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2005-09

Ferrite cores – Dimensions –

Part 7: EER-cores

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

FERRITE CORES – DIMENSIONS

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FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards. Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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International Standard IEC 62317-7 has been prepared IEC technical committee 51: Magnetic components and ferrite materials.

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

FDIS	Report on voting
51/834/FDIS	51/840/RVD

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.

IEC 62317 consists of the following parts, under the general title *Ferrite cores – Dimensions*:

Part 1: General (under consideration)
Part 2: Pot cores (under consideration, currently available as IEC 60133)
Part 3: Half pot cores (under consideration, currently available as IEC 62323)
Part 4: RM-cores and associated parts
Part 5: EP-cores (under consideration, currently available as IEC 61596)
Part 6: ETD-cores (under consideration, currently available as IEC 61185)
Part 7: EER-cores
Part 8: E-cores
Part 9: Planar cores
Part 10: PM-cores (under consideration, currently available as IEC 61247)
Part 11: EC-cores (under consideration, currently available as IEC 60647)
Part 12: Uncoated ring cores (under consideration, currently available as IEC 61604)

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.

INTRODUCTION

New round centre pole E-cores, which have been developed in the industry, were introduced in IEC 62358, and are in widespread use. This part of IEC 62317 has been developed to specify dimensions and effective parameters for these newer round centre pole E-cores.

This standard replaces Table A.2 and Table B.2 in IEC 62358:2004.

FERRITE CORES – DIMENSIONS

Part 7: EER-cores

1 Scope

This part of IEC 62317 specifies the dimensions that are of importance for mechanical interchangeability for a preferred range of EER-cores made of ferrite, the essential dimensions of coil formers to be used with them, and the effective parameter values to be used in calculations involving them.

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 60205:2001, *Calculation of the effective parameters of magnetic piece parts*

IEC 62358:2004, *Ferrite cores – Standard inductance factor (A_L) and its tolerance*

3 Primary standards

Compliance with the following requirements ensures mechanical interchangeability of complete assemblies and coil formers.

3.1 Dimensions of EER-cores

3.1.1 Principal dimensions

The principal dimensions of EER-cores are given in Table 1. The dimensions of the cores may be checked by means of gauges. By way of example, a possible standard for these gauges is given in Annex B. In order to facilitate production, it may be necessary to use gauges having dimensions differing from those given in Annex B, although no relaxation of the requirements for the dimensions of the cores given in Table 1 is permitted. The dimensions specified in Table 1 are illustrated in Figure 1.

3.1.2 Effective parameter and A_{min} values

The effective parameter values of a pair of cores whose dimensions comply with 3.1.1 shall be as given in Table 2.

3.2 Dimensional limits for coil formers

The essential dimensions of coil formers suitable for use with a pair of EER-cores shall be as given in Table 3. The dimensions specified in Table 3 are illustrated in Figure 2.

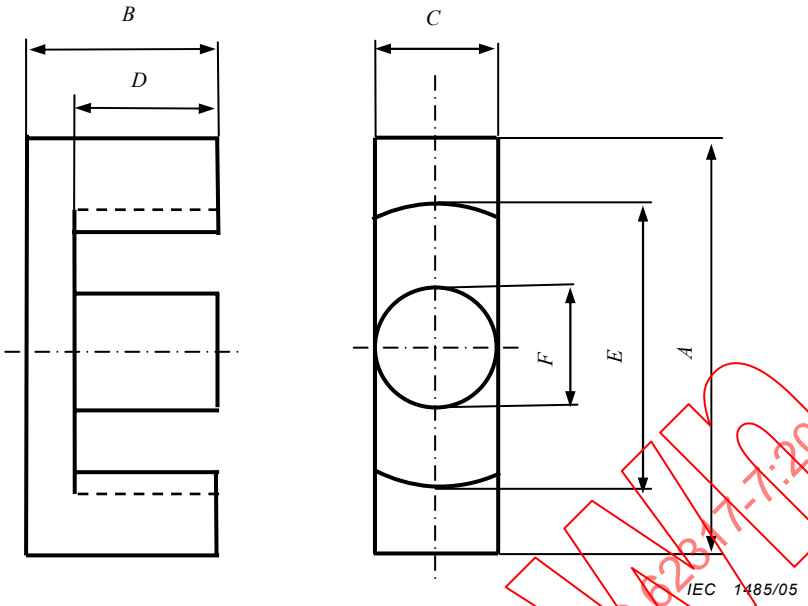

Figure 1 – Dimensions of EER-cores

Table 1 – Dimensions of EER-cores

Size	*A* mm		*B* mm		*C* mm		*D* mm		*E* mm		*F* mm	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
EER25,5	24,9	26,1	9,05	9,55	7,25	7,75	5,95	6,45	19,7	20,9	7,25	7,75
EER28	27,9	29,1	13,7	14,3	11,1	11,7	9,3	9,9	21,1	22,3	9,6	10,2
EER28L	27,9	29,1	16,6	17,2	11,1	11,7	12,2	12,8	21,1	22,3	9,6	10,2
EER35A	34,2	35,8	20,4	21,0	11,0	11,6	14,4	15,0	25,3	26,9	11,0	11,6
EER39	38,2	39,8	21,8	22,6	12,5	13,1	16,6	17,4	28,4	30,0	12,5	13,1
EER40	39,5	40,5	22,2	22,6	13,05	13,55	15,1	15,7	29,0	30,8	13,05	13,55
EER42	41,1	42,9	20,8	21,6	14,8	15,6	14,9	15,7	29,2	31,0	14,8	15,6
EER49	47,9	50,1	30,8	31,6	16,8	17,6	22,3	23,1	36,0	38,2	16,8	17,6

