

Australian Standard™

Measurement of water flow in open channels

Part 3.7: Velocity-area methods— Measurement by ultrasonic (acoustic) method

[ISO title: Measurement of liquid flow in open channels—Measurement of discharge by the ultrasonic (acoustic) method]



Standards Australia

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Australian Water and Wastewater Association
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Australian Standard™

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**Part 3.7: Velocity-area methods—
Measurement by ultrasonic (acoustic) method**

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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.

This Standard is identical to and is reproduced from ISO 6416:1992, *Measurement of liquid flow in open channels—Measurement of discharge by the ultrasonic (acoustic) method*.

This Standard is Part 3.7 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
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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
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3778.3.2	Part 3.2:	Measurement by moving boat method
3778.3.3	Part 3.3:	Measurement by slope-area method
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3778.3.6	Part 3.6:	Measurement of flow in tidal channels
3778.3.7	Part 3.7:	Measurement by ultrasonic (acoustic) method (this Standard)
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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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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
1100	Liquid flow measurement in open channels—	3778.2.3	Part 2.3: General—Determination of the stage-discharge relation
1100.2	Part 2: Determination of the stage-discharge relation		
5168	Measurement of fluid flow — Estimation of uncertainty of a flow-rate measurement	3778.2.4	Part 2.4: General — Estimation of uncertainty of a flow-rate measurement
748	Liquid flow measurement in open channels — Velocity area methods	3778.3.1	Part 3.1: Velocity-area methods — Measurement by current-meters and floats

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Measurement of water flow in open channels

Part 3.7:

Velocity-area methods—Measurement by ultrasonic (acoustic) method

Section 1: General

1.1 Scope

This International Standard describes the establishment and operation of an ultrasonic (acoustic) gauging station for the measurement of discharge in a river, an open channel, or a closed conduit with a free water surface. It also describes the basic principles on which the method is based, and the operation and performance of associated instrumentation. It is limited to the “time of travel of acoustic pulses” technique, and does not apply to systems that make use of the “Doppler shift” or “correlation” or “level-to-flow” techniques.

1.2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties in agreement based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 748:1979, *Liquid flow measurement in open channels — Velocity-area methods.*

ISO 772:1988, *Liquid flow measurement in open channels — Vocabulary and symbols.*

ISO 1100-2:1982, *Liquid flow measurement in open channels — Part 2: Determination of the stage-discharge relation.*

ISO 4373:1979, *Measurement of liquid flow in open channels — Water level measuring devices.*

ISO 5168:1991, *Measurement of fluid flow — Estimation of uncertainty of a flow-rate measurement.*

1.3 Definitions

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

1.4 Units of measurement

The International System of Units (SI) is used in this International Standard.