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**CHAPTER 2**  
**DETAILS OF SAFETY REGULATIONS THAT APPLY TO**  
**MOTOR VEHICLES**

**Section 2**  
**Details of Safety Regulations That Apply to**  
**Motor Vehicles, etc. to Be Newly Used for Operation,**  
**Except for Designated Motor Vehicles, etc.**

**Article 83**

The provisions of this Section shall apply to the following cases.

- (1) Cases where the initial inspection is conducted pursuant to the provision of Paragraph 1 of Article 59 of the Act, or cases where the preliminary inspection is carried out pursuant to the provision of Paragraph 1 of Article 71 of the Act in connection with motor vehicles, except designated motor vehicles, etc. (except cases where the initial inspection or preliminary inspection is performed for motor vehicles subjected to deletion registration pursuant to the provision of Article 16 of the Act or motor vehicles for which motor vehicle inspection certificates have been returned pursuant to the provision of Paragraph 4 of Article 69 of the Act);
- (2) Cases where motor vehicles (except designated motor vehicles, etc.) provided for in Article 99 of the Act are to be newly used for operation;
- (3) Cases where mini-sized motor vehicles exempted from inspection and small-sized special motor vehicles (except those type-approved pursuant to the provision of Paragraph 1 of Article 62-3 of the Enforcement Regulations) provided for in Paragraph 1 of Article 58 of the Act are to be newly used for operation.

**Article 84** (Length, Width and Height)

1. The method prescribed in the Announcement of Paragraph 1 of Article 2 of the Safety Regulations in connection with the measurement of a motor vehicle shall mean that the motor vehicle under the conditions enumerated in each of the following Items be measured according to Paragraph 2.

- (1) Unloaded state;
- (2) Any ladder of a ladder truck, a turret of an overhead wire repair motor vehicle or those which can be housed while the motor vehicle is being driven shall be housed;
- (3) Any folding awnings, cranes of a work motor vehicle or those which may be used in various states while the motor vehicle is being driven shall be in respective states where these are used during running. However, any outward-opening windows and ventilators shall be closed.
- (4) Any outside rear-view mirrors, devices and flexible antennas in Paragraph 5 of Article 44 of the Safety Regulations shall be removed. In this case, the outside rear-view mirrors and devices in Paragraph 5 of Article 44 of the Safety Regulations shall include lamps and reflectors attached thereto.

2. The length, width and height of a motor vehicle shall be the measured values (the unit shall be centimeter, ignoring the fractions of less than 1 cm.) of the dimensions given in each of the following Items, using a measuring tape or the like, with the motor vehicle in its straight-ahead position under the conditions of the preceding Paragraph placed on a horizontal, flat surface (hereinafter referred to as the “reference surface”).

- (1) With regard to the length, the most forward end and most rearward end of the motor vehicle are projected on the reference surface. The length shall be the distance between the projected points in a direction parallel to the longitudinal centre line of the motor vehicle.
- (2) As regards the width, the outermost sections of the motor vehicle (except the rotating tyres, disc wheels and their related rotating sections that are mounted on motor vehicles other than large-sized special motor vehicles and small-sized special motor vehicles) are projected on the reference surface. The width shall be the distance between the projected points in a direction parallel to a straight line perpendicular to the motor vehicle longitudinal centre line.
- (3) The height shall be the distance between the highest section of the motor vehicle and the reference surface.

3. The method prescribed in the Announcement of Paragraph 2 of Article 2 of the Safety Regulations in connection with the measurement of a motor vehicle shall mean that the motor vehicle under the conditions enumerated in

each of the following Items be measured.

- (1) With regard to the outward-opening windows and ventilators, the state where they are opened;
- (2) As regards the rear-view mirrors and devices of Paragraph 5 of Article 44 of the Safety Regulations, the state where they are fitted.

**Article 85** (Minimum Ground Clearance)

The requirements prescribed in the Announcement of Article 3 of the Safety Regulations shall be that any part other than the ground-contact section of a motor vehicle have enough clearance above the ground to ensure safe operation. In this case, when the clearance between the sections other than the ground-contact section of a motor vehicle and the ground (hereinafter referred to as the “ground clearance”) comes under one of the following Items enumerated below, the motor vehicle meeting such condition shall be regarded as complying with this requirement.

- (1) Those motor vehicles which are approved to be equivalent to type-designated motor vehicles, etc.;
- (2) Those motor vehicles for which the measured values meet the requirements of Item B when the measurement has been conducted according to the measuring conditions of Item A in the case of ordinary-sized motor vehicles and small-sized motor vehicles (except motor vehicles with a passenger capacity of 11 persons or more and motor cycles) with a gross vehicle weight of 2.8 tons or less, motor vehicles used exclusively for carriage of passengers (except motor vehicles with a passenger capacity of 11 persons or more and motor cycles) with a gross vehicle weight exceeding 2.8 tons, and mini-sized motor vehicles (except motor cycles and mini-sized motor vehicles with caterpillar tracks and sleds) which have been modified so that the minimum ground clearance becomes smaller;

A. Measuring conditions

The minimum ground clearance shall be determined, using the following methods enumerated below:

- ① The motor vehicle to be measured shall be under the unloaded condition;

- ② The air inflation pressure of the tyres of the motor vehicle to be measured shall be the specified value;
- ③ In the case of motor vehicles that are equipped with a vehicle height adjustment device, the standard (neutral) position shall be selected. However, in the case of vehicle height adjustment devices capable of holding the vehicle height at an arbitrary position, the device shall be set to a mid-point between the position where the vehicle height becomes the minimum value and the position where the vehicle height becomes the maximum value;
- ④ With the motor vehicle to be measured placed on a paved, flat surface, the minimum ground clearance shall be measured by means of a measuring tape or the like;
- ⑤ The measured value shall be expressed in centimeters, rounding off the fractions less than 1 cm.

B. Evaluation of measured values

The minimum ground clearance determined according to Item A shall meet the following requirements prescribed in Items ① through ③.

However, in the case of motor vehicles whose construction allows the important devices in terms of the motor vehicle construction and safety to adequately withstand impacts, such as contact, or whose construction includes undercovers, etc. capable of providing adequate protection for the important devices in terms of the motor vehicle construction and safety when the section other than the ground-contact section of the motor vehicle comes in contact with the ground, etc., it is permissible for the minimum ground clearance of the section concerned to satisfy only the following requirements of ① and ②.

In this case, with regard to the minimum ground clearance at the section of motor vehicles whose “construction allows ..... to adequately withstand” and whose “construction includes undercovers, etc.” in the proviso above, the value in Item ① shall read as “at least 5 cm” in its application.

Furthermore, the following sections of the motor vehicle shall be

excluded when measuring the ground clearance.

- (a) Lower edge of the brake drum which moves up and down in interlocking with the tyre, and the lower edge of the lower arm, etc. of the suspension;
  - (b) Rubber parts of a certain level of freedom in movement;
  - (c) Mud guard, air dam skirt, air cut flap and so forth that are made of resin.
- ① The minimum ground clearance (over the whole section) of the motor vehicle shall be at least 9 cm.
  - ② The minimum ground clearance of the motor vehicle over the wheelbase shall be at least the value that is determined using the following formula:

$$H = Wb \cdot 1 / 2 \cdot \sin 2^{\circ}20' + 4$$

- ③ The minimum ground clearance at the section ahead of the front wheel and the minimum ground clearance at the section rearward from the rear wheel of the motor vehicle shall be at least the value that is determined using the following formula given below:

$$H = Ob \cdot \sin 6^{\circ}20' + 2$$

where:

H : Minimum ground clearance of motor vehicle (cm)

Wb : Wheelbase (cm)  
If the motor vehicle has plural axles, the wheelbase to be used is the longest one between the axles in tandem.

Ob : Distance between a point where the front minimum ground clearance of the motor vehicle is measured from the front axle (in the case of a motor vehicle with plural axles, the most forward axle) and the centre line of the front axle, or the distance between a point where the rear minimum ground clearance of the motor vehicle is measured from rear axle (in the case of a motor vehicle with plural axles, the most rearward axle) and the centre

line of the rear axle. (cm)

Furthermore, as for the sine of trigonometric functions, the following values shall be used.

$$\sin 2^{\circ}20' = 0.04$$

$$\sin 6^{\circ}20' = 0.11$$

### **Article 86** (Stability)

The requirements prescribed in the Announcement of Article 5 of the Safety Regulations in connection with the stability of a motor vehicle shall be the requirements prescribed in each of the following Items.

- (1) The total load imposed upon the ground-contact sections of the steering tyres in the unloaded state and in the loaded state shall be 20% or more (18% in the case of three-wheeled motor vehicles) of the vehicle weight and of the gross vehicle weight, respectively.
- (2) In the case of a tractor, the requirement of the preceding Item shall be met even in the state when a trailer is coupled thereto.
- (3) In the case of a motor cycle with sidecar, the load imposed upon the ground-contact section of the wheel (except driving wheels) of the sidecar in the unloaded state and in the loaded state shall be 35% or less of the vehicle weight and of the gross vehicle weight, respectively.
- (4) Any motor vehicle (except motor cycles and trailers) in the unloaded state shall not overturn when it is tilted to the right and left sides at an angle of  $35^{\circ}$  ( $25^{\circ}$  in the case of motor cycles with sidecar and  $30^{\circ}$  in the case of motor vehicles with a maximum speed of less than 20 km/h and motor vehicles with a gross vehicle weight of 1.2 times or less of the vehicle weight). In this case, the phrase "tilted to the right and left sides" shall not mean to tilt a motor vehicle to the right or left side perpendicular to the motor vehicle longitudinal centre line, but it shall mean to tilt a motor vehicle to the side where overturning may actually take place, using as an axis a line connecting the ground-contact sections of the front and rear outer wheels at the side concerned.
- (5) In the case of trailers (except pole trailers), the requirements of the preceding Item shall be met when a tractor in the unloaded state is coupled thereto;

- (6) In the case of pole trailers, the distance between the centres of the ground-contact sections of the right and left outermost wheels shall be 1.3 times or more the height of the loading platform above the ground in the unloaded state.

**Article 87** (Ground-Contact Section and Contact Pressure)

The requirements prescribed in the Announcement of Article 7 of the Safety Regulations in connection with the ground-contact sections and contact pressure of the running system of a motor vehicle shall be the requirements prescribed in each of the following Items.

- (1) No ground-contact section shall be constructed in such a way that it damages road surfaces;
- (2) Motor vehicles with a rubber traction belt caterpillar or flat traction belt caterpillar shall comply with the requirement of the preceding Item;
- (3) For pneumatic rubber tyres or solid rubber tyres whose ground-contact section is 25 mm or thicker, the ground-contact pressure shall not exceed 200 kg/cm<sup>2</sup> per cm of the width of the ground-contact section of the tyre. In this case, the “width of the ground-contact section of the tyre” shall mean the maximum width of the section that is actually in contact with the ground;
- (4) For caterpillar tracks, the ground-contact pressure shall not exceed 3 kg per cm<sup>2</sup> of the ground-contact area of the caterpillar tracks. In this case, the ground-contact area of the caterpillar tracks shall be a virtual ground-contact area and the value calculated from the following formula (The unit shall be cm<sup>2</sup> and the value shall be an integer.):

(Calculation formula)

$$A = a \cdot b$$

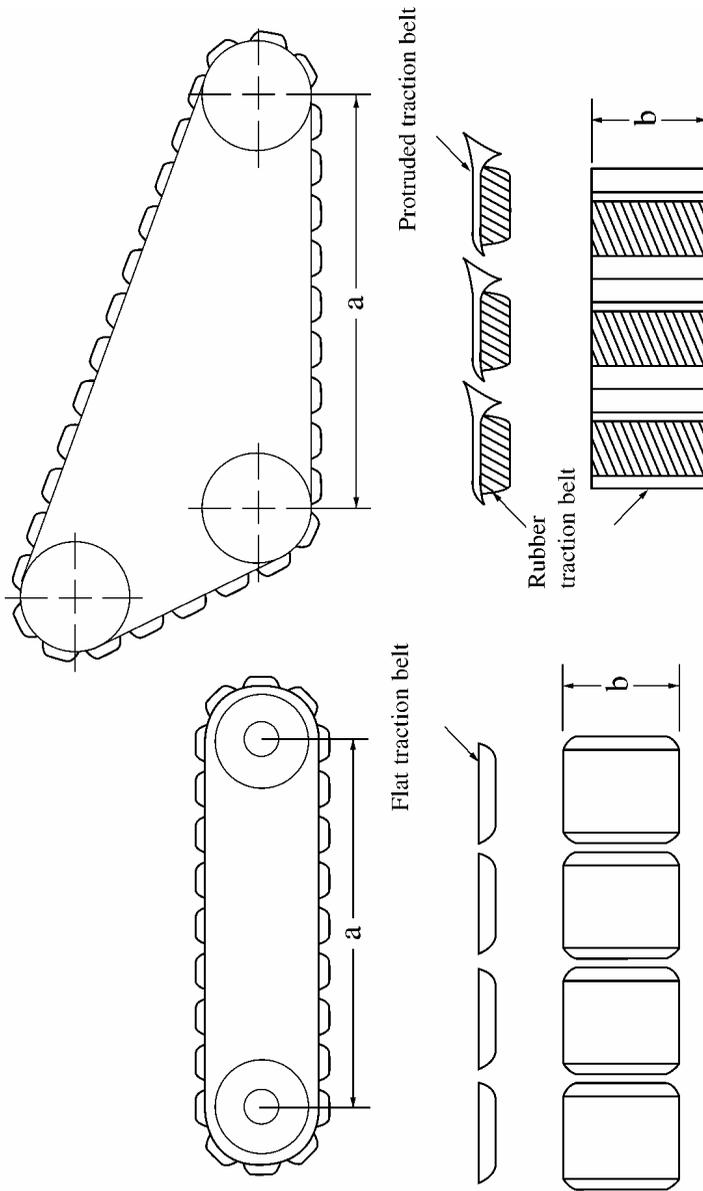
where:

A : Virtual ground-contact area

a : Ground-contact length of traction belt

b : Ground-contact width of traction belt

(Referential diagram)



- (5) As regards ground-contact sections other than those in the preceding two Items as well as those of sleds, the ground-contact pressure shall

not exceed 100 kg per cm of the width of the ground-contact section;

- (6) For tractors, the requirements of the preceding three Items shall be met even when coupled with a trailer.

**Article 88** (Engine and Power Train System)

1. The requirements prescribed in the Announcement of Paragraph 1 of Article 8 of the Safety Regulations in connection with the construction, etc. of the engine and power train system shall be that the engine and power train system be constructed and have sufficient performance to fully withstand operations. In this case, those enumerated in the following Items shall be regarded as not complying this requirement:

- (1) Engines where starting is extremely difficult;
- (2) Engines emitting considerable abnormal noise or vibration during operation;
- (3) Engines where smooth rise in speed is not attained when the engine speed is increased from idling;
- (4) Engines where the air cleaners are detached;
- (5) Engines where the lubrication system exhibits considerable oil leakage;
- (6) Engines where the cooling system exhibits considerable water leakage;
- (7) Engines where the fan belts, etc. are excessively loose or damaged;
- (8) Clutches whose operation is not proper or which exhibit excessive slippage, or the dust boot of the release cylinder is damaged;
- (9) Transmissions whose control mechanism exhibits excessive play;
- (10) Power train systems whose connections exhibit looseness;
- (11) Power train systems which exhibit considerable fluid or oil leakage;
- (12) Splines of propeller shafts, universal joints or centre bearings which exhibit excessive play;
- (13) Splines of drive shafts, universal joints or centre bearings which

exhibit excessive play;

- (14) Propeller shafts or drive shafts which are damaged;
- (15) Universal joints whose bolts and nuts are missing or exhibit damage;
- (16) Universal joints whose dust boots exhibit damage or where the direction of the yoke is not correct;
- (17) Power train systems whose sprockets are damaged, whose mounting are loose or whose chains exhibit excessive looseness;
- (18) Motor vehicles which do not comply with the requirements of Attachment 95 "Technical Standard for Running Performance of Motor Vehicles";
- (19) Motor vehicles which do not comply with the requirements of Attachment 96 "Technical Standard for Running Performance of Coupled Motor Vehicles."

