

INTERNATIONAL STANDARD

ISO
6817

First edition
1992-12-01

Measurement of conductive liquid flow in closed conduits — Method using electromagnetic flowmeters

*Mesure de débit d'un fluide conducteur dans les conduites fermées —
Méthode par débitmètres électromagnétiques*



Reference number
ISO 6817:1992(E)

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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 6817 was prepared by Technical Committee ISO/TC 30, *Measurement of fluid flow in closed conduits*, Sub-Committee SC 5, *Electromagnetic flowmeters*.

The first edition cancels and replaces ISO/TR 6817:1980, of which it constitutes a technical revision.

Annexes A and B of this International Standard are for information only.

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Measurement of conductive liquid flow in closed conduits — Method using electromagnetic flowmeters

1 Scope

This International Standard describes the principle and main design features of industrial electromagnetic flowmeters for the measurement of flow-rate of a conductive liquid in a closed conduit running full. It covers their installation, operation, performance and calibration.

This International Standard does not specify safety requirements in relation to hazardous environmental usage of the meter, nor does it apply to the measurement of magnetically permeable slurries, liquid metals nor usage in medical applications.

This International Standard covers flowmeter types in both a.c. and pulsed d.c. versions.

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 to agreements 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 4006:1991, *Measurement of fluid flow in closed conduits — Vocabulary and symbols*.

ISO 5168:1978, *Measurement of fluid flow — Estimation of uncertainty of a flow-rate measurement*.

ISO 7066-1:1989, *Assessment of uncertainty in the calibration and use of flow measurement devices — Part 1: Linear calibration relationships*.

ISO 7066-2:1988, *Assessment of uncertainty in the calibration and use of flow measurement devices — Part 2: Non-linear calibration relationships*.

ISO 9104:1991, *Measurement of fluid flow in closed conduits — Methods of evaluating the performance of electromagnetic flow-meters for liquids*.

3 Definitions

For the purposes of this International Standard, the definitions given in ISO 4006 and the following definitions apply. Many of these are extracted from ISO 4006 for ease of reference.

3.1 electromagnetic flowmeter: Flowmeter which creates a magnetic field perpendicular to the flow, so enabling the flow-rate to be deduced from the induced electromotive force (e.m.f.) produced by the motion of a conducting liquid¹⁾ in the magnetic field. The electromagnetic flowmeter consists of a primary device and one or more secondary devices.

3.1.1 primary device: Device containing the following elements:

- an electrically insulated meter tube through which the conductive liquid to be metered flows,
- one or more pairs of electrodes, diametrically opposed, across which the signal generated in the liquid is measured,
- an electromagnet for producing a magnetic field in the meter tube.

The primary device develops a signal proportional to the flow-rate and in some cases the reference signal.

1) In the present International Standard, for electromagnetic flowmeters, the more correct term "liquid" replaces the word "fluid" (covering liquids and gases) of the general definition in ISO 4006. This usage also aligns with that in ISO 9104.