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Compilation of comments on Committee Draft with Observations of Secretariat				**OIML TC 8/SC 7/018/CC/Secr**
TC8 / SC7 Comments on: **OIML TC 8/SC 7/004/1CD**	Committee Draft: OIML 1CD **R137-1 and -2**	Title: Gas meters		Project: **p3** ; development of R 137-2 Gas meters - Part 2: Test methods
CD Circulation date : 16 October 2009	Closing date for comments: 15 January 2010	Compilation of Comments: **OIML TC 8/SC 7/005/CC**	CC Circulation date: 26 February 2010	Circulation date: **25 June 2010**
Secretariat: **NL** Mr. George Teunisse	**Please note** that: "**new clause" numbering corrected and yellow marked** **The comments** will be **discussed** at the **TC 8/SC 7 meeting** organised to take place on **1** and **2 July 2010** in **Delft** at **Verispect** premises			

Country Code	**New Clause**	**Clause/ paragraph/ table**	**gen./ edit./ techn.**	**COMMENTS**	**PROPOSED CHANGE**	**OBSERVATIONS OF THE SECRETARIAT** on each comment submitted
CH			gen.	No comments		noted
PL			gen.	No comments		noted
RO			gen.	No comments		noted
RU			gen.	{All-Russian research institute of flow measurement (VNIIR)} No comments for the time being	No changes are proposed.	noted
SE			gen.	No comments		noted
		Foreword				
BIML			edit	Only one previous edition of OIML R 137-1 exists.	Suggest changing at the end of the fifth paragraph to "…supersedes OIML R 137-1:2006."	agree; amended
BIML			gen.	The terms "applicant" and "manufacturer" are both used in the CD. Sometimes, it seems that it means the same. We recommend to check consistency in terminology and also the need for keeping both terms.		consistency is checked document appears O.K.
BIML			gen.	Several sections refer to 5.3 for the MPEs. Since different MPEs are defined in 5.3 according to the type of the metrological control, we recommend to specify which one apply.	Suggest adding "for type evaluation and initial verification" in the relevant sections.	not (yet) adopted; In the opinion of the secretariat it should already be clear to the user which MPE applies
FR			gen.	The R137 (2006) is a normative document according to MID directive, in order to assume the conformity of the meter to MID requirements. It's important that the revised R137 could get the same statute and could cover more requirements than the one before. One can have a look at the correspondence table in order to identify the different requirements that have to be modified in order to comply with MID requirement.		Since in principle the requirements of R137-1(2006) have not changed a conflict with MID is not assumed. When the revised recommendation is available the correspondence table shall be reviewed
FR			gen.	The directive 2009/137/EC of 10 November 2009 has introduced a new provision concerning the non-exploitation of maximum permissible errors, as regards the instrument-specific annexes MI-002. It should be useful to introduce in the R137 a specific provision in order to cover this new requirement.		In this directive it is stated that: "The gas meter shall not exploit the MPEs or systematically favour any party'. This is covered at section 5.4 WME
UK			edit.	In the third paragraph – correct typos.	This Recommendation ~~also~~ applies to correction devices, and other electronic devices that can be attached to the gas meter~~. This including~~, and to devices for internal temperature compensation.	Scope re-edited (keeping the original contents)

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US		All	gen.	Some general thoughts on the 1CD revision of OIML R137: 1. In the US, the ANSI B109 standards committee is in the process of developing a brand-new over-arching performance-based standard for all gas meters. As much as possible, this new standard will be harmonized with OIML R137. 2. When complete, this new ANSI standard should help create a much more "level playing-field" between competing metering technologies in the marketplace (diaphragm, rotary, turbine, mass-flow, ultrasonic, etc.). Currently, only rotary gas meters and diaphragm gas meters are covered by the ANSI B109 series of standards. 3. The US wishes to work closely and cooperatively with the international effort to revise/improve R137, and, at the same time, maximize harmonization between R137 and the new ANSI B109 standard.		Thank you for your efforts on harmonization of documents. The secretariat strongly supports this approach, which is in line with OIML policy.
CEN/ TC 237		Gen	edit.	Careful consideration by the panel should be given to making changes to the existing published R137-1 as this standard is cited in the Official Journal of the EU as a normative document. Such action of changing the published standard would undo a lot of work.	Are the changes to R 137-1 necessary?	Yes, in order to produce R137-2 it was needed to extract the tests from R137-1 to bring the document in line with present OIML draft requirements for recommendations. In general the requirements in R 137-1 were maintained. When the revised recommendation is available the correspondence table shall be reviewed
CEN/ TC 237		Gen	edit.	The word 'fault' is used in a number of places throughout the document e.g. 5.10, 5.11 etc. Is this the correct work? A fault is where something has gone wrong.	Change the word 'fault' to 'error'	Within OIML D11a fault is defined as a deviation and not a defect or mistake. It is also coupled to significant fault. Recommendations shall be made in line with D11. Your remark has been noted by the secretary of TC 5/SC 1
		Scope				
AU		2		Third paragraph, second sentence should read: "This *includes* devices…"		Scope re-edited
BIML		Scope	gen. /techn.	In order to avoid any confusion with OIML R 140 which includes the requirements for conversion devices, we suggest changing the wording of the third and fourth paragraphs.	Suggest changing to: "This Recommendation also applies to correction devices, and other electronic devices that **are included in the gas meter**. **Built-in temperature compensation is included in the scope of this Recommendation.** However, ……..".	Scope re-edited
CA		2	edit.	Change the word "including" to read "includes"	"This includes devices for internal temperature compensation"	Scope re-edited
CEN/ TC 237		2	edit.	R137-1 -2 states in the scope that is covers gas meters that to meter the quantity for energy, however there is little in the standard covering the 'metrological and technical requirement or testing of such meters.	Consider how the standard should be enhanced to cover such meters.	The normal MPE are also applicable to basic energy measurements. The scope however of R137-1 will be discussed in the coming TC8/SC 7 meeting.
CEN/ TC 237		2	techn.	In the first sentence the words "at operating conditions" are rather confusing as they can only apply to volume and in the case of compensated meters do not even apply then.	See EN 12405-1	to be discussed in the meeting See definition of operating conditions (3.2.11)
CEN/ TC 237		2	edit.	In the second paragraph the word also should be removed as there have been no previous exclusions.	Delete the word 'also'	Scope re-edited

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DE		2	gen.	The measurement of the chemical energy of an amount of gas is not directly possible (no meters or principles are available). The only opportunity to determine the energy is to multiply the amount of gas by the specific calorific value of the gas. This is a energy conversion which is covered by R140. It is possible to use the meter sensors or associated devices to determine values which are correlated to the calorific value but this works only for a limited range of gases and gas mixtures. Hence, if energy measurement by shall be in the scope then the correct function of energy determination need to be tested for different gases and gas mixtures.	delete energy measurement in the scope	To be discussed see…..
DE		2	gen.	The scope should be clear in respect to the kind of meters covered and should not overlap with R140	- mass meter - meter for volume at working conditions - meters for volume at working pressure but with internal temperature conversion to a base temperature - meter for volume at base conditions (if no pt or ptz conversion is used)	Alternative to be discussed in the meeting
FACO-GAZ		2	gen.	The scope should be clear in respect to the kind of meters covered and should not overlap with R140	- Mass meter - Meter for volume at working conditions - Meters for volume at working pressure but with internal temperature conversion to a base temperature - Meter for volume at base conditions (if no pt or ptz conversion is used)	Alternative to be discussed in the meeting
UK		2	edit.	In the first sentence the words "at operating conditions" are rather confusing as they can only apply to volume and in the case of compensated meters do not even apply then.	Delete "at operating conditions".	to be discussed in the meeting See definition of operating conditions (3.2.11)
UK		2	edit.	In the second paragraph the word "also" should be removed as there have been no previous exclusions.	"…(CNG dispensers) are ~~also~~ excluded…"	Scope re-edited
US		2 (Scope) + All	gen.	US Scope comment A: As much as possible, we would like to harmonize between the US draft ANSI B109 standard and R137. The scope statements are obviously of high-level, big-picture importance to both documents. In the next column, we have provided the proposed scope statement from our draft ANSI B109 standard – provided also as a suggested revision to R137. For the most part, we believe the suggested text improves on the clarity of the R137 scope while keeping the intent consistent. However, we have had lengthy discussions in the US about this scope – some of our discussions/questions about this scope are listed in the comments boxes below.	Suggestion for revised scope section text: 2 Scope This standard applies to gas meters based on any measurement technology that are used to measure the quantity of gas that has passed through the meter at operating conditions. The quantity of gas can be expressed in volume, mass, or energy units. This standard applies to gas meters intended to measure quantities of gaseous fuels or other gases. The standard does not cover meters used for gases in the liquefied state, multi-phase, steam, compressed natural gas (CNG), or liquefied natural gas (LNG).	In principle the suggested scope does not deviate much from the present one. The first 2 sentences of the scope could be replaced Alternative to be discussed in the meeting

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US		2	gen.	US Scope comment B: The following is a set of statements concerning inclusion of the measurement of "all gasses." a. The scope statement says that R137 is "intended to measure quantities of gaseous fuels or other gases." The way this is written, it says that it covers all gasses. We want to ensure that this is truly the intent. b. One way to possibly limit the scope somewhat is to do what we did in the scope of R117, saying that the document is limited to measuring systems that are subject to legal metrology controls (or custody transfer applications). c. Manufacturers have estimated that at least 95% of US gas meters are used only for the measurement of natural gas. Gaseous propane is probably the second-most-measured gas. One thought is that maybe we should just limit the document to the measurement of "gaseous fuels." This is the area of expertise of those reviewing the document. d. If the documents are really being written to properly cover all gasses (including, for instance, the measurement of in-plant process gasses), then we need to ensure the inclusion of "specialty-gas experts" in the technical work. For example, if the document is being written to include the measurement of oxygen, there would probably be a need to include some special "cleanliness" requirements (somewhat similar to requirements for beer and milk measurement in R117)	Please clarify the intent to include the measurement of "all gasses."	This comment presents the omission of distinguishing the principle difference between an international standard and an OIML recommendation. OIML recommendations only and exclusively concern legal metrology, which means that any non-legal or non custody transfer application in principle is outside the scope of the OIML and therefore outside the scope of the recommendation. Taking this in consideration the use of the term "all gasses" means "all gasses for the measurement of which legal requirements have/will be arranged in a member state and which depends on the decisions made by national authorities. Since this is a general applicable condition within OIML it would be superfluous repeating this statement in all Recommendations.
US		2	gen. /techn.	US scope comment C The R117-1 scope includes the following statement "This Recommendation is not intended to prevent the development of new technologies." The concept of encouraging new technologies (and writing the document in a way that allows for their development) is also important in the ANSI B109 effort.	Add a statement about allowing/encouraging the development of (as yet) unknown technologies.	This US suggested statement would also be redundant. It is general OIML policy that Recommendations shall not create a restriction to innovation unless this would result in a deterioration of the measurement . Taking into account the inconvenience as expressed in the comments of the US the secretary wonders whether a separate document on OIML policy could help in elimination the US reservations expressed

