

Form of caution plates

1. Scope

This standard specifies the form of Caution plates (Content, colouration, character style, writing style, characters and terms, figures and unit symbols, character size, language, and position) used as a guideline by designers when they design alert indicators (hereinafter referred to as "caution plates") to be attached on the components of automobiles (excluding two-wheeled vehicles).

Remark: The standards applicable to this standard are as follows.

JIS Z 8202	Quantity symbols, unit symbols, and chemical symbols
JIS Z 8701	Specification of colours according to the CIE 1931 standard colourimetric system and the CIE 1964 supplementary standard colourimetric system
JASO Z 201	General rules for glossary of terms relating to automobiles

2. Definitions

Definitions of major terms used in this standard are as follows.

(1) Caution plates

These plates are attached when it is expected that, even when an operator operates a car normally, the car may give a damage to the operator if he mis-operates it (normal operating procedures are not followed) and a preventive technique (design improvement of cars) that can be developed in reasonable range is not yet established. They inform the operator of the character, seriousness, and preventing method of damage.

(2) Normal operation

Inspections and maintenance of cars before and during traveling, and operation and riding together on roads where cars can travel.

(3) Hazard

Events that, if a car is mis-operated (normal operating procedures are not followed), it may produce a damage.

(4) Damage

Death, personal injury, and property damage.

(5) Foreseeability

Predictions and expectations of the present design by designers based on the past examples and reasonable thoughts.

(6) Preventive technique that can be developed in reasonable range

Design improvement that can be achieved by generally acceptable industrial techniques (design specification, production engineering, and materials).

3. Shape and Dimensions

The shape and dimensions of caution plates shall not be defined specifically because the requirements for the areas in which the caution plates are to be mounted are different according to the conditions of a vehicle or components on which the caution plates are to be mounted.

4. Indication Procedures

4.1 Content

The content of a caution plate shall be formed with either or a combination of three panels: a signal panel, pictorial panel, and message panel.

Also, the signal, pictorial, or message panel may be included in the instruction or maintenance indication.

(1) Three-panel type

The content shall be formed with three panels: signal panel, pictorial panel, and message panel. Because the requirements for the areas in which caution plates to be mounted are different according to the conditions of the components on which the caution plates are to be mounted, the arrangement of these three panels shall not be defined specifically. It should be in accordance with Fig. 1.

(2) Two-panel type

The content shall be formed with two panels: signal panel and pictorial panel or message panel. Because the requirements for the areas in which caution plates to be mounted are different according to the conditions of the components on which the caution plates are to be mounted, the arrangement of these two panels shall not be defined specifically. It should be in accordance with Fig. 2.

(3) One-panel type

The content shall be formed with a pictorial panel only.

Fig. 1 General formation of three-panel type

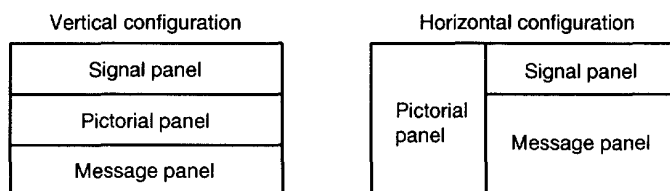
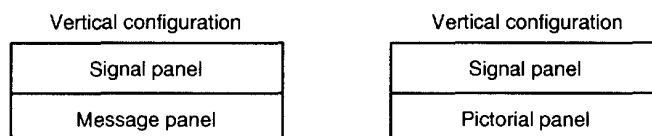


Fig. 2 General formation of two-panel type



4.2 Signal panel

The signal panel shall include a signal indicating the seriousness of damage. As the signal, an alert symbol (mark indicating the presence of danger) and a signal word (word indicating the seriousness of damage) shall be arranged as shown in Fig. 3.

