National Measurement Office

WEIGHTS AND MEASURES

The Measuring Instruments (Beltweighers) Regulations 2006 (S.I. 2006 No. 1259)

The Weighing Equipment (Beltweighers) Regulations (S.I. 1983 No. 914)

This publication was withdrawn on 7 January 2021.

Guidance on Regulation

February 2012

Version 1

BIS Department for Business Innovation & Skills

Summary

This guidance covers all beltweighers in use for trade. **Part 1** of this document covers beltweighers covered by the Measuring Instruments Directive (MID) i.e. those put on the market on or after 1st October 2006. **Part 2** covers beltweighers under national control i.e. before the MID came into force and during the transitional period.

Nothing in this guidance should be construed as overriding, amending or deferring safety regulations and requirements issued by the Health and Safety Executive (in Northern Ireland the Health and Safety Executive for Northern Ireland), in connection with the conduct of persons and the condition and use of machinery and equipment on any premises.

The guidance is addressed to organisations that are required to comply with weights and measures law. Following the guidance is not in itself obligatory but, if you do follow it, this should help your organisation to meet its legal obligations.

Ultimately, only the courts can provide a definitive interpretation of the law. However, for further guidance on how to comply with the law, you can contact your local authority trading standards department, who provide this service free of charge:
http://www.tradingstandards.gov.uk/advice/index.cfm - simply type in your postcode and press “go".

This guidance complies with the Government Code of Practice on Guidance and will be reviewed in October 2016

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Revision History

Version number and date of change	Sections affected
Version 1	First issued February 2012 Updates existing guidance on 2006 MID Regulations (now Part 1) to comply with the BRE "Code of Practice on Guidance on Regulation" and has been expanded in Part 2 to cover the guidance on the Weighing Equipment (Beltweighers) Regulations (S.I. 1983 No. 914)

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Part 1: The Measuring Instruments (Beltweighers) Regulations 2006 (S.I. 2006 No. 1259) [Pages 4 to 29]

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Part 1: The Measuring Instruments (Beltweighers) Regulations 2006 (S.I. 2006 No. 1259)

1.1 Foreword

1.1.1 The Measuring Instruments (Beltweighers) Regulations 2006, SI 2006/1259, ("The Regulations") implement Directive 2004/22/EC ("the Directive") in relation to the class of beltweighers known as continuous totalisers within the category of automatic weighing instruments covered by the Directive. The Regulations provide for the harmonisation of laws on beltweighers within Member States, thereby creating a single market for these instruments.

1.1.2 Eleven new measuring instrument Regulations have been made to implement the Directive. Ten of these have been written so that the types of instrument and their field of application mirror the scope of the Regulations made previously under the Weights and Measures Act 1985 and the Weights and Measures (Northern Ireland) Order 1981. A separate regulation relates to instruments covered by the Measuring Instruments Directive, but not regulated within the UK. These are referred to as "non-prescribed instruments" and the regulation governing them provides a means by which UK manufacturers can be permitted to undertake conformity assessment procedures on these instruments. This will allow them to export to other Member States where the particular instruments are regulated.

1.1.3 There is also a distinction between measures relating to measuring instruments when they are first placed on the market (which are governed by the Directive) and the in-service provisions which are derived from existing national provisions. The Regulations therefore apply both at the point at which the instrument is placed on the market and include in-service testing and subsequent repair and re-qualification.

1.1.4 This guidance covers the above Regulations.

1.1.5 The Regulations came into force on 30 October 2006 after which date new designs of beltweighers placed on the market must comply with their provisions. This guidance is intended to assist manufacturers, notified bodies and enforcement authorities in meeting the requirements of the Regulations.

1.1.6 A similar system of approval and verification of instruments has been operating successfully for several years for non-automatic weighing instruments (NAWIs) and manufacturers have benefited enormously from its introduction, through savings in costs on both approvals and verification, and through the widening of an easily accessible market. This should also be the case with the new Regulations.

1.1.7 There is significant input from WELMEC, the European Cooperation in Legal Metrology, to the understanding and interpretation of the MID. WELMEC has already convened a number of working groups for this purpose. WELMEC is considering questions of application and implementation, particularly in areas of technical uncertainty and acts as a forum for seeking advice from the European Commission on common issues. Information regarding WELMEC and its decisions can be found at **www.welmec.org**.

1.2 Background

1.2.1 The MID is a "New Approach" directive and was adopted by the EC Council of Ministers in April 2004. It consists of 27 Articles, 14 annexes and 10 instrument

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specific annexes and provides (subject to the transitional provisions) for the repeal of the earlier old approach Directive on beltweighers. Member States were required to implement the provisions of the MID into their national law by 30 April 2006 and to apply the new legislation with effect from 30 October 2006.

1.2.2 The MID extends to all measuring instruments listed in Article 1 and provides that Member States may prescribe use of them for measuring tasks for reasons of public interest, public health, public safety, public order, protection of the environment, protection of consumers, levying of taxes and duties and fair trading where they consider it justified. Following a public consultation it was decided that the UK implementation should apply to areas covered by existing weights and measures Regulations only.

1.2.3 The MID is the second "New Approach" directive adopted in respect of measuring instruments. The first was Directive 90/384/EEC ("the NAWI Directive"), which relates to non-automatic weighing instruments and came fully into force in January 2003.

1.2.4 The Commission has issued guidance on new approach directives in "Guidance on the implementation of directives based on the New and Global Approach" which can be found at:
http://ec.europa.eu/enterprise/policies/single-market-goods/files/blue-guide/guidepublic_en.pdf

1.2.5 The principals of Regulation 2006 No. 1259 are set out in the Commission's Guidance as follows:

- Harmonisation is limited to essential requirements.
- Only products fulfilling the essential requirements may be placed on the market and put into service.
- Harmonised standards, the reference numbers of which have been published in the Official Journal and which have been transposed into national standards, are presumed to conform to the corresponding essential requirements.
- Application of harmonised standards or other technical specifications remain voluntary, and manufacturers are free to choose any technical solution that provides compliance with the essential requirements.
- Manufacturers may choose between different conformity assessment procedures provided for in the applicable directive.

1.2.6 The "New Approach" to Technical Harmonisation is an important part of the process for achieving the single market. It is intended to remove the technical barriers to trade caused by differing national laws. Directives agreed under the New Approach allow for the free movement (placing on the market and putting into service) in the Community of goods that conform to the essential and other requirements of those directives. Such products carry the "CE marking", and no Member State is allowed to refuse complying products access to its market. In this case all compliant automatic measuring instruments covered by the MID have free movement throughout the Community.

1.2.7 In the Regulations it is important to distinguish between when instruments are first placed on the market or put into service and requirements that relate to in-service provisions . The first are requirements of the MID, the second are national provisions and will therefore apply only to Great Britain.

1.2.8 The Measuring Instruments Directive provides an 'optionality clause'. This means that Member States may prescribe the category and range of applications for measuring instruments they wish to control. This will lead to a variation between

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Member States which will mean that for the same use, instruments in some Member States will be regulated, whereas in other Member States they will not.

1.3 PART I - Preliminary

1.3.1 The Regulations have been made using powers under the European Communities Act 1972 and, in relation to Part III, the Weights and Measures Act 1985. The Regulations also extend to Northern Ireland except for Part III. Separate in-service Regulations for Northern Ireland are covered by the Measuring Instruments (Beltweighers) (Use for Trade) Regulations (Northern Ireland) 2007 (SR 2007/386).

Citation and commencement

Regulation 1

1.3.2 This gives the title of the Regulations and states the coming into force dates of 30 May 2006 for the Regulations listed in regulation 1(2) relating to the approval of notified bodies for the purpose of these Regulations, and 30 October 2006 for the remaining regulations.

Interpretation

Regulation 2.

1.3.3 The following definitions are important to an understanding of the Regulations:

Manufacturer
This term means a person responsible for the conformity of a beltweigher with these Regulations with a view to either placing it on the market under his own name or putting it into use for his own purposes, or both.

Authorised representative
The manufacturer may appoint any natural or legal person to act on his behalf as an authorised representative. For the purposes of the Directive the authorised representative must be established inside the Community. The authorised representative must be established in a Member State. The authorised representative must be authorised by the manufacturer, in writing, to act on his behalf, and he may be addressed by the UK authorities instead of the manufacturer with regard the latter's obligations under the Regulations. The manufacturer remains generally responsible for actions carried out by an authorised representative on his behalf.

Approved verifier
This is a term used in Regulation 23, and is not defined in the Regulations. The interpretation of this phrase can be found in section 11(A)(1) of the Weights and Measures Act 1985 (in Northern Ireland Article 9(3B) of the Weights and Measures (NI) Order 1981).

Inspector
This is a term used in regulation 22 and it is not defined in the Regulations. It means an Inspector of weights and measures appointed under section 72(1) of the Weights and Measures Act 1985 (in Northern Ireland Article 40 of the Weights and Measures (NI) Order 1981).

Importer/person responsible for placing on the market

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An importer (a person responsible for placing on the market), for the purposes of the Directive, is any natural or legal person established in the Community who places a product from a third country on the Community market. The importer must ensure that he is able to provide the market surveillance authority with the necessary information regarding the product, where the manufacturer is not established in the Community, and has no authorised representative in the Community. In line with Schedule 1 of the Interpretation Act 1978 a person includes a body of persons corporate or unincorporated in that it applies to either a natural or a legal person.

Notified Body means—
(a) the Secretary of State, i.e. National Measurement Office (NMO) Services; or
(b) a United Kingdom notified body (namely a person designated under Regulation 7); and
(c) for the purposes of regulations 4(1)(c), 20(1)(b), 22(1)(c) and 25(6), a person designated by another Member State who has been notified to the Commission and the other Member States pursuant to Article 11.1.

Installer
The installer and assembler of a product, which is already placed on the market, should take necessary measures to ensure that it still complies with the essential requirements at the moment of first use within the Community. This applies to products where the directive in question covers putting into service, and where such manipulations may have an impact on the compliance of the product.

