



TC9 / SC2 Comments on:

1 CD R 50: Continuous Totalising weighing instruments - Part 1 Metrological and test requirements.

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TC9 / SC2 Secretariat

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Member State/ Liaison	Clause	Comment	Secretariat Comments
Australia		<i>Following discussion at the TC2/SC9 meeting and looking at the structure of the terminology in R50 it is evident that it may be preferable to transfer whole belt totalisation device (T.2.8 in CD1) to T.4.3.3.5 as a whole belt totalisation indicating device, and transfer 3.9 of CD1 to 3.4.5A (before 3.4.6). The following is a rewording of earlier proposals, intended to reflect discussions at the TC2/SC9 meeting.</i>	
	<b>T.4.3.3.5</b>	<p align="center"><b>Whole belt totalisation indicating device</b></p> <p>A totalisation indicating device in which the indication of mass of loads conveyed is updated once in each belt revolution (i.e. at the same point in each belt revolution). This is intended to eliminate effects of variations in the load applied to the load receptor by an (empty) belt during a belt revolution.</p>	Amended.
Australia	<b>3.4.5A (insert before 3.4.6)</b>	<p align="center"><b>Whole belt totalisation indicating device (T.4.3.3.5)</b></p> <p>Where a whole belt totalisation indicating device is provided, the belt weigher shall:</p> <ul style="list-style-type: none"> <li>- incorporate a mechanism to synchronise the totalisation with whole belt revolutions.</li> <li>- Not provide totalisation over less than a whole number of belt revolutions (other than for process control purposes), unless when providing such an indication it is accompanied by an operation warning indication (3.2.6). Such a totalisation shall not be used for trade or legal purposes – this shall be indicated on any printout of such an indication (or such printouts shall be prevented).</li> <li>- Incorporate interlocks to ensure that at the finalisation of a delivery all material is correctly accounted for (e.g. product feed is stopped and the belt continues for an additional belt revolution) and an updated whole belt totalisation indication is obtained.</li> </ul>	Inserted in 3.4.5 (d)

Member State/ Liaison	Clause	Comment	Secretariat Comments
	<b>T.2.8</b>	<p align="center"><b>Belt Profile Correction Device</b></p> <p>A device capable of correcting for variations in the load applied to the load receptor by an (empty) belt during a belt revolution. The device uses a stored profile of the (empty) belt load over a full revolution. The load value at any belt position during operation is corrected by subtracting the (empty) belt value in the stored profile for the corresponding belt position (to achieve this a mechanism to synchronise the belt position and the stored profile is necessary).</p> <p><i>[The device may be thought of as being similar to a table of stored tare values, with the selection of the stored tare value in use being made according to the belt position].</i></p>	Inserted in 2.8.
Australia	<b>2.7.3</b>	<p align="center"><b>Zero-setting (2.7 is Simulation test mode)</b></p> <p>Following any zero-setting within the range of the zero-setting device, the totalization error shall not exceed the appropriate maximum permissible error for influence factor tests specified in 2.2.2, Table 2.</p> <p>A belt profile device (3.8) may be engaged during this test.</p> <p>A whole belt totalization indicating device may be used during this test (3.4.5A).</p>	Amended.
	<b>2.8.4</b>	<p><b>Maximum variation during zero-load test (2.8 is In-situ test mode)</b></p> <p>During the zero-load test as specified in 2.8.2, the totalization indicator shall not vary from its initial indicated value by more than the following percentages of the minimum totalized (<math>\Sigma T_{min}</math>) load:</p> <p>0.07% for class 0.2;  0.18 % for class 0.5;  0.35 % for class 1;  0.7 % for class 2.</p> <p>Notes:</p> <ol style="list-style-type: none"> <li>1. This is not applicable when all material tests load readings are obtained over a whole number of belt revolutions (including where a whole belt totalisation indicating device is used).</li> <li>2. A belt profile correction device may be in operation during tests</li> </ol>	Amended.

Member State/ Liaison	Clause	Comment	Secretariat Comments
Australia	3.8	<p align="center"><b>Belt Profile Correction Device (T.2.7)</b></p> <p>A belt weigher may be fitted with a belt profile correction device.</p> <p>The device shall:</p> <ul style="list-style-type: none"> <li>- either be permanently in operation, or permanently disabled (any ability to enable or disable shall be sealed against user access).</li> <li>- incorporate a mechanism to reliably synchronise the belt position with the stored (empty) belt profile (use of a sensor to detect the passing of a tag fixed to the belt being one possibility).</li> </ul> <p>The device may:</p> <ol style="list-style-type: none"> <li>a) Be combined with an automatic or semi-automatic zero-setting device - i.e. operation of the zero-setting device may acquire and store a new profile of the (empty) belt.</li> <li>b) Operate separately from an automatic or semi-automatic zero-setting device, in which case the automatic or semi-automatic zero-setting device may adjust the average (empty) belt profile value according to the average zero value determined over a whole number of belt revolutions.</li> </ol>	Paragraph inserted.
	3.11.2.2	<p><b>Conveyor belt</b> (3.11 is Installation Conditions)</p> <p>Variations in the mass per unit length of the belt (including belt joins) shall not have any significant effect on the results (so as to ensure the requirement of 2.8.4 is met). It is recommended that such variations are minimised, however the use of a belt profile correction device (3.8), or a whole belt totalization indicating device (3.4.5A) can eliminate or substantially reduce the effect of such variations.</p>	Amended.
Denmark	1.2	As R50 distinguish between single speed, multi-speed and variable speed we suggest that the text “belt weighers that are intended for use with multi-speed belt conveyors” is added to the last bullet.	Inserted as proposed.

Member State/ Liaison	Clause	Comment	Secretariat Comments
Denmark	2.4	<p>We do not agree in the inserted parentheses in the second clause, as the clause requires minimum the load for one (whole) revolution then there is no reason to except load readings obtained over a whole number of belt revolutions.</p> <p>The inserted text in clause three “unless a whole ....” should have been inserted in clause two, but as described above we see no reason to make exception for whole belt totalization device (3.9) and suggest to limit the text to be inserted in clause two to: “unless an empty belt profile correction device (3.8) is fitted.”</p>	Last sentence in clause 3 removed. This was agreed at the TC9/SC2 meeting at NWML.
Denmark	2.7.4.4	For clarification we suggest to add the text “for automatic weighing” in the end of the sentence.	Amended.
Denmark	2.7.5.3	Change to 0.02 % for class 2	Amended.
Denmark	3.2.7	<p>We suggest that this section is <u>deleted</u>.</p> <p>We have serious doubt about the usefulness of the checking devices defined in the first two bullets, and the last three bullets are already covered by 3.2.6 except the wording “fallen under minimum load”, but this can be inserted in 3.2.6, if and only if, this new term “minimum load” is defined in this recommendation.</p>	<p>3.2.7 deleted.</p> <p>3.2.6 amended.</p>
Denmark	3.3.2 f	<p>In the first sentence the wording “- if present –” should be inserted after audit trail, as such a device is not mandatory.</p> <p>We suggest removing the last sentence, as we disagree in the need for a graphical representation of the flowrate.</p>	3.3.2f deleted in accordance with TC9/SC2 proposals.
Denmark	3.3.3	For clarification insert an “or” after the text in a).	Amended.
Denmark	3.4.2.2	In the table, 1 <sup>st</sup> column, 3 <sup>rd</sup> row correct “0.1 t, 10 kg” to “0.01 t, 10 kg”.	Amended.
Denmark	3.4.6	<p>Add to the end of a) the wording “except when disengaged by the device mentioned in c)”.</p> <p>In c) correct to “totalization”.</p>	Amended.
Denmark	3.11.2 & subsections	Correct the section number to 3.11.1.	Amended.
Denmark	4.5.4	We find it too restrictive for many applications that the belt weigher during an AC power failure “shall be capable of indicating that information for at least 5 minutes during the 24-hour period”. We suggest the wording changed to “shall be capable of indicating that information after having been energized again within 24 hours.”	Amended.
Denmark	4.5.5	The requirement in 4.5.4 for retaining the metrological information in case of power failure should also be inserted in this section, as it should apply for DC supply as well as for AC supply.	Amended.

