Regulation on requirements to non-automatic weighing instruments

Established by the Norwegian Metrology Service dd.dd.yyyy in accordance with the Units of measurement, measurement and standard time Act of 26 January 2007 no 4 § 35, cf. § 7 and § 10, and § 8, § 19, § 20 and § 30

Chapter 1 – Introductory provisions

§ 1. *Scope and objectives for use*

The regulation prescribes the requirements which applies to non-automatic weighing instruments, cf. regulation 20th December 2007 nr. 1723 on measuring units and measurements chapter 3.

The provisions of this regulation applies in full for non-automatic weighing instruments which are used or shall be used for the following objectives:

a) determination of mass for commercial transactions

b) determination of mass for the calculation of a toll, tariff, tax, bonus, penalty, remuneration, indemnity or similar type of payment

c) determination of mass for the application of laws or regulations or for an expert opinion given in court proceedings

d) determination of mass in the practice of medicine for weighing patients for the purposes of monitoring, diagnosis and medical treatment

e) determination of mass for making up medicines on prescription in a pharmacy and determination of mass in analyses carried out in medical and pharmaceutical laboratories

f) determination of price on the basis of mass for the purposes of direct sales to the public and the making-up of prepackages

When the weights are equipped with or connected to devices which are not used to such objectives as mentioned in the second subsection, the devices are excempted from the requirements of this regulation.

§ 2. *Requirements for weights which are used or will be used for other objectives for use*

All non-automatic weighing instruments which are used or will be used for other objectives for use than those listed in § 1 second subsection, shall be applied the following marking before sale or offering for sale:

a) the manufacturer's name, registered trade name or registered trade mark,
b) maximum capacity, in the form Max ….

The marking shall be visibly, legibly and indelibly. The weights shall not bear the conformity marking.

§ 3. *Definitions*

'*Weighing instrument'* means a measuring instrument serving to determine the mass of a body by using the action of gravity on that body. A weighing instrument may also serve to determine other mass-related magnitudes, quantities, parameters or characteristics.

'*Non-automatic weighing instrument*' means a weighing instrument requiring the intervention of an operator during weighing.

When the regulation hereafter uses the term "weight", this means "non-automatic weighing instrument".

Chapter 2 – Technical requirements

§ 4. *Introductory remarks*

When a weight is equipped with or connected to more than one display- or pressing device which is used for objectives mentioned in § 1 second subsection, those devices which displays the weighing results and which can not affect the correct functioning of the weight, shall not be subject to the essential requirements if the weighing results is pressed or registered correct and indelibly of a part of the weight which fulfils the essential requirements, and if the results are available for the two parties which are affected by the measurement. However, the display- or pressing devices for seller and customer shall fulfil the essential requirements for weights which are used for direct sale to the public.

§ 5. *Units of mass*

The units of mass used shall be in accordance with regulation on measuring units and measurements chapter 2.

§ 6. *Accuracy classes*

The following accuracy classes have been defined:

I	special
II	high
III	medium
IIII	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 = ((Maks)/(e))***	
		minimum value	minimum value	*maximum value*
I	0,001 g ≤ e	100 e	50 000	–
II	0,001 g ≤ e ≤ 0,05 g	20 e	100	100 000
	0,1 g ≤ e	50 e	5 000	100 000
III	0,1 g ≤ e ≤ 2 g	20 e	100	10 000
	5 g ≤ e	20 e	500	10 000
IIII	5 g ≤ e	10 e	100	1 000

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

§ 7. *Scale intervals*

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

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

For all weights other than those with auxiliary indicating devices, d = e. For weights with auxiliary indicating devices the following conditions apply:

e = 1 x 10 kg

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

§ 8. *Weights with one weighing range*

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

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

§ 9. ***Weights with multiple weighing ranges***

Multiple weighing ranges are permitted, provided they are clearly indicated on the weight. Each individual weighing range is classified according to § 8. If the weighing ranges fall into different accuracy classes, the weight shall comply with the severest of the requirements that apply for the accuracy classes in which the weighing ranges fall.

