CANTER

Body/equipment mounting directives for CANTER EURO V (FB/FE)

Europe

December 2010

FUSO

Body/equipment mounting directives for Canter EURO V (FB/FE)

Europe

MITSUBISHI FUSO TRUCK & BUS CORP.
KAWASAKI, JAPAN

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1 Introduction

Mitsubishi Fuso Truck and Bus Corp., as the manufacturer of Mitsubishi Fuso vehicles, publishes this body/equipment mounting directive to provide body manufacturers with important technical information about the basic vehicle. This information must be observed by the body manufacturer in the production of bodies and equipment, fittings and modifications for Mitsubishi Fuso vehicles.

Due to the large number of body manufacturers and body types, Mitsubishi Fuso Truck and Bus Corp. cannot take into account all the possible modifications to the vehicle, e.g. performance, stability, load distribution, centre of gravity and handling characteristics, that may result from the design of attachments, bodies, equipment or modifications. For this reason, Mitsubishi Fuso Truck and Bus Corp. can accept no body manufacturer liability for accidents or injuries sustained as a result of such modifications to the vehicles if such modifications have a negative impact on the overall vehicle. Accordingly, Mitsubishi Fuso Truck and Bus Corp. will only assume liability as vehicle manufacturer within the scope of the design, production and instruction services which it has performed itself.

The body manufacturer is bound to ensure that its bodies and equipment, fittings and modifications are themselves not defective, nor capable of causing defects or hazards to the overall vehicle. If this obligation is violated in any way, the body manufacturer shall assume full product liability. The body/equipment mounting directives enable Mitsubishi Fuso Truck and Bus Corp. to instruct the body manufacturer about important aspects that must be observed when mounting its bodies and equipment, fittings and modifications.

These body/equipment mounting directives are primarily intended for the professional manufacturers of bodies, equipment, fittings and modifications for our vehicles. As a result, these body / equipment mounting directives assume that the body manufacturer has suitable background knowledge. If you intend to mount attachments, bodies and equipment on or carry out modifications to our vehicles, please be aware that certain types of work (e.g. welding work on load-bearing components) may only be carried out by qualified personnel. This will avoid the risk of injury while also ensuring that the degree of quality required for the attachments, bodies, equipment and modifications is given.

1.1 The aim of these directives

These directives serve as instructions for the manufacture of attachments, bodies, equipment and modification to other make bodies and major assemblies. These directives are divided into 9 interlinked chapters to help you find the information you require more quickly:

1 Introduction
2 General
3 Planning of bodies
4 Technical threshold values for planning
5 Damage prevention
6 Modifications to the basic vehicle
7 Construction of bodies
8 Calculations
9 Technical data

Appendix
Index

The index, in PDF format, is linked to help you find the information you require quickly.

Make absolutely sure that you observe the technical threshold values selected in Section 4 as planning must be based on these values.

Section 6 "Modifications to the basic vehicle" and Section 7 "Construction of bodies" represent the main source of technical information contained in these body/equipment mounting directives.

1.1 The aim of these directives

⚠ Risk of accident

Before installing any attachments, special-purpose bodies, equipment or carrying out any modifications to the basic vehicle and/or its assemblies, you must read the relevant sections of the Owner's Handbook, as well as the operating and assembly instructions issued by the manufacturer of the accessories and items of optional equipment.

You could otherwise fail to recognise dangers, which could result in injury to yourself or others.

The instructions listed herein must be observed in full to maintain the operational reliability and road safety of the chassis and for observance of material defect claims.

Illustrations and schematic drawings are examples only and serve to explain the texts and tables.

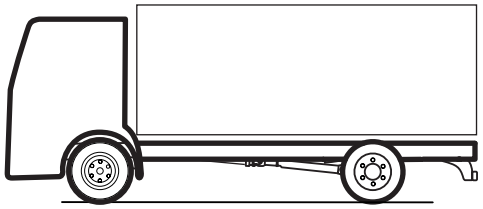
References to regulations, standards, directives etc. are given in keywords and serve for information only.

Additional information is available from any

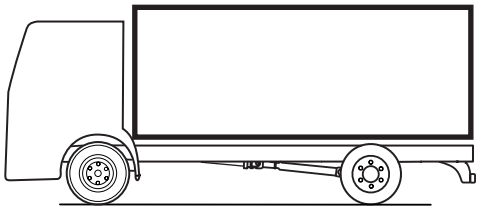
Mitsubishi Fuso Service Centre

Your
Mitsubishi Fuso Truck and Bus Corp.

The illustrations below explain the difference between "Basic vehicle" and "Body":



Basic vehicle



Body

1.2 Conventions

The following conventions are used in these directives:

Warning

A warning draws your attention to possible risks of accident and injury to yourself and others.

Environmental note

An environmental note gives you tips on the protection of the environment.

A note draws your attention to possible hazards to your vehicle.

A tip contains advice or further information you may find useful.

▷ page

This symbol indicates the page on which you will find further information on the subject. These pages are cross-linked in the PDF file.

1.3 Vehicle safety

⚠ Risk of accident and injury

The use of parts, assemblies or conversion parts and accessories which have not been approved may jeopardise the safety of the vehicle.

Before installing any attachments, special-purpose bodies, equipment or carrying out any modifications to the basic vehicle and/or its assemblies, you must read the relevant sections of the Owner's Handbook, as well as the operating and assembly instructions issued by the manufacturer of the accessories and items of optional equipment.

You could otherwise fail to recognise dangers, which could result in injury to yourself or others.

Official acceptance by public testing bodies or official approval does not rule out safety hazards.

In many countries, parts that make extensive changes to the vehicle can invalidate the general operating permit. Specifically, this concerns parts which:

- change the vehicle type approved in the general operating permit
- could endanger road users
- could adversely affect exhaust emissions or noise levels

i

Make absolutely sure that you comply with national registration regulations as attachments, bodies, equipment on or modifications to the vehicle will change the vehicle type approved and may invalidate the general operating permit.

Notes on vehicle safety

Mitsubishi Fuso recommends

using appropriate parts only for each particular vehicle model.

1.4 Operational reliability

⚠ Risk of accident

Before installing any attachments, special-purpose bodies, equipment or carrying out any modifications to the basic vehicle and/or its assemblies, you must read the relevant sections of the Owner's Handbook, as well as the operating and assembly instructions issued by the manufacturer of the accessories and items of optional equipment.

You could otherwise fail to recognise dangers, which could result in injury to yourself or others.

Work incorrectly carried out on electronic components and their software could prevent this equipment from working correctly. Since the electronic systems are networked, this might also affect systems that have not been modified.

Malfunctions in the electronic systems could seriously jeopardise the operating safety of the vehicle.

1.5 Accident prevention

The body, the attached or installed equipment and any modifications must comply with the applicable laws and ordinances as well as work safety or accident prevention regulations, safety rules and accident insurer leaflets.

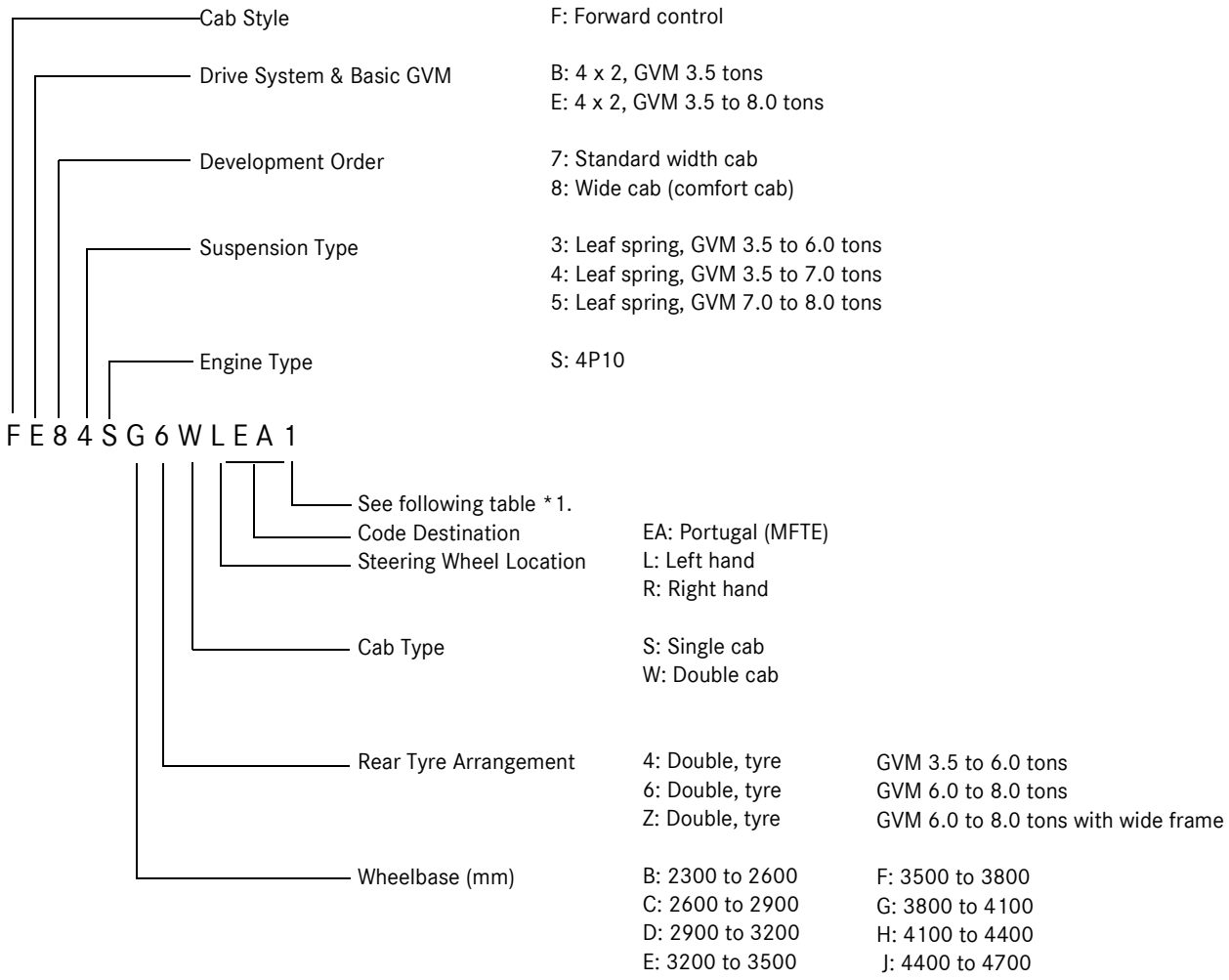
All technical means shall be used to avoid operating conditions that may be unsafe or liable to cause an accident.

All national laws, directives and registration requirements must be complied with.

The manufacturer of the attachment, body, equipment or conversion or the device manufacturer is responsible for compliance with these laws and regulations.

2.1 Vehicle and model designations

2.1.1 Model coding system



*1

	Engine Model	Vehicle Model&Engine Output			
		FB7	FB8	FE7	FE8
1	4P10 0AT2	96kw	96kw	96kw	
2	4P10 0AT3		107kw		107kw
3	4P10 0AT6				129kw
4	4P10 6AT2*	96kw	96kw	96kw	
5	4P10 6AT3*		107kw		107kw
6	4P10 6AT6*				129kw

*: EEV (Enhanced Environmentally - friendly Vehicle) Compliant engine

In this document, vehicle model with the last model code of 1 and 4, 2 and 5, 3 and 6 are identical in the vehicle specification except for the engine model type. There are no significant differences between the non-EEV compliant engine type (4P10-0AT2,3,6) with the EEV compliant engine type (4P10-6AT2,3,6) except as otherwise noted.

2.1.2 Vehicle and model designation

		FB73	FB73	FB83	FB83	FB83	FE74	FE84	FE84	FE85	FE85
Engine Type		4P10T2	4P10T2	4P10T2	4P10T2	4P10T3	4P10T2	4P10T3	4P10T3	4P10T3	4P10T3
Number of Cylinders		L4	L4	L4	L4	L4	L4	L4	L4	L4	L4
Output	(kW)	96	96	96	96	107	96	107	107	107	107
	(rpm)	3500	3500	3500	3500	3500	3500	3500	3500	3500	3500
Maximum torque	(Nm)	300	300	300	300	370	300	370	370	370	370
	(rpm)	1600	1600	1600	1600	1600	1600	1600	1600	1600	1600
Cab	Standard	●	●				●				
	Wide			●	●	●		●	●	●	●
	Double		●		●				●		●
Transmission		6S420	6S420	6S420	6S420	6S420	6S420	6S420	6S420	6S420	6S420
Wheelbase	(mm) 2500	●		●		●	●				
	2750							●		●	
	2950	●		●		●	●				
	3350	●	●	●	●	●	●	●		●	
	3850			●		●		●	●	●	●
	4200									●	●
	4470									●	
Permissible axle load and weight	(kg) Front	1950	1950	1950	1950	1950	2300	2500	2500	3100	3100
	Rear	2700	2700	2700	2700	2700	3800	4500	4500	5200	5200
	Total	3500	3500	3500	3500	3500	5500	6500	6500	7500	7500
Permissible total gross weight of combination	(kg)	7000	7000	7000	7000	7000	9000	10000	10000	11000	11000

		FE84	FE84	FE85	FE85
Engine Type		4P10T6	4P10T6	4P10T6	4P10T6
Number of Cylinders		L4	L4	L4	L4
Output	(kW)	129	129	129	129
	(rpm)	3500	3500	3500	3500
Maximum torque	(Nm)	430	430	430	430
	(rpm)	1600	1600	1600	1600
Cab	Standard				
	Wide	●	●	●	●
	Double		●		●
Transmission		6S420	6S420	6S420	6S420
Wheelbase	(mm) 2500				
	2750				
	2950				
	3350	●		●	
	3850	●	●	●	●
	4200			●	●
	4470			●	
Permissible axle load and weight	(kg) Front	2640	2640	3100	3100
	Rear	4750	4750	5200	5200
	Total	6500	6500	7500	7500
Permissible total gross weight of combination	(kg)	10000	10000	11000	11000

2.2 Technical advice and contact persons

The staff members of the Daimler development department TP/EVM., the team responsible for conversion/body manufacturers and the body/equipment mounting directive for the overall vehicle development of Mitsubishi Fuso vehicle, issue letter of no objection for the Canter (FB/FE) and answer technical and design-engineering questions regarding vehicle registration and damage as the representative of Mitsubishi Fuso. The relevant members of staff can be contacted at:

Europe and German contacts		**Responsibility**
Telephone:	+49 (0)7 11-17-4 30 34	Mitsubishi Fuso Canter
	+49 (0)7 11-17-5 17 19	Team management, standards and procedures for Mercedes-Benz Actros, Axor, Atego, Econic, Zetros and Mitsubishi Fuso Canter series
Telefax:	+49 (0)7 11-17-5 21 91	
Postal address:	Daimler AG HPC (in-house post code) C 108 TP/EVM D-70546 Stuttgart, Germany	

2.3 Issue of letter of no objection

2.3.1 Letter of no objection

Mitsubishi Fuso Truck and Bus Corp. does not issue body/equipment approval certificates for bodies not manufactured by Mitsubishi Fuso Truck and Bus Corp. These directives only supply important information and technical specifications to body manufacturers explaining how to handle the product. For this reason, Mitsubishi Fuso Truck and Bus Corp. recommends that all work on the basic vehicle and body be carried out in compliance with the Mitsubishi Fuso body/ equipment mounting directives.

Mitsubishi Fuso Truck and Bus Corp. advises against attachments, bodies, equipment and modifications which:

- are not produced in accordance with Mitsubishi Fuso Body/Equipment Mounting Directives
- exceed the permitted maximum gross vehicle weight
- exceed the permissible axle loads

Mitsubishi Fuso Truck and Bus Corp. issues a letter of no objection voluntarily based on the following criteria:

Mitsubishi Fuso Truck and Bus Corp.'s assessment shall be based solely on the documents submitted by the body manufacturer carrying out the modifications. The assessment and the endorsement shall only cover the expressly defined scopes and their basic compatibility with the designated chassis and its connection points or, in the case of chassis modifications, the basic feasibility of the design for the designated chassis.

The letter of no objection shall not refer to the overall design of the body, its functions or its intended field of operation. No objection shall only apply if design, production and assembly are performed by the body manufacturer carrying out the modifications in accordance with the state of the art and in compliance with the valid Mitsubishi Fuso body / equipment Mounting Directives – unless deviations have been endorsed in these directives. Nevertheless, the letter of no objection shall not release the body manufacturer carrying out the modifications from his product liability or his obligation to perform his own calculations, tests and trials on the overall vehicle in order to ensure that the overall vehicle produced by the company meets the required specifications for operating and road safety and handling characteristics. Accordingly, it shall be the sole duty and responsibility of the body manufacturer to ensure the compatibility of his attachments, bodies, equipment and modifications with the basic vehicle and to guarantee the operating and road safety of the vehicle.

All national laws, directives and registration requirements must be complied with.

2.3 Issue of letter of no objection

2.3.2 Required documents

In individual cases, the body drawings may be submitted to the department responsible before the start of work ▷Page 14. The drawings shall contain the following information:

- All deviations from Mitsubishi Fuso body/ equipment mounting directives.
- Complete data on dimensions, weights and centre of gravity (weight certificates)
- Attachment of body to the chassis
- Vehicle operating conditions, e.g.
  - on poor roads
  - in very dusty conditions
  - at high altitude
  - at extremely high or low ambient temperatures
- Certificates ("e" mark, seat tensile strength test, etc.)

Submitting the required documentation in full will make queries on our part unnecessary and will speed up the approval procedure.

If complex calculations and/or vehicle tests are necessary for the no objection check, all costs incurred must be borne by the vehicle body/conversion manufacturer or its client. The extent of testing required is defined by the relevant department of Mitsubishi Fuso Truck Development ▷Page 14.

2.3.3 Legal claim

- No legal claim can be made as to the issue of a letter of no objection.
- Mitsubishi Fuso Truck and Bus Corp. reserves the right to refuse the issue of a letter of no objection due to ongoing technical development and the knowledge gained from it, even if a similar certificate was issued in the past.
- A letter of no objection may be restricted to individual vehicles.
- Subsequent issuance of a letter of no objection for vehicles already completed or delivered can be refused.

The body manufacturer alone shall be responsible for:

- The functionality and compatibility of its bodies and equipment, fittings and conversions with the basic vehicle
- Operating and road safety
- All bodies and equipment, fittings, conversions and installed parts

2.4 Product safety

Both the vehicle manufacturer and the body manufacturer must always ensure that they introduce their scopes into the market in a safe condition and that third parties are not at risk of any safety hazard. If this is not adhered to they may be subject to civil, criminal and public law consequences. Every manufacturer is liable for the products it manufactures.

From this, it follows that the vehicle body/conversion manufacturer therefore also bears responsibility for the following:

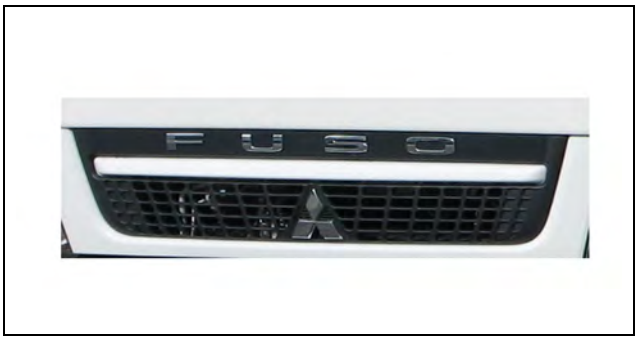
- the operating and road safety of the body
- the operating and road safety of parts and modifications
- testing and maintaining the operating and handling safety of the vehicle after the body/equipment is mounted (the body and/or equipment must not have a negative effect on the driving, braking or steering characteristics of the vehicle)
- influences of parts on or modifications to the chassis
- consequential damage resulting from the body, attachment, equipment or modification
- consequential damage resulting from retrofitted electrical and electronic systems
- maintaining the operational reliability and freedom of movement of all moving parts of the chassis after the body/equipment is mounted (e.g. axles, springs, propeller shafts, steering, gearbox linkage, etc.) even in the case of diagonal torsion between the chassis and the bodies

2.4.1 Guarantee of traceability

Hazards in your implement/body which become known after delivery may necessitate supplementary measures in the market (customer notification, warnings, recalls). In order to make these measures as efficient as possible, your product must be traceable after delivery.

For this purpose and to enable the Federal Office for Motor Vehicles' Central Vehicle Register (ZFZR) or comparable registers abroad to be used for determining which owners are affected, we advise you to promptly file the serial number/identification number of your equipment/add-on part linked to the vehicle identification number for the truck in your databases. Similarly, it is also advisable to store the addresses of your customers for this purpose and to grant subsequent purchasers the opportunity to register.

2.5 Mitsubishi three diamonds and Fuso emblem



The Mitsubishi three diamonds and Fuso emblem are owned or controlled by MITSUBISHI FUSO.

They must not be removed or affixed in another position.

Mitsubishi three diamonds and Fuso emblems supplied separately must be attached at the points specified by MITSUBISHI FUSO.

Overall appearance of the overall vehicle

If the vehicle fails to comply with the appearance and quality standards as required by Mitsubishi Fuso Truck and Bus Corp., the trademarks such as the Mitsubishi three diamonds and Fuso emblem must be removed.

Third-party trademarks

- may not be affixed next to MITSUBISHI FUSO trademarks

Binding ruling

The Mitsubishi Fuso Brand Trademark Directive governs the use of trademarks by body manufacturers on integrated bodies mounted on FB/FE chassis. Mitsubishi Fuso Truck and Bus Corp. reserves the right to prohibit the body manufacturer from using Mitsubishi Fuso trademarks in the event of any violations to this body/equipment mounting directive, including the trademark directive.

- If you have any question, contact the department responsible ▷Page 14.

2.6 Recycling of components

Environmental note

When planning attachments, bodies, equipment and modifications, and with regard to the legal requirements according to EU Directive 2000/53/EC, the following principles for environmentally-compatible design and material selection shall be taken into account.

Materials with risk potential, such as halogen additives, heavy metals, asbestos, CFCs and CHCs, are to be avoided.

- It is preferable to use materials which permit recycling and closed material cycles.
- Materials and production processes are to be selected such that only low quantities of waste are generated during production and that this waste can be easily recycled.
- Plastics are to be used only where they provide advantages in terms of cost, function or weight.
- In the case of plastics, and composite materials in particular, only compatible substances within one material family are to be used.
- For components which are relevant to recycling, the number of different types of plastics used must be kept to a minimum.
- It must be assessed whether a component can be made from recycled material or with recycled elements.
- It must be ensured that components can be dismantled easily for recycling, e.g. by snap connections or predetermined breaking points. These components should generally be easily accessible and should permit the use of standard tools.
- Service products must be capable of being removed simply and in an environmentally responsible manner by means of drain plugs, etc.
- Wherever possible, components should not be painted or coated; coloured plastic parts are to be used instead.
- Components in areas at risk from accidents must be designed in such a way that they are damage-tolerant, repairable and easy to replace.
- All plastic parts are to be marked in accordance with VDA code of practice 260, e.g. "PPGF30R".
- EU Directive 2000/53/EC must be complied with.

2.7 Quality system

World-wide competition, increased quality standards demanded by the customer from the product as a whole, national and international product liability laws, new organisational forms and rising cost pressures make efficient quality assurance systems a necessity in all sectors of the automotive industry.

For the reasons quoted above, Mitsubishi Fuso Truck and Bus Corp. urgently advises body manufacturers to set up a quality management system with the following minimum requirements:

- Does the quality management system clearly define responsibility and authority?
- Is there a description of processes/workflows?
- Are the contracts checked/is the feasibility of construction checked?
- Are product checks on the basis of specified instructions carried out?
- What provisions are made for the handling of faulty products?
- Are the inspection results documented and archived?
- Do all employees concerned have currently valid proof of the qualification required?
- Is the test equipment systematically monitored?
- Is there a system for labelling materials/parts?
- Are quality assurance measures carried out at suppliers?

3.1 Selecting the chassis

When planning attachments, bodies, equipment or modification work, the selected vehicle must be checked to verify whether it fulfils the necessary requirements.

In order to ensure safe operation of the vehicle, it is essential to choose the chassis and equipment carefully in accordance with the intended use.

Along with the selection of the correct vehicle version, the required series and special equipment such as

- Wheelbase
- Engine/gearbox
- Power take-offs
- Axle ratio
- Position of the centre of gravity
- Legal registration requirements (e.g. underride guard)
- Permissible and technical gross vehicle weight

should be taken into consideration and be appropriate for the intended use.

Observe the Model. The axle designation or the load capacity of the tyres has only limited relevance to the gross weight of the vehicle.

The non-availability of a vehicle version may be an indication that the vehicle is not suitable for the intended application.

3.2 Vehicle modifications

⚠ Risk of accident

Do not carry out any modifications to major assemblies (steering, brake system etc.). Any modifications to the steering and the brake system may result in these systems malfunctioning and ultimately failing. The driver could lose control of the vehicle and cause an accident.

Alterations to the basic vehicle are permitted only within the framework of the procedures described in this body/equipment mounting directive.

Standard production vehicles comply ex factory with EU Directives and national regulations

The vehicles must still comply with EC Directives or national regulations after modifications have been carried out.

The body manufacturer must inform the officially recognised approval authority or inspector of any modifications to the chassis when the vehicle is inspected. If necessary, present a letter of no objection from Mitsubishi Fuso Truck and Bus Corp. (e.g. drawing with approval note) or the applicable body/equipment mounting directive.

Following all work on the brake system, i.e. even if merely disassembling parts, a complete check (operation, effectiveness and visibility) of the entire brake system must be performed.

3.3 Dimensions, weights, overall vehicle height

Risk of accident

The vehicle tyre load capacity may not be exceeded by overloading the vehicle beyond its specified gross vehicle weight. The tyres could overheat and suffer damage. This could cause you to lose control of the vehicle and cause an accident with possible injury to yourself and others.

Information on the permissible axle loads can be found on the vehicle model plate.

All legal provisions governing the permissible vehicle height must be taken into account when planning bodies. In the Federal Republic of Germany the permissible vehicle height is limited to max. 4 m. In other countries (and if the vehicle is operated on international services), comply with all the relevant national regulations.

Information about changes in weight is available from the department responsible ▷ page 14.

Dimensions and weight details can be found in the drawings and technical data. They are based on a vehicle that is fitted with standard equipment. Weight tolerances of ±3% in production must be taken into consideration (2003/19/EC).

The permissible axle loads and the maximum permissible gross vehicle weight specified in the technical data may not be exceeded.

The technical data can be found in the vehicle documents or on the vehicle model plate.

Please note the minimum weight of the vehicle including body which is specified in the homologation documents.

3.3.1 Maximum Rear Body Width

There is a limitation on rear body width for outside Mirror and Lamps.

Outside mirror

The position of outside mirror for wide cabin must be set according to the width of rear body as shown in Fig. 1.

(The mirror is mounted on the inside position until the rear body is assembled.)

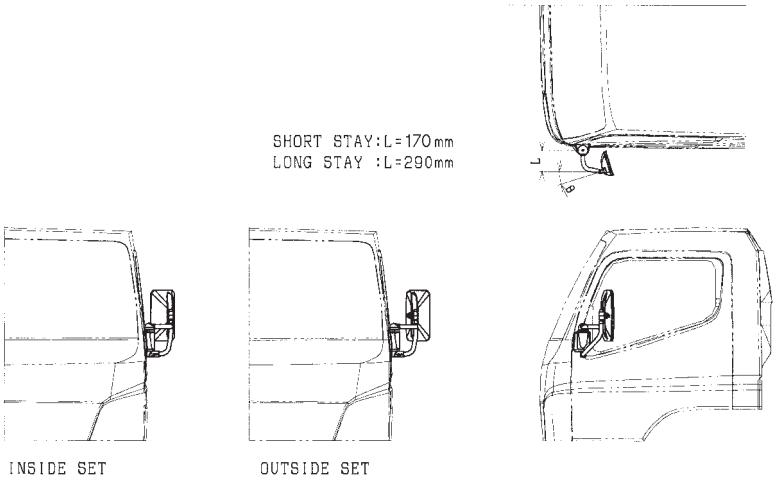


Fig. 1

MODEL (CABIN WIDTH)	STAY LENGTH	MIRROR SET	REAR BODY WIDTH (mm)	SET ANGLE	θ
FB7 FE7 STD	SHORT	OUTSIDE SET	1870 to 2000	DRIVER SIDE	17.5°
				PASSENGER SIDE	31.0°
	LONG	INSIDE SET	2000 to 2100	DRIVER SIDE	18.0°
				PASSENGER SIDE	30.0°
		OUTSIDE SET	2100 to 2200	DRIVER SIDE	19.0°
				PASSENGER SIDE	31.5°
FB8 FE8 WIDE	SHORT	INSIDE SET	2000 to 2150	DRIVER SIDE	16.0°
				PASSENGER SIDE	31.5°
		OUTSIDE SET	2150 to 2280	DRIVER SIDE	17.5°
				PASSENGER SIDE	33.5°
	LONG	INSIDE SET	2280 to 2400	DRIVER SIDE	18.5°
				PASSENGER SIDE	32.0°
		OUTSIDE SET	2400 to 2550	DRIVER SIDE	21.0°
				PASSENGER SIDE	34.0°

Lamps

Maximum rear body width is divided into the following 3 cases by the rear bumper in which rear combination lamp is installed.

When you add side direction indicator lamp, change flasher relay to the followings and use 21watt bulb of side direction indicator lamp.

Flasher relay

Type	Parts No.
12 V	MK542356

- When using no rear bumper

MODEL	Normal	In case additional Side direction indicator lamp on rear body sides	In case additional Side direction indicator lamp and End outline marker lamp on rear body sides
FB7 / FE7	1900mm	2100mm	2200*mm
FB7-W	2070mm	2100mm	2200*mm
FB8 / FE8	2220mm	2550*mm	–
FB8-W / FE8-W	2390mm	2550*mm	–

*)Limited by outside mirror

- When using the rear bumper with vehicle resistration N1 (Without coupling device)

MODEL	Normal	In case additional Side direction indicator lamp on rear body sides	In case additional Side direction indicator lamp and End outline marker lamp on rear body sides
FB7 / FE7	1900mm	2100mm	2200*mm
FB7-W	2070mm	2100mm	2200*mm
FB8 / FE8	2220mm	2340***mm	–
FB8-W / FE8-W	2340**mm	2340***mm	–

*) Limited by outside mirror

**) Limited by rear bumper
When you mount wider rear body, change the location of rear combination lamp to rear body.
In that case, maximum rear body width is 2390mm

***)Limited by rear bumper
When you mount wider rear body, change the location of rear combination lamp to rear body.
In that case, maximum rear body width is 2550*mm

- When using the other rear bumper

MODEL	Rear combination lamp	Normal	In case additional Side direction indicator lamp on rear body sides	In case additional Side direction indicator lamp and End outline marker lamp on rear body sides
FB7 / FE7	–	1900mm	2100mm	2200*mm
FB7-W	–	2070mm	2100mm	2200*mm
FB8 / FE8	inside set	2220mm	2250**mm	–
	outside set	2220mm	2550*mm	–
FB8-W / FE8-W	inside set	2250mm	2250**mm	–
	outside set	2390mm	2550*mm	–

*) Limited by outside mirror

**) Limited by rear bumper
When you mount wider rear body, change the rear combination lamp to outside set or the location of rear combination lamp to rear body.
In that case, maximum rear body width is 2550*mm

3.4 About vehicle body incline

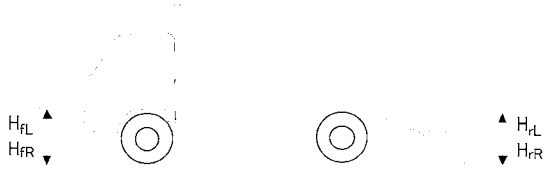
- When mounting the rear body onto the chassis, take care to evenly balance weight on the left and right sides. If there is difference in weight between the left and right sides, adjust by adding counter-weights or spacers on the sub-frame.
  Also, use the chassis height adjustment shims (4.5 mm thickness) set on the front and rear springs.

Spacer Specification

Material	Thickness (mm)	Finish
SS400(JIS G3101)	4.5	Painting for rust prevention
E275A(ISO 630)		
S275JR/JO(EN10025)		
SUP9(JIS G4801)		
55Cr3(ISO683-14)		
or equivalent		

- The following are target reference values for tilting the body of an assembled vehicle.
  - Left-right weight difference
    |HfL - HfR| ≤ 20 mm
    |HrL - HrR| ≤ 20 mm
  - Front-back deviation
    |(HfL - HfR) - (HrL - HrR)| ≤ 20 mm

HfL: Centre height of headlamp (left side)
HfR: Centre height of headlamp (right side)
HrL: Lower height of rear end of body outer panel (left side)
HrR: Lower height of rear end of body outer panel (right side)



3.5 Tyres

The body manufacturer must ensure that:

- the largest permissible tyres can be fitted.
- the distance between the tyre and the mudguard or wheel housing is sufficient even when snow or anti-skid chains are fitted, with the suspension fully compressed (including any twist) (Adherence to valid regulations).
- that the relevant information in the drawings is observed.

If the option of fitting snow and anti-skid chains cannot be guaranteed, the operator should be informed by the body manufacturer (operating instructions).

⚠ Risk of accident

Exceeding the specified tyre load-bearing capacity or the permissible maximum tyre speed can lead to tyre damage or failure. You can lose control of the vehicle, cause an accident and injuries.

For this reason, only fit tyres of a type and size approved for your vehicle and observe the tyre load-bearing capacity required for your vehicle. Observe tyre speed index.

Comply with national regulations governing the approval of tyres. These regulations may define a specific type of tyre for your vehicle or may forbid the use of certain tyre types which are approved in other countries.

!

If you have other wheels fitted

- the brakes or components of the suspension system could be damaged
- wheel and tyre clearance can no longer be guaranteed
- the brakes or components of the suspension system can no longer function correctly.

3.6 Bolted and welded connections

⚠ Risk of accident

Do not modify any bolted connections that are relevant to safety, e.g. that are required for wheel alignment, steering or braking functions.

When unfastening bolted connections make sure that, when work is complete, the connection again corresponds with the original condition.

Welding work on the chassis/body may only be carried out by trained personnel.

The body, the attached or installed equipment and any modifications must comply with the applicable laws and ordinances as well as work safety or accident prevention regulations, safety rules and accident insurer leaflets.

ⓘ

Further information on bolted and welded connections can be found in Section 5 "Damage prevention" ▷ page 60 and Section 6 "Modifications to the basic vehicle" ▷ page 73.

3.6.1 Nuts and Bolts for Use on Frame

Pay attention to the following when removing nuts and bolts used on a standard vehicle.

- Target Locations
  Nuts and bolts used for tightening frame cross-members and side members (including nuts and bolts used for tightening the fuel tank and battery together)
  How to distinguish nuts and bolts
  Bolt (8T) .... Identifying letter "8"
  Nut (6T) .... Identification at diagonal corner

- Handling of nuts and bolts
  (a) Bolts that have been removed cannot be used again. Tighten again using new bolts having the same strength.
  (b) Nuts and bolts must be tightened to the following torques:
  M10: 60 to 80 Nm
  M12: 98 to 120 Nm

- In particular, cross-members must be tightened when bolts used for tightening cross-members together are removed for moving the fuel tank and battery.

3.6.2 Welded connections

Welding work on the chassis/body may only be carried out by trained personnel.

Parts which must not be welded:

- Assemblies such as the engine, gearbox, axles, etc.
- The chassis frame (except frame modifications).

Further information on bolted and welded connections can be found in Section 5 "Damage prevention" ▷ page 60 and Section 6"Modifications to the basic vehicle" ▷ page 73.

3.7 Soundproofing

If modifications are carried out on any parts whose operation produces noise, e.g.

- engine
- exhaust system
- air intake system
- tyres
- Noise absorbing cover, etc.

sound level measurements must be made.

To prevent modifications from changing the vehicle's sound levels, it must be ensured that interior sound levels are reduced when planning bodies.

- Noise-insulating parts fitted as standard must not be removed or modified.
- The level of interior noise must not be adversely affected.

Comply with all national regulations and directives.

In Germany, the EC Directive 70/157/EEC or Article 49.3 of the German licensing regulations (low-noise vehicles) must be observed.

3.8 Exhaust system

The exhaust system must not be modified.
If modification is unavoidable, consult with the department in charge of the measures ▷ page 14.

!

The original exhaust system mounting, by this we mean the bracket components including frame-mounted castings, may not be modified. Modifications can lead to damage to the exhaust system.

3.8.1 Clearance between exhaust system parts and other parts

- The exhaust pipe and exhaust gas purification devices (Blue Tec® system) become so hot that if they are too close to or interfere with other chassis parts, a serious accident like fire or damage by melting could occur. Malfunction is also a possible consequence. Secure sufficient clearance in accordance with the standards ▷ page 112. If this is impracticable, provide a heat shield plate to ensure safety.
- Do not install the tail pipe under the fuel pipe, fuel hose joint or fuel filter drain hose.
  Wooden and rubber body parts should be more than 100 mm apart from the diesel particulate filter (DPF) integrated muffler and exhaust pipe. If this is impracticable, provide a heat shielding plate against to ensure safety.

⚠ Risk of accident and injury

The tail pipe of a DPF-equipped vehicle can become considerably hotter than that of a conventional vehicle during automatic regeneration. Provide sufficient clearance between the tail pipe and other parts.

3.8.2 Exhaust gas purification devices (Blue Tec® system) and sensors

- Exhaust gas purification devices (Blue Tec® system) may be damaged by heavy impact against their body or fall. When mounting, handle them with sufficient care.
- To prevent the exhaust gas purification devices (Blue Tec® system) and engine proper from being adversely affected, do not relocate the exhaust gas purification devices (Blue Tec® system), exhaust temperature senor, differential pressure sensor, lambda sensor and NOx sensor.
  If temporary removal of these parts becomes inevitable during mounting, be sure to reinstall these parts in the original places. Connect the pressure sensor hose properly, not in reverse, too loose nor too tense. Also, securely clip hose joints and make sure of gas-tightness.
- Exhaust gas purification devices and sensors are periodically removed for maintenance. Install them so that removal and reinstallation work can be carried out without any problems.

3.8.3 Regeneration controlling DPF system

- The regeneration controlling DPF system can maintain its full PM (particulate matter) removing capability thanks to an automatic computer control it employs to actively regenerate the filter (or remove the collected PM by oxidation) and thus prevent an overfilled ceramic filter.
  Accumulated PM in DPF might not be able to be removed automatically depending on use conditions (e.g. long PTO operation).
  Please deal it according to the following when the DPF indicator lamp is on.
- Unless Engine control warning lamp (red) is flashing or Engine control warning lamp (amber) is on when this lamp is illuminated, continue driving at a constant speed on the highway.
  This will remove particulate matter and regenerates DPF.
- If the lamp comes on again within 30 minutes of driving after it turned off, have the vehicle inspected by an authorised Mitsubishi Fuso distributor or dealer.

- If engine control warning lamp (red) is flashing or Engine control warning lamp (amber) is on when this lamp is illuminated, have the vehicle inspected by an authorised Mitsubishi Fuso distributor or dealer as soon as possible.

3.8.4 Blue Tec® exhaust gas aftertreatment

Blue Tec® exhaust gas aftertreatment removes NOx in the exhaust gas.
Do not modify and transfer the following parts because the performance of the system is deteriorated.

- SCR muffler
- AdBlue® tank unit
- Dosing module
- AdBlue hose

The function of Blue Tec® exhaust gas aftertreatment can not work when the fuse of system is blowout.

Blue Tec® exhaust gas aftertreatment requires a lot of electric power to work the heating device for freeze proofing in winter or cold region.

Don't take out the power supply for other electric components from the fuse of Blue Tec® exhaust gas aftertreatment.

3.9 Maintenance and repairs

⚠ Risk of accident and injury

Always have maintenance work performed at a qualified specialist workshop possessing the required expertise and tools in order to perform the necessary work.

Mitsubishi Fuso recommends a Mitsubishi Fuso Service Centre for this work.

It is absolutely essential that all safety-relevant work and all work on safety-relevant systems is performed by a qualified specialist workshop.

Before performing any maintenance work, always read the technical documentation, such as the Instruction Manual and the workshop information. Always have all maintenance work performed at the correct time. If this is not done, malfunctions or failures may occur in systems that could be relevant to safety. This could make you cause an accident, which could result in injury to yourself or others.

Maintenance and repair of the vehicle should not be made unnecessarily difficult by the body.

Maintenance points and major assemblies must be easily accessible.

- The Instruction Manual must be complied with and supplemented as necessary.
- Stowage boxes must be fitted with maintenance flaps or removable rear panels.
- The battery compartment must be sufficiently ventilated, with provision for air to enter and exit.
- Check the condition and capacity of batteries and service them in accordance with the manufacturer's specifications ▷ page 36.

Any additional expenses arising from the body in connection with warranty, maintenance or repair will not be borne by Mitsubishi Fuso Truck and Bus Corp..

3.9.1 Maintenance instructions

The following must be observed by the body manufacturer before delivery of the vehicle:

- Due date of inspection
- The load sensing valve (LSV) must be set.
- Check the condition and capacity of batteries and service them in accordance with the manufacturer's specifications.
- Check the headlamp setting or have this checked at a qualified specialist workshop.
- Retighten the wheel nuts to the specified torque.
- Instruction Manual and directives for maintenance of attachments, bodies, installations or conversions, which have been installed by the body manufacturer, must be provided with the vehicle in the language of the country of use.
- Mitsubishi Fuso recommends adapting to each individual body the scope of maintenance work which has to be carried out on the body, co-ordinating it by means of the valid Mitsubishi Fuso service systems. This applies both to the scope and type of service work, and for determining the service due dates for servicing intervals based on time elapsed and distance covered.

3.9.2 Preparation for storing the vehicle

For vehicle deliveries in winter (gritted roads). To prevent surface damage, please clean the vehicle at the earliest opportunity. Particular attention should be paid to the gearbox housing and light-alloy wheels.

Storage in an enclosed space:

- Clean the overall vehicle.
- Check the oil and coolant levels.
- Inflate the tyres to 0.5 bar above the specified tyre pressures.
- Release the handbrake and chock the wheels.
- Disconnect the battery and grease battery lugs and terminals.

Storing the vehicle in the open (< 1 month):

- Carry out the same procedure as for storing in an enclosed space.
- Close all air inlets and set the heating system to "Off".

Storing the vehicle in the open (> 1 month):

- Carry out the same procedure as for storing in an enclosed space.
- Fold the windscreen wipers away from the windscreen.
- Close all air inlets and set the heating system to "Off".
- Remove the battery and store it in accordance with the manufacturer's specifications.

Maintenance work on stored vehicles (in storage for > 1 month):

- Check the oil level once a month.
- Check the coolant once a month.
- Check the tyre pressures once a month.
- Remove the battery.

Removing the vehicle from storage:

- Check the fluid levels in the vehicle.
- Correct the tyre pressures to the manufacturer's specifications.
- Check the battery charge and install the battery.
- Clean the overall vehicle.

3.9.3 Battery maintenance and storage

To avoid damage to the battery, disconnect the battery if the vehicle is to be immobilised for a period of longer than 1 week.

If the vehicle is immobilised for periods of longer than 1 month, remove the battery and store it in a dry place at temperatures of between 0 °C to 30 °C.

Store the battery in an upright position.

The battery charge must be kept above 12.55 V at all times.

If the battery voltage drops below 12.1 V, the battery is damaged and it will have to be replaced.

Leaving the vehicle parked up for long periods of time can lead to battery damage. This can be avoided by disconnecting the battery and storing it appropriately.

3.9.4 Work before handing over the modified vehicle

The manufacturer must confirm the work and modifications carried out by making an entry in the Service Booklet.

Checking the overall vehicle

Check the vehicle for perfect condition. All damage must be repaired.

If it is not known how long a vehicle equipped with a hydraulic clutch operating system has been in storage, the brake fluid must be renewed.

Checking the batteries:

Test the battery charge before handing over the vehicle.

Checking the tyres

Before handing over the vehicle, check that the tyres are inflated to the specified pressure and check the tyres for damage. Damaged tyres must be replaced.

Checking wheel alignment

When equipment, attachments and bodies have been mounted, it is recommended to have the toe setting checked by a qualified specialist workshop. Mitsubishi Fuso recommends a Mitsubishi Fuso Service Centre for this work.

It is absolutely essential that all safety-relevant work and all work on safety-relevant systems is performed by a qualified specialist workshop.

Further details are available from any Mitsubishi Fuso Service Centre.

3.10 Special equipment

⚠ Risk of accident and injury

The use of parts, assemblies or conversion parts and accessories which have not been approved may jeopardise the safety of the vehicle.

Before installing any attachments, special-purpose bodies, equipment or carrying out any modifications to the basic vehicle and/or its assemblies, you must read the relevant sections of the vehicle Instruction Manual, as well as the operating and assembly instructions issued by the manufacturer of the accessories and items of optional equipment.

You could otherwise fail to recognise dangers, which could result in injury to yourself or others.

Mitsubishi Fuso recommends using equipment available as option codes to adapt the vehicle to the body optimally.

All code-specific special equipment is available from your Mitsubishi Fuso Service Centre or from body manufacturer advisors ▷ page 14.

Optional equipment (e.g. , auxiliary tanks, anti-roll bars, etc.) or retrofitted equipment increases the unladen weight of the vehicle.

When chassis are fitted with different springs or tyre sizes, the frame height can change considerably in both the laden and unladen state.

The actual vehicle weight and axle loads must be determined by weighing before mounting.

Not all optional equipment can be installed in any vehicle without problems. This applies, in particular, for retrofitted equipment because the installation space may already be occupied by other components or the special equipment may require other components.

Bracket for the second compressor (option code : GC/CG6) is developped specially for the compressor model CR2211L (Supplier: MITSUBISHI HEAVY INDUSTRIES,LTD), and can be used only for the model CR2211L.

4.1 Vehicle overhang and technical wheelbases

Risk of accident

The body must be designed in such a way that a placing of excessive load weight at the rear is prevented. It is important to comply with the points listed below, otherwise the necessary steering and braking forces for safe vehicle operation cannot be transferred to the road.

- When calculating the length of the vehicle overhang, always take into account the permissible axle loads and the minimum front axle load.
- Comply with the minimum front axle load ▷ page 42.
- Take the weight of special equipment into consideration when making calculations.

4.1 Vehicle overhang and technical wheelbases

4.1.1 Maximum vehicle overhangs

Maximum vehicle overhang
65% of wheelbase (Van body)
50% of wheelbase (Except Van body)

Van body: Body that does not accept load jutting out in the rear of vehicle

Example: Van body, lorry, etc.

All national laws, directives and registration requirements must be complied with.

4.2 Weight distribution, CoG height, anti-roll bars

⚠ Risk of accident

The body must be designed in such a way that a placing of excessive load weight at the rear is prevented. It is important to comply with the points listed below, otherwise the necessary steering and braking forces for safe vehicle operation cannot be transferred to the road.

4.2.1 Weight distribution

Avoid one-sided weight distribution.

The wheel load (1/2 the axle load) may be exceeded by no more than 4%. Observe the tyre load capacity.

Example:

- Permissible axle load 5,000 kg
- Permissible wheel load distribution 2,600 kg to 2,400 kg

4.2.2 CoG height

For approval of the vehicle with body/implements mounted, a calculation of the height of the centre of gravity of the laden vehicle must be submitted in accordance with EC Brakes Directive 71/320/EEC. The calculation basis for permissible heights of centre of gravity can be requested from the responsible department ▷ page 14.

Mitsubishi Fuso cannot vouch for the handling, braking and steering characteristics of vehicles with attachments, installations or modifications for payloads with unfavourable centres of gravity (e.g. rear-mounted. overheight and side-mounted loads). The vehicle body/equipment manufacturer/converter is responsible for the safety of the vehicle in the case of these bodies.

4.2.3 Stabilisers roll control

Make sure that the vehicle you are building is correctly equipped. Mitsubishi Fuso provides stabilisers for different model series. Stabilising equipment is required if the vehicle is used for extremely high loads.

If this equipment is unsuitable due to operating conditions (such as a need for off-road capability), the mounting frame must be designed in a manner that stabilises the overall vehicle in consultation with the department responsible ▷ page 14.

4.3 Steerability

Risk of accident

The body must be designed in such a way that a placing of excessive load weight at the rear is prevented. The following points must be complied with otherwise the steering and braking forces necessary for safe driving cannot be transmitted.

To ensure sufficient vehicle steerability, the minimum front axle load (25% of gross vehicle weight) must be maintained under all load conditions. Consult the department responsible in the event of any deviations ▷ page 14.

The permissible front axle load must not be exceeded.

Observe the notes on product liability ▷ page 17.

4.4 Clearance for assemblies and cab

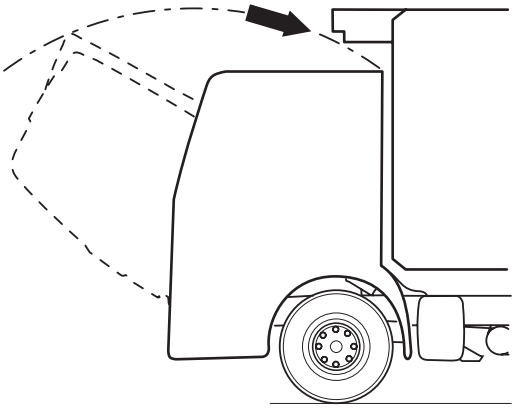
Certain clearances must be maintained in order to ensure the function and operational safety of assemblies.

Dimensional data in the tender drawings must be observed.

Read and comply with the relevant sections of the Instruction Manual.

4.4.1 Attachment above cab

- Observe the permissible centre of gravity location and the front axle load.
- Make sure that there is sufficient space for tilting. ▷ page 241.



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Cab tilting range clearance

4.4.2 Cab

- The distance between the cab and the body must be keeped per layout drawings.

You can obtain tender drawings and technical data.
▷ page 241.

4.5 Wind deflectors

4.5.1 Attaching the roof rack or drag foiler

Roof

- When attaching externally mounted parts such as roof rack or drag foiler onto the roof, use the exclusive mounting holes provided on the roof.
- Prevent the weight of externally mounted parts attached to the roof from exceeding 50 kg. (See Figs. 1, 2 and 4.)

Cautions

- Use nickel-chrome plated stainless steel bolts and washers.
- Take special care to prevent the body from becoming scratched when attaching externally mounted parts.
- Insert packing between externally mounted parts and the body to prevent rusting. Use packing made of EPDM rubber to prevent ozone cracking.
- After attaching externally mounted parts, coat the entire periphery of the mounting bolts with sealer.
- The top coat of paint must be applied to externally mounted parts before attaching to the roof. (See Fig. 3.)

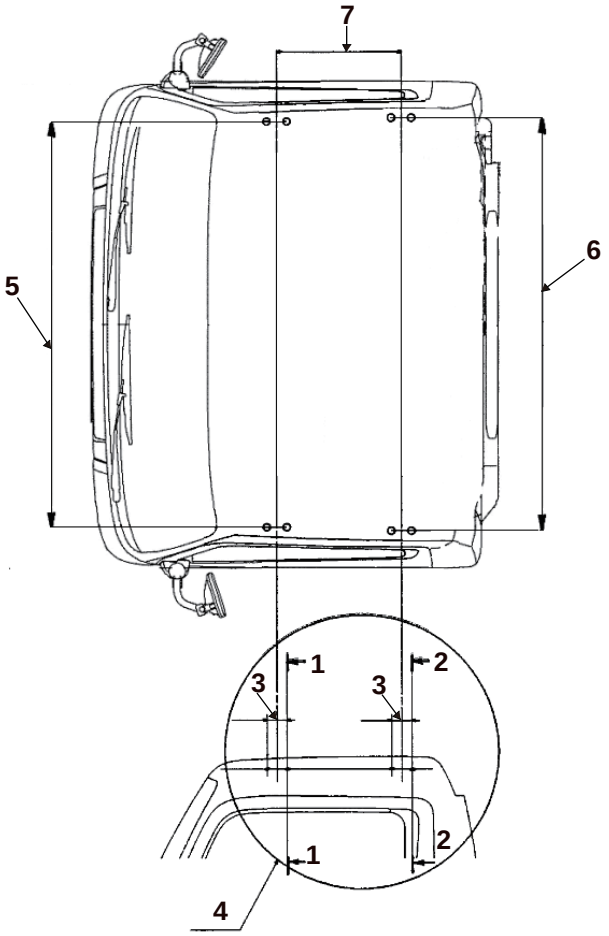
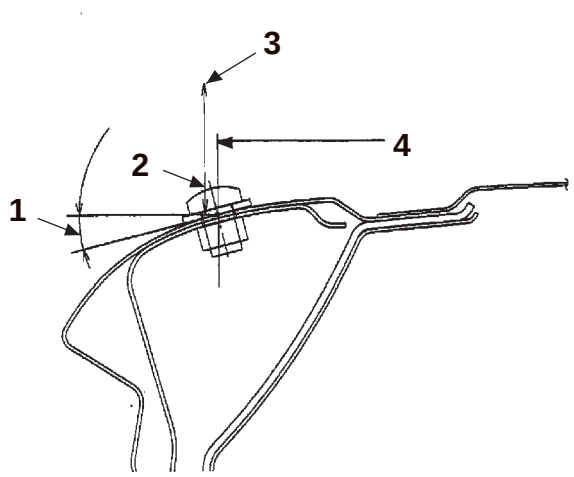
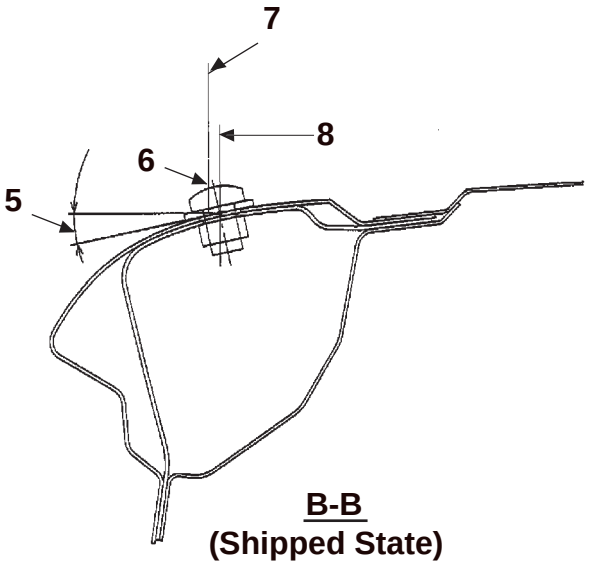


Fig. 1

1 Section A-A
2 Section B-B
3 80
4 Detail C
5 1408 (Standard cab)
1664 (Wide cab)
6 1436 (Standard cab)
1694 (Wide cab)
7 500

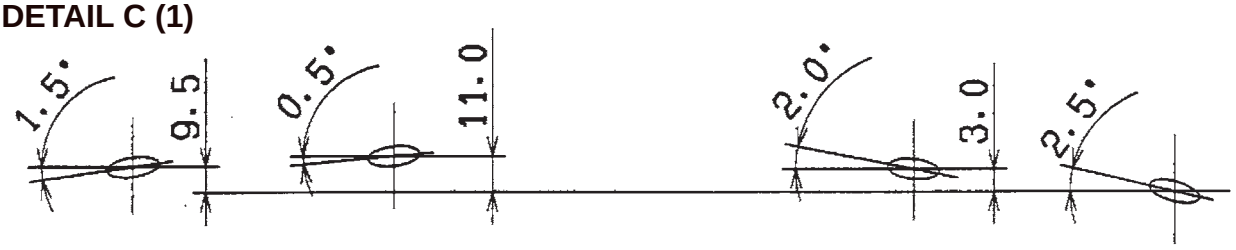


A-A
(Shipped State)



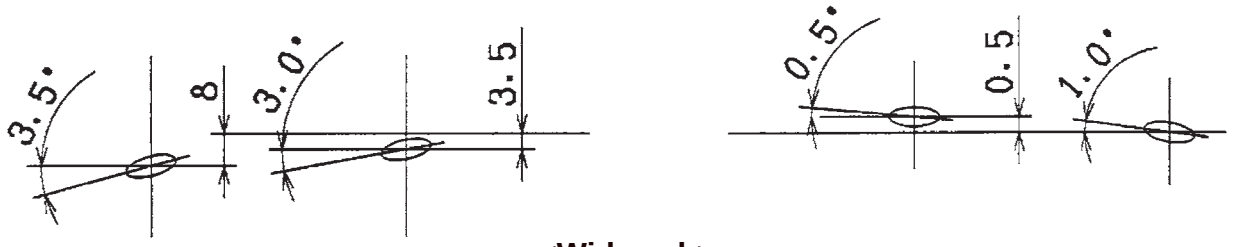
B-B
(Shipped State)

DETAIL C (1)



<Standard cab>

DETAIL C (2)



<Wide cab>

Fig. 2

1 14.5° (Standard cab)
16.5° (Wide cab)
2 32.5 (Standard cab)
31.0 (Wide cab)
3 roof top
4 1408 (Standard cab)
1664 (Wide cab)
5 12.0° (Standard cab)
14.5° (Wide cab)
6 21.5 (Standard cab)
34.5 (Wide cab)
7 roof top
8 1436 (Standard cab)
1694 (Wide cab)

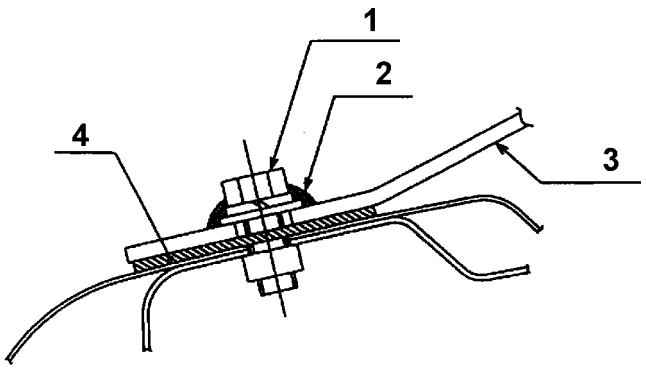


Fig. 3

1 Use washer and bolt with plain washer
2 Coat periphery with sealer
3 Roof deck or drag foiler
4 Rubber packing

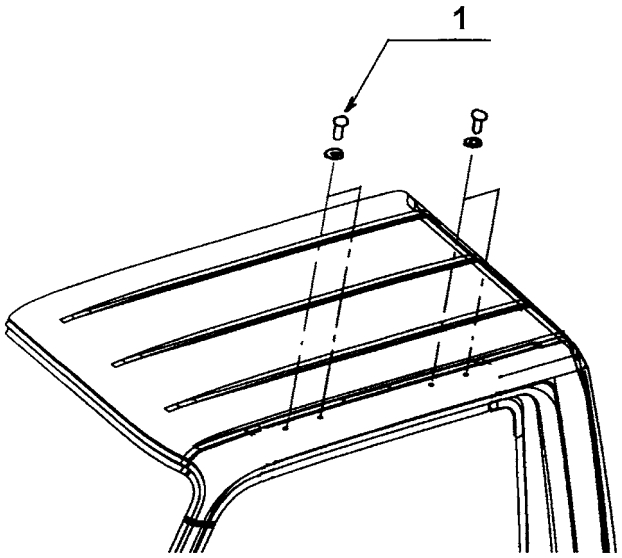


Fig. 4

1 Bolt and washer: Left/right total 8 places
(For roof deck or drag foiler)

4.6 Governor and transmission power-take-off

4.6.1 Governor

The electronically controlled governor (electronic governor) automatically switches to serve as special equipment governor at the time of PTO activation. Also, the cab back engine control (sensor-based) is provided for use as engine control during PTO activation.

Engine model	Governor type	Governor & torque	Engine control	Operation	Applicable vehicle*1		Remarks
4P10	Electronically controlled	Normal engine governor	–	–	Standard vehicle	Vehicles without PTO	
		Special equipment governor	Sensor-based	PTO-ON	Specially equipped vehicle	Vehicles with transmission PTO	*2

Note. - *1 The cab back engine control is not equipped in dump trucks.

- *2 The accelerator pedal is inoperative as long as PTO is activated.

4.6.2 Governor and torque characteristics

For special equipment governor, appropriate governor and torque characteristics during PTO activation can be selected through change of PTO control resistor.

When governor and torque characteristics are required to change depending on the type of mounted equipment, the suitable PTO control resistor should be selected from options listed in the table below and the existing resistor be replaced with the selected one. When a PTO is installed later in a standard vehicle, the suitable PTO control resistor should be selected from options listed in the table below and the existing resistor be replaced with the selected one.

(PTO resistor, governor and torque characteristics and engine control system)

Control resistor No.	Color		Part No.	Resistance value (Ω)	See 9.2.3 Governor and torque characteristics		
	Molding	Connector			4P10-T2 (96 kW)	4P10-T3 (107 kW)	4P10-T6 (129 kW)
#1	Black	Natural color	MC854770	270	Fig. 1	Fig. 7	Fig. 13
#2	Black	Green	MC854771	510	Fig. 5	Fig. 11	Fig. 17
#3	Black	Yellow	MC854772	820	Fig. 1	Fig. 7	Fig. 13
#4	Black	Brown	MC854773	1.3K	Fig. 5	Fig. 11	Fig. 17
#5	Blue	Natural color	MC854774	2.0K	Fig. 2	Fig. 8	Fig. 14
#6	Blue	Green	MC854775	3.3K	Fig. 6	Fig. 12	Fig. 18
#7	Blue	Yellow	MC854776	5.6K	Fig. 3	Fig. 9	Fig. 15
#8	Blue	Brown	MC854777	15.0K	Fig. 4	Fig. 10	Fig. 16

Note. - *1 In either case, the engine governor is operated in the normal characteristics when PTO is not activated, during which the cab back sensor is not working.

- *2 When one of the control resistors #3, #4, #6, #7 and #8 is installed, the accelerator pedal does not work during the PTO activation.

- *3 When one of the control resistors #2 and #5 is installed, the accelerator pedal works even during the PTO activation. (When the cab back sensor and accelerator pedal are operated at the same time, the engine is controlled by input larger in magnitude.)

4.6.3 PTO speed ratio and part No.

- PTO Speed Ratio and Part No.

T/M Type	Speed Ratio	P.T.O. Part No.	Engine
M037S6	1.412	ME533444	4P10-0AT2.3.6

Simply installing a PTO does not enable all of its functions to work. It is necessary to change the related settings of the engine ECU using the manufacturer-specified diagnostic tool and to register the history of changes with the data server of Mitsubishi Fuso Truck & Bus Corporation before all the PTO functions can become operational.

Please contact the department responsible for details of the above setting changes and registration.

▷ page 14.

- Direction of Rotation

Direction is counter direction to engine rotation. For details, refer to PTO Drawing

▷ page 310.

4.6.4 Non standard PTO

Installation of non-standard PTO requires a letter of no objection from department responsible.
▷ page 14.

4.6.5 Cab back engine control system

An engine Speed of a vehicle should be adjusted by a cab back engine control system to match with an operation speed of a upper structure unit to be mounted.

- Sensor Type Cab Back Engine Control System

The control system will be fitted to any desired position on the vehicle and engine speed can be controlled by a cable connected to a upper structure.

- Component Parts List

To adopt the cab back engine control system, use the following KIT. Table 1

Table 1 (KIT Number of Cab back Engine Control System)

KIT No.	Parts Name	QTY	Remark
MK552405	Cab Back Control KIT	1	Sub-Harness Length 2000 mm

When choosing the characteristic "hard" of the governor please order the resistor MC854773 (#4) separately.

Table 2 (Component Parts List of KIT No.)

KIT No.	MK552405

Part No.	Parts Name	QTY
MK515114	Sensor assy cab back control	1
MK482869	Harness cab back control	1
MC854772	Unit resistor	1

Simply installing the components of a cab back engine control system does not enable all of the system's functions to work. It is necessary to change the related settings of the engine ECU using the manufacturer-specified diagnostic tool and to register the history of changes with the data server of Mitsubishi Fuso Truck & Bus Corporation before all the cab back engine control functions can become operational.

Please contact the department responsible for details of the above setting changes and registration.

▷ page 14.

- Detail of Accelerator Sensor

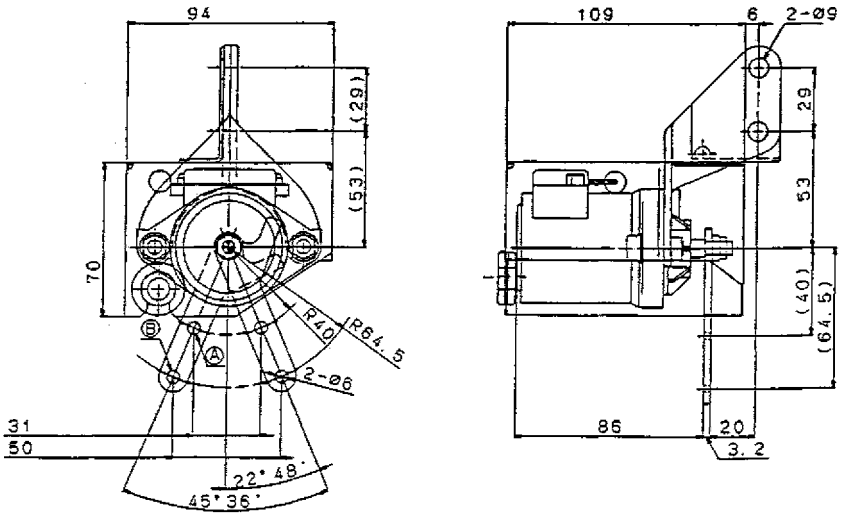


Fig. 1

- Lever Stroke

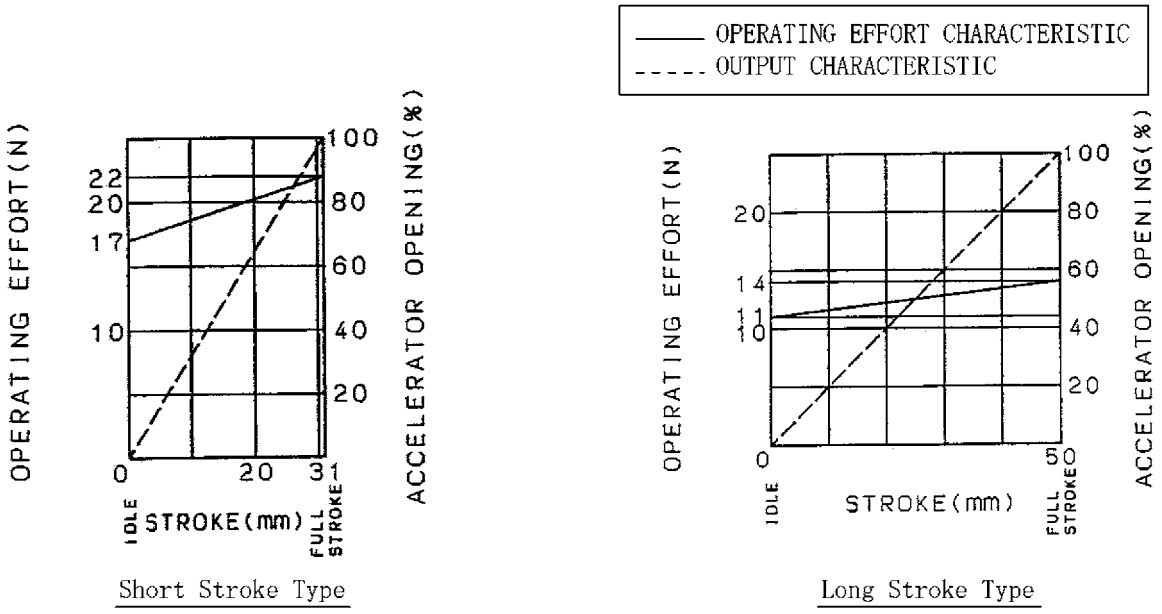
It's able to choose 2 kinds of lever stroke by choosing a clevis hole of the accelerator sensor lever Table 3.

Table 3 (Accelerator Sensor Specification)

	LEVER HOLE	LEVER STROKE (mm)	LEVER OPERATING EFFORT N {kgf}		LEVER LENGTH (mm)
			AT IDLE	AT FULL STROKE	
SHORT STROKE TYPE	Ⓐ	31	17 N {1.7 kgf}	22 N {2.2 kgf}	40.0
LONG STROKE TYPE	Ⓑ	50	11 N {1.1 kgf}	14 N {1.4 kgf}	64.5

- Sensor Output Characteristic

Output characteristic and operating effort are as following figure.



- Exchange of the Resistor in the Cab

There is the resistor in the following figure location, so exchange it for the resistor in the KIT.

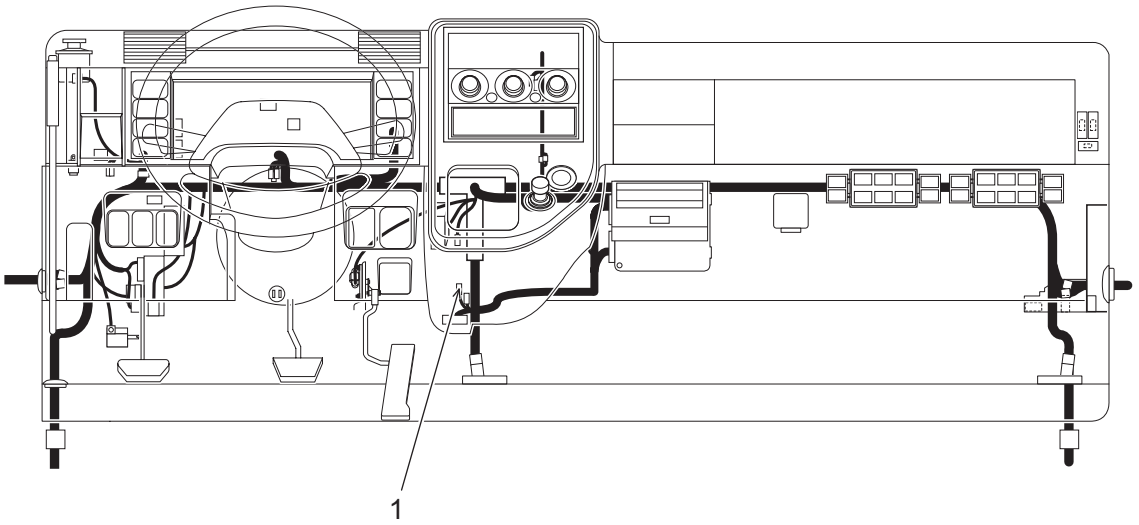


Fig. 2

1 Exchange of the Resistor. UNIT, RESISTOR: MC854772 (#3) ←MC854770 (#1)

This drawing shows LHD. RHD and LHD is symmetrical.

- Installation of Accelerator Sensor

The accelerator sensor operates by a connection of a harness from the vehicle side.

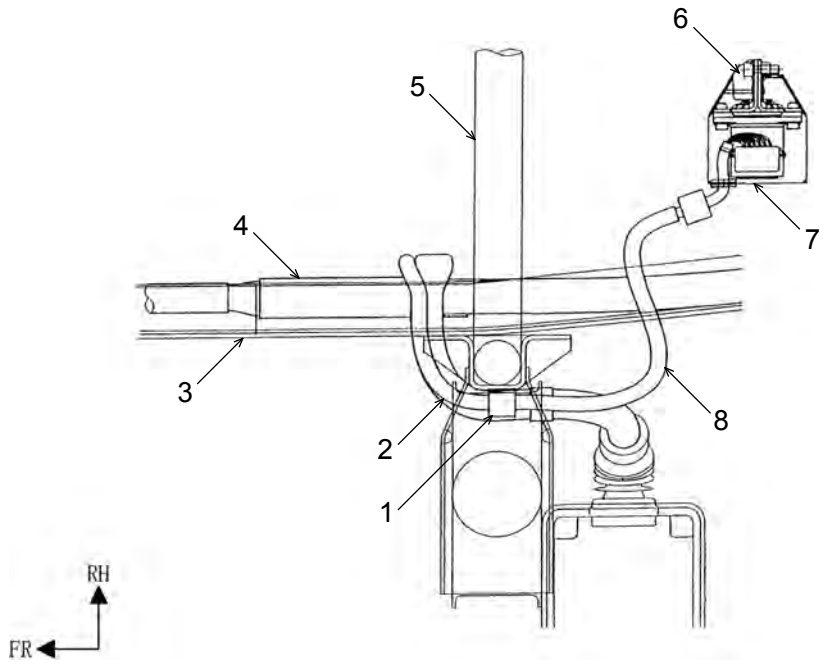


Fig. 3

1 Connector for connect sub-Harness
2 Harness for accelerator
3 Frame LH
4 Chassis harness
5 Rear cab mounting
6 Bracket for installation
7 Sensor assy, cab back control MK515114
8 Harness, cab back control MK482869

- An installation position must be secluded from high pressured water for car wash, and from the stone and mud which fly from the tyre.
  Pay attention to a dust, a high temperature, vibration and interference with other parts.
- After examining the location of a installation, install the accelerator sensor by using the bracket in the KIT.
- There is the harness connector for connections around the vehicle left side rear cab mounting. Connect it to the accelerator sensor by using the sub-harness in the KIT.
- The direction of the hauling cable connected to the accelerator sensor lever must be as parallel as possible to the lever.
- Don't bend or twist the cable to protect an accelerator sensor lever.
- Don't adjust the accelerator sensor stopper bolt.
- A control stroke of a cable extended from an upper structure unit must be set in a length not exceeding a lever stroke of an accelerator sensor lever.
- Fix Connector and Harness in an interval of 200-300 mm by the band (MB249339) or the vinyl tape. (For steady fixation)

5.1 Electrical system

⚠ Risk of fire

Work carried out incorrectly on the electrical system may impair its function. This may lead to the failure of components or parts relevant to safety.

All accident prevention regulations must be complied with when working on the vehicle.

Comply with all national regulations and laws.

⚠ Risk of fire

Work on live electrical lines carries a risk of short circuit.

Before starting work on the electrical system, disconnect the on-board electrical system from the power source, e.g. battery.

Batteries

- Never place any metal objects or tools on the batteries.
- There is a risk of short circuit if the positive terminal clamp on the connected battery comes into contact with vehicle parts. This could cause the highly explosive gas mixture to ignite. You and others could be seriously injured as a result.
- When disconnecting the batteries, always disconnect the negative terminal clamp first and then the positive terminal.
- When connecting the batteries, always connect the positive terminal clamp first and then the negative terminal.
- Incorrect polarity of the supply voltage can cause irreparable damage to the control units.
- Never start the engine without a connected battery (battery terminals tightened).
- Do not disconnect or remove the battery terminals while the engine is running.
- If the batteries are flat, the engine can be jump-started using jump leads connected to the batteries of another vehicle. Observe the Instruction Manual. Do not use a quick charger for jump-starting.
- Only tow-start the vehicle with the batteries connected.
- Quick-charge the batteries only after disconnecting them from the vehicle's electrical system. Both the positive and negative terminals must be disconnected.

Observe the notes on operating safety and vehicle safety in Section 1 "Introduction" ▷ page 9 and ▷ page 10.

Installing additional electrical consumers ▷ page 96.

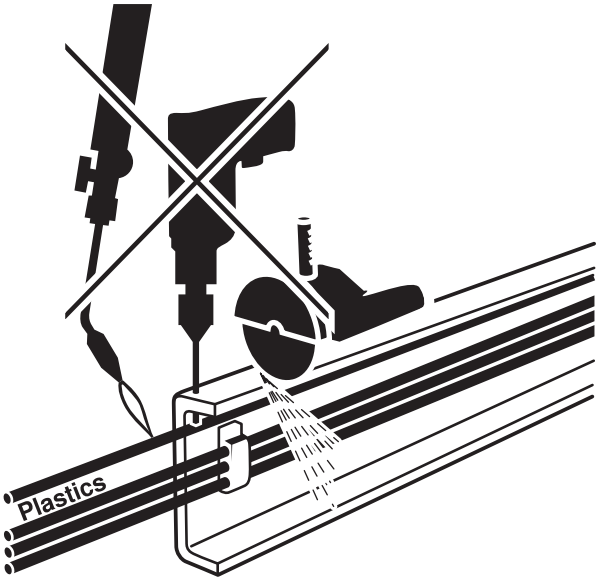
Lines, plug connections and control units

- A plug connection must not be unplugged from or plugged into the control units while the ignition is on.
- Lines must be protected from heat by means of insulation.
- Route cables in such a way that chafing cannot occur, particularly at crossover points and sharp edges. If necessary, use cable ducts or guide pipes.
- Do not carry out tests at connector terminals using unsuitable tools (test probes, wire ends, etc.). This may lead to contact damage and subsequent problems. Use suitable test leads.
- The department responsible must be consulted if a battery isolating switch is to be retrofitted ▷ page 14.

5.2 Brake hoses/cables and lines

⚠ Risk of accident

Work carried out incorrectly on the brake hoses, cables and lines may impair their function. This may lead to the failure of components or parts relevant to safety.



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- Fuel and hydraulic lines and brake hoses must be covered or removed if necessary before carrying out any welding, drilling and grinding work and before working with cutting discs.
- After installing, fuel lines, hydraulic lines and brake hoses, the system must be tested for pressure loss and leaks.
- No other lines may be attached to brake hoses.
- Lines must be protected from heat by means of appropriate insulation.
- Line routing must be designed to prevent any increase in pressure loss.

Comply with all national regulations and laws.

5.3 Mobile communications systems

The ADR/GGVS regulations (Hazardous Materials Road Transport Regulations and European Agreement concerning the International Carriage of Dangerous Goods by Road) and the manufacturer's information and installation specification must be observed.

If mobile communication systems (e.g. telephone, CB radio) are retrofitted, the following requirements must be fulfilled in order to avoid malfunctions developing on the vehicle at a later stage.

Equipment

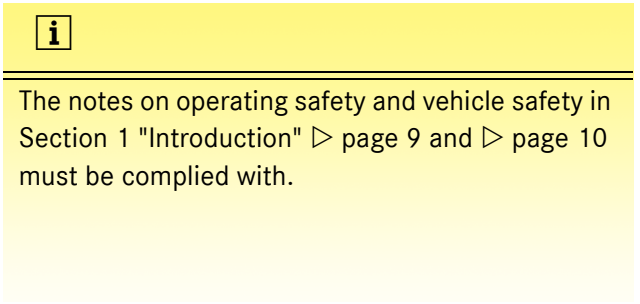
- The equipment must have official approval and correspond to DIN VDE 0879, Part 2.
- The equipment must be permanently installed.
- Operation of portable or mobile equipment inside the cab is only permitted if this equipment is connected to a permanently installed external aerial.
- The transmitter must be installed separately from all other vehicle electronics.
- Protect equipment from moisture.
- Observe the permissible operating temperature.
- Protect the equipment against severe mechanical vibrations.

Aerial (for two-way radio sets)

- The aerial must be officially licensed.

Connection and wiring

- The connection should be made directly to teriminal inside cab ▷ page 99.
- Disconnect the unit from the electrical system before jump-starting.
- Cables should be wired via the shortest possible route (not looped) and twisted.
- Ensure that the system has a good earth connection to the body (aerial and equipment).
- The aerial and connecting cables between the transmitter, receiver and control panel must be routed separately from the vehicle wiring harness in the vicinity of the body earth.
- Make sure that the aerial cable is not kinked or crushed.



The notes on operating safety and vehicle safety in Section 1 "Introduction" ▷ page 9 and ▷ page 10 must be complied with.

5.4 Electromagnetic compatibility (EMC)

The different electrical consumers on board the vehicle cause electrical interference in the vehicle's electrical circuit. At Mitsubishi Fuso, electronic components installed at the factory are checked for their electromagnetic compatibility in the vehicle.

When retrofitting electric or electronic systems, they must be tested for electromagnetic compatibility and this must be documented.

The equipment must have been granted type approval in accordance with EC Directive 95/54/EEC and must bear the "e" mark.

The following standards provide information on this:

- DIN 40839
- DIN 57879, Part 3
- VDE 0879, Part 3
- DC 10614 (EMC component requirements)
- DC 10613 (EMC vehicle requirements)
- EU Directive 95/54/EEC

The notes on operating safety and vehicle safety in Section 1 "Introduction" ▷ page 9 and ▷ page 10 must be complied with.

5.5 Welding work

Risk of injury

Welding work in the vicinity of the airbags can cause the restraint system to malfunction.

Welding work near the airbags is strictly forbidden.

The airbag could be triggered or may no longer function correctly.

The legal stipulations regarding the transport and storage of airbag units must be observed.

All laws governing explosive substances must be complied with.

The following safety measures must be observed to prevent damage to components caused by overvoltage during welding work:

- Disconnect the positive and negative terminals from the battery and cover them.
- Connect the welding-unit earth terminal directly to the part to be welded.
- Do not touch electronic component housings (e.g. control modules) and electric lines with the welding electrode or the earth contact clamp of the welding unit.
- Before welding, cover spring to protect them from welding spatter. Do not touch springs with welding electrodes or welding tongs.
- Cover the fuel tank and fuel system (lines, etc.) before carrying out welding work.
- Avoid welding work on inaccessible cavities in the cab.
- Plug welding is only permissible in the vertical webs of the longitudinal frame member.
- Welds must be ground down and reinforced with angular profiles to prevent notching from welding penetration.
- Avoid welds in bends.
- The distance from a weld to the outer edge should always be at least 15 mm.

Do not connect the arc welder earth clamp to assemblies such as the engine, gearbox or axles.

Welding work is not permitted on assemblies such as the engine, gearbox, axles, etc.

Additional information on welded connections can be found in Section 6 "Modifications to the basic vehicles" ▷ page 73.

The following safety measures must be observed to prevent damage to welding parts;

- Do not weld any item to the frame to hold it temporarily.
- Clean parts thoroughly with a wire brush and dry them off before welding.
- Make sure the paint is completely removed, before welding a painted part.
- Use a low hydrogen type welding electrode. The welding electrode absorbs moisture when it is used, so it is necessary to dry it thoroughly before use.
- When welding, maintain the optimum welding speed and conditions for the preservation of the welding electrode.
- Maintain the welding current at the optimum value for safety.
- Make several short welding beads rather than one long bead.
- Make symmetrical beads to limit shrinkage.
- Avoid more than 3 welds at any one point.
- Avoid welding in strain hardened zones.
- When connecting the ground cable of the arc welder, make sure to disconnect the negative terminal from the battery. The ground of the

welder should be connected to the side rail near the welded part. Never connect around the engine, transmission, propeller shaft, front and rear axles, etc.

- When performing welding work on the chassis, take proper measure to prevent the tubes, harnesses, rubber parts, springs, etc. from heat or spatter.
- Do not cool parts off with water after welding.

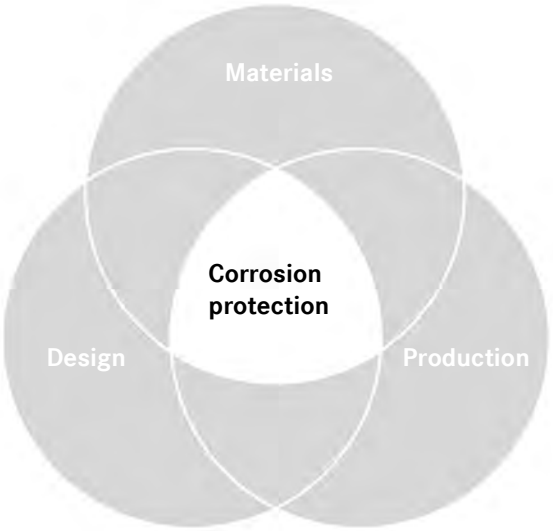
5.6 Corrosion protection measures

General

In order to preserve the durability and quality standard of the vehicle, measures must be taken to protect it against corrosion when the vehicle is modified and after installing bodies and fittings.

Information on the design, execution of work and the requirements of the materials and components to be used with regard to corrosion protection is listed below.

To achieve good corrosion protection, the areas of design (1), production (2) and materials (3) must be perfectly matched.



Optimum corrosion protection

5.6 Corrosion protection measures

Disassembly of components

If the body manufacturer makes structural modifications to the chassis, the corrosion protection in the affected areas must be restored to match the production standards of Mitsubishi Fuso. The areas must also be finished with appropriate paintwork. Information on approved Mitsubishi Fuso refinishing paint suppliers is available on request from the responsible department ▷ page 14.

Damage to components

If components are damaged during disassembly (scratches, scuff marks), they must be professionally repaired. This applies especially for drilled holes and openings. Two-component epoxy primers are particularly suitable for repair work.

Cutting of components

When cutting and grinding work is carried out, the adjacent painted components must be protected against flying sparks and shavings. Grinding dust and shavings must be carefully removed because these contaminants can spread corrosion. Edges and drilled holes must be cleanly deburred in order to guarantee optimum corrosion protection.

Corrosion protection on reinforcements and fittings

Reinforcements and fittings must receive adequate anti-corrosion priming prior to installation. In addition to galvanising, cataphoretic dip-priming and zinc-rich paint in sufficient coatings have proved satisfactory for this purpose.

5.7 Corrosion prevention in welding work

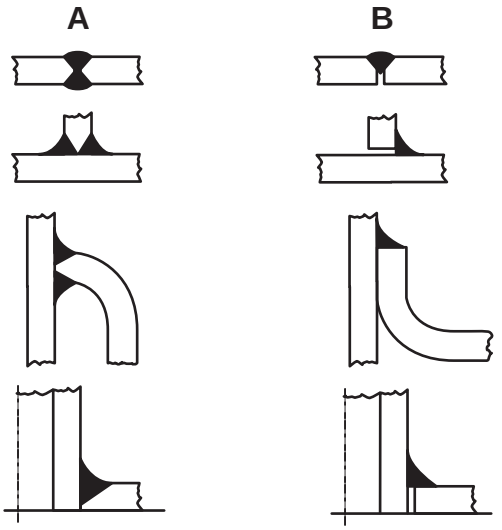
In order to avoid crevice corrosion at weld seams, the welds should be made in accordance with the examples shown.

Preparation

The welding area must be free from corrosion, grease, dirt or similar contamination. If painted surfaces are to be welded, the paint coat must first be removed by grinding or chemical stripping. If this is not done, the paint will burn and the residues can impair corrosion resistance.

After welding work

- Remove drilling shavings.
- Deburr sharp edges.
- Remove any burned paint and thoroughly prepare surfaces for painting.
- Prime and paint all unprotected parts.
- Preserve cavities with wax preservative.
- Carry out corrosion protection measures on the underbody and frame parts.



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Example: Weld seams

A – Suitable
B – Unsuitable

Plug and slot welds, particularly on horizontal surfaces, should be avoided due to the risk of corrosion. If they are unavoidable, these welds must receive additional preservation. Furthermore, avoid designs which allow moisture to accumulate. These must be fitted with additional drainage holes or gaps in the weld seam.

5.8 Bolted connections

Finish-painted components

If painted parts are to be bolted together, the coats of paint must not cause settling in the bolted connections. In such cases, hard, high-density coatings such as cataphoretic immersion primers or powder coatings should be used. The coat thicknesses should be kept as small as possible (cataphoretic immersion primer approx. 20 µm, powder coatings approx. 100 µm).

- If using bolts with serrations under the head, an additional top coat must be applied to touch up any paint damage.
- The use of hexagon socket or Torx socket bolts in a horizontal position is to be avoided, as moisture can accumulate in the bolt head under certain conditions, leading to corrosion.

Fasteners

In areas susceptible to corrosion always use bolts, nuts, etc. with corrosion resistance (>480 h saline fog test according to ISO 9227) regardless of the required strength class. This standard is satisfied, e.g. by bolts with electroplating and additional thick-coat sealing and zinc platelet coatings with sealer (e.g. Dacromet or Deltaseal), refer to VDA 235-104 recommendation.

Information on identifying suitable coatings can be obtained from your local bolt supplier.

For details on bolted connections see Section 3 ▷ page 30.

5.8 Bolted connections

Preventing contact corrosion

Direct contact between materials with different electrode potentials can lead to corrosion of the less noble material when exposed to moisture and salt ions.

When selecting materials, avoid the following combinations:

- Chrome/nickel-steel with aluminium
- Chrome/nickel-steel with zinc-coated steel

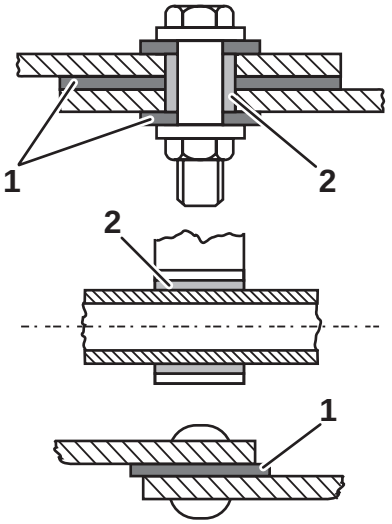
Insulation by coating

Contact corrosion can be prevented by using insulation such as washers, sleeves or bushings. Even in this case, however, the connecting points must not be persistently exposed to moisture.

Vehicle cleaning and care

When the vehicle is handed over to the body manufacturer, it must immediately be cleaned of salt and dirt. If it is to be stored for some time, the vehicle must be preserved.

During modification it must be ensured that load-bearing components are additionally protected against aggressive chemicals and environmental influences. If the vehicle comes into contact with chemicals or salts (e.g. snow-clearing operations), it must be cleaned thoroughly at regular intervals.



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1 Insulating washer
2 Insulating sleeve

!

A conductive connection occurs if two different metals are brought into contact with each other through an electrolyte (e.g. air humidity). This causes electrochemical corrosion and the less base of the two metals is damaged. The further apart the two metals are in the electrochemical potential series, the more intense electrochemical corrosion becomes.

For this reason, electrochemical corrosion must be prevented by insulation or by treating the components accordingly, or it can be minimised by selecting suitable materials.

5.9 Painting work

Environmental note

Paints and lacquers are harmful to health and to the environment if they are not handled correctly.

Dispose of paints and lacquers in an environmentally responsible manner.

Paint compatibility should be checked when repainting. In order to avoid colour variations on painted bodies, Mitsubishi Fuso recommends that paints be used only if they have been tested and approved for the vehicle model in question. Information on the primers used at the factory and on Mitsubishi Fuso colour numbers can be obtained from the relevant department ▷ page 14.

Mask the following areas before painting:

- Sealing surfaces
- Windows
- Contact areas between the wheels and wheel hubs
- Contact areas for wheel nuts
- Breathers on gearboxes, axles, etc.
- Disc brakes
- Door locks
- Door retainers in the rear door hinges
- Coupling flanges of drive shafts and power take-offs
- Spring mounting area

!

Do not exceed a temperature of 80 °C for drying the paint.

5.10 Leaf springs

Parabolic springs

- Damaged parabolic springs must be completely replaced.
- Individual spring leaves may not be renewed.
- Only use spring leaves which have been tested and approved for the vehicle model in question. Reinforcement by installing additional spring leaves is not permitted.
- Do not damage the surface or the corrosion protection of the spring leaves when carrying out installation work.
- Before carrying out welding work, cover the spring leaves to protect them against welding spatter. Do not touch springs with welding electrodes or welding tongs.

5.11 Tilting the cab

Risk of injury

Before tilting the cab, please make sure that you read the "Tilting the cab" section in the detailed Instruction Manual.

You could otherwise fail to recognise dangers, which could result in injury to yourself or others.

5.12 Towing and tow-starting

Risk of accident and injury

Before towing or tow-starting, please make sure that you read the "Towing" section in the detailed Instruction Manual. You could otherwise fail to recognise dangers and cause an accident, which could result in injury to yourself or others.

Failure to observe the instructions in the Instruction Manual can result in damage to the vehicle.

5.13 Risk of fire

⚠ Risk of fire

Work on live electrical lines carries a risk of short circuit.

Before starting work on the electrical system, disconnect the on-board electrical system from the power source, e.g. battery.

With all bodies make sure that neither flammable objects nor flammable liquids can come into contact with hot assemblies (including through leakages in the hydraulic system) such as the engine, gearbox, exhaust system, turbocharger, etc.

Appropriate caps, seals and covers must be installed on the body in order to avoid the risk of fire.

5.14 Storing and handing over the vehicle

Storage

To prevent any damage while vehicles are in storage, Mitsubishi Fuso recommends that they be serviced and stored in accordance with the manufacturer's specifications ▷ page 36.

Handover

To prevent damage to the vehicle or to repair any existing damage, Mitsubishi Fuso recommends that the vehicle be subjected to a full function check and a complete visual inspection before it is handed over ▷ page 37.

6.1 General

Risk of injury

Do not modify any bolted connections that are relevant to safety, e.g. that are required for wheel alignment, steering or braking functions.

When unfastening bolted connections make sure that, when work is complete, the connection again corresponds with the original condition.

Welding work on the chassis/body may only be carried out by trained personnel.

The body, the attached or installed equipment and any modifications must comply with the applicable laws and directives as well as work safety or accident prevention regulations, safety rules and accident insurer leaflets.

Further information on bolted and welded connections can be found in Section 3 "Planning of bodies" ▷ page 30 and Section 5 "Damage prevention" ▷ page 55.

6.2 Chassis frame material

If the frame is extend, the material of the extension element and reinforcing bracket must have the same quality and dimensions as the standard chassis frame.

See the respective tender drawings for the longitudinal frame member dimensions.

Material: FB, FE (except FE8-JZ) . MJSH440 or SAPH440 (JIS) (SAE J410950X or the equivalent)

FE8-JZ. HTP540

Further information on the material can be found in chapter 9.5.3 "Frame section modulus" > page272

6.3 Drilling work on the vehicle frame

Drilling work on the longitudinal frame members

Parts which must not be drilled:

- In the top and bottom flanges of the chassis frame. Holes in the rear end of the frame are an exception. Holes must not, however, be drilled in sections with a supporting function for the last axle or on parts fastened to the frame.
- Near sectional changes in the longitudinal frame member, e.g. frame drop and frame taper.
- At load application points (e.g. in the immediate vicinity of spring brackets).

Existing (factory-made) holes in the upper and lower flanges of the chassis frame must not be enlarged (exception: mounting holes for the end crossmember). These bore holes must not be used to secure assemblies.

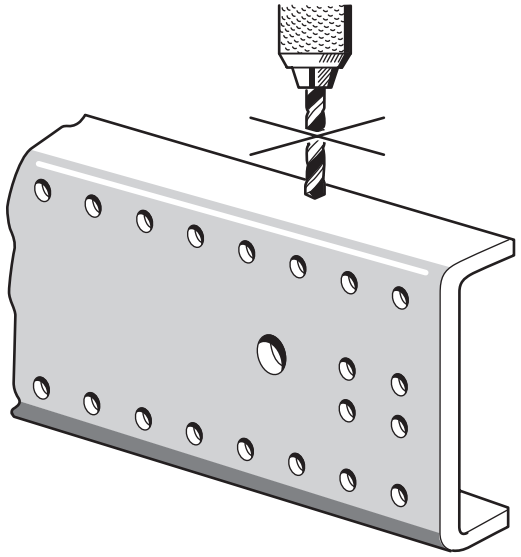
Holes may be drilled in the web of the longitudinal member for special cases (see below).

- Distance (a):
  At least 30 mm from inside edge of longitudinal frame member.
- Distance between holes (b):
  At least 30 mm
- Maximum hole diameter (d): 11 mm

No load may be applied to the centre of the web of the longitudinal member (diaphragm effect). If this is unavoidable, make sure that there is a large area of support on both sides of the web.

Deburr and ream all holes after drilling.

For further information, contact the department responsible > page14



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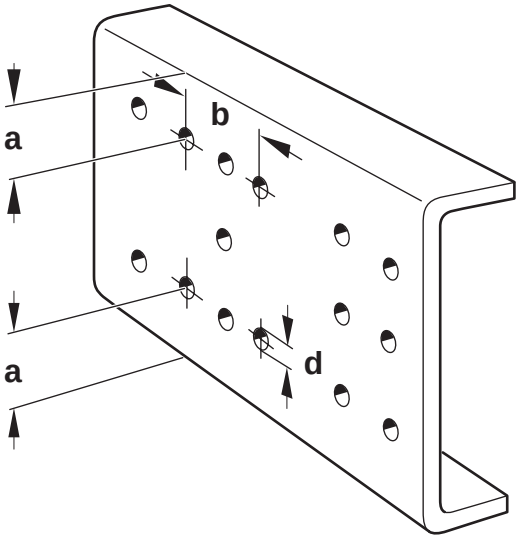

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6.3 Drilling work on the vehicle frame

Drilling work on the crossmembers

- The holes and distances between the holes should conform to the values specified in the chart below.

Crossmember type	Hole diameter	Centre-to-centre distance of holes
• Alligator type (see Fig. 1) • Channel type (see Fig. 2)	9 mm max.	30 mm* min.

Note*: Maintain the dimensions of previously drilled holes.

- Holes should be more than 100 mm away from the end of the side rail flange or the end of the gusset.
- Holes in the web of the channel type crossmember shoule be 50 mm min. from the end of the crossmember. (Refer to Fig. 2)
- Holes in the flange should be more than 25 mm from the end.
- Holes should be drilled more than 20 mm from the curved part of the flange.

Alligator type

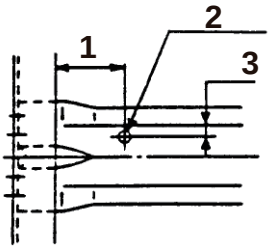


Fig. 1

1 100 mm min
2 DIA 9 mm max
3 25 mm min

Channel type

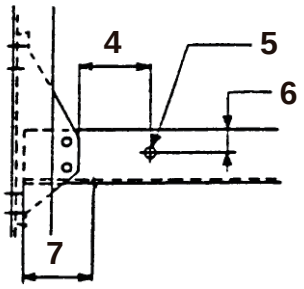


Fig. 2

4 100 mm min
5 DIA 9 mm max
6 25 mm min
7 50 mm min (Web surface)

6.4 Welding work on the vehicle frame

Welding work on the frame may only be carried out by trained personnel.

Welding must not be performed on the upper or lower flange of the chassis frame (except for wheelbase and frame extensions).

Connect the earth terminal of the arc welder directly to the part of the vehicle to be welded.

- Use only completely dry lime basic jacket electrodes. Electrode diameter 2.5 mm.
- Maximum current per mm electrode diameter 40 A.
- Weld only with electrodes connected to the positive pole of a direct current source. Always weld from bottom to top.
- MIG welding is permissible. Welding wire thickness 1 to 1.2 mm.
- The yield point and tensile strength of the welding material must be at least equal to that of the material to be welded.
- Welds must be ground down and reinforced with angular profiles to prevent notching from welding penetration. Avoid welds in bends. There should be at least 15 mm between the weld and the outer edges.
- Fine-grain steel with elongations at fracture of > 380 N/mm² in MC quality and in the sheet thickness for frame sections should not be pre-heated.
- Do not weld anything within 20 mm of the curve in the side rail.

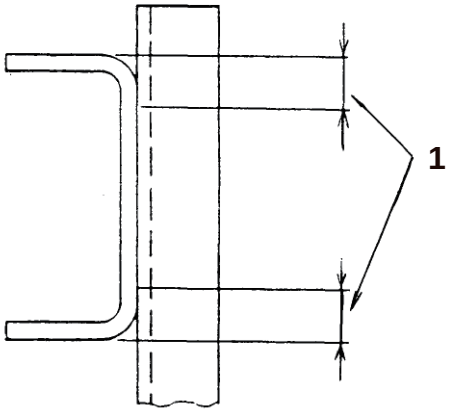


Fig. 1

1 No welding within 20 mm of this part.

6.4 Welding work on the vehicle frame

Further information on welded connections can be found in Section 5 "Damage prevention"
▷ page 60.

- Avoid defects such as deposited metal cracking, toe crack, blow holes, slag inclusion, under cut, poor penetration, etc.

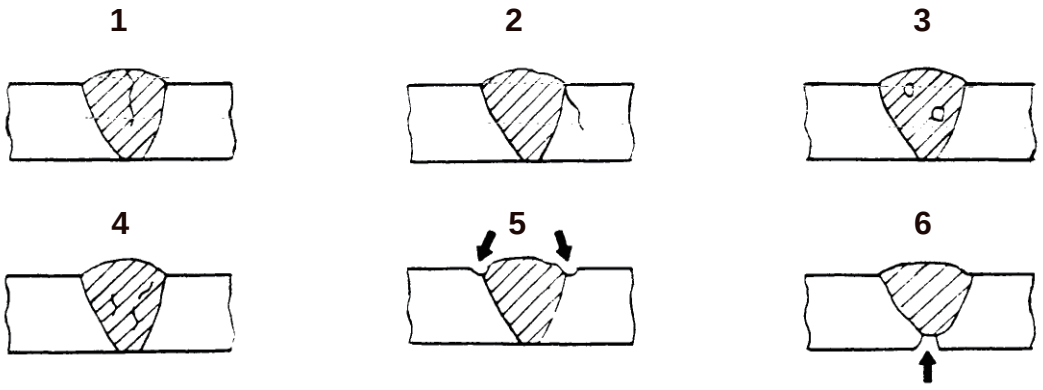


Fig. 2

1 Deposited metal cracking
2 Toe crack
3 Blow hole
4 Slag inclusion
5 Under cut
6 Poor penetration

6.5 Reinforcement on side rail

Avoid adding outside reinforcement to the side rail, as this can actually produce stress concentrations which cause cracks in the frame. If additional reinforcement is absolutely necessary, perform the procedures described below.

- An L-shaped stiffener is recommended. The channel type stiffener should not be used as it produces a gap with the side rail flange.
- Position the L-shaped stiffeners so the flange will be on the side of the side rail stress that receives the tension (the lower surface within the wheelbase and the upper side for the overhang).
- Do not align the stiffener ends with the ends of the sub side rail that have already been installed. (Refer to Fig. 1)
- Do not position the ends of the stiffener near stress concentration locations such as the rear surface of the cab, spring hangers, crossmember ends, etc.
- Do not cut the outer stiffener ends vertically. They should be cut at an angle of less than 45°. (Refer to Fig. 1)
- Attach the stiffeners and the side rail by riveting or plug welding on the web.
- When drilling rivet holes, the outer stiffeners and side rails should be processed together. The difference between the rivet and hole diameters should be less than 0.7 mm. The rivet holes should be separated from the side rail corners by 20 mm.
- Use rivet which hove a 10 mm diameter. Arrange them in a zig-zag pattern.
- Separate rivets and bolts at least 70 mm to prevent heat damage or distortion when they are plug welded.
- Holes for plug welding should be at least 30 mm dia and arranged in a zig-zag pattern.
- Position the end of the stiffeners 25 mm - 30 mm from the holes for rivets or plug welds.
- The pitch for rivets and plug welds should be 70 mm - 150 mm. Keep the pitch small near the edge of the stiffener.
- Do not drill any additional holes in the side rail flange. Only use the holes which have been already drilled in the flange.

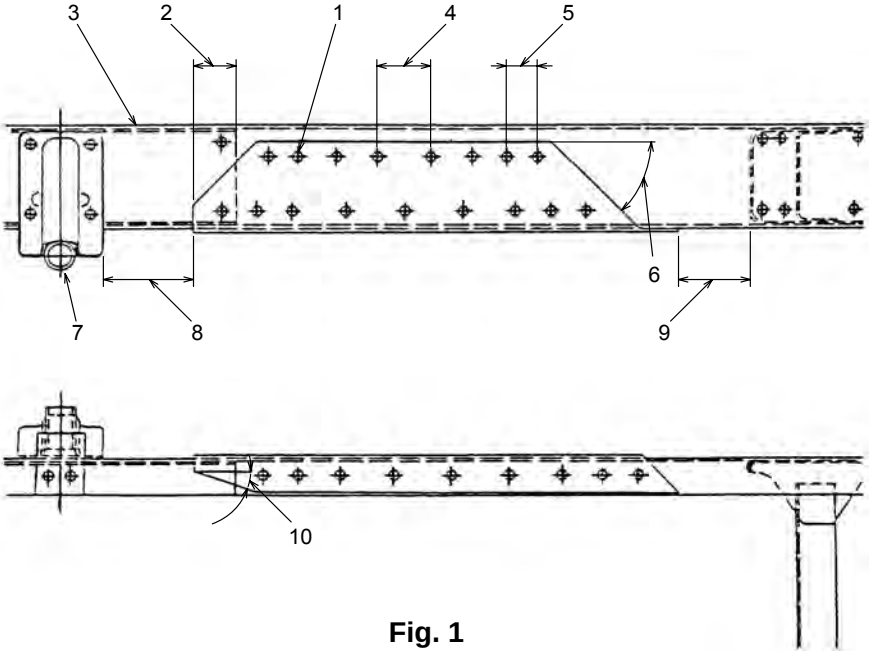


Fig. 1

1 10mm diameter rivet or 30mm diameter plug welding arranged in zig-zag pattern
2 Do not align the stiffener end with the sub side rail
3 Sub side rail
4 Pitch: 70-150 mm
5 The pitch at the end should be smaller
6 45° or less
7 Front Shackle Hanger
8 Do not connect stiffener to the hanger
9 Do not position the end near a crossmember
10 45° or less

6.5.1 Others

Never drill or grind any notches in the side rail, crossmember flange, or crossmember gusset.

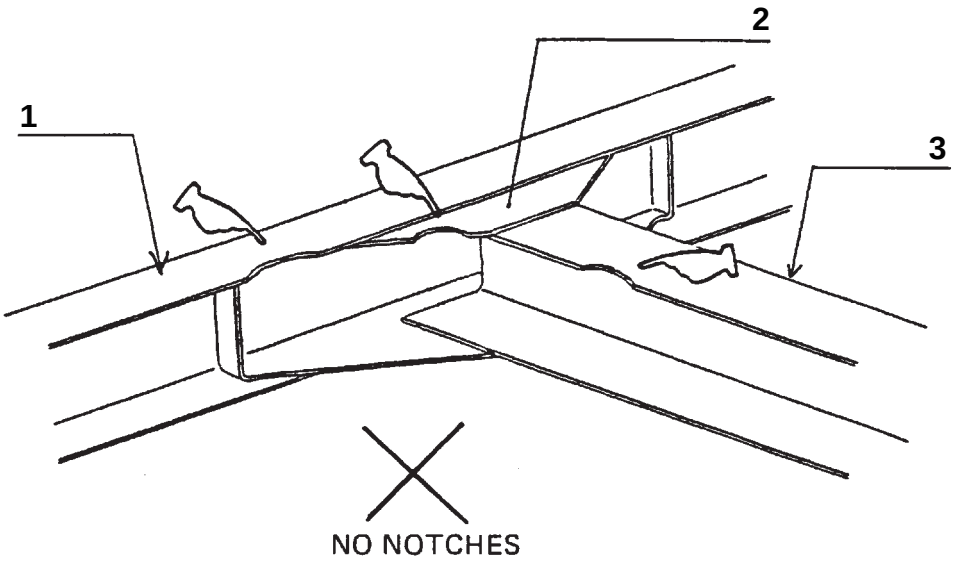


Fig. 1

1 Side rail
2 Crossmember gusset
3 Crossmember

6.6 Brake systems

Risk of accident

Work carried out incorrectly on the brake system may impair its function. This may lead to the failure of components or parts relevant to safety. This could cause you to lose control of the vehicle and cause an accident with possible injury to yourself and others.

All accident prevention regulations must be complied with when working on the vehicle.

Comply with all national regulations and laws.

After any modifications the brake system must be tested for proper operation and approved by a technical inspection authority otherwise the operating permit will be invalidated.

Further information can be found in Section 5 "Damage prevention" ▷ page 57.

Disc brake

Do not impede cooling by attaching spoilers below the bumper, additional hub caps or brake disc covers, etc.

6.7 Modifications to the wheelbase

The wheelbase should not be extended or shortened because considerations for the propeller shaft length, balance, position of centre bearings, brake piping and harness length are required.

If this is unavoidable, contact the department responsible ▷ page 14.

6.7.1 Prohibition on modifying the propeller shaft

⚠ Risk of accident

It is strictly prohibited to modify the propeller shaft by welding or other means to change its length.

An improperly modified propeller shaft may cause vibration during operation, which in turn may cause cracks and fractures in the clutch housing, separation of the propeller shaft, and other dangerous conditions, possibly resulting in a serious accident.

6.8 Frame modifications

- The maximum permissible axle loads must not be exceeded, while the minimum front axle load must be exceeded.
- Rear underride guard: fastened in the same way as on a standard vehicle.
- Extend the mounting frame to the end of the frame.

6.8.1 Frame extension of rear overhang

Extension of the rear overhang may be required. Extension procedures are listed below.

- Added material as an extension member.
  Use steel plates: ▷ page 74
  The cross section form should be the same as that of the side rail rear end. The plate thickness should be 6.0 mm.
- Reinforcement material.
  Use the same for the frame. ▷ page 74
  The plate thickness should be 3.2 mm - 4.5 mm.
- Rear overhang extension
  (a) Added material length less than 300 mm.
  Butt weld continuously from the outside as shown in Fig. 1 and finish the welded surface by grinding. No reinforcement is required for normal usage, but reinforcement should be added as shown in (b) in order to support heavy weights on the overhang extension.

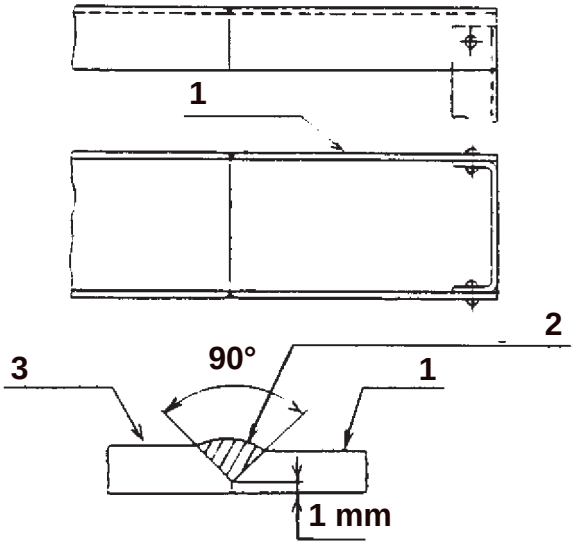
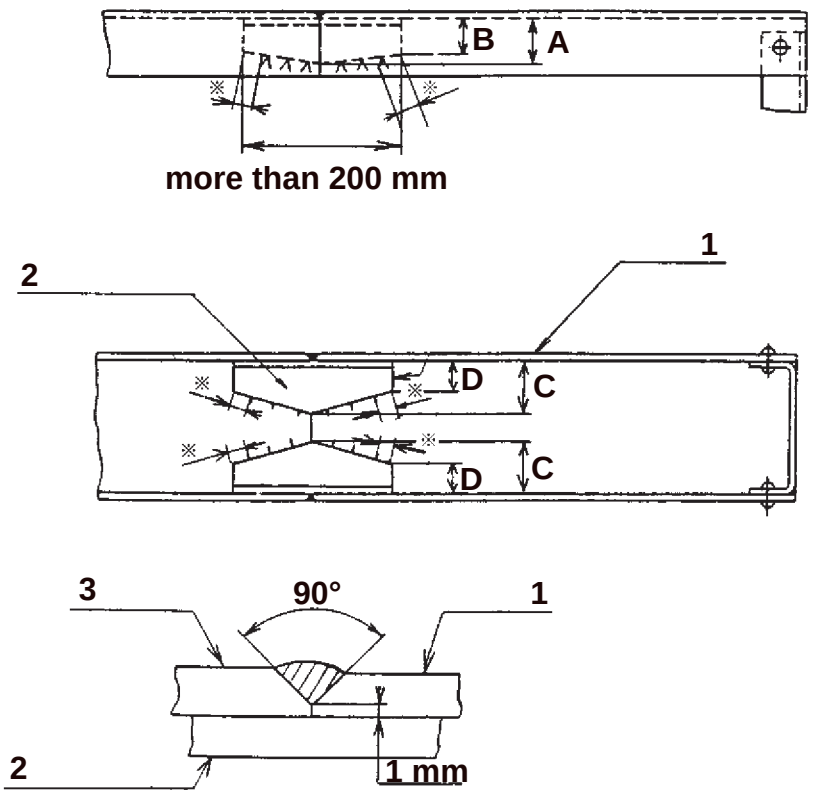


Fig. 1

1 Extension
2 Finish surface with grinder
3 Side rail

(b) Added material length of 300 mm or more.
Attach reinforcement on the inside of the side rail as shown in Fig. 2. Butt weld the additional material and the side rail continuously, and then finish the welded surface by grinding.



Note: There should be no contact within 10 mm of the asterisk ※ mark.

Unit: mm

A	B	C	D
50	35	50	35

Fig. 2

1 Extension
2 Reinforcement
3 Side rail

- Exercise great care in welding the reinforcement to the lower face of the rear side rail where it is tapered.

- Cautions for finishing the side rails.
  Be especially careful when finishing the flange end of the butt-welded side rails. Ensure a clean finish by grinding the weld so it is free of undercut, pileup or convex bead.

Under cut

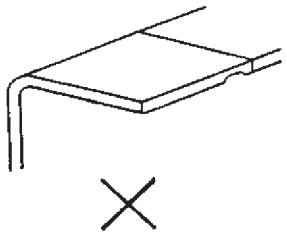


Fig. 3

Pile up

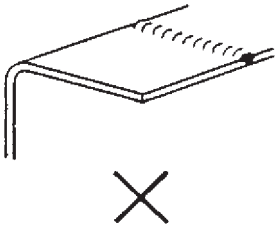


Fig. 4

6.9 Mounting equipment on the side rail

⚠ Risk of accident

The use of parts, assemblies or conversion parts and accessories which have not been approved may jeopardise the safety of the vehicle.

Before installing any attachments, special-purpose bodies, equipment or carrying out any modifications to the basic vehicle and/or its assemblies, you must read the relevant sections of the vehicle Instruction Manual, as well as the operating and assembly instructions issued by the manufacturer of the accessories and items of optional equipment.

You could otherwise fail to recognise dangers, which could result in injury to yourself or others.

Official acceptance by public testing bodies or official approval does not rule out safety hazards.

All national laws, directives and registration requirements must be complied with.

6.9.1 Mounting equipment on the side rail

- Attach a stiffener to the inside of the side rail as shown in Fig. 1 when installing bolts to support heavy components on the side rail overhang. This will prevent cracks in the frame due to resonance of the component if the static load caused by the weight of the component exceeds 100 kg of force for each bolt.

Example:

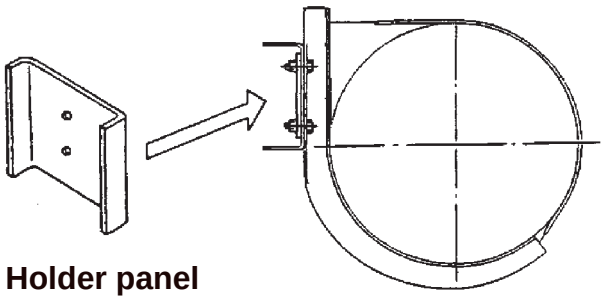


Fig. 1

- As a rule, avoid attaching additional equipment together with components (fuel tank, battery, etc.) which are already installed to the frame side. When this is absolutely necessary, increase the size of the bolts, or the number of bolt locations, to decrease the stress on each bolt.

6.9.2 Wheel chocks

Mounting

- In a suitable bracket so that they cannot rattle.
- Secured to prevent loss.
- Ensure good accessibility.

6.9.3 Mudguards and wheel arches

- The distance from the tyre to the mudguard or wheel arch must be sufficient, even when snow chains or anti-skid chains are fitted and at full spring compression (including under torsion). The dimensional data in the tender drawings must be observed.
- On chassis with standard bore holes for mudguard brackets, use these bore holes to secure the brackets.

6.9.4 Spare wheel

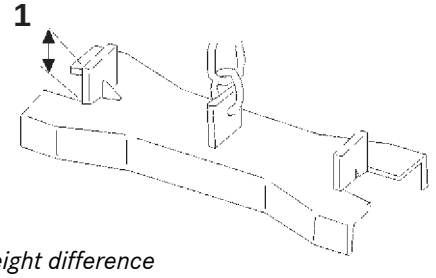
Mounting

- Install under the frame, on the side of the frame or on the body in accordance with the chassis drawing.
- It must be easily accessible and easy to handle.
- Double-secured to prevent loss. (only for Germany)
- The Spare tyre - carrier
  When remodelling the tyre-carrier, followings must be paid attention:

  (a) A single worker can easily remove or attach the tyre.
  (b) Interference is not caused with parts other than the intended stopper when tightening the tyre on the tyre carrier.
  (c) The worker can attach even burst tyres.
  (d) The tightening section is prevented from becoming loose.
  Example 1: Clamped tyre-carrier
  - The tightening bolt must be 30 mm or longer.
  - Double nuts must be used for tightening.
  - The structure having a height difference for preventing falling on the bracket.
  - The structure having a stopper for preventing tightening nuts and bolts from falling.

  Example 2: Hoisted tyre-carrier
  - The structure must have a spring inserted below the hoisting plate.
  - The structure must prevent reverse rotation of the hoisting shaft.
  - The structure must have a lock for preventing the tyre from falling

  (e) The tightening bolt must be M10, 7 T strength or an equivalent product. (clamped tyre-carriers)
  (f) The tyre shape must limit movement in the forward, backward, left and right directions. (clamped tyre-carriers)
  (g) Take care to prevent injury when hoisting tyres. (hoisted tyre-carriers)
  (h) Tightening bolts must be tightened to a torque of at least 49 Nm and by a force at least 290 N at handles. The tyre-carrier must be designed to have enough contact area to support the tyre securely.
  (hoisted tyre-carriers)
  (i) The height difference on the lifter must be at least 10 mm, or the lifter must be of a shape that enables the same effect. (hoisted tyre-carriers)



1 Height difference

  (j) When manufacturing the carrier, apply a tensile load of 4900 N or more on the lifter. (hoisted tyre-carriers)
  (k) Affix a Caution Plate indicating the recommended tightening torque 49 Nm at a position that can be easily seen during operation.

- Carry out the following tests with the carrier attached to the body or in a similar state.
  (a) Tensile strength test
  (clamped tyre-carrier)
  Apply the following load face down at the centre of the disc wheel with a tyre attached to the carrier.

  $P = W \times \alpha \times \beta$

  P : Test load
  W : tyre of maximum set weight
  α : Load multiple of 2.5
  β : Required safety ratio of 1.3

  (hoisted tyre-carrier)
  Apply the following load face down via the hoisting plate.

  $P = (Po \times \gamma \pm W \times \alpha) \times \beta$

  P : Test load
  Po : Load applied on chain by tightening torque during standard tightening
  W : tyre of maximum set weight
  α : Load multiple of 2.5
  β : Required safety ratio of 1.3
  γ : Load multiple of 1.5

  As a result of this test, carrier components must be free from detrimental deformation.

(b) Hoisting strength test
(hoisted tyre carrier)
Fix the hoisting plate, and apply the following torques on the carrier.

$T = To \times \gamma \times \beta$

T : Test torque
To : Standard tightening torque
β : Required safety ratio of 1.3
γ : Load multiple of 1.5

As a result of this test, carrier components must be free from detrimental deformation.

(c) Operating durability
Hoist a tyre of maximum allowable weight, tighten to a torque of 5 kgfm, and then winch down. Repeat this series of operations 200 times. (This test needs be carried out continuously.) As a result of this test, operation must remain uninterrupted and carrier components must be free from detrimental deformation.

(d) Looseness resistance
Increase and decrease vibrations of 1 g (9.8 m/sec2) (need not be 1 g during resonance vibrations) and 8.3 Hz to 50 Hz (500 to 3,000 times per minute) on the supporting device in the vertical direction of the carrier mount continuously for one hour taking at least 5 minutes for each reciprocal movement.
As a result of this test, the carrier device must be free from detrimental looseness.

6.9 Mounting equipment on the side rail

- Cautions when Attaching the Crank Handle Guide
  The spare tyre crank handle guide is not attached to the frame on FE single-tyre vehicles. So, follow the procedure below when attaching the crank handle guide onto the body.

Crank handle guide

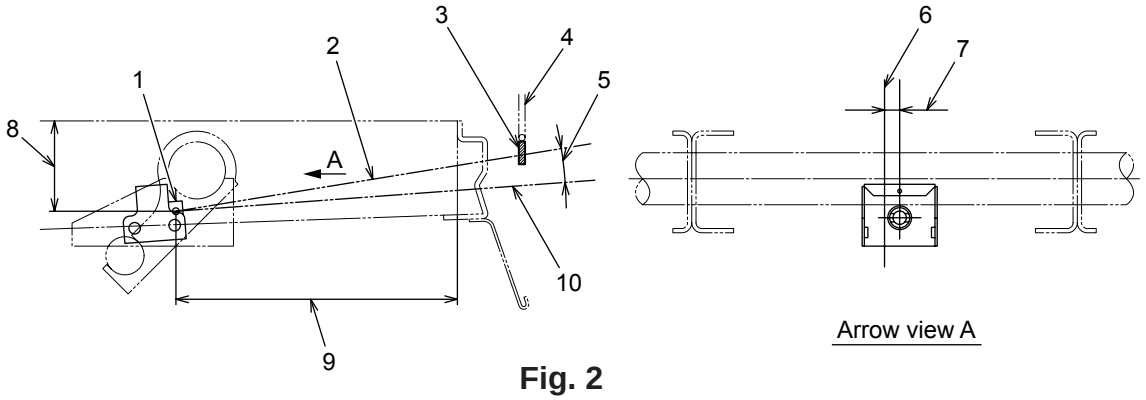


Fig. 2

1 Clank handle boss
2 Clank handle center line
3 Guide plate
4 Rear body part
5 6° or less
6 Body center line
7 25
8 134
9 370
10 Ideal center line

Handle guide plate

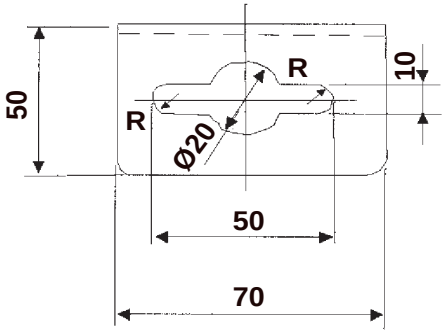


Fig. 3

A handle guide plate of any external shape may be used. However, make sure that the hole is machined to the shape shown in the figure ont the left.
The angle between the handle center line and ideal center line must be 6° or less.

Crank handle guide (reference)

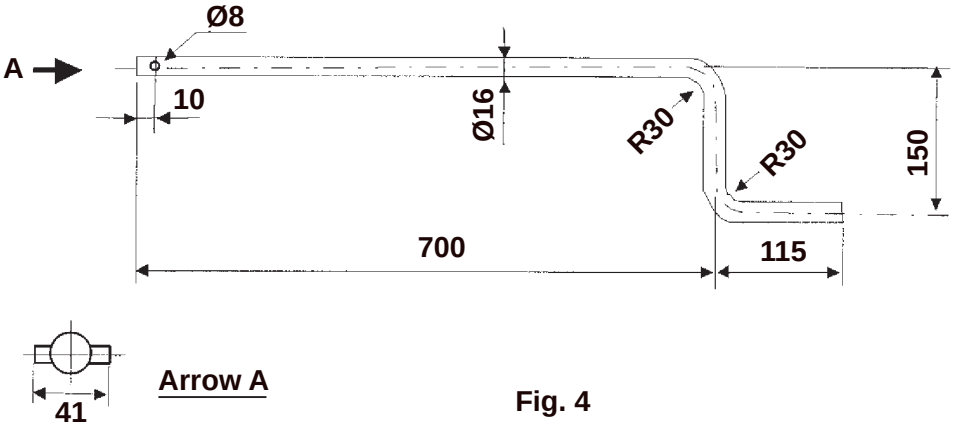


Fig. 4

6.9.5 Front underrun protection

All class N2 vehicles put into circulation must comply with EC Directive 2000/40/EC (front underride protection) in order to conform with Directive 70/156/ EEC, Annex II. The intended operation of a vehicle is to a great extent determined by the bodywork, so that the structure, design and equipment of the chassis must be carefully considered both with and without the front underrun protection. It is not possible to retrofit a front underrun protection on Canter. Mitsubishi Fuso recommends that the approval and intended use be clarified with the authorities responsible beforehand.

6.9.6 Rear underrun protection

In Germany, Article § 32b of the German vehicle licensing regulations requires an underrun protection when

- the distance between the rear of the vehicle and the final rear axle is more than 1,000 mm
- the ground clearance of the chassis as well as the main body parts exceeds 700 mm for the unladen vehicle across the entire width.

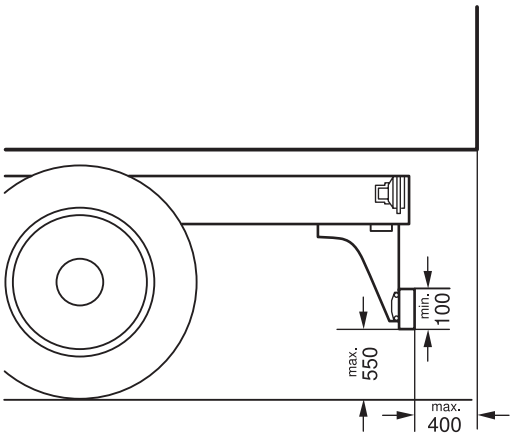
Exceptions to this regulation are semitrailer tractor vehicles, machines and vehicles whose purpose cannot be fulfilled if an underrun protection is fitted.

If an underride guard is required, it must comply with EC Directive 70/221/EEC.

The underride guard must be mounted as far back as possible.

Installation dimensions:

- maximum height of underrun protection (unladen vehicle) above road surface: 550 mm.
- maximum width = width of rear axle (outer tyre edge).
- minimum width: = Width of rear axle – 100 mm on each side (widest axle is authoritative)
- crossmember section height at least 100 mm.
- edge radius at least 2.5 mm.



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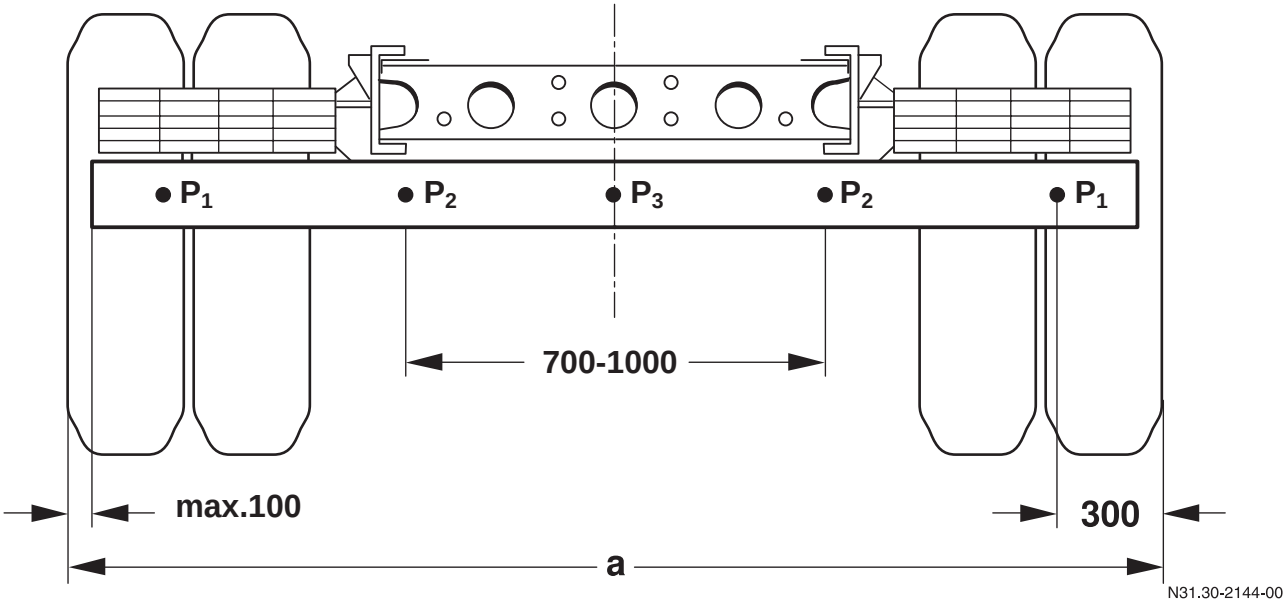
The rear underrun protection fitted at the factory complies with EC Directive 70/221/EEC. No modifications may be made. If modifications are unavoidable, they must be clarified in advance with the vehicle licensing agency responsible.

6.9 Mounting equipment on the side rail

Check strength of underrun protection and its mounting in accordance with EC Directive 70/221/EEC.

At maximum deformation, the distance from the end of the body to the end of the underrun protection at the load points may not exceed 400 mm.



a = Rear axle width
P_1, P_2, P_3 = Load application points

6.9.7 Side underrun protections

According to EC Directive 89/297/EEC, a side underrun protection is stipulated for vehicles with a permissible gross vehicle weight in excess of 3.5 t.

- Components may be mounted in the side underrun protections, e.g. battery box, air tank, fuel tank, lights, reflectors, spare wheel and tool box, provided that the specified clearances are maintained. Brake, hydraulic lines and other parts may not be secured to side underrun protections.
- The function and accessibility of all equipment on the vehicle must not be impaired.
- The underrun protections must extend continuously from the front to the rear wherever possible.
- Adjacent parts may overlap. The overlapping edge must point to the rear or downwards.

6.10 Cab

Modifications to the cab must not have a negative effect on the operation or strength of assemblies or control elements or on the strength of load-bearing parts.

The tilting cab must not be fixed rigidly to the bodywork. If any interventions to the cab are planned they must be co-ordinated with the department responsible ▷ page 14.

- If the tilting cab is fixed rigidly to the bodywork, a lettter of no objection from the department responsible is required ▷ page 14.
- If additional parts are installed or removed, a torsion bar with increased aligning torque may be necessary on the short cab with three-point bearing without tilting hydraulics. If the weight of the bodies amounts to more than 50 kg, a four-point bearing with tilting hydraulics and a letter of no objection from the department responsible are required ▷ page 14.
- The content relating to in Section 2.5 Mitsubishi three diamonds and emblem must be complied with ▷ page 19.

6.11 Seats and bench seat

Risk of injury

Modifications to or work incorrectly carried out on a restraint system (seat belt and seat belt anchorages, belt tensioner or airbag) or its wiring, could cause the restraint systems to stop functioning correctly, e.g. the airbags or belt tensioners could be triggered inadvertently or could fail in accidents in which the deceleration force is sufficient to trigger the airbag. For this reason, never carry out modifications to the restraint systems.

Comply with all national regulations and directives.

The retrofitting of original seats and/or bench seats is only permitted and possible if the necessary preinstallations exist in the vehicle, such as suitable floor assembly, reinforced cab/cab suspension. For all other seat retrofittings, corresponding evidence (belt checks, tensile tests) is required as part of an endorsement check carried out by the department responsible ▷ page 14.

6.12 Electrics/electronics

⚠ Risk of accident

Before installing any attachments, special-purpose bodies, equipment or carrying out any modifications to the basic vehicle and/or its assemblies, you must read the relevant sections of the Owner's Handbook, as well as the operating and assembly instructions issued by the manufacturer of the accessories and items of optional equipment.

You could otherwise fail to recognise dangers, which could result in injury to yourself or others.

Work incorrectly carried out on electronic components and their software could prevent this equipment from working correctly. Since the electronic systems are networked, this might also affect systems that have not been modified.

Malfunctions in the electronic systems could seriously jeopardise the operating safety of the vehicle.

Electrical Wiring

The electrical circuits have been designed in particular with the emphasis on safety. In this respect, a high-current fuse box is provided at the side of the battery in order to prevent fires caused by shorting during accidents. So, follow the procedures below when making changes to the electrical circuits.

- Additional Wiring
  (a) Use wires of the same gauge and color as the original wires when making wiring extensions.
  (b) Connect wires securely by soldering or crimping terminals and then insulate them completely with tape or other material. Never attempt to connect wires by just twisting the stripped ends together.
  (c) Do not use sulfuric acid for soldering.
  (d) Do not extend or shorten the battery cables. In case of change of battery cable wiring due to the transfer of the battery, be sure not to make extension or shortening of the battery cables. Replace the cables with the ones with specified length.
  (e) Be especially careful not to modify the type of clamps, location or slack of wiring connected to movable components between the starter and the frame.
  (f) Wiring should be made along the rear body parts, the frame, etc., and never extend it individually in midair.
  (g) Clamp all wires securely in locations away from moving parts or sharp corners on the chassis and body. Use grommets whenever routing wires through metal plates in order to prevent electrical short circuits due to installation damage. (Fig. 1)

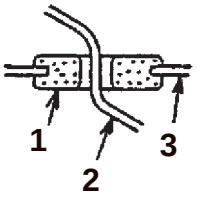


Fig. 1

1 Grommet
2 Wire
3 Metal plate

(h) Wires should never pass along brake tubes or fuel lines. Observe the following clearances.

Wiring	Clearance mm (in.)
Parallel	10 (0.39) or more
Crossed	20 (0.79) or more

(i) Position wires more than 200 mm (7.87 in.) away from parts which become extremely hot such as the exhaust pipe or muffler. Install a heat insulator if heat protection is necessary.

(j) Gravel which is thrown up by the wheels can damage lamp wiring. Install metal covers to protect the wiring.

(k) Tape wires together with the nearest chassis wiring harnesses if possible.

(l) Route wires along the chassis harnesses that are already installed. Wires should be clamped with vinyl tape, and wrapped up widely with thin metal sheets (rubber or vinyl coated). Do not use weak vinyl tape that could fall off soon due to engine heat.

(m) Wires connecting engine and transmission components should run along previously installed harnesses to allow them to absorb motion. Also allow adequate slack to prevent them from contacting other components.

(n) When connecting plugs, place the female end in the power source side to prevent a short circuit to the body even if the terminal comes off.

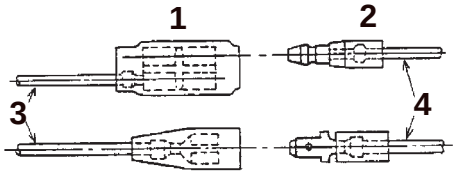


Fig. 2

1 Socket (female)
2 Plug (male)
3 Power source side
4 Ground side

(o) Use coated or protected tape when clamping wires.

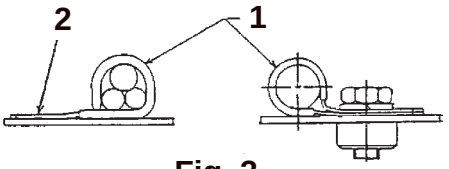


Fig. 3

1 PVC covering
2 Spot welding

(p) Bonding or temporary clamps should be used only for additional support.

(q) Use standard wiring clamp intervals as shown below:

Harness diameter	Clamp intervals mm (in.)
5 (0.20) max	300 (11.81) max
5-10 (0.20-39)	approx. 400 (15.75)
10-20 (0.39-0.79)	approx. 500 (19.69)

(r) Wires may come in contact with edges of metal parts; increase the number of clamps and cover the edges with protectors to prevent damages due to vibrations.

(s) When passing electrical wiring through the cab floor, use the grommet shown in Fig. 4.

- Cut the grommet as shown in Fig. 5
- Drill an appropriate additional hole for the plug. (excluding T/M with P.T.O. vehicles)
- Pass the harness through and tape.

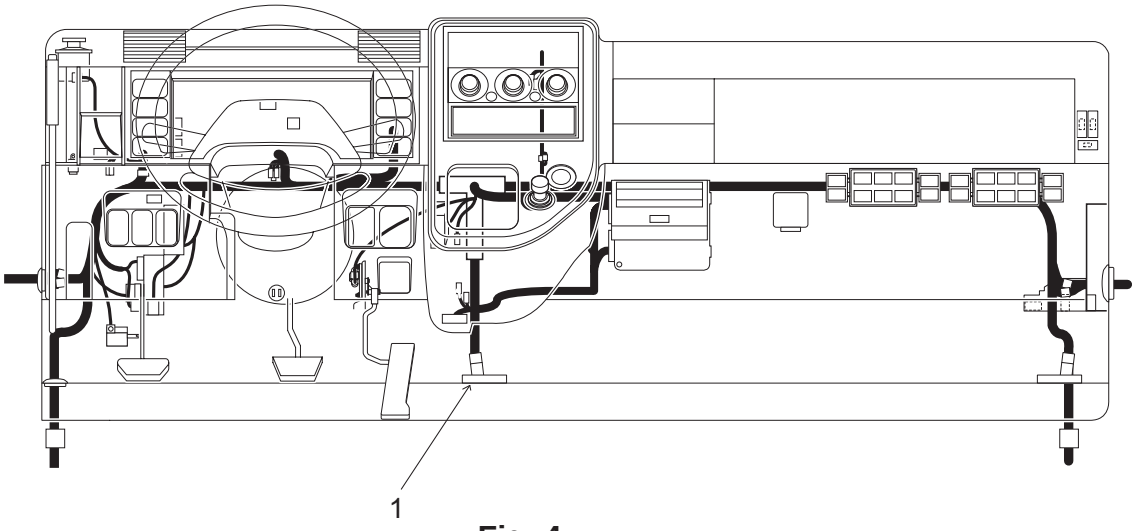


Fig. 4

1 Grommet

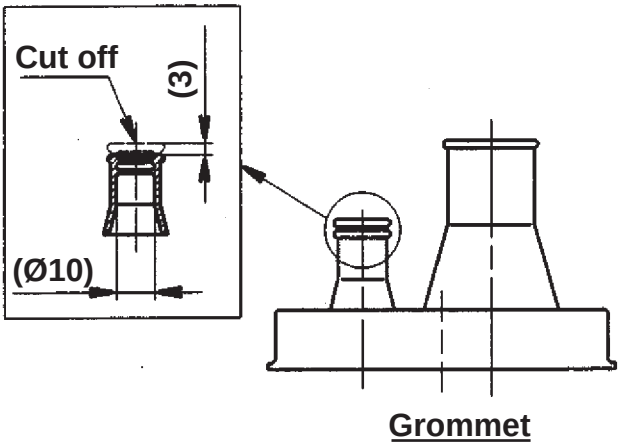
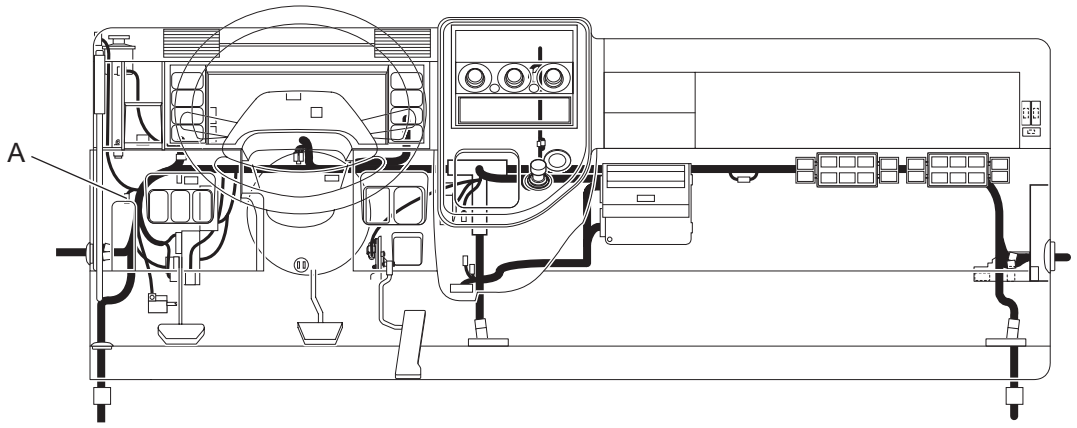
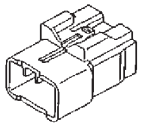
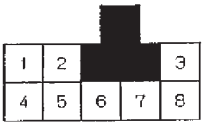


Fig. 5

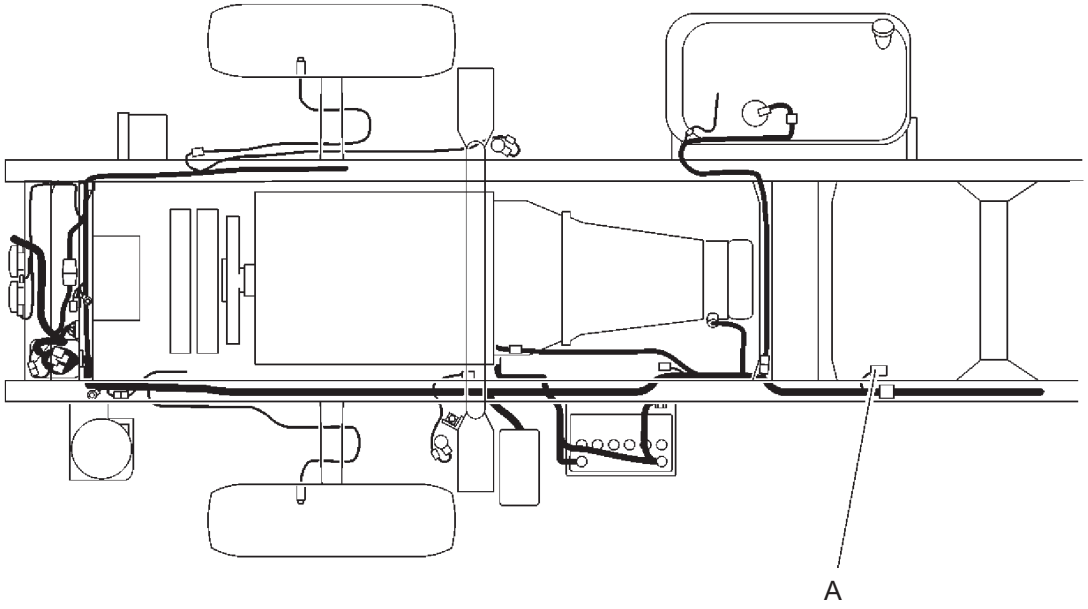
- Mounting Location of Optional Terminal Inside Cab

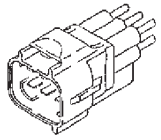


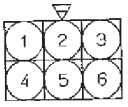
Sign	Binder phase Connector No.
A	MFTBC Part No. MH058509 090 II -8PF 

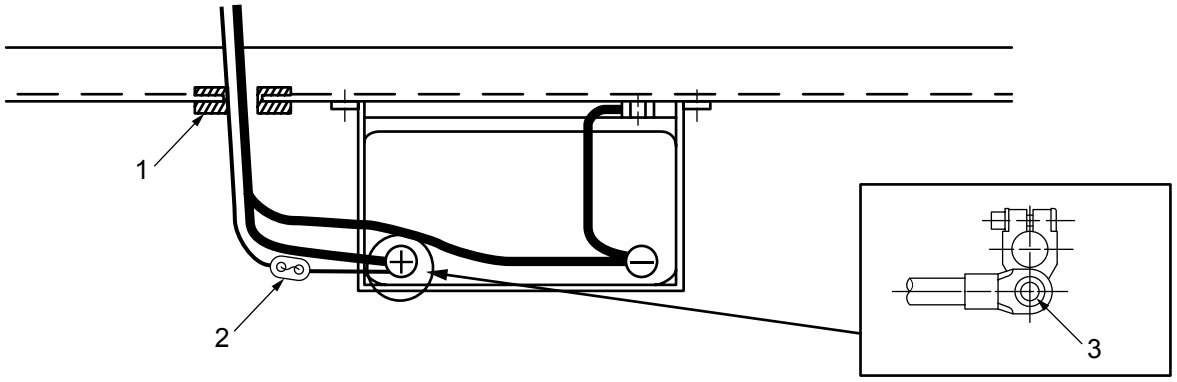
Sign	Connector No.	No.	Circuit	Line Color	Load
A	MFTBC Part No. MH058054 090 II -8PF 	1	BATT	G-R	Total with Body chassis terminal : 7A
		2	ACC	W-R	Total with Body chassis terminal : 7A
		3	GROUND	B	———
		4	MAIN	L-R	Total with Body chassis terminal : 7A
		5	ILL	G-R	Total with Body chassis terminal : 5A
		6	———	———	———
		7	———	———	———
		8	IDLE UP SIGNAL	R-B	———

- Mounting Location of Optional Terminal Outside Cab



Sign	Binder phase Connector No.
A	MFTBC Part No. MH053296 090 II -6PF 

Sign	Connector No.	No.	Circuit	Line Color	Load
A	MFTBC Part No. MH058335 090 II -6PF 	1	BATT	G-R	Total with Body chassis terminal : 7A
		2	ACC	W-R	Total with Body chassis terminal : 7A
		3	MAIN	L-R	Total with Body chassis terminal : 7A
		4	ILL	G-R	Total with Body chassis terminal : 5A
		5	IDLE UP SIGNAL	Y-G	————
		6	GROUND	B	————



1 Grommet
2 Fuse, etc
3 M8 screw

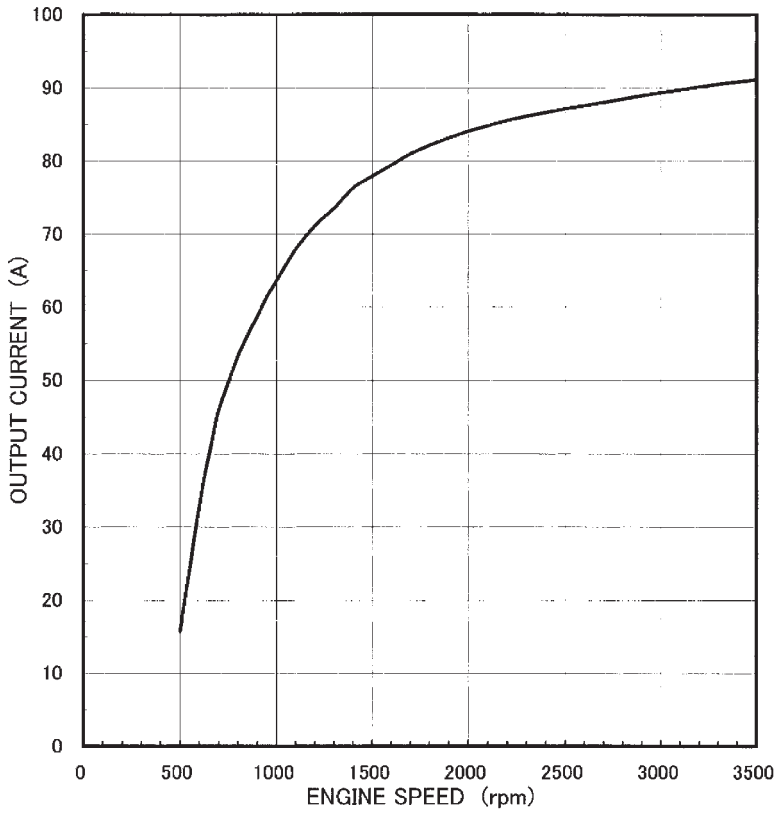
- Cautions when Earthing the Frame
  When moving the battery or when earthing a new rear body on the frame, remove masked or painted areas then reliably earth.

- About Charging/Discharging Balance
  The charging/discharging balance may become worse in the following operating conditions. For this reason, reduce the electrical load during work referring to the Engine Alternator Performance Curves on page ▷ page 102.
  - When there is a lot of night work
  - When working for a long time with the engine idling
  - When many large load electrical auxiliary equipments are connected.

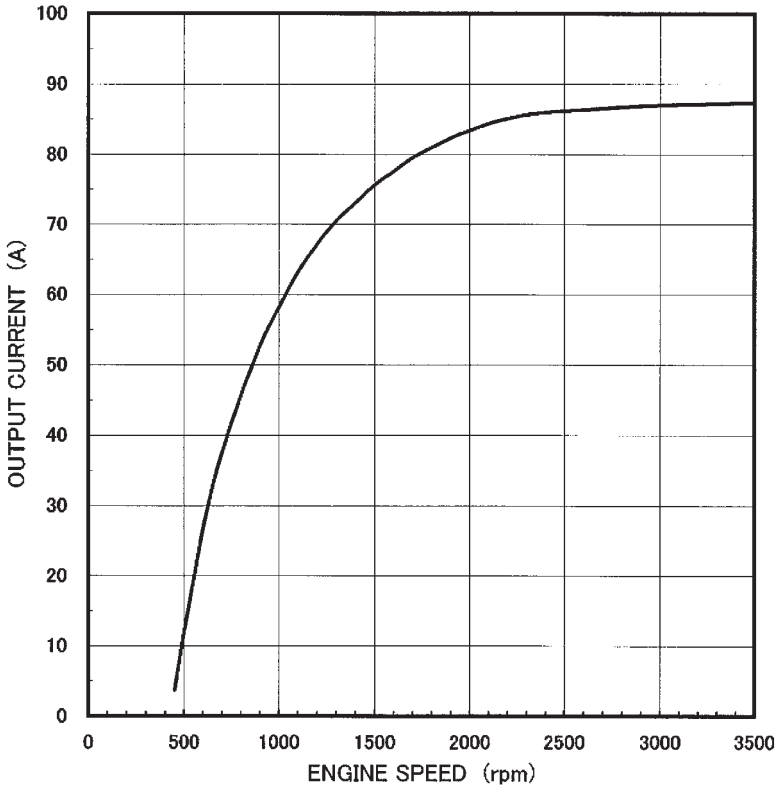
  In particular, when mainly idling the engine during night work, make sure that the electrical load is lower than the output current of the alternator.

- Engine Alternator Performance Curves

4P10 Engine Alternator Performance Curve
Nominal output : 12V-110A



4P10 Engine Alternator Performance Curve
Nominal output : 12V-140A

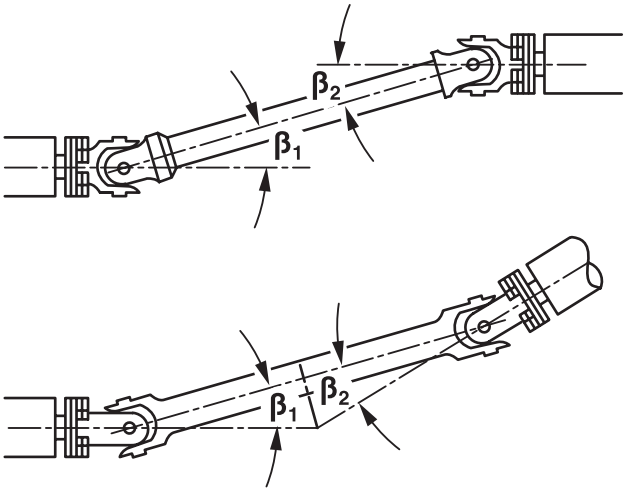


6.13 Installation of propeller shafts

Observe the following when installing propeller shafts:

- Installation guidelines of the propeller shaft manufacturer.
- If necessary, fit several propeller shafts with intermediate bearings.
- The flanging surfaces must be completely flat.
- The angular offsets must be identical at both universal joints ($ß_1 = ß_2$). They must not be greater than 6° or less than 1°.
- Balancing plates must not be removed.
- Make sure that the marks are aligned on the propeller shafts during installation.
- Eliminate any vibrations, e.g. by optimising the propeller shaft angles.

6.13.1 Types of angular offset



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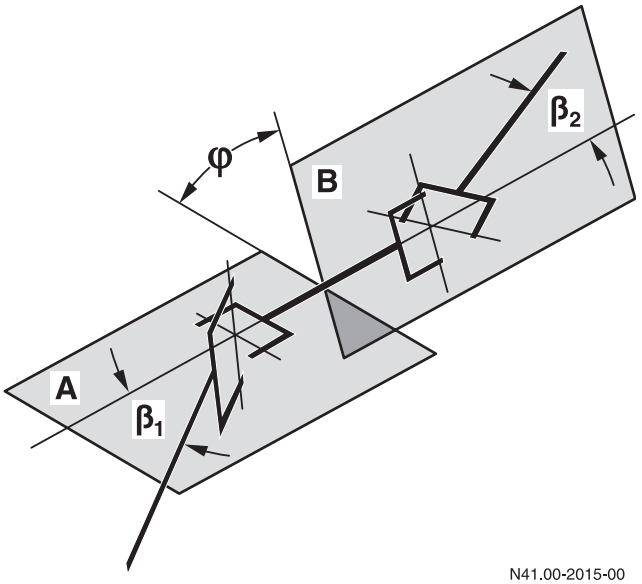
Angle in one plane (two-dimensional offset)

$ß_1 = ß_2$
Upper = Z-type offset
Lower = W-type offset



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Angles in two planes (three-dimensional offset)

$ß_1 = ß_2$

With three-dimensional offset, the input and output shafts intersect in different planes (combined W- and Z-offset).