Application

1.3.4 The Regulations apply to beltweighers of any capacity or flowrate which are used for trade to weigh materials which are mined or weighed in bulk, such as coal, clay, sand, ballast (and rocks – see Part III Manner of Use below for definition of ballast), and fish.

Regulation 3(1)

1.3.5 The Regulations apply to beltweighers in use for trade as defined by section 7 of the Weights and Measures Act 1985 (in Northern Ireland Article 5 of the Weights and Measures (NI) Order 1991 that have been first placed on the market or put into service on or after 30 October 2006. Instruments already on the market are therefore not subject to these Regulations. The Regulations have similar in-service provisions to those included in the existing Regulations insofar as they are consistent with the MID.

Regulation 3(2)

1.3.6 The Regulations do not apply to beltweighers which determine the quantity of mass, or mass flowrate, by measurement of the absorption of electro-magnetic radiation by the material being weighed, often referred to as nucleonic beltweighers – they are precluded from these Regulations. This is by virtue of the definition of an automatic weighing instrument, which requires that mass be determined by the effect of gravity on the body being weighed (i.e. the load). Therefore all non-gravimetric beltweighers remain prescribed by the Weights and Measures Regulations 1963, SI 1963/1710 (in Northern Ireland the Weights and Measures Regulations (NI) 1967, S.R.&O.(N.I) 1967 No.237), for the purposes of section 11(1) of the Act (in Northern Ireland for the purposes of Article 9 of the Weights and Measures (N.I.) Order 1981).

1.3.7 The Regulations do not apply to instruments that have been first passed as fit for use for trade and stamped under the following Regulations in respect of which a

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certificate of approval granted before 30 October 2006 is still in force:

- The Weighing Equipment (Beltweighers) Regulations 2001, SI 2001/1208 ("the 2001 Regulations")

- The Weighing Equipment (Beltweighers) Regulations 1983, SI 1983/914 ("the 1983 Regulations").

A certificate of approval referred to in regulation 3(2) will remain valid until the date on which it expires but no later than 29 October 2016 and may be modified up to the date of expiry. Thus a beltweigher may continue to be used indefinitely provided it complies with the expired certificate.

Regulations 3(3) and 3(5)

1.3.8 The Regulations do not apply to instruments with a mark of EEC initial or partial verification under the following set of Regulations in respect of which a certificate of EEC pattern approval granted before 30 October 2006 is still in force:

- The Measuring Instruments (EEC Requirements) Regulations 1988, SI 1988/186 (the 1988 Regulations)

A certificate of EEC pattern approval referred to in regulation 3(3) will remain valid until the date on which it expires but no later than 29 October 2016 and may be modified up to the date of expiry. Thus a beltweigher may continue to be used indefinitely provided it complies with the expired certificate.

1.3.9 The earlier old approach Directive on beltweighers transposed under the 1988 Regulations - i.e. Council Directive 75/410/EEC of 24 June 1975 on the approximation of the laws of the Member States relating to continuous totalizing weighing machines - is one of the directives which has been repealed under Article 22 of the MID.

Regulation 3(4)

1.3.10 Instruments not in conformity with the Regulations may be displayed or presented at a trade fair, exhibition or demonstration if they are clearly marked to indicate that they are not compliant with the essential requirements of the Regulations and cannot be acquired or used until they have been made to comply by the manufacturer.

1.3.11 The 'test' for the potential applicability of the 2006 Regulations, would be that the following statements **all** apply:

- the instrument continuously weighs a bulk product on a conveyor belt without systematic subdivision of the product and without interrupting the movement of the conveyor belt
- the instrument is automatic, meaning that it follows a predetermined programme of automatic (weighing) processes without an operator intervening and that the feed of the material and determination of the weight of the load is automated
- the instrument is (or will be) in use for trade, meaning that the material being weighed will form part of a transaction for money or money's worth, or relates to the payment of a toll or duty, and the instrument will be the final arbiter of the weight of that material (it is not to be checkweighed on another instrument for the purposes of such a transaction); and

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- the instrument has not already been verified and brought into use under SI 2001/1208 or SI 1983/914.

1.4 PART II - Placing on the market and putting into use of beltweighers

Requirements for placing on the market and putting into use

Regulation 4(1)

1.4.1 This regulation makes it an offence to first place on the market or put into use an instrument to which the 2006 Regulations apply unless it
(a) meets the essential requirements,
(b) has demonstrated conformity with these essential requirements and
(c) carries the CE marking, M marking and identification number of the notified body which carried out the conformity assessment.

See paragraphs 1.4.32-3 and the annex to this guidance for explanation of what these markings are.

1.4.2 In Regulation 4(1)(b) 'its' refers to 'the instrument's'.

1.4.3 The terms placing on the market and putting into use are defined in the Regulations and originate from the Directive. The requirements of regulation 4(1) apply only to when beltweighers are first placed on the market or put into use. Any subsequent re-qualification is addressed by Part IV of the Regulations. It should be remembered that it is intended that these Regulations apply only to beltweighers that are being used for trade as defined in section 7 of the Weights and Measures Act 1985 (in Northern Ireland Article 5 of the Weights and Measures (NI) Order 1981. This applies to instruments when they are first placed on the market or re-qualified.

Compliance with the essential requirements

Regulation 5(1)

1.4.4 Manufacturers can use more than one method to demonstrate compliance with the essential requirements. These methods are identified as:-

(a) using any technical solution that complies with the essential requirements;
(b) correctly applying solutions set out in the relevant national standard; or
(c) correctly applying solutions set out in the relevant normative document,

and selecting and following one of the conformity assessment procedures referred to in regulation 6.

Regulation 5(2)

1.4.5 This includes the presumption that instruments which conform fully or in part to relevant national standards or normative documents will be presumed to conform fully or in part with the essential requirements. Relevant national standards and normative documents for this purpose will be published by the Secretary of State, or the competent authority in another Member State in accordance with regulation 2. Normative documents for beltweighers identified by the Commission are published on

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the NMO website and can be found under the heading 'Continuous Totalisers' at: **http://www.bis.gov.uk/nmo.**

1.4.6 The appropriate OIML Recommendation for beltweighers is R 50-1 which is available from OIML's website via the following link: **http://www.oiml.org.**

1.4.7 Where conformity is only in part to relevant national standards or normative documents then either alternative, or parts of both documents, where available, should be used to give full conformity or other technical solutions provided. Other technical solutions could include the use of European standards which are not harmonised standards and international standards such as OIML Recommendations which are not normative documents.

Regulation 5(4)

1.4.8 Provides for devices which do not meet the essential requirements and which are not in use for trade. These can be connected to a beltweigher without affecting the conformity of the instrument to the essential requirements. Examples of such devices are printers or data storage devices for management purposes only. These devices are likely to carry their own CE marking under directives other than 2004/22/EC.

Conformity assessment procedures

Regulation 6(1)

1.4.9 The different conformity assessment procedures available to manufacturers are set out as modules in the annexes of the Directive. These are numbered A to H1.

The options available to manufacturers for beltweighers are as follows:

	D1	B+D	B+E	B+F	F1	G	H1
AWIs - Mechanical	.	.	.	.	.	.	.
AWIs - Electro-mechanical		.		.		.	.
AWIs - Electronics &Software				.		.	.

The options above represent:

- Declaration of conformity by the manufacturer based on quality assurance of the production process (including test and final inspection) but without the need for type examination (Module D1)
- Third party verification but without the need for type examination (Module F1)
- Type examination followed by declaration of conformity by the manufacturer based on formal quality assurance of the production process (including test and final inspection) as two separate processes (Modules B + D)
- Type examination followed by declaration of conformity by the manufacturer based on formal quality assurance of product testing and final inspection only (Modules B + E)
- Type examination followed by third party verification (Modules B + F)
- Third party verification for one off 'bespoke' instruments which would otherwise need type examination (Module G)
- Design examination together with declaration of conformity by the manufacturer based on full formal quality assurance of the design and

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production process (including test and final inspection) as part of an integrated process (Module H1)

1.4.10 For further information on conformity assessment procedures and other aspects regarding the interpretation of the Directive, reference should be made to the 'Guide to the implementation of directives based on the New Approach and the Global Approach'. This document can be found at the following website:

http://ec.europa.eu/enterprise/policies/single-market-goods/files/blue-guide/guidepublic_en.pdf

1.4.11 For Modules F/F1 under 6.1 and 7.2 of these Regulations the recommended tests to be carried out for initial and subsequent verification should be identified together with the standards necessary to ensure traceability of measurement.

1.4.12 The EU Commission in relation to the Directive has published a list of references to the normative documents in the Official Journal (2011/C 33/01 and 2006/C 269/01) which in part gives presumption of conformity to the essential requirements. This includes details on beltweighers (MI-006, Chapter V) in relation to R 50-1. This information is available on the NMO web-site or by reference to the EU website under the following two links:

http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2011:033:0001:0012:EN:PDF

http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:C:2006:269:0001:0028:EN:PDF

1.4.13 The normative references address all the relevant provisions of the MID i.e. both the general and instrument specific requirements, in tabular form, in relation to the corresponding paragraphs of the respective OIML Recommendation and makes comment, in general terms only, of any differences.

1.4.14 WELMEC documents published on the WELMEC website, set out as guidance full versions of these simplified tables with background information and comment for interested parties. Beltweighers are covered by document WELMEC 8.16-4, which can be found at http://www.welmec.org.

1.4.15 It will be for the manufacturer and/or notified body to decide how to interpret the guidance.

Regulation 6(2)

1.4.16 Schedule 3 of the 2006 Regulations outlines the nature of the technical documentation that a manufacturer or his authorised representative must maintain. This information must be provided to a notified body to enable them to carry out the relevant assessment. This documentation must be provided in the language of the notified body or any other language acceptable to it in compliance with paragraph 10(1)(a) of Part II of Schedule 2.

1.4.17 The 2006 Regulations do not provide for manufacturers that 'self verify' to notify the Chief Inspector of Weights and Measures of details such as the location, certificate number and date of installation of a beltweigher. However, should the manufacturer wish to do so in the interests of openness, there is nothing to prevent this from happening.