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US		2 + Part 2 + All	gen. /techn.	US scope comment D: The R117-1 scope allows for the type approval of individual components (in addition to complete measuring systems). While the concept of type-approving individual components makes sense and was fairly easy write into R117-1 (the requirements part), it has proven to be much more difficult to properly/completely implement this concept in the development of R117-2 (test methods). To illustrate the process that we are using in the IWG to develop R117-2, Enclosure (1) is included at the end of this document – it is a table showing the specific components that will be allowed to get a separate R117 type approval (cross-referenced with R117-1 requirements that apply to that specific component). Only page 1 of 7 pages of the table was included for brevity. The full table is available upon request. It is not currently clear exactly which specific components will be allowed to obtain separate R137 type approval.	1. Ensure full clarity about exactly which specific components will be allowed to obtain separate R137 type approval. 2. Improve the requirements section and the testing requirements section to ensure clarity about which requirements and tests are applicable for which specific components. (See also US comment on Annex C.)	Noted. Although your concern expressed is appreciated by the secretariat there are some reservations concerning comparison between R117 (concerning dispenser installations) and R137 (concerning general gas flow metering) E.g. for this reason CNG dispensers are outside the scope of R137
		Terminology				
AU		3.1-3.5	edit.	Editorial: The following definitions require capitalisation of the first letter of the sentence: 3.1.2, 3.1.3, 3.1.4, 3.2.4, 3.2.8, 3.2.9, 3.2.17, 3.4.1 and 3.5.3.		As indicated by BIML brought in line with ISO convention (ISO 10241): non-capitals to be used in terminology; amended as such
BIML		Terminology and 10.1.2	edit.	Relevant editions of Publications are indicated in the Bibliography. There is no need to repeat them in the text.	Suggest deleting references in brackets in the first paragraph of the terminology and in the last paragraph of 10.1.2.	amended; according conventional references kept, versions deleted.
BIML			gen. /techn.	Conventionally, terms in the terminology start with a small letter. It is also the case for the definition itself. In additional, no dot is required at the end of the definition.	Example: 3.1.1 gas meter instrument intended to measure, memorize and display the quantity of gas passing the flow sensor	amended
US		3	gen. /techn.	The working group to develop the new ANSI B109 standard is creating a large spreadsheet that will compare all of the R137 terminology with: • terms from the VIM, • terminology from other ANSI B109 documents, and • terminology from a large American Gas Association (AGA) terminology document. We will be happy to share this spreadsheet (and its conclusions/decisions) when it is complete in late Feb/March 2010.		Thank you. The secretariat is looking forward to this input, which will hopefully also be completely in line with the VIML and ISO and IEC vocabularies
UK		3.1	edit.	3.1.2, 3.1.3, 3.1.4, 3.2.4, 3.2.8, 3.2.9, etc.	Please capitalize the first letter of these and other applicable terminology clauses.	As indicated by BIML brought in line with ISO convention (ISO 10241): non-capitals to be used in terminology; amended as such
UK		3.1.6	edit.	Displaying device?	Suggest “display device”	not accepted see VIM 4.15
NO		3.1.7	edit.	The density should be added in this paragraph, as this will in some cases, given the measurement principal of the meter and the measurand to be indicated (volume, mass or energy), be an important input to the correction.	The paragraph should be reformulated: “Device intended for correction of known errors as a function of e.g. flow rate, Reynolds number (curve linearization) or **density,** pressure and/or temperature.” (Change in **bold**)	agree, amended

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UK		3.1.7	edit.	Pressure and temperature is compensated for rather than corrected.	Delete 'or pressure and/or temperature' from the sentence.	For interpretation reasons the secretariat would like not to discriminate between correction and compensation Furthermore at least conversion is not concerned in this definition
BIML		3.1.11	edit.	For clarification, references to the definition of "electronic device" should be added in the sixth bullet.	Suggest adding references to 3.5.2 to the sixth bullet: "…the same electronic device **(see 3.5.2)** for each meter size…".	agree, amended
FR		3.1.11	techn.	It's important to make a difference between the metrological part and the non-metrological part of the software if it exists. The non-metrological part is not included in the scope of the certification.	Change in the sixth item : "- the same electronic device for each meter size and using the same **metrological part** of the software (if applicable) for those components that are critical to the performance of the meter"	amended using different wording.
DE		3.2.1	edit.	reference is not correct		agree; amended
FR		3.2.1	*gen.*	We don't know any meters able to measure by its own the gas energy.	Replace the first sentence by the following one : "Total quantity of gas obtained by integrating the flow over time, expressed as volume V or mass m ~~or energy E~~ passed through the gas meter, disregarding the time taken"	to be discussed in the meeting
AU		3.2.4	*gen.*	This section defines Error as "measured quantity value minus reference quantity value" taken from VIM 2.16. This effectively represents an absolute error, however all of the requirements of OIML are expressed as relative errors (%). For completeness OIML R137 should define the relationship between absolute and relative error.		The former as well as the present definition of (measurement) error is often interpreted to be the definition for the absolute error. However when expressing the parameter in percentage or dB this definition could also be applied to a relative error. It shall be decided whether a separate definition for a relative error is needed. This would probably be necessary when errors are expressed in absolute as well as relative format. In the case that an extra definition is needed the following addition is suggested: relative error ratio between the error (value) and the reference quantity value and expressed as a quantity of dimension one (e.g. in a percentage or decibel) For the present draft the secretariat has a prevalence for keeping only the VIM definition since the use of the term in all cases concerns a relative error If agreed it is suggested to introduce in the clause an explanatory note in line with the above comment. to be discussed in the meeting
CEN/ TC 237		3.2.4	techn.	With this definition of error it is not possible to express MPE in percentage terms. The error must be expressed as a ratio x 100%		see above
JP		3.2.4	*gen.*	The definition of 3.2.4 means an absolute error. However, the maximum permissible error of gas meters is defined by a relative error, the term and definition of the relative error should be added.	Change the title of 3.2.4 to "Absolute error". Then add the term "Relative error" and its definition of 2.2.7 in the present Recommendation R 137-1 into the CD document.	see above

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UK		3.2.4	techn.	With this definition of error it is not possible to express MPE in percentage terms.	The error must be expressed as a ratio x 100%	see above
AU		3.2.5	techn.	Why is there a discontinuity in the weighting factor at $Q_i = 0.9Q_{max}$?		The WME is introduced to avoid a possible (mis)exploitation of the MPE this results in the discontinuity
BIML		3.2.7	edit. /techn.	The Recommendation is related to gas meters. OIML R 140 is related to measuring systems. Suggest changing the wording in the definition to avoid any confusion.	Suggest changing to "..intrinsic error of a **gas meter** or of its constituent elements"	partly agree; definitions should not be amended ; note added for avoiding confusion
DE		3.3	gen.	ambient conditions not defined		Chapter 3 only deals with terminology used in the recommendation "ambient conditions is not used in the recommendation"
FR		3.3	*gen. /techn.*	It should be interesting to define a Qoverflow definition and specification in order to ensure the meter qualities will be maintained even after an unexpected too high flow rate. Standardisation provides some test examples : For turbine meter, EN12261 (5.2.6) foresees a test at 120% Qmax during 1 hour. For rotary displacement gas meters, EN 12480 (6.3.5.2) mentions a test at 125% Qmax during 30 min.		Thank you for the references. This recommendation is set up such that no discrimination is made between different measurement principles. In R137-1 the values presented in clause 5.11 were established
NO		3.3.5	techn.	It will be clarifying for the understanding and use of the document to indicate a precise definition for the working conditions and for the calculations to indicate different measurands.	The definition should be changed to: "Temperature of the gas to be measured at **the inlet of** the gas meter." (Change in **bold**)	For some measuring principles it is common to measure the temperature at the inlet but for others this is performed at the outlet (e.g. ultrasonic industrial meters) therefore not adapted
CEN/ TC 237		3.3.6 3.3.8	edit.	The words "without deterioration of its metrological performance" should be replaced by "within maximum permissible error". The metrological performance will almost certainly deteriorate but it must stay within MPE		By amending in a different way as suggested it is avoided to implement a requirement in the terminology part.
UK		3.3.6 3.3.8	edit.	The words "without deterioration of its metrological performance" should be replaced by "within maximum permissible error". The metrological performance will almost certainly deteriorate but it must stay within MPE	Minimum and maximum gas temperature that a gas meter can withstand, within its rated operating conditions, within maximum permissible error.	See above
FR		3.3.7	*edit.*	The definition of working pressure refers only to gauge pressure and not to absolute pressure. Absolute pressure is the one needed for volume conversion device, the pressure transducers of which are measuring absolute pressure for volume calculation in base conditions.	Modify the definition : "3.3.7 Working pressure, *p*w Gauge **or absolute** pressure of the gas to be measured at the gas meter. The gauge pressure is the difference between the absolute pressure of the gas and the atmospheric pressure."	Difference between gauge and absolute removed in the present draft Recommendation
NO		3.3.7	techn.	It will be clarifying for the understanding and use of the document to indicate a precise definition for the working conditions and for the calculations to indicate different measurands.	The definition should be changed to: "Gauge pressure of the gas to be measured at **the inlet of** the gas meter. The gauge pressure is the difference between the absolute pressure of the gas and the atmospheric pressure." (Change in **bold**)	Pressure measuring points are defined by the manufacturer as indicated in 5.16
NO		3.3.10	techn.	It will be clarifying for the understanding and use of the document to indicate a precise definition for the working conditions and for the calculations to indicate different measurands.	The definition should be changed to: "Density of the gas flowing through the gas meter, corresponding to p_w and t_w at **the inlet of** the gas meter." (Change in **bold**)	see above
FR		3.4.1	*gen.*	Difference of definition between OIML R140 and OIMLR137 for influence quantity. The definition given in OIML R140 seems to be clearer.	We propose the following change : "Quantity that is not the measurand but which affects the result of the measurement."	not agreed; the definitions in the draft have been brought in line with the most recent update of definitions in the VIM
BIML		3.5.1	edit. /techn.	Reference to "auxiliary equipment" is made in the note. Does it correspond to "ancillary device" defined in 3.1.8?		agree; "auxiliary" is replaced by "ancillary"