Member State/ Liaison	Clause	Comment	Secretariat Comments
Denmark	5.1.6.4	<p>The first bullet says “lowest input signal, <math>\mu\text{V}/e</math>” but “e” is not defined for belt weighers!</p> <p>Let us discuss this at the meeting in Teddington in order to find a definition of “lowest input signal”.</p> <p>Our suggestion to a definition of a lowest input signal e is,  <math display="block">e = \max( Q_{\min} / Q_{\max} ; 0.20 ) \times \text{Max} / n</math> where n is the number of totalization scale intervals for the accuracy class of the EUT in table 3, and 0.20 comes from the 20% in second sentence of section 2.5 (b).</p>	Amended in accordance with Denmark home work report.
Denmark	5.2.2.2	<p>This section should be deleted! (This may have the effect that T.4.6.6 and 2.7.4.4 are deleted too.)</p> <p>Having a test at the suggested stage is against the principles for OIML and also against the principles used in Europe.</p> <p>If durability or endurance testing have to be included, it shall be a part of the type examination prior to the issuing of OIML certificate of conformity and type examination certificate.</p>	<p>5.2.2.2 deleted. Durability test at initial verification rejected in recent TC9/SC2 consultation.</p> <p>TC9/SC2 majority voted to have durability testing at type approval. (see attached vote results from recent consultation). Report from “durability” R50 WG adopted in 5.1.6.</p>
Denmark	6.1	In paragraph 3) exchange “2.3 Table 3 for initial verification and in-service verification;” with 2.4 Table 3;” As it apply for type approval as well.	Amended.
Denmark	A.5.4.1	Insert a shift of paragraph before “For variable-speed belt weighers ...” to make it easier to read.	Amended.
Denmark	A.7.3	As a consequence of introducing class E1 and E2 in note 2 we find that a note 3 with the text “The severity level stated in the tests A.7.3.1 to A.7.3.5 apply to class E2.” should also be added to the heading Tests.	Amended.
Denmark	A.7.3.2	In table 12.1 the amplitude should be changed to 1 kV, and in table 12.2 the amplitude should be changed to 2 kV. This should be done in order to bring this Recommendation in line with the severity level of E2 in OIML D11:2004 and IEC 61000-6-2:2005.	Amended.

Member State/ Liaison	Clause	Comment	Secretariat Comments
Denmark	.7.3.3	In order to bring the surge test in line with the severity level 3 in OIML D11 the amplitudes in table 13 should be changed to, "1 kV line to line" "2 kV line to earth" and to the note in table 13 should be added "Line to line test does not apply to balanced signal and communication lines."	Amended.
Denmark	A.8.1	Add "- 0.02 % for class 0.2;"	Amended.
Denmark	A.8.1.1	Add "- 0.02 % for class 0.2;"	Amended.
Denmark	A.8.1.2	Add "- 0.07 % for class 0.2;"	Amended.
FRANCE	T.3.3	The second sentence ("this will be at least ...") is a requirement and should then be moved to chapter 3	Moved to 3.9.
	T.3.12 / T.3.13	The concepts of static test mode and dynamic test mode are interesting but not developed in the rest of the text and should be deleted as definitions. - "static test mode" is never referred to in other parts of the text - "dynamic test mode" is only referred to in A.3.5 (warm-up test)	'Static test mode' deleted. "Dynamic test mode" replaced with 'automatic test mode'.

Member State/ Liaison	Clause	Comment	Secretariat Comments
FRANCE	T.4.6.6 2.7.4.4 5.2.2.2	<p><b>Durability testing</b></p> <p>For this the comment is related to the conditions for its implementation during type evaluation.</p> <p>Such a test implies that an instrument needs to be tested on a site, the minimum duration being 3 months.</p> <p>This involves :</p> <ul style="list-style-type: none"> <li>- that a customer uses a non certified instrument.</li> <li>- that till the type is certified, no other instrument of this type might be sold for legal uses.</li> </ul> <p>In France we used this kind of procedure in the past for AGFI and this lead to critical situations.</p> <p>For example, one kind of situation was that the user where the instrument was installed made life very difficult to get tests performed because he had to pay the total price of the instrument only when all was OK. So, delaying the endurance tests allowed him to use an instrument without having paid the total price (sometimes till 30% of the price). For the certifying body, the consequence was :</p> <ul style="list-style-type: none"> <li>- either to wait to get tests results before certifying</li> <li>- or to create a special procedure which authorised to put into service several instruments of the type for official testing with a special authorisation number in order to have a chance to get results on one of them.</li> </ul> <p>But if results got were not good, we all instruments in use were defined as out of legal use. This had very bad economical consequences and gave to Legal Metrology a very horrible brand image.</p> <p>Another weakness of this system is that, for a same instrument, as we can see a lot of time when performing tests on instruments in service, the results will not be the same due to users and environments.</p> <p>That is why such a requirement - which is technically not a bad requirement – might lead to bad consequences.</p> <p>We are therefore not in favour of such a requirement.</p>	<p>5.2.2.2 deleted. Durability test at initial verification rejected in recent TC9/SC2 consultation.</p> <p>TC9/SC2 majority voted to have durability testing at type approval. (see attached vote results from recent consultation). Report from “durability” R50 WG adopted in 5.1.6.</p>
FRANCE	3.3.2 a)	<p>The part of the last sentence should be deleted: i.e. “with the intention of limiting access to authorised persons only”.</p> <p>“authorized persons” can cover a lot of people including user’s staff and that is not the aim of this paragraph.</p>	Deleted.

