SIEMENS

Ferrites and Hardware

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Data Book 1983/84
U.S. Edition

1983/84

Page

Contents/Index of Part Numbers/Ordering Code	6
Definitions	15
SIFERRIT Materials	35
Inductor Design	61
Cores for High Power	89
Pot Cores	107
4-Slot Pot Cores	244
Touch-Tone Pot Cores	259
RM Cores	269
PM Cores	345
Pot Cores for Proximity Switches	363
CC Cores	375
EP and Q Cores	382
X Cores	409
E, EF, EC, and ER Cores	417
ETD Power Cores and Hardware	455
U, UI Cores	459
Toroids and Multi-Aperture Cores	469
Cylindrical, Tube, Screw Cores/Antenna Rods	481
Cores for RF Choke Coils	493

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Ferrite Cores and Hardware

Data Book 1983/84

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Contents/Index of Part Numbers/Ordering Code

Table of Contents

	Page
Index of part numbers	9 ... 10
Ordering code	11
Definitions	13
SI units	15
Symbols	16 ... 17
1. Permeability	18 ... 21
2. Inductance factor A_L	22
3. Resistance factor A_R	23 ... 24
4. Time constant	24
5. Magnetization curves	24 ... 25
6. Core losses	25 ... 27
7. Q factor of coil or coil loss factor tan δ_L	27 ... 28
8. Influence of temperature	28 ... 29
9. Disaccomodation	29 ... 30
10. Resistivity	30
11. Dielectric constant	31
12. Magnetostriction	31
SIFERRIT® materials	33
General notes on testing ferrite parts	34
General material data	35
Application survey	36 ... 37
Material survey	38 ... 40
Relative loss factor versus frequency	41
Permeability versus frequency and temperature	42 ... 47
Permeability factor versus temperature	48 ... 50
Magnetization curves	51 ... 58
Inductor design	59
1. Ungapped pot cores	61
2. Gapped pot cores	61
3. SIFERRIT pot and RM cores with inserted threaded sleeve	62
4. Inductance adjustment	62
5. Winding design	63 ... 76
6. DC magnetic bias of pot and RM cores	77 ... 80
7. Typical calculation for a resonant circuit inductor	81 ... 82
8. Assembly of inductors	82 ... 85
Cores for high power	87
General	89
Materials	89
Core shapes	90 ... 93
Amplitude permeability	94
Relative power loss	95 ... 97
Typical values for transmissible power	98 ... 100
Design of power transformers	101
Design fundamentals for energy storage chokes	102 ... 103
Pot cores	105
General	107
Summary	108
⌀ 3,3 x 2,6	109
⌀ 4,6 x 4,1	110 ... 116
⌀ 4,6 x 5,2 (cores for miniature inductors)	117 ... 122
⌀ 5,8 x 3,3	123 ... 124

Table of Contents

	Page
⌀ 7 x 4	125 ... 132
⌀ 9 x 5 (DIN 41293/41294; IEC publ. 133)	133 ... 141
⌀ 11 x 7 (DIN 41293/41294; IEC publ. 133)	142 ... 150
⌀ 14 x 8 (DIN 41293/41294; IEC publ. 133)	151 ... 161
⌀ 18 x 11 (DIN 41293/41294; IEC publ. 133)	162 ... 175
⌀ 18 x 14	176 ... 185
⌀ 22 x 13 (DIN 41293/41294; IEC publ. 133)	186 ... 196
⌀ 26 x 16 (DIN 41293/41294; IEC publ. 133)	197 ... 206
⌀ 30 x 19 (DIN 41293/41294; IEC publ. 133)	207 ... 215
⌀ 36 x 22 (DIN 41293/41294; IEC publ. 133)	216 ... 223
⌀ 41 x 25	224 ... 229
⌀ 50 x 30	230 ... 233
⌀ 62 x 38	234 ... 237
⌀ 70 x 42	238 ... 241
4-slot pot cores	243
General; survey	244
⌀ 14 x 8; ⌀ 18 x 11; ⌀ 22 x 13; ⌀ 26 x 16	245 ... 256
Touch-tone pot cores (TT cores)	257
⌀ 23/15 x 11; ⌀ 23/15 x 18; ⌀ 30/20 x 19	259 ... 266
RM cores	267
General	269
Summary	270
RM 3	271 ... 272
RM 4 (DIN 41980/41981; IEC publ. 431)	273 ... 279
RM 5 (DIN 41980/41981; IEC publ. 431)	280 ... 290
RM 6 (DIN 41980/41981; IEC publ. 431)	291 ... 302
R 6 (IEC publ. 431)	303 ... 309
RM 7 (IEC publ. 431)	310 ... 316
RM 8 (DIN 41980/41981; IEC publ. 431)	317 ... 324
RM 10 (DIN 41980/41981; IEC publ. 431)	325 ... 330
RM 12	331 ... 334
RM 14 (DIN 41980/41981; IEC publ. 431)	335 ... 338
Adjusting tools	339 ... 341
PM cores	343
General	345
⌀ 50 x 39 (DIN 41989)	346 ... 349
⌀ 62 x 49 (DIN 41989)	350 ... 352
⌀ 74 x 59 (DIN 41989)	353 ... 355
⌀ 87 x 70 (DIN 41989)	356 ... 358
⌀ 114 x 93 (DIN 41989)	359 ... 360
Pot cores for proximity switches	361
General, summary	363
⌀ 5,6 x 3,7 ... ⌀ 70 x 14,5	364 ... 372
CC cores	373
CC 26; CC 36; CC 50	375 ... 380
EP and Q cores (cube cores)	381
EP 7; EP 10; EP 13; EP 17; EP 20	382 ... 400
Q 10; Q 15 (cube cores)	401 ... 406

Table of Contents

	Page
X cores	407
X 22; X 25; X 30 (DIN 41299/41277; IEC publ. 226)	409 ... 414
E, EF, EC, and ER cores	415
General	417 ... 419
DC magnetic bias, material N 27	420
EF 12,6 (DIN 41985)	421 ... 422
EF 16 (DIN 41985)	423 ... 424
EF 20 (DIN 41985)	425 ... 426
E 20 (DIN 41295)	427 ... 428
EF 25 (DIN 41985)	429 ... 430
EI 25 (DIN 41986)	431
E 30 (DIN 41295)	432 ... 433
E 42/15 (DIN 41295)	434 ... 435
E 42/20 (DIN 41295)	436 ... 437
E 55 (DIN 41295)	438 ... 439
EC cores, summary	441
EC 35; EC 41; EC 52; EC 70 (IEC publ. 647)	442 ... 452
ER cores, ER 42; ER 48	453 ... 454
ETD cores for switched-mode power supplies	455 ... 456
U and UI cores	457
General	459
Summary	460
U 15; U 21; U 25	461
U 29; U 37	462
U 47	463
U 57 (DIN 41296)	464
U 59 (DIN 41296)	465
UI 93, UU 93	466
Toroids and multi-aperture cores	467
Toroids, summary	469 ... 470
Toroids for pulse transformers, broadband transformers, chokes; general	471 ... 475
Double-aperture cores	476
Six-aperture cores	477
Cylindrical, tube, screw cores, aerial rods	479
Cylindrical cores (DIN 41291; IEC publ. 220)	481 ... 482
Tube cores (IEC publ. 220)	483 ... 484
Damping pearls	485
Screw cores (DIN 41286)	486 ... 487
Antenna rods and rods for RF welding apparatus (IEC publ. 223)	488
Cube cores	489
Cores for RF choke coils	491 ... 494

Index of Part Numbers

(in numerical order)

Part number B . . .	Page
61110	479, 480
61610	486
62110	481, 482
62151	474, 475
63310[1]	484, 485
63399	339 . . . 341
64290	467, 468
65491	109
65495	111
65496	112, 113, 114, 122
65501	123
65502	124
65511	126
65512	127, 128, 129, 365
65517	134
65518	136, 137
65522	135
65531	143
65532	144
65535	145
65539	146, 276, 284
65541	153
65542	154, 367
65543	155
65545	156
65546	246
65547	247
65549	157
65561	178
65562	179
65563	180
65565	181
65569	182
65576	222
65579	228
65611	218
65612	219
65613	220
65615	221
65621	225
65622	226
65623	227
65644	231
65645	232, 233
65646	346
65647	347, 348, 349
65651	164

Part number B . . .	Page
65652	165, 179
65653	166
65655	167
65656	249
65657	250
65659	168, 296, 313
65661	188
65662	189
65663	190
65665	191
65666	252
65667	253
65669	192
65671	199
65672	200
65673	201
65675	202
65676	255
65677	256
65679	203, 213, 222, 329
65684	350
65685	351, 352
65686	353
65687	354, 355
65694	235
65695	236, 237
65696	239
65697	240
65698	241
65701	209
65702	210
65703	211
65705	212
65713	356
65714	357, 358
65716	260, 263
65717	261, 264
65730	265
65731	266
65733	359
65734	360
65803	274
65804	275
65805	281
65806	275, 276, 282, 283, 284
65807	292
65808	168, 293 . . . 296, 305, 306, 313
65809	304

[1] For the adjusting device to B63310 see also page 260, 261, 263, 264

Index of Part Numbers

(in numerical order)

Part number B . . .	Page
65810	305, 306
65811	318
65812	319, 320, 321
65813	326
65814	327, 328
65815	332
65816	333, 334
65817	271
65818	272
65819	311
65820	312
65833	402
65834	403
65837	405
65838	406
65839	383
65840	384
65841	386
65842	387, 388
65843	390
65844	391, 392
65845	394
65846	395, 396
65847	398
65848	399, 400
65851	409
65854	410
65861	411
65864	412
65871	413
65874	414
65887	336
65888	333, 337, 338
65931	364
65933	365
65935	366
65937	367
65939	368
65940	368
65941	369
65942	369
65943	371
65944	371
65945	372
65946	372
65947	370
66202	422
66206	426
66208	430
66217	431

Part number B . . .	Page
66222	428
66232	433
66242	435
66243	437
66252	439
66272	443
66274	445, 446
66276	448, 449
66278	451, 452
66305	421
66307	423
66308	424
66311	425
66313	427
66317	429
66319	432
66325	434
66329	436
66333	454
66335	438
66337	442
66339	434
66341	447
66343	450
66347	453
66361	455, 456
66363	455, 456
66365	455, 456
66367	455, 456
66430	118
66433	118
66442	375, 376
66443	377, 378
66446	379, 380
67333	463
67334	462
67345	464
67348	459
67350	459
67351	453
67352	459
67353	461
67354	460
67356	460
67358	460
67410	487
67416	491, 492
67499	487

Ordering code

Ordering code system

Example of the ordering code for an RM 5 core set, (see also figure on page 61) SIFERRIT material N 48, 250 nH A_L value, ± 3% tolerance of A_L value, type B65805 (see page 281).

Ordering code B65805–N0250–A048

Type

Revision status

Filling digit

Code for SIFERRIT material N 48

Filling digit

Tolerance of A_L value (A ≙ ±3%)

A_L value in nH

For particular components, an uncoded inquiry is requested. The appropriate ordering code will be allocated.

Improvements and technical developments are indicated by a changed revision status code letter. Components can be supplied with a later revision status than applicable at the time of ordering.

Tolerance code letters

The tolerances of the A_L value are coded (12th digit) by letters similar to the recommendations in IEC publication 62/1968.

Code letter	Tolerance of A_L value	Code letter	Tolerance of A_L value
A	± 3%	Q	+30% −10%
G	± 2%	R	+30% −20%
J	± 5%	U	+80% − 0%
K	±10%	X	filling letter only
L	±15%	Y	+40% −30%
M	±20%	–	–

The tolerance values available are indicated in the appropriate ordering codes.
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Definitions

Definitions

SI units

In the present data book, SI units were introduced in accordance with the performance specifications of the Law for Units in Testing Procedures, dated 26th July, 1970. The main relations between these units and those used in previous editions of this data book are summarized in the following:

	Previous units
Magnetic flux density (magnetic induction)	
1 T (Tesla) = 1 Vs/m^2 = 10^{-4} Vs/cm^2	= 10^4 G
Decimal multiples or parts of this unit are permissible, e.g. mT (Millitesla), 1 mT = 10 x 10^{-8} Vs/cm^2	= 10 G
Magnetic field strength, magnetization	
1 A/m = 10^{-2} A/cm	= 1.257 x 10^{-2} Oe
Decimal multiples or parts can be used here, too e.g. 1 kA/m = 10^3 A/m = 10 A/cm	= 12.57 Oe
Density of energy	
1 J/m^3 = 1 T · 1 A/m = 1 mT · 1 kA/m	= 125.7 GOe
A decimal multiple of this unit is 1 kJ/m^3 = 1 mJ/cm^3	= 1.257 x 10^5 GOe
Magnetic flux	
1 Wb (Weber) = 1 Vs = 1 Tm^2	= 10^8 Gcm^2 = 10^8 M
A decimal part of this unit is the milliweber (mWb) 1 mWb = 10^{-3} Wb	= 10^5 M

Magnetic field constant (induction constant)

$$\mu_0 = 1.257 \times 10^{-6} \frac{T}{A/m} = 1.257 \times 10^{-6} \frac{Vs}{Am} = 1.257 \times 10^{-8} \frac{Vs}{Acm} = 1 \frac{G}{Oe}$$

From the stated decimal multiples and parts, it follows for μ_0:

$$\mu_0 \; 1.257 \frac{mT}{kA/m} = 1.257 \cdot 10^{-6} \frac{H}{m}$$

Resistance (to tension and compression)	
1 Newton/square millimeter (N/mm^2)	= 0.102 kp/mm^2
10 N/mm^2 correspond to	approx. 1 kp/mm^2
Thermal conductivity	
$1 \frac{J}{mm \cdot s \cdot K} = \frac{W}{mm \cdot K}$	$= 2.39 \frac{cal}{cm \cdot s \cdot °C}$

Definitions

Symbols	Meaning		Unit
U	Voltage, rms value of sinusoidal voltage		V
$\hat{U}$	Peak value of the voltage		V
J	Polarization		Vs/m^2
B	RMS value of magnetic flux density 10^{-4} Vs/m^2 =(1 G) = 0.1 mT		Vs/m^2
$\hat{B}$	Peak value of the magnetic flux density		Vs/m^2
B_{-}	Direct field flux density		Vs/m^2
B_s	Peak value of the saturation flux density		Vs/m^2
I	Current, rms value of sinusoidal current		A
I_{-}	Direct current		A
$\hat{I}$	Peak value of the current		A
H	Magnetic field strength		A/m
$\hat{H}$	Peak value of the magnetic field strength		A/m
H_{-}	DC field strength		A/m
μ_r	(Rel.) permeability, permeability number		A/m
μ_0	Magnetic field constant $\mu_0 = 1.257 \times 10^{-6}$ H/m		Vs/Am
μ_i	(Rel.) initial permeability		
μ_e	(Rel.) effective permeability		
μ_a	(Rel.) amplitude permeability		
μ_{rev}	(Rel.) reversible permeability		
μ_{app}	(Rel.) apparent permeability		
μ_{tot}	(Rel.) total permeability derived from the static magnetization curve		
$\bar{\mu}$	(Rel.) complex permeability		
μ'_s	(Rel.) real (inductance) component of $\bar{\mu}$	}	expressed in
μ''_s	(Rel.) imaginary loss component of $\bar{\mu}$	}	series terms
μ'_p	(Rel.) real (inductance) component of $\bar{\mu}$	}	expressed in
μ''_p	(Rel.) imaginary loss component of $\bar{\mu}$	}	parallel terms
μ_p	(Rel.) pulse permeability		
L	Self-inductance		H = Vs/A; nH = 10^{-9} H
L_0	Inductance of a coil without core		H
L_s	Series inductance		H
L_{rev}	Reversible inductance		H
A_L	Inductance factor; $A_L = L/N^2$		nH
N	Number of turns		
$\tan\delta$	Loss factor		
$\tan\delta_L$	Loss factor of the coil		
$\tan\delta_r$	(Residual) loss factor at $H \rightarrow 0$		
$\tan\delta_e$	Effective loss factor		
$\tan\delta_h$	Hysteresis loss factor		
$\tan\delta/\mu_i$	Relative loss factor of the material at $H \rightarrow 0$		
Q	Quality factor ($Q = \omega L/R_s = 1/\tan\delta_L$)		
P_v	Relative power loss		mW/g
ω	Angular frequency; $\omega = 2\pi f$		s^{-1}
f	Frequency		s^{-1}, Hz

Definitions

Symbols	Meaning	Unit
h	Hysteresis coefficient of the material	cm/MA = 10^{-6} cm/A
h/μ_i^2	Relative hysteresis coefficient	cm/MA = 10^{-6} cm/A
η_B	Hysteresis material constant (in accordance with IEC)	
	$\eta_B = \frac{1}{2\pi \cdot \sqrt{2} \cdot \mu_0} \frac{h}{\mu_i^2}$; $h/\mu_i^2 = 2\pi \cdot \sqrt{2} \cdot \mu_0 \cdot \eta_B$	1/mT
η_i	Hysteresis core constant	A^{-1} $H^{-1/2}$
k_u	Voltage distortion factor	
ϑ	Temperature	°C
α	Temperature coefficient (previously "*TC*")	1/°C; 1/K
α/μ_i	Relative temperature coefficient of the material (previously TC/μ_i, α_F in accordance with IEC)	1/°C; 1/K
α_e	Temperature coefficient of the effective permeability	$\alpha_e = \alpha \frac{\mu_e}{\mu_i}$
t	Time	s, h
d	Disaccommodation coefficient	
DF	Relative disaccommodation coefficient $DF = d/\mu_i$	
$\Sigma l/A$	Core factor (magnetic characteristics)	mm^{-1}
$\Sigma l/A^2$	Core factor (magnetic characteristics)	mm^{-3}
l_e	Effective length (magnetic characteristics)	mm
A_e	Effective area (magnetic characteristics)	mm^2
V_e	Effective volume (magnetic characteristics)	mm^3
R	Resistance	Ω
R_h	Hysteresis loss resistance of a core	Ω
R_v	Effective loss resistance of a coil	Ω
R_s	Series loss resistance of a core	Ω
R_p	Parallel loss resistance of a core	Ω
R_r	Residual or after-effect loss resistance of a core	Ω
R_{Cu}	Winding resistance (f = 0)	Ω
τ_{Cu}	DC current time constant $\tau_{Cu} = L/R_{Cu} = A_L/A_R$	s
f_{Cu}	Copper factor	
ρ	Resistivity	Ω mm; Ω m
A_R	Resistance factor, $A_R = R_{Cu}/N^2$	μΩ = 10^{-6}
$\bar{l}_N$	Average length of turn	mm
A_N	Winding cross section	mm^2
ε_r	Rel. dielectric constant	
λ_s	Magnetostriction at saturation magnetization	
s	Total air gap	mm
Z	Complex impedance	Ω
t_d	Pulse duration	s
ΔB	Flux density deviation	mT
S	Current density	A/mm^2

Definitions

1. Permeability

The magnetic flux density (induction) inside an inductor with a ferrite core is composed of the magnetic flux density of the vacuum $\mu_0 H$ and the magnetic polarization J of the ferrite:

$$B = \mu_0 H + J$$

μ_0 = magnetic field constant.

Here, the so-called relative permeability or magnetic constant μ is introduced, defining:

$$B = \mu_r \mu_0 H \text{ or } \mu_r = \frac{1}{\mu_0} \cdot \frac{B}{H}$$

(See also definitions in IEC publications 125, 205, 218, 219, 367).

1.1 Initial permeability μ_i

The initial permeability is defined as the ratio of the variation of flux density ΔB to that of the field strength ΔH in very weak ac fields ($\Delta H \rightarrow 0$), measured with a magnetically closed core (toroid). A measuring flux density of less than 0.25 mT is recommended.

$$\mu_i = \frac{1}{\mu_0} \cdot \frac{\Delta B}{\Delta H} \, (\Delta H \rightarrow 0).$$

1.2 Effective permeability μ_e, dimensional parameters, calculation of the air gap.

If an air gap is introduced in a magnetically closed core, e.g. a toroid or pot core, the permeability is lower than that of the same core without air gap. This smaller permeability is due to the higher reluctance of the air gap, and is called effective permeability. Its value depends not only on the core material but also on the shape and dimensions of the core.

$$\mu_e = \frac{1}{\mu_0} \cdot \frac{L}{N^2} \sum \frac{l}{A}$$

$\sum \frac{l}{A}$ and $\sum \frac{l}{A^2}$ are the core factors, the method of summation being specified in IEC publications 205, 205 A, and 205 B. By means of these factors the effective dimensions can be calculated as follows:

effective magnetic length	$l_e = (\sum \frac{l}{A})^2 / \sum \frac{l}{A^2}$
effective magnetic area	$A_e = l_e / \sum \frac{l}{A}$
effective magnetic volume	$V_e = l_e \cdot A_e$

The magnetic data is indicated on the pages of the individual core versions.

From these parameters the inductance, for example, can be calculated:

$$L = \mu_0 \mu_e N^2 \;/\; \sum \frac{l}{A}$$

or in the case of ungapped toroids,

$$L = \frac{1}{2\pi} \mu_i \mu_0 N^2 h \ln \frac{d_a}{d_i}$$

(where d_a and d_i are the outer and inner diameter and h is the height of the toroid).

By way of approximation, for $s \ll l_e$

$$\mu_e = \frac{\mu_i}{1 + \frac{s}{l_e}\mu_i}$$

1.3 Apparent permeability μ_{app}

This is defined as the relationship between the inductance L of the inductor with a magnetic core and the inductance L_0 of the same inductor without core, so that

$$\mu_{app} = \frac{L}{L_o}.$$

This definition is preferably used with cylindrical, tubular and screw cores where, because of the substantial stray inductances, a clear identification either of initial or effective permeability is not possible.

The apparent permeability μ_{app} of a given core material is a function of the core shape, the position of the winding with respect to the core, and of the coil data. A simple comparison of the apparent permeabilities of cores made of different materials is therefore only possible if these conditions are identical.

The apparent permeability μ_{app} is, in general, lower than the effective permeability μ_e.

1.4 Reversible permeability μ_{rev}

When a SIFERRIT core is magnetized with a dc field H_- upon which a weak ac field $H_\sim$ is superimposed, the ac field produces a small lancet-shaped hysteresis loop which changes to a straight line as the ac field is reduced. The slope of this line is called "reversible permeability".

$$\mu_{rev} = \frac{1}{\mu_0} \lim \left[\frac{\Delta B}{\Delta H}\right] H_- \qquad \Delta H \rightarrow 0$$

The reversible permeability μ_{rev} is a function of the dc magnetic bias. It usually reaches its maximum value when the dc field strength H_- is zero. In the case of toroids it is identical with the initial permeability μ_i.

It is not possible to determine from toroidial core data what effect the dc magnetic bias has on other core shapes. For this reason, the magnetic bias curves are given separately for specific core shapes.

For stability reasons, a dc bias should be avoided with high Q filter coils if possible, or its effect should at least be sufficiently reduced by an air gap (see para. 9, disaccommodation).

1.5 Complex permeability $\overline{\mu}$

With the (relative) complex permeability $\overline{\mu}$, the impedance $\overline{Z}$ of an inductor with ferrite core can be described on the basis of the law of induction as follows:

$\overline{Z} = j\omega\overline{\mu}\, L_0$, where L_0 is the inductance of the inductor without the core[1].

$$L_0 = \mu_0 \frac{N^2 A_e}{l_e}$$

On the other hand, an inductor with a ferrite core can be represented in an equivalent circuit by a lossless self-inductance L_s connected in series with a loss resistance R_s which is attributable only to the ferrite core material. The impedance $\overline{Z}$ can therefore be given by:

$\overline{Z} = j\omega L_s + R_s$

By equating, one obtains the complex permeability:

$$\overline{\mu} = \frac{L_s}{L_0} - j\frac{R_s}{\omega L_0}.$$

The real part:

$$\mu'_s = \frac{L_s}{L_0} = \frac{L_s\, l_e}{\mu_0 N^2 A_e}$$

represents the inductive permeability, and the imaginary part:

$$\mu''_s = \frac{R_s}{\omega L_0} = \frac{R_s\, l_e}{\omega\, \mu_0 N^2 A_e}$$

the resistive permeability determining the core losses.

[1] L_0 = inductance that would be measured if the core had uniform permeability, the flux distribution remaining unaltered (in the case of toroids).

The loss factor of the core is then:

$$\tan\delta = \frac{\mu''_s}{\mu'_s} = \frac{R_s}{\omega\, L_s}$$

In certain cases it is useful to employ the parallel equivalent circuit:
From

$$\overline{Z} = \frac{1}{1/R_p + 1/j\omega L_p}$$

the real part is found to be:

$$\mu'_p = \frac{L_p}{L_0} = \frac{L_p\, l_e}{\mu_0\, N^2\, A_e}$$

and the imaginary part:

$$\mu''_p = \frac{R_p}{\omega\, L_0} = \frac{R_p\, l_e}{\omega\, \mu_0 N^2\, A_e} \quad \text{and}$$

$$\tan\delta = \frac{\mu'_p}{\mu''_p} = \frac{\omega\, L_p}{R_p}$$

The relations between series and parallel terms are given by:

$$\mu'_p = \mu'_s\ (1 + \tan^2\delta) \text{ and}$$

$$\mu''_p = \mu''_s\ (1 + 1/\tan^2\delta,$$

Due to the influence of the hysteresis losses (see 6.5), R_s, R_p, and $\tan\delta$ depend on the measuring field strength, but since the value for a negligibly low field strength is normally given, the loss factor includes only the remanence losses (also called the residual losses, see 6.1), so that:

$$\tan\delta = \tan\delta_r.$$

The variation of μ'_s and μ''_s of our SIFERRIT materials with frequency was measured at flux densities < 0.1 mT. For ferrite materials with higher permeability, low resistivity, and high dielectric constant, the shape of the curve largely depends on the dimensions of the core sample because eddy currents are allowed to be built up over the full core cross section (volume resonance).
An example of this is shown on page 43 covering measurements at three toroids of different heights made of a manganese zinc ferrite.
For these reasons, cores with smaller magnetic area can be used at higher frequencies.

2. Inductance factor A_L

It has been found useful to employ the magnetic conductance (permeance) in the calculation of the inductance or the number of turns of coils and this is called "inductance factor A_L" or "A_L value". The A_L value is the inductance L per unit turn

$$A_L = \frac{L}{N^2}; \quad A_L = \frac{\mu_e \cdot \mu_0}{\Sigma l/A}$$ (for measuring conditions see below).

The A_L value is conveniently expressed in nH = 10^{-9} H. Accordingly, the inductance L of a coil is obtained in nH from the product $A_L \cdot N^2$.

Occasionally, the so-called turns factor c (also designated K or α) is used for determining the number of turns in accordance with the formula

$$N = c\sqrt{L}$$

where L is expressed in mH. When c is expressed in $1/\sqrt{\ }$ mH and the A_L value in nH, the conversion factor from A_L to c is

$$c = \frac{10^3}{\sqrt{A_L}}.$$

Gapped SIFERRIT pot cores are ground to specific A_L values; air gap dimensions are typical values. The A_L and μ_e values given in the data sheets apply to standard coils with defined winding data, at frequencies up to 10 kHz, a flux density of $\hat{B} \leqq 1$ mT and without glueing and sealing. The measuring pressure should correspond to the holding force of the mounting assemblies indicated on page 84. Care should be taken that a good centering of both pot core halves and clean surfaces are ensured.

3. Resistance factor A_R

The resistance factor A_R, or A_R value, is the dc resistance R_{Cu} per unit turn, analogous to the A_L value:

$$A_R = \frac{R_{Cu}}{N^2}$$

When the A_R value and the number of turns N are given, the dc resistance R_{Cu} is equal to $A_R\,N^2$. From the winding data, etc., the A_R value can be determined:

$$A_R = \frac{\rho\, l_N}{f_{Cu}\, A_N}$$

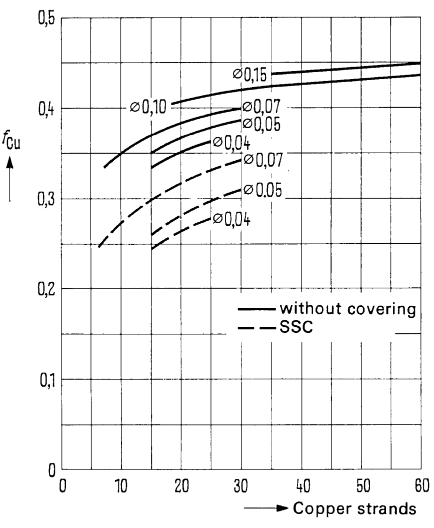
where
ρ = resistivity (for copper = 17.2 μΩ mm), l_N = mean length of turn in mm, A_N = cross section of winding space in mm^2, f_{Cu} = copper factor. If these units are used in the equation, the A_R value is obtained in μΩ = 10^{-6} Ω.

For coil formers, A_R values are stated in addition to A_N and l_N. They are based on a copper factor of f_{Cu} = 0.5. This permits the A_R value to be calculated for any copper factor f_{Cu} according to the formula

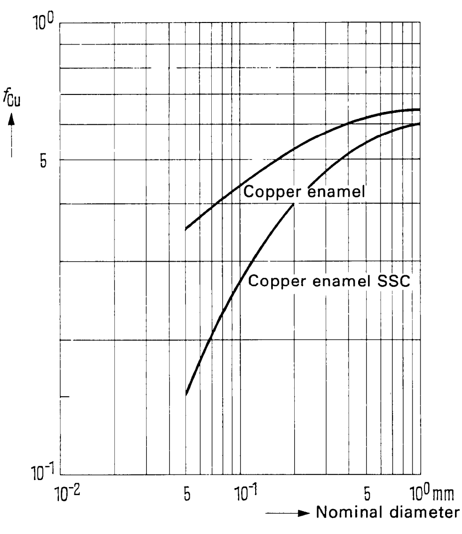
$$A_{R\,(f_{Cu})} = A_{R\,(0,5)}\frac{0.5}{f_{Cu}}$$

The following diagrams show the copper factor of wires and litz wires versus their nominal diameters in mm and the number of strands:

Copper factor f_{Cu} for litz wires



Copper factor f_{Cu} for wires



The cross section of the useful winding space, as given in the data for each coil, is smaller than that calculated from the dimensions of the drawing. It is an empirical value which takes into account that the winding space is not fully utilized because the wire ends are brought out and the top layer is incompletely wound.

4. Time constant

The time constant τ is defined as the ratio of the inductance L to the loss resistance R

$\tau = L/R$.

At low frequencies, coil losses are essentially caused by the dc resistance R_{Cu}, the dc time constant being

$\tau_{Cu} = L/R_{Cu}$.

According to paragraphs 2 and 3, the dc time constant can simply be obtained from the equation

$\tau_{Cu} = A_L/A_R$.

5. Magnetization curves

5.1 Static (steady field) magnetization curves

The static magnetization curves shown on pages 51 to 57 were measured at room temperature by the ballistic galvanometer method. Curves are also shown at a temperature of 100 °C/212 °F for those materials which are frequently used at higher flux densities.

The relative total permeability $\mu_{tot} = \dfrac{B_-}{\mu_0 H_-}$ was determined from the curve of normal magnetization (new curve).

5.2 Dynamic (alternating field) magnetization curves

The graphs on page 58 show the dynamic magnetization curves of SIFERRIT K 1, M 33, and N 22 at various frequencies. The amplitude permeability can be determined from the relationship $\mu_a = \dfrac{\hat{B}}{\mu_0 \hat{H}}$ in which $\hat{B}$ and $\hat{H}$ are the peak values of effective flux density or effective field strength respectively.

When designing power transformers, for example, it is often necessary to calculate the peak values of magnetic field strength and magnetic flux density:

$$\hat{H} = \frac{I \cdot N\sqrt{2}}{l_e} \text{ and } \hat{B} = \frac{\sqrt{2}\,U}{\omega N A_e} \quad \left[\frac{\mathrm{V_s}}{\mathrm{m}^2} \text{ or T}\right] \qquad \text{if } U \text{ in V, } \omega \text{ in Hz, } A_e \text{ in mm}^2$$

$$\text{and } \hat{B} = \frac{\sqrt{2}\,U \times 10^9}{\omega N A_e} = \frac{0.225 \times U \times 10^9}{f \times N \times A_e} \quad [\mathrm{mT}] \qquad \text{if } A_e \text{ in mm}^2.$$

5.3 Coercive force H_c and remanence B_r

When a hysteresis loop is drawn in the usual manner with flux density B as the ordinate and field strength H as the abscissa, H_c is the field strength at which the loop cuts the axis of the abscissa. The point where the hysteresis loop intersects the ordinate is called the remanence B_r.

5.4 Saturation flux density B_s

This is the value reached by the flux density $\hat{B}$ at high field strength. The flux densities shown on pages 38 and 39 (material survey) are already close to the saturation point. They were measured at a field strength of 3000 A/m. Values obtained otherwise are marked accordingly.

6. Core losses

In SIFERRIT materials, the core loss resistance R_s (see para. 1.5) with weak magnetic fields (up to about 2 A/m) is essentially caused by the residual loss resistance R_r and the hysteresis loss resistance R_h. Eddy currents are only of secondary importance because of the low conductivity, especially at low frequencies.

6.1 Relative loss factor

In a gapped core, the material loss factor tan δ of the core is reduced by the factor μ_e/μ_i. The table of the material characteristics (pages 38 and 39) and the graph (page 41) give the loss factor as relative value μ_i: tan δ/μ_i.
The effective loss factor for a gapped core is therefore:

$$\tan \delta_e = \frac{\tan \delta}{\mu_i} \mu_e$$

The residual loss resistance R_r is given by

$$R_r = \omega L \tan \delta_e$$

6.2 Optimum frequency range

The relative loss factor tan δ/μ_i is plotted against the frequency for SIFERRIT materials on page 41. These curves provide a quick reference for the selection of SIFERRIT materials for high Q inductors. The curves of μ'_s and μ''_s of the complex permeability $\overline{\mu}$ on pages 42 to 43 are generally more suitable for designing wideband transformers and attenuators.

6.3 Upper frequency limit f_{max}

The upper frequency limit is that frequency at which the loss factor curve has not yet begun to rise too steeply. This is approximately the case when the Q factor of the toroid is about 50 or when tan δ is about 0.02. The Q factor below the limit frequency or for gapped cores is much higher.

6.4 Lower frequency limit f_{min}

The lower frequency limit is that frequency at which a change to the material with the next higher permeability is recommended because of its lower losses.

6.5 Hysteresis loss resistance R_h, hysteresis material constant η_B, and hysteresis core constant η_i

If the loss resistance of an inductor with a ferrite core is measured at different flux density levels, it is found to increase with flux density as a result of hysteresis. Since this hysteresis loss resistance R_h can increase to differing extents in different flux density ranges and at different frequencies, measurement should be carried out at $\hat{B}$ = 1.5 and 3 mT ($\Delta\hat{B}$ = 1.5 mT) and at f = 10 kHz for μ_i values greater than 500, complying with an IEC recommendation.

If the inductance bridge can only adjust current and not voltage, a flux density of 3 mT can be obtained for a ferrite material with μ_i = 2000 and an effective field strength of 0.85 A/m as follows:

$$\hat{B} = \mu_i \, \mu_0 \, \hat{H} = 2000 \times 1.257 \times 10^{-6} \times 0.85 \times \sqrt{2} = 3 \text{ [mT]}$$

The hysteresis material constant η_B characterizing the hysteresis losses, is independent of the influence of the air gap, unlike the previously used hysteresis coefficient h/μ_i^2:

$$\eta_B = \frac{\Delta \tan \delta_h}{\mu_e \, \Delta\hat{B}} = \frac{\Delta R_h}{\omega \, L \, \mu_e \, \Delta\hat{B}}$$

The hysteresis loss factor of an inductor can be reduced at constant flux density by an (additional) air gap according to

$$\Delta \tan \delta_h = \frac{\Delta R_h}{\omega L} \eta_B \, \Delta\hat{B} \, \mu_e.$$

The material survey on page 38 shows the hysteresies material constants measured with toroids R 10, 10 mm in diameter, at 10 kHz and at the flux density inverval $\Delta\hat{B}$ specified above.

The magnetic characteristics indicated in this survey apply to the Rayleigh range[1]. The permissible range of modulation increases with decreasing initial permeability. Since often the specifications of inductors do include current, inductance, and frequency but disregard field strength and flux density, a hysteresis core constant μ_i is defined in accordance with IEC publication 125:

[1] Rayleigh range = range of linear dependence between flux density and field strength.

$$\eta_i = \frac{\tan\delta_h}{\hat{I}\cdot\sqrt{L}} = \frac{R_h}{\hat{I}\,L^{3/2}\,\omega}$$

The relationship between both constants being

$$\eta_i = \eta_B \sqrt{\frac{\mu_0\,\mu_e^{\,3}}{V_e}}$$

η_i establishes a relationship between core size, effective permeability, and hysteresis.

The previously used hysteresis coefficient h/μ_i^2 is still often applied. Conversion is done according to the following equations:

$$\frac{h}{\mu_i^2} = 2\pi\cdot\sqrt{2}\cdot\mu_0\cdot\eta_B; \qquad \eta_B = \frac{1}{2\pi\cdot\sqrt{2}\cdot\mu_0}\cdot\frac{h}{\mu_i^2}$$

which can be simplified to:

$$\eta_B = 0.896 \times \frac{h}{\mu_i^2}\left[\frac{1}{\mathrm{mT}}\right]$$

Example with $h/\mu_i^2 = 0.8 \times 10^{-6}$ [cm/A]; $\eta_B = 0{,}896 \times 0.8 \times 10^{-6} = 0.71 \times 10^{-6}\left[\frac{1}{\mathrm{mT}}\right]$

$$\eta_i = \frac{1}{2\pi\cdot\sqrt{2}}\cdot\frac{h}{\mu_i^2}\cdot\sqrt{\frac{\mu_e^{\,3}}{\mu_0\cdot V_e}}$$

For further information refer to IEC publications 205 and 401.

The distortion factor k is proportional to the hysteresis loss factor $\tan\delta_h$ (in the Rayleigh range).

If the current is sinusoidal the voltage distortion factor k_u approximates $\frac{3}{5}\tan\delta_h$.

6.6 Power loss P_v at higher flux densities

The power loss P_v of SIFERRIT materials which are useful at higher flux density levels is shown on page 97 versus frequency, with flux density levels given as parameters (measured with toroids R 10). The total losses versus temperature are indicated on page 96 for materials N 27, N 41, and N 47, which are particularly suitable for power transformers.

7. Q factor and loss factor tan δ_L of inductors

The ratio of the reactance to the total resistance of an inductor is called the Q factor:

$$Q = \frac{\omega\,L}{R_v} = \frac{1}{\tan\delta_L} = \frac{\text{reactance}}{\text{total real resistance}}$$

where

R_v = resistance in series with inductance L,

$\tan \delta_L$ = loss factor of complete inductor.

The measuring technique determines only inaccurately the loss components – losses per core and losses per winding – especially for gapped pot cores. Examples are therefore given showing the Q factor versus frequency.

The so-called ISO Q curves were determined for some core types from these Q factor versus frequency curves.

8. Influence of temperature

8.1 Curie temperature

This is the temperature at which ferrites practically lose their magnetic properties. With SIFERRIT materials, this transition occurs fairly abruptly. The phenomenon is reversible, i.e. when cooled to a point below Curie temperature the material becomes magnetic again. See pages 38 and 39 for the Curie temperature of the materials.

8.2 Temperature dependance of initial permeability μ_i and relative loss factor $\tan \delta/\mu_i$

The curves for both values versus temperature are shown on pages 44 and 45. In the range +5 °C (+41 °F) to +55 °C (+131 °F) variation of the loss factor with temperature is of minor significance as in most cases the variation of the copper resistance has the greater effect on the Q factor of inductors.

8.3 Temperature coefficient α of permeability

The *TC* value of the initial permeability is defined as follows:

$$\alpha = \frac{\mu_{i2} - \mu_{i1}}{\mu_{i1}} \cdot \frac{1}{\vartheta_2 - \vartheta_1}$$

μ_{i1} = initial permeability at temperature ϑ_1 (20 °C to 25 °C) (68 °F to 77 °F)

μ_{i2} = permeability value at temperature ϑ_2

In a magnetic circuit with an air gap and the effective permeability μ_e, the temperature coefficient of the material is reduced by the factor μ_e/μ_i. Hence, the formula for gapped cores is

$$\alpha_e = \alpha \frac{\mu_e}{\mu_i} = \frac{\mu_{i2} - \mu_{i1}}{\mu_{i1}} \cdot \frac{1}{\vartheta_2 - \vartheta_1} \cdot \frac{\mu_e}{\mu_i}$$

The magnitude α/μ_i is the "relative temperature coefficient". It is indicated in the material survey (page 38 and 39) throughout the range between +55 °C/131 °F and −25 °C/−13 °F. The effective permeability μ_e, necessary for calculating the temperature coefficient of the core, is mentioned under special core data. The diagrams on pages 48 to 50 also show data for an extended temperature range.

There, the relative inductance change between two temperatures can be determined with the help of the permeability factor $(\mu_i - \mu_{i1}) / \mu_i \cdot \mu_{i1}$ according to:

$$\frac{\Delta L}{L} = \frac{\mu_i - \mu_{i1}}{\mu_i \cdot \mu_{i1}} \cdot \mu_e = \frac{\alpha}{\mu_i} \cdot \mu_e \cdot (\vartheta - \vartheta_1) = \alpha_F \cdot \mu_e (\vartheta - \vartheta_1)$$

Moreover, α/μ_i values are also given for some temperatures in accordance with the IEC recommendations. It should be taken into account that the temperature coefficient of the complete inductor may largely differ from that of the core, since various parameters such as winding design, assembly (support pressure, glueing), leakage flux ect. also determine the temperature coefficient of the complete inductor.

As far as pot cores are concerned, the α/μ_i values (data on pages 48 to 50) are referred to measurements with standard inductors at frequencies up to 50 kHz, a flux density $\hat{B}$ of less than and equal to 1 mT, and a measuring pressure which corresponds to the support forces indicated on page 84.

For further information refer to the book by Kampczyk/Röss on "Ferrite cores", published by Siemens-Verlag.

9. Disaccommodation

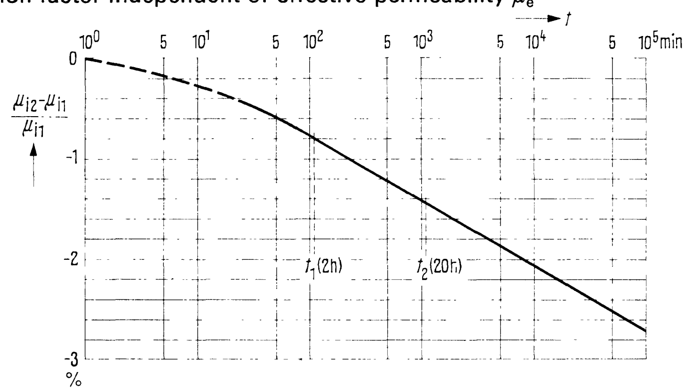
Disaccomodation is the variation of permeability with time under constant operating conditions, especially at constant temperature. Tests over a period of a few years have shown that a few hours after production the permeability of a SIFERRIT core decreases almost linearly, if time t is plotted logarithmically. Therefore, characteristics have been introduced:

the disaccomodation coefficient

$$d = \frac{\mu_{i1} - \mu_{i2}}{\mu_{i1} \cdot \log \frac{t_2}{t_1}} \qquad \begin{aligned} \mu_{i1} &= \text{permeability at time } t_1 \\ \mu_{i2} &= \text{permeability at time } t_2 \end{aligned} \qquad (t_2 > t_1),$$

and the disaccomodation factor independent of effective permeability μ_e

$$DF = \frac{d}{\mu_{i1}}$$



Hence it follows from the indicated measuring points at t_1 and t_2: d = 0.6% and at $\mu_e = \mu_{i1}$ = 2000 $DF = 3 \times 10^{-6}$.

Magnetic, thermal, or mechanical stress can, once more, cause a decrease in permeability with time. The data in the material survey (page 38 and 39) is referred to a thermal stress of at least 170 °C/338 °F and is measured at times t_1 = 2 hours and t_2 = 20 hours after the test. Experience has shown that the value obtained by this method is almost identical with the long-term value desired.

After a magnetic shock (value of demagnetization in an alternating field) shorter periods of time t_1 and t_2 can be selected than after thermal stress. After periods below 2 hours, generally, lower values for the disaccommodation are obtained than at periods longer than two hours.

An air gap reduces every inductance variation by the factor μ_e/μ_i. It can be said that

$$\frac{L_1 - L_2}{L_1} = DF \cdot \mu_e \cdot \log \frac{t_2}{t_1}$$

Example:

For a pot core 22 dia x 13 of material K 1 with an effective permeability of μ_e = 15.9 (A_L value = 40 nH) and a disaccommodation factor $DF < 35 \times 10^{-6}$ which has been placed in operation at a time t_1 = 5 weeks (after production) and which should function at least until time t_2 = 10 years (appr. 500 weeks) a max. inductance variation $\Delta L/L$ of

$< 35 \times 10^{-6} \times 15.9 \times \log \frac{500}{5}$, i.e. < 0.11 % can be expected.

10. Resistivity

The material survey (page 38 and 39) also provides information on the resistivity ρ, measured at room temperature, low current density (< 0.01 mA/mm^2), and with Indium-Gallium junctions. Higher values are normally obtained using some other types of juncton, for example highly conductive silver.

The effect of frequency on resistivity with material N 48 is shown in the following table:

f	kHz	10	100	500
ρ	Ωm	1,0	0,95	0,65

The effect of frequency on resistivity with highly resistive SIFERRIT materials, e.g. K 1, is negligible.

11. Dielectric constant

Highly conductive SIFERRIT materials exhibit a high relative dielectric constant (ε_r) at low frequencies which is based on a layer effect of the fine grain structure. At high frequencies, all SIFERRIT materials approach the dielectric constant of the crystalline SIFERRIT material (ε approx. 10 to 20). SIFERRIT materials with a low conductivity already display these characteristics at lower frequencies, as is shown in the following table:

SIFERRIT material	Resistivity	Dielectric constant ε at				
	Ωm approx.	10 kHz approx.	100 kHz approx.	1 MHz approx.	100 MHz approx.	300 MHz approx.
K 1	10^5	30	15	12	11	11
N 48	1	140×10^3	50×10^3	30×10^3		

12. Magnetostriction

Linear magnetostriction is defined as the relative change in the length of a magnetic core under the influence of a magnetic field. The greatest relative variation in length $\lambda = \Delta l/l$ occurs at saturation magnetization. The values of the saturation magnetostriction (λ_s) of SIFERRIT materials are given in the following table (negative values denote contraction).

SIFERRIT material	K 12	K 1	N 48
λ_s in 10^{-6}	−21	−18	−1,5

Magnetostrictive effects in SIFERRIT power transformers can produce audible whistling similar to that in laminated iron cores, particularly when gapped U or pot cores are used. The parts must be rigidly mounted and the use of gapped cores or the provision of suitable spacers is recommended.

SIFERRIT Materials

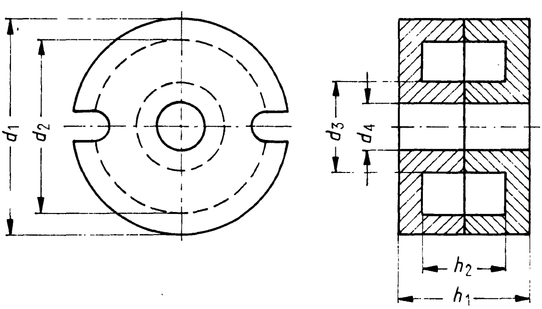
General notes on testing ferrite parts

All Siemens ferrite parts are subjected to severe quality examinations. Our quality assurance program guarantees attaining and maintaining the required Q level throughout every stage of the formation process, i.e. from development via material procurement, production, and testing, up to delivery.

Requirements surpassing this quality level can be met by means of components complying with the CECC System of Quality Assessment. The AQL values for mechanical and electrical characteristics, determined in this system, are particularly severe.
The Siemens ferrite products were granted this licence so that we are capable of supplying pot cores as well as RM cores, made e.g. of the material N 48, meeting the CECC requirements.

Primary and secondary dimensions (major and minor defects) have been determined in accorandance with the CECC Quality Assessment system for examining the dimensions of the ferrite parts. The primary dimensions are examined lotwise with the help of gauges, whereas the secondary dimensions are subject to less severe examinations (see figure below). The gauges used were designed in accordance with DIN 7150, based on a production tolerance and a compensation for wear in accordance with DIN 7151, ISO tolerance series 8.

The following dimensions are to be understood as primary ones, illustrated with a pot core 14 x 8, for example:



Primary dimensions

in mm	d_1	d_2	d_3	d_4	h_1	h_2
max.	14,2		6,0		8,5	
min		11,6		3,0		5,6

The gauge tolerance for an external diameter of 14.2 mm is e.g. 31 μm, i.e. parts with an external diameter of 14.23 mm can still be evaluated as "good" (utilizing the entire compensation for wear).

General material data

Magnetic ferrites are mixed crystals or compounds of ferromagnetic oxides (Fe_2O_3) respectively, with one or several oxides of bivalent metals, such as NiO, MnO, ZnO, MgO, CuO, BaO, CoO. They have a much higher resistivity than metallic materials; the resistivity is 10^0 to 10^5 Ωm compared with 10^{-7} to 10^{-6} Ωm for metallic materials. Contrary to metallic cores, most ferrites have negligible eddy current losses in an alternating magnetic field.

Siemens ferrite cores are well-known under the trademark SIFERRIT®.

General technical data

Tensile strength	approx. 20 N/mm^2
Resistance to compression	approx. 100 N/mm^2
Vickers hardness HV_{15}	approx. 8 000 N/mm^2
Modulus of elasticity	approx. 150 000 N/mm^2
Heat conductivity	approx. 4 . . . 7 · 10^{-3} J/mm · s · K
Linear expansion coefficient	approx. 7 . . . 10 · 10^{-6}/K
Specific heat	approx. 0.7 J/g · K

Resistance to moisture

SIFERRIT is moisture, water and also sea-water-resistant, but can be attacked by several acids in high concentrations.

