"Pre Study for the discussion on Reversing Alarm System" -Japanese current situations-

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Noise Subcommittee/JASIC

Japan Automobile Standards Internationalization Center
http://www.jasic.org
Contents

1. Technical Standard and History in Japan

2. Reversing alarm standard for unit (JASO D901)

3. The attachment rate of the reversing alarm System for new Vehicles and sound pressure level

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* To equip reversing alarms is not mandatory. It is allowed to be equipped.

Reversing Alarm equipment is available for Retrofit

* In 1963, a Japanese company succeeded in developing the world’s first reversing alarm system.

* JASO (Japanese Automobile Standards Organization) established D901 "Reverse buzzer standard" in 1975.
## List of JASO Standards translated in English

<table>
<thead>
<tr>
<th>Number</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>#D618 : 08</td>
<td>Automotive parts – Test methods for unscreened low-voltage cables</td>
</tr>
<tr>
<td>#D620 : 03</td>
<td>Automobile - Copper alloy strips for electric and electronic connectors</td>
</tr>
<tr>
<td>D621 : 04</td>
<td>Automotive parts - 42V Fuse-links - Definitions and general test requirements</td>
</tr>
<tr>
<td>#D622 : 06</td>
<td>Automotive parts - Bolt-in type high-voltage fuse-links</td>
</tr>
<tr>
<td>D623 : 15</td>
<td>Automotive parts – Test methods and general performance requirements for wiring harness connector operation</td>
</tr>
<tr>
<td>#D801 : 96</td>
<td>Glossary of terms relating to electric systems and parts for automobiles</td>
</tr>
<tr>
<td>D802 : 01</td>
<td>Terminology of air conditioners for automobiles</td>
</tr>
<tr>
<td>D805 : 12</td>
<td>Automobile parts - Glossary of terms relating to electrical and optical connectors</td>
</tr>
<tr>
<td>#D901 : 96</td>
<td>Backup buzzer for automobiles</td>
</tr>
<tr>
<td>#D902 : 95</td>
<td>Durability testing methods for automotive electronic equipment</td>
</tr>
<tr>
<td>#D903 : 99</td>
<td>Road vehicles - SRS air bag system disposition</td>
</tr>
<tr>
<td>E002 : 89</td>
<td>Crankcase emission control system test procedure</td>
</tr>
</tbody>
</table>
2. Reversing alarm standard for unit : JASO D901

D901 : Main requirements

1. Sound pressure level : 75 - 95 dB
   Distance from the buzzer to microphone 1m, measured in anechoic chamber

2. Fundamental frequency : 400 - 4000 Hz
   (no fluctuation)

3. The intermittence number per minute : 60 - 120 count/min
3. The attachment rate of the reversing alarm system for new Vehicles

All new motor vehicles sold in Japan of categories N2, N3, and M3 are equipped with reversing alarms (beep type).

<table>
<thead>
<tr>
<th>Categories</th>
<th>Company A</th>
<th>Company B</th>
<th>Company C</th>
<th>Company D</th>
</tr>
</thead>
<tbody>
<tr>
<td>M3</td>
<td>—</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>N3</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>N2</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>
Measuring Point same as Germany Proposal

Measuring Point:
Distance from the end of the vehicle: 7m
Maximum sound level during microphone height: 0.5 ~ 1.5m
Measurement results of SPL

- N3: 59.9~75.0 dBA (Ave. 67.4 dBA)
- N2: 71.2~78.9 dBA (Ave. 75.6 dBA)
- M3: 56.9~69.1 dBA (Ave. 62.6 dBA)
**4. Questionnaire Research (Truck & Bus users)**

Number of company which responded our questionnaire

<table>
<thead>
<tr>
<th></th>
<th>Trucking Association (JTA)</th>
<th>Road Contractors Association (JRCA)</th>
<th>Bus Association (NBA)</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Responded Company</td>
<td>159</td>
<td>98</td>
<td>49</td>
<td>307</td>
</tr>
<tr>
<td>Total Owned Vehicle Number</td>
<td>about 5,800</td>
<td>about 1,900</td>
<td>about 2,500</td>
<td>about 10,200</td>
</tr>
</tbody>
</table>

How many vehicle does your company have?

- **JTA**
  - ≥ 50 (23.3%)
  - < 10 (4.1%)
  - 10 - 49 (62.3%)

- **JRCA**
  - ≥ 50 (4.1%)
  - 10 - 49 (55.1%)
  - < 10 (14.5%)

- **NBA**
  - ≥ 50 (26.5%)
  - < 10 (4.1%)
  - 10 - 49 (69.4%)
What is a major vehicle type at your workplace?

Japan Trucking Association (JTA) & Japan Road Contractors Association (JRCA)

<table>
<thead>
<tr>
<th></th>
<th>JTA</th>
<th>JRCA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tractors</td>
<td>15 (9.4)</td>
<td>2 (2.0)</td>
</tr>
<tr>
<td>Heavy duty</td>
<td>62 (39.0)</td>
<td>45 (45.9)</td>
</tr>
<tr>
<td>Medium duty</td>
<td>54 (34.0)</td>
<td>24 (24.5)</td>
</tr>
<tr>
<td>Small duty</td>
<td>5 (3.1)</td>
<td>5 (5.1)</td>
</tr>
<tr>
<td>Multiple category</td>
<td>23 (14.5)</td>
<td>22 (22.5)</td>
</tr>
</tbody>
</table>

Nihon Bus Association (NBA)

<table>
<thead>
<tr>
<th></th>
<th>NBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large buses</td>
<td>41 (83.7)</td>
</tr>
<tr>
<td>Medium buses</td>
<td>2 (4.1)</td>
</tr>
<tr>
<td>Large &amp; Medium</td>
<td>6 (12.2)</td>
</tr>
</tbody>
</table>
Almost all companies own vehicles equipped with reversing alarms. One bus company answered "None", however all the buses owned by the company are equipped with reversing camera.
Do you think motor vehicles need reversing alarms?

