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| Chapter and/or Section;-Number and title-Chapitre ou section-Numéro et titre Part B: Test Methods Section, Method M-04 TEST METHOD TO DETERMINE THE NOISE LEVEL OF TOYS | | | Amendment number- Numéro de la modification 2 |

1 SCOPE AND PURPOSE

- 1.1 This method describes a procedure for testing noise levels in toys and is applicable to item 10 (a) of Schedule I, Part 1 of the Hazardous Products Act.
- 1.2 This method is provided to facilitate laboratory procedures only. It is the trader's responsibility to ensure that the product is tested according to, and meets the requirements of the HPA and its Regulations.
- 1.3 The purpose of the test is to determine that a toy is designed and constructed, so that it shall not make or emit noise exceeding one hundred decibels measured at a distance that the product ordinarily would be from the ear of a child using it.

2 APPLICABLE DOCUMENTS

- 2.1 Hazardous Products Act, Schedule I, Part 1.
- 2.2 Anthropometry of Infants, Children and Youths to Age 18 for Product Safety Design; Michigan Univ, Ann Arbor, 31 May 77.
- 2.3 Bruel & Kjaer instruction manual.

3 APPARATUS


- 3.1 Sound Level Meter Bruel & Kjaer, Type 2231, or other instrument with equal capabilities.
- 3.2 Bruel & Kjaer Pistophone, Type 4220, with the Microphone Adaptor or a similar device, which is enabling the analyst to calibrate the Sound Level Meter.
- 3.3 Support for the Sound Level Meter.
- 3.4 Support for the toy being evaluated.
- 3.5 Stop watch.

4 SAMPLING

- 4.1 In as much as possible and where the quantity of sample elements available for testing is sufficient, the following test procedure should be conducted on a minimum of three specimens.

5 TESTING PROCEDURE

- 5.1 Calibrate the Sound Level Meter in accordance with the manufacturer's instructions.

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- 5.2 Set the Sound Level Meter to the "A" weighting network and the fast response time "F" to measure MAXL (Max. RMS level) in dB(A). **Note:** Definition are in the Bruel & Kjaer Instruction Manuals.
- 5.3 Attach the Sound Level Meter to the support.
- 5.4 Check the background noise level.
- 5.5 Establish the group of the toy (See Appendix "B") and the co-ordinates for testing (see Appendix "A").
- 5.6 Position the toy according to the individual Appendices.
- 5.7 Generate the sound for a minimum of 5 seconds using a foreseeable use force.
- 5.8 Record the noise level.
- 5.9 Repeat steps 5.5 through 5.8 four more times.

6 TEST REPORT


- 6.1 The test report should contain the following information:
 - 6.1.1 A description of the product, brand, style and country of origin.
 - 6.1.2 The number of specimens tested.
 - 6.1.3 The position, ie the co-ordinates, and orientation of the toy in relation to the microphone of the Sound Level Meter.
 - 6.1.4 The five noise levels recorded for each specimen in dB(A).
 - 6.1.5 The analyst's name and signature.
 - 6.1.6 The signature of the approving officer.

7 QUALITY CONTROL PROCEDURES

- 7.1 Check calibration of the Sound Level Meter before each test run.
- 7.2 Check the background noise level before each test run and ensure it is kept below 60 dB(A).

8 PRECISION AND BIAS


- 8.1 This section of the test method is under development and will be added in a revised issue when completed.