3. When multiple types of signal levels are mixed, they may be unified into one at which damage is mostly serious.

Fig. 3 Arrangement in signal panel (Example)

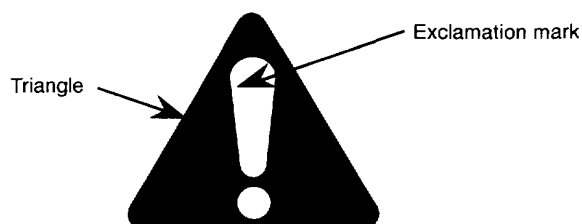


4.2.1 Alert symbol

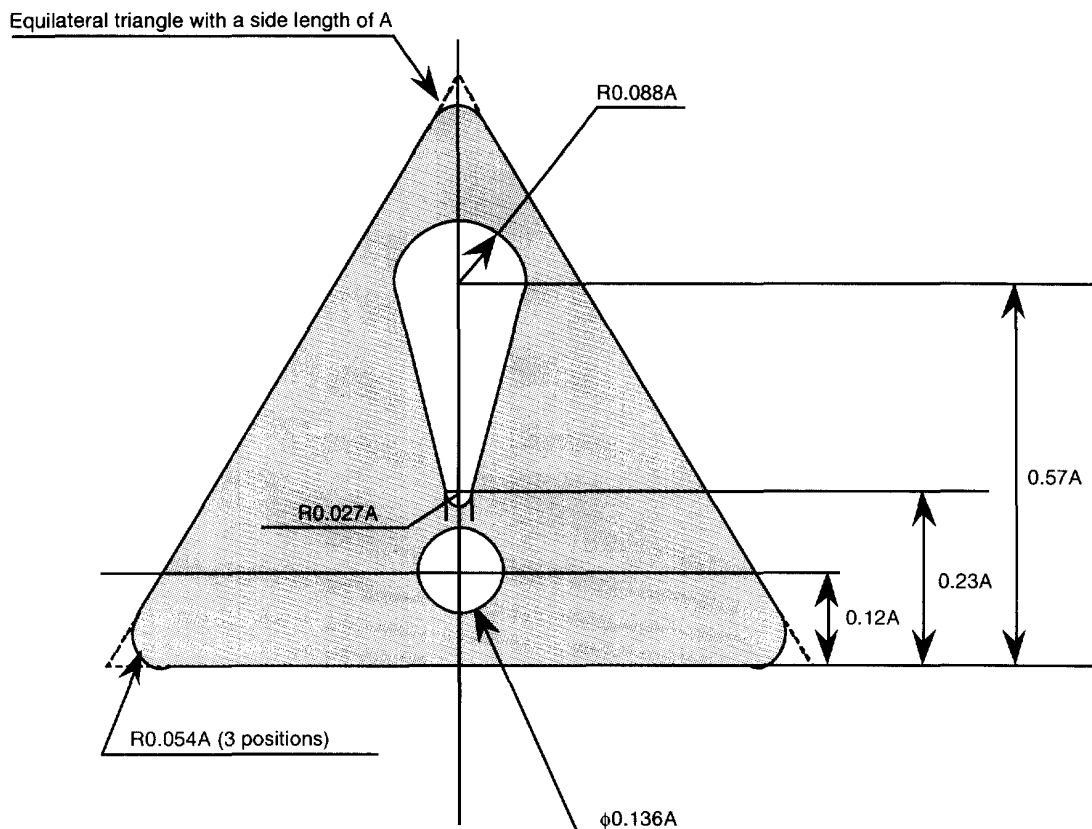
As an alert symbol, an exclamation mark shall be arranged in a triangle as shown in Fig. 4. The height of the alert symbol shall be equal to or more than that of a signal word.

Reference: The detailed shape of the alert symbol shall not be defined, and its typical example is shown in Reference drawing 1.

Fig. 4 Alert symbol (Example)



Reference Drawing 1 General dimensions of alert symbol



4.2.2 Signal word

A signal word includes the following three types.
Also the examples of some signal words which are translated from Japanese into some foreign languages are shown in **Table 1**.

(1) DANGER

This signal word shall be used when a hazard which will cause death or serious personal injury directly if a car is mis-operated (normal operating procedures are not followed) may be encountered.

It should be used conservatively only when the most serious danger may be encountered.

(2) WARNING

This signal word shall be used when a hazard which may cause death or serious personal injury directly if a car is mis-operated (normal operating procedures are not followed) may be encountered.

It should be used when the probability of occurrence of personal injury is less than in DANGER.

(3) CAUTION

This signal word shall be used when a hazard which may cause minor or moderate personal injury if a car is mis-operated (normal operating procedures are not followed) may be encountered.

It may be used only for those property damages which do not follow personal injury.

