

DRAFT
RECOMMENDATION

TC 8/SC 7
(NL)

INFORMATION

Revision of R 137 (Parts 1 and 2)

Gas meters

Draft submitted for CIML postal ballot on 2011.06.01

Voting closes on 2011.09.01.



ORGANISATION INTERNATIONALE
DE MÉTROLOGIE LÉGALE

INTERNATIONAL ORGANIZATION
OF LEGAL METROLOGY



Secr. OIML TC 8/SC 7
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Compilation of comments on Committee Draft			OIML TC 8/SC 7/032/CC/Secr.
TC8 / SC7 member comments on: OIML TC 8/SC 7/023/2CD	Committee Draft: OIML 2CD R137-1 and -2	Title: Gas meters	Project: p3 ; development of R 137-2 Gas meters - Part 2: Test methods
CD date: 14 September 2010	Circulation date compilation: 15 February 2011	Closing date for comments:	15 December 2010
Secretariat: NL Mr. George Teunisse	Please note: This compilation contains all responses as received at the Secretariat. (Some of which with announced late arrival were received on 11 February 2011)		

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AU		gen.	As a general comment, there are numerous grammatical, spelling and punctuation mistakes throughout the document. While editing performed by BIML will ideally address many of these, it is suggested that they are corrected before the documentation progresses to final editing stages as some mistakes do not have a straightforward correction.	We have identified some corrections below, however there may be more.	Noted. Thank you I already removed quite some grammatical mistakes and conflicts. Furthermore it seems that automatic spelling check was switched off in this draft t Many of the clauses were copied from R 137-1 (2006) which in the earlier phases (should) have been checked in grammar and spelling by native English speaking SC members. Also the grammar of new input by non-native speaking experts often has to be corrected. Since I assume it is an impossible task for BIML to make all corrections needed in the last stages of a draft it is very helpful when those native English speaking members of the SC comment on incorrect grammar also during the committee draft stage of production. BIML then in final stage could concentrate on the harmonization of grammar and spelling used.

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US	all	gen.	<p><u>US big picture comment:</u></p> <p>As discussed with subcommittee TC8/SC7 for the past year, the US is continuing to develop a brand-new ANSI B109 performance-based gas meter standard for use in the US. This new standard will be significantly different from our current series of standards that are based on individual meter technologies.</p> <p>As much as possible, the ANSI B109 standards committee is trying to harmonize our new standard with each new draft of OIML R137.</p> <p>Most of the US comments that are being submitted on R137 (2CD) are directly connected to our desire to keep these two documents as harmonized as possible.</p>		Thank you for your efforts.
JP	2. Scope	gen.	We think that gas meters which measure with unit of energy may be developed in the future.	Change the last sentence of the first paragraph to <i>"The quantity of gas can be expressed in units of volume, mass or energy."</i>	During the meeting in June in NL it was decided to delete unit of energy from the scope

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US	2	gen. + techn.	<p>US Scope comment:</p> <p>The scope statements of both the draft ANSI B109 standard and R137 are obviously of high-level, big-picture importance to both documents.</p> <p>In the US, we have continued to have lengthy discussions about the “scope” statement of ANSI B109. One major topic of discussion is that of including the measurement of “all gasses” in the scope – when we really only feel knowledgeable about the measurement of “gaseous fuels.” For now, we have left the scope statement as seen on the right.</p> <p>We have decided in the US that our standard will not cover <u>any</u> metering of CNG – and have edited our scope statement as seen on the right.</p> <p>We have also decided to not include any reference to R140 in our standard (but we understand if the statement is kept in the R137 scope).</p>	<p>2 Scope</p> <p>This Recommendation applies to gas meters based on any measurement technology or principle that is used to measure the quantity of gas that has passed through the meter at operating conditions. The quantity of gas can be expressed in units of volume or mass.</p> <p>This Recommendation applies to gas meters intended to measure quantities of gaseous fuels or other gases. The Recommendation does not cover meters used for gases in the liquefied state, multi-phase, steam, or and compressed natural gas (CNG). used in CNG dispensers.</p> <p>Built-in correction devices and devices for internal temperature compensation are included in this scope as well as any other (electronic) devices that may be attached to the gas meter.</p> <p>However, provisions for conversion devices, either as part of the gas meter or as a separate instrument, or provisions for devices for the determination of the superior calorific value and gas metering systems consisting of several components, are layed down in the OIML Recommendation R140 Measuring systems for gaseous fuel.</p>	<p>Exclusion of CNG in general would be an option, but would result in no recommendation at all covering CNG measuring devices for other purposes than dispensers. The intension is that the R137 is a measuring technique independent recommendation covering as many gasses as possible.</p>
JP	3.2.1 Quantity of gas	edit.	<p>Because we added gas meters which measure with energy into "2. Scope". Also we recommend revising unclear expressions in this sentence.</p>	<p>We recommend revising the first sentence to "<i>total quantity of gas obtained by integrating the flow passed through the gas meter over time, which is expressed as volume V, mass m or energy J, disregarding the time taken.</i>"</p>	<p>Amended, however during the meeting in June in NL it was decided to delete unit of energy from the scope</p>
CZ	3.2.6		<p>Why the equation for WME in 3.2.6 is different than the one used in OIML R137-1:2006(E) or in EN 12261?</p>		<p>The former presentation of the WME is mathematically incorrect and when applied lead to an irrational step function in the curve. The topic is extensively discussed in the last TC 8/SC 7 meeting and the new formula was unanimously accepted</p>

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CA	3.3.7	techn.	Meaning or application unclear. Cannot find associated reference to “median temperature” in document	Remove definition if not required.	t_{sp} is used in the document in 5.3.4 and 7.1.2 b. The definition used median as applied in statistics. For reasons of enlightening the term median is deleted and in the definition “centre” now is used instead.
SI	3.3.8	techn.	Working pressure is probably meant as a relative pressure (excluding air pressure), or pressure of the gas acting inside the meter. A confusion might be possible with absolute pressure (gas pressure plus air pressure).	To add a statement that this pressure is not absolute pressure, i.e. is not related or affected by atmospheric pressure.	In general the absolute pressure is meant and used. Just when using absolute pressure there will be no influence of the actual atmospheric pressure on the measurement result. To prevent confusion the unit in which the pressure is expressed is normally extended with a “a” or “g”.
UK	Table 1	techn.	The ratios seem acceptable; although it does not seem to provide clarification as to how these values are identifiable by the respective accuracy class (i.e. is it practical to designate a higher ratio to a lower accuracy class?) Annex MI-002 in the MID indicates the following, which roughly similar to the content structure of Table 1: Class 1,5- $Q_{max}/Q_{min} \geq 150$ and $Q_{max}/Q_t \geq 10$ Class 1,0- $Q_{max}/Q_{min} \geq 20$ and $Q_{max}/Q_t \geq 50$	Indicate another column for accuracy classes to appropriately distinguish ratio values	First of all a amendment like this would be clearly out of scope of the present project while it is of great influence to the requirements as stated in R137-1 (2006) The intension of the draft recommendation is to create a technique independent document. Coupling accuracy classes to measuring range will work out technique restricting. The TC/SC meeting was aware that such approach unfortunately is not in-line with MID
US	5.3.4 (see also 5.9 and 12.4.8)	techn.	Even after numerous comments (from several countries) on this section on the 1CD, and several edits to the text, we still find that the text of this section causes confusion. We have attempted to edit the section to keep the intent of the section the same – but improve clarity. We have decided to not include any reference to R140 in our standard, but we understand that it might be desirable to keep the reference in R137.	5.3.4 Gas meter with a built-in conversion device For a gas meter with a built-in conversion device, displaying the volume at base conditions only, the maximum permissible errors are as indicated in Table 2 are increased by 0.5 % in the a range of ($t_{sp} - 30\text{ °C}$) to ($t_{sp} + 30\text{ °C}$). extending symmetrically around the The temperature, t_{sp} , is specified by the manufacturer. Outside this range, the permissible error is allowed an additional increase of 0.5 % is permitted in each interval of 10 °C. <i>Note 1: The conversion may be based on temperature and/or pressure measurements.</i> <i>Note 2: Gas meters indicating both actual volume and volume at base conditions are considered a gas metering system for which OIML R140 is also applicable.</i>	In principle agreed to reedit. The addition of “permissible” to error however suggests that “permissible error” is defined and “the permissible error is allowed “ is a pleonasm. Looking at the definition of “error” there is no need for adding the word “permissible” See amendment.
US	5.6 & 5.7		The US has spent a significant amount of time discussing the heavily edited reproducibility and repeatability sections in the 2CD – we are satisfied with the new text.	No change proposed.	Thank you