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Designation of United Kingdom notified bodies

Regulation 7(1)

1.4.18 Under Article 11 of the MID, notified bodies are required for the tasks relating to the conformity assessment modules A to H1 (see paragraph 1.4.9 of this guidance for those relevant to beltweighers). The criteria for designation of these bodies in accordance with Article 12 are included in Schedule 2 Part 1 of the 2006 Regulations.

1.4.19 If an organisation meets the requirements of Schedule 2 Part I the Regulations permit the Secretary of State to designate a person, whether that is a person resident or incorporated or carrying on a business in the United Kingdom or any other type of person e.g. a local weights and measures authority, to be a UK notified body. The definition of a notified body includes a person although it would appear unlikely that an individual person would be appointed. Where the designation is in respect of a particular description of a beltweigher the Secretary of State must be satisfied that the applicant meets the criteria as respects that instrument. As with the definition of an importer and, in line with Schedule 1 of the Interpretation Act 1978, a person includes a body of persons corporate or unincorporated in that it applies to either a natural or a legal person. The application form for bodies applying to be designated as a United Kingdom notified body under Regulation 7 is available on the NMO website: www.bis.gov.uk/nmo

Regulation 7(3)

1.4.20 If a person applying to be a notified body operates an approved quality system under a relevant harmonised standard e.g. EN 17025/17020 and EN 45011/45012 he shall be presumed to meet the criteria of the MID only to the extent that the standard corresponds with the criteria of the MID. The application form for persons wishing to be designated as a notified body under Article 11 and bodies wishing to extend their current status to include conformity assessment tasks in the directive can be found on the NMO website: www.bis.gov.uk/nmo/regulation

Regulation 7(4)

1.4.21 Designations under the Regulations must be in writing which may be either in electronic or hard copy format. They may include conditions such as the scope of the designation.

Regulations 7(5) and 8

1.4.22 In addition to the criteria in Schedule 2 Part I of the Regulations the Secretary of State may consider any matter appearing to him to be relevant prior to designating a person to be a UK notified body under Regulation 7. The functions of a notified body are set out in Part 2 of Schedule 2 to the 2006 Regulations.

Provisions supplemental to regulation 7

Regulation 9

1.4.23 The provisions of Regulation 9 deal with the publication of lists of notified bodies and the inspection of notified bodies. The Secretary of State will periodically carry out an inspection of UK notified bodies. The purpose of that inspection shall be to verify whether the notified body meets the notified body criteria and complies with any designation to which it is subject and complies with the Regulations. It is

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important to remember that although such an inspection may result in a visit to a manufacturer, it is the notified body that will be inspected, not the manufacturer.

Regulation 9(1)

1.4.24 The Secretary of State will publish a list which specifies for which instruments the notified body is designated and any conditions to which it is subject. These details will be available on the NMO website at http://www.bis.gov.uk/nmo/regulation.

1.4.25 The European Commission also publishes a list of notified body numbers which gives details of the notified body and the instruments on the New Approach Notified and Designated Organisations (NANDO) website. For the MID, click on:

http://ec.europa.eu/enterprise/newapproach/nando/

1.4.26 Search by Annex for the relevant declaration of conformity and then by instrument type.
Search by country and then by notified body number to give name and for the MID, both the instruments for which it has been notified and the applicable procedures/annexes.

1.4.27 This site will enable you to find the European notified bodies as well as third country bodies designated under formal agreements - Mutual Recognition Agreements (MRAs), Protocols to the Europe Agreements on Conformity Assessment and Acceptance of Industrial Products (PECAs) and European Economic Area (EEA) - responsible for carrying out the conformity assessment procedures referred to in the application.

Fees

Regulation 11

1.4.28 This regulation permits notified bodies (which includes the Secretary of State) to charge such fees in connection with or incidental to the carrying out of conformity assessments or specific tasks as it may determine.

1.4.29 Section 56 of the Finance Act 1973 requires the Secretary of State to define by statute the fees he charges for certain tasks to be carried out in relation to EU commitments/obligations.

1.4.30 The Regulations do not govern the fees that may be charged by other notified bodies other than identifying broad parameters in which all notified body fees should be set. The Regulations do not govern other duties undertaken by local authorities relative to the Regulations i.e. in-service inspection, re-qualification and market surveillance.

Regulation 11(4)

1.4.31 Provides that, in cases where fees (charged after work is completed or payment of fees has been requested in writing) have not been paid within a period of 28 days, the notified body may give 14 days' notice in writing that the certificates or notification appropriate to the conformity assessment will be suspended until the fees have been paid.

Marking and identification requirements

This publication was withdrawn on 7 January 2021.

Regulation 12

1.4.32 The annex to this guidance describes the CE marking, supplementary metrology (M) marking and the identification number of the notified body concerned with the conformity assessment which must be affixed to each instrument so as to be visible and legible. The M mark denotes that the instrument is regulated by one of the metrology directives.

1.4.33 It should be noted the supplementary markings are different from those in the NAWI Directive. For the purposes of the Directive, the M marking does not have to be on a green background as it does under the NAWI Directive but it must be accompanied by the last two digits of the year in which it is affixed. See drawings in the annex to this guidance.

Conformity with other directives

Regulation 13

1.4.34 Where a beltweigher falls within the scope of other directives which provide for the affixing of the CE marking the CE marking affixed to a beltweigher shall, in addition to conformity with the Measuring Instruments Directive, indicate conformity with those other directives. Other directives of which manufacturers should be aware include the following:

• 89/336/EEC (amended by 91/263/EEC, 92/31/EEC and 2004/108/EC) on electro-magnetic compatibility, as implemented by The Electromagnetic Compatibility Regulations 2005 (as amended);

• 89/392/EEC (amended by 91/368/EEC, 93/44/EEC and 93/68/EEC) on machinery safety (for some but not all industrial products), as implemented by the Supply of Machinery (Safety) Regulations 1992 (as amended); and

• 73/23/EEC (amended by 93/68/EEC) on low (voltage, as implemented by the Electrical Equipment (Safety) Regulations 1994.

This list is not exhaustive.

1.5 PART III - Use for trade of beltweighers

Regulations 14 – 17

This publication was withdrawn on 7 January 2021.

1.5.1 This part only applies to beltweighers in use for trade once they have been placed on the market and put into use in Great Britain (see paragraph 1.7.1 regarding Northern Ireland). It applies irrespective of whether the instrument was attested under these Regulations or the corresponding regulations issued by another Member State.

1.5.2 This part of the Regulations is made under section 15 of the Weights and Measures Act 1985. This part of the Regulations prescribes the requirements for use for trade of the instruments and for the avoidance of doubt prescribes the instruments for the purposes of section 11(1) of the Act once put into use. The enforcement provisions of Part IV of the Regulations make reference to Regulation 14 in Part III by providing the Inspector or approved verifier with the criteria under which a disqualification or re-qualification sticker may be applied to an instrument. Only the Inspector of weights and measures can apply a disqualification mark to an instrument. The activities of an approved verifier are controlled by an approval issued by the Secretary of State under section 11A of the Weights and Measures Act 1985. Approved verifiers must apply to the Secretary of State to have any automatic beltweighers covered by the Regulations that they propose to re-qualify added to the appendix which accompanies their approval.

Requirements for use for trade

Regulation 14(a)

1.5.3 Regulation 14(a) requires that an instrument continues to meet the essential requirements in-service. There are separate in-service values for maximum permissible errors (MPEs).

Regulation 14(d)

1.5.4 This regulation provides the MPEs for an instrument already in use for trade (whereas the mpes in paragraph 18 of Schedule 1 relate to placing on the market and putting into use). The values are given in the table in Schedule 5 to the Regulations.

1.5.5 The values given for the MPEs in Schedule 1 and Schedule 5 are the same as those presented in OIML R 50-1 (Clause 2.2.1). The table headings ‘Initial verification‘ and ‘In-service‘ should more properly read ‘Placing on the market/Putting into use‘ and ‘Use for trade‘ respectively in relation to the Regulations.

Manner of use

Regulation 15(1)

1.5.6 There is no requirement in the Directive for a beltweigher to be marked with the temperature but the Directive does permit this. Where a beltweigher is marked with a temperature range it shall not be used for trade in temperatures outside that range.

Regulation 15(3)

1.5.7 This regulation has been retained from the 2001 Regulations. It should be noted that the trade weighing of materials other than ballast on a Class 2 beltweigher is an offence under sections 15(1) and (3) of the Weights and Measures Act 1985. 'Ballast' means any of the materials mentioned in paragraph 1 of Schedule 4 to the Weights and Measures Act 1985; that is to say:

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(a) Sand, gravel, shingle, ashes and clinker of any description.

(b) Broken slag, slag chippings, granite chippings, limestone chippings, slate chippings and other stone chippings (including such materials which have been coated with tar, bitumen or cement).

(c) Any other material commonly used in the building and civil engineering industries as a hardcore or an aggregate.

(d) Any other material commonly known as ballast.

Regulation 15(4)

1.5.8 This regulation was also retained from the 2001 Regulations, as it is considered that the prohibition of spillage and over-loading is unique to beltweighers, and the provision is intended to prevent careless or fraudulent use resulting in 'short weight'.

Regulation 15(4)(b)

1.5.9 This regulation provides for the protection of beltweighers against the effect of accidental loads greater than the maximum capacity.

Regulation 15(5)

1.5.10 The Regulations specifically include a requirement that the product shall not have a different speed than the speed of the belt (paragraph 19, Schedule 1). This issue would have been addressed by general suitability provisions under the 2001 Regulations. The requirement is included to remind manufacturers, installers and users that care needs to be taken to ensure that infeed loading of the belt from, for example, a hopper does not take place too close to the weighhead section, or that the infeed part of the beltweigher is not mounted out of level, with the potential for material to spill over on the belt such that the product is not stationary with respect to the belt itself. Equally material that can potentially change its property whilst been transported on the belt e.g. crushed ice, needs to be handled carefully in respect of this requirement.