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BIML		3.5.3	edit.	Electronic system is not defined. It seems that an electronic component is linked to an electronic device. Suggest replacing "electronic system" by "electronic device".	Suggest changing 3.5.3 to "smallest physical entity in an electronic **device** used to…".	agree, amended
		Metrological requirements				
SK		5	edit.		We recommend to make from the part "Technical Requirements" a new chapter (eg "6"). Then, to adapt the numbering of following chapters.	agree; numbering chapter 6 was inadvertedly deleted in editorial process; change undone
		Rated Operating Conditions				
AU		5.1	techn.	Request that an option of 60°C be included in the possible choices for the upper temperature range. Such that the section reads: *upper temperature to be chosen from +30°C, +40°C, +55°C, +60°C and +70°C*		Amended implementing Note 1 from format templates
DE		5.1	gen.	gas meters may be used at ambient conditions where condensation occurs	manufacturer shall specify	Agree; condensation may occur But this specification is to be interpreted in such a way that a gas meter shall anyhow be able to withstand at least 93 % relative humidity
UK		5.1	edit.	Please replace : 'DC mains or battery voltage' ... by ... 'DC mains or battery voltage variation' 'AC mains voltage' ... by ... 'AC mains voltage variation' Reason: For clarity since these are voltage variation tests.	DC mains or battery voltage variation: AC mains voltage variation:	Not agreed; 5.1. concerns the requirement for the rated operating conditions which implies that it specifies the nominal values of the parameters involved including the range in between these external parameters are allowed to variate. It is not the specification of the tests to be performed since part 1 does not deal with tests.
US		5.1	tech.	Need to ensure that the flow rate range (Q_{max} to Q_{min}, inclusive) is expressed in actual volume/time.		No need. In 3.3.1 Q is already defined as actual quantity per time unit.
US		5.2	tech.	It is implied, but never explicitly stated, that Q_{max}/Q_{min} (the "turn-down ratio") is required to be ≥ 5. If this is a requirement it should be stated.	Add the requirement that Q_{max}/Q_{min} must be ≥ 5.	amended adding: "The ratios and relations shall be within the ranges…"
FR		5.3.2	*edit.*	The second provision of 5.3.2 mentions : "A correction device can be used to improve the accuracy class specification". Such a provision is not understandable as the manufacturer knows prior to the approval type certification what its meter is liable to be classified for.	Please erase the provision or rewrite it in a most understandable way.	Agreed amended by removing sentence
CEN/ TC 237		5.3.3	techn.	Errors expressed as a percentage are inconsistent with the definition of error in 3.2.4		see response on 3.2.4
NO		5.3.3	gen.	The table for MPE is divided into two parts: "During type evaluation and initial verification" and "In service". In part 2 of the draft document, the tests descriptions are described for "Type evaluation" (section 11) and "Initial verification and subsequent verification" (section 12). These two sections do not seem to relate to the two parts in the table for MPE, leaving the description for "In service" testing undefined. As it will, especially for gas metering, be difficult to define the test conditions for the defined MPEs for "In service" conditions, it will probably be best to omit this part of the table for MPE.		amended
		Table 2 and Table 3				

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UK		5.3.3 5.4	edit.	Suggest removing this text from the column heading 'During type evaluation and…' Reason: MPEs are for initial verification tests which form part of the type evaluation.	~~During type evaluation and~~ Initial verification	Sorry, initial verification is not part of type evaluation
UK		5.3.3	techn.	Errors expressed as a percentage are inconsistent with the definition of error in 3.2.4	Reword 3.2.4 to align with specified mpes.	see response on 3.2.4
AU		5.3.4	gen.	Should t_{sp} be included in the definitions?		yes, implemented in chapter 3
AU		5.3.4	gen.	This clause discusses temperature correction and allows the MPE to increase at more extreme temperature. If a correction for temperature is performed accuracy should improve. Can this clause be clarified?		This clause concerns an extra temperature correction which can be done either electronically or mechanically for which an extra error is allowed
BIML		5.3.4	edit. /techn.	This paragraph refers to internal temperature compensation. For consistency, we suggest using a consistent wording. In general this requirement is intended to apply to gas meters which display the compensated quantity only.	Suggest changing "temperature conversion device" to "**temperature compensation device**". Suggest changing the beginning of the sentence to: "For a gas meter with a built-in **temperature compensation device, which displays the volume at base conditions only**, the maximum permissible errors….	To be discussed during the meeting
CZ		5.3.4	gen.	For a gas meter with a built-in temperature conversion device, having only one indicating device (????) displaying the volume at base conditions, the maximum permissible errors as indicated in Table 2 are increased by 0.5 % in a range of 30 °C extending symmetrically around the temperature tsp specified by the manufacturer.	For a gas meter with a built-in temperature conversion device, having ~~only one~~ indicating device ~~(????)~~ displaying **only** the volume at base conditions, the maximum permissible errors as indicated in Table 2 are increased by 0.5 % in a range of 30 °C extending symmetrically around the temperature tsp specified by the manufacturer. Reason: One indicating device (e.g. LCD) can display several items.	To be discussed during the meeting
DE		5.3.4	edit.	"having only one indicating device"	Replace by "having only an indication for …"	To be discussed during the meeting
DE		5.3.4	edit.	Even it seems to be clear what "temperature t_{sp} specified by the manufacturer" should mean, it should be listed in the terminology or may be replaced by term "reference temperature"	replace by term "reference temperature"	To be discussed during the meeting
FR		5.3.4	gen.	The item 5.3.4 refers to gas meters with a built-in temperature device, having only one indicating device displaying the volume at base conditions. It should be interesting to mention what would be the maximum permissible errors for such instruments having two indicating devices displaying on the one hand the volume at metering conditions and on the other hand the volume at base conditions.		To be discussed during the meeting

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US		5.3.4	techn.	Section 5.3.4 states: "For a gas meter with a built-in temperature conversion device, having only one indicating device displaying the volume at base conditions, the maximum permissible errors as indicated in Table 2 are increased by 0.5 % in a range of 30 °C extending symmetrically around the temperature t_{sp} specified by the manufacturer. Outside this range an additional increase of 0.5 % is permitted in each interval of 10 °C." Some questions: 1. R137 (2006) limited this section to only mechanical meters with mechanical temp conversion devices – this has now been expanded to all meters with all temp conversion devices. Why? 2. We acknowledge that some meter technologies may tend to operate less accurately at the limits of their temperature ranges. But, the manufacturer makes the statement that the meter will meet the mpe(s) of Table 2 over the full rated operating conditions temperature range (Section 5.1). Why does this section seem to significantly relax the mpe requirements at higher and lower temperatures?	2. Clarify how Section 5.3.4 relates to Section 5.1 concerning temperature range in the rated operating conditions.	To be discussed during the meeting
CEN/ TC 237		5.4	techn.	The WME requirement is out of line with the recently agreed modification to the MID		The secretary considers the WME in line with the recent modification. To be discussed in the meeting
UK		5.4	techn.	The WME requirement is out of line with the recently agreed modification to the MID		The secretary considers the WME in line with the recent modification. To be discussed in the meeting
CEN/ TC 237		5.5	techn.	This clause could be very severe if say only the LF was replaced on a meter behind the metrological seals. It would be OK if the work could interfere with the metrological characteristics of the meter.	After repair of the gas meter or damage to the seals, if the metrological characteristic of the meter could be affected by the repair / damage, then the maximum permissible error shall br confirmed as complying with the errors on initial verification as stated in Table 2, as well as the maximum permissible weighted mean error as stated in Table 3.	agreed text has been amended in somewhat different wording
		Reproduc-ibility				
AU	5.6 and 5.7 (12.4.2 and 12.4.3)	5.6 and 5.7 (11.4.2 and 11.4.3)	techn.	Some types of meters, particularly diaphragm meters that utilise change gear adjustment, exhibit a systematically large distribution of error values (cyclical) when tested over small increments of the measurand. To determine conformance with the requirements of this section, in a uniform and unambiguous manner will require some additional testing control to choose appropriate test increments. Suggested mechanisms for specifying for the minimum test measurand increment:- • Nomination by the meter manufacturer (value included as an additional item in section 6.1) • Providing a equation to calculate a minimum test measurand increment e.g. Q_{max}*Time(min); that is the quantity of gas that would be passed by the meter at a flow rate of Q_{max} in a specified time period. From our experience a time period of 60 seconds or greater may be required for some meter types to conform to this requirement.		Beyond the mandate, be decided when to bring into discussion

Country Code	New Clause	Clause/ paragraph/ table	gen./ edit./ techn.	COMMENTS	PROPOSED CHANGE	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
BIML		5.6	*techn.*	The number of measurements (currently defined in 11.4.2) should be part of the requirement. We would also raise the question of specifying a minimum value. A manufacturer could be interested in having more tests conducted in order to minimize the risk to have the instrument rejected even if this is more costly.	Suggest changing to: "This requirement is applicable to gas meters which are sensitive to hysteresis behaviour. Assuming …….estimated on the basis of calculation of the experimental standard deviation **of at least six measurements**, shall be less…".	The number of tests should in principle not be of influence to the result gained as actual variance (performance) of the measuring instrument. . However since there is still some dispute on the way in which the experimental standard deviation is converted to the variance it is probably easier for practical reasons to state the number of measurements in the requirement (as is been suggested by BIML)
DE		5.6 + 5.7	gen.	In context with 11.4.2 and 11.4.3 the difference between repeatability and reproducibility seems to be related to only (hydro)-mechanical hysteresis by changing flow rates. See also comments to 11.4.2 and 11.4.2		Text amended and to be discussed during the meeting
FR		5.6	*techn.*	"Assuming that the results from reproducibility measurements of a gas meter will show normal distribution" is not a metrological requirement. How this provision should be understood if after the test described in 11.4.2, the test results don't show a normal distribution.		Correct. It is the mathematical boundary condition being the introduction to this requirement containing a statistical statement. This in needed to provide a relationship between the experimental standard deviation calculated from a number of measurements and the actual variance of the measurements. If not assumed some distribution the clause is meaningless since results could not be compared. Claiming or disclaiming normal distribution by performing only 6 measurements as in 11.4.2 is disputable and could probably only be made on basis of historical data. Thus the assumption is made in order to be able to come to conclusions. Text is simplified for clarity reasons to be discussed during the meeting
UK		5.6	edit.	The 1st line 'Assuming that the results from reproducibility measurements of a…' is ambiguous and not specific.	Suggest changing to 'The results of the reproducibility measurements of a gas meter shall show a normal distribution, and its associated standard deviation, estimated from …'	Difficult to prove normal distribution. To be discussed during the meeting
BIML		5.7	*techn.*	Same comment as for reproducibility. The requirement shall include a defined number of measurements to be repeated.	Suggest changing to: "This requirement is applicable to gas meters which are not sensitive to hysteresis behaviour. Repeatability is defined as the difference between the maximum and minimum error **of at least three** consecutive measurements…..changing the flow rate. It shall be less…".	Amended see also reproducibility
FR		5.7	techn.	Item 5.7 mentions : "The difference between the maximum and minimum error of consecutive measurements of gas meters, at reference conditions, during repeated measurements without changing the flow rate, shall be less than or equal to one third of the maximum permissible error." Is there a technical justification for the difference "one third of the maximum permissible" ? Couldn't current technologies allow to precise more severe specifications ?		In combination with the choice of different accuracy classes it is the opinion of the secretariat that the limit of 1/3 MPE is sufficient, especially for a document which is technology independent
BIML		5.8,5.9 and 5.11	techn.	These sections refers to the requirements of 5.3. It means that the requirement on the weighted mean error does not apply. Is it the intention?		Yes. WME cannot be set as a requirement for influences like temperature and pressure variations