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ZA	5.7	gen.	Delete the first “of”	The repeatability error of three consecutive	Not agree. “repeatability of error” (definition 3.2.14) differs in meaning from “repeatability error”
SI	5.9/ 2 nd paragraph	edit.	“For gas meters indicating indicating” ...	delete the second word “indicating”	amended
US	5.9 (see also US comments on 5.3.4)	edit. + techn.	Text change proposed for additional clarity.	5.9 Temperature The requirements as mentioned in 5.3 shall be fulfilled over the whole temperature range, where the ambient temperature equals the gas temperature within 5 °C. For gas meters indicating the volume at base conditions only, the double maximum permissible error limits apply when the ambient temperature differs 20 °C or more from the gas temperature (this applies for flowrates Q_t to Q_{max}).	Amended, and does not affect the performance test on Q_t and Q_{max} , which is described in 12.4.8.2
ZA	5.9	gen.	Delete the first “indicating”, insert the word “by”	For gas meters indicating the volume.....when the ambient conditions differs by 20 °C or more....	amended
CZ	5.10		The clause 5.10 is not in agreement wit MID		This is well known by the TC/SC and was already known when R137-1 (2006) was issued. See also reply on comment of JP on this topic .
JP	5.10 Durability	techn.	Basically, MPE is specified differently depends on the classes of gas meters. So, there is no need for also changing coefficient of maximum fault at a durability test. This coefficient should be constant (1.0) regardless classes to make the requirement simple.	We recommend revising the requirement for the "fault" as " <i>for flowrates from Q_t up to Q_{max} a fault of less than or equal to 1.0 times of the maximum permissible error for all classes.</i> "	The rationale of your comment is understood but: - This is a requirement from R137-1 (2006) The mandate for the present project does not cover to make such amendments. See also reply on US comments
UK	5.10	edit.	Incorrect word used in ‘less then’	Change to ‘less than’	amended

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US	5.10 (see also 12.4.10)	edit. + techn.	<p>This section on durability has been highly discussed in the US.</p> <p>The proposed text changes attempt to accomplish two goals:</p> <ul style="list-style-type: none"> Alleviate any confusion about whether the type evaluation mpe or the in-service mpe was being applied. Make the requirement the same for all accuracy classes in the second bullet. <p><u>A note on harmonization with ANSI B109:</u> A significant issue for the US is that all of our current ANSI gas meter standards require a 4000 hour “accelerated life test.” US manufacturers are very supportive of reducing this requirement to 2000 hours – saying that if the tests are going to reveal a problem, it will happen in the first 2000 hours of testing. US customers of these meters (the utilities), however, tend to support keeping the 4000 hour requirement. For now, we have decided to keep the 2000 hour requirement (to remain harmonized with R137) in our new ANSI B109.zero gas meter standard (1CD) – but this is subject to change after the standard is widely distributed for comments.</p> <p><u>A note on harmonization with OIML R117:</u> We have decided to only require endurance testing on meters with internal moving parts in R117.</p> <p>Note: Section 5.10 currently states that <u>all</u> gas meters must meet the durability requirement. This creates a dis-connect with section 12.4.10 which limits this testing to “all gas meters with internal moving parts and gas meters without internal moving parts having a maximum equivalent volume flowrate up to and including 25 m³/h.” The US supports testing on <u>all</u> meters.</p>	<p>5.10 Durability</p> <p>Gas meters shall meet the following requirements after being exposed to a flow with a quantity that is equivalent to 2000 hours flow at Q_{max} and at a flowrate between $0.8 Q_{max}$ and Q_{max}:</p> <ul style="list-style-type: none"> double the in-service maximum permissible errors (from Table 2 in Section 5.3) as mentioned in; for flowrates from Q_t up to Q_{max}, a fault of less than or equal to 1.0 times the in-service maximum permissible error (from Table 2 in Section 5.3) . for class 1.5 or 0.5 times the in-service maximum permissible error for other classes 	<p>Your amendment in the first bullet is accepted, since it is editorial. The second is problematic. Additional to the response on the comment from Japan on this clause one should be aware that this bullet concerns “fault” which means the shift between intrinsic error and the indicated value. In case the in-service MPE value is accepted as “fault” it would mean, in the extreme situation, that an error of 3 MPE (specified for type evaluation) would be acceptable after a durability test.</p>
ZA	5.10	gen.		Gas meters shall meet the following requirements after being subjected to a flow rate of between $0,8 Q_{max}$ and Q_{max} for a period of 2000 h.	Implementation of your suggestion would result in a less defined quantity. Proposal therefore not accepted but clause is amended for clarifying reasons
UK	5.11	gen.	Clarification on overflow rate	Use definition of Q_r from the MID	The clause does not concern overload rate. Discussion on overload rate in this clause would create confusion.
ZA	5.11	gen.	Include the word flow rate after “overload” and also include the word “period”	Gas meters shall meet the following requirements after being exposed to an overload flow rate of $1,2 Q_{max}$ for a period of 1 hour.	See UK; partly accepted
AU	5.12	edit.	The last sentence reads: “...shocks shall be less then...”	Suggest that “then” should be changed to “than”.	amended