Resistance to radiation

SIFERRIT materials can be exposed without significant variation ($\Delta L/L \leqq 1$ % for ungapped cores) to the following radiation:

gamma quanta	10^9 rad
quick neutrons	2 x 10^{20} neutrons/m^2
thermal neutrons	2 x 10^{22} neutrons/m^2

Shrinkage due to the sintering process

The burning or sintering process produces a considerable shrinkage of the molded body, linearly by 15 % and 40 % by volume. For this reason, often a slight distortion must be accepted, when the cores are not worked after the burning and sintering process. The dimensional tolerances of unworked parts are ±2 to ±3 %.

Application survey

Application	Frequency range (MHz)	Flux density low[1]	high
High Q inductors in resonant circuits and filters	... 0,1	x	
	0,2 ... 1,6	x	
	1,5 ... 12	x	
	6 ... 30	x	
High Q inductors in resonant circuits and filters (open)	0,2 ... 1,6	x	
	1,5 ... 12	x	
	6 ... 40	x	
	10 ... 300	x	
Transformers with flat permeability characteristic	... 0,3	x	
Wideband transformers (e.g. antenna transformers for MW, SW, VHF, TV) and pulse transformers for EDP	... 3[2]	x	
	... 5[2]	x	
	... 10	x	
	... 250	x	
	... 400	x	
	... 1000	x	
Power transformers, chokes (e.g. for switched mode power supplies pulse transformers, TV line transformers transducers ignition coils etc.)	... 0,1		x
	... 1		x
	... 1,5	x	x
Attenuators (e.g. wound cylindrical cores, wires with slide-on tubular core)	... 500	x	x
Erase heads	0,2		x
Proximity switches	... 1	x	
	... 2	x	

[1] Low flux density up to approx. 10 mT (Rayleigh range).
[2] Upper frequency limit also depends on core dimensions (in pot core filters also on gap).
[3] Upon request

Material	Type
N 48	Pot, RM, TT cores with air gap
M 33, N 58	
K 1	
K 12	
M 33	Cylindrical cores Tube cores Screw cores Antenna rods, round, slotted
K 1	Cylindrical cores Tube cores Screw cores
K 12	
U 17	
N 48, N 30, T 35, T 38	Pot, RM, X, Q, EP, E cores
N 30	Pot cores
N 30, T 35, T 38	Toroidal cores, EP cores
N 48	Pot cores E cores
M 33	Pot, RM cores
K 1, K 12	Pot cores Double aperture cores
U 17	Cylindrical cores Tube cores
U 60[3])	Double aperture cores
N 27, N 41	U, toroidal, ER, TT cores Pot, PM, RM cores E, EC, CC cores
N 47	RM cores
M 33	Cylindrical cores
N 22	Cylindrical cores, attenuation beads Tube cores Six aperture cores
T 8, T 9, N 22, T 56, T 57	Recording head cores
N 22	Pot cores
M 33	

Material survey

For measuring conditions refer to page 40
For definitions refer to page 15 to 31

		Standard					
SIFERRIT material		**K 1**	**M 33**	**N 58**	**N 48**	**N 27**[3]	**N 41**[3]
Color code		violet	white	–	–	–	–
Initial permeability μ_i		80 ±20%	750 ±20%	1300 ±20%	2000 ±20%	2000 ±20%	3000 ±20%
Optimum f_{min} frequency range f_{max}	MHz MHz	1,5 12	0,2 1,0	0.05 0,6	0,001 0,1	– –	– –
Rel. dissipation factor f_{min} $\tan \delta/\mu_i$ f_{max}	10^{-6}	< 40 < 100	< 12 < 20	< 1,6 < 8	< 0,5 < 2,5	–	–
Curie temperature	°C	> 350	> 200	200	>150	>200	> 230
Coercivity	A/m	500	100	45	20	20	20
Flux density $\hat{B}$ at $\hat{H}$ = 3000 A/m	mT	360	450	420	390	470	470
DC resistivity ρ	Ω m	10^5	5	3	1	1	1
Hysteresis material constant η_B	$\frac{10^{-6}}{mT}$	< 36	< 1,8	< 0,5	< 0,4	< 1,5	< 1,4
Relative temperature coefficient[4] α/μ_i for 20 ... 55 °C/68 ... 131 °F for 20 ... 5 °C/68 ... 41 °F for 20 ... −25 °C/68 ... −13 °F	10^{-6}/K	 2...6 1...6 1...6	 0,5...2,3 0,5...2,5 0,5...3,0	 0,5...1,2 0,5...1,2 0,3...2,0	 0,4...1,0 0,4...1,0 0,4...1,5	 – – –	 – – –
Mean value of α/μ_i for 20 ... 55 °C/68 ... 131 °F	10^{-6}/K	4	1,6	0,9	0,7	3	4
Disaccommodation factor *DF* at 60 °C/140 °F at 20 °C/ 68 °F	10^{-6}	< 35 20	< 12 8	< 6 –	< 4 2	– –	< 6 –
Density	kg/m^3	4400	4500	4500	4700	4800	4800
Core shapes		Pot, RM Cylindrical tube threaded toroids double aperture	Pot, RM Cylindrical tube threaded toroids antenna rods	Pot, RM	Pot, RM X TT Q EP	Pot RM TT PM CC E U toroids	Pot RM

[1] Upon request
[2] Perminvarferrite; irreversible changes in quality and permeability occur with strong fields in the core (about > 1500 A/m).
[3] Data for power applications: from pages 89 to 103
[4] For further details refer to pages 48 to 50

materials			Special materials				
N 30	**T 35**	**T 38**	**U 60**[1]	**U 17**[2]	**K 12**	**N 47**[3]	**N 22**
–	–	–	pink	grey	light blue	–	red
4300 ± 20 %	6000 ± 20 %	10000 ± 30 %	8 ± 20 %	10 ± 20 %	24 ± 20 %	1400 ± 20 %	1800 ± 20 %
–	–	–	100 1000	10 220	3 40	–	0,001 0,2
–	–	–	< 2000	< 100 < 1700	< 150 < 600	–	< 2 < 20
> 140	> 130	> 130	> 250	> 500	> 400	> 200	> 145
13	6	4	1000	1500	1200	35	30
380	380	380	110	–	145	430	390
0,5	0,2	0,1	10^5	10^5	10^5	3	1
< 1,4	< 1,4	< 1,4	–	< 27	< 45	< 0,8	< 1,4
– – –	– – –	– – –	– – –	– – –	3 ...14 –0,5...14 –1 ...14	– – –	0,6...1,6 0,6...1,8 07...2,3
1	0,7	0,5	150	40	10	1	0,9
– –	– –	– –	– –	– –	< 50 –	– –	< 7 4
4800	4900	4900	4800	4200	4300	4700	4700
Pot Q, X, TT toroids, double aperture	RM, EP	Pot Q toroids	only upon request	Pot, cylin- drical, tube, threaded double aperture	Pot	Pot RM	Proximity switches, tube, multi- aperture

For further material data (magnetic head cores) refer to page 496.

Material survey

The values for SIFERRIT materials, given in the preceding table, were measured with toroids R 10 (10 mm in diameter) and are, unless otherwise stated, related to room temperature (23 ±3) °C/(73 ±5.4) °F.

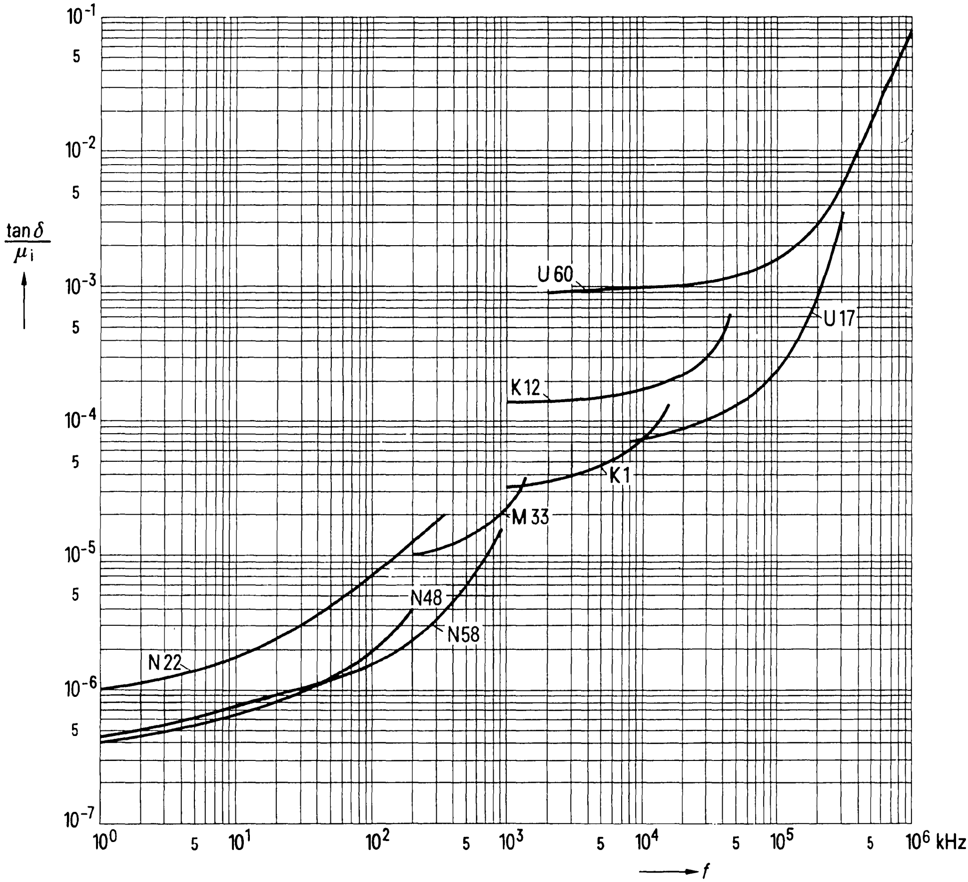
Due to reasons of functional efficiency, that data does not generally apply to products of deviating shape and size. Guaranteed values for the individual products are to be found on the appropriate data sheets.

For symbols and definitions refer to page 15 to 31.

The following measuring conditions apply:

		Frequency f	Flux density $\hat{B}$ mT	Other conditions
Initial permeability	μ_i	$\leqq$ 10 kHz	$\leqq$ 0,1	
Relative loss factor	$\frac{\tan\delta}{\mu_i}$	see table	$\leqq$ 0,1	
Curie temperature	ϑ_c	$\leqq$ 10 kHz	$\leqq$ 0,1	
Peak value of the flux density (≈ saturation flux density $\hat{B}_s$)	B	static		3000 A/m
DC resistivity	ρ			< 10 A/m²
Hysteresis material constant	η_B	$\mu_i \geqq 500$: 10 kHz	1.5 and 3	
		$\mu_i < 500$: 100 kHz	0.3 and 1.2	
Relative temperature coefficient	α/μ_i	$\leqq$ 50 kHz	$\leqq$ 0,1	for temperature refer to table
Disaccommodation factor	DF	$\leqq$ 10 kHz	$\leqq$ 0,1	for temperature refer to table

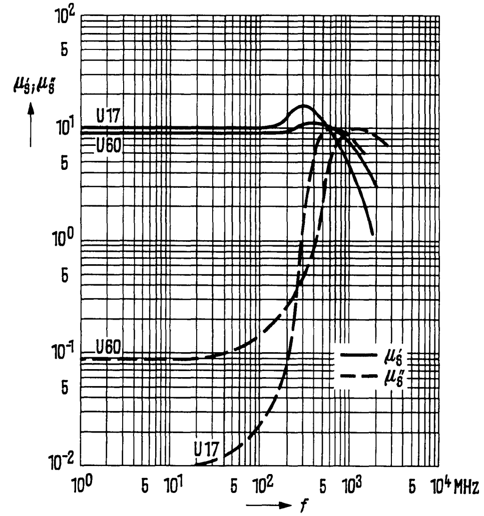
Relative loss factor versus frequency



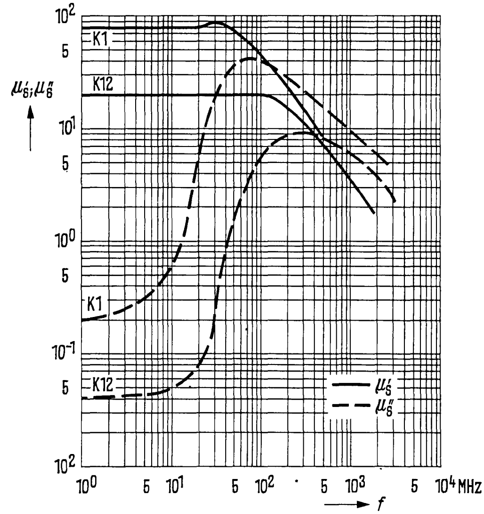
Measured with toroids R 10.
Measuring flux density $\hat{B} \leqq 0.1$ mT

Complex permeability versus frequency

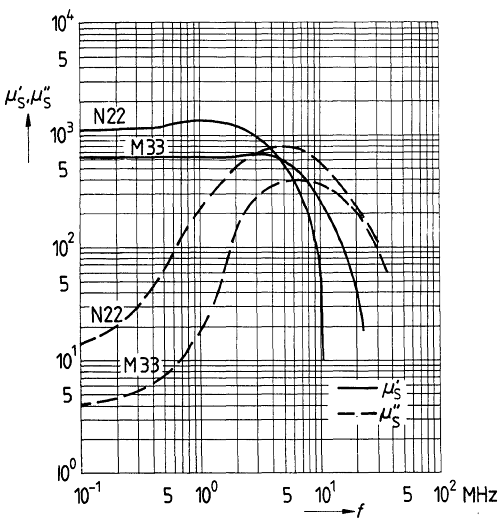
U 17, U 60



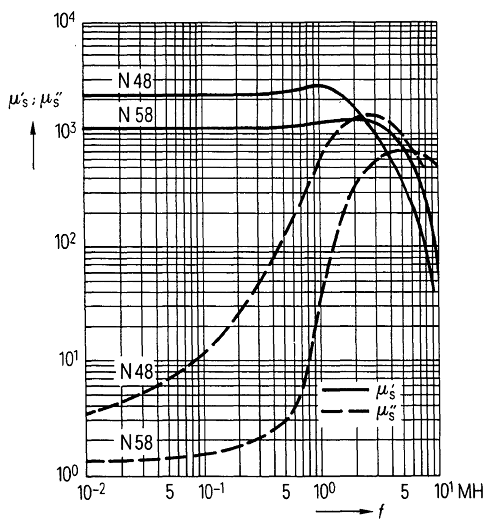
K 12, K 1



M 33, N 22



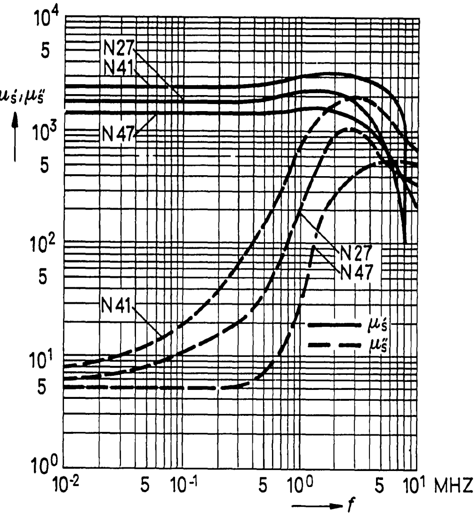
N 48, N 58



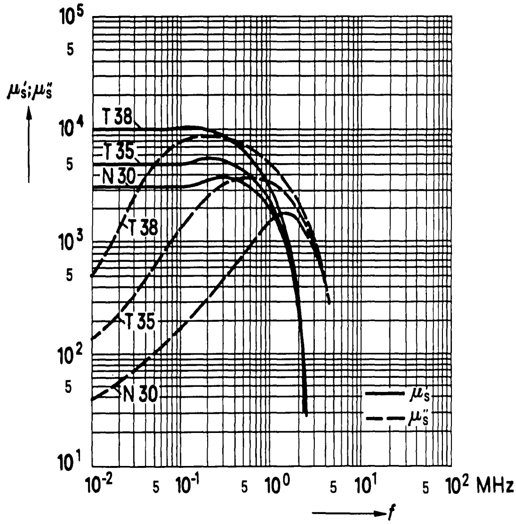
Measured with toroids R 10. Measuring flux density $\hat{B} \leqq 0.1$ mT.

Complex permeability versus frequency

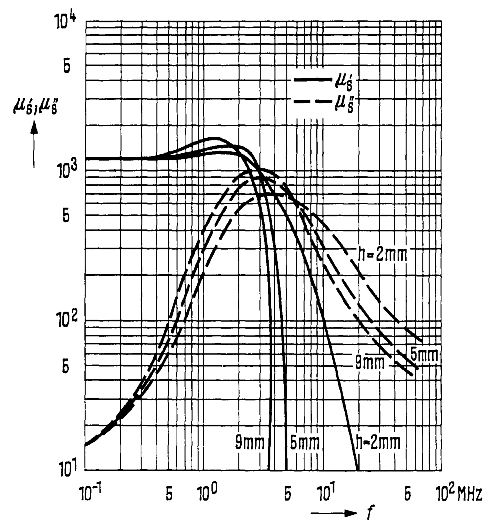
N 27, N 41, N 47



N 30, T 35, T 38



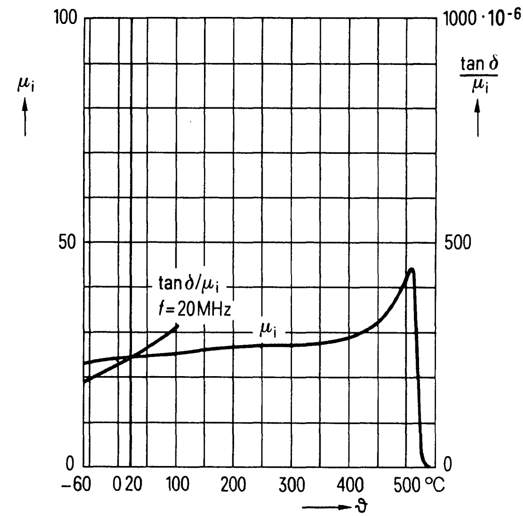
Influence of the core size on the frequency characteristic of the complex permeability, measured with a toroidal core of manganese zinc ferrite
Parameter: Core height *h*.



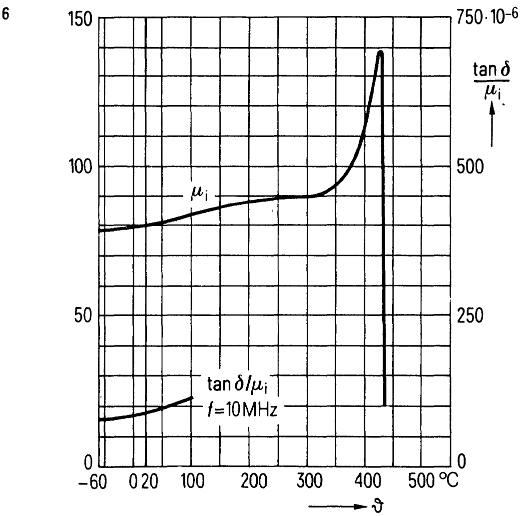
Measured with toroids R 10. Measuring flux density $\hat{B} \leqq 0.1$ mT.

Initial permeability and relative loss factor versus temperature

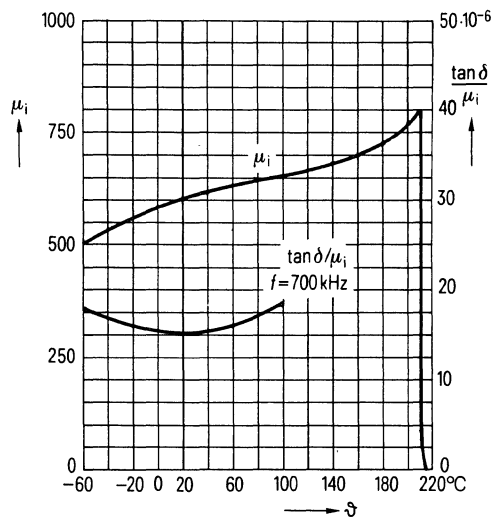
K 12



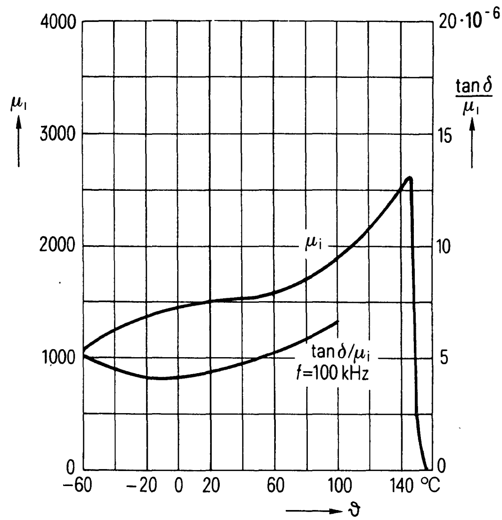
K 1



M 33



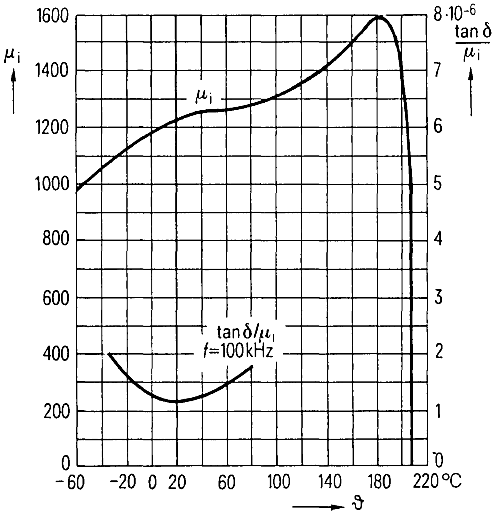
N 22



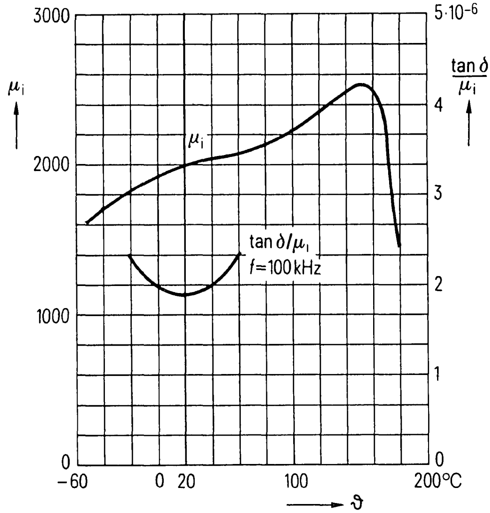
Measuring flux density $\hat{B} \leqq 0.1$ mT.

Initial permeability and relative loss factor versus temperature

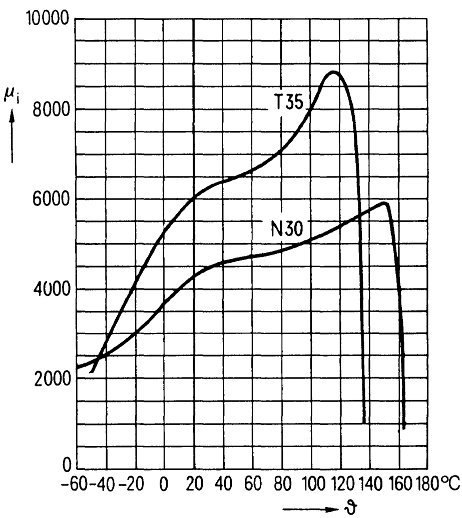
N 58



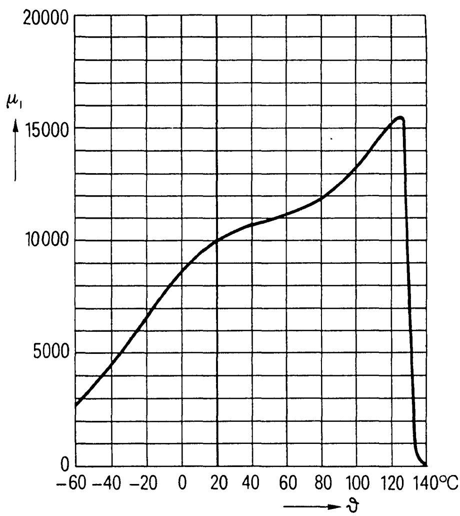
N 48



N 30, T 35

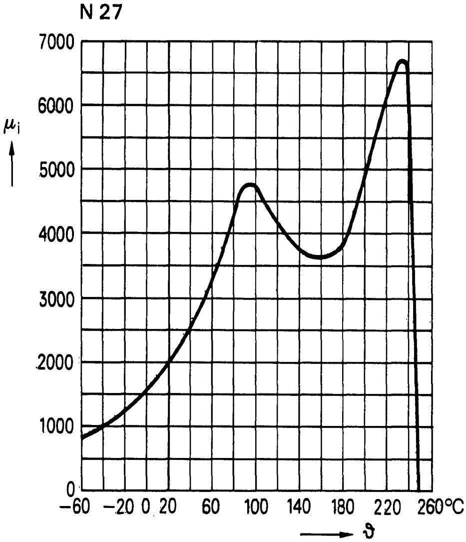


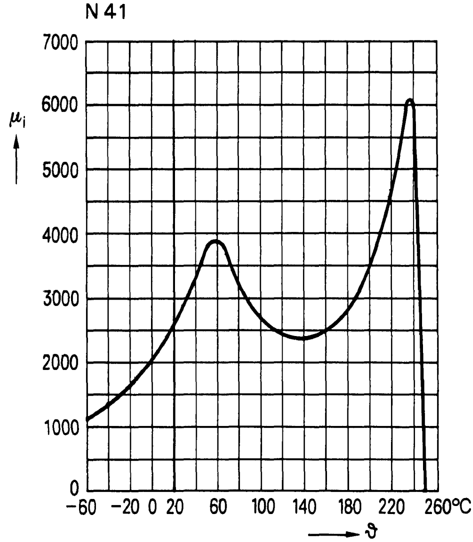
T 38

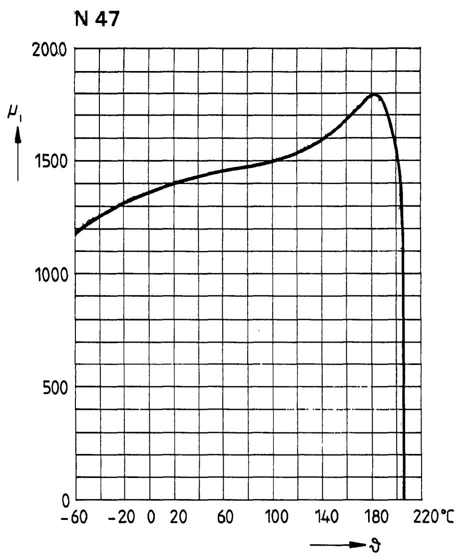


Measuring flux density $\hat{B} \leqq 0.1$ mT.

Initial permeability versus temperature

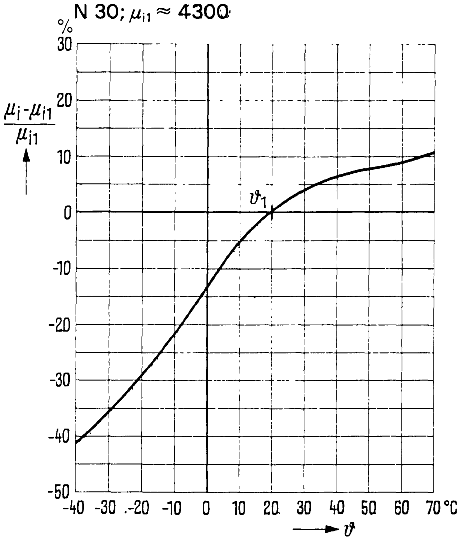


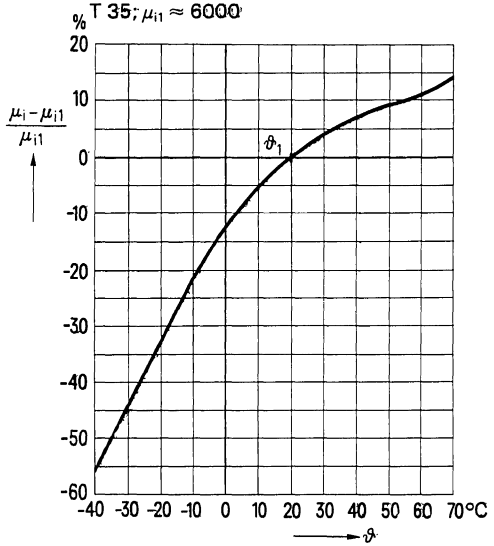


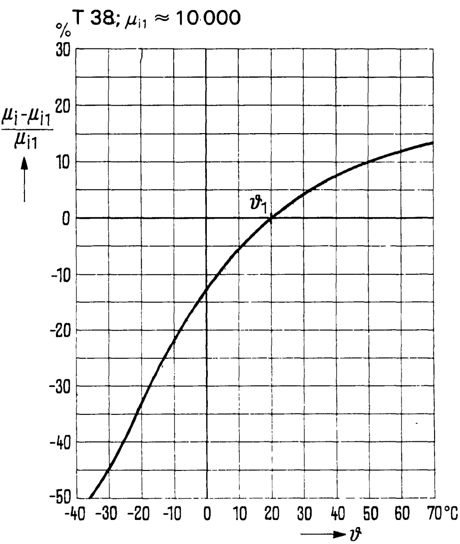


Measuring flux density $\hat{B} \leqq 0.1$ mT.

Variation of initial permeability versus temperature







Measuring flux density $\hat{B} \leqq 0.1$ mT.

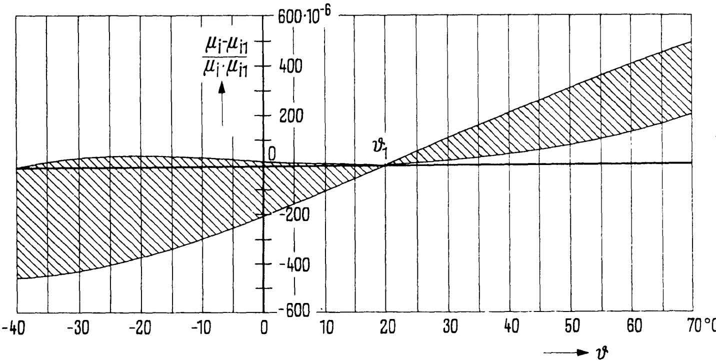
Permeability factor versus temperature

$$\frac{\alpha}{\mu_i} = \frac{\mu_i - \mu_{i1}}{\mu_i \cdot \mu_{i1}} \cdot \frac{1}{(\vartheta - \vartheta_1)}$$

μ_i at temperature ϑ
μ_{i1} at temperature ϑ_1

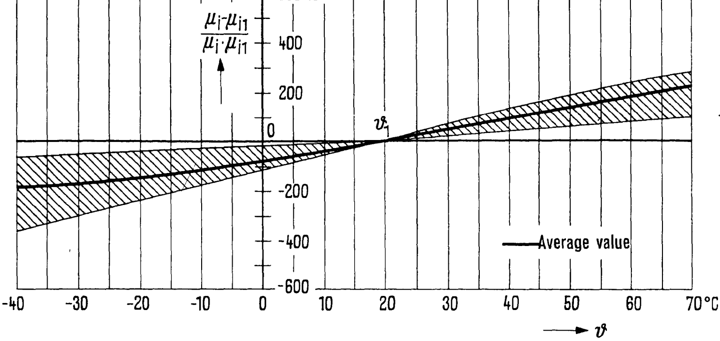
$$\frac{\Delta L}{L}[\%] = \frac{\alpha}{\mu_i}[10^{-6}/\mathrm{K}] \cdot (\vartheta - \vartheta_1)\ [\mathrm{K}] \cdot \mu_e \cdot 100$$

$$\frac{\Delta L}{L}[\%] = \frac{\mu_i - \mu_{i1}}{\mu_i \cdot \mu_{i1}}\,\mu_e \cdot 100$$



K 12 ($\mu_{i1} \approx 24$)

ϑ °C	α/μ_i 10^{-6}/K
20… 55	3 …14
20… 5	−0,5…14
20…−25	−1 …14

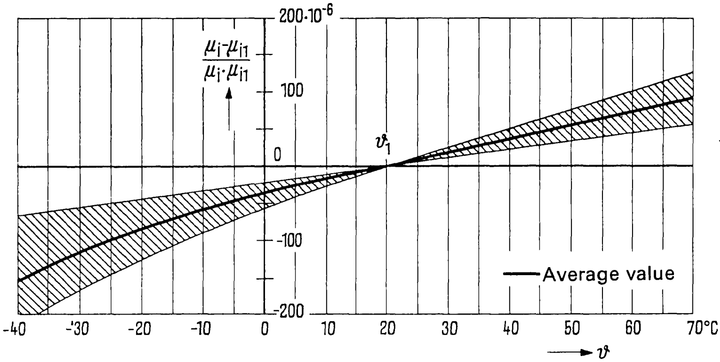


K 1 ($\mu_{i1} \approx 80$)

ϑ °C	α/μ_i 10^{-6}/K
20… 55	2…4 …6
20… 5	1…4 …6
20…−25	1…3,5…6

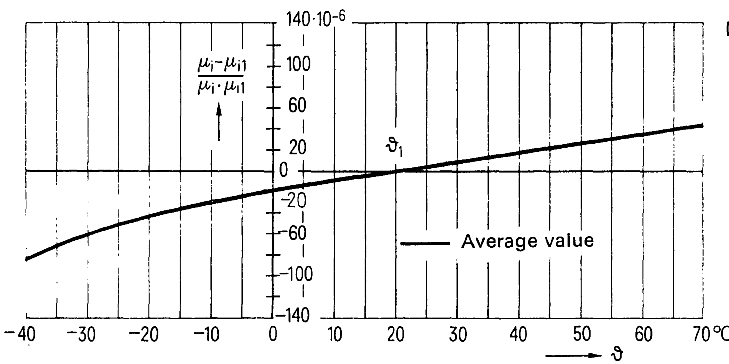
SIFERRIT Materials

Permeability factor versus temperature



M 33 ($\mu_{i1} \approx 750$)

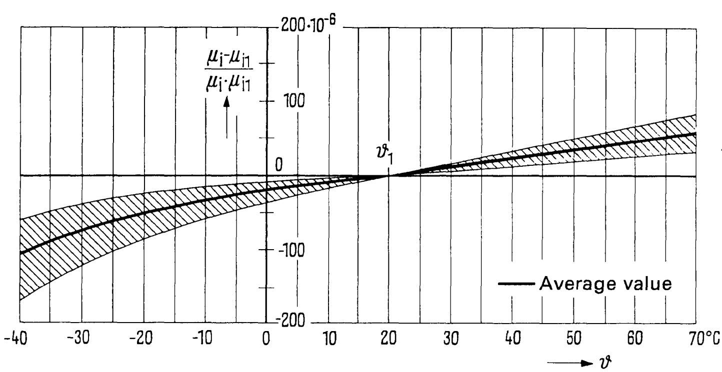
ϑ °C	α/μ_i 10^{-6}/K
20... 55	0,5...1,6...2,3
20... 5	0,5...1,8...2,5
20...−25	0,5...2,0...3,0



N 58 ($\mu_{i1} \approx 1300$)

ϑ °C	α/μ_i 10^{-6}/K
−20... 70	0,3 ... 2,0

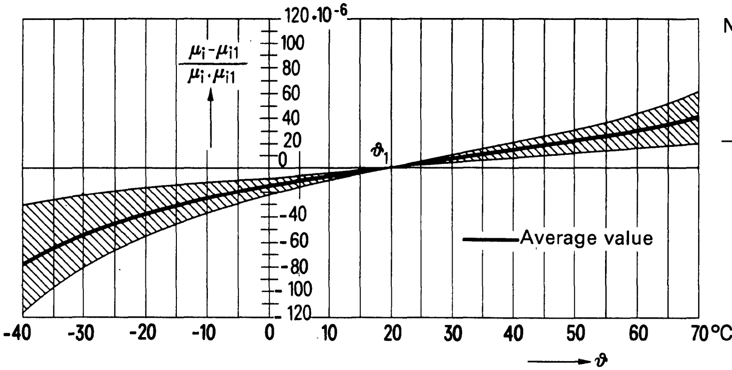
Deviating values for intermediate temperature ranges are only available upon request, since they depend on the core shape.



N 22 ($\mu_{i1} \approx 1800$)

ϑ °C	α/μ_i 10^{-6}/K
20... 55	0,6...0,9...1,6
20... 5	0,6...1,0...1,8
20...−25	0,7...1,4...2,3

Permeability factor versus temperature



N 48 ($\mu_{i1} \approx 2000$)

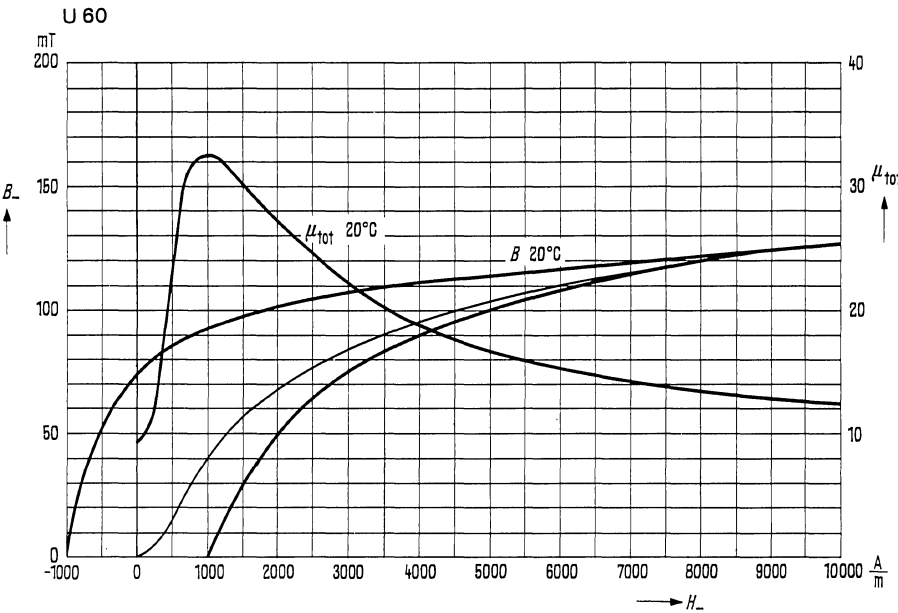
ϑ °C	α/μ_i 10^{-6}/K
20... 55	0,4...0,7...1,0[1]
20... 5	0,4...0,7...1,0[1]
20...−25	0,4...0,9...1,5
20...−40	0,6...1,25...2,0

[1] For pot cores greater than 22 mm dia and RM cores greater than RM 8, the α/μ_i value may deviate by up to 1.2×10^{-6}/K.

Static magnetization curves

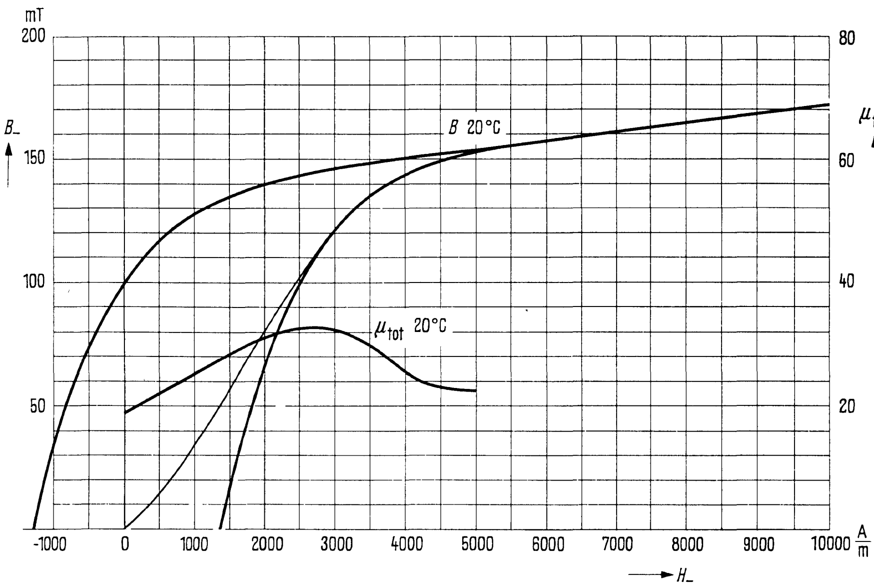
The static magnetization curves were obtained by the ballistic galvanometer method.

The relative total permeability $\mu_{tot} = \frac{1}{\mu_0} \cdot \frac{B_-}{H_-}$ is taken from the curve of normal magnetization (new curve).

