Australian Government
National Measurement Institute

Bradfield Road, West Lindfield NSW 2070

Cancellation

General Certificate of Approval

No 3/0/A

Issued by the Chief Metrologist under Regulation 60
of the
National Measurement Regulations 1999

This is to certify that the approval for use for trade granted in respect of the pattern and variants of

Masses of 1 mg to 20 kg Capacity

has been cancelled in respect of new instruments as from 1 March 2012.

General Certificate of Approval No 3/0B issued 27 May 2008 for *Masses of Certain Denominations* is still valid for new instruments.

Signed by a person authorised by the Chief Metrologist to exercise his powers under Regulation 60 of the *National Measurement Regulations 1999*.

NATIONAL STANDARDS COMMISSION

NATIONAL MEASUREMENT (PATTERNS OF INSTRUMENTS) REGULATIONS

REGULATION 9

GENERAL CERTIFICATE OF APPROVAL No 3/0/A

This is to certify that an approval for use for trade has been granted in respect of the pattern and variants of

Masses of 1 mg to 20 kg Capacity.

This Certificate is issued upon completion of a review of NSC Approval No 3/0.

CONDITION OF APPROVAL

- This approval is subject to review on or after 1/8/94.

Signed

J. Birch

Executive Director

Descriptive Advice

Pattern: approved 13/7/89

- Masses of 1 mg to 20 kg.

Variants: approved 13/7/89

1. Metric carat masses.
2. Special industrial masses.

- Technical Schedule No 3/0/A describes the pattern and variants.

Filing Advice

The documentation for this approval comprises:

General Certificate of Approval No 3/0/A dated 28/9/89
Technical Schedule No 3/0/A dated 28/9/89
Tables 1 to 4 dated 28/9/89
Figure 1 dated 28/9/89

NATIONAL STANDARDS COMMISSION

TECHNICAL SCHEDULE No 3/0/A

Pattern: Masses of 1 mg to 20 kg.

1. Description of Pattern

1.1 Nominal Values

The masses shall be limited to the following values:

1, 2, 5, 10, 20, 50, 100, 200, 500 mg;
1, 2, 5, 10, 20, 50, 100, 200, 500 g; and
1, 2, 5, 10, 20 kg.

1.2 Construction

1.2.1 Materials

Apart from lead inserted for adjustment and stamping, masses shall be made of iron, brass, gun-metal, bronze, non-magnetic stainless steel, nickel-silver, platinum or aluminium, provided masses of less than 100 g shall not be made of iron and masses of less than 50 mg for use in pharmaceutical dispensing shall be made of aluminium.

Masses shall not be composed of two or more different un-alloyed metals, apart from lead for adjustment and stamping, and hard adherent coatings of nickel, chromium or zinc.

1.2.2 Finish

Every mass shall be clean and free from corrosion, shall be smooth on all surfaces and shall have no flaws. Every iron mass shall be painted, black-leaded or protected by sherardising or galvanising.

Masses shall not have a split ring or other removable parts.

Masses may be plated with a coating of nickel, chromium or zinc.

1.2.3 Shape

The masses shall be in one single piece and constructed in accordance with the shapes specified in Table 1.

The dimensions for rectangular iron masses are shown in Figure 1.

For circular-cylindrical masses with handles or knobs, the diameter of the knob shall not be more than 90% of the diameter of the mass.

1.3 Adjusting Hole

1.3.1

Masses from 50 g to 20 kg shall have an adjusting hole; masses of less than 50 g shall be solid without an adjusting hole.

No mass may have more than one adjusting hole, or any hole in the base other than an adjusting hole.

..../2

1.3.2

The adjusting holes in iron masses shall be rectangular or circular, and in non-iron masses shall be circular; the holes shall not exceed the dimensions shown in Table 2.

1.3.3

The adjusting hole shall be in the base of the mass and shall not extend to the top face; the hole shall be undercut and have well-defined edges.

1.3.4

Adjustment of the mass shall be carried out by plugging the adjusting hole with lead, set firmly and securely below the surface, but not so as to render stamping impracticable or reading of the verification mark difficult. The lead shall be free from flakes or layers, without any fringe around the walls of the hole, and shall have a clean flat surface. The lead shall have a minimum thickness of 1.5 mm in 50 g and 100 g masses, and 3 mm in masses of 200 g and over.

