

WELMEC

European Cooperation in Legal Metrology

Measuring Instruments Directive 2014/32/EU
Automatic Rail Weighbridges
Corresponding Tables
OIML R 106-1:2011 – MID Annex VIII, Chapter VI



WELMEC

European Cooperation in Legal Metrology

WELMEC is a cooperation between the legal metrology authorities of the Member States of the European Union and EFTA.

This document is one of a number of Guides published by WELMEC to provide guidance to manufacturers of measuring instruments and to Notified Bodies responsible for conformity assessment of their products.

The Guides are purely advisory and do not themselves impose any restrictions or additional technical requirements beyond those contained in relevant EU Directives.

Alternative approaches may be acceptable, but the guidance provided in this document represents the considered view of WELMEC as to the best practice to be followed.

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Notes

1. The column “Comments” indicates, if necessary, the relevant text of OIML R106-1:2011 and related explanations concerning the compliance with the relevant requirements of Directive 2014/32/EU.
2. The column “Conclusion” gives the conclusion on the compliance between OIML R 106-1:2011 and the relevant requirements of Directive 2014/32/EU.

The indication “Covered” means that:

- the requirement of OIML R 106-1:2011 is identical to the one of Directive 2014/32/EU, or
- the requirement of OIML R 106-1:2011 is more severe than the one of Directive 2014/32/EU, or
- all the requirements of OIML R 106-1:2011 fulfil the requirements of Directive 2014/32/EU (even when Directive 2014/32/EU allows other alternatives),
- The indication “Partially covered” means that the requirement is not fully covered or R 106 allows possibilities which are not foreseen in the directive.

The indication “Not Covered” means that the requirement in Directive 2014/32/EU is either not compatible with the relevant OIML R 106-1 requirement or not included in OIML R 106-1.

The indication “Not Relevant” means that the requirement in Annex I of Directive 2014/32/EU is not relevant for automatic rail-weighbridges.

The text in *italic* is an extract from the relevant clause of the OIML Recommendation.

<p align="center">Directive 2014/32/EU Essential requirements of Annex I and Annex VIII Automatic Weighing Instruments (MI-006)</p>	<p align="center">OIML R 106-1:2011 (E)</p>	<p align="center">Comments</p>	<p align="center">Conclusion</p>
<p align="center">ANNEX 1</p>			
<p>1.1 Under rated operating conditions and in the absence of a disturbance, the error of measurement shall not exceed the maximum permissible error (MPE) value as laid down in the appropriate instrument-specific requirements.</p> <p>Unless stated otherwise in the instrument-specific annexes, MPE is expressed as a bilateral value of the deviation from the true measurement value</p>	<p>2.2.1 4.1.1</p>		<p>Covered</p>
<p>1.2 Under rated operating conditions and in the presence of a disturbance, the performance requirement shall be as laid down in the appropriate instrument specific requirements.</p> <p>Where the instrument is intended to be used in a specified permanent continuous electromagnetic field the permitted performance during the radiated electromagnetic field-amplitude modulated test shall be within MPE.</p>	<p>4.1.2 A.7.2 A.7.3 0.4.4.6</p>	<p>Covered except that R106-1 indicates a frequency range limited to 2 GHz whereas D11: 2013 indicates 3 GHz</p>	<p>Partially covered</p>
<p>1.3 The manufacturer shall specify the climatic, mechanical and electromagnetic environments in which the instrument is intended to be used, power supply and other influence quantities likely to affect its accuracy, taking account of the requirements laid down in the appropriate instrument-specific annexes.</p>	<p>5.1.1 A.7.2</p>		<p>Covered</p>
<p>1.3.1. <i>Climatic environments</i> The manufacturer shall specify the upper temperature limit and the lower temperature limit from any of the values in Table 1 unless otherwise specified in the Annexes III to XII, and indicate whether the instrument is designed for condensing or non-condensing humidity as well as the intended location for the instrument, i.e. open or closed.</p>	<p>2.7.1.1 4.3.3 5.1.1 A.7.2.1 & A.7.2.3</p>	<p>Covered except R106-1 makes no reference to condensing humidity or intended location</p>	<p>Partially covered</p>

