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Measurement of water flow in open channels

Part 4.2: Measurement using flow gauging structures — Rectangular broad-crested weirs (ISO 3846:2008, IDT)



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- Engineers Australia
- Institute of Instrumentation, Control & Automation Australia
- Irrigation Australia
- Joint Accreditation System of Australia & New Zealand
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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, to supersede AS 3778.4.2:1991, *Measurement of water flow in open channels, Part 4: Measurement using flow gauging structures, Method 4.2: Rectangular broad-crested weirs*.

The objective of this document is to specify requirements for the use of rectangular broad-crested weirs for the accurate measurement of flow of clear water in open channels under free flow conditions.

This document is identical with, and has been reproduced from, ISO 3846:2008, *Hydrometry — Open channel flow measurement using rectangular broad-crested weirs*.

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Foreword

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Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 3846 was prepared by Technical Committee ISO/TC 113, *Hydrometry*, Subcommittee SC 2, *Flow measurement structures*.

This third edition cancels and replaces the second edition (ISO 3846:1989), of which it constitutes a technical revision.

NOTES

Australian Standard®

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1 Scope

This International Standard lays down requirements for the use of rectangular broad-crested weirs for the accurate measurement of flow of clear water in open channels under free flow conditions.

2 Normative references

The following referenced documents are indispensable for the application 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 772, *Hydrometry — Vocabulary and symbols*

3 Terms and definitions

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

4 Symbols

A	m^2	area of approach channel
b	m	width of weir crest perpendicular to flow direction
C	—	discharge coefficient (gauged head)
f	—	drowned flow reduction factor
fC	—	combined coefficient of discharge
C_d	—	discharge coefficient (total head)
C_v	—	coefficient of velocity
E	m	encoder height from datum
e_b	m	random uncertainty in the width measurement
g	m/s^2	acceleration due to gravity
H	m	total head above crest level
h	m	gauged head above crest level (upstream head is inferred if no subscript is used)
L	m	length of weir in the direction of flow
n	—	number of measurements in a set
p	m	height of weir (difference between mean bed level and crest level)
Q	m^3/s	volumetric rate of flow
S	—	submergence ratio, h_2/h_1
S_1	—	modular limit
\bar{v}_1	m/s	mean velocity in the approach channel
U	%	expanded percentage uncertainty
$u^*(b)$	%	percentage uncertainty in b
$u^*(C)$	%	percentage uncertainty in C
$u^*(h_1)$	%	percentage uncertainty in h_1