1.4 Marking

1.4.1

Every mass greater than 500 mg shall be clearly and permanently marked with its value and unit symbol. Where the height of the letters and digits is not specified, it shall be proportional to the size of the mass; for rectangular iron masses, the height is given in Figure 1.

Masses of 500 mg and less may have the unit symbol omitted.

Only the following unit symbols shall be used:

kilogram - kg; gram - g; milligram - mg.

1.4.2

The name of the manufacturer, if marked on a mass, shall be in letters not exceeding half the size of the letters indicating the denomination. Masses shall not bear a trade or other mark which could be mistaken for either the denomination or the verification mark.

1.4.3

Masses intended for use for pharmaceutical dispensing or for weighing precious metals shall be marked "A".

1.5 Verification Mark

The lead adjustment shall be sealed by the application of a verification mark to the lead surface. Where no lead adjustment is provided the verification mark shall be applied to the metal, or a certificate shall be issued.

1.6 Maximum Permissible Errors

The maximum permissible errors are listed in Table 3.

..../3

2. Description of Variants

2.1 Description of Variant 1

Metric carat masses of 0.005 CM to 500 CM, and which shall comply with the pattern except in the following respects:

2.1.1 Nominal Values

The masses shall be limited to the following values:

0.005,	0.01,	0.02,	0.05 CM
0.1,	0.2,	0.5	CM
1,	2,	5	CM
10,	20,	50	CM
100,	200,	500	CM

2.1.2 Materials of Construction

Metric carat masses of less than 5 CM shall be made of aluminium.

2.1.3 Shape

Metric carat masses of 5 CM or greater shall be circular-cylindrical with knobs; masses of less than 5 CM shall be flat sheet.

2.1.4 Adjusting Hole

They shall not have an adjusting hole.

2.1.5 Markings

Metric carat masses of 5 CM or greater shall be clearly and permanently marked with their value and the symbol CM; the symbol may be omitted on masses of less than 5 CM.

2.1.6 Maximum Permissible Errors

The maximum permissible errors are listed in Table 4.

2.2 Description of Variant 2

Masses of 20 g to 20 kg for special industrial purposes, and which shall comply with the pattern except in the following respects:

2.2.1 Nominal Values

They may be of any value from 20 g to 20 kg to suit the purpose for which they are to be used.

2.2.2 Materials of Construction

Apart from lead inserted for adjustment and stamping, special industrial masses shall be made of iron, brass, bronze, gun-metal or non-magnetic stainless steel, provided masses of less than 2 kg shall not be made of iron.

2.2.3 Shape

They shall be of a shape dissimilar to any of those described for the pattern.

2.2.4 Adjusting Hole

An adjusting hole conforming to the requirements for the nearest mass described in the pattern shall be provided.

2.2.5 Markings

They shall be marked on the top face with the words FACTORY USE ONLY or NON-RETAIL.

2.1.6 Maximum Permissible Errors

The maximum permissible errors are the same as those applicable to the nearest mass described in the pattern, as listed in Table 3.

TABLE 1

<table>
<tr><th>Denomination</th><th>Iron Masses</th><th colspan="3">Masses Other Than Iron</th></tr>
<tr><td>20 kg
10 kg
5 kg</td><td>Rectangular
(see Figure 1)</td><td colspan="3"></td></tr>
<tr><td>2 kg
1 kg
500 g
200 g
100 g</td><td>Regular
Hexagonal flat
or
Flat – circular</td><td>Regular
Hexagonal flat</td><td>Flat –
circular</td><td rowspan="3">Circular –
cylindrical
with handles
or knobs</td></tr>
<tr><td>50 g
20 g
10 g
5 g
2 g
1 g</td><td colspan="2"></td><td></td></tr>
<tr><td>500 mg
200 mg
100 mg
50 mg
20 mg
10 mg
5 mg
2 mg
1 mg</td><td></td><td colspan="2">Hexagonal flat sheet</td></tr>
</table>

Shapes for Masses

TABLE 2

Denomination	Rectangular hole		Circular hole	Minimum distance of lead below surface when new
	Length	Width	Diameter	
	mm		mm	mm
20 kg, 10 kg	50	25	40	10
5 kg, 2 kg	25	13	20	5
1 kg, 500 g	16	13	16	5
200 g	16	10	14	5
100 g	13	8	12	5
50 g	–	–	7	5

