INTERNATIONAL STANDARD

ISO 9123

Second edition
2017-10

Hydrometry — Stage-fall-discharge relationships

Hydrométrie — Relations hauteur-dénivelé-débit

Reference number
ISO 9123:2017(E)

ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

Contents

Page

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 on 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 the following URL: www.iso.org/iso/foreword.html

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

This second edition cancels and replaces the first edition (ISO 9123:2001), which has been technically revised. The main changes were to improve the text relating to the stage-fall-discharge method and to revise the previous clause on uncertainty in accordance with HUG/GUM and similar related standards on the estimation of uncertainty in flow measurements.

Hydrometry — Stage-fall-discharge relationships

1 Scope

This document specifies methods for determining stage-fall-discharge relationships for a stream reach where variable backwater occurs either intermittently or continuously. Two gauging stations, a base reference gauge and an auxiliary gauge are required for gauge height measurements. A number of discharge measurements are required in order to calibrate the rating to the accuracy required by this document.

The preparation of rating curves is not described in detail in this document.

NOTE For a more detailed description of preparing rating curves, see the methods described in ISO 1100-2.

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 772, *Hydrometry — Vocabulary and symbols*

ISO 1100-2, *Hydrometry — Measurement of liquid flow in open channels — Part 2: Determination of the stage-discharge relationship*

3 Terms and definitions

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

Note, however that the application of the definition of backwater given in ISO 772 to the determination of discharge under intermittent or continuous backwater conditions should take into account that a higher gauge height would prevail for a given discharge than would be the case if the variable backwater was not present.

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/

4 Symbols and abbreviated terms

4.1 Symbols

Symbol	Meaning	Units
H	measured water level or stage at gauging station	m
H_{1e}	total effective upstream head	m
H_{2e}	total effective downstream head	m
H_{1max}	maximum upstream total head above crest elevation	m
h	measured fall (difference between stage at main gauging station and upstream or downstream secondary gauge)	m
h_c	reference fall or unit fall for constant fall methods	m