Country Code	New Clause	Clause/ paragraph/ table	gen./ edit./ techn.	COMMENTS	PROPOSED CHANGE	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
FR		5.8	techn.	It is foreseen to erase the requirement : "The maximum difference between the error curves, obtained at different pressures, is limited to 0,5 times the maximum permissible error." This requirement was intended to protect users from possible drifts between the calibration pressure and the expected operating ones. Such a requirement is foreseen by the EN 12261 related to turbine meters (5.2.1.2 and E.3.1) If the provision is not inserted back in the draft, as the calibration pressure is not really specified (cf. §12.1.3 of R137), a discrepancy of 2% between the calibration and the operation pressure curves could be possible.	Reinsert the following requirement : "The maximum difference between the error curves, obtained at different pressures, is limited to 0.5 times the maximum permissible error."	The pressure requirements have been brought in line with the temperature requirements Background : the meter shall function within the MPE at all operating conditions
AT		5.9	techn.	The sentence: In case the ambient temperature is unequal to the gas temperature the double maximum permissible error limits apply. cannot be accepted. In practice the gas temperature is never equal to the ambient temperature. According to the present draft of clause 5.9 the mpe of a gas meter in the field would always be the double of the mpe stated in 5.3.		agree 5.9 has been reedited taking into account this comment
AU	5.9 (12.4.7)	5.9 (11.4.7)	gen.	The meaning of "ambient temperature is equal to gas temperature" needs to be defined e.g. - such that the difference in ambient and gas temperatures does not exceed 1°C.		agree 5.9 has been reedited taking into account this comment
CA		5.9	edit.	Convert the case of the lettering of the section title to lowercase letters, " match the format of the other section titles in the document, i.e. "Temperature", instead of "TEMPERATURE"	**"Temperature"**	More or less agree. In this draft the font for subsections used is small caps. Style adjusted.
CA		5.9	edit.	Correct the spelling of the word "conversion"	"…a built-in temperature conversion device only."	agree; amended
FR		5.9		For a better comprehension of the signification of the wording "equal and unequal temperatures", please refer to the item 11.4.7	We suggest the following provision : "The requirements as mentioned in 5.3 shall be fulfilled over the whole temperature range, where the ambient temperature is equal to the gas temperature, *according to the test 11.4.7*. In case the ambient temperature is unequal to the gas temperature the double maximum permissible error limits apply."	5.9 has been reedited
US		5.9	tech	Do not agree that the mpe should be doubled when "the ambient temperature is unequal to the gas temperature." The type approval lab should be required to achieve equal temps or the results of type approval should not be valid. Of course, it is very rare that the two temps would be <u>exactly</u> the same (maybe a tolerance could be provided, ± 1 or 2 deg C??). Initial verification is a different situation where achieving equal temps is often not possible. Even during initial verification, though, it is not clear why <u>double</u> the mpe was chosen.	Propose to delete second sentence of Section 5.9. **5.9 Temperature** The requirements as mentioned in 5.3 shall be fulfilled over the whole temperature range, where the ambient temperature is equal to the gas temperature. ~~In case the ambient temperature is unequal to the gas temperature the double maximum permissible error limits apply.~~	Be aware this is an overall requirement, which is not specific to type evaluation. Some amendments have been made for improvement of the clauses. The choice on double MPE was based on experts input in R 137-1 Changing would be rather beyond the present mandate.
CEN/ TC 237		5.10	edit.	This clause is confusing. The first and second bullets appear to be in conflict with each other	Consider rewording for clarity	Your confusion probably concerns the definition of "fault" see response on your general remark

Country Code	New Clause	Clause/ paragraph/ table	gen./ edit./ techn.	COMMENTS	PROPOSED CHANGE	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
CZ		5.10	*techn.*	The paragraph: " *Gas meters with internal moving parts shall meet the following requirements after being exposed to the equivalent of 2000 hours flow at Qmax:* *• double the maximum permissible errors as mentioned in 5.3 and..."* will not be in conformity with MID for gas meters class 1,0. In MID there is written: *"4.2. Class 1,0 meters* *4.2.2. The error of indication after the durability test shall not exceed the MPE in paragraph 2."*		Noted It is know that this clause is not in line with MID as indicated in the cross reference list This is beyond the present project mandate
DE		5.10	gen.	Compared with the In-service MPE (and the basic idea of In-service MPE) and compared with requirements for other influence factors, the requirement seems to be weak.	Tighten the requirements, e.g. fault to 1/3 MPE.	This is beyond the present project mandate
FR		5.10	techn.	MID annex MI002 details some complementary requirements for meter durability, concerning the error variation before and after the test. In order revised R137 could fully get the statute of normative document, such a requirement should be inserted in the R137.	We suggest the following complementary requirement : "- class 1.5 meters : the variation of the measurement result after the durability test when compared with the initial measurement result for the flow rates in the range Q_t to Q_{max} shall not exceed the measurement result by more than 2 %. - class 1.0 meters : the variation of the measurement result after the durability test when compared with the initial measurement result shall not exceed one-third of the MPE."	It is know that this clause is not in line with MID as indicated in the cross reference list This is beyond the present project mandate
FR		5.10	techn.	Item 5.10 mentions "Gas meter shall meet the following requirements after being exposed to the equivalent of 2000 hours flow at Qmax : for flow rate from Qt up to Qmax a fault of less then or equal to : - 1.0 times the maximum permissible error for classes 1.5 - 0,5 times the maximum permissible error for other classes." What are the reasons why a meter should respect 0,5 times the MPE after 2000 hours flow, whereas accuracy tests are to be done within the entire MPE.		Please review the definition of "fault" (D11)
JP		5.10	*techn.*	Since the MPE will be different depending on classes, the multiplier should be constant for all classes. The durability is 1 times of MPE for class 1.5, and 0.5 times for other classes. We would like to know why the durability should have different multiples of MPE.		Compromise: Although the document is measurement technique independent in fact the class 1,5 is used for domestic meters and the other classes for industrial meters. Industrial meters can handle much smaller faults

Country Code	New Clause	Clause/ paragraph/ table	gen./ edit./ techn.	COMMENTS	PROPOSED CHANGE	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
US	(see also 12.4.9)	5.10 (see also 11.4.9)	tech	5.10 DURABILITY Gas meters ~~with internal moving parts~~ shall meet the following requirements after being exposed to the equivalent of 2000 hours flow at Qmax … a. The durability/endurance tests are (by far) the most expensive and time-consuming tests – therefore, the issues raised here are very important to all interested parties. b. There was a great deal of discussion during the revision of R117-1 whether endurance testing would be required for all meters – or only those with "internal moving parts." • Argument A: A fairness issue says that all of the different meter technologies should be tested the same way. • Argument B: Little is accomplished by endurance testing meters without moving parts – it is just a lengthy, expensive test. The electronics on other meter technologies will be adequately tested by completion of all of the other testing requirements. c. In R117-1, we decided to require testing on all meters. But now, during the development of R117-2, we are leaning back toward only requiring endurance testing on meters with internal moving parts. d. Maybe some other form of durability testing (other than lengthy, expensive, total-volume-based testing) could be developed for electronic meters. e. For right now, while we have had significant internal debate about this, **US participants in this work tend to support a requirement to do durability tests on <u>all</u> meters** (not just those with internal moving parts).		to be discussed

Country Code	New Clause	Clause/ paragraph/ table	gen./ edit./ techn.	COMMENTS	PROPOSED CHANGE	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
US		5.10 (see also 11.4.9)	techn.	US comments on 5.10 (continued): f. In the US, there is some discussion of the phrase "…exposed to the equivalent of 2000 hours flow at Q_{max}" …The issue is that running the test for 4000 hours at ½ of Q_{max} (for the same total volume through the meter) is not nearly as abusive a test – and therefore, not an "equivalent" test. g. The "families of meters" issue is significant to durability testing. Specific requirements concerning "families of meters" need to be covered somewhere in R137. See also OIML R49 and R117-2. (See also US comment on Section 11.3.1) h. A harmonization note: Another 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. This is a significant issue concerning harmonization with R137.	f. Consider a clarification of the term "equivalent." g. Develop a section on "families of meters."	to be discussed
US		5.11	techn.	Some comments on Section 5.11 "OVERLOAD FLOW" We believe this requirement is very dependent on the meter technology. • diaphragm meters can often go up to 200% without a problem; • rotary meters require caution around 120%; • it is easier for meters with no moving parts to accomplish this requirement. Some meters stop registering when the in an overload status (like ultrasonic)	Consider a possible revision to the wording of this requirement based on the comments.	to be discussed
FACO-GAZ		5.12 and 5.13.7 table 4, No. e	gen.	Instead of the random vibration test the sinusoidal test acc. OIML D11, 11.1.2 should be allowed	As an alternative to the random test add the sinusoidal vibration test with the dates of the severity level 2 from OIML D11, 11.1.2	This requirement was already stated in R137-1 (2006) A rationale need to be given for choosing sinusoidal vibration (see D11, 11.1) If so the topic needs to be discussed
BIML		5.12.1	edit.	This section should be included in a section which defines the relevant disturbances as suggested in 6.12 of the Draft Recommendation Format.		Agree, but more or less beyond the present project, to be decided
AU		5.12.2	techn.	Regarding the 'height of fall'; whilst we appreciate that the height of 50mm is specified in the Shock Tests of many OIML Recommendations, could we suggest that the 'height of fall' be increased to 300mm. This is perhaps a more realistic value, as well as being a more rigorous test.		Disagree, while not in line with D11 and beyond the present project
BIML		5.12.2	edit.	Same comment as for 5.12.1.		See comment on 5.12.1

Country Code	New Clause	Clause/ paragraph/ table	gen./ edit./ techn.	COMMENTS	PROPOSED CHANGE	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
CEN/ TC 237		5.13.1	edit.	Improved English	If the manufacturer of the meter specifies the meter will only operate correctly while installed in certain orientations and marked as such, the metrological requirements as mentioned in 5.3 and 5.4 shall be fulfilled for these orientations only.	amended
CA		5.13.1	edit.	Correct the spelling of the word "specifatied"	"If the meter is specified by …"	amended
US		5.13.3	edit./ techn.	5.13.3 Flow disturbance For types of gas meters of which the accuracy is affected by flow disturbances the shift of the error curve due to these (mild or severe flow) disturbances shall not exceed one third of the maximum permissible error. The effect of flow disturbance is also very dependent on the meter technology. More discussion might be needed on this.	Propose to add the following sentence to Section 5.13.3: Manufacturer must provide guidance to minimize the effect of flow disturbance on meter accuracy	Indeed depending on meter type. Annex C provides information which meter type shall be subjected to this test. This is covered by par. 7.1e According this par the manufacturer needs to deliver sufficient documentation.
CA		5.13.4	edit.	Reword this sentence as shown in the next column.	"For types of gas meters with one or more drive shafts, any fault which results from the application of the maximum allowable torque shall …"	Agree; amended
US		5.13.4	techn.	5.13.4 Drive shaft (torque) For types of gas meters provided with one or more drive shafts the fault at Q_{min} due to the application of the maximum torque shall not be more than one third of the maximum permissible error. Believe this requirement needs to be re-worded. As currently worded, the error is difficult to test for/prove. Also it seems that the application of torque needs a time duration specified. Note: AGA 7 gives a max torque requirement for turbine meters (1/2 in-oz) (converted is 36 g-cm).	Possible suggestion for improved wording in Section 5.13.4: Manufacturer shall provide the maximum torque that can be applied to achieve less than 1/3 mpe.	Agreed, amended by introducing "specified" in the clause. The max torque is not restricted to what is presented by AGA 7. This is left to the manufacturer to specify.
BIML		5.13.5	techn.	Same comment as for 5.8,5.9 and 5.11.		same response