§ 10. ***Multi-interval weights***

Weights with one weighing range may have several partial weighing ranges (multi-interval weights).

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

Each partial weighing range of multi-interval weights 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, … 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.

The partial weighing ranges are classified according to table 2. All partial weighing ranges shall fall into the same accuracy class, that class being the weight's accuracy class.

Table 2 - Multi-interval weights

Class	***Verification scale interval***	***Minimum capacity (Min)***	***Number of verification scale intervals***	
			Minimum value [1] ***$n = ((Maks_i)/(e_i))$***	***Maximum value $n = ((Max_i)/(e_i))$***
I	0,001 g ≤ e_i	100 e_i	50 000	–
II	0,001 g ≤ e_i ≤ 0,05	20 e_i	5 000	100 000
	0,1 g ≤ e_i	50 e_i	5 000	100 000
III	0,1 g ≤ e_i	20 e_i	500	10 000
IIII	5 g ≤ e_i	10 e_i	50	1 000

[1] For i = r, the corresponding column of table 1 applies, with e replaced by e_r.

i= 1, 2, ... r

i = partial weighing range number

r = total number weighing ranges.

§ 11. *Accuracy*

On implementation of the procedures laid down in § 24, the error of indication shall not exceed the maximum permissible error of indication as shown in table 3. In the case of digital indication, the error of indication shall be corrected for the rounding error.

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

Table 3 - Maximum permissible errors in cases of national verification and reverification

Load expressed by verification scale intervals, e				***Maximum permissible error***
Class I	***Class II***	***Class III***	***Class IIII***	
0 ≤ m ≤ 50 000	0 ≤ m ≤ 5 000	0 ≤ m ≤ 500	0 ≤ m ≤ 500	± 0,5 e
50 000 < m ≤ 200 000	5 000 < m ≤ 20 000	500 < m ≤ 2 000	50 < m ≤ 200	± 1,0 e
200 000 < m	20 000 < m ≤ 100 000	2 000 < m ≤ 10 000	200 < m ≤ 1 000	± 1,5 e

Table 3 prescribes the maximum permissible errors for national verification and reverification. The maximum permissible errors in service are twice the maximum permissible errors fixed in table 3.

§ 12. *Repeatability*

Weighing results of a weight shall be repeatable, and shall be reproducible by the other indicating devices used and in accordance 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.

§ 13. *Sensitivity*

The weight shall react to small variations in the load.

§ 14. *Influence quantity and time*

Weights 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 occur in normal use.

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

(a) 5 °C for a weight in class I;
(b) 15 °C for a weight in class II;
(c) 30 °C for a weight in class III or IIII

In the absence of a manufacturer's specification, the temperature range of – 10 °C to + 40 °C applies.

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

Electronic weights, 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.

Loading a weight 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. Under other conditions the weights shall either continue to function correctly or be automatically put out of service.

Chapter 3 – Requirements to design and construction

§ 15. *General requirements*

Design and construction of the weights shall be such that the weights will preserve their metrological qualities when properly used and installed and when used in an environment for which they are intended. The value of the mass must be indicated.

When exposed to disturbances, electronic weights shall not display the effects of significant faults, or shall automatically detect and indicate them. Upon automatic detection of a significant fault, electronic weights shall provide a visual or audible alarm that shall continue until the user takes corrective action or the fault disappears.

The requirements of the first and second subsection shall be met on a lasting basis during a period of time that is normal in view of the intended use of such weights.

Digital electronic devices shall always exercise adequate control of the correct operation of the measuring process, of the indicating device, and of all data storage and data transfer.

Upon automatic detection of a significant durability error, electronic weights shall provide a visual or audible alarm that shall continue until the user takes corrective action or the error disappears.

When external equipment is connected to an electronic weight through an appropriate interface, the metrological qualities of the weight shall not be adversely influenced.

The weights shall have no characteristics likely to facilitate fraudulent use, whereas possibilities for unintentional misuse shall be minimal. Components that may not be dismantled or adjusted by the user shall be secured against such actions.