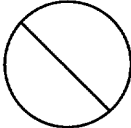
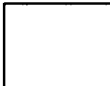
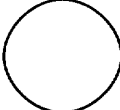
Table 1 Signal words in foreign languages (Example)

Japanese	English	French	Germany
危険	DANGER	DANGER	GEFAHR
警告	WARNING	AVERTISSEMENT	ACHTUNG
注意	CAUTION	ATTENTION	VORSICHT

4.3 Pictorial panel

The pictorials used for this panel shall be in accordance with those geometrical shapes and meanings shown in **Table 2**. The content of the pictorials shall refer to the relevant governmental standards and **ISO**. However, if any proper example is not found or more proper pictorial is desired, a pictorial may be designed by yourself.

Table 2 Geometrical shapes and meanings

Geometrical shape		Meaning of shape	Example of graphic
Circle and oblique line in the direction of right side down		Prohibited ⁽¹⁾	 Contact prohibited
X-mark		Prohibited ⁽¹⁾	 Contact prohibited
Triangle		Alert	 Caution on electrification
Quadrangle		Description	 Direction of pass
Circle		Obligation	 Read operation manual.

NOTE ⁽¹⁾: Either may be used if the pictorial is easy to understand and the item to be prohibited can be noticed correctly.

4.4 Message panel

A message panel shall include those brief and clear messages including the character, seriousness, and preventive method of damage. When the prevention method of damage can be found easily from the pictorial panel, the message may be omitted. If a hazard and preventive method cannot be filled completely in the message panel, it shall be indicated in it to refer to the operation manual or maintenance manual.

(1) Character of damage

Type of potential hazard that may be encountered if a car is mis-operated (normal operating procedures are not followed). For example, downfall, high temperature, electrification, explosion, toxicity, inclusion into rotating sections, and falling of heavy loads.

(2) Seriousness of damage

Shall be in accordance with item **4.2.2** (This may be omitted if the character and seriousness of damage can be found easily from the appearance of a product).

(3) Preventive method of damage

Method whereby a car is prevented from being involved in a hazard.

Example: Do not touch it when it is hot. Ventilate and do not move it closely to sparks or flame. Set a safety support bar securely.

4.5 Colouration

To make it easier to see the content of indications on a caution plate, the content shall be contrasted with the background colour. For raised indications by a forming, however, the contrast may not be given if the content of indications is legible. The colouration in each panel shall be as shown below.

4.5.1 Colouration in signal panel

When colours are used in a signal panel, a combination of three colours of red, orange, and yellow shall be used according to the signal words.

- (1) The signal word of DANGER shall be formed with a signal word of white characters in red base and an alert symbol of a red exclamation mark in white base triangle. The example is shown in Fig. 5.
- (2) The signal word of WARNING shall be formed with a signal word of black characters in orange base and an alert symbol of an orange exclamation mark in black base triangle. The example is shown in Fig. 6.

- (3) The signal word of CAUTION shall be formed with a signal word of black characters in yellow base and an alert symbol of a yellow exclamation mark in black base triangle. The example is shown in Fig. 7.

The requirements for those colours used in a signal panel (in accordance with JIS Z 8701 specification of colours) are as shown in Table 3. However, even if the requirements for the colours used in a signal panel come slightly out of these requirements above, these colours may be used if the colours can be noticed without fail when the caution plate is checked visually.

Table 3 Colouration in caution plate

Signal word	Colour	Requirements for colour
DANGER	Red	0.5959x, 0.3269y, 12.00 (Y%)
WARNING	Orange	0.5510x, 0.4214y, 30.05 (Y%)
CAUTION	Yellow	0.4562x, 0.4788y, 59.10 (Y%)

Fig. 5 Colouration of DANGER (Example)

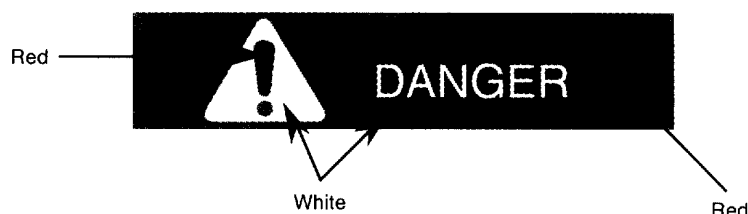


Fig. 6 Colouration of WARNING (Example)