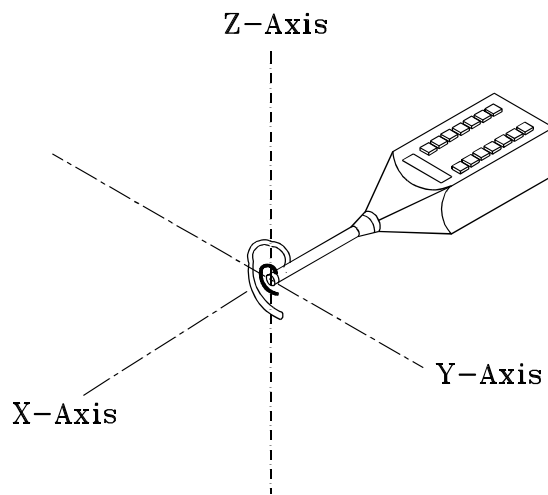
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APPENDIX "A"


DESCRIPTION OF THE CO-ORDINATE SYSTEM

- A.1 The co-ordinate system is used to describe the position of the centre of a noise source in relation to a child's ear. During laboratory measurements of noise, the child's ear is assumed to be the microphone of the Sound Level Meter. From anthropometric data, the 95th percentile for male and female in 2 - 3.5 years age category was used as a guideline for development of co-ordinates.
- A.2 The origin of the co-ordinates "O" is assumed to be at the centre of the microphone face.
- A.3 The x-axis is assumed to be an imaginary horizontal line running through both ears, and which is perpendicular to the microphone face.
- A.4 The y-axis is assumed to be a horizontal line perpendicular to the x-axis and intersecting it at the origin.
- A.5 The z-axis is assumed to be a vertical line going through the origin "O".
- A.6 The co-ordinate system is shown in the following sketch.

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Sketch of Co-ordinate System

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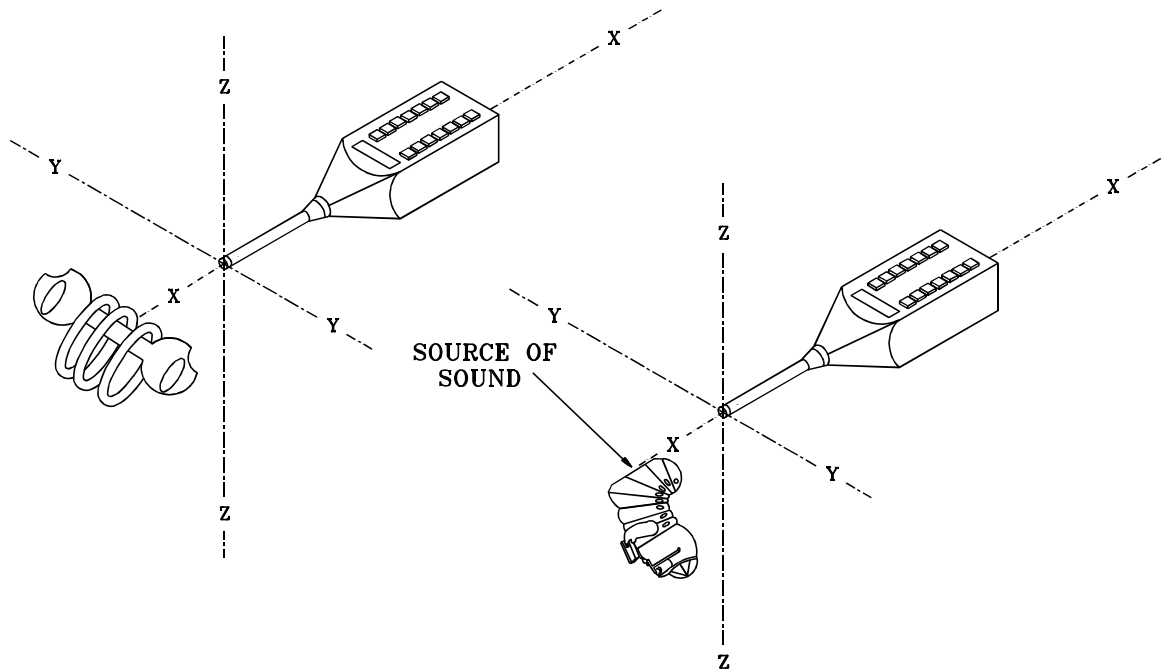
APPENDIX "B"


