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Measurement of fluid flow by means of pressure differential devices inserted in circular cross-section conduits running full - Part 6: Wedge meters (ISO 5167-6:2019)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 03/20

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 5167-6

October 2019

ICS 17.120.10

English Version

Measurement of fluid flow by means of pressure differential devices inserted in circular cross-section conduits running full - Part 6: Wedge meters (ISO 5167-6:2019)

Mesure de débit des fluides au moyen d'appareils déprimogènes insérés dans des conduites en charge de section circulaire - Partie 6: Débitmètres à coin (ISO 5167-6:2019)

Durchflussmessung von Fluiden mit Drosselgeräten in voll durchströmten Leitungen mit Kreisquerschnitt - Teil 6: Keil-Durchflussmesser (ISO 5167-6:2019)

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Ref. No. EN ISO 5167-6:2019 E

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European foreword

The text of ISO 5167-6:2019 has been prepared by Technical Committee ISO/TC 30 "Measurement of fluid flow in closed conduits" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 5167-6:2019 by CCMC.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2020, and conflicting national standards shall be withdrawn at the latest by April 2020.

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INTERNATIONAL STANDARD

ISO 5167-6

First edition
2019-02

Measurement of fluid flow by means of pressure differential devices inserted in circular cross-section conduits running full —

Part 6: **Wedge meters**

Mesure de débit des fluides au moyen d'appareils déprimogènes insérés dans des conduites en charge de section circulaire —

Partie 6: Débitmètres à coin

Reference number
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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 30, *Measurement of fluid flow in closed conduits*, Subcommittee SC 2, *Pressure differential devices*.

A list of all the parts in the ISO 5167 series can be found on the ISO website.

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Introduction

ISO 5167, divided into six parts, covers the geometry and method of use (installation and operating conditions) of orifice plates, nozzles, Venturi tubes, cone and wedge meters when they are inserted in a conduit running full to determine the flow rate of the fluid flow in the conduit. It also gives necessary information for calculating the flow rate and its associated uncertainty.

ISO 5167 is applicable only to pressure differential devices in which the flow remains subsonic throughout the measuring section and where the fluid can be considered as single-phase, but it is not applicable to the measurement of pulsating flow. Furthermore, each of these devices can only be used within specified limits of pipe size and Reynolds number.

ISO 5167 deals with devices for which direct calibration experiments have been made, sufficient in number, spread and quality to enable coherent systems of application to be based on their results and coefficients to be given with certain predictable limits of uncertainty. However, for wedge meters calibrated in accordance with Clause 7, a wider range of pipe size, β and Reynolds number can be considered.

The devices introduced into the pipe are called 'primary devices'. The term primary device also includes the pressure tappings. All other instruments or devices required for the measurement are known as 'secondary devices'. ISO 5167 covers primary devices; secondary devices[1)] are mentioned only occasionally.

ISO 5167 is divided into the following six parts.

a) Part 1 gives general terms and definitions, symbols, principles and requirements as well as methods of measurement and uncertainty that are to be used in conjunction with Part 2 to Part 6 of ISO 5167.

b) Part 2 specifies requirements for orifice plates, which can be used with corner pressure tappings, D and $D/2$ pressure tappings[2)] , and flange pressure tappings.

c) Part 3 specifies requirements for ISA 1932 nozzles[3)], long radius nozzles and Venturi nozzles, which differ in shape and in the position of the pressure tappings.

d) Part 4 specifies requirements for classical Venturi tubes[4)].

e) Part 5 specifies requirements for cone meters, and includes a section on calibration.

f) Part 6 specifies requirements for wedge meters, and includes a section on calibration.

NOTE This document is complementary to ISO 5167-1:2003, ISO 5167-2:2003, ISO 5167-3:2003, ISO 5167-4:2003 and ISO 5167-5:2015.

1) See ISO 2186[1] and also ISO/TR 9464[4].

2) Orifice plates with 'vena contracta' pressure tappings are not considered in ISO 5167.

3) ISA is the abbreviation for the International Federation of the National Standardizing Associations, which was succeeded by ISO in 1946.

4) In the USA the classical Venturi tube is sometimes called the Herschel Venturi tube.

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INTERNATIONAL STANDARD **ISO 5167-6:2019(E)**

Measurement of fluid flow by means of pressure differential devices inserted in circular cross-section conduits running full —

Part 6: Wedge meters

1 Scope

This document specifies the geometry and method of use (installation and operating conditions) of wedge meters when they are inserted in a conduit running full to determine the flow rate of the fluid flowing in the conduit.

NOTE 1 As the uncertainty of an uncalibrated wedge meter can be too large for a particular application, it could be deemed essential to calibrate the flow meter according to Clause 7.

This document gives requirements for calibration which, if applied, are for use over the calibrated Reynolds number range. Clause 7 could also be useful guidance for calibration of meters of similar design but which fall outside the scope of this document.

It also provides background information for calculating the flow rate and is applicable in conjunction with the requirements given in ISO 5167-1.

This document is applicable only to wedge meters in which the flow remains subsonic throughout the measuring section and where the fluid can be considered as single-phase. Uncalibrated wedge meters can only be used within specified limits of pipe size, roughness, beta (or wedge ratio) and Reynolds number. It is not applicable to the measurement of pulsating flow. It does not cover the use of uncalibrated wedge meters in pipes whose internal diameter is less than 50 mm or more than 600 mm, or where the pipe Reynolds numbers are below 1×10^4.

NOTE 2 A wedge meter has a primary element which consists of a wedge-shaped restriction of a specific geometry. Alternative designs of wedge meters are available; however, at the time of writing there is insufficient data to fully characterize these devices, and therefore these meters are calibrated in accordance with Clause 7.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 4006, *Measurement of fluid flow in closed conduits — Vocabulary and symbols*

ISO 5167-1, *Measurement of fluid flow by means of pressure differential devices inserted in circular cross-section conduits running full — Part 1: General principles and requirements*

ISO 5168, *Measurement of fluid flow — Procedures for the evaluation of uncertainties*

ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

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

koniec náhľadu – text ďalej pokračuje v platenej verzii STN

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