5,460       | 5,440      | 5,540      |
| ENGINE           | MODEL         |       | D4AF             | D4AL       | D4DB-d      | D4DC       | D4DD       |
|                  | ASPIRATION    |       | NA               | TCI        | TCI         | NA         | TCI        |
|                  | DISPLACEMENT  | cc    | 3.6 l            | 3.3 l      | 3.9 l       | 3.9 l      | 3.9 l      |
|                  | OUTPUT        | ps    | 96               | 120        | 105         | 105        | 140        |
|                  | TORQUE        | kgm   | 24               | 30         | 29          | 27         | 38         |
| PERFOR-<br>MANCE | MAX.SPD       | km/h  | 103              | 112        | 107         | 107        | 122        |
|                  | MAX.GRD       | tan θ | 0.385            | 0.416      | 0.4         | 0.374      | 0.436      |
|                  | T/RAD         | m     | 5.0              | ←          | ←           | ←          | ←          |
| T / M            | MODEL         |       | M2S5             | M3S5       | ←           | ←          | M03S5      |
|                  | GEAR<br>RATIO | 1st   | 5.494            | 5.181      | ←           | ←          | 5.380      |
|                  |               | 2nd   | 2.836            | 2.865      | ←           | ←          | 3.208      |
|                  |               | 3rd   | 1.592            | 1.593      | ←           | ←          | 1.700      |
|                  |               | 4th   | 1.000            | 1.000      | ←           | ←          | 1.000      |
|                  |               | 5th   | 0.746            | 0.739      | ←           | ←          | 0.722      |
|                  |               | 6th   | -                | -          | ←           | ←          | -          |
|                  |               | 7th   | -                | -          | ←           | ←          | -          |
|                  |               | REV   | 5.494            | 5.181      | ←           | ←          | 5.380      |
| R/AXLE           | MODEL         |       | D2H              | D3H        | ←           | ←          | D3H        |
|                  | RATIO         |       | 6.666            | 6.166      | ←           | ←          | 5.000      |
| TIRE             | FRT           |       | 7.00R16-10PR     | ←          | ←           | ←          | ←          |
|                  | RR            |       | 7.00R16-10PR     | ←          | ←           | ←          | ←          |



|                  |               |       | WIDE CAB         |            |             |            |            |
|------------------|---------------|-------|------------------|------------|-------------|------------|------------|
|                  |               |       | HD65 STADARD CAB |            |             |            |            |
|                  |               |       | HIGH DECK LONG   |            |             |            |            |
|                  |               |       | HD65CS-LHF       | HD65CS-LHL | HD65CS-LHBd | HD65CS-LHC | HD65CS-LHD |
| O. A. L          |               | mm    | 6,130            | ←          | ←           | ←          | 6,175      |
| O. A. W          |               | mm    | 2,030            | ←          | ←           | ←          | ←          |
| O. A. H          |               | mm    | 2,325            | ←          | ←           | ←          | ←          |
| BODY<br>INSIDE   | LENTH         | mm    | 4,350            | ←          | ←           | ←          | 4,310      |
|                  | WIDTH         | mm    | 1,920            | ←          | ←           | ←          | ←          |
|                  | HEIGHT        | mm    | 380              | ←          | ←           | ←          | ←          |
| DECK OFFSET      |               | mm    | 560              | ←          | ←           | ←          | 530        |
| WHEEL BASE       |               | mm    | 3,375            | ←          | ←           | ←          | ←          |
| WHEEL<br>TREAD   | FRT           | mm    | 1,665            | ←          | ←           | ←          | 1,680      |
|                  | RR            | mm    | 1,495            | ←          | ←           | ←          | ←          |
| OVER<br>HANG     | FRT           | mm    | 1,075            | ←          | ←           | ←          | 1,120      |
|                  | RR            | mm    | 1,680            | ←          | ←           | ←          | 1,680      |
| KERB WT          | FRT           | kg    | 1,590            | 1,620      | 1,640       | 1,620      | 1,680      |
|                  | RR            | kg    | 1,180            | 1,200      | 1,200       | 1,200      | 1,240      |
|                  | TTL           | kg    | 2,770            | 2,820      | 2,840       | 2,820      | 2,920      |
| G.V.W            | FRT           | kg    | 2,190            | 2,220      | 2,240       | 2,220      | 2,280      |
|                  | RR            | kg    | 3,270            | 3,290      | 3,290       | 3,290      | 3,330      |
|                  | TTL           | kg    | 5,460            | 5,510      | 5,530       | 5,510      | 5,610      |
| ENGINE           | MODEL         |       | D4AF             | D4AL       | D4DB-d      | D4DC       | D4DD       |
|                  | ASPIRATION    |       | NA               | TCI        | TCI         | NA         | TCI        |
|                  | DISPLACEMENT  | cc    | 3.6 l            | 3.3 l      | 3.9 l       | 3.9 l      | 3.9 l      |
|                  | OUTPUT        | ps    | 96               | 120        | 105         | 105        | 140        |
|                  | TORQUE        | kgm   | 24               | 30         | 29          | 27         | 38         |
| PERFOR-<br>MANCE | MAX.SPD       | km/h  | 103              | 112        | 107         | 107        | 122        |
|                  | MAX.GRD       | tan Θ | 0.379            | 0.411      | 0.395       | 0.369      | 0.431      |
|                  | T/RAD         | m     | 6.0              | ←          | ←           | ←          | ←          |
| T / M            | MODEL         |       | M2S5             | M3S5       | ←           | ←          | M035S5     |
|                  | GEAR<br>RATIO | 1st   | 5.494            | 5.181      | ←           | ←          | 5.380      |
|                  |               | 2nd   | 2.836            | 2.865      | ←           | ←          | 3.208      |
|                  |               | 3rd   | 1.592            | 1.593      | ←           | ←          | 1.700      |
|                  |               | 4th   | 1.000            | 1.000      | ←           | ←          | 1.000      |
|                  |               | 5th   | 0.746            | 0.739      | ←           | ←          | 0.722      |
|                  |               | 6th   | -                | -          | ←           | ←          | -          |
|                  |               | 7th   | -                | -          | ←           | ←          | -          |
|                  | REV           |       | 5.494            | 5.181      | ←           | ←          | 5.380      |
| R/AXLE           | MODEL         |       | D2H              | D3H        | ←           | ←          | D3H        |
|                  | RATIO         |       | 6.666            | 6.166      | ←           | ←          | 5.000      |
| TIRE             | FRT           |       | 7.00R16-10PR     | ←          | ←           | ←          | ←          |
|                  | RR            |       | 7.00R16-10PR     | ←          | ←           | ←          | ←          |

|                  |               |       | WIDE CAB       |            |             |            |            |
|------------------|---------------|-------|----------------|------------|-------------|------------|------------|
|                  |               |       | HD65 SUPER CAB |            |             |            |            |
|                  |               |       | HIGH DECK LONG |            |             |            |            |
|                  |               |       | HD65CP-LHF     | HD65CP-LHL | HD65CP-LHBd | HD65CP-LHC | HD65CP-LHD |
| O. A. L          |               | mm    | 6,420          | ←          | ←           | ←          | 6,465      |
| O. A. W          |               | mm    | 2,030          | ←          | ←           | ←          | ←          |
| O. A. H          |               | mm    | 2,335          | ←          | ←           | ←          | ←          |
| BODY<br>INSIDE   | LENTH         | mm    | 4,350          | ←          | ←           | ←          | 4,340      |
|                  | WIDTH         | mm    | 1,920          | ←          | ←           | ←          | ←          |
|                  | HEIGHT        | mm    | 380            | ←          | ←           | ←          | ←          |
| DECK OFFSET      |               | mm    | 455            | ←          | ←           | ←          | 440        |
| WHEEL BASE       |               | mm    | 3,570          | ←          | ←           | ←          | ←          |
| WHEEL<br>TREAD   | FRT           | mm    | 1,665          | ←          | ←           | ←          | 1,680      |
|                  | RR            | mm    | 1,495          | ←          | ←           | ←          | ←          |
| OVER<br>HANG     | FRT           | mm    | 1,075          | ←          | ←           | ←          | ←          |
|                  | RR            | mm    | 1,775          | ←          | ←           | ←          | ←          |
| KERB WT          | FRT           | kg    | 1,615          | 1,645      | 1,665       | 1,645      | 1,705      |
|                  | RR            | kg    | 1,210          | 1,230      | 1,230       | 1,230      | 1,270      |
|                  | TTL           | kg    | 2,825          | 2,875      | 2,895       | 2,875      | 2,975      |
| G.V.W            | FRT           | kg    | 2,120          | 2,150      | 2,170       | 2,150      | 2,210      |
|                  | RR            | kg    | 3,400          | 3,420      | 3,420       | 3,420      | 3,460      |
|                  | TTL           | kg    | 5,520          | 5,570      | 5,590       | 5,570      | 5,670      |
| ENGINE           | MODEL         |       | D4AF           | D4AL       | D4DB-d      | D4DC       | D4DD       |
|                  | ASPIRATION    |       | NA             | TCI        | TCI         | NA         | TCI        |
|                  | DISPLACEMENT  | cc    | 3.6 l          | 3.3 l      | 3.9 l       | 3.9 l      | 3.9 l      |
|                  | OUTPUT        | ps    | 96             | 120        | 105         | 105        | 140        |
|                  | TORQUE        | kgm   | 24             | 30         | 29          | 27         | 38         |
| PERFOR-<br>MANCE | MAX.SPD       | km/h  | 103            | 112        | 107         | 107        | 122        |
|                  | MAX.GRD       | tan θ | 0.375          | 0.406      | 0.391       | 0.365      | 0.426      |
|                  | T/RAD         | m     | 6.5            | ←          | ←           | ←          | ←          |
| T / M            | MODEL         |       | M2S5           | M3S5       | ←           | ←          | M035S5     |
|                  | GEAR<br>RATIO | 1st   | 5.494          | 5.181      | ←           | ←          | 5.380      |
|                  |               | 2nd   | 2.836          | 2.865      | ←           | ←          | 3.208      |
|                  |               | 3rd   | 1.592          | 1.593      | ←           | ←          | 1.700      |
|                  |               | 4th   | 1.000          | 1.000      | ←           | ←          | 1.000      |
|                  |               | 5th   | 0.746          | 0.739      | ←           | ←          | 0.722      |
|                  |               | 6th   | -              | -          | ←           | ←          | -          |
|                  |               | 7th   | -              | -          | ←           | ←          | -          |
|                  | REV           |       | 5.494          | 5.181      | ←           | ←          | 5.380      |
| R/AXLE           | MODEL         |       | D2H            | D3H        | ←           | ←          | D3H        |
|                  | RATIO         |       | 6.666          | 6.166      | ←           | ←          | 5.000      |
| TIRE             | FRT           |       | 7.00R16-10PR   | ←          | ←           | ←          | ←          |
|                  | RR            |       | 7.00R16-10PR   | ←          | ←           | ←          | ←          |

|                  |               |       | WIDE CAB       |            |  |  |  |
|------------------|---------------|-------|----------------|------------|--|--|--|
|                  |               |       | HD65 DOUBLE    |            |  |  |  |
|                  |               |       | HIGH DECK LONG |            |  |  |  |
|                  |               |       | HD65CD-LHF     | HD65CD-LHL |  |  |  |
| O. A. L          |               | mm    | 6,130          | ←          |  |  |  |
| O. A. W          |               | mm    | 2,030          | ←          |  |  |  |
| O. A. H          |               | mm    | 2,325          | ←          |  |  |  |
| BODY<br>INSIDE   | LENTH         | mm    | 4,350          | ←          |  |  |  |
|                  | WIDTH         | mm    | 1,920          | ←          |  |  |  |
|                  | HEIGHT        | mm    | 380            | ←          |  |  |  |
| DECK OFFSET      |               | mm    | 60             | ←          |  |  |  |
| WHEEL BASE       |               | mm    | 3,375          | ←          |  |  |  |
| WHEEL<br>TREAD   | FRT           | mm    | 1,665          | ←          |  |  |  |
|                  | RR            | mm    | 1,495          | ←          |  |  |  |
| OVER<br>HANG     | FRT           | mm    | 1,075          | ←          |  |  |  |
|                  | RR            | mm    | 1,680          | ←          |  |  |  |
| KERB WT          | FRT           | kg    | 1,645          | 1,675      |  |  |  |
|                  | RR            | kg    | 1,235          | 1,255      |  |  |  |
|                  | TTL           | kg    | 2,880          | 2,930      |  |  |  |
| G.V.W            | FRT           | kg    | 2,045          | 2,075      |  |  |  |
|                  | RR            | kg    | 3,790          | 3,810      |  |  |  |
|                  | TTL           | kg    | 5,835          | 5,885      |  |  |  |
| ENGINE           | MODEL         |       | D4AF           | D4AL       |  |  |  |
|                  | ASPIRATION    |       | NA             | TCI        |  |  |  |
|                  | DISPLACEMENT  | cc    | 3.6 l          | 3.3 l      |  |  |  |
|                  | OUTPUT        | ps    | 96             | 120        |  |  |  |
|                  | TORQUE        | kgm   | 24             | 30         |  |  |  |
| PERFOR-<br>MANCE | MAX.SPD       | km/h  | 102            | 112        |  |  |  |
|                  | MAX.GRD       | tan Θ | 0.354          | 0.384      |  |  |  |
|                  | T/RAD         | m     | 6.0            | ←          |  |  |  |
| T / M            | MODEL         |       | M2S5           | M3S5       |  |  |  |
|                  | GEAR<br>RATIO | 1st   | 5.494          | 5.181      |  |  |  |
|                  |               | 2nd   | 2.836          | 2.865      |  |  |  |
|                  |               | 3rd   | 1.592          | 1.593      |  |  |  |
|                  |               | 4th   | 1.000          | 1.000      |  |  |  |
|                  |               | 5th   | 0.746          | 0.739      |  |  |  |
|                  |               | 6th   | -              | -          |  |  |  |
|                  |               | 7th   | -              | -          |  |  |  |
|                  |               | REV   | 5.494          | 5.181      |  |  |  |
| R/AXLE           | MODEL         |       | D2H            | D3H        |  |  |  |
|                  | RATIO         |       | 6.666          | 6.166      |  |  |  |
| TIRE             | FRT           |       | 7.00R16-10PR   | ←          |  |  |  |
|                  | RR            |       | 7.00R16-10PR   | ←          |  |  |  |

|                  |               |       | WIDE CAB         |            |            |            |            |
|------------------|---------------|-------|------------------|------------|------------|------------|------------|
|                  |               |       | HD72 STADARD CAB |            |            |            |            |
|                  |               |       | HIGH DECK SHORT  |            |            |            |            |
|                  |               |       | HD72CS-SHL       | HD72CS-SHA | HD72CS-SHB | HD72CS-SHC | HD72CS-SHD |
| O. A. L          |               | mm    | 5,200            | ←          | ←          | ←          | 5,275      |
| O. A. W          |               | mm    | 2,030            | ←          | ←          | ←          | ←          |
| O. A. H          |               | mm    | 2,355            | ←          | ←          | ←          | ←          |
| BODY<br>INSIDE   | LENTH         | mm    | 3,140            | ←          | ←          | ←          | 3,410      |
|                  | WIDTH         | mm    | 1,920            | ←          | ←          | ←          | ←          |
|                  | HEIGHT        | mm    | 380              | ←          | ←          | ←          | ←          |
| DECK OFFSET      |               | mm    | 385              | ←          | ←          | ←          | ←          |
| WHEEL BASE       |               | mm    | 2,750            | ←          | ←          | ←          | 2,780      |
| WHEEL<br>TREAD   | FRT           | mm    | 1,650            | ←          | ←          | ←          | 1,667      |
|                  | RR            | mm    | 1,495            | ←          | ←          | ←          | ←          |
| OVER<br>HANG     | FRT           | mm    | 1,075            | ←          | ←          | ←          | 1,120      |
|                  | RR            | mm    | 1,375            | ←          | ←          | ←          | ←          |
| KERB WT          | FRT           | kg    | 1,620            | 1,655      | 1,655      | 1,620      | 1,685      |
|                  | RR            | kg    | 1,280            | 1,300      | 1,300      | 1,280      | 1,320      |
|                  | TTL           | kg    | 2,900            | 2,955      | 2,955      | 2,900      | 3,005      |
| G.V.W            | FRT           | kg    | 2,295            | 2,330      | 2,330      | 2,295      | 2,360      |
|                  | RR            | kg    | 4,300            | 4,320      | 4,320      | 4,300      | 4,340      |
|                  | TTL           | kg    | 6,595            | 6,650      | 6,650      | 6,595      | 6,700      |
| ENGINE           | MODEL         |       | D4AL             | D4DA       | D4DB       | D4DC       | D4DD       |
|                  | ASPIRATION    |       | TCI              | TCI        | TCI        | NA         | TCI        |
|                  | DISPLACEMENT  | cc    | 3.3 l            | 3.9 l      | 3.9 l      | 3.9 l      | 3.9 l      |
|                  | OUTPUT        | ps    | 120              | 155        | 130        | 105        | 140        |
|                  | TORQUE        | kgm   | 30               | 38         | 37         | 27         | 38         |
| PERFOR-<br>MANCE | MAX.SPD       | km/h  | 107              | 129        | 122        | 102        | 116        |
|                  | MAX.GRD       | tan θ | 0.359            | 0.382      | 0.372      | 0.322      | 0.379      |
|                  | T/RAD         | m     | 5.2              | ←          | ←          | ←          | ←          |
| T / M            | MODEL         |       | M3S5             | M035S5     | ←          | M3S5       | M035S5     |
|                  | GEAR<br>RATIO | 1st   | 5.181            | 5.380      | ←          | 5.181      | 5.380      |
|                  |               | 2nd   | 2.865            | 3.028      | ←          | 2.865      | 3.208      |
|                  |               | 3rd   | 1.593            | 1.700      | ←          | 1.593      | 1.700      |
|                  |               | 4th   | 1.000            | 1.000      | ←          | 1.000      | 1.000      |
|                  |               | 5th   | 0.739            | 0.722      | ←          | 0.739      | 0.722      |
|                  |               | 6th   | -                | -          | ←          | -          | -          |
|                  |               | 7th   | -                | -          | ←          | -          | -          |
|                  | REV           |       | 5.181            | 5.380      | ←          | 5.181      | 5.380      |
| R/AXLE           | MODEL         |       | D3H              | D033H      | ←          | D3H        | D033H      |
|                  | RATIO         |       | 6.666            | 5.428      | ←          | 6.666      | 5.428      |
| TIRE             | FRT           |       | 7.50R16-14PR     | ←          | ←          | ←          | ←          |
|                  | RR            |       | 7.50R16-14PR     | ←          | ←          | ←          | ←          |

|                  |               |       | WIDE CAB          |            |            |            |            |
|------------------|---------------|-------|-------------------|------------|------------|------------|------------|
|                  |               |       | HD72 STANDARD CAB |            |            |            |            |
|                  |               |       | HIGH DECK LONG    |            |            |            |            |
|                  |               |       | HD72CS-LHL        | HD72CS-LHA | HD72CS-LHB | HD72CS-LHC | HD72CS-LHD |
| O. A. L          |               | mm    | 6,670             | ←          | ←          | ←          | 6,715      |
| O. A. W          |               | mm    | 2,170             | ←          | ←          | ←          | ←          |
| O. A. H          |               | mm    | 2,355             | ←          | ←          | ←          | ←          |
| BODY<br>INSIDE   | LENTH         | mm    | 4,880             | ←          | ←          | ←          | ←          |
|                  | WIDTH         | mm    | 2,060             | ←          | ←          | ←          | ←          |
|                  | HEIGHT        | mm    | 380               | ←          | ←          | ←          | ←          |
| DECK OFFSET      |               | mm    | 635               | ←          | ←          | ←          | ←          |
| WHEEL BASE       |               | mm    | 3,735             | ←          | ←          | ←          | ←          |
| WHEEL<br>TREAD   | FRT           | mm    | 1,650             | ←          | ←          | ←          | 1,667      |
|                  | RR            | mm    | 1,495             | ←          | ←          | ←          | ←          |
| OVER<br>HANG     | FRT           | mm    | 1,075             | ←          | ←          | ←          | 1,120      |
|                  | RR            | mm    | 1,860             | ←          | ←          | ←          | ←          |
| KERB WT          | FRT           | kg    | 1,695             | 1,730      | 1,730      | 1,695      | 1,760      |
|                  | RR            | kg    | 1,365             | 1,385      | 1,385      | 1,365      | 1,405      |
|                  | TTL           | kg    | 3,060             | 3,115      | 3,115      | 3,060      | 3,165      |
| G.V.W            | FRT           | kg    | 2,480             | 2,515      | 2,515      | 2,480      | 2,545      |
|                  | RR            | kg    | 4,280             | 4,300      | 4,300      | 4,280      | 4,320      |
|                  | TTL           | kg    | 6,760             | 6,815      | 6,815      | 6,760      | 6,865      |
| ENGINE           | MODEL         |       | D4AL              | D4DA       | D4DB       | D4DC       | D4DD       |
|                  | ASPIRATION    |       | TCI               | TCI        | TCI        | NA         | TCI        |
|                  | DISPLACEMENT  | cc    | 3.3 l             | 3.9 l      | 3.9 l      | 3.9 l      | 3.9 l      |
|                  | OUTPUT        | ps    | 120               | 155        | 130        | 105        | 140        |
|                  | TORQUE        | kgm   | 30                | 38         | 37         | 27         | 38         |
| PERFOR-<br>MANCE | MAX.SPD       | km/h  | 107.0             | 129.0      | 121.6      | 102.6      | 116.1      |
|                  | MAX.GRD       | tan θ | 0.350             | 0.373      | 0.362      | 0.314      | 0.370      |
|                  | T/RAD         | m     | 7.0               | ←          | ←          | ←          | ←          |
| T / M            | MODEL         |       | M3S5              | M035S5     | ←          | M3S5       | M035S5     |
|                  | GEAR<br>RATIO | 1st   | 5.181             | 5.380      | ←          | 5.181      | 5.380      |
|                  |               | 2nd   | 2.865             | 3.028      | ←          | 2.865      | 3.208      |
|                  |               | 3rd   | 1.593             | 1.700      | ←          | 1.593      | 1.700      |
|                  |               | 4th   | 1.000             | 1.000      | ←          | 1.000      | 1.000      |
|                  |               | 5th   | 0.739             | 0.722      | ←          | 0.739      | 0.722      |
|                  |               | 6th   | -                 | -          | ←          | -          | -          |
|                  |               | 7th   | -                 | -          | ←          | -          | -          |
|                  | REV           |       | 5.181             | 5.380      | ←          | 5.181      | 5.380      |
| R/AXLE           | MODEL         |       | D3H               | D033H      | ←          | D3H        | D033H      |
|                  | RATIO         |       | 6.666             | 5.428      | ←          | 6.666      | 5.428      |
| TIRE             | FRT           |       | 7.50R16-12PR      | ←          | ←          | ←          | ←          |
|                  | RR            |       | 7.50R16-12PR      | ←          | ←          | ←          | ←          |

|                  |               |       | WIDE CAB       |            |            |            |            |
|------------------|---------------|-------|----------------|------------|------------|------------|------------|
|                  |               |       | HD72 SUPER CAB |            |            |            |            |
|                  |               |       | HIGH DECK LONG |            |            |            |            |
|                  |               |       | HD72CP-LHL     | HD72CP-LHA | HD72CP-LHB | HD72CP-LHC | HD72CP-LHD |
| O. A. L          |               | mm    | 6,670          | ←          | ←          | ←          | 6,715      |
| O. A. W          |               | mm    | 2,170          | ←          | ←          | ←          | ←          |
| O. A. H          |               | mm    | 2,355          | ←          | ←          | ←          | ←          |
| BODY<br>INSIDE   | LENTH         | mm    | 4,580          | ←          | ←          | ←          | ←          |
|                  | WIDTH         | mm    | 2,060          | ←          | ←          | ←          | ←          |
|                  | HEIGHT        | mm    | 380            | ←          | ←          | ←          | ←          |
| DECK OFFSET      |               | mm    | 485            | ←          | ←          | ←          | ←          |
| WHEEL BASE       |               | mm    | 3,735          | ←          | ←          | ←          | ←          |
| WHEEL<br>TREAD   | FRT           | mm    | 1,650          | ←          | ←          | ←          | 1,667      |
|                  | RR            | mm    | 1,495          | ←          | ←          | ←          | ←          |
| OVER<br>HANG     | FRT           | mm    | 1,075          | ←          | ←          | ←          | 1,120      |
|                  | RR            | mm    | 1,860          | ←          | ←          | ←          | ←          |
| KERB WT          | FRT           | kg    | 1,665          | 1,700      | 1,700      | 1,665      | 1,730      |
|                  | RR            | kg    | 1,390          | 1,410      | 1,410      | 1,390      | 1,430      |
|                  | TTL           | kg    | 3,055          | 3,110      | 3,110      | 3,055      | 3,160      |
| G.V.W            | FRT           | kg    | 2,305          | 2,340      | 2,340      | 2,305      | 2,370      |
|                  | RR            | kg    | 4,440          | 4,460      | 4,460      | 4,440      | 4,480      |
|                  | TTL           | kg    | 6,745          | 6,800      | 6,800      | 6,745      | 6,850      |
| ENGINE           | MODEL         |       | D4AL           | D4DA       | D4DB       | D4DC       | D4DD       |
|                  | ASPIRATION    |       | TCI            | TCI        | TCI        | NA         | TCI        |
|                  | DISPLACEMENT  | cc    | 3.3 ℓ          | 3.9 ℓ      | 3.9 ℓ      | 3.9 ℓ      | 3.9 ℓ      |
|                  | OUTPUT        | ps    | 120            | 155        | 130        | 105        | 140        |
|                  | TORQUE        | kgm   | 30             | 38         | 37         | 27         | 38         |
| PERFOR-<br>MANCE | MAX.SPD       | km/h  | 107.0          | 129.0      | 121.6      | 102.6      | 116.1      |
|                  | MAX.GRD       | tan Θ | 0.351          | 0.373      | 0.363      | 0.315      | 0.371      |
|                  | T/RAD         | m     | 7.0            | ←          | ←          | ←          | ←          |
| T / M            | MODEL         |       | M3S5           | M035S5     | ←          | M3S5       | M035S5     |
|                  | GEAR<br>RATIO | 1st   | 5.181          | 5.380      | ←          | 5.181      | 5.380      |
|                  |               | 2nd   | 2.865          | 3.028      | ←          | 2.865      | 3.208      |
|                  |               | 3rd   | 1.593          | 1.700      | ←          | 1.593      | 1.700      |
|                  |               | 4th   | 1.000          | 1.000      | ←          | 1.000      | 1.000      |
|                  |               | 5th   | 0.739          | 0.722      | ←          | 0.739      | 0.722      |
|                  |               | 6th   | -              | -          | ←          | -          | -          |
|                  |               | 7th   | -              | -          | ←          | -          | -          |
|                  | REV           |       | 5.181          | 5.380      | ←          | 5.181      | 5.380      |
| R/AXLE           | MODEL         |       | D3H            | D033H      | ←          | D3H        | D033H      |
|                  | RATIO         |       | 6.666          | 5.428      | ←          | 6.666      | 5.428      |
| TIRE             | FRT           |       | 7.50R16-12PR   | ←          | ←          | ←          | ←          |
|                  | RR            |       | 7.50R16-12PR   | ←          | ←          | ←          | ←          |

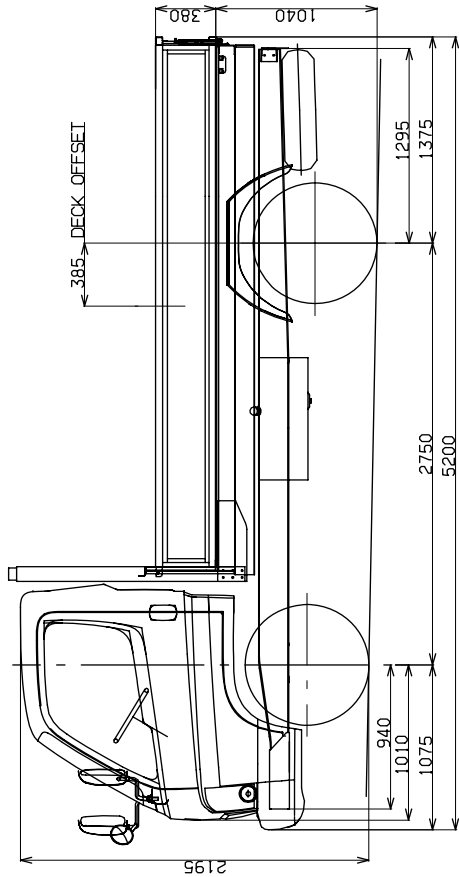
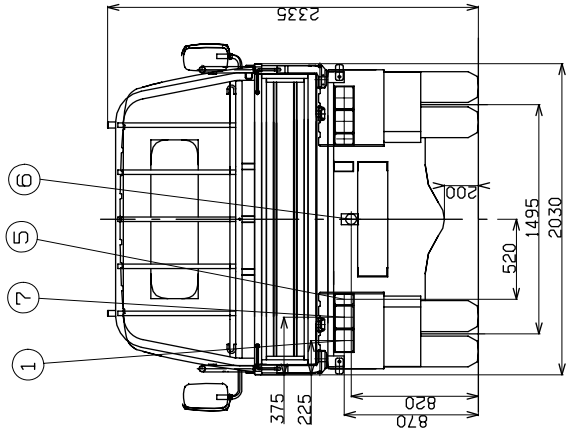
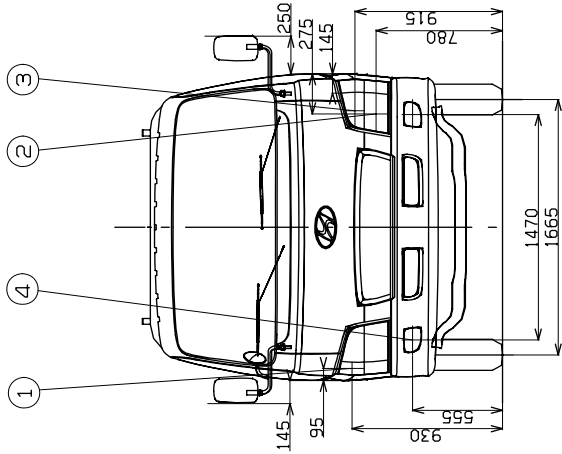
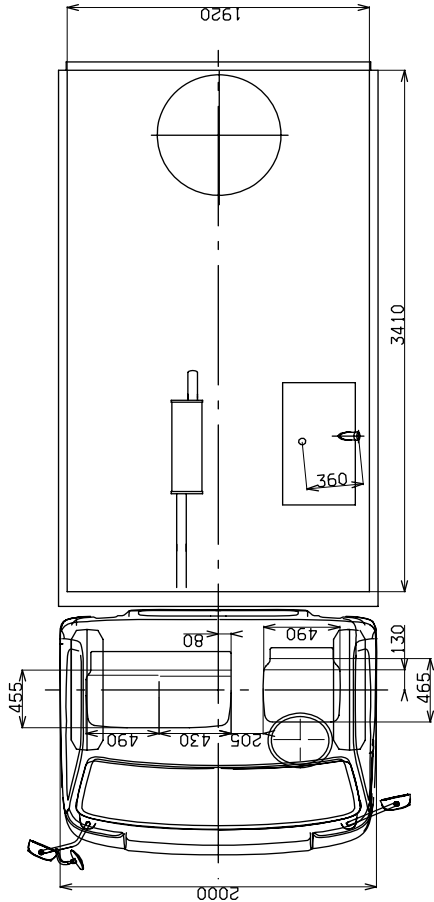
|                  |               |       | WIDE CAB          |            |            |            |
|------------------|---------------|-------|-------------------|------------|------------|------------|
|                  |               |       | HD78 STANDARD CAB |            |            |            |
|                  |               |       | HIGH DECK LONG    |            |            |            |
|                  |               |       | HD78CS-LHA        | HD78CS-LHB | HD78CS-LHC | HD78CS-LHD |
| O. A. L          |               | mm    | 6,670             | ←          | ←          | 6,715      |
| O. A. W          |               | mm    | 2,170             | ←          | ←          | ←          |
| O. A. H          |               | mm    | 2,355             | ←          | ←          | ←          |
| BODY<br>INSIDE   | LENTH         | mm    | 4,880             | ←          | ←          | ←          |
|                  | WIDTH         | mm    | 2,060             | ←          | ←          | ←          |
|                  | HEIGHT        | mm    | 380               | ←          | ←          | ←          |
| DECK OFFSET      |               | mm    | 635               | ←          | ←          | ←          |
| WHEEL BASE       |               | mm    | 3,735             | ←          | ←          | ←          |
| WHEEL<br>TREAD   | FRT           | mm    | 1,650             | ←          | ←          | 1,667      |
|                  | RR            | mm    | 1,495             | ←          | ←          | ←          |
| OVER<br>HANG     | FRT           | mm    | 1,075             | ←          | ←          | 1,120      |
|                  | RR            | mm    | 1,860             | ←          | ←          | ←          |
| KERB WT          | FRT           | kg    | 1,730             | 1,760      | 1,695      | 1,760      |
|                  | RR            | kg    | 1,385             | 1,395      | 1,365      | 1,405      |
|                  | TTL           | kg    | 3,115             | 3,155      | 3,060      | 3,165      |
| G.V.W            | FRT           | kg    | 2,515             | 2,560      | 2,480      | 2,545      |
|                  | RR            | kg    | 4,300             | 4,390      | 4,280      | 4,320      |
|                  | TTL           | kg    | 6,815             | 6,950      | 6,760      | 6,865      |
| ENGINE           | MODEL         |       | D4DA              | D4DB       | D4DC       | D4DD       |
|                  | ASPIRATION    |       | TCI               | TCI        | NA         | TCI        |
|                  | DISPLACEMENT  | cc    | 3.9 l             | 3.9 l      | 3.9 l      | 3.9 l      |
|                  | OUTPUT        | ps    | 155               | 130        | 105        | 140        |
|                  | TORQUE        | kgm   | 38                | 37         | 27         | 38         |
| PERFOR-<br>MANCE | MAX.SPD       | km/h  | 131               | 129        | 111        | 116        |
|                  | MAX.GRD       | tan Θ | 0.358             | 0.355      | 0.301      | 0.356      |
|                  | T/RAD         | m     | 7.0               | ←          | ←          | ←          |
| T / M            | MODEL         |       | M035S5            | ←          | M3S5       | M035S5     |
|                  | GEAR<br>RATIO | 1st   | 5.380             | ←          | 5.181      | 5.380      |
|                  |               | 2nd   | 3.208             | ←          | 2.865      | 3.208      |
|                  |               | 3rd   | 1.700             | ←          | 1.593      | 1.700      |
|                  |               | 4th   | 1.000             | ←          | 1.000      | 1.000      |
|                  |               | 5th   | 0.722             | ←          | 0.739      | 0.722      |
|                  |               | 6th   | -                 | ←          | -          | -          |
|                  |               | 7th   | -                 | ←          | -          | -          |
|                  |               | REV   | 5.300             | ←          | 5.181      | 5.300      |
| R/AXLE           | MODEL         |       | D033H             | ←          | D3H        | D033H      |
|                  | RATIO         |       | 5.428             | ←          | 6.166      | 5.428      |
| TIRE             | FRT           |       | 7.50R16-12PR      | ←          | ←          | ←          |
|                  | RR            |       | 7.50R16-12PR      | ←          | ←          | ←          |

|                  |               |       | NARROW CAB       |            |                |            |
|------------------|---------------|-------|------------------|------------|----------------|------------|
|                  |               |       | HD65 STADARD CAB |            |                |            |
|                  |               |       | HIGH DECK SHORT  |            | HIGH DECK LONG |            |
|                  |               |       | HD65CN-SHF       | HD65CN-SHL | HD65CN-LHF     | HD65CN-LHL |
| O. A. L          |               | mm    | 4,940            | ←          | 6,120          | ←          |
| O. A. W          |               | mm    | 1,900            | ←          | ←              | ←          |
| O. A. H          |               | mm    | 2,275            | ←          | 2,275          | ←          |
| BODY<br>INSIDE   | LENTH         | mm    | 3,110            | ←          | 4,350          | ←          |
|                  | WIDTH         | mm    | 1,790            | ←          | ←              | ←          |
|                  | HEIGHT        | mm    | 380              | ←          | ←              | ←          |
| DECK OFFSET      |               | mm    | 335              | ←          | 560            | ←          |
| WHEEL BASE       |               | mm    | 2,550            | ←          | 3,375          | 3,375      |
| WHEEL<br>TREAD   | FRT           | mm    | 1,475            | ←          | ←              | ←          |
|                  | RR            | mm    | 1,435            | ←          | ←              | ←          |
| OVER<br>HANG     | FRT           | mm    | 1,075            | ←          | ←              | ←          |
|                  | RR            | mm    | 1,270            | 1,670      | 1,680          | 1,670      |
| KERB WT          | FRT           | kg    | 1,500            | 1,530      | 1,540          | 1,570      |
|                  | RR            | kg    | 1,090            | 1,100      | 1,180          | 1,190      |
|                  | TTL           | kg    | 2,590            | 2,630      | 2,720          | 2,760      |
| G.V.W            | FRT           | kg    | 2,015            | 2,045      | 2,140          | 2,170      |
|                  | RR            | kg    | 3,270            | 3,280      | 3,275          | 3,285      |
|                  | TTL           | kg    | 5,285            | 5,325      | 5,415          | 5,455      |
| ENGINE           | MODEL         |       | D4AF             | D4AL       | D4AF           | D4AL       |
|                  | ASPIRATION    |       | NA               | TCI        | NA             | TCI        |
|                  | DISPLACEMENT  | cc    | 3.6 l            | 3.3 l      | 3.6 l          | 3.3 l      |
|                  | OUTPUT        | ps    | 96               | 120        | 96             | 120        |
|                  | TORQUE        | kgm   | 24               | 30         | 24             | 30         |
| PERFOR-<br>MANCE | MAX.SPD       | km/h  | 103              | 121        | 103            | 121        |
|                  | MAX.GRD       | tan Θ | 0.392            | 0.393      | 0.383          | 0.384      |
|                  | T/RAD         | m     | 5.4              | ←          | 6.8            | ←          |
| T / M            | MODEL         |       | M2S5             | M3S5       | M2S5           | M3S5       |
|                  | GEAR<br>RATIO | 1st   | 5.494            | 5.181      | 5.494          | 5.181      |
|                  |               | 2nd   | 2.836            | 2.865      | 2.836          | 2.865      |
|                  |               | 3rd   | 1.592            | 1.593      | 1.592          | 1.593      |
|                  |               | 4th   | 1.000            | 1.000      | 1.000          | 1.000      |
|                  |               | 5th   | 0.746            | 0.739      | 0.746          | 0.739      |
|                  |               | 6th   | -                | -          | -              | -          |
|                  |               | 7th   | -                | -          | -              | -          |
|                  | REV           |       | 5.494            | 5.181      | 5.494          | 5.181      |
| R/AXLE           | MODEL         |       | D2H              | D3H        | D2H            | D3H        |
|                  | RATIO         |       | 6.666            | 5.714      | 6.666          | 5.714      |
| TIRE             | FRT           |       | 7.00R16-10PR     | ←          | ←              | ←          |
|                  | RR            |       | 7.00R16-10PR     | ←          | ←              | ←          |



### 3. EXTERIOR DRAWING OF THE COMPLETE VEHICLE

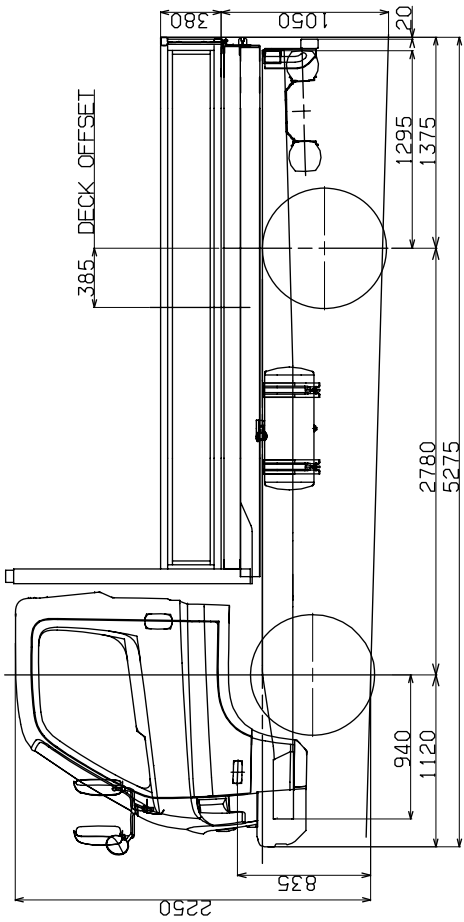
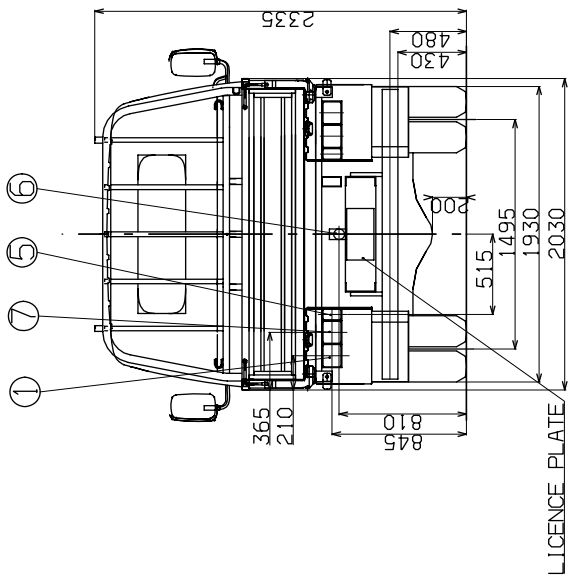
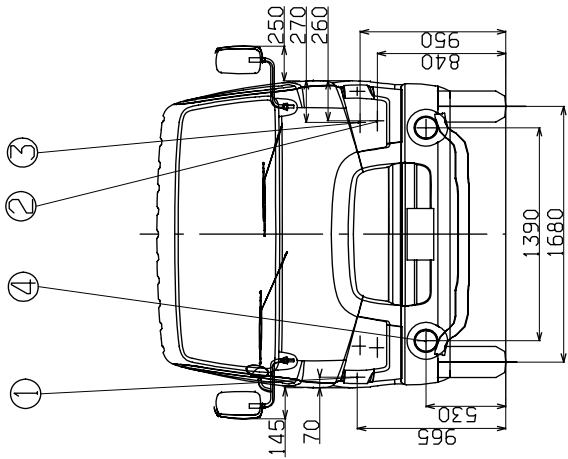
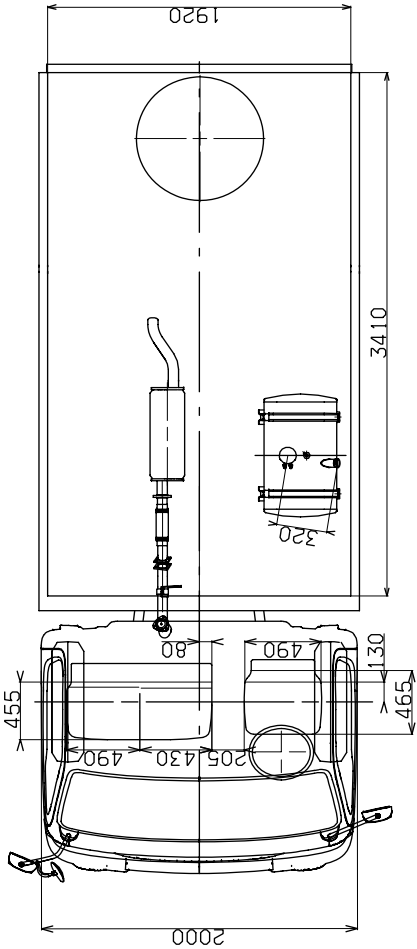
|   |                         |   |                      |
|---|-------------------------|---|----------------------|
| 1 | TURN SIGNAL LAMP        | 5 | BACK-UP LAMP         |
|   | CORNER LAMP             | 6 | LICENCE PLATE LAMP   |
| 2 | HEAD LAMP, PARKING LAMP | 7 | TAIL LAMP, STOP LAMP |
| 3 | POSITION LAMP           |   | REAR REFLECTOR       |
| 4 | FOG LAMP(OPT. )         |   |                      |



HD65 SHORT (D4AF/AL/DB-d/DC) STD CARGO TRUCK

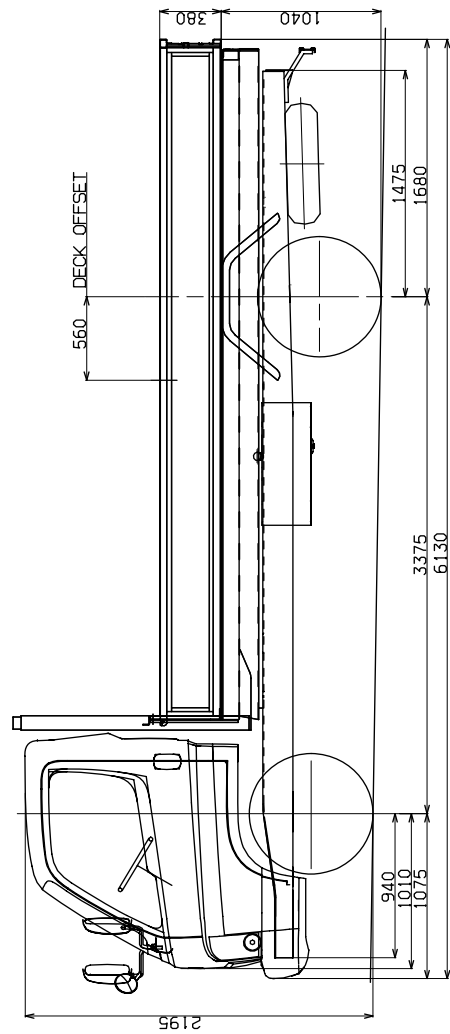
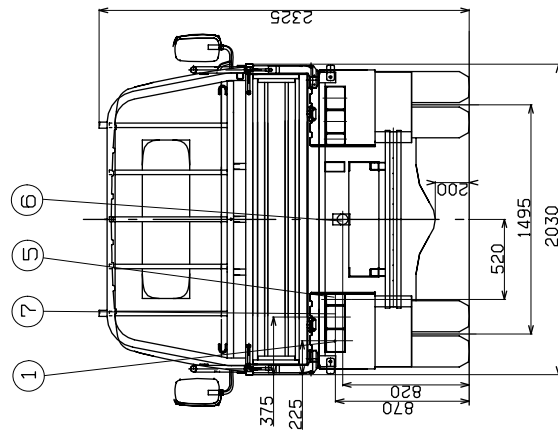
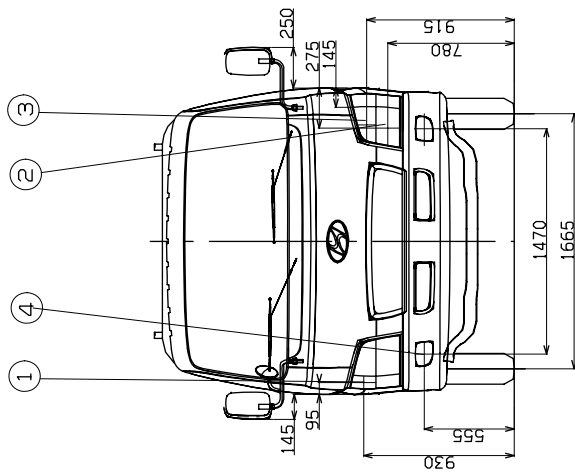
W.B: 2750mm

|   |                         |   |                      |
|---|-------------------------|---|----------------------|
| 1 | TURN SIGNAL LAMP        | 5 | BACK-UP LAMP         |
|   | CORNERING LAMP          | 6 | LICENCE PLATE LAMP   |
| 2 | HEAD LAMP, PARKING LAMP | 7 | TAIL LAMP, STOP LAMP |
| 3 | POSITION LAMP           |   | REAR REFLECTOR       |
| 4 | FOG LAMP (OPT.)         |   |                      |



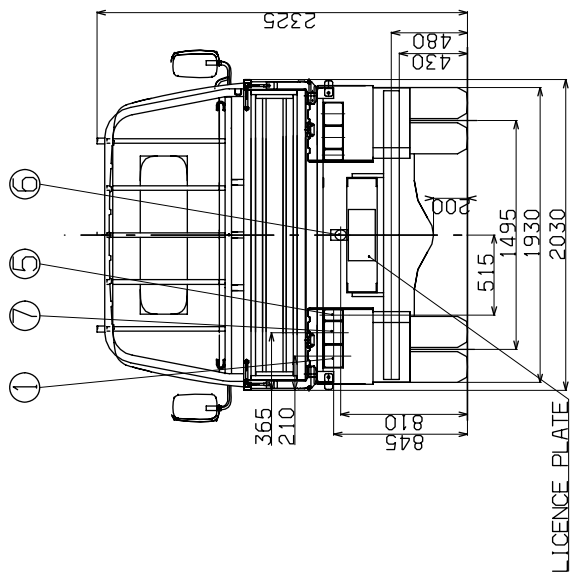
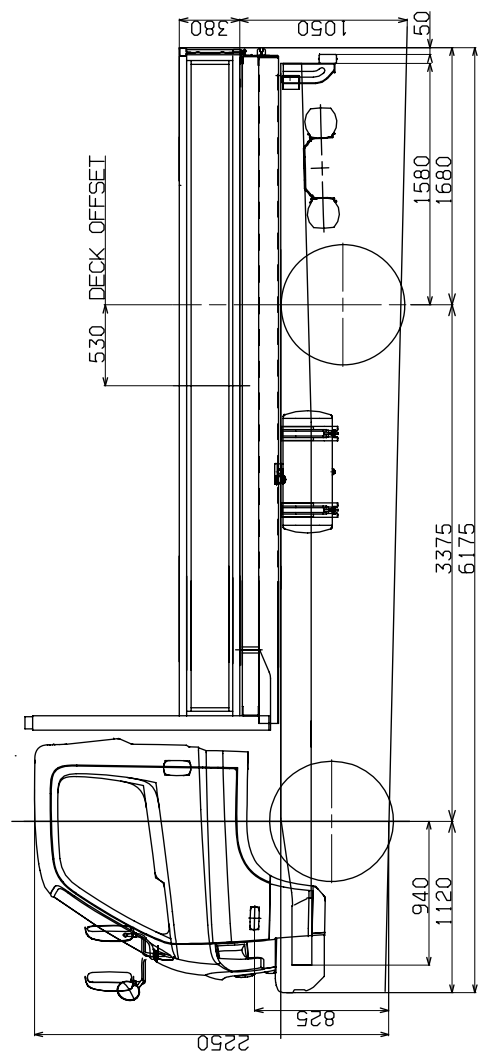
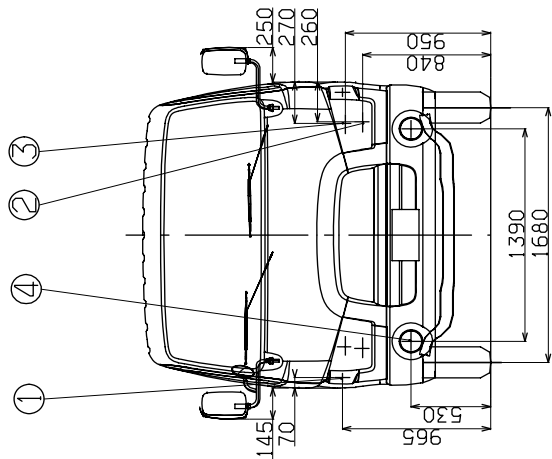
HD65 SHORT (D4DD) STD CARGO TRUCK

W.B: 2780mm

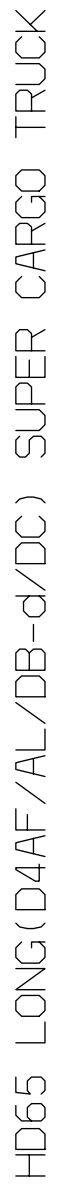
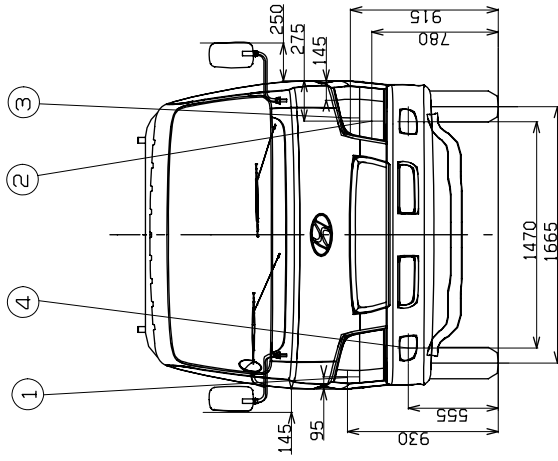


HD65 LONG(D4AF/AL/DB-d/DC) STD CARGO TRUCK

W.B: 3375mm

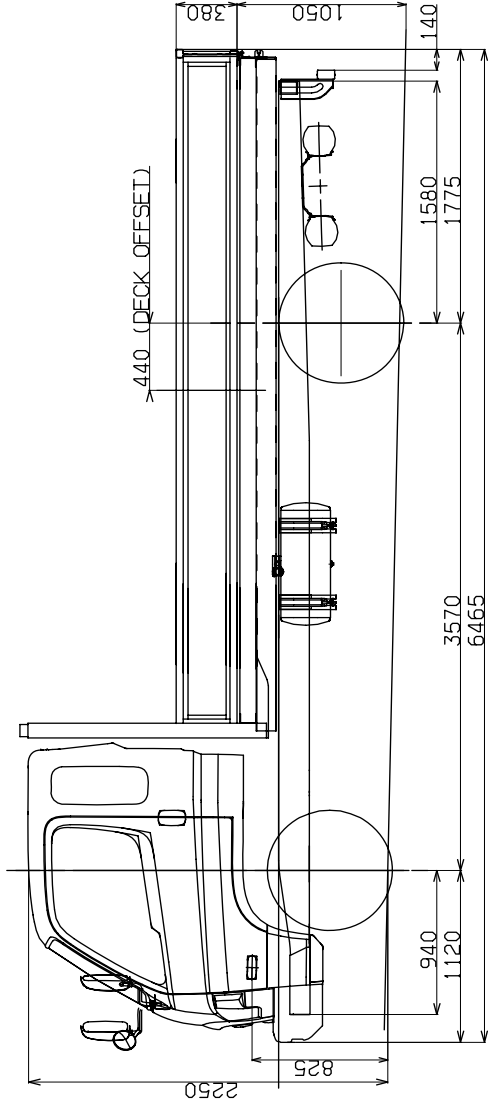
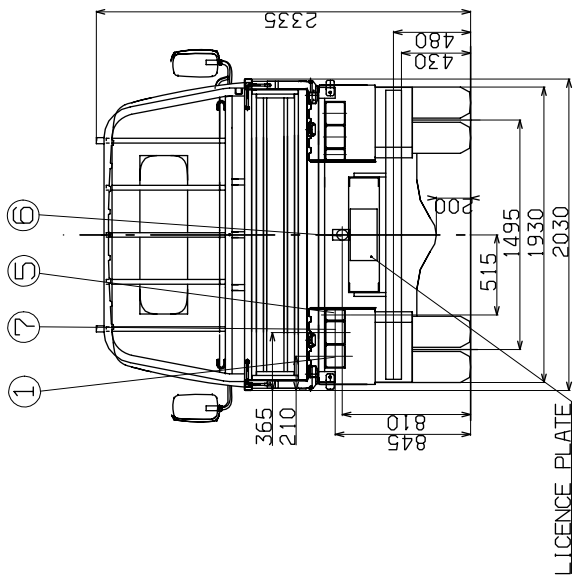
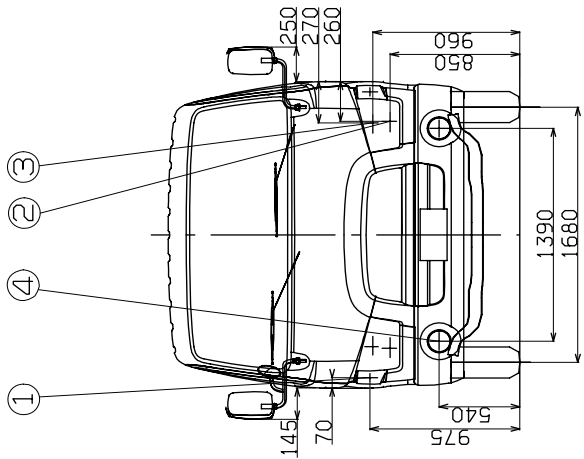
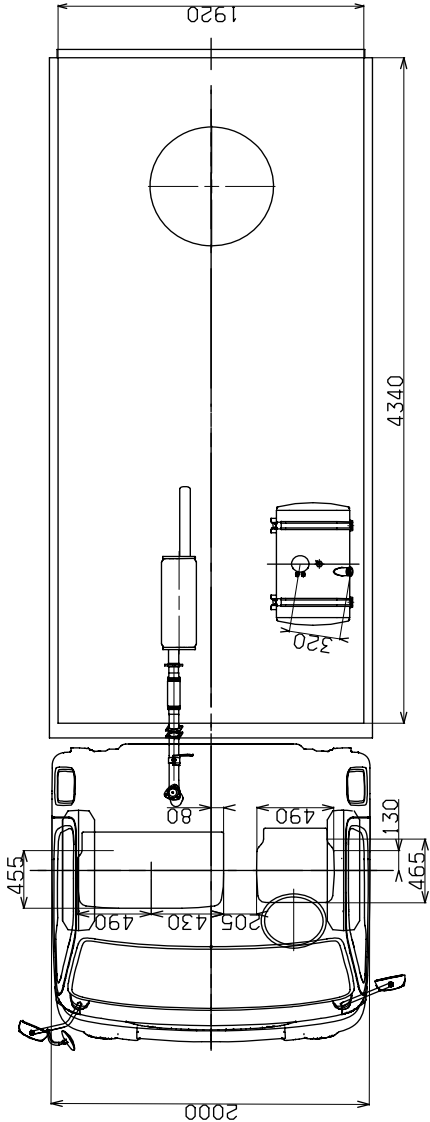


W.B: 3375mm



W.B: 3570mm

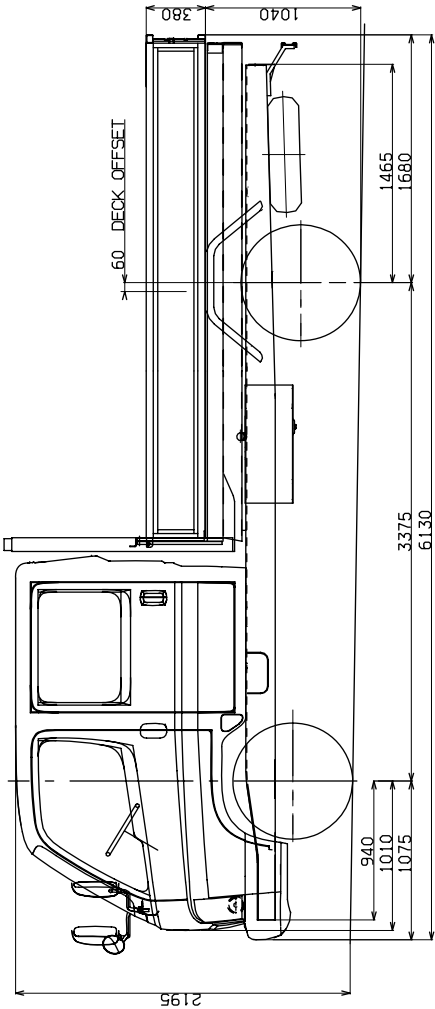
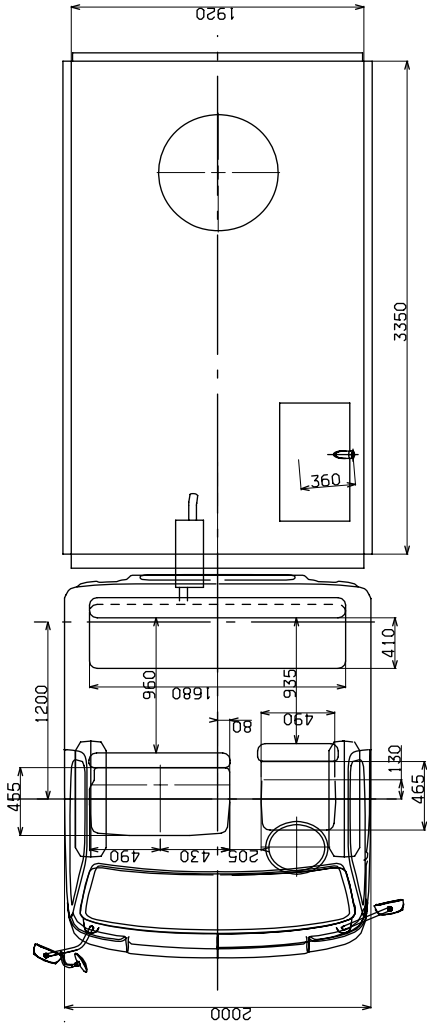
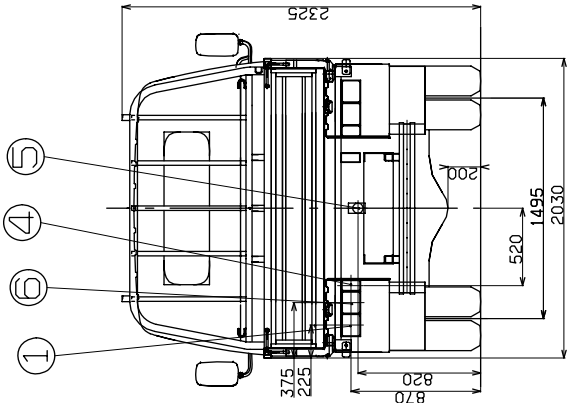
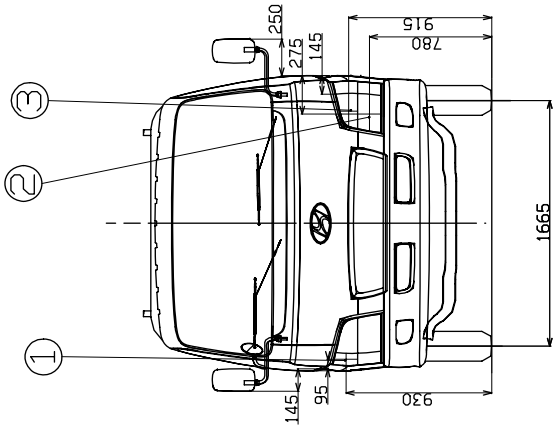
|   |                         |   |                      |
|---|-------------------------|---|----------------------|
| 1 | TURN SIGNAL LAMP        | 5 | BACK-UP LAMP         |
|   | CORNERING LAMP          | 6 | LICENCE PLATE LAMP   |
| 2 | HEAD LAMP, PARKING LAMP | 7 | TAIL LAMP, STOP LAMP |
| 3 | POSITION LAMP           |   | REAR REFLECTOR       |
| 4 | FOG LAMP(OPT. )         |   |                      |



HD65 LONG(D4DD) SUPER CARGO TRUCK

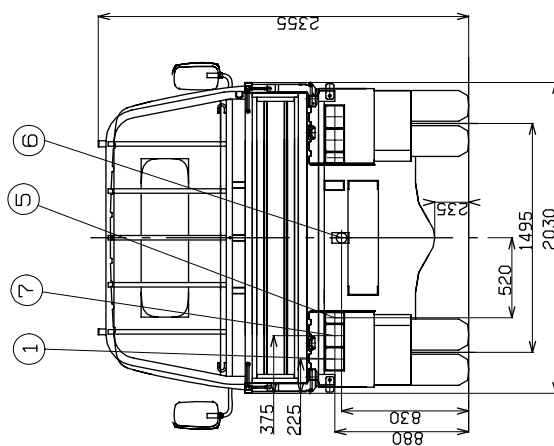
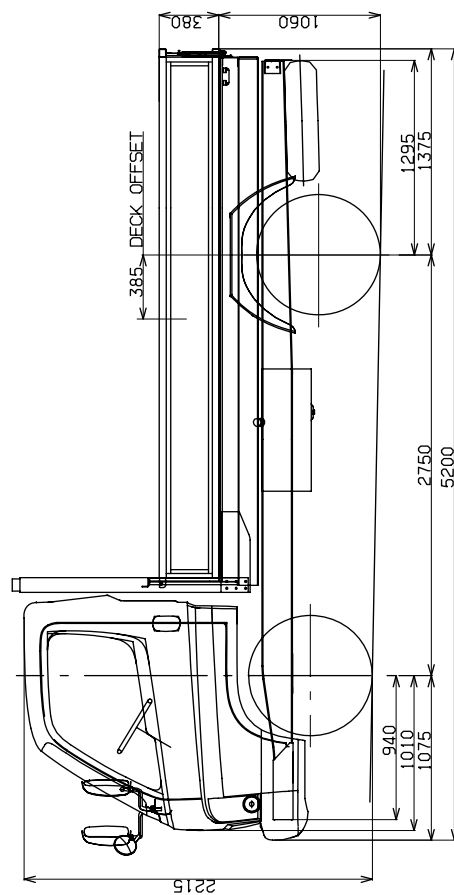
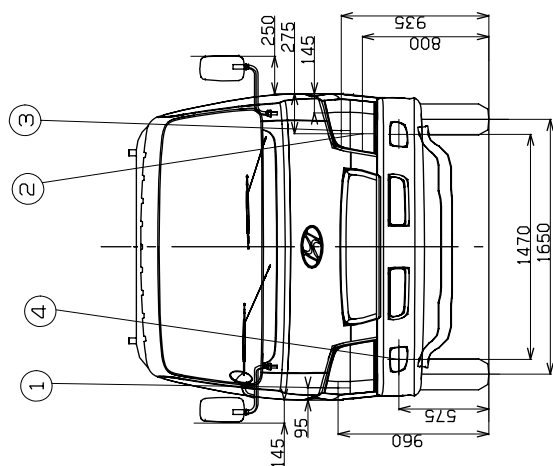
W.B: 3570mm

|   |                         |   |                      |
|---|-------------------------|---|----------------------|
| 1 | TURN SIGNAL LAMP        | 5 | LICENCE PLATE LAMP   |
|   | CORNERING LAMP          | 6 | TAIL LAMP, STOP LAMP |
| 2 | HEAD LAMP, PARKING LAMP |   |                      |
| 3 | POSITION LAMP           |   |                      |
| 4 | BACK-UP LAMP            |   |                      |



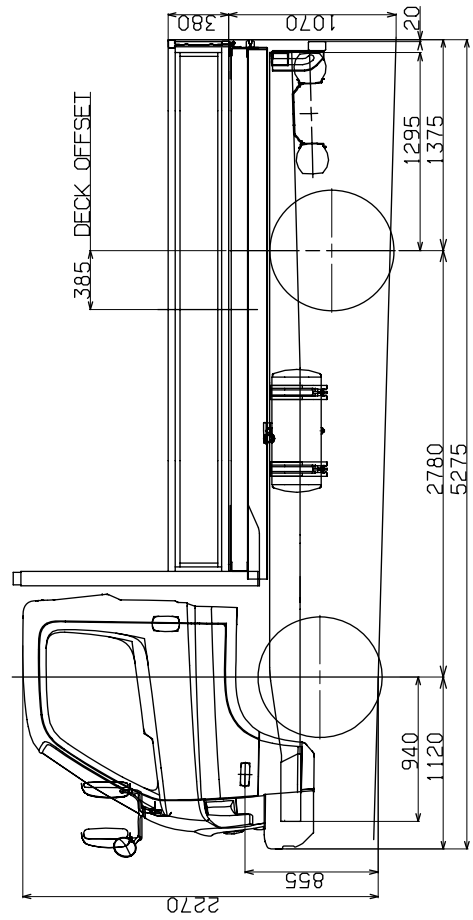
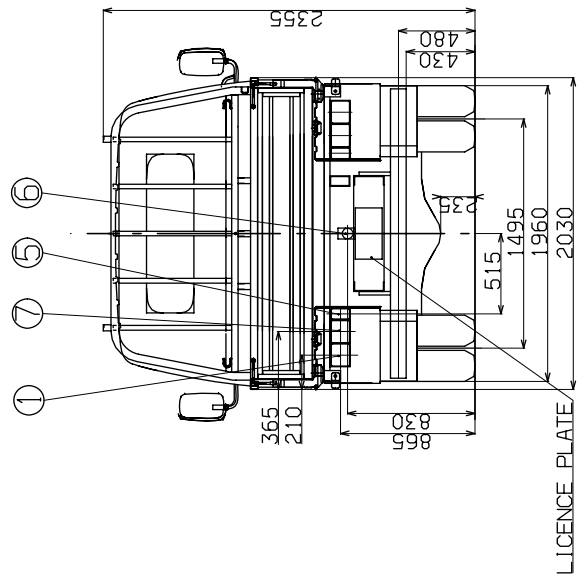
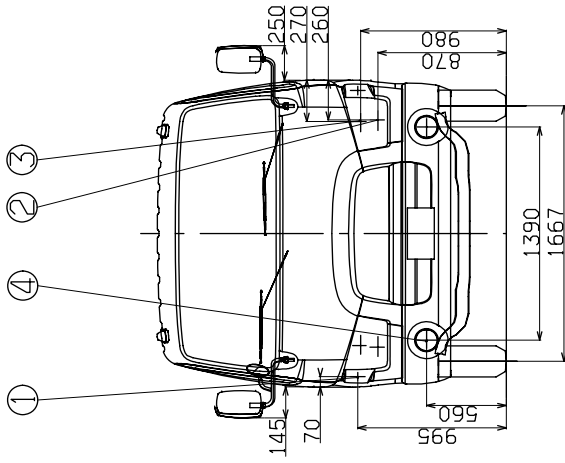
HD65 DOUBLE (D4AF/AL) CARGO TRUCK W. B: 3375mm



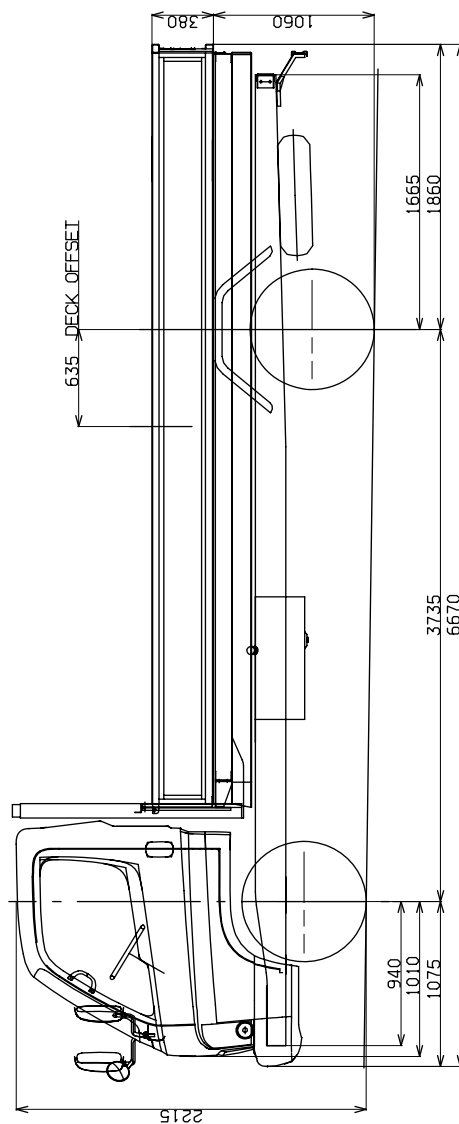
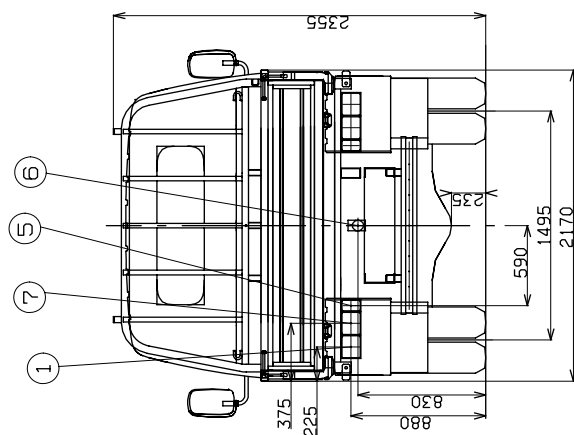
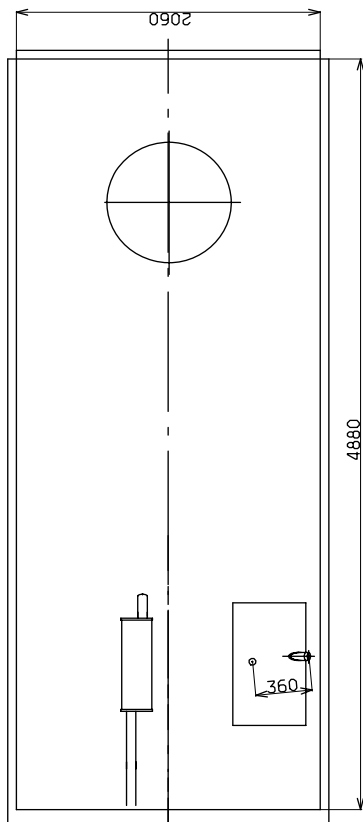


HD72 SHORT (D4AL/DA/DB/DC) STD CARGO TRUCK

W.B:2750mm

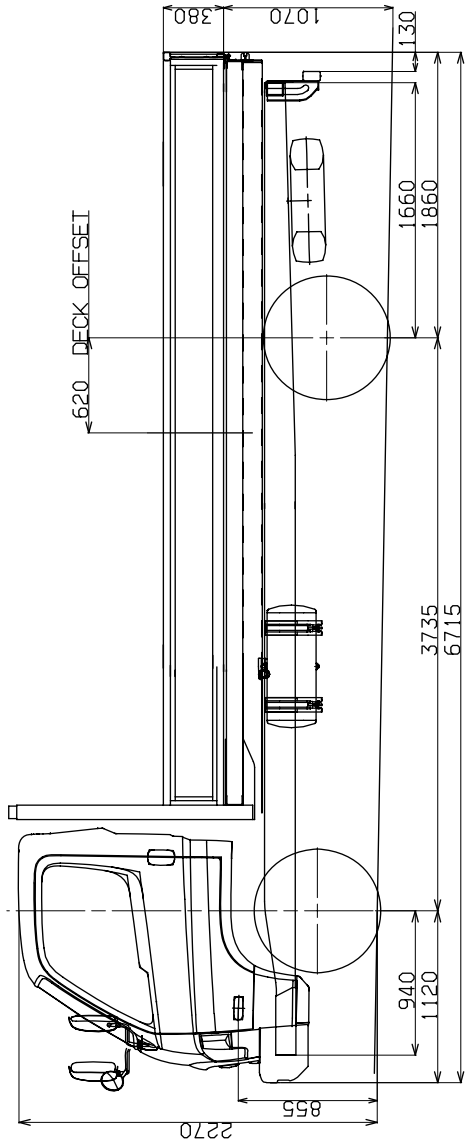
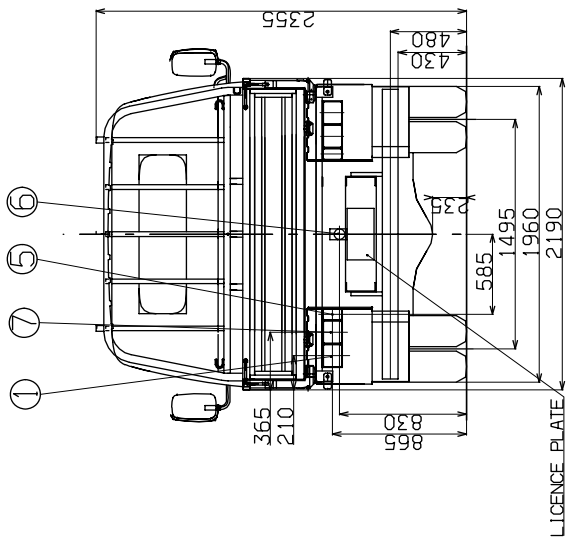
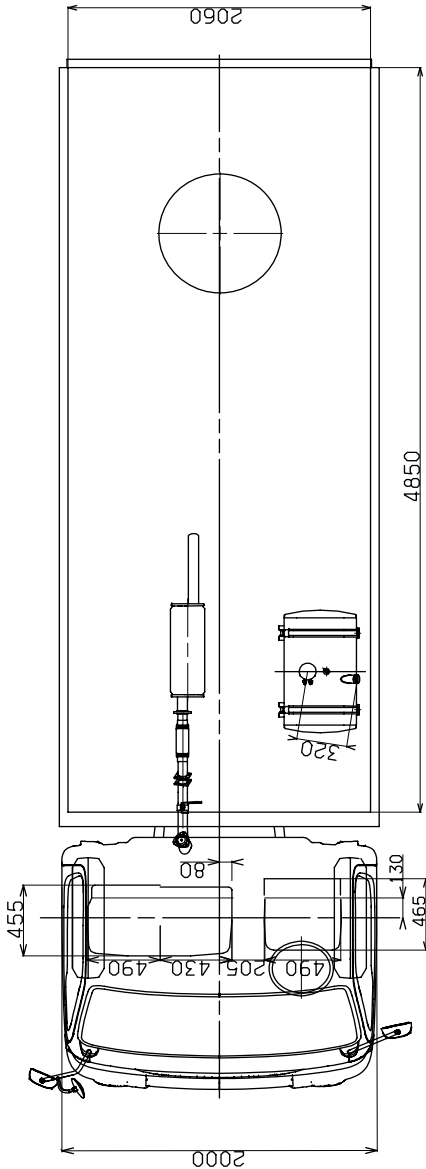
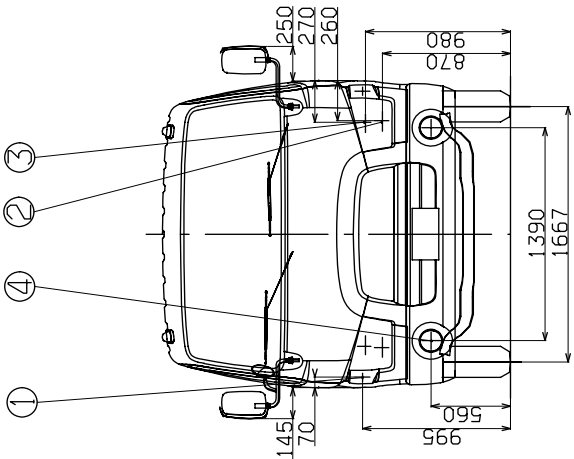


W.B:2780mm



W.B: 3735mm

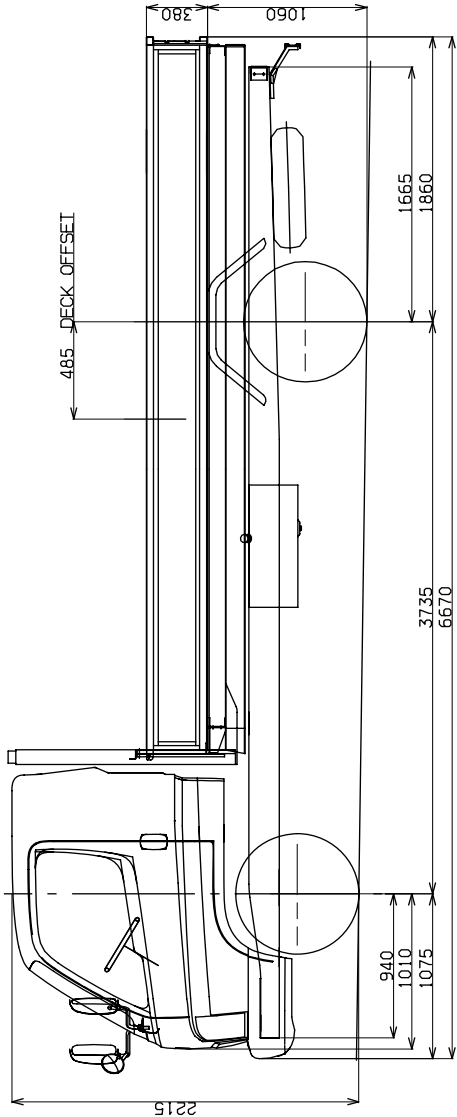
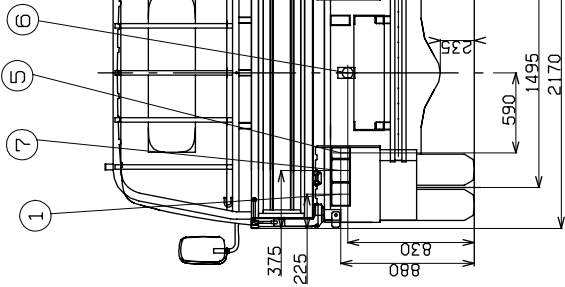
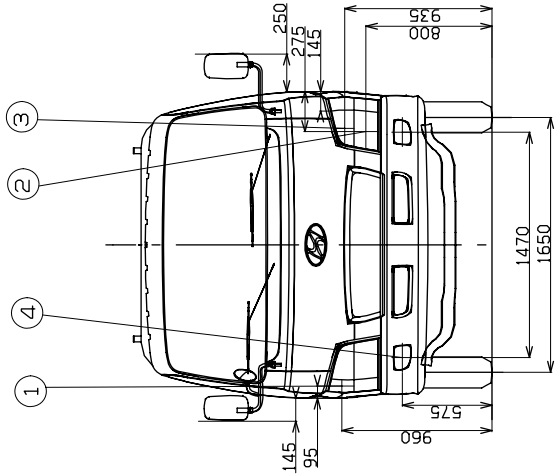
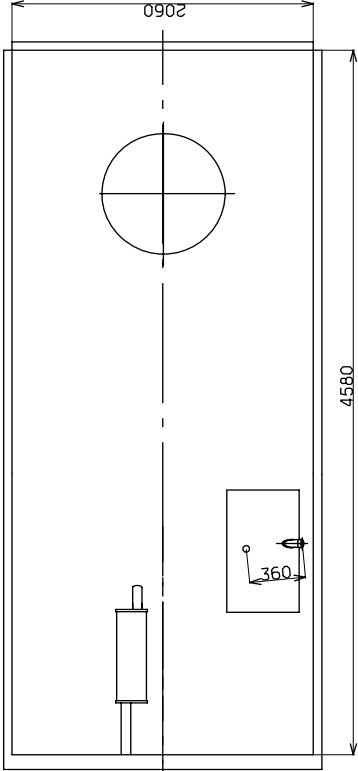
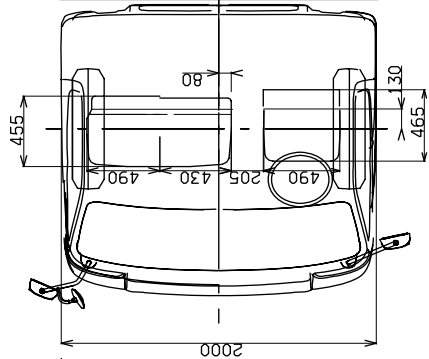
|   |                         |   |                      |
|---|-------------------------|---|----------------------|
| 1 | TURN SIGNAL LAMP        | 5 | BACK-UP LAMP         |
|   | CORNERING LAMP          | 6 | LICENCE PLATE LAMP   |
| 2 | HEAD LAMP, PARKING LAMP | 7 | TAIL LAMP, STOP LAMP |
| 3 | POSITION LAMP           |   | REAR REFLECTOR       |
| 4 | FOG LAMP(OPT. )         |   |                      |



HD72 LONG(D4DD) STD CARGO TRUCK

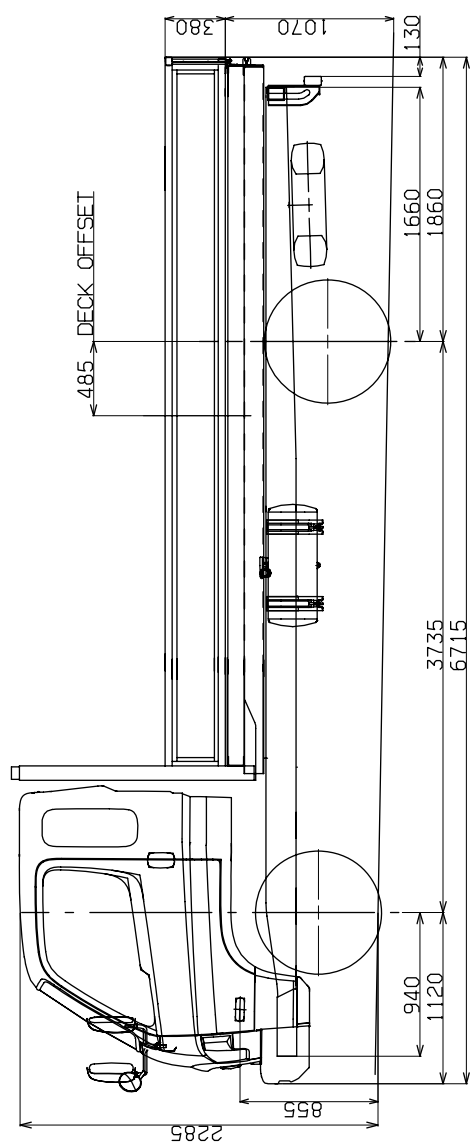
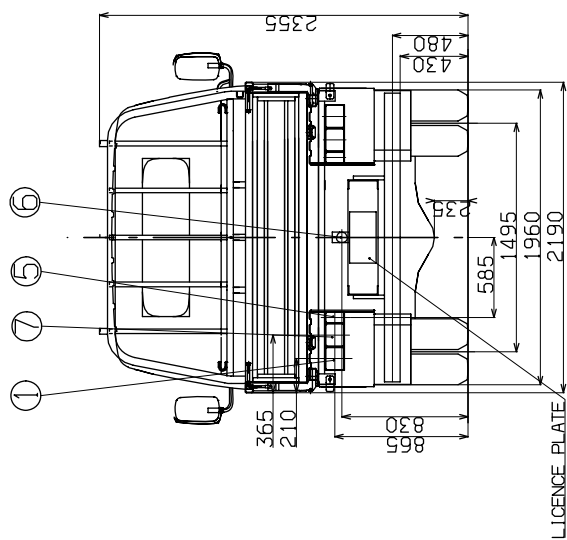
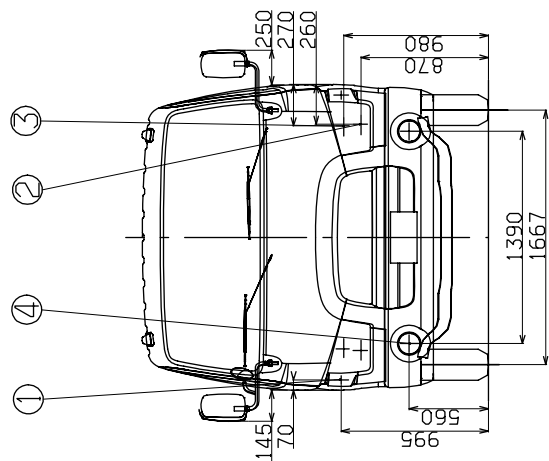
W.B: 3735mm

|   |                         |   |                      |
|---|-------------------------|---|----------------------|
| 1 | TURN SIGNAL LAMP        | 5 | BACK-UP LAMP         |
|   | CORNERING LAMP          | 6 | LICENCE PLATE LAMP   |
| 2 | HEAD LAMP, PARKING LAMP | 7 | TAIL LAMP, STOP LAMP |
| 3 | POSITION LAMP           |   | REAR REFLECTOR       |
| 4 | FOG LAMP(OPT.)          |   |                      |



HD72 LONG(D4AL/DA/DB/DC) SUPER CARGO TRUCK

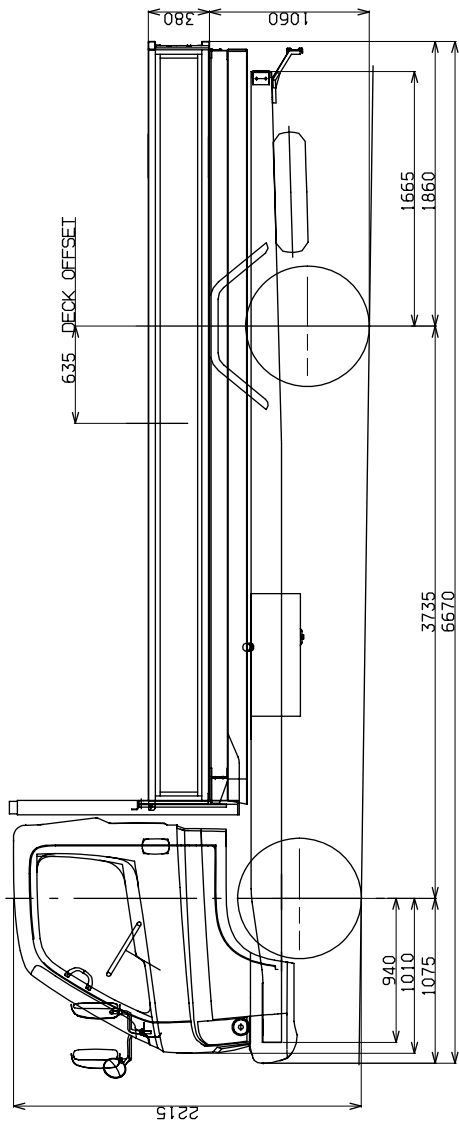
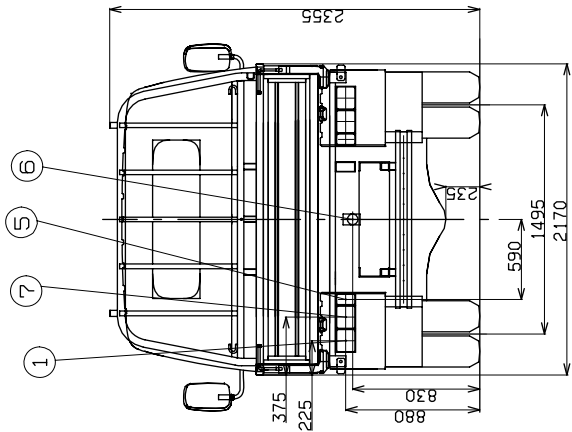
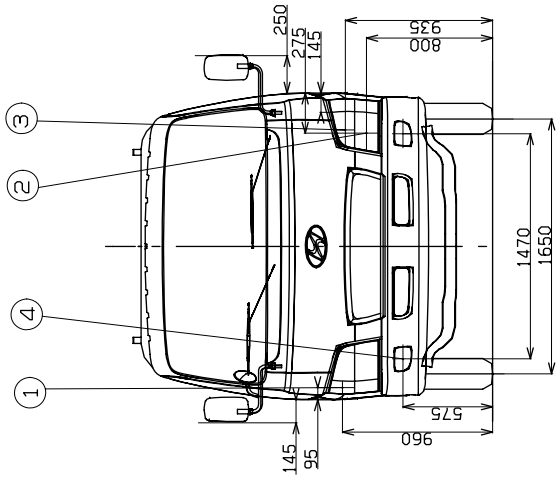
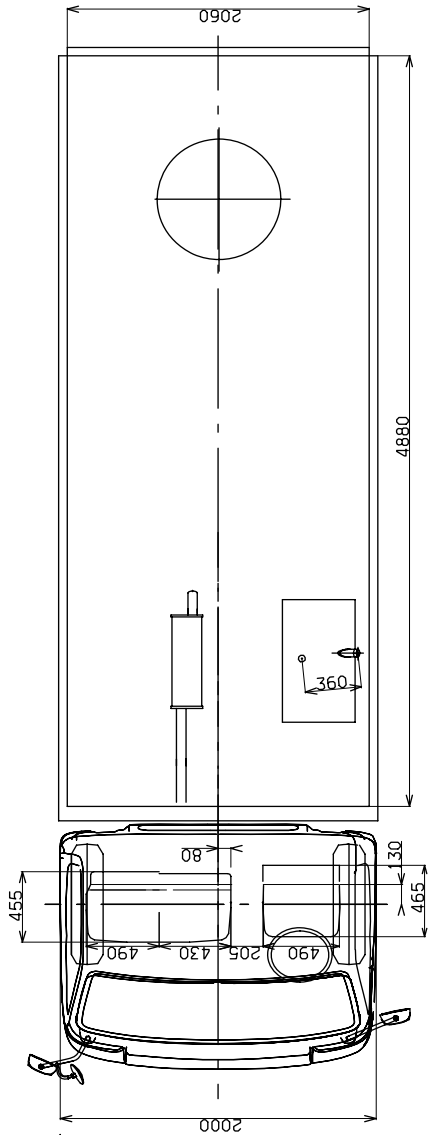
W.B: 3735mm