2. The requirements prescribed in the Announcement of Paragraph 5 of Article 8 of the Safety Regulations in connection with the speed limiting performance, etc. of the speed limitation device shall be the requirements prescribed in Attachment 1 "Technical Standard for Speed Limitation Devices for Large-Sized Trucks."

**Article 89** (Running System)

1. The requirements prescribed in the Announcement of Paragraph 1 of Article 9 of the Safety Regulations in connection with the strength, etc. of the running system of a motor vehicle shall be the requirements prescribed in each of the following Paragraphs.

2. The running system of a motor vehicle shall be secure to ensure safe operation. In this case, each of the following Items shall be regarded as not complying with this requirement.

- (1) Hub bolts, spindle nuts, clip bolts and nuts which exhibit looseness or omission, or where cotter pins are missing.
- (2) Wheel bearings which exhibit considerable play or damage.
- (3) Axles which exhibit damage.

- (4) Rims or side rings which exhibit damage.
- (5) Side rings which are not fitted completely into the rims.
- (6) Wheels which exhibit considerable runout.
- (7) Wheels which will not rotate smoothly.

3. Light-alloy disc wheels which bear casting or stamping markings in accordance with Attachment 2 “Technical Standard for Light-Alloy Disc Wheels” and which exhibit no damage shall be regarded as “being secure” as stated in the preceding Paragraph.

4. The requirements prescribed in the Announcement of Paragraph 2 of Article 9 of the Safety Regulations in connection with the strength, anti-slip performance, etc. of pneumatic rubber tyres of a motor vehicle shall be the requirements prescribed in each of the following Items.

- (1) With regard to loads applicable to tyres for motor vehicles, the value obtained by dividing the axle weight of a motor vehicle in the loaded state by the number of wheels attached to the said axle shall be the load capacity of tyres.
- (2) The ground-contact section of a tyre shall have a tread to reduce the likelihood of slipping. In this case, the tread depth (except for tyres mounted on motor vehicles with a maximum speed of less than 40 km/h, trailers drawn by motor vehicles with a maximum speed of less than 40 km/h, large-sized special motor vehicles and trailers drawn by large-sized special motor vehicles) shall be 1.6 mm or more (0.8 mm in the case of tyres mounted on motor cycles with or without sidecars) at any part of the recessed section (except the siping, platform and wear indicator) for preventing slipping across the overall width of the ground-contact section of the tyre (1/4 of the overall width from the centre line of the ground-contact section of the tyre to the right and left sides, respectively, in the case of lug-type tyres). Here, it is permissible to evaluate the tread depth, using a wear indicator.
- (3) The tyres shall be free from any notable damage, such as cracks, bare cords, etc.
- (4) The tyre shall be inflated to a proper pressure.

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**Article 90** (Control System)

The requirements prescribed in the Announcement of Article 10 of the Safety Regulations in connection with the arrangement, identification marks, etc. of the control system shall be the requirements prescribed in each of the following Items.

- (1) The devices enumerated in each Item of Article 10 of the Safety Regulations, which are necessary for operating a motor vehicle, shall be located within 500 mm to the right and left of the centre of the steering wheel and be constructed so that the driver in his normal driving position may easily operate them. In this case, the distance concerning the arrangement in relation to the centre of the steering wheel shall be the length of the perpendicular drawn from the centre of each control device to the vertical plane which is parallel to the motor vehicle longitudinal centre line including the centre of the steering wheel (the centre of the driver's seat in the case of a lever-type steering system). The centre of the transmission shall be the centre point of the grip of the shift lever located at the centre in the neutral position. The centre of a movable defroster control device, such as a lever-type control device, shall be the centre position of the movable range.
- (2) The devices (except the starter switch, accelerator, clutch and control device of the transmission) enumerated in Item (1) of Article 10 of the Safety Regulations as well as the devices (except the control device of the direction indicator lamps) enumerated in Item (3) of the same Article shall have an identification mark thereon or nearby so that the driver in his seat may easily recognize the device concerned.
- (3) The control device of the transmission shall have an identification mark thereon or nearby so that the driver in his seat may easily recognize the operating position of each gear.
- (4) The control device of the direction indicator lamp shall have an identification mark thereon or nearby so that the driver in his seat may easily recognize the operating position of each direction indicated by the direction indicator lamp concerned.
- (5) "An identification mark thereon or nearby so that the driver in his seat may easily recognize" mentioned in Items (2) through (4) shall mean an indication which enables the driver seated in his seat to easily distinguish the device concerned or the operating position thereof by means of characters, figures or marks provided at a position where the driver can see without assuming a strained posture. In this case, those

identification codes which are posted in JIS D0032 “Road vehicles – Symbols for controls, indicators and tell-tales” or ISO (International Organization for Standardization) 2575 “Road vehicles – Symbols for controls, indicators and tell-tales” shall be examples of such indications.

**Article 91** (Steering System)

1. The requirements prescribed in the Announcement of Paragraph 1 of Article 11 of the Safety Regulations in connection with the strength, operating performance, etc. of the steering system of a motor vehicle shall be the requirements prescribed in each of the following Items.

- (1) The steering system of a motor vehicle shall be secure to ensure safe operation. In this case, each of the following Items shall be regarded as not complying with this requirement.
  - A. Steering links, such as the knuckle arms, tie-rods, drag links and sector arms, which exhibit damage.
  - B. Mountings of each section specified in the preceding Item which exhibit considerable play or where cotter pins are missing.
  - C. Steering wheels which exhibit excessive play or whose mountings exhibit looseness.
  - D. Points needing lubrication, but not lubricated.
  - E. Steering forks which exhibit damage.
  - F. Gear boxes which exhibit excessive oil leakage or whose mountings are loose.
  - G. Dust boots of steering systems which exhibit damage.
  - H. Power steering systems which exhibit excessive oil leakage or whose mountings are loose.
  - I. Belts of power steering systems which exhibit excessive looseness or damage.
  - J. Components using such parts which have undergone repairs, such as welding, padding or heat treatment.

- K. Motor vehicles with four or more wheels whose side slippage of the steering tyres exceeds 5 mm per 1 m driving when subjected to the measurement on a sideslip tester. However, this provision shall not apply to cases where the side slippage is within a range of the side slippage designated as capable of assuring safe operation in connection with the steering system by the motor vehicle manufacture, etc. (referring to a person who makes it his business to manufacture motor vehicles or a person who has a contract to purchase the motor vehicles concerned from him and makes it his business to export the motor vehicles concerned to Japan) of designated motor vehicles, etc. when the steering tyres of the motor vehicle with four or more wheels are subjected to the measurement on a sideslip tester.
- (2) The steering system shall be operated easily and securely by the driver in his normal position. Motor vehicles (except motor vehicles with a maximum speed of less than 20 km/h) which are not equipped with power steering and in which the total sum of wheel loads of the steering tyres is 4,700 kg or more shall be regarded as not complying with this requirement.
  - (3) No part of the steering system shall come in contact, when steered, with any other part of the motor vehicle, such as the frame and fender.
  - (4) There shall be no great difference between the left and right as respects the relationship between the turning angle of the steering wheel and the steering angle of the steering tyres.
  - (5) There shall be no considerable difference between the left and right as respects the steering force of the steering wheel.
2. The requirements prescribed in the Announcement of Paragraph 2 of Article 11 of the Safety Regulations in connection with the driver protection performance of the steering system shall be the requirements prescribed in Attachment 6 “Technical Standard for Steering System Impacts.” In this case, the steering system enumerated in each of the following Items shall be regarded as complying with this requirement.
- (1) Steering systems having the same construction and provided at the same position as the steering system mounted on designated motor vehicles, etc., which exhibit no damage liable to hamper its function;
  - (2) Those having the same construction as the steering system for which

device type designation has been granted pursuant to the provision of Paragraph 1 of Article 75-2 of the Act or those having the performance equivalent to it, which exhibit no damage liable to hamper its function;

- (3) Those for which a document proving compliance with the requirements prescribed in Attachment 6 “Technical Standard for Steering System Impacts” has been submitted.

3. Those devices enumerated in each of the following Items, for which the implementation of a destructive test is proved to be extremely difficult, shall be regarded as complying with the requirements of Paragraph 2 of Article 11 of the Safety Regulation, under the provision of the proviso of Article 1-3 of the Safety Regulations.

- (1) Those which come under all of the following Items:
  - A. Those in which the horizontal distance parallel to the longitudinal centre line of the motor vehicle between the front edge of the driver’s seat (in the mid-point position for the seat concerned that is adjustable in a fore-and-aft direction) and the front edge of the motor vehicle is equal to or longer than 750 mm;
  - B. Of the surfaces of the steering wheel that faces the driver’s side, those having no irregularity nor sharp protrusion with a radius of curvature less than 2.5 mm at a section where a 165 mm diameter sphere can be contacted.
- (2) Those for which a document proving compliance with the Agreement Regulation No. 94 has been submitted;
- (3) Those for which a document proving compliance with the Federal Motor Vehicle Safety Standard No. 203 has been submitted;
- (4) Those for which a document proving compliance with the Federal Motor Vehicle Safety Standard No. 208 has been submitted.

#### **Article 92** (Locking Device)

1. The requirements prescribed in the Announcement of Paragraph 2 of Article 11-2 of the Safety Regulations in connection with the construction, locking performance, etc. of the locking device shall be the requirements prescribed in each of the following Items. However, the provision of Item (3)

shall not apply to motor cycles with or without sidecar and mini-sized motor vehicles with caterpillar tracks and sleds.

- (1) The locking device shall be so constructed that, when operated, it can positively prevent the function of the system provided with the locking system.
- (2) The locking device shall be secure and constructed so that its function may not be easily damaged or its function may not be disabled.
- (3) The locking device shall be such one that, when operated, it can prevent the activation of the starter.
- (4) The locking device shall not be activated by vibration, shocks, etc. while running.

2. The following locking device which exhibits no damage, etc. liable to hamper its function shall be regarded as complying with the requirements prescribed in the preceding Paragraph.

- (1) Locking devices having the same construction and provided at the same position as the locking devices mounted on designated motor vehicles, etc.;
- (2) Locking devices having the same construction and provided at the same position as the locking devices mounted on motor vehicles for which device type designation has been granted in connection with the locking device pursuant to the provision of Paragraph 1 of Article 75-2 of the Act, or locking devices having the performance equivalent to it.

3. The requirements prescribed in the Announcement of Paragraph 3 of Article 11-2 of the Safety Regulations in connection with the construction, locking performance, etc. of the immobilizer shall be the requirements prescribed in Attachment 9 “Technical Standard for Immobilizer” (except the provisions of Paragraph 5-3-8 and Attached Sheet 1). In this case, the immobilizer having the same construction and provided at the same position as the immobilizers mounted on designated motor vehicles, etc. which exhibits no damage, etc. liable to hamper its function shall be regarded as complying with this requirement.

**Article 93 (Brake System)**

1. The requirements prescribed in the Announcement of Paragraph 1,

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Article 12 of the Safety Regulations in connection with the braking performance of decelerating and stopping the running motor vehicle and of holding the stopped motor vehicle standstill, etc. shall be the requirements enumerated in the next Paragraph through Paragraph 8.

2. Motor vehicles (except motor vehicles enumerated in the next Paragraph through Paragraph 6) shall be provided with brake systems which comply with the requirements prescribed in Attachment 10 “Technical Standard for Brake Systems of Trucks and Buses” and Attachment 11 “Technical Standard for Anti-Lock Brake System” as well as the following requirements.

- (1) Two or more independently operating brake systems shall be provided. In this case, the brake system which is constructed so that those sections from the brake pedal or the brake lever to the wheel cylinder or the brake chamber (up to the camshafts, etc. which directly actuate the brake shoes in the case of such systems which do not incorporate any wheel cylinders or brake chambers) are independent for each system shall be regarded as the “two or more independently operating brake systems.”
- (2) The brake system shall be durable enough to fully withstand the operation and be mounted so as not to be damaged by vibration, impact, contact, etc. Furthermore, the brake system shall not be such ones enumerated in the following Items.
  - A. Pipes or brake cables (excluding protective materials in cases where such protective materials are wound around the pipes or brake cables to protect them) of the brake system which are in contact with the drag links, propeller shafts, exhaust pipes, tyres, etc. or exhibit traces caused by contacting them during running, or which are likely to contact with them;
  - B. Pipes or joints of the brake system which exhibit fluid leakage or air leakage;
  - C. Brake rods or brake cables which exhibit damage or whose joints exhibit looseness;
  - D. Brake rods or pipes of the brake system which use such parts which have undergone repairs, such as welding and padding (except copper pipes where two layers are employed and brazing is made securely);
  - E. Brake hoses or brake pipes which exhibit damage;

- F. Brake hoses which are attached in an excessively twisted state;
  - G. Brake pedals which have no free travel or brake pedals where there is no gap relative to the floor surface;
  - H. Brake levers which have no free travel or working travel;
  - I. Brake levers whose ratchets will not operate positively or which exhibit damage.
  - J. In addition to those enumerated in Items A. through I., brake systems which are not durable or which have not been mounted so as not to be damaged by vibration, impact, contact, etc.
- (3) The brake system shall have a construction and functions which operate without interfering with the steering performance, and shall not cause sideslips due to unevenness of braking effects, etc.
- (4) The service brake system (which means the brake system commonly used for braking the vehicle being in operation; the same applies hereinafter) shall work on all wheels. In this case, the construction that the braking force-operating surface of the brake disc, brake drum, etc. is connected to the wheel by means of rigid parts, such as bolts, shafts and gears, shall be regarded as an example of “work on wheels.”
- (5) The service brake system shall be such that the braking effect is not affected significantly even after the brakes have been repeatedly applied.
- (6) The service brake system shall be such that the its braking effect is not affected significantly even when the brake piping, etc., are partly damaged.
- (7) The service brake system shall be capable of adjusting automatically the clearances of rotating and sliding parts. However, this provision shall not apply to the following service brake systems:
- A. The service brake system installed to the rear wheels of motor vehicles with a gross vehicle weight of 3.5 tons or less (except those used exclusively for carriage of passengers);
  - B. The service brake system installed to the following motor vehicles with a gross vehicle weight exceeding 3.5 tons, but 12

tons or less (except those used exclusively for carriage of passengers):