In order to compensate for any irregularities, the inner joint fork must be offset.

!

Failure to observe these instructions could result in damage to the major assemblies.

7.1 General

Risk of accident and injury

Do not modify any bolted connections that are relevant to safety, e.g. that are required for wheel alignment, steering or braking functions.

When unfastening bolted connections make sure that, when work is complete, the connection again corresponds with the original condition.

Welding work on the chassis/body may only be carried out by trained personnel.

The body, attached or installed equipment and any modifications must comply with the applicable laws and directives as well as workplace safety or accident prevention regulations, safety rules and accident insurer leaflets.

Risk of fire

With all bodies make sure that neither flammable objects nor flammable liquids can come into contact with hot assemblies (including through leakages in the hydraulic system) such as the engine, gearbox, exhaust system, turbocharger, etc.

Appropriate caps, seals and covers must be installed on the body in order to avoid the risk of fire.

Bodies on which the gearbox can be expected to be exposed to high levels of water, e.g. cleaning water (flushing, overflowing or similar), require an effective cover over the gearbox (gearbox guard) which will prevent abrupt cooling as well as water ingestion via the gearbox breather.

Further information on bolted and welded connections can be found in Section 3 "Planning of bodies" ▷ page 30 and Section 5 "Damage prevention" ▷ page 55.

7.2 Mounting frame

All bodies require a mounting frame or a substructure that assumes the function of a mounting frame to ensure a reliable connection between the chassis and the body.

If more than one body is mounted on the same chassis (e.g. platform and loading tailgate), the larger of the specified moments of resistance must be taken to determine the mounting frame.

Sub-frame

- Install the sub-frame as shown in Fig. 1 to gradually reduce the stress concentrations in the front end. The front end of the sub-frame should be installed as close to the rear of the cab as possible. Extend the sub-frame as far toward the cab as possible when the rear body is installed far from the cab.

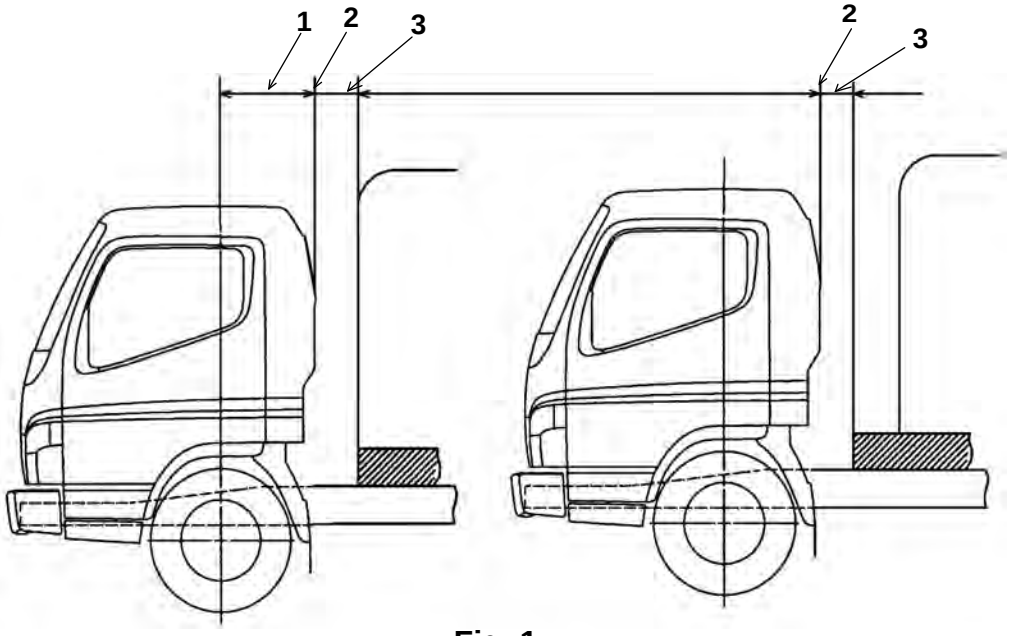


Fig. 1

1 525 mm
2 CAB BACK
3 Extend the front end of the sub-frame as far forward as possible; less than 115 mm

- Examples of front-end shape of sub-frames
  (a) Install the sub-frame having the shape as shown in Fig. 2 to gradually reduce the stress concentrations in the front end.

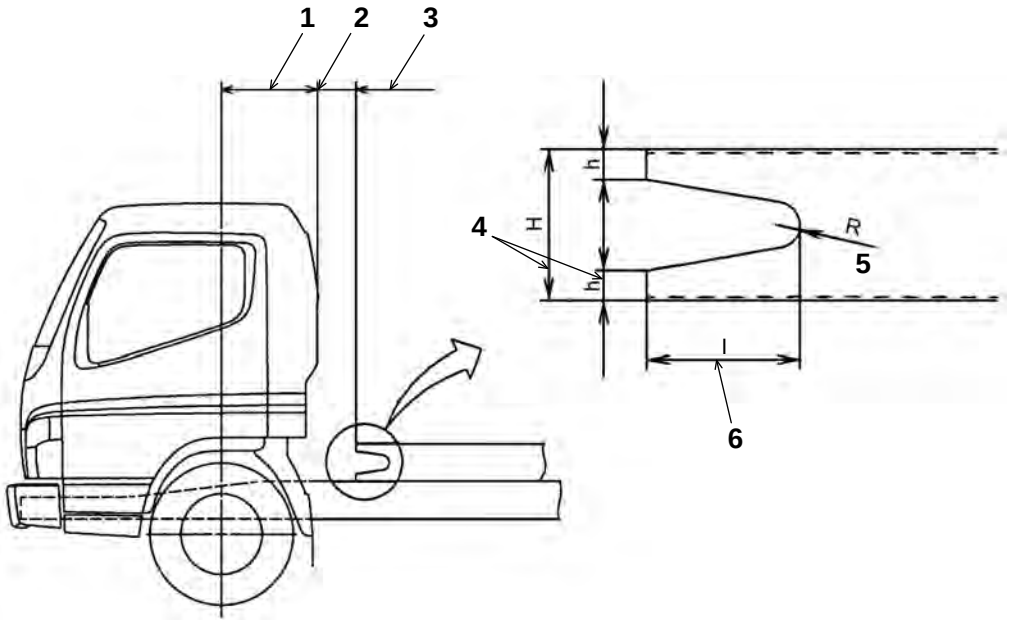


Fig. 2

1 525 mm
2 CAB BACK
3 Extend the front end of the sub-frame as far forward as possible; less than 115 mm
4 "h" should be between a fourth and a fifth of "H"
5 DRILLING
6 "l" must not be less than 2/3H(two thirds of "H")

(b) The shape of the sub-frame front end as shown in Fig. 2 is highly desirable. However, if there is enough room behind the cab, the shape as shown in Fig. 3 is also acceptable.

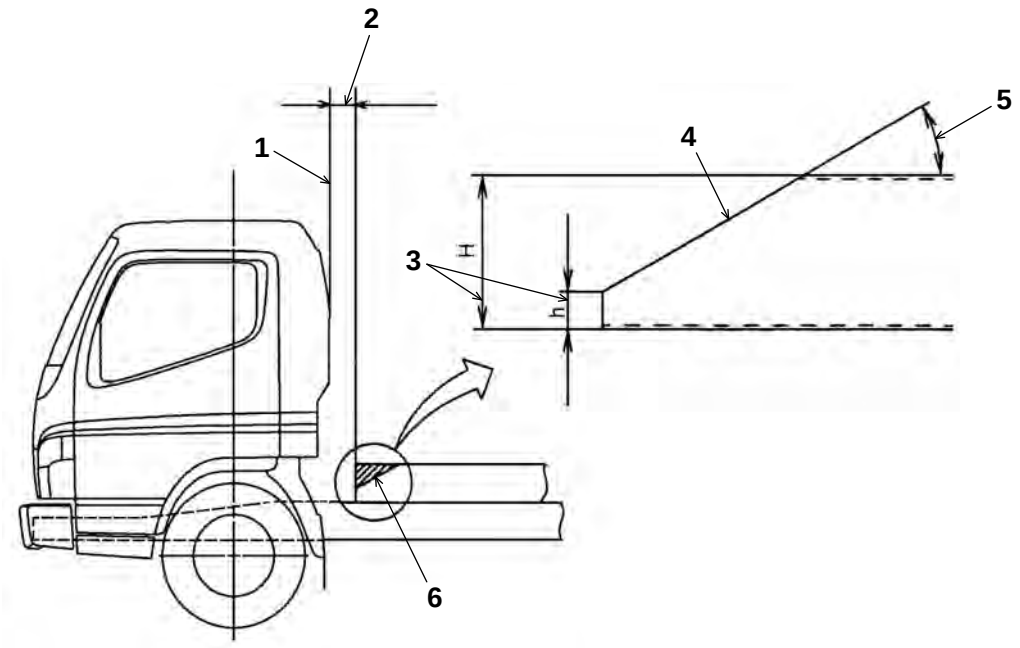


Fig. 3

1 CAB BACK
2 Less than 115 mm
3 "h" should be between a fourth and a fifth of "H"
4 Left open
5 Less than 30°
6 Cut off Obliquely

(c) If it is difficult to shape the front end of the sub-frame as described in Fig. 2 and Fig. 3, cut it to the shape as shown in Fig. 4 before installation.

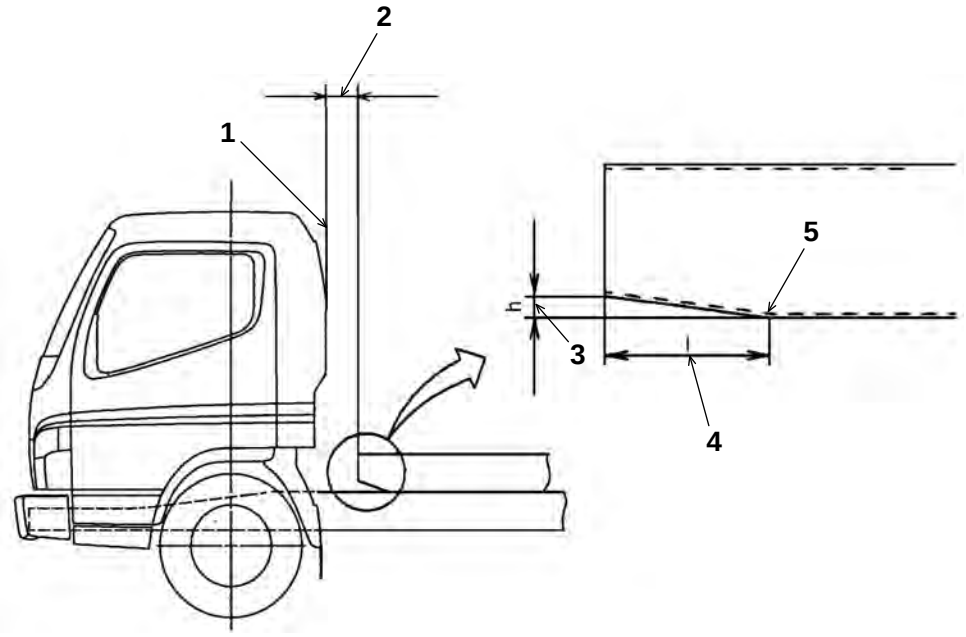


Fig. 4

1 CAB BACK
2 Less than 115mm
3 "h" should be 2 to 3 mm
4 "l" should be 50 to 70 mm
5 This corner should be ground smoothly

7.3 Mounting frame attachment

Attaching with U-bolts

- Allow sufficient clearance so that the U-bolts for tightening sub-frames or main bolsters do not come in contact with pipes, hoses, wires and harnesses.
- Do not install U-bolts at the taper-cut position of the sub-frames or main bolster.

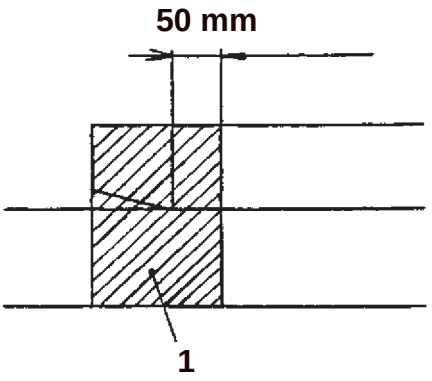


Fig. 1

1 Do not install U-bolts in the shaded area.

- Place a wooden spacer inside the flange of the side rail to avoid bending when tightening the U-bolts.
- Use metal spacers in locations subject to heat, such as near the muffler, or other place where it is difficult to place wooden spacers.

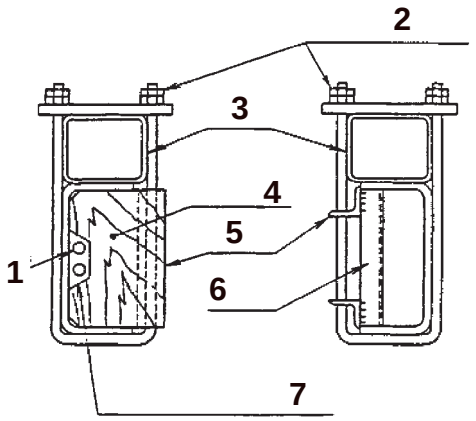


Fig. 2

1 Pipes and other parts
2 Use double nuts
3 Main bolster
4 Spacer (Wood)
5 Slip Stopper
6 Spacer (Steel plate or pipe)
7 Make a notch to secure clearance from pipes or tubes.

7.3 Mounting frame attachment

Mounting Bracket

When U-bolts cannot be used with a particular body, use mounting brackets in those positions to attach it to the sub-frame. Use the following bracket locations and installation procedures.

- Attach the mounting brackets to the chassis frame with bolts whenever possible. Be especially careful not to damage any pipes, hoses, and wiring harnesses attached to or around the frame.
- Do not attach brackets close to the ends of crossmembers, gussets or stiffeners. Brackets should be installed at least 200 mm away from the end of these parts.

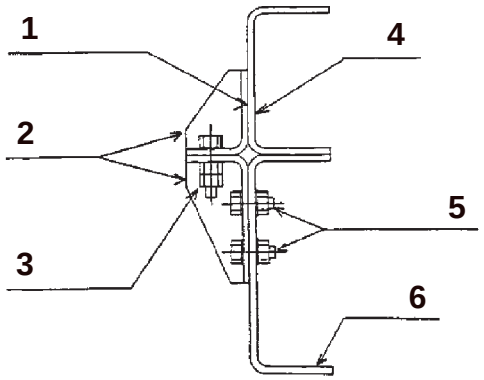


Fig. 1

1 Attached by welding
2 Mounting bracket
3 Use double nuts
4 Sub-frame
5 Tighten the bolts and nuts in more than two locations.
6 Chassis frame

- As a maker option (except W.B-J), the genuine rear body brackets are available as shown below.

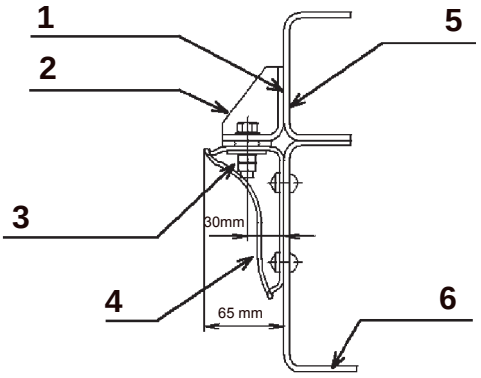
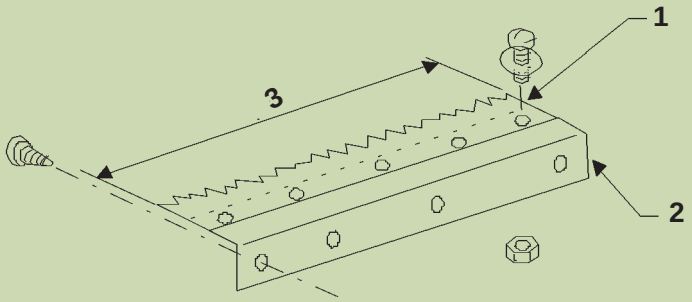


Fig. 2

1 Attached by welding
2 Mounting bracket
3 Use double nuts With washer (more than Ø32 mm)
4 Genuine mounting bracket
5 Sub-frame
6 Chassis frame

7.4 Clearance between chassis parts and bodies

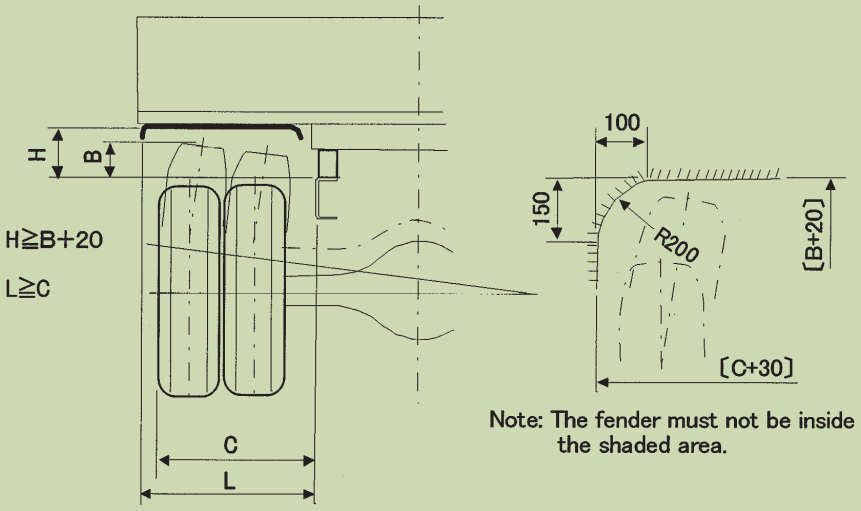
The minimum clearance between chassis parts and rear body parts must be kept according to the following table of minimum clearance standard.

Part	Minimum Clearance and Notes
1. The Surrounding part of T/M	25 mm at surrounding part of transmission except rear part.
2. Clutch and Transmission Assembly	Do not install any rear body part in the area of 100 mm of rear part, because clutch and transmission assy is moved backward in the same inclination line of engine, to pull out the clutch spline shaft, when clutch and transmission ass'y is removed from engine.
3. Upper part of Transmission	Keep more than 100 mm of clearance between the upper surface of upper cover and the rear body part if possible, because this clearance is used when the transmission upper cover is removed.
4. The surrounding part of the Propeller shaft and the Rear axle	Min. 25 mm of the surrounding part.
5. The brake hose (which connects to the front and rear wheel)	Keep min. 50 mm of clearance at worst. This brake hose is considered to move when vehicle is driven.
6. The cab back and the surrounding part of the engine	No equipment must be mounted within 100 mm in the cab back, except the subframe and the side members.If eny equipment inevitably comes within this range, install it in such a position which is more than 300 mm far from both sides of engine rear part and no over the engine. Also take care that any equipments must not stand in the way of air flow which is discharged rearward, downward, or sideward from the engine compartment. If the air is discharged insufficiently, engine compartment temperature rise, resulting in poor engine performance, and fuel pipe and electric wiring overheat. Install a protector as shown below on the cab back or the front of the fixed rear body as high as possible with every regard to exhaust so as to keep away foreign matter, which may come between cab and rear body from high temperature areas of the engine. When a protector is installed ;on the cab back, use the specialised fixing holes on the cab back.  *1 Rubber strip* *2 Sheet metal* *3 675 mm*

7.4 Clearance between chassis parts and bodies

<table>
<tr><th>Part</th><th>Minimum Clearance and Notes</th></tr>
<tr><td>7. The Exhaust system</td><td>The heat and the interference of the exhaust system is a significant factor in the safety of the vehicle.Keep the clearance between the rear body parts and these parts at least following figures on the table.
<table>
<tr><th>Parts</th><th>Minimum Clearance (mm)</th></tr>
<tr><td>Wiring harness</td><td>150 (*100)</td></tr>
<tr><td>Fuel hose and pipe</td><td>200</td></tr>
<tr><td>Fuel tank</td><td>150</td></tr>
<tr><td>Rear body floor</td><td>100</td></tr>
<tr><td>Subframe, additional member etc.</td><td>20</td></tr>
<tr><td>Spring, axle</td><td>20</td></tr>
<tr><td>Shock absorber</td><td>30</td></tr>
<tr><td>Tyre</td><td>100</td></tr>
<tr><td>Propeller shaft</td><td>50</td></tr>
<tr><td>Differential</td><td>50</td></tr>
<tr><td>Brake hose and pipe</td><td>100</td></tr>
<tr><td>Parking brake cable</td><td>50</td></tr>
<tr><td>Oil pan</td><td>100</td></tr>
<tr><td>Rear mud guard</td><td>50</td></tr>
<tr><td>Battery cable</td><td>150</td></tr>
<tr><td>Rubber parts</td><td>150</td></tr>
<tr><td>Plastic parts</td><td>150</td></tr>
<tr><td>Oil pipe</td><td>100</td></tr>
<tr><td>Brake booster</td><td>100</td></tr>
<tr><td>Vacuum tank</td><td>80</td></tr>
<tr><td colspan="2">Note*: When wireharness is covered by heatproof conduit or protection.</td></tr>
</table></td></tr>
<tr><td>8. Cab tilting</td><td>Cabs other than double cabs can be tilted. Make sure that installation items do not enter the tilt path of the cab.For details on space requirements, refer to Chapter 9 "Layout Drawings: Cab Side View (Cab Tilt Locus)" (▷ page 241).</td></tr>
</table>

7.4 Clearance between chassis parts and bodies

Part	Minimum Clearance and Notes
9. Attaching the rear fender	The clearance between the rear fender and tyre must be designed to be optimum assuming that the vehicle is traveling in bad conditions. Determine the standard clearance from the fender and top and side surfaces of the frame as follows from dimensions B and C listed in 9.9 "Differential and tyre bound height" ▷ page 307. 

7.5 Fuel tank

7.5.1 Cautions relating to fuel tank

⚠ Risk of fire

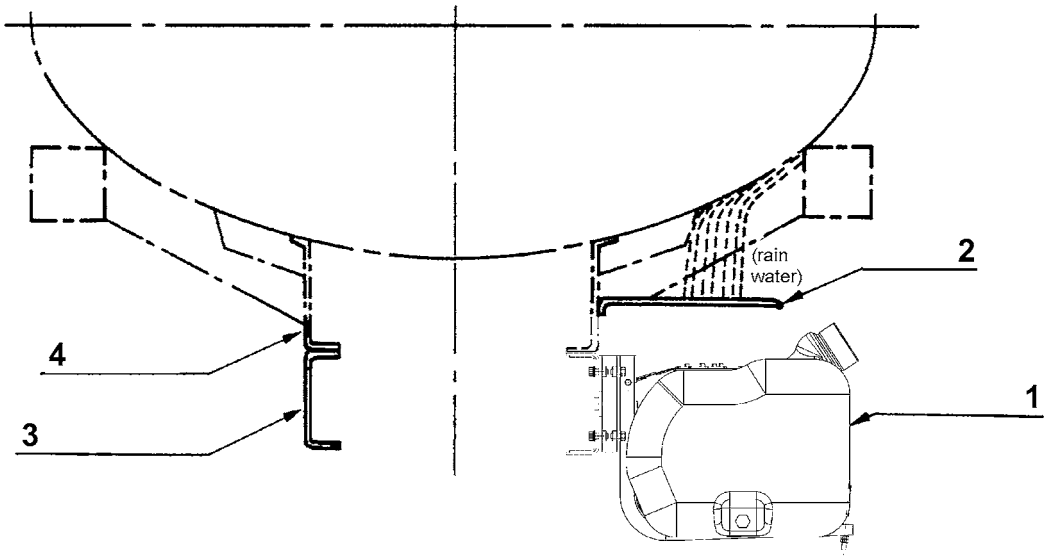
Firmly attach the airvent hose to the Fuel Tank Bracket if it comes away when relocating the fuel tank. ▷ page 315

7.5.2 Attaching the splash guard protective cover

To protect the fuel hoses, a protection cover must be attached over the fuel hoses for the vehicle which has a large space between the tank and the body.
(e.g. concrete mixer, tankbody)

Fig. 1 shows an example of a cover installed on a vehicle equipped as a lorry.

Fig. 1



1 Fuel tank
2 Cover bracket
3 Chassis frame
4 Sub frame

7.5.3 Instructions for relocating the tank, adding on the auxiliary tank, and increasing its capacity

- A letter of no objection is required from the department responsible when relocating the tank, adding on the auxiliary tank, or increasing its capacity and following must be considered.
- Use Mitsubishi Fuso authorised fuel hose when replace it.
- Keep the distance from the filler end and the end of air vent hose to;
  - Over 300 mm to exhaust exit
  - Over 200 mm to exposed electric terminal
- Don't connect the fuel piping over the exhaust pipes. Set the connection point where the fuel will not splash on the exhaust system even if it will leak.
- Install the tank securely to be free from loosen or other defect with consideration the effect of vibration, layout, and others. New bracket must be designed to have sufficient strength.
- Use legally conformed auxiliary tank for your local regulations.
- Don't open the plug for auxiliary tank except the mounting process of the auxiliary tank.
- Don't modify the Mitsubishi Fuso genuine tank.
- Use following flange bolt and nut for mounting the tank, and tighten them with following torque. Some of the bolts that fix the tank on the frame are tightened with frame component such as C/MBR. These bolts and nuts must be tightened securely again with new bolts and nuts if you remove them through the relocating process.

	Size	Strength Grade	Tightening torque
BOLT, FLANGE	M10	8.8 or more	60 - 80 N·m
NUT, FLANGE	M10	6T	

7.6 Blue Tec® system

7.6.1 Installing a side guard and other parts around the AdBlue tank

- Care is required when installing a side guard around the AdBlue tank. Do not let the side guard and its mounting stay hide the filler cap of the tank and interfere with refilling the tank with AdBlue. Be sure to open up sufficient space around the cap to allow a filler gun of AdBlue to be inserted; typical dimensions of filler guns are shown in the figures below.
- Allow a clearance of at least 25 mm between the side guard, mud guard, etc. installed around the AdBlue tank and the following parts of the AdBlue tank: front end, rear end, and outer side.
- Avoid directly attaching parts to any of the AdBlue tank brackets.

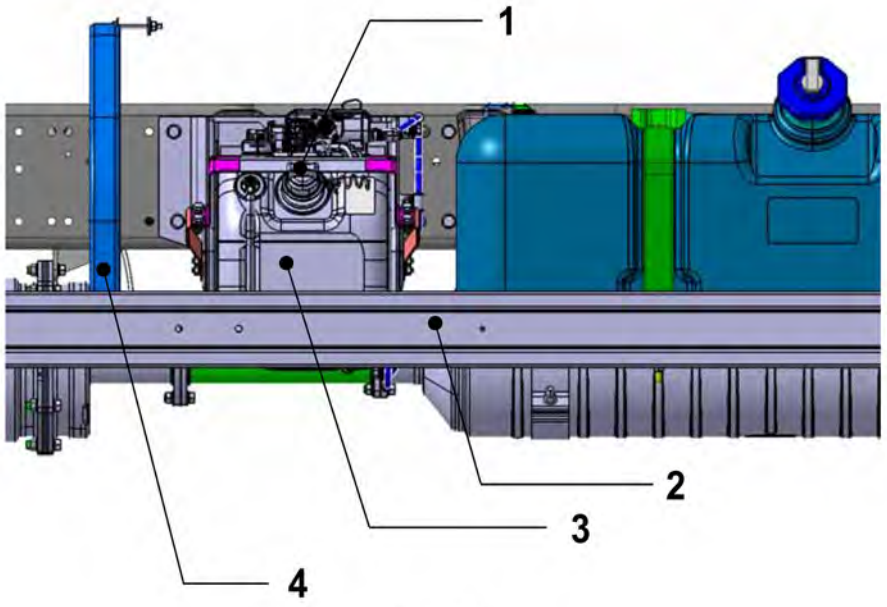


Fig. 1

1 Cap
2 Side guard
3 AdBlue tank
4 Side guard mounting stay

AdBlue filler gun - Examples

Filler gun for dispensers

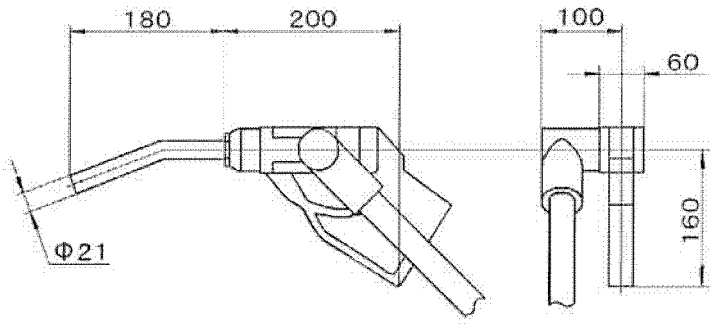


Fig. 2

Filler gun for IBC pump units

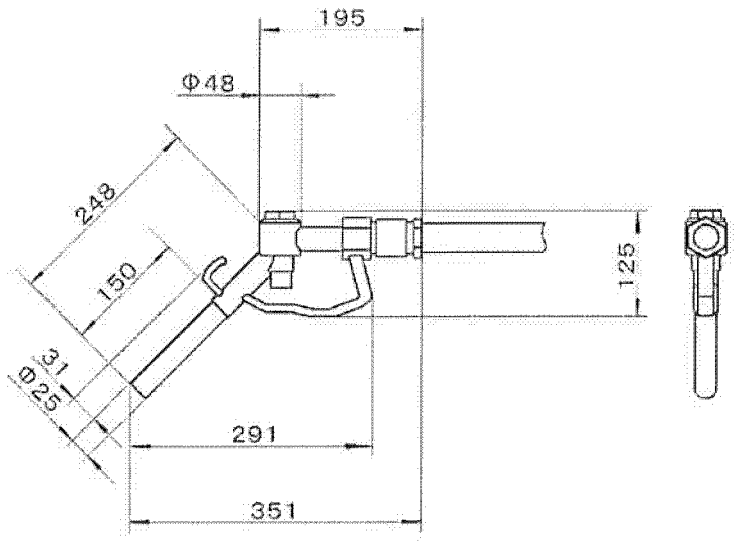


Fig. 3

Filler gun for IBC pump units (with auto-stopping function)

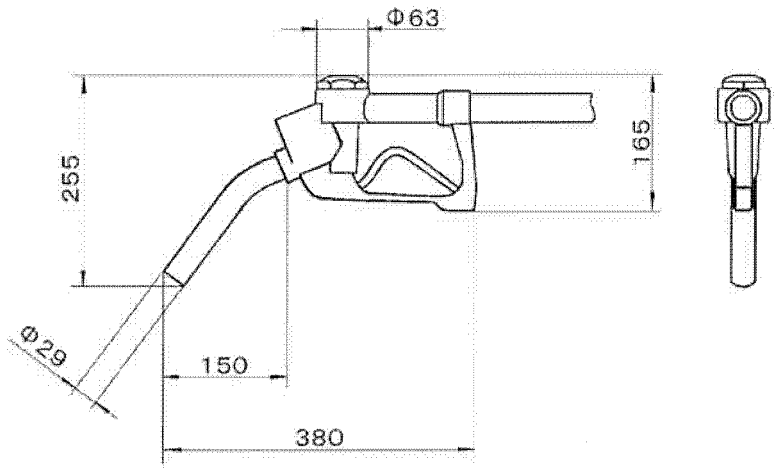


Fig. 4

7.6.2 AdBlue tank and connection piping

The AdBlue tank with an AdBlue pump module inside, the dosing module, and their connection piping are all installed conforming to the relevant exhaust gas control requirements. It is prohibited to relocate these components and change their piping when mounting the body or equipment.

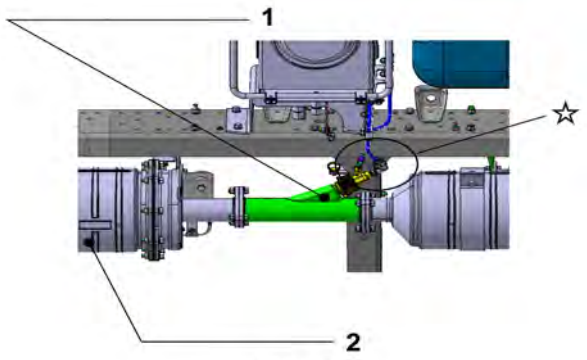


Fig. 1

1 Dosing module
2 SCR muffler

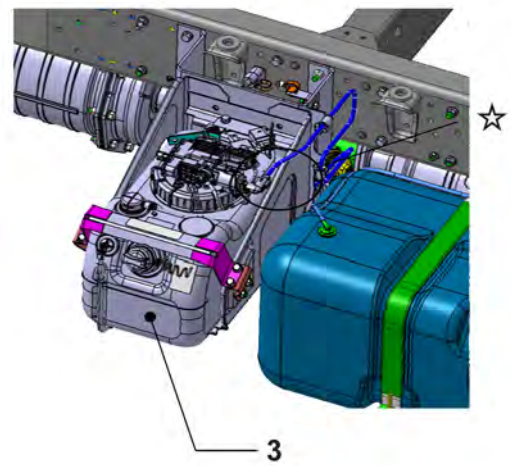


Fig. 2

3 AdBlue tank

There are AdBlue hose connecting ports near the points marked ☆(2 places in total). After any operation including mounting the body or equipment near these areas, visually check that the clamps of the coupling connector is fully closed regardless of whether you touch the piping or not.

!

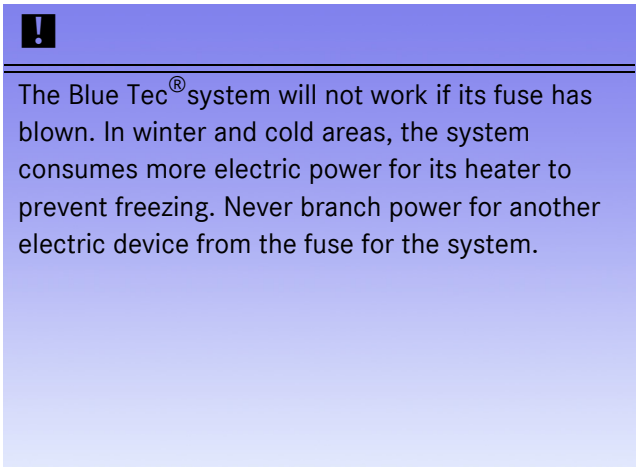
Applying undue force to hoses may damage their connections. Do not pull on hoses or step on their connections.

7.6.3 Precautions for electric welding

If electric welding is performed while the electric wiring for the pump module of the Blue Tec® system is still connected, the internal electric circuits on the module could be damaged. Be sure to disconnect the module's electric wiring connector as follows before starting electric welding:

- Turn the starter switch to "OFF".
- Leave the starter switch in the "OFF" position for at least 1 minute. (This is necessary for the after-running processing.)
- Disconnect the wiring connector on the pump module side.
- Be sure to earth the welder close to the welding area.

When reconnecting the connector after completing the electric welding, confirm that the starter switch is in the "OFF" position.



The Blue Tec®system will not work if its fuse has blown. In winter and cold areas, the system consumes more electric power for its heater to prevent freezing. Never branch power for another electric device from the fuse for the system.

8.1 Axle load calculation

An axle load calculation is required to optimise the overall vehicle (vehicle and body). It is only possible to match the body to the truck if the vehicle is weighed before any work on the body is carried out. The weights measured by weighing form the basis of the axle load calculation.

The moment theorem is used to distribute the weight of the equipment on the front and rear axles. All distances relate to the centre front axle (theoretical centre). Mark the weight with mathematically correct signs and enter them in the table. The result will assist you in choosing the optimum positioning of the body.

It has proved useful to make the following calculations:

Weight

+ (plus) is everything when the vehicle is laden
– (minus) is everything that the vehicle can unload (weights)

Axle distance

+ (plus) is everything behind the centre of the front axle
– (minus) is everything in front of the centre of the front axle

Calculate the weight distribution on the front and rear axle using the formula:

$$\triangle G_{HA} = \frac{G_{component} \cdot a}{R} \text{ [kg]}$$

$\triangle G_{HA}$ = Change in weight on rear axle in [kg]

$G_{component}$ = Component weight in [kg]

a = Axle distance to theoretical centre of front axle in [mm]

R = Theoretical wheelbase [mm]

$$\triangle G_{VA} = G_{component} - G_{HA} \text{ [kg]}$$

$\triangle G_{VA}$ = Change in weight on front axle in [kg]

$G_{component}$ = Component weight in [kg]

$\triangle G_{HA}$ = Change in weight on rear axle in [kg]

Axle and Tyre Load Carrying Capacity

Max. GVW (kg)	Vehicle Model "*": L/R	Max. Output	Tyre Size					Axle Capacity (kg)	
			195/75R16C 107/105	205/75R16C 113/111	215/75R16C 116/114	225/75R16C 118/116	205/75R17.5C 124/122	Front	Rear
3500	FB73SB4S*EA	All	X					1950	2700
	FB73SD4S*EA		X						
	FB73SE4S*EA		X						
	FB73SE4W*EA		X						
	FB83SB4S*EA		X						
	FB83SD4S*EA		X						
	FB83SE4S*EA		X						
	FB83SG4S*EA		X						
	FB83SE4W*EA		X						
5500	FE74SB4S*EA	All		X				2300	3800
	FE74SD4S*EA			X					
	FE74SE4S*EA			X					
6500	FE84SC6S*EA	107kW			X			2500	4500
	FE84SE6S*EA				X				
	FE84SG6S*EA				X				
	FE84SG6W*EA				X				
	FE84SE6S*EA	129kW				X		2640	4750
	FE84SG6S*EA					X			
	FE84SG6W*EA					X			
7500	FE85SC6S*EA	All					X	3100	5200
	FE85SE6S*EA						X		
	FE85SG6S*EA						X		
	FE85SH6S*EA						X		
	FE85SJZS*EA						X		
	FE85SG6W*EA						X		
	FE85SH6W*EA						X		
Tyre Capacity (kg)*1		Front	975X2=1950	1150X2=2300	1250X2=2500	1320X2=2640	1600X2=3200		
		Rear	925X4=3700	1090X4=4360	1180X4=4720	1250X4=5000	1500X4=6000		

*1: At indicated maximum pressure (kPa,cold:Front/Rear)

195/75R16 107/105 ... 475/325
205/75R16 113/111 ... 525/525
215/75R16 116/114 ... 525/525
225/75R16 118/116 ... 525/525
205/75R17.5 124/122 ... 750/750

9.1 Vehicle performance list

Engine		Clutch	T/M			GVW (kg)	Tyre	Radius	Final gear ratio (Refer Page #)				Group	Final gear ratio (S:Std, P:Opt)				Model
Model	Output (PS/kW/rpm) Torque (Nm/rpm)		Model	Position	Ratio				4.111	4.444	4.875	5.285	5.714		4.111	4.444	4.875	5.285	5.714	
4P10-0AT2 4P10-6AT2*	96/3500 300/1600	C3W28	6S420	1	5.152	3500	195/75R16	0.337	S1	P1	P2			FB73-S	S	P	P			FB73SB4S
				2	3.022										S	P	P			FB73SD4S
				3	1.956										S	P	P			FB73SE4S
				4	1.360									FB73-W	S	P	P			FB73SE4W
				5	1.000				S2	P3	P4			FB83-S	S	P	P			FB83SB4S
				6	0.799										S	P	P			FB83SD4S
				R	4.636										S	P	P			FB83SE4S
															S	P	P			FB83SG4S
														FB83-W	S	P	P			FB83SE4W
4P10-0AT3 4P10-6AT3*	107/3500 370/1600								S3	P5	P6			FB83-S	S	P	P			FB83SB4S
															S	P	P			FB83SD4S
															S	P	P			FB83SE4S
															S	P	P			FB83SG4S
4P10-0AT2 4P10-6AT2*	96/3500 300/1600					5500	205/75R16	0.344		S4	P7			FE74-S		S	P			FE74SB4S
																S	P			FE74SD4S
																S	P			FE74SE4S
4P10-0AT3 4P10-6AT3*	107/3500 370/1600					6500	215/75R16	0.351	P8	S5	P9	P10		FE84-S	P	S	P	P		FE84SC6S
															P	S	P	P		FE84SE6S
															P	S	P	P		FE84SG6S
														FE84-W	P	S	P	P		FE84SG6W
						7500	205/75R17.5	0.366			S6	P11	P12	FE85-S			S	P	P	FE85SC6S
																	S	P	P	FE85SE6S
																	S	P	P	FE85SG6S
																	S	P	P	FE85SH6S
																	S	P	P	FE85SJZS
														FE85-W			S	P	P	FE85SG6W
																	S	P	P	FE85SH6W
4P10-0AT6 4P10-6AT6*	129/3500 430/1600					6500	225/75R16	0.359	P13	S7	P14	P15		FE84-S	P	S	P	P		FE84SE6S
															P	S	P	P		FE84SG6S
														FE84-W	P	S	P	P		FE84SG6W
						7500	205/75R17.5	0.366			S8	P16	P17	FE85-S			S	P	P	FE85SE6S
																	S	P	P	FE85SG6S
														FE85-W			S	P	P	FE85SG6W
																	S	P	P	FE85SH6W
														FE85-S			S	P	P	FE85SJZS

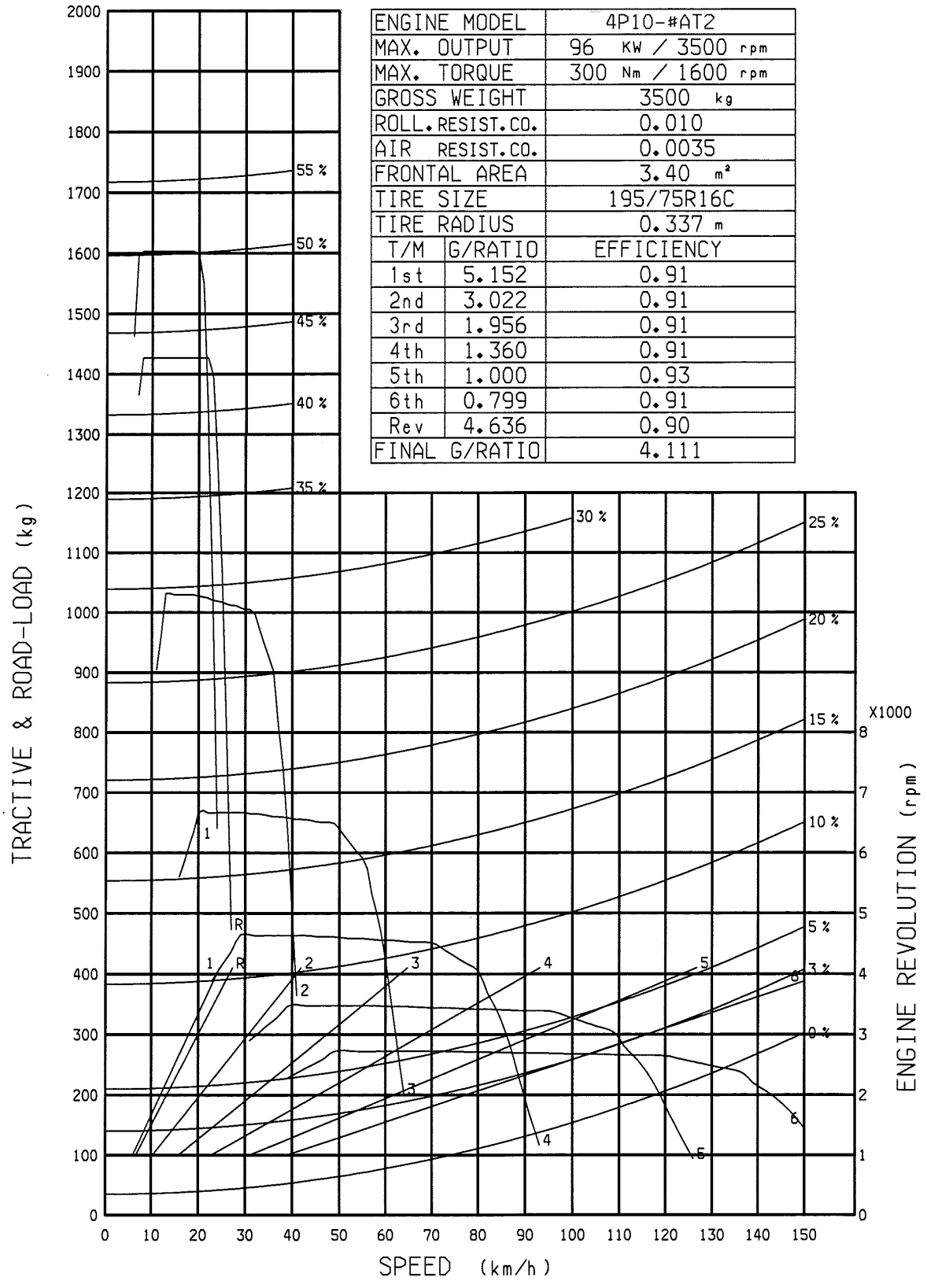
*EEV COMPLIANT ENGINE MODEL

9.2 Performance curve

9.2.1 Vehicle performance curve

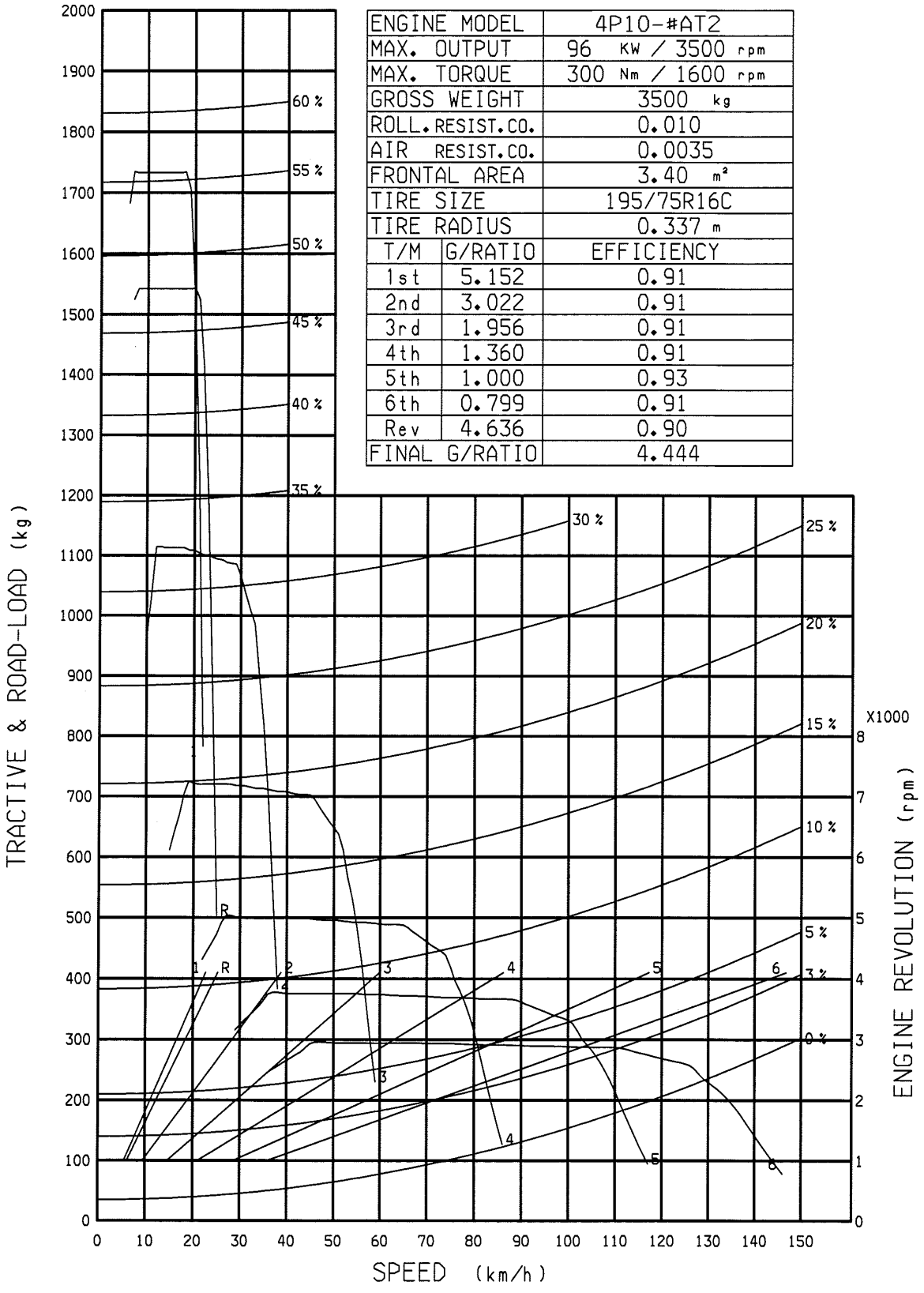
FB73 <S1>

ENGINE MODEL	4P10-#AT2
MAX. OUTPUT	96 KW / 3500 rpm
MAX. TORQUE	300 Nm / 1600 rpm
GROSS WEIGHT	3500 kg
ROLL. RESIST. CO.	0.010
AIR RESIST. CO.	0.0035
FRONTAL AREA	3.40 m²
TIRE SIZE	195/75R16C
TIRE RADIUS	0.337 m
T/M G/RATIO	EFFICIENCY
1st 5.152	0.91
2nd 3.022	0.91
3rd 1.956	0.91
4th 1.360	0.91
5th 1.000	0.93
6th 0.799	0.91
Rev 4.636	0.90
FINAL G/RATIO	4.111



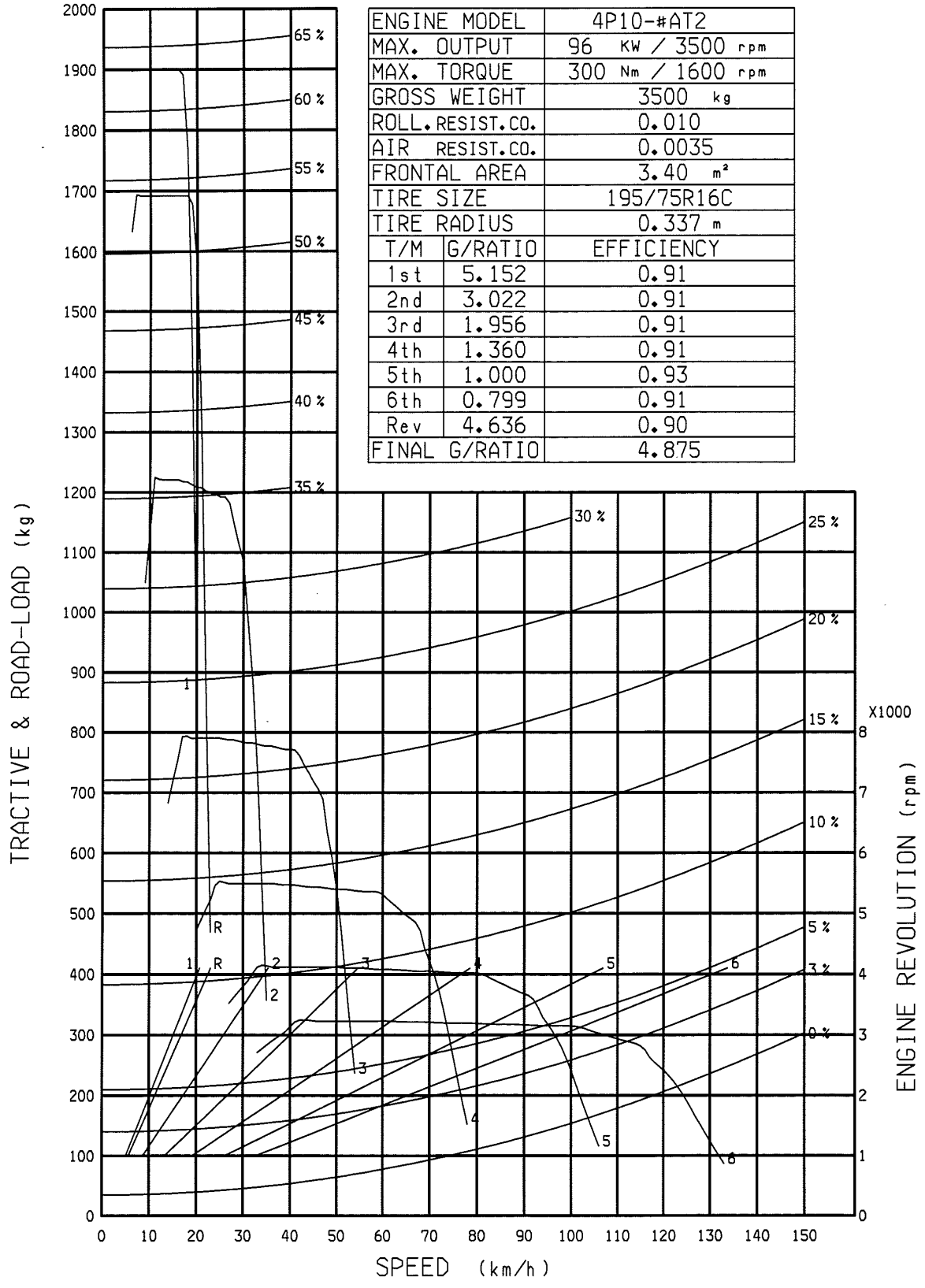
FB73 <P1>

ENGINE MODEL	4P10-#AT2
MAX. OUTPUT	96 KW / 3500 rpm
MAX. TORQUE	300 Nm / 1600 rpm
GROSS WEIGHT	3500 kg
ROLL. RESIST. CO.	0.010
AIR RESIST. CO.	0.0035
FRONTAL AREA	3.40 m²
TIRE SIZE	195/75R16C
TIRE RADIUS	0.337 m
T/M G/RATIO	EFFICIENCY
1st 5.152	0.91
2nd 3.022	0.91
3rd 1.956	0.91
4th 1.360	0.91
5th 1.000	0.93
6th 0.799	0.91
Rev 4.636	0.90
FINAL G/RATIO	4.444



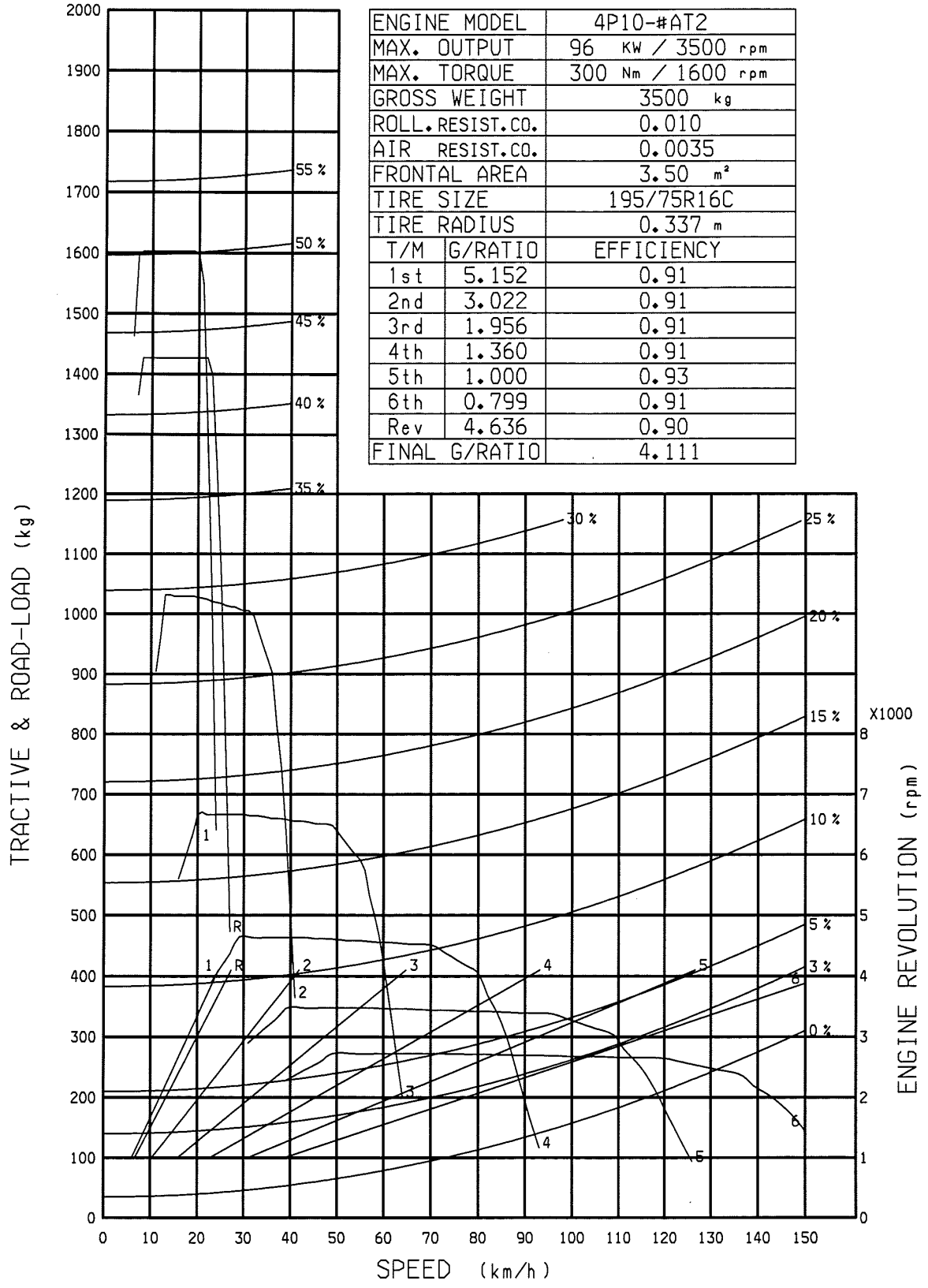
FB73 <P2>

ENGINE MODEL		4P10-#AT2
MAX. OUTPUT		96 KW / 3500 rpm
MAX. TORQUE		300 Nm / 1600 rpm
GROSS WEIGHT		3500 kg
ROLL. RESIST. CO.		0.010
AIR RESIST. CO.		0.0035
FRONTAL AREA		3.40 m²
TIRE SIZE		195/75R16C
TIRE RADIUS		0.337 m
T/M	G/RATIO	EFFICIENCY
1st	5.152	0.91
2nd	3.022	0.91
3rd	1.956	0.91
4th	1.360	0.91
5th	1.000	0.93
6th	0.799	0.91
Rev	4.636	0.90
FINAL G/RATIO		4.875



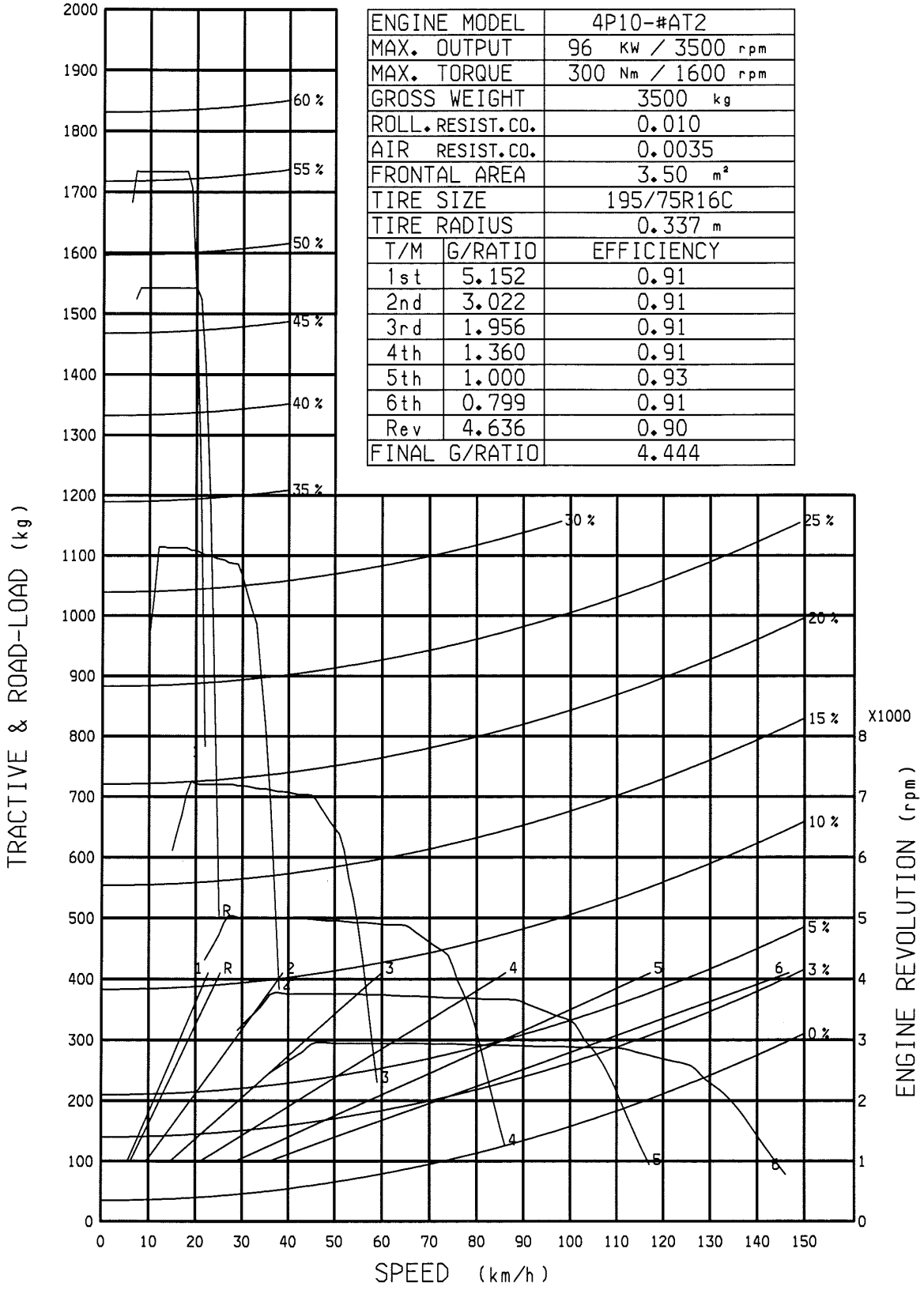
FB83 <S2>

ENGINE MODEL	4P10-#AT2
MAX. OUTPUT	96 KW / 3500 rpm
MAX. TORQUE	300 Nm / 1600 rpm
GROSS WEIGHT	3500 kg
ROLL. RESIST. CO.	0.010
AIR RESIST. CO.	0.0035
FRONTAL AREA	3.50 m²
TIRE SIZE	195/75R16C
TIRE RADIUS	0.337 m
T/M G/RATIO	EFFICIENCY
1st 5.152	0.91
2nd 3.022	0.91
3rd 1.956	0.91
4th 1.360	0.91
5th 1.000	0.93
6th 0.799	0.91
Rev 4.636	0.90
FINAL G/RATIO	4.111



FB83 <P3>

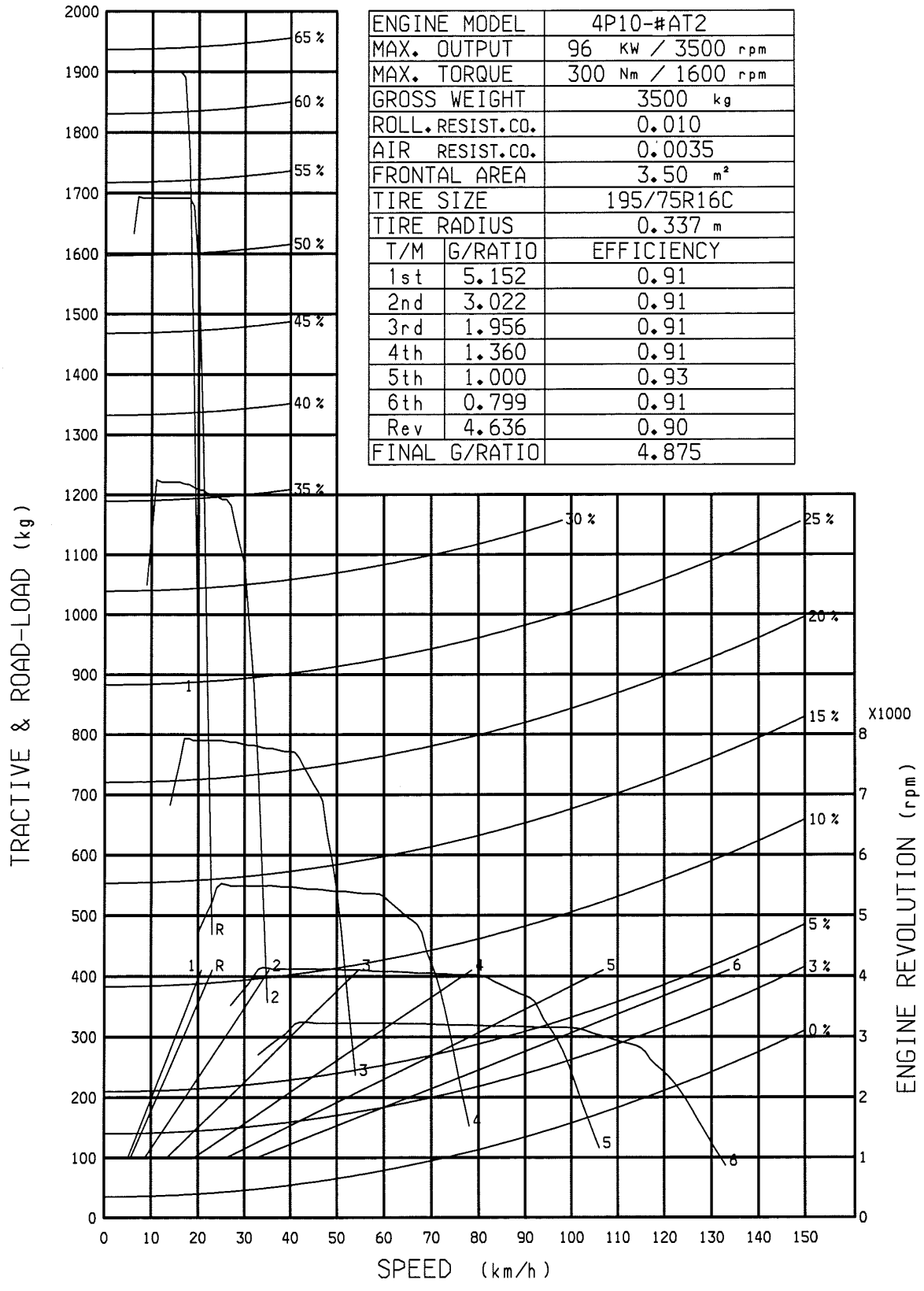
ENGINE MODEL	4P10-#AT2
MAX. OUTPUT	96 KW / 3500 rpm
MAX. TORQUE	300 Nm / 1600 rpm
GROSS WEIGHT	3500 kg
ROLL. RESIST. CO.	0.010
AIR RESIST. CO.	0.0035
FRONTAL AREA	3.50 m²
TIRE SIZE	195/75R16C
TIRE RADIUS	0.337 m
T/M G/RATIO	EFFICIENCY
1st 5.152	0.91
2nd 3.022	0.91
3rd 1.956	0.91
4th 1.360	0.91
5th 1.000	0.93
6th 0.799	0.91
Rev 4.636	0.90
FINAL G/RATIO	4.444



FB83 <P4>

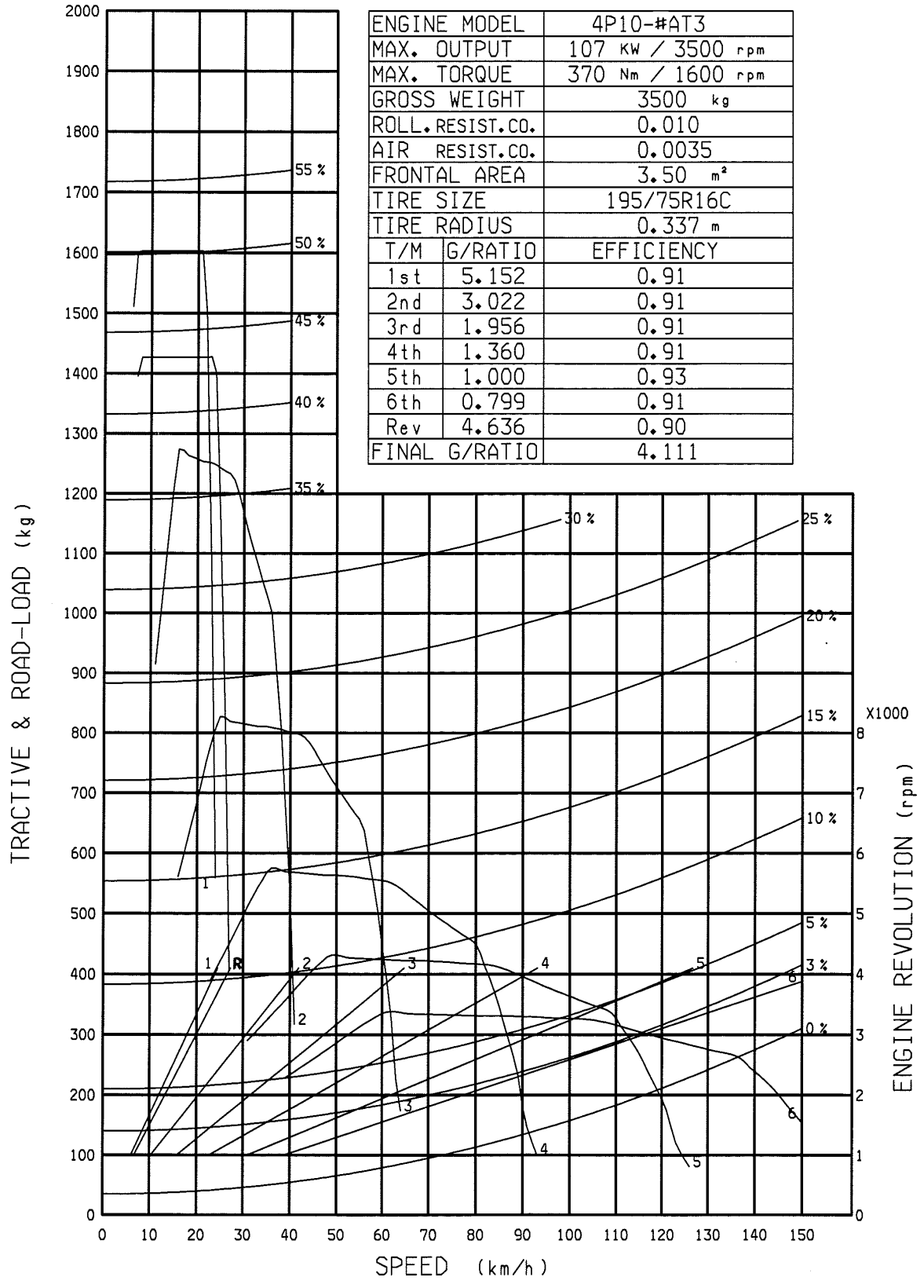
ENGINE MODEL	4P10-#AT2
MAX. OUTPUT	96 KW / 3500 rpm
MAX. TORQUE	300 Nm / 1600 rpm
GROSS WEIGHT	3500 kg
ROLL. RESIST. CO.	0.010
AIR RESIST. CO.	0.0035
FRONTAL AREA	3.50 m²
TIRE SIZE	195/75R16C
TIRE RADIUS	0.337 m

T/M	G/RATIO	EFFICIENCY
1st	5.152	0.91
2nd	3.022	0.91
3rd	1.956	0.91
4th	1.360	0.91
5th	1.000	0.93
6th	0.799	0.91
Rev	4.636	0.90
FINAL G/RATIO		4.875



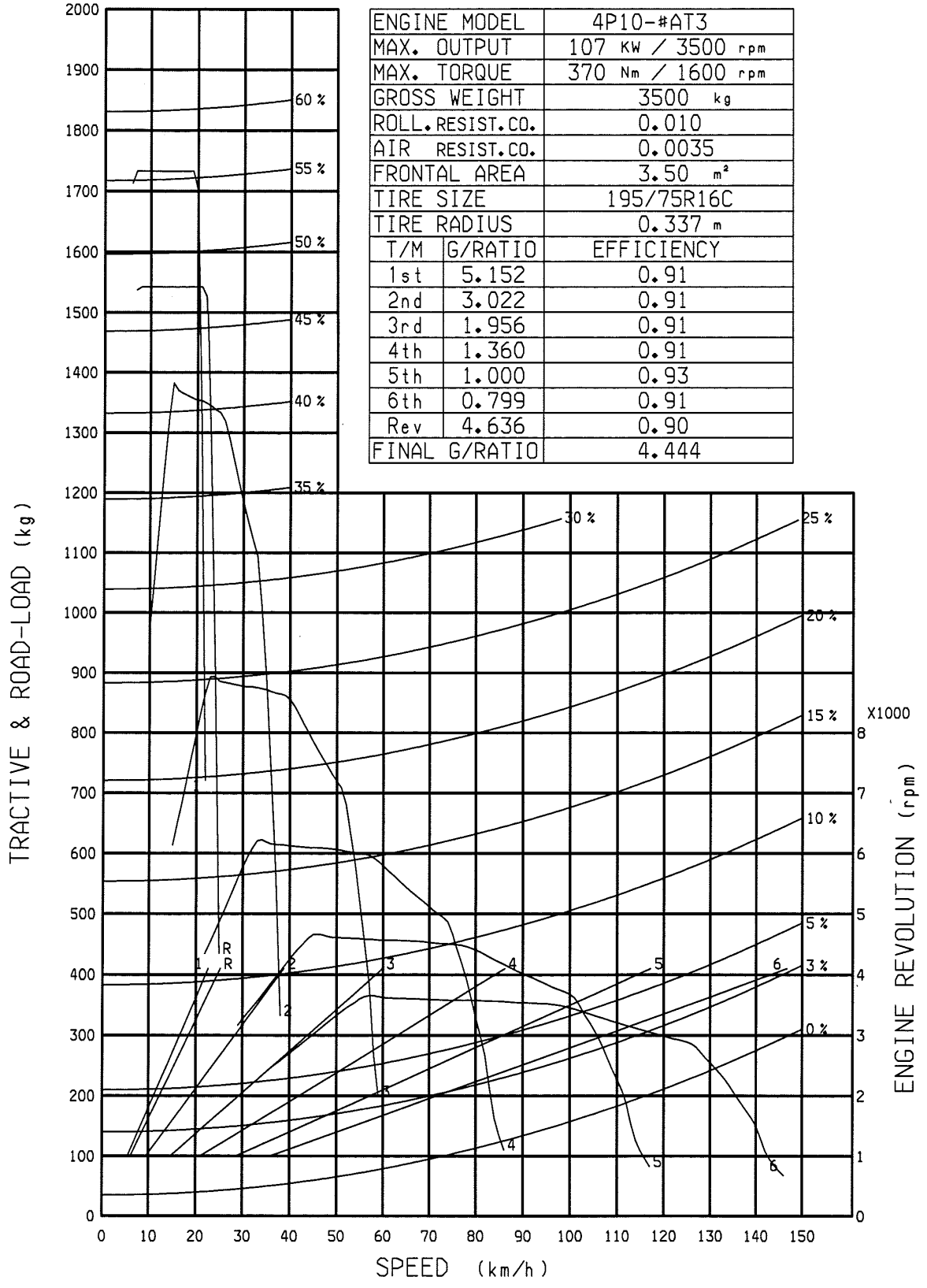
FB83 <S3>

ENGINE MODEL	4P10-#AT3
MAX. OUTPUT	107 KW / 3500 rpm
MAX. TORQUE	370 Nm / 1600 rpm
GROSS WEIGHT	3500 kg
ROLL. RESIST. CO.	0.010
AIR RESIST. CO.	0.0035
FRONTAL AREA	3.50 m²
TIRE SIZE	195/75R16C
TIRE RADIUS	0.337 m
T/M G/RATIO	EFFICIENCY
1st 5.152	0.91
2nd 3.022	0.91
3rd 1.956	0.91
4th 1.360	0.91
5th 1.000	0.93
6th 0.799	0.91
Rev 4.636	0.90
FINAL G/RATIO	4.111



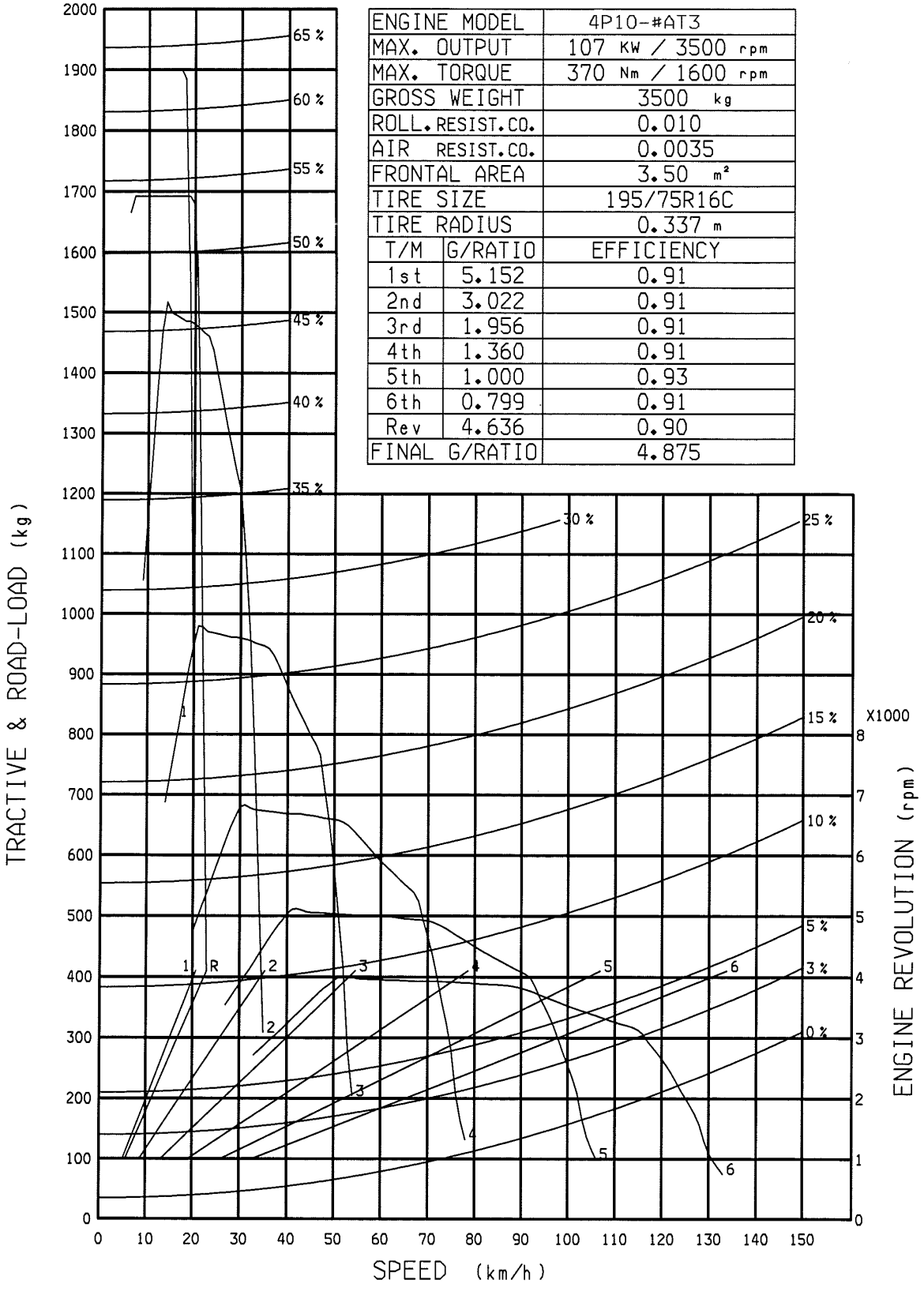
FB83 <P5>

ENGINE MODEL	4P10-#AT3
MAX. OUTPUT	107 KW / 3500 rpm
MAX. TORQUE	370 Nm / 1600 rpm
GROSS WEIGHT	3500 kg
ROLL. RESIST. CO.	0.010
AIR RESIST. CO.	0.0035
FRONTAL AREA	3.50 m²
TIRE SIZE	195/75R16C
TIRE RADIUS	0.337 m
T/M G/RATIO	EFFICIENCY
1st 5.152	0.91
2nd 3.022	0.91
3rd 1.956	0.91
4th 1.360	0.91
5th 1.000	0.93
6th 0.799	0.91
Rev 4.636	0.90
FINAL G/RATIO	4.444



FB83 <P6>

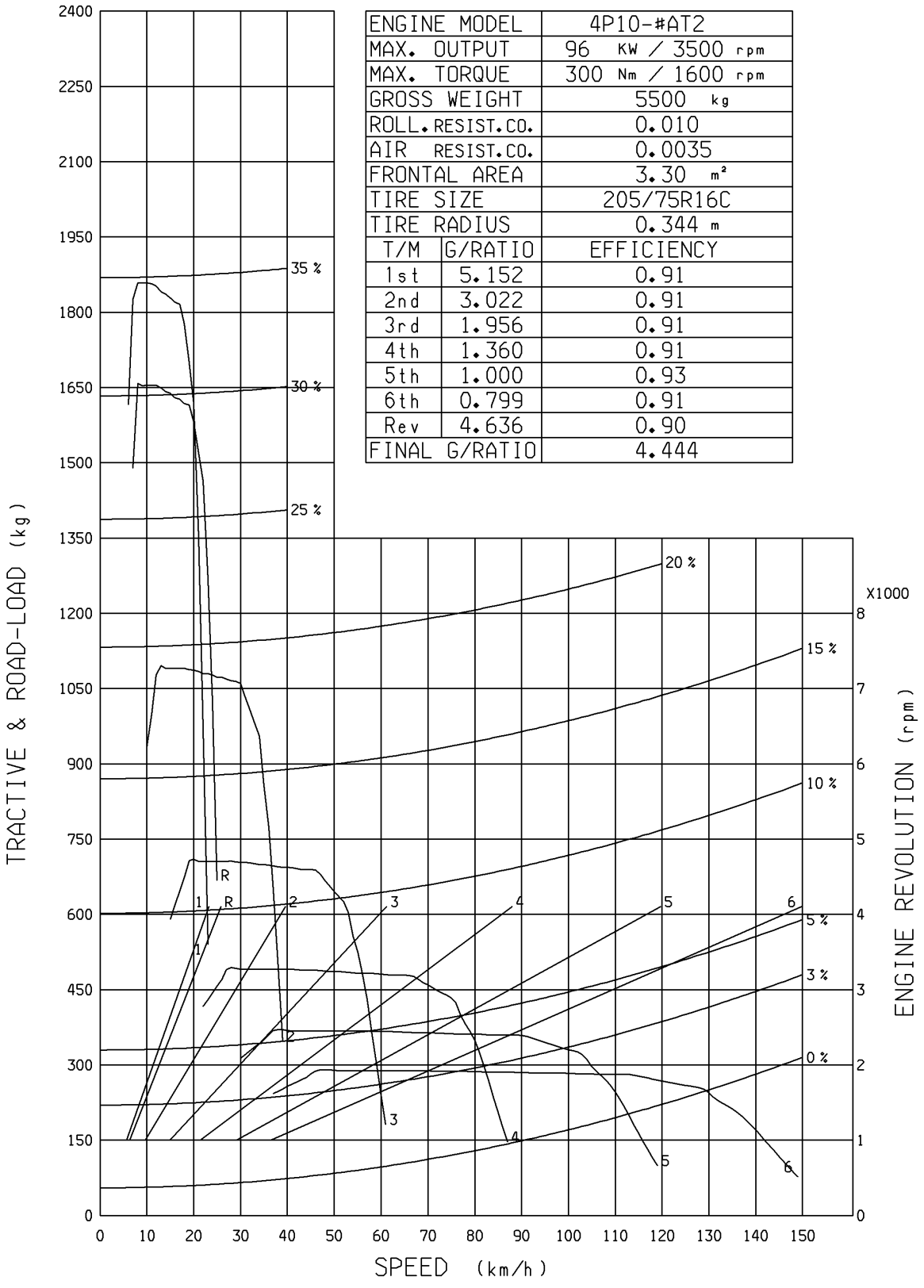
ENGINE MODEL		4P10-#AT3
MAX. OUTPUT		107 KW / 3500 rpm
MAX. TORQUE		370 Nm / 1600 rpm
GROSS WEIGHT		3500 kg
ROLL. RESIST. CO.		0.010
AIR RESIST. CO.		0.0035
FRONTAL AREA		3.50 m²
TIRE SIZE		195/75R16C
TIRE RADIUS		0.337 m
T/M	G/RATIO	EFFICIENCY
1st	5.152	0.91
2nd	3.022	0.91
3rd	1.956	0.91
4th	1.360	0.91
5th	1.000	0.93
6th	0.799	0.91
Rev	4.636	0.90
FINAL G/RATIO		4.875



9.2 Performance curve

FE74 <S4>

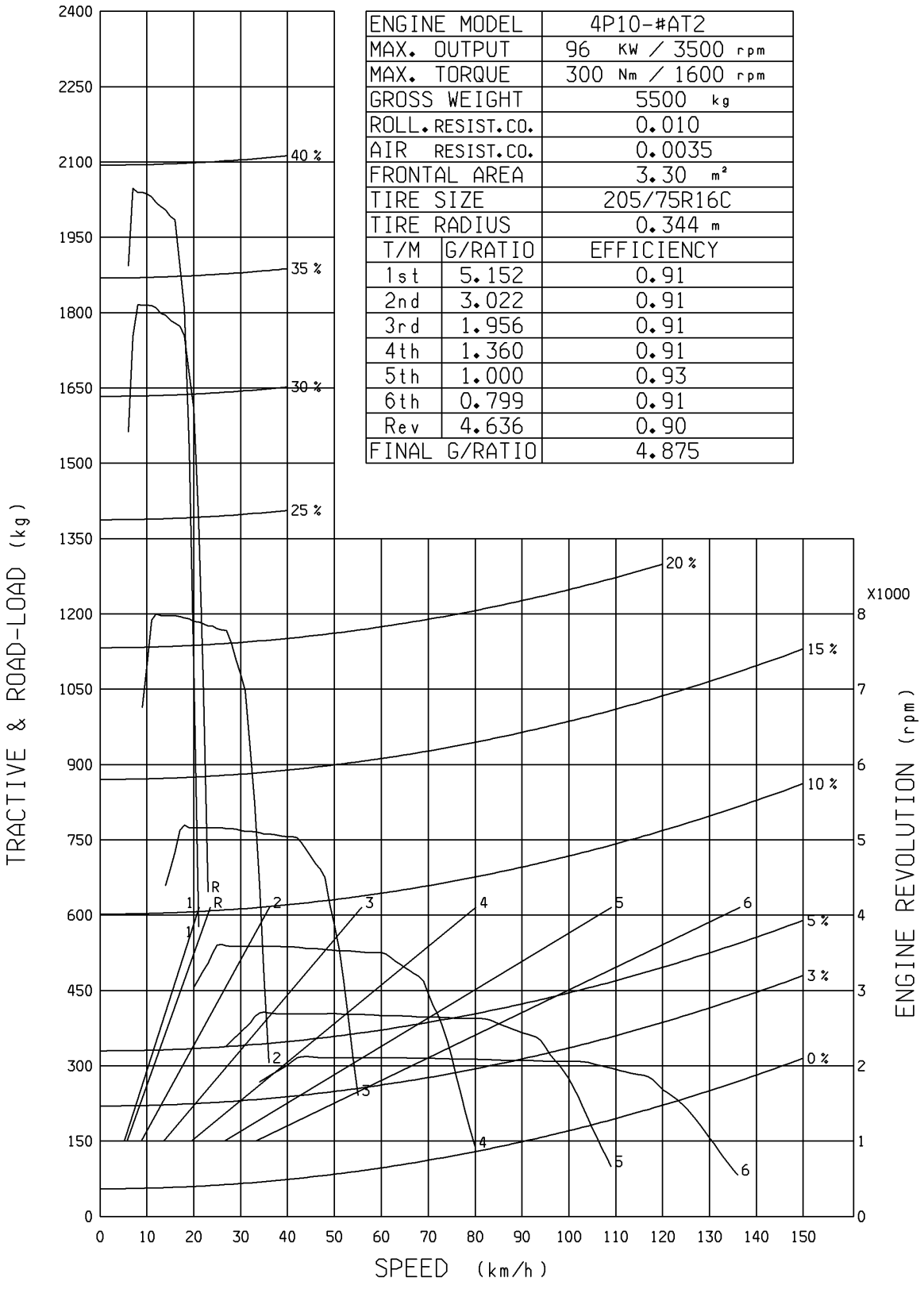
ENGINE MODEL		4P10-#AT2
MAX. OUTPUT		96 KW / 3500 rpm
MAX. TORQUE		300 Nm / 1600 rpm
GROSS WEIGHT		5500 kg
ROLL. RESIST. CO.		0.010
AIR RESIST. CO.		0.0035
FRONTAL AREA		3.30 m²
TIRE SIZE		205/75R16C
TIRE RADIUS		0.344 m
T/M	G/RATIO	EFFICIENCY
1st	5.152	0.91
2nd	3.022	0.91
3rd	1.956	0.91
4th	1.360	0.91
5th	1.000	0.93
6th	0.799	0.91
Rev	4.636	0.90
FINAL G/RATIO		4.444



FE74 <P7>

ENGINE MODEL	4P10-#AT2
MAX. OUTPUT	96 KW / 3500 rpm
MAX. TORQUE	300 Nm / 1600 rpm
GROSS WEIGHT	5500 kg
ROLL. RESIST. CO.	0.010
AIR RESIST. CO.	0.0035
FRONTAL AREA	3.30 m²
TIRE SIZE	205/75R16C
TIRE RADIUS	0.344 m

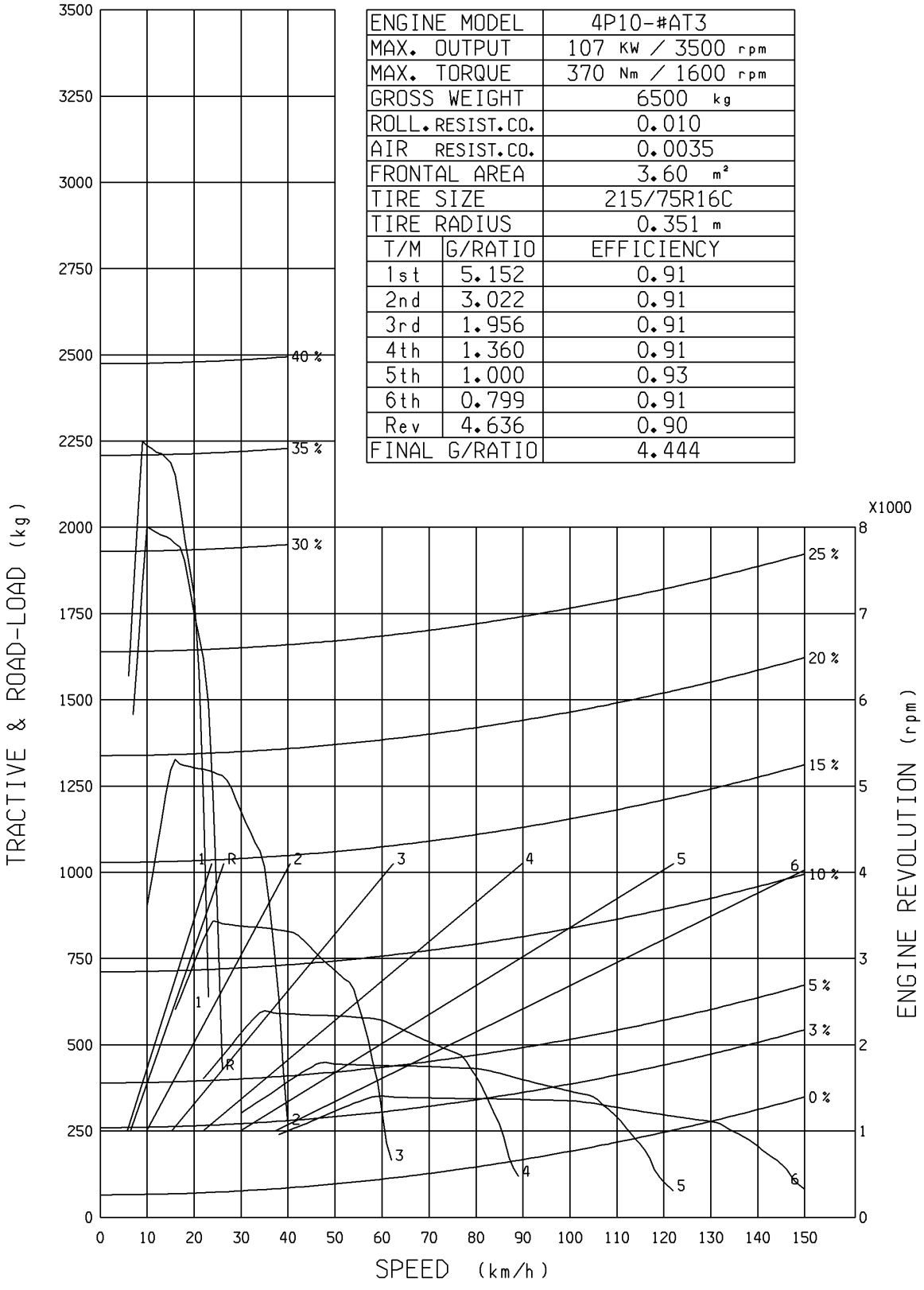
T/M	G/RATIO	EFFICIENCY
1st	5.152	0.91
2nd	3.022	0.91
3rd	1.956	0.91
4th	1.360	0.91
5th	1.000	0.93
6th	0.799	0.91
Rev	4.636	0.90
FINAL G/RATIO		4.875



FE84 <S5>

ENGINE MODEL	4P10-#AT3
MAX. OUTPUT	107 KW / 3500 rpm
MAX. TORQUE	370 Nm / 1600 rpm
GROSS WEIGHT	6500 kg
ROLL. RESIST. CO.	0.010
AIR RESIST. CO.	0.0035
FRONTAL AREA	3.60 m²
TIRE SIZE	215/75R16C
TIRE RADIUS	0.351 m

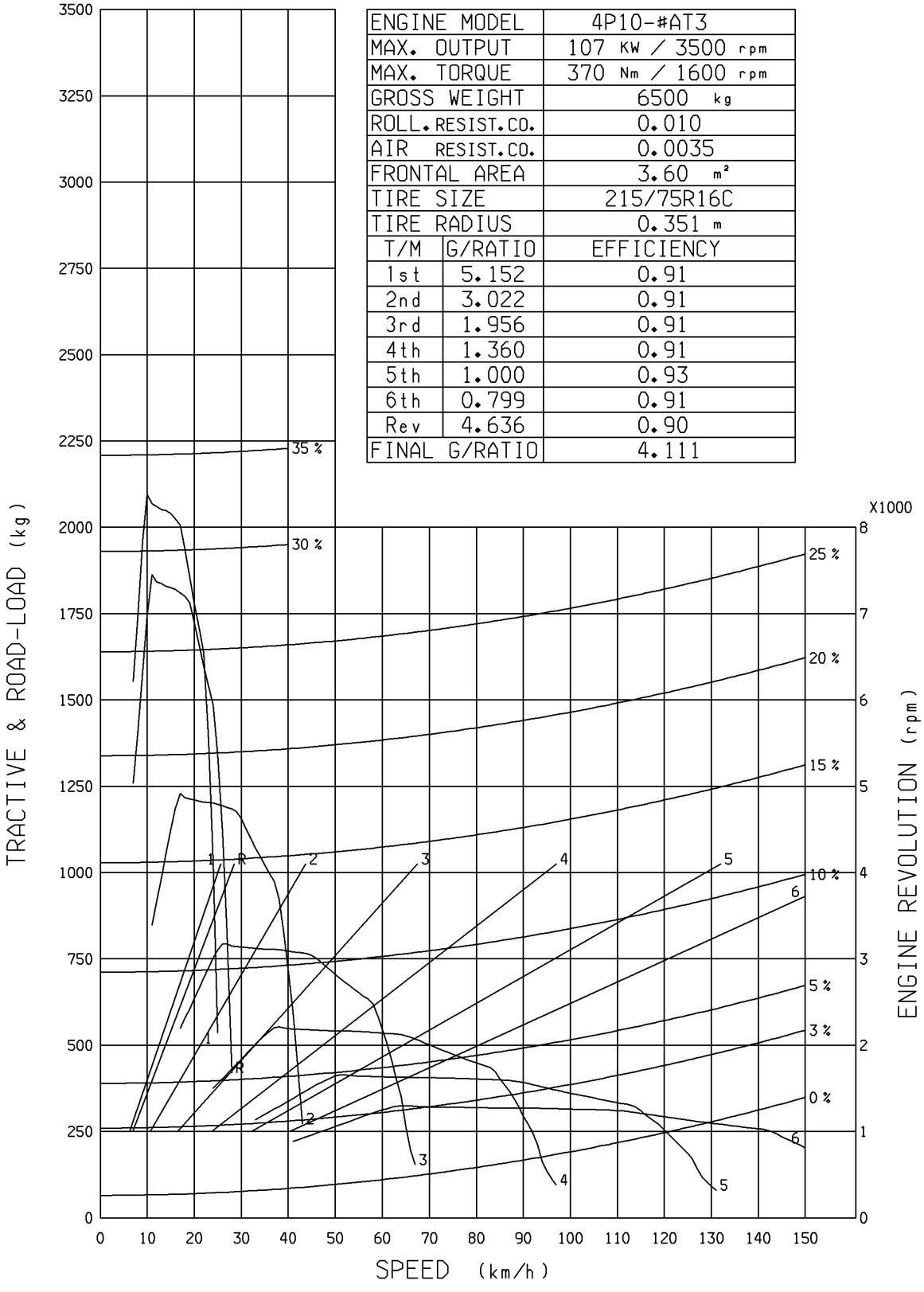
T/M	G/RATIO	EFFICIENCY
1st	5.152	0.91
2nd	3.022	0.91
3rd	1.956	0.91
4th	1.360	0.91
5th	1.000	0.93
6th	0.799	0.91
Rev	4.636	0.90
FINAL G/RATIO		4.444



FE84 <P8>

ENGINE MODEL	4P10-#AT3
MAX. OUTPUT	107 KW / 3500 rpm
MAX. TORQUE	370 Nm / 1600 rpm
GROSS WEIGHT	6500 kg
ROLL. RESIST. CO.	0.010
AIR RESIST. CO.	0.0035
FRONTAL AREA	3.60 m²
TIRE SIZE	215/75R16C
TIRE RADIUS	0.351 m

T/M	G/RATIO	EFFICIENCY
1st	5.152	0.91
2nd	3.022	0.91
3rd	1.956	0.91
4th	1.360	0.91
5th	1.000	0.93
6th	0.799	0.91
Rev	4.636	0.90
FINAL G/RATIO		4.111

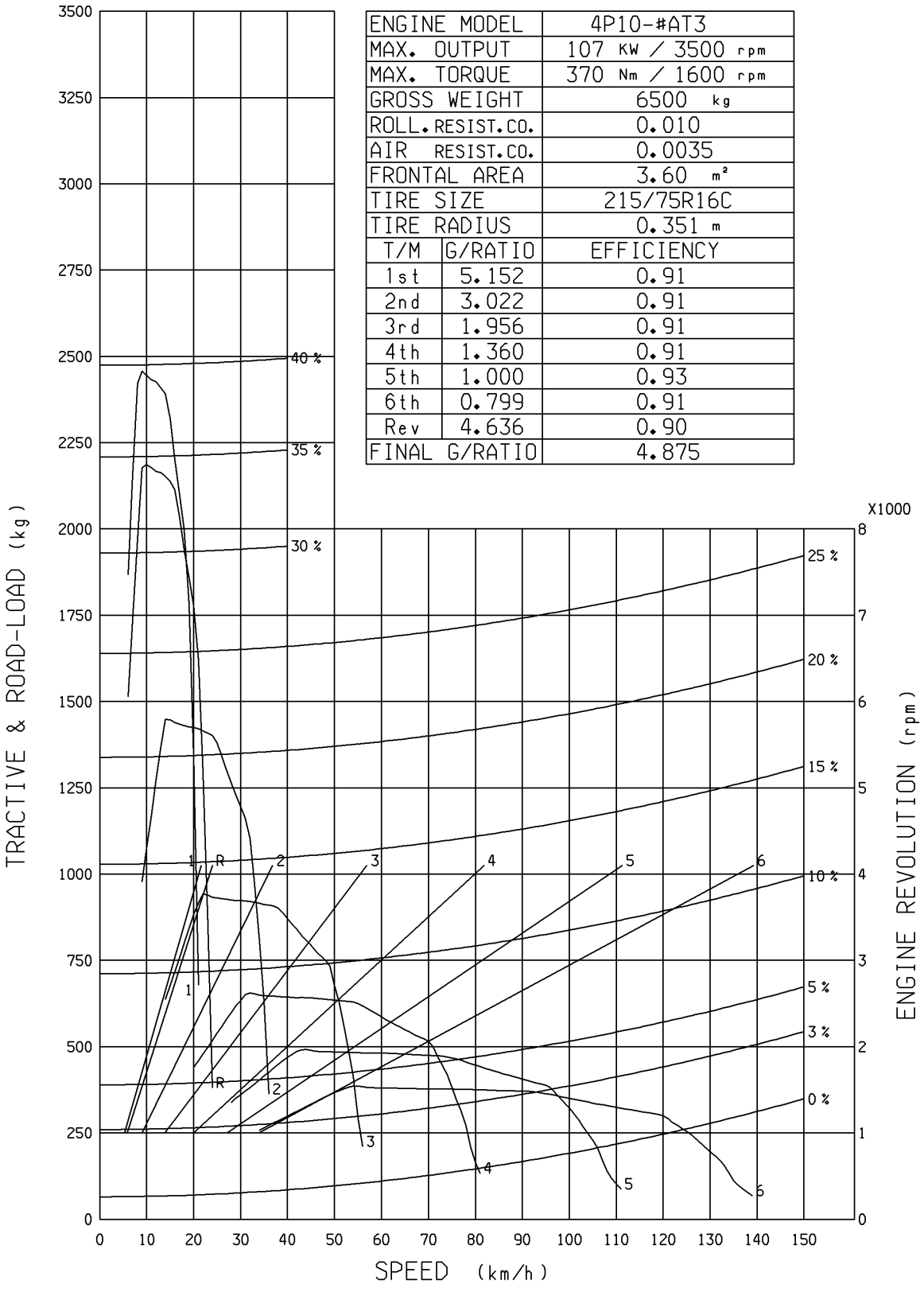


9.2 Performance curve

FE84 <P9>

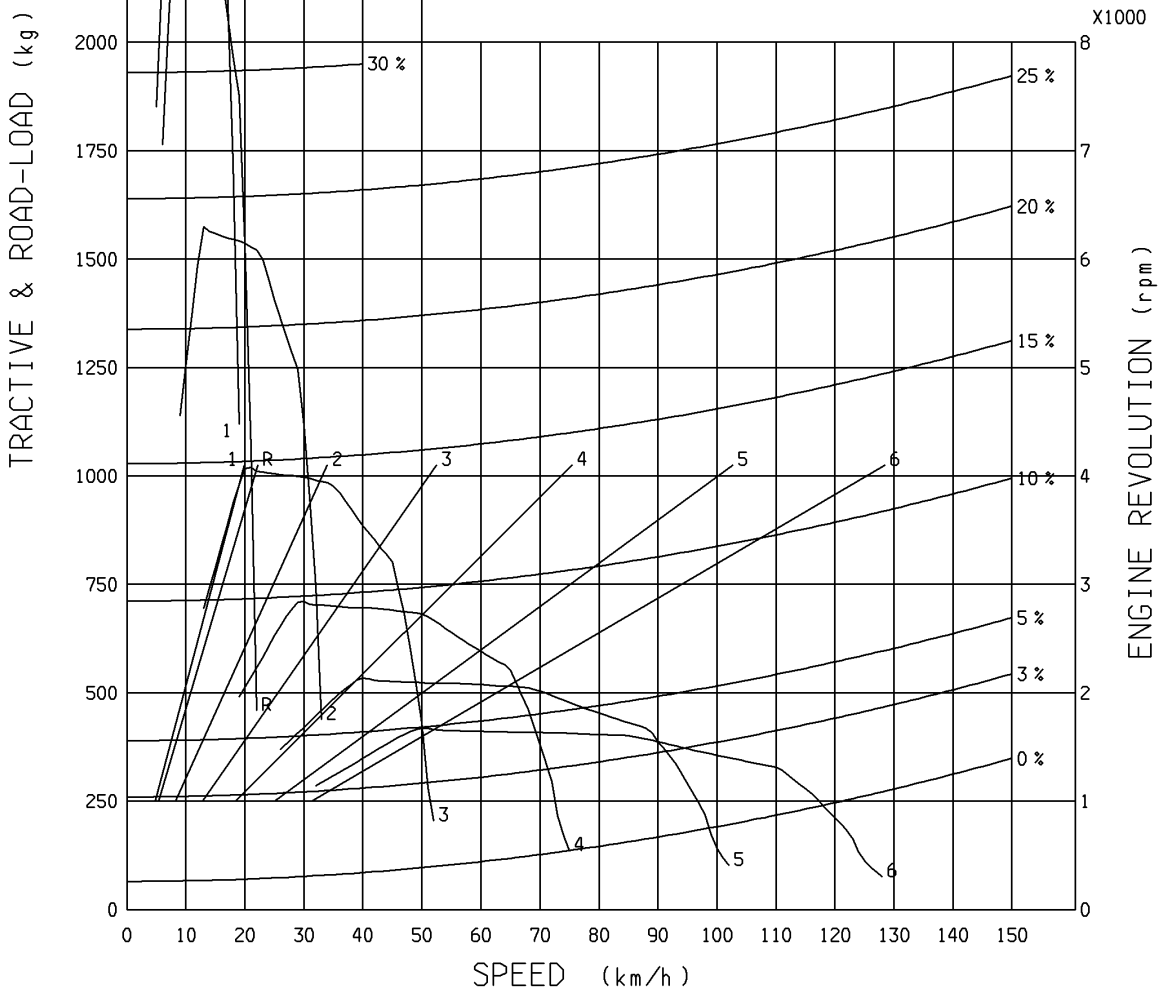
ENGINE MODEL	4P10-#AT3
MAX. OUTPUT	107 KW / 3500 rpm
MAX. TORQUE	370 Nm / 1600 rpm
GROSS WEIGHT	6500 kg
ROLL. RESIST. CO.	0.010
AIR RESIST. CO.	0.0035
FRONTAL AREA	3.60 m²
TIRE SIZE	215/75R16C
TIRE RADIUS	0.351 m

T/M	G/RATIO	EFFICIENCY
1st	5.152	0.91
2nd	3.022	0.91
3rd	1.956	0.91
4th	1.360	0.91
5th	1.000	0.93
6th	0.799	0.91
Rev	4.636	0.90
FINAL G/RATIO		4.875



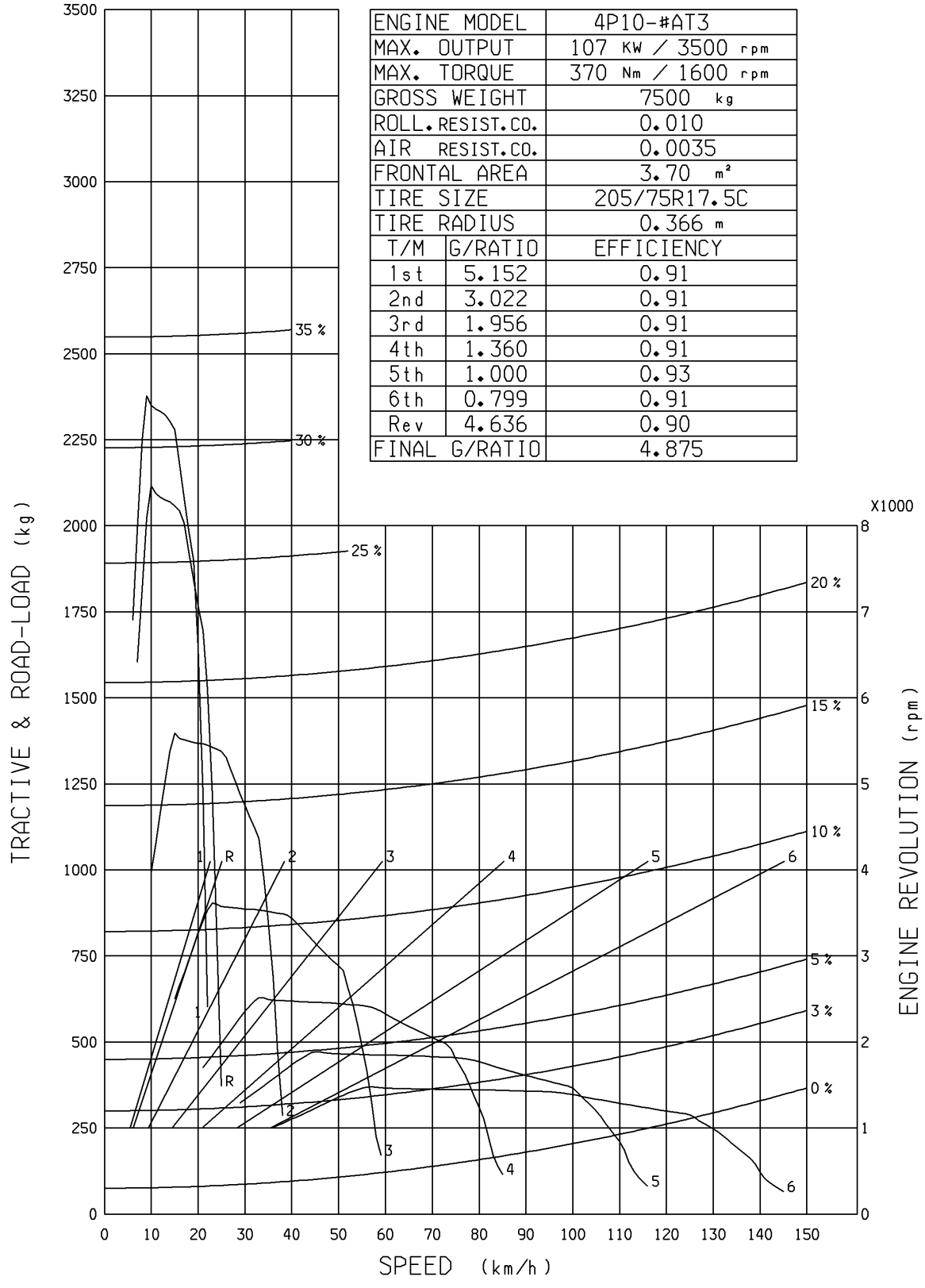
FE84 <P10>

ENGINE MODEL		4P10-#AT3
MAX. OUTPUT		107 KW / 3500 rpm
MAX. TORQUE		370 Nm / 1600 rpm
GROSS WEIGHT		6500 kg
ROLL. RESIST. CO.		0.010
AIR RESIST. CO.		0.0035
FRONTAL AREA		3.60 m²
TIRE SIZE		215/75R16C
TIRE RADIUS		0.351 m
T/M	G/RATIO	EFFICIENCY
1st	5.152	0.91
2nd	3.022	0.91
3rd	1.956	0.91
4th	1.360	0.91
5th	1.000	0.93
6th	0.799	0.91
Rev	4.636	0.90
FINAL G/RATIO		5.285



FE85 <S6>

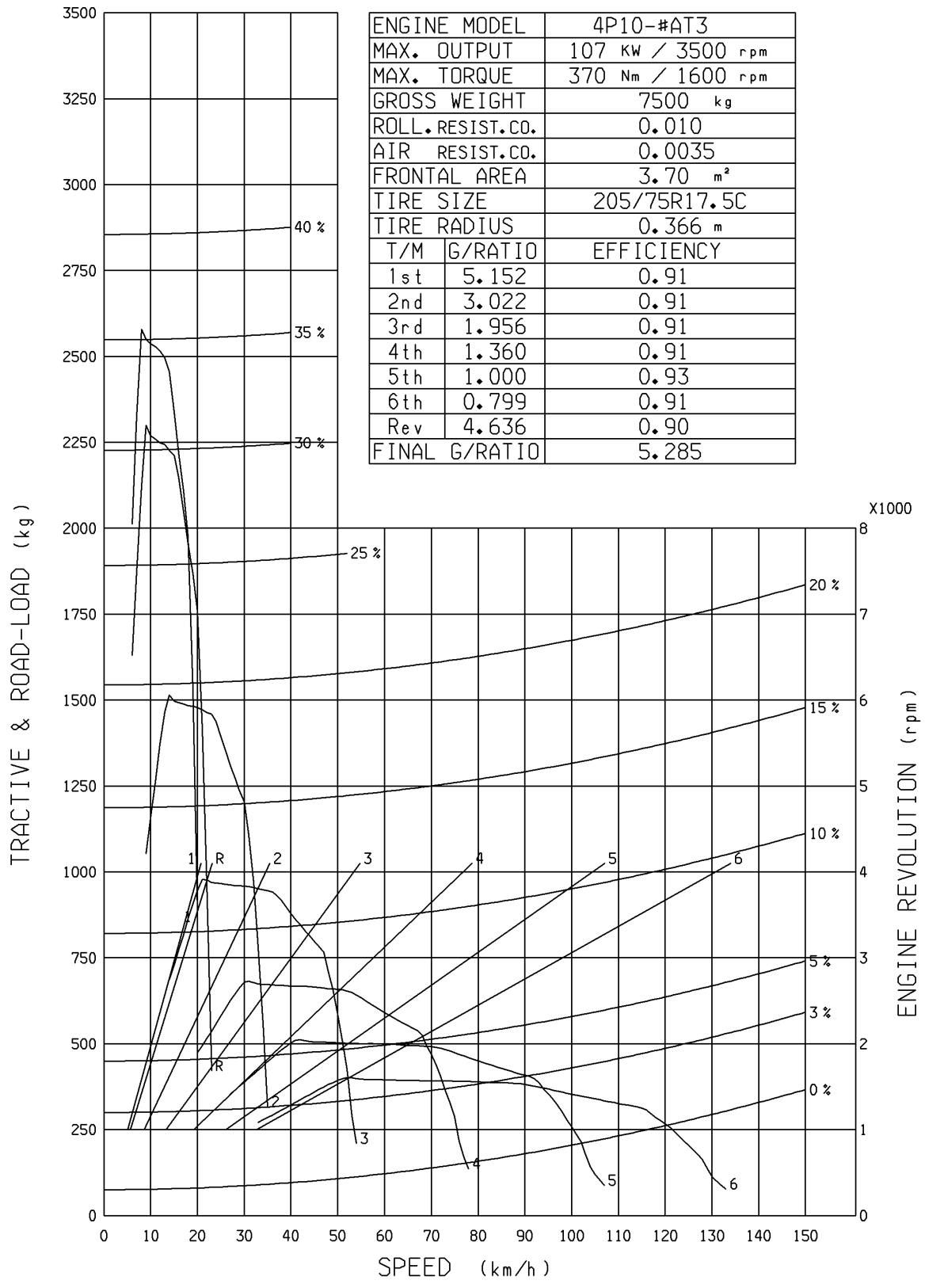
ENGINE MODEL	4P10-#AT3
MAX. OUTPUT	107 KW / 3500 rpm
MAX. TORQUE	370 Nm / 1600 rpm
GROSS WEIGHT	7500 kg
ROLL. RESIST. CO.	0.010
AIR RESIST. CO.	0.0035
FRONTAL AREA	3.70 m²
TIRE SIZE	205/75R17.5C
TIRE RADIUS	0.366 m
T/M G/RATIO	EFFICIENCY
1st 5.152	0.91
2nd 3.022	0.91
3rd 1.956	0.91
4th 1.360	0.91
5th 1.000	0.93
6th 0.799	0.91
Rev 4.636	0.90
FINAL G/RATIO	4.875



FE85 <P11>

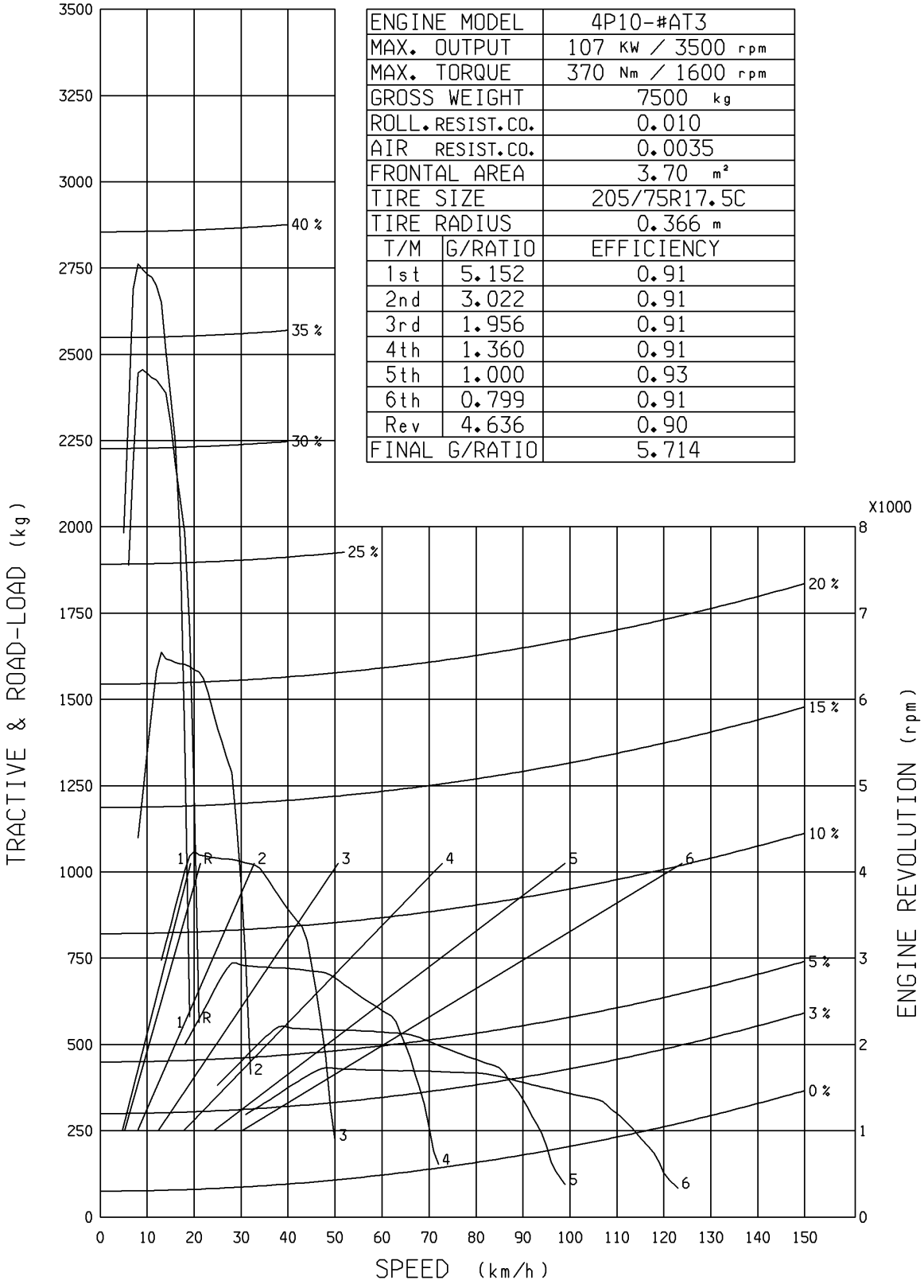
ENGINE MODEL	4P10-#AT3
MAX. OUTPUT	107 KW / 3500 rpm
MAX. TORQUE	370 Nm / 1600 rpm
GROSS WEIGHT	7500 kg
ROLL. RESIST. CO.	0.010
AIR RESIST. CO.	0.0035
FRONTAL AREA	3.70 m²
TIRE SIZE	205/75R17.5C
TIRE RADIUS	0.366 m

T/M	G/RATIO	EFFICIENCY
1st	5.152	0.91
2nd	3.022	0.91
3rd	1.956	0.91
4th	1.360	0.91
5th	1.000	0.93
6th	0.799	0.91
Rev	4.636	0.90
FINAL G/RATIO		5.285



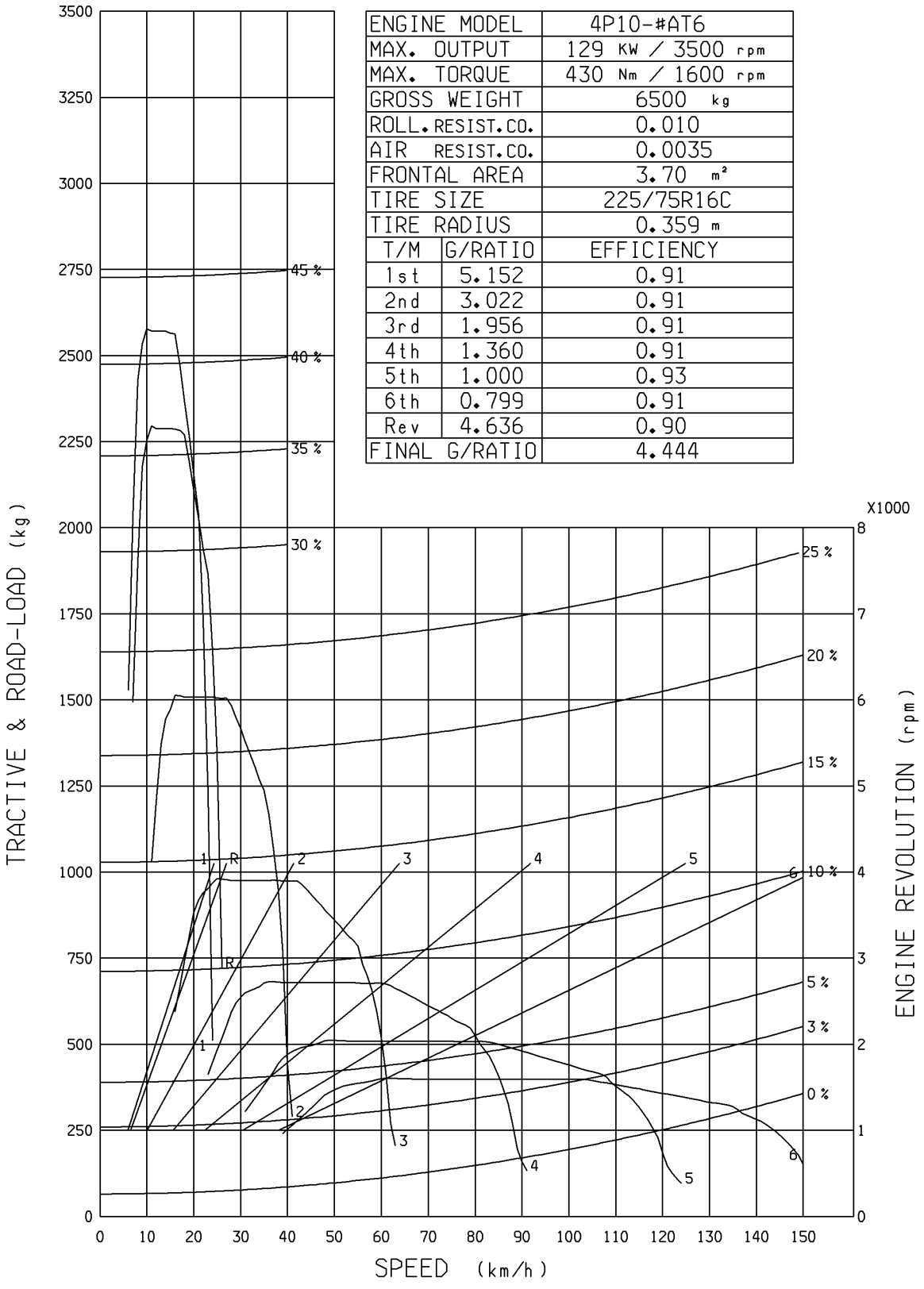
FE85 <P12>

ENGINE MODEL	4P10-#AT3
MAX. OUTPUT	107 KW / 3500 rpm
MAX. TORQUE	370 Nm / 1600 rpm
GROSS WEIGHT	7500 kg
ROLL. RESIST. CO.	0.010
AIR RESIST. CO.	0.0035
FRONTAL AREA	3.70 m²
TIRE SIZE	205/75R17.5C
TIRE RADIUS	0.366 m
T/M G/RATIO	EFFICIENCY
1st 5.152	0.91
2nd 3.022	0.91
3rd 1.956	0.91
4th 1.360	0.91
5th 1.000	0.93
6th 0.799	0.91
Rev 4.636	0.90
FINAL G/RATIO	5.714



FE84 <S7>

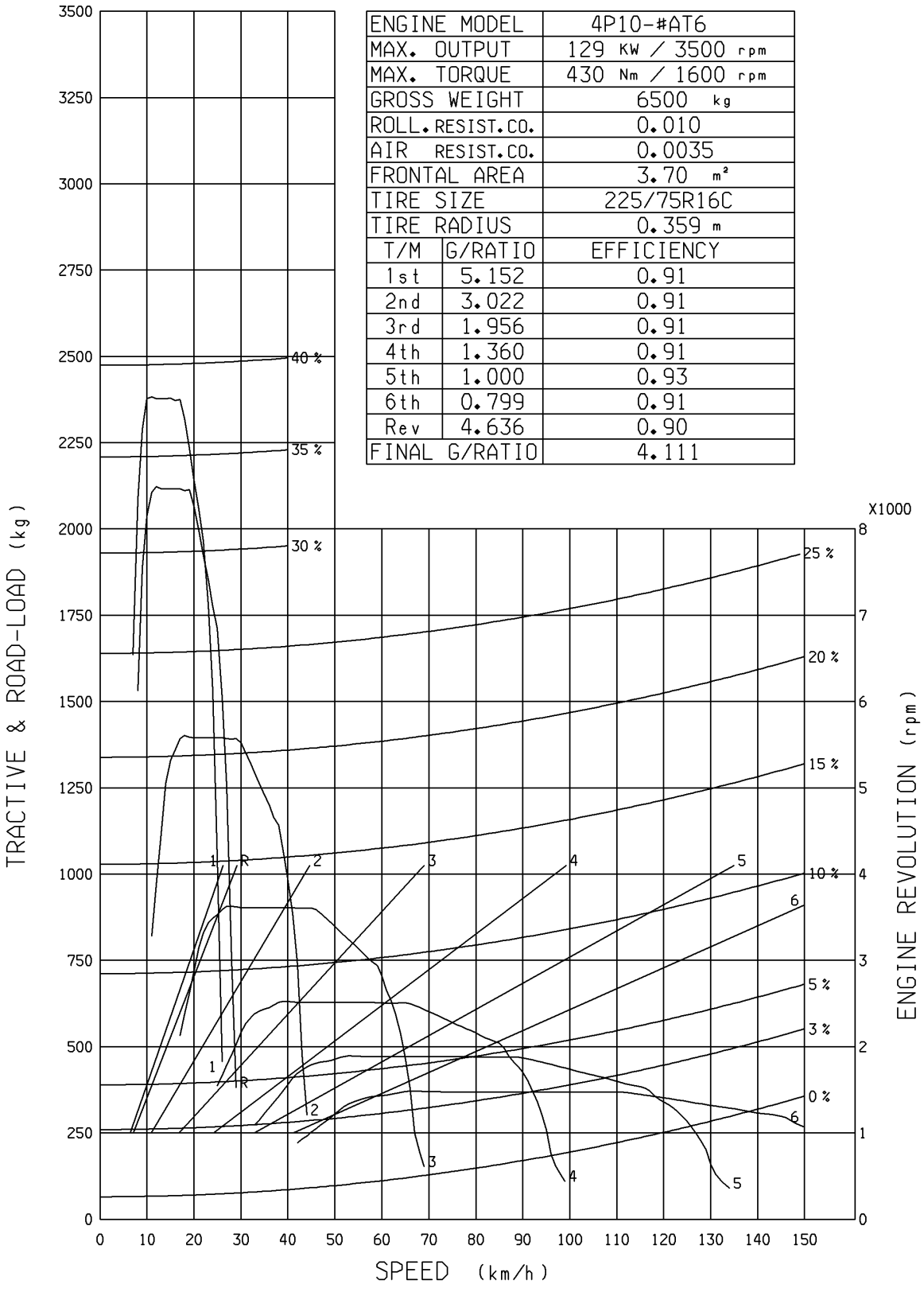
ENGINE MODEL		4P10-#AT6
MAX. OUTPUT		129 KW / 3500 rpm
MAX. TORQUE		430 Nm / 1600 rpm
GROSS WEIGHT		6500 kg
ROLL. RESIST. CO.		0.010
AIR RESIST. CO.		0.0035
FRONTAL AREA		3.70 m²
TIRE SIZE		225/75R16C
TIRE RADIUS		0.359 m
T/M	G/RATIO	EFFICIENCY
1st	5.152	0.91
2nd	3.022	0.91
3rd	1.956	0.91
4th	1.360	0.91
5th	1.000	0.93
6th	0.799	0.91
Rev	4.636	0.90
FINAL G/RATIO		4.444



FE84 <P13>

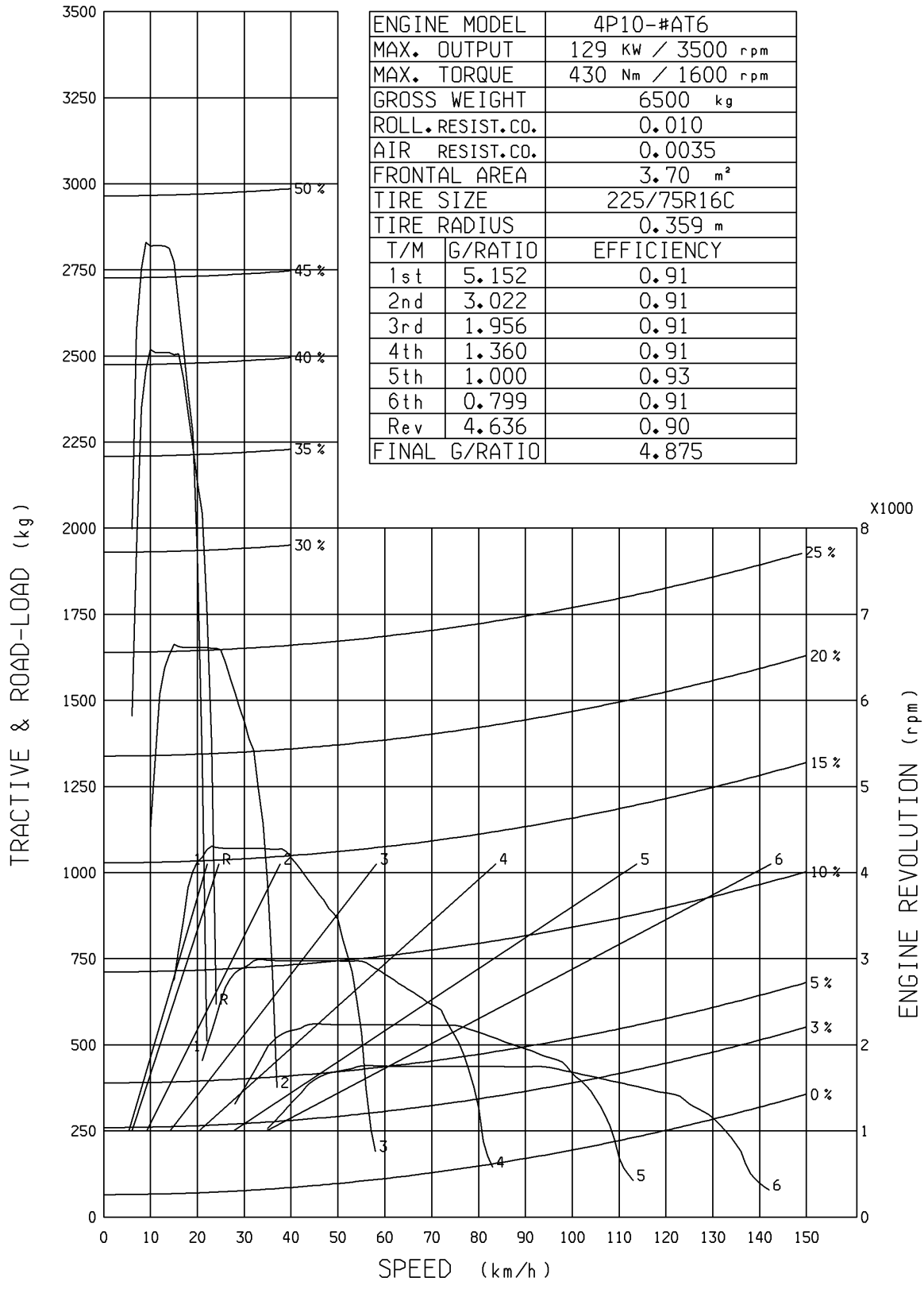
ENGINE MODEL	4P10-#AT6
MAX. OUTPUT	129 KW / 3500 rpm
MAX. TORQUE	430 Nm / 1600 rpm
GROSS WEIGHT	6500 kg
ROLL. RESIST. CO.	0.010
AIR RESIST. CO.	0.0035
FRONTAL AREA	3.70 m²
TIRE SIZE	225/75R16C
TIRE RADIUS	0.359 m

T/M	G/RATIO	EFFICIENCY
1st	5.152	0.91
2nd	3.022	0.91
3rd	1.956	0.91
4th	1.360	0.91
5th	1.000	0.93
6th	0.799	0.91
Rev	4.636	0.90
FINAL G/RATIO		4.111



FE84 <P14>

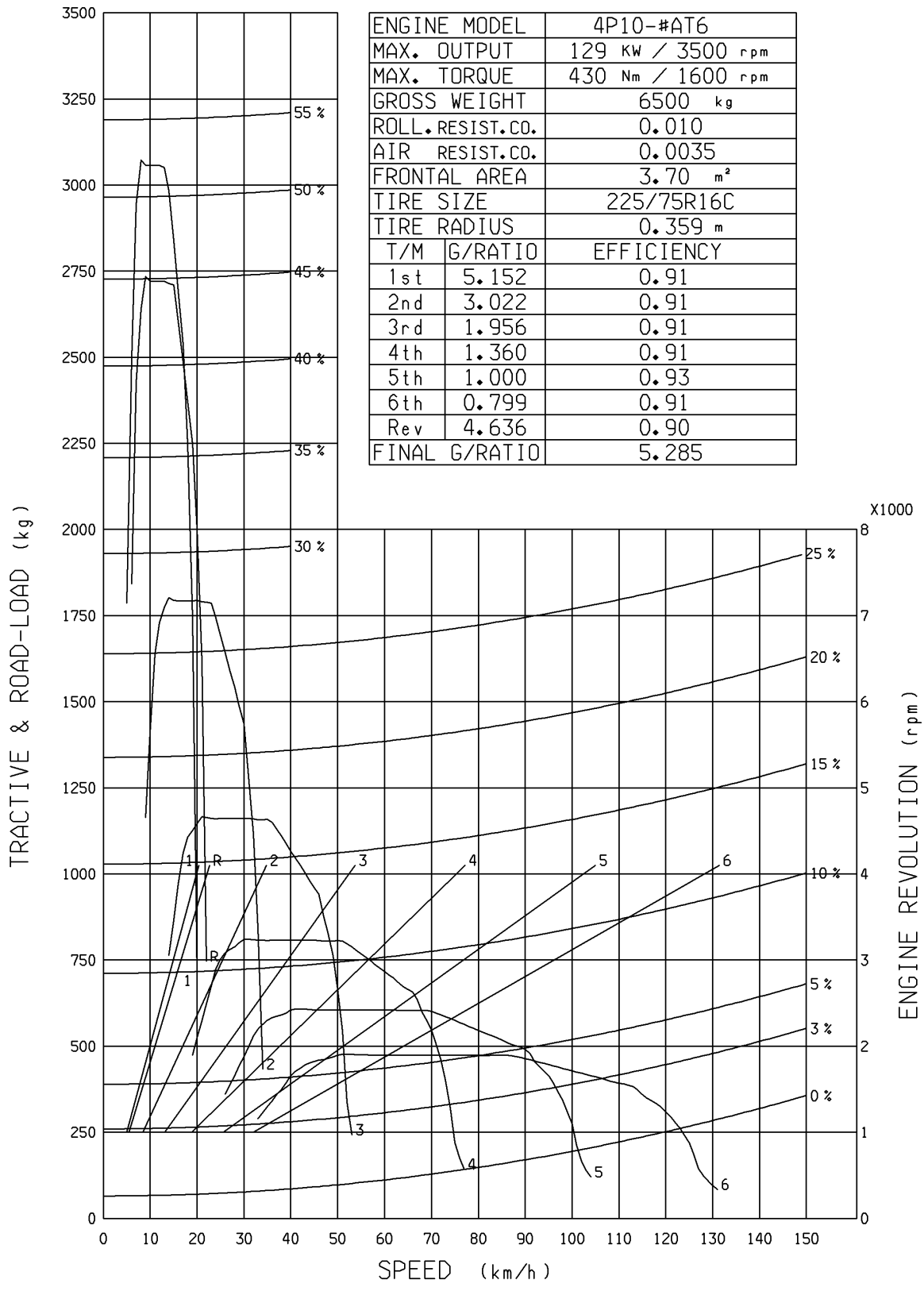
ENGINE MODEL	4P10-#AT6
MAX. OUTPUT	129 KW / 3500 rpm
MAX. TORQUE	430 Nm / 1600 rpm
GROSS WEIGHT	6500 kg
ROLL. RESIST. CO.	0.010
AIR RESIST. CO.	0.0035
FRONTAL AREA	3.70 m²
TIRE SIZE	225/75R16C
TIRE RADIUS	0.359 m
T/M	G/RATIO	EFFICIENCY
1st	5.152	0.91
2nd	3.022	0.91
3rd	1.956	0.91
4th	1.360	0.91
5th	1.000	0.93
6th	0.799	0.91
Rev	4.636	0.90
FINAL G/RATIO	4.875	



FE84 <P15>

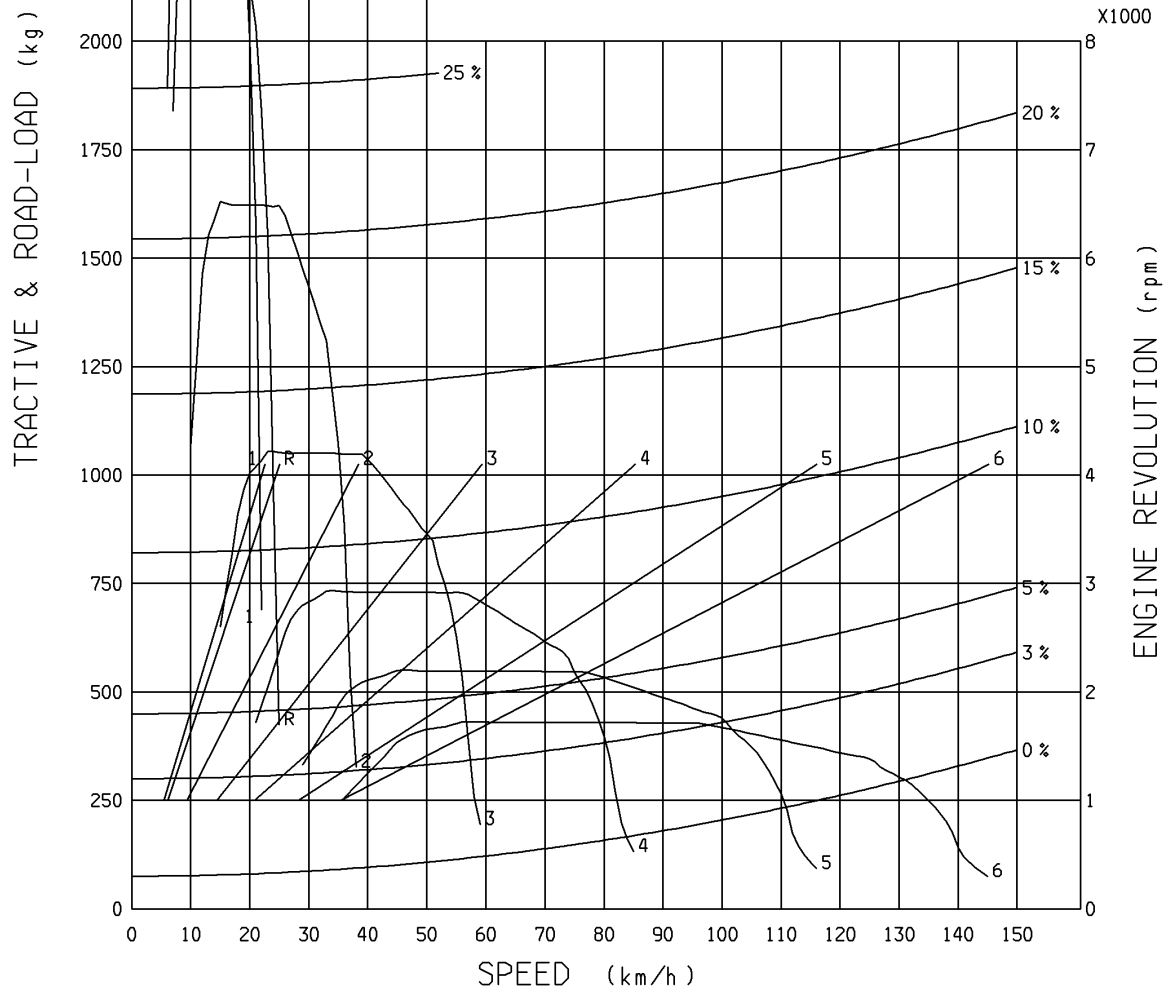
ENGINE MODEL	4P10-#AT6
MAX. OUTPUT	129 KW / 3500 rpm
MAX. TORQUE	430 Nm / 1600 rpm
GROSS WEIGHT	6500 kg
ROLL. RESIST. CO.	0.010
AIR RESIST. CO.	0.0035
FRONTAL AREA	3.70 m²
TIRE SIZE	225/75R16C
TIRE RADIUS	0.359 m

T/M	G/RATIO	EFFICIENCY
1st	5.152	0.91
2nd	3.022	0.91
3rd	1.956	0.91
4th	1.360	0.91
5th	1.000	0.93
6th	0.799	0.91
Rev	4.636	0.90
FINAL G/RATIO		5.285



FE85 <S8>

ENGINE MODEL	4P10-#AT6
MAX. OUTPUT	129 KW / 3500 rpm
MAX. TORQUE	430 Nm / 1600 rpm
GROSS WEIGHT	7500 kg
ROLL. RESIST. CO.	0.010
AIR RESIST. CO.	0.0035
FRONTAL AREA	3.70 m²
TIRE SIZE	205/75R17.5C
TIRE RADIUS	0.366 m
T/M G/RATIO	EFFICIENCY
1st 5.152	0.91
2nd 3.022	0.91
3rd 1.956	0.91
4th 1.360	0.91
5th 1.000	0.93
6th 0.799	0.91
Rev 4.636	0.90
FINAL G/RATIO	4.875

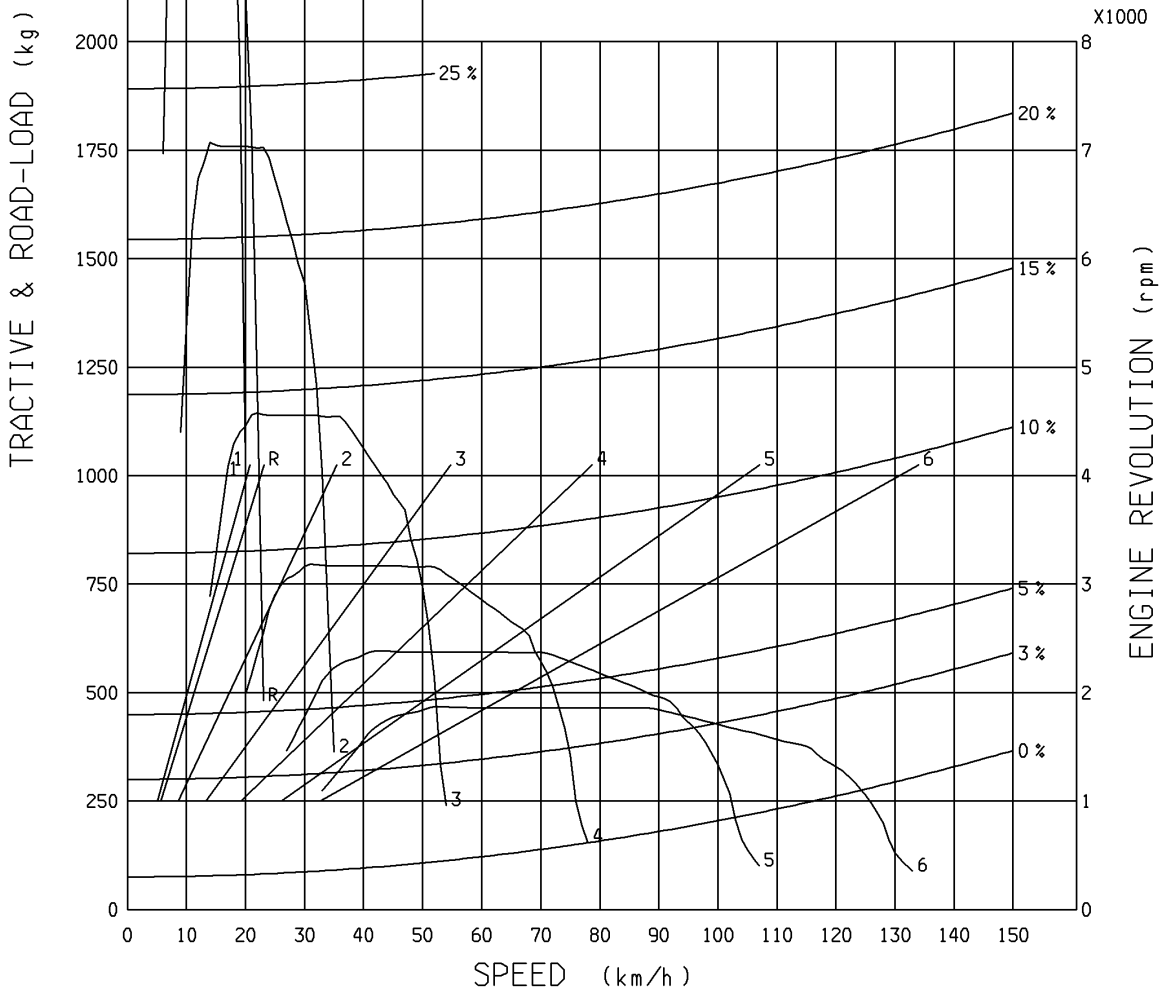


9.2 Performance curve

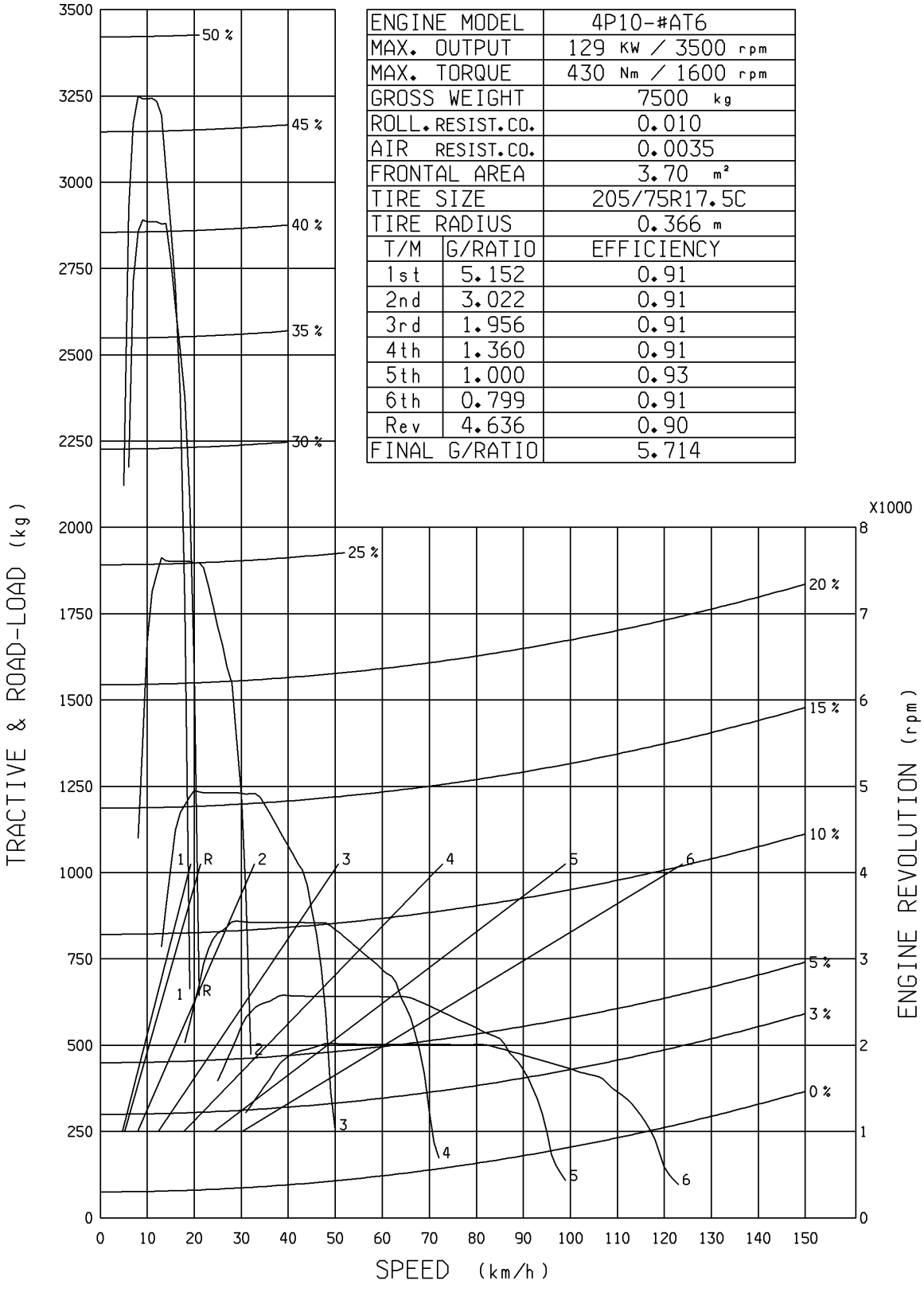
FE85 <P16>

ENGINE MODEL	4P10-#AT6
MAX. OUTPUT	129 KW / 3500 rpm
MAX. TORQUE	430 Nm / 1600 rpm
GROSS WEIGHT	7500 kg
ROLL. RESIST. CO.	0.010
AIR RESIST. CO.	0.0035
FRONTAL AREA	3.70 m²
TIRE SIZE	205/75R17.5C
TIRE RADIUS	0.366 m

T/M	G/RATIO	EFFICIENCY
1st	5.152	0.91
2nd	3.022	0.91
3rd	1.956	0.91
4th	1.360	0.91
5th	1.000	0.93
6th	0.799	0.91
Rev	4.636	0.90
FINAL G/RATIO		5.285

