

Australian Standard™

**Measurement of water flow in open
channels**

**Part 3.6: Velocity-area methods—
Measurement of flow in tidal channels**

[ISO title: Measurement of liquid flow in open channels under tidal conditions]



S t a n d a r d s Australia

This Australian Standard was prepared by Committee CE-024, Measurement of Water Flow in Open Channels and Closed Conduits. It was approved on behalf of the Council of Standards Australia on 25 September 2000 and published on 12 March 2001.

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Australian Water and Wastewater Association
Department of Natural Resources, Qld
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Department of Land and Water Conservation, New South Wales
Department of Public Works and Services, New South Wales
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**Measurement of water flow in open
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**Part 3.6: Velocity-area methods—
Measurement of flow in tidal channels**

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PREFACE

This Standard was prepared by the Standards Australia Committee, CE-024, Measurement of Water Flow in Open Channels and Closed Conduits.

The Standard is identical to and is reproduced from ISO 2425:1999, *Measurement of liquid flow in open channels under tidal conditions*.

This Standard is Part 3.6 of AS 3778, *Measurement of water flow in open channels*, which is published in parts as follows:

AS

| | | |
|-----------|------------|---|
| 3778 | | Measurement of water flow in open channels |
| 3778.1 | Part 1: | Vocabulary and symbols |
| 3778.2 | Part 2: | General |
| 3778.2.1 | Part 2.1: | Guidelines for the selection of methods of measurement |
| 3778.2.2 | Part 2.2: | Establishment and operation of a gauging station |
| 3778.2.3 | Part 2.3: | Determination of the stage-discharge relation |
| 3778.2.4 | Part 2.4: | Estimation of uncertainty of a flow-rate measurement |
| 3778.2.5 | Part 2.5: | Guidelines for the selection of flow gauging structures |
| 3778.3 | Part 3: | Velocity-area method |
| 3778.3.1 | Part 3.1: | Measurement by current meters and floats |
| 3778.3.2 | Part 3.2: | Measurement by moving boat method |
| 3778.3.3 | Part 3.3: | Measurement by slope-area method |
| 3778.3.4 | Part 3.4: | Collection and processing of data for determination of errors in measurement |
| 3778.3.5 | Part 3.5: | Investigation of total error |
| 3778.3.6 | Part 3.6: | Measurement of flow in tidal channels (this Standard) |
| 3778.3.7 | Part 3.7: | Measurement by ultrasonic (acoustic) method |
| 3778.3.8 | Part 3.8: | Electromagnetic method using a full-channel-width coil |
| 3778.4 | Part 4: | Measurement using flow gauging structures |
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| 3778.4.2 | Part 4.2: | Rectangular broad-crested weirs |
| 3778.4.3 | Part 4.3: | Round-nose horizontal broad-crested weirs` |
| 3778.4.4 | Part 4.4: | V-shaped broad-crested weirs |
| 3778.4.5 | Part 4.5: | Triangular profile weirs |
| 3778.4.6 | Part 4.6: | Flat-V weirs |
| 3778.4.7 | Part 4.7: | Rectangular, trapezoidal and U-shaped flumes |
| 3778.4.8 | Part 4.8: | Trapezoidal profile weirs |
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| 3778.6.2 | Part 6.2: | Direct depth sounding and suspension equipment |
| 3778.6.3 | Part 6.3: | Calibration of rotating element current meters in straight open tanks |
| 3778.6.4 | Part 6.4: | Echo sounders for water depth measurements |
| 3778.6.5 | Part 6.5: | Water level measuring devices |
| 3778.6.6 | Part 6.6: | Cableway system for stream gauging |
| 3778.6.7 | Part 6.7: | Ultrasonic (acoustic) velocity meters |
| 3778.6.8 | Part 6.8: | Position fixing equipment for hydrometric boats |

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- (e) A full point should be substituted for a comma when referring to a decimal marker.

References to International Standards should be replaced by references to equivalent 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 |
| 748 | Liquid flow measurement in open channels—Velocity area methods | | |
| 4369 | Liquid flow measurement in open channels—The moving-boat method | 3778.3.1 | Part 3.1: Velocity-area methods—Measurement by current-meters and floats |
| 6416 | Liquid flow measurement in open channels—Measurement of discharge by the ultrasonic (acoustic) method | 3778.3.7 | Part 3.7: Velocity-area methods—Measurement by ultrasonic (acoustic) method |

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AUSTRALIAN STANDARD

Measurement of water flow in open channels

Part 3.6

Velocity-area methods—Measurement of flow in tidal channels

1 Scope

This International Standard provides a summary of a selection of recommended methods available for the measurement of liquid flow in tidal channels, special consideration being given to those techniques that are either unique to or particularly appropriate for measurement under tidal conditions, including treatment of errors.

Reference is also made, where appropriate, to methods developed for measurement in non-tidal channels, but in such cases attention is drawn to their limitations with respect to practicality and/or accuracy.

This International Standard does not describe alternative methods, such as weirs, flumes, dilution gauging, salt velocity and floats, although they may be suitable under certain conditions, especially where the effect of tides only impedes and does not stop or reverse the passage of stream flow. These methods are described in detail in other International Standards.

The standard comprises two parts:

- a) techniques for single measurements of tidal flow;
- b) techniques appropriate for continuous measurement of tidal flow.

The cubature method of measurement, although currently not used, is included in annex A. Annex B presents methods suitable for measurement for tidal conditions, and annex C gives an example of the computation for a single vertical. Similar computations may be made for other verticals.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard 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 748:1997, *Measurement of liquid flow in open channels — Velocity-area methods*.

ISO 772:1996, *Hydrometric determinations — Vocabulary and symbols*.

3 Terms and definitions

For the purposes of this International Standard, the terms and definitions given in ISO 772 apply.