Manner of erection and installation

Regulation 17

1.5.11 This regulation makes requirements in relation to the manner of erection and installation of instruments. When an instrument is permanently installed and testing has been conducted 'in-situ', levelling is not required. However, where the beltweigher is

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transportable such that an instrument has not been tested 'in-situ', alignment with a spirit level may be necessary when it is installed at its place of use.

Regulation 17(1)

1.5.12 The special equipment (referred to in paragraph 9(5) of Schedule 1 to the Regulations) that may be needed to permit the control of measuring tasks when the instrument has been placed on the market must be incorporated in the instrument and the operation manual must describe the procedure for testing the equipment. This may require special test weights, to test the instrument is working correctly.

1.5.13 The Regulations reflect the less prescriptive provisions of the Directive regarding testing of beltweighers. For example, there is a requirement to position instruments to facilitate cleaning and testing, rather than for instruments submitted for testing, to be clean.

Further guidance on in-situ material tests is available from OIML R 50-1 (clause A.11 of Annex A).

Regulation 17(4)

1.5.14 Where special equipment which is not a permanent part of the automatic beltweigher is needed to permit the control of measuring tasks when the instrument has been placed on the market, details must be incorporated in the operation manual describing the procedure for testing the equipment.

1.6 PART IV - Enforcement

Enforcement authority

1.6.1 All enforcement of these Regulations will be under the European Communities Act 1972. The powers of the Weights and Measures Act 1985 (in Northern Ireland the Weights and Measures Order) do not extend to enforcement for these Regulations.

Regulation 18(1)

1.6.2 This regulation imposes a duty on every local weights and measures authority in Great Britain to enforce the Regulations within its area (in Northern Ireland the enforcement authority is the Department of Enterprise, Trade and Investment). It also authorises the Secretary of State to enforce Part II of the Regulations and for that purpose gives him the power to appoint any persons to act on his behalf. The power of the Secretary of State is independent of local weights and measures authorities and is to ensure the Secretary of State is able to fulfil his obligations to conduct market surveillance. Those authorised by this regulation are referred to as 'enforcement authorities'.

Compliance notice procedure

Regulation 19

1.6.3 In cases where the enforcement authority has established that the CE marking and/or the M marking were inappropriately affixed for an instrument was placed on the market or put into use it may serve a notice on the manufacturer or his authorised

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representative requiring him to end the infringement. It must be noted that this power rests with an enforcement authority, not with an officer of that authority. It therefore does not limit the issuing of these notices to Inspectors.

1.6.4 It should also be remembered that the application of the CE and the M markings confirm compliance with the essential requirements in Schedule 1 of the Regulations when the instrument was placed on the market or put into use. This will include selecting and following one of the conformity assessment routes. Any contravention that falls outside of these definitions is not caught by the compliance notice procedure.

Immediate enforcement action

Regulation 20

1.6.5 An enforcement authority has powers to take action pursuant to this Regulation where it has reasonable grounds for considering that either:
(a) the requirements of a compliance notice procedure have not been complied with, or
(b) a beltweigher which has been placed on the market or put into use does not bear one or more of the CE marking, the M marking and the identification number of the notified body which carried out the conformity assessment procedure in respect of that instrument; or
(c) a beltweigher bearing the CE marking and the M marking does not meet all the essential requirements when placed on the market or properly installed and put into use in accordance with the manufacturer‘s instructions.

1.6.6 The Secretary of State will publish particulars of any notice issued withdrawing a certificate or notification. It is expected that this will take the form of advice to trading standards officers/interested parties and will be published on the NMO website (www.bis.gov.uk/nmo).

Disqualification

1.6.7 In cases where an instrument has been altered and the inspector has been notified in writing of the alteration a disqualification sticker will be required in all cases where the instrument no longer meets the essential requirements.

It should be noted that the maximum permissible errors for instruments (mpes) in use for trade are those in the Table in Schedule 5 of the Regulations and not those in Schedule 1, paragraph 17.

Regulation 22(1)(c)(ii)

1.6.8 This regulation provides that an Inspector may affix a disqualification sticker to an instrument which has, since it was last verified, had any adjustment, alteration, addition, repair or replacement made to it such that it is no longer compliant with regulation 14 (which describes requirements for use for trade). That provision overrides any other circumstance in which an Inspector shall or may affix a disqualification sticker.

Regulation 22(3)

1.6.9 This regulation provides that where the instrument does not fully comply but, in the Inspector‘s opinion, a disqualification sticker should not be immediately affixed to it, the Inspector may require compliance within a specified period not exceeding 28 days; if correction is not made within the specified period, the Inspector shall affix a disqualification sticker to the instrument.

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Re-qualification

Regulation 23

1.6.10 It is important to contrast this process with that initially placing a measure on the market for the first time which requires the involvement of a notified body. Re-qualification may be by an inspector of weights and measures or by an approved verifier, e.g. the manufacturer or a repairer.

1.6.11 Re-qualification is the process by which either an Inspector or an approved verifier assesses compliance of the instrument after it has, or could have, been disqualified and returned to conformity with the essential requirements. The re-qualification process requires compliance with the MPEs given in Schedule 1 of the Regulations.

Testing of beltweighers

Regulation 24

1.6.12 This regulation, being part of Part IV (Enforcement), relates only to the testing carried out by the Inspector in relation to his duties as an enforcement officer when he makes an in-service inspection of the beltweigher. It does not apply to testing for conformity assessment or re-qualification.

Regulation 24(1)

1.6.13 Requires the person in control of the equipment to provide such assistance as necessary to enable the Inspector to carry out his duties. In most cases, this normally means allowing access to the equipment and co-operation of site staff so that inspection of the equipment can take place and test deliveries can be made. However, the regulation gives the inspector the power to require reasonable assistance in a number of specific and non-specific ways. This helps to ensure the inspector cannot be prevented from carrying out his duties without very good reason.

1.6.14 The 2006 Regulations do not stipulate a test procedure for conformity assessment or verification. They only stipulate that an instrument must comply with the essential requirements. The use of a harmonised standard or normative document will demonstrate compliance with the essential requirements. The reference for the normative documents covering beltweighers is given in the section describing regulation 5(2) above.

1.6.15 Where third party testing is carried out in accordance with Module F/F1 the testing requirement is specified in the harmonised standard or normative document or equivalent tests. In the absence of these documents the notified body is responsible for specifying the appropriate tests to be used for the purposes of Sections 4.1 and 5.2 of Annex F and Sections 6.1 and 7.2 of Annex F1 to the MID.

Regulation 24(2)

1.6.16 Beltweighers are often installed in hostile environments and it follows that the materials conveyed are usually at least partially responsible for the detrimental conditions. In such locations as quarries, coal depots and dockyards or quaysides, the degree of care and maintenance of the conveyance system might not be as stringent as that which is desirable for weighing equipment and, unless given periodic attention,

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deposits of material may settle on and penetrate parts which can affect the metrological integrity of the beltweigher. Furthermore, part of an Inspector's judgment will be based on observation of the beltweigher in operation and this may be impaired and influenced by the condition in which it is kept.

Unauthorised application of authorised marks

Regulation 25

1.6.17 Any beltweigher in use for trade but not marked with the notified body number, CE marking and M marking and put into use on or after 30 October 2006 may be disqualified unless it can be demonstrated that the instrument is not subject to the Regulations.

Powers of entry and inspection

Regulation 26(1)

1.6.18 It is important to consider the definition of Enforcement Officer. It is either an Inspector as defined in the Weights and Measures Act (in Northern Ireland the Weights and Measures (NI) Order 1981, or a person appointed by the Secretary of State to act on his behalf to enforce Part II of the Regulations.

1.6.19 It should be noted that this Regulation gives an enforcement officer the authority to inspect and test a beltweigher, but it is only an Inspector of weights and measures that may reject the instrument if it is found not to comply with the Regulations. The enforcement authority does have the power to issue a compliance notice (regulation 19) or take immediate enforcement action (regulation 20) if the requirements of these Regulations are not met.

1.6.20 The powers under regulation 26(1) should be contrasted with those existing in relation to the NAWI Regulations 2000 (SI 2000/3236), as amended - 'the NAWI Regulations'. These give an authorised officer an extra power to inspect relevant quality systems. A similar power has not been included in these Regulations. This means that an enforcement officer will not have the power to look at the quality systems that a manufacturer or approved verifier may be using when engaging in conformity assessment procedures for their own instruments. Where this becomes a necessity such action may be authorised as part of a market surveillance exercise.

1.6.21 It should be noted that there is no provision in these Regulations which allows a person to refuse to give information if it may incriminate them. This should be contrasted with the NAWI Regulations which do contain such a provision.

Penalties for offences

Regulation 28

1.6.22 The enforcement provisions for these Regulations have been made under the European Communities Act 1972. The maximum penalty is a fine not exceeding level 5 on the standard scale levied on summary conviction. The scale has 5 levels, each corresponding to a certain amount. This means that the level of fines can be updated by changing the value of each level, without the need to amend the legislation relating to each separate offence. The current values of the standard scale are contained in

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section 37 of the Criminal Justice Act 1982, which provides as follows:

Level on the scale	Amount of fine
1	£200
2	£500
3	£1,000
4	£2,500
5	£5,000

95 This penalty avoids the threat of imprisonment previously applicable to offences made under the Weights and Measures Act 1985.

1.7 PART V - Miscellaneous and supplemental

Adaptation for Northern Ireland

Regulation 33

1.7.1 The Regulations apply to Northern Ireland subject to Schedule 6. This means that the 2006 Regulations apply the requirements relating to placing on the market to the whole of the UK. However the in-service provisions relate to Great Britain only. Northern Ireland will make in-service provisions for beltweighers.

