21-1 Audible warning devices

Refer to: R28 00-S4

21-1.1 Effective date and Scope:

21-1.1.1 Effective date from 2019/1/1, the new types of audible warning devices used in category symbols M,N,L2, L3 and L5, and from 2021/1/1, all types of audible warning devices used in category symbols L2, L3 and L5, shall comply with this regulation.

21-1.1.1.1 Category symbols L2, L3 and L5 of a power less than or equal to 7 kW (9.51 horsepower) conform to “21 Audible warning devices” of “VSTD”, it could be deemed to comply with this regulation.

21-1.1.2 When applying for the low volume safety approval, the vehicle could exempt from regulation of “audible warning devices” except large passenger vehicle and child-only vehicle.

21-1.1.3 The vehicles applying for vehicle-by-vehicle low volume safety approval could exempt from regulation of “Audible warning devices ”.

21-1.2 Audible warning devices shall according to suitable types and range of principle are as below：

21-1.2.1 Trade name

21-1.2.2 Principles of operation

21-1.2.3 Type of electrical supply (direct or alternating current)

21-1.2.4 Outer shape of case

21-1.2.5 Shape and dimensions of diaphragm(s)

21-1.2.6 Shape or kind of sound outlet(s)

21-1.2.7 Rated sound frequency or frequencies

21-1.2.8 Rated supply voltage

21-1.2.9 For devices supplied directly from an external compressed air source, rated operating pressure

21-1.3 Audible warning devices:

21-1.3.1 The audible warning devices fitted on category symbols M and N and motor cycles of a power greater than 7 kW (9.51 horsepower)：

21-1.3.1.1 Measurement of the sound characteristics

21-1.3.1.1.1 Sound level:

21-1.3.1.1.1.1 This regulation applies to the audible warning device supplied with direct or alternating current or compressed air.

21-1.3.1.1.1.2 The audible warning device shall emit a continuous and uniform sound; its acoustic spectrum shall not vary substantially during its operation. For warning devices supplied with alternating current, this requirement shall apply only at constant generator speed.

21-1.3.1.1.1.3 The microphone shall be so placed that its diaphragm is at a distance of 2 (± 0.01) m from the plane of the sound outlet of the device. The device to be tested and the microphone shall be placed at the same height. This height shall be between 1.15 and 1.25 m. The background (ambient) noise level shall be at least 10 dB (A) lower than the sound pressure level to be measured.

21-1.3.1.1.2 Endurance:

21-1.3.1.1.2.1 In the case of AWDs supplied with direct current shall be supplied with current at a voltage measured at the terminal of the electric power source of 13/12 of the rated voltage and its the resistance of the connecting leads, expressed in ohms, including terminals and contacts, shall be as close as possible to (0.10/12) x rated voltage in volts. The supply voltage varies between 115% and 95% of its rated voltage.

21-1.3.1.1.2.2 For AWDs supplied with alternating current, the supply voltage varies between 50% and 100% of the maximum speed of the generator indicated by the manufacturer for continuous operation.

21-1.3.1.1.2.3 The test is performed for 50,000 times, each time for one second followed by an interval of four seconds. If, after the AWD has been operated for half the number of times prescribed, the sound level characteristics are no

longer the same as before the test, the AWD may be adjusted. After being operated the prescribed number of times, and after further adjustment if necessary, the AWD must pass the test. For warning devices of the electro-pneumatic type, the device may be lubricated with the oil recommended by the manufacturer after every 10,000 times of operation.

21-1.3.1.2 Accepting standard

21-1.3.1.2.1 Sound level

21-1.3.1.2.1.1 The sound level shall not exceed 118 dB (A). The total sound pressure level within the band 1800-3550 Hz shall be greater than that of any component of a frequency above 3,550 Hz and in any event equal to or greater than 105 dB (A).

21-1.3.1.2.1.2 The time lapse between the moment when the device is actuated and the moment when the sound reaches the minimum value prescribed in 21-1.3.1.2.1.1 above shall not exceed 0.2 second.

21-1.3.1.2.2 Endurance: After performing the endurance test specified above, the sound level shall comply with the requirement specified in 21-1.3.1.1.1 above.

21-1.3.2 The audible warning devices (AWDs) fitted on category symbols L2, L3 and L5 and motor cycles of a power less than or equal to 7 kW(9.51 horsepower)：

21-1.3.2.1 Measurement of the sound characteristics

21-1.3.2.1.1 Sound level:

21-1.3.2.1.1.1 This regulation applies to the audible warning device supplied with direct or alternating current or compressed air.

21-1.3.2.1.1.2 The audible warning device shall emit a continuous and uniform sound; its acoustic spectrum shall not vary substantially during its operation. For warning devices supplied with alternating current, this requirement shall apply only at constant generator speed.

21-1.3.2.1.1.3 The microphone shall be so placed that its diaphragm is at a distance of 2 (± 0.01) m from the plane of the sound outlet of the device. The device to be tested and the microphone shall be placed at the same height. This height shall be between 1.15 and 1.25 m. The background (ambient) noise level shall be at least 10 dB (A) lower than the sound pressure level to be measured.

21-1.3.2.1.2 Endurance:

21-1.3.2.1.2.1 In the case of AWDs supplied with direct current shall be supplied with current at a voltage measured at the terminal of the electric power source of 13/12 of the rated voltage and its the resistance of the connecting leads, expressed in ohms, including terminals and contacts, shall be as close as possible to (0.10/12) x rated voltage in volts. The supply voltage varies between 115% and 95% of its rated voltage.

21-1.3.2.1.2.2 For AWDs supplied with alternating current, the supply voltage varies between 50% and 100% of the maximum speed of the generator indicated by the manufacturer for continuous operation.

21-1.3.2.1.2.3 The test is performed for 10,000 times, each time for one second followed by an interval of four seconds. If, after the AWD has been operated for half the number of times prescribed, the sound level characteristics are no longer the same as before the test, the AWD may be adjusted. After being operated the prescribed number of times, and after further adjustment if necessary, the AWD must pass the test.

21-1.3.2.2 Accepting standard

21-1.3.2.2.1 Sound level:

21-1.3.2.2.1.1 The sound level shall not exceed 115 dB (A). The total sound pressure level in the band 1800-3550 Hz shall be greater than that of any component of a frequency above 3,550 Hz and in any event equal to or greater than 95 dB (A).

21-1.3.2.2.1.2 The time lapse between the moment when the device is actuated and the moment when the sound reaches the

minimum value prescribed in 21-1.3.2.2.1.1 above shall not exceed 0.2 second.

21-1.3.2.2.2 Endurance: After performing the endurance test specified above, the sound level shall comply with the requirement specified in 21-1.3. 2.1.1 above.