Country Code	New Clause	Clause/ paragraph/ table	gen./ edit./ techn.	COMMENTS	PROPOSED CHANGE	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
US	5.13.6 + 6.1.8	5.13.6 + 5.14.8	techn.	5.13.6 Interchangeable components For types of gas meters of which some components are meant to be interchangeable for operational purposes (e.g. ultrasonic transducers or meter cartridges), the fault due to the interchange of such a component, shall not be more than one third of the maximum permissible error, while the error shall in no case exceed the maximum permissible error for that range. Some comments on 5.13.6: 1. Agree that the ability should exist to replace components without needing to re-calibrate. 2. Manufacturers need to provide statements that detail exactly which components are meant to be interchangeable (without affecting accuracy – or, at least describing how much of effect the exchange will have on accuracy). This needs to part of the original type approval process. 3. Will R137 allow the manufacturer to get a type approval on a "component module" (like a meter cartridge, for example)?? If yes, the details of this need to be fully explained in R137 (See also Section 5.14.8 and US scope comment D.) 4. Interchangeable components are very dependent on the meter technology.	Several changes are proposed based on responses to comments #2 and # 3.	regarding #2 it is the opinion of the secretariat that by amending the clause 11.4.14 by including the text "as specified by the manufacturer" this comment is respected. Answer to comment #3: It is not the intention to cover type evaluation of modules. Comment #4 agree
		Table 4				
BIML		5.13.7	edit.	This section should be split into two tables as suggested in 6.10 and 6.12 of the Draft Recommendation Format.		see response 5.12.1
FR		5.13.7 d	gen.	Damp heat, cyclic (condensing). The word "specified" adjoining temperature seems to be forgotten.	We suggest to complete the fourth line of the table (column level) related to "damp heat , cyclic (condensing)" thus way : " upper temperature **specified "**	amended
JP		5.13.7	*techn.*	When electronic components can not be evaluated with false input pulses, tests under the conditions with radiated / conducted electromagnetic field, heat, damp heat and cold will be difficult. We would like to know how the error tests are conducted for such conditions.	It is recommended to add that "when false input pulse signal is not available, tests on heat, dump heat, cold, radiated electromagnetic fields, and conducted radio frequency field shall be exempt."	In 11.4.15 it is indicated in what way this requirement can be evaluated
UK		5.13.7	edit.	In head of Table 4 change 'gas meters' to 'gas meters'		amended (sorry for the Dutch way of spelling)
CEN/ TC 237		5.13.8	edit.	English. Numerous throughout document. It would not be normal to insert (like e.g. communications….)	Delete like	deleted
FR	5.13.8 and 12.4.16	5.13.8 and 11.4.16	techn.	There aren't sufficient requirements on software to ensure the security and the functioning of the system. It's necessary to align the document with the D31 (requirements and tests)		Agree; Software annex to be implemented

Country Code	New Clause	Clause/ paragraph/ table	gen./ edit./ techn.	COMMENTS	PROPOSED CHANGE	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
AU	6.1.2	5.14.2	techn.	This section does not appear to have an associated evaluation procedure. While it is easy to specify the requirement of gas-tight, in reality, without a testing method and specification, conformance becomes a matter of judgement. To illustrate my point, take the absurd position - that gas-tight means that no molecule of gas shall escape the meter case over the life time of the meter. To prove this is impractical and therefore no meter could be considered gas-tight. I suggest that a requirement be included, defining the resolution of the instrumentation used to evaluate case soundness. E.g. the instrumentation used to evaluate case soundness shall have a resolution not exceeding xxx (a value of 100 mL/h has been suggested).		Considered as a rather theoretical approach. This clause was already part of R 6. It does not seem to be a problem in common practice.
CEN/ TC 237	6.1.2	5.14.2	techn.	There would normally be a safety factor when undertaking a tightness test dependant on the maximum working pressure. This is normally dependant on the operating pressure say 1.5 x the maximum working pressure.	Consider rewording	More or less a safety requirement and beyond OIML scope
US	6.1.2	5.14.2	techn.	5.14.2 Soundness of cases 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. 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. 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.)	Consider testing gas meter cases up to 150% of the maximum working pressure of the gas meter.	see above
CEN/ TC 237	6.1.5	5.14.5	edit.	Incomplete body to text. Repeat of the work consumers in the note	The indicating device can be connected to the meter body physically or remotely. In the latter case the data to be displayed shall be stored in the gas meter and be available without the use of tools by the consumer. Note: National or regional requirements may contain provisions to guarantee access to the data stored in the meter for customers and operators.	This comment would mean that always a display should be available on the gas meter. This is not what is meant by this clause.
FR	6.1.5	5.14.5	*edit./ techn.*	§5.14.5 Indicating device The definition isn't consistent with definition § 3.1.6 : as the indicating device is supposed to be a part of the meter, how could it be possible that indicating device could be connected remotely to the meter ? Furthermore, the proposal 5.14.5 doesn't seem to be consistent with MID requirement 10.5 (annexe 1) : " the meter shall be equipped with an indicating device"		Not agree with your remark on inconsistency. " remotely" means that the indicating device is still part of the meter, but not physically connected For other regions than EU it is not always required to have an indicating device on the meter.

Country Code	New Clause	Clause/ paragraph/ table	gen./ edit./ techn.	COMMENTS	PROPOSED CHANGE	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
US	6.1.5	5.14.5	techn.	5.14.5 Indicating device The indicating device can be connected to the meter body physically or remotely. In the latter case the data to be displayed shall be stored in the gas meter. Note: National or regional requirements may contain provisions to guarantee access to the data stored in the meter for customers and consumers. Manufacturers are concerned that the second sentence (removed in the proposed change) is a problem for both current and future technologies. Manufacturers say that we're going in the direction of reducing all mechanical indicators (everything is going toward electronic/LCD) Utilities believe all meters must have the ability to be "read" and verified. Their concerns seem to be covered by the 5.14.5 "note."	5.14.5 Indicating device The indicating device can be connected to the meter body physically or remotely. ~~In the latter case the data to be displayed shall be stored in the gas meter.~~	It is not meant in this clause that a mechanical indicating device is still required at the gas meter. The application of LCD displays is not blocked by this clause. Not amended.
BIML	6.1.6	5.14.6	techn.	The note intends to specify that requirements applicable to electronic gas meters do not apply in this case.	Suggest transforming the note in a second paragraph of the clause.	amended
DE	6.1.9	5.14.9	gen.	Below Q_{min} the gas meter shall not be biased unduly. This clause shall avoid a continuous counting with large positive error below Qmin for instance by a zero shift of electronic meters. The currently available clause is not sufficient		to be discussed Please supply new clause proposal
FR	6.1.9	5.14.9	*techn.*	5.14.9 mentions "The gas meter totalization shall not change when the flow rate is zero, while the installation conditions are free from pulsations and vibrations." It's important the meter doesn't count even there are pulsations or vibrations in the pipe. The situation has already been observed on site whereas they weren't any flow rate and the meter totalization was changing due to pulsations in the pipe.	Please erase the provision "while the installation conditions are free from pulsations and vibrations."	This requirement is meant to avoid registration in case of no flow. In case of flow pulsations it means that there is some flow, so registration is allowed. In practice this will not be a problem since in these cases always a low flow cut-off will be applied.
FR	6.2.3	5.15.3	*edit./ techn.*	For bi-directional flow meters, 5.15.3 mentions "If a meter is designed for bi-directional use, the quantity of gas passed during reverse flow shall either be subtracted from the indicated quantity or be recorded separately. " The data for reverse flow should be recorded separately. The algebraic subtraction should be considered as an additional functionality.	Replace the first sentence of 5.15.3 by the following one : "If a meter is designed for bi-directional use, the quantity of gas passed during reverse flow shall be recorded separately."	not agreed This will eliminate the use of mechanical indicating devices having only one counter e.g. rotary piston gas meters
JP	6.2.4	5.15.4	*edit./ techn.*	There is a possibility to make a misinterpretation that deterioration or changes in metrological properties should not occur even during reverse flow. It should be clearly expressed that all metrological properties are applicable only for forward flow.	"After returned to forward flow" shall be added as ...even when accidental reverse flow will occur, its metrological properties shall not deteriorate or …"after returned to forward flow".	amended
DE	10.1	5.16	gen.	self draining is not clear If the pressure tapping is not located at the meter then a requirement shall be more strict.	The specification of the pressure tappings shall be such that the influence of the meter error is below 0,2 MPE (this concerns for instance pipe diameter, rectangular drill etc.)	agree with amending the wording "self draining" New requirements cannot be added (beyond the project)
FACO-GAZ	10.1.1	5.16.1	edit.	The wording "self-draining" in the last sentence is not defined and may be misunderstood	New wording: In any case those tappings shall be designed to avoid condensation	agree amended
FR	10.1.1	5.16.1	*techn.*	5.16.1 mentions that « self draining tapping » are compulsory to avoid condensation. Are manufacturer able to equip meters with such an equipment ?		see amended text

Country Code	New Clause	Clause/ paragraph/ table	gen./ edit./ techn.	COMMENTS	PROPOSED CHANGE	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
FR	10.1.1	5.16.1	*edit./ techn.*	The R137 proposes two ways for pressure measurement : - on the meter pressure tapping ; - on a pressure tapping of the installation pipe work as specified by the manufacturer. To avoid bad measurement, the pressure measurement on meter pressure tapping itself should be favoured.	We propose to insert the following comment in 5.16.1 : "It's advisable to measure the pressure on the pressure tapping mounted on the meter, when the meter is equipped with such a tapping."	usually requirements are not expressed as an advice.
JP	10.1.1	5.16.1	*edit./ techn.*	In the note, there is description that this requirement is not mandatory for meters for direct mass measurement. However, this is not limited only to meters for mass measurement but also to meters with function to compensate pressure.	It is proposed to add the following sentence in the note: "This requirement is not mandatory when meters have capabilities of pressure compensation by themselves."	comment is not clear please enlighten your view
US	10.1.1	5.16.1	edit.		Suggested replacement statement for Section 5.16.1: If a pressure tap is needed for performance or accuracy, the manufacturer should specify the location.	suggestion is not adopted. This requirement was not changed during production of R 137-2
FR	10.1.4	5.16.4	*edit./ techn.*	In the coming years, for a best unanimous understanding, one of the terms should be advised by the R137. We suggest Pr.	We suggest the following modification : "The pressure tapping on the gas meter for measuring the working pressure (3.3.7) shall be clearly and indelibly marked "pr" (i.e. the pressure reference point). Nevertheless, other markings are possible : "pm" (i.e. the pressure measurement point) and other pressure tappings "p".	Not adopted. In CEN documents p_m is used
US	6.3.4	5.17.4	edit.	Suggest removal of the word "drums" (we call this the "odometer-type register", but it is only one of many types) -- it can be "dials" & "gears" The last sentence involves old technology – suggest removal.	5.17.4 Mechanical indicating device A mechanical indicating device shall consist of **dials and gears** ~~drums~~; the last element (i.e. the one with the smallest scale interval) may however be an exception to this rule. The minimum height of the numerals shall be 4.0 mm and their minimum width shall be 2.4 mm. ~~The advance by one unit of a figure of any order shall take place completely while the figure of an order immediately below passes through the last tenth of its course.~~	Not adopted. Indicating devices with drums are very often still in use in Europe. Regarding the note: As these techniques are still produced. The secretariat would like to keep this text as it is
FACO-GAZ	6.4.2	5.18.2	techn.	"Penultimate paragraph": This wording is too restricting and with electronic indexes there are more possibilities	Modify the text as follows: With an electronic index the last digit is used as integral test element. More efficient test methods like increased number of digits may be available in a specific test mode, which can be accessed through either physical or electronic interfaces.	Please indicate in which case the text in this clause is too restrictive
DE	6.4.4	5.18.4	edit.	portable is not a well description	replace "portable" by "removable"	amended with different wording
AU	6.4.5	5.18.5	techn.	It is not uncommon with diaphragm meters for the time taken for an increment of the test element or pulse to exceed 60 seconds at Q_{min}. A typical domestic diaphragm meter may have a 10 L test increment and a Q_{min} of 30 L/h. For such a meter, one increment of the test element would take 1200 seconds. The requirements of this section would make meter testing less time consuming but may not be a practical requirement for all meters. For diaphragm meters operating at Q_{min} the quantity of gas passed in 60 seconds will typically be less than the cyclic volume. Testing over part cycles would provide erratic results.		Such a design as described is not according to this recommendation. The objective of this requirement is to reduce testing time to a reasonable level as is noticed in this comment. And has no relation with the cyclic volume
DE	6.4.5	5.18.5	gen.	the requirement should define the time in which is needed to test a meter at Qmin	The test element shall allow to carry out an accuracy test at Qmin at least within 60 minutes	This is an amendment of requirements considered beyond the project.

