

DRAFT
RECOMMENDATION

TC 9/SC 2
(UK)

INFORMATION

Revision of R 106-1

Automatic rail-weighbridges

Part 1: Metrological and technical requirements - Tests

Draft submitted for CIML online approval on 2011.01.18.

Voting closes on 2011.04.18.





TC9 / SC2 Comments on: *DR Revision of R 106 Parts 1 Rail-weighbridges – Metrological and technical requirements*

Secretariat: TC 9/SC 2 – UK Secretariat's responses to the comments to the DR 106. June 2010

In accordance with Resolution 16 of the 45th CIML meeting the DR 106 is submitted for online CIML approval. The following changes have been made to bring the DR 106 back in line with the version approved by TC9/SC2.

- 1) The rounding error example inserted in 2.2.1.1 at Germany's request has been deleted as committee Members have not agreed with it and its inclusion at the DR stage of the draft revision.
- 2) The requirement for test for 'rolling loads' inserted in A.5.3.2.2 at China's request has been removed in accordance with other Members comments. The requirement was a major technical change introduced at the DR stage and Members are not content with its inclusion.

Member	Clause	Comment	Secretariat comments
AUSTRIA	General	We abstain from voting, but if the essential comments on rounding and temperature were taken into consideration, we would agree. Word wraps are missing throughout the text, which leads to misunderstandings (e.g. table 5 in 5.1.4.1).	Editorial correction. Amended.
	2.2.1.1	The new example in 2.2.1.1 proposes a new type of rounding of the limits of error. Since this type of rounding is not systematic, we propose to quit the rounding completely in the given example.	Footnote deleted. This was inserted at the DR stage on Germany's request but some Members have objected to its inclusion.
	2.2.2.1	The new example in 2.2.1.2 is inconsistent with the rounding example in 2.2.1.1 and 4 t should be replaced by 0.4 t.	Example deleted and footnote amended as above. Amended to 0.4t.

	2.7.1.1.	<p>For the sake of clarification we propose the following amendments:</p> <p>Replace: “The temperature limits may be expressed using the values shown in Table 4 provided that any ranges specified shall be at least 30 °C.” by “The temperature limits may be expressed using table 4, combining one value of the upper row with one value of the lower line provided that any range specified shall be at least 30 °C.”</p> <p>Table 4: Additionally, we suggest that -5 be replaced by + 5 as contained in the</p>	Editorial correction. Amended.
	A.5.3.2.2	2nd sentence in A 5.3.2.2 (eccentricity test) is not consistent with R76.	Amended.
	6.2.3.2	In the new text of 6.2.3.2 the provision „one or both directions“ is missing	Text re-inserted.
	A.9.3.1.1	Point b) in A.9.3.1.1 is still unclear.	Amended.
BELARUS	A.3.5.1	We recommend that A.3.5.1 be amended in respect to the weighbridges. The example here refers to an instrument with a scale interval of 10 kg and zero error of 1 kg while the minimum scale interval given in table 3 is 50 kg. We suggest therefore that the above example should be based on more real values.	Amended. Values indicated in 100s kg.
	A.5.3.2.3	The same comment applies to an example in A.5.3.2.3 which is based on values which are beyond the weighing range of an instrument.	Editorial correction. Amended as above.
FRANCE	General	By accepting some of the comments of the last consultation, the text has been modified and unfortunately in a direction which makes it less coherent with MID. We deeply regret this and we ask the secretariat to reconsider it at this stage.	Changes deleted and draft reverted to previous TC/SC approved version. Only editorial amendments made in this 2 nd DR.