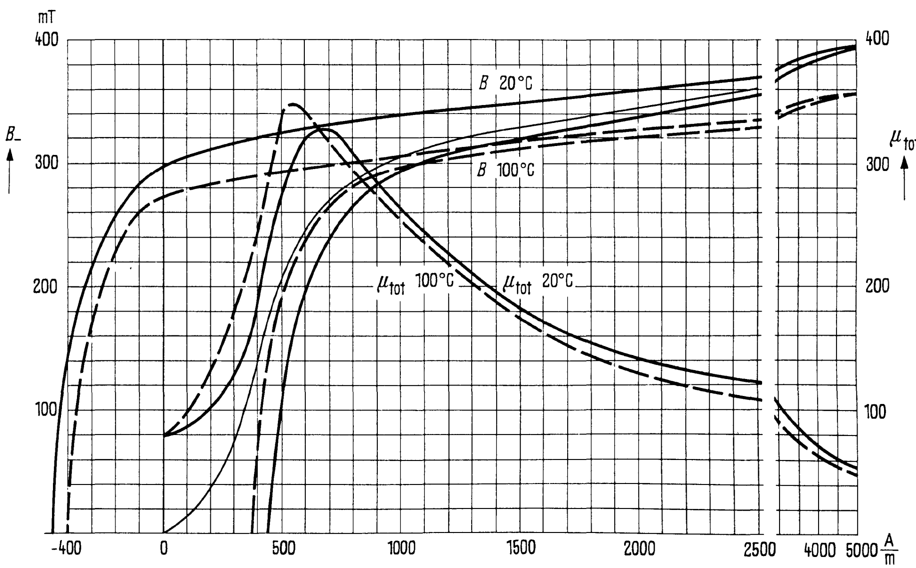


Static magnetization curves

K 12

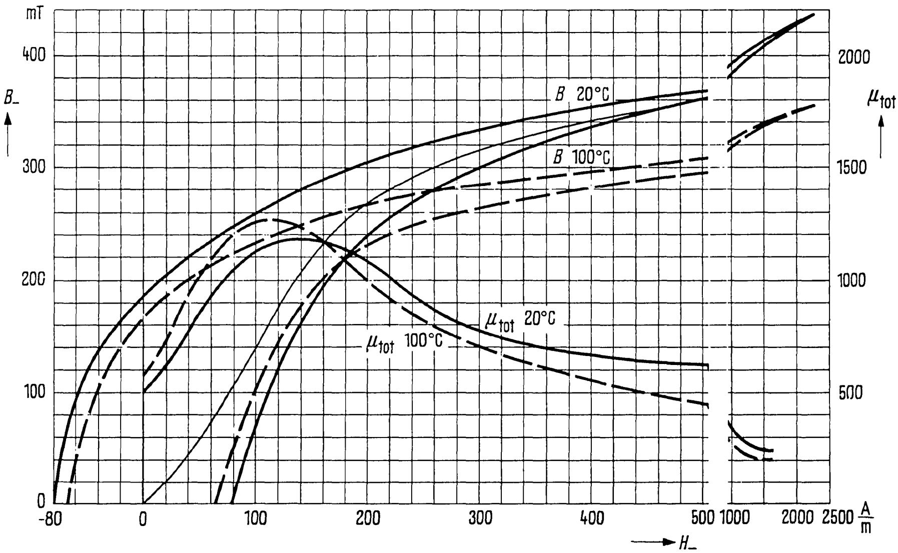


K 1

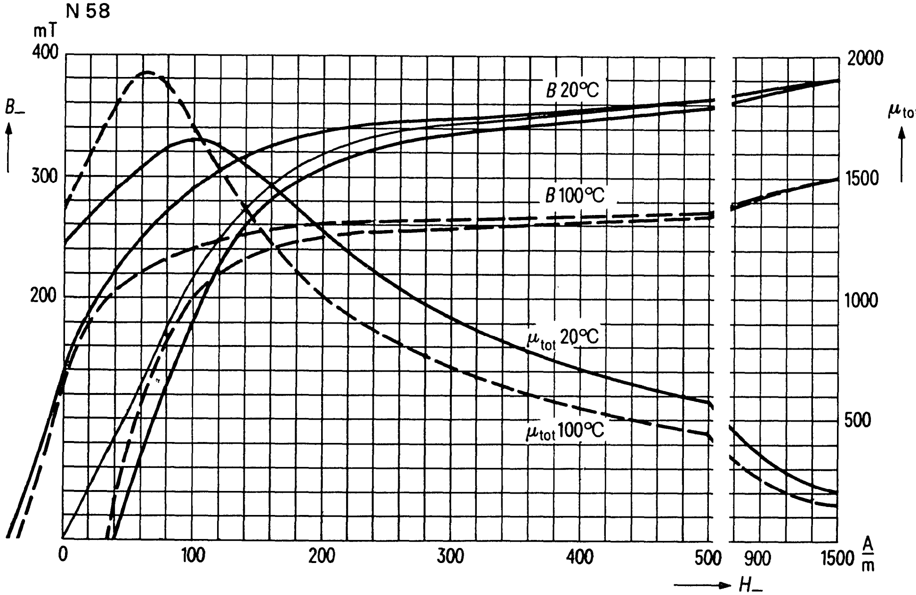


Static magnetization curves

M 33

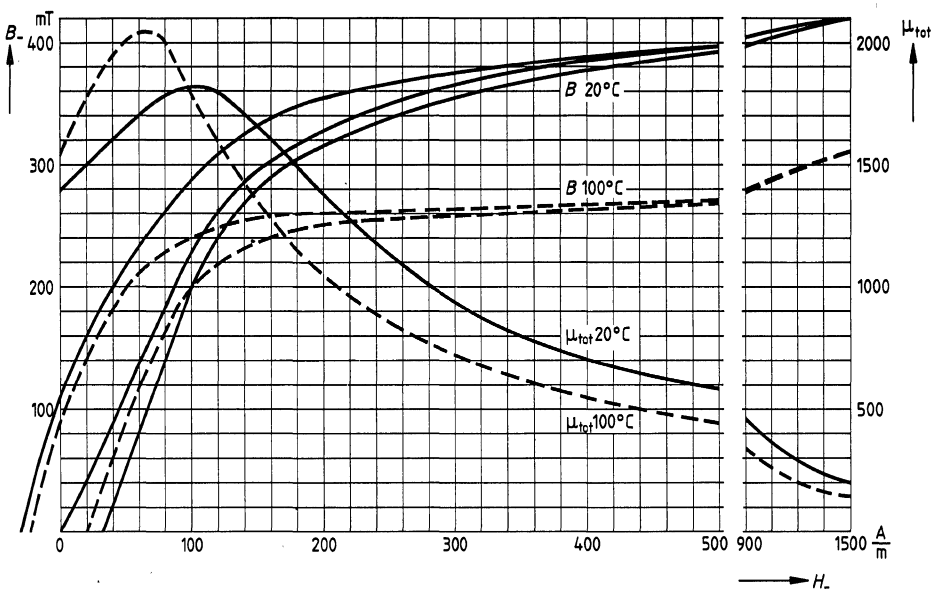


N 58

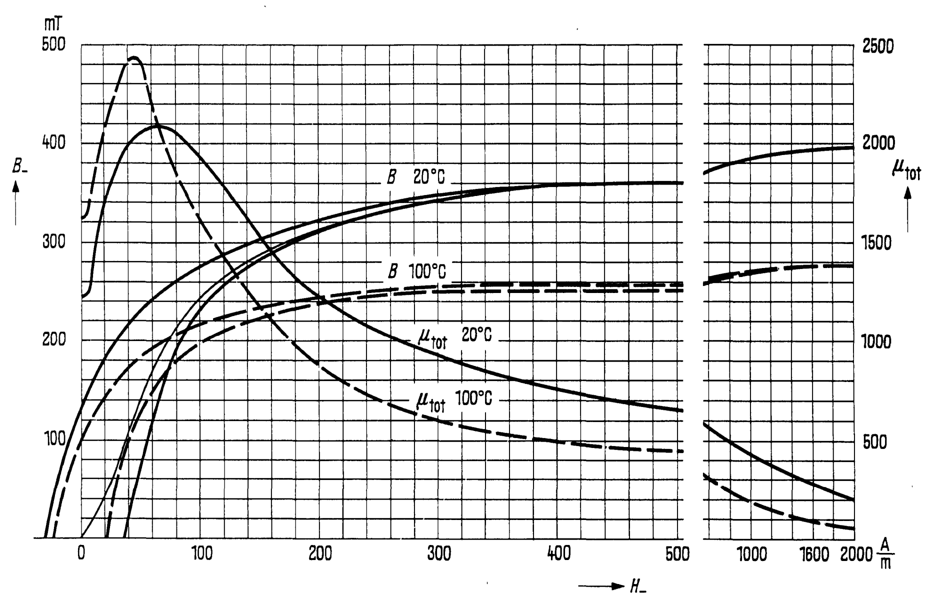


Static magnetization curves

N 47

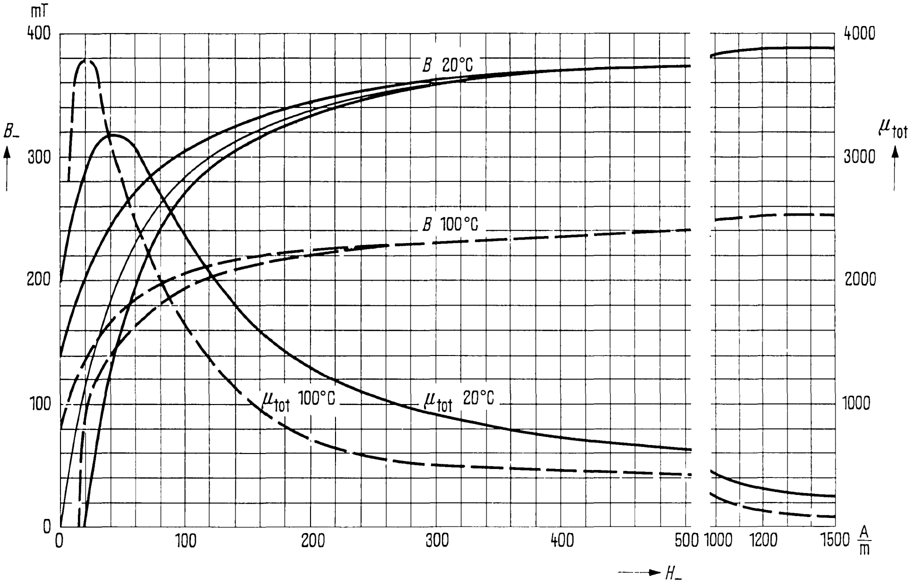


N 22

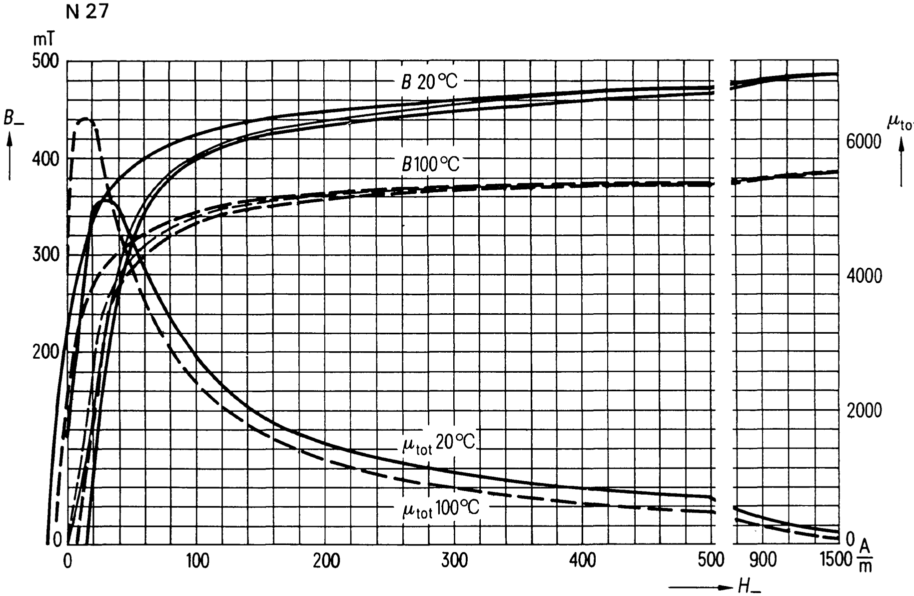


Static magnetization curves

N 48

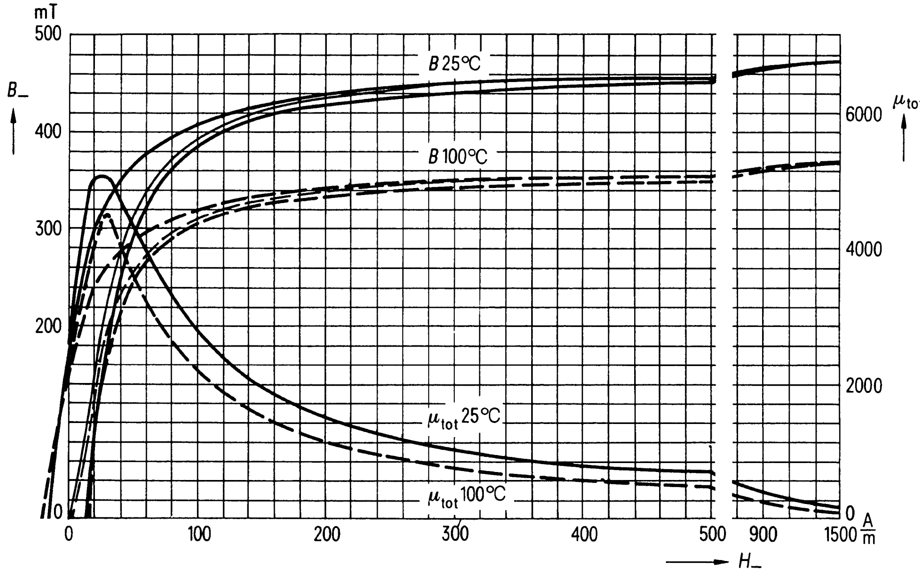


N 27

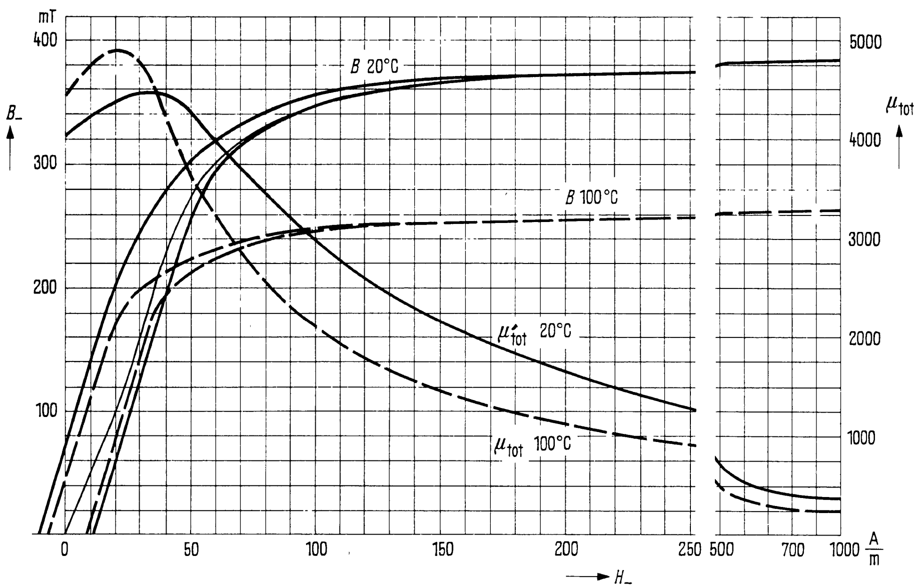


Static magnetization curves

N 41

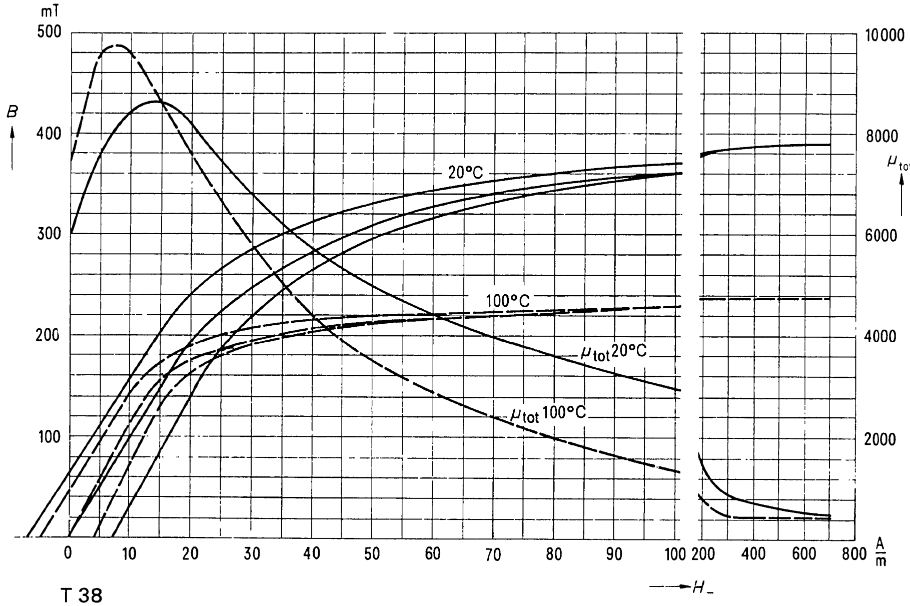


N 30

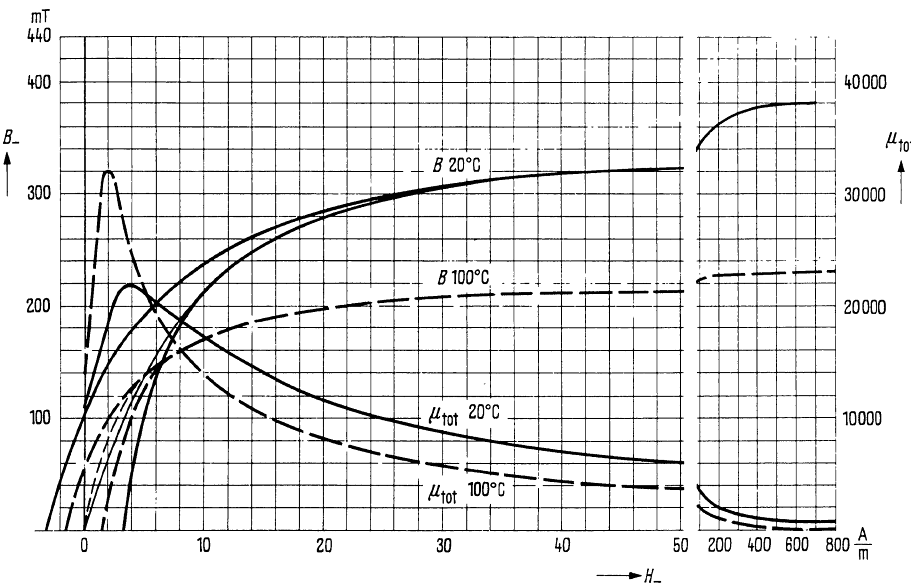


Static magnetization curves

T 35

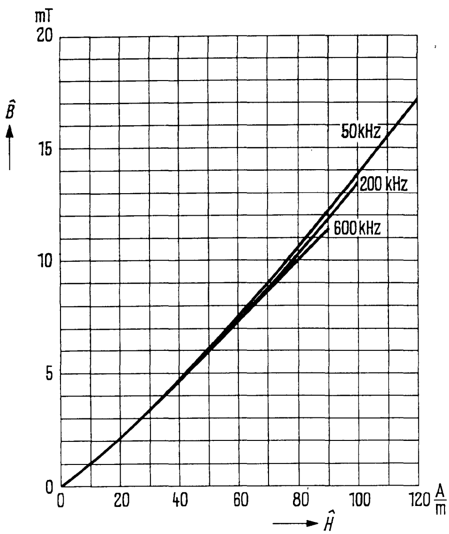


T 38

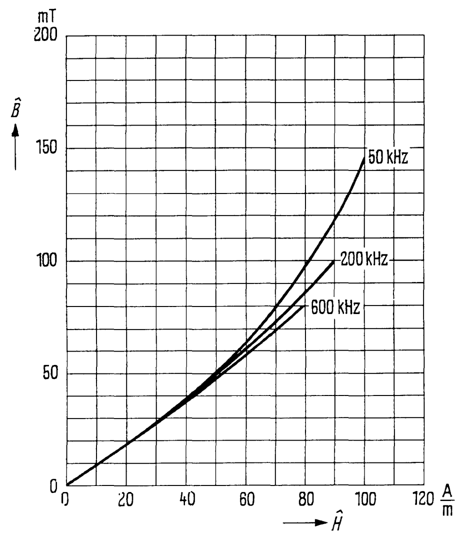


Dynamic magnetization curves

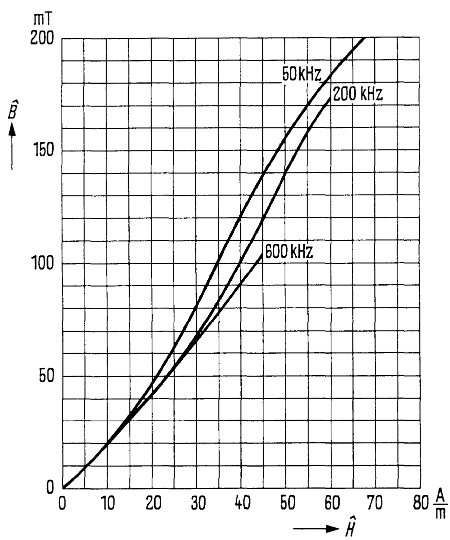
K 1



M 33



N 22



Inductor Design

1. Ungapped pot cores

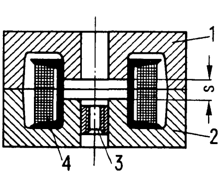
Even with the best grinding methods known today, a certain degree of roughness on ground surfaces cannot be avoided, so that the usual term "without air gap, (ungapped)" does not in fact imply no air gap at all. The A_L values quoted allow for a certain amount of roughness of the ground faces. The tolerance of the A_L value for the ungapped pot cores is +30 to −20% or +40 to −30%. Closer tolerances are not available for several reasons. The spreads in the A_L value of an ungapped pot core practically equal the spreads in toroids permeability, and the A_L value largely depends on the grinding quality of the matching surfaces. With increasing material permeability the influence of the inevitable residual air gap grows larger.

The spreads in the A_L value may also be increased by the mode of core assembly. Influences of mounting and glueing generally tend to diminish the A_L value. It is, therefore, particularly important for delivery to keep the minimum limit value, whereas exceeding the A_L value within moderate limits (about 20%), is of no importance. Considering these versatile influences, we have made it a rule to maintain the minimum limit in any case, whereas occasional exceeding the maximum limit will be tolerated.

2. Gapped pot cores

This type of core is used in high quality filter and resonant circuits. In case of small air gaps (max. 0.15 mm for round types or 0.2 mm for RM cores) the air gap can be ground into only one core half. Then, only the half with the ground air gap has been stamped whereas the other half is blank. The gap reduces after-effect losses, temperature coefficient and disaccommodation factor by the ratio of the permeability of a gapped core to the permeability of the same core without air gap, and hysteresis losses by the square of this ratio. Furthermore, closer tolerances on the A_L value can be obtained on special order.

The rated A_L values for cores with a ground air gap can be obtained from the appropriate sheets on pot cores. These also indicate the relative effective permeability μ_e used to approximately determine the loss and temperature coefficients ect. for the appropriate effective permeability (see page 38) from the toroidal core characteristics. In cores with a larger air gap the stray field immediately around the air gap causes additional eddy current losses in the copper winding. If the coil Q must meet stringent requirements, it is therefore advisable to wind several layers of polystyrene or nylon tape instead of wire in that part of the winding in the proximity of the air gap. For example in the section near the air gap of the center compartment of a three-compartment former, thus "padding" the winding.



Schematic drawing showing construction of a set of gapped (s) pot or RM cores comprising 2 core halves 1 and 2, threaded part 3 and padded winding 4.

3. SIFERRIT pot and RM cores with inserted threaded sleeves

Pot and RM cores are available with threaded sleeve fitted to the core. We have developed automatic machines of high reliability in adding adhesive and in positioning the threaded sleeve in the core.

The rigid fit of the threaded sleeve is checked regularly, at a climate of 40 °C/104 °F/ 93% humidity[1] during four days and also by periodic examinations of 3 weeks. Bond strengths of 20 N for 2 mm center holes (e.g. for pot cores 11 x 7 or RM 5 cores) and > 30 N for 3 mm center holes (e.g. pot cores 14 x 8, or RM 6 cores) are greatly exceeded, on an average of 100 N. The threaded sleeve is also properly centered and positioned to the proper depth (this helps maintain the specified adjustment range). Summing up, the controlled mechanical procedure guarantees higher reliability than manual glueing and its unavoidable inadequacies.

Owing to the porosity of the ferrite, bracing of the ferrite structure because of soaked-in, hardened adhesive cannot always be avoided. Hence, the relative temperature coefficient α/μ_e can be increased by approximately 0.2×10^{-6}/K.

The ordering codes for pot and RM cores with glued threaded sleeve (e.g. for RM 6: B65807–**N******–****) are to be found on the appropriate catalog pages.

4. Inductance adjustment

Inductance curves, to be understood as minimum values, are included in the data for pot core adjusting devices. The indicated percentage change in inductance is referred to L_{min} (inductance without adjusting screw). Adjustment is done by bridging the air gap with a cylindrical or screw core, and is, therefore, only possible on gapped pot cores.

In order to avoid unstable conditions of inductance, Q etc. due to intermittent magnetic contact, the adjusting device should not come into direct contact with the wall of the center boss during the adjusting procedure. A suitable insulator is therefore provided for the adjustment systems of SIFERRIT pot cores.

Although wide variations of inductance can be obtained with a large air gap, it should be remembered that the magnetic properties depend to a great extent on the size of the air gap. If the coils have to meet stringent Q and temperature coefficient requirements etc., it is advisable to use the smallest possible adjustment range.

These conditions can be met by suitably selecting the adjusting core material (SIFERRIT or SIRUFER). Suitable plastic adjusting tools are included on the pages dealing with adjusting devices.

[1] according to IEC publication 68-2-3.

5. Winding design

The usual litz wires and wires as well as nomograms for determining flux density and A_L value are contained in the following pages.

Litz wire table
(Extract from DIN 46 447, part 1)

Litz wire	Nominal diameter of the copper enamel wire	Outer diameter of the insulated litz wire (max. dimension)			DC resistance at 20 °C/68 °F for 1 meter (nominal value)
		non-covered	covered		
			single natural silk (1 x 52)	double natural silk (2 x 52)	
	mm	mm	mm	mm	Ω
1 x 12 x 0.04	0.04	0.208	0.243	0.278	1.156
1 x 15 x 0.04		0.229	0.269	0.299	0.925
1 x 20 x 0.04		0.264	0.304	0.334	0.694
1 x 30 x 0.04		0.323	0.363	0.393	0.462
1 x 45 x 0.04		0.395	0.435	0.465	0.308
3 x 20 x 0.04		0.460	0.500	0.530	0.231
3 x 30 x 0.04		0.565	0.605	0.645	0.154
3 x 45 x 0.04		0.690	0.730	0.770	0.103
1 x 10 x 0.05	0.05	0.231	0.271	0.301	0.888
1 x 15 x 0.05		0.283	0.323	0.353	0.592
1 x 20 x 0.05		0.327	0.367	0.397	0.444
1 x 30 x 0.05		0.401	0.441	0.471	0.296
1 x 45 x 0.05		0.490	0.530	0.560	0.197
3 x 20 x 0.05		0.570	0.610	0.650	0.148
3 x 30 x 0.05		0.701	0.741	0.781	0.099
3 x 40 x 0.05		0,806	0.846	0.886	0.074
1 x 3 x 0.071	0.07	0.189	0.224	0.259	1.468
1 x 6 x 0.071		0.254	0.294	0.324	0.734
1 x 10 x 0.071		0.328	0.368	0.398	0.440
1 x 15 x 0.071		0.402	0.442	0.472	0.294
1 x 20 x 0.071		0.464	0.504	0.534	0.220
1 x 30 x 0.071		0.568	0.608	0.648	0.147
1 x 45 x 0.071		0.696	0.736	0.776	0.098
3 x 20 x 0.071		0.810	0.850	0.890	0.073
3 x 30 x 0.071		0.994	1.034	1.094	0.0489
3 x 45 x 0.071		1.214	1.254	1.314	0.0326

Wire table (Extract from DIN 46 435 and DIN 46 436, part 2)

Nominal diameter (conductor diameter)	Outer diameter of the insulated wire (max. dimension)				DC resistance at 20 °C/68 °F for 1 meter (nominal value)
	enamelled according to degree 1 (L)	enamelled according to degree 2 (2 L)	enamelled according to degree 1 single-silk covered (1 x 52)	enamelled according to degree 1 double-silk covered (2 x 52)	
mm	mm	mm	mm	mm	Ω
● 0.02	0.025	0.027	–	–	54,88
● 0.025	0.031	0.034	–	–	35.12
0.03	0.038	0.041	0.073	0.108	24.39
● 0.032	0.040	0.043	0.077	0.112	21.44
0.036	0.045	0.049	0.081	0.116	16.94
● 0.04	0.050	0.054	0.085	0.120	13.72
0.045	0.056	0.061	0.091	0.126	10.84
● 0.05	0.062	0.068	0.097	0.132	8.781
0.056	0.069	0.076	0.104	0.139	7.000
0.06	0.074	0.081	0.109	0.144	6.098
● 0.063	0.078	0.085	0.113	0.148	5.531
● 0.071	0.088	0.095	0.123	0.158	4.355
● 0.08	0.098	0.105	0.133	0.168	3.430
● 0.09	0.110	0.117	0.145	0.180	2.710
● 0.1	0.121	0.129	0.156	0.191	2.195
● 0.112	0.134	0.143	0.169	0.204	1.750
● 0.125	0.149	0.159	0.184	0.219	1.405
● 0.14	0.166	0.176	0.201	0.236	1.120
0.15	0.177	0.187	0.212	0.247	0.9756
● 0.16	0.187	0.199	0.222	0.257	0.8575
0.17	0.198	0.210	0.233	0.268	0.7596
● 0.18	0.209	0.222	0.244	0.279	0.6775
0.19	0.220	0.233	0.255	0.290	0.6081
0.2	0.230	0.245	0.265	0.300	0.5488
● 0.224	0.256	0.272	0.296	0.326	0.4375
● 0.25	0.284	0.301	0.324	0.354	0.3512
● 0.28	0.315	0.334	0.355	0.385	0.2800
0.3	0.336	0.355	0.375	0.405	0.2439
● 0.315	0.352	0.371	0.392	0.422	0.2212
● 0.355	0.395	0.414	0.435	0.465	0.1742
● 0.4	0.442	0.462	0.482	0.512	0.1372
● 0.45	0.495	0.516	0.535	0.565	0.1084
● 0.5	0.548	0.569	0.588	0.618	0.08781
● 0.56	0.611	0.632	0.651	0.691	0.07000
0.6	0.654	0.674	0.693	0.733	0.06098
● 0.63	0.684	0.706	0.724	0.764	0.05531
● 0.71	0.767	0.790	0.807	0.847	0.04355
● 0.75	0.809	0.832	0.849	0.889	0.03903
● 0.8	0.861	0.885	0.901	0.941	0.03430
● 0.85	0.913	0.937	–	1.013	0.03038
● 0.9	0.965	0.990	–	1.065	0.02710
● 0.95	1.017	1.041	–	1.117	0.02432
● 1	1.068	1.093	–	1.168	0.02195

The nominal diameters marked by ● comply with the diameters of the IEC publication 182-1, 1st edition 1964, part 1: "Diameters of conductors for round winding wires" and are preferred diameters.

Table of
American Wire Gauges (AWG)

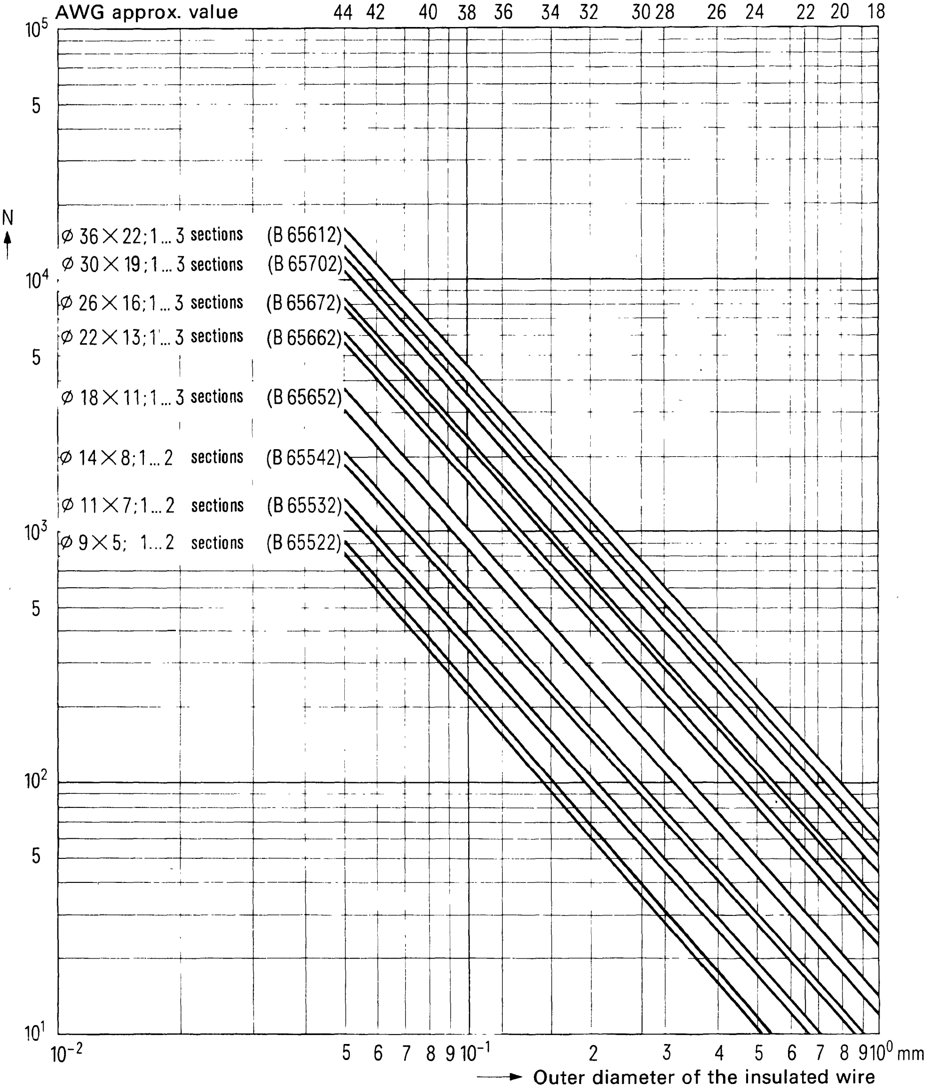
1 in. = 25.4 mm
1 mil = 1/1000 in.
1 mm = 0.03937 in.

Nominal diameter		Wire gauge No.		Nominal diameter		Wire gauge No.	
mm	mil	BG[1]	SWG[2]	mm	mil	BG[1]	SWG[2]
2.642	104	–	12	0.2870	11.3	29	–
2.591	102	10	–	0.2743	10.8	–	32
2.337	92	–	13	0.2540	10.0	30	33
2.311	91	11	–	0.2337	9.2	–	34
2.057	81	12	–	0.2261	8.9	31	–
2.032	80	–	14	0.2134	8.4	–	35
1.829	72	13	15	0.2007	7.9	32	–
1.626	64	14	16	0.1930	7.6	–	36
1.448	57	15	–	0.1803	7.1	33	–
1.422	56	–	17	0.1727	6.8	–	37
1.295	51	16	–	0.1600	6.3	34	–
1.219	48	–	18	0.1524	6.0	–	38
1.143	45	17	–	0.1422	5.6	35	–
1.016	40	18	19	0.1321	5.2	–	39
0.9144	36	19	20	0.1270	5.0	36	–
0.8128	32	20	21	0.1219	4.8	–	40
0.7239	28.5	21	–	0.1118	4.4	37	41
0.7112	28	–	22	0.1016	4.0	38	42
0.6426	25.3	22	–	0.09144	3.6	–	43
0.6096	24	–	23	0.08890	3.5	39	–
0.5740	22.6	23	–	0.08128	3.2	–	44
0.5588	22	–	24	0.07874	3.1	40	–
0.5105	20.1	24	–	0.07112	2.8	41	45
0.5080	20	–	25	0.0633	2.5	42	–
0.4572	18	–	26	0.06096	2.4	–	46
0.4547	17.9	25	–	0.0564	2.2	43	–
0.4166	16.4	–	27	0.05080	2.0	44	47
0.4039	15.9	26	–	0.0447	1.8	45	–
0.3759	14.8	–	28	0.04064	1.6	46	48
0.3607	14.2	27	–	0.0355	1.4	47	–
0.3454	13.6	–	29	0.03048	1.2	48	49
0.3200	12.6	28	–	0.0282	1.1	49	–
0.3150	12.4	–	30	0.02504	1.0	50	50
0.2946	11.6	–	31				

[1] BG ≙ Birmingham gauge
[2] SWG ≙ Standard wire gauge

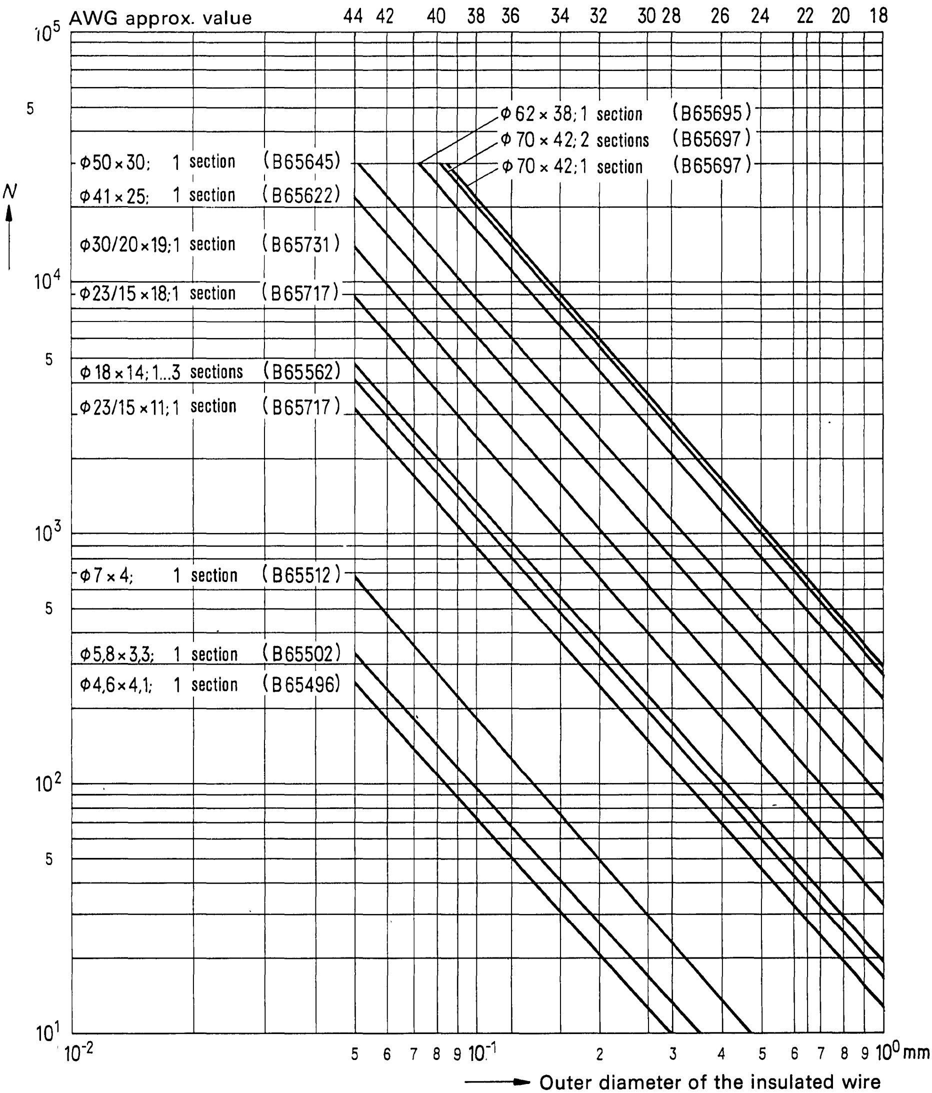
Pot cores – standardized

Maximum number of turns *N* for coil formers



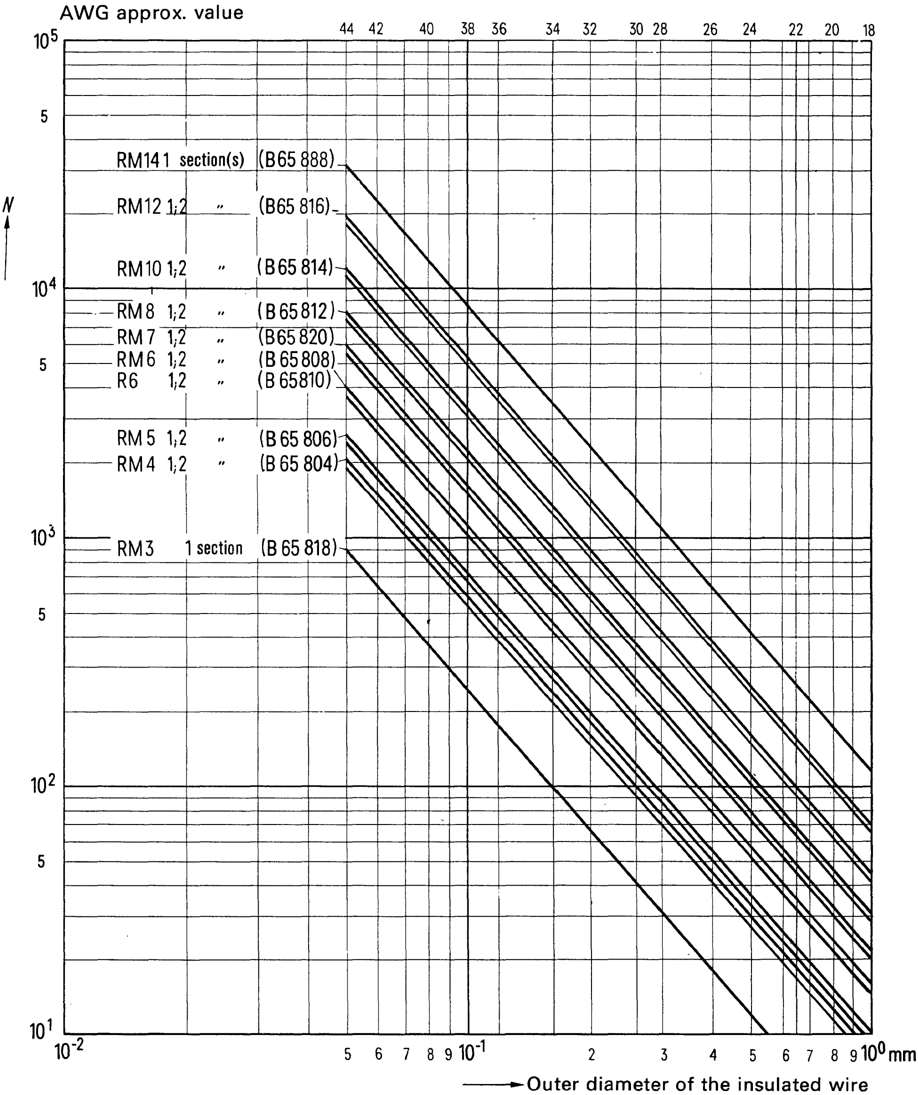
Pot cores – non-standardized

Maximum number of turns *N* for coil formers



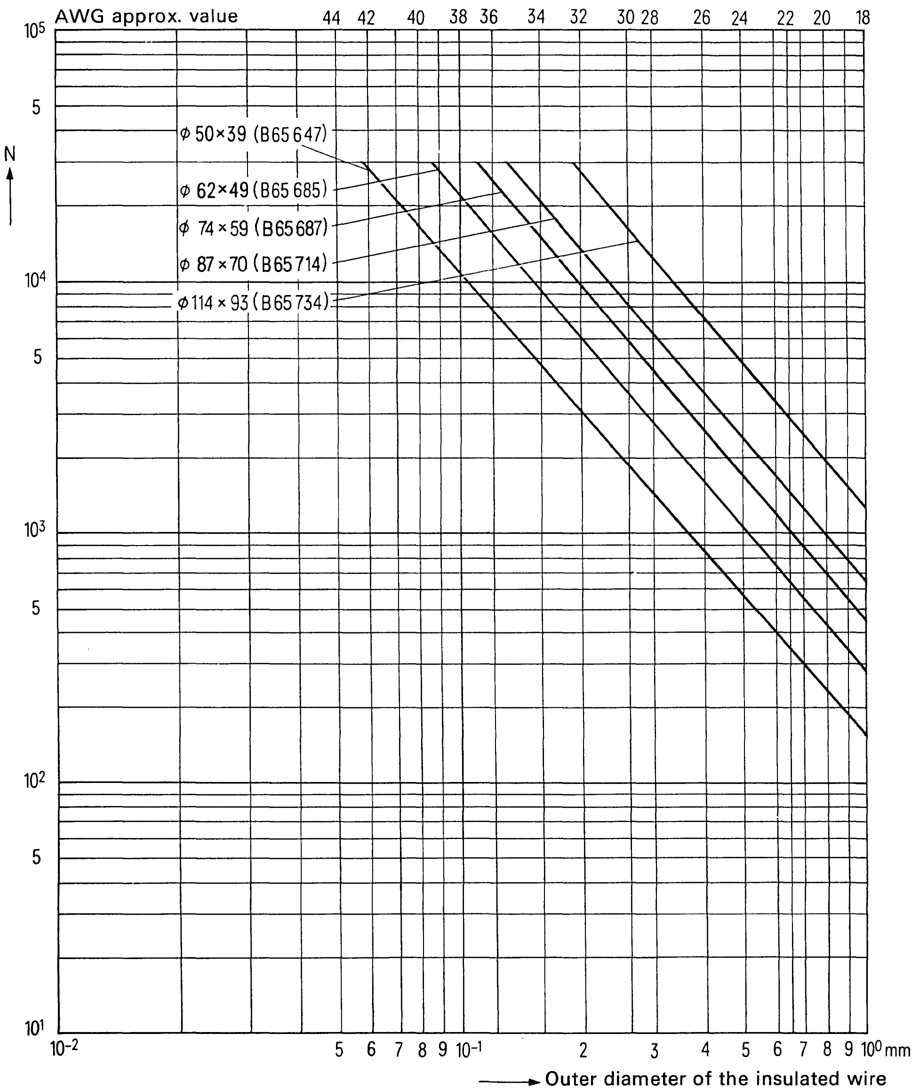
RM cores

Maximum number of turns *N* for coil formers



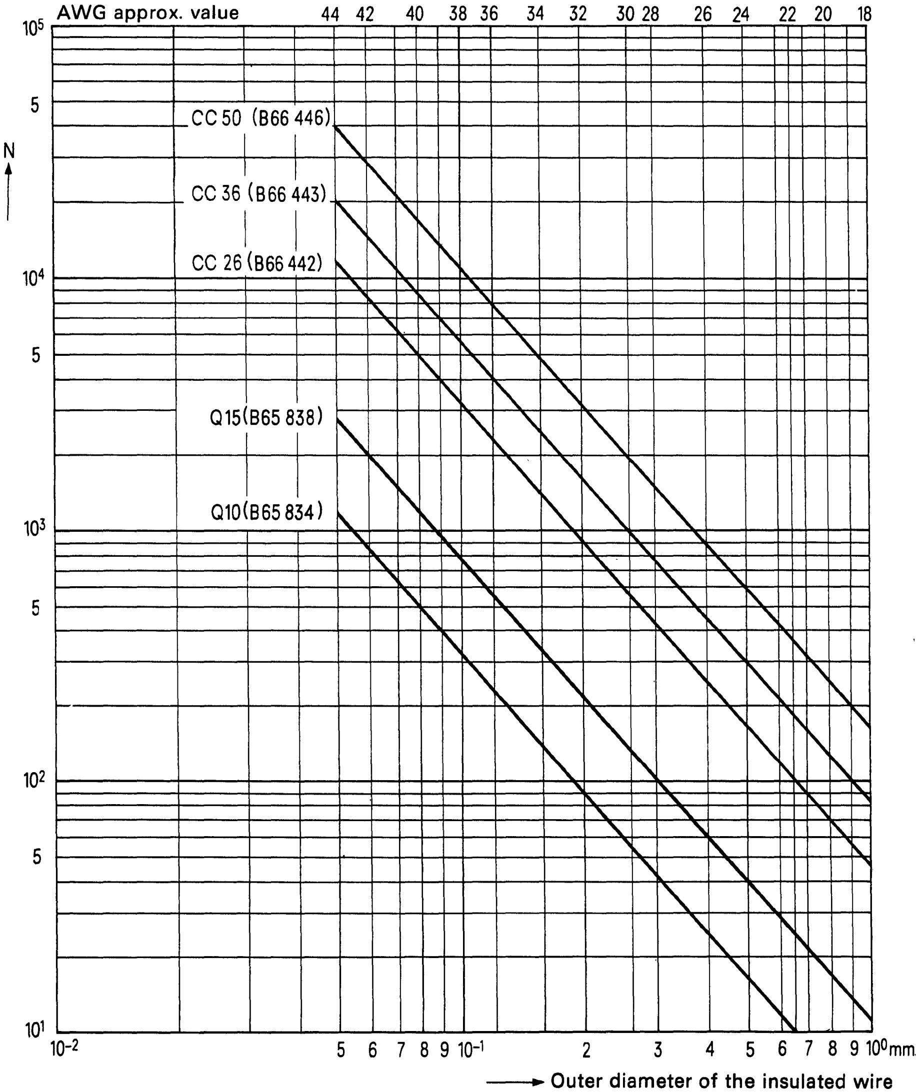
PM Cores

Maximum number of turns *N* for coil formers



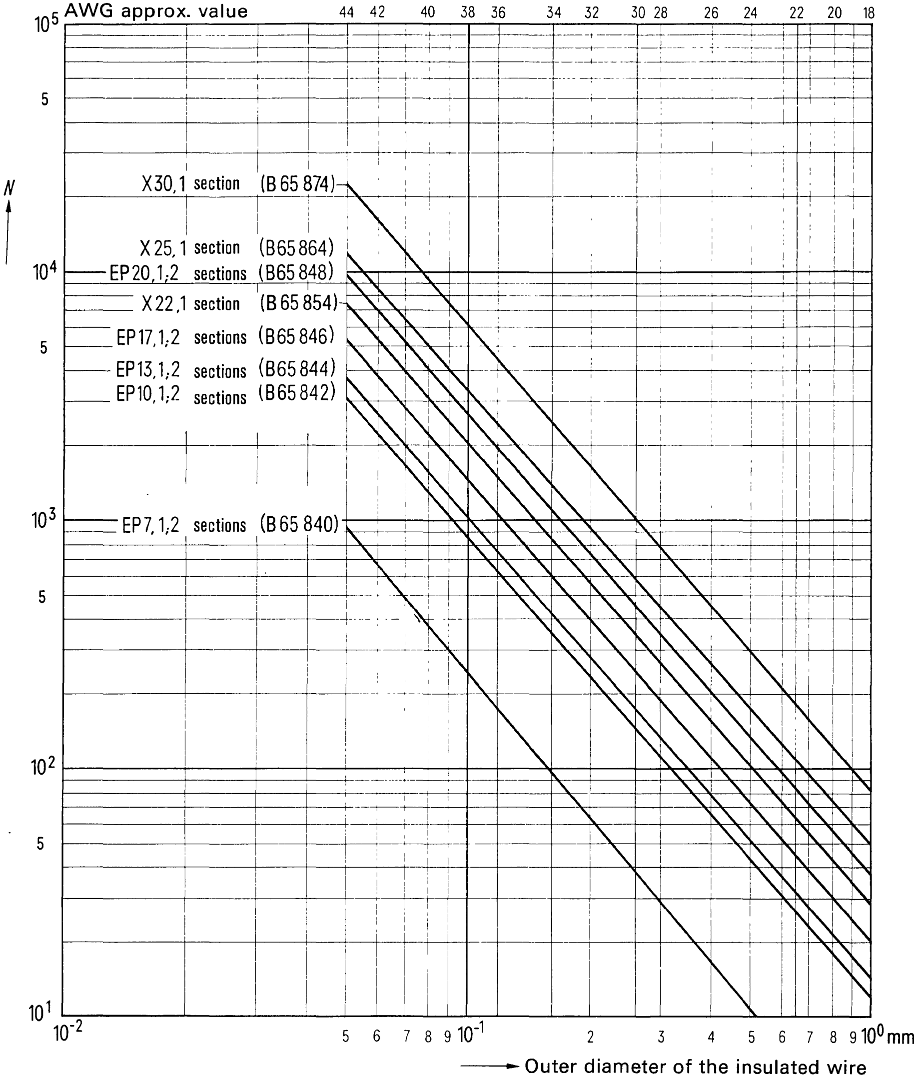
CC and Q cores

Maximum number of turns *N* for coil formers



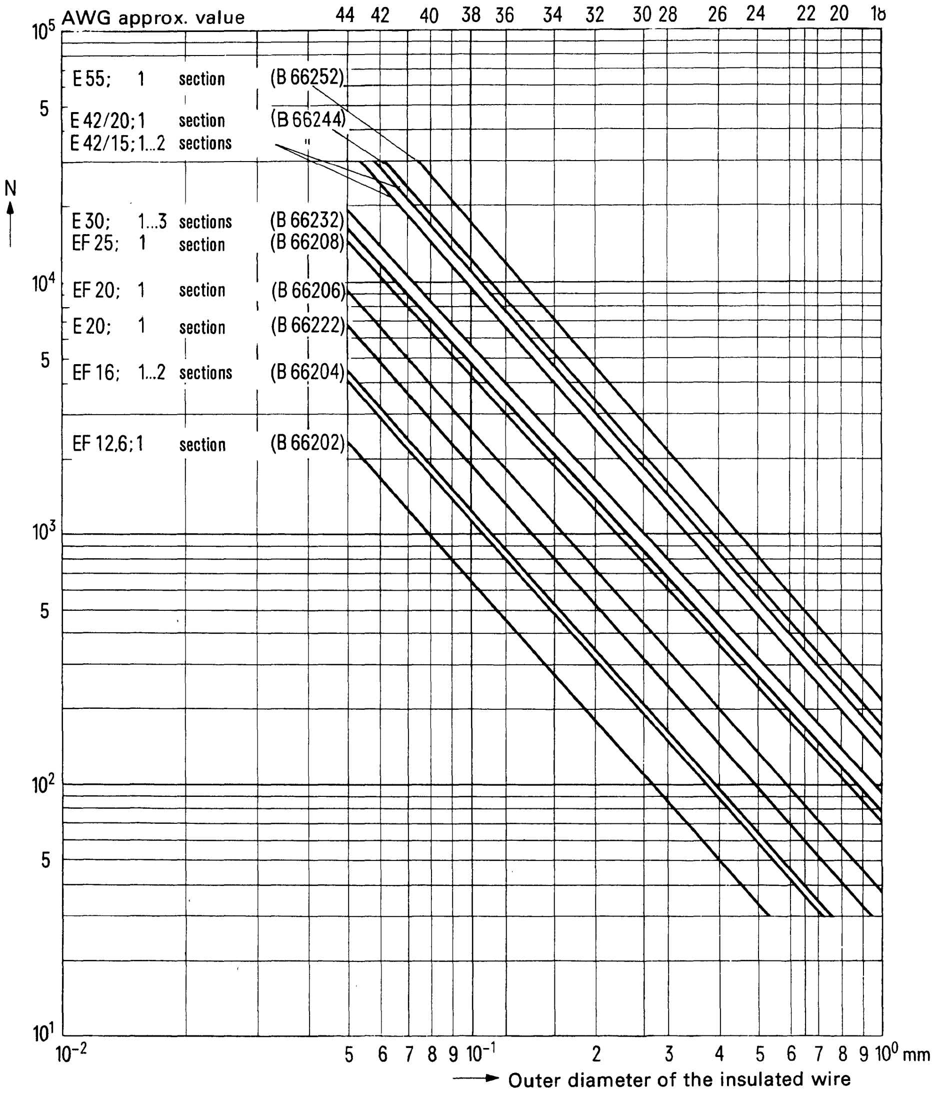
EP and X cores

Maximum number of turns *N* for coil formers



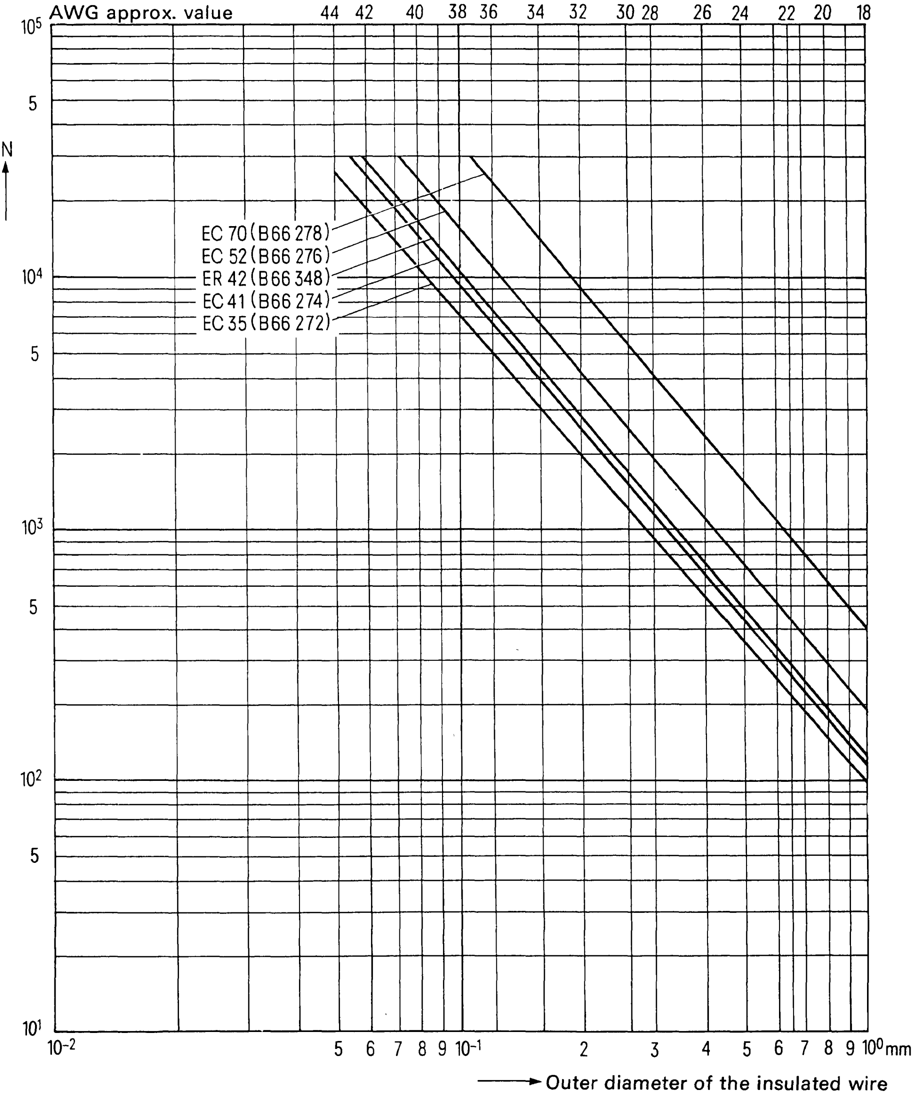
E and EF cores

Maximum number of turns *N* for coil formers

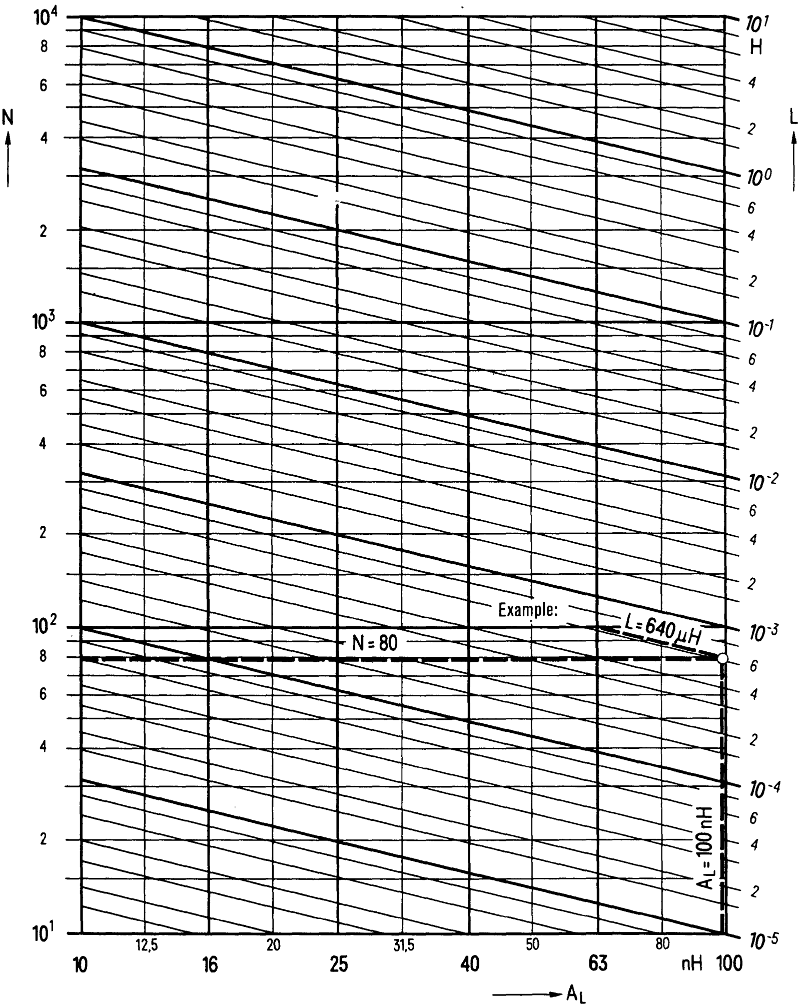


EC and ER cores

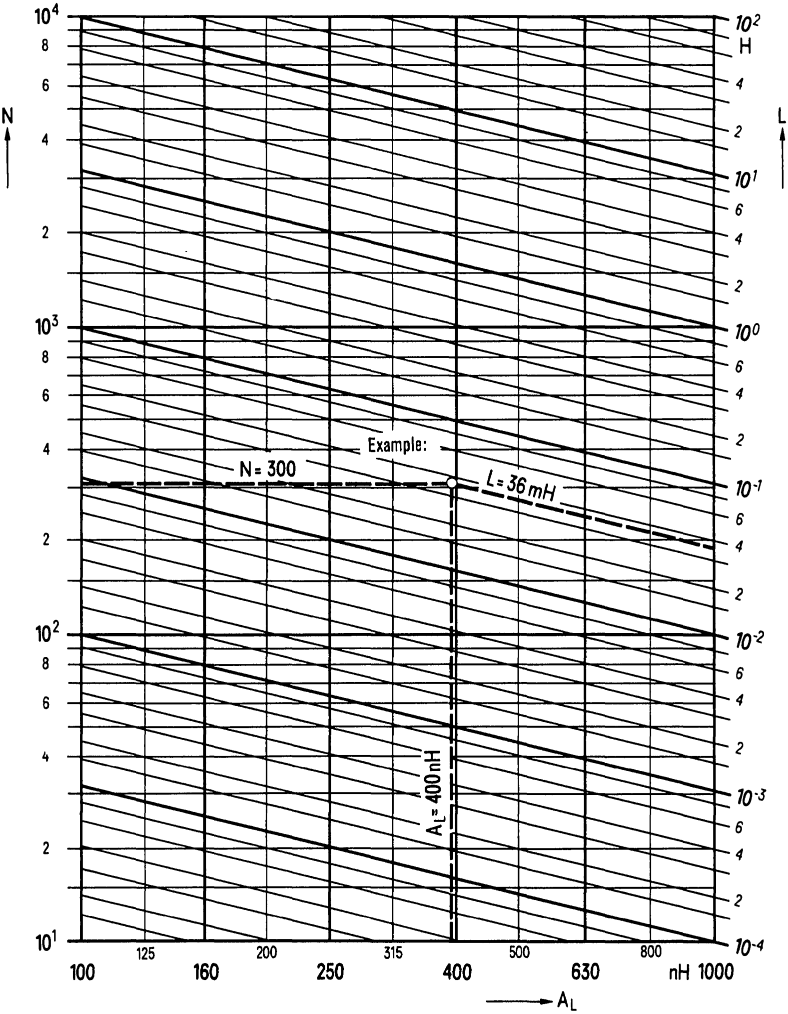
Maximum number of turns *N* for coil formers