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US	5.12 (see also 12.4.14)	techn.	<p>Some debate on this section.</p> <p>Many in the US question how much damage could actually be done by only dropping the meter 50 mm. It seems that the consensus answer is that a fall from this height (normal product handling) should not affect the mpe. So ... OK.</p> <p>See also US comment (on section 12.4.14) to subject all meters to this requirement – not just those weighing less than 10 kg.</p>	(See US proposed change to section 12.4.14)	<p>It is decided not to amend this clause again as this is beyond the mandate. Moreover like you already indicate this is considered not a critical requirement. This requirement is not limited on basis of weight. Only applying tests for verifying compliance is restricted See 12.4.14</p> <p>In future revisions the shock test in general should be reviewed and D11 should give guidance on this topic.</p>
UK	5.13.1	edit.	Grammar in part of sentence ‘requirements as mentioned...’	Delete ‘as’	amended
ZA	5.13.2	gen.	Remove the word “apply”mentioned in 5.3 and 5.4 shall be fulfilled	amended
US	5.13.3	edit. + techn.		<p>Propose to add the following sentence to Section 5.13.3:</p> <p>Manufacturer must provide guidance to minimize the effect of flow disturbance on meter accuracy (See also Annex B).</p>	This concerns manufacturer specification of the installation conditions therefore suggest adding to clause 8.2; see amendmend
US	5.13.4 (see also 12.4.11)	edit. + techn.	Proposed text improves clarity – and defines the flowrate where this requirement is most severe (at Q_{min}).	<p>5.13.4 Drive shaft (torque)</p> <p>For types of gas meters with one or more drive shafts, any fault which results from the application of the maximum specified torque, as specified by the manufacturer, shall not be more than one third of the type approval maximum permissible error at Q_{min}.</p>	<p>First editorial amended. Further it would better to leave the requirement as it is The actual test is performed at Q_{min} where, like you mention, the effect is the most severe.</p> <p>So that it will cover the compliancy to the requirement over the whole range.</p> <p>To enlighten this issue 12.4.11 is slightly amended</p>

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US	5.13.6 (see also 6.1.8 And 12.4.15)	edit + techn.	<p>The US has had a significant amount of internal debate about section 5.13.6 on interchangeable components.</p> <p>One possible re-write is:</p> <p>5.13.6 “Manufacturers must designate those components which are considered to be “replaceable” or interchangeable (such as ultrasonic transducers or meter cartridges). The manufacturer shall provide additional samples of these interchangeable components during type approval and shall specify the maximum fault due to the interchange of such a component which in no case will exceed the mpe for the meter.”</p> <p>One problem with the current 2CD wording is that an example can be provided that shows that even though meter accuracy significantly improved after the exchange of a component – the meter would fail the 5.13.6 requirement. (example below)</p> <table><tr><td>Flowrate</td><td>$Q_t \leq Q \leq Q_{\max}$</td></tr><tr><td>Meter Accuracy Class 1</td><td>+/- 1.0%</td></tr><tr><td>1/3 MPE (max limit per spec)</td><td>+/- 0.33</td></tr><tr><td>Meter Accuracy when Qualified</td><td>- 0.9%</td></tr><tr><td>Meter Accuracy after Component Interchange</td><td>- 0.4%</td></tr><tr><td>Accuracy Change</td><td>0.5% (fails 5.13.6 because it exceeds 1/3 mpe, even though accuracy has improved)</td></tr></table> <p>Several participants in the US, however, do still believe that there should be some limit on the fault due to the interchange of a component (more than just ensuring that the overall mpe requirement is still met). We believe that this section needs additional discussion on the international level.</p>	Flowrate	$Q_t \leq Q \leq Q_{\max}$	Meter Accuracy Class 1	+/- 1.0%	1/3 MPE (max limit per spec)	+/- 0.33	Meter Accuracy when Qualified	- 0.9%	Meter Accuracy after Component Interchange	- 0.4%	Accuracy Change	0.5% (fails 5.13.6 because it exceeds 1/3 mpe, even though accuracy has improved)	(recommend further discussion on this item)	<p>Regarding the suggested amendment one should be aware that this part of the recommendation concerns the required metrological quality/accuracy of the measuring instrument and not the obligations of the manufacturer or applicant.</p> <p>The clause therefore contains an allowance /tolerance to a measurement device of which certain components are meant to be interchangeable and which is not related to maintenance.</p> <p>The suggested amendment concerns the type evaluation process as explicitly mentioned.</p> <p>The amendment suggested therefore is too specific for a requirement to be implemented in legislation which rather is the purpose of part 1 of a recommendation.</p> <p>More generic wording does not mean that the requirement does not apply</p> <p>Furthermore the margin given for exchangeable parts concerns exchange of “identical” parts and does not concern the intended improvement of a measuring device. In case of allowance for exchange of identical parts the actual sign and value of the impact generally cannot be predicted. So concerning the example after the interchange the actual accuracy could, with same probability have reached – 1.4 %</p> <p>For the above reasons and also because of the project mandate no essential amendment in this clause is suggested.</p>
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JP	5.13.7 Electronics	techn.	A test with flowing gas is usually difficult for most of the items in Table 4.	We recommend adding a sentence " <i>All tests of Table 4 may be conducted without flow or with a simulated external input signal</i> " at the end of 5.13.7.	This is already covered by 12.6.15 Note: For electronic and EMC tests often no flow or simulation of flow is required, but simulation of sensing signals cannot be applied while sensors in general are most sensitive for disturbances.
AU	5.13.8	edit.	The clause makes repeated reference to “accessories”, however we believe the clause should be addressing the possible influence of “ancillary devices”. This term is defined in section 3, whereas “accessories” is not.	Suggest changing the term “accessories” to “ancillary devices”. Suggest that the similar changes be made throughout the document where appropriate.	Agree, amended
US	6.1.2	techn.	<p>This comment was made on the 1CD (both by the US and by CEN). We believe it is still valid – and not beyond the scope of this OIML document.</p> <p>Soundness of cases</p> <p>(current text) The case of a gas meter shall be gas-tight up to the maximum working pressure of the gas meter. If a meter is to be installed in the open air it shall be impermeable to run-off water.</p> <p>Note: In the US, many of our current standards require the case of a gas meter to be tested above the maximum allowable operating pressure (MAOP) – often 1.5 x MAOP.</p> <p>For example:(text from ANSI B109.3, Section 3.6.1) Each new meter shall be tested to establish that it is able to withstand an internal pressure in excess of that to which it may be subjected in actual service. A shell (or case) pressure test shall be performed at 1.5 times the MAOP for cast steel, cast aluminum and wrought aluminum shells, and at 2.0 times the MAOP for cast and ductile iron shells. (Reference Section VIII, ASME Boiler and Pressure Vessel Code.)</p>	Recommend testing gas meter cases up to 150% of the maximum working pressure of the gas meter.	<p>First sentence of clause amended as follows: “The case of a gas meter shall be gas-tight as specified according to national or international standards and requirements concerning safety and at least up to the maximum working pressure of the gas meter”.</p> <p>Since the testing of a case for safety reasons is beyond the scope of OIML. OIML strictly concerns legal metrology. Only in case the metrological properties of a meter would be influenced after having been exposed to a pressure level proven to occur once in a while during operation this could be a reason to include a requirement and associated fault .</p> <p>CEN and ANSI are obliged to develop these safety standards. These contain requirements which are to be implemented in or linked to the national legislation concerning safety.</p>
US	6.1.5	edit + techn.	Suggested text change.	<p>6.1.5 Indicating device The indicating device can be connected to the meter body either physically or remotely. In the latter case, the data to be displayed shall be stored in the gas meter.</p> <p>Note: National or regional requirements may contain provisions to guarantee access to the data stored in the meter for customers and consumers.</p>	amended