HD72 LONG(D4DD) SUPER CARGO TRUCK

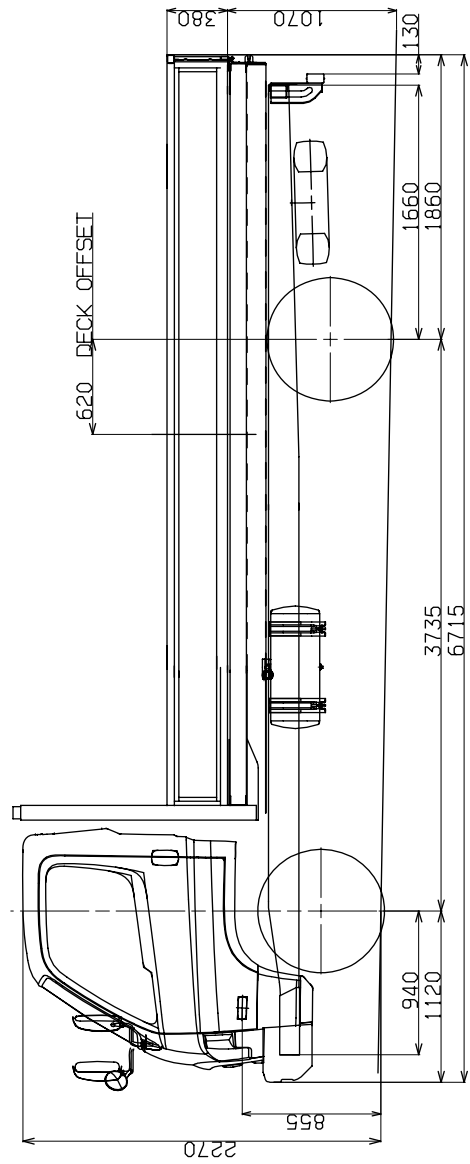
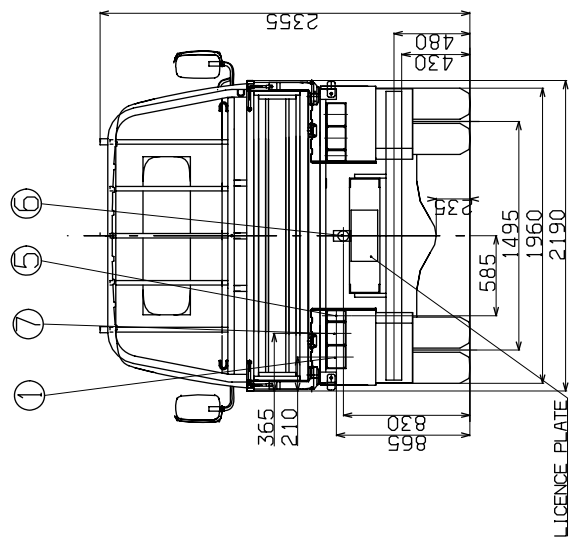
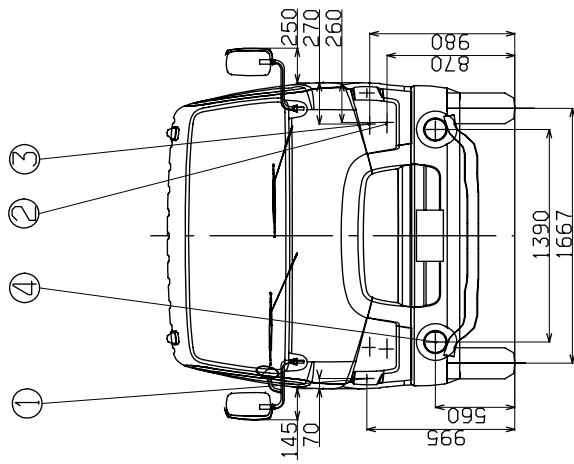
W.B: 3735mm

|   |                         |   |                      |
|---|-------------------------|---|----------------------|
| 1 | TURN SIGNAL LAMP        | 5 | BACK-UP LAMP         |
|   | CORNERING LAMP          | 6 | LICENCE PLATE LAMP   |
| 2 | HEAD LAMP, PARKING LAMP | 7 | TAIL LAMP, STOP LAMP |
| 3 | POSITION LAMP           |   | REAR REFLECTOR       |
| 4 | FOG LAMP(OPT.)          |   |                      |



HD78 LONG(D4DA/DB/DC) STD CARGO TRUCK

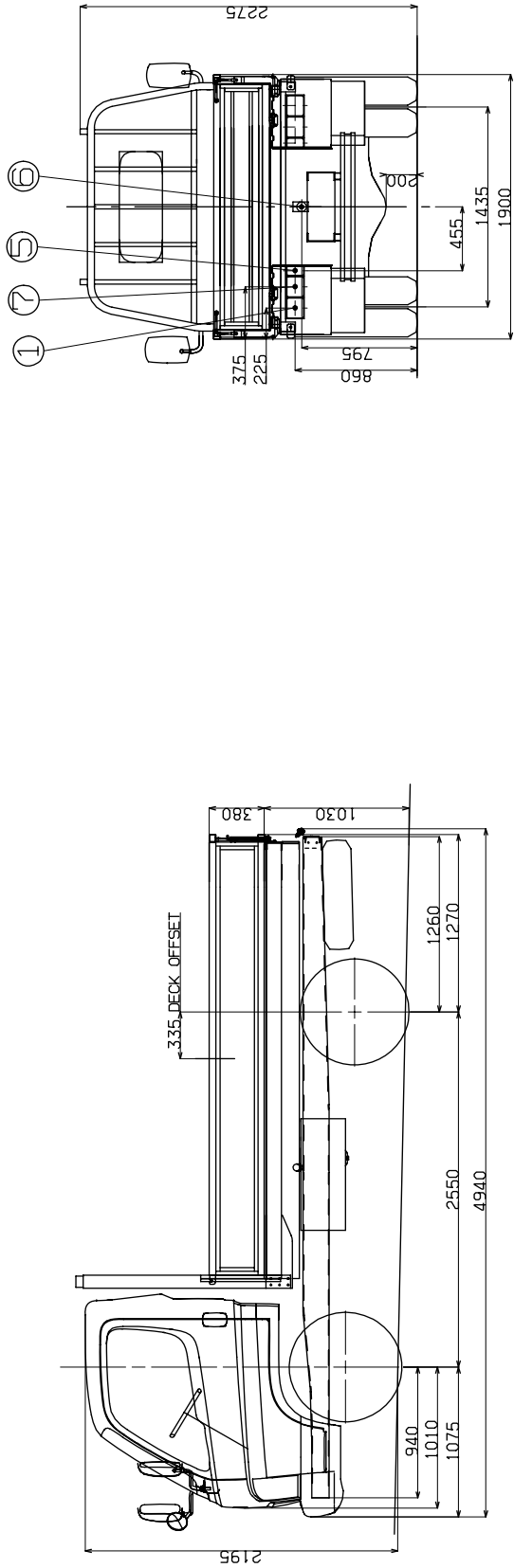
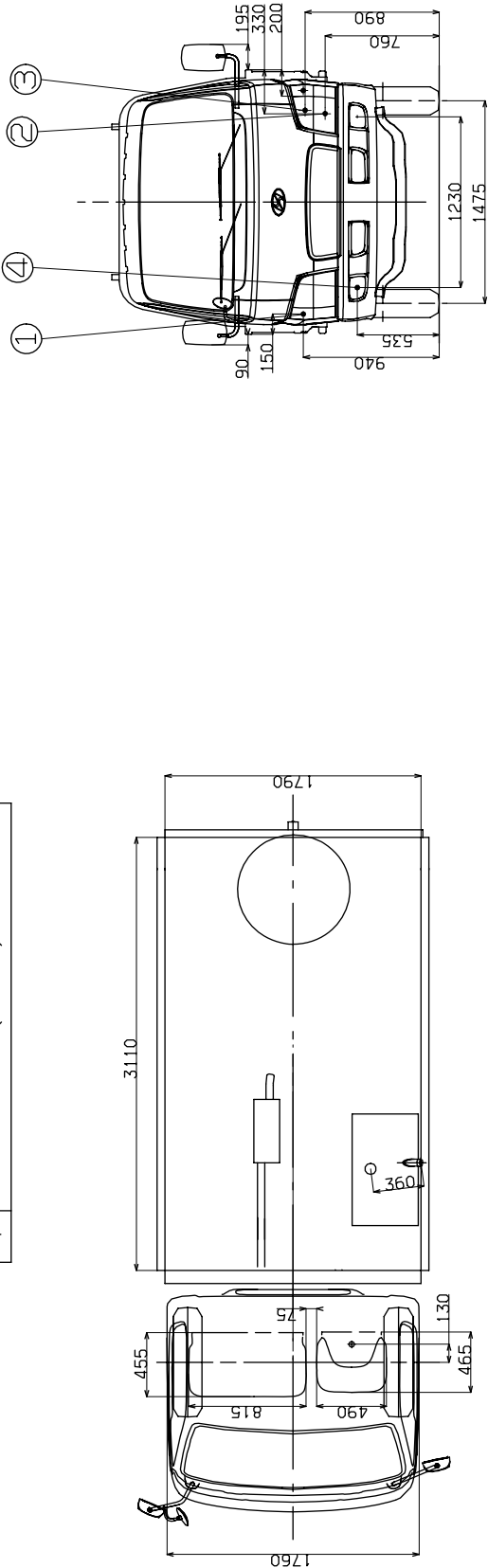
W.B: 3735mm



W.B.: 3735mm



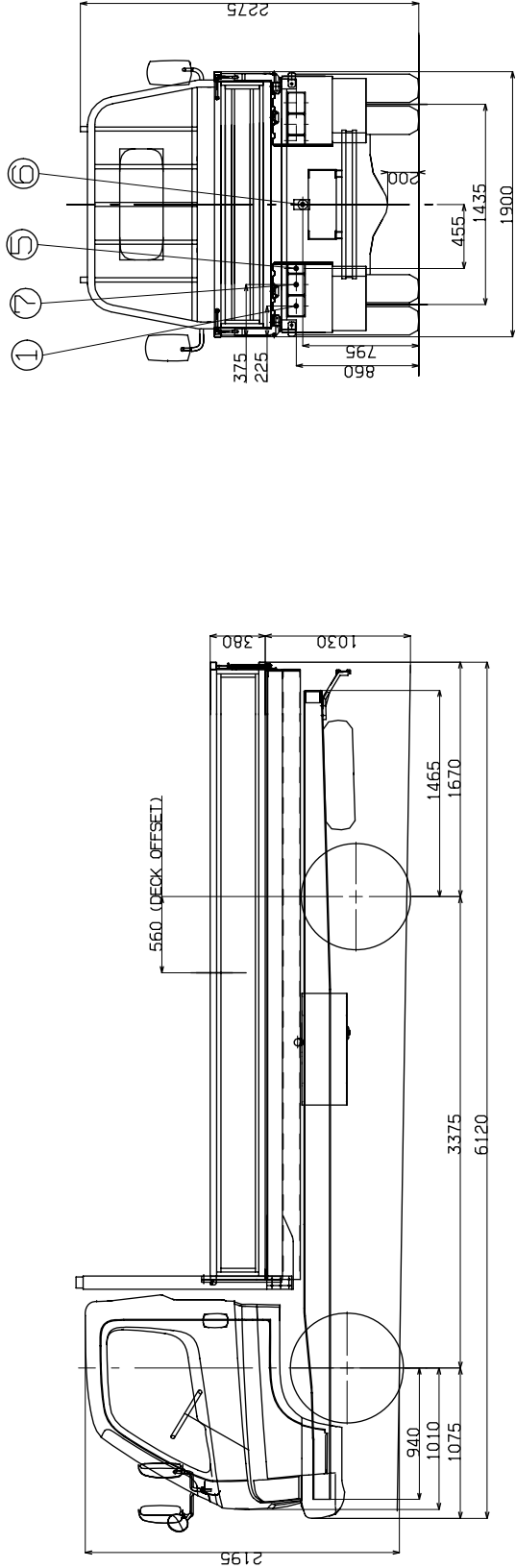
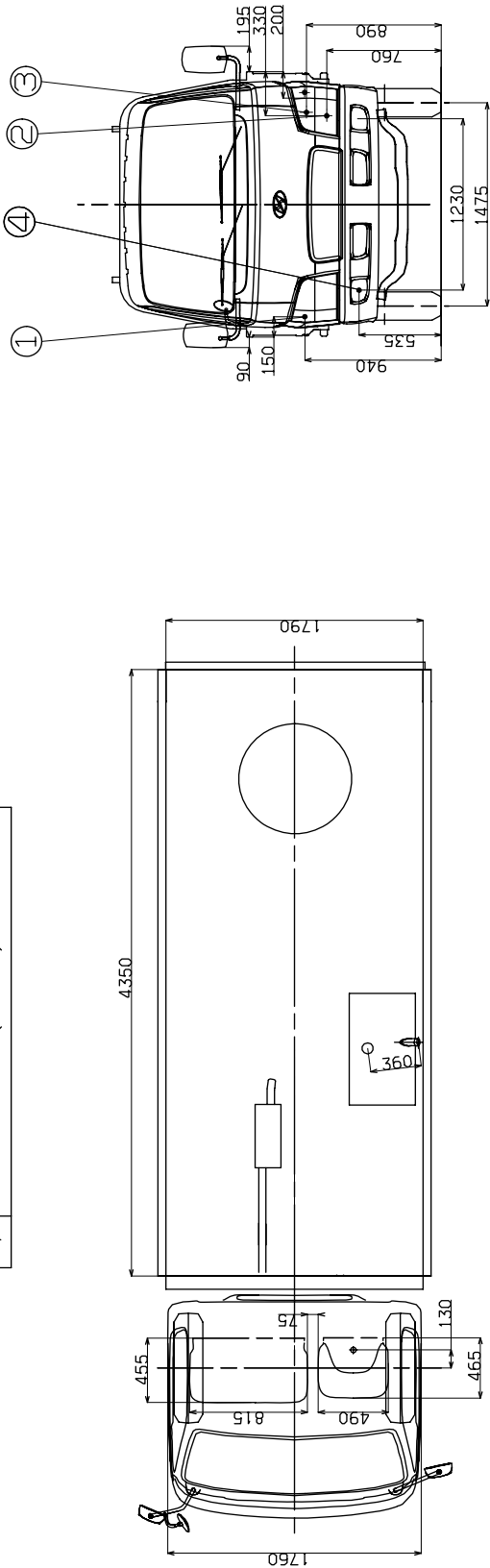
|   |                  |   |                      |
|---|------------------|---|----------------------|
| 1 | TURN SIGNAL LAMP | 5 | BACK-UP LAMP         |
|   | CORNERING LAMP   | 6 | LICENCE PLATE LAMP   |
| 2 | HEAD LAMP        | 7 | TAIL LAMP, STOP LAMP |
| 3 | POSITION LAMP    |   | REAR REFLECTOR       |
| 4 | FOG LAMP (OPT )  |   |                      |



HD65 SHORT (N) (D4AF /AL) CARGO TRUCK

W.B: 2550mm

|   |                  |   |                      |
|---|------------------|---|----------------------|
| 1 | TURN SIGNAL LAMP | 5 | BACK-UP LAMP         |
|   | CORNERING LAMP   | 6 | LICENCE PLATE LAMP   |
| 2 | HEAD LAMP        | 7 | TAIL LAMP, STOP LAMP |
| 3 | POSITION LAMP    |   | REAR REFLECTOR       |
| 4 | FOG LAMP (OPT )  |   |                      |

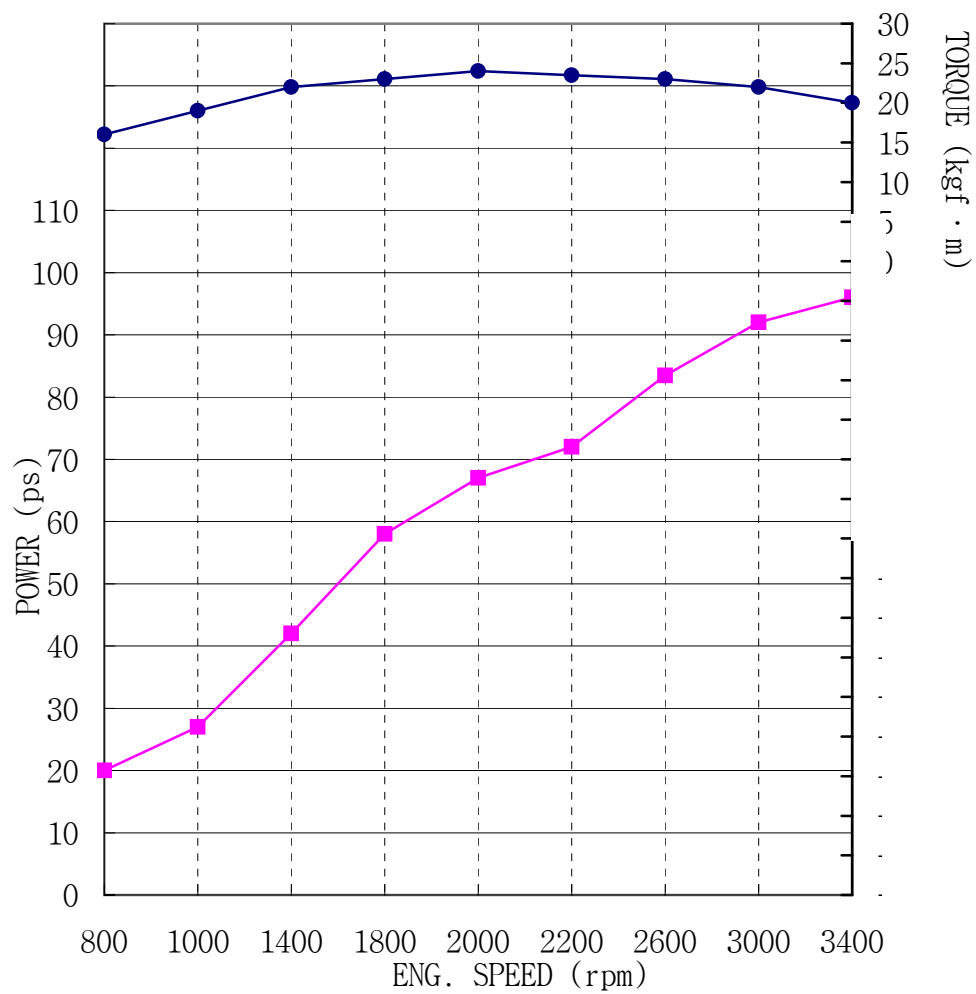


HD65 LONG(N) (D4AF/AL) CARGO TRUCK

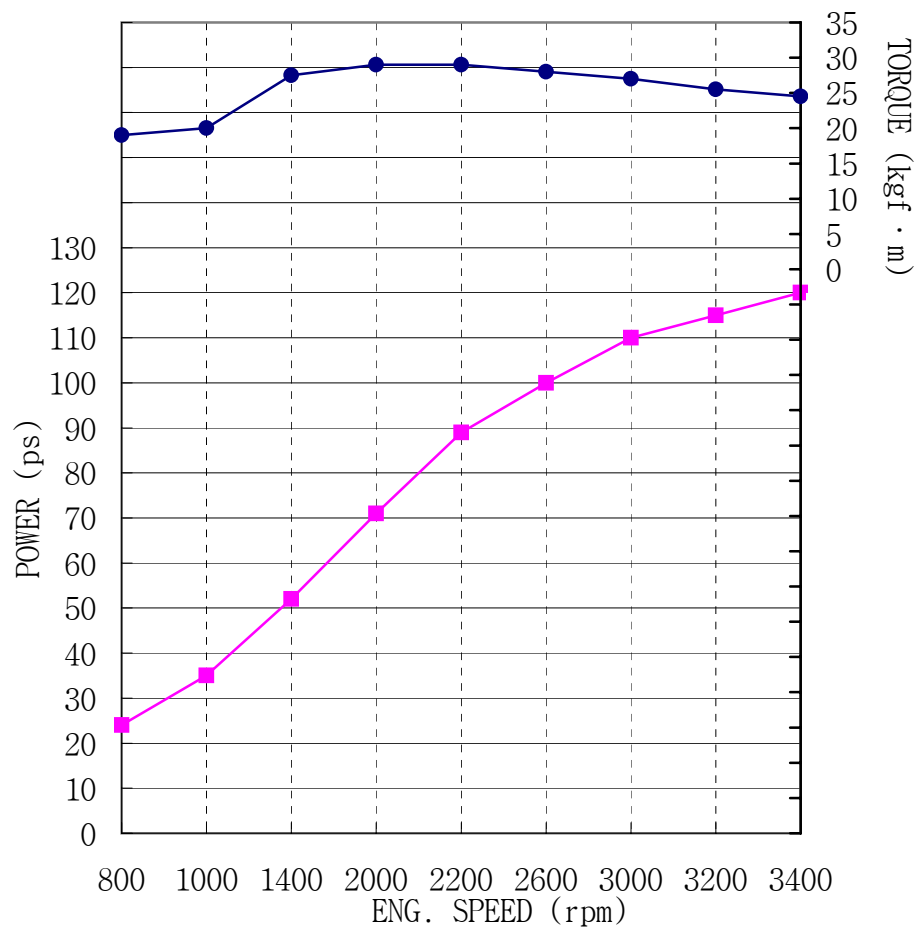
W. B : 3375mm

## 4. ENGINE PERFORMANCE CURVE

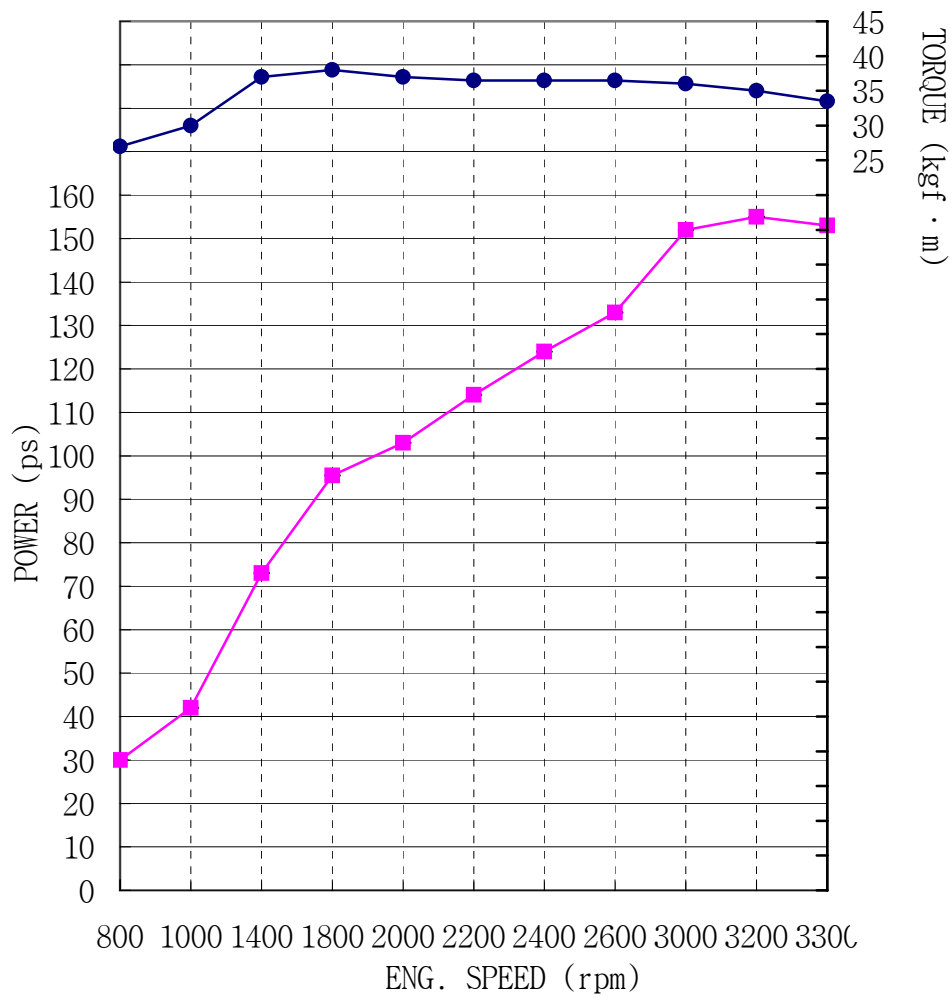
# 1) D4AF



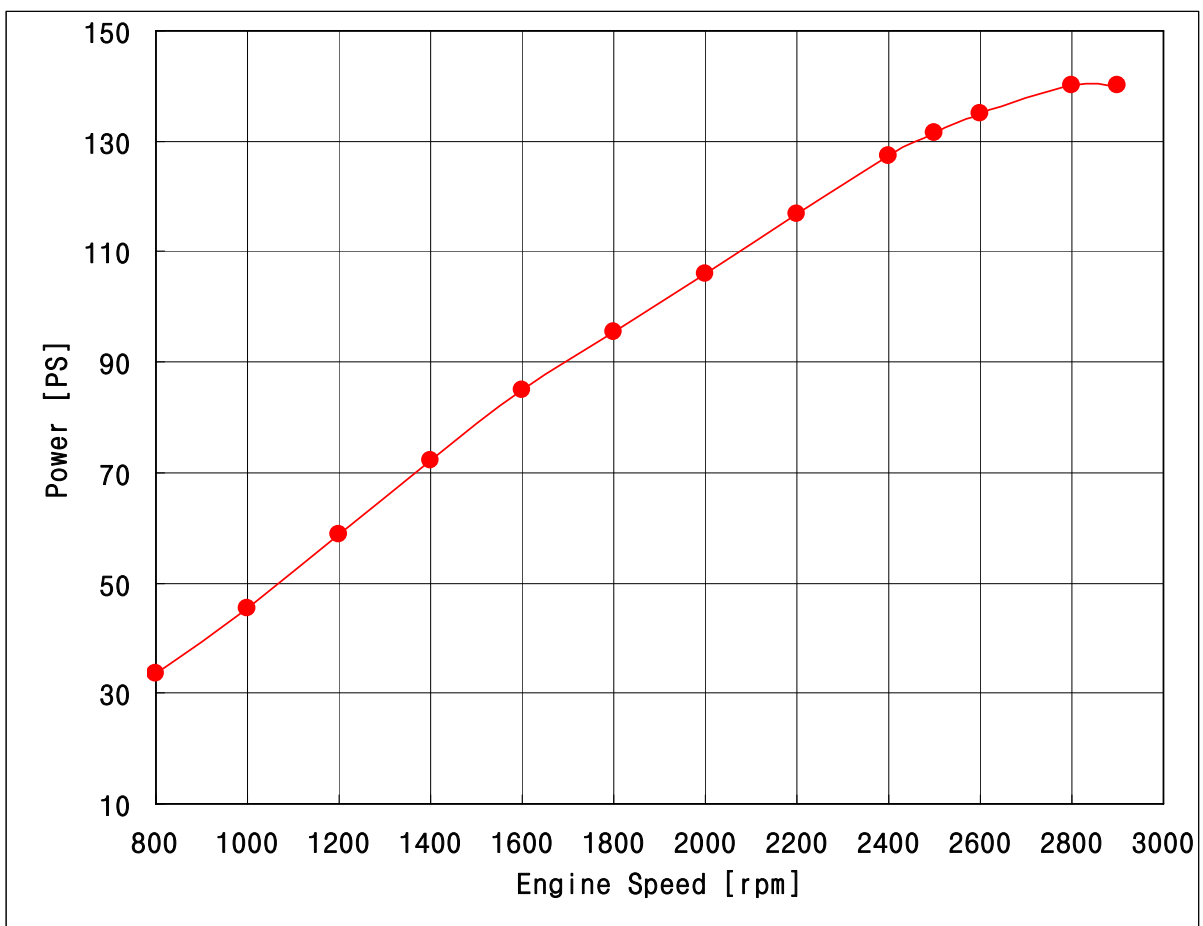
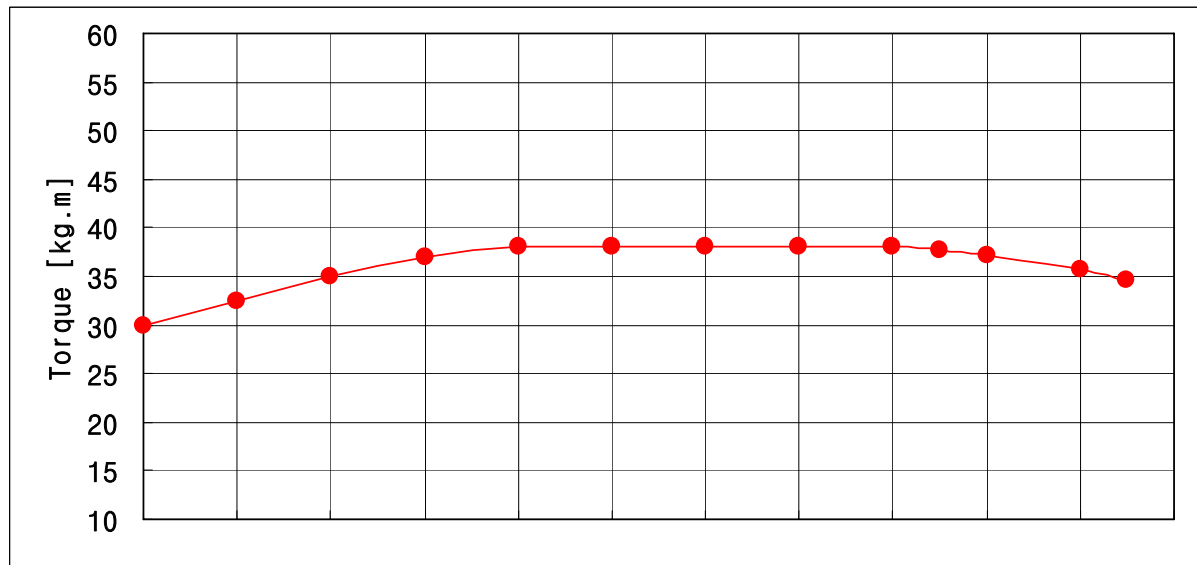
## 2) D4AL



### 3) D4DA



#### 4) D4DD



## 5. CAUTIONS REGARDING INSTALLATION MODIFICATION OR ALTERATION



## 5-1. Cautions needed for the front structure of the rear body

The structure of the front area of the rear body in relation to front wheel tires, exhaust pipe, cab and intake duct should be installed carefully as the followings.

### (1) Move of the cab and the intake duct

In case of applying the floating cab mounting, be free from interference with the cab and the intake duct. Make reference to the reference drawing for the moving range of the cab and the intake duct.

### (2) Sub frame

As the forward area of the sub frame is near exhaust pipe, be careful not to take fire by adding a protector to the outside of the sub frame. Also the ground clearance of the rear body floor and the height of fender should be more than 50mm from tires. Make reference to BODY BUILDER DRAWING for a rising quantity of tires. If the height of sub frame is low, as strength drops, use the steel sub frame surely in using the sub frame less than standard height. Make reference to the paragraph 2-2-4, COMMON BOOK of BODY BUILDER BOOK for dimension of the steel frame.

### (3) Projecting relation of the upper side of transmission and chassis frame

As harness connector and the sensor of gear shift unit are on the upper side of transmission, be free from ascending the upper side of transmission.

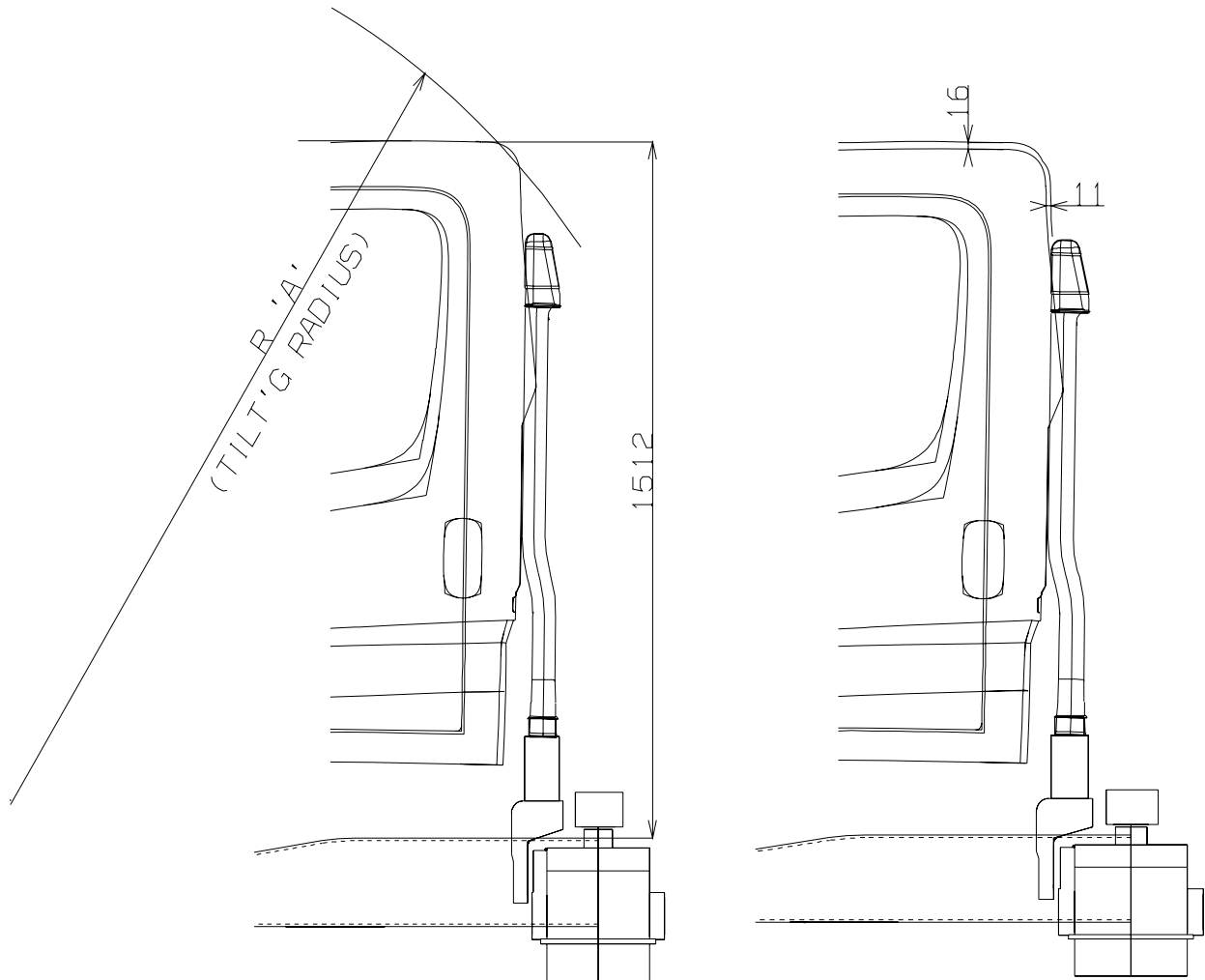
### (4) Object for stain prevention between cab and rear body

Install a object for stain prevention between cab and rear body figure to prevent stain by front forward wheels as the appendix drawing.

### (5) Front and rear wheel fender

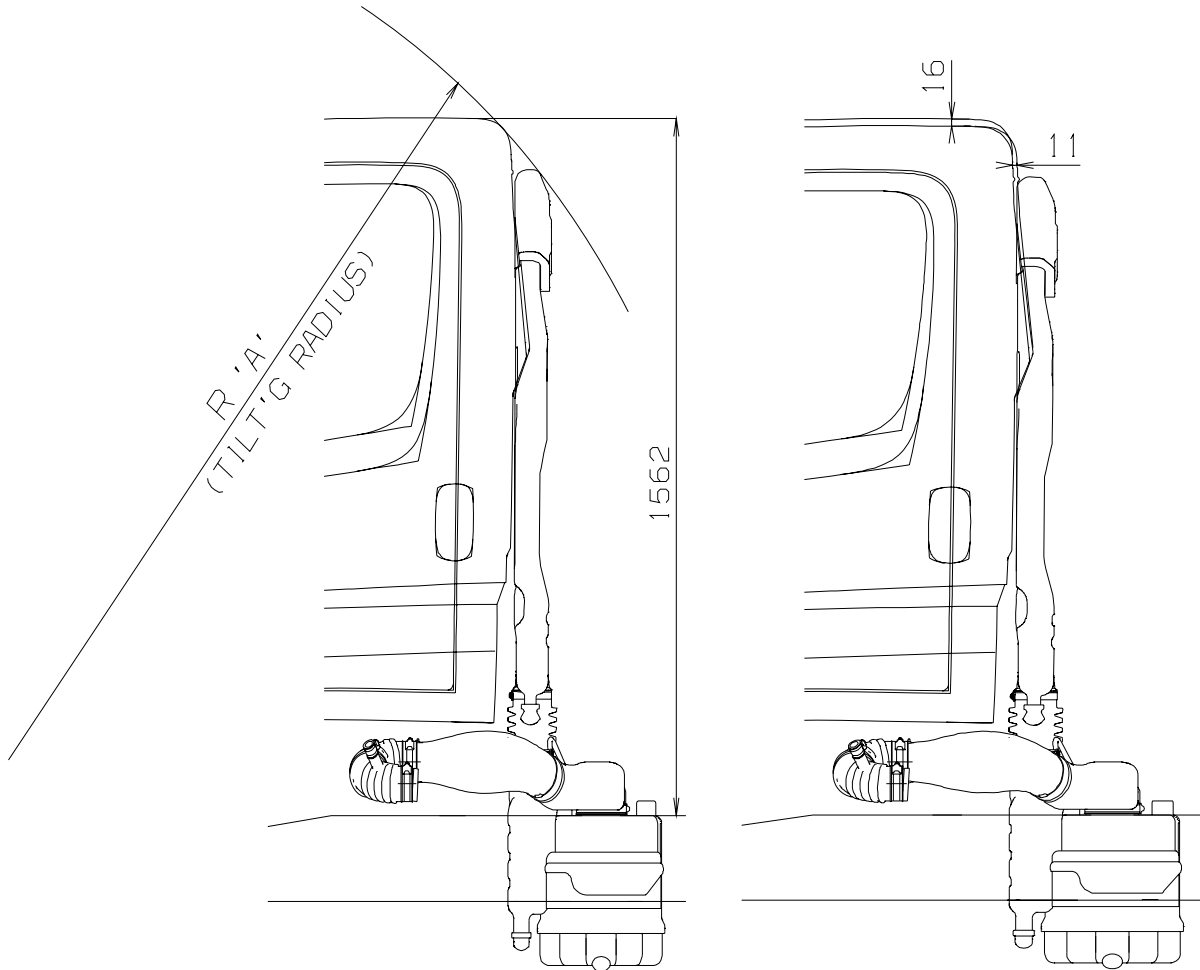
Make reference to the appendix drawing for the height of fender and mudguard. Also make reference to the paragraph 2-2-5, COMMON BOOK of BODY BUILDER BOOK.

\*) MOVE OF THE CAB & THE INTAKE DUCT  
(D4AF/D4AL/D4DA/D4DB/D4DB-d/D4DC)



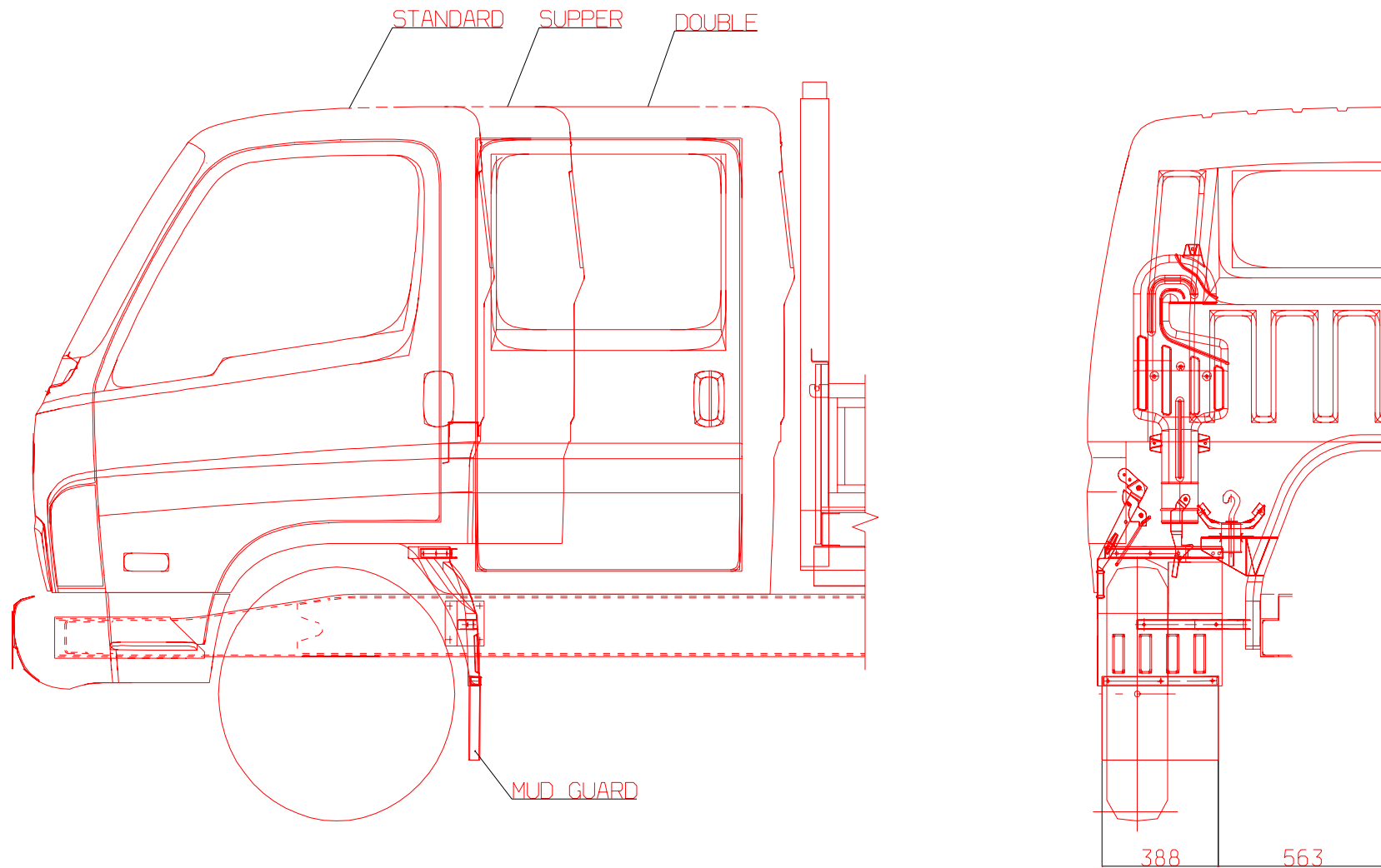
|     | WIDE CAB |       | NARROW CAB |
|-----|----------|-------|------------|
|     | STANDARD | SUPER |            |
| 'A' | 1925     | 2139  | 1925       |

(D4DD)

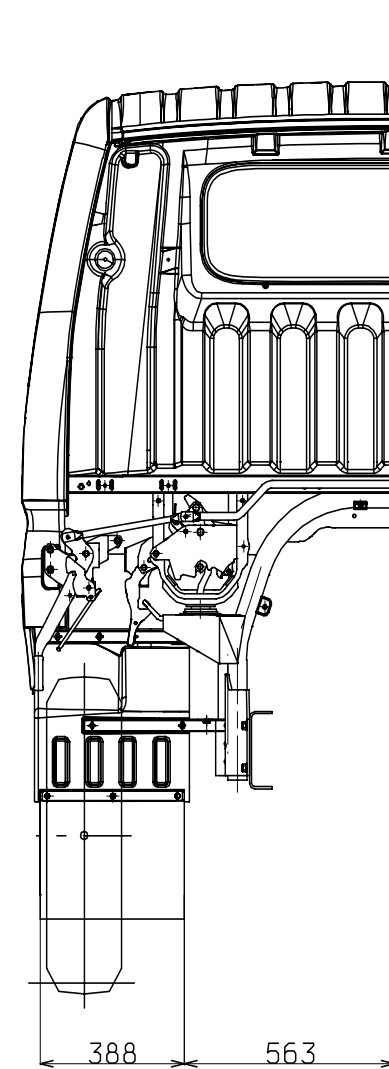
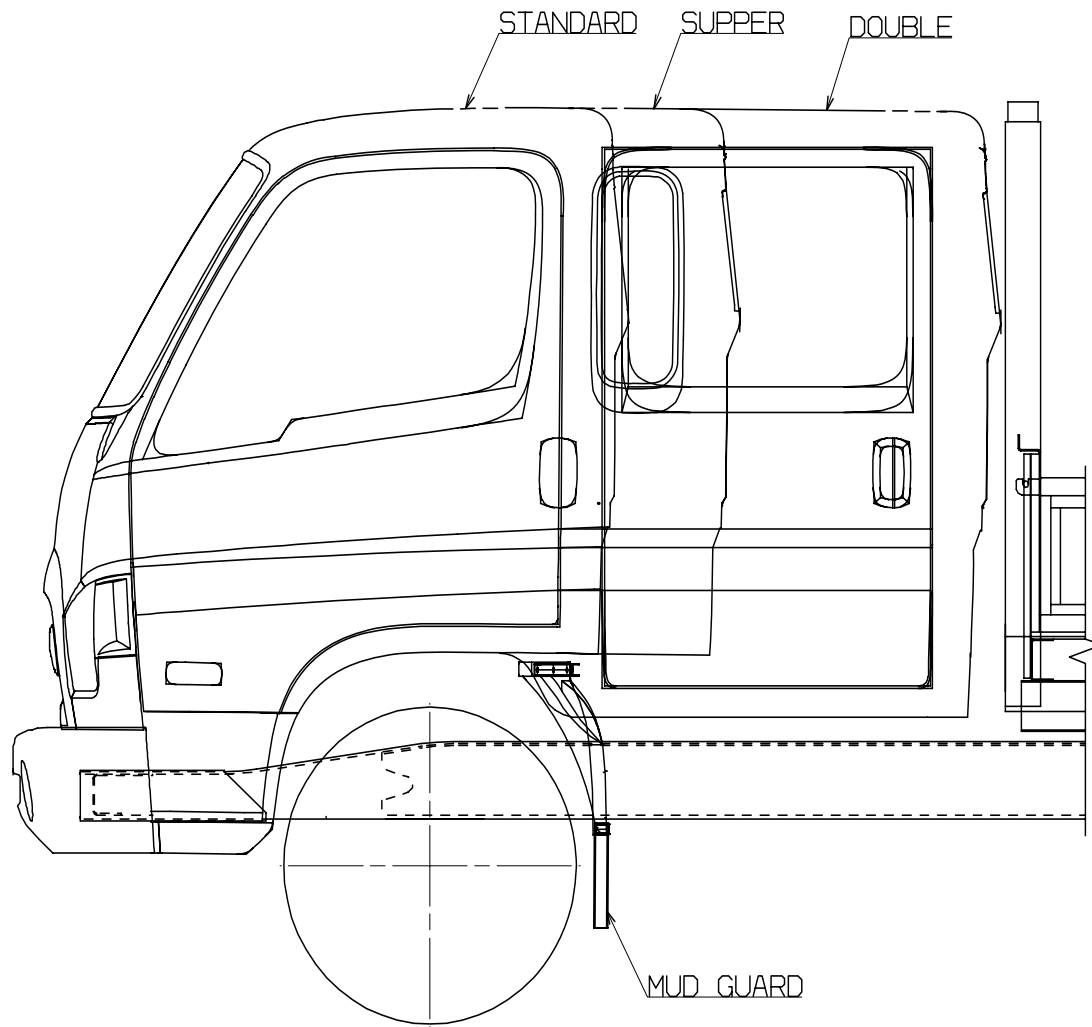


|     | WIDE CAB |       | NARROW CAB |
|-----|----------|-------|------------|
|     | STANDARD | SUPER |            |
| 'A' | 1940     | 2170  | 1925       |

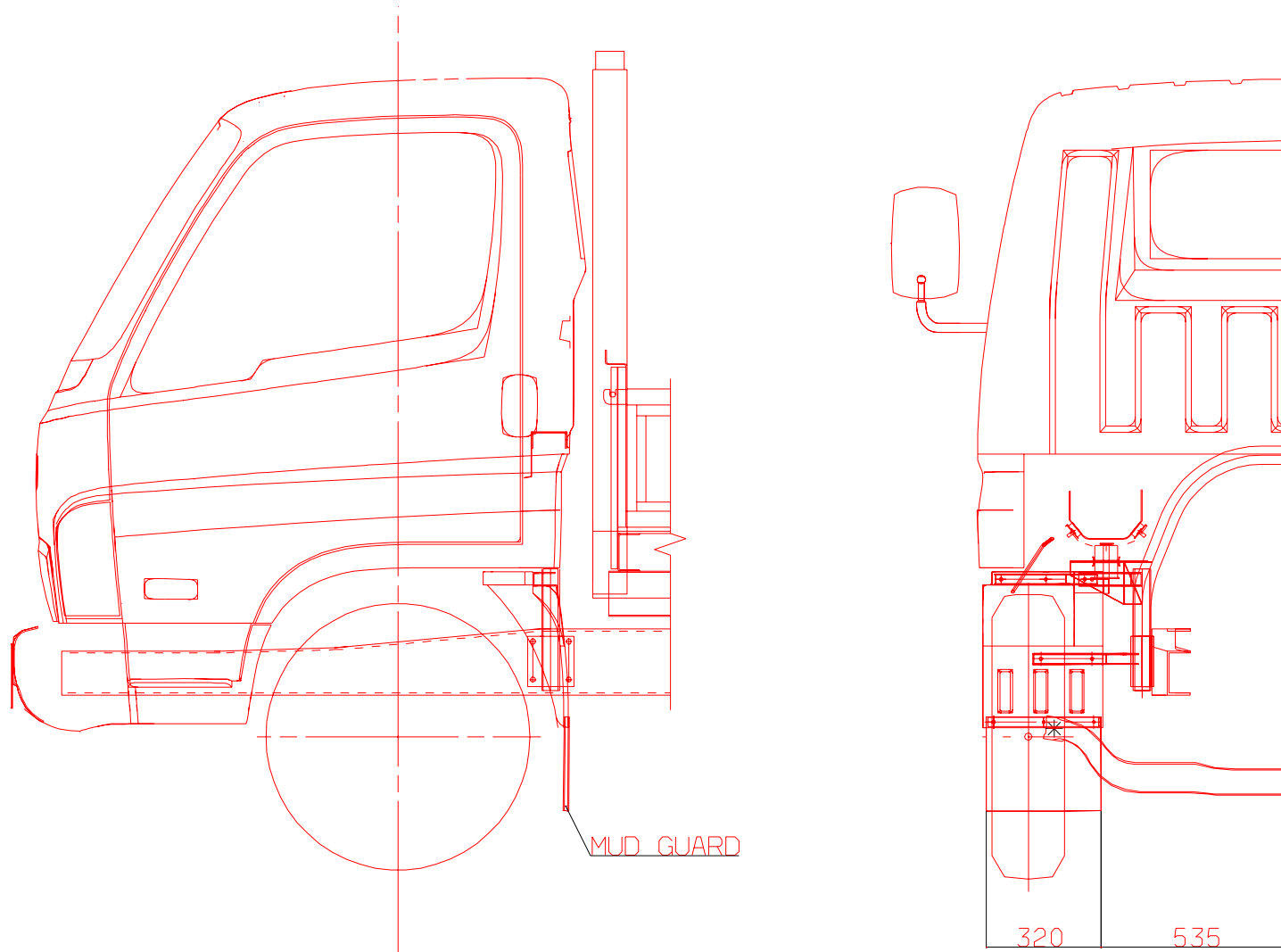
1) REFERENCE DRAWING OF MUD GUARD



( WIDE CAB :D4AF/D4AL/D4DA/D4DB/D4DB-d/D4DC )



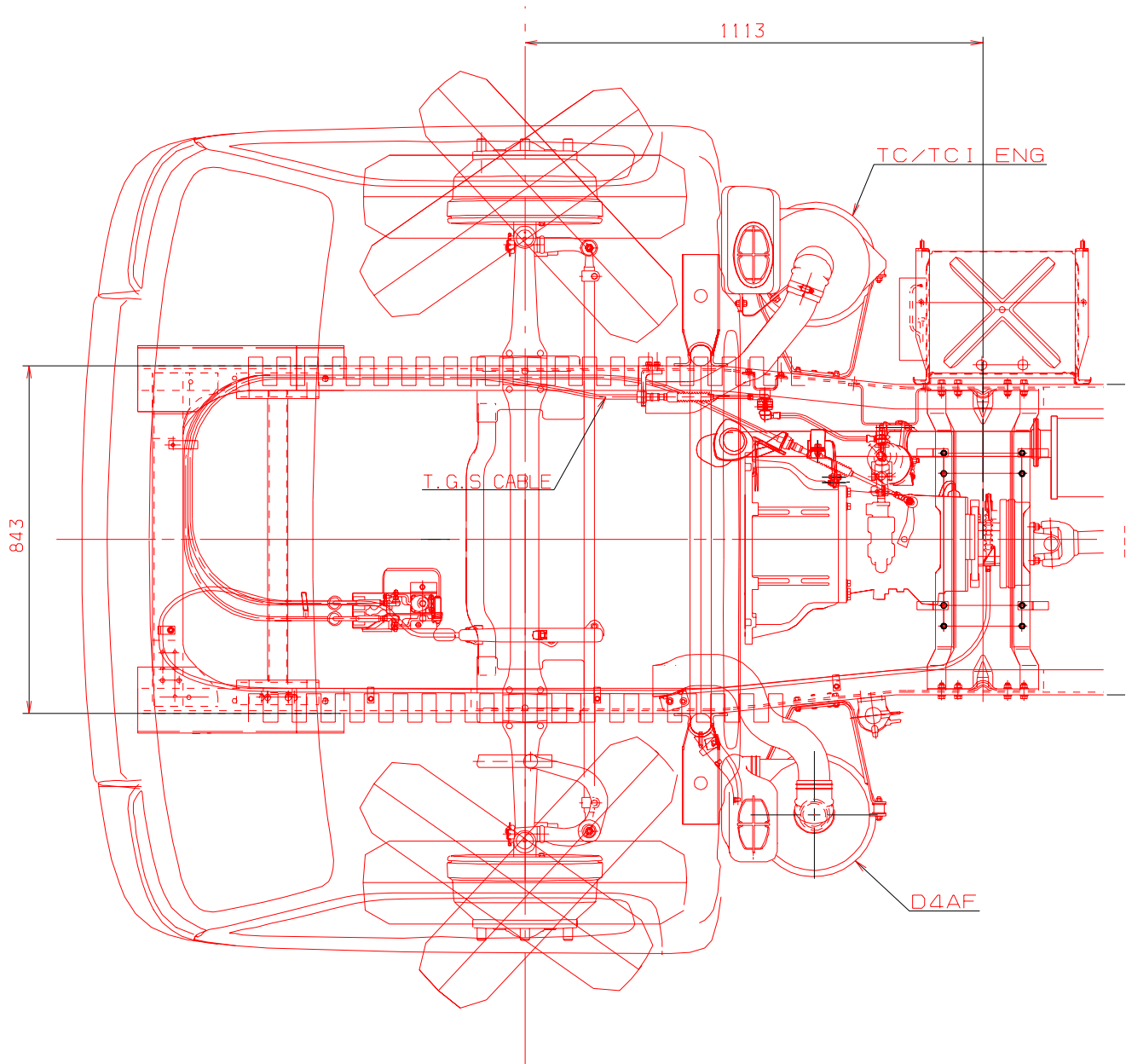
( WIDE CAB : D4DD )



( NARROW CAB : D4AF/D4AL )

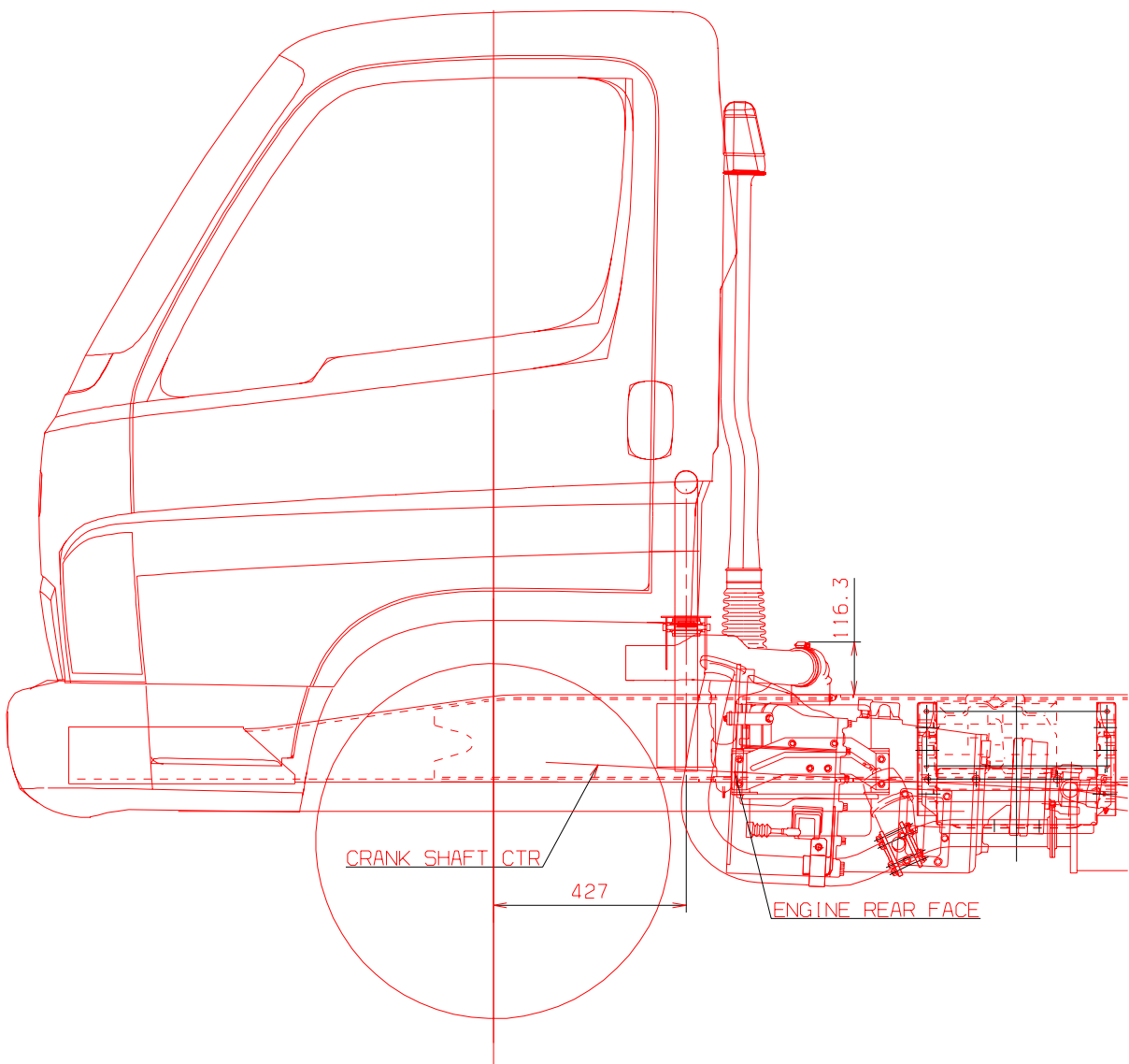
## 5-2. CAUTIONS NEEDED FOR FASTENING 'U-BOLT'

In case of fastening U-bolt between the cab rear and No.2 cross member, refer to the appendix drawing of U-bolt installation.



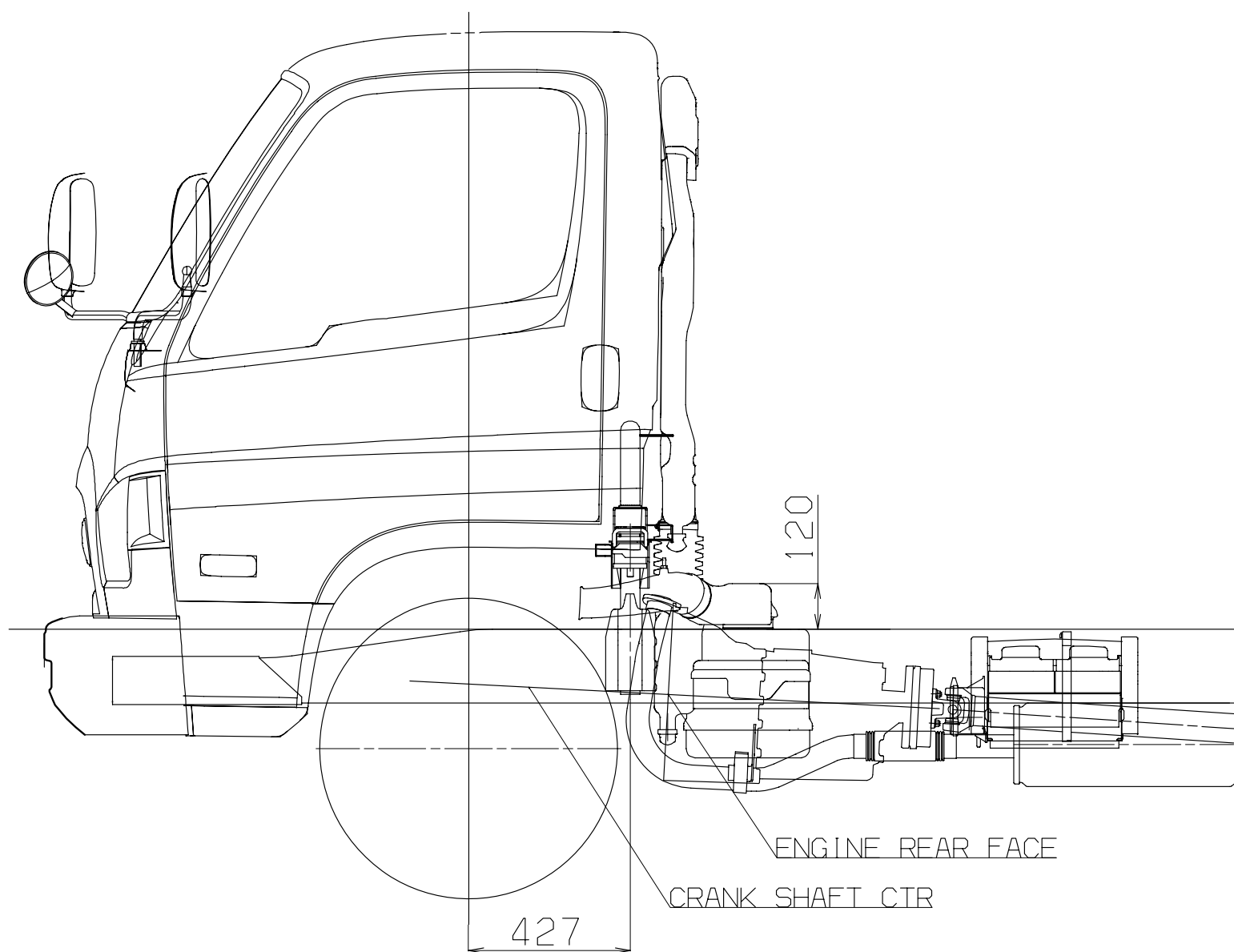
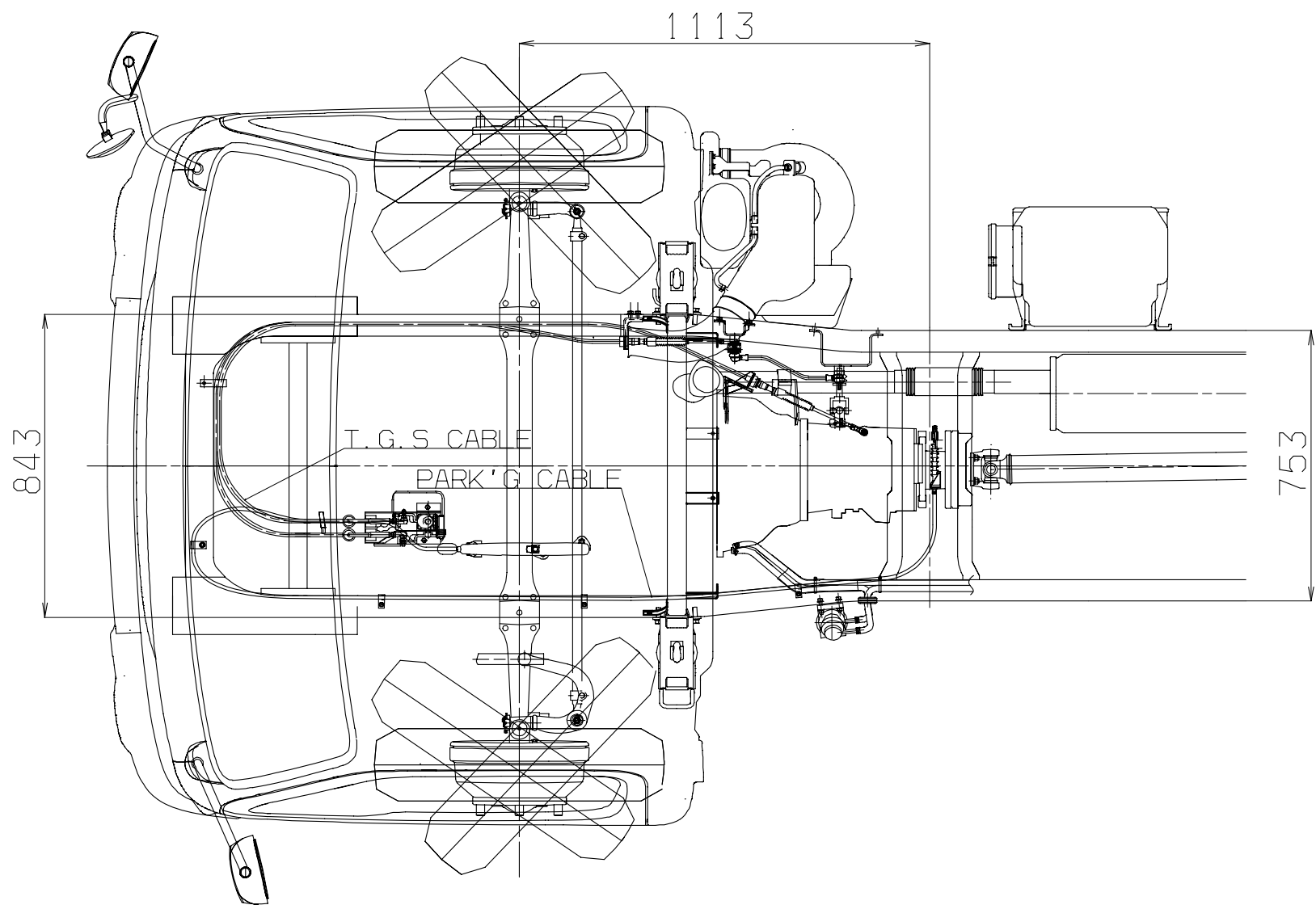
\* REFERENCE DRAWING OF THE 'U-BOLT' INSTALLATION

(1) FRONT AXLE TO NO.2 C/MBR AREA

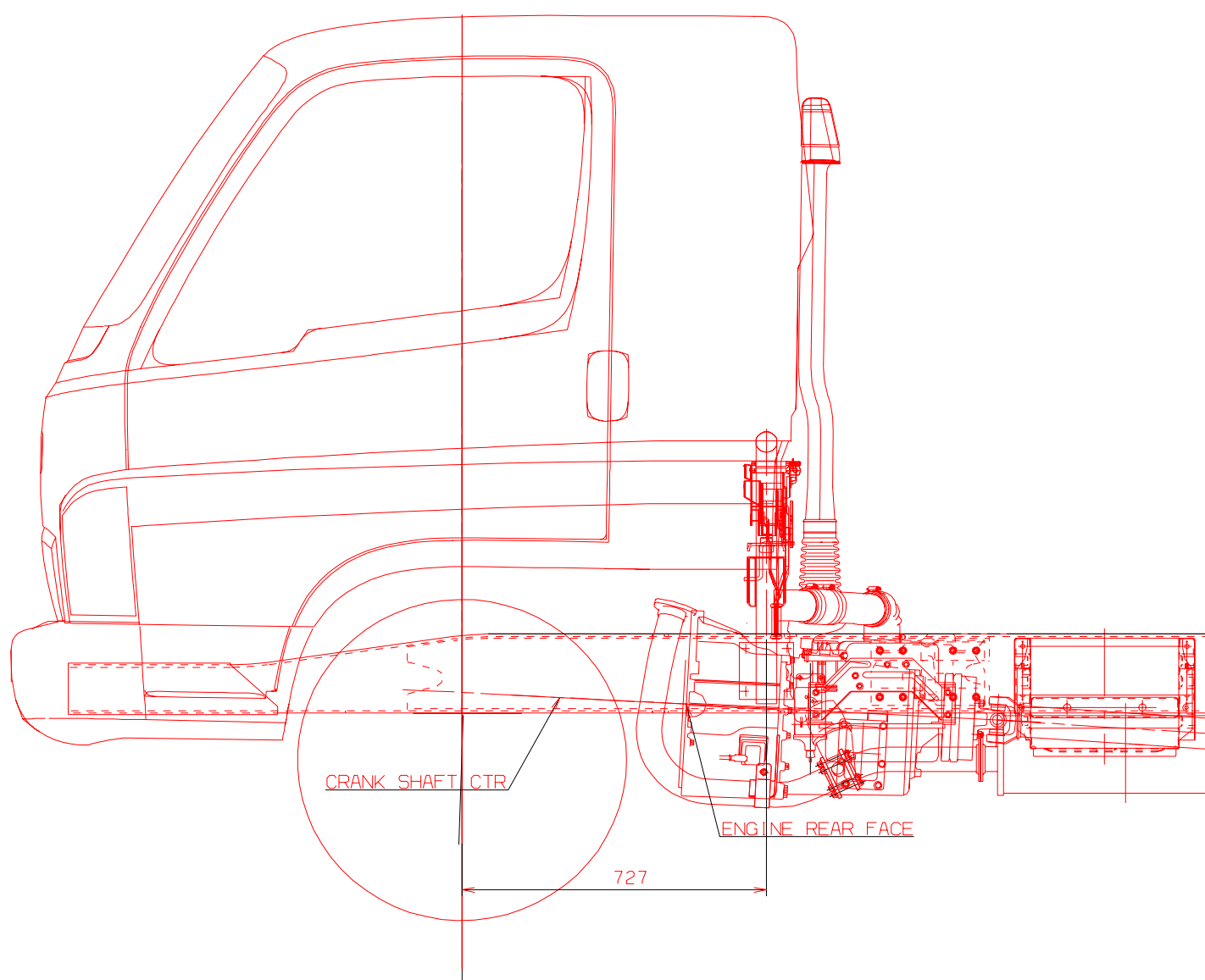
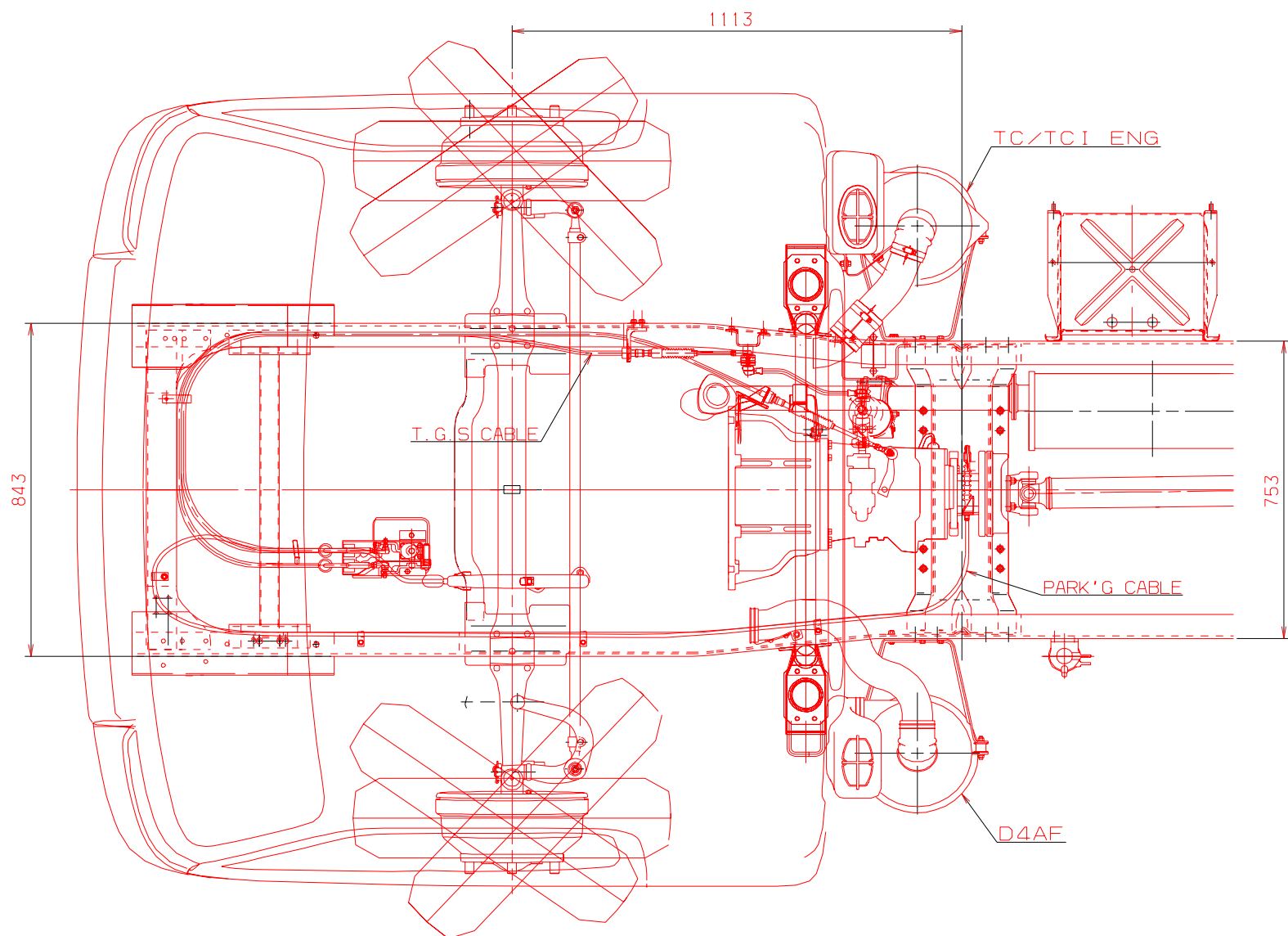


WIDE STD CAB(HD\*CS-D4AF/D4AL/D4DA/D4DB/D4DB-d/D4DC)

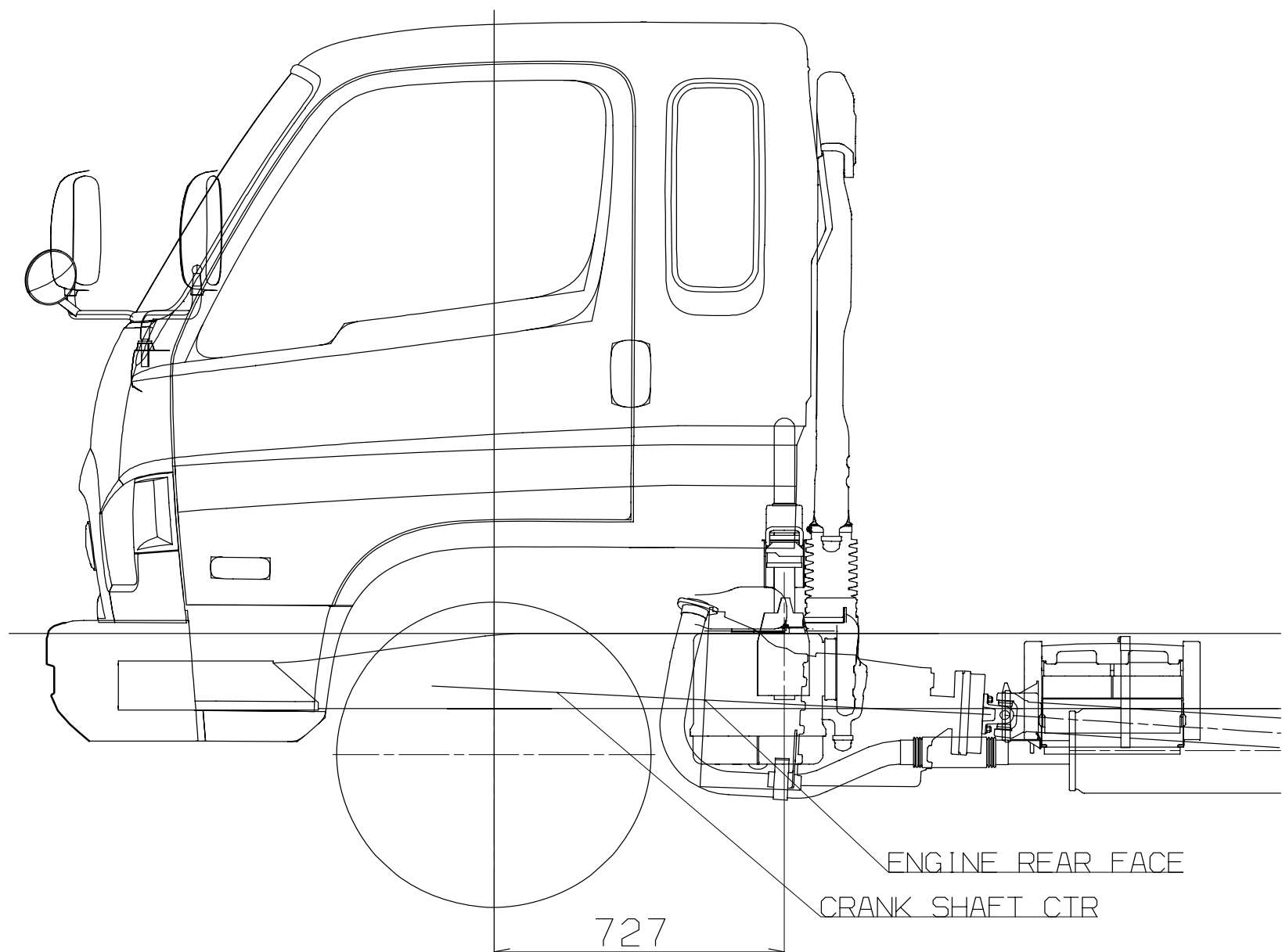
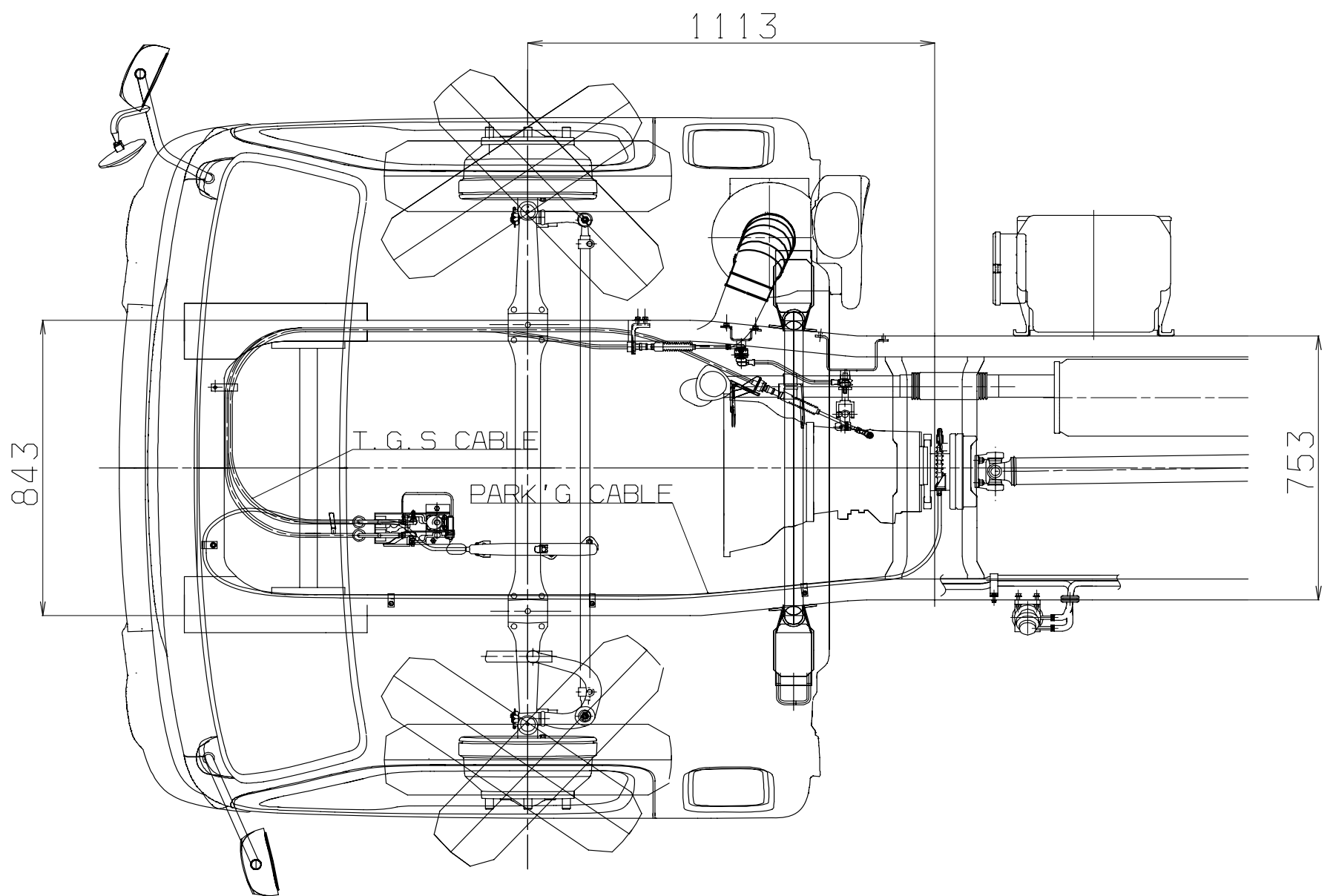




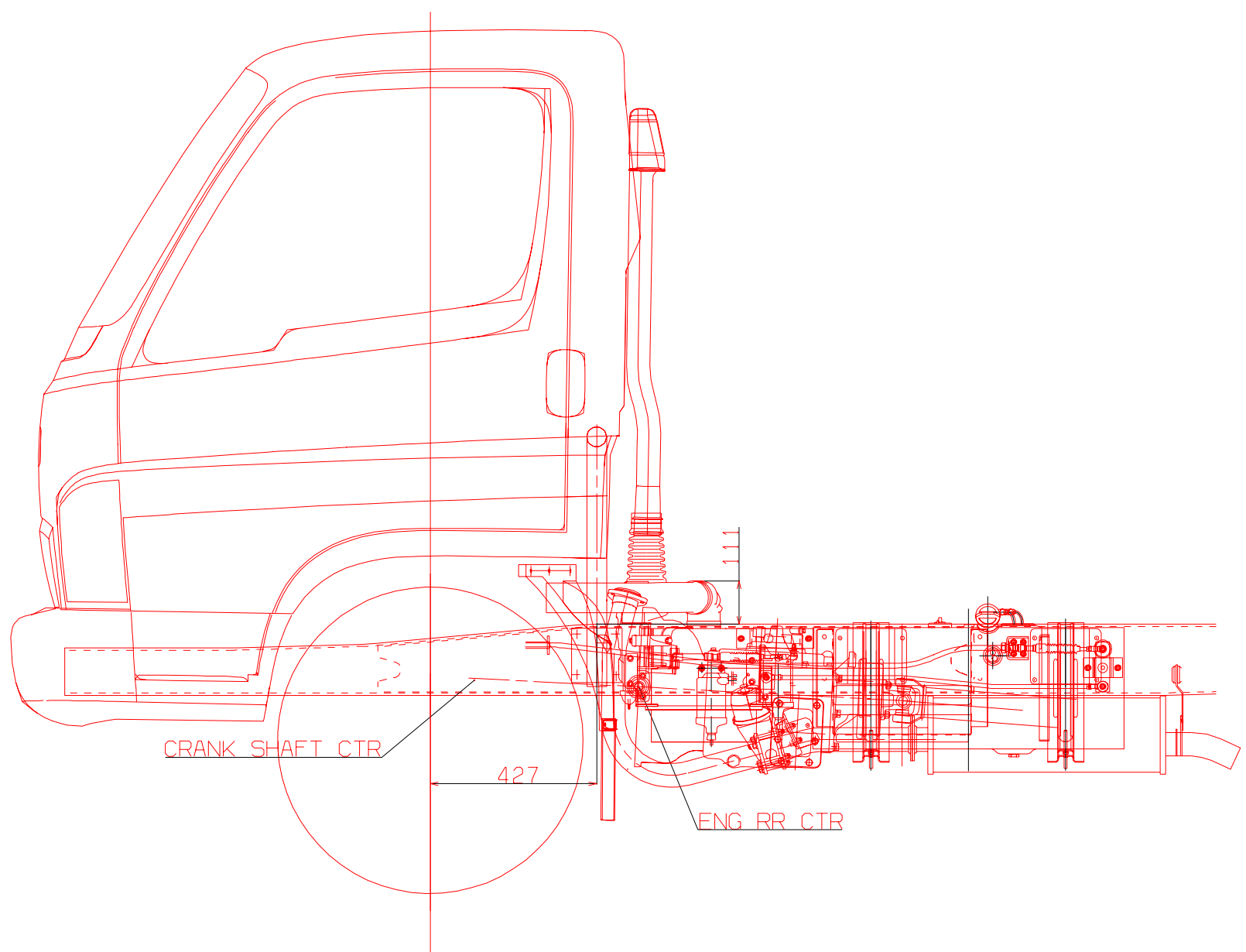
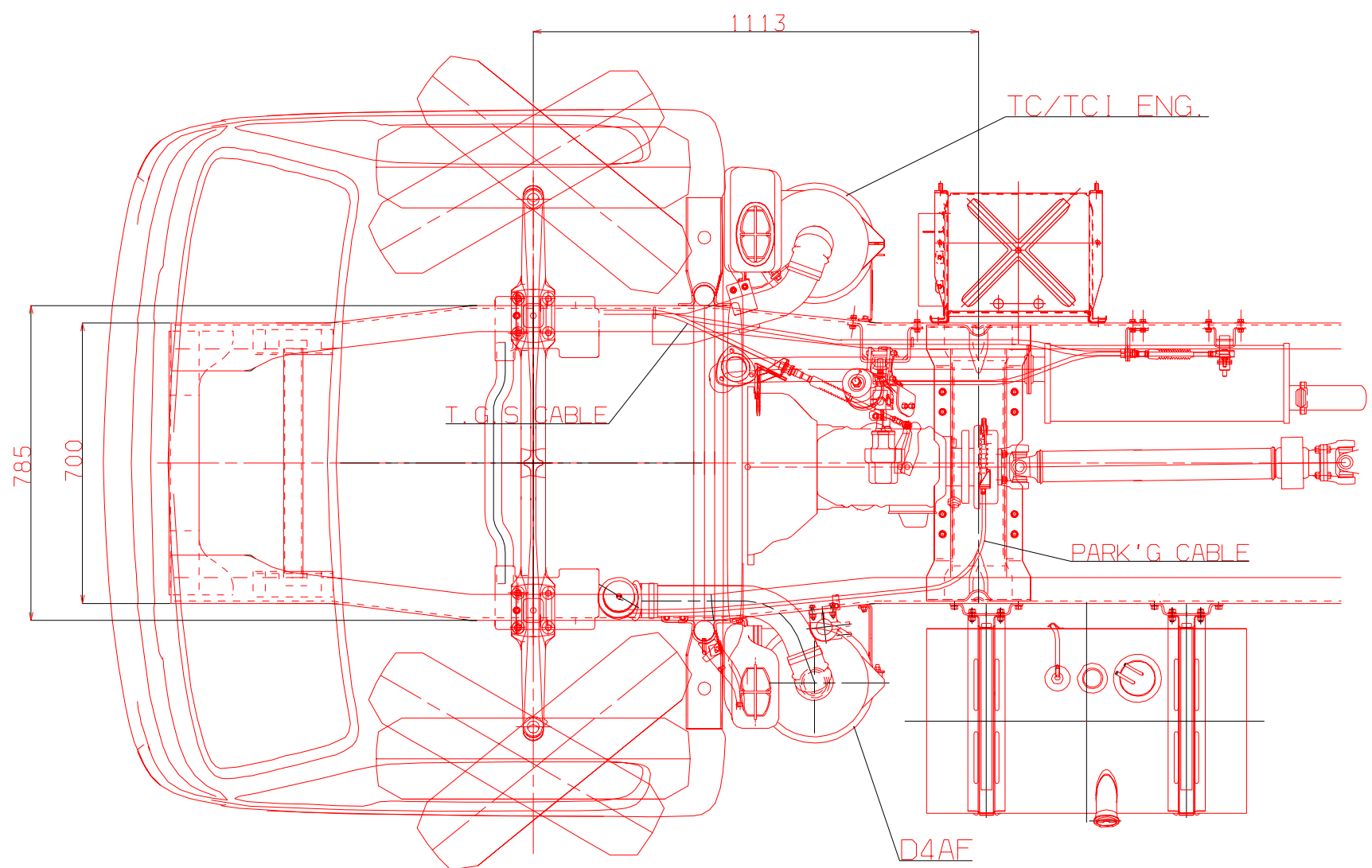
WIDE STD CAB(HD\*CS-D4DD)



WIDE SUPER CAB(HD\*DP-D4AF/D4AL/D4DA/D4DB/D4DB-d/D4DC)

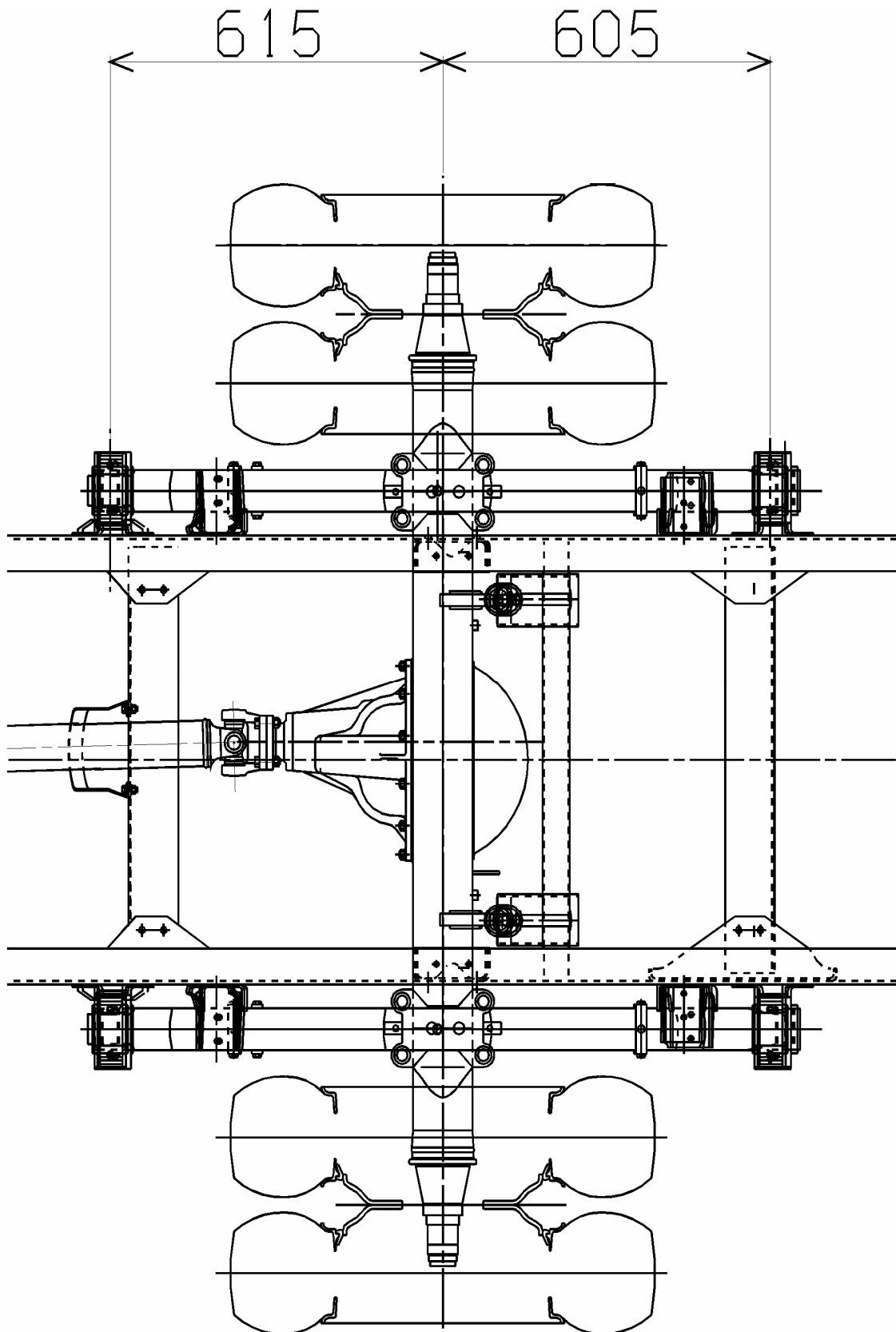


WIDE SUPER CAB(HD\*DP-D4DD)



NARROW CAB(HD\*CN-D4AF/D4AL)

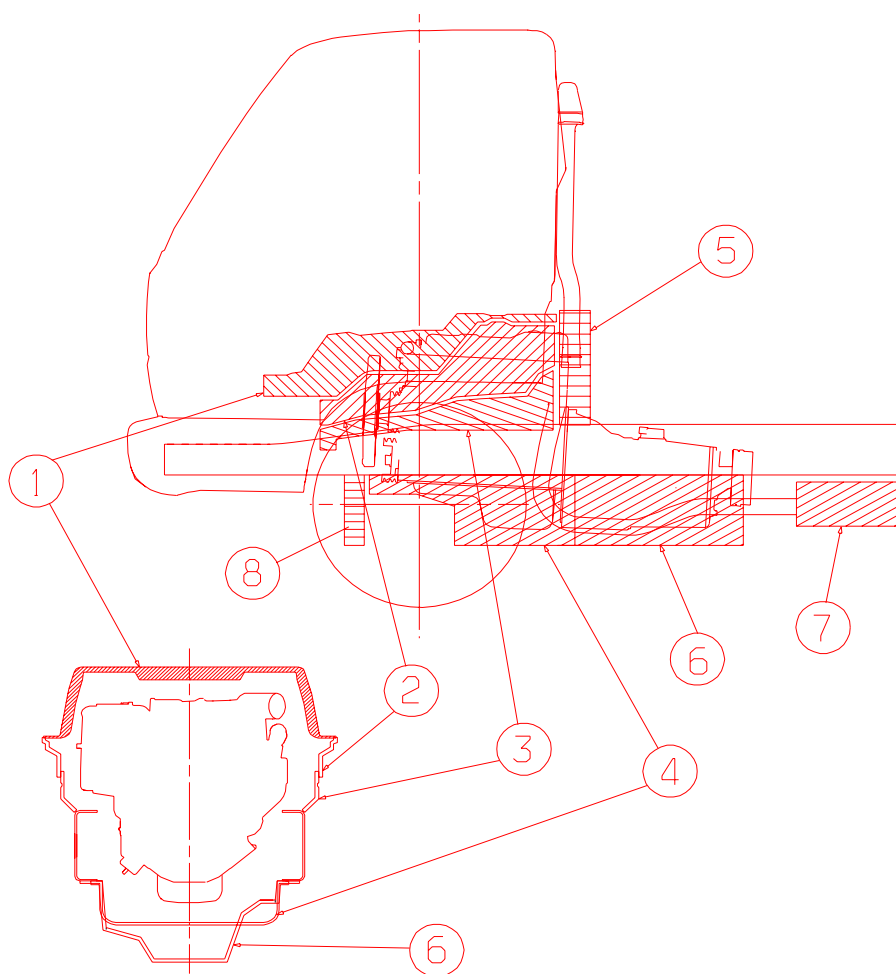
(2) REAR AXLE AREA



### 5-3. NOISE PREVENTION PARTS

Don't modify or alterate noise prevention parts, which conform to the noise regulations. But in an unavoidable case, please contact with HMC. Also in case detaching noise prevention parts when installing or modifying them, be sure to install them as ever again after finishing installation or modification.