	2.2.1.1	<p>The note which has been inserted following German comment should be deleted. A note cannot give a recipe which contradicts a requirement.</p> <p>Furthermore § 2.2 of annex MI-06, chapter VI of directive 2004/22/CE also indicates “rounded to the nearest scale interval” for the mpe wagon weighing.</p> <p>Rather than inventing a strange method of calculation because of special numerical example we suggest :</p> <ul style="list-style-type: none"> - either to keep the previous wording and unfortunately to consider that in the German example the instrument should be rejected or modified to have a greater value for the scale division (100 kg instead of 50 kg) to solve the problem in the field - or to simply explain that "rounding to nearest scale interval" is made to the upper value (in the example 224,9 should be rounded to 250 kg) 	<p>Footnote deleted.</p> <p>This was inserted at the DR stage on Germany's request but some Members have objected to its inclusion.</p>
GERMANY	3.2.7.4	Item b) does not make sense here at all; we suppose it refers to zero tracking and thus must be deleted here.	Text deleted.
	3.3.5.3	This item seems not to be a requirement but a definition. It should better be shifted to the “terminology” part. We must admit that we had missed that detail when checking the 4 th CD.	Stable equilibrium is defined in T.3.9. For clarification 3.3.5.3 amended. It cannot be deleted since the committee has approved the draft with this requirement.
	5.1.4.1	Table 5 is disordered and does not make sense being in the present form; please adopt table 7 from R76-1, No. 3.2.10.1.	Editorial correction. Table amended in accordance with table 7 from R76-1, No. 3.2.10.1.
	A.5.3.2.2	There are significant changes in comparison to the 4 th CD (A.5.3.2.3) which obviously were directly taken from R76-1; however for rail weighbridge that test does not make sense what becomes evident when you read paragraph 4 where “rolling load” is considered a special case although with rail weighbridge there are exclusively “rolling loads”. We do not see the necessity to change the wording of 4 th CD.	Test for rolling loads (originally inserted at China's request) is now deleted and A.5.3.2.2 reverted back to the approved wording in the 4CD.
	A.7.1.2.1	There should be a clear statement that this part is only applicable to strain gauge load cells.	Reference to load cells is mentioned in the last paragraph.
NETHERLAND	general	A number of amendments have been made in the Draft which are more than editorial modifications Moreover some of them have these have implications which cannot be accepted and therefore, although a positive vote was given during the on-line ballot on the amended Draft this time a negative vote from NL will be cast.	Draft reverted to previous TC/SC approved version. Only editorial amendments made in this second DR.

T.3.2.1	<p>This is not an editorial change This new definition is not consistent with other definitions of Max, for example R76-1 This amendment which is based on the comments of New Zealand is not correct it should be coupled to the maximum weighing capacity. There is no basis for the introducing the “excessive relative error”</p> <p>Suggestion :</p> <p>Revert change.</p>	Terminology reverted to wording in the 4CD.
3.2.7	<p>Since the title has changed also the clause should include “zero-tracking device”</p> <p>Suggestion: The following editorial modification: 3.2.7 Zero-setting and zero-tracking devices (A.5.2) An instrument may be equipped with a semi-automatic, or automatic zero-setting and/or zero-tracking device for each load receptor.</p>	Title amended as proposed.
5.2.6	<p>This part concerns initial verification. It is absolutely not the place to drop a text concerning use of OIML certificates. Moreover it is not clear at all why a clause about the use of OIML certificates should be integrated in this recommendation</p> <p>The text adopted from R 76-1 concerns modules and in that specific recommendation it is part of the type evaluation tests and examinations.</p>	5.2.6 and text deleted. This was inserted in the DR at the request of China.
6.1.1.1	<p>This is not an editorial change The “alternative control instrument” does not make sense. This is already covered by either the separate or integrated control instrument. This is an example and not an alternative.</p> <p>Revert change or modify the amendment to a note.</p>	Text on “alternative control instrument” deleted as this was inserted at the DR stage and Members have objected to it.

	A.5.3.2.2	<p>The added sentence starting with “On an instrument used for weighing rolling loads....” is not an editorial change.</p> <p>It is an additional test containing additional requirements for which the rationale in case of rail-weigh bridges can be questioned.</p> <p>Revert change or change to: Where the instrument detects either of the above conditions, it shall neither indicate nor print any measurement result or the indication or printout of any measurement result shall be accompanied by a message indicating a speed fault notification</p>	A.5.3.2.2 amended to reverted back to wording of the 4 CD.
P.R. CHINA	<p>T.2.6.2 analogue data processing module</p> <p>T.2.6.3 digital data processing module</p>	<p>Since “analogue data processing module” and “digital data processing module” have added according to R76-1. Why not two terms" terminal" and "digital display" also add? However, if the introduction of so many modules, it is considerable to how to detect these modules in the recommendation, because " analogue data processing module " and " digital data processing module " may be no digital display. Namely, it is necessary to take into account “apportioning of errors” and “how to test them separately”.</p>	These proposals represents a major technical change which cannot be implemented because this draft has become a DR, i.e., TC 9/SC2 has already approved the draft.
P.R. CHINA	<p>1.1 Scope</p> <p>2.1 Accuracy classes</p>	<p>1.1 Scope This International Recommendation specifies the requirements and test methods for automatic railweighbridges, hereinafter referred to as “instruments”, which are used to determine the mass of railway vehicles (T.1.5) when they are weighed in motion.</p> <p>2.1 Accuracy classes Instruments are divided into four accuracy classes as follows:0.2 □0.5 □1□ 2</p> <p>Question: At present, it is popular to use automatic rail-weighbridges of non-breaking rail□rail patch and automatic rail-weighbridges greater than 50km/h with high speed in the world. So are these automatic rail-weighbridges applicable for the scope in the recommendation? If it is applicable, so is it reasonable for accuracy classes in 2.1? Why don't add 5 and 10 accuracy class according to OIML R134? Which class shall static accuracy meet?</p> <p>Suggestion: We suggest adding 5 and 10 accuracy classes.</p> <p>Reason:</p> <ul style="list-style-type: none"> □ It is applicable for automatic rail-weighbridges of non-breaking rail and rail patch. □ It is applicable for automatic rail-weighbridges greater than 50km/h with high speed. 	Proposal is a technical change which cannot be implemented because this draft has become a DR, i.e., TC 9/SC2 has already approved the draft.