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US	6.1.8 (see also 5.13.6 & 12.4.15)	edit + techn.	Suggested text change – requires that “components <u>shall</u> be marked...”	<p>6.1.8 Components</p> <p>Components of the meter may only be exchanged without subsequent verification if the type evaluation establishes that the metrological properties and especially the accuracy of the meter are not influenced (see section 5.13.6) by the exchange of the components concerned. Such components shall be identified by the manufacturer at least by their own unique part number/identifier. type indication.</p> <p><i>Note: National bodies may require Components shall be marked with the model(s) of the meter(s) to which they may be attached. National bodies and may require such exchanges to be carried out by authorized persons.</i></p>	Partly amended. A note cannot contain a requirement so “shall” cannot be accepted as such Shifting the note to the clause would be too restrictive. For consistency with the R137-1(2006) the text in the note maintained
UK	6.3	edit.	Grammar in part of sentence ‘those showing units’	Change to ‘those indicative units’	Text was copied from R137-1 (2007). Thank you; amended in a different way
US	6.3.3 And 6.3.4	edit + techn.	<p>Meters in the US are not designed to meet this requirement as written – the meters need to run longer than one hour at Q_{min} to register the least significant digit. (In the US, the smallest “visible” digit on diaphragm meters often corresponds to 100 ft^3 (~ 2.83 m^3) which is much more than one hour at Q_{min}.)</p> <p>Suggested replacement text is provided.</p> <p>Also, as suggested on our 1CD comments, “odometer-type” meters (with drums) are not the only type of mechanical indicating devices in existence. Allowance should be made for other types – including those with dials and gears which are in common use in the US.</p>	<p>6.3.3 Resolution</p> <p>The resolution of the indicating device shall be adequate to meet the requirements of the custody transfer or regulatory authority (as applicable).</p> <p>The quantity corresponding to the least significant digit shall not exceed the quantity of gas passed during one hour at Q_{min}.</p>	<p>The comment on 6.3.3 is not in agreement to what was decided at the production of R137-1 (2006). Moreover the suggested direct coupling of metrological requirements to requirements of other jurisdictions cannot be accepted. It is the aim of OIML recommendations to provide in such requirements ready to be implemented in legislation.</p> <p>6.3.4.Amended</p>
FACOG AZ	6.4.2	edit.	With an electronic indicating device there are other and more efficient methods than increasing the number of digits possible. So it should not be limited to that.	<p>Please modify sentence as follows:</p> <p>With an electronic indicating device the last digit is used as an integral test element. The number of digits may be increased or other methods may be used in a specific test mode, which can be accessed through either physical or electronic buttons or switches or interfaces.</p>	Amended using different wording

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US	6.6	gen.	The US is in agreement with the changes made to section 6.6 “Power sources” on the 2CD.	No change proposed.	thanks
NL	6.6.2	techn.	Add requirement on emergency power supply for mains supplied gas meters		note amended
AU	6.6.3	techn.	There should be an additional requirement that the battery life be displayed on an electronic indicating device. This will allow far more up-to-date information to be provided, and is important as the battery is non-replaceable.	Suggest to add a requirement that the remaining battery life shall be able to be displayed on an electronic indicating device.	amended in a different manner and added marking requirement in 7.1.4(b)
AU	6.6.4	edit.	The second sentence reads: “...the power source, shall be replaced...”	Suggest replacing the first “shall” with “is to” and deleting the comma. “The date by which the power source is to be replaced shall be indicated on the meter.”	amended
AU	6.6.4	edit.	The grammar and exact intention of the third sentence requires review.	Suggest: “Alternatively, the estimated remaining life of the power source shall be displayed, or, warning shall be given when the estimated remaining life of the power source is at or below 10%.”	amended
US	6.7.1	edit.	Edits suggested to 6.7.1.	6.7.1 Checks An electronic gas meter is required to: <ul style="list-style-type: none"> • ensure that transducers and critical devices are present and correctly functioning; detect the presence and correct functioning of transducers and devices; • check the integrity of stored, transmitted and displayed presented data; and • check the pulse transmission (if applicable). 	“ensuring” differs from “detecting” since it includes “acting upon by solving. Clause 6.7.3 is linked to 6.7.1 thus ensuring proper functioning slightly amended
AU	6.7.2	edit.	The grammar in the first sentence needs to be corrected.	Suggest: “The gas meter may also have the capability to detect and act upon:”	amended

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US	6.7.3	edit + techn.	<p>Some US manufacturers suggest consideration of changing the key word in 6.7.3 to “may.”</p> <p>Suggested edit to 1st bullet in 6.7.3.</p> <p>2nd bullet: not clear on the term “superior calorific value” – is it the same as “heating value?”</p>	<p>6.7.3 Alarms</p> <p>If malfunctions are registered while checking the items as indicated in 0 or if the conditions as indicated in Error! Reference source not found. are detected, the following actions (may?) shall be performed:</p> <ul style="list-style-type: none"> • a visible, audible, or other alarm output, which remains present as long as the alarm condition exists. (the alarm may either self-clear or be manually cleared); a visible or audible alarm, which remains present until the alarm is acknowledged and the cause of the alarm is suppressed; • continuation of the registration in specific alarm registers (if applicable) during the alarm, in which case default values may be used for the pressure, temperature, compressibility, density or superior calorific value; and • registration in a log (if applicable). 	<p>This clause is to cover the ensuring of correct functioning as a response on the checks done in 6.7.1 like you requested. Changing to “may” would undermine this ensuring while no response would be acceptable.</p> <p>Therefore not amended</p> <p>(The clause is copied from R137-1 sub clause 6.5.3)</p>
AU	6.8 & Annex I	edit.	Should the software requirements be placed in an Annex? Note, R 46 CD 5 has an equivalent section based on D 31 incorporated into the document. If it needs to be an annex, should it be Annex A?	Suggest incorporating content of Annex I directly into 6.8. Alternatively, we suggest changing the Annex designation to A.	<p>Not amended</p> <ol style="list-style-type: none"> 1. Implementing directly in 6.8 would need a too much detailed hierarchy in clause numbering. It is suggested by the BIML experts to copy software requirements in a separate Annex 2. Since Annex A already exists in part 2 it was chosen to use Roman numbering for the Annexes to part 1
NL	7.1.2	edit.		Change “base temperature” to “base conditions”	amended
AU	7.1.4	edit.	If the suggested change to 6.6.3 is accepted, a similar addition should be included as a new b).	<p>Suggest including the following:</p> <p>b) For a non-replaceable battery: the latest date by which the meter is to be replaced, or alternatively the remaining battery capacity can be presented on the electronic indicating device.</p>	amended

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AU	7.1.4	edit.	Could some explanation of the note be provided? It is assumed it relates to the option of a warning in 6.6.4, but it appears to be incomplete.	Suggest replacing b) with: b) For a replaceable battery, one or more of the following shall be displayed (*): (i) the latest date by which the battery is to be replaced; (ii) the remaining battery life presented on the electronic indicating device; (iii) a warning clearly indicating that the battery life is at or below 10 %.	Agree; is to be amended . However this clause only concerns the markings. Therefore amended in line but in an alternative manner.
AU	9.1	edit.	Second sentence reads: "...quantities of gas measured (volume or) shall..."	Suggest the addition of "mass" after "volume or..."	Agree, amended
US	9.1	edit. + gen.	In the US, mechanical sealing is optional. Suggest the following edit to allow mechanical sealing to be optional. (this is a similar to our comment on the 1 st CD -- where we did not understand the response from the Secretariat)	9.1.1 General provision Protection of the metrological properties of the meter is accomplished via hardware (mechanical) sealing or via electronic sealing devices. In any case, Memorized quantities of gas measured (volume or) may shall be protected by means of a hardware seal. The requirements for The design of verification marks and hardware seals (and their design) are is subject to national or regional legislation. Seals shall be able to withstand outdoor conditions. 9.1.2 Verification marks Verification marks (or documents) indicate that the gas meter has successfully passed the initial verification. This is a hardware marking 9.1.3 Hardware sealing (if present) . . . 9.1.4 Electronic sealing devices (if present) . . .	Amended such that electronic sealing is acceptable for all necessary sealings
FACOG AZ	9.1.1, 3 rd sentence	edit.	Word to be added.	In any case, memorized quantities of gas measured (volume or mass) shall be protected by means of a hardware seal.	See AU 9.1