CO-ORDINATES FOR INDIVIDUAL GROUP OF TOYS

B.1 A GROUP OF TOYS INCLUDING SQUEEZE TOYS, RATTLES AND OTHER SIMILAR TOYS

Position squeeze toys, rattles, or other similar toys in such a way that the distance between the centre of the microphone and the source of noise is equal to 150 mm. This distance is measured along the x-axis. The air from the source of noise should be blown perpendicular to the longitudinal axis of the microphone (ie in the direction of Y or Z). See figure below.

co-ordinates: $x = 150 \text{ mm}$
 $y = 0 \text{ mm}$
 $z = 0 \text{ mm}$



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B.2 A GROUP OF TOYS INCLUDING MUSICAL INSTRUMENTS USING BLOWING AIR FROM MOUTH

The position of the source of noise from the origin is described by the co-ordinates as follows:

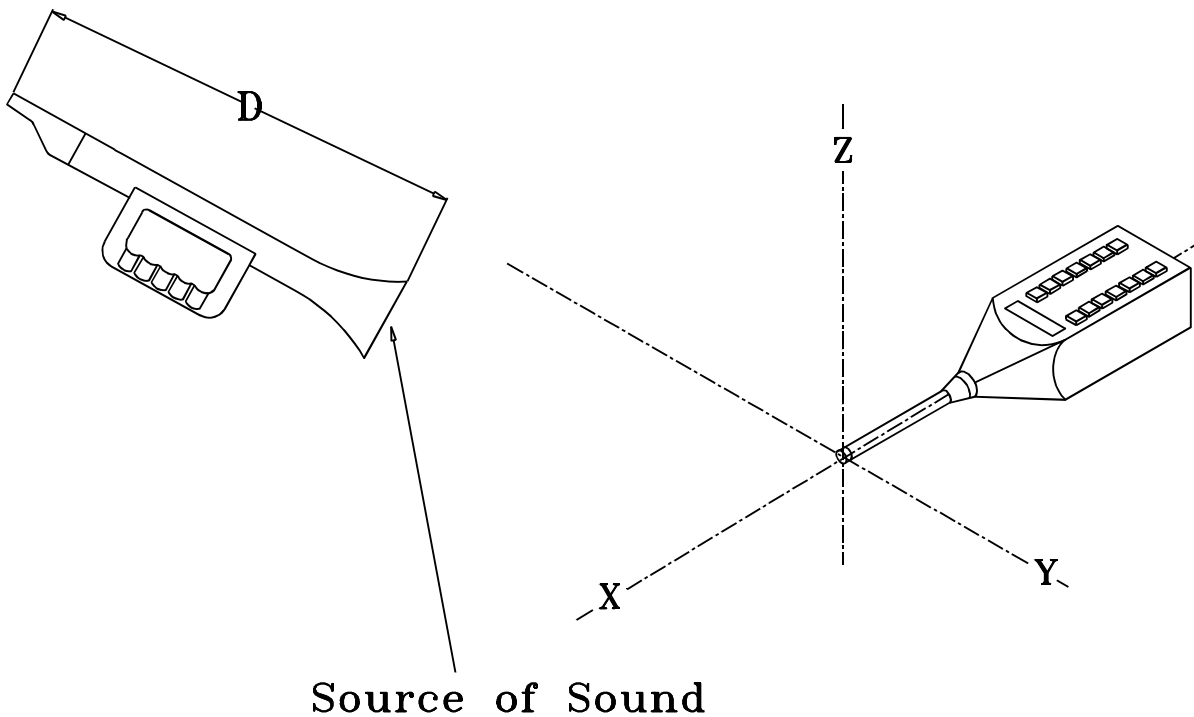
$$x = 75 \text{ mm}$$


$$y = 100 \text{ mm} + D$$

where D is the distance between the child's mouth and the centre of noise source.

$$z = 45 \text{ mm}$$

The air from the source of noise should be blown perpendicular to the longitudinal axis of the microphone (ie in the direction of Y). See figure below.