	2.2.1.1 Wagon weighing	<p><i>Note:</i> When rounding to the nearest scale interval it is possible that in some situations the rounding process may possibly reduce the mpe and fail good instruments. See example below and alternative solution. Maximum permissible error (MPE): $89\,980\text{ kg} \times 0.25\% = \pm 224.9\text{ kg}$</p> <p>0.25 % should be changed into ($\pm 0.25\%$).</p>	The error calculation footnote has been deleted in accordance with other Members proposals.
	2.2.1.1 wagon weighing	The expression of mpe and MPE should be consistent.	Footnote deleted as above.
	1.1 Scope 2.2.1.1 wagon weighing	ARW and “hereinafter referred to as instruments” should be consistent.	Footnote deleted as above.
P.R. CHINA	2.2.1.2	<p>MPE according to:</p> <p>2.2.2.1 a) $0.5\% \times 100\text{t} \times 10\text{ Reference wagons} = 7.5\text{ t}$</p> <p>2.2.2.1 b) $35\% \times \text{Max wagon mass} \times 10\text{ Reference wagons} = 350\text{ t}$, $0.5\% \times 350\text{ t} = 1.75\text{ t}$ (rounded to the nearest scale interval = 1.8 t),</p> <p>2.2.2.1 c) $1\text{ d} \times \text{Number of Reference wagons} = 2\text{ t}$</p> <p>Amend as below content:</p> <p>2.2.1.2 a) $0.5\% \times 100\text{t} \times 15\text{ Reference wagons} = 7.5\text{ t}$</p> <p>2.2.1.2 b) $35\% \times \text{Max wagon mass} \times 10\text{ Reference wagons} = 350\text{ t}$, $0.5\% \times 350\text{ t} = 1.75\text{ t}$ (rounded to the nearest scale interval = 1.8 t),</p> <p>2.2.1.2 c) $1\text{ d} \times 10\text{ Reference wagons} = 2\text{ t}$</p>	Editorial correction. Amended as proposed.

	2.2.1.2 Train weighing	<p>2.2.1.2 Train weighing Example according to 2.2.1.1 b) for a class 2 instrument: 1 % = 0.35 t (or 4 t rounded) for 90 % (54 out of 60) of reference wagons Example according to 2.2.2.1 for a class 1 instrument: 0.5 % *350 t = 1.75 t(rounded to the nearest scale interval = 1.8 t),</p> <p>Amend: 1 % = 0.35 t for 90 % (54 out of 60) of reference wagons rounded to 0.4 t . 0.5 % *350 t = 1.75 t rounded to the nearest scale interval = 1.8 t . ① Scale interval = 0.2 t 0.35 t 0.4 t ② Reason: Scale interval = 0.2 t 0.35 t rounded to the nearest scale interval = 0.4 t the bracket is unwanted.</p>	Editorial correction. Amended as above.
	2.2.2	0 ≤ m ≤ 500 should be 0 ≤ m ≤ 500 in table 2. When unload tests happened, we need make sure if the accuracy of “0” is at the range of ±0.5d_s.	Editorial correction. Amended as proposed.
	2.2.2 Table2	We suggest adding the MPE of “common accuracy class” in Table 2. For a class 1 and 2 instrument, the static accuracy is not always “medium accuracy class”.	Not sure what the Member is proposing. In any case, we cannot amend the mpes at this DR stage.
P.R. CHINA	Figure 2	What does “10d=1d” mean in Figure 2?	Text amended.
P.R. CHINA	Figure 1 Figure 2	<p>Figure 1 - Illustration of maximum permissible errors for coupled wagons Figure 2 - Illustration of maximum permissible errors for train weighing Question: The two figures are illustrated according to “Maximum wagon mass = 100 t Scale interval = 0.2 t”, but the content in 2.2.1.1 a),b) and 2.2.1.2 a),b) state that “rounded to the nearest scale interval , d=0.2t”. In fact, the oblique line in figures should be ladder-shaped line which move up along y axle with step size equal to d=0.2t. It is similar to error curve in OIML R76. Suggestion: if oblique line can't modified in Figure 1 and Figure 2, then adding a sentence—in fact the oblique line should be ladder-shaped line.</p>	Chart is specified as in R 106-1 1997 Edition. These comments should have been flagged up during the CD development stages.