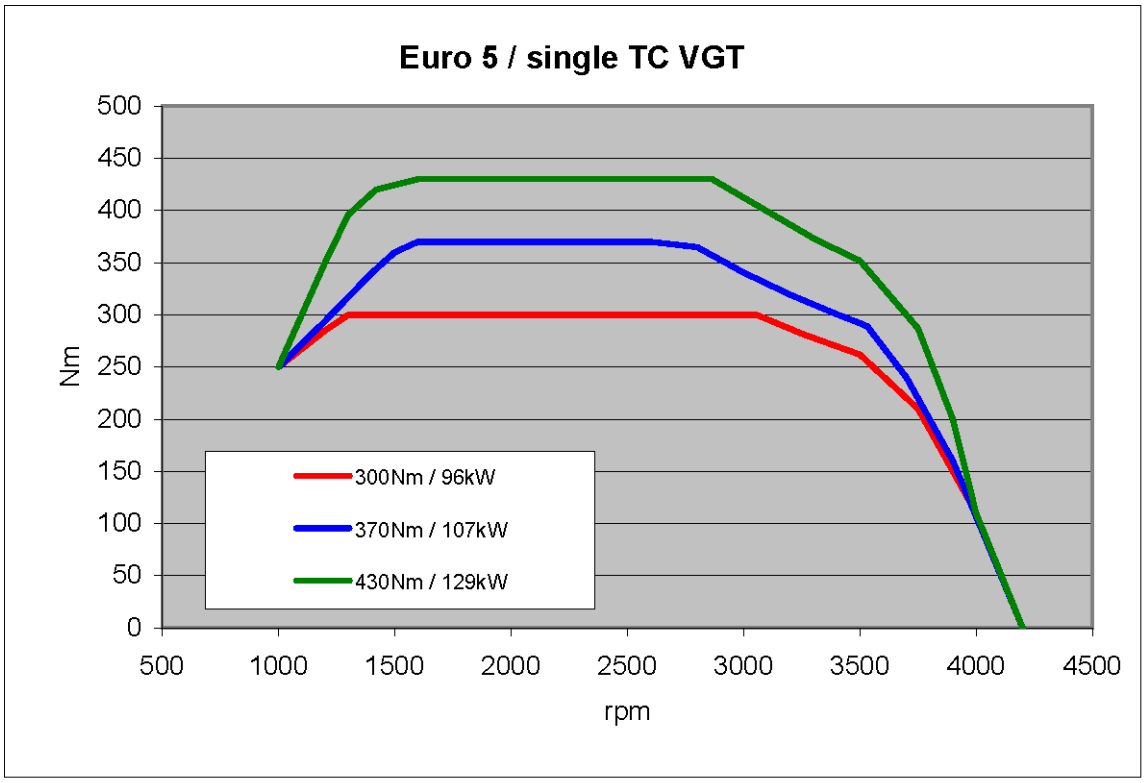


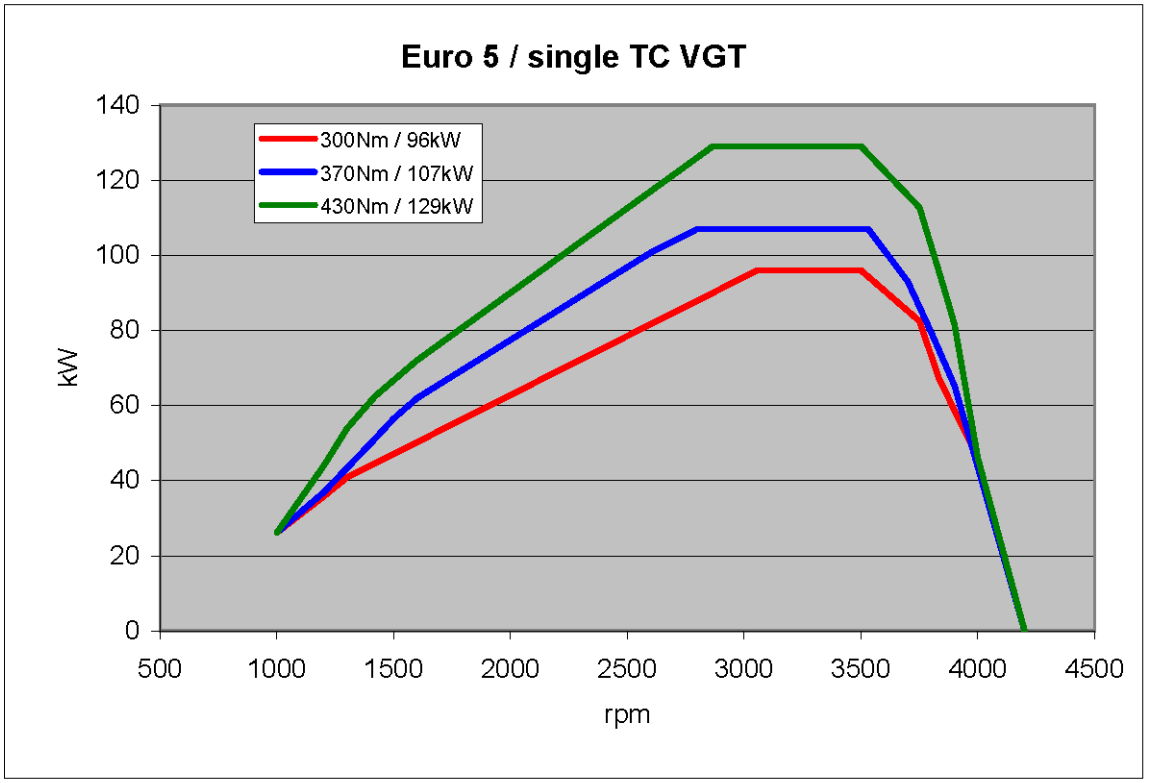
FE85 <P17>



ENGINE MODEL		4P10-#AT6
MAX. OUTPUT		129 KW / 3500 rpm
MAX. TORQUE		430 Nm / 1600 rpm
GROSS WEIGHT		7500 kg
ROLL. RESIST. CO.		0.010
AIR RESIST. CO.		0.0035
FRONTAL AREA		3.70 m²
TIRE SIZE		205/75R17.5C
TIRE RADIUS		0.366 m
T/M	G/RATIO	EFFICIENCY
1st	5.152	0.91
2nd	3.022	0.91
3rd	1.956	0.91
4th	1.360	0.91
5th	1.000	0.93
6th	0.799	0.91
Rev	4.636	0.90
FINAL G/RATIO		5.714

9.2.2 Engine performance curve





9.2.3 Governor and torque characteristics

- 4P10 (96kW)

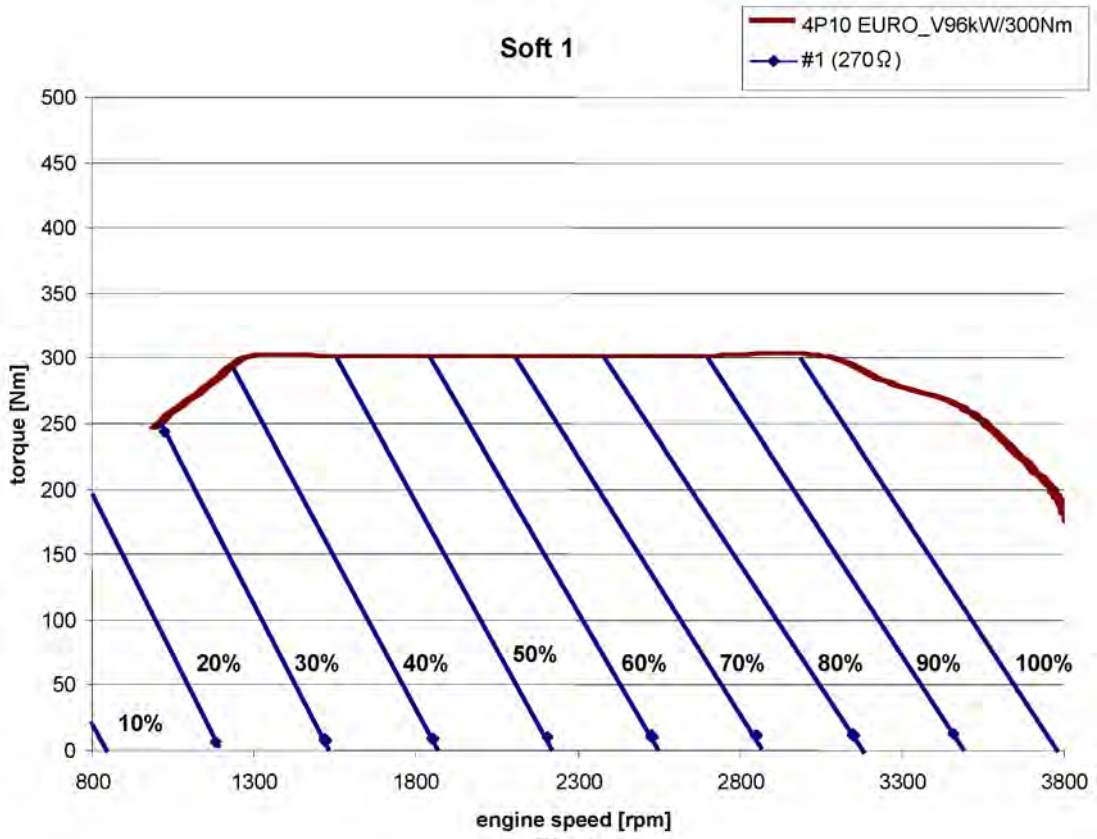


Fig.1

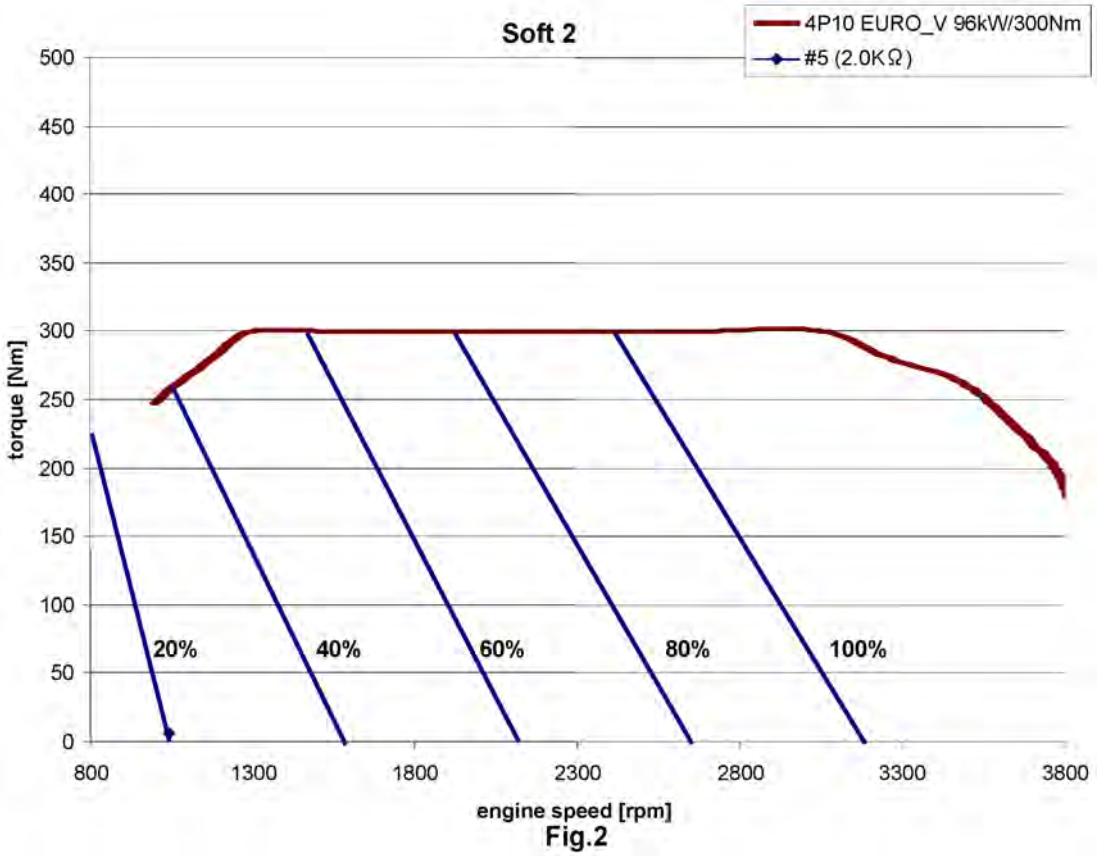


Fig.2

9.2 Performance curve

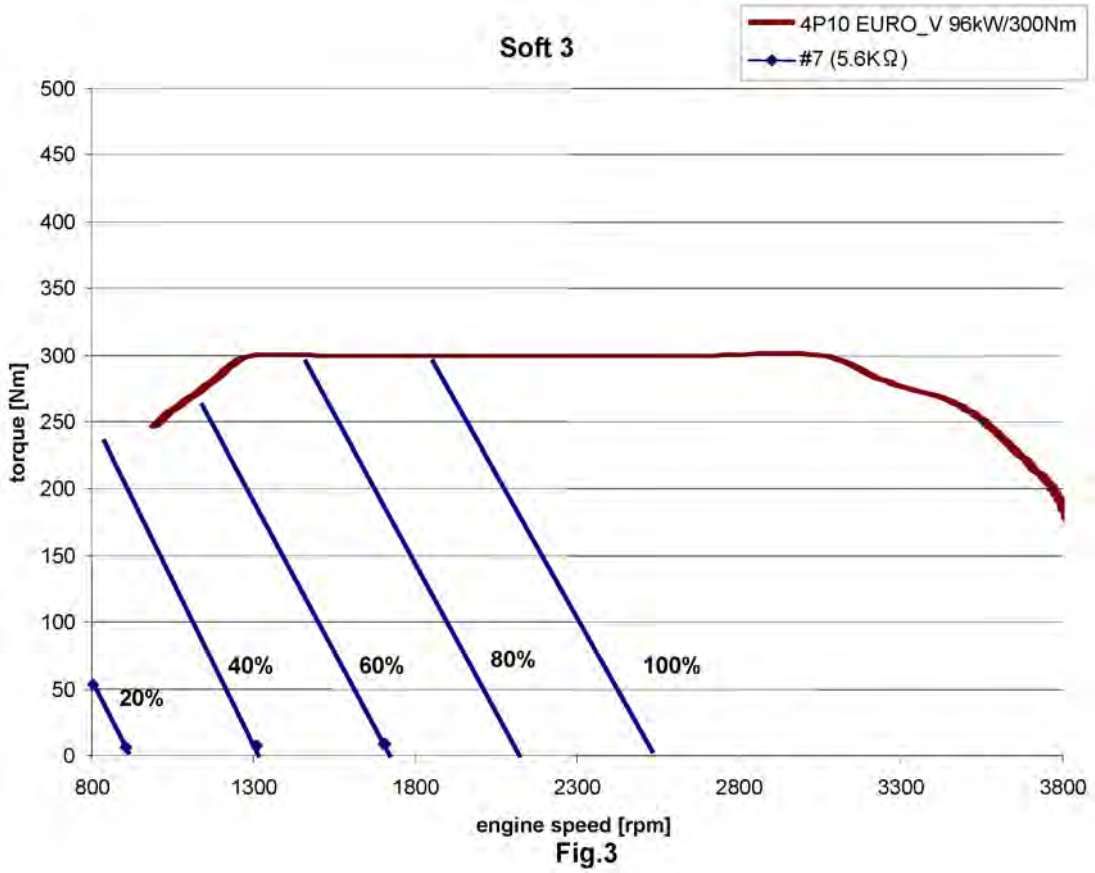


Fig.3

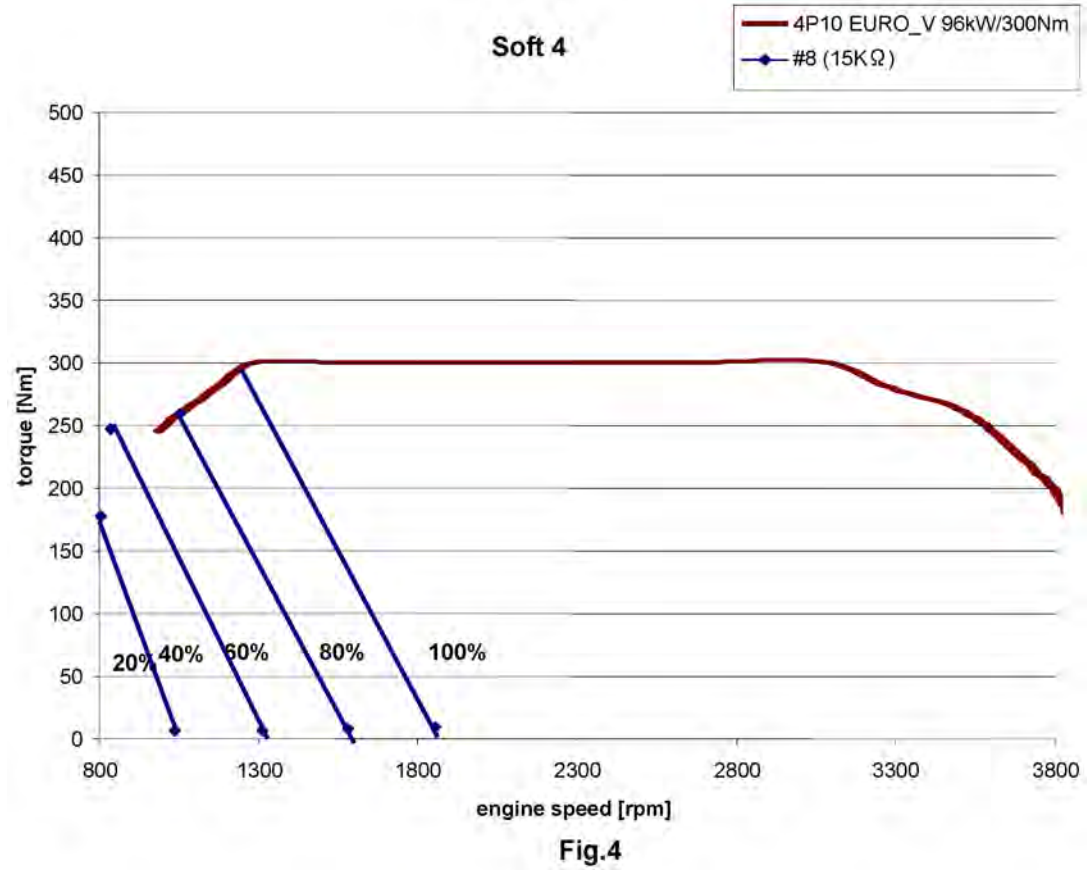


Fig.4

9.2 Performance curve

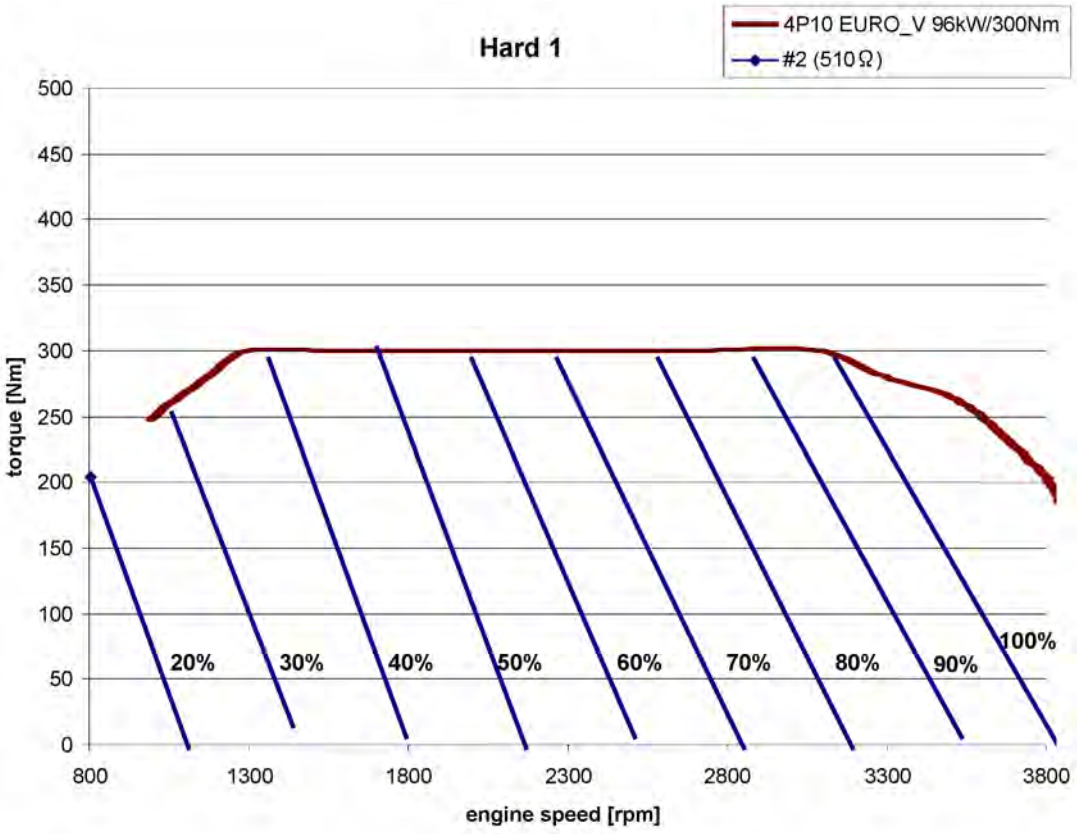


Fig.5

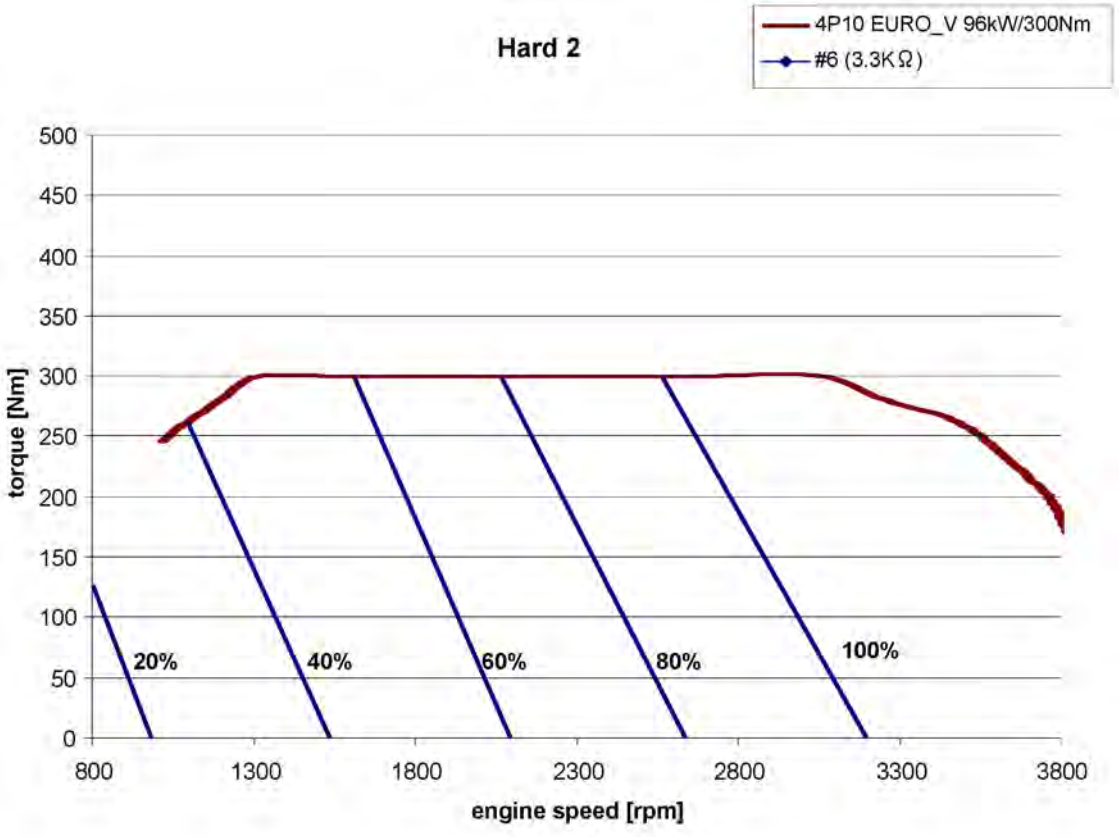


Fig.6

- 4P10 (107kW)

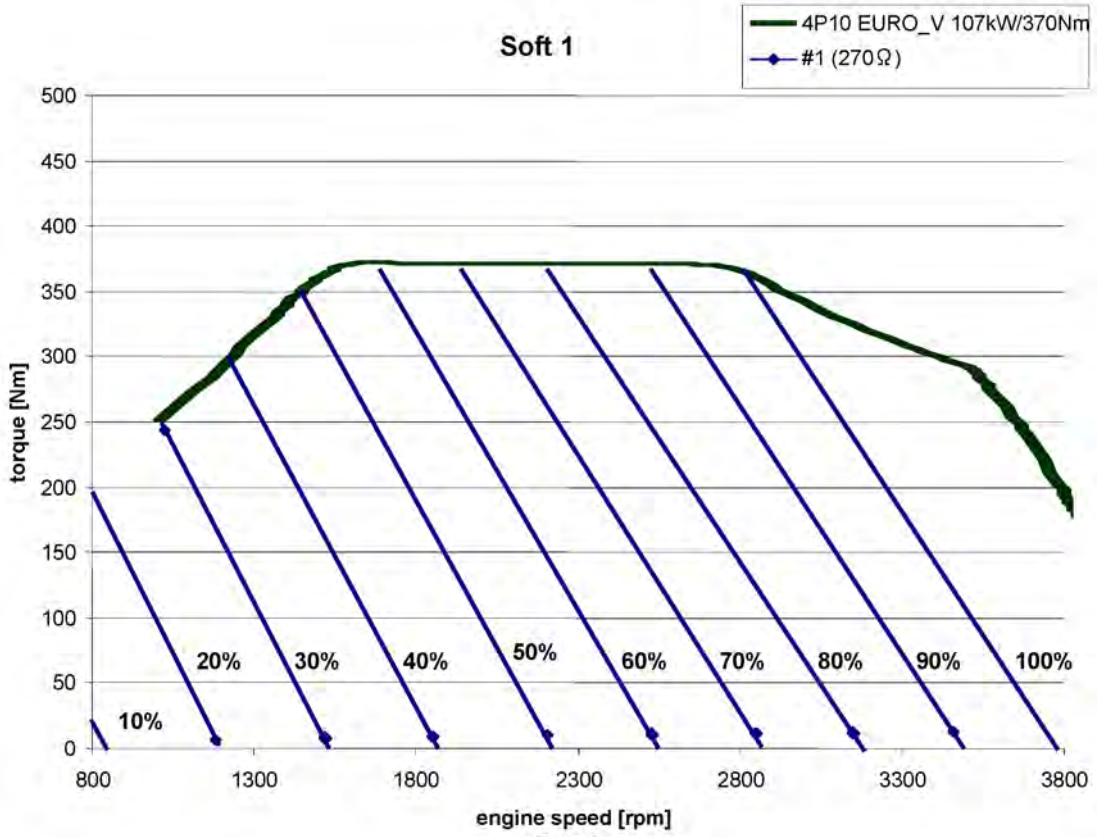


Fig.7

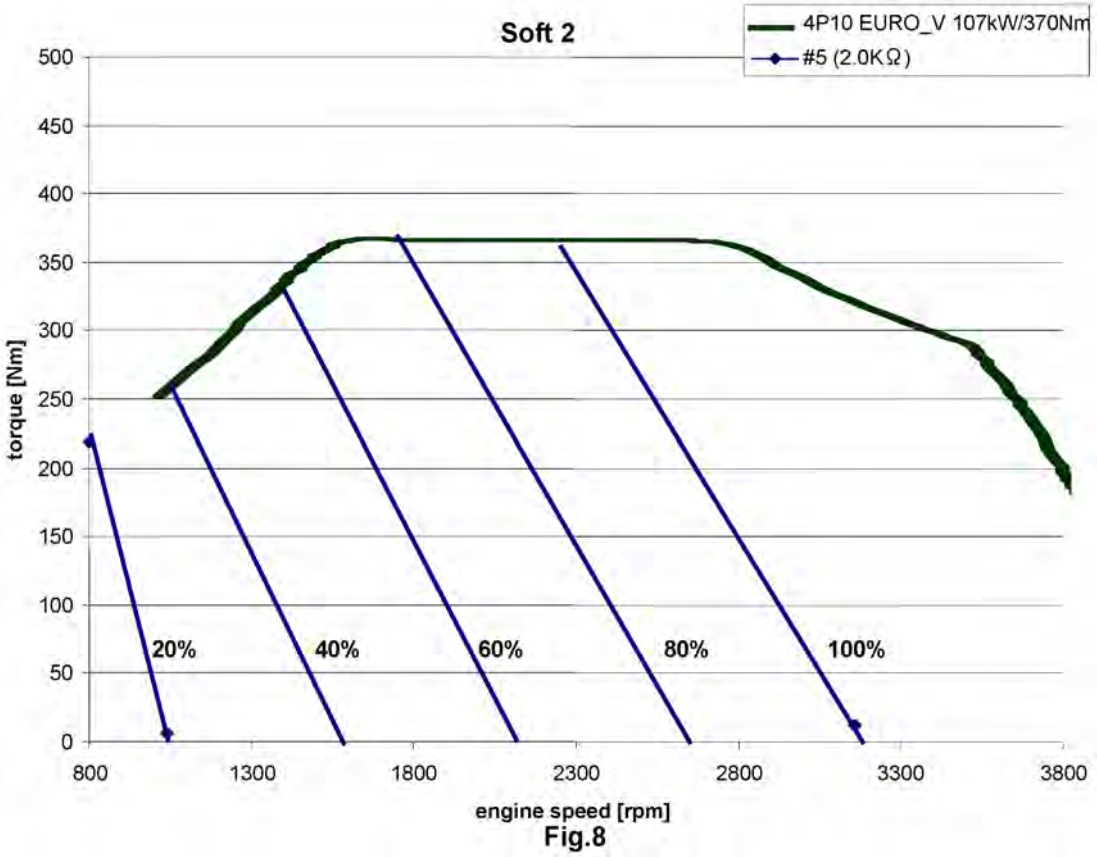


Fig.8

9.2 Performance curve

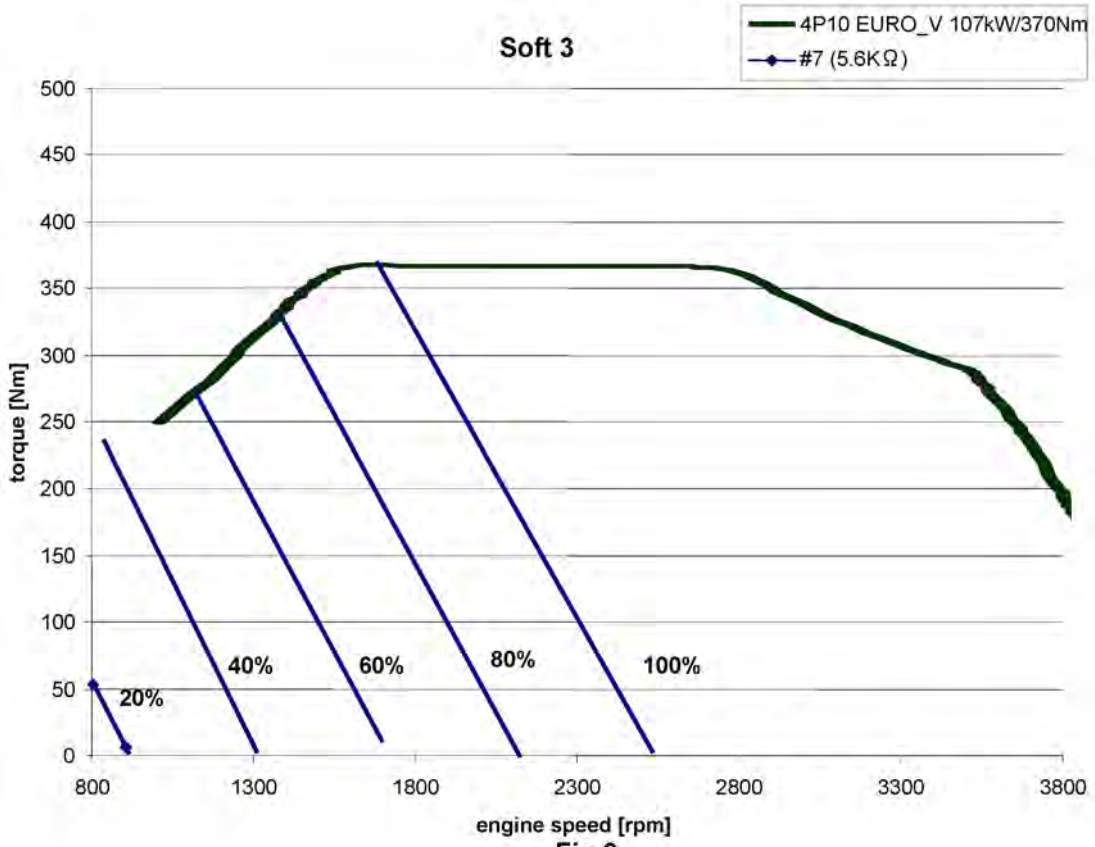


Fig.9

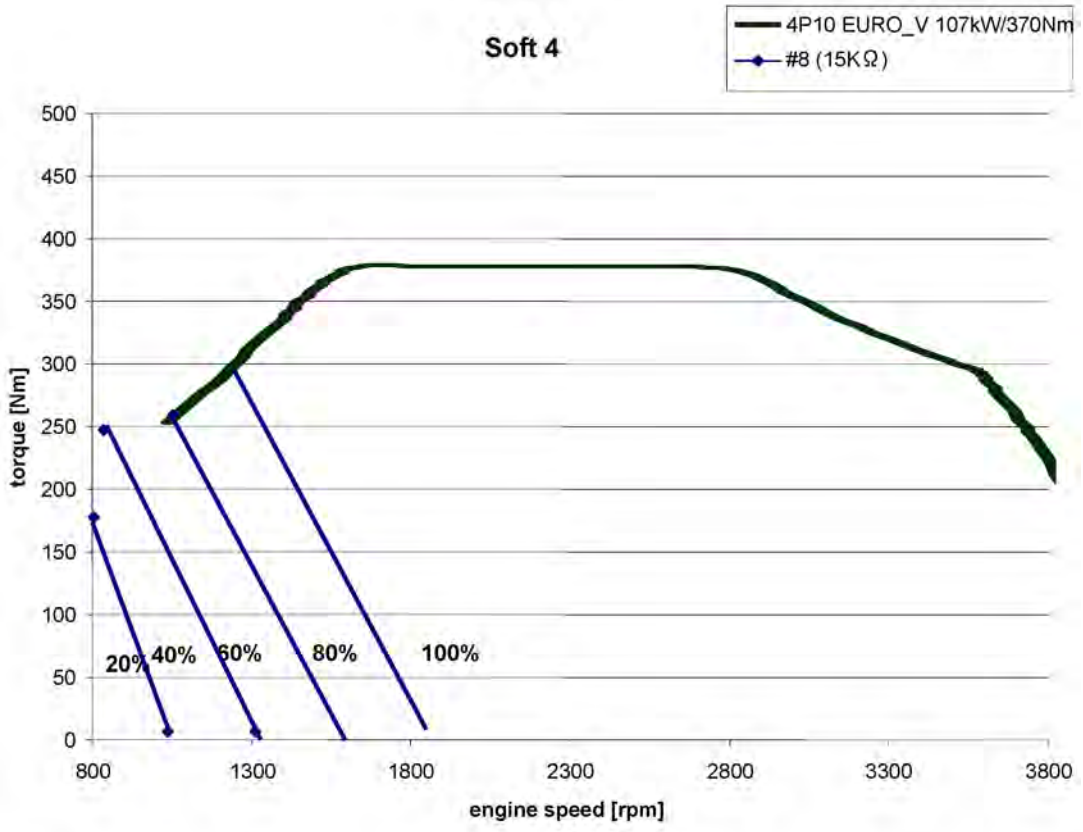


Fig.10

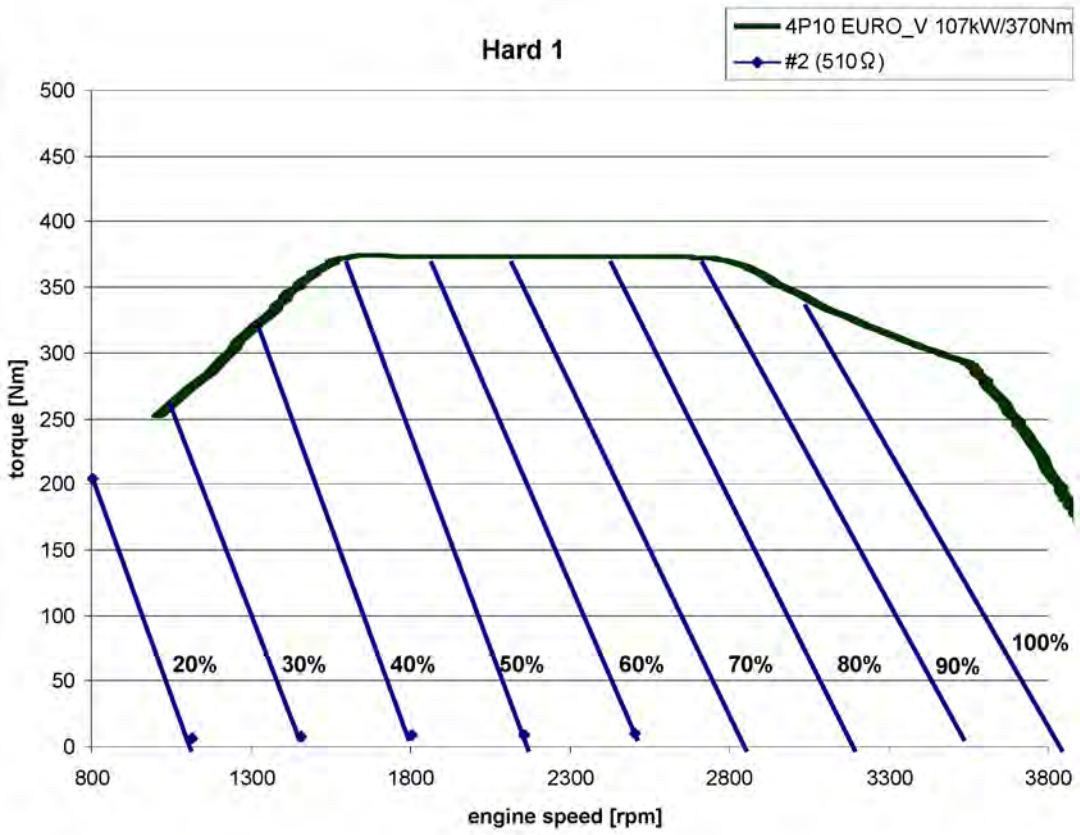

Hard 1
4P10 EURO_V 107kW/370Nm
#2 (510Ω)
torque [Nm]
engine speed [rpm]
20%
30%
40%
50%
60%
70%
80%
90%
100%

Fig.11

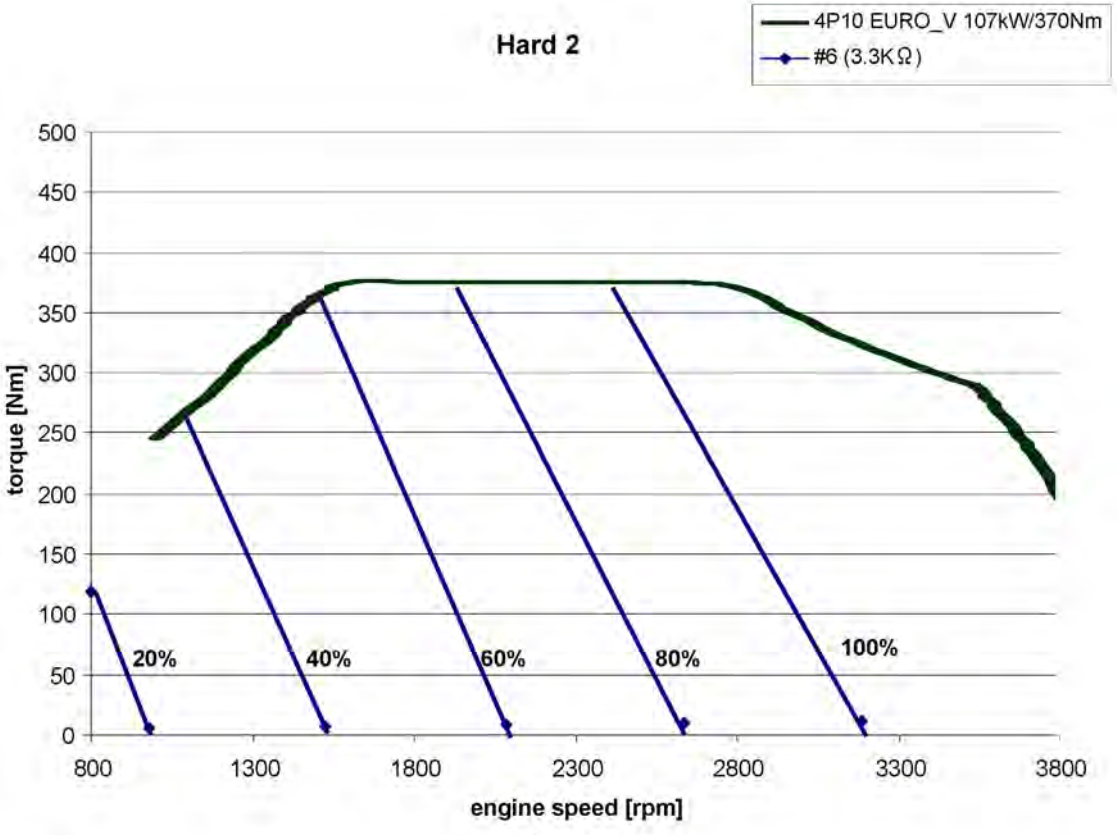

Hard 2
4P10 EURO_V 107kW/370Nm
#6 (3.3KΩ)
torque [Nm]
engine speed [rpm]
20%
40%
60%
80%
100%

Fig.12

- 4P10 (129kW)

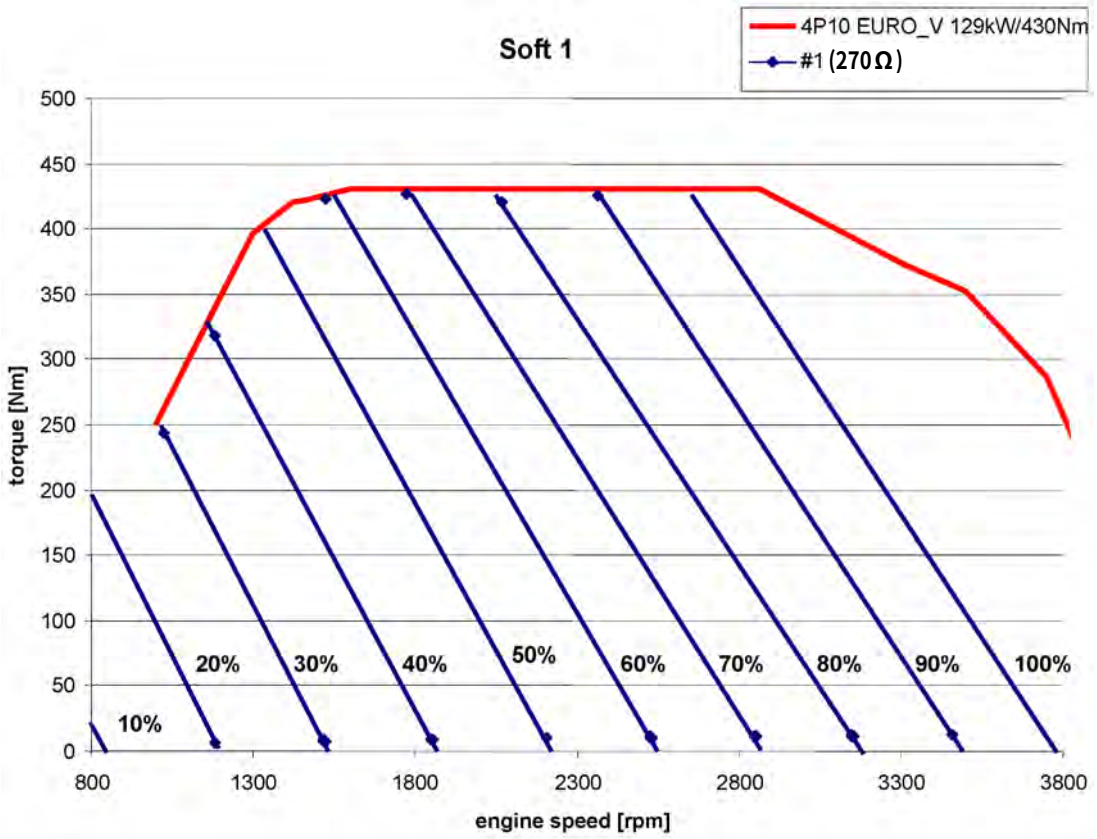


Fig. 13

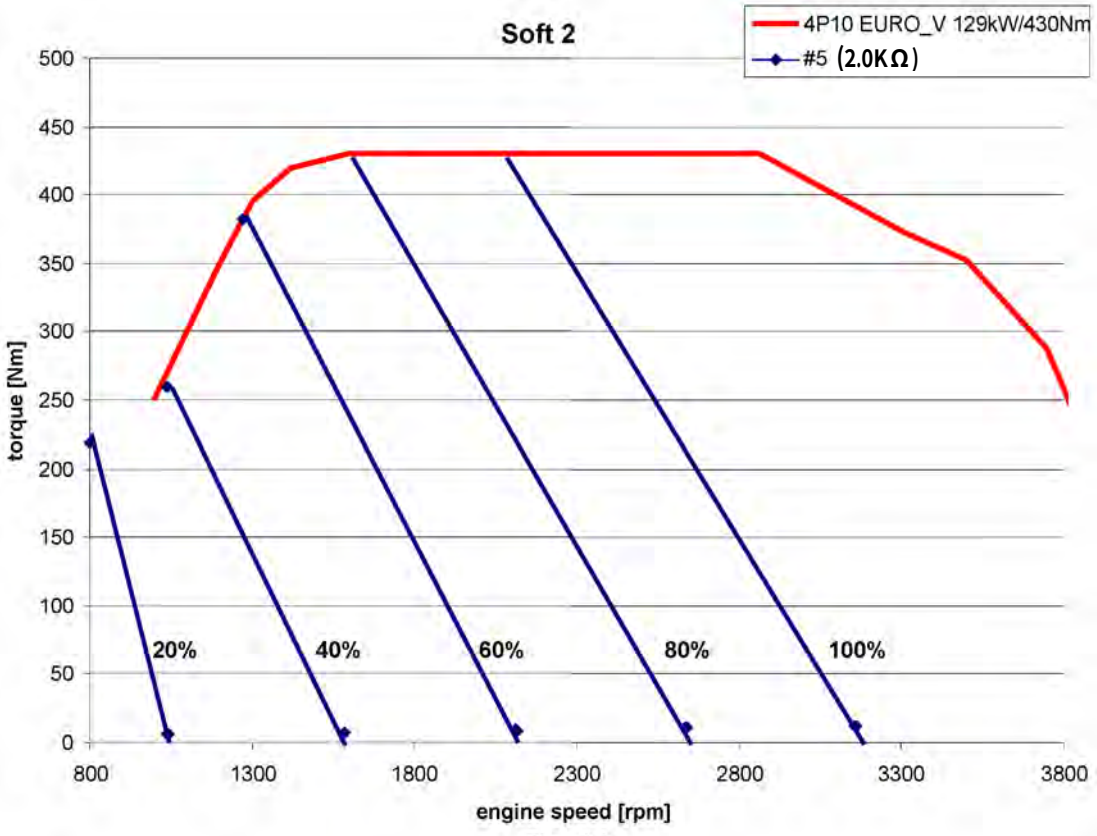


Fig. 14

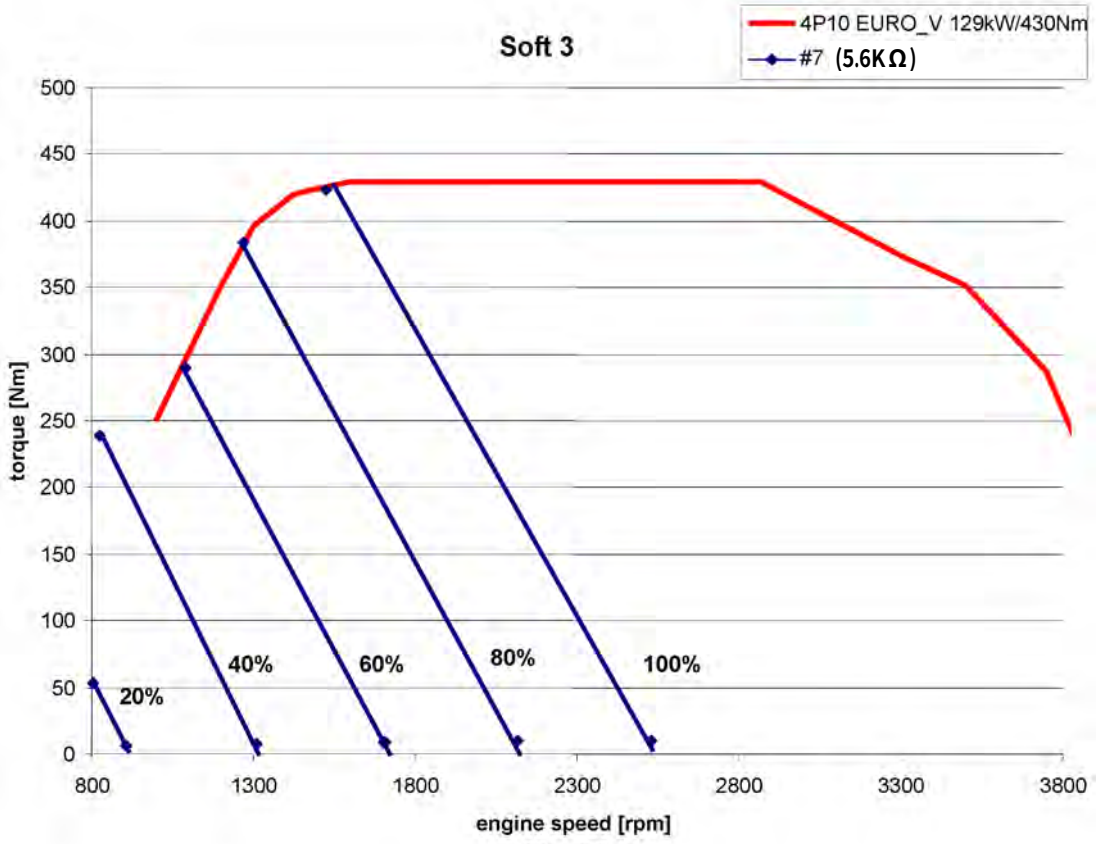

Soft 3
4P10 EURO_V 129kW/430Nm
#7 (5.6KΩ)
torque [Nm]
engine speed [rpm]
20%
40%
60%
80%
100%

Fig. 15

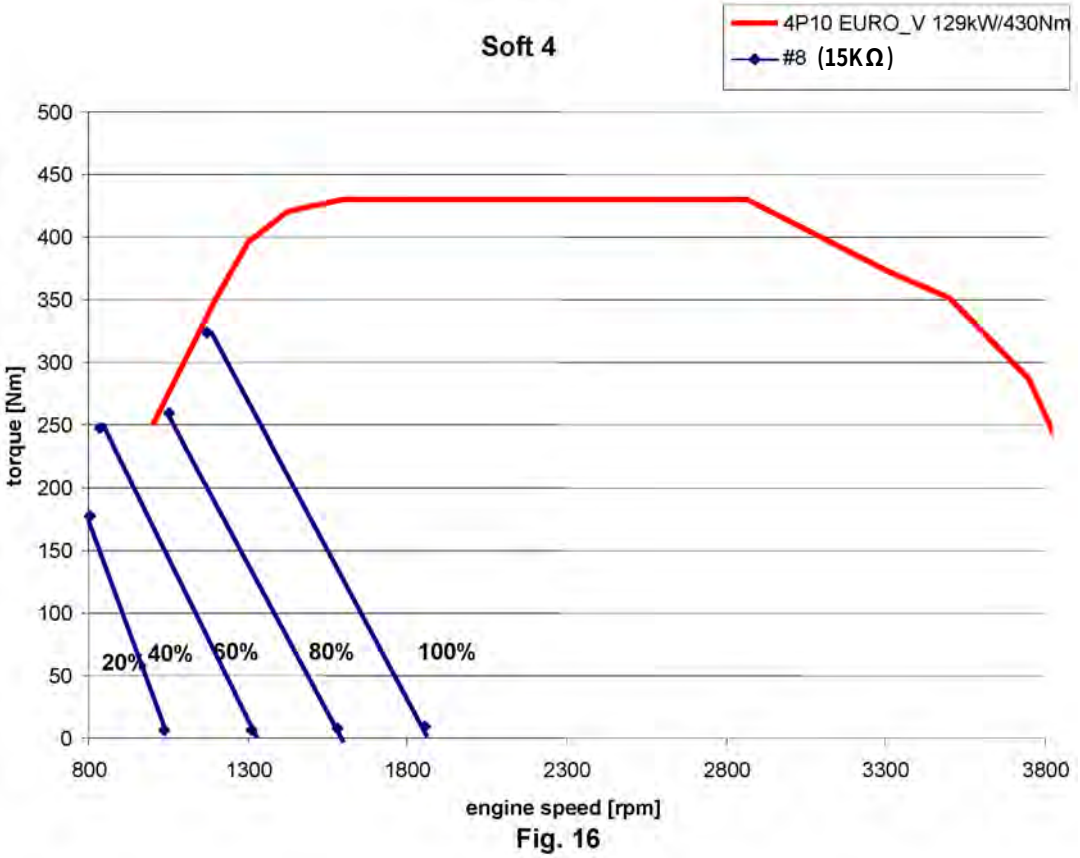

Soft 4
4P10 EURO_V 129kW/430Nm
#8 (15KΩ)
torque [Nm]
engine speed [rpm]
20%
40%
60%
80%
100%

Fig. 16

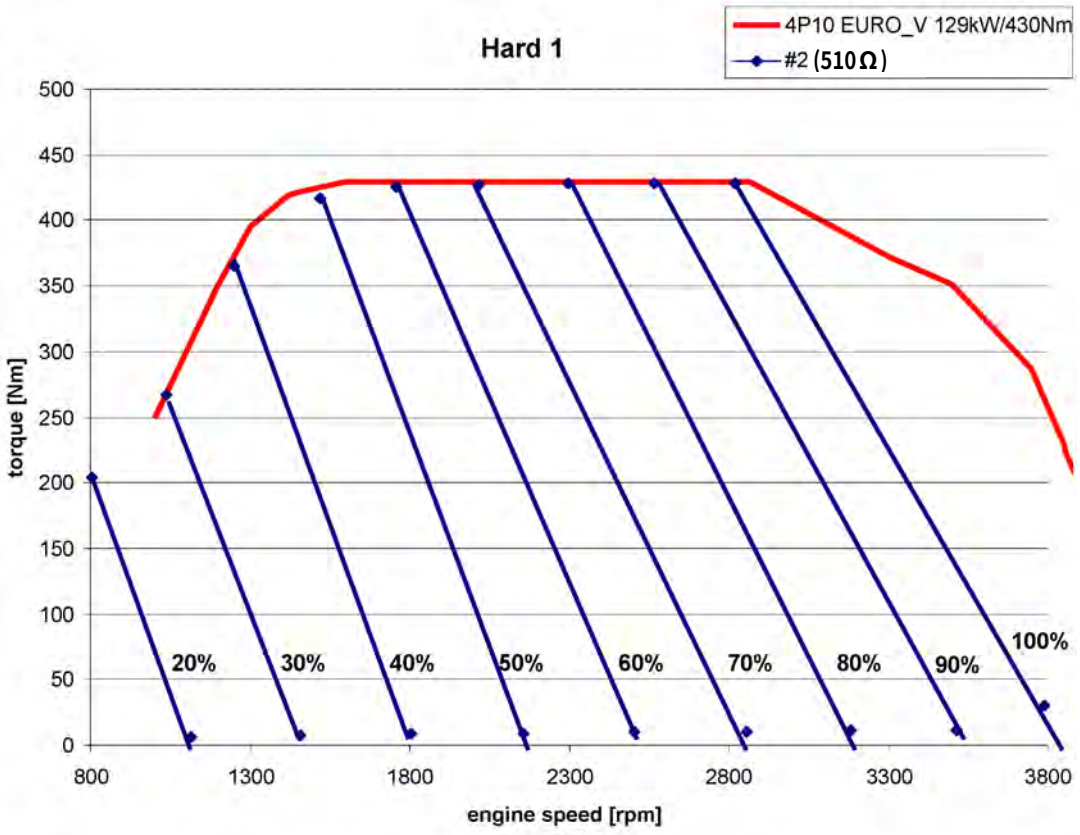

Hard 1
4P10 EURO_V 129kW/430Nm
#2 (510Ω)
torque [Nm]
engine speed [rpm]
20%
30%
40%
50%
60%
70%
80%
90%
100%

Fig. 17

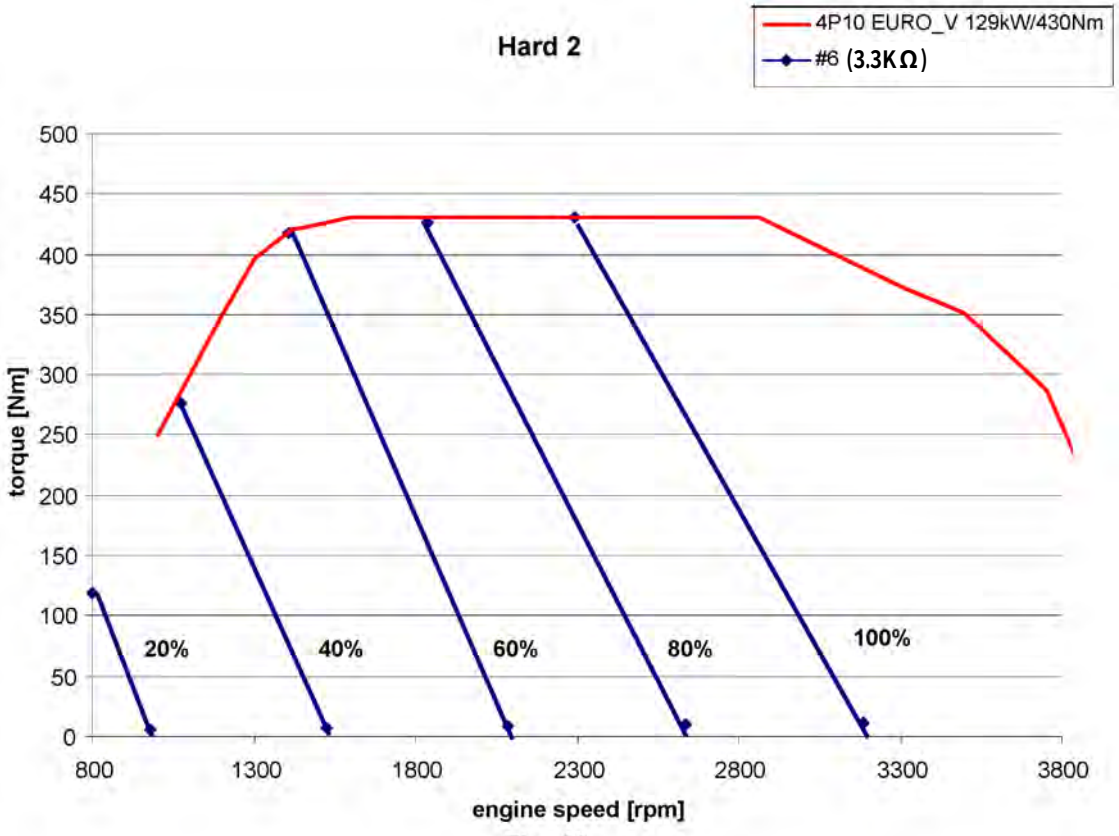

Hard 2
4P10 EURO_V 129kW/430Nm
#6 (3.3KΩ)
torque [Nm]
engine speed [rpm]
20%
40%
60%
80%
100%

Fig. 18

9.3 Weight distribution table

Model: FB73SB (96kW)

Wheelbase (m) : 2.500

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	8	-0.920	10.3	-2.8
Steering system	38	-0.620	47.4	-9.4
Engine control system	4	-0.600	5.0	-1.0
Brake,clutch control system	26	-0.550	31.7	-5.7
Air intake system	14	0.310	12.3	1.7
Parking brake system	3	-0.400	3.5	-0.5
Remote control system	9	-0.130	9.5	-0.5
Cab assembly,Front cab mounting	331	-0.370	380.0	-49.0
Cooling system	23	-0.079	24.0	-0.7
Engine, Transmission assembly	355	0.335	307.8	47.6
Rear cab mounting	53	-0.170	56.1	-3.6
Battery	34	1.100	19.0	15.0
Fuel system	79	1.315	37.4	41.6
Exhaust system	52	1.740	15.8	36.2
Propeller shaft assembly	15	1.650	5.1	9.9
Electric system	15	1.360	6.8	8.2
Frame and others	211	1.250	105.5	105.5
Engine and T/M cover	11	0.335	9.5	1.5
Sprung weight	1281		1086.7 1087	194.0 194
Unsprung weight	572		250	322
*2 Chassis Cab weight	1853 1855		1337 1340	516 515

*1: From front axle center
*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FB73SD (96kW)

Wheelbase (m) : 2.950

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	8	-0.920	9.8	-2.3
Steering system	38	-0.620	46.0	-8.0
Engine control system	4	-0.600	4.8	-0.8
Brake,clutch control system	26	-0.550	30.8	-4.8
Air intake system	14	0.310	12.5	1.5
Parking brake system	3	-0.400	3.4	-0.4
Remote control system	9	-0.130	9.4	-0.4
Cab assembly,Front cab mounting	331	-0.370	372.5	-41.5
Cooling system	23	-0.270	25.4	-2.1
Engine, Transmission assembly	355	0.335	315.0	40.4
Rear cab mounting	53	-0.170	55.5	-3.0
Battery	34	1.100	21.3	12.7
Fuel system	79	1.315	43.8	35.2
Exhaust system	53	1.840	19.9	33.1
Propeller shaft assembly	24	1.880	8.7	15.3
Electric system	15	1.500	7.4	7.6
Frame and others	228	1.610	103.6	124.4
Engine and T/M cover	11	0.335	9.8	1.2
Sprung weight	1308		1099.6 1100	208.1 208
Unsprung weight	572		250	322
*2 Chassis Cab weight	1880 1880		1350 1350	530 530

*1: From front axle center
*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FB73SE (96kW)

Wheelbase (m) : 3.350

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	8	-0.920	9.6	-2.1
Steering system	38	-0.620	45.0	-7.0
Engine control system	4	-0.600	4.7	-0.7
Brake,clutch control system	26	-0.550	30.3	-4.3
Air intake system	14	0.310	12.7	1.3
Parking brake system	3	-0.400	3.4	-0.4
Remote control system	9	-0.130	9.3	-0.3
Cab assembly,Front cab mounting	331	-0.370	367.6	-36.6
Cooling system	23	-0.079	23.8	-0.5
Engine, Transmission assembly	355	0.335	319.9	35.5
Rear cab mounting	53	-0.170	55.2	-2.7
Battery	34	1.100	22.8	11.2
Fuel system	79	2.205	27.0	52.0
Exhaust system	61	1.700	30.0	31.0
Propeller shaft assembly	26	2.000	10.5	15.5
Electric system	15	1.730	7.3	7.7
Frame and others	240	1.790	111.8	128.2
Engine and T/M cover	11	0.335	9.9	1.1
Sprung weight	1330		1100.8 1101	228.9 229
Unsprung weight	572		250	322
*2 Chassis Cab weight	1902 1900		1351 1350	551 550

*1: From front axle center

*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FB73SEW (96kW)

Wheelbase (m) : 3.350

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	8	-0.920	9.6	-2.1
Steering system	38	-0.620	45.0	-7.0
Engine control system	4	-0.600	4.7	-0.7
Brake,clutch control system	26	-0.550	30.3	-4.3
Air intake system	22	0.871	16.3	5.7
Parking brake system	3	-0.400	3.4	-0.4
Remote control system	9	-0.180	9.5	-0.5
Cab assembly,Front cab mounting	491	0.100	476.5	14.7
Cooling system	23	-0.130	24.2	-0.9
Engine, Transmission assembly	355	0.335	319.9	35.5
Rear cab mounting	51	0.065	49.5	1.0
Battery	34	1.105	22.8	11.2
Fuel system	79	2.205	27.0	52.0
Exhaust system	53	1.700	26.1	26.9
Propeller shaft assembly	26	2.000	10.5	15.5
Electric system	9	1.730	4.4	4.6
Frame and others	240	1.790	111.8	128.2
Engine and T/M cover	11	0.335	9.9	1.1
Sprung weight	1482		1201.4 1201	280.5 281
Unsprung weight	572		250	322
*2 Chassis Cab weight	2054 2055		1451 1450	603 605

*1: From front axle center
*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FB83SB (96kW)

Wheelbase (m) : 2.500

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	14.1	-4.1
Steering system	39	-0.820	51.8	-12.8
Engine control system	2	-0.700	2.6	-0.6
Brake,clutch control system	24	-0.550	29.3	-5.3
Air intake system	16	0.304	14.1	1.9
Parking brake system	3	-0.400	3.5	-0.5
Remote control system	9	-0.180	9.6	-0.6
Cab assembly,Front cab mounting	406	-0.360	464.5	-58.5
Cooling system	27	-0.074	27.8	-0.8
Engine, Transmission assembly	355	0.382	301.1	54.3
Rear cab mounting	68	-0.130	71.5	-3.5
Battery	32	1.070	18.3	13.7
Fuel system	79	1.395	34.9	44.1
Exhaust system	49	1.760	14.5	34.5
Propeller shaft assembly	12	1.650	4.1	7.9
Electric system	9	1.360	4.1	4.9
Frame and others	217	1.210	112.0	105.0
Engine and T/M cover	15	0.382	12.7	2.3
			1190.5	181.9
Sprung weight	1372		1191	182
Unsprung weight	541		226	315
*2				
Chassis Cab weight	1913		1417	497
	1915		1420	495

*1: From front axle center
*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FB83SD (96kW)

Wheelbase (m) : 2.950

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	13.5	-3.5
Steering system	39	-0.820	49.8	-10.8
Engine control system	2	-0.700	2.5	-0.5
Brake,clutch control system	24	-0.550	28.5	-4.5
Air intake system	16	0.304	14.4	1.6
Parking brake system	3	-0.400	3.4	-0.4
Remote control system	9	-0.180	9.5	-0.5
Cab assembly,Front cab mounting	406	-0.360	455.5	-49.5
Cooling system	27	-0.074	27.7	-0.7
Engine, Transmission assembly	355	0.382	309.4	46.0
Rear cab mounting	68	-0.130	71.0	-3.0
Battery	32	1.070	20.4	11.6
Fuel system	79	1.395	41.6	37.4
Exhaust system	49	1.850	18.3	30.7
Propeller shaft assembly	19	1.880	6.9	12.1
Electric system	9	1.500	4.4	4.6
Frame and others	235	1.500	115.5	119.5
Engine and T/M cover	15	0.382	13.1	1.9
Sprung weight	1397		1205.4 1205	192.0 192
Unsprung weight	541		226	315
*2 Chassis Cab weight	1938 1940		1431 1430	507 510

*1: From front axle center
*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FB83SE (96kW)

Wheelbase (m) : 3.350

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	13.1	-3.1
Steering system	39	-0.820	48.5	-9.5
Engine control system	2	-0.700	2.4	-0.4
Brake,clutch control system	24	-0.550	27.9	-3.9
Air intake system	16	0.304	14.5	1.5
Parking brake system	3	-0.400	3.4	-0.4
Remote control system	9	-0.180	9.5	-0.5
Cab assembly,Front cab mounting	406	-0.360	449.6	-43.6
Cooling system	27	-0.074	27.6	-0.6
Engine, Transmission assembly	355	0.382	314.9	40.5
Rear cab mounting	68	-0.130	70.6	-2.6
Battery	32	1.070	21.8	10.2
Fuel system	79	1.758	37.5	41.5
Exhaust system	56	1.600	29.3	26.7
Propeller shaft assembly	22	2.000	8.9	13.1
Electric system	9	1.730	4.4	4.6
Frame and others	245	1.700	120.7	124.3
Engine and T/M cover	15	0.382	13.3	1.7
Sprung weight	1417		1217.9 1218	199.5 200
Unsprung weight	541		226	315
*2 Chassis Cab weight	1958 1960		1444 1445	515 515

*1: From front axle center
*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FB83SG (96kW)

Wheelbase (m) : 3.850

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	12.7	-2.7
Steering system	39	-0.820	47.3	-8.3
Engine control system	2	-0.700	2.4	-0.4
Brake,clutch control system	24	-0.550	27.4	-3.4
Air intake system	16	0.304	14.7	1.3
Parking brake system	3	-0.400	3.3	-0.3
Remote control system	9	-0.180	9.4	-0.4
Cab assembly,Front cab mounting	406	-0.360	444.0	-38.0
Cooling system	27	-0.074	27.5	-0.5
Engine, Transmission assembly	355	0.382	320.1	35.3
Rear cab mounting	68	-0.130	70.3	-2.3
Battery	32	1.070	23.1	8.9
Fuel system	79	2.205	33.8	45.2
Exhaust system	52	1.600	30.4	21.6
Propeller shaft assembly	24	2.000	11.5	12.5
Electric system	9	1.730	5.0	4.0
Frame and others	262	1.950	129.3	132.7
Engine and T/M cover	15	0.382	13.5	1.5
Sprung weight	1432		1225.7 1226	206.7 207
Unsprung weight	541		226	315
*2 Chassis Cab weight	1973 1975		1452 1455	522 520

*1: From front axle center
*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FB83SEW (96kW)

Wheelbase (m) : 3.350

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	13.1	-3.1
Steering system	39	-0.820	48.5	-9.5
Engine control system	2	-0.700	2.4	-0.4
Brake,clutch control system	24	-0.550	27.9	-3.9
Air intake system	16	0.853	11.9	4.1
Parking brake system	3	-0.400	3.4	-0.4
Remote control system	9	-0.180	9.5	-0.5
Cab assembly,Front cab mounting	616	0.180	582.9	33.1
Cooling system	27	0.077	26.4	0.6
Engine, Transmission assembly	355	0.382	314.9	40.5
Rear cab mounting	53	0.165	50.4	2.6
Battery	32	1.070	21.8	10.2
Fuel system	79	2.205	27.0	52.0
Exhaust system	56	1.600	29.3	26.7
Propeller shaft assembly	22	2.000	8.9	13.1
Electric system	9	1.730	4.4	4.6
Frame and others	245	1.700	120.7	124.3
Engine and T/M cover	15	0.382	13.3	1.7
Sprung weight	1612		1316.7 1317	295.7 296
Unsprung weight	541		226	315
*2 Chassis Cab weight	2153 2155		1543 1545	611 610

*1: From front axle center
*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FB83SB (107kW)

Wheelbase (m) : 2.500

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	14.1	-4.1
Steering system	39	-0.820	51.8	-12.8
Engine control system	2	-0.700	2.6	-0.6
Brake,clutch control system	24	-0.550	29.3	-5.3
Air intake system	16	0.304	14.1	1.9
Parking brake system	3	-0.400	3.5	-0.5
Remote control system	9	-0.180	9.6	-0.6
Cab assembly,Front cab mounting	406	-0.360	464.5	-58.5
Cooling system	27	-0.074	27.8	-0.8
Engine, Transmission assembly	355	0.382	301.1	54.3
Rear cab mounting	68	-0.130	71.5	-3.5
Battery	32	1.070	18.3	13.7
Fuel system	79	1.395	34.9	44.1
Exhaust system	49	1.760	14.5	34.5
Propeller shaft assembly	12	1.650	4.1	7.9
Electric system	9	1.360	4.1	4.9
Frame and others	217	1.210	112.0	105.0
Engine and T/M cover	15	0.382	12.7	2.3
Sprung weight	1372		1190.5 1191	181.9 182
Unsprung weight	541		226	315
*2 Chassis Cab weight	1913 1915		1417 1420	497 495

*1: From front axle center
*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FB83SD (107kW)

Wheelbase (m) : 2.950

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	13.5	-3.5
Steering system	39	-0.820	49.8	-10.8
Engine control system	2	-0.700	2.5	-0.5
Brake,clutch control system	24	-0.550	28.5	-4.5
Air intake system	16	0.304	14.4	1.6
Parking brake system	3	-0.400	3.4	-0.4
Remote control system	9	-0.180	9.5	-0.5
Cab assembly,Front cab mounting	406	-0.360	455.5	-49.5
Cooling system	27	-0.074	27.7	-0.7
Engine, Transmission assembly	355	0.382	309.4	46.0
Rear cab mounting	68	-0.130	71.0	-3.0
Battery	32	1.070	20.4	11.6
Fuel system	79	1.395	41.6	37.4
Exhaust system	49	1.850	18.3	30.7
Propeller shaft assembly	19	1.880	6.9	12.1
Electric system	9	1.500	4.4	4.6
Frame and others	235	1.500	115.5	119.5
Engine and T/M cover	15	0.382	13.1	1.9
Sprung weight	1397		1205.4 1205	192.0 192
Unsprung weight	541		226	315
*2 Chassis Cab weight	1938 1940		1431 1430	507 510

*1: From front axle center
*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FB83SE (107kW)

Wheelbase (m) : 3.350

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	13.1	-3.1
Steering system	39	-0.820	48.5	-9.5
Engine control system	2	-0.700	2.4	-0.4
Brake,clutch control system	24	-0.550	27.9	-3.9
Air intake system	16	0.304	14.5	1.5
Parking brake system	3	-0.400	3.4	-0.4
Remote control system	9	-0.180	9.5	-0.5
Cab assembly,Front cab mounting	406	-0.360	449.6	-43.6
Cooling system	27	-0.074	27.6	-0.6
Engine, Transmission assembly	355	0.382	314.9	40.5
Rear cab mounting	68	-0.130	70.6	-2.6
Battery	32	1.070	21.8	10.2
Fuel system	79	1.758	37.5	41.5
Exhaust system	56	1.600	29.3	26.7
Propeller shaft assembly	22	2.000	8.9	13.1
Electric system	9	1.730	4.4	4.6
Frame and others	245	1.700	120.7	124.3
Engine and T/M cover	15	0.382	13.3	1.7
Sprung weight	1417		1217.9 1218	199.5 200
Unsprung weight	541		226	315
*2 Chassis Cab weight	1958 1960		1444 1445	515 515

*1: From front axle center
*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FB83SG (107kW)

Wheelbase (m) : 3.850

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	12.7	-2.7
Steering system	39	-0.820	47.3	-8.3
Engine control system	2	-0.700	2.4	-0.4
Brake,clutch control system	24	-0.550	27.4	-3.4
Air intake system	16	0.304	14.7	1.3
Parking brake system	3	-0.400	3.3	-0.3
Remote control system	9	-0.180	9.4	-0.4
Cab assembly,Front cab mounting	406	-0.360	444.0	-38.0
Cooling system	27	-0.074	27.5	-0.5
Engine, Transmission assembly	355	0.382	320.1	35.3
Rear cab mounting	68	-0.130	70.3	-2.3
Battery	32	1.070	23.1	8.9
Fuel system	79	2.205	33.8	45.2
Exhaust system	52	1.600	30.4	21.6
Propeller shaft assembly	24	2.000	11.5	12.5
Electric system	9	1.730	5.0	4.0
Frame and others	262	1.950	129.3	132.7
Engine and T/M cover	15	0.382	13.5	1.5
Sprung weight	1432		1225.7 1226	206.7 207
Unsprung weight	541		226	315
*2 Chassis Cab weight	1973 1975		1452 1455	522 520

*1: From front axle center

*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FE74SB (96kW)

Wheelbase (m) : 2.500

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	8	-0.920	10.3	-2.8
Steering system	38	-0.620	47.4	-9.4
Engine control system	4	-0.600	5.0	-1.0
Brake,clutch control system	26	-0.550	31.7	-5.7
Air intake system	14	0.310	12.3	1.7
Parking brake system	3	-0.400	3.5	-0.5
Remote control system	9	-0.180	9.6	-0.6
Cab assembly,Front cab mounting	331	-0.370	380.0	-49.0
Cooling system	23	-0.079	24.0	-0.7
Engine, Transmission assembly	355	0.335	307.8	47.6
Rear cab mounting	53	-0.170	56.1	-3.6
Battery	34	1.100	19.0	15.0
Fuel system	79	1.315	37.4	41.6
Exhaust system	49	1.740	14.9	34.1
Propeller shaft assembly	15	1.650	5.1	9.9
Electric system	15	1.360	6.8	8.2
Frame and others	216	1.250	108.0	108.0
Engine and T/M cover	11	0.335	9.5	1.5
Sprung weight	1283		1088.4 1088	194.3 194
Unsprung weight	745		283	462
*2 Chassis Cab weight	2028 2030		1371 1375	656 655

*1: From front axle center
*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FE74SD (96kW)

Wheelbase (m) : 2.950

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	8	-0.920	9.8	-2.3
Steering system	38	-0.620	46.0	-8.0
Engine control system	4	-0.600	4.8	-0.8
Brake,clutch control system	26	-0.550	30.8	-4.8
Air intake system	14	0.310	12.5	1.5
Parking brake system	3	-0.400	3.4	-0.4
Remote control system	9	-0.180	9.5	-0.5
Cab assembly,Front cab mounting	331	-0.370	372.5	-41.5
Cooling system	23	-0.079	23.9	-0.6
Engine, Transmission assembly	355	0.335	315.0	40.4
Rear cab mounting	53	-0.170	55.5	-3.0
Battery	34	1.100	21.3	12.7
Fuel system	79	1.315	43.8	35.2
Exhaust system	51	1.840	19.2	31.8
Propeller shaft assembly	24	1.880	8.7	15.3
Electric system	15	1.500	7.4	7.6
Frame and others	232	1.610	105.4	126.6
Engine and T/M cover	11	0.335	9.8	1.2
Sprung weight	1332		1101.9 1102	229.8 230
Unsprung weight	745		283	462
*2 Chassis Cab weight	2077 2075		1385 1385	692 690

*1: From front axle center
*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FE74SE (96kW)

Wheelbase (m) : 3.350

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	8	-0.920	9.6	-2.1
Steering system	38	-0.620	45.0	-7.0
Engine control system	4	-0.600	4.7	-0.7
Brake,clutch control system	26	-0.550	30.3	-4.3
Air intake system	14	0.310	12.7	1.3
Parking brake system	3	-0.400	3.4	-0.4
Remote control system	9	-0.180	9.5	-0.5
Cab assembly,Front cab mounting	331	-0.370	367.6	-36.6
Cooling system	23	-0.079	23.8	-0.5
Engine, Transmission assembly	355	0.335	319.9	35.5
Rear cab mounting	53	-0.170	55.2	-2.7
Battery	34	1.100	22.8	11.2
Fuel system	79	2.205	27.0	52.0
Exhaust system	59	1.700	29.1	29.9
Propeller shaft assembly	26	2.000	10.5	15.5
Electric system	15	1.730	7.3	7.7
Frame and others	244	1.790	113.6	130.4
Engine and T/M cover	11	0.335	9.9	1.1
Sprung weight	1332		1101.9 1102	229.8 230
Unsprung weight	745		283	462
*2 Chassis Cab weight	2077 2075		1385 1385	692 690

*1: From front axle center

*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FE84SC (107kW)

Wheelbase (m) : 2.750

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	13.3	-3.6
Steering system	39	-0.820	50.6	-11.6
Engine control system	7	-0.600	8.5	-1.5
Brake,clutch control system	27	-0.550	32.4	-5.4
Air intake system	21	0.223	19.3	1.7
Parking brake system	3	-0.400	3.4	-0.4
Remote control system	9	-0.180	9.6	-0.6
Cab assembly,Front cab mounting	406	-0.360	459.1	-53.1
Cooling system	28	-0.074	28.8	-0.8
Engine, Transmission assembly	355	0.382	306.0	49.4
Rear cab mounting	68	-0.130	71.2	-3.2
Battery	32	1.100	19.2	12.8
Fuel system	110	1.395	54.2	55.8
Exhaust system	52	1.840	17.2	34.8
Propeller shaft assembly	13	0.801	9.2	3.8
Electric system	13	1.430	6.2	6.8
Frame and others	258	1.300	136.0	122.0
Engine and T/M cover	15	0.382	12.9	2.1
Sprung weight	1466		1257.1 1257	209.0 209
Unsprung weight	824		311	513
*2 Chassis Cab weight	2290 2290		1568 1570	722 720

*1: From front axle center
*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FE84SE (107kW)

Wheelbase (m) : 3.350

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	12.7	-3.0
Steering system	39	-0.820	48.5	-9.5
Engine control system	7	-0.600	8.3	-1.3
Brake,clutch control system	27	-0.550	31.4	-4.4
Air intake system	21	0.223	19.6	1.4
Parking brake system	3	-0.400	3.4	-0.4
Remote control system	9	-0.180	9.5	-0.5
Cab assembly,Front cab mounting	406	-0.360	449.6	-43.6
Cooling system	28	-0.074	28.6	-0.6
Engine, Transmission assembly	355	0.382	314.9	40.5
Rear cab mounting	68	-0.130	70.6	-2.6
Battery	32	1.100	21.5	10.5
Fuel system	110	1.395	64.2	45.8
Exhaust system	52	1.600	27.2	24.8
Propeller shaft assembly	23	1.039	15.9	7.1
Electric system	13	1.730	6.3	6.7
Frame and others	288	1.700	141.9	146.1
Engine and T/M cover	15	0.382	13.3	1.7
Sprung weight	1506		1287.4 1287	218.7 219
Unsprung weight	824		311	513
*2 Chassis Cab weight	2330 2330		1598 1600	732 730

*1: From front axle center

*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FE84SG (107kW)

Wheelbase (m) : 3.850

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	12.3	-2.6
Steering system	39	-0.820	47.3	-8.3
Engine control system	7	-0.600	8.1	-1.1
Brake,clutch control system	27	-0.550	30.9	-3.9
Air intake system	21	0.223	19.8	1.2
Parking brake system	3	-0.400	3.3	-0.3
Remote control system	9	-0.180	9.4	-0.4
Cab assembly,Front cab mounting	406	-0.360	444.0	-38.0
Cooling system	28	-0.074	28.5	-0.5
Engine, Transmission assembly	355	0.382	320.1	35.3
Rear cab mounting	68	-0.130	70.3	-2.3
Battery	32	1.100	22.9	9.1
Fuel system	110	1.395	70.1	39.9
Exhaust system	52	1.600	30.4	21.6
Propeller shaft assembly	25	1.241	16.9	8.1
Electric system	13	1.980	6.3	6.7
Frame and others	306	1.960	150.2	155.8
Engine and T/M cover	15	0.382	13.5	1.5
			1304.3	221.8
Sprung weight	1526		1304	222
Unsprung weight	824		311	513
*2				
Chassis Cab weight	2350		1615	735
	2350		1615	735

*1: From front axle center

*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FE84SGW (107kW)

Wheelbase (m) : 3.850

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	12.3	-2.6
Steering system	39	-0.820	47.3	-8.3
Engine control system	7	-0.600	8.1	-1.1
Brake,clutch control system	27	-0.550	30.9	-3.9
Air intake system	24	0.716	19.5	4.5
Parking brake system	3	-0.400	3.3	-0.3
Remote control system	9	-0.180	9.4	-0.4
Cab assembly,Front cab mounting	621	0.180	592.0	29.0
Cooling system	28	0.077	27.4	0.6
Engine, Transmission assembly	355	0.382	320.1	35.3
Rear cab mounting	57	0.165	54.6	2.4
Battery	32	1.100	22.9	9.1
Fuel system	110	2.183	47.6	62.4
Exhaust system	52	1.600	30.4	21.6
Propeller shaft assembly	25	1.241	16.9	8.1
Electric system	13	1.980	6.3	6.7
Frame and others	306	1.960	150.2	155.8
Engine and T/M cover	15	0.382	13.5	1.5
Sprung weight	1733		1412.7 1413	320.4 320
Unsprung weight	824		311	513
*2 Chassis Cab weight	2557 2555		1724 1725	833 830

*1: From front axle center
*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FE85SC (107kW)

Wheelbase (m) : 2.750

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	13.3	-3.6
Steering system	39	-0.820	50.6	-11.6
Engine control system	7	-0.600	8.5	-1.5
Brake,clutch control system	27	-0.550	32.4	-5.4
Air intake system	21	0.223	19.3	1.7
Parking brake system	3	-0.400	3.4	-0.4
Remote control system	9	-0.180	9.6	-0.6
Cab assembly,Front cab mounting	406	-0.360	459.1	-53.1
Cooling system	28	-0.074	28.8	-0.8
Engine, Transmission assembly	355	0.382	306.0	49.4
Rear cab mounting	68	-0.130	71.2	-3.2
Battery	32	1.100	19.2	12.8
Fuel system	110	1.365	55.4	54.6
Exhaust system	52	1.395	25.6	26.4
Propeller shaft assembly	13	1.840	4.3	8.7
Electric system	13	1.430	6.2	6.8
Frame and others	258	1.300	136.0	122.0
Engine and T/M cover	15	0.382	12.9	2.1
Sprung weight	1466		1261.8 1262	204.3 204
Unsprung weight	891		323	568
*2 Chassis Cab weight	2357 2355		1585 1585	772 770

*1: From front axle center

*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FE85SE (107kW)

Wheelbase (m) : 3.350

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	12.7	-3.0
Steering system	39	-0.820	48.5	-9.5
Engine control system	7	-0.600	8.3	-1.3
Brake,clutch control system	27	-0.550	31.4	-4.4
Air intake system	21	0.223	19.6	1.4
Parking brake system	3	-0.400	3.4	-0.4
Remote control system	9	-0.180	9.5	-0.5
Cab assembly,Front cab mounting	406	-0.360	449.6	-43.6
Cooling system	28	-0.074	28.6	-0.6
Engine, Transmission assembly	355	0.382	314.9	40.5
Rear cab mounting	68	-0.130	70.6	-2.6
Battery	32	1.100	21.5	10.5
Fuel system	110	1.395	64.2	45.8
Exhaust system	52	1.600	27.2	24.8
Propeller shaft assembly	23	1.039	15.9	7.1
Electric system	13	1.730	6.3	6.7
Frame and others	288	1.700	141.9	146.1
Engine and T/M cover	15	0.382	13.3	1.7
Sprung weight	1506		1287.4 1287	218.7 219
Unsprung weight	891		323	568
*2 Chassis Cab weight	2397 2395		1610 1610	787 785

*1: From front axle center

*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FE85SG (107kW)

Wheelbase (m) : 3.850

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	12.3	-2.6
Steering system	39	-0.820	47.3	-8.3
Engine control system	7	-0.600	8.1	-1.1
Brake,clutch control system	27	-0.550	30.9	-3.9
Air intake system	21	0.223	19.8	1.2
Parking brake system	3	-0.400	3.3	-0.3
Remote control system	9	-0.180	9.4	-0.4
Cab assembly,Front cab mounting	406	-0.360	444.0	-38.0
Cooling system	28	-0.074	28.5	-0.5
Engine, Transmission assembly	355	0.382	320.1	35.3
Rear cab mounting	68	-0.130	70.3	-2.3
Battery	32	1.100	22.9	9.1
Fuel system	110	1.395	70.1	39.9
Exhaust system	52	1.600	30.4	21.6
Propeller shaft assembly	25	1.241	16.9	8.1
Electric system	13	1.980	6.3	6.7
Frame and others	316	1.960	155.1	160.9
Engine and T/M cover	15	0.382	13.5	1.5
Sprung weight	1536		1309.2 1309	226.9 227
Unsprung weight	891		323	568
*2 Chassis Cab weight	2427 2425		1632 1630	795 795

*1: From front axle center
*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FE85SGW (107kW)

Wheelbase (m) : 3.850

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	12.3	-2.6
Steering system	39	-0.820	47.3	-8.3
Engine control system	7	-0.600	8.1	-1.1
Brake,clutch control system	27	-0.550	30.9	-3.9
Air intake system	24	0.716	19.5	4.5
Parking brake system	3	-0.400	3.3	-0.3
Remote control system	9	-0.180	9.4	-0.4
Cab assembly,Front cab mounting	621	0.180	592.0	29.0
Cooling system	28	0.077	27.4	0.6
Engine, Transmission assembly	355	0.382	320.1	35.3
Rear cab mounting	57	0.165	54.6	2.4
Battery	32	1.100	22.9	9.1
Fuel system	110	2.183	47.6	62.4
Exhaust system	52	1.600	30.4	21.6
Propeller shaft assembly	25	1.241	16.9	8.1
Electric system	13	1.980	6.3	6.7
Frame and others	316	1.960	155.1	160.9
Engine and T/M cover	15	0.382	13.5	1.5
Sprung weight	1743		1417.6 1418	325.5 326
Unsprung weight	891		323	568
*2 Chassis Cab weight	2634 2635		1741 1740	894 895

*1: From front axle center
*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FE85SH (107kW)

Wheelbase (m) : 4.200

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	12.1	-2.4
Steering system	39	-0.820	46.6	-7.6
Engine control system	7	-0.600	8.0	-1.0
Brake,clutch control system	27	-0.500	30.2	-3.2
Air intake system	21	0.223	19.9	1.1
Parking brake system	3	-0.400	3.3	-0.3
Remote control system	9	-0.180	9.4	-0.4
Cab assembly,Front cab mounting	406	-0.360	440.8	-34.8
Cooling system	28	-0.074	28.5	-0.5
Engine, Transmission assembly	355	0.382	323.1	32.3
Rear cab mounting	68	-0.130	70.1	-2.1
Battery	32	1.100	23.6	8.4
Fuel system	110	1.395	73.5	36.5
Exhaust system	52	1.600	32.2	19.8
Propeller shaft assembly	27	1.459	17.6	9.4
Electric system	13	2.000	6.8	6.2
Frame and others	356	2.450	148.3	207.7
Engine and T/M cover	15	0.382	13.6	1.4
Sprung weight	1578		1307.6 1308	270.5 271
Unsprung weight	891		323	568
*2 Chassis Cab weight	2469 2470		1631 1630	839 840

*1: From front axle center
*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FE85SHW (107kW)

Wheelbase (m) : 4.200

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	12.1	-2.4
Steering system	39	-0.820	46.6	-7.6
Engine control system	7	-0.600	8.0	-1.0
Brake,clutch control system	27	-0.500	30.2	-3.2
Air intake system	24	0.716	19.9	4.1
Parking brake system	3	-0.400	3.3	-0.3
Remote control system	9	-0.360	9.8	-0.8
Cab assembly,Front cab mounting	621	0.180	594.4	26.6
Cooling system	28	0.077	27.5	0.5
Engine, Transmission assembly	355	0.382	323.1	32.3
Rear cab mounting	57	0.165	54.8	2.2
Battery	32	1.100	23.6	8.4
Fuel system	110	2.183	52.8	57.2
Exhaust system	52	1.600	32.2	19.8
Propeller shaft assembly	27	1.459	17.6	9.4
Electric system	13	2.000	6.8	6.2
Frame and others	344	2.320	154.0	190.0
Engine and T/M cover	15	0.382	13.6	1.4
Sprung weight	1773		1430.3 1430	342.8 343
Unsprung weight	891		323	568
Chassis Cab weight *2	2664 2665		1753 1755	911 910

*1: From front axle center

*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FE85SJZ (107kW)

Wheelbase (m) : 4.470

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	11.9	-2.2
Steering system	39	-0.820	46.2	-7.2
Engine control system	7	-0.600	7.9	-0.9
Brake,clutch control system	27	-0.500	30.0	-3.0
Air intake system	21	0.223	20.0	1.0
Parking brake system	3	-0.400	3.3	-0.3
Remote control system	9	-0.180	9.4	-0.4
Cab assembly,Front cab mounting	406	-0.360	438.7	-32.7
Cooling system	28	-0.074	28.5	-0.5
Engine, Transmission assembly	355	0.382	325.0	30.4
Rear cab mounting	68	-0.130	70.0	-2.0
Battery	32	1.100	24.1	7.9
Fuel system	110	1.507	72.9	37.1
Exhaust system	52	1.600	33.4	18.6
Propeller shaft assembly	27	1.459	18.2	8.8
Electric system	13	2.000	7.2	5.8
Frame and others	408	2.810	151.5	256.5
Engine and T/M cover	15	0.382	13.7	1.3
			1311.9	318.2
Sprung weight	1630		1312	318
Unsprung weight	914		323	591
*2				
Chassis Cab weight	2544		1635	909
	2545		1635	910

*1: From front axle center

*2: Chassis cab weight include oil, fuel and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FE84SE (129kW)

Wheelbase (m) : 3.350

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	12.7	-3.0
Steering system	39	-0.820	48.5	-9.5
Engine control system	7	-0.600	8.3	-1.3
Brake,clutch control system	27	-0.550	31.4	-4.4
Air intake system	21	0.223	19.6	1.4
Parking brake system	3	-0.400	3.4	-0.4
Remote control system	9	-0.180	9.5	-0.5
Cab assembly,Front cab mounting	406	-0.360	449.6	-43.6
Cooling system	28	-0.074	28.6	-0.6
Engine, Transmission assembly	355	0.382	314.9	40.5
Rear cab mounting	68	-0.130	70.6	-2.6
Battery	32	1.100	21.5	10.5
Fuel system	110	1.395	64.2	45.8
Exhaust system	62	2.427	17.1	44.9
Propeller shaft assembly	23	1.039	15.9	7.1
Electric system	13	1.730	6.3	6.7
Frame and others	288	1.700	141.9	146.1
Engine and T/M cover	20	-0.360	21.6	-2.1
SCR tank	20	2.075	7.6	12.4
Sprung weight	1541		1293.2 1293	247.4 247
Unsprung weight	830		312	518
*2 Chassis Cab weight	2371 2370		1605 1605	765 765

*1: From front axle center

*2: Chassis cab weight include oil, fuel, urea and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FE84SG (129kW)

Wheelbase (m) : 3.850

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	12.3	-2.6
Steering system	39	-0.820	47.3	-8.3
Engine control system	7	-0.600	8.1	-1.1
Brake,clutch control system	27	-0.550	30.9	-3.9
Air intake system	21	0.223	19.8	1.2
Parking brake system	3	-0.400	3.3	-0.3
Remote control system	9	-0.180	9.4	-0.4
Cab assembly,Front cab mounting	406	-0.360	444.0	-38.0
Cooling system	28	-0.074	28.5	-0.5
Engine, Transmission assembly	355	0.382	320.1	35.3
Rear cab mounting	68	-0.130	70.3	-2.3
Battery	32	1.100	22.9	9.1
Fuel system	110	1.395	70.1	39.9
Exhaust system	58	2.103	26.3	31.7
Propeller shaft assembly	25	1.241	16.9	8.1
Electric system	13	1.980	6.3	6.7
Frame and others	306	1.960	150.2	155.8
Engine and T/M cover	20	-0.360	21.3	-1.8
SCR tank	20	2.075	9.2	10.8
Sprung weight	1557		1317.2 1317	239.4 239
Unsprung weight	830		312	518
*2 Chassis Cab weight	2387 2385		1629 1630	757 755

*1: From front axle center

*2: Chassis cab weight include oil, fuel, urea and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FE84SGW (129kW)

Wheelbase (m) : 3.850

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	12.3	-2.6
Steering system	39	-0.820	47.3	-8.3
Engine control system	7	-0.600	8.1	-1.1
Brake,clutch control system	27	-0.550	30.9	-3.9
Air intake system	24	0.716	19.5	4.5
Parking brake system	3	-0.400	3.3	-0.3
Remote control system	9	-0.180	9.4	-0.4
Cab assembly,Front cab mounting	621	0.180	592.0	29.0
Cooling system	28	0.077	27.4	0.6
Engine, Transmission assembly	355	0.382	320.1	35.3
Rear cab mounting	57	0.165	54.6	2.4
Battery	32	1.100	22.9	9.1
Fuel system	110	2.183	47.6	62.4
Exhaust system	58	2.103	26.3	31.7
Propeller shaft assembly	24	1.241	16.3	7.7
Electric system	13	1.980	6.3	6.7
Frame and others	306	1.960	150.2	155.8
Engine and T/M cover	14	0.180	13.4	0.7
SCR tank	20	2.991	4.5	15.5
Sprung weight	1757		1412.4 1412	344.8 345
Unsprung weight	830		312	518
*2 Chassis Cab weight	2587 2585		1724 1725	863 860

*1: From front axle center
*2: Chassis cab weight include oil, fuel, urea and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FE85SE (129kW)

Wheelbase (m) : 3.350

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	12.7	-3.0
Steering system	39	-0.820	48.5	-9.5
Engine control system	7	-0.600	8.3	-1.3
Brake,clutch control system	27	-0.550	31.4	-4.4
Air intake system	21	0.223	19.6	1.4
Parking brake system	3	-0.400	3.4	-0.4
Remote control system	9	-0.180	9.5	-0.5
Cab assembly,Front cab mounting	406	-0.360	449.6	-43.6
Cooling system	28	-0.074	28.6	-0.6
Engine, Transmission assembly	355	0.382	314.9	40.5
Rear cab mounting	68	-0.130	70.6	-2.6
Battery	32	1.100	21.5	10.5
Fuel system	110	1.395	64.2	45.8
Exhaust system	64	1.260	39.9	24.1
Propeller shaft assembly	23	1.039	15.9	7.1
Electric system	13	1.730	6.1	6.6
Frame and others	288	1.700	141.9	146.1
Engine and T/M cover	20	-0.360	21.6	-2.1
SCR tank	20	2.075	7.6	12.4
			1315.8	226.5
Sprung weight	1542		1316	227
Unsprung weight	891		323	568
*2				
Chassis Cab weight	2433		1639	795
	2435		1640	795

*1: From front axle center
*2: Chassis cab weight include oil, fuel, urea and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FE85SG (129kW)

Wheelbase (m) : 3.850

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	12.3	-2.6
Steering system	39	-0.820	47.3	-8.3
Engine control system	7	-0.600	8.1	-1.1
Brake,clutch control system	27	-0.550	30.9	-3.9
Air intake system	21	0.223	19.8	1.2
Parking brake system	3	-0.400	3.3	-0.3
Remote control system	9	-0.180	9.4	-0.4
Cab assembly,Front cab mounting	406	-0.360	444.0	-38.0
Cooling system	28	-0.074	28.5	-0.5
Engine, Transmission assembly	355	0.382	320.1	35.3
Rear cab mounting	68	-0.130	70.3	-2.3
Battery	32	1.100	22.9	9.1
Fuel system	110	1.395	70.1	39.9
Exhaust system	58	2.103	26.3	31.7
Propeller shaft assembly	25	1.241	16.9	8.1
Electric system	13	1.980	6.3	6.7
Frame and others	316	1.960	155.1	160.9
Engine and T/M cover	20	-0.360	21.3	-1.8
SCR tank	20	2.075	9.2	10.8
Sprung weight	1567		1322.1 1322	244.5 245
Unsprung weight	891		323	568
*2 Chassis Cab weight	2458 2460		1645 1645	813 815

*1: From front axle center
*2: Chassis cab weight include oil, fuel, urea and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FE85SGW (129kW)

Wheelbase (m) : 3.850

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	12.3	-2.6
Steering system	39	-0.820	47.3	-8.3
Engine control system	7	-0.600	8.1	-1.1
Brake,clutch control system	27	-0.500	30.5	-3.5
Air intake system	24	0.716	19.5	4.5
Parking brake system	3	-0.400	3.3	-0.3
Remote control system	9	-0.360	9.8	-0.8
Cab assembly,Front cab mounting	621	0.180	592.0	29.0
Cooling system	28	0.077	27.4	0.6
Engine, Transmission assembly	355	0.382	320.1	35.3
Rear cab mounting	57	0.165	54.6	2.4
Battery	32	1.100	22.9	9.1
Fuel system	110	2.183	47.6	62.4
Exhaust system	58	2.103	26.3	31.7
Propeller shaft assembly	25	1.241	16.9	8.1
Electric system	13	1.980	6.3	6.7
Frame and others	316	1.960	155.1	160.9
Engine and T/M cover	14	0.180	13.4	0.7
SCR tank	20	2.991	4.5	15.5
Sprung weight	1768		1417.9 1418	350.3 350
Unsprung weight	891		323	568
*2 Chassis Cab weight	2659 2660		1741 1740	918 920

*1: From front axle center

*2: Chassis cab weight include oil, fuel, urea and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FE85SH (129kW)

Wheelbase (m) : 4.200

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	12.1	-2.4
Steering system	39	-0.820	46.6	-7.6
Engine control system	7	-0.600	8.0	-1.0
Brake,clutch control system	27	-0.500	30.2	-3.2
Air intake system	21	0.223	19.9	1.1
Parking brake system	3	-0.400	3.3	-0.3
Remote control system	9	-0.180	9.4	-0.4
Cab assembly,Front cab mounting	406	-0.360	440.8	-34.8
Cooling system	28	-0.074	28.5	-0.5
Engine, Transmission assembly	355	0.382	323.1	32.3
Rear cab mounting	68	-0.130	70.1	-2.1
Battery	32	1.100	23.6	8.4
Fuel system	110	1.395	73.5	36.5
Exhaust system	58	1.557	36.5	21.5
Propeller shaft assembly	27	1.459	17.6	9.4
Electric system	13	2.000	6.8	6.2
Frame and others	356	2.450	148.3	207.7
Engine and T/M cover	20	-0.360	21.2	-1.7
SCR tank	20	2.075	10.1	9.9
			1329.6	279.0
Sprung weight	1609		1330	279
Unsprung weight	891		323	568
*2				
Chassis Cab weight	2500		1653	847
	2500		1655	845

*1: From front axle center

*2: Chassis cab weight include oil, fuel, urea and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FE85SHW (129kW)

Wheelbase (m) : 4.200

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	12.1	-2.4
Steering system	39	-0.820	46.6	-7.6
Engine control system	7	-0.600	8.0	-1.0
Brake,clutch control system	27	-0.500	30.2	-3.2
Air intake system	24	0.716	19.9	4.1
Parking brake system	3	-0.400	3.3	-0.3
Remote control system	9	-0.360	9.8	-0.8
Cab assembly,Front cab mounting	621	0.180	594.4	26.6
Cooling system	28	0.077	27.5	0.5
Engine, Transmission assembly	355	0.382	323.1	32.3
Rear cab mounting	57	0.165	54.8	2.2
Battery	32	1.100	23.6	8.4
Fuel system	110	2.183	52.8	57.2
Exhaust system	58	1.557	36.5	21.5
Propeller shaft assembly	27	1.459	17.6	9.4
Electric system	13	2.000	6.8	6.2
Frame and others	344	2.320	154.0	190.0
Engine and T/M cover	14	0.180	13.4	0.6
SCR tank	20	2.991	5.8	14.2
Sprung weight	1798		1440.2 1440	357.9 358
Unsprung weight	891		323	568
*2 Chassis Cab weight	2689 2690		1763 1765	926 925

*1: From front axle center

*2: Chassis cab weight include oil, fuel, urea and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Model: FE85SJZ (129kW)

Wheelbase (m) : 4.470

Parts name	Weight (Kg)	Distance*1 to center of gravity(m)	Front axle load (Kg)	Rear axle load (Kg)
Front bumper	10	-1.030	11.9	-2.2
Steering system	39	-0.820	46.2	-7.2
Engine control system	7	-0.600	7.9	-0.9
Brake,clutch control system	27	-0.500	30.0	-3.0
Air intake system	21	0.223	20.0	1.0
Parking brake system	3	-0.400	3.3	-0.3
Remote control system	9	-0.180	9.4	-0.4
Cab assembly,Front cab mounting	406	-0.360	438.7	-32.7
Cooling system	28	-0.074	28.5	-0.5
Engine, Transmission assembly	355	0.382	325.0	30.4
Rear cab mounting	68	-0.130	70.0	-2.0
Battery	32	1.100	24.1	7.9
Fuel system	110	1.507	68.9	35.1
Exhaust system	58	2.103	30.7	27.3
Propeller shaft assembly	27	1.459	18.2	8.8
Electric system	13	2.000	7.2	5.8
Frame and others	408	2.810	151.5	256.5
Engine and T/M cover	20	-0.360	21.1	-1.6
SCR tank	20	2.252	9.9	10.1
Sprung weight	1661		1322.5 1323	332.1 332
Unsprung weight	914		323	591
*2 Chassis Cab weight	2575 2575		1646 1650	923 925

*1: From front axle center

*2: Chassis cab weight include oil, fuel, urea and coolant but exclude spare tyre, tools and persons.

9.3 Weight distribution table

Optional equipment

The following additional weight must be taken into consideration when calculating vehicle weight.

<Crew>

Cab type	Model	Weight (kg)	Distance to centre gravity (m)
Single Cab	FB7/FE7	225	-0.112
	FB8/FE8	225	-0.183
Double Cab	FB7/FB8-Crew 6	450	FB7:0.447/FB8:0.609
	FE8	525	FE8:0.496

<Table No.1>

Group	Option	Mass Variation [kg]	Mass Centre Position (distance from Fr. Axle centre) [m] *1				Remark, applicable model, etc.
			Standard Cab		Wide Cab		
			Single	Double	Single	Double	
Interior	Airbag Driver Seat	+2	-0.370	0.100	-0.360	0.180	
	Air Bag Driver & Passenger Seat	+7	-0.370	0.100	-0.360	0.180	
	Suspension Seat (Driver side)	+9	–	–	-0.360	0.180	
	Over Head Shelf	+1	-0.370	0.100			
		+2	–	–	-0.360	0.180	
	Armrest Driver Seat	+1	-0.370	0.100	-0.360	0.180	
	Lockable Glove Compartment	0	–	–	–	–	
	Back Panel Pocket	+1	–	–	-0.360	–	FB8*S/FE8*S (Wide Single Cab) only
Exterior	Mirror with heater	0	–	–	–	–	
	Long Stay Mirror	0	–	–	–	–	
Electric	Alternator (12V-140A)	0	–	–	–	–	
	Fog Lamps	+1	-0.370	0.100	-0.360	0.180	
	Central Doorlock	0	–	–	–	–	
	Central Doorlock + Keyless Entry	+1	-0.370	0.100	-0.360	0.180	
	Tachograph EU	+1	-0.370	0.100	-0.360	0.180	
	Digital Tachograph less	-1	-0.370	–	-0.360	0.180	N2 class only
	Daytime Running Headlamp system	0	–	–	–	–	
	Dimmer	0	–	–	–	–	
	Rear Heater for Crew Cab	+7	–	0.100	–	0.180	

9.3 Weight distribution table

Group	Option	Mass Variation [kg]	Mass Centre Position (distance from Fr. Axle centre) [m] *1				Remark, applicable model, etc.
			Standard Cab		Wide Cab		
			Single	Double	Single	Double	
Electric	Air Conditioning	+20	-0.370	0.100	-0.360	0.180	
	Immobiliser	0	–	–	–	–	
	Reverse Warning Buzzer	0	–	–	–	–	
	Heavy Duty Battery (DIN)	+30	1.100				
	-	-					
	-	-					
	Radio	+1	-0.370	0.100	-0.360	0.180	
	-	-	-	-	-	-	
Chassis	Rear Bumper	**See table No.2**					
	ABS	+5	-0.550				N1Class Only
	Bracket for Rear Body	**See table No.3**					Except FE8-J
	Bracket for 2nd Compressor	+1	–	–	–	–	
	Rear Axle Ratio 4.111	0	–	–	–	–	FE84 D033H
	Rear Axle Ratio 4.444	0	–	–	–	–	FB73 D1H FB83 D1H
	Rear Axle Ratio 4.875	0	–	–	–	–	FB73 D1H FB83 D1H FE74 D2H FE84 D033H
	Rear Axle Ratio 5.285	0	–	–	–	–	FE84 D033H FE85 D035H
	Rear Axle Ratio 5.714	0	–	–	–	–	FE85 D035H
	L.S.D (Multi Disc Clutch) for Std. Ratio	+4	**Same as w.b. length** *2				FB: rf=4.111
		+5					FE74: rf=4.444
		+3					FE84: rf=4.444
							FE85: rf=4.875
	Rear Traction Tyre	0	–		–		FB:All FE74, FE84 (107kW)
		+3	–		Same as w.b. length *2		FE84 (129kW), FE85
	Tyre Fit Less	-2	-0.370	0.100	-0.360	0.180	N1Class Only
	Spare Tyre	+27	**Depends on W.B.** *3				N1Class Only
	Spare Tyre Less	FE74 -38 FE84 -41 FE85 -50					N2Class Only

9.3 Weight distribution table

Group	Option	Mass Variation [kg]	Mass Centre Position (distance from Fr. Axle centre) [m] *1				Remark, applicable model, etc.
			Standard Cab		Wide Cab		
			Single	Double	Single	Double	
Chassis	Double Lock Spare Tyre Carrier	See table No.3					
	Fuel Tank 100 L						
	Additional Fuel Tank 80 L						
	Short Type Exhaust pipe						
	Heavy Duty Shock Absorber	0	-	-	-	-	
	LSV*5 label + Plate for Germany	0	-	-	-	-	FE85 only
	Localised Heavy Duty Front Axle	+15	at Front Axle				FE84S
		+20					FE85
	Localised Heavy Duty Rear Axle	+15	at Rear Axle				FE84, FE85 Only
	TM PTO	+10	0.335		0.382		
	Rear Stabiliser	+11	Depends on W.B. *4				FB73, FB83 Only
Others	Fire Extinguisher	+4	-		-0.360	0.180	
	Triangle	+1	-0.370	0.100	-0.360	0.180	

Note. - *1 Distance from Fr. Axle Centre ; +:backward, -:forward

- *2 w.b. length B:2500/C:2750/D:2950/E:3350/G:3850/H:4200/J:4470
- *3 (W.B.):Position from centre (B):3.371/(C):3.629/(D):3.821/(E):4.226/(G):4.726/(H):5.076/(J):5.552
- *4 (W.B.):Position from centre (B):2.700/(D):3.150/(E):3.550/(G):4.050
- *5 LSV : Load Sensing Valve

9.3 Weight distribution table

<Table No.2>

Option	Model	Wheel Base	Mass Variation [kg]	Mass Centre Position from Fr.Axle [m] *1
Rear bumper N1	FB8	B	+17	3.763
		D	+16	4.388
		E	+16	4.793
		G	+16	5.513
	FB7 FE7	B	+16	3.761
		D	+15	4.387
		E	+15	4.792
	FE8	C	+17	4.018
		E	+16	4.793
		G	+16	5.513
Rear bumper N2	FE7	B	+42	3.832
		D	+42	4.502
		E	+42	4.907
	FE8	C	+43	4.089
		E	+43	4.909
		G	+43	5.629
		HW	+43	5.979
		H	+43	6.539
		J	+43	6.360
Rear bumper N1+ electric socket+coupling device	FB8	B	+53	3.849
		D	+53	4.519
		E	+53	4.924
		G	+53	5.646
	FB7 FE7	B	+52	3.849
		D	+52	4.519
		E	+52	4.924
	FE8	C	+56	4.156
		E	+56	4.976
		G	+56	5.696

9.3 Weight distribution table

Option	Model	Wheel Base	Mass Variation [kg]	Mass Centre Position from Fr.Axle [m] *1
Rear bumper N2+ electric socket+coupling device	FE7	B	+46	3.849
		D	+46	4.519
		E	+46	4.924
	FE8	C	+48	4.106
		E	+48	4.926
		G	+48	5.646
		HW	+48	5.996
		H	+48	6.556
		J	+50	6.379

Note. - *1 Distance from Fr. Axle Centre ; +:backward, -:forward

- w.b. length B:2500/C:2750/D:2950/E:3350/G:3850/H:4200/J:4470

9.3 Weight distribution table

<Table No.3>

Option	Model	Wheel Base	Mass Variation [kg]	Mass Centre Position from Fr. Axle [m] *1	Remark
Bracket for rear body	FB7	B	+6	2.230	
		D	+8	2.560	
		E	+8	2.765	
		EW	+7	3.165	
	FE7	B	+5	2.230	
		D	+7	2.560	
		E	+7	2.765	
	FB8 FE8	B	+7	2.230	FB8 Only
		C	+6	2.360	FE8 Only
		D	+9	2.565	FB8 Only
		E	+9	2.765	
		EW	+7	3.305	FB8 Only
		G	+10	3.125	
		GW	+8	3.665	FE8 Only
		H	+12	3.580	FE8 Only
		HW	+9	3.840	FE8 Only
Fuel Tank 100L	FB7 FE7	D	+18	1.725	
		E	+21	2.168	Double Cab Not Available
	FB8	D	+19	1.758	
		E	+21	1.758	Double Cab Not Available
		G	+21	1.758	
Additional Fuel Tank 80L	FE8	G	+87	2.683	Double Cab Not Available
		H	+87	2.294	Double Cab Not Available
		J	+79	2.845	No Spacer

9.3 Weight distribution table

Option	Model	Wheel Base	Mass Variation [kg]	Mass Centre Position from Fr. Axle [m] *1	Remark
Double lock Spare tyre carrier	FB7	B	+8	3.371	
		D	+8	3.821	
		E	+8	4.226	
		EW	+7	4.226	
	FE7	B	+8	3.371	
		D	+8	3.821	
		E	+8	4.226	
	FB8	B	+7	3.371	
		D	+7	3.821	
		E	+7	4.226	
		G	+7	4.726	
		EW	+7	4.226	
	FE8	C	+6	3.629	
		E	+6	4.226	
		JZ	+13	5.552	
		G	+6	4.726	
		GW	+6	4.726	
		H	+6	5.076	
		HW	+6	5.076	
Short Type Exhaust tail pipe	FB7	B	-5	1.700	
	FB8		-3	1.760	
	FE7		-5	1.700	
	FE8		-5	1.395	

Note. - *1 Distance from Fr. Axle Centre; +:backward,-:forward

- Diesel oil: 0.85kg/L

9.4 Chassis cab drawings

9.4.1 Chassis cab drawings

CHASSIS CAB DRAWING. DXF FILE (For Autocad) – click below Model name

Chassis cab drawings shows left hand drive model.

For right hand drive model, exterior rear view mirror on left and right side are symmetric with respect to the chassis centre line.

***PDF FILE –view file, unable to edit– ***

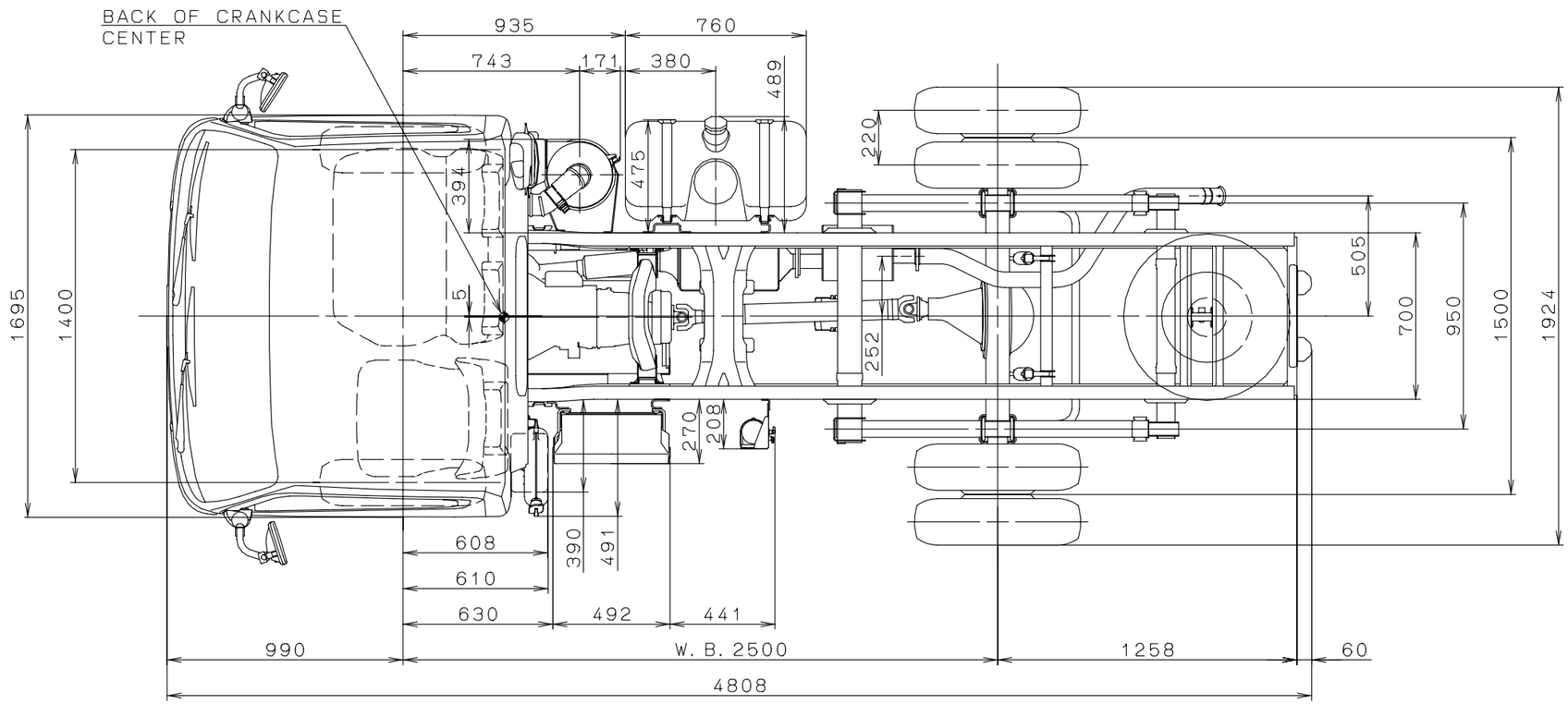
PDF files of Chassis cab drawings will be shown on clicking the Model name in left bookmark.

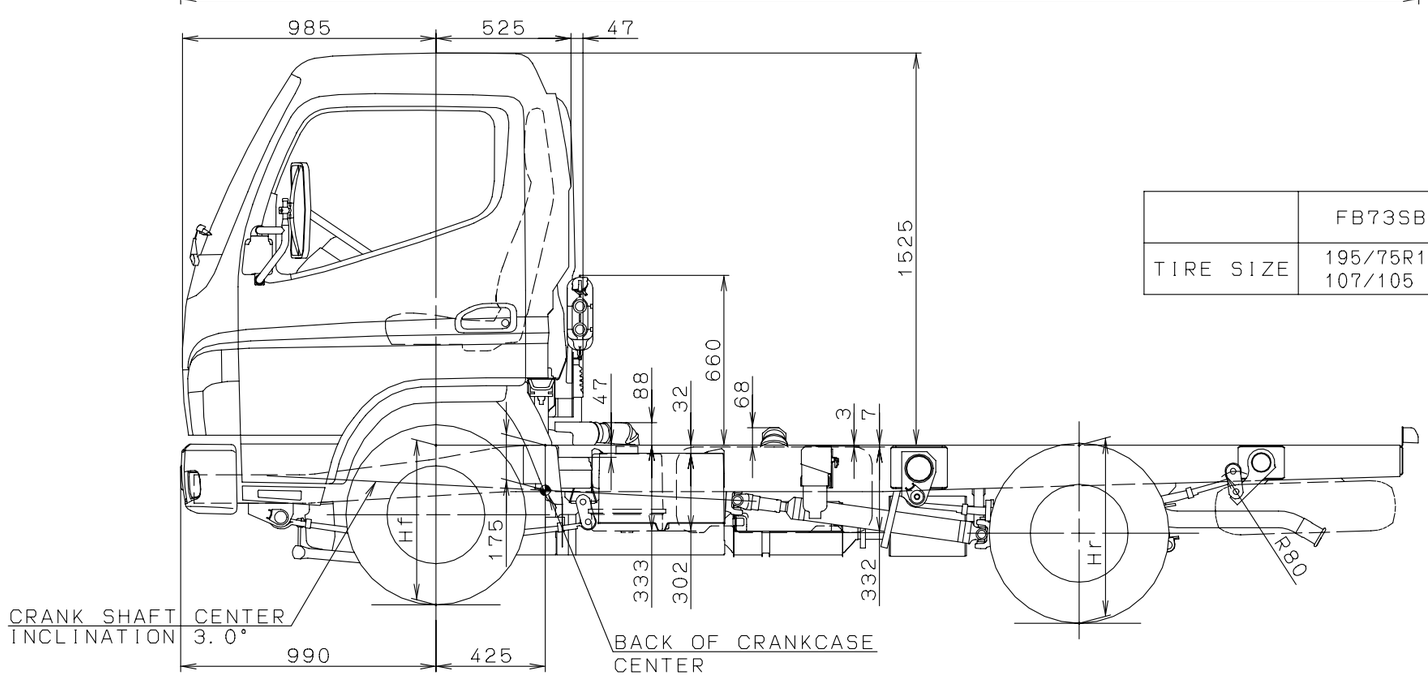
Model	Down Load
FB73SB4SLEA1	.dxf
FB73SD4SLEA1	.dxf
FB73SE4SLEA1	.dxf
FB73SE4WLEA1	.dxf
FB83SB4SLEA1 FB83SB4SREA1 FB83SB4SLEA2 FB83SB4SREA2	.dxf
FB83SD4SLEA1 FB83SD4SREA1 FB83SD4SLEA2 FB83SD4SREA2	.dxf
FB83SE4SLEA1 FB83SE4SREA1 FB83SE4SLEA2 FB83SE4SREA2	.dxf
FB83SE4WLEA1 FB83SE4WREA1	.dxf
FB83SG4SLEA1 FB83SG4SREA1 FB83SG4SLEA2 FB83SG4SREA2	.dxf

Model	Down Load
FE74SB4SLEA1	.dxf
FE74SD4SLEA1	.dxf
FE74SE4SLEA1	.dxf
FE84SC6SLEA2 FE84SC6SREA2 FE85SC6SLEA2 FE85SC6SREA2	.dxf
FE84SE6SLEA2 FE84SE6SREA2 FE85SE6SLEA2 FE85SE6SREA2	.dxf
FE84SE6SLEA3 FE84SE6SREA3 FE85SE6SLEA3 FE85SE6SREA3	.dxf
FE84SG6SLEA2 FE84SG6SREA2 FE85SG6SLEA2 FE85SG6SREA2	.dxf
FE84SG6SLEA3 FE84SG6SREA3 FE85SG6SLEA3 FE85SG6SREA3	.dxf

Model	Down Load
FE84SG6WLEA2 FE84SG6WREA2 FE85SG6WLEA2 FE85SG6WREA2	.dxf
FE84SG6WLEA3 FE84SG6WREA3 FE85SG6WLEA3 FE85SG6WREA3	.dxf
FE85SH6SLEA2 FE85SH6SREA2	.dxf
FE85SH6SLEA3 FE85SH6SREA3	.dxf
FE85SH6WLEA2 FE85SH6WREA2	.dxf
FE85SH6WLEA3 FE85SH6WREA3	.dxf
FE85SJZSLEA2 FE85SJZSREA2	.dxf
FE85SJZSLEA3 FE85SJZSREA3	.dxf

9.4 Chassis cab drawings





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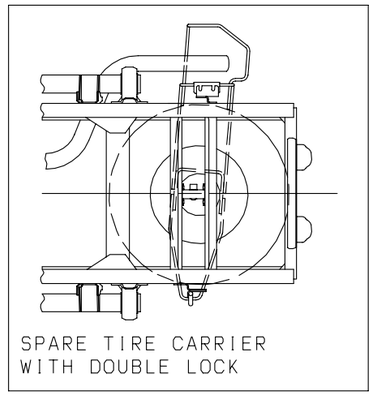
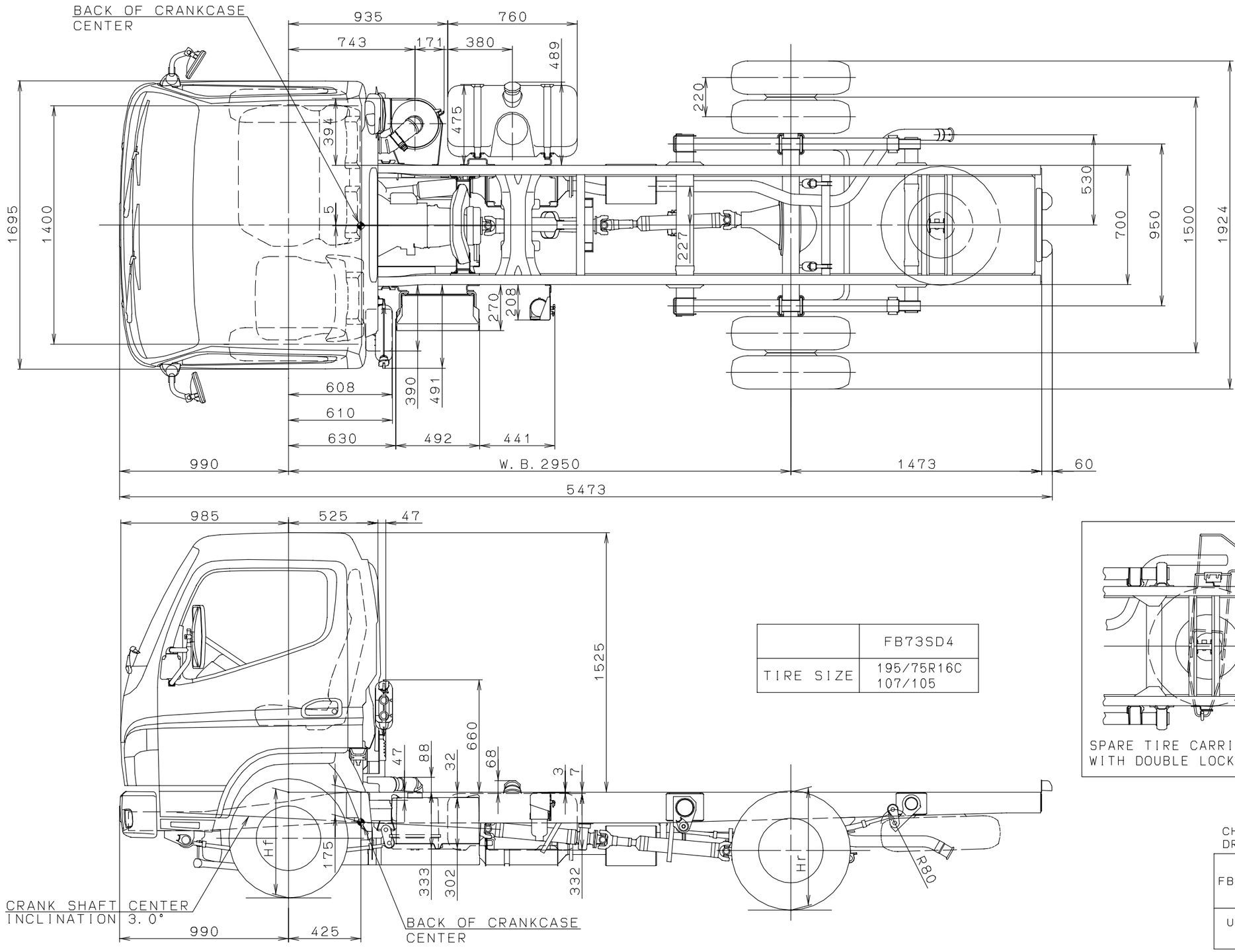


SPARE TIRE CARRIER
WITH DOUBLE LOCK

CHASSIS CAB DRAWINGS

FB73SB4SLEA1
UNIT :mm

9.4 Chassis cab drawings



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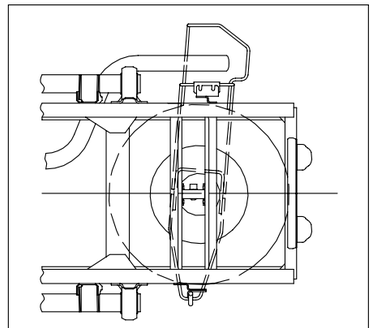
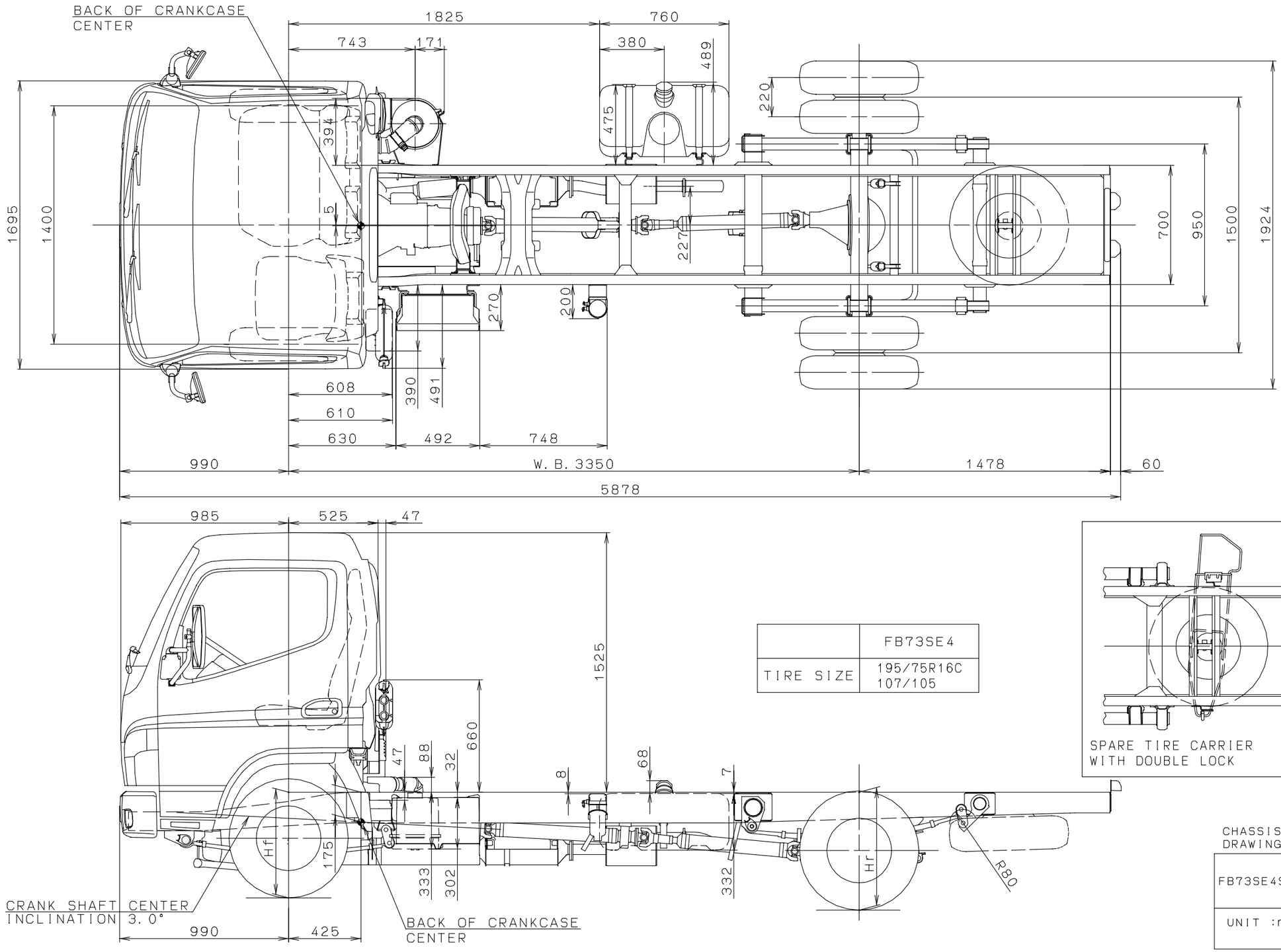


SPARE TIRE CARRIER WITH DOUBLE LOCK

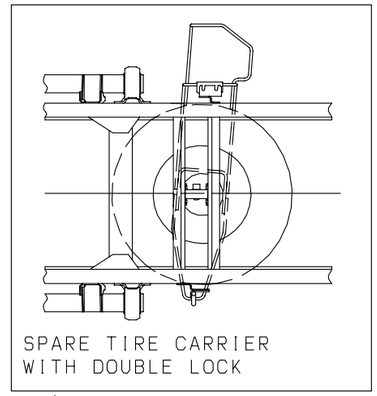
CHASSIS CAB DRAWINGS

FB73SD4SLEA1
UNIT :mm

9.4 Chassis cab drawings



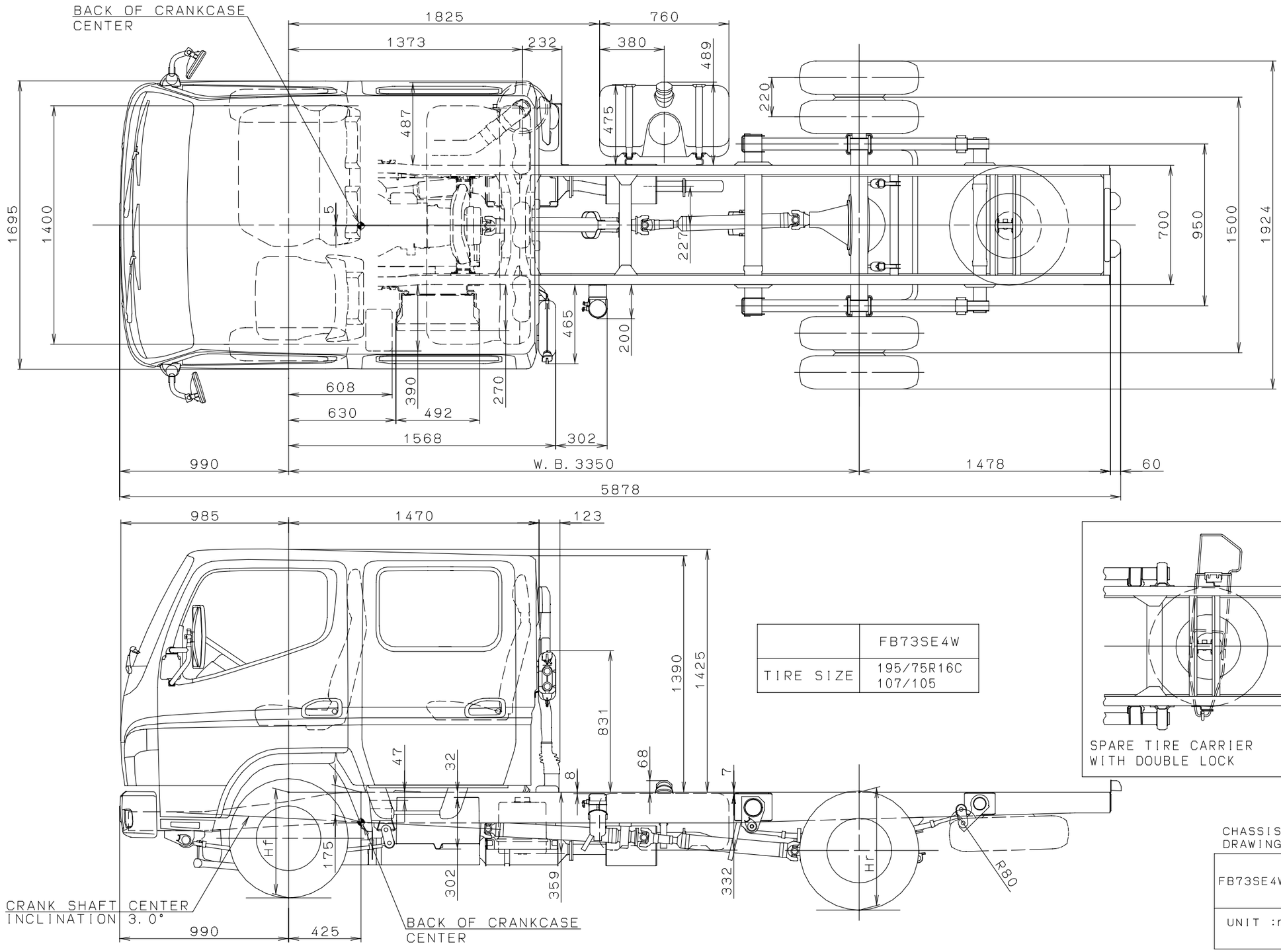
	FB73SE4
TIRE SIZE	195/75R16C 107/105



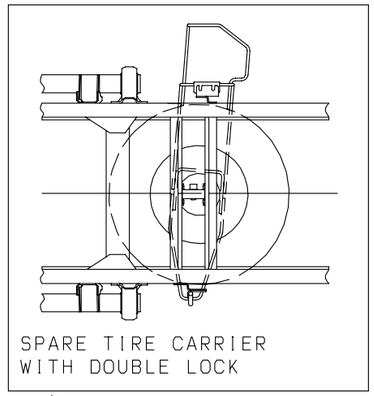
CHASSIS CAB DRAWINGS

FB73SE4SLEA1
UNIT :mm

9.4 Chassis cab drawings



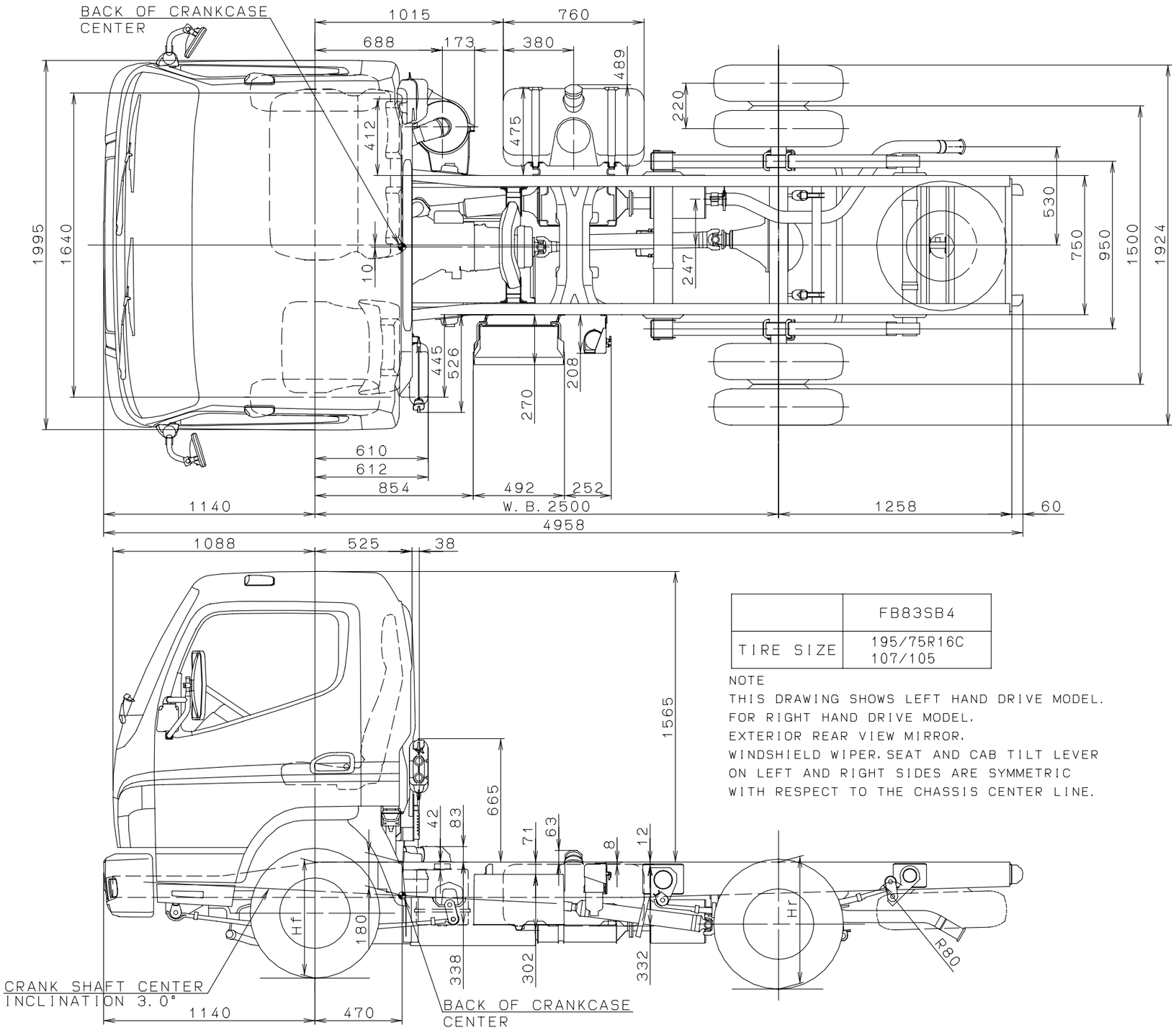
	FB73SE4W
TIRE SIZE	195/75R16C 107/105



CHASSIS CAB DRAWINGS

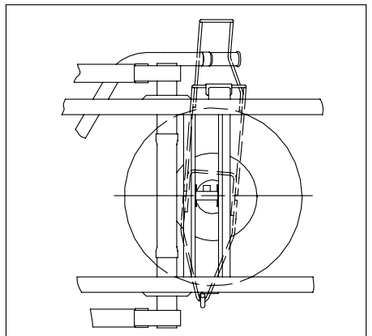
FB73SE4WLEA1
UNIT :mm

9.4 Chassis cab drawings



	FB83SB4
TIRE SIZE	195/75R16C 107/105

NOTE
THIS DRAWING SHOWS LEFT HAND DRIVE MODEL.
FOR RIGHT HAND DRIVE MODEL,
EXTERIOR REAR VIEW MIRROR,
WINDSHIELD WIPER, SEAT AND CAB TILT LEVER
ON LEFT AND RIGHT SIDES ARE SYMMETRIC
WITH RESPECT TO THE CHASSIS CENTER LINE.

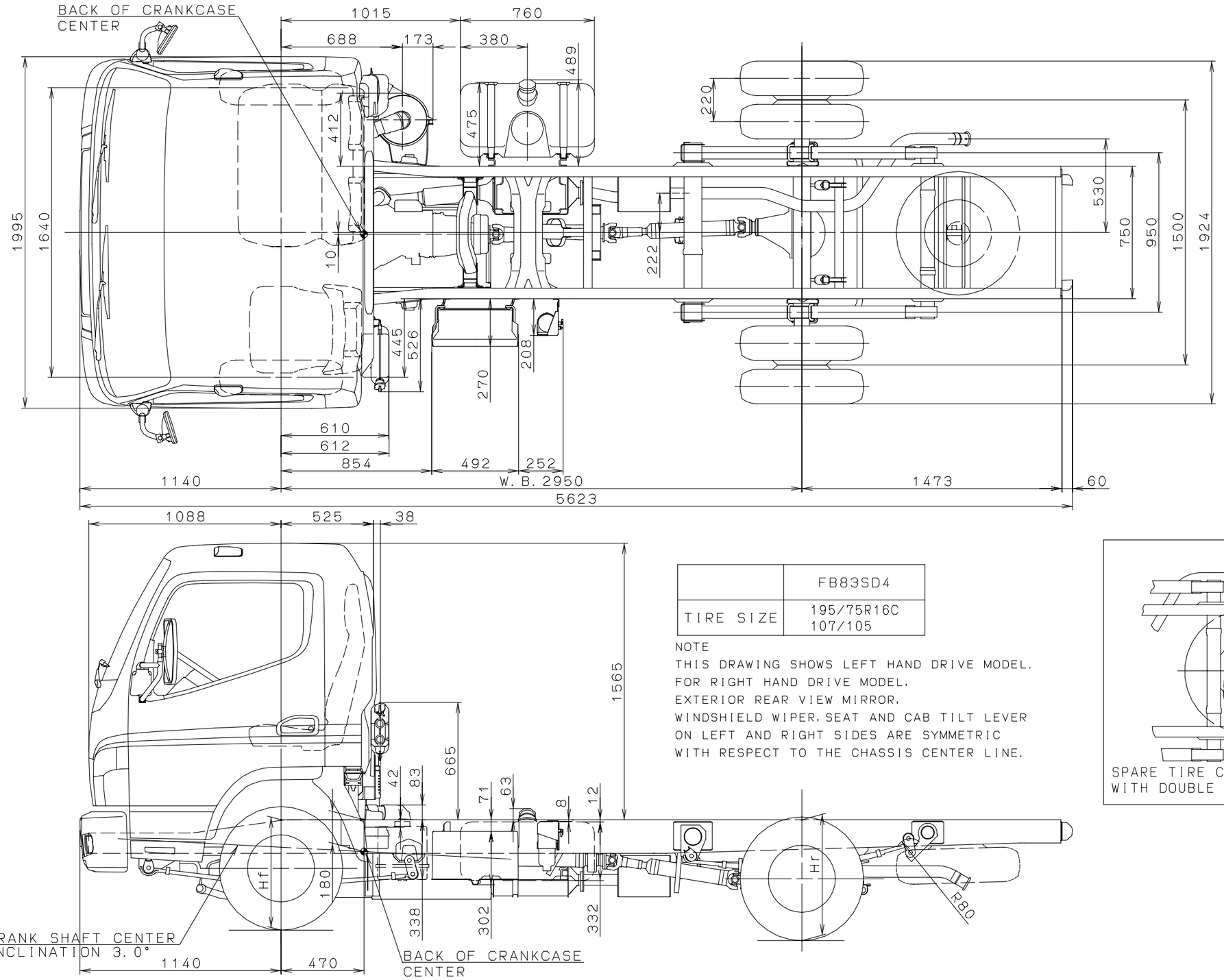


SPARE TIRE CARRIER
WITH DOUBLE LOCK

CHASSIS CAB DRAWINGS

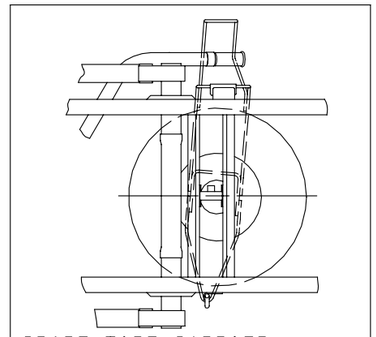
FB83SB4SLEA1
FB83SB4SREA1
FB83SB4SLEA2
FB83SB4SREA2
UNIT :mm

9.4 Chassis cab drawings



	FB83SD4
TIRE SIZE	195/75R16C 107/105

NOTE
THIS DRAWING SHOWS LEFT HAND DRIVE MODEL.
FOR RIGHT HAND DRIVE MODEL,
EXTERIOR REAR VIEW MIRROR,
WINDSHIELD WIPER, SEAT AND CAB TILT LEVER
ON LEFT AND RIGHT SIDES ARE SYMMETRIC
WITH RESPECT TO THE CHASSIS CENTER LINE.

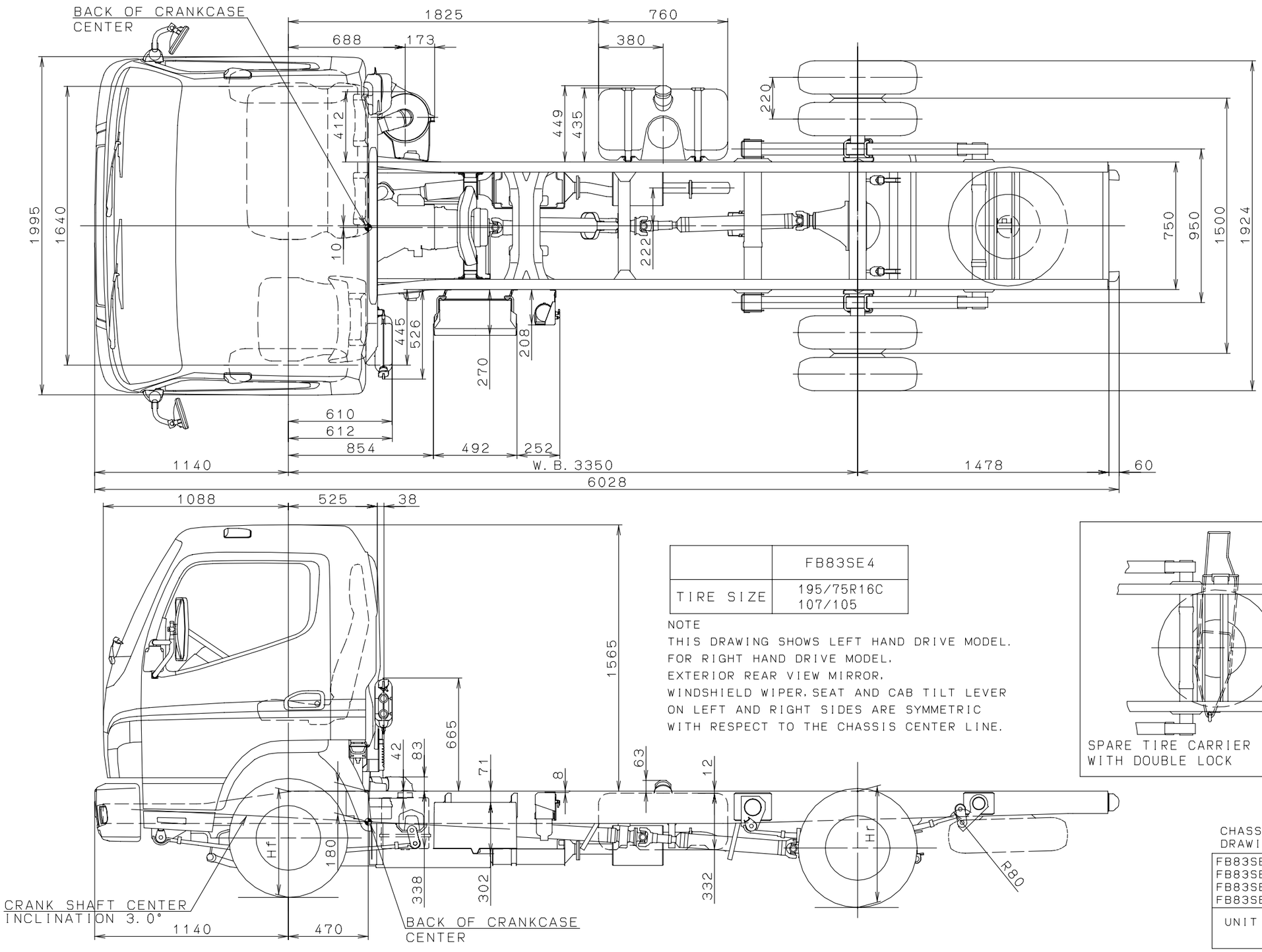


SPARE TIRE CARRIER
WITH DOUBLE LOCK

CHASSIS CAB DRAWINGS

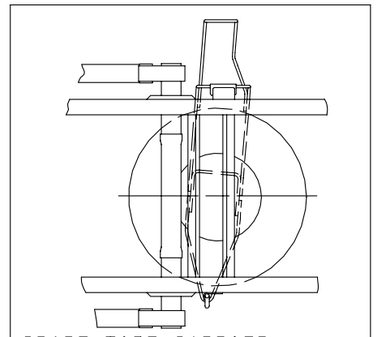
FB83SD4SLEA1
FB83SD4SREA1
FB83SD4SLEA2
FB83SD4SREA2
UNIT :mm

9.4 Chassis cab drawings



	FB83SE4
TIRE SIZE	195/75R16C 107/105

NOTE
THIS DRAWING SHOWS LEFT HAND DRIVE MODEL.
FOR RIGHT HAND DRIVE MODEL,
EXTERIOR REAR VIEW MIRROR,
WINDSHIELD WIPER, SEAT AND CAB TILT LEVER
ON LEFT AND RIGHT SIDES ARE SYMMETRIC
WITH RESPECT TO THE CHASSIS CENTER LINE.