The Electromagnetic Compatibility Regulations 2005

1.7.2 The Electromagnetic Compatibility Directive was implemented in the UK by the Electromagnetic Compatibility Regulations 2005 (SI 2005/281) and applies to all instruments. The MID specifically provides immunity requirements in relation to instruments within its scope and therefore these implementing Regulations have been disapplied for all MID instruments by regulation 33 of the Measuring Instruments (Automatic Gravimetric Filling Instruments) Regulations 2006 (SI 2006/1258). The EMC Regulations 2005 remain in force for all other beltweighers not subject to the 2006 Regulations i.e. all those instruments that are not regulated whether because the instrument type is not regulated in the UK or is a regulated instrument that is not in use for trade. The EMC Regulations continue to apply to emissions.

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ANNEX

MARKING AND INSCRIPTIONS

Regulation 12(3)

Supply of Stickers

The Secretary of State has decided that it is necessary to provide a long-term, professional solution to resolve the difficulties that have arisen in securing a consistent good quality source for the supply of the metrology stickers that local authorities and others require to fulfil their statutory obligations for both initial verification, disqualification and subsequent re-qualification activities.

A new solution has been identified which will enable NMO to produce printed versions of the stickers described below on demand. The system has the capability to incorporate the specific identification data required in thermal printed form. This solution will replace the current stop-gap solution introduced in 2006 to allow for the changes to the marking requirements in the MID which meant that, when re-qualifying an instrument, an inspector has to apply both his number and the year of re-qualification in manuscript on a modified NAWI sticker using a "permanent" D marker. It has become clear that these marks were not sufficiently permanent so as to withstand the harsh cleaning requirements in some conditions of use particularly in the food preparation sector.

The new stickers have been tested and performed well in a harsh cleaning environment and have been found to meet the requirements applicable in the food industry.

It is the opinion of the Secretary of State that the following stickers should be required to be used for the statutory marks. The new stickers are 12.7 mm x 11.1 mm.

It is not envisaged that the Weights and Measures (Prescribed Stamp) Regulations 1968 (SI. 1968/1612) will need to be amended as re-qualification is carried out under the provisions of these regulations.

The Green M metrology mark, and the CE mark for initial verification which are the responsibility of the instrument manufacturer will not be supplied centrally.

The new stickers will also be relevant to local authorities who are notified bodies and to approved verifiers under the regulations. Commercial organisations which need to obtain supplies are invited to contact **stickers@nmo.gov.uk** to discuss availability and prices.

The Secretary of State has determined that there will be benefits arising from a change of process with the stickers produced centrally and supplied by NMO directly to local

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authorities. To that end the decision has been made to supply a limited quantity of stickers free of charge to all inspectors. The stickers used for re-qualification of NAWI and MID ,' instruments will be supplied overprinted with the inspector's number and on an annual basis with the year also overprinted. Stickers can also be overprinted with the relevant Notified Body/Approved Verifier numbers on request

If you have a requirement for a larger quantity , or you are not a local authority, please contact **stickers@nmo.gov.uk**. It will be possible to agree terms under which larger numbers/other stickers can be provided (at a cost).

STICKER 1 – RE-QUALIFICATION

Inspector or

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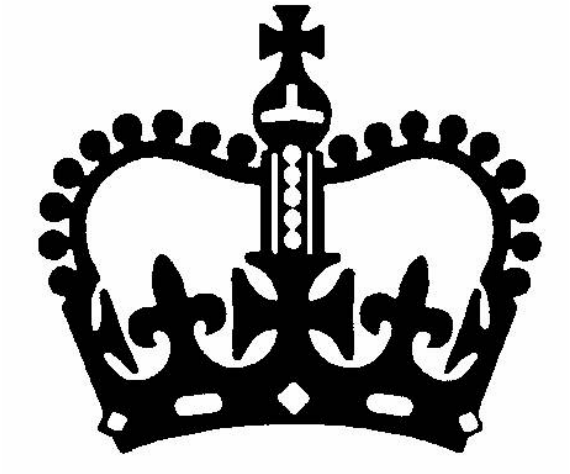
This is an all white label printed on which with the prescribed crown and the information for Inspector 's number will be overprinted using thermal printing technology for use for NAWI and MID instruments. This is all white label printed on which with the prescribed crown and the information for ,Inspector's number will be overprinted using thermal printing technology for use for NAWI and MID instruments.

Approved Verifier

AV/0704/08



This is all white label printed on which with the prescribed crown and the information for Approved Verifier number will be overprinted using thermal printing technology.

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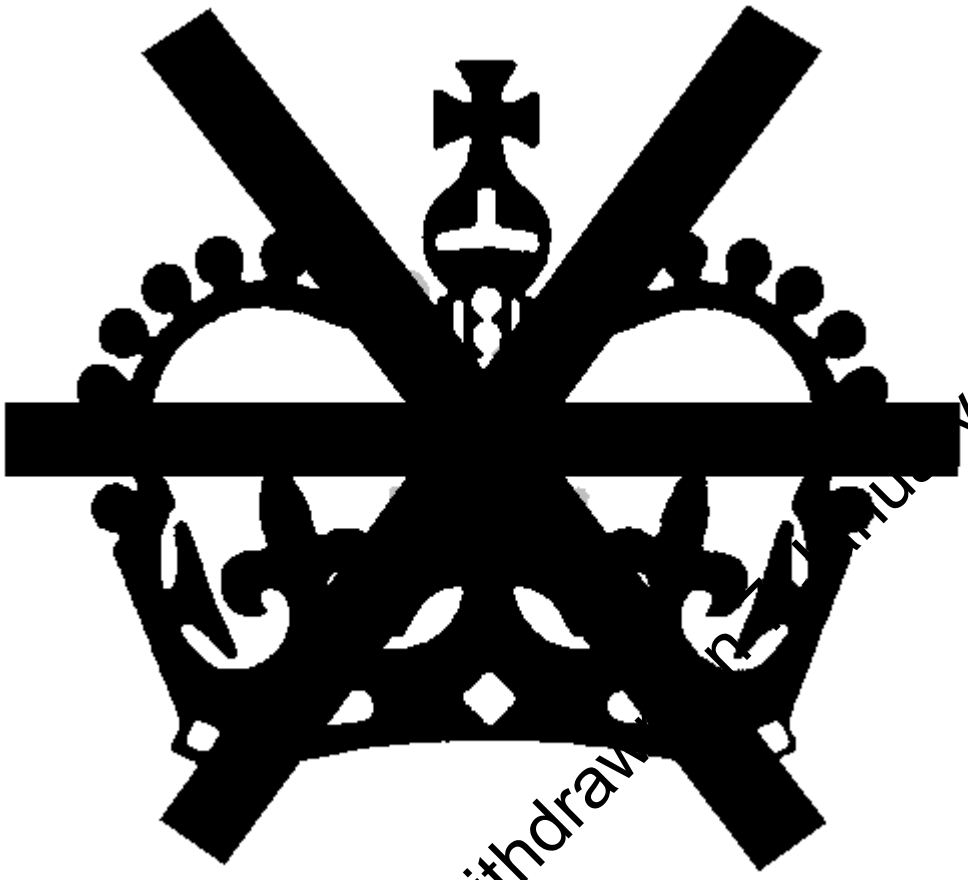
STICKER 2 – DISQUALIFICATION



This is a plain white label bearing the prescribed crown mark which has been printed with the disqualification mark No overprinting is required.

STICKER 3 - NOTIFED BODY IDENTIFICATION NUMBER FOR INITIAL VERIFICATION

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NB 0126

This is a plain white label in which the Notified Body number has been overprinted using a thermal printer. It is not a requirement for the number to be pre-fixed by NB.

Other marks and requirements for MID instruments

1. The CE marking consists of the symbol "CE" according to the design laid down in paragraph I.B(d) of the Annex to Decision 93/465/EEC. The CE marking shall be at least 5 mm high.
2. The M marking consists of the capital letter "M" and the last two digits of the year of its affixing, surrounded by a rectangle, the height of the rectangle shall be equal to the height of the CE marking. The M marking shall immediately follow the CE marking.
3. The identification number of the notified body concerned shall follow the CE marking and the M Marking.
4. The CE marking and the M marking shall be indelible. The identification number of the notified body concerned shall be indelible or self destructive upon removal. All markings shall be clearly visible or easily accessible.

Directive 2004/22/EC does not itself contain diagrams for any of these marks although **the CE mark** is prescribed by reference to paragraph 1.B(d) of the Annex to Decision 93/465/EEC.

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Possible Examples of Article 17 Markings required by the MID Directive

CE M 06 XXXX

CE Mark
At least 5 mm high

Supplementary metrology mark
Rectangle height the same as CE
'Immediately follows' CE

Identification number of the notified body
'Follows' CE and Supplementary metrology mark

CE
M 06
XXXX

CE M 06
XXXX

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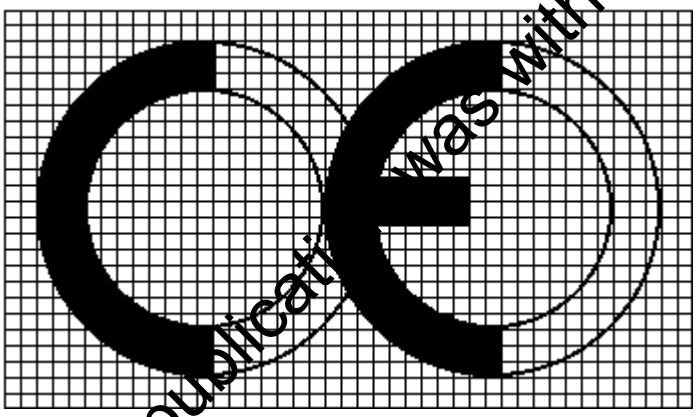
"The CE mark must not be less than 5mm in its vertical height, and the proportions maintained. It is generally shown on a grid in the guidance booklets, as below (the grid does not form part of the marking and is for information only):



This mark looks the same as some previous marks, but there are subtle changes, and it should be studied closely. It should be noted, for example, that the C and E are not formed by perfect semi-circles, i.e. the top and bottom arms extend one square beyond the semi-circles, and the middle arm of the E stops one square short.