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JP	9.1.1 General provision	techn.	Protection of " <i>memorized quantities of gas measured</i> " is achieved successfully with an electronic sealing device. We think a hardware seal may not be necessary for all cases.	We propose to delete the sentence " <i>In any case, memorized quantities of gas measured (volume or) shall be protected by means of a hardware seal.</i> "	This sentence was copied from of R 137-1 (2007) amending is yet beyond the mandate for the project.
SI	9.1.1 / 2 nd paragraph	edit.	"In any case, memorized quantities of gas measured (volume or) shall" ...	"In any case, memorized quantities of gas measured (volume or mass) shall" ...	See AU 9.1 amended
UK	9.1.1	edit.	Grammar in part of sentence 'memorized quantities of gas measured (volume or)...'	Change to 'memorized quantities (or volume) of gas measured...' or should this be 'volume or mass '?	See AU 9.1 amended
AU	9.1.4.1 [9.1.4]	techn.	We disagree with the possibility of offering the second option in part a). Unrestricted access should not be allowed to parameters that contribute to the determination of the measurement result. This is simply good practice, regardless of the subsequent judgements of 'authorized persons'. Furthermore, this option is inconsistent with clause I.1.3 (3 rd paragraph) which states: <i>Parameters that fix the legally relevant characteristics of the gas meter shall be secured against unauthorized modification.</i>	Suggest the deletion of the second option in part a).	This sentence was copied from of R 137-1 (2006) in principle amending is yet beyond the mandate for the project. However it appears that with what is stated in the clause the intention is not made completely clear. The clause therefore was re-edited and is considered not in conflict any more with I.1.3
CA	9.1.4.1 [9.1.4]	gen.	As the permissibility of electronic sealing as a replacement for hardware sealing is established by national authorities, it is recommended that additional wording in this regard be added to this section.	Suggest the following amendment language: "When access to parameters that contribute to the determination of results of measurement needs to be protected and electronic sealing is permitted by national authorities, the protection shall...."	amended
US	9.1.4.2 [9.1.4.1]	techn.	This section (9.1.4.2) causes problems in the U.S. because parts need to be fully interchangeable – which causes problems with logging information.		Clause is amended
CA	Annex I	gen.	It would appear that R137-1 has incorporated a very limited and conservative approach to the guidance and provisions of D31. It is our understanding that D31 was published to provide guidance to TCs not only in regards to the metrological control and protection of software in a measuring device from a design perspective, but also to address the very relevant aspect of allowing for software upgrades to occur in-service (through traced or verified updates) where meters have been specifically designed to accommodate such an occurrence. This aspect is not apparent in the R137-1 provisions which address software controlled gas meters.	It is recommended that the secretariat give further consideration to the inclusion of additional pattern approval requirements from OIML D31 (in particular those of section 5.2.6) which would support the potential for the occurrence of both traced and verified updates to be performed on in-service gas meters.	Amended; clause implemented
US	Annex I	gen. + edit.	Many of the secretariats of the OIML TC/SCs are probably having difficulty deciding how to properly implement OIML D31 into their OIML measuring instrument recommendations. This is made more difficult because progress seems to have stopped on the TC5/SC2 project entitled "Methods and means for Verification" (software). Also, need to move Annex I into the back of the document (with the other annexes).	(recommend further international discussion on Annex I)	Could be discussed but is not seen as necessity Annex I concerns part 1 of the recommendation (requirements) and therefore should not be shifted to the end of part 2.

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CA	Annex I I.1.3.	edit.	Is reference to section A.3 appropriate?		corrected by deletion
CA	Annex I	techn.	As this section is mandatory it should be supported by type evaluation criteria and testing provisions in section 12 of Part 2.	Suggest the incorporation of the pertinent sections of OIML D31 (in particular section 6 Type Approval documentation and validation methods, as applicable).	amended through implementing evaluation procedures in chapter 12
JP	Annex I The paragraph below the title "Annex I"	edit.	Because D 31 is a general requirement for software, there are no practical descriptions in this document about the severity levels (I) and (II) applicable for gas meters .	Firstly, in regard to the sentence " <i>For the following requirements, severity level (I) of OIML D 31:2008 is applied except for A.1.1 and A.2.3.3 where severity level (II) is applied.</i> ", there is a strong need for defining the severity levels (I) and (II) clearly to be applied for gas meters. Secondly, the " <i>clauses A.1.1 and A.2.3.3</i> " referred in this sentence are not found in this draft. These reference numbers should be corrected.	I admit that the header in Annex I is not clear. The levels (I) and (II) refer to the use of these levels in D31. Since the applicable requirements have been implemented there is no need any more to mention the severity levels. Corrected by deleting the statement on severity levels. This was an editorial mistake. A.1.1 and A 2.3.3 should have been I. 1.1 and I.2.3.3
JP	Annex I General comment	gen.	In Annex I, it is not written practically how software of gas meters is tested for severity levels (I) and (II).	We request that test procedures for gas meters correspond to the severity levels (I) and (II) should be explained practically in this Annex. If not, the procedure should be clearly referred from other documents, such as OIML D31.	amended through implementing evaluation procedures in chapter 12 and reference for details is made to OIML D31.
SI	11.1.2 / 2 nd paragraph	techn.	The acceptance criteria in this paragraph are correct only if the uncertainty is less than MPR.	Add a condition $U \leq MPE$	amended

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US	12.1 (comment A)	edit + techn.	Suggested edits made to the first two paragraphs of 12.1 to improve clarity.	<p>12.1 General Each type of gas meter is subject to the type evaluation procedure – the procedure of evaluating meters to ensure conformance with the requirements of this document.</p> <p>Any modification made to an approved gas meter must be fully documented and must be approved by the authority that issued the type approval certificate. The gas meter after such a modification must continue to meet all of the requirements of this document.</p> <p>No modification may be made to an approved type without authorization and documentation by the authority that issued the type approval certificate.</p> <p>The calculator (including indicating device) and the measuring transducer (including flow, volume or mass sensor) of a gas meter, where they are separable and interchangeable with other calculators and measuring transducers of the same or different designs, may be the subject of separate type evaluations.</p>	<p>Addition of the suggested definition of “ type evaluation procedure” should be omitted in the body of a recommendation. Moreover this term is general legal metrology terminology defined in the VIML (2.5)</p> <p>Further amended but in a different way since the original as well as this suggested clause both require that the authority that issued the certificate is the only authority that is allowed to perform the type evaluation of a modified measuring device. Although for practical reasons it often will be that same authority, it should not be mandatory.</p>
US	12.1 (comment B)	edit. + techn.	<p>The last part of the 3rd paragraph of 12.1 might be incorrectly interpreted to mean that components are able to get separate type approvals under R137. The secretariat has said that this is not possible (in response to questions on the 1CD).</p> <p>Recommend re-wording this paragraph to improve clarity.</p>		Amended by rewording
AU	12.2	techn.	In the fourth dot point, there is a requirement that “general software information” be provided. However if the National Authority is to properly investigate the software as part of the type approval process (as per OIML D 31 and Annex I), highly detailed software information is required.	Suggest that the wording be amended and expanded as suggested in OIML D 31 clause 6.1.	amended as such