- ① Motor vehicles provided with a power train system designed to transmit power to all wheels (including the type designed to cut off power transmission to one axle);
  - ② Motor vehicles provided with a power train system designed to transmit power to one or more of the front axles and rear axles respectively (including the type designed to cut off power transmission to one axle) and with a device capable of stopping or limiting the operations of the differentials of one or more power train systems, and also provided with an ability of climbing a slope with a gradient of 1/4;
- C. The service brake system installed to the following motor vehicles with a gross vehicle weight exceeding 12 tons (except those used exclusively for carriage of passengers):
- ① Motor vehicles provided with a power train system designed to transmit power to all wheels (including the type designed to cut off power transmission to one axle);
  - ② Motor vehicles provided with a power train system designed to transmit power to more than half the number of axles and with a device capable of stopping or limiting the operations of the differentials of one or more power train systems, and also provided with an ability to climbing a slope with a gradient of 1/4.
- (8) The brake fluid of the service brake system shall not deteriorate the function of the service brake system concerned by corroding the brake piping and forming bubbles due to heat from the engine, etc.
- (9) The service brake system operated by fluid pressure shall have any of the following construction that the brake fluid level can be checked readily without opening the lid of the reservoir tank, and shall be provided with a warning device to give warning to the driver in his seat when the braking effect is affected by leakage of brake fluid from the brake piping.
- A. Construction where the reservoir tank of the brake fluid is transparent or semitransparent;

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- B. Construction equipped with a gauge by which the level of brake fluid can be checked;
  - C. Construction equipped with a fluid level drop warning device which gives a warning to the driver in his seat in the event that the brake fluid level drops;
  - D. In addition to those enumerated in Items A. through C., construction that the brake fluid level can be checked readily without opening the lid of the reservoir tank.
- (10) The service brake system operated by pneumatic or vacuum pressure or pressure of accumulated fluid shall have a capacity of accumulating a sufficient pressure for braking and shall be provided with a warning device to give warning to the driver in his seat when the braking effect is liable to be affected significantly by pressure change.
- (11) The service brake system for motor vehicles used exclusively for carriage of passengers with a gross vehicle weight exceeding 12 tons (except motor vehicles for passenger carrying business (which mean motor vehicles used for passenger carrying business; hereinafter the same) running regularly along fixed routes other than those related to the national expressways, etc. (which mean the roads provided for in Paragraph 1, Article 4 of the National Expressway Law (Law No. 79 of 1957) and the fully-access-controlled highways provided for in Paragraph 1, Article 48-4 of the Road Law (Law No. 180 of 1952; the same applies hereinafter))) and for tractors with a gross vehicle weight exceeding 7 tons shall be provided with a device capable of preventing efficiently the locking of the rotation of wheels which affects significantly the braking of the vehicle being in operation.
- (12) In the case of motor vehicles provided with a device capable of preventing efficiently the locking of the rotation of wheels which affects significantly the braking of the vehicle being in operation, they shall be provided with a warning device to give warning when the power supply is applied and to give warning readily distinguished by the driver in his seat so that he can know that the device becomes liable to fail to operate normally.
- (13) The auxiliary brake system for motor vehicles used exclusively for carriage of passengers with a gross vehicle weight exceeding 10 tons (except motor vehicles for passenger carrying business running regularly along fixed routes other than those related to the national

expressways, etc.) shall be such that the braking effect is not affected significantly even after the brakes have been repeatedly applied.

3. Motor vehicles used exclusively for carriage of passengers with a passenger capacity of less than 10 persons (except motor vehicles in the next Paragraph through Paragraph 6) shall be provided with brake systems which comply with the requirements prescribed in Attachment 12 “Technical Standard for Passenger Motor Vehicle Brake System” as well as the following requirements. However, the requirement of “must satisfy the requirements in Paragraph 3-1 (A)” appearing in Item (a), Paragraph 5-2 of Annex 3 “Distribution of Braking Among the Axles of Vehicles” of Attachment 12 “Technical Standard for Passenger Motor Vehicle Braking System” shall read as “must satisfy the requirements of Paragraph 3-1 (A), or the curve of the rear axle must be below the straight line  $z = 0.9k$  for all braking rates from 0.15 to 0.8 (see Fig. 2),” and the phrase “25% above the reference level” appearing in Paragraphs 2-2-2-2 and 2-3-2-2 of Annex 7 “Tests with Regard to Electromagnetic Compatibility of Braking System of Passenger Motor Vehicles” of Attachment 12 “Technical Standard for Passenger Motor Vehicle Braking System” shall read as “80% of the reference level.”

- (1) Two or more independently operating brake systems shall be provided. In this case, the provisions of the latter part of Item (1) of the preceding Paragraph shall apply *mutatis mutandis*.
- (2) The brake system shall comply with the requirements prescribed in Items (2) through (6) and Items (8) through (10) of the preceding Paragraph.
- (3) The service brake system shall be capable of adjusting automatically the clearances of rotating and sliding parts.
- (4) The brake system except service brake systems (one brake system in the case of motor vehicles provided with two or more brake systems except the service brake system, or the service brake system in the case of motor vehicles equipped with mechanism in which the service brake system is actuated by operating the operating device of the brake system except the service brake system) shall be equipped with a warning device to give warning to the driver in his seat when it is operated.
- (5) The service brake system shall have such construction that the wear of the sliding section can be checked easily with an appropriate inspection hole or the like. In this case, the examples given below shall be deemed

as those complying with this requirement:

- A. The brake system having the same construction and provided at the same position as the brake system mounted on designated motor vehicles, etc.;
  - B. The brake system equipped with a device giving a warning to the driver in his seat when the sliding section needs to be replaced by a new one.
- (6) The service brake system operated by pneumatic pressure, vacuum pressure or accumulated fluid pressure shall be provided with two or more independently operating devices which accumulate pressure. However, this provision shall not apply to the service brake system constructed to comply with the requirements of Item (8) only by the operating force of the driver even when the device which accumulates pressure fails to operate normally.
- (7) The service brake system equipped with an electric device to control the braking force shall be capable of accumulating electricity sufficient enough for braking and shall be provided with a warning device to give warning to the driver in his seat when the device becomes liable to fail to operate normally.
4. Motor cycles with or without sidecar (except motor vehicles with a maximum speed of 25 km/h or less and motor vehicles of Paragraph 6) shall be provided with brake systems complying with the requirements prescribed in Attachment 13 “Technical Standard of Two-Wheeled Vehicle Brake System” and the following requirements.
- (1) Two or more brake systems shall be provided.
  - (2) The brake system shall comply with the requirements of Items (2), (3), (5), (8) and (12) of Paragraph 2.
  - (3) The service brake system shall have two independent control devices and shall work on the wheels including the front one by means of one of the control devices and on the wheels including the rear one by means of the other control device. However, this provision shall not apply to motor cycles with sidecar of Item B., Item (4) of Article 2, that have the service brake system in which one control device works on all wheels. In this case, the provision of the latter part of Item (4) of Paragraph 2 shall apply *mutatis mutandis*.

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- (4) The service brake system shall be such that the braking effect is not affected significantly by adhesion of rainwater, etc.
  - (5) The service brake system operated by fluid pressure shall have any of the following construction that the brake fluid level can be checked readily without opening the lid of the reservoir tank.
    - A. Construction where the reservoir tank of the brake fluid is transparent or semitransparent;
    - B. Construction equipped with a gauge by which the level of brake fluid can be checked;
    - C. Construction equipped with a fluid level drop warning device which gives a warning to the driver in his seat in the event that the brake fluid level drops;
    - D. In addition to those enumerated in Items A. through C., construction that the brake fluid level can be checked readily without opening the lid of the reservoir tank.

5. Large-sized special motor vehicles, small-sized special motor vehicles for agricultural use, mini-sized motor vehicles with caterpillar tracks and sleds and motor vehicles with a maximum speed of 25 km/h or less (except motor vehicles of the next Paragraph) shall be provided with brake systems which comply with the requirements prescribed in Attachment 14 "Technical Standard for Brake Fluid Leakage Warning Devices" and the following requirements. However, the requirements of Items (1), (3), (5), (8) and (10) shall not apply to large-sized special motor vehicles with a maximum speed of less than 35 km/h, small-sized special motor vehicles for agricultural use and motor vehicles with a maximum speed of 25 km/h or less.

- (1) Two or more independently operating brake systems shall be provided.
- (2) The brake system shall comply with the requirements of Items (2), (3) and (8) of Paragraph 2.
- (3) The service brake system shall work on at least half the number of wheels including the rear ones. In this case, the provision of the latter part of Item (4), Paragraph 2 shall apply *mutatis mutandis*.
- (4) The service brake system shall have a braking capacity specified in the following Table according to the maximum speed of the motor vehicle concerned on a dry, level paved road. In this case, the force to be

applied by the driver shall not exceed 900 N for the foot-operated type and 300 N for the hand-operated type.

Maximum speed (km/h)	Initial braking speed (km/h)	Stopping distance (m)
80 or more	50	22 or less
35 or more, but less than 80	35	14 or less
20 or more, but less than 35	20	5 or less
Less than 20	Maximum speed	5 or less

- (5) The service brake system shall be constructed to work on two or more wheels when the brake piping (except the section for common use of two or more wheels) is partly damaged. However, this provision shall not apply to motor vehicles provided with an emergency brake system (which means a brake system capable of working on two or more wheels of the vehicle being in operation when the service brake system fails).
- (6) The brake system (one brake system in the case of motor vehicles provided with two or more brake systems) shall be capable of holding an unloaded vehicle standstill on a dry paved road with a gradient of 1/5 by a mechanical action when the driver is not in his seat. In this case, the force to be applied by the driver shall not exceed 900 N for the foot-operated type and 500 N for the hand-operated type. The brake system which utilizes hydraulic pressure, pneumatic pressure or electrical operations, even after the motor vehicle comes to the stationary state by applying the brake system concerned, shall be regarded as the brake system not complying with this requirement.
- (7) In the case of tractors, the requirements of the preceding Item shall be complied with when unloaded trailers are coupled with them.
- (8) The service brake system operated by fluid pressure shall be provided with a buzzer or other warning device to give warning to the driver in his seat when the braking effect is affected by leakage of brake fluid from the brake piping (which refers, among brake piping, to the section used as a passage of oil or air for braking leading only to one wheel, except the section for common use of two or more wheels). However, this provision shall not apply to motor vehicles equipped with an emergency brake system (which means a brake system capable of

working on two or more wheels of the vehicle being in operation when the service brake system fails).

- (9) The service brake system operated by pneumatic or vacuum pressure shall have a capacity of accumulating a sufficient pressure for braking and shall be provided with a buzzer or other warning device to give warning to the driver in his seat when the braking effect is liable to be affected by pressure change. However, this provision shall not apply to the service brake system constructed to comply with the requirements of Item (4) even when the pressure is reduced to zero.
- (10) The service brake system for tractors with a gross vehicle weight exceeding 7 tons shall be provided with a device capable of preventing efficiently the locking of the rotation of wheels which affects significantly the braking of the vehicle being in operation. In this case, the provision of Item (12), Paragraph 2 shall apply mutatis mutandis.

6. Any trailer shall be provided with brake systems which comply with the requirements prescribed in Attachment 11 "Technical Standard for Anti-Lock Brake System" and Attachment 15 "Technical Standard for Brake System for Trailers" as well as the following requirements.

- (1) Two or more brake systems shall be provided.
- (2) The brake system shall comply with the requirements of Items (2) , (4), (5) and (8) of Paragraph 2.
- (3) The service brake system shall be constructed to operate in interlocking with that of the tractor.
- (4) The service brake system shall have a braking capacity complying with the following Formula A. for semi-trailers, and with the Formula B. for other trailers, on a dry, level paved road when only the service brake system of the trailer is operated:

A.  $S \leq 0.15V + 0.0086V^2$

B.  $S \leq 0.15V + 0.0077V^2$

In this case, the running system of the tractor drawing the trailer shall be disconnected from the engine.

where:

S : Stopping distance of trailer itself (Unit: meters)

V : Initial braking speed (the maximum speed of the tractor drawing the trailer, but 60 in the case of trailers drawn by tractors with a maximum speed exceeding 60 km/h) (Unit: km/h).

- (5) The service brake system shall be capable of adjusting automatically the clearances of rotating and sliding parts. However, this provision shall not apply to trailers with a gross vehicle weight of 3.5 tons or less and trailers drawn by tractors with a maximum speed of 25 km/h or less.
- (6) The brake system except service brake systems for trailers (one brake system in the case of trailers provided with two or more brake systems except service brake system) shall be capable of holding the trailer standstill on a dry paved road with a gradient of 9/50 by a mechanical action. In this case, the force to be applied by the driver shall not exceed 600 N.

7. Notwithstanding the requirements prescribed in Item (3) of the preceding Paragraph, the service brake system for the following trailers may be constructed to operate when the trailer approaches the tractor drawing it. In this case, the requirements prescribed in Item (2) (limited only to the sections related to the requirements of Item (5), Paragraph 2) and Item (4) of the preceding Paragraph shall not apply.

- (1) Trailers (except semi-trailers) with a gross vehicle weight of 3.5 tons or less;
- (2) Trailers drawn by tractors with a maximum speed of 25 km/h or less;
- (3) Trailers drawn by large-sized special motor vehicles with a maximum speed of less than 35 km/h and small-sized special motor vehicles for agricultural use, which have a gross vehicle weight of less than 2 tons (except those enumerated in the two preceding Items).

8. The brake system of a motor vehicle, when its braking force is measured under the conditions prescribed in Item (1) by means of a brake tester, shall comply with the requirements of Item (2). However, only when it is difficult to conduct the inspection by means of a brake tester, the inspection may be carried out by the running or other appropriate methods and the conformity to the requirements of Item (2) may be judged.

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(1) Conditions of measurement

It shall be the motor vehicle conditions at the time of inspection. Moreover, if the motor vehicle concerned is of type with an automatic axle-lift device, the measurement shall be carried out in the status where the axle is lifted as well.

(2) Evaluation of measured values

- A. For the service brake system of a motor vehicle (except for trailers), the value obtained by dividing the total sum of the braking forces by the weight of the motor vehicle under the motor vehicle conditions at the time of inspection (Note 1) shall be 4.90 N/kg or more (if “kgf” is used as measurement unit for indicating braking forces, the total sum of the braking forces shall be 50% or more of the weight of the motor vehicle under the motor vehicle conditions at the time of inspection) (Note 2), and the value obtained by dividing the sum of the braking forces applied to the rear wheels by the axle weight of the axle concerned under the motor vehicle conditions at the time of inspection shall be 0.98 N/kg or more (if “kgf” is used as measurement unit for indicating braking forces, the sum of the braking forces shall be 10% or more of the axle weight of the axle concerned under the motor vehicle conditions at the time of inspection).
- B. For the service brake system of a motor vehicle with a maximum speed of less than 80 km/h and whose gross vehicle weight is 1.25 times or less the vehicle weight, notwithstanding the provision of Item A. above, the value obtained by dividing the total sum of the braking forces by the gross vehicle weight shall be 3.92 N/kg or more (if “kgf” is used as measurement unit for indicating braking forces, the total sum of the braking forces shall be 40% or more of the gross vehicle weight) (Note 2).
- C. For the service brake system of trailers, the value obtained by dividing the sum of braking forces by the axle weight of the axle concerned under the motor vehicle conditions at the time of inspection shall be 4.90 N/kg or less (if “kgf” is used as measurement unit for indicating braking forces, the sum of braking forces shall be 50% or more of the axle weight of the axle concerned (Note 3)).
- D. For the service brake system, the value obtained by dividing the

difference in braking forces between the right and left wheels by the axle weight of the axle concerned under the motor vehicle conditions at the time of inspection (Note 1) shall be 0.78 N/kg or less (if “kgf” is used as measurement unit for indicating braking forces, the difference in braking forces shall be 8% or less of the axle weight of the axle concerned under the motor vehicle conditions at time of inspection (Note 1)).