2.7.2 Supply voltage	<p>2.7.2 Supply voltage</p> <p>We suggest adopting an approach specified in D11 and R76-1 for easy understand.</p> <p>There may be two different results in test if U_{nom}, U_{min} and U_{max} are marked on the product. It is unreasonable for the products only U_{nom} is marked on if the supply voltage varies from $-15\%U_{nom}$ to $10\%U_{nom}$ or $-15\%U_{nom}$ and $10\%U_{nom}$ are marked on if the supply voltage varies from $85\% \times U_{min}$ to $110\% \times U_{max}$.</p>	Amended in accordance with OIML R76.
3.5 Data storage device	<p>Since some terms about "software" have added according to R76-1, why not two terms" long-term storage of measurement data" and "metrological relevant" mentioned in 3.5 also add?</p>	Amended. Subject to TC9/SC2 approval.
3.3.5	<p>3.3.5 Limits of indication of weighing results</p> <p>"unless the value is clearly marked with an error code or message. These values may be separated from the other weighing values."</p> <p>Amend:</p> <p>These values may be separated from the other weighing values unless they are clearly marked with an error code or message.</p>	The current sentence is clear and sufficient for its purpose.
3.8	<p>Some securing means on software are provided in 3.8, but we don't understand the reason that clause 3.8.3 about computer and software are deleted. It is not totally enough to only mention a word "Note referencing R76 (5.5.2.1)" about relevant hardware.</p> <p>Now it is popular to use PC and ADC in the weighing instrument, so we suggest adding the total contents in clause 5.5 of R76-1 to R106-1, and the relevant contents Appendix G of R76-1 or D31.</p>	<p>Additional securing requirements for software and computer interface is moved to 3.9 (Securing) and to 4.3.5 (Interfaces).</p> <p>Detailed software requirement was removed in the 4CD at the request of some Members.</p> <p>At this DR stage it is impossible to add additional software requirements.</p>

3.8.1 Software documentation	<p>3.8.1 Software documentation</p> <p>The software documentation submitted by the manufacturer shall include:</p> <p>f) overview of the system hardware, e.g. topology block diagram, type of computer(s), source code for software functions, etc. if not described in the operating manual;</p> <p>The software documentation submitted to software control instruments includes source code for software functions. Is it feasible in practice?</p> <p>Suggestion: Delete “source code for software functions.”</p> <p>Reason: Legally relevant software should have some protections which prevent malice modification (text editor tool) by some software according to software securing level of automatic rail-weighbridges. The stored data shall be adequately protected against intentional and unintentional changes. Generally speaking, it is not greater than middle-level of software securing, so it is not necessary to provide “source code for software functions,”</p>	<p>Text removed as Members have objected to its inclusion.</p>
3.8 Software and hardware requirements	<p>3.8 Software and hardware requirements</p> <p>Question: there are some requirements about software in the recommendation, but test methods about software don't exist.</p>	<p>Some of the software requirements will require mainly visual examination. Other software requirements will be integral with the type approval test process if the instrument is software-controlled. Reference can be made to the OIML Document D 31.</p>

