INTERNATIONAL STANDARD

ISO 18320

First edition
2020-07

Hydrometry — Measurement of liquid flow in open channels — Determination of the stage–discharge relationship

Hydrométrie — Measurage du débit des cours d'eau — Détermination de la relation hauteur–débit

Reference number
ISO 18320:2020(E)

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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 113, *Hydrometry*, Subcommittee SC 1, *Velocity area methods*.

This first edition of ISO 18320 cancels and replaces ISO 1100-2:2010, which has been technically revised.

The main changes compared to the previous edition are as follows.

— Major revisions have been made to Clause 5, including a new figure of a stage–discharge relationship and shift curves.

— Clause 7 has been revised to be consistent with new standards on uncertainty.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Hydrometry — Measurement of liquid flow in open channels — Determination of the stage–discharge relationship

1 Scope

This document specifies methods of determining the stage–discharge relationship for gauging stations. It specifies an accuracy for defining the stage–discharge relationship based on a sufficient number of discharge measurements, complete with corresponding stage measurements.

This document considers stable and unstable channels and includes brief descriptions of the effects on the stage–discharge relationship of the transition from inbank to overbank flows, shifting controls, variable backwater and hysteresis. Methods of determining discharge for twin-gauge stations, ultrasonic velocity-measurement stations and other complex rating curves are not described in detail.

NOTE These types of rating curves are described separately in other International Standards, Technical Specifications and Technical Reports, which are listed in the Bibliography.

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 748, *Hydrometry — Measurement of liquid flow in open channels using current-meters or floats*

ISO 772, *Hydrometry — Vocabulary and symbols*

3 Terms, definitions and symbols

3.1 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

3.2 Symbols

For the purposes of this document, the symbols given in ISO 772 and the following apply.

Symbol	Definition
A	wet cross-sectional area
B	cross-sectional width
β	power-law exponent (slope on logarithmic plot) of the rating curve
C_D	coefficient of discharge

[a] Some reference texts use a characteristic dimension of four times the hydraulic radius, because it gives the same value of Re for the onset of turbulence as in pipe flow[16]. Other texts use the hydraulic radius as the characteristic length-scale, with consequently different values of Re for transition and turbulent flow.