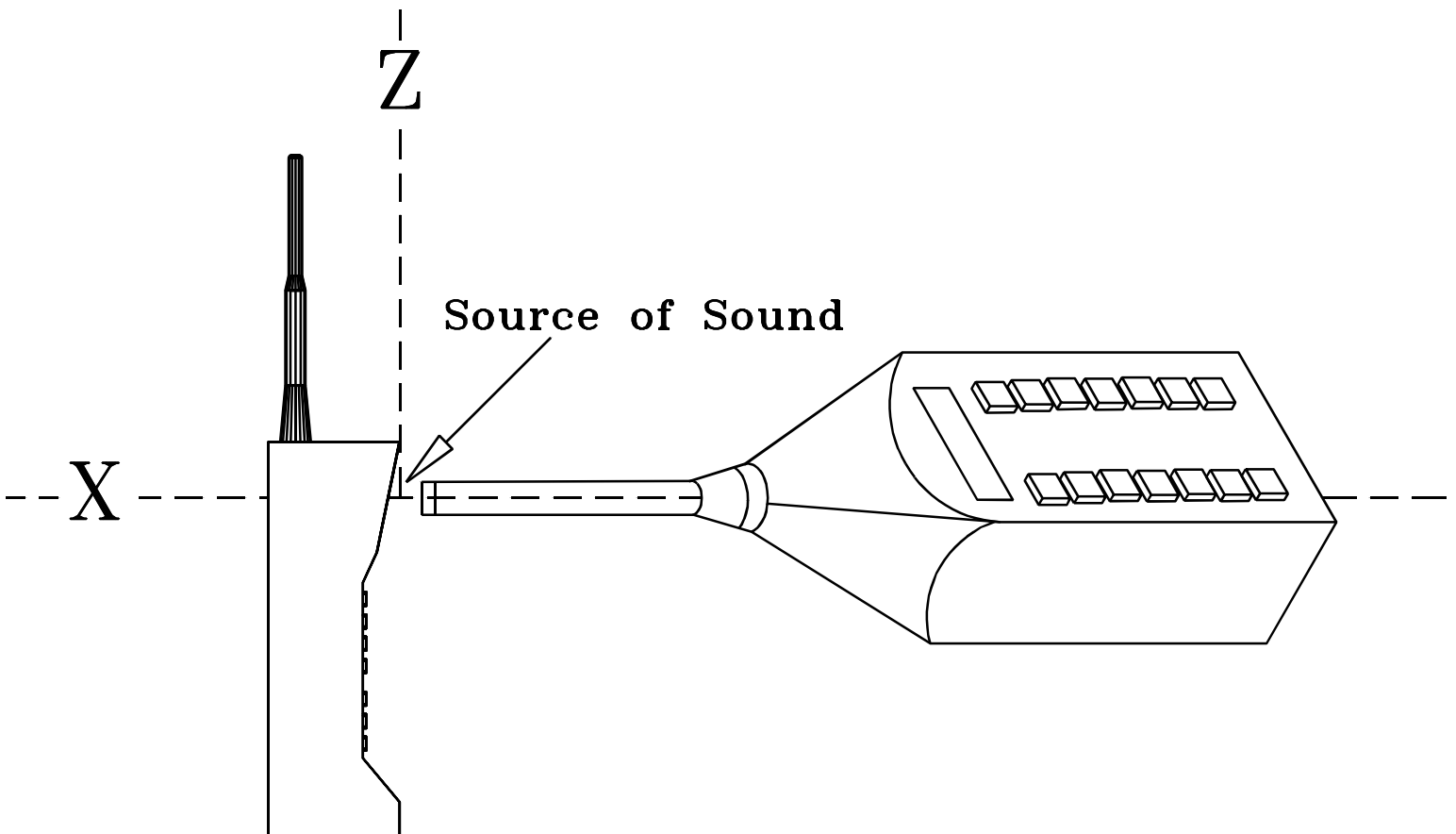



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B.3 A GROUP OF TOYS INCLUDING TELEPHONES, EAR-PHONES AND SIMILAR TOYS