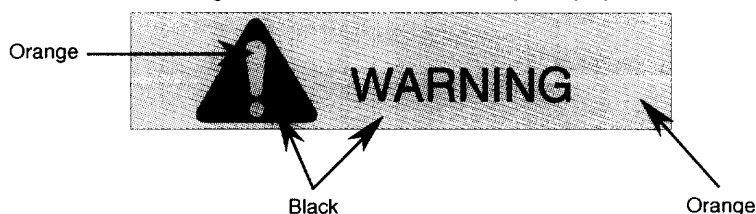
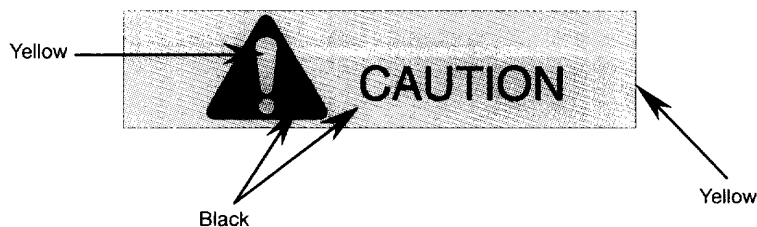


Fig. 7 Colouration of CAUTION (Example)



4.5.2 Colouration in pictorial panel

When colours are used in a pictorial panel, they shall be in accordance with the meanings of colours shown in **Table 4**.

Table 4 Meanings of colours in pictorial panel

Colour	Meaning of colour	Example of use
Red	Prohibited	Use of a rearward child seat installed on an air bag mounted seat is prohibited.
Blue	Obligation	Wear of protective goggles in handling batteries.
Yellow	Danger	Battery electrolyte, cooling fan
Green	Safety	First-aid box

4.5.3 Colouration in message panel

The colour used in a message panel shall be selected from among items (1), (2), and (3) below so that the message can be read under the condition that a caution plate is mounted on a product.

- (1) Black characters in white base
- (2) White characters in black base
- (3) When a colour in a message panel can be identified easily from a background colour (product colour): Black characters in base colour which is the same as the colour in a signal panel.

4.6 Character style

A character style shall use Gothic for both signal and message panel. Alphabetical letters may be capitals only, or a combination of capitals and lower-case letters.

4.7 Writing style

The writing style should be preferably colloquial.

4.8 Characters and terms

Terms used shall be those specified in the Glossary of terms of **ISO**, **JASO Z 201**, and **JASO**. Those characters and terms which are simple and easy to understand, widely used in operation manuals, maintenance manuals, and advertisements, and well known in public may also be used.

4.9 Figures and unit symbols

(1) Figures

In general, figures shall be Arabic.

(2) Unit symbols

Unit symbols shall be in accordance with International System of Units, and the other symbols shall be in accordance with **JIS Z 8202**.

5. Languages

The language used in signal and message panels should preferably be that of a country where a product is used. The writing style in which multiple languages are arranged in one panel shall not be defined here specifically because the requirements for the areas in which the caution plates to be mounted are different according to the conditions of the components on which the caution plates are to be mounted. The examples are as shown in **Figs. 8, 9, and 10**.

Example 1 Parallel type

Language (1), language (2), --- and language (n) are arranged in lateral direction (See **Fig. 8**).

Example 2 Laminating type

Language (1), language (2), --- and language (n) are arranged in vertical direction (See **Fig. 9**).

Example 3 Free type

Language (1), language (2), --- and language (n) are arranged freely according to the shape of product (See **Fig. 10**).