Member State/ Liaison	Clause	Comment	Secretariat Comments
FRANCE	3.3.3	<p>The last sentence “The means provided shall be easily accessible, and shall not require any disassembly of the equipment”.</p> <p>Sometimes, you get indicators where only a seal of the part dedicated to legal metrology is necessary inside the box. To access to this sealing device requires to unscrew a part of the box to get inside it. Is this considered as requiring a disassembly of the equipment?</p> <p>If yes, we don't agree with this last sentence.</p>	<p>The text “...and shall not require any disassembly of the equipment” has been deleted.</p>
FRANCE	6.3	<p>For the EUT, the last hyphen “load cell simulator” should be deleted”</p> <p>It is in opposition for example with the 1<sup>st</sup> one which states “complete beltweigher without the belt conveyor” and also what is then the need of a representative load receptor ?</p>	<p>“load cell simulator” deleted</p>
Germany	T.2.2	<p>Air cushion conveyor: What is meant by this?</p>	<p>The text “...air cushion conveyor” is replaced with “...other devices”. This was agreed at the R50 meeting at NWML.</p>

Member State/ Liaison	Clause	Comment	Secretariat Comments
Germany	T.3.13	<p>Dynamic test mode: The last bullet of T.3.13 doesn't make much sense. Since there is an "or" between "by means of a load cell simulator" and "a test weight on the load receptor" that bullet would be no alternative to the bullet before. So, I think "by means of a load cell simulator" should be reasonably deleted here. Furthermore, it should be clarified that the load cell simulator shall not be exposed to different temperatures (as load receptor and displacement transducer are). Past experiences have made evident that belt weighers struggle with keeping the requirements of "temperature effect at zero flowrate" (2.5.4.2, R50/1997). The origin of these difficulties lies in the load receptor or the load cell respectively. Often manufacturers are not aware of the strict regulations and use a load cell of which the Y-factor (see R60) is too low and thus temperature effect on zero is too high. (Temperature effect on no load of the indicator is negelectable in comparison to that of the load cell) Therefore, I'm asking whether we are really willing to renounce to a test including the most sensitive load receptor. Wouldn't it be wise to keep testing a complete simulation set-up (including load receptor), supplementing this test by a "modular" test of indicator and displacement transducer only? If we did so, then any load cell could be used provided that certain conditions are fulfilled. In the past PTB included the following paragraph into TACs to address this problem:</p> <p><i>- The minimum range of utilisation (<math>Ba_{min}</math>) of the load cell determined by the weighing range from zero to Max is calculated according to the following equation:</i>  <math display="block">Ba_{min}(BW) = Z \cdot v_{min} / N</math></p> <p><i>while <math>v_{min}</math> = minimum scale interval of the load cell (<math>v_{min} = E_{max}/Y</math>)</i>  <i><math>N</math> = number of load cells</i>  <i><math>Z</math> = factor considering accuracy class of the belt weigher</i>  <i><math>Z = 6000</math> for class 0.5</i>  <i><math>Z = 3000</math> for class 1</i>  <i><math>Z = 1500</math> for class 2</i></p> <p>This requirement could be introduced into R50, supplemented by a new Z-factor for class 0.2 instruments. Since these ideas affect the modular approach as well, could please inform the working group "Testing of a family of instruments...".</p>	T.3.13 is amended in accordance with proposals made at the R50 meeting in London and a proposal from Denmark on the minimum scale interval of the load cell ( $v_{min}$ ) adopted in R50, 5.1.6.5.

Member State/ Liaison	Clause	Comment	Secretariat Comments
Germany	2.4	2 <sup>nd</sup> hyphen: "not applicable" should better read "automatically / intrinsically fulfilled"  3 <sup>rd</sup> hyphen: There must be a sufficiently high totalised mass in order to obtain a sufficiently high resolution of the value displayed. Belt length and mass while passing through the range below 20 % of Qmax should be minimised since the relative error within the range is a maximum or <b>not known</b> , respectively. The device for measuring the load of the empty belt (empty belt profile correction device) has no influence since not working; the device does not affect the resolution.	Amended as agreed at the R50 meeting at NWML.
Germany	2.8.2	Zero checking and setting shall be done so frequently that conditions are fulfilled.	Amended as agreed at the R50 meeting at NWML.
Germany	2.8.5	Please add: "The minimum totalised test load shall be in accordance with 2.4 (3 <sup>rd</sup> hyphen) and 2.7.5.2 (accuracy of reading)."	Sentence added as proposed.
Germany	3.2.2	2 <sup>nd</sup> paragraph: Should it not read "flowrate < 5%" instead of "zero flowrate"? 3 <sup>rd</sup> paragraph: No adjustment must be possible in case of pauses in material feed either.	"Zero flowrate" is from R 50 1977E.  3 <sup>rd</sup> paragraph amended.
Germany	3.2.7	Add another hyphen: - to indicate that the mpe on checking of zero has been exceeded (3.7.1)	Added to 3.2.6. Clause 3.2.7 deleted as agreed at R50 meeting at NWML.
Germany	3.4.2.2	2 <sup>nd</sup> paragraph might pose a problem in case the number of display digits is limited. Moreover, with belt weighers that requirement does make much sense to us.	2 <sup>nd</sup> paragraph deleted.
Germany	3.4.6	Contradiction between a) [except b)] and b); there may be separately engaged totalisation (indicating) devices (e.g. for different customers and / or materials, self-service instruments for shippers). Yet, it shall be unambiguously designated which counter is engaged [no more contradiction]	Amended.
Germany	3.7.1	Supplement should perhaps have a new wording: should mpe on checking of zero (2.8.2) be exceeded this shall be clearly presented to the user!!!  Last paragraph is obviously misplaced here!	Amended.  Last paragraph moved to 3.10 in accordance with R50 1997E.

Member State/ Liaison	Clause	Comment	Secretariat Comments
Germany	3.8	<p>a) Should express more clearly that both <b>procedures</b> (zero setting plus empty belt profiling) may be combined. During each zero setting procedure the empty belt profile shall be determined.</p> <p>b) last part should read: "... the zero setting device shall adjust the empty belt profile value according to the average zero value determined over a whole number of belt revolutions."</p>	Amended as proposed.
Germany	5.1.3.4	<p>Although "durability testing" being a good idea, I'd like to warn against to expensive testing. So we should ponder on what could be the parts of the belt weigher of which minor durability may significantly affect the totalisation result. From our point of view it is the load receptor and the displacement transducer. So instead of performing costly material tests could it be sufficient to test load receptor and displacement transducer only? The load receptor could perhaps be tested statically at initial verification and subsequently at the durability check after some months. The correct function of the displacement transducer could be checked by using a reference transducer applied onto a remote part of the belt distant from the belt weigher's displacement transducer. Please do be so kind as to pass these reflexions on to the corresponding WG.</p>	<p>Durability test specified under type approval in 5.1.3.4. Test requirement specified in accordance with R50 WG "Durability" report.</p> <p>TC9/SC2 majority voted to have durability testing at type approval. (see attached vote results from recent consultation).</p>
Germany	5.1.4	class 0.2 is missing	Amended.
Germany		"e" doesn't make any sense with belt weighers and should replaced with "d", explaining that this "d" refers to static load that may be applied on the load receptor.	Amended in accordance with R50 WG proposal.
Germany	5.2.3	2 <sup>nd</sup> hyphen: delete "the" before "all"	Amended.
Germany	6.3	"stimulate"???. load cell simulator should only be used when applying the modular concept.	Amended. "Load cell simulator" deleted.