- E. For the brake system except the service brake system (one brake system in the case of motor vehicles provided with two or more brake systems except the service brake system), the value obtained by dividing the total sum of braking forces by the weight of the motor vehicle under the motor vehicle conditions at time of inspection (Note 1) shall be 1.96 N/kg or more (if “kgf” is used as measurement unit for indicating braking forces, the total sum of braking forces shall be 20% or more of the weight of the motor vehicle under the motor vehicle conditions at time of inspection (Note 1)). The brake system which utilizes hydraulic pressure, pneumatic pressure or electrical operations, even after the motor vehicle is held in the stationary state by applying the brake system concerned, shall be regarded as the brake system not complying with this requirement.
- F. For the brake system of the trailers of Paragraph 4 of Article 63, the value obtained by dividing the total sum of braking forces by the weight of the motor vehicle under the motor vehicle conditions at time of inspection shall be 1.96 N/kg or more (if “kgf” is used as measurement unit for indicating braking forces, the total sum of braking forces shall be 20% or more of the weight of the motor vehicle under the motor vehicle conditions at time of inspection).

(Note 1) If it is difficult to measure each axle weight of a motor vehicle under the motor vehicle conditions at time of inspection, it is permissible to regard the value obtained by adding 55 kg to the front axle weight in the unloaded state as the front axle weight of the motor vehicle under the motor vehicle conditions at time of inspection.

(Note 2) If all wheels of the front axle are locked on the rollers of a brake tester and it is difficult to measure the braking forces beyond this point, it is permissible to regard that the conformity of the total sum of braking forces with the requirements has been obtained at this condition.

(Note 3) If all wheels of the axle concerned are locked on the rollers of a brake tester and it is difficult to measure the braking forces beyond this point, it is permissible to regard that the value divided by the axle weight of the axle concerned has reached 4.90 N/kg or more under those conditions (if “kgf” is used as measurement unit for indicating braking forces, 50% of the axle concerned).

#### **Article 94** (Brake Systems for Tractors and Trailers)

1. The requirements prescribed in the Announcement of Article 13 of the Safety Regulations in connection with the braking performance under the coupled condition of the tractor and trailer shall be the requirements prescribed in Attachment 93 “Technical Standard for Prevention of Lag in Braking Coupled Motor Vehicles” and the requirements prescribed in the next Paragraph through Paragraph 7.

2. The brake systems for tractors and trailers shall comply with the requirements of Items (3) and (8), Paragraph 2 of the preceding Article as well as the following requirements when the tractor and trailer are in the coupled state.

(1) In cases where trailers are drawn by motor vehicles of Paragraph 2 or 3 of the preceding Article, the requirements prescribed in Item (10), Paragraph 2 of the same Article;

(2) In cases where trailers are drawn by motor vehicles of Paragraph 5 of the preceding Article, the requirements of Item (9) of the same Paragraph.

3. Trailers enumerated in Items (2) and (3), Paragraph 7 of the preceding Article need not be provided with a service brake system in cases where the requirements of Item (3), Paragraph 2 and Item (4), Paragraph 5 of the said Article are complied with by only the service brake system of the tractor coupled therewith.

4. The brake system for tractors and trailers (except those for trailers which are constructed to operate when the trailer approaches the tractor drawing it (hereinafter referred to as the “inertial brake system”)) shall be constructed to stop the tractor and trailer, respectively, when they are detached during operation. However, this provision shall not apply to the brake system for trailers (except semi-trailers) with a gross vehicle weight of 1.5 tons or less

and with one axle, which are capable of preventing the coupling device from coming into contact with the ground when detached and of keeping the trailer coupled with the tractor.

5. The service brake systems for tractors (except large-sized special motor vehicles with a maximum speed of less than 35 km/h, small-sized special motor vehicles for agricultural use and motor vehicles with a maximum speed of 25 km/h or less) and trailers (except motor vehicles provided with an inertial brake system) shall comply with the following requirements when the tractor and trailer are in the coupled state:

- (1) In cases where trailers are drawn by motor vehicles of Paragraph 2 or 3 of the preceding Article, the requirements prescribed in Item (9), Paragraph 2 of the same Article;
- (2) In cases where trailers are drawn by motor vehicles of Paragraph 4 of the preceding Article, the requirements of Item (5) of the same Paragraph;
- (3) In cases where trailers are drawn by motor vehicles of Paragraph 5 of the preceding Article, the requirements of Items (5) and (8) of the same Paragraph.

6. The service brake systems for tractors and trailers with a gross vehicle weight exceeding 7 tons (except trailers with a gross vehicle weight of 10 tons or less and trailers drawn by large-sized special motor vehicles with a maximum speed of less than 35 km/h, small-sized special motor vehicles for agricultural use or motor vehicles with a maximum speed of 25 km/h or less) shall comply with the following requirements when the tractor and trailer are in the coupled state:

- (1) In cases where trailers are drawn by motor vehicles of Paragraph 2 of the preceding Article, the requirements of Items (11) and (12) of the same Paragraph;
- (2) In cases where trailers are drawn by motor vehicles of Paragraph 5 of the preceding Article, the requirements of Item (10) of the same Paragraph.

7. Trailers with a gross vehicle weight of 750 kg or less drawn by motor vehicles of Paragraph 3 of the preceding Article need not be provided with a service brake system in the case of any of the following Items:

- (1) Cases where the requirements prescribed in Paragraph 2-1-2 of

Attached Sheet 1 of Attachment 12 “Technical Standard for Passenger Motor Vehicle Braking System” as well as the requirements prescribed in Item (3), Paragraph 2 of the preceding Article are complied with by only the service brake system of the tractor coupled therewith;

- (2) Cases where the gross vehicle weight of the trailer concerned will not exceed 1/2 the vehicle weight of a tractor drawing it.

**Article 95** (Suspension System)

1. The requirements prescribed in the Announcement of Paragraph 1 of Article 14 of the Safety Regulations in connection with the strength, suspension performance, etc. of the suspension system, such as springs, shall be the requirements prescribed in the following Paragraph.

2. The suspension system, such as springs, shall have sufficient capacity to absorb shocks from the ground and ensure safe operation. In this case, the suspension system, such as springs, enumerated in each of the following Items shall be regarded as not complying with this requirement.

- (1) Springs which exhibit damage or spring leaves which exhibit excessive displacement of leaves or springs in which there is a considerable difference in deflection between the right and left springs.
- (2) Centre bolts, U-bolts, clip bolts and nuts or clip bands which exhibit damage, missing or looseness.
- (3) Brackets or sliding seats which exhibit damage, or whose mountings exhibit looseness.
- (4) Shackles or shackle pins which exhibit excessive wear.
- (5) Arms, etc., such as suspension arms; rods, etc., such as torque rods, or stabilizers, etc. which exhibit damage, or whose mountings exhibit excessive play.
- (6) Dust boots of arms, etc., such as suspension arms, which exhibit damage.
- (7) Air spring bellows, etc. which exhibit damage or air leakage, or air springs in which there is a considerable difference in height between the right and left air springs.

- (8) Spring ends which are detached from their brackets or likely to detach therefrom.
- (9) Struts which exhibit damage, or strut mountings which exhibit looseness.
- (10) Shock absorbers which exhibit excessive fluid leakage, gas leakage or damage, or shock absorber mountings which exhibit looseness.
- (11) Suspension systems in which shock absorbers are detached.
- (12) Oleo systems which exhibit excessive fluid leakage.
- (13) Fork rocker arm mountings which exhibit excessive play or looseness.
- (14) Springs, stabilizers, etc. which use such parts which have undergone repairs, such as welding, padding or heat treatment, thus hampering their functions.
- (15) Those which come under one of the following categories due to modifications.
  - A. Part or the entire portion of a spring is removed due to cutting, etc.
  - B. Springs employing clamps which may hamper the function of the springs.
  - C. Springs whose installation method may hamper the function of the springs.

**Article 96 (Fuel System)**

1. The requirements prescribed in the Announcement of Paragraph 1 of Article 15 of the Safety Regulations in connection with the strength, construction, installation method, etc. of the fuel system of motor vehicles fueled by gasoline, kerosene, light oil, alcohol or any other inflammable liquid shall be the requirements prescribed in each of the following Items.

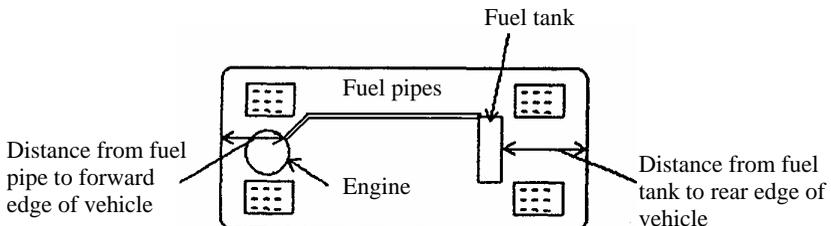
- (1) The fuel tank and its piping shall be secure and fixed so that they may not be damaged by vibrations, impacts, etc. In this case, the fuel tank and its piping enumerated below shall be regarded as not complying with this requirement.

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- A. Pipes (excluding protective materials in cases where such protective materials are wound around the pipes) which exhibit traces caused by contacting with other sections during running, or which are likely to contact them.
- B. Fuel tanks, pipes or joints which exhibit fuel leakage.
- (2) Plastic fuel tanks mounted on motor vehicles used exclusively for carriage of passengers with a passenger capacity of 10 persons or less shall comply with the requirements prescribed in Attachment 16 “Technical Standard for Plastic Fuel Tanks for Passenger Motor Vehicles.”
- (3) The filler and gas vent of a fuel tank shall not leak fuel when the vehicle is shaken.
- (4) The filler and gas vent of a fuel tank shall not have their openings facing the direction of the exhaust pipe. They shall be located at least 300 mm away from the opening of exhaust pipe.
- (5) The filler and gas vent of a fuel tank shall be located at least 200 mm away from any exposed electric terminals or switches;
- (6) The filler and gas vent of a fuel tank shall not open to the inside of any vehicle compartment with seats or standing space (except the driver’s compartment separated by a partition).
2. The fuel system having the same construction and provided at the same position as the fuel tank and piping mounted on designated motor vehicles, etc. which exhibits no damage liable to hamper its function shall be regarded as complying with the requirements prescribed in Items (1) and (2) of the preceding Paragraph.
3. The requirements prescribed in the Announcement of Paragraph 2 of Article 15 of the Safety Regulations in connection with the performance, etc. of the fuel tank and pipes of ordinary-sized motor vehicles, small-sized motor vehicles or mini-sized motor vehicles fueled by gasoline, kerosene, light oil, alcohol or any other inflammable liquid (except motor vehicles with a passenger capacity of 11 persons or more, motor vehicles with a gross vehicle weight exceeding 2.8 tons, motor cycles with or without sidecar, and mini-sized motor vehicles with caterpillar tracks and sleds) shall be the requirements prescribed in Attachment 17 “Technical Standard for Fuel Leakage in Collisions, etc.” In this case, the fuel system enumerated in each of the following Items shall be regarded as complying with this requirement.

- (1) Fuel systems having the same construction and provided at the same position as the fuel tank and piping mounted on designated motor vehicles, etc. which exhibit no damage, etc. liable to hamper their functions;
- (2) Fuel systems for which the document proving compliance with the Safety Regulations has been submitted.

4. Those devices enumerated in each of the following Items, for which the implementation of a destructive test is proved to be extremely difficult, shall be regarded as complying with the requirements of Paragraph 2 of Article 15 of the Safety Regulations, under the provision of the proviso of Article 1-3 of the Safety Regulations.

- (1) Fuel tanks and piping which meet all the requirements below;
  - A. The horizontal distance from the most forward edge of the fuel tank and pipings to the front edge of the motor vehicle, parallel to the longitudinal centre line of the motor vehicle, is 420 mm or more, and the horizontal distance from the most rearward edge of the fuel tank and pipings to the rear edge of the motor vehicle, parallel with the longitudinal centre line of the motor vehicle, is 65 mm or more.



- B. The fuel tank and pipes (excluding those provided in the wheelbase) shall not be exposed to outside, excluding the underside exposure.
  - C. Fuel systems having no sharp projection near the fuel tank and pipes which may cause damage in collision.
- (2) Fuel systems for which the document proving compliance with Regulation No. 34 of the “Agreement concerning the Adoption of

Uniform Technical Prescriptions for Wheeled Vehicles, Equipment and Parts Which Can Be Fitted and/or Be Used on Wheeled Vehicles and the Conditions for Reciprocal Recognition of Approvals Granted on the Basis of These Prescriptions” has been submitted.

**Article 97** (Fuel System of Motor Vehicles Whose Fuel Is Producer Gas)

The requirements prescribed in the Announcement of Article 16 of the Safety Regulations in connection with the strength, installation method, etc. of the fuel system of motor vehicles whose fuel is producer gas shall be the requirements prescribed in each of the following Items.

- (1) The gas producer and its piping shall be secure and be mounted in such a way that they may not be damaged by vibration or impact, etc.
- (2) The part of the vehicle body which faces the combustion chamber of the gas producer shall be covered with a suitable heat insulator.
- (3) The distance between a gas producer and heat insulator shall be 50 mm or more.
- (4) No hot parts of the piping shall be in contact with a combustible part of the body.
- (5) If loaded goods are likely to come in contact with the gas producer, there shall be a suitable partition provided between the gas producer and the goods-loading accommodation.

**Article 98** (Fuel System of Motor Vehicles Whose Fuel Is High-Pressure Gas)

1. The requirements prescribed in the Announcement of Paragraph 1 of Article 17 of the Safety Regulations in connection with the strength, installation method, etc. of the fuel system of motor vehicles whose fuel is high-pressure gas (except motor vehicles of Paragraph 3) shall be the requirements prescribed in each of the following Items.

- (1) The gas container shall be constructed and have the performance in Articles 7 and 17 of the Safety Regulations for Containers (Ministry of International Trade and Industry Ordinance No. 50 of 1966). In this case, those which can be confirmed by any of the following methods shall be regarded as complying with this requirement.

- A. High-pressure gas container which has not undergone the container re-inspection

It shall be confirmed whether the container concerned bears a valid stamping or a mark by the container inspection provided for in Article 45 of the High-Pressure Container Control Act (Law No. 204 of 1951) or by Article 49-25 (including cases where it applies *mutatis mutandis* in Paragraph 2 of Article 49-33 of the said Act). In this case, the container for the fuel system of compressed natural gas-fueled motor vehicles (referring to, of gas containers of motor vehicles fueled by compressed natural gas (referring to high-pressure gas containing methane gas as main component. Hereinafter the same), the container for the fuel system of compressed natural gas-fueled motor vehicles provided for in Item (10) of Article 2 of the Safety Regulations for Containers) bears a mark near the fuel filling port according to Article 46 of the said Act. Hence, confirmation can be made by this mark.

- B. High-pressure gas container which has undergone the container re-inspection

It shall be confirmed whether the container concerned bears a valid stamping or a mark according to Article 49 of the said Act. In the case of the container for the fuel system of compressed natural gas-fueled motor vehicles, confirmation shall be made as to whether a valid mark is put near the fuel filling port according to the said Article.