Fig. 8 Parallel type

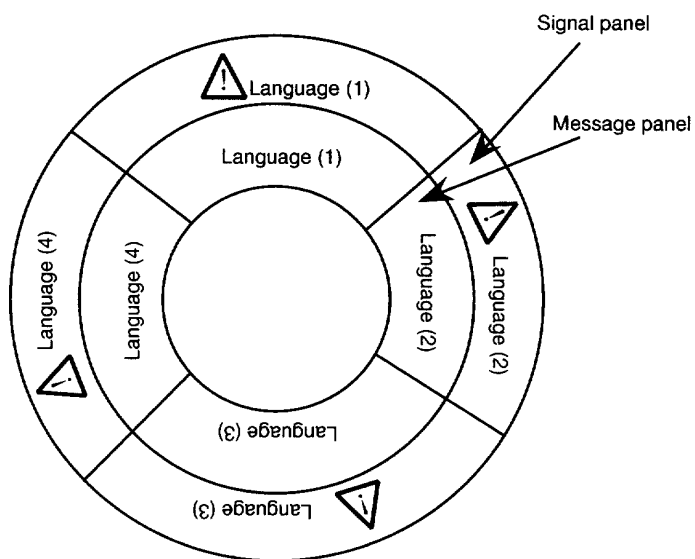
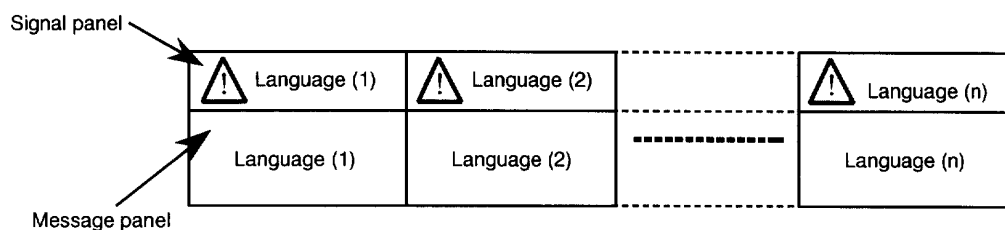


Fig. 9 Laminating type

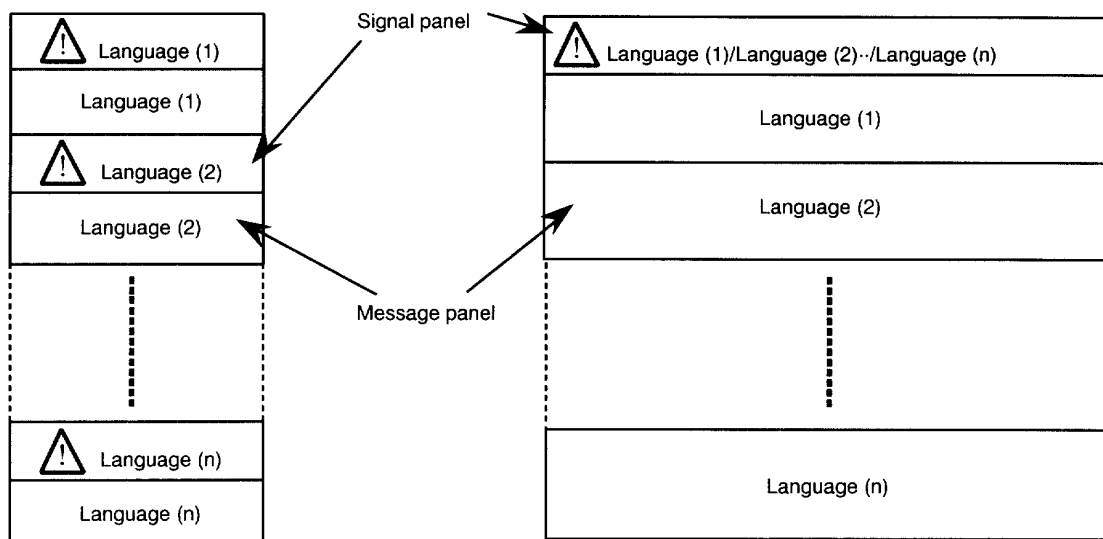
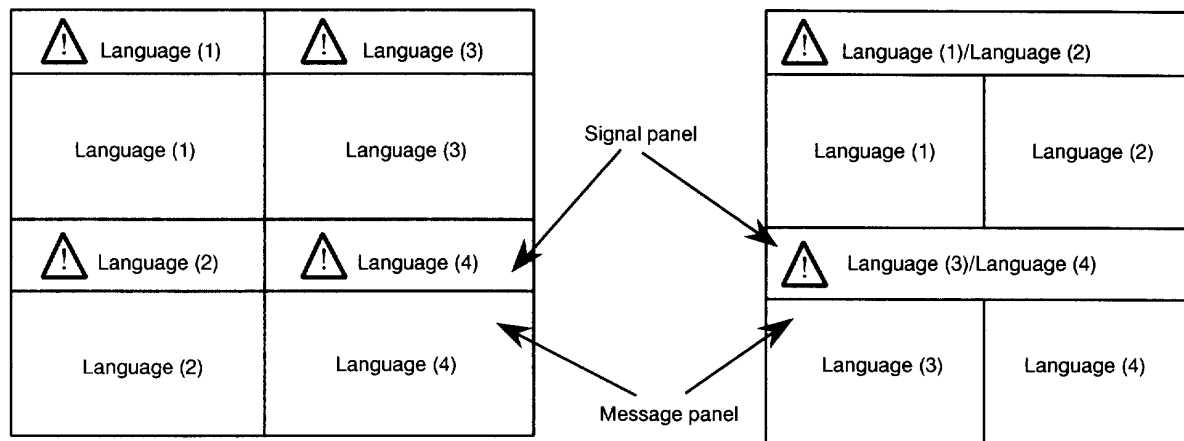