Directive 2014/32/EU Essential requirements of Annex I and Annex VIII Automatic Weighing Instruments (MI-006)					OIML R 106-1:2011 (E)	Comments	Conclusion			
<i>Table 1</i>					2.7.1.1	-10 to +40 °C Min of 30 °C				
	Temperature Limits									
Upper temperature limit	30 °C	40 °C	55 °C	70 °C						
Lower temperature limit	5 °C	- 10 °C	- 25 °C	- 40 °C						
1.3.2. (a) Mechanical environments are classified into classes M1 to M3 as described below. M1 This class applies to instruments used in locations with vibration and shocks of low significance, e.g. for instruments fastened to light supporting structures subject to negligible vibrations and shocks transmitted from local blasting or pile-driving activities, slamming doors, etc. M2 This class applies to instruments used in locations with significant or high levels of vibration and shock, e.g. transmitted from machines and passing vehicles in the vicinity or adjacent to heavy machines, conveyor belts, etc. M3 This class applies to instruments used in locations where the level of vibration and shock is high and very high, e.g. for instruments mounted directly on machines, conveyor belts, etc. (b) The following influence quantities shall be considered in relation with mechanical environments: – Vibration; – Mechanical shock.						Not relevant according to Annex VIII Chapter I point 1.3 § 2	Not relevant			
									Not relevant according to Annex VIII Chapter I point 1.3 § 2	Not relevant
									Not relevant according to Annex VIII Chapter I point 1.3 § 2	Not relevant
									Not relevant according to Annex VIII Chapter I point 1.3 § 2	Not relevant
									Not relevant according to Annex VIII Chapter I point 1.3 § 2	Not relevant
1.3.3. (a) Electromagnetic environments are classified into classes E1, E2 or E3 as described below, unless otherwise laid down in the appropriate instrument-specific annexes.						Definitions of E1, E2 & E3 are not mentioned in the recommendation	Not covered			
E1 This class applies to instruments used in locations with electromagnetic disturbances corresponding to those likely to be found in residential, commercial and light industrial buildings.						Definitions of E1, E2 & E3 are not mentioned in the recommendation	Not covered			

<p>Directive 2014/32/EU Essential requirements of Annex I and Annex VIII Automatic Weighing Instruments (MI-006)</p>	<p>OIML R 106-1:2011 (E)</p>	<p>Comments</p>	<p>Conclusion</p>
<p>E2 This class applies to instruments used in locations with electromagnetic disturbances corresponding to those likely to be found in other industrial buildings.</p>		<p>Definitions of E1, E2 & E3 are not mentioned in the recommendation</p>	<p>Not covered</p>
<p>E3 This class applies to instruments supplied by the battery of a vehicle. Such instruments shall comply with the requirements of E 2 and the following additional requirements:</p> <ul style="list-style-type: none"> – voltage reductions caused by energising the starter-motor circuits of internal combustion engines – load dump transients occurring in the event of a discharged battery being disconnected while the engine is running. 		<p>Definitions of E1, E2 & E3 are not mentioned in the recommendation</p> <p>Voltage reductions is not mentioned in R 106 OIML D11:2013 (14.2 Table 40)</p> <p>Load dump is not mentioned in R106 OIML D11:2013 (14.2 Table 41)</p>	<p>Not covered</p>
<p>(b) The following influence quantities shall be considered in relation with electromagnetic environments:</p>	<p>4.1.2</p>	<p>E3 is not covered at all in R106 Covered on provisions below</p>	<p>Partially covered</p>
<ul style="list-style-type: none"> – Voltage interruptions, 	<p>A.7.3.1</p>	<p>Covered for E1 & E2 AC mains, not covered for E3 in R106</p> <p>Covered on the provision that the relevant severity level specified in OIML D11:2013 is used OIML D11:2013 (12.3, Table 23). For E1 use severity level 1. For E2 use severity level 2.</p>	<p>Partially covered</p>
<ul style="list-style-type: none"> – Short voltage reductions, 	<p>A.7.3.1</p>	<p>Covered for E1 & E2 AC mains, not covered for E3 in R106</p> <p>Covered on the provision that the relevant severity level specified in OIML D11:2013 is used OIML D11:2013 (12.3 Table 23). For E1 use severity level 1. For E2 use severity level 2.</p>	<p>Partially covered</p>