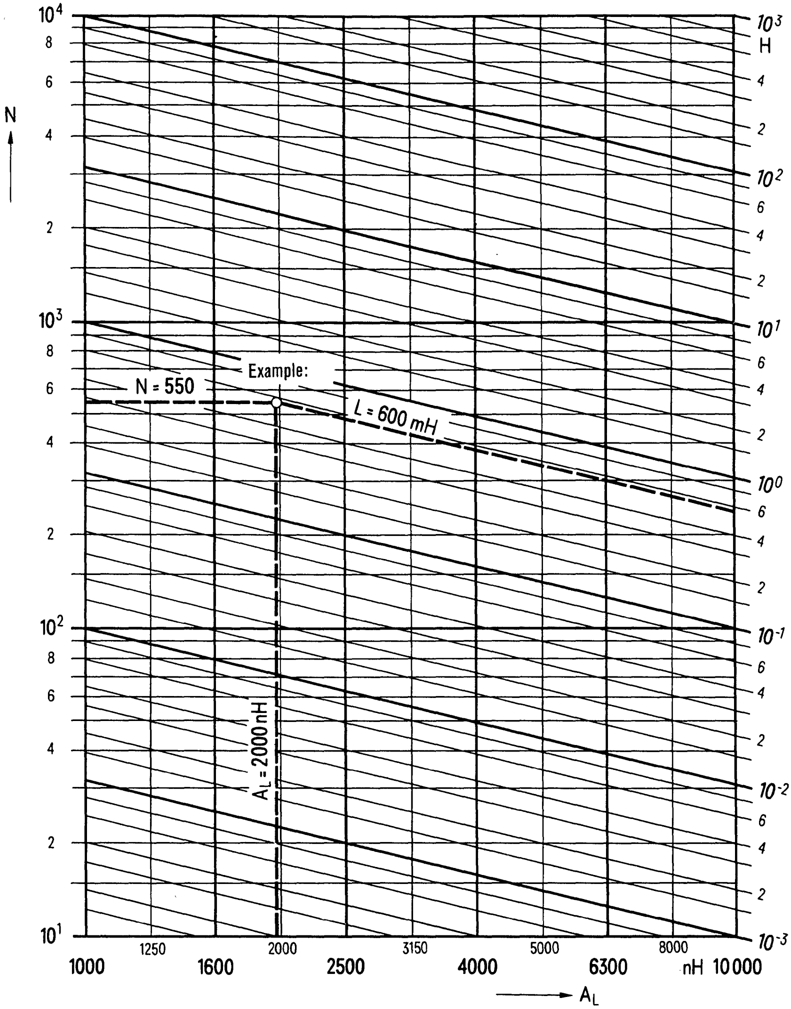
Nomogram for determining the number of turns N
from inductance L and inductance factor A_L for A_L values 10 to 100 nH



Nomogram for determining the number of turns *N*
from inductance *L* and inductance factor A_L for A_L values 100 to 1000 nH



Nomogram for determining the number of turns *N*
from inductance L and inductance factor A_L for A_L values 1000 to 10 000 nH



6. DC magnetic bias of pot cores and RM cores

Definitions

$$H_{-} = \frac{I_{-} \cdot N}{l_e}$$

H_{-} = DC field strength in A/m
I_{-} = DC current in A
N = number of turns
l_e = effective length (in m)[1]
For further definitions see pages 15 to 31.

Explanations to the graphs

The curves of $\mu_{rev} = f(H_{-})$ allow an approximate calculation of the variation in AC permeability (μ_{rev}) and A_L value due to magnetic bias. These curves are of particular interest for pot core inductors used as transformers, since magnetic bias should be avoided if possible with inductors to high stability requirements (filter inductors etc.). In the case of geometrically similar pot cores, only the effective permeability of the actual pot core in question in conjunction with the given curves suffices in determining the reversible permeability to a close approximation.

In determining the variation of reversible permeability with magnetic bias DC field strength H_{-}, the effective permeability μ_e for the desired A_L value is taken from the appropriate pot core data. If the curve $\mu_{rev} = f(H_{-})$ for the actual effective permeability is not shown, this can be obtained by interpolation from two curves shown. The associated DC field strength H_{-} can be calculated from the above equation with the effective length l_e obtained from the data.

The following curves, measured at 20 °C/68 °F and 10 kHz apply to pot and RM cores with center hole. Cores without center hole (RM 6, RM 8, RM 10, RM 12) may be loaded by an approx. 10% higher DC field strength.
For DC magnetic bias for E cores see page 420.

Example

Pot core 26 x 16, B65671
Material SIFERRIT N 48
A_L = 400 nH
μ_e = 127
l_e = 37.2 mm

The decrease in permeability caused by premagnetization begins at a DC field strength of about 1000 A/m.

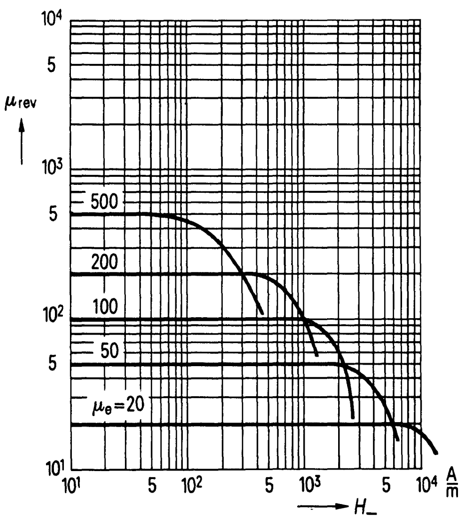
This corresponds to an ampere-turns value of

$I_{-} \cdot N = H_{-} \cdot l_e = 1000 \times 37.2 \times 10^{-3} = 37.2$ A.

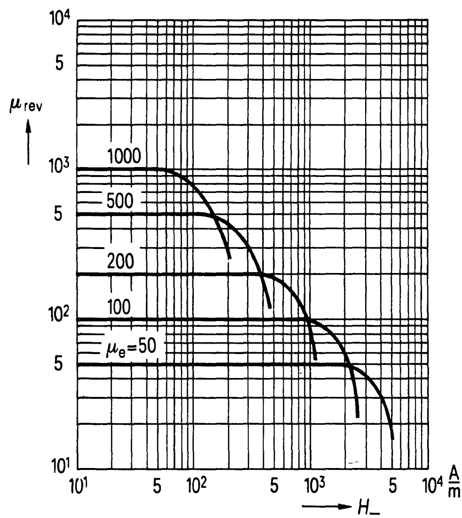
[1] In practice l_e is indicated in mm.

DC magnetic bias
of pot cores and RM cores

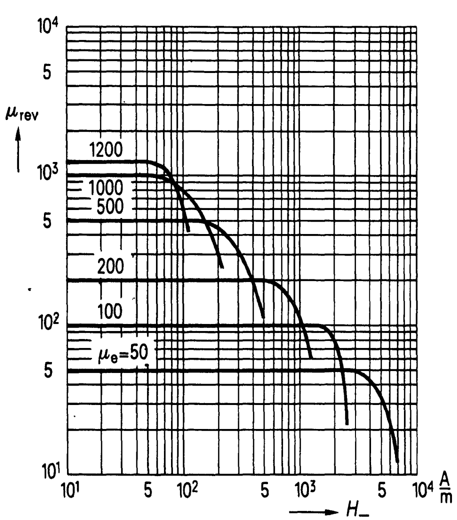
M 33



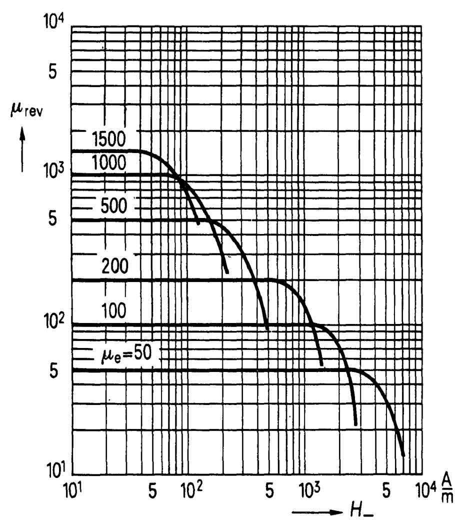
N 58



N 22

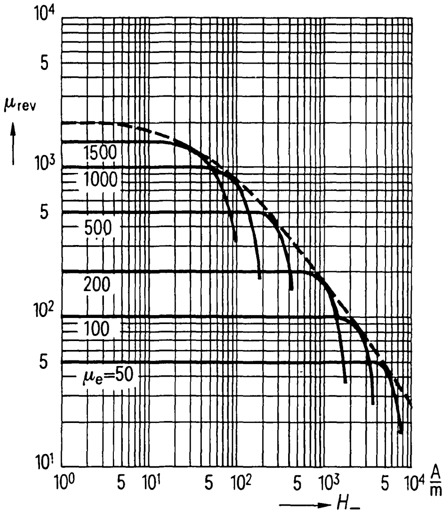


N 48

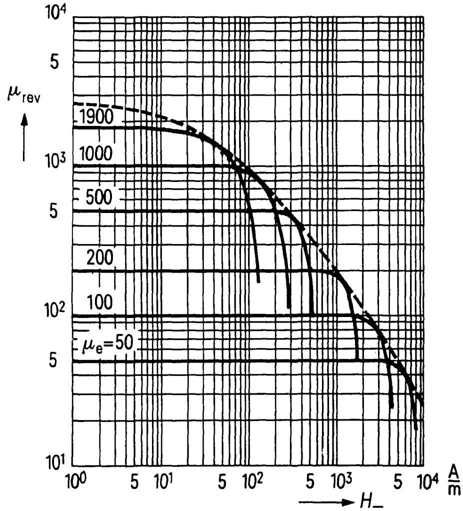


DC magnetic bias of pot, RM, and PM cores

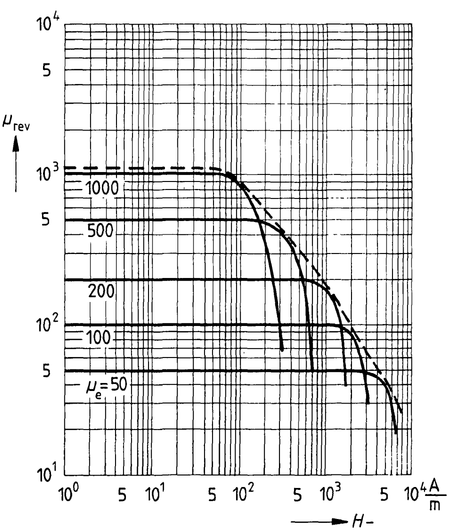
N 27



N 41



N 47



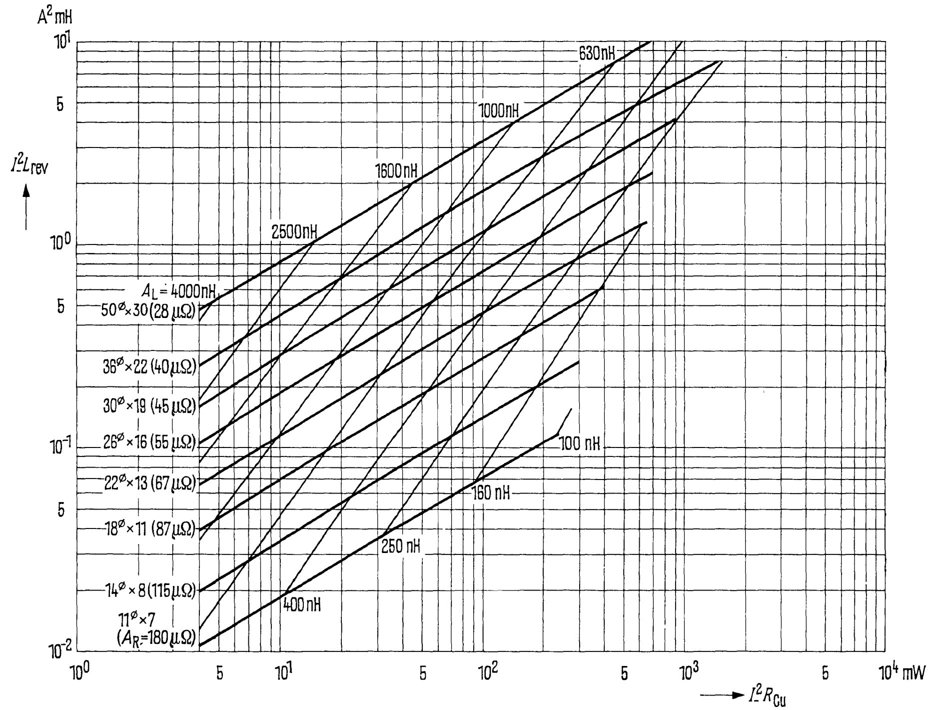
Optimum value of pot cores with dc magnetic bias, SIFERRIT material N 48

The maximum value of the inductance L_{rev} (inductance corresponding to the reversible permeability) or the minimum value of the dc resistance R_{Cu} which can be obtained at a definite magnetic bias current I, are illustrated for SIFERRIT N 48 pot cores in the following graph.

Example: at $I = 0.1$ A, $L_{rev} > 10$ mH and $R_{Cu} < 1\ \Omega$.

Unknown: the smallest possible pot core

Solution: All core sizes contained in a rectangle limited at the bottom by the horizontal $I_{-}^2 \cdot L_{rev} = 0.1\ A^2$ mH and at the right by the vertical $I_{-}^2 \cdot R_{Cu} = 0.01$ W are possibilities. Therefore, the size of the smallest possible pot core is 22 mm dia x 13 mm with $A_L = 1000$ nH, R_{Cu} approx. 0.86 Ω, L_{rev} approx. 10.6 mH and $N = \sqrt{R_{Cu}/A_R}$ approx. 114, 1 section coil former.



7. Typical calculation of a resonant circuit inductor

A SIFERRIT pot core inductor is required with an inductance of 640 μH and a minimum Q of 400 ($\tan \delta_L = \frac{1}{Q} = 2.5 \times 10^{-3}$) for a frequency of 500 kHz. The temperature coefficient α_e of this inductor should be 100×10^{-6}/K in the temperature range 5 to 55 °C/ 41 to 131 °F.

a) Choice of material

According to the material survey on pages 38 and 39, and the curves $\tan \delta/\mu_i$ on page 41 the material M 33 for example, can be used for 500 kHz.

b) Choice of A_L value

The Q and temperature coefficient requirements demand a gapped pot core. The average relative temperature coefficient α/μ_i of SIFERRIT M 33 according to the material survey is 1.6×10^{-6}/K. Since the required α_e value of the gapped core should be about 100×10^{-6}/K, the effective permeability is:

$$\frac{\alpha}{\mu_i} = \frac{\alpha_e}{\mu_e}; \quad \mu_e = \alpha_e \cdot \frac{\mu_i}{\alpha} = \frac{100 \cdot 10^{-6}}{\mathrm{K}} \cdot \frac{1 \cdot \mathrm{K}}{1.6 \cdot 10^{-6}} = 62.5$$

For pot core 18 x 11 (B65651) is $\mu_e = 47.9$ for $A_L = 100$ nH
For pot core 22 x 13 (B65661) is $\mu_e = 39.8$ for $A_L = 100$ nH

c) Choice of winding material

Single silk covered, high frequency litz wire 20 x 0.05 incl. single natural silk covering (or 43/44 in AWG) is particularly suitable for frequencies around 500 kHz. The approximate overall diameter of the wire including insulation, say 0.367 mm (14 mils), and the average resistance per meter of say 0.444 Ω/m are obtained from the litz table (page 63). It is recommended that the actual overall diameter always be measured, and this value used for the calculation.

d) Number of turns and type of core

For an A_L value of 100 nH and an inductance of 640 μH the nomogram on page 74 shows that the number of turns required is approximately 80. The nomogram for formers on page 66 shows that for a wire with an external diameter of 0.367 mm the two-section former for core type 18 x 11 (B65651) can easily take 80 turns. This type can therefore be used with a two-section former.

e) Length of wire and dc resistance

The length of an average turn l_N on the above former is 35.6 mm (see page 165). The length of litz necessary for the coil is therefore 80 x 35.6 = 2848 mm plus say 2 x 10 cm for the connections, giving a total length of 3.04 m. The average resistance of this wire is 0.444 Ω/m; the total dc resistance R_{Cu} is thus 3.04 m x 0.444 Ω/m approx. 1.35 Ω. It should be noted that the length of an average turn l_N given in the table always refers to the fully wound former; an appropriate correction must be made where necessary.

f) Quality test

The mathematical calculation of the total loss, i.e. the loss from the core and windings, is very laborious and only approximate. At the specified frequency of 500 kHz considerable dielectric and eddy current losses occur in the winding. Q is therefore checked on a sample coil wound as specified above, in this case the value being about 550 as shown in the graphs on page 174.

g) Checking the temperature coefficient

Pot core 18 x 11 with A_L = 100 nH has an effective permeability μ_e of about 47.9 SIFERRIT M 33 has a relative temperature coefficient α/μ_i of approx. 1.6 x 10^{-6}/K; therefore the following temperature coefficient can be calculated:

$\alpha_e = \mu_e \cdot \alpha/\mu_i = 47.9\ (1.6 \times 10^{-6}/\mathrm{K}) = 76.5 \times 10^{-6}/\mathrm{K}$;

Actual measurement showed 90 x 10^{-6}/K;

It must be pointed out here that when the magnetic flux lies almost entirely within the core, the temperature coefficient is only reduced slightly.

For effective permeabilities $\mu_e < 80$, however, due to the influence of the winding an additional temperature coefficient of approx. (10 to 30) x 10^{-6}/K has to be included in the calculation.

8. Assembly of inductors

Every pot core should always be used with its associated mounting assembly. The fixing parts are vibration-resistant. The pressure of the spring jig or the clamps is only exerted on the side wall of the pot core and not its middle part in order to prevent the sensitive air gap in the center stud from being affected.

Despite the reliable fixing, the pot core halves should also be glued, especially when gapped pot cores are used for resonant circuits, since the pot core halves can move slightly when subjected to strong vibration thus entailing undesired inductance changes.

8.1 Glueing of the core halves

From the numerous adhesives, epoxy resins with appropriate hardeners have proved particularly suitable, for example:

8.1.1 Adhesive preparation

A) for cores
100 g Araldite AY 103
16 g hardener HY 956
max. pot life 1 hour
hardening: 6 hours at 70 °C/158 °F
temperature stability of the glued joint 70 °C/158 °F
(for a short period 90 °C/194 °F)

B) for cores
100 g Araldite AY 103
7 g hardener HY 992
approx. pot life 8 hours
hardening: 6 hours at 100 °C/212 °F
temperature stability of the glued joint 90 °C/194 °F
(for a short period 120 °C/248 °F)

C) for coil formers
100 g adhesive A
200 cm^3 filler Aerosil 200
hardening procedure like A

D) for threaded sleeves of adjusting devices and for external glueing
100 g adhesive Araldite AW 134 B
40 g hardener HY 994
max. pot life 1 hour
hardening procedure for 24 hours at 25 °C/77 °F
or 4 hours at 70 °C/158 °F
temperature stability of the glued joint 80 °C/176 °F
(for a short period 100 °C/212 °F)

Adhesive A hardens even at room temperature, higher strength can be obtained with a hardening temperature of 70 °C/158 °F. Adhesive B only hardens at higher temperatures, with the advantage of a longer pot life, but its fluidity is higher than that of type A adhesives.

8.1.2 Cleaning and degreasing the pot cores

The mating surfaces must be free of dust, fat, and fibers. To degrease the mating surfaces a non-fluffy nylon coated stamp pad soaked in trichlorethylene can be used. A second pad can then be used to dry the surfaces. Any remanents impair the adhesion. To improve the evaporation of the trichlor the cores can be heated by suction up to about 35 °C/95 °F.

8.1.3 Applying the adhesive and glueing the halves together

The adhesive A or B is dabbed two to four times on the cleaned surface of the pot core side wall, but the center boss must remain clean. The two core halves without coil former are then placed on a mandrel and rotated against each other two or three times to spread the adhesive. A slight ring of adhesive extended around the edges indicates sufficient adhesive has been applied.

The adhesive should be applied and spread twice on the somewhat porous, low permeability SIFERRIT materials (U and K types). The next step should follow immediately, since the adhesive film easily attracts dust and absorbs moisture. Therefore, the pot core pair with adhesive already applied must be opened for a short period and then the wound coil inserted without touching the mating surface.

The wound coil is then fixed in position by elasticized spacers, which must be inserted before the adhesive has been applied.

The spacers are available upon request.

The coil former can also be fixed by an adhesive solution (C), which should only be applied as spots in one position of the pot core bottom, to prevent any mechanical stresses between the plastic and the ferrite material because of their different thermal expansion. Adhesive D is also suitable for external glueing, i.e. only four cementing spots at the joints on both sides of the openings. Because of the somewhat lower torsional strength, it should be noted that this kind of glueing should be used with mounted cores.

8.1.4 Holding jigs

The pot core assembly is cured under pressure in a centering jig. The pot core holes are used for centering and from two to eight can be held in one jig with a pressure spring. Spacers will ensure that the pressure is exerted only on the side wall of the pot core. Single jigs make the core inductance measurements easier. This technique has proved useful to control the pot cores, particularly those with small air gaps, before the adhesive has hardened. Small inductance corrections can be made by slightly turning the pot core halves relative to each other.

When pot core sets already mounted in the mounting assembly are to be cured, a good centering, possibly by mandrels with stepped diameters must be ensured. Furthermore, care should be taken that no hardener remains on parts of the mounting assembly. The devices should exert approximately the following pressure forces, corresponding to the holding forces of the listed mounting assemblies and clamps (per pair of clamps):

Pot core type	Pot core size	Pressure force in N (typ. values)	Pot core type	Pot core size	Pressure force in N (typ. values)
B65511	∅ 7 x 7	6	B65817	RM 3	10
B65517	∅ 9 x 5	10	B65803	RM 4	40
B65531	∅11 x 7	15	B65805	RM 5	40
B65541	∅14 x 8	25	B65807	RM 6	50
B65651	∅18 x 11	35	B65809	R 6	50
B65661	∅22 x 13	40	B65819	RM 7	50
B65671	∅26 x 16	45	B65811	RM 8	60
B65701	∅30 x 19	50	B65813	RM 10	60
B65611	∅36 x 22	60	B65815	RM 12	60
B65621	∅41 x 25	80	B65887	RM 14	70
B65644	∅50 x 30	90			

8.1.5 Curing the assembled pot core

The curing process is more effective at an increased temperature even for adhesive A, for example at 70 °C/158 °F for 6 hours.

The cores should be placed quickly in the oven after the adhesive has been applied to prevent the adhesive from soaking into the porous ferrite material. The cores can be moved into and also removed from the warm oven (e.g. 70 °C/158 °F), however the holding jig should not be opened until the assembly has cooled down. With regard to the thermal expansion of the ferrite, its temperature change should not exceed approximately 1 K/min..

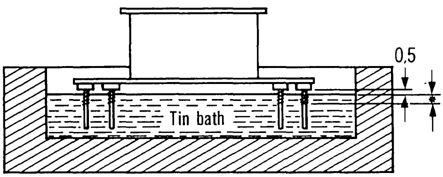
8.1.6 Thermal after-treatment

Any internal stresses can be relieved by subjecting the assembled pot core to a temperature cycle up to 70 °C/158 °F (cycle time 24 hours) with a slow warm up and cooling, lasting for a period of about 4 hours. The cycle should be best performed with completely mounted pot core inductors (including adjusting device when necessary).

8.2 Dip soldering of coil formers for all types with injection-molded pins

During dip soldering, care should be taken that only 2 to 3 turns of the wire are dipped into the tin bath (see * in the drawing) and soldered. Depending on the thickness of the wire more turns may have to be wrapped around the pin.

These limiting immersion depth prevents the solder pins from being heated up close to the pin embedding, moreover, formation of solder jumpers between the wire ends is avoided. Prior to every dip soldering process the oxide film has to be removed from the surface of the tin bath.



8.3 Glueing of threaded sleeves for adjusting screws

Pot cores are available in which the threaded sleeve has already been glued in position (for ordering codes see the appropriate pages dealing with pot cores).

For 9 and 11 mm cores a thread for the adjusting screw is provided in the base plate of the mounting assembly.

A centering jig is necessary to press the flangeless threaded sleeve in the pot core hole, whereas threaded sleeves with a flange can be centered more easily. It is recommended to glue these sleeves in position without exception, especially because of expansion during large temperature changes. The adhesive D stated in para. 8.1.1 can be used. The threaded sleeves with a flange should be painted with adhesive on the inside ring.

The flangeless sleeves with spring crown type B65579-K 1 can centrally be located in a less complicated way, however care should be taken to prevent the adhesive from flowing into the thread. Therefore, the pot cores should be located with their threaded parts downward during the curing period.

The threaded sleeves must be cured for at least 24 hours at room temperature, and it has been found practical to utilize the 24 hours waiting period between curing and thermal after-treatment.

8.4 Final adjustment

After each thermal or mechanical stress disaccommodation arises. The complete coils should therefore be stored for at least one day or better a week, before they are finally adjusted.

Cores for High Power

Cores for High Power

General

In order to meet the versatile requirements of power electronics, special ferrite core types have continually been added to the range of conventional ferrite cores. It is this comprehensive range which enables satisfactory solutions even of unusual tasks. At the same time, new materials such as N 41 (of high permeability, for applications with biasing) and N 47 (for frequencies greater than 200 kHz) were added to the SIFERRIT material N 27 proven for applications in power electronics.

Materials

N 27. N 41: 10 kHz to 100 kHz (200 kHz)
N 47 : 200 kHz to 1 MHz

Apart from the more favorable biasing characteristics of N 41 thanks to its higher permeability, the materials N 41 and N 27 are comparable. At present, the application range preferably covers up to approx. 50 kHz, whereas more recently applications up to 100 kHz and 200 kHz are also included.

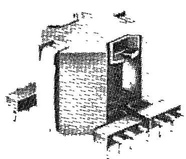
State-of-the-art power supply units even operate at frequencies above 200 kHz. For this, our new material N 47, featuring favorable characteristics for power applications up to approx. 1 MHz, is provided.

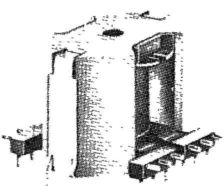
The main data for material selection is shown in the following illustrations. More detailed information can be obtained from the material survey on page 38/39 and appropriate curves shown on the following pages.

Core shapes

RM cores

The worldwide used RM cores are standardized in the IEC publication 431 A, B. Recently, program-controlled winding machines for the production of coil formers are available. For RM 6[1], 8, 10, 12, and 14 cores, we additionally offer coil formers with a greater pin spacing. This is advantageous for the connection of thicker litz wires which are necessary to meet higher frequency requirements.

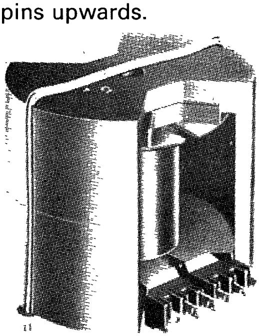




Type	Ordering code	Number of terminals	Page
RM 5	B65805-C0000-R047	6	280
RM 6	B65807-C0000-R047	8	291
RM 8	B65811-J0000-R047	12	317
	B65811-J0000-R041	12	
RM 10	B65813-J0000-R047	12	325
	B65813-J0000-R027	12	
	B65813-J0000-R041	12	
RM 12	B65815-J0000-R027	12	331
	B65815-J0000-R041	12	
RM 14	B65887-A0000-R027	12	339
	B65887-A0000-R041	12	

PM cores

These cores are used where power in the range between 250 W and approx. 2 kW has to be transmitted. Due to their large effective magnetic area, they need only a few number of turns; leakage inductance and self-capacitance are low. Good screening is obtained as a result of the compact design. If connection on the PCB by means of the pins becomes impossible due to the weight, the coil former can be mounted with its pins upwards.



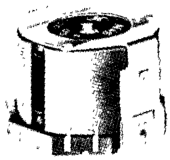
Type PM	Ordering code	Number of terminals	Page
dia 50 x 39	B65646-A0000-R027	14	346
dia 62 x 49	B65684-A0000-R027	16	350
dia 74 x 59	B65686-A0000-R027	18	353
dia 87 x 70	B65713-A0000-R027	20	356
dia 114 x 93	B65733-A0000-R027	none	359

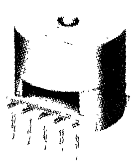
[1] Coil former for power transformers in preparation.

Cores for High Power

Pot cores

The tubular pot cores preferably used in filter technique are also suitable for the design of transformers featuring low leakage flux.



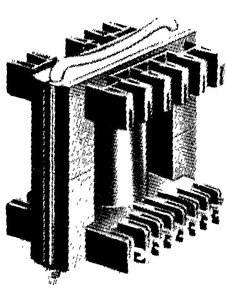


Type	Ordering code	Number of terminals	Page
Pot cores			
dia. 14 x 8	B65541-K0000-R041	4/6	151
dia. 18 x 11	B65651-K0000-R041	8	162
dia. 22 x 13	B65661-L0000-R041	8	186
dia. 26 x 16	B65671-L0000-R041	8	197
dia. 30 x 19	B65701-L0000-R041	8	207
TT cores			
dia. 23/15 x 11	B65716-P0000-R027	10	259
dia. 23/15 x 18	B65716-A0000-R027	10	262
dia. 30/20 x 19	B65730-A0000-R027	10	265
Q cores			
Q 10	B65833-A0000-R047	7	401

EC and ER cores

The EC cores meeting the IEC standard permit large winding space and good lead connection. They can be mounted horizontally or vertically. Holding devices are available for both versions.

ER cores are of similar design, i.e. with round center leg. This round center leg enables compact windings. An 18 pin coil former is available for the ER 42/15 type.

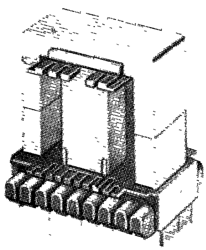


Type	Ordering code	Number of terminals	Page
EC cores			
EC 35	B66337-G0000-X127	13	442
EC 41	B66339-G0000-X127	12	444
EC 52	B66341-G0000-X127	14	447
EC 70	B66343-G0000-X127	19	450
ER cores			
ER 42/15	B66347-G0000-X127	18	453
ER 48	B66333-G0000-X127	–	454

Cores for High Power

E cores

In connection with E cores having an angular cross section, the type EI 25 with external air gap should be referred to. The leakage flux in the winding can, hence, remarkably be reduced.

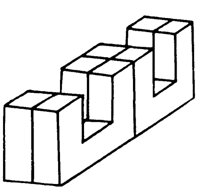


Type	Ordering code	Number of terminals	Page
EF 12,6	B66305-G0000-X127	9/4	421
EF 16	B66307-G0000-X127	6	423
EF 20	B66311-G0000-X127	12/6	425
EF 25	B66317-G0000-X127	8/6	429
EI 25	B66217-A0000-R041	6	431
E 30	B66319-G0000-X127	10	432
E 42/15	B66325-G0000-X127	10	434
E 42/20	B66329-G0000-X127	12	436
E 55	B66335-G0000-X127	14	438

U cores

U cores with round legs are mainly used for line transformers. The large U 93 cores can be combined with large E cores to meet the requirements of transmitting high power; e.g. eight U 93 cores at 20 kHz enable transmission of 20 kW.

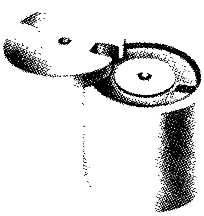
Type	Ordering code	Page
U 20	B67348–A0001–X027	459
U 25	B67352–A0001–X027	459
U 29	B67354–A0001–X027	460
U 37	B67356–A0001–X027	460
U 47	B67353–A0001–X042	461
U 93	B67345–A0001–X027	464
I 93	B67345–A0002–X027	464



Cores for High Power

CC cores

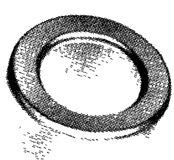
C cores (cup) are especially used for crossover networks in speaker systems. Together with the cap (CC cores) and a relatively large air gap, they are well suited for energy storage chokes. It should be mentioned that the contact surfaces are not ground. Thus, air gap and inductance may have somewhat greater tolerances.



Type	Ordering code	Page
CC 26 cup	B66442-A0000-X027	375
CC 26 cap	B66442-J0000-X027	
CC 36 cup	B66443-A0000-X027	377
CC 36 cap	B66443-J0000-X027	
CC 50 cup	B66446-A0000-X027	379
CC 50 cap	B66446-J0000-X027	

Toroids

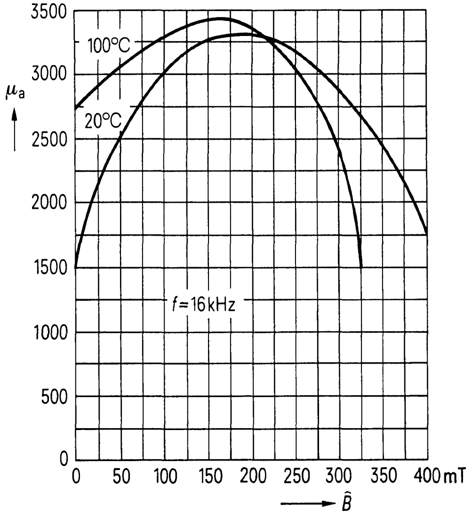
Owing to their low leakage inductance, transformers with toroids are frequently used in push-pull switched-mode power supplies.



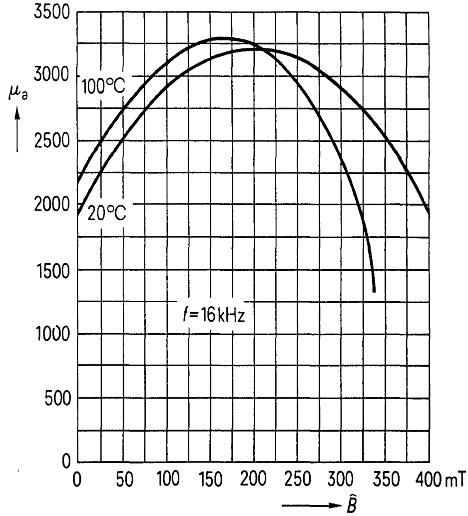
Type	Ordering code	Page
R 12,5	B64290-K0044-X027	467
R 16	B64290-K0045-X027	467
R 25/10	B64290-K0618-X027	467
R 34/12,5	B64290-K0048-X027	467

Amplitude permeability versus alternating field flux density $\hat{B}$
(measured with ungapped E cores)

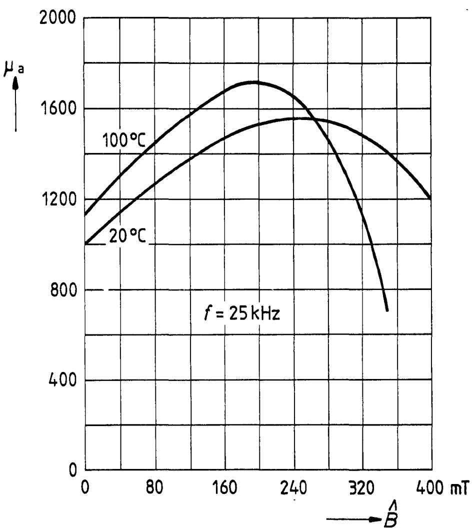
N 27



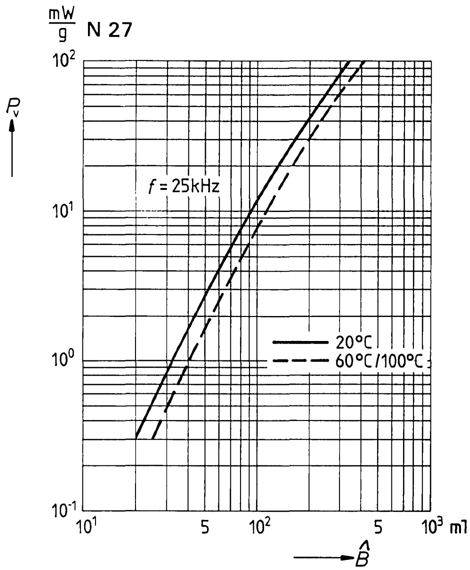
N 41

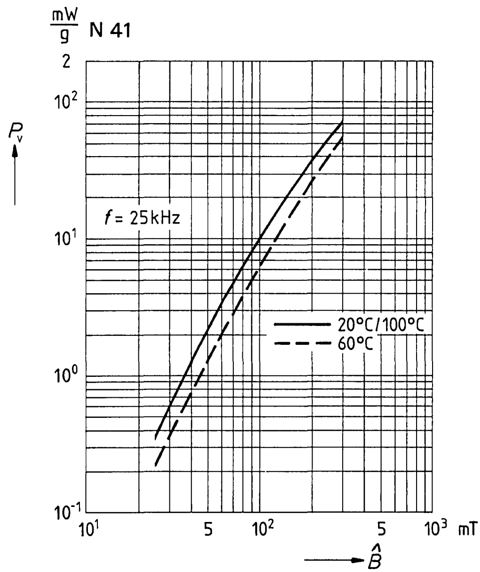


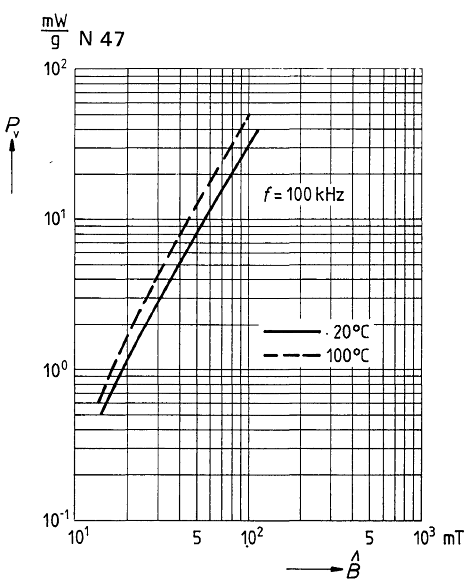
N 47



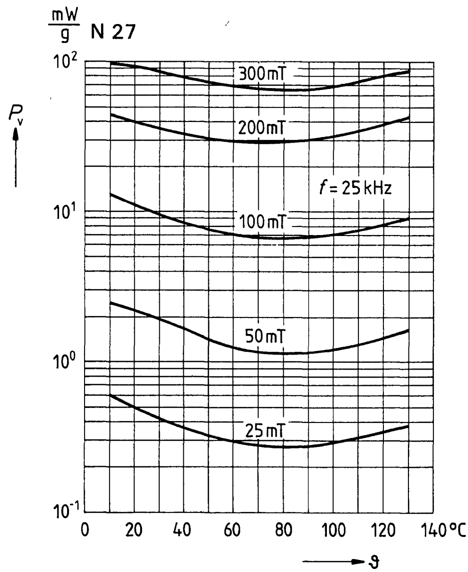
Relative power loss versus alternating field flux density $\hat{B}$
(measured with R 16 toroids)

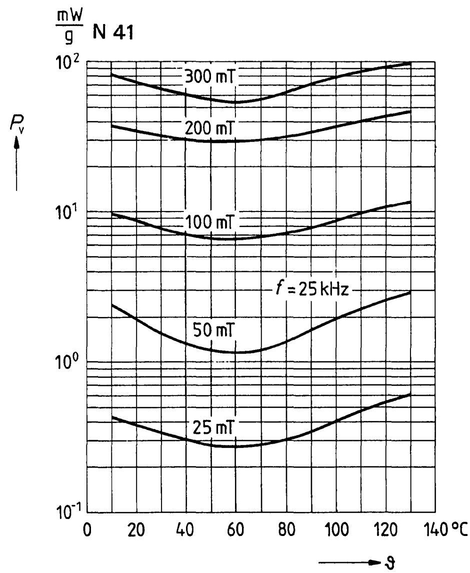


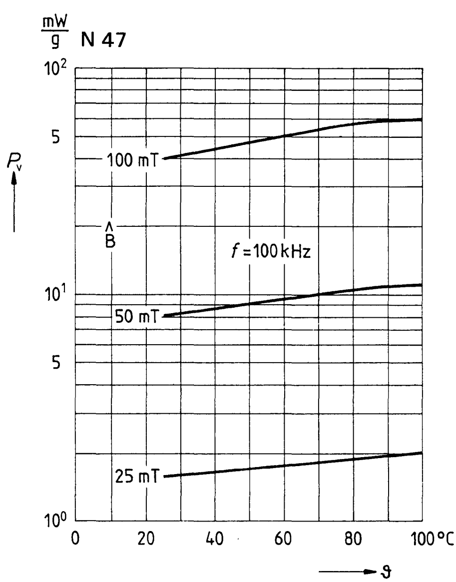




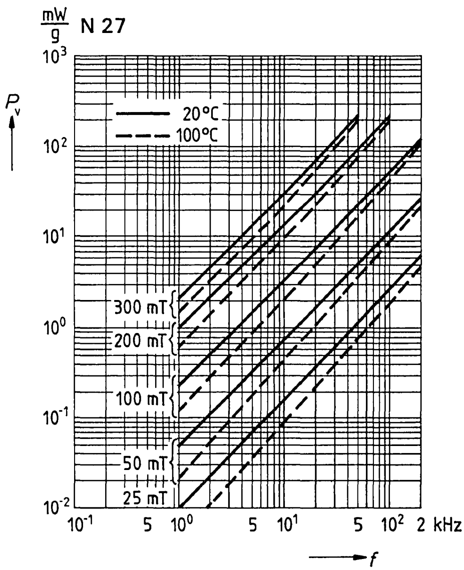
Relative power loss
versus temperature
(measured with R 16 toroids)

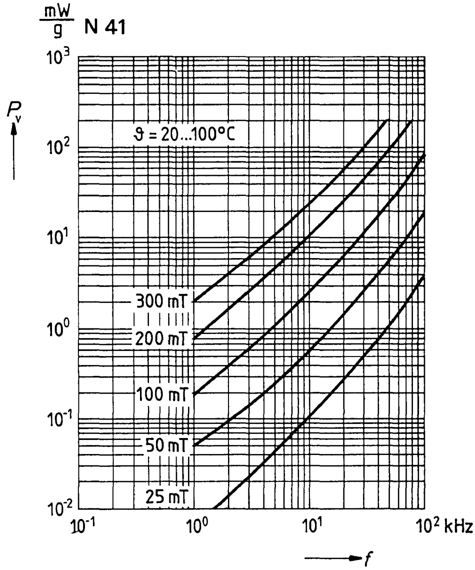


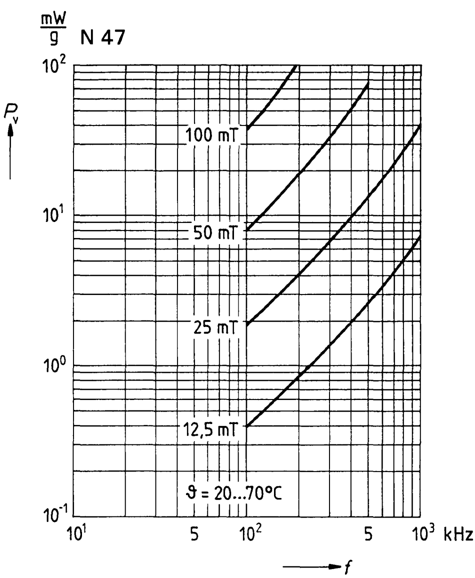




Relative power loss
versus frequency
(measured with R 16 toroids)







Typical values of transmissible power

The power to be transferred by means of different core types is shown for orientation in the three characteristic curves, figure 1, 2, and 3. For push-pull feedthrough, single-phase feedthrough, and blocking operation – commonly used in switched-mode power supplies, the power P is given versus the transformer volume V (including volume of the winding). Figure 1 applies to the major part of the types with SIFERRIT N 27 and N 41 cores at 20 kHz and an overtemperature $\Delta\vartheta$ of 30 K.