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US	12.3.1 [12.4]		<p>(from US comment on the 1CD)</p> <p><u>Families of Meters Issue</u></p> <p>“If so requested by the authority responsible for the type evaluation, these meters shall include more than one size if simultaneous approval of a family of gas meters is requested.”</p> <p>Recommend that the secretariats of OIML TC8/SC3 + SC5 + SC7 all work together and jointly develop a consistent way to handle the type approval of “families of meters” in all OIML metering recommendations.</p> <p>Note: The 1CD of OIML R117-2 will soon be distributed (Feb 2011) which includes a lengthy coverage/discussion on the topic of “families of meters.” Hopefully, this will be helpful for further discussions with TC8/SC7.</p>	This section should reference your new Annex D.	Amended
AU	12.3.2 [12.5.2.1]	edit.	Both “Power voltage” listings indicate “battery” in brackets.	Suggest deleting “battery” from the first “Power voltage” listing.	agree, amended
CA	12.3.2 [12.5.2.1]	techn./ edit.	Although intended as an acceptable range within which a reference condition may lie, 12.3.2, as written, would appear to allow fluctuations of the reference conditions during testing. E.g. allowing ambient temperature to fluctuate by 5C during testing would be considered excessive.	Suggest limiting rate of change of reference conditions during type evaluation testing. E.g. Ambient temperature (20.0 +/- 5) C, rate of change not to exceed 0.5 C per hour.	Although your comment is clear it could be possible that the referred stability could not be reached by all laboratories in all situations due to e.g. changing pressure etc. The uncertainty claim should cover these fluctuations.

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US	12.3.4 [12.5.2.3]	edit. + techn.	<p>We found several sentences in 12.3.4 to be somewhat confusing.</p> <p>Recommended edits in Section 12.3.4 are not intended to change (what we believe is) the intent of each sentence – but to improve clarity.</p> <p>The term “mutual differences” causes confusion. (this term is also used in 13.1.3)</p>	<p>12.3.4 Test gases</p> <p>All the tests listed in 12.4 can be performed with air or any other gas as specified by the manufacturer under the rated operating conditions stated in 5.1. For the temperature tests in 12.4.8, it is important that the gas be dry.</p> <p>Meters intended to measure The test with different gases (as stated in Section 12.4.13) are to be tested during type approval is performed with the gases specified by the manufacturer.</p> <p>When gas meters are to be verified (at initial or subsequent verification) with air, the type approval testing shall be done with air. When gas meters are to be verified (at initial or subsequent verification) with a different gas, then the type approval testing shall be done with that same gas. air. (or a type of gas different from that at operating conditions) the test shall include air (or the other gas(-es)).</p> <p>If needed, correction factors for the differences between the gases are In such case the maximum mutual differences between the error curves are established as required for the initial or subsequent verification (see 13.1.3).</p> <p>If In case such mutual the differences between the gasses are within 1/3 MPE, the initial or subsequent verification may be performed with air (or with the other gas(-es)). When the mutual differences exceed 1/3 MPE, the initial or subsequent verification may only be performed with air or the other gas(-es) if the correction factor for the mutual differences is applied.</p> <p>The authority responsible for type evaluation shall document report whether the initial or subsequent verification may be performed with air (or the other gas(-es)) or whether correction factors must be applied. and in the latter case the mutual differences.</p>	<p>Amended as such but needed to keep “include” while it is essential that tests at type evaluation are to be performed with the gasses for which the gas meter is intended to be used.</p> <p>It is noted that the first 2 sentences concern statements on use of gases. The rest of the clause concerns an evaluation. Splitting up in 2 clauses probably reduces confusion.</p> <p>Reedited to give more clarity</p> <p>Deleted “mutual” to prevent any confusion</p> <p>Need for correction factors can only be decided on basis of performing measurements and record the differences in performance.</p> <p>“ maximum difference” is used while here the comparing of 2 error curves is concerned, which in general cannot be covered by one single correction factor. The result will be a function of Q. The word “maximum” was introduced, referring to the Q level at which a maximum difference the gasses occurs.</p> <p>See alternative amendments</p>

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AU	12.4 [12.6]	gen.	a. In general, the tests described in this section require far more detail as to how the testing is to be performed. Could there be a prescriptive test procedure for each test?? b. Assuming that a Test Report Format (Part 3) is to be developed in the future, there is a need to link the test procedures here with the completion of the test report format. For example, a requirement of every test should be to complete the test report format in (yet to be completed) OIML R 137-3. We would also suggest Annex A be incorporated into the main document (ie, merged with the content of 12.4). This is in alignment with the draft general format for OIML recommendations.	We have identified some tests where more detail is required.	a) Your consecutive comments will be taken into account for the further clauses. b) The separated Annex A originates from the fact that originally the Annex A tests only applied for measuring devices comprising electronic devices. Today such a subdivision is not necessary any more. For those instruments and devices not comprising electronic devices a number of tests simply can be stated not applicable. So there are no strong reservations concerning merging with Annex A. Moreover aligning with the draft templates is supported. Since this is a editorial issue and the templates are not yet final such amendment will be postponed until the next phase of the draft.
AU	12.4.2 [12.6.1]	edit.	The WME is found in 3.2.5 not 1.1.1.	Suggest changing the reference to the WME from 1.1.1 to 3.2.5.	Caused by wrong automatic cross reference. Thank you; corrected
AU	12.4.2 [12.6.1]	edit./ techn.	The last paragraph requires that the pressure differential at Q3 be determined. While we agree that this is a very worth while test to perform, we believe that there is a need to specify a more detailed test procedure. There are also no requirements for it.	Suggest a more detailed test procedure for the measurement of differential pressure and requirements.	Thank you for noticing. For metrological purposes there is no need for establishing the value of this parameter. For that reason also there is no requirement. Therefore this bullet is deleted
AU	12.4.3 [12.6.2]	edit./ techn.	There is no reference to the requirements in Part 1.	Suggest referring to clause 5.6 in Part 1.	amended
AU	12.4.4 [12.6.3]	edit./ techn.	There is no reference to the requirements in Part 1.	Suggest referring to clause 5.7 in Part 1.	amended
AU	12.4.5 [12.6.4]	techn.	If the manufacturer specifies that their meter can operate in all orientations, then how does the testing laboratory proceed? Taking an extreme interpretation, should the meter be tested at 360 points on each axis of rotation? We believe that a discrete number of orientations can approximate the results expected from “all orientations” and reduce potential confusion regarding the interpretation of the Recommendation.	Suggest that a discrete number of orientations be defined. Then a manufacturer can nominate any or all of them to be tested. For example: <ul style="list-style-type: none"> • Horizontal • Vertical (flow upwards) • Vertical (flow downwards) • 45° inclined (flow upwards) • 45° inclined(flow downwards) 	Thank you for this suggestion At least the first 3 bullets apply. The clause is amended Note It is very unlikely that there will be an influence on inclination of 45 ° when at both horizontal and vertical the meter complies the requirements. Moreover for in-use it is very unusual to mount a meter at such degree.