Directive 2014/32/EU Essential requirements of Annex I and Annex VIII Automatic Weighing Instruments (MI-006)	OIML R 106-1:2011 (E)	Comments	Conclusion
<ul style="list-style-type: none"> – Voltage transients on supply lines and/or signal lines, 	<p>A.7.3.2</p> <p>A.7.3.2</p>	<p>Covered for E1 & E2, not covered for E3 in R106</p> <p>Covered on the provision that the relevant severity level specified in OIML D11:2013 is used</p> <p>OIML D11:2013 (12.3 Table 26). For E1 use severity level 2. For E2 use severity level 3.</p> <p>OIML D11:2013 (12.4 Table 28). For E1 use severity level 2. For E2 use severity level 3.</p>	Partially covered
<ul style="list-style-type: none"> – Electrostatic discharges, 	A.7.3.4		Covered
<ul style="list-style-type: none"> – Radio frequency electromagnetic fields on supply lines and/or signal lines 	A.7.3.5.1	<p>Partially covered for E1 & E2& E3; the range from 2 GHz to 3 GHz is not covered</p> <p>Covered on the provision that the relevant severity level specified in OIML D11:2013 is used</p> <p>OIML D11:2013 (13.2 Table 32, 33 and 34)). For E1 use severity level 2. For E2 use severity level 3.</p> <p>* limit frequency range in Table 34 to 2 GHz</p>	Partially covered
<ul style="list-style-type: none"> Conducted radio frequency electromagnetic fields on supply lines and/or signal lines, 	A.7.3.5.2	The recommendation is more severe than MID	Covered
<ul style="list-style-type: none"> – Surges on supply lines and/or signal lines 	<p>A.7.3.3</p> <p>A.7.3.3</p>	<p>Covered on the provision that the relevant severity level specified in OIML D11:2013 is used</p> <p>OIML D11:2013 (12.3, Table 27). For E1 use severity level 2. For E2 use severity level 3.</p> <p>OIML D11:2013 (12.4 Table 29). For E1 use severity level 2. For E2 use severity level 3.</p>	Partially covered

<p align="center">Directive 2014/32/EU Essential requirements of Annex I and Annex VIII Automatic Weighing Instruments (MI-006)</p>	<p align="center">OIML R 106-1:2011 (E)</p>	<p align="center">Comments</p>	<p align="center">Conclusion</p>
<p>1.3.4. Other influence quantities to be considered, where appropriate, are:</p>			<p>Partially covered</p>
<p>– Voltage variation,</p>	<p>2.7.2 & 4.3.6 & A.7.2.4 / 2.7.2 & 4.3.7 & A.7.2.5 & A.7.2.6</p>	<p>Covered for AC mains, DC mains and battery power supply. Not covered for E3</p>	<p>Partially Covered</p>
<p>– Mains frequency variation,</p>		<p>Not covered by R106 but is in D11:2013 OIML D11:2013 (12.2, Table 21).</p>	<p>Not covered</p>
<p>– Power frequency magnetic fields,</p>		<p>Not covered by R106 but is in D11:2013 OIML D11:2013 (13.1, Table 30).</p>	<p>Not covered</p>
<p>– Any other quantity likely to influence in a significant way the accuracy of the instrument.</p>	<p>4.3.4 & A.6.1 2.10 & A.6.3</p>	<p>Warm-up time Operating Speed</p>	<p>Covered</p>
<p>1.4 When carrying out the tests as envisaged in this Directive, the following points shall apply:</p>			
<p>1.4.1. <i>Basic rules for testing and the determination of errors</i></p> <p>Essential requirements specified in 1.1 and 1.2 shall be verified for each relevant influence quantity. Unless otherwise specified in the appropriate instrument-specific annex, these essential requirements apply when each influence quantity is applied and its effect evaluated separately, all other influence quantities being kept relatively constant at their reference value.</p> <p>Metrological tests shall be carried out during or after the application of the influence quantity, whichever condition corresponds to the normal operational status of the instrument when that influence quantity is likely to occur.</p>	<p>5.1.2 A.7.1.1 A.7.2</p> <p>Annex A</p>	<p>Conditions are listed in each test</p>	<p>Covered</p> <p>Covered</p>