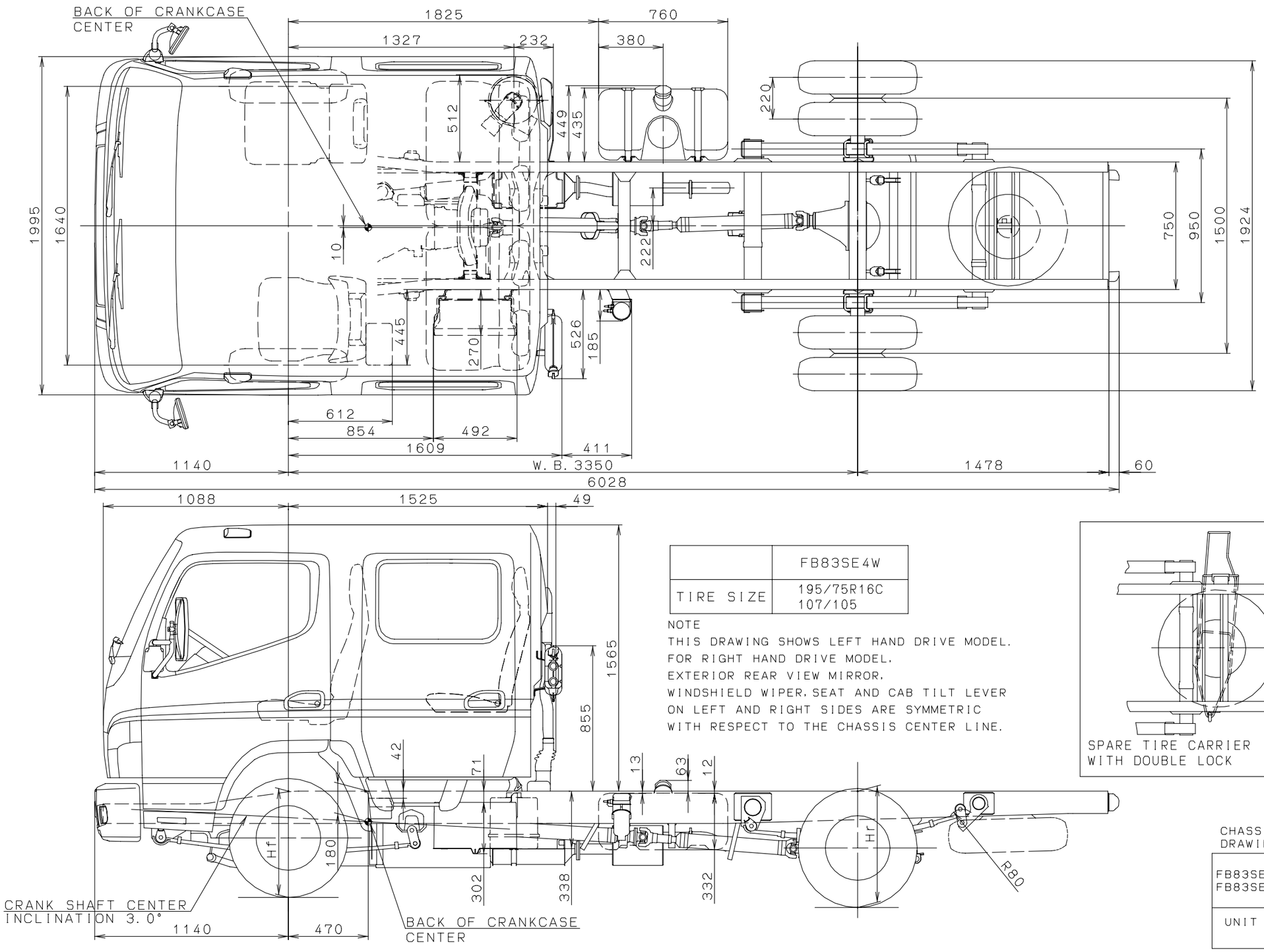


SPARE TIRE CARRIER
WITH DOUBLE LOCK

CHASSIS CAB DRAWINGS

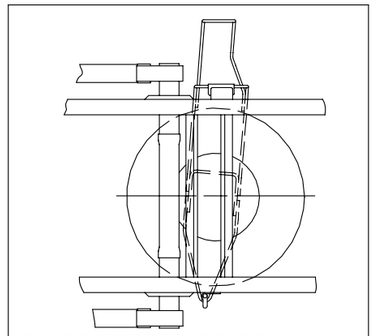
FB83SE4SLEA1
FB83SE4SREA1
FB83SE4SLEA2
FB83SE4SREA2
UNIT :mm

9.4 Chassis cab drawings



	FB83SE4W
TIRE SIZE	195/75R16C 107/105

NOTE
THIS DRAWING SHOWS LEFT HAND DRIVE MODEL.
FOR RIGHT HAND DRIVE MODEL,
EXTERIOR REAR VIEW MIRROR,
WINDSHIELD WIPER, SEAT AND CAB TILT LEVER
ON LEFT AND RIGHT SIDES ARE SYMMETRIC
WITH RESPECT TO THE CHASSIS CENTER LINE.

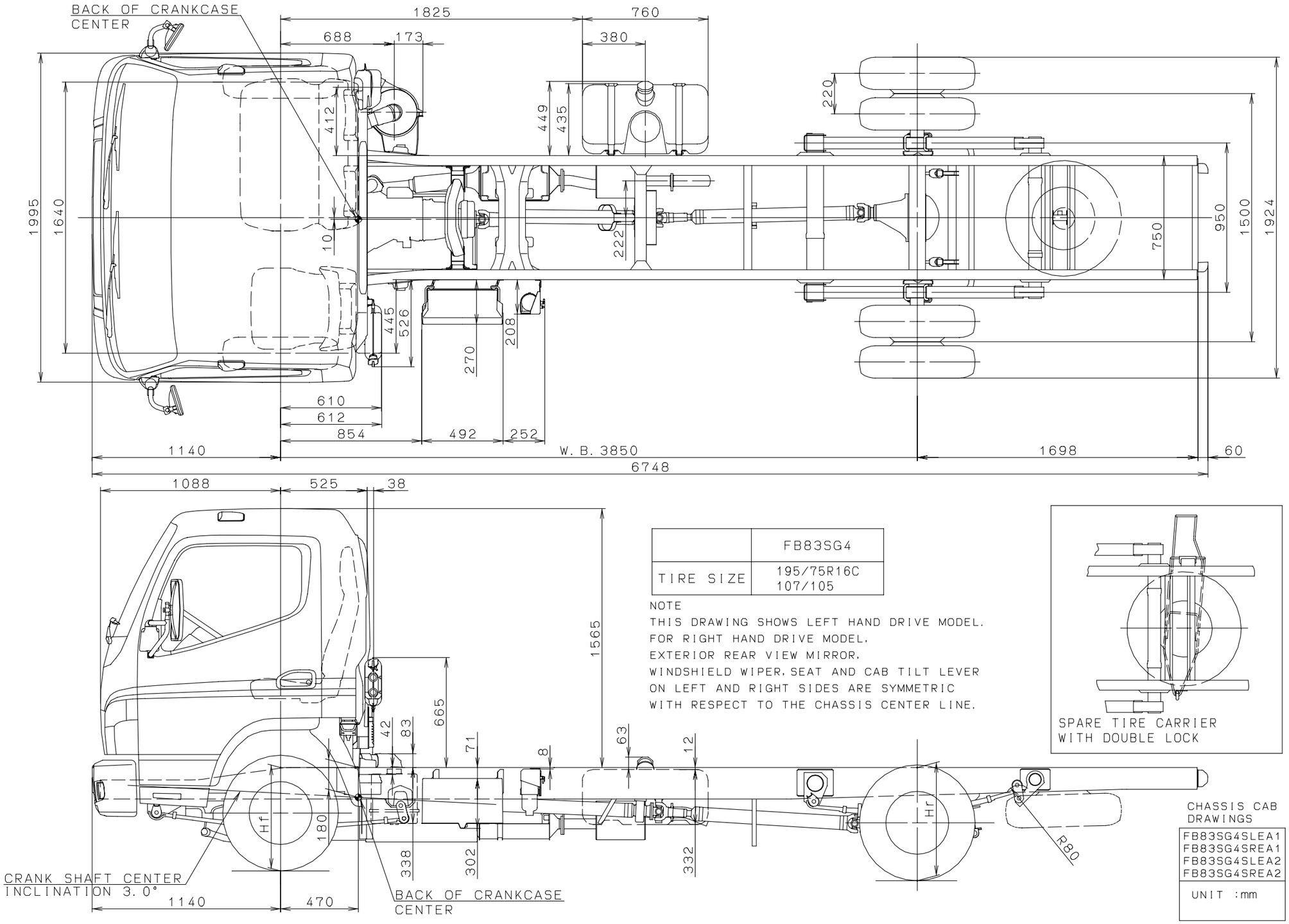


SPARE TIRE CARRIER
WITH DOUBLE LOCK

CHASSIS CAB DRAWINGS

FB83SE4WLEA1 FB83SE4WREA1
UNIT :mm

9.4 Chassis cab drawings



	FB83SG4
TIRE SIZE	195/75R16C 107/105

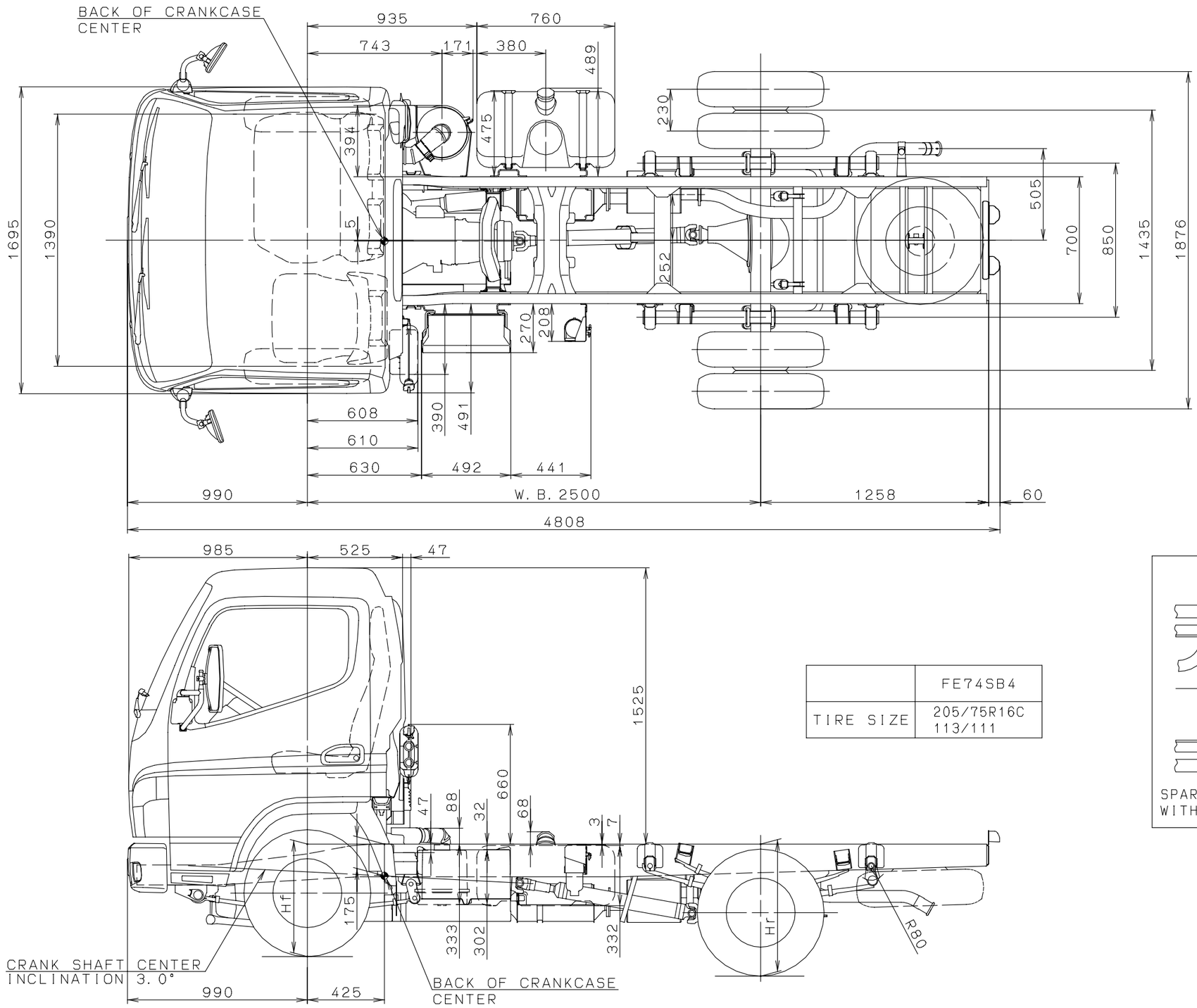
NOTE
THIS DRAWING SHOWS LEFT HAND DRIVE MODEL.
FOR RIGHT HAND DRIVE MODEL,
EXTERIOR REAR VIEW MIRROR,
WINDSHIELD WIPER, SEAT AND CAB TILT LEVER
ON LEFT AND RIGHT SIDES ARE SYMMETRIC
WITH RESPECT TO THE CHASSIS CENTER LINE.

SPARE TIRE CARRIER
WITH DOUBLE LOCK

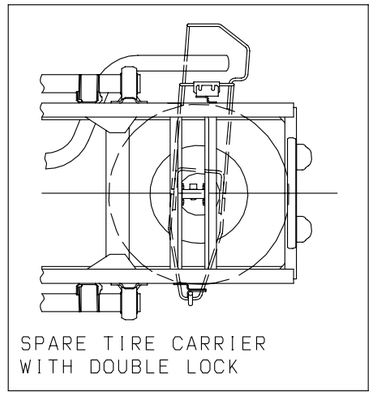
CHASSIS CAB DRAWINGS

FB83SG4SLEA1
FB83SG4SREA1
FB83SG4SLEA2
FB83SG4SREA2
UNIT :mm

9.4 Chassis cab drawings



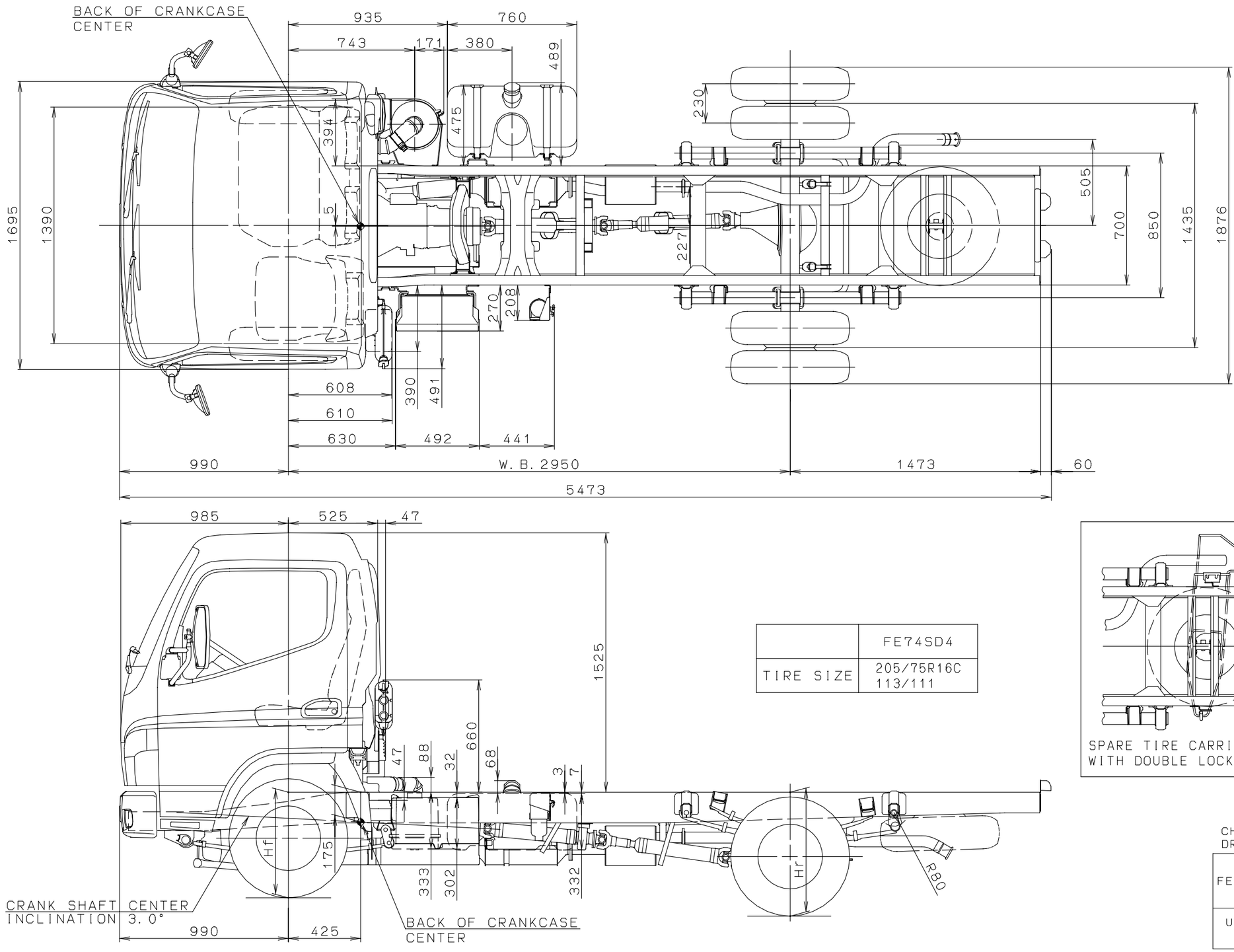
	FE74SB4
TIRE SIZE	205/75R16C 113/111



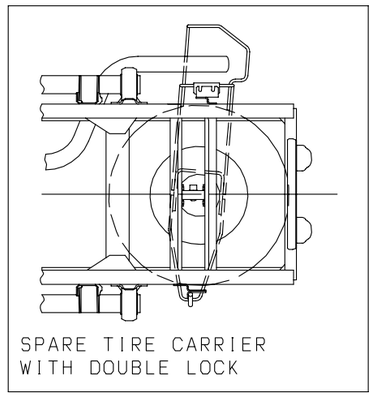
CHASSIS CAB DRAWINGS

FE74SB4SLEA1
UNIT :mm

9.4 Chassis cab drawings



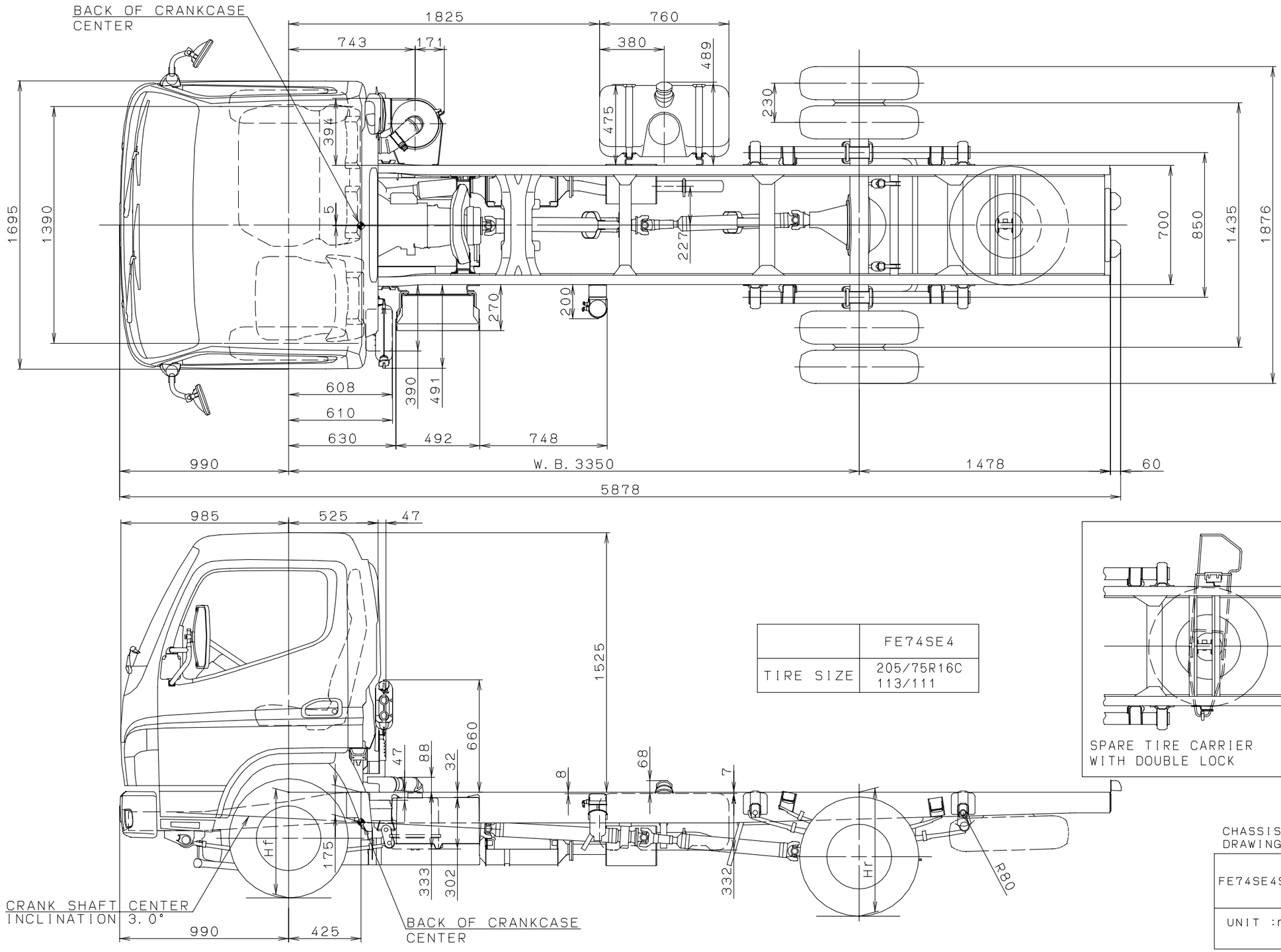
	FE74SD4
TIRE SIZE	205/75R16C 113/111



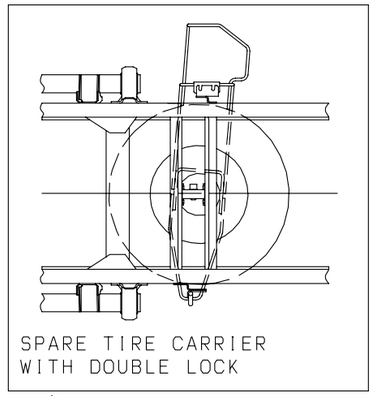
CHASSIS CAB DRAWINGS

FE74SD4SLEA1
UNIT :mm

9.4 Chassis cab drawings



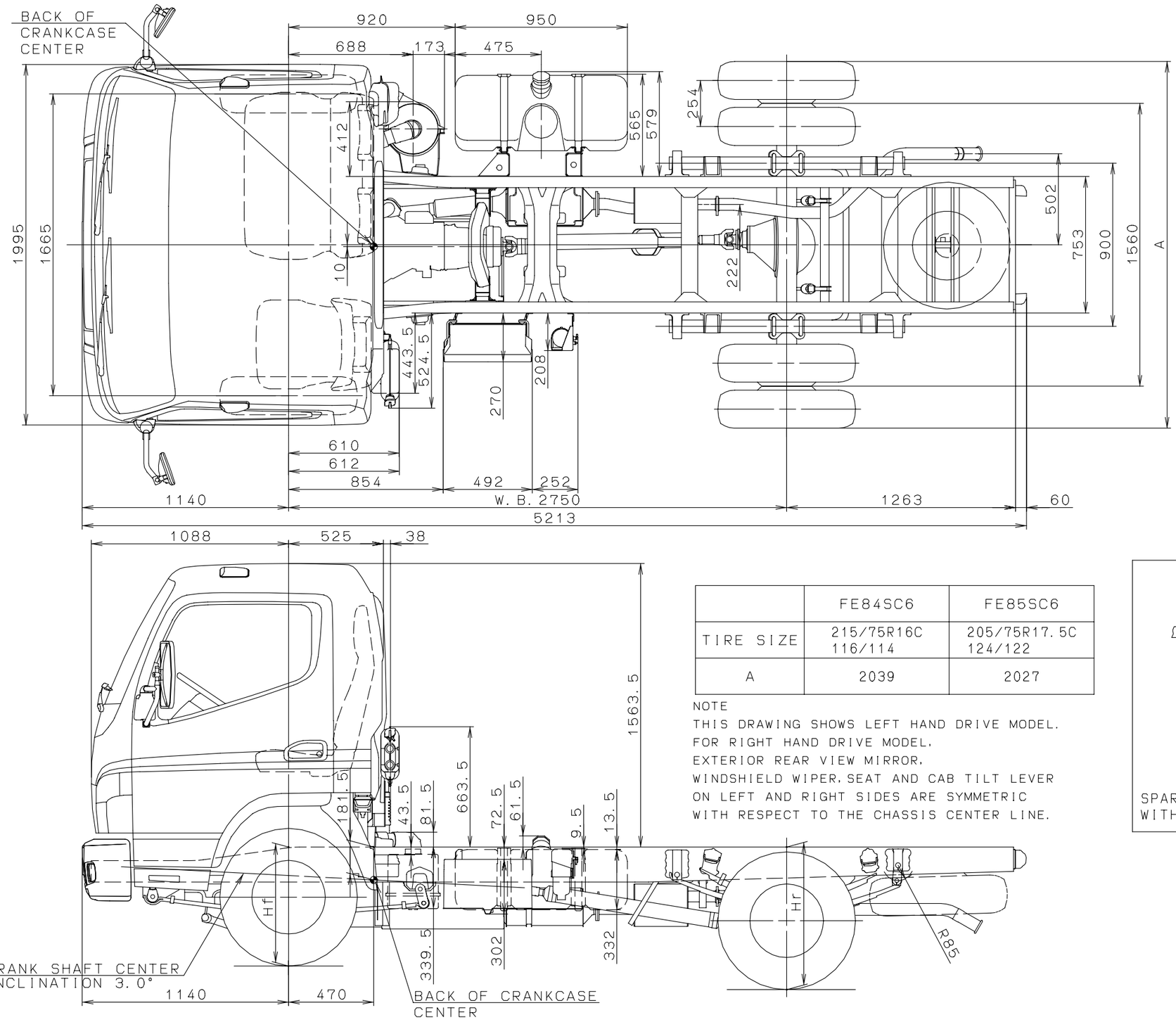
	FE74SE4
TIRE SIZE	205/75R16C 113/111



CHASSIS CAB DRAWINGS

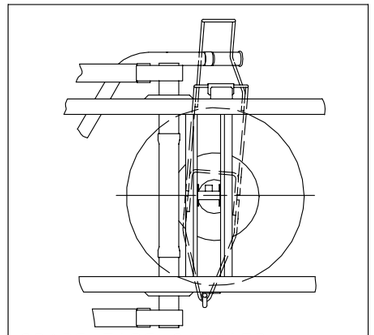
FE74SE4SLEA1
UNIT :mm

9.4 Chassis cab drawings



	FE84SC6	FE85SC6
TIRE SIZE	215/75R16C 116/114	205/75R17.5C 124/122
A	2039	2027

NOTE
THIS DRAWING SHOWS LEFT HAND DRIVE MODEL.
FOR RIGHT HAND DRIVE MODEL,
EXTERIOR REAR VIEW MIRROR,
WINDSHIELD WIPER, SEAT AND CAB TILT LEVER
ON LEFT AND RIGHT SIDES ARE SYMMETRIC
WITH RESPECT TO THE CHASSIS CENTER LINE.

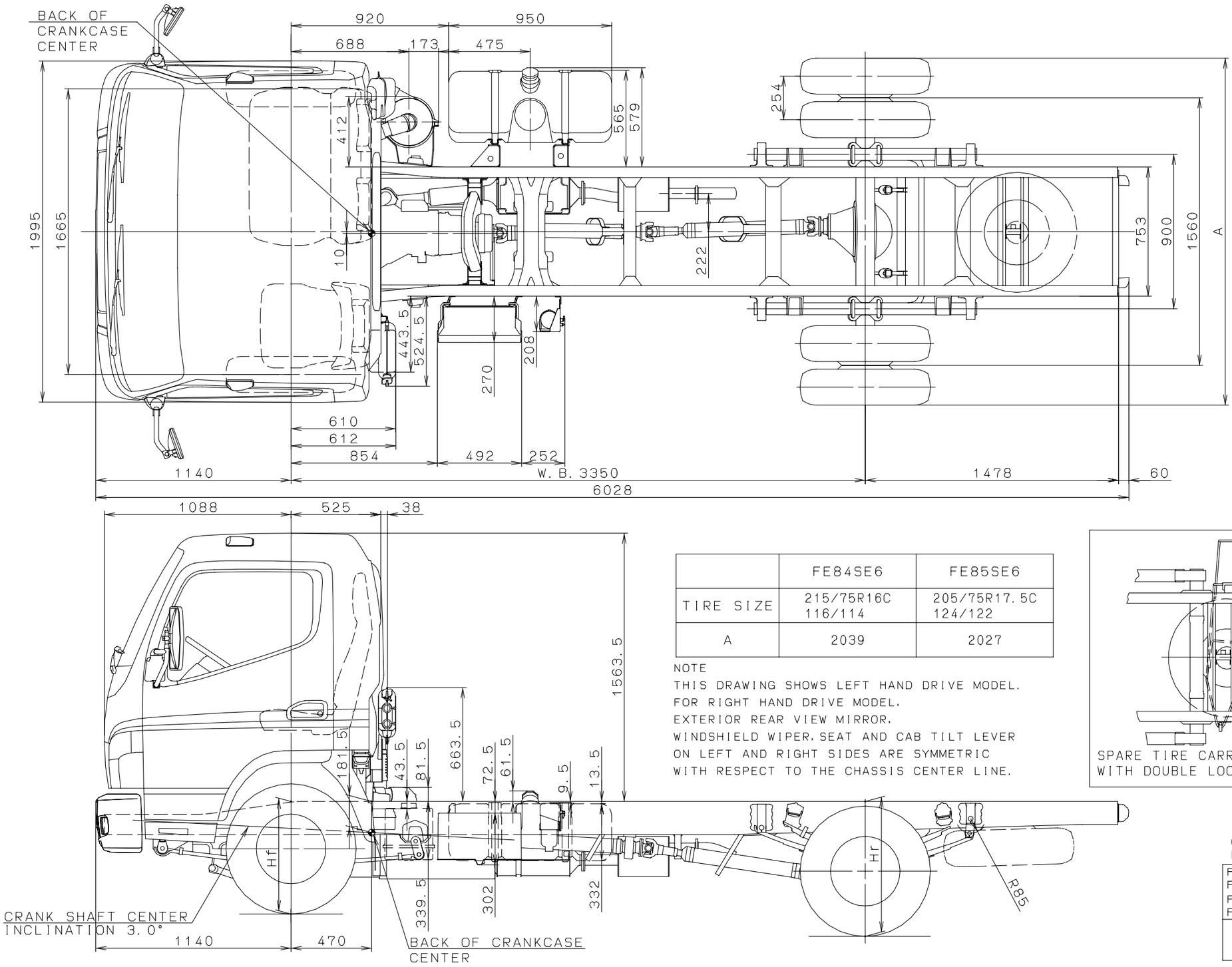


SPARE TIRE CARRIER
WITH DOUBLE LOCK

CHASSIS CAB
DRAWINGS

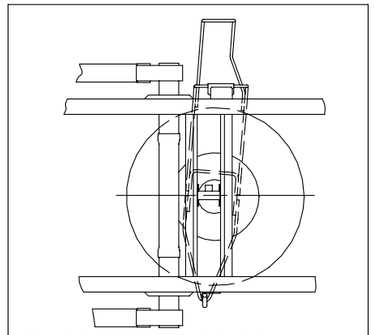
FE84SC6SLEA2 FE84SC6SREA2 FE85SC6SLEA2 FE85SC6SREA2
UNIT :mm

9.4 Chassis cab drawings



	FE84SE6	FE85SE6
TIRE SIZE	215/75R16C 116/114	205/75R17.5C 124/122
A	2039	2027

NOTE
THIS DRAWING SHOWS LEFT HAND DRIVE MODEL.
FOR RIGHT HAND DRIVE MODEL,
EXTERIOR REAR VIEW MIRROR,
WINDSHIELD WIPER, SEAT AND CAB TILT LEVER
ON LEFT AND RIGHT SIDES ARE SYMMETRIC
WITH RESPECT TO THE CHASSIS CENTER LINE.

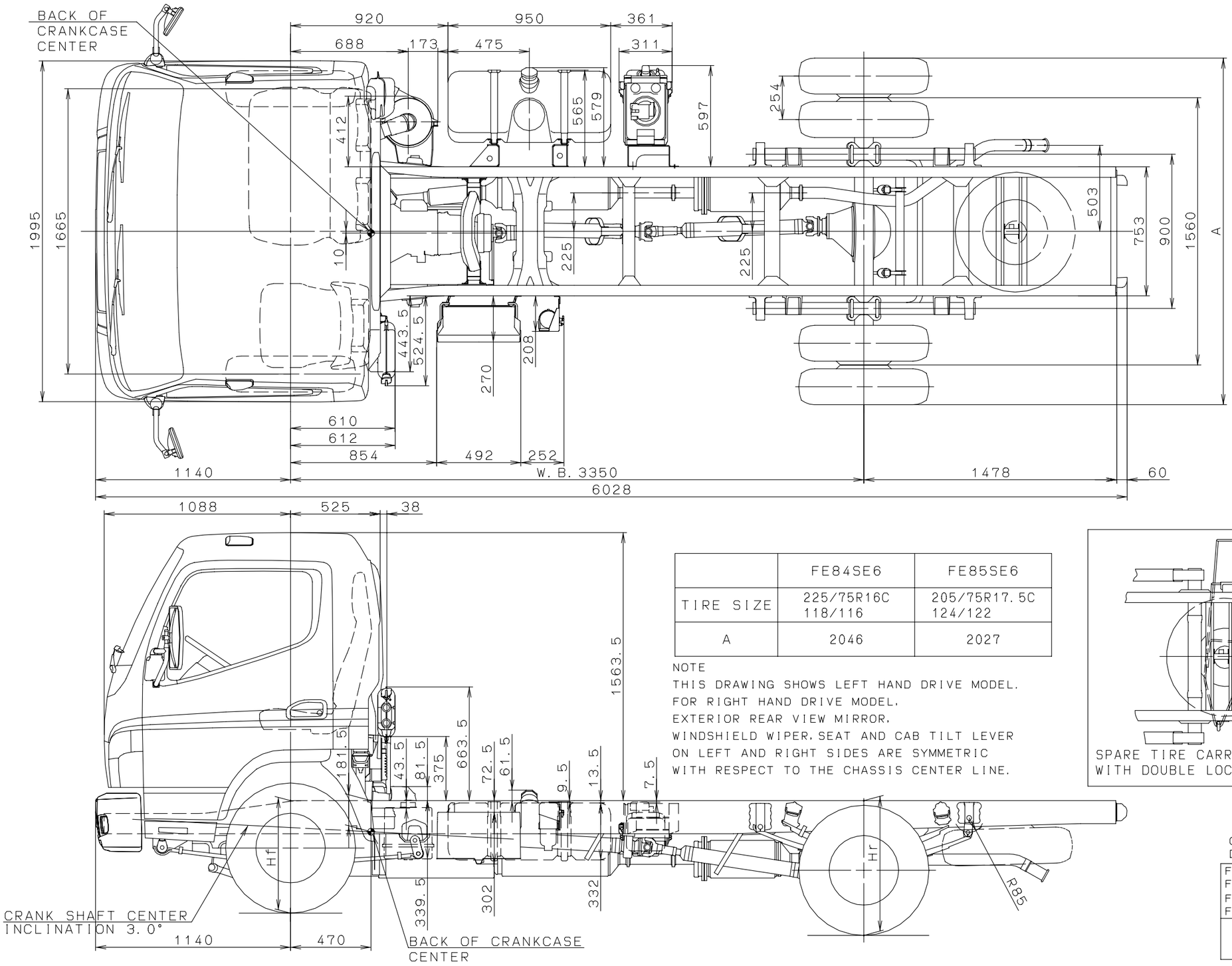


SPARE TIRE CARRIER
WITH DOUBLE LOCK

CHASSIS CAB DRAWINGS

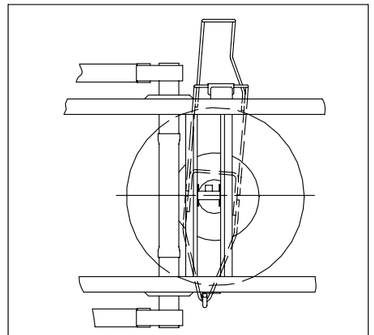
FE84SE6SLEA2
FE84SE6SREA2
FE85SE6SLEA2
FE85SE6SREA2
UNIT :mm

9.4 Chassis cab drawings



	FE84SE6	FE85SE6
TIRE SIZE	225/75R16C 118/116	205/75R17.5C 124/122
A	2046	2027

NOTE
THIS DRAWING SHOWS LEFT HAND DRIVE MODEL.
FOR RIGHT HAND DRIVE MODEL,
EXTERIOR REAR VIEW MIRROR,
WINDSHIELD WIPER, SEAT AND CAB TILT LEVER
ON LEFT AND RIGHT SIDES ARE SYMMETRIC
WITH RESPECT TO THE CHASSIS CENTER LINE.

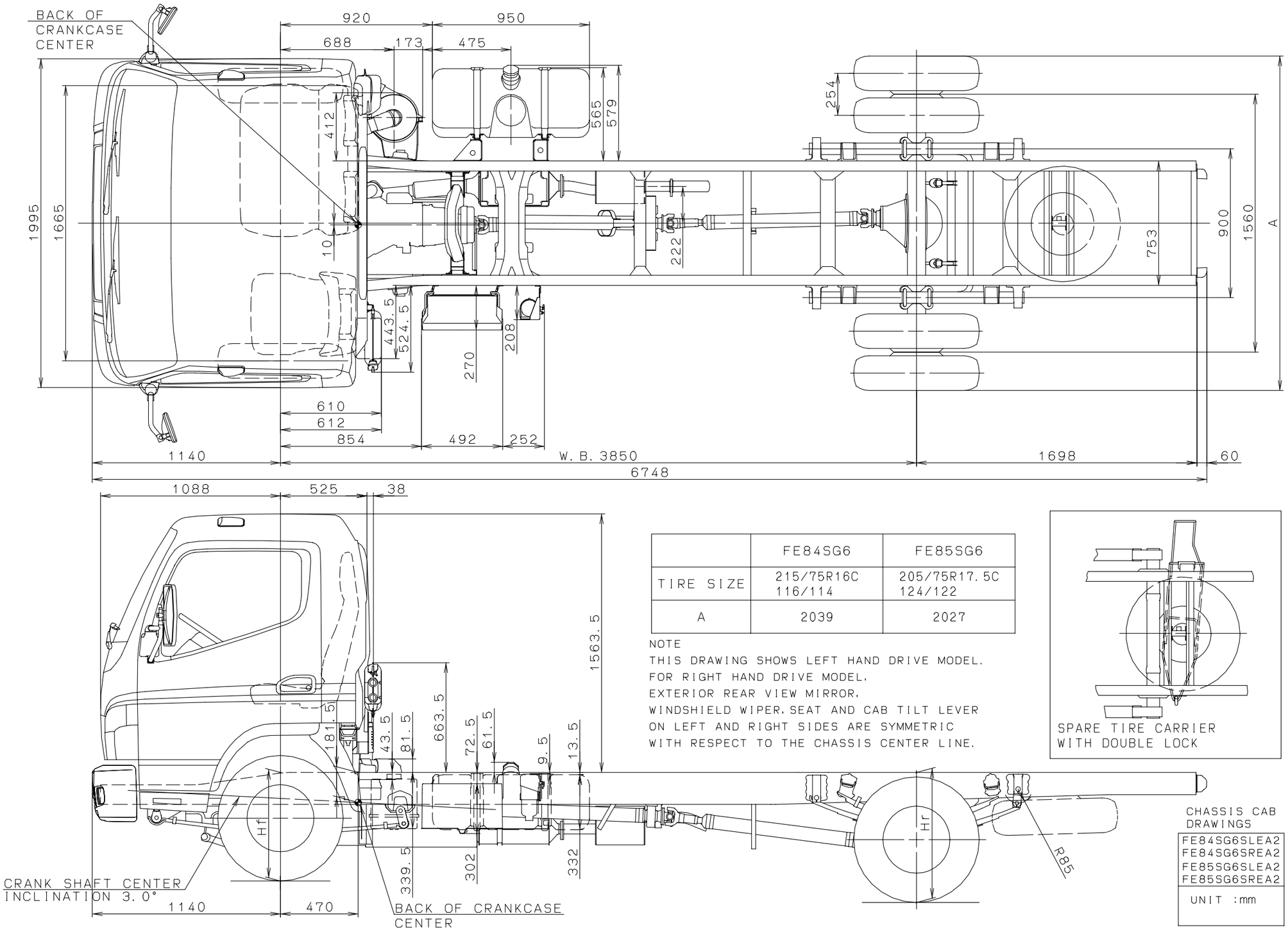


SPARE TIRE CARRIER
WITH DOUBLE LOCK

CHASSIS CAB DRAWINGS

FE84SE6SLEA3
FE84SE6SREA3
FE85SE6SLEA3
FE85SE6SREA3
UNIT :mm

9.4 Chassis cab drawings



	FE84SG6	FE85SG6
TIRE SIZE	215/75R16C 116/114	205/75R17.5C 124/122
A	2039	2027

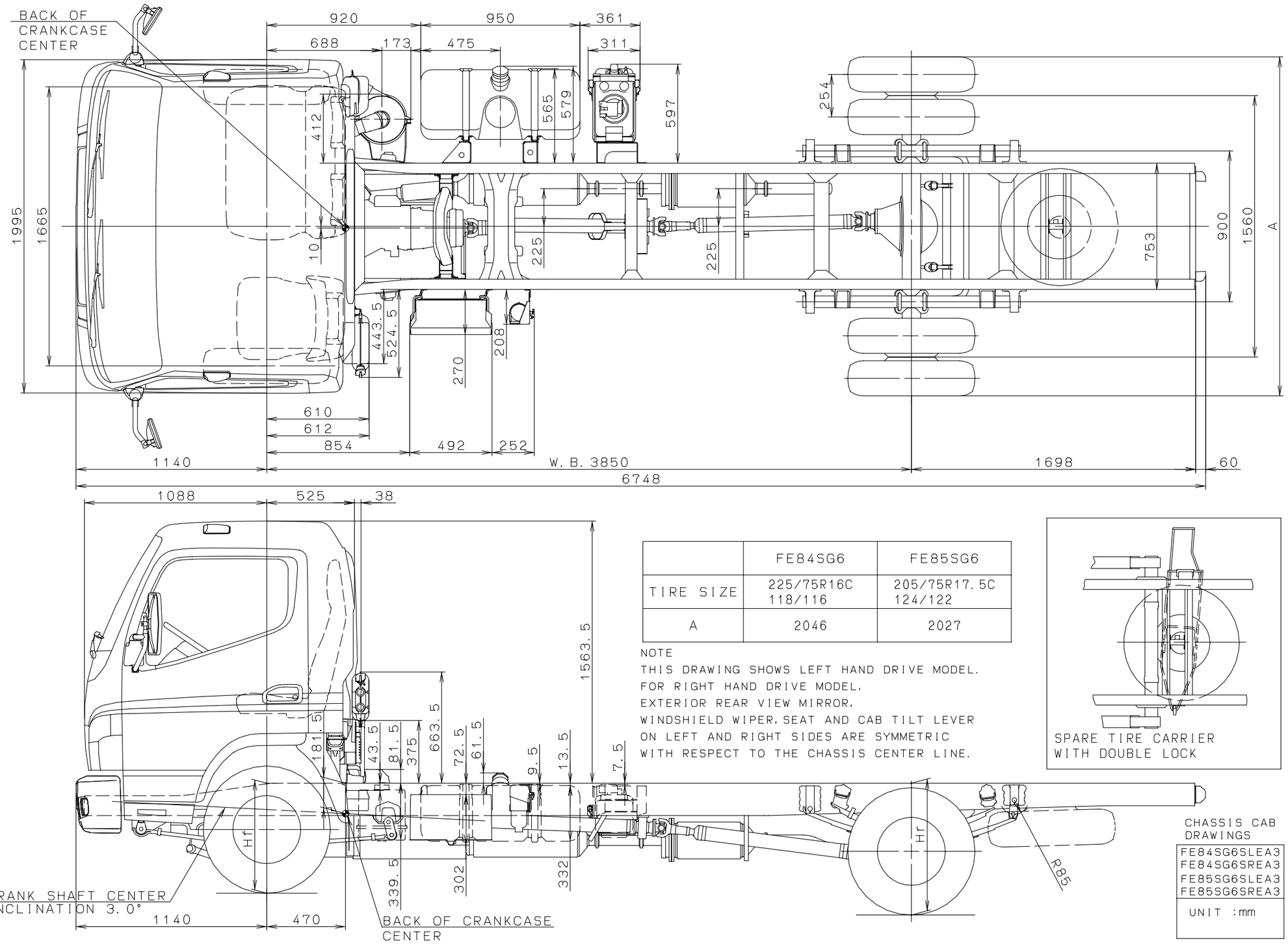
NOTE
THIS DRAWING SHOWS LEFT HAND DRIVE MODEL.
FOR RIGHT HAND DRIVE MODEL,
EXTERIOR REAR VIEW MIRROR,
WINDSHIELD WIPER, SEAT AND CAB TILT LEVER
ON LEFT AND RIGHT SIDES ARE SYMMETRIC
WITH RESPECT TO THE CHASSIS CENTER LINE.

SPARE TIRE CARRIER
WITH DOUBLE LOCK

CHASSIS CAB DRAWINGS

FE84SG6SLEA2
FE84SG6SREA2
FE85SG6SLEA2
FE85SG6SREA2
UNIT :mm

9.4 Chassis cab drawings



	FE84SG6	FE85SG6
TIRE SIZE	225/75R16C 118/116	205/75R17.5C 124/122
A	2046	2027

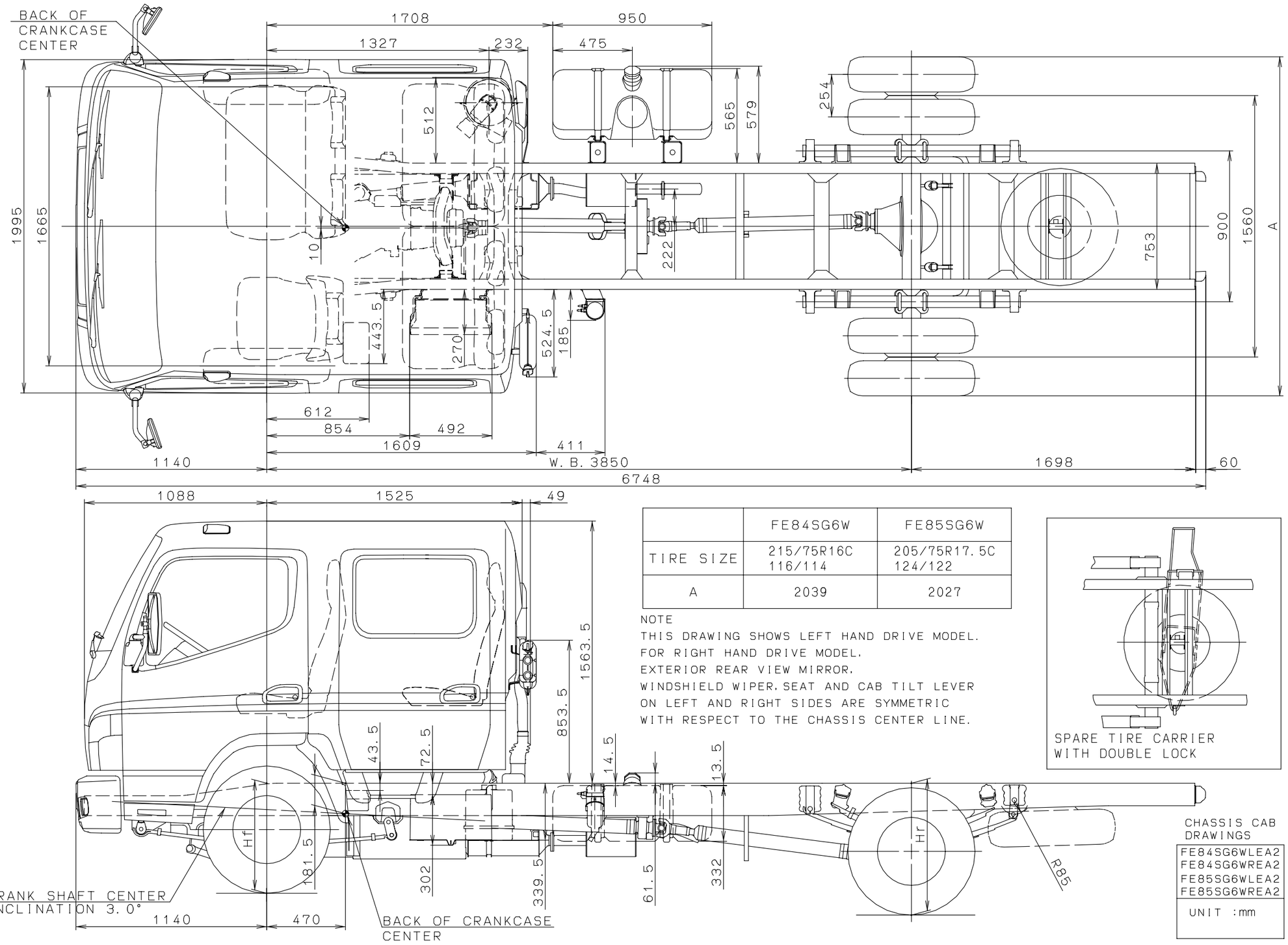
NOTE
THIS DRAWING SHOWS LEFT HAND DRIVE MODEL.
FOR RIGHT HAND DRIVE MODEL,
EXTERIOR REAR VIEW MIRROR,
WINDSHIELD WIPER, SEAT AND CAB TILT LEVER
ON LEFT AND RIGHT SIDES ARE SYMMETRIC
WITH RESPECT TO THE CHASSIS CENTER LINE.

SPARE TIRE CARRIER
WITH DOUBLE LOCK

CHASSIS CAB DRAWINGS

FE84SG6SLEA3
FE84SG6SREA3
FE85SG6SLEA3
FE85SG6SREA3
UNIT :mm

9.4 Chassis cab drawings



	FE84SG6W	FE85SG6W
TIRE SIZE	215/75R16C 116/114	205/75R17.5C 124/122
A	2039	2027

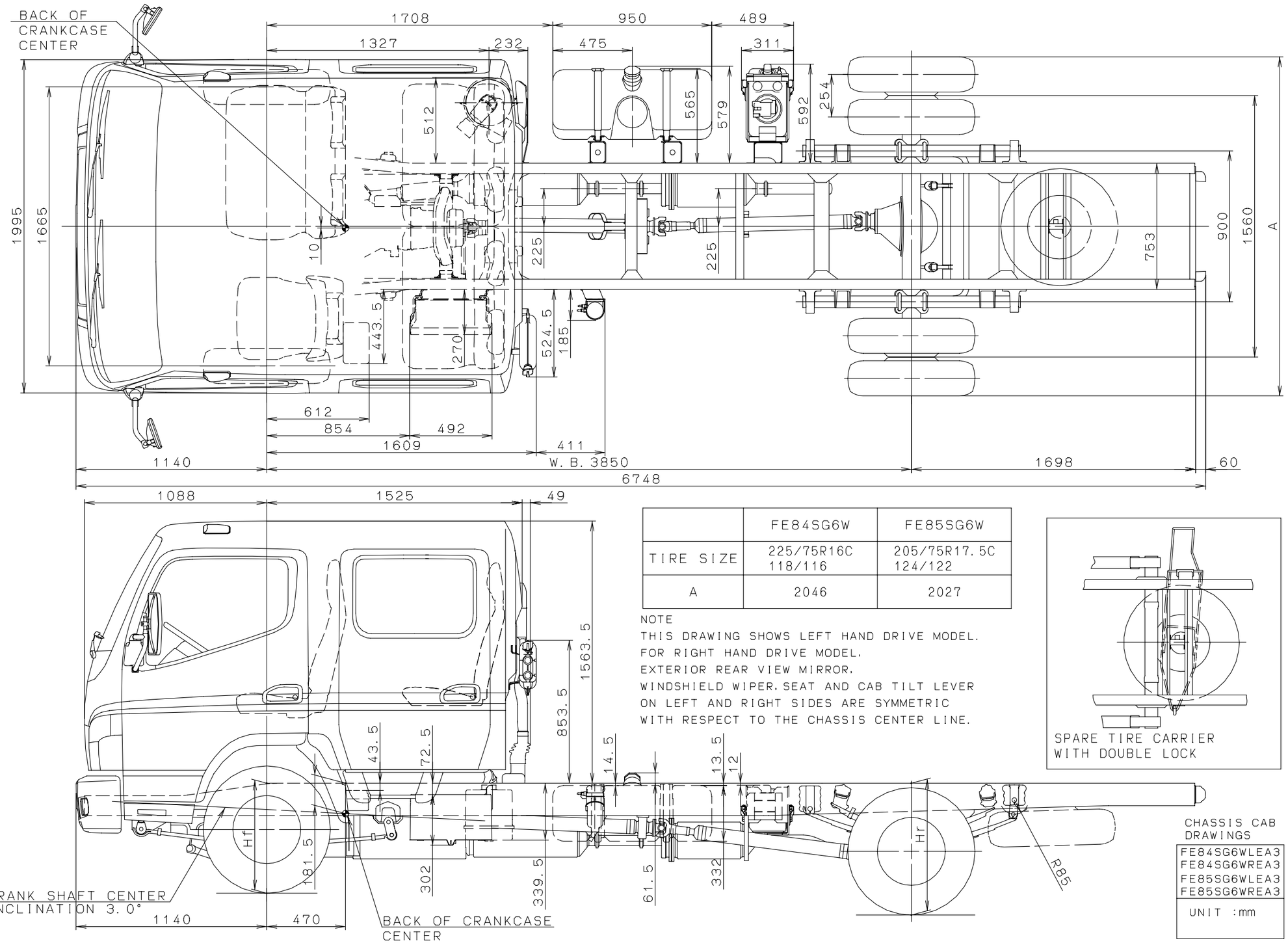
NOTE
THIS DRAWING SHOWS LEFT HAND DRIVE MODEL.
FOR RIGHT HAND DRIVE MODEL,
EXTERIOR REAR VIEW MIRROR,
WINDSHIELD WIPER, SEAT AND CAB TILT LEVER
ON LEFT AND RIGHT SIDES ARE SYMMETRIC
WITH RESPECT TO THE CHASSIS CENTER LINE.

SPARE TIRE CARRIER
WITH DOUBLE LOCK

CHASSIS CAB DRAWINGS

FE84SG6WLEA2
FE84SG6WREA2
FE85SG6WLEA2
FE85SG6WREA2
UNIT :mm

9.4 Chassis cab drawings



	FE84SG6W	FE85SG6W
TIRE SIZE	225/75R16C 118/116	205/75R17.5C 124/122
A	2046	2027

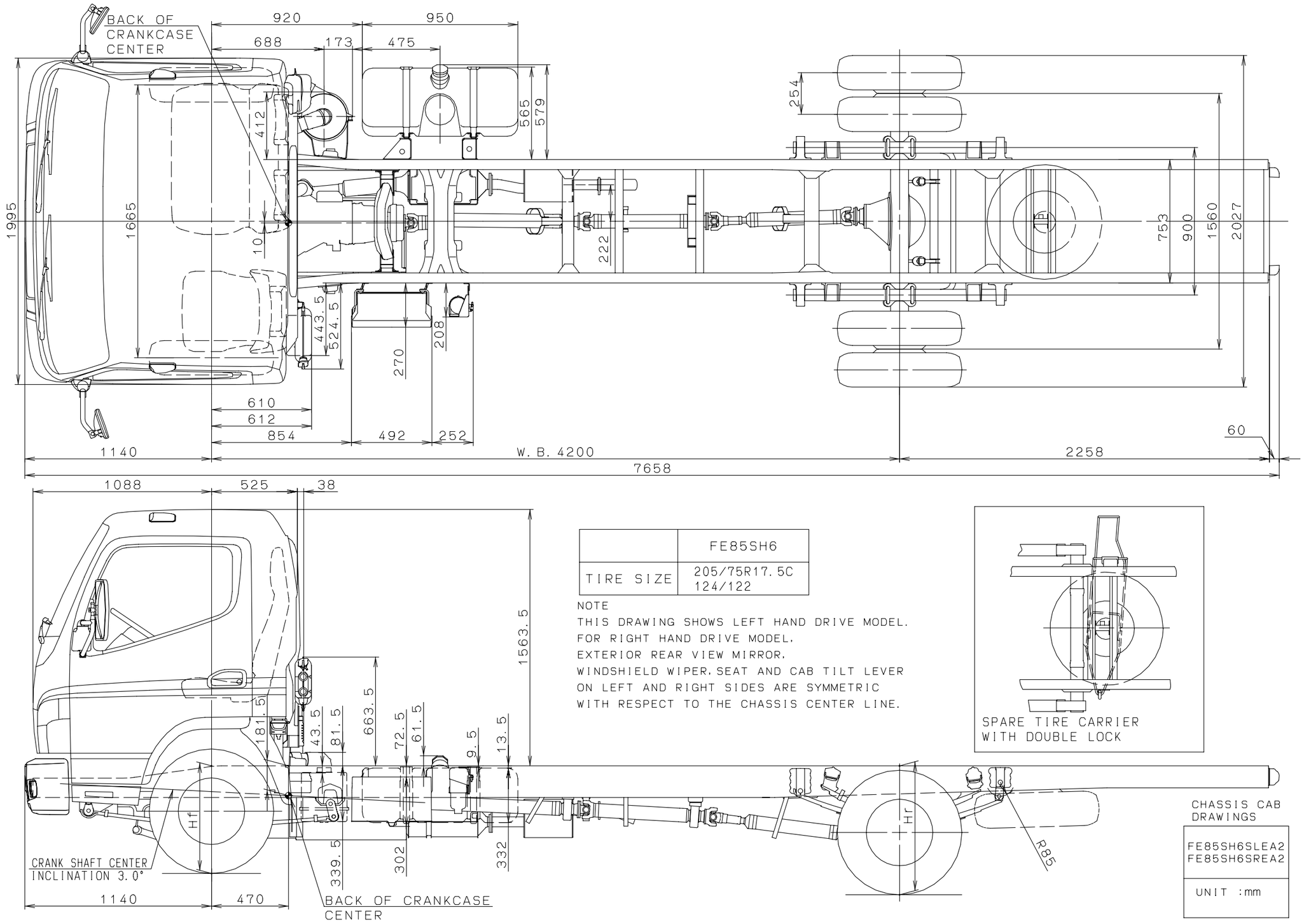
NOTE
THIS DRAWING SHOWS LEFT HAND DRIVE MODEL.
FOR RIGHT HAND DRIVE MODEL,
EXTERIOR REAR VIEW MIRROR,
WINDSHIELD WIPER, SEAT AND CAB TILT LEVER
ON LEFT AND RIGHT SIDES ARE SYMMETRIC
WITH RESPECT TO THE CHASSIS CENTER LINE.

SPARE TIRE CARRIER
WITH DOUBLE LOCK

CHASSIS CAB DRAWINGS

FE84SG6WLEA3
FE84SG6WREA3
FE85SG6WLEA3
FE85SG6WREA3
UNIT :mm

9.4 Chassis cab drawings



	FE85SH6
TIRE SIZE	205/75R17.5C 124/122

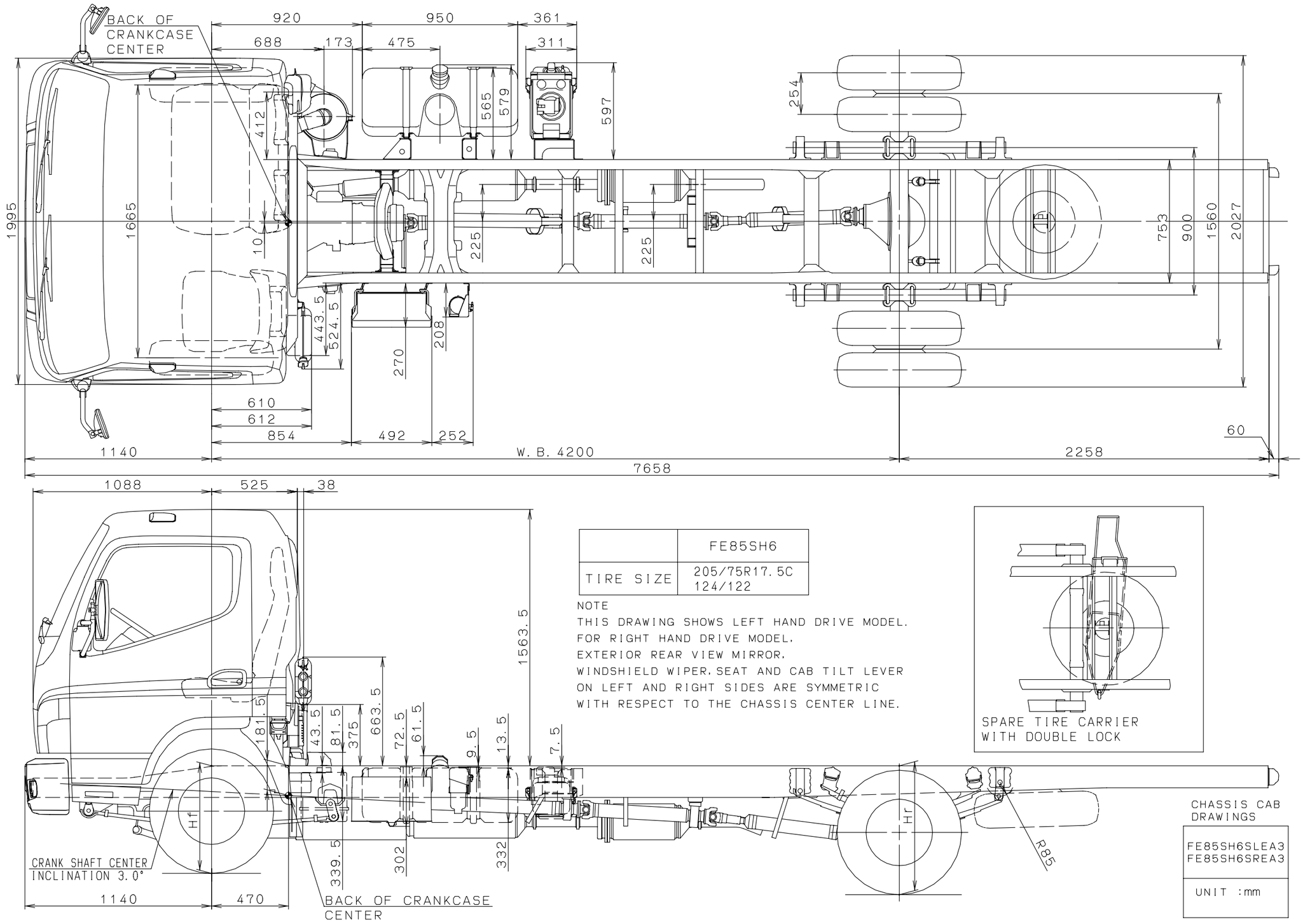
NOTE
THIS DRAWING SHOWS LEFT HAND DRIVE MODEL.
FOR RIGHT HAND DRIVE MODEL,
EXTERIOR REAR VIEW MIRROR,
WINDSHIELD WIPER, SEAT AND CAB TILT LEVER
ON LEFT AND RIGHT SIDES ARE SYMMETRIC
WITH RESPECT TO THE CHASSIS CENTER LINE.

SPARE TIRE CARRIER
WITH DOUBLE LOCK

CHASSIS CAB DRAWINGS

FE85SH6SLEA2 FE85SH6SREA2
UNIT :mm

9.4 Chassis cab drawings



	FE85SH6
TIRE SIZE	205/75R17.5C 124/122

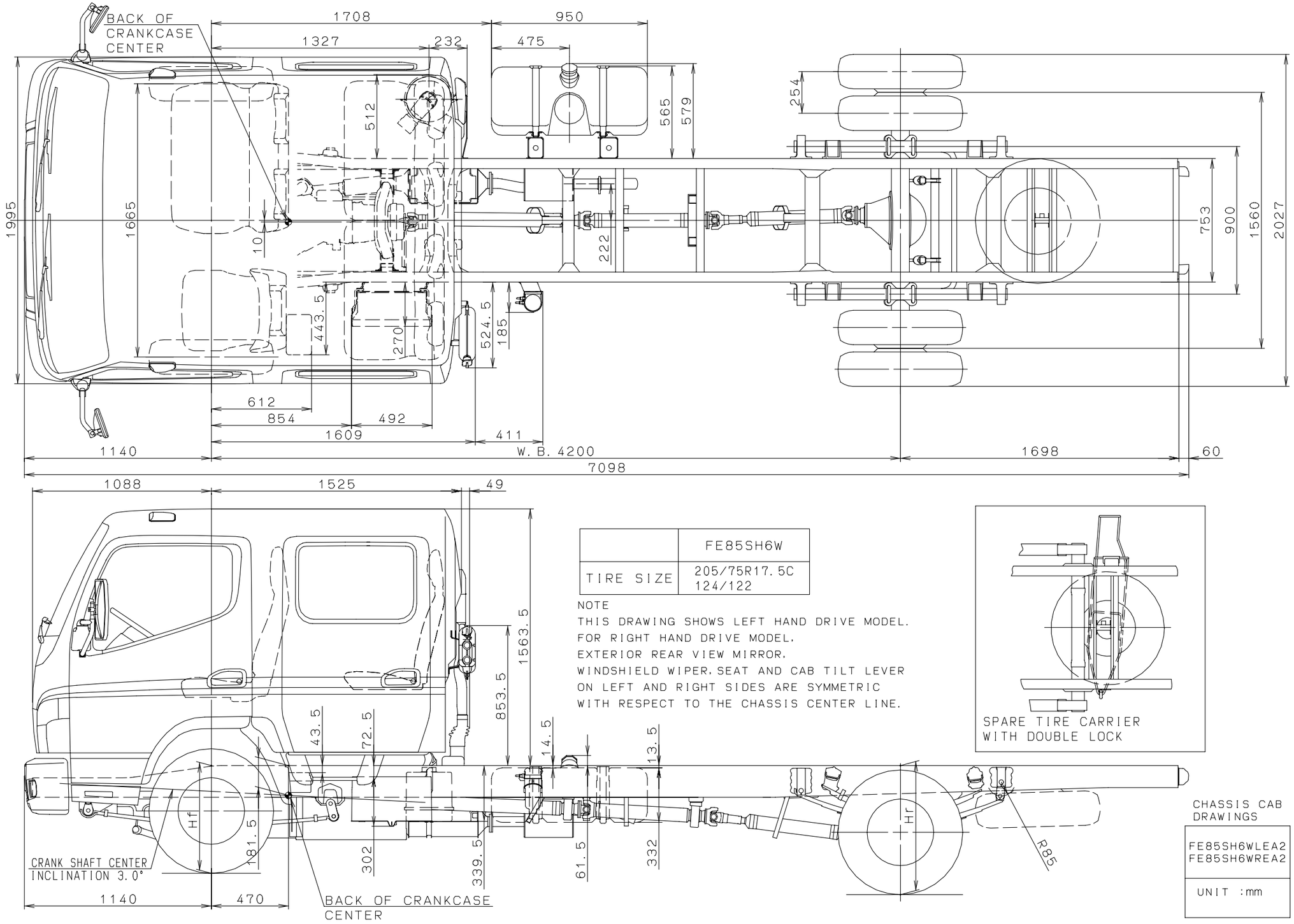
NOTE
THIS DRAWING SHOWS LEFT HAND DRIVE MODEL.
FOR RIGHT HAND DRIVE MODEL,
EXTERIOR REAR VIEW MIRROR,
WINDSHIELD WIPER, SEAT AND CAB TILT LEVER
ON LEFT AND RIGHT SIDES ARE SYMMETRIC
WITH RESPECT TO THE CHASSIS CENTER LINE.

SPARE TIRE CARRIER
WITH DOUBLE LOCK

CHASSIS CAB DRAWINGS

FE85SH6SLEA3 FE85SH6SREA3
UNIT :mm

9.4 Chassis cab drawings



	FE85SH6W
TIRE SIZE	205/75R17.5C 124/122

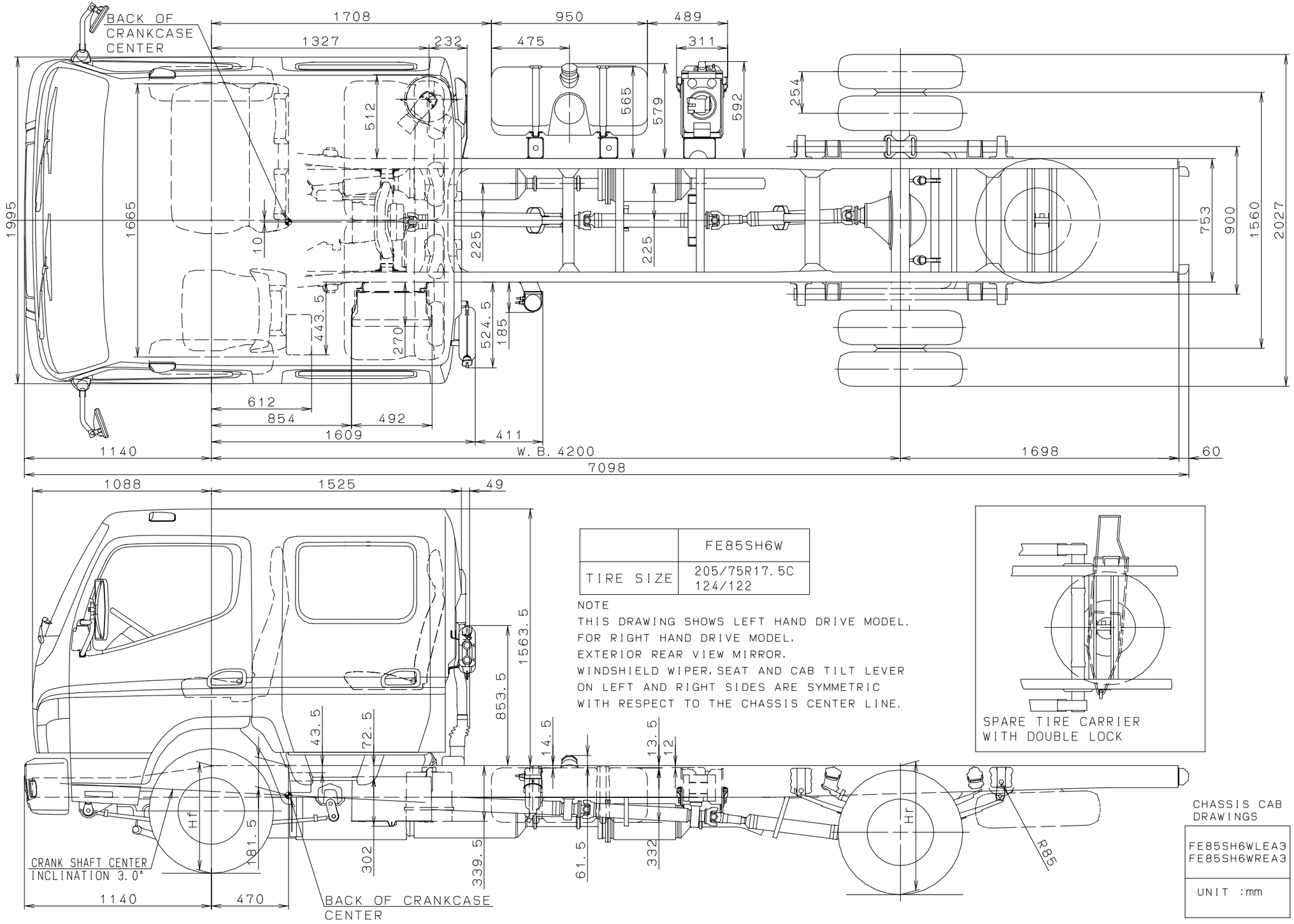
NOTE
THIS DRAWING SHOWS LEFT HAND DRIVE MODEL.
FOR RIGHT HAND DRIVE MODEL,
EXTERIOR REAR VIEW MIRROR,
WINDSHIELD WIPER, SEAT AND CAB TILT LEVER
ON LEFT AND RIGHT SIDES ARE SYMMETRIC
WITH RESPECT TO THE CHASSIS CENTER LINE.

SPARE TIRE CARRIER
WITH DOUBLE LOCK

CHASSIS CAB DRAWINGS

FE85SH6WLEA2 FE85SH6WREA2
UNIT : mm

9.4 Chassis cab drawings



	FE85SH6W
TIRE SIZE	205/75R17.5C 124/122

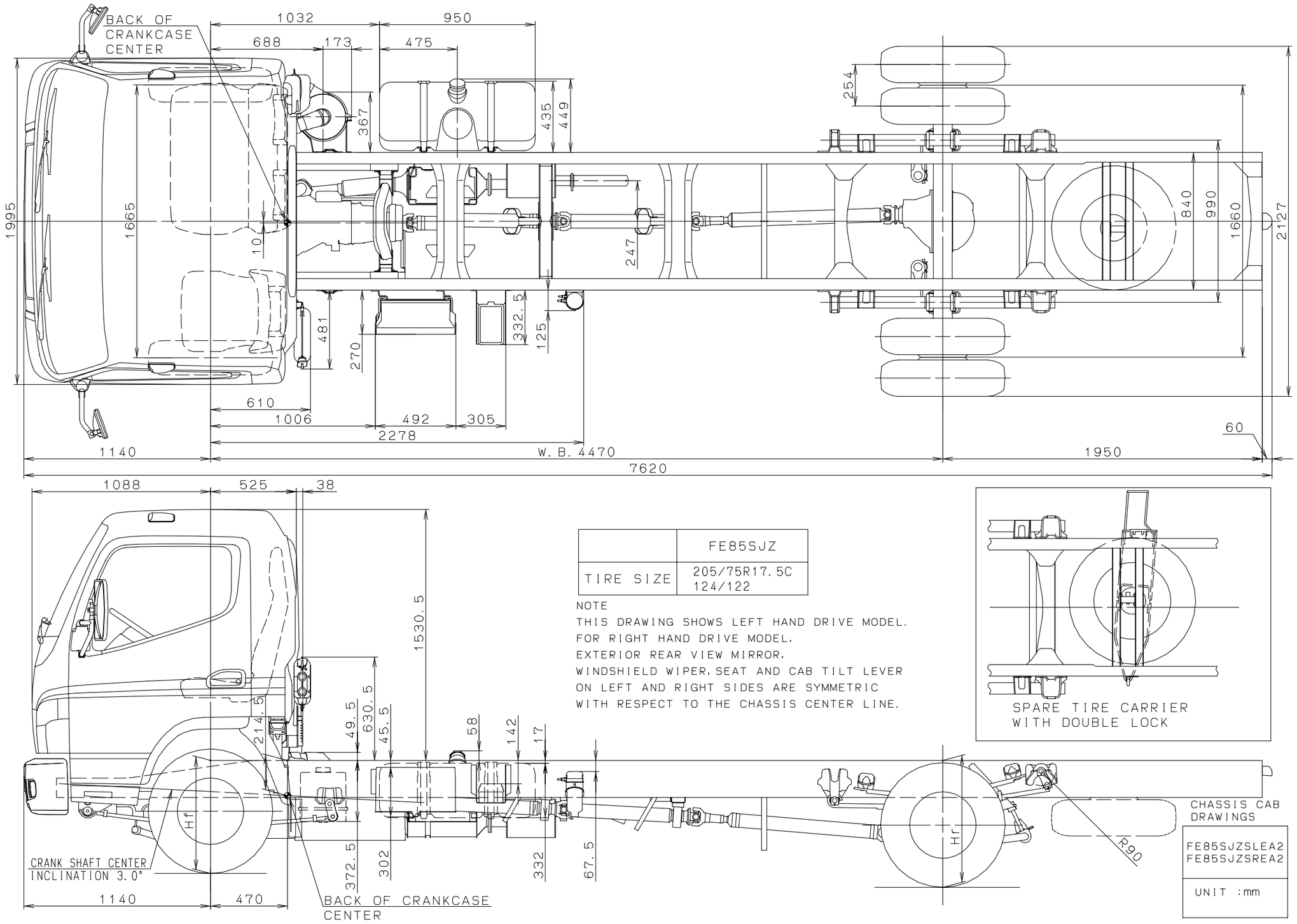
NOTE
THIS DRAWING SHOWS LEFT HAND DRIVE MODEL.
FOR RIGHT HAND DRIVE MODEL,
EXTERIOR REAR VIEW MIRROR,
WINDSHIELD WIPER, SEAT AND CAB TILT LEVER
ON LEFT AND RIGHT SIDES ARE SYMMETRIC
WITH RESPECT TO THE CHASSIS CENTER LINE.

SPARE TIRE CARRIER
WITH DOUBLE LOCK

CHASSIS CAB DRAWINGS

FE85SH6WLEA3 FE85SH6WREA3
UNIT : mm

9.4 Chassis cab drawings



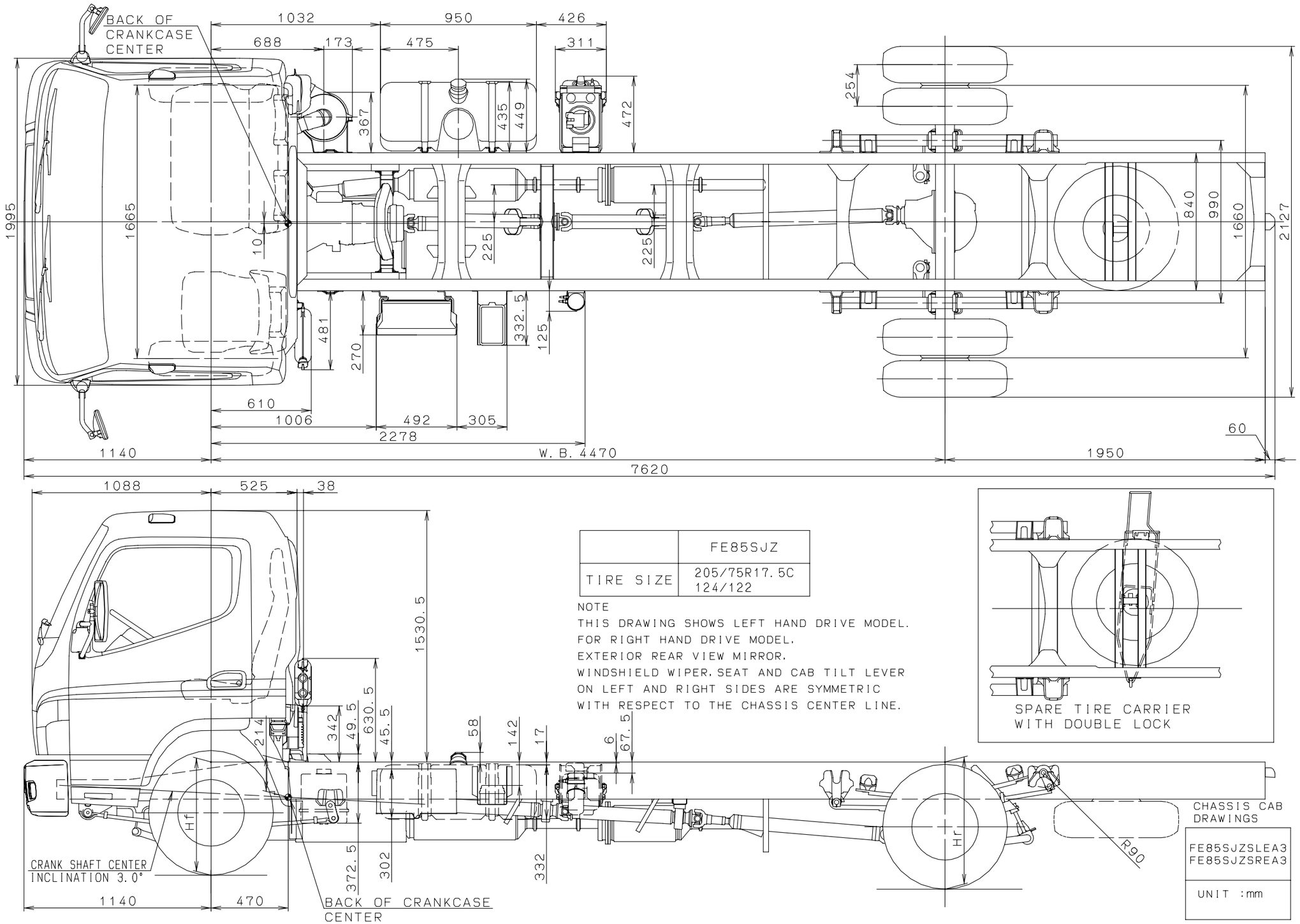
	FE85SJZ
TIRE SIZE	205/75R17.5C 124/122

NOTE
THIS DRAWING SHOWS LEFT HAND DRIVE MODEL.
FOR RIGHT HAND DRIVE MODEL,
EXTERIOR REAR VIEW MIRROR,
WINDSHIELD WIPER, SEAT AND CAB TILT LEVER
ON LEFT AND RIGHT SIDES ARE SYMMETRIC
WITH RESPECT TO THE CHASSIS CENTER LINE.

CHASSIS CAB DRAWINGS

FE85SJZSLEA2 FE85SJZSREA2
UNIT : mm

9.4 Chassis cab drawings



	FE85SJZ
TIRE SIZE	205/75R17.5C 124/122

NOTE
THIS DRAWING SHOWS LEFT HAND DRIVE MODEL.
FOR RIGHT HAND DRIVE MODEL,
EXTERIOR REAR VIEW MIRROR,
WINDSHIELD WIPER, SEAT AND CAB TILT LEVER
ON LEFT AND RIGHT SIDES ARE SYMMETRIC
WITH RESPECT TO THE CHASSIS CENTER LINE.

CHASSIS CAB DRAWINGS

FE85SJZSLEA3 FE85SJZSREA3
UNIT : mm

9.4.2 Cab front & Rear view

Cab front & Rear view. DXF FILE (For Autocad) – click below Model name

Cab front & Rear view shows left hand drive model.

For right hand drive model, exterior rear view mirror on left and right side are symmetric with respect to the chassis centre line.

***PDF FILE –view file, unable to edit– ***

PDF files of Cab front & Rear view will be shown on clicking the Model name in left bookmark.

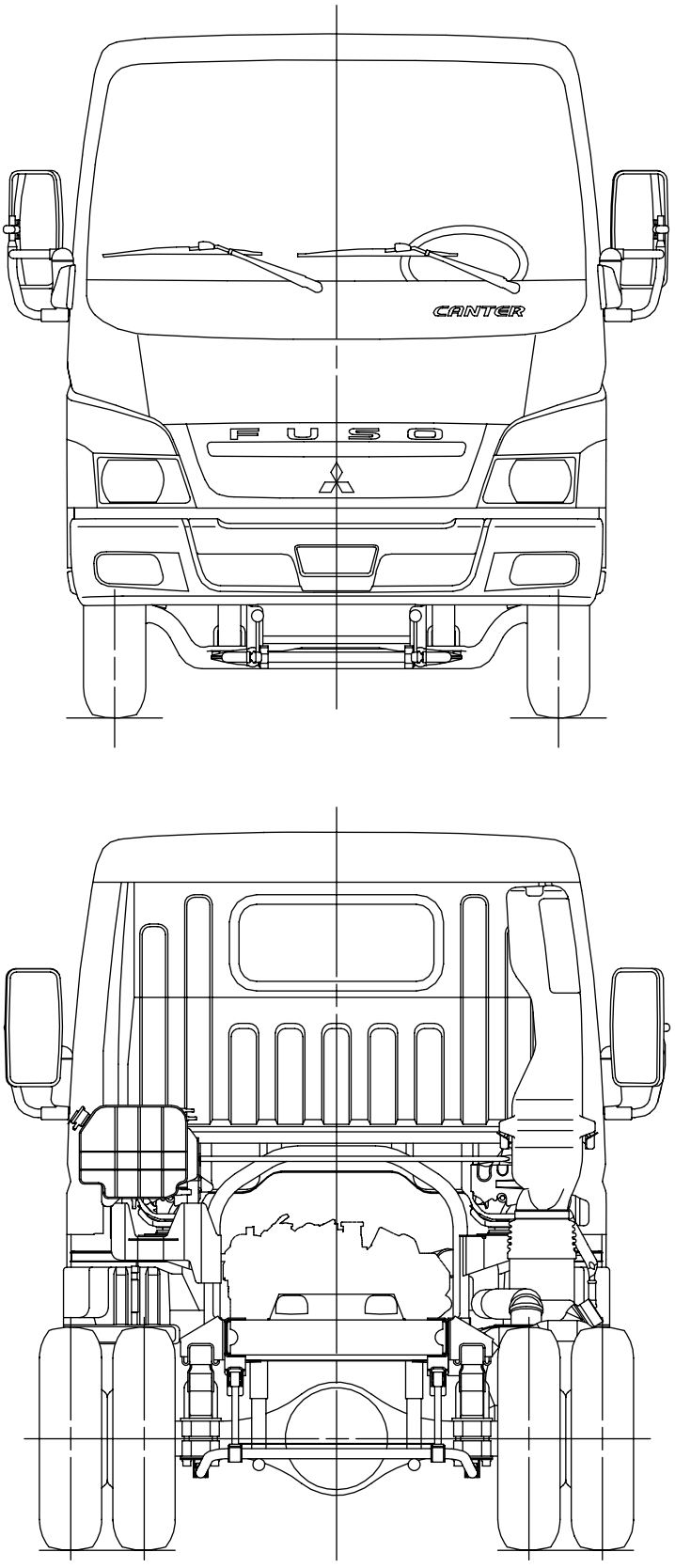
Model	Down Load
FB73SB4SLEA1 FB73SD4SLEA1 FB73SE4SLEA1	.dxf
FB73SE4WLEA1	.dxf
FB83SB4SLEA1 FB83SB4SREA1 FB83SB4SLEA2 FB83SB4SREA2 FB83SD4SLEA1 FB83SD4SREA1 FB83SD4SLEA2 FB83SD4SREA2 FB83SE4SLEA1 FB83SE4SREA1 FB83SE4SLEA2 FB83SE4SREA2 FB83SG4SLEA1 FB83SG4SREA1 FB83SG4SLEA2 FB83SG4SREA2	.dxf
FB83SE4WLEA1 FB83SE4WREA1	.dxf

Model	Down Load
FE74SB4SLEA1 FE74SD4SLEA1 FE74SE4SLEA1	.dxf
FE84SC6SLEA2 FE84SC6SREA2 FE85SC6SLEA2 FE85SC6SREA2 FE84SE6SLEA2 FE84SE6SREA2 FE85SE6SLEA2 FE85SE6SREA2 FE84SG6SLEA2 FE84SG6SREA2 FE85SG6SLEA2 FE85SG6SREA2 FE85SH6SLEA2 FE85SH6SREA2	.dxf
FE84SE6SLEA3 FE84SE6SREA3 FE85SE6SLEA3 FE85SE6SREA3 FE84SG6SLEA3 FE84SG6SREA3 FE85SG6SLEA3 FE85SG6SREA3 FE85SH6SLEA3 FE85SH6SREA3	.dxf

9.4 Chassis cab drawings

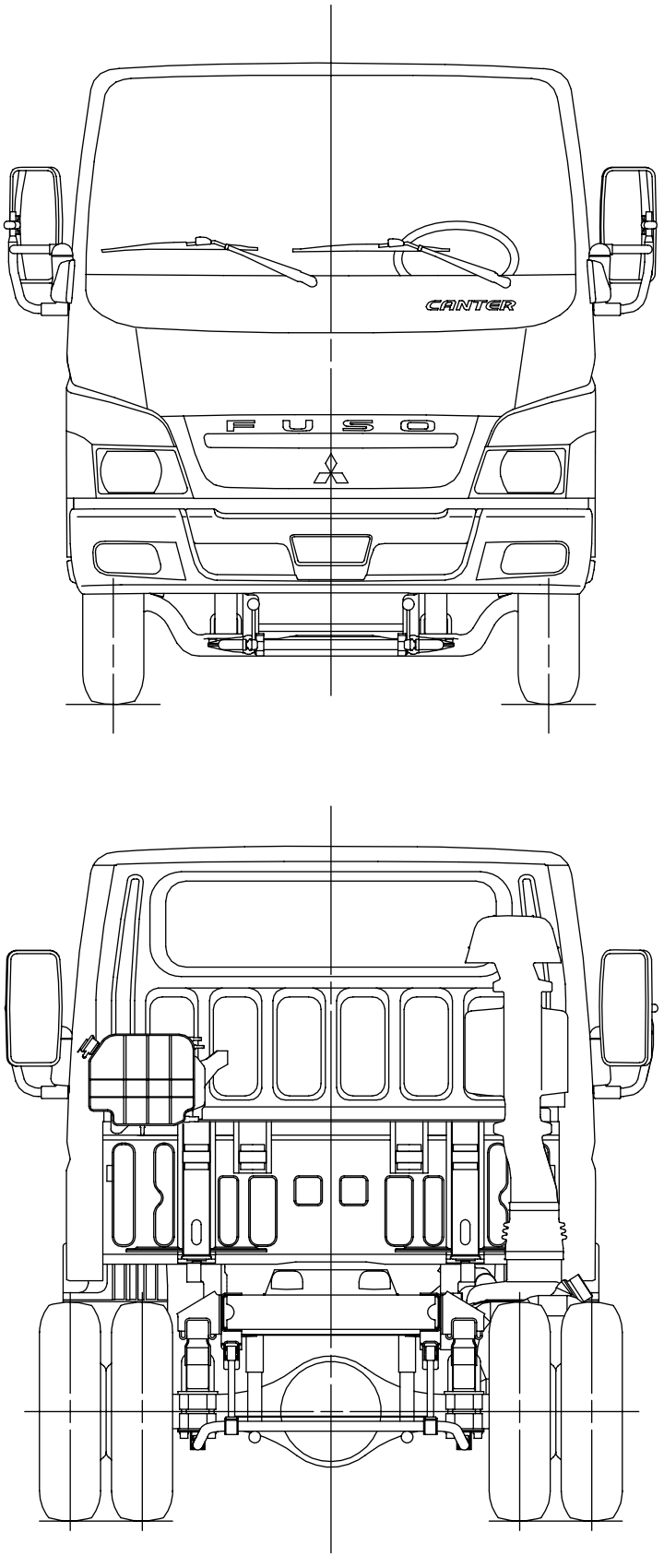
Model	Down Load
FE84SG6WLEA2 FE84SG6WREA2 FE85SG6WLEA2 FE85SG6WREA2 FE85SH6WLEA2 FE85SH6WREA2	.dxf
FE84SG6WLEA3 FE84SG6WREA3 FE85SG6WLEA3 FE85SG6WREA3 FE85SH6WLEA3 FE85SH6WREA3	.dxf
FE85SJZSLEA2 FE85SJZSREA2	.dxf
FE85SJZSLEA3 FE85SJZSREA3	.dxf

9.4 Chassis cab drawings



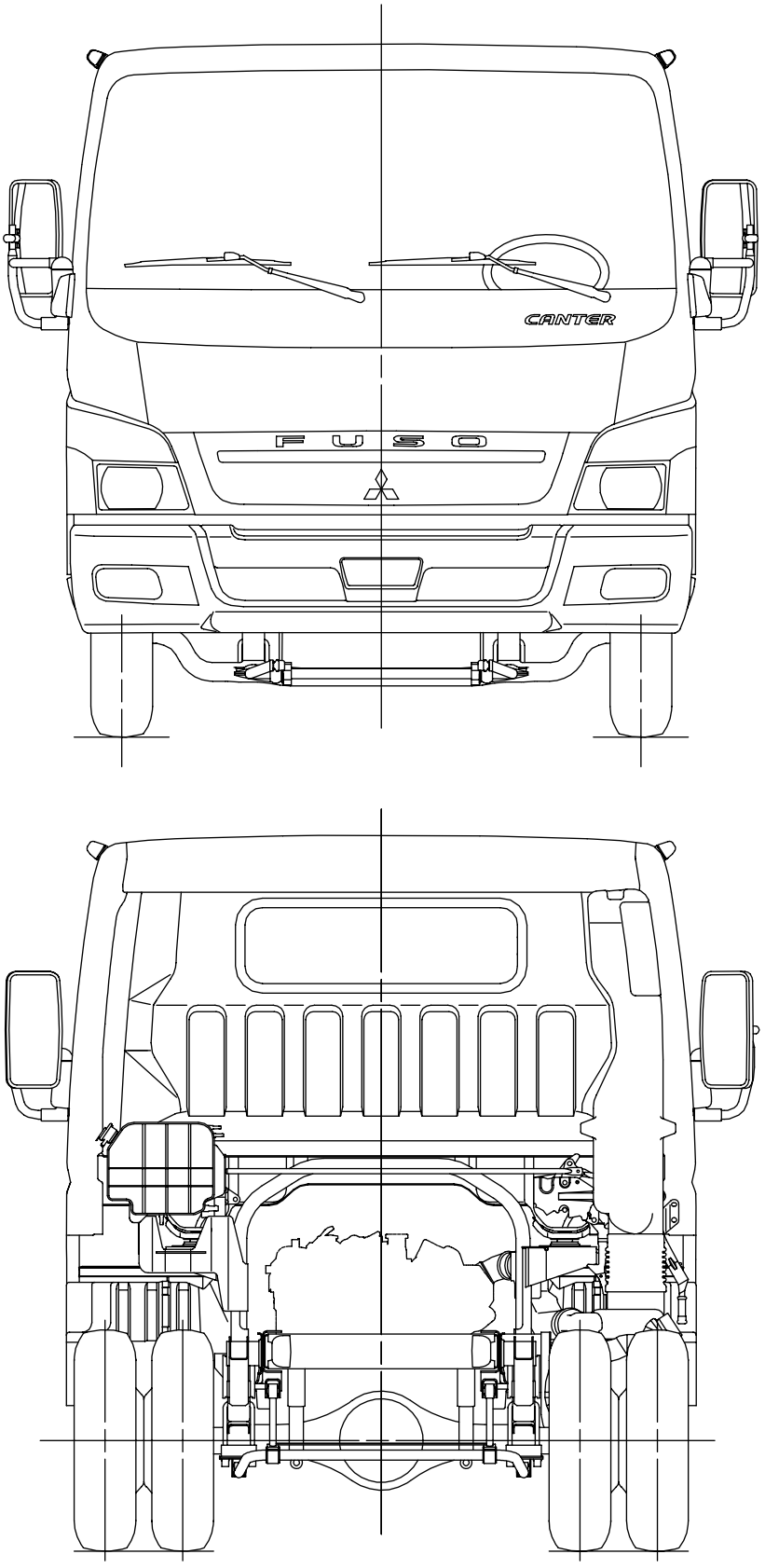
FB73S*4SLEA1

9.4 Chassis cab drawings



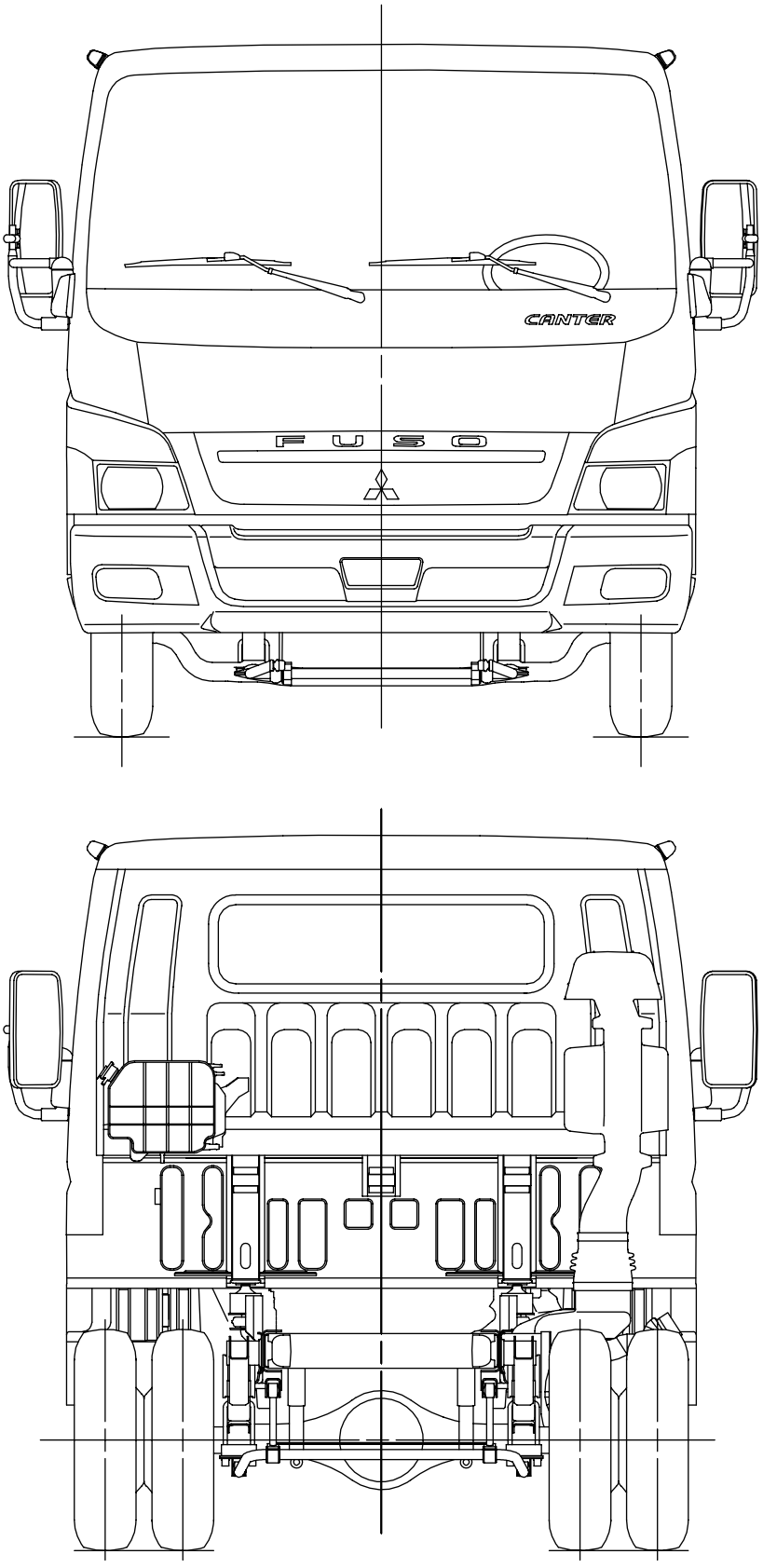
FB73SE4WLEA1

9.4 Chassis cab drawings



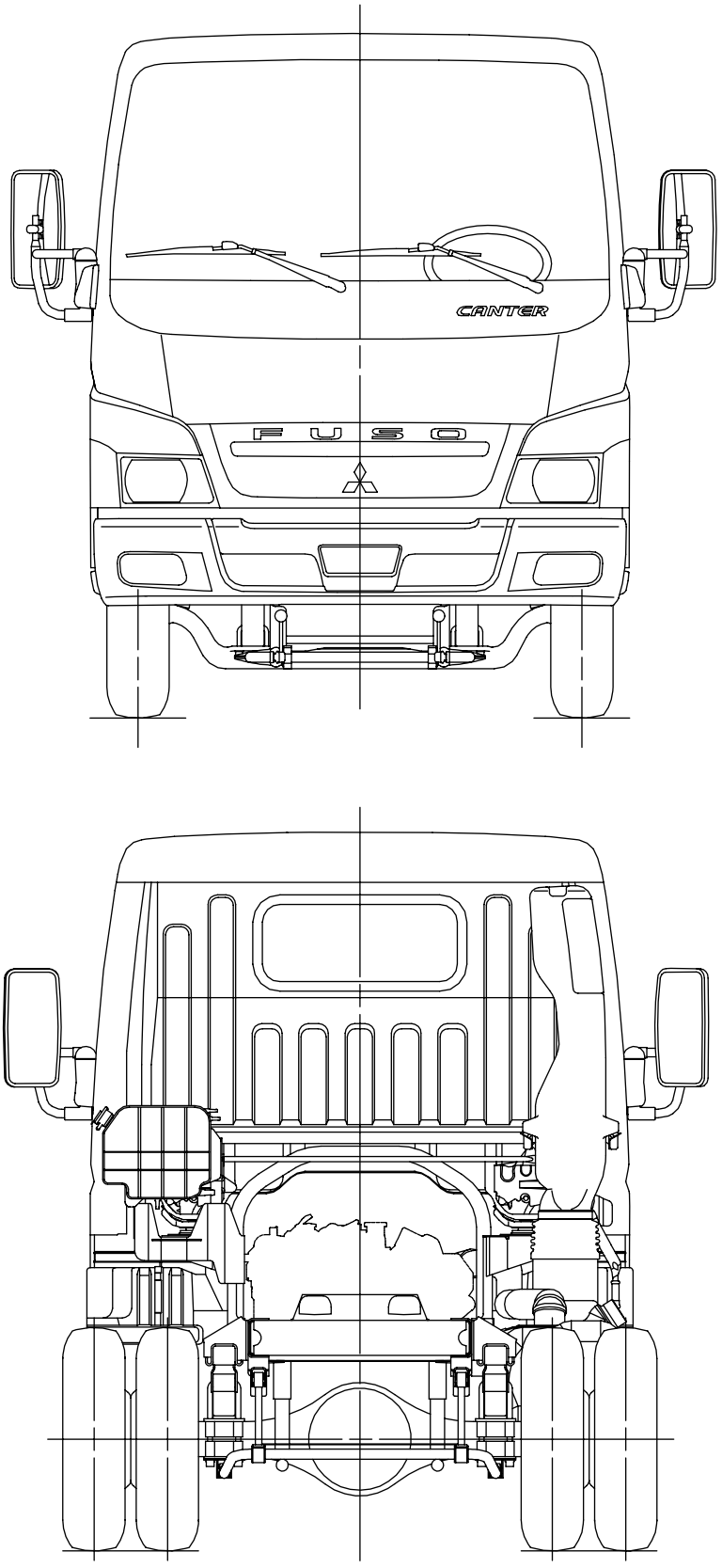
FB83S*4SLEA1/2

9.4 Chassis cab drawings



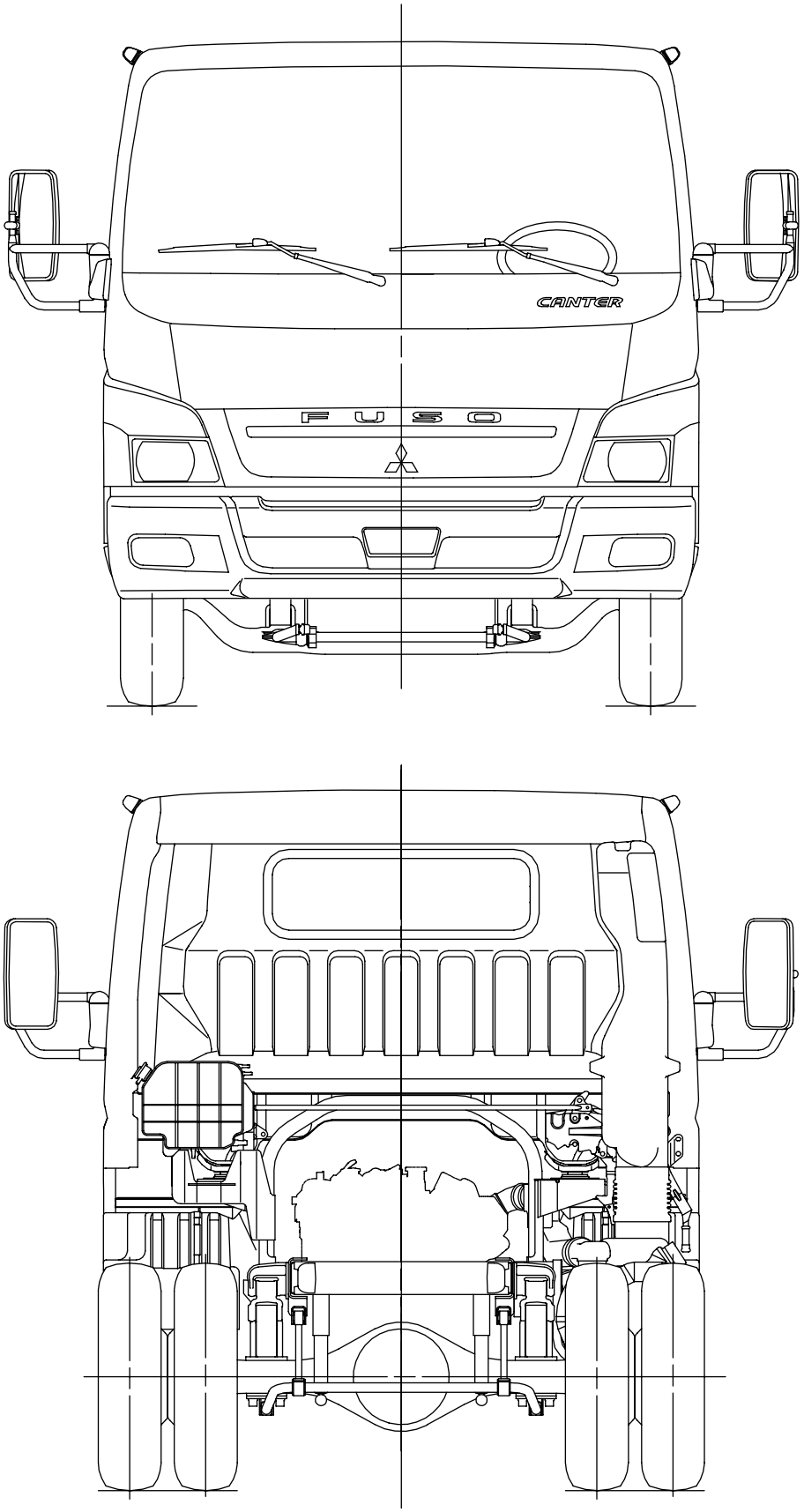
FB83SE4WLEA1

9.4 Chassis cab drawings



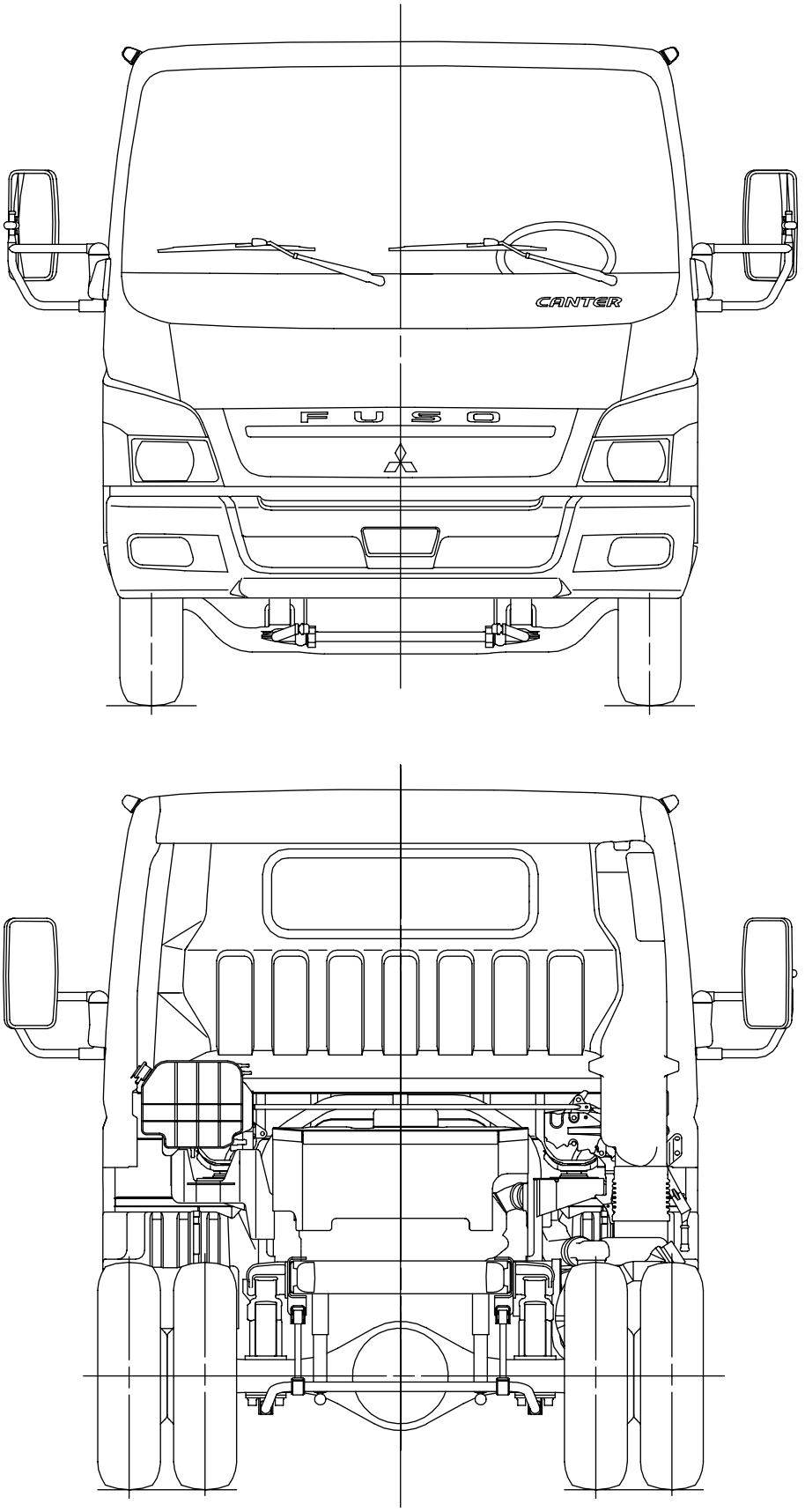
FE74S*4SLEA1

9.4 Chassis cab drawings



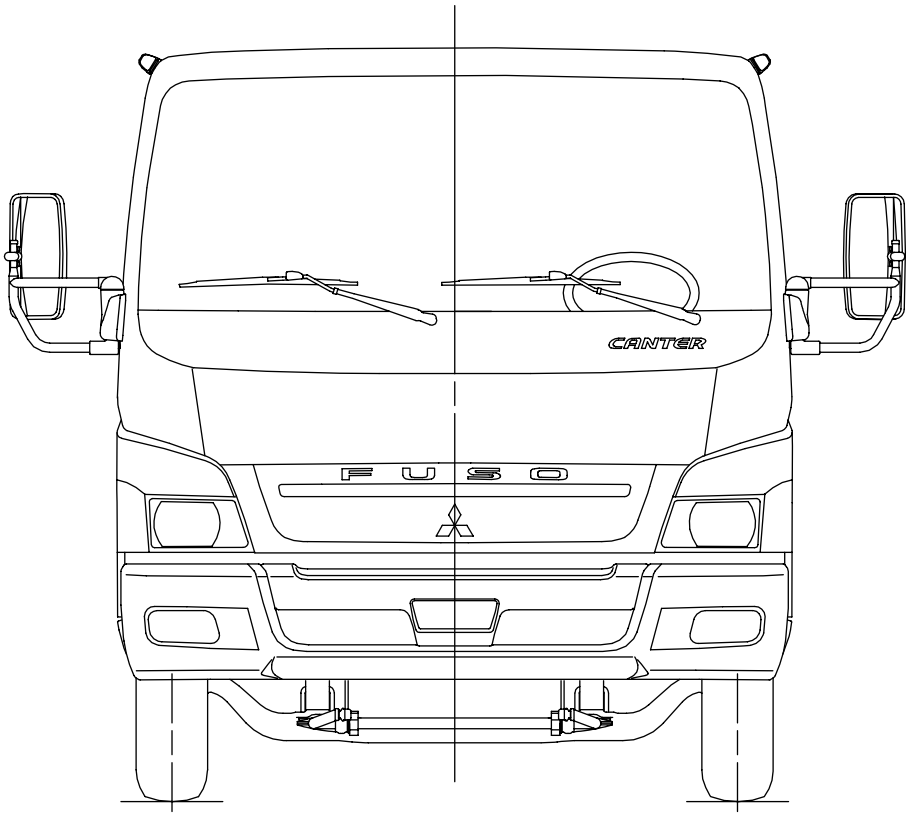
FE84/5S*6LEA2

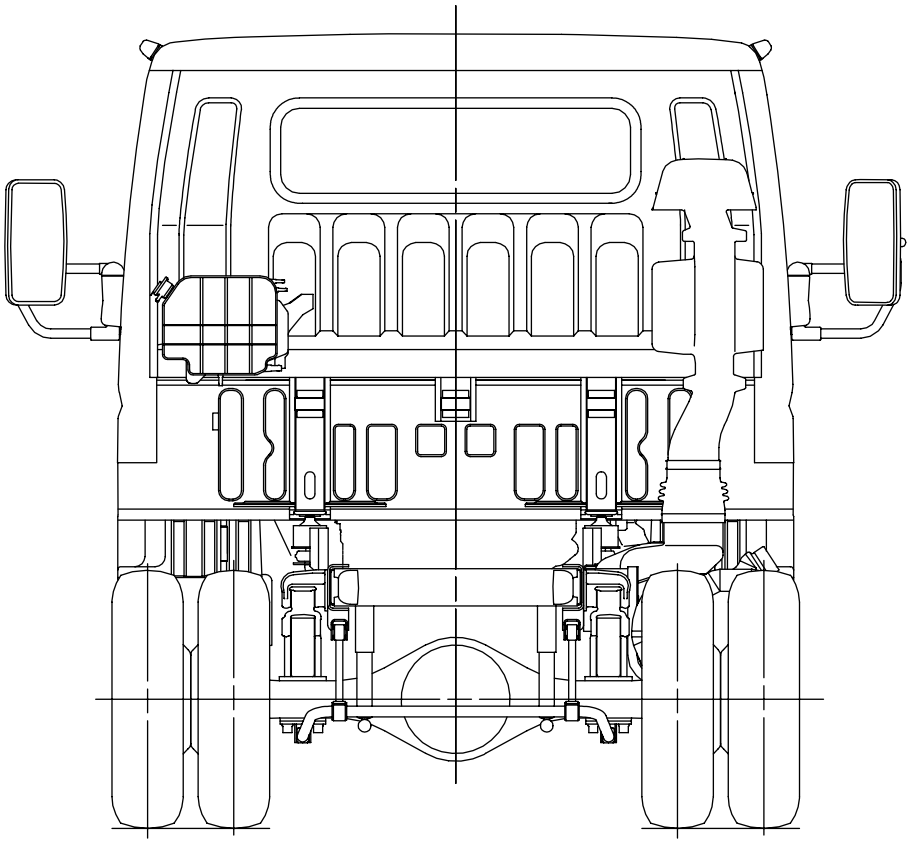
9.4 Chassis cab drawings



FE84/5S*6LEA3

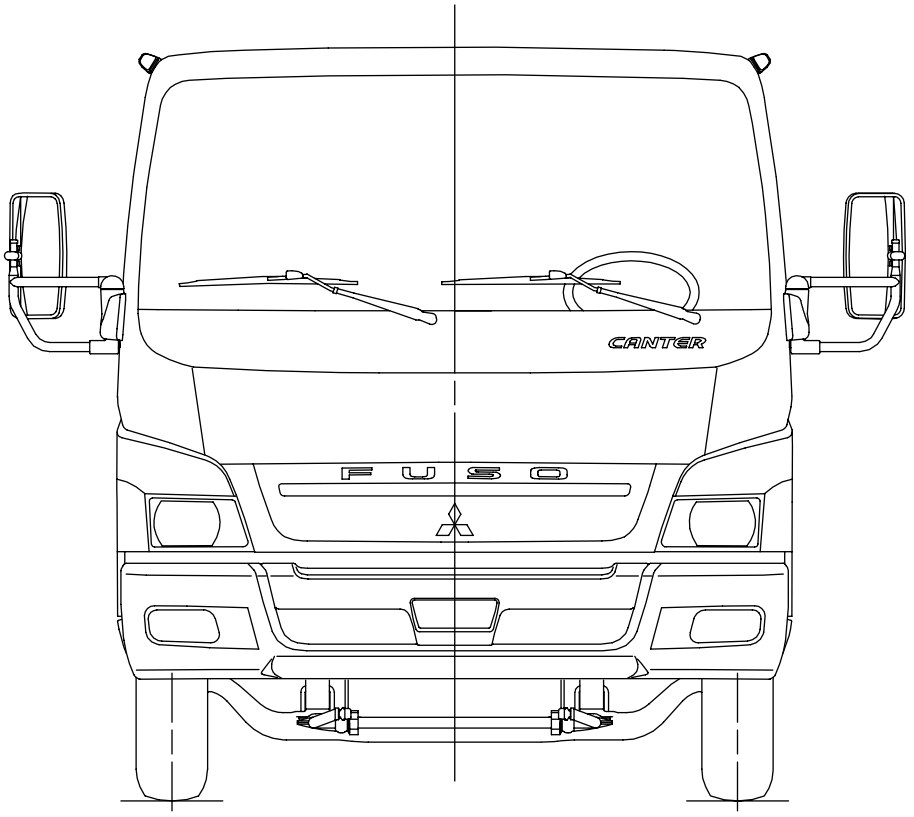
9.4 Chassis cab drawings

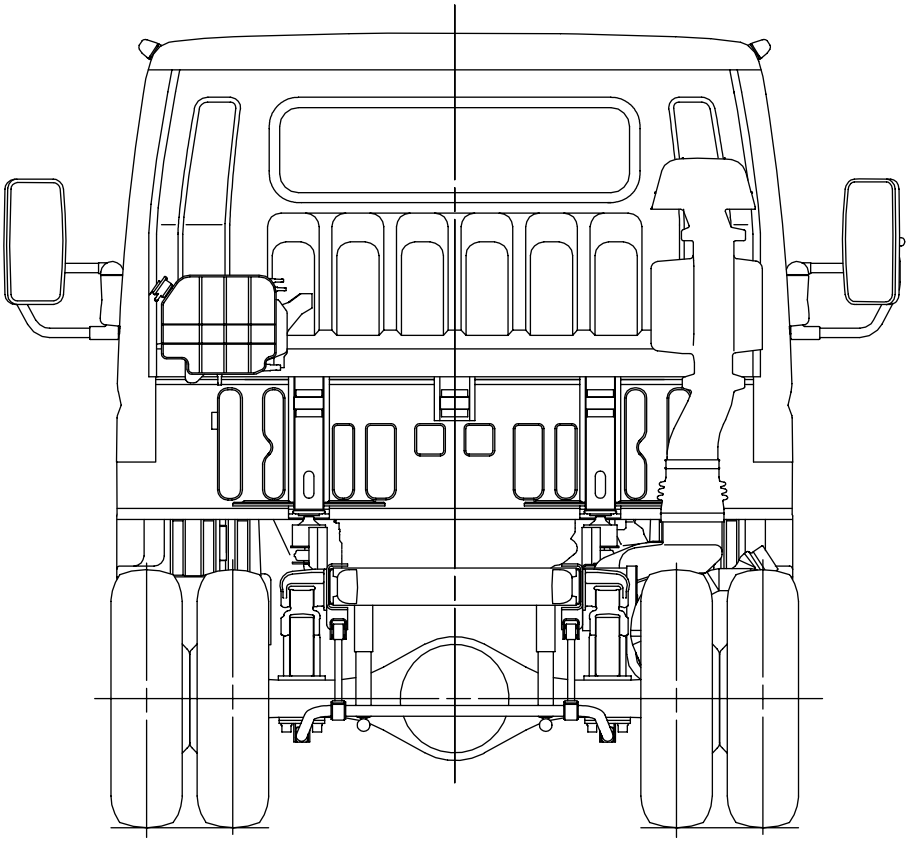




FE84/5S*6WEA2

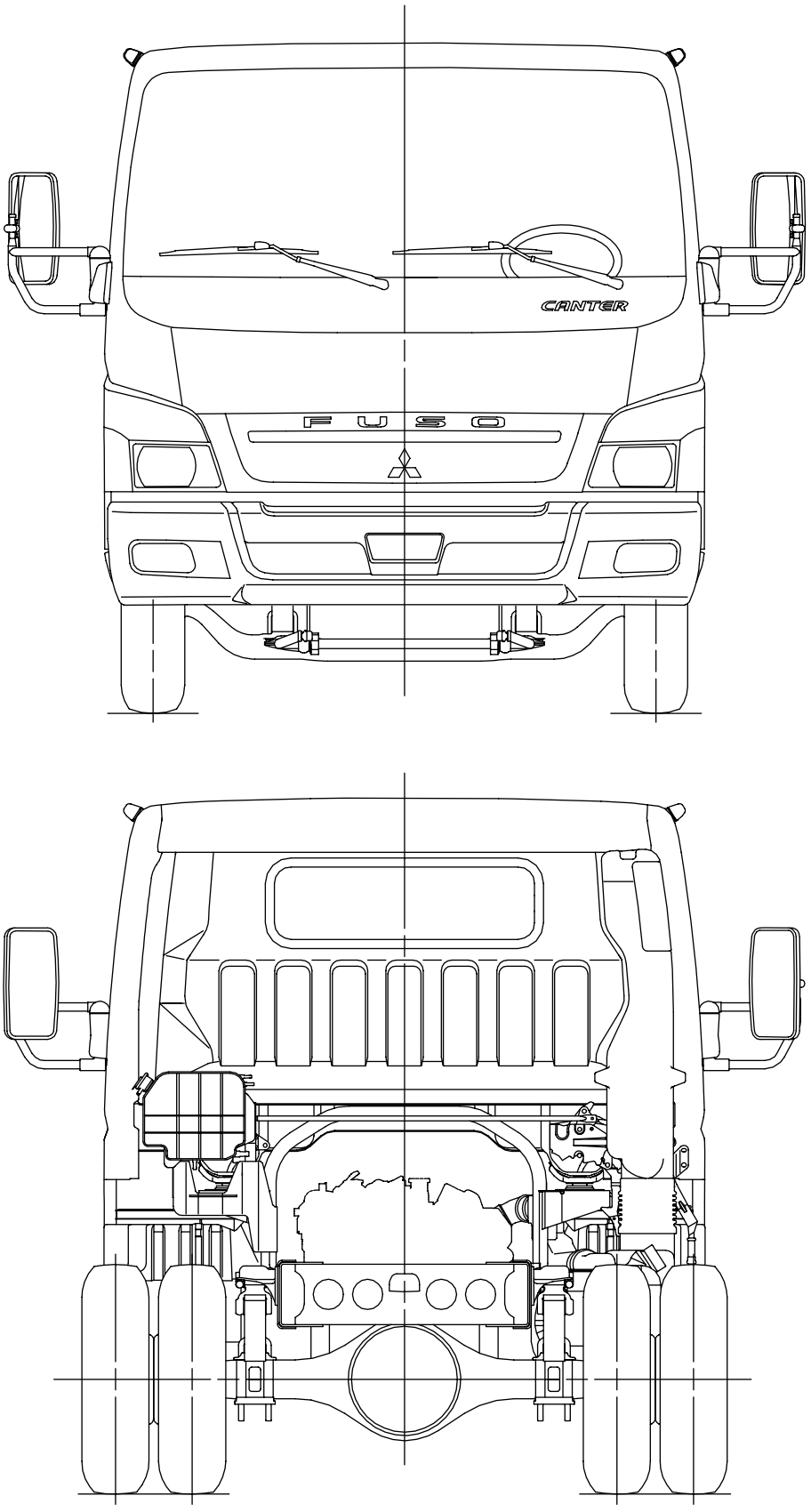
9.4 Chassis cab drawings





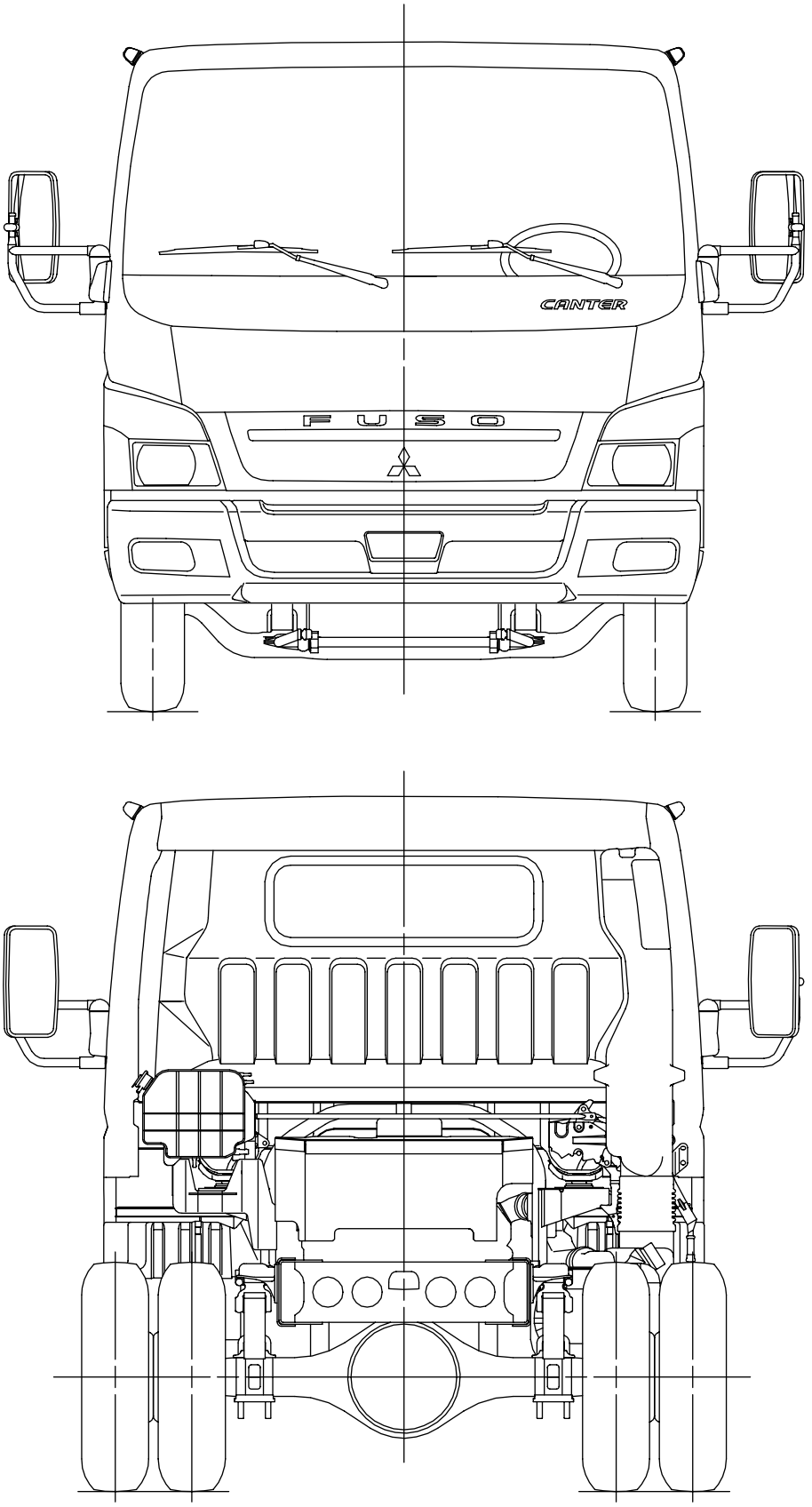
FE84/5S*6WEA3

9.4 Chassis cab drawings



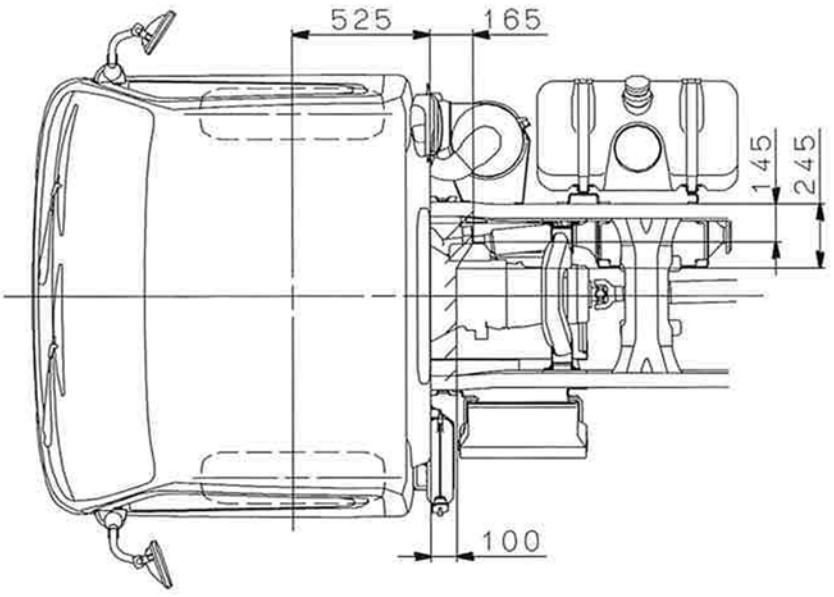
FE85SJZSLEA2

9.4 Chassis cab drawings

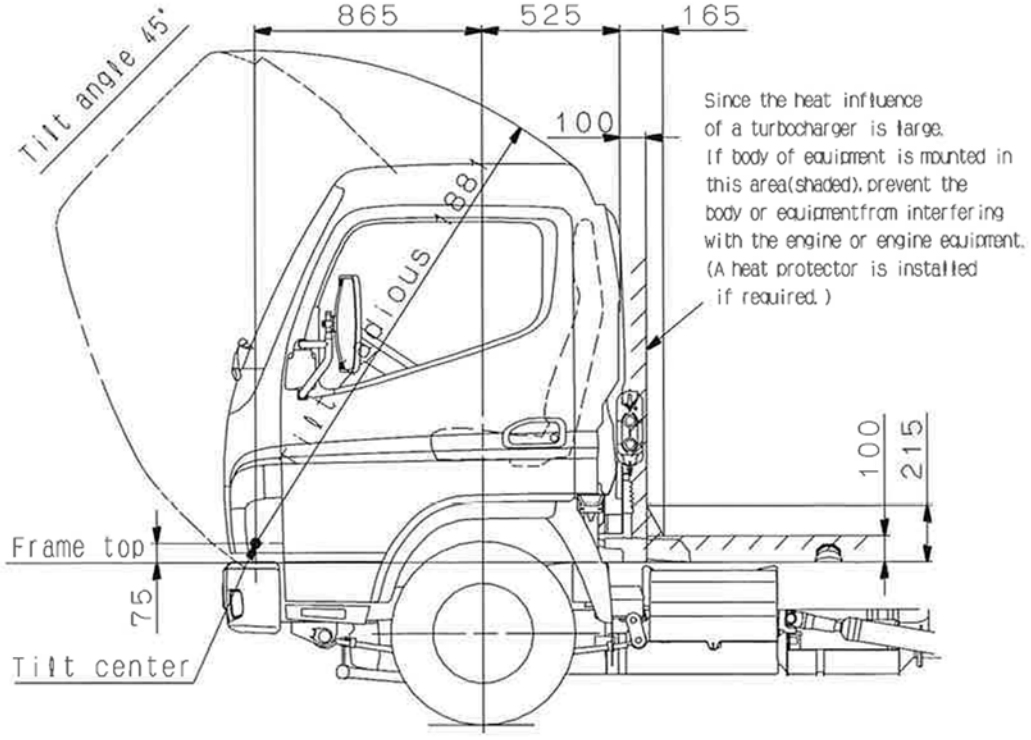


FE85SJZSLEA3

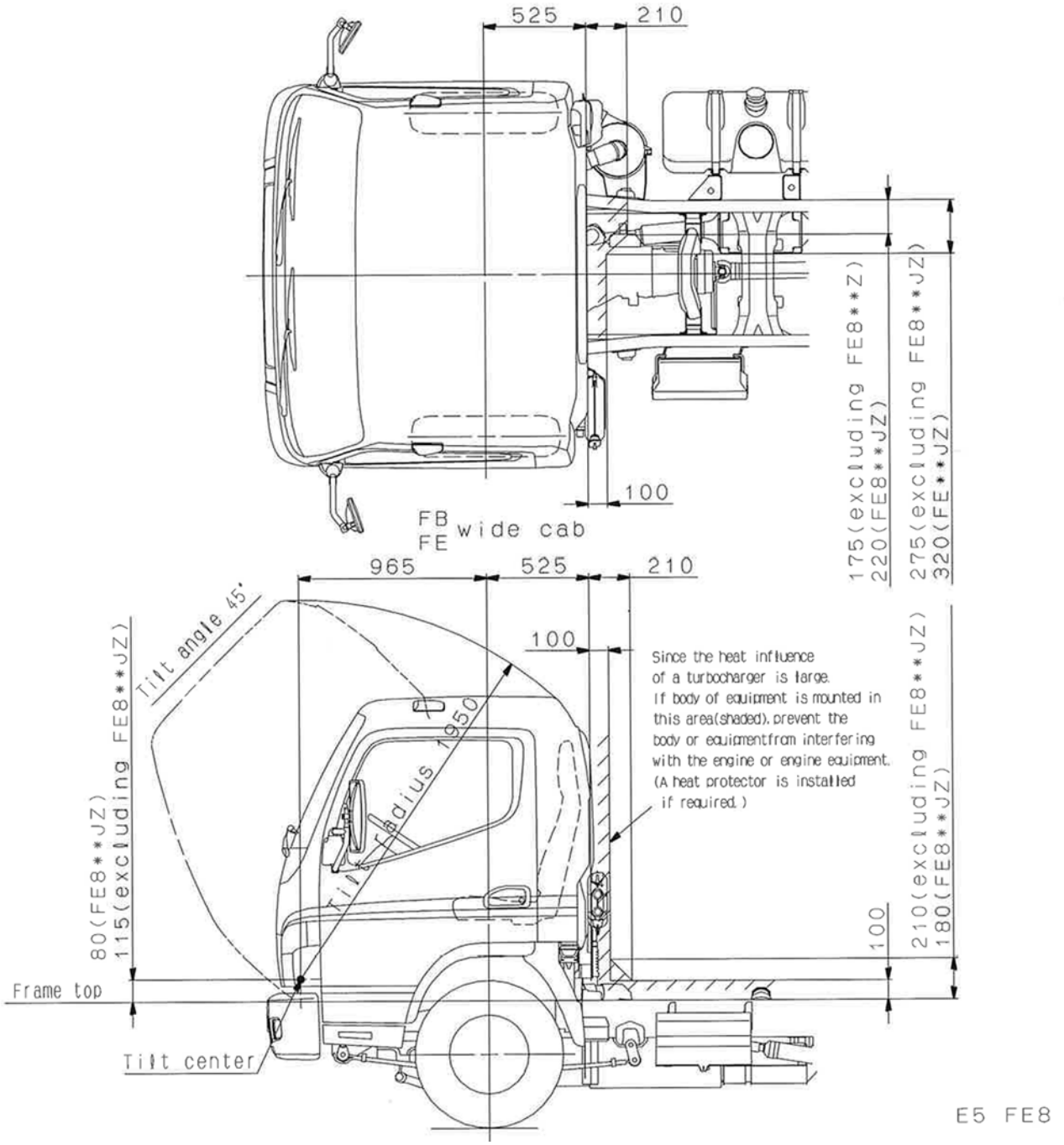
9.4.3 Cab side view



FE standard cab



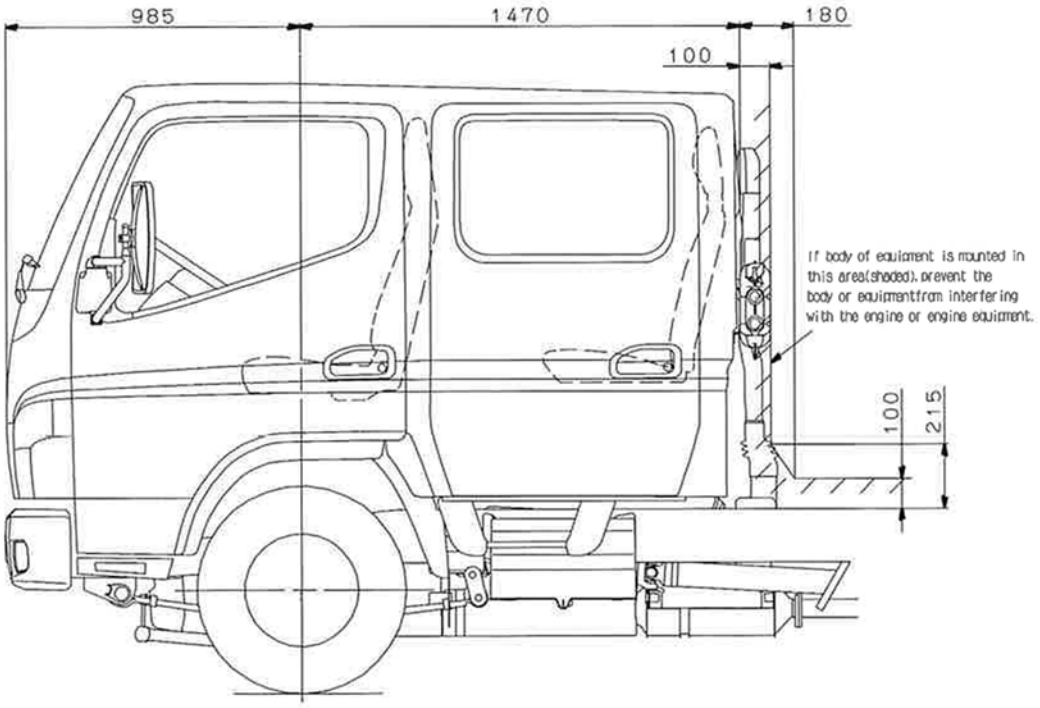
E5 FE7


525
210
100
FB
FE
wide cab
175(excluding FE8**Z)
220(FE8**JZ)
275(excluding FE8**JZ)
320(FE**JZ)
965
525
210
100
Tilt angle 45°
Tilt radius 1950
Since the heat influence
of a turbocharger is large.
If body of equipment is mounted in
this area(shaded), prevent the
body or equipment from interfering
with the engine or engine equipment.
(A heat protector is installed
if required.)
80(FE8**JZ)
115(excluding FE8**JZ)
Frame top
Tilt center
100
210(excluding FE8**JZ)
180(FE8**JZ)
E5 FE8

9.4 Chassis cab drawings

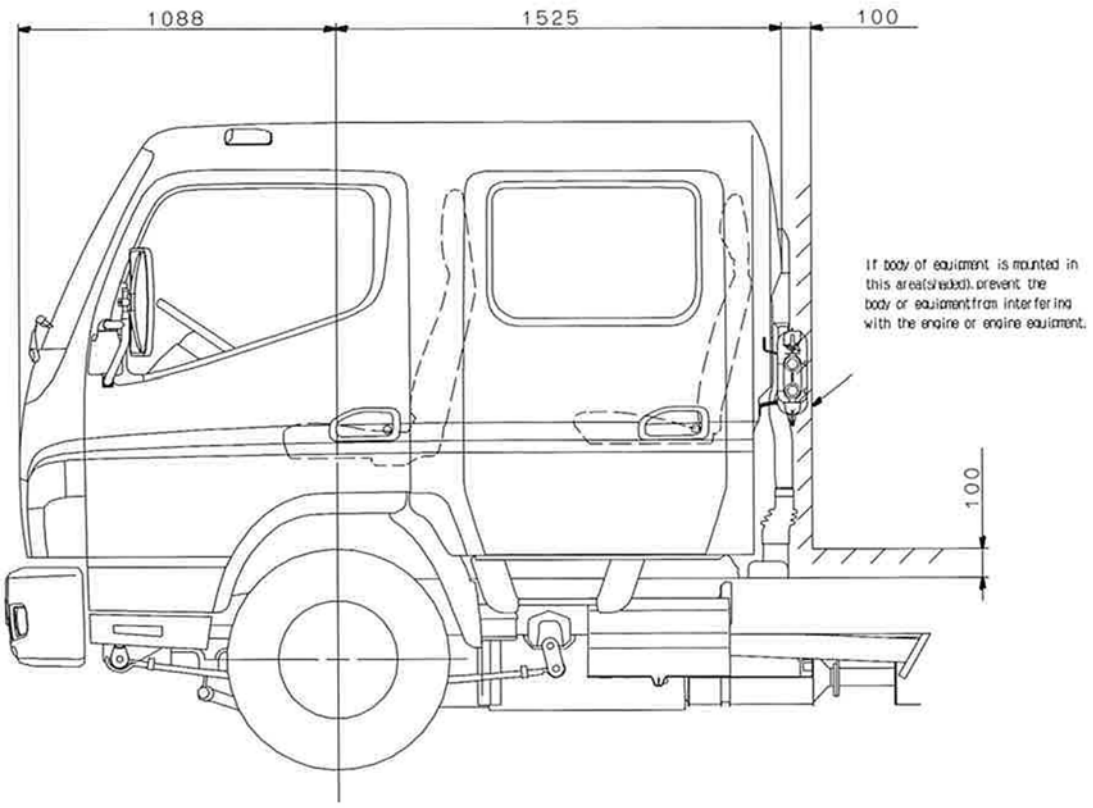
E5 FE7W

FE standard double cab



9.4 Chassis cab drawings

FB. FE wide double cab



9.5 Frame layout

Frame Layout & Frame Section Drawing. DXF FILE (For Autocad) –click below Model name

***PDF FILE –view file, unable to edit– ***

PDF files of Frame Layout & Frame Section Drawing. will be shown on clicking the Model name or Section name in left bookmark.