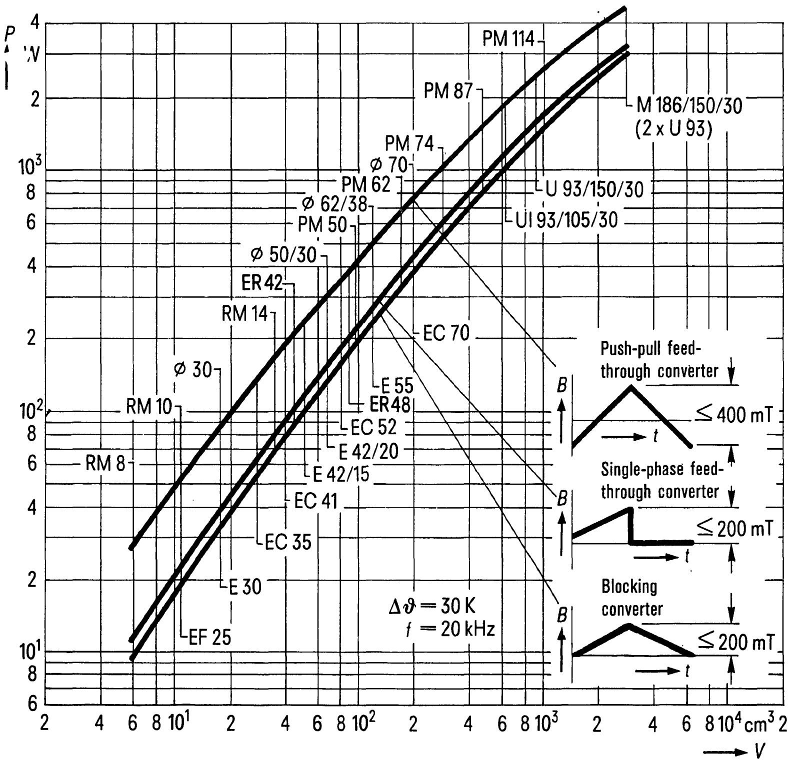


Figure 1
Transmissible power P and volume V of transformers with SIFERRIT N 27/N 41 cores (typical values)

The transmissible power for frequencies of 50 and 100 kHz (depending on the operation mode) – also at an overtemperature of $\Delta\vartheta$ = 30 K – can be obtained from figure 2.

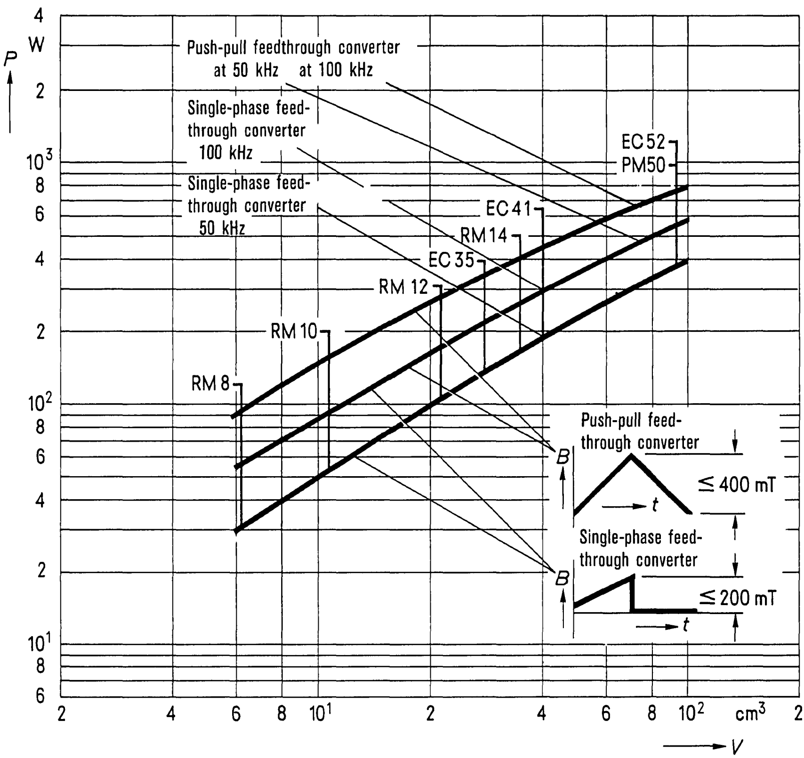


Figure 2
Transmissible power *P* and volume *V* of transformers with N 27 and N 41 SIFERRIT cores at high frequencies (approx. values)

The plotted core shapes generally meet the requirements of that frequency range. As today's switched-mode power supplies preferably operate at increasing frequencies, enhanced importance is attached to that frequency range. Thanks to the particular characterics of RM cores (completed by some EC and PM types), their standardized compact design, as well as the suitability of coil formers for automatic winding machines, they are particularly suitable for use throughout the frequency range between 50 and 100 kHz.

The frequency range above 100 kHz is becoming more and more important for power supply units. For this reason, the material N 47 has been developed. The transmissible power for RM 5, RM 6, RM 8, and RM 10 cores, made of this material, is shown in figure 3 for frequencies of 300 and 600 kHz (single-phase feedthrough and push-pull feedthrough converters).

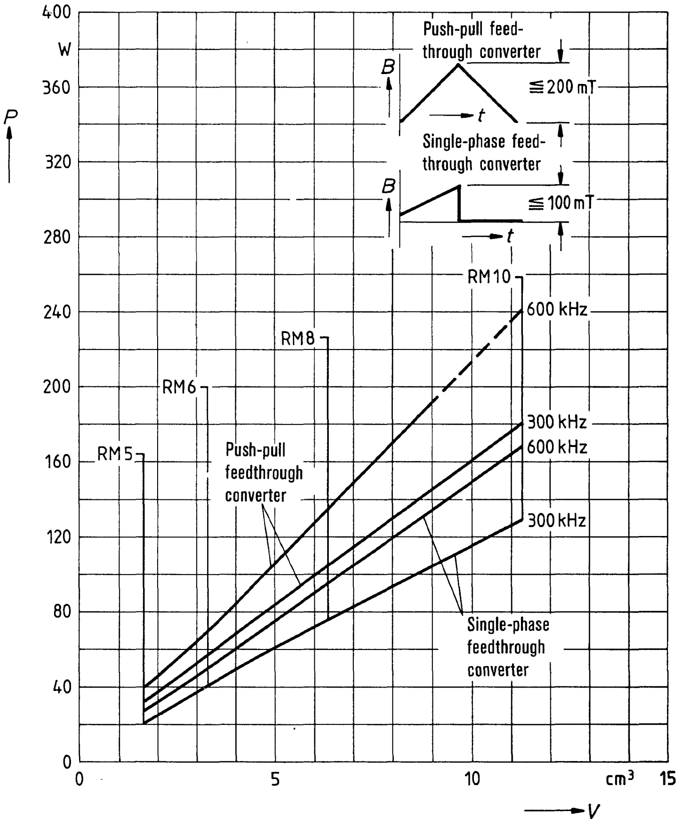


Figure 3
Transmissible power P and volume V of transformers with SIFERRIT N 47 cores (typical values)

Design of power transformers

The transmissible power P of transformers can be calculated in close approximation with the aid of the following equation:

$$P = C \cdot f \cdot \Delta B \cdot S \cdot f_{Cu} \cdot A_N \cdot A_e \qquad (1)$$

This simple equation neglects voltage drops at the winding resistances, leakage inductances, as well as the magnetizing current of single-phase feedthrough converters. The constant C takes the operation mode into consideration, i.e.

$C = 1$ in push-pull feedthrough operation

$C = \frac{1}{2\sqrt{p}}$; i.e. $C = 0.71$ at the switching ratio $p = t_1 \cdot f = 0.5$ in single-phase feedthrough operation and

$C = 0.61$ in (single-phase) blocking operation

Further quantities in equation (1) are: switching frequency f, deviated magnetic flux density ΔB, current density S, copper factor f_{Cu}, winding cross section A_N, and effective area A_e.

The deviation in magnetic flux density ΔB is limited by the permissible heating $\Delta\vartheta_{Fe}$ of the core resulting from core losses and saturation phenomena which are due to the material used. It should, furthermore, be taken into consideration that the flux density in a core of unequal cross sections has to be designed according to the minimum core cross section A_{min}, since due to the flux concentration, the highest flux density is to be found in this area. Hence it follows:

$$\Delta B = \Delta B_{perm.} \frac{A_{min}}{A_e} \qquad (2)$$

The smallest flux density deviation which has been determined according to the limitations mentioned above, is the flux density deviation ΔB, found for equation (1). The current density S is limited by the heating of the winding due to copper losses. The characteristic curves, plotted in the figures, are based on these considerations.
More detailed information including design examples can be obtained from the offprint B/1967-101.

Comment on A_{min}

In addition to the effective area A_e, used for dimensioning at low excitation, the min. core cross section A_{min} is indicated for cores for power transformers with differing cross sections along the magnetic path.

In case of large excitations (approx. > 100 mT), the flux density should always be referred to A_{min}, as the smallest core cross section is mandatory for magnetic saturation and core heating. The data on P_v and μ_e was subject to corresponding considerations.

Design fundamentals for energy storage chokes[1]

The most important aspects for designing energy storage chokes are briefly explained, taking the most usual switched-mode power supply – step-down mode – as an example (figure 4).

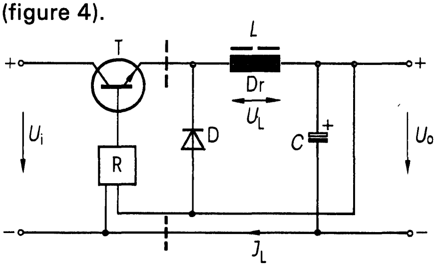
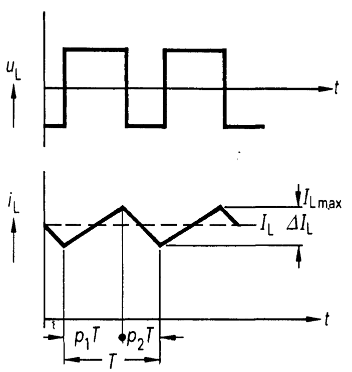


Figure 4
Switched-mode power supply incl. energy storage choke (step-down mode)
- - - interface for incorporating a transformer

If the response of the choke voltage U_L is of rectangular waveform, that of the choke current I_L will have a sawtooth waveform (figure 2):



p_1 = relation on-time versus cycle
p_2 = relation off-time versus cycle
I = cycle
U_L = voltage at the choke

Figure 5
Schematic for voltage U_L and current I_L of energy storage chokes

Depending on the current ripple ΔI_L – for step-down SMPS generally below 0.3 I_L – the maximum choke current $I_{Lmax} = I_L + 0.5\ \Delta I_L$.

The maximum magnetic biasing capability $(I^2L)_{max}$ of the core is obtained at optimum design, whereby the inductance – under worst conditions (at maximum operating temperature) – may decrease by 5 % at the most. The inductance for the step-down SMPS is calculated as follows:

$$L = \frac{(U_i - U_0)\ U_0}{\Delta I_L \cdot f \cdot U_i}$$

with the given operating conditions U_i = input voltage, U_0 = output voltage, f = switching frequency. As soon as the maximum magnetic biasing capability has been found out with the aid of I_{Lmax} and L, core type, core size, and air gap can be determined. With increasing air gap, the magnetic biasing capability rises, but also the pertinent copper loss I^2R and hence the heating of the choke. An optimum gapping is attained when the overtemperature $\Delta\vartheta$ just reaches the permissible value.

[1] For detailed information, the off-print B/1967-101 is recommended.

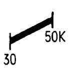
The relationship between magnetic biasing capability $(I^2L)_{max}$, copper loss I^2R, effective permeability μ_e (effect of air gap), and overtemperature $\Delta\vartheta$ between 30 and 50 K is shown in the nomograms of figure 6 for three different core series. Core losses due to ripple have not been taken into consideration. Type, size, and air gap can be chosen with the help of these nomograms.

Example

Given: $(I^2L)_{max}$ = 8 A^2 mH and $\Delta\vartheta$ approx. 40 K

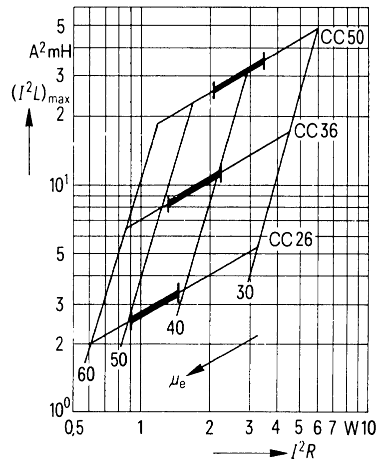
Required: Ferrite core and μ_e

Solution: An effective permeability μ_e of approximately 38 can be obtained from the nomogram in the center of figure 3 on the rising straight line of the EC41 core in the height of the ordinate 8 A^2 mH and in the middle of the plotted temperature range between 30 and 50 K.

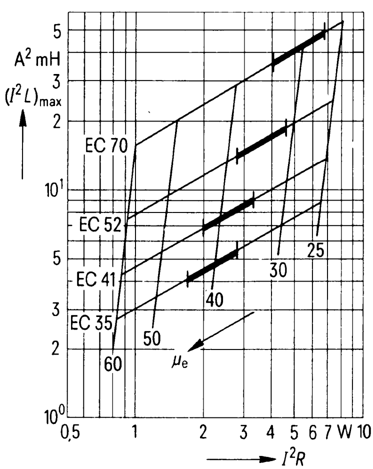


Operating range with 30 ... 50 K overtemperature $\Delta\vartheta$ due to copper losses

CC cores



EC cores



E and EF cores

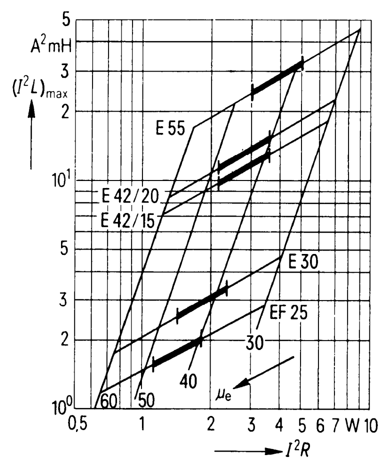
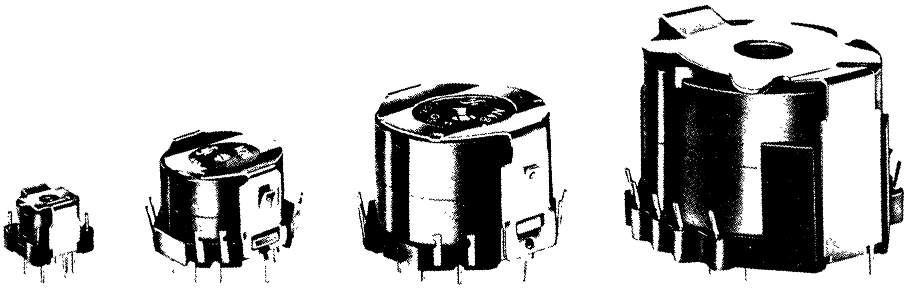


Figure 6
Magnetic biasing capability $(I^2L)_{max}$, copper loss I^2R effective permeability μ_e, and overtemperatures $\Delta\vartheta$ of SIFERRIT N 27 E and CC cores.

Pot Cores



Pot cores, general

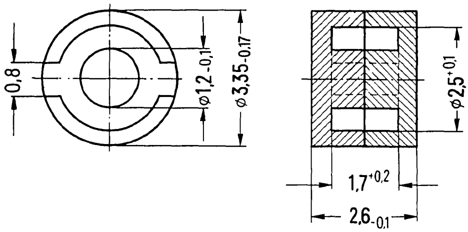
Pot cores complying with DIN 41 293, IEC 133, have a low stray field due to their closed form. They feature high Q and high stability along with very fine adjustment capability. In the course of time they have practically penetrated the entire electrotechnical field. To meet the large application field, a comprehensive type spectrum with accessories is at the user's disposal. Standardized pot cores are to be preferred. Most of the types are available with inserted sleeves.

Coil formers with mounted pins are intended to be used for four-slot pot cores as well as for TT cores which are particularly suitable for touch tone telephone systems (see sections "4-Slot Pot Cores" and "Touch-Tone Pot Cores").

Summary

Approx. dimensions dia x height in mm	Drawing number	Part No.	Page
3,3 x 2,6	2 x C61035-A35-C1	B65491	109
4,6 x 4,1	1 x C61035-A41-C10 1 x C61035-A41-C11	B65495	110
4,6 x 5,2	1 x C61036-A36-C1 1 x C61036-A36-C2	B65430 B65433	117
5,8 x 3,3	2 x C60358-B3050-C1	B65501	123
7 x 4	2 x C61035-A15-C7	B65511	125
9 x 5 (standardized)	2 x C61035-A18-C11	B65517	133
11 x 7 (standardized)	2 x C61035-A14-C1	B65531	142
14 x 8 (standardized)	2 x C60358-B3054-C3	B65541	151
18 x 11 (standardized)	2 x C61035-A10-C1	B65651	162
18 x 14	2 x C60358-B3056-C6	B65561	176
22 x 13 (standardized)	2 x C60358-B3185-C3	B65661	186
26 x 16 (standardized)	2 x C60358-B3181-C1	B65671	197
30 x 19 (standardized)	2 x C60358-B3186-C1	B65701	207
36 x 22 (standardized)	2 x C61035-A16-C30	B65611	216
41 x 25	2 x C40330-A79-C1	B65621	224
50 x 30[1)]	2 x C61035-A54-C1	B65644	230
62 x 38[1)]	2 x C61035-A52-C1	B65694	234
70 x 42[1)]	2 x C61035-A9-C8	B65696	238
Adjusting tools	–	B63399	339

[1)] Not for new design, available only for a transition period. Replacement: PM cores.



Dimensions in mm

Magnetic characteristics

Core factor $\Sigma\, l/A$ = 3.72 mm^{-1}
Effective length l_e = 5.1 mm
Effective area A_e = 1.37 mm^2
Effective volume V_e = 7.0 mm^3

Approx. weight: 0.06 g/set

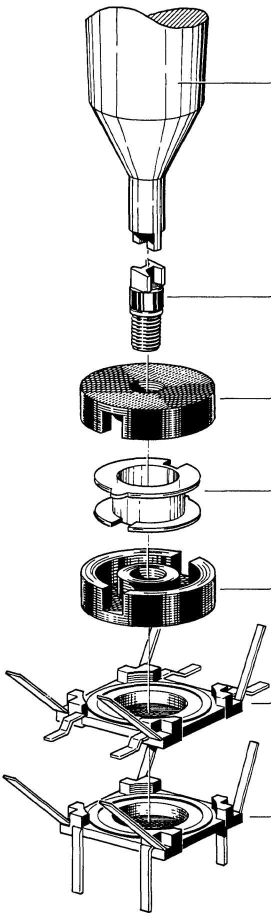
A_L value nH	tolerance	SIFERRIT material	Effective permeability μ_e	**Ordering code** (PU: 500 sets)
Ungapped				
30	+40 −30 % ≙ Y	K 1	89	B65491–B0000–Y001
◥ 500	+40 −30 % ≙ Y	N 30	1480	B65491–B0000–Y030

Winding data

Useful winding cross section A_N without coil former mm^2	Average length of turn l_N mm	A_R value µΩ
0,65	5,8	310

◥ to be preferred

Adjustable miniature type for film circuits and PC boards

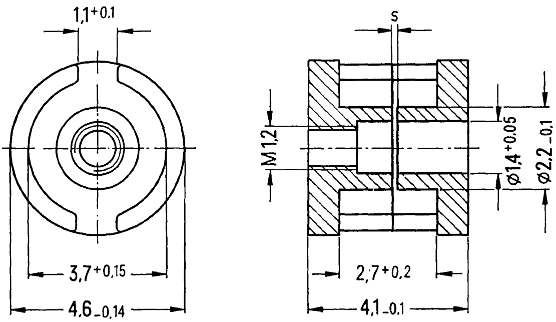


Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B 63 399	340, fig. 5
Adjusting screw	B 65496	114
Pot core	B 65495	111
Coil former	B 65496	112
Pot core with inside thread	B 65495	111
Connecting board for film circuits	B 65496	113
or		
Connecting board for printed circuits	B 65496	113

Miniature pot cores for adjustable miniature inductors

One pot core half carries the inside thread for guiding the adjusting screw. The pot core and the wound unit can be glued on a connecting board with 4 solder terminals.

Space requirement of the inductor (without terminals): 5 mm x 5 mm x 5 mm.



Dimensions in mm

Magnetic characteristics

Core factor	$\Sigma l/A$ =	2.5 mm^{-1}
Effective length	l_e =	7.2 mm
Effective area	A_e =	2.9 mm^2
Effective volume	V_e =	21.0 mm^3

Approx. weight 0.17 g/set

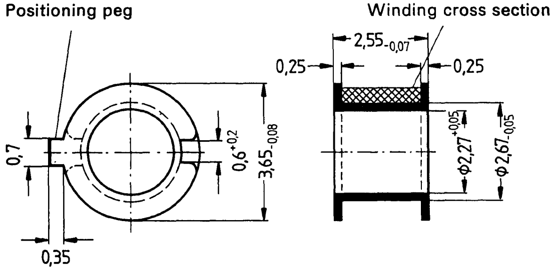
A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 500 sets)
Gapped					
5		U 17[1]	0,5	10	B65495-K0005-A017
◥ 16	± 3% ≙ A	K 1	0,2	31,8	B65495-K0016-A001
◥ 40		M 33	0,07	80	B65495-K0040-A033
63	± 5% ≙ J	N48	0,04	125	B65495-K0063-J048
100[2]	$^{+30}_{-10}$% ≙ Q		0,02	199	B65495-K0100-Q048
Ungapped					
40[2]	$^{+40}_{-30}$% ≙ Y	K 1		80	B65495-K0000-Y001
◥ 800[2]		N 30		1590	B65495-K0000-Y030

[1] The dimensions may be exceeded by up to 10 %.
[2] Version without thread is also permitted.
◥ to be preferred

Coil former B 65496

Glass-fiber reinforced polyterephthalate coil former including positioning peg, flame-retardant in accordance with UL 94 V-0; color code black.

For winding details refer to page 67.



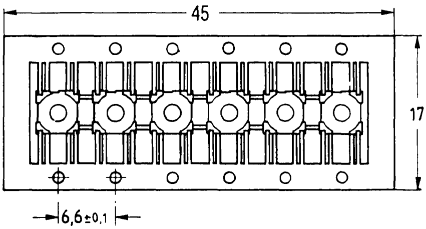
Dimensions in mm

Number of sections	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1] µΩ	Approx. weight g	**Ordering code** (PU: 500)
1	0.8	9.5	400	0.03	B65496-B1000-T001

[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

Connecting board B65496

Made of glass-fiber reinforced thermosetting plastic, flame-retardant in accordance with UL 94V-0.
Max. permissible soldering temperature is 400 °C/752 °F, 2 sec.
For an easier handling we offer 6 connecting boards in one mounting strip (17 mm x 45 mm).



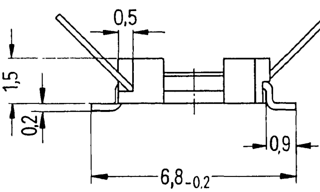
Ordering code
B 65 496–A2000–X000
(PU: 100 mounting strips)

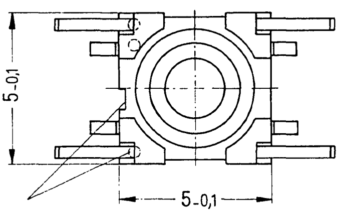
Individual connecting boards are also available.

Solder terminals for film circuits

Ordering code
B65496–A2003–X000
(PU: 100)

bent after soldering



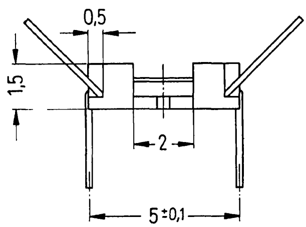


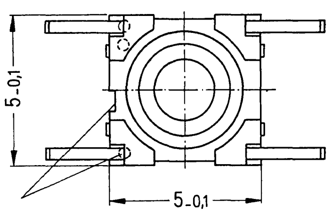
Marking for pin 1

Solder terminals for PC boards

Ordering code
B65496–A2002–X000
(PU: 100)

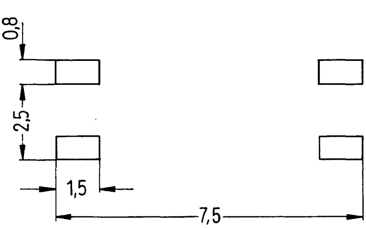
bent after soldering





Marking for pin 1

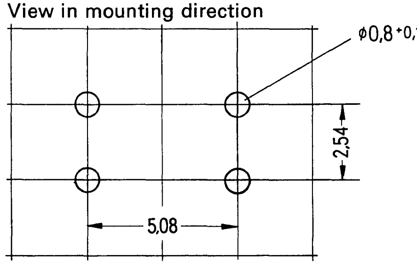
Solder terminals on film circuits



Dimensions in mm

Hole arrangement for PC boards

View in mounting direction

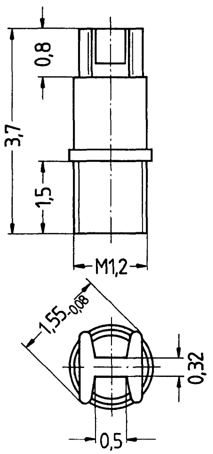


Adjusting devices B 65496

Adjusting screw B65496-A3001-X0••, consisting of a SIFERRIT tube core on which a polyacetal thread is molded and 4 cam profiles serving as core brake;

fits:

the lower part of the pot core set B65495-K••••-•••• into which a guiding thread is molded.
Adjusting screw driver B63399-A1007-X000.

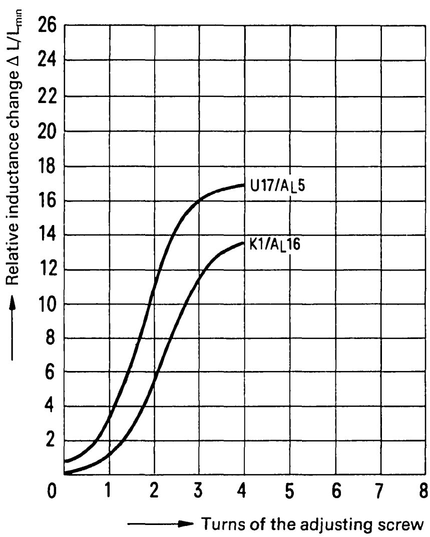


Dimensions in mm

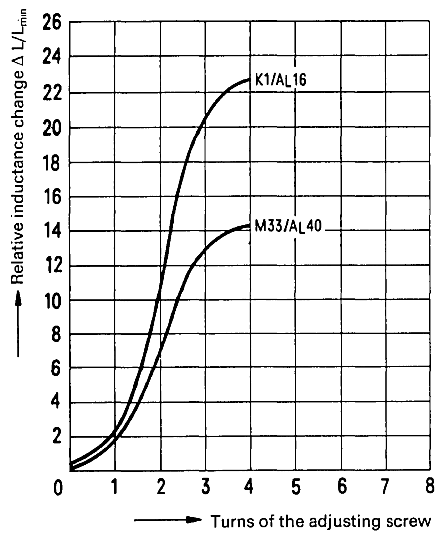
Pot core B65495		Adjusting screw			
Material	A_L value nH	Tube core dia. x length	Tube core Material	Color code	**Ordering code** (PU: 500)
U 17	5	1,25 x 1,2	U 17	brown	B65496-A3001-X017
K 1	16		K 1	blue	B65496-A3001-X001
M 33	40				
N 48	63		N 22	green	B65496-A3001-X022

Inductance adjustment curves

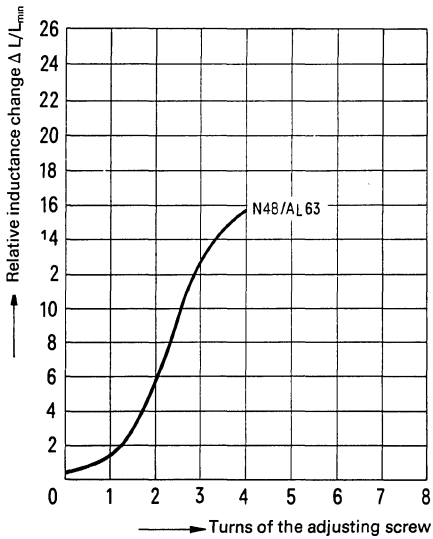
Adjusting screw B65496–A3001–X017
color code brown



Adjusting screw B65496–A3001–X001
color code blue



Adjusting screw B65496–A3001–X022
color code green

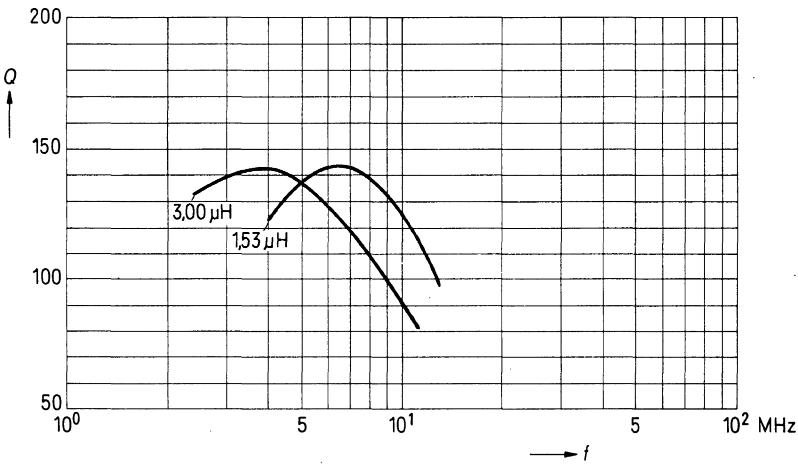


0 ≙ at least ½ to 1 turn engaged.

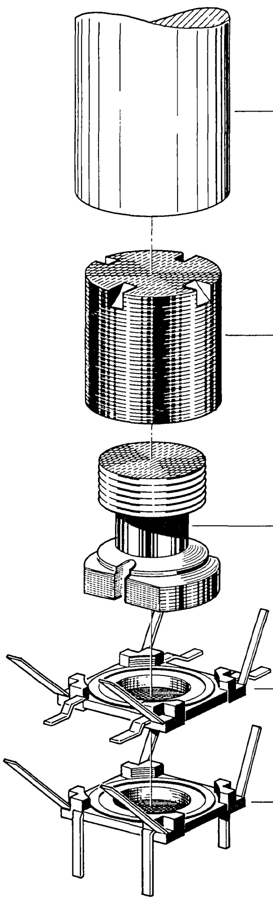
Q factor characteristics

Material K 1

L (μH)	A_L (nH)	Turns	Wire
1.53	16	9	32 x 0.025 CuLS
3.0	16	13	15 x 0.04 CuLS



Flux density in the core
$\hat{B} = < 1$ mT

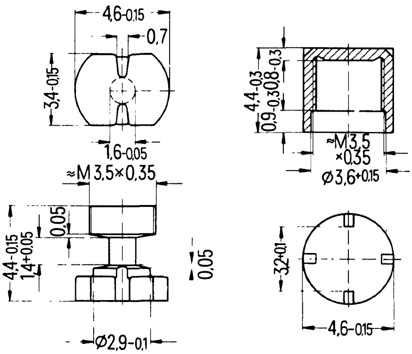


Individual parts	Part No.	Page
Adjusting screw driver	B63399	340, fig. 5
Cup core	B66433	118
Drum core	B66430	118
Connecting board for film circuits	B65496	122
or		
Connecting board for PC boards	B65496	122

Cores for Miniature Inductors 4.6 x 5.2

B 66430
B 66433

SIFERRIT cores for adjustable miniature inductor design in resonant circuits and for transformers and chokes.
The drum core, carrying the winding, is screwed with the cup core, thus resulting in a compact structural form suitable for dip-soldering on the connecting board.



Magnetic characteristics

Core factor	$\Sigma l/A$ =	1.44 mm^{-1}
Effective length	l_e =	8.0 mm
Effective area	A_e =	5.55 mm^2
Effective volume	V_e =	44.4 mm^3

Approx. weights:

Drum core 0.15 g
Cup core 0.15 g

Dimensions in mm

SIFERRIT material	A_L value (typical value) nH		Adjusting range	Temperature coefficient α_e (typical value) for −55 ... +20 °C −67 ... +68 °F 10^{-6}/K	**Ordering code**
Drum core without cup core					(PU: 1000 items)
U 17[1]	7,5		–		B66430-C0001-X017
K 1	16		–		B66430-C0001-X001
N 48	20		–		B66430-C0001-X048
Drum core with cup core	position 1[2]	position 2[3]			(PU: 500 sets)
U 17[1]	> 9	–	–	560	B66433-C0000-X017
K 1	> 55	31,5	±20%	130	B66433-C0000-X001
N 48	>160	55	±30%	150	B66433-C0000-X048
Adjusting key for cup core coil					B63399-A1007-X000

[1] The dimensions may be exceeded by up to 10%.
[2] Cup completely screwed on
[3] Like position 1, however, 1.5 turns backwards.

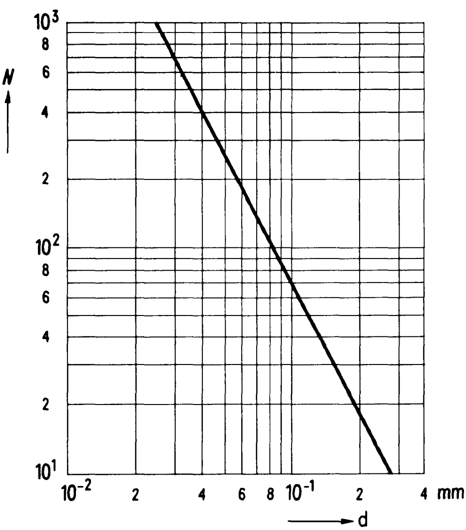
After having wound the drum core, it is recommended to apply a drip of non-corrosive elastic material (e. g. silicone rubbers 3144 RTV of Messrs. Dow Corning) onto the drum core thread in order to eliminate its play. Then, the associated cup core is screwed on. Subsequent adjusting of the inductor by turning the cup core is possible at any time.

Winding data

Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1] μΩ
0.84	6.9	280

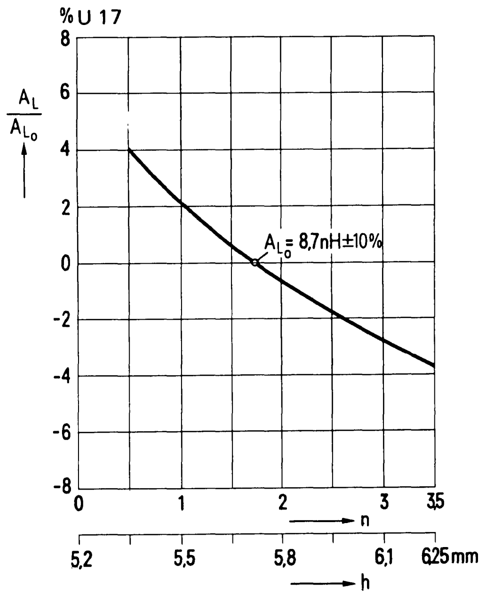
Maximum number of turns ***N***

versus diameter *d* of the insulated wire



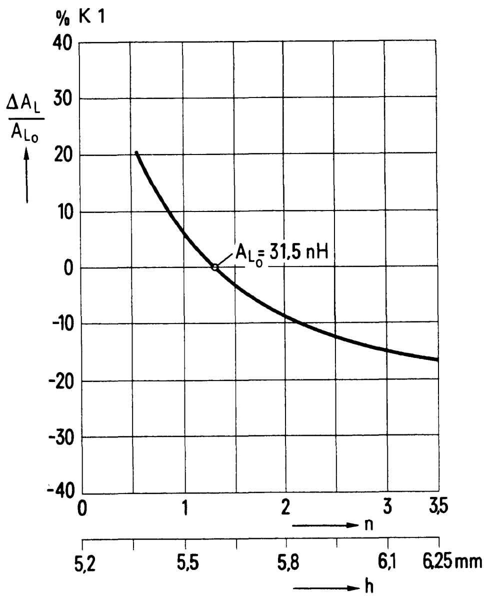
Inductance change

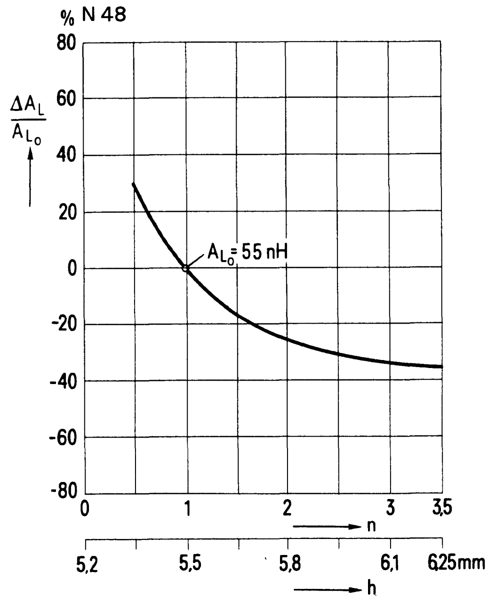
versus turn *n* and height *h* of the cup core.



[1]) $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²).

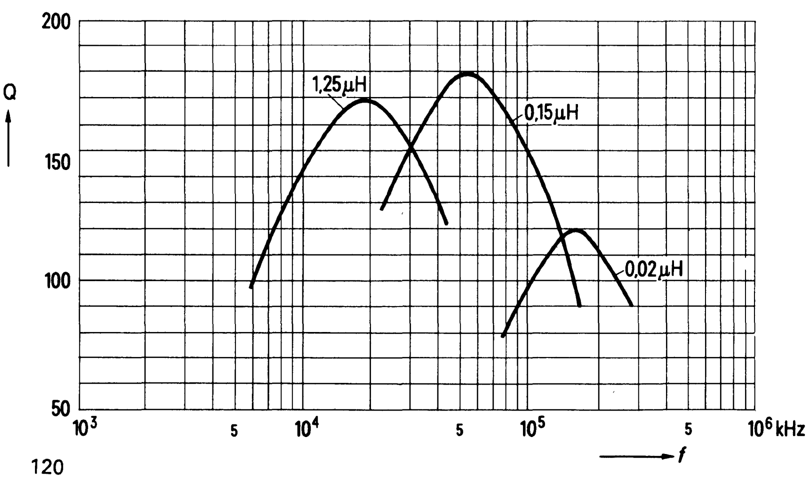
Inductance change
versus turn *n* and height *h* of the cup core





Q factor characteristics
Material U 17

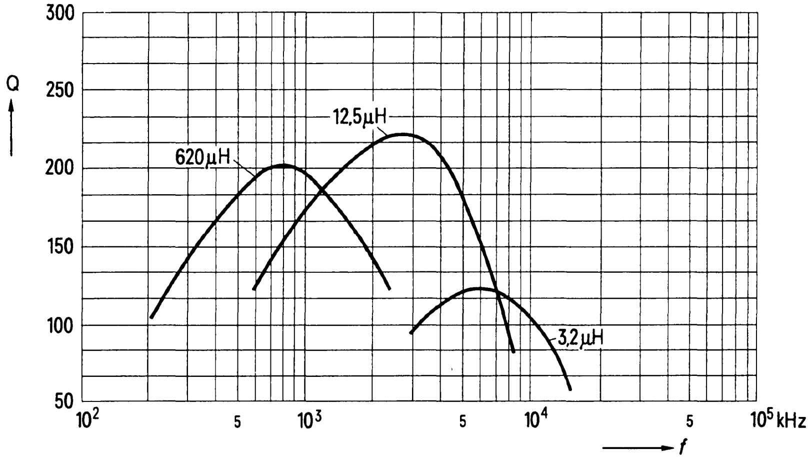
L (µH)	Wire	Turns	Layers
1,25	0,18 CuL	14	2
0,15	0,23 CuL	4	1
0,020	0,23 CuL	1	–



Q factor characteristics

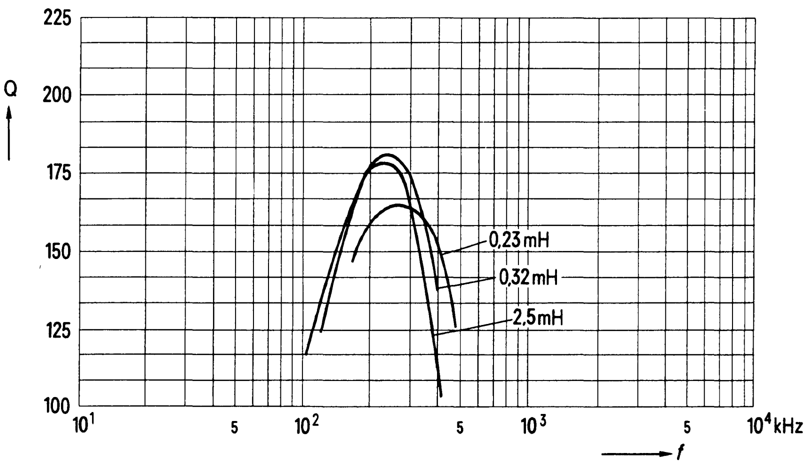
Material K 1

L (µH)	Wire; RF litz wire	Turns
620	0,04 CuL	140
12,5	12 x 0,04 CuL	20
3,2	0,20 CuL	10



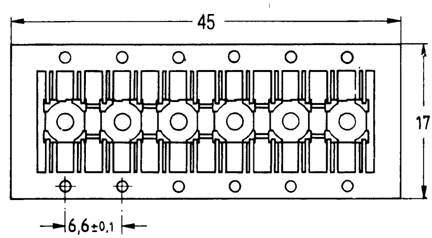
Material N 48

L (mH)	Wire	Turns
2,5	0,05 CuL	200
0,32	0,09 CuL	72
0,23	0,10 CuL	60



Connecting board B 65496

Made of glass-fiber reinforced thermosetting plastic, flame-retardant in accordance with UL 94V-0.
Max. permissible soldering temperature is 400 °C/752 °F, 2 sec.
For an easier handling we offer 6 connecting boards in one mounting strip (17 mm x 45 mm).



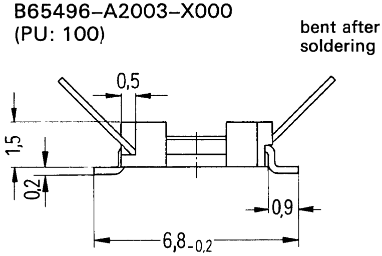
Ordering code

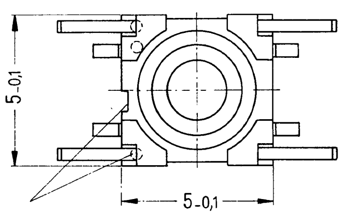
B65496–A2000–X000
(PU: 100 mounting strips)

Individual connecting boards are also available.

Solder terminals for film circuits

Ordering code
B65496–A2003–X000
(PU: 100)

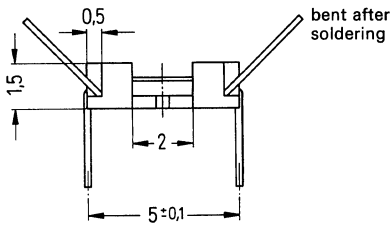


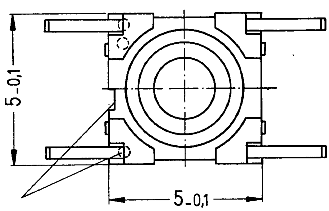


Marking for pin 1

Solder terminals for PC boards

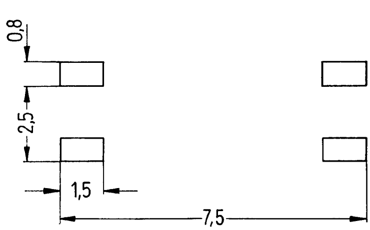
Ordering code
B65496–A2002–X000
(PU: 100)





Marking for pin 1

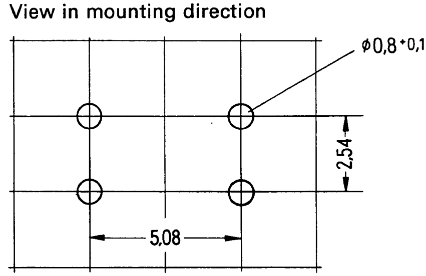
Solder terminals on film circuits

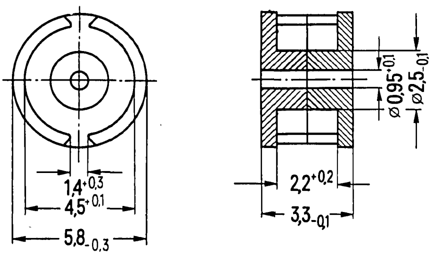


Dimensions in mm

Hole arrangement for PC boards

View in mounting direction





Dimensions in mm

Magnetic characteristics

Core factor	$\Sigma\, l/A$ =	1.68	mm^{-1}
Effective length	l_e =	7.9	mm
Effective area	A_e =	4.7	mm^2
Effective volume	V_e =	37	mm^3

Approx. weight 0.2 g/set

A_L value nH	tolerance	SIFERRIT material	Effective permeability μ_e	**Ordering code** (PU: 500 sets)
Ungapped				
60	$^{+40}_{-30}$ % ≙ Y	K 1	80	B65501-J0000-Y001
800		N 48	1070	B65501-J0000-Y048
◥ 1500		N 30	2000	B65501-J0000-Y030

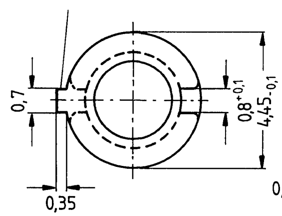
Gapped pot cores upon request.
◥ to be preferred

Coil former B 65 502

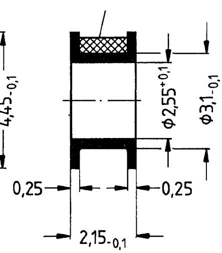
Glass-fiber reinforced polyterephthalate coil former with positioning peg, flame-retardant in accordance with UL 94 V-0; color code black.

For winding details refer to page 67.

Positioning peg



Winding cross section

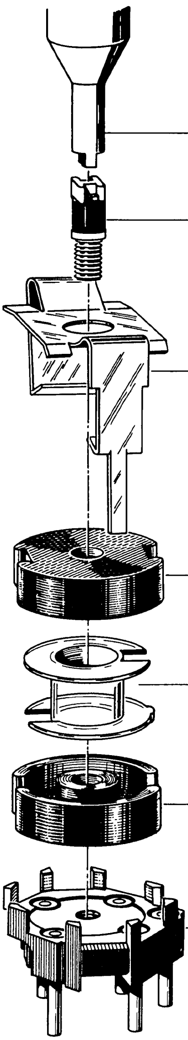


Dimensions in mm

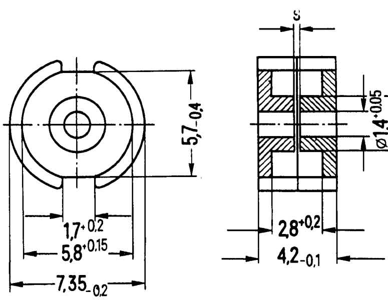
Number of sections	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1] µΩ	Appox. weight g	**Ordering code** (PU: 500)
1	0.95	11.7	433	0.03	B65502–B0000–T001

[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns^2)

Type for PC mounting



Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	340, fig. 5
Adjusting screw	B65512	129
Yoke	B65512	128
Pot core	B65511	126
Coil former	B65512	127
Pot core	B65511	126
Connecting board with thread; 5 solder terminals	B65512	128
Centering pin		129



Dimensions in mm

Magnetic characteristics

Core factor	$\Sigma l/A$ =	1.43 mm^{-1}
Effective length	l_e =	10 mm
Effective area	A_e =	7 mm^2
Effective volume	V_e =	70 mm^3

Approx. weight 0.5 g/set

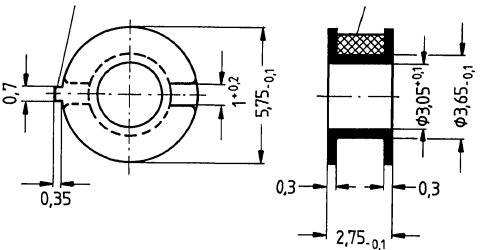
A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 500 sets)
Gapped					
8	±3%≙A	U 17[1]	0,8	9,1	B65511-A0008-A017
◥ 25	±3%≙A	K 1	0,32	28,5	B65511-A0025-A001
◥ 63	±3%≙A	M 33	0,13	72	B65511-A0063-A033
◥ 100	±3%≙A	N 48	0,10	114	B65511-A0100-A048
Ungapped					
70	$^{+40}_{-30}$ %≙Y	K 1		80	B65511-A0000-Y001
1000	$^{+40}_{-30}$ %≙Y	N 48		1140	B65511-A0000-Y048
◥ 2000	$^{+40}_{-30}$ %≙Y	N 30		2280	B65511-A0000-Y030

[1] The dimensions may be exceeded by up to 10%
◥ to be preferred

Coil former B 65512

Glass-fiber reinforced polyterephthalate coil former with positioning peg, flame-retardant in accordance with UL 94V-0; color code black.

For winding details refer to page 67.



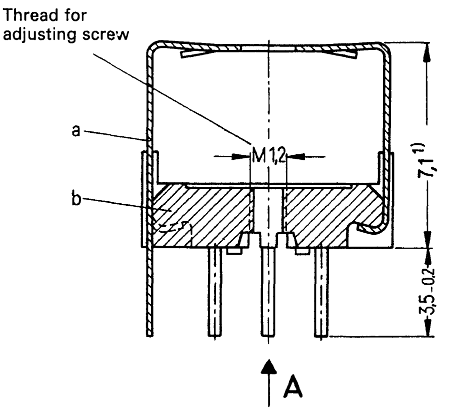
Dimensions in mm

Number of sections	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1] μΩ	Approx. weight g	**Ordering code** (PU: 500)
1	2.2	14.6	240	0.04	B65512–C0000–T001

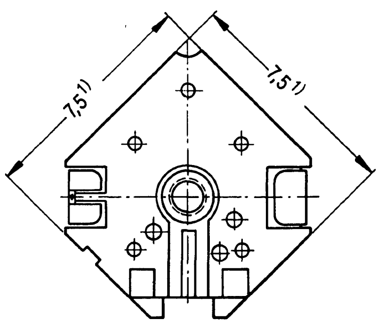
[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

Mounting assembly for PC mounting B 65512

Mounting assembly with snap-in connection.
Glass-fiber reinforced polyterephthalate connecting board, flame-retardant in accordance with UL 94V-0, with 5 solder terminals.
Max. permissible soldering temperature is 400 °C/752 °F, 2 sec.
0.2 mm thick nickel-silver spring yoke with ground terminal.