Position describing drawing of noise prevention parts.



|      | PATRS           |
|------|-----------------|
| D4AF | 1,2,3,4,5,7     |
| D4AE | 1,2,3,4,5,7     |
| D4AL | 1,2,3,4,5,6,7,8 |
| D4DA | 1,2,3,4,5,6,7,8 |

| NO | NOISE PREVENTION PARTS       |
|----|------------------------------|
| ①  | ENGIND UPPER COVER INSULATOR |
| ②  | ENGINE SIDE-UPPER INSULATOR  |
| ③  | ENGINE SIDE COVER            |
| ④  | ENGINE UNDER COVER           |
| ⑤  | ENGINE REAR COVER            |
| ⑥  | T/M UNDER COVER              |
| ⑦  | MUFFLER                      |
| ⑧  | RADIATOR UNDER COVER         |

## 6. WEIGHT AND FRAME INFORMATION

## 6-1. PERMISSIBLE WEIGHT

Permissible weight must not exceed axle and tire capacity.

### (1) AXLE CAPACITY

|            |      | ENGINE                   | FRONT(Kg) | REAR(Kg) | REMARKS          |
|------------|------|--------------------------|-----------|----------|------------------|
| WIDE CAB   | HD65 | D4AF/D4AL<br>D4DB-d/D4DC | 2,300     | 4,100    |                  |
|            |      | D4DD                     | 2,600     | 4,400    |                  |
|            | HD72 | D4AL/D4DA                | 2,600     | 4,700    | SHORT WHEEL BASE |
|            |      | D4DB/D4DC                | 2,600     | 4,300    | LONG WHEEL BASE  |
|            |      | D4DD                     | 3,100     | 4,700    |                  |
|            | HD78 | D4DA/D4DB<br>D4DC/D4DD   | 3,100     | 4,700    |                  |
| NARROW CAB | HD65 | D4AF/D4AL                | 2,300     | 4,100    |                  |

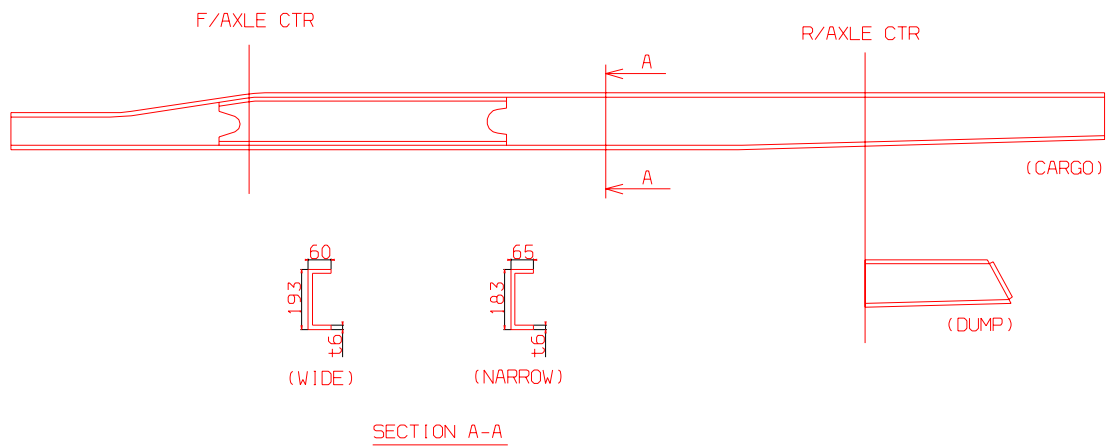


## (2) TIRE SPECIFICATION

| TIRE TYPE      | LBS / PSI     | PERMISSIBLE<br>WEIGHT<br>(Kg) | AIR<br>PRESSURE<br>(Kg/cm <sup>2</sup> ) | EFF.RAD(mm)    |                 | OTR<br>DIA. |
|----------------|---------------|-------------------------------|------------------------------------------|----------------|-----------------|-------------|
|                |               |                               |                                          | STATIC<br>RAD. | DYNAMIC<br>RAD. |             |
| 6.50-16LT-10PR | (S) 2227 / 78 | 1010                          | 5.5                                      | 354            | 356             | 740~        |
|                | (D) 2116 / 78 | 960                           | 5.5                                      | 355            | 357             | 760         |
| 6.50R16LT-10PR | (S) 2227 / 78 | 1010                          | 5.5                                      | 351            | 353             | 740~        |
|                | (D) 2116 / 78 | 960                           | 5.5                                      | 352            | 354             | 760         |
| 7.00-16LT-10PR | (S) 2490 / 75 | 1130                          | 5.25                                     | 365            | 367             | 766~        |
|                | (D) 2370 / 75 | 1075                          | 5.25                                     | 366            | 368             | 786         |
| 7.00R16LT-10PR | (S) 2535 / 80 | 1150                          | 5.62                                     | 362            | 372             | 766~        |
|                | (D) 2470 / 80 | 1120                          | 5.62                                     | 363            | 373             | 786         |
| 195R15LT-12PR  | (S) 2447 / 85 | 1110                          | 5.98                                     | 321            | 333             | 681~        |
|                | (D) 2337 / 85 | 1060                          | 5.98                                     | 322            | 334             | 702         |
| 7.50-16LT-12PR | (S) 3110 / 90 | 1410                          | 6.32                                     | 381            | 382             | 794~        |
|                | (D) 2730 / 90 | 1240                          | 6.32                                     | 382            | 383             | 816         |
| 7.50R16LT-12PR | (S) 3090 / 95 | 1400                          | 6.68                                     | 375            | 386             | 794~        |
|                | (D) 2730 / 95 | 1240                          | 6.68                                     | 376            | 387             | 816         |
| 7.50-16LT-14PR | (S) 3329 / 92 | 1510                          | 6.5                                      | 381            | 382             | 794~        |
|                | (D) 3175 / 92 | 1440                          | 6.5                                      | 382            | 383             | 816         |
| 8.5R17.5-12PR  | (S) 3195 / 89 | 1450                          | 6.25                                     | 374            | 388             | 791~        |
|                | (D) 3085 / 89 | 1400                          | 6.25                                     | 375            | 389             | 813         |

(S) : SINGLE, (D) : DOUBLE

## 6-2. FRAME MATERIAL & MAIN SECTION



### \*NOTE

- 1) FRAME MATERIAL : HIGH TENSILE PLATE  
TENSION STRENGTH :  $45\text{kg/mm}^2$   
YIELD STRENGTH :  $30\text{kg/mm}^2$

## 7. PTO CONTROL

## 7. P.T.O CONTROL

### 7-1. T/M P.T.O

(1) Use of genuine parts P.T.O

1) Unless otherwise provided for, be sure to use genuine parts.

2) Refer to appendix P.T.O ASSY drawing for details in using power.

(2) Use P.T.O other than genuine parts

A particular reason, when using PTO other than genuine parts, consult with HMC.

(3) Cautions regarding the propeller shaft driving P.T.O

1) Make sure that an angle of intersection of propeller shaft makes a solid angle be 15°. MAX, and also the angle of intersection of the both ends of propeller shaft is the same.

2) As in driving, there is a displacement of about  $\pm 10\text{mm}$  (up and down, left and right) from the position of P.T.O outlet, take notice of an allowable angle of intersection of propeller shaft.

3) The direction of P.T.O output shaft is contrary to the direction of engine revolution.

(4) T/M P.T.O table

1) PTO TYPE : 47110-5H050(M035S5)  
47110-DS031A(M2S5, M3S5)

2) TM TYPE : M2S5, M3S5, M035S5

3) TORQUE :  $15\text{kg} \cdot \text{m}/2000\text{rpm}$

4) TM & PTO RATIO : M2S5 :  $43/24 \times 36/15 \times 13/36$   
: M3S5 :  $49/29 \times 36/15 \times 13/36$   
: M035S5 :  $43/23 \times 35/16 \times 13/35$

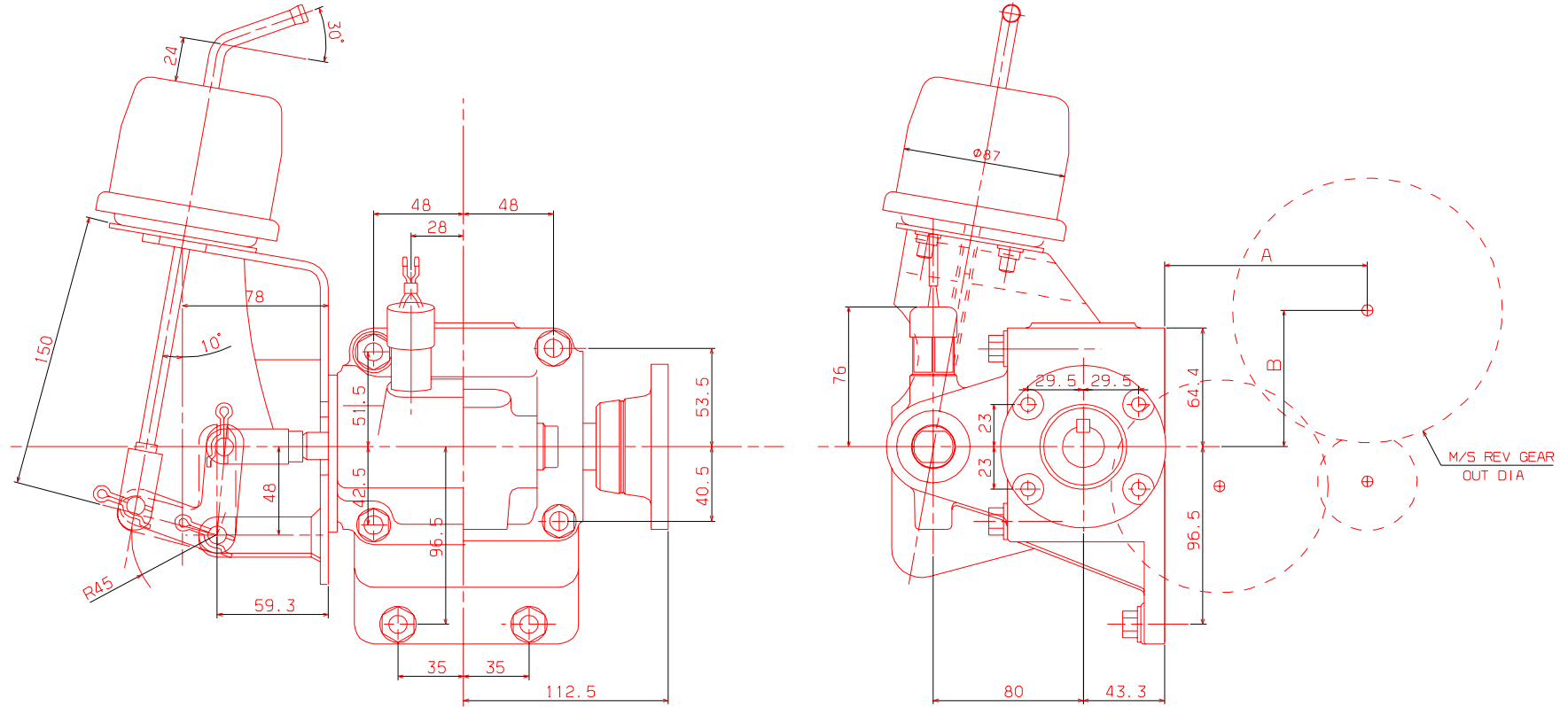
5) SHIFT STROKE : 11.5mm

6) ALLOWABLE TORQUE :  $850\text{kg} \cdot \text{cm}$

|           | A     | B    |
|-----------|-------|------|
| M2S5/M3S5 | 108.5 | 74.1 |
| M035S5    | 108.1 | 81.7 |

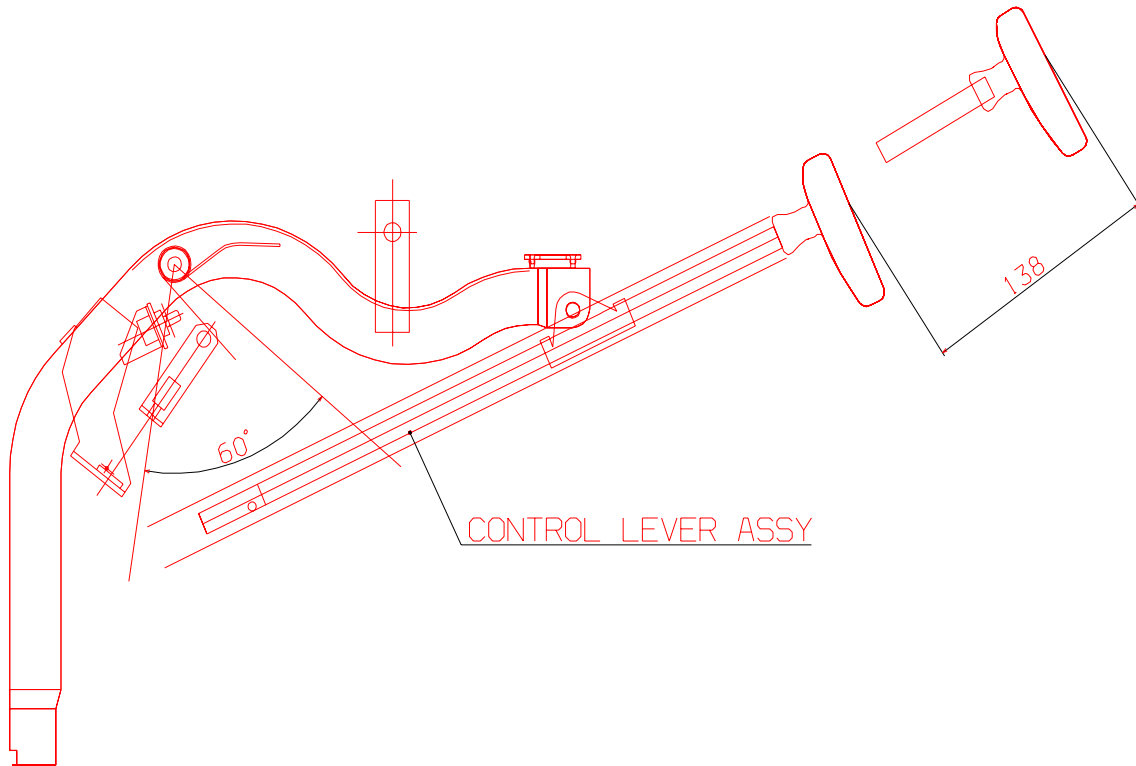
★ TRANSMISSION P.T.O

– P.T.O TYPE : 47110-5H050(M035S5)  
47110-DS031A(M3S5)



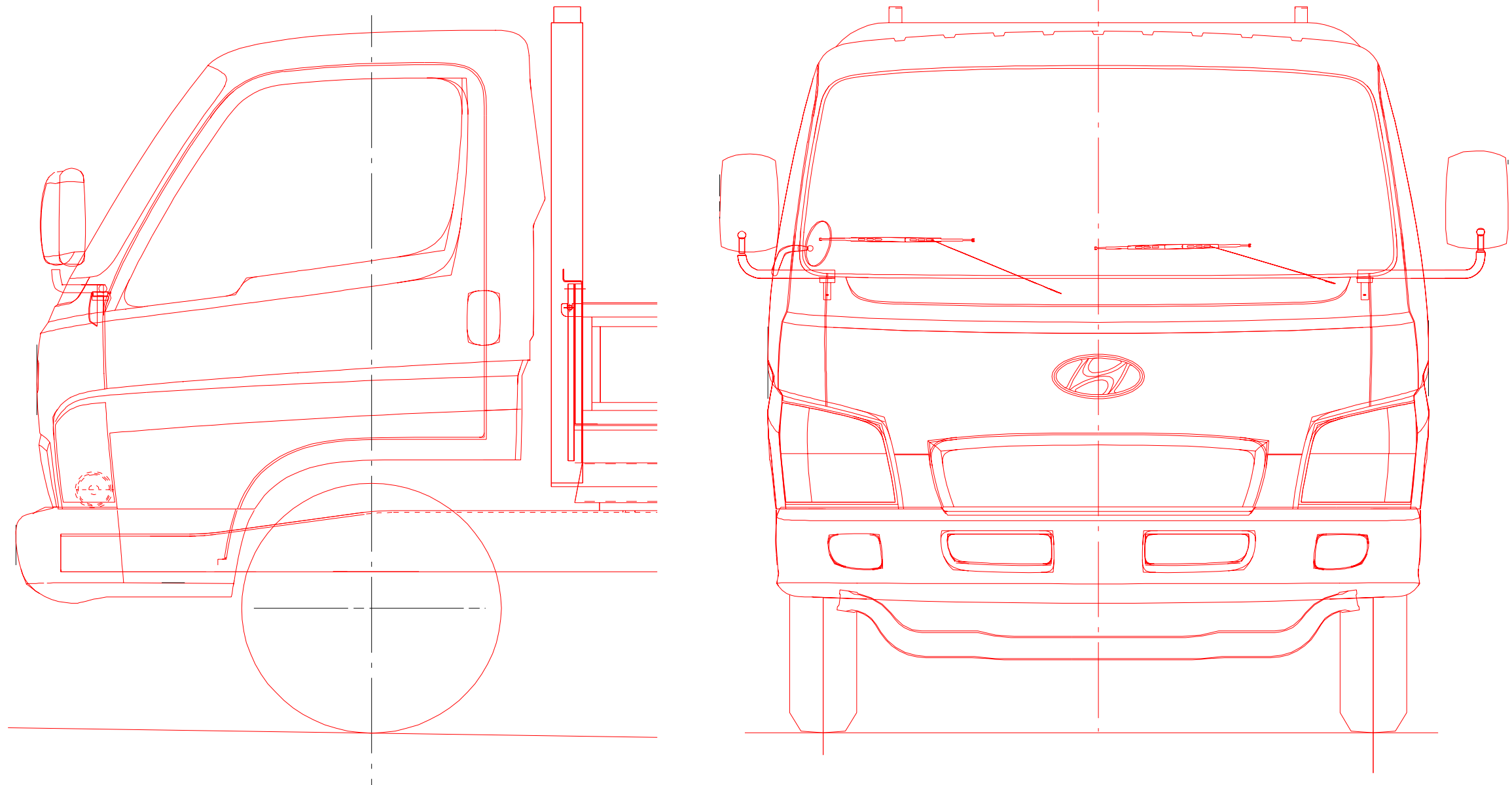
## 7-2. DUMP CONTROL LEVER

- VEHICLE : HD65 DUMP  
HD72 DUMP



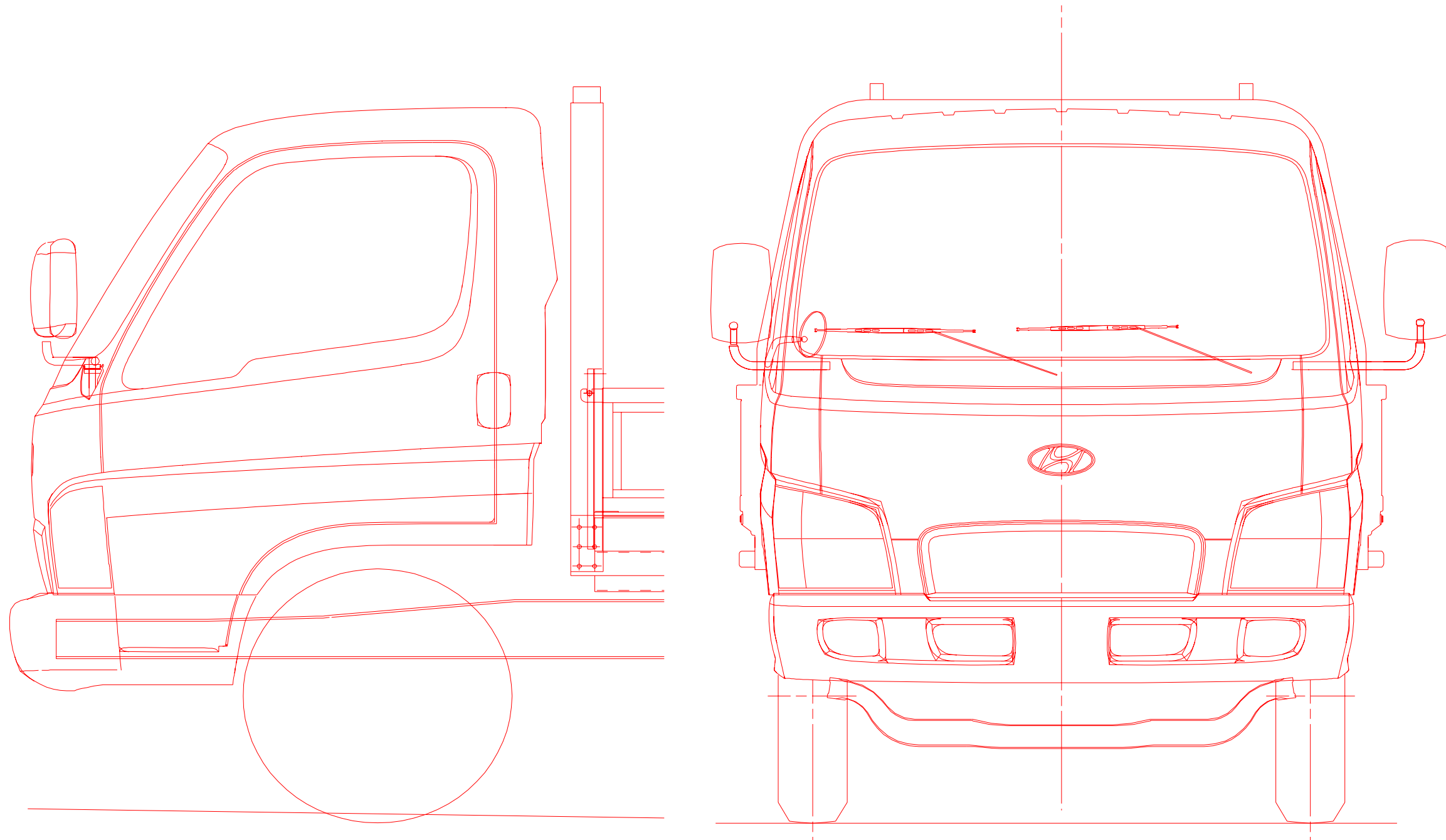
## 8. EXTERIOR DRAWING OF THE CAB

## 9. EXTERIOR DRAWING OF THE CAB (WIDE CAB)

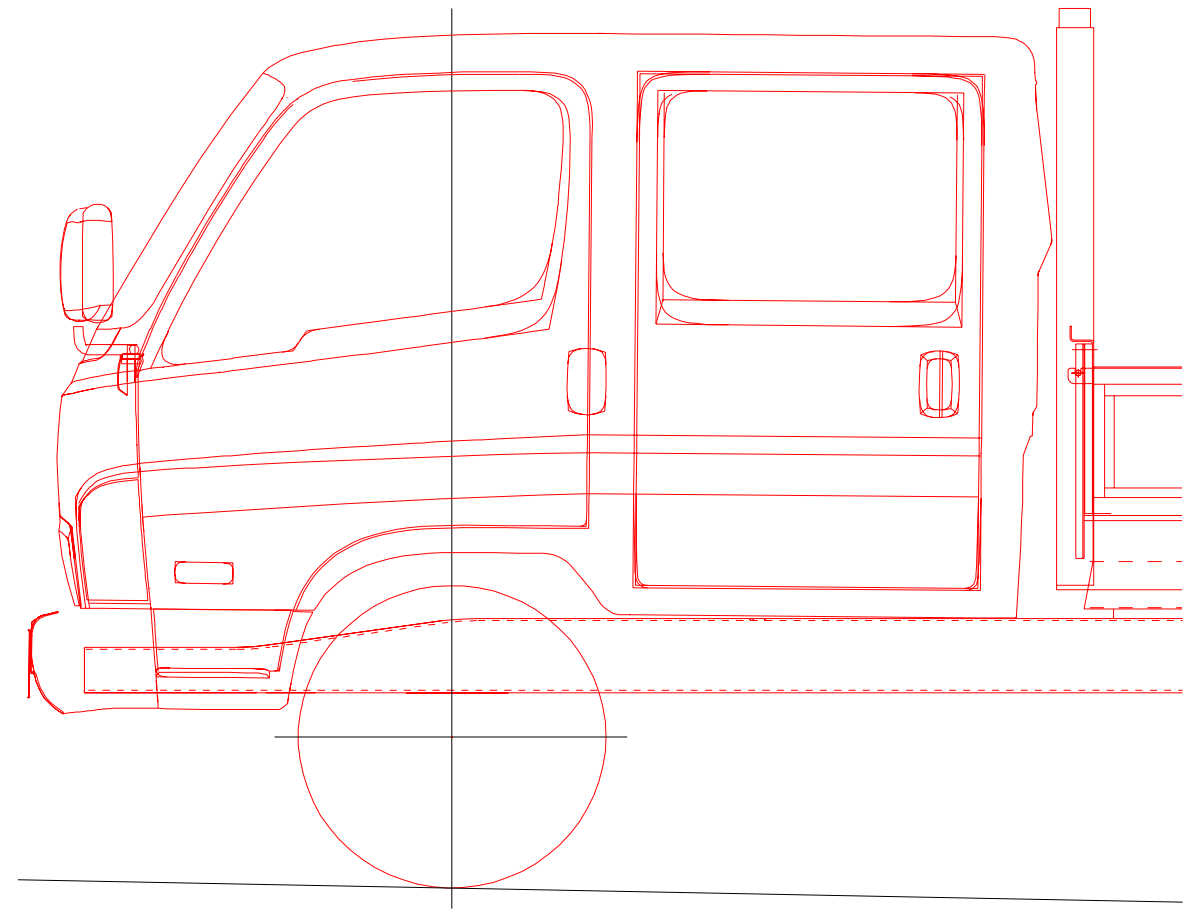
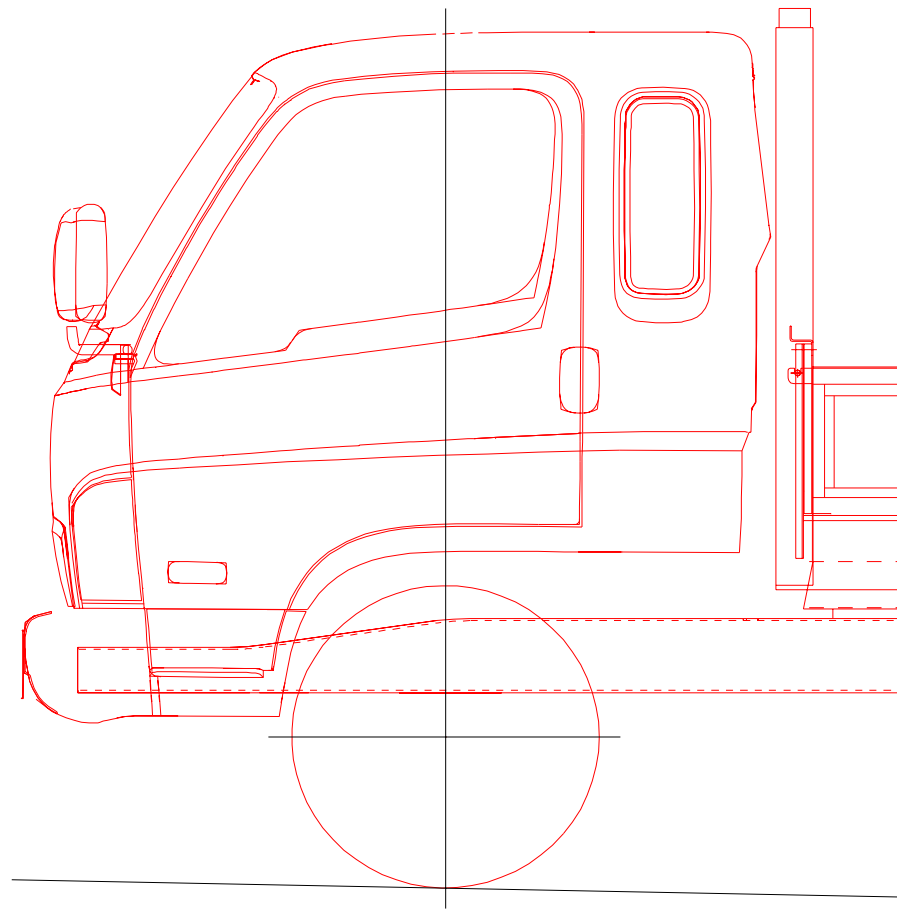




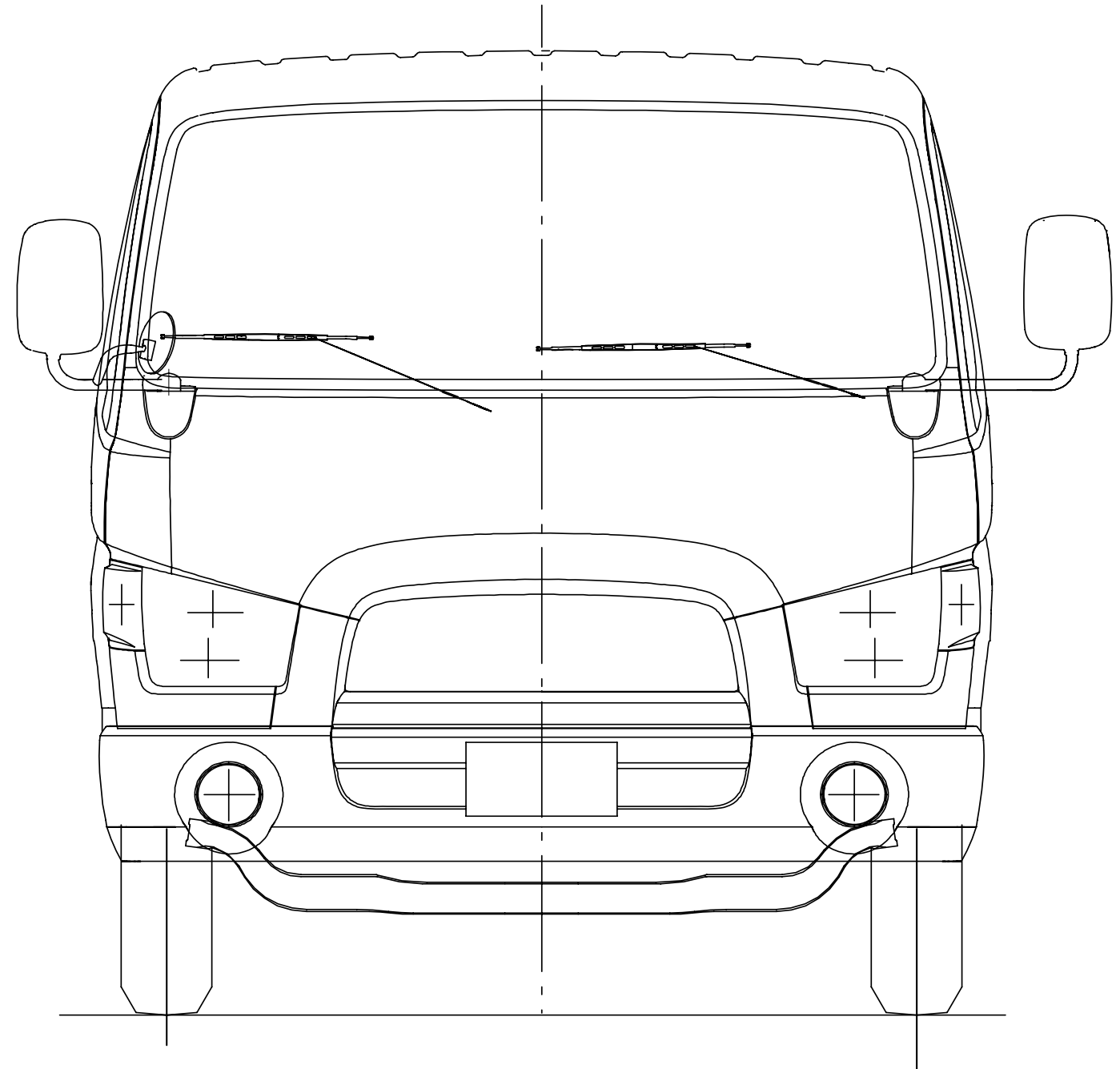
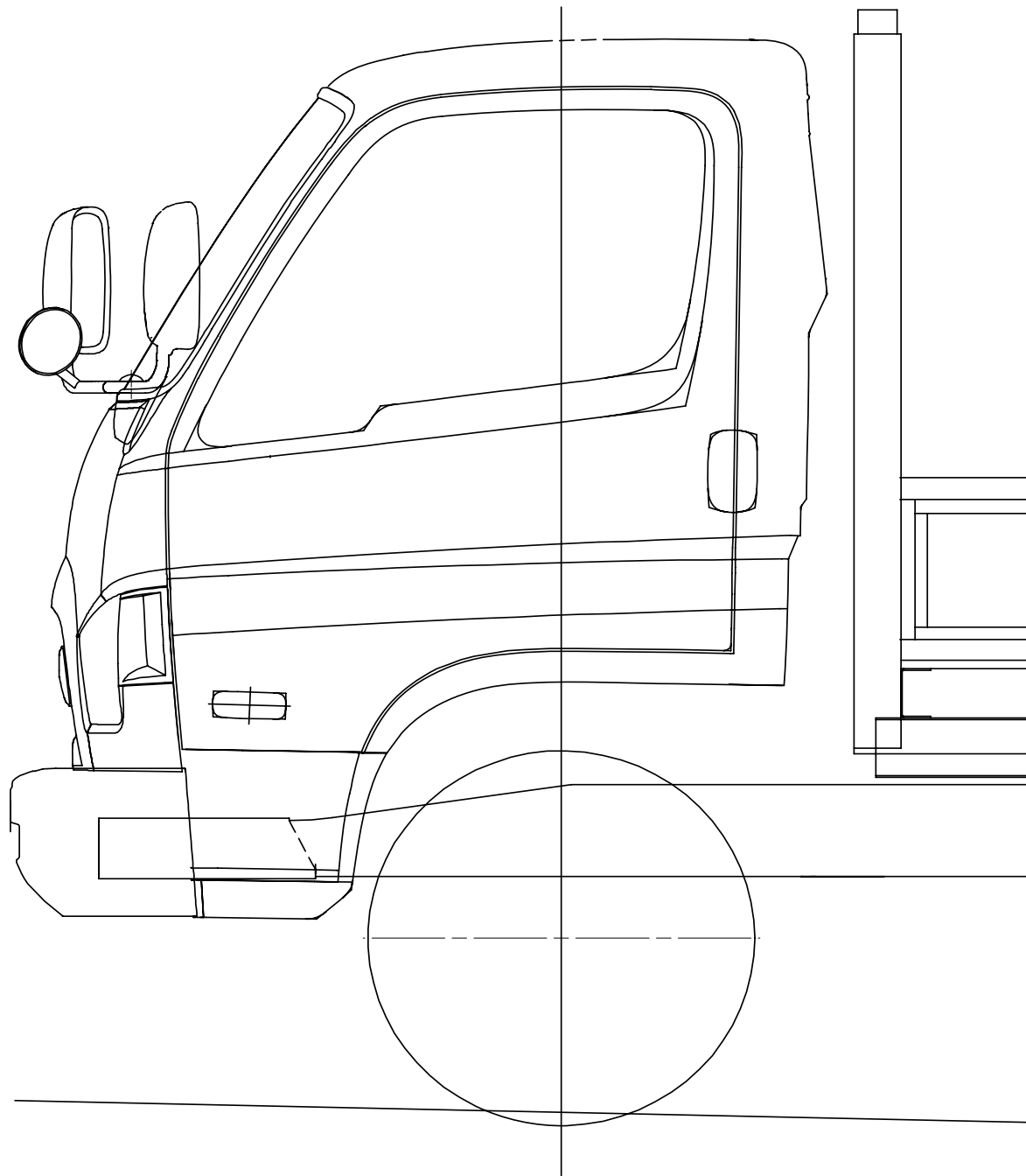
(NARROW CAB)



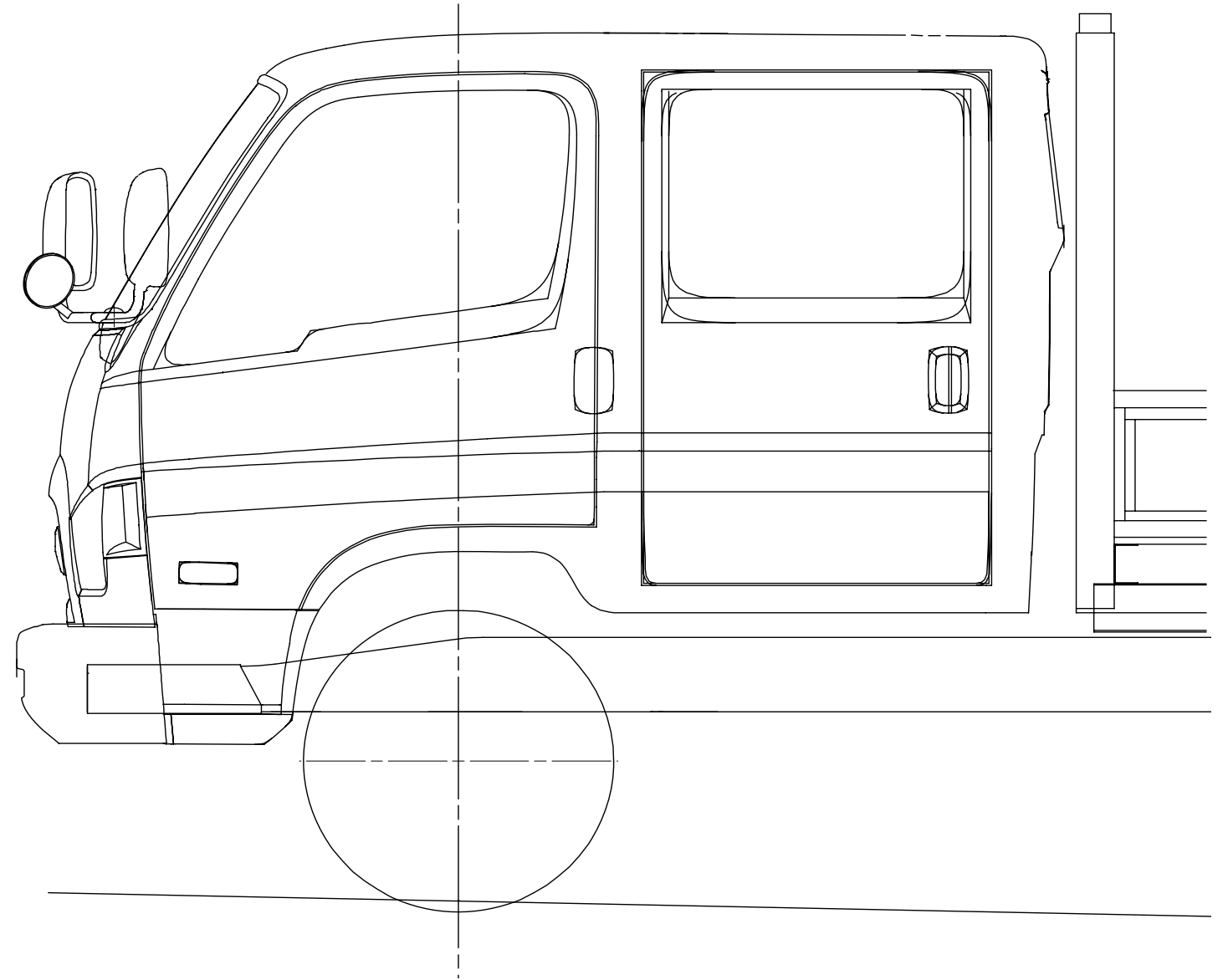
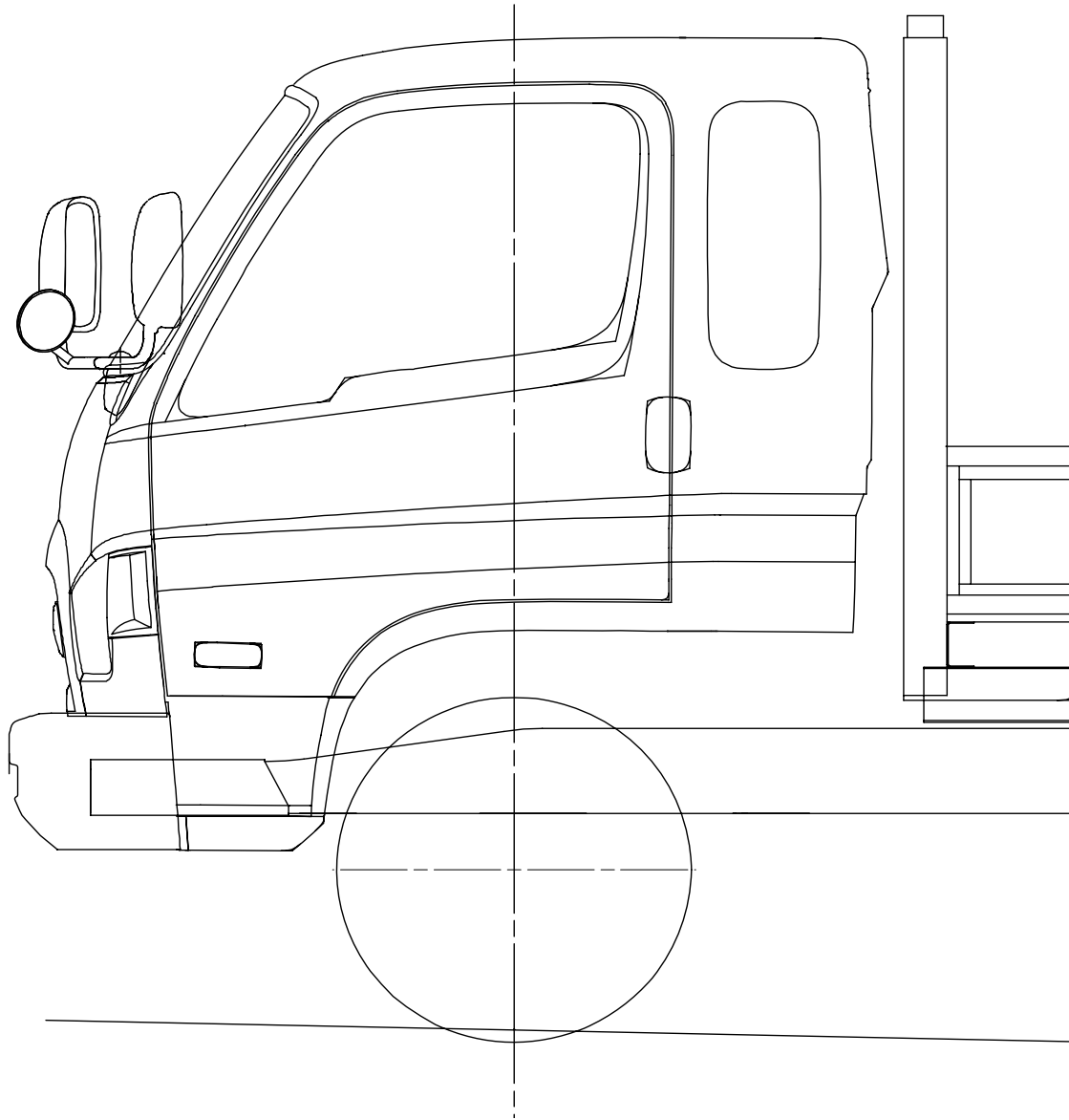
(SUPER CAB, DOUBLE)



## (WIDE CAB) - D4DD ENGINE



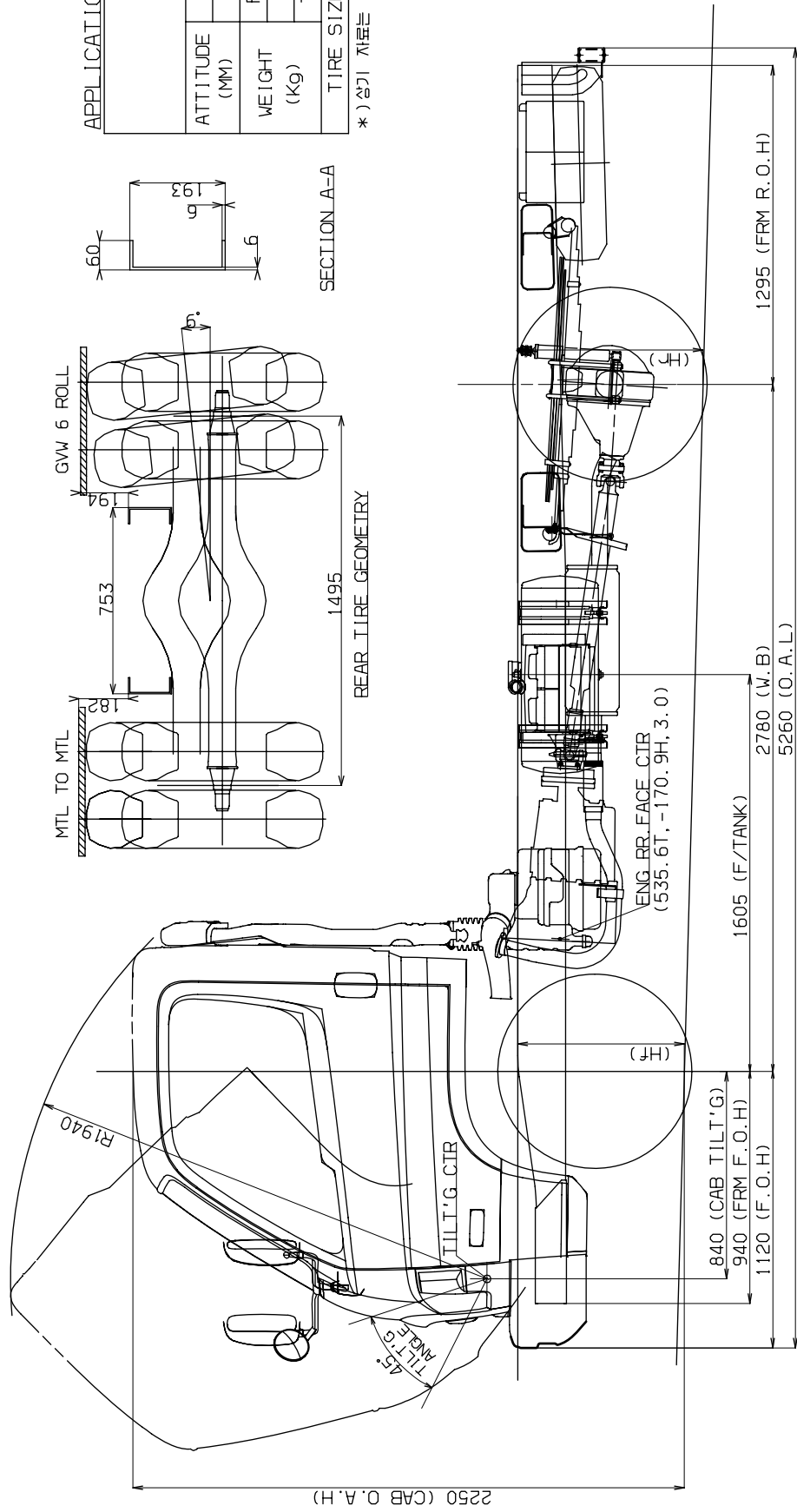
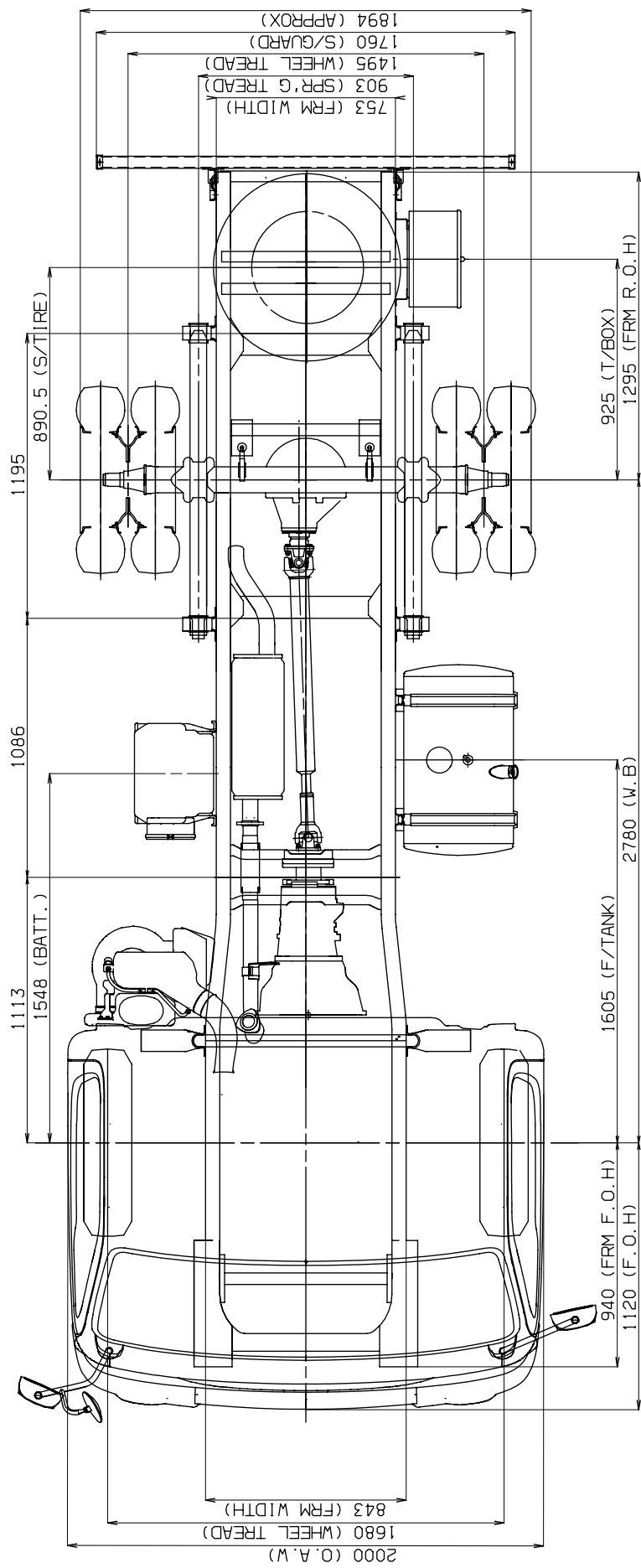
(SUPER CAB, DOUBLE) - D4DD ENGINE



## 9. CHASSIS CAB DRAWING

[illegible]





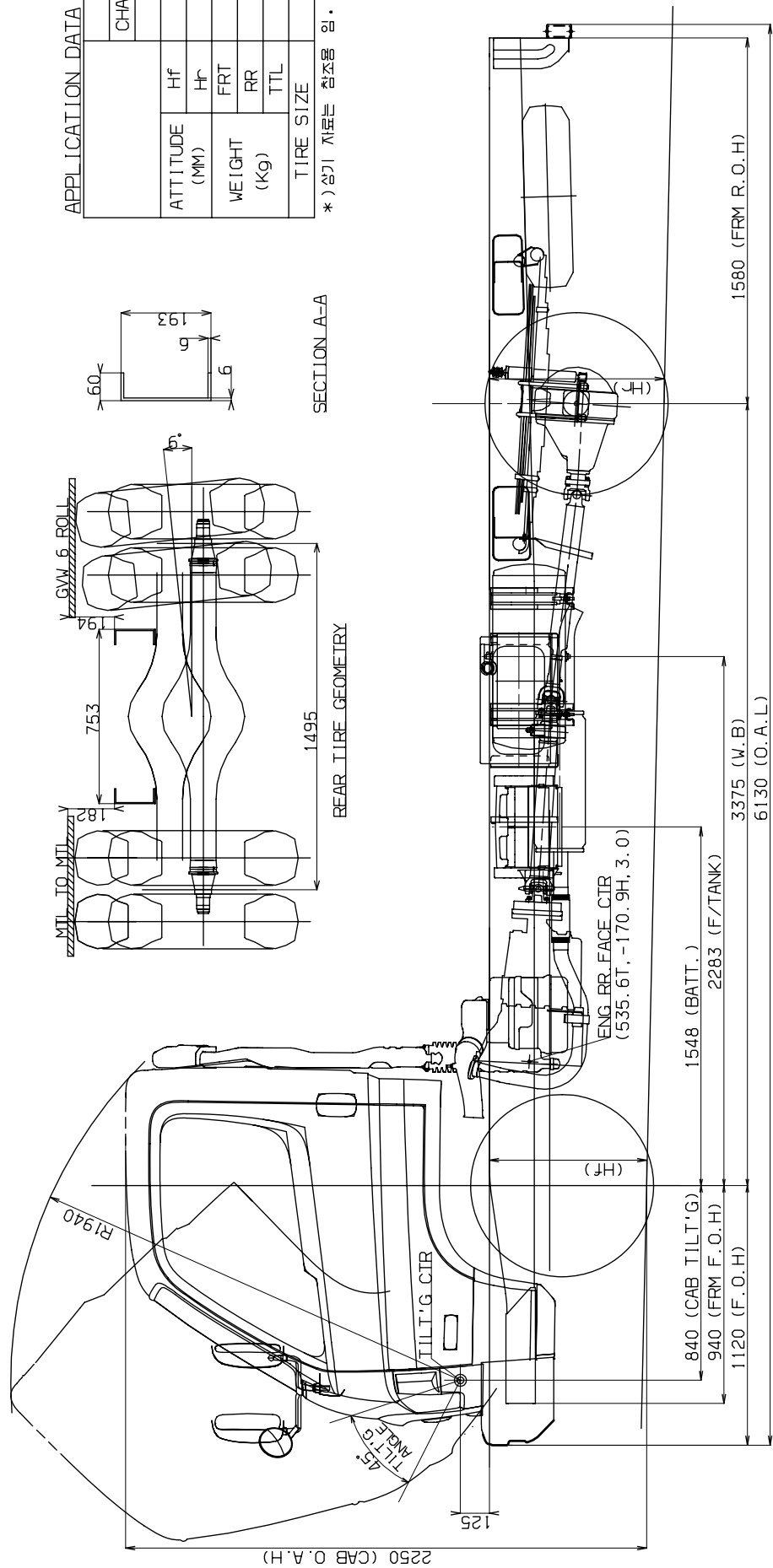
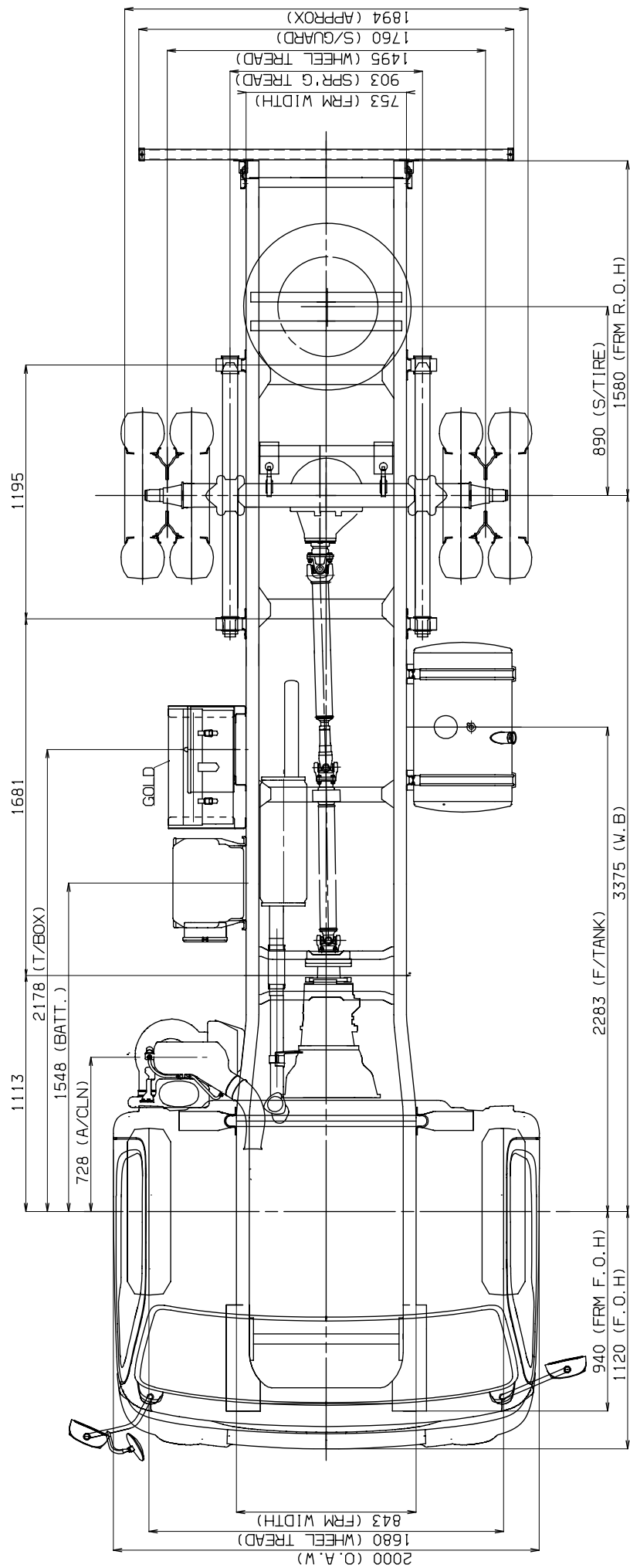
| APPLICATION DATA |     |              |  | HD65(SHORT) |  |
|------------------|-----|--------------|--|-------------|--|
|                  |     | CHASSIS CAB  |  | MAX G. V. W |  |
|                  |     | D4DD         |  |             |  |
| ATTITUDE<br>(MM) | Hf  | 675          |  | -           |  |
|                  | Hr  | 750          |  | -           |  |
| WEIGHT<br>(Kg)   | FRT | 1580         |  | 2300        |  |
|                  | RR  | 830          |  | 4400        |  |
|                  | TTL | 2410         |  | 6700        |  |
| TIRE SIZE        |     | 7.00R16-10PR |  |             |  |

(\*) 상기 자료는 연건임

|                                   |              |              |            |
|-----------------------------------|--------------|--------------|------------|
| DATE                              | MODIFICATION | ITEM         | SIGN       |
| HYUNDAI MOTOR COMPANY             |              |              |            |
| REFERENCE                         | DATE         |              |            |
| DESIGN                            | CHECKED      | APPROVED     | 2005.04.10 |
|                                   |              | DO NOT SCALE |            |
| UNLESS OTHERWISE SPECIFIED        | QTY          | UNIT(KG)     |            |
| WELDING                           |              | SCALE        |            |
| MACHINE DIM:                      |              |              |            |
| CASTING DIM:                      |              |              |            |
| MATERIAL                          | APPROVED     | PROJECTION   |            |
|                                   |              | SCALE        |            |
|                                   |              | DIMENSION    | MM         |
| FINISH                            |              |              |            |
| PART NAME: HD65CS HIGH DECK SHORT |              |              |            |
| BODY BUILDERS DRWG                |              |              |            |
| PART NO.                          | FORM         | SHEET        | SHTS       |

[illegible]





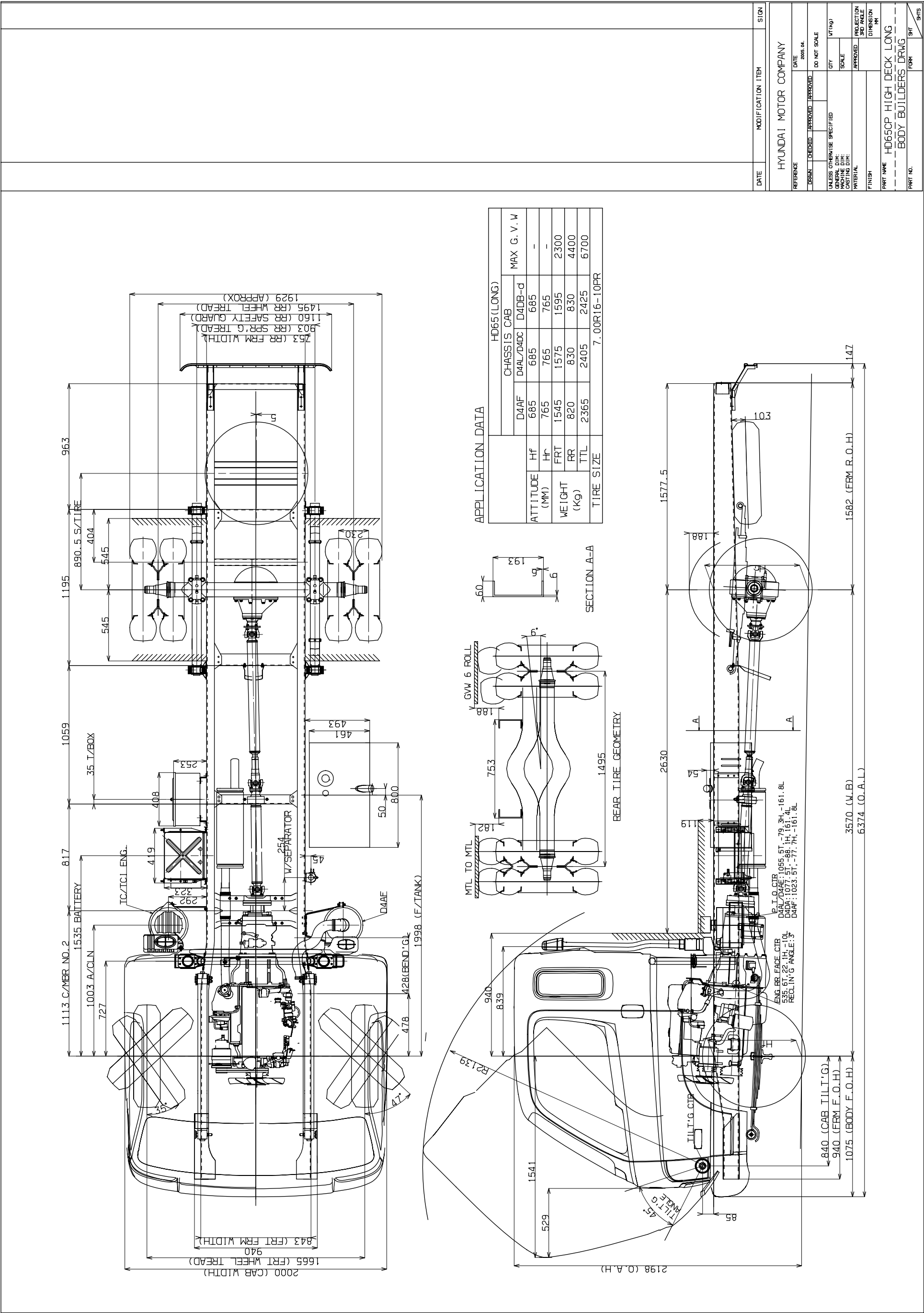
| APPLICATION DATA |                |           | HD65 (LONG)  |             |
|------------------|----------------|-----------|--------------|-------------|
| ATTITUDE<br>(NM) | HEIGHT<br>(KG) | TIRE SIZE | CHASSIS CAB  | MAX G. V. W |
|                  |                |           | D4DD         |             |
| Hf               | 675            | -         |              |             |
| Hf               | 750            | -         |              |             |
| FRT              | 1590           | 2300      |              |             |
| RR               | 860            | 4400      |              |             |
| TTL              | 2450           | 6700      |              |             |
| TIRE SIZE        |                |           | 7.00R16-10PR |             |

(\*) 1인당 1.5인원

SECTION A-A

## REAR TIRE GEOMETRY

|                            |                       |              |
|----------------------------|-----------------------|--------------|
| DATE                       | MODIFICATION ITEM     | SIGN         |
| HYUNDAI MOTOR COMPANY      |                       |              |
| REFERENCE                  | DATE                  | 2005.04.     |
| DESIGN                     | ORDERED               | APPROVED     |
| DO NOT SCALE               | DO NOT SCALE          | DO NOT SCALE |
| UNLESS OTHERWISE SPECIFIED | QTY                   | WT(Kg)       |
| ENGINEING                  | SCALE                 |              |
| DRAWING DIM:               | APPROVED              | PROJECTION   |
| MATERIAL                   |                       | SECTION      |
| FINISH                     |                       | DIMENSION    |
| PART NAME                  | HD65CS HIGH DECK LONG |              |
| BODY BUILDERS DRWG         |                       |              |
| PART NO.                   | FORM                  | SHEET        |



HYUNDAI MOTOR COMPANY

DATE 2005.04

DO NOT SCALE

UNLESS OTHERWISE SPECIFIED

GENERAL DIM: MILLIMETER

CASTING DIM: MILLIMETER

WATER

FINISH

PART NAME

HD65CP HIGH DECK LONG

BODY BUILDERS DRWG

PART NO.

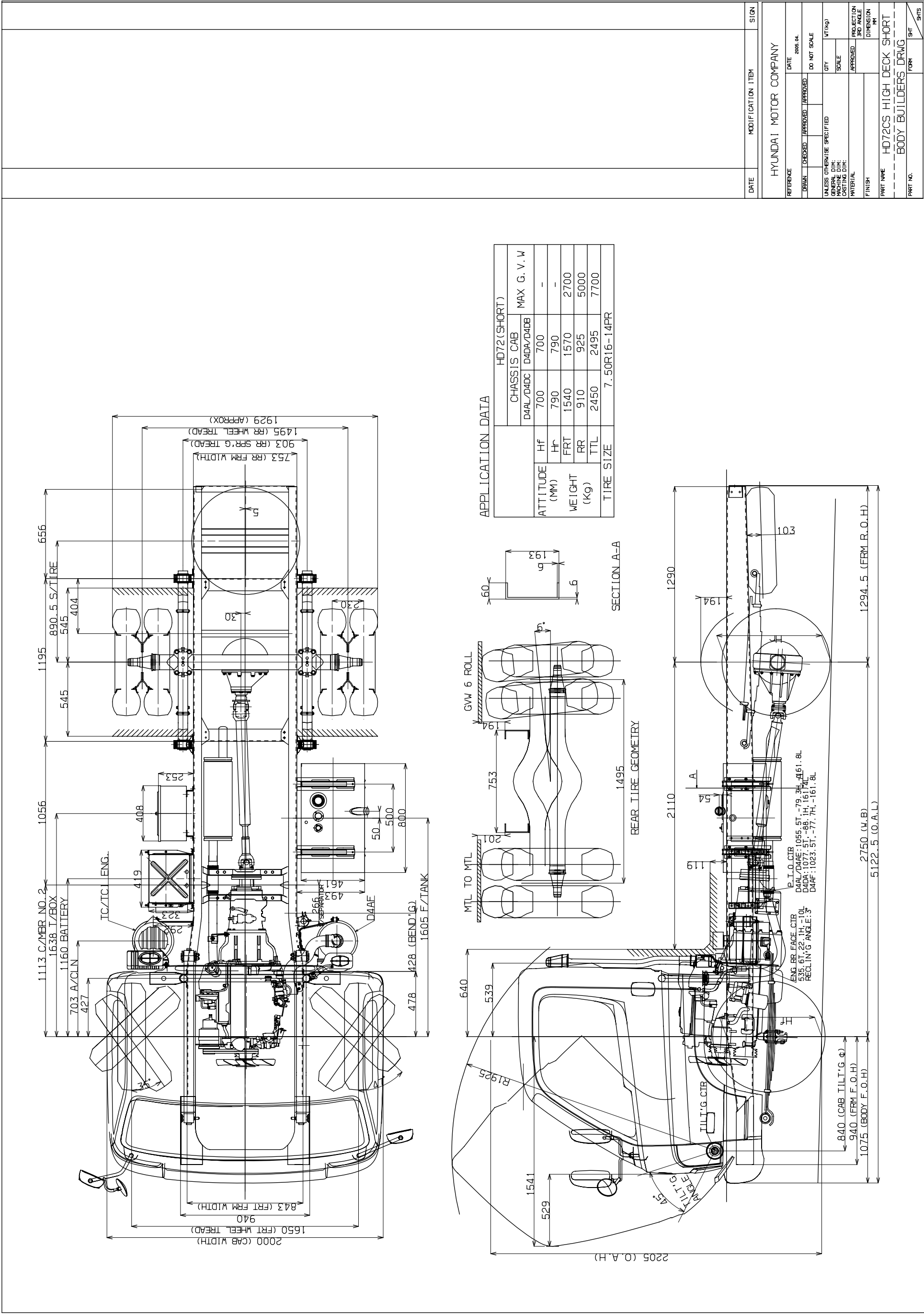
FORM

SHT

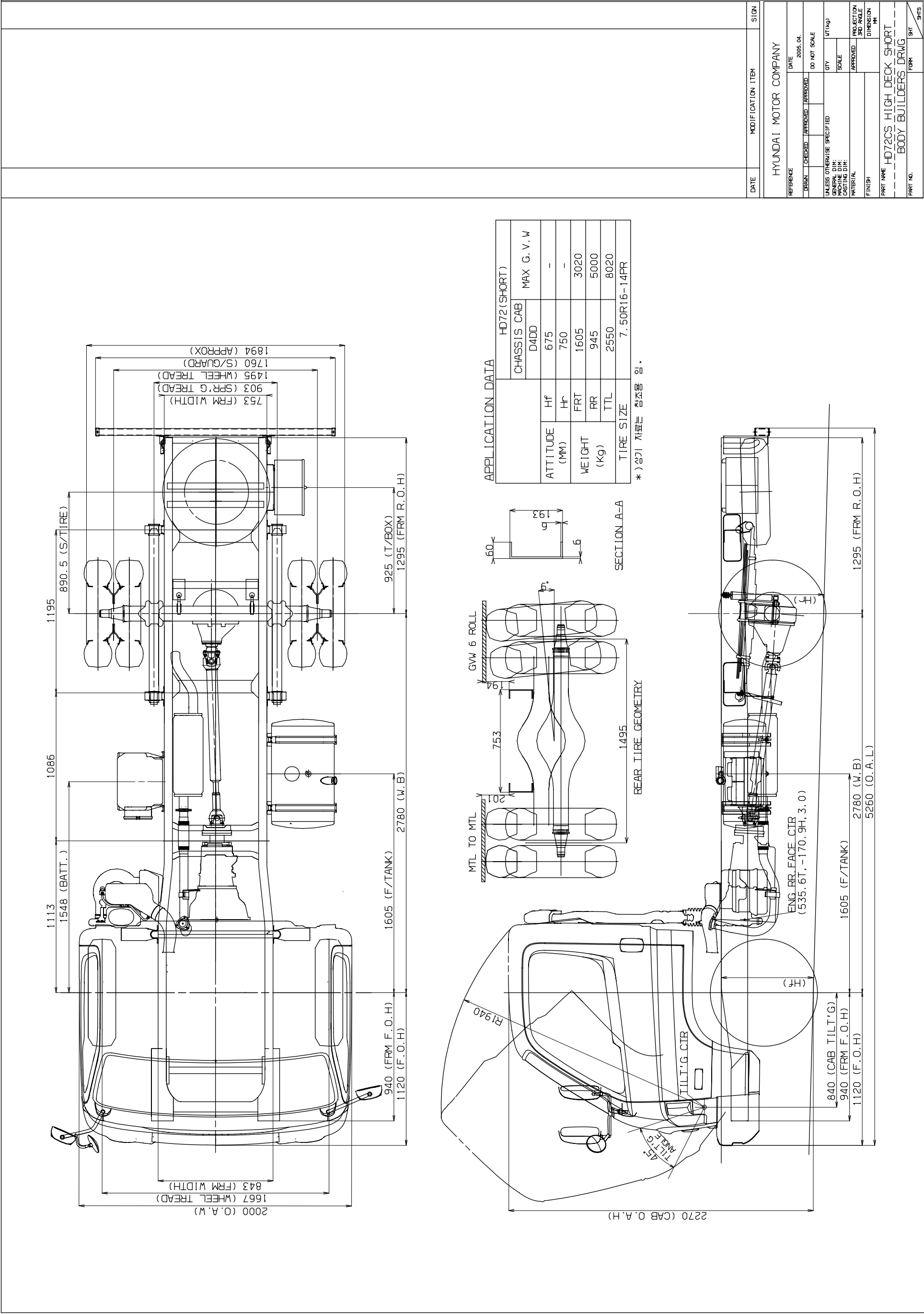
SHTS





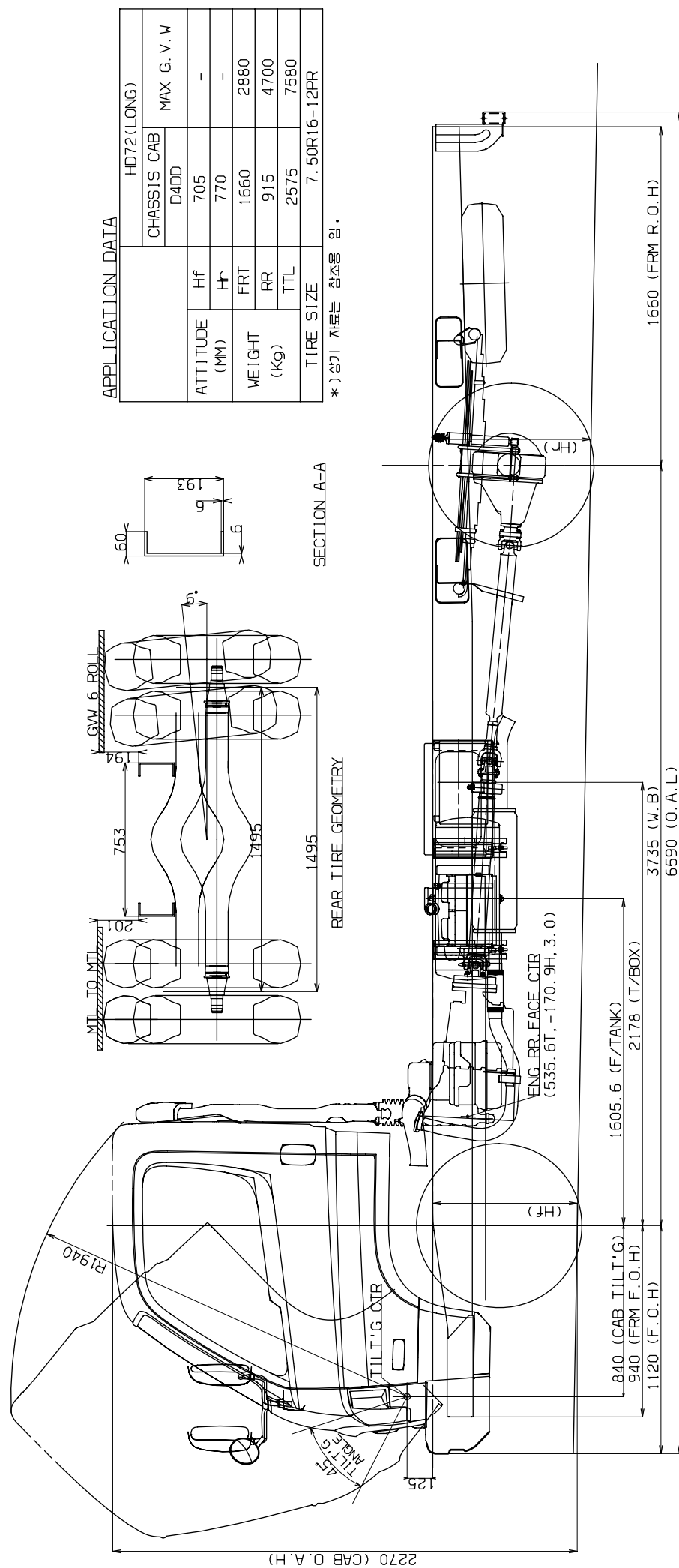
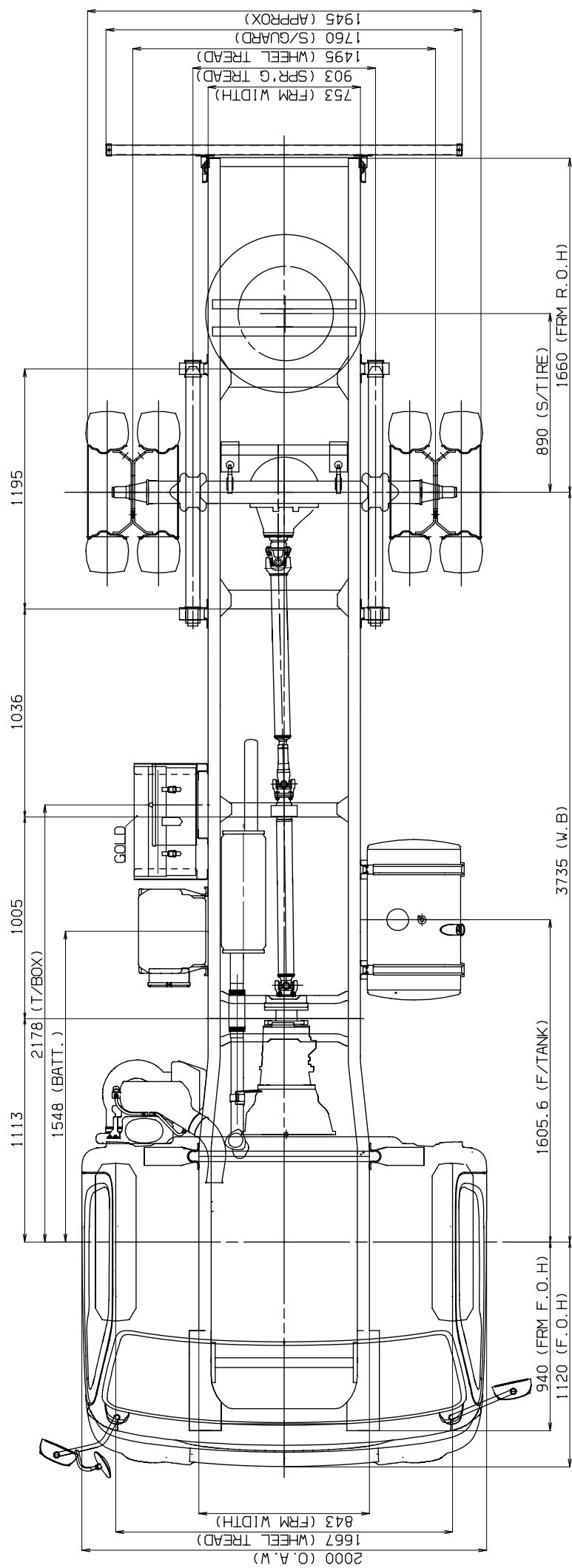


| DATE                             | MODIFICATION ITEM | SIGN     |
|----------------------------------|-------------------|----------|
| HYUNDAI MOTOR COMPANY            |                   |          |
| REFERENCE                        |                   |          |
| DRAWN                            | CHECKED           | APPROVED |
| DATE 2005.04.                    |                   |          |
| DO NOT SCALE                     |                   |          |
| UNLESS OTHERWISE SPECIFIED       |                   |          |
| CASTING DIM:                     |                   |          |
| MATERIAL                         |                   |          |
| FINISH                           |                   |          |
| PART NAME HD72CS HIGH DECK SHORT |                   |          |
| BODY BUILDERS DRWG               |                   |          |
| PART NO.                         | FORM              | SHT      |









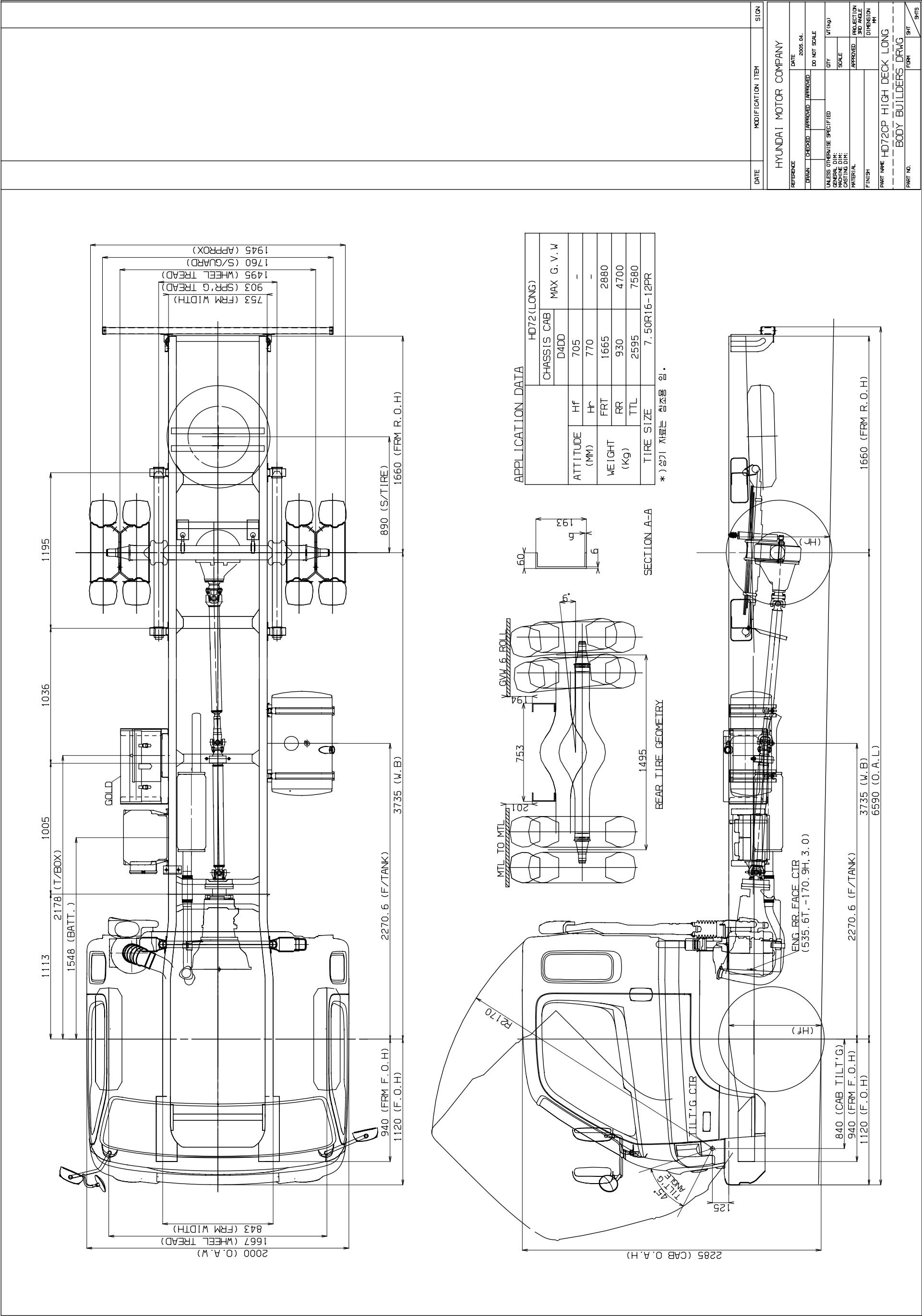
| APPLICATION DATA |     | HD72 (LONG)  |      |
|------------------|-----|--------------|------|
|                  |     | CHASSIS CAB  |      |
|                  |     | D4DD         |      |
| ATTITUDE<br>(MM) | Hf  | 705          | -    |
|                  | Hr  | 770          | -    |
| WEIGHT<br>(kg)   | FRT | 1660         | 2880 |
|                  | RR  | 915          | 4700 |
|                  | TTL | 2575         | 7580 |
| TIRE SIZE        |     | 7.50R16-12PR |      |

(\*) 신기 자료는 없음.

|                            |                   |            |
|----------------------------|-------------------|------------|
| DATE                       | MODIFICATION ITEM | SIGN       |
| HYUNDAI MOTOR COMPANY      |                   |            |
| REFERENCE                  | DATE              |            |
| DESIGN                     | DESIGNED          | APPROVED   |
| DO NOT SCALE               |                   | WT(kg)     |
| UNLESS OTHERWISE SPECIFIED | QTY               | SCALE      |
| MACHINE DIM:               |                   |            |
| CASTING DIM:               |                   |            |
| MATERIAL                   | APPROVED          | PROJECTION |
| FINISH                     |                   | DIMENSION  |
| PART NAME                  |                   | MM         |
| HD72CS HIGH DECK LONG      |                   |            |
| BODY BUILDERS DWG          |                   |            |
| PART NO.                   | FORM              | SHT        |





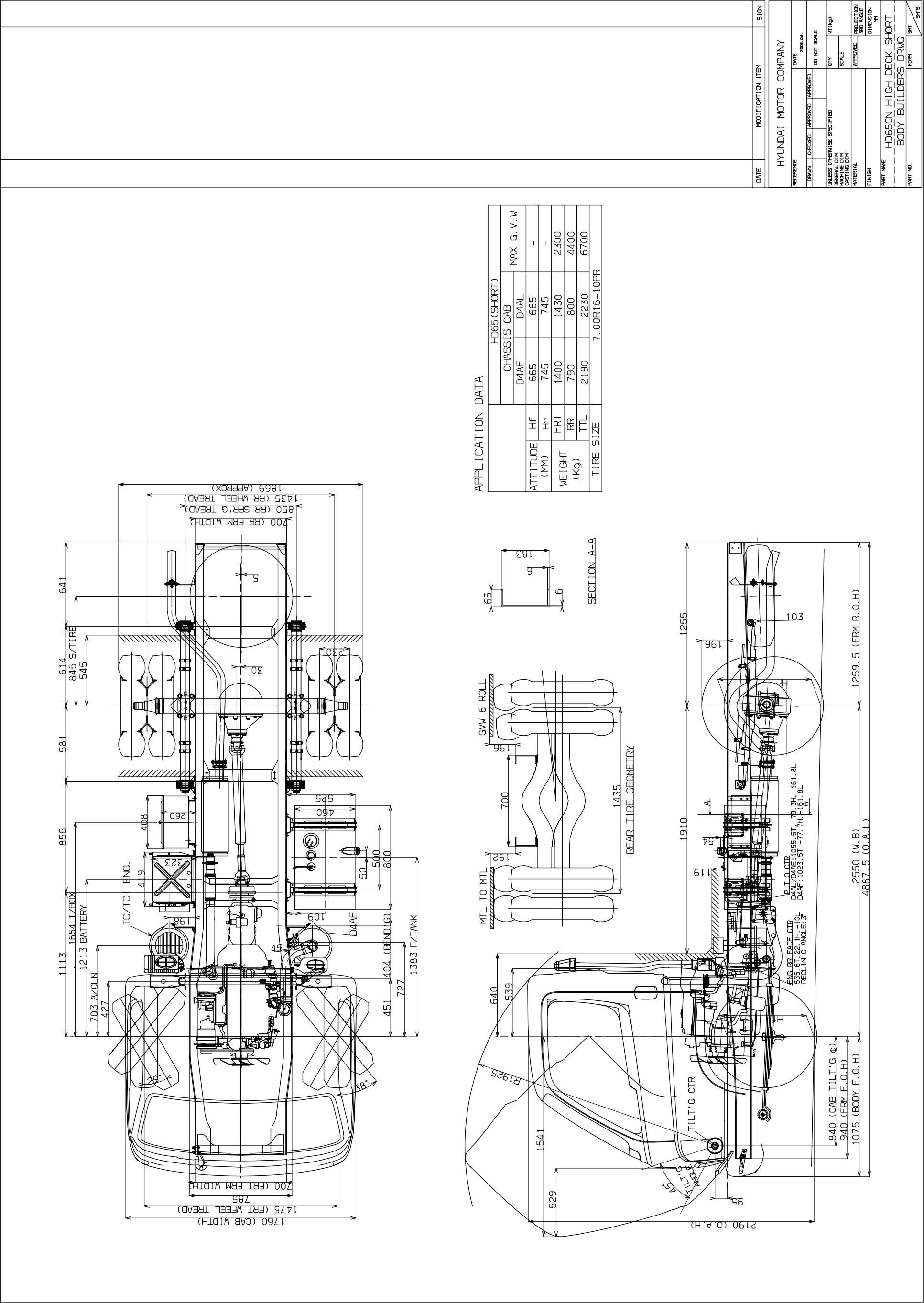


HYUNDAI MOTOR COMPANY

|                            |                       |            |
|----------------------------|-----------------------|------------|
| REFERENCE                  | DATE                  | 2005.04.   |
| DESIGN                     | CHECKED               | APPROVED   |
| DO NOT SCALE               | QTY                   | UT (kg)    |
| UNLESS OTHERWISE SPECIFIED | SCALE                 | APPROVED   |
| DESIGN DIM:                | CASTING DIM:          | PROJECTION |
| MATERIAL                   | FINISH                | 3RD ANGLE  |
|                            |                       | DIMENSION  |
|                            |                       | MM         |
| PART NAME                  | HD72CP HIGH DECK LONG |            |
|                            | BODY BUILDERS DRWG    |            |
| PART NO.                   | FORM                  | SHT        |



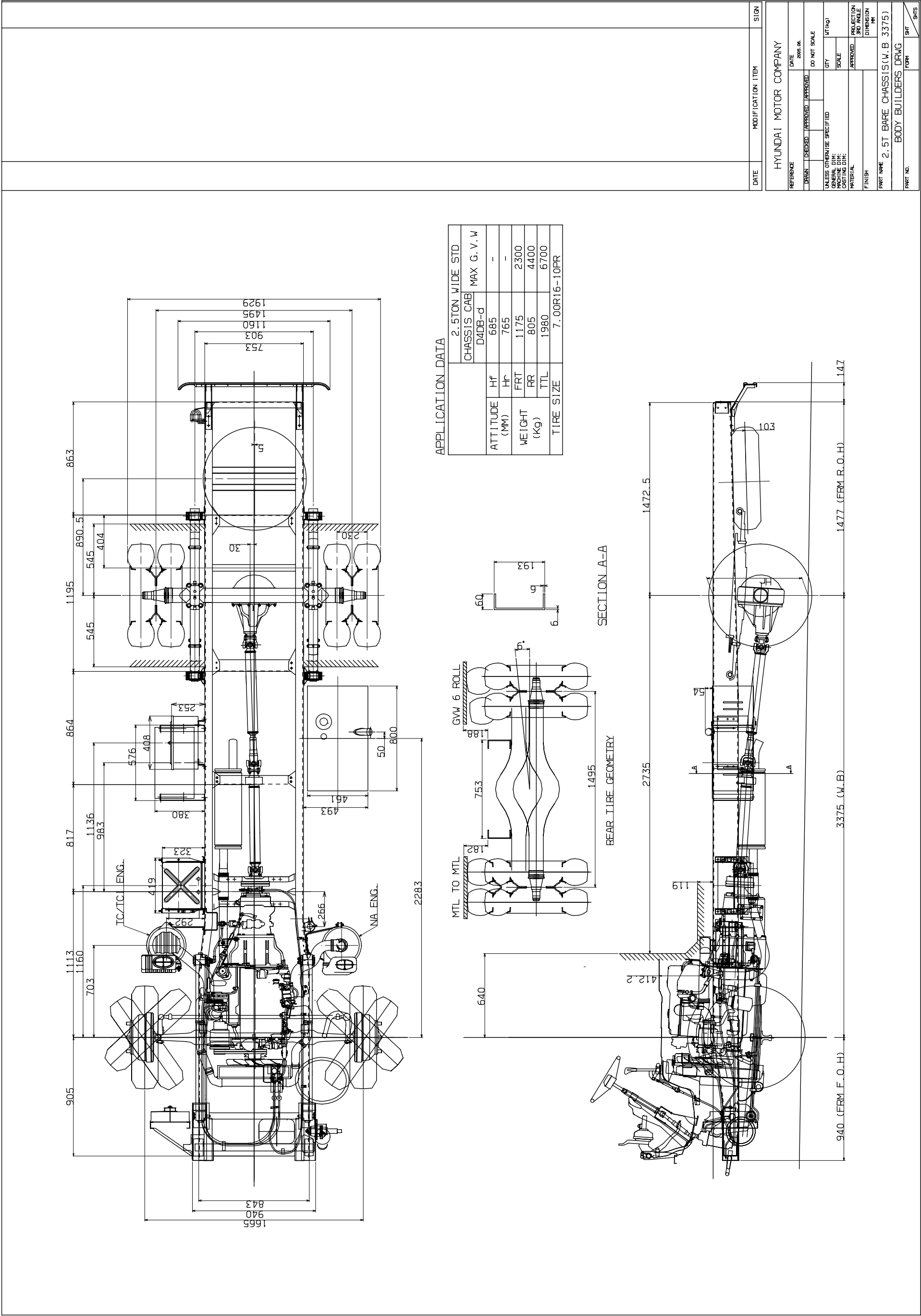
[illegible]







[illegible]



| DATE                       | MODIFICATION | ITEM                        | SIGN         |
|----------------------------|--------------|-----------------------------|--------------|
| HYUNDAI MOTOR COMPANY      |              |                             |              |
| REFERENCE                  | DATE         | 2006.06.                    |              |
| DRAWN                      | CHECKED      | APPROVED                    | DO NOT SCALE |
| UNLESS OTHERWISE SPECIFIED |              | QTY                         | WT(Kg)       |
| GENERAL DIM:               |              | SCALE                       |              |
| MACHINE DIM:               |              | APPROVED                    |              |
| CASTING DIM:               |              | APPROVED                    |              |
| FINISH                     |              | APPROVED                    |              |
| PART NAME                  |              | 2.5T BARE CHASSIS(W.B 3375) |              |
| PART NO.                   |              | BODY BUILDERS DRWG          |              |
|                            |              | FORM                        | SHT          |





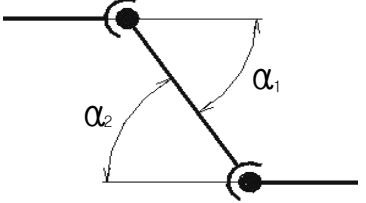
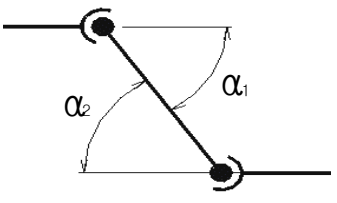


## 10. CAUTIONS NEEDED FOR THE INSTALLATION OF THE P/SHAFT

## 10. CAUTIONS NEEDED FOR THE INSTALLATION OF THE PROPELLAR SHAFT

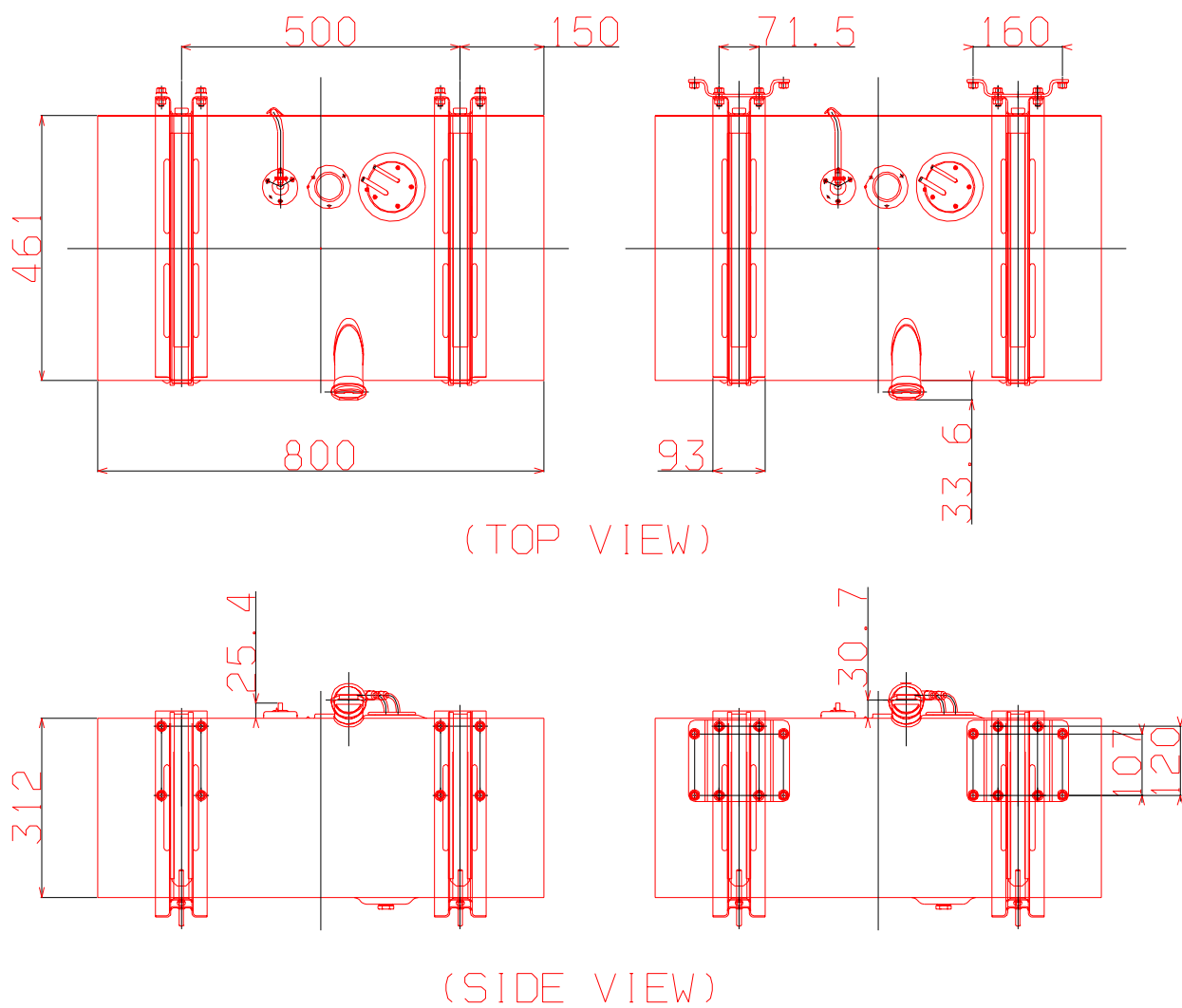
Be sure not to modify or alter propellar shaft, as it was designed to suit a vehicle feature. But in an unavoidable case, observe the following items.