Weights shall be designed to permit ready execution of the statutory controls laid down by this regulation

§ 16. ***Indication of weighing results and other weight values***

The indication of the weighing results and other weight values shall be accurate, unambiguous and non-misleading. The indicating device shall permit easy reading of the indication under normal conditions of use.

The names and symbols of the units referred to in § 5 shall comply with the provisions of regulation on measuring units and measurements chapter 2, with the addition of the symbol for the metric carat which shall be the symbol 'ct'.

Indication shall be impossible above the maximum capacity (Max), increased by 9 e.

An auxiliary indicating device is permitted only after the decimal mark. An extended indicating device may be used only temporarily, and printing shall be inhibited during its functioning. Secondary indications may be shown, provided that they cannot be mistaken for primary indications.

§ 17. ***Printing of weighing results and other weight values***

Printed results shall be correct, suitably identified and unambiguous. The printing shall be clear, legible, non-erasable and durable.

§ 18. ***Levelling***

When appropriate, weights shall be fitted with a levelling device and a level indicator, sufficiently sensitive to allow proper installation.

§ 19. ***Zeroing***

Weights may be equipped with zeroing devices. The operation of these devices shall result in accurate zeroing and shall not cause incorrect measuring results.

§ 20. ***Tare devices and preset tare devices***

The weights may have one or more tare devices and a preset tare device. The operation of the tare devices shall result in accurate zeroing and shall ensure correct net weighing. The operation of the preset tare device shall ensure correct determination of the calculated net value.

§ 21. ***Weights for direct sales to the public, with a maximum capacity not exceeding 100 kg: additional requirements***

Weights for direct sale to the public shall show all essential information about the weighing operation and, in the case of price-indicating weights, shall clearly show the customer the price calculation of the product to be purchased. The price to pay, if indicated, shall be accurate.

Price-computing weights shall display the essential indications long enough for the customer to read them properly. Price-computing weights may perform functions other than per-article weighing and price computation only if all indications related to all transactions are printed clearly and unambiguously and are conveniently arranged on a ticket or label for the customer.

Weights shall bear no characteristics that can cause, directly or indirectly, indications the interpretation of which is not easy or straightforward. Weights shall safeguard customers against incorrect sales transactions due to their malfunctioning.

Auxiliary indicating devices and extended indicating devices are not permitted. Supplementary devices are permitted only if they cannot lead to fraudulent use.

Weights similar to those normally used for direct sales to the public which do not satisfy the requirements of this provision must carry near to the display the indelible marking 'Not to be used for direct sale to the public'.

§ 22. ***Price labelling weights***

Price labelling weights shall meet the requirements of price indicating weights for direct sale to the public, as far as applicable to the weight in question. The printing of a price label shall be impossible below a minimum capacity.

Chapter 4 – Requirements for non-automatic weighing instruments when sold

§ 23. ***General provisions***

Non-automatic weighing instruments which are sold or offered for sale shall fulfil the requirements of regulation on measuring units and measurements chapter 4, with the clarifications stated in this regulation.

§ 25. ***Requirements to technical documentation***

The documents and correspondence shall be drawn up in Norwegian or in a language which is official in the member state where the procedures are carried out, or which is accepted by the notified body.

§ 26. ***Requirements to marking***

Weights that shall be used to the objectives mentioned in § 1 second subsection, shall bear the following inscriptions visibly, legibly and indelibly:

1. the number of the EU-type examination certificate, where appropriate,
2. the manufacturer's name, registered trade name or registered trade mark,
3. the accuracy class, enclosed in an oval or in two horizontal lines joined by two half circles,
4. maximum capacity, in the form Max …,
5. minimum capacity, in the form Min …,
6. verification scale interval, in the form e = …
7. type, batch or serial number

Where applicable, the following marking shall also be applied:

1. identification mark on each unit for weights, consisting of separate but associated units,
2. scale interval if it is different from e, in the form d = …,
3. maximum additive tare effect, in the form T = + …,
4. maximum subtractive tare effect if it is different from Max, in the form T = – …,
5. tare interval if it is different from d, in the form dT = …,
6. maximum safe load if it is different from Max, in the form Lim …,
7. the special temperature limits, in the form … °C/... °C,
8. ratio between load receptor and load.

