
**Measurement of water flow in closed
conduits — Meters for hot water —**

**Part 1:
Specifications**

*Mesurage de débit d'eau dans les conduites fermées — Compteurs d'eau
chaude —*

Partie 1: Spécifications



Reference number
ISO 10385-1:2000(E)

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

© ISO 2000

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.ch
Web www.iso.ch

Printed in Switzerland

Contents

Page

Foreword.....	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Technical characteristics	4
4.1 Meter size and overall dimensions, meter designation and permanent flowrate	4
4.2 Indicating device	7
4.3 Verification devices — Control element and verification scale interval	9
4.4 Adjustment device	10
4.5 Accelerating device	10
4.6 Remote output systems	11
4.7 Materials	11
4.8 Strainers	11
4.9 Behaviour in case of flow reversal.....	11
4.10 Sealing	11
5 Metrological characteristics	12
5.1 Maximum permissible errors.....	12
5.2 Metrological classes.....	12
6 Pressure loss	12
7 Marking	12
Bibliography	14

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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.

Attention is drawn to the possibility that some of the elements of this part of ISO 10385 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 10385-1 was prepared by Technical Committee ISO/TC 30, *Measurement of fluid flow in closed conduits*, Subcommittee SC 7, *Volume methods including water meters*.

ISO 10385 consists of the following parts, under the general title *Measurement of water flow in closed conduits — Meters for hot water*:

— *Part 1: Specifications*

Installation conditions as well as test methods and equipment will be the subjects of future parts to ISO 10385.

Measurement of water flow in closed conduits — Meters for hot water —

Part 1: Specifications

1 Scope

This part of ISO 10385 specifies the technical characteristics, metrological characteristics, pressure loss and marking of meters for hot water.

This part of ISO 10385 applies to water meters which are self-contained integrating measuring instruments which continuously determine the volume of water flowing through them, employing a direct mechanical process involving the use of volumetric chambers with mobile walls ("volumetric" meters) or the action of the velocity of the water on a moving part ("velocity" meters). A magnetic coupling is considered as a direct mechanical process.

It applies to hot-water meters having permanent flowrates which lie within the range 0,6 m³/h to 400 m³/h at maximum admissible working pressures (MAP) of 10 bar¹⁾ to 40 bar and at maximum admissible temperatures (MAT) corresponding to one of the following values: 70 °C, 90 °C, 130 °C and 180 °C.

Legal requirements take precedence over the specifications of this part of ISO 10385.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 10385. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 10385 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation*.

ISO 7005-1:1992, *Metallic flanges — Part 1: Steel flanges*.

ISO 7005-2:1988, *Metallic flanges — Part 2: Cast iron flanges*.

ISO 7005-3:1988, *Metallic flanges — Part 3: Copper alloy and composite flanges*.

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*.

1) 1 bar = 10⁵ Pa = 0,1 MPa

3 Terms and definitions

For the purposes of this part of ISO 10385, the following terms and definitions apply.

3.1

volumetric meter

device, fitted into a closed conduit, which consists of chambers of known volume and a mechanism driven by the flow, whereby these chambers are successively filled with water and then emptied

NOTE By counting the number of these volumes passing through the device, the indicating device totalizes the volume of water passed.

3.2

velocity meter

device, fitted into a closed conduit, which consists of a moving element deriving its motion directly from the velocity of the water flow

NOTE The movement of the moving element is transmitted by mechanical or other means to the indicating device which totalizes the volume of water passed.

3.2.1

Woltman meter

velocity meter comprising a rotor with helical blades which rotates about the axis of the flow within the meter

3.2.2

single-jet meter

velocity meter comprising a turbine rotor which rotates about an axis perpendicular to the axis of the flow within the meter

NOTE The jet impinges at a single place on the periphery of the rotor.

3.2.3

multi-jet meter

velocity meter comprising a turbine rotor which rotates about an axis perpendicular to the axis of the flow within the meter

NOTE The jets impinge at several points around the periphery of the rotor.

3.3

flowrate

quotient of the volume of water passing through the water meter, and the time taken for this volume to pass through the water meter

3.4

overload flowrate

q_s

flowrate at which the water meter is required to operate in a satisfactory manner (see 3.6) for a short period of time without deteriorating; its value being twice the value of q_p

NOTE It is expressed in cubic metres per hour.

3.5

minimum flowrate

$q_{\min}$

lowest flowrate at which the meter is required to give indications within the maximum permissible error tolerance and determined as a function of the numerical value of the meter designation

NOTE It is expressed in cubic metres per hour.