<table>
<thead>
<tr>
<th>Option</th>
<th>JTA</th>
<th>JRCA</th>
<th>NBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Necessary for all motor vehicles</td>
<td>141 (88.7)</td>
<td>91 (92.9)</td>
<td>43 (87.8)</td>
</tr>
<tr>
<td>Necessary for certain types of motor vehicles</td>
<td>11 (6.9)</td>
<td>5 (5.1)</td>
<td>2 (4.1)</td>
</tr>
<tr>
<td>Not necessary for any motor vehicles</td>
<td>3 (1.9)</td>
<td>1 (1.0)</td>
<td>2 (4.1)</td>
</tr>
<tr>
<td>Others</td>
<td>2 (1.3)</td>
<td>1 (1.0)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>No answer</td>
<td>2 (1.3)</td>
<td>0 (0)</td>
<td>2 (4.1)</td>
</tr>
<tr>
<td>Total</td>
<td>159 (100)</td>
<td>98 (100)</td>
<td>49 (100)</td>
</tr>
</tbody>
</table>

A lot of companies answered that reversing alarm is necessary for all motor vehicles. 5 of 6 companies who answered “not necessary for any” own vehicles equipped with reversing camera.
How Do You Feel About Volume of The Reversing Alarms in The Daytime and at Night? (Not using an Alarm Sound Reducer)

Daytime:

- **JTA**
  - n=145
  - Somewhat loud: 10%
  - Just right: 45%
  - Somewhat quiet: 20%
  - Too quiet: 25%
  - Too loud: 0%

- **JRCA**
  - n=94
  - Somewhat loud: 5%
  - Just right: 45%
  - Somewhat quiet: 15%
  - Too quiet: 30%
  - Too loud: 5%

- **NBA**
  - n=41
  - Somewhat loud: 10%
  - Just right: 45%
  - Somewhat quiet: 20%
  - Too quiet: 25%
  - Too loud: 0%

Night:

- **JTA**
  - n=132
  - Somewhat loud: 15%
  - Just right: 40%
  - Somewhat quiet: 25%
  - Too quiet: 20%
  - Too loud: 0%

- **JRCA**
  - n=92
  - Somewhat loud: 10%
  - Just right: 45%
  - Somewhat quiet: 20%
  - Too quiet: 25%
  - Too loud: 0%

- **NBA**
  - n=37
  - Somewhat loud: 10%
  - Just right: 45%
  - Somewhat quiet: 20%
  - Too quiet: 25%
  - Too loud: 0%
How Do You Feel About Volume of The Reversing Alarms in The Daytime and at Night? (Using an Alarm Sound Reduced)

**Daytime**

- **JTA** (n=41): Somewhat loud
- **JRCA** (n=31): Too quiet, Somewhat quiet, Just right
- **NBA** (n=6): Somewhat loud

**Night**

- **JTA** (n=40): Somewhat quiet, Too loud
- **JRCA** (n=32): Just right
- **NBA** (n=9): Too quiet, Somewhat loud
Have Local Residents Ever Complained About Reversing Alarms?

- **NBA**
  - n=49
  - Don’t have any motor vehicles with reversing alarms

- **JRCA**
  - n=97
  - Yes in the last 12 month
  - Yes, but not in the last 12 month
  - Never

- **JTA**
  - n=157

1: Many times (> 10 times every year)
2: From time to time (5 – 10 times every year)
3: Not often (< 5 times a year)
To ensure safety while reversing the vehicle, do you use any equipment or take any measures other than reversing alarms? (Multiple answers allowed)

<table>
<thead>
<tr>
<th></th>
<th>JTA</th>
<th>JRCA</th>
<th>JBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reversing cameras</td>
<td>82.9</td>
<td>52.7</td>
<td>100.0</td>
</tr>
<tr>
<td>Rear sonars</td>
<td>2.4</td>
<td>7.3</td>
<td>12.5</td>
</tr>
<tr>
<td>Directional microphones</td>
<td>0.0</td>
<td>0.0</td>
<td>50.0</td>
</tr>
<tr>
<td>Someone guiding while reversing</td>
<td>19.5</td>
<td>47.3</td>
<td>18.8</td>
</tr>
<tr>
<td>Others</td>
<td>2.4</td>
<td>10.9</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Many companies use several equipment (especially reversing cameras) other than reversing alarms, to ensure safety while reversing the vehicle. 'Directional microphones' are used in Bus association only.
All new motor vehicles sold in Japan of categories N2, N3, and M3 are equipped with reverse alarms (beep type), which are in fairly high demand from operation managers of automotive transport companies who own trucks and buses.

- Though differing somewhat depending on the vehicle category, the sound level of reverse alarms commonly used in Japan is typically 60–78 dB (measured by the method proposed by Germany).

- Most operation managers feel the sound level of reverse alarms (60–78 dB) is just right in the daytime, but a majority feel it is too loud at night.

- Regarding the use of reverse alarms, roughly half of operation managers have received complaints from local residents.

- In addition to reverse alarms, most motor vehicles of categories N2, N3, and M3 are equipped with reverse cameras to ensure safety while reversing. In some cases, even further measures are taken such as sonars, microphones, and someone guiding while reversing.