Directive 2014/32/EU Essential requirements of Annex I and Annex VIII Automatic Weighing Instruments (MI-006)	OIML R 106-1:2011 (E)	Comments	Conclusion
<p>1.4.2. <i>Ambient humidity</i></p> <p>(a) According to the climatic operating environment in which the instrument is intended to be used either the damp heat-steady state (non-condensing) or damp heat cyclic (condensing) test may be appropriate.</p> <p>(b) The damp heat cyclic test is appropriate where condensation is important or when penetration of vapour will be accelerated by the effect of breathing. In conditions where non-condensing humidity is a factor the damp-heat steady state is appropriate.</p>	4.3.3 A.7.2.3	Covered except for the damp heat condensing test Non-condensing only	Partially covered
<p>2. Reproducibility</p> <p>The application of the same measurand in a different location or by a different user, all other conditions being the same, shall result in the close agreement of successive measurements. The difference between the measurement results shall be small when compared with the MPE</p>	R 106	Covered provided all requirements and tests should be performed and in accordance with R 106.	Partially Covered
<p>3. Repeatability</p> <p>The application of the same measurand under the same conditions of measurement shall result in the close agreement of successive measurements. The difference between the measurement results shall be small when compared with the MPE.</p>	R 106	Covered provided all requirements and tests should be performed and in accordance with R 106.	Partially covered
<p>4. Discrimination and Sensitivity</p> <p>A measuring instrument shall be sufficiently sensitive and the discrimination threshold shall be sufficiently low for the intended measurement task.</p>	R 106	Covered provided all requirements and tests should be performed and in accordance with R 106.	Partially covered

Directive 2014/32/EU Essential requirements of Annex I and Annex VIII Automatic Weighing Instruments (MI-006)	OIML R 106-1:2011 (E)	Comments	Conclusion
<p>5. Durability</p> <p>A measuring instrument shall be designed to maintain an adequate stability of its metrological characteristics over a period of time estimated by the manufacturer, provided that it is properly installed, maintained and used according to the manufacturer's instruction when in the environmental conditions for which it is intended.</p>	<p>4.1.3 6.3.3 A.8</p>	<p>Covered for electronic instruments</p>	<p>Partially covered</p>
<p>6. Reliability</p> <p>A measuring instrument shall be designed to reduce as far as possible the effect of a defect that would lead to an inaccurate measurement result, unless the presence of such a defect is obvious.</p>	<p>3.2, 3.3.3 3.3.5.1 3.3.5.2, 4.1.2, 4.3.1, A.6.3 A.7.3</p>		<p>Covered</p>
<p>7. Suitability</p>			
<p>7.1. A measuring instrument shall have no feature likely to facilitate fraudulent use, whereas possibilities for unintentional misuse shall be minimal.</p>	<p>A.6.2, 3.1, 3.2.1, 3.2.2</p>		<p>Covered</p>
<p>7.2. A measuring instrument shall be suitable for its intended use taking account of the practical working conditions and shall not require unreasonable demands of the user in order to obtain a correct measurement result.</p>	<p>3.1</p>		<p>Covered</p>
<p>7.3. The errors of a utility measuring instrument at flows or currents outside the controlled range shall not be unduly biased.</p>			<p>Not relevant</p>
<p>7.4. Where a measuring instrument is designed for the measurement of values of the measurand that are constant over time, the measuring instrument shall be insensitive to small fluctuations of the value of the measurand, or shall take appropriate action.</p>			<p>Not relevant</p>

