

INTERNATIONAL  
RECOMMENDATION

**OIML R 52**

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Hexagonal weights -  
Metrological and technical requirements

Poids hexagonaux -  
Exigences métrologiques et techniques

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OIML R 52 Edition 2004 (E)



ORGANISATION INTERNATIONALE  
DE MÉTROLOGIE LÉGALE

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INTERNATIONAL ORGANIZATION  
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## Contents

<i>Foreword</i> .....	3
<b>1 General</b> .....	<b>4</b>
1.1 Scope .....	4
1.2 Units and nominal values for hexagonal weights .....	4
<b>2 Metrological requirements</b> .....	<b>4</b>
<b>3 Technical requirements</b> .....	<b>4</b>
3.1 Shape .....	4
3.2 Construction .....	4
3.3 Material .....	4
3.4 Dimensions .....	4
3.5 Surface conditions .....	5
3.6 Adjustment .....	5
3.7 Marking .....	5
<b>4 Metrological controls</b> .....	<b>5</b>

## Foreword

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This publication - reference OIML R 52 Edition 2004 (E) - was developed by the OIML Technical Subcommittee TC 9/SC 3 *Weights*. It was approved for final publication by the International Committee of Legal Metrology in 2003 and will be submitted to the International Conference of Legal Metrology in 2004 for formal sanction.

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# Hexagonal weights - Metrological and technical requirements

## 1 General

### 1.1 Scope

This Recommendation applies to hexagonal weights made of grey cast iron with the denominations specified in 1.2 below.

### 1.2 Units and nominal values for hexagonal weights

Hexagonal weights shall be made in the nominal values listed in Table 1.

## 2 Metrological requirements

The maximum permissible errors for hexagonal weights are listed in Table 1.

## 3 Technical requirements

### 3.1 Shape

A hexagonal weight shall be in the shape of an inverted frustum of a pyramid with a hexagonal base.

### 3.2 Construction

3.2.1 A hexagonal weight shall be of one-piece construction and shall be cast with an adjustment cavity.

3.2.1.1 The adjustment cavity for hexagonal weights shown in Figure 1 shall be in the shape of a right circular cone located axially and having its smaller diameter opening into the bottom face of the weight (see 3.6).

Table 1 Nominal values and maximum permissible errors for hexagonal weights

Nominal value	Maximum permissible errors for initial verification*
100 g	± 100 mg
200 g	± 100 mg
500 g	± 250 mg
1 kg	± 500 mg
2 kg	± 1 000 mg
5 kg	± 2 500 mg
10 kg	± 5 000 mg
20 kg	± 10 000 mg
50 kg	± 25 000 mg

\* Values for subsequent verification are left to the discretion of each state

3.2.1.2 The adjustment cavity for hexagonal weights shown in Figure 2 shall be in the shape of a frustum of a pyramid with a rectangular base and having its smaller diameter opening into the bottom face of the weight (see 3.6).

3.2.2 Hexagonal weights of 5, 10, 20 and 50 kg shall be cast with an integral lifting handle.

### 3.3 Material

Hexagonal weights shall be made of grey cast iron.

### 3.4 Dimensions

All six sides of a hexagonal weight (i.e. excluding the top and the bottom) shall be equal in size and shape. The recommended dimensions for hexagonal weights are presented in Tables 2 and 3, which reference Figures 1 and 2.

Table 2 Dimensions (in millimetres) for 100 g to 2 kg hexagonal weights (see Figure 1)

Nominal value	A <sub>1</sub>	A <sub>2</sub>	H	o	d <sub>1</sub>	d <sub>2</sub>	p	n (*)
100 g	34	26	21	3	12	15	12	2
200 g	42	34	26	4	15	19	15	3
500 g	56	44	35	4	20	26	20	3
1 kg	71	55	44	5	26	33	25	4
2 kg	89	69	55	5	33	42	30	4

(\*) minimum value  
*Note:* The radius at the bottom of the adjusting cavity must be less than the thickness of the lead (n).

Table 3 Dimensions (in millimetres) for 5 kg to 50 kg hexagonal weights (see Figure 2)

Nominal value	A <sub>1</sub>	A <sub>2</sub>	B <sub>1</sub>	B <sub>2</sub>	H	a	o	C <sub>1</sub>	C <sub>2</sub>	C <sub>3</sub>	C <sub>4</sub>	n (*)
5 kg	139	130	80	70	68	19	10	35	49	55	17	5
10 kg	165	155	90	80	96	20	10	53	66	60	22	5
20 kg	210	198	110	100	112	25	14	63	77	70	30	5
50 kg	283	266	150	135	150	40	14	105	135	110	30	5

(\*) minimum value  
*Note:* The radius at the bottom of the adjusting cavity must be less than the thickness of the lead (n)

### 3.5 Surface conditions

3.5.1 The surfaces of a weight shall be smooth and free from blemishes and porosity.

3.5.2 A weight shall not have sharp edges or corners.

3.5.3 If necessary, a hexagonal weight shall be protected against corrosion by a suitable wear and impact resistant coating.