### (1) 2-JOINT

|                                                                                  |                                                                                   |                                                                                    |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|  |  |  |
| 0                                                                                | X                                                                                 | 0                                                                                  |
| $\alpha_1 = 7^\circ$ , $\alpha_2 = 8^\circ$                                      | $\alpha_1 = 7^\circ$ , $\alpha_2 = 8^\circ$                                       | $\alpha_1 = 7^\circ$ , $\alpha_2 = 8^\circ$                                        |
| $\alpha_1^2 - \alpha_2^2 = -15$                                                  | $\alpha_1^2 + \alpha_2^2 = 113$                                                   | $\alpha_1^2 - \alpha_2^2 = -15$                                                    |

## 11. OTHERS

## 11-1. FUEL TANK



EXCEPT HD65CN-S\*\*

***HYUNDAI TRUCK***  
**BODY BUILDER BOOK**  
(HD120 TRUCK)



2005. 6

**HYUNDAI MOTOR COMPANY**  
**COMMERCIAL VEHICLE ENGINEERING & RESEARCH CENTER**

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### 11. CAUTIONS NEEDED FOR THE INSTALLATION OF THE PROPELLAR SHAFT

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- 12-1.Fuel tank
- 12-2.Rear safety guard



# 1. IDENTIFICATION CODE

## 1. IDENTIFICATION CODE

H       —

①    ②    ③                      ④    ⑤    ⑥

| ①     | ②       |         | ③                 | ④                                         | ⑤                                                                 | ⑥          |
|-------|---------|---------|-------------------|-------------------------------------------|-------------------------------------------------------------------|------------|
| DRIVE | PAYLOAD |         | VEH. TYPE         | WHEEL BASE                                | ENGINE                                                            | SERIAL NO. |
| 4X2:F | CARGO   | 5TON :5 | CARGO:C<br>DUMP:D | CARGO – SHORT:S<br>LONG:L<br>EXTRA LONG:E | D6BR:R<br>KK-TCI : L<br>(LOW HORSE)<br>KK-TCI : H<br>(HIGH HORSE) |            |
|       | DUMP    | 5TON :5 |                   | DUMP : D                                  |                                                                   |            |

EX) 5TON LONG CARGO TRUCK (D6BR) : HF5C-LR  
 5TON DUMP TRUCK(KK-TCI, LOW HORSE) : HF5D-DL

## 2. GENERAL SPECIFICATION

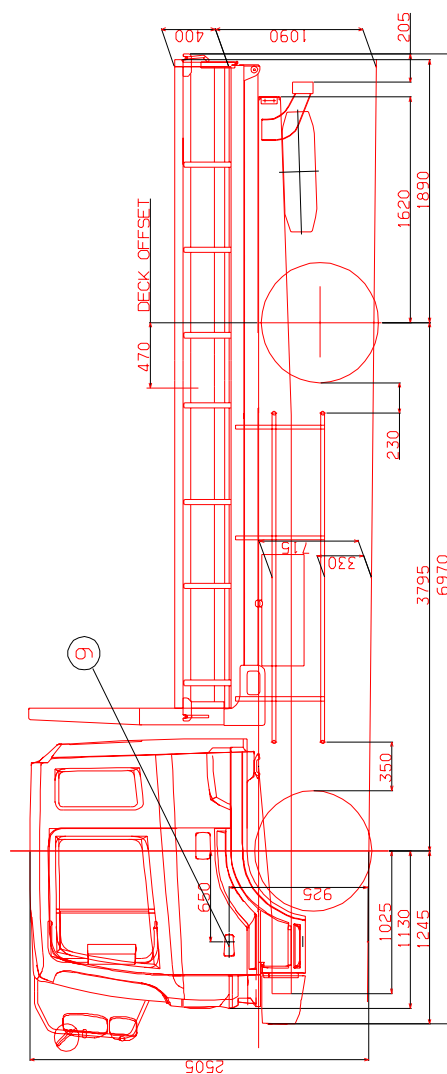
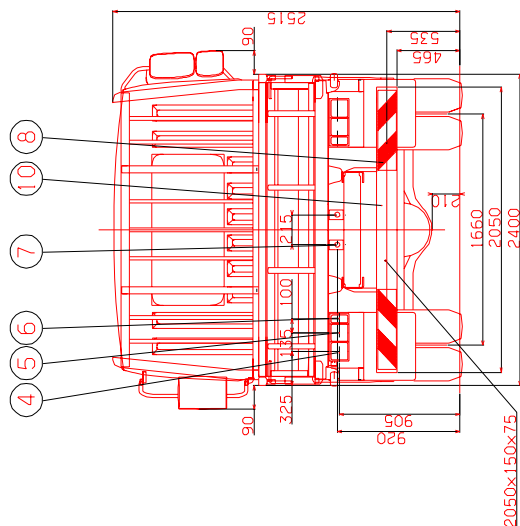
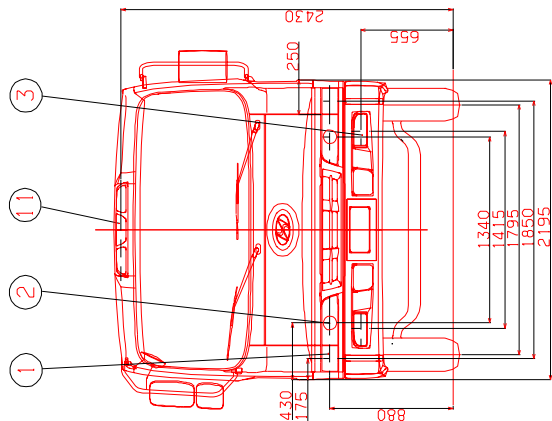
## 2.GENERAL SPECIFICATION

|                      |              |         | HD120 CARGO              |                            |                         |                           |                           |                             |
|----------------------|--------------|---------|--------------------------|----------------------------|-------------------------|---------------------------|---------------------------|-----------------------------|
|                      |              |         | SHORT(D6BR)<br>(HF5C-SR) | SHORT(KK-TCI)<br>(HF5C-SL) | LONG(D6BR)<br>(HF5C-LR) | LONG(KK-TCI)<br>(HF5C-LL) | E-LONG(D6BR)<br>(HF5C-ER) | E-LONG(KK-TCI)<br>(HF5C-EL) |
| O. A. L              |              | mm      | 6765                     | ←                          | 7465                    | ←                         | 8415                      | ←                           |
| O. A. W              |              | mm      | 2195                     | ←                          | 2195                    | ←                         | 2195                      | ←                           |
| O. A. H              |              | mm      | 2505                     | ←                          | 2505                    | ←                         | 2505                      | ←                           |
| BODY<br>INSIDE       | LENTH        | mm      | 4600                     | ←                          | 5300                    | ←                         | 6250                      | ←                           |
|                      | WIDTH        | mm      | 2280                     | ←                          | 2280                    | ←                         | 2280                      | ←                           |
|                      | HEIGHT       | mm      | 400                      | ←                          | 400                     | ←                         | 400                       | ←                           |
| DECK OFFSET          |              | mm      | 470                      | ←                          | 585                     | ←                         | 745                       | ←                           |
| WHEEL BASE           |              | mm      | 3795                     | ←                          | 4260                    | ←                         | 4895                      | ←                           |
| WHEEL<br>TREAD       | FRT          | mm      | 1795                     | ←                          | 1795                    | ←                         | 1795                      | ←                           |
|                      | RR           | mm      | 1660                     | ←                          | 1660                    | ←                         | 1660                      | ←                           |
| OVER<br>HANG         | FRT          | mm      | 1245                     | ←                          | 1245                    | ←                         | 1245                      | ←                           |
|                      | RR           | mm      | 1725                     | ←                          | 1960                    | ←                         | 2275                      | ←                           |
| C/CAB<br>(kg)        | FRT          | kg      | 2270                     | 2385                       | 2375                    | 2510                      | 2435                      | 2600                        |
|                      | RR           | kg      | 1300                     | 1430                       | 1340                    | 1470                      | 1325                      | 1470                        |
|                      | TTL          | kg      | 3570                     | 3815                       | 3715                    | 3980                      | 3760                      | 4070                        |
| MAX<br>G.V.W<br>(kg) | FRT          | kg      | 3600                     | 3720                       | 3600                    | 3720                      | 3600                      | 3720                        |
|                      | RR           | kg      | 6740                     | 7800                       | 6740                    | 7800                      | 6740                      | 7800                        |
|                      | TTL          | kg      | 10340                    | 11520                      | 10340                   | 11520                     | 10340                     | 11520                       |
| ENGINE               | MODEL        |         | D6BR                     | KK-TCI                     | D6BR                    | KK-TCI                    | D6BR                      | KK-TCI                      |
|                      | ASPIRATION   |         | NA                       | TCI                        | NA                      | TCI                       | NA                        | TCI                         |
|                      | DISPLACEMENT | cc      | 7545                     | 6606                       | 7545                    | 6606                      | 7545                      | 6606                        |
|                      | OUTPUT       | ps/rpm  | 185/2900                 | 196/2500                   | 185/2900                | 196/2500                  | 185/2900                  | 196/2500                    |
|                      | TORQUE       | kgm/rpm | 51/1400                  | 58/1700                    | 51/1400                 | 58/1700                   | 51/1400                   | 58/1700                     |
| PERFOR-<br>MANCE     | MAX.SPD      | km/h    | 124(114)                 | 123                        | 124(114)                | 123                       | 124(114)                  | 123                         |
|                      | MAX.GRD      | tan θ   | 0.475                    | 0.406                      | 0.457                   | 0.392                     | 0.447                     | 0.42                        |
|                      | T/RAD        | m       | 6.3                      | ←                          | 7.3                     | ←                         | 8.2                       | ←                           |
| T / M                | MODEL        |         | M6S6                     | KH-10                      | M6S6                    | KH-10                     | M6S6                      | KH-10                       |
|                      | GEAR         | 1st     | 6.903                    | 6.967                      | 6.903                   | 6.967                     | 6.903                     | 6.967                       |
|                      |              | 2nd     | 4.206                    | 4.247                      | 4.206                   | 4.247                     | 4.206                     | 4.247                       |
|                      | RATIO        | 3rd     | 2.320                    | 2.454                      | 2.320                   | 2.454                     | 2.320                     | 2.454                       |
|                      |              | 4th     | 1.414                    | 1.471                      | 1.414                   | 1.471                     | 1.414                     | 1.471                       |
|                      |              | 5th     | 1.000                    | 1.000                      | 1.000                   | 1.000                     | 1.000                     | 1.000                       |
|                      |              | 6th     | 0.747                    | 0.769                      | 0.747                   | 0.769                     | 0.747                     | 0.769                       |
|                      |              | 7th     | -                        | -                          | -                       | -                         | -                         | -                           |
|                      |              | 8th     | -                        | -                          | -                       | -                         | -                         | -                           |
|                      | REV          |         | 6.903                    | 6.492                      | 6.903                   | 6.492                     | 6.903                     | 6.492                       |
| R/AXLE               | MODEL        |         | D4H-II                   | ←                          | D4H-II                  | ←                         | D4H-II                    | ←                           |
|                      | RATIO        |         | 5.428                    | 4.333                      | 5.428                   | 4.333                     | 5.428                     | 4.333                       |
| TIRE                 | FRT          |         | 8.25R16-16PR             | 245/70R19.5-14PR           | 8.25R16-16PR            | 245/70R19.5-14PR          | 8.25R16-16PR              | 245/70R19.5-14PR            |
|                      | RR           |         | 8.25R16-16PR             | 245/70R19.5-14PR           | 8.25R16-16PR            | 245/70R19.5-14PR          | 8.25R16-16PR              | 245/70R19.5-14PR            |

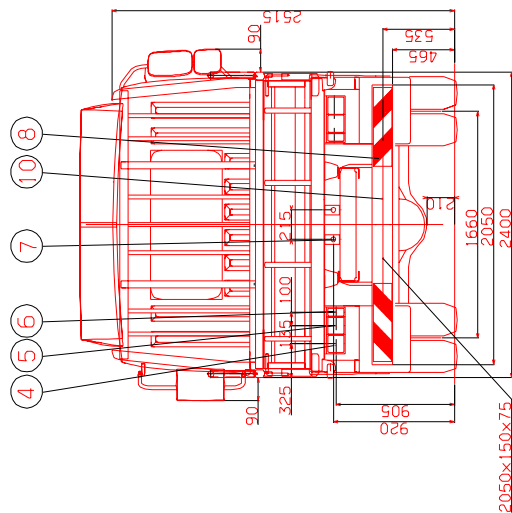
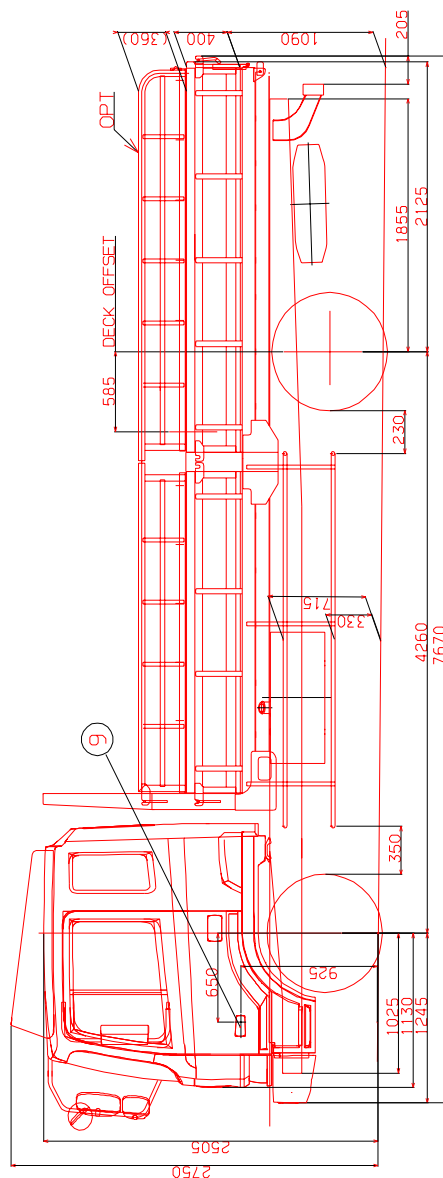
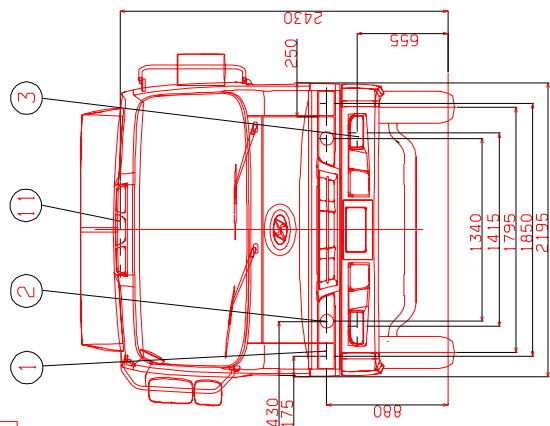
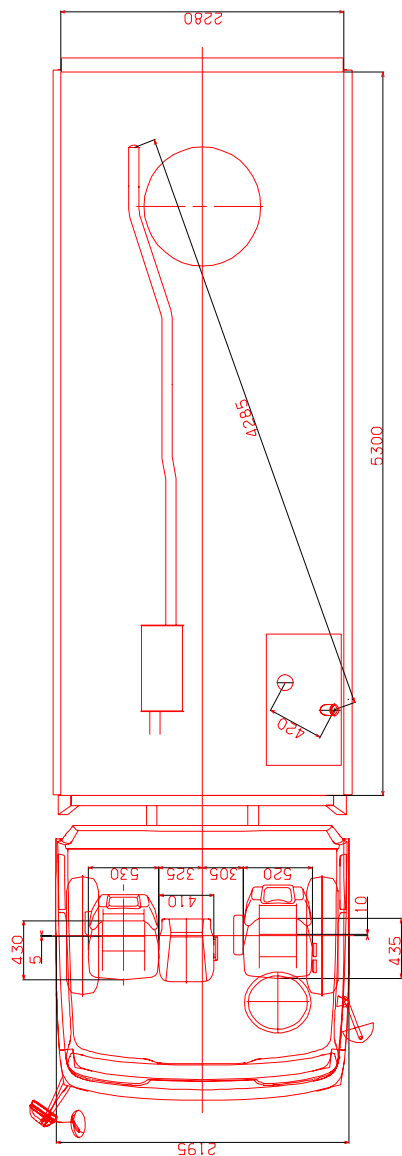
|                      |               |         | HD120 DUMP              |                           |  |  |  |  |
|----------------------|---------------|---------|-------------------------|---------------------------|--|--|--|--|
|                      |               |         | DUMP(D6BR)<br>(HF5D-DR) | DUMP(KK-TCI)<br>(HF5C-DL) |  |  |  |  |
| O. A. L              |               | mm      | 5752                    | ←                         |  |  |  |  |
| O. A. W              |               | mm      | 2195                    | ←                         |  |  |  |  |
| O. A. H              |               | mm      | 2510                    | ←                         |  |  |  |  |
| BODY<br>INSIDE       | LENTH         | mm      | 3400                    | ←                         |  |  |  |  |
|                      | WIDTH         | mm      | 2060                    | ←                         |  |  |  |  |
|                      | HEIGHT        | mm      | 480                     | ←                         |  |  |  |  |
| DECK OFFSET          |               | mm      | 450                     | ←                         |  |  |  |  |
| WHEEL BASE           |               | mm      | 3300                    | ←                         |  |  |  |  |
| WHEEL<br>TREAD       | FRT           | mm      | 1795                    | ←                         |  |  |  |  |
|                      | RR            | mm      | 1660                    | ←                         |  |  |  |  |
| OVER<br>HANG         | FRT           | mm      | 1245                    | ←                         |  |  |  |  |
|                      | RR            | mm      | 1207                    | ←                         |  |  |  |  |
| C/CAB<br>(kg)        | FRT           | kg      | 2262                    | 2346                      |  |  |  |  |
|                      | RR            | kg      | 1260                    | 1314                      |  |  |  |  |
|                      | TTL           | kg      | 3522                    | 3660                      |  |  |  |  |
| MAX<br>G.V.W<br>(kg) | FRT           | kg      | 3600                    | 3720                      |  |  |  |  |
|                      | RR            | kg      | 7160                    | 7800                      |  |  |  |  |
|                      | TTL           | kg      | 10760                   | 11520                     |  |  |  |  |
| ENGINE               | MODEL         |         | D6BR                    | KK-TCI                    |  |  |  |  |
|                      | ASPIRATION    |         | NA                      | TCI                       |  |  |  |  |
|                      | DISPLACEMENT  | cc      | 7545                    | 6606                      |  |  |  |  |
|                      | OUTPUT        | ps/rpm  | 185/2900                | 196/2500                  |  |  |  |  |
|                      | TORQUE        | kgm/rpm | 51/1400                 | 58/1700                   |  |  |  |  |
| PERFOR-<br>MANCE     | MAX.SPD       | km/h    | 124(114)                | 103                       |  |  |  |  |
|                      | MAX.GRD       | tan θ   | 0.421                   | 0.434                     |  |  |  |  |
|                      | T/RAD         | m       | 5.7                     | ←                         |  |  |  |  |
| T / M                | MODEL         |         | M6S6                    | KH-10                     |  |  |  |  |
|                      | GEAR<br>RATIO | 1st     | 6.903                   | 6.967                     |  |  |  |  |
|                      |               | 2nd     | 4.206                   | 4.247                     |  |  |  |  |
|                      |               | 3rd     | 2.320                   | 2.454                     |  |  |  |  |
|                      |               | 4th     | 1.414                   | 1.471                     |  |  |  |  |
|                      |               | 5th     | 1.000                   | 1.000                     |  |  |  |  |
|                      |               | 6th     | 0.747                   | 0.769                     |  |  |  |  |
|                      |               | 7th     | -                       | -                         |  |  |  |  |
|                      |               | 8th     | -                       | -                         |  |  |  |  |
|                      |               | REV     | 6.903                   | 6.492                     |  |  |  |  |
| R/AXLE               | MODEL         |         | D4H-II                  | ←                         |  |  |  |  |
|                      | RATIO         |         | 5.428                   | 4.875                     |  |  |  |  |
| TIRE                 | FRT           |         | 8.25R16-18PR            | 245/70R19.5-14PR          |  |  |  |  |
|                      | RR            |         | 8.25R16-18PR            | 245/70R19.5-14PR          |  |  |  |  |

NOTE : 1) WEIGHT BASED ON THE STANDRD SPECIFICATION  
2) ABOVE DATAS BASED ON THE CHASSIS CAB

### 3. EXTERIOR DRAWING OF THE COMPLETE VEHICLE



W.B.: 3795mm

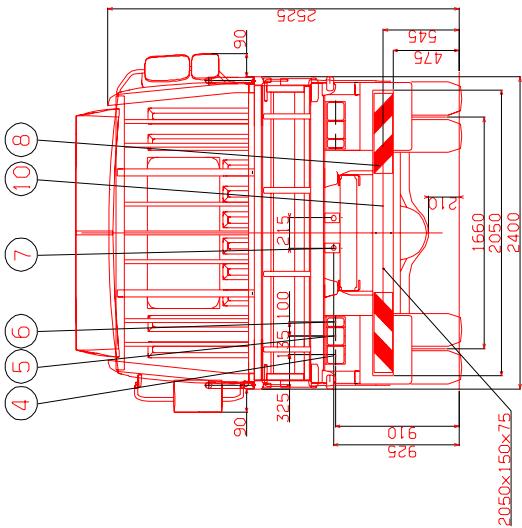
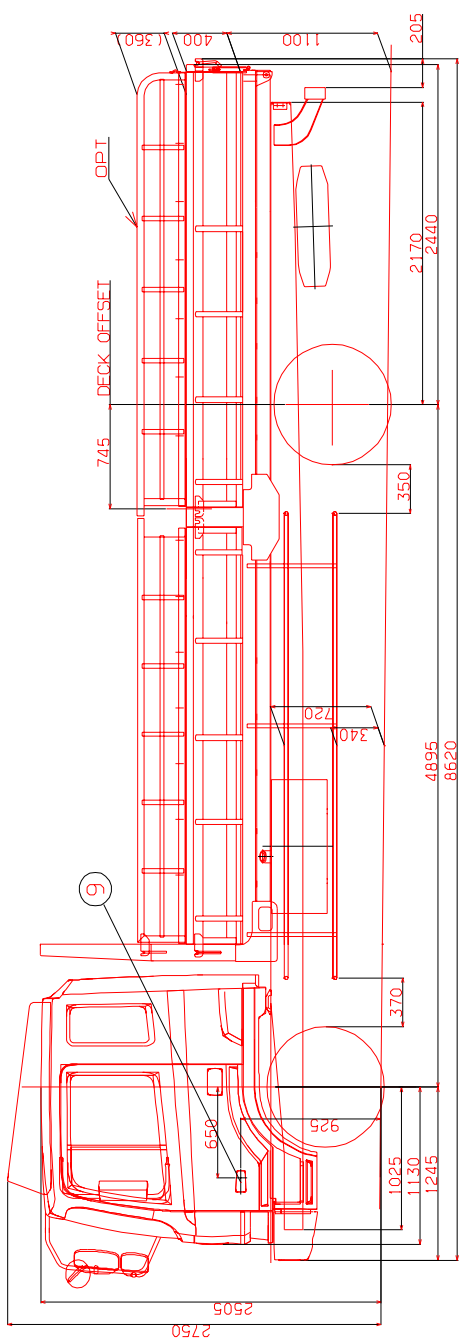
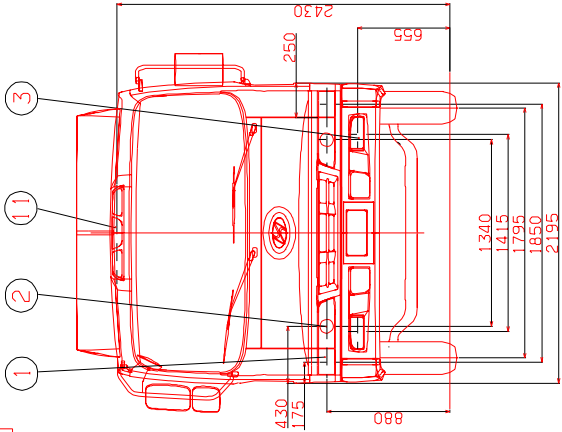
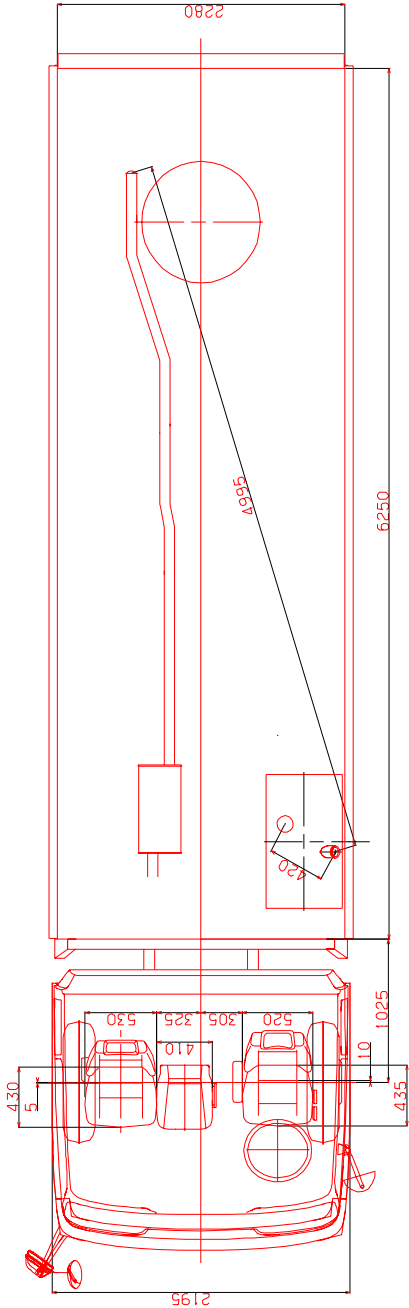


HYUNDAI HD120 (D6BR) CARGO TRUCK (LONG WHEEL BASE)

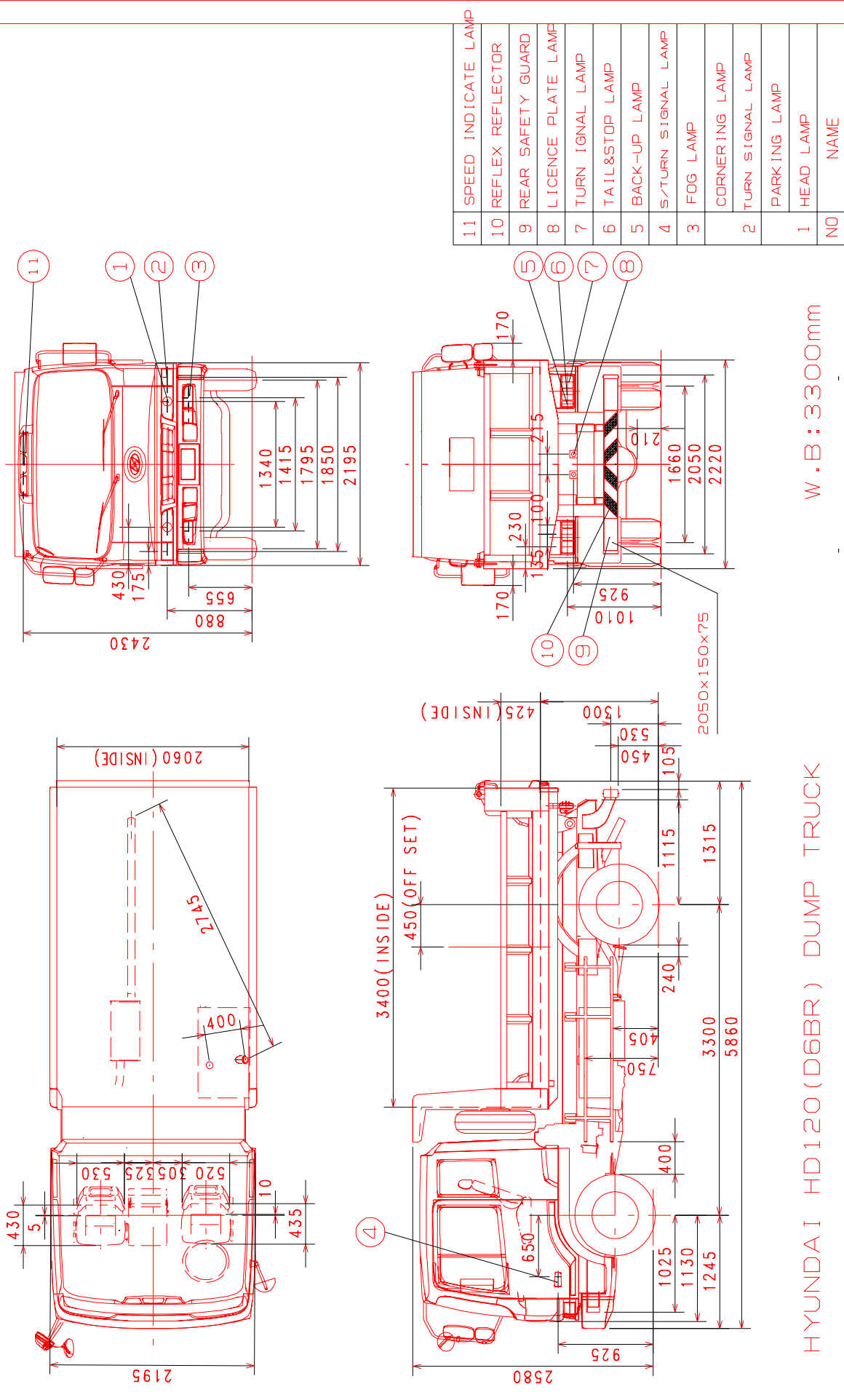
W.B:4260mm



|   |                         |   |                      |    |                     |
|---|-------------------------|---|----------------------|----|---------------------|
| 1 | TURN SIGNAL LAMP        | 5 | TAIL LAMP, STOP LAMP | 10 | REAR SAFETY GUARD   |
|   | CORNERING LAMP          | 6 | BACK-UP LAMP         | 11 | SPEED INDICATE LAMP |
| 2 | HEAD LAMP, PARKING LAMP | 7 | LICENCE PLATE LAMP   |    |                     |
| 3 | FOG LAMP                | 8 | REFLEX REFLECTOR     |    |                     |
| 4 | TURN SIGNAL LAMP        | 9 | SIDE TURN SIGNAL     |    |                     |



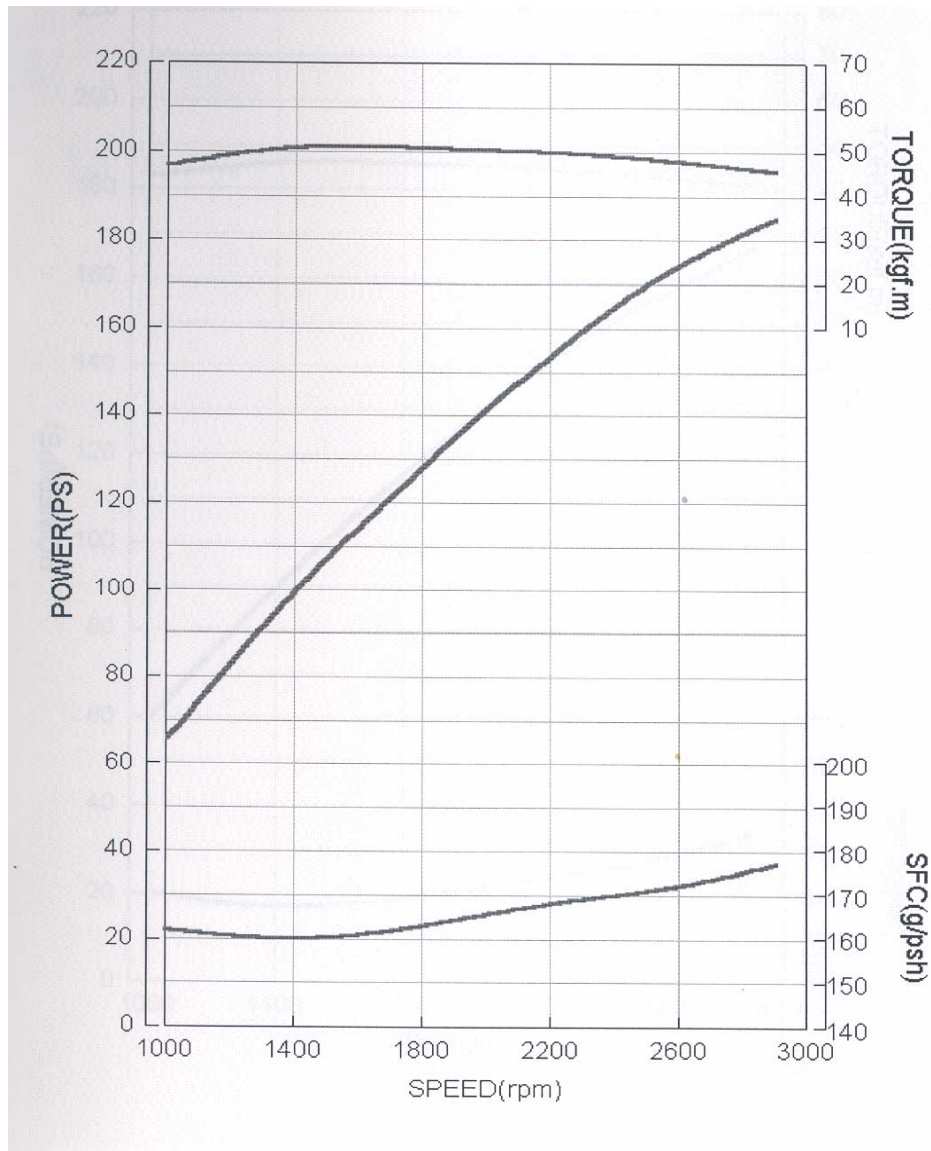
HYUNDAI HD120(D6BR) CARGO TRUCK(EXTRA-LONG WHEEL BASE) W.B:4895mm



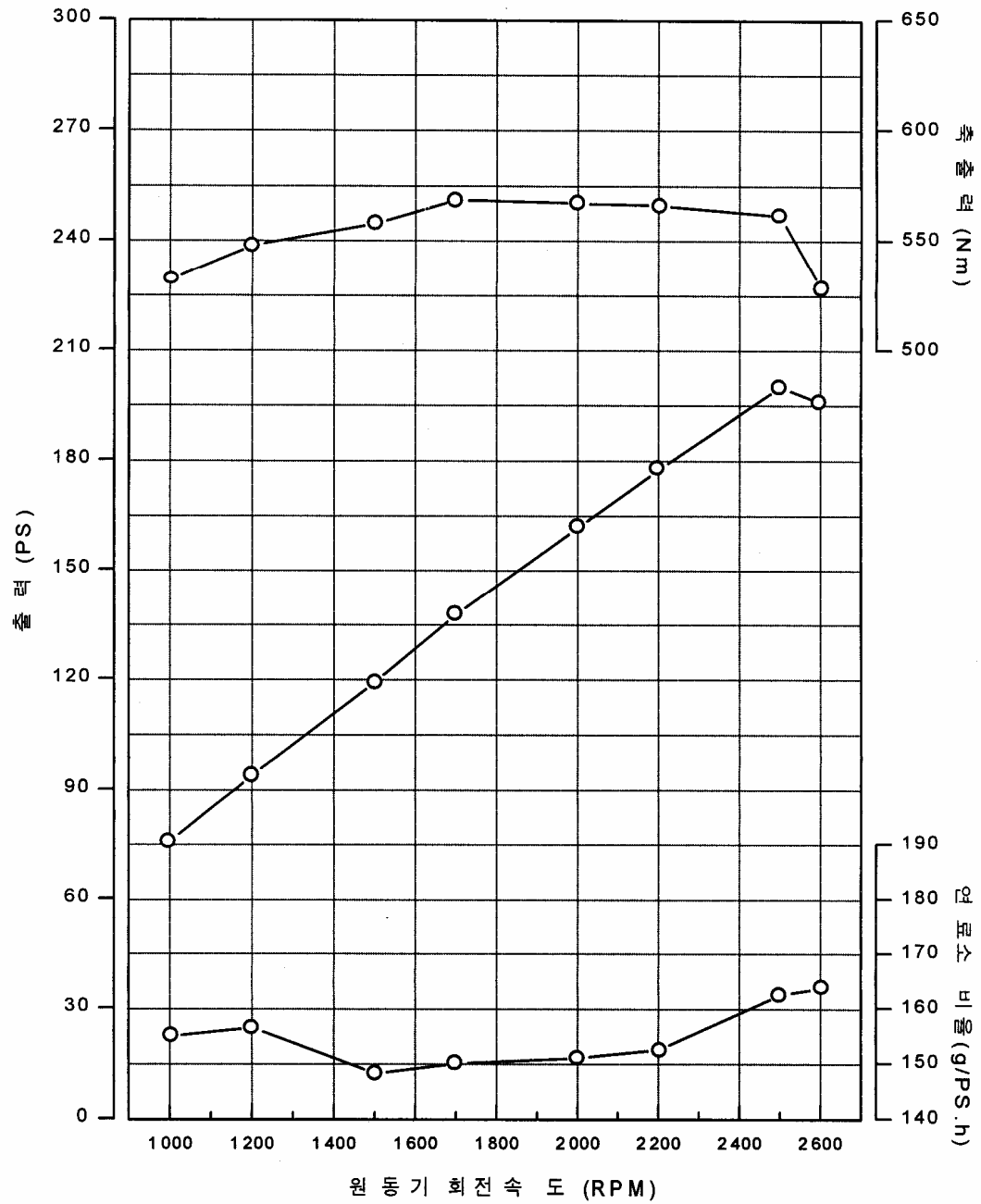
## 4. ENGINE PERFORMANCE CURVE

#### 4. ENGINE PERFORMANCE CURVE

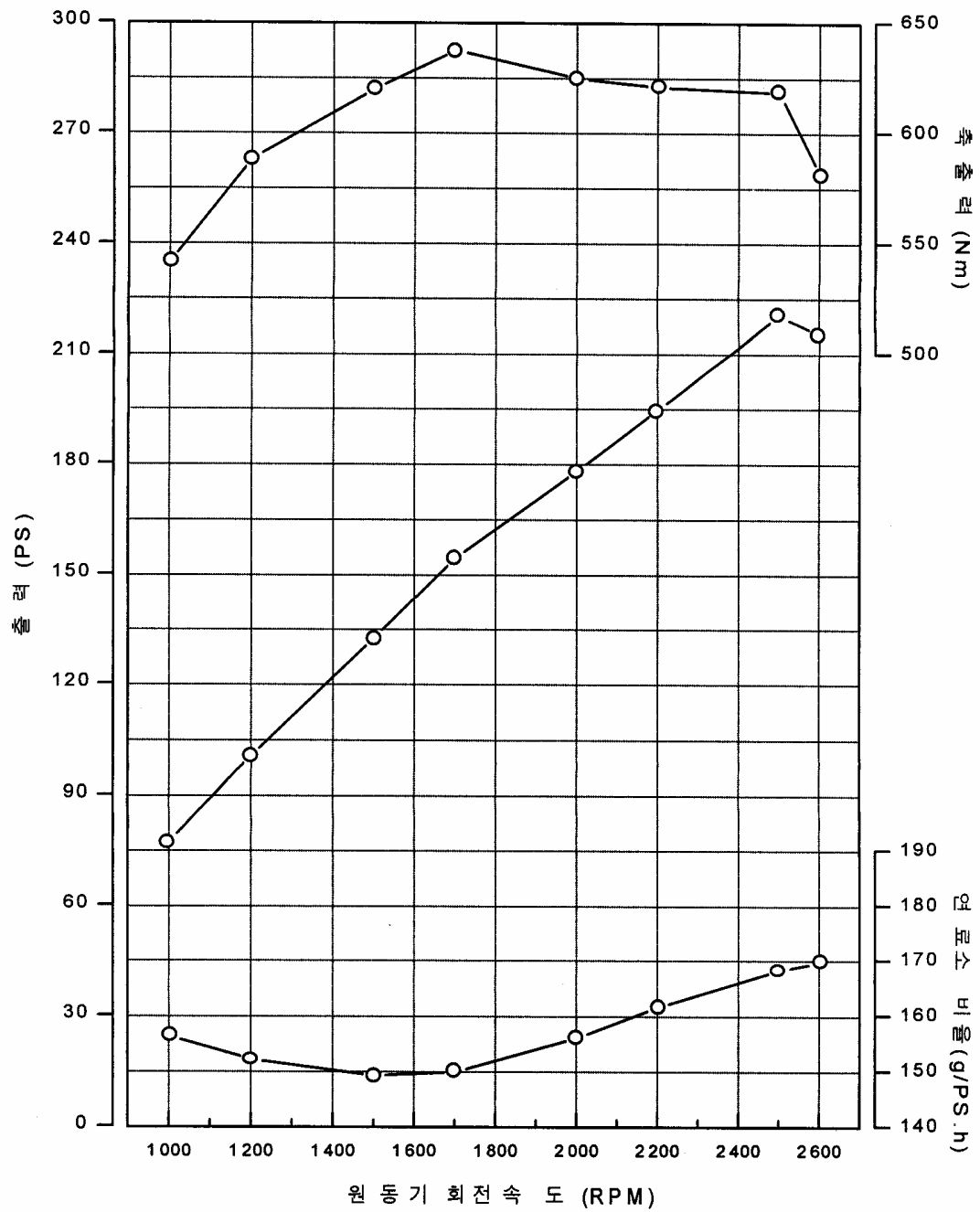
(1) D 6 B R



2) KK-TCI (LOW HORSE POWER)



3) KK-TCI (HIGH HORSE POWER)



## 5. CAUTIONS REGARDING INSTALLATION MODIFICATION OR ALTERATION

## 5-1. Cautions needed for the front structure of the rear body

The structure of the front area of the rear body in relation to front wheel tires, exhaust pipe, cab and intake duct should be installed carefully as the followings.

(1) Move of the cab and the intake duct

In case of applying the floating cab mounting, be free from interference with the cab and the intake duct. Make reference to the appendix drawing for the moving range of the cab and the intake duct.

(2) Sub frame

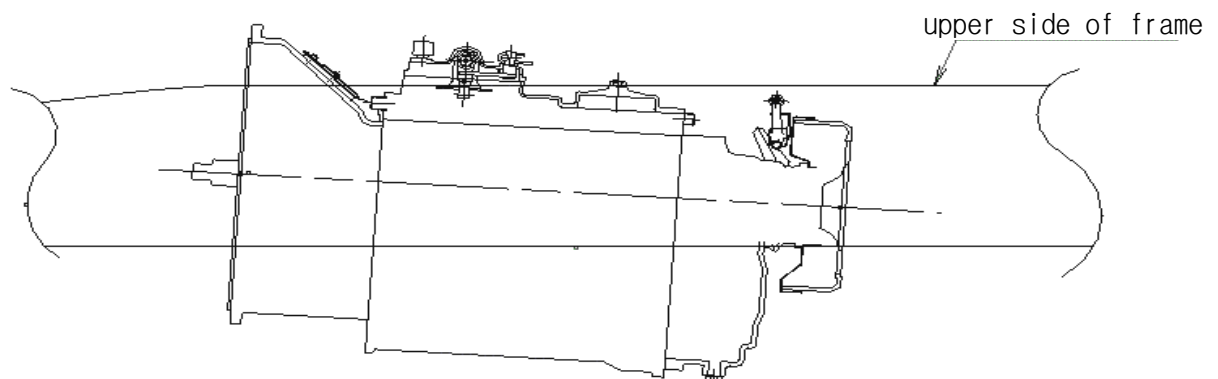
As the forward area of the sub frame is near exhaust pipe, be careful not to take fire by adding a protector to the outside of the sub frame. Also the ground clearance of the rear body floor and the height of fender should be more than 50mm from tires. Make reference to BODY BUILDER DRAWING for a rising quantity of tires. If the height of sub frame is low, as strength drops, use the steel sub frame surely in using the sub frame less than standard height. Make reference to the paragraph 2-2-4, COMMON BOOK of BODY BUILDER BOOK for dimension of the steel frame.

(3) Foremost cross bearer

As it nearby exhaust pipe, use steel instead of wood. Also make sure that there is a space of detaching transmission.

(4) Projecting relation of the upper side of transmission and chassis frame

As harness connector and the sensor of gear shift unit are on the upper side of transmission, be free from ascending the upper side of transmission.



(5) Object for stain prevention between cab and rear body

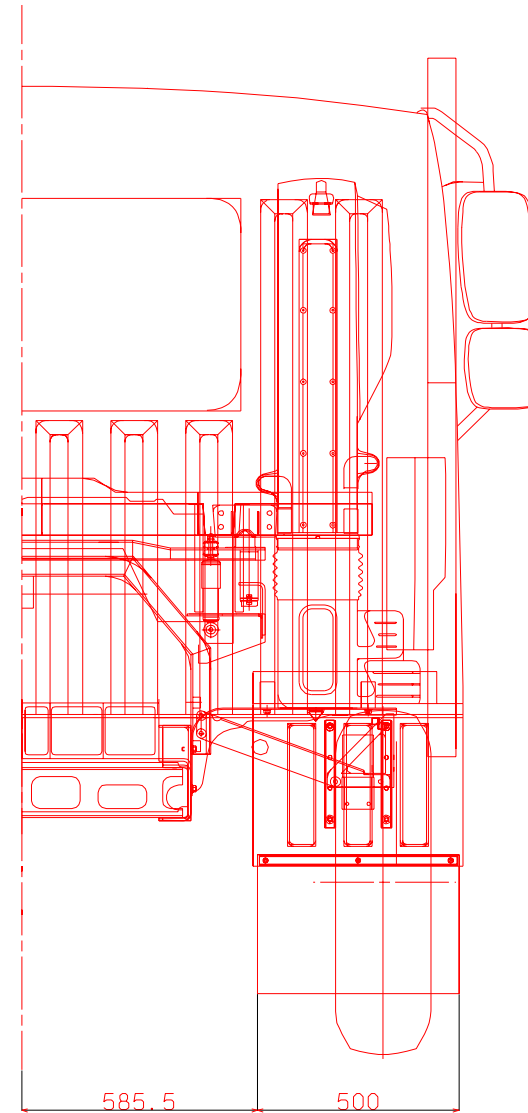
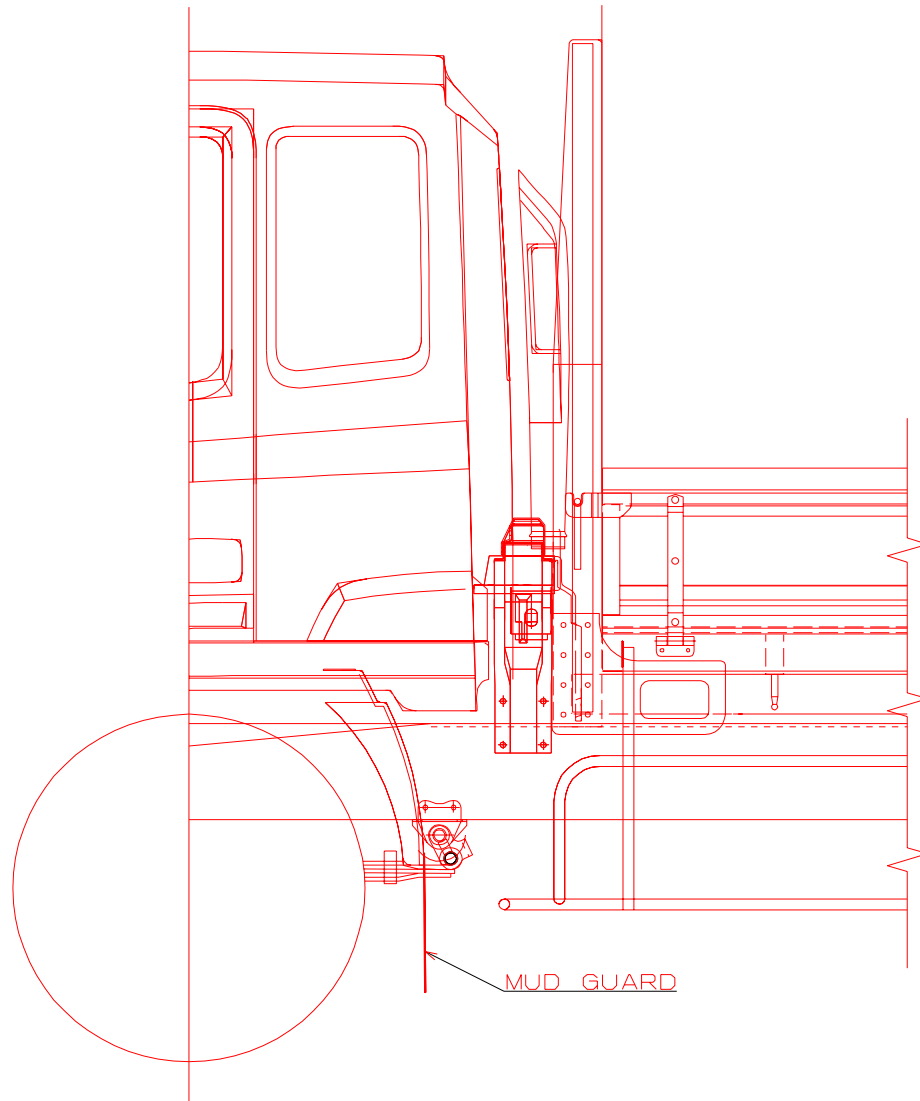
Install a object for stain prevention between cab and rear body figure to prevent stain by front forward wheels as the appendix drawing.

(6) Front and rear wheel fender

Make reference to the appendix drawing for the height of fender and mudguard. Also make reference to the paragraph 2-2-5, COMMON BOOK of BODY BUILDER BOOK.



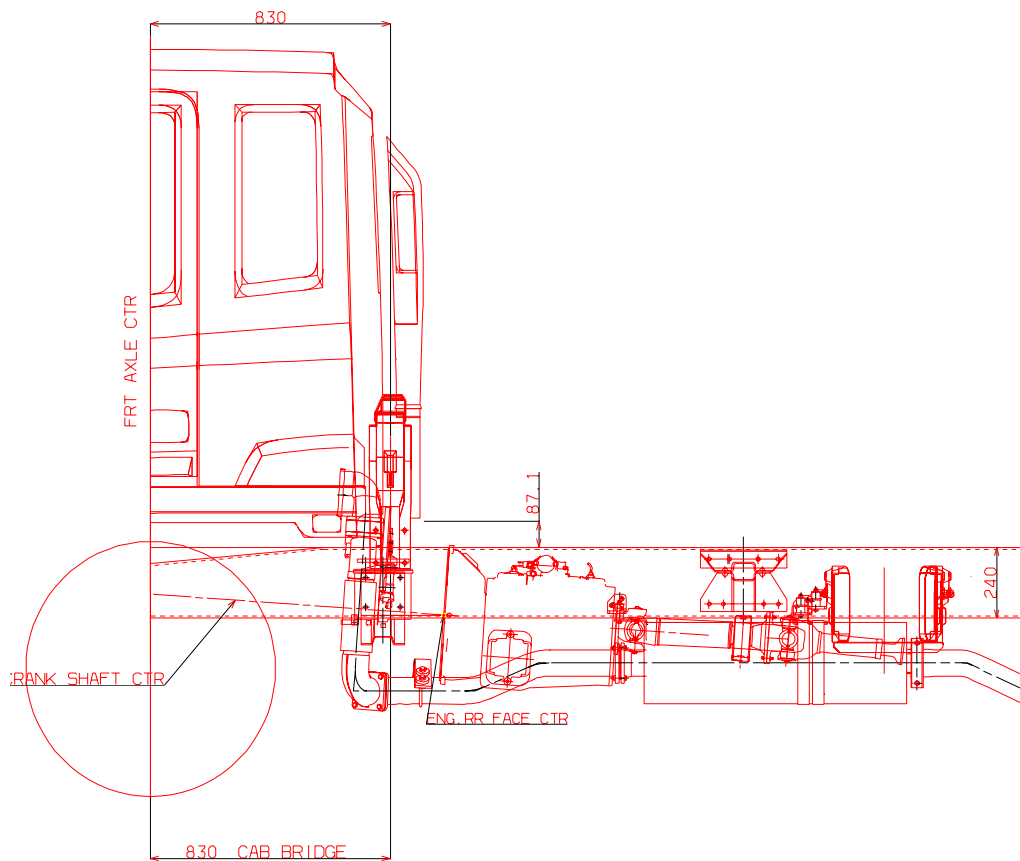
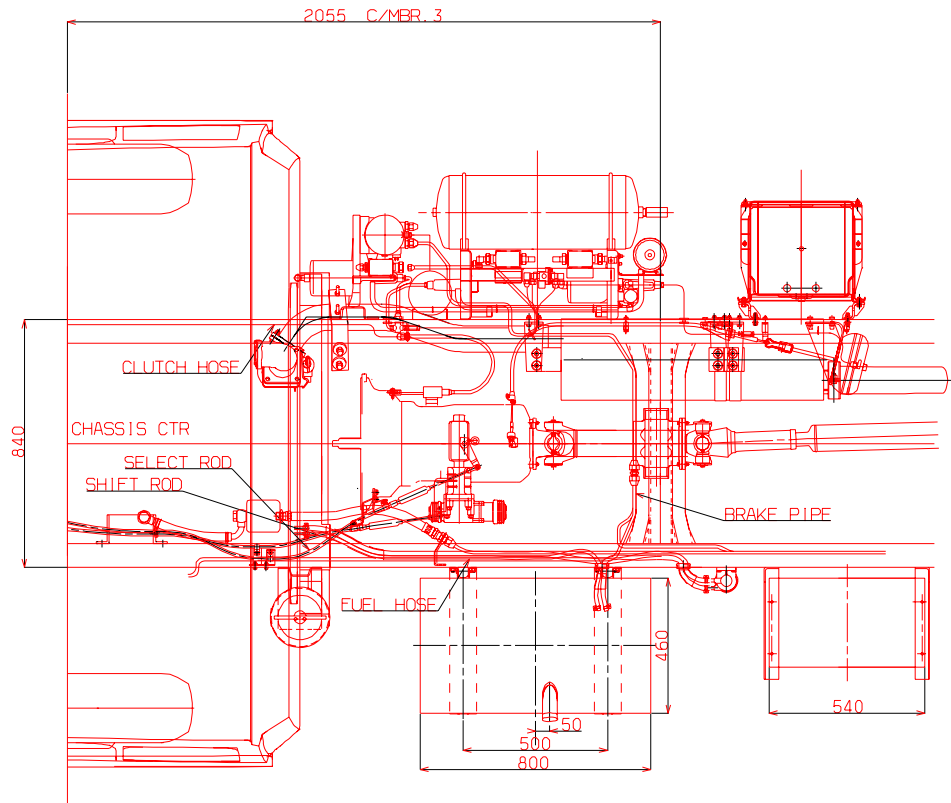
\* ) REFERENCE DRAWING OF MUD GUARD



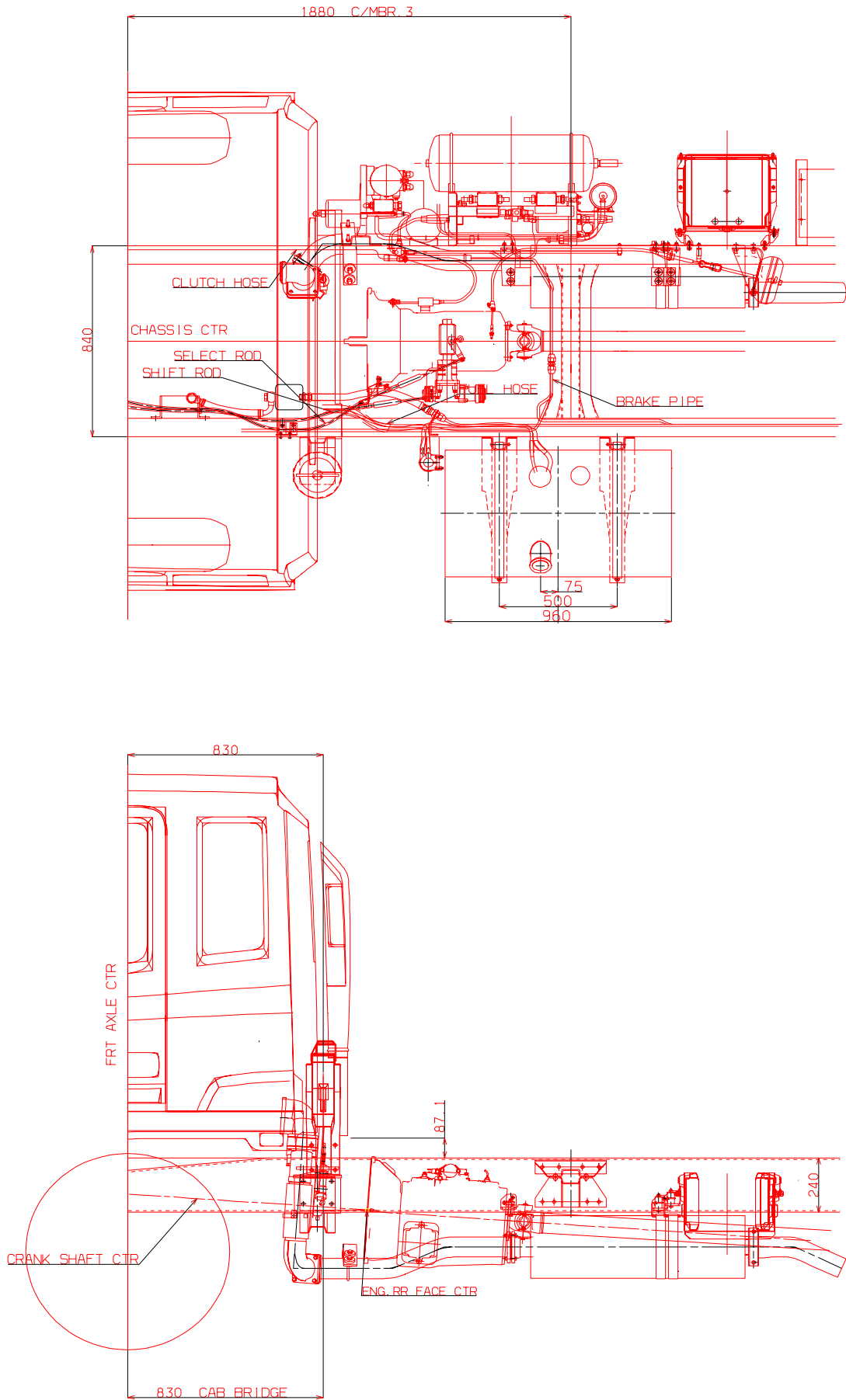
## 5-2. Cautions needed for fastening U-bolt

In case of fastening U-bolt between the cab rear and No.3 cross member, refer to the appendix drawing of U-bolt installation.

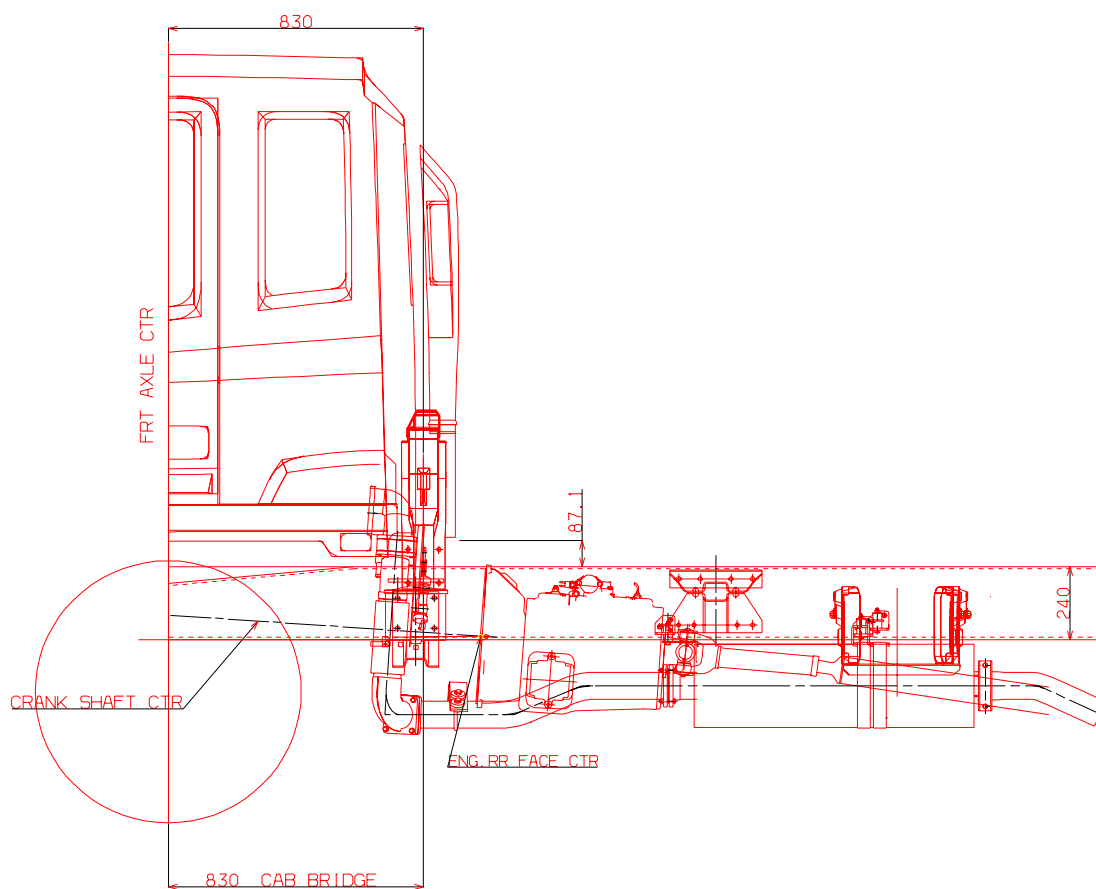
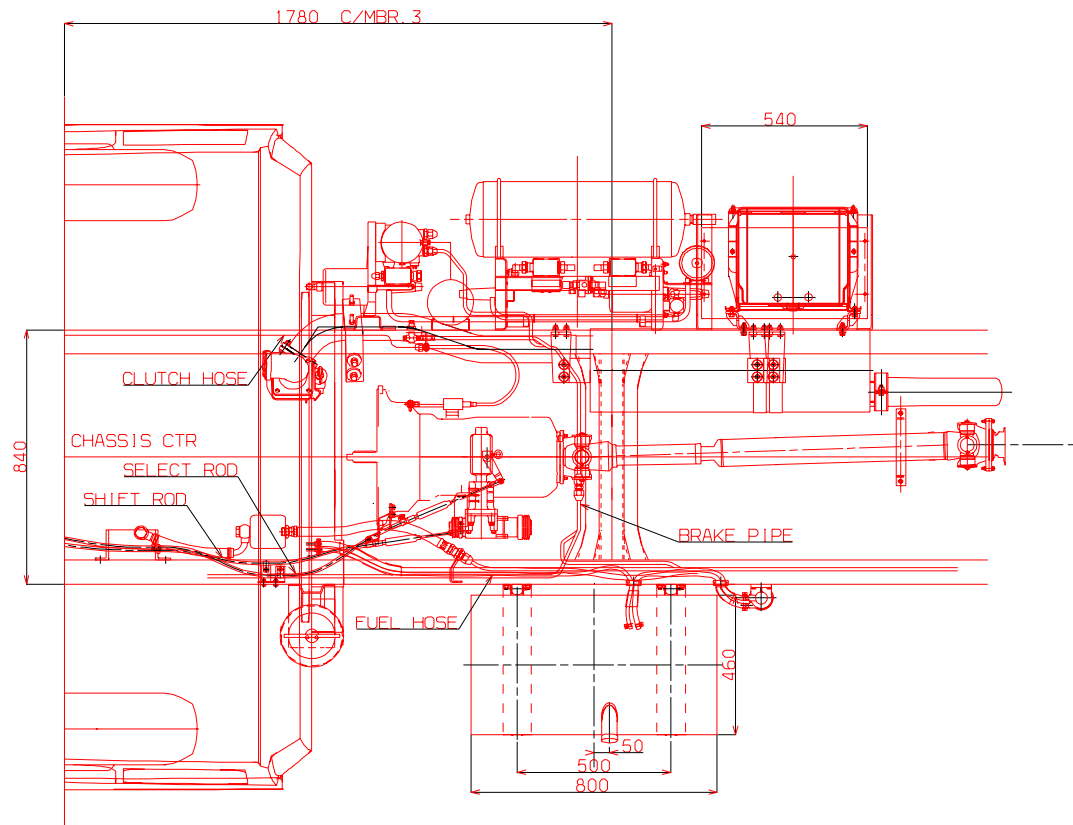
(1) REFERENCE DRAWING OF U-BOLT INSTALLATION



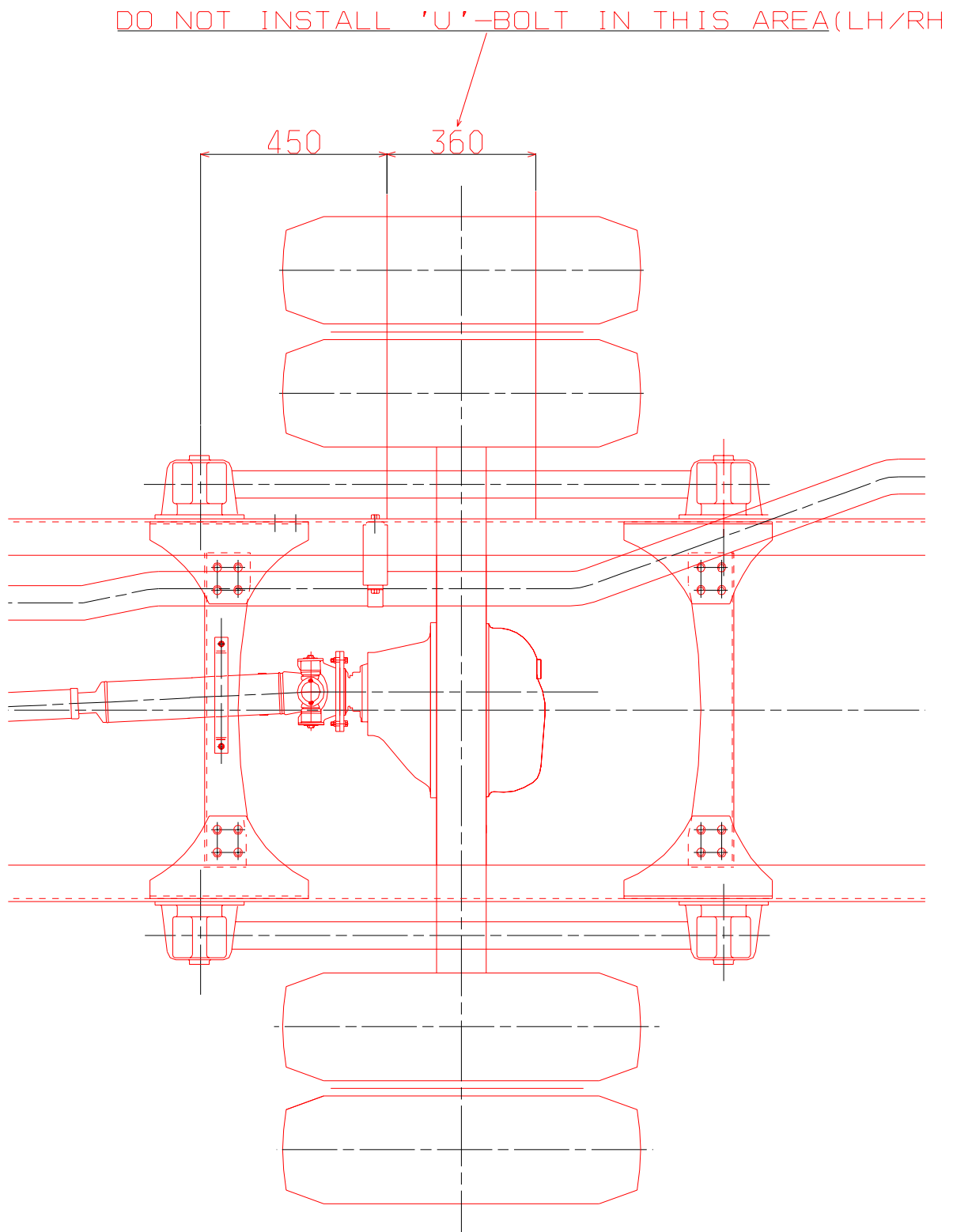




HD120 E-LONG CARGO



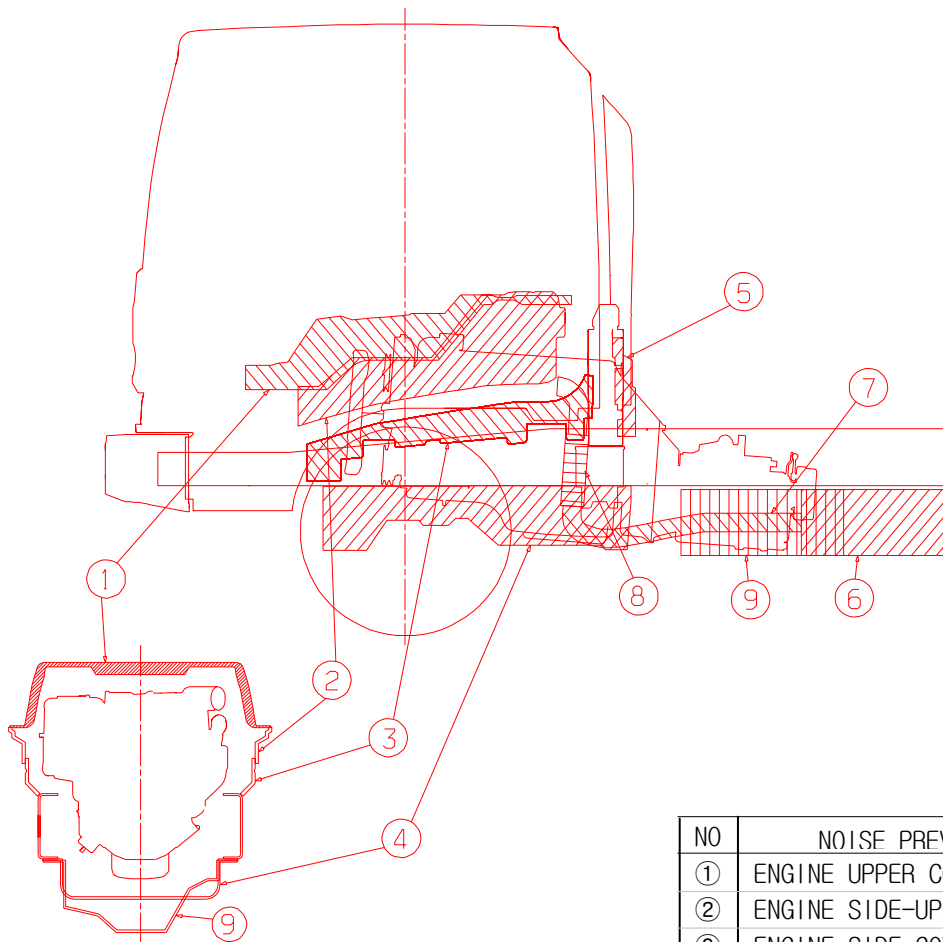
(2) REAR AXLE AREA



### 5-3. Noise prevention parts

Don't modify or alterate noise prevention parts, which conform to the noise regulations. But in an unavoidable case, please contact with HMC. Also in case detaching noise prevention parts when installing or modifying them, be sure to install them as ever again after finishing installation or modification.

Position describing drawing of noise prevention parts.

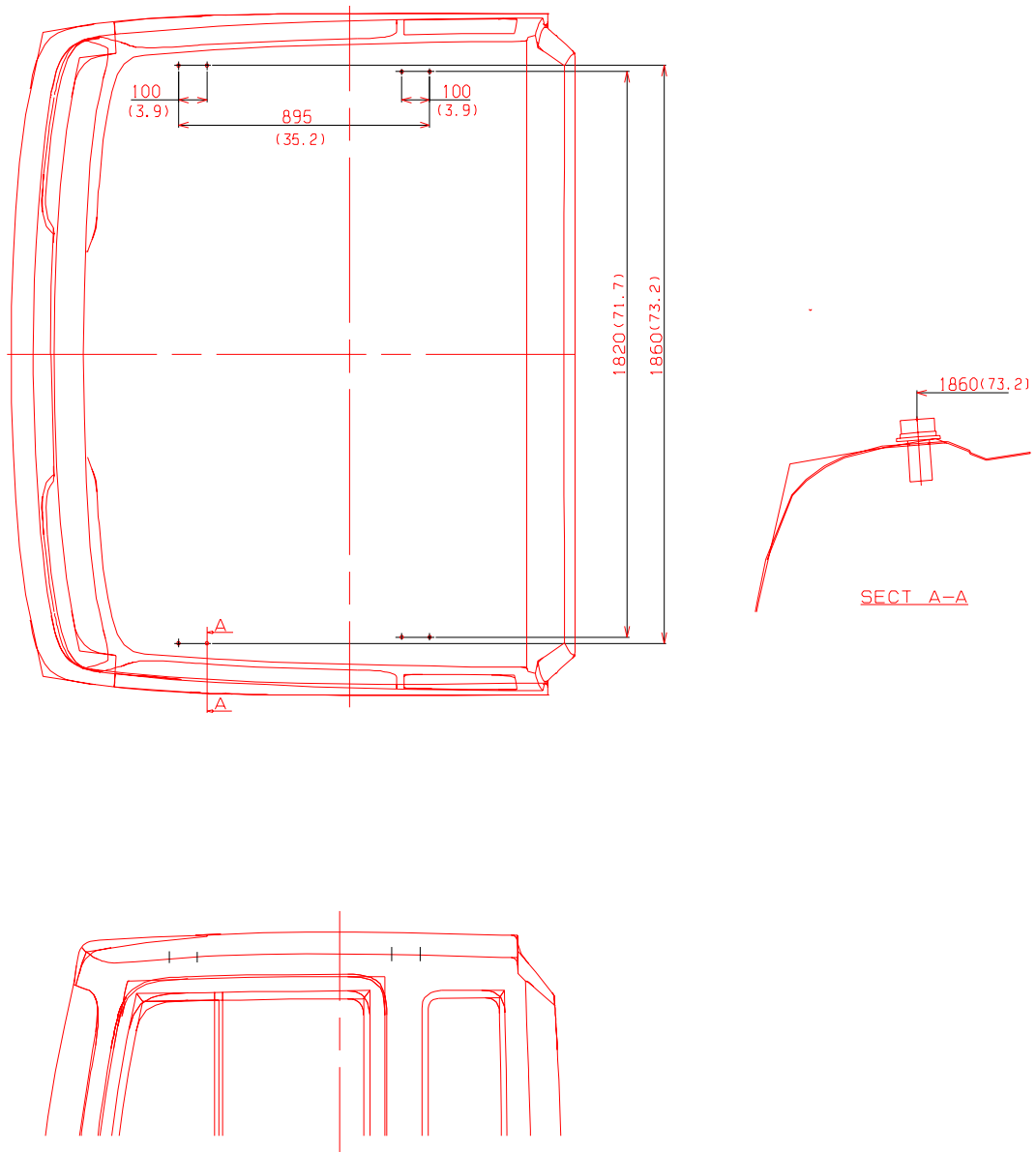


| NO | NOISE PREVENTION PARTS       |
|----|------------------------------|
| ①  | ENGINE UPPER COVER INSULATOR |
| ②  | ENGINE SIDE-UPPER INSULATOR  |
| ③  | ENGINE SIDE COVER            |
| ④  | ENGINE UNDER COVER           |
| ⑤  | ENGINE REAR COVER            |
| ⑥  | MUFFLER                      |
| ⑦  | MUFFLER PIPE                 |
| ⑧  | FLEXIBLE PIPE                |
| ⑨  | T/M UNDER COVER              |
|    |                              |



## 5-4. Installation or alteration on the roof

In case of installation or alteration on the roof, make reference to the paragraph 3-2-2, COMMON BOOK of BODY BUILDER BOOK.



## 6.WEIGHT AND FRAME INFORMATION

## 6-1 Permissible weight

### (1) Axle weight

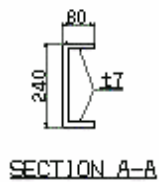
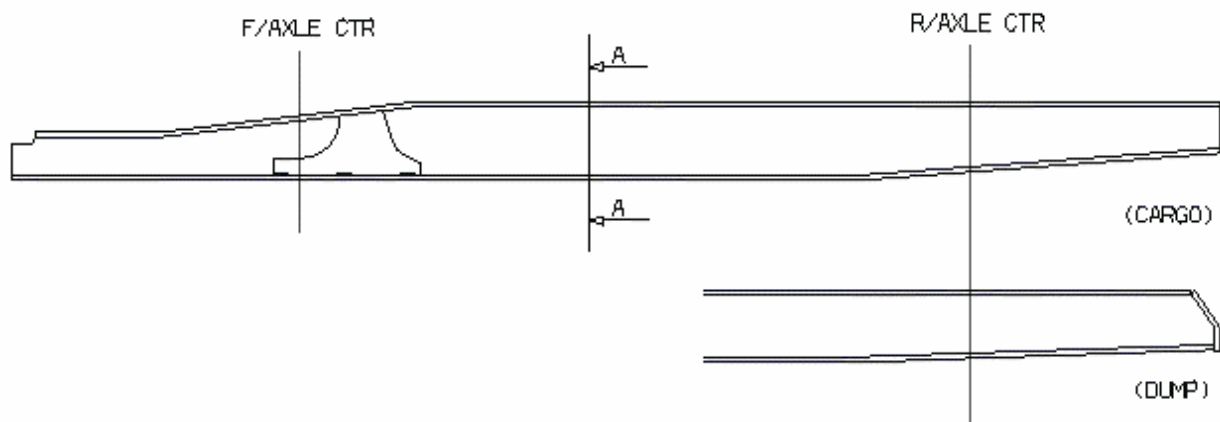
|        |       |          | FRONT (kg) | REAR (kg) |
|--------|-------|----------|------------|-----------|
| D6BR   | CARGO | HF*C-*R* | 3,600      | 8,800     |
|        | DUMP  | HF5D-*R* | ↑          | ↑         |
| KK-TCI | CARGO | HF*C-*L* | 3,720      | 8,800     |
|        | DUMP  | HF5D-*L* | ↑          | ↑         |

## 6-2 Tire specification

| TIRE TYPE        | LBS / PSI      | PERMISSIBLE<br>WEIGHT<br>(Kg) | AIR<br>PRESSURE<br>(Kg/cm <sup>2</sup> ) | EFF. RAD(mm)   |                 | OTR<br>DIA. |
|------------------|----------------|-------------------------------|------------------------------------------|----------------|-----------------|-------------|
|                  |                |                               |                                          | STATIC<br>RAD. | DYNAMIC<br>RAD. |             |
| 8.25R16-16PR     | (S) 4220 / 114 | 1915                          | 8.0                                      | 402            | 403             | 853 ~       |
|                  | (D) 3715 / 114 | 1685                          | 8.0                                      | 403            | 404             | 870         |
| 8.25R16-18PR     | (S) 4320 / 115 | 1995                          | 8.79                                     | 402            | 403             | 853 ~       |
|                  | (D) 3800 / 115 | 1790                          | 8.79                                     | 403            | 404             | 870         |
| 245/70R19.5-14PR | (S) 4540 / 105 | 2060                          | 7.4                                      | 403            | 414             | 848 ~       |
|                  | (D) 4300 / 105 | 1950                          | 7.4                                      | 404            | 415             | 858         |

(S) : SINGLE, (D) : DOUBLE

## 6-3 FRAME MATERIAL & MAIN SECTION



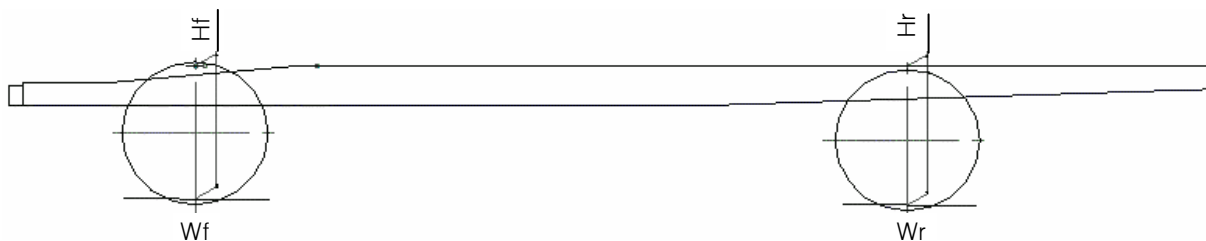
**\*NOTE**

- 1) FRAME MATERIAL : HIGH TENSILE PLATE  
TENSION STRENGTH :  $55\text{kg/mm}^2$   
YIELD STRENGTH :  $55\text{kg/mm}^2$

## 7.SUSPENSION CHARACTERISTICS

## 7. SUSPENSION CHARACTERISTICS

### 7-1 Formula of the frame ground height



| MODEL                             | FRT/RR | TIRE TYPE        | FORMULA(Hf/Hr)                         |
|-----------------------------------|--------|------------------|----------------------------------------|
| HD120 SHORT(D6BR)<br>(HF5C-SR)    | FRONT  | 8.25R16-16PR     | $H_f = -0.0284 \cdot W_f + 877 \pm 10$ |
|                                   | REAR   | ↑                | $H_r = -0.0138 \cdot W_r + 873 \pm 25$ |
| HD120 LONG(D6BR)<br>(HF4.5C-LR)   | FRONT  | ↑                | $H_f = -0.0283 \cdot W_f + 876 \pm 10$ |
|                                   | REAR   | ↑                | $H_r = -0.0134 \cdot W_r + 871 \pm 25$ |
| HD120 E/LONG(D6BR)<br>(HF5C-ER)   | FRONT  | ↑                | $H_f = -0.0283 \cdot W_f + 876 \pm 10$ |
|                                   | REAR   | ↑                | $H_r = -0.0134 \cdot W_r + 884 \pm 25$ |
| HD120 DUMP(D6BR)<br>(HF5D-DR)     | FRONT  | 8.25R16-18PR     | $H_f = -0.0277 \cdot W_f + 882 \pm 10$ |
|                                   | REAR   | ↑                | $H_r = -0.0139 \cdot W_r + 881 \pm 25$ |
| HD120 SHORT(KK-TCI)<br>(HF5C-SR)  | FRONT  | 245/70R19.2-14PR | $H_f = -0.0285 \cdot W_f + 880 \pm 10$ |
|                                   | REAR   | ↑                | $H_r = -0.0138 \cdot W_r + 874 \pm 25$ |
| HD120 LONG(KK-TCI)<br>(HF4.5C-LR) | FRONT  | ↑                | $H_f = -0.0285 \cdot W_f + 882 \pm 10$ |
|                                   | REAR   | ↑                | $H_r = -0.0134 \cdot W_r + 874 \pm 25$ |
| HD120 E/LONG(KK-TCI)<br>(HF5C-ER) | FRONT  | ↑                | $H_f = -0.0285 \cdot W_f + 882 \pm 10$ |
|                                   | REAR   | ↑                | $H_r = -0.0134 \cdot W_r + 886 \pm 25$ |
| HD120 DUMP(KK-TCI)<br>(HF5D-DR)   | FRONT  | ↑                | $H_f = -0.0264 \cdot W_f + 881 \pm 10$ |
|                                   | REAR   | ↑                | $H_r = -0.0140 \cdot W_r + 882 \pm 25$ |

## 8. PTO CONTROL



## 8. P.T.O CONTROL

### 8-1. T/M P.T.O

#### (1) Use of genuine parts P.T.O

1) Unless otherwise provided for, be sure to use genuine parts.

2) Refer to appendix P.T.O ASSY drawing for details in using power.

#### (2) Use P.T.O other than genuine parts

A particular reason, when using P.T.O other than genuine parts, consult with HMC.

#### (3) Cautions regarding the propeller shaft driving P.T.O

1) Make sure that an angle of intersection of propeller shaft makes a solid angle be 15° MAX, and also the angle of intersection of the both ends of propeller shaft is the same.

2) As in driving, there is a displacement of about  $\pm 10\text{mm}$  (up and down, left and right) from the position of P.T.O outlet, take notice of an allowable angle of intersection of propeller shaft.

3) The direction of P.T.O output shaft is contrary to the direction of engine revolution.