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DE	6.5.3	5.19.3	edit.	reference is not correct		reference seems OK in 1CD (reference changed in new draft)
US	6.6 and 6.6.1	5.20 and 5.20.1	techn.	5.20.1 Types of power sources Suggestion to add rechargeable battery, fuel cell, and solar-powered (recharged regularly) to the bulleted list of 5.20.1 and detail specific requirements for each. Alternate suggestion to just make this section very generic (remove specific power source types). Note that all power sources are required to meet applicable electrical codes.		agreed amended
SK	7	6	edit.	Chapter 6 "Inscriptions"	We propose to indicate the paragraphs with alphabet letters - a), b), c) ... in the Articles 6.1.2, 6.1.3 and 6.1.4.	amended
AU	7.1	6.1		Refer to comments for section 5.6 and 5.7 above.		???
DE	7.1.1	6.1.1	gen.	not all markings shall be available via display only	at least a,b,c,e ,f, and g shall be on a name plate	implemented and also some other markings added to the suggested group
DE	7.1.1	6.1.1	gen.	all values should be expressed as an equation t_{min} = number unit t_{max} = number unit and so on		not (yet) adopted
DE	7.1.1 w	6.1.1 w	gen.	the remaining battery capacity should be expressed in time		see amendment
AT	7.1.2	6.1.2	edit.	If in 5.3.4 the word mechanical will be removed then this word should also be removed in clause 6.1.2		agree amended
CEN/ TC 237	7.1.4 w)	6.1.4 w)	edit.	Incomplete	For a non-replaceable or replaceable battery: the latest date by which the battery is to be replaced, or the value of the remaining battery capacity when a flag will be shown. ;	amended
CEN/ TC 237	7.1.4	6.1.4	edit.	Numbering issue	Should be a), b), c)	amended
DE	7.1.1 l	6.1.1 l	gen.	the correct position shall be described by the approval (a letter is not sufficient)		agreed indeed describes in approval certificate but also on the name plate (method is also applied in EU standards like EN 12261 and EN 12480).
DE	8.1	7.1	gen.	the external power source it is to specify in general (not only converters). this should include the voltage range, frequency range and maximum acceptable switching time for emergency supplies if applicable		partly adapted. requirements for power supply are covered by 5.20.2
DE	8.1	7.1	gen.	also the instruction manual shall include information about the seals and the places of them		covered by 11.2
US	9.1	8.1	techn.	8.1 comment: In the U.S., sealing is an option (especially if the transfer involves an agreement between 2 companies).	8.1 VERIFICATION MARKS AND PROTECTION DEVICES 8.1.1 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, mass or energy) **may** ~~shall~~ be protected by means of a hardware seal.	not agreed. Such application as referred to is outside OIML scope

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CA	9.1.2	8.1.2	gen.	Amend the requirement which reads ..."Verification marks shall be realized as hardware seals", so as to also allow for the use of metal stamps for stamping a verification mark on: (a) orifice meter plates (b) turbine meter bodies (Note: In addition, the meter's removable turbine module is required to be sealed with a physical seal that bears a verification mark) (c) V-cone meter bodies (d) Vortex meter bodies (e) multipath ultrasonic meter bodies (f) flow conditioning tubes (i.e. upstream and downstream pipes used with orifice meters, turbine meters, and ultrasonic meters, etc.) (g) flow conditioners (i.e. plate type) This change is being proposed to reflect the practices followed in Canada.	"Verification marks shall be realized as hardware seals, where possible. A metal stamp may be used for stamping a verification mark on the downstream face of orifice meter plates and flow conditioners (plate type), and for stamping the pipe flange(s) of turbine meter bodies, V-cone meter bodies, vortex meter bodies, multipath ultrasonic meter bodies, and on the pipe flange(s) of upstream tubes and downstream pipes (or tubes) used with such meters".	The text has been amended to assure that there is no conflict with the Canadian practice
AT	9.1.4.1 d	8.1.4.1 d	gen.	The record shall include at least - an identification of the authorized person that implemented the intervention (This sentence is mentioned twice in this clause - one of them should be deleted)		amended
DE	9.1.4.1 d	8.1.4.1 d	gen.	the time and date shall be generated by an internal clock or the event counter is needed		amended
DE	9.1.4.1 d	8.1.4.1 d	edit.	the "identification of the authorised person" is mention as needed in d and is listed also as only recommended (last bullet)		amended
CEN/ TC 237	10	9	*gen./ techn.*	It is generally not possible to test gas meters "on site"		why not ?
DE	10	9	gen.	the requirements for testing on site need to be specified		amended
FR	10	9		§9 Suitability for testing The requirement "The design of the instrument (read meter) shall be such that initial and subsequent verification and metrological supervision can be carried out on site, ..." should be adapted not to let thinking that initial and subsequent verification aren't systematically done on site. What does mean : "without unreasonable effort"? The word "unreasonable" can create difficulties of comprehension and interpretation between the stakeholders. Suppress the wording "without unreasonable effort"	New proposal : "The instrument shall be designed so as to allow initial and subsequent verification and metrological supervision "	amended
UK	10	9	edit.	It is generally not possible to test gas meters "on site"		amended
AU	moved to 12.3.4	9.1	techn.	The manufacturer may wish to generate conversion/correction tables for error curve corrections to be applied when testing meters (at initial or subsequent verification) with a different type of gas than that at operating conditions. If these conversion/correction factors were tested and validated as part of the type approval process then they could be used in place of the limit of 0.5 x MPE given here.		see the secretariat response on US comment on this clause

Country Code	New Clause	Clause/ paragraph/ table	gen./ edit./ techn.	COMMENTS	PROPOSED CHANGE	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
BIML	moved to 12.3.4	9.1	techn.	This requirement allows the errors to be outside the MPEs when the gas meter is verified with gas different from that measured. A general principle should be to demonstrate at the level of type approval that alternative gases may be used under specific conditions for verification purpose. We suggest having a more general requirement similar to that in OIML R 117-1 for liquids (see 2.6 in R 117-1).		see the secretariat response on US comment on this clause
DE	moved to 12.3.4	9.1	*techn.*	the permitted difference of meter errors for a test gas other then the gas specified in the rated operating conditions is to large	$\Delta e \leq 0{,}33$ MPE	see the secretariat response on US comment on this clause
FACO-GAZ	moved to 12.3.4	9.1	gen.	The permitted difference of meter errors for a test gas other then the gas specified in the rated operating conditions is to large	Change the limit between the testing with different gases from 0,5 MPE to 1/3 (0,33) MPE	see the secretariat response on US comment on this clause
US	moved to 12.3.4	9.1	techn.	9.1 Use of Different Gases for Testing "When gas meters are to be verified (at initial or subsequent verification) with a type of gas different from that at operating conditions the maximum mutual difference between the error curves of the gas meter, obtained as result of testing with different gases, is limited to 0.5 times the maximum permissible error." "Example: In case it is the intention to perform the verifications with air while in practice, under operating conditions, the gas meter is used for natural gas." We agree that most verification testing is done with air (or a special "testing gas" with similar properties to natural gas). We do not agree, however, that there should be an additional mpe granted just because you are testing with a different gas. If the decision is made to not remove the allowance for an additional mpe, please clarify the why "0.5 times the maximum permissible error" was chosen for this requirement.	Remove the allowance of an additional mpe when the testing is done with a different gas.	The objection is understood, however what apparently is interpreted as relaxation, in fact is some margin given due to the plausible different behaviour of the gasses compared. This relaxation is not the intention of the clause. For that reason the clause was re-edited and is reallocated in the section "12.3 Type evaluation procedures" Probably there will be a need for further specifying the margin. Possibly this could be done by limiting the mutual WME results. Another approach could be the use and introduction of conversion factors, like suggested by AU.
AU	11.1.1	10.1.1		Suggested rewording for second paragraph: . Suggested change in the fourth paragraph: .	All equipment used as part of the test procedure, including equipment used as or incorporating reference standards, shall be suitable for the testing of the meter(s) under test. The working range of all equipment and reference standards shall equal or exceed that of the meter(s) under test. All reference standards used shall be traceable to national or international standards of measurement During the tests corrections shall be made for temperature and pressure differences between the meter(s) under test and the *reference standard; otherwise* these differences have to be taken into account in the uncertainty calculations	accepted with slight modification
CEN/ TC 237	11.1.1	10.1.1	edit.	Second paragraph, first sentence - Clarity	The used test equipment shall be traceable to reference standards that are suitable for the testing of the gas meters.	Covered by the AU suggested and implemented clause

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DE	11.1.1	10.1.1	*edit.*		replace "stipulated by the supplier" by "specified in the instruction manual"	Not adopted, the instruction manual does not need to concern test procedures for metrological control
US	11.1.1	10.1.1	edit.	Editorial suggestions for Section 10.1.1 "Test method"	1st paragraph All tests shall be carried out under the installation conditions (~~e.g.~~ straight sections of piping upstream and downstream of the meter, **flow conditioners, etc.**) stipulated by the supplier **of the meter to be tested.** ~~for this type of meter.~~ 2nd paragraph ~~The used~~ **All** test equipment shall be equipped … 4th paragraph During the tests**,** corrections shall …	amended
AU	11.1.2	10.1.2	*gen./ math.*	In this industry there is often debate as to whether the uncertainty arising from the non-reproducibility of the meter under test should be included in the calculation of uncertainty. Similarly, if the determination of meter error is as the result of several observations, are all observations required to conform with the values of MPE, or should the conformance test be performed using the mean value. Section 5.7 permits up to one-third MPE variation between observations; hence how these matters are dealt with has the potential to significantly alter the evaluation outcome. Guidance along the lines discussed in OIML TC3/SC5 "The role of measurement uncertainty in conformity assessment decisions in legal metrology" (draft) should be considered for inclusion.		Comment to be taken into account TC3/SC5 developments to be taken into consideration
NO	11.1.2	10.1.2	gen.	It is twice in this paragraph for the expanded uncertainty referred to "k = 2". As it is often the case for flow meters that there are a small number of repetitions with a significant spread contributing to the combined uncertainty, or also a dominant uncertainty contribution with a non normal distribution, the reference should rather be to the level of confidence.	Reformulation in the first sentence: "When a test is conducted, the expanded uncertainty (**reported with a level of confidence of approx. 95 %**) of the determination …." Reformulation after the fourth dot-mark "The estimation of the expanded uncertainty U is made according to the Guide to the expression of uncertainty in measurement (GUM, 2008 edition) [6] with a **level of confidence of approx. 95 %**. (Changes in **bold**)	agree; amended
AU	12.2	11.2	*edit.*	We suggest the following change be made to the third dot point:	• mechanical drawings of the essential *metrological components*	agreed amended
DE	12.2	11.2	*edit.*	"regulatory markings" are not defined User seals should be referenced also (for instance as part of the instruction manual)	definition should be added	amended by deleting regulatory
BIML	12.3.1	11.3.1	gen.	For consistency among testing laboratories within the implementation of the Basic OIML Certificate System and the OIML MAA, we suggest adding guidance on the number of instruments to be tested in general and in case of type approval of a family.		Please deliver suggested clauses accordingly

