

1. -----IND- 2015 531 CZ- EN- ----- 20151005 --- --- PROJET

*Executive summary for the Commission (not part of this legislation)*

The placing on the market and putting into use in the Czech Republic of automatic weighing instruments is governed by Directive 2004/22/EC (MID). Once they have been put into use, they become subject to national metrological regulation – verification (at specified intervals). The legislation which is the subject of this notification only applies to the verification of measuring instruments that have already been put into use. It does not concern their placing on the market or putting into use (with the exception of the cases referred to in Article 23 of the MID).

The requirements imposed on these measuring instruments when in service are fully compatible with the MID and also stem from the recommendations under OIML R 50-1.

Some parameters specified in this document are properties of measuring instruments in new condition and are provided only because the preservation of these properties when the instrument is in use is subject to visual or other checks within the scope of verification.

*(End of executive summary.)*

Ref. No: 0313/006/15/Pos.

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As the authority with substantive and territorial jurisdiction in the matter of laying down metrological and technical requirements for legal measuring instruments and laying down the methods for type approval and verification of legal measuring instruments under § 14(1) of Act No 505/1990 on metrology, as amended (hereinafter the “Metrology Act”), and in accordance with the provisions of § 172 et seq. of Act No 500/2004, the Code of Administrative Procedure (hereinafter the “CAP”), the Czech Metrology Institute (hereinafter the “CMI”) commenced ex officio proceedings on 2 July 2015 under § 46 of the CAP and, based on the supporting documents, hereby issues the following:

## I.

### GENERAL MEASURE

number: 0111-OOP-C055-15

Ref. No 0313/006/15/Pos.,

**laying down metrological and technical requirements for legal measuring instruments,  
including the tests for the verification of legal measuring instruments:**

## **“automatic weighing instruments - continuous totalisers”**

This General Measure lays down the metrological and technical requirements for automatic weighing instruments – continuous totalisers to be applied in the verification of these instruments after they have been placed on the market or put into use. These requirements comply with the requirements of Government Regulation No 464/2005 laying down the technical requirements for measuring instruments<sup>1)</sup>, as amended (hereinafter the “Government Regulation on Measuring Instruments”) and the requirements of harmonised standards/OIML documents.

The verification of automatic weighing instruments type approved under the Metrology Act effective until 30 October 2006, i.e. prior to the transposition of Directive 2004/22/EC of the European Parliament and of the Council, as amended, into Czech law, shall be subject to metrological requirements applicable at the time they were put into circulation.

### **1 Definitions**

For the purposes of this General Measure, the terms and definitions according to VIM and VIML<sup>2)</sup> and the terms and definitions below shall apply.

#### **1.1**

##### **weighing instrument**

a weighing device serving to determine the mass of a body or dry material by using the action of gravity on that body or dry material

#### **1.2**

##### **automatic weighing instrument**

a weighing device that weighs without the intervention of an operator and/or follows a predetermined programme of automatic processes characteristic of the weighing instrument

#### **1.3**

##### **continuous totalisers; belt weighers**

an automatic weighing device that continuously determines the mass of a product on a conveyor belt, without systematic subdivision of the product and without interrupting the movement of the conveyor belt

### **2 Metrological requirements**

The metrological requirements are based on the requirements of the Government Regulation on Measuring Instruments, applying the relevant requirements under OIML Recommendation R 50 Continuous totalising automatic weighing instruments (belt weighers) – Part 1: Metrological and technical requirements<sup>3)</sup>.

Measuring instruments type approved prior to the entry into force of the Metrology Act shall be subject to the metrological requirements applicable at the time they were put into circulation.

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<sup>1)</sup> This Government Regulation implements Directive 2004/22/EC of the European Parliament and of the Council of 31 March 2004 on measuring instruments, as amended, into Czech legislation.

<sup>2)</sup> International Vocabulary of Metrology – Basic and General Concepts and Associated Terms (VIM) and International Vocabulary of Terms in Legal Metrology (VIML) are part of the technical harmonisation compendium “Terminology in the Area of Metrology”, which is publicly accessible at [www.unmz.cz](http://www.unmz.cz).