Position telephones, ear-phones and similar types of toys in such a way that the distance between the centre of the ear piece and the centre of the microphone is equal to 10 mm ($x = 10$ mm). The ear piece faces the microphone, during testing. See figure below.

co-ordinates: $x = 10$ mm
 $y = 0$ mm
 $z = 0$ mm

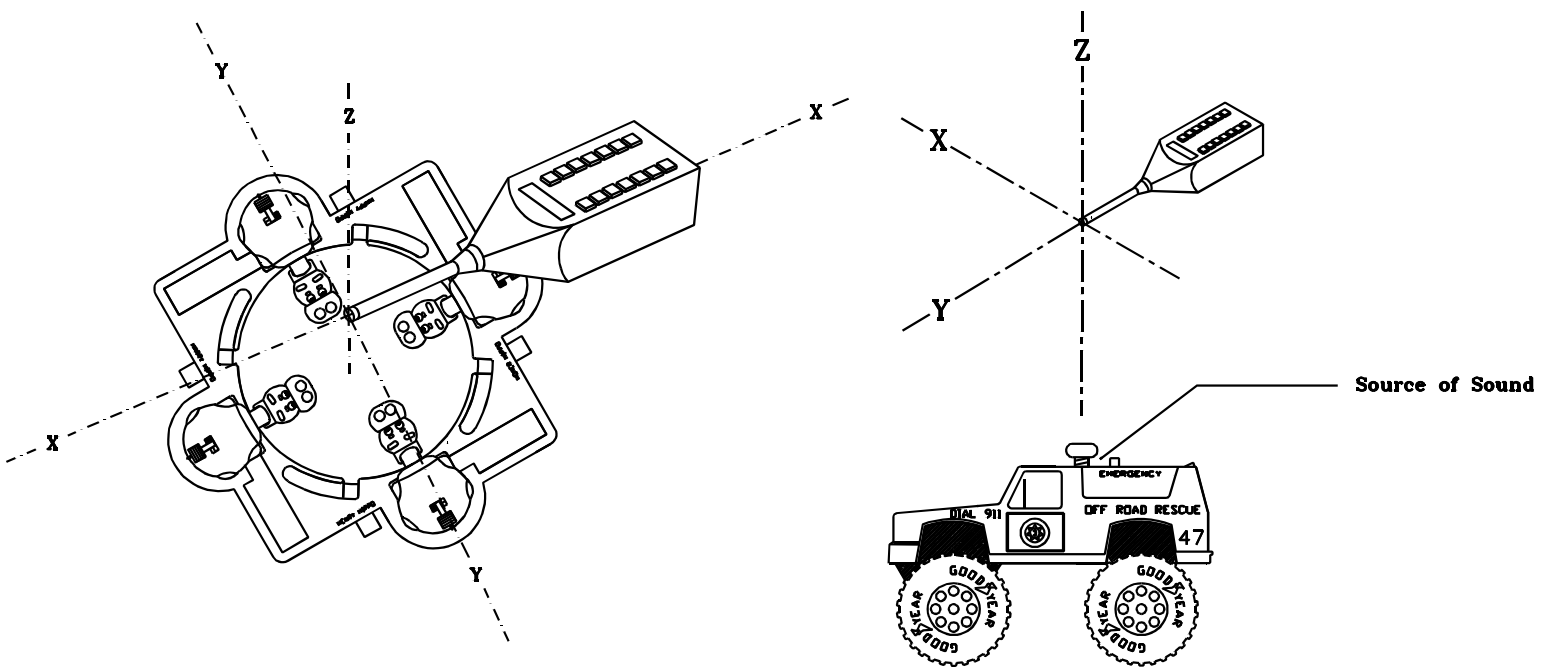



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B.4 A GROUP OF TOYS PLACED ON A DESK IN FRONT OF A CHILD

This group includes a variety of games, xylophones, trucks, push/pull toys with flexible shafts, etc. See figure below.