Member State/ Liaison	Clause	Comment	Secretariat Comments
Germany	6.5	<p>b) Change over points procedure cannot be applied with belt weighers! If necessary the test load to be totalised must be increased; there is a contradiction between 0.2 and “ten times”. Thus paragraph b) should read as follows:</p> <p>“With the simulation test, a totalization indicating device and standard weights distributed on the load receptor in line with the direction of belt travel shall be weighed as an automatic bulk weighing operation and the indicated mass on the beltweigher totalization indicating device shall be observed and recorded, while the belt length or number of pulses respectively is five times that at totalisation of Sigma min... Alternatively, a supplementary totalization indicating device (T.4.3.3.3) with a higher resolution (not greater than 0.2 d) shall be used to indicate the mass of the test load.”</p>	Amended as proposed.
Germany	A.3.5	When performing simulation test with a static load the instrument is not working in dynamic mode. So delete “dynamic” and replace it with “automatic”.	Amended.
Germany	A.3.7.3	Must refer to 2.4 instead of 2.3.	Amended.
Germany	A.5.2	<p>Within warm-up time the totalising operation of the instrument may either not be started or the error limits shall be kept. Stable indication is no applicable criteria (see also 2<sup>nd</sup> paragraph). So the first paragraph should read as follows:</p> <p>“This test is to verify that metrological performance is maintained in the period immediately after switch on. The method is to check that errors comply with the requirements during the period of time before the warm up time specified by the manufacturer has elapsed. It shall be checked that the operation of the instrument is inhibited until the warm up time has elapsed if the manufacturer has chosen this alternative.”</p> <p>The paragraph under “Test B” should read as follows:</p> <p>“Immediately carry out a totalization at maximum capacity Max for exactly the same duration, and for variable and multi-speed belt weighers the same maximum speed <b>and</b> number of pulses used in Test A. Note the totalization.” (To obtain the same totalised mass the same number of pulses or the same belt length must be chosen.)</p>	Amended.
Germany	A.7.3	Paragraph before last paragraph: Rounding error cannot be eliminated.	Amended.
Germany	A.8.1	<p>Accuracy class 0.2 has not been considered.</p> <p>A.8.3 does not exist! We assume A.8.1.2 is meant.</p>	<p>Accuracy class 0.2 added.</p> <p>Amended.</p>

Member State/ Liaison	Clause	Comment	Secretariat Comments
Germany	A 8.1.1	Add note: “Note: For this test the semi-automatic zero-setting device may be used, which indicates zero-variation caused by the discrimination load.” Class 0.2 is missing.	Accuracy class 0.2 added. Note added.
Germany	A.9.3.1	Significant increase of test runs seem not necessary to us.  Please add the following paragraphs immediately after (a), (b), (c):  If the minimum feeding flowrate is not smaller than:  <ul style="list-style-type: none"> <li>- 50% of maximum flow than perform a) and b) or</li> <li>- 80 % of the maximum flow, perform a) and b) with only one pair of tests each.</li> </ul>	Amended.
Germany	A.9.3.2	We should not require more than a total of 10 tests. Otherwise it may be necessary to perform 50 tests (5 different speeds). So please modify as follows: “For each speed, the tests specified in A.9.3.1 shall be carried out with only one pair of tests at each feeding flow rate for minimum, medium and maximum speed.”	Inserted as proposed. Subject to SC2 approval.
Germany	A.9.3.3	Please modify as follows: “The tests specified in A.9.3.1 shall be carried out with only one pair of tests at each feeding flow rate for minimum, medium and maximum speed and one additional single test shall be carried out at each of the feeding flowrates in A.9.3.1, varying the speed throughout its range during each of them.”	Inserted as proposed. Subject to SC2 approval.
The Netherlands	general	Although we are pleased to see that the draft is significantly improved, we have the following comments:	
The Netherlands	general	The replacement of “normal conditions” with typical in-situ weighing conditions” is not appropriate for all clauses. Just replacing “normal” with “typical” is sufficient.	Amended. ‘Normal’ inserted.
The Netherlands	general	The comments refer to the “marked version” of the draft.	

<b>Member State/ Liaison</b>	<b>Clause</b>	<b>Comment</b>	<b>Secretariat Comments</b>
The Netherlands	general	The draft contains several expressions like "in accordance with national legislation" etc. In general it is strongly advised to avoid this (See Directives for the Technical Work, Part 2, clause 2.6). And please keep in mind that it will be an OIML Recommendation. Member States are always free to change particular requirements on a national level.	Amended as appropriate.
The Netherlands	Cover page	Why do you not use the standardized cover page for OIML Drafts? See OIML Directives for the Technical Work, Part 1.	Cover page added.
The Netherlands	Terminology	Please apply VIM (2007) instead of VIM (1993) throughout the entire Recommendation. This means also that all references to clauses in the "VIM" must be checked (and mostly changed!).	Amended.  Clauses amended as appropriate.
The Netherlands	T.1.9	The second sentence does not belong to the definition. This text may be added in another part of the recommendation or put as a note.	Agree. Moved to 3.3.3.
The Netherlands	T.2.5	The displacement sensor does not need to be in contact, optical, capacitive or magnetic solutions do not need contact. Is this definition needed?, the occurrence in 3.7.1 could easily be replaced with reference to a displacement transducer.	Amended. The terminology 'displacement sensing device' deleted and 'displacement transducer' inserted in relevant sections.
The Netherlands	T.2.9	This definition seems to be in contradiction with the definition of continuous totalizing automatic weighing instrument.	'Totalization hold back device' deleted from R50 as agreed at the R50 meeting at NWML.
The Netherlands	T.2.11	The text does not correspond to the title. This text seems to fit more or less to the T.2.7 "Empty belt profile device".	T.2.7 amended as agreed at R50 meeting. T.2.11 is taken from R50 1997E.
The Netherlands	T.2.16	Suggest to include a picture and table as in R76-1 Ed 2006 (T.2.2) Replace "in the relevant Recommendation" with "in this Recommendation".	Table and diagram inserted as in R76. Amended.
The Netherlands	T.2.19.2	Suggest a broader definition because this definition does not exclude all possibilities: Interface (hardware and/or software) which allows to introduce only data into instrument, which cannot influence metrological properties of the instrument.	Amended.