P.R. CHINA	3.11.1 Markings shown in full	<p>3.11.1 Markings shown in full</p> <p>① “not to be used to weigh wagons carrying liquids or other products that may be subjected to fluctuations in its gravity centre with wagon movement (if applicable)”</p> <p>Suggest changing as follows:</p> <p>“can be used to weigh wagons carrying liquids or other products that may be subjected to fluctuations in its gravity centre with wagon movement (if applicable)”</p> <p>Reason: Most automatic rail-weighbridges weigh wagons by means of bogie, that is to say, most of them can't weigh liquids. Only a few rail-weighbridges with double load platform and full draught weighing can be allowed to weigh wagons carrying liquids or other products that may be subjected to fluctuations in its gravity centre with wagon movement. Therefore, it is complicated to write down excessive texts in the mark. We suggest amending text as shown above.</p> <p>② “software identification, (if applicable)”</p> <p>Suggestion: We suggest deleting “(if applicable)”.</p> <p>Reason: Since automatic rail-weighbridges are instruments in-motion with electronic devices according to 3.8 and T2.8.4, the mark “software identification” is essential not “if applicable”.</p>	<p>1) Specified as in R 106 1997Ed. However amended. Subject to TC9/SC2 approval.</p> <p>2) Amended. Text worded in accordance with R76.</p>
	3.11.1	<p>3.11.1 Markings shown in full</p> <p>maximum transit operating speed (if applicable) km/h</p> <p>We suggest changing the sentence into “maximum transit speed (if applicable)” or “maximum operating speed”.</p>	Amended.
	5.1.4	<p>Generally speaking, an automatic rail-weighbridge is large in volume. It pointed out modules has tested separately in type evaluation of 5.1.4. So it is very important to test compatibility checking of modules separately, then how to evaluate the compatibility checking of modules? It can not only take into account “apportioning of errors” but also other requirements. We suggest adding compatibility checks according to R76-1 Edition 2006.</p>	New bulletin inserted in Table 5 Subject to TC9/SC2 approval.
	5.2.3	<p>identification of software if applicable; identification of modules if applicable; and Amend: identification of software(if applicable); identification of modules(if applicable); and</p>	Amended.

P.R. CHINA	5.2.6	In 5.2.6: “a representative complete instrument shall be submitted for testing of correct functioning if this is considered necessary by the responsible authority.” But rails, vehicles, speed, and installation quality factors affect the metrological performance in the type evaluation and verification of automatic rail-weighbridge. So it is not the word “necessary” but “indispensable”. We think it is indispensable for performance test of the complete instrument. Certainly this test can process in the normal temperature.	5.2.6 (Use of OIML certificates) deleted in accordance with Netherlands proposals. The text was inserted at the DR stage subject to SC2 approval.																																
	5.2.6	If automatic rail-weighbridge adopts the definition “module”, shall some requirements and test methods be specified technically as indicator the same Appendix C and D in R76-1? If do this, relevant module may carry out type evaluation separately because relevant fractions of apportioning of errors for modules are raised in various recommendation on automatic weighing. That is to say, the same kind of automatic weighing indicator may be combined use.	Additional technical text cannot be inserted at this DR stage.																																
	5.1.4.1 Table 5	<p>Modification in Table 5 has no substantial meanings. The problem about “creep” is not being solved completely.</p> <p><input type="checkbox"/> As we put forward the last feedback suggestion</p> <p><input type="checkbox"/>fraction of “creep effect” have modified, but still have some problems, and it is reasonable to change “creep effect” to “time effect”.</p> <p>We suggest changing below table:</p> <table><tr><th colspan="4">Table 5</th></tr><tr><th>Performance criteria</th><th>Load cell</th><th>Electronic indicator</th><th>Connecting elements, etc.</th></tr><tr><td>Combined effect</td><td>0.7</td><td>0.5</td><td>0.5</td></tr><tr><td>Temperature effect on no load</td><td>0.7 n/a</td><td>0.5 1</td><td>0.5 n/a</td></tr><tr><td>Power supply variation</td><td>0.7</td><td>n/a</td><td>0.7</td></tr><tr><td>Effect of time</td><td>0.7</td><td>0.5</td><td>0.5</td></tr><tr><td>Damp heat</td><td>n/a</td><td>1</td><td>n/a</td></tr><tr><td>Span stability</td><td></td><td></td><td></td></tr></table>	Table 5				Performance criteria	Load cell	Electronic indicator	Connecting elements, etc.	Combined effect	0.7	0.5	0.5	Temperature effect on no load	0.7 n/a	0.5 1	0.5 n/a	Power supply variation	0.7	n/a	0.7	Effect of time	0.7	0.5	0.5	Damp heat	n/a	1	n/a	Span stability				Table 5 amended. For consistency wording from R76 used. So ‘creep effect’ used.
	Table 5																																		
Performance criteria	Load cell	Electronic indicator	Connecting elements, etc.																																
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Span stability																																			
	It put forward the metrological requirement about “time (creep and creep recovery)”in 3.9.4 and test method in A.4.11 according to R76-1. Why does the recommendation have no relevant requirements and test methods?	Reference in the notes to the relevant sections in OIML R76 should be sufficient.																																	