co-ordinates : $x = 0 \text{ mm}$
 $y = 0 \text{ mm}$
 $z = 300 \text{ mm}$



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B.5 A GROUP OF TOYS INCLUDING LONG BARRELLED GUNS


Rationale for coordinate selection: The end of the butt of the long barrelled gun is pressed against the child's shoulder and the child's head is inclined to aim the gun. In such a body position, the distance between the child's ear and the longitudinal axis of the barrel in direction of axis x was estimated as 50 mm. The distance between the ear, which is above the end of the butt, and the noise source is equal to $y = D$. The ear is on the same level as the longitudinal axis of the barrel, therefore $z = 0$.

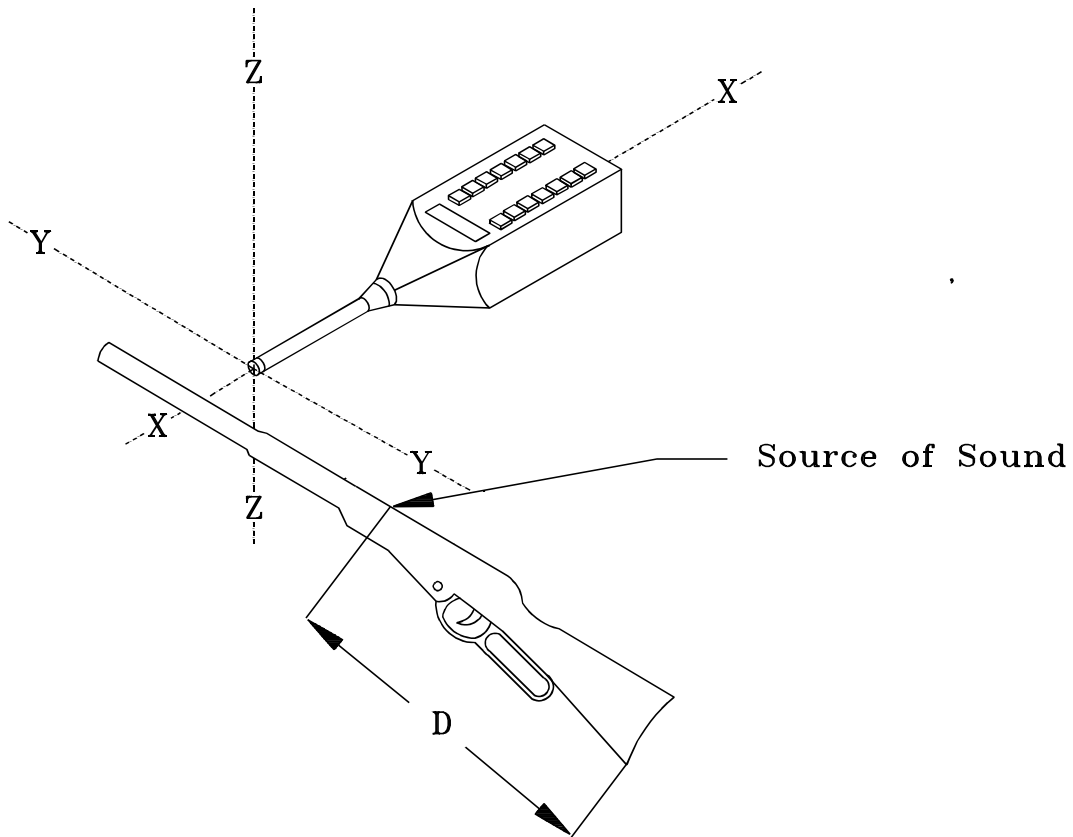
The longitudinal axis of the barrel is in horizontal position and is parallel with the front face of the microphone. See figure following page.


co-ordinates: $x = 50 \text{ mm}$
 $y = 0 \text{ mm} + D$

where D is the distance between the ear and the source of noise (in mm).