#### (4) T/M P.T.O table

##### – M6S6 TM

1) P.T.O TYPE : 47110-DS052

2) TORQUE :  $25\text{kg} \cdot \text{m}/1500\text{rpm}$

3) TM & P.T.O GEAR RATIO :  $23/43 \times 37/23$

4) SHIFT STROKE : 11mm

5) ALLOWABLE TORQUE :  $4.1\text{kg} \cdot \text{m}$

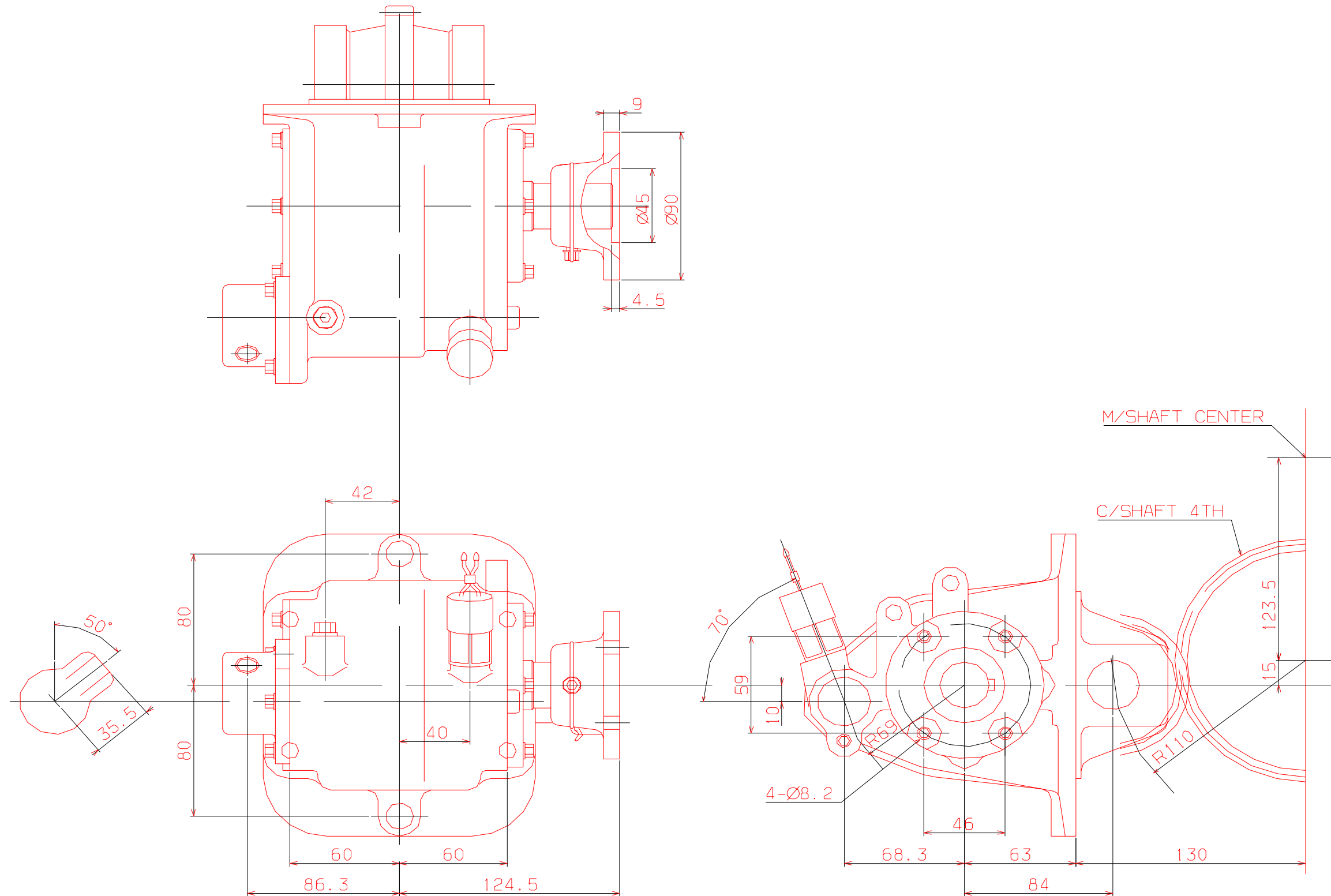
##### – KH-10 TM

1) P.T.O TYPE : 47110-6A500

2) TORQUE :  $25\text{kg} \cdot \text{m}/1500\text{rpm}$

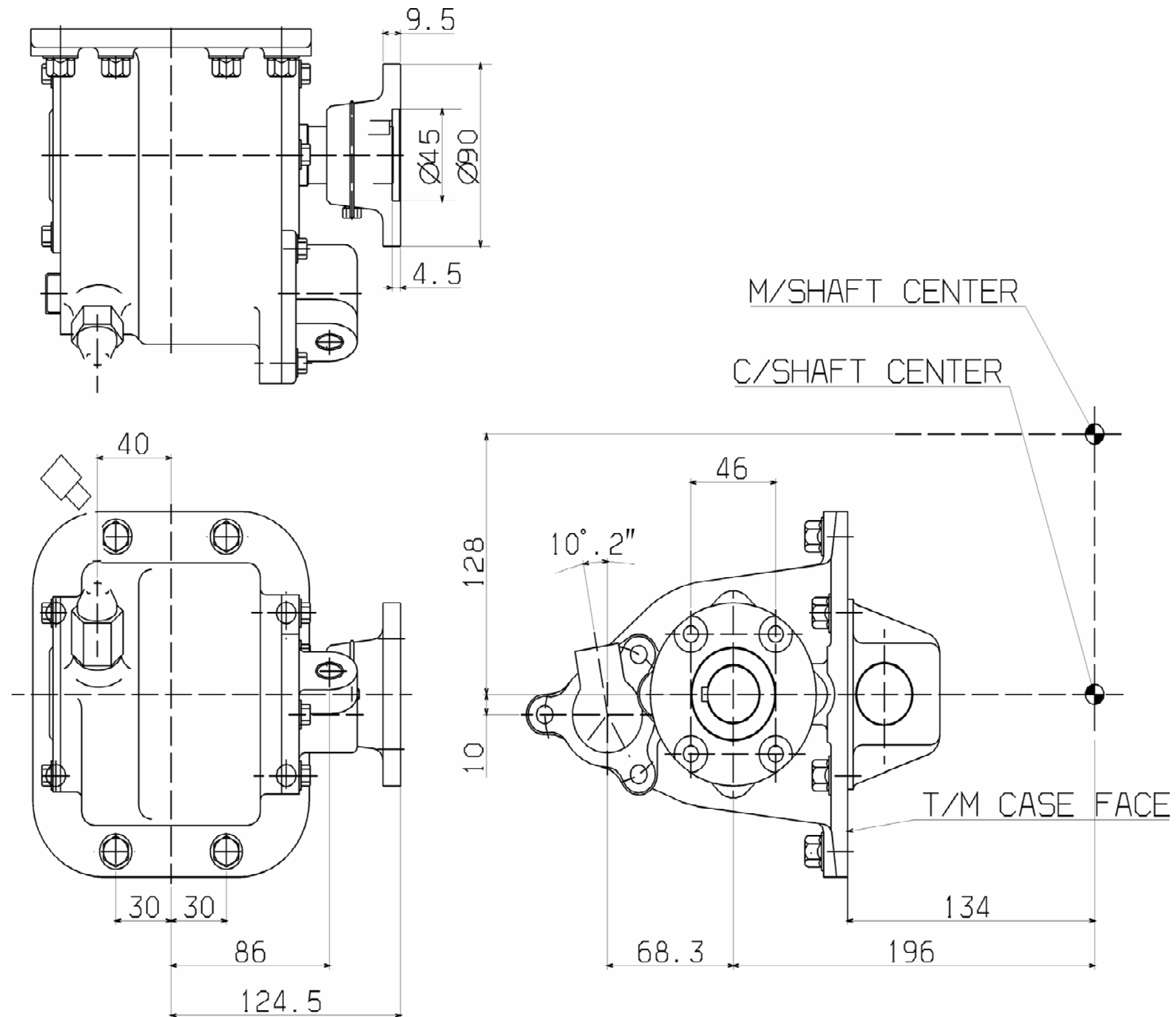
3) TM & P.T.O GEAR RATIO :  $1.046(38/20 \times 18/31 \times 17/18)$

4) ROTATION : CLOCKWISE FROM REAR VIEW



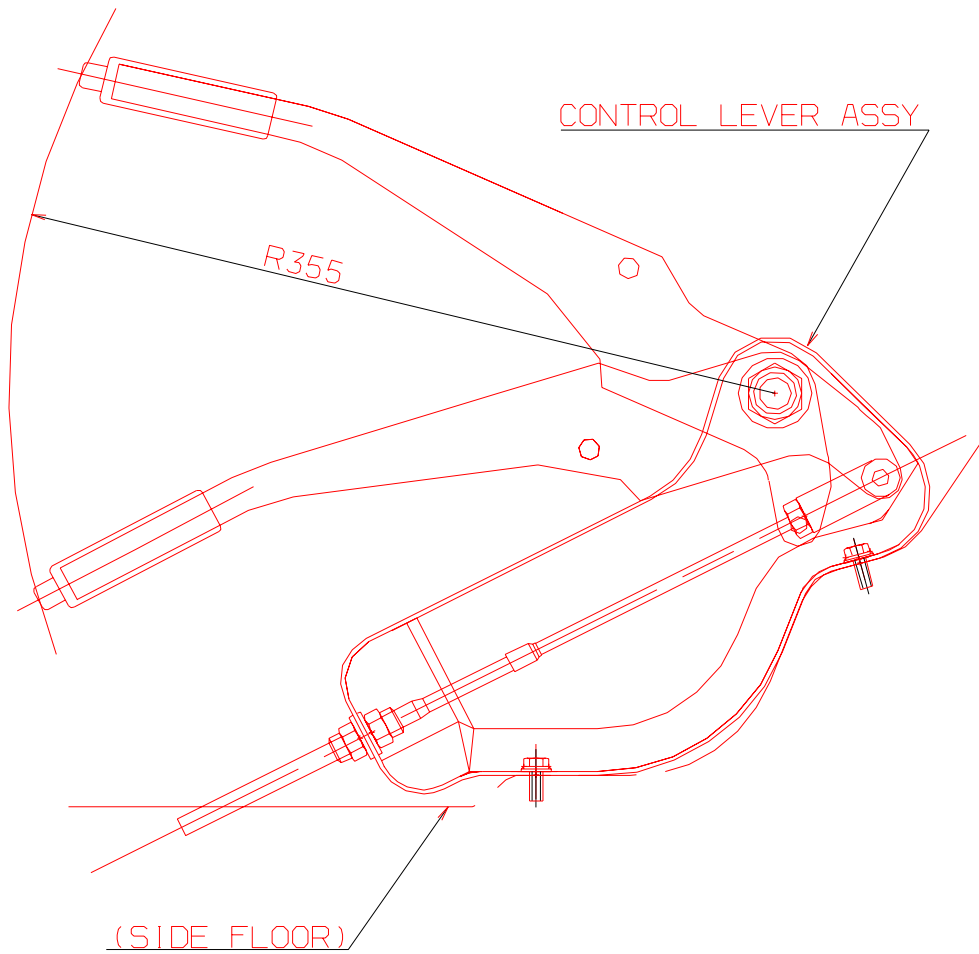
\*TRANSMISSION P.T.O

- P.T.O TYPE : 47110-6A500



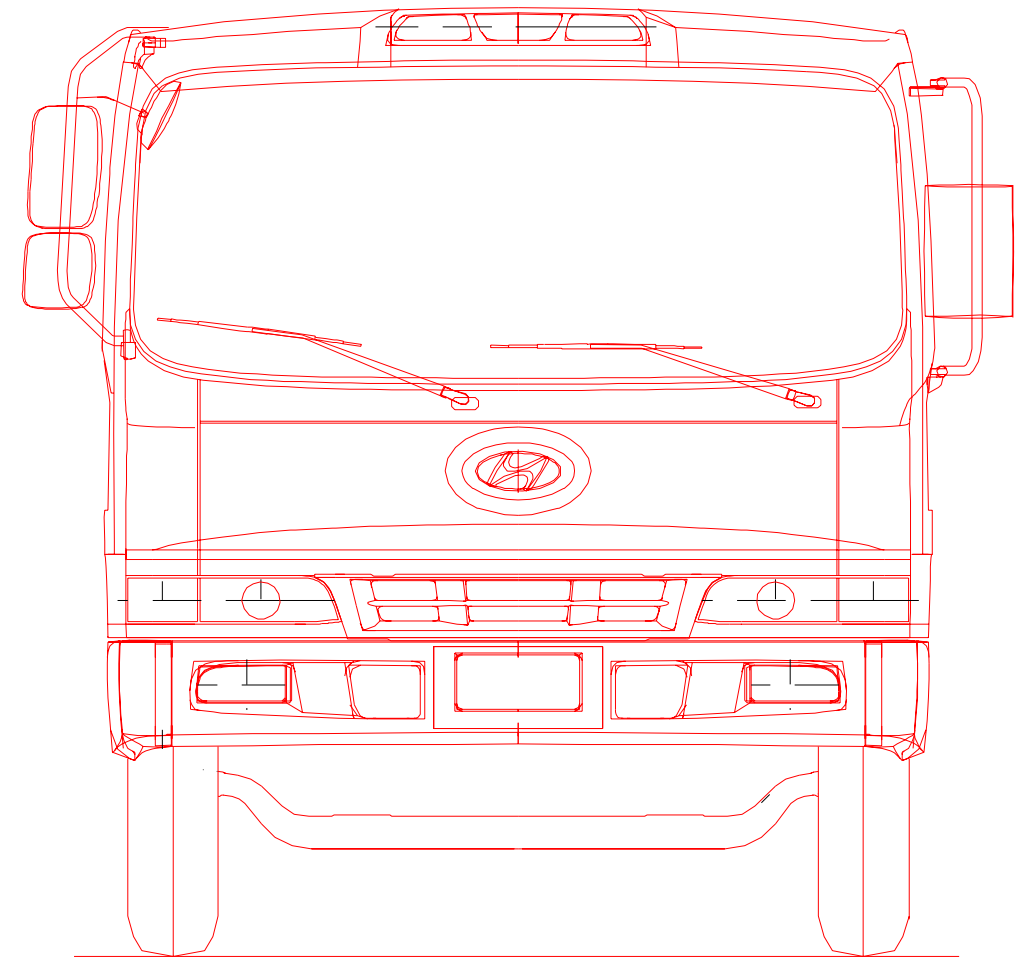
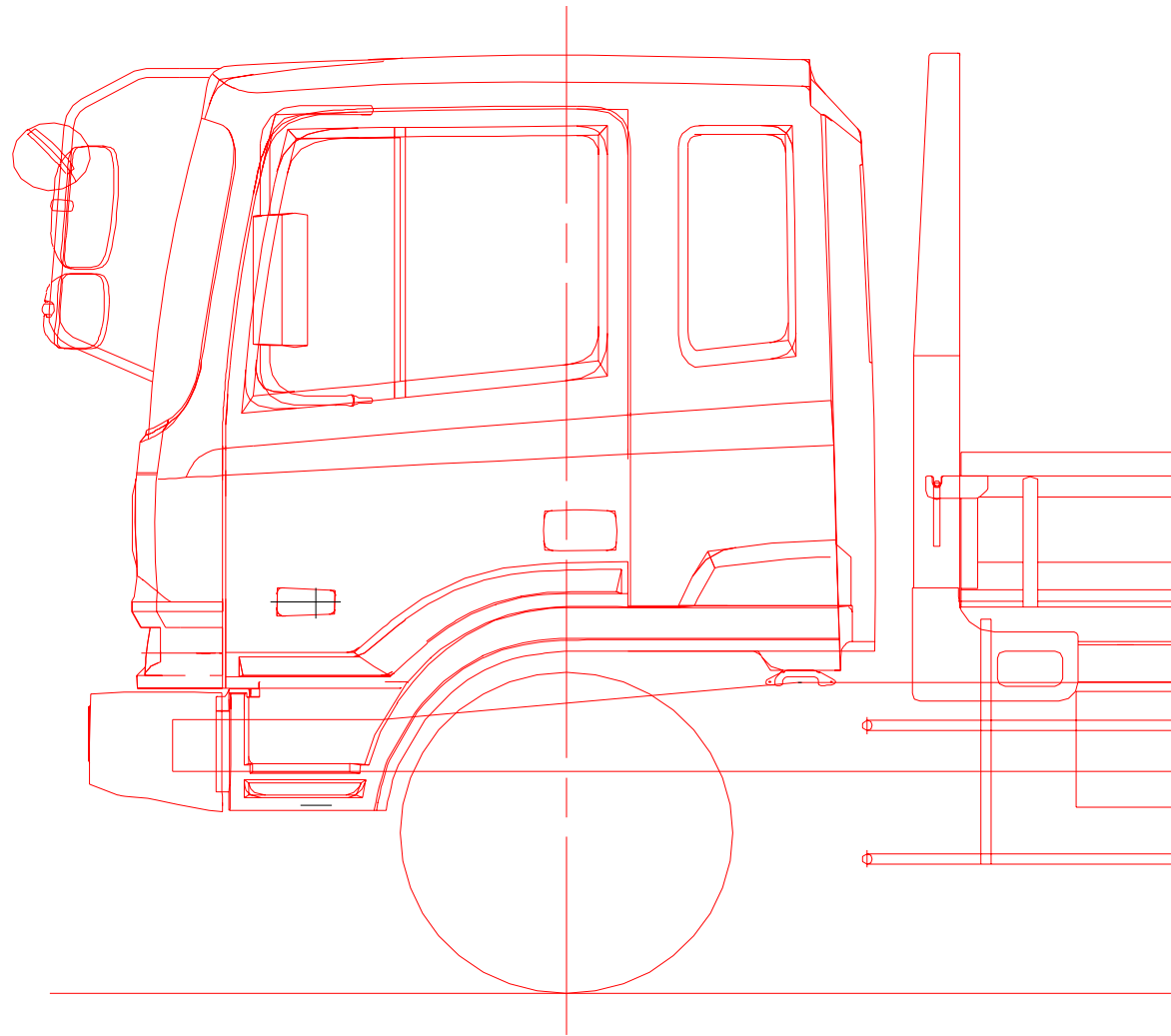
## 8-2. DUMP CONTROL LEVER

VEHICLE : HD120 DUMP



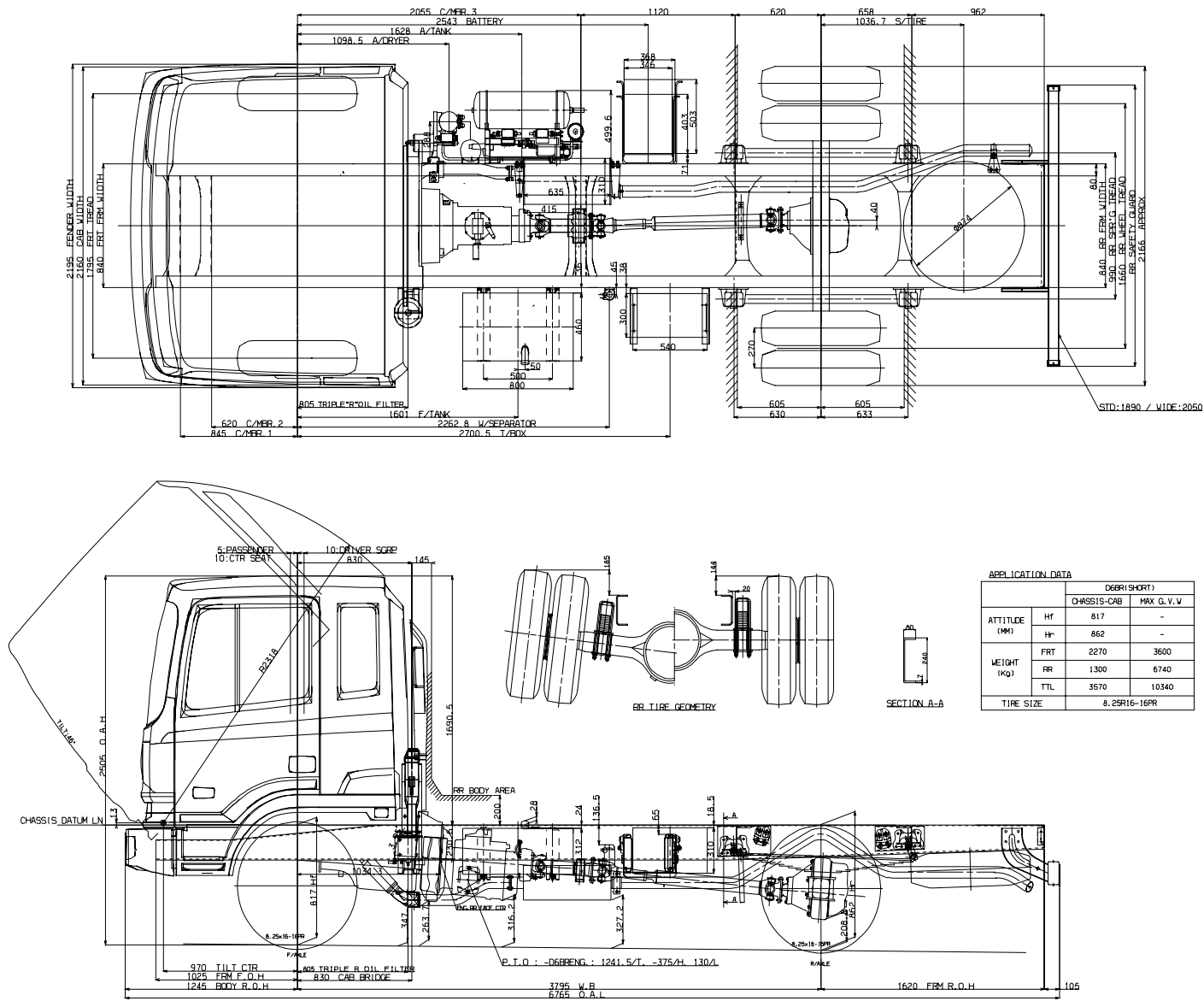
## 9. EXTERIOR DRAWING OF THE CAB

## 9. EXTERIOR DRAWING OF THE CAB



## 10. CHASSIS FRAME DRAWING

### 10-1. CHASSIS CAB DETAIL DRAWING



| APPLICATION DATA |     |              |            |
|------------------|-----|--------------|------------|
|                  |     | DGBR (SHORT) |            |
|                  |     | CHASSIS-CAB  | MAX. G. V. |
| ATTITUDE<br>(MM) | Hf  | 817          | -          |
|                  | Hr  | 862          | -          |
| WEIGHT<br>(Kg)   | FRT | 2270         | 3600       |
|                  | RR  | 1300         | 6740       |
|                  | TTL | 3570         | 10340      |
| TIRE SIZE        |     | 8.25R16-16PR |            |

|                        |                     |                   |
|------------------------|---------------------|-------------------|
| DATE                   | REGISTRATION ITEM   | REVENUE           |
| HYUNDAI MOTOR COMPANY  |                     |                   |
| REFERENCE              | DATE                |                   |
| ISSUAL                 | 2005.04.            |                   |
| K.P.20N                | F.7.506             | 17.5.000          |
| CLASS OF MOTOR VEHICLE | CD                  | NET SCALE         |
| CLASS OF MOTOR VEHICLE | SCALE               | POWER             |
| CLASS OF MOTOR VEHICLE | POWERED             | REDUCTION BY GEAR |
| CLASS OF MOTOR VEHICLE |                     | SPRINGER IN       |
| CLASS OF MOTOR VEHICLE | EG 4.5/5TON (SHORT) |                   |
| CLASS OF MOTOR VEHICLE | BODY BUILDING       |                   |
| CLASS OF MOTOR VEHICLE | 0000-04149          | DMV               |
| CLASS OF MOTOR VEHICLE |                     | BE                |

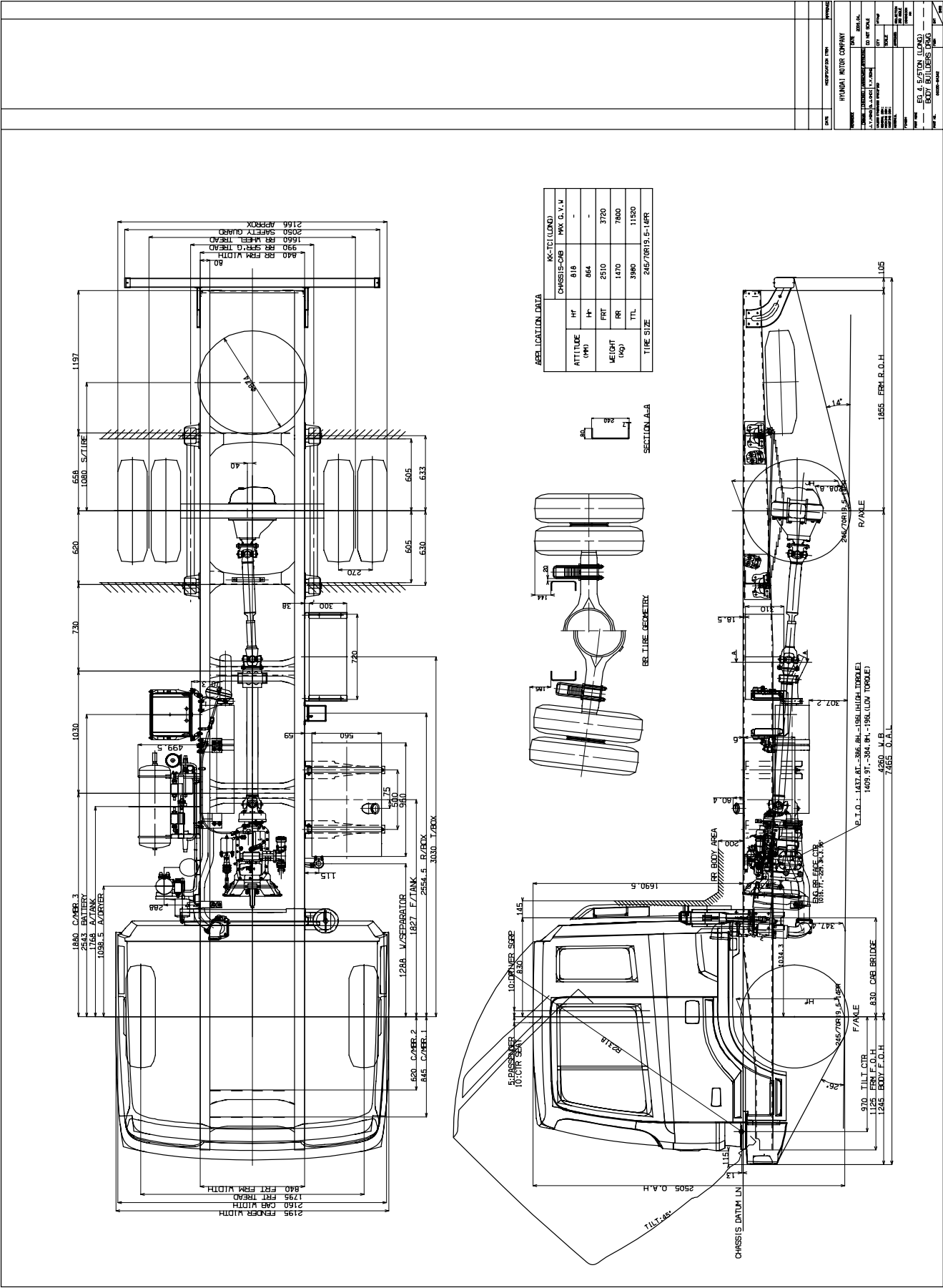




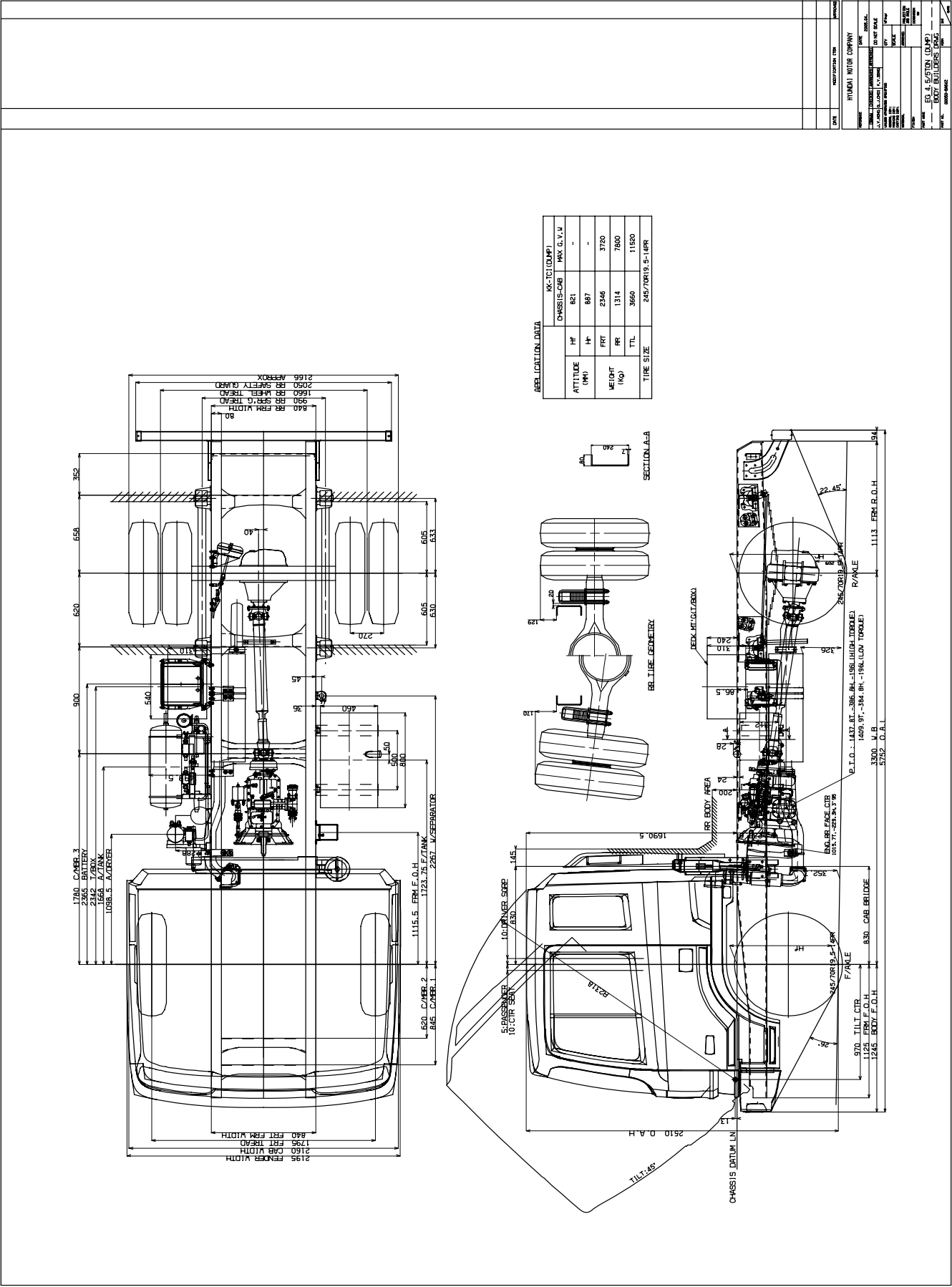


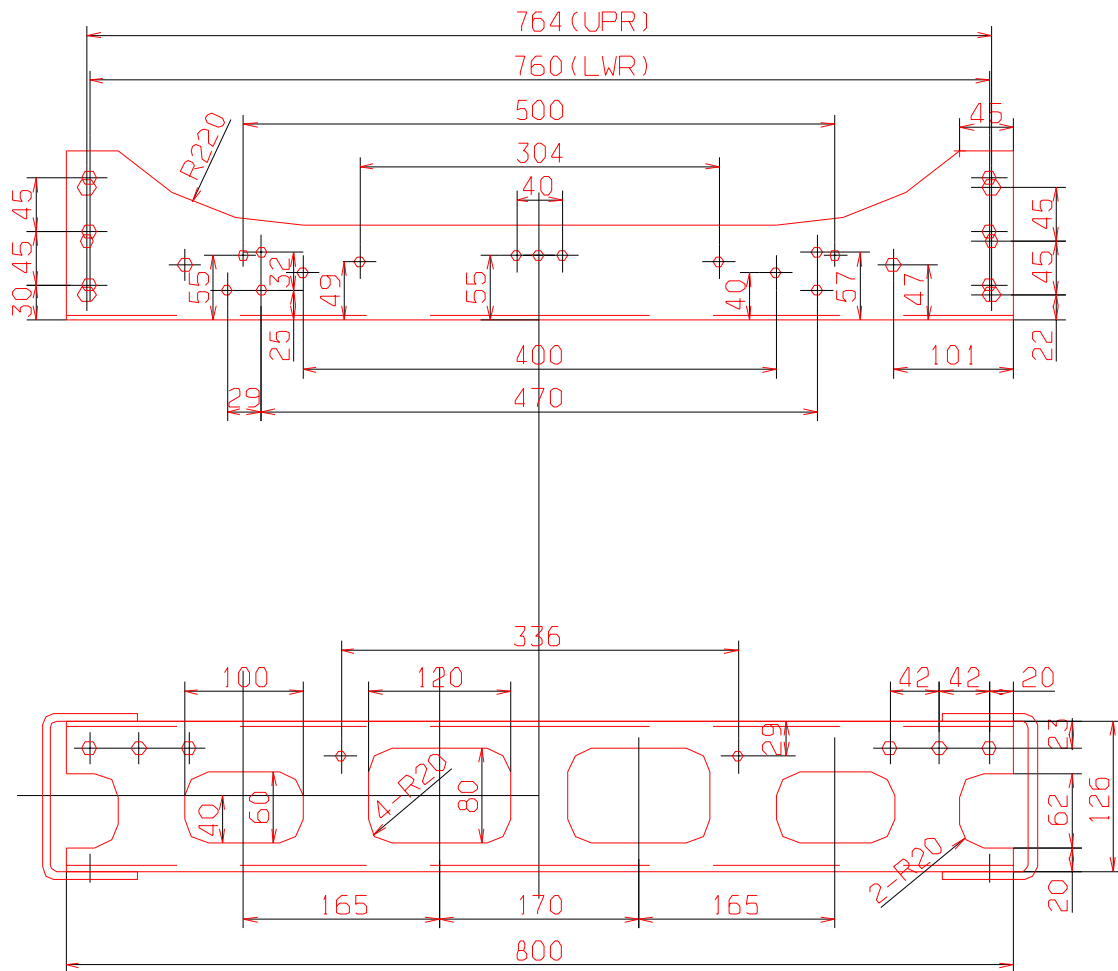








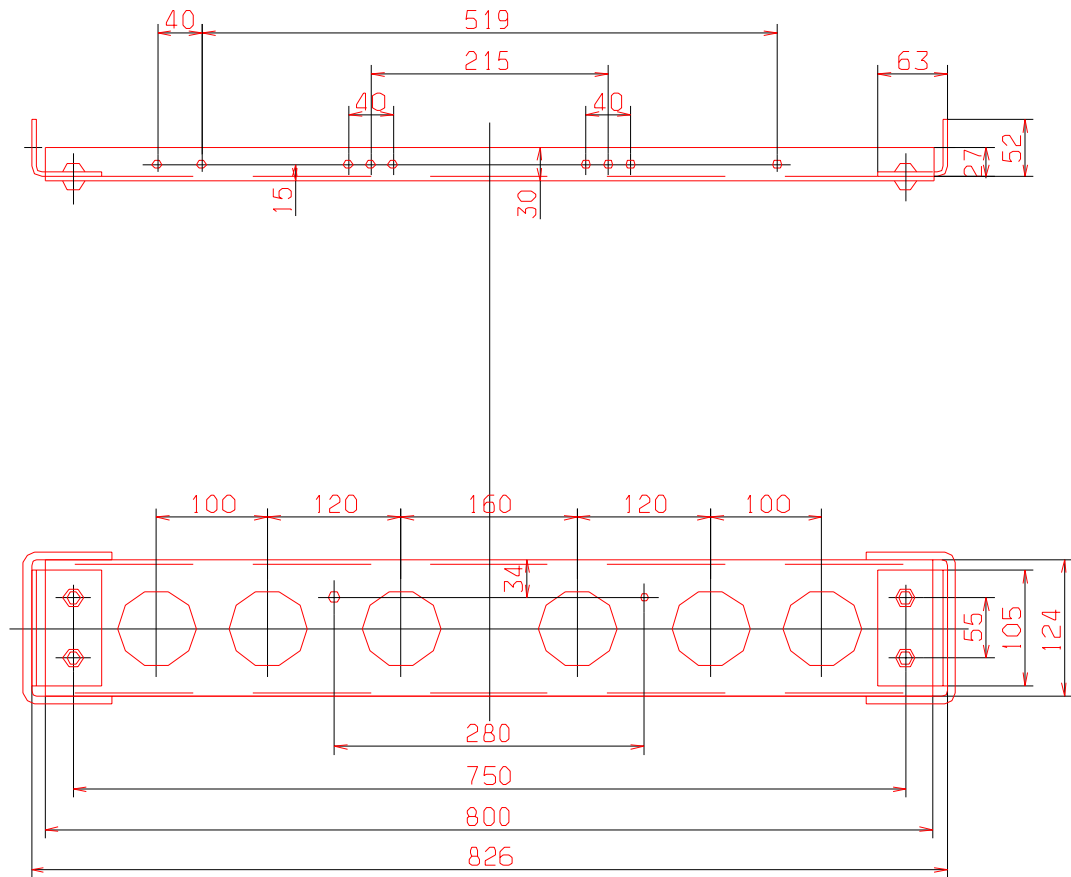




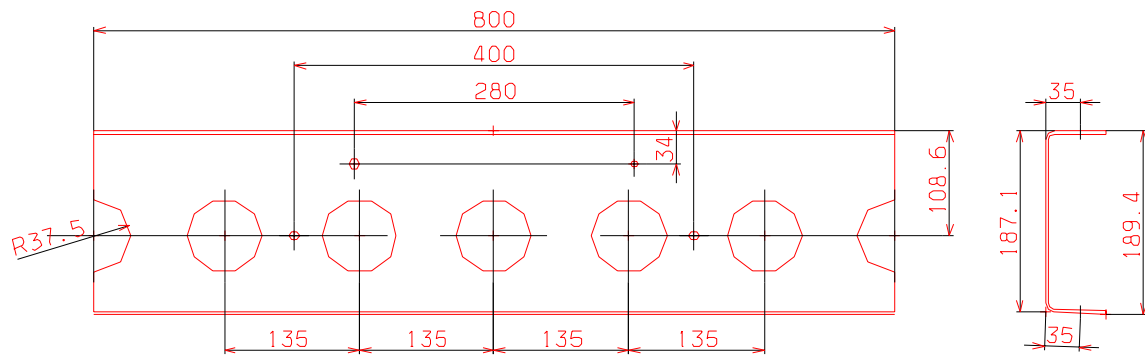
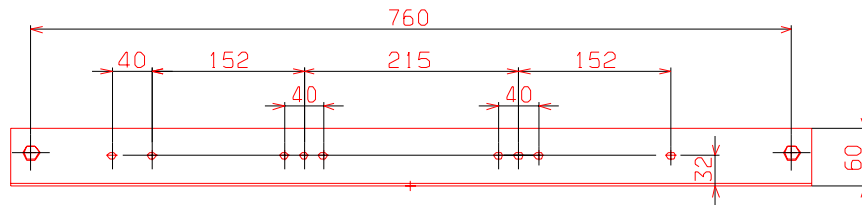


(2) END CROSS MEMBER

- CARGO ALL

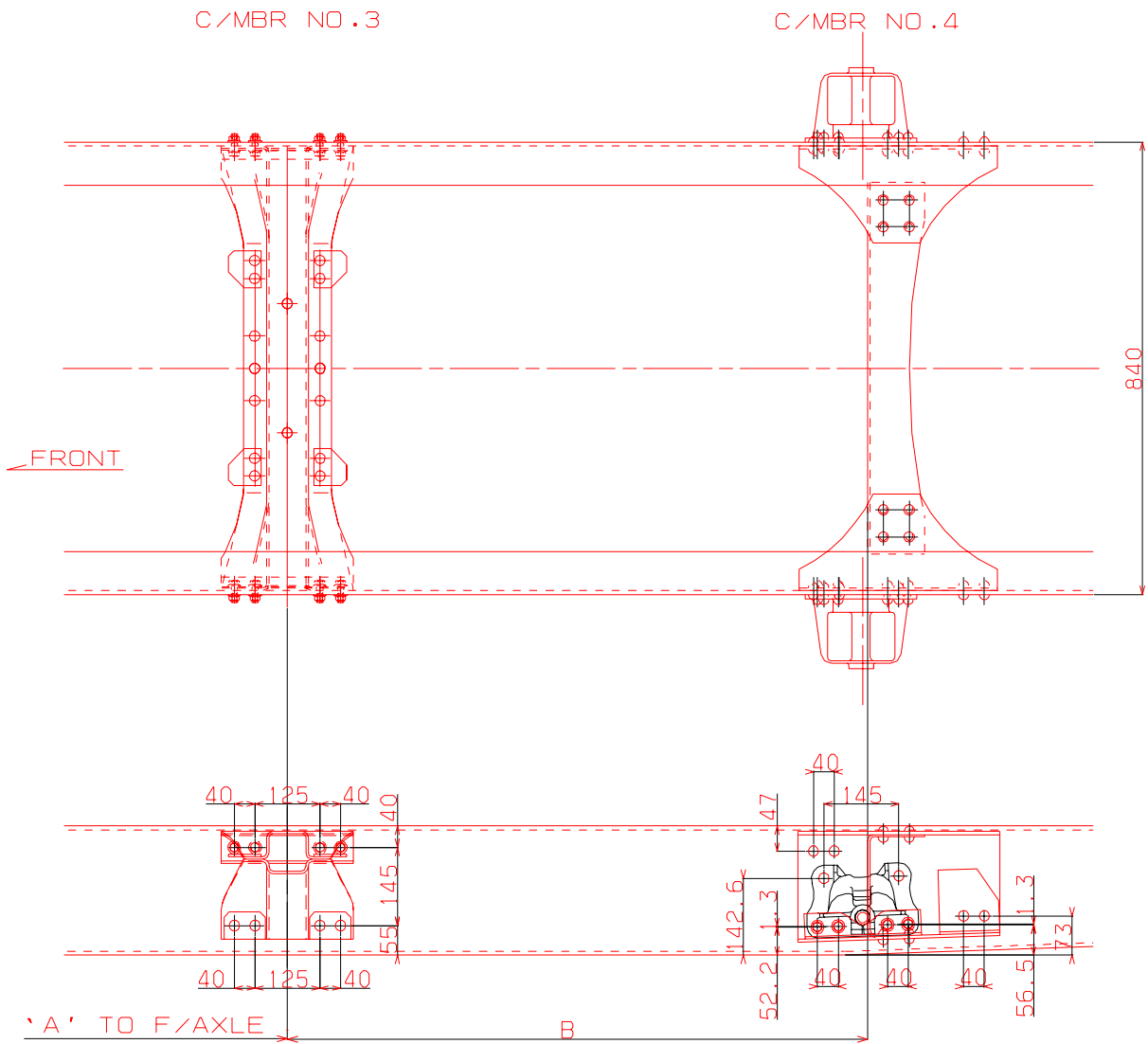


– DUMP



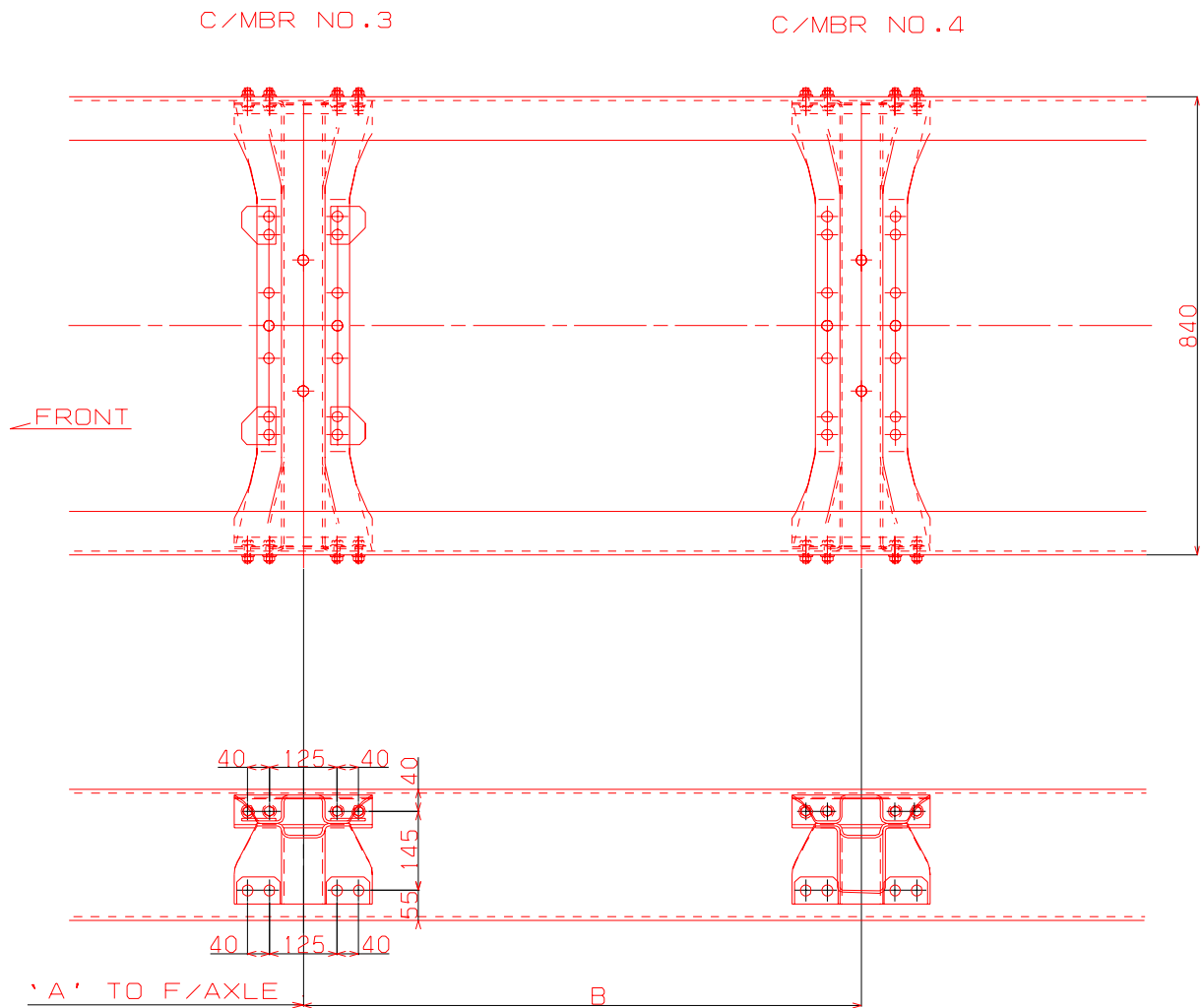
# 10-3. BOLTS NEAR THE NO.2 & NO.3 CROSS MEMBER

## (1) SHORT CARGO & DUMP



| VEHICLES    | A    | B    |
|-------------|------|------|
| SHORT CARGO | 2055 | 1120 |
| DUMP        | 1780 | 900  |

## (2) LONG CARGO, EXTRA LONG CARGO & U-LONG CARGO



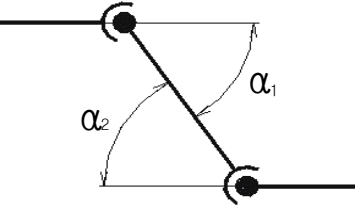
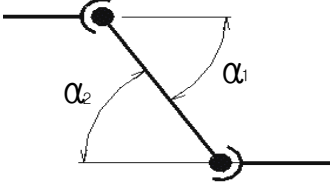
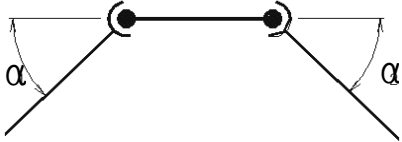
| VEHICLES     | A    | B    |
|--------------|------|------|
| LONG CARGO   | 1880 | 1030 |
| E-LONG CARGO | 1880 | 1150 |
| U-LONG CARGO | 1880 | 820  |

## 11. CAUTIONS NEEDED FOR THE INSTALLATION OF THE P/SHAFT

## 11. CAUTIONS NEEDED FOR THE INSTALLATION OF THE PROPELLER SHAFT

Be sure not to modify or alter propeller shaft, as it was designed to suit a vehicle feature. But in an unavoidable case, observe the following items.

### (1) 2-JOINT

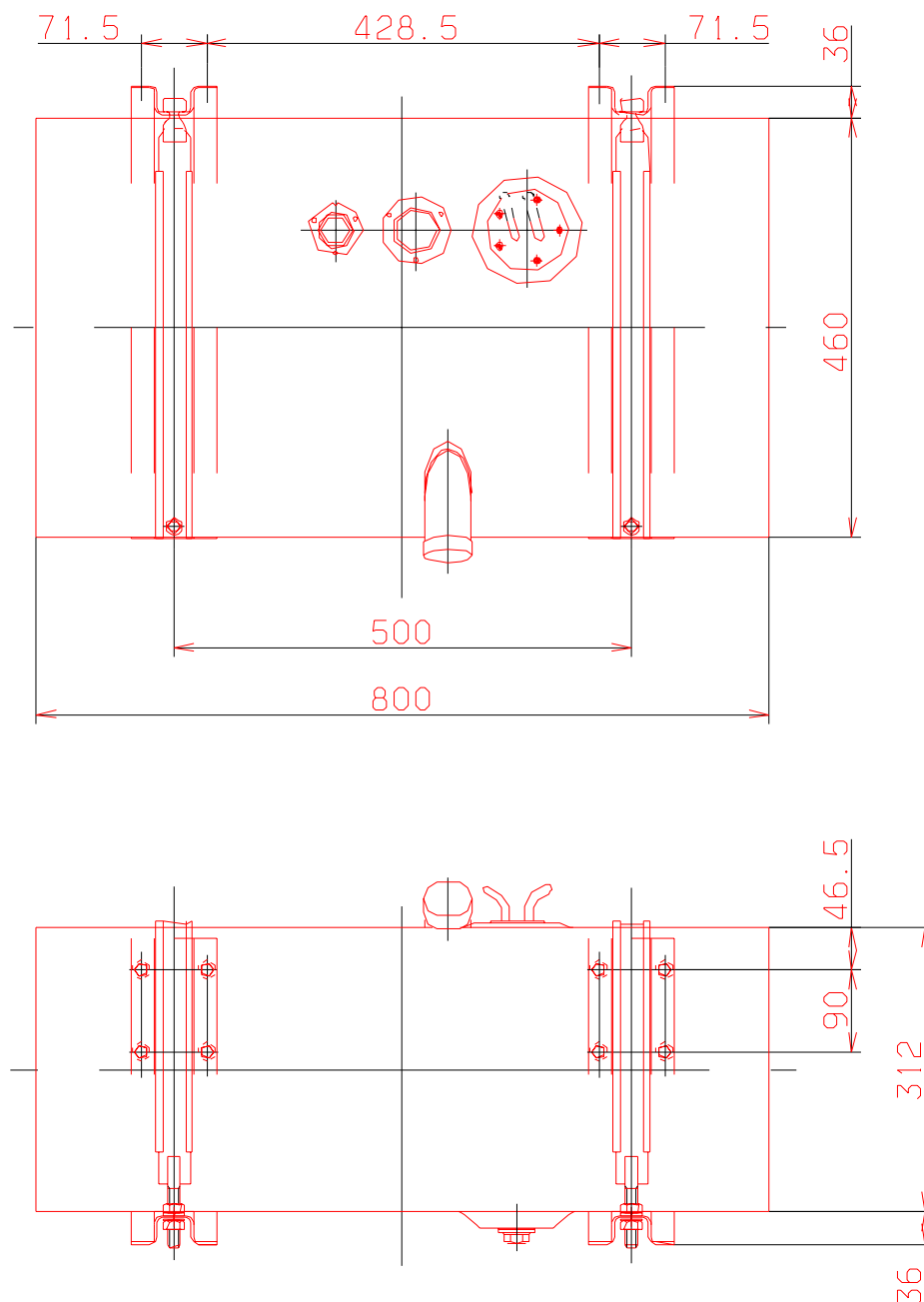
|                                                                                   |                                                                                   |                                                                                    |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|  |  |  |
| 0                                                                                 | X                                                                                 | 0                                                                                  |
| $\alpha_1 = 7^\circ$ , $\alpha_2 = 8^\circ$                                       | $\alpha_1 = 7^\circ$ , $\alpha_2 = 8^\circ$                                       | $\alpha_1 = 7^\circ$ , $\alpha_2 = 8^\circ$                                        |
| $\alpha_1^2 - \alpha_2^2 = -15$                                                   | $\alpha_1^2 + \alpha_2^2 = 113$                                                   | $\alpha_1^2 - \alpha_2^2 = -15$                                                    |

## 12. OTHERS

## 12-1. FUEL TANK

### (1) FUEL TANK CAPACITY - 100L

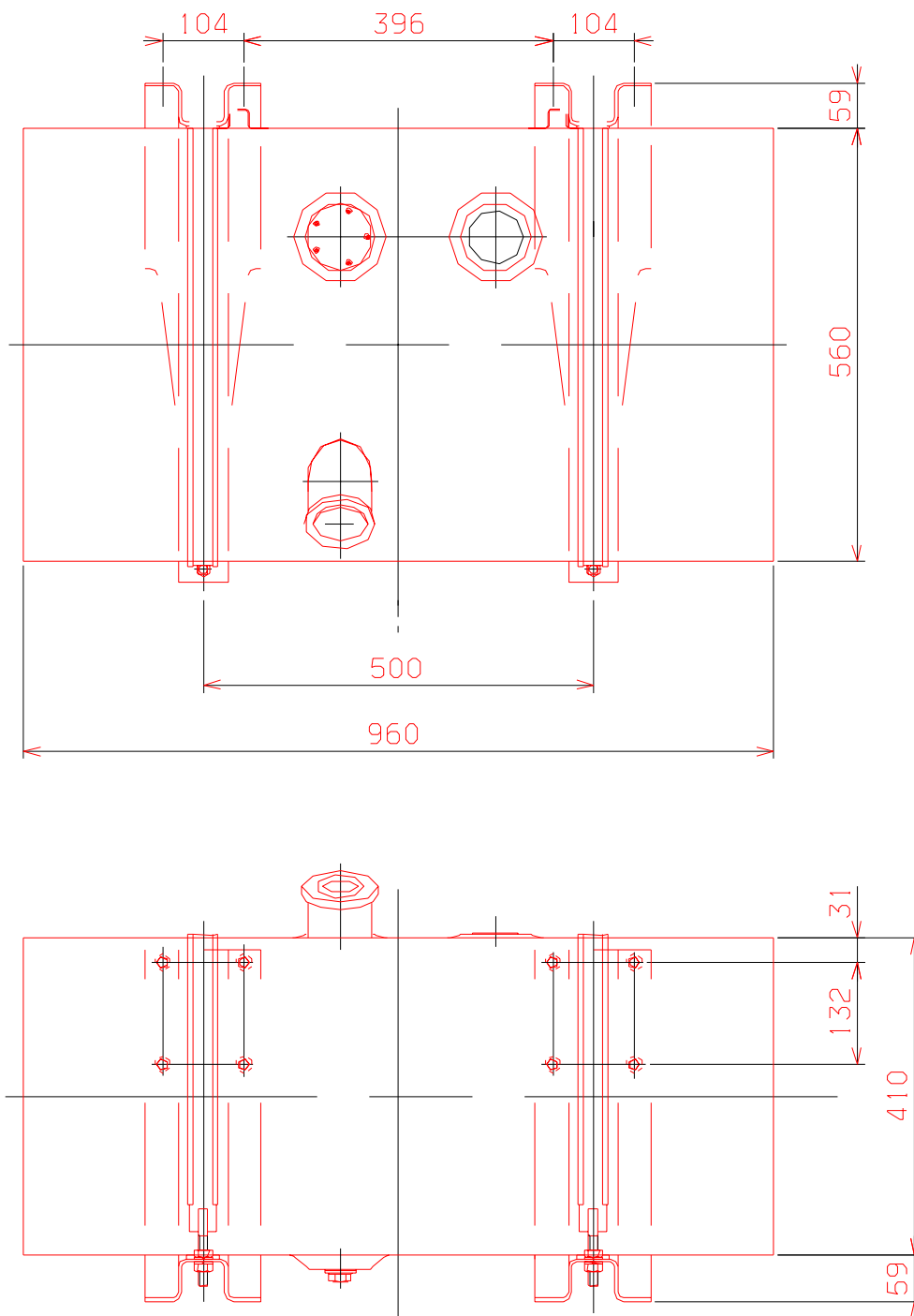
- VEHICLE : HD120 SHORT CARGO  
HD120 DUMP





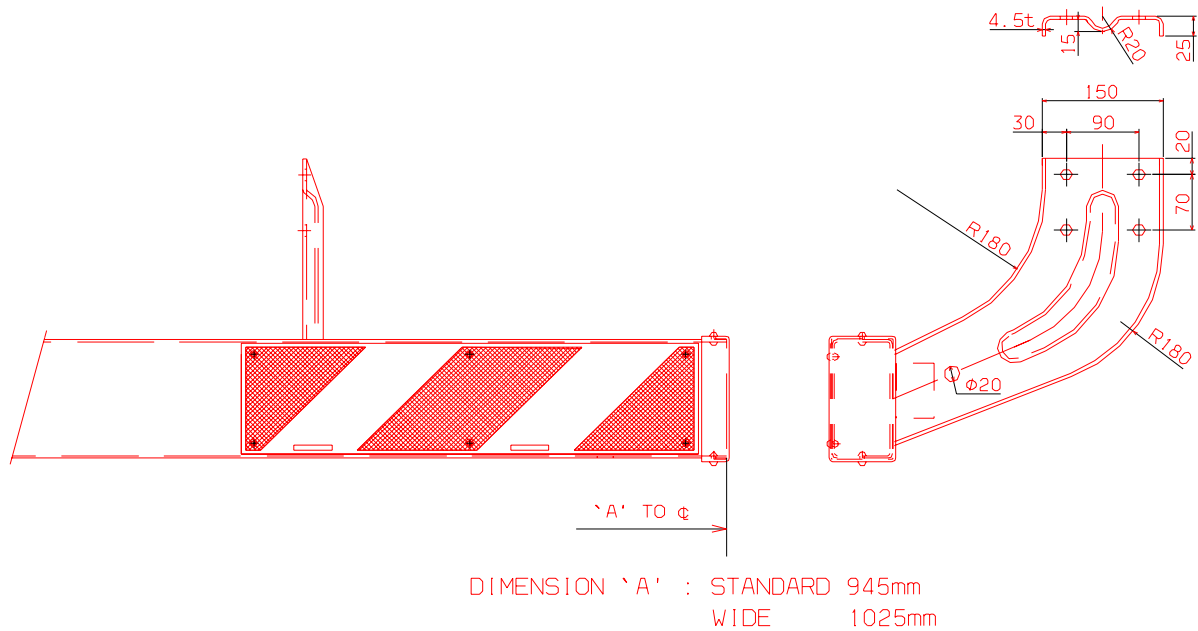
(2) FUEL TANK CAPACITY - 200L

- VEHICLE : HD120 LONG CARGO  
HD120 E-LONG



## 12-2. Rear safety guard

In case of modifying or altering rear safety guard, so care should be taken to conform to the regulations about ground clearance.



# *HYUNDAI TRUCK* BODY BUILDER BOOK

– HEAVY DUTY TRUCK –



2005. 06.

HYUNDAI MOTOR COMPANY

COMMERCIAL VEHICLE ENGINEERING & RESEARCH CENTER

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### 11. CAUTIONS NEEDED FOR THE INSTALLATION OF THE PROPELLAR SHAFT

# 1. IDENTIFICATION CODE

## 1. IDENTIFICATION CODE

|         | VEHICLE |                         | ENGINE     | CODE         | REMARK |
|---------|---------|-------------------------|------------|--------------|--------|
| CARGO   | 4x2     | 8T SHORT/LONG           | D6BR       | HD160        |        |
|         |         | 8.5T SHORT/LONG         | D6AV,Q-dd  | HD170        |        |
|         | 6x4     | 11.5T LONG              | D6AC,D6CA  | HD250        |        |
|         |         | 16T SHORT/MIDDLE        | D6AC,D6CA  | HD260        |        |
|         |         | 17T MIDDLE              | D6CA       | HD260        |        |
|         |         | 19M P/CARGO             | D6AC       | HD19M        |        |
|         |         | 19T E-LONG              | D6AC,D6CA  | HD320        |        |
|         |         | 19.5T SHORT             | D6AC,D6CA  | HD310        |        |
| DUMP    | 4x2     | 8T-DUMP                 | D6BR, D6DA | HD160        |        |
|         | 6x4     | 15T-DUMP                | D6AC       | HD270        |        |
|         | 8x4     | 23T-DUMP                | D6CA       | HD370        |        |
| MIXER   | 6x4     | 7 m <sup>3</sup> -MIXER | D6CA       | HD270        |        |
|         | 8x4     | 9 m <sup>3</sup> -MIXER | D6CA       | HD380        |        |
| TRACTOR | 4x2     | 4x2 TRACTOR             | D6AC,D6CA  | HD450/HD500  |        |
|         | 6x4     | 6x4 TRACTOR             | D6AC,D6CA  | HD700/HD1000 |        |

## 2. GENERAL SPECIFICATION

## 1. GENERAL SPECIFICATION

|               |                   |         | HD160            |          | HD170            |           |                  |           |
|---------------|-------------------|---------|------------------|----------|------------------|-----------|------------------|-----------|
|               |                   |         | SHORT(8T)        | LONG(8T) | SHORT(8.5T)      |           | LONG(8.5T)       |           |
|               |                   |         | D6BR             | D6BR     | D6AV             | Q-dd      | D6AV             | Q-dd      |
| O.A.L (C/CAB) |                   | mm      | 7,850            | 9,525    | 7,850            | ←         | 9,525            | ←         |
| O.A.W (C/CAB) |                   | mm      | 2,495            | ←        | ←                | ←         | ←                | ←         |
| O.A.H (C/CAB) |                   | mm      | 2,910            | 2,915    | 2920             | ←         | 2915             | ←         |
| BODY INSIDE   | LENGTH            | mm      | 5,400            | 7,300    | 5,400            | ←         | 7,300            | ←         |
|               | WIDTH             | mm      | 2,340            | ←        | ←                | ←         | ←                | ←         |
|               | HEIGHT            | mm      | 450              | ←        | ←                | ←         | ←                | ←         |
| DECK OFFSET   |                   | mm      | 775              | 1,280    | 775              | ←         | 1,280            | ←         |
| WHEEL BASE    |                   | mm      | 4,395            | 5,850    | 4,395            | ←         | 5,850            | ←         |
| WHEEL TREAD   | FRT               | mm      | 2,040            | ←        | ←                | ←         | ←                | ←         |
|               | RR                | mm      | 1,850            | ←        | ←                | ←         | ←                | ←         |
| OVER HANG     | FRT(BODY)         | mm      | 1,495            | ←        | ←                | ←         | ←                | ←         |
|               | RR(RR GUARD)      | mm      | 1,960            | 2,180    | 1,960            | ←         | 2,180            | ←         |
| C/CAB         | FRT               | kg      | 3,490            | 3,560    | 3,850            | 3,960     | 3,920            | 4,030     |
|               | RR                | kg      | 2,340            | 2,380    | 2,350            | 2,370     | 2,390            | 2,410     |
|               | TTL               | kg      | 5,830            | 5,940    | 6,200            | 6,330     | 6,310            | 6,440     |
| MAX G.V.W     | FRT               | kg      | 6,700            | ←        | 6,550            | ←         | ←                | ←         |
|               | RR                | kg      | 10,800           | ←        | 10,800           | ←         | ←                | ←         |
|               | TTL               | kg      | 17,500           | ←        | 17,350           | ←         | ←                | ←         |
| ENGINE        | MODEL             |         | D6BR             | ←        | D6AV             | Q-dd      | D6AV             | Q-dd      |
|               | ASPIRATION        |         | NA               | ←        | ←                | TCI       | ←                | TCI       |
|               | DISPLACEMENT      | cc      | 7,545            | ←        | 11,149           | ←         | 11,149           | ←         |
|               | OUTPUT            | ps/rpm  | 177/2900         | ←        | 235/2200         | 290/2000  | 235/2200         | 290/2000  |
|               | TORQUE            | kgm/rpm | 48/1400          | ←        | 82/1400          | 110/1200  | 82/1400          | 110/1200  |
| PERFOR-MANCE  | MAX.SPD           | km/h    | 109              | 103      | 99               | 120       | 99               | -         |
|               | MAX.GRD           | tan Θ   | 0.193            | 0.195    | 0.278            | 0.341     | 0.274            | -         |
|               | MIN. TURNING RAD. | m       | 7.5              | 9.9      | 7.5              | ←         | 10.1             | ←         |
| T / M         | MODEL             |         | M8S5(DD)         | ←        | M8S5(OD)         | M10S6     | M8S5(OD)         | M10S6     |
|               | GEAR RATIO        | 1st     | 6.597<br>(6.552) | ←        | 5.405<br>(5.431) | 6.552     | 5.405<br>(5.431) | 6.552     |
|               |                   | 2nd     | 4.207<br>(4.178) | ←        | 3.447<br>(3.463) | 4.382     | 3.447<br>(3.463) | 4.382     |
|               |                   | 3rd     | 2.432<br>(2.415) | ←        | 1.739<br>(1.747) | 2.415     | 1.739<br>(1.747) | 2.415     |
|               |                   | 4th     | 1.407<br>(1.397) | ←        | 1.000<br>(1.000) | 1.621     | 1.000<br>(1.000) | 1.621     |
|               |                   | 5th     | 1.000<br>(1.000) | ←        | 0.738<br>(0.741) | 1         | 0.738<br>(0.741) | 1         |
|               |                   | 6th     | -                | -        | -                | 0.758     | -                | 0.758     |
|               |                   | 7th     | -                | -        | -                | -         | -                | -         |
|               |                   | 8th     | -                | -        | -                | -         | -                | -         |
|               |                   | REV     | 6.896<br>(6.849) | ←        | 5.650<br>(5.677) | 6.849     | 5.650<br>(5.677) | 6.849     |
| R/AXLE        | MODEL             |         | D10H             | ←        | ←                | D10HT-III | D10H             | D10HT-III |
|               | RATIO             |         | 6.166            | ←        | ←                | 4.333     | 6.166            | 4.333     |
| TIRE          | FRT               |         | 11.00X20-16PR    | ←        | ←                | ←         | ←                | ←         |
|               | RR                |         | 11.00X20-16PR    | ←        | ←                | ←         | ←                | ←         |

NOTE : 1) WEIGHT BASED ON THE STANDRD SPECIFICATION

2) ABOVE DATAS BASED ON THE CHASSIS CAB



|               |                   |         | HD250         |          |                | HD260      |          |                |
|---------------|-------------------|---------|---------------|----------|----------------|------------|----------|----------------|
|               |                   |         | LONG(11.5T)   |          |                | SHORT(16T) |          |                |
|               |                   |         | D6AC          | D6AC(II) | D6CA360-TAIWAN | D6AC       | D6AC(II) | D6CA350-TAIWAN |
| O.A.L (C/CAB) |                   | mm      | 11,610        | ←        | ←              | 9,635      | ←        | ←              |
| O.A.W (C/CAB) |                   | mm      | 2,495         | ←        | ←              | ←          | ←        | ←              |
| O.A.H (C/CAB) |                   | mm      | 2,920         | ←        | ←              | 2,910      | ←        | ←              |
| BODY INSIDE   | LENGTH            | mm      | 9,100         | ←        | ←              | 7,080      | ←        | ←              |
|               | WIDTH             | mm      | 2,340         | ←        | ←              | ←          | ←        | ←              |
|               | HEIGHT            | mm      | 450           | ←        | ←              | ←          | ←        | ←              |
| DECK OFFSET   |                   | mm      | 780           | ←        | ←              | 470        | ←        | ←              |
| WHEEL BASE    |                   | mm      | 6,950         | ←        | ←              | 5,650      | ←        | ←              |
| WHEEL TREAD   | FRT               | mm      | 2,040         | ←        | ←              | ←          | ←        | ←              |
|               | RR                | mm      | 1,850         | ←        | ←              | ←          | ←        | ←              |
| OVER HANG     | FRT(BODY)         | mm      | 1,495         | ←        | ←              | ←          | ←        | ←              |
|               | RR(RR GUARD)      | mm      | 3,165         | ←        | ←              | 2,490      | ←        | ←              |
| C/CAB         | FRT               | kg      | 4,275         | ←        | 4,525          | 4,190      | ←        | 4,405          |
|               | RR                | kg      | 4,565         | ←        | 4,575          | 4,160      | ←        | 4,290          |
|               | TTL               | kg      | 8,840         | ←        | 9,100          | 8,350      | ←        | 8,695          |
| MAX G.V.W     | FRT               | kg      | 6,700         | ←        | ←              | 6,550      | ←        | ←              |
|               | RR                | kg      | 21,600        | ←        | ←              | 21,600     | ←        | ←              |
|               | TTL               | kg      | 28,300        | ←        | ←              | 28,150     | ←        | ←              |
| ENGINE        | MODEL             |         | D6AC          | D6AC(II) | D6CA360        | D6AC       | D6AC(II) | D6CA350        |
|               | ASPIRATION        |         | TCI           | ←        | ←              | TCI        | ←        | ←              |
|               | DISPLACEMENT      | cc      | 11,149        | ←        | 12,344         | 11,149     | ←        | 12,344         |
|               | OUTPUT            | ps/rpm  | 340/2200      | ←        | 360/1900       | 340/2200   | ←        | 350/1900       |
|               | TORQUE            | kgm/rpm | 140/1400      | 148/-    | 160/1200       | 140/1400   | 148/-    | 148/1200       |
| PERFOR-MANCE  | MAX.SPD           | km/h    | 117           | -        | -              | 118        | -        | -              |
|               | MAX.GRD           | tan θ   | 0.466         | -        | -              | 0.360      | -        | -              |
|               | MIN. TURNING RAD. | m       | 9.9           | ←        | ←              | 8.1        | ←        | ←              |
| T / M         | MODEL             |         | M12S6         | H160S6   | ←              | M12S6      | ←        | ←              |
|               | GEAR RATIO        | 1st     | 7.213         | ←        | ←              | ←          | ←        | ←              |
|               |                   | 2nd     | 4.178         | ←        | ←              | ←          | ←        | ←              |
|               |                   | 3rd     | 2.587         | ←        | ←              | ←          | ←        | ←              |
|               |                   | 4th     | 1.621         | ←        | ←              | ←          | ←        | ←              |
|               |                   | 5th     | 1.000         | ←        | ←              | ←          | ←        | ←              |
|               |                   | 6th     | 0.702         | ←        | ←              | ←          | ←        | ←              |
|               |                   | 7th     | -             | -        | -              | -          | -        | -              |
|               |                   | 8th     | -             | -        | -              | -          | -        | -              |
|               |                   | REV     | 7.081         | ←        | ←              | ←          | ←        | ←              |
| R/AXLE        | MODEL             |         | D10HT         | ←        | ←              | ←          | T14HT    | D10HT-II       |
|               | RATIO             |         | 5.571         | 5.143    | ←              | 5.571      | ←        | ←              |
| TIRE          | FRT               |         | 11.00X20-16PR | ←        | ←              | ←          | ←        | ←              |
|               | RR                |         | 11.00X20-16PR | ←        | ←              | ←          | ←        | ←              |

NOTE : 1) WEIGHT BASED ON THE STANDRD SPECIFICATION

2) ABOVE DATAS BASED ON THE CHASSIS CAB

|                  |                   |         | HD260         |          |                |                  | HD19M            |          |
|------------------|-------------------|---------|---------------|----------|----------------|------------------|------------------|----------|
|                  |                   |         | MIDDLE(16T)   |          |                | MIDDLE(17T)      | 19M P/CARGO      |          |
|                  |                   |         | D6AC          | D6AC(II) | D6CA350-TAIWAN | D6CA350-TAIWAN   | D6AC             | D6AC(II) |
| O.A.L (C/CAB)    |                   | mm      | 10,310        | ←        | ←              | ←                | 10,925           | ←        |
| O.A.W (C/CAB)    |                   | mm      | 2,495         | ←        | ←              | ←                | ←                | ←        |
| O.A.H (C/CAB)    |                   | mm      | 2,910         | ←        | ←              | ←                | ←                | ←        |
| BODY INSIDE      | LENGTH            | mm      | 8,000         | ←        | ←              | -                | 8,300            | ←        |
|                  | WIDTH             | mm      | 2,340         | ←        | ←              | -                | 2,340            | ←        |
|                  | HEIGHT            | mm      | 450           | ←        | ←              | -                | 450              | ←        |
| DECK OFFSET      |                   | mm      | 530           | ←        | ←              | -                | 610              | ←        |
| WHEEL BASE       |                   | mm      | 6,100         | ←        | ←              | ←                | 6,420            | ←        |
| WHEEL TREAD      | FRT               | mm      | 2,040         | ←        | ←              | 2,120            | 2,040            | ←        |
|                  | RR                | mm      | 1,850         | ←        | ←              | ←                | 1,850            | ←        |
| OVER HANG        | FRT(BODY)         | mm      | 1,495         | ←        | ←              | ←                | 1,495            | ←        |
|                  | RR(RR GUARD)      | mm      | 2,715         | ←        | ←              | ←                | 3,010            | ←        |
| C/CAB            | FRT               | kg      | 4,230         | ←        | 4,445          | 4,545            | 4,320            | ←        |
|                  | RR                | kg      | 4,220         | ←        | 4,350          | 4,350            | 4,650            | ←        |
|                  | TTL               | kg      | 8,450         | ←        | 8,795          | 8,895            | 8,970            | ←        |
| MAX G.V.W        | FRT               | kg      | 6,550         | ←        | ←              | 7,950            | 6,550            | ←        |
|                  | RR                | kg      | 21,600        | ←        | ←              | 21,600           | 21,600           | ←        |
|                  | TTL               | kg      | 28,150        | ←        | ←              | 29,550           | 28,150           | ←        |
| ENGINE           | MODEL             |         | D6AC          | D6AC(II) | D6CA350        | ←                | D6AC             | D6AC(II) |
|                  | ASPIRATION        |         | TCI           | ←        | ←              | ←                | TCI              | ←        |
|                  | DISPLACEMENT      | cc      | 11,149        | ←        | 12,344         | ←                | 11,149           | ←        |
|                  | OUTPUT            | ps/rpm  | 340/2200      | ←        | 350/1900       | ←                | 340/2200         | ←        |
|                  | TORQUE            | kgm/rpm | 140/1400      | 148/-    | 148/1200       | ←                | 140/1400         | 148/-    |
| PERFOR-<br>MANCE | MAX.SPD           | km/h    | 100           | -        | -              | -                | 94               | -        |
|                  | MAX.GRD           | tan θ   | 0.406         | -        | -              | -                | 0.579            | -        |
|                  | MIN. TURNING RAD. | m       | 8.8           | ←        | ←              | ←                | 9.1              | ←        |
| T / M            | MODEL             |         | M12S6         | ←        | ←              | ←                | M12S2x5          | H160S2x5 |
|                  | GEAR RATIO        | 1st     | 7.213         | ←        | ←              | ←                | 9.153<br>(7.145) | ←        |
|                  |                   | 2nd     | 4.178         | ←        | ←              | ←                | 4.783<br>(3.733) | ←        |
|                  |                   | 3rd     | 2.587         | ←        | ←              | ←                | 2.765<br>(2.158) | ←        |
|                  |                   | 4th     | 1.621         | ←        | ←              | ←                | 1.666<br>(1.301) | ←        |
|                  |                   | 5th     | 1.000         | ←        | ←              | ←                | 1.000<br>(0.780) | ←        |
|                  |                   | 6th     | 0.702         | ←        | ←              | ←                | -                | -        |
|                  |                   | 7th     | -             | -        | -              | -                | -                | -        |
|                  |                   | 8th     | -             | -        | -              | -                | -                | -        |
|                  |                   | REV     | 7.081         | ←        | ←              | ←                | 8.105<br>(6.327) | ←        |
| R/AXLE           | MODEL             |         | D10HT         | T14HT    | D10HT-II       | ←                | D10HT            | ←        |
|                  | RATIO             |         | 5.571         | ←        | ←              | ←                | 6.166            | 5.571    |
| TIRE             | FRT               |         | 11.00X20-16PR | ←        | ←              | 315/80R22.5-20PR | 11.00X20-16PR    | ←        |
|                  | RR                |         | 11.00X20-16PR | ←        | ←              | 12R22.6-16PR     | 11.00X20-16PR    | ←        |

NOTE : 1) WEIGHT BASED ON THE STA

2) ABOVE DATAS BASED ON THE CHASSIS CAB

3) 19M P/CARGO'S DATAS NOT INCLUDE TRAILER.

|               |                   |         | HD320            |          |           | HD310            |          |           |
|---------------|-------------------|---------|------------------|----------|-----------|------------------|----------|-----------|
|               |                   |         | E-LONG(19T)      |          |           | SHORT(19.5T)     |          |           |
|               |                   |         | D6AC             | D6AC(II) | L2D-A     | D6AC             | D6AC(II) | L2D-A     |
| O.A.L (C/CAB) |                   | mm      | 12,245           | ←        | ←         | 11,395           | ←        | ←         |
| O.A.W (C/CAB) |                   | mm      | 2,495            | ←        | ←         | 2,495            | ←        | ←         |
| O.A.H (C/CAB) |                   | mm      | 2,920            | ←        | ←         | 2,920            | ←        | ←         |
| BODY INSIDE   | LENGTH            | mm      | 10,100           | ←        | ←         | 9,100            | ←        | ←         |
|               | WIDTH             | mm      | 2,340            | ←        | ←         | 2,340            | ←        | ←         |
|               | HEIGHT            | mm      | 450              | ←        | ←         | 450              | ←        | ←         |
| DECK OFFSET   |                   | mm      | 1,660            | ←        | ←         | 1,350            | ←        | ←         |
| WHEEL BASE    |                   | mm      | 7,850            | ←        | ←         | 7,040            | ←        | ←         |
| WHEEL TREAD   | FRT               | mm      | 2,040            | ←        | ←         | 2,040            | ←        | ←         |
|               | RR                | mm      | 1,850            | ←        | ←         | 1,850            | ←        | ←         |
| OVER HANG     | FRT(BODY)         | mm      | 1,925            | ←        | ←         | 1,925            | ←        | ←         |
|               | RR(RR GUARD)      | mm      | 2,470            | ←        | ←         | 2,430            | ←        | ←         |
| C/CAB         | FRT               | kg      | 6,225            | ←        | 6475      | 6,070            | ←        | 6320      |
|               | RR                | kg      | 3,995            | ←        | 4035      | 3,950            | ←        | 3990      |
|               | TTL               | kg      | 10,220           | ←        | 10510     | 10,020           | ←        | 10310     |
| MAX G.V.W     | FRT               | kg      | 13,100           | ←        | ←         | 13,100           | ←        | ←         |
|               | RR                | kg      | 23,200           | ←        | ←         | 23,200           | ←        | ←         |
|               | TTL               | kg      | 36,300           | ←        | ←         | 36,300           | ←        | ←         |
| ENGINE        | MODEL             |         | D6AC             | D6AC(II) | D6CA(380) | D6AC             | D6AC(II) | D6CA(380) |
|               | ASPIRATION        |         | TCI              | ←        | ←         | TCI              | ←        | ←         |
|               | DISPLACEMENT      | cc      | 11,149           | ←        | 12,344    | 11,149           | ←        | 12,344    |
|               | OUTPUT            | ps/rpm  | 340/2200         | ←        | 380/1900  | 340/2200         | ←        | 380/1900  |
|               | TORQUE            | kgm/rpm | 140/1400         | 148/-    | 160/1200  | 140/1400         | 148/-    | 160/1200  |
| PERFOR-MANCE  | MAX.SPD           | km/h    | 94               | -        | -         | 94               | -        | -         |
|               | MAX.GRD           | tan θ   | 0.643            | -        | -         | 0.456            | -        | -         |
|               | MIN. TURNING RAD. | m       | 11.7             | ←        | ←         | 10.8             | ←        | ←         |
| T / M         | MODEL             |         | M12S2x5          | H160S2x5 | ←         | M12S2x5          | H160S2x5 | ←         |
|               | GEAR RATIO        | 1st     | 9.153<br>(7.145) | ←        | ←         | 9.153<br>(7.145) | ←        | ←         |
|               |                   | 2nd     | 4.783<br>(3.733) | ←        | ←         | 4.783<br>(3.733) | ←        | ←         |
|               |                   | 3rd     | 2.765<br>(2.158) | ←        | ←         | 2.765<br>(2.158) | ←        | ←         |
|               |                   | 4th     | 1.666<br>(1.301) | ←        | ←         | 1.666<br>(1.301) | ←        | ←         |
|               |                   | 5th     | 1.000<br>(0.780) | ←        | ←         | 1.000<br>(0.780) | ←        | ←         |
|               |                   | 6th     | -                | ←        | ←         | -                | ←        | ←         |
|               |                   | 7th     | -                | -        | -         | -                | -        | -         |
|               |                   | 8th     | -                | -        | -         | -                | -        | -         |
|               |                   | REV     | 8.105<br>(6.327) | ←        | ←         | 8.105<br>(6.327) | ←        | ←         |
| R/AXLE        | MODEL             |         | D12HT            | ←        | D12HT-II  | D12HT            | ←        | D12HT-II  |
|               | RATIO             |         | 6.166            | 5.571    | 5.143     | 6.166            | 5.571    | 5.143     |
| TIRE          | FRT               |         | 11.00X20-16PR    | ←        | ←         | 11.00X20-16PR    | ←        | ←         |
|               | RR                |         | 11.00X20-16PR    | ←        | ←         | 11.00X20-16PR    | ←        | ←         |

NOTE : 1) WEIGHT BASED ON THE STA

2) ABOVE DATAS BASED ON THE CHASSIS CAB

|              |                   |         | HD160            |          |          | HD270    |          | HD370            |
|--------------|-------------------|---------|------------------|----------|----------|----------|----------|------------------|
|              |                   |         | 4x2(8T)          |          |          | 6x4(15T) |          | 8x4(23T)         |
|              |                   |         | D6BR             | D6DA19   | D6DA22   | D6AC     | D6AC(II) | L2D-A            |
| O. A. L      |                   | mm      | 6,520            | ←        | ←        | 7,635    | ←        | 9,025            |
| O. A. W      |                   | mm      | 2,495            | ←        | ←        | ←        | ←        | ←                |
| O. A. H      |                   | mm      | 2,930            | ←        | ←        | ←        | ←        | 2,945            |
| BODY INSIDE  | LENGTH            | mm      | 4,000            | ←        | ←        | 4,840    | ←        | 5,220            |
|              | WIDTH             | mm      | 2,330            | ←        | ←        | 2,300    | ←        | ←                |
|              | HEIGHT            | mm      | 575              | ←        | ←        | 905      | ←        | 1,306            |
| DECK OFFSET  |                   | mm      | 750              | ←        | ←        | 350      | ←        | 1,800            |
| WHEEL BASE   |                   | mm      | 3,700            | ←        | ←        | 4,590    | ←        | 6,000            |
| WHEEL TREAD  | FRT               | mm      | 2,050            | ←        | ←        | 2,040    | ←        | 2,098            |
|              | RR                | mm      | 1,850            | ←        | ←        | ←        | ←        | 1,850            |
| OVER HANG    | FRT               | mm      | 1,495            | ←        | ←        | ←        | ←        | 1,925            |
|              | RR                | mm      | 1,325            | ←        | ←        | 1,550    | ←        | 1,100            |
| KERB WT      | FRT               | kg      | -                | -        | -        | -        | -        | -                |
|              | RR                | kg      | -                | -        | -        | -        | -        | -                |
|              | TTL               | kg      | -                | -        | -        | -        | -        | -                |
| G.V.W        | FRT               | kg      | 6,550            | ←        | ←        | 6,700    | ←        | 18,000           |
|              | RR                | kg      | 10,800           | ←        | ←        | 23,600   | ←        | 23,600           |
|              | TTL               | kg      | 17,350           | ←        | ←        | 30,300   | ←        | 41,600           |
| ENGINE       | MODEL             |         | D6BR             | D6DA19   | D6DA22   | D6AC     | D6AC(II) | D6CA(380)        |
|              | ASPIRATION        |         | NA               | TCI      | ←        | ←        | ←        | ←                |
|              | DISPLACEMENT      | cc      | 7,545            | 6,606    | ←        | 11,149   | ←        | 12,344           |
|              | OUTPUT            | ps/rpm  | 177/2900         | 196/2500 | 225/2500 | 340/2200 | ←        | 380/1900         |
|              | TORQUE            | kgm/rpm | 48/1400          | 58/1700  | 65/1700  | 140/1400 | 148/-    | 160/1200         |
| PERFOR-MANCE | MAX.SPD           | km/h    | 80               | -        | -        | -        | -        | -                |
|              | MAX.GRD           | tan θ   | 0.251            | -        | -        | -        | -        | -                |
|              | MIN. TURNING RAD. | m       | 6.2              | ←        | ←        | 7.4      | ←        | 9.7              |
| T / M        | MODEL             |         | M8S5(DD)         | ←        | ←        | M12S6    | H160S6   | ZF16S151         |
|              | GEAR RATIO        | 1st     | 6.597<br>(6.552) | ←        | ←        | 7.213    | ←        | 13.86<br>(11.59) |
|              |                   | 2nd     | 4.207<br>(4.178) | ←        | ←        | 4.178    | ←        | 9.52<br>(7.96)   |
|              |                   | 3rd     | 2.432<br>(2.415) | ←        | ←        | 2.587    | ←        | 6.56<br>(5.48)   |
|              |                   | 4th     | 1.407<br>(1.397) | ←        | ←        | 1.621    | ←        | 4.58<br>(3.83)   |
|              |                   | 5th     | 1.000<br>(1.000) | ←        | ←        | 1.000    | ←        | 3.02<br>(2.53)   |
|              |                   | 6th     | -                | -        | -        | 0.702    | ←        | 2.08<br>(1.74)   |
|              |                   | 7th     | -                | -        | -        | -        | -        | 1.43<br>(1.20)   |
|              |                   | 8th     | -                | -        | -        | -        | -        | 1<br>(0.84)      |
|              |                   | REV     | 6.896<br>(6.849) | ←        | ←        | 7.081    | ←        | 12.97<br>(10.85) |
| R/AXLE       | MODEL             |         | D10H             | ←        | ←        | D12HT    | ←        | D12HT-II         |
|              | RATIO             |         | 6.666            | 5.571    | 6.166    | 6.166    | ←        | 4.875            |
| TIRE         | FRT               |         | 11.00X20-16PR    | ←        | ←        | ←        | ←        | 385/65R22.5-20PR |
|              | RR                |         | 11.00X20-16PR    | ←        | ←        | ←        | ←        | 12R22.5-16PR     |

NOTE : 1) WEIGHT BASED ON THE STANDRD SPECIFICATION

2) ABOVE DATAS BASED ON THE COMPLETED VEHICLE

|             |                   |         | HD450/HD500      |             |             | HD700/HD1000     |                  |          |
|-------------|-------------------|---------|------------------|-------------|-------------|------------------|------------------|----------|
|             |                   |         | 4x2              |             |             | 6x4              |                  |          |
|             |                   |         | D6AC             | L2D-B( 350) | L2D-B( 380) | D6AC             | D6AC( I I )      | L1D      |
| O. A. L     |                   | mm      | 5,880            | ←           | ←           | 6,665            | ←                | ←        |
| O. A. W     |                   | mm      | 2,495            | ←           | ←           | ←                | ←                | ←        |
| O. A. H     |                   | mm      | 2,850            | ←           | ←           | 2,895            | ←                | ←        |
| BODY INSIDE | LENGTH            | mm      | -                | -           | -           | -                | -                | -        |
|             | WIDTH             | mm      | -                | -           | -           | -                | -                | -        |
|             | HEIGHT            | mm      | -                | -           | -           | -                | -                | -        |
| DECK OFFSET |                   | mm      | 470              | ←           | ←           | 260              | ←                | ←        |
| WHEEL BASE  |                   | mm      | 3,450            | ←           | ←           | 4,350            | ←                | ←        |
| WHEEL TREAD | FRT               | mm      | 2,040            | ←           | ←           | ←                | ←                | ←        |
|             | RR                | mm      | 1,850            | ←           | ←           | ←                | ←                | ←        |
| OVER HANG   | FRT               | mm      | 1,495            | ←           | ←           | ←                | ←                | ←        |
|             | RR                | mm      | 935              | ←           | ←           | 820              | ←                | ←        |
| KERB WT     | FRT               | kg      | 4,535            | 4,735       | ←           | 4,400            | ←                | 4,600    |
|             | RR                | kg      | 2,455            | 2,475       | ←           | 4,480            | ←                | 4,500    |
|             | TTL               | kg      | 6,990            | 7,210       | ←           | 8,880            | ←                | 9,100    |
| G.V.W       | FRT               | kg      | 6,550            | ←           | ←           | 6,550            | ←                | ←        |
|             | RR                | kg      | 11,800           | ←           | ←           | 23,600           | ←                | ←        |
|             | TTL               | kg      | 18,350           | ←           | ←           | 30,150           | ←                | ←        |
| ENGINE      | MODEL             |         | D6AC             | D6CA350     | D6CA380     | D6AC             | D6AC( I I )      | L1D      |
|             | ASPIRATION        |         | TCI              | ←           | ←           | ←                | ←                | ←        |
|             | DISPLACEMENT      | cc      | 11,149           | 12,344      | ←           | 11,149           | ←                | 12,344   |
|             | OUTPUT            | ps/rpm  | 340/2200         | 350/1900    | 380/1900    | 340/2200         | ←                | 410/1900 |
|             | TORQUE            | kgm/rpm | 140/1400         | 148/1200    | ←           | 140/1400         | 148/-            | 188/1200 |
| PERFORMANCE | MAX.SPD           | km/h    | -                | -           | -           | -                | -                | -        |
|             | MAX.GRD           | tan θ   | -                | -           | -           | -                | -                | -        |
|             | MIN. TURNING RAD. | m       | 6.2              | ←           | ←           | 6.8              | ←                | ←        |
| T / M       | MODEL             |         | M12S2X5          | H160S2X5    | ←           | M12S2X5          | ZF16S151         | ←        |
|             | GEAR RATIO        | 1st     | 9.153<br>(7.145) | ←           | ←           | 9.153<br>(7.145) | 13.86<br>(11.59) | ←        |
|             |                   | 2nd     | 4.783<br>(3.733) | ←           | ←           | 4.783<br>(3.733) | 9.52<br>(7.96)   | ←        |
|             |                   | 3rd     | 2.765<br>(2.158) | ←           | ←           | 2.765<br>(2.158) | 6.56<br>(5.48)   | ←        |
|             |                   | 4th     | 1.666<br>(1.301) | ←           | ←           | 1.666<br>(1.301) | 4.58<br>(3.83)   | ←        |
|             |                   | 5th     | 1.000<br>(0.780) | ←           | ←           | 1.000<br>(0.780) | 3.02<br>(2.53)   | ←        |
|             |                   | 6th     | -                | -           | -           | -                | 2.08<br>(1.74)   | ←        |
|             |                   | 7th     | -                | -           | -           | -                | 1.43<br>(1.20)   | -        |
|             |                   | 8th     | -                | -           | -           | -                | 1<br>(0.84)      | -        |
|             |                   | REV     | 8.105<br>(6.327) | ←           | ←           | 8.105<br>(6.327) | 12.97<br>(10.85) | ←        |
| R/AXLE      | MODEL             |         | D12H             | ←           | ←           | D12HT            | R178HT           | D12HT    |
|             | RATIO             |         | 4.875            | ←           | ←           | 5.571            | 4.875            | 3.909    |
| TIRE        | FRT               |         | 11.00X20-16PR    | ←           | ←           | 11.00X20-16PR    | ←                | ←        |
|             | RR                |         | 11.00X20-16PR    | ←           | ←           | 11.00X20-16PR    | ←                | ←        |

NOTE : 1) WEIGHT BASED ON THE STANDRD SPECIFICATION

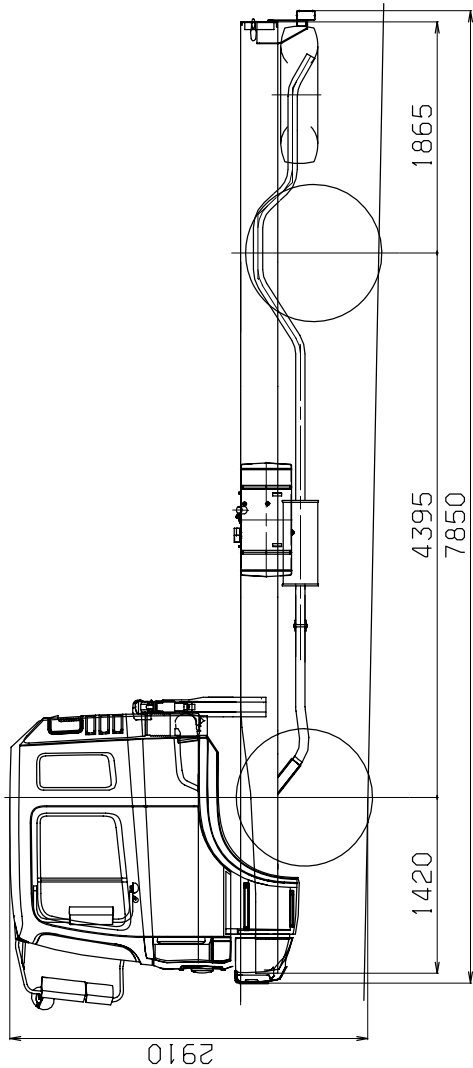
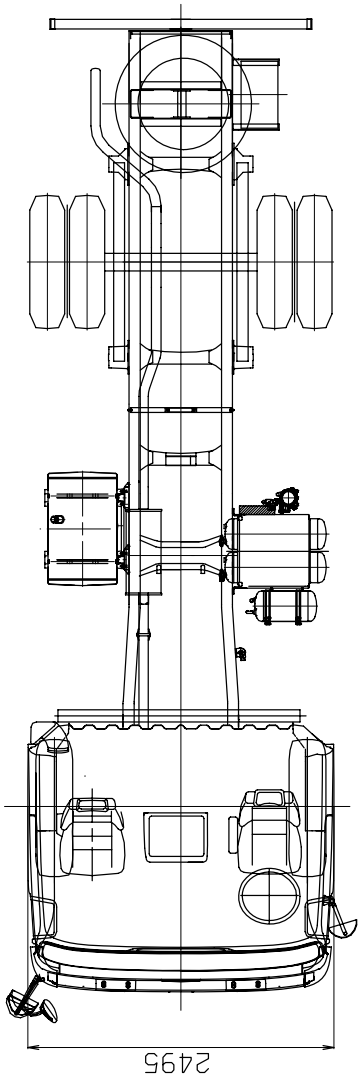
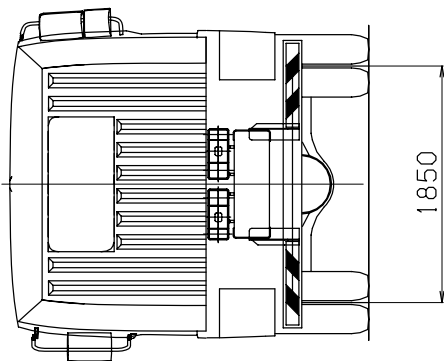
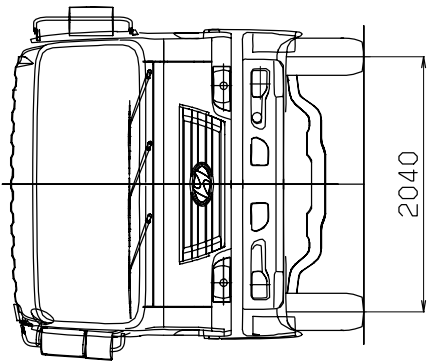
2) ABOVE DATAS BASED ON THE COMPLETED VEHICLE

|              |                   |         |                 |  |  |  |  |
|--------------|-------------------|---------|-----------------|--|--|--|--|
|              |                   |         | HD270           |  |  |  |  |
|              |                   |         | 7m <sup>3</sup> |  |  |  |  |
|              |                   |         | L2D-B           |  |  |  |  |
| O. A. L      |                   | mm      | 8,310           |  |  |  |  |
| O. A. W      |                   | mm      | 2495            |  |  |  |  |
| O. A. H      |                   | mm      | 3660            |  |  |  |  |
| BODY INSIDE  | LENGTH            | mm      | 4178.5          |  |  |  |  |
|              | WIDTH             | mm      | 2100            |  |  |  |  |
|              | HEIGHT            | mm      | -               |  |  |  |  |
| DECK OFFSET  |                   | mm      | 470             |  |  |  |  |
| WHEEL BASE   |                   | mm      | 4,590           |  |  |  |  |
| WHEEL TREAD  | FRT               | mm      | 2,040           |  |  |  |  |
|              | RR                | mm      | 1,850           |  |  |  |  |
| OVER HANG    | FRT               | mm      | 1,495           |  |  |  |  |
|              | RR                | mm      | 2,225           |  |  |  |  |
| KERB WT      | FRT               | kg      | -               |  |  |  |  |
|              | RR                | kg      | -               |  |  |  |  |
|              | TTL               | kg      | -               |  |  |  |  |
| G.V.W        | FRT               | kg      | 6,700           |  |  |  |  |
|              | RR                | kg      | 21,600          |  |  |  |  |
|              | TTL               | kg      | 28,300          |  |  |  |  |
| ENGINE       | MODEL             |         | D6CA380B        |  |  |  |  |
|              | ASPIRATION        |         | TCI             |  |  |  |  |
|              | DISPLACEMENT      | cc      | 12,344          |  |  |  |  |
|              | OUTPUT            | ps/rpm  | 380/1900        |  |  |  |  |
|              | TORQUE            | kgm/rpm | 148/1200        |  |  |  |  |
| PERFOR-MANCE | MAX.SPD           | km/h    | -               |  |  |  |  |
|              | MAX.GRD           | tan Θ   | -               |  |  |  |  |
|              | MIN. TURNING RAD. | m       | 7.4             |  |  |  |  |
| T / M        | MODEL             |         | M12S6           |  |  |  |  |
|              | GEAR RATIO        | 1st     | 7.213           |  |  |  |  |
|              |                   | 2nd     | 4.178           |  |  |  |  |
|              |                   | 3rd     | 2.587           |  |  |  |  |
|              |                   | 4th     | 1.621           |  |  |  |  |
|              |                   | 5th     | 1.000           |  |  |  |  |
|              |                   | 6th     | 0.702           |  |  |  |  |
|              |                   | 7th     | -               |  |  |  |  |
|              |                   | 8th     | -               |  |  |  |  |
|              |                   | REV     | 7.081           |  |  |  |  |
| R/AXLE       | MODEL             |         | D10HT-III       |  |  |  |  |
|              | RATIO             |         | 5.571           |  |  |  |  |
| TIRE         | FRT               |         | 11.00X20-16PR   |  |  |  |  |
|              | RR                |         | 11.00X20-16PR   |  |  |  |  |