Directive 2014/32/EU Essential requirements of Annex I and Annex VIII Automatic Weighing Instruments (MI-006)	OIML R 106-1:2011 (E)	Comments	Conclusion
8.4. Measurement data, software that is critical for measurement characteristics and metrologically important parameters stored or transmitted shall be adequately protected against accidental or intentional corruption.	3.5, 3.8.2, 3.9		Covered
8.5. For utility measuring instruments the display of the total quantity supplied or the displays from which the total quantity supplied can be derived, whole or partial reference to which is the basis for payment, shall not be able to be reset during use.			Not relevant
9. Information to be borne by and to accompany the instrument			
9.1. A measuring instrument shall bear the following inscriptions: (a) manufacturer's name, registered trade or registered trade mark; (b) information in respect of its accuracy, and where, applicable: (c) information in respect of the conditions of use; (d) measuring capacity; (e) measuring range; (f) identity marking; (g) number of the EU-type examination certificate or the EU design examination certificate; (h) information whether or not additional devices providing metrological results comply with the provisions of this Directive on legal metrological control.	3.11		Covered
9.2. An instrument of dimensions too small or of too sensitive a composition to allow it to bear the relevant information shall have its packaging, if any, and the accompanying documents required by the provisions of this Directive suitably marked.			Not relevant

Directive 2014/32/EU Essential requirements of Annex I and Annex VIII Automatic Weighing Instruments (MI-006)	OIML R 106-1:2011 (E)	Comments	Conclusion
<p>9.3. The instrument shall be accompanied by information on its operation, unless the simplicity of the measuring instrument makes this unnecessary. Information shall be easily understandable and shall include where relevant:</p> <ul style="list-style-type: none"> (a) rated operating conditions; (b) mechanical and electromagnetic environment classes; (c) the upper and lower temperature limit, whether condensation is possible or not, open or closed location; (d) instructions for installation, maintenance, repairs, permissible adjustments; (e) instructions for correct operation and any special conditions of use; (f) conditions for compatibility with interfaces, sub-assemblies or measuring instruments. 			Not covered
<p>9.4. Groups of identical measuring instruments used in the same location or used for utility measurements do not necessarily require individual instruction manuals.</p>			Not relevant
<p>9.5. Unless specified otherwise in an instrument-specific annex, the scale interval for a measured value shall be in the form 1×10^n, 2×10^n, or 5×10^n, where n is any integer or zero. The unit of measurement or its symbol shall be shown close to the numerical value.</p>	<p>2.3 2.8 3.3.2 2nd paragraph 3.3.3 6th paragraph</p>		Covered
<p>9.6. A material measure shall be marked with a nominal value or a scale, accompanied by the unit of measurement used.</p>			Not relevant
<p>9.7. The units of measurement used and their symbols shall be in accordance with the provisions of Union legislation on units of measurement and their symbols.</p>	<p>3.11.1 3.11.2.1</p>	Units of measurement implied	Covered
<p>9.8. All marks and inscriptions required under any requirement shall be clear, non-erasable, unambiguous and non-transferable.</p>	<p>3.11.4 3.12</p>		Covered

Directive 2014/32/EU Essential requirements of Annex I and Annex VIII Automatic Weighing Instruments (MI-006)	OIML R 106-1:2011 (E)	Comments	Conclusion
10. Indication of result			
10.1. Indication of the result shall be by means of a display or hard copy.	3.3.1, 3.3.2		Covered
10.2. The indication of any result shall be clear and unambiguous and accompanied by such marks and inscriptions necessary to inform the user of the significance of the result. Easy reading of the presented result shall be permitted under normal conditions of use. Additional indications may be shown provided they cannot be confused with the metrologically controlled indications.	3.3		Covered
10.3. In the case of hard copy the print or record shall also be easily legible and non-erasable.	3.3.1, 3.3.2, 3.5		Covered
10.4. A measuring instrument for direct sales trading transactions shall be designed to present the measurement result to both parties in the transaction when installed as intended. When critical in case of direct sales, any ticket provided to the consumer by an ancillary device not complying with the appropriate requirements of this Directive shall bear appropriate restrictive information.			Not relevant
10.5. Whether or not a measuring instrument intended for utility measurement purposes can be remotely read it shall in any case be fitted with a metrologically controlled display accessible without tools to the consumer. The reading of this display is the measurement result that serves as the basis for the price to pay.			Not relevant