Member State/ Liaison	Clause	Comment	Secretariat Comments
The Netherlands	T.3.1.1	Why is the “normal weighing mode” changed to “typical weighing mode”? This is not clear and not in line with other Recommendations for weighing instruments. Please change back to “normal weighing mode”.	Amended.
The Netherlands	T.3.1.2	The use of $d_t$ is confusing, for example in R107, $d_t$ means totalization scale interval. Please use full wording in the text instead of a “new” symbol.	Since $d_t$ is defined in the terminology and in T.7 there should be no confusion.
The Netherlands	T.3.12 + T.3.13	What is the meaning of the sign “(*)” behind the defined expressions?	(*) deleted. 'Static test mode' deleted as agreed at the R50 meeting.
The Netherlands	T.3.13	4 <sup>th</sup> bullet: Delete “by means of a load cell simulator or” because this is already in the 3 <sup>rd</sup> bullet.	Deleted.
The Netherlands	T.3.15	Delete “e” as this term is not used in this recommendation.	“e” replaced with “d” as agreed at the R50 meeting.
The Netherlands	T.4.1.1	Define the primary indications to be: totalized load(s).	Amended.
The Netherlands	T.4.4	This definition is not clear. Remove “at the time of measurement”	Amended.
The Netherlands	T.4.6.4	Remove “for influence factor tests” Part of this definition refers to a deleted definition. Remove “or in its checking facilities (T.3.12)”.	Amended.
The Netherlands	T.7	“d” should read: “totalization scale interval”	Amended.
The Netherlands	2.2.2	Table 2 replace "Class 0.1" by "Class 0.2".	Amended.
The Netherlands	2.2.2	The concept of modular approach could be worked out here or in a separate chapter.	Report of R50 WG on “family of instruments or modules” inserted in 5.1.6.
The Netherlands	2.7	The title of this clause does not cover the meaning of the sub clauses, please reconsider.	Amended in accordance with R50 1997E.

Member State/ Liaison	Clause	Comment	Secretariat Comments
The Netherlands	2.7.4.2	<p>This requirement includes the test method. Please change the wording to:            “Without intermediate setting to zero, the difference between two totalizations at zero flowrate and maximum belt speed shall not vary by more than one fifth of the appropriate maximum permissible errors specified in 2.2.2, Table 2 per 10 °C.”</p> <p>We assume that the text "The rate of temperature change between two totalizations shall not exceed 5 °C per hour" is not meant as a requirement, but rather as part of the test method. If this is true, it should be moved to Annex A (Part 2).</p>	<p>Amended.</p> <p>Last paragraph is relevant to 2.7.4.2.</p>
The Netherlands	2.7.4.4	<p>Needs to be discussed if this requirement is necessary and a time period should be introduced as well because it can not be expected that this error will be maintained for the lifetime of the instrument.</p>	<p>Discussed at R50 meeting in London. R50 WG reported and</p>
The Netherlands	2.7.5.3	<p>It is unclear if this device is mandatory. Suggest to include a clause defining the minimum required devices.</p> <p>Furthermore: this is written as a description of a test, so this belongs in Annex A (Part 2).</p> <p>We suggest replacing in 2.7.5.3 "For tests of a duration" by "For totalisations of a duration of ..."</p>	<p>Deleted as agreed at the R50 meeting at NWML.</p>
The Netherlands	2.7.5.4	<p>The requirement for short term (1 hour) and the requirement for long-term (3h) are not far apart. Suggest to replace the 2 requirements with 1 requirement:            “Stability of zero            The difference between zero-indications over a period of 3 hours of operation at maximum belt speed after zero-setting shall not exceed one tenth of the appropriate maximum permissible errors specified in 2.2.2, Table 2.”</p> <p>This proposal also solves the problem of mixing a requirement with a test.</p>	<p>Amended as proposed. Subject to TC9/SC2 approval.</p>
The Netherlands	2.7.5.5	<p>See comment on 2.7.5.4.</p>	<p>Amended as above.</p>
The Netherlands	2.8.5	<p>Replace "Belt scales" by "Belt Weighers"</p> <p>Suggest replacing “purpose of type approval 'in-situ' tests or for subsequent re-verification” with “purpose of type approval 'in-situ' tests, <i>initial verification</i> or for subsequent re-verification”</p>	<p>Amended.</p>
The Netherlands	3.3.2 f)	<p>The requirement to produce a graphical record of the flow rate is too much. The primary indication of the belt weigher is a totalised load, flow rate is not a primary indication. A record of each totalised load (of a batch) together with the out of range warnings should be sufficient.</p>	<p>Deleted as agreed at the R50 meeting at NWML.</p>

Member State/ Liaison	Clause	Comment	Secretariat Comments
The Netherlands	3.3.2 f)	Last sentence is not finished: Add "... warning occurred."	3.3.2.f deleted as above.
The Netherlands	3.3.3 b)	Last sentence contradicts itself: "records may not be overwritten and ... new records may replace the oldest record ..."	Amended.
The Netherlands	3.3.3 c)	Change "(e.g. maintained by the metrological authority)" to "(e.g. on the descriptive plate of the instrument)" because the metrological authority can not be responsible for that.	Amended.
The Netherlands	3.4	Suggest to include the minimum configuration of a belt weigher: "The belt weigher shall be equipped with a general totalization indicating device and may additionally be equipped with partial and supplementary totalization indicating devices."	Sentence inserted.
The Netherlands	3.4.1	Is an "analogue indicating device" nowadays of any relevance? Change "...at least 9,5 mm and ..." to "... at least 9,5 mm <b>high</b> and ..."	"analogue indicating device" exists on some beltweighers in use in some developing countries.
The Netherlands	3.4.6	Line a) is in contradiction with b), c) and d). Suggest the following: a) The general totalization indicating device shall be permanently engaged. b) Other totalization indicating device(s) and printing device(s) shall clearly indicate when they are not engaged. c) There shall be a device which disengages the other totalization indicating devices when the belt is running empty d) The other totalization indicating devices shall be engaged again when at most 5 % of maximum capacity on the weigh length is reached	Amended.
The Netherlands	3.6 1 <sup>st</sup> line	Wording is not consequent: Replace "...of the weighing instrument ..." with "...of the belt weigher ..."	Amended.
The Netherlands	3.6 4 <sup>th</sup> /5 <sup>th</sup> line	Wording is not consequent: Replace "...of a discontinuous totalising automatic weighing instrument ..." with "...of a belt weigher ..."	Amended.
The Netherlands	3.7.1 last paragraph	This paragraph concerning displacement sensing devices does not belong to this clause, it should be moved to 3.10 taking into account the comment on T.2.5. See also our remark 3.10	Moved to 3.10.
The Netherlands	3.9	Is this really a continuous totalising automatic weighing instrument?	Deleted as agreed at the R50 meeting.

