

AS 2360.0—1993

ISO 4006:1991
Reconfirmed 2019

Australian Standard[®]

**Measurement of fluid flow in
closed conduits**

Part 0: Vocabulary and symbols

This Australian Standard was prepared by Committee CE/24, Measurement of Water Flow in Open Channels and Closed Conduits. It was approved on behalf of the Council of Standards Australia on 3 August 1993 and published on 20 December 1993.

The following interests are represented on Committee CE/24:

Association of Consulting Engineers of Australia
Department of Water Resources, New South Wales
Engineering and Water Supply Department, South Australia
Forestry Commission of New South Wales
Institute of Instrumentation and Control, Australia
Melbourne Water
Monash University
Snowy Mountains Engineering Corporation
University of New South Wales
University of Queensland
Water Authority of Western Australia
Water Board, Sydney—Illawarra—Blue Mountains
Water Resources Commission, Queensland

Review of Australian Standards. To keep abreast of progress in industry, Australian Standards are subject to periodic review and are kept up to date by the issue of amendments or new editions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.

Full details of all Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications; this information is supplemented each month by the magazine 'The Australian Standard', which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS 2360.0—1993

Measurement of fluid flow in closed conduits

Part 0: Vocabulary and symbols

RECONFIRMATION NOTICE

Technical Committee CE-024 has reviewed the content of this publication and in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 28 November 2019.

The following are represented on Technical Committee CE-024:

Australian Bureau of Meteorology
Australian Hydrographers Association
Australian Industry Group
Institute of Instrumentation, Control & Automation
Irrigation Australia Limited
National Measurement Institute
Office of Finance & Services (NSW)

NOTES

Australian Standard[®]

**Measurement of fluid flow in
closed conduits**

Part 0: Vocabulary and symbols

First published as AS 2360—1980.
Revised and redesignated AS 2360.0—1993.

PREFACE

This Standard was prepared by the Standards Australia Committee on Measurement of Water Flow in Open Channels and Closed Conduits. It is identical with and has been reproduced from ISO 4006:1991, *Measurement of fluid flow in closed conduits – Vocabulary and symbols*.

Under arrangements made between Standards Australia and the international Standards bodies, ISO and IEC, as well as certain other Standards organizations, users of this Australian Standard are advised of the following:

- (a) Copyright is vested in Standards Australia.
- (b) The number of this Standard is not reproduced on each page; its identity is shown only on the cover and title pages.
- (c) There may be occasional dual language sections, but English is always one of the languages reproduced.
- (d) Where any cross-references to page numbers appear within the text, these relate to page numbering in the international Standard and are to be disregarded.

This Standard is one of a series, to be published progressively, which deals with methods of measurement of fluid flow in closed conduits. The following Parts were published concurrently with this Part:

AS

2360 Measurement of fluid flow in closed circuits

2360.0 Part 0: Vocabulary and symbols (*this Standard*)

2360.1.1 Part 1.1: Pressure differential methods—Measurement using orifice plates, nozzles or Venturi tubes—Conduits with diameters from 50 mm to 1200 mm

2360.1.2 Part 1.2: Pressure differential methods—Measurement using orifice plates or nozzles—Conduits with diameters less than 50 mm

2360.1.3 Part 1.3: Pressure differential methods—Measurement using orifice plates, nozzles or Venturi tubes—Guide to the use of methods specified in Parts 1.1 and 1.2

2360.1.4 Part 1.4: Pressure differential methods—Measurement using orifice plates, nozzles or Venturi tubes—Guide to the effect of departure from the conditions specified in Part 1.1

2360.1.5 Part 1.5: Pressure differential methods—Measurement using orifice plates, nozzles or Venturi tubes—Pulsating flow, in particular sinusoidal or square wave intermittent periodic-type fluctuations

2360.6.1 Part 6.1: Volumetric methods—By mass

2360.6.2 Part 6.2: Volumetric methods—By volume

2360.7.1 Part 7.1: Assessment of uncertainty in the calibration and use of flow measurement devices—Linear calibration relationships

2360.7.2 Part 7.2: Assessment of uncertainty in the calibration and use of flow measurement devices—Non-linear calibration relationships

At the date of publication of this Part the following Parts, with the numbers of the parent international Standards in parenthesis, had not been published:

Pressure differential methods—Measurement using orifice plates, nozzles or Venturi tubes—Connections for pressure signal transmissions between primary and secondary elements (ISO 2186)

