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Measurement of water flow in fully charged closed conduits -- Meters for cold potable water and hot water -- Part 2: Installation requirements

Mesurage de débit d'eau dans les conduites fermées en pleine charge -- Compteurs d'eau potable froide et d'eau chaude -- Partie 2: Conditions d'installation

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Mesurage de débit d'eau dans les conduites fermées en pleine charge — Compteurs d'eau potable froide et d'eau chaude — Partie 2: Conditions d'installation

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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 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.

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 4064-2 was prepared by Technical Committee ISO/TC 30, *Measurement of fluid flow in closed conduits*, Subcommittee SC 7, *Volume methods including water meters*.

This third edition cancels and replaces the second edition (ISO 4064-2:2001), which has been technically revised, as well as cancelling and replacing ISO 7858-2:2000.

ISO 4064 consists of the following parts, under the general title *Measurement of water flow in fully charged closed conduits — Meters for cold potable water and hot water*:

— *Part 1: Specifications*

— *Part 2: Installation requirements*

— *Part 3: Test methods and equipment*

Measurement of water flow in fully charged closed conduits — Meters for cold potable water and hot water —

Part 2: Installation requirements

1 Scope

This part of ISO 4064 specifies criteria for the selection of single, combination and concentric water meters, associated fittings, installation, special requirements for meters and the first operation of new or repaired meters to ensure accurate constant measurement and reliable reading of the meter.

This part of ISO 4064 also applies to water meters, based on electrical or electronic principles and to water meters based on mechanical principles incorporating electronic devices, used to meter the actual volume flow of cold potable water. It also applies to electronic ancillary devices.

NOTE 1 As a rule ancillary devices are optional.

The recommendations of this part of ISO 4064 apply to water meters, irrespective of technology, defined as integrating measuring instruments continuously determining the volume of water flowing through them.

NOTE 2 Attention is drawn to the fact that national legislation may apply in the country of use, which will take precedence over the provisions of this part of ISO 4064.

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 4064-1:2005, *Measurement of water flow in closed fully charged conduits — Meters for cold and hot potable water — Part 1: Specifications*

ISO 6817:1992, *Measurement of conductive liquid flow in closed conduits — Method using electromagnetic flowmeters*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4064-1 and the following apply.

3.1
parallel operation
operation of two or more meters grouped together and connected to a common source and a common delivery

3.2
multiple meter operation
operation of several meters grouped together where their inlets are connected to a common source, or their outlets to a common delivery, but not both at the same time

4 Criteria for the selection of water meters

4.1 General considerations

The type, metrological characteristics and sizes of water meters shall be determined according to the operating conditions of the installation and the environmental class(es) demanded, particularly taking into account the following:

— available supply pressure;

— physical and chemical characteristics of the water;

— acceptable pressure loss across the meter;

— expected flowrates: the flowrates, Q_1 and Q_3, of the meter (as defined in Clause 3 of ISO 4064-1:2005) shall be compatible with the expected flowrate conditions of the installations, including the water flow direction(s);

— suitability of the meter type for the intended installation conditions;

— available space and pipework to install the meter and fittings;

— possibility of deposition of substances from solution within the meter;

— sustainability of the power supply of the water meter (where applicable).

When using combination meters, care shall be taken to ensure that “cross-over” flowrates are different from (and less than) normal operating flowrates.

4.2 Information to be provided by the manufacturer

The manufacturer shall supply sufficient information to enable the correct choice and installation of a meter, such that influencing factors shall not lead to either failure or non-conformance with the specified metrological characteristics.

NOTE This is particularly important for hydraulic disturbances.

Specifically, the manufacturer shall determine the influence factors, which affect the indicating error and state of the individual meter design. For each influence factor, the manufacturer shall state the relevant rated operating conditions applicable to the meter.

4.3 Meters operating in parallel or in a group

4.3.1 For meters operating in parallel, means shall be provided so that the unserviceability of one or more meters within a group shall not cause the remaining meters to operate at a flowrate in excess of each individual meter’s limit of operation.

4.3.2 In order to ensure that water meters of different types will operate satisfactorily in parallel, the individual characteristics of meters operating in parallel shall be compatible, e.g. by grouping them according to pressure loss, flowrate range and maximum working pressure. However, the installation conditions for each type shall be respected.

4.3.3 For meters operating in parallel and multiple meter operation, the possibilities of interaction between one meter or meter type and another to the detriment of their life and accuracy, e.g. pressure surges and vibration, shall be considered.

NOTE Examples of the use of meters operating in parallel and multiple meter operation are the following:

— meters operating in parallel where the installation of one large meter to meet the maximum water demand or to cover the required flowrate range is impractical;

— meters installed in parallel where “stand by” meters are necessary to ensure continuity of delivery and flow measurement in the case of filter blockage or water meter breakdown;

— meters grouped in multiple operation for ease of access, service and reading, where it is necessary to split a water supply into a number of branches, as for instance in a block of flats, or where it is necessary to unite a number of metered tributary flows into a common main, as in a water treatment plant.

5 Associated fittings

5.1 General

The water meter installation may include the following accessories as applicable.

5.2 Upstream of the meter

5.2.1 **A stopcock or valve,** optionally with the direction of the valve operation indicated.

5.2.2 **A flow straightening device and/or a length of straight pipe**, fitted between the valve and the meter.

5.2.3 **A strainer**, fitted between the stop valve and the meter.

5.2.4 **A means of sealing the connection of the water meter to the water supply line**, in order to detect any unauthorized removal of the water meter.

5.3 Downstream of the meter

5.3.1 **An adjustable length device**, to allow for easy installation and removal of the water meter. This device is specially recommended for meters having $Q_3 \geqslant 16$ m^3/h.

5.3.2 **A device including a drain valve**, which may be used for pressure monitoring, sterilization and water sampling.

5.3.3 **A stopcock or a valve**, for meters having $Q_3 > 4{,}0$ m^3/h; this valve shall be operated in the same sense as the upstream valve.

5.3.4 **A check valve**, if required, except for bi-directional flow applications.

6 Installation

6.1 General requirements

6.1.1 Every water meter, single or in a group, shall be easily accessible for reading (without, e.g., the use of mirror or ladder), for installation, for maintenance, for removal and for *in situ* dismantling of the mechanism if required.