Member State/ Liaison	Clause	Comment	Secretariat Comments
The Netherlands	3.10	Include the last paragraph of 3.7.1. Suggested wording: "If the displacement transducer is in contact with the belt the transducer shall be driven by the clean side of the belt. The transducer shall detect displacements of the belt equal to or less than the weigh length. It shall be possible to seal adjustable parts." (Is it necessary to have one tenth of the weigh length to detect 5% of maximum capacity on the weigh length (clause 3.4.6)?)	Amended.
The Netherlands	3.11.2.4	Second paragraph is not in line with first paragraph. Suggest to include an "If".	Amended.
The Netherlands	3.12.1	The term zero testing is not appropriate, suggest using "Zero setting shall have ..."	Amended.
The Netherlands	3.12.3	The wording "control value .... g, kg or t " is not appropriate, delete this line. In our opinion, this title should be removed and the contents added to 3.12.1, as it is always the manufacturer who is responsible. The wording "speed range of displacement simulation device " is not appropriate, change to "belt speed"	Moved to 3.12.1 as proposed.
The Netherlands	3.12.3	The wording "operating frequency ... ", is not appropriate, delete this line.	Deleted.
The Netherlands	4.5.4	Add: ".... operates from the <b>AC</b> mains ...."	Amended in accordance with R50 TC9/SC2 meeting decision.
The Netherlands	4.5.5	Add a line (like in 4.5.4) that the metrological information shall be retained for at least 24 hours and shall be capable of indicating that information for at least 5 minutes during the 24-hour period in case of putting out of service.	Amended in accordance with R50 TC9/SC2 meeting decision.
The Netherlands	4.6.2 d)	This requirement is not needed for this kind of instrument.	4.6.2 d) is applicable for beltweighers that may have interfaces or connection devices specified by national requirements. 'Instruments' changed to 'devices'.
The Netherlands	5	Replace "shall" with "may" to make clear that this depends on national regulations. The sentence will read: "The metrological controls of belt weighers <u>may</u> , in agreement with national regulations, consist of: ..."	Amended.

Member State/ Liaison	Clause	Comment	Secretariat Comments
The Netherlands	5.2.2.2	Please delete this clause, this will cause an unnecessary commitment of resources. It might be considered to be part of the type-approval testing.	TC9/SC2 majority voted to have durability testing at type approval. (see attached vote results from recent consultation). Report from "durability" WG adopted in 5.1.6.
The Netherlands	6.2.1	Please note that "conventional true value" is not defined (contrary to VIM (1993), this expression is not defined in VIM (2007)!	Amended. "True quantity value" used. (based on VIM:2007, 2.11).
The Netherlands	6.2.1 2 <sup>nd</sup> paragraph	The paragraph seems to imply that a calibration is performed before as well as after the material test. This is not clearly written. Please clarify.	Amended.
The Netherlands	6.3	The load cell simulator replaces the load receptor but this cannot be done for every test. For example disturbance tests have to be performed with the load receptor. Suggest describing 2 possible simulation set-ups.	Amended in accordance with working group proposals.
The Netherlands	A.5.4.3	Because this test is only to be performed during type-approval the sentence "If the load receptor cannot readily be re-calibrated, only the positive part of the zero-setting range need be considered." can be removed.	Deleted as proposed.
The Netherlands	A.5.5.4	Combine the tests according to the proposed change in the requirements (2.7.5.4 and 2.7.5.5).	Amended as proposed. Subject to SC2 approval.
The Netherlands	A.7.2.2	Suggest opening the possibility to combine this test (to the choice of the test lab) in line with the tests for non-automatic weighing instruments and therefore allow combining this test with the temperature test. Consequence is to calculate the zero effect per 10 °C without making 10 °C steps. If 2.7.4.2 is changed as well this will be possible.	A.7.2.1 and A.7.2.2 each includes a sentence that "The test in A.7.2.2 may be conducted during this test..."
The Netherlands	A.7.3.2	As belt weighers are intended to be used in (heavy) industrial environments suggest to raise the levels to 1 kV for I/O signal and communication lines and 2 kV for mains lines	Amended. Subject to SC2 approval.
The Netherlands	A.7.3.3	As belt weighers are intended to be used in (heavy) industrial environments suggest raising the levels to 1 kV for line to line and 2 kV for line to earth.	Amended. Subject to SC2 approval.
The Netherlands	A.8	Add class 0,2 or refer to "one fifth of the maximum permissible error specified in 2.2.1, Table 1.	Amended.
The Netherlands	A.8.1.1	Add "0.02 % for class 0.2.	Amended.
The Netherlands	A.8.1.2	Add class 0,2 or refer to "one fifth of the maximum permissible error specified in 2.2.2, Table 2.	Amended.

<b>Member State/ Liaison</b>	<b>Clause</b>	<b>Comment</b>	<b>Secretariat Comments</b>
The Netherlands	Bibliography [1]	Please note that "VIM (1993)" has been replaced by "VIM (2007)"	Amended.
<b>POLAND</b>	5.2.2.2 Durability testing	The testing period for the weighing instrument should be shorter. Now the initial verification for that type of weighing instruments takes no more than 2 days. In our opinion the legal status of the weighing instruments is indefinite during the period of 3 months.	Durability test now under type approval in 5.1.3.4. Test specified in accordance with R50 WG "Durability" report following a majority TC9/SC2 vote in recent durability consultation. (See attached vote results).

<b>R50 TC9/SC2 meeting</b>		<b>Discussions of the R50 TC9/SC2 meeting on 4 &amp; 5 February 2009, NMO</b>	
	Durability testing	Working group to look into durability testing. WG consist of: USA, Australia (chair) and Sweden. WG to submit feasibility study on durability testing to SC2 Secretariat by 15 March 2009 for TC9/SC2 consultation. Study to include information on error limits, simulation or in-situ tests and type of material tests	R50 WG reported. Proposals adopted in 5.1.3.4.
	Testing of a family of instruments or modules	Working group to look into the concept of 'Testing of a family of instruments or modules. WG consists of USA (chair), Netherlands and Denmark. WG to submit information to Secretariat by 30 March 2009.	R50 WG reported. Proposals adopted in 5.1.6.
	General	Add new accuracy class 0.2 in R50	Accuracy class 0.2 added.
	Empty Belt Profile Correction Device	Reword the terminology and description for 'Empty Belt Profile Correction Device	Description amended in accordance with Australia's proposal.
	Whole Belt Totalisation Device	Amend description of 'Whole Belt Totalisation Device'	T.4.3.3.5 and 3.4.5 added. Description amended in accordance with Australia's proposal.
	Belt length (B <sub>L</sub> )	Change Belt length (B <sub>L</sub> ) to 'complete belt revolutions', where appropriate	Changed as appropriate.
	Dynamic Test Mode and static test mode'	Keep 'Dynamic Test Mode' and determine the relevance of 'static test mode'	'Static test mode' deleted. "Dynamic test mode" replaced with 'automatic test mode'.
	Air cushion conveyor	Replace 'Air cushion conveyor' with 'other devices'	Amended.
	Totalisation Hold Back Devices'	Delete 'Totalisation Hold Back Devices' from R50	Deleted.
2.4	Amend last bulletin in 2.4 'Minimum value of the totalised load' to remove references to 'Totalisation Hold Back Devices' and 'Empty Belt Profile Correction Device'	Amended.	