Pitot static tube methods—Measurement of velocity at a point of the cross-section of a conduit (ISO 7145)

Pitot static tube methods—Measurement using Pitot-static tubes (ISO 3966)

Pitot static tube methods—Measurement in swirling or asymmetric flow conditions using ISO 3966 or ISO 3354 (ISO 7194)

Current meters method—Measurement of clean water in full conduits and under regular flow conditions using current meters (ISO 3354)

Non-radioactive tracer methods—Review of alternative methods (ISO 2975.1)

Non-radioactive tracer methods—Measurement using constant rate injection (ISO 2975.2)

Non-radioactive tracer methods—Measurement using transit time (ISO 2975.6)

Weighing methods—Verification of static type (ISO 9368.1)

Weighing methods—Verification of dynamic type (ISO 9368.2, not published)

When published, the details for the above unpublished Australian Standards will be listed in the Catalogue of Australian Standards and Other Products.

For the purposes of this Australian Standard, the ISO text should be modified as follows:

- (i) Wherever the words 'International Standard' appear, referring to this Standard, they should be read as 'Australian Standard'.
- (ii) Substitute a full stop (.) for a comma (,) as a decimal marker.
- (iii) The references to other publications should be replaced by references to Australian Standards as follows:

<i>Reference to International Standard</i>		<i>Australian Standard</i>	
ISO		AS	
772	Liquid flow measurement in open channels—Vocabulary and symbols	3778	Measurement of water flow in open channels
		3778.1	Part 1: Vocabulary and symbols
5167	Measurement of fluid flow by means of pressure differential devices	2360	Measurement of fluid flow in closed conduits
5167.1	Part 1: Orifice plates, nozzles and Venturi tubes inserted in circular cross-section conduits running full	2360.1.1	Part 1.1: Pressure differential methods—Measurement using orifice plates, nozzles, or Venturi tubes—Conduits with diameters from 50 mm to 1200 mm
5168	Measurement of fluid flow—Evaluation of uncertainties	3778	Measurement of water flow in open channels
		3778.2.4	Part 2.4: General—Estimation of uncertainty of a flow-rate measurement

© Copyright — STANDARDS AUSTRALIA

Users of Standards are reminded that copyright subsists in all Standards Australia publications and software. Except where the Copyright Act allows and except where provided for below no publications or software produced by Standards Australia may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing from Standards Australia. Permission may be conditional on an appropriate royalty payment. Requests for permission and information on commercial software royalties should be directed to the head office of Standards Australia.

Standards Australia will permit up to 10 percent of the technical content pages of a Standard to be copied for use exclusively in-house by purchasers of the Standard without payment of a royalty or advice to Standards Australia.

Standards Australia will also permit the inclusion of its copyright material in computer software programs for no royalty payment provided such programs are used exclusively in-house by the creators of the programs.

Care should be taken to ensure that material used is from the current edition of the Standard and that it is updated whenever the Standard is amended or revised. The number and date of the Standard should therefore be clearly identified.

The use of material in print form or in computer software programs to be used commercially, with or without payment, or in commercial contracts is subject to the payment of a royalty. This policy may be varied by Standards Australia at any time.

CONTENTS

	<i>Page</i>
1 Scope	1
2 Symbols	2
3 Subscripts	4
4 General terms in fluid mechanics	4
5 Uncertainties	7
6 General terms related to the devices	10
7 Differential pressure devices	11
8 Critical flow measurement	15
9 Velocity–area methods	16
10 Tracer methods	18
11 Electromagnetic methods	18
12 Weighing and volumetric methods	19
13 Instability methods	23
14 Variable–area methods	24
15 Ultrasonic methods	28
16 Other methods	30
17 Meters (for the measurement of the volume of fluids)	32
Annex A Bibliography	35
Alphabetical index	36

Measurement of fluid flow in closed conduits

Part 0: Vocabulary and symbols

1 Scope

This International Standard defines the terms to be used in the field of measurement of fluid flow in closed conduits, and gives the corresponding symbols.

It has been found necessary to exclude terms which come under the following categories:

- a) terms which are self-evident;
- b) terms which do not apply specifically to this field, in particular those referring more specifically to flow in open channels (see ISO 772);
- c) terms referring to very specific methods of measurement which cannot be the subject of standardization.