

SCHEDULE 2

ANNEX I TO COUNCIL DIRECTIVE 90/384/EEC of 20TH JUNE 1990
ON THE HARMONISATION OF THE LAWS OF MEMBER STATES
RELATING TO NON-AUTOMATIC WEIGHING INSTRUMENTS
METROLOGICAL REQUIREMENTS

Units of mass

1. The units of mass used shall be the legal units within the meaning of Directive 80/181/EEC(1) as last amended by Directive 1999/103/EC(2).

Subject to compliance with this condition, the following units are permitted:

- SI units: kilogram, microgram, milligram, gram, tonne,
- Imperial units: Troy ounce,
- other non-SI units: metric carat, if weighing precious stones.

For instruments that make use of the Imperial units of mass referred to above, the relevant essential requirements specified below shall be converted to the said Imperial units, using simple interpolation.

Accuracy classes**2**

The following accuracy classes have been defined:

- I special
- II high
- III medium
- III ordinary

The specifications of these classes are given in Table 1.

TABLE 1

Accuracy classes

Class	Verification scale interval (e)	Minimum capacity (Min)	Number of verification scale intervals	
			n	Max e
		minimum value	minimum value	maximum value
I	$0,001 \text{ g} \leq e$	100 e	50 000	—
II	$0,001 \text{ g} \leq e \leq 0,005 \text{ g}$	20 e	100	100 000
	$0,1 \text{ g} \leq e$	50 e	5 000	100 000

(1) OJNo. L39, 15.2.1980, p. 40.

(2) OJ No. L34, 9.2.2000, p. 17.

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Class	Verification scale interval (e)	Minimum capacity (Min)	Number of verification scale intervals		
			n	Min	Max
		minimum value	minimum value	maximum value	
III	$0,1 \text{ g} \leq e \leq 2 \text{ g}$	20 e	100	10 000	
	$5 \text{ g} \leq e$	20 e	500	10 000	
III	$5 \text{ g} \leq e$	10 e	100	1 000	

The minimum capacity is reduced to 5e for instruments in classes II and III for determining a conveying tariff.

Scale intervals

2.2

2.2.1. The actual scale interval (d) and the verification scale interval (e) shall be in the form:

1×10^k , 2×10^k or 5×10^k mass units,
k being any integer or zero.

2.2.2. For all instruments other than those with auxiliary indicating devices:

$d = e$

2.2.3. For instruments with auxiliary indicating devices the following conditions apply:

$e = 1 \times 10^k \text{ g}$
 $d < e \leq 10 d$

except for instruments of class I with $d < 10^{-4} \text{ g}$, for which $e = 10^{-3} \text{ g}$.

Classification

3

3.1. Instruments with one weighing range

Instruments equipped with an auxiliary indicating device shall belong to class I or class II. For these instruments the minimum capacity lower limits for these two classes are obtained from Table 1 by replacement in column 3 of the verification scale interval (e) by the actual interval (d).

If $d < 10^{-4} \text{ g}$, the maximum capacity of class I may be less than 50 000 e.

Instruments with multiple weighing ranges

3.2. Multiple weighing ranges are permitted, provided they are clearly indicated on the instrument. Each individual weighing range is classified according to 3.1. If the weighing ranges fall into different accuracy classes the instrument shall comply with the severest of the requirements that apply for the accuracy classes in which the weighing ranges fall.

Multi-interval instruments

3.3

3.3.1. Instruments with one weighing range may have several partial weighing ranges (multi-interval instruments).

Multi-interval instruments shall not be equipped with an auxiliary indicating device.

3.3.2. Each partial weighing range i of multi-interval instruments is defined by:

- its verification scale interval e_i with $e_{(i+1)} > e_i$
- its maximum capacity Max_i with $Max_r = Max$
- its minimum capacity Min_i with $Min_i = Max_{(i-1)}$ and $Min_1 = Min$

where:

$i = 1, 2, \dots, r$,

i = partial weighing range number,

r = the total number of partial weighing ranges.