Fig. 10 Free type



6. Size of characters

The size of characters shall be as follows.

(1) Height of characters in signal panel

The height of characters in a signal panel shall be 1.5 times or more larger than that in a message panel.

(2) Height of characters in message panel

In general, the height of characters in a message panel shall be calculated using the following expression.

($H \geq L/150$, H: Height of characters on a capital basis, L: Distance between label and eyes under condition where label is read. H and L shall be in the same unit.)

7. Positions of caution plates

The positions of caution plates shall be as follows.

(1) Movement of caution plates as close to hazards as possible

Move caution plates to those areas where a hazard may be encountered and easy to read.

(2) Safety cover

If a hazard may be encountered when a safety cover is removed, a caution plate shall be visible with the safety cover removed.

(3) Replacement part

A caution plate shall be attached to a part which is difficult to be replaced by the maintenance or repair of a vehicle. If it must be attached to a part which is liable to be replaced, it must be taken account that the part is replaced together with the caution plate.

8. Durability of caution plates

Caution plates shall have such a durability (no peeling off from main body, no discolouration) that they can withstand the expected environments at each stamped, printed, or formed panel, and are legible satisfactorily within the service period.

9. Selection of signal word

For the selection of a signal word, the probability of occurrence of damage and the seriousness of damage shall be plotted in Fig. 11, and either of DANGER, WARNING, and CAUTION shall be determined.

9.1 Probability of occurrence of damage

The probability of occurrence of damage is generally divided into three groups; Large, medium, and small, according to the possibility of mis-operation (normal operating procedures not followed) and the possibility of suffering when a car is mis-operated (normal operating procedures are not followed).

- (1) If a hazard which immediately causes damage may occur when a car is mis-operated (normal operating procedures are not followed), evaluate it as "Large" even if the possibility of mis-operation (normal operating procedures not followed) is small.
- (2) If a damage does not occur immediately though the possibility of occurrence of damage is induced if a car is mis-operated (normal operating procedures are not followed), evaluate it generally or experimentally by the possibility of occurrence of damage.
- (3) When a caution plate is attached on the cover located over the area where a potential hazard is present or in the vicinity of it, determine the signal word based on the evaluation results of a hazard which may occur under the condition that the cover is removed. However, if the cover is so designed that it cannot be removed with on-vehicle tools, the signal word "CAUTION" may be used.

9.2 Seriousness of damage

The seriousness of damage shall be divided into three groups; "death", "serious personal injury", "minor or moderate personal injury, and property damage" according to the possibility of occurrence of personal injury which may occur when a car is mis-operated (normal operating procedures are not followed). If multiple personal injuries are expected, it shall be divided according to the possibility of occurrence of more serious personal injury.

Fig. 12 Signal word selecting criteria

		Probability of occurrence of damage		
		Large	Medium	Small
Seriousness of damage	Death	DANGER	WARNING	
	Serious personal injury			
	Minor or moderate personal injury Property damage	CAUTION		

Related standards

JIS Z 8301	Style manual for Japanese industrial standards
JIS Z 8304	Design standard for nameplates
JIS Z 8305	Dimensions of printing types
JASO B002	Quality of caution plates
JASO B502	Safety device for proof against descent of dump truck body
ISO 9244	Earth moving machinery-safety signs and hazard pictorials-general principles
ISO 3864	Safety colours and signs
ANSI Z535	Safety signs

Explanatory Note on JASO B001-97 Form of caution plates

This explanatory note explains those items specified in the main body and these related items, and is not a part of the standard.