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US	12.4.6 [12.6.5]	edit.	Need to ensure this testing is only required on meters that are “able to measure flow in both directions” (5.13.2).	12.4.6 Flow direction The accuracy measurements as stated in 12.4.2 are performed in both flow directions, if applicable . The results of the different accuracy measurements are evaluated with the requirements as laid down in 5.8 without intermediate adjustments. If the requirements are not fulfilled for both flow directions without intermediate adjustments, the meter shall be marked in order to be used in a certain direction only, as indicated in 6.2.	amended
US	12.4.7 [12.6.6]	gen.	In the US, we have had lengthy discussions concerning section 12.4.7. We have decided to accept the changes made to this section in the 2CD. We continue to note, however, that testing at elevated pressures is difficult to accomplish in the US.	No change proposed.	Thank you for your information
US	12.4.8 [12.6.7]	edit.	Some of the text in this section is confusing. We need a better definition of “unsuppressed flowrate.”		Definition implemented
CA	12.4.8.1 [12.6.7.1]	edit.	Reference temperature appears twice as a temperature test point	Delete last bullet.	Mentioning reference temperature twice is intended, indicating the sequence. Text amended to prevent misinterpretation.
NL	12.4.8.2 [12.6.7.2]	techn.		Implement test at 20 °C at reference temperature	amended
AU	12.4.9 [12.6.8]	edit./ techn.	We believe a more prescriptive test procedure is required for flow disturbance testing. For example, are the disturbances listed in Annex B placed upstream or downstream of the meter, or both? If the disturbances are only placed upstream, what is the configuration of the rig downstream of the meter? Are straightening veins or flow straighteners allowed? What if they are integrated into the meter?	Suggest that a prescriptive test procedure be defined.	B2.1 Amended to: “Flow disturbance tests are executed using the piping configurations as presented in the following table B.1, mounted upstream of the meter, whereby the meter is installed according to the manufacturers’ mounting specifications.” Straighteners are allowed as indicated in B.2.3 and if integrated the test is performed with this integrated straightener.
AU	12.4.10 [12.6.9]	techn.	The last paragraph allows one meter to fail the durability test requirements (assuming option 2 is taken). We strongly disagree; all meters should be required to pass each test in the Recommendation. Regardless of the option taken, we see no reason why this test should be made so lenient.	Suggest deleting the bracketed section of the last paragraph; beginning “...with the exception of one of them...”	Your comment is rather problematic since this statement was copied from the identical clause 7.4.9 from R137-1 (2006) and can be traced back even to R31 (1989) clause 7.2.4. Moreover I have not found any comment on this statement during development of R137-1 since 2000.
CA	12.4.10 [12.6.9]	edit.	Reference in the sentence which follows Table 5 appears to be inappropriate.	Amend 11.3.3. to 12.3.3	Thank you for noticing; corrected

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CZ	12.4.10 [12.6.9]		Why the durability test according to 12.4.10 is limited only for meters with Q_{max} up to 25 m ³ /h? I suppose that a durability test should be also obligatory for meters with higher value of Q_{max} .		This is a compromise reached at the SC meeting in Delft and concerns practical implications. It is yet even more stringent than specified in R137-1 (2006) clause 7.4.9. since it now also includes the range of gas meters up to 25 m ³ /h without internal moving parts. In principle the mandate of the present project is limited such that if not acceptable the SC should fall back on the former version as specified in R137-1 (2007) which means no durability test at all for this type of gas meters.
CZ	12.4.10 [12.6.9]		In clause 12.4.10 there the clause D.3 should be mentioned in order to explain how to perform the durability test with a family of gas meters.		Thank you for your comment. It appears there is an inconsistency due to introduction of Annex D. A new sentence is added
AU	12.4.14 [12.6.13]	edit.	There is no reference to the test procedure in Annex A.	Suggest the addition of a reference to Annex A (or better still, merge tests as suggested in 12.4 above).	This clause concerns all gas meters not only those comprising electronics Concerning your suggestion for merging. This is taken into consideration see response to your comment on 12.4
US	12.4.14 [12.6.13] (see also 5.12)	techn.	<p>In trying to understand origin/rationale of the “< 10 kg” limit on this testing requirement, our manufacturers asked some of their European colleagues.</p> <p>The answer that seemed to make the most sense was that 10 kg might be the maximum weight that a worker might possibly be inclined to “throw” the meter (to another worker, or ...?).</p> <p>Unless there is a better reason for the restriction on this testing requirement, we support having this testing be a requirement for <u>all</u> meters.</p>	<p>12.4.14 Vibration and shocks</p> <p>Gas meters having a maximum weight of 10 kg are submitted to vibrations and shocks. For gas meters exceeding this weight only the electronics part of the meter are to be tested. Before and after these tests, the intrinsic error of the gas meter is determined over the whole flow rate range according to 12.3.3.</p> <p>The requirements as laid down in 5.12 are applicable.</p>	<p>The rationale for this limitation is quite different. First of all this is a test and not the requirement. Therefore each meter independent of its weight shall withstand the vibrations and shocks specified. (see 5.12)</p> <p>Like you have noticed these shocks and vibration requirements are not very severe. These can be expected during to transport of relative small packages and cannot be of influence to the larger meters since if it were, these could not operate at all, while these larger meters will frequently experience these levels of shocks and vibrations during installation and operation. Therefore performing such tests for metrological purposes on the larger meters is considered futile and therefore inefficient.</p> <p>In June 2005 this same topic was discussed at the SC meeting in Delft and agreed upon.</p>
US	12.4.15 [12.6.14] (see also 5.13.6)		<p>Question: Why is Q_{min} to Q_t not taken into consideration in this test method??</p> <p>Manufacturers and utilities are often looking at Q_{min}.</p>		<p>The requirement covers the whole range.</p> <p>Tests are to be performed only at the rather critical transition point Q_t employing the lower MPE levels whereby the effect is expected to be rather severe.</p>