All capacities are capacities of net load, irrespective of the value of any tare used.

3.3.3. The partial ranges are classified according to Table 2. All partial weighing ranges shall fall into the same accuracy class, this class being the instrument's accuracy class.

TABLE 2

Multi-interval instruments

$i = 1, 2, \dots, r$ = partial weighing range number r = total number of partial weighing ranges

Class	Verification scale interval (e)	Minimum capacity (Min) Minimum Value	Number of verification scale intervals Minimum value ⁽¹⁾ $n = \frac{Max_i}{e_i}$	Maximum value $= Max_i$
I	$0,001 \text{ g} \leq e_i$	$100 e_1$	50 000	—
II	$0,001 \text{ g} \leq e_i \leq 0,05 \text{ g}$	$20 e_1$	5 000	100 000
	$0,1 \text{ g} \leq e_i$	$50 e_1$;	5 000	100 000
III	$0,1 \text{ g} \leq e_i$	$20 e_1$	500	10 000
III	$5 \text{ g} \leq e_i$	$10 e_1$	50	1 000

(1) For $i=r$ the corresponding column of Table 1 applies, with e replaced by e_r .

Accuracy

4

4.1. On implementation of the procedures laid down in Article 8, the error of indication shall not exceed the maximum permissible error of indication as shown in Table 3. In case of digital indication the error of indication shall be corrected for the rounding error.

The maximum permissible errors apply to the net and tare value for all possible loads, excluded preset tare values.

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TABLE 3

Maximum permissible errors

Load				Maximum permissible error
Class I	Class II	Class III	Class IIII	
$0 \leq m \leq 50\,000\text{ e}$	$0 \leq m \leq 5\,000\text{ e}$	$0 \leq m \leq 500\text{ e}$	$0 \leq m \leq 50\text{ e}$	$\pm 0,5\text{ e}$
$50\,000\text{ e} < m \leq 200\,000\text{ e}$	$5\,000\text{ e} < m \leq 20\,000\text{ e}$	$500\text{ e} < m \leq 2\,000\text{ e}$	$50\text{ e} < m \leq 200\text{ e}$	$\pm 1,0\text{ e}$
$200\,000\text{ e} < m$	$20\,000\text{ e} < m \leq 100\,000\text{ e}$	$2\,000\text{ e} < m \leq 10\,000\text{ e}$	$200\text{ e} < m \leq 1\,000\text{ e}$	$\pm 1,5\text{ e}$

4.2. The maximum permissible errors in service are twice the maximum permissible errors fixed in section 4.1.

5. Weighing results of an instrument shall be repeatable, and shall be reproducible by the other indicating devices used and with other methods of balancing used.

The weighing results shall be sufficiently insensitive to changes in the position of the load on the load receptor.

6. The instrument shall react to small variations in the load.

Influence quantities and time

7

7.1. Instruments of classes II, III and IIII, liable to be used in a tilted position, shall be sufficiently insensitive to the degree of tilting that can exist in a normal installed condition.

7.2. The instruments shall meet the metrological requirements within the temperature range specified by the manufacturer. The value of this range shall be at least equal to:

5°C for an instrument in class I,

15°C for an instrument in class II,

30°C for an instrument in class III or IIII.

In the absence of a manufacturer's specification, the temperature range of -10°C to $+40^{\circ}\text{C}$ applies.

7.3. Instruments operated from a mains power supply shall meet the metrological requirements under conditions of power supply within the limits of normal fluctuation.

Instruments operated from battery power shall indicate whenever the voltage drops below the minimum required value and shall under those circumstances either continue to function correctly or be automatically put out of service.

7.4. Electronic instruments, except those in class I and in class II if e is less than 1 g, shall meet the metrological requirements under conditions of high relative humidity at the upper limit of their temperature range.

7.5. Loading an instrument in class II, III or IIII for a prolonged period of time shall have a negligible influence on the indication at load or on the zero indication immediately after removal of the load.

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7.6. Under other conditions the instruments shall either continue to function correctly or be automatically put out of service.