1. Purpose of establishment

The purpose of establishment of this standard is to standardize the form of caution plates to call an operator's attention to a variety of operational hazards for his convenience (Content is visible easily by signal panels, and content of hazards, seriousness of damages, and preventive measures are easy to understand).

2. Scope (Section 1 of main body)

As usual, only cars excluding two-wheeled vehicles are applied to the standard. In the future, however, it is considered necessary to study on vehicles including two-wheeled vehicles. Efforts have been made to match the standard with ISO, and the applicable destination has been expanded from domestic only to foreign countries.

3. Revised points of each item and supplementary explanation

3.1 Definitions (Section 2 of main body)

(1) Caution plate

The term Caution plate has been defined based on the purpose of those caution plates indicated below which are specified in ISO 9244 Earth Moving Machinery-Safety Signs and Hazard Pictorials-General Principles, and shows that reasonably executable preventive technique has a priority in use.

- (a) Warns operators of existing or potential hazard.
- (b) Identify hazard.
- (c) Indicates the characteristics of hazard.
- (d) Explains the seriousness of possible damage that may be caused by hazard to operators.
- (e) Indicates the method for preventing damage to operators.

(2) Normal operation

This includes the operations by all personnel who handle cars such as drivers, occupants, service personnel, and repairmen. However abnormal operations that cannot be predicted reasonably by designers are excluded.

3.2 Shape and dimensions (Section 3 of main body)

The shape and dimensions are so specified that caution plates can be designed freely according to the shapes of a variety of component parts.

3.3 Indication Procedures (Section 4 of main body)

Based on the recent company caution plate examples and relevant standards, each item has been specified as follows.

- (1) **Because ISO 9244** Earth moving machinery-safety signs and hazard pictorials-General principles is approximately identical to recent company caution plate examples, items **4.1 Content**, **4.2 Signal panel**, **4.3 Pictorial panel**, and **4.4 Message panel** have been specified to match each other.
- (2) For items **4.3 Pictorial panel** and **4.5 Colouration**, a geographical shape and colour meanings which match **ISO 3864** Safety Colours and Signs have been specified.
- (3) In item **4.5.1 Colouration** in signal panel, the standard colours of safety red, safety orange, and safety yellow conforming to **ANSI Z531** Safety signs have been indicated by the indications of colours conforming to **JIS Z8701** (chromaticity coordinate x and y, tristimulus values).
- (4) Item **4.6 Character style** has been specified in decoration-free sans-serif and Gothic based on the actual states of companies.
- (5) Item **4.7 Writing style** has not been specified to provide designers with the degree of freedom.
- (6) Item **4.8 Characters and terms** should be preferably in accordance with the standard (ISO, JASO). However, based on the actual state of recognition by operators, exceptions have been added.
- (7) In item **4.9 Figures and unit symbols**, Arabic numerals and SI unit system have been adopted in accordance with international standards.

3.4 Languages (Section 5 of main body)

When multiple languages are used on a tied land as in Europe, the main language in that area is generally used. In the future, it is desired to promote the standardization of car pictorials whereby a common calling of attention can be achieved irrespective of languages.

3.5 Size of characters (Section 6 of main body)

Because this could not be found in ISO, the easy-to-read idea specified in **ANSI Z535** Safety signs has been introduced, and the provisions of minimum character sizes have been abolished.

3.6 Positions of caution plates (Section 7 of main body)

It is desirable to attach one caution plate for one hazard on its potential place. Because there is a case in which it is reasonable to indicate multiple hazards at one place, it has not been specified that one indication shall be used for one hazard.

3.7 Durability of caution plates (Section 8 of main body)

This is not the item to be specified in this form of caution plates. Because the scope of application of this standard has been expanded to the caution plates for foreign countries, basic ideas have been specified here.

3.8 Selection of signal word (Section 9 of main body)

A guideline for selection has been indicated here so that the selection by designers is standardized as far as possible.

In the event of any doubt, the original
standards in Japanese should be referred.

□ : SI PHASE UNRELATED STANDARD
(The standard to which SI units are not given or which does not use units.)

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