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IEC 62317-1

First edition
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Ferrite cores –
Dimensions –

Part 1:
General specification

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

FERRITE CORES – DIMENSIONS –

Part 1: General specification

FOREWORD

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International Standard IEC 62317-1 has been prepared IEC technical committee 51: Magnetic components and ferrite materials.

The text of this standard is based on the following documents:

CDV	Report on voting
51/874/CDV	51/890/RVC

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts of IEC 62317 series, published under the general title *Ferrite cores – Dimensions*, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

FERRITE CORES – DIMENSIONS –

Part 1: General specification

1 Scope

This part of IEC 62317 specifies the standards and existing projects dealing with dimensions of ferrite cores.

It is intended that this standard will include ferrite cores which are widely used and referenced in industry, either because they are included in national standards, or because they are seen to have broad-based use in industry. Where applicable, it is intended that the existing industrial name for each standard part should appear with the part within this series.

It is intended that this standard will exclude ferrite cores which are specialty cores with limited use. Also, special cores which are only marginal variations upon standard cores are excluded.

Examples:

> E24/25 (USA) and E24,5 (Metric) are two similar parts, yet they are included separately in this series because they are national standards, widely used.
>
> E-187 (USA) and FEE19A (Japan) are two similar parts, yet they are included separately in this series because they are national standards, widely used.
>
> EP5 has small dimensional differences when comparing different manufacturers, yet only one EP5 is shown in this series, because they are only minor variations on the single basic part.
>
> A ferrite core produced by only one or two suppliers may generally be considered a specialty part, and not suitable as a standard core within this series. A ferrite core produced by three or more competing manufacturers may generally be considered to be a candidate to be included in this series.

IEC publishes electrical standards for families of ferrite cores, as well as this series of dimensional standards for families of ferrite cores. Modifications to the ferrite cores listed in one type of standard should be reflected in the other type.

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.

IEC 60133, *Dimensions of pot-cores made of magnetic oxides and associated parts*

IEC 60647, *Dimensions for magnetic oxide cores intended for use in power supplies (EC-cores)*

IEC 61185, *Ferrite cores (ETD-cores) intended for use in power supply applications – Dimensions*

IEC 61247, *PM-cores made of magnetic oxides and associated parts – Dimensions*

IEC 61596, *Magnetic oxide EP-cores and associated parts for use in inductors and transformers – Dimensions*

IEC 62317-4, *Ferrite cores – Dimensions – Part 4: RM-cores and associated parts*

IEC 62317-7, *Ferrite cores – Dimensions – Part 7: EER-cores*

IEC 62317-8, *Ferrite cores – Dimensions – Part 8: E-cores*

IEC 62317-9, *Ferrite cores – Dimensions – Part 9: Planar cores*

IEC 62323, *Dimensions of half pot-cores made of ferrite for inductive proximity switches*

IEC/TR 61604, *Dimensions of uncoated ring cores of magnetic oxides*

3 Transition of existing publications and projects

The standards that are to be included within the IEC 62317 series include existing standards, future standards already in development, and future standards that may be developed later. The new references should be recorded on the IEC web site as follows:

a) for existing projects: the new project numbers should be recorded on the IEC web site at the time of circulation of next working drafts, with an explanatory note on the cover sheet;
b) for existing publications: the publication numbers should be updated at the time of each new revision of these standards. An explanatory note should be included in the foreword of future publications;
c) for future new projects, the new project numbers should be selected to be consistent with the IEC 62317 series.

A table showing existing project (or publication) references and the proposed new project (or publication) references is given in Table A.1.

4 Dimension descriptions

Table 1 and Table 2 describe the alphabetic character assignments for the major dimensions of ferrite shapes. All other minor core dimension designations are left to the discretion of the specifier.

Table 1 – Toroid core dimension designations

Letter	Dimension description
A	Toroid outside diameter
B	Toroid inside diameter
C	Toroid height

Table 2 – Ferrite shape dimension designations

Letter	Dimension description
A	Overall length of the core back or diameter
B	Outside leg length or height of core
C	Core width or floor width at wire aperture
D	Inside leg length or available bobbin depth
E	Window width or available bobbin width
F	Centre post thickness or diameter
G	Wire aperture or slot width
H	Centre post hole diameter
J	RM core side-to-side parallel width
K	Centre post offset dimension
S	Slot width in outside legs
T	Distance between slot depths in outside legs

5 Locations and functions of core parts and surfaces (see Figure 1)

5.1 Mating surfaces

These surfaces are generally ground in order to reduce the residual air gap between the two core halves. Consequently, irregularities on these surfaces shall be considered as major ones, and carefully evaluated with regard to their influence on the magnetic properties of the complete circuit.

5.2 Centre post

This should be considered as the most important part of the core due to its function of carrying the total flux generated by the winding. The centre post of ferrite cores is generally circular (with or without a hole) or rectangular.

5.3 Outer walls or legs

The main function of the outer walls (e.g. pot-cores) or the outer legs (e.g. E-cores) is to guide the magnetic flux in a closed magnetic circuit.