<sup>3)</sup> OIML R 50-1 “Continuous totalizing automatic weighing instruments (belt weighers) – Part 1: Metrological and technical requirements“ – *publicly available at* [www.oiml.org](http://www.oiml.org)

**2.1 Rated operating conditions**

The rated operating conditions for continuous totalisers shall be established by the manufacturer with the minimum operating temperature range being 30 °C.

For other influence quantities (if applicable):

- a) the rate(s) of operation;
- b) the characteristics of the product to be weighed.

**2.2 Measuring range**

The measuring range shall be expressed in terms of the maximum and minimum capacity.

**2.3 Accuracy classes**

The weighing instruments are divided into three accuracy classes as follows: 0.5; 1 and 2.

**2.4 Maximum permissible errors**

**2.4.1 Maximum permissible error in verification**

In verification, the maximum permissible errors referred to in Table 1 shall apply.

**Table 1 – Maximum permissible errors of totalised loads**

Accuracy class	Maximum permissible error of totalised load
0.5	±0.25 %
1	±0.5 %
2	±1.0 %

**2.4.2 Maximum permissible in-service errors**

When inspecting weighing instruments in service or carrying out verification of legal measuring instruments in accordance with § 11a(1) of the Metrology Act at the request of a person who may be affected by incorrect measurement, the maximum permissible in-service errors referred to in Table 2 shall be applied.

**Table 2 – Maximum permissible in-service errors of totalised loads**

Accuracy class	Maximum permissible error of totalised load
0.5	±0.5 %
1	±1.0 %
2	±2.0 %

**2.4.3 Maximum permissible zero-load error**

The maximum permissible errors for zero indication change and maximum change in the totalising indicating device readings at zero load are provided in Tables 3 and 4.

**Table 3 – Maximum permissible errors for zero indication change**

Accuracy class	Maximum permissible error for zero indication change
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0.5	±0.05 %
1	±0.1 %
2	±0.2 %

**Table 4 – Maximum permissible errors for maximum change in indication of a totalising indicating device**

Accuracy class	Maximum permissible error for maximum change in indication of a totalising indicating device
0.5	±0.175 %
1	±0.35 %
2	±0.7 %

## 2.5 Measurement range

**2.5.1** The manufacturer shall specify the measurement range, the ratio between the minimum net load on the weighing unit and the maximum capacity, and the minimum totalised load.

**2.5.2** Minimum totalised load  $\Sigma_{min}$  shall be not less than the largest of the following values:

- 2 % of the load totalised in one hour at maximum flow-rate;
- the load obtained at maximum flow-rate in one revolution of the belt;
- the load corresponding to the appropriate number of verification intervals in Table 5.

**Table 5 – Number of scale intervals of the totaliser**

Accuracy class	Number of intervals
0.5	800
1	400
2	200

## 2.6 Speed of the belt

The speed of the belt shall be specified by the manufacturer. For single-speed belt weighers and variable-speed belt weighers having a manual speed setting control, the speed shall not vary by more than 5 % of the nominal value. The product shall not have a different speed than the speed of the belt.

## 2.7 General totalisation device

It shall not be possible to reset the general totalisation device to zero.

## 2.8 Maximum flow-rate, $Q_{max}$

The flow-rate obtained with the maximum capacity of the weighing unit and the maximum speed.

## 2.9 Minimum flow-rate, $Q_{min}$

### 2.9.1 Single-speed belt weighers

The minimum flow-rate shall be equal to 20 % of the maximum flow-rate. This shall apply provided that the characteristics of the installation are such that the flow-rate variation is less than a ratio of 5:1,

exclusive of the flow-rate gradient at the beginning and the end of the conveyance of the product. Otherwise, the minimum flow-rate shall not exceed 35 % of the maximum flow-rate.

### **2.9.2 Variable-speed and multi-speed belt weighers**

Variable and multi-speed belt weighers may have a minimum flow-rate less than 20 % of the maximum flow-rate. The minimum instantaneous net load on the weighing unit shall not be less than 20 % of the maximum capacity.

