

# INTERNATIONAL STANDARD

## NORME INTERNATIONALE

**Ferrite cores – Dimensions –  
Part 2: Pot-cores for use in telecommunications, power supply, and filter  
applications**

**Noyaux ferrites – Dimensions –  
Partie 2: Circuits magnétiques en pots utilisés dans des applications de  
télécommunications, d'alimentation électrique et de filtre**



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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**FERRITE CORES –  
DIMENSIONS –****Part 2: Pot-cores for use in telecommunications,  
power supply, and filter applications**

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International Standard IEC 62317-2 has been prepared by technical committee 51: Magnetic components and ferrite materials.

According to IEC 62317-1 clause 3-b) and Table A.1 in Annex A, the publication number of IEC 60133 should be updated to IEC 62317-2 at the time of new revision of this standard.

This first edition cancels and replaces the fourth edition of IEC 60133 published in 2000.

This International Standard constitutes a technical revision of IEC 60133.

The main changes with respect to the previous edition of IEC 60133 are listed below:

- changed “e dimension” of P4,6/3,1 in Table 6 from 3,20 Max. to 3,40 Max.;
- removed “derived standards” from Annex B (informative) in the fourth edition of IEC 60133;

- changed the name of core parts in Subclause 3.1.2 from “Grooves” to “Wire-ways” in accordance with IEC 62317-1 Subclause 5.6.

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

FDIS	Report on voting
51/980/FDIS	51/982/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.

A list of all parts of the IEC 62317 series, 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 stability 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

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## FERRITE CORES – DIMENSIONS –

### Part 2: Pot-cores for use in telecommunications, power supply, and filter applications

#### 1 Scope

This part of IEC 62317 specifies the dimensions that are of importance for mechanical interchangeability for a preferred range of pot-cores made of ferrite, and the dimensional limits for coil formers to be used with them.

The selection of core sizes for this standard is based on the philosophy of including those sizes which are industrial standards, either by inclusion in a national standard, or by broad-based use in industry. See IEC 62317-1 for more detail concerning the philosophy of selecting core sizes to be included.

The general considerations upon which the design of this range of cores is based are given in Annex A.

#### 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, *Calculation of the effective parameters of magnetic piece parts*

IEC 62317-1, *Ferrite cores – Dimensions – Part 1: General specification*

#### 3 Primary standards

##### 3.1 Dimensions of pot-cores

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

##### 3.1.1 Principal dimensions

The principal dimensions of pot-cores shall be as given in Table 1, Figure 1 and Figure 2.

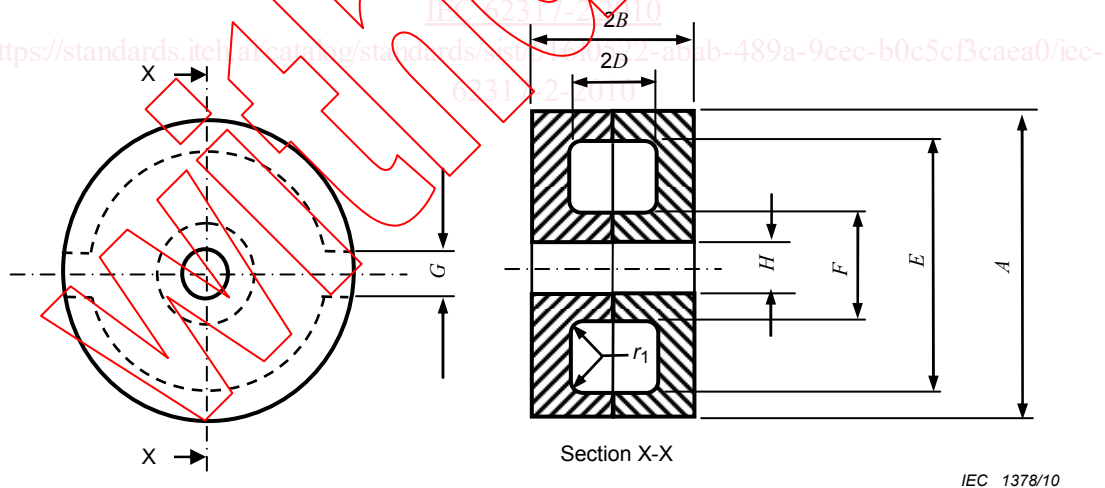
**Table 1 – Principal dimensions of pot-cores**