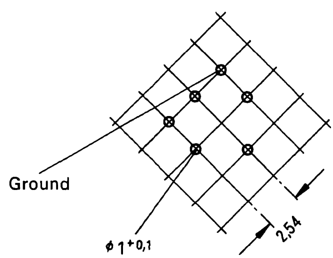


Approx. weight 0.4 g



View in direction A

Hole arrangement
View in mounting direction



Dimensions in mm

Ordering code B65512–C2001–X000
(Complete mounting assembly with 5 solder terminals)
(PU: 500 sets)

Mounting parts		Ordering code
a	1 yoke	C61035–A15–C5
b	1 connecting board (with thread)	C61035–A15–B1

[1)] Max. dimensions

Adjusting devices B 65512

Adjusting screw B65512–A3001–X***, consisting of a SIFERRIT tube core on which a polyacetal thread is molded and 4 cam profiles serving as core brake;

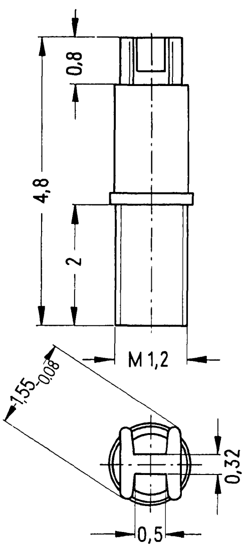
fits:

glass-fiber reinforced polyterephthalate **connecting board** B65512–C2001–X000 into which a guiding thread is molded.

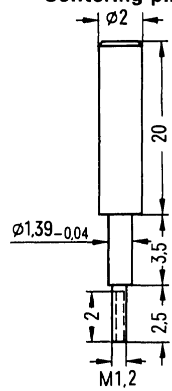
Centering pin e. g. of brass (for design proposal see drawing)

Adjusting screw driver B63399–A1007–X000

Adjusting screw



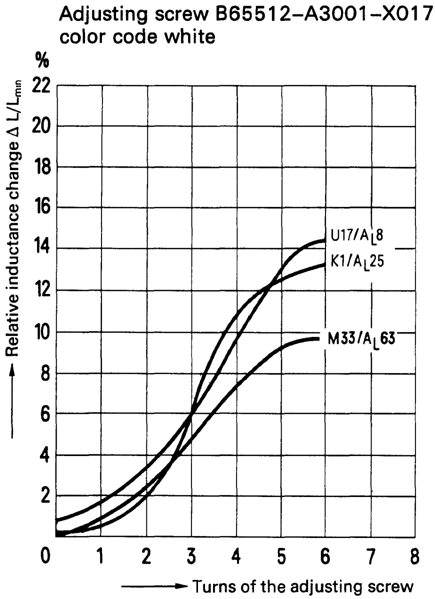
Centering pin

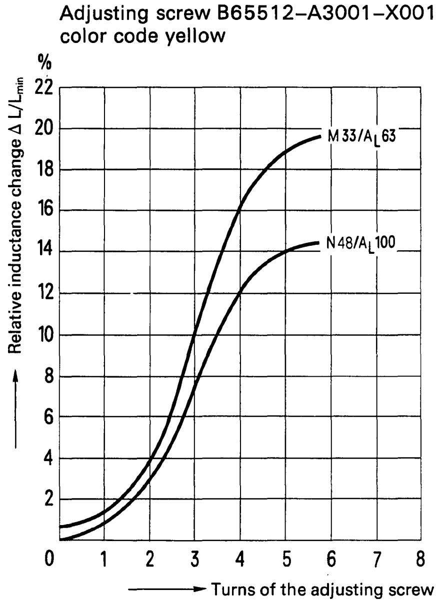


Dimensions in mm

Pot cores B65511		Adjusting screw			
Material	A_L value nH	Tube core dia. x length	Tube core Material	Color code	**Ordering code** (PU: 500)
U 17	8	1,25 x 1,8	U 17	white	B65512–A3001–X017
K 1	25				
M 33	63		K 1	yellow	B65512–A3001–X001
N 48	100				

Inductance adjustment curves





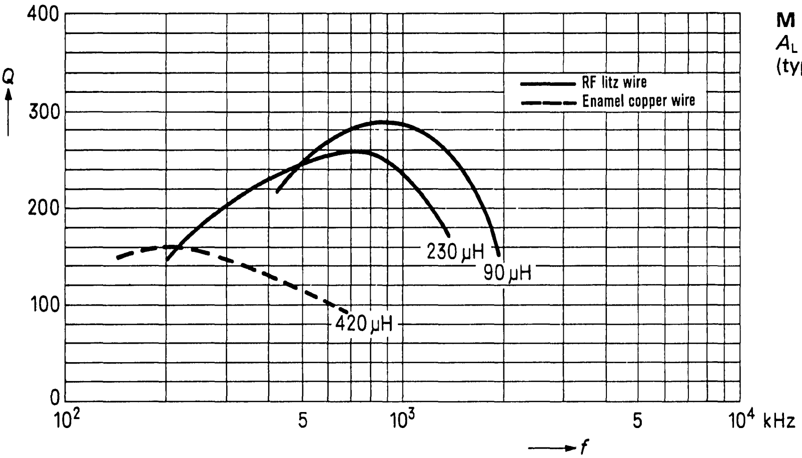
"0" corresponds to a completely engaged screw.

Q factor characteristics

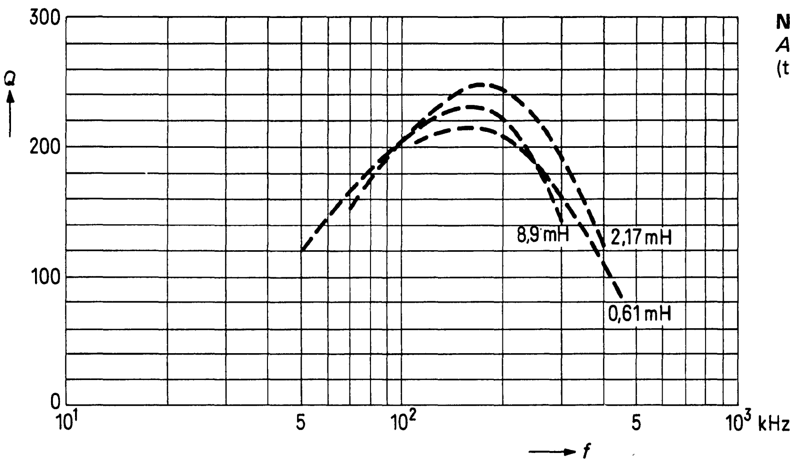
Materials M 33, N 48

Material	L	Turns	Wire; RF litz wire	Padding
M 33 A_L = 63 nH	420 µH 230 µH 90 µH	80 60 37	0,15 CuL 3 x 0,07 CuLS 12 x 0,04 CuLS	– – –
N 48 A_L = 100 nH	8,90 mH 2,17 mH 0,61 mH	300 150 80	0,07 CuL 0,10 CuL 0,15 CuL	– – –

Flux density in the core $\hat{B} < 1$ mT



M 33
A_L = 63 nH
(typical values)



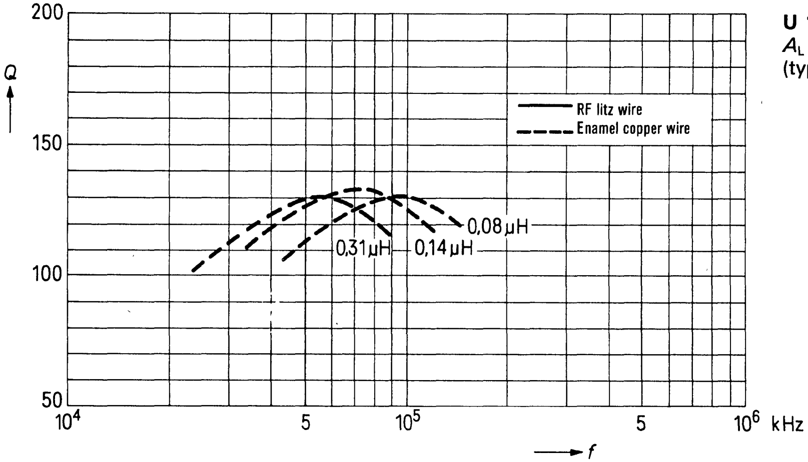
N 48
A_L = 100 nH
(typical values)

Q factor characteristics

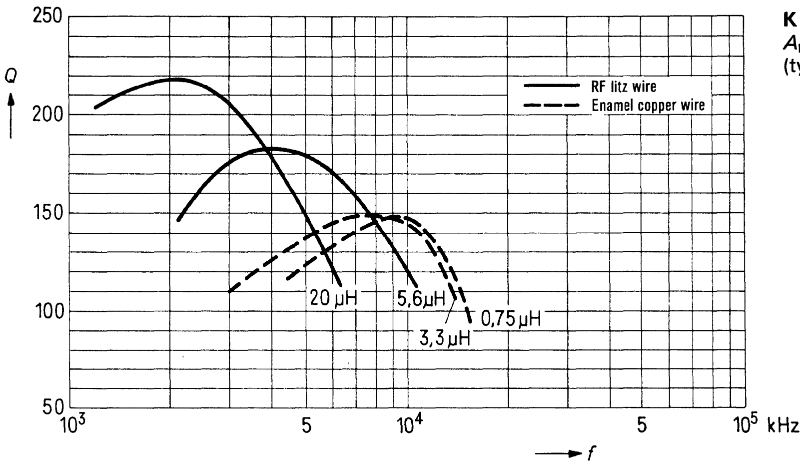
Materials U 17, K 1

Material	L (μH)	Turns	Wire; RF litz wire	Number of layers
U 17 A_L = 8 nH	0,31 0,14 0,08	6 4 3	0,25 CuL 0,30 CuL 0,30 CuL	1 1 1
K 1 A_L = 25 nH	20 5,6 3,3 0,75	28 15 11 5	15 x 0,04 CuLS 12 x 0,04 CuLS 0,3 CuL 0,4 CuL	4 2 2 1

Flux density in the core $\hat{B} < 2$ mT

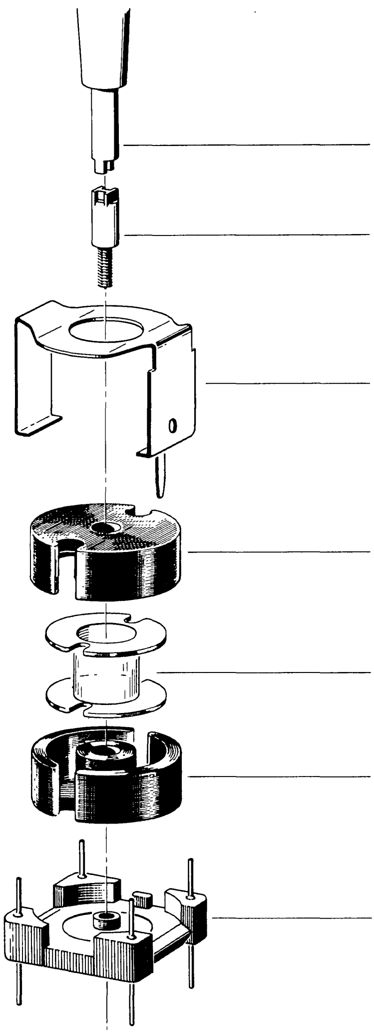


U 17
A_L = 8 nH
(typical values)



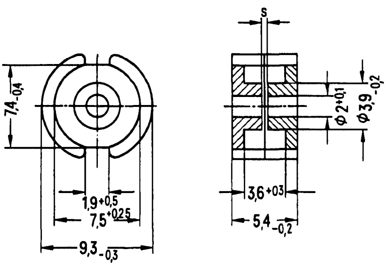
K 1
A_L = 25 nH
(typical values)

Type for PC mounting



Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	340, fig. 4
Matching handle	B63399	341, fig. 6
Adjusting screw	B65518	137
Yoke	B65518	136
Pot core	B65517	134
Coil former with 1 or 2 sections	B65522	135
Pot core	B65517	134
Connecting board with thread; 4 or 6 solder terminals	B65518	136
Centering pin		137

Pot cores complying with DIN 41 293 or IEC publication 133



Dimensions in mm

Magnetic characteristics

Core factor	$\Sigma\, l/A$ =	1.25 mm^{-1}
Effective length	l_e =	12.5 mm
Effective area	A_e =	10 mm^2
Effective volume	V_e =	125 mm^3

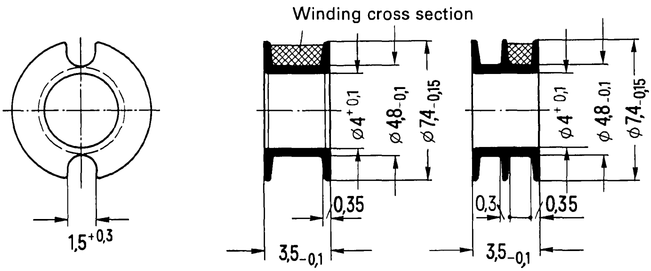
Approx. weight 0.8 g/set

A_L value nH	tolerance	SIFERRIT material	Total air gap *s* in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 500 sets)
Gapped					
10	±3%≙A	U 17[1]	1,2	10	B65517-A0010-A017
16	±3%≙A	K 12	0,8	15,9	B65517-A0016-A012
◥ 25	±3%≙A	K 1	0,45	24,9	B65517-A0025-A001
40	±3%≙A	K 1	0,26	39,8	B65517-A0040-A001
40	±3%≙A	M 33	0,37	39,8	B65517-A0040-A033
◥ 63	±3%≙A	M 33	0,2	63	B65517-A0063-A033
100	±3%≙A	N 48	0,1	100	B65517-A0100-A048
◥ 160	±3%≙A	N 48	0,06	159	B65517-A0160-A048
200	±3%≙A	N 48	0,04	200	B65517-A0200-A048
250	±10%≙K	N 48	0,03	249	B65517-A0250-K048
Ungapped					
95	$^{+30}_{-20}$%≙R	K 1		95	B65517-A0000-R001
1200	$^{+30}_{-20}$%≙R	N 48		1190	B65517-A0000-R048
◥ 2500	$^{+30}_{-20}$%≙R	N 30		2490	B65517-A0000-R030
◥ 5000	$^{+40}_{-30}$%≙Y	T 38		4970	B65517-A0000-Y038

[1] The dimensions may be exceeded by up to 10%
◥ to be preferred

Coil former and insulating washers B 65 522

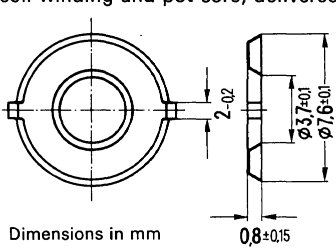
Glass-fiber reinforced polyterephthalate coil former, complying with DIN 41 294 or IEC publication 133, flame-retardant in accordance with UL 94V-0; color code black.
For winding details refer to page 66.



Dimensions in mm

Number of sections	Useful winding cross section A_N of one section mm²	Useful winding cross section A_N total mm²	Average length of turn l_N mm	A_R value[1] µΩ	Approx. weight g	**Ordering code** (PU: 500)
1	2,8	2,8	18,5	220	0,05	B65522–B0000–T001
2	1,25	2,5		250	0,06	B65522–B0000–T002

0.04 mm thick insulating Makrofol spring washers for insulation and tolerance balancing between coil winding and pot core; delivered in strips.



Dimensions in mm

Ordering code B65522–A5000–X000
(PU: 1000)

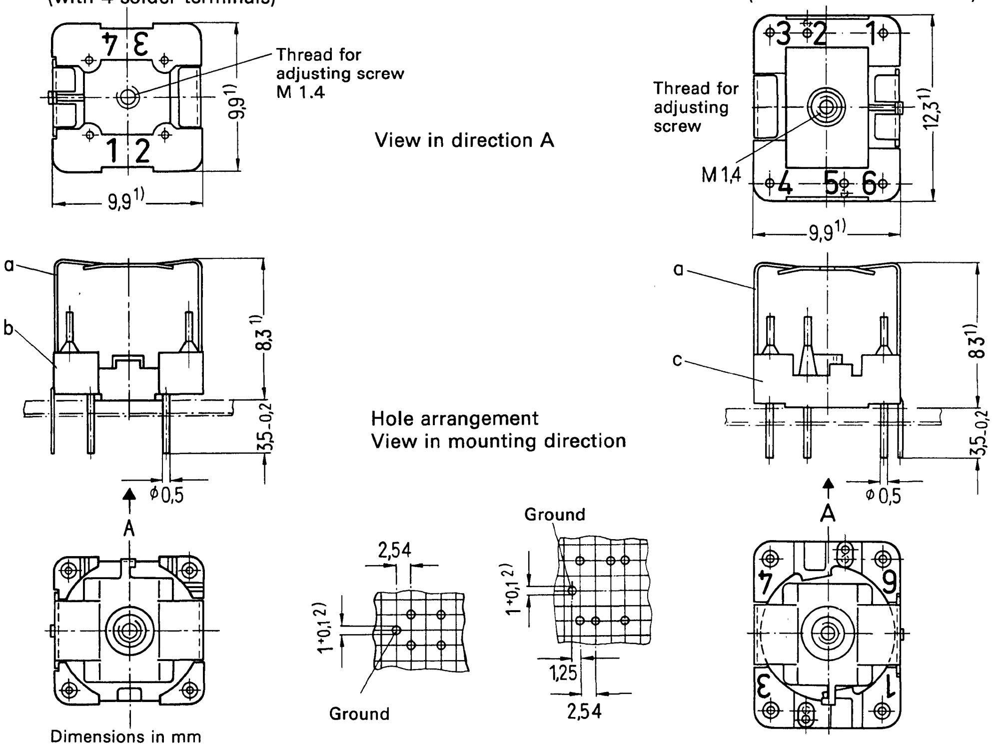
[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

Mounting assemblies for PC mounting B 65 518

Mounting assemblies with snap-in connection. Glass-fiber reinforced polyterephthalate connecting board, flame-retardant in accordance with UL 94 V-0. Max. permissible soldering temperature is 400 °C/752 °F, 2 sec. 0.25 mm thick nickel-silver spring yoke.
Approx. weight 0.6 g (4 solder terminals); 0.7 g (6 solder terminals)

B65518-B2001-X000
(with 4 solder terminals)

B65518-B2002-X000
(with 6 solder terminals)



Ordering code B65518–B2002–X000 (Complete mount. assembly with 4 solder term.) (PU: 500 sets)			Ordering code B65518–B2002–X000 (Complete mount. assembly with 6 solder term.) (PU: 500 sets)		
Mounting parts		Ordering code	Mounting parts		Ordering code
a	1 yoke	C61035–A18–C7	a	1 yoke	C61035–A18–C7
b	1 connecting board (with thread)	C61035–A18–B6	c	1 connecting board (with thread)	C61035–A18–B7

Drawing details for the design of mounting devices are available upon request.
Ordering code C61407–A9–A1

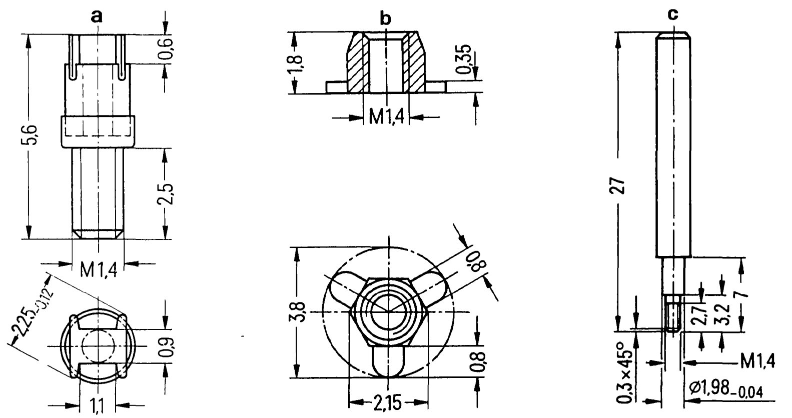
[1] Max. dimension [2] 1.3 mm hole also permissible

Adjusting devices B 65 518

Adjusting screw (a) B65518–B3∗∗∗–X∗∗∗, consisting of a SIFERRIT or SIRUFER tube core on which a glass-fiber reinforced polyterephthalate thread is molded and 4 cam profiles serving as core brake;

fits:

glass-fiber reinforced polyterephthalate **connecting board** B65518–B2∗∗∗–X∗∗∗ into which a guiding thread is molded;
glass-fiber reinforced 11 polyamide **threaded flange** (b) B65539–J1001–X000 (only needed, when no mounting assembly is used).
Centering pin (c) e. g. of brass (for design proposal see drawing)
Adjusting screw driver B63399–B0004–X000

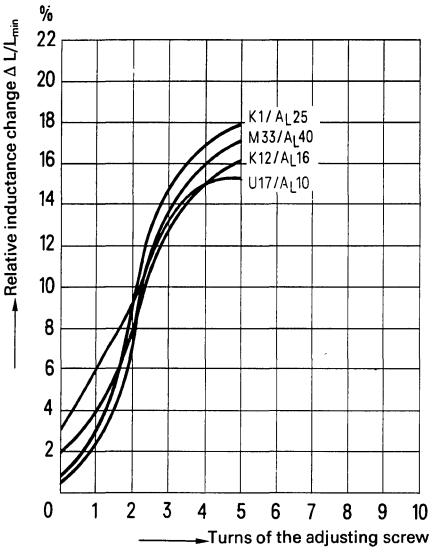


Dimensions in mm

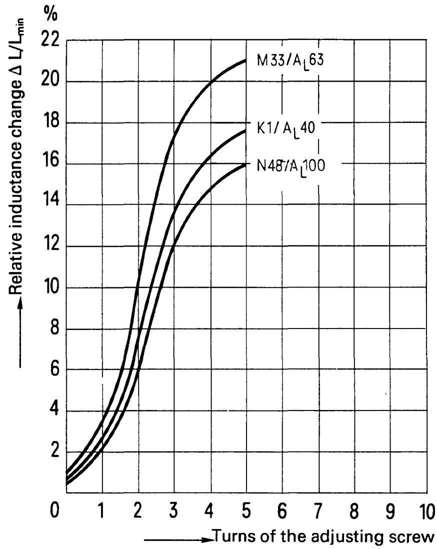
Pot cores B65517		Adjusting screw			
Material	A_L value nH	Tube core dia. x length	Tube core Material	Color code	**Ordering code** (PU: 500)
U 17	10	1,81 x 2	Si 1	brown	B65518-B3000-X101
K 12	16				
K 1	25				
	40		K 1	blue	B65518-B3000-X001
M 33	40		Si 1	brown	B65518-B3000-X101
	63		K 1	blue	B65518-B3000-X001
N 48	100				
	160		N 22	green	B65518-B3000-X022
	200				
	250				

Inductance adjustment curves

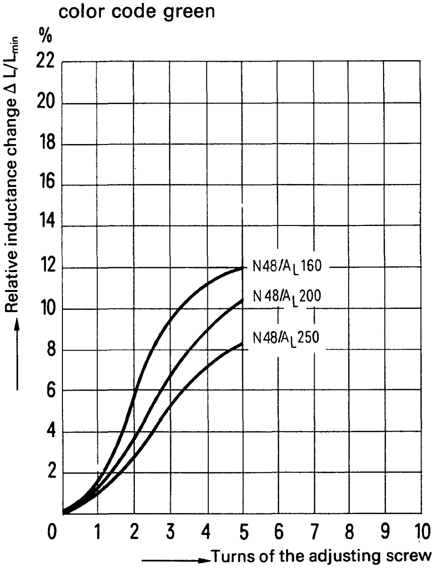
Adjusting screw B65518–B3000–X101
color code brown



Adjusting screw B65518–B3000–X001
color code blue



Adjusting screw B65518–B3000–X022
color code green



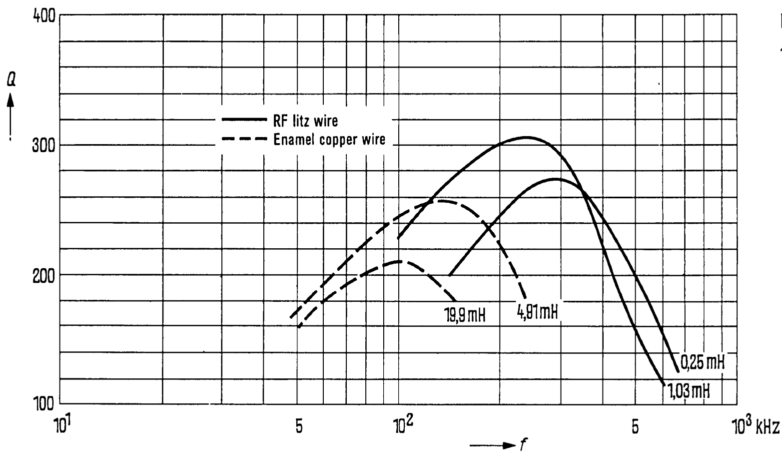
0 ≙ at least one turn engaged.

Q factor characteristics

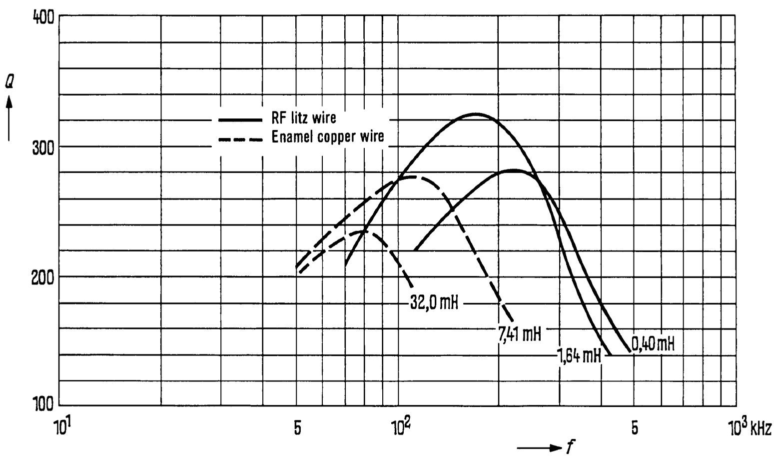
Material N 48

L (mH) for A_L = 100 nH	A_L = 160 nH	Turns	Wire; RF litz wire	Number of sections
19,9	32,0	450	0,07 CuL	1
4,91	7,41	250	0,1 CuL	1
1,03	1,64	100	1 x 12 x 0,04 CuL	1
0,25	0,40	50	1 x 15 x 0,04 CuLS	1

Flux density in the core $\hat{B} < 3$ mT



N 48
A_L = 100 nH
(typical values)



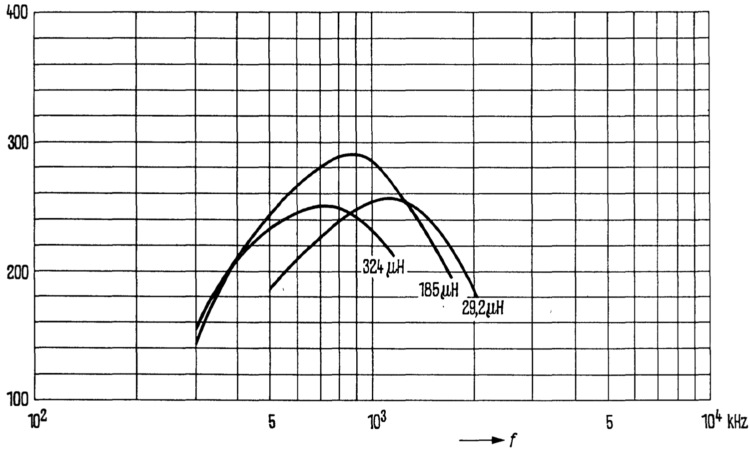
N 48
A_L = 160 nH
(typical values)

Q factor characteristics

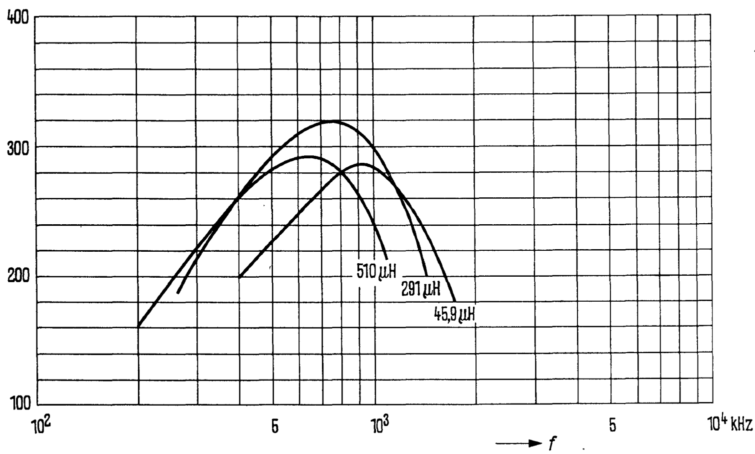
Material M 33

L (µH) for A_L = 40 nH	L (µH) for A_L = 63 nH	Turns	RF litz wire	Number of sections
324	510	90	1 x 5 x 0,05 CuLS	1
185	291	68	1 x 12 x 0,04 CuLS	1
29,2	45,9	27	1 x 30 x 0,04 CuLS	1

Flux density in the core $\hat{B} < 2$ mT



M 33
A_L = 40 nH
(typical values)

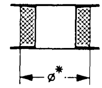


M 33
A_L = 63 nH
(typical values)

Q factor characteristics

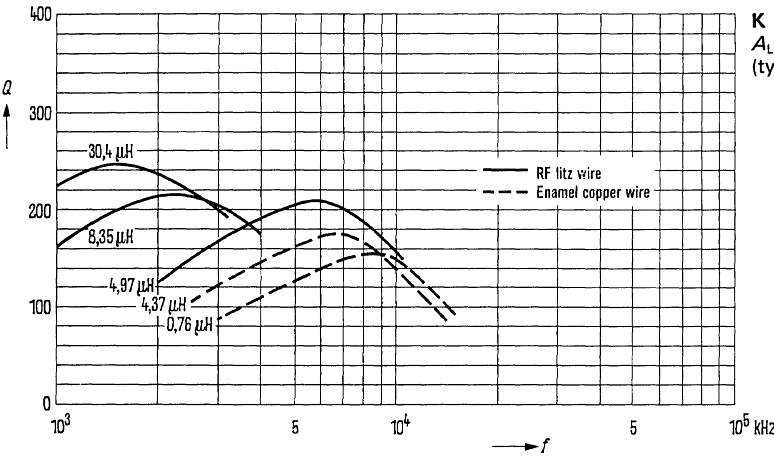
Material K 1

L (µH) for A_L = 25 nH	A_L = 40 nH	Turns	Wire; RF litz wire	Number of sections	⌀* mm
4,37	6,21	12	0,20 CuL	1	6,7
0,76	1,08	5	0,50 CuL	1	6,0
30,4	47,3	35	1 x 20 x 0,04 CuLS	1	–
8,35	12,2	18	1 x 20 x 0,04 CuLS	1	–
4,97	7,2	13	1 x 12 x 0,04 CuLS	1	6,7

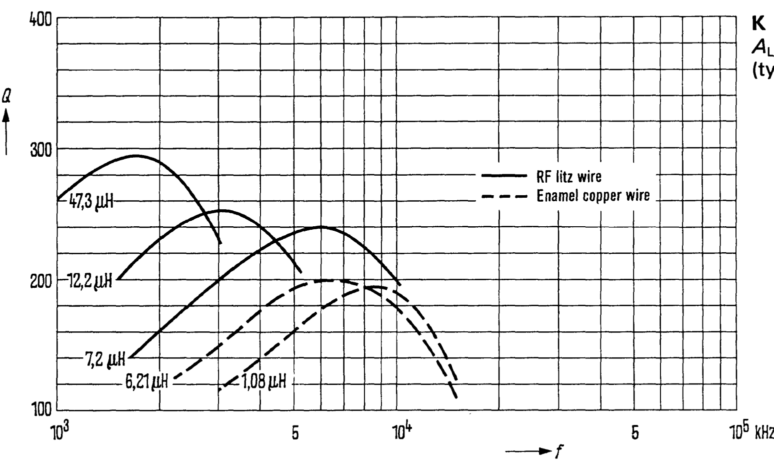


Pad of polystyrene tape up to the diameter

Flux density in the core $\hat{B}$ < 0.6 mT

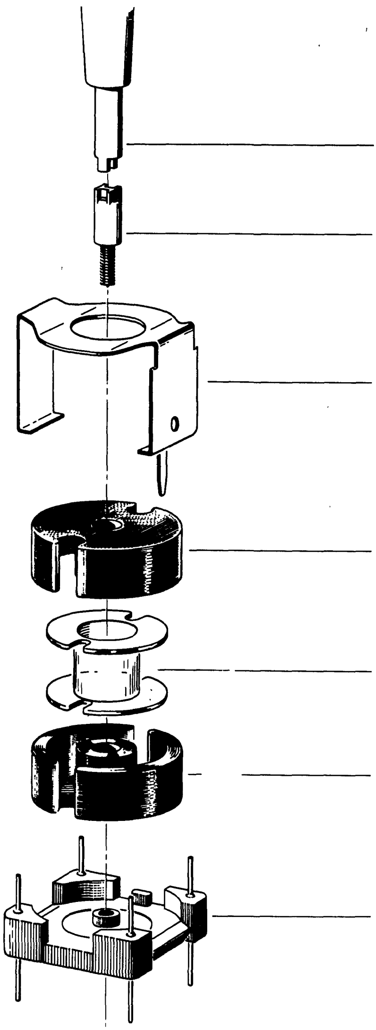


K 1
A_L = 25 nH
(typical values)



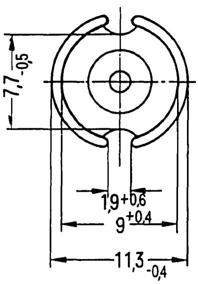
K 1
A_L = 40 nH
(typical values)

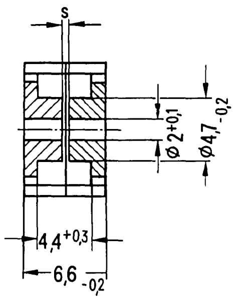
Type for PC mounting



Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	340, fig. 4
Matching handle	B63399	341, fig. 6
Adjusting screw	B65539	146
Yoke	B65535	145
Pot core	B65531	143
Coil former with 1 or 2 sections	B65532	144
Pot core	B65531	143
Connecting board with thread, 4 or 8 solder terminals	B65535	145
Centering pin		146

Pot cores complying with DIN 41 293 or IEC publication 133





Dimensions in mm

Magnetic characteristics

Core factor	$\Sigma\, l/A$ =	1.0 mm^{-1}
Effective length	l_e =	15.9 mm
Effective area	A_e =	15.9 mm^2
Effective volume	V_e =	252 mm^3

Approx. weight 1.7 g/set

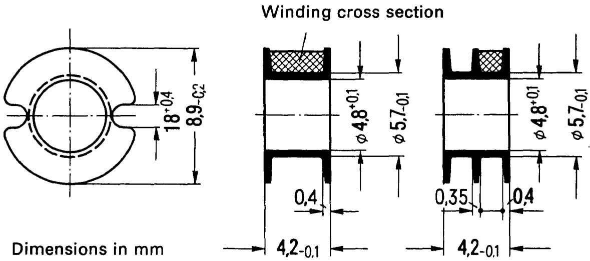
A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 500 sets)
Gapped					
16		K 12	1,0	12,7	B65531-L0016-A012
25		K 1	1,0	19,1	B65531-L0025-A001
◥ 40			0,41	31,8	B65531-L0040-A001
40		M 33	0,64	31,8	B65531-L0040-A033
◥ 63	±3%≙A		0,38	50	B65531-L0063-A033
100		N 48	0,2	80	B65531-L0100-A048
160			0,1	127	B65531-L0160-A048
◥ 250			0,06	199	B65531-L0250-A048
400	±10%≙K		0,03	318	B65531-L0400-K048
Ungapped					
115		K 1		92	B65531-L0000-R001
1600	$^{+30}_{-20}$ %≙R	N 48		1270	B65531-L0000-R048
◥ 3200		N 30		2550	B65531-L0000-R030
◥ 6500	$^{+40}_{-30}$ %≙Y	T 38		5170	B65531-L0000-Y038

◥ to be preferred

Coil former and insulating washers B 65532

Glass-fiber reinforced polyterephthalate coil former, complying with DIN 41 294 or IEC publication 133, flame-retardant in accordance with UL 94V-0, color code black.

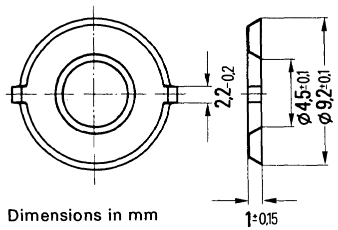
For winding details refer to page 66.



Dimensions in mm

Number of sections	Useful winding cross section A_N of one section mm²	total mm²	Average length of turn l_N mm	A_R value[1)] μΩ	Approx. weight g	**Ordering code** (PU: 500)
1	4,2	4,2	22	180	0,1	B65532–B0000–T001
2	1,9	3,8		200		B65532–B0000–T002

0.04 mm thick insulating Makrofol spring washers for insulation and tolerance balancing between coil winding and pot core; delivered in strips.



Dimensions in mm

Ordering code B65532–A5000–X000
(PU: 1000)

1) $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

Mounting assemblies for PC mounting B 65 535

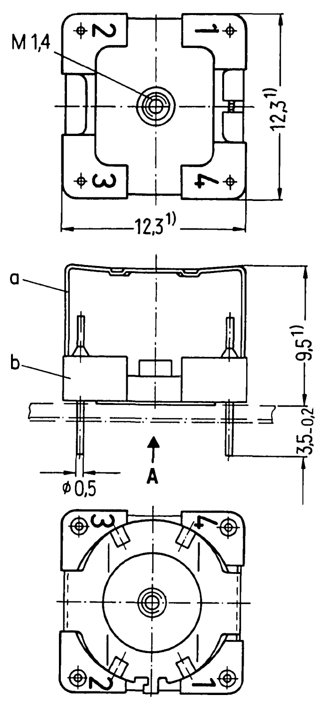
Mounting assemblies with snap-in connection. Glass-fiber reinforced polyterephthalate connecting board, flame-retardant in accordance with UL 94V-0. Max. permissible soldering temperature is 400 °C/752 °F, 2 sec. 0.25 mm thick nickel-silver spring yoke.

Approx. weight 1.1 g (4 solder terminals); 1.4 g (8 solder terminals).

B65535-B0002-X000
(with 4 solder terminals)

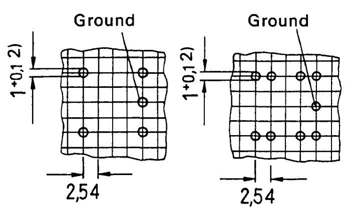
B65535-B0003-X000
(with 8 solder terminals)

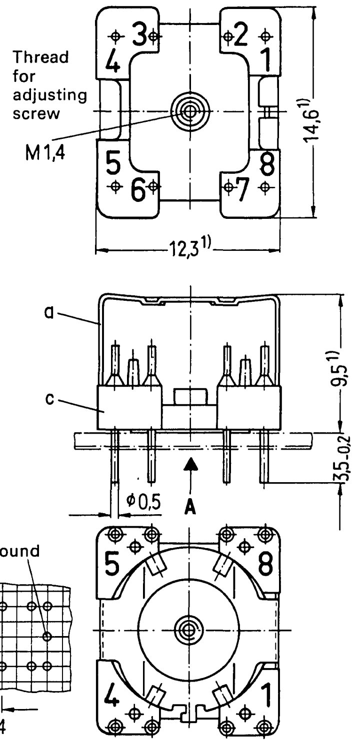
Thread for adjusting screw



View in direction A

Hole arrangement
View in mounting direction





Dimensions in mm

Ordering code B65535–B0002–X000 (Complete mounting assembly with 4 solder terminals) (PU: 500 sets)			**Ordering code** B65535–B0003–X000 (Complete mounting assembly with 8 solder terminals) (PU: 500 sets)		
Mounting parts		Ordering code	Mounting parts		Ordering code
a	1 yoke	C61035–A14–C24	a	1 yoke	C61035–A14–C24
b	1 connect. board (with 4 solder terminals)	C61035–A14–B20	c	1 connect. board (with 8 solder terminals)	C61035–A14–B21

Drawing details for the design of mounting devices are available upon request.
Ordering code C61407–A9–A1

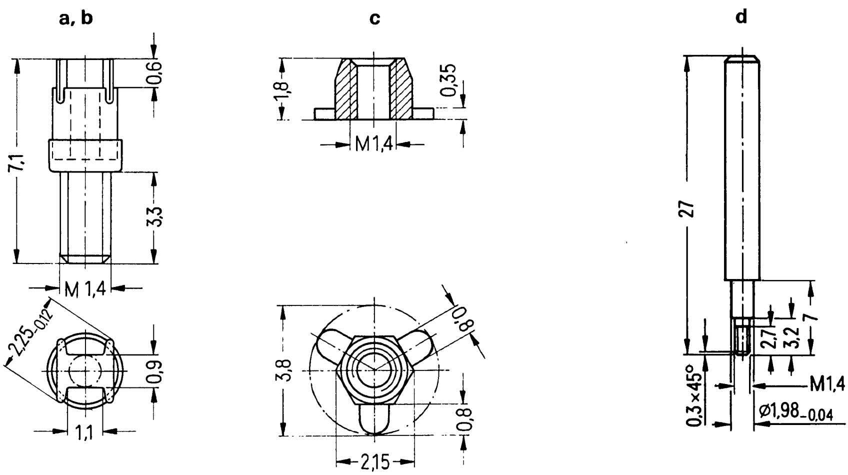
[1] Max. dimension [2] 1.3 mm hole also permissible

Adjusting devices B 65539

Adjusting screw (a, b) B65549–C1∗∗∗–X∗∗∗, consisting of a SIFERRIT or SIRUFER tube core on which a glass-fiber reinforced polyterephthalate thread is molded and 4 cam profiles serving as corebrake;

fits:

polyterephthalate **connecting board** B65535–B0∗∗∗–X∗∗∗ into which a guiding thread is molded; glass-fiber reinforced 11 polyamide **threaded flange** (c) B65539–J1001–X000 (only needed, when no mounting assembly is used).
Centering pin (d) e.g. of brass (for design proposal see drawing)
Adjusting screw driver B63399–B0004–X000.