Table 2 – Effective parameter values of EER-cores

Size	C_1 mm^{-1}	C_2 mm^{-3}	l_e mm	A_e mm^2	V_e mm^3	A_{min} [a] mm^2
EER25,5	1,070 0	$2{,}408\ 7 \times 10^{-2}$	47,5	44,4	2 110	42,5
EER28	0,728 16	$0{,}843\ 36 \times 10^{-2}$	62,9	86,4	5 430	77,0
EER28L	0,868 36	$1{,}013\ 8 \times 10^{-2}$	74,4	85,7	6 370	77,0
EER35	0,815 66	$0{,}738\ 15 \times 10^{-2}$	90,1	111	9 960	100
EER39	0,762 91	$0{,}573\ 84 \times 10^{-2}$	101	133	13 500	129
EER40	0,643 21	$0{,}424\ 31 \times 10^{-2}$	97,5	152	14 800	139
EER42	0,510 64	$0{,}272\ 52 \times 10^{-2}$	95,7	187	17 900	179
EER49	0,557 95	$0{,}231\ 33 \times 10^{-2}$	134	241	32 400	228

[a] See 2.2 of IEC 60205 for the definition of A_{min}.

NOTE 1 The manufacturers may indicate in their catalogues more precise values than those given in Table 2.

NOTE 2 The above values have been calculated using the method given in 3.5 of IEC 60205.

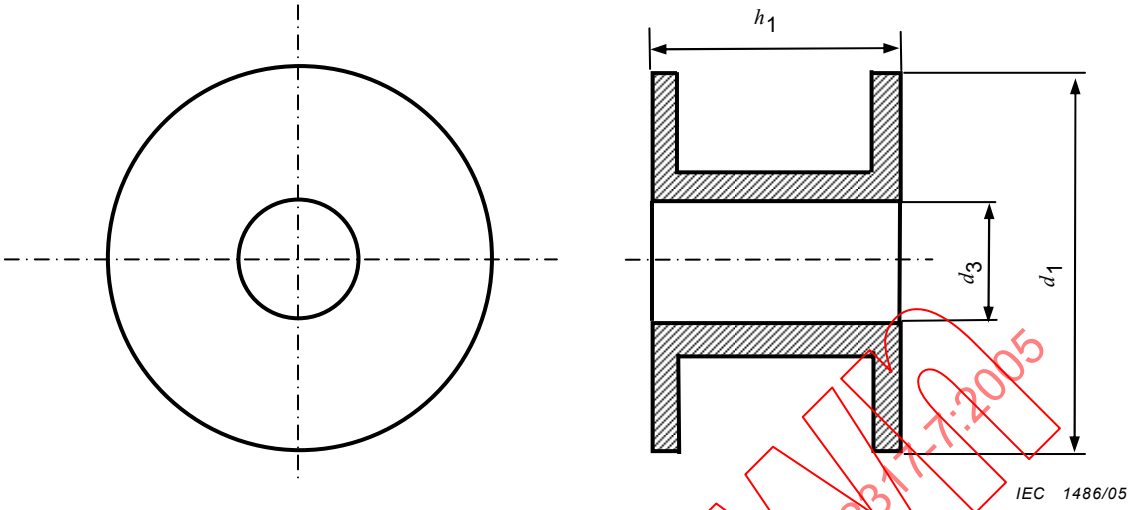

Figure 2 – Essential dimensions of coil formers

Table 3 – Essential dimensions of coil formers

Size	d_1 mm	d_3 mm	h_1 mm
	Max.	**Min.**	**Max.**
EER 25,5	19,3	8,0	11,7
EER 28	20,7	10,4	18,4
EER 28L	20,7	10,4	24,2
EER 35	24,9	11,8	28,6
EER 39	27,9	13,3	33,0
EER 40	28,5	13,8	30,0
EER 42	28,6	15,8	29,6
EER 49	35,4	17,9	44,3

Annex A
(normative)

Derived standards

Clauses 1 to 3 of this part of IEC 62317 establish the values for the principal dimensions of core assemblies and coil formers and enable full interchangeability for components complying with this primary standard to be achieved.

Parties interested in making or using EER-cores may find it desirable to lay down local standards for everyday use, which show the dimensions and tolerances in greater detail than Clause 3, and which correspond to the state of the art in that area. These specifications are known as “derived standards”. When doing so, care should be taken not to exclude any other type of EER-core meeting this part of IEC 62317, which would also satisfy the performance specification valid for a specific case.

It should be noted that even if a component complies with a derived standard and with the requirements of Clause 3 of this primary standard, therefore permitting core assemblies and coil formers to be freely interchanged, its constituent parts may not necessarily be interchangeable.

When requirements lead to the establishment of a national standard, the relevant national standardization body is strongly requested to insert a note in such a national standard stating that:

a) it is in accordance with the dimensional requirement of this part of IEC 62317 but that more details are given in order to promote its practical use;

b) other solutions are possible within the framework of this part of IEC 62317 and should not be excluded if the resulting core and coil formers are functionally interchangeable with those of the national standard.