TECHNICAL SPECIFICATION

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Vacuum technology — Vacuum gauges — Evaluation of the uncertainties of results of calibrations by direct comparison with a reference gauge

Technique du vide — Manomètres à vide — Évaluation de l'incertitude des résultats des étalonnages par comparaison directe avec un manomètre de référence

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of document:

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— an ISO Technical Specification (ISO/TS) represents an agreement between the members of a technical committee and is accepted for publication if it is approved by 2/3 of the members of the committee casting a vote.

An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO/TS 27893 was prepared by Technical Committee ISO/TC 112, *Vacuum technology*.

Vacuum technology — Vacuum gauges — Evaluation of the uncertainties of results of calibrations by direct comparison with a reference gauge

1 Scope

This Technical Specification gives guidelines for the determination and reporting of measurement uncertainties arising during vacuum gauge calibration by direct comparison with a reference gauge in accordance with ISO/TS 3567. It describes methods for uniform reporting of uncertainties in vacuum gauge certificates. Uncertainties reported in accordance with this Technical Specification are transferable in the sense that the uncertainty evaluated for one result can be used as a component in the uncertainty evaluation of another measurement or calibration in which the first result is used.

This specification defines two measurement models that are sufficient to cover most practical cases. However, it is possible that the models given cannot be applied to newly developed vacuum gauges.

The final uncertainty to be reported in a certificate is evaluated from the uncertainties of the input quantities and influence quantities. The principal quantities that may affect the result of a vacuum calibration are described; however, a complete list of the possible quantities that may have an influence on the final result lies outside the scope of this Technical Specification.

NOTE It is intended to give such details in Technical Specifications for the calibration of specific types of vacuum gauges.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/TS 3567, *Vacuum gauges — Calibration by direct comparison with a reference gauge*

ISO/IEC Guide 98-3:2008, *Uncertainty of measurement — Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)*

ISO/IEC Guide 99:2007, *International vocabulary of metrology — Basic and general concepts and associated terms (VIM)*