9.5.1 Frame layout

Model	Down Load
FB73SB4SLEA1	.dxf
FB73SD4SLEA1	.dxf
FB73SE4SLEA1 FB73SE4WLEA1	.dxf
FB83SB4SLEA1 FB83SB4SREA1 FB83SB4SLEA2 FB83SB4SREA2	.dxf
FB83SD4SLEA1 FB83SD4SREA1 FB83SD4SLEA2 FB83SD4SREA2	.dxf
FB83SE4SLEA1 FB83SE4SREA1 FB83SE4SLEA2 FB83SE4SREA2	.dxf
FB83SE4WLEA1 FB83SE4WREA1	.dxf
FB83SG4SLEA1 FB83SG4SREA1 FB83SG4SLEA2 FB83SG4SREA2	.dxf

Model	Down Load
FE74SB4SLEA1	.dxf
FE74SD4SLEA1	.dxf
FE74SE4SLEA1	.dxf
FE84SC6SLEA2 FE84SC6SREA2 FE85SC6SLEA2 FE85SC6SREA2	.dxf
FE84SE6SLEA2 FE84SE6SREA2 FE85SE6SLEA2 FE85SE6SREA2 FE84SE6SLEA3 FE84SE6SREA3 FE85SE6SLEA3 FE85SE6SREA3	.dxf
FE84SG6SLEA2 FE84SG6SREA2 FE85SG6SLEA2 FE85SG6SREA2 FE84SG6SLEA3 FE84SG6SREA3 FE85SG6SLEA3 FE85SG6SREA3	.dxf
FE84SG6WLEA2 FE84SG6WREA2 FE85SG6WLEA2 FE85SG6WREA2 FE84SG6WLEA3 FE84SG6WREA3 FE85SG6WLEA3 FE85SG6WREA3	.dxf

Model	Down Load
FE85SH6SLEA2 FE85SH6SREA2 FE85SH6SLEA3 FE85SH6SREA3	.dxf
FE85SH6WLEA2 FE85SH6WREA2 FE85SH6WLEA3 FE85SH6WREA3	.dxf
FE85SJZSLEA2 FE85SJZSREA2 FE85SJZSLEA3 FE85SJZSREA3	.dxf

9.5.2 Frame section drawing

Model	Section	Down Load
FB73S*4	A-A, B-B, C-C,D-D, E-E, F-F, H-H	.dxf
FB83S*4	A-A, B-B	.dxf
FE74S*4	C-C	.dxf
FE84S*6	D-D	.dxf
FE85S*6	E-E, F-F	.dxf
FE85SJZ	G-G, H-H, I-I	.dxf

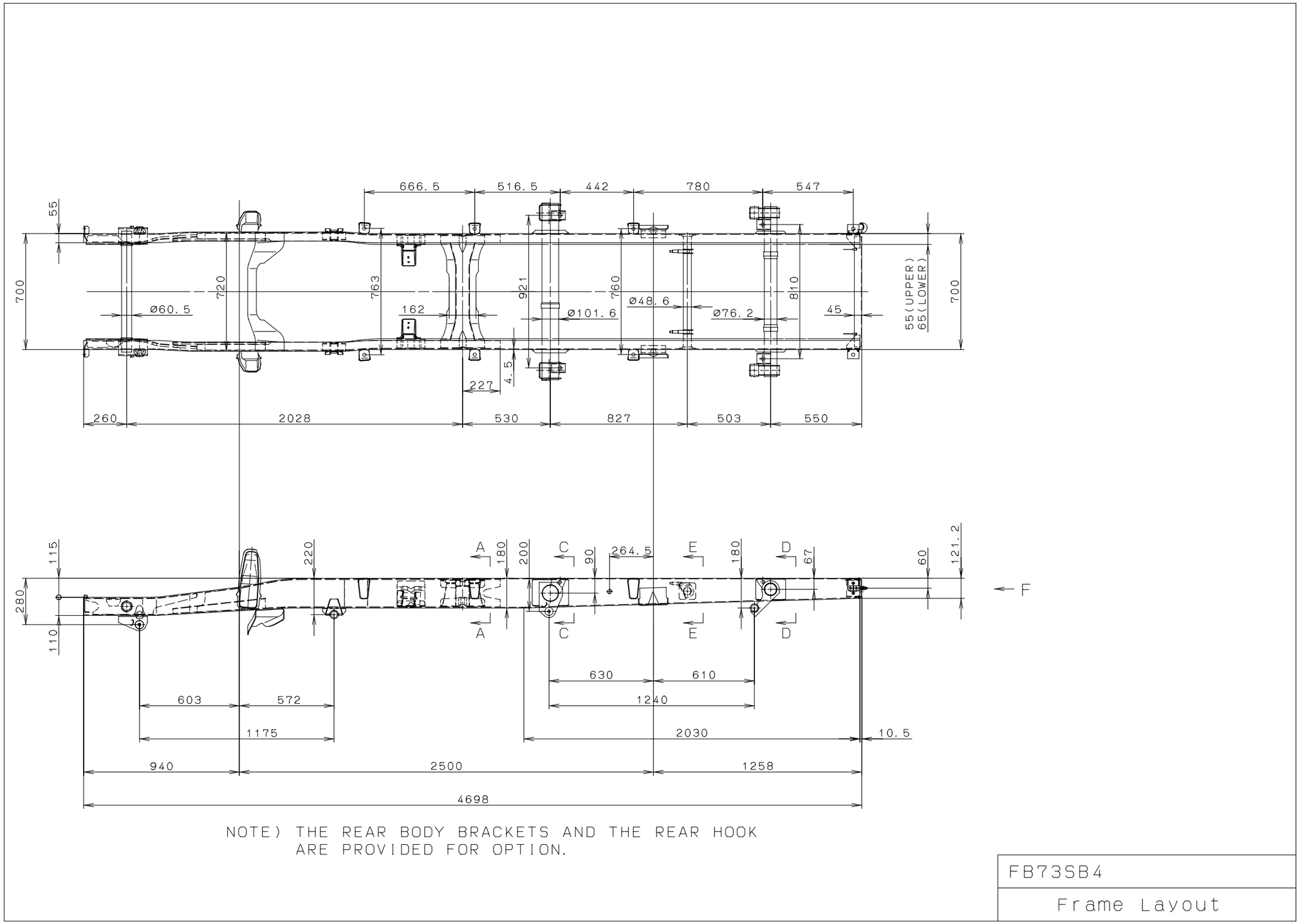
9.5.3 Frame section module

Model	Down Load
FB73SB4SLEA1 FE74SB4SLEA1	.dxf
FB73SD4SLEA1 FE74SD4SLEA1	.dxf
FB73SE4SLEA1 FB73SE4WLEA1 FE74SE4SLEA1	.dxf
FB83SB4SLEA1 FB83SB4SREA1 FB83SB4SLEA2 FB83SB4SREA2	.dxf
FB83SD4SLEA1 FB83SD4SREA1 FB83SD4SLEA2 FB83SD4SREA2	.dxf
FB83SE4SLEA1 FB83SE4SREA1 FB83SE4SLEA2 FB83SE4SREA2 FB83SE4WLEA1 FB83SE4WREA1	.dxf
FB83SG4SLEA1 FB83SG4SREA1 FB83SG4SLEA2 FB83SG4SREA2	.dxf
FE84SC6SLEA2 FE84SC6SREA2 FE85SC6SLEA2 FE85SC6SREA2	.dxf

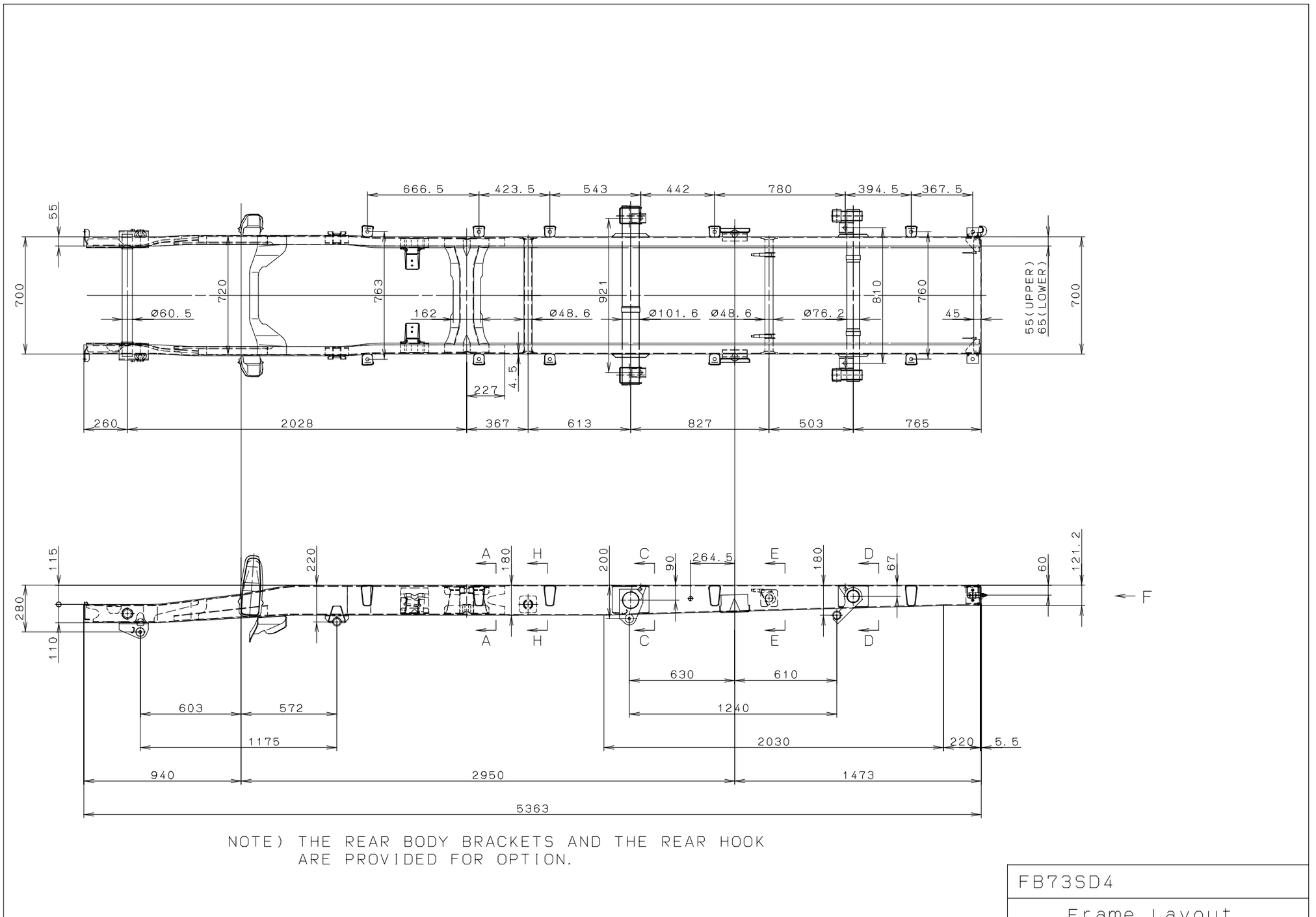
Model	Down Load
FE84SE6SLEA2 FE84SE6SREA2 FE85SE6SLEA2 FE85SE6SREA2 FE84SE6SLEA3 FE84SE6SREA3 FE85SE6SLEA3 FE85SE6SREA3	.dxf
FE84SG6SLEA2 FE84SG6SREA2 FE85SG6SLEA2 FE85SG6SREA2 FE84SG6SLEA3 FE84SG6SREA3 FE85SG6SLEA3 FE85SG6SREA3 FE84SG6WLEA2 FE84SG6WREA2 FE85SG6WLEA2 FE85SG6WREA2 FE84SG6WLEA3 FE84SG6WREA3 FE85SG6WLEA3 FE85SG6WREA3	.dxf
FE85SH6SLEA2 FE85SH6SREA2 FE85SH6WLEA2 FE85SH6WREA2 FE85SH6SLEA3 FE85SH6SREA3 FE85SH6WLEA3 FE85SH6WREA3	.dxf
FE85SJZSLEA2 FE85SJZSREA2 FE85SJZSLEA3 FE85SJZSREA3	.dxf

9.5 Frame layout

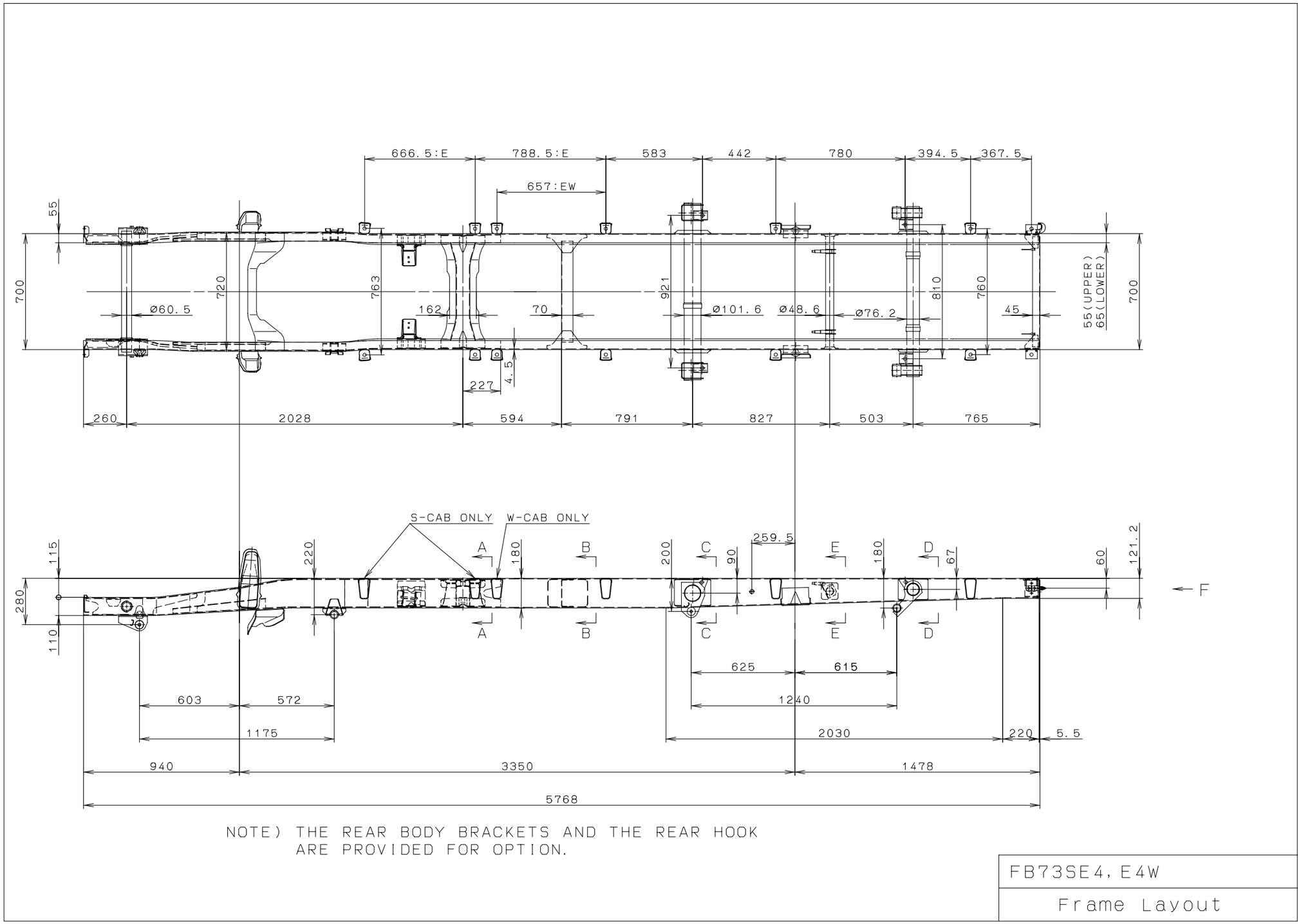
9.5.1 Frame layout



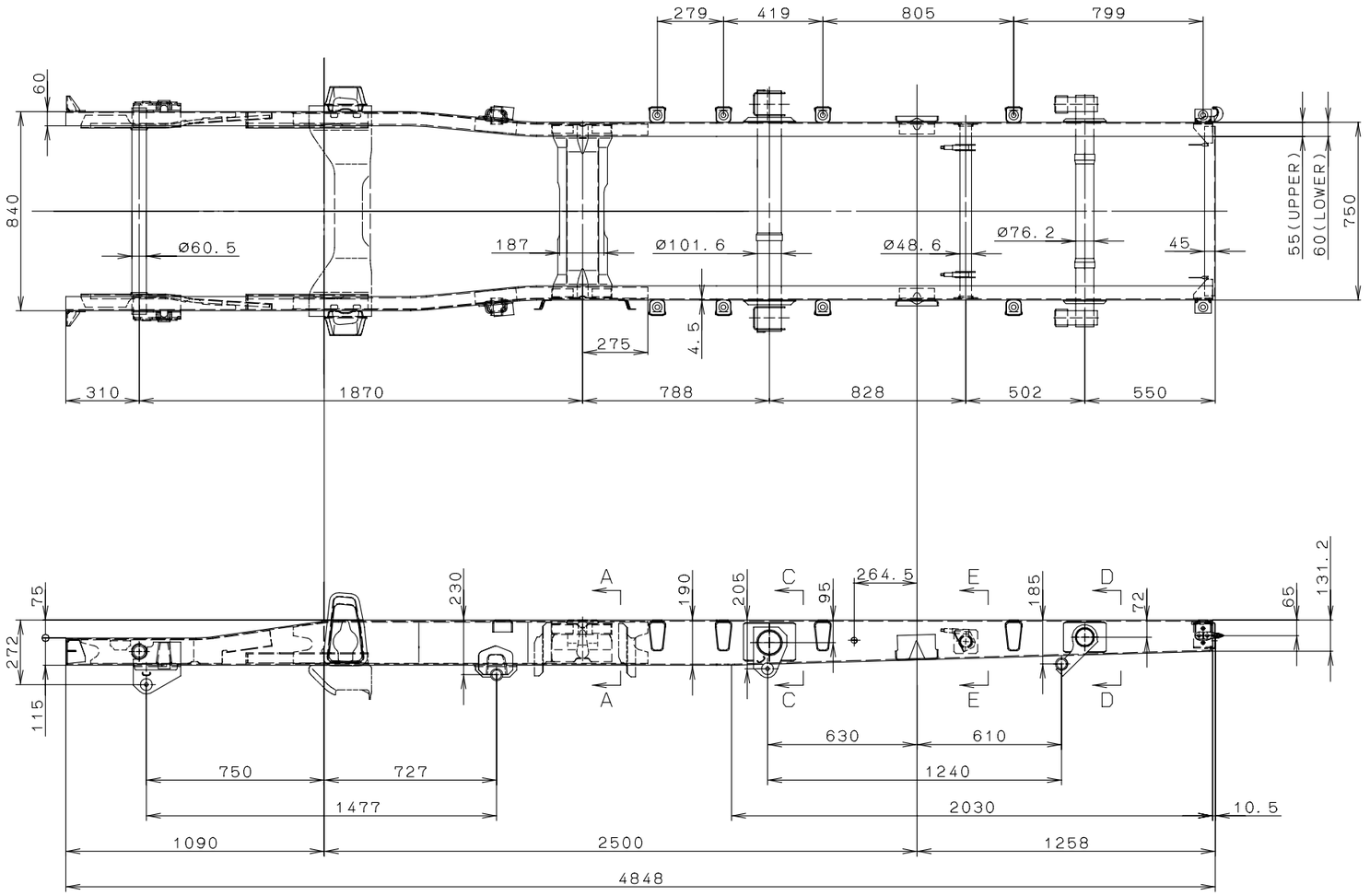
9.5 Frame layout



9.5 Frame layout



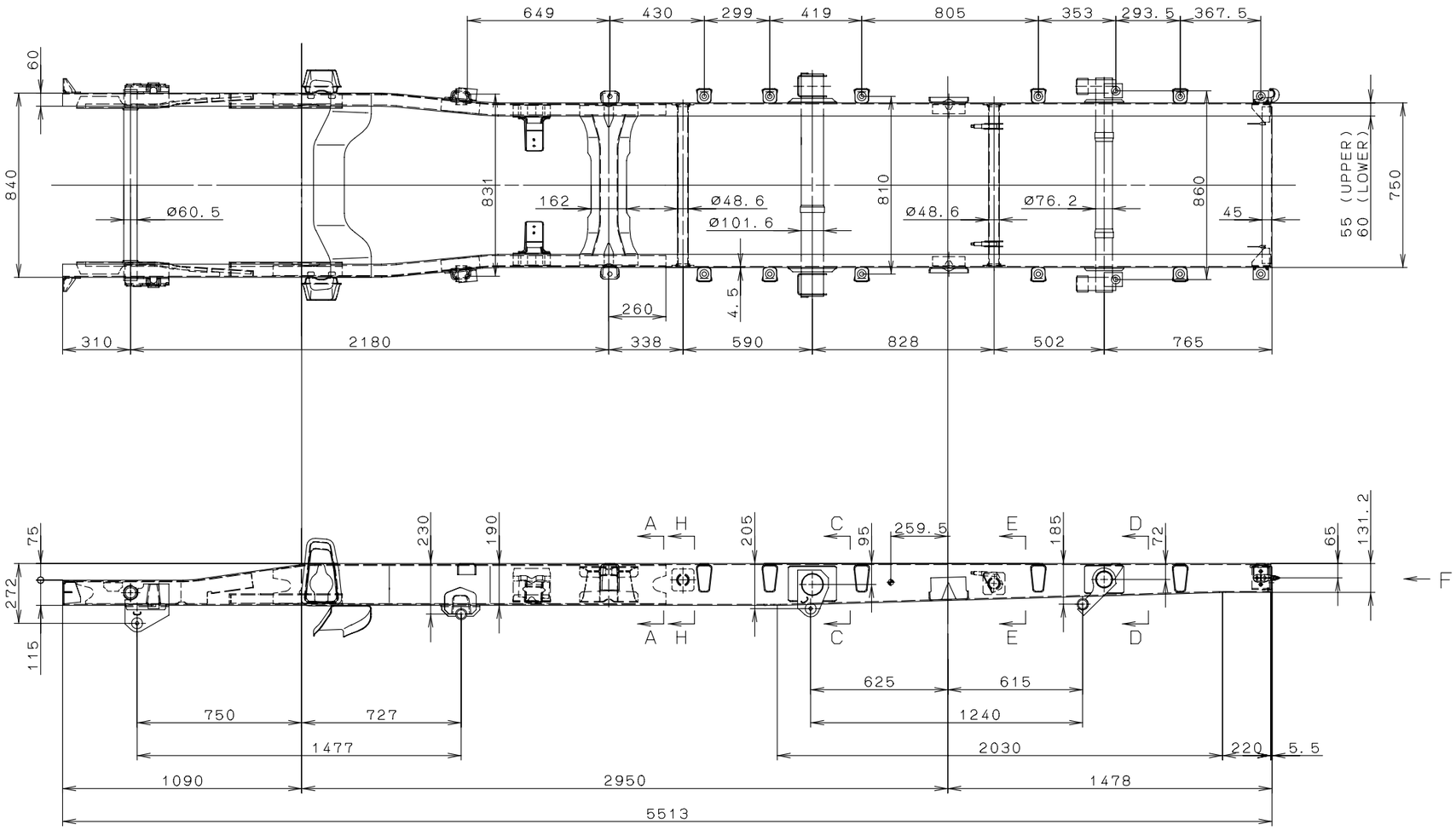
9.5 Frame layout



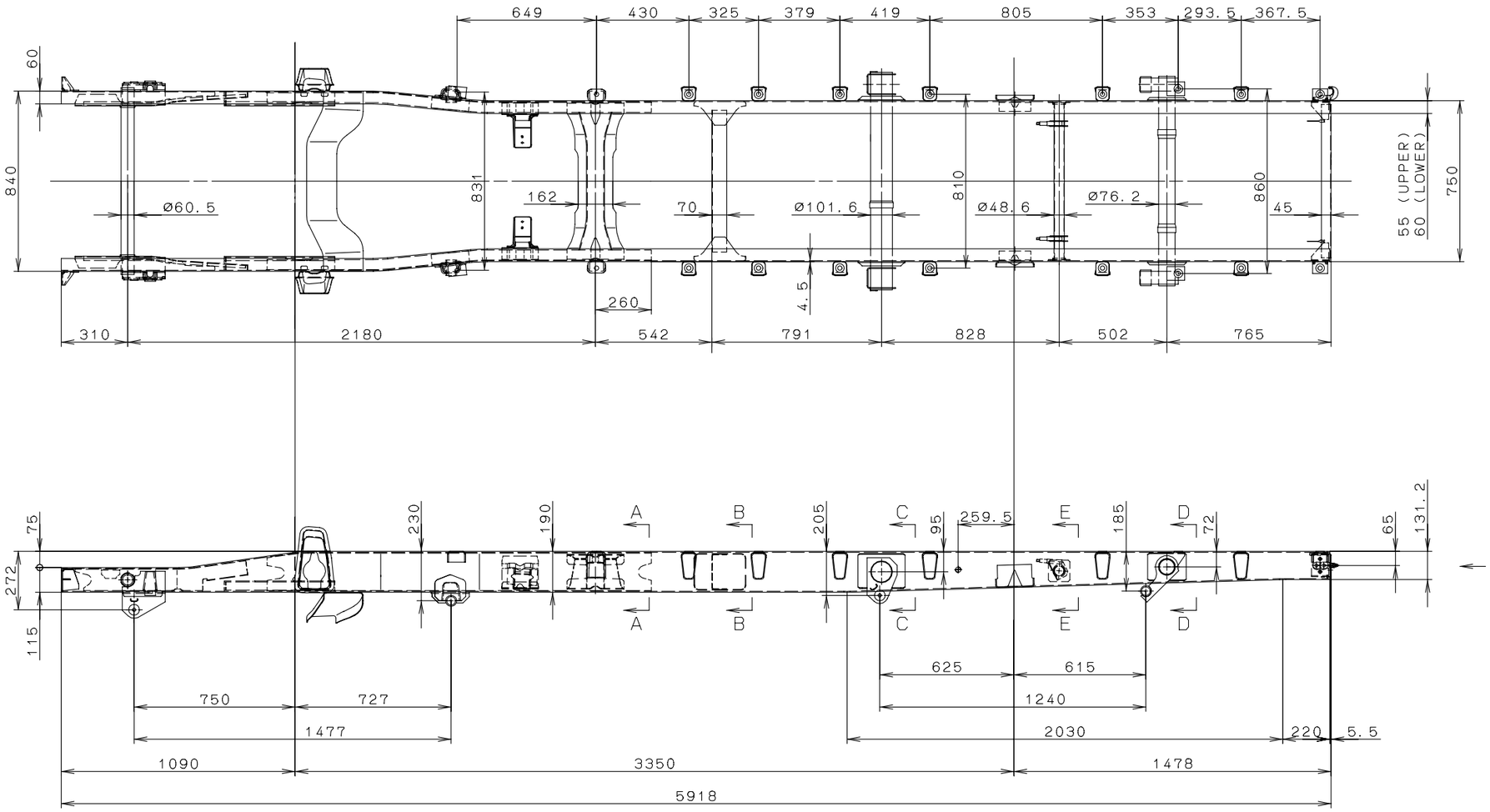
NOTE) THE REAR BODY BRACKETS AND THE REAR HOOK ARE PROVIDED FOR OPTION.

FB83SB4
Frame Layout

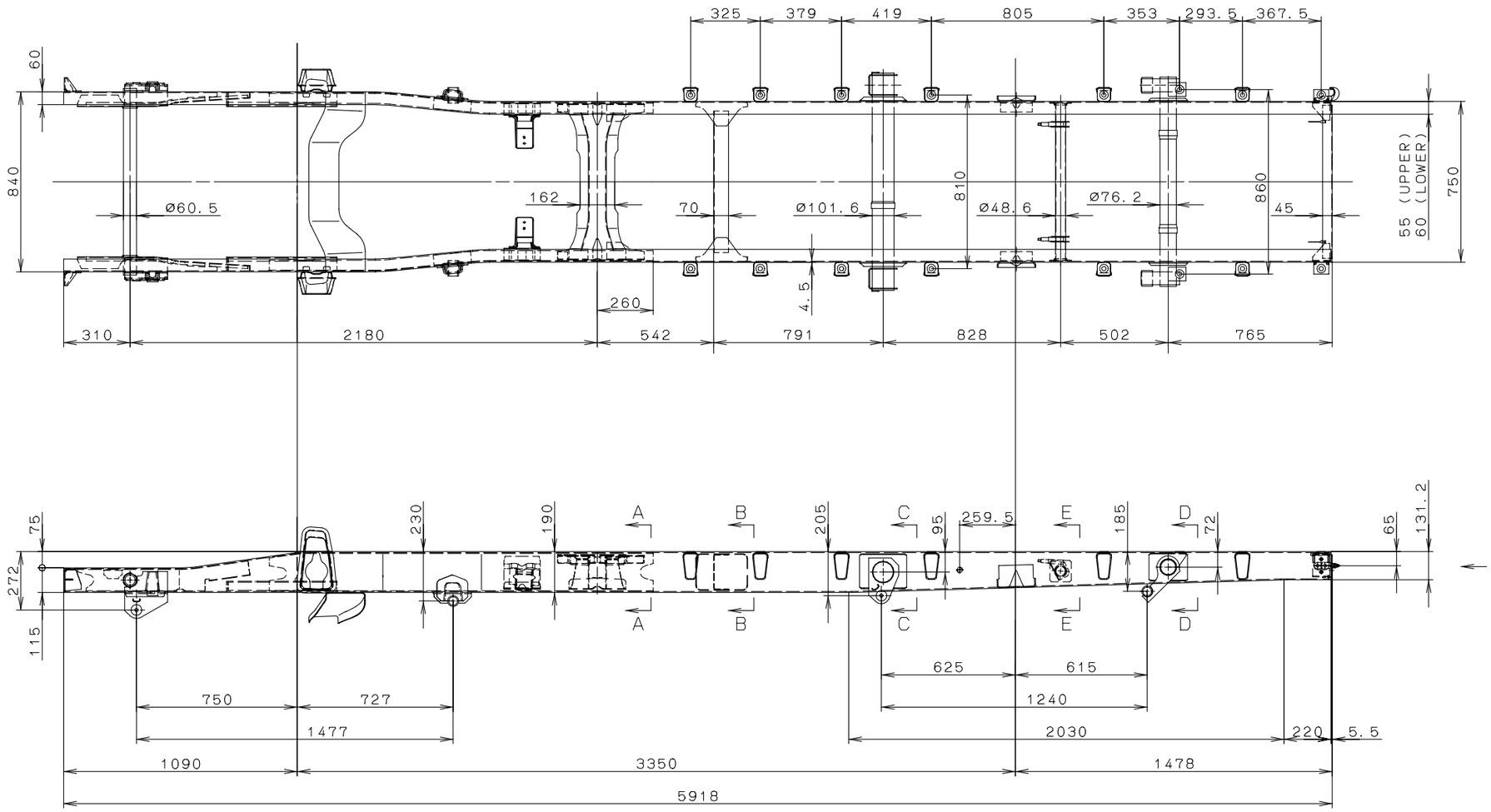
9.5 Frame layout



9.5 Frame layout



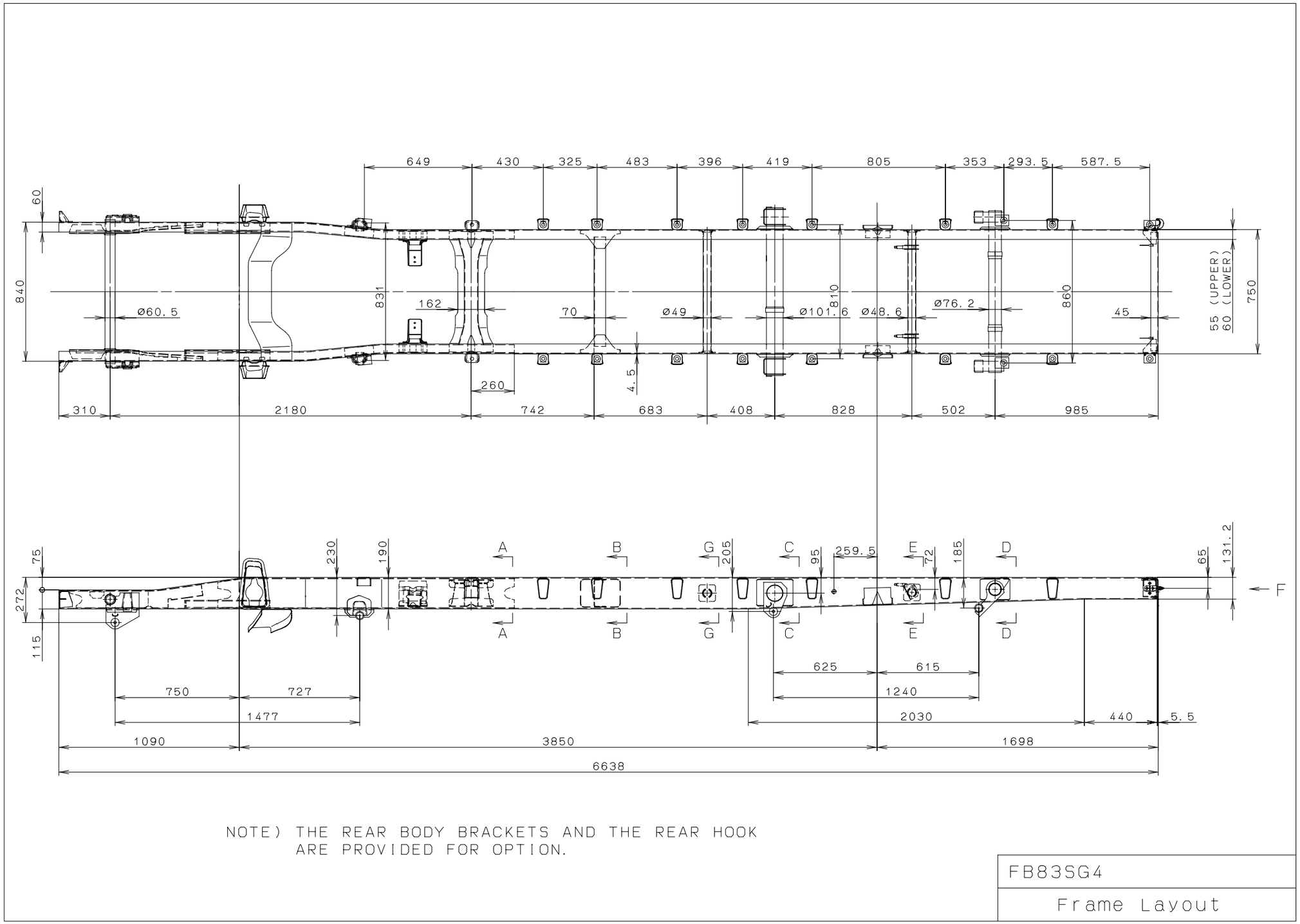
9.5 Frame layout



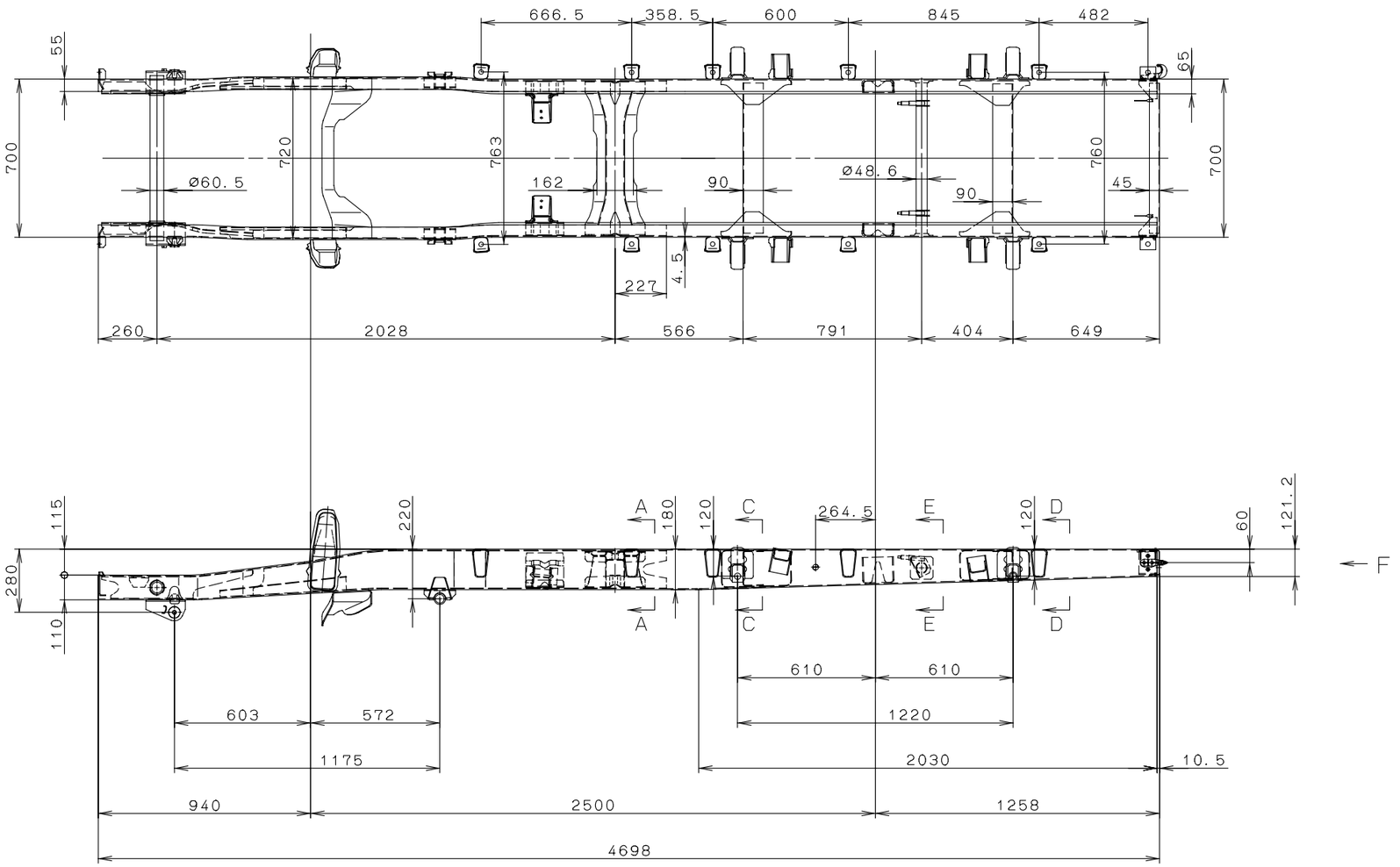
NOTE) THE REAR BODY BRACKETS AND THE REAR HOOK
ARE PROVIDED FOR OPTION.

FB83SE4W
Frame Layout

9.5 Frame layout



9.5 Frame layout

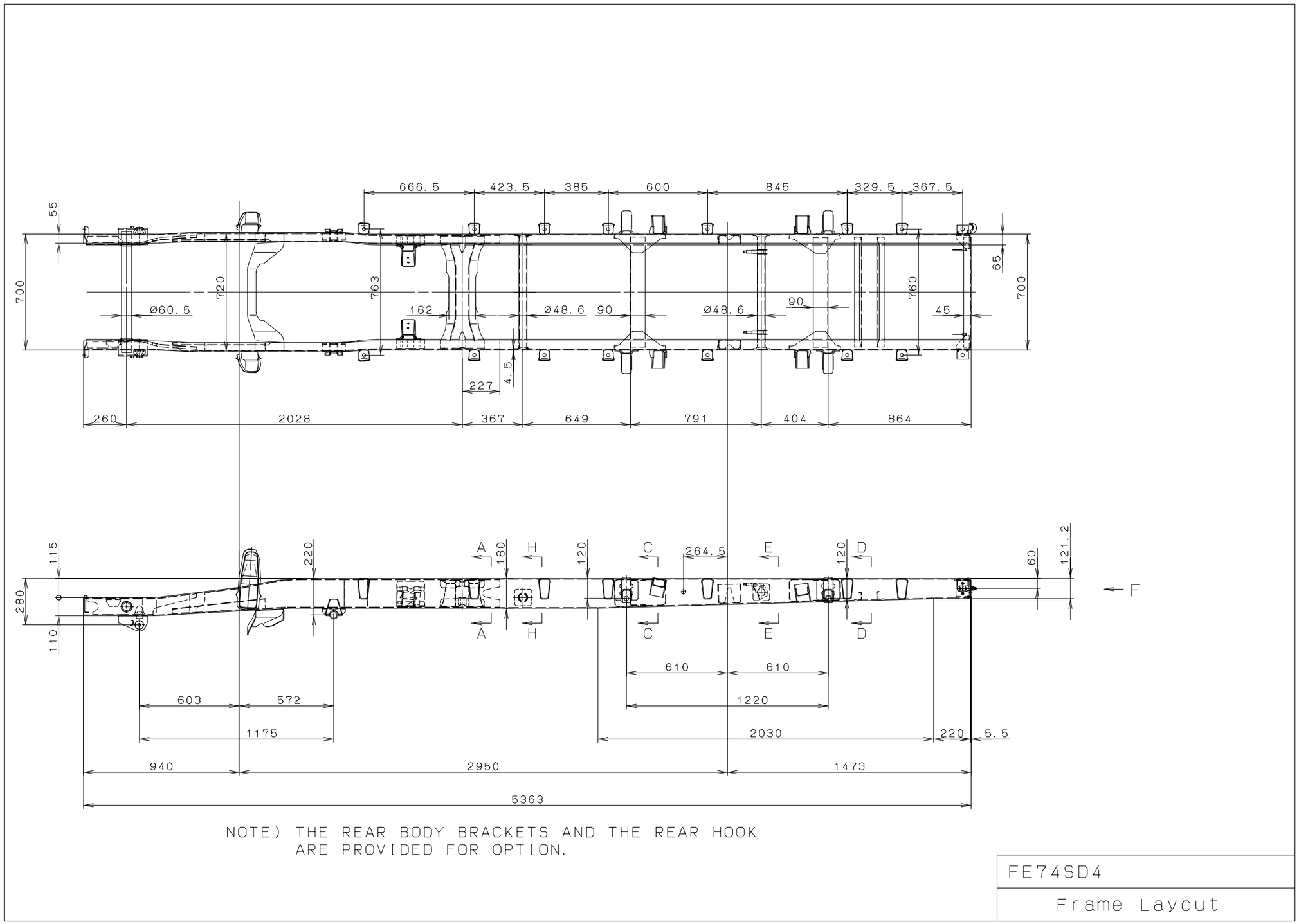


NOTE) THE REAR BODY BRACKETS AND THE REAR HOOK ARE PROVIDED FOR OPTION.

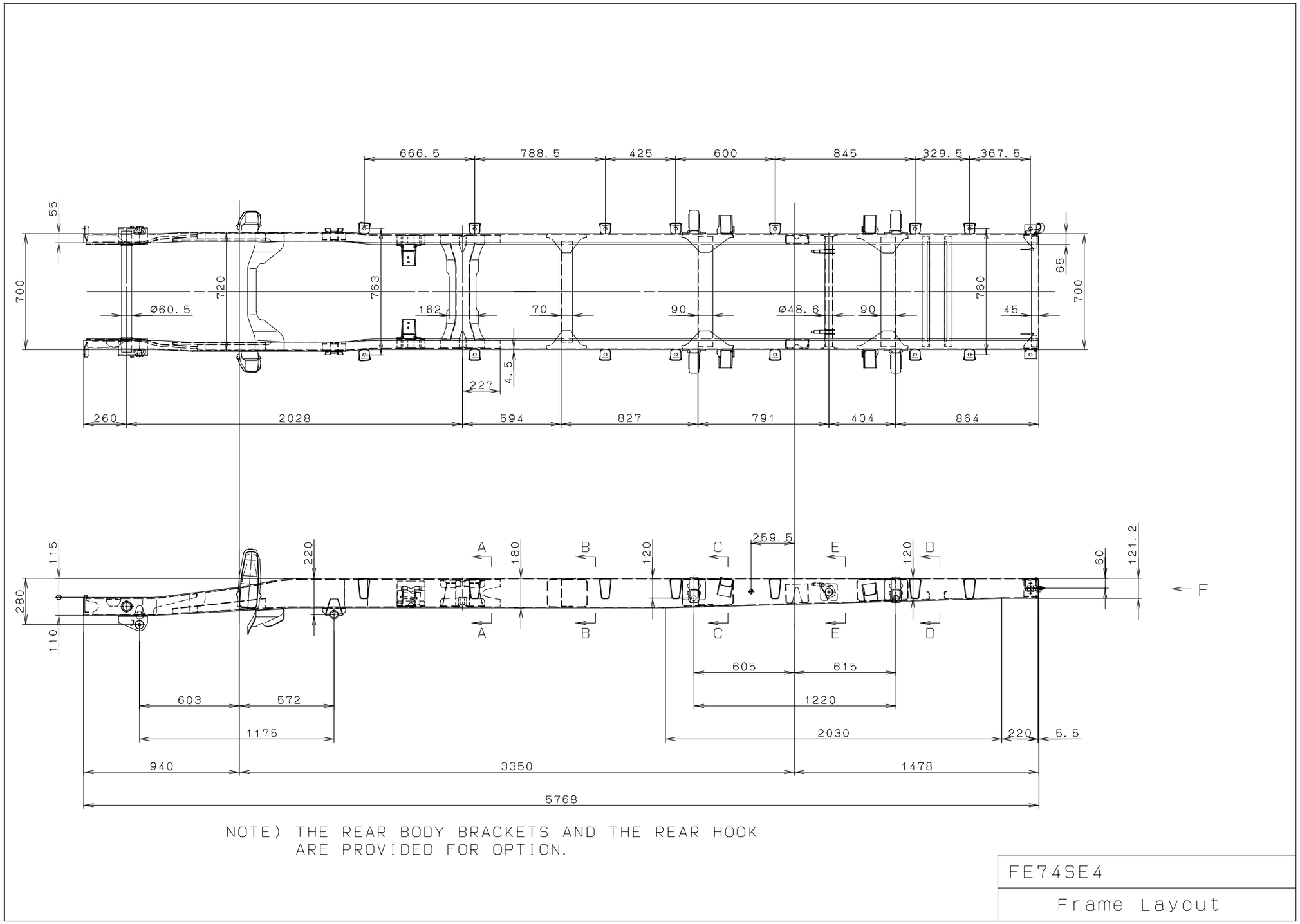
FE74SB4

Frame Layout

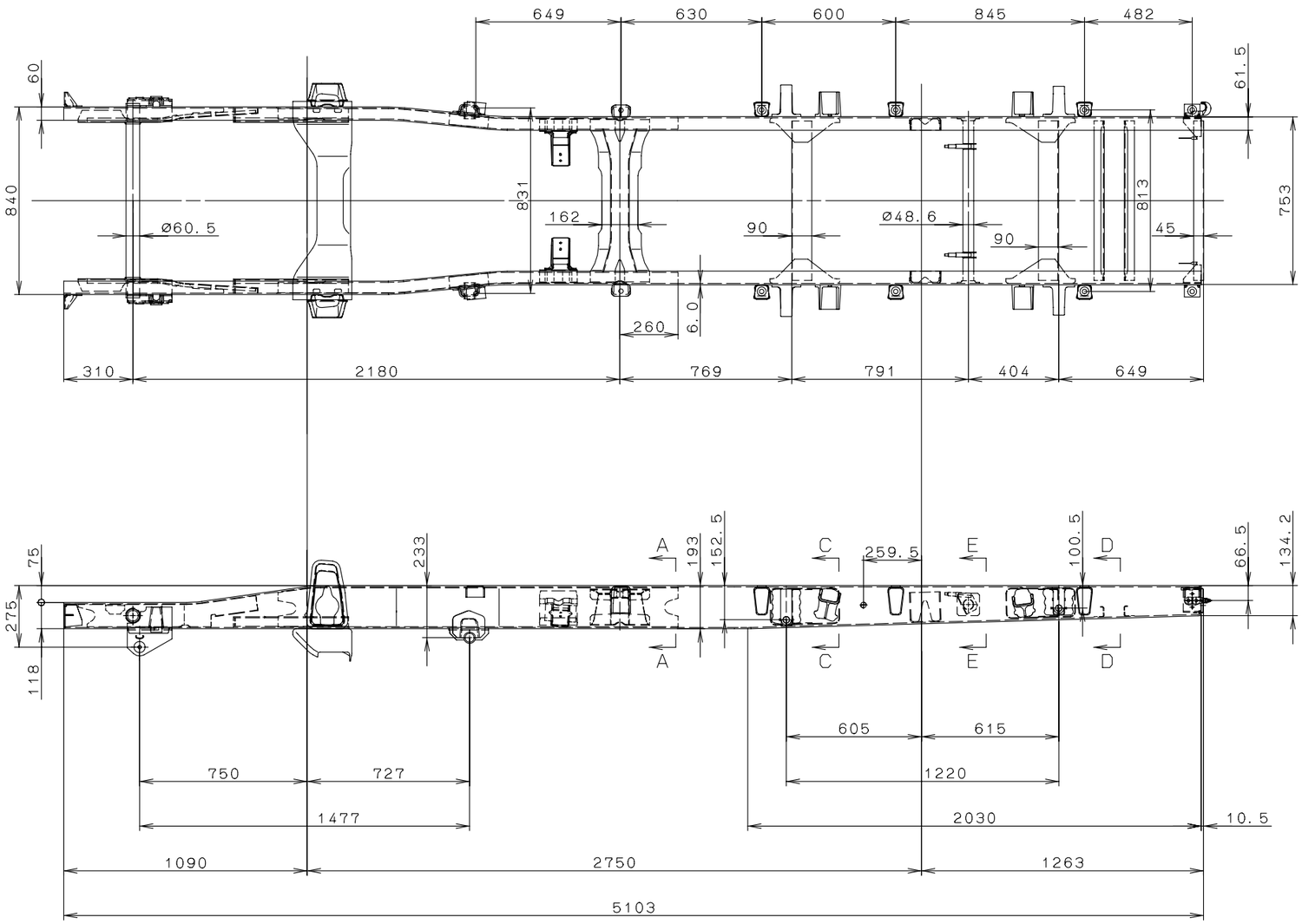
9.5 Frame layout



9.5 Frame layout



9.5 Frame layout

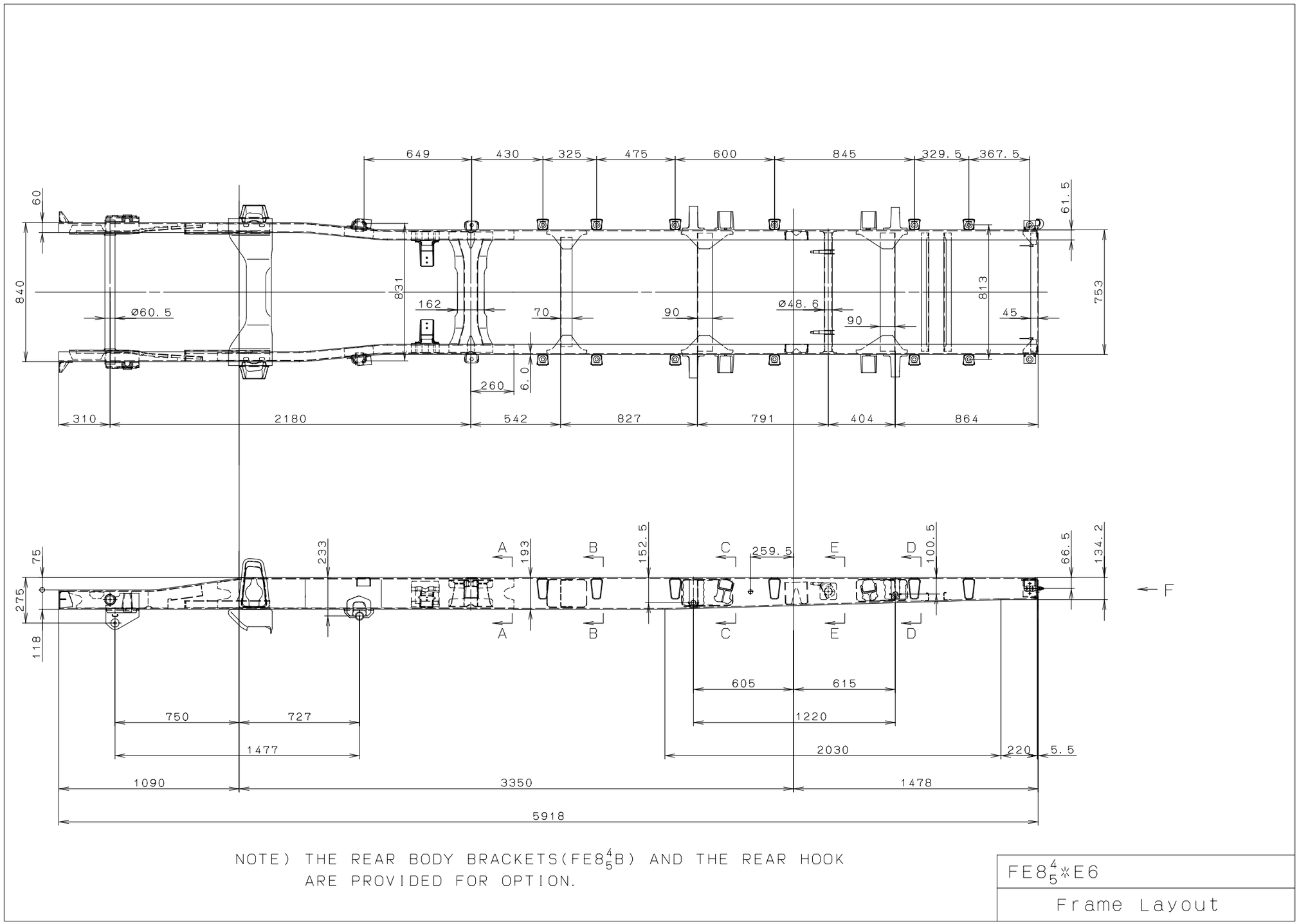


NOTE) THE REAR BODY BRACKETS(FE8$^{4}_{5}$B) AND THE REAR HOOK ARE PROVIDED FOR OPTION.

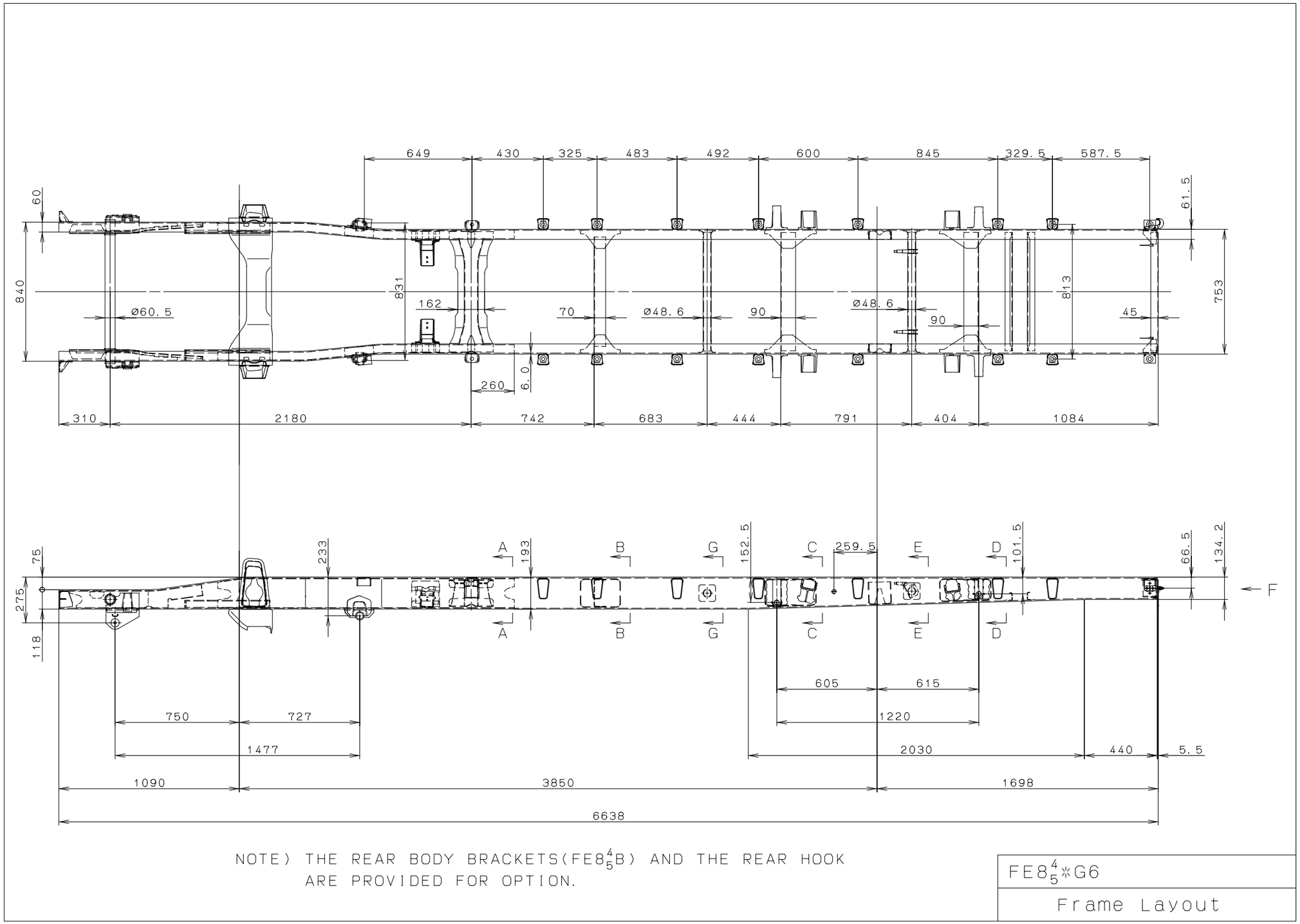
FE8$^{4}_{5}$*C6

Frame Layout

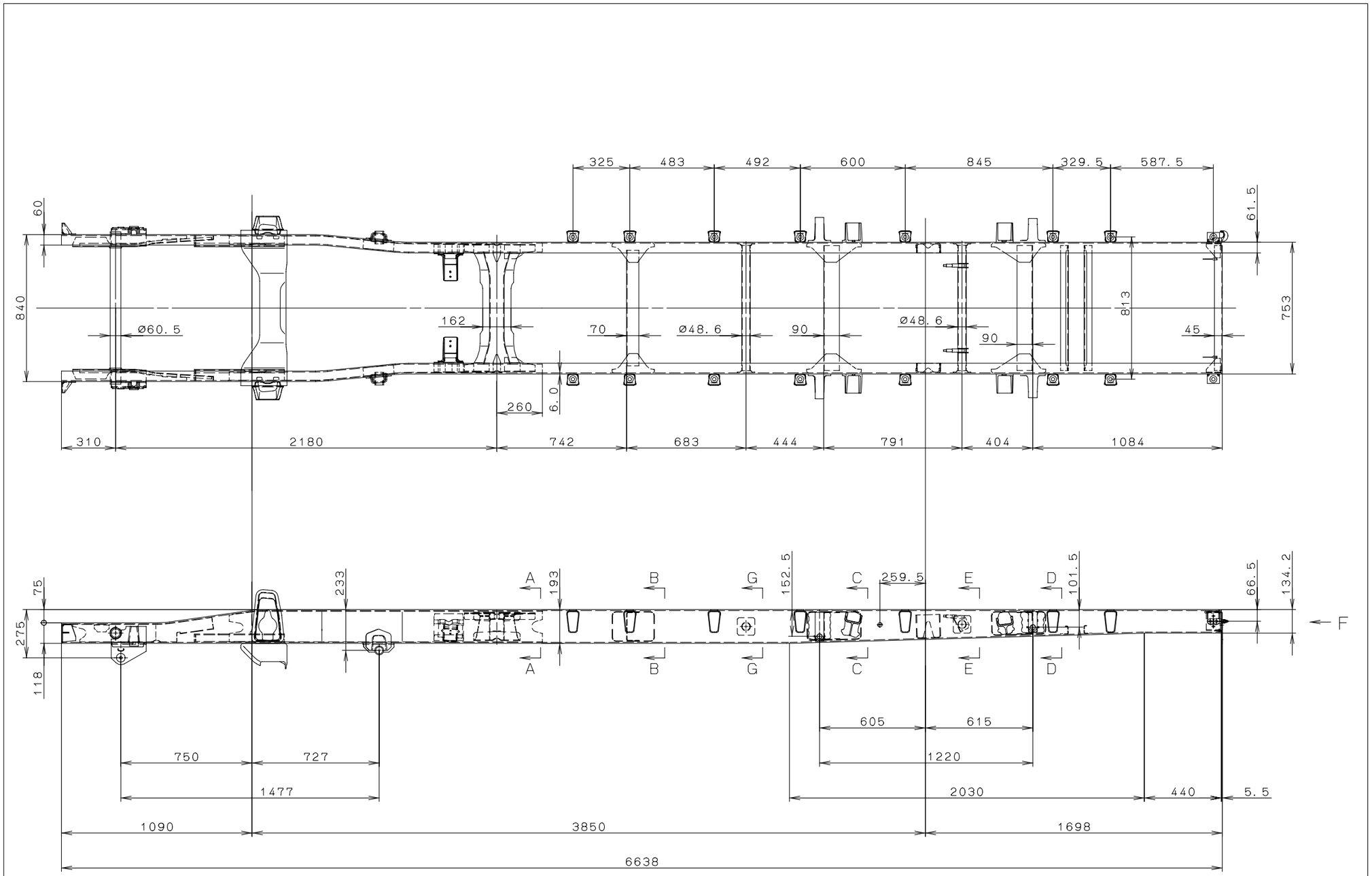
9.5 Frame layout



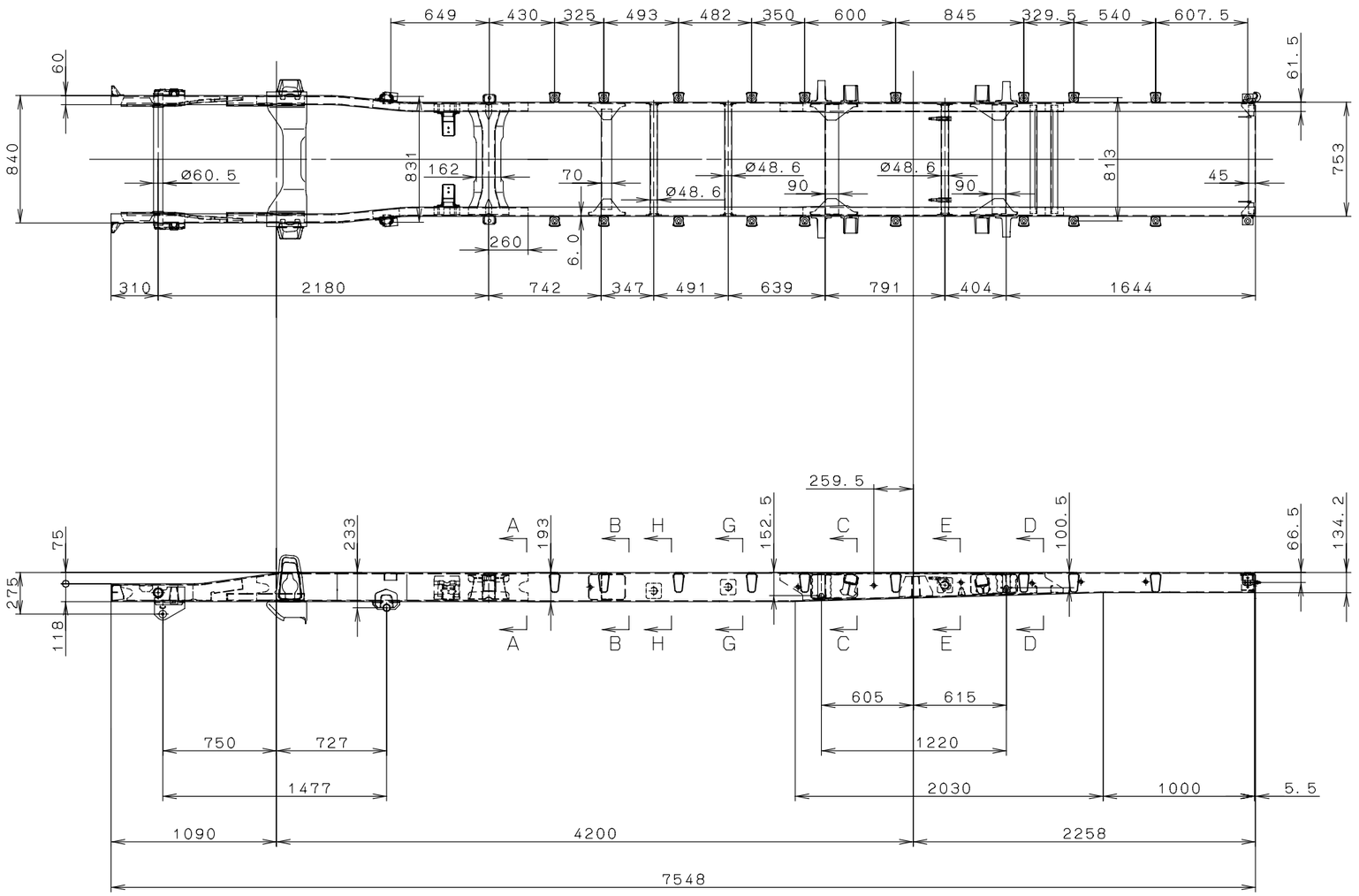
9.5 Frame layout



9.5 Frame layout



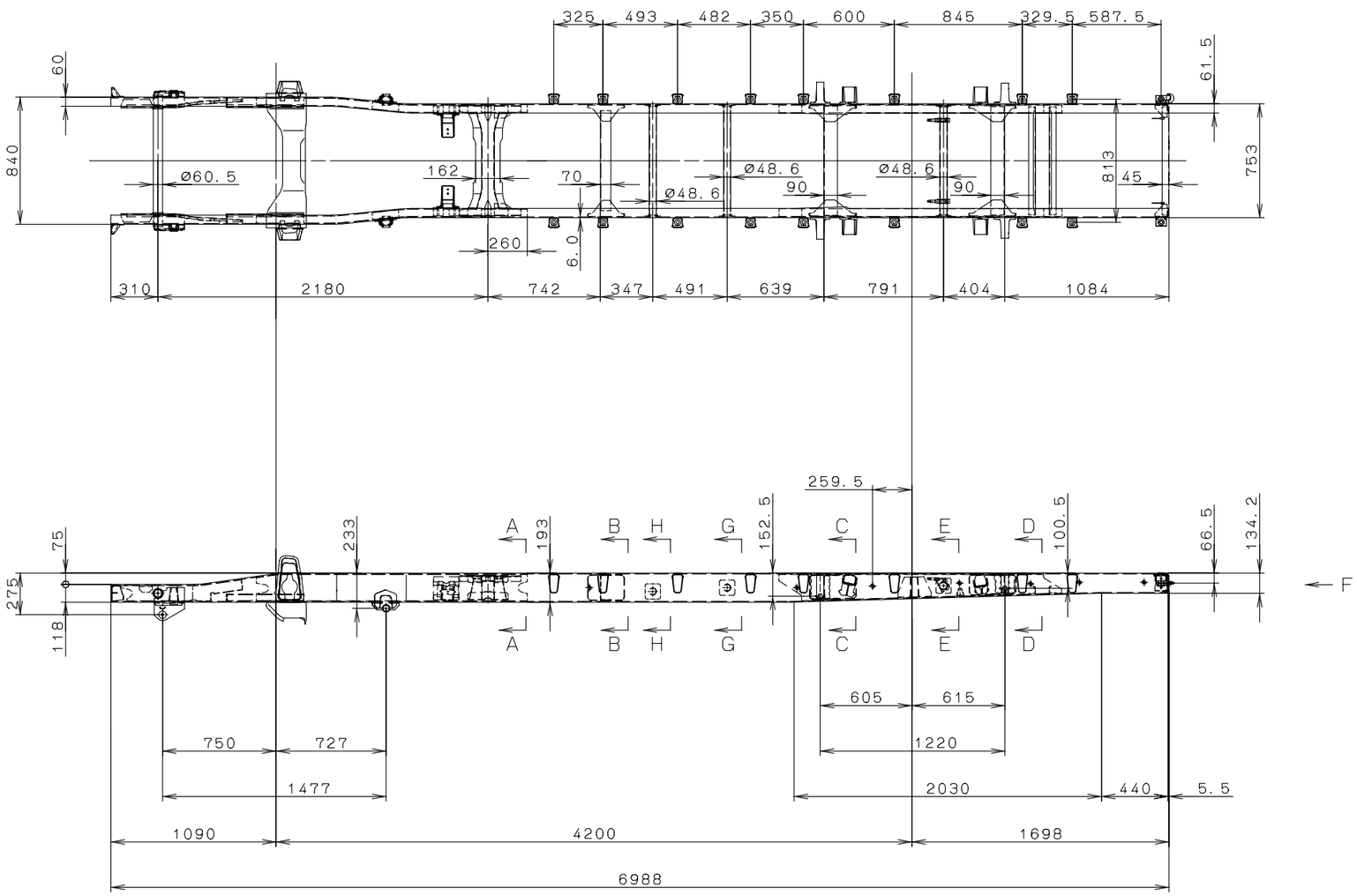
9.5 Frame layout



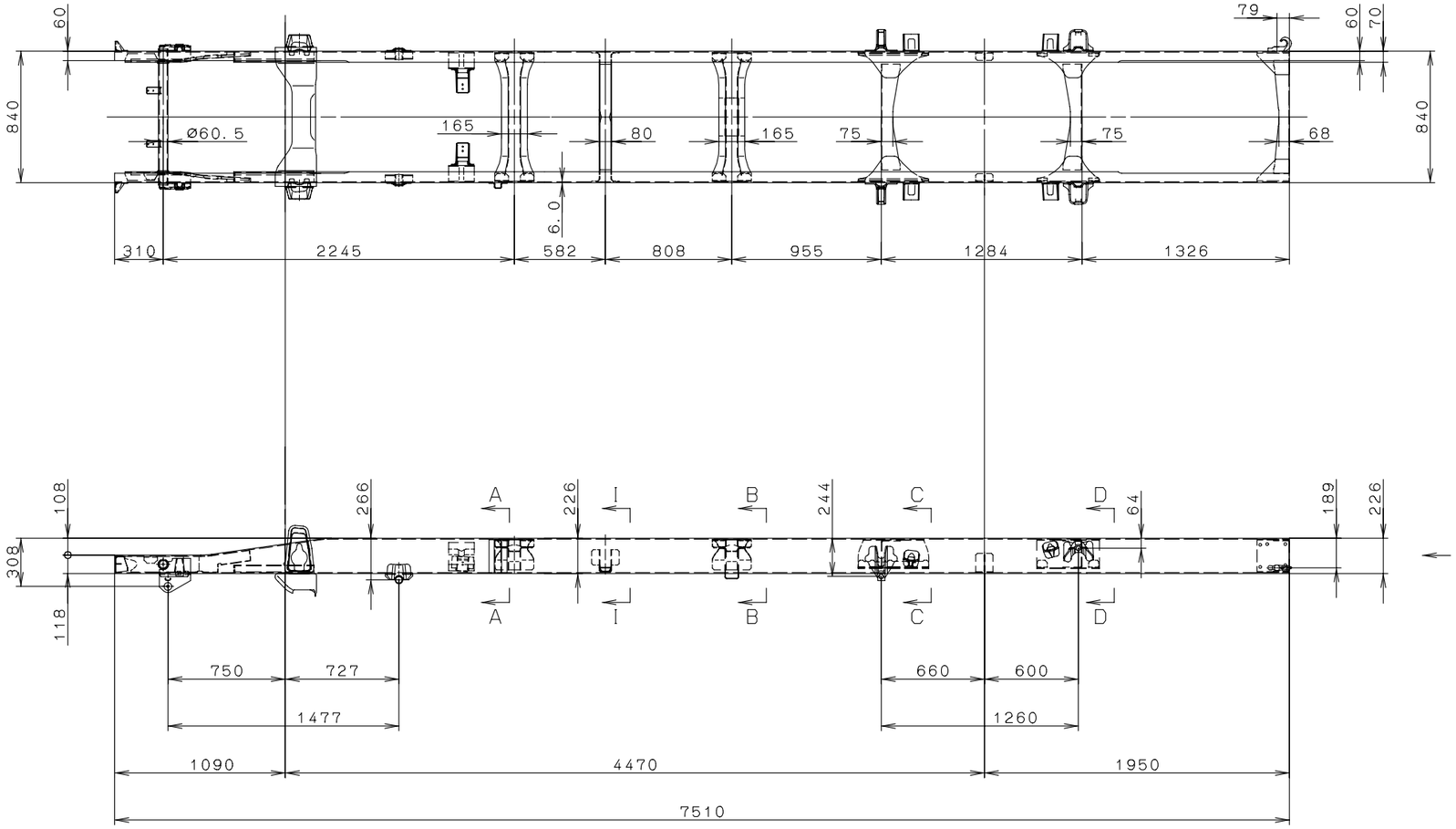
NOTE) THE REAR BODY BRACKETS(FE85B) AND THE REAR HOOK ARE PROVIDED FOR OPTION.

FE85*H6
Frame Layout

9.5 Frame layout



9.5 Frame layout



NOTE) THE REAR HOOK IS PROVIDED FOR OPTION.

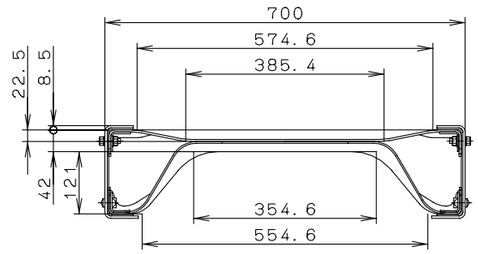
FE85*JZ

Frame Layout

9.5 Frame layout

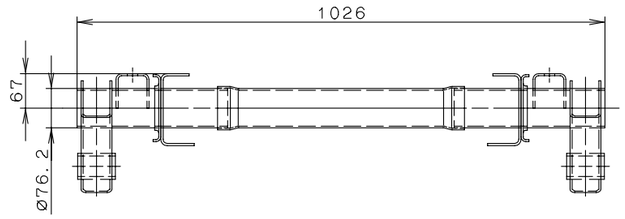
9.5.2 Frame section drawing

Section A-A
(No. 2 Cross-member)



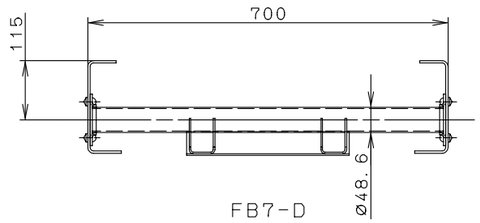
FB7

Section D-D
(No. 5 Cross-member)



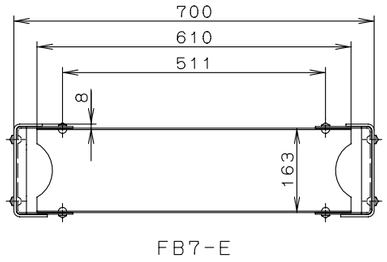
FB7

Section H-H
(Pipe Cross-member)



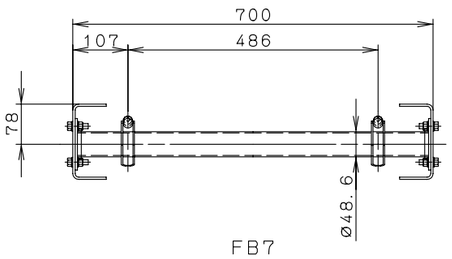
FB7-D

Section B-B
(No. 3 Cross-member)



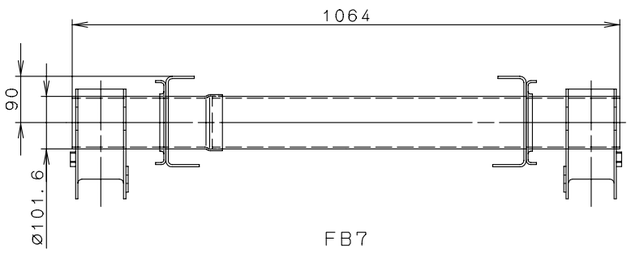
FB7-E

Section E-E
(Absorber Cross-member)



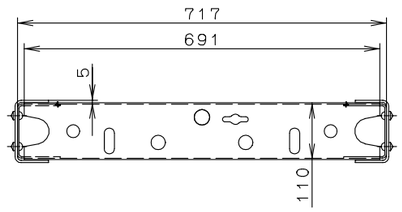
FB7

Section C-C
(No. 4 Cross-member)



FB7

Section F-F
(Rear Cross-member)

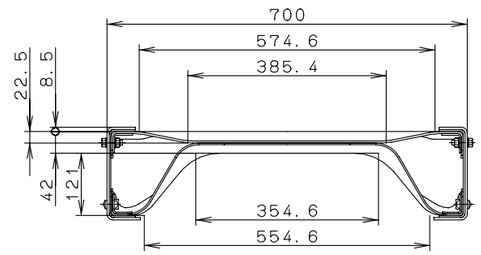


FB7

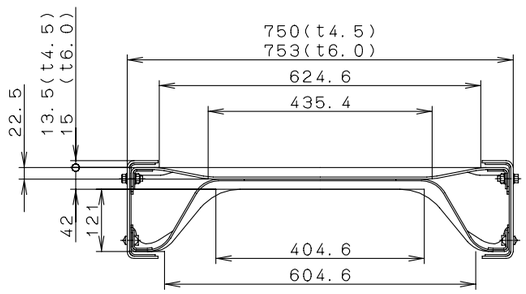
Section A-A, B-B, C-C, D-D, E-E, F-F, H-H
Frame Section Drawing

9.5 Frame layout

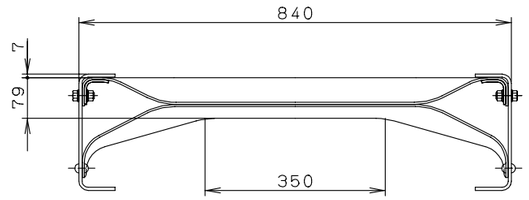
Section A-A (No. 2 Cross-member)



FE7

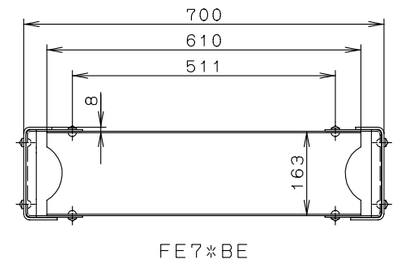


FE8, FB8
(excluding FE85*J)

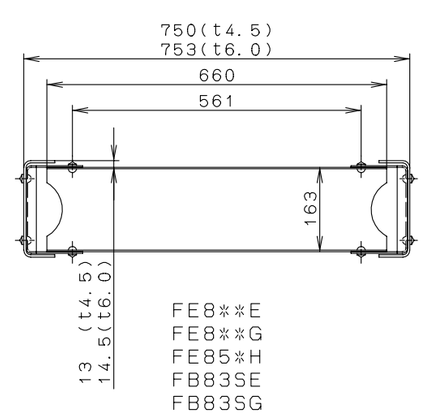


FE85*J

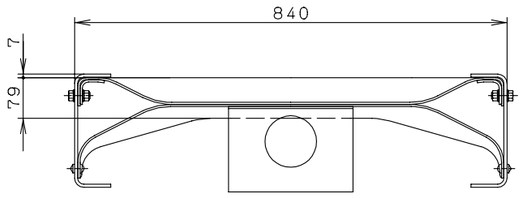
Section B-B (No. 3 Cross-member)



FE7*BE



FE8**E
FE8**G
FE85*H
FB83SE
FB83SG

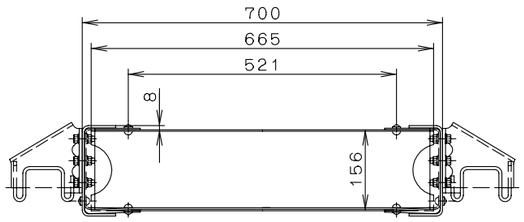


FE85*J

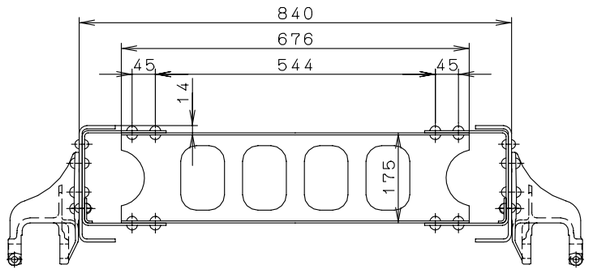
Section A-A, B-B
Frame Section Drawing

9.5 Frame layout

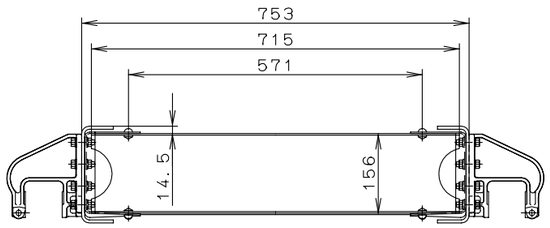
Section C-C (No. 4 Cross-member)



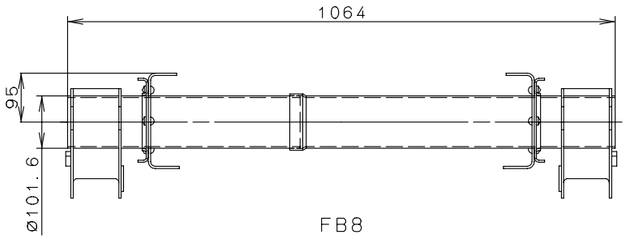
FE7



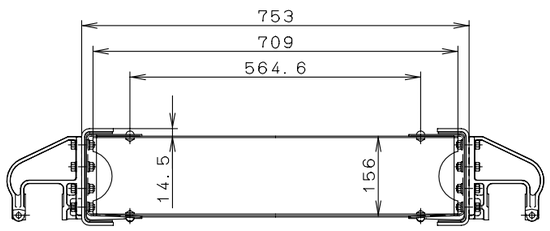
FE85*J



FE8
(Excluding FE85*H, FE85*J)



FB8



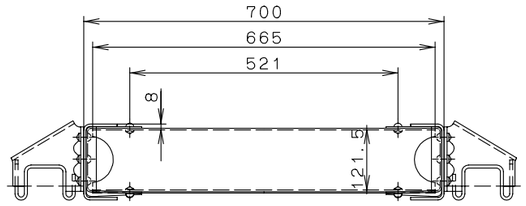
FE85*H

Section C-C

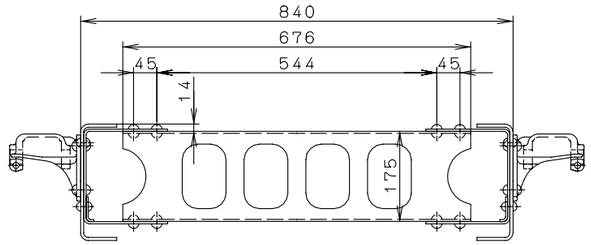
Frame Section Drawing

9.5 Frame layout

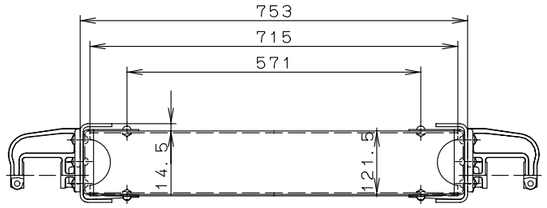
Section D-D (No.5 Cross-member)



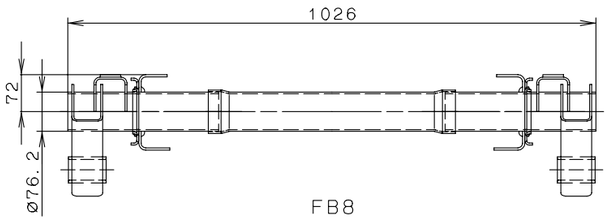
FE7



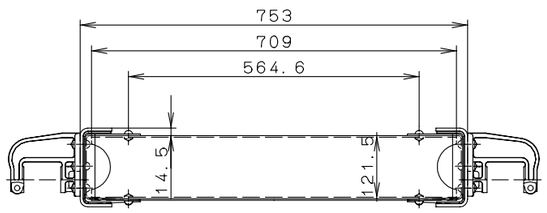
FE85*J



FE8
(Excluding FE85*H, FE85*J)



FB8



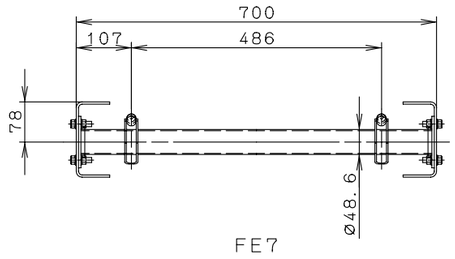
FE85*H

Section D-D

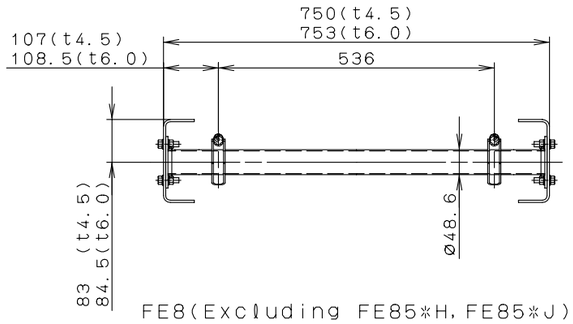
Frame Section Drawing

9.5 Frame layout

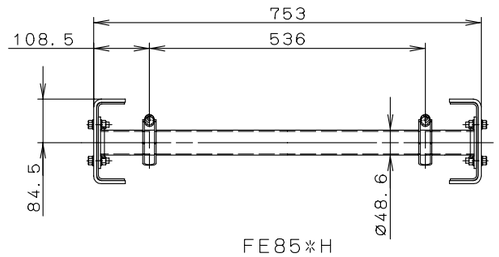
Section E-E (Absorber Cross-member)



FE7

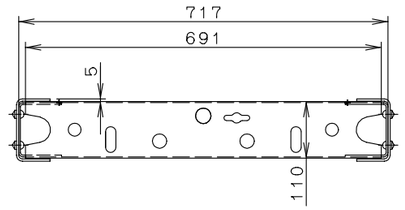


FE8(Excluding FE85*H, FE85*J)
FB8

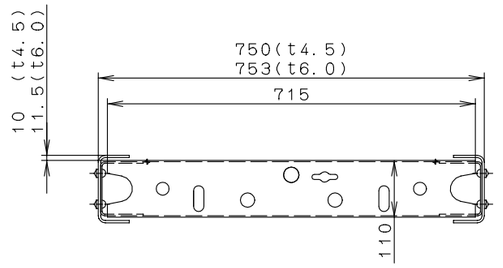


FE85*H

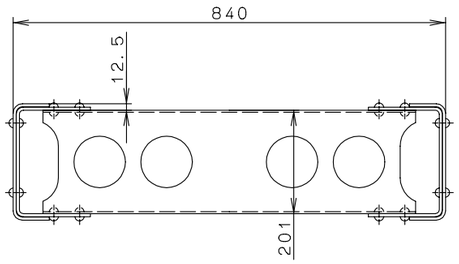
Section F-F (Rear Cross-member)



FE7



FE8(Excluding FE85*J)
FB8

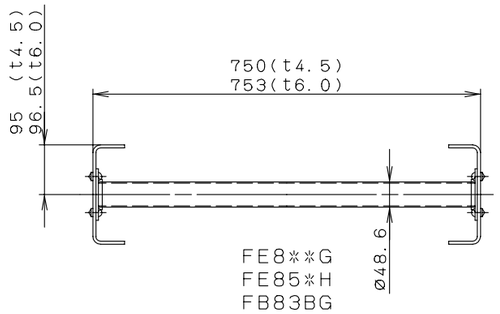


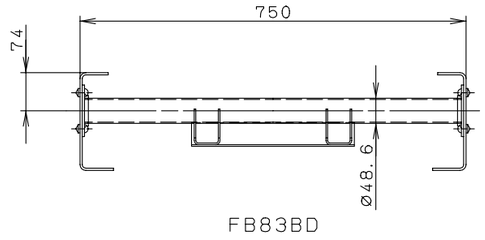
FE85*J

Section E-E, F-F
Frame Section Drawing

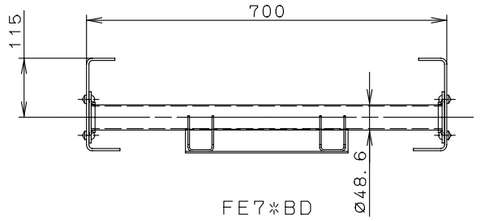
9.5 Frame layout

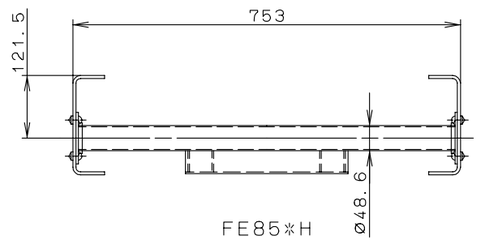
Section G-G (Pipe Cross-member)



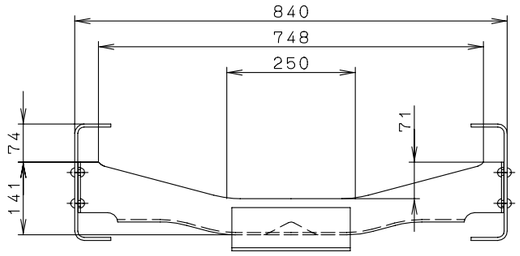


Section H-H (Pipe Cross-member)





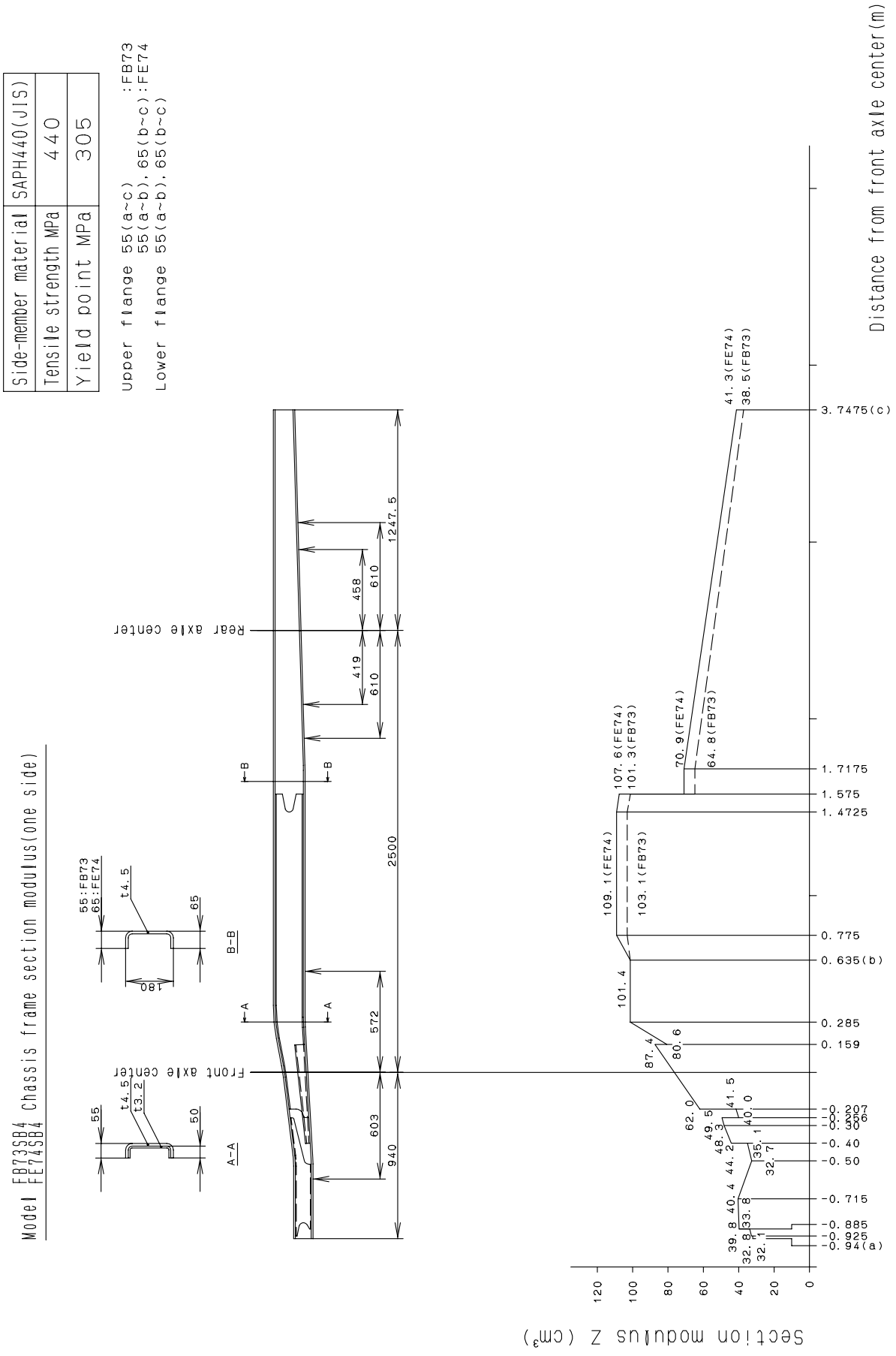
Section I-I (Center Bearing Bracket)



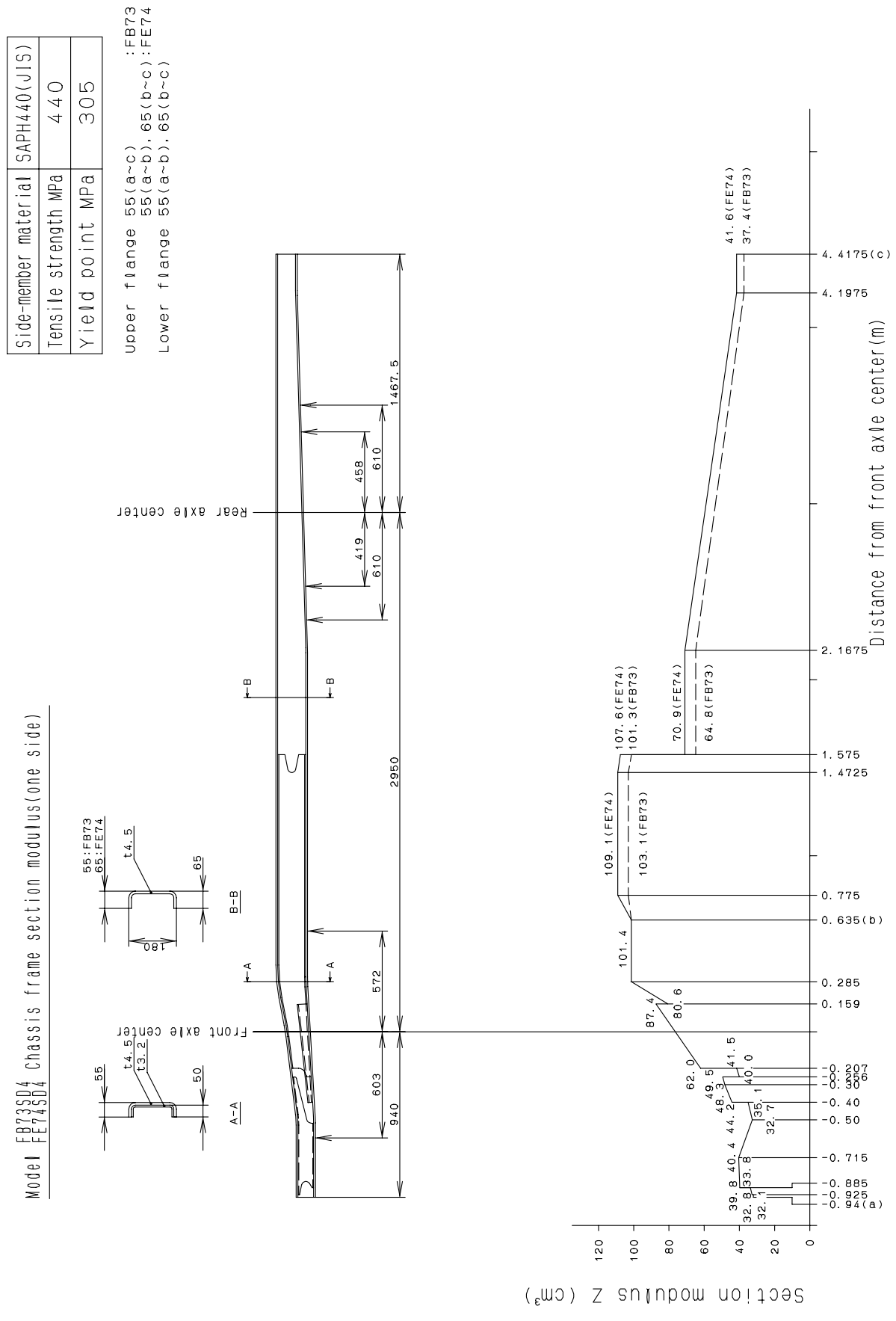
Section G-G, H-H, I-I

Frame Section Drawing

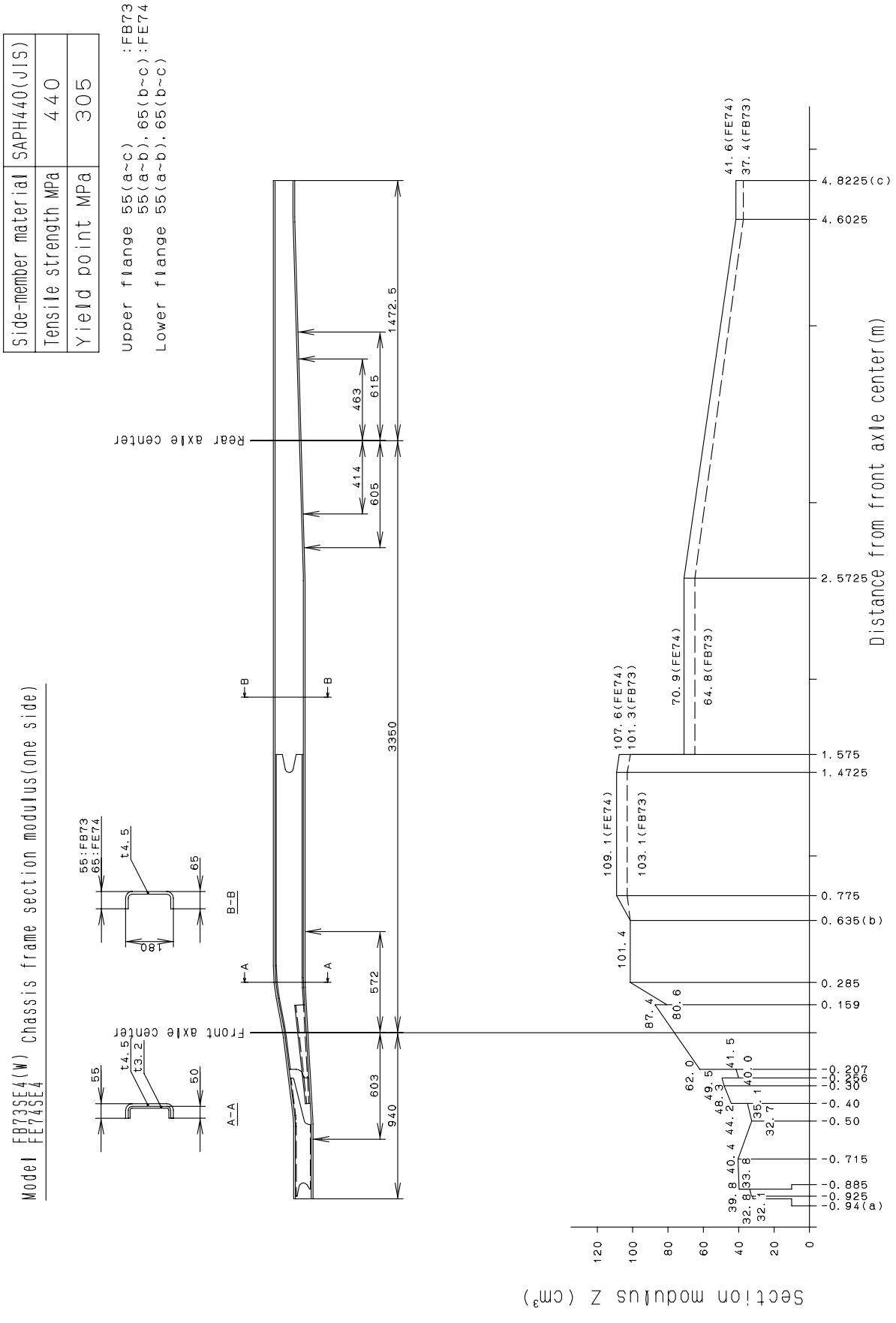
9.5.3 Frame section modulus



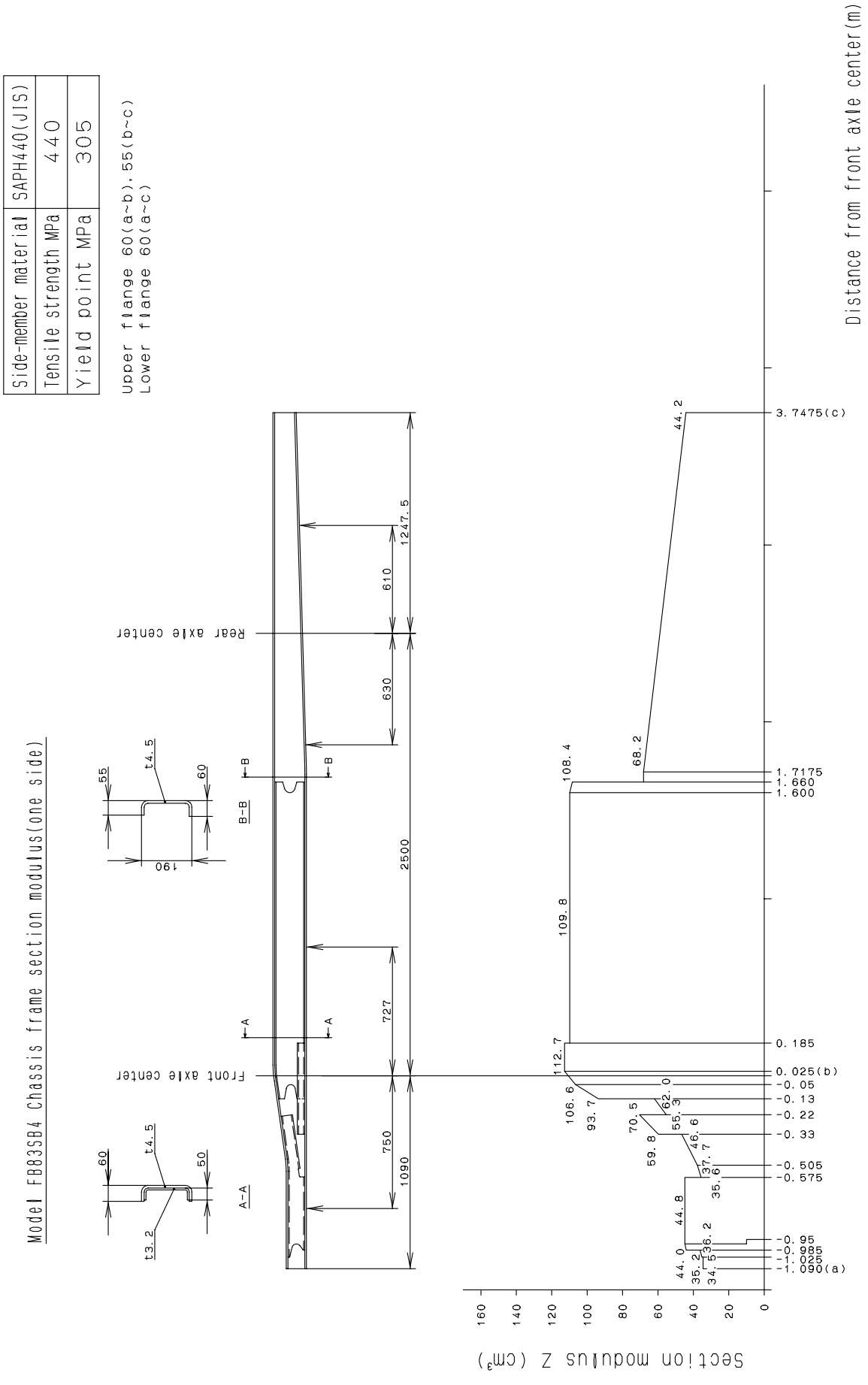
9.5 Frame layout



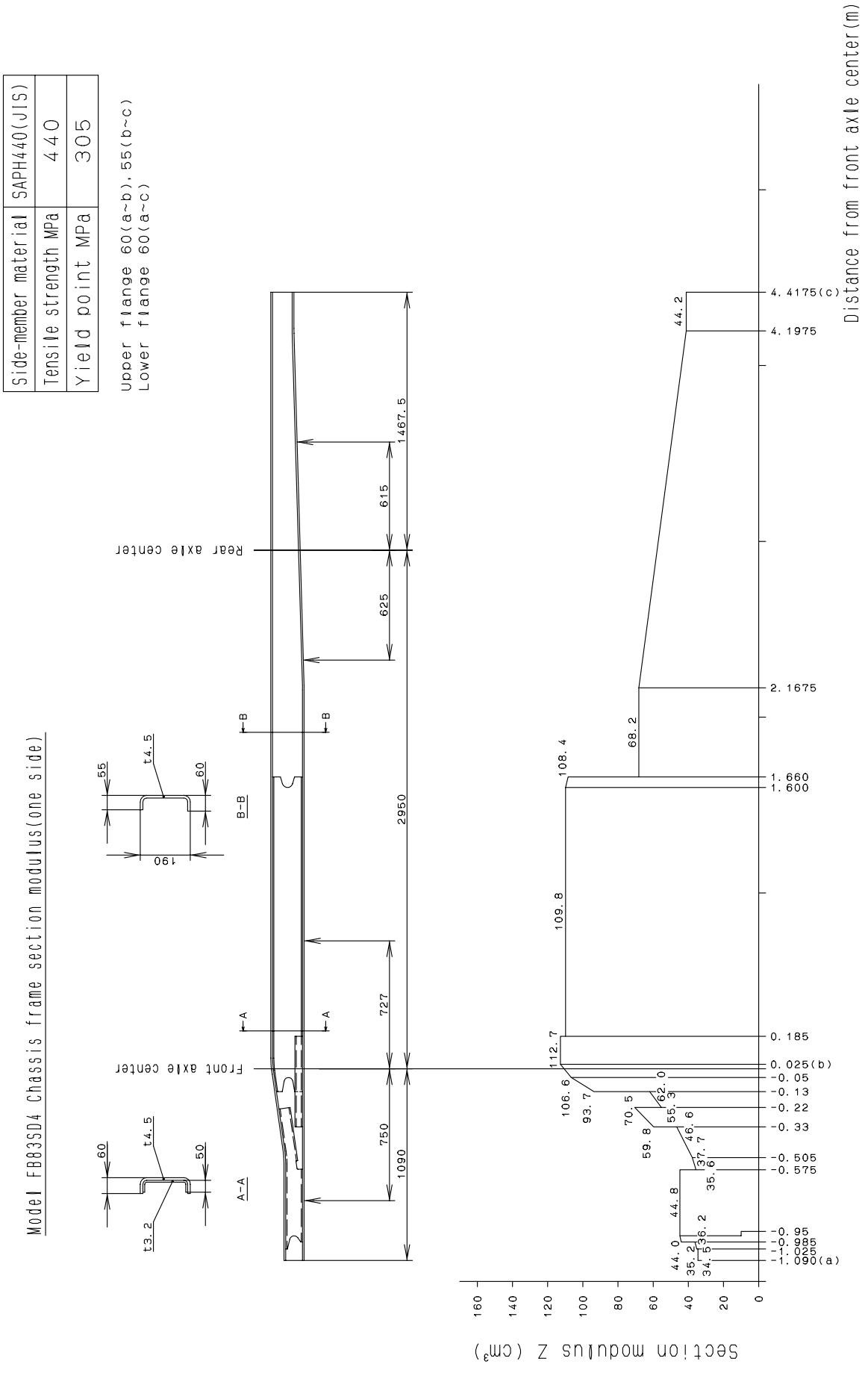
9.5 Frame layout



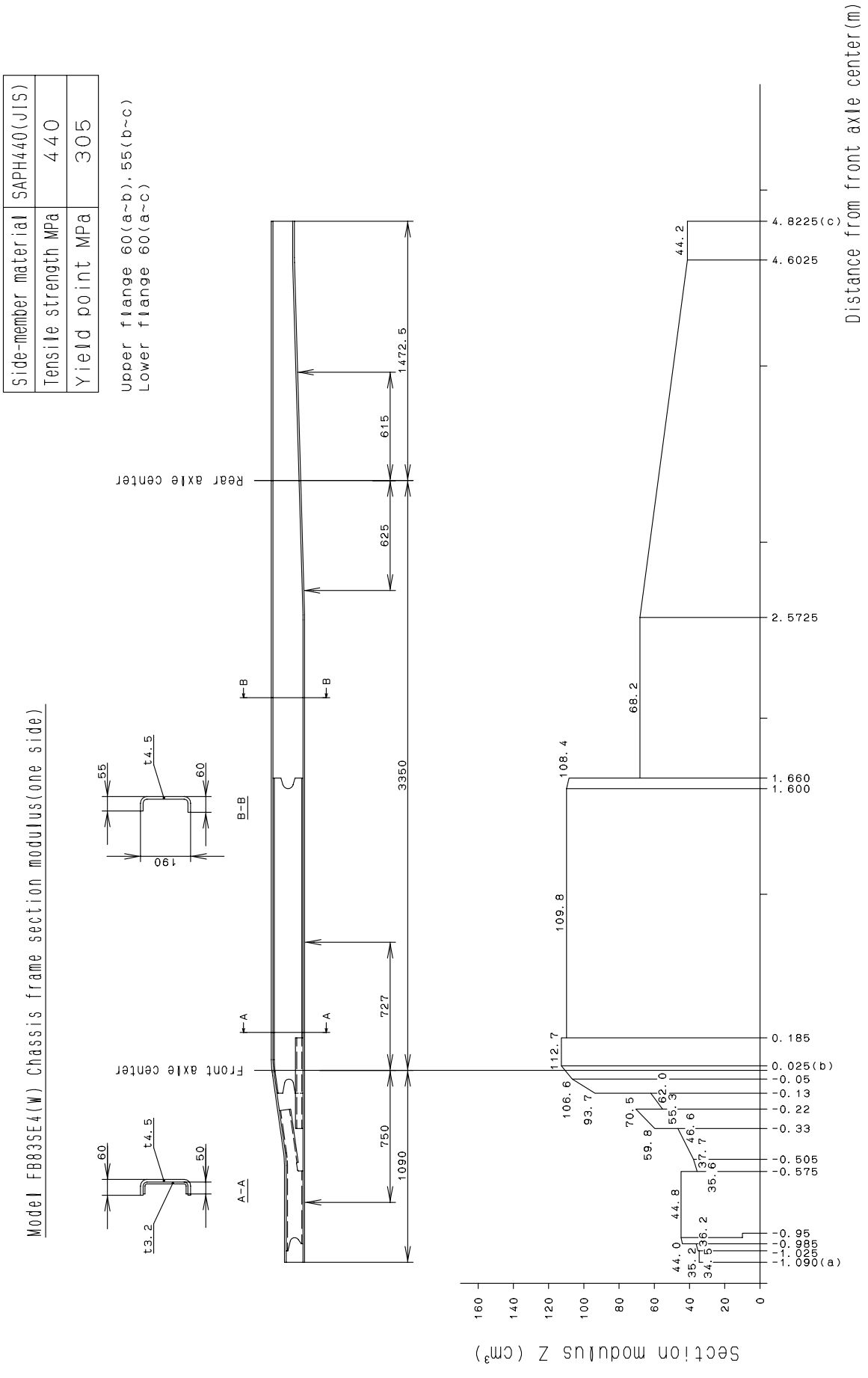
9.5 Frame layout



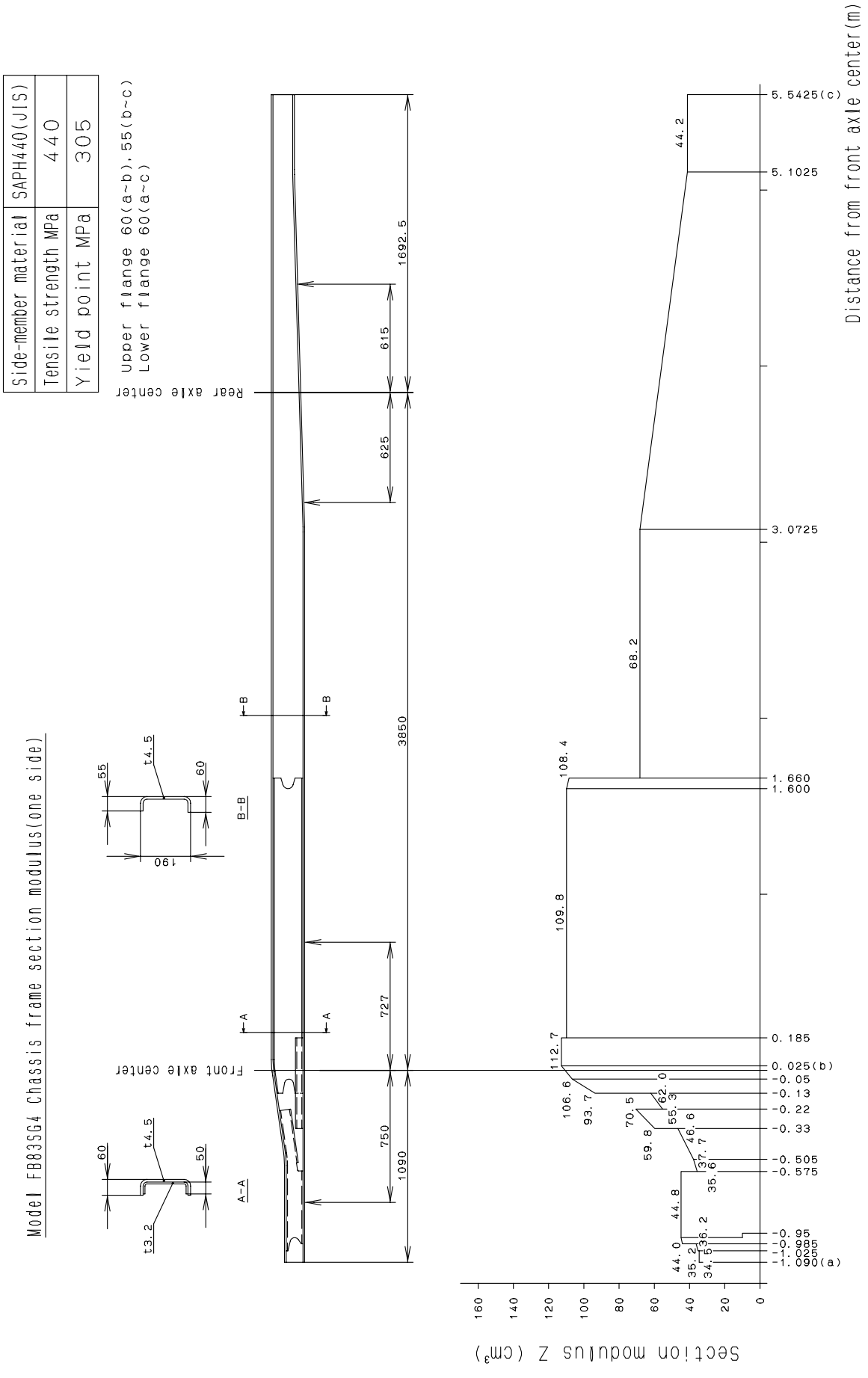
9.5 Frame layout



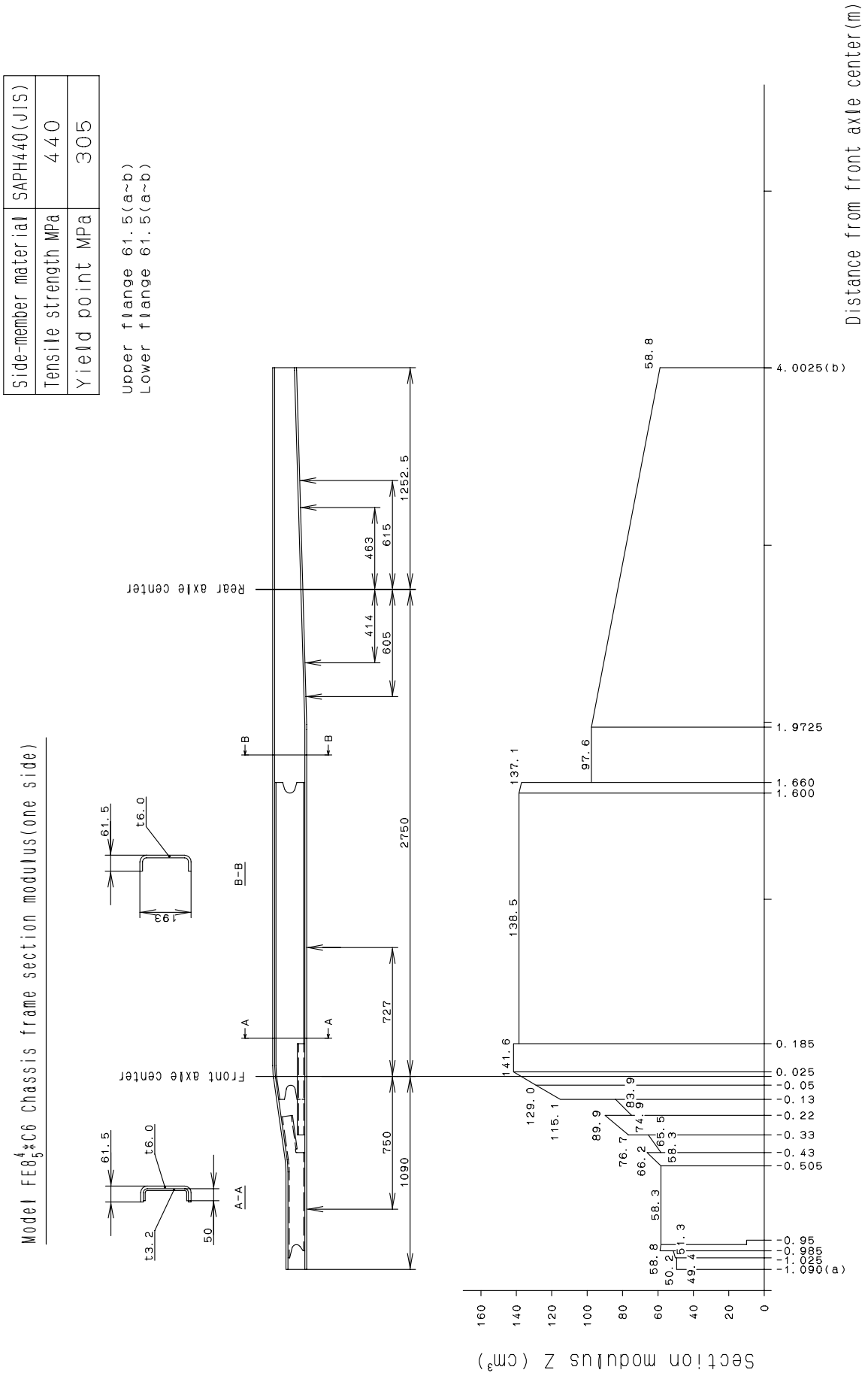
9.5 Frame layout



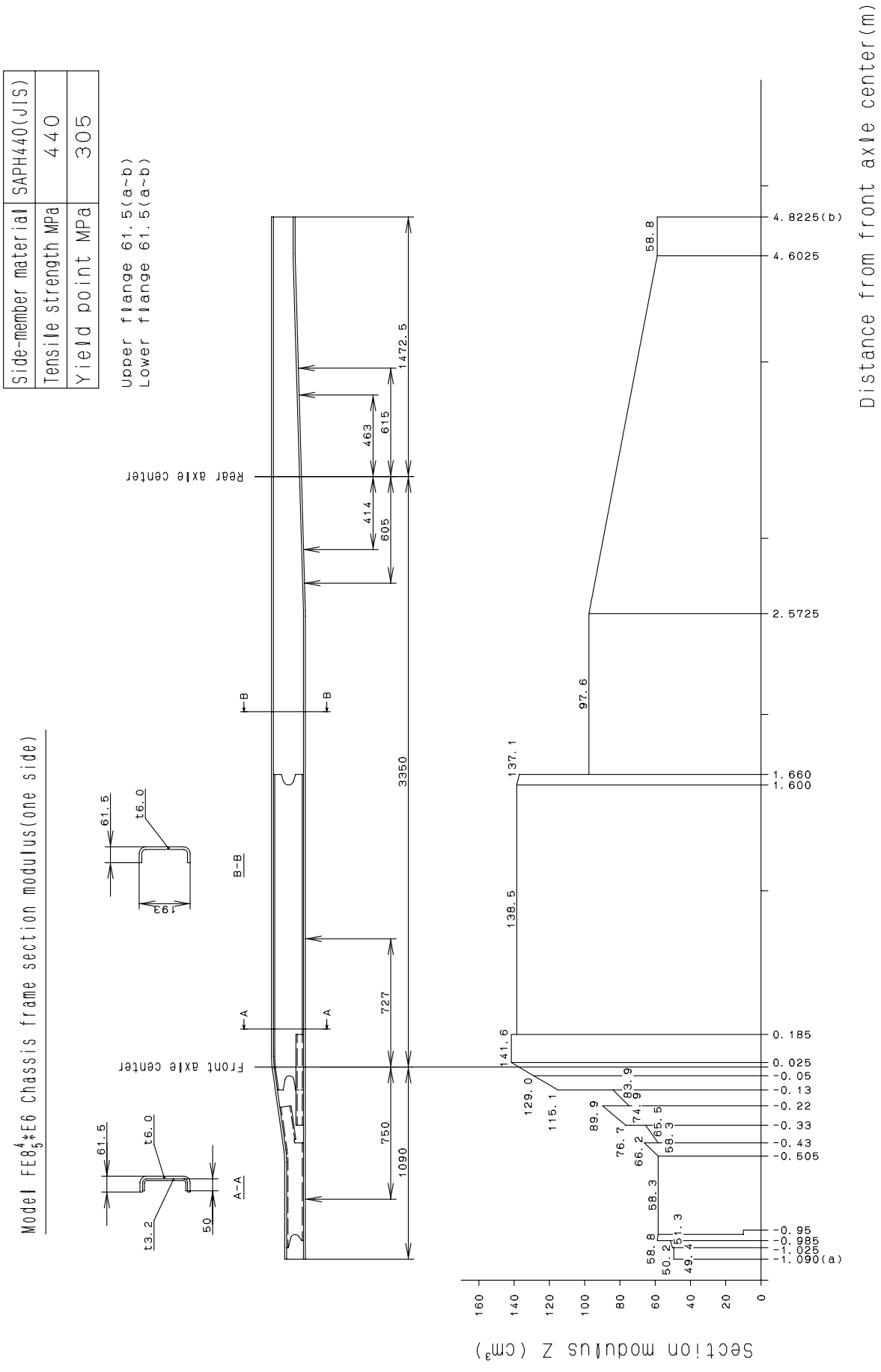
9.5 Frame layout



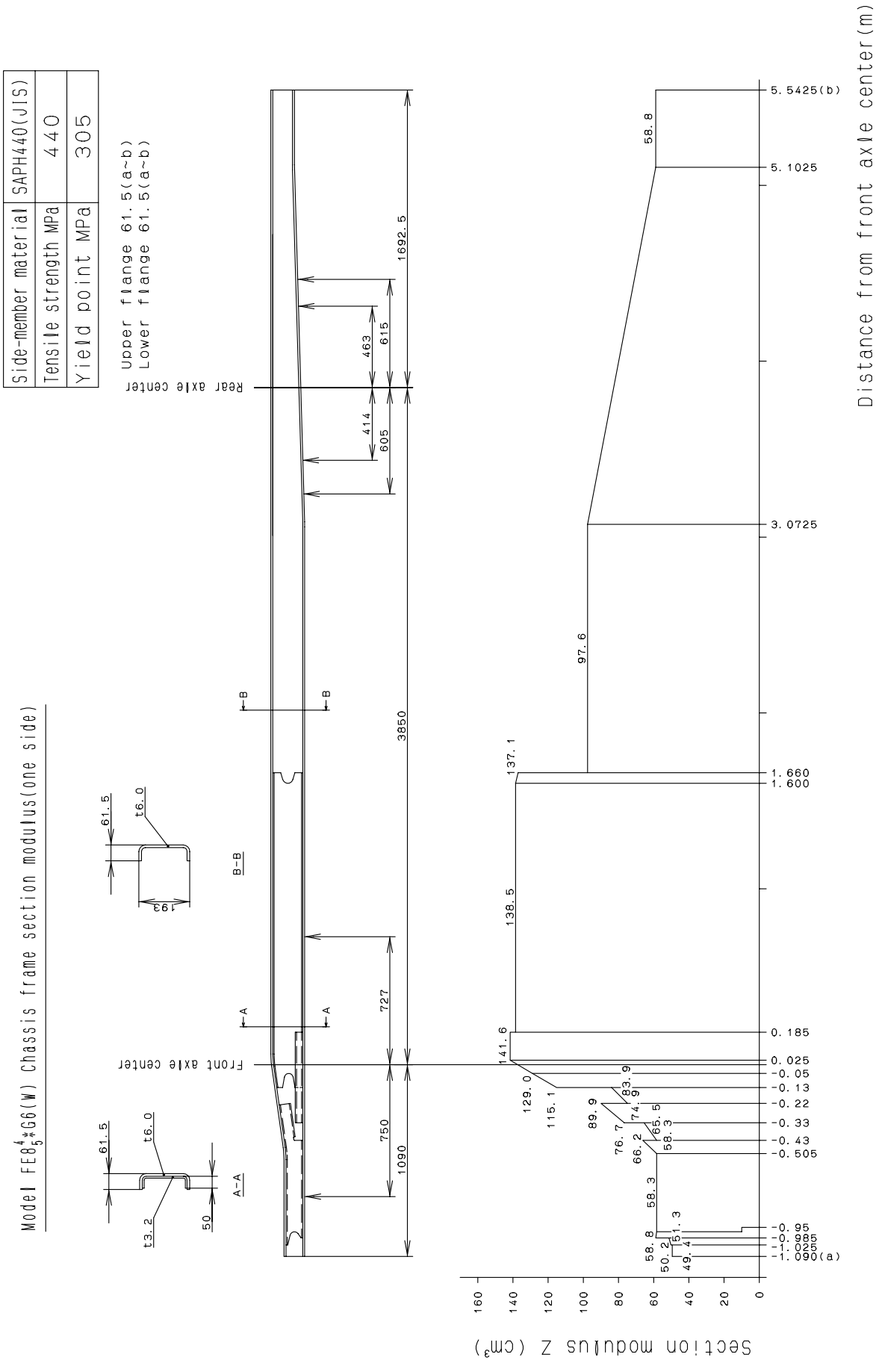
9.5 Frame layout



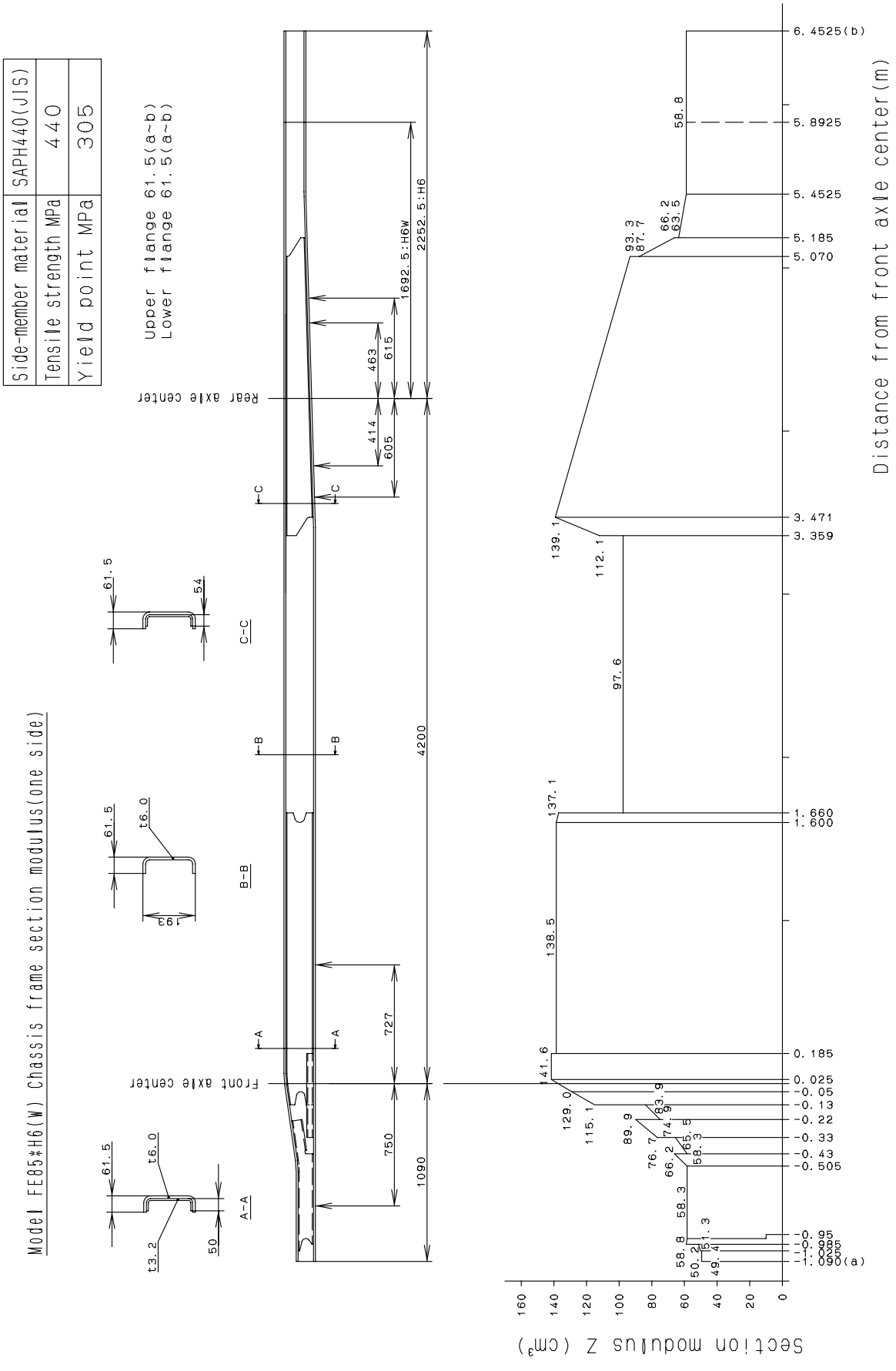
9.5 Frame layout



9.5 Frame layout



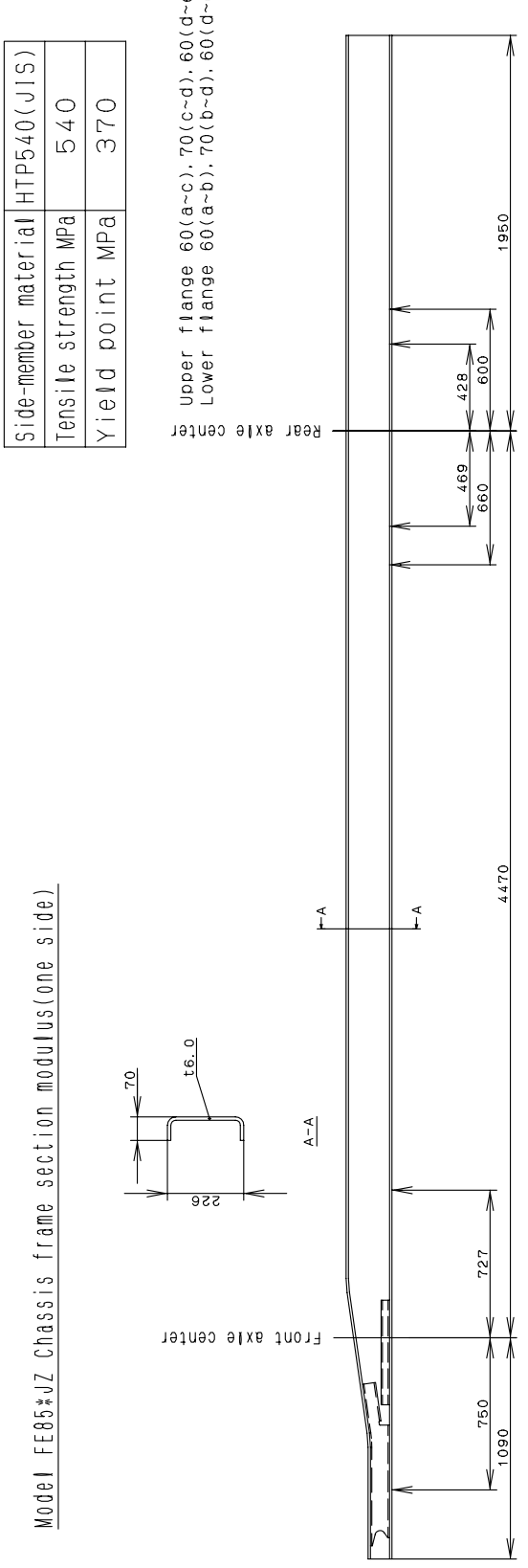
9.5 Frame layout



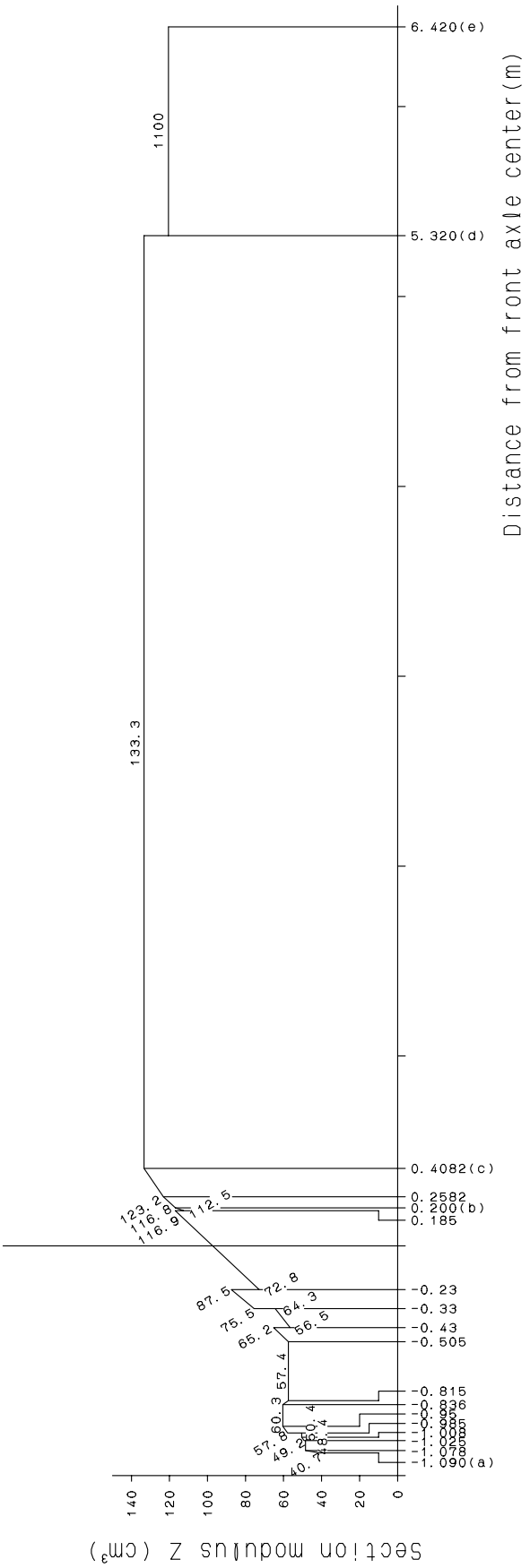
9.5 Frame layout

Side-member material	HTP540(JIS)
Tensile strength MPa	540
Yield point MPa	370

Upper flange 60(a~c), 70(c~d), 60(d~e)
Lower flange 60(a~b), 70(b~d), 60(d~e)



Model FE85*VZ Chassis frame section modulus(one side)



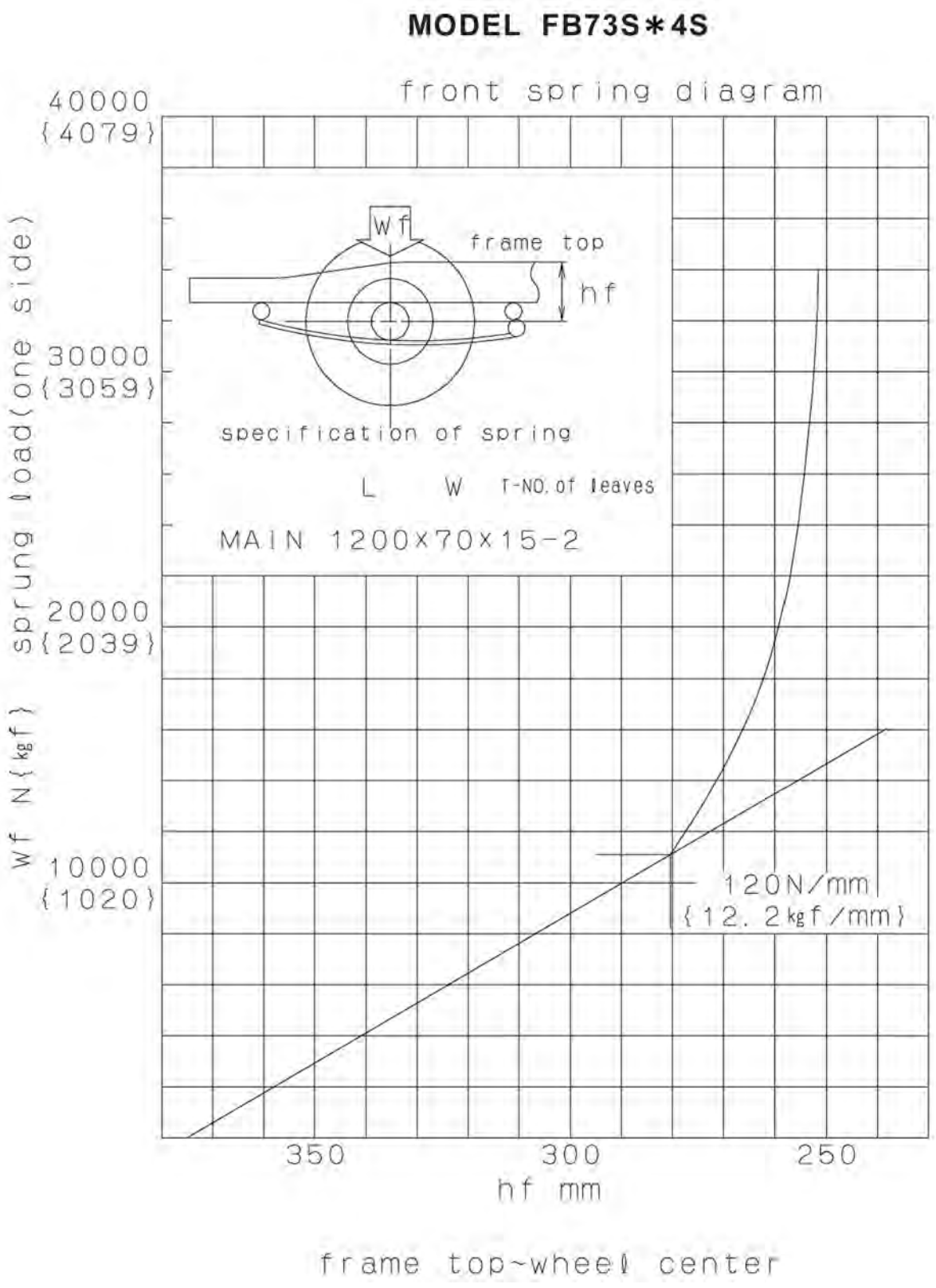
9.6 Spring diagram

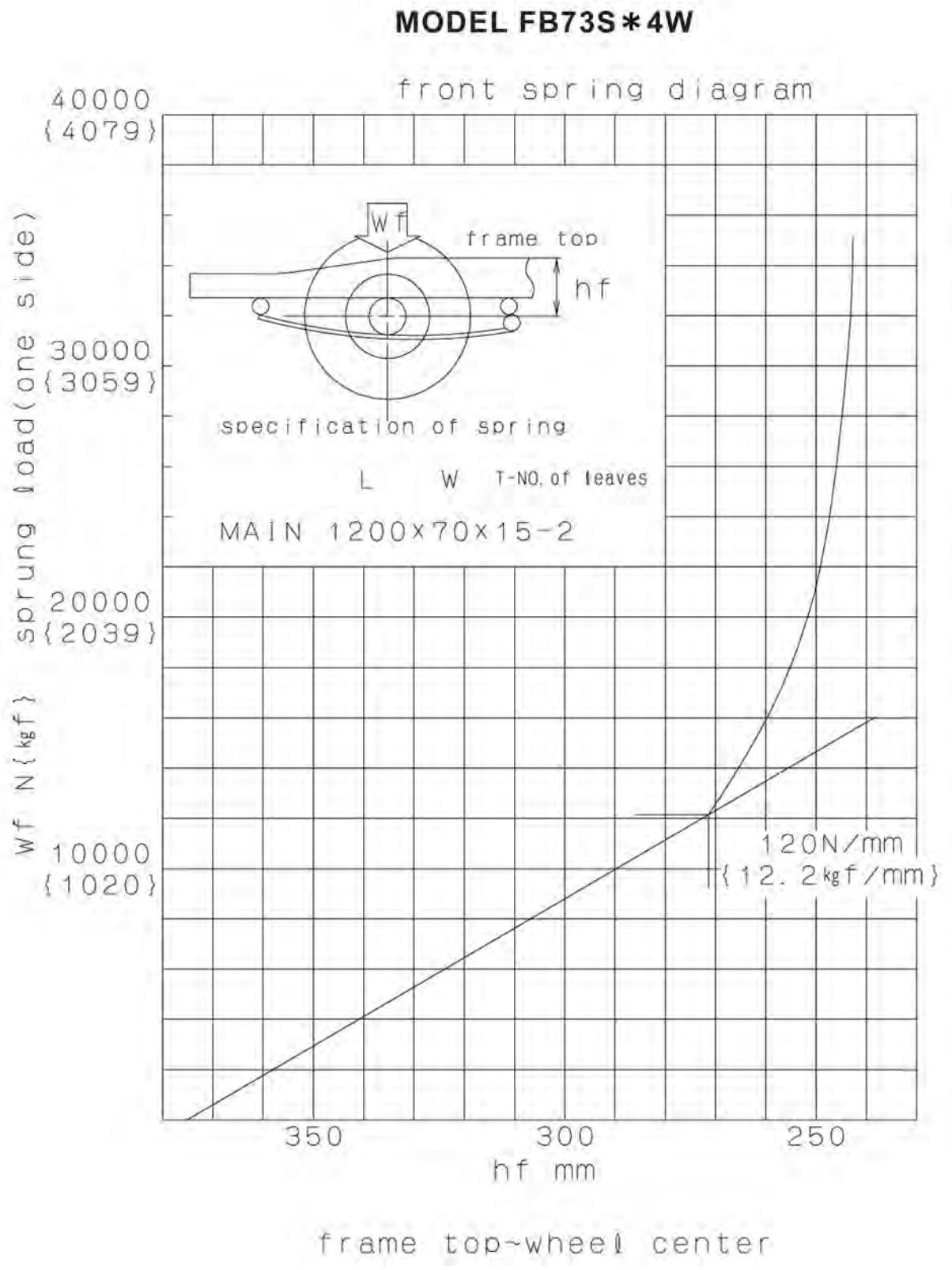
9.6.1 Distance from frame top surface to ground

MODEL	ENGINE (kW)	CAB CHASSIS WEIGHT (kg)			UNSPRUNG WEIGHT (kg)		DISTANCE FROM FRAME TOP SURFACE TO GROUND		CoG. HEIGHT (mm)
		Front Wf	Rear Wr	Total W	Front	Rear	Front ±10 Hf	Rear ±25 Hr	
FB73SB4SLEA1/4	96	1340	515	1855	250	322	657	718	660
FB73SD4SLEA1/4	96	1350	530	1880	250	322	657	717	650
FB73SE4SLEA1/4	96	1350	550	1900	250	322	657	716	640
FB73SE4WLEA1/4	96	1450	605	2055	250	322	651	713	715
FB83SB4SLEA1/4	96/107	1420	495	1915	226	315	618	713	655
FB83SD4SLEA1/4	96/107	1435	505	1940	226	315	617	712	645
FB83SE4SLEA1/4	96/107	1445	515	1960	226	315	616	712	635
FB83SG4SLEA1/4	96/107	1455	525	1980	226	315	615	711	630
FB83SE4WLEA1/4	96	1550	610	2160	226	315	629	706	710
FE74SB4SLEA1/4	107	1375	655	2030	283	462	652	743	665
FE74SD4SLEA1/4	107	1385	670	2055	283	462	652	742	655
FE74SE4SLEA1/4	107	1385	690	2075	283	462	652	742	645
FE84SC6SLEA2/5	107	1570	720	2290	311	513	652	769	665
FE84SE6SLEA2/5	107	1600	730	2330	311	513	650	769	650
FE84SG6SLEA2/5	107	1615	735	2350	311	513	649	769	640
FE84SG6WLEA2/5	107	1725	830	2555	311	513	643	766	715
FE85SC6SLEA2/5	107	1585	770	2355	323	568	686	778	675
FE85SE6SLEA2/5	107	1610	785	2395	323	568	684	778	665
FE85SG6SLEA2/5	107	1635	790	2425	323	568	683	778	655
FE85SG6WLEA2/5	107	1740	895	2635	323	568	677	775	730
FE85SH6SLEA2/5	107	1635	835	2470	323	568	683	777	640
FE85SH6WLEA2/5	107	1755	910	2665	323	568	677	774	715
FE85SJZSLEA2/5	107	1635	910	2545	323	591	725	816	660
FE84SE6SLEA3/6	129	1605	770	2375	312	518	664	782	650
FE84SG6SLEA3/6	129	1625	760	2385	312	518	663	782	640
FE84SG6WLEA3/6	129	1725	860	2585	312	518	657	779	715
FE85SE6SLEA3/6	129	1615	820	2435	323	568	684	777	665
FE85SG6SLEA3/6	129	1645	815	2460	323	568	682	777	655
FE85SG6WLEA3/6	129	1740	920	2660	323	568	677	774	730
FE85SH6SLEA3/6	129	1650	850	2500	323	568	682	776	640
FE85SH6WLEA3/6	129	1765	925	2690	323	568	676	774	715
FE85SJZSLEA3/6	129	1645	930	2575	323	591	725	815	660

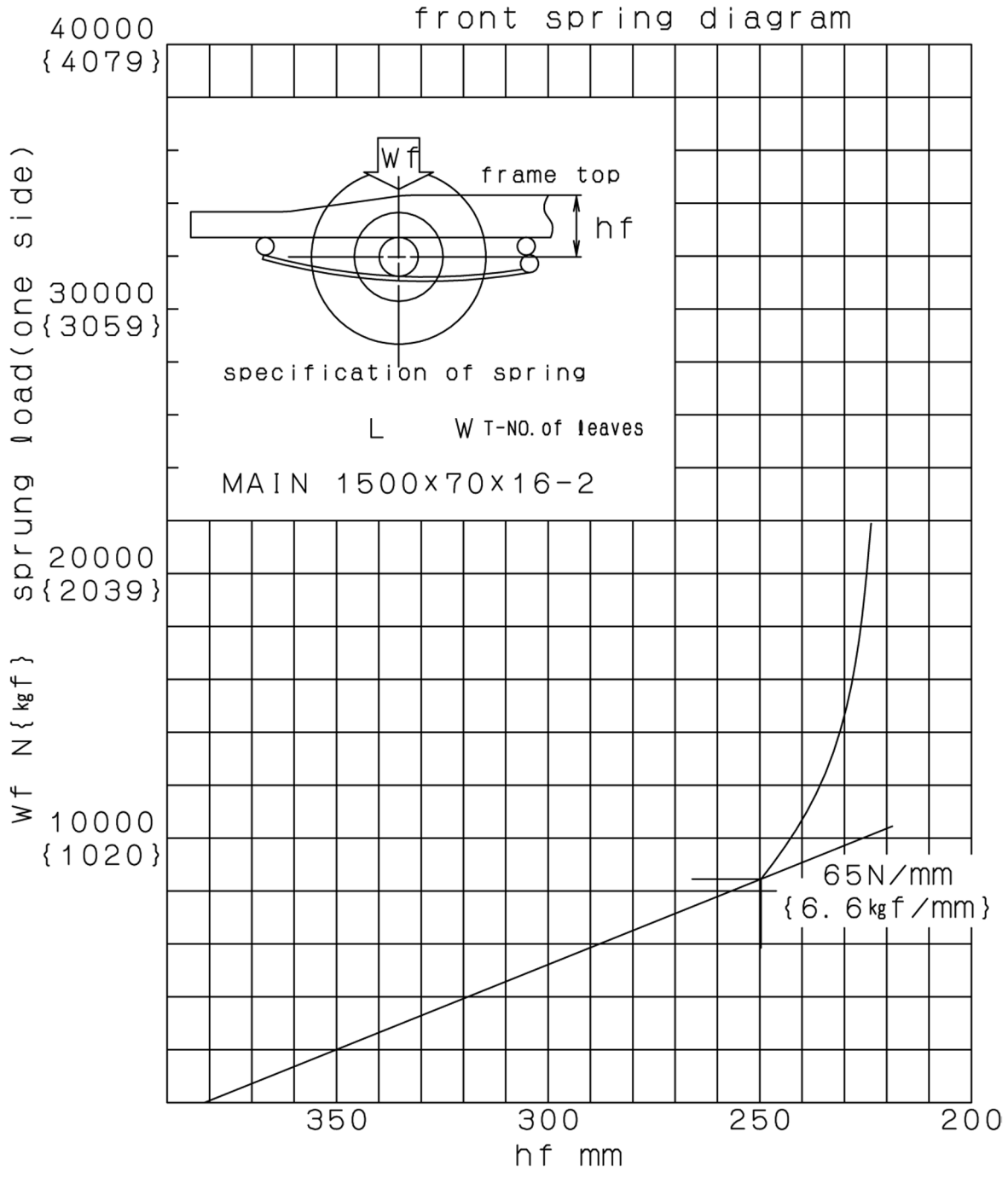
Method of calculating Hf, Hr
Hf=hf+Rf : Frame height, Front See Chapter 9.5.1
Hr=hr+Rr : Frame height, Rear
hf : Distance from frame top to front wheel centre (See drawings or following page 285.)
hr : Distance from frame top to rear wheel centre (See drawings or following page 293.)
Rf, Rr : Tyre radius (See drawings or following page 299.)