Directive 2014/32/EU Essential requirements of Annex I and Annex VIII Automatic Weighing Instruments (MI-006)	OIML R 106-1:2011 (E)	Comments	Conclusion
11. Further processing of data to conclude the trading transaction			
11.1. A measuring instrument other than a utility measuring instrument shall record by a durable means the measurement result accompanied by information to identify the particular transaction, when: (a) the measurement is non-repeatable and; (b) the measuring instrument is normally intended for use in the absence of one of the trading parties.	3.5		Covered
11.2. Additionally, a durable proof of the measurement result and the information to identify the transaction shall be available on request at the time the measurement is concluded.	3.3.2 3.5		Covered
12. Conformity evaluation A measuring instrument shall be designed so as to allow ready evaluation of its conformity with the appropriate requirements of this Directive.	R 106	Covered provided all requirements and tests should be performed and in accordance with R 106.	Partially covered

Directive 2014/32/EU Essential requirements of Annex I and Annex VIII Automatic Weighing Instruments (MI-006)	OIML R 106-1:2011 (E)	Comments	Conclusion
ANNEX VIII 006 AUTOMATIC WEIGHING INSTRUMENTS (MI-006)			
The relevant essential requirements of Annex I, the specific requirements of this Annex and the conformity assessment procedures listed in Chapter I of this Annex, apply to automatic weighing instruments defined below, intended to determine the mass of a body by using the action of gravity on that body.	0.1.1	Slightly different wording	Covered
DEFINITIONS			
Automatic weighing instrument An instrument that determines the mass of a product without the intervention of an operator and follows a predetermined programme of automatic processes characteristic of the instrument.	0.1.2	Slightly different wording	Covered
Automatic catchweigher An automatic weighing instrument that determines the mass of pre-assembled discrete loads (for example prepackages) or single loads of loose material.			Not relevant
Automatic checkweigher An automatic catchweigher that subdivides articles of different mass into two or more subgroups according to the value of the difference of their mass and a nominal set-point.			Not relevant
Weight labeller An automatic catchweigher that labels individual articles with the weight value.			Not relevant
Weight/price labeller An automatic catchweigher that labels individual articles with the weight value, and price information.			Not relevant
Automatic gravimetric filling instrument An automatic weighing instrument that fills containers with a predetermined and virtually constant mass of product from bulk.			Not relevant
Discontinuous totaliser (totalising hopper weigher) An automatic weighing instrument that determines the mass of a bulk product by dividing it into discrete loads. The mass of each discrete load is determined in sequence and summed. Each discrete load is then delivered to bulk.			Not relevant

Directive 2014/32/EU Essential requirements of Annex I and Annex VIII Automatic Weighing Instruments (MI-006)	OIML R 106-1:2011 (E)	Comments	Conclusion
Continuous totaliser An automatic weighing instrument that continuously determines the mass of a bulk product on a conveyor belt, without systematic subdivision of the product and without interrupting the movement of the conveyor belt.			Not relevant
Rail-weighbridge An automatic weighing instrument having a load receptor inclusive of rails for conveying railway vehicles.	0.1.4	Different wording	Covered

Directive 2014/32/EU Essential requirements of Annex I and Annex VIII Automatic Weighing Instruments (MI-006)	OIML R 106-1:2011 (E)	Comments	Conclusion
SPECIFIC REQUIREMENTS			
Chapter I – Requirements common to all types of automatic weighing instruments			
1. <i>Rated Operating Conditions</i> The manufacturer shall specify the rated operating conditions for the instrument as follows:	0.5.2, 4.1.1 5.1.1	5.1.1 is common to 1.1 to 1.4 below	Covered
1.1. For the measurand: The measuring range in terms of its maximum and minimum capacity.	2.5 2.3 (Table 3) 5.1.1	Min Max	Covered
1.2. For the electrical supply influence quantities: In case of AC voltage supply: the nominal AC voltage supply, or the AC voltage limits. In case of DC voltage supply: the nominal and minimum DC voltage supply, or the DC voltage limits.	2.7.2, 4.3.6 & 5.1.1 2.7.2, 4.3.7 & 5.1.1		Covered
1.3. For the mechanical and climatic influence quantities: The minimum temperature range is 30°C unless specified otherwise in the following chapters of this Annex. The mechanical environment classes according to Annex I, paragraph 1.3.2 are not applicable. For instruments which are used under special mechanical strain, e.g. instruments incorporated into vehicles, the manufacturer shall define the mechanical conditions of use.	2.7.1.1		Covered Not relevant