### 3.6 Adjustment

3.6.1 Adjustments shall be made with lead cast into the adjustment cavity.

3.6.2 At least two-thirds of the total volume of the adjustment cavity shall be empty after initial calibration.

### 3.7 Marking

3.7.1 The nominal value of a hexagonal weight shall appear on its top surface and shall be shown as 100 g, 200 g, 500 g or 1 kg, 2 kg, 5 kg, 10 kg, 20 kg or 50 kg. Unit symbols (i.e. g or kg) shall be clear and easily readable.

3.7.2 The manufacturer's name may appear on the top surface of a hexagonal weight.

## 4 Metrological controls

Control marks shall be placed on the lead seal that closes the adjustment cavity.

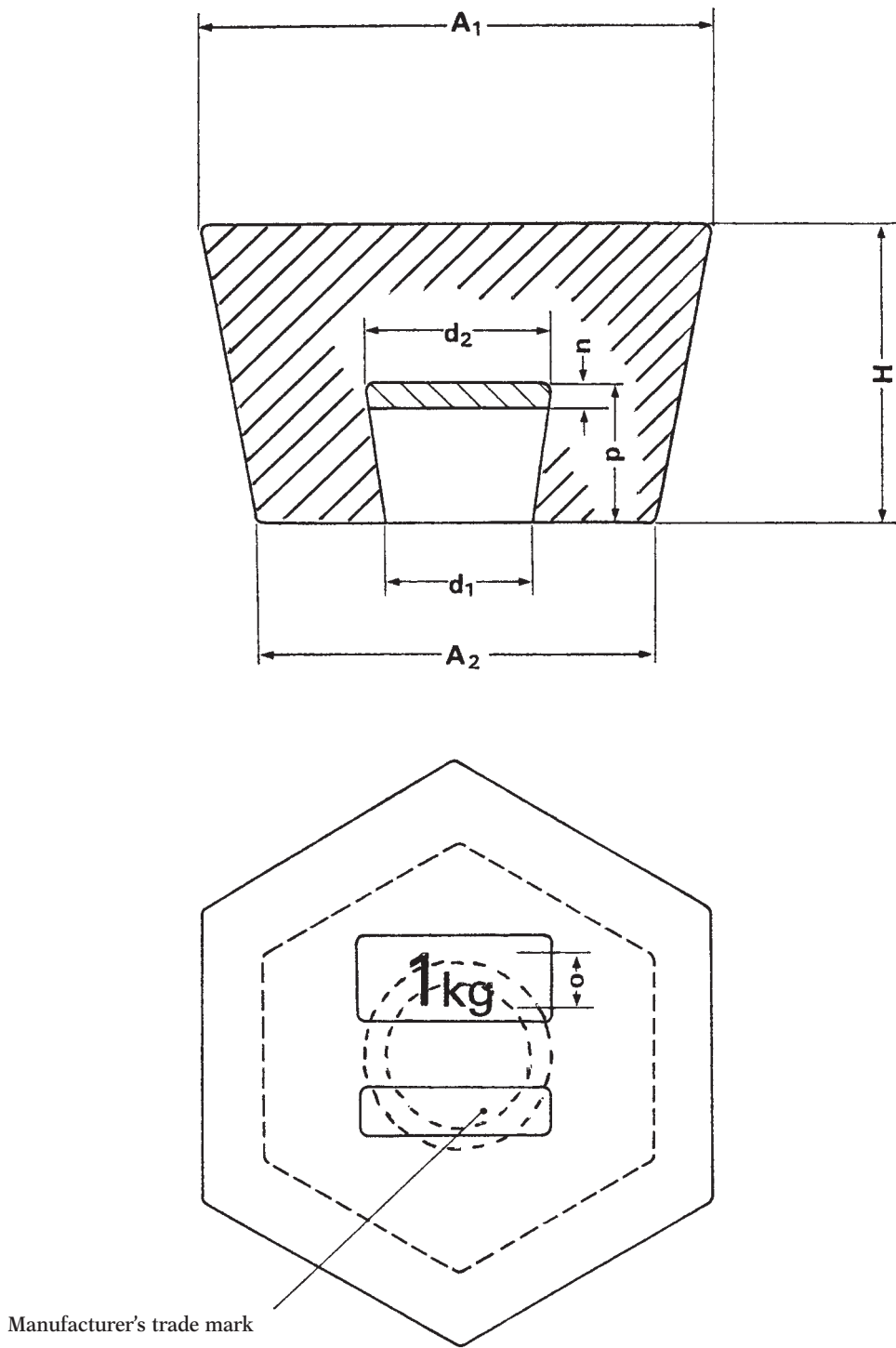


Figure 1 Hexagonal weights from 100 g to 2 kg (See Table 2 for dimensions)

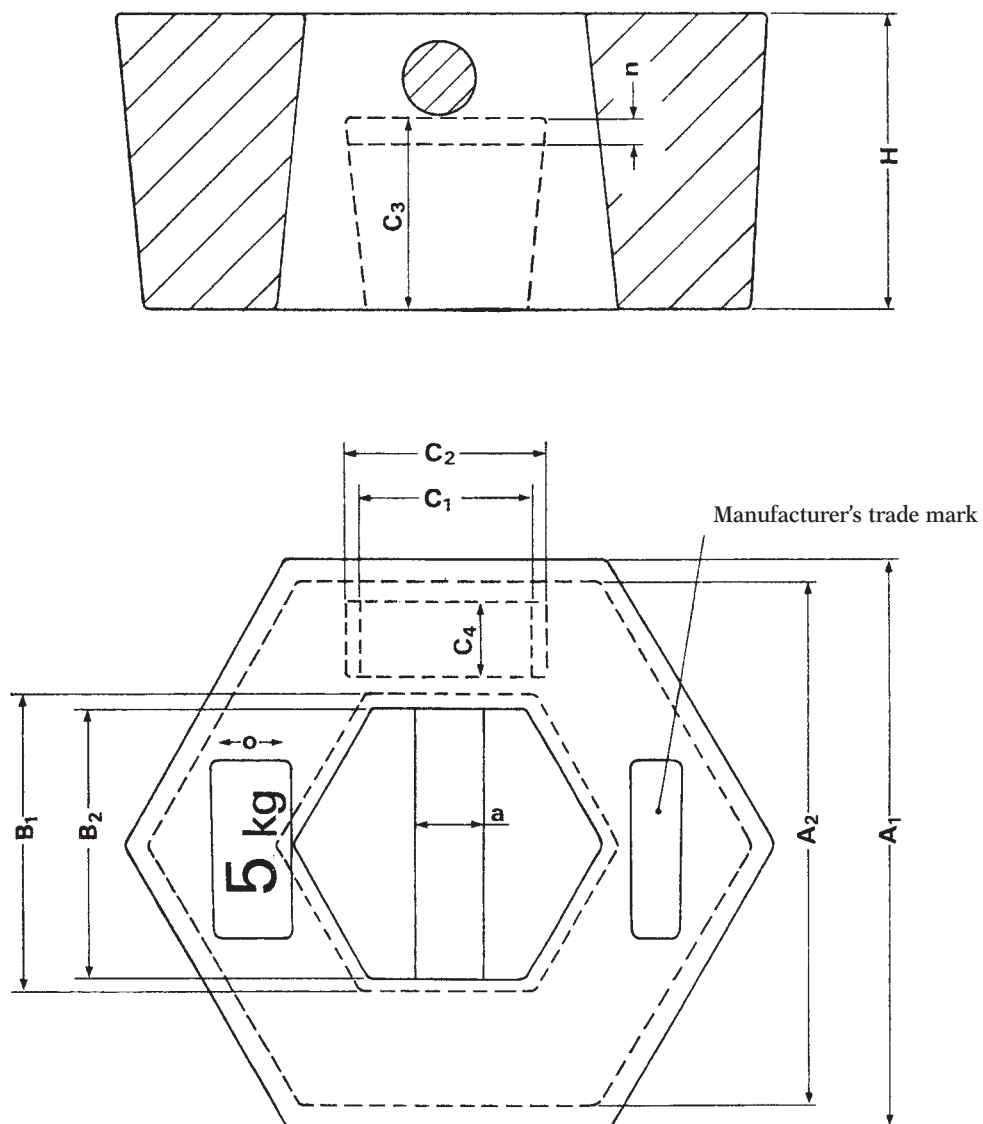


Figure 2 Hexagonal weights from 5 kg to 50 kg (See Table 3 for dimensions)