5.4 Back wall, bottom and back surfaces

The back wall has the same magnetic function as the outer walls or legs; it may include wire-slots and wire-way areas (e.g. on RM-cores), the shapes and dimensions of which are dictated by the winding and isolation requirements.

Besides accommodating the clamping, the back surface (ground or not) serves as a reference plane for grinding the mating surface in order to achieve the required parallelism and flatness.

5.5 Wire-slot area

Lateral area of the outer walls, interfacing with the cut-out portion.

5.6 Wire-way area

This is located on the bottom (inside) surface of the back wall, running radially from the centre post to the wire-slot, centred with respect to the wire-slot.

It takes out the leads of the wound coil from inside to outside for termination.

5.7 Clamping recess area

Recess area on the back wall is to accommodate clamping clips.

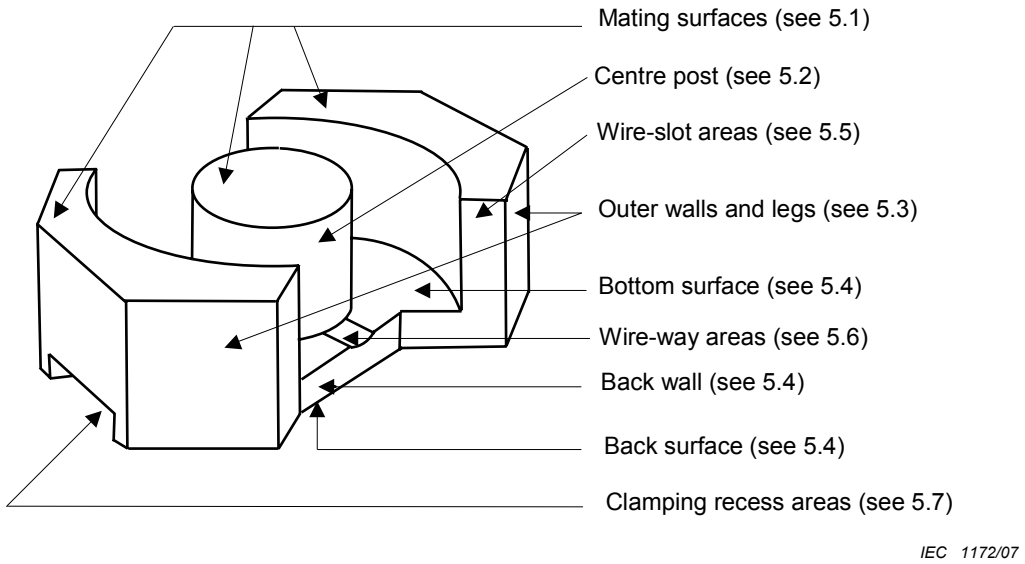

Figure 1 – Location of main core parts and surfaces – Example of RM-core type

A table showing existing project (or publication) references and the proposed new project (or publication) references is given in Table A.1.

Annex A
(informative)

Original and new references and titles

Table A.1 – Original and new references and titles

New standard	Original standard
IEC 62317-1, Ferrite cores – Dimensions – Part 1: General specification	///
IEC 62317-2, Ferrite cores – Dimensions – Part 2: Pot cores (future standard)	IEC 60133 Ed.4: 2000 (current standard)
IEC 62317-3, Ferrite cores – Dimensions – Part 3: Half pot cores (future standard)	IEC 62323 Ed.1 : 2005 (current standard)
IEC 62317-4 : 2005, Ferrite cores – Dimensions – Part 4: RM-cores and associated parts	IEC 60431 Ed.3 : 2005 (former standard)
IEC 62317-5, Ferrite cores – Dimensions – Part 5: EP-cores (future standard)	IEC 61596 Ed.1: 1995 (current standard)
IEC 62317-6, Ferrite cores – Dimensions – Part 6: ETD-cores (future standard)	IEC 61185 Ed.2 : 2005 (current standard)
IEC 62317-7 : 2005, Ferrite cores – Dimensions – Part 7: EER-cores	///
IEC 62317-8 : 2006, Ferrite cores – Dimensions – Part 8: E-cores	IEC 61246 Ed.1.1, 2002 (former standard)
IEC 62317-9 : 2006, Ferrite cores – Dimensions – Part 9: Planar cores	IEC 61860 Ed.1, 2000 (former standard)
IEC 62317-10, Ferrite cores – Dimensions – Part 10: PM-cores (future standard)	IEC 61247 Ed.1, 1995 (current standard)
IEC 62317-11, Ferrite cores – Dimensions – Part 11: EC-cores (future standard)	IEC 60647 Ed.1, 1979 (current standard)
IEC 62317-12, Ferrite cores – Dimensions – Part 12: Uncoated ring cores (future standard)	IEC/TR 61604 Ed.1, 1997 (current standard)
IEC 62317-13, Ferrite cores – Dimensions – Part 13: PQ-cores for use in power supply applications (future standard)	///
IEC 62317-14, Ferrite cores – Dimensions – Part 14: EFD-cores for use in power supply applications (future standard)	///

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