P.R. CHINA	6.1.1.3 Partial weighing (see T.3.1.2) of reference wagons	<p>6.1.1.3 Partial weighing (see T.3.1.2) of reference wagons</p> <p>“Where the control instrument is constructed only for partial weighing of reference wagons by individual axle measurement when stationary it shall have a scale interval for stationary load (2.4), comply with the requirements in 6.2.1, and the alignment correction test for single-axle weighing instruments in Annex B shall be successfully applied.”</p> <p>Amend :“Where the control instrument is constructed only for partial weighing of reference wagons by axles or bogie partial weighing measurement when stationary it shall have a scale interval for stationary load (2.4), comply with the requirements in 6.2.1, and the alignment correction test for single-axle load or bogie load partial weighing instruments in Annex B shall be successfully applied.”</p> <p>Reason: The definition of partial weighing is “Determining the mass of a wagon in two or more parts (i.e. axle or bogie partial weighing) successively on the same load receptor”. So partial weighing can be divided into “single-axle load partial weighing” and “bogie load partial weighing”.</p>	This applies to ‘individual axle measurement’ as mentioned in the sentence. In this situation, the alignment correction of single-axle weighing applies to weighing of a ‘single axle’ only, i.e., on a wagon with 2 separate axle on each end as opposed to a bogie which has two or more axles on each end of the wagon. There is greater uncertainty of error from a single axle measurement than from a bogie axle measurement.
	6.1.2.1	<p>The method on distribution of test weights in 6.1.2.1 is not being applicable to weighing mode of instruments. We suggest testing by stimulating the site practical way such as standard rolling load way for automatic rail-weighbridge.</p> <p>If weights are used for testing standard, please add this sentence: When two points of support are very close, double loads may be applied to double zone where two points of support joint.</p>	The load distribution is dependent on the load receptor and 6.1.2.1 is a general statement of the possible means of ensuring an even load distribution.
	6.1.2.2	<p>There are two questions in 6.1.2.2.</p> <p>Question 1: what does “at least 50% of Max are used” mean? Since it is “at least 50% of Max”, repeatability test will be meaningless. Can it change into “If meet the following circumstance, standard weights may reduce”?</p> <p>Question 2: Shall “with a load of adequate stability” be “with a load of about the value where the substitution is made”?</p>	<p>‘Max’ refers to maximum capacity of the instrument under test. The repeatability test is as specified in R76-1 (A.4.10).</p> <p>‘load of adequate stability’ implies that the test load must be of a stable quantity if loads other than weights are used.</p>