NOTE : 1) WEIGHT BASED ON THE STANDRD SPECIFICATION

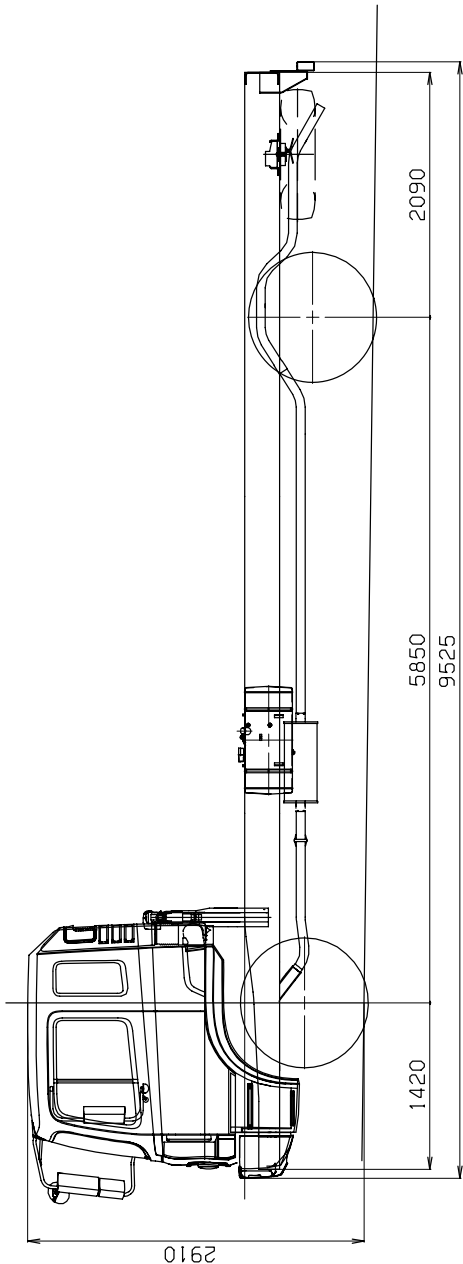
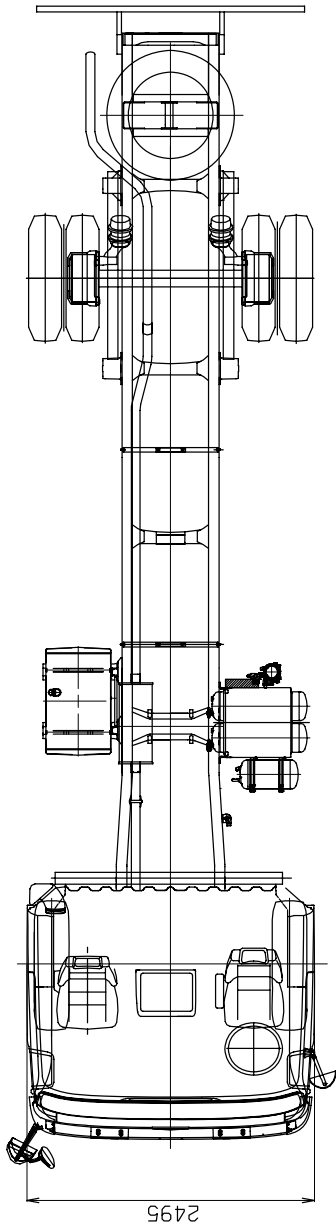
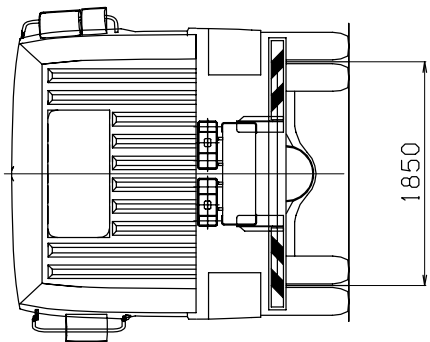
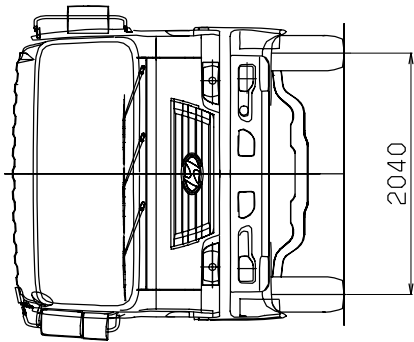
2) ABOVE DATAS BASED ON THE COMPLETED VEHICLE

### 3.EXTERIOR DRAWING OF THE COMPLETE VEHICLE

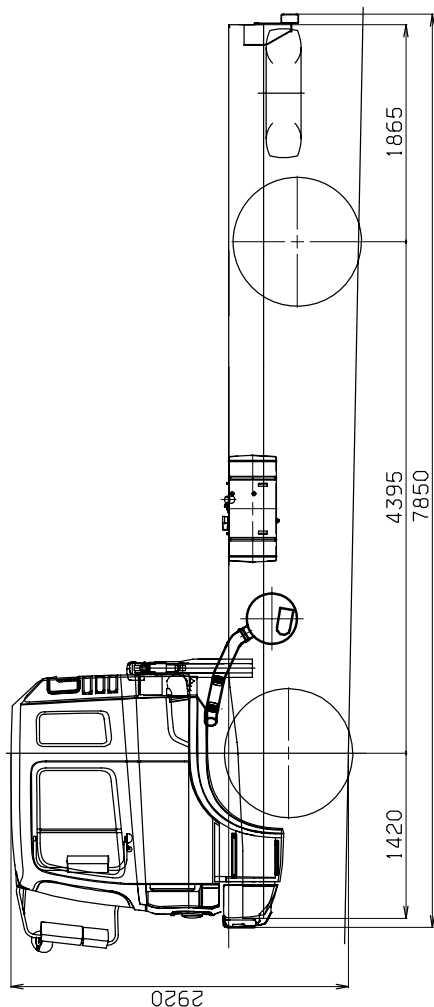
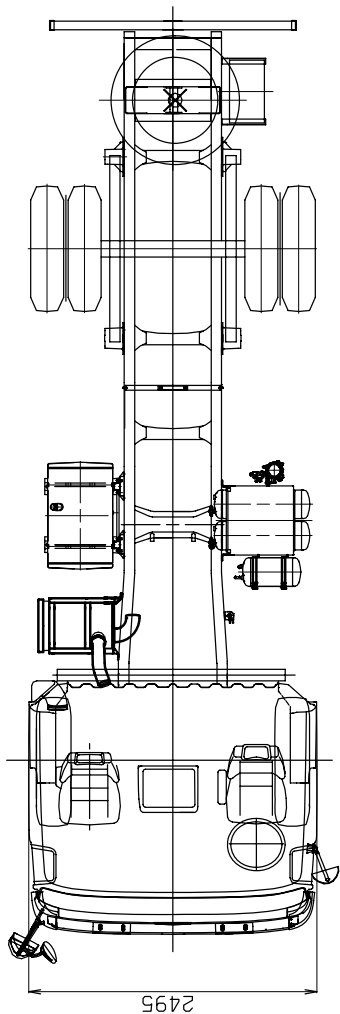
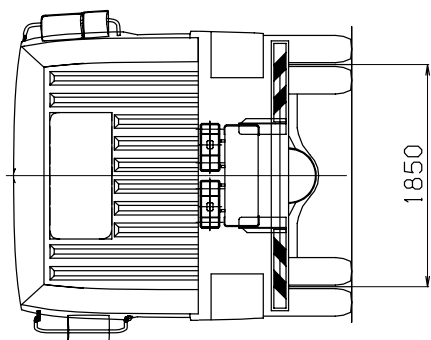
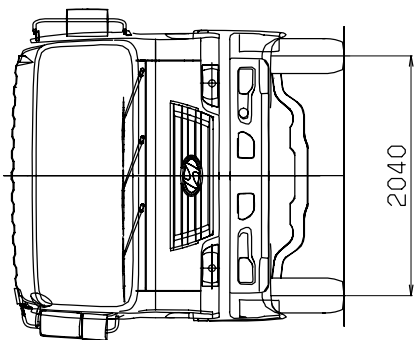


|                       |      |
|-----------------------|------|
| HD160                 | D6BR |
| HYUNDAI MOTOR COMPANY |      |

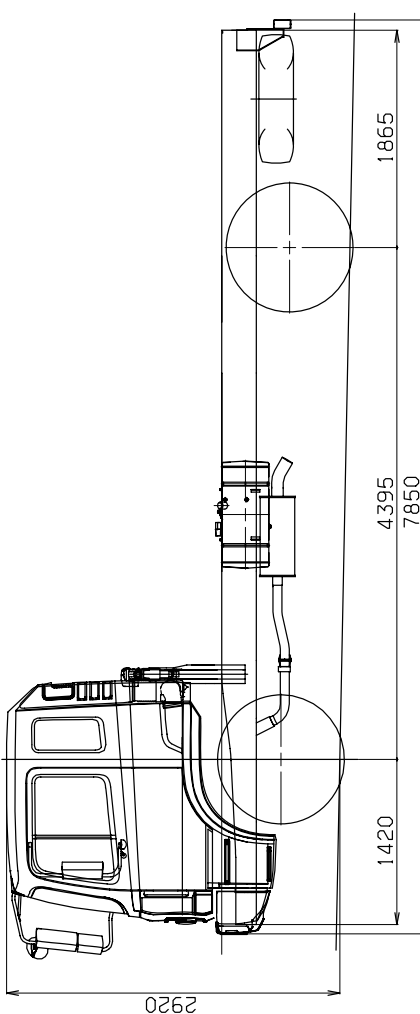
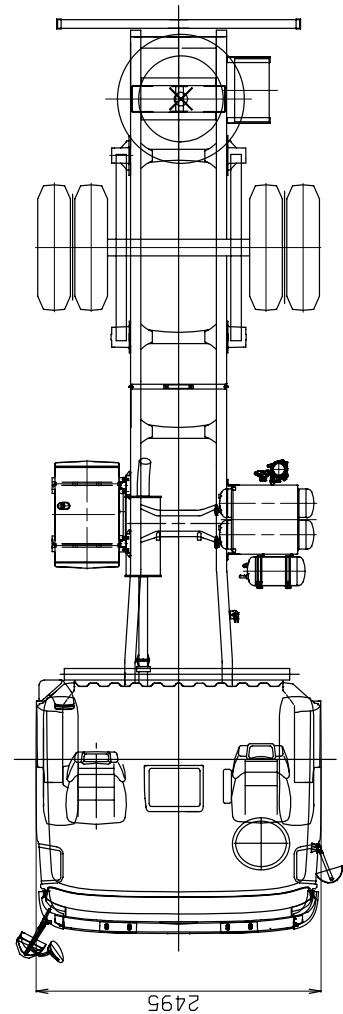
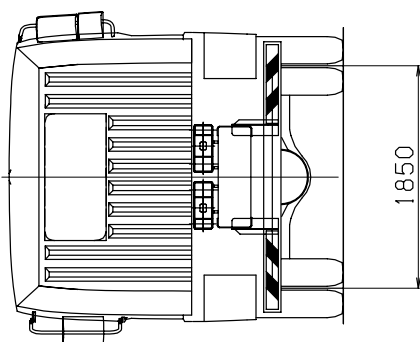
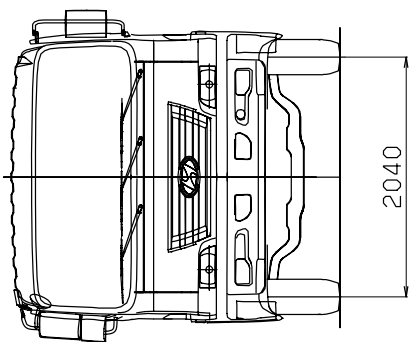




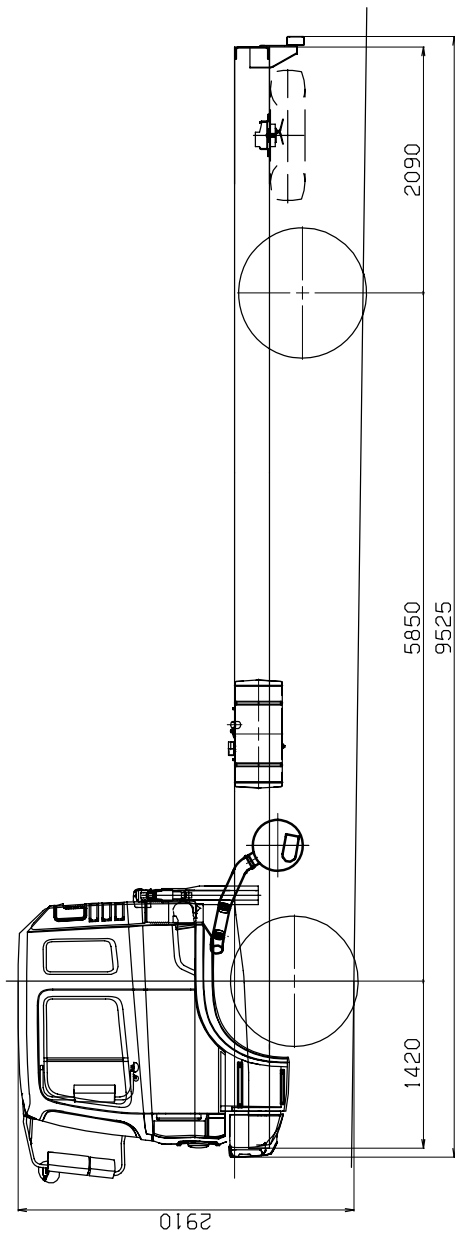
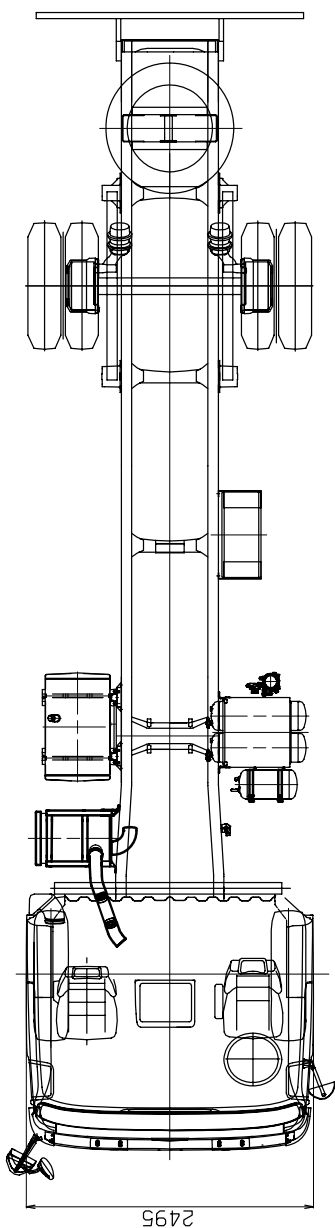
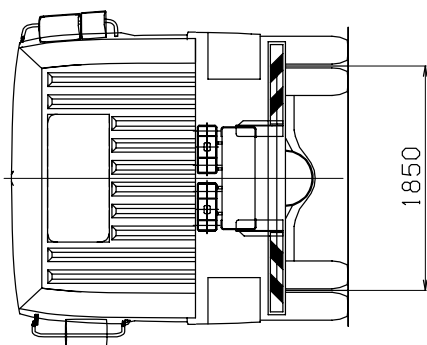
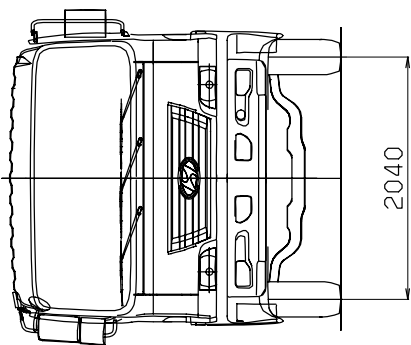
|                       |      |
|-----------------------|------|
| HD160                 | D6BR |
| HYUNDAI MOTOR COMPANY |      |



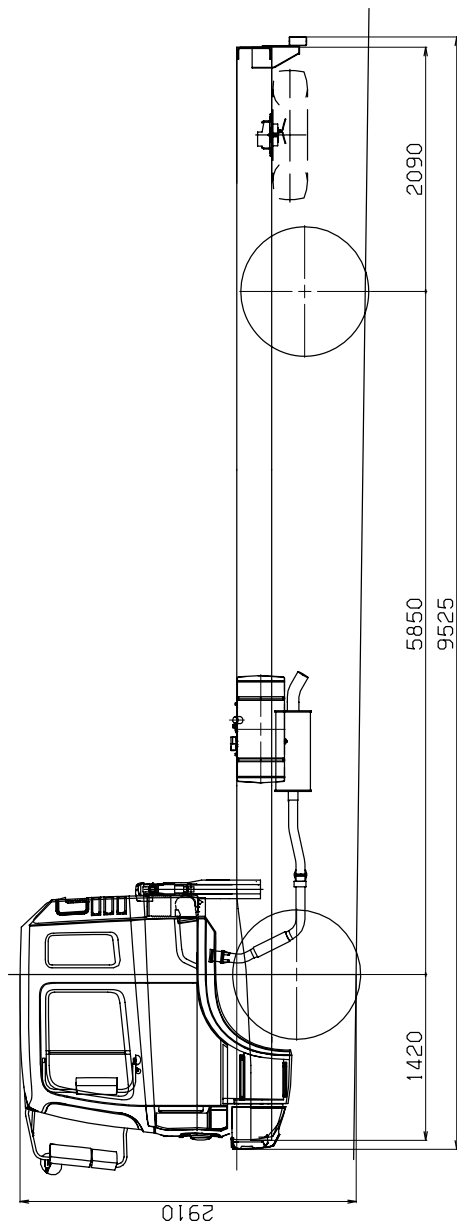
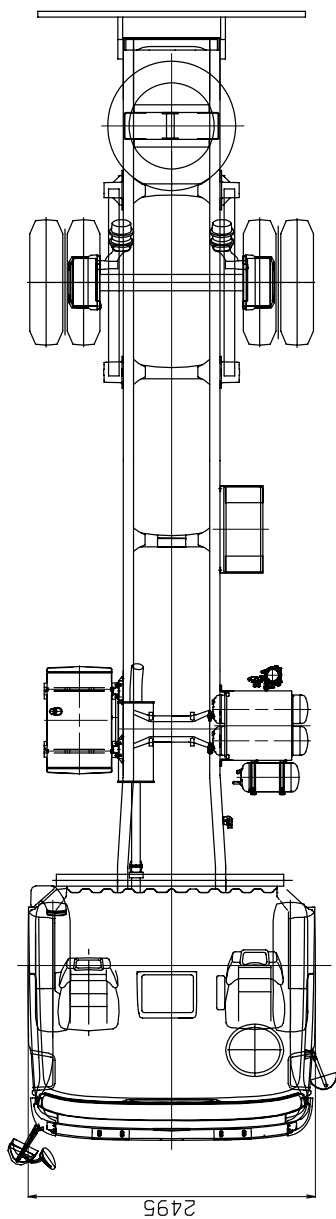
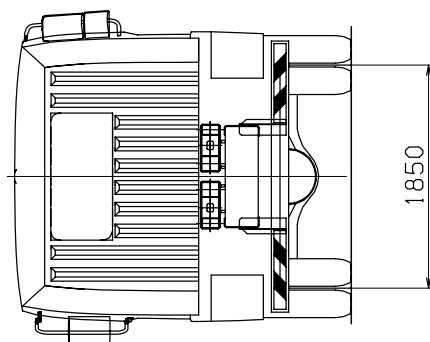
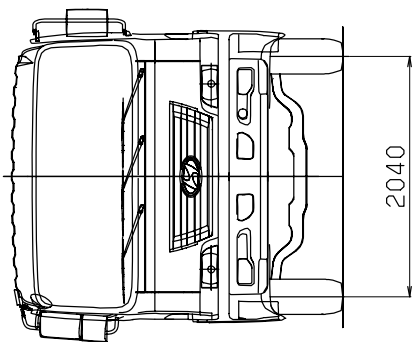
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|-----------------------|------|
| HD170                 | D6AB |
| HYUNDAI MOTOR COMPANY |      |



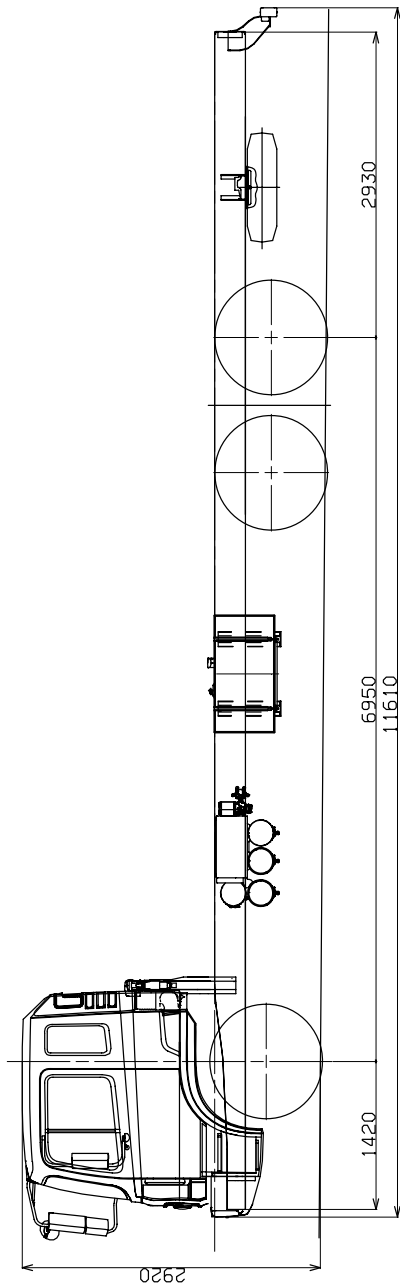
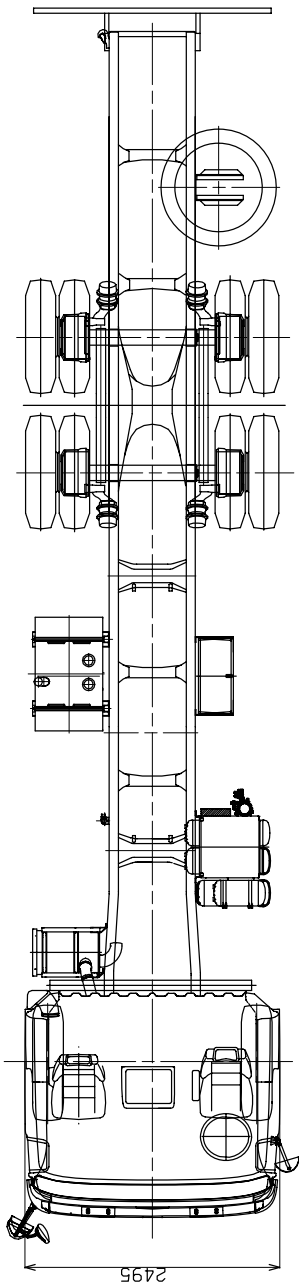
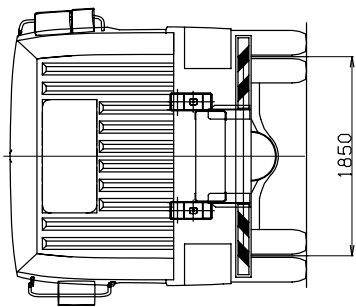
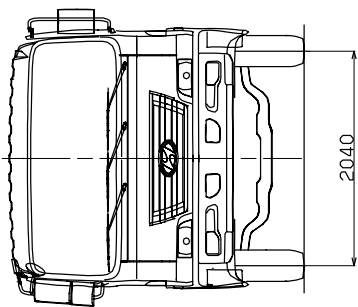
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|-----------------------|------|
| HD170                 | D6AV |
| HYUNDAI MOTOR COMPANY |      |



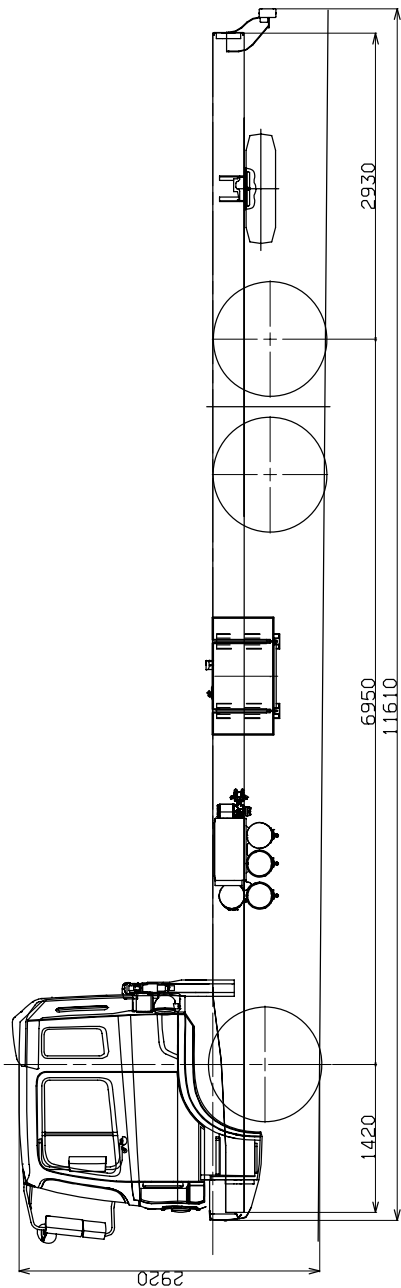
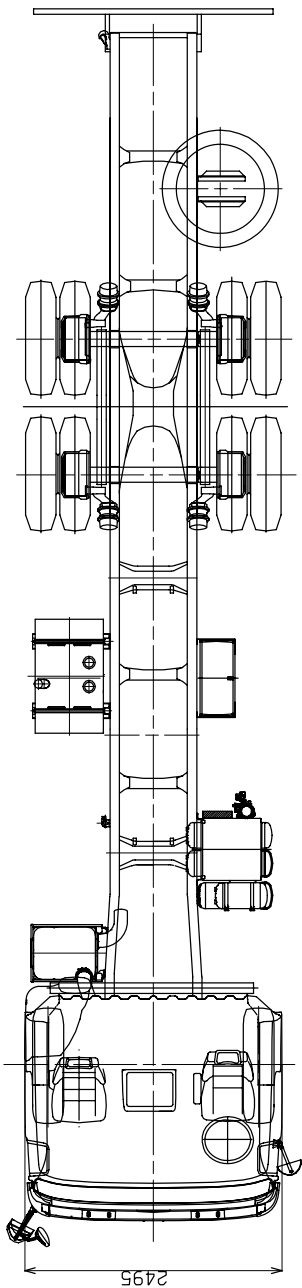
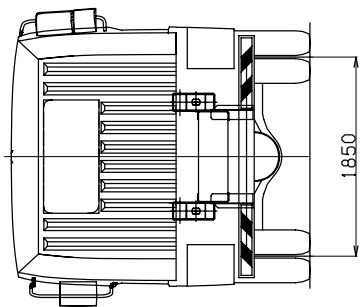
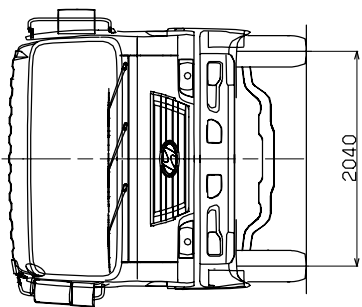
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|-----------------------|------|
| HD170                 | D6AB |
| HYUNDAI MOTOR COMPANY |      |



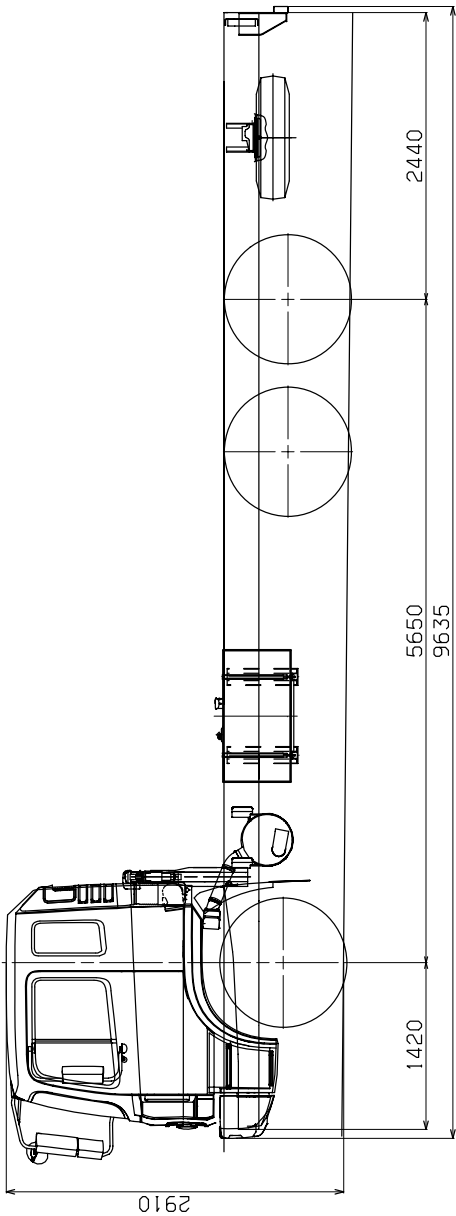
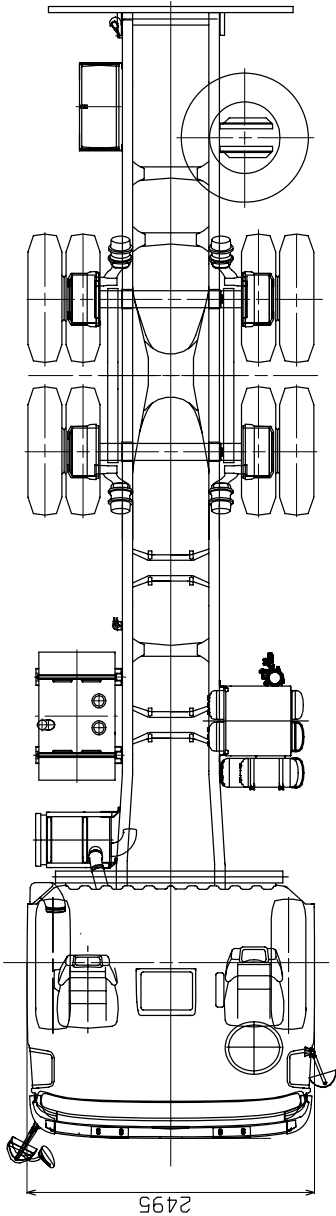
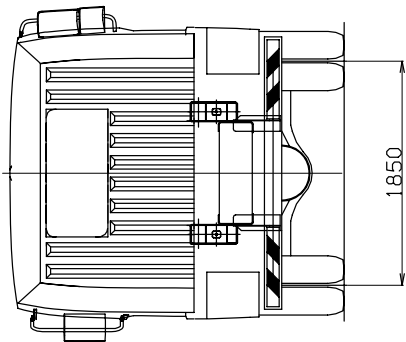
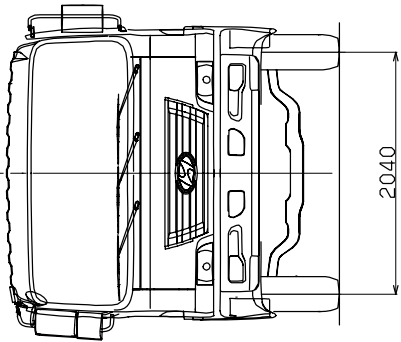
|                       |      |
|-----------------------|------|
| HD170                 | D6AV |
| HYUNDAI MOTOR COMPANY |      |



|                       |      |
|-----------------------|------|
| HD250                 | D6AC |
| HYUNDAI MOTOR COMPANY |      |

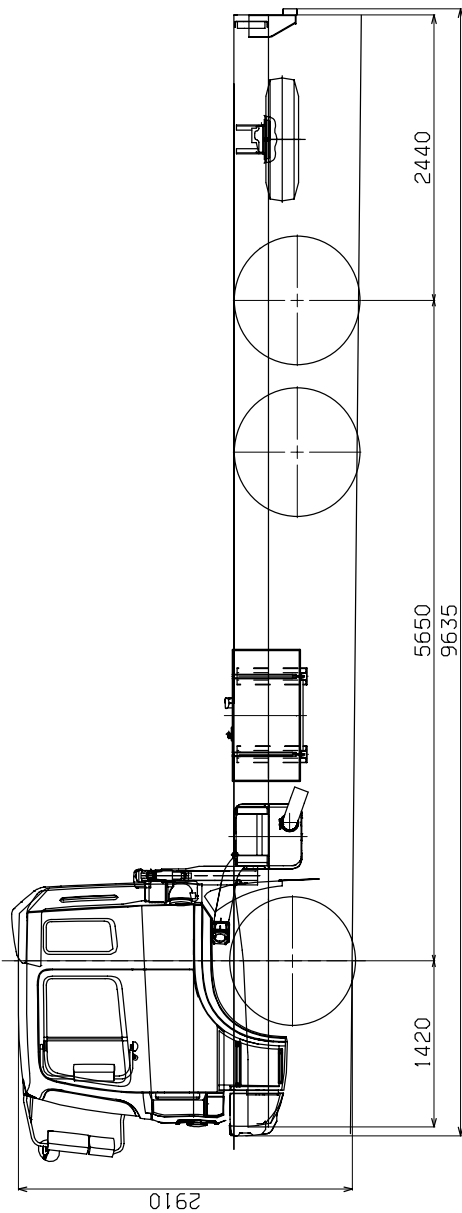
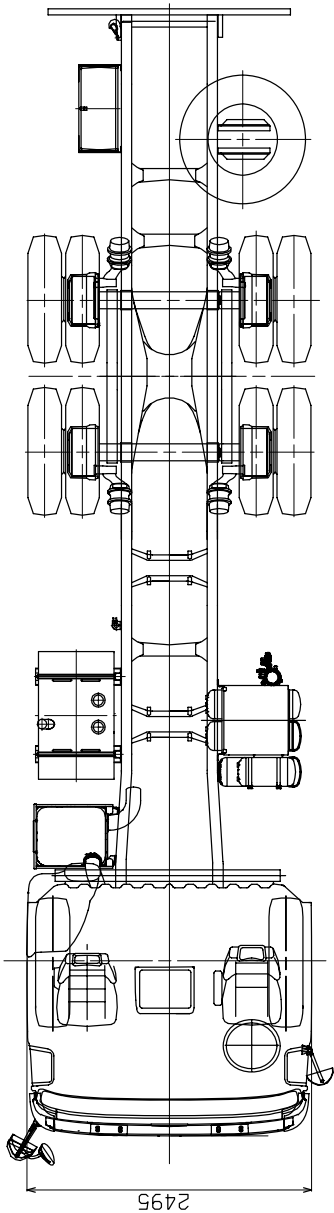
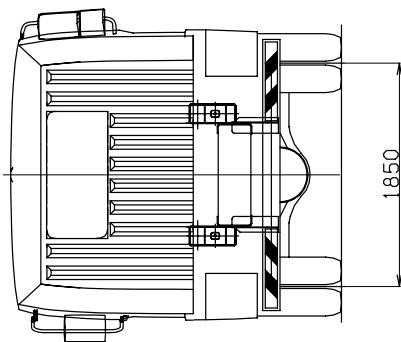
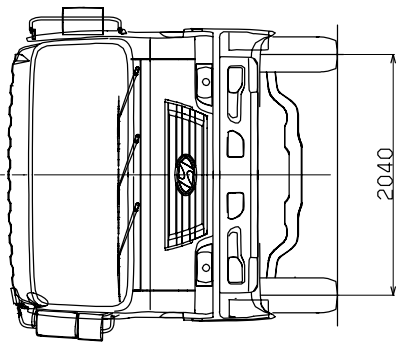


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|-----------------------|------|
| HD250                 | D6CA |
| HYUNDAI MOTOR COMPANY |      |

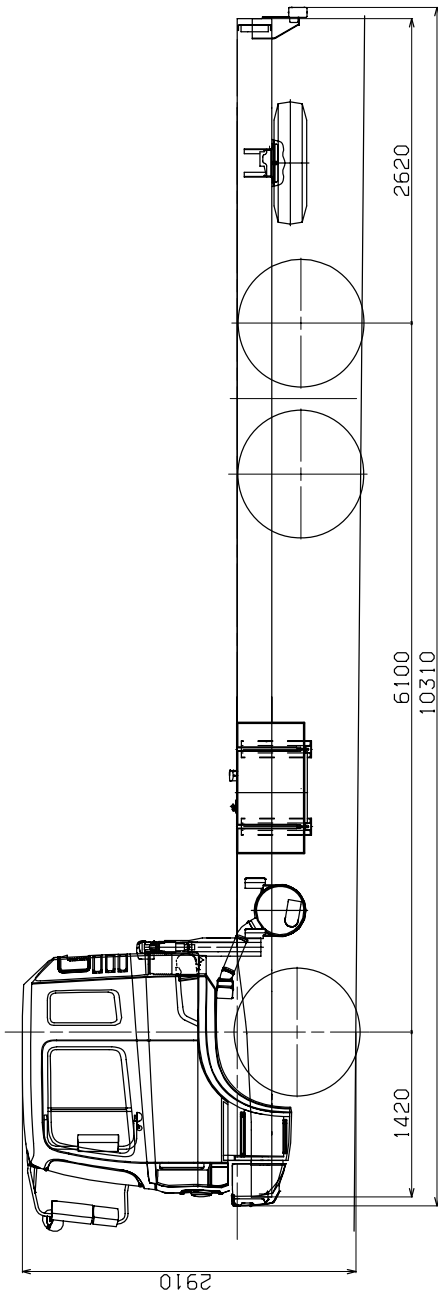
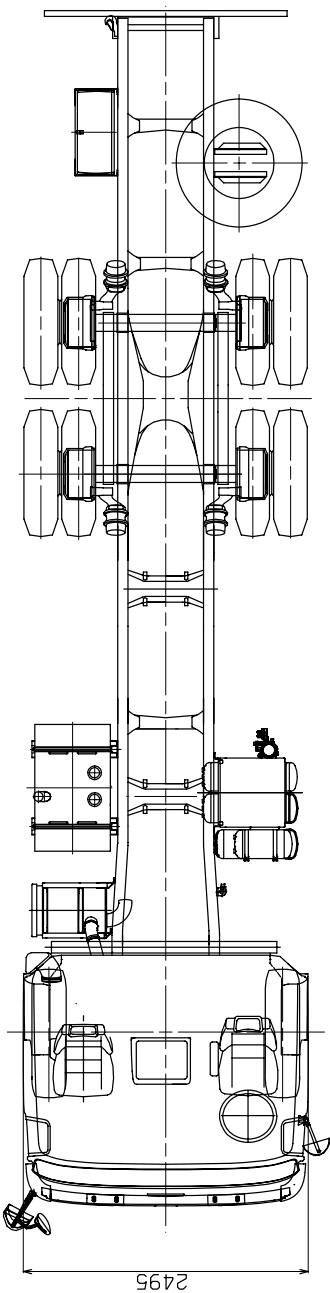
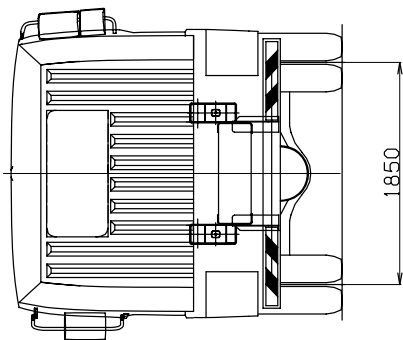
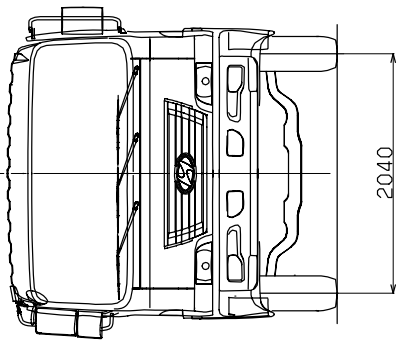


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|-----------------------|------|
| HD260                 | D6AC |
| HYUNDAI MOTOR COMPANY |      |

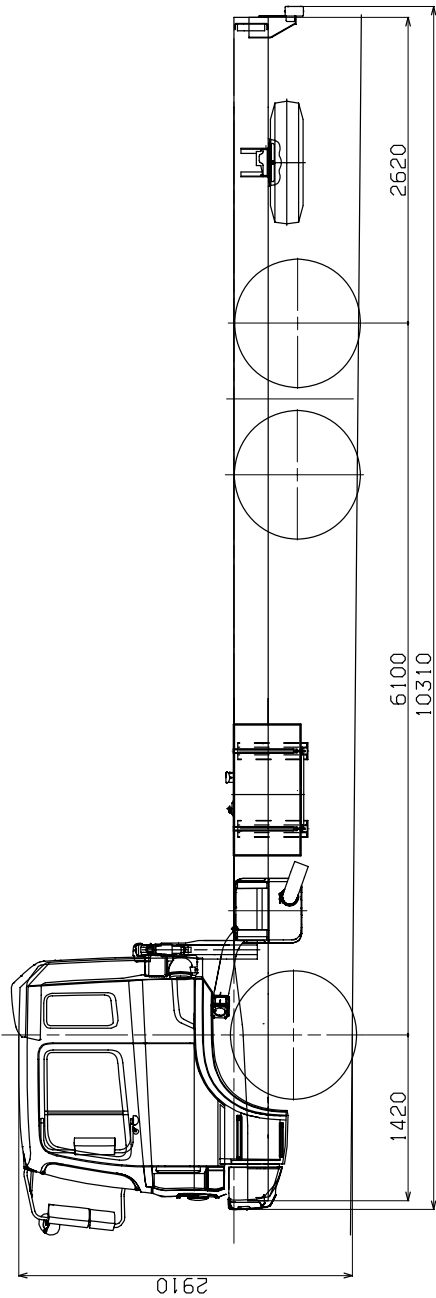
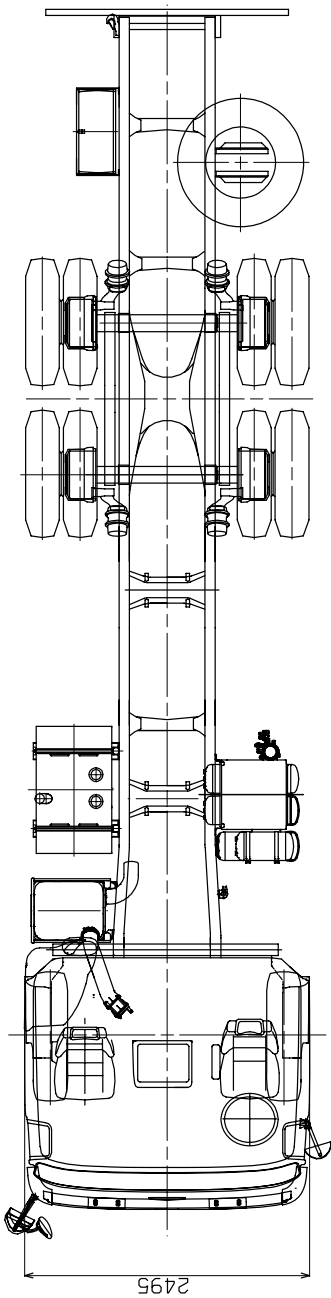
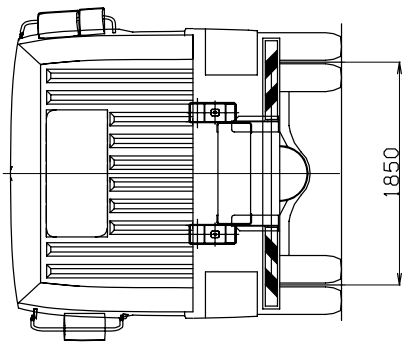
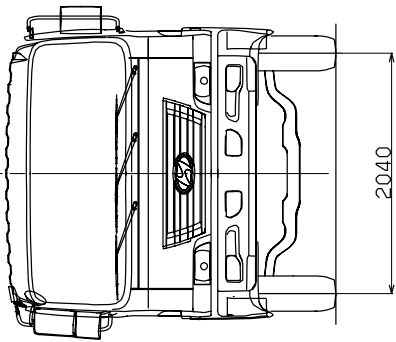




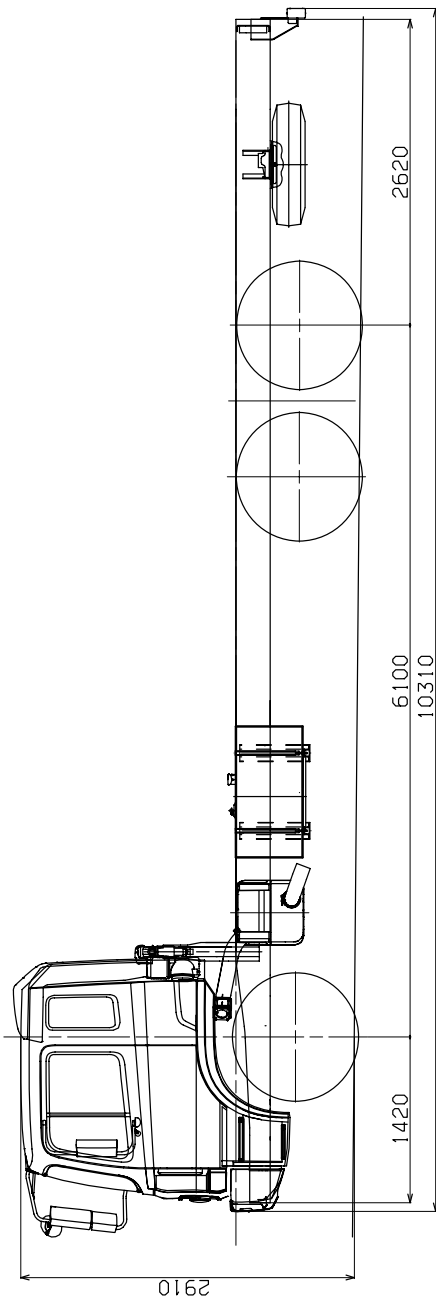
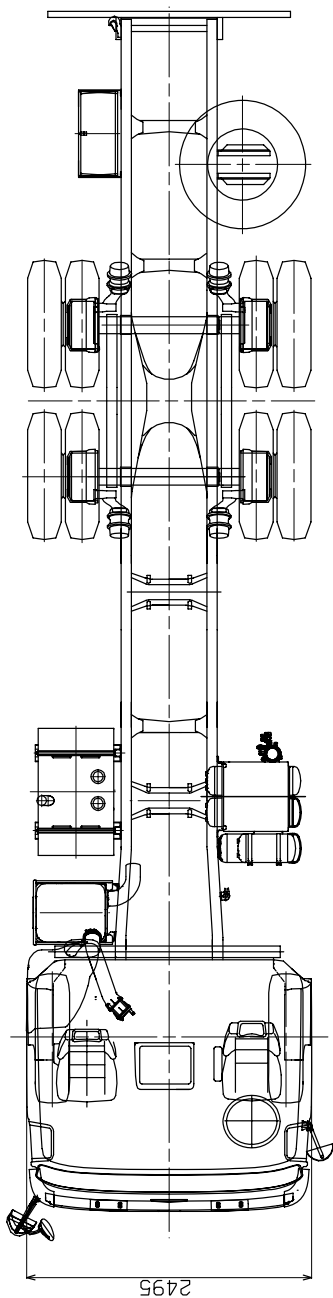
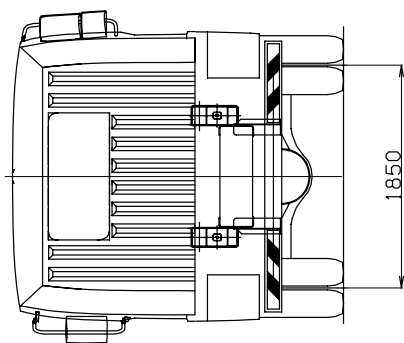
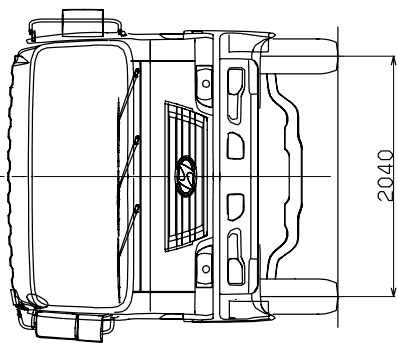
|                       |      |
|-----------------------|------|
| HD260                 | D6CA |
| HYUNDAI MOTOR COMPANY |      |



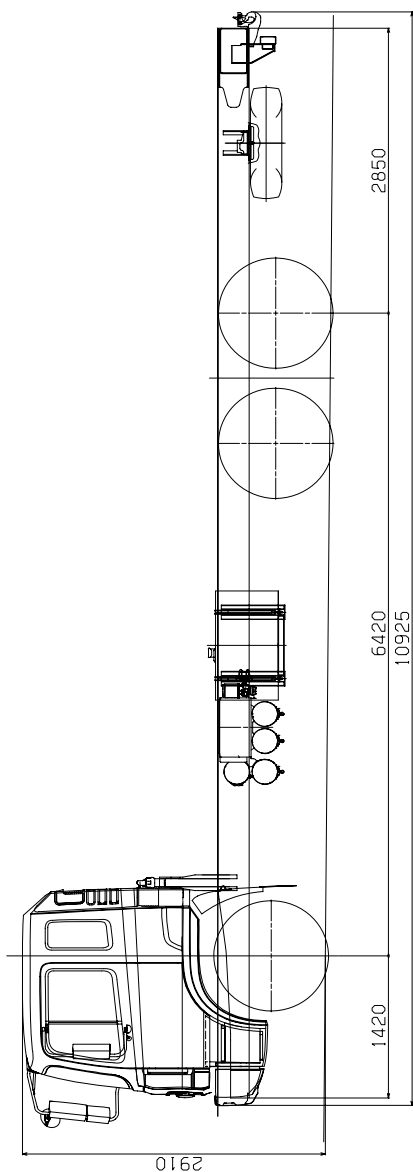
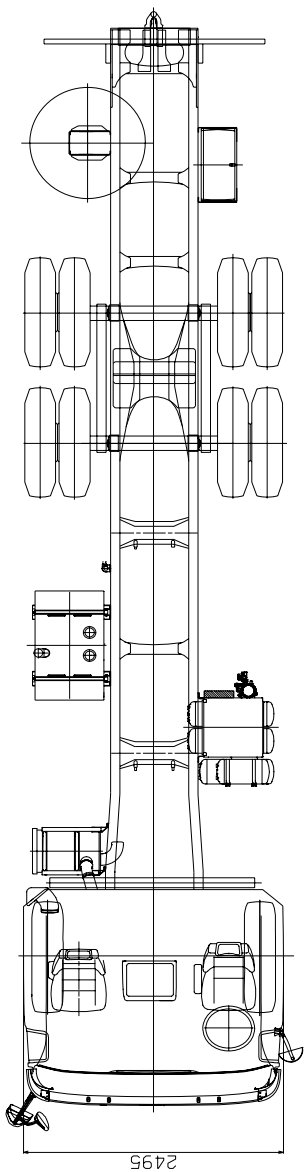
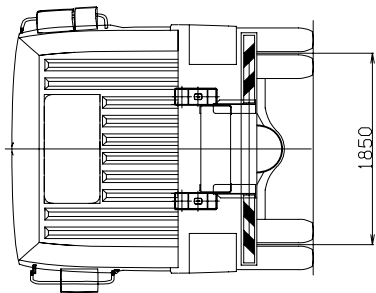
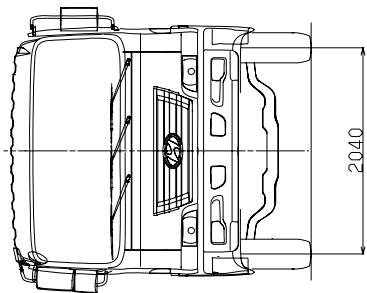
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|-----------------------|------|
| HD260                 | D6AC |
| HYUNDAI MOTOR COMPANY |      |



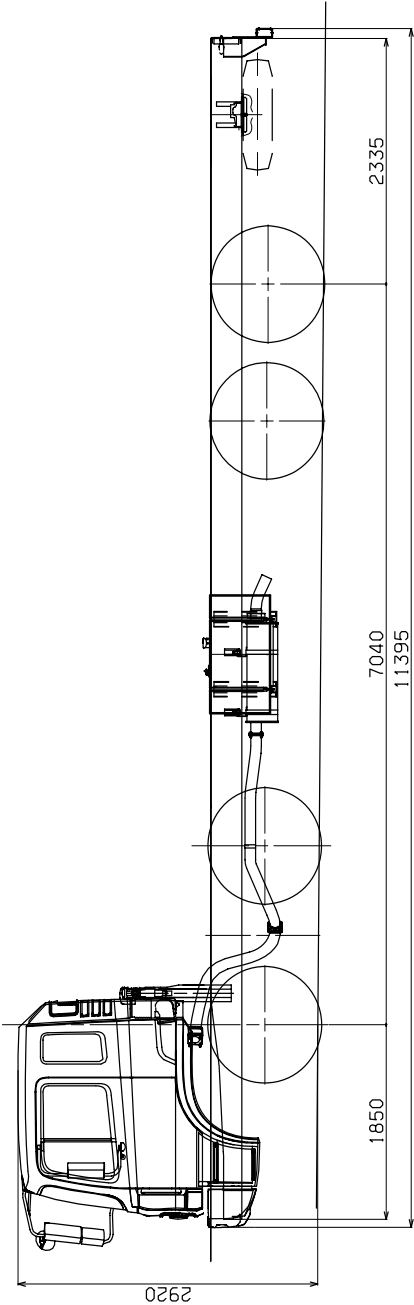
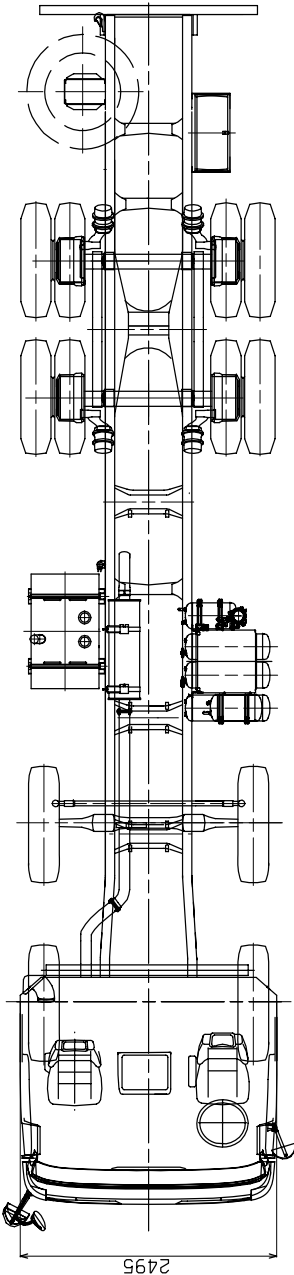
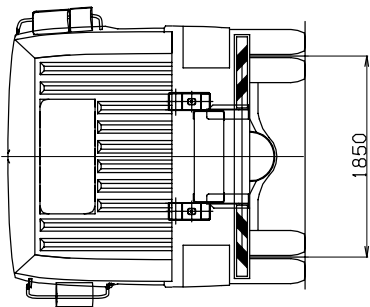
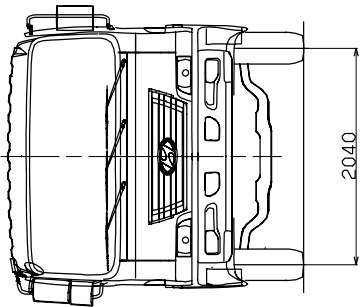
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|-----------------------|------|
| HD260                 | D6CA |
| HYUNDAI MOTOR COMPANY |      |



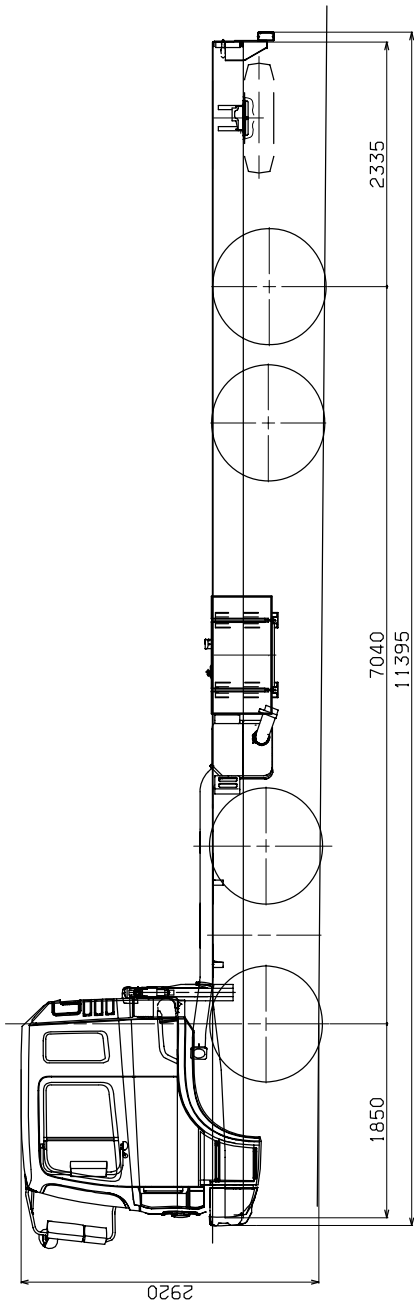
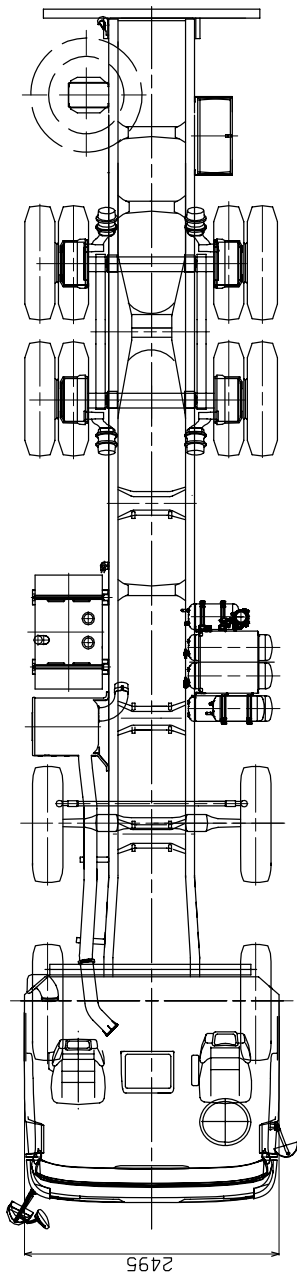
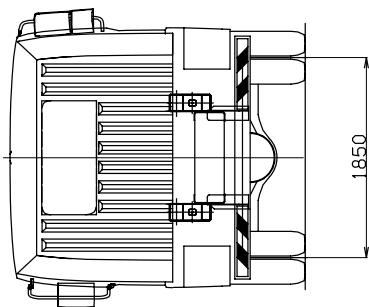
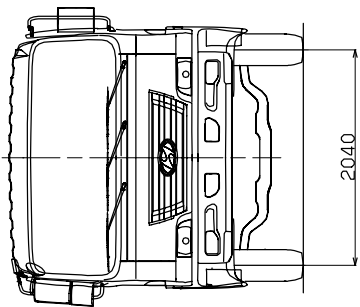
|                       |      |
|-----------------------|------|
| HD260                 | D6CA |
| HYUNDAI MOTOR COMPANY |      |



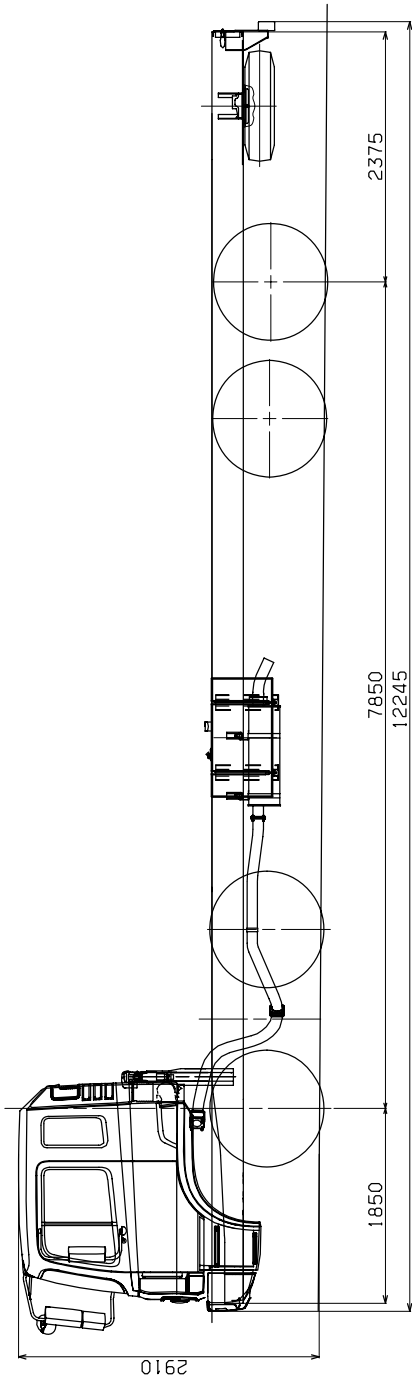
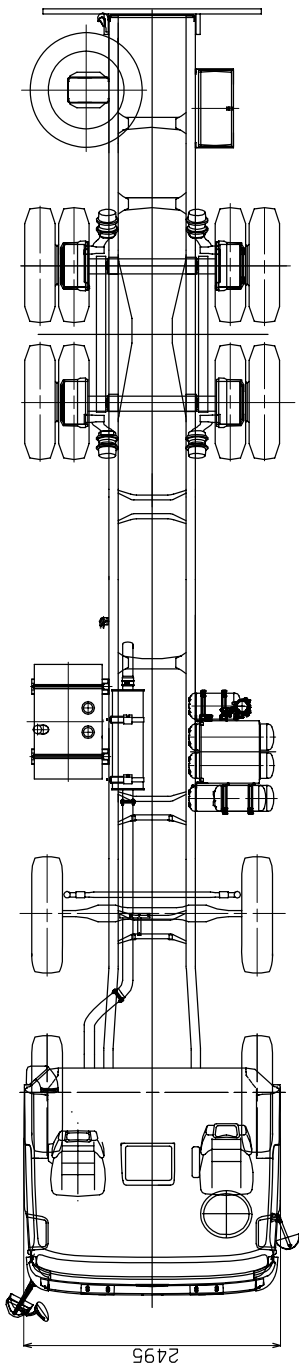
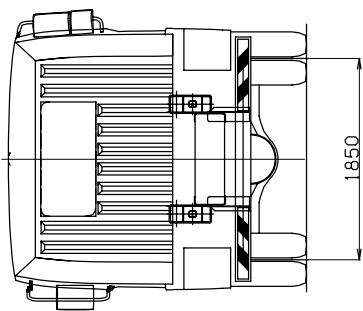
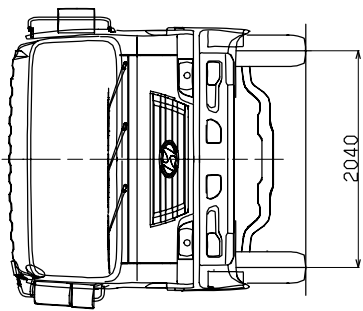
|                       |      |
|-----------------------|------|
| HD19M                 | D6AC |
| HYUNDAI MOTOR COMPANY |      |



|                       |      |
|-----------------------|------|
| HD310                 | D6AC |
| HYUNDAI MOTOR COMPANY |      |

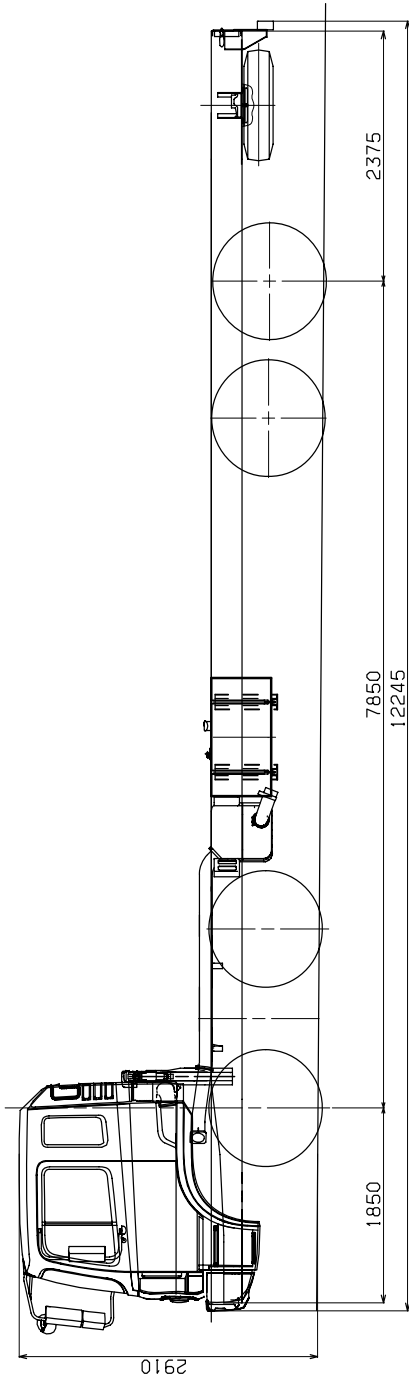
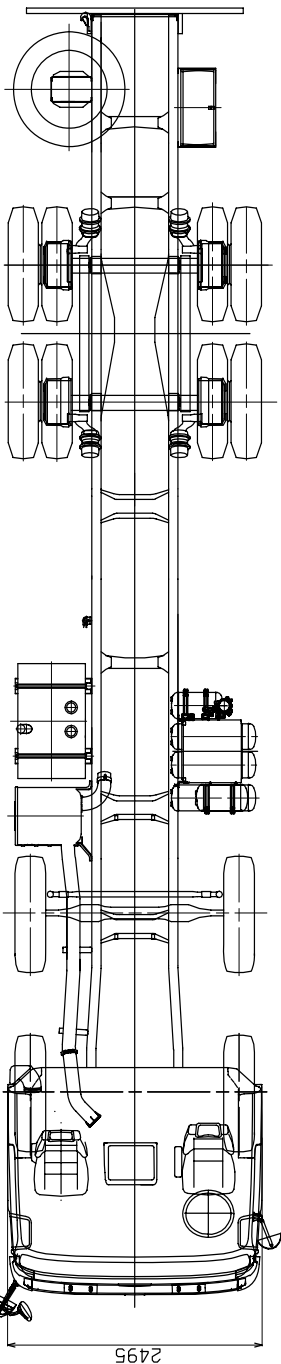
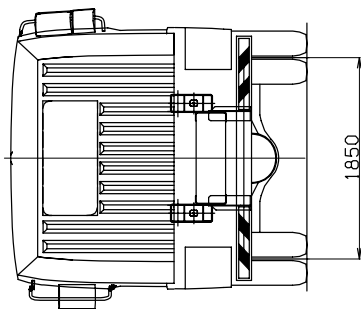
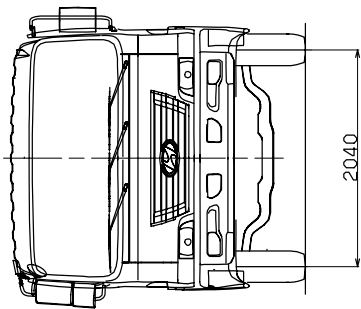


|                       |      |
|-----------------------|------|
| HD310                 | D6CA |
| HYUNDAI MOTOR COMPANY |      |



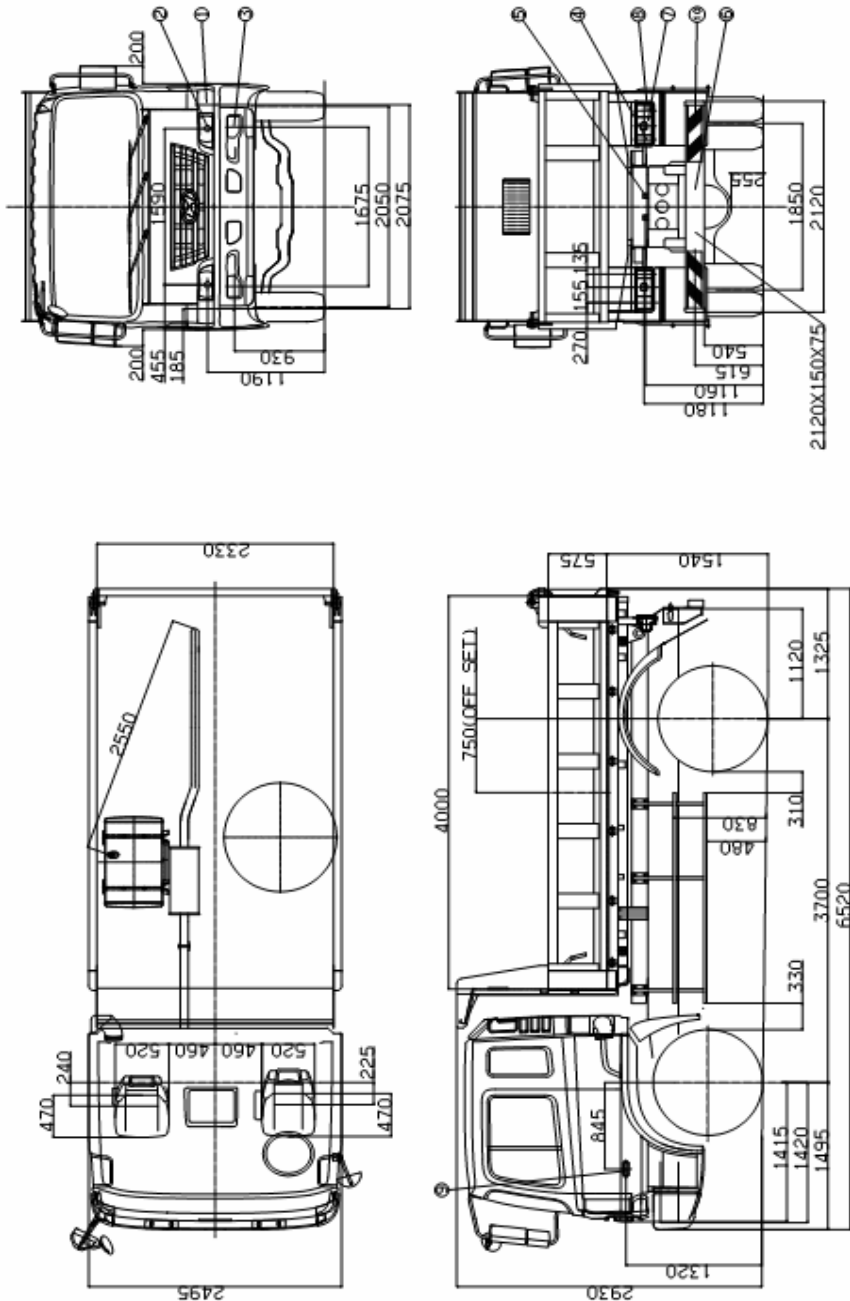
|                       |      |
|-----------------------|------|
| HD320                 | D6AC |
| HYUNDAI MOTOR COMPANY |      |



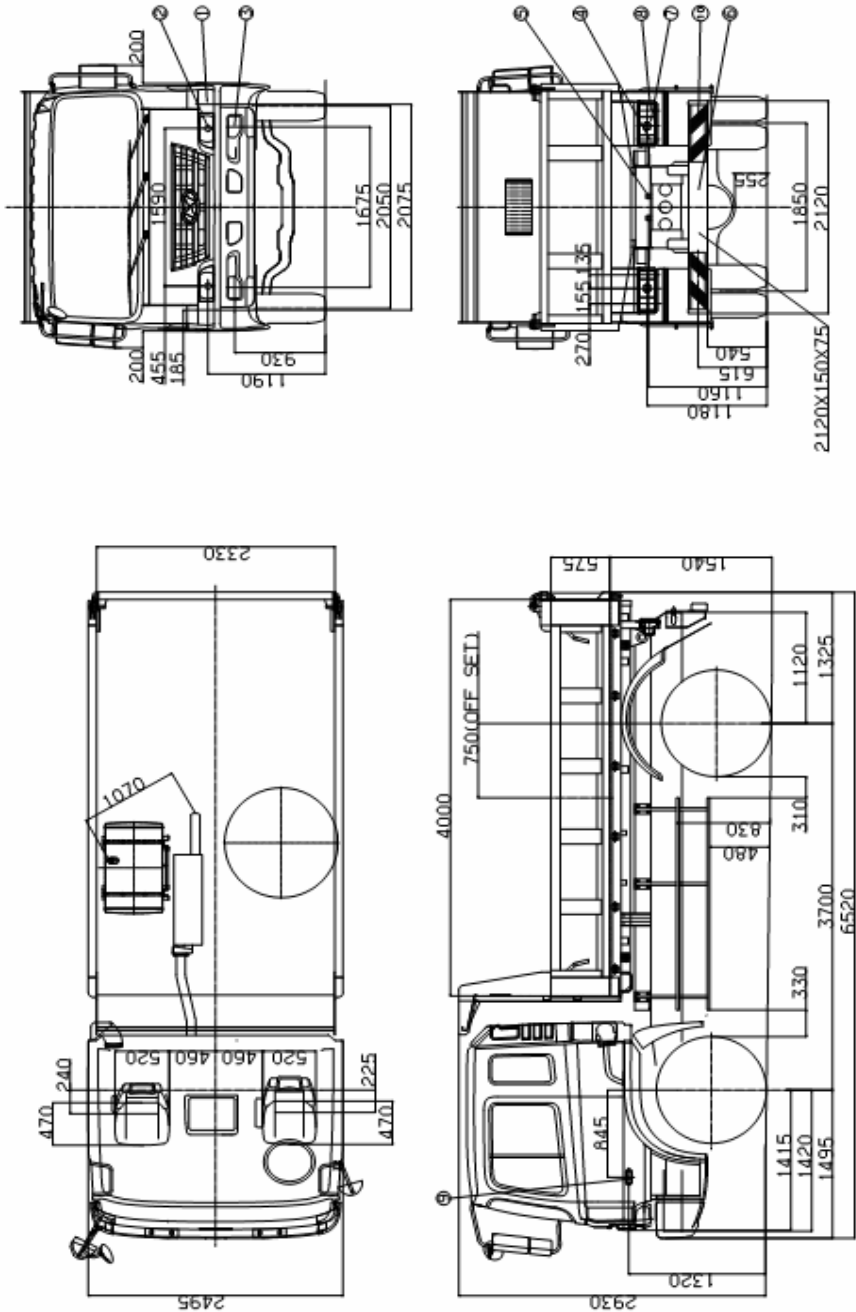


|                       |      |
|-----------------------|------|
| HD320                 | D6CA |
| HYUNDAI MOTOR COMPANY |      |

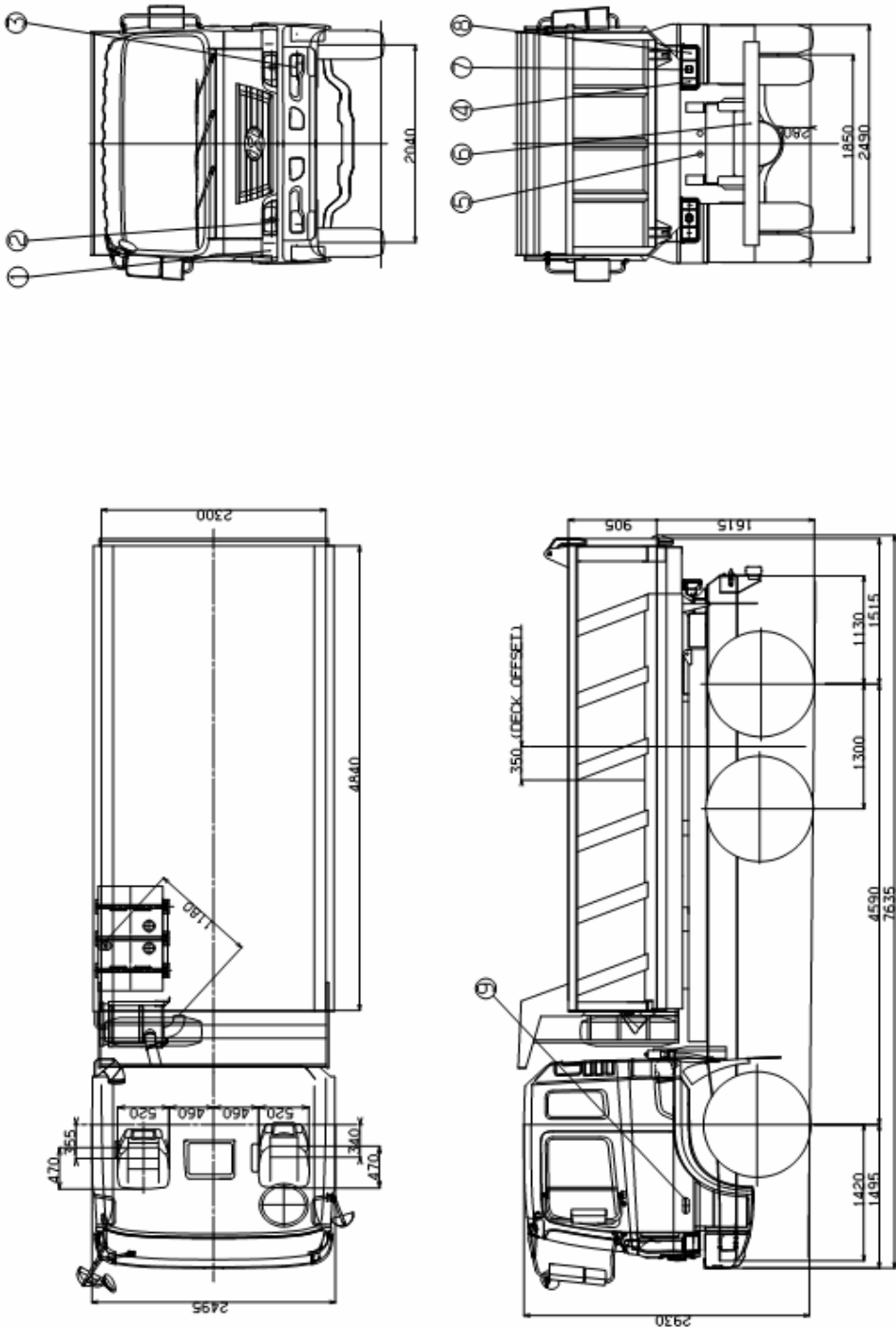
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|---|------------------------------------|---|-----------------------|----|------------------|
| 1 | TURN SIGNAL LAMP<br>CORNERING LAMP | 5 | LICENCE PLATE LAMP    | 10 | REFLEX REFLECTOR |
| 2 | HEAD LAMP, POSITION LAMP           | 6 | REAR SAFETY GUARD     |    |                  |
| 3 | FOG LAMP                           | 7 | TAIL LAMP, STOP LAMP  |    |                  |
| 4 | BACK-UP LAMP                       | 8 | TURN SIGNAL LAMP      |    |                  |
|   |                                    | 9 | SIDE TURN SIGNAL LAMP |    |                  |

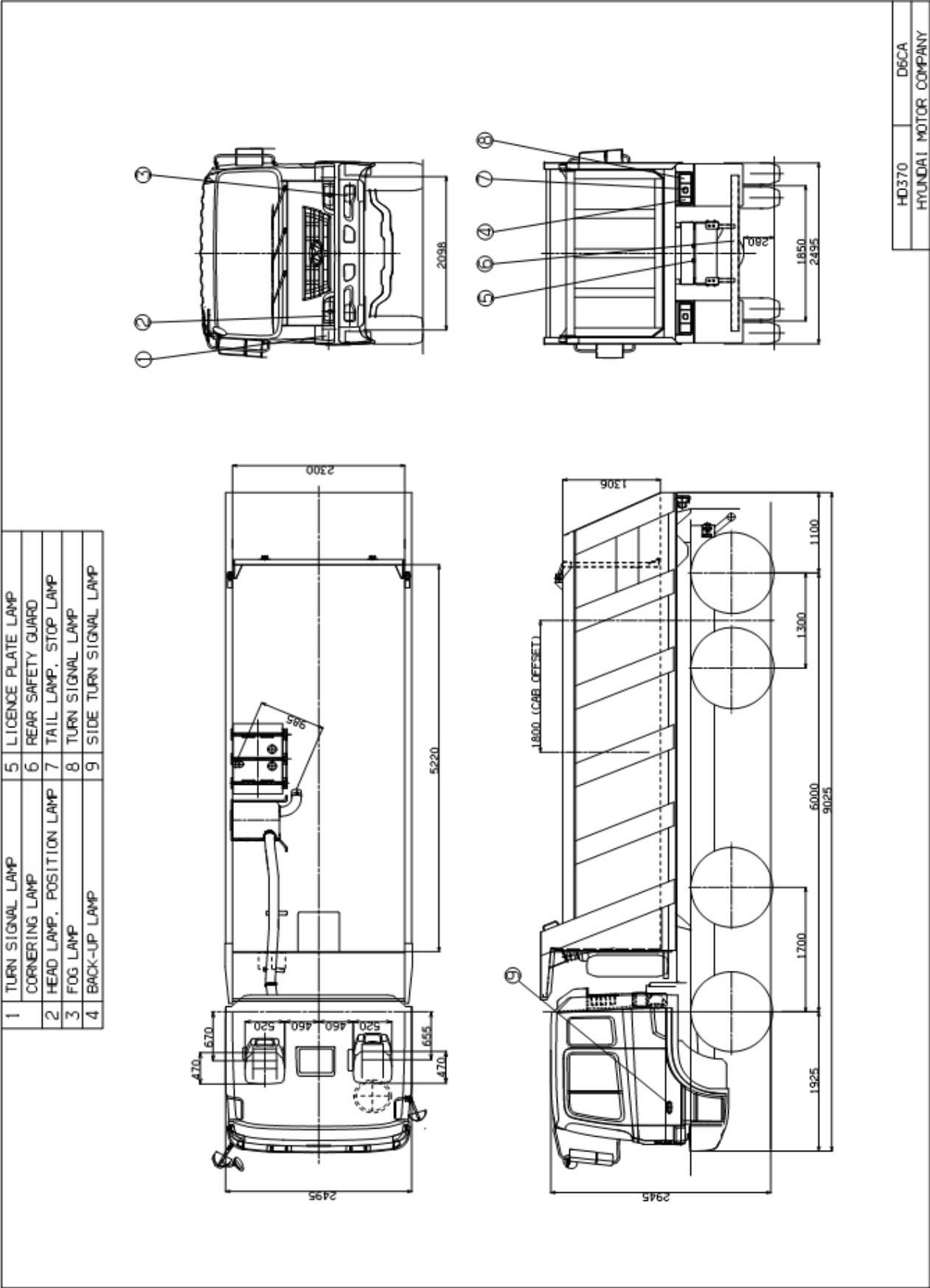


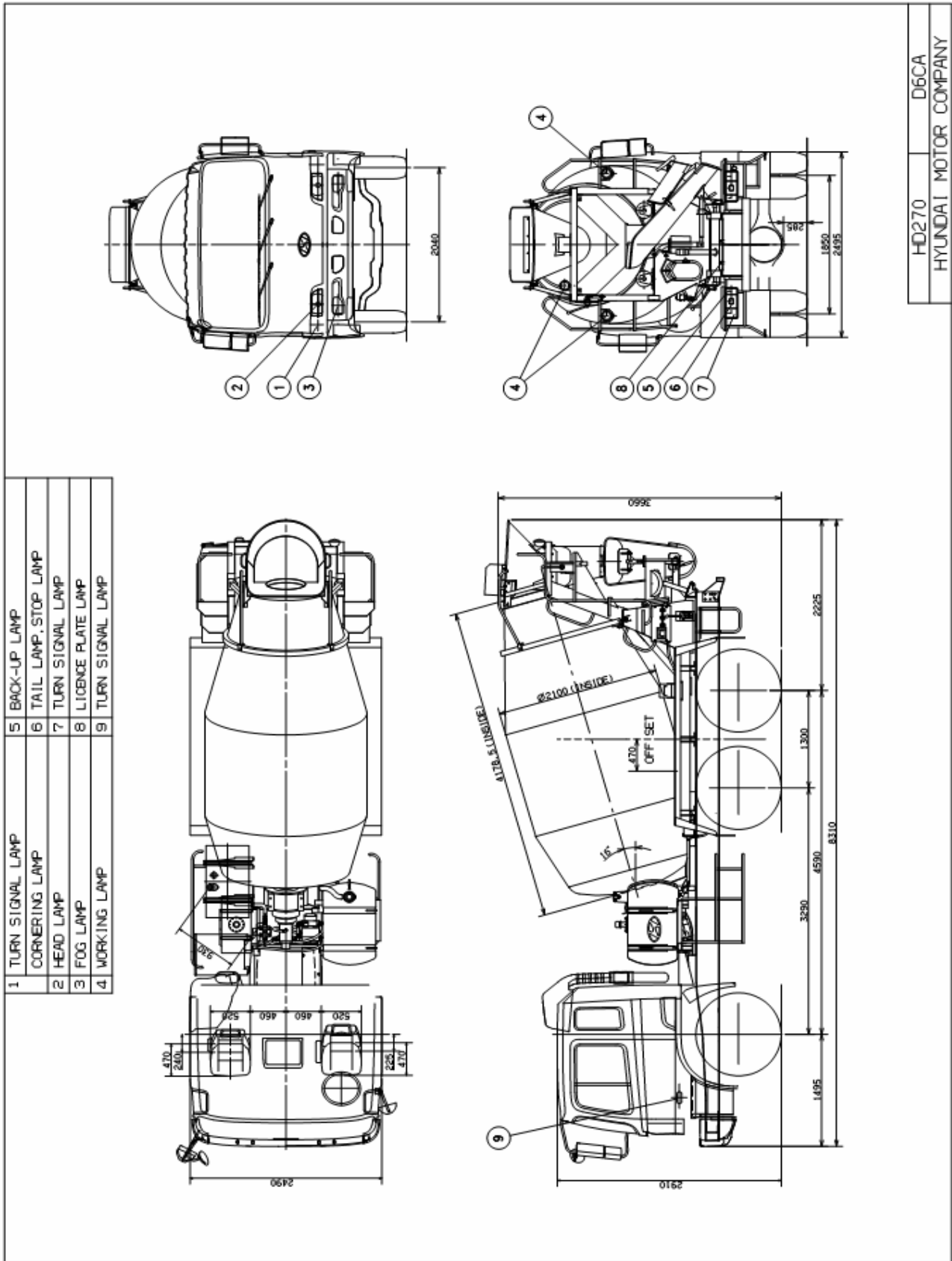
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|---|--------------------------|---|-----------------------|----|------------------|
| 1 | TURN SIGNAL LAMP         | 5 | LICENCE PLATE LAMP    | 10 | REFLEX REFLECTOR |
|   | CORNERING LAMP           | 6 | REAR SAFETY GUARD     |    |                  |
| 2 | HEAD LAMP, POSITION LAMP | 7 | TAIL LAMP, STOP LAMP  |    |                  |
| 3 | FOG LAMP                 | 8 | TURN SIGNAL LAMP      |    |                  |
| 4 | BACK-UP LAMP             | 9 | SIDE TURN SIGNAL LAMP |    |                  |



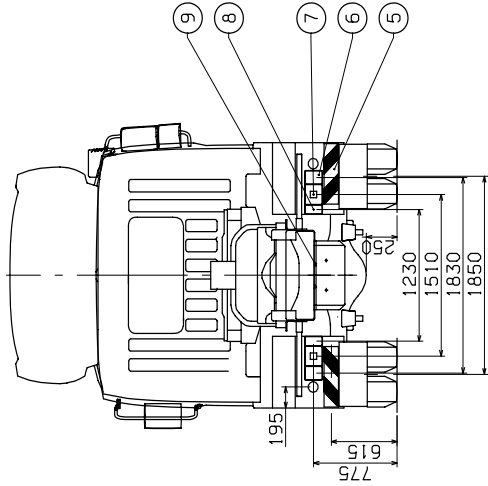
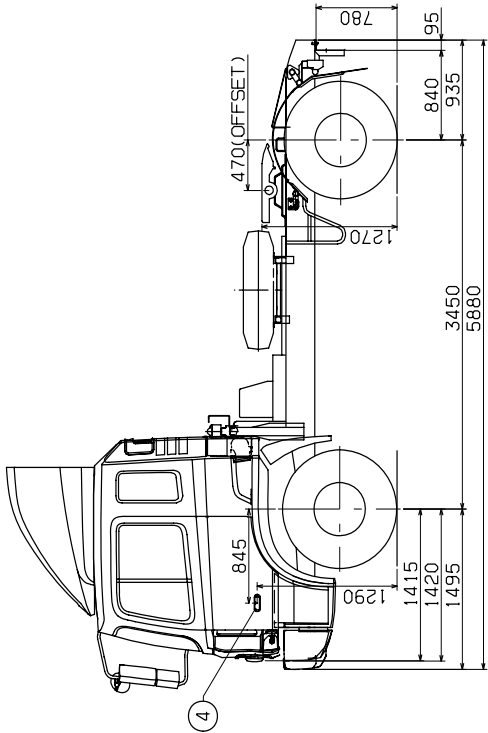
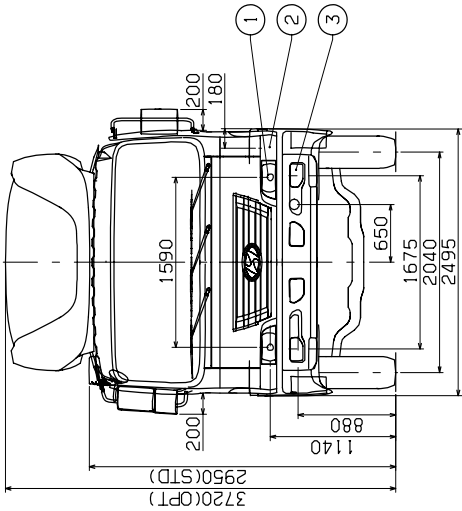
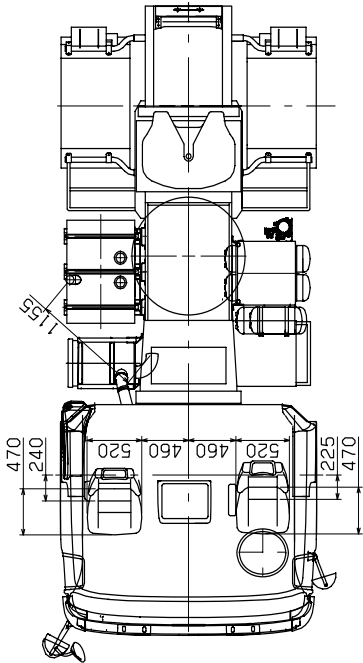
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|---|--------------------------|---|-----------------------|
| 1 | TURN SIGNAL LAMP         | 5 | LICENCE PLATE LAMP    |
| 2 | CORNERING LAMP           | 6 | REAR SAFETY GUARD     |
| 3 | HEAD LAMP, POSITION LAMP | 7 | TAIL LAMP, STOP LAMP  |
| 4 | FOG LAMP                 | 8 | TURN SIGNAL LAMP      |
|   | BACK-UP LAMP             | 9 | SIDE TURN SIGNAL LAMP |