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AU	12.4.16 [12.6.15]	techn.	The first dot point of the fourth paragraph states: <i>The meter is to be powered up, except for the vibration and mechanical shock tests.</i> However, the first sentence of A.5 states: <i>The test consists of exposure to the vibration level for a time sufficient for testing the various functions of the EUT during the exposure.</i> There appears to be an inconsistency between these two statements if we wish to test the electronic functionality of the EUT during the exposure of vibration. If this is not the intension, then an explicit statement to that affect is required to remove potential confusion.	If the intention is to examine the electronic functionality of the EUT during the exposure of vibration, then delete the second part of the first dot point in paragraph 4. Otherwise, an explicit statement regarding the test procedure for vibration is required.	Thank you for detecting the inconsistency (can also be detected in R 137-1 (2007)) The test procedure described in A.5 was not completely in line with the description in 12.4.16 and therefore was corrected
AU	12.4.17 [12.6.16]	edit.	This section again refers to “accessories” when “ancillary devices” is perhaps more appropriate and consistent.	Replace all instances of “accessories” with “ancillary devices”.	amended
AU	12.4.17 [12.6.16]	techn.	What is defined as a negligible effect?	Suggest definition, e.g. not greater than the uncertainty of the measurement.	Good suggestion for adding such definition There is a preference to express in MPE. Amended to < 0,1MPE
CA	12.4.17 [12.6.16]	gen.	Is there a need to define negligible as concerns effect?	Suggest “statistically insignificant” or alternatively, applying an MPE limit.	See above
AU	12.5.1 [12.7]	edit.	The 5 th dot point refers to the type approval sign. Should this read “type approval mark”?	Suggest change “sign” to “mark”.	amended
CA	13.1.4	edit	Singular/plural conflict.	Suggest amending “A gas meter” to “Gas meters”	thanks; corrected
AU	13.1.5	techn.	What is meant by “independent of flow direction”? If the type approval revealed that the meter is equally accurate in both flow directions then surely it should verified in both directions. If however it can only operate in one direction then it should be marked as such and no verification testing is required.	The use of the phrase “independent of flow direction” is somewhat confusing. Can it be clarified? Equally can the requirements for verification in relation to flow direction independence be clarified?	sub clause amended in order to clarify the intension
CA	13.2	gen.	It is questionable as to why this recommendation includes requirements relative to statistical sampling for the purposes of meter verification. The manner of establishing meter verification compliance is typically not considered a potential barrier to trade. Tolerable AQ and LQ levels can be political decisions rather than technical ones and these decisions are often established by individual member states.	Set maximum AQL and LQ values and allow national authorities to implement a statistical sampling plan which meets the criteria.	Agree. Should be amended .These clauses were copied from R 137-1 (2007) and should not be presented in the way it is done now. Several changes were made. A final text for these clauses however should be based on the outcome of the OIML TC3/SC4 project on this topic
AU	13.2.1	techn.	Instead of requiring the same year of manufacture, could the requirement be stated as: “The difference between the earliest and latest dates of manufacture shall be no greater than 12 months.”?		Agree amended
CA	13.2.1	techn.	There is no technical basis for limiting a lot size to a maximum of 1000 meters, if the appropriate sample size and nonconformity allowances (based on AQL and LQ) are established.	Remove.	Amended

Country Code	Clause/ paragraph/ table [diff. in DR]	gen./ edit./ techn.	COMMENTS	PROPOSED CHANGE	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
CA	13.2.3 table	techn.	Sample sizes in table are not linked to maximum lot sizes. A sample size of 1000 is presented, however this would appear inappropriate as a sample size given the 1000 meter lot size limitation of 13.2.1 It should be made that the table is simply an example of a plan based on the maximum AQL and LQ values and that other plans with lower LQs may also be acceptable.	Suggest placing AQL and LQ maximum criteria under 13.2 and removing all other information.	Amended
AU	Annex A	edit.	We believe that an explicit statement linking the rated operating conditions in 5.1 to the severity levels in Annex A is required. In particular, the minimum and maximum ambient temperature.	Suggest the following, or similar, clause be included either in Annex A or in section 5: “The rated operating conditions of the gas meter shall be defined by the manufacturer based upon the options available in table 5.1. The rated operating conditions specified shall then be used to define the severity levels used for testing in accordance with Annex A.”	This is true for especially the maximum and minimum ambient like you indicate. It is up to the national authorities to specify rate operating conditions but the manufacturer needs to specify the operating conditions to which his meter complies. Amended
AU	A.6.1.1	techn.	Is the frequency range high enough?	Suggest possibly increasing the frequency range up to at least 2.4 GHz. An increasing amount of communication devices and protocols (such as ZigBee) are now using frequencies up to and beyond 2.4 GHz. Is it appropriate to increase the frequency range?	The present draft OIML D11 requires coverage up to 3 GHz. The range indicated in 61000-4-3 is up to 6 GHz. However as can be deduced from that standard the risk on a disturbance between 3 and 6 GHz is very low. Testing up to 3 GHz can be performed in same way and using similar facilities as up to 2 GHz. Agree that the free band microwave and Bluetooth frequency (2.45 GHz) should at least be covered. Amended.
CZ	Annex B		If the principle of the meter is independent on the velocity profile of the incoming gas then tests according to annex B need not be performed		Agree with this comment. This is what is indicated in 12.4. 9 (2CD numbering) Those meters listed in table B.1 are considered to be influenced
DE	B.1.1	techn.	We like to keep all the former test points 0.25Q _{max} , 0.4Q _{max} , 0.7 Q _{max} and Q _{max} . Based on our experience with conformity assessments of meters according to these tests, we see problems with the evidence of detection if we use only three points.	Change back to the former test points 0.25Q _{max} , 0.4Q _{max} , 0.7 Q_{max} and Q _{max}	This is not agreed while there was not such additional test point on 0,7 Q _{max} in former versions. Please refer to R137-1 (2006) and also the former R32 (1989) or even the European standard EN 12261 (2002)
DE	B.1.2.	edit./techn.	Of course it is reasonable to perform the test with only one size out of a meter family. But the size should be selected according to the worst case.	Please change in the sense of “...it is sufficient to perform the full set of tests on <u>this</u> one size <u>which is considered as worst case situation for the meter family.</u> ”	amended
CZ	Table B1		Why in table B.1 there the reference conditions are defined with 80D straight line? I suppose it is too long.		80 D is considered necessary and in line with ISO 17089. However for turbines this is not necessary. Amended
CZ	Table B1		There are not clear drawings and descriptions of the piping configurations in the table B.1. The clear dimensions were in annex B of OIML R137-1:2006(E).		Amended by adding dimensions.

Country Code	Clause/ paragraph/ table [diff. in DR]	gen./ edit./ techn.	COMMENTS	PROPOSED CHANGE	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
DE	Table B.1	techn.	<p>We appreciate the extension of the set of test configuration to have better covering of the different situation of different meter technologies.</p> <p>But we cannot agree that the former test configurations consisting of double bend out of plane with diffuser (formerly called “mild disturbance test”) and additionally with half moon plate (formerly called “severe disturbance test”) are killed out and replaced by the simple double bend out of plane.</p> <p>From our investigations of installation effects in real configurations we know</p> <p>a) that the simple double bend does not cover all swirl generating situations</p> <p>b) the former “severe disturbance test” perturbation is necessary to cover situations downstream to complex installation in measuring stations, e.g. downstream to headers.</p> <p>If necessary, we can underpin this statement by the results out of our investigation projects of installation effects.</p>	The test configuration “double bend out of plane” shall be kept as already defined in the former OIML R-137-1 2006, B.2 and B.3	Amended such that the severe disturbance test will still be required unless the gas meter is marked as not allowed to be installed using piping which creates severe flow disturbances.
DE	Table B.1	techn.	From our experience with tests on installation effects it is also essential necessary to put more details in the geometrical definition of the test configurations. This is especially the case for the bend radius and angles of diffusers/confusers. Otherwise the test results can be influenced/trimmed by different geometrical set ups.	Please add definitions/requirements of bend radius and angles of diffusers/confusers.	amended
CZ	B2.5		Clause B2.5 is not clear.		Clause reedited in order to enlighten its meaning
CA	Table C1 Influence from accessories	techn.	Diaphragm meters and rotary meters may be equipped with electronic data loggers or electronic automatic meter readers.	Suggest adding “if applicable” to diaphragm and rotary meter columns. Suggest adding reference to 5.13.8	amended in a different way by adding ancillary devices to the last sentence of C1
NL		edit.		Add “if applicable” in cell “different gasses”	amended
CA	Annex D2	edit	A family of meters is defined as a group of gas meters of different sizes and/or different flow rates...	Remove same flow rate criteria from list of characteristics.	agree deleted