The graphic is not made available for download from any official sources, but can be obtained in a wide variety of file formats from commercial organisations, sometimes freely available for download.

As far as **the M mark** is concerned the manufacturer applying the mark has freedom over the design provided that the M marking meets the criteria set down in Paragraph 2 of Schedule 4 of Directive 2004/22/EC, as to being

surrounded by a rectangle also containing the last two digits of the year of affixing, and is placed immediately after the CE mark.

Similarly **the Notified Body** must place its mark, or authorise the manufacturer to do so on its behalf, so that it follows the CE and M markings.

The identification number of the notified body concerned shall follow the CE marking and M marking.

The CE marking and the M marking must be indelible. The identification number of the notified body concerned must be indelible or self-destructive upon removal. All markings shall be clearly visible or easily accessible.

The Directive does not specify in detail the form and appearance of all the various markings. It has therefore been necessary to decide on the details that will apply under the Regulations as indicated in the examples statutory marks above.

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Part 2: The Weighing Equipment (Beltweighers) Regulations 1983 (S.I. 1983 No. 914) [Pages 31 to 44]

CONTENTS

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Part 2: The Weighing Equipment (Beltweighers) Regulations 1983 (S.I. 1983 No. 914)

2.1 BACKGROUND TO THE REGULATIONS

2.1.1 These Regulations mark the latest in a chain of events aimed at formalising requirements and test procedures specifically for beltweighers which are intended for trade use. They identify beltweighers as a class of equipment within the general group embracing automatic weighing machines.

2.1.2 The concept of continuous weight totalisation on a belt conveyor has been with us for at least as long as pattern examination has been a requirement under UK weights and measures legislation. An 'automatic weighing machine of the continuous totalising belt conveying type' was approved for trade use by the then Board of Trade in October 1908.

2.1.3 Since then, various means of testing beltweighers have been devised such as test-chains or ranks of rollers so as to short cut the otherwise arduous practice of using material test loads but it is to be noted that for the purposes of legal verification, use of such facilities is considered inappropriate. Inspectors of weights and measures were advised of the need to use a minimum material test load in 1908, and now spanning seventy years this principle is fundamental to these Regulations and the international recommendations with which they are harmonised.

2.1.4 The following is a synopsis of beltweigher documentation.

2.1.4.1 In 1964 a working group, appointed by the Organisation Internationale de Métrologie Légale (OIML), drafted proposals for totalising weighing machines.

2.1.4.2 In 1969 an EEC working group tabled a similar document.

2.1.4.3 In June 1975 an EEC directive (75/410/EEC) laid down provisions for continuous totalising weighing machines.

2.1.4.4 In February 1977 the directive (75/410/EEC) was implemented in the UK by the Measuring Instruments (EEC Requirements) (Amendment) Regulations, SI 1977/27, under the powers conferred by section 2(2) of the European Communities Act 1972 (1972 C68).

2.1.4.5 The OIML international recommendation No 50 on continuous totalizing automatic weighing machines appeared in June 1980. Current copies of OIML R 50 may be obtained via the OIML website @ http://www.oiml.org.

2.1.5 Prior to these Regulations, beltweighers were prescribed by the Weights and Measures Regulations 1963, SI 1963/1710. They were deemed to comply with the description of an automatic weighing machine in regulation 140(1) of 1963/1710. Hence the removal of beltweighers from the 1963/1710 regulations is a prerequisite of the Beltweigher Regulations 1983. [Regulation 3(4)].

2.1.6 With the exception of SI 1977/27, as referred to in paragraph 2.1.4.4 above, Regulations mentioned in this document have been made, by the Department, under the powers conferred by the Weights and Measures Act 1963 (1963 C31).

2.2 STATUS AND PURPOSE

2.2.1 These Notes for Guidance are not an authoritative interpretation of the law. The law can only be interpreted by a court of law, though the Department does have certain powers to adjudicate when differences arise on the interpretation of Regulations. [Weights and Measures Act 1963, section 14(2)].

2.2.2 These Notes are broadly for the guidance of all who are concerned with applying or

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observing the new controls. This will include manufacturers, inspectors of weights and measures, users and owners of those beltweighers which are in use for trade, as defined in section 9 of the Weights and Measures Act 1963.

2.2.3 There follows comment on the Regulations, part by part as appropriate, to advise on interpretation. As a further aid:

Annex A, is a tabulation of the references in the Regulations for testing and limits of error;

Annex B, is a checklist of requirements for passing as fit for trade use, in Regulation numerical order;

Annex C, is a tabulation of maximum allowable differences between results from more than one totalisation indicating device on the same machine. [Schedule 1: Paragraph 7(2)];

Annex D, is a tabulation of those beltweighers which qualify for exemption from certain requirements of the Regulations by reference to date of pattern approval and date of testing.

2.3 SCOPE OF THE REGULATIONS

The Regulations apply to beltweighers of any capacity or flowrate which are used for trade but they are *not* applicable to the following three categories of equipment, [Regulation 3(1)]:

2.3.1 the Regulations do *not* apply to machines which determine the quantity of mass or mass flowrate by measurement of the absorption of electro-magnetic radiation by the material being weighed. This group of machines is precluded by virtue of the definition of a beltweigher, which requires that weight be determined by the effect of gravity on the load. For example, this exclusion notably applies to those machines referred to as nucleonic beltweighers. Therefore as automatic weighing machines this group remains prescribed by 1963/1710. [Regulations 2 and 3(1)].

2.3.2 the Regulations do *not* apply to beltweighers which are designed to operate at other than a single belt speed. These machines would not meet the testing and other requirements of these Regulations. Machines which are thus excluded also remain prescribed by the 1963/1710 Regulations until further amended. [Regulation 3(2)].

2.3.3 the Regulations do *not* apply to beltweighers which bear the mark of EEC initial verification. Approval and testing of machines to both EEC and UK requirements is now carried out independently and it is unlikely that UK and EEC testing and stamping would be applied to the same machine. [Regulation 3(1)].

2.4 CLASSES OF EQUIPMENT

Both the EEC and OIML documents identify two classes of accuracy with Class 1 verification requiring half the error allowances for Class 2 throughout the test procedures. The Regulations adopt this two tier system but on Class 2 beltweighers only ballast is permitted to be weighed for trade purposes. It should be noted that the trade weighing of materials other than ballast on a Class 2 beltweigher is an offence under section 14(1) of the Weights and Measures Act 1963. `Ballast' means any of the materials mentioned in paragraph 1 of Schedule 5 to the Weights and Measures Act 1963; that is to say:

(a) sand, gravel, shingle, ashes and clinker of any description;

(b) broken slag, slag chippings, granite chippings, limestone chippings, slate chippings and other stone chippings (including such materials which have been coated with tar, bitumen or cement);

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(c) any other material commonly used in the building and civil engineering industries as a hardcore or an aggregate;

(d) any other material commonly known as ballast. [Regulation 4(2)].

2.5 BELTWEIGHER INDICATIONS

2.5.1 The indications of weight on a beltweigher differ fundamentally from those of most other types of weighing machines in that a cumulative total weight is displayed. Amongst those indicating devices now recognised by international metrology organisations are:

- general totalisation indicating devices (GTID)
- zero totalisation indicating devices (ZTID)
- flowrate indicating devices
- supplementary totalisation indicating devices

These particularly cumbersome titles will be referred to by the above abbreviations, adopted solely for these notes.

2.5.2 The GTID is the primary indication. It cannot be reset and it is the only indication to be used for trade. The ZTID is intended for use in non-material tests and will normally be necessary because the GTID scale interval will be too coarse for all but the material testing.

2.5.3 Flowrate indicating devices monitor the rate of flow of material over the weighing unit. The indication at any instant is representative of a relatively small displacement of the belt and is therefore a useful aid to an operator attempting to control the flowrate, as well as providing a visual warning of a material flowrate outside of the specified verification range.

2.5.4 The STID is mentioned later in paragraph 2.10.2.8 as a consequence of exclusion from testing.

2.5.5 Other devices such as those for:

- Partial totalisation indications;
- And test totalisation indications,

are similarly recognised but are of less importance for trade use and will be peculiar to a given design.

2.5.6 The Regulations include a definition of a 'totalisation indicating device' in Regulation 2(1) with subsequent references and further give the requirements of a ZTID in Regulations 9.

2.6 MATERIALS, PRINCIPLES OF CONSTRUCTION AND MARKING

(Part I I of the Regulations)

This Part of the Regulations includes a number of well established principles previously applied to other groups of weighing and measuring equipment. The following are peculiar to beltweighers.

2.6.1 Use of a zero totalisation indicating device will give some indication of the continuity and uniformity of a conveyor belt. However, this should not replace a visual inspection of the belt both when stationary and in motion. [Regulations 8(1) and 8(2)].

2.6.2 The provision of a semi-automatic or automatic zero setting device is a practical requirement for long belt-wraps or slow running belts whose prolonged time per revolution might otherwise be a discouragement to regular zero setting procedures. Zero

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setting must be based on a change in indication during the course of one or more whole revolutions of the belt and hence, such devices will be adjusted according to the speed and length of the belt with which the beltweigher is installed. [Regulation 10(1)].

2.7 MANNER OF ERECTION AND USE FOR TRADE

(Part III of the Regulations)

Use is made of this Part of the Regulations to promote good installation practice and to facilitate ease of testing on site. It should be noted that breach of the requirements of Part III of the Regulations may constitute an offence under section 14(1) of the Weights and Measures Act 1963.

2.7.1 Of particular note is the requirement for a separate weighing machine which will be capable of checkweighing the material test load to an accuracy of not less than five times better than the prescribed limit of error for the beltweigher submitted for testing and stamping. There is no implication here that the material test load must be weighed in one operation. In many cases this will not be practicable and indeed Schedule 1 paragraph 5(2) of the Regulations acknowledges this. However, the cumulative accuracy due to weighing the material test load in sub-divided quantities should still comply with the prescribed 'one fifth of the limits of error' and in this respect the effect of any tare weighing will place a further constraint on the accuracy requirement for the weighing machine.