$z = 0 \text{ mm}$

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B.6 A GROUP OF TOYS INCLUDING PISTOLS


Rationale for selecting the co-ordinates: The child is holding the pistol in a stretched arm. The distance between the child's ear and the pistol grip was estimated as $y = 400$ mm. This distance has to be adjusted by D , which is a distance between the pistol grip and the source of the noise. The longitudinal axis of the pistol barrel is on the ear level and in the same plane as the ear. Therefore, co-ordinates $x = 0$ and $z = 0$.

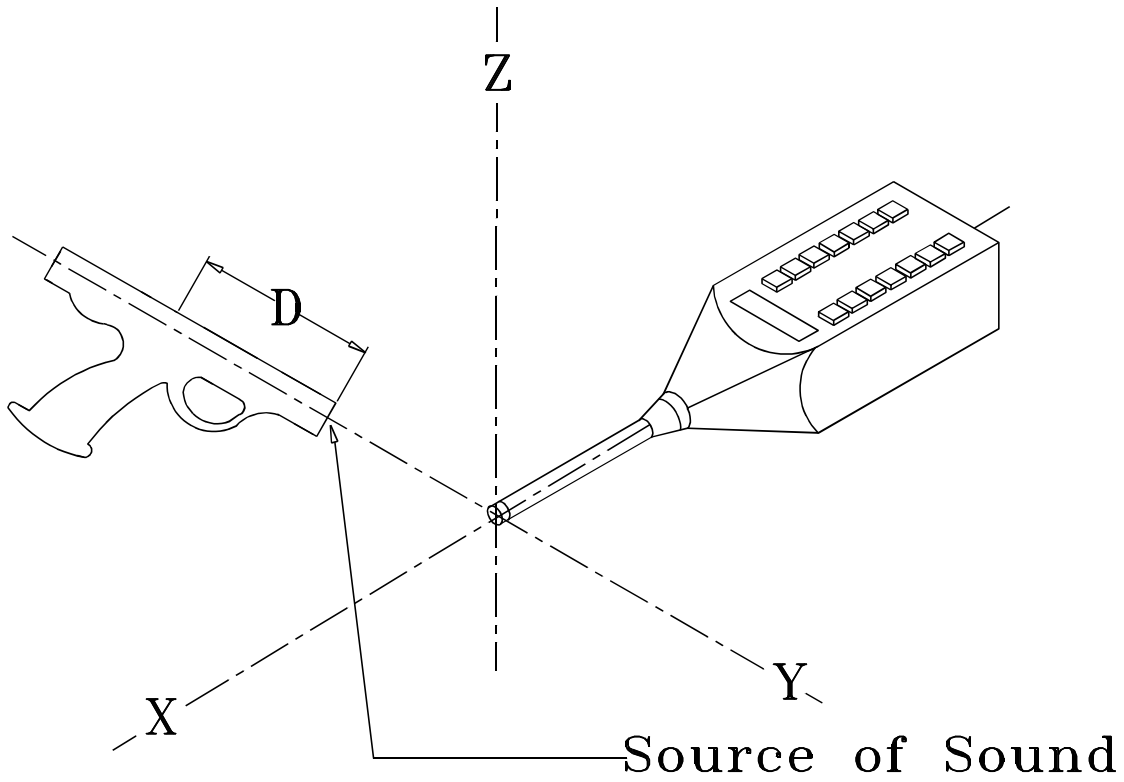
The longitudinal axis of the barrel is in horizontal position and is parallel with the front face of the microphone. See figure following page.


co-ordinates: $x = 0$ mm
 $y = 400$ mm + D

where D is the distance between the centre of the pistol grip and the source of sound.