9.6.2 Front spring diagram

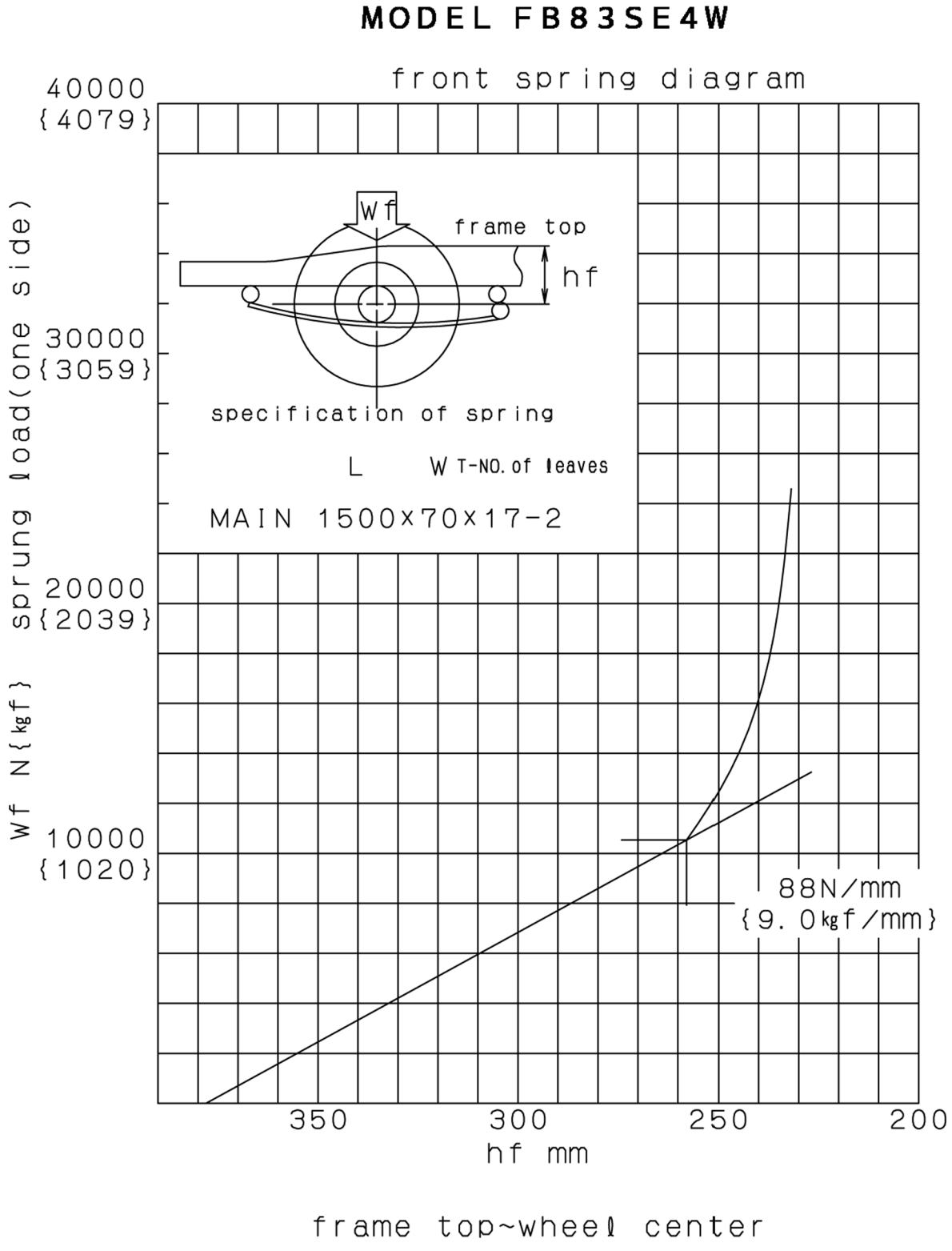



MODEL FB73S*4W
front spring diagram
40000
{4079}
30000
{3059}
20000
{2039}
10000
{1020}
sprung load(one side)
Wf N{kgf}
Wf
frame top
hf
specification of spring
L W T-NO. of leaves
MAIN 1200x70x15-2
120N/mm
{12.2kgf/mm}
350
300
250
hf mm
frame top~wheel center

MODEL FB83S*4S

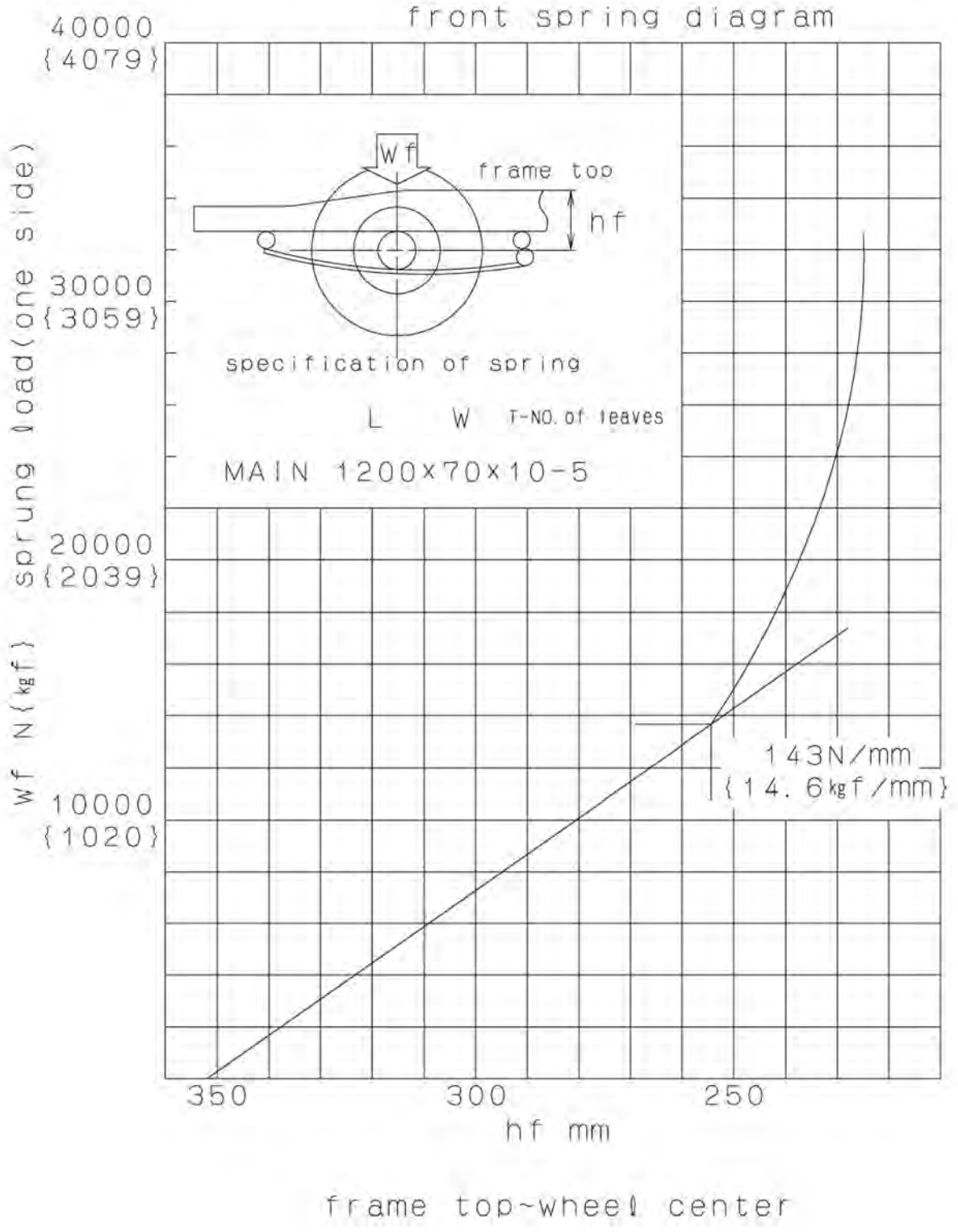


frame top~wheel center

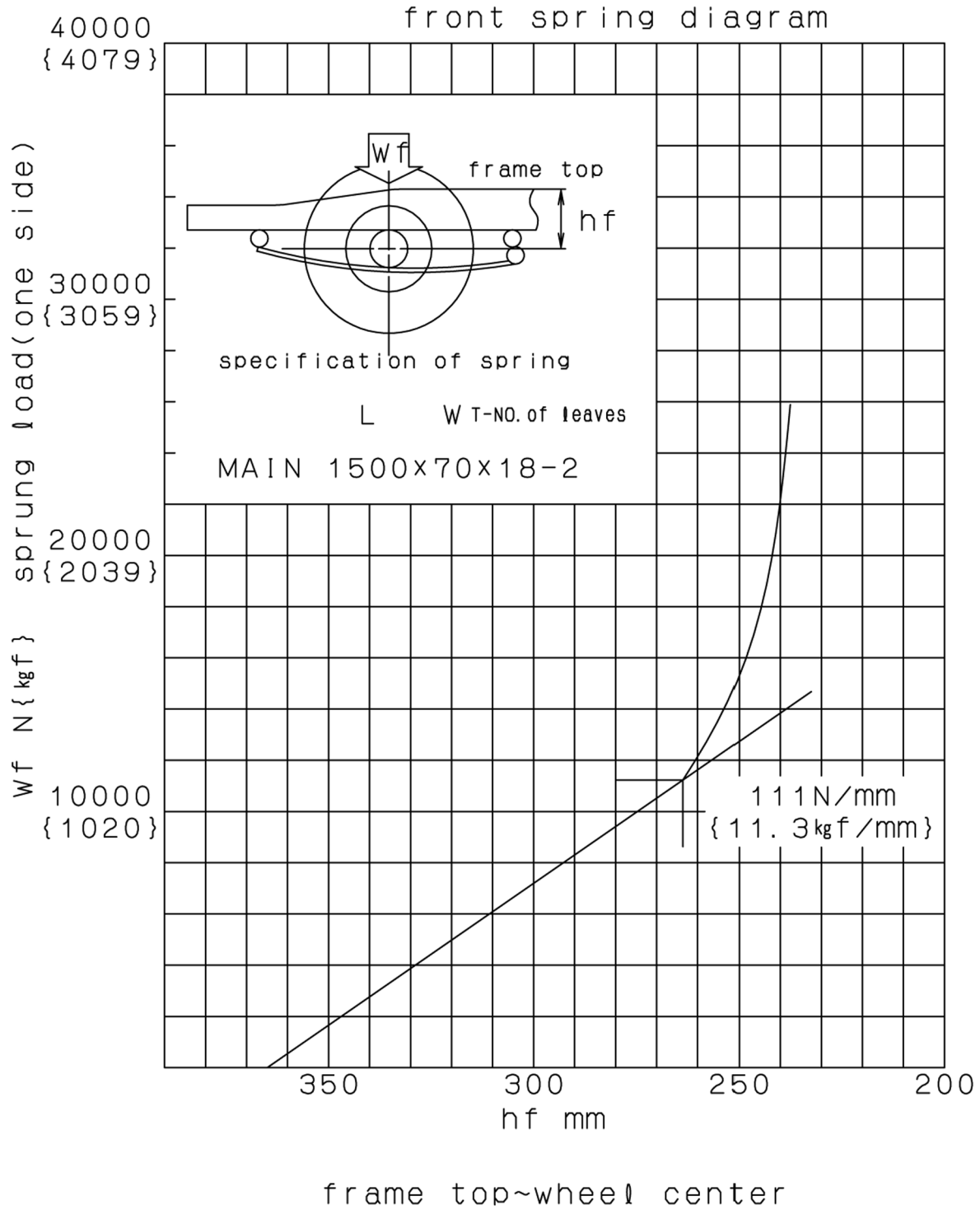

MODEL FB83SE4W
front spring diagram
40000
{4079}
30000
{3059}
20000
{2039}
10000
{1020}
sprung load(one side)
Wf N{kgf}
Wf
frame top
hf
specification of spring
L W T-NO. of leaves
MAIN 1500x70x17-2
88N/mm
{9.0kgf/mm}
350
300
250
200
hf mm
frame top~wheel center

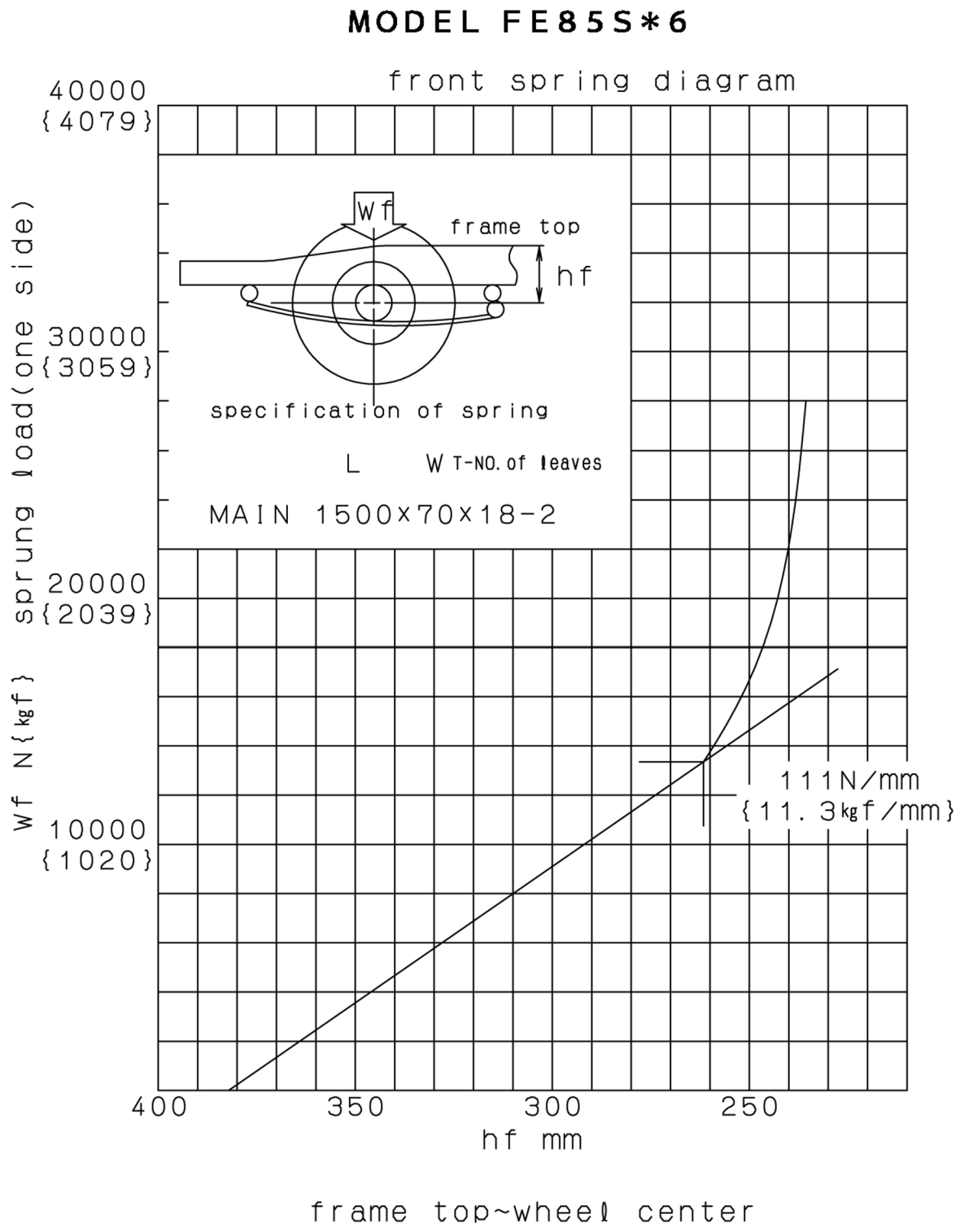
9.6 Spring diagram

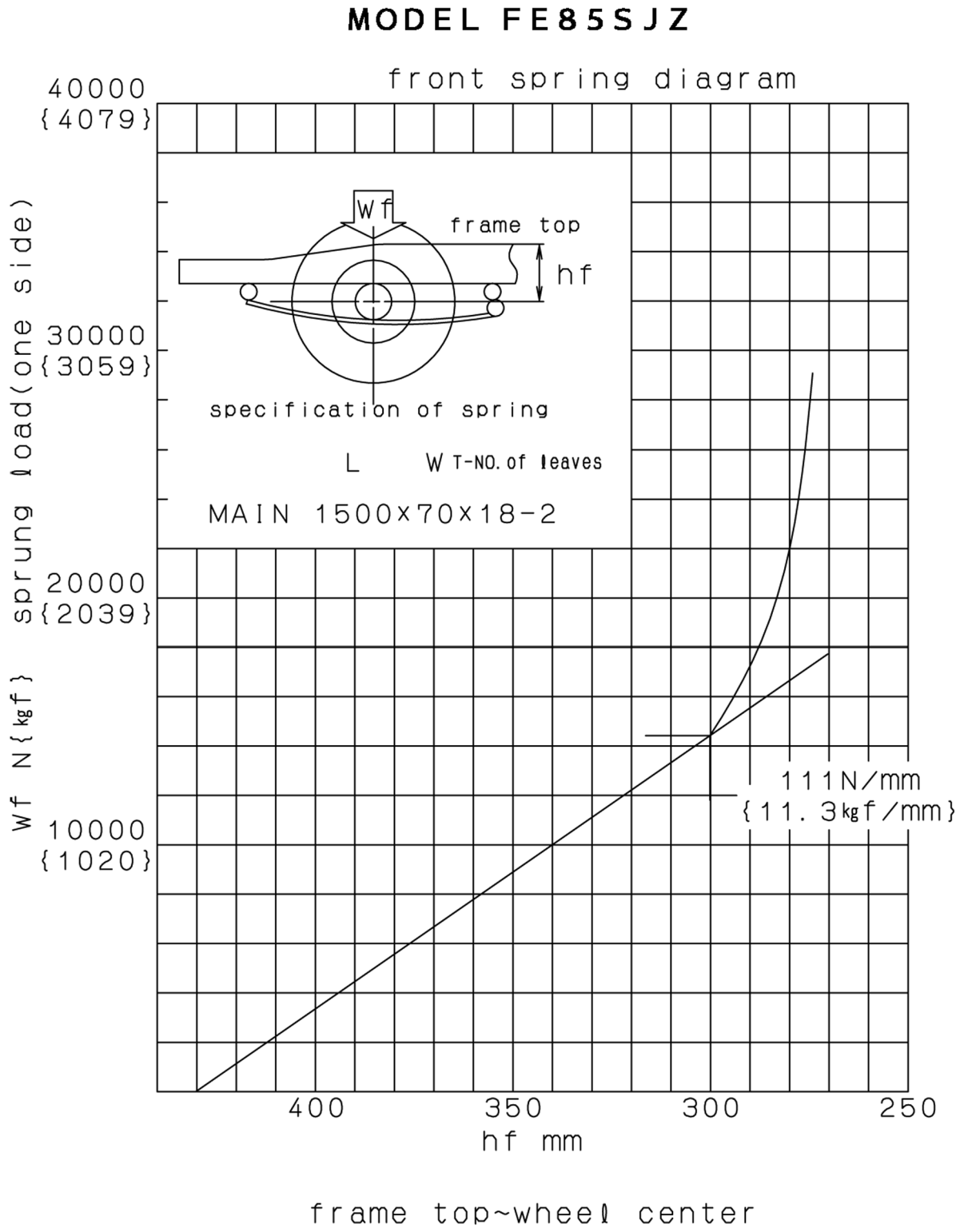
MODEL FE74S＊4



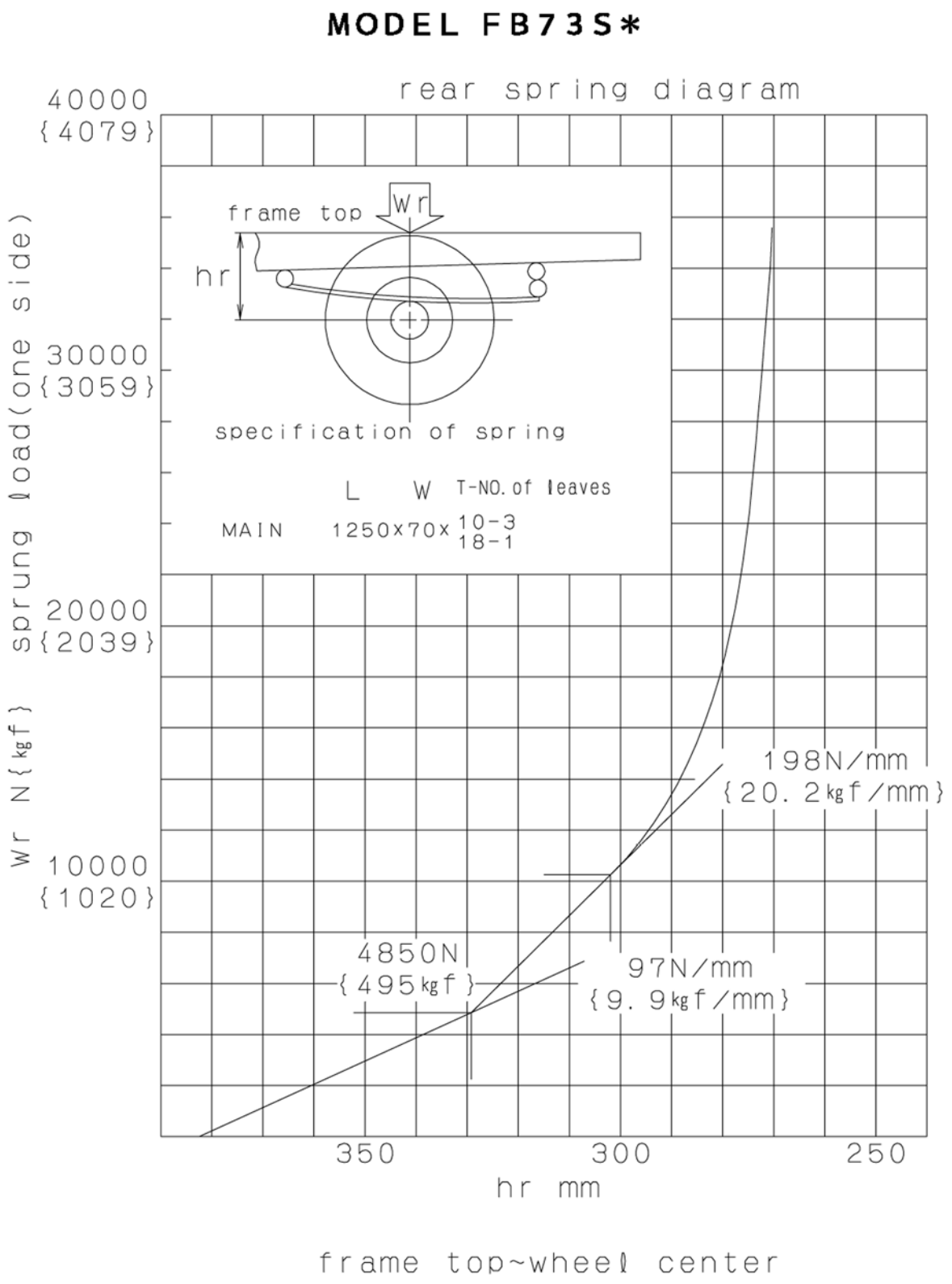
MODEL FE84S*6



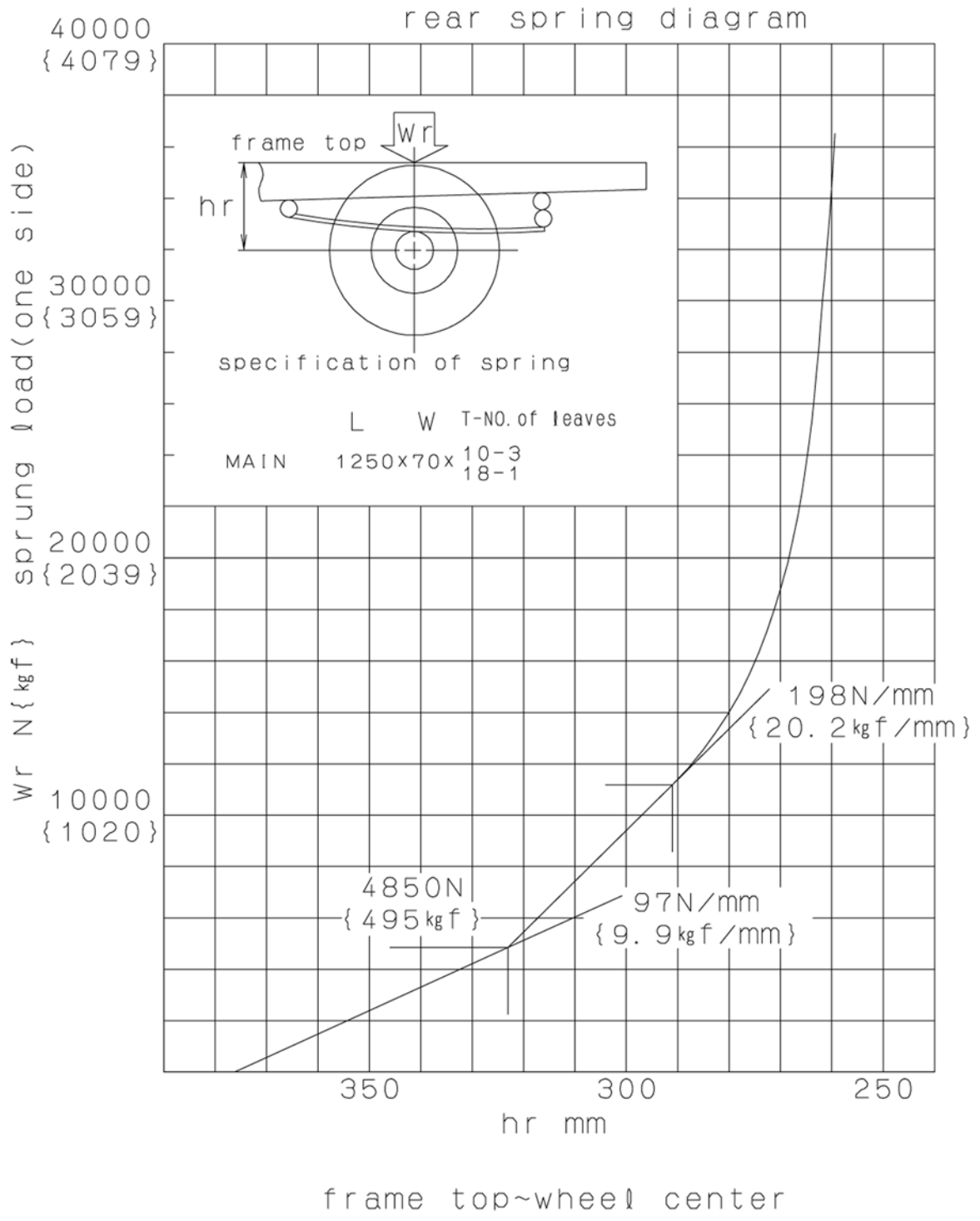

MODEL FE85S*6
front spring diagram
40000
{4079}
30000
{3059}
20000
{2039}
10000
{1020}
Wf N{kgf} sprung load(one side)
Wf
frame top
hf
specification of spring
L W T-NO. of leaves
MAIN 1500x70x18-2
111N/mm
{11.3kgf/mm}
400
350
300
250
hf mm
frame top~wheel center


MODEL FE85SJZ
front spring diagram
40000
{4079}
30000
{3059}
20000
{2039}
10000
{1020}
Wf N{kgf} sprung load(one side)
Wf
frame top
hf
specification of spring
L W T-NO. of leaves
MAIN 1500×70×18-2
111N/mm
{11.3kgf/mm}
400
350
300
250
hf mm
frame top~wheel center

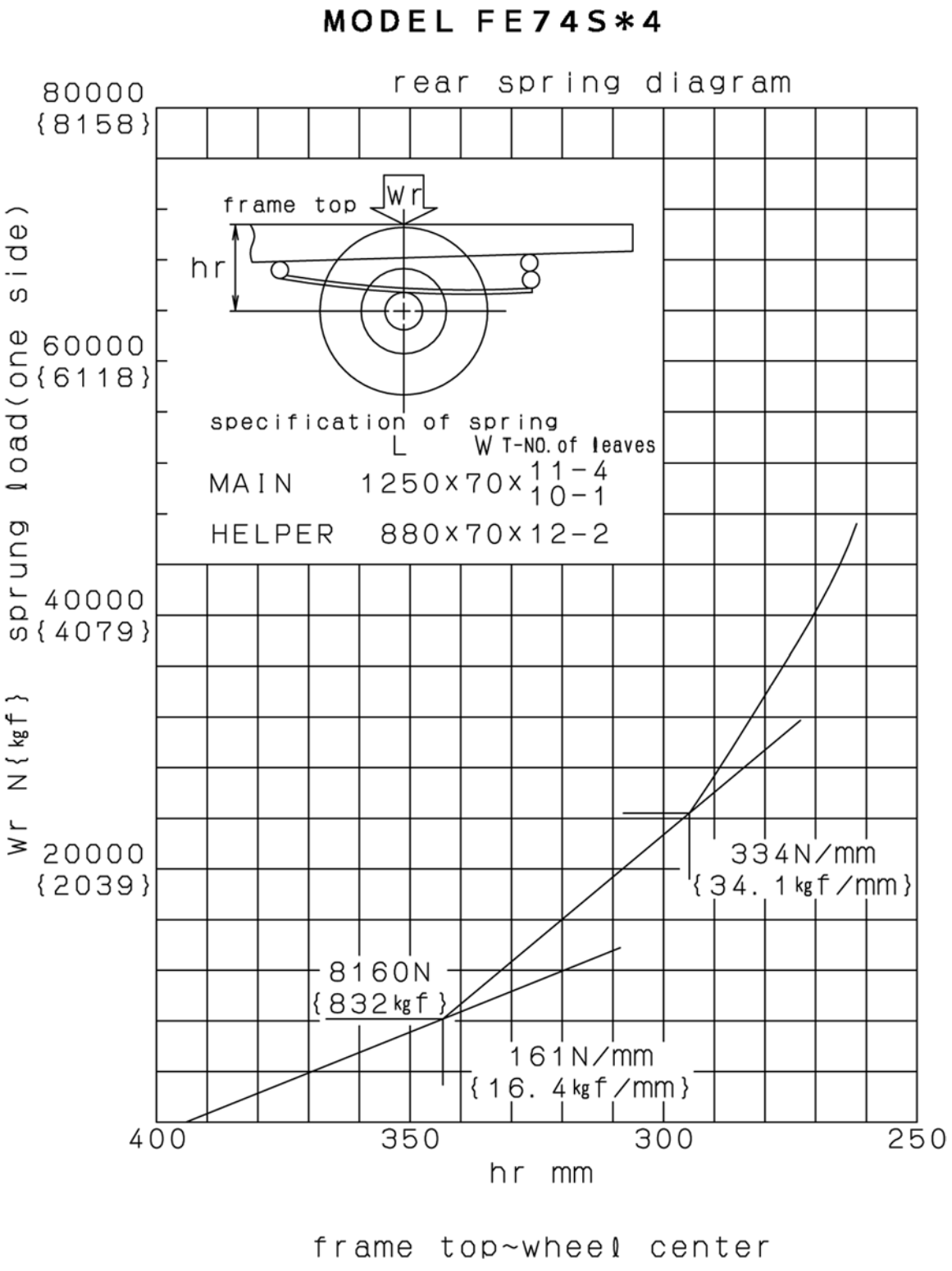
9.6.3 Rear spring diagram



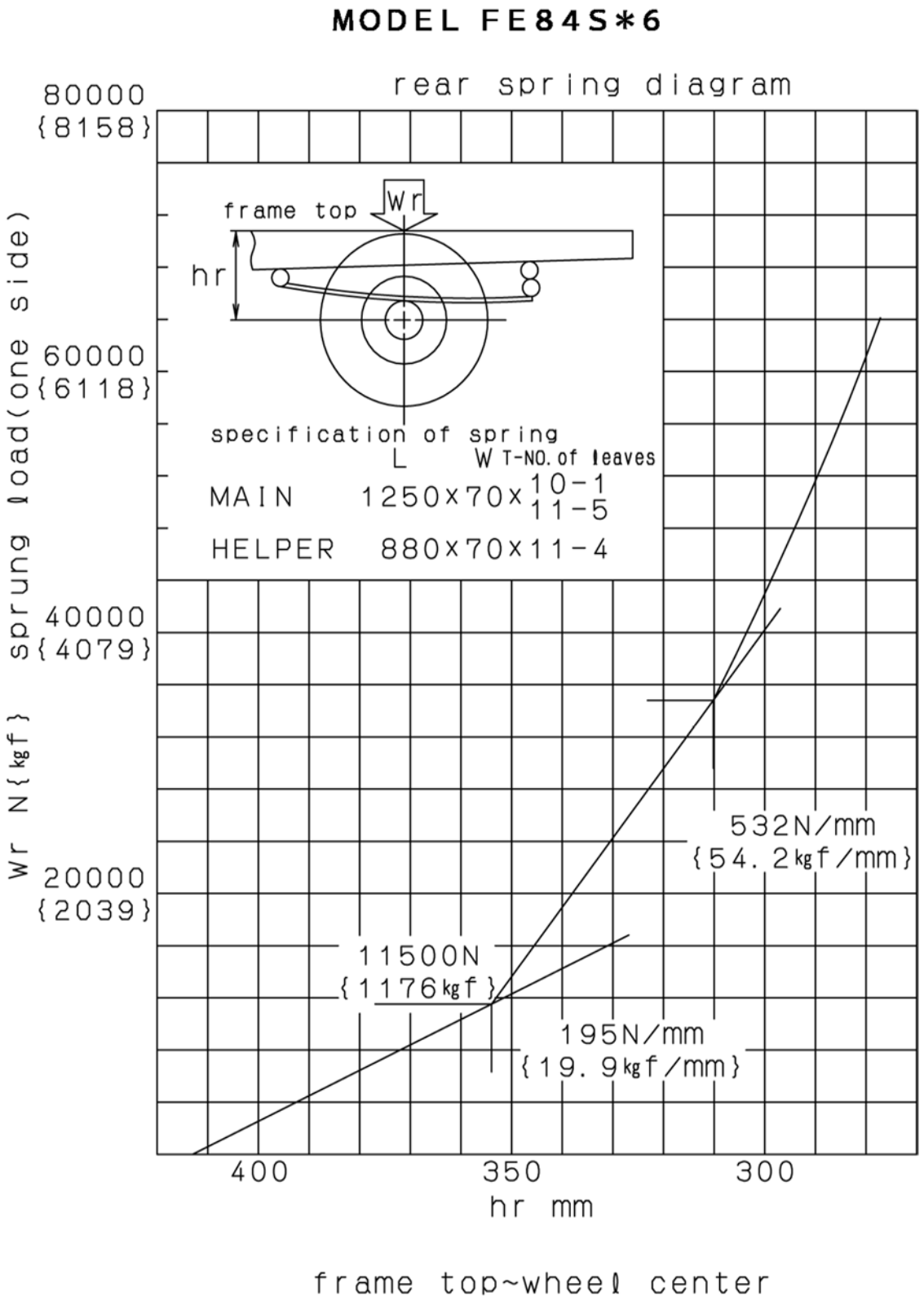
MODEL FB83S*4



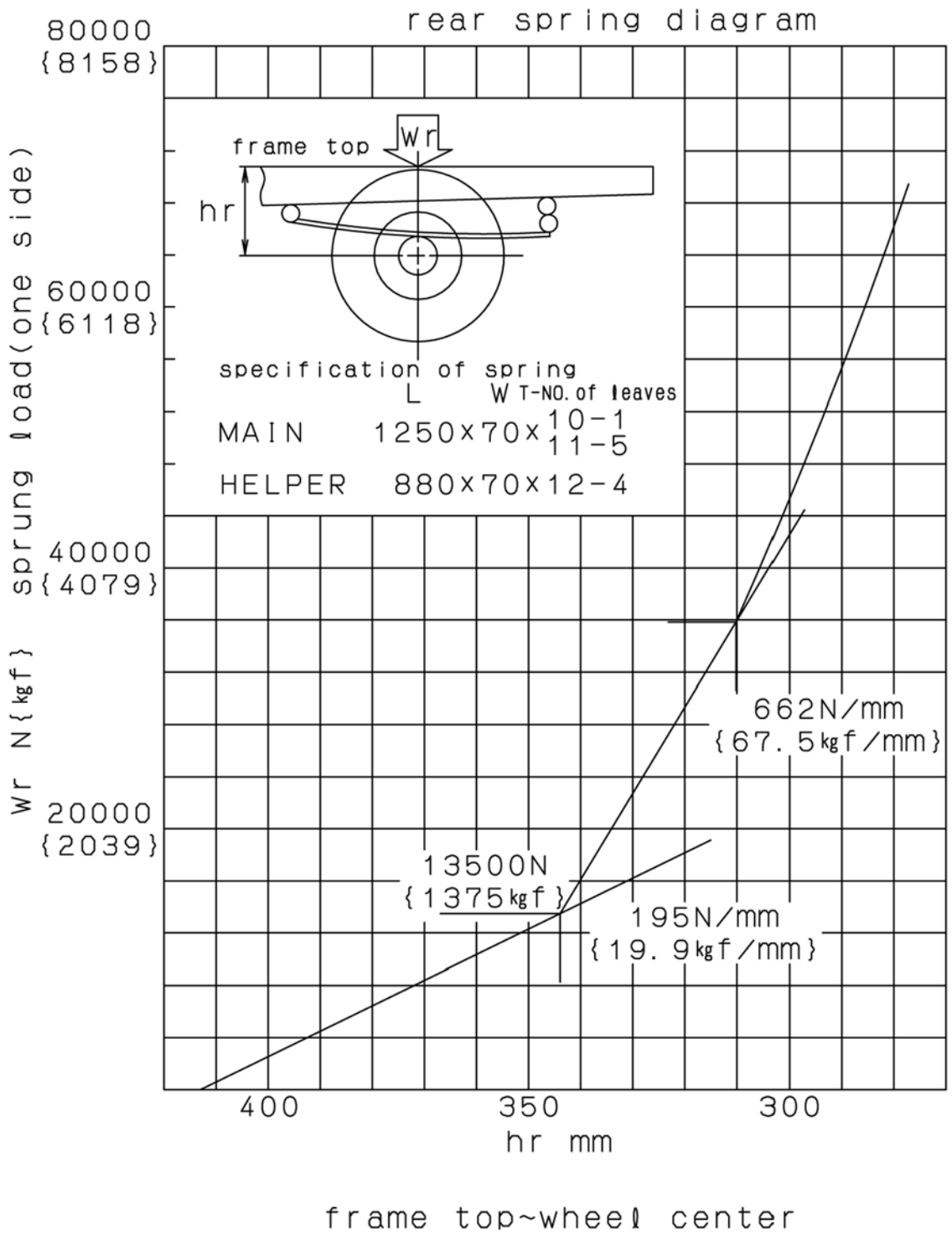
9.6 Spring diagram



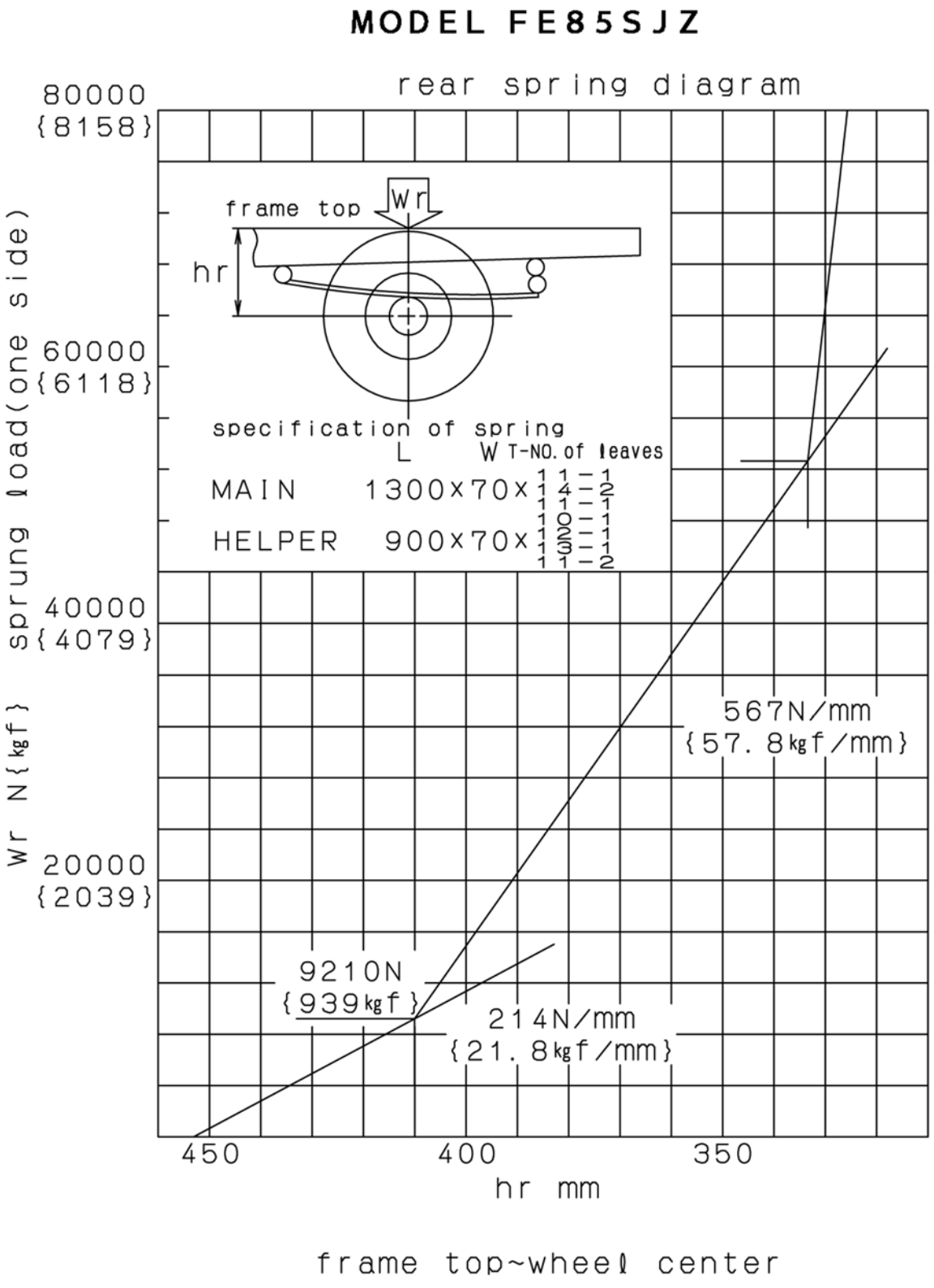
9.6 Spring diagram



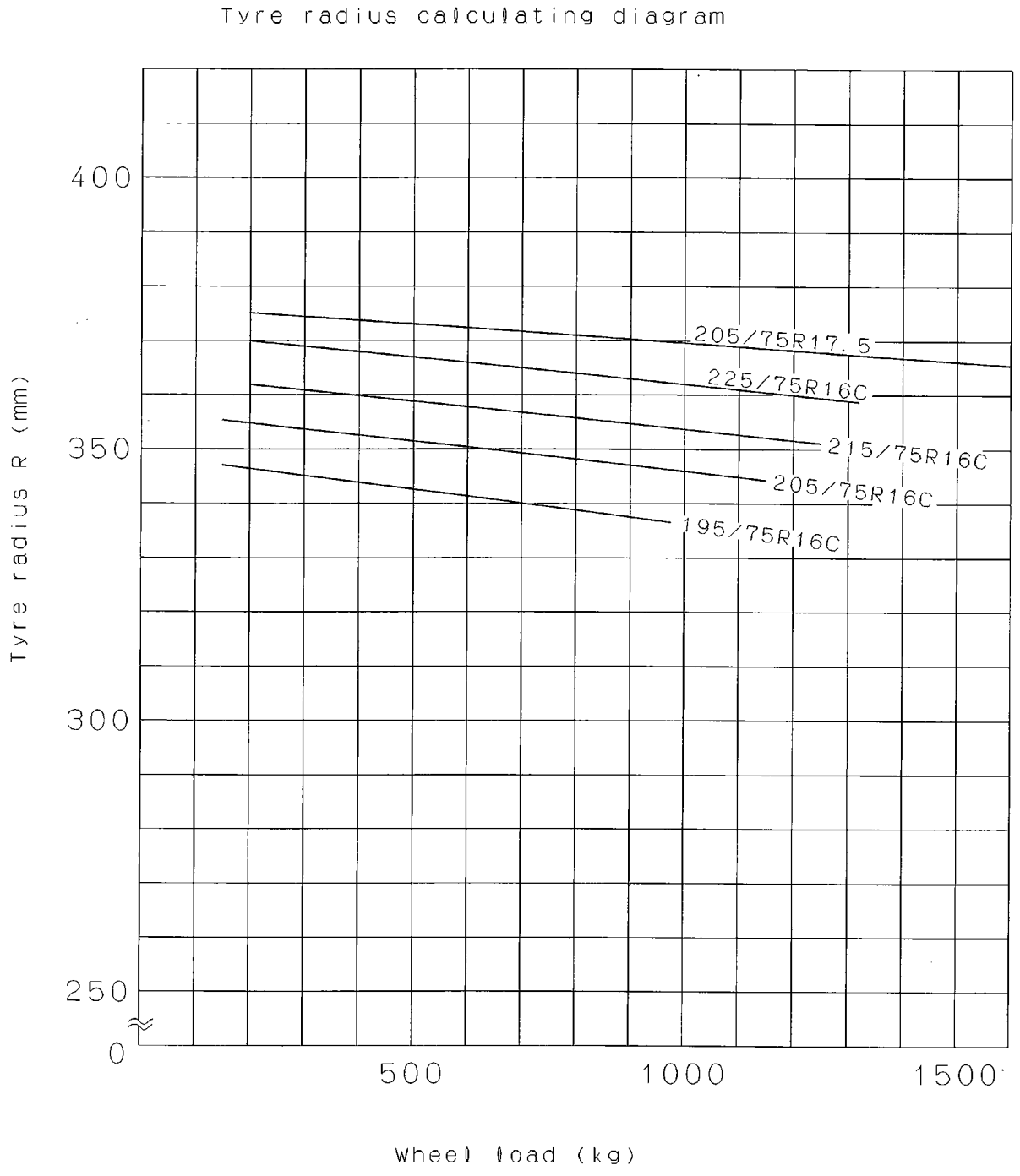
MODEL FE85S*6



9.6 Spring diagram



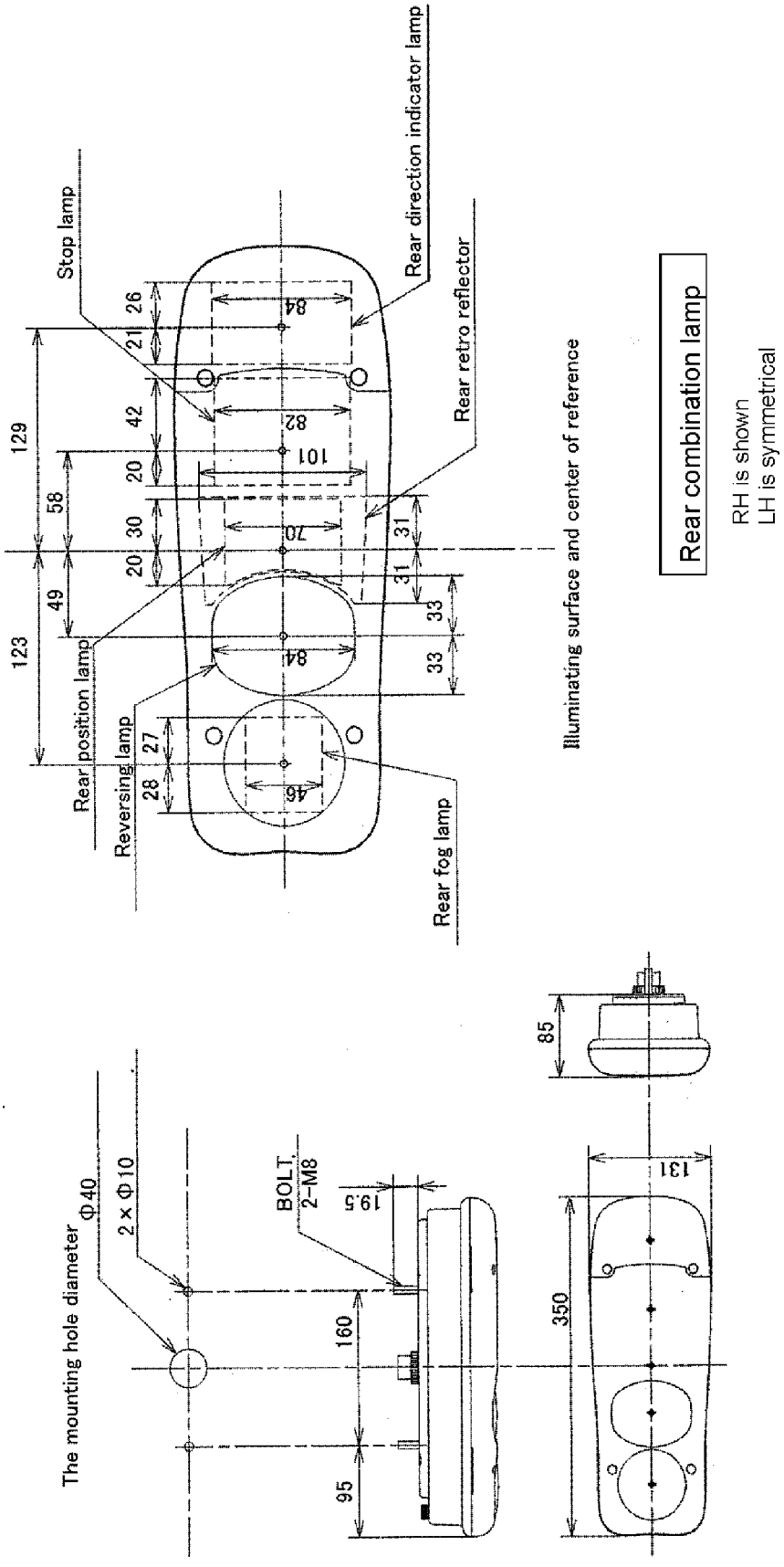
9.6.4 Tyre radius calculating diagram



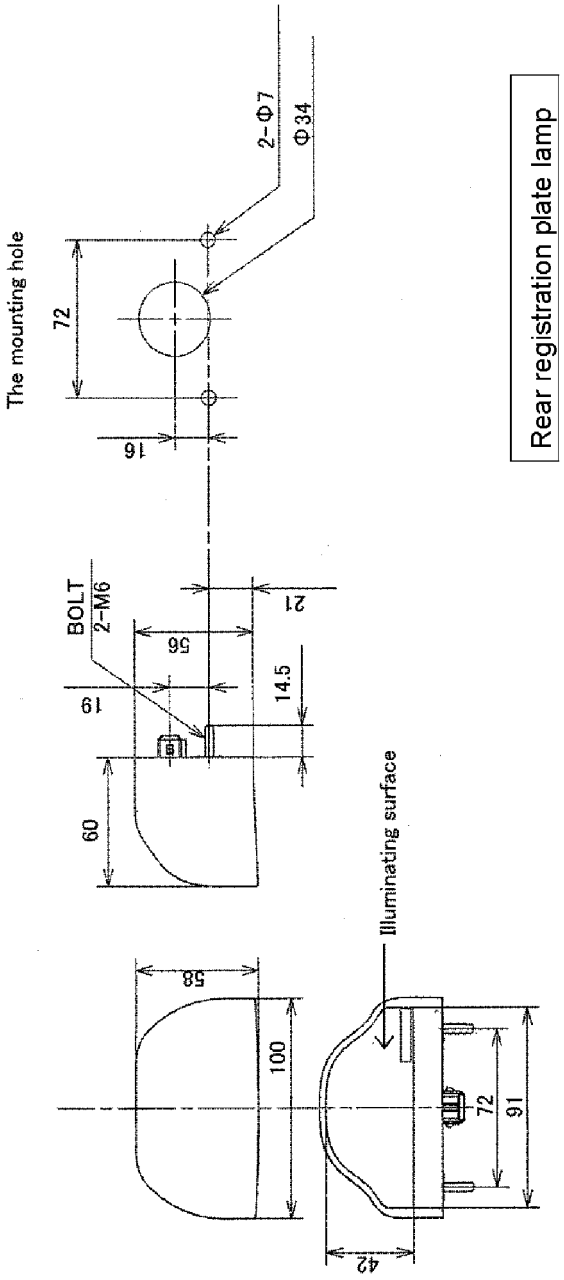
Single tyre : Front-rear tyre distributed load/2
Double tyre : Rear-tyre distributed load/4

9.7 Lamp layout drawings

9.7.1 Rear combination lamp



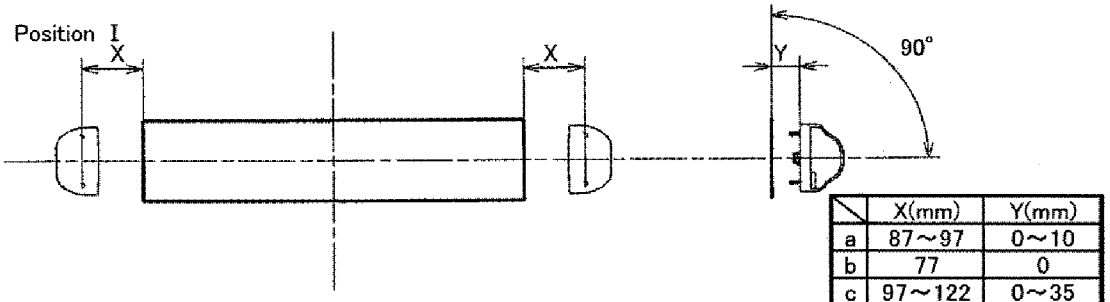
9.7.2 Rear registration plate lamp



The relative position of registration plate lamp and registration plate should be the following scheme. (Position I - V)

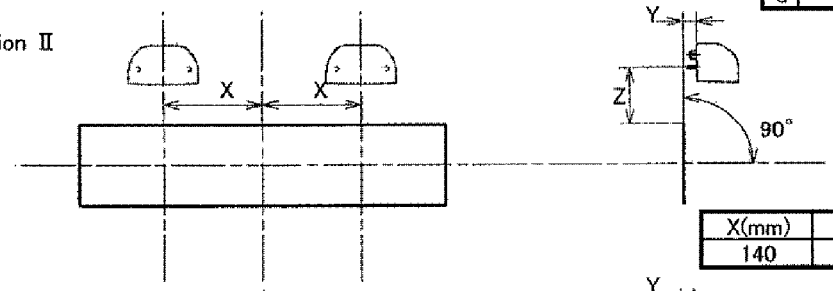
In case of wide plate.

Position Ⅰ



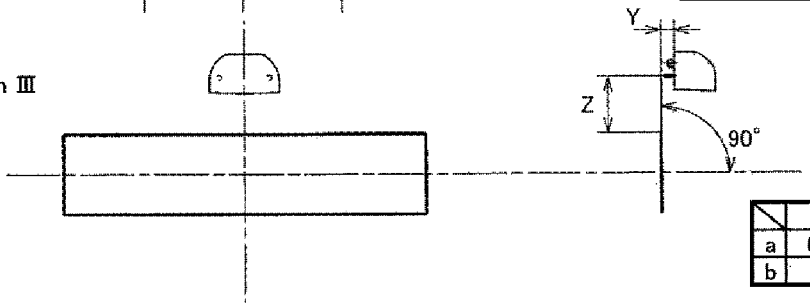
	X(mm)	Y(mm)
a	87～97	0～10
b	77	0
c	97～122	0～35
d	60	0

Position Ⅱ



X(mm)	Y(mm)	Z(mm)
140	0	36

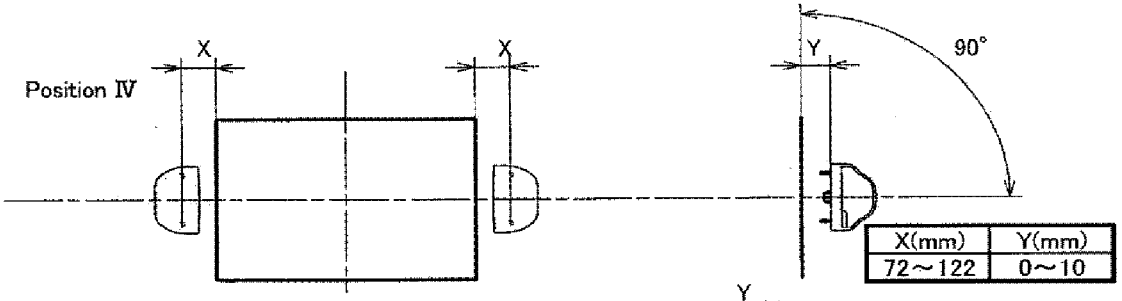
Position Ⅲ



	Y(mm)	Z(mm)
a	0～100	86～121
b	0	45

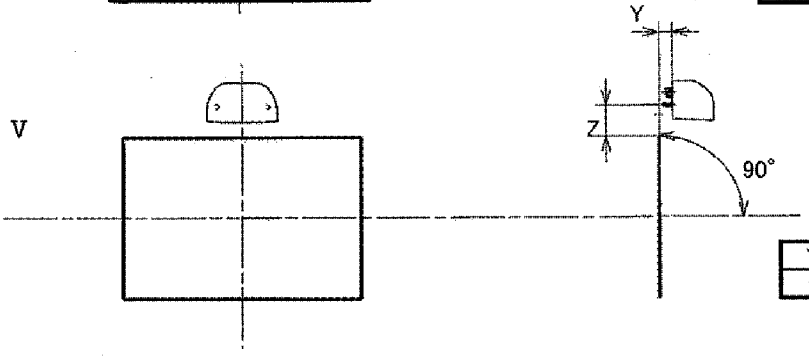
In case of tall plate.

Position Ⅳ



X(mm)	Y(mm)
72～122	0～10

Position Ⅴ



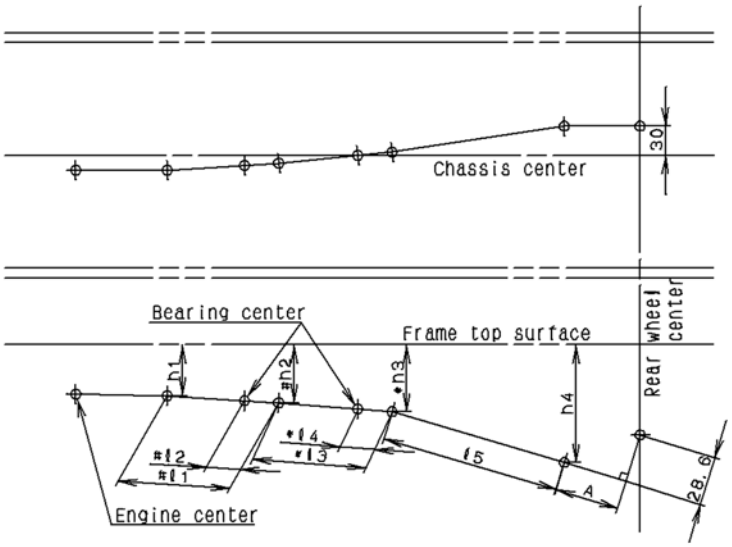
Y(mm)	Z(mm)
0～20	36～86

9.8 Power train

9.8.1 Powertrain list

Model	GVW (kg)	Engine Model	Clutch	T/M
FB73SB4S*EA1/4	3500	4P10 96kW	C3W28	6S420 5.152/0.799
FB73SD4S*EA1/4				
FB73SE4S*EA1/4				
FB73SE4W*EA1/4				
FB83SB4S*EA1/4				
FB83SD4S*EA1/4				
FB83SE4S*EA1/4				
FB83SG4S*EA1/4				
FB83SE4W*EA1/4				
FB83SB4S*EA2/5		4P10 107kW		
FB83SD4S*EA2/5				
FB83SE4S*EA2/5				
FB83SG4S*EA2/5				
FE74SB4S*EA1/4	5500	4P10 96kW		
FE74SD4S*EA1/4				
FE74SE4S*EA1/4				
FE84SC6S*EA2/5	6500	4P10 107kW		
FE84SE6S*EA2/5				
FE84SG6S*EA2/5				
FE84SG6W*EA2/5				
FE85SC6S*EA2/5	7500			
FE85SE6S*EA2/5				
FE85SG6S*EA2/5				
FE85SH6S*EA2/5				
FE85SJZS*EA2/5				
FE85SG6W*EA2/5				
FE85SH6W*EA2/5				
FE84SE6S*EA3/6	6500	4P10 129kW		
FE84SG6S*EA3/6				
FE84SG6W*EA3/6				
FE85SE6S*EA3/6	7500			
FE85SG6S*EA3/6				
FE85SG6W*EA3/6				
FE85SH6S*EA3/6				
FE85SH6W*EA3/6				
FE85SJZS*EA3/6				

9.8.2 Propeller shaft layout



MODEL	A (mm)
FB8, FE8	336
FE7	378
FB7	340

Note Dimension marked by # are not applicable only to 1-propeller models.
Dimension marked by * are applicable only to 3-propeller models.

PROPELLER SHAFT LAYOUT (FB7)

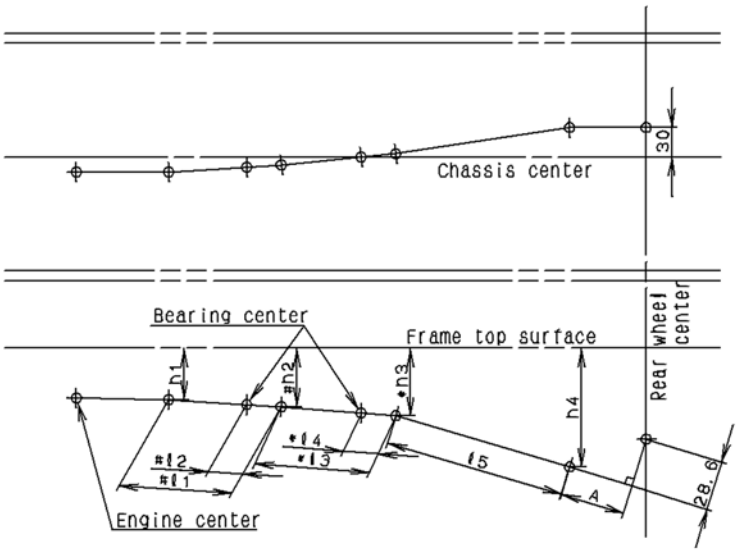
MODEL	T/M	PROPELLER SHAFT DIMENSIONS						DISTANCE FROM TOP SURFACE				
		l_1 (mm)	l_2 (mm)	l_3 (mm)	l_4 (mm)	l_5 (mm) BASIC LENGTH (O.D. X I.D.)	l_5 (mm) AT FULL STROKE	h_1 (mm)	h_2 (mm)	h_3 (mm)	h_4 (mm) BASIC LENGTH	h_4 (mm) AT FULL STROKE
FB73SB4	6M/T	–	–	–	–	997 (76.2 X 71.4)	995	214	–	–	356	265
FB73SD4		678	114			765 (76.2 X 71.4)	769		277		353	
FB73SE4 FB73SE4W		913				929 (76.2 X 71.4)	932		260		351	
											347	

NOTE: BASIC LENGTH IS CALCULATED WHEN THE AXLE POSITION IS UNLADEN.

PROPELLER SHAFT LAYOUT (FB8)

MODEL	T/M	PROPELLER SHAFT DIMENSIONS						DISTANCE FROM TOP SURFACE				
		l_1 (mm)	l_2 (mm)	l_3 (mm)	l_4 (mm)	l_5 (mm) BASIC LENGTH (O.D. X I.D.)	l_5 (mm) AT FULL STROKE	h_1 (mm)	h_2 (mm)	h_3 (mm)	h_4 (mm) BASIC LENGTH	h_4 (mm) AT FULL STROKE
FB83SB4	6M/T	–	–	–	–	950 (76.2 X 71.4)	945	219	–	–	359	265
FB83SD4		653	114			744 (76.2 X 71.4)	743		273		357	
FB83SE4 FB83SE4W		868				933 (76.2 X 71.4)	932		266		356	
											351	268
FB83SG4		1123				1176 (88.9 X 84.08)	1177		277		355	265

NOTE: BASIC LENGTH IS CALCULATED WHEN THE AXLE POSITION IS UNLADEN.

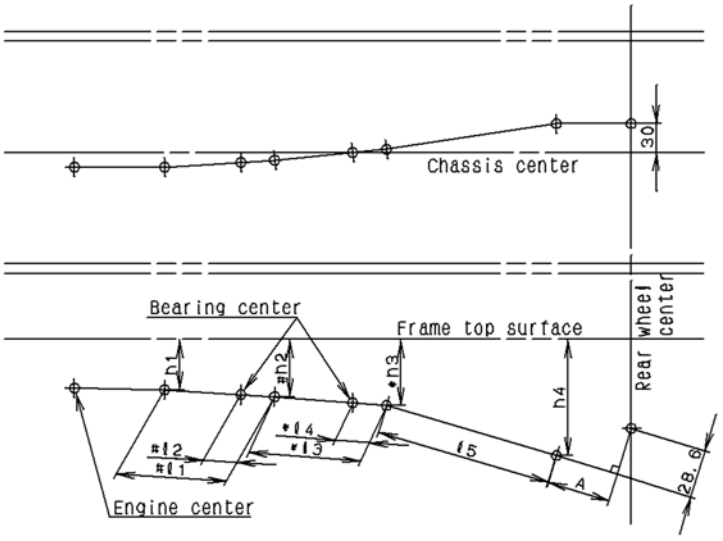


Note Dimension marked by # are not applicable only to 1-propeller models.
Dimension marked by * are applicable only to 3-propeller models.

PROPELLER SHAFT LAYOUT (FE7)

MODEL	T/M	PROPELLER SHAFT DIMENSIONS						DISTANCE FROM TOP SURFACE				
		l_1 (mm)	l_2 (mm)	l_3 (mm)	l_4 (mm)	l_5 (mm) BASIC LENGTH (O.D. X I.D.)	l_5 (mm) AT FULL STROKE	h_1 (mm)	h_2 (mm)	h_3 (mm)	h_4 (mm) BASIC LENGTH	h_4 (mm) AT FULL STROKE
FE74SB4	6M/T	–	–	–	–	951 (76.2 X 71.4)	957	214.2	–	–	385	262.5
FE74SD4		678	114			720 (76.2 X 71.4)	727		270		383	
FE74SE4		913				888 (76.2 X 71.4)	896		260		401	272

NOTE: BASIC LENGTH IS CALCULATED WHEN THE AXLE POSITION IS UNLADEN.



Note Dimension marked by # are not applicable only to 1-propeller models.
Dimension marked by • are applicable only to 3-propeller models.

PROPELLER SHAFT LAYOUT (FE8)

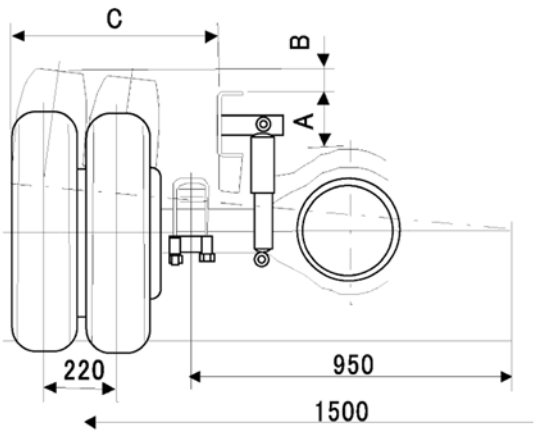
MODEL	T/M	PROPELLER SHAFT DIMENSIONS						DISTANCE FROM TOP SURFACE				
		l_1 (mm)	l_2 (mm)	l_3 (mm)	l_4 (mm)	l_5 (mm) BASIC LENGTH (O.D. X I.D.)	l_5 (mm) AT FULL STROKE	h_1 (mm)	h_2 (mm)	h_3 (mm)	h_4 (mm) BASIC LENGTH	h_4 (mm) AT FULL STROKE
FE84SC6 FE85SC6	6M/T	–	–	–	–	1210 (88.9 X 84.08)	1215	221	–	–	408	279
FE84SE6 FE85SE6		868	114			940 (76.2 X 71.4)	947		267		406	
FE84SG6 FE85SG6 FE84SG6W FE85SGW		1123				1182 (88.9 X 84.08)	1192		279		404	
FE85SH6 FE85SHW		1068		778	114	808 (76.2 X 71.4)	821		279	315	402	
FE85SJZ		918		828		1163 (76.2 X 71.4)	1171	254	306	361	443	324

NOTE: BASIC LENGTH IS CALCULATED WHEN THE AXLE POSITION IS UNLADEN.

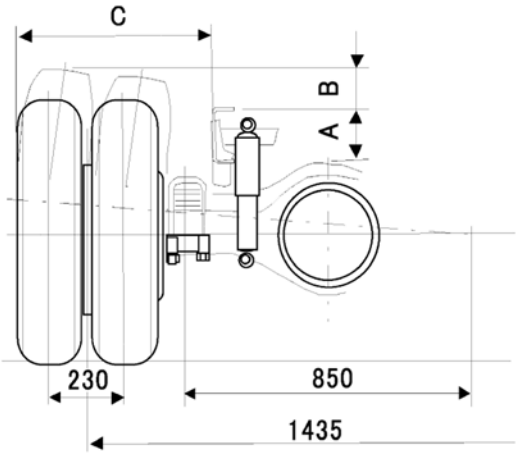
9.9 Maximum height of axle housing and tyre when bounding

Model	Tyre size	A	B	C
FB83SB4S FB83SD4S FB83SE4S FB83SE4W FB83SG4S	195/75R16C	101	138	587
FB73SB4S FB73SD4S FB73SE4S FB73SE4W	195/75R16C	95	144	612
FE74SB4S FE74SD4S FE74SE4S	205/75R16C	79	168	588
FE84SC6S FE84SE6S FE84SG6S FE84SG6W	215/75R16C 225/75R16C	87 87	170 178	643 647
FE85SC6S FE85SE6S FE85SG6S FE85SG6W FE85SH6S FE85SH6W	205/75R17.5C	87	182	637
FE85SJZ	205/75R17.5C	122	143	644

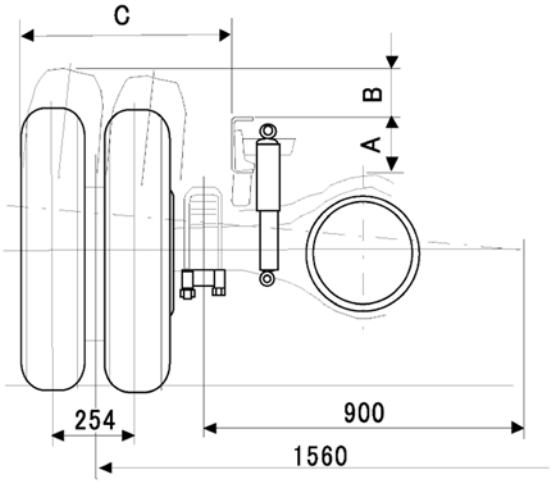
9.9 Maximum height of axle housing and tyre when bounding



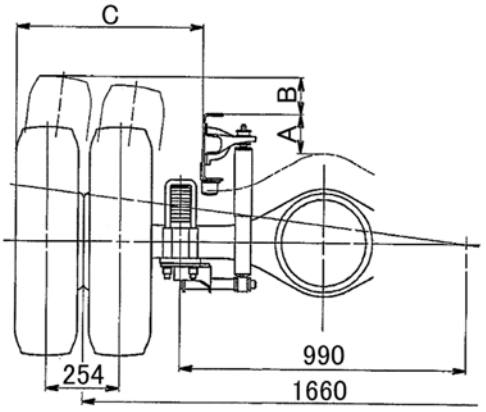
FB73S, FB83S



FE74S



FE84S, FE85S



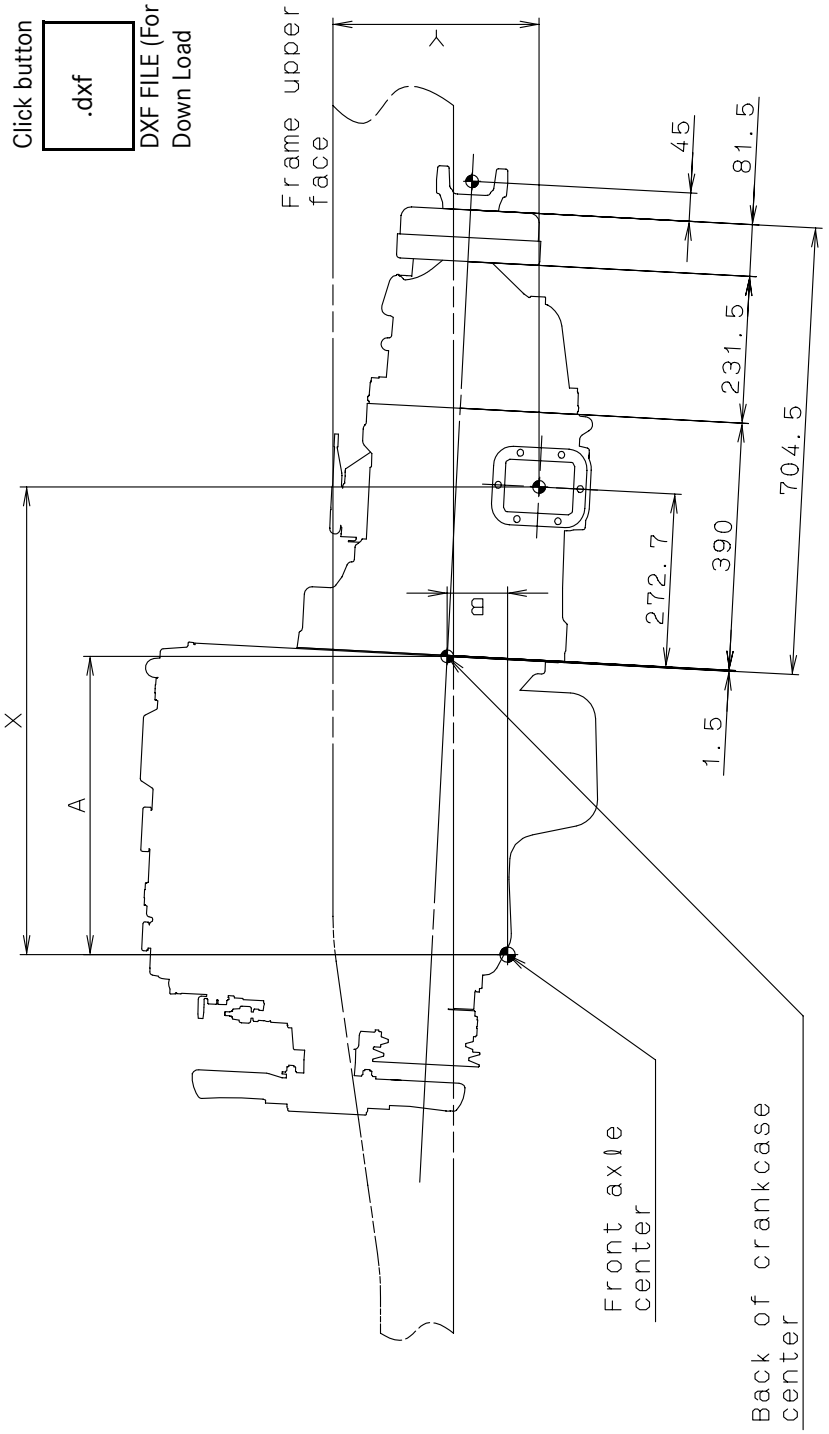
FE85SJZ

Note:
A is a dimension at the time both wheels are in the highest position
B is a dimension at the time the wheels on one side are in the highest position and the wheels on other side are in state of unloading
C is a dimension between the outside of the tyres and the out side of the frame

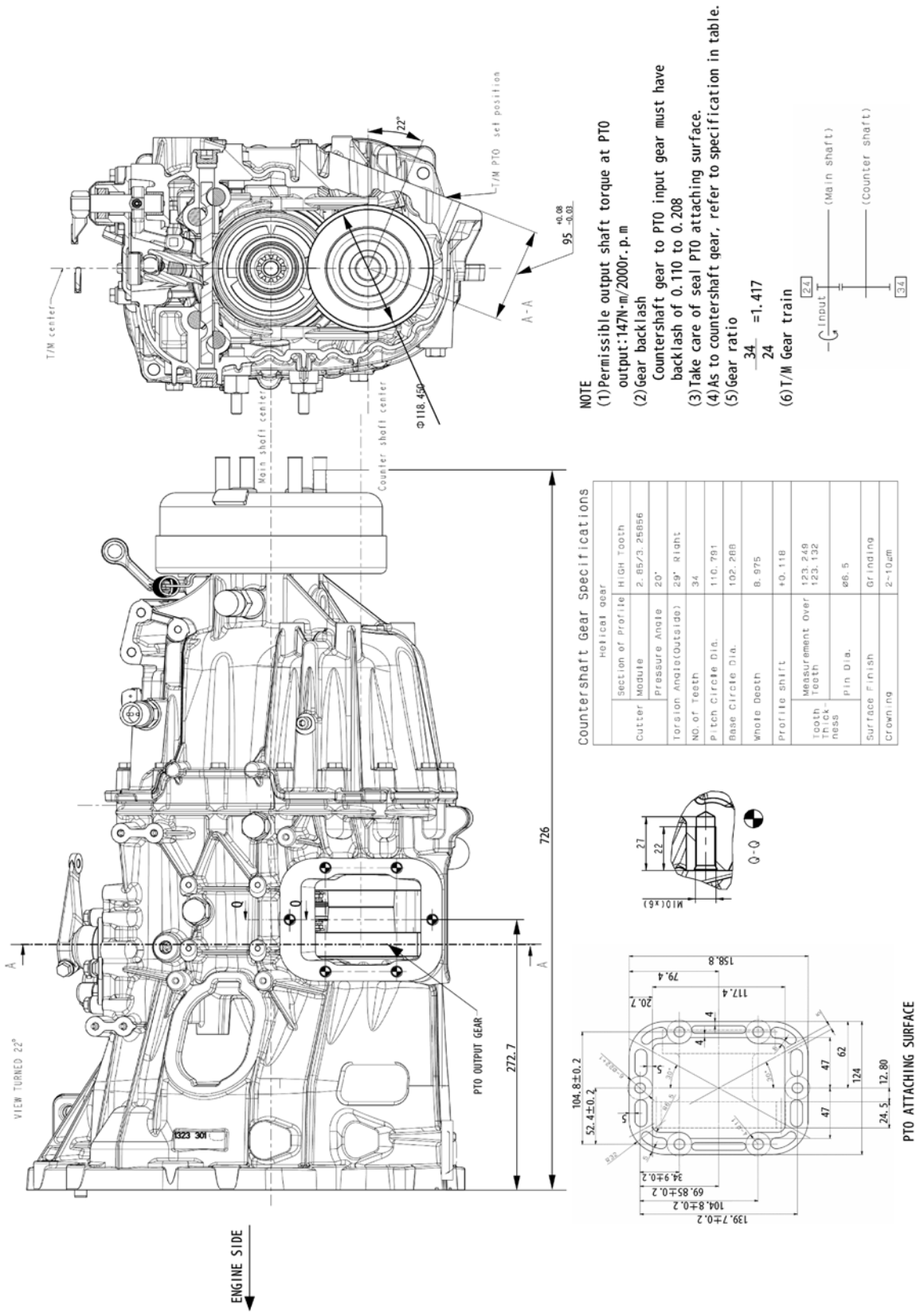
9.10 Engine transmission assembly

	FB7 FE7	FB8	FE8	FE8*JZ
A	425	470	470	470
B	95	95	95	95
X	692	737	737	737
Y	319.8	324.8	326.3	359.3

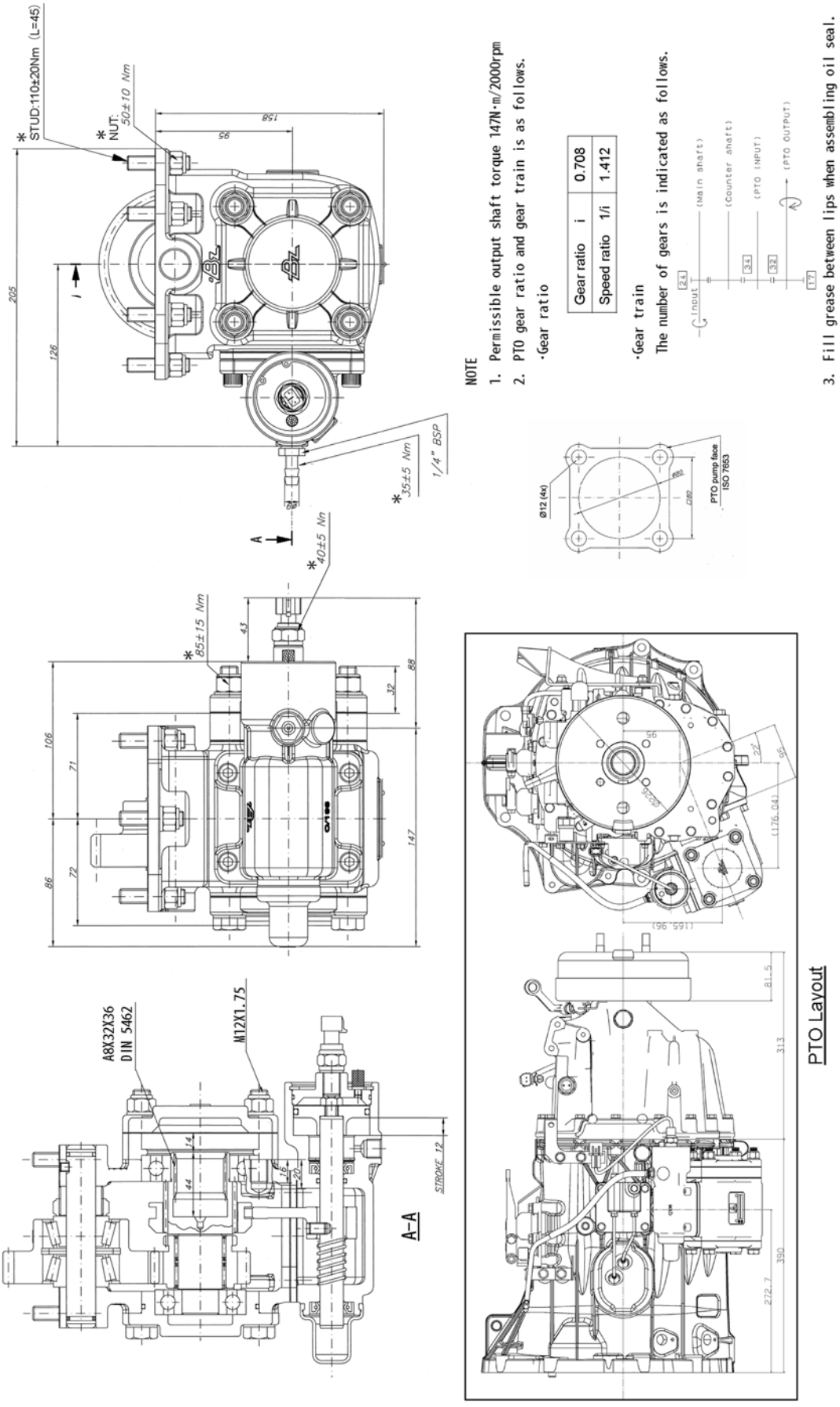
Click button .dxf DXF FILE (For Autocad.) Down Load



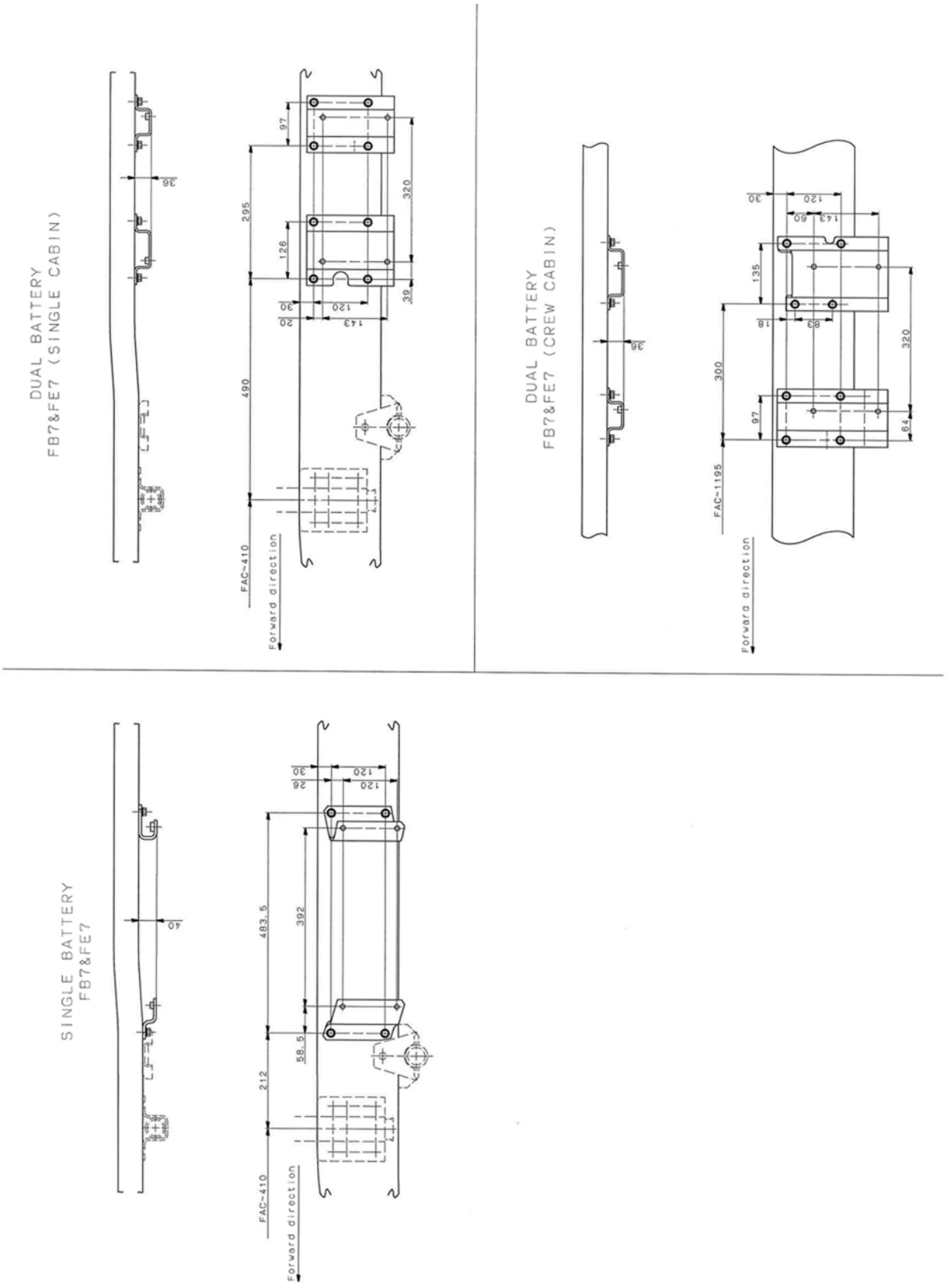
9.11 Transmission power-take-off layout



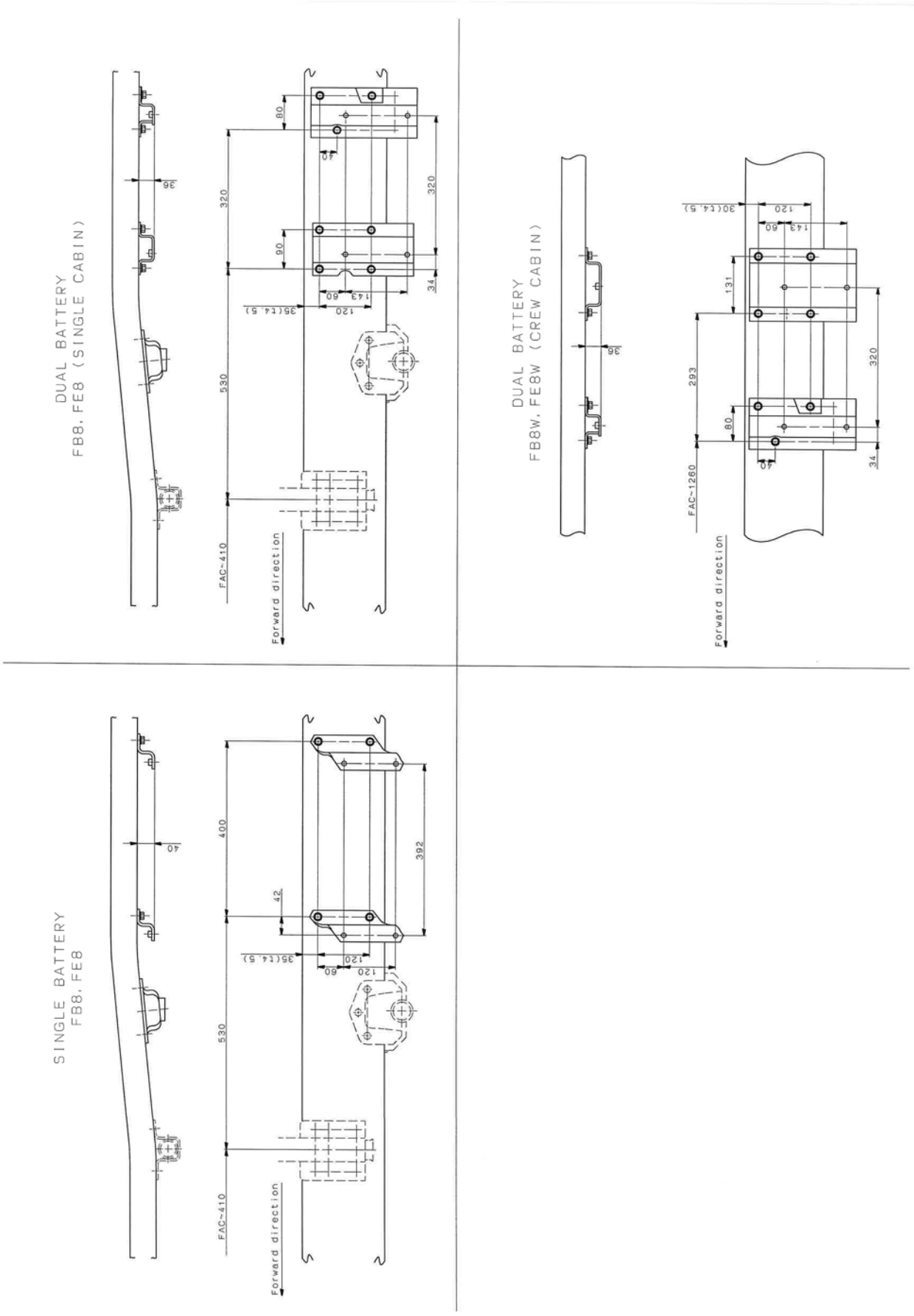
9.11 Transmission power-take-off layout



9.12 Battery mounting layout

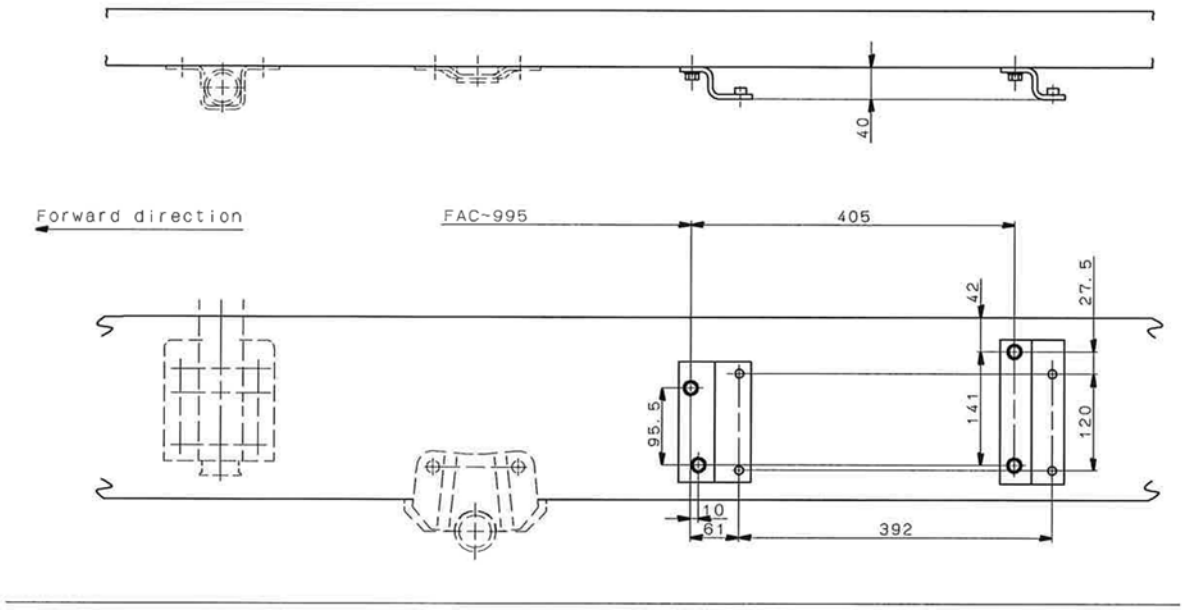


9.12 Battery mounting layout

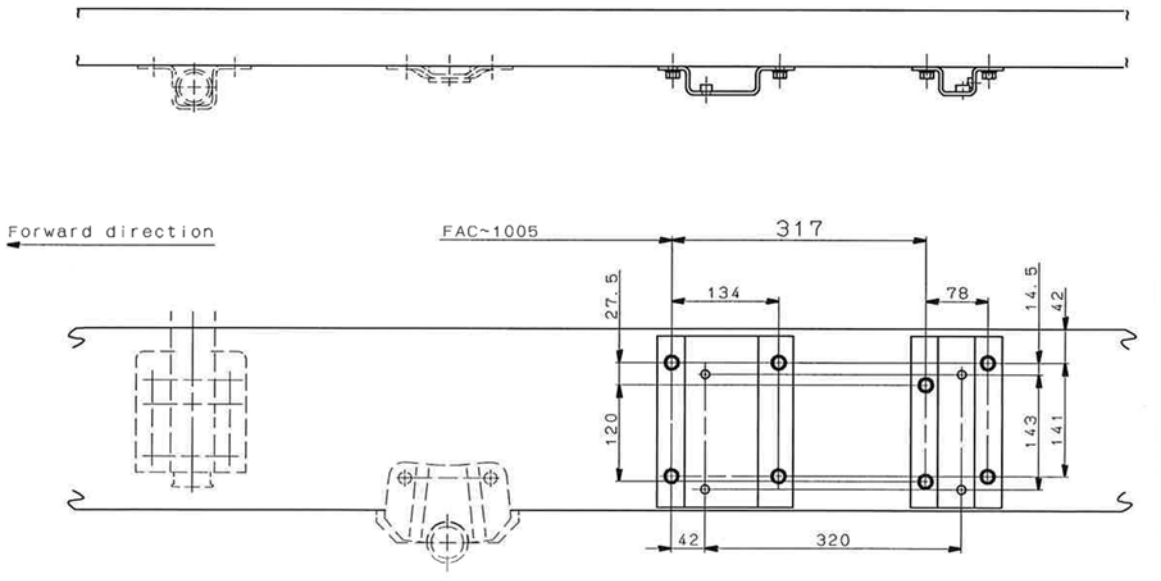


9.12 Battery mounting layout

SINGLE BATTERY
FE8J



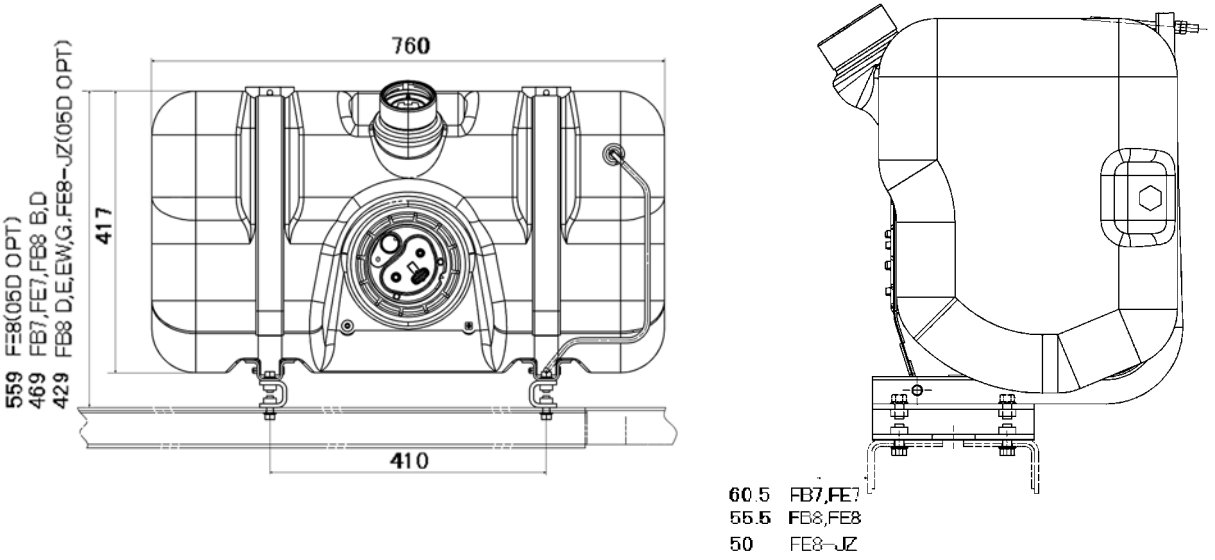
DUAL BATTERY
FE8J



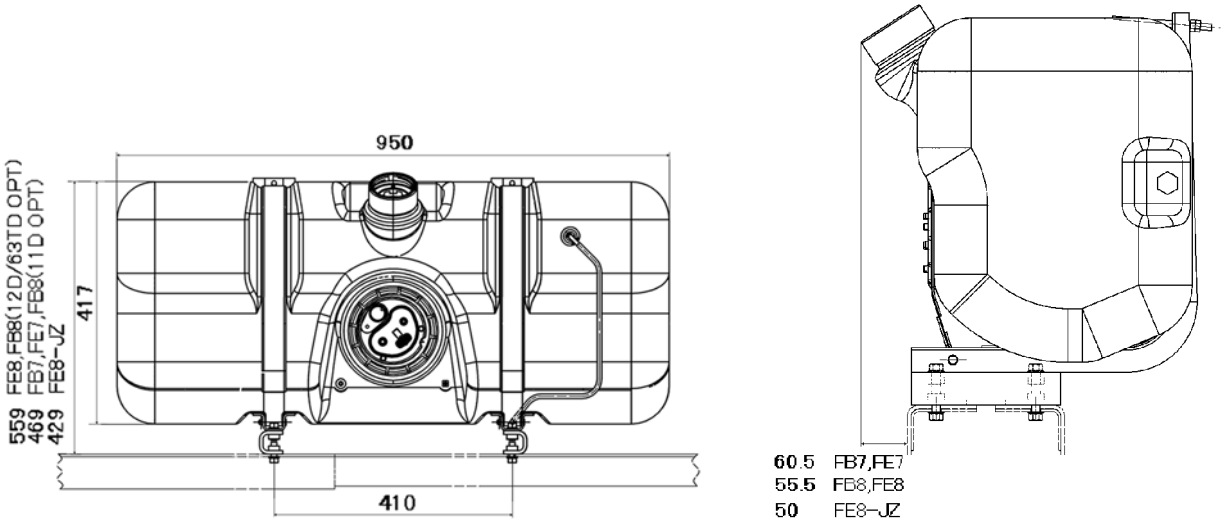
9.13 Fuel tank mounting layout

9.13.1 Fuel tank

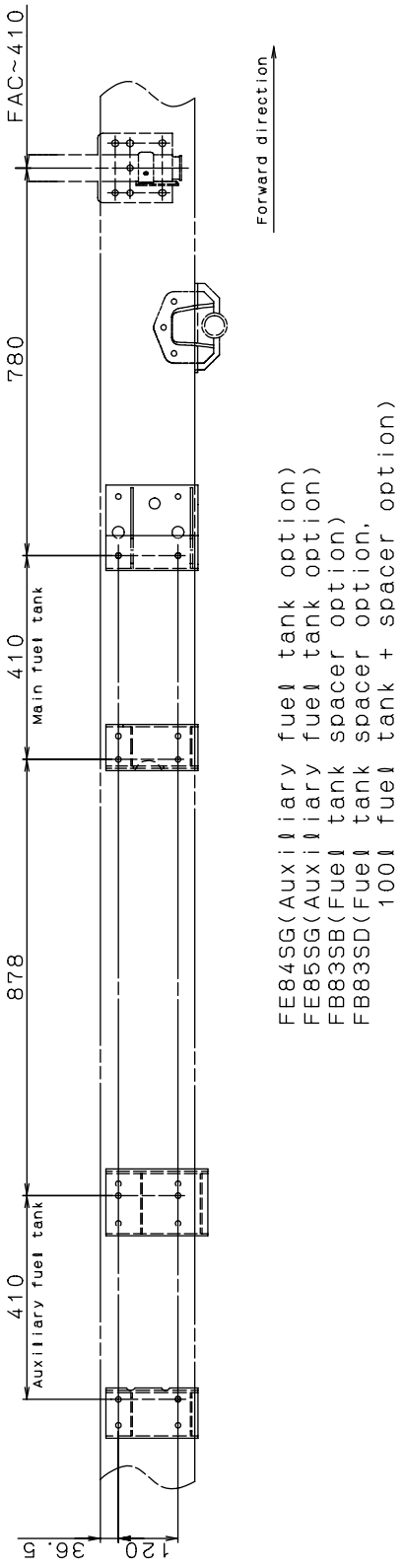
80-liter tank

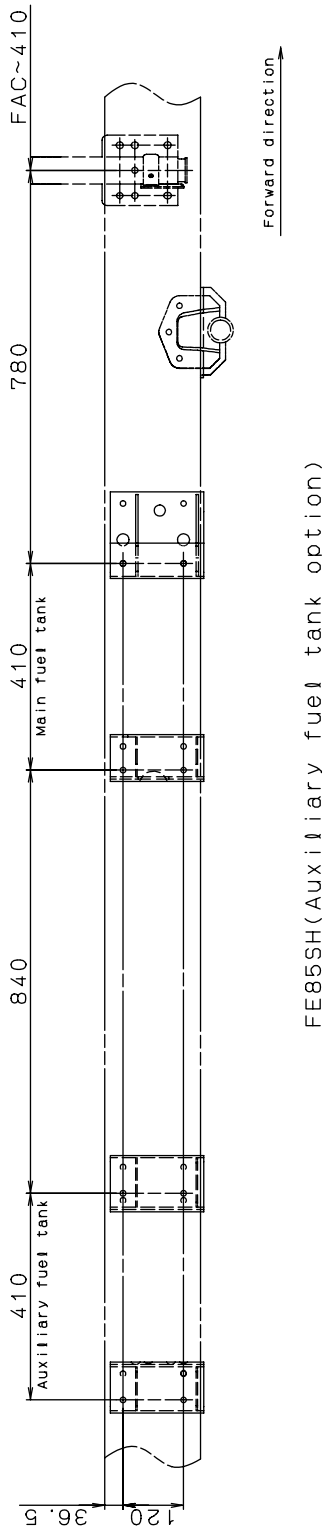


100-liter tank

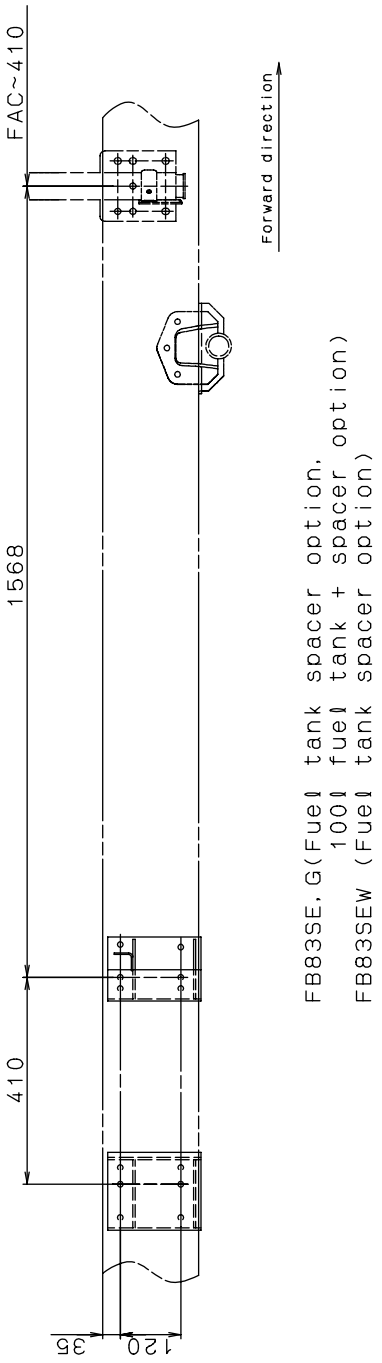


9.13.2 Fuel tank bracket (option)

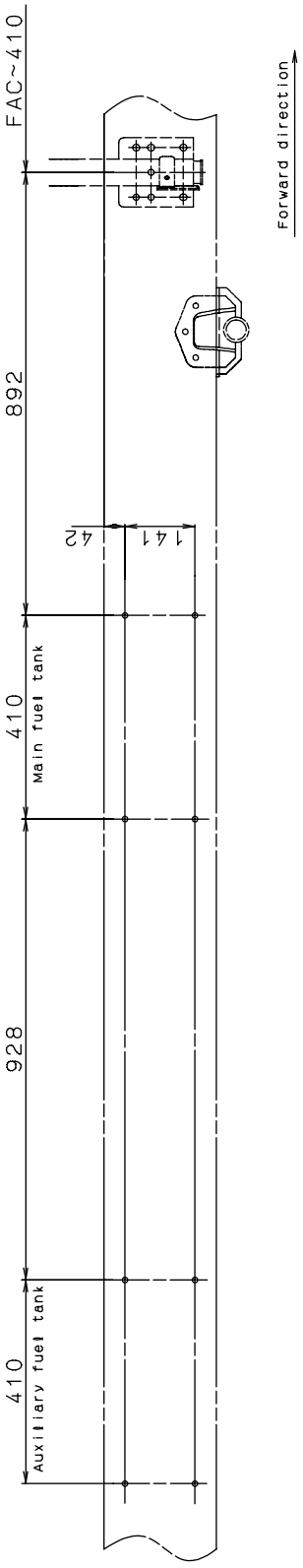




9.13 Fuel tank mounting layout



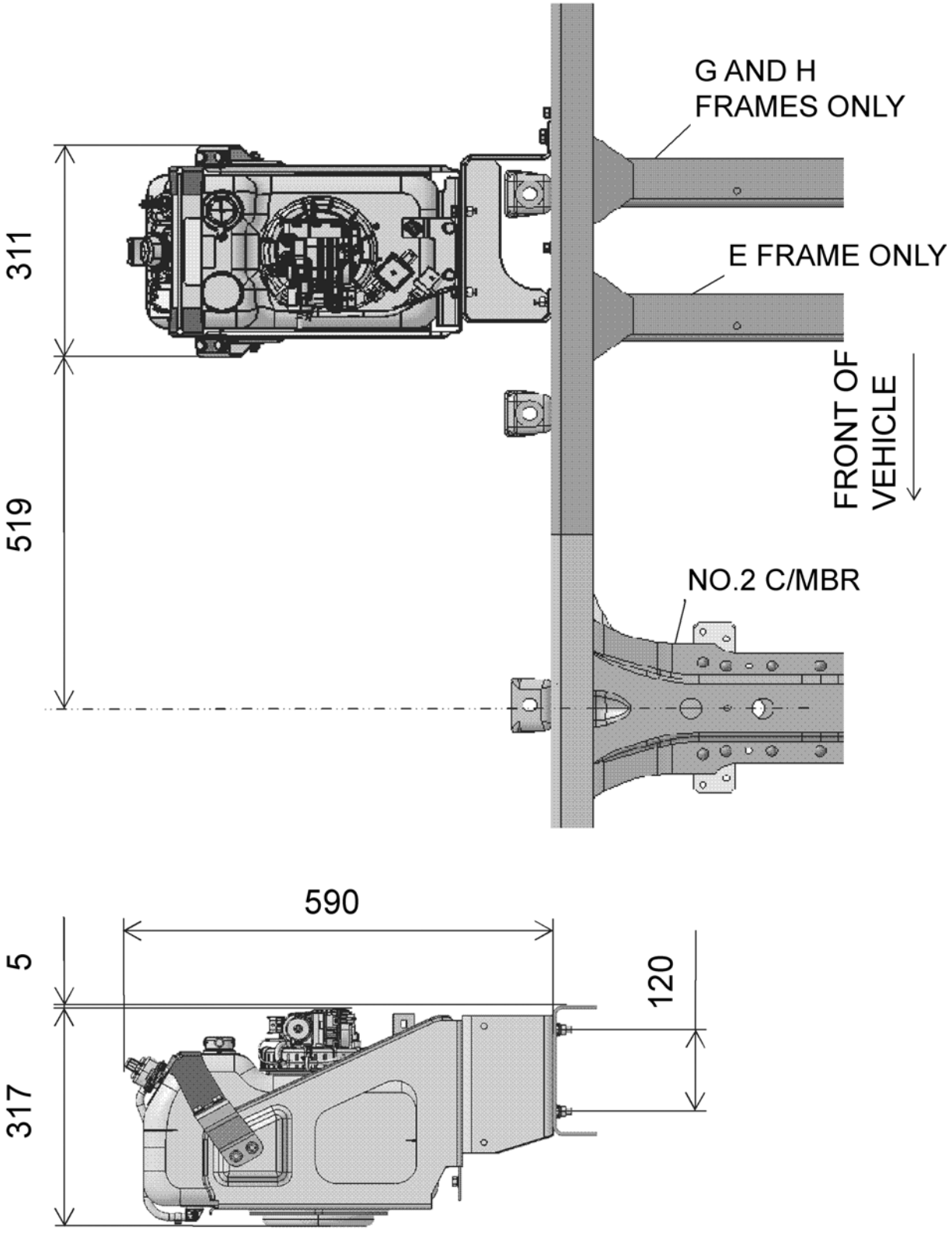
FB83SE,G(Fuel tank spacer option,
1001 fuel tank + spacer option)
FB83SEW (Fuel tank spacer option)



FE85SJZ(Auxiliary fuel tank option)

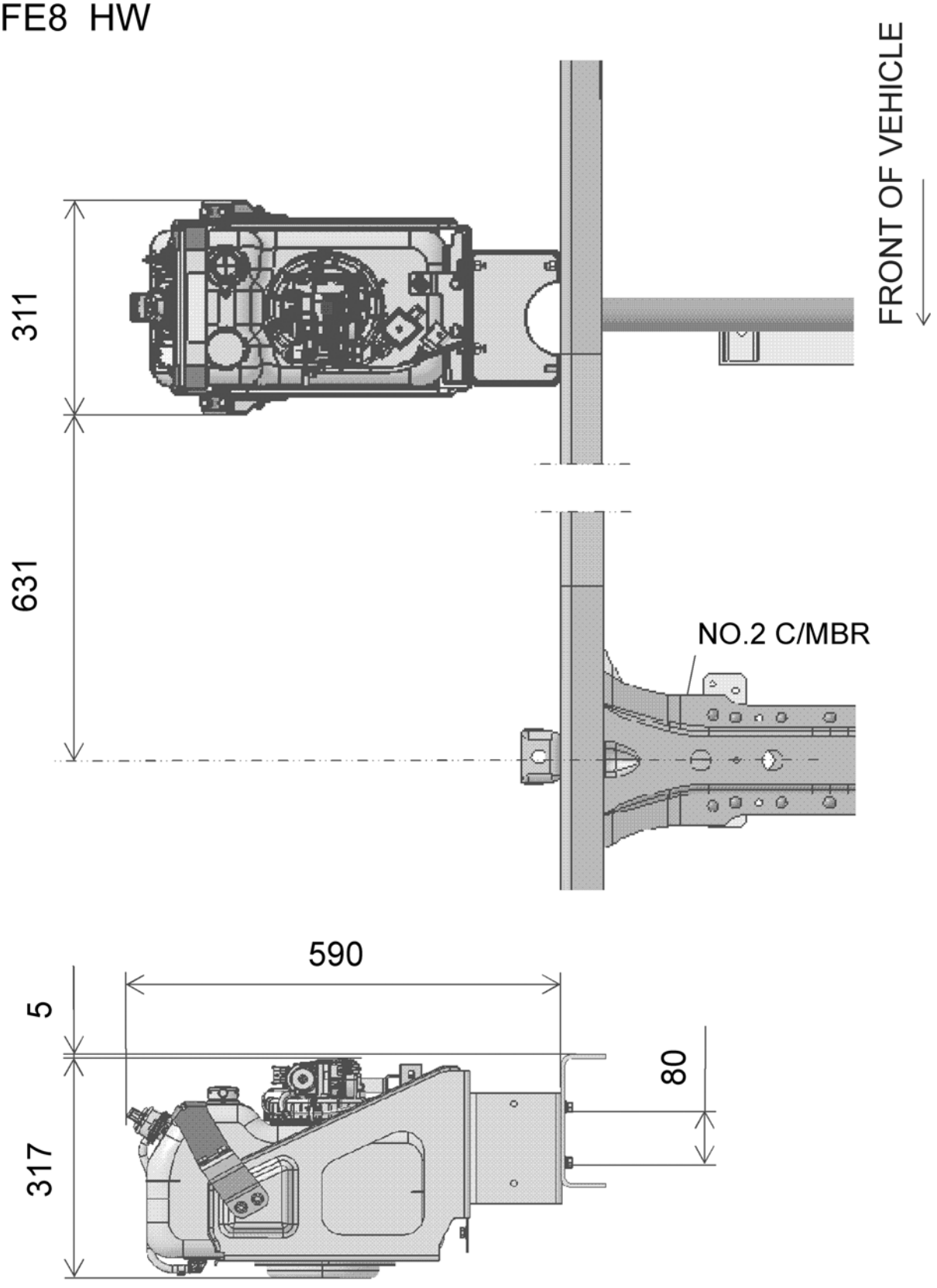
9.14 Blue Tec® exhaust gas aftertreatment

- FE8 E,G,H



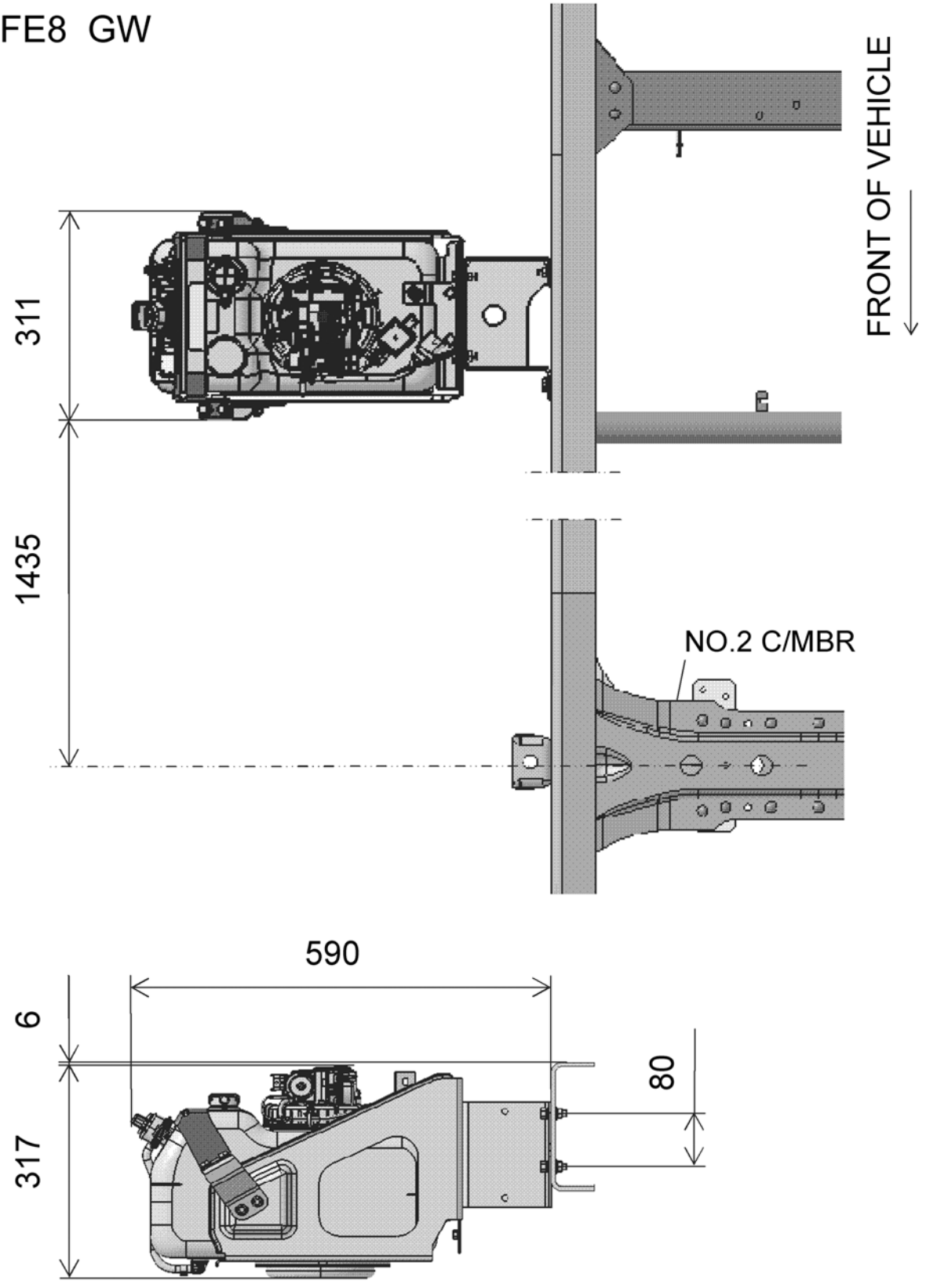
9.14 Blue Tec® exhaust gas aftertreatment

· FE8 HW



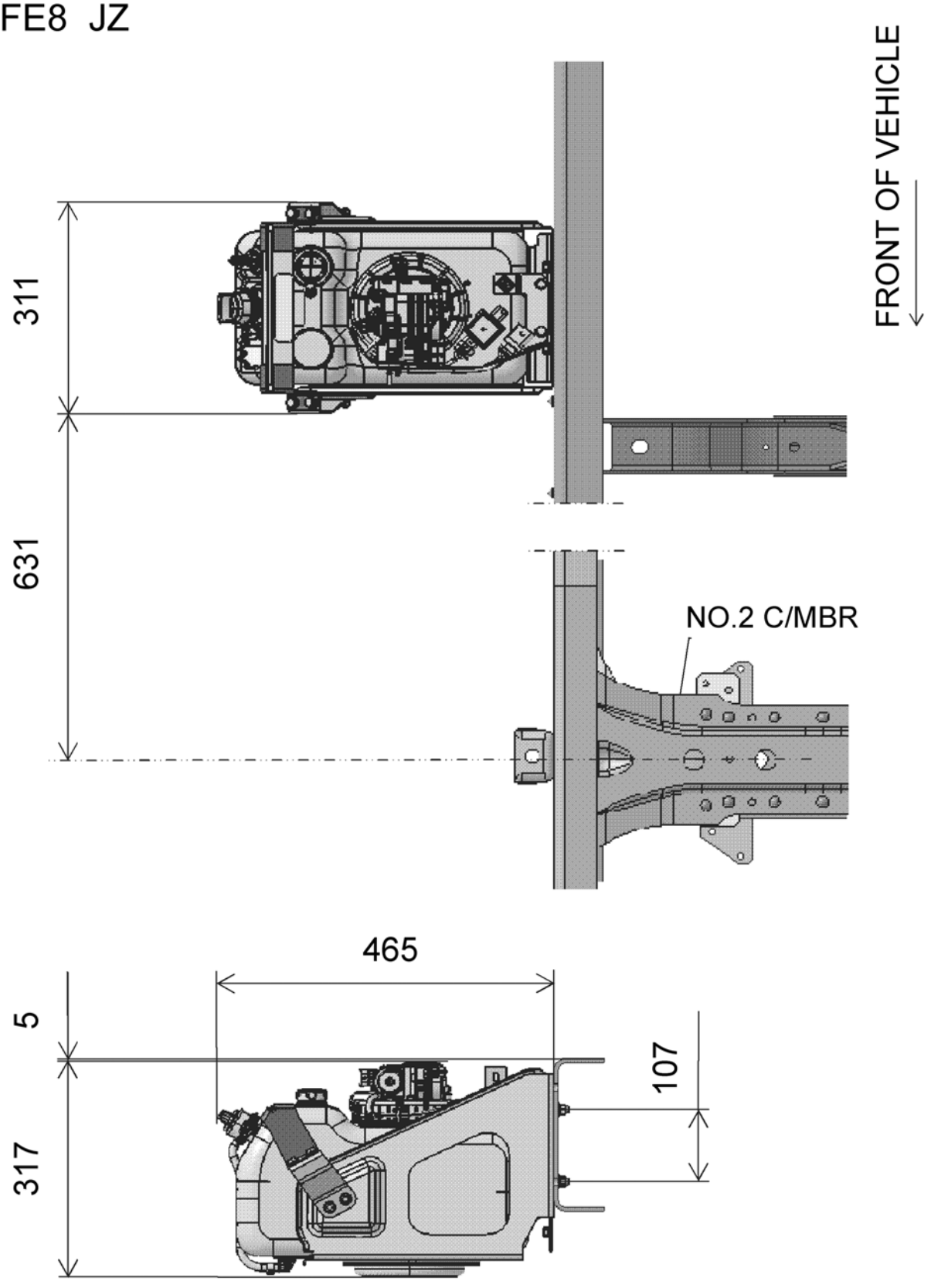
9.14 Blue Tec® exhaust gas aftertreatment

· FE8 GW



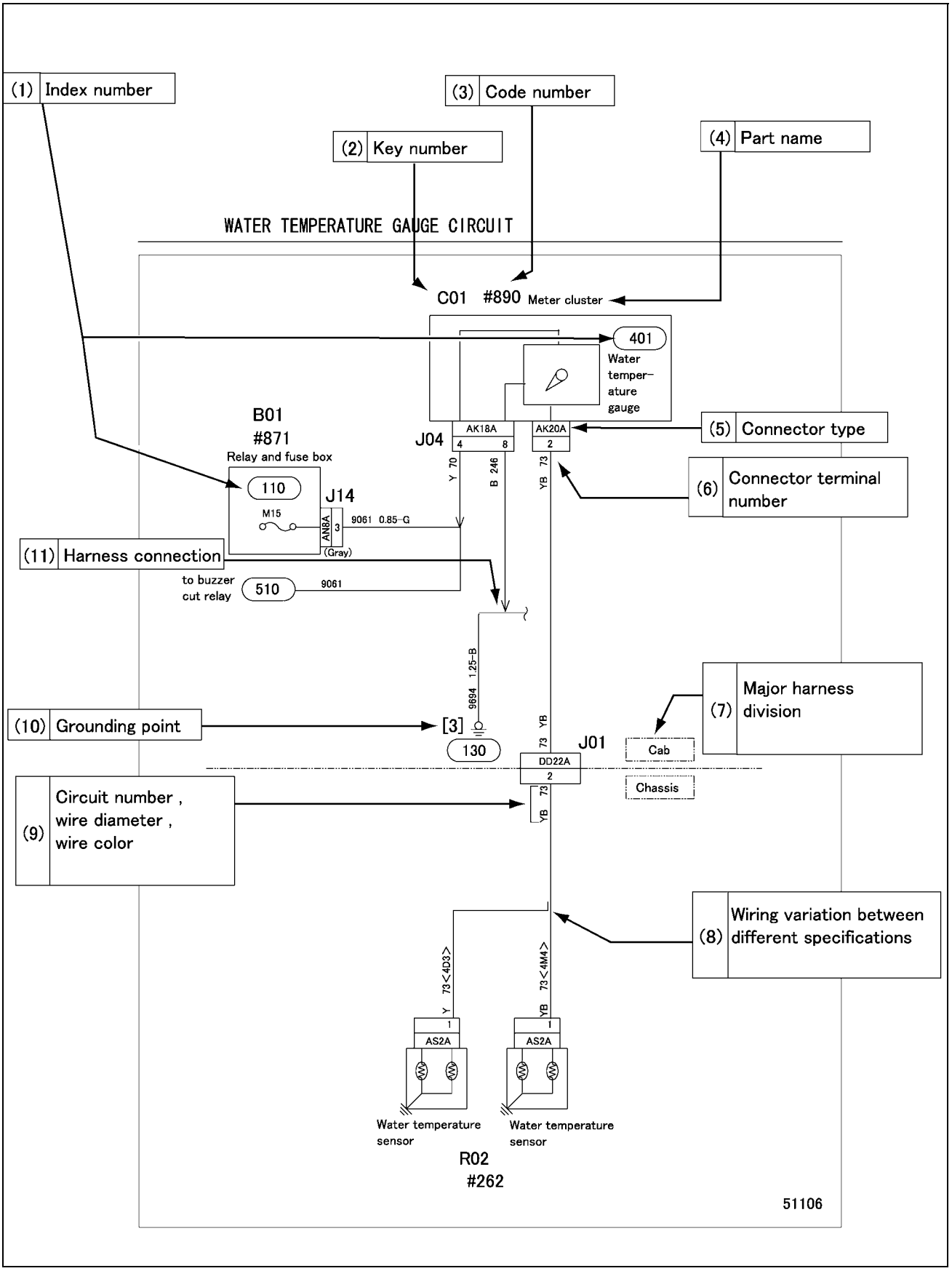
9.14 Blue Tec® exhaust gas aftertreatment

· FE8 JZ



9.15 Electrical wiring diagram

HOW TO READ CIRCUITS



9.15 Electrical wiring diagram

(1) Index number: (100) - (999)

- Index numbers are used as reference numbers for electrical circuits. Each electrical circuit has been assigned its own index number.

(2) Key number: A01 - Z99

- Key numbers indicate parts installation locations. The installation location of a part can be easily found using its key number shown in a circuit diagram.

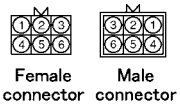
(3) Code number: #001 - #999

- Code numbers are reference numbers to find individual parts inspection procedures. The inspection procedure for a part can be found using its code number shown in a circuit diagram.

(4) Part name

(5) Connector type (type indication)

(6) Connector terminal number



Connector terminal numbering starts with the upper left corner for female connectors and with the upper right corner for male connectors.

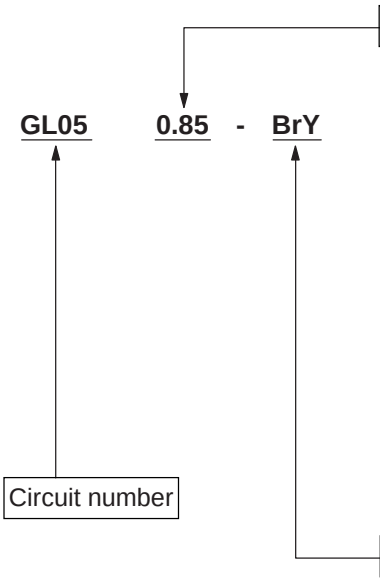
(7) Major harness division

- Major harness divisions are shown

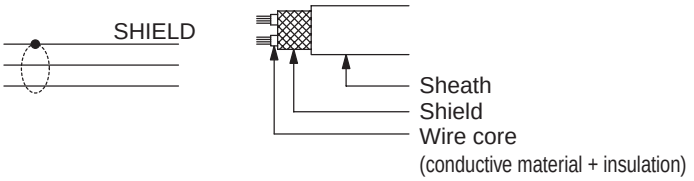
(8) Wiring variations between different specifications

- Variations in wiring/circuit between different vehicle specifications are clearly indicated as shown.

(9) Circuit number, wire diameter, wire color



"Wire diameter" represents the cross section of the wire's conductive material. For example, "0.85" corresponds to 0.85 mm². On the circuit diagrams, the unit "mm²" is omitted. Wires with a conductive cross section of 0.5 mm² are shown without the wire diameter or unit. As indicated below, shielding wires are marked with "SHIELD," and shielded wires are circled by a dotted line.



On the circuit drawings, twisted wires are indicated as shown below.

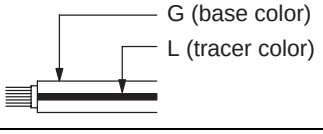
Wire colors are represented by the first letter of the color.
Colors that all start with the letter "B" are indicated as follows.

- BLACK → B
- BLUE → L
- BROWN → Br

Wires that have both base and tracer colors are indicated by two letters.

RY (Yellow tracer on Red base)

GL (Blue tracer on Green base)



(10) Grounding point: [1] - [99]

- Locations where wires are grounded to the vehicle. All of the grounding points are listed in (130).

(11) Harness connection

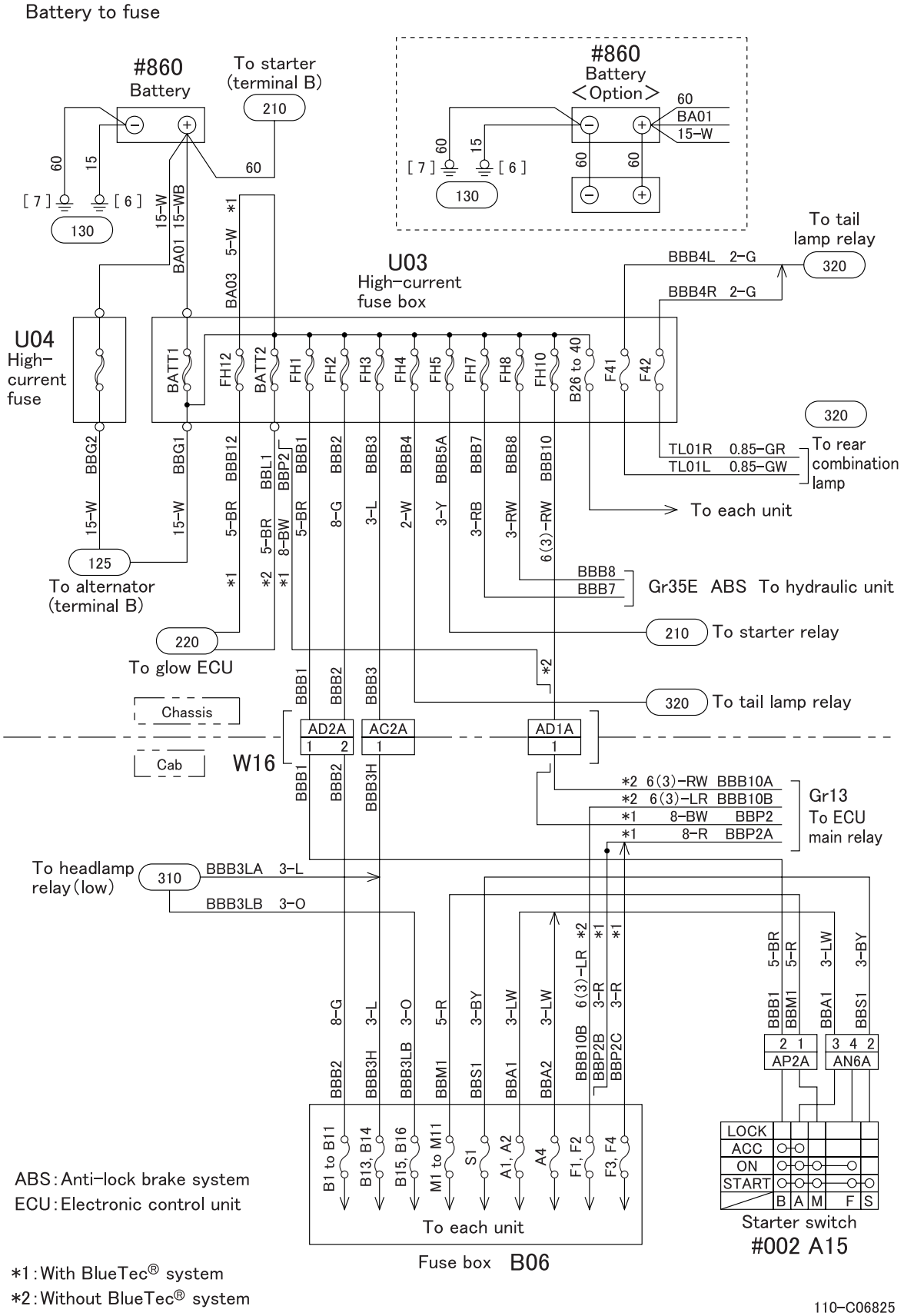
- The arrow in the wiring diagram indicates where harnesse are connected, and NOT the flow of electricity.

9.15 Electrical wiring diagram

Wire color

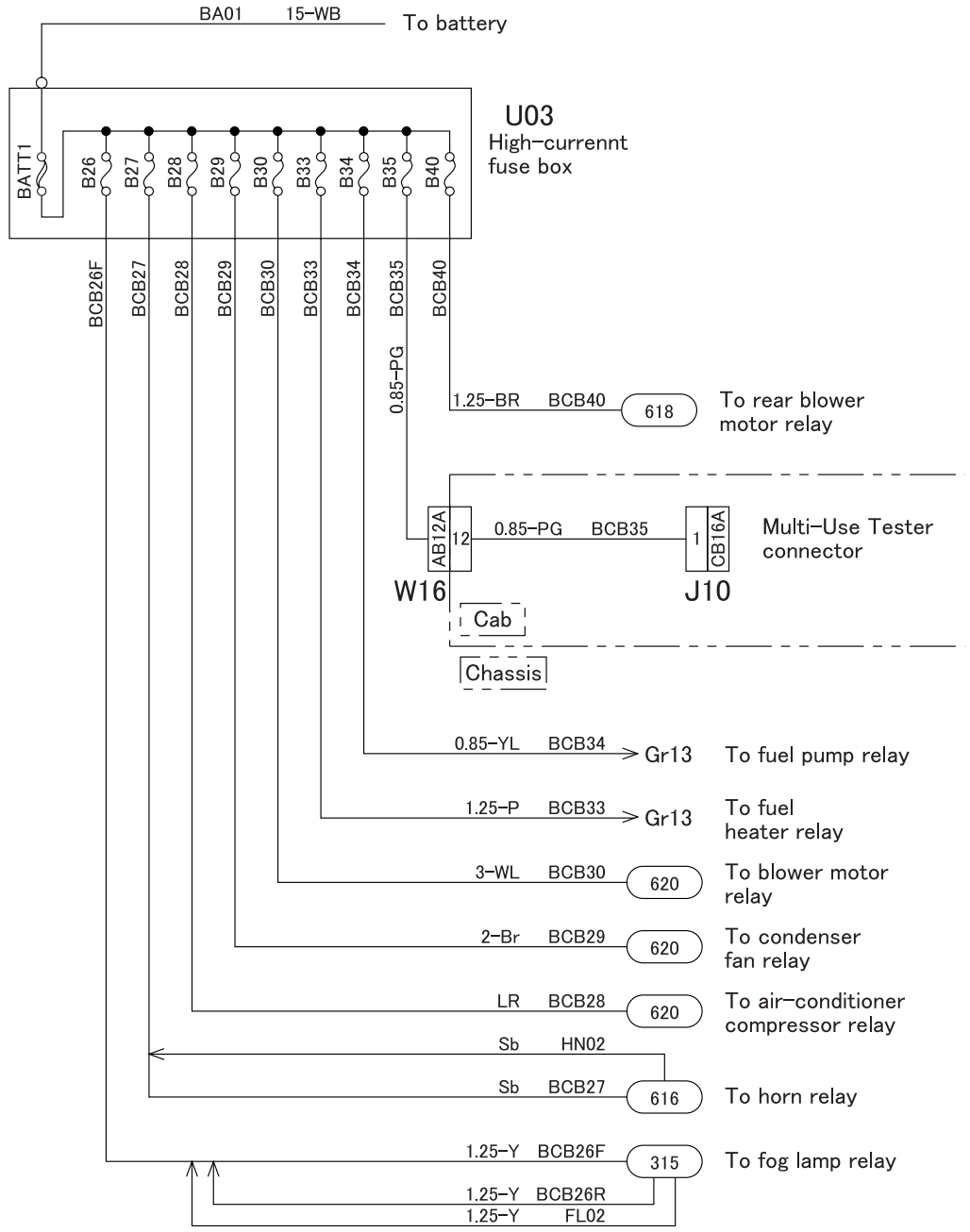
Wire color		Base color / tracer color											
B	Black	BW	Black/ white	BY	Black/ yellow	BR	Black/red	BG	Black/ green	BL	Black/ blue		
Br	Brown	BrW	Brown/ white	BrB	Brown/ black	BrY	Brown/ yellow	BrR	Brown/ red	BrG	Brown/ green		
G	Green	GW	Green/ white	GR	Green/ red	GY	Green/ yellow	GB	Green/ black	GL	Green/ blue	GO	Green/ orange
Gr	Gray	GrL	Gray/ blue	GrR	Gray/ red								
L	Blue	LW	Blue/ white	LR	Blue/red	LY	Blue/ yellow	LB	Blue/ black	LO	Blue/ orange	LG	Blue/ green
Lg	Light green	LgR	Light green/ red	LgY	Light green/ yellow	LgB	Light green/ black	LgW	Light green/ white				
O	Orange	OL	Orange/ blue	OB	Orange/ black	OG	Orange/ green						
P	Pink	PB	Pink/ black	PG	Pink/ green	PL	Pink/ blue	PW	Pink/ white				
Pu	Purple												
R	Red	RW	Red/ white	RB	Red/ black	RY	Red/ yellow	RG	Red/ green	RL	Red/blue	RO	Red/ orange
Sb	Sky blue												
V	Violet	VY	Violet/ yellow	VW	Violet/ white	VR	Violet/red	VG	Violet/ green				
W	White	WR	White/ red	WB	White/ black	WL	White/ blue	WG	White/ green	WO	White/ orange		
Y	Yellow	YR	Yellow/ red	YB	Yellow/ black	YG	Yellow/ green	YL	Yellow/ blue	YW	Yellow/ white	YW	Yellow/ orange
		YR	Yellow/ pink	YV	Yellow/ violet								

POWER CIRCUIT (1)



POWER CIRCUIT (2)

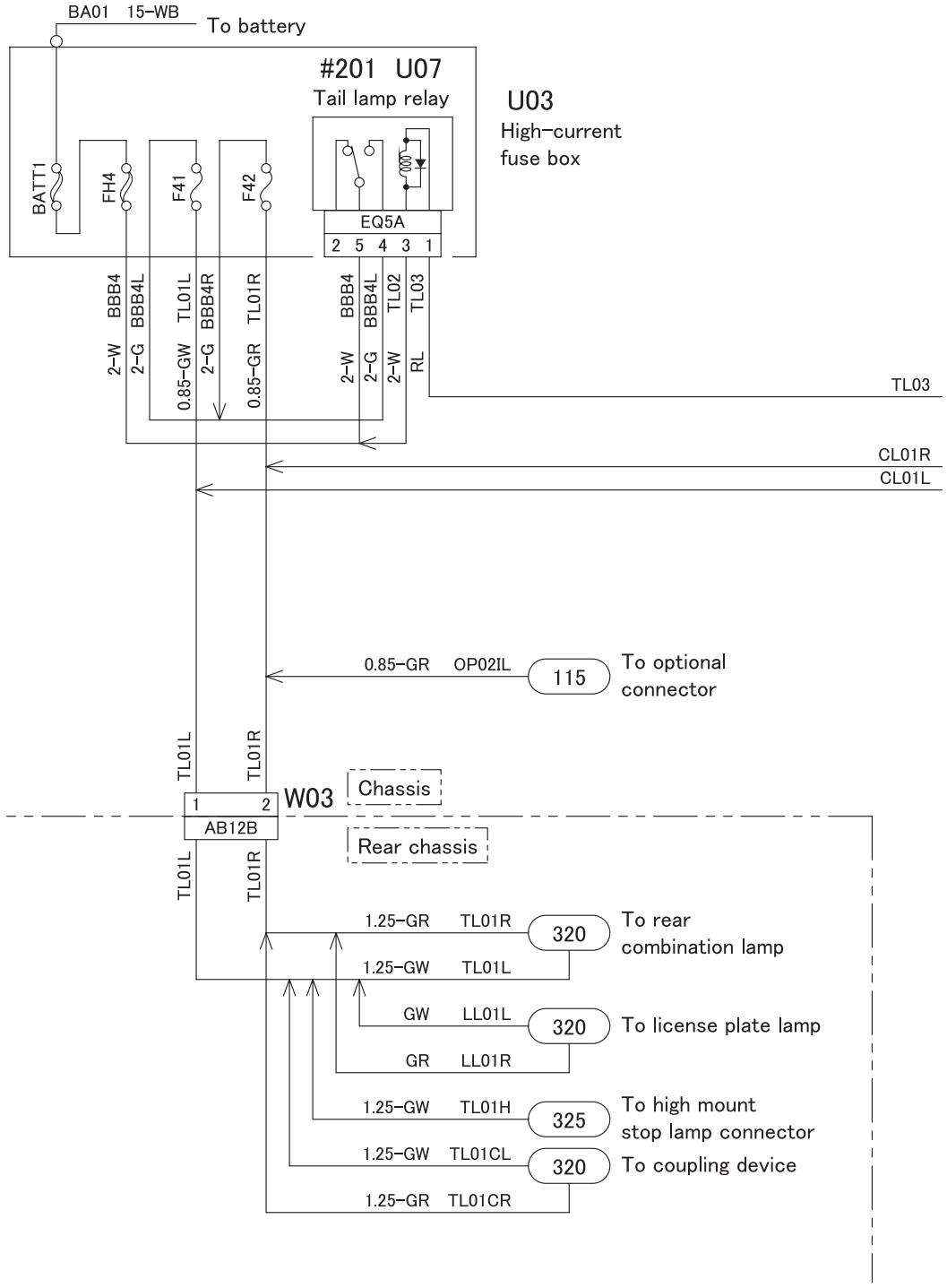
High-current fuse box
(Fuse B26 to B40)



110-C05268

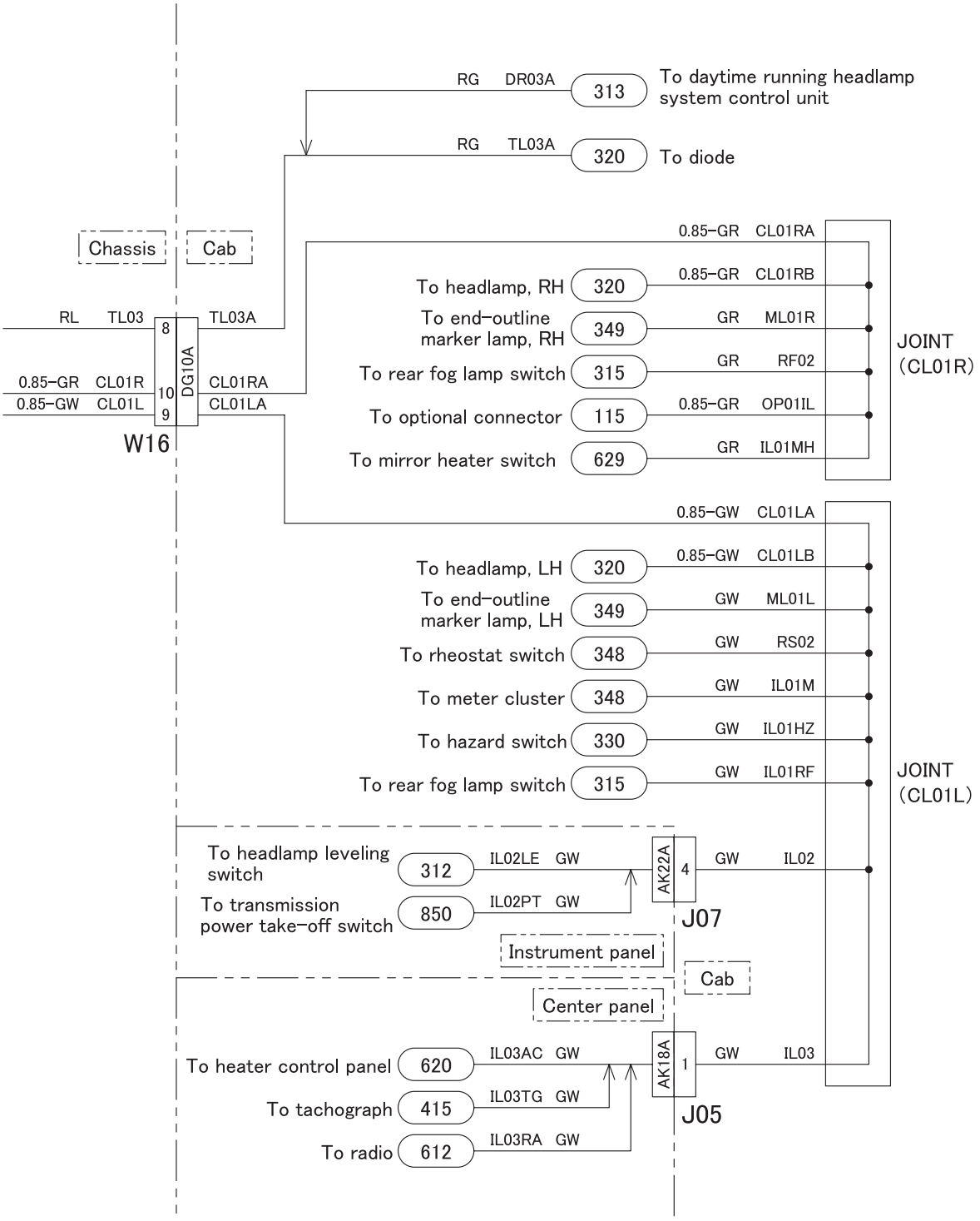
POWER CIRCUIT (3)

High-current fuse box
(Fuse F41, F42)



110-C05269-1

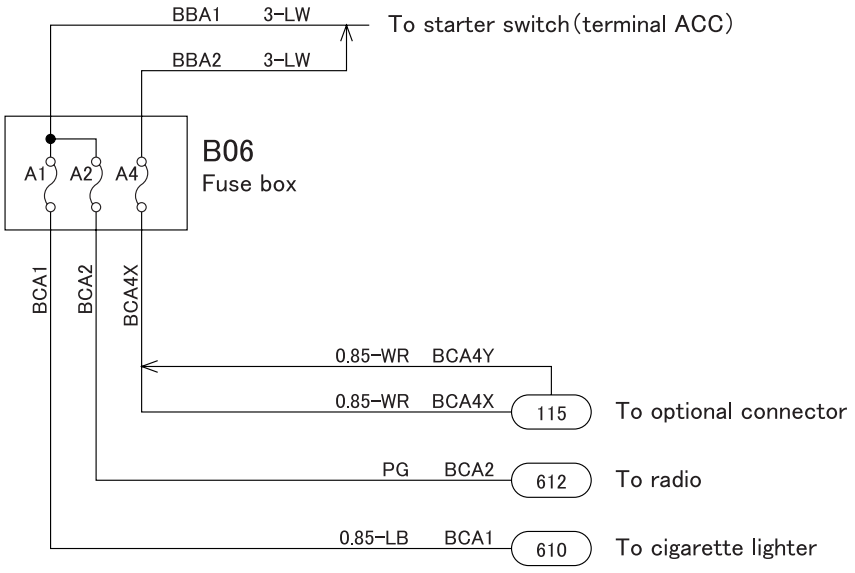
POWER CIRCUIT (4)



110-C05269-2

POWER CIRCUIT (5)

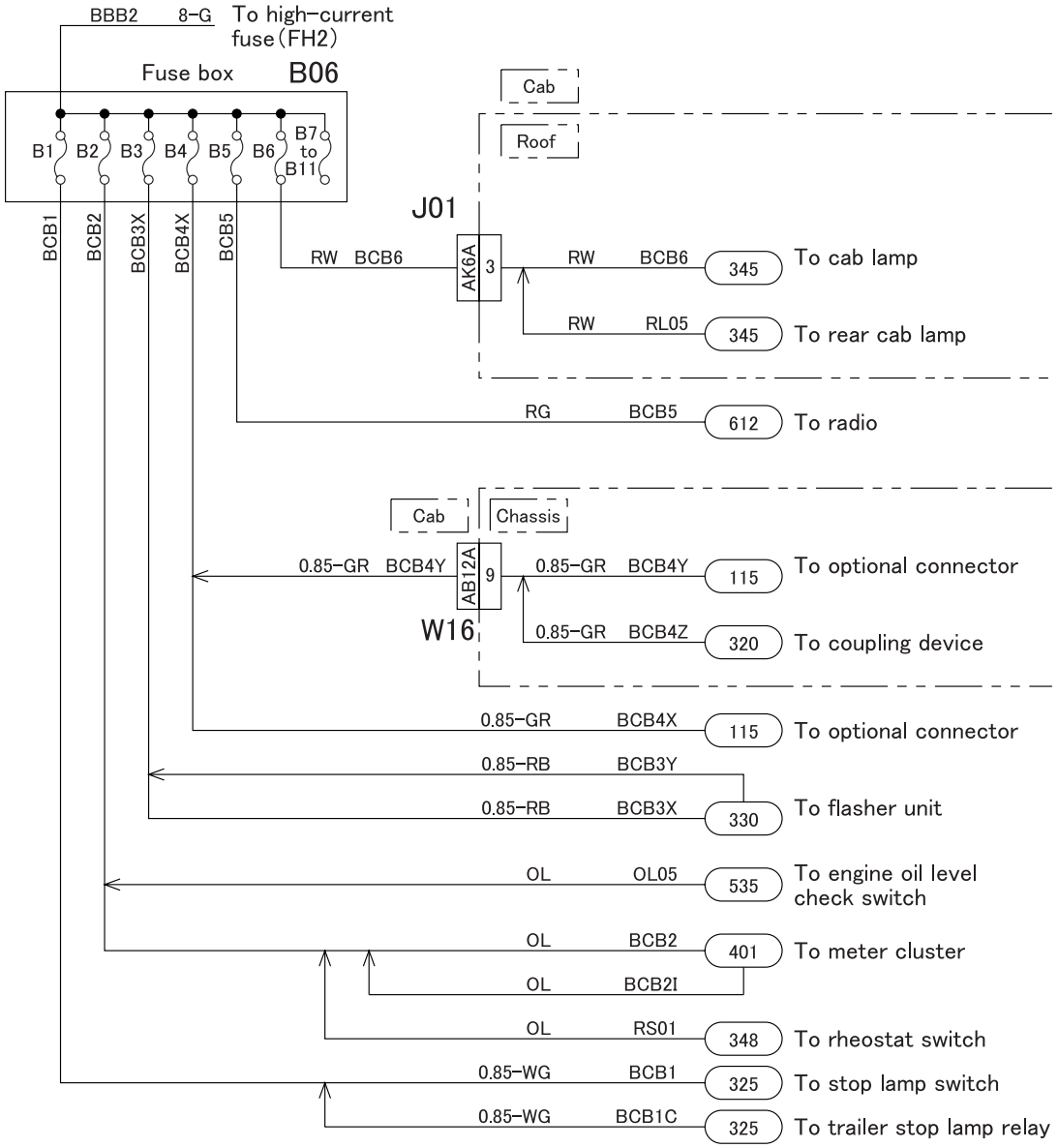
Fuse box
(Fuse A1 to A4)



110-C05270

POWER CIRCUIT (6)

Fuse box
(Fuse B1 to B6)

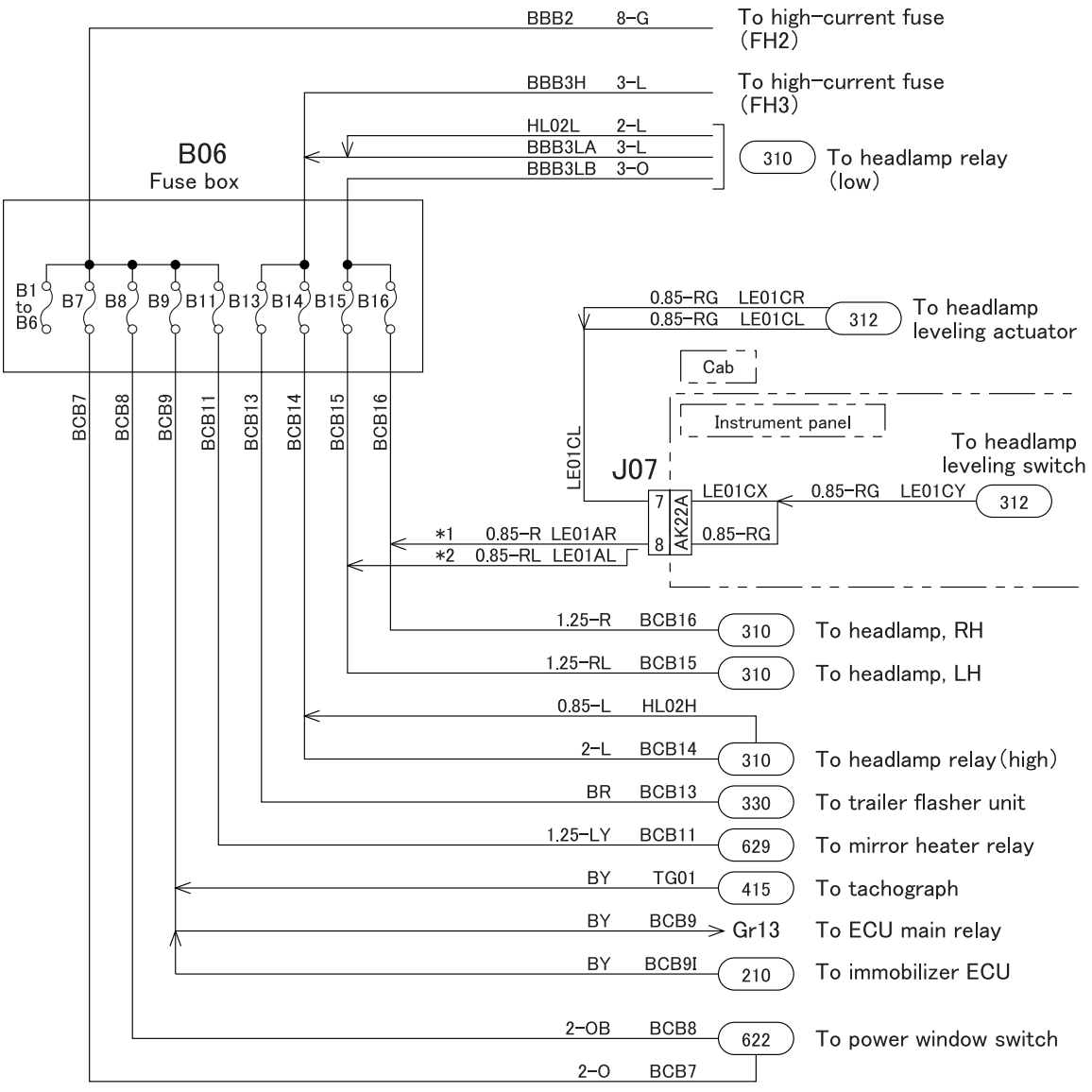


110-C05271

POWER CIRCUIT (7)

Fuse box
(Fuse B7 to B16)

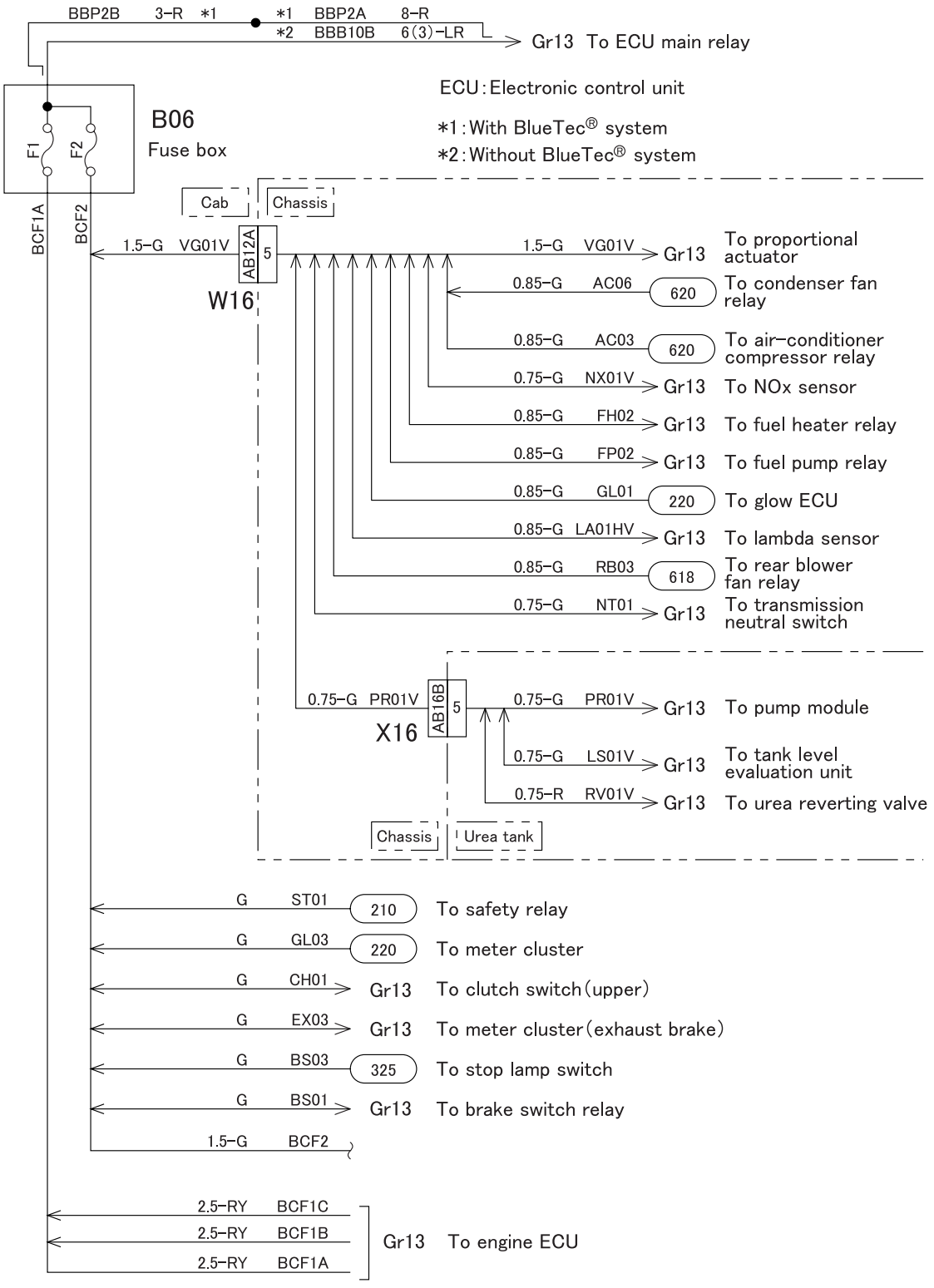
ECU : Electronic control unit
*1 : Right-hand drive vehicle
*2 : Left-hand drive vehicle



110-C05272

POWER CIRCUIT (8)

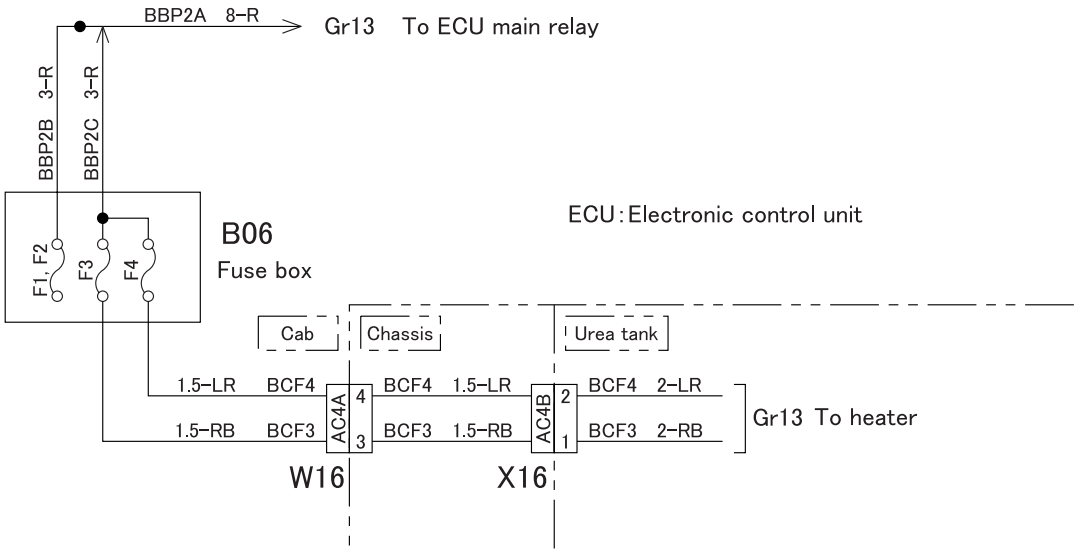
Fuse box
(Fuse F1, F2)



110-C06826

POWER CIRCUIT (9)

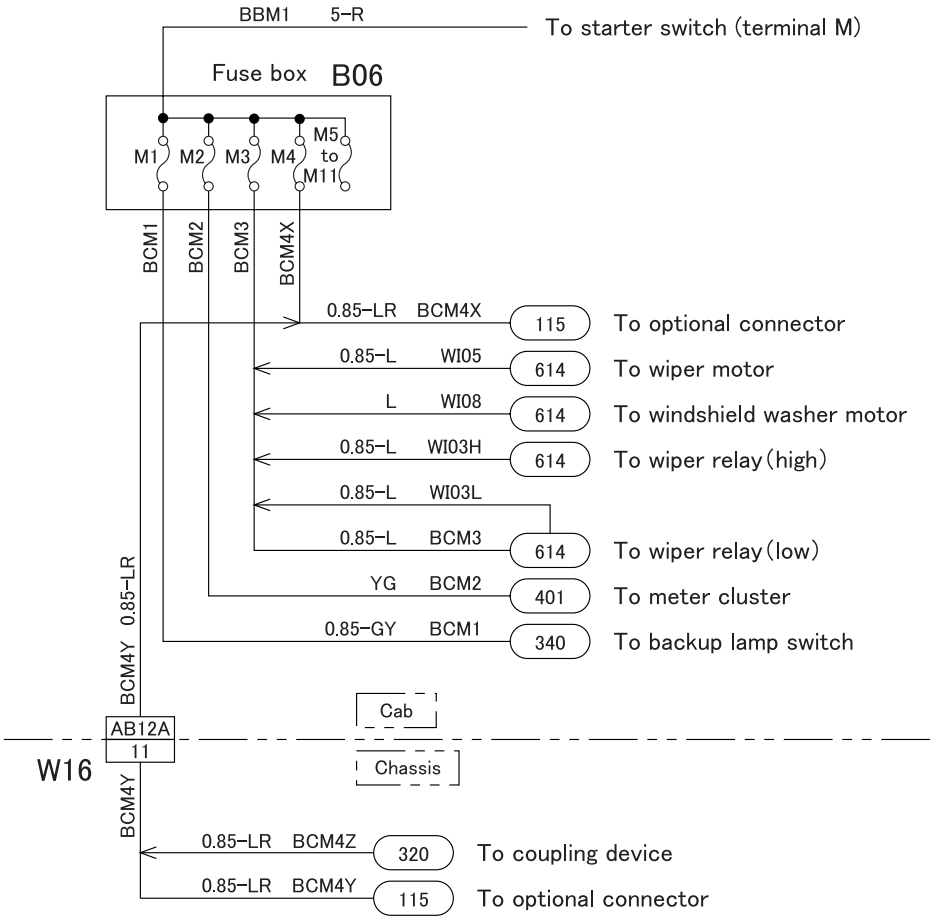
Fuse box
(Fuse F3, F4)
<With BlueTec® system>