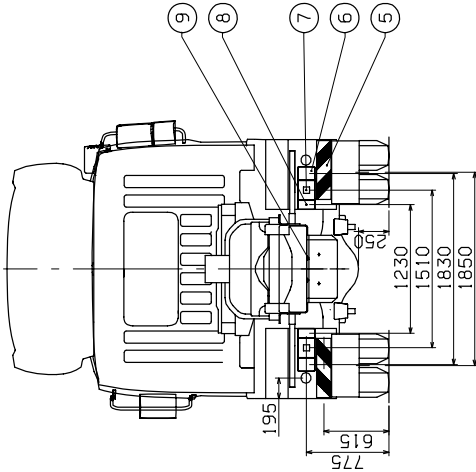
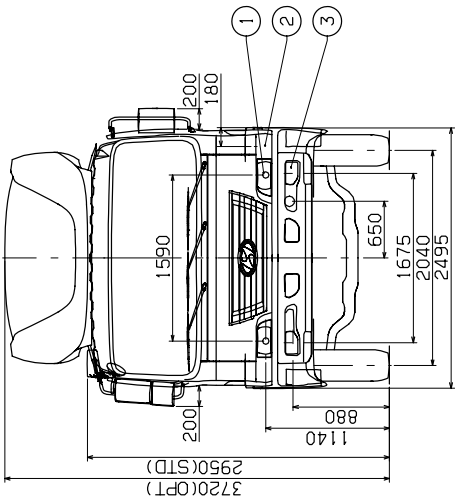
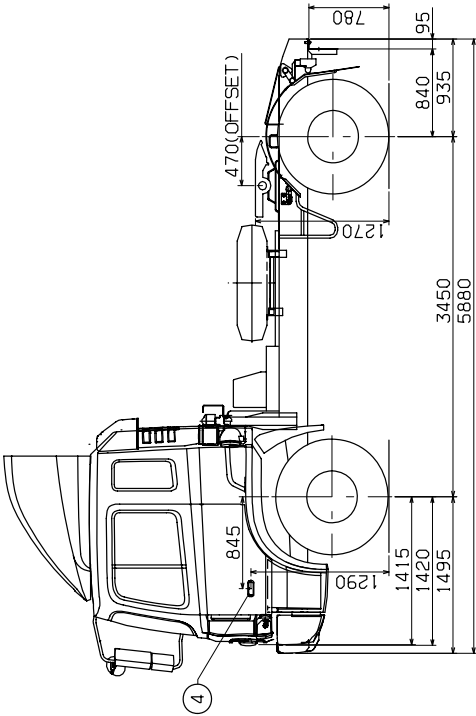
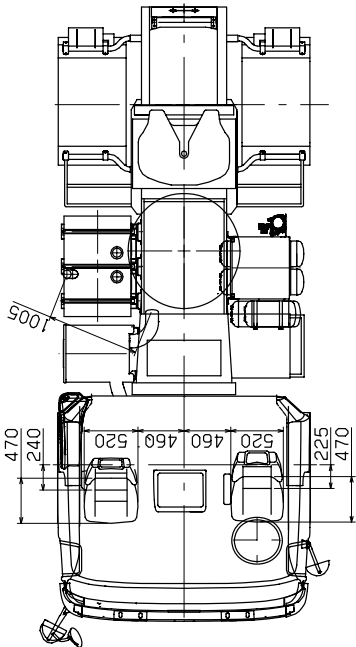


|   |                       |   |                      |
|---|-----------------------|---|----------------------|
| 1 | HEAD LAMP             | 6 | TURN SIGNAL LAMP     |
| 2 | TURN SIGNAL LAMP      | 7 | TAIL LAMP, STOP LAMP |
| 3 | FOG LAMP              | 8 | BACK-UP LAMP         |
| 4 | SIDE TURN SIGNAL LAMP | 9 | LICENCE PLATE LAMP   |
| 5 | REFLEX REFLECTOR      |   |                      |



|                       |      |
|-----------------------|------|
| HD450                 | D6AC |
| HYUNDAI MOTOR COMPANY |      |

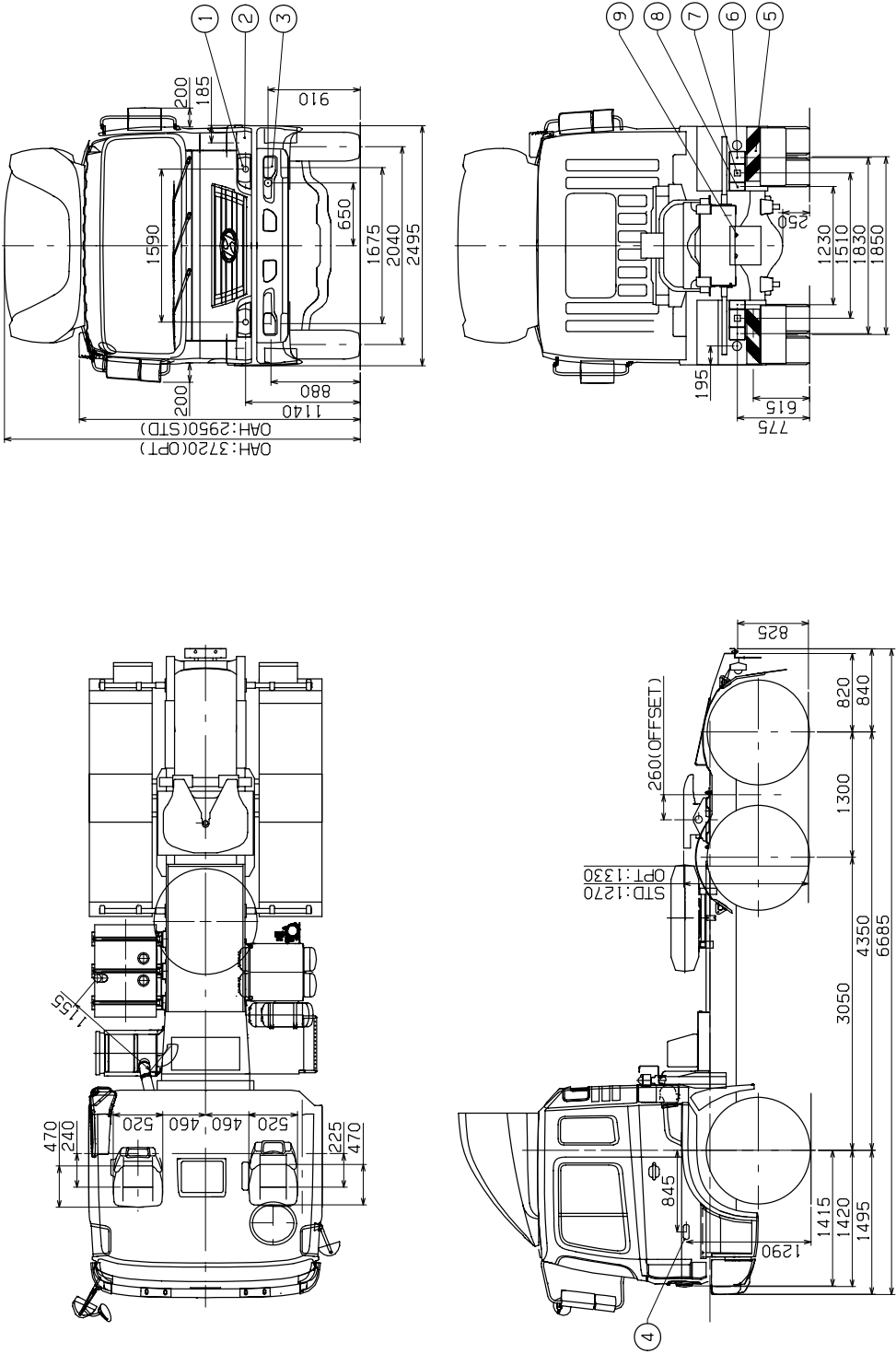
|   |                       |   |                      |
|---|-----------------------|---|----------------------|
| 1 | HEAD LAMP             | 6 | TURN SIGNAL LAMP     |
| 2 | TURN SIGNAL LAMP      | 7 | TAIL LAMP, STOP LAMP |
| 3 | FOG LAMP              | 8 | BACK-UP LAMP         |
| 4 | SIDE TURN SIGNAL LAMP | 9 | LICENCE PLATE LAMP   |
| 5 | REFLEX REFLECTOR      |   |                      |



|                       |      |
|-----------------------|------|
| HP500                 | D6CA |
| HYUNDAI MOTOR COMPANY |      |

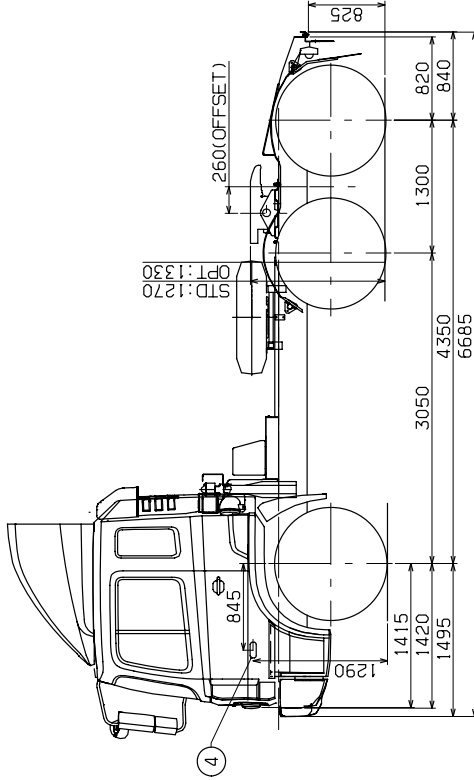
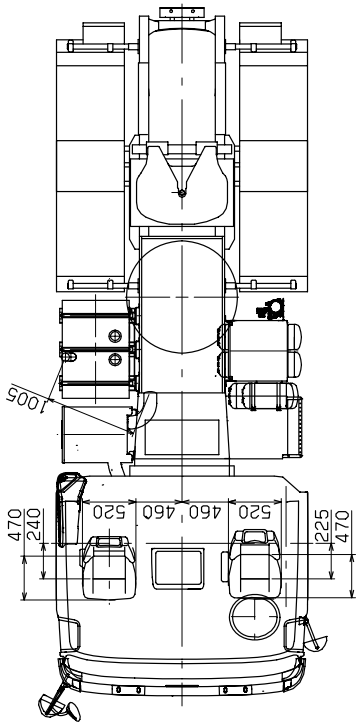
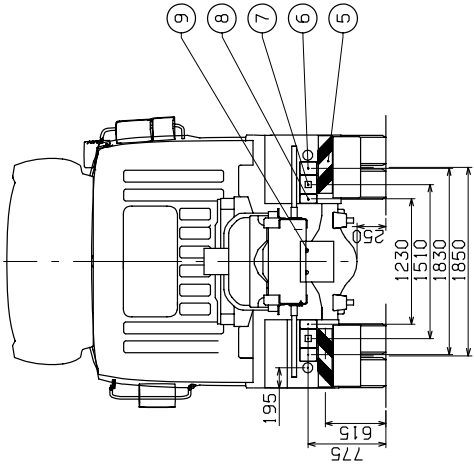
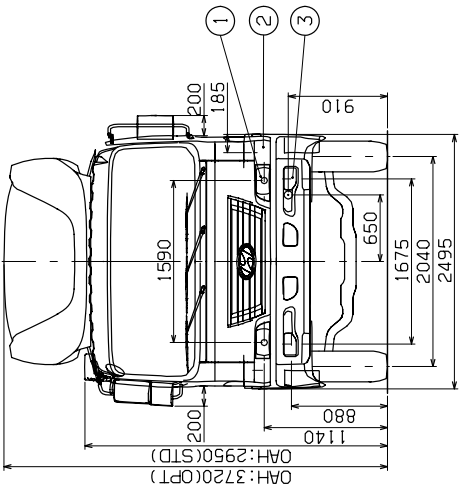


|                         |                        |
|-------------------------|------------------------|
| 1 HEAD LAMP             | 6 TURN SIGNAL LAMP     |
| 2 TURN SIGNAL LAMP      | 7 TAIL LAMP, STOP LAMP |
| 3 FOG LAMP              | 8 BACK-UP LAMP         |
| 4 SIDE TURN SIGNAL LAMP | 9 LICENCE PLATE LAMP   |
| 5 REFLEX REFLECTOR      |                        |



|                       |      |
|-----------------------|------|
| HD700                 | D6AC |
| HYUNDAI MOTOR COMPANY |      |

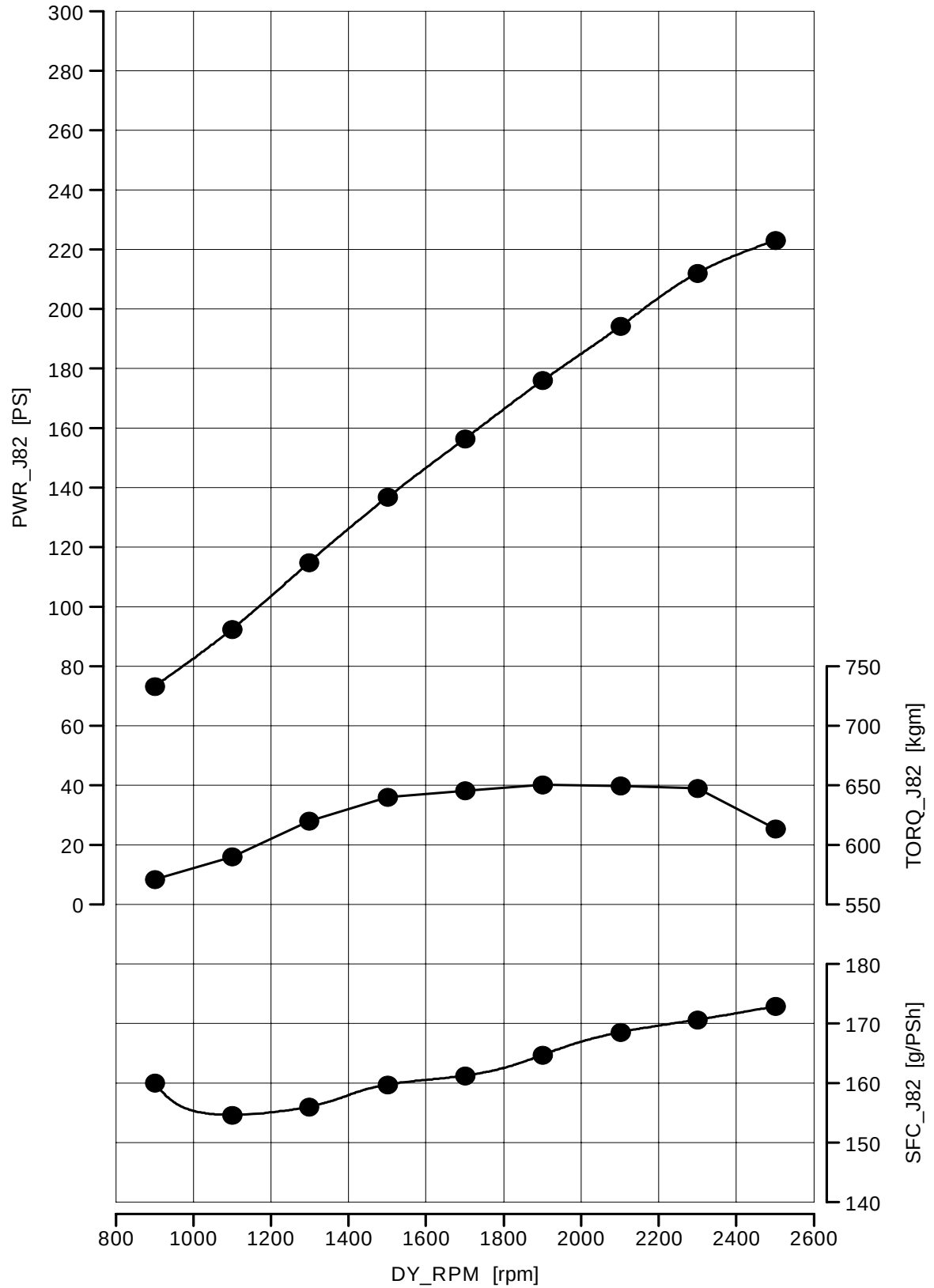
|                         |                        |
|-------------------------|------------------------|
| 1 HEAD LAMP             | 6 TURN SIGNAL LAMP     |
| 2 TURN SIGNAL LAMP      | 7 TAIL LAMP, STOP LAMP |
| 3 FOG LAMP              | 8 BACK-UP LAMP         |
| 4 SIDE TURN SIGNAL LAMP | 9 LICENCE PLATE LAMP   |
| 5 REFLEX REFLECTOR      |                        |



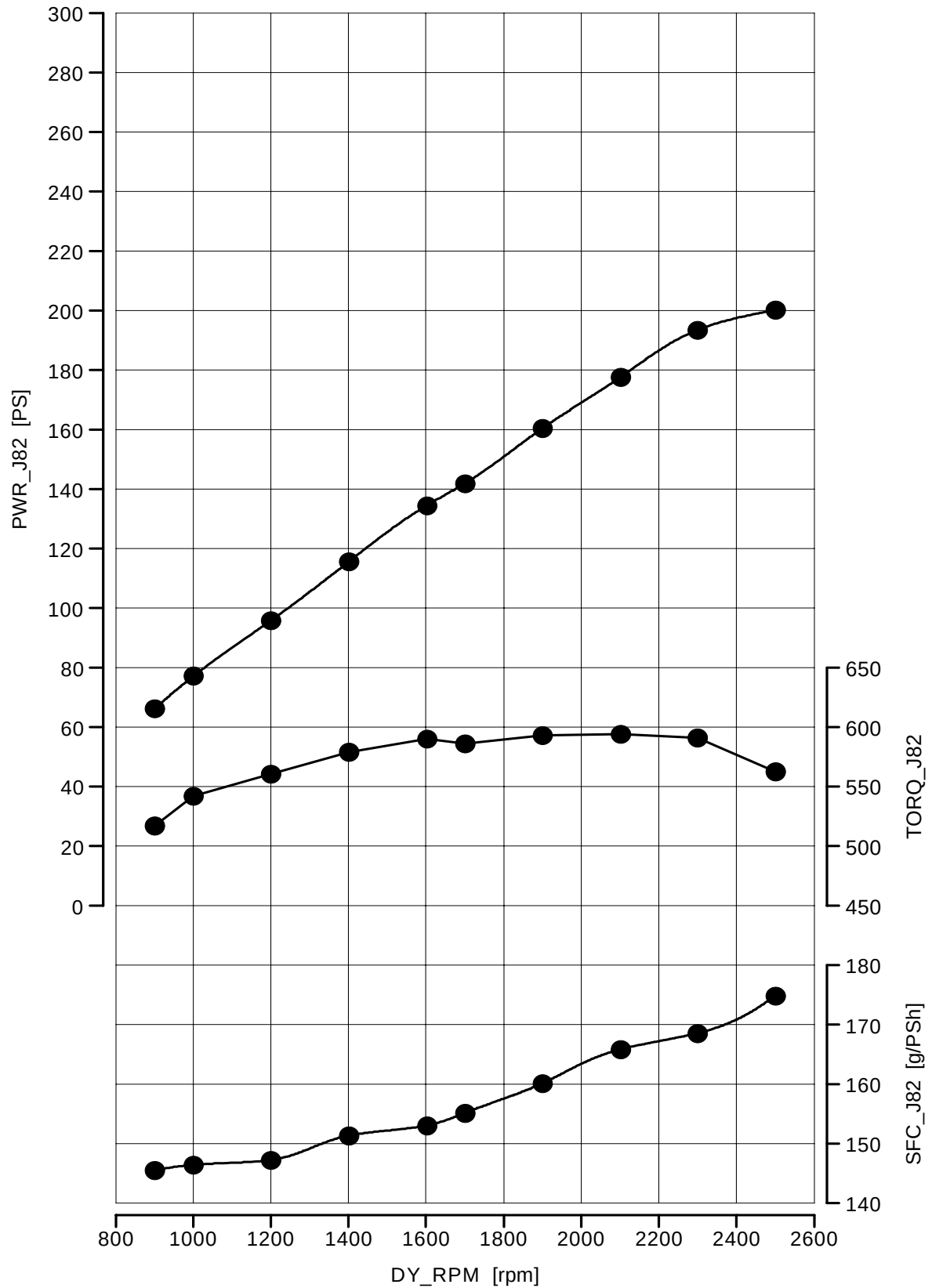
## 4.ENGINE PERFORMANCE CURVE

## 4. ENGINE PERFORMANCE CURVE

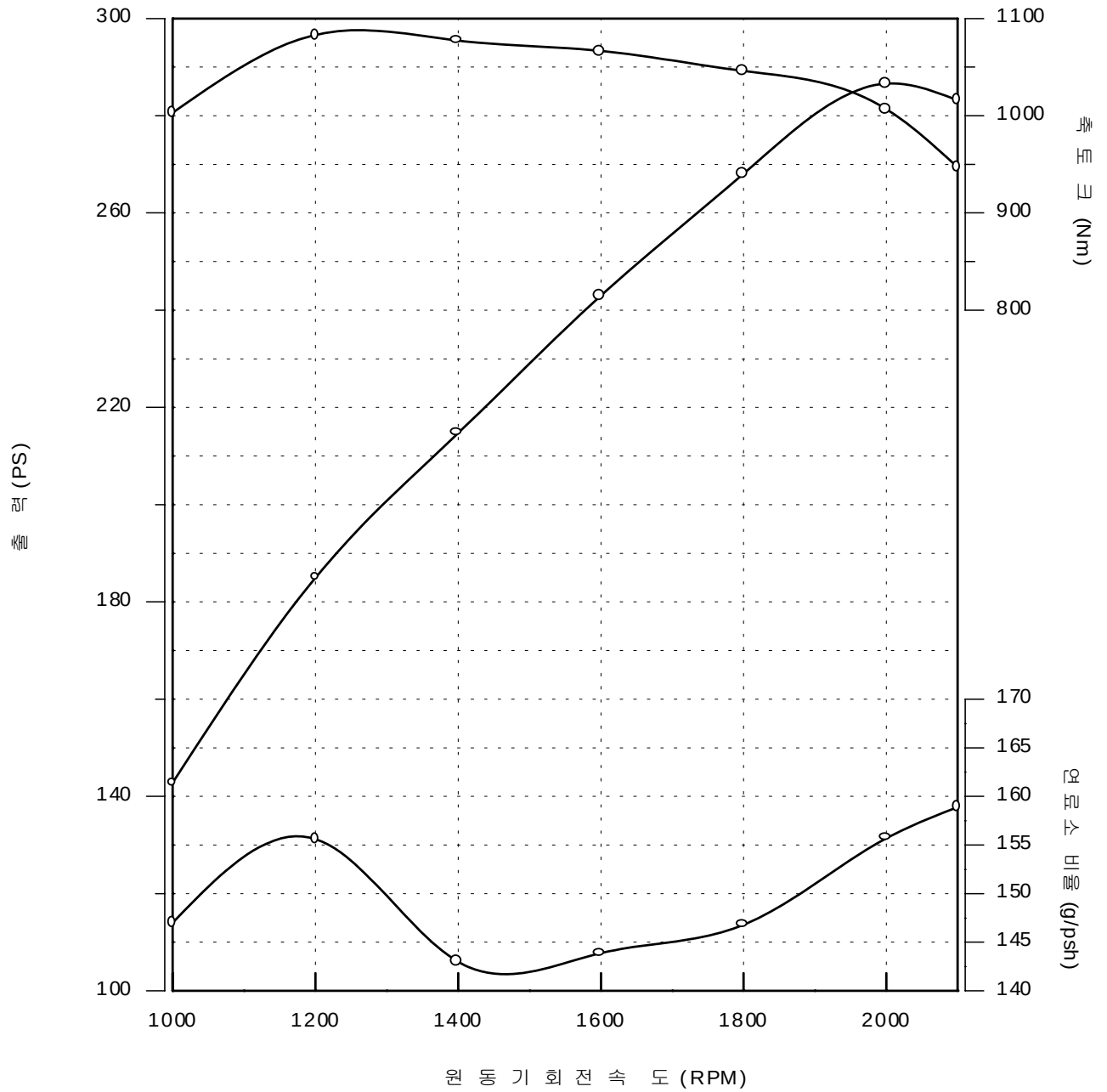
### 1) KK-TCI (HIGH HORSE POWER)



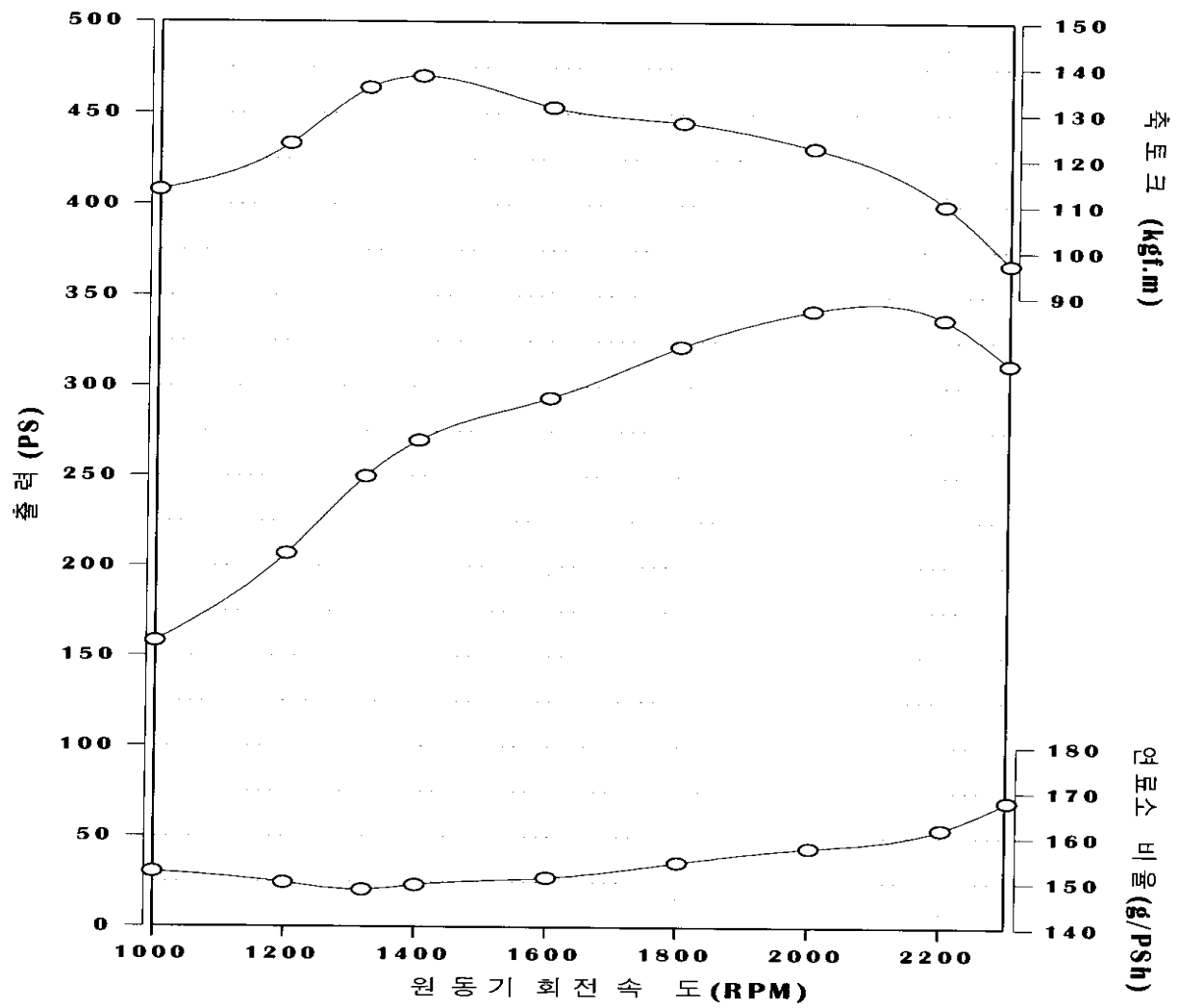
## 2) KK-TCI (LOW HORSE POWER)



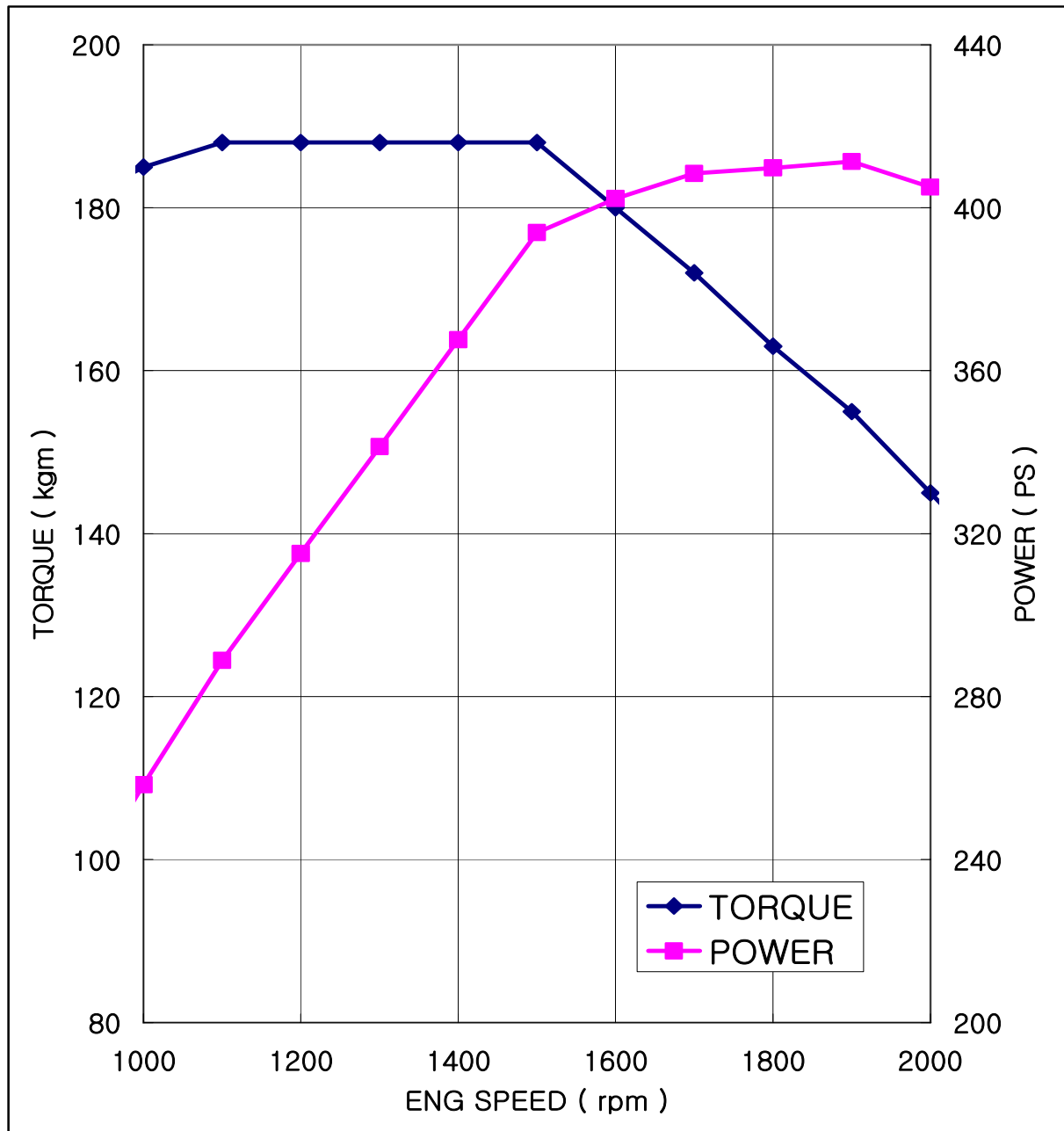
3) Q-dd(D6AB-dd)



4) D6AC

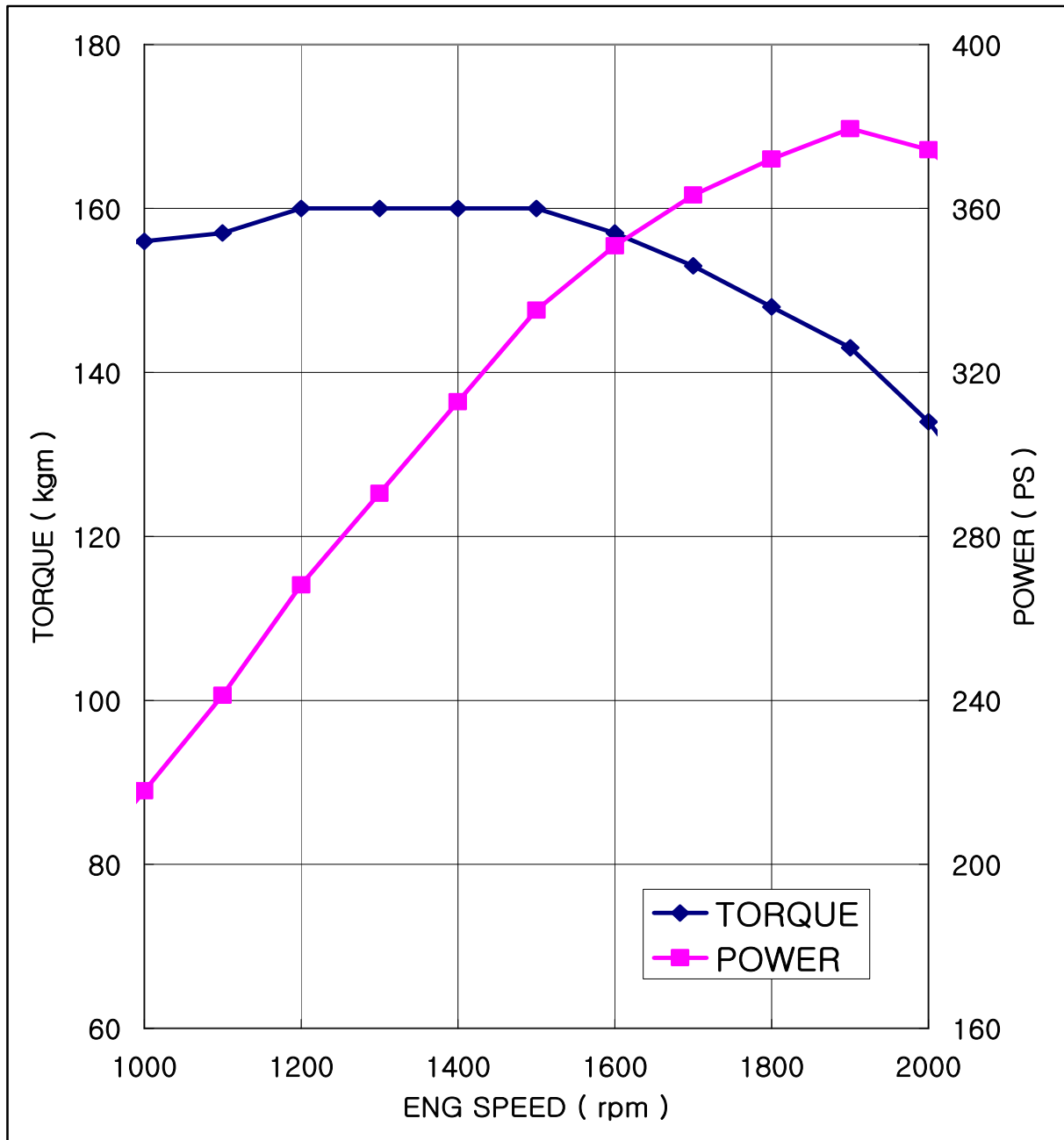


## 5) L1D

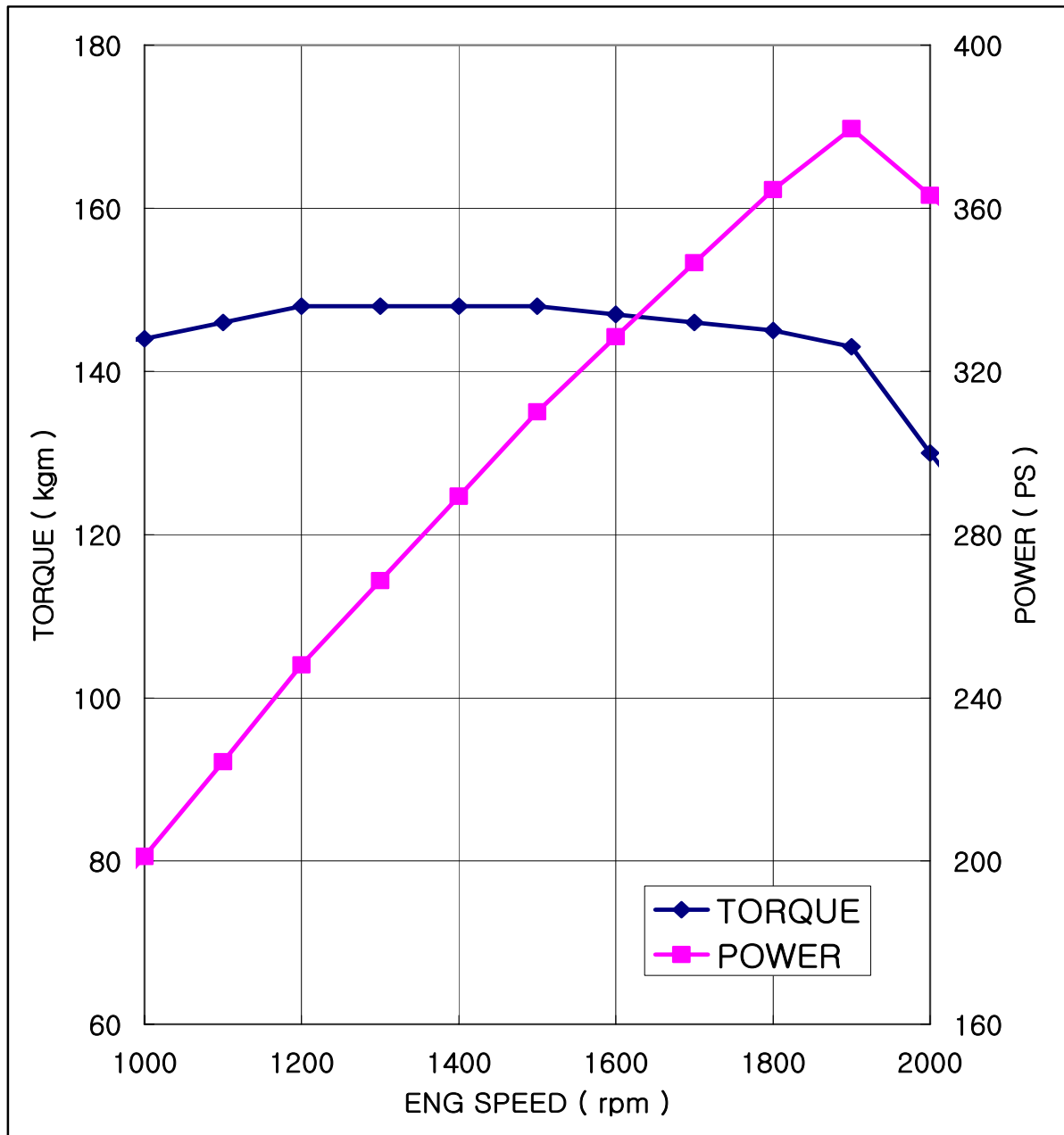




6) L2D – A



## 7) L2D-B



## 5.CAUTIONS REGARDING INSTALLATION MODIFICATION OR ALTERATION

## 5-1. Cautions needed for the front structure of the rear body

The structure of the front area of the rear body in relation to front wheel tires, exhaust pipe, cab and intake duct should be installed carefully as the followings.

(1) Move of the cab and the intake duct

In case of applying the floating cab mounting, be free from interference with the cab and the intake duct. Make reference to the appendix drawing for the moving range of the cab and the intake duct.

(2) Sub frame

As the forward area of the sub frame is near exhaust pipe, be careful not to take fire by adding a protector to the outside of the sub frame. Also the ground clearance of the rear body floor and the height of fender should be more than 50mm from tires. Make reference to BODY BUILDER DRAWING for a rising quantity of tires. If the height of sub frame is low, as strength drops, use the steel sub frame surely in using the sub frame less than standard height. Make reference to the paragraph 2-2-4, COMMON BOOK of BODY BUILDER BOOK for dimension of the steel frame.

(3) Foremost cross bearer

As it nearby exhaust pipe, use steel instead of wood. Also make sure that there is a space of detaching transmission.

(4) Projecting relation of the upper side of transmission and chassis frame

As harness connector and the sensor of gear shift unit are on the upper side of transmission, be free from ascending the upper side of transmission.



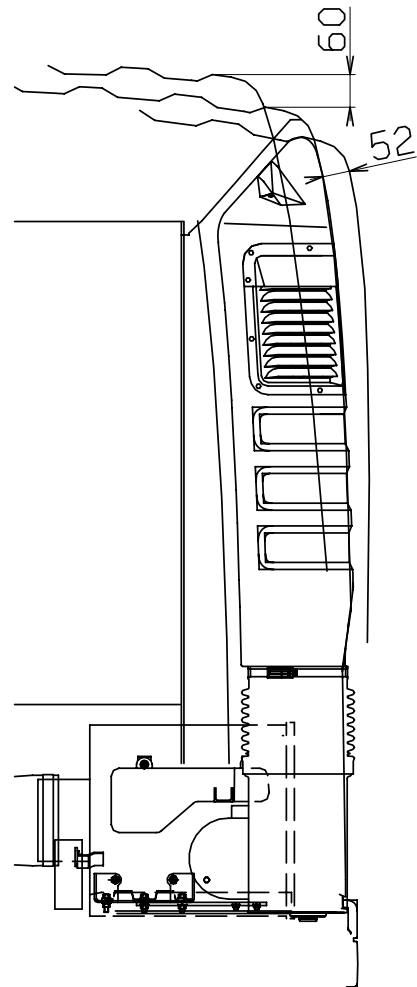
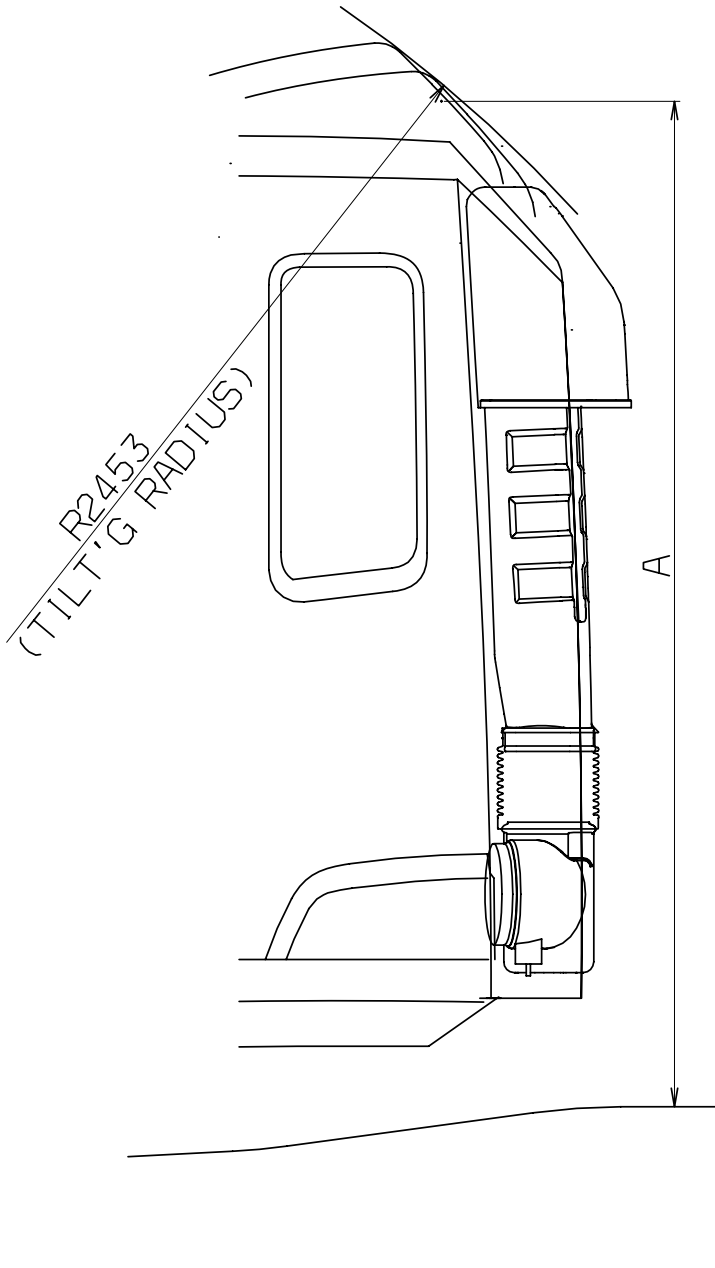
(5) Object for stain prevention between cab and rear body

Install a object for stain prevention between cab and rear body figure to prevent stain by front forward wheels as the appendix drawing.

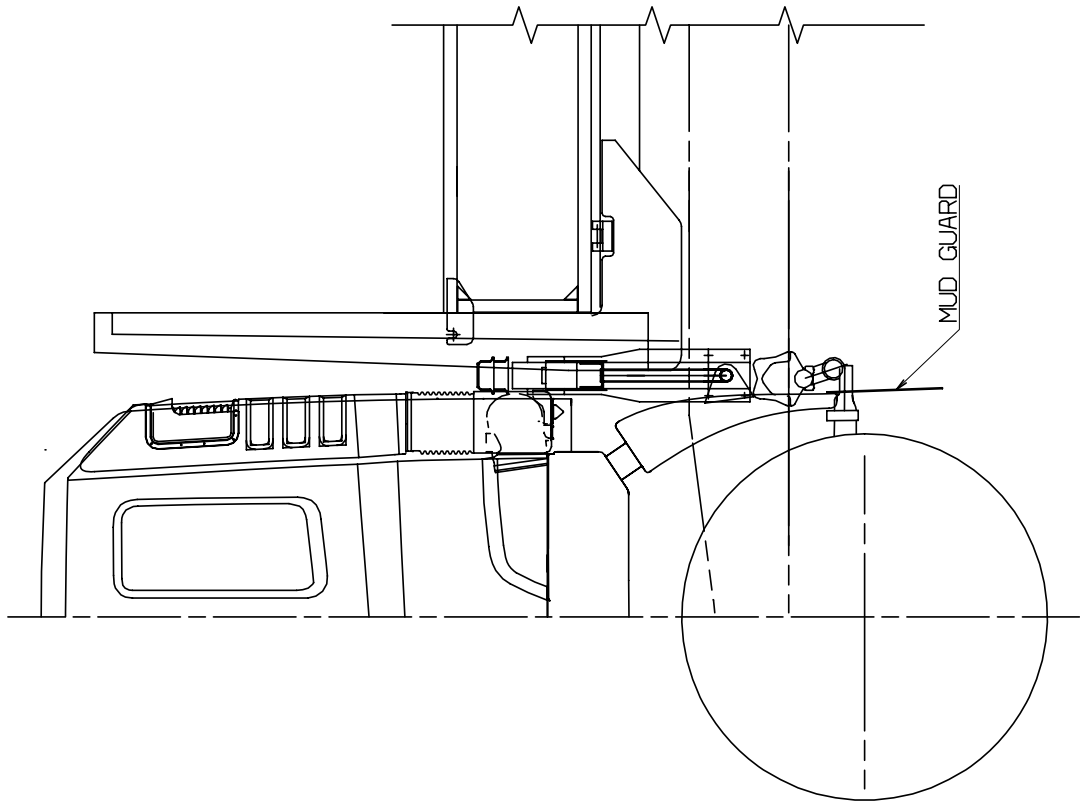
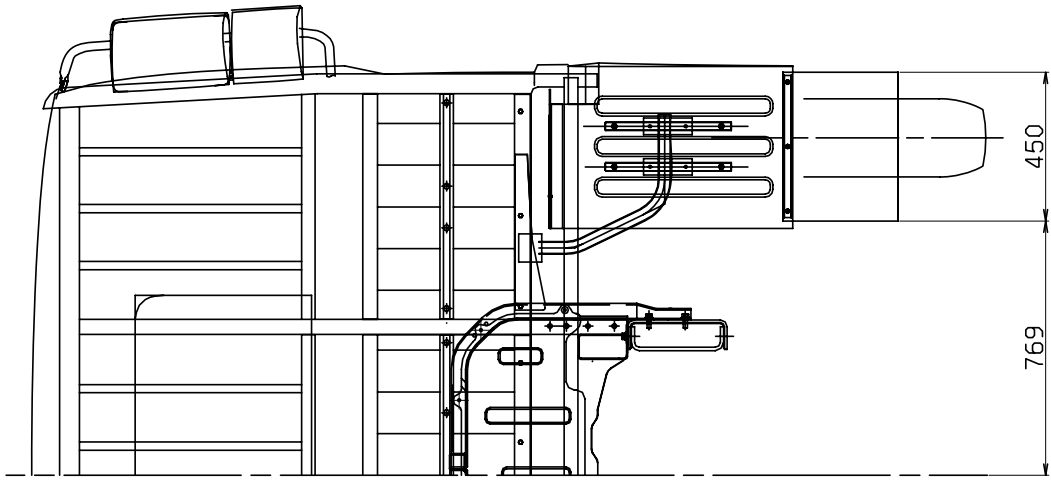
(6) Front and rear wheel fender

Make reference to the appendix drawing for the height of fender and mudguard. Also make reference to the paragraph 2-2-5, COMMON BOOK of BODY BUILDER BOOK.

\*.) Move of the cab and the intake duct

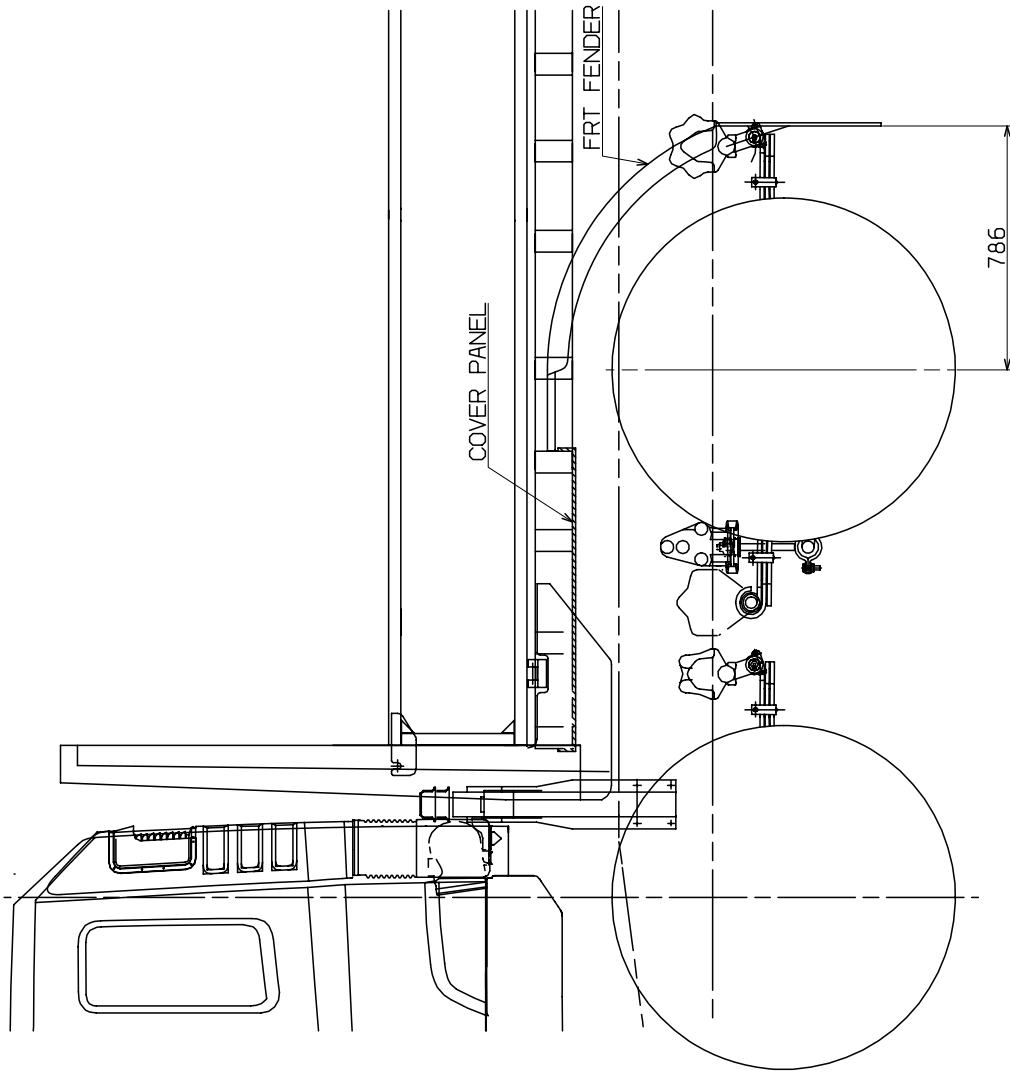
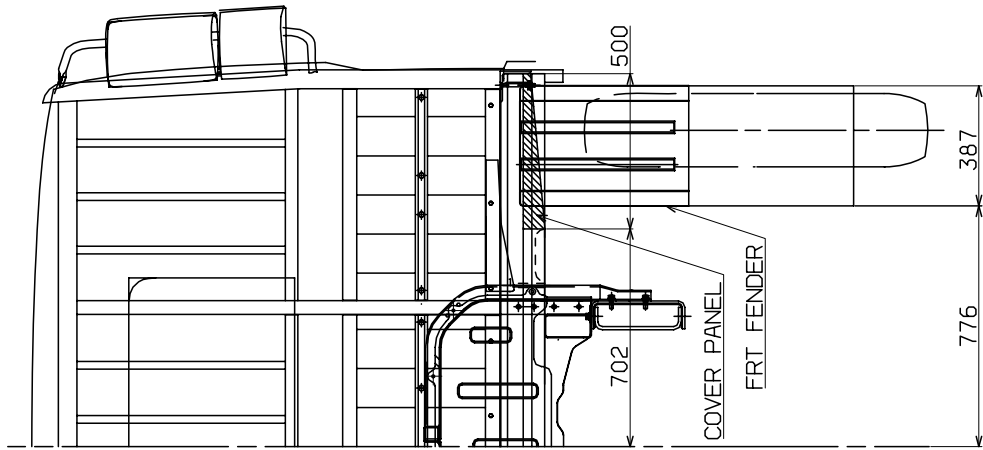


| MODEL       | A    |
|-------------|------|
| CARGO, DUMP | 1943 |
| TRACTOR     | 1963 |



(4X2 CARGO, DUMP, TRT)  
(6X4 CARGO, DUMP, TRT)

\*) REFERENCE DRAWING OF MUD GUARD



(8X4 CARGO, DUMP)

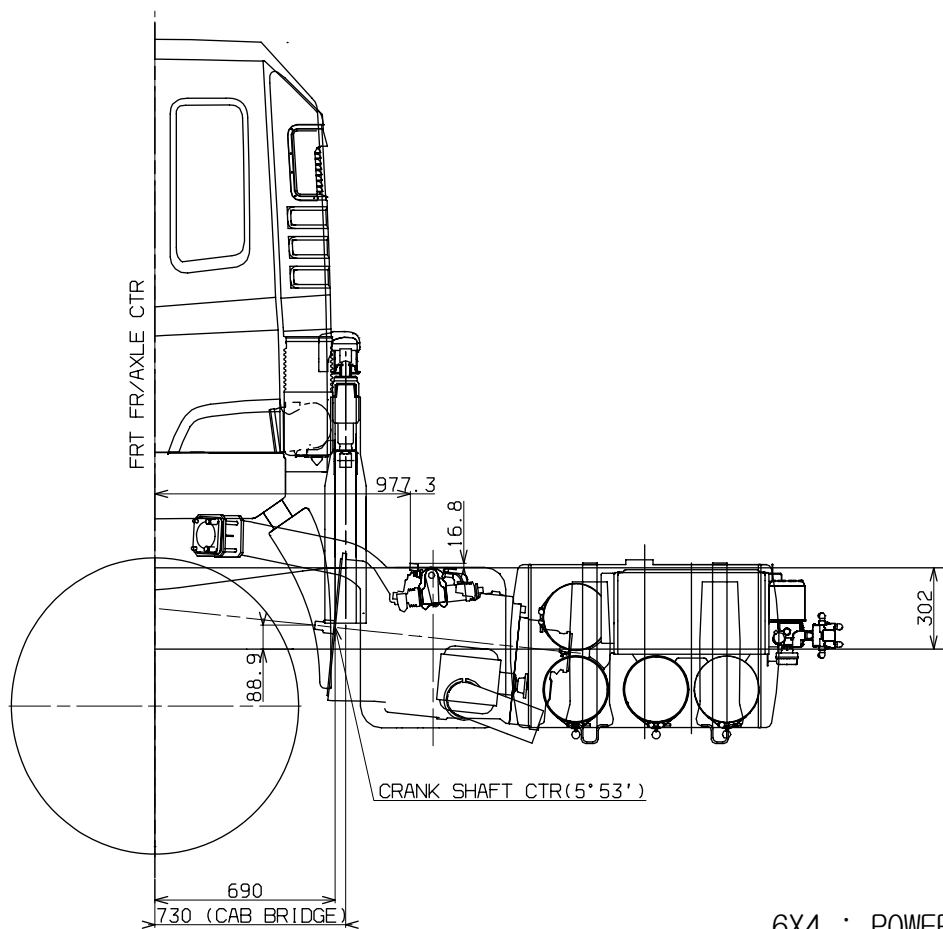
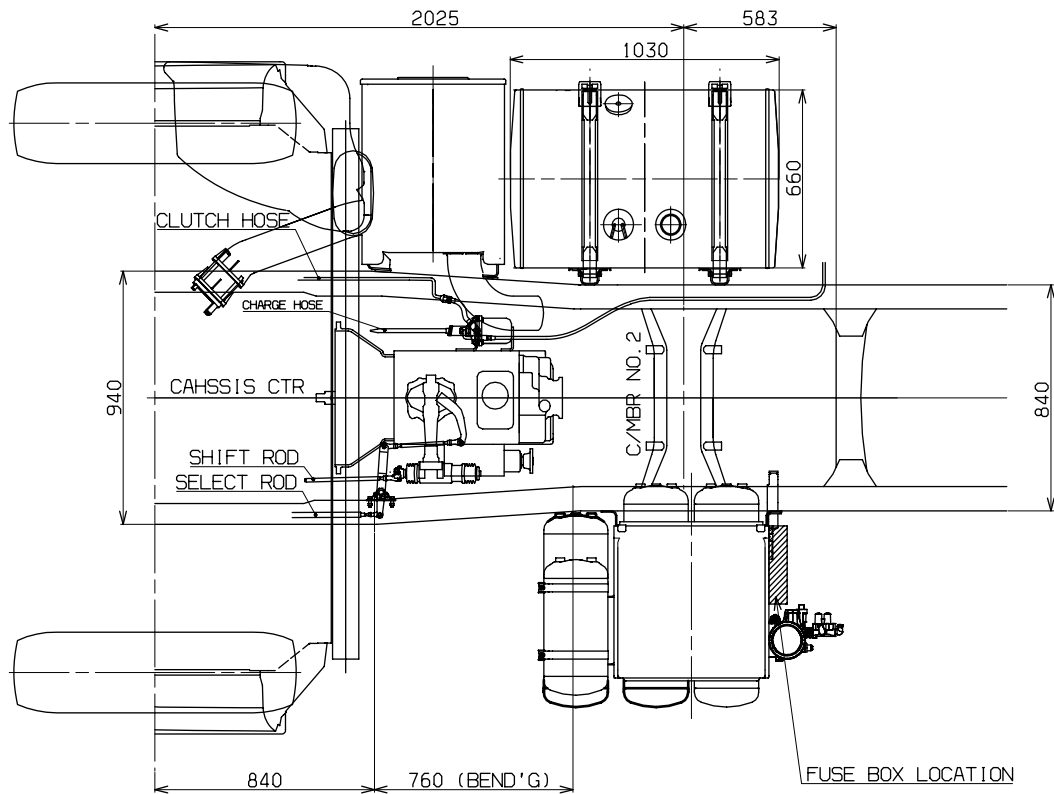
## 5-2. Cautions needed for fastening UPPER BODY MT'G

In case of fastening UPPER BODY MT'G between the cab rear and No.2 cross member, refer to the appendix fastening drawing U-bolt, don't fasten U-bolt to the taper-cut portion frame.

Inevitable, in mounting sub frame and the like on the taper-cut portion of sub frame, make reference to the COMMON BOOK of BODY BUILDER BOOK.





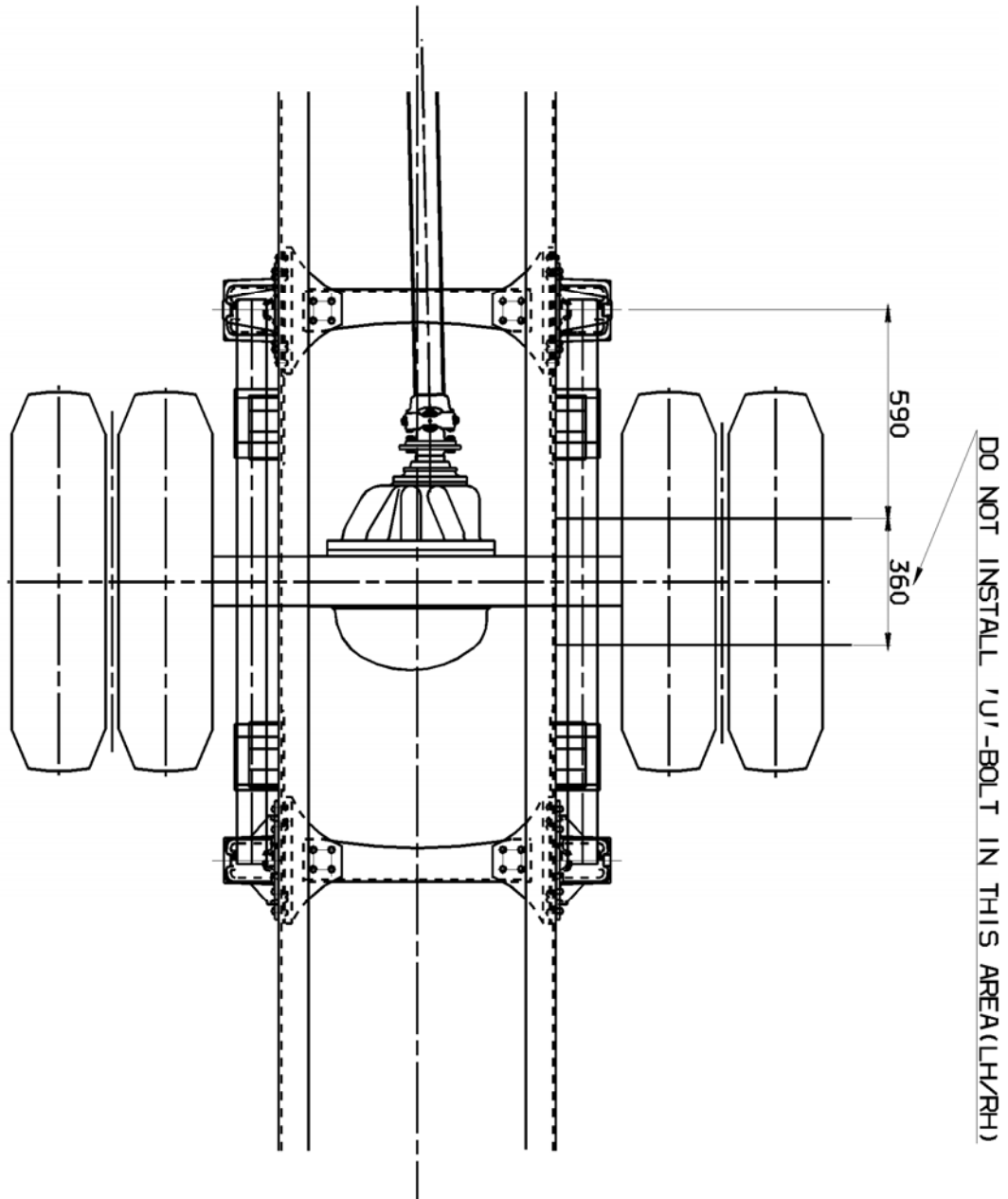


6X4 : POWERTEC

\* ) REAR AXLE AREA

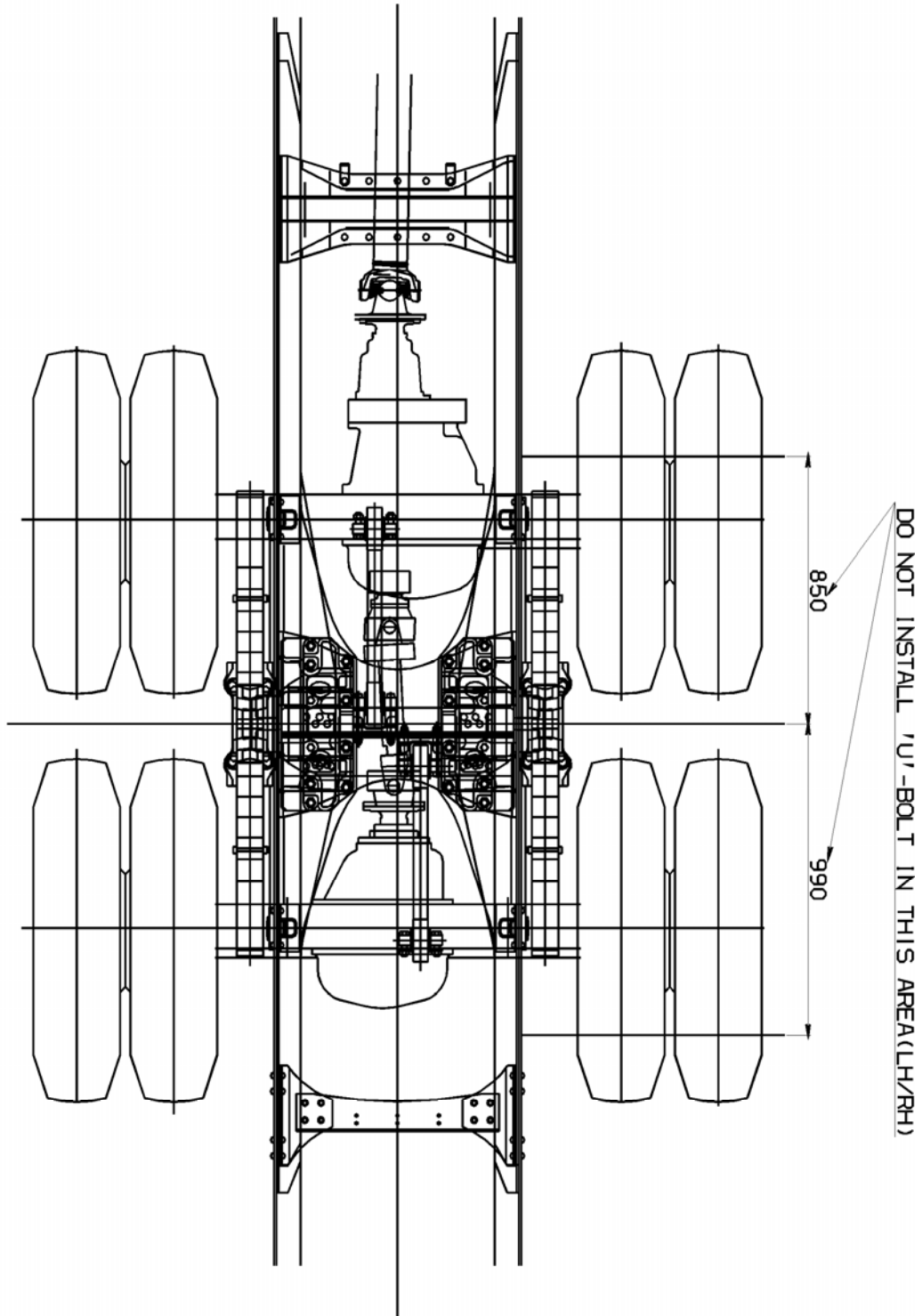
4X2 CARGO

4X2 DUMP

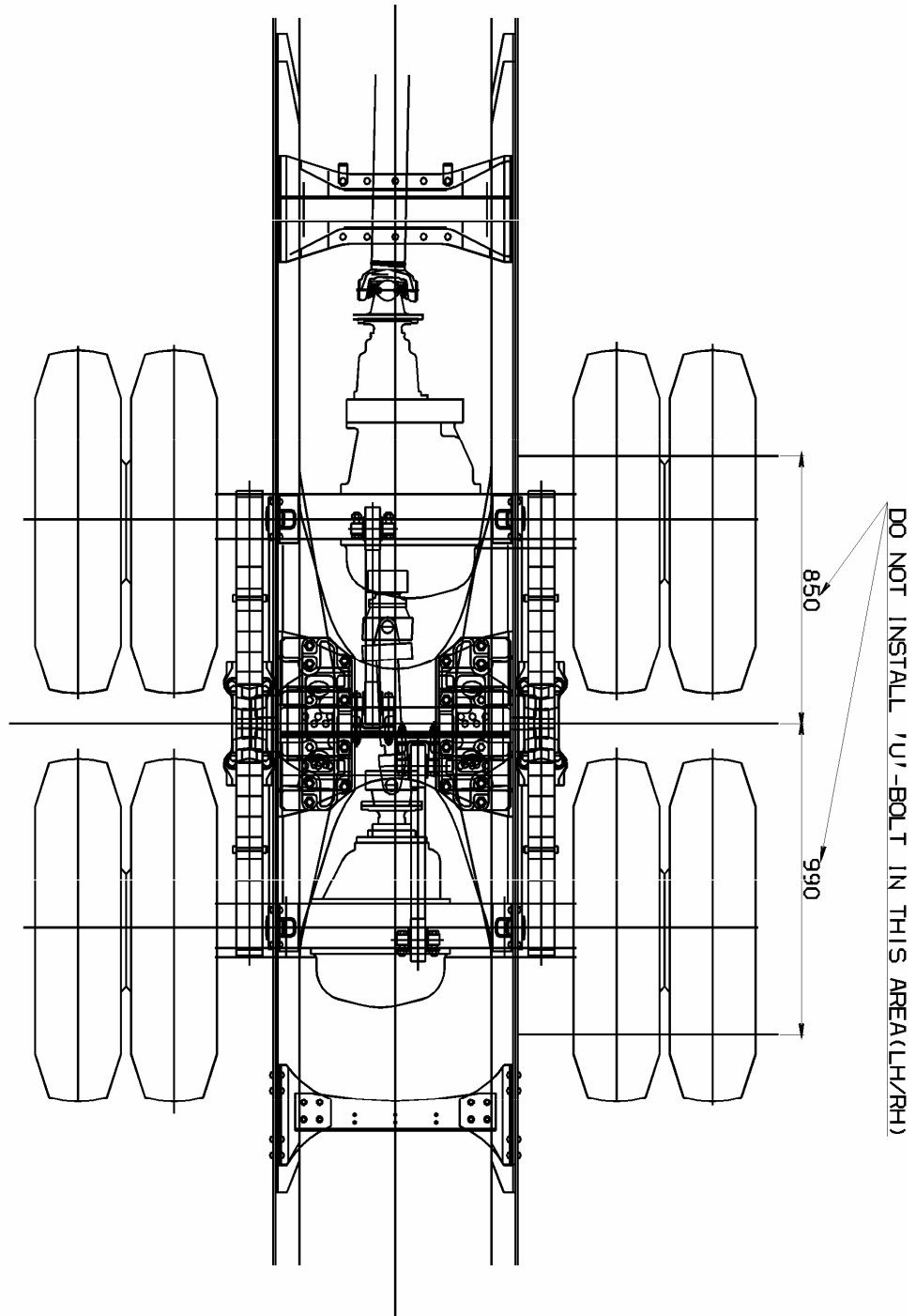


6X4 CARGO

6X4 DUMP



8X4 CARGO  
8X4 DUMP

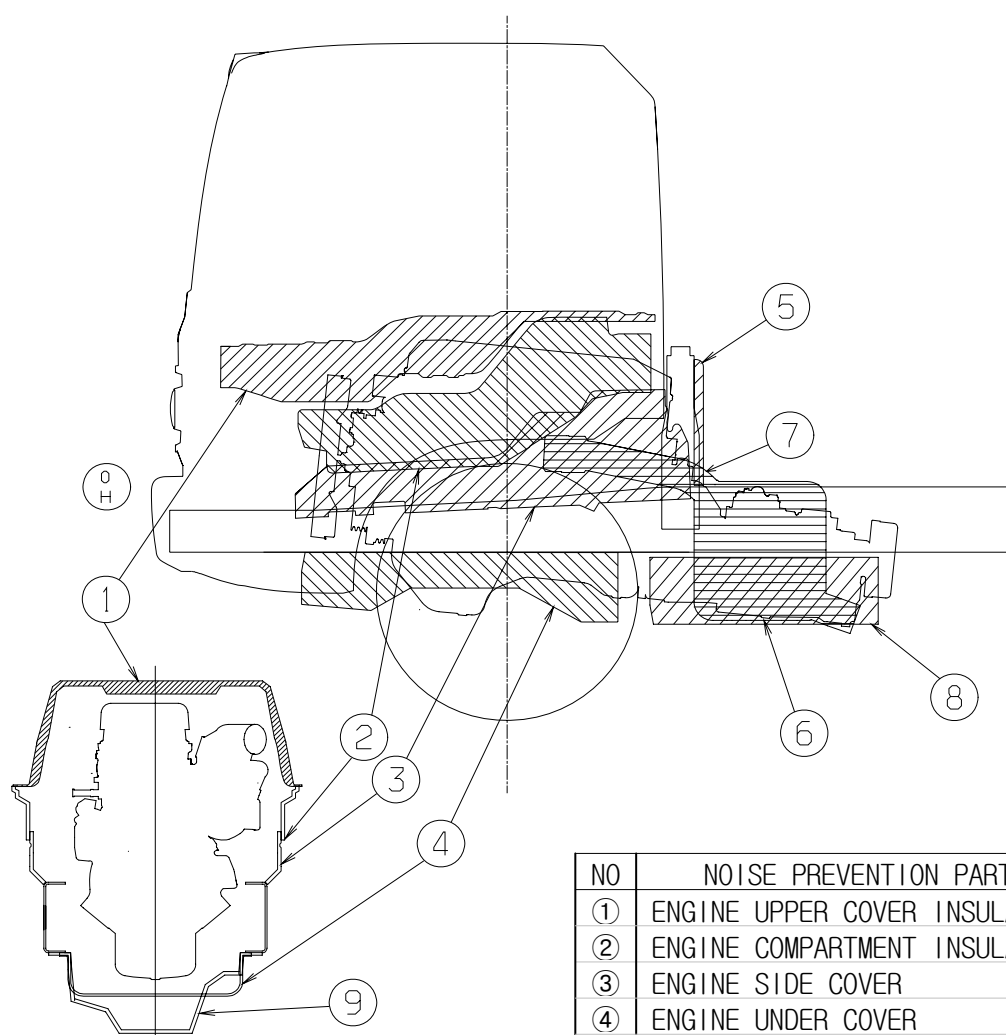


### 5-3. Noise prevention parts

Don't modify or alterate noise prevention parts, which conform to the noise regulations. But in an unavoidable case, please contact with HMC. Also in case detaching noise prevention parts when installing or modifying them, be sure to install them as ever again after finishing installation or modification.

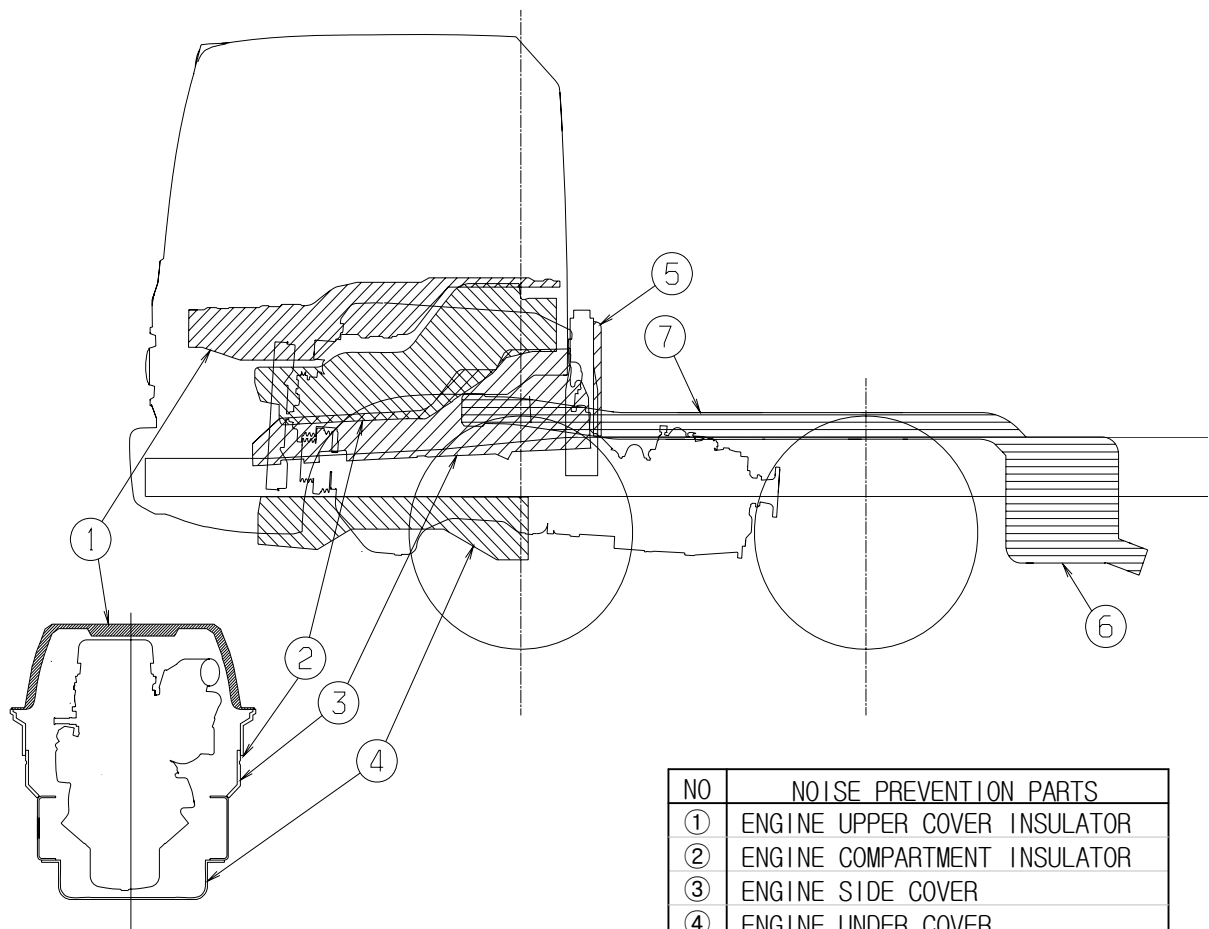
Position describing drawing of noise prevention parts.