*Dimensions in millimetres*

Size	A		E		F		H		2B		2D		$r_1^a$ Max.	Figures
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.		
P3,3/2,6	3,18	3,30	2,50	2,60	1,30	1,40	–	–	2,50	2,60	1,70	1,90	0,20	1
P4,6/3,1	4,40	4,60	3,50	3,65	1,90	2,00	–	–	3,00	3,10	2,10	2,30	0,20	1
P5,8/3,3	5,65	5,80	4,50	4,60	2,40	2,50	0,95	1,05	3,20	3,30	2,20	2,40	0,20	1
P7,4/4,0	7,15	7,35	5,80	5,95	2,95	3,00	1,05	1,15	4,10	4,20	2,80	3,00	0,20	1
P9/5	9,00	9,30	7,50	7,75	3,70	3,90	2,00	2,20	5,10	5,40	3,60	3,90	0,25	2
P11/7	10,9	11,3	9,00	9,40	4,50	4,70	2,00	2,20	6,30	6,60	4,40	4,70	0,25	2
P14/8	13,8	14,3	11,6	12,0	5,80	6,00	3,00	3,20	8,20	8,50	5,60	6,00	0,25	2
P18/11	17,6	18,4	14,9	15,4	7,30	7,60	3,00	3,20	10,4	10,7	7,20	7,60	0,25	2
P22/13	21,2	22,0	17,9	18,5	9,10	9,40	4,40	4,70	13,2	13,6	9,20	9,60	0,35	2
P26/16	25,0	26,0	21,2	22,0	11,1	11,5	5,40	5,70	15,9	16,3	11,0	11,4	0,35	2
P30/19	29,5	30,5	25,0	25,8	13,1	13,5	5,40	5,70	18,6	19,0	13,0	13,4	0,35	2
P36/22	35,0	36,2	29,9	30,9	15,6	16,2	5,40	5,70	21,4	22,0	14,6	15,0	0,35	2

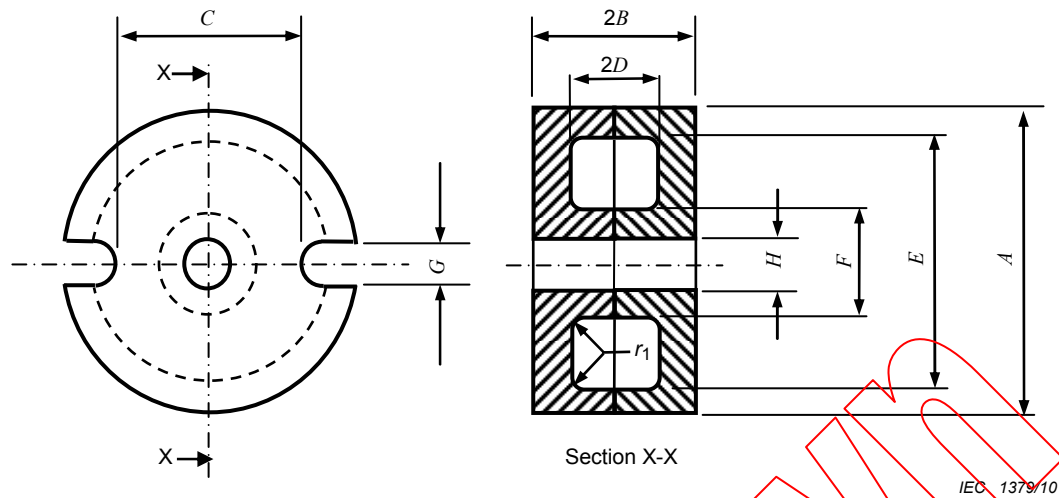
NOTE P3,3/2,6 and P4,6/3,1 cores are without the centre hole shown in Figure 1.

<sup>a</sup> Sharp inner corners of pot-cores are preferable but in practice some rounding may occur, provided that radius  $r_1$  is not exceeded.



**Figure 1 – Principal dimensions of pot-cores without back-wall slots**





**Figure 2 – Principal dimensions of pot-cores with back-wall slots**

NOTE 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 and in Table 2 is permitted.

**Table 2 – Limits for dimensions C and G**

*Dimensions in millimetres*

Size	Cores with back-wall slots			
	C		G	
	Min.	Max.	Min.	Max.
P3,3/2,6	–	–	0,8	1,3
P4,6/3,1	–	–	1,1	1,7
P5,8/3,3	–	–	1,4	2,0
P7,4/4,0	–	–	1,6	2,2
P9/5	6,0	7,5	1,6	2,4
P11/7	6,5	8,0	1,8	2,6
P14/8	8,7	10,0	2,3	4,1
P18/11	11,3	14,0	2,7	4,4
P22/13	13,3	16,5	3,0	4,4
P26/16	17,0	20,0	3,0	4,4
P30/19	20,0	23,0	3,5	5,3
P36/22	24,0	27,2	4,0	5,6

NOTE 1 The shape of the slots is not defined, but the width  $G$  is indicated in the table.

NOTE 2 It is recommended that any tightening of the tolerance on dimensions  $C$  should be towards the minimum value and on dimension  $G$  towards the maximum value.

### 3.1.2 Wire-ways

Wire-ways are recesses in the floor of the pot-core, corresponding to the back-wall slots, which allow a path for wire leads from the centre of the coil to the outside. When wire-ways are provided, their minimum depth shall be as given in Table 3.

**Table 3 – Minimum wire-way depth**

*Dimensions in millimetres*

Size	Wire-way depth
P14/8	0,2
P18/11	0,3
P22/13	0,4
P26/16	0,5
P30/19	0,6
P36/22	0,6

**3.1.3 Effective parameter values**

The effective parameter values for pot-cores whose dimensions comply with 3.1.1 shall be as given in Table 4 and Table 5 (for the definitions of these parameters, and their calculation, see IEC 60205).