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US	12.3.1	11.3.1	techn.	Families of Meters Issue "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." 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. (See also US comment on Section 5.10.g)		Consistency will be searched with the other committees Suggest to create ad-hoc WG on this item
DE	12.3.2	11.3.2	gen.	reference condition for ambient humidity should be less strict (no need, much efforts needed for climatisation)	h = 60% + 30% -15% rh	amended to 60% ± 25%
FACO-GAZ	12.3.2	11.3.2	gen.	Reference condition for ambient humidity should be less strict (no need, much efforts needed for climatisation)	H = 60% + 30% -15% rh	see above
FR	12.3.3	11.3.3	*techn.*	11.3.3 mentions "The errors of the gas meters shall be determined at a minimum of 6 flowrates, which are distributed over the measuring range at regular intervals, including Qmin, Qt and Qmax. " This provision ("test at regular intervals") should be discussed keeping in mind standardisation (EN12405 and ISO9951) which foresees test at irregular intervals (ex EN12261 for meter with a flowrange 1:50 : 2%, 5%, 15%, 25%, 40%, 70%, 100% Qmax) If necessary, this procedure should be detailed for the different types of meter.		Text has been amended as follows:" …. measuring range at regular intervals, including Qmin and Qmax and preferably Qt." In this way there is no contradiction with EN standards.
US	12.3.3 **	11.3.3 **	techn.	11.3.3 Flowrates The errors of the gas meters shall be determined at a minimum of 6 flowrates, which are distributed over the measuring range at regular intervals, including Qmin, Qt and Qmax. This is an expensive area of testing, so the requirement in this section are significant. The US agrees with 6 flowrates. However, we believe the MID and EN12480 require 7 test flowrates. Our current ANSI B109.3 standard for rotary meters requires only 2 test points (10% and 100%).	Please clarify harmonization with the MID on the issue of the number of test flowrates.	A minimum of 6 flow rates is specified. Using 7 in practice will not be in contradiction
DE	12.3.4	11.3.4	gen.	the requirement in respect to humidity should be such that condensation or ice creation is avoided in general		This is more or less a general remark not having a specific relation to 11.3.4
BIML	12.4	11.4	edit.	References in brackets to clauses require to be checked. Should the instruction manual defined in 7.1 not be examined at this stage?		Reference is made to both 7.1 and 7.2 by introducing 7
CZ	12.4	11.4	edit.	There is a typist's error at the end of paragraph.. Instead of "0" there should be "5". *"Each type of gas meter submitted shall be inspected externally to ensure that it complies with the provisions of the relevant preceding clauses of these requirements (4, **0,** 6, 8 and 9)".*	*"Each type of gas meter submitted shall be inspected externally to ensure that it complies with the provisions of the relevant preceding clauses of these requirements (4, **5,** 6, 8 and 9)".*	amended
FR	12.4	11.4	gen.	What is the reference: "(4, 0, 6, 8 and 9)"?		amended by referencing to chapter 5
SK	12.4	11.4	edit.		In the section 11.4, in part entitled "Design inspection" we do not understand the figures listed in parentheses.	see above

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US	12.4	11.4	edit.		Each type of gas meter submitted shall be inspected externally to ensure that it complies with the provisions of the relevant preceding clauses of these requirements (4, **5??**, 6, 8, and 9)	amended
BIML	12.4.2	11.4.2	edit. /techn.	It should be clarified that the determination shall be performed for each flow rate above Q_t on the basis of the flowrates defined in 11.3.3 for the error curve determination in 11.4.1. In accordance with 11.4.1, all the gas meters shall be tested at flowrates equal to or greater than Q_t. The first part of the first sentence should be included in the requirement (see 5.6)	Suggest changing to: "For each flow rate equal to or grater than Q_t as defined in 11.3.3, the errors shall be determined independently at least six time, by ….. For each of these flowrates, the experimental …"	amended in line with comment
BIML	12.4.2 and 12.4.3	11.4.2 and 11.4.3	edit. /techn.	The number of measurements should be part of the requirements. See 5.6 and 5.7.		see response on 5.6 and 5.7
DE	12.4.2	11.4.2	gen.	The reproducibility shall be tested for all kind of meters, it is not possible to decide about the sensitivity in respect to hysteresis by the principle		To be discussed during the meeting
CA	12.4.2	11.4.2	edit.	Some words seem to missing in the sentence in the third sentence of the first paragraph.	"For each flowrate, the experimental standard deviation is to be calculated using at least six measurements."	agree amended as such
DE	12.4.2+ 12.4.3	11.4.2+ 11.4.3	gen.	See also comment to 5.6 + 5.7		To be discussed during the meeting
FR	12.4.2	11.4.2	*techn.*	Why is hysteresis the clue for deciding that meters should be only subject to reproducibility or repeatability test ? If these two tests are not modified, would it be possible to assert the two requirements (reproducibility and repeatability) are satisfied for the two meter types (hysteresis and non hysteresis) Furthermore hysteresis is not defined. If hysteresis concerns only meters with moving parts or Vortex, why do not use "meter with moving parts or Vortex" instead of meters with hysteresis ?		To be discussed during the meeting
JP	12.4.2- 12.4.3	11.4.2- 11.4.3	*techn.*	What is "hysteresis behaviour"? Please explain the technical difference between gas meters sensitive to hysteresis behaviour and those not sensitive to hysteresis behaviour.		To be discussed during the meeting
BIML	12.4.3	11.4.3	edit. /techn.	Similar comment as for 11.4.2. The first part of the first sentence should be included in the requirement (see 5.7).	Suggest changing to: "The repeatability shall be determined at the three following flowrates: Q_{min}, Q_t and Q_{max}. For each flow rate the difference…	partly amended
AU	12.4.4	11.4.4	*edit.*	Where are the orientations prescribed? A mandatory list of orientations could be included (e.g. horizontal, vertical, 45° inclined flow upwards, etc…) that national regulatory bodies can add to if they wish.		changed to "…..all orientations as stipulated by the manufacturer."
CEN/ TC 237	12.4.4	11.4.4	techn.	It is not possible to perform a test in all possible orientations if for example an RPD meter is said to be accurate with the register pointing anywhere between upwards and sideways.		not agreed Orientation tests only concern the sensor

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US	12.4.4 **	11.4.4 **	techn.	11.4.4 Orientation The accuracy measurements as stated in 11.4.1 are performed in all prescribed orientations. The results of the different accuracy measurements are evaluated with the requirements as laid down in 5.13.1 without intermediate adjustments. Question: Is the intent that full 11.4.1 testing needs to be done in all orientations (including horizontal, vertical up, vertical down, etc.)?? Some meters can be installed on an angle, but testing them at an angle seems quite difficult/ impractical.	Please clarify the specific requirements of testing in all orientations.	The answer to your question is "yes". The clause is changed. See above comment AU
AU	12.4.6	11.4.6	*edit.*	What is "Intermediate Adjustments" referring to? No adjustment of the meter when testing for accuracy should be allowed. We are assuming here the pressure correction factor is taken into account, although there is no reference to this in the document.		A note is added for explanation "If the requirements are not fulfilled for the operating pressure range without intermediate adjustments when putting into use either the operating pressure range can be reduced or the operating pressure range can be split into several ranges. Alternatively pressure correction can be applied".
CA	12.4.6	11.4.6	techn.	Amend wording to specify that gas meters must be tested at or near the meter's intended maximum operating pressure, or at a Reynolds number equivalent, in addition to the meter's minimum operating pressure, which is what the American Gas Association recommends in AGA Report No. 7 (2006 Edition) for turbine meters. Type approval testing at pressures less than the meter's intended maximum operating pressure is only valid for certain types of meter technologies. Although the Reynolds number relationship becomes fairly flat above pressures of 50 bar, this relationship should always be confirmed through tests on the meter at the time of type approval.		This test was already described in R137-1 (2006) In practice 5 MPa covers almost any application. In those specific cases where the pressure exceeds 5 MPa Reynolds correction is always possible to apply. To be discussed
CEN/ TC 237	12.4.6	11.4.6	techn.	This testing causes unnecessary expense. e.g. a diaphragm meter is rated to 0.2 bar say to ensure it will remain gas tight if there is an upstream failure. The meter is used at about 20 mbar. Testing a meter at 0.2 bar is difficult, expensive and does not add value.		Safety pressure range and operating pressure range should not be confused. This clause only concerns working (operating) pressure
DE	12.4.6	11.4.6	gen.	a gas meter for a limited pressure range, especially for low pressure near or ambient pressure shall be tested only at one pressure	one test pressure is sufficient if for the rated operated pressure range if the following equations are fulfilled $2\ p_{test,abs} <= p_{max,abs}$ $0{,}5\ p_{test,abs} >= p_{min,abs}$	Not (yet) adopted The recommendation applies to all kind of measurement principles and e.g. turbine meters at low flow rate are very sensible for different pressures. A rationale for a different approach is needed . This topic is to be discussed in the meeting
FACO-GAZ	12.4.6	11.4.6	gen.	A gas meter for a limited pressure range, especially for low pressure near or ambient pressure shall be tested only at one pressure	One test pressure is sufficient for the rated operated pressure range if the following equations are fulfilled $2\ p_{test,abs} <= p_{max,abs}$ $0{,}5\ p_{test,abs} >= p_{min,abs}$	see above

