SAE International™

SURFACE VEHICLE RECOMMENDED PRACTICE

SAE J1192 NOV2010

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Performance of Audible Warning Devices for Motorcycles

RATIONALE

Not applicable.

FOREWORD

This SAE Standard establishes requirements and test procedures for the operational life, corrosion resistance, and sound pressure level output of motorcycle electric and electro pneumatic Audible Warning Devices (AWD). Test equipment, environment, and procedures are specified. Requirements for sound output after completion of life cycle and corrosion resistance tests, and a required minimum sound pressure level output as installed on the motorcycle are included. Two types of tests are specified: "Laboratory," to assess AWD durability, and "Vehicle," to assess AWD in-use acoustic performance.

1. SCOPE

The requirements of this document apply to all classes of motorcycles as defined in SAE J213.

1.1 Purpose

This document specifies performance and longevity requirements for motorcycle AWD's with the goal of enhancing vehicle safety.

2. REFERENCES

2.1 Applicable Documents

The following standards contain provisions which, through reference in this text, constitute provisions of this recommended practice. At the time of publication, the editions indicated were valid. All standards are subject to revision, and users of this recommended practice are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

2.1.1 SAE Publication

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 (outside USA), www.sae.org.

SAE J184 Qualifying a Sound Data Acquisition System

SAE J213 Motorcycle Classifications

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
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http://www.sae.org/technical/standards/J1192_201011

2.1.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM B 117 Salt Spray (Fog) Testing

2.1.3 ANSI Publications

Available from American National Standards Institute, 25 West 43rd Street, New York, NY 10036-8002, Tel: 212-642-4900, www.ansi.org.

ANSI S1.4-1983 (R2006) American National Standard Specification for Sound Level Meters

ANSI S1.40-2006 American National Standard Specifications and Verification Procedures for Sound Calibrators

2.1.4 IEC Publications

Available from IHS Standards Store, 15 Inverness Way East, Englewood, CO 80112, Tel: 877-413-5184, www.global.ihs.com.

IEC 60942 Electroacoustics - Sound Calibrators

2.2 Definitions

2.2.1 SHALL

A mandatory requirement.

2.2.2 SHOULD

Suggested or advisory, but not required.

2.2.3 MAY

Permitted, but not required.

2.3 Abbreviations

Audible warning device	AWD
Direct current	DC
Sound pressure level	SPL

3. REQUIREMENTS

3.1 Component Level Requirements

3.1.1 Endurance

After completing the endurance test specified in 4.3.1, the AWD when tested per 4.2 shall produce a sound pressure level of at least 103 dB(A).

3.1.2 Salt Spray

After completing the salt spray exposure specified in 4.3.2, the AWD when tested per 4.2 shall produce a sound pressure level of at least 103 dB(A).

3.2 Vehicle Level Specifications

When tested on the motorcycle as specified in 4.4, the AWD shall produce a sound pressure level of at least 85 dB(A).

4. TEST METHODS AND PROCEDURES

4.1 General Instrumentation

The following instrumentation shall be used:

4.1.1 A sound level meter meeting the Type 1, Type S1A, Type 2, or Type S2A requirements of ANSI S1.4-1983 (R2006). The meter shall be set for the A weighting scale and the fast response.

4.1.2 As an alternative to making direct measurements using a sound level meter, a microphone or sound level meter may be used with a recorder or other indicating instrument, provided the system meets the requirements of SAE J184.

4.1.3 A sound level calibrator with an accuracy of ±0.5 dB conforming to IEC 60942 (2003) Class 1 and/or ANSI S1.40–1984 (R1997).

4.1.4 A windscreen which does not affect microphone response more than ±1 dB for frequencies of 63 to 4000 Hz and ±1.5 dB for frequencies of 4000 to 10 000 Hz.

4.1.5 An anemometer with steady-state accuracy of ±10% at 9 m/s (20 mph).

4.1.6 For additional general comments see Appendix A.

4.2 Component Level Tests

Perform off-vehicle tests using the facility, power supplies and sound measuring equipment noted as follows.

4.2.1 Test Facility

Laboratory tests shall be made outdoors or in an acoustic chamber as follows.

4.2.1.1 Outdoor Laboratory

The outdoor test facility, if used, shall consist of a flat, open space free of large sound-reflecting surfaces (other than the ground) such as parked vehicles, signboards, buildings, or hillsides located within 5 m (16 ft) of the AWD being tested and the location of the sound level meter microphone. The area between the microphone and the AWD shall be paving or hard-packed earth, level within an average slope of 40 mm/m (0.5 in/ft) and shall be free of loose or powdered snow, plowed soil, grass of a height greater than 150 mm (6 in), trees, or other extraneous material.

4.2.1.2 Acoustic Chamber

The acoustic chamber, if used, should be constructed of material with an absorption coefficient of at least 90% down to a frequency at least 1 octave lower than the dominant frequency of the AWD under test.

4.2.2 Test Conditions

4.2.2.1 During component level testing the AWD shall be powered by a DC power supply system which shall furnish regulated and filtered direct current, such that the voltage measured at the AWD terminals, with the AWD operating shall be as noted in Table 1.

TABLE 1 - DC POWER SUPPLY SPECIFICATIONS

Rated Voltage	Supply Voltage
6 V	6.5 ± 0.2 V
12 V	13.0 ± 0.2 V
24 V	26.0 ± 0.2 V

4.2.2.2 The AWD and the measurement microphone shall be mounted 1.2 m ± 15 cm (4 ft ± 6 in) from the ground plane, separated by 2 m ± 0.08 m (6 ft 7 in ± 3 in) with the microphone on the acoustical axis (highest output) of the AWD.

4.2.2.3 The AWD shall be mounted to a rigid, non-reflecting surface.

4.2.2.4 During the test, the ambient temperature shall be 15 to 30 °C (59 to 86 °F).

4.2.2.5 Outdoor measurements shall be made only when the wind velocity does not exceed 19 km/h (12 mph).

4.2.2.6 No persons other than an observer reading the meter shall be within 3 m (10 ft) of the AWD or microphone.

4.2.2.7 The ambient sound pressure level coming from sources other than the AWD being measured, including wind, shall be at least 10 dB(A) lower than the measured level of the AWD being tested. When engine sound makes the 10 dB(A) differential impossible, the test may be run and the measurement corrected according to the principles for combining decibel signal levels, provided the result is identified as having been corrected, the correction method is identified, and the observed data is provided (see Appendix A).

4.2.3 Test Procedures

4.2.3.1 The sound output shall be measured during a 1 to 2 s period of operation. The applicable reading shall be the highest sound pressure level attained ignoring unrelated peaks due to extraneous ambient sounds.

4.2.3.2 At least six sound pressure level measurements shall be made with at least 2 min between measurements. The highest and lowest shall be discarded, and the remaining shall be averaged to obtain the reported value.

4.3 Endurance and Corrosion Resistance Testing

4.3.1 Endurance

A new AWD shall be operated for 50 000 cycles, each cycle consisting of 1 s on and 4 s off. The AWD may be adjusted to the manufacturer's specifications before conducting the test but not thereafter. During test, the ambient temperature shall be 15 to 30 °C (59 to 86 °F).

4.3.2 Corrosion Resistance

A new AWD shall be installed in a salt spray cabinet capable of containing the AWD to be tested and meeting the requirements of ASTM B 117, Salt Spray (Fog) Testing. The AWD shall be subjected to a salt spray test in accordance with ASTM B 117, Salt Spray (Fog) Testing, for 72 h.