Directive 2014/32/EU Essential requirements of Annex I and Annex VIII Automatic Weighing Instruments (MI-006)	OIML R 106-1:2011 (E)	Comments	Conclusion
1.4. For other influence quantities (if applicable): The rate(s) of operation. The characteristics of the product(s) to be weighed.	2.10 3.2.3, A.6.3 3.11.1 8 th point (C.6)	Operating speed & liquid loads Speed restrictions	Covered
2. <i>Permissible effect of disturbances – Electromagnetic environment</i> The required performance and the critical change value are given in the relevant Chapter of this Annex for each type of instrument.		See chapter VI – Automatic Rail Weighbridges of Annex VI of directive	
3. <i>Suitability</i>			
3.1. Means shall be provided to limit the effects of tilt, loading and rate of operation such that maximum permissible errors (MPEs) are not exceeded in normal operation.	3.7.1, 3.7.2 & A.6.3 3.3.5 3.2.3 2.10		Covered
3.2. Adequate material handling facilities shall be provided to enable the instrument to respect the MPEs during normal operation.	3.7.1, 3.7.2, 3.7.4 (C.2, C.4 & C.5)	Aprons Drainage Approach rails Ice Overhead structures	Covered
3.3. Any operator control interface shall be clear and effective.	3.3.		Covered
3.4. The integrity of the display (where present) shall be verifiable by the operator.	4.3.2		Covered
3.5. Adequate zero setting capability shall be provided to enable the instrument to respect the MPEs during normal operation.	3.2.7 & A.5.2 6.2.2.2		Covered
3.6. Any result outside the measurement range shall be identified as such, where a printout is possible.	3.3.5.1	No printout allowed outside of the measurement range of R-106	Covered

Directive 2014/32/EU Essential requirements of Annex I and Annex VIII Automatic Weighing Instruments (MI-006)	OIML R 106-1:2011 (E)	Comments	Conclusion
<p>4. Conformity assessment</p> <p>The conformity assessment procedures referred to in Article 17 that the manufacturer can choose between are:</p> <p>For mechanical systems: B+D or B+E or B+F or D1 or F1 or G or H1.</p> <p>For electromechanical instruments: B+D or B+E or B+F or G or H1.</p> <p>For electronic systems or systems containing software: B+D or B+F or G or H1.</p>			<p>Not covered</p>
<p>Chapter VI – Automatic Rail Weighbridges</p>			
<p>1. <i>Accuracy Classes</i></p> <p>Instruments are divided into four accuracy classes as follows: 0.2, 0.5, 1, 2.</p>	<p>2.1</p>		<p>Covered</p>
<p>2. <i>MPE</i></p>			
<p>2.1. The MPEs for weighing-in-motion of a single wagon or a total train are shown in table 9.</p>	<p>2.2.1 -Table 1</p>		<p>Covered</p>
<p style="text-align: center;"><i>Table 9</i></p>			
<p>Accuracy class</p>	<p>MPE</p>		
<p>0.2</p>	<p>± 0,1 %</p>		
<p>0.5</p>	<p>± 0,25 %</p>		
<p>1</p>	<p>± 0,5 %</p>		
<p>2</p>	<p>± 1,0 %</p>		

Directive 2014/32/EU Essential requirements of Annex I and Annex VIII Automatic Weighing Instruments (MI-006)	OIML R 106-1:2011 (E)	Comments	Conclusion
<p>2.2. The MPEs for the weight of coupled or uncoupled wagons weighing-in-motion shall be one of the following values, whichever is the greatest:</p> <ul style="list-style-type: none"> – the value calculated according to Table 9, rounded to the nearest scale interval; – the value calculated according to Table 9, rounded to the nearest scale interval for a weight equal to 35 % of the maximum wagon weight (as inscribed on the descriptive markings); – one scale interval (d) 	2.2.1.1		Covered
<p>2.3. The MPEs for the weight of train weighing-in-motion shall be one of the following values, whichever is the greatest:</p> <ul style="list-style-type: none"> – the value calculated according to Table 9, rounded to the nearest scale interval; – the value calculated according to Table 9, for the weight of a single wagon equal to 35 % of the maximum wagon weight (as inscribed on the descriptive markings) multiplied by the number of reference wagons (not exceeding 10) in the train, and rounded to the nearest scale interval; – one scale interval (d) for each wagon in the train, but not exceeding 10 d. 	2.2.1.2		Covered
<p>2.4. When weighing coupled wagons; the errors of not more than 10 % of the weighing results taken from one or more passes of the train may exceed the appropriate MPE given in paragraph 2.2, but shall not exceed twice the MPE.</p>	2.2.1.1 2 nd paragraph		Covered

