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Measurement of fluid flow by means of pressure-differential devices — Guidelines for the specification of orifice plates, nozzles and Venturi tubes beyond the scope of ISO 5167 series

bsi.

National foreword

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Mesurage du débit des fluides au moyen d'appareils déprimogènes — Lignes directrices pour la spécification des diaphragmes, des tuyères et des tubes de Venturi non couverts par la série de l'ISO 5167

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Foreword

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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*.

This fourth edition cancels and replaces the third edition (ISO/TR 15377:2018), which has been technically revised.

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Measurement of fluid flow by means of pressure-differential devices — Guidelines for the specification of orifice plates, nozzles and Venturi tubes beyond the scope of ISO 5167 series

1 Scope

This document describes the geometry and method of use for conical-entrance orifice plates, quarter-circle orifice plates, eccentric orifice plates and Venturi tubes with 10,5° convergent angles. Information is also given for square-edged orifice plates and nozzles under conditions outside the scope of ISO 5167 series.

NOTE The data on which this document is based are limited in some cases.

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*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 4006 and ISO 5167-1 apply.

4 Symbols

For the purposes of this document, the symbols given in Table 1 apply.

Table 1 — Symbols

Symbols	Represented quantity	Dimensions M: mass L: length T: time	SI unit
a	Orifice plate pressure-tapping hole diameter	L	m
C	Discharge coefficient	dimensionless	
d	Diameter of orifice (or throat) of primary device under working conditions[a]	L	m
d_k	Measured drain hole diameter	L	m

[a] In applications with drain holes, d is calculated from the measured values d_m and d_k [see Formulae (1) and (11)].

NOTE 1 Other symbols used in this document are defined at their place of use.

NOTE 2 Subscript 1 refers to the cross-section at the plane of the upstream pressure tapping. Subscript 2 refers to the cross-section at the plane of the downstream pressure tapping.

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