## **3 Technical requirements**

The technical requirements are based on the requirements of the Government Regulation on Measuring Instruments, applying the relevant requirements under OIML Recommendation R 50-1 Continuous totalising automatic weighing instruments (belt weighers) – Part 1: Metrological and technical requirements<sup>3)</sup>.

The verification of measuring instruments type approved prior to the entry into force of the Metrology Act shall be subject to the technical requirements applicable at the time they were put into circulation.

**3.1** Means shall be provided to limit the effects of tilt, loading and rate of operation such that maximum permissible errors are not exceeded in normal operation.

**3.2** Adequate material handling facilities shall be provided to enable the instrument to respect the maximum permissible errors during normal operation.

**3.3** Any operator control interface shall be clear and effective.

**3.4** The integrity of the display (where present) shall be verifiable by the operator.

**3.5** Adequate zero-setting capability shall be provided to enable the instrument to respect the maximum permissible errors during normal operation.

**3.6** Weighing results shall contain the names or symbols of the units of mass in which they are expressed. The scale intervals of the indicating and printing devices shall be in the form of  $1 \times 10^k$ ,  $2 \times 10^k$  or  $5 \times 10^k$  of units in which the result is expressed, where k is a positive or negative whole number or zero.

**3.7** The units of measurement shall be:

- a) for mass: gram (g), kilogram (kg) and tonne (t);
- b) for flow-rate: gram per hour (g/h), kilogram per hour (kg/h), tonne per hour (t/h);
- c) for the speed of the belt: metres per second (m/s).

**3.8** If the weighing instrument is switched off or ceases to function, the conveyor belt shall stop, or a visible or audible signal shall be given.

**3.9** Weighing instruments shall be proofed against fraudulent use. Components that may not be dismantled or adjusted by the user shall be secured against such actions.

## **4 Instrument markings**

### **4.1 Markings on the instrument**

The weighing instruments shall bear the following markings as a minimum:

- trade mark or name of the manufacturer;
- the number of the type approval certificate, if any;

- accuracy class = 0.5, 1 or 2;
- maximum capacity, in the form  $Max \dots$  ;
- totalisation scale interval  $d = \dots\dots$  g, kg or t;
  - nominal speed(s) of the belt  $v = \dots\dots$  m/s; or
  - range of speeds of the belt  $v = \dots\dots / \dots\dots$  m/s;
- maximum flow-rate  $Q_{max} = \dots\dots$  g/h, kg/h or t/h;
- minimum flow-rate  $Q_{min} = \dots\dots$  g/h, kg/h or t/h;
- minimum totalised load  $\Sigma_{min} = \dots\dots$  g, kg or t;
- temperature range  $\dots\dots$  °C /  $\dots\dots$  °C.

The label bearing the compulsory markings shall be sealed unless it cannot be removed without being destroyed.

#### **4.2 Placement of the official mark**

The official marks shall be placed in such a manner that after they have been affixed the weighing instrument cannot be adjusted or components, for which access is prohibited, accessed. The marks shall be of such design that they cannot be dismantled without being damaged or destructed.

The manner of placement of the official marks is provided in the type approval certificate or the EC type-examination certificate or other document or provisions applied within the context of conformity assessment when placing the device on the market and putting it into use.

### **5 Type approval of measuring instruments**

Automatic weighing instruments – continuous totalising weighing instruments shall be placed on the market and put into use after conformity assessment in accordance with the Government Regulation on Measuring Instruments and thus are not subject to type approval.

### **6 Initial verification**

A procedure identical to that used for follow-up verification referred to in Chapter 7 shall be applied in initial verification.

### **7 Follow-up verification**

Follow-up verification, i.e. any verification of the measuring instrument conducted after prior verification or conformity assessment and, if applicable, examination in accordance with § 11a(1) of the Metrology Act shall be carried out in accordance with this measure regardless of whether the instrument was placed on the market and put into circulation in accordance with the Metrology Act or the Government Regulation on Measuring Instruments.