5.1.6.4 Last bulletin	Leave first bulletin of 5.1.6.4 'Lowest input signal, $\mu\text{V}/\text{e}$ ' but request for further information from TC9/SC2 regarding the definition of 'e'.	'e' changed to 'd' in accordance with TC9/SC2 proposal.
Table 1	In Table 1 – amend column 3 heading to remove subsequent verification.	Amended.
IEC and OIML D 11 references	Secretariat to check references to IEC and OIML D 11 standards and ensure correct severity levels for emc tests, etc	Done.
VIM references	Secretariat to check terminology for VIM, symbols, etc, and consider alphabetical index of terms, similar to that of R76, etc.	Terminology amended in accordance with VIML 2007 Edition.
3.2, 3.3	Secretariat to check requirements for Security of operation in 3.2 and Securing and sealing of components, interfaces and pre-set controls in 3.3 and combine for simplicity.	Amended. Subject to further discussions.

TC9/SC2 MEETING	Denmark proposal for a lowest input signal for the electronics of a belt weigher as well as a requirement for the minimum scale interval of the load cell to be used in a beltweigher		
Denmark	T.3.1.1	<p>Totalization scale interval (<math>d_t</math>)</p> <p>The value, expressed in units of mass, of the difference between two consecutive indicated values, for general and partial totalization devices, with the instrument in its typical weighing mode.</p>	Amended.
	T.3.1.2	<p>Scale interval for testing (<math>d_e</math>)</p> <p>The value, expressed in units of mass, of the difference between two consecutive indicated values, for general and partial totalization devices, with the instrument in a special <b>extended resolution</b> mode for testing purposes. Where such a special mode is not available, the scale interval for testing (<math>d_e</math>) is equal to the totalization scale interval (<math>d_t</math>).</p>	Amended.
	T.3.1.3	<p><b>Control scale interval (d)</b></p> <p><b>Scale interval of a control indicating device, when considering the weighing without totalisation.</b></p>	Terminology inserted.
	T.3.x	<p><b>Minimum capacity (Min)</b></p> <p><b>The minimum instantaneous net load that the weighing unit is intended to weigh on the portion of the conveyor belt representing the weigh length.</b></p>	Terminology inserted in T.3.5.

	<p><b>2.x</b></p>	<p><b>Control scale interval (d).</b></p> <p>The control scale interval (d) is defined as the maximum instantly error (per 5°K) during checking of zero. When expressed in <math>\mu\text{V}</math> it is equal to the lowest input signal from analog strain gauge load cells. <sup>Footnote</sup></p> <p>Footnote:</p> <p>According to section 2.8.2 is the maximum permissible error on checking of zero equal to,</p> <p style="padding-left: 40px;"><math>\text{Error} \leq \text{mpe} = 0.1\% \text{ of } Q_{\text{max}} * \text{accuracy class (per } 10^\circ\text{K)}</math></p> <p>when considering the electronic device alone the mpe shall be 0.7 times this value (2.2.2 and 5.1.7.1, as well as 2.7.4.2), which gives,</p> <p style="padding-left: 40px;"><math>\text{Error} \leq 0.07 \text{ of } Q_{\text{max}} * \text{accuracy class (per } 10^\circ\text{K)}</math></p> <p>In this the time can be eliminated by exchanging Error with</p> <p style="padding-left: 40px;"><math>d = \text{Error} * \text{Max} / Q_{\text{max}}</math></p> <p>and then obtaining</p> <p style="padding-left: 40px;"><math>d \leq 0.035 \% \text{ of } \text{Max} * \text{accuracy class (per } 5^\circ\text{K, as for R76-1)}</math></p> <p>As</p> <p><math>0.035\% = 1/2857 \approx 1/3000</math></p> <p>the following relation is obtained,</p> <p style="padding-left: 40px;"><math>\text{Max} \geq (3000 / \text{accuracy class}) * d</math></p> <p>or by setting</p> <p style="padding-left: 40px;"><math>S = 3000 / \text{accuracy class}:</math></p> <p style="padding-left: 40px;"><math>d \leq \text{Max} / S</math></p> <p>where</p> <p style="padding-left: 40px;"><math>S = 15000 \text{ for class } 0.2</math></p> <p style="padding-left: 40px;"><math>S = 6000 \text{ for class } 0.5</math></p> <p style="padding-left: 40px;"><math>S = 3000 \text{ for class } 1</math></p> <p style="padding-left: 40px;"><math>S = 1500 \text{ for class } 2</math></p>	<p>New paragraph (2.6) inserted.</p>
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Denmark	5.1.6.x	<p>Requirement to the minimum scale interval (<math>v_{\min}</math>) of the used load cell(s).  When analog strain gauge load cells are used then the minimum scale interval (<math>v_{\min}</math>) of the load cell shall fulfil the following equation,<sup>2</sup></p> $\text{Max} \geq S \times v_{\min} \times R / \sqrt{N}$ <p>Where,</p> <ul style="list-style-type: none"> <li>S = 15000 for class 0.2</li> <li>S = 6000 for class 0.5</li> <li>S = 3000 for class 1</li> <li>S = 1500 for class 2</li> </ul> <p>R is the reduction ratio of the load receptor  N is the number of load cells</p>	New paragraph (5.1.6.5) inserted.
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TC9/SC2 MEETING	Working Group report for the inclusion of the concept of a family or type when grouping instruments for type evaluation. (USA, Netherlands, Denmark)	
Working Group report "Family or type"	<p>It is a significant cost to a manufacturer to acquire a type approval for a legal-use weighing device. The associated costs of testing and the time involved from the submission of an application until the issuance of a certificate can create added expense to the manufacture of the device, which will most likely be passed on to the end consumer (device users/owners). Any means by which this process can be expedited will presumably manifest itself in the form of a lower cost to both manufacture and consumer.</p> <p>The tendency of manufacturers to produce devices which target the specific needs of their users will make it necessary to produce a number of devices, each designed to fulfil the criteria of individual applications. These devices may not differ in significant attributes, and in fact may only vary in properties related to size, capacity, speed of operation, etc. Although some features will differ, similar devices may be manufactured based on and incorporating the same principles involving operating controls, metrological blueprint, and basic architecture. Devices may also be manufactured using many of the same modular-type components used in other devices within the same type or group, thereby saving the cost of retooling production machinery.</p> <p>It is therefore suggested that devices which do not vary in significant measures, and that share the same above listed principles, be evaluated for type approval on the basis of a representative device(s). The result of the evaluation would be based on the performance of the representative device(s) and the certificate issued afterwards would cover and include the entire "family" of instruments.</p> <p>This concept is not unique or untried. The testing of families of devices is used by current certifying authorities, and examples may be found in OIML Recommendations (R76, R60), as well as the National Conference on Weights and Measures type evaluation program (NTEP) in the United States.</p> <p>This concept has been applied to belt weighers in the U.S. where devices meeting a set of criteria are classified together within a family under a single Certificate of Approval.</p> <p>Obviously there must be criteria applied to categorize measurement devices within one family or another.</p> <p>Supporting Basis for the Proposal: In OIML R60 load cells are grouped with regard to similarities such as:</p> <ul style="list-style-type: none"> <li>- manufactured from the same material</li> <li>- measurement technique (e.g. strain gauges bonded to metal)</li> <li>- method of construction (e.g. shape, mounting method)</li> <li>- used in a single or multiple cell application</li> <li>- set of specifications (e.g. output rating, supply voltage, input impedance)</li> </ul>	'Testing of a family of instruments' inserted in 5.1.6.