110-C06827

POWER CIRCUIT (10)

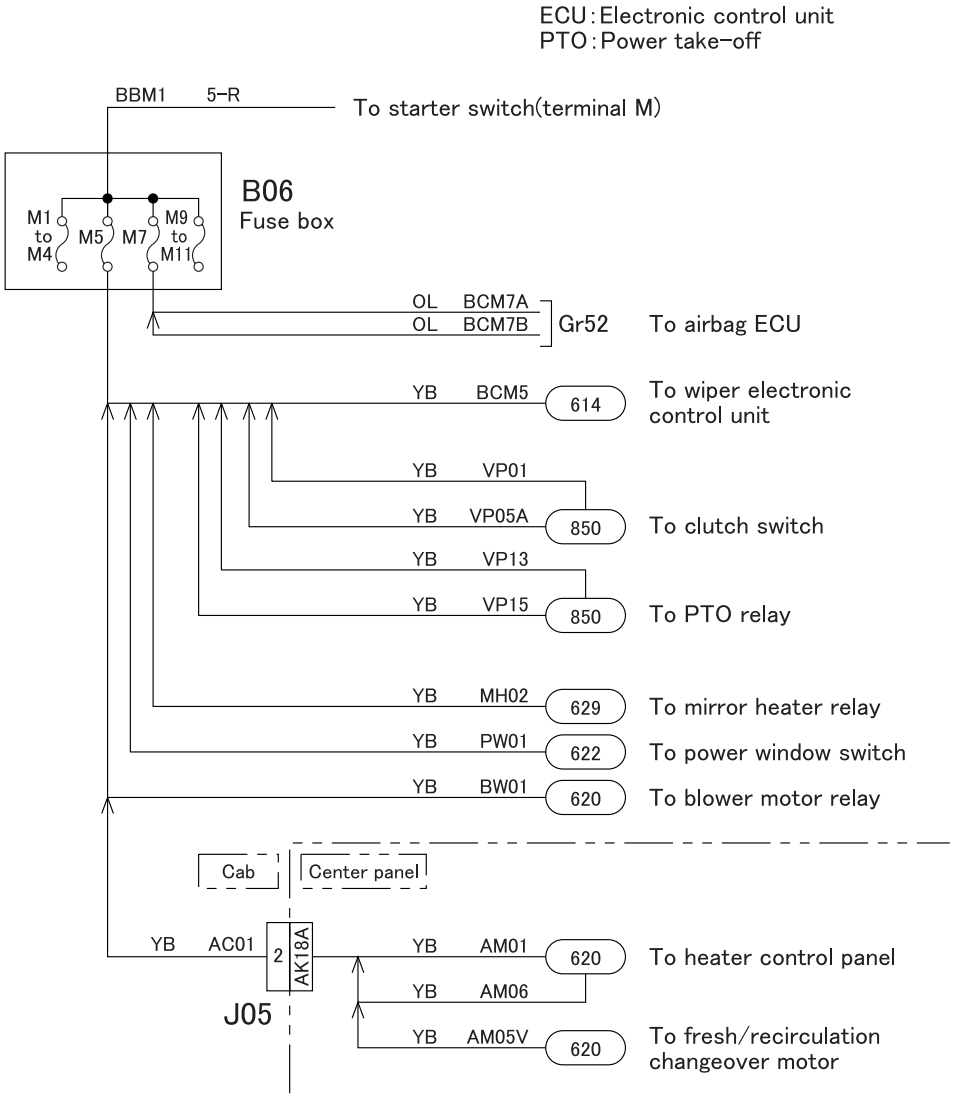
Fuse box
(Fuse M1 to M4)



110-C05274

POWER CIRCUIT (11)

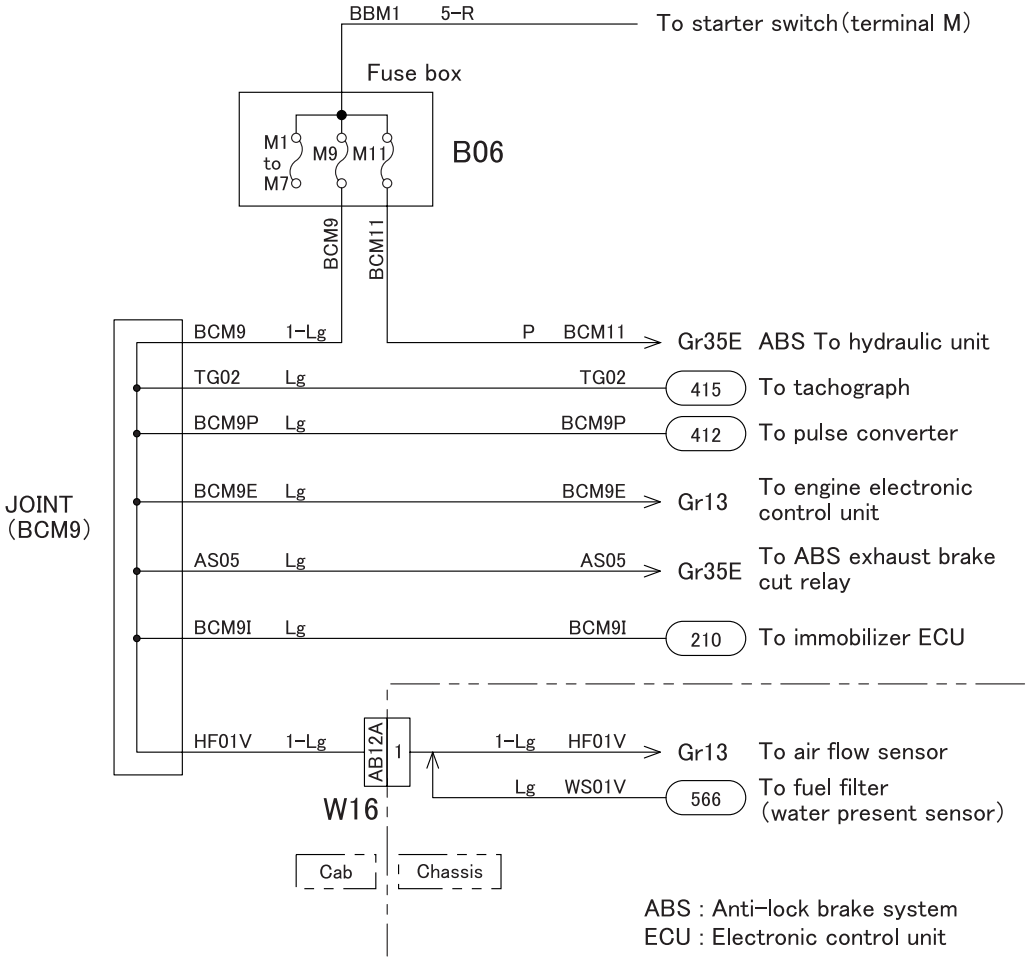
Fuse box
(Fuse M5, M7)



110-C05275

POWER CIRCUIT (12)

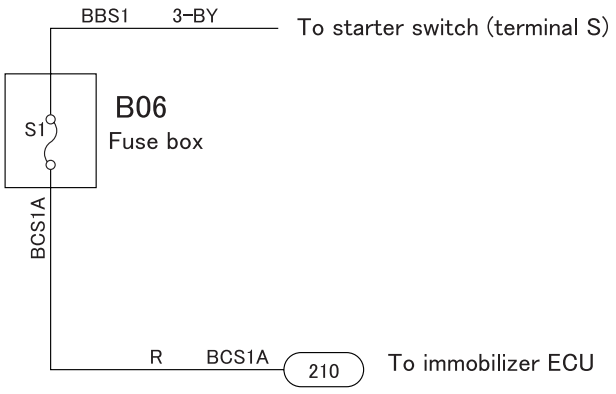
Fuse box
(Fuse M9, M11)



110-C05276

POWER CIRCUIT (13)

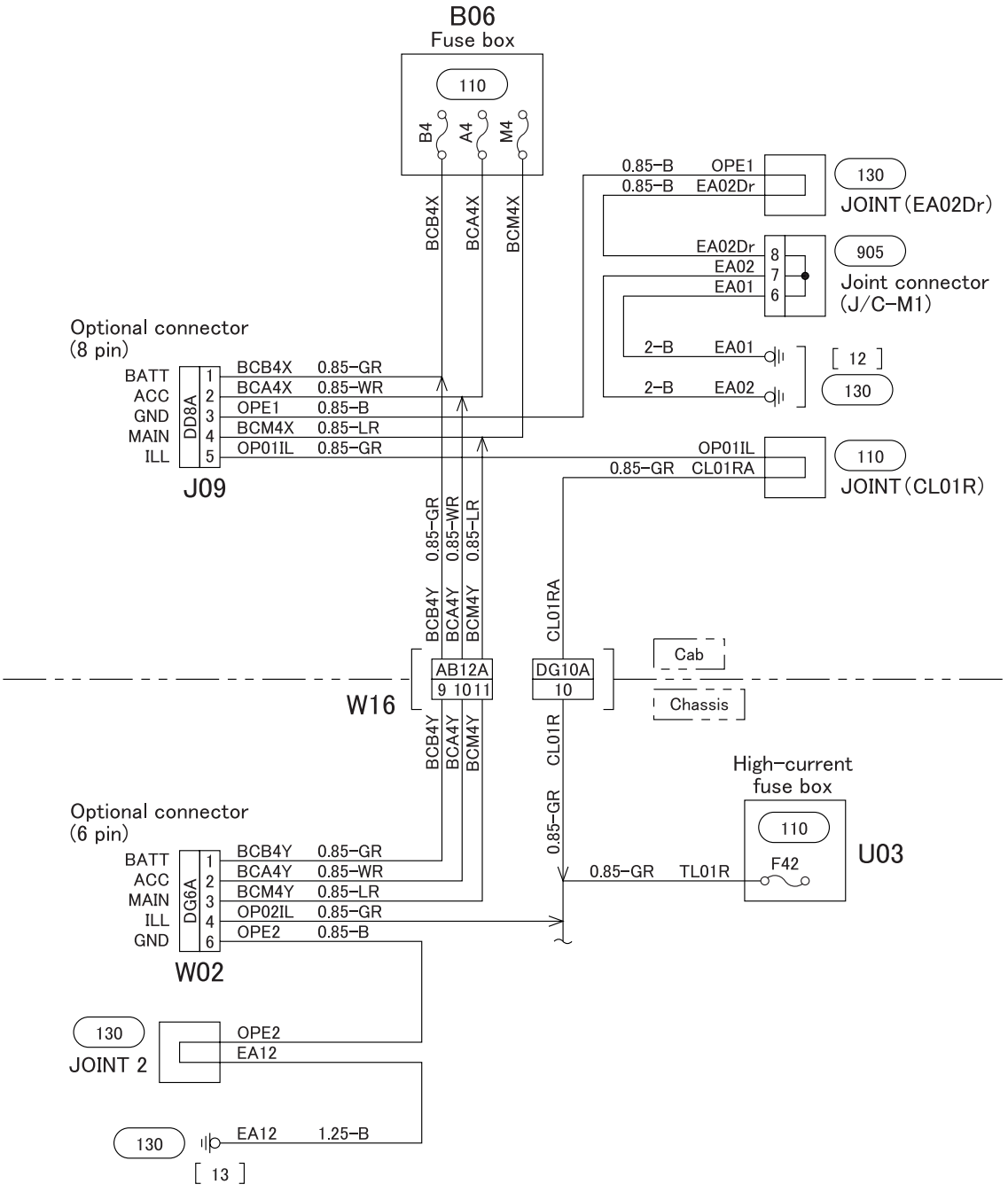
Fuse box
(Fuse S1)



ECU : Electronic control unit

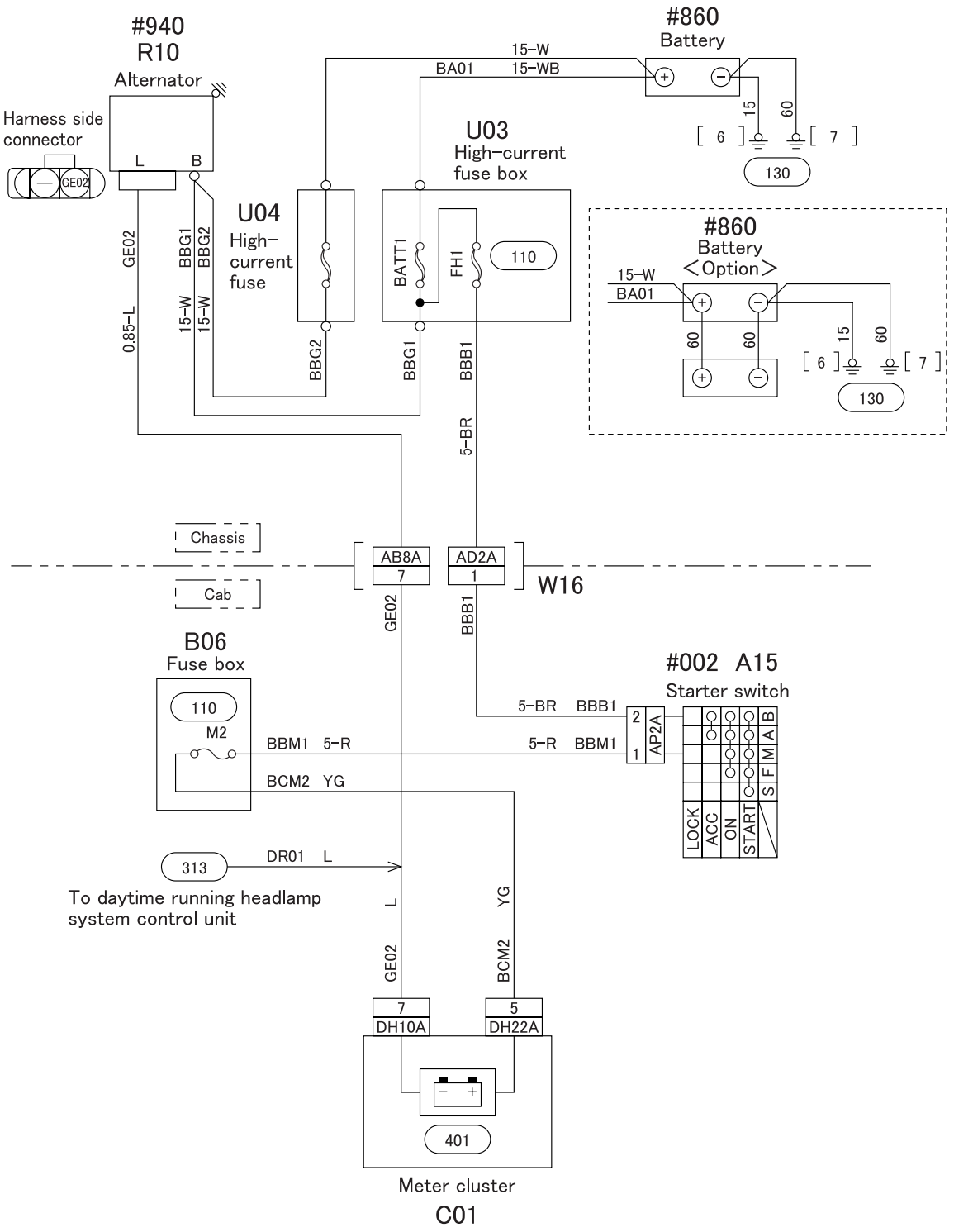
110-C05277

RESERVE POWER CIRCUIT



115-C05278

BATTERY CHARGING CIRCUIT

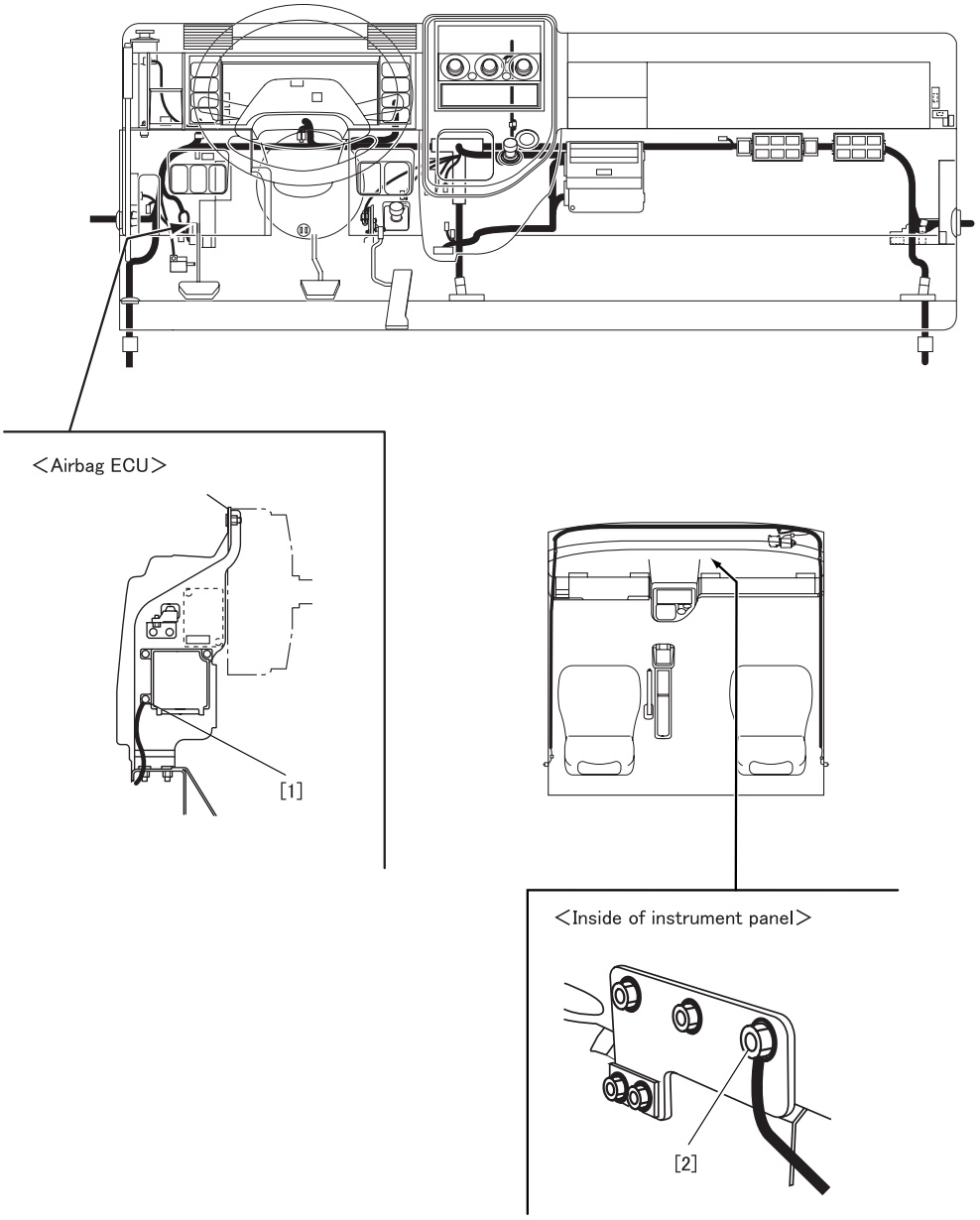


125-C05279

GROUND (1)

[1] – [2]

<Left-hand drive vehicle>



Location	Circuit No.	Wire diameter-˜ wire color	Destination	Remarks
[1]	—	1.25-B	Cab ground ([2])	Airbag ECU case ground
[2]	AGE4	B	Airbag ECU case ground	—
	EA10	3-B	Frame ground ([12] (5))	—
	RAE1	B	Radio	—

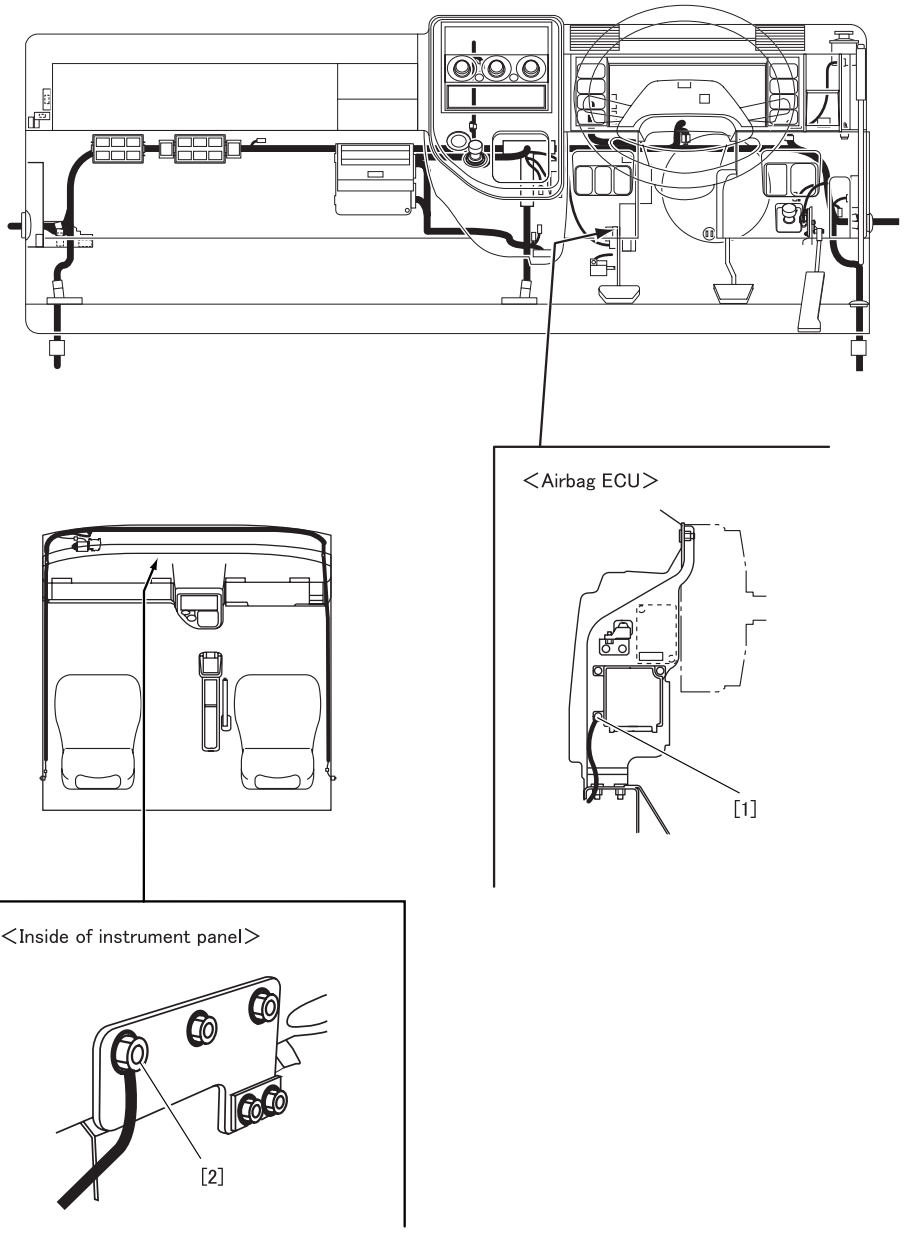
ECU : Electronic control unit

54-L03566-1

GROUND (2)

[1] – [2]

<Right-hand drive vehicle>



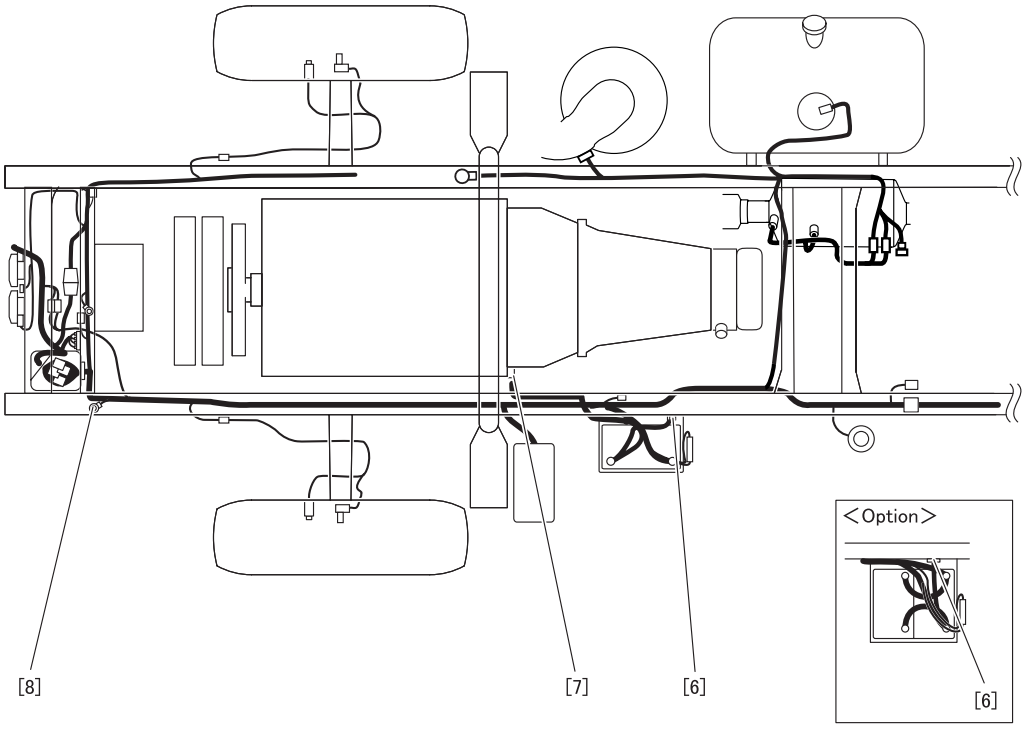
Location	Circuit No.	Wire diameter-˜ wire color	Destination	Remarks
[1]	—	1.25-B	Cab ground ([2])	Airbag ECU case ground
[2]	AGE4	B	Airbag ECU case ground	—
	EA10	3-B	Frame ground ([12] (5))	—
	RAE1	B	Radio	—

ECU : Electronic control unit

54-L03566-2

GROUND (3)

[6] – [8]



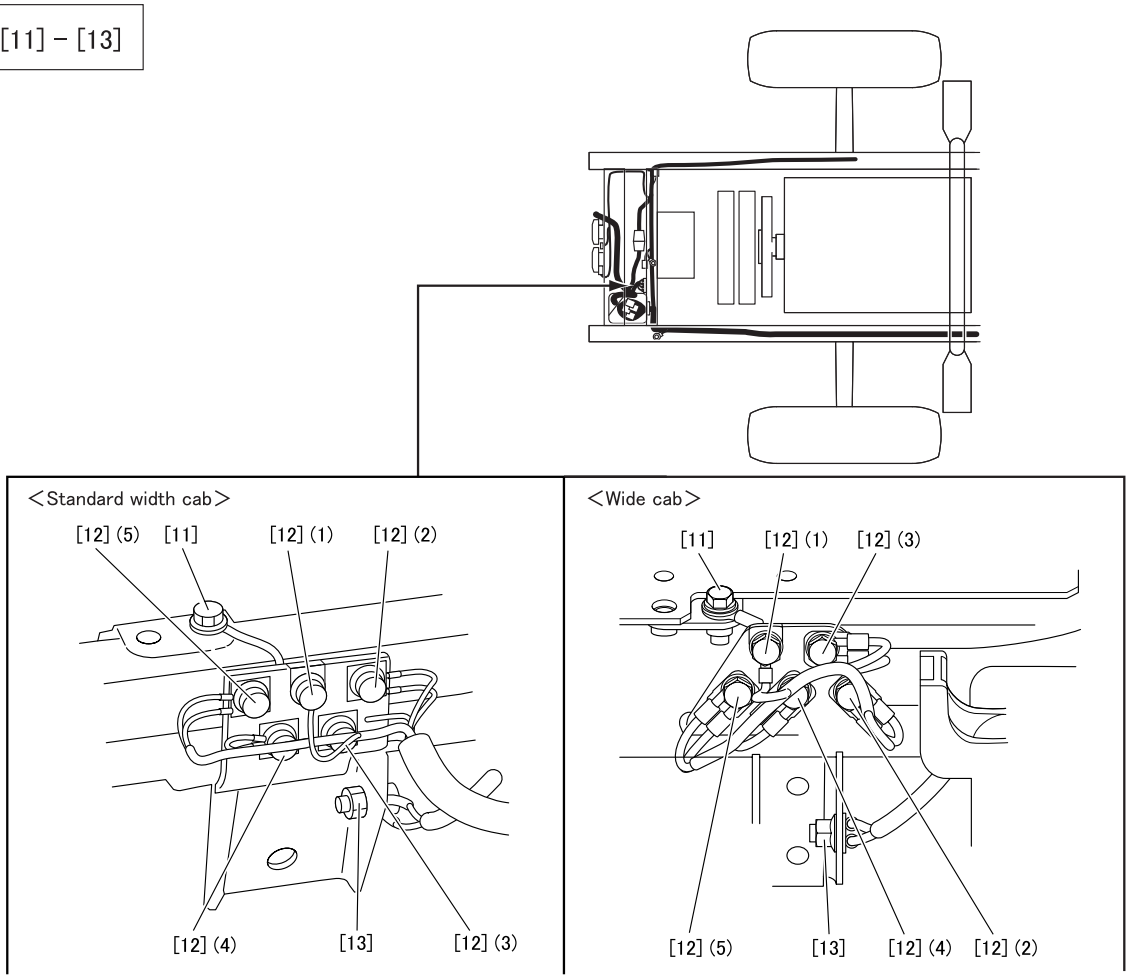
Location	Circuit No.	Wire diameter-˜ wire color	Destination	Remarks
[6]	—	15	Battery	Battery ground
[7]	—	60	Battery	Engine ground
[8]	ASE1	3-B	Hydraulic unit	ABS
	ASE2	3-B	Hydraulic unit	ABS

ABS : Anti-lock brake system

54-L03566-3

GROUND (4)

[11] – [13]



Location	Circuit No.	Wire diameter-˜ wire color	Destination	Remarks
[11]	ACE2	2-B	Condenser fan motor	
	EA14	2-B	Rear combination lamp	
	HSE1	1.5-B	JOINT (HSE1)	With BlueTec® system
	HSE2	1.5-B		
[12] (1)	BWE2	3-B	Heater control panel	Air-conditioner
[12] (2)	EA01	2-B	Joint connector (J/C-M1)	
	EA03L	3-B	JOINT (EA03L)	
	EA04	B	Meter cluster	
[12] (3)	EA07	0.85-B	JOINT (EA07)	
	EDE1	2.5-B	Engine ECU	
	EDE3	2.5-B		
[12] (4)	EA08	0.85-B	JOINT (EA07)	
	EDE2	2.5-B	Engine ECU	
	TVE1	1.5-B	(Exhaust brake system valve)	
[12] (5)	EA02	2-B	Joint connector (J/C-M1)	
	EA03R	3-B	JOINT (EA03R)	
	EA10	3-B	Cab ground ([2])	
[13]	EA11	2-B	JOINT1	
	EA12	1.25-B	JOINT2	

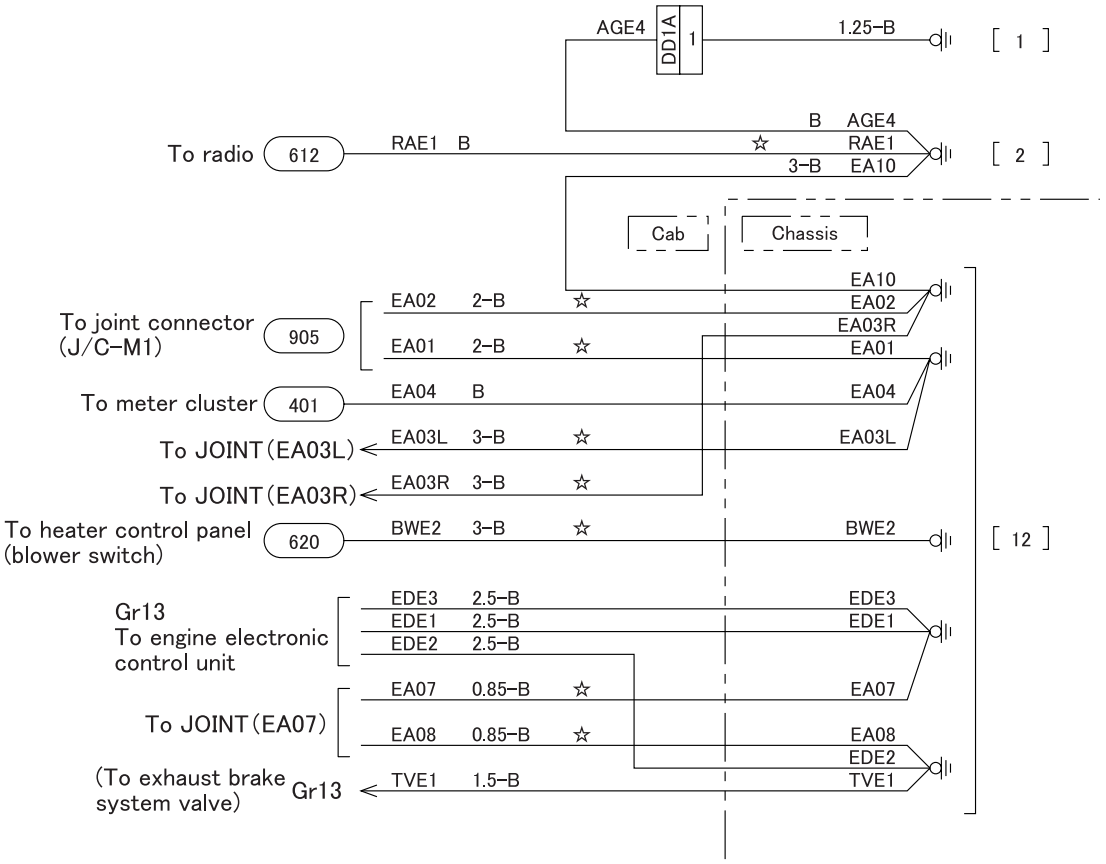
ECU : Electronic control unit

54–L04854

GROUND (5)

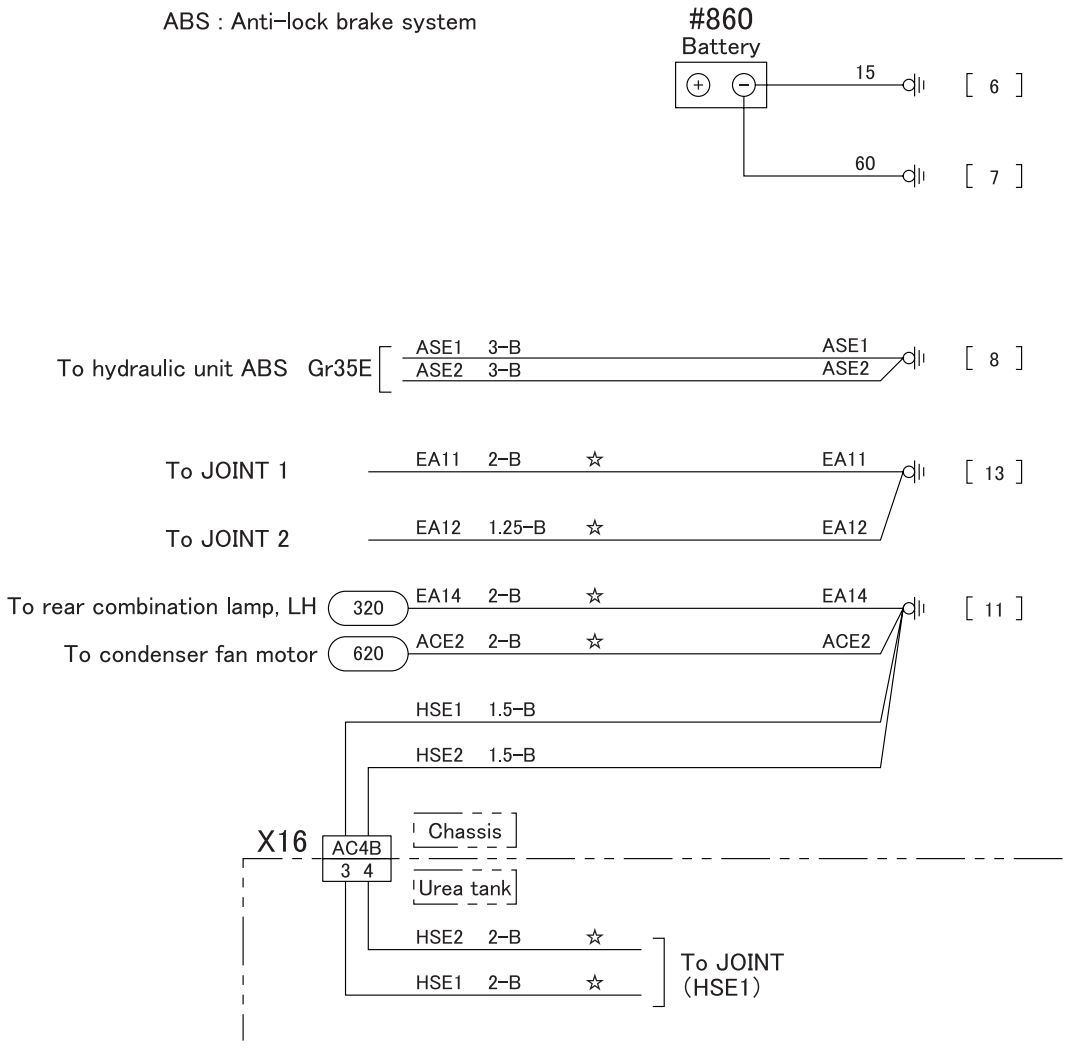
Entire ground

- This diagram indicates grounding points.
- See the following pages for branching of grounding (wiring for ☆). (in circuit No. order)



130-C06828-1

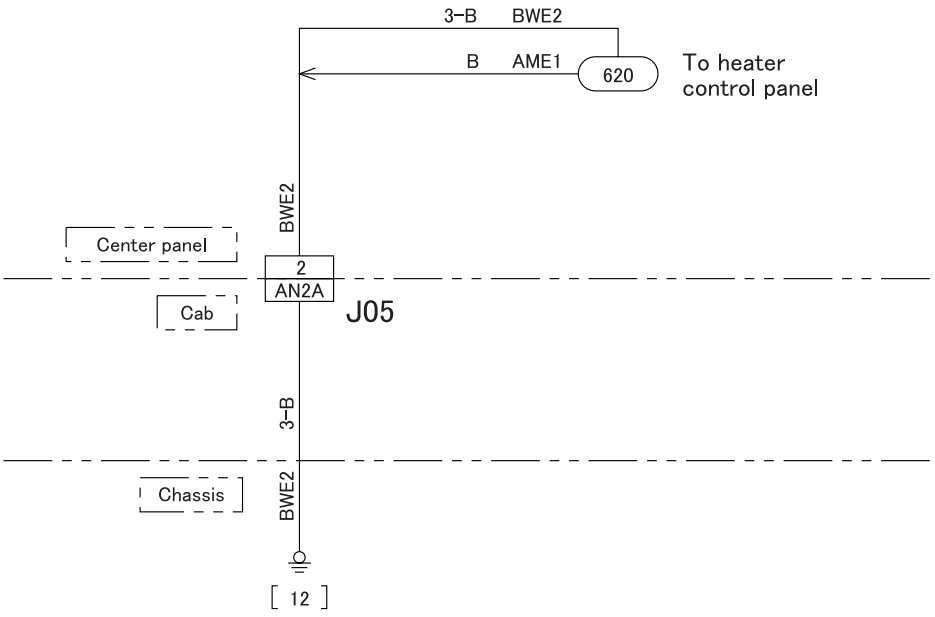
GROUND (6)



130-C06828-2

GROUND (7)

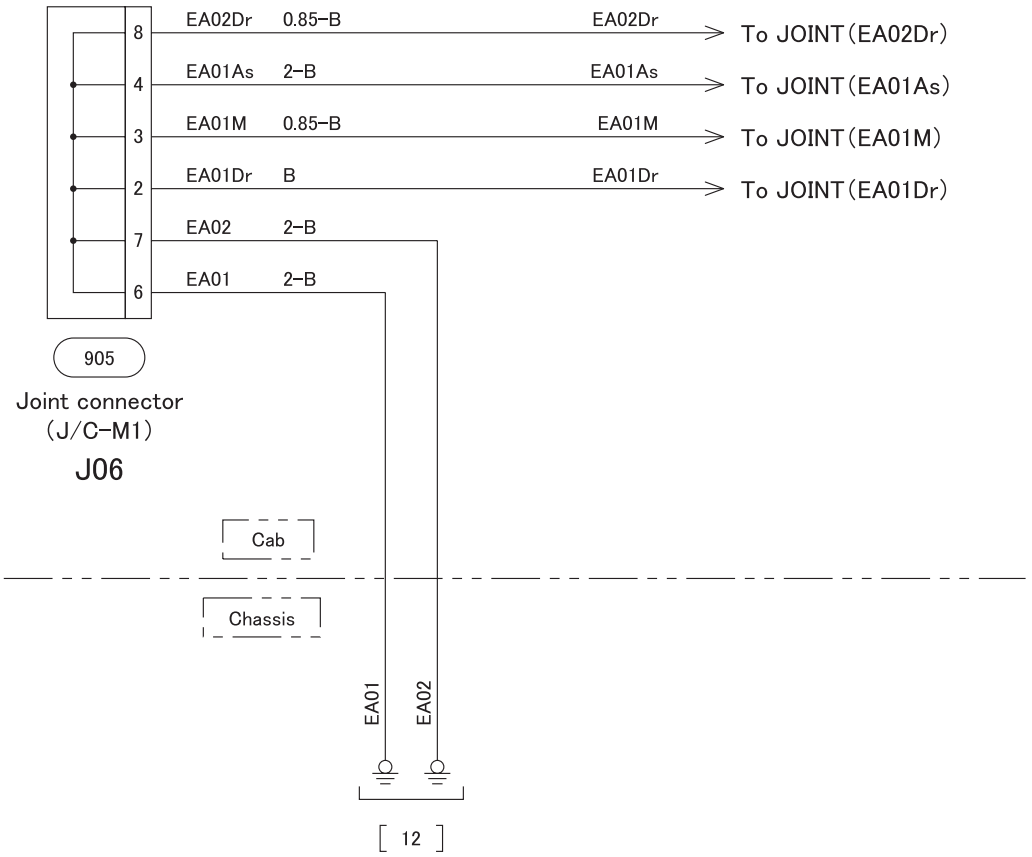
Circuit No. BWE2 chassis ground



130–C05397

GROUND (8)

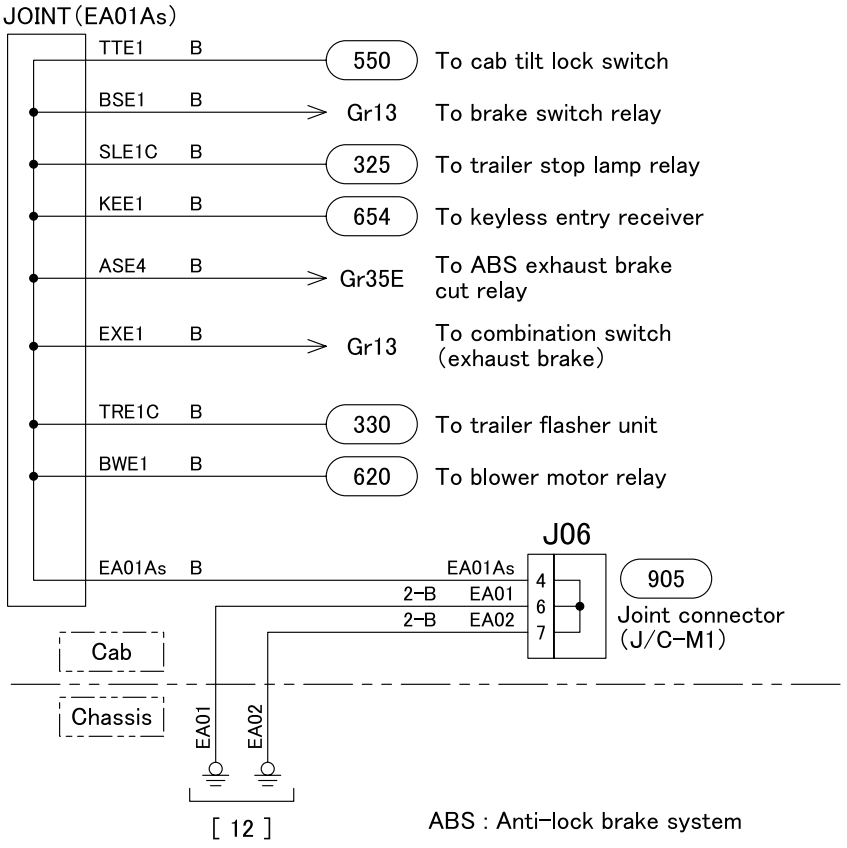
Circuit No. EA01, EA02 chassis ground
＜Main ground＞



130-C05398

GROUND (9)

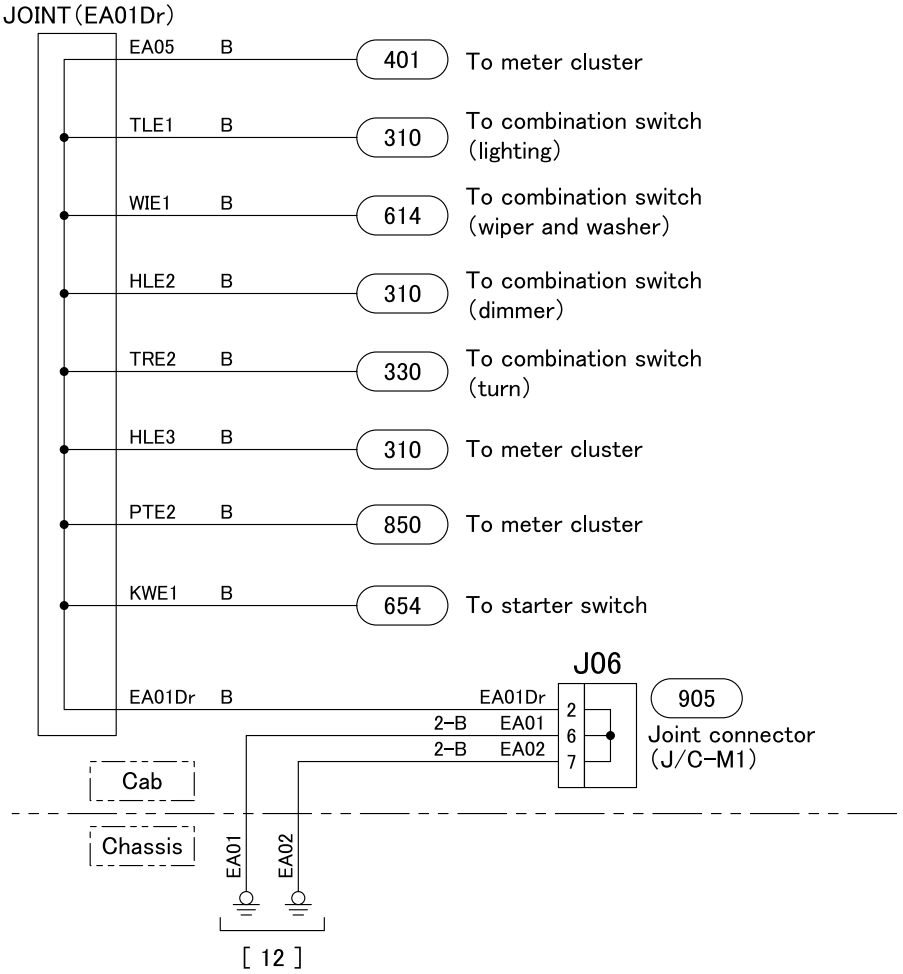
Circuit No. EA01, EA02 chassis ground
＜JOINT(EA01As)＞



130-C05399

GROUND (10)

Circuit No. EA01, EA02 chassis ground
＜JOINT (EA01Dr)＞

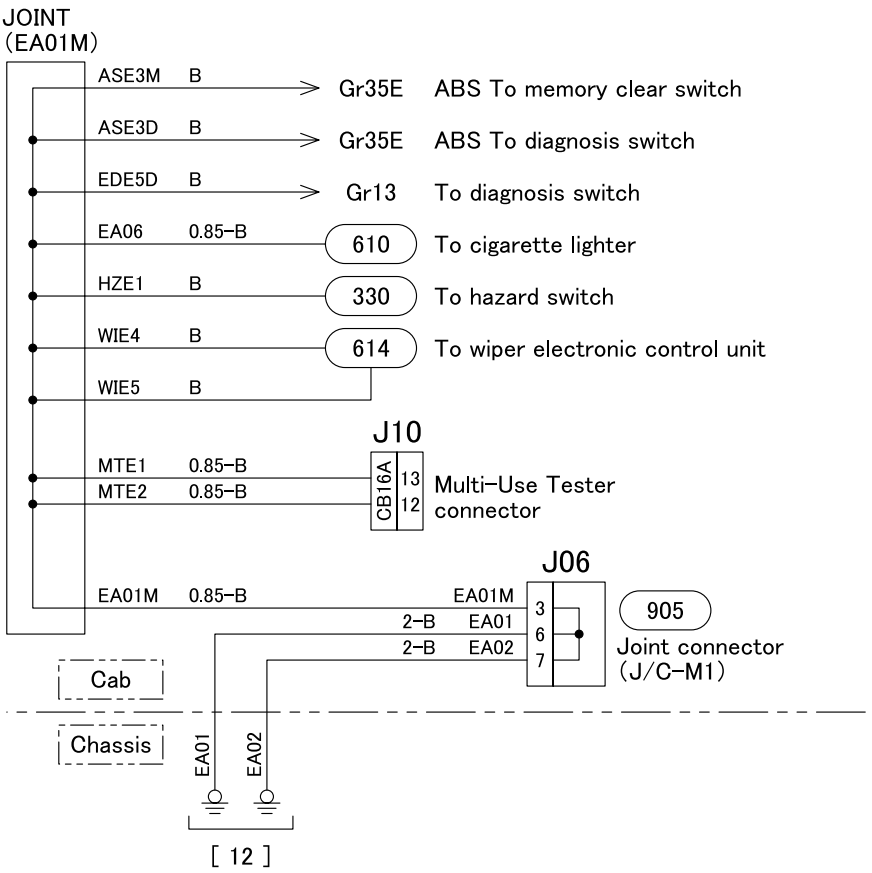


130-C05400

GROUND (11)

Circuit No. EA01, EA02 chassis ground
＜JOINT (EA01M)＞

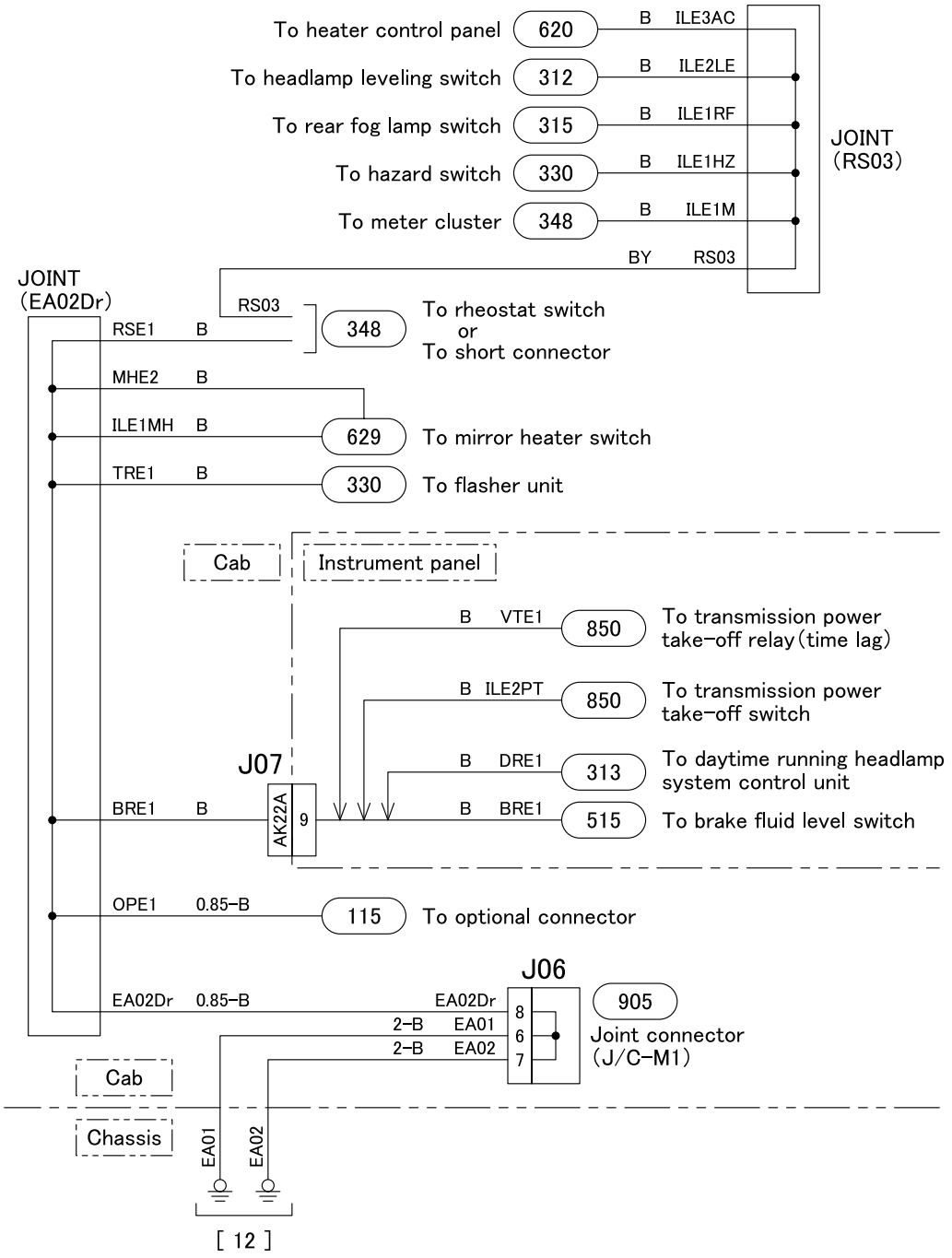
ABS : Anti-lock brake system



130-C05401

GROUND (12)

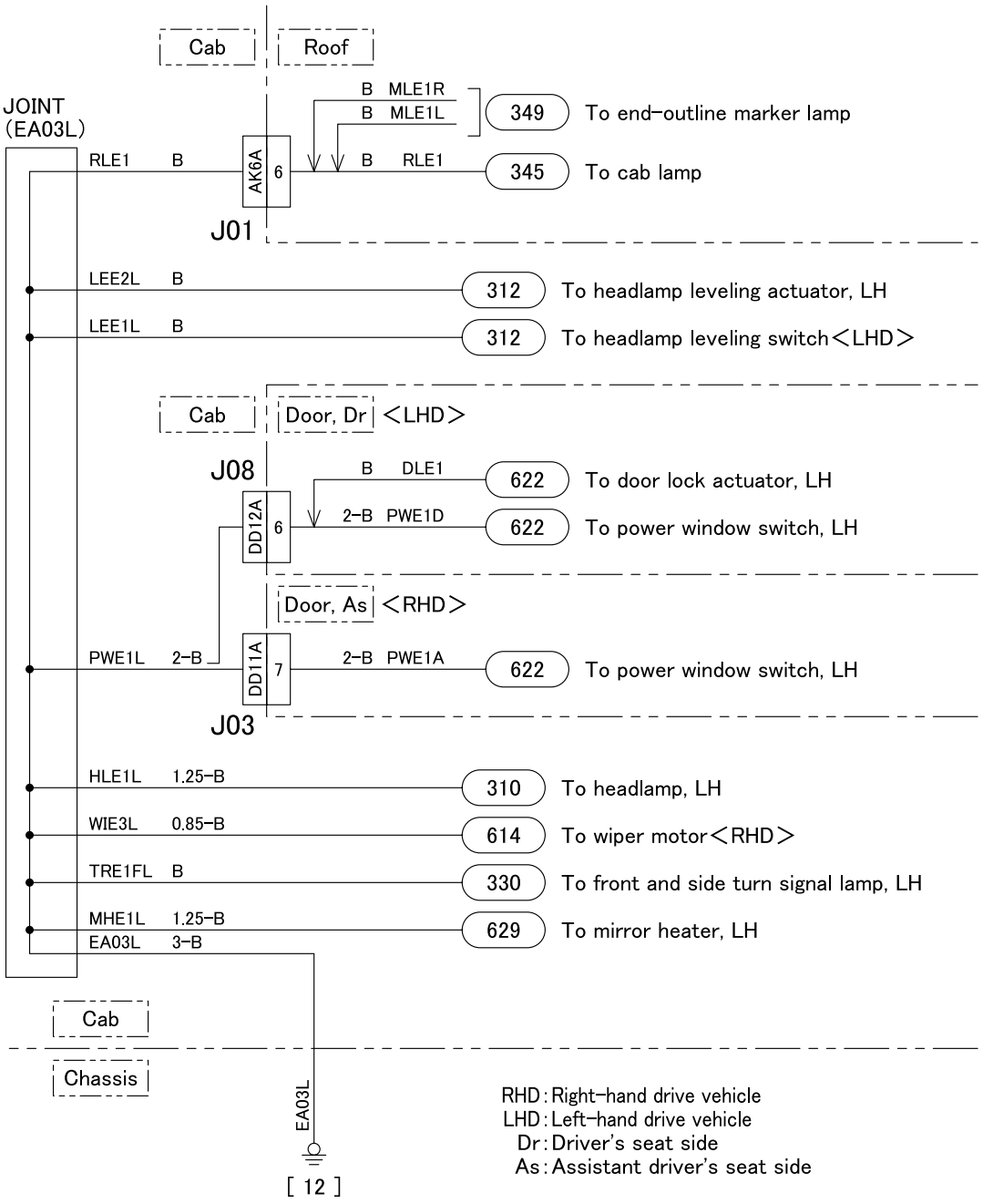
Circuit No. EA01, EA02 chassis ground
＜JOINT (EA02Dr)＞



130-C05402

GROUND (13)

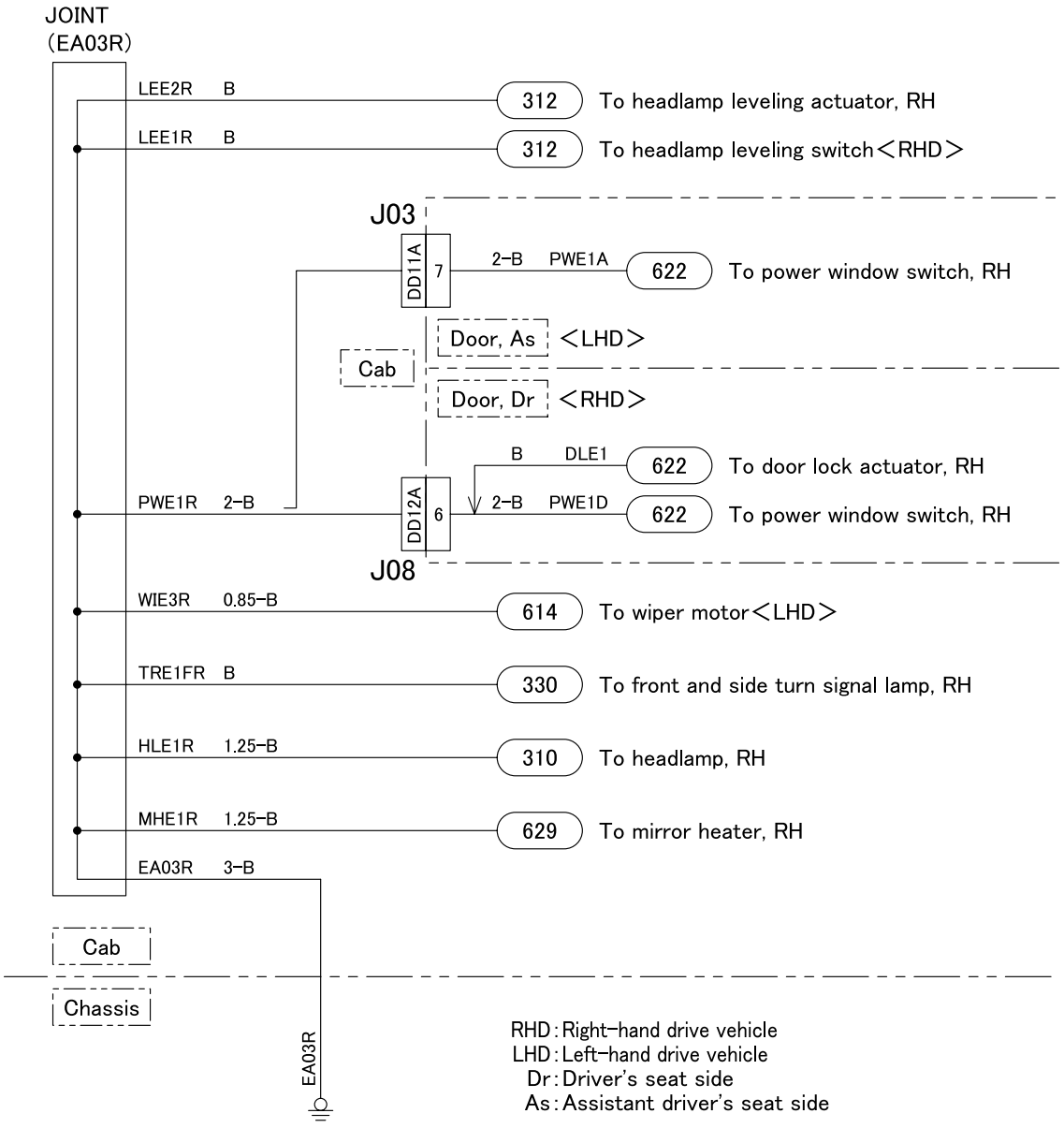
Circuit No. EA03L chassis ground



130-C05403

GROUND (14)

Circuit No. EA03R chassis ground

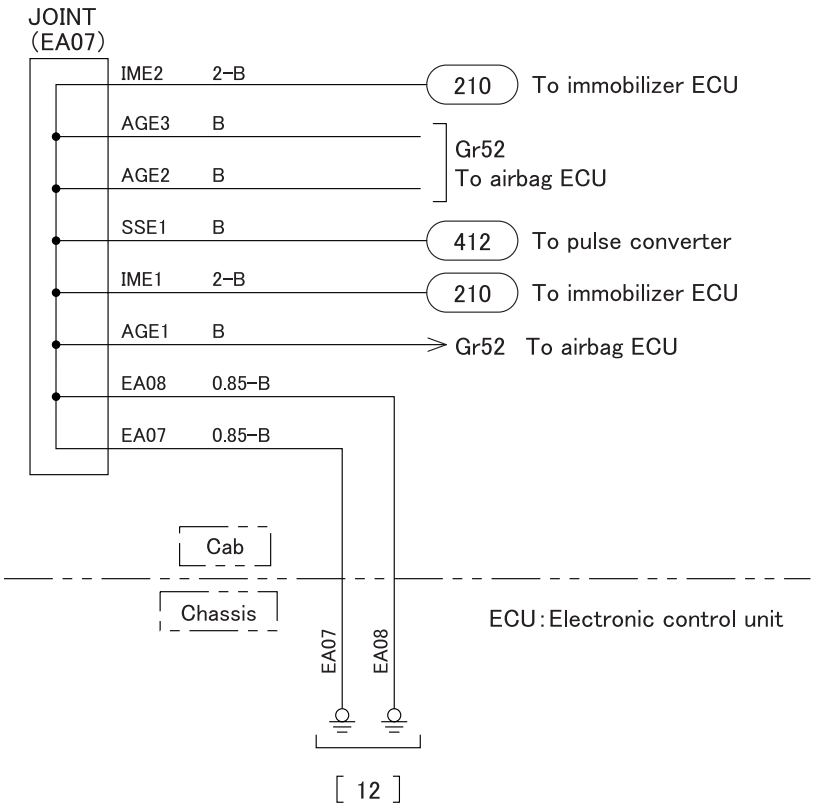


[12]

130-C05404

GROUND (15)

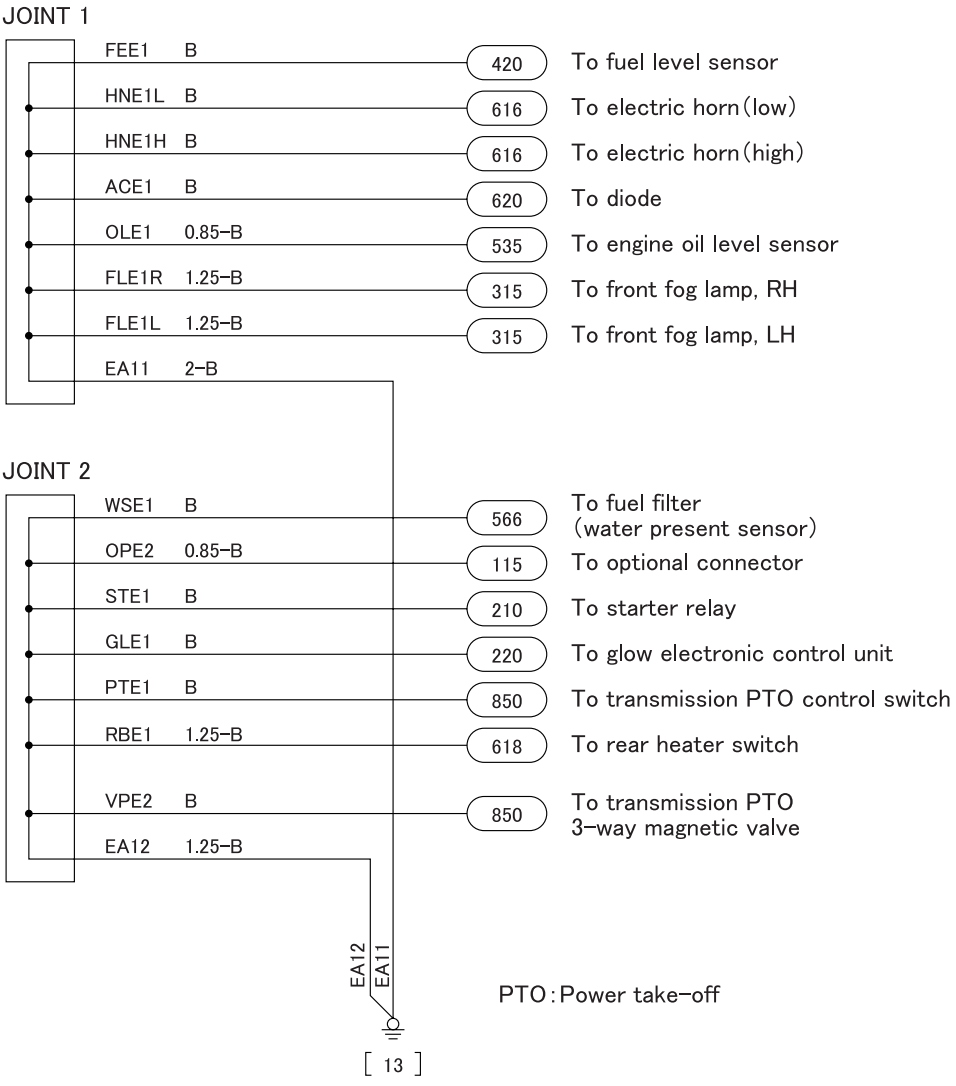
Circuit No. EA07, EA08 chassis ground



130-C05405

GROUND (16)

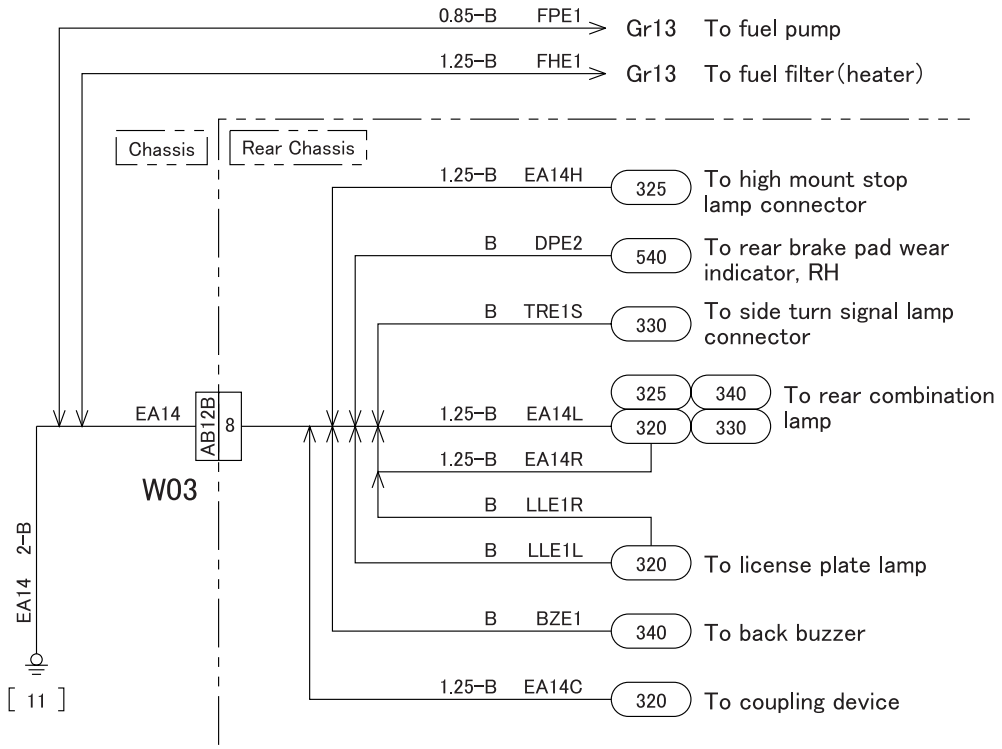
Circuit No. EA11, EA12 chassis ground



130-C05406

GROUND (17)

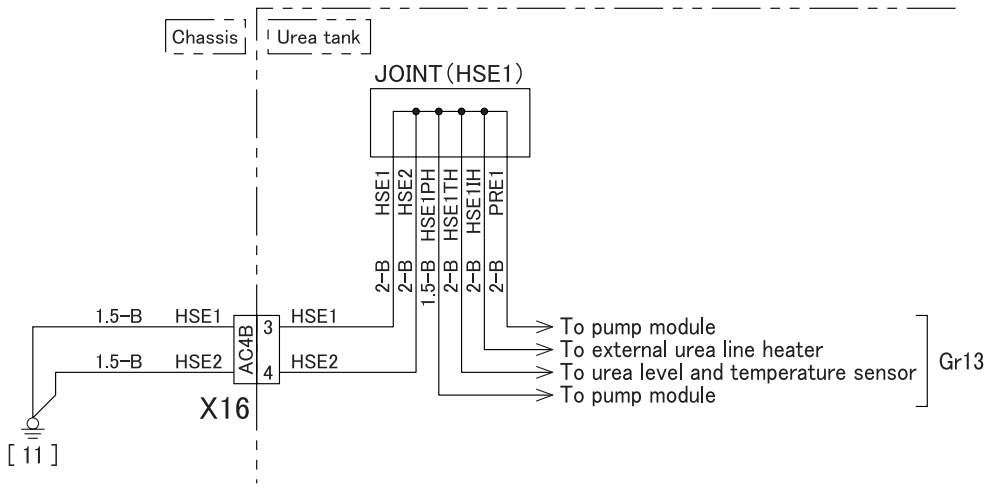
Circuit No. EA14 chassis ground



130-C05407

GROUND (18)

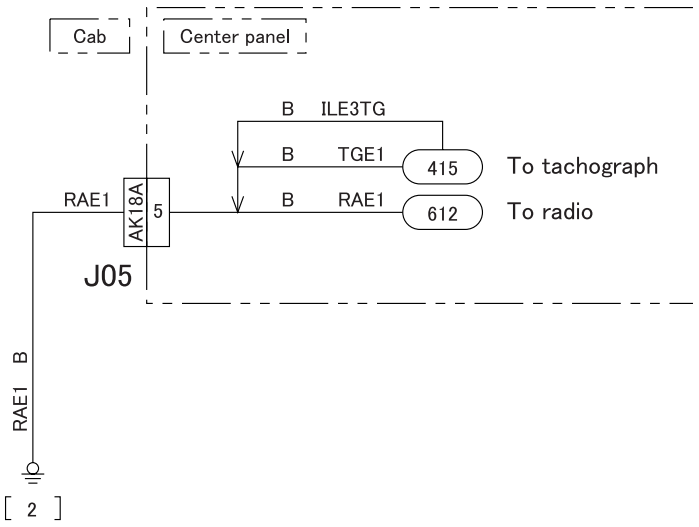
Circuit No. HSE1 chassis ground
<With BlueTec® system>



130-C06829

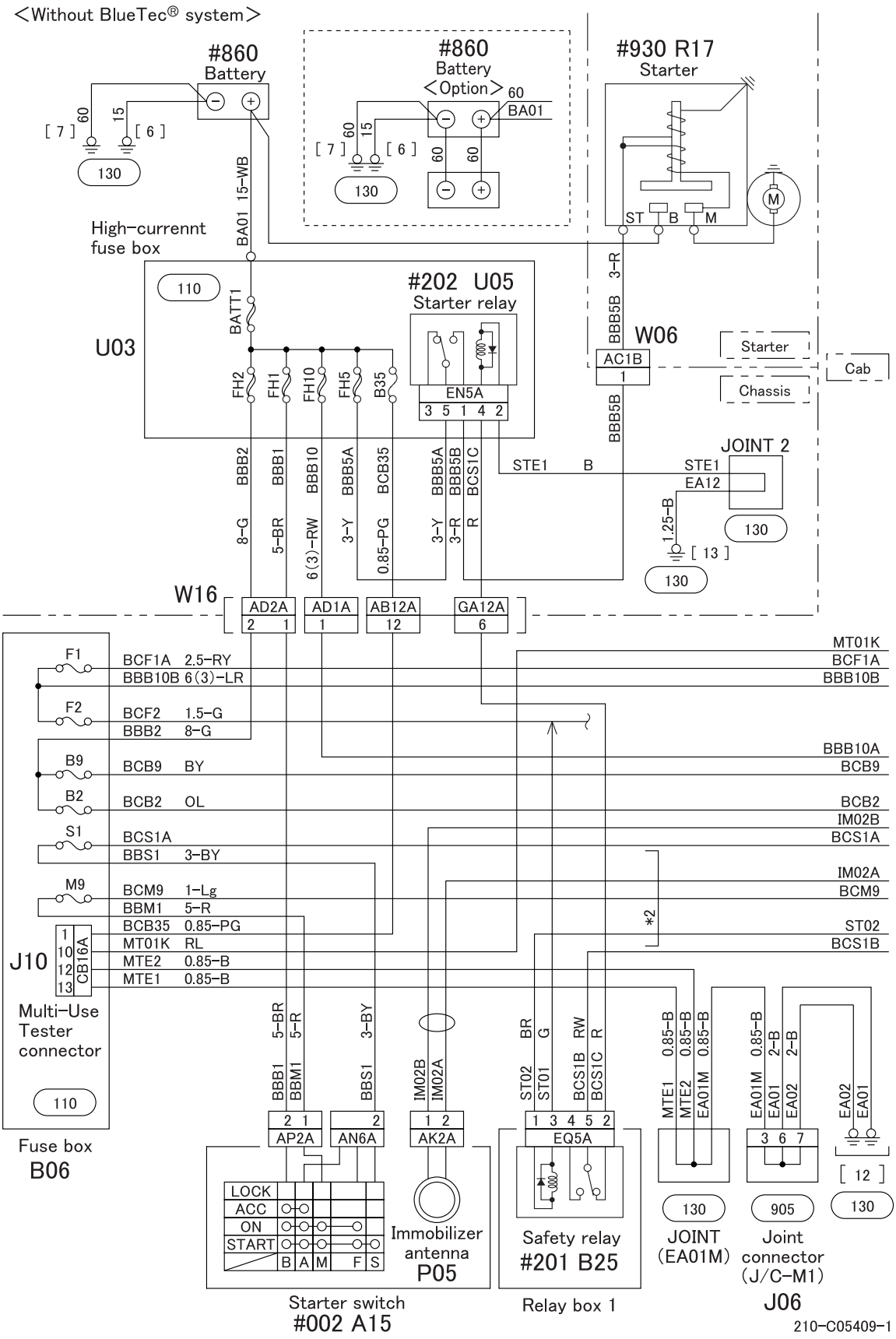
GROUND (19)

Circuit No. RAE1 cab ground

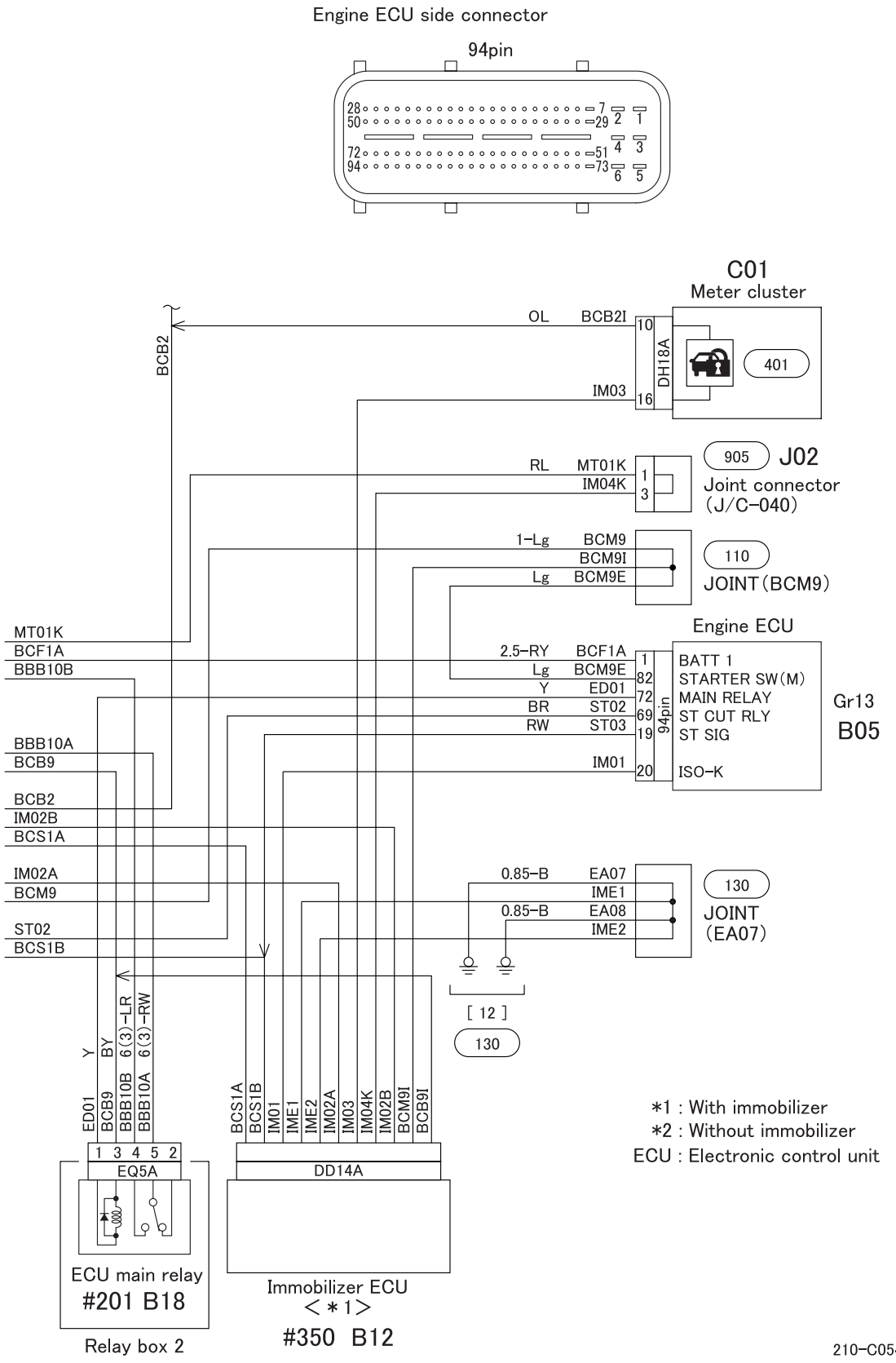


130-C05408

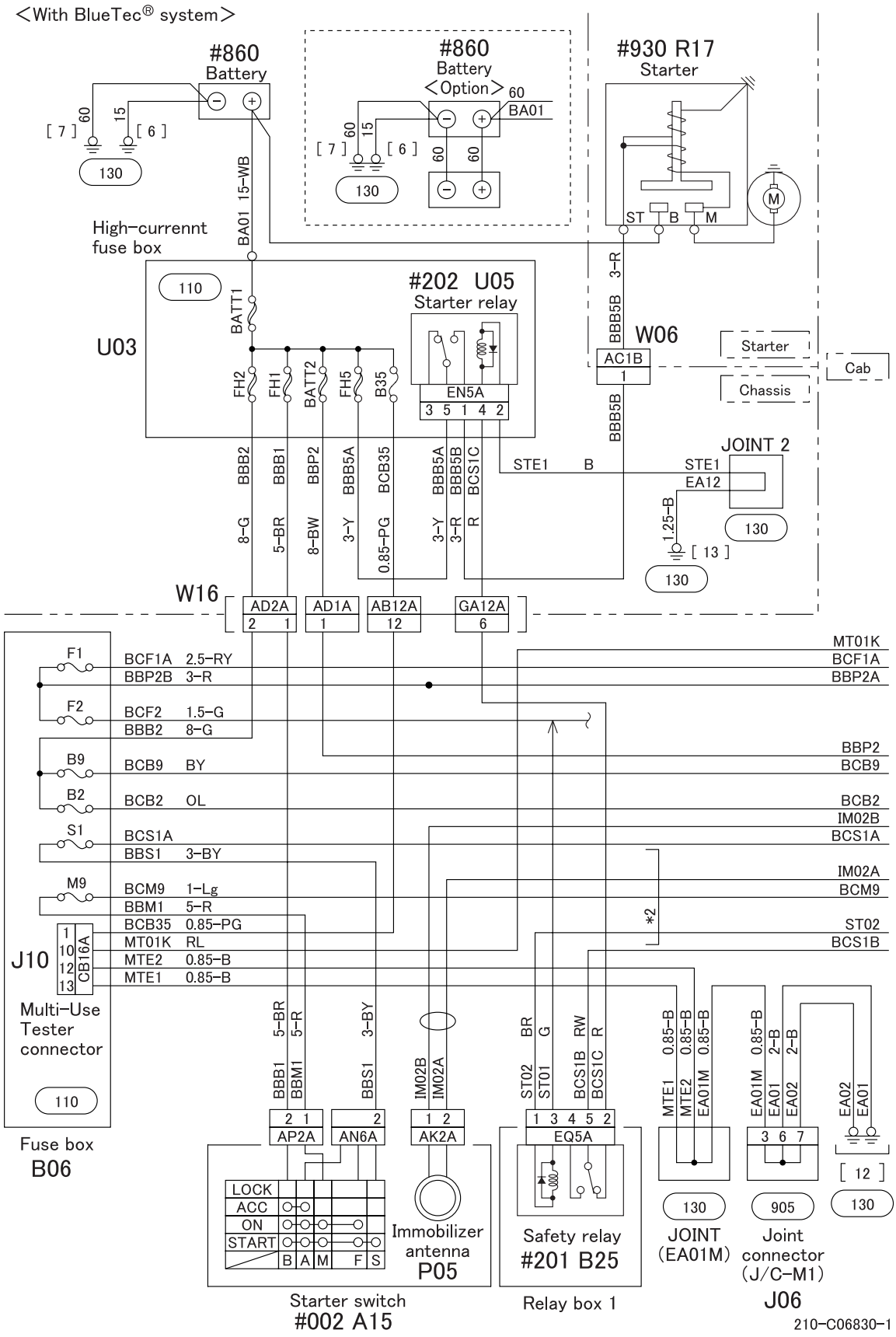
ENGINE STARTING CIRCUIT (1)



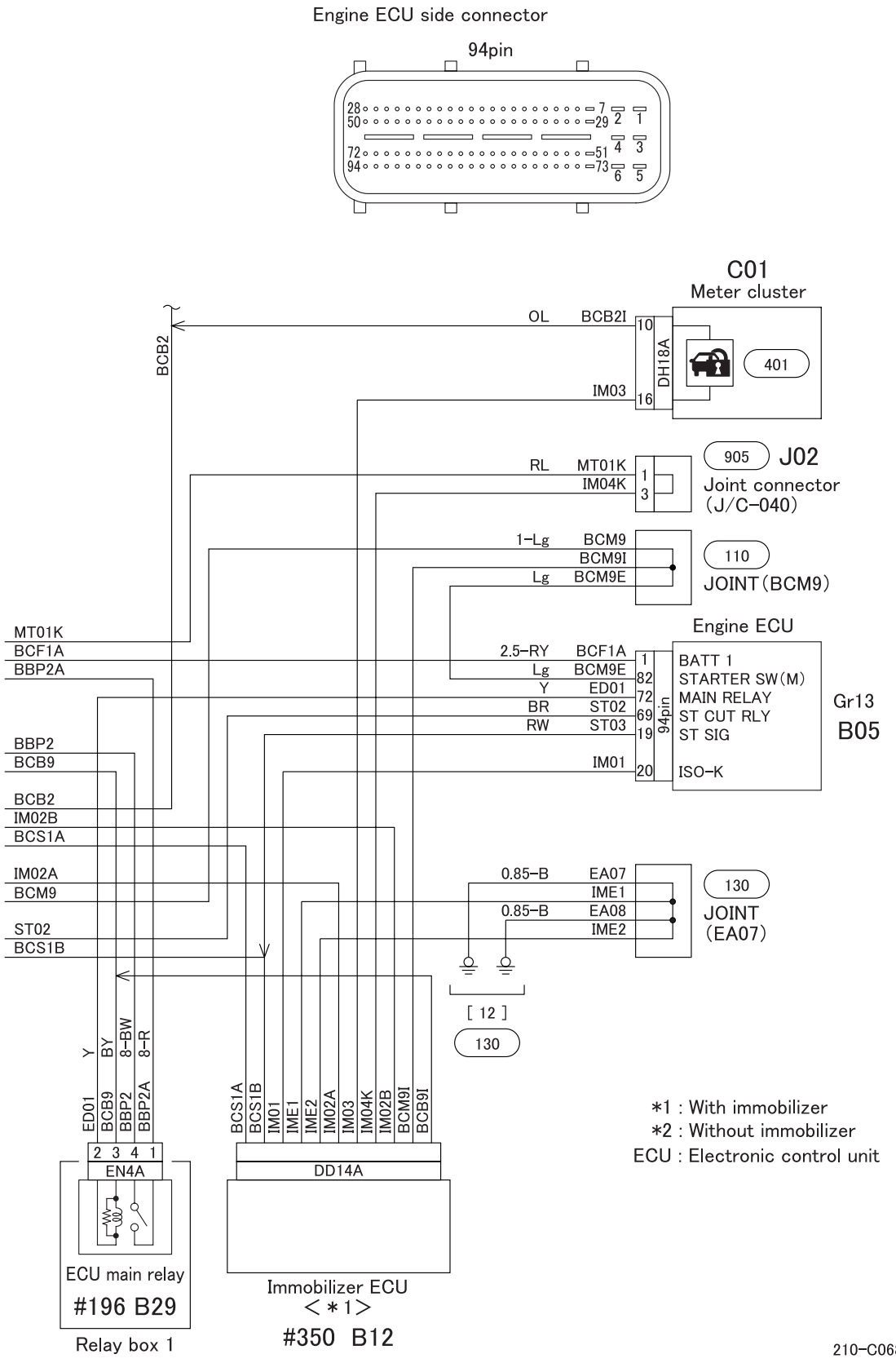
ENGINE STARTING CIRCUIT (2)



ENGINE STARTING CIRCUIT (3)

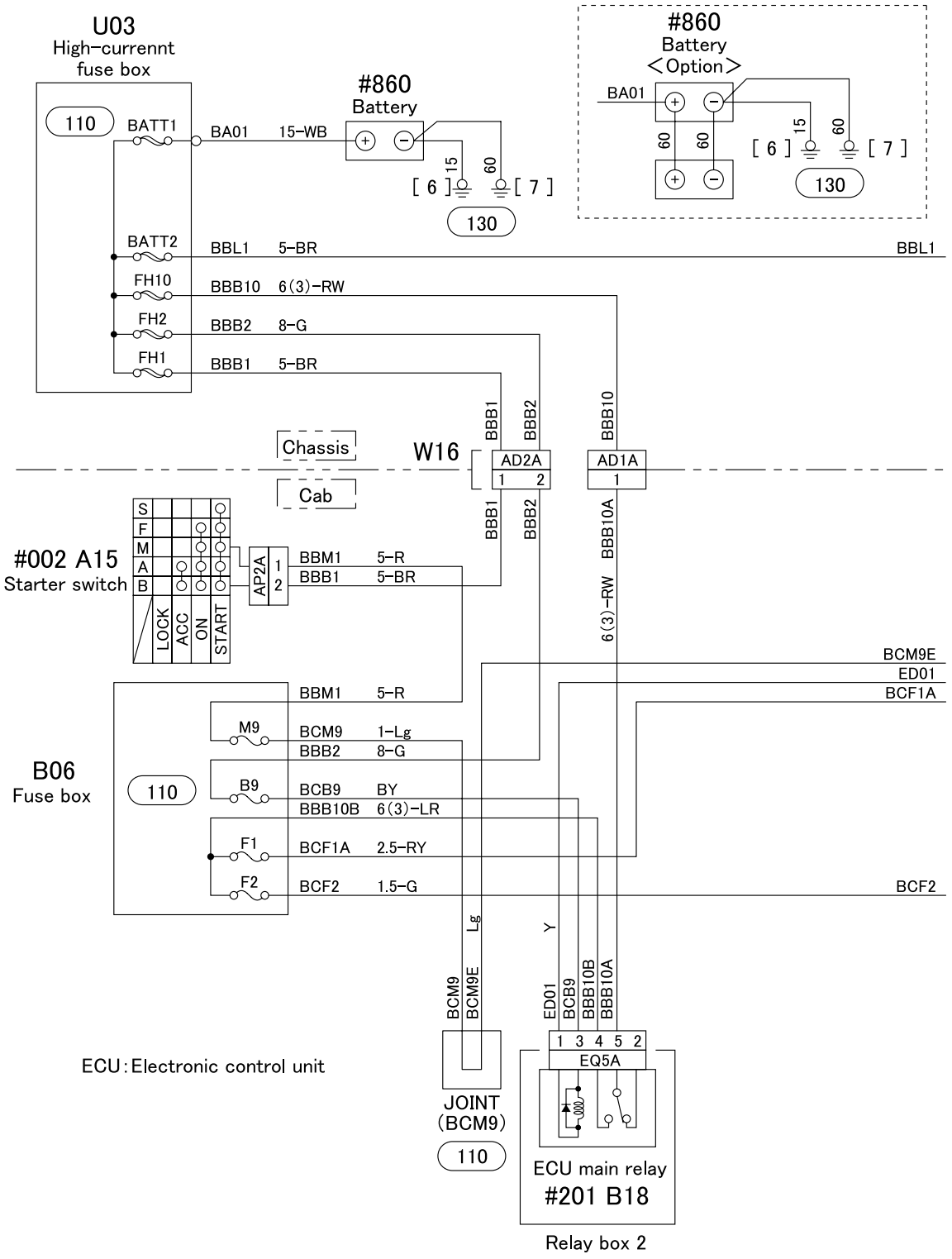


ENGINE STARTING CIRCUIT (4)



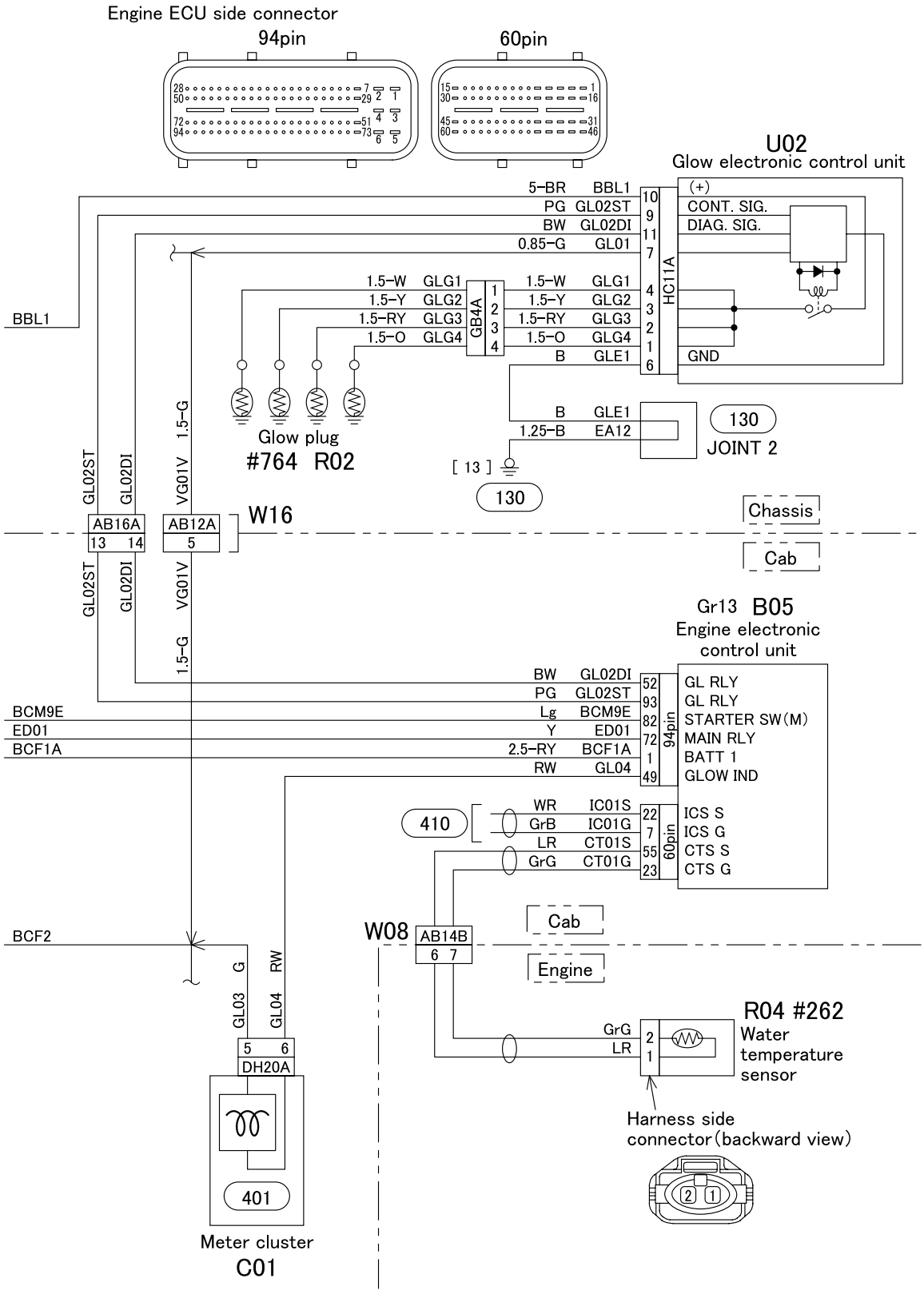
ENGINE PREHEATING CIRCUIT (1)

＜Without BlueTec® system＞



220-C05410-1

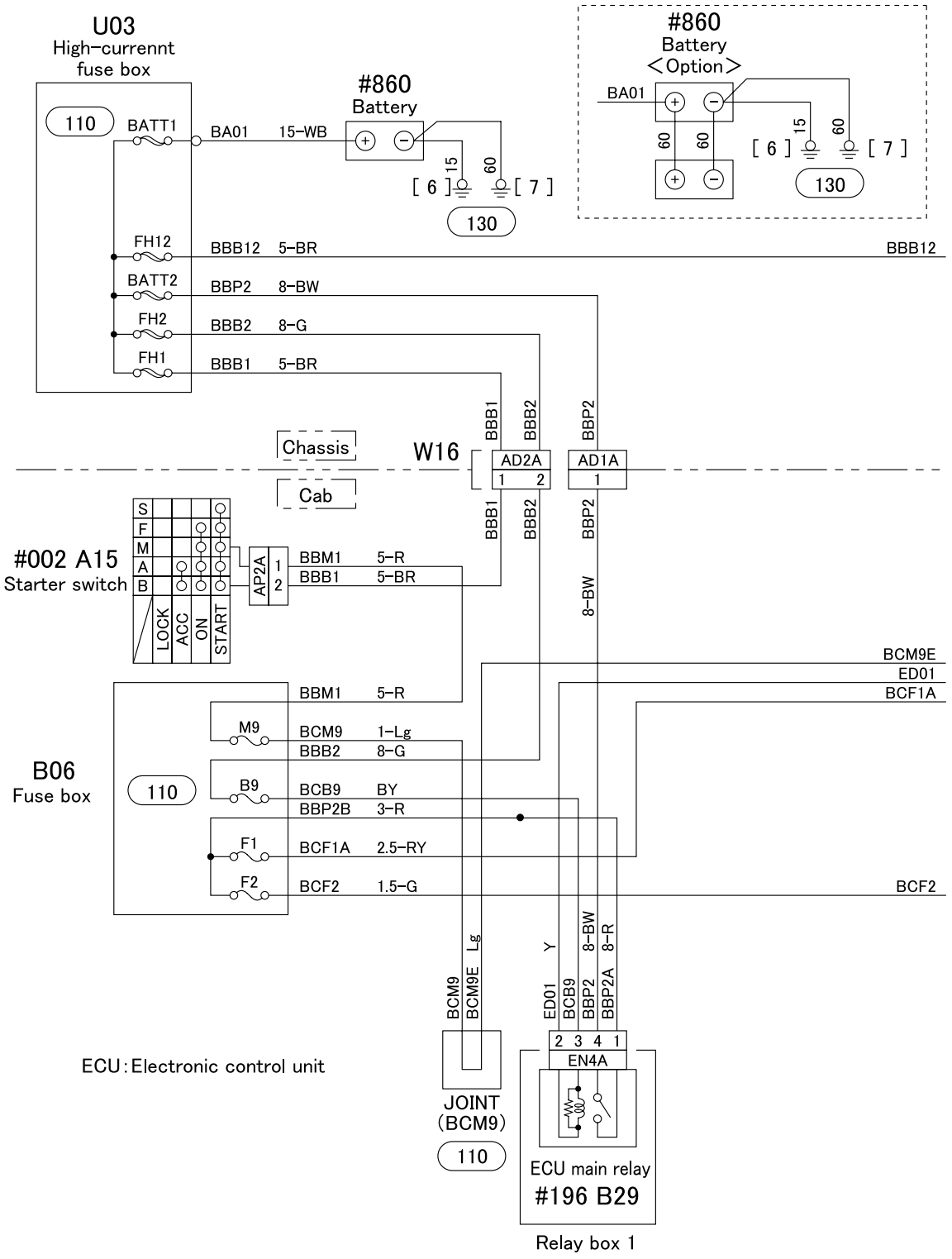
ENGINE PREHEATING CIRCUIT (2)



220-C05410-2

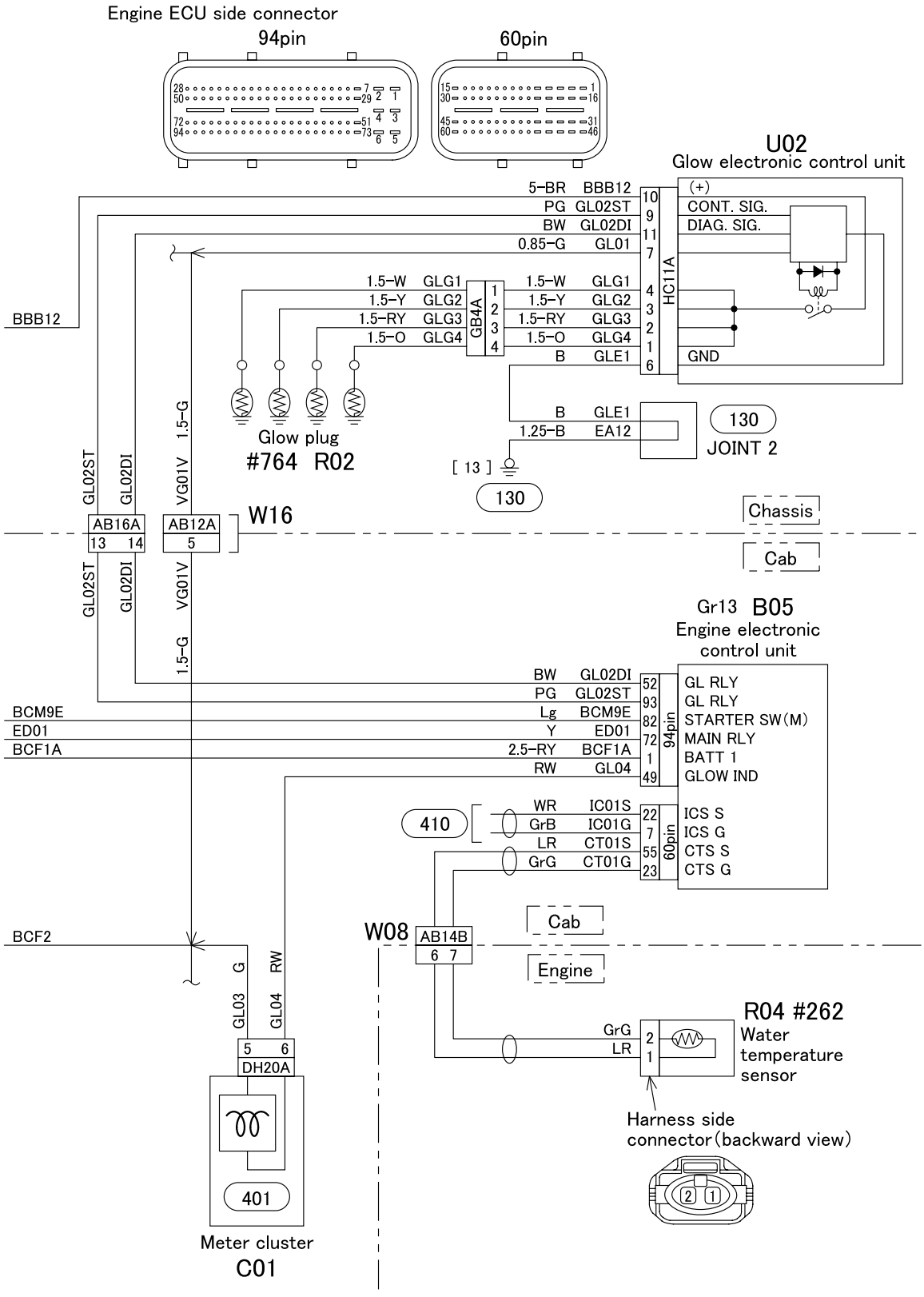
ENGINE PREHEATING CIRCUIT (3)

＜With BlueTec® system＞



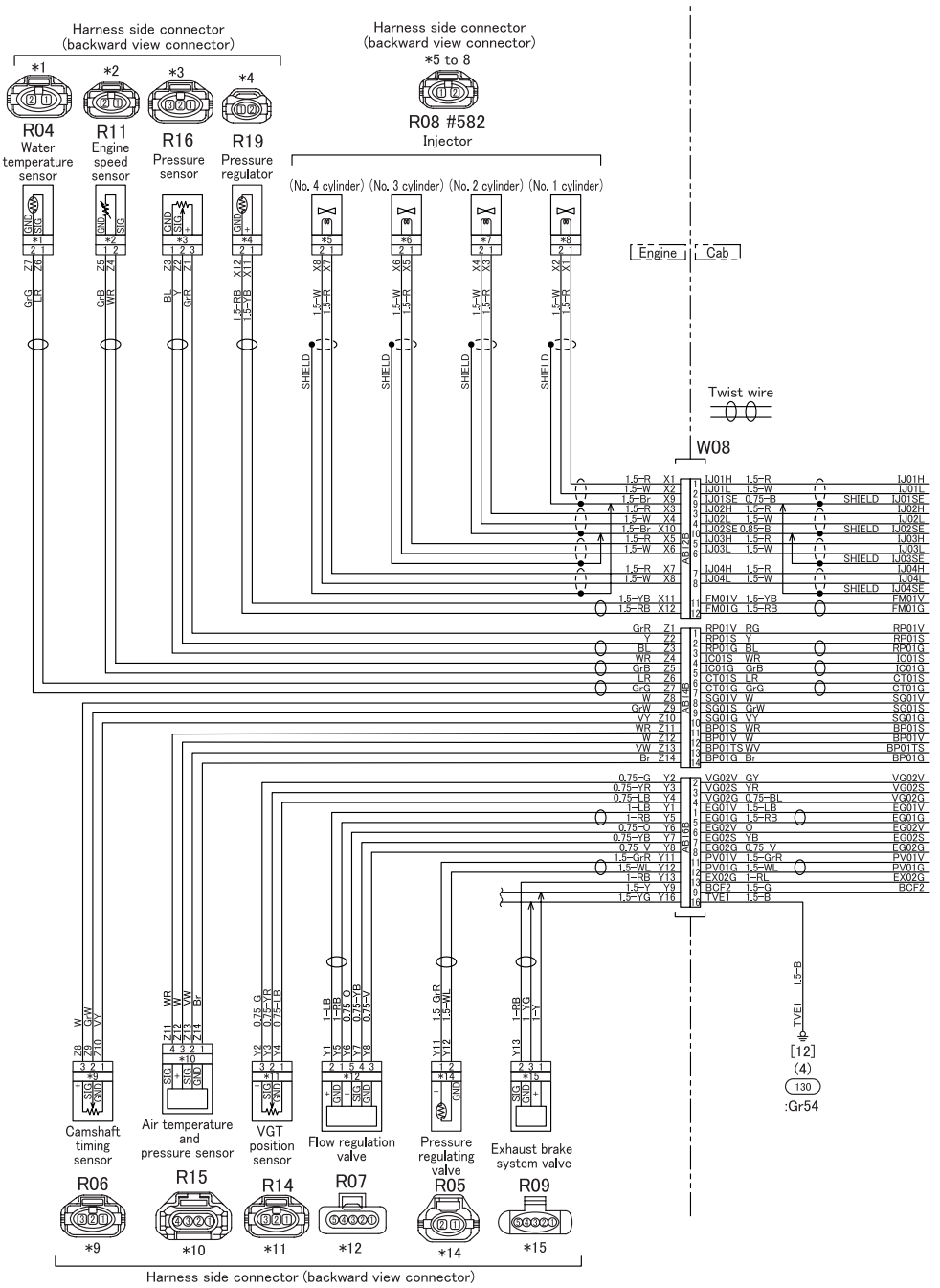
220-C06831-1

ENGINE PREHEATING CIRCUIT (4)



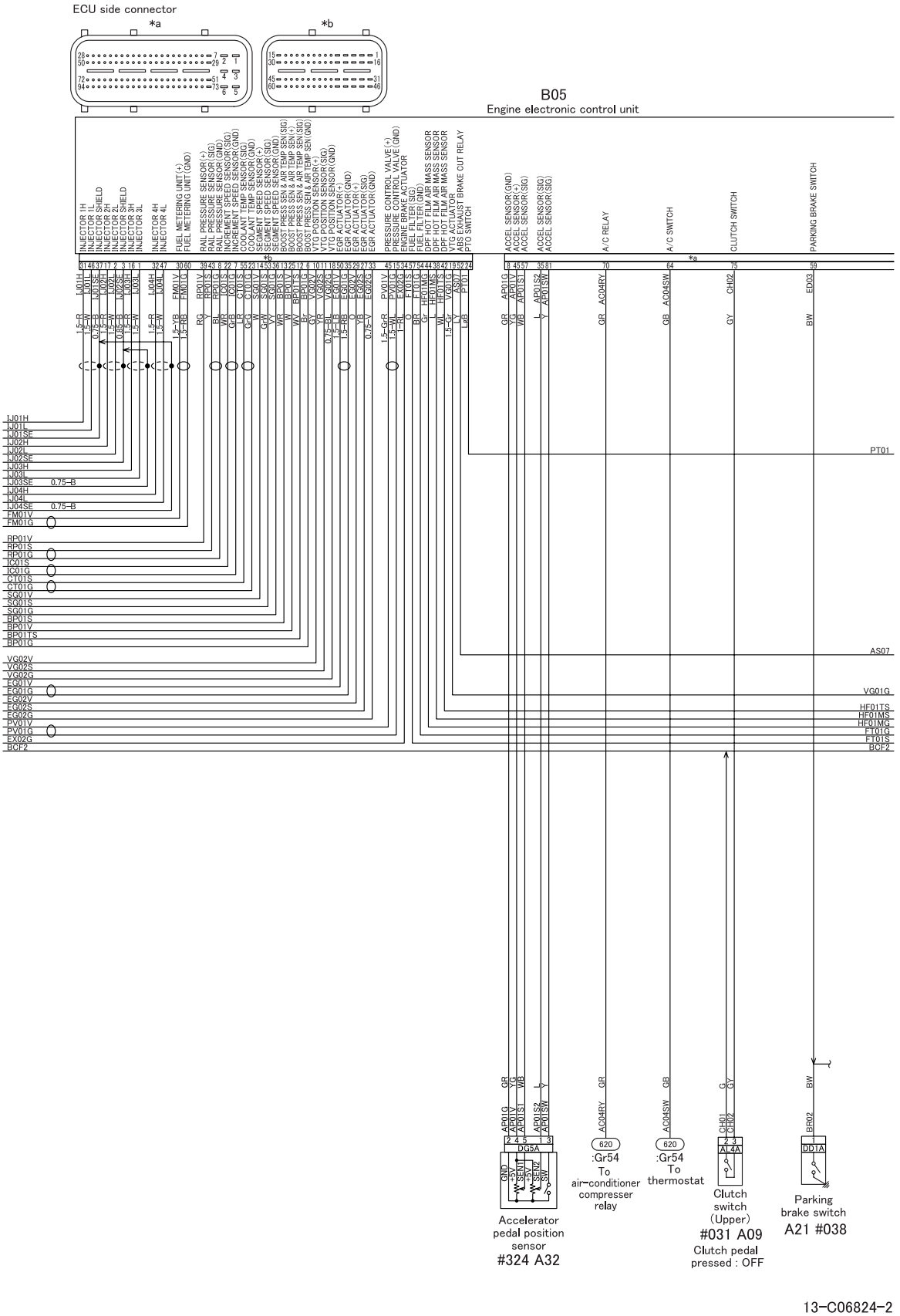
220-C06831-2

ENGINE ELECTRIC CIRCUIT (1/8)



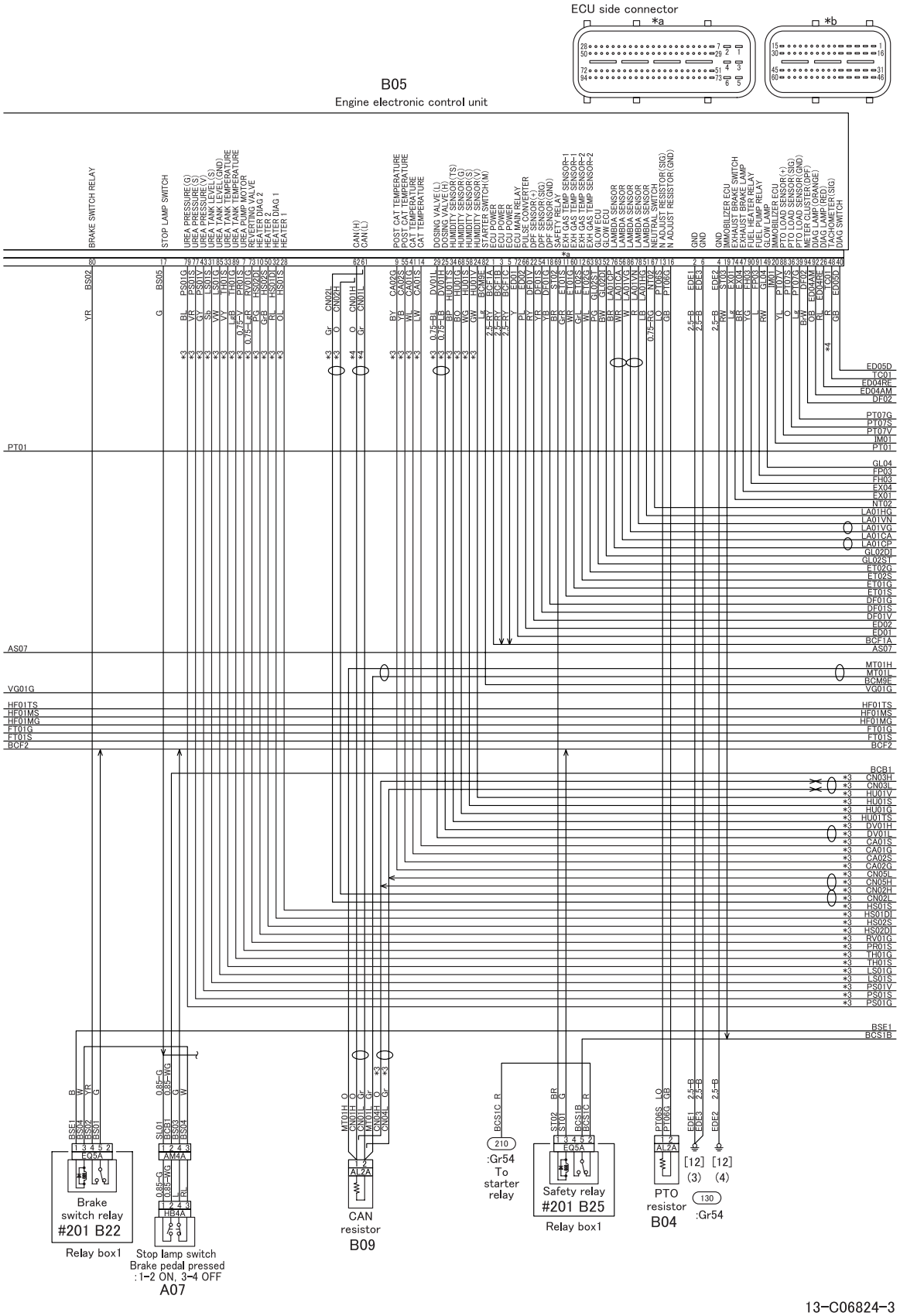
13-C06824-1

ENGINE ELECTRIC CIRCUIT (2/8)

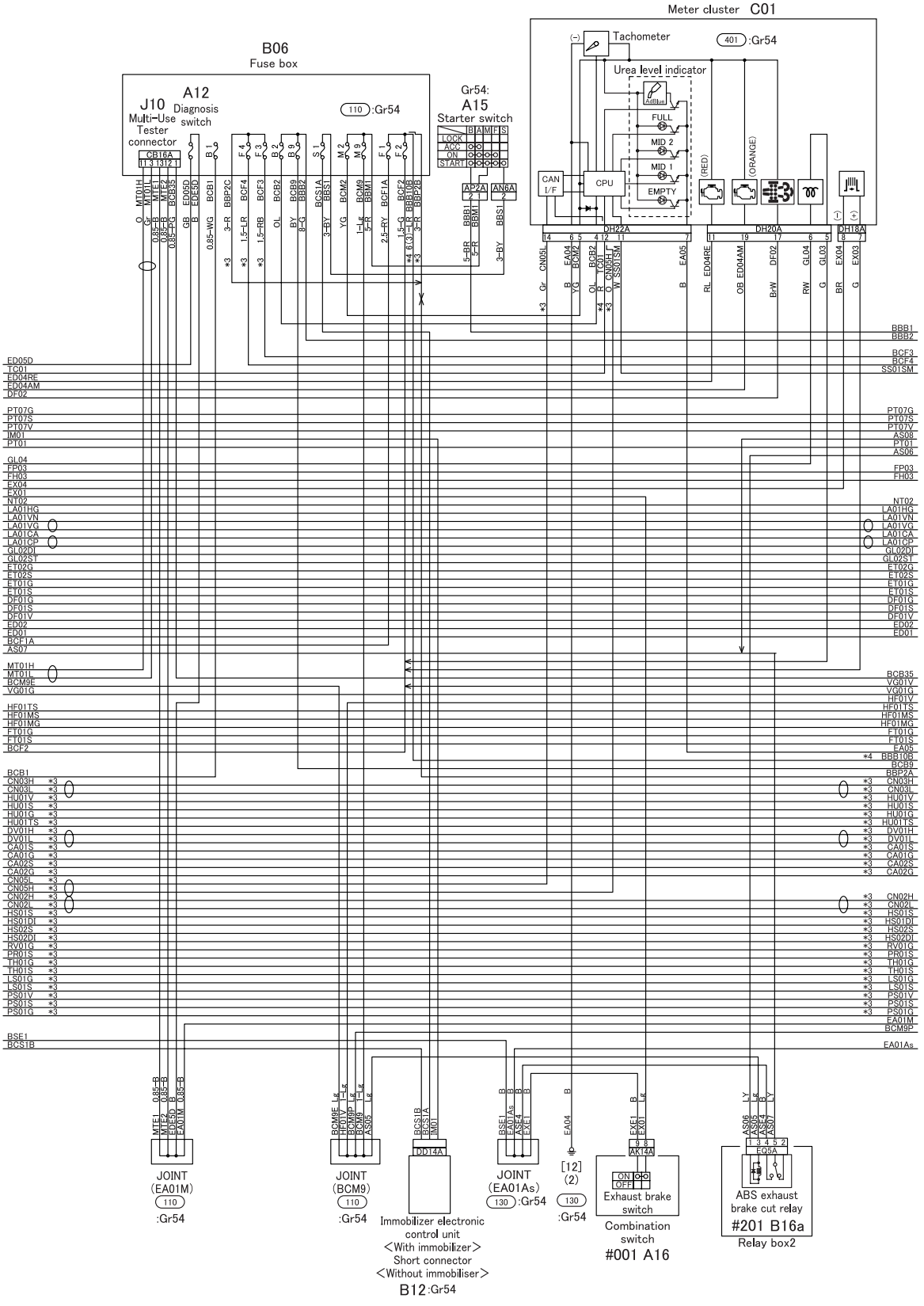


13-C06824-2

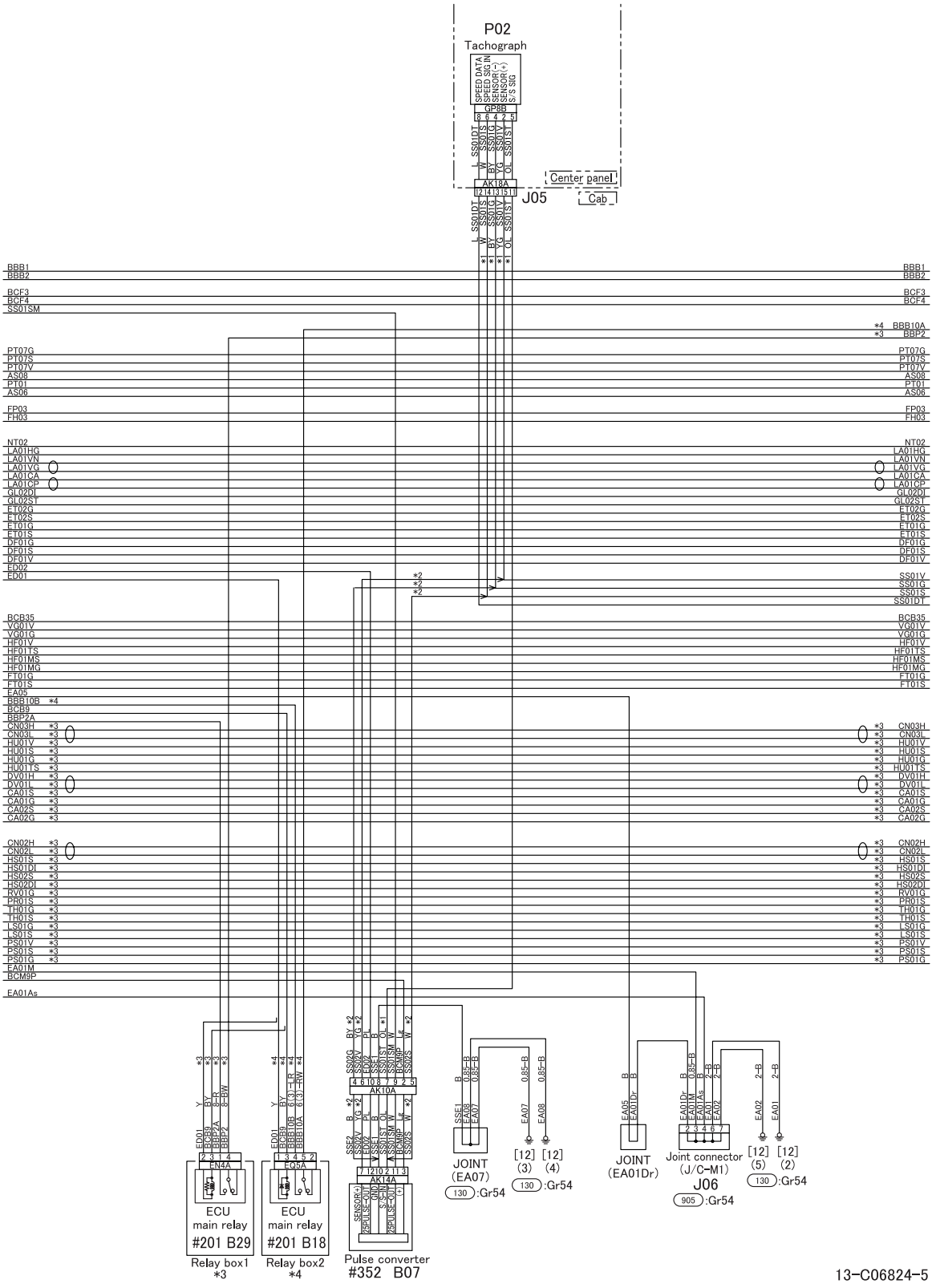
ENGINE ELECTRIC CIRCUIT (3/8)



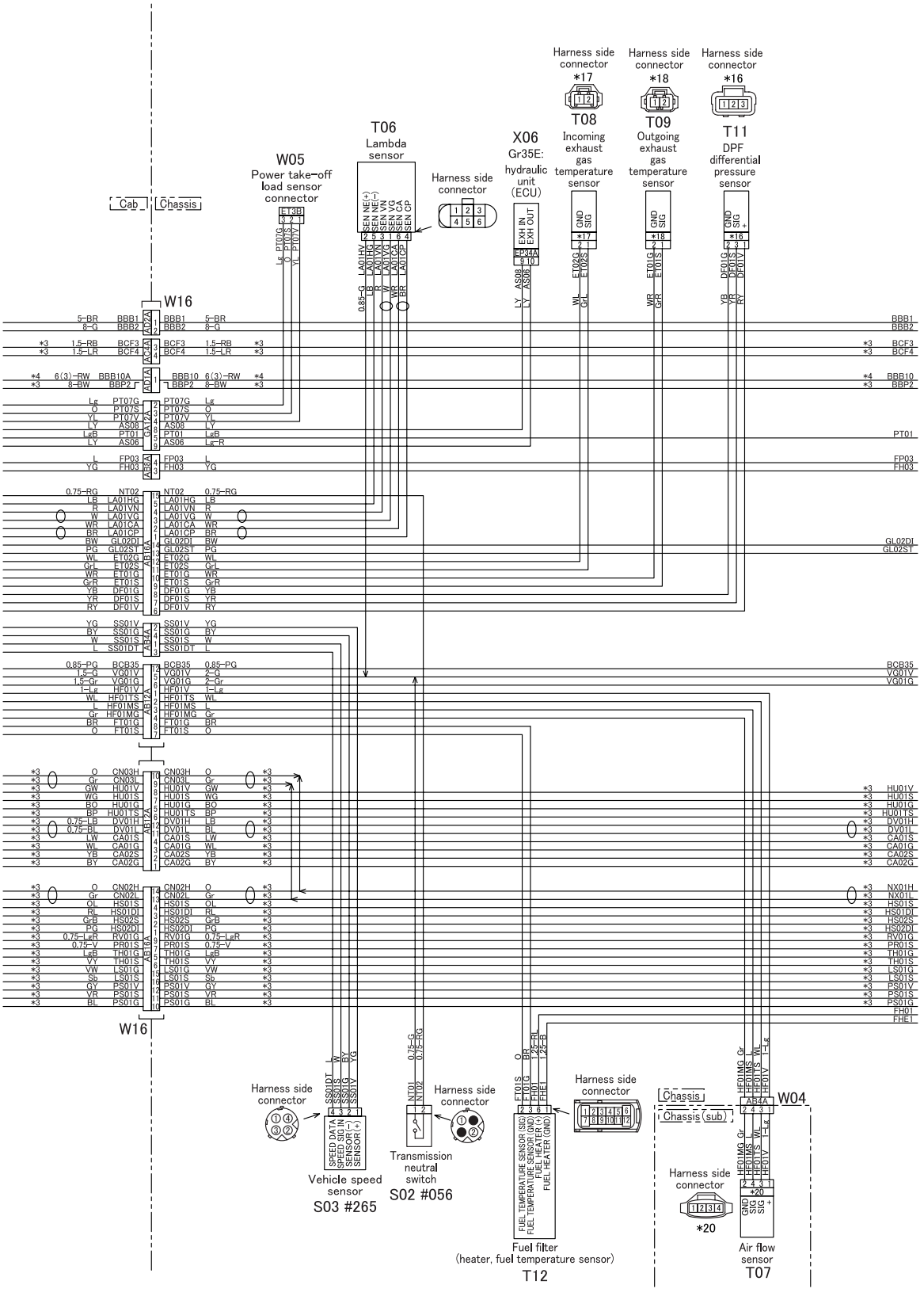
ENGINE ELECTRIC CIRCUIT (4/8)



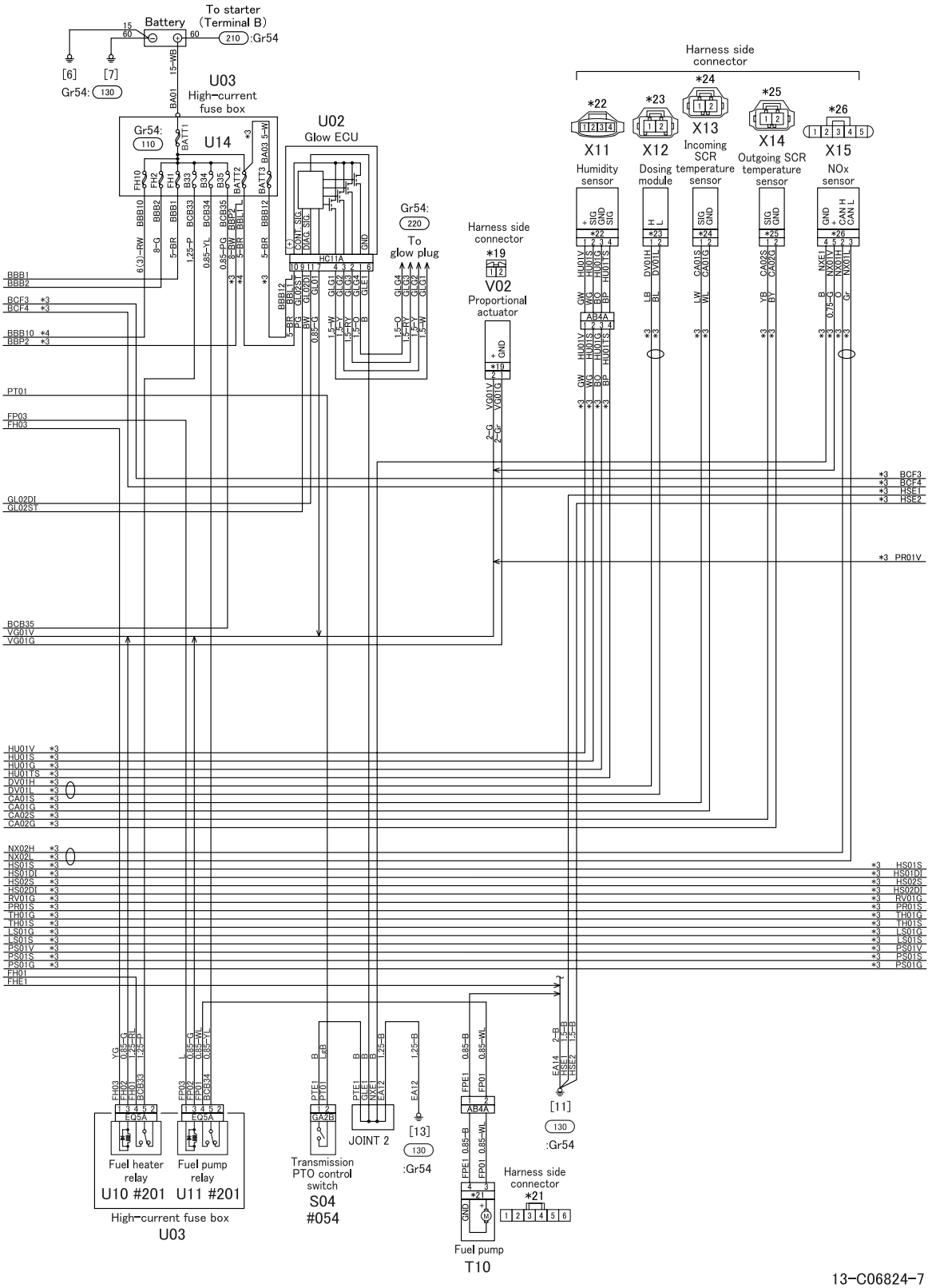
ENGINE ELECTRIC CIRCUIT (5/8)



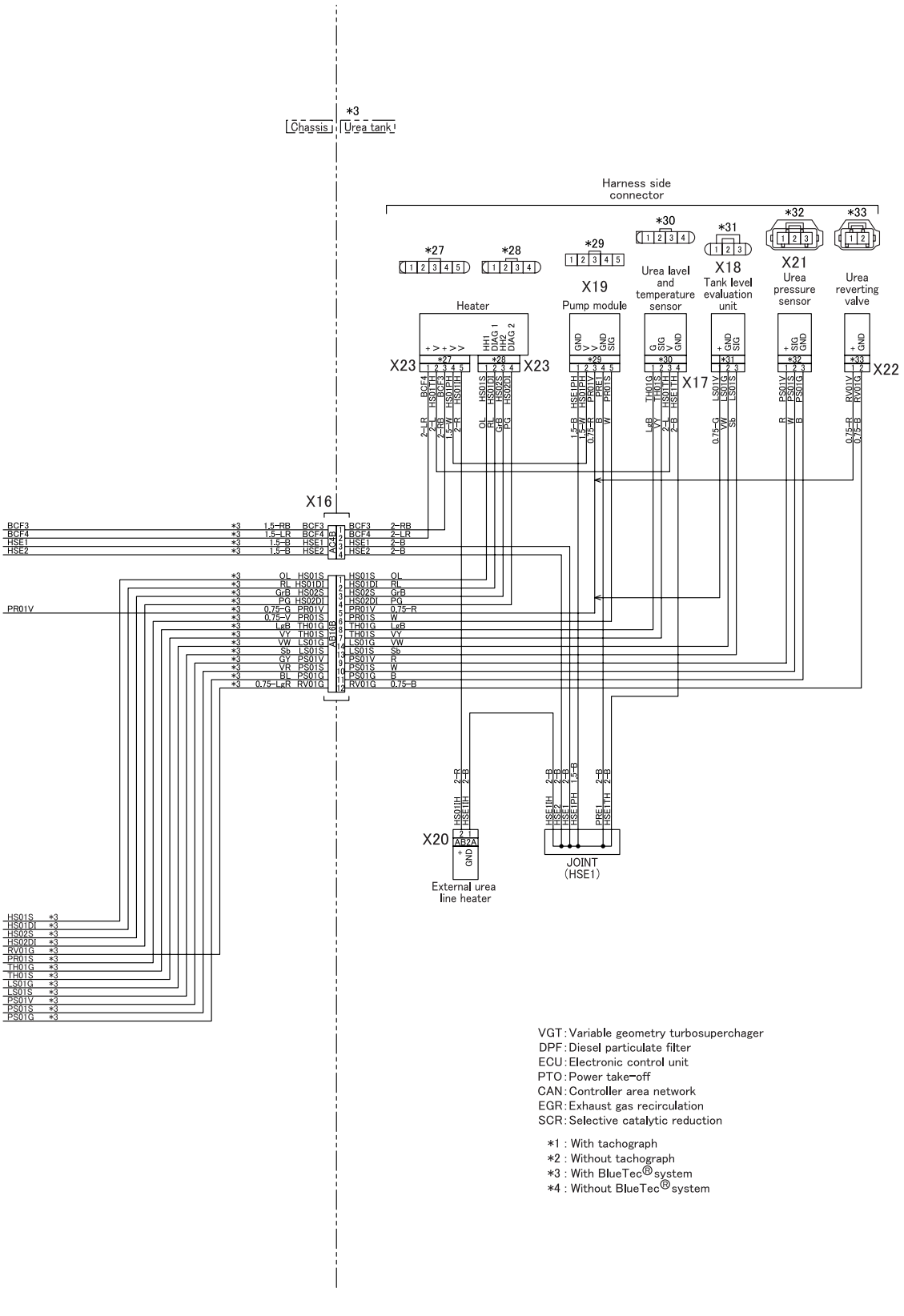
ENGINE ELECTRIC CIRCUIT (6/8)



ENGINE ELECTRIC CIRCUIT (7/8)



ENGINE ELECTRIC CIRCUIT (8/8)

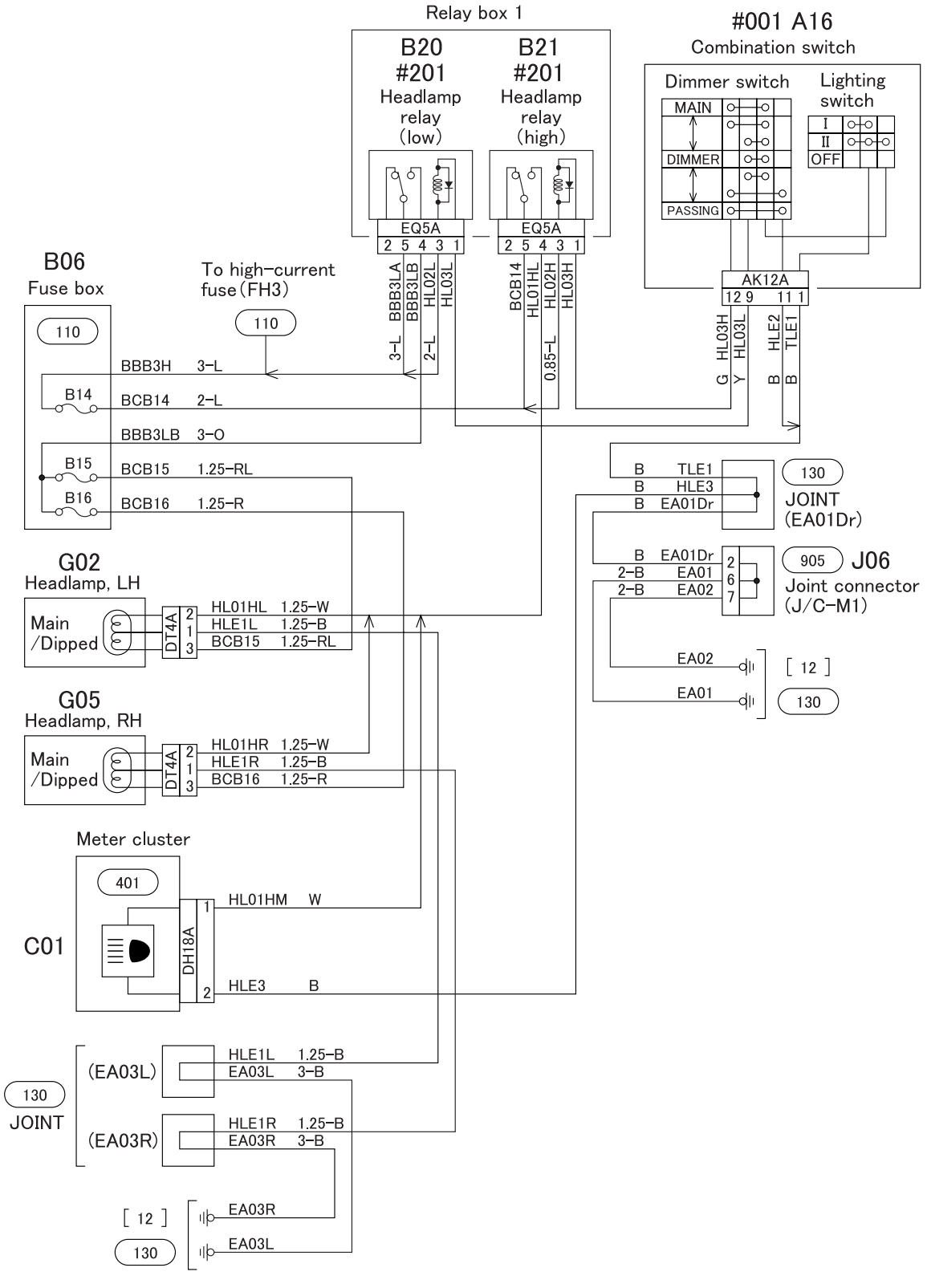


VGT: Variable geometry turbosuperchager
DPF: Diesel particulate filter
ECU: Electronic control unit
PTO: Power take-off
CAN: Controller area network
EGR: Exhaust gas recirculation
SCR: Selective catalytic reduction

*1 : With tachograph
*2 : Without tachograph
*3 : With BlueTec® system
*4 : Without BlueTec® system

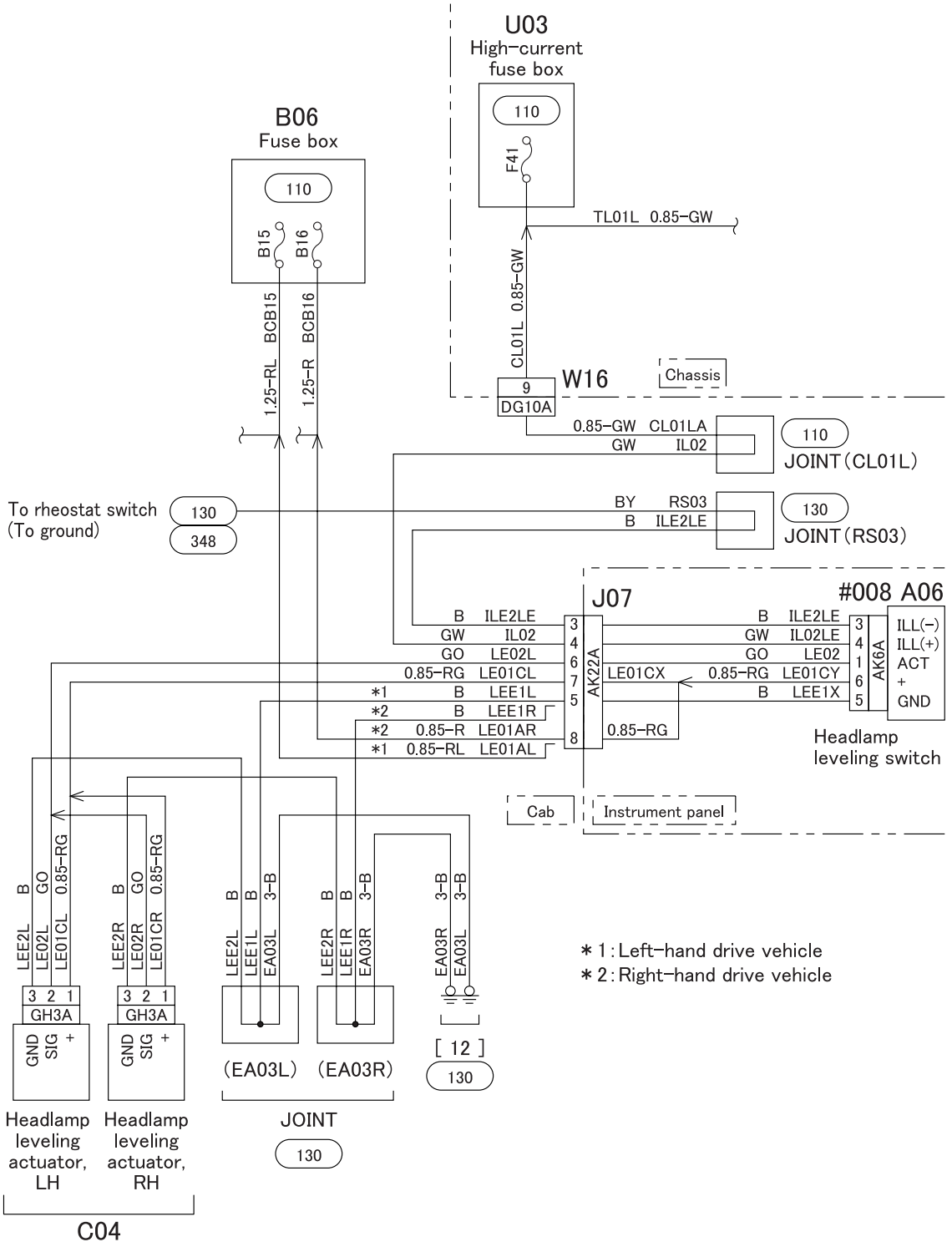
13-C06824-8

HEADLAMP CIRCUIT



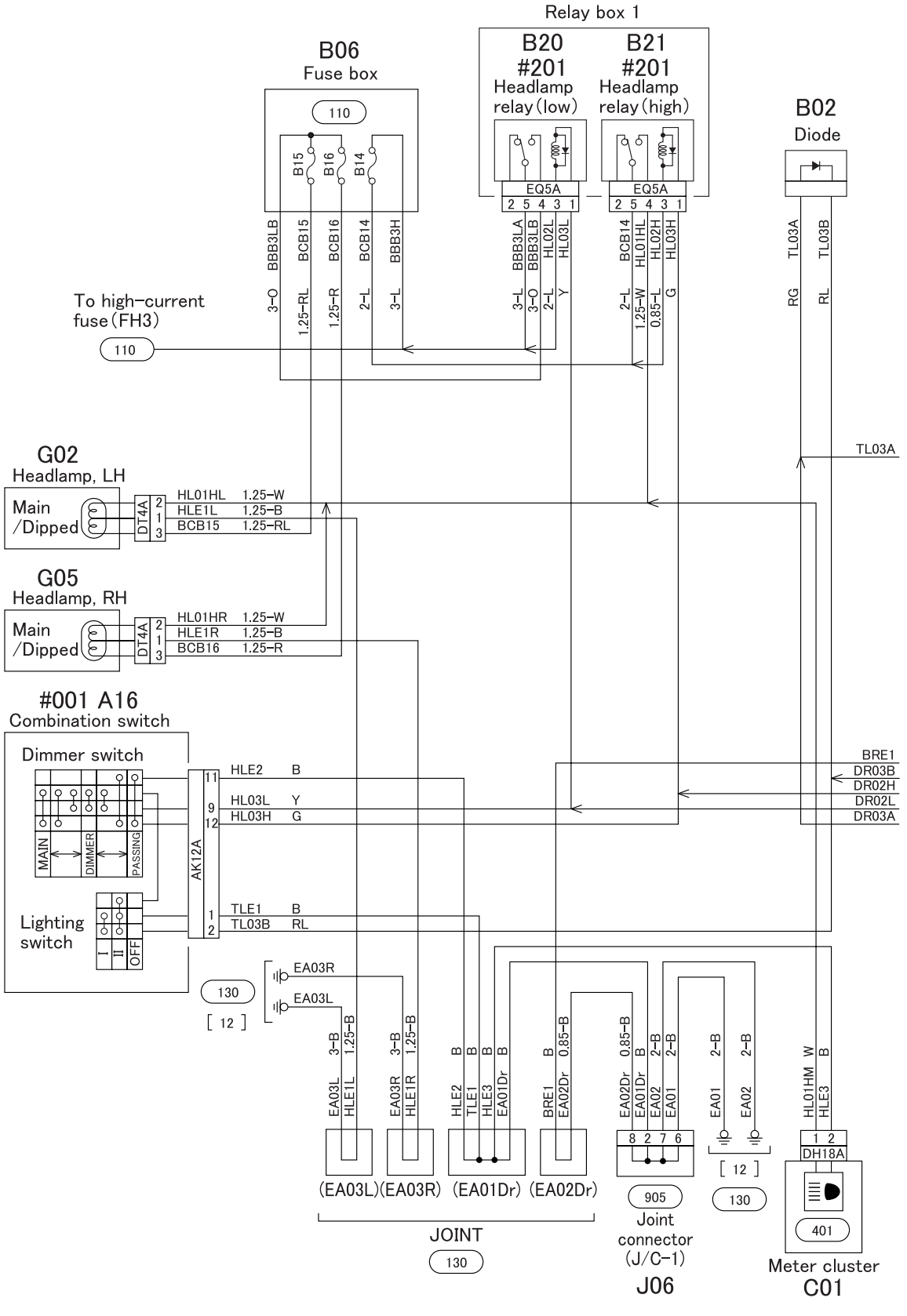
310-C05411

HEADLAMP LEVELING CIRCUIT

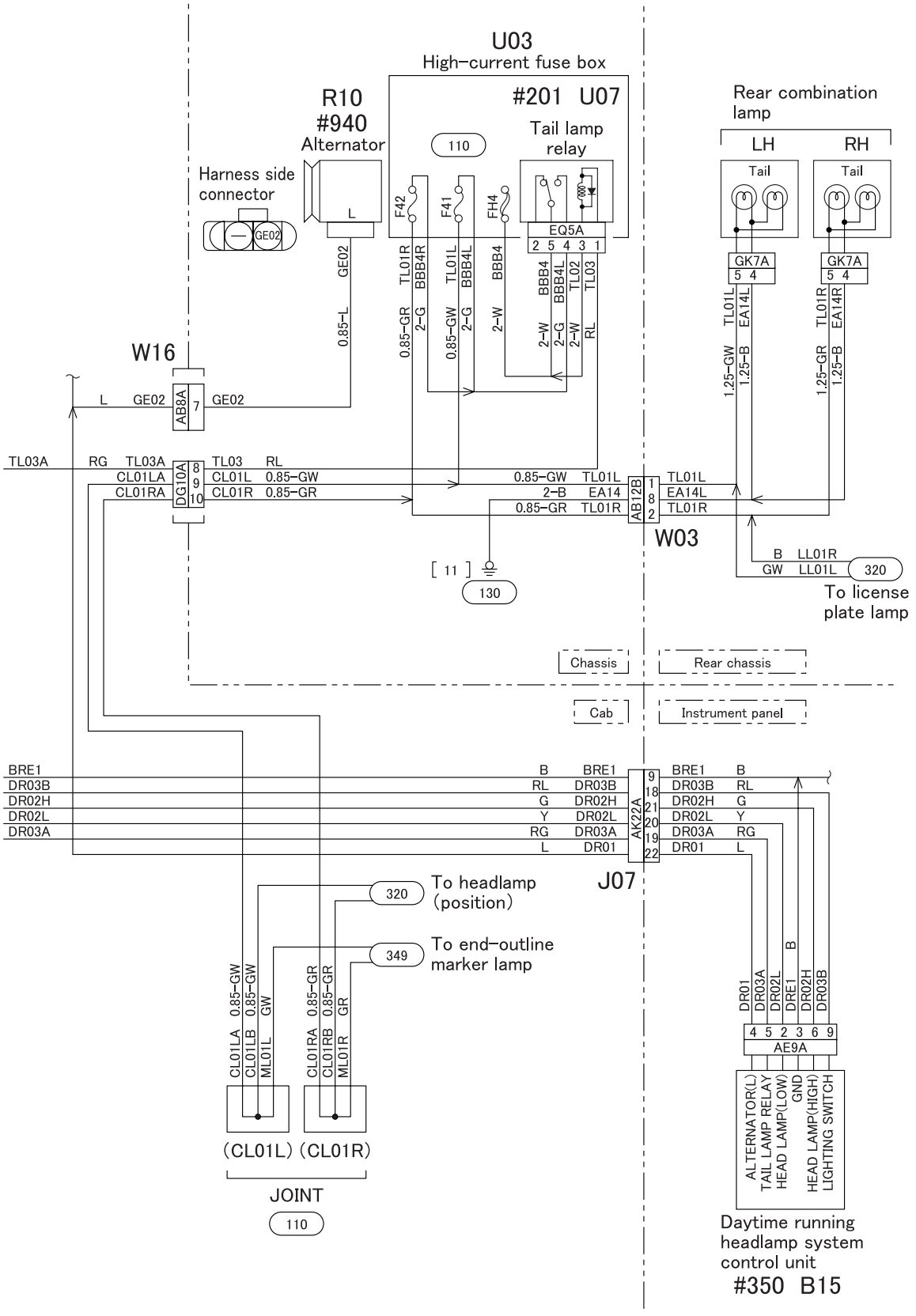


312-C05412

DAYTIME RUNNING LIGHT CIRCUIT (1)

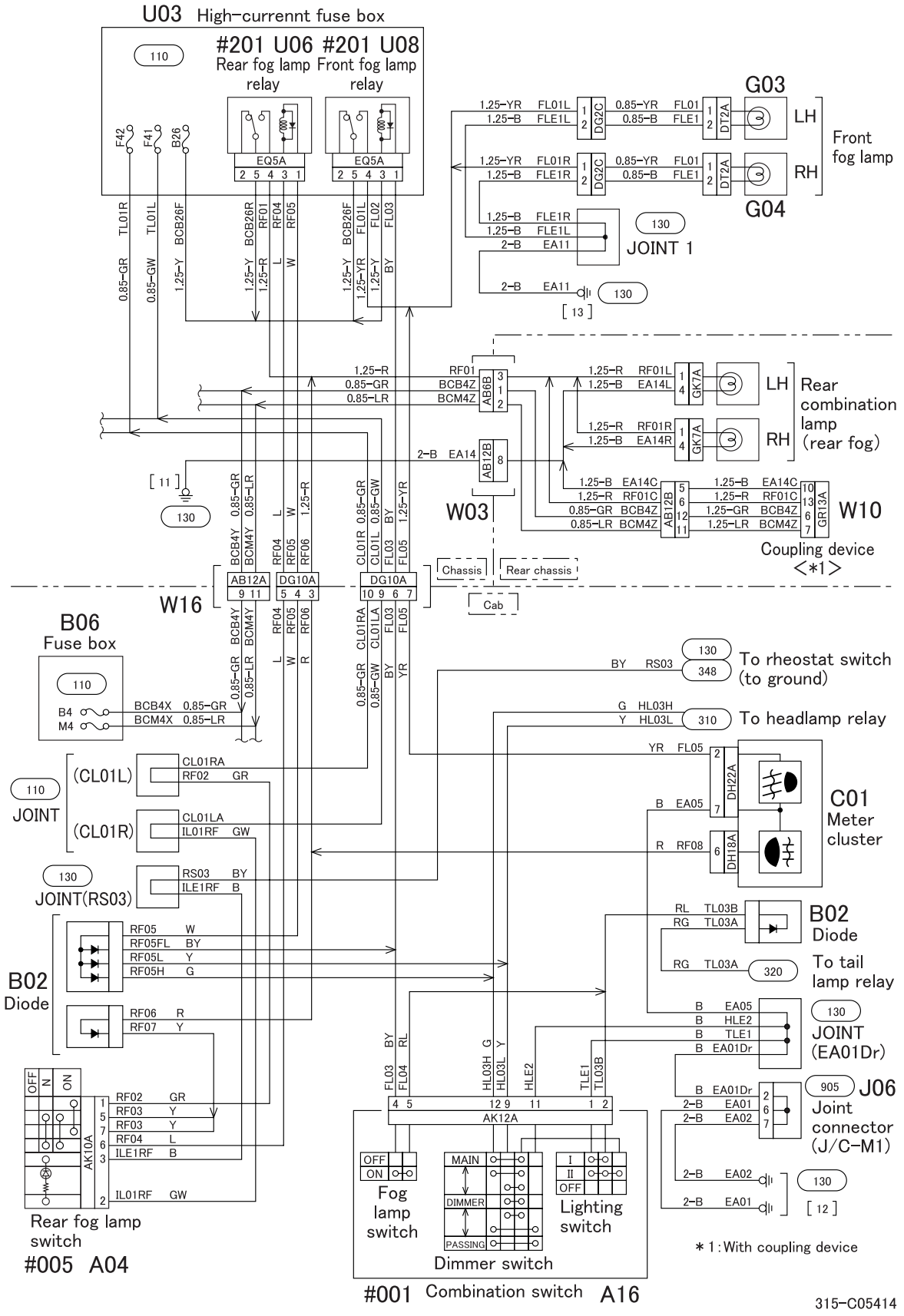


DAYTIME RUNNING LIGHT CIRCUIT (2)

