ASME PTC 19.5-2004

REAFFIRMED 2013

Flow Measurement

Performance Test Codes

AN AMERICAN NATIONAL STANDARD

The American Society of Mechanical Engineers

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ASME issues written replies to inquiries as code cases and interpretations of technical aspects of this document. Code cases and interpretations are published on the ASME Web site under the Committee Pages at http://www.asme.org/codes/ as they are issued.

The American Society of Mechanical Engineers
Three Park Avenue, New York, NY 10016-5990

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NOTICE

All Performance Test Codes must adhere to the requirements of ASME PTC 1, General Instructions. The following information is based on that document and is included here for emphasis and for the convenience of the user of the Supplement. It is expected that the Code user is fully cognizant of Sections 1 and 3 of ASME PTC 1 and has read them prior to applying this Supplement.

ASME Performance Test Codes provide test procedures that yield results of the highest level of accuracy consistent with the best engineering knowledge and practice currently available. They were developed by balanced committees representing all concerned interests and specify procedures, instrumentation, equipment-operating requirements, calculation methods, and uncertainty analysis.

When tests are run in accordance with a Code, the test results themselves, without adjustment for uncertainty, yield the best available indication of the actual performance of the tested equipment. ASME Performance Test Codes do not specify means to compare those results to contractual guarantees. Therefore, it is recommended that the parties to a commercial test agree before starting the test and preferably before signing the contract on the method to be used for comparing the test results to the contractual guarantees. It is beyond the scope of any Code to determine or interpret how such comparisons shall be made.

FOREWORD

The history of this Instruments and Apparatus Supplement began with the Research Committee on Fluid Meters being organized in 1916. One of its stated objectives was "the preparation of a textbook on the theory and use of fluid meters sufficient as a standard reference." In carrying out this objective, the first edition of Part 1 of this report was published in 1924, received immediate approval, and was widely referenced by the users of fluid meters and educators. As originally planned by the Committee, the report was to be issued in three parts: Part 1, Theory and Application, was the first one published; followed by Part 2, Description of Meters; and Part 3, Installation. Part 1 was so well received that the second and third editions of this Part were needed before the preparation of the other two parts could occur. The second edition of Part 1 was considerably different from the first, though it followed about the same format and arrangement; the third edition was very similar to the second. These were published in 1927 and 1930, respectively.

Part 2 of the report was published in 1931 and contained a complete description of the physical characteristics of the meters then being manufactured. However, it was found that the material in this Part became obsolete rapidly and it was decided to inform anyone interested in these descriptions that they should be secured from the manufacturers, since their literature must necessarily be up to date.

Part 3, published in 1933, gave instructions for correct installation of meters and discussed the effect of incorrect installation. However, Part 3 was abandoned also because the Committee decided the material in it should be an integral part of the complete report of the Committee.

The fourth edition of Part 1 was prepared in 1937 and was a completely new draft of this Part of the report. It was altered because there had been considerable criticism of the fact that the material presented was difficult to put to practical use. The changed format and additional material presented apparently corrected this condition, since this edition went through many printings.

The fifth edition, issued in 1959, followed the same general format as the fourth and included material gained in the long interval since the last edition. Another publication by the Committee was a manual, Flowmeter Computation Handbook, which was issued in 1961. The procedures in it could be adapted to computer programming.

The format of the sixth edition differed slightly from that of the fourth and fifth editions. Each section by itself was complete so that altering one section would not affect preceding or following sections.

The sixth edition, somewhat like the third edition and its Part 3, was divided into two parts. The material on installation and application were both a part of the complete report and a separate publication, which became ASME PTC 19.5, Flow Measurement, in accordance with an agreement made between the Research Committee on Fluid Meters and the Performance Test Code Committee in 1964. Practically all of the material in ASME PTC 19.5 was taken from Fluid Meters, and most of the writers also were members of the Research Committee on Fluid Meters. It was the decision of the two committees that combining the material into one publication, in such a way that the sections dealing with specifications and instructions could be published separately, would reduce the work of the committees and the number of separate publications. However, this publication prompted considerable criticism that the material presented was difficult to put to practical use. Consequently, the Board on Performance Test Codes formed a committee to address these concerns, and the result is the current version of ASME PTC 19.5, Flow Measurement.

This edition includes a much broader range of methods of flow measurement than any of its predecessors. Even so, it does not include every method — only those that were judged at the time to meet the requirements and needs of Test Codes by providing results of the highest level of accuracy consistent with the best engineering knowledge and practice currently available.

This edition was approved by the Board of Performance Test Codes on April 16, 2001 and February 18, 2004 and by the ANSI Board of Standards Review as an American National Standard on July 10, 2002 and March 10, 2004.

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General. ASME Codes are developed and maintained with the intent to represent the consensus of concerned interests. As such, users of this Supplement may interact with the Committee by requesting interpretations, proposing revisions, and attending Committee meetings. Correspondence should be addressed to:

Secretary, PTC 19.5 Standards Committee
The American Society of Mechanical Engineers
Three Park Avenue
New York, NY 10016-5990

Proposing Revisions. Revisions are made periodically to the Supplement to incorporate changes that appear necessary or desirable, as demonstrated by the experience gained from the application of the Supplement. Approved revisions will be published periodically.

The Committee welcomes proposals for revisions to this Supplement. Such proposals should be as specific as possible, citing the paragraph number(s), the proposed wording, and a detailed description of the reasons for the proposal, including any pertinent documentation.

Interpretations. Upon request, the PTC 19.5 Committee will render an interpretation of any requirement of the Supplement. Interpretations can only be rendered in response to a written request sent to the Secretary of the PTC 19.5 Standards Committee.

The request for interpretation should be clear and unambiguous. It is further recommended that the inquirer submit his/her request in the following format:

Subject:	Cite the applicable paragraph number(s) and the topic of the inquiry.
Edition:	Cite the applicable edition of the Supplement for which the interpretation is being requested.
Question:	Phrase the question as a request for an interpretation of a specific requirement suitable for general understanding and use, not as a request for an approval of a proprietary design or situation. The inquirer may also include any plans or drawings, which are necessary to explain the question; however, they should not contain proprietary names or information.

Requests that are not in this format will be rewritten in this format by the Committee prior to being answered, which may inadvertently change the intent of the original request.

ASME procedures provide for reconsideration of any interpretation when or if additional information that might affect an interpretation is available. Further, persons aggrieved by an interpretation may appeal to the cognizant ASME Committee or Subcommittee. ASME does not "approve," "certify," "rate," or "endorse" any item, construction, proprietary device, or activity.

Attending Committee Meetings. The PTC 19.5 Standards Committee regularly holds meetings, which are open to the public. Persons wishing to attend any meeting should contact the Secretary of the PTC 19.5 Standards Committee or check our Web sitehttp://www.asme.org.org/codes/.

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FLOW MEASUREMENT

Section 1
Object and Scope

1-1 OBJECT

The object of this Supplement is to define and describe the proper measurement of any flow required or recommended by any of the Performance Test Codes. Flow measurements performed as specified herein satisfy the requirements of all relevant ISO flow measurement standards in effect at the time of publication.

1-2 SCOPE

This Supplement describes the techniques and methods of all flow measurements required or recommended by the Performance Test Codes. Newer flow measurement techniques of comparably high accuracy are included to provide alternative flow measurements for special situations in which deviations from the requirements of a code are agreed to be necessary. This is a supplementary document that does not supersede the mandatory requirements of any code unless such an agreement has been expressed in writing prior to testing.