P.R. CHINA	6.2.3.3 Coupled wagons or train (A.9.3.2)	<p>6.2.3.3 Coupled wagons or train (A.9.3.2)</p> <p>① The test train shall comprise a number of wagons equal to the maximum number of wagons of a train that the automatic rail-weighbridge is intended to weigh in motion. Test trains should be configured to simulate normal use of the weigh-in-motion system and consist of similar wagons to those being weighed during normal operations.</p> <p>Question: The test train shall comprise a number of wagons equal to the maximum number of wagons of a train that the automatic rail-weighbridge is intended to weigh in motion, is it correct? The number of test train is possible to exceed at most 50 wagons in China. It is impossible to use so many test trains each time. If the number exceeds 50 wagons, 15 reference wagons can represent accuracy in motion, did it have corresponding tests?</p> <p>Suggestion: if the number of practical wagons exceeds 50, the number of the test train can reduce to 30.</p> <p>② a total of train shall be tested by using a test train of empty reference wagons and a test train of both full and partially loaded reference wagons.</p> <p>Question: The test train can be divided into empty reference wagons and full loaded reference wagons. If collocation test between empty reference wagons and full loaded reference wagons are not allowed, it is not correspond with practical use. In many cases, it is possible to be mixed up with empty reference wagons in a coupled wagon. Coupler will have a strong impact on accuracy of the adjacent wagon. If test can't proceed, the test method can't reflect practical situation.</p> <p>Suggestion: Adding the collocation test between empty reference wagons and full loaded reference wagons in every test train.</p>	<p>1) The number of wagons in a test train is dependent on the number that the weighbridge is intended or designed to weigh. This is to ensure that the weighbridge can be tested fully to its capabilities. Hence, if the weighbridge is intended to weigh 50 wagons then 50 wagons should be weighed to ensure it can operate accurately under this requirement.</p> <p>2) Each test train is required to be weighed on the same instrument and site in accordance with the requirements in 5.1.2 and/or 5.2.1. It is expected that the tester will ensure that the wagons are distributed equally in the test train to minimise load distribution errors.</p>
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P.R. CHINA	6.2.3.5 Evaluation of errors for in-motion weighing	<p>6.2.3.5 Evaluation of errors for in-motion weighing</p> <p>6.2.3.5.1 Wagon The error for wagon in-motion weighing shall be equal to the result of subtracting the indicated mass of the reference wagon (6.2.3.4) from the conventional true value of the mass of the reference wagon (6.1.1). The MPE shall be as specified in 2.2.1.1 for initial verification as appropriate for the instrument.</p> <p>6.2.3.5.2 Train The error for train in-motion weighing shall be equal to the result of subtracting the sum of the masses of the individual reference wagons (i.e., the conventional true value of the train) from the sum of the indicated masses of the reference wagons. The errors for in-motion train weighing shall not exceed the appropriate MPE in 2.2.1.2 and applied to the summation.</p> <p>Question: Generally speaking, total number of wagons in test train (n_w) is greater than minimum number of reference wagons according to 6.2.3.3. How to examine the non- reference wagons for test train in-motion weighing according to 6.2.3.5. If the repeatability of indication of in-motion weighing (60 values) exceed the appropriate one time or two times MPE given in Table 1 of 2.2.1, how to consider it?</p> <p>Suggestion: On repeatability of an instrument in-motion weighing non-reference wagons, the errors of not more than 10 % of the weighing results may exceed the appropriate two times maximum permissible error given in Table 1 but shall not exceed four times that value.</p>	The Member's proposal is already specified in the last paragraph in 2.2.1.1 for in-motion coupled wagon (train) weighing.
	A.3.5.1	<p>Which sign can express "load"?</p> <p>"Load" is expressed by "m" in metrological requirements, but "load" is expressed by "L" in A.3.5.1, why?</p>	Amended. 'm' in Table 2 changed to 'L'. Thank you for noticing this.
	A.5.3.2.2	The two paragraph are paradoxical between "The test load shall be on the rails covering the test area as is practicable and stacked across each pair of supports of the load receptor, or in the case of a load receptor which consists of several sections, the test load shall be applied to each section." and "On an instrument used for weighing rolling loads a test load corresponding to the usual rolling load, the heaviest and the most concentrated one which may be weighed, but not exceeding 0.8 times the sum of the maximum capacity, shall be applied at different points on the load receptor." in A.5.3.2.2. According to relevant international standard, only a test method list if there exist many applicable test methods in principle. For some reasons, a standard need provide several methods and indicate the arbitration in order to solve doubts or dispute.	Requirement for test for 'rolling loads' deleted in accordance with other Members comments. This technical requirement was inserted at the approved DR stage and some Members have objected to it so it is removed from the draft.
	A.5.3.2.3	According to the stated above, "d" in A.5.3.2.3 and figure 3 shall be "d _s ".	Amended.

A.5.3.2.3	We suggest adding “This test applies only to type examination” in A.5.3.2.3 discrimination test. The contents have specified in R76-1.	Already inserted. See second paragraph of A.5.3.2.3.
A.6.1	<p>Warm-up time test stipulate that apply a load close to Max to load receptor and unload to zero, determine error at zero and Max after 0, 5, 10 and 15 minutes in A.6.1.</p> <p>Then there is a problem that it is not possible to load and unload weights in a short time if use weights load. Only standard reference wagons can finish the test.</p>	<p>Normal practice is to use standard test weights or substitution material. (see clause 6.1.2).</p> <p>The word ‘load’ generally refers to any suitably approved reference test material.</p>
ANNEX B (MANDATORY)	<p>ANNEX B ALIGNMENT CORRECTION OF SINGLE-AXLE WEIGHING INSTRUMENTS</p> <p>Partial weighing of two-axle wagons needs the alignment correction, why? Why do different wagons and train weighing carry out according to Table 1 □ Accuracy of single-axle weighing method is low, why does its correction be improved? Aiming at the above response the secretariat doesn’t tell the reason the alignment correction is only applicable to single-axle weighing instruments not partial weighing of bogie (two-axle) wagons?</p>	Alignment correction of single-axle weighing applies to weighing of a ‘single axle’ only, i.e., on a wagon with 2 separate axle on each end as opposed to a bogie which has two or more axles on each end of the wagon. There is greater uncertainty of error from a single axle measurement than from a bogie axle measurement.
ANNEX B (MANDATORY)	<p>ANNEX B (MANDATORY) “ALIGNMENT CORRECTION OF SINGLE-AXLE WEIGHING INSTRUMENTS”</p> <p>Amend: “ALIGNMENT CORRECTION OF SINGLE-AXLE LOAD OR BOGIE LOAD PARTIAL WEIGHING INSTRUMENTS”</p> <p>Reason: Single-axle load weighing instruments need alignment correction. In the same way bogie load partial weighing instruments need alignment correction too.</p>	Response as above.
B.1 General	<p>B.1 General</p> <p>“The alignment correction shall only be applied to instruments that operate by partial weighing of two axle wagons (6.1 and A.9.3.1.2) ”</p> <p>Amend: “The alignment correction shall only be applied to instruments that operate by partial weighing of two axle or bogie wagons (6.1 and A.9.3.1.2) ”</p> <p>Reason: It is same as above.</p>	Response as above.
B.3 Alignment correction	<p>B.3 Alignment correction</p> <p>Suggestion: We suggest that all “two-axle wagon” should be replaced with “two-axle or bogie wagon”, “axle” should be changed into “axle or bogie”. “Single axle-loads” should be changed into “single axle or bogie loads”. “The number of weighments of each static axle” should be changed into “the number of weighments of each static axle or bogie”.</p> <p>Reason: It is same as above.</p>	Response as above.