<p><b>Working Group report “Family or type”</b></p>	<p>OIML R76 categorizes instruments into families using the following criteria:</p> <ul style="list-style-type: none"> <li>- value of the verification scale interval</li> <li>- capacity</li> <li>- load cells used</li> <li>- temperature and humidity limits</li> <li>- instrument functions</li> <li>- and other characteristics</li> </ul> <p>Likewise in the U.S. type evaluations for families of devices may be based on similar criteria. For the categorization of belt weighers, the following aspects are considered:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> belt width</li> <li><input type="checkbox"/> belt speed</li> <li><input type="checkbox"/> belt loading capabilities</li> <li><input type="checkbox"/> weighbridge length</li> <li>- number of idlers</li> <li><input type="checkbox"/> scale capacity</li> </ul> <p>In “WELMEC 2.6 Guide for testing of automatic catchweighing instruments” the modular approach on load cells is limited due to dynamic influences. Based on that the following could be added to R50-1:</p> <p>Load cells can be interchanged only if the following conditions are met:</p> <ul style="list-style-type: none"> <li>- There is an OIML Certificate of Conformity (R60) issued for the load cell.</li> <li>- The certificate contains the load cell types and the necessary load cell data required for the compatibility checking of modules (OIML R76-1 Ed 2006, Annex F), and any particular installation requirements. A load cell marked NH is allowed only if humidity testing to R76-1 has been conducted on this load cell.</li> <li>- It is not a load cell with digital output.</li> <li>- The characteristics of the replacement load cell such as nlc , Y, Z are the same or better than the load cell that is tested dynamically.</li> <li>- The design of the load cells and the material are the same.</li> <li>- No oil damper is used.</li> </ul>	<p>‘Testing of a family of instruments’ inserted in 5.1.6.</p>
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<p><b>Working Group report “Family or type”</b></p>		<p><b><u>It is the intent of this recommendation to include the following entries regarding new terminology within OIML R50</u></b></p> <p>T.3.14 Type</p> <p>Definitive model of a weighing instrument or module (including a family of instruments or modules) of which all of the elements affecting its metrological properties are suitably defined.</p> <p>T.3.15 Family</p> <p>Identifiable group of weighing instruments or modules belonging to the same manufactured type that have the same design features and metrological principles for measurement (for example the same type of indicator, the same type of design of load cell and load transmitting device) but which may differ in some metrological and technical performance characteristics (e.g. Max, Min, e, d, accuracy class, ...).</p> <p>The concept of family primarily aims at reducing the test effort at type examination. It does not preclude the possibility of listing more than one family in one certificate.</p> <p><b><u>The following entries are suggested additions to metrological controls within R 50:</u></b></p> <p>5.1.6 Testing of a family of instruments or modules</p> <p>Where a family of instruments (T.3.15) or modules of various capacities and characteristics is presented for type examination, the following provisions apply for selecting the Equipment Under Test (EUT).</p> <p>5.1.6.1 Selection of EUTs</p> <p>The selection of EUTs to be tested shall be such that their number is minimized but nevertheless sufficiently representative.</p> <p>Approval of the most sensitive EUTs implies approval of the variants with lower characteristics. The EUTs with the highest metrological characteristics shall be selected for test.</p> <p>5.1.6.2 Accuracy class</p> <p>If a EUT of a family has been tested completely for one accuracy class, it is sufficient for a EUT of a lower class if only partial tests are carried out that are not yet covered.</p> <p>5.1.6.3 Other features to be considered</p> <p>All metrologically relevant features and functions have to be tested at least once in a EUT as far as applicable and as many as possible in the same EUT.</p> <p>For example, it is not acceptable to test the temperature effect on no-load indication on one EUT and the combined effect on a different one. Variations in metrologically relevant features and functions such as different:</p>	
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<p><b>“Family or type” Working Group report</b></p>		<ul style="list-style-type: none"> <li>- housings;</li> <li>- load receptors;</li> <li>- displacement transducers;</li> <li>- temperature and humidity ranges;</li> <li>- instrument functions;</li> <li>- indications; etc.;</li> </ul> <p>May require additional partial testing of those factors which are influenced by that feature. These additional tests should preferably be carried out on the same EUT, but if this is not possible, tests on one or more additional EUTs may be performed under the responsibility of the testing authority.</p> <p>5.1.6.4 Summary of relevant metrological characteristics</p> <p>The EUTs must cover:</p> <ul style="list-style-type: none"> <li>- lowest input signal, <math>\mu\text{V/d}</math> (when using analog strain gauge load cells);</li> <li>- all accuracy classes;</li> <li>- all temperature ranges;</li> <li>- single speed, variable or multiple speed instrument;</li> <li>- maximum size of load receptor, if significant;</li> <li>- metrologically relevant features (see 5.1.6.3);</li> <li>- maximum number of instrument functions;</li> <li>- maximum number of indications;</li> <li>- maximum number of peripheral devices connected;</li> <li>- maximum number of implemented digital devices;</li> <li>- maximum number of digital interfaces;</li> <li>- different types of displacement transducers;</li> <li>- different types of load receptors; and</li> <li>- different types of belt conveyors.</li> </ul>	<p>Inserted in 5.1.6.</p>
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<p><b>“Family or type” Working Group questions.</b></p>		<p>Question to be posed to TC9/SC2 Members:</p> <p>Q1: Is it possible to group instruments under an “umbrella” set of criteria based on common principles of operation and metrological design.</p> <p style="text-align: center;"><input type="checkbox"/> Yes   <input type="checkbox"/> No</p> <p>Q2: Should it be possible for an instrument manufacturer to submit a representative instrument for type evaluation, which would include other instruments from that manufacturer that are designated to be included within a “family”.</p> <p style="text-align: center;"><input type="checkbox"/> Yes   <input type="checkbox"/> No</p> <p>Q3: Should a type evaluation certificate that has been issued for an instrument be inclusive of other instruments from the same manufacturer that share the same operating, metrological, and design principles as outlined in the above proposal.</p> <p style="text-align: center;"><input type="checkbox"/> Yes   <input type="checkbox"/> No</p>	