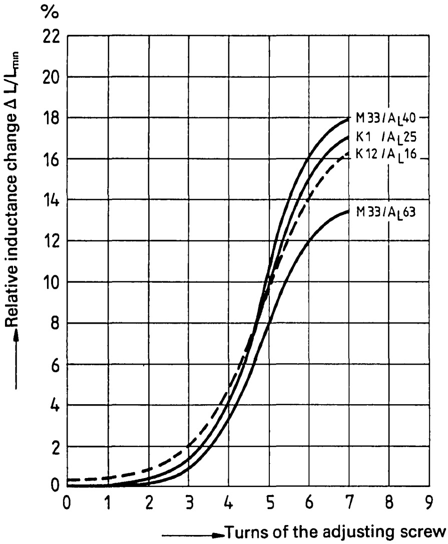


Dimensions in mm

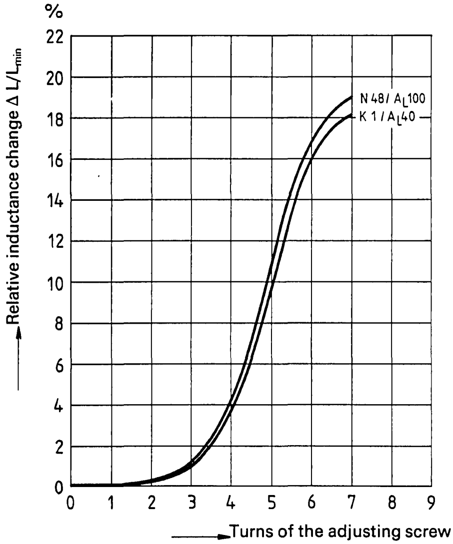
Pot cores B65531		Adjusting screw				
Material	A_L value nH	Part	Tube core dia. x length	Tube core Material	Color code	**Ordering code** (PU: 500)
K 12	16	a	1,81 x 2,0	Si 1	black	B65539–C1003–X101
K 1	25 40			K 1	yellow	B65539–C1003–X001
M 33	40 63			Si 1	black	B65539–C1003–X101
N 48	100	a	1,81 x 2,0	K 1	yellow	B65539–C1003–X001
	160 250	b	1,81 x 2,7	N 22	red	B65539–C1002–X022

Inductance adjustment curves

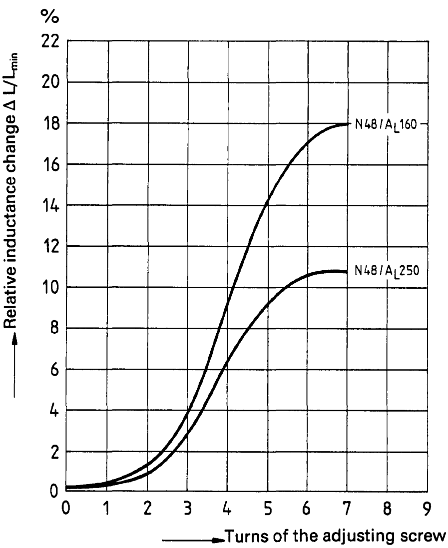
Adjusting screw B65539-C1003-X101
color code black



Adjusting screw B65539-C1003-X001
color code yellow



Adjusting screw B65539-C1002-X022
color code red



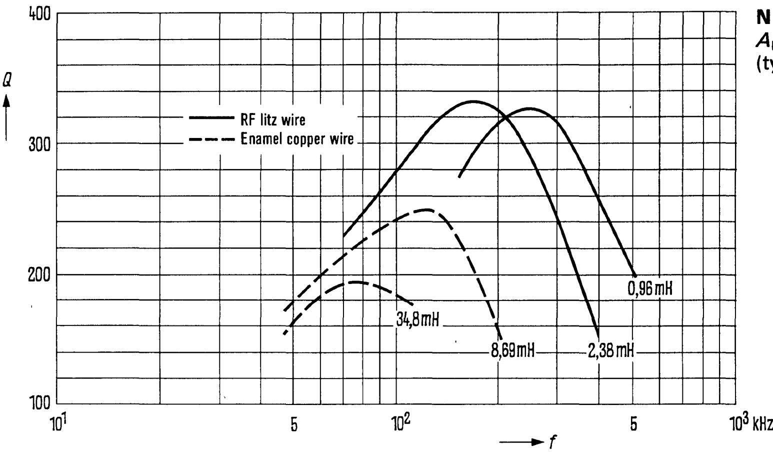
0 ≙ at least one turn engaged

Q factor characteristics

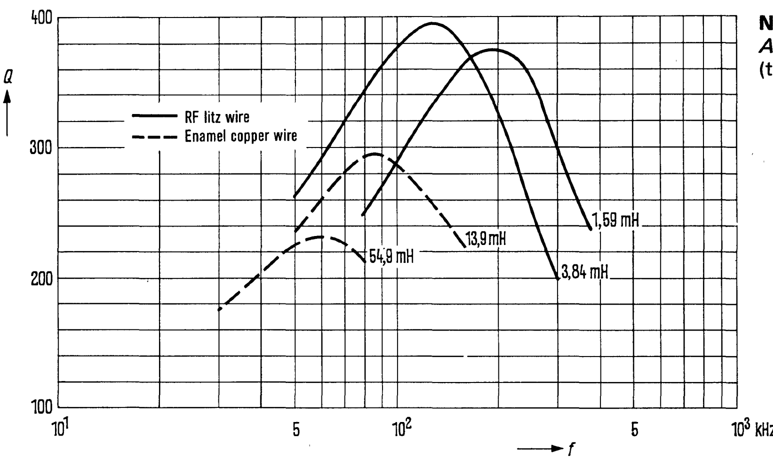
Material N 48

L (mH) for A_L = 100 nH	A_L = 160 nH	Turns	Wire; RF litz wire	Number of sections
34,8	54,9	600	0,07 CuL	1
8,69	13,9	300	0,10 CuL	1
2,38	3,84	160	1 x 12 x 0,04 CuLS	1
0,96	1,59	100	1 x 12 x 0,04 CuLS	1

Flux density in the core $\hat{B}$ < 1.5 mT



N 48
A_L = 100 nH
(typical values)



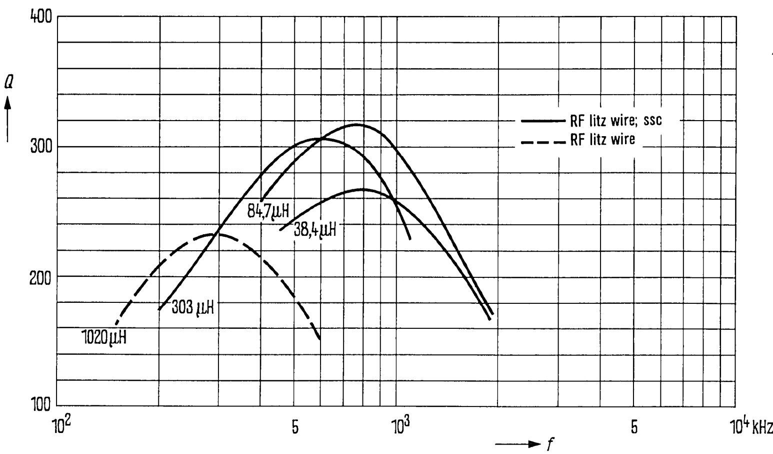
N 48
A_L = 160 nH
(typical values)

Q factor characteristics

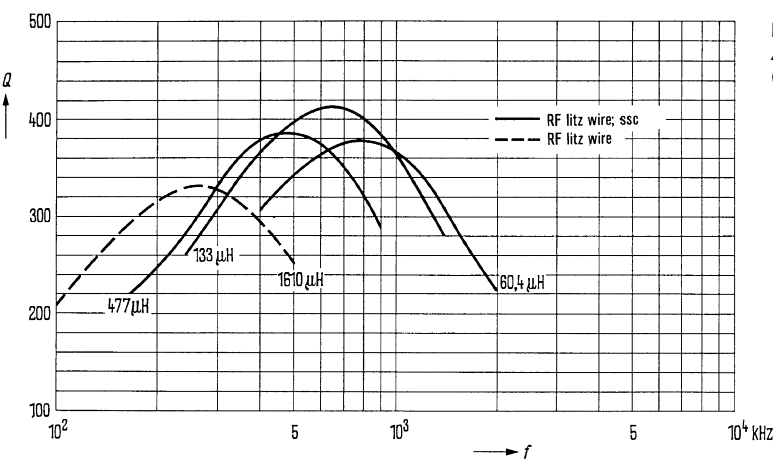
Material M 33

L (µH) for A_L = 40 nH	L (µH) for A_L = 63 nH	Turns	RF litz wire	Number of sections
1020	1610	160	1 x 12 x 0,04 CuL	1
303	477	87	1 x 15 x 0,04 CuLS	1
84,7	133	46	1 x 30 x 0,04 CuLS	1
38,4	60,4	31	1 x 45 x 0,04 CuLS	1

Flux density in the core $\hat{B} < 2$ mT



M 33
A_L = 40 nH
(typical values)

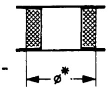


M 33
A_L = 63 nH
(typical values)

Q factor characteristics

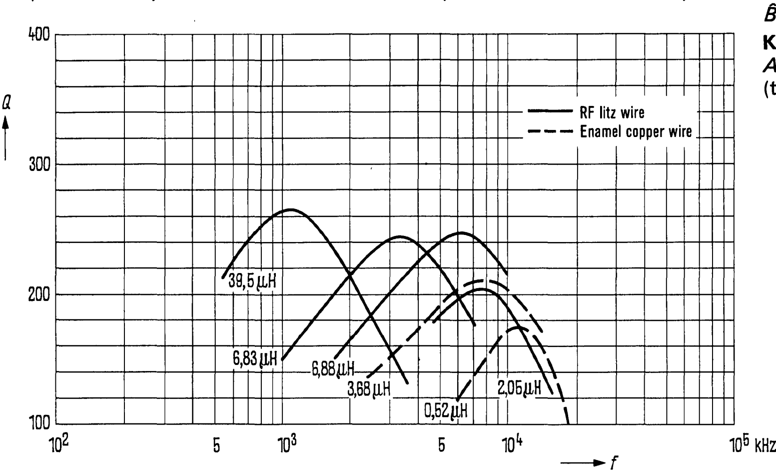
Material K 1

L (µH) for A_L = 25 nH	L (µH) for A_L = 40 nH	Turns	Wire; RF litz wire	Number of sections	mm diameter*
3,68	5,35	11	0,25 CuL	1	8,1
0,52	0,74	4	0,70 CuL	1	7,2
39,5	60,8	40	1 x 30 x 0,04 CuLS	1	–
6,88	9,73	15	1 x 12 x 0,04 CuLS	1	8,4
6,83	9,70	15	1 x 30 x 0,04 CuLS	1	6,9
2,05	2,92	8	1 x 30 x 0,04 CuLS	1	8,1

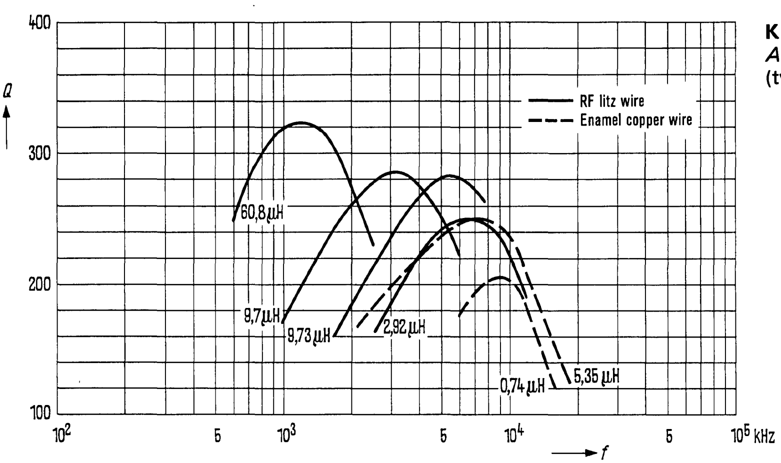


Pad of polystyrene tape up to the diameter*

Flux density in the core $\hat{B} < 0.6$ mT

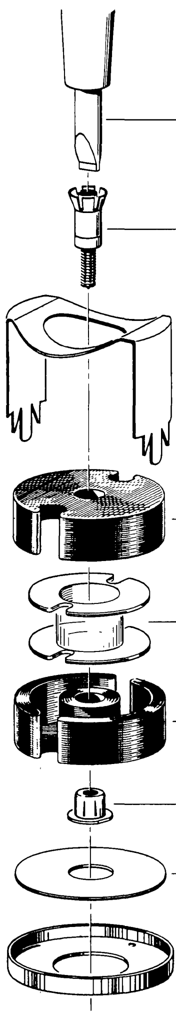


K 1
A_L = 25 nH
(typical values)



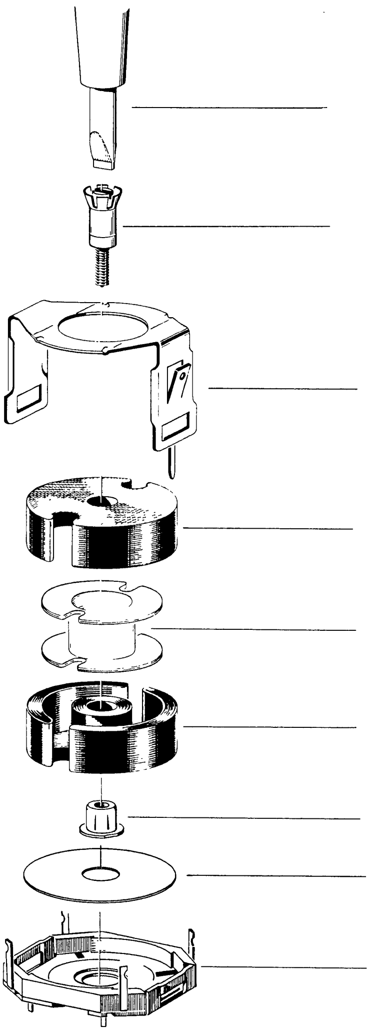
K 1
A_L = 40 nH
(typical values)

Type for chassis mounting



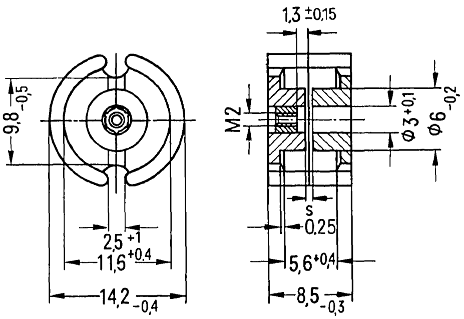
Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	340, fig. 4
Matching handle	B63399	341, fig. 6
Adjusting screw	B65549	157
Yoke	B65543	155
Pot core	B65541	153
Coil former with 1 or 2 sections	B65542	154
Pot core	B65541	153
Threaded sleeve threaded flange	B65549 B65808	157
Bakelized paper washer	B65543	155
Base plate	B65543	155

Type for PC mounting



Individual parts	Part No.	Page
Adjusting screw driver Matching handle	B63399 B63399	340, fig. 4 341, fig. 6
Adjusting screw	B65549	157
Yoke	B65545	156
Pot core	B65541	153
Coil former with 1 or 2 sections	B65542	154
Pot core	B65541	153
Threaded sleeve or threaded flange	B65549 B65808	157
Insulating washer	B65542	154
Connecting board with 4 or 6 solder terminals	B65545	156

Pot cores complying with DIN 41 293 or IEC publication 133



Magnetic characteristics

Core factor	$\Sigma l/A$ =	0.80	mm^{-1}
Effective length	l_e =	20	mm
Effective area	A_e =	25	mm^2
Min. core cross section[1]	A_{min} =	19	mm^2
Effective volume	V_e =	500	mm^3

Approx. weight 3.2 g/set

Dimensions in mm

Pot cores	Ordering code
without threaded sleeve	B65541-**K**••••-••••
with threaded sleeve (fig.)	B65541-**N**••••-••••

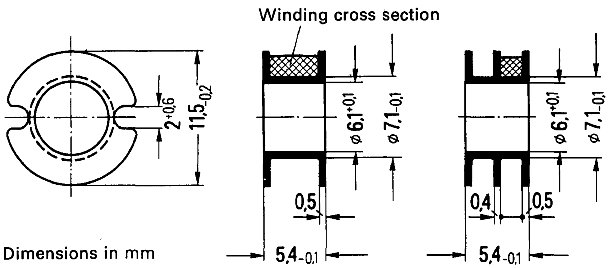
A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 500 sets)
Gapped					
20	±3%≙A	K 12	2,0	12,7	B65541-•0020-A012
◥ 40		K 1	1,0	25,4	B65541-•0040-A001
40		M 33	0,9	25,4	B65541-•0040-A033
◥ 100			0,3	64	B65541-•0100-A033
◥ 200		N 58	0,12	127	B65541-•0200-A058
250			0,09	159	B65541-•0250-A058
160		N 48	0,16	102	B65541-•0160-A048
◥ 250			0,1	159	B65541-•0250-A048
◥ 315			0,08	201	B65541-•0315-A048
400			0,05	255	B65541-•0400-A048
Ungapped					
140	$^{+30}_{-20}$%≙R	K 1		89	B65541-K0000-R001
2100		N 48		1340	B65541-K0000-R048
2800		N 41		1780	B65541-K0000-R041
◥ 4200		N 30		2670	B65541-K0000-R030
◥ 9000	$^{+40}_{-30}$%≙Y	T 38		5720	B65541-K0000-Y038

[1] Necessary for the calculation of the max. flux density
◥ to be preferred

Coil former and insulating washers B 65542

Glass-fiber reinforced polyterephthalate coil former, complying with DIN 41 294 or IEC publication 133, flame-retardant in accordance with UL 94V-0, color code black.

For winding details refer to page 66.

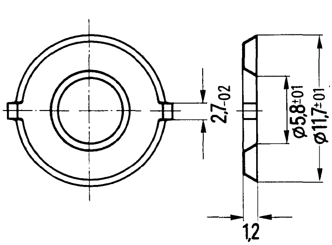


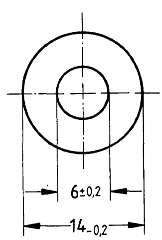
Dimensions in mm

Number of sections	Useful winding cross section A_N of one section mm²	total mm²	Average length of turn l_N mm	A_R value[1] µΩ	Approx. weight g	**Ordering code** (PU: 500)
1	8,4	8,4	28	115	0,2	B65542–B0000–T001
2	3,8	7,6		127	0,3	B65542–B0000–T002

0.04 mm thick insulating Makrofol spring washers for insulation and tolerance balancing between coil winding and pot core; delivered in strips.

0.05 mm thick insulating Teflon washers for increasing the dielectric strength between core and connecting board.





Dimensions in mm

Ordering code B65542–A5000–X000
(PU: 1000)

Ordering code B65542–A5002–X000
(PU: 500)

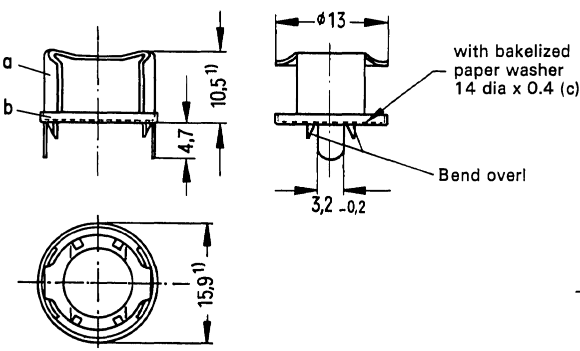
[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

Mounting assembly for chassis mounting B 65 543

Mounting assembly with metal base plate; fixed by twist prongs.
0.3 mm thick nickel-silver spring yoke.

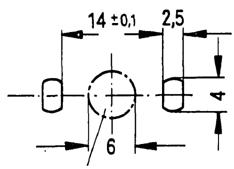
Approx. weight 1.5 g

B65543–A0001–X000



Dimensions in mm

Hole arrangement
View in mounting direction



Only for adjustment from below

Ordering code B65543–A0001–X000
(Complete mounting assembly)
(PU: 500 sets)

Mounting parts		Ordering code
a	1 yoke	C40330–A82–C8
b	1 base plate	C40330–A82–C9
c	1 washer	C40330–A82–C7

[1] Max. dimensions

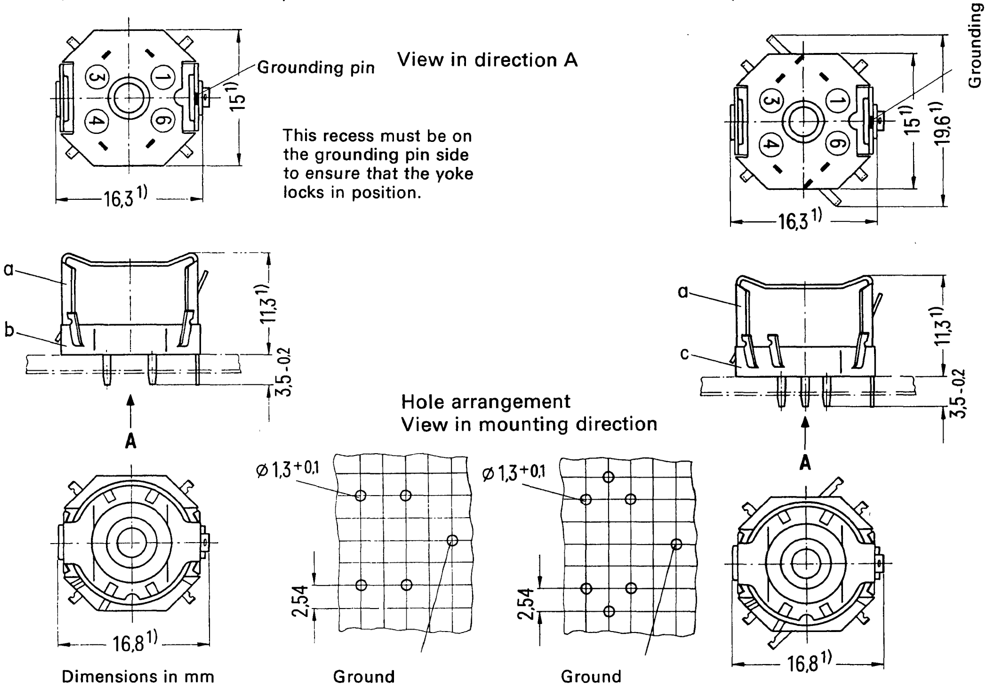
Mounting assemblies for PC mounting B 65 545

Mounting assemblies with snap-in connection.
Glass-fiber reinforced polyterephthalate connecting board, flame-retardant in accordance with UL 94V-0. Max. permissible soldering temperature is 400 °C/752 °F, 2 sec.
0.3 mm thick nickel-silver spring yoke.

Approx. weight 1.3 g

B65545-B0009-X000
(with 4 solder terminals)

B65545-B0010-X000
(with 6 solder terminals)



Dimensions in mm

Ordering code B65545–B0009–X000 (Complete mounting assembly with 4 solder terminals) (PU: 500 sets)			**Ordering code** B65545–B0010–X000 (Complete mounting assembly with 6 solder terminals) (PU: 500 sets)		
Mounting parts		Ordering code	Mounting parts		Ordering code
a	1 yoke	C61035–A12–C28	a	1 yoke	C61035–A12–C28
b	1 connecting board (with 4 solder terminals)	C42035–A11–B4	c	1 connecting board (with 6 solder terminals)	C42035–A11–B3

Drawing details for the design of mounting devices are available upon request.
Ordering code C61407–A9–A1

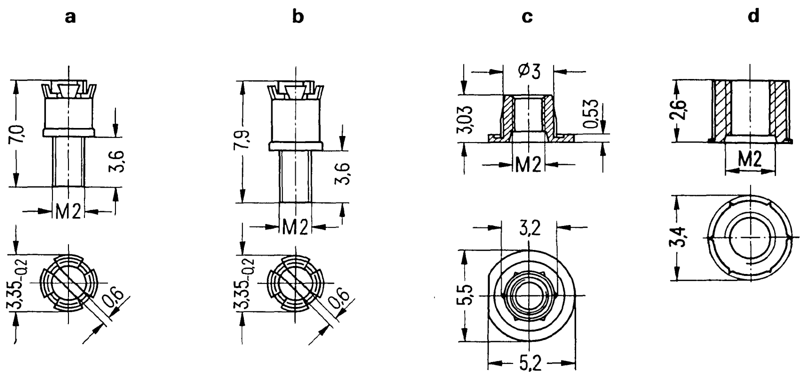
[1] Max. dimension

Adjusting devices B 65 549

Adjusting screw (a, b) B65549–E0•••–X•••, consisting of a SIFERRIT or SIRUFER tube core on which a glass-fiber reinforced polyterephthalate thread is molded and a spring crown serving as core brake;

fits:

glass-fiber reinforced 11 polyamide **threaded flange** (c) B65549–J0002–X000, color code black;
glass-fiber reinforced 11 polyamide **threaded sleeve** (d) B65808–L3002–X000.
Adjusting screw driver B63399–B0004–X000.



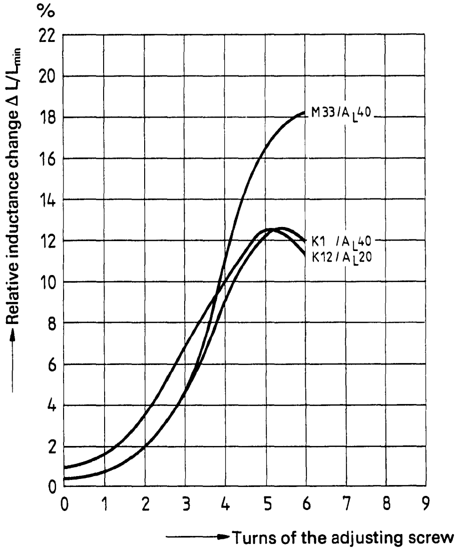
Dimensions in mm

Pot cores B65541		Adjusting screw				
Material	A_L value nH	Part	Tube core dia. x length	Tube core Material	Color code	**Ordering code** (PU: 500)
K 12	20	a	2,6 x 2,0	Si 1	green	B65549–E0003–X101
K 1	40					
M 33	40					
	100			N 22	white	B65549–E0003–X023
N 48	160	b	2,76 x 2,9	N 22	black	B65549–E0004–X023
N 58	200					
N 58, N 48	250					
N 48	315					
	400					

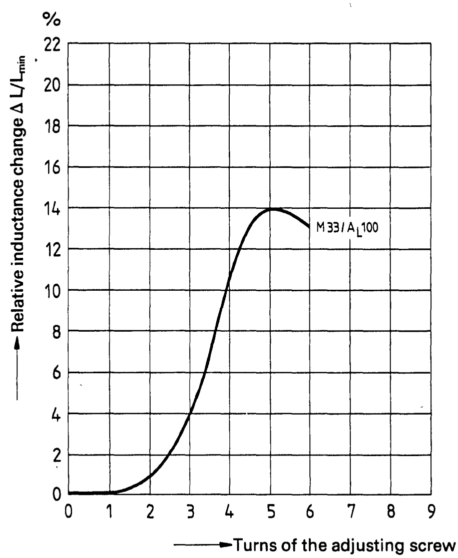
Inductance adjustment curves

Measured at cores with glued-in, threaded sleeve B 65 808–L3002–X000.

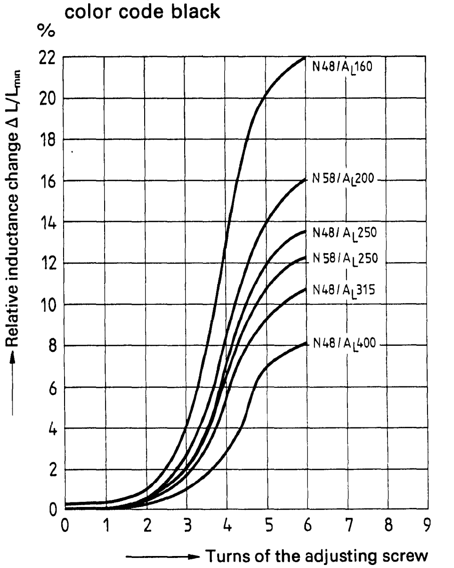
Adjusting screw B65549–E0003–X101
color code green



Adjusting screw B65549–E0003–X023
color code white



Adjusting screw B65549–E0004–X023
color code black

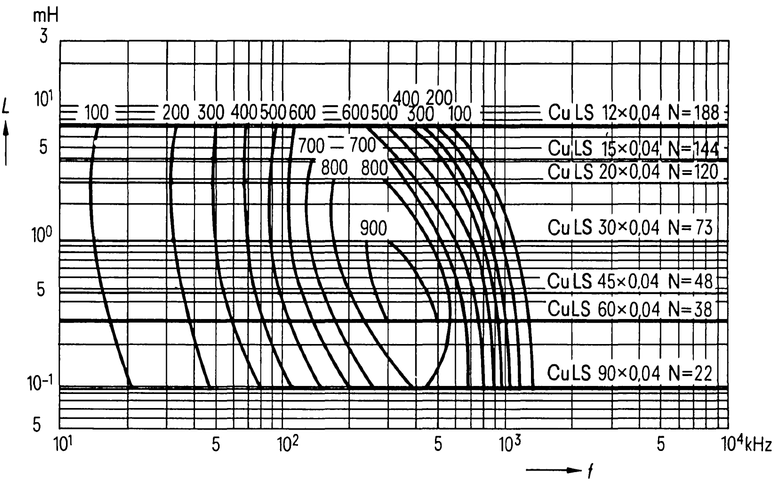


0 ≙ at least one turn engaged.

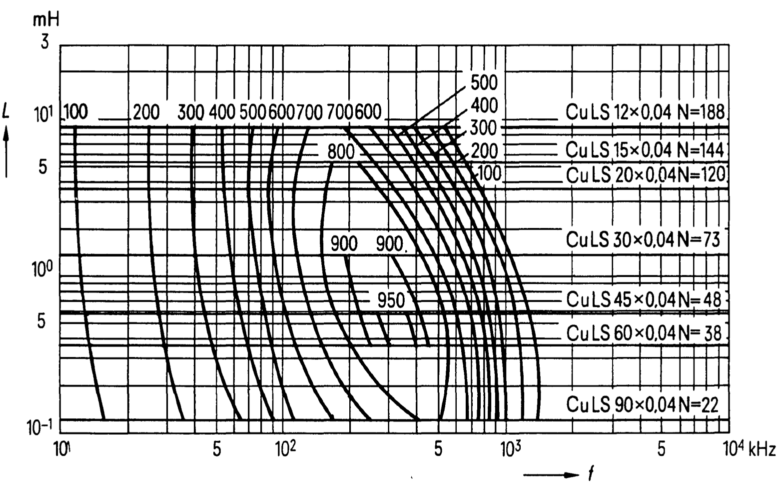
ISO-Q curves

Material N 58

2-section winding with RF litz wire
Flux density in the core $\hat{B} < 1$ mT



N 58
A_L = 200 nH



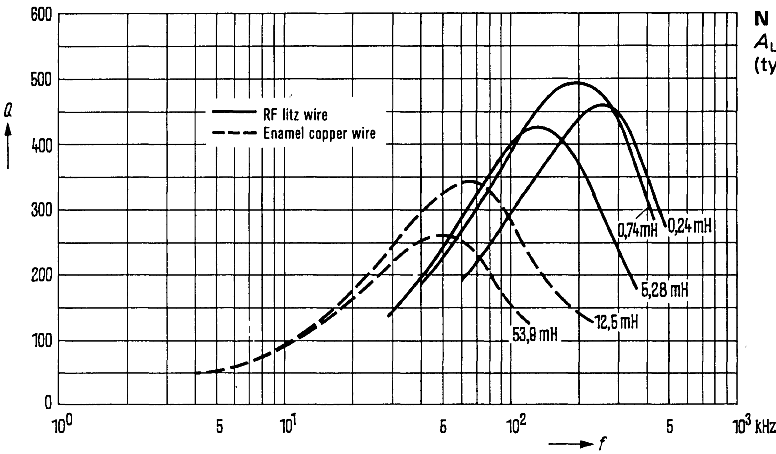
N 58
A_L = 250 nH

Q factor characteristics

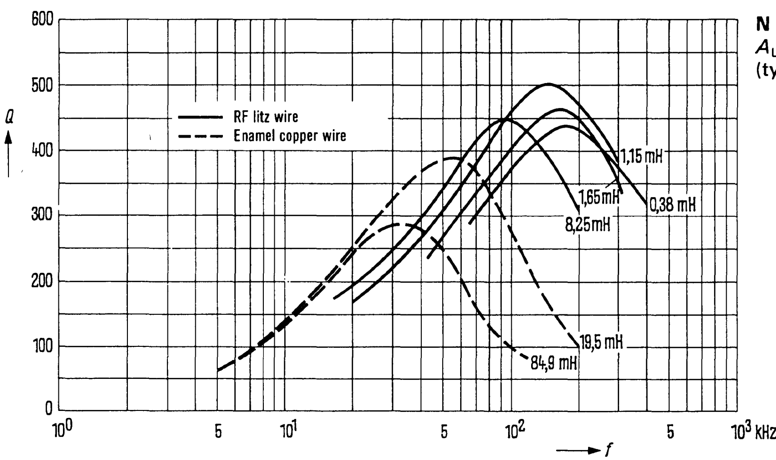
Material N 48

L (mH) for A_L = 160 nH	A_L = 250 nH	Turns	Wire; RF litz wire	Number of sections
53,9	84,9	580	0,10 CuL	1
12,5	19,5	280	0,15 CuL	1
5,28	8,25	182	1 x 12 x 0,04 CuLS	1
–	1,65	81	1 x 20 x 0,04 CuLS	2
0,74	1,15	68	1 x 20 x 0,05 CuLS	2
0,24	0,38	39	1 x 30 x 0,05 CuLS	2

Flux density in the core $\hat{B} < 1.5$ mT



N 48
A_L = 160 nH
(typical values)

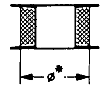


N 48
A_L = 250 nH
(typical values)

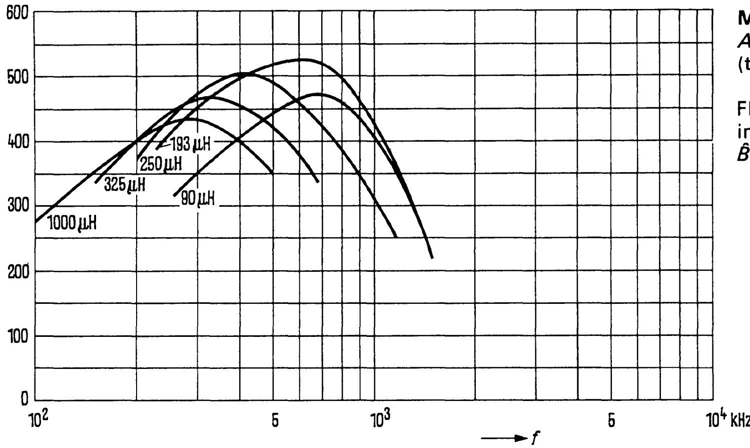
Q factor characteristics

Material M 33, K 1

Material	L (µH)	Turns	Wire; RF litz wire	No. of sections	⌀* mm
M 33 A_L = 100 nH	1000	100	1 x 15 x 0,04 CuLS	1	–
	325	57	1 x 30 x 0,05 CuLS	1	–
	250	50	1 x 30 x 0,05 CuLS	1	–
	193	22 + 22	1 x 45 x 0,04 CuLS	2	–
	90	15 + 15	1 x 45 x 0,04 CuLS	2	–
K 1 A_L = 40 nH	2,23	7	0,55 CuL	1	10,1
	0,68	4	1,0 CuL	1	9,2
	33,8	30	1 x 20 x 0,04 CuLS	1	9,5
	10,3	15	1 x 20 x 0,04 CuLS	1	10,8
	4,75	10	1 x 20 x 0,04 CuLS	1	10,8
	2,53	7	1 x 20 x 0,04 CuLS	1	10,8

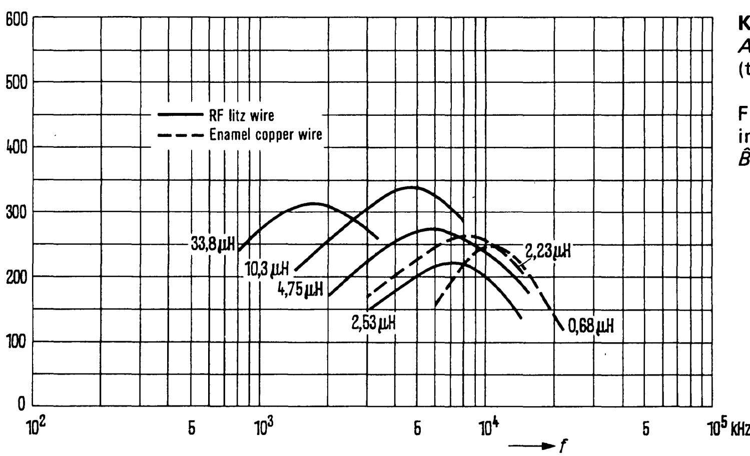


Pad of polystyrene tape up to the diameter*



M 33
A_L = 100 nH
(typical values)

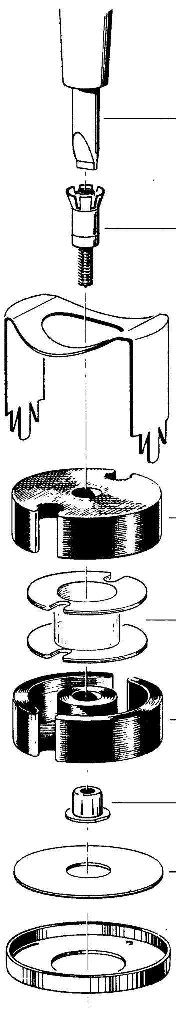
Flux density in the core
$\hat{B} < 2$ mT



K 1
A_L = 40 nH
(typical values)

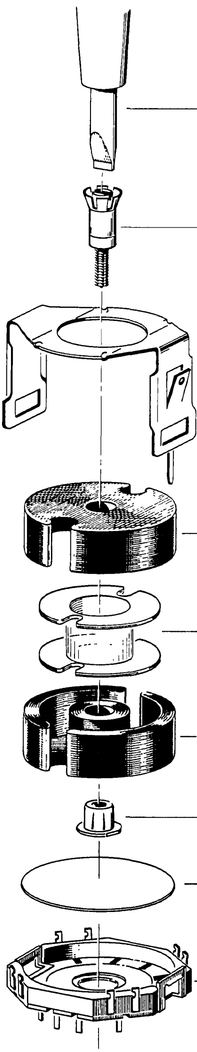
Flux density in the core
$\hat{B} < 0.6$ mT

Type for chassis mounting



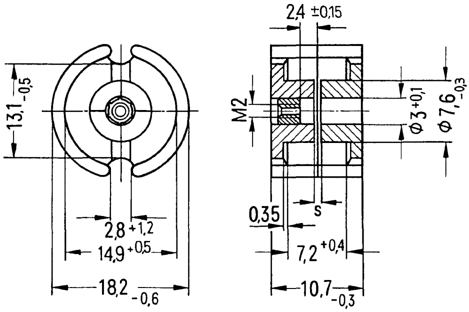
Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	340, fig. 4
Matching handle	B63399	341, fig. 6
Adjusting screw	B65659	168
Yoke	B65653	166
Pot core	B65651	164
Coil former with 1, 2, or 3 sections	B65652	165
Pot core	B65651	164
Threaded sleeve or threaded flange	B65659 B65808	168
Bakelized paper washer	B65653	166
Base plate	B65653	166

Type for PC mounting



Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	340, fig. 4
Matching handle	B63399	341, fig. 6
Adjusting screw	B65659	168
Yoke	B65655	167
Pot core	B65651	164
Coil former with 1, 2, or 3 sections	B65652	165
Pot core	B65651	164
Threaded sleeve or threaded flange	B65659 B65808	168
Insulating washer	B65652	165
Connecting board with 4 or 8 solder terminals	B65655	167

Pot cores complying with DIN 41 293 or IEC publication 133



Magnetic characteristics

Core factor	$\Sigma l/A =$	0.60	mm^{-1}
Effective length	$l_e =$	25.9	mm
Effective area	$A_e =$	43	mm^2
Min. core cross section¹⁾	$A_{min} =$	35	mm^2
Effective volume	$V_e =$	1120	mm^3

Approx. weight 6 g

Dimensions in mm

Pot cores	Ordering code
without threaded sleeve	B65651–K****–****
with threaded sleeve (fig.)	B65651–N****–****

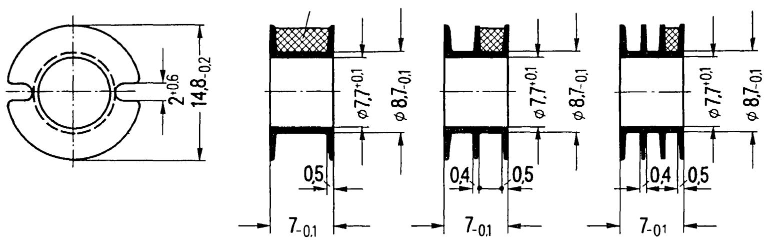
A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 500 sets)
Gapped					
25	±3% ≙ A	K 12	2,35	12	B65651–*0025–A012
40	±3% ≙ A	K 1	1,6	19,2	B65651–*0040–A001
◥ 63	±3% ≙ A	K 1	0,9	30,2	B65651–*0063–A001
63	±3% ≙ A	M 33	1,1	30,2	B65651–*0063–A033
100	±3% ≙ A	M 33	0,6	47,9	B65651–*0100–A033
◥ 160	±3% ≙ A	M 33	0,25	77	B65651–*0160–A033
250	±3% ≙ A	N 58	0,18	120	B65651–*0250–A058
◥ 315	±3% ≙ A	N 58	0,14	151	B65651–*0315–A058
160	±3% ≙ A	N 48	0,32	77	B65651–*0160–A048
250	±3% ≙ A	N 48	0,2	120	B65651–*0250–A048
315	±3% ≙ A	N 48	0,15	151	B65651–*0315–A048
◥ 400	±3% ≙ A	N 48	0,1	192	B65651–*0400–A048
500	±3% ≙ A	N 48	0,07	240	B65651–*0500–A048
630	±10% ≙ K	N 48	0,05	302	B65651–K0630–K048
Ungapped					
180	$^{+30}_{-20}$ % ≙ R	K 1		86	B65651–K0000–R001
2800	$^{+30}_{-20}$ % ≙ R	N 48		1340	B65651–K0000–R048
3900	$^{+30}_{-20}$ % ≙ R	N 41		1860	B65651–K0000–R041
◥ 5600	$^{+30}_{-20}$ % ≙ R	N 30		2670	B65651–K0000–R030
◥ 12000	$^{+40}_{-30}$ % ≙ Y	T 38		5730	B65651–K0000–Y038

¹⁾ Necessary for the calculation of the max. flux density.
◥ to be preferred

Coil former and insulating washers B 65 652

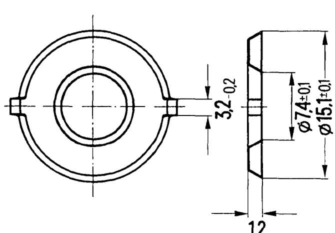
Glass-fiber reinforced polyterephthalate coil former, complying with DIN 41 294 or IEC publication 133, flame-retardant in accordance with UL 94V-0, color code black.

For winding details refer to page 66.



Number of sections	Useful winding cross section A_N of one section mm²	total mm²	Average length of turn l_N mm	A_R value[1] μΩ	Approx. weight g	**Ordering code** (PU: 500)
1	16	16		87	0,2	B65652–B0000–T001
2	6,5	13	35,6	94	0,3	B65652–B0000–T002
3	4,0	12		101	0,4	B65652–B0000–T003

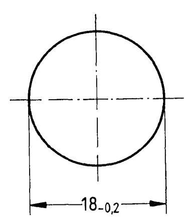
0.04 mm thick insulating Makrofol spring washers for insulation and tolerance balancing between coil winding and pot core; delivered in strips.



Dimensions in mm

Ordering code B65652–A5000–X000
(PU: 1000)

0.05 mm thick insulating Teflon washers for increasing the dielectric strength between core and connecting board.



Ordering code B65652–A5002–X000
(PU: 500)

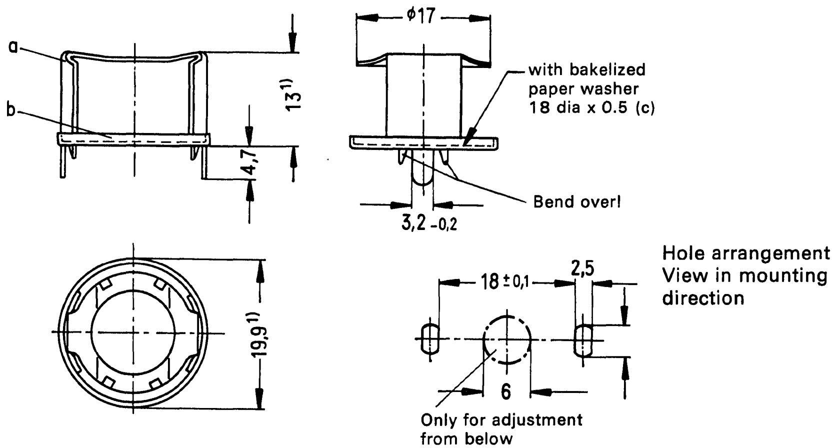
[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

Mounting assembly for chassis mounting B 65 653

Mounting assembly with metal base plate; fixed by twist prongs.
0.3 mm thick nickel-silver spring yoke.

Approx. weight 2.3 g

B65653-A0001-X000



Dimensions in mm

Ordering code B65653-A0001-X000
(Complete mounting assembly)
(PU: 500 sets)

Mounting parts		Ordering code
a	1 yoke	C40330-A75-C5
b	1 base plate	C61035-A10-C43
c	1 washer	C40330-B5-C33

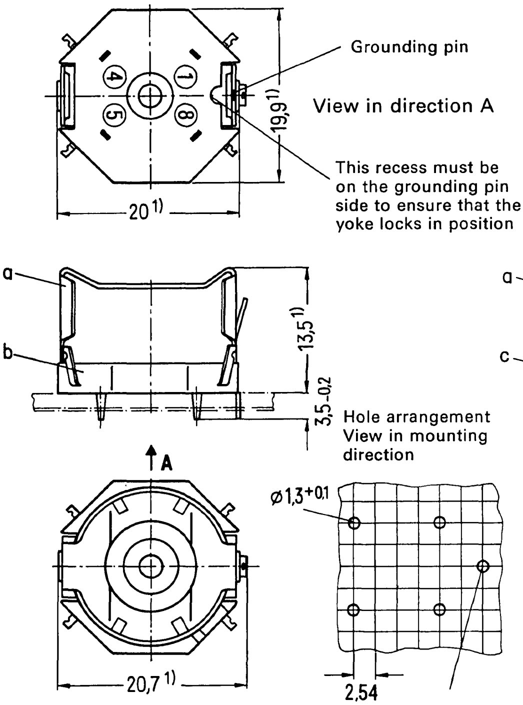
[1)] Max. dimension

Mounting assemblies for PC mounting B 65 655

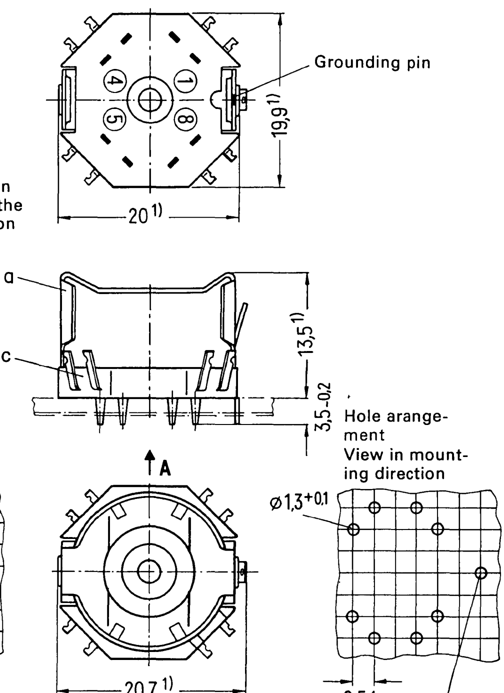
Mounting assemblies with snap-in connection. Glass-fiber reinforced polyterephthalate connecting board, flame-retardant in accordance with UL 94 V-0. Max. permissible soldering temperature is 400 °C/752 °F, 2 sec. 0.3 mm thick nickel-silver spring yoke.

Approx. weight 2.4 g

B65655-B0009-X000
(with 4 solder terminals)



B65655-B0010-X000
(with 8 solder terminals)



Dimensions in mm

Ordering code B65655-B0009-X000 (Complete mounting assembly with 4 solder terminals) (PU : 500 sets)			**Ordering code** B65655-B0010-X000 (Complete mounting assembly with 8 solder terminals) (PU : 500 sets)		
Mounting parts		Ordering code	Mounting parts		Ordering code
a	1 yoke	C61035-A10-C40	a	1 yoke	C61035-A10-C40
b	1 connecting board (with 4 solder terminals)	C42035-A10-B5	c	1 connecting board (with 8 solder terminals)	C42035-A10-B3

Drawing details for the design of mounting devices are available upon request.
Ordering code C61407-A9-A1

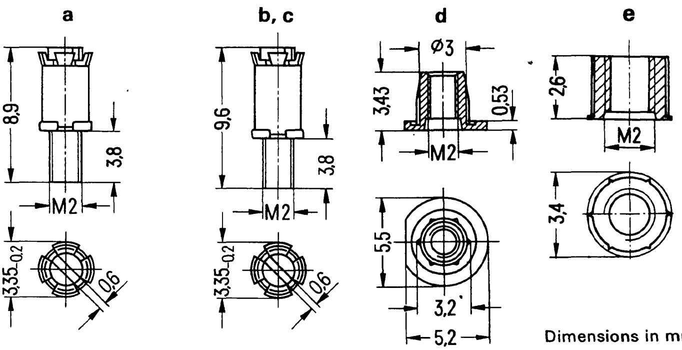
1) Max. dimension

Adjusting devices B 65 659

Adjusting screw (a, b, c) B65659–E0∗∗∗–X∗∗∗, consisting of a SIFERRIT or SIRUFER tube core on which a glass-fiber reinforced polyterephthalate thread is molded and a spring crown serving as core brake;
fits:
glass-fiber reinforced 11 polyamide **threaded flange** (d) B65659–J0002–X000, color code: colorless;

glass-fiber reinforced 11 polyamide **threaded sleeve** (e) B65808–L3002–X000.

Adjusting screw driver B63399–B0004–X000.



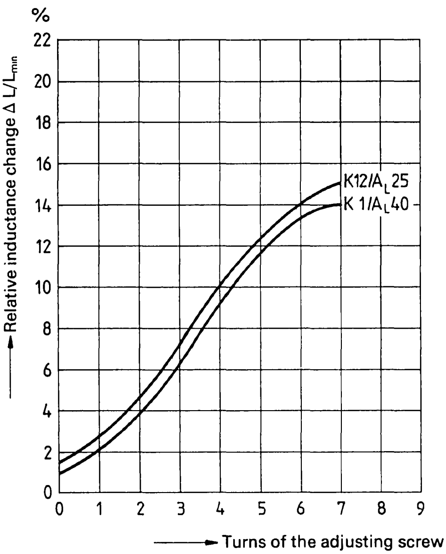
Dimensions in mm

Pot cores B65651		Adjusting screw				
Material	A_L value nH	Part	Tube core dia. x length	Material	Color code	**Ordering code** (PU : 500)
K 12	25	a	2,6 x 3,7	Si 1	white	B65659–E0001–X101
K 1	40					
	63	c	2,82 x 4,4	Si 1	brown	B65659–E0004–X101
	63	a	2,6 x 3,7	K 1	green	B65659–E0001–X001
M 33	63	a	2,6 x 3,7	Si 1	white	B65659–E0001–X101
	100					
	100	c	2,82 x 4,4	Si 1	brown	B65659–E0004–X101
M 33, N 48	160	a	2,6 x 3,7	K 1	green	B65659–E0001–X001
N 48	160	c	2,82 x 4,4	Si 1	brown	B65659–E0004–X101
	250	a	2,6 x 3,7	N 22	red	B65659–E0001–X023
N 58	250	b	2,75 x 4,4	N 22	black	B65659–E0003–X023
N 48, N 58	315					
N 48	400					
	400	c	2,82 x 4,4	N 22	yellow	B65659–E0004–X023
	500					

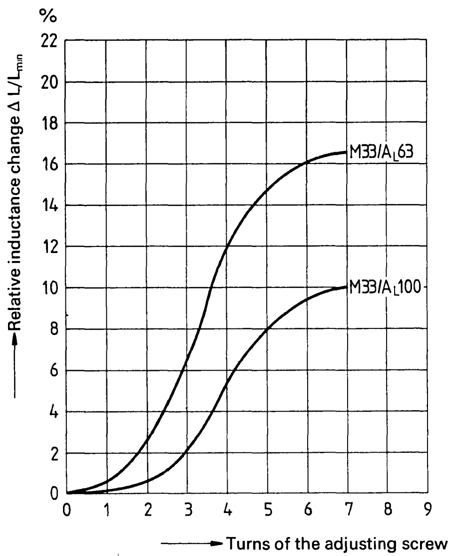
Inductance adjustment curves

Measured at cores with glued-in, threaded sleeve B65808–L3002–X000

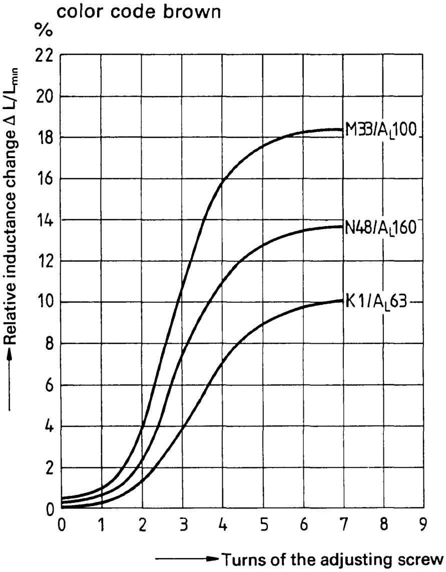
Adjusting screw B65659–E0001–X101
color code white



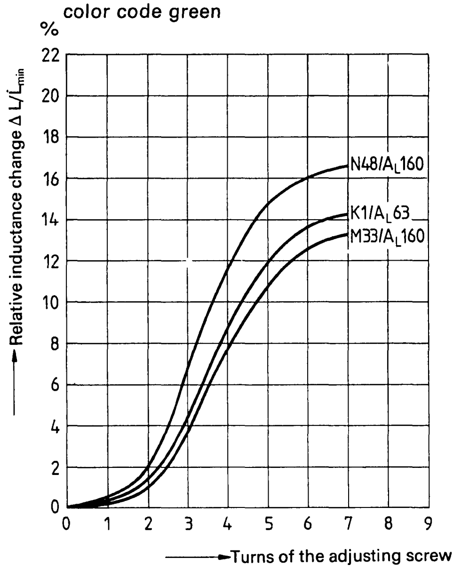
Adjusting screw B65659–E0001–X101
color code white



Adjusting screw B65659–E0004–X101
color code brown



Adjusting screw B65659–E0001–X001
color code green

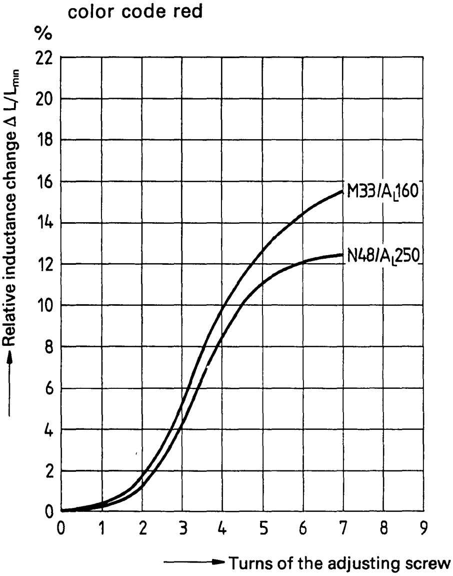


0 ≙ at least one turn engaged.