- (1) 4X2 CARGO, DUMP, TRACTOR  
6X4 CARGO, DUMP, TRACTOR



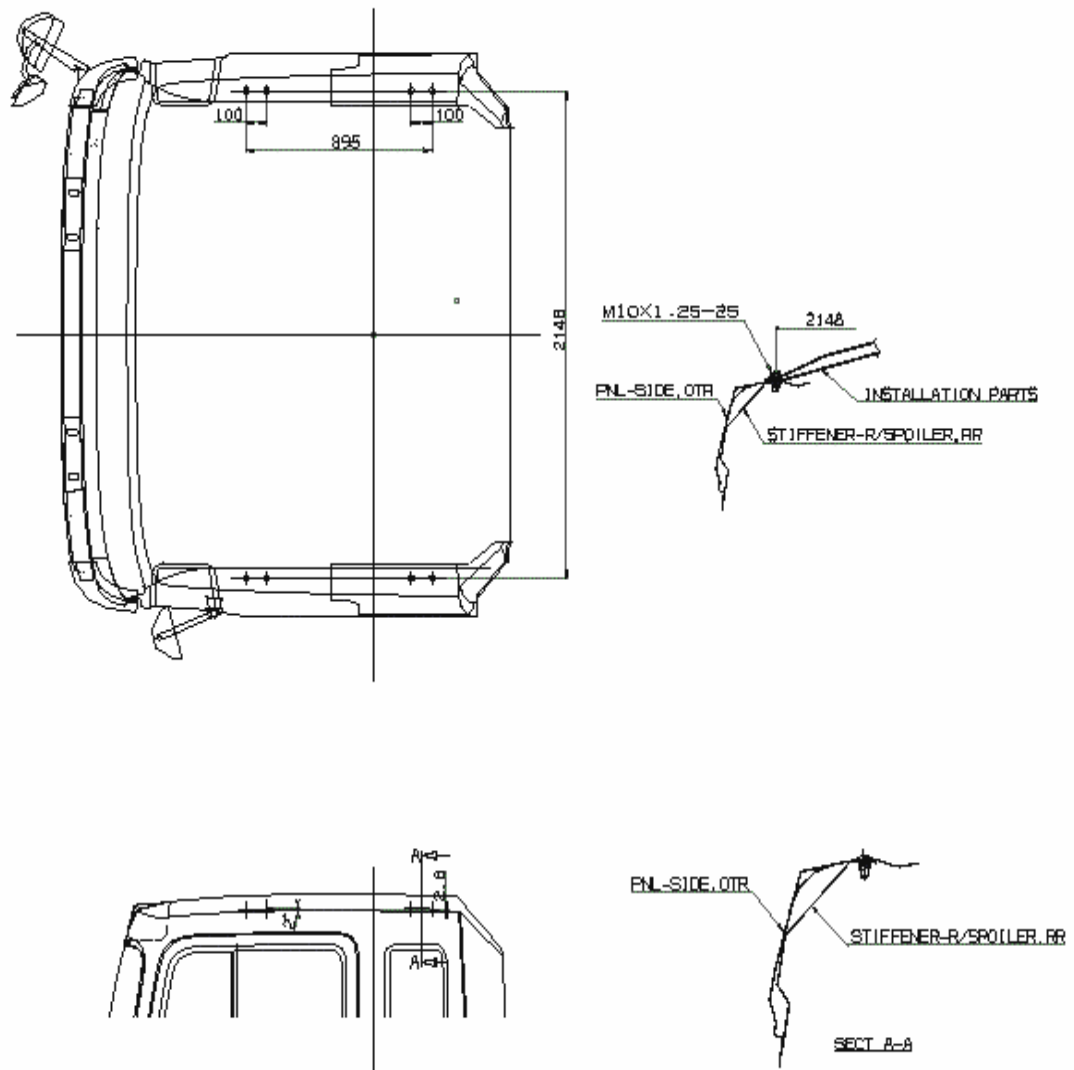
| NO | NOISE PREVENTION PARTS       |
|----|------------------------------|
| ①  | ENGINE UPPER COVER INSULATOR |
| ②  | ENGINE COMPARTMENT INSULATOR |
| ③  | ENGINE SIDE COVER            |
| ④  | ENGINE UNDER COVER           |
| ⑤  | ENGINE REAR COVER            |
| ⑥  | MUFFLER                      |
| ⑦  | MUFFLER PIPE                 |
| ⑧  | T/M UNDER COVER              |
|    |                              |
|    |                              |

(2) 8X4 CARGO, DUMP



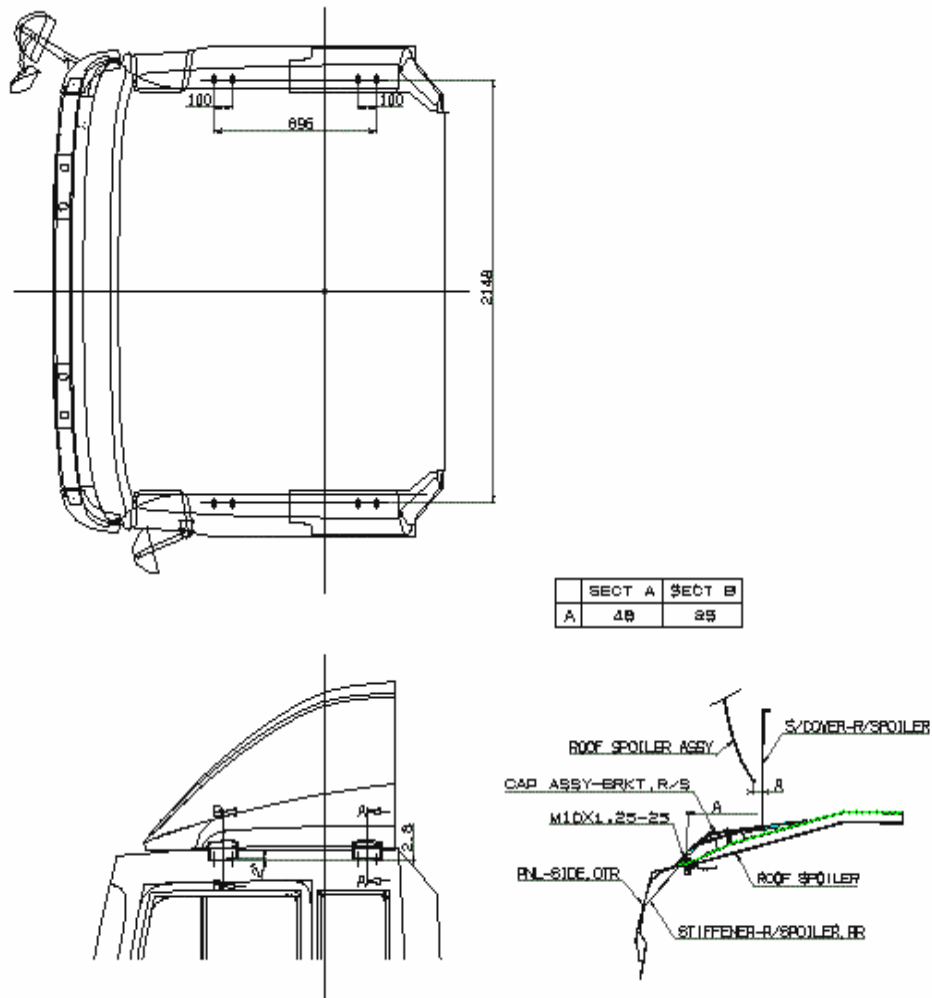
| NO | NOISE PREVENTION PARTS       |
|----|------------------------------|
| ①  | ENGINE UPPER COVER INSULATOR |
| ②  | ENGINE COMPARTMENT INSULATOR |
| ③  | ENGINE SIDE COVER            |
| ④  | ENGINE UNDER COVER           |
| ⑤  | ENGINE REAR COVER            |
| ⑥  | MUFFLER                      |
| ⑦  | MUFFLER PIPE                 |
|    |                              |
|    |                              |
|    |                              |

## 5-4 Installation or alteration on the roof





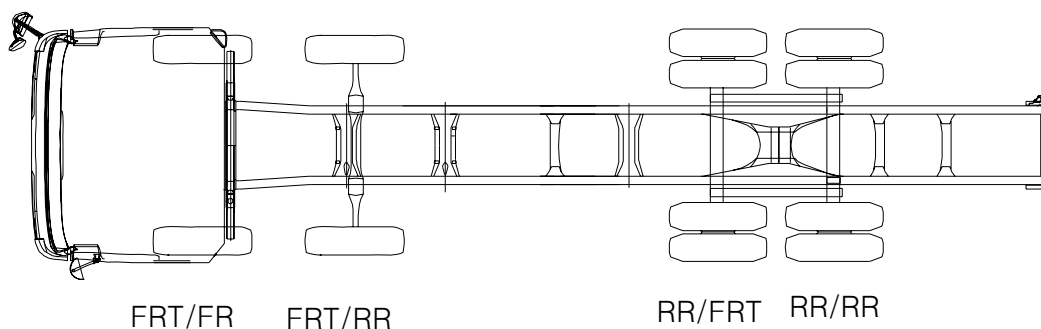
## 5-5 Installation of the Roof spoiler



## 6.WEIGHT AND FRAME INFORMATION

## 6-1 Permissible weight

### (1) Axle weight

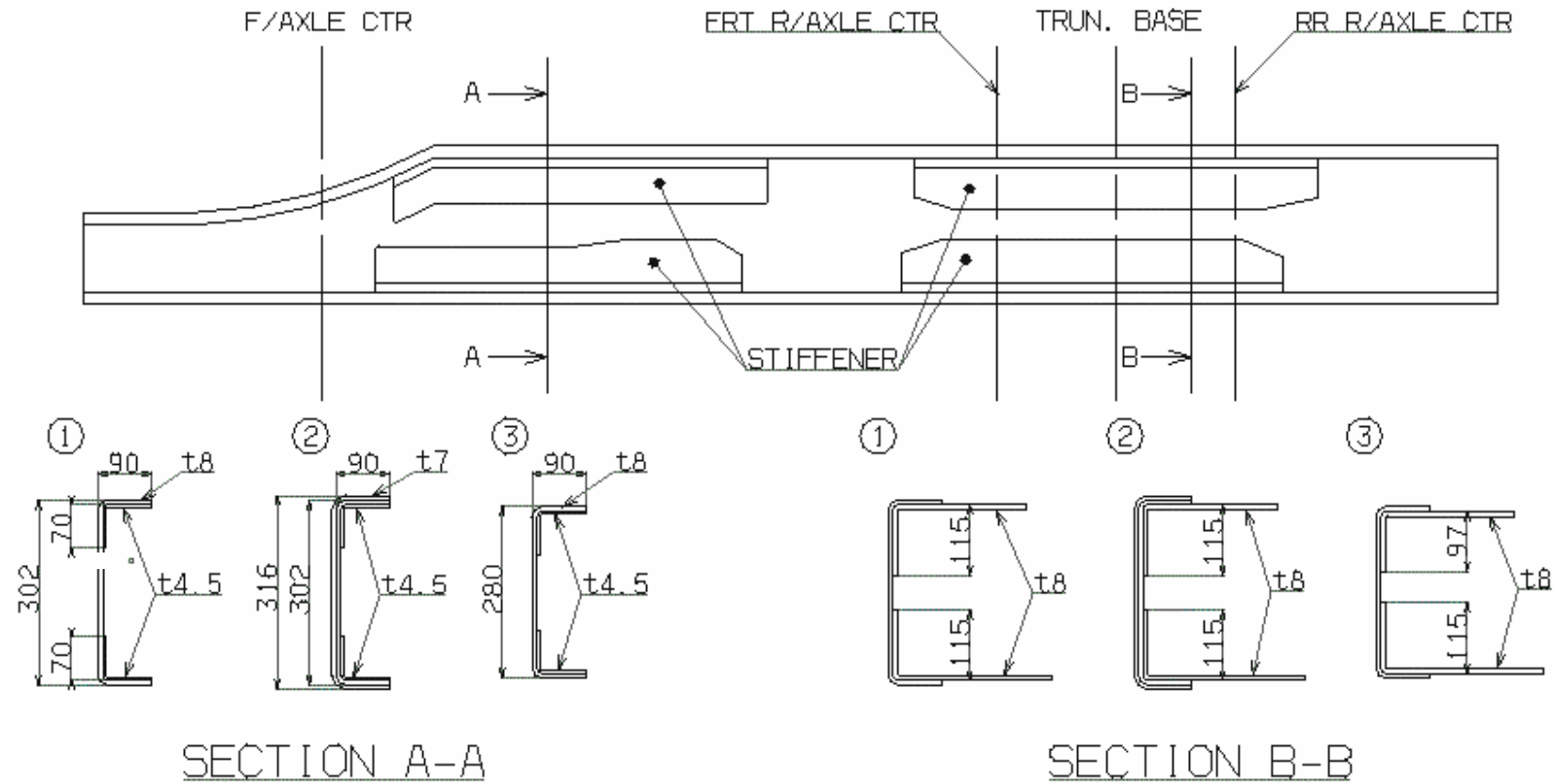


|     |      |         |                  | FRT/FRT<br>(kg) | FRT/RR<br>(kg) | RR/FRT<br>(kg) | RR/RR<br>(kg) | 비고                |
|-----|------|---------|------------------|-----------------|----------------|----------------|---------------|-------------------|
| 4x2 | AXLE | CARGO   | HD160            | 6,700           | —              | 10,800         | —             | D10H              |
|     |      |         | HD170            | 6,550           | —              | 10,800         | —             | D10H<br>D10H-II   |
|     |      | DUMP    | HD160            | 6,550           | —              | 10,800         |               | D12HT             |
|     |      | TRACTOR | HD450/500        | 6,550           | —              | 11,800         | —             | D12H              |
|     | TIRE |         | 11.00x20-16PR    | 6,700           | —              | 11,600         | —             | HANKOOK           |
|     |      |         | 12R22.5-16PR     | 6,700           | —              | 12,300         | —             | KUMHO/HANKOOK     |
| 6x4 | AXLE | CARGO   | HD250            | 6,700           | —              | 10,800         | 10,800        | D10HT             |
|     |      |         | HD260/HD19M      | 6,550           | —              | 10,800         | 10,800        | D10HT/T14HT       |
|     |      |         | HD260            | 7,950           | —              | 10,800         | 10,800        | D10HT             |
|     |      | DUMP    | HD270            | 6,700           | —              | 11,800         | 11,800        | D12HT             |
|     |      | MIXER   | HD270            | 6,700           | —              | 10,800         | 10,800        | D10HT-II          |
|     |      | TRACTOR | HD700/HD1000     | 6,550           | —              | 11,800         | 11,800        | D12HT<br>R178HT   |
|     | TIRE |         | 11.00x20-16PR    | 6,700           | —              | 11,600         | 11,600        | HANKOOK           |
|     |      |         | 12R22.5-16PR     | 6,700           | —              | 12,300         | 12,300        | KUMHO/HANKOOK     |
|     |      |         | 315/80R22.5-20PR | 8,164           | —              | —              | —             |                   |
| 8x4 | AXLE | CARGO   | HD310, HD320     | 6,550           | 6,550          | 11,800         | 11,800        | D12HT<br>D12HT-II |
|     |      | DUMP    | HD370            | 9,000           | 9,000          | 11,800         | 11,800        | D12HT-II          |
|     |      | MIXER   | HD380            | 9,000           | 9,000          | 11,800         | 11,800        | D12HT-II          |
|     | TIRE |         | 11.00x20-16PR    | 6,700           | 6,700          | 11,600         | 11,600        | HANKOOK           |
|     |      |         | 12R22.5-16PR     | 6,700           | 6,700          | 12,300         | 12,300        | KUMHO/HANKOOK     |
|     |      |         | 385/65R22.5-20PR | 9,000           | 9,000          | —              | —             |                   |

## 6-2. Tire specification

| TIRE TYPE                  | LBS / PSI    | Permissible<br>Weight<br>(Kg) | Air<br>Pressure<br>(Kg/cm <sup>2</sup> ) | EFF. RAD(mm)     |                   | OVER<br>ALL<br>Dia. |
|----------------------------|--------------|-------------------------------|------------------------------------------|------------------|-------------------|---------------------|
|                            |              |                               |                                          | Static<br>Radius | Dynamic<br>Radius |                     |
| 11.00X20-16PR<br>(HANKOOK) |              | 3350<br>2900                  | 8.10<br>7.40                             | 510±8            | 520±8             | 1090±8              |
| 12R22.5-16PR<br>(HANKOOK)  |              | 3350<br>3075                  | 8.40<br>8.40                             | 508±8            | 527±8             | 1087±4              |
| 315/80R22.5-20PR           | (S) 9000/130 | 4082                          | 9.14                                     |                  |                   |                     |
| 385/65R22.5-20PR           | (S) 9370/120 | 4500                          | 9.10                                     | 497              | 516               | 1057 ~<br>1087      |

(S) : SINGLE, (D) : DOUBLE



| FRAME | VEHICLES                                     |
|-------|----------------------------------------------|
|       | DOMESTIC & EXPORT(W/O CHINA)                 |
| ①     | HD160/HD170<br>HD250/HD260/HD310/HD320 CARGO |
| ②     | HD270/HD370 DUMP, HD270/HD380 MIXER          |
| ③     | TRACTOR                                      |

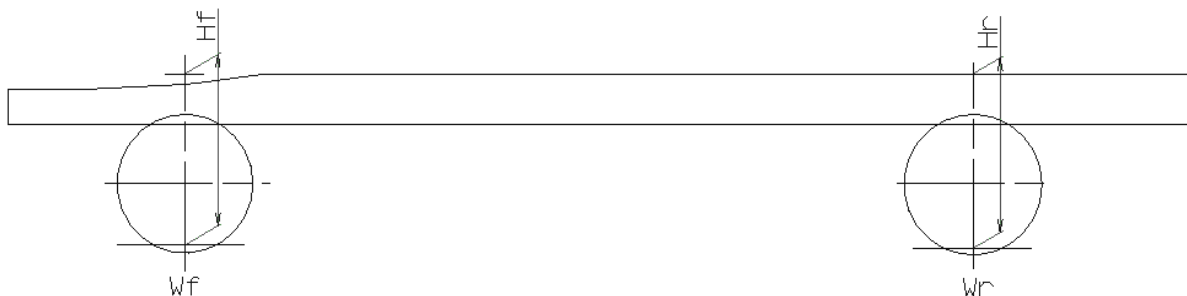
※NOTE 1) FRAME MATERIAL : HIGH TENSILE PLATE  
TENSION STRENGTH : 55kg/mm<sup>2</sup>  
YIELD STRENGTH : 55kg/mm<sup>2</sup>  
2) STIFFENER MATERIAL : SAPH45  
TENSION STRENGTH : 45kg/mm<sup>2</sup>  
YIELD STRENGTH : 30kg/mm<sup>2</sup>

## 7.SUSPENSION CHARACTERISTICS

## 7 SUSPENSION CHARACTERISTICS

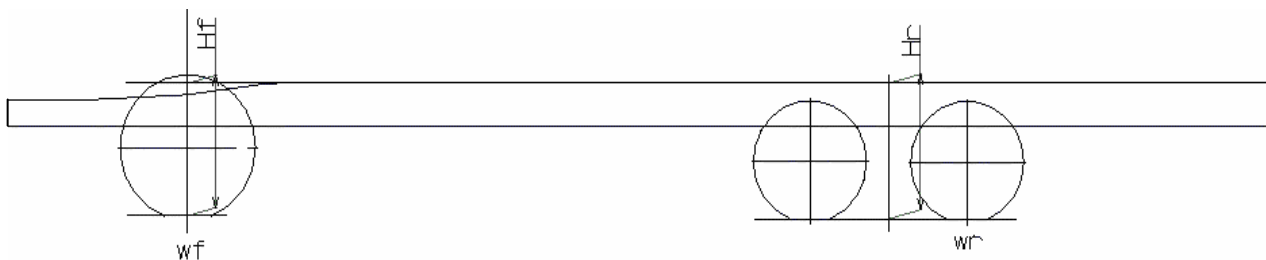
### 7-1 Formula of the frame ground height

#### (1) 4X2



| MODEL                         |       | TIRE TYPE     | FORMULA(Hf/Hr)                          |
|-------------------------------|-------|---------------|-----------------------------------------|
| HD160<br>(8T-SHORT)           | FRONT | 11.00X20-16PR | $H_f = -0.0150 \cdot W_f + 1092 \pm 10$ |
|                               | REAR  | ↑             | $H_r = -0.0115 \cdot W_r + 1161 \pm 25$ |
| HD160<br>(8T-LONG)            | FRONT | ↑             | $H_f = -0.0136 \cdot W_f + 1078 \pm 10$ |
|                               | REAR  | ↑             | $H_r = -0.0126 \cdot W_r + 1149 \pm 25$ |
| HD170<br>(8.5T-SHORT)         | FRONT | ↑             | $H_f = -0.0149 \cdot W_f + 1094 \pm 10$ |
|                               | REAR  | ↑             | $H_r = -0.0108 \cdot W_r + 1158 \pm 25$ |
| HD170<br>(8.5T-LONG)          | FRONT | ↑             | $H_f = -0.0137 \cdot W_f + 1086 \pm 10$ |
|                               | REAR  | ↑             | $H_r = -0.0127 \cdot W_r + 1151 \pm 25$ |
| HD160<br>(8T DUMP:D6BR)       | FRONT | ↑             | $H_f = -0.0136 \cdot W_f + 1078 \pm 10$ |
|                               | REAR  | ↑             | $H_r = -0.0126 \cdot W_r + 1150 \pm 25$ |
| HD160<br>(8T DUMP:KK-TCI)     | FRONT | ↑             | $H_f = -0.0136 \cdot W_f + 1078 \pm 10$ |
|                               | REAR  | ↑             | $H_r = -0.0126 \cdot W_r + 1150 \pm 25$ |
| HD450 - D6AC<br>(4x2 TRACTOR) | FRONT | ↑             | $H_f = -0.0214 \cdot W_f + 1070 \pm 10$ |
|                               | REAR  | ↑             | $H_r = -0.0105 \cdot W_r + 1157 \pm 25$ |
| HD550 - D6CA<br>(4x2 TRACTOR) | FRONT | ↑             | $H_f = -0.0215 \cdot W_f + 1074 \pm 10$ |
|                               | REAR  | ↑             | $H_r = -0.0105 \cdot W_r + 1158 \pm 25$ |
|                               |       |               |                                         |
|                               |       |               |                                         |
|                               |       |               |                                         |
|                               |       |               |                                         |

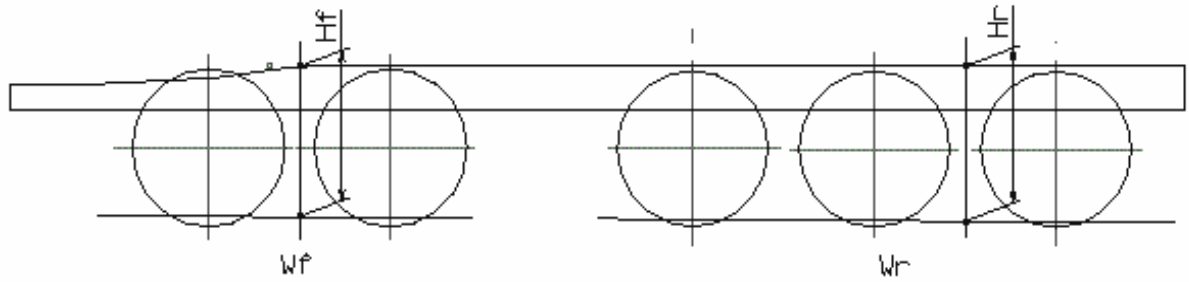
## (2) 6X4



| MODEL                        |       | TIRE TYPE        | FORMULA(Hf/Hr)                          |
|------------------------------|-------|------------------|-----------------------------------------|
| HD250 – D6AC<br>(11.5T-LONG) | FRONT | 11.00X20-16PR    | $H_f = -0.0150 \cdot W_f + 1100 \pm 10$ |
|                              | REAR  | ↑                | $H_r = -0.0034 \cdot W_r + 1106 \pm 25$ |
| HD250 – D6CA<br>(11.5T-LONG) | FRONT | ↑                | $H_f = -0.0150 \cdot W_f + 1104 \pm 10$ |
|                              | REAR  | ↑                | $H_r = -0.0034 \cdot W_r + 1106 \pm 25$ |
| HD260 – D6AC<br>(16T-SHORT)  | FRONT | ↑                | $H_f = -0.0134 \cdot W_f + 1094 \pm 10$ |
|                              | REAR  | ↑                | $H_r = -0.0028 \cdot W_r + 1100 \pm 25$ |
| HD260 – D6CA<br>(16T-SHORT)  | FRONT | ↑                | $H_f = -0.0134 \cdot W_f + 1097 \pm 10$ |
|                              | REAR  | ↑                | $H_r = -0.0028 \cdot W_r + 1100 \pm 25$ |
| HD260 – D6AC<br>(16T-MIDDLE) | FRONT | ↑                | $H_f = -0.0130 \cdot W_f + 1093 \pm 10$ |
|                              | REAR  | ↑                | $H_r = -0.0029 \cdot W_r + 1101 \pm 25$ |
| HD260 – D6CA<br>(16T-MIDDLE) | FRONT | ↑                | $H_f = -0.0130 \cdot W_f + 1096 \pm 10$ |
|                              | REAR  | ↑                | $H_r = -0.0029 \cdot W_r + 1101 \pm 25$ |
| (17T-MIDDLE)                 | FRONT | 315/80R22.5-20PR | $H_f = -0.0129 \cdot W_f + 1108 \pm 10$ |
|                              | REAR  | 12R22.5-16PR     | $H_r = -0.0028 \cdot W_r + 1100 \pm 25$ |
| HD19M<br>(19M-P/CARGO)       | FRONT | 11.00X20-16PR    | $H_f = -0.0159 \cdot W_f + 1104 \pm 10$ |
|                              | REAR  | ↑                | $H_r = -0.0036 \cdot W_r + 1108 \pm 25$ |
| HD270<br>(6x4 DUMP)          | FRONT | ↑                | $H_f = -0.0159 \cdot W_f + 1115 \pm 10$ |
|                              | REAR  | ↑                | $H_r = -0.0031 \cdot W_r + 1110 \pm 25$ |
| HD270<br>(6x4 MIXER)         | FRONT | ↑                | $H_f = -0.0132 \cdot W_f + 1095 \pm 10$ |
|                              | REAR  | ↑                | $H_r = -0.0031 \cdot W_r + 1105 \pm 25$ |
| HD700<br>(6x4 TRACTOR)       | FRONT | ↑                | $H_f = -0.0184 \cdot W_f + 1097 \pm 10$ |
|                              | REAR  | ↑                | $H_r = -0.0033 \cdot W_r + 1074 \pm 25$ |
| HD1000<br>(6x4 TRACTOR)      | FRONT | ↑                | $H_f = -0.0184 \cdot W_f + 1099 \pm 10$ |
|                              | REAR  | ↑                | $H_r = -0.0033 \cdot W_r + 1081 \pm 25$ |
|                              |       |                  |                                         |
|                              |       |                  |                                         |



(3) 8X4



| MODEL                           |       | TIRE TYPE         | FORMULA(Hf/Hr)                          |
|---------------------------------|-------|-------------------|-----------------------------------------|
| HD310 -D6AC<br>(19.5T-SHORT)    | FRONT | 11.00X20-16PR     | $H_f = -0.0063 \cdot W_f + 1087 \pm 10$ |
|                                 | REAR  | ↑                 | $H_r = -0.0028 \cdot W_r + 1109 \pm 25$ |
| HD310 -D6CA<br>(19.5T-SHORT)    | FRONT | ↑                 | $H_f = -0.0063 \cdot W_f + 1088 \pm 10$ |
|                                 | REAR  | ↑                 | $H_r = -0.0028 \cdot W_r + 1109 \pm 25$ |
| HD320 -D6AC<br>(19T-EXTRA LONG) | FRONT | ↑                 | $H_f = -0.0064 \cdot W_f + 1087 \pm 10$ |
|                                 | REAR  | ↑                 | $H_r = -0.0028 \cdot W_r + 1108 \pm 25$ |
| HD320 -D6CA<br>(19T-EXTRA LONG) | FRONT | ↑                 | $H_f = -0.0064 \cdot W_f + 1089 \pm 10$ |
|                                 | REAR  | ↑                 | $H_r = -0.0028 \cdot W_r + 1108 \pm 25$ |
| HD370<br>(23T DUMP)             | FRONT | 385/65R 22.5-20PR | $H_f = -0.0047 \cdot W_f + 1112 \pm 10$ |
|                                 | REAR  | 12R22.5-16PR      | $H_r = -0.0029 \cdot W_r + 1119 \pm 25$ |
| HD380<br>(9m³-MIXER)            | FRONT | 385/65R 22.5-20PR | $H_f = -0.0053 \cdot W_f + 1120 \pm 10$ |
|                                 | REAR  | 12R22.5-16PR      | $H_r = -0.0030 \cdot W_r + 1120 \pm 25$ |
|                                 |       |                   |                                         |
|                                 |       |                   |                                         |

FORMULA\_4X2

| MODEL  |       |     | HD160, <small>SHORT</small> | HD160, <small>LONG</small> | HD170, <small>SHORT</small> | HD170, <small>LONG</small> | HD160 DUMP |        | 4x2 TRACTOR |        |
|--------|-------|-----|-----------------------------|----------------------------|-----------------------------|----------------------------|------------|--------|-------------|--------|
| ENGINE |       |     | D6BR                        | D6BR                       | D6AB-D                      | D6AB-D                     | D6BR       | D6DA   | D6AC        | D6CA   |
| WT     | KERB  | FRT | 3,890                       | 3,980                      | 4,250                       | 4,390                      | 3,930      | 3,980  | 4,450       | 4,655  |
|        |       | RR  | 3,430                       | 3,410                      | 3,390                       | 3,420                      | 3,470      | 3,475  | 2,425       | 2,475  |
|        | G.V.W | FRT | 5,435                       | 5,865                      | 5,885                       | 6,385                      | 5,720      | 5,770  | 5,745       | 5,950  |
|        |       | RR  | 10,015                      | 9,655                      | 10,385                      | 10,055                     | 9,810      | 9,815  | 9,760       | 9,810  |
| Hf, Hr | KERB  | FRT | 1033.6                      | 1023.7                     | 1033.6                      | 1023.7                     | 1024       | 1024   | 974         | 974    |
|        |       | RR  | 1121.4                      | 1105.5                     | 1121.4                      | 1105.5                     | 1106.3     | 1106.3 | 1031.5      | 1031.5 |
|        | G.V.W | FRT | 1010.4                      | 997.9                      | 1010.4                      | 997.9                      | 999.6      | 999.6  | 946.2       | 946.2  |
|        |       | RR  | 1045.2                      | 1026.4                     | 1045.2                      | 1026.4                     | 1026.1     | 1026.1 | 954.3       | 954.3  |

|       |             |           |           |           |           |           |           |           |         |
|-------|-------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|---------|
| FRONT | INCLINATION | -0.015016 | -0.013687 | -0.01419  | -0.012932 | -0.013631 | -0.013631 | -0.021467 | -0.0215 |
|       | CONSTANT    | 1092      | 1078      | 1094      | 1080      | 1078      | 1078      | 1070      | 1074    |
| REAR  | INCLINATION | -0.011572 | -0.012666 | -0.010893 | -0.011922 | -0.01265  | -0.01265  | -0.010525 | -0.0105 |
|       | CONSTANT    | 1161      | 1149      | 1158      | 1146      | 1150      | 1150      | 1057      | 1058    |

|    |       |     |           |           |           |           |           |           |           |         |
|----|-------|-----|-----------|-----------|-----------|-----------|-----------|-----------|-----------|---------|
| WT | C/CAB | FRT | 5000      |           |           |           |           |           |           |         |
|    |       | RR  | 600       |           |           |           |           |           |           |         |
|    |       | Hf  | 1016.932  | 1078.1743 | 1093.9058 | 1080.4729 | 1077.5709 | 1078.2525 | 1069.529  | 1073.93 |
|    |       | Hr  | 1154.1481 | 1148.6915 | 1158.3289 | 1146.272  | 1150.195  | 1150.2582 | 1057.0228 | 1057.55 |

FORMULA\_6X4 -(1)

| MODEL  |       |     | HD250, LONG | HD260, SHORT | HD260, MEDIUM |        | HD260, MEDIUM-TAIWAN | P/CARGO |
|--------|-------|-----|-------------|--------------|---------------|--------|----------------------|---------|
| ENGINE |       |     | D6AC        | D6AC         | D6AC          | D6CA   | D6CA                 | D6AC    |
| WT     | KERB  | FRT | 4,500       | 4,425        | 4,485         | 4,700  | 4,845                | 4,540   |
|        |       | RR  | 6,310       | 5,560        | 5,770         | 5,900  | 5,750                | 6,510   |
|        | G.V.W | FRT | 6,060       | 6,065        | 6,175         | 6,390  | 7,320                | 5,730   |
|        |       | RR  | 16,380      | 20,050       | 20,210        | 20,340 | 20,405               | 15,450  |
| Hf, Hr | KERB  | FRT | 1032.5      | 1035         | 1035          | 1035   | 1045                 | 1032.3  |
|        |       | RR  | 1084.8      | 1084         | 1084          | 1084   | 1084                 | 1084.4  |
|        | G.V.W | FRT | 1009.1      | 1013         | 1013          | 1013   | 1013                 | 1013.4  |
|        |       | RR  | 1050.6      | 1042.7       | 1042.7        | 1042.7 | 1042.7               | 1052.2  |

|       |             |              |           |           |           |              |           |
|-------|-------------|--------------|-----------|-----------|-----------|--------------|-----------|
| FRONT | INCLINATION | -0.0150000   | -0.013415 | -0.013018 | -0.013018 | -0.012929293 | -0.015882 |
|       | CONSTANT    | 1100         | 1094      | 1093      | 1096      | 1108         | 1104      |
| REAR  | INCLINATION | -0.003396226 | -0.00285  | -0.00286  | -0.00286  | -0.002818151 | -0.003602 |
|       | CONSTANT    | 1106         | 1100      | 1101      | 1101      | 1100         | 1108      |

|    |       |     |             |           |           |           |             |           |
|----|-------|-----|-------------|-----------|-----------|-----------|-------------|-----------|
| WT | C/CAB | FRT |             |           |           |           |             |           |
|    |       | RR  |             |           |           |           |             |           |
|    |       | Hf  | 1100        | 1094.3598 | 1093.3846 | 1096.1834 | 1107.642424 | 1104.4059 |
|    |       | Hr  | 1106.230189 | 1099.8473 | 1100.5028 | 1100.8747 | 1100.204367 | 1107.8477 |

FORMULA\_6X4 -(2)

| MODEL  |       |             | HD270 DUMP  | HD270 MIXER | 6X4 TRACTOR |           |
|--------|-------|-------------|-------------|-------------|-------------|-----------|
| ENGINE |       |             | D6AC        | D6CA        | D6AC        | D6CA      |
| WT     | KERB  | FRT         | 4,700       | 4,520       | 4,380       | 4,520     |
|        |       | RR          | 6,240       | 7,120       | 4,470       | 4,500     |
|        | G.V.W | FRT         | 6,165       | 6,500       | 5,675       | 5,815     |
|        |       | RR          | 19,905      | 19,970      | 19,805      | 19,835    |
| Hf, Hr | KERB  | FRT         | 1040.5      | 1035.1      | 1016.2      | 1015.4    |
|        |       | RR          | 1091.3      | 1082.6      | 1058.8      | 1066.1    |
|        | G.V.W | FRT         | 1017.2      | 1008.8      | 992.3       | 991.5     |
|        |       | RR          | 1049.6      | 1042.7      | 1008        | 1015.3    |
|        |       |             |             |             |             |           |
|        | FRONT | INCLINATION | -0.01590444 | -0.01328283 | -0.018456   | -0.018456 |
|        |       | CONSTANT    | 1115        | 1095        | 1097        | 1099      |
|        | REAR  | INCLINATION | -0.00305159 | -0.00310506 | -0.003313   | -0.003313 |
|        |       | CONSTANT    | 1110        | 1105        | 1074        | 1081      |
|        |       |             |             |             |             |           |
| WT     | C/CAB | FRT         |             |             |             |           |
|        |       | RR          |             |             |             |           |
|        |       | Hf          | 1115.250853 | 1095.138384 | 1097.0355   | 1098.8193 |
|        |       | Hr          | 1110.341932 | 1104.708016 | 1073.6077   | 1081.0071 |

FORMULA\_8X4

| MODEL  |       |     | HD320, E/LONG |        | HD310, SHORT |        | HD370 DUMP | HD380 MIXER |
|--------|-------|-----|---------------|--------|--------------|--------|------------|-------------|
| ENGINE |       |     | D6AC          | D6CA   | D6AC         | D6CA   | D6CA       | D6CA        |
| WT     | KERB  | FRT | 6,580         | 6,830  | 6,560        | 6,810  | 8,240      | 8,830       |
|        |       | RR  | 5,780         | 5,820  | 5,290        | 5,330  | 6,140      | 6,530       |
|        | G.V.W | FRT | 11,705        | 11,955 | 11,470       | 11,720 | 17,600     | 17,275      |
|        |       | RR  | 19,785        | 19,825 | 20,010       | 20,050 | 19,910     | 19,815      |
| Hf, Hr | KERB  | FRT | 1044.8        | 1044.8 | 1045.1       | 1045.1 | 1072.9     | 1072.9      |
|        |       | RR  | 1093          | 1093   | 1093.5       | 1093.5 | 1100.5     | 1100.5      |
|        | G.V.W | FRT | 1012.3        | 1012.3 | 1013.7       | 1013.7 | 1028.3     | 1028.3      |
|        |       | RR  | 1053.7        | 1053.7 | 1053         | 1053   | 1059.9     | 1059.9      |

|       |             |            |            |            |            |             |             |
|-------|-------------|------------|------------|------------|------------|-------------|-------------|
| FRONT | INCLINATION | -0.0063415 | -0.0063415 | -0.0063951 | -0.0063951 | -0.00476496 | -0.00528123 |
|       | CONSTANT    | 1087       | 1088       | 1087       | 1089       | 1112        | 1120        |
| REAR  | INCLINATION | -0.0028061 | -0.0028061 | -0.0027514 | -0.0027514 | -0.00294844 | -0.00305608 |
|       | CONSTANT    | 1109       | 1109       | 1108       | 1108       | 1119        | 1120        |

|    |       |     |            |            |            |            |             |             |
|----|-------|-----|------------|------------|------------|------------|-------------|-------------|
| WT | C/CAB | FRT |            |            |            |            |             |             |
|    |       | RR  |            |            |            |            |             |             |
|    |       | Hf  | 1086.52683 | 1088.1122  | 1087.05193 | 1088.65071 | 1112.163248 | 1119.533274 |
|    |       | Hr  | 1109.21949 | 1109.33174 | 1108.05469 | 1108.16474 | 1118.603413 | 1120.456191 |

## 8. P.T.O CONTROL

## 8. P.T.O CONTROL

### 8-1 T/M PTO

(1) Use of genuine parts P.T.O

1) Unless otherwise provided for, be sure to use genuine parts.

2) Refer to appendix P.T.O ASSY drawing for details in using power.

(2) Use P.T.O other than genuine parts

A particular reason, when using PTO other than genuine parts, consult with HMC.

(3) Cautions regarding the propeller shaft driving P.T.O

1) Make sure that an angle of intersection of propeller shaft makes a solid angle be 15° MAX, and also the angle of intersection of the both ends of propeller shaft is the same.

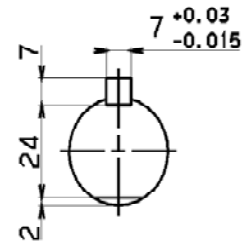
2) As in driving, there is a displacement of about  $\pm 10\text{mm}$  (up and down, left and right) from the position of P.T.O outlet, take notice of an allowable angle of intersection of propeller shaft.

3) The direction of P.T.O output shaft is contrary to the direction of engine revolution.

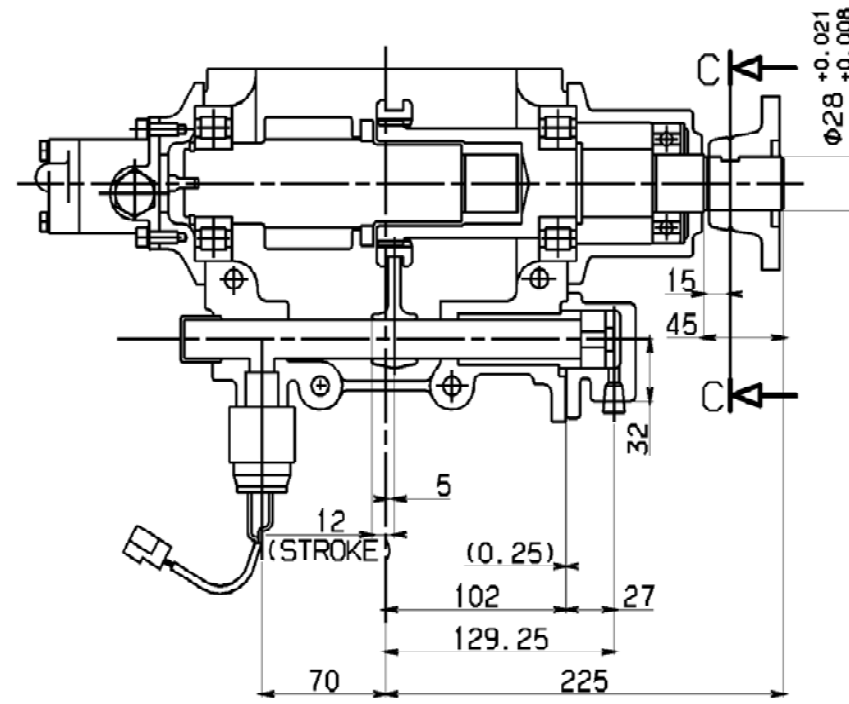
(4) T/M P.T.O table

| PTO type        | T/M type           | ALLOWABLE TORQUE     | T/M & PTO GEAR                       | MODEL                                                                                                                                                     |
|-----------------|--------------------|----------------------|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 47110<br>-7F900 | H160S2X5<br>H160S6 | 50kg · m<br>/1000RPM | $\frac{29}{16} \times \frac{10}{29}$ | HD250 CARGO(D6AC,D6CA),<br>HD260 CARGO(D6AC,D6CA),<br>HD390 TRACTOR(D6AC,D6CA),<br>HD270 DUMP(D6AC),<br>HD320 CARGO(D6AC,D6CA),<br>HD310 CARGO(D6AC,D6CA) |
| 47110<br>-7D900 | T15S6              | 30kg · m<br>/1000RPM | $\frac{28}{15} \times \frac{9}{28}$  | HD250 CARGO(D6CA) : OPT<br>HD260 CARGO(D6CA) : OPT                                                                                                        |

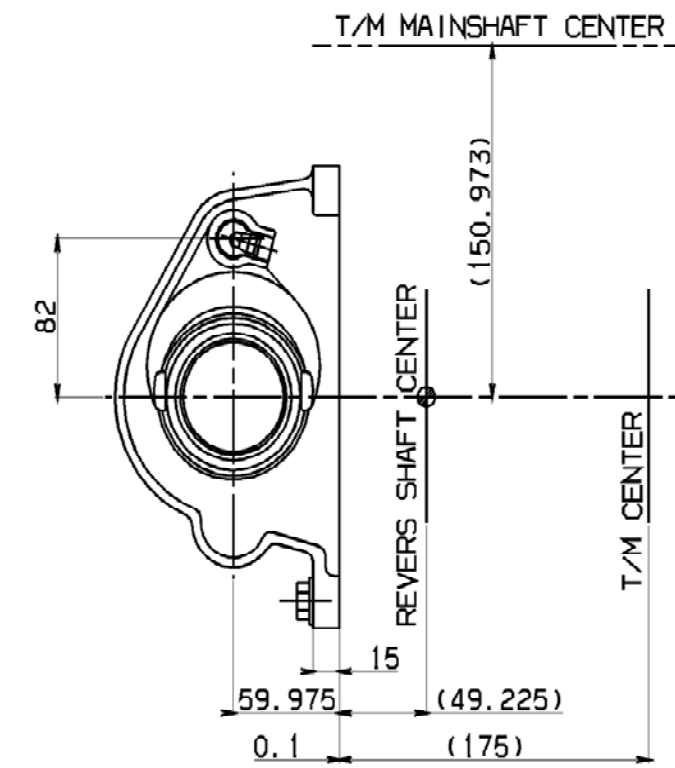
PTO TYPE : 47110-7F000



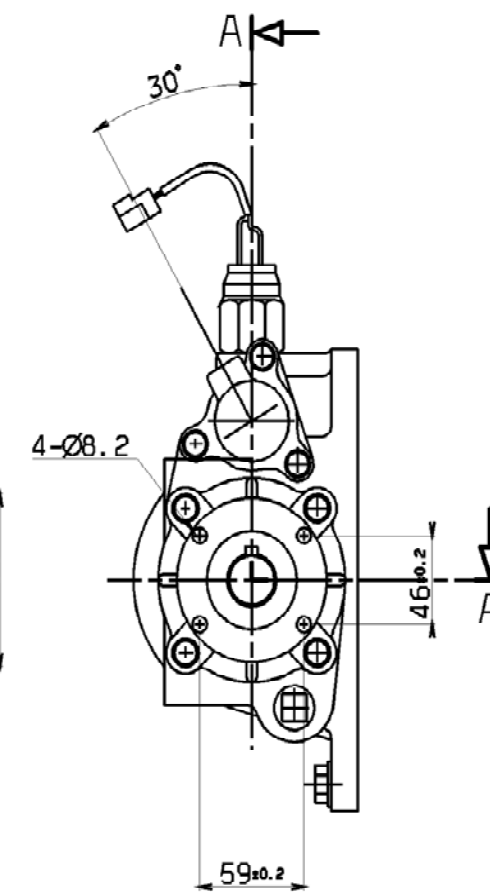
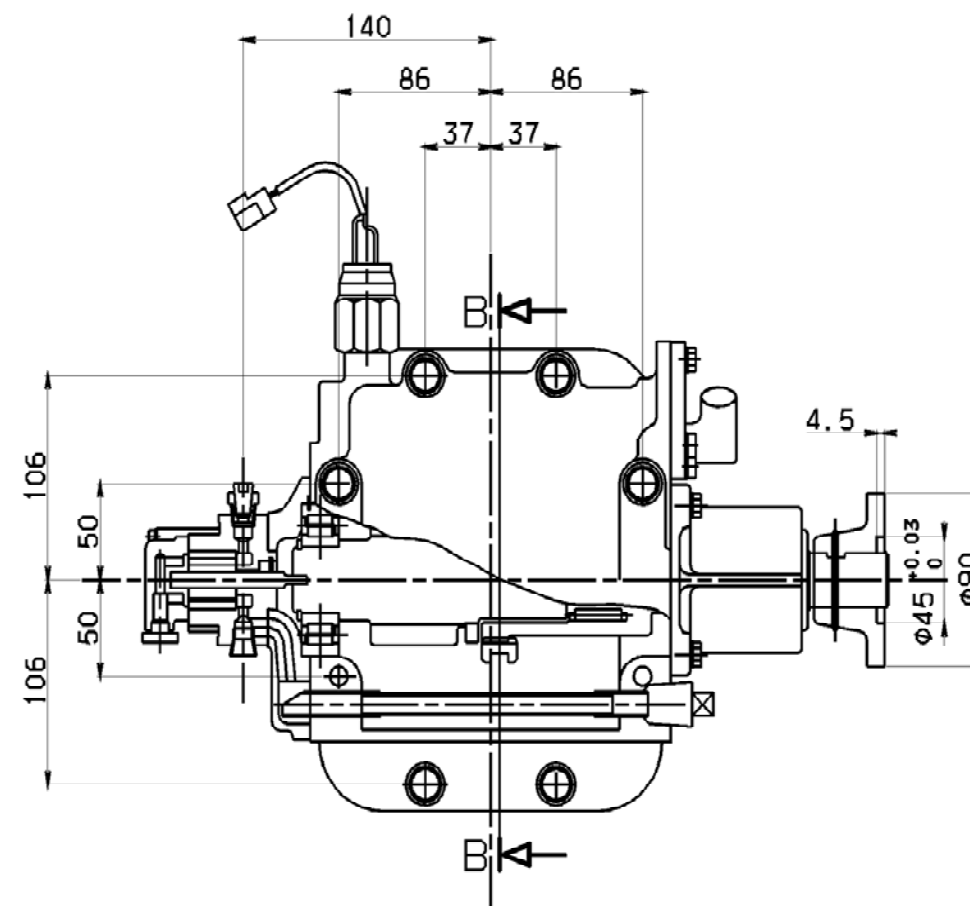
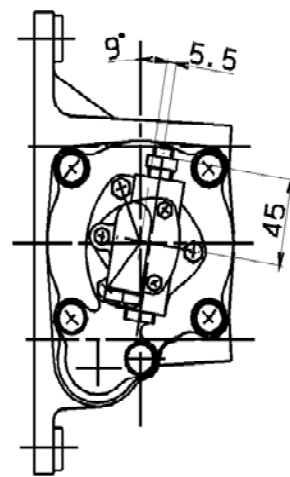
SECTION C-C



SECTION A-A

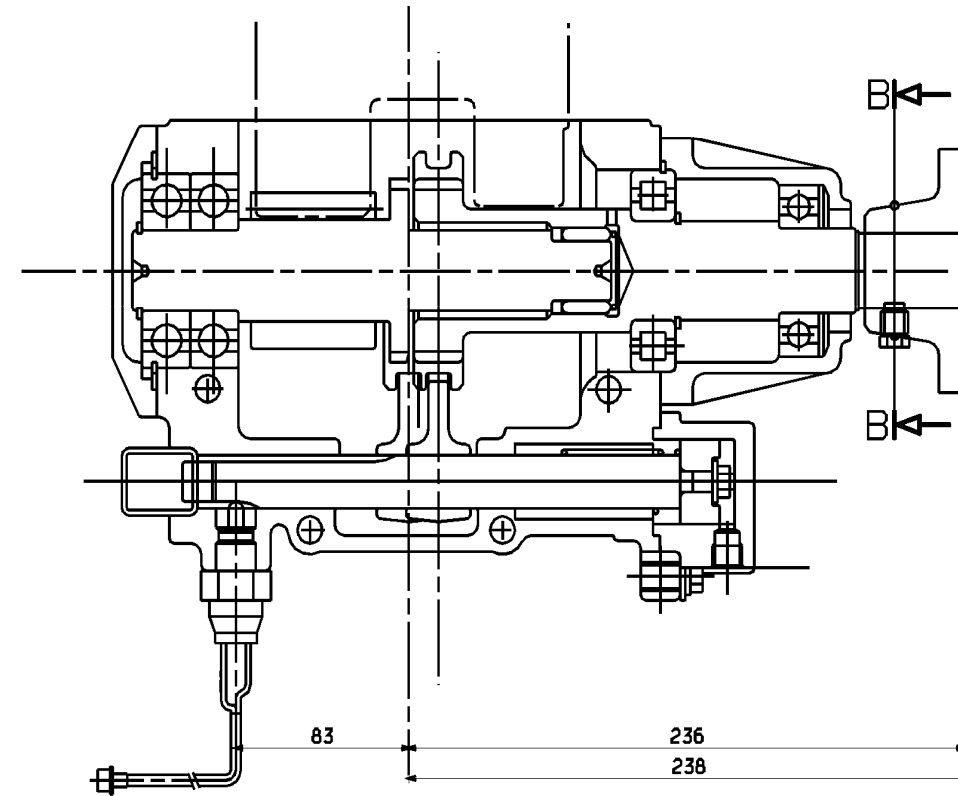


SECTION B-B

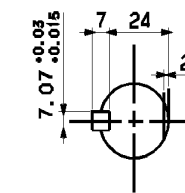




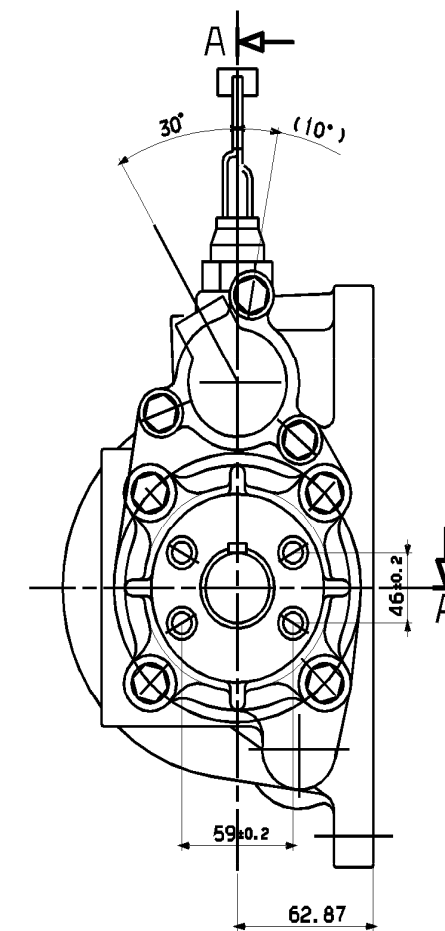
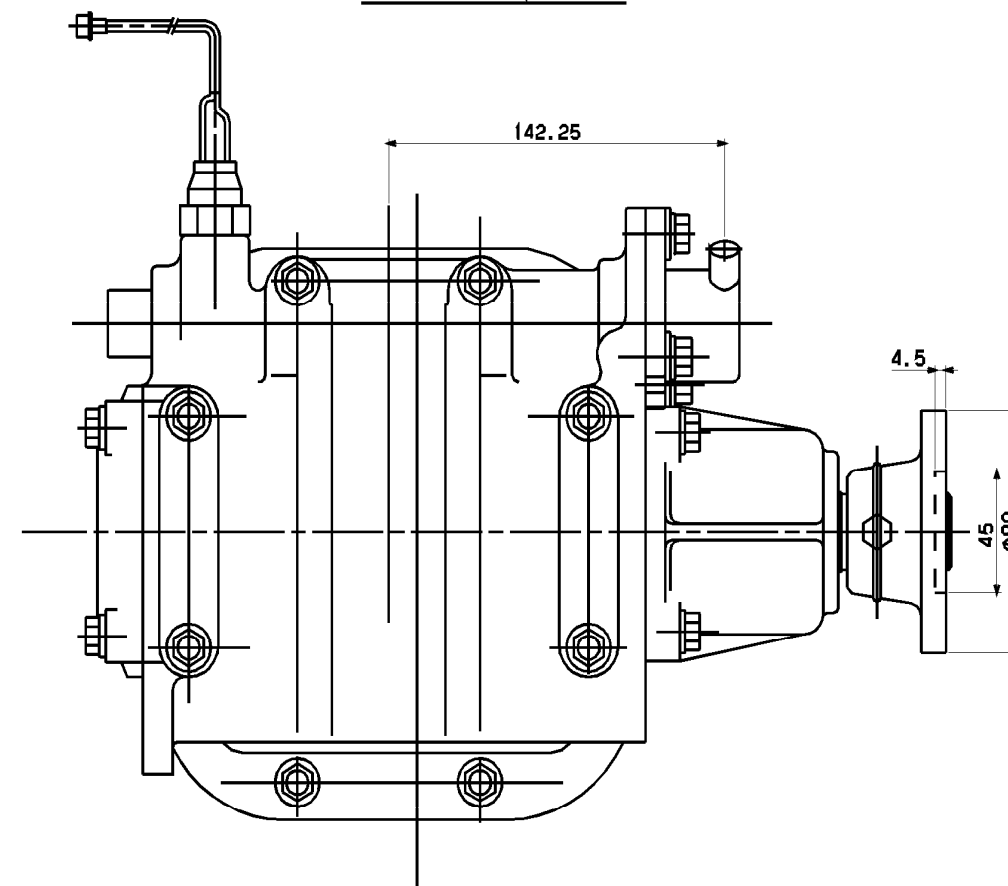
PTO TYPE : 47110-7D900



SECTION A-A



SECTION B-B

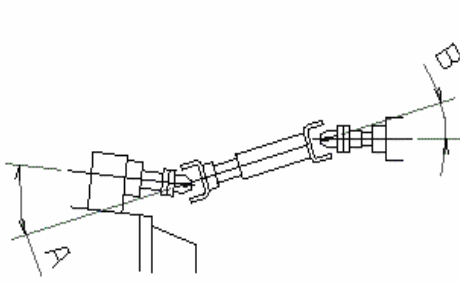


## 8-2 Flywheel PTO

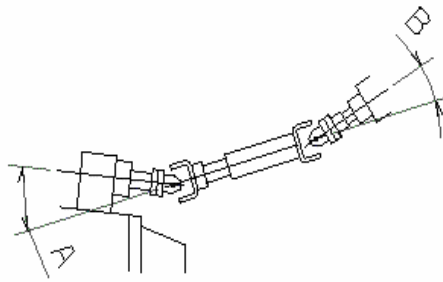
In mixer the flange form PTO is installed on the upper end of flywheel. In case of PTO, refer to the appendix flywheel PTO drawing and chassis cab drawing.

## 8-3 Cautions needed for the p/shaft driven by PTO

- 1) As the length of shaft of the p/shaft for driving to be linked to flywheel PTO is short and an angle of intersection is large, pay full attentions to the arrangement of device, and make A and B, an angle of intersection, small as much as possible, also the difference in an angle of intersection should nearly be "0".



Drive system of A type



Drive system of B type

- 2) In case A and B, an angle of intersection, are large, and also equivalent angle of intersection ( $\sqrt{|A^2 - B^2|}$ ) by the difference in an angle of intersection is large, flywheel PTO, p/shaft and hydraulic pump can break resulting from unreasonable torque in driving system.

- 3) Regarding the angle of intersection of p/shaft, observe the instructions below, and make sure that the torque of driving system is low as much as possible.

Angle of intersection of p/shaft : a solid angle is to be 12° MAX.

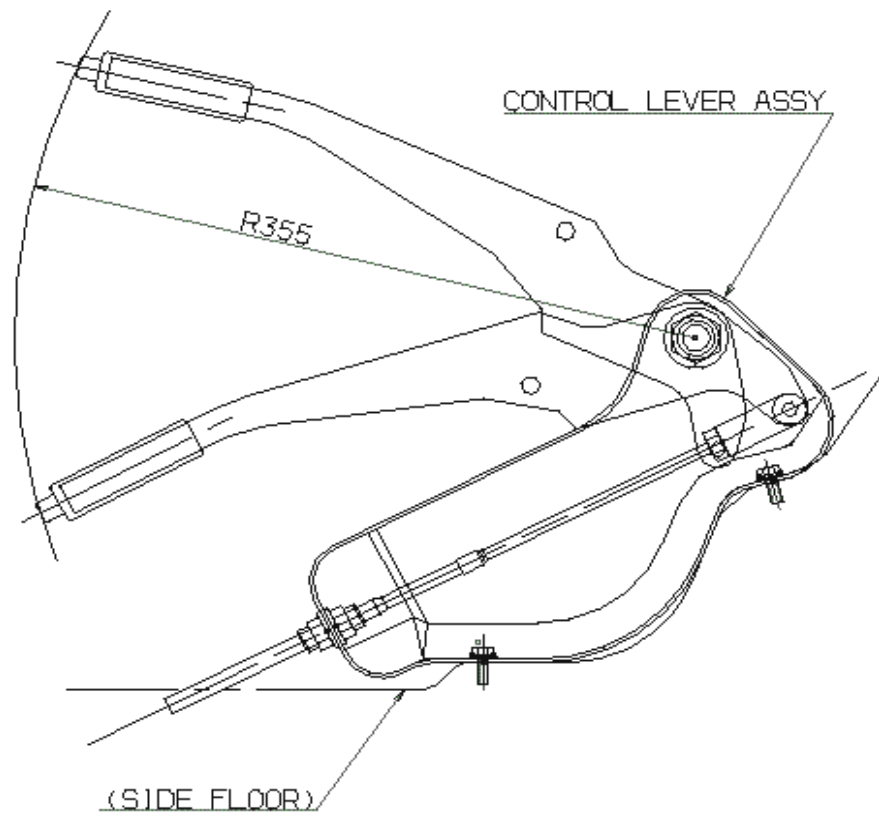
Equivalent angle of intersection by the difference in an angle of intersection :  $A^2 - B^2 \div 0$

- 4) In case of the drive connecting system of B type as stated above, as the difference in an angle of intersection happens in driving through an angle of intersection(A,B) gets to be "0" in stopping, and an equivalent angle of intersection ( $\sqrt{|A^2 - B^2|}$ ) by the difference in an angle of intersection in driving grows larger in case particularly an angle of intersection (A,B) is large, be sure to set up the angle (A,B) as small as possible by all means.
- 5) When unreasonable torque works upon the driving system, as main parts of the inside of an engine can get damaged, be sure to set up the driving system within 40Kgm.



#### 8-4 DUMP AND MIXER CONTROL LEVER

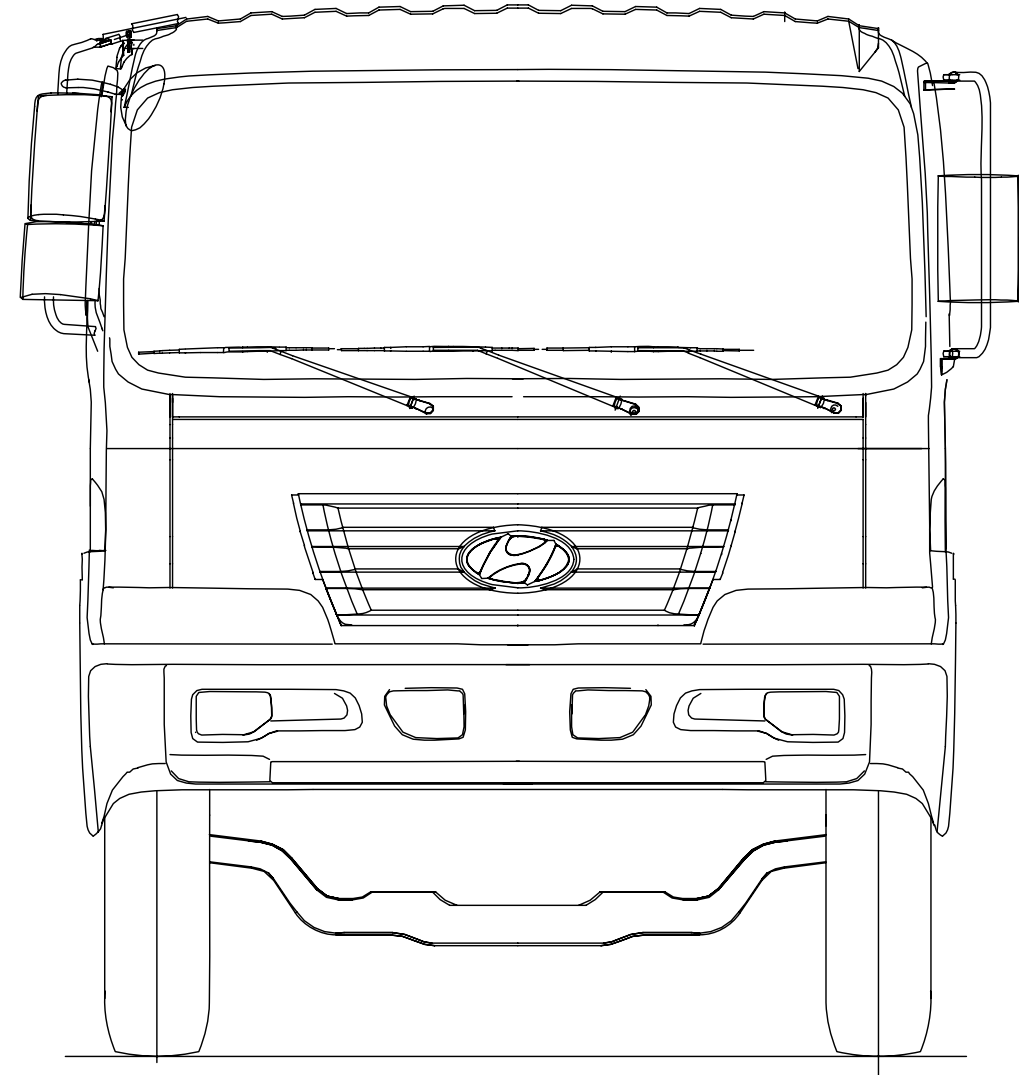
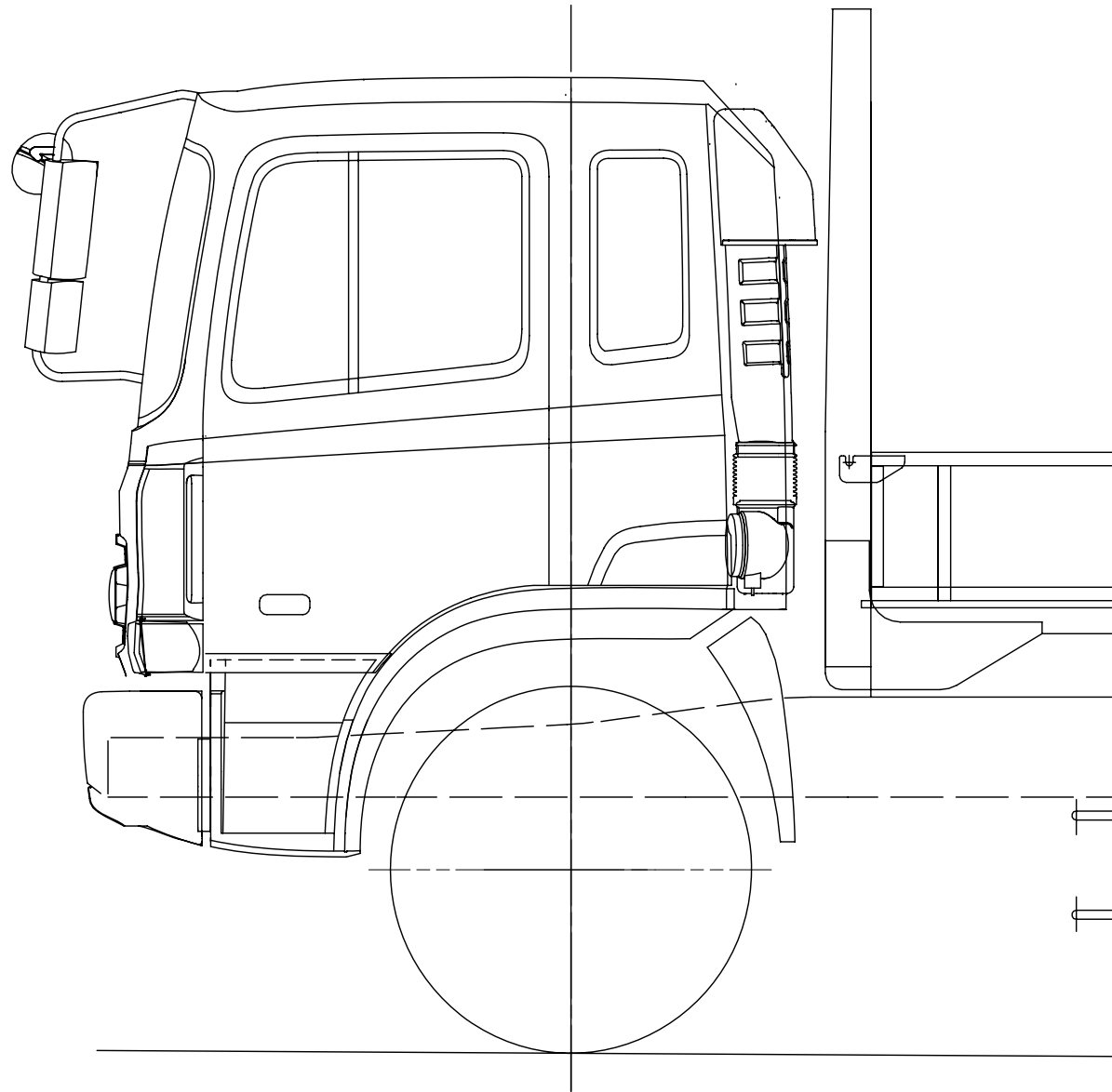
VEHICLE : HD270 DUMP ALL  
HD270 MIXER, HD380 MIXER



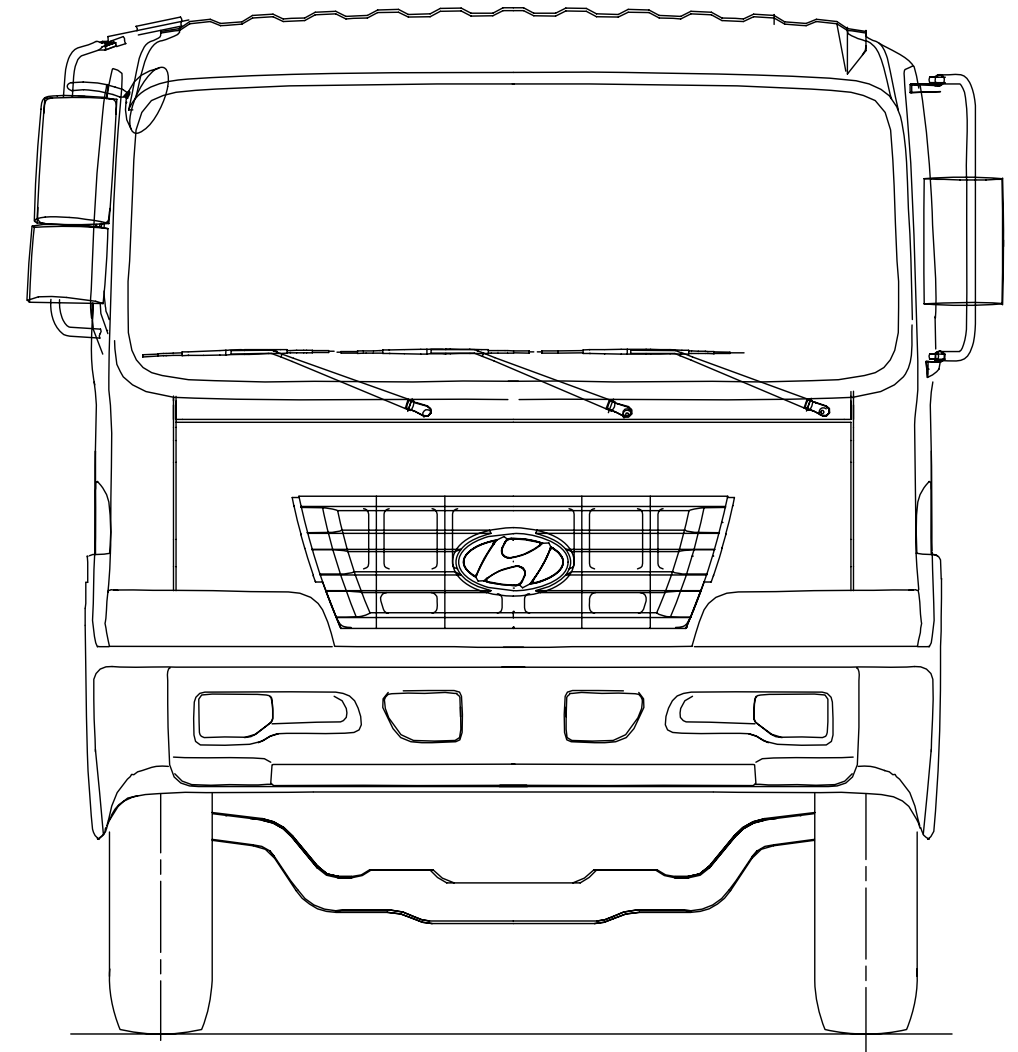
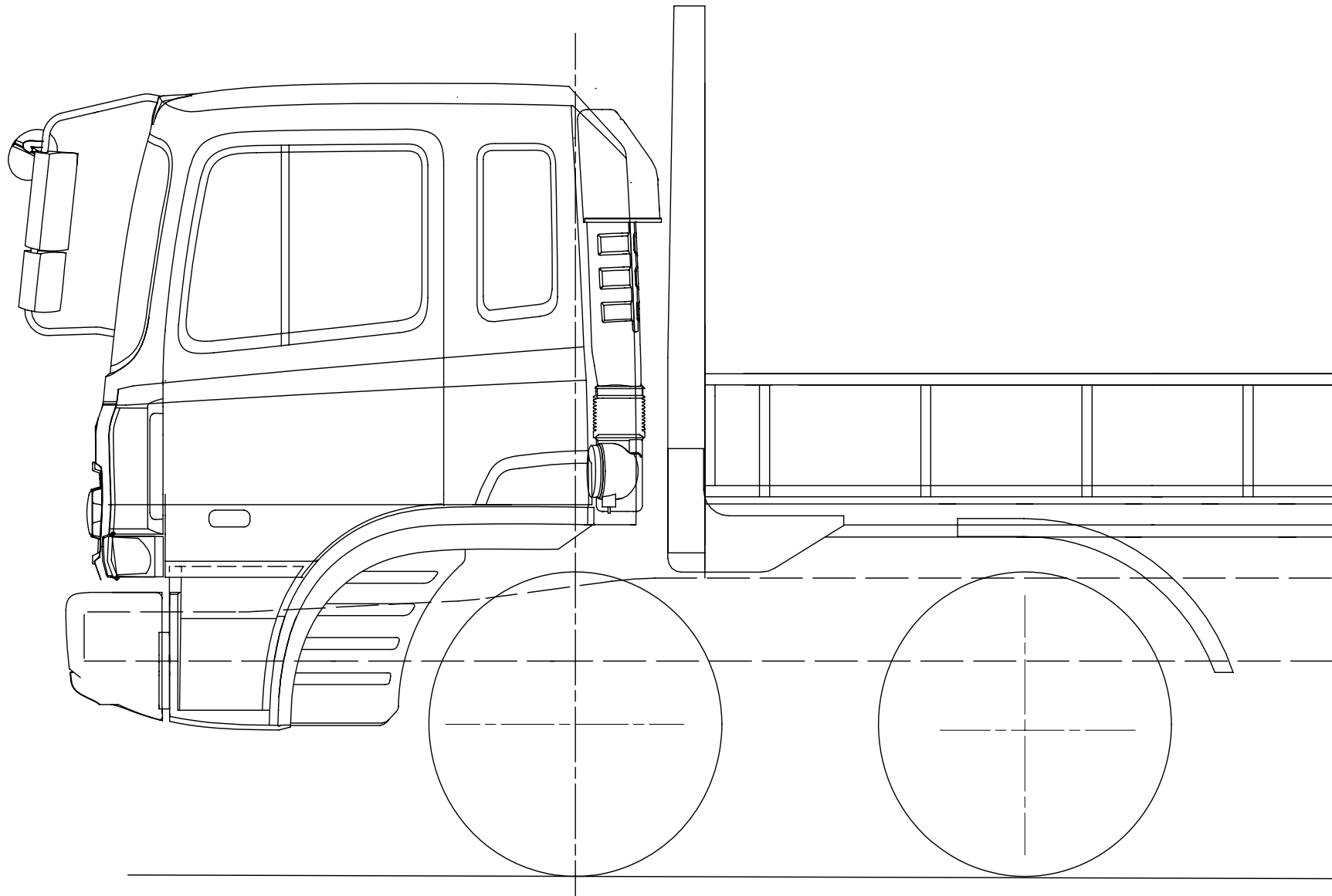
## 9. EXTERIOR DRAWING OF THE CAB

## 9. EXTERIOR DRAWING OF THE CAB

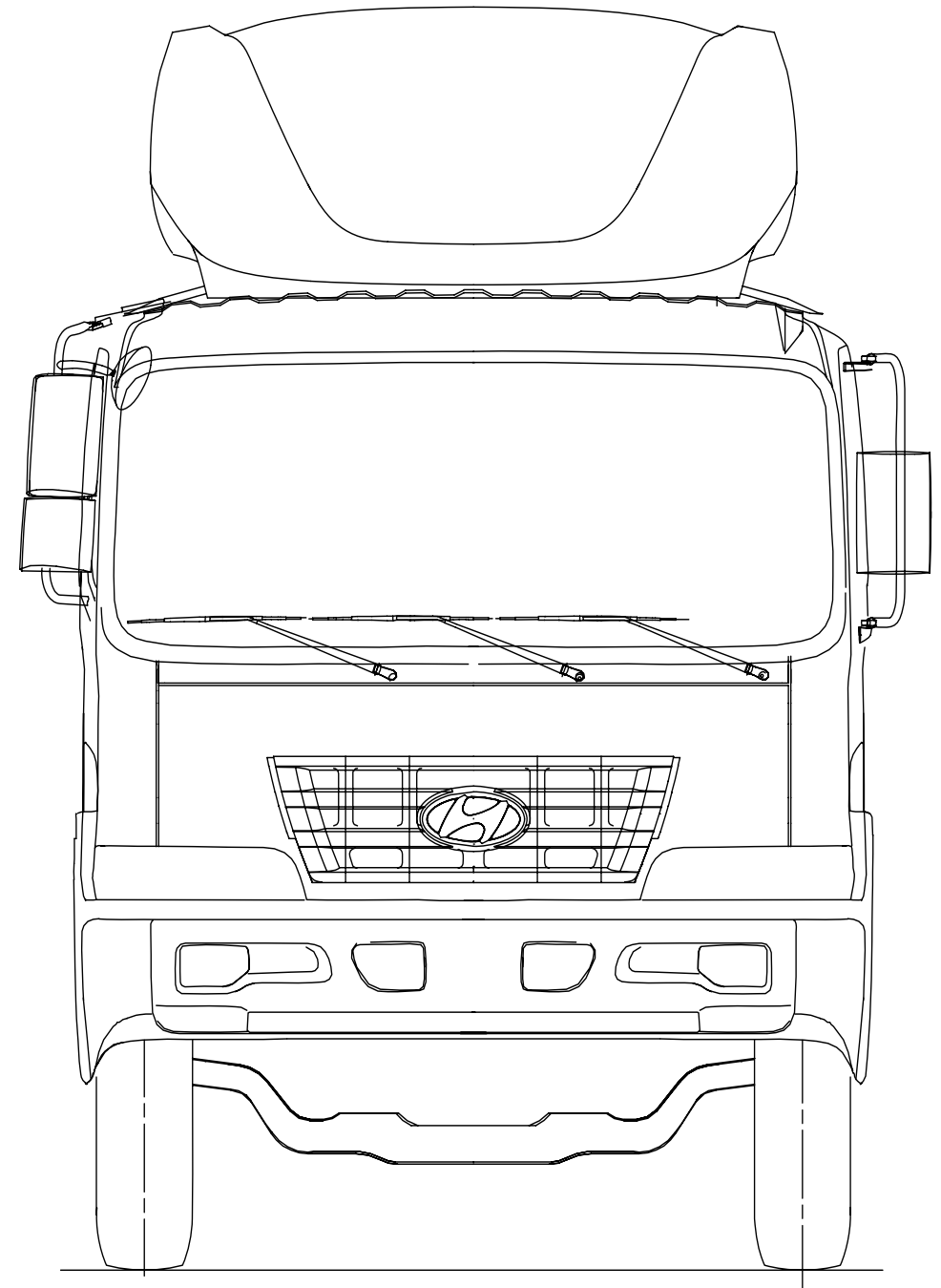
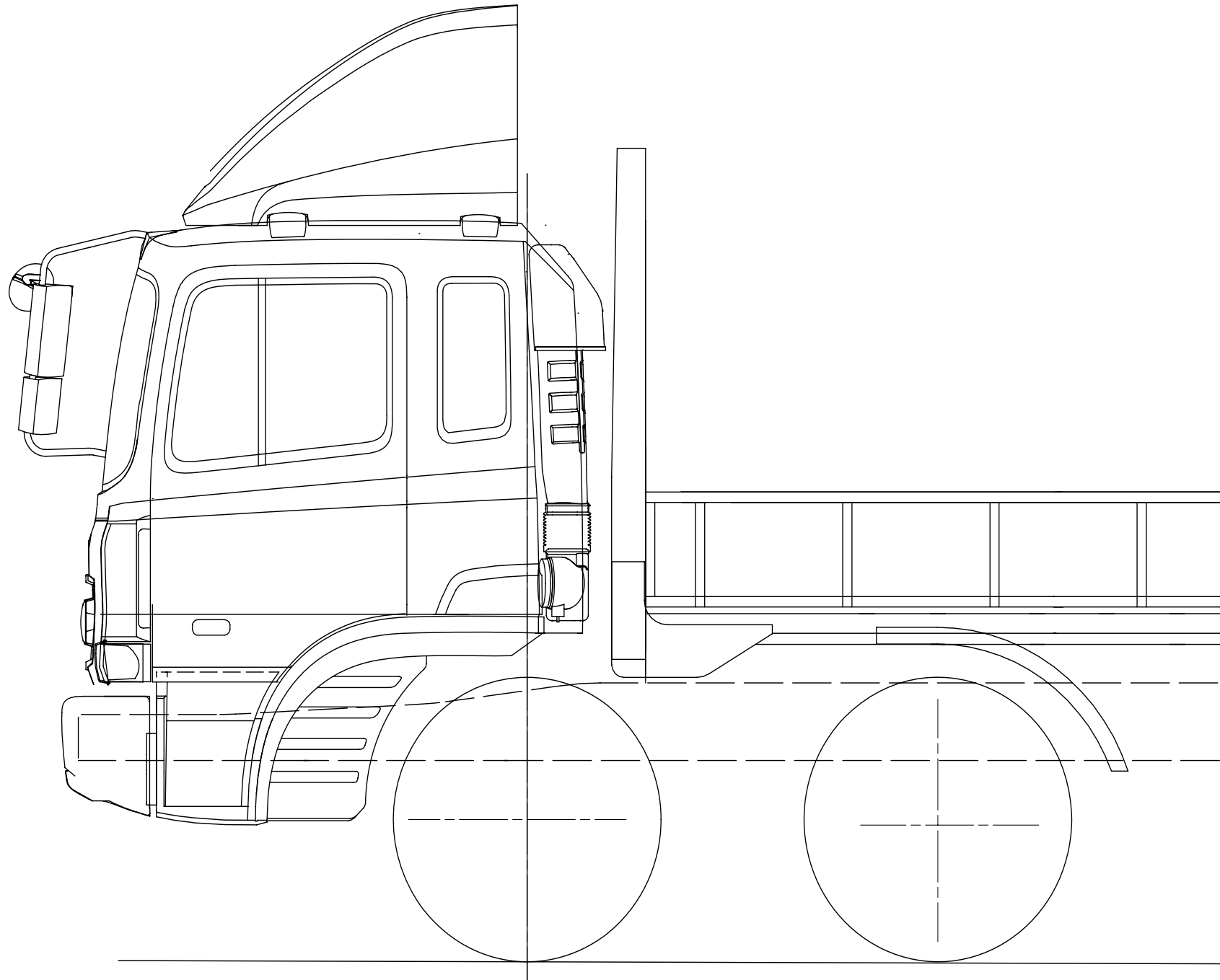
(1) 4x2 / 6x4 ALL  
(SCALE : 1/25 )



(2) 8x4  
(SCALE : 1/25 )



(3) ROOF SPOILER  
(SCALE : 1/ 25)





## 10.CHASSIS FRAME DRAWING







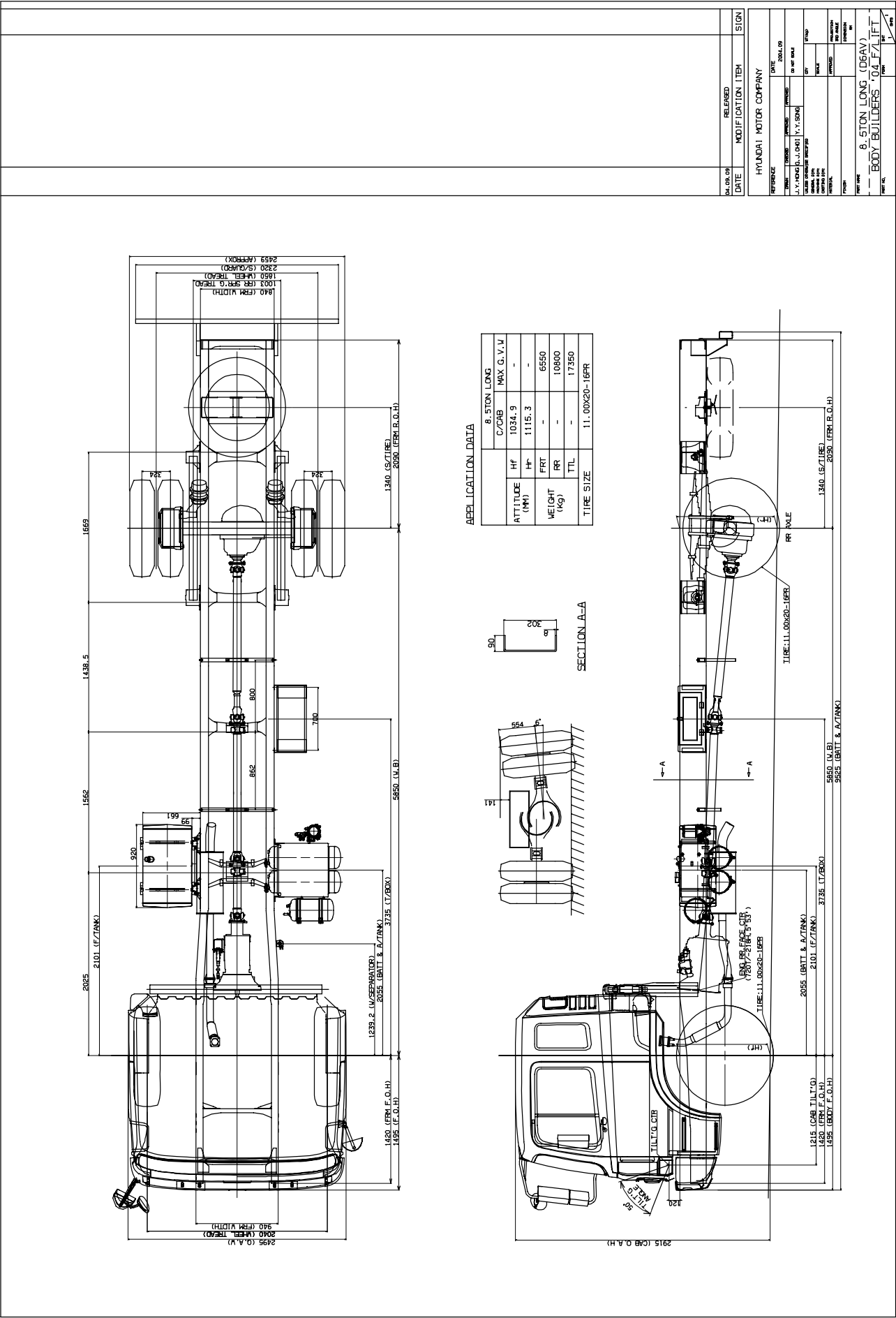


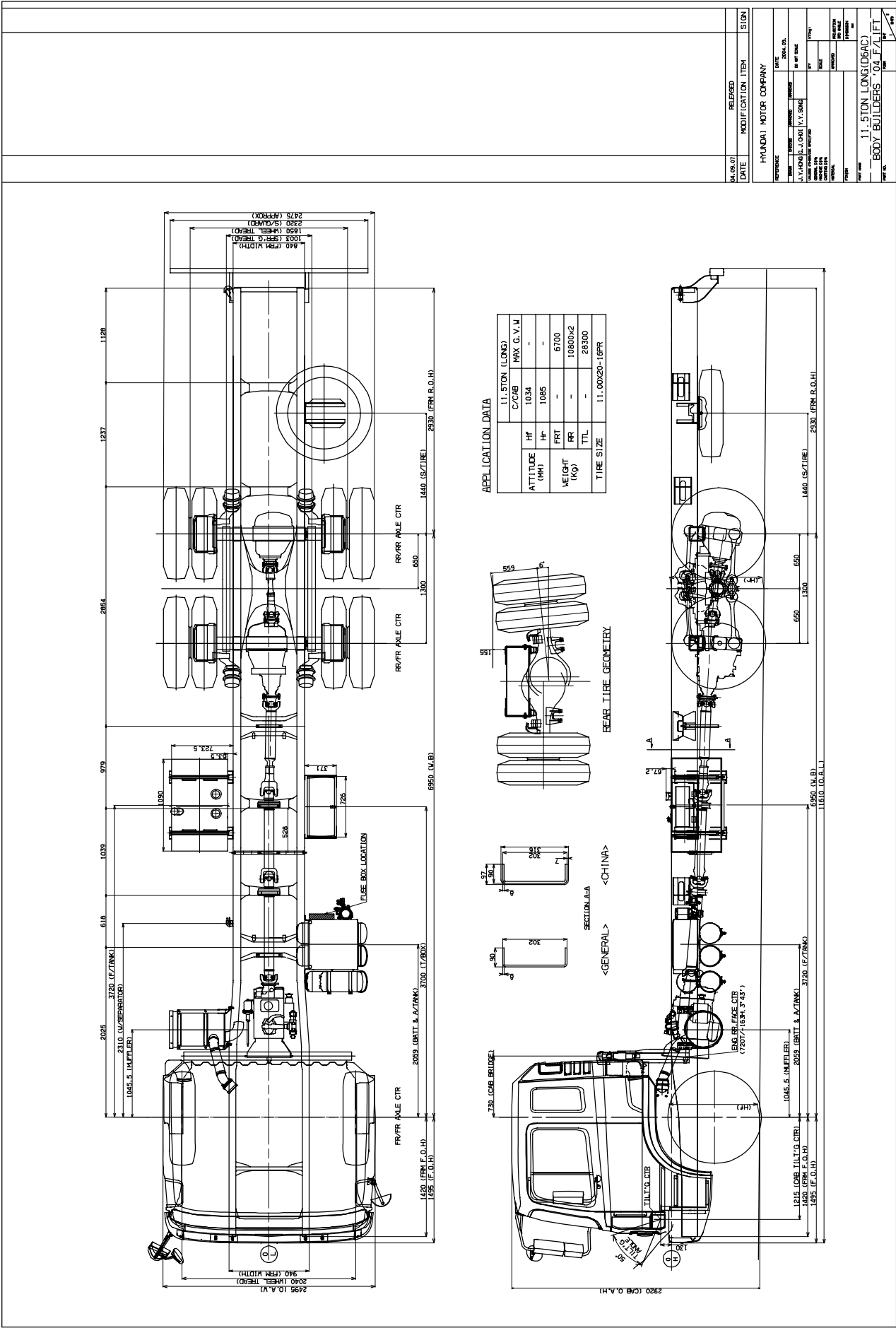






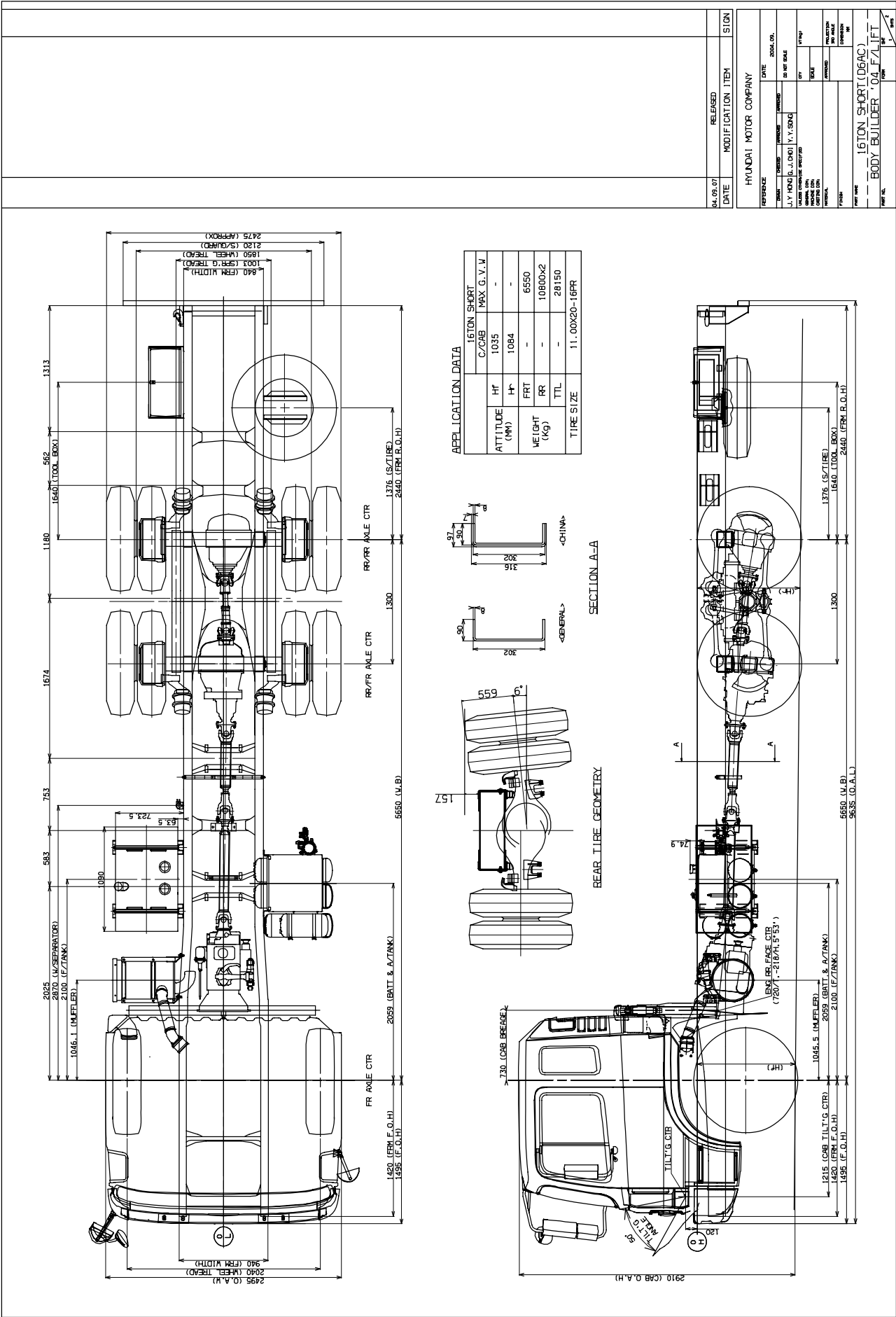
















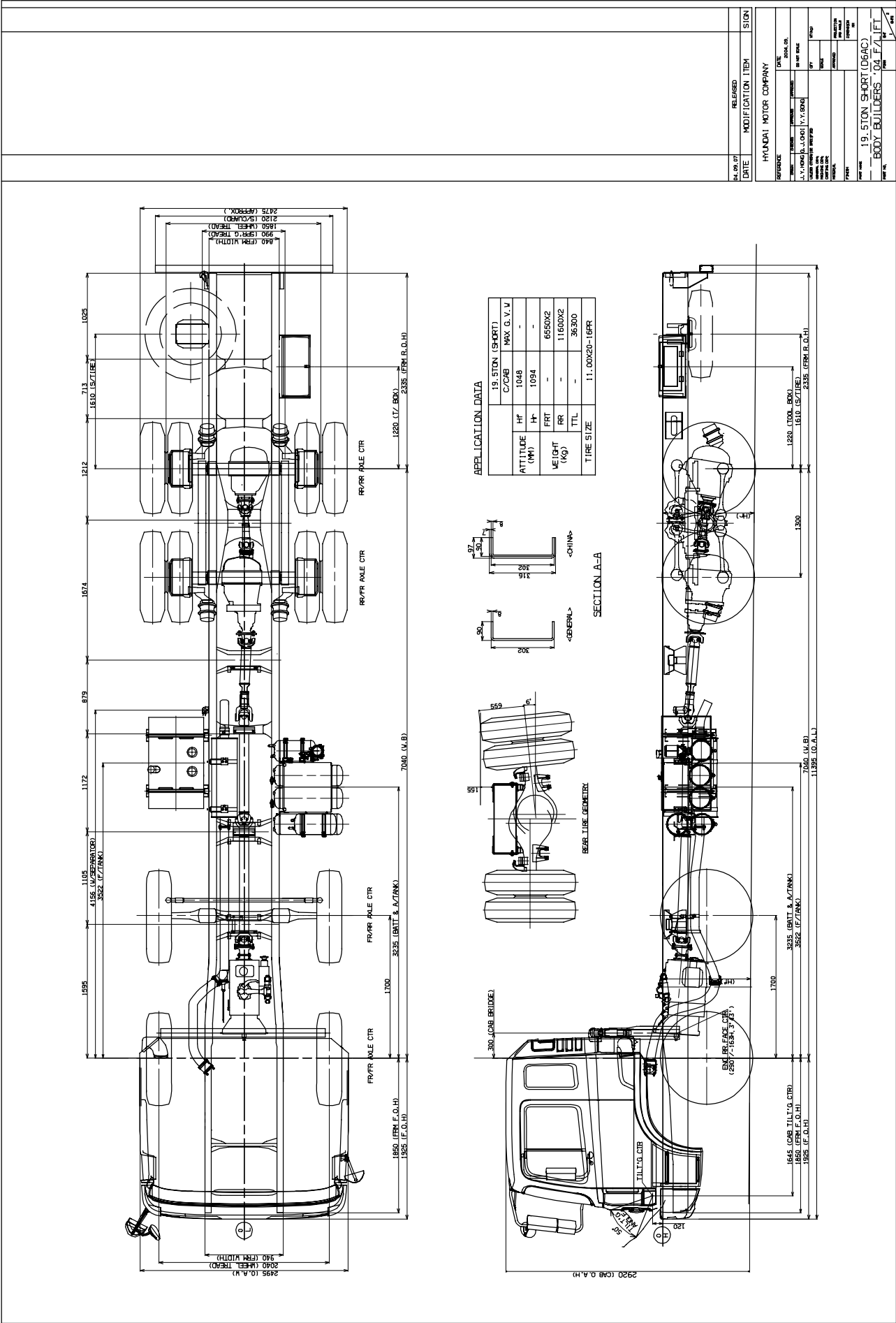






























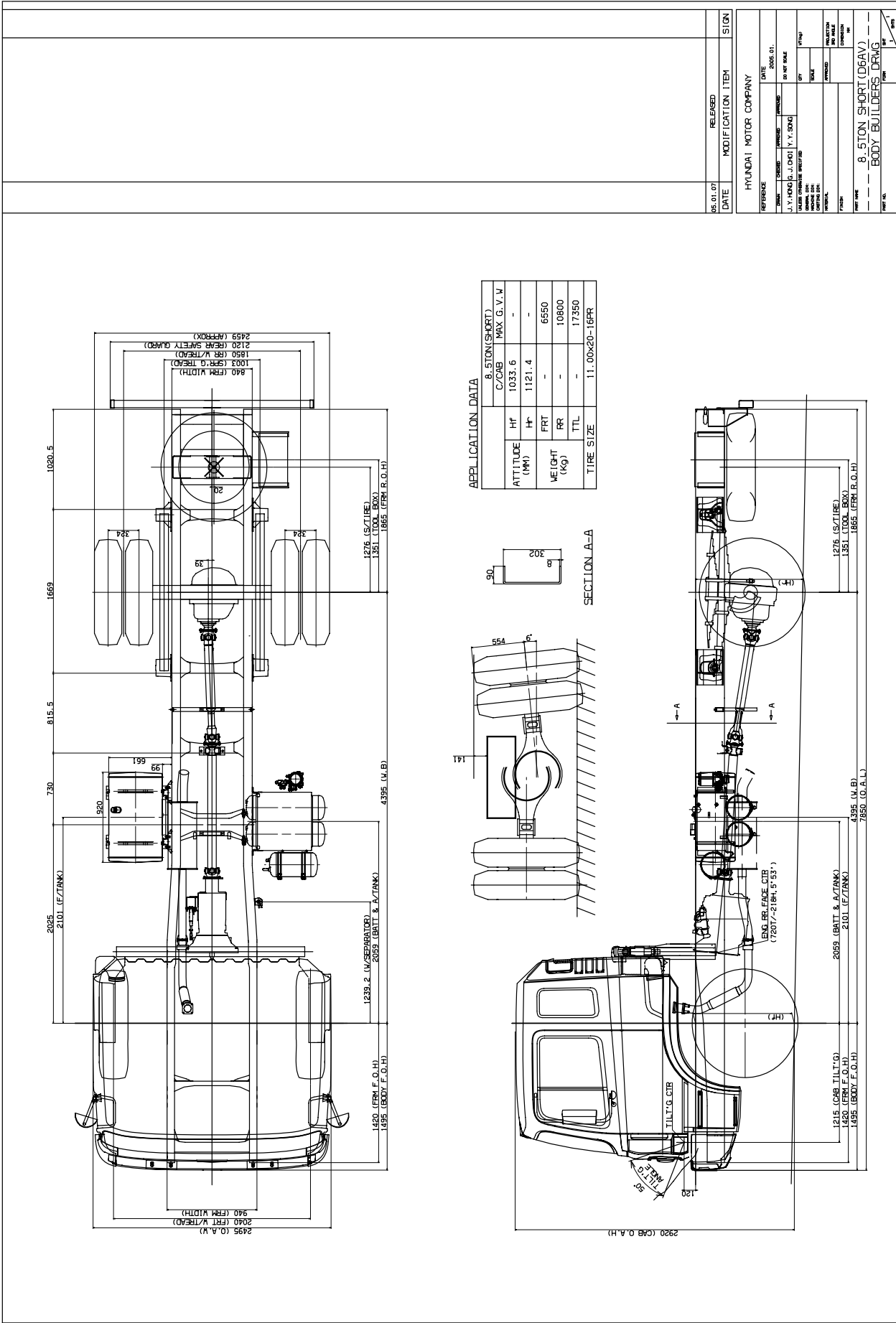














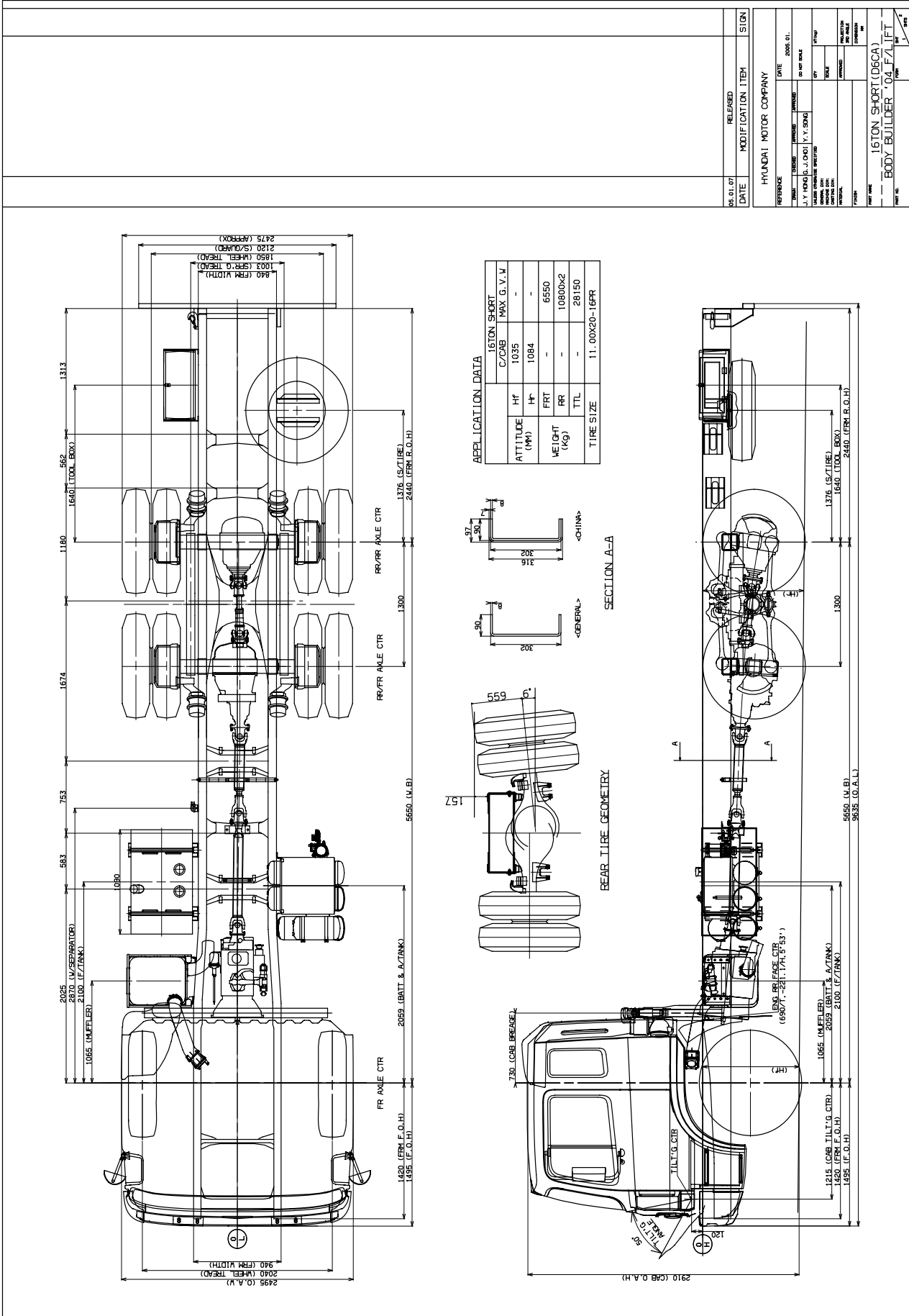






[illegible]



































## 11.CAUTIONS NEEDED FOR THE INSTALLATION OF THE P/SHAFT

## 11. CAUTIONS NEEDED FOR THE INSTALLATION OF THE PROPELLAR SHAFT

Be sure not to modify or alter propellar shaft, as it was designed to suit a vehicle feature.  
But in an unavoidable case, observe the following items.

### (1) 2-JOINT

|                                             |                                             |                                             |
|---------------------------------------------|---------------------------------------------|---------------------------------------------|
|                                             |                                             |                                             |
| 0                                           | X                                           | 0                                           |
| $\alpha_1 = 7^\circ$ , $\alpha_2 = 8^\circ$ | $\alpha_1 = 7^\circ$ , $\alpha_2 = 8^\circ$ | $\alpha_1 = 7^\circ$ , $\alpha_2 = 8^\circ$ |
| $\alpha_1^2 - \alpha_2^2 = -15$             | $\alpha_1^2 + \alpha_2^2 = 113$             | $\alpha_1^2 - \alpha_2^2 = -15$             |

### (2) 3-POINT

|                                                                    |
|--------------------------------------------------------------------|
|                                                                    |
| 0                                                                  |
| $\alpha_1 = 3^\circ$ , $\alpha_2 = 4^\circ$ , $\alpha_3 = 5^\circ$ |
| $\alpha_1^2 + \alpha_2^2 - \alpha_3^2 = 0$                         |

\* Allowable specification

$$\alpha_1, \alpha_2 \leq 9$$

$$|\alpha_1^2 \pm \alpha_2^2 \pm \alpha_3^2| \leq 25$$