Directive 2014/32/EU Essential requirements of Annex I and Annex VIII Automatic Weighing Instruments (MI-006)	OIML R 106-1:2011 (E)	Comments	Conclusion										
<p>3. Scale interval (d)</p> <p>The relationship between the accuracy class and the scale interval shall be as specified in Table 10.</p> <p style="text-align: center;">Table 10</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 50%;">Accuracy class</th> <th style="width: 50%;">Scale interval (d)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">0.2</td> <td style="text-align: center;">$d \leq 50 \text{ kg}$</td> </tr> <tr> <td style="text-align: center;">0.5</td> <td style="text-align: center;">$d \leq 100 \text{ kg}$</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">$d \leq 200 \text{ kg}$</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">$d \leq 500 \text{ kg}$</td> </tr> </tbody> </table>	Accuracy class	Scale interval (d)	0.2	$d \leq 50 \text{ kg}$	0.5	$d \leq 100 \text{ kg}$	1	$d \leq 200 \text{ kg}$	2	$d \leq 500 \text{ kg}$	2.3	First and second column of Table 3 in R-106:2011(E) aligned with Table 10 of MID	Covered
Accuracy class	Scale interval (d)												
0.2	$d \leq 50 \text{ kg}$												
0.5	$d \leq 100 \text{ kg}$												
1	$d \leq 200 \text{ kg}$												
2	$d \leq 500 \text{ kg}$												
<p>4 <i>Measurement range</i></p>													
<p>4.1. The minimum capacity shall not be less than 1 t, and not greater than the value of the result of the minimum wagon weight divided by the number of partial weighings.</p>	2.5		Covered										
<p>4.2. The minimum wagon weight shall not be less than 50 d.</p>	2.6		Covered										
<p>5. <i>Performance under influence factor and electromagnetic disturbance</i></p>													
<p>5.1. The MPE due to an influence factor shall be as specified in Table 11.</p> <p style="text-align: center;">Table 11</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 70%;">Load (m) in verification scale intervals (d)</th> <th style="width: 30%;">MPE</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">$0 < m \leq 500$</td> <td style="text-align: center;">$\pm 0,5 d$</td> </tr> <tr> <td style="text-align: center;">$500 < m \leq 2\ 000$</td> <td style="text-align: center;">$\pm 1,0 d$</td> </tr> <tr> <td style="text-align: center;">$2\ 000 < m \leq 10\ 000$</td> <td style="text-align: center;">$\pm 1,5 d$</td> </tr> </tbody> </table>	Load (m) in verification scale intervals (d)	MPE	$0 < m \leq 500$	$\pm 0,5 d$	$500 < m \leq 2\ 000$	$\pm 1,0 d$	$2\ 000 < m \leq 10\ 000$	$\pm 1,5 d$	2.2.2 (Table 2)		Covered		
Load (m) in verification scale intervals (d)	MPE												
$0 < m \leq 500$	$\pm 0,5 d$												
$500 < m \leq 2\ 000$	$\pm 1,0 d$												
$2\ 000 < m \leq 10\ 000$	$\pm 1,5 d$												

Directive 2014/32/EU Essential requirements of Annex I and Annex VIII Automatic Weighing Instruments (MI-006)	OIML R 106-1:2011 (E)	Comments	Conclusion
5.2. The critical change value due to a disturbance is one scale interval.	0.4.4.6 4.1.2, A.7.3	Significant fault	Covered