Those weights shall have adequate facilities for the affixing of the conformity marking and inscriptions. These shall be such that it shall be impossible to remove the conformity marking and inscriptions without damaging them, and that the conformity marking and inscriptions shall be visible when the weight is in its regular operating position.

Where a data plate is used it shall be possible to seal the plate unless it cannot be removed without being destroyed. If the data plate is sealable it shall be possible to apply a control mark to it.

The inscriptions Max, Min, e, d, shall also be shown near the display of the result if they are not already located there.

Each load measuring device which is connected or can be connected to one or more load receptors shall bear the relevant inscriptions relating to the said load receptors.

The CE marking and the supplementary metrology marking shall be followed by the identification number(s) of the notified body or bodies involved in the production control phase as set out in regulation on measuring units and measurements annex 1.

§ 27. *CE-marking*

The CE-marking contains of the letters «CE», according to regulation (EF) nr. 765/2008 article 30, as adopted in the EEA-product act.

§ 28. *Marking of devices which have not carried out the conformity assessment*

When a weight used for one of the objectives of use mentioned in § 1 second subsection is equipped with or attached to devices which have not carried out the conformity assessment mentioned in § 24, each of those devices shall be constituted by a capital letter 'M' printed in black on a red background at least 25 mm × 25 mm square with two intersecting diagonals forming a cross. The symbol shall be clearly visible and indelible.

§ 29. ***Common provisions on conformity assessments***

The conformity assessment according to regulation on measuring units and measurements annex 1 module D, D1, F1 or G may be carried out at the manufacturer's works or any other location if transport to the place of use does not require dismantling of the weight, if the putting into service at the place of use does not require assembly of the weight or other technical installation work likely to affect the weight's performance, and if the gravity value at the place of putting into service is taken into consideration or if the weight's performance is insensitive to gravity variations. In all other cases, it shall be carried out at the place of use of the weight.

If the weight's performance is sensitive to gravity variations the procedures referred to in subsection one may be carried out in two stages, with the second stage comprising all examinations and tests of which the outcome is gravity-dependent, and the first stage all other examinations and tests. The second stage shall be carried out at the place of use of the weight. If a Member State has established gravity zones on its territory, the expression "at the place of use of the weight" may be read as "in the gravity zone of use of the weight".

Where a manufacturer has opted for execution in two stages of one of the procedures mentioned in subsection one, and where these two stages will be carried out by different parties, a weight which has undergone the first stage of the procedure shall bear the identification number of the notified body involved in that stage.

The party which has carried out the first stage of the procedure shall issue for each of the weights a certificate containing the data necessary for identification of the weight and specifying the examinations and tests that have been carried out. The party which carries out the second stage of the procedure shall carry out those examinations and tests that have not yet been carried out.

The manufacturer or his authorised representative shall ensure that he is able to supply the notified body's certificates of conformity on request.

A manufacturer who has opted for Module D or D1 in the first stage may either use this same procedure in the second stage or decide to continue in the second stage with Module F or F1 as appropriate.

The CE marking and the supplementary metrology marking shall be affixed to the weight on completion of the second stage, along with the identification number of the notified body which took part in the second stage.

§ 30. ***The manufacturer's obligations***

All weights which shall be used for objectives as prescribed in § 1 second subsection, shall be marked by the manufacturer as indicated in § 26.

All weights which shall not be used for objectives as prescribed in § 1 second subsection, shall be marked by the manufacturer as indicated in § 2.

If a weight which shall be used for objectives as prescribed in § 1 second subsection is equipped with or connected to devices which shall not be used to such objectives, the manufacturer shall apply the mark as indicated in § 28 on each device.

Additionally, the requirements in regulation on measuring units and measurements chapter 4 section 3 applies.

§ 31. ***The importer's obligations***

Before a non-automatic weighing instrument which shall not be used for the objectives prescribed in § 1 second subsection is placed on the market, the importer shall ensure that the manufacturer has fulfilled the requirements in

- § 30, and
- regulation on measuring units and measurements § 4-14 point 5 and 6.