- (2) The gas container and the conduit pipes for liquefied petroleum gas (which means the liquefied gas of the chief ingredient being propane or butane gas; hereinafter the same) shall be constructed so that gas may be filled without unfixing the container.
- (3) The gas container, except those located outside the vehicle body, shall be located where an airtight partition wall against the vehicle compartment with seats or standing space is provided and also it is properly ventilated to the outside of the vehicle body. In this case, the inspection shall be conducted in accordance with the following Items A. and B. for motor vehicles whose fuel is liquefied petroleum gas or compressed natural gas. As a result, those which fall under Item C. shall be regarded as not complying with this requirement.

- A. Motor vehicles where the gas container or the gas container valve

and safety valve, etc. are housed in a fixed container case and they are located in the luggage compartment, etc.

(1) Methods employing carbonic acid gas:

Insert a carbonic acid gas hose whose nozzle diameter is 4 mm (or 6 mm dia.) into one of ventilation holes of the container case. After sealing all of the ventilation holes, fill compressed carbonic acid gas that is pressurized to 9.8 kPa for 30 seconds into the container case. Under this condition, inspect to see whether any gas leakage from the container case is present, using a carbonic acid gas detector.

(2) Method employing a smoke agent:

Insert an air hose whose nozzle diameter is 4 mm (or 6 mm dia.) into one of ventilation holes of the container case. After sealing all of the ventilation holes, fill compressed air which contains smoke generated by a smoke agent that has been pressurized to 9.8 kPa for 30 seconds into the container case. Under this condition, inspect visually to see whether any smoke leakage from the container case is present.

B. Motor vehicles where the gas container or the gas container valve and safety valves, etc. are installed in the luggage compartment, etc. by using other methods than those in Item A.

(1) Methods employing carbonic acid gas:

Insert a carbonic acid gas hose whose nozzle diameter is 4 mm (or 6 mm dia.) into one of ventilation holes of the gas container compartment. After sealing all of the ventilation holes, fill compressed carbon acid gas that is pressurized to 490 kPa (294 kPa in the case of a 6 mm dia. nozzle) for 30 seconds into the gas container compartment. Under this condition, inspect to see whether any gas leakage to the passenger compartment occurs, using a carbonic acid gas detector.

(2) Method employing a smoke agent:

Insert an air hose whose nozzle diameter is 4 mm (or 6 mm dia.) into one of ventilation holes of the gas container compartment. After sealing all of the ventilation holes, fill

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compressed air which contains smoke generated by a smoke agent that has been pressurized to 490 kPa (291 kPa in the case of 6 mm dia. nozzle) for 30 seconds into the gas container compartment. Under this condition, visually inspect to see whether any gas leakage to the passenger compartment occurs.

C. Evaluation of airtightness examination results

- (1) When employing carbonic acid gas, cases where the gas concentration in the detecting tube of the carbonic acid gas detector exceeds 0.05%.
- (2) When employing a smoke agent, cases where the smoke leaks into the passenger compartment.

D. Omission of airtightness examination

- (1) Those in which the gas container valve, safety valves, etc. are housed securely in the same container case as that at the time of installing the gas container, and the said container case is free from any risk of damaging the airtight performance (except for the container cases to be installed in motor vehicles for which fuel is changed to liquefied petroleum gas or compressed natural gas).
  - (2) Those which are recognized to have the airtightness performance by means of other procedures.
- (4) The gas containers and conduit pipes shall be securely fixed so that they may not move or be damaged. Any part thereof which is likely to be damaged shall be protected by suitable covering. Moreover, in the case of a gas container for soluble acetylene gas, the container shall be mounted so that the gascock opens upwards and that the original state of porous material inside the container may not be changed. In this case, those enumerated below shall be regarded as not complying with this requirement.
- A. Mountings of the gas container and mountings of the pipes which exhibit looseness or damage.
  - B. Conduit pipes (excluding protective materials in cases where such protective materials are wound around the conduit pipes to protect them) which exhibit traces caused by making contact with other components during running, or which are likely to contact with

them.

- (5) If the gas container and conduit pipes are located in a position where they are likely to be exposed to considerable heat from the exhaust pipe, silencer, etc., there shall be a suitable heat-prevention device. In this case, those which are exposed to direct sunrays shall be covered with a suitable sunshade or the like.
- (6) Conduit pipes shall be of fiberglass-reinforced plastics or annealed steel or copper (fiberglass-reinforced plastics or annealed steel for high-pressure gases containing acetylene gas). However, those used on the low-pressure side and for liquefied petroleum gas may be of oil-proof rubber.
- (7) The conduit pipe (except oil-proof rubber hoses), each end of which is fixed, shall be provided with flexible section in the middle and also by held by a stay every meter or less.
- (8) For a fuel system using a high pressure gas containing acetylene gas, no copper material shall be used on any part which comes into contact with the gas in the fuel system.
- (9) The high-pressure pipe line (referring to a pipe from the gas container to the first pressure-reducing valve. Hereinafter the same in this Item.) shall be able to withstand the pressure of 1.5 times of the gas filling pressure in the gas container. In this case, if there is a likelihood that the high-pressure pipe line fails to comply with this requirement, the air-tight inspection shall be conducted in accordance with the methods enumerated in Items A. through C. given below. As a result of the air-tight inspection, the high-pressure pipe line of a motor vehicle fueled by liquefied petroleum gas or compressed natural gas which complies with the requirement of Item D. shall be regarded as complying with this requirement.

A. Method employing detecting liquid

With the liquid draining valve of the gas container fully opened, apply detecting liquid (e.g. soapy water) to each of the pipes and joints. Inspect to see if any gas leakage is present at the pipes by observing any bubbles.

B. Method using a gas detector

With the liquid draining valve of the gas container fully opened, let

the detecting section of the gas detector come in contact with each of the pipes and joints. Inspect to see if any gas leakage is present at the pipes.

C. Method employing a pressure gauge

Install a pressure gauge in the pipe. Fill the pipes for one minute with incombustible gas set to the normal pressure of liquefied petroleum gas or compressed natural gas. See if any drop in pressure takes place by observing the pressure gauge attached to the pipes.

D. When subjected to the airtight inspection conducted in accordance with Items A. through C. above, there shall be no gas leakage as proven by bubbles or a drop in pressure.

- (10) The main stop valve shall be located in a place easily operated by the driver, and a gas-filling valve near the gas filling inlet port.
- (11) The fuel system of a motor vehicle whose fuel is high pressure gas other than liquefied petroleum gas shall be provided with a pressure gauge which indicates the inlet port pressure of the first pressure-reducing valve.
- (12) The fuel system of a motor vehicle whose fuel is compressed natural gas shall be provided with a safety device capable of efficiently preventing significant pressure rise on the low-pressure side. However, this provision shall not apply to such a fuel system in which the low-pressure side of the final pressure-reducing valve is open to the air.
- (13) Safety devices shall be mounted so that the gas discharged may not leak into the vehicle compartments.
- (14) The fuel system of a motor vehicle whose fuel is high pressure gas containing acetylene gas shall be provided, between the final pressure-reducing valve and the intake manifold of the engine, with a back-fire prevention device.

2. The requirements prescribed in the Announcement of Paragraph 2 of Article 17 of the Safety Regulations in connection with the strength, installation method, etc. of the fuel system of motor vehicles whose fuel is liquefied petroleum gas shall be the requirements prescribed in each Item of the preceding Paragraph as well as the requirements prescribed in Items (4) through (6), Paragraph 1 of Article 96. In this case, the phrase "The filler and

gas vent of a fuel tank” shall read as “the filling port of a gas container.”

3. The requirements prescribed in the Announcement of Paragraph 1 of Article 17 of the Safety Regulations in connection with the strength, construction, installation method, etc. of fuel systems of motor vehicles fueled by compressed hydrogen gas (except motor cycles with or without sidecar) shall be the requirements prescribed in each of the following Items:

(1) Gas containers shall have construction and performance prescribed in Articles 7 and 17 of the Safety Regulations for Containers. In this case, those which can be confirmed by any of the following methods shall be regarded as complying with this requirement:

A. High-pressure gas containers which have never undergone re-inspection of container

It shall be confirmed that the container bears a valid stamping or a mark according to Article 45 of the High-Pressure Gas Safety Act or Article 49-25 (including cases where application is made mutatis mutandis in Paragraph 2 of Article 49-33 of the said Law).

B. High-pressure gas containers which have undergone re-inspection of container

It shall be confirmed that the container bears a valid stamping or a mark according to Article 49 of the said Law.

(2) Fuel systems shall comply with the requirements prescribed in Attachment 100 “Technical Standard for Fuel Systems of Motor Vehicles Fueled by Compressed Hydrogen Gas.” In this case, the compliance with this Technical Standard shall be evident from a document describing the results of tests, etc. conducted by a public testing institute, etc. designated separately.

4. The requirements prescribed in the Announcement of Paragraph 3 of Article 17 of the Safety Regulations in connection with the performance of preventing fuel leakage, etc. of the gas container, piping, or other devices on the hydrogen gas flow passage of ordinary-sized motor vehicles or small-sized motor vehicles used exclusively for carriage of passengers, or mini-sized motor vehicles, fueled by compressed hydrogen gas (except motor vehicles with a passenger capacity of 11 persons or more, motor vehicles with a gross vehicle weight exceeding 2.8 tons, motor cycles with or without sidecar, and mini-sized motor vehicles with caterpillar tracks and sleds) shall

be the requirements prescribed in Attachment 17. In this case, devices enumerated in each of the following Items shall be regarded as complying with this requirement:

- (1) Devices having the same construction and provided at the same position as the gas container, piping and other devices on the hydrogen gas flow passage mounted on designated motor vehicles, etc., which exhibit no damage liable to hamper their functions; and
- (2) Devices for which the document proving compliance with the requirements prescribed in Attachment 17 has been submitted.

5. Those devices enumerated in each of the following Items, for which the implementation of a destructive test is proved to be extremely difficult, shall be regarded as complying with the requirements of the preceding Paragraph, under the provision of the proviso of Article 1-3 of the Safety Regulations:

- (1) Gas containers, container main valves and container safety valves shall be installed at a position where the horizontal distance from the most forward edge thereof to the front edge of the motor vehicle, parallel to the longitudinal centre line of the motor vehicle, is 420 mm or more, and the horizontal distance from the most rearward edge thereof to the rear edge of the motor vehicle, parallel to the longitudinal centre line of the motor vehicle is 300 mm or more; and
- (2) The installation section of a gas container shall not be broken by acceleration of  $\pm 196 \text{ m/s}^2$  in the running direction under a condition that the gas container is filled with compressed hydrogen gas at the general-use pressure (referring to the general-use pressure of Paragraph 2-4 of Attachment 100). In this case, the compliance with the requirements concerning the acceleration shall be proven by a method of calculation or by the motor vehicle manufacturer.

#### **Article 99** (Electrical System)

1. The requirements prescribed in the Announcement of Paragraph 1 of Article 17-2 of the Safety Regulations in connection with the installation position, installation method, etc. of the electrical system shall be the requirements prescribed in each of the following Items.

- (1) Electrical wiring located inside the vehicle compartment or the place for a gas container with a partition wall, such as the luggage compartment (hereinafter referred to as “the vehicle compartment,

etc.”), shall be covered with an insulator and fixed to the body.

- (2) Electric terminals, switches and other electrical systems which are likely to spark and are located in the vehicle compartment, etc. shall be suitably covered so that they may not be damaged or shorted by occupants or loaded goods and they may not injure occupants and damage loaded goods by electric sparks, etc. In this case, electric terminals and switches located behind the instrument panel or mounted at a closed section under the seats shall be regarded as being suitably covered.
- (3) The storage battery shall be fixed so that it may not move or be damaged by vibration, impacts, etc. Furthermore, the battery in the vehicle compartment, etc. shall be covered with a wooden case or other insulating material. In this case, the phrase “shall be covered with a wooden case or other insulating material” refers to a condition where the terminal section of the battery (the upper section of the battery box) is covered completely by appropriate insulating material. The side or lower section of the battery need not be covered by insulating material.
- (4) The radio wave emitted from the electrical system shall not cause continuous and serious damage to the function of the wireless equipment. In this case, motor vehicles which do not have a radio interference control device, such as high-voltage resistive wire, external resistor, etc. for preventing motor vehicle radio noise, shall be regarded as not complying with this requirement.

2. The requirements prescribed in the Announcement of Paragraph 2 of Article 17-2 of the Safety Regulations in connection with the performance and construction of protecting the occupants as the one that is unlikely to cause injuries, etc. to the occupants by high voltage of the electrical system of fuel cell vehicles (except motor cycles with or without sidecar) shall be the requirements prescribed in Attachment 101 “Technical Standard for Protection of Occupants Against High Voltage in Fuel Cell Vehicles.” In this case, the following electrical systems shall be regarded as complying with this requirement:

- (1) Electrical systems having the same construction and provided at the same position as the electrical system mounted on designated motor vehicles, etc., which exhibit no looseness or damage liable to hamper their functions; and
- (2) Those for which the document proving compliance with the requirements prescribed in Attachment 101 has been submitted.

**Article 100** (Frame and Body)

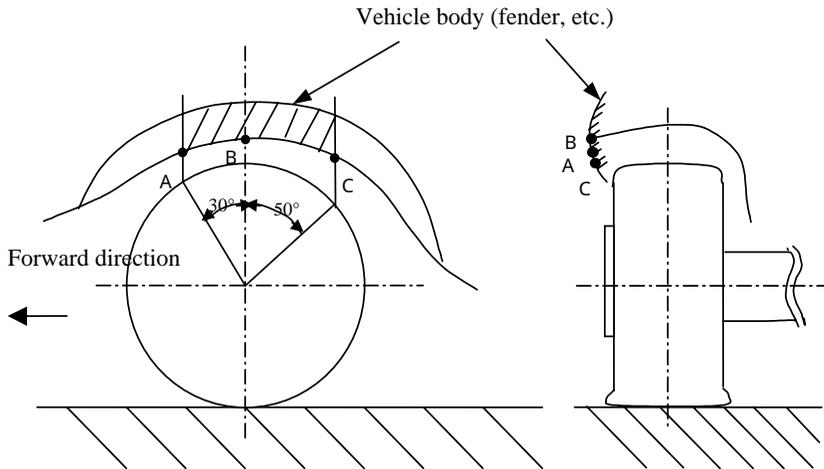
1. The requirements prescribed in the Announcement of Item (1), Paragraph 1 of Article 18 of the Safety Regulations in connection with the strength, installation method, etc. of the frame and body shall be the requirements prescribed in each of the following Items.

- (1) The frame and body shall be secure so that they may fully withstand vehicle operation.
- (2) The body shall be firmly fixed to the frame so that it may not be loosened by vibration, impacts, etc.
- (3) The frame and body shall not be severely damaged.

2. The requirements prescribed in the Announcement of Item (2), Paragraph 1 of Article 18 of the Safety Regulations in connection with the external shape of the vehicle body and other shape of motor vehicles shall be that the external shape of the vehicle body and other shape of motor vehicles have no sharp edge or rotating protrusions which are likely to endanger other traffic. In this case, the following frame and body shall be regarded as complying with this requirement.