The verification of weighing instruments shall be subject to the metrological and technical requirements applicable when they were placed into circulation.

#### **7.1 Overview of the tests conducted**

Each verification shall consist of the following actions and tests:

- a) visual inspection;
- b) accuracy tests:
  - zero-load test;
  - weighing test;

- repeatability test.

## 7.2 Visual inspection

The purpose of the visual inspection shall be to check that:

- the measuring instrument presented for verification complies with the approved type or design of the measuring instrument for which conformity was declared in the context of its placement on the market, while attention shall be paid to checking the markings referred to in Chapter 4;
- the measuring instrument is not mechanically damaged and its metal parts do not have traces of corrosion that could have an adverse effect on the function of the instrument.

If the measuring instrument fails to meet the visual inspection requirements, no further tests are performed.

## 7.3 Test conditions and equipment

**7.3.1** The weighing instrument shall be fully assembled and fixed in the position in which it is intended to be used under typical in-service conditions. The tests shall be carried out using the product(s) that are or are intended to be weighed when the instrument is in service.

**7.3.2** The relevant value set out in Article 2.5.2 shall be used as the minimum test load.

**7.3.3** Test equipment – the control weighing instrument shall make it possible to determine the true weight of the test load to an error not greater than  $\frac{1}{3}$  of the relevant maximum permissible error for automatic weighing referred to in Table 1.

**7.3.4** Where necessary, the control weighing instrument shall be verified immediately after the tests to check that its characteristics have not changed. Where the control weighing instrument does not have a suitable scale interval, suitable resolution may be obtained by using additional weights to determine the changeover point. It must be ensured that the control weighing instrument can be used to weigh any test load imposed by the given product.

## 7.4 Accuracy tests

### 7.4.1 Zero-load test

The purpose of the zero-load test is to ascertain that the weighing instrument meets the requirements for maximum permissible errors for zero indication change and maximum change in the totalising indicating device readings recorded during the test. The maximum indication change of the totalising indicating device shall be recorded only if the value of the minimum totalised load is equal to or less than three belt revolutions at maximum flow-rate  $Q_{\max}$ .

Mark or determine the initial point on the stationary belt. The instrument must be switched on, warm and running. Zero the weighing instrument and disable automatic zero-setting. Record indication  $I_1$  taking account of the point marked on the belt (test start). Let the belt run for a period as close as possible to three minutes. The belt revolutions must be complete. Record the indication of total  $I_2$  at the end of the test and determine whether the error (zero indication change,  $I_2 - I_1$ ) does not exceed the maximum permissible error referred to in Table 3.

Where the minimum totalised load is equal to or less than three belt revolutions at maximum flow-rate  $Q_{\max}$ , record, in addition to indication  $I_1$ , the maximum and minimum indications  $I_{\max}$  and  $I_{\min}$  observed during the test and determine whether the error (indication change of the totalising indicating device  $I_1 - I_{\max}$  and  $I_1 - I_{\min}$ ) does not exceed the maximum permissible error referred to in Table 4.

The measurement errors shall not exceed the relevant maximum permissible errors for the given category of weighing instruments under Table 3 or 4.

Where the weighing instrument fails to meet the maximum permissible error set out in Article 2.4.1, the test may be repeated once.

#### **7.4.2 Weighing test – material test**

Before the tests, the weighing instrument shall operate for at least 30 minutes. Before each test, the weighing instrument shall be set to zero. On completion of each test, the totalisation of the test load shall be recorded. Where the duration of the tests exceeds one day, the zero-load test shall be repeated at the end of each day and at the beginning of the following day.

##### **7.4.2.1 Single-speed belt weighers**

The tests shall be carried out in pairs at practically identical flow-rates, speeds of the belt and test load sizes (to be able to use these results for repeatability evaluations) at the following flow-rates:

- two pairs (4x) of tests at maximum and minimum flow-rates (as indicated on the instrument's label);
- one pair (2x) of tests at intermediate flow-rate or 20 % of the interval between maximum and minimum flow-rates; where the minimum flow-rate is less than 20 % of the maximum flow-rate, the tests shall be conducted at maximum and minimum flow-rates only.