Additionally, the requirements in regulation on measuring units and measurements chapter 4 section 3 applies.

§ 32. ***The distributor's obligations***

Before the distributor makes a non-automatic weighing instrument which shall not be used to the objectives prescribed in § 1 second subsection available on the market, he shall verify that

(a) the manufacturer has fulfilled the requirements of

- § 30 and

- regulation on measuring units and measurements § 4-14 point 5 and 6, and

(b) the importer has fulfilled the requirements of FMM § 4-16 point 3

Additionally, the requirements in regulation on measuring units and measurements chapter 4 section 3 applies.

Chapter 5 – Requirements for use of non-automatic weighing instruments

§ 49. ***Requirements for accuracy classes***

The accuracy classes as mentioned in § 11, shall be used for weights which are used for the following objectives:

a) for determination of mass for commercial transactions, class III or more accurate weights shall be used

b) for determination of mass for the calculation of a toll, tariff, tax, bonus, penalty, remuneration, indemnity or similar type of payment, class IIII or more accurate weights can be used

c) For determination of mass for the application of laws or regulations or for an expert opinion given in court proceedings, the weight class is determined as applicable

d) For determination of mass in the practice of medicine for weighing patients for the purposes of monitoring, diagnosis and medical treatment, class III weights, or more accurate weights, shall be used. For weights used to measure persons, class IIII weights are permitted

e) For determination of mass for making up medicines on prescription in a pharmacy and determination of mass in analyses carried out in medical and pharmaceutical laboratories, class II weights, or more accurate weights, shall be used

f) For determination of price on the basis of mass for the purposes of direct sales to the public and the making-up of prepackages, class III weights, or more accurate weights, shall be used.

§ 50. ***Surveillance of a non-automatic weighing instrument in service***

Non-automatic weighing instruments are subject to periodic surveillance with a surveillance period of three years. The weight is not subject to periodic surveillance when it is used for weiging at the following places:

- the grocery sector,
- mail in shops and post offices,
- fish landing facilities, which receives more than 10 tons of fish every year (per facility), including production of prepacked products in fish landing facilities

The Norwegian Metrology Service shall perform inspection and testing in accordance to national procedures during ordinary surveillance. The maximum permissible errors are double of what is specified in § 11.

The Norwegian Metrology Service shall perform inspection, testing and marking in accordance to national procedures during reverification. The maximum permissible errors are the same as specified in § 11. The Norwegian Metrology Service shall apply their own sealings where this is applicable in accordance to the national type examination.

§ 51. ***Calculation of limits for gravity value***

This provision applies to weights where variations in acceleration due to gravity affects the indication of the weight, cf. § 29.

A change in the gravity value shall not affect the error of the weight with more than 1/3 of maximum permissible error. The gravity value is determined by the following formula:

$g = 9{,}780\,318\,(1 + 0{,}005\,3024 \sin^2 \phi - 0{,}000\,0058 \sin^2 2\phi) - 0{,}000\,003085\,a \text{ m s}^{-2}$

where ϕ denotes degree of latitude in radians.

(conversion from degrees to radians is performed by the following formula: radians = degrees × π/180).

a is elevation above sea level in meters.

Table 4 - General directions

Accuracy class	***Number of verification scale intervals n***	***Adjustment***
IIII	-	No restrictions
III	n ≤ 1 500 d	No restricstions
III	1 500 d < n ≤ 3 000	In the relevant local metrology office or neighboring offices
III	3 000 d < n ≤ 5 000 d	In the relevant local metrology office
III	n > 5 000 d	At the place of use
II	-	At the place of use
I	-	At the place of use

For weights of class III with up to 1500 verification scale intervals and weights of class IIII that are adjusted in one of the local metrology offices, the adjustment is valid throughout the country.

The weight shall be marked in such a way to make it clear for which geographical area the weight has been verified.

Chapter 6 – Concluding provisions

§ 52. *Infringement penalty*

Violation of the provisions of this regulation may lead to order of infringement penalty determined by the provisions in regulation on measuring units and measurements chapter 7.

§ 53. *Entry into force*

This regulation enters into force xx.