Member	Clause	Comment	Secretariat comments
SWITZERLAND	A.7.2.3	Stabilisation: 3 hours at reference temperature and 50 % humidity. 48 hours days at the upper limit temperature as specified	Amended.
UK	T.3.2.2	Header formatting error	Amended.
	T.4.1.1	Header formatting error	Amended.
	2.2.1.2	Figure 2 diagram not formatted correctly	Amended.
	2.7.2	Please amend to align with D11 as follows: Voltage variation <ul style="list-style-type: none"> AC mains power supply 	Amended.
	4.3.6	Please amend to align with D11 as follows: AC mains power failure In the event of a mains power failure,	Amended.
	4.3.7	Please amend to align with D11 as follows: DC mains or rechargeable battery supply failure An instrument that operates from the DC mains supply, or rechargeable battery supply shall,	Amended.
	5.1.4.1 Table 5	In Table 5 the letter 'n/a' should replace the deleted numbers '0.5'	Amended.
	6.1.1.1 Accuracy of control instruments	Please amend the 3 rd paragraph as follows: Where the control instrument is separate from the instrument under test and is verified at any time other than immediately prior to the weighing tests, its combined error and uncertainty shall be less than one-fifth of the maximum permissible error for weighing-in-motion in 2.2.1.	Amended.
	6.2.3.3	Please amend the 4 th paragraph as follows: Modes of operation include loaded or empty wagons, pushing or pulling, and one or both directions (see A.9.3.1.1).	Amended.
	A.3.1	Please capitalize the heading : GENERAL TEST REQUIREMENTS	Amended.

A.5	Please capitalize the heading : METROLOGICAL PERFORMANCE TESTS	Amended.
A.6.3 Operating speeds	Please amend for clarity: Verify that interlocks (hardware and/or software) either prevent the operation of the instrument or provide an indication of the operation of the instrument outside the range of operating speeds.	Amended.
A 7.2.1; A 1.2.2 A.7.2.3; A 7.2.4; A 7.2.5; A 7.2.6; A 7.3.1; A 7.3.2; A 7.3.3; A 7.3.4; A 7.3.5.1; A 7.3.5.2	Please amend to align with D11 as follows: In the paragraph : Condition of the EUT: change sentences where “normal power” or “voltage supply” is mentioned consequently to: “The EUT is connected to the mains power supply and switched on for at least the warm-up time specified by the manufacturer. During the test the electrical power supplied to the EUT shall not be switched off”	Amended. For clarity and alignment with OIML D11.
A. 7.3.5.2	Please amend to align with D11 as follows: Condition of the EUT second paragraph : change ‘ ..power port... ‘ to ‘ ..mains power port...’	Amended.
A 7.2.5; A 7.2.6; A.7.3; A.7.3.2; A.7.3.3	Please amend to align with D11 as follows: Change all instances of ‘...voltage supply...’ to ‘...power supply...’	Amended.
Ref [11]	change to IEC 60068-2-2 (2007-07) Ed. 5.0 <i>delete amendments and sentence</i> “The 1987...62-2-2A”	Amended.
Ref [16]	change to IEC 61000-4-1 (2006-10) Ed. 3.0	Amended.
Ref [20]	change to IEC 61000-4-5 (2005-11) Ed. 2.0	Amended.
Ref [22]	change to IEC 61000-4-3 (2008-04) Ed. 3.1 <i>and delete amendments</i>	Amended.
Ref [23]	change to IEC 61000-4-6 (2008-10) Ed. 3.0	Amended.