Adjusting Holes

TABLE 3

Denomination	Maximum permissible errors: mg		
	Non-ferrous masses marked "A"	Non-ferrous masses not marked "A"	Iron masses
1 mg	+ 0.1	–	–
2 mg	+ 0.2	–	–
5 mg	+ 0.3	–	–
10 mg	+ 0.4	–	–
20 mg	+ 0.6	–	–
50 mg	+ 0.9	–	–
100 mg	+ 1.3	–	–
200 mg	+ 2	–	–
500 mg	+ 3	–	–
1 g	+ 4	+ 60	–
2 g	+ 5.5	+ 60	–
5 g	+ 9	+ 60	–
10 g	+ 12.5	+ 120	–
20 g	+ 18	+ 120	–
50 g	+ 28	+ 120	–
100 g	+ 40	+ 120	240
200 g	+ 60	+ 170	340
500 g	+ 90	+ 270	540
1 kg	+ 130	+ 380	760
2 kg	+ 220	+ 650	1300
5 kg	+ 280	+ 850	1700
10 kg	+ 400	+ 1200	2400
20 kg	+ 560	+ 1700	3400

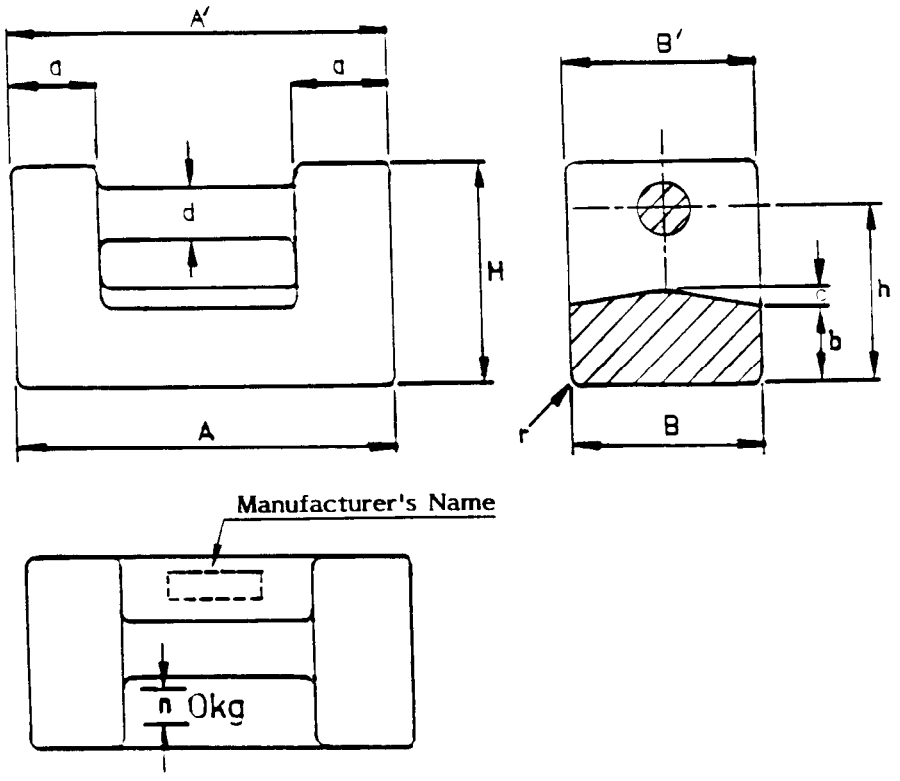
Maximum Permissible Errors for Masses

TABLE 4

Denomination CM	Maximum permissible errors mg
0.005	+ 0.1
0.01	+ 0.1
0.02	+ 0.1
0.05	+ 0.1
0.1	+ 0.1
0.2	+ 0.15
0.5	+ 0.2
1	+ 0.2
2	+ 0.3
5	+ 0.5
10	+ 0.7
20	+ 1
50	+ 2
100	+ 2
200	+ 3
500	+ 5

Maximum Permissible Errors For Metric Carat Masses

FIGURE 3/0/A – 1



Dimensions in mm

Denomination	A	A'	B	B'	H	a	b	c	h	d	r	n
5 kg	150	152	75	77	84	36	30	6	66	19	5	12
10 kg	190	193	95	97	109	46	38	8	84	25	6	16
20 kg	230	234	115	117	139	61	52	12	109	29	8	20

(Dimensions A, A' & B, B' may be interchanged)

Dimensions for Rectangular Iron Masses