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US	12.4.6	11.4.6	techn.	11.4.6 Working pressure The accuracy measurements as stated in 11.4.1 are performed at least at the minimum and at the maximum operating pressure. However, for specified maximum pressures above 5 MPa (50 bar) a test at 5 MPa (50 bar) is deemed to be acceptable. The results of the different accuracy measurements are evaluated with the requirements as laid down in 5.8 without intermediate adjustments. Comments: This test makes sense, however… In the US, we have very few facilities that do accuracy tests at elevated pressures. Typical low pressure meters are not tested at elevated pressures. Why was the 50 bar number selected as the highest pressure where testing would be conducted?		To be discussed in the meeting
DE	12.4.7 a	11.4.7 a	*gen.*	the restriction to electronic meters only if domestic is not reasonable		To be discussed in the meeting
DE	12.4.7 b	11.4.7 b	gen.	the unsuppressed flow rate is only a hint in respect to a correct function. At least tests for small flow rates in the whole temperature range or in a part of the temperature range should give additional evidence		To be discussed in the meeting
DE	12.4.7.c	11.4.7.c	gen.	the manufacturer shall provide a report on the issue which is available public.		The evaluation of the construction will be part of the test report
FACO-GAZ	12.4.7.a	11.4.7.a	gen.	In Europe this technical solution is used for diaphragm meters only. In these applications the ambient temperature is not significantly different from the gas meter temperature due to the good heat exchange function of the housing. Therefore, it should be an option and not mandatory (as it is in EN 1359)	New wording of the second sentence: For gas meters with a built-in temperature conversion device the manufacturer can declare the meter suitable for operation where the temperature of the gas at the meter inlet is significantly different from the ambient temperature of the air surrounding the meter. In this case also flow tests are performed with a gas temperature different from the ambient temperature as specified in 11.4.7.2.	To be discussed
BIML	12.4.7.1	11.4.7.1	techn.	The minimum number of flowrates to be tested is not defined. Do we refer to the flowrates defined in 11.3.3 and perform the test for all of them equal or greater to Q_t?		correct; text amended
CA	12.4.7.1	11.4.7.1	edit.	The first sentence contains duplicated words, in the section which reads "…in the flow range in the flow range …".	"The flow tests are performed in the flow range ..."	amended
DE	12.4.7.1	11.4.7.1	gen.	temperture test shall include Qmin up to Qmax		copied from R137-1 not part of the present project to change this
JP	12.4.7.1	11.4.7.1 11.4.7.2		By separating mechanical meters, electronic household meters and electronic meters, the contents of actual flow test should be clarified. Please tell us the difference between "the different temperatures" in 11.4.7 and "the ambient temperature equal to the reference temperature" in 11.4.7.2.	Similar to 11.4.7, this should be described in a) and b) separately.	to be discussed ; comment not clear
DE	12.4.7.2	11.4.7.2	gen.	temperature test with tamb ≠ tgas shall be optional (only if manufacturer specifies)		to be discussed
DE	12.4.7.2	11.4.7.2	gen.	the locations where the temperatures will be measured need to be specified	the gas temperature shall be measured in the center of the input pipe 1 D upstream. The ambient temperature shall be measured at an adequate positions in a distance to the meter not larger the 20 cm from the housing	Not in line with keeping the recommendation technology independent

Country Code	New Clause	Clause/ paragraph/ table	gen./ edit./ techn.	COMMENTS	PROPOSED CHANGE	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
JP	12.4.7.2	11.4.7.2	*edit./ techn.*	Due to the structure of mechanical temperature conversion devices, it will be difficult to compensate instantly the measured volume according to gas temperature. It is necessary for the devices to fit the temperature.	"…the error will be determined at Q_t and Q_{max}." It is proposed to add the following sentence after that: "Determination of errors shall be performed after the gas temperature of gas meter under test is stabilized."	amended accordingly
BIML	12.4.9	11.4.9	techn.	The number of flowrates to be tested is not defined. Do we refer to the six flowrates defined in 11.3.3?		amended
US	12.4.9	11.4.9 (see also 5.10)	techn.	11.4.9 Durability Gas meters with internal moving parts are submitted to the durability test. …. There seems to be a conflict between the requirements of Section 11.4.9 and Section 5.10 (which says that all meters shall be tested for durability). While we have had significant internal debate about this, US participants in this work tend to support a requirement to do durability tests on all meters (not just those with internal moving parts). See also US comment on Section 5.10. Decisions need to be made concerning the durability testing requirement when a "family of meters" is being type-approved.	Make Section 11.4.9 agree with Section 5.10 11.4.9 Durability Gas meters ~~with internal moving parts~~ are submitted to the durability test. …. Clarify durability testing requirements for a "family of meters."	to be discussed
DE	12.4.11	11.4.11	*techn.*	Overload flow shall not be restricted to meters with moving parts. Meters with pressure sensor for instance may be sensitive to overflow too		To be discussed
CA	12.4.12	11.4.12	edit.	Insert the missing word "with" in the second sentence, and place a comma after "9.1"	"If as a result of these accuracy measurements the gas meter does not comply with clause 9.1, …"	amended
FR	12.4.12	11.4.12	*edit.*		We suggest to complete the 2nd item thus way : "*Taking into consideration the manufacturer proposal*, the authority responsible for the type evaluation shall decide which gases are to be used during the investigation, depending on the application purpose of the gas meter under test."	amended
CEN/ TC 237	12.4.13	11.4.13	edit.	First sentence – clarity. The new addition to the second part of the sentence is unclear. Does it mean (see comment column)	Gas meters (including any electronics part of gas meters) with a maximum weight of 10 kg are submitted to vibrations and shocks.	text has been slightly amended to improve meaning
FR	12.4.13	11.4.13	*techn.*	There are no proper reason why a meter should be dispensed of shock and vibration environment tests just because of its weight. In the course of the certification procedure, the manufacturer have to decide the mechanical environments classes foreseen for the meter, what imposes to comply with the requirement and therefor to undergo the necessary and adapted tests. There are parts of the meter other than electronic parts that can be affected by vibrations and shocks.	We propose to suppress the first sentence : "Gas meters with a maximum weight of 10 kg are submitted to vibrations and shocks, as well as only the electronics part of gas meters exceeding this weight."	see above
US	12.4.13	11.4.13	techn.	11.4.13 Vibration and shocks Gas meters with a maximum weight of 10 kg are submitted to vibrations and shocks … Questions: 1. Why was 10 kg selected as a maximum weight for this test?? 2. Why not do also do this testing on the bigger meters??		The limit was chosen during discussions on R 137-1 development

Country Code	New Clause	Clause/ paragraph/ table	gen./ edit./ techn.	COMMENTS	PROPOSED CHANGE	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
BIML	12.4.15 and A.5	11.4.15 and A.5	techn.	This section refers to electronic gas meters and **requirements** (not tests as currently indicated in this section) listed in table 4 whereas tests for vibrations and shocks are also mentioned in 11.4.13. It means that these two tests are not only applicable to electronic gas meters.	Suggest adding A.5 also in 11.4.13 and adding also the requirement concerning the power supply for vibrations and shocks (gas meter not powered on during the test) in 11.4.13.	amended editorial and technical such that 12.4.3. is always applicable.
CA	12.4.15	11.4.15	edit.	In the Note, change the word "Mostly" to read "Most"	"Most electronic meters have a cut-off for low flow rates."	amended
DE	12.4.16	11.4.16	gen.	the influence of functions on the accuracy shall be evaluated by investigating the software design. Tests may be carried out only if the software evaluation shows no adequate results		Suggest implementing Software annex
US	12.4.16	11.4.16		11.4.16 Software The effect of all functions of the software (like communication possibilities) is determined by performing an accuracy test at Qmin, with and without applying the specific function. The effect shall be negligible. Question: Why was Q_{min} selected as the flow rate for this testing?? Utilities are much more concerned at high flow rates.		Suggest elaborating on this subject and implementing in Software annex
FR	12.5	11.5	techn.	The software identification should be pointed out in the certificate as it's the case in the R140 : "When applicable, the version of the metrological part (the complete part if there is no specific metrological part) of the evaluated software shall be indicated in the type approval certificate or in its annexes.		see above
DE	12.6	11.6	edit.	replace "Directions" by "provisions"		agree; amended
FR	13.1.3	12.1.3	*gen.*	"The accuracy requirements of chapter 5.3 and 5.4 shall be verified while using the conditions of the gas as close as possible to the operating conditions (pressure, temperature, gas type) under which the meter will be put into use." This provision isn't easy to respect as we don't systematically know where the meter will be installed and so on the real working pressure.		These provisions are described in rather broad terms, giving ample room for choosing an applicable test condition between the boundaries as specified on the identification plate
JP	13.1.4	12.1.4	*edit.*	Since it is defined that authority will reduce the number of flow rates, these notes will be unnecessary.	Delete both of two notes.	Agree note 2 is redundant; removed. Note 1 however is a suggestion and can be maintained as advice
DE	13.1.5	12.1.5	gen.	these provisions shall be part of the evaluation certificate		amended
FR	13.1.6	12.1.6		12.1.6 Adjustments Why do not adjust systematically the meter even if the error curve and WME are inside the requirements ?		Adjustment probably will in a number of cases involve a testing/adjusting/testing sequence and could need involvement of a qualified engineer. For economic reasons and if not absolutely required such extensive procedure should be omitted.
DE		B.2.1	gen.	Ultrasonic and vortex meters can be sensitive to the orientation in relation to the perturbation, because the perturbed flow profile is asymmetric.	Add note in table B.1 for ultra sonic and vortex meter in case of single bend out of plane and double bend out of plane or add a paragraph B.2.4	Still to be elaborated on
FACO-GAZ		B.2.1	techn.	Reference condition with 80 D straight line makes no sense for turbine meters	Change to 5 - 10 D for turbine meters	Still to be elaborated on
FACO-GAZ		C1	gen.	Thermal mass meters may be sensitive to flow disturbances as well	Test of flow disturbance acc. clause 11.4.8. must also be performed for thermal mass meters	Still to be elaborated on
FACO-GAZ		C1	gen.	For electronic meters there is no durability test (11.4.9) required, but tests for electronics. There is a serious question if these tests are really simulating the lifetime of the meter with his sensors and electronic	Looking and discussing other methods to simulate the lifetime, e. g. by using the HALT (highly accelerated lifetime test) and the HASS (highly accelerated stress screening).	Still to be elaborated on

Country Code	New Clause	Clause/ paragraph/ table	gen./ edit./ techn.	COMMENTS	PROPOSED CHANGE	OBSERVATIONS OF THE SECRETARIAT on each comment submitted
US		Annex C	gen./ edit./ techn.	Annex C and Table C.1 provide a great reference for users of R137. Consider making Annex C informational (instead of mandatory) for two reasons: 1. All of the actual requirements are already written in textual form in the main document. 2. It makes the table seem a little more compatible with the concept of promoting/encouraging new technologies. (see also US scope comment C). Consider making a new table, very much like Table C.1, that will provide an overview of which requirements sections and which testing requirements sections are applicable for which specific components. (See also US scope comment D and Enclosure (1) of the US comments.) In Table C.1, if durability testing is decided to be applicable to all meter types, add "Xs" all the way across that row. (See also US comments on Sections 5.10 and 11.4.9) In Table C.1, is the drive shaft test applicable to diaphragm meters?	Suggested editorial change: This Annex **provides an overview of testing requirements** ~~the shows the tests required~~ **for some existing** ~~the different~~ metering principles. In Table C.1, the diaphragm gas meter, the temperature-compensated (TC) diaphragm gas meter, the rotary piston gas meter, and the turbine gas meter are purely mechanical meters. Consider making a new table that will provide an overview of type approval requirements for specific components. (See also Enclosure 1 of the US comments)	Still to be elaborated on

Section from R117-1	General metrological requirements for specific components of a measuring system															
	Meter						Gas elimination device			Associated measuring devices			Self-service device	Ancillary device		
	Measuring device				Electronic calculator (incl. conversion, adjustment, correction)	Indicating device	Gas separator	Gas extractor	Special gas extractor	Pressure sensor	Density sensor	Temperature sensor		Printing device	Memory device	Conversion device(not included in the calculator)
	Meter sensor		transducer													
	electrical	mechanical	electrical	mechanical												
2.5	X	X	X	X	X	X										
2.6.2	X	X	X	X	X	X				X	X	X				
2.7.1					X					X	X	X				X
2.7.2					X					X	X	X				X
2.8					X											
2.9.1						X										
2.9.2						X										
2.10.1							X	X	X							
2.10.2							X	X	X							
2.10.3							X	X	X							
2.10.5							X	X	X							