- (1) When a motor vehicle is in a straight-ahead posture, the rotating parts of the running system (e.g. tyres, wheel-steps, and wheel caps) which lie between two planes; one plane is passing through the axle centre and intersecting with the vertical plane including the axle centre at an angle of 30 degrees forward, and the other plane passing through the axle centre and intersecting with the vertical plane including the axle centre at an angle of 50 degrees backward; which are not protruding in the outward direction of the motor vehicle from the body sections (e.g. fenders) immediately above the said rotating parts.

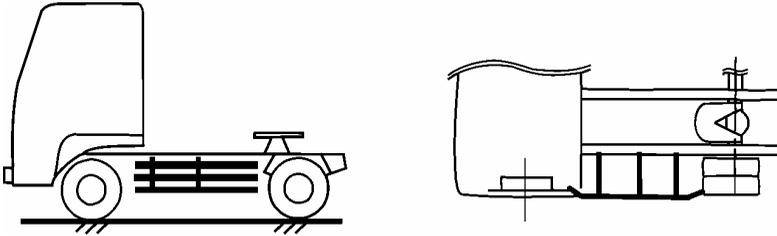
(Referential diagram)



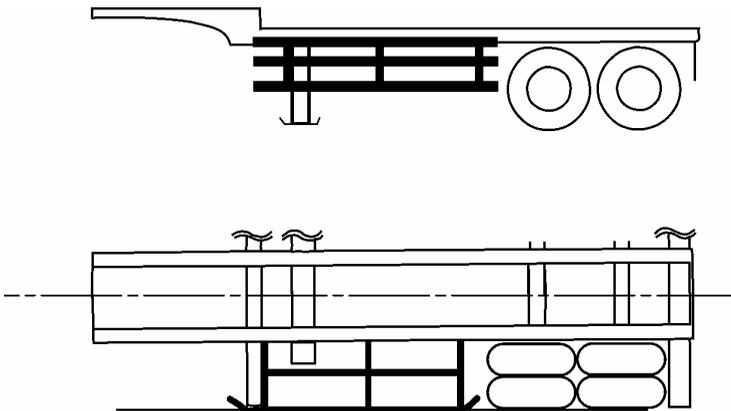
- (2) Rear wheels of an ordinary-sized motor vehicles for carriage of goods which are equipped with pedestrian protection side-guards, etc. which comply with the requirements of Paragraph 1 of Article 18-2 of the Safety Regulations and whose flat portions are at the outer side of the straight line which connects each of the intersections of a vertical line at the outermost point (excluding those portions below the axle centres) of the rotating parts, such as wheels, on the vertical planes passing through the respective axle centres of the outermost front and rear wheels and the ground-contact section (in the case of a trailer without any front wheels, the straight line which passes the intersection of a vertical line at the outermost point (excluding those portions below the axle centres) of the rotating parts, such as wheels, on the vertical plane passing through the axle centre of the outermost rear wheels and the ground-contact section and in parallel with the longitudinal centre line of the motor vehicle).

## (Referential diagram)

(Example 1)



(Example 2)



- (3) Air spoilers mounted on motor vehicles used exclusively for carriage of passengers with a passenger capacity of 10 persons or less, and motor vehicles used for the transport of goods with a gross vehicle weight of 2.8 tons or less (except those mounted on motor cycles with or without sidecar and mini-sized motor vehicles with caterpillar tracks and sleds), which comply with the following requirements.

- A. The air spoiler shall not constitute the most forward point or the most backward point of the motor vehicle at any point of the front part or the rear part of the motor vehicle. However, this provision shall not apply to those parts that are situated below the lower edge of each bumper and where the curvature radius of the corner parts of those areas where a 100 mm diameter sphere can make static

contact (except for its parts lower than the geometrical locus (hereinafter referred to as the “floor line”) of the contact point when a cone, in which the angle between the vertical line and the generatrix is 30°, is moved while being statically brought in contact with the external surface of the motor vehicle) is 5 mm or more, or where the hardness of corner parts is 60 shore (A) or less.

- B. The air spoiler (except for its parts lower than the lower edge of each bumper and its parts higher than a 1.8 m high point above the ground) shall not have any corner parts with a curvature radius of less than 2.5 mm at those areas where a 100 mm diameter sphere can make static contacts. However, this provision shall not apply to cases where the hardness of the corner parts is 60 shore (A) or less, or the height of the corner parts is less than 5 mm, or the distance between the adjacent corner parts (referring to the distance between the contact points when a 100 mm diameter sphere makes static contacts with the two corner parts concerned) is 40 mm or less and the corner parts concerned comply with the requirements regarding the shapes of the corner parts set forth in the next table.

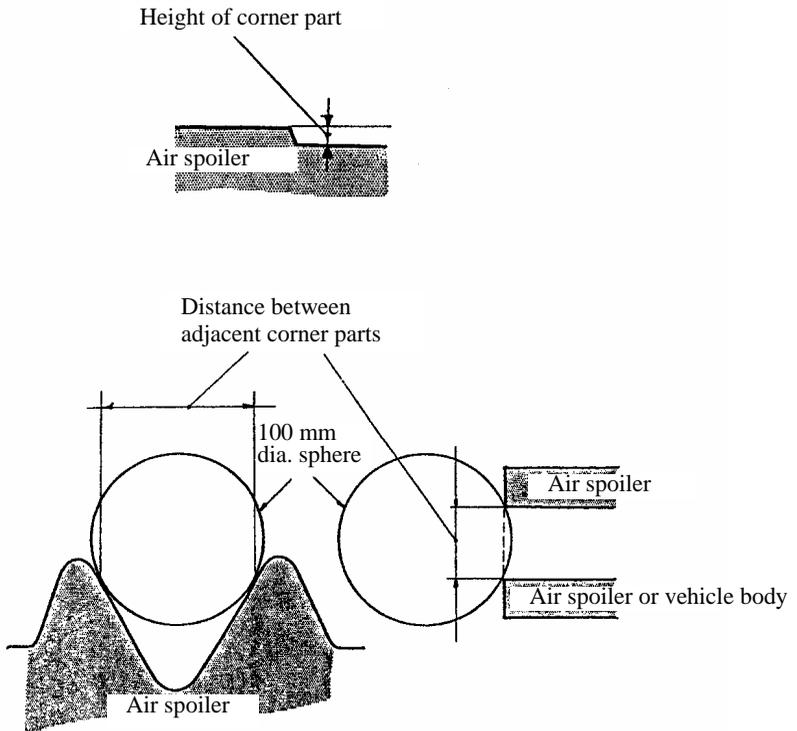
Height of corner parts (h)	Shape of corner parts	Distance of adjacent corner parts ( $\delta$ )	Shape of corner parts
h < 5 mm	The corner parts shall not have any parts pointed outward or sharp edge.	$25 < \delta \leq 40$ mm	The curvature radius of the corner of the corner parts shall be 1.0 mm or more.
		$\delta \leq 25$ mm	The curvature radius of the corner parts shall be 0.5 mm or more.

- C. The air spoiler shall not constitute the outermost part of the vehicle body at its adjacent sections (the outermost part of the motor vehicle for the parts below the upper edge of each bumper).
- D. The air spoiler shall have no wing-shaped overhangs extending to the side (hereinafter referred to as the “Wings”). However, this provision shall not apply to cases where the gap between the side edge of the wing and the vehicle body is extremely small, for example, the gap between the side edge of the wing and the vehicle body is not exceeding 20 mm, or cases where the side edge of the wing is situated 165 mm or more inward from the outermost part of the body of the motor vehicle concerned, or cases where the parts of the wing whose side edge is not situated 165 mm or more

inward from the outermost part of the vehicle body are constructed so that they may reduce the impact in the event of contact with pedestrians. In this case, those whose wing section not situated 165 mm or more inward from the outermost part of the vehicle body can yield, turn, or drop shall be regarded as an example of “the parts of the wing whose side edge is not situated 165 mm or more inward from the outermost part of the vehicle body are constructed so that they may reduce the impact in the event of contact with pedestrians.”

- E. The air spoiler shall be securely attached to the vehicle body by welding, bolts, nuts, adhesive agents and so forth.

(Example) Examples of Height and Distance Concerning Corner parts



- 3. The following air spoiler which exhibits no damage, etc. shall be

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regarded as complying with the requirements prescribed in Item (3) of the preceding Paragraph.

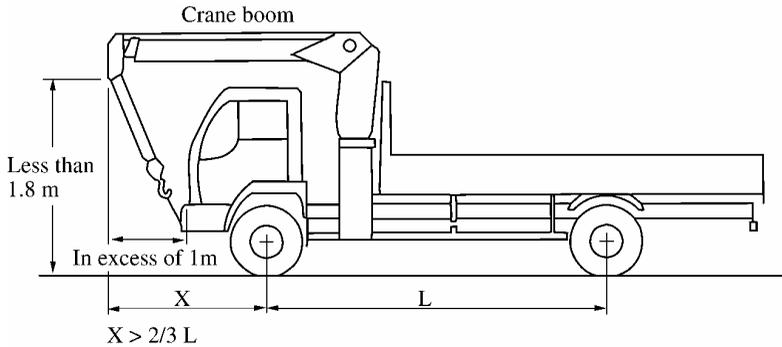
- (1) Air spoilers having the same construction and provided at the same position as the air spoiler mounted on designated motor vehicles, etc.;
- (2) Air spoilers having the same construction and provided at the same position as the air spoiler mounted on motor vehicles for which device type designation has been granted in connection with the external projections pursuant to the provision of Paragraph 1 of Article 75-2 of the Act.

4. The frame and body which fall under any of the following Items when the windows, entrance doors, etc. of the motor vehicle are all closed shall be regarded as the examples not complying with the requirements of Paragraph 2:

- (1) Edges of bumpers which are likely to catch the clothes of pedestrians;
- (2) Those motor vehicles used exclusively for carriage of passengers with a passenger capacity of less than 10 persons (except motor cycles with or without sidecar, three-wheeled motor vehicles, mini-sized motor vehicles with caterpillar tracks and sleds, and trailers) which have a projection of 5 mm or more in length, and of less than 2.5 mm in radius of curvature at the end, from the vehicle body or the base (excluding the part above the height of 2.0 m, the part below the floor line, those which do not contact a 100 mm-radius globe at the contour including the vehicle body, grills for air intake or air delivery at intervals of 40 mm or less, those whose projections are no more than 60 shores-A durometer, windshield wipers, wiper blades of headlamp washers and their supporting parts, part of bumpers within 20 mm from the bumper contour line, rotating parts of wheels, turned parts of body panels whose radius of curvature is 10% or more of the projection height, and the end of deflectors attached to the side of the vehicle).
- (3) Antennas installed on the motor vehicles used exclusively for carriage of passengers with a passenger capacity of less than 10 persons (limited to those installed lower than 2.0 m in height), partially or totally projected from the outermost of the vehicles.
- (4) Wheels, wheel nuts, hub caps and wheel caps installed on motor vehicles used exclusively for carriage of passengers with a passenger capacity of less than 10 persons, having sharp projections from the outermost of the wheel rims.

- (5) Outward-opening windows installed on motor vehicles used exclusively for carriage of passengers with a passenger capacity of less than 10 persons (limited to those installed lower than 2.0 m in height), partially or totally projected from the outermost of the motor vehicle, or with the edges being oriented in the direction of forward movement.
- (6) Rear-view mirrors whose installation has sharp projections;
- (7) Ornaments in shape of propeller to be installed on wheels, such as spinners and wing nuts;
- (8) Lever door handles whose tip ends are oriented in the direction of forward movement of the vehicle (excluding those unlikely to impede the traffic safety, such as handles with the tip ends bent inside or those with protection devices);
- (9) Crane booms of simple cranes mounted on trucks whose forward projection amount and the installation height of the forward end of the crane boom come under the categories given below:
  - A. Cases where the horizontal distance between the centre of the most forward axle and the most forward point of the crane boom exceeds  $\frac{2}{3}$  of the wheelbase;
  - B. Cases where the horizontal distance between the most forward point of the motor vehicle, except for the crane section, and the most forward point of the crane boom exceeds one meter;
  - C. Cases where the height of the lower edge of the most forward point of the crane boom is less than 1.8 m above the ground.

(Referential diagram)



(10) Fairings installed on motor cycles, having sharp projections.

5. Motor vehicles other than those used exclusively for carriage of passengers with a passenger capacity of less than 10 persons (motor cycles with or without sidecar, three-wheeled motor vehicles, mini-sized motor vehicles with caterpillar tracks and sleds and trailers) and motor vehicles used exclusively for carriage of passengers with a passenger capacity of less than 10 persons (motor cycles with or without sidecar, three-wheeled motor vehicles, mini-sized motor vehicles with caterpillar tracks and sleds and trailers), manufactured on or before December 31, 2008, which are enumerated below, shall be regarded as complying with the requirement of Paragraph 2, notwithstanding the provisions of Items (2) through (5) of the preceding Paragraph.

(1) Rear bumpers (limited to those bumpers whose edges are located at a point near the side at the rear section of the body) which are installed at the rear section of motor vehicles used exclusively for carriage of passengers and motor vehicles whose shape is similar to that of motor vehicles used exclusively for carriage of passengers (e.g. trucks used for carriage of passengers, police patrol motor vehicles, etc.), and which come under the categories given below:

A. Bumpers which are built into the recessed part of the body;

B. Bumpers whose gap between the bumper's edge and the vehicle body is less than 20 mm, in which the end of the bumper will not contact with a sphere of a 100 mm diameter when such sphere is brought into contact with the vehicle body and bumper, and the

outermost part of the bumper is turned in toward the vehicle body.

- (2) Antenna mounting sections which are provided at a point 1.8 m or less above the ground and which are not projected above the outermost point of the vehicle body in close proximity to the antenna.
- (3) Designated motor vehicles, etc. which comply with Attachment 20 “Technical Standard for External Projections,” Attachment 21 “Technical Standard for Luggage Racks of External Projection” and Attachment 22 “Technical Standard for Radio Receiving and Transmitting Aerials of External Projections,” and whose external shape of the vehicle body and other shape of motor vehicles have the same construction as those of designated motor vehicles, etc. and which exhibit no damage liable to hamper their functions.
- (4) Those which have the same construction as the external projections for which device type designation has been granted pursuant to the provision of Paragraph 1 of Article 75-2 of the Act, and which exhibit no damage liable to hamper their functions.

6. The requirements prescribed in the Announcement of Item (3), Paragraph 1 of Article 18 of the Safety Regulations in connection with the horizontal distance between the centre of the rearmost axle of the motor vehicle and the rearmost part of the vehicle body (referring to the length measured, using a measuring tape or the like, in parallel with the longitudinal centre line of the motor vehicle with the motor vehicle placed on a flat surface in the unloaded state. Hereinafter the same) shall be that the horizontal distance between the centre of the rearmost axle and the rearmost part of the vehicle body is  $\frac{1}{2}$  ( $\frac{2}{3}$  in the case of motor vehicles which are so constructed that they may not carry a load protruding out of the rearmost part of the vehicle body, or  $\frac{11}{20}$  in the case of small-sized motor vehicles except those corresponding with the former) or less of the distance between the foremost and rearmost axles. In this case, the crane booms of the crane trucks or the goods loading accommodation provided on the outside of the passenger compartment of ski buses are included in the vehicle body, but the attached parts, such as bumpers, hooks and hinges, are not included. In the case of motor vehicle with automatic axle-lift device, the measurement shall be conducted, on one hand, for the status where the axle is lifted and, on the other hand, for the condition where the axle is forcibly lowered.