##### **7.4.2.2 Multi-speed belt weighers**

The tests shall be carried out using only one pair of tests at all flow-rates for the minimum, intermediate and maximum speeds of the belt.

##### **7.4.2.3 Variable-speed belt weighers**

The tests shall be carried out using only one pair of tests at all flow-rates for the minimum, intermediate and maximum speeds of the belt and one separate test shall be conducted at all flow-rates while continuously changing the speed within its given range.

##### **7.4.2.4 Evaluation of the tests**

Record the indications of the totaliser at the beginning ( $T_s$ ) and the end ( $T_f$ ) of each test and calculate and record the mass of the test load weighed by the belt weigher ( $A = T_f - T_s$ ).

Record the mass of the test load obtained using the control weighing instrument ( $B$ ).

Calculate the error in per cent  $(A - B)/B \times 100$  and compare it with the relevant maximum permissible errors provided in Article 2.4.1 for verifications or Article 2.4.2 for in-service checks of weighing instruments or examination of legal measuring instruments under § 11a(1) of the Metrology Act.

#### **7.4.3 Repeatability test**

Calculate the difference between the relative errors obtained in each test pair (the smaller error is deducted from the greater error). Each result is compared with the relevant maximum permissible error referred to in Table 1.

## **8 Notified standards**

For the purposes of specifying the metrological and technical requirements for measuring instruments and the verification methods arising from this General Measure, the CMI shall provide notification of the Czech technical standards, other technical standards or technical documents of international or foreign organisations, or other technical documents containing more detailed technical requirements (hereinafter “notified standards”). The CMI shall publish a list of these notified standards attached to the relevant measures, together with the General Measure in a manner accessible to the public (on the [www.cmi.cz](http://www.cmi.cz) website).



Compliance with notified standards or parts thereof shall be considered, to the extent and under the conditions laid down in a General Measure, as compliance with those requirements laid down in this measure to which these standards or parts thereof apply.

## **II. G R O U N D S**

The CMI has issued this General Measure laying down metrological and technical requirements for legal measuring instruments and tests for the verification of these legal measuring instruments in accordance with § 14(1)(j) of the Metrology Act to implement § 9(1), § 9(9) and § 11a(3) of the Metrology Act.

Under (d) of Item 2.1.3, Automatic weighing instruments, in the Annex “List of the Types of Legal Measuring Instruments” to Decree No 345/2002 specifying the measuring instruments whose verification is mandatory and the measuring instruments subject to type approval, as amended, belt weighers are classified as measuring instruments that are subject to verification.

As such, the CMI has issued this General Measure to implement § 9(1), § 9(9) and § 11a(3) of the Metrology Act for this specific type of measuring instruments, “automatic weighing instruments – continuous totalising weighing instruments” laying down the metrological and technical requirements for automatic weighing instruments – continuous totalising weighing instruments and the tests for the verification of these legal measuring instruments.

This legislation (General Measure) was notified in accordance with European Parliament and Council Directive 98/34/EC of 22 June 1998 on the procedure for the provision of information in the field of technical standards and regulations and rules on Information Society services, as amended.

## **III. I N S T R U C T I O N S**

In accordance with § 173(2) of the CAP, no appeals may be made regarding general measures.

In accordance with the provisions of § 172(5) of the CAP, decisions on objections are final and appeals may not be made against them.

Compliance of general measures with legislation may be subject to a review process in accordance with §§ 94 to 96 of the CAP. A party to the proceedings may initiate review proceedings to be conducted by the administrative authority which issued the General Measure. If the administrative authority finds no reason to commence the review proceedings, it shall communicate and provide grounds for this within 30 days. Pursuant to § 174(2) of the CAP, a ruling on the commencement of review proceedings may be issued within three years of the entry into force of the General Measure.

## **IV. E N T R Y I N T O F O R C E**

This General Measure shall enter into force on the fifteenth day as of its date of publication (§ 24d of the Metrology Act).

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RNDr. Pavel Klenovský  
Director General