$z = 0$ mm

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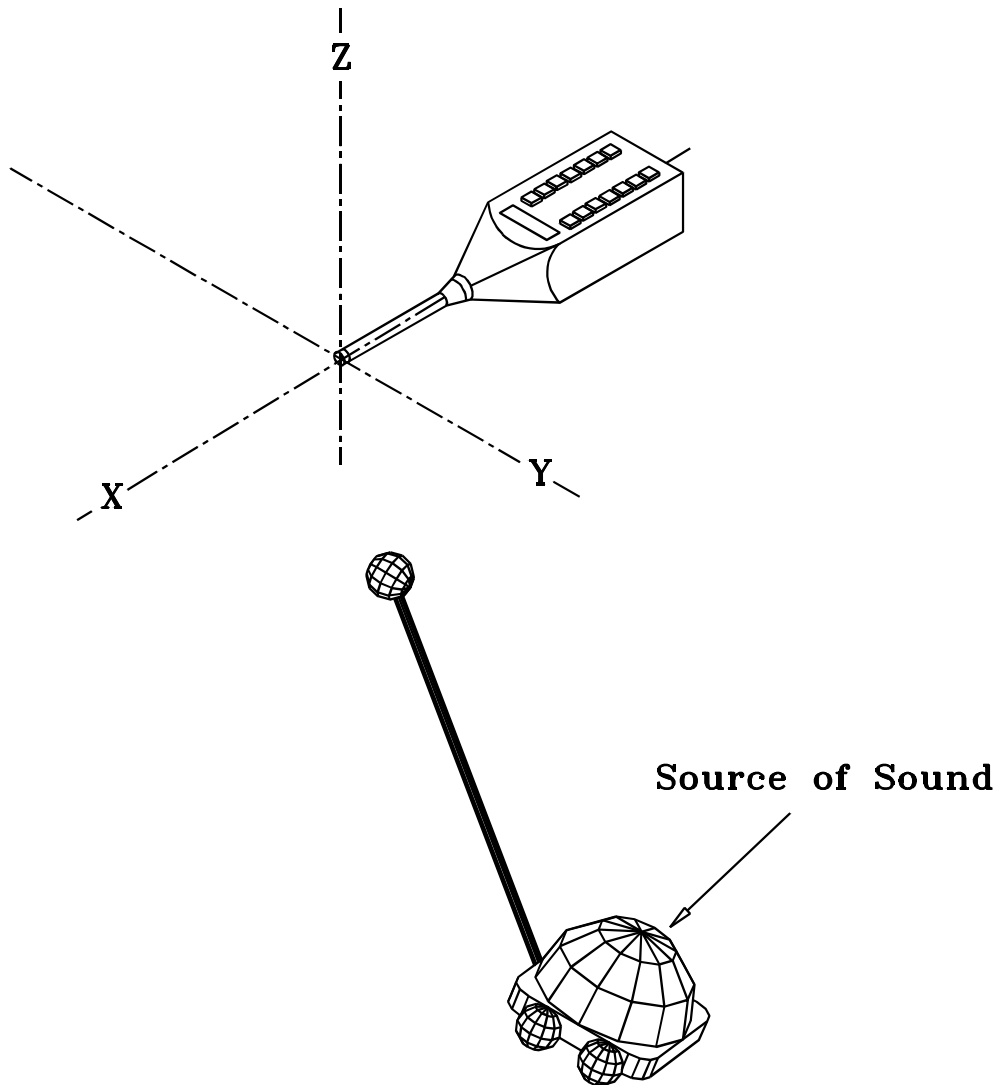



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B.7 A GROUP INCLUDING PUSH/PULL TOYS

See figure below.

co-ordinates: x = 60 mm
 y = 500 mm
 z = 800 mm



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B.8 A GROUP INCLUDING TAPE RECORDERS

Use standard tape for testing.

Rationale for selecting the co-ordinates: The child is bending over the playing tape recorder to adjust the buttons. The ear is 300 mm above the noise source. See figure below.

co-ordinates: $x = 0$ mm
 $y = 0$ mm
 $z = 300$ mm