7. Motor vehicles enumerated below shall be regarded as “motor vehicles which are so constructed that they may not carry a load protruding out of the rearmost part of the vehicle body.”

- (1) Motor vehicles with no device to accommodate goods.
- (2) Motor vehicles whose devices to accommodate goods come under the following categories given below:
  - A. Tanks or the like;
  - B. Clamping devices used exclusively for carriage of containers.
- (3) Motor vehicles whose rear gate panels are not folded types and the gate panel height is 155 cm or more above the loading platform floor level.
- (4) Van type motor vehicles, etc. which have double doors, a single-side opening door or shutter type doors over the entire sections of the loading/unloading section at the rear.

8. The requirements prescribed in the Announcement of Paragraph 2 of Article 18 of the Safety Regulations in connection with the occupant protection performance of the frame and body in the event of frontal collision shall be the requirements prescribed in Attachment 23 “Technical Standard for Occupant Protection in Frontal Collision.” In this case, the frame and body enumerated in each of the following Items shall be regarded as complying with this requirement.

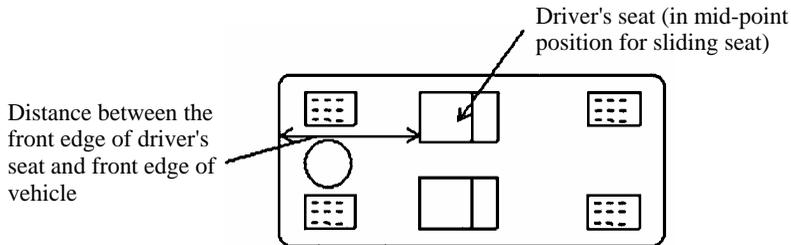
- (1) Frames and bodies in which the forward section of the driver’s seat is of the same construction as that of the designated motor vehicle, etc., which exhibit no damage liable to hamper the frontal-impact absorbing performance.
- (2) Motor vehicles for which the document proving compliance with the requirements prescribed in Attachment 23 “Technical Standard for Occupant Protection in Frontal Collision” has been submitted.

9. Those devices enumerated in each of the following Items, for which the implementation of a destructive test is proved to be extremely difficult, shall be regarded as complying with the requirements of Paragraph 2 of Article 18 of the Safety Regulations, under the provision of the proviso of Article 1-3 of the Safety Regulations.

- (1) Those which come under all of the following Items:
  - A. The horizontal distance parallel to the longitudinal centre line of the motor vehicle between the front edge of the driver’s seat (in the mid-point position for the seat concerned that is adjustable in a

fore-and-aft direction) and the front edge of the vehicle is equal to or longer than 750 mm.

(Figure)



B. The surface of the section located in front of the driver's seat and the seat which is parallel thereto and adjacent to the side of the motor vehicle is covered with impact-absorbing material and has no sharp projection.

- (2) Those for which the document proving compliance with Agreement Regulation No. 94 has been submitted.

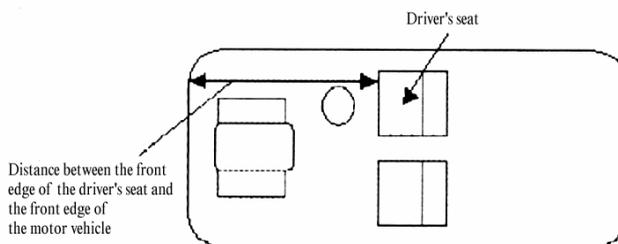
10. The requirements prescribed in the Announcement of Paragraph 3 of Article 18 of the Safety Regulations in connection with the occupant protection performance of the frame and body in the event of offset collision shall be the requirements prescribed in Attachment 100 "Technical Standard for Passenger Protection at Time of Offset Collision." In this case, the frame and body enumerated in each of the following Items shall be regarded as complying with this requirement:

- (1) Frames and bodies in which the forward section of the driver's seat is of the same construction as that of the designated motor vehicle, etc., which exhibit no damage liable to hamper the frontal-impact absorbing performance;
- (2) Those for which a document proving compliance with the requirements prescribed in Attachment 100 "Technical Standard for Passenger Protection at Time of Offset Collision" has been submitted;
- (3) Those for which a document proving compliance with the Agreement Regulation No. 94 has been submitted.

11. Those devices enumerated in each of the following Items, for which the implementation of a destructive test is proved to be extremely difficult, shall be regarded as complying with the requirements of Paragraph 3 of Article 18 of the Safety Regulations, under the provision of the proviso of Article 1-3 of the Safety Regulations.

- (1) Those which come under all of the following Items:
  - A. Those in which the horizontal distance parallel to the longitudinal centre line of the motor vehicle between the front edge of the driver's seat (in the mid-point position for the seat concerned that is adjustable in a fore-and-aft direction) and the front edge of the motor vehicle is equal to or longer than 750 mm;

(Figure)



- B. The surface of the section located in front of the driver's seat and the seat which is parallel thereto and adjacent to the side of the motor vehicle is covered with impact-absorbing material and has no sharp projection.
- (2) Those for which a document proving compliance with the Federal Motor Vehicle Safety Standard No. 208 has been submitted.

12. The requirements prescribed in the Announcement of Paragraph 4 of Article 18 of the Safety Regulations in connection with the occupant protection performance of the frame and body in the event of lateral collision shall be the requirements prescribed in Attachment 24 "Technical Standard for the Protection of the Occupants in the Event of A Lateral Collision." In this case, those enumerated in each of the following Items shall be regarded as complying with this requirement.

- (1) Frames and bodies which are of the same construction as that of the designated motor vehicles, etc. for the portion enclosing the driver's compartment and passenger compartment, and which exhibit no

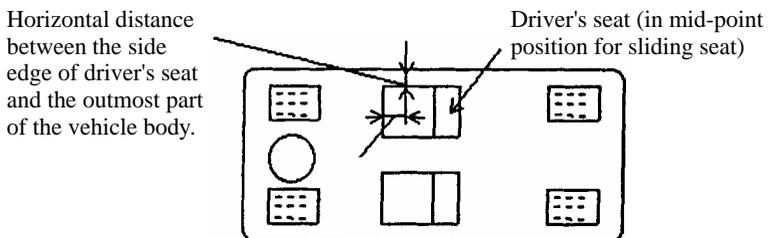
damage liable to hamper the side-impact absorbing performance.

- (2) Those which have the same construction as the occupant protection device in lateral collision whose type has been approved pursuant to the provision of Paragraph 1 of Article 75-2 of the Act, and which exhibit no damage liable to hamper the side-impact absorbing performance.
- (3) Those for which the document proving compliance with the requirements prescribed in Attachment 24 “Technical Standard for the Protection of the Occupants in the Event of A Lateral Collision” is submitted.

13. Those devices enumerated in each of the following Items, for which the implementation of a destructive test is proved to be extremely difficult, shall be regarded as complying with the requirements of Paragraph 4 of Article 18 of the Safety Regulations, under the provision of the proviso of Article 1-3 of the Safety Regulations.

- (1) Those which come under all of the following Items:
  - A. The horizontal distance from the outmost side edge (the edge section of both edges of the seat, that has been measured at right angles in the depth direction at a distance of 20 cm in the depth direction from the centre of the front edge of the seat) of the driver’s seat (in the mid-point position for the seat concerned that is adjustable in a fore-and-aft direction) to the outmost side edge of the vehicle body is 130 mm or more.

(Figure)



- B. The surface of the section located at the side of the driver's seat and the seat which is parallel thereto and adjacent to the side of the motor vehicle is covered with impact-absorbing material and has no sharp projection.

- (2) The motor vehicles for which the document proving compliance with Federal Motor Vehicles Safety Standards No.214 has been submitted.

14. The requirements prescribed in the Announcement of Paragraph 4 of Article 18 of the Safety Regulations in connection with the performance of the frame and body concerning the protection of the heads of pedestrians shall be the requirements prescribed in each of the following Items (the requirement of Item (1) in the case of frames and bodies to which the provisions of Section 2 apply pursuant to the provision of Item (3), Paragraph 2 of Article 161):

- (1) The hood (those equivalent to the hood, such as the front panel, in the case of motor vehicles equipped with no hood) shall have no sharp protrusion on its surface.
- (2) Attachment 99 “Technical Standard for Protection of Heads of Pedestrians” shall be complied with. In this case, any of the following Items shall be regarded as complying with this requirement.
  - A. Frames and bodies having the same material and construction of the hood (those equivalent to the hood, such as the front panel, in the case of motor vehicles equipped with no hood) as those of designated motor vehicles, etc., and exhibiting no damage liable to hamper the performance concerning the protection of the heads of pedestrians.
  - B. Those for which the document proving compliance with the requirements prescribed in Attachment 99 “Technical Standard for Protection of Heads of Pedestrians” is submitted.

15. Those devices enumerated in each of the following Items, for which the implementation of a destructive test is proved to be extremely difficult, shall be regarded as complying with the requirements of Paragraph 4 of Article 18 of the Safety Regulations, under the provision of the proviso of Article 1-3 of the Safety Regulations.

- (1) The hood (those equivalent to the hood, such as the front panel, in the case of motor vehicles equipped with no hood) shall have no sharp protrusion on its surface.
- (2) Those for which the document proving compliance with the European Union Directives 2003/102/EC is submitted.

16. On the rear surface of the body of a motor vehicle, the maximum loading capacity (the maximum loading capacity, the maximum loading volume and the name of loaded goods in the case of a tank motor vehicle) shall be marked.

17. The indication to be attached, pursuant to Paragraph 7 of Article 18 of the Safety Regulations, on the front, rear and each side of the vehicle body of any motor vehicle (only limited to those motor vehicles with a passenger capacity of 11 persons or more) used exclusively for carriage of students, children or infants of middle schools, primary schools, schools for the blind, schools for the deaf, schools for physically handicapped or mentally retarded children, kindergartens or nursery schools, indicating that this particular vehicle is used for carriage of the above mentioned passengers, shall be in accordance with the example of the form prescribed below.

- (1) The shape shall be an equilateral triangle with its apex is directed upwards, with a length of each side of 50 cm or more, and the thickness of the frame and the triangle line shall be approximately 12 mm. However, for a motor vehicle whose body is so constructed that it may not ensure the said dimensions (referring to motor vehicles in which the specified dimensions cannot be ensured because of the function components of motor vehicles, such as the windshield screen, headlamps, signal lamps or the like, air inlet port of the cooling system, or the motor vehicle registration number plate), it may reduce the length of the side to 30 cm.
- (2) The colour of the triangle line, the characters and symbols shall be in black and the frame and ground shall be in yellow.
- (3) The characters in the form shall be Japanese words which mean “school bus,” “kindergarten bus,” etc.

(Example of form)



**Article 101** (Pedestrian Protection Side Guard)

1. The requirements prescribed in the Announcement of Paragraph 1 of Article 18-2 of the Safety Regulations in connection with the strength, shape, etc. of the pedestrian protection side guard shall be the requirements prescribed in each of the following Items.

- (1) It shall be secure. In this case, those whose installation is not secure due to corrosion, etc. shall be regarded as not complying with this requirement.
- (2) It shall be a sheet or have a shape which can effectively prevent pedestrians, bicycle riders, etc. from being caught under the rear wheels of the motor vehicle. In this case, pedestrian protection side guards whose flat section has the shape of integral sheets, grating, mesh, rods (3 pcs. or more) or shape similar to these shall be regarded as complying with this requirement.

2. With regard to the application of the provision of Item (2) of the preceding Paragraph in the case of ordinary-sized motor vehicles used for the transport of goods (except those with a gross vehicle weight of 8 tons or more or with a maximum loading capacity of 5 tons or more), the phrase “shall be

a sheet or have a shape which can effectively prevent pedestrians, bicycle riders, etc. from being caught under the rear wheels of the motor vehicle” shall read as “shall be constructed so that pedestrians are not likely to be caught under the rear wheels of the motor vehicle” pursuant to the provision of Paragraph 4 of the Supplementary Provisions of the “Ministry Ordinance That Amends Part of the Safety Regulations for Road Vehicles” (Ministry of Transport Ordinance No. 8 of 1979). In this case, pedestrian protection side guards having a shape of one steel pipe or the like shall be regarded as complying with this requirement.

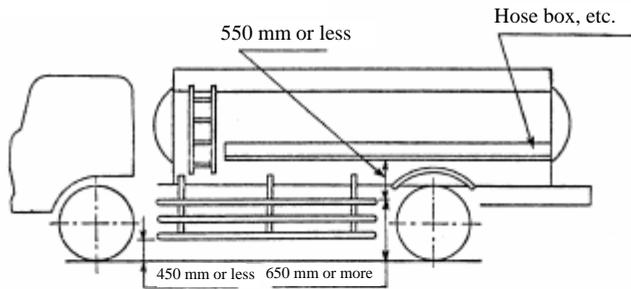
3. The “motor vehicles which are constructed as prescribed in the Announcement in connection with the construction by which pedestrians, bicycle riders, etc. are not likely to be caught under the rear wheels of the motor vehicle concerned” in the proviso of Paragraph 1 of Article 18-2 of the Safety Regulations shall be motor vehicles which are constructed so as to effectively prevent pedestrians, bicycle riders, etc. from being caught under the rear wheels of the motor vehicle concerned by means of the original construction, etc. of the motor vehicle to the same degree as or more than the pedestrian protection side guard.

4. The requirements prescribed in the Announcement of Paragraph 2 of Article 18-2 of the Safety Regulations in connection with the installation position, installation method, etc. of the pedestrian protection side guard shall be the requirements prescribed in each of the following Items.

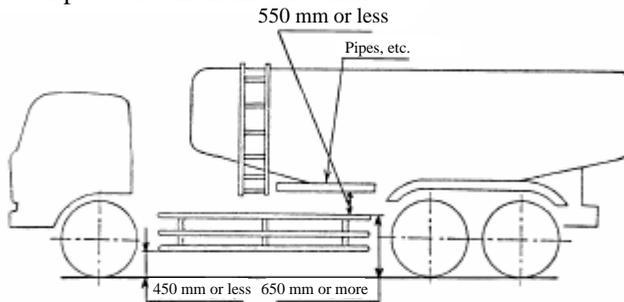
- (1) The pedestrian protection side guard shall be mounted so that, in the unloaded state, the height of its lower edge is 450 mm or less above the ground and the height of its upper edge is 650 mm or more above the ground.
- (2) The pedestrian protection side guard shall be mounted so that the distance between the upper edge thereof and the loading platform, etc. may effectively prevent pedestrians, bicycle riders, etc. from being caught under the rear wheels of the motor vehicle. In this case, pedestrian protection side guards that are mounted in such a way that the distance between the upper edge of the flat section thereof and the loading platform, etc. is 550 mm or less shall be regarded as complying with this requirement.