For example:

> say minimum totalised load is 40 tonnes; for Class I accuracy on passing as fit for use for trade the minimum error allowance in accordance with Schedule 2 paragraph 3(a) to the Regulations will be 40t x ± 0.5% = ± 0.2t

from Schedule 1 paragraph 5(2) to the Regulations the accuracy required of the weighing machine to check weigh the load in one operation will be:

$$\pm \frac{0.2t}{5} = \pm 0.04t$$

but such an operation would normally require tare and gross weighing and so in these circumstances the Department advises that the required accuracy be derived by dividing by the square root of 2. Furthermore, a division of the material test load into convenient weighments will require a further constraint on the accuracy of the check-weighing machine and so in these cases the Department advises use of the multiplier

$$\frac{\sqrt{2}}{N}$$

where 'N' is the number of divisions of the material test load. It then follows that if 'M' is taken to be the material test load, the required accuracy will be:

$$\pm M \times \frac{0.5\%}{5} \times \frac{1}{\sqrt{2}} \times \frac{\sqrt{2}}{N}$$

where the third term is due to tare weighing and the fourth term is used only when the material test load is sub-divided. The above formula to derive accuracy reduces to:

$$\pm \frac{M}{1000\ N}$$

Note: this may be adjusted for Class 2 beltweighers (factor of 2) and for obliteration of stamp (factor of 2), both of which require *a lower* order of accuracy. [Regulations 13(2) and (3)].

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2.7.2 A further requirement of the weighing machine is that it be 'sited in the vicinity of the beltweigher'. Interpretation of 'vicinity' in any one instance must rest with an inspector of weights and measures who should take into consideration:

(a) the distance between beltweigher and weighing machine,
(b) accessibility, eg condition of the link road,
(c) the means by which the load is to be transported, and
(d) how much assistance is available. [Regulation 13(2)].

2.7.3 The error allowance for belt speed variation is an indirect test of the motor which drives the conveyor belt. The speed of the belt will normally be affected by the load upon it and so for the purposes of checking the belt speed variation the reference speed will be dependent on whether or not the nominal speed of the belt is marked on the beltweigher. [Regulation 15].

2.7.3.1 On those beltweighers with no nominal speed marking, the most convenient reference and probably the most stable speed will be that taken at no load. This will normally be representative of the maximum speed and it is this to which the allowable variation of 10% would be referred, in which case this variation must not be exceeded when conveying material at maximum flowrate. [Regulation 15(a)].

2.7.3.2 A nominal speed marking should be representative of the belt whilst the beltweigher is totalising and hence the need for a bilateral tolerance. The required tolerance of ± 5% equates with the unilateral tolerance of 10% referred to in paragraph 2.7.3.1 above. [Regulation 15(b)].

2.8 TOOLS AND EQUIPMENT NEEDED FOR TESTING

2.8.1 For the purposes of testing, the owner or user of an installation would normally need to arrange for:
(i) the availability of material test load, [Regulation 17(3)];
(ii) access and use of a weighing machine, see paragraphs 2.7.1 and 2.7.2 above; and
(iii) transportation facilities for movement of the load between conveyor and weighing machine.

2.8.2 In contrast, those items necessary for the inspector to provide, apart from stationery and protective clothing, are:
(i) a stopwatch,
(ii) one small test weight for the discrimination test, and
(iii) some means by which the belt may be durably marked.

2.8.2.1 The stopwatch will be required at hand throughout the testing and will further be of use during any warm-up period to assess continuity of belt speed. It will be of particular assistance in determining the validity of requirements in Regulation 10(1) (see paragraph 2.6.2 above) and also in assessing the likelihood of non-compliance with Regulation 15 (see paragraph 2.7.3 above).

2.8.2.2 A test weight will be required for the discrimination test as per paragraph 3(1) of Schedule 1 to the Regulations. Some means may be required to suspend the weight as appropriate to the particular design of the weighing unit of the beltweigher to be tested.

2.8.2.3 A reference mark on the belt will be necessary to determine each whole revolution of the belt. The mark should be made as soon as is convenient having first searched for existing markings which might subsequently be misleading. The marking needs to be of sufficient prominence to enable observation of its approach say ten seconds prior to its arrival and hence the reference point will need to be chosen accordingly. Though chalk is an obvious choice it may not survive the complete test due to friction around the conveyor rollers and tensioning device. For prominence over many hours an automobile aerosol paint spray has been found most suitable and, with the usual belt colour being

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black, a yellow paint gives good contrast.

2.9 GENERAL COMMENT ON TESTING

2.9.1 Though most beltweighers may be considered an integral and permanent part of a plant conveyance system, the requirement that testing and stamping only be done on site forbids the transfer of the weighing unit to another belt conveyor and also ensures that equipment of comparatively low capacity or part of a complete mobile unit, remains dedicated to a particular purpose. This requirement usually makes it practicable for a beltweigher to be tested by using the same type of material as would normally be weighed when the machine is in use for trade. [Regulation 17(1)].

2.9.2 Beltweighers are often installed in hostile environments and it follows that the materials conveyed are usually at least partially responsible for the detrimental conditions. In such locations as quarries, coal depots and dockyards or quaysides, the degree of care and maintenance of- the conveyance system might not be as stringent as that which is desirable for weighing equipment and, unless given periodic attention, deposits of material may settle on and penetrate parts which can affect the metrological integrity of the beltweigher. Furthermore, part of an inspector's judgement will be based on observation of the beltweigher in operation and this may be impaired and influenced by the condition in which it is kept. [Regulation 17(2)].

2.9.3 The supplying of materials needed particularly for material testing will now specifically be the responsibility of either the person in possession of a beltweigher which is in use for trade, or the person submitting a beltweigher for testing, as appropriate. Therefore, the said person should be aware of the quantity of the minimum totalised load (see Regulation 18), as marked on the beltweigher in question, and the requirements of Schedule 1 paragraph 6(2) of the Regulations (see paragraph 2.10.2.3 below). It would be advisable to discuss these requirements with the inspector, in advance, to determine the number of pairs of tests to be done and whether it is practicable or advantageous to attempt to recycle the same material on each individual test. [Regulation 17(3)].

2.9.4 The requirements for testing are called-up in their entirety in Regulation 18(2). Passing as fit for use for trade requires compliance with the testing requirements and with the prescribed limits of error for those tests which are made applicable by Regulation 18(2). [Regulations 18(2) and 20(b)].

2.9.5 A table of the references for beltweigher test procedures and related limits of errors is given at Annex A.

2.9.6 The test requirements are so arranged that:

(a) the test procedure is described in Schedule 1 [Regulation 18(2)]; whereas

(b) the test results:

(i) must be within the limits of error set out in Schedule 2, [Regulations 19 and 20(b)(i)] ; and

(ii) must comply with the requirements of Schedule 1 paragraphs 3(2) and 7(2). [Regulation 20(b)(ii)].

2.9.7 A reasonably practicable order of testing has been laid down in Schedule 1 though there is no compulsion to adhere to it. The non-material tests described first are quicker and require considerably less manpower and resources. Hence if the initial results are adverse then if desired the remaining tests can be postponed to enable servicing and hence minimise loss of time and use of resources. Furthermore, errors due to *ineffective zero* setting, lack *of* discrimination and/or instability *may* be either contributory to adverse material test results or complementary to producing favourable material test results thereby nullifying the tests. However, the order of testing on any one site may ultimately be dependent on factors beyond the owner's control.

2.9.8 It is reasonable to allow some time for a belt conveyor system to warm-up by continuous operation prior to the testing of the beltweigher. The extent of the warm-up

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period will depend on the size and capacity of the installation although various plant and environmental influences may also affect initial stability. The variation from zero as indicated at each complete revolution of the belt will act as a guide to determine when the testing proper should begin.

2.9.9 Although there may be long periods of comparative inactivity whilst awaiting the right conditions for any one test, once a particular test begins it becomes difficult to maintain adequate suveillance of the complete installation. Hence more than one pair of eyes are desirable during the testing of a beltweigher. Throughout all of the tests in Schedule 1 to the Regulations it is necessary to view the complete installation continuously to ensure that the belt is not subjected to illegitimate influences.

2.10 TESTING

The test requirements can conveniently be divided into;
(i) non-material testing, and
(ii) material testing

2.10.1 Non-material testing, detailed in paragraphs 2, 3 and 4 of Schedule 1 to the Regulations is less arduous, requires fewer resources and is generally more straightforward to perform than material testing (see paragraph 8.4 above). It sub-divides into three headings:

(i) setting to zero,
(ii) discrimination, and
(iii) stability at zero.

2.10.1.1 The purpose of *setting to zero* testing is to ensure that the beltweigher can be effectively calibrated at zero flow rate. In particular, the ZTID must not be corrupted by say irregularities in the conveyor belt or the dynamics of the conveyor system during a period equivalent to one or more complete revolutions of the belt and whilst no adjustment is made. Clearly a number of satisfactory results will be required to confirm the efficiency of the setting to zero facility with the extent of the testing being influenced by the size of the installation and the degree of scatter of the results. Any coarse zero setting controls should have been adjusted prior to testing with sufficient use of the equipment to confirm readiness for testing. No further adjustment other than those required in normal daily use should be necessary during testing. The prescribed test also recognises those zero setting controls which require an additional mass to be attached to the 'weighing unit'. Whilst the addition of such a mass would normally be described as part of the pattern to which the equipment conforms, the Department is otherwise of the opinion that Schedule 1 paragraph 3(3)(b) should be used as guidance. [Schedule 1: Paragraph 2].

2.10.1.2 *Discrimination* testing will give some indication of the equipment's response to a small change in the load on the weighing unit at zero load. It is to be noted that no quantitative assessment is required of the results but merely a confirmation of response in both incrementing and decrementing the load. The limitation on the point of application of the load is intended to ensure that the effect of the application will be the same as if applied directly onto that portion of the belt conveyor passing over the beitweigher. It is of course imperative that the mass referred to for the purposes of this must *only* be applied or moved between tests and not during the test run. It should be noted that the automatic zero setting device, if fitted, must be disabled throughout this test. [Schedule 1 Paragraph 3].