**Table 4 – Effective parameter values pot-cores with a centre hole**

Size	$C_1$ mm <sup>-1</sup>	$C_2$ 10 <sup>-3</sup> mm <sup>-3</sup>	$A_e$ mm <sup>2</sup>	$l_e$ mm	$V_e$ mm <sup>3</sup>	$A_{min}$ mm <sup>2</sup>
P5,8/3,3	1,632 6	345,47	4,73	7,72	36,5	3,66
P7,4/4,0	1,358 8	186,79	7,27	9,88	71,9	5,79
P9/5	1,203 2	118,12	10,2	12,3	125	7,88
P11/7	0,933 53	56,727	16,5	15,4	253	13,2
P14/8	0,757 42	29,521	25,7	19,4	499	19,8
P18/11	0,573 83	12,863	44,6	25,6	1 140	36,0
P22/13	0,480 78	7,418 5	64,8	31,2	2 020	50,9
P26/16	0,389 23	4,060 5	95,9	37,3	3 580	76,1
P30/19	0,323 43	2,332 1	139	44,9	6 220	115
P36/22	0,256 66	1,249 2	205	52,7	10 800	172

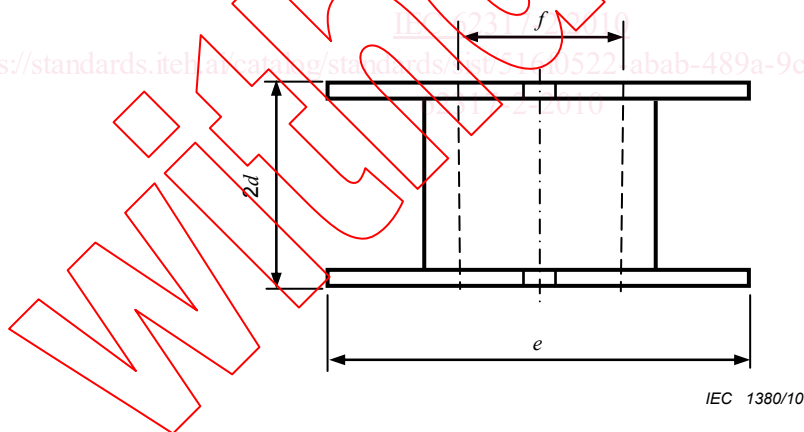
**Table 5 – Effective parameter values pot-cores without a centre hole**

Size	$C_1$ mm <sup>-1</sup>	$C_2$ 10 <sup>-3</sup> mm <sup>-3</sup>	$A_e$ mm <sup>2</sup>	$l_e$ mm	$V_e$ mm <sup>3</sup>	$A_{\min}$ mm <sup>2</sup>
P3,3/2,6	3,136 7	1 768,4	1,77	5,56	9,87	1,43
P4,6/3,1	2,088 7	609,06	3,43	7,16	24,6	2,60
P5,8/3,3	1,540 6	295,89	5,21	8,02	41,8	3,66
P7,4/4,0	1,294 1	163,38	7,92	10,3	81,2	5,79
P9/5	1,063 9	84,640	12,6	13,4	168	8,95
P11/7	0,865 00	46,165	18,7	16,2	304	13,2
P14/8	0,680 99	22,061	30,9	21,0	649	23,6
P18/11	0,540 12	10,923	49,4	26,6	1 320	36,0
P22/13	0,438 12	5,773 5	75,9	33,2	2 520	58,1
P26/16	0,355 34	3,183 1	112	39,7	4 430	87,0
P30/19	0,304 43	1,988 8	153	46,6	7 130	117
P36/22	0,246 93	1,128 5	219	54,0	11 800	172

### 3.2 Main dimensions for coil formers

Main dimensions for coil formers shall be in accordance with Figure 3 and Table 6.

NOTE The dimensions of Table 6 which correspond to similar dimensions in Table 1 are labelled with the same letter in upper case, for example,  $2d$  corresponds to  $2D$  in Table 1.



**Figure 3 – Main dimensions of coil formers for pot-cores**

**Table 6 – Main dimensions of coil formers for pot-cores**

*Dimensions in millimetres*

Size	Main dimensions for coil formers		
	<i>e</i>	<i>f</i>	<i>2d</i>
	Max.	Min.	Max.
P3,3/2,6	2,40	1,50	1,60
P4,6/3,1	3,40	2,10	2,00
P5,8/3,3	4,40	2,60	2,10
P7,4/4,0	5,70	3,10	2,70
P9/5	7,40	4,00	3,50
P11/7	8,90	4,80	4,30
P14/8	11,5	6,10	5,50
P18/11	14,8	7,70	7,10
P22/13	17,8	9,50	9,10
P26/16	21,1	11,6	10,9
P30/19	24,9	13,6	12,9
P36/22	29,8	16,3	14,5

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