(Example)

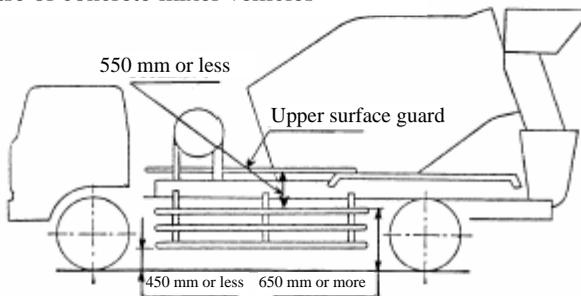
(1) Case of tank trucks



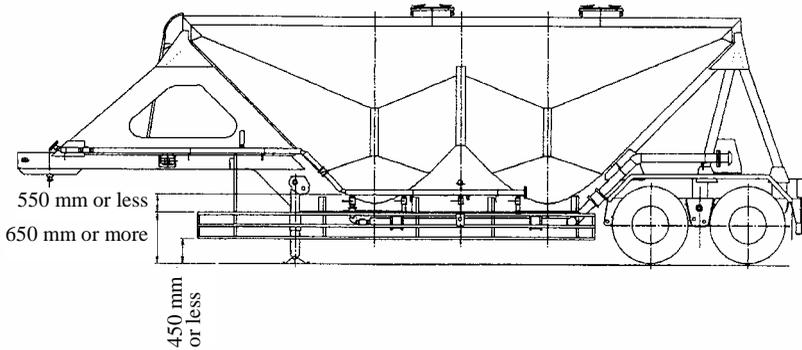
(2) Case of powder cement motor vehicles



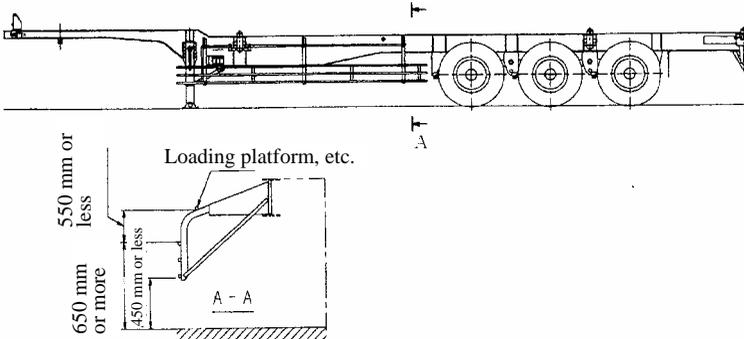
(3) Case of concrete mixer vehicles



## (4) Case of powder cement semi-trailers



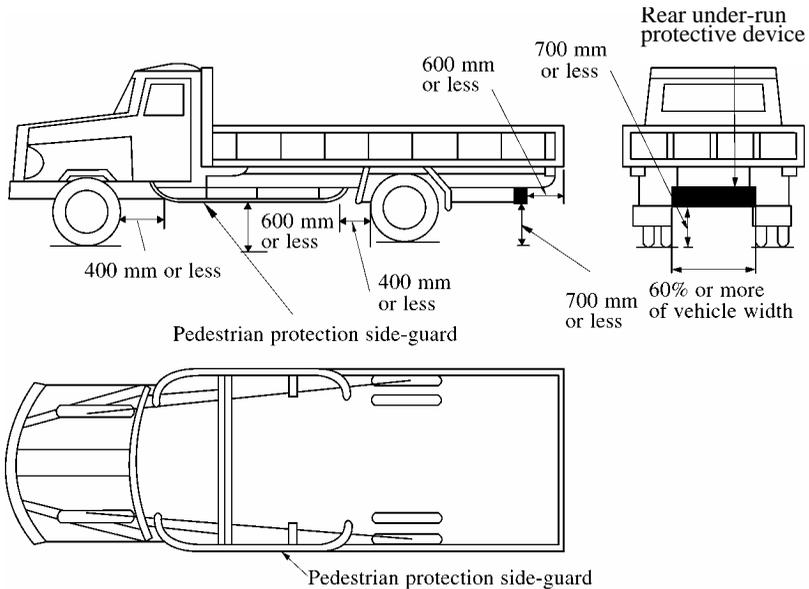
## (5) Case of container semi-trailers



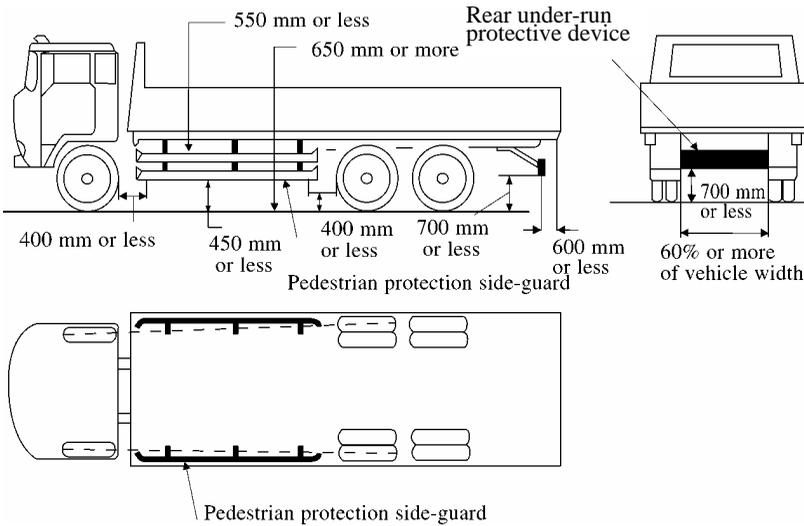
- (3) The pedestrian protection side guard shall be mounted so that the distance between a vertical plane, which includes the forward end of the flat section (except the curved section. Hereinafter the same) thereof and is perpendicular to the longitudinal centre plane of the motor vehicle, and a vertical plane, which includes the rear end of the rearmost front tyre and is perpendicular to the longitudinal centre plane of the motor vehicle, as well as the distance between a vertical plane, which includes the rear end of the flat section and is perpendicular to the longitudinal centre plane of the motor vehicle, and a vertical plane,

which includes the front end of the most forward rear tyre and is perpendicular to the longitudinal centre plane of the motor vehicle, is 400 mm or less. However, the pedestrian protection side guard to be mounted on a semi-trailer shall be mounted so that the front end of flat sections is located forward of the auxiliary leg.

(Example 1) (Example of installation on ordinary-sized truck)

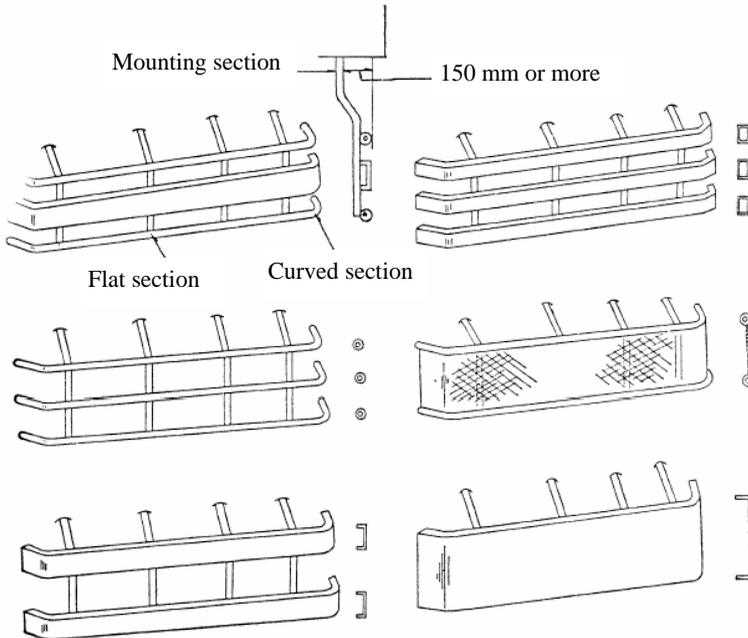


(Example 2) (Example of installation on large-sized truck with a gross vehicle weight of 8 tons or more, or with a maximum loading capacity of 5 tons or more)



(4) The pedestrian protection side guard shall be mounted so that the flat section thereof is located outside of a straight line connecting the centres of the road contact sections of the outermost front wheel and outermost rear wheel, and the mounting section thereof is located 150 mm or more inside of the flat section.

(Example)



(5) The pedestrian protection side guard shall be securely mounted so that it does not become loose due to vibrations, shocks, etc.

5. With regard to the application of the provisions of Items (1) and (2) of the preceding Paragraph in the case of ordinary-sized motor vehicles used for the transport of goods (except those with a gross vehicle weight of 8 tons or more or with a maximum loading capacity of 5 tons or more), notwithstanding the provisions of Items (1) and (2) of the preceding Paragraph, the pedestrian protection side guard shall be mounted so that, in the unloaded state, the height of its lower edge is 600 mm or less above the ground, except sections near the entrance of the driver's seat, pursuant to the provision of Paragraph 4 of the Supplementary Provisions of the "Ministry Ordinance That Amends Part of the Safety Regulations for Road Vehicles" (Ministry of Transport Ordinance No. 8 of 1979).

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**Article 102** (Rear Underrun Protection Devices)

1. The requirements prescribed in the Announcement of Paragraph 2, Article 18-2 of the Safety Regulations in connection with strength, shape, etc. of the rear underrun protection device shall be the requirements prescribed in each of the following Items.

- (1) The rear underrun protection device mounted on motor vehicles used for the transport of goods with a gross vehicle weight of more than 3.5 shall comply with the requirements prescribed in Attachment 25 “Technical Standard for Rear Underrun Protection Devices.” In this case, the following rear underrun protection devices enumerated below which exhibit no damage, etc. liable to hamper its function shall be regarded as complying with these requirements.
  - A. Rear underrun protection devices having the same construction as the rear underrun protection device mounted on designated motor vehicles, etc. or the rear underrun protection device having the equivalent construction, and mounted at the same position or at the rear position thereof;
  - B. Rear underrun protection devices type-designated pursuant to the provision of Paragraph 1 of Article 75-2 of the Act;
  - C. Rear underrun protection devices provided with an identification code prescribed by the Minister of Land, Infrastructure and Transport.
- (2) The rear underrun protection device mounted on ordinary-sized motor vehicles used for the transport of goods (except those of the preceding Item) shall be a sheet or have a shape which can effectively prevent the front part of a colliding motor vehicle from running under the rear part of the motor vehicle concerned during a rear-end collision. The length of the rear underrun protection device shall be 60% or more of the width of the motor vehicle to which it is attached.
- (3) The rear underrun protection device provided for in Item (1) shall be so constructed that the height of the cross-section of the flat section thereof is 100 mm or more on a vertical plane in parallel with the longitudinal centre plane of the motor vehicle.
- (4) The rear underrun protection device shall be robust and capable of fully withstanding operations, and shall not be such ones enumerated below.

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- A. Those whose installation is not secure due to corrosion, etc.;
  - B. Those which are not robust other than those in Item A.
- (5) The rear underrun protection device shall not be liable to injure pedestrians, etc., when it comes in contact with them. For example, the rear underrun protection device shall have no external edge which bends backward nor sharp outward protrusion.
2. The “motor vehicles prescribed in the Announcement as ones having such construction that can prevent the front part of the colliding motor vehicle from plunging into the rear part of the motor vehicle concerned in the case of rear-end collision, to the same degree as with motor vehicles equipped with a rear underrun protection device” appearing in the proviso of Paragraph 2 of Article 18-2 of the Safety Regulations shall be those motor vehicles having such construction that complies with the following requirements.
- (1) In the case of motor vehicles with a gross vehicle weight of 7 tons or more, the cross-section of the flat section of the construction section (that refers to a construction section, consisting of the vehicle frame or the vehicle body, capable of preventing the front part of the colliding motor vehicle from plunging into the rear part of the motor vehicle concerned in the case of rear-end collision, to the same degree as with rear underrun protection devices. Hereinafter the same.) at the rear surface of the vehicle body shall be at a height of 100 mm or more on a vertical plane parallel to the vehicle longitudinal centre plane and the outermost edge of the flat section concerned shall be located within 100 mm inward from the outermost edge of the wheel of the rear axle.
  - (2) In the case of motor vehicles with a gross vehicle weight of less than 7 tons, the length of the construction section at the rear surface of the vehicle body shall be 60% or more of the width of the motor vehicle concerned (in cases where the horizontal distance between the centre of the rearmost axle and the rear end of the vehicle body is 1500 mm or less, the width or more of the vehicle frame at the rear end of the motor vehicle concerned).
  - (3) The height of the lower edge of the construction section at the rear end of the vehicle body shall be 550 mm or less (in the case of motor vehicles with a gross vehicle weight of less than 7 tons (limited only to those in which the horizontal distance between the centre of the rearmost axle and the rear end of the vehicle body is 1,500 mm or

less), 600 mm or less) above the ground under the unloaded state.

- (4) The horizontal distance between the flat section of the construction section at the rear end of the vehicle body and the rear end of the other part of the motor vehicle concerned at a height of 1,500 mm or less above the ground under the unloaded condition shall be 450 mm or less.

3. The requirements prescribed in the Announcement of Paragraph 3, Article 18-2 of the Safety Regulations in connection with the installation position, installation method, etc. of the rear underrun protection device shall be the requirements enumerated in each of the following Items.

- (1) The rear underrun protection device of motor vehicles used for the transport of goods with a gross vehicle weight of more than 3.5 tons shall comply with the requirements prescribed in each of the following Items:

- A. The rear underrun protection device shall be mounted so that the height at its lower edge is 550 mm or less above the ground in the unloaded state;

- B. The rear underrun protection device shall be mounted so that its flat section is symmetrical relative to the longitudinal centre plane of the vehicle on the vertical plane perpendicular to the longitudinal centre plane of the vehicle;

- C. The rear underrun protection device shall be mounted so that the outermost edge of the flat section thereof is located within 100 mm inward from the outermost edge of the wheel of the rear axle;

- D. The rear underrun protection device shall be mounted so that the horizontal distance between the flat section and the rear end of the other part of the motor vehicle concerned at a height of 1,500 mm or less above the ground under the unloaded condition is within 400 mm and that the rear underrun protection device is located as close to the rearmost end of the motor vehicle;

- E. The rear underrun protection device shall be securely mounted so that it may not be loosened by vibrations, shocks, etc.

- (2) The rear underrun protection device of ordinary-sized motor vehicles used for the transport of goods (except for the motor vehicles of the

preceding Item) shall comply with the following requirements:

- A. The rear underrun protection device shall be mounted so that the height at its lower edge is 700 mm or less above the ground in the unloaded state;
- B. The rear underrun protection device shall be mounted so that its flat section is symmetrical relative to the longitudinal centre plane of the vehicle on the vertical plane perpendicular to the longitudinal centre plane of the vehicle;
- C. The rear underrun protection device shall be mounted so that the horizontal distance between the flat section and the rear end of the other part of the motor vehicle concerned at a height of 1,500 mm or less above the ground under the unloaded condition is within 600 mm;
- D. The rear underrun protection device shall be securely mounted so that it may not be loosened by vibrations, shocks, etc.

**Article 103** (Coupling Device)

1. The requirements prescribed in the Announcement of Paragraph 1 of Article 19 of the Safety Regulations in connection with the strength, construction, etc. of coupling devices between a tractor and a trailer shall be the requirements prescribe in each of the following Items:

- (1) The coupling device between a tractor and a trailer shall be secure so that it may fully withstand vehicle operation;
- (2) The coupling device between a tractor and a trailer shall be constructed so that it may securely connect the tractor with the trailer;
- (3) The coupling device of a tractor or a trailer shall be provided with a suitable safety device to prevent accidental separation by vibration, shocks, etc. while running.

2. In the preceding Paragraph, an emergency drawing hook, etc. which is provided at the front end of the frame of trucks, etc. and is not intended to tow a trailer shall not be included in coupling devices.