2.10.1.3 In recording the results for *stability at zero* testing, particular care must be taken to note the positive or negative sense of each reading of the ZT1 D. The total range or bandwidth of the results must be used to assess the stability of the equipment so again it is important to maintain the same zero setting throughout by either disabling an automatic zero setting feature or avoiding use of a semi-automatic or non-automatic zero setting feature as appropriate. In calculating the stability at zero error, note that the bandwidth of results may span the zero point. For example, the five results may be:

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+1, -1, -4, +3, +1

in which case the stability at zero error is calculated by

(+3) - (-4) = 7 [Schedule 1 Paragraph 4].

2.10.2 The purpose of *material* testing is to confirm by a system of checkweighing that the equipment is capable of achieving the required weighing accuracy at various average flowrates for quantities of material not less than the minimum totalised load. The material testing procedure is generally more arduous and demanding than the non-material tests in that continuous diligence is required throughout the passing of the material test load over the beltweigher and on through the checkweighing procedure. Observation of the entire belt conveyor is necessary with assistance appropriate to the size of the installation. [Schedule 1: Paragraph 6].

2.10.2.1 The basic material test requires a supply of material to be conveyed in separate loads, each being at least equal in quantity to the minimum totalised load. The usual feed arrangements mean that the flowrate will gradually reach the desired level, then fluctuate to a degree dependant on the feed arrangement until tailing-off at termination of the load. Though an average flowrate for the individual load can be calculated, this figure alone gives no indication of the flowrate profile which may vary considerably between two loads of similar average flowrates to the extent that the validity of a comparison of the results become questionable. Therefore it is desirable to monitor the totalisation device used during material testing by recording totalised load against time. Equal time increments should be chosen with the intention of obtaining a minimum of ten readings for each material test load. If equal increments of mass are alternatively chosen then the initial feed and tailing-off periods can become lengthy and give little indication of the flowrate profile during those periods, whereas peaks during the flow may create intervals of such rapid totalisation as to prevent monitoring at the chosen increment. [Schedule 1: Paragraph 6(3)].

2.10.2.2 If checkweighing is to supersede the test run then consideration must be given to the site conditions at the point of discharge from the belt conveyor. The primary considerations must be to ensure that the entire load can be collected, transported for checkweighing and that no extraneous material is picked up in the course of the exercise. It is not always reasonable to expect the load to be discharged directly into waiting vehicles due to concern for vehicle suspension, apart from the problem of unexpected overflows. If the load is to be discharged onto the ground then it will be necessary to ensure that:

(a) the ground is reasonably flat and hard to enable use of mechanical handling equipment;
(b) any immobile obstructions are partitioned to avoid loss of material in areas which are inaccessible;
(c) there is sufficient space to shoot the load and that none will be lost, say over a quayside;
(d) a shovel and broom are handy; and
(e) if the load is subsequently moved by suspended container, eg mechanical grab, then if possible the container avoids traversing open water or any area from which accidental discharges cannot be recovered. [Schedule 1: Paragraph 6(4)].

2.10.2.3 The material test procedure must take the form of pairings of individual tests. At least two pairs of tests are prescribed at different flowrates though ideally at least three different flowrates should be attempted at:

approximately maximum flowrate;
approximately minimum flowrate; and
an approximate mean of maximum and minimum flowrates.

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The ability to do this does depend upon resources, the size of the installation and the reliance of the plant or site upon the operation of the belt conveyor. [Schedule 1: Paragraph 6(2)].

2.10.2.4 Note that each of the two individual tests comprising a 'pair' must be run at similar rates of flow and with similar quantities of material load, both being necessary as qualifying factors for the subsequent assessment of repeatability. [Schedule 1: Paragraphs 6(2), (3) and (5)].

2.10.2.5 During the checkweighing procedure some attention to the operational arrangements will be required to ensure the integrity of the results; many situations will involve movement of the material in sub-divided lorry loads, hence tare weighing must be completed prior to gross weighing in case of residual material in the lorries. To avoid lack of continuity due to prolonged periods between weighings or a change of driver, the weighing procedure should be consistent throughout the tests by ensuring that all tare and gross weighings do not include the driver. Furthermore, the primary display of the weighing machine must be seen and not just a printout of a weight which might, in innocence, have been made prematurely. Finally, it is necessary to observe the movement of the vehicles between beltweigher and weighing machine to ensure that *none* of the material load is lost in transit. Any losses would nullify the result of that particular individual test. [Schedule 1: Paragraph 6(4)(a)].

2.10.2.6 Following through the material test procedure the salient points are:

(a) assurance of an adequate checkweighing facility,
(b) zero setting with the belt running empty,
(c) paired test-runs of individual loads (of known mass?),
(d) when not weighed prior to the test run, checkweighing the material load as soon as possible after discharge,
(e) repetition of (c) and (d) at other flowrates, and
(f) using results to calculate both 'material testing error' and 'repeatability error' and to check continuity where there is more than one totalisation indicating device. [Schedule 1: Paragraphs 5, 6 and 7].

2.10.2.7 For those machines with more than one totalisation indicating device the allowable differences between any two indications for the same weighing operations are tabulated for clarity under Annex 'C'. [Schedule 1: Paragraph 7(2)].

2.10.2.8 A supplementary totalisation indicating device (STID) would normally have a magnitude of indication of at least one order greater than that of the_ GTI D, so that a number of complete cycles of the latter could be determined on inspection of the STID display. The ratio of scale interval to magnitude of indication for the STID will likely be similar to that of the GTID, so the discrimination between increments on the STID is unlikely to enable compliance with the error allowances throughout the testing. Hence, the STID is not to be used for trade by itself because the associated scale interval might imply an accuracy of little better than say ± 5% of totalised load. [Schedule 1: Paragraph 7(3)].

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ANNEX A

REFERENCES FOR BELTWEIGHER TEST PROCEDURES AND RELATED LIMITS OF ERROR

Test	**Regulation 18(2) Procedure** as **Schedule** 1 **Paragraph:**	**Regulation 20(b)(ii) Requirements** as **Schedule 1 Paragraph:**	**Regulations 19 and 20(b)(i) Limits of Error as Schedule 2 Test:**	**Exemptions (see key below)**
Setting to zero	2		1	
Discrimination	3(1) and 3(3)	3(2)		
Stability at zero	4			
Material load accuracy	6(1), 6(2),6(3) and 6(4)		3	(b)
Repeatability	6(5)		4	
Consistency with Multiple indications	7(1)	7(2)		(b)

Key: Schedule 1: paragraph 7(3), supplementary totalisation indicating devices.

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ANNEX B

CHECKLIST FOR PASSING AS FIT FOR TRADE USE (in Regulation order)

	Regulation:
APPLICATION	
The Regulations do not apply to machines with the mark of EEC verification	3(1)
The conveyor belt operates at only one intended speed	3(2)
MATERIALS, PRINCIPLES OF CONSTRUCTION AND MARKING	
The removal of removable parts does not affect accuracy	5
The interchange or reversal of parts does not affect accuracy	6
The machine is made in accordance with a pattern as approved under section 12 of the Weights and Measures Act 1963	7(1)
The constituent parts will withstand wear and tear	7(4)
The mass per unit length of the belt is virtually constant	8(1)
There are no belt joints which would disturb the operation of the machine	8(2)
The size of the scale interval of the zero totalisation indicating device is not greater than the prescribed limit	9
An appropriate zero setting device is provided	10
The beltweigher is appropriately marked	11
The units of measurement are correctly marked	12
MANNER OF ERECTION AND USE FOR TRADE	
The beltweigher can be tested in situ	13(1)
A suitable checkweighing machine is in the vicinity	13(2)
Spillage of material load from the belt is not normally likely to occur	14(a)
Overloading of the belt is not normally likely to occur. The speed of the belt will remain within a 10% range	14(b)
The speed of the belt will remain within a 10% range	15
Zero setting control and indication are suitably positioned	16
TESTING	
The beltweigher is completely erected and installed	17(1)
The beltweigher is in a clean condition	17(2)
The marking of the minimum totalised load is valid	18(1)
SUPPLEMENTARY PROVISIONS	
The test results satisfy all requirements	20(b)
An appropriate stamping plug or stud is provided	21(1)
The beltweigher does not bear any mark or stamp which might be mistaken for the prescribed stamp	21(3)

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ANNEX C

PRESCRIBED MAXIMUM VARIATION BETWEEN RESULTS FROM TOTALISATION INDICATING DEVICES WHEN SIMULTANEOUSLY RECORDING A TEST LOAD

Schedule 1: Paragraph 7(2)

	Digital scale interval	**Analogue scale interval**
Equal digital scale interval	Zero [Schedule 1: Paragraph 7(2)(i)]	Either: the prescribed material testing error, or the digital scale interval, whichever is the greater. [Schedule 1: paragraph 7(2)(iv)]
Unequal digital scale interval	Largest of the two scale intervals [Schedule 1: Paragraph 7(2)(ii)]	
Analogue scale interval	[see above right]	The prescribed material testing error. [Schedule 1: paragraph 7(2)(iii)]

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ANNEX D

EXEMPTIONS (BY REFERENCE TO DATE) FROM THE REQUIREMENTS OF THE REGULATIONS

Conditions :	Regulations exempted:
Beltweighers made in accordance with a pattern in respect of which a Certificate of Approval was in force before 8 August 1983	10(1) The semi-automatic or automatic zero setting device is not obligatory. [See 10(2)]
Beltweighers first passed as fit for use for trade before 1 December 1980	12(1)(a) Partial restriction of marking of units of measurement. [See 12(1)(b)]
Beltweighers first passed as fit for use for trade before 1 August 1984	13(1) The conditions for testing in situ are less stringent [See 13(4)] 13(2) The weighing machine requirement is not obligatory [See 13(4)1] 16(1) The erection requirements for zero setting devices are less restrictive [See 16(2)1]

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