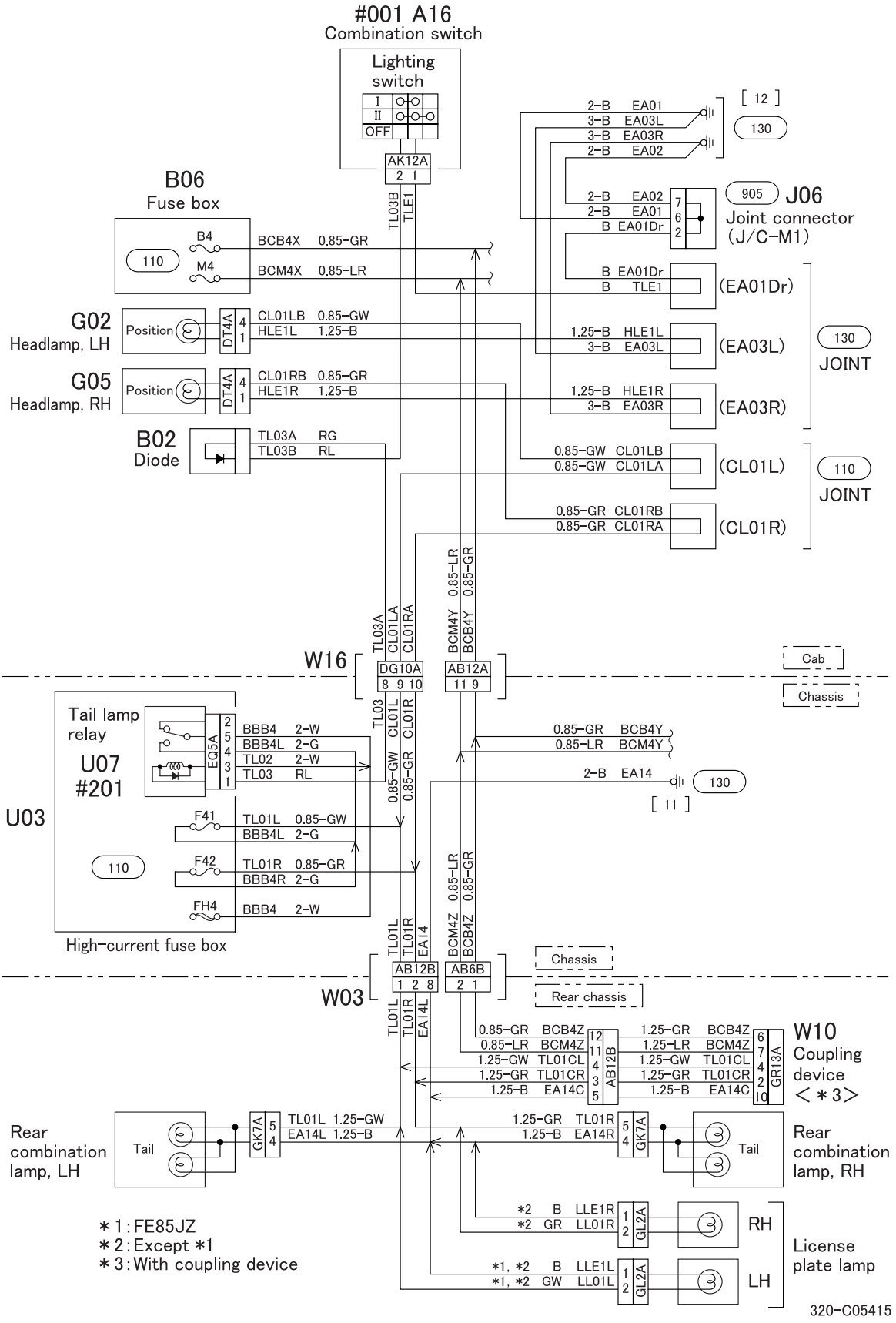


313-C05413-2

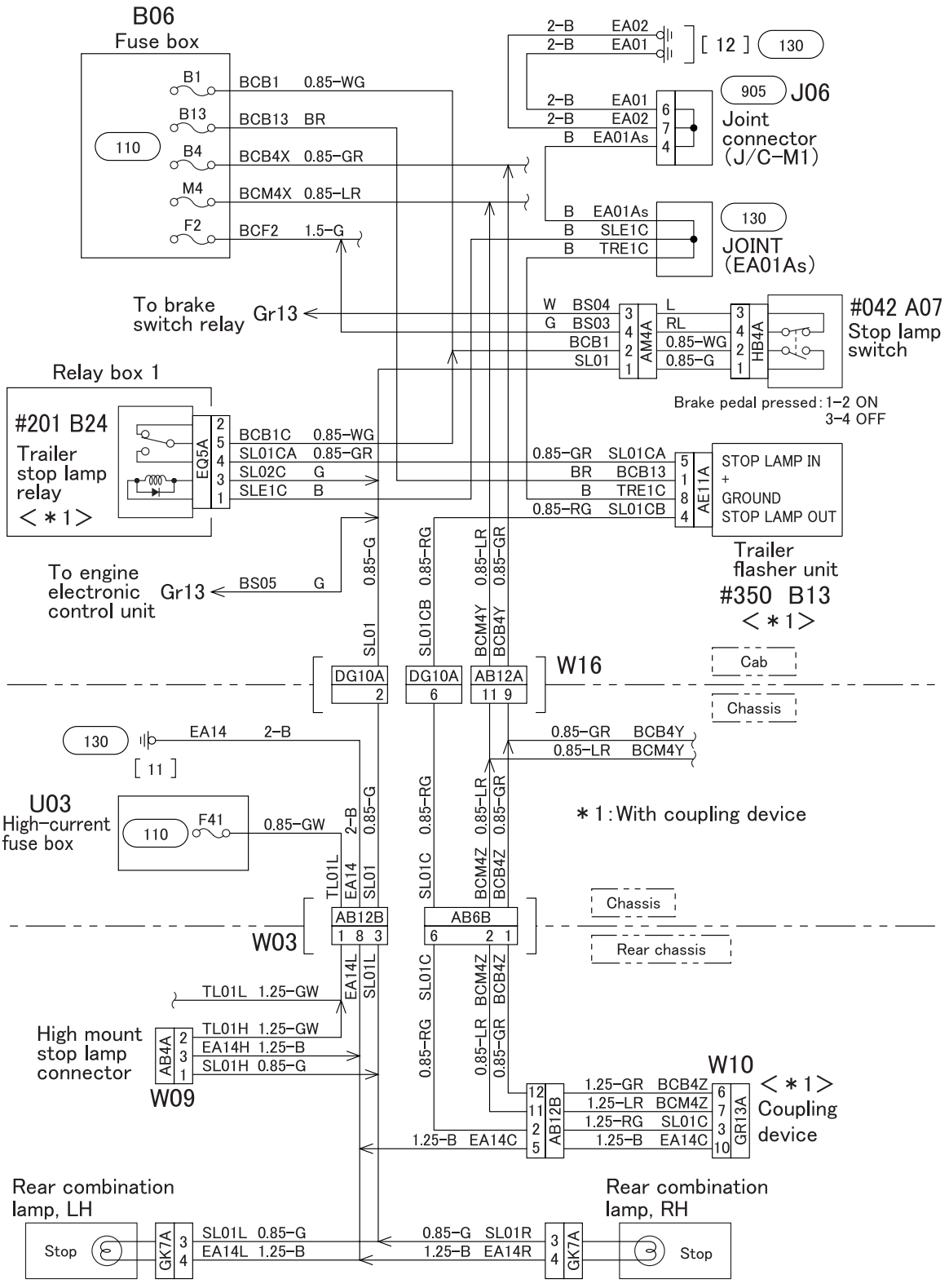
FOG LAMP CIRCUIT



TAIL, POSITION AND LICENSE PLATE LAMPS CIRCUIT

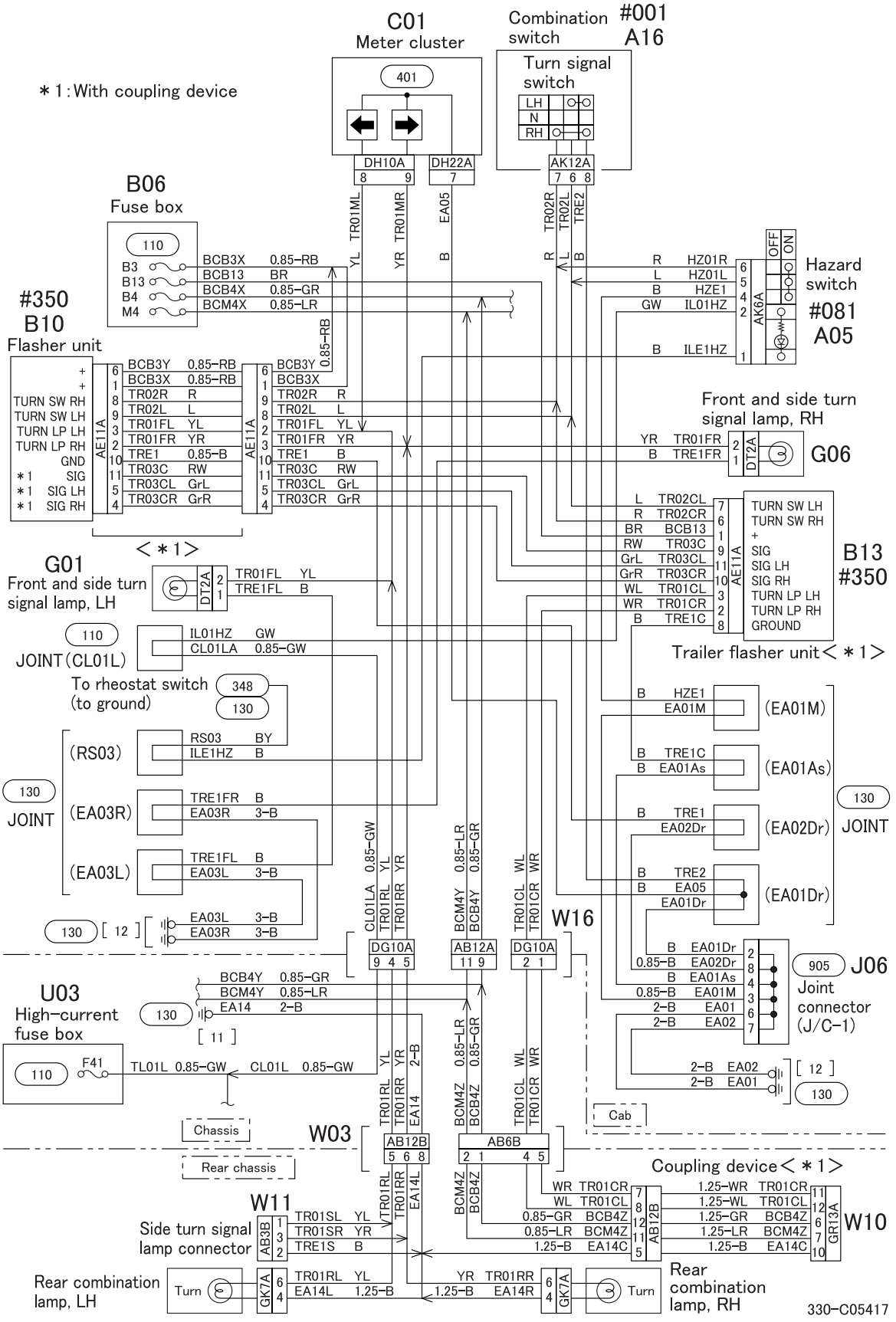


STOP LAMP CIRCUIT

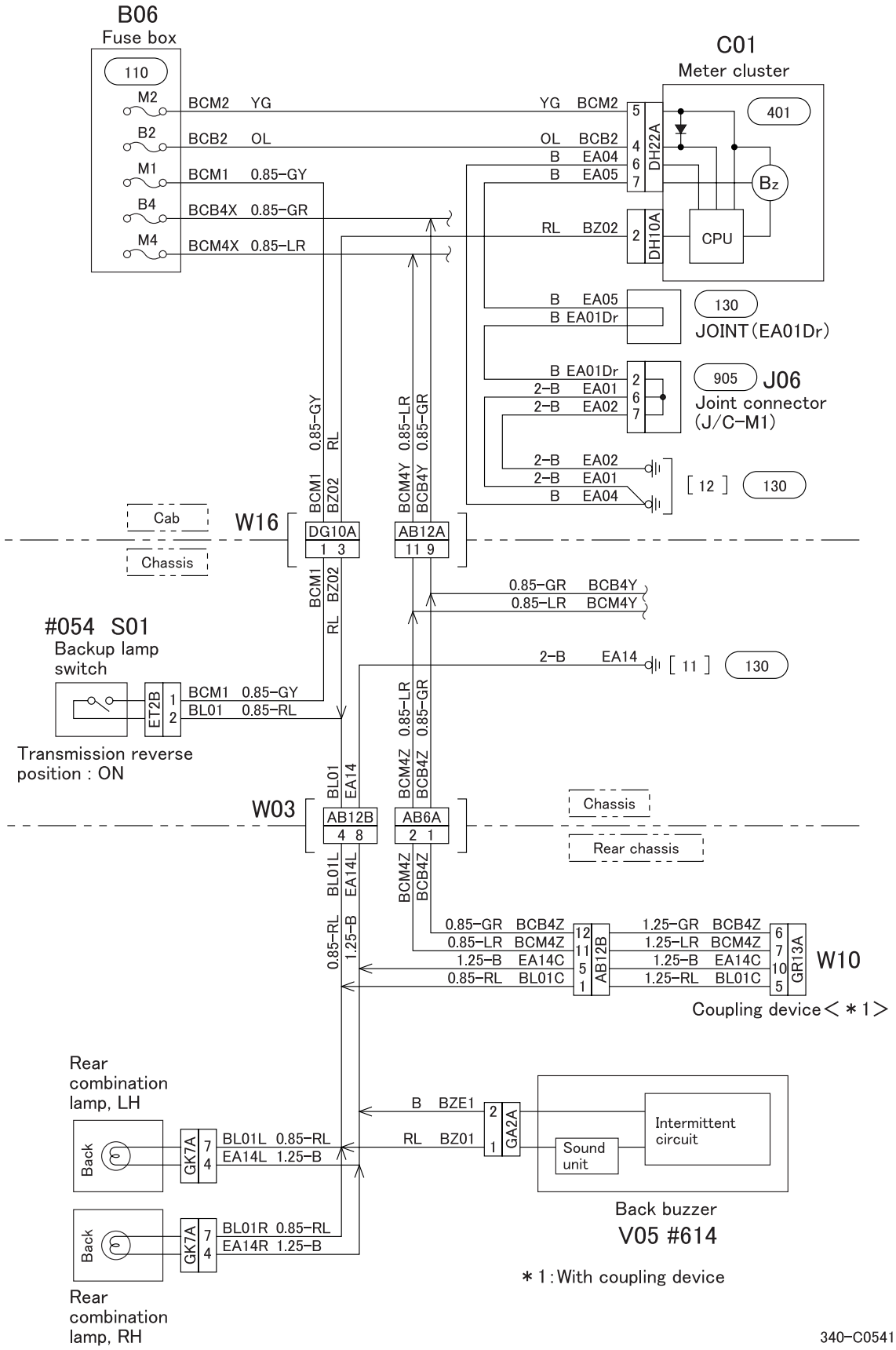


325-C05416

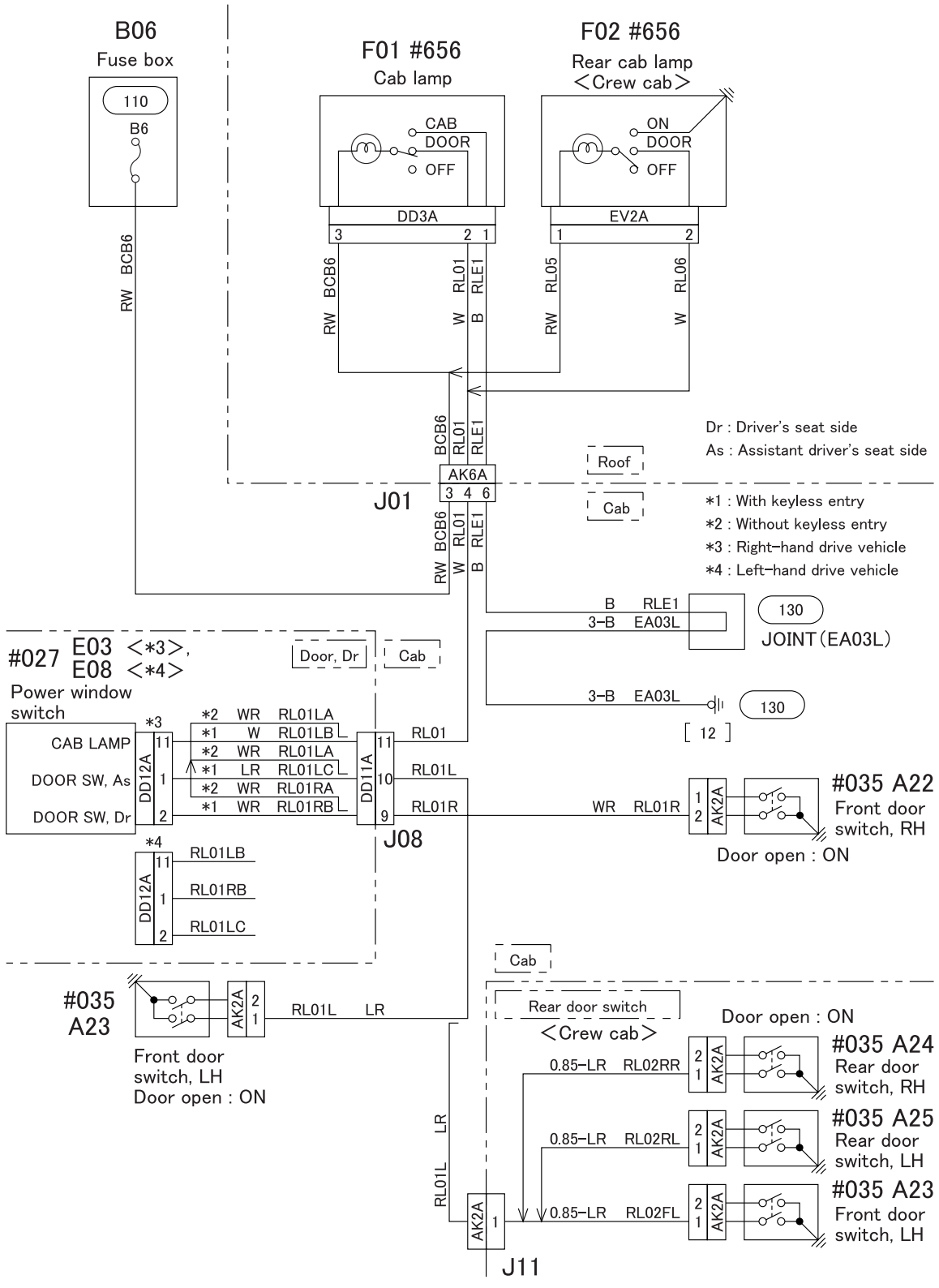
TURN SIGNAL AND HAZARD LAMP CIRCUIT



BACKUP LAMP CIRCUIT

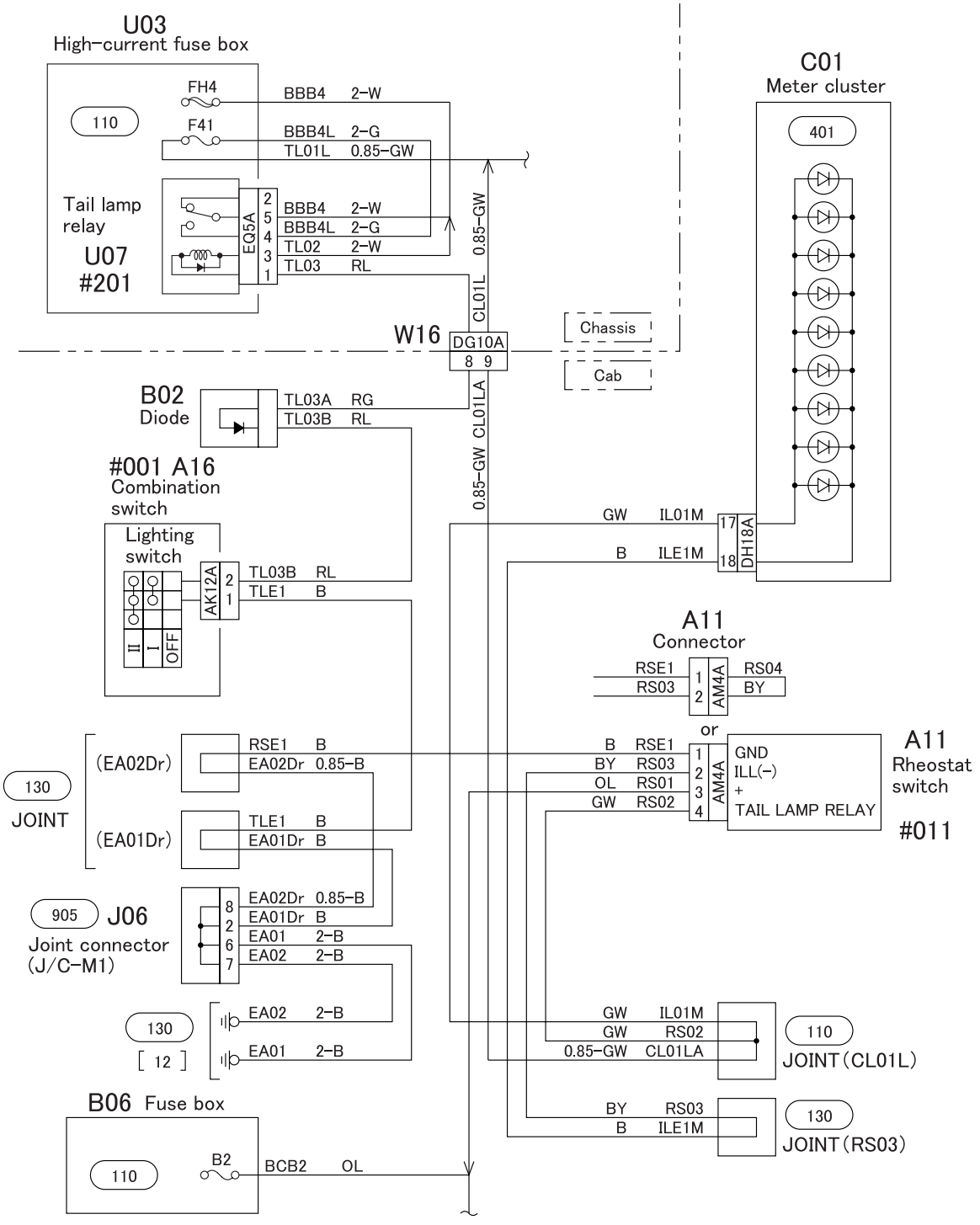


CAB LAMP CIRCUIT



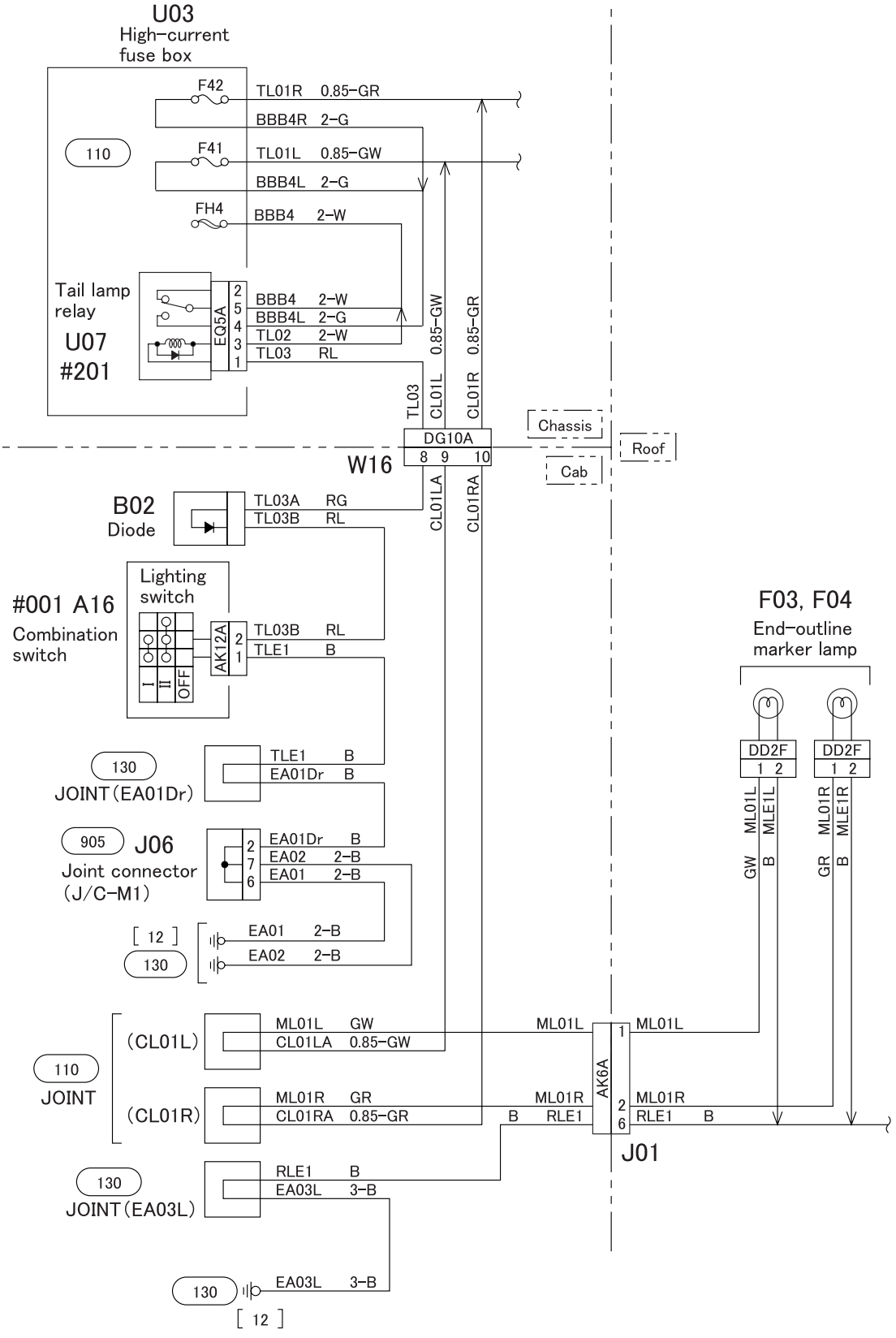
345-C05419

ILLUMINATION LIGHT CIRCUIT



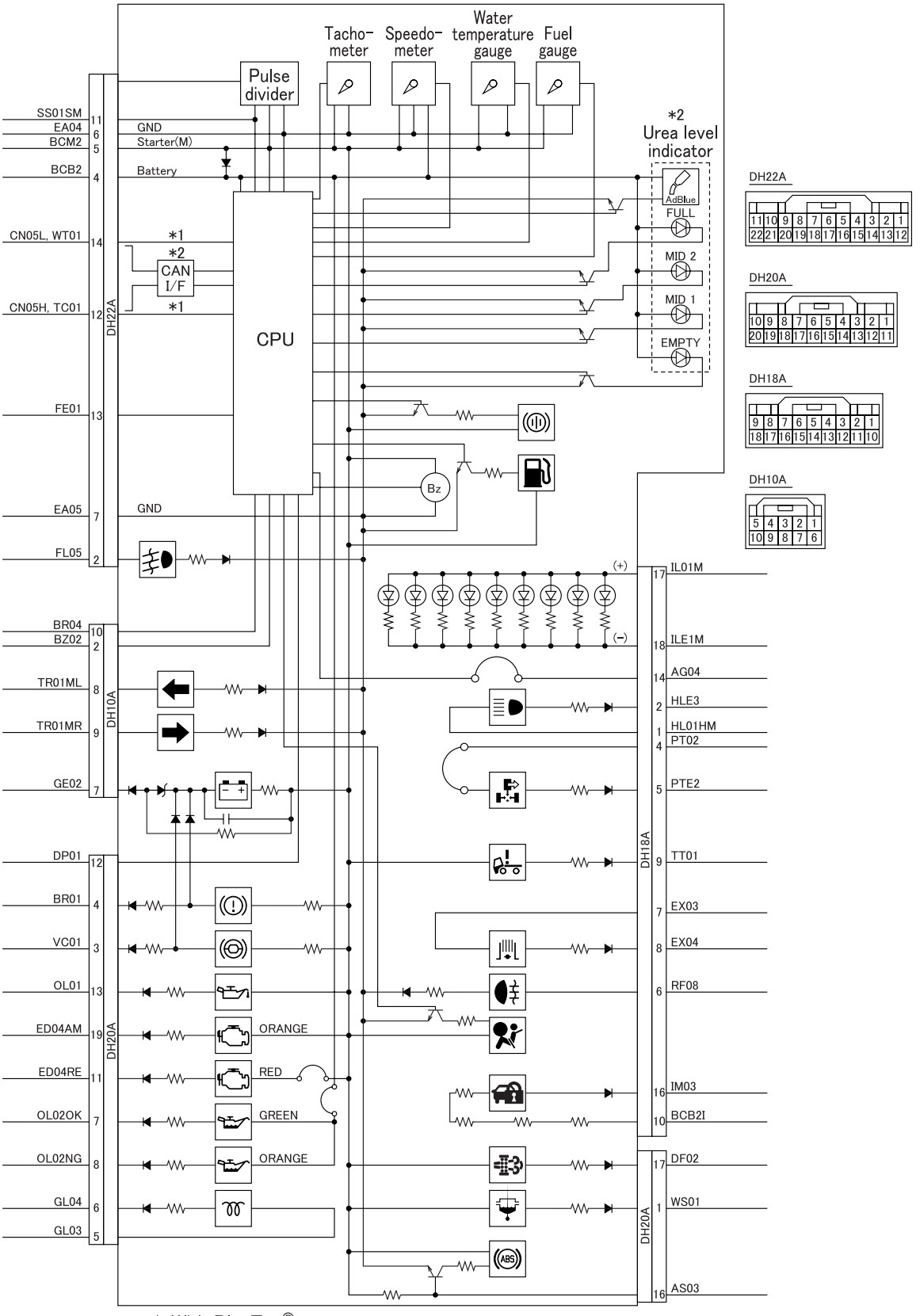
348-C05420

END-OUTLINE MARKER LAMP CIRCUIT



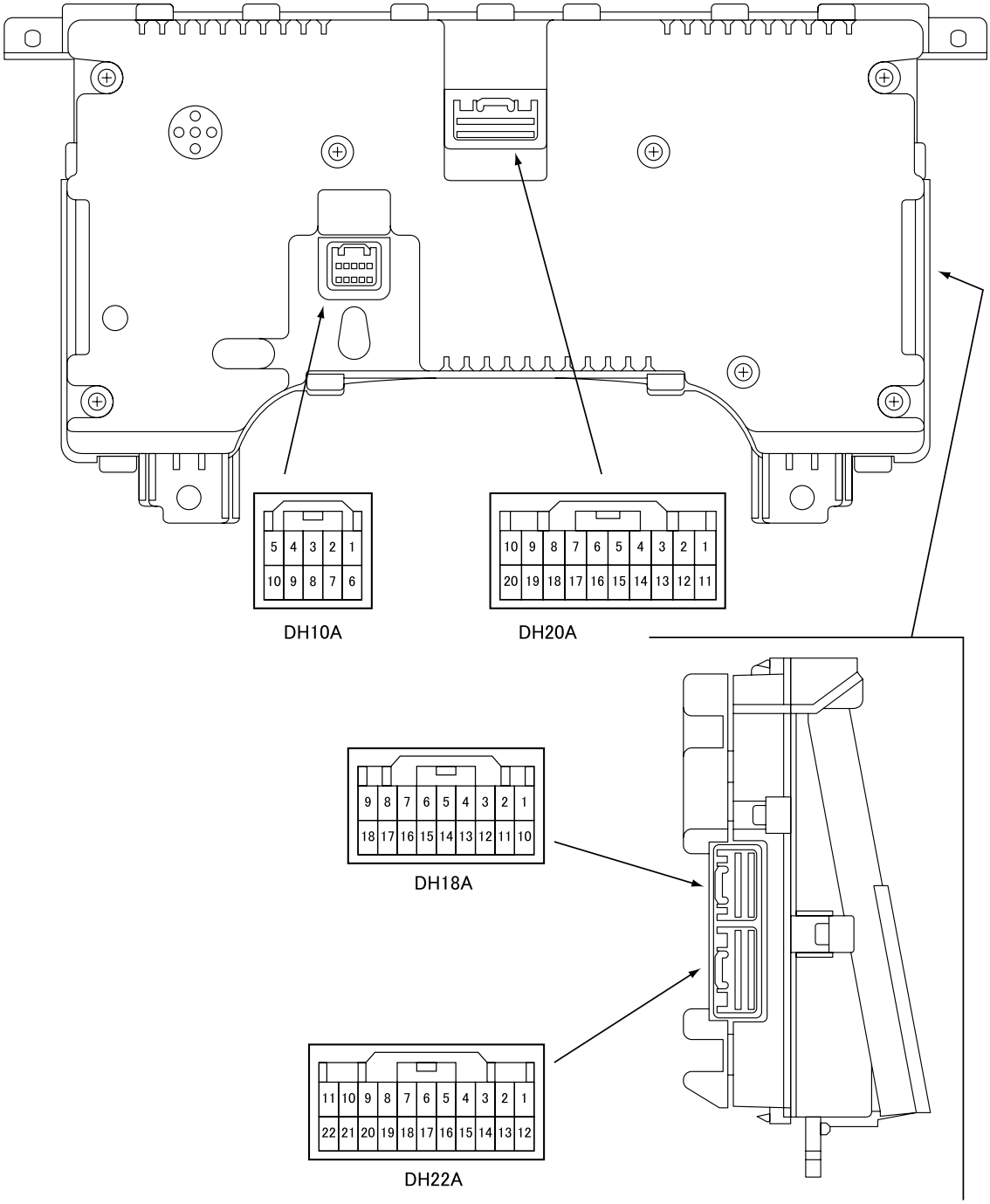
349-C05421

METER CLUSTER INTERNAL CIRCUIT



METER CLUSTER BACKWARD VIEW

Meter cluster backward view

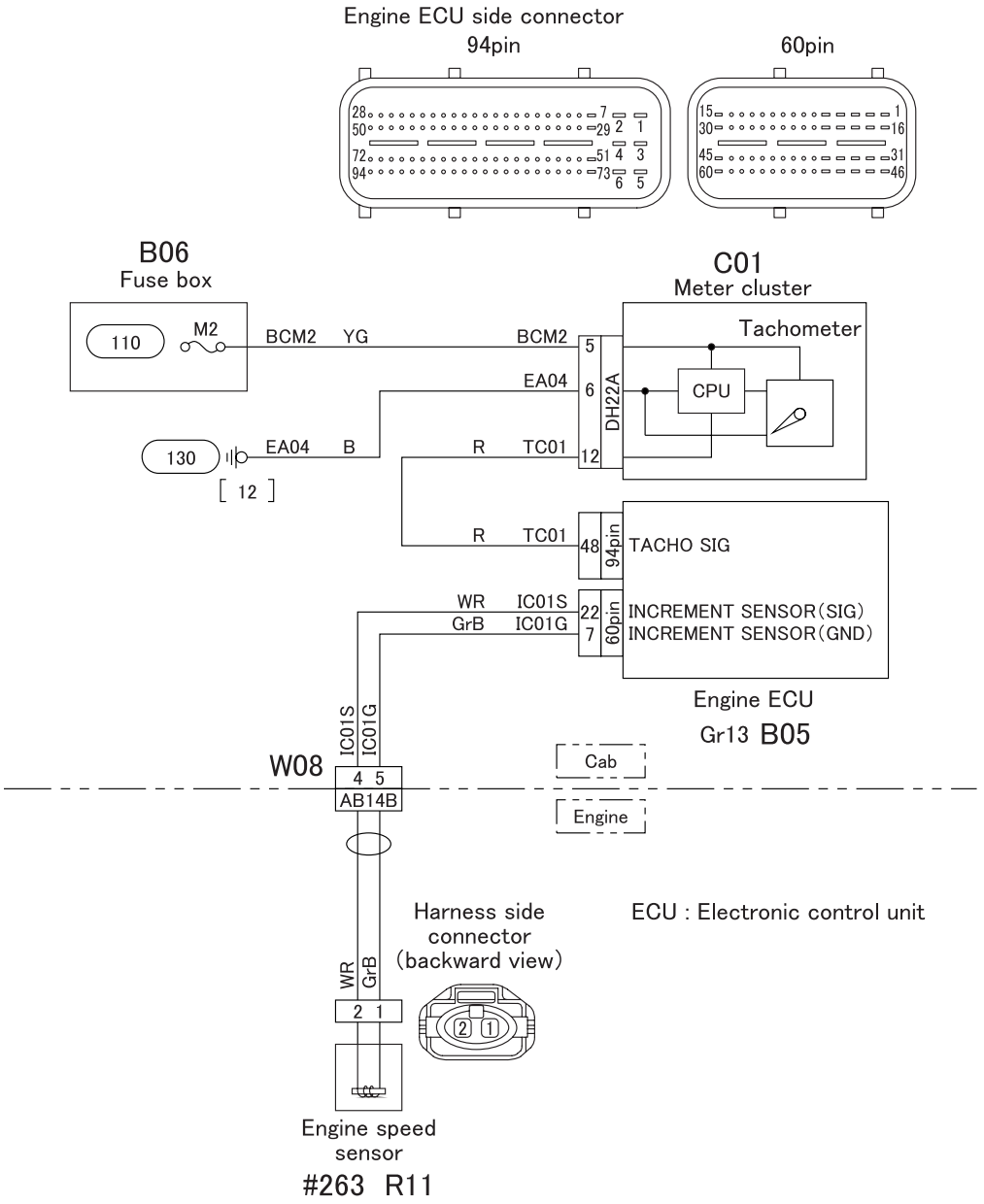


Because a CPU is built into the meter, the inner part of the meter body cannot be disassembled.

P50800N

TACHOMETER CIRCUIT (1)

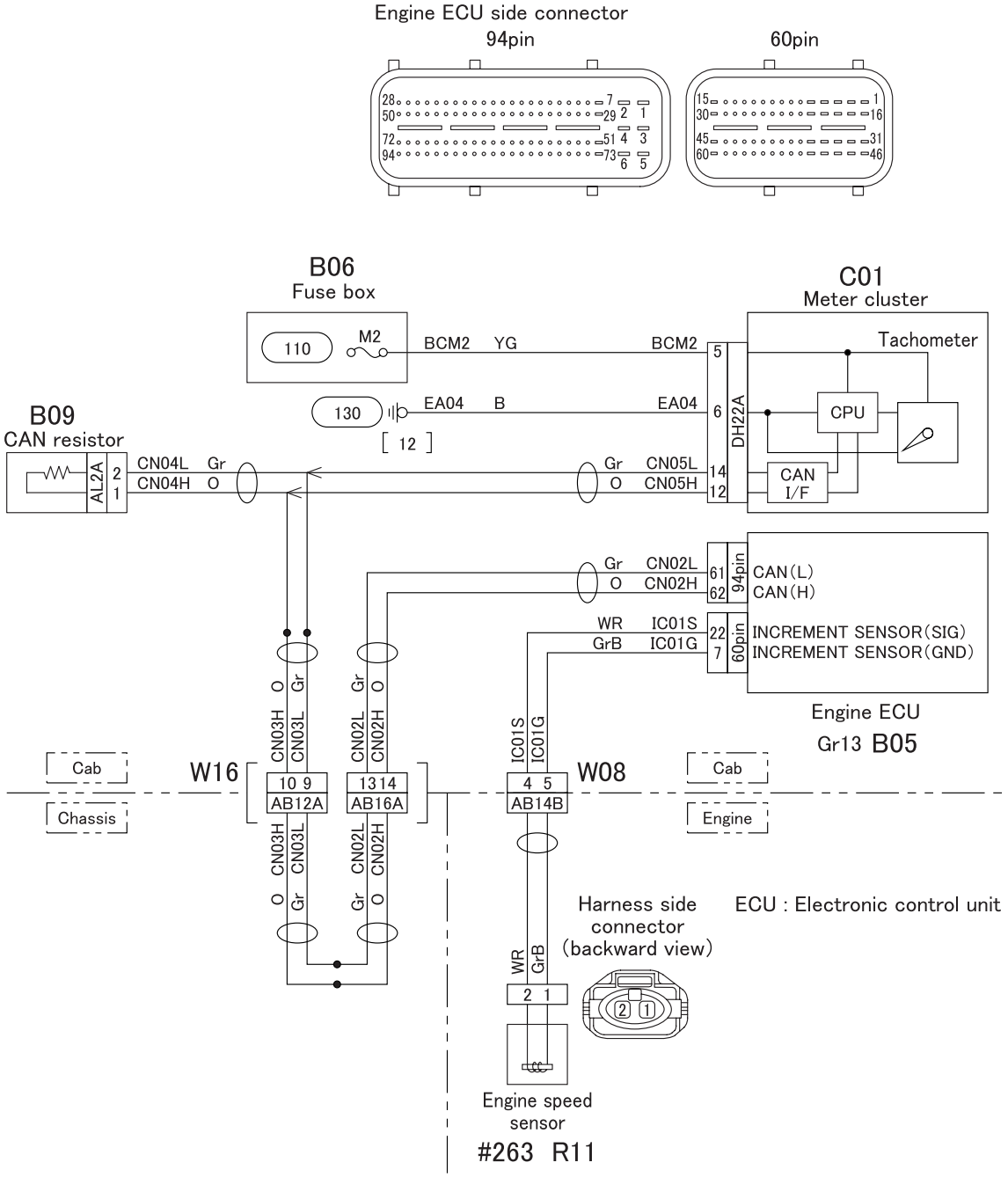
＜Without BlueTec® system＞



410-C05422

TACHOMETER CIRCUIT (2)

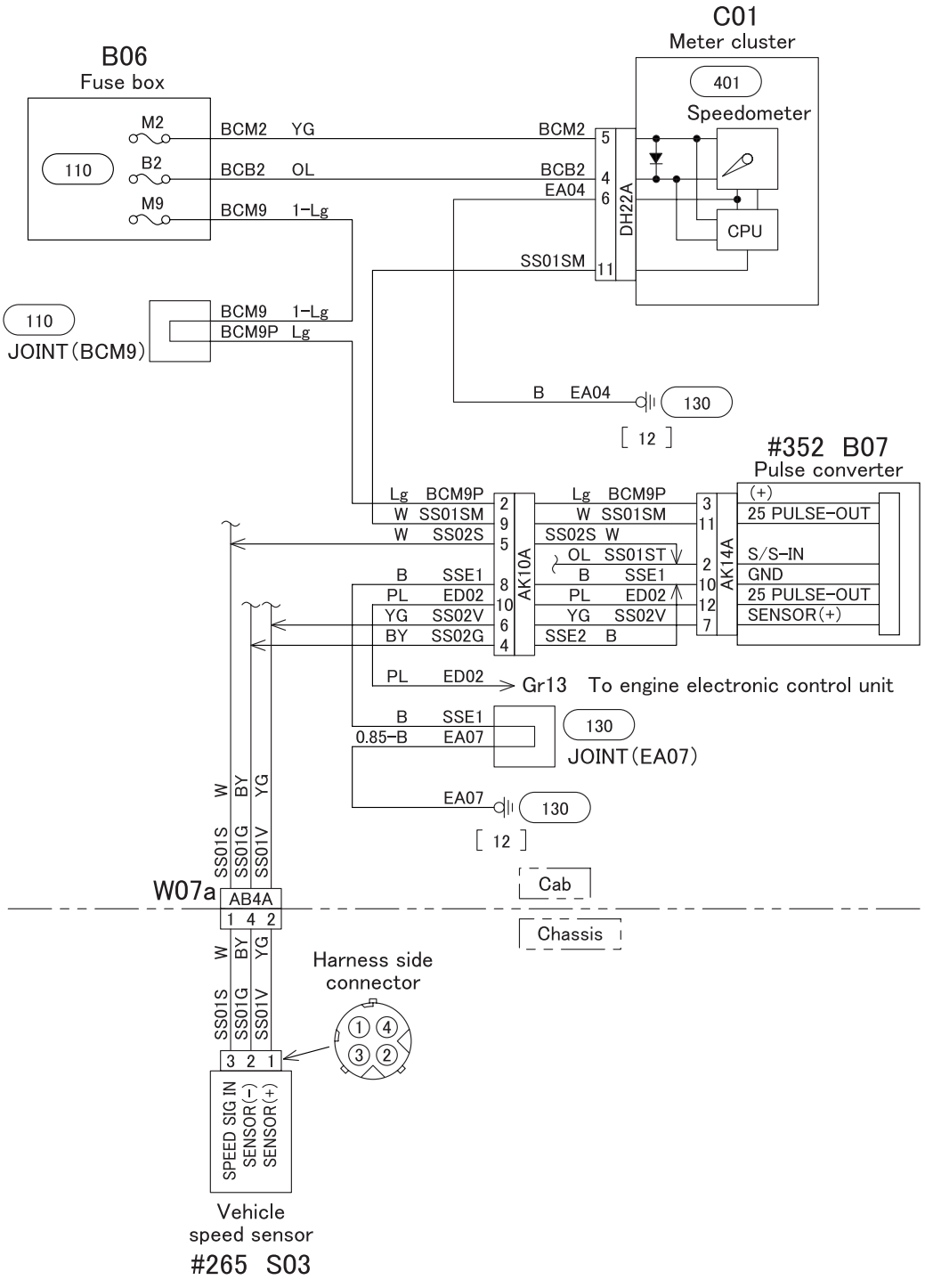
<With BlueTec® system>



410-C06833

SPEEDOMETER CIRCUIT (1)

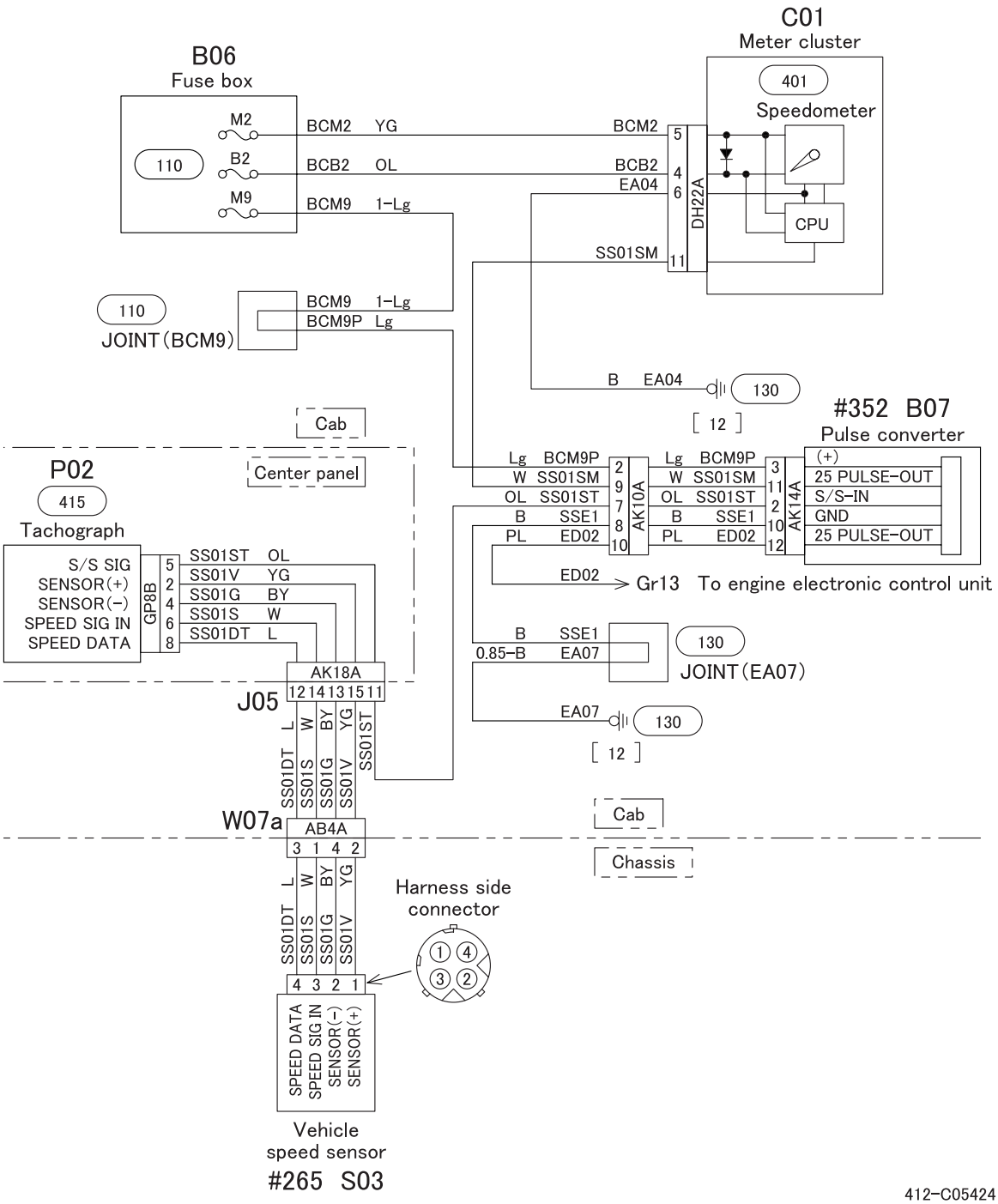
＜Without tachograph＞



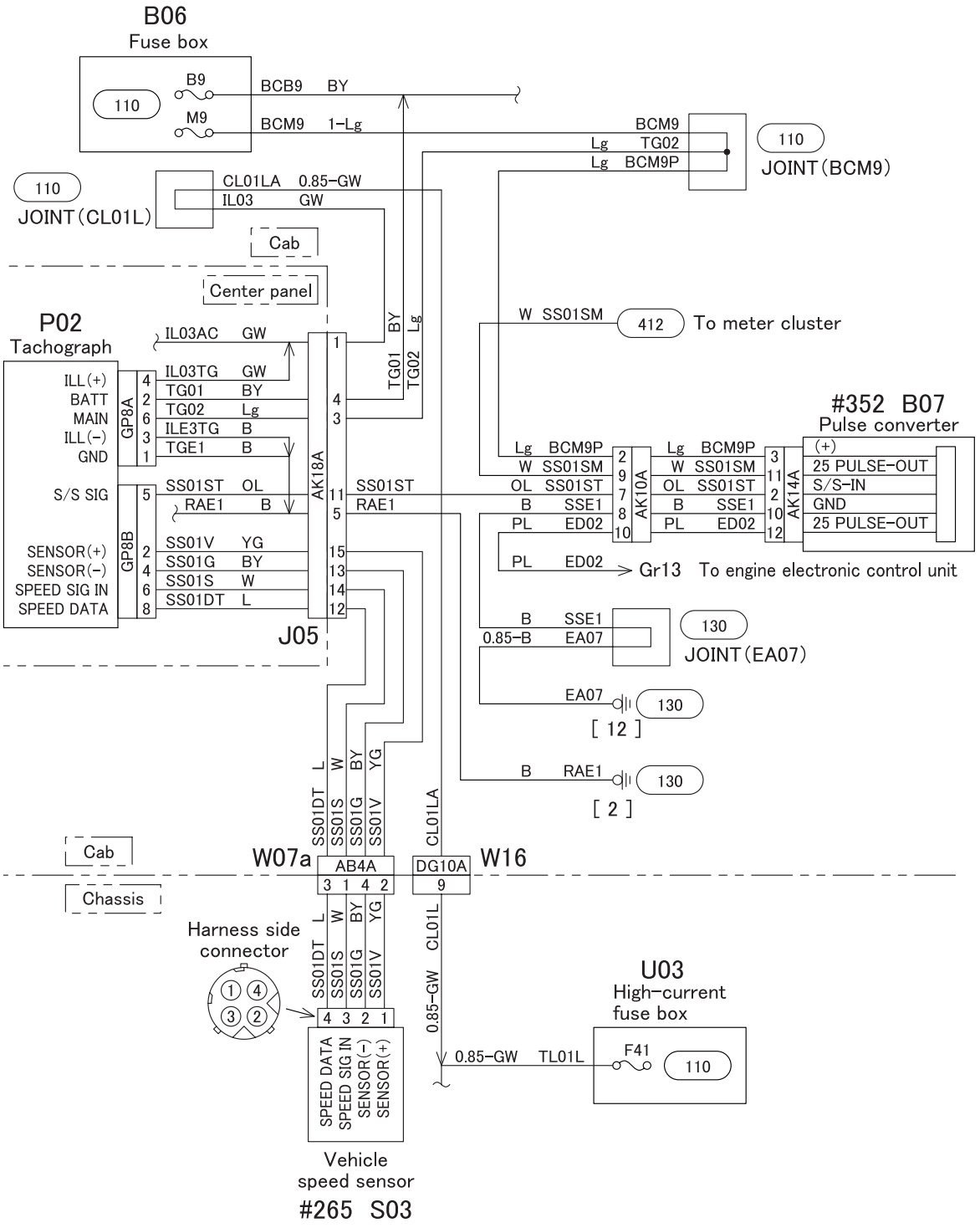
412-C05423

SPEEDOMETER CIRCUIT (2)

＜With tachograph＞

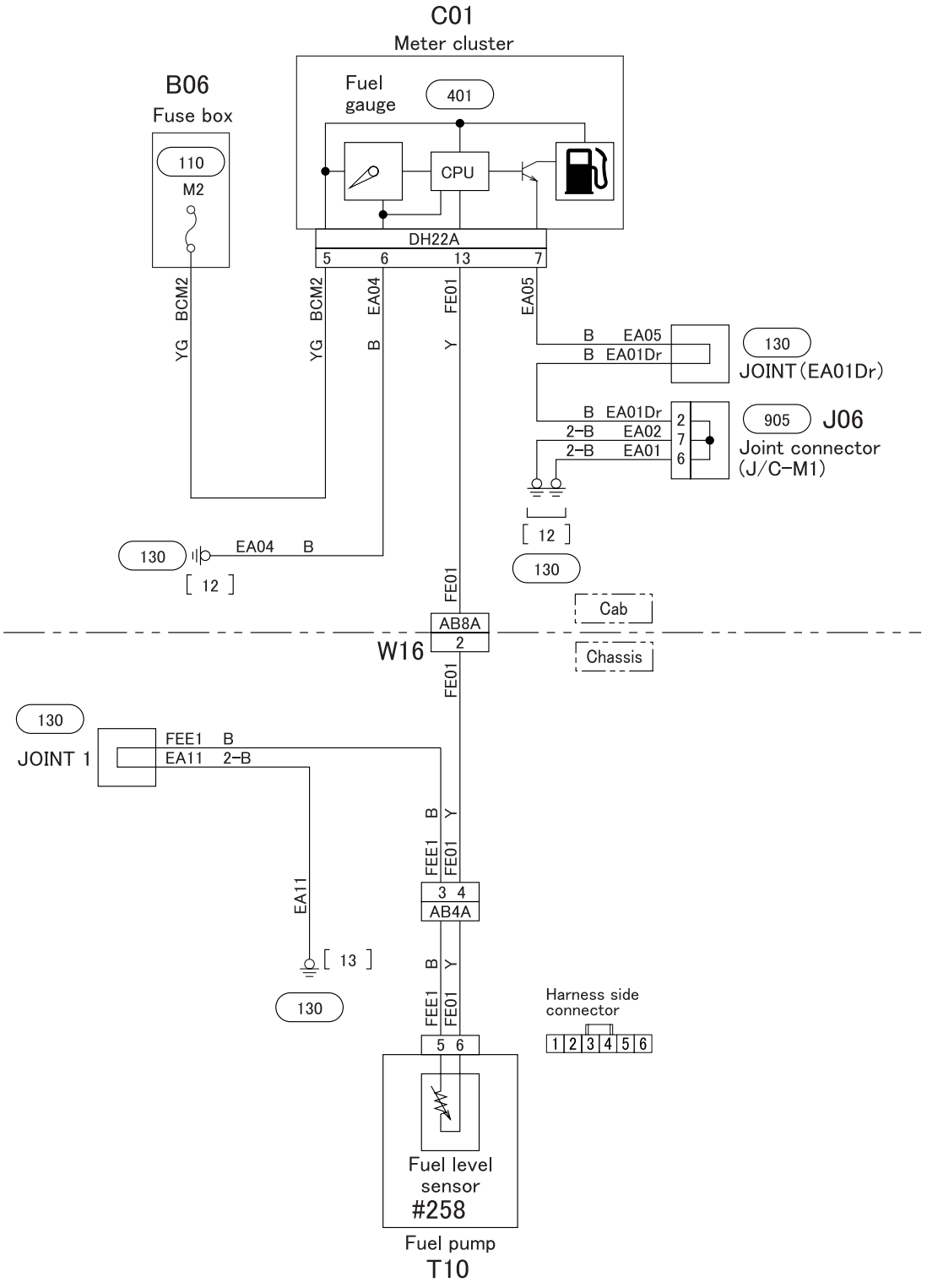


TACHOGRAPH CIRCUIT



415-C05425

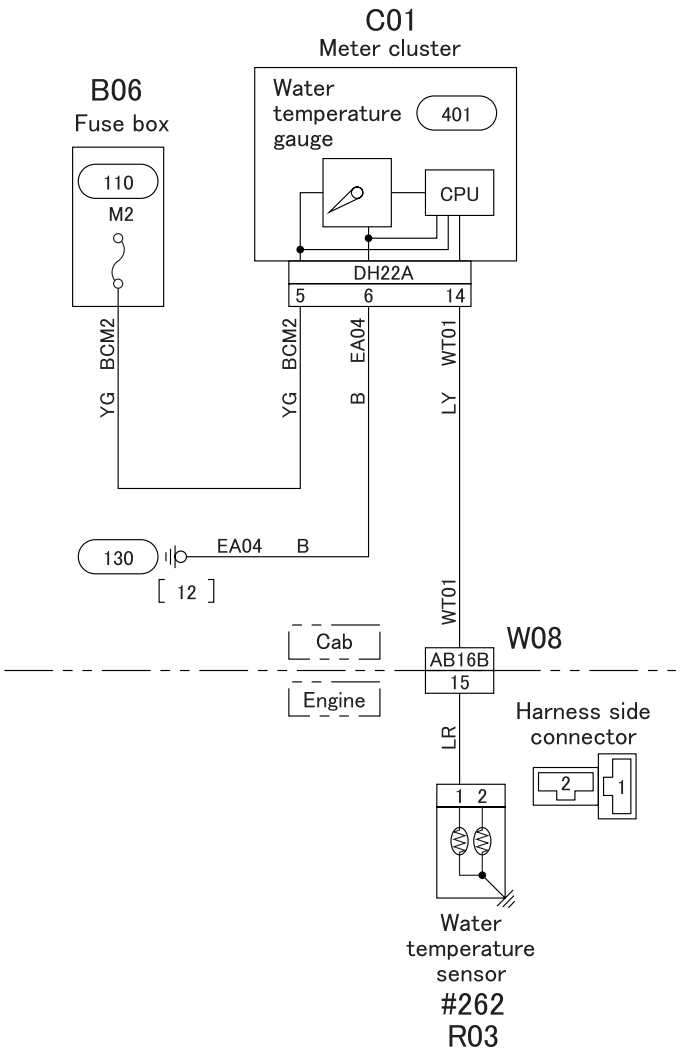
FUEL GAUGE CIRCUIT



420-C05426

WATER TEMPERATURE GAUGE CIRCUIT (1)

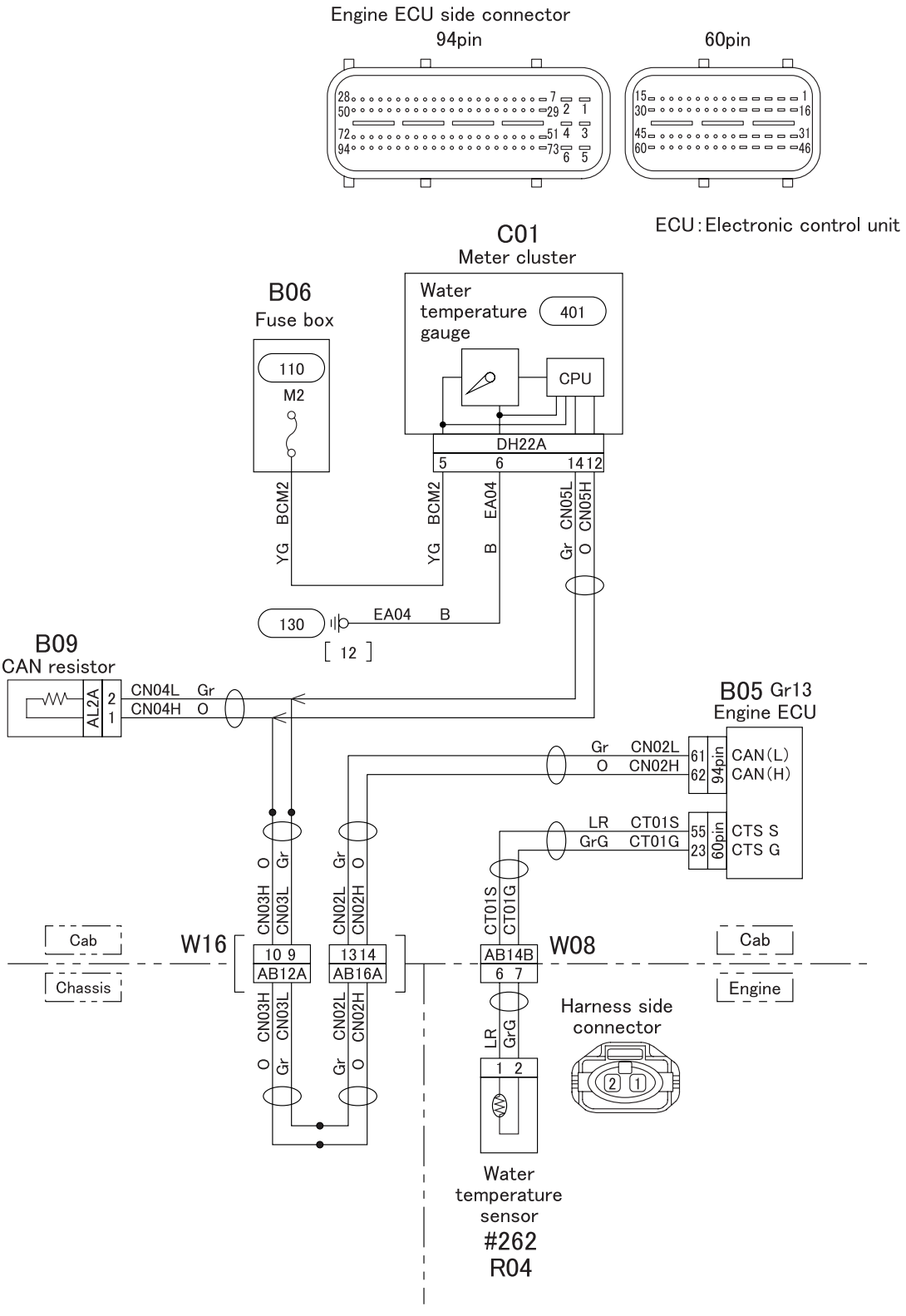
＜Without BlueTec® system＞



425–C05427

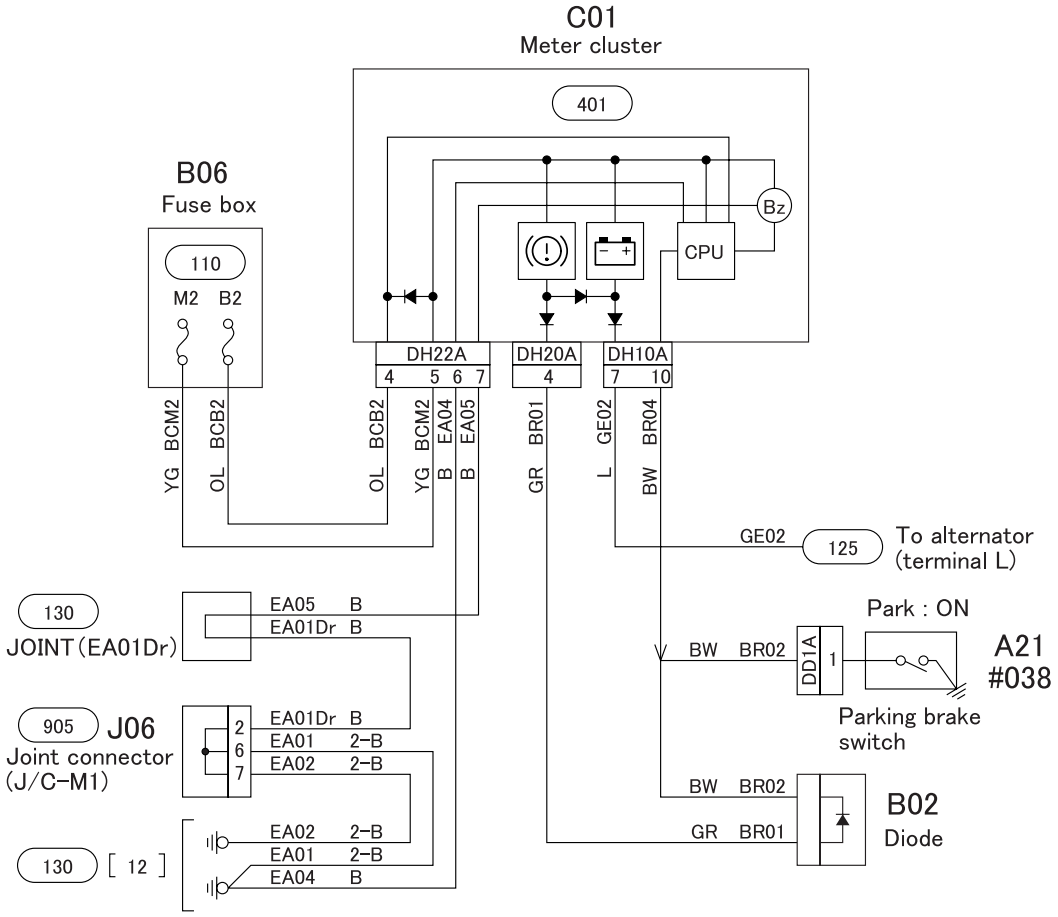
WATER TEMPERATURE GAUGE CIRCUIT (2)

<With BlueTec® system>



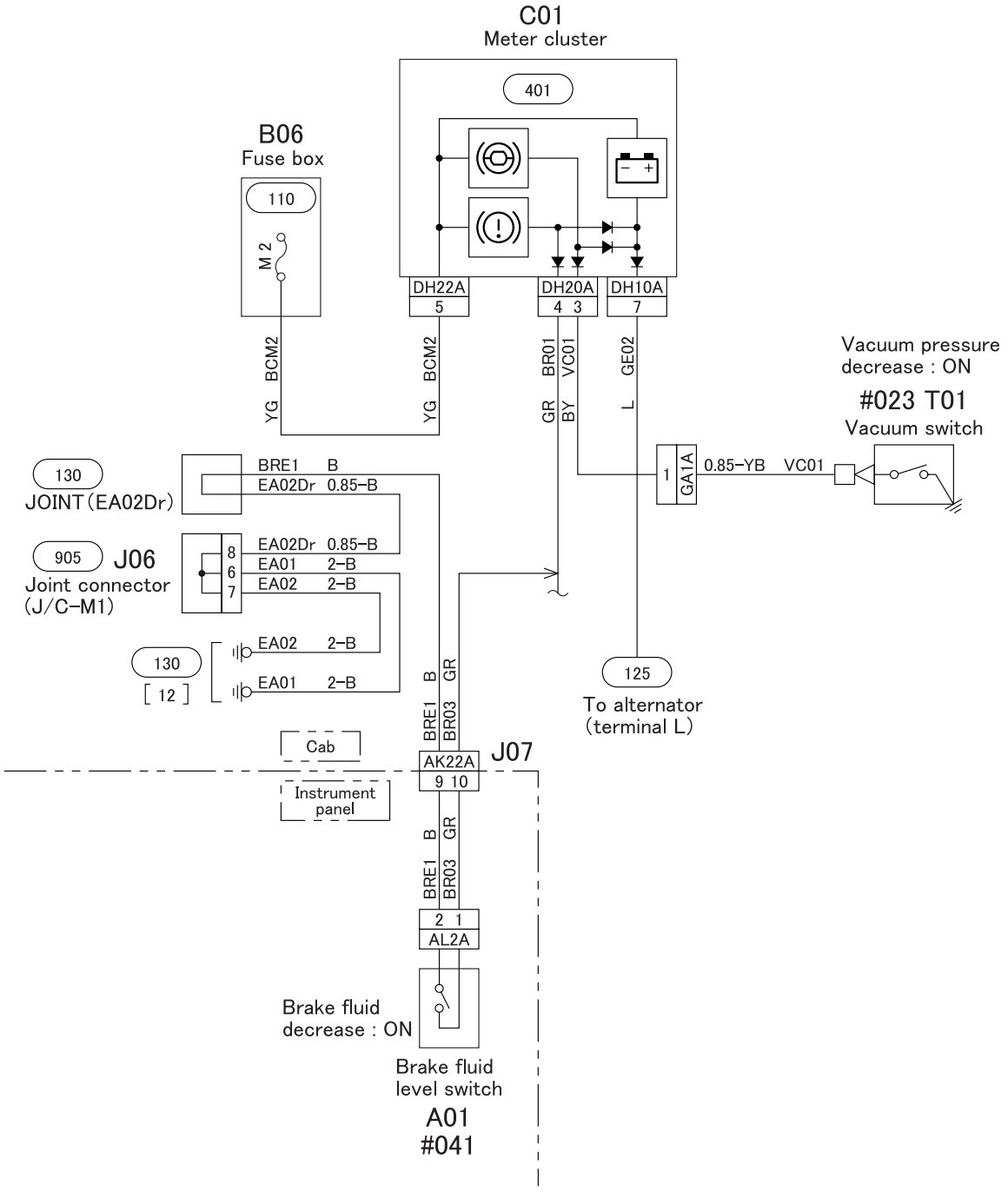
425-C06834

PARKING BRAKE INDICATOR CIRCUIT



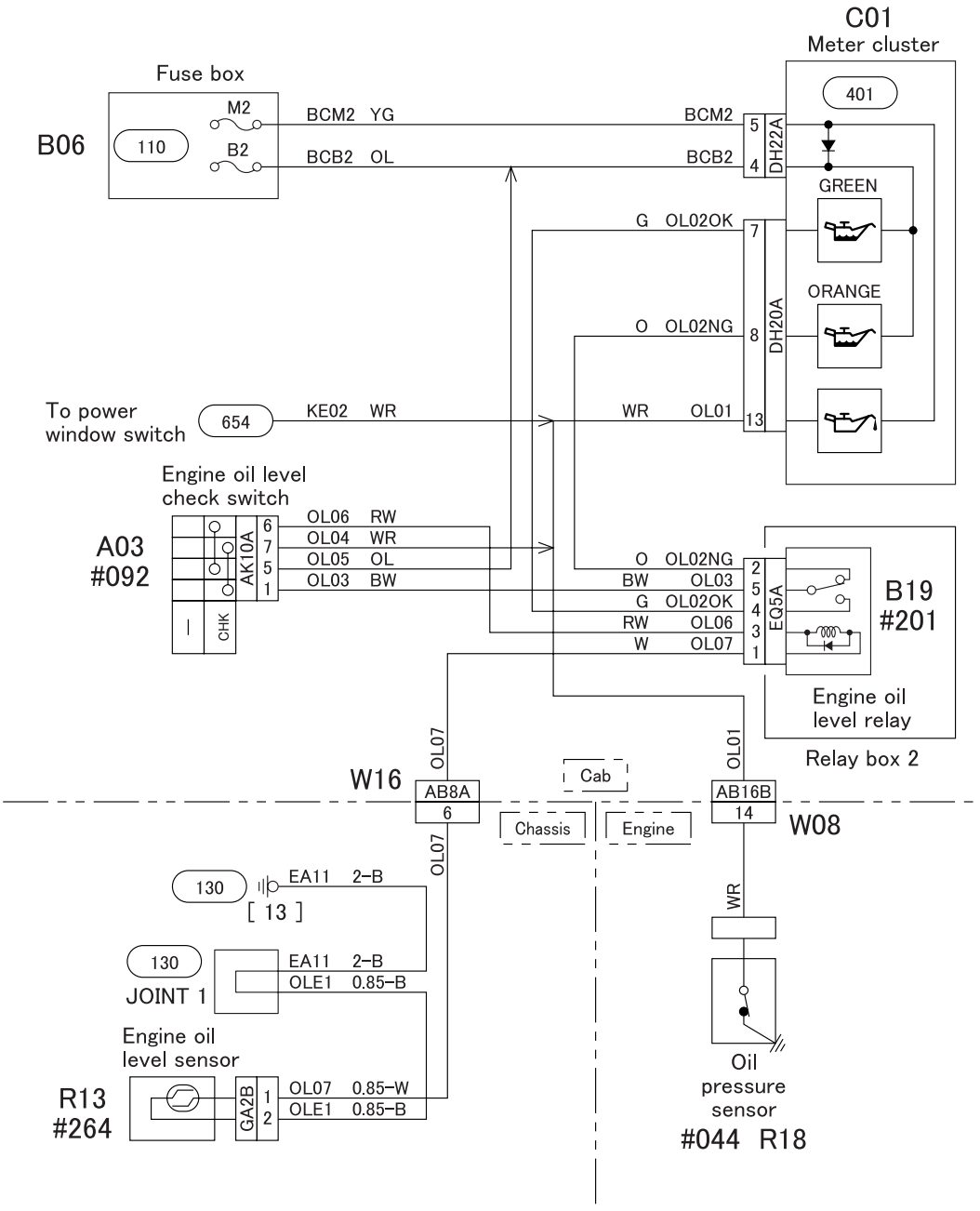
510-C05428

BRAKE WARNING CIRCUIT



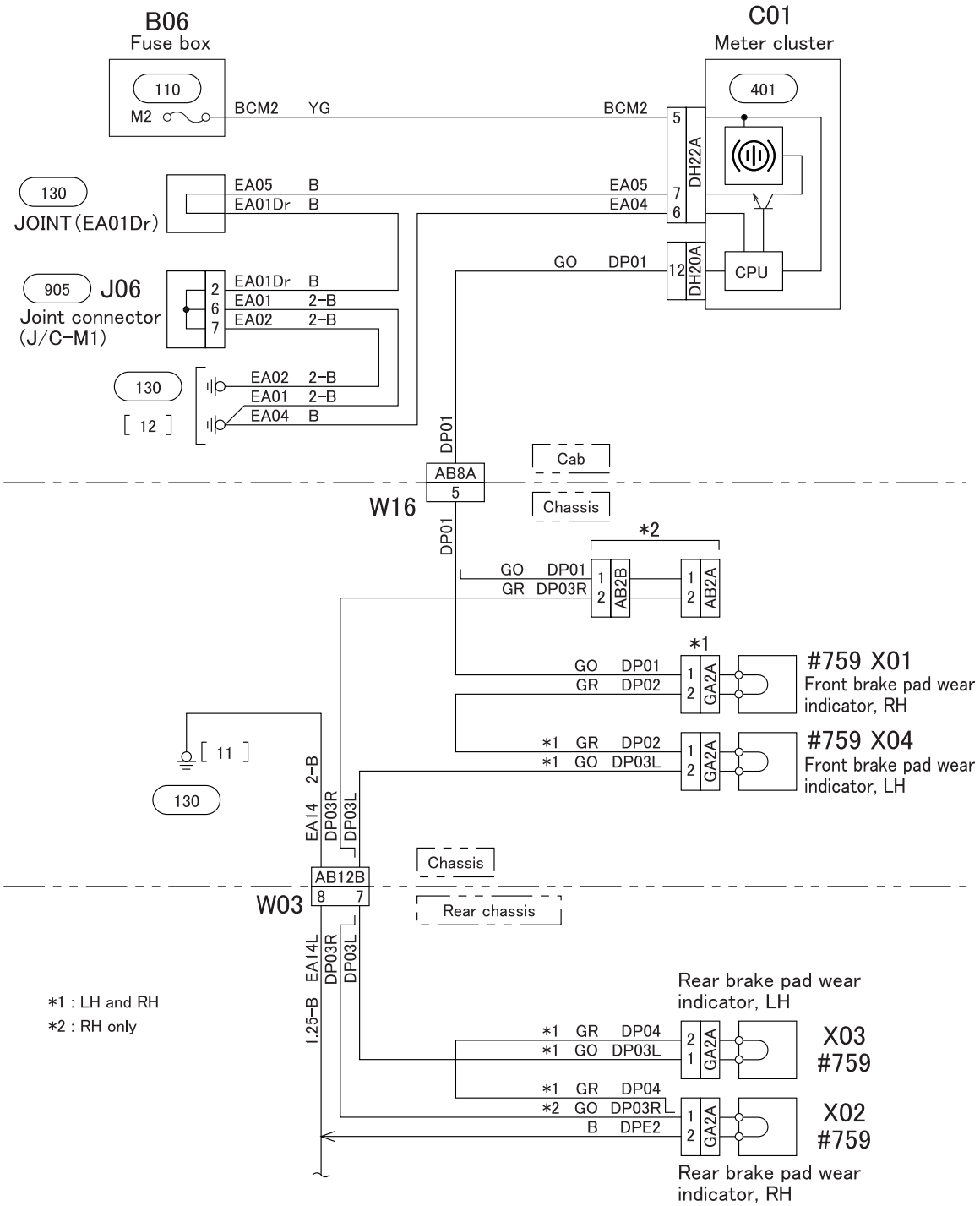
515-C05429

ENGINE OIL LEVEL AND OIL PRESSURE WARNING CIRCUIT



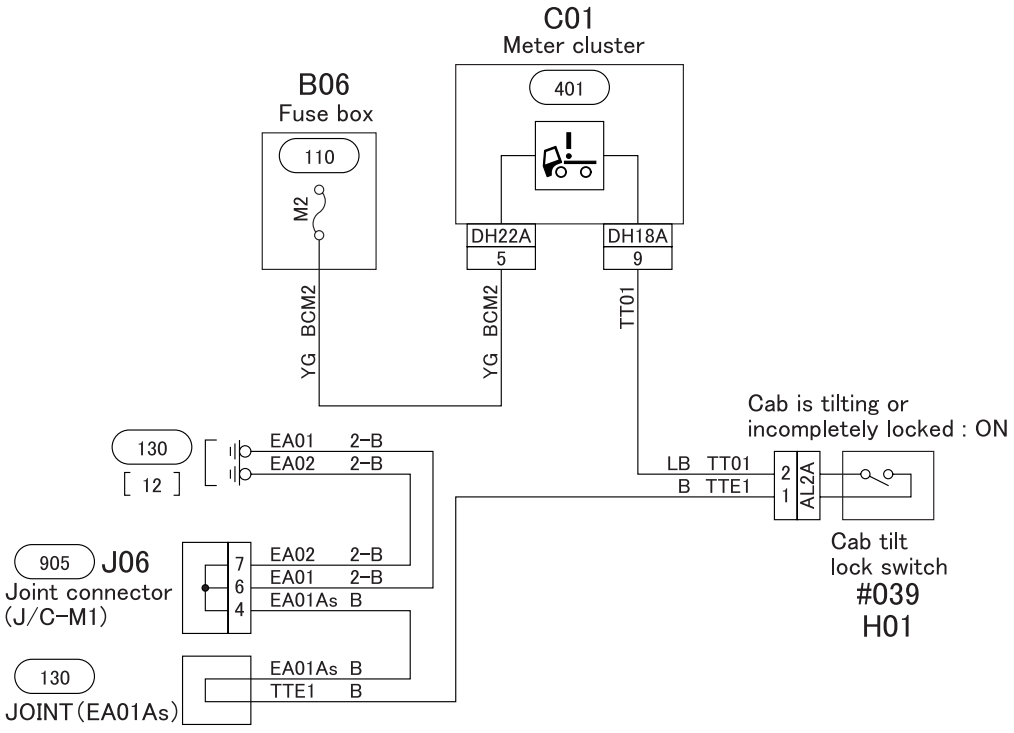
535-C05430

BRAKE PEDAL WARNING CIRCUIT



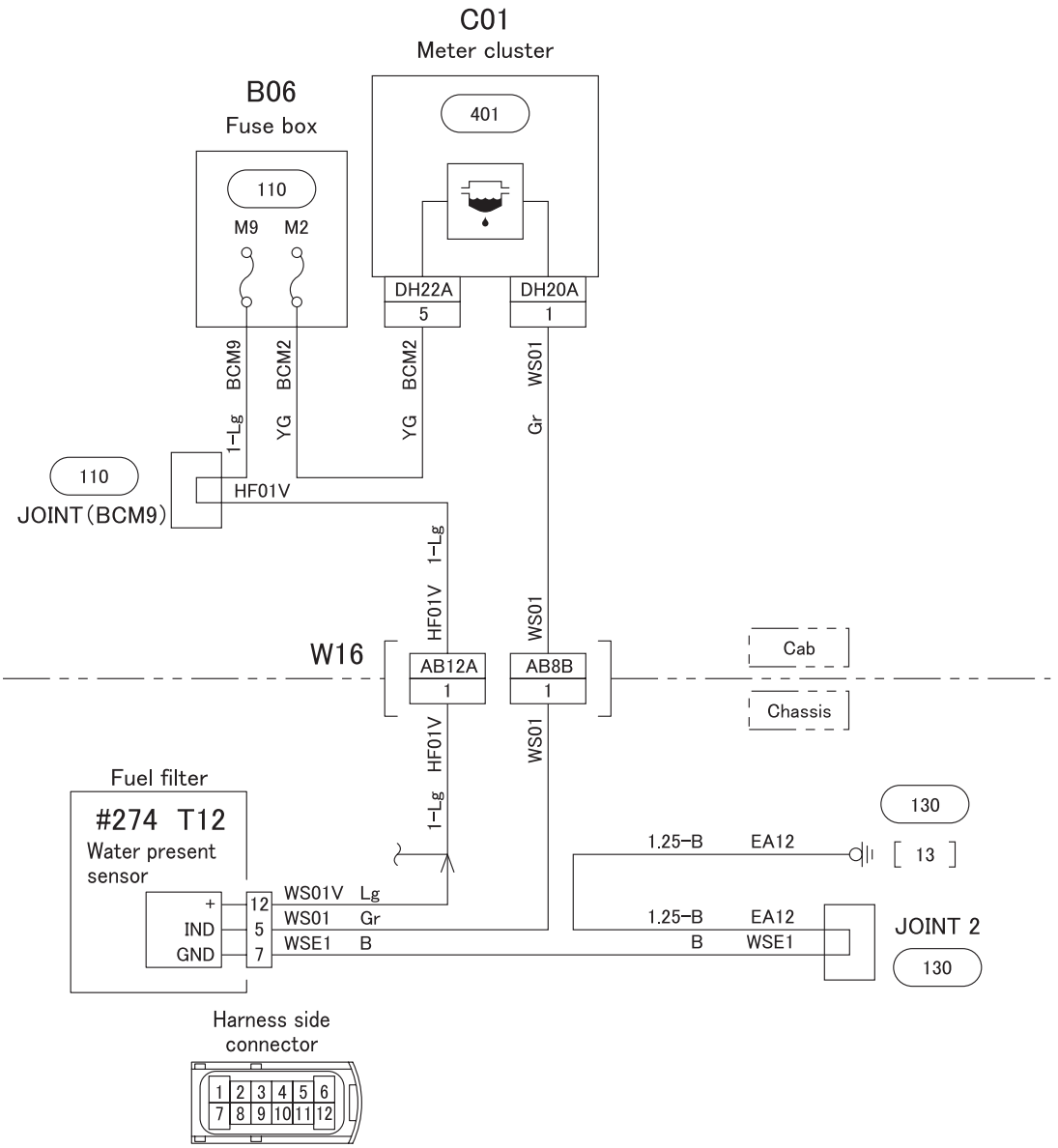
540-C05431

CAB TILT WARNING CIRCUIT



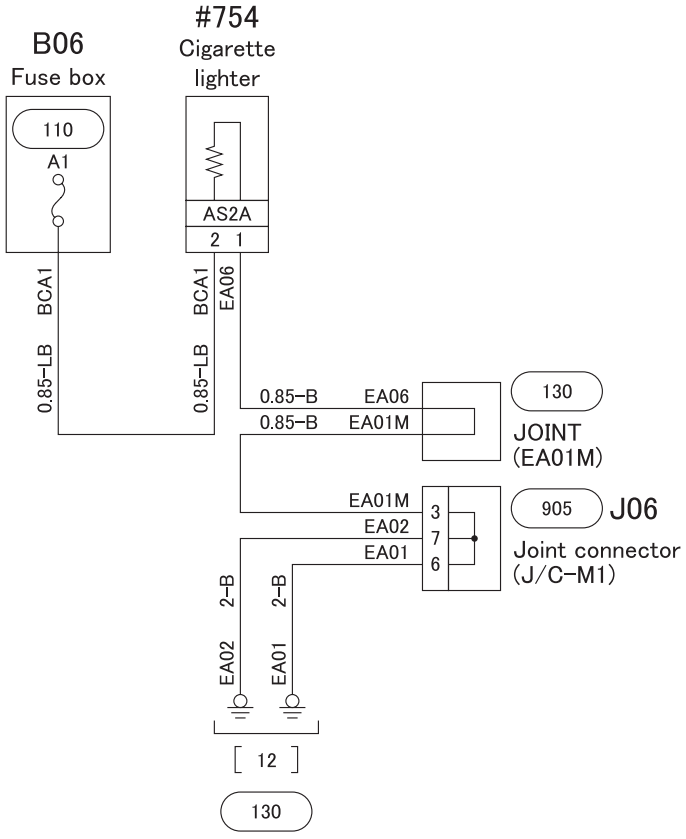
550-C05432

FUEL FILTER WARNING CIRCUIT



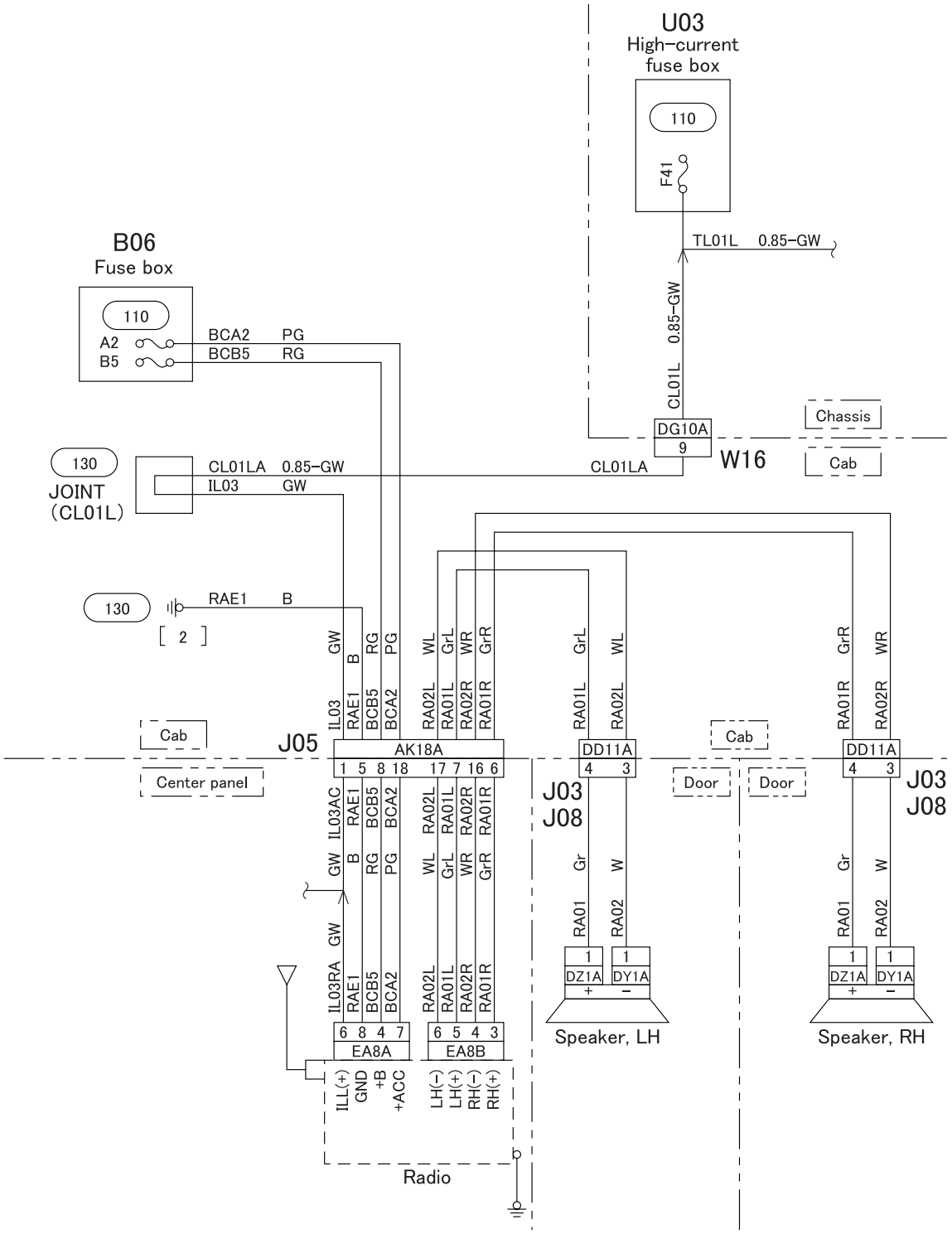
566-C05433

CIGARETTE LIGHTER CIRCUIT



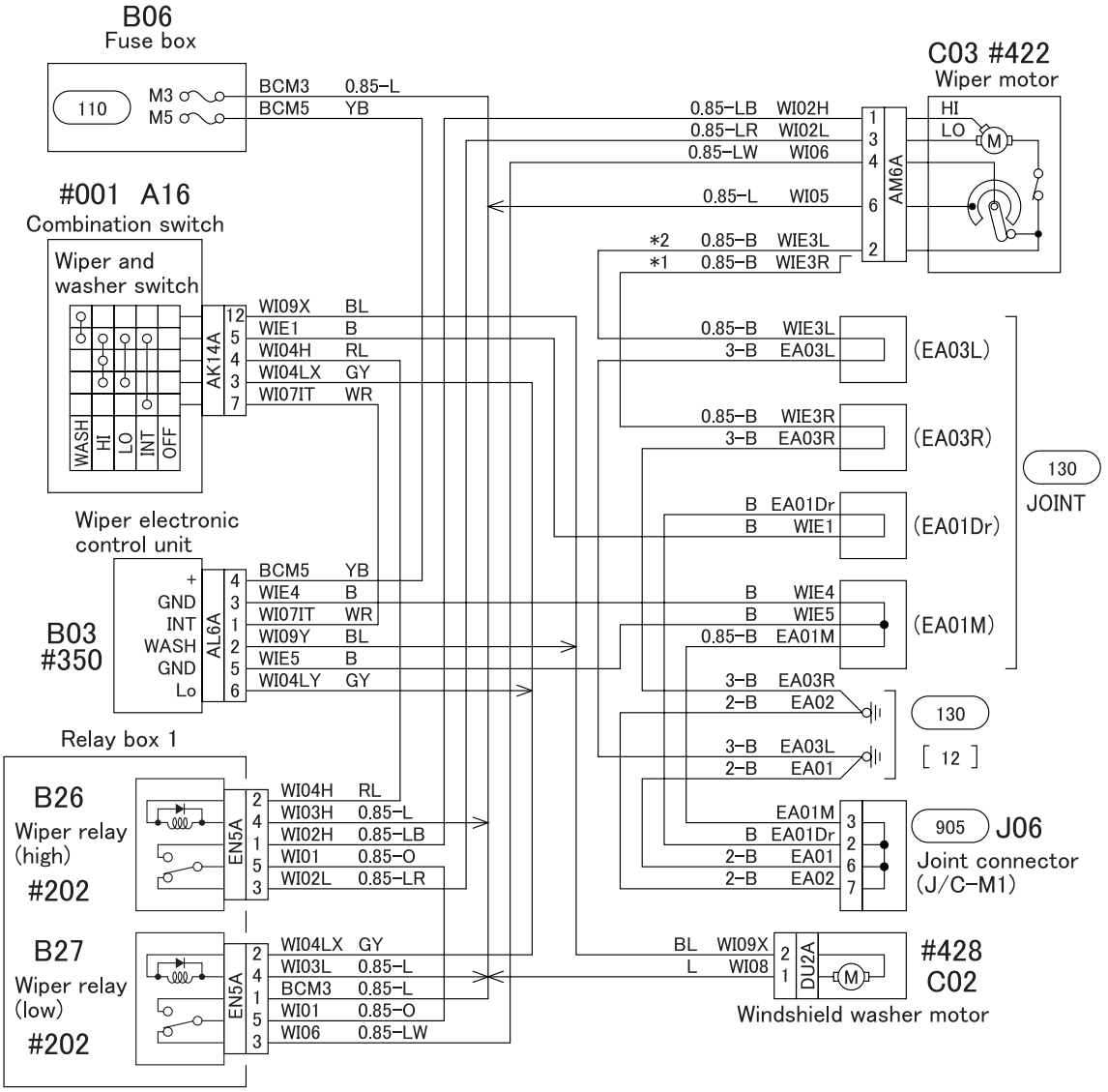
610-C05434

AUDIO CIRCUIT



612-C05435

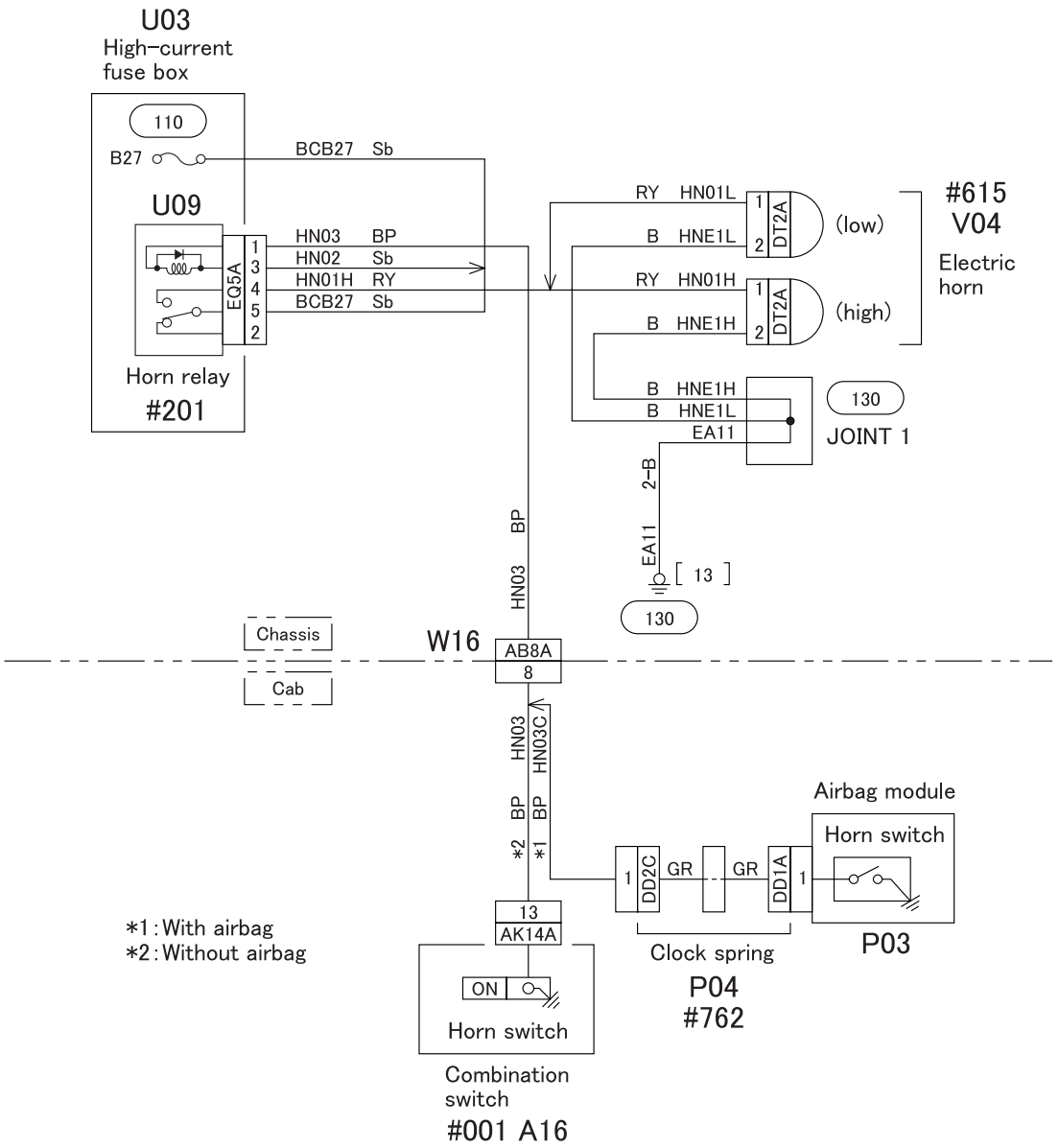
WIPER AND WASHER CIRCUIT



*1 : Left-hand drive vehicle
*2 : Right-hand drive vehicle

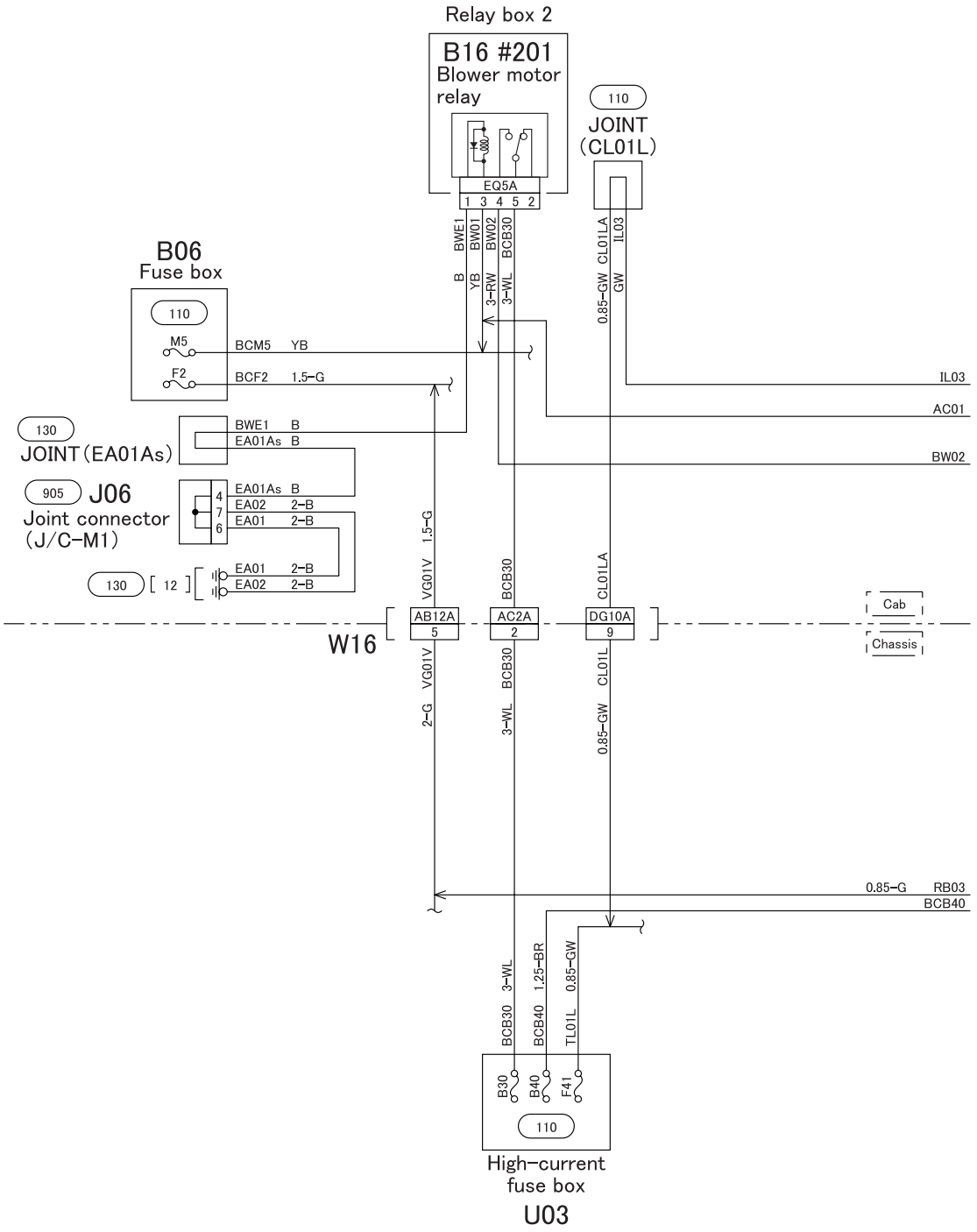
614-C05436

HORN CIRCUIT



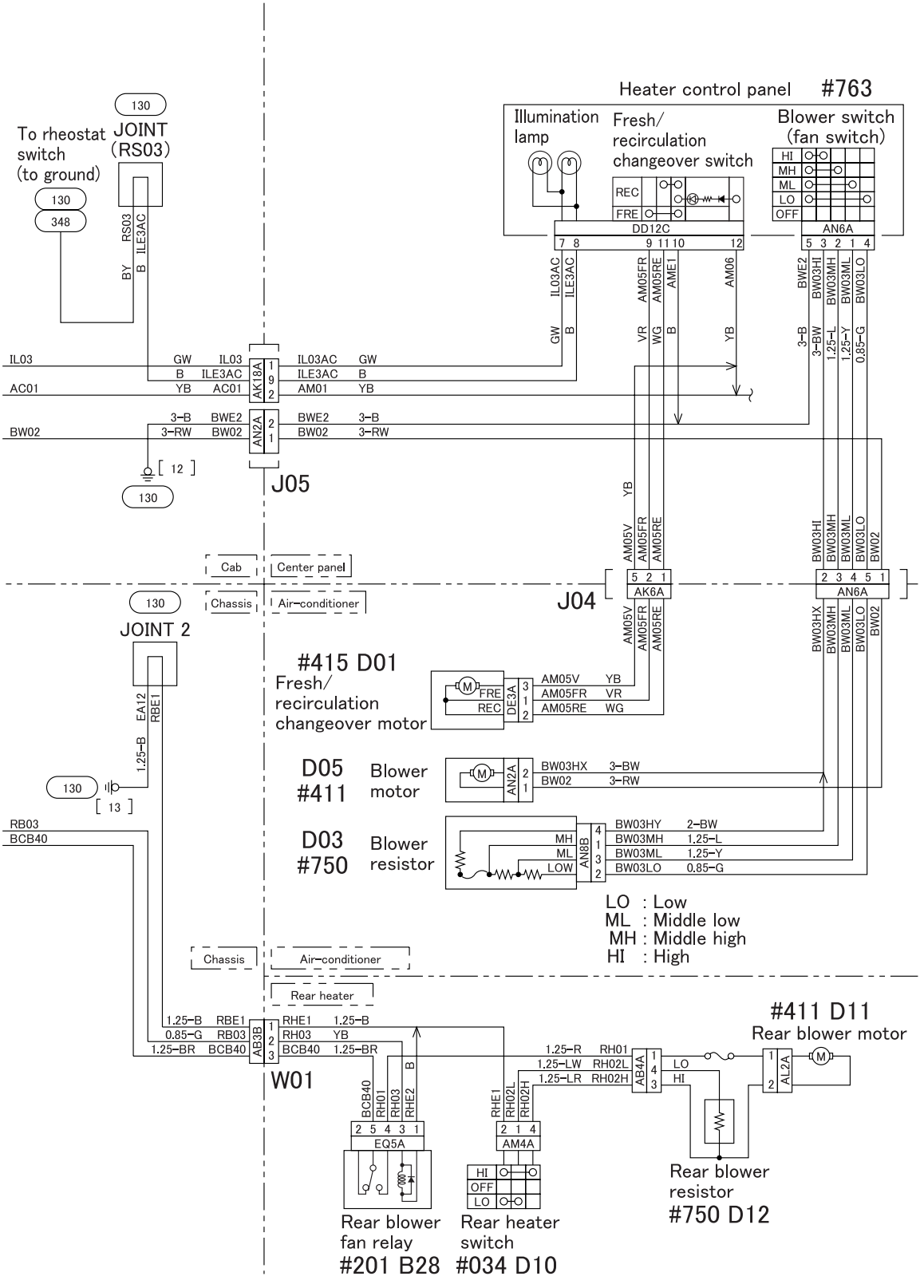
616-C05437

HEATER CIRCUIT (1)



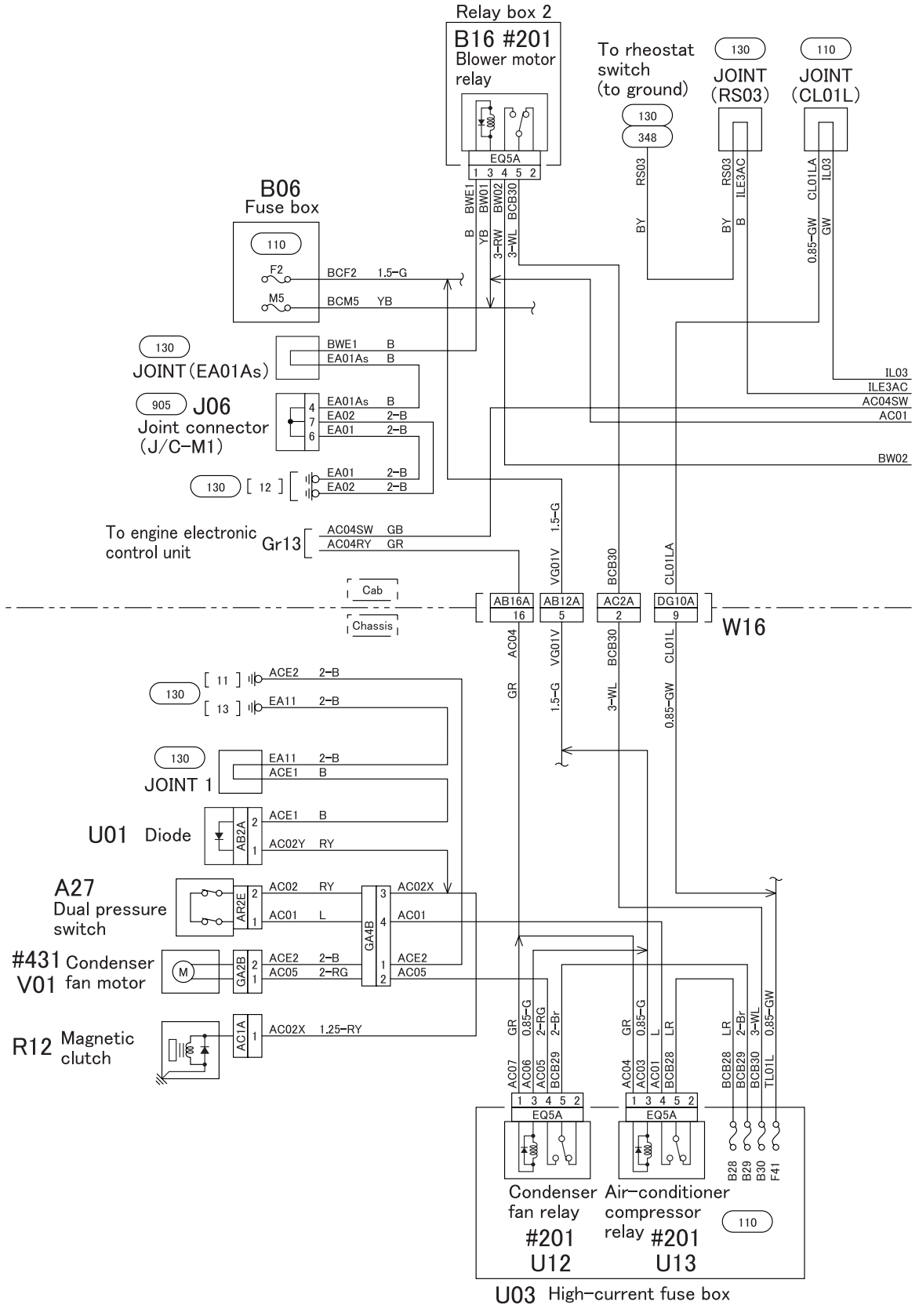
618-C05438-1

HEATER CIRCUIT (2)



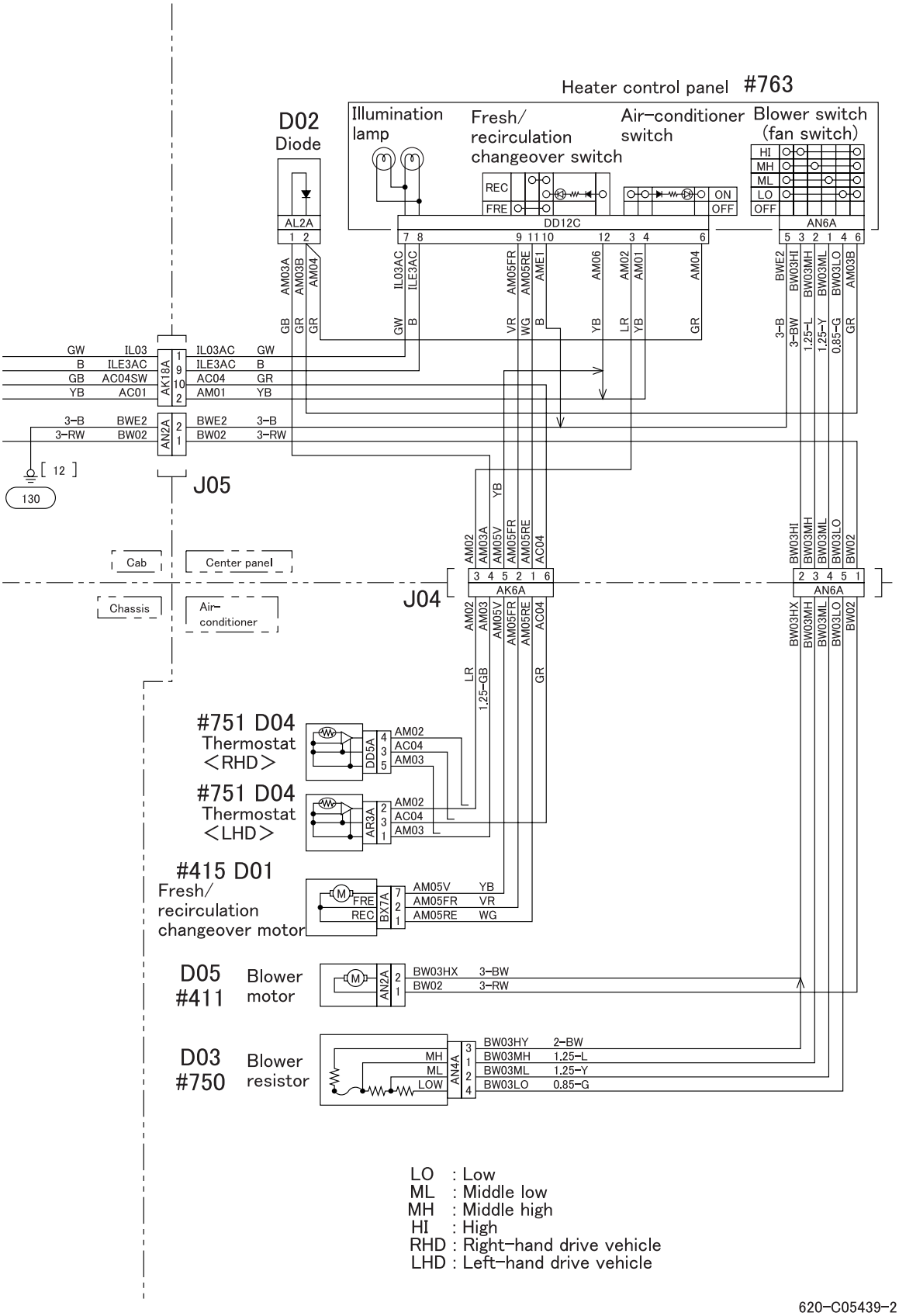
618-C05438-2

AIR-CONDITIONER CIRCUIT (1)

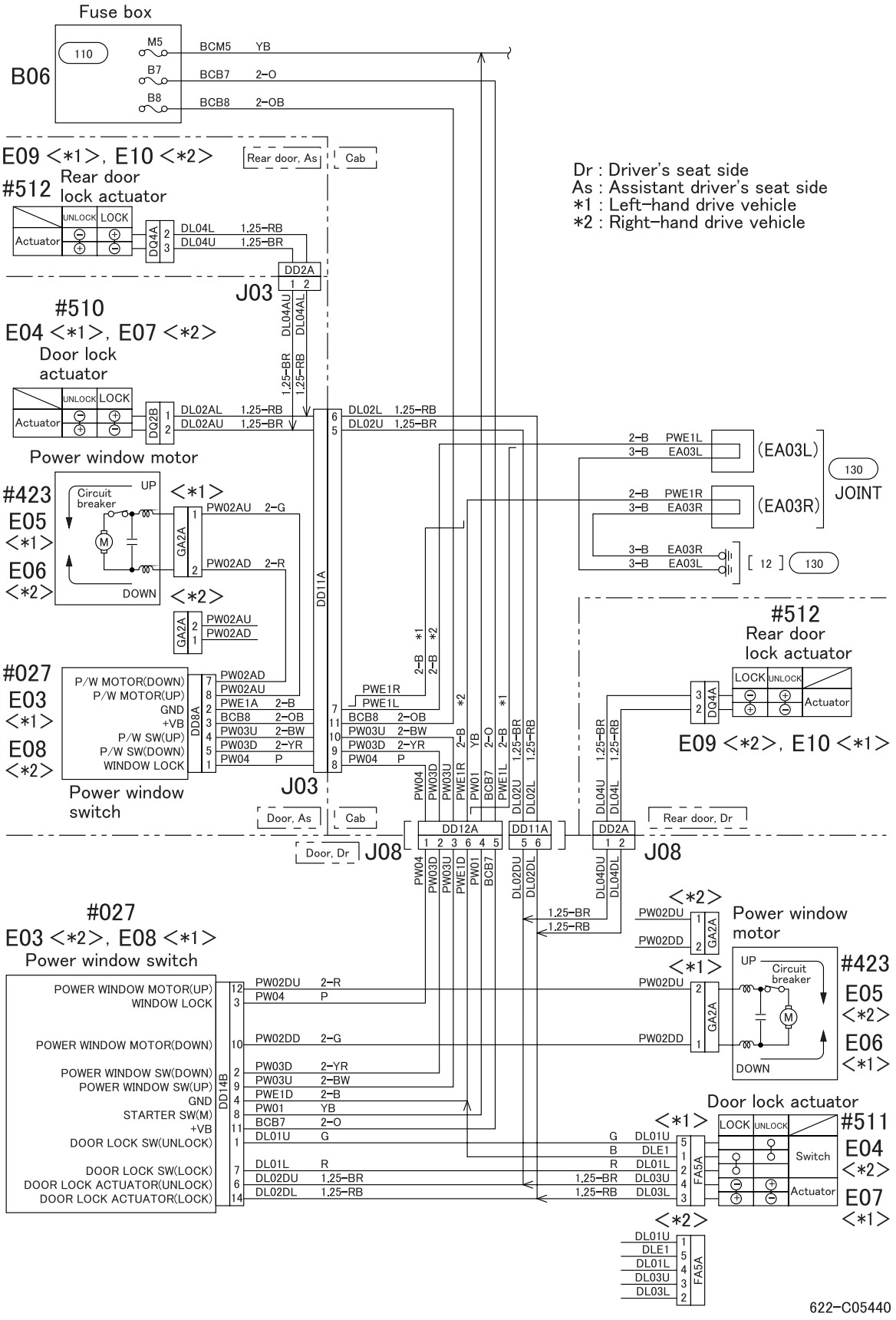


620-C05439-1

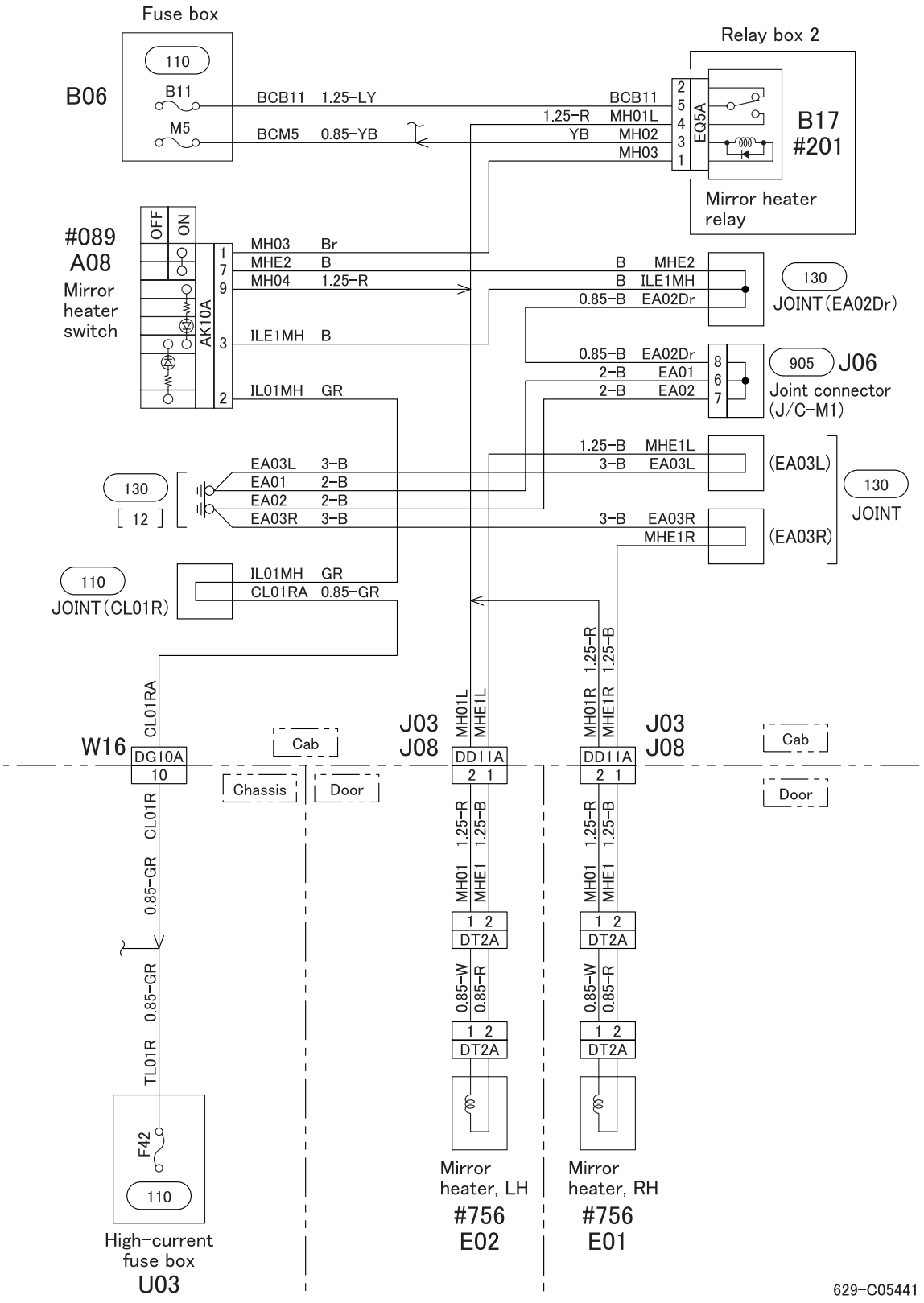
AIR-CONDITIONER CIRCUIT (2)



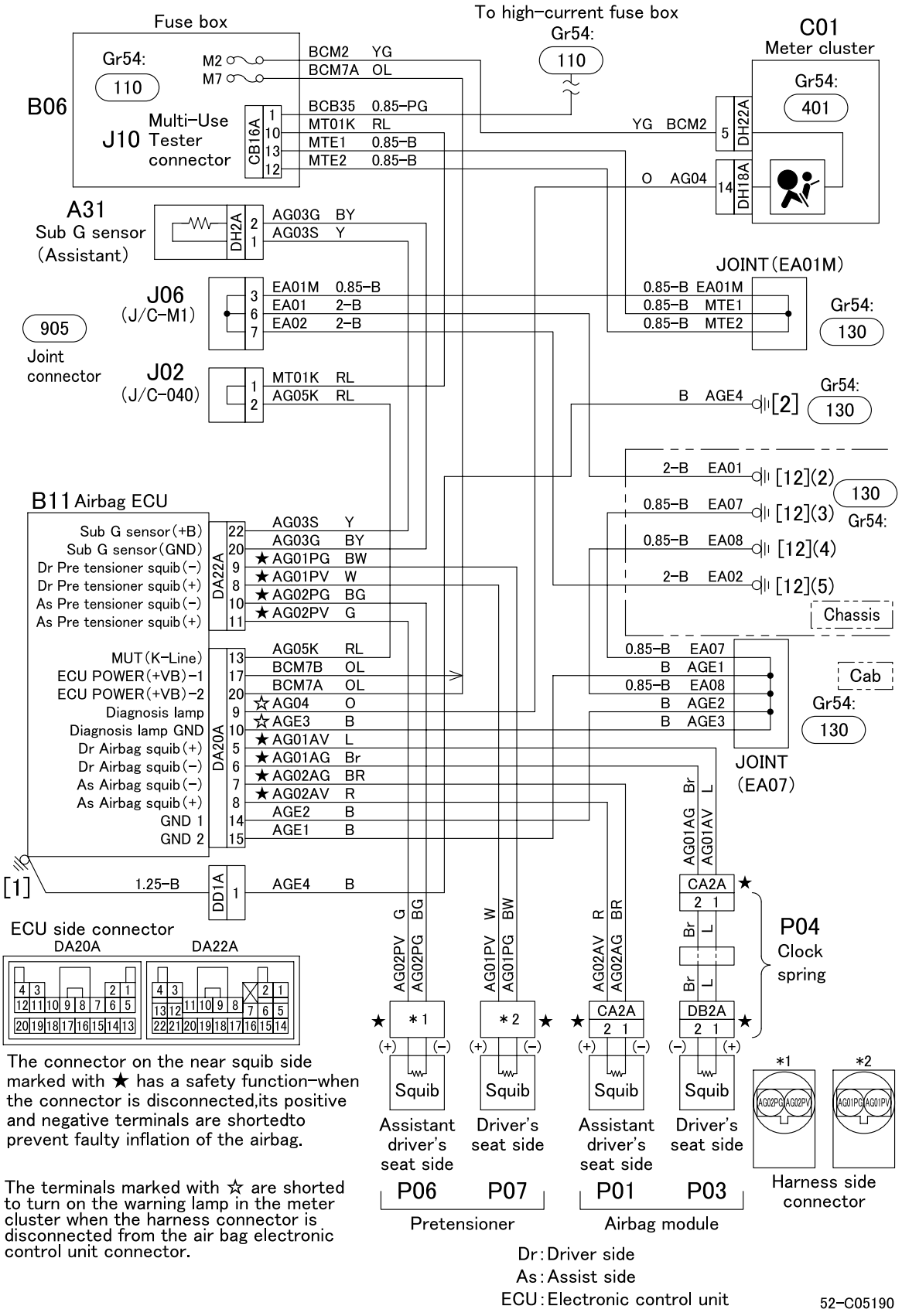
POWER WINDOW AND CENTRAL DOOR LOCK CIRCUIT



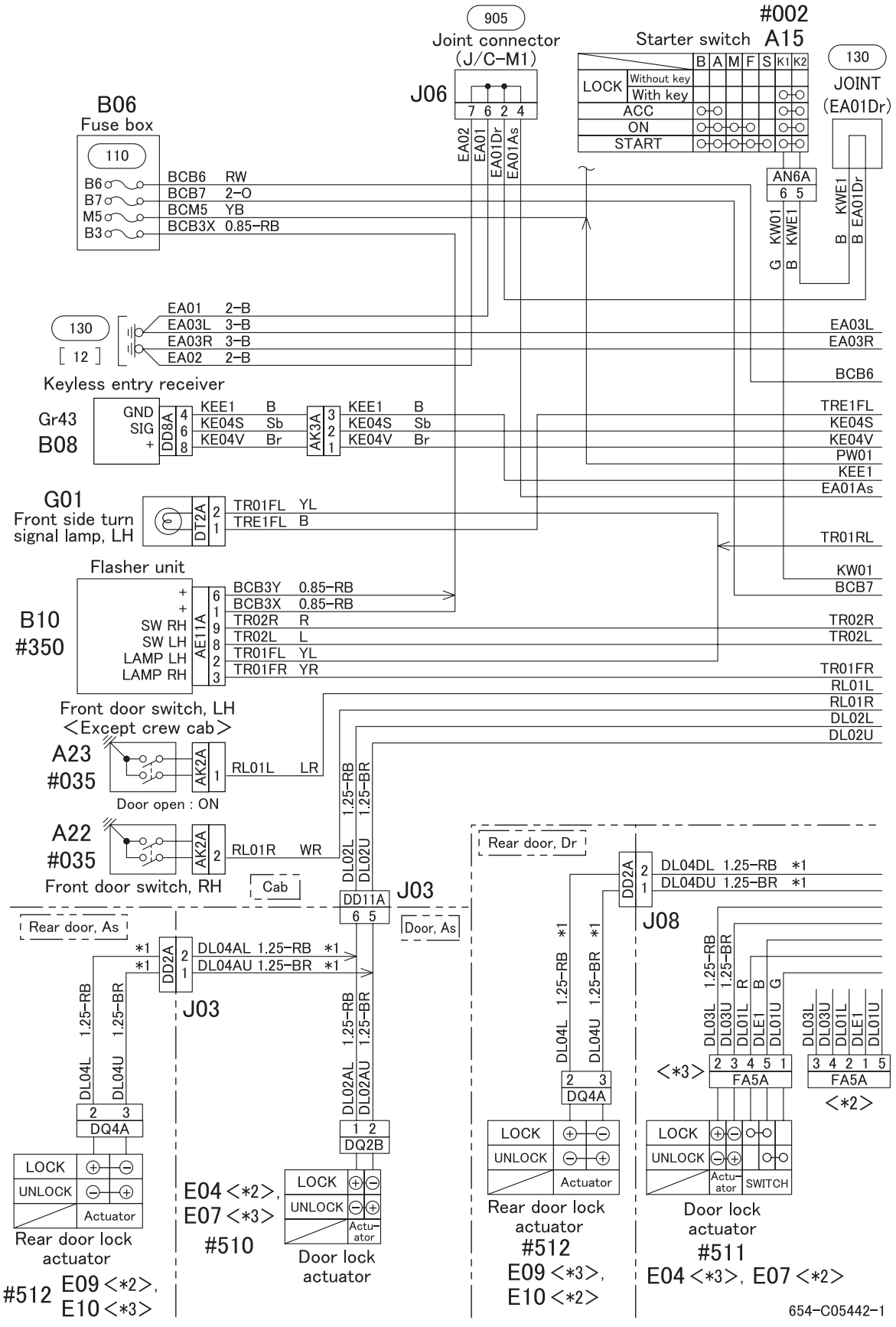
MIRROR HEATER CIRCUIT



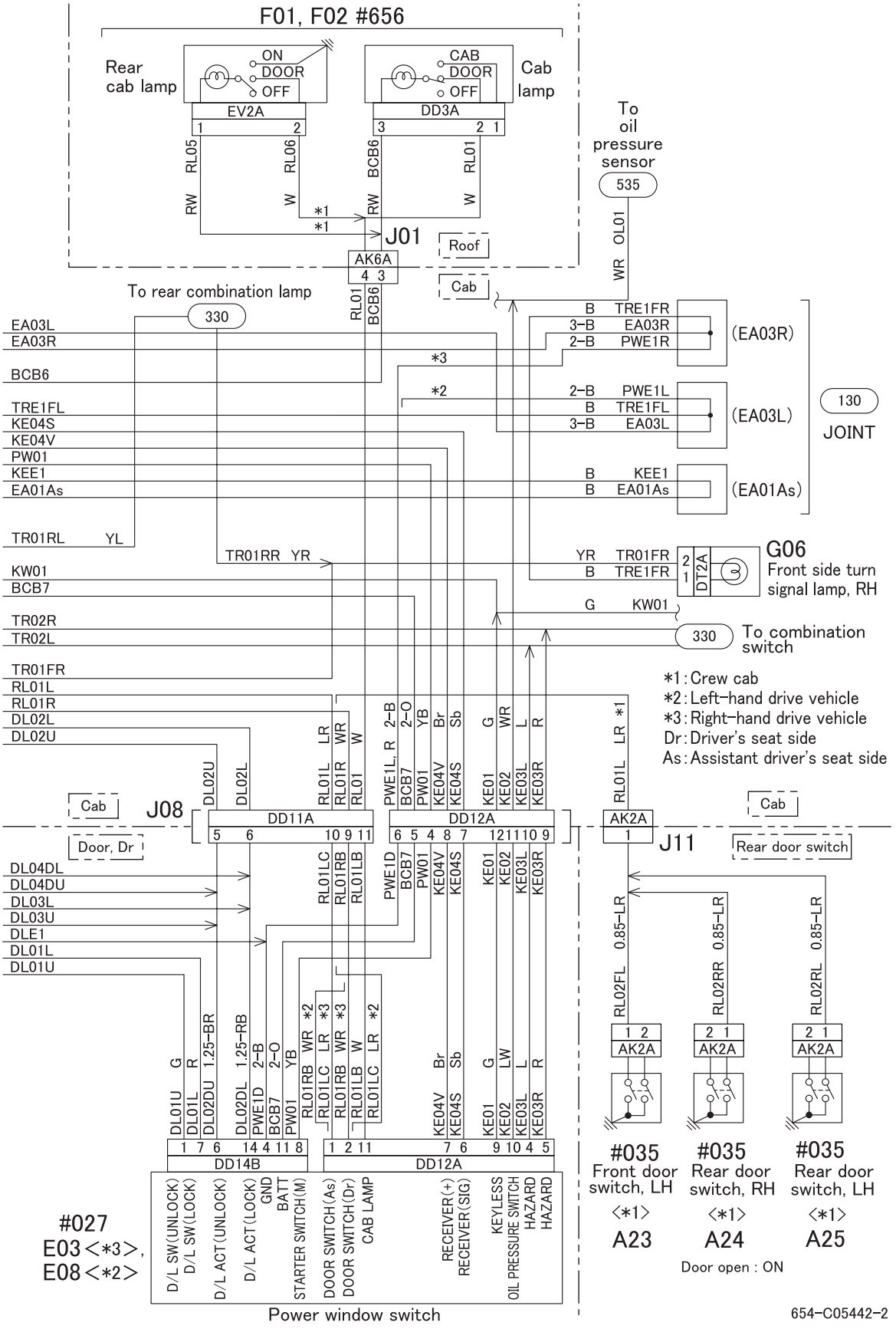
SRS AIRBAG CIRCUIT



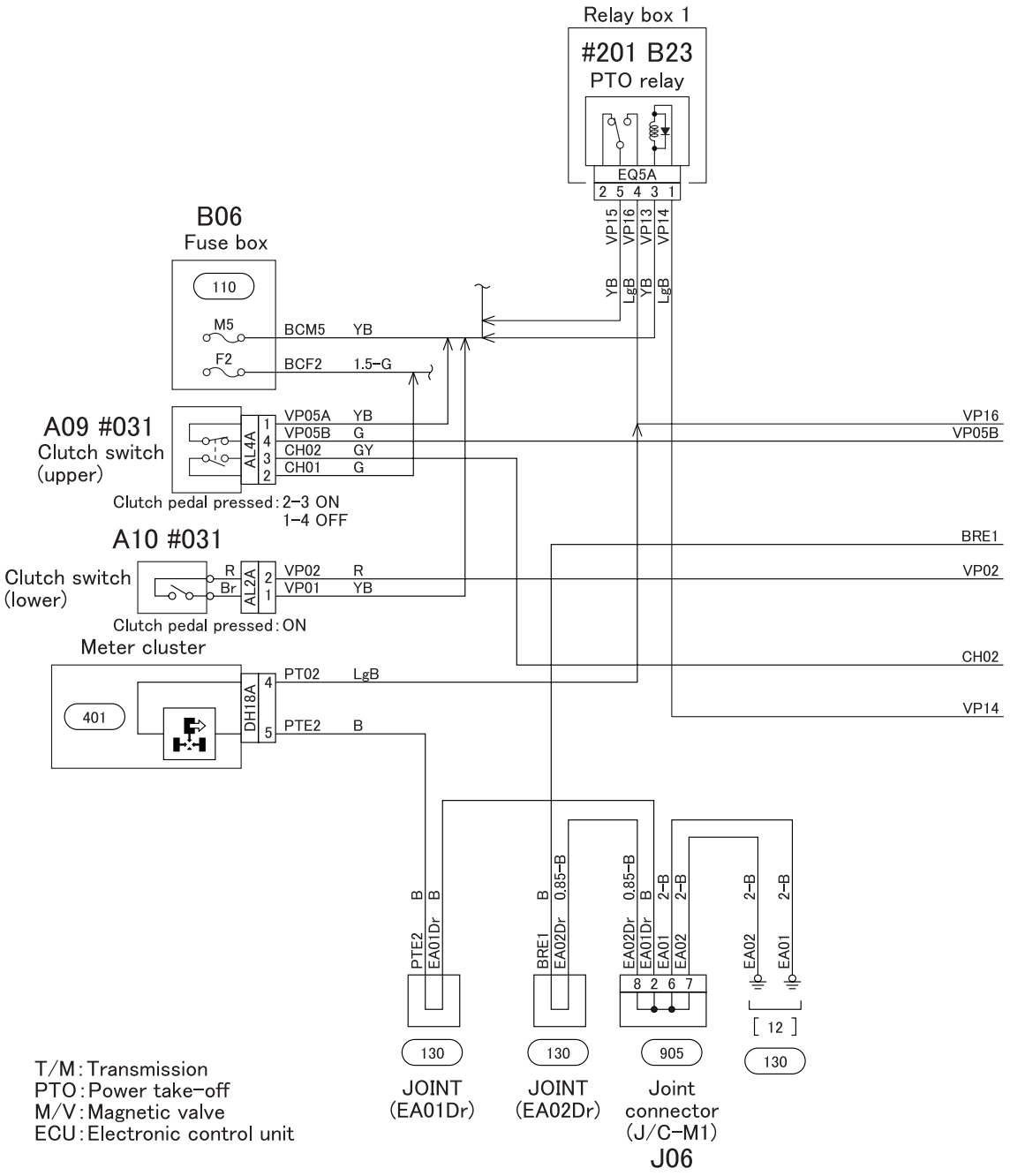
KEYLESS ENTRY CIRCUIT (1)



KEYLESS ENTRY CIRCUIT (2)

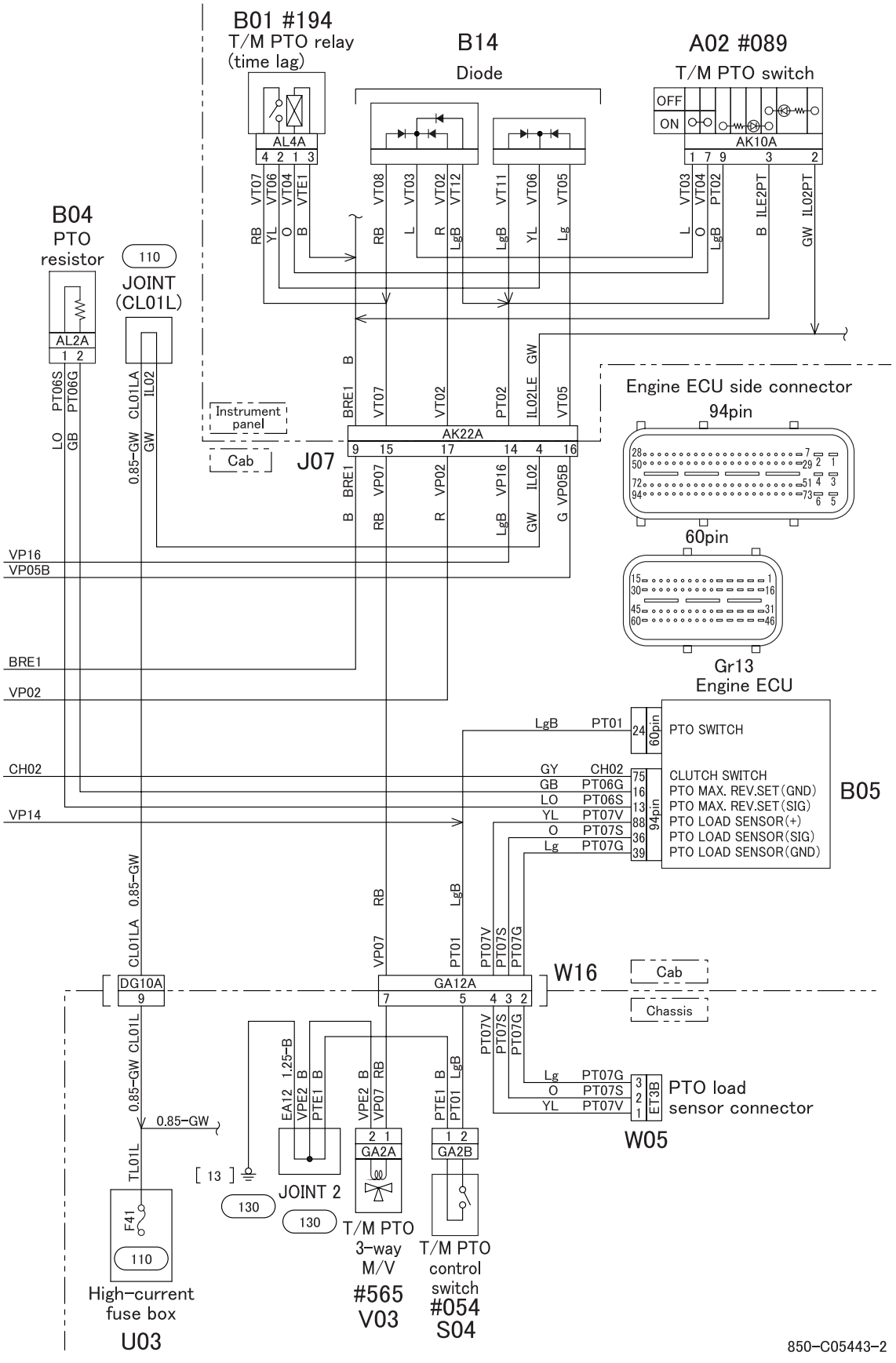


TRANSMISSION POWER TAKE-OFF CIRCUIT (1)



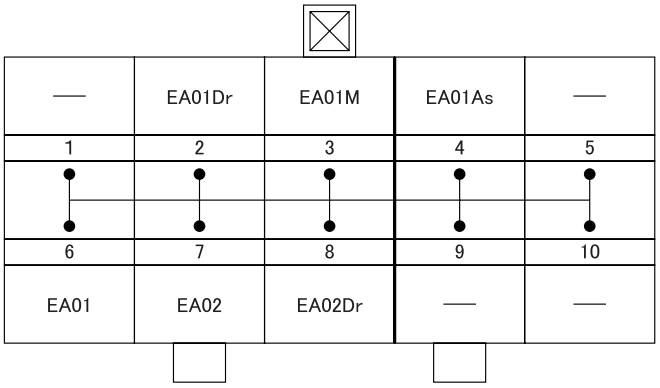
850-C05443-1

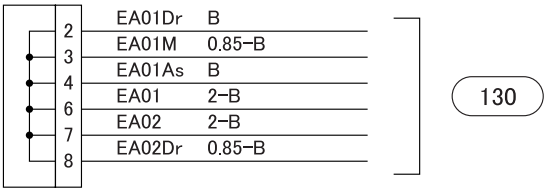
TRANSMISSION POWER TAKE-OFF CIRCUIT (2)



JOINT CONNECTOR (J/C-M1)

＜J/C-M1＞

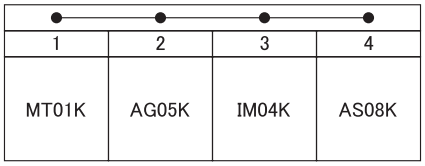


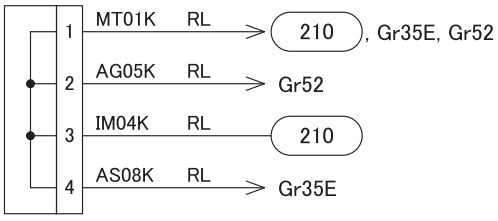


905-C05444

JOINT CONNECTOR (J/C-040)

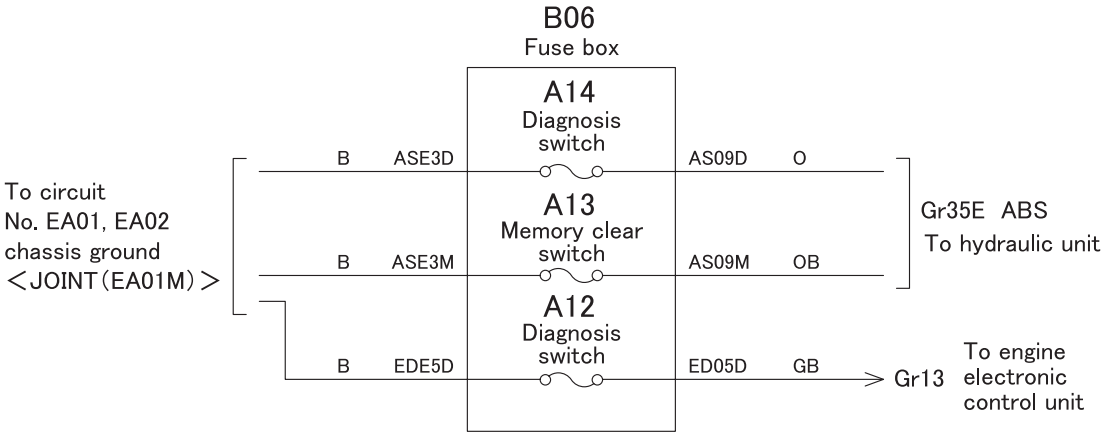
＜J/C-040＞





905–C05445

DIAGNOSIS SWITCH AND MEMORY CLEAR SWITCH CIRCUIT

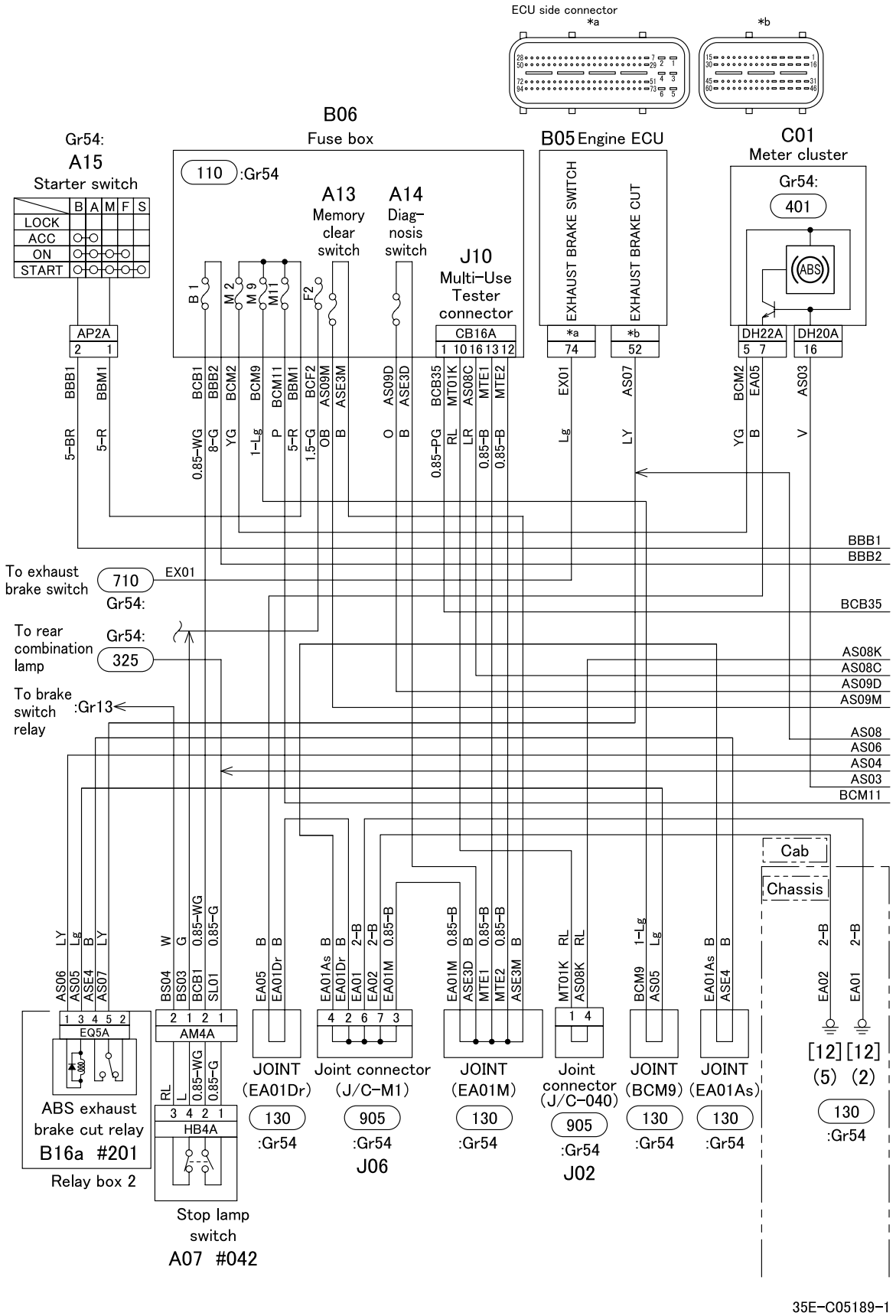


The fuse is substituted for
diagnosis switch and the memory clear switch.

ABS : Anti-lock brake system

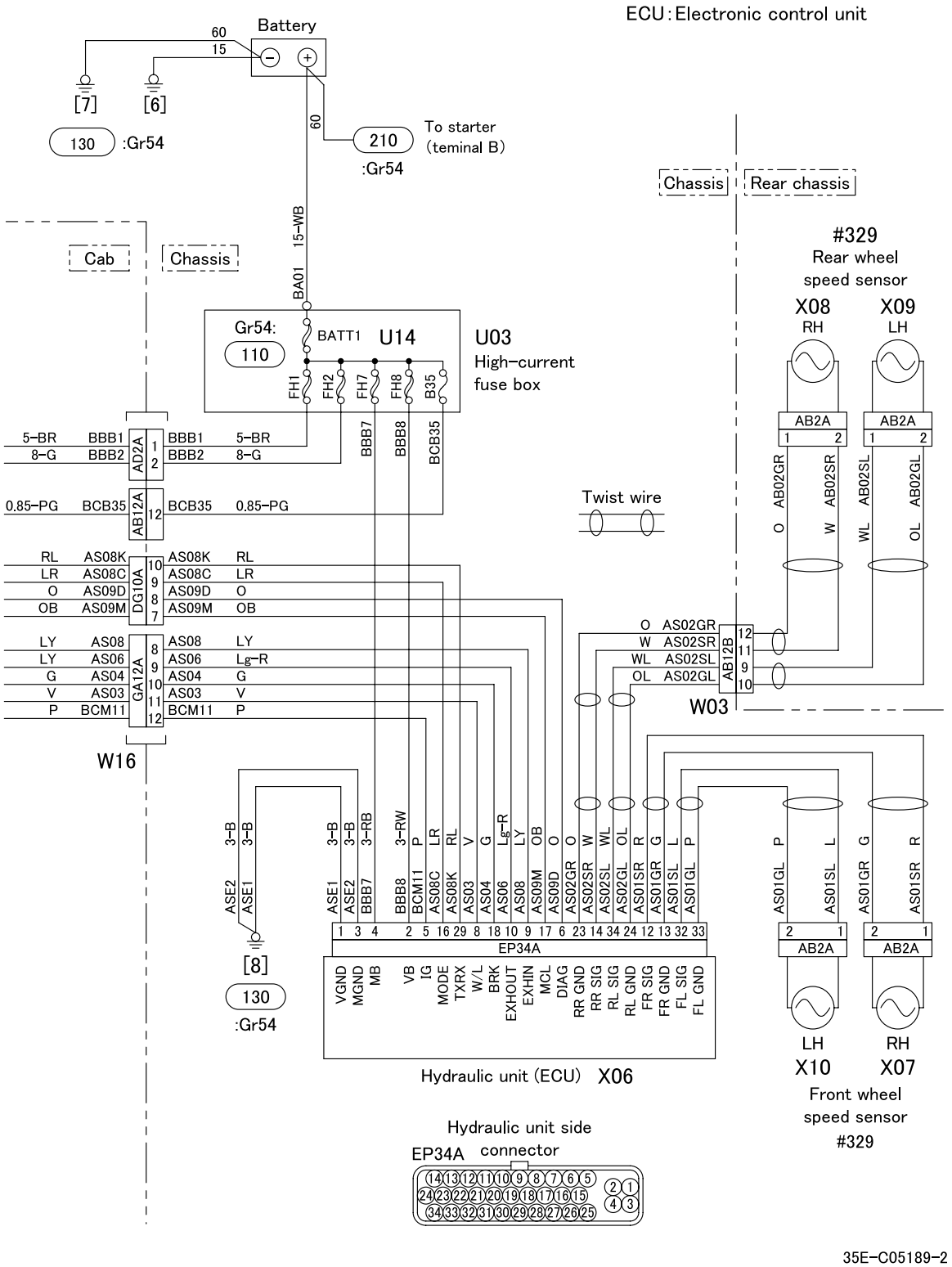
907-C05446

ANTI-LOCK BRAKE SYSTEM CIRCUIT (1)



35E-C05189-1

ANTI-LOCK BRAKE SYSTEM CIRCUIT (2)



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CANTER

Body/equipment mounting directives for CANTER EURO V (FB/FE)

Europe

MITSUBISHI FUSO TRUCK & BUS CORP.

December 2010 BS1001