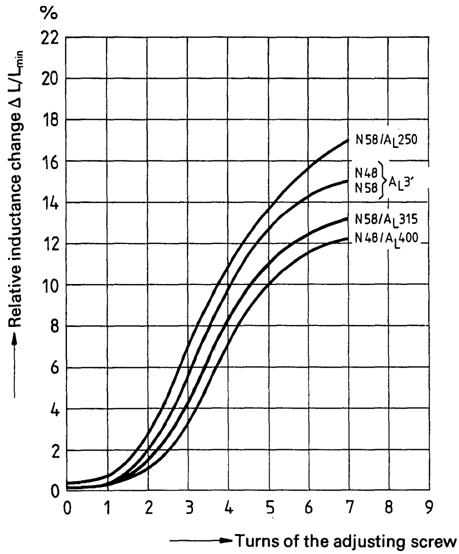
Inductance adjustment curves

Measured at cores with glued-in threaded sleeve B65808–L3002–X000

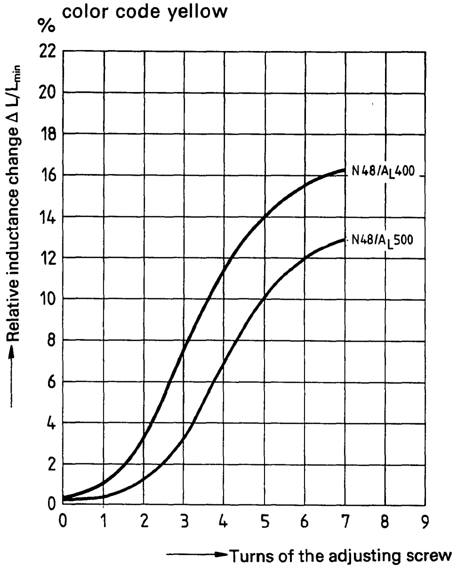
Adjusting screw B65659–E0001–X023
color code red



Adjusting screw B65659–E0003–X023
color code black



Adjusting screw B65659–E0004–X023
color code yellow

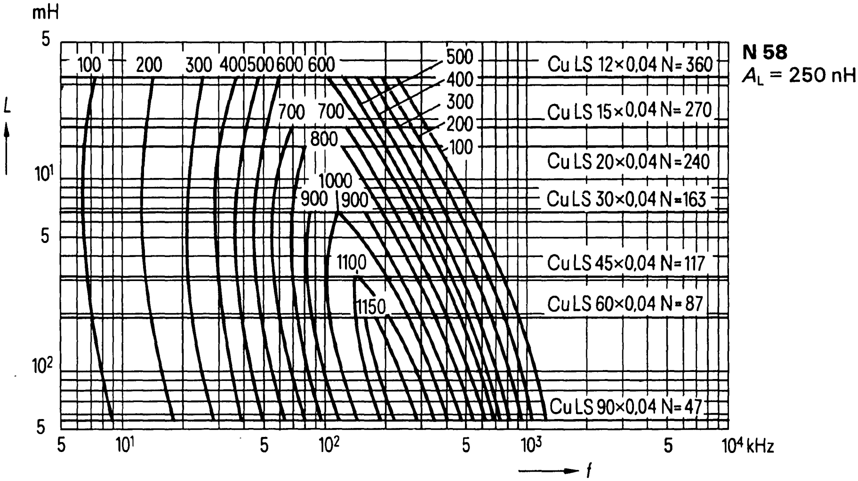


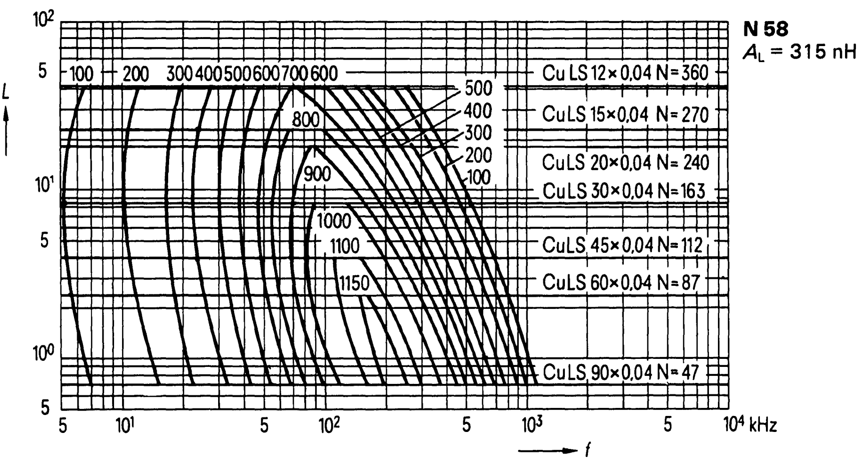
0 ≙ at least one turn engaged.

ISO-Q curves

Material N 58

2-section winding with RF litz wire
Flux density in the core $\hat{B} < 1$ mT



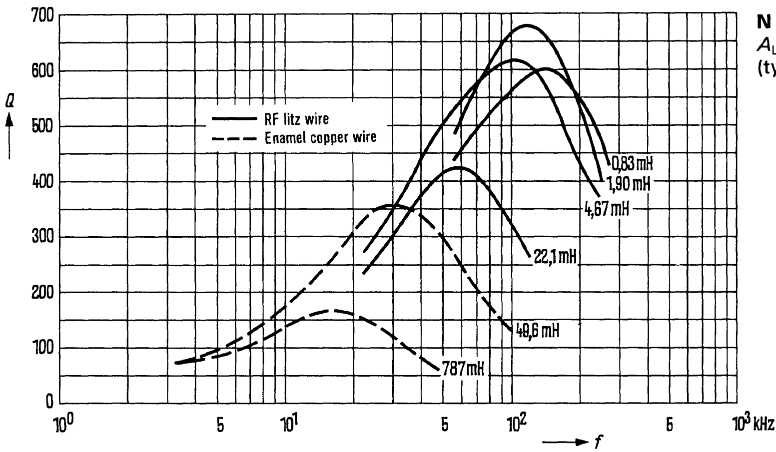


Q factor characteristics

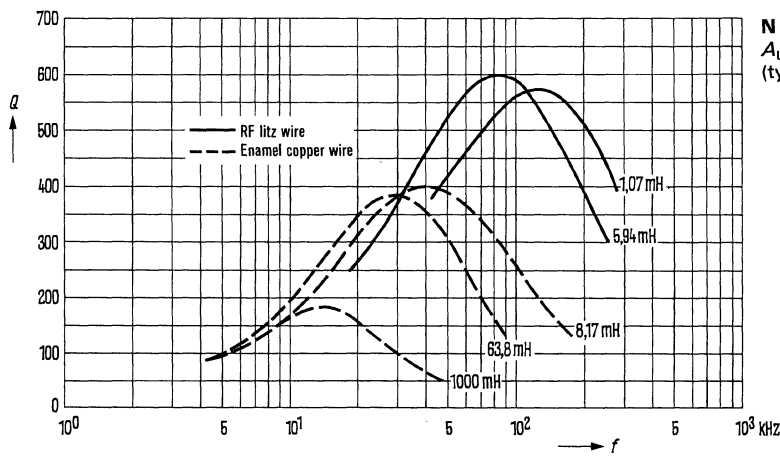
Material N 48

L (mH) for A_L = 250 nH	L (mH) for A_L = 315 nH	Turns	Wire; RF litz wire	Number of sections
787	1000	1790	0,07 CuL	1
49,6	63,8	450	0,15 CuL	1
22,1	–	301	1 x 20 x 0,04 CuLS	1
–	8,17	161	0,25 CuL	1
4,67	5,94	138	1 x 20 x 0,05 CuLS	1
1,90	–	87	1 x 45 x 0,04 CuLS	1
0,83	1,07	58	1 x 45 x 0,05 CuLS	1

Flux density in the core $\hat{B} < 1.5$ mT



N 48
A_L = 250 nH
(typical values)

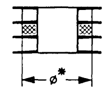


N 48
A_L = 315 nH
(typical values)

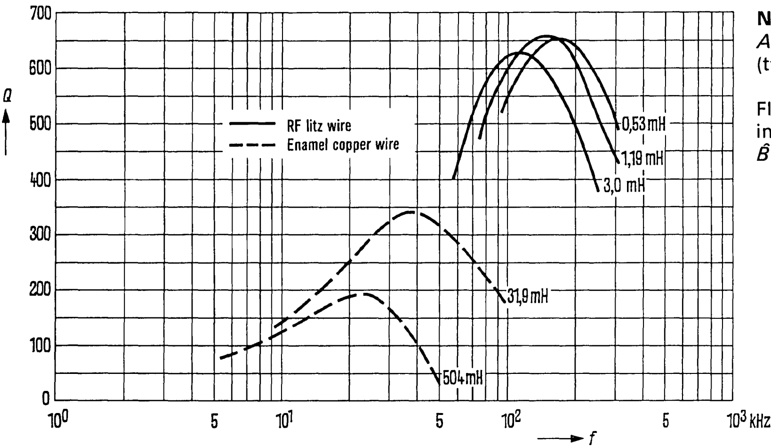
Q factor characteristics

Materials N 48, M 33

Material	L	Turns	Wire; RF litz wire	Number of sections	∅* mm
N 48 A_L = 160 nH	504 mH	1790	0,07 CuL	1	–
	31,9 mH	450	0,15 CuL	1	–
	3,0 mH	138	1 x 20 x 0,05 CuLS	1	–
	1,19 mH	87	1 x 45 x 0,04 CuLS	1	–
	0,53 mH	58	1 x 45 x 0,05 CuLS	1	–
M 33 A_L = 40 nH	900 µH	150	1 x 30 x 0,04 CuLS	1	–
	400 µH	100	1 x 45 x 0,04 CuLS	1	–
	256 µH	40 + 40	1 x 45 x 0,04 CuLS	2	–
	125 µH	25 + 6 + 25	1 x 45 x 0,04 CuLS	3	11,7
	46,3 µH	15 + 4 + 15	1 x 45 x 0,04 CuLS	3	10,8

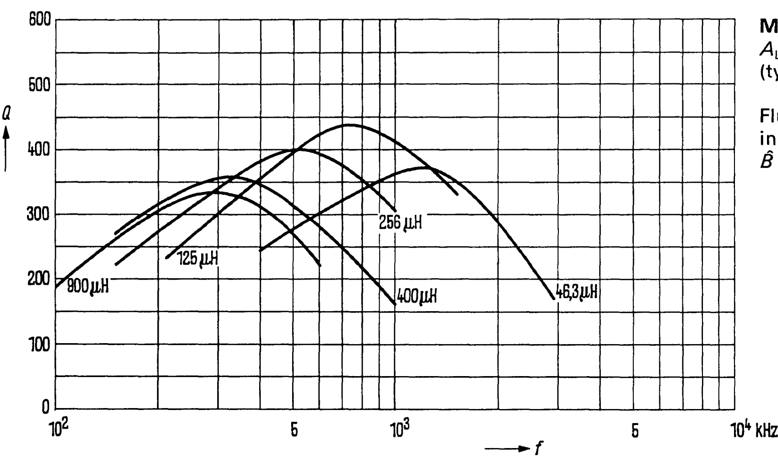


Pad of polystyrene tape up to the diameter*



N 48
A_L = 160 nH
(typical values)

Flux density in the core
$\hat{B}$ < 1.5 mT



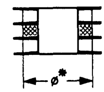
M 33
A_L = 40 nH
(typical values)

Flux density in the core
$\hat{B}$ < 1.6 mT

Q factor characteristics;

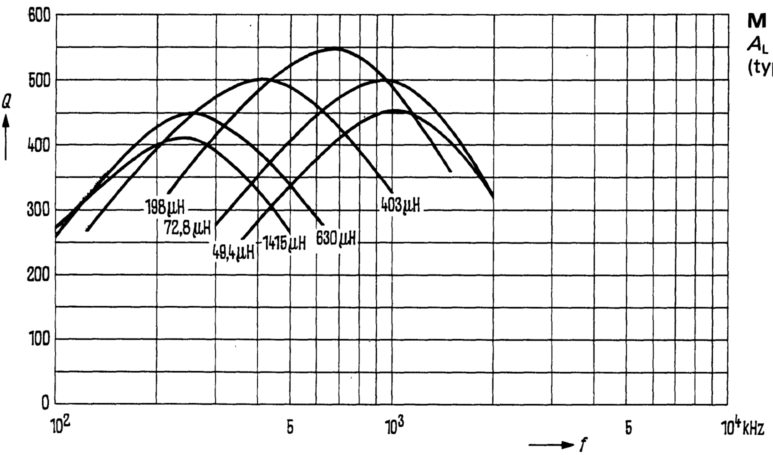
Material M 33

L (μH) for A_L = 63 nH	L (μH) for A_L = 100 nH	Turns	Wire; RF litz wire	Number of sections	∅* mm
1415	2250	150	1 x 30 x 0,04 CuLS	1	–
630	1000	100	1 x 45 x 0,04 CuLS	1	–
403	640	40 + 40	1 x 45 x 0,04 CuLS	2	–
198	313	25 + 6 + 25	1 x 45 x 0,04 CuLS	3	11,7
72,8	115	15 + 4 + 15	1 x 45 x 0,04 CuLS	3	10,8
49,4	81,2	12 + 4 + 12	1 x 45 x 0,04 CuLS	3	10,8

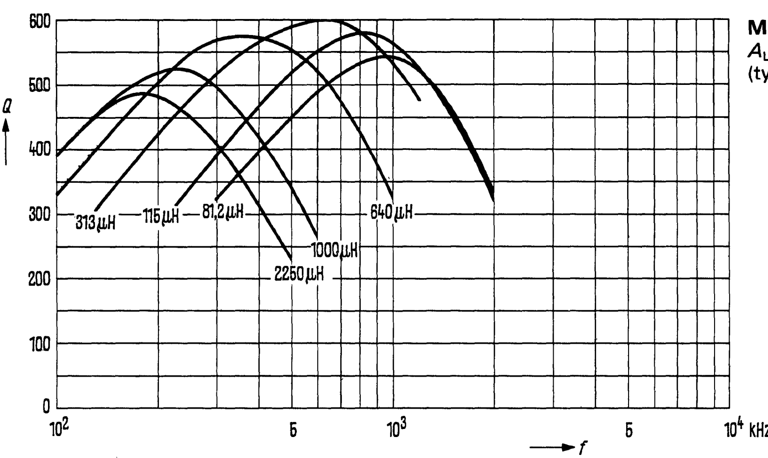


Pad of polystyrene tape up to the diameter *

Flux density in the core $\hat{B} < 1.6$ mT



M 33
A_L = 63 nH
(typical values)

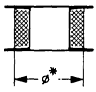


M 33
A_L = 100 nH
(typical values)

Q factor characteristics

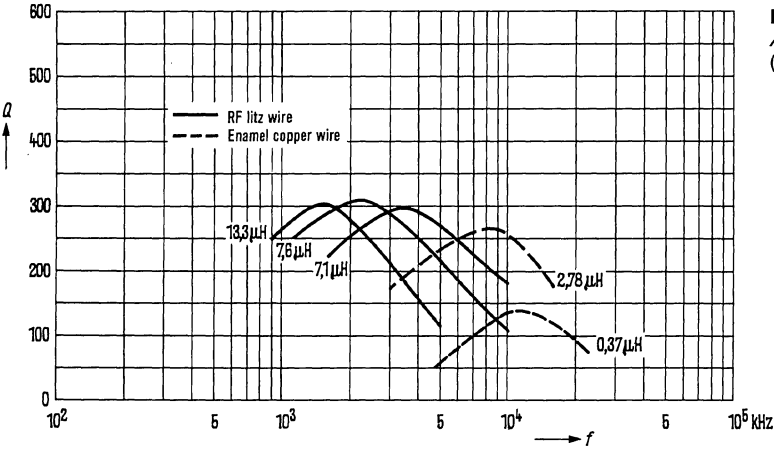
Material K 1

L (µH) for A_L = 25 nH	L (µH) for A_L = 40 nH	Turns	Wire; RF litz wire	Number of sections	∅* mm
2,78	3,75	9	0,6 CuL	1	13,0
0,37	0,49	3	1,0 CuL	1	12,2
13,3	18,3	20	3 x 30 x 0,04 CuLS	1	12,8
7,6	10,6	5 + 5 + 5	3 x 30 x 0,04 CuLS	3	12,8
7,1	9,85	15	1 x 45 x 0,04 CuLS	1	13,5

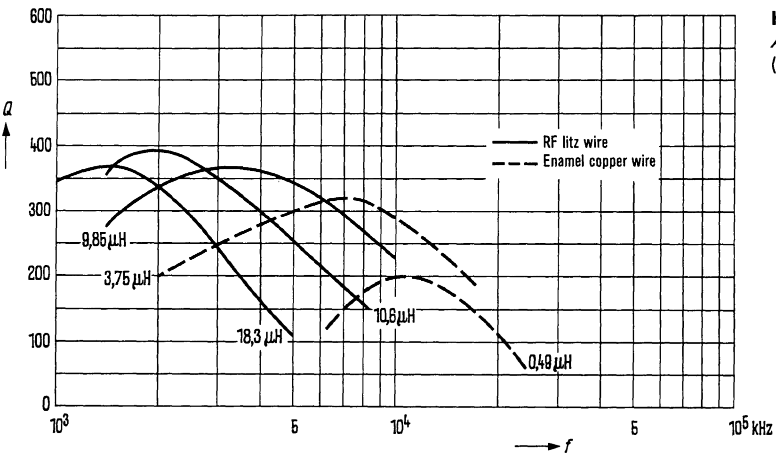


Pad of polystyrene tape up to the diameter * (valid for all sections)

Flux density in the core $\hat{B} < 0.6$ mT

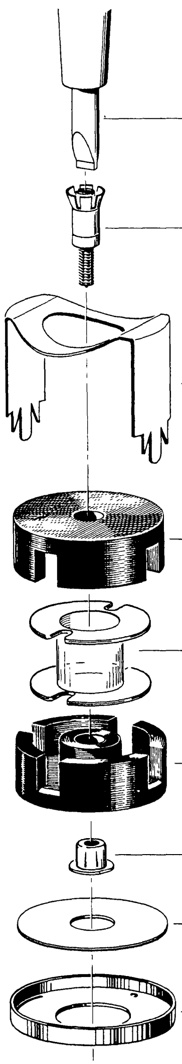


K 1
A_L = 25 nH
(typical values)



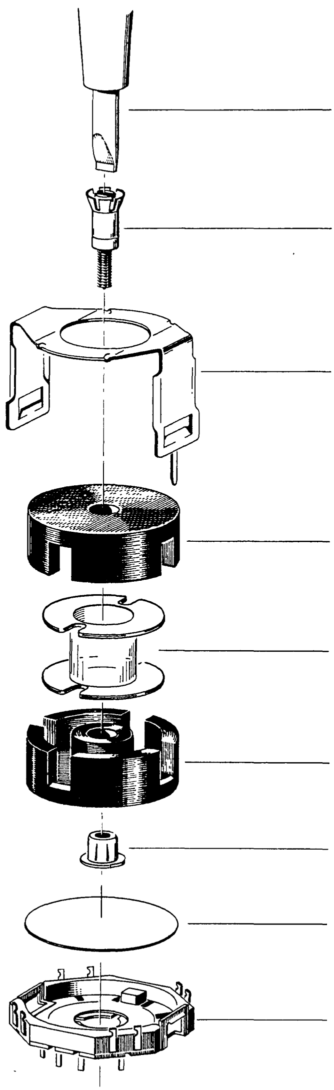
K 1
A_L = 40 nH
(typical values)

Type for chassis mounting

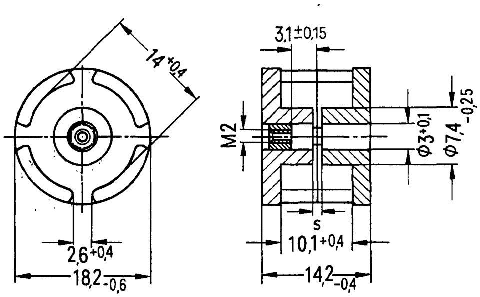


Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	340, fig. 4
Matching handle	B63399	341, fig. 6
Adjusting screw	B65569	182
Yoke	B65563	180
Pot core	B65561	178
Coil former with 1,2, or 3 sections	B65562	179
Pot core	B65561	178
Threaded sleeve or threaded flange	B65569 B65808	182
Bakelized paper waher	B65563	180
Base plate	B65563	180

Type for PC mounting



Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	340, fig. 4
Matching handle	B63399	341, fig. 6
Adjusting screw	B65569	182
Yoke	B65565	181
Pot core	B65561	178
Coil former with 1, 2, or 3 sections	B65562	179
Pot core	B65561	178
Threaded sleeve or threaded flange	B65569 B65808	182
Insulating washer	B65652	179
Connecting board with 4 or 8 solder terminals	B65565	181



Magnetic characteristics

Core factor	$\Sigma l/A$ =	0.67 mm^{-1}
Effective length	l_e =	30.1 mm
Effective area	A_e =	45 mm^2
Effective volume	V_e =	1350 mm^3

Approx. weight 9.0 g/set

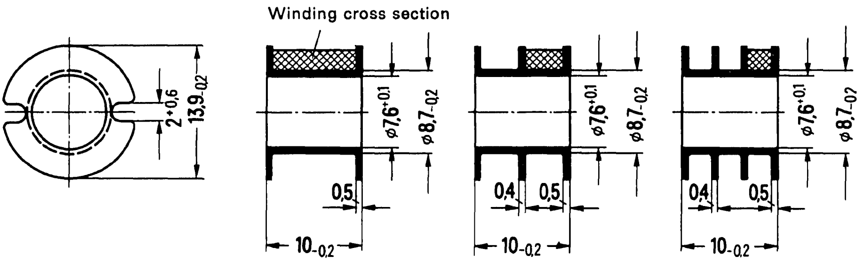
Dimensions in mm

Pot core	Ordering code
without threaded sleeve	B65561–**A**∗∗∗∗–∗∗∗∗
with threaded sleeve (fig.)	B65561–**N**∗∗∗∗–∗∗∗∗

A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 500 sets)
Gapped					
25	± 3 % ≙ A	K 12	1,5	13,5	B65561–∗0025–A012
25	± 3 % ≙ A	K 1	2,7	13,5	B65561–∗0025–A001
40	± 3 % ≙ A	K 1	1,3	21,6	B65561–∗0040–A001
40	± 3 % ≙ A	M 33	2,0	21,6	B65561–∗0040–A033
63	± 3 % ≙ A	M 33	1,1	34	B65561–∗0063–A033
100	± 3 % ≙ A	M 33	0,6	54	B65561–∗0100–A033
100	± 3 % ≙ A	N 48	0,6	54	B65561–∗0100–A048
160	± 3 % ≙ A	N 48	0,3	86,5	B65561–∗0160–A048
250	± 3 % ≙ A	N 48	0,17	135	B65561–∗0250–A048
315	± 3 % ≙ A	N 48	0,14	170	B65561–∗0315–A048
400	± 5%≙J	N 48	0,1	216	B65561–A0400–J048
630	±10%≙K	N 48	0,05	340	B65561–A0630–K048
Ungapped					
160	$^{+30}_{-20}$%≙R	K 1		85	B65561–A0000–R001
2700	$^{+30}_{-20}$%≙R	N 48		1440	B65561–A0000–R048
5300	$^{+30}_{-20}$%≙R	N 30		2820	B65561–A0000–R030

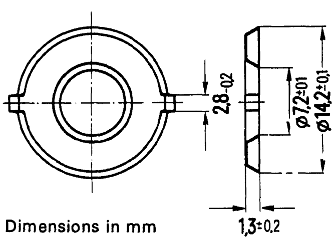
Coil former and insulating washers B 65 562

Glass-fiber reinforced polyacetal or polycarbonate coil former.
For winding details refer to page 67.



Number of sections	Useful winding cross section A_N of one section	total	Average length of turn l_N	A_R value[1]	Approx. weight	Material	**Ordering code** (PU: 500)
	mm²	mm²	mm	µΩ	g		
1	20	20		58	0,4	Polyacetal[2] Polycarbonate	B65562-A0000-H001 B65562-A0000-M001
2	8,5	17,0	34	68	0,4	Polyacetal[2] Polycarbonate	B65562-A0000-H002 B65562-A0000-M002
3	5,3	15,9		73	0,5	Polyacetal[2] Polycarbonate	B65562-A0000-H003 B65562-A0000-M003

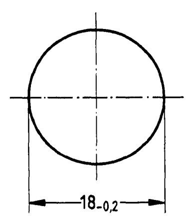
0.04 mm thick insulating Makrofol spring washers for insulation and tolerance balancing between coil winding and pot core; delivered in strips.



Dimensions in mm

Ordering code B65562-A5000-X000
(PU: 1000)

0.05 mm thick insulating Teflon washers for increasing the dielectric strength between core and connecting board.



Ordering code B65652-A5002-X000
(PU: 500)

[1] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

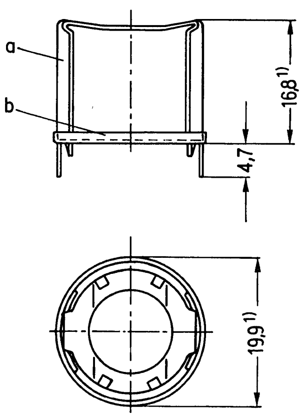
[2] glass-fiber reinforced

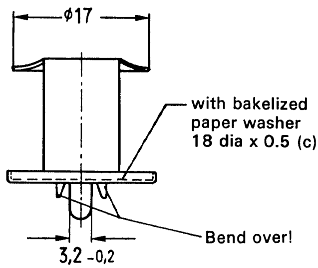
Mounting assembly for chassis mounting B 65 563

Mounting assembly with metal base plate; fixed by twist prongs.
0.3 mm thick nickel-silver spring yoke.

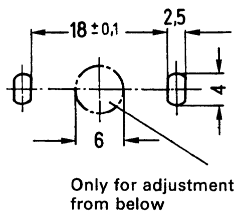
Approx. weight 2 g

B65563-A0001-X000





Hole arrangement
View in mounting direction



Ordering code B65563-A0001-X000
(Complete mounting assembly)
(PU: 500 sets)

Mounting parts		Ordering code
a	1 yoke	C40330-B5-C27
b	1 base plate	C61035-A10-C43
c	1 washer	C40330-B5-C33

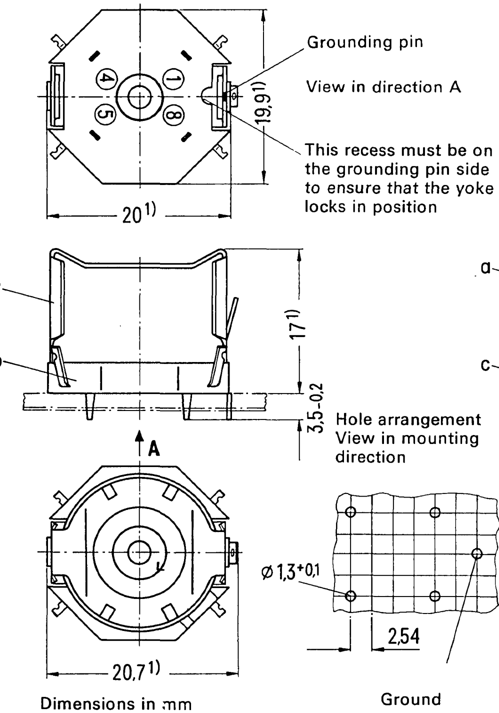
[1] Max. dimension

Mounting assemblies for PC mounting B 65 565

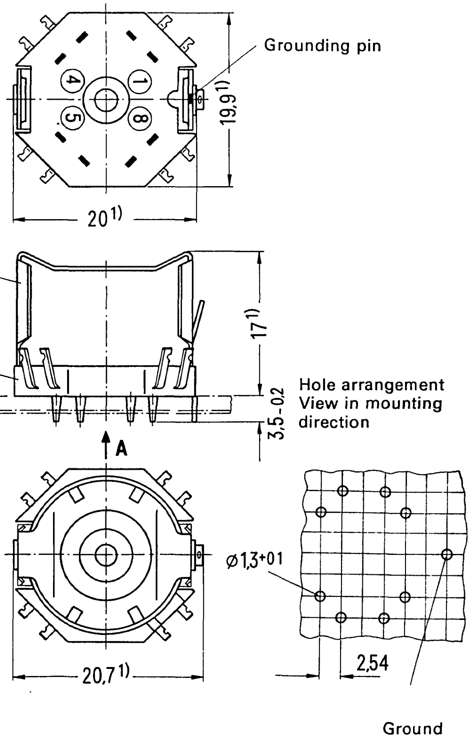
Mounting assemblies with snap-in connection. Glass-fiber reinforced polyterephthalate connecting board, flame-retardant in accordance with UL 94V-0. Max. permissible soldering temperature is 400 °C/752 °F, 2 sec. 0.3 mm thick nickel-silver spring yoke.

Approx. weight 2.5 g

B65565–B0009–X000
(with 4 solder terminals)



B65565–B0010–X000
(with 8 solder terminals)



Dimensions in mm

Ordering code B65565–B0009–X000 (Complete mounting assembly with 4 solder terminals) (PU: 500 sets)			**Ordering code** B65565–B0010–X000 (Complete mounting assembly with 8 solder terminals) (PU: 500 sets)		
Mounting parts		Ordering code	Mounting parts		Ordering code
a	1 yoke	C61035–A10–C41	a	1 yoke	C61035–A10–C41
b	1 connecting board (with 4 solder terminals)	C42035–A10–B5	c	1 connecting board (with 8 solder terminals)	C42035–A10–B3

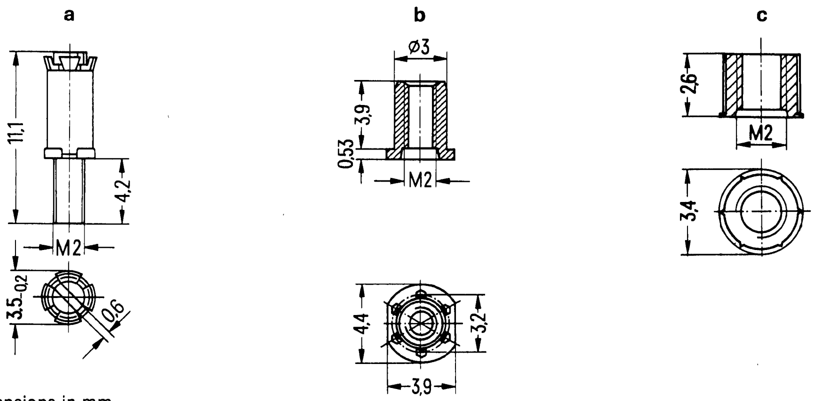
Drawing details for the design of mounting devices are available upon request.
Ordering code C61407–A9–A1

[1] Max. dimension

Adjusting devices B 65 569

Adjusting screw (a) B65569–DO∗∗∗–X∗∗∗, consisting of a SIFERRIT or SIRUFER tube core on which a glass-fiber reinforced polyterephthalate thread is molded and a spring crown serving as core brake.

fits:
glass-fiber reinforced 11 polyamide **threaded flange** (b) B65569–K0002–X000, color code white; glass-fiber reinforced 11 polyamide **threaded sleeve** (c) B65808–L3002–X000.
Adjusting screw driver B63399–B0004–X000

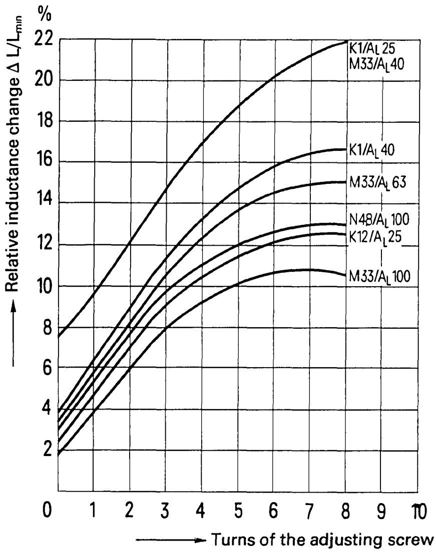


Dimensions in mm

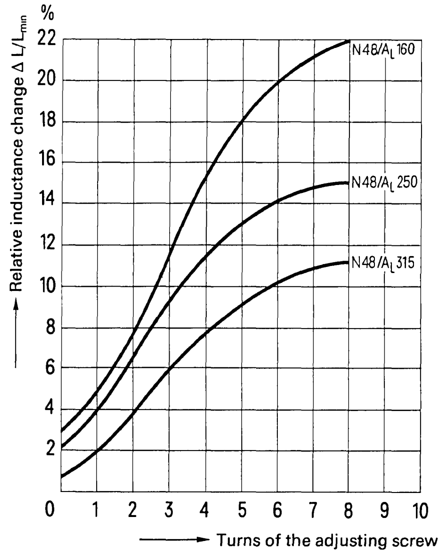
Pot cores B65561		Adjusting screw			
Material	A_L value nH	Tube core dia. x length	Tube core Material	Color code	**Ordering code** (PU: 500)
K 12	25				
K 1	25 40				
M 33	40 63 100	2.6 x 5.5	Si 1	white	B65569–D0001–X101
N 48	100				
N 48	160 250 315		N 22	red	B65569–D0001–X023

Inductance adjustment curves

Adjusting screw B65569-D0001-X101
color code white



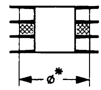
Adjusting screw B65569-D0001-X023
color code red



0 ≙ at least two turns engaged

Q factor characteristics

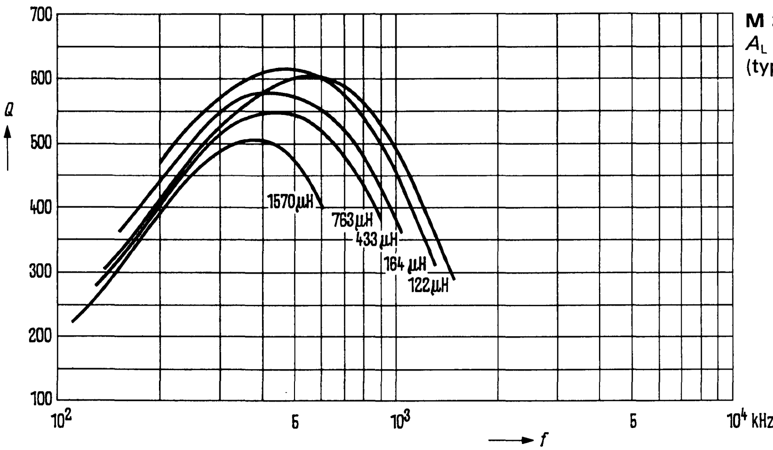
Material M 33



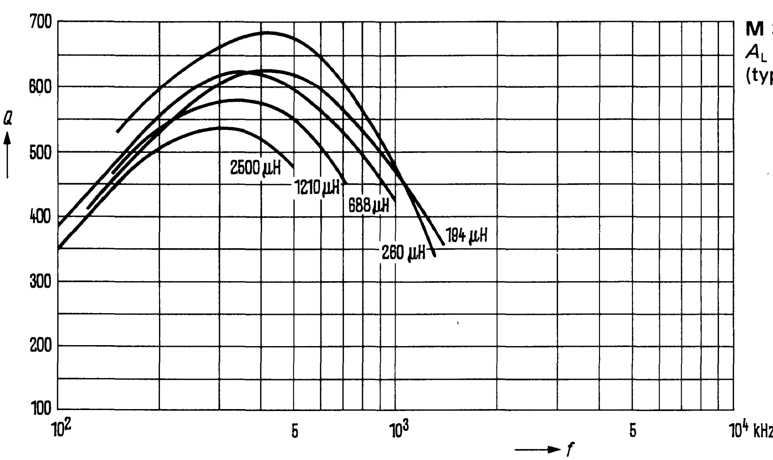
L (µH) for A_L = 63 nH	L (µH) for A_L = 100 nH	Turns	RF litz wire	Number of sections	ø* mm
1570	2500	65 + 38 + 65	1 x 20 x 0,04 CuLS	3	11,2
763	1210	50 + 10 + 50	1 x 30 x 0,04 CuLS	3	13,2
433	688	38 + 7 + 38	1 x 45 x 0,04 CuLS	3	11,8
164	260	20 + 11 + 20	2 x 30 x 0,04 CuLS	3	10,8
122	194	20 + 4 + 20	3 x 30 x 0,04 CuLS	3	11,5

Pad of polystyrene tape up to the diameter *

Flux density in the core $\hat{B} < 1.6$ mT



M 33
A_L = 63 nH
(typical values)

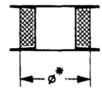


M 33
A_L = 100 nH
(typical values)

Q factor characteristics

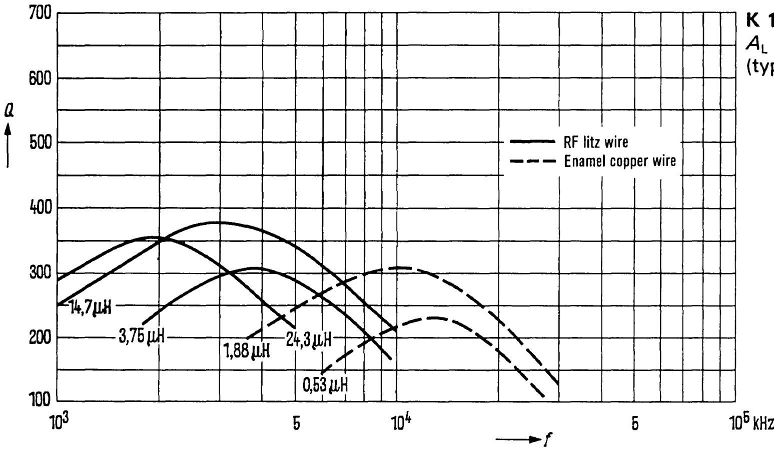
Material K 1

L(µH) for A_L = 25 nH	L(µH) for A_L = 40 nH	Turns	Wire; RF litz wire	Number of sections	⌀* mm
1,88	2,92	8	1,0 CuL	1	11,5
0,53	0,78	4	1,2 CuL	1	11,2
24,3	38,8	10 + 10 + 10	1 x 45 x 0,04 CuLS	3	12,0
14,7	22,4	11	1 x 45 x 0,04 CuLS	1	12,8
3,75	5,65	22	3 x 30 x 0,04 CuLS	1	12,5

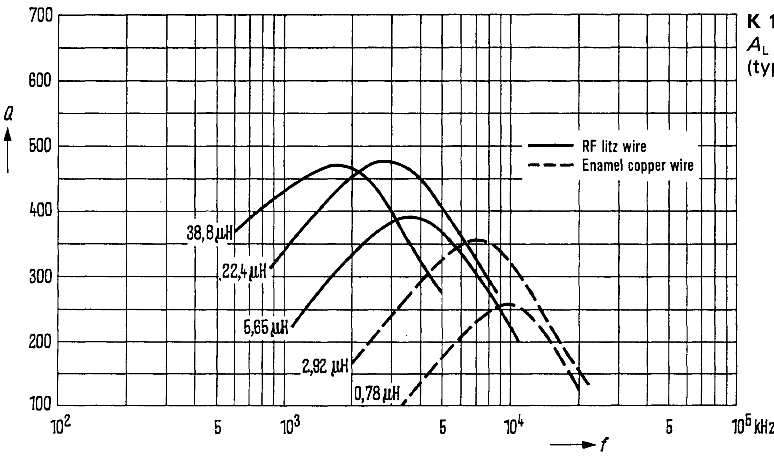


Pad of polystyrene tape up to the diameter * (valid for all sections)

Flux density in the core $\hat{B} < 0.6$ mT

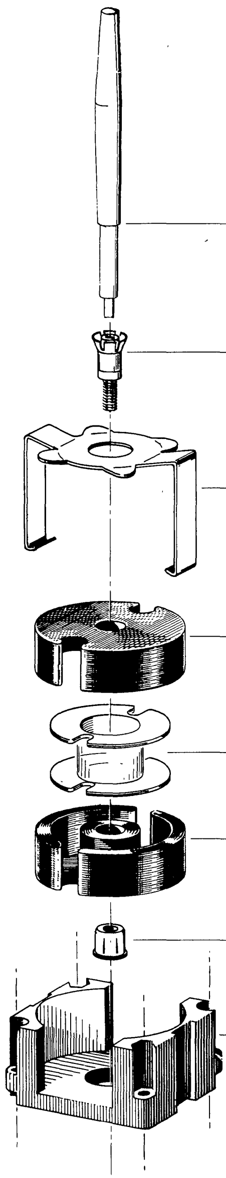


K 1
A_L = 25 nH
(typical values)



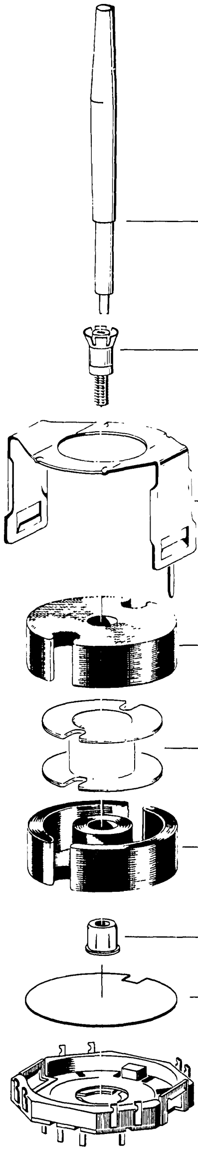
K 1
A_L = 40 nH
(typical values)

Type for chassis mounting



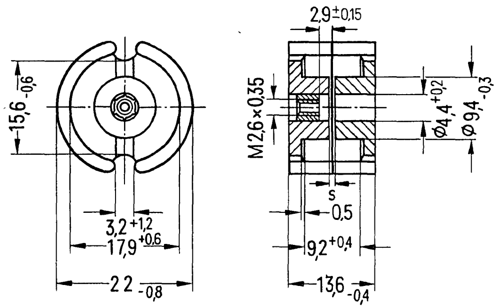
Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	339, fig. 3
Matching handle	B63399	341, fig. 6
Adjusting screw	B65669	192
Yoke	B65663	190
Pot core	B65661	188
Coil former with 1, 2, or 3 sections	B65662	189
Pot core	B65661	188
Threaded sleeve or threaded flange	B65669 B65669	192
Frame	B65663	190

Type for PC mounting



Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	339, fig. 3
Matching handle	B63399	341, fig. 6
Adjusting screw	B65669	192
Yoke	B65665	191
Pot core	B65661	188
Coil former with 1, 2, or 3 sections	B65662	189
Pot core	B65661	188
Threaded sleeve or threaded flange	B65669 B65669	192
Insulating washer	B65662	189
Connecting board with 8 solder terminals	B65665	191

Pot cores complying with DIN 41 293 or IEC publication 133



Magnetic characteristics

Core factor	$\Sigma\, l/A =$	0.5 mm^{-1}
Effective length	$l_e =$	31.6 mm
Effective area	$A_e =$	63 mm^2
Min. core cross section¹⁾	$A_{min} =$	50 mm^2
Effective volume	$V_e =$	2000 mm^3

Approx. weight 13 g/set

Dimensions in mm

Pot cores	**Ordering code**
without threaded sleeve	B65661–**L*****–****
with threaded sleeve (fig.)	B65661–**N*****–****

A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 500 sets)
Gapped					
40	± 3 % ≙ A	K 1	1,4	15,9	B65661–*0040–A001
◥ 63	± 3 % ≙ A	K 1	1,3	25	B65661–*0063–A001
100	± 3 % ≙ A	M 33	0,9	39,8	B65661–*0100–A033
◥ 160	± 3 % ≙ A	M 33	0,7	64	B65661–*0160–A033
160	± 3 % ≙ A	N 48	0,5	64	B65661–*0160–A048
250	± 3 % ≙ A	N 48	0,26	100	B65661–*0250–A048
315	± 3 % ≙ A	N 48	0,22	125	B65661–*0315–A048
◥ 400	± 3 % ≙ A	N 48	0,16	159	B65661–*0400–A048
◥ 500	± 3 % ≙ A	N 48	0,14	199	B65661–*0500–A048
630	± 3 % ≙ A	N 48	0,10	250	B65661–L0630–A048
1250	±10% ≙ K	N 48	0,05	498	B65661–L1250–K048
Ungapped					
220	+30/−20 % ≙ R	K 1		86	B65661–L0000–R001
3800	+30/−20 % ≙ R	N 48		1510	B65661–L0000–R048
4900	+30/−20 % ≙ R	N 41		1950	B65661–L0000–R041
◥ 7000	+30/−20 % ≙ R	N 30		2780	B65661–L0000–R030
◥ 16000	+40/−30 % ≙ Y	T 38		6360	B65661–L0000–Y038

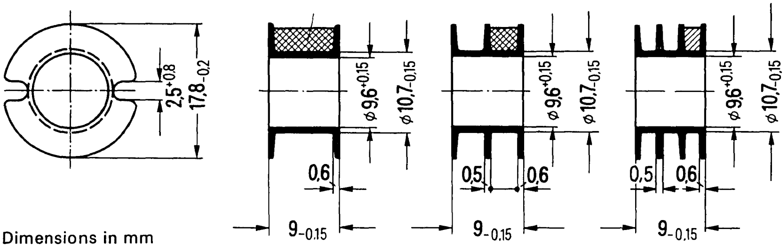
¹⁾ Necessary for the calculation of the max. flux density.
◥ to be preferred

Coil former and insulating washers B 65662

Glass-fiber reinforced polyterephthalate coil former, complying with DIN 41294 or IEC publication 133, flame-retardant in accordance with UL 94V-0, color code black.

For winding details refer to page 66.

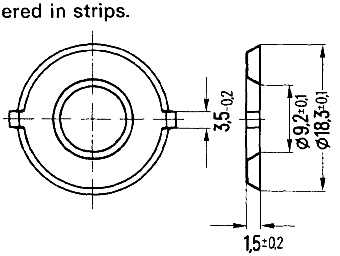
Winding cross section



Dimensions in mm

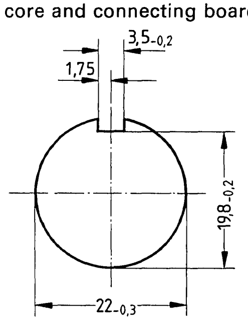
Number of sections	Useful winding cross section A_N of one section mm²	Useful winding cross section A_N total mm²	Average length of turn l_N mm	A_R value[1]) µΩ	Approx. weight g	**Ordering code** (PU: 500 items)
1	23,4	23,4	44	67	0,4	B65662-B0000-T001
2	11,0	22,0		69	0,45	B65662-B0000-T002
3	6,7	20,0		76	0,5	B65662-B0000-T003

0.06 mm thick insulating Makrofol spring washers for insulating and tolerance balancing between coil winding and pot core; delivered in strips.



Ordering code B65662-A5000-X000
(PU: 1000)

0.05 mm thick insulating Teflon washers for increasing the dielectric strength between core and connecting board.



Ordering code B65662-A5002-X000
(PU: 500)

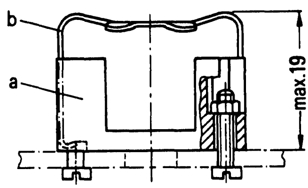
[1]) $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

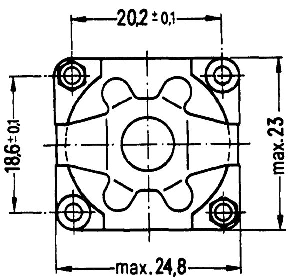
Mounting assembly for chassis mounting B 65 663

Mounting assembly with glass-fiber reinforced polyterephthalate frame, flame-retardant in accordance with UL 94V-0; fixed by screws.
0.4 mm thick nickel-silver spring yoke.

Approx. weight 4 g

B65663–B0001–X000
(for free terminals)





Dimensions in mm

Ordering code B65663–B0001–X000
(Complete mounting assembly for free terminals)
(PU: 500 sets)

Mounting parts		Ordering code
a	1 frame	C60358–B3185–C103
b	1 yoke	C60358–B3185–C105

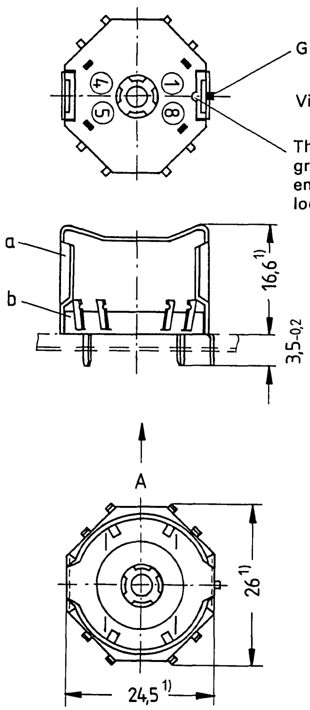
2 hex. nuts M 2 DIN 934 m-5 S
2 cylindrical screws AM 2 x 10 DIN 84-5 S } not included in delivery
(for ≦ 3 mm thick mounting plates)

Mounting assemblies for PC mounting B 65 665

Mounting assemblies with snap-in connection. Glass-fiber reinforced polyterephthalate connecting board, flame-retardant in accordance with UL 94V-0. Max. permissible soldering temperature is 400 °C/752 °F, 2 sec. 0.4 mm thick nickel-silver spring yoke.

Approx. weight 5 g

B65665-C0005-X000
(with 4 solder terminals)

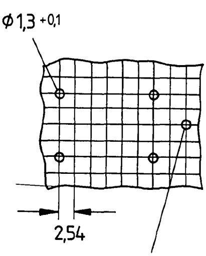


Grounding pin

View in direction A

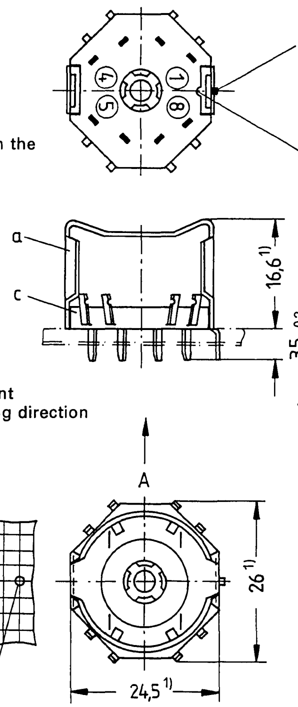
This recess must be on the grounding pin side to ensure that the yoke locks in position

Hole arrangement
View in mounting direction



Ground

B65665-C0004-X000
(with 8 solder terminals)

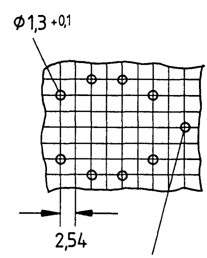


Grounding pin

View in direction A

This recess must be on the grounding pin side to ensure that the yoke locks in position

Hole arrangement
View in mounting direction



Ground

Dimensions in mm

Ordering code B65665-C0005-X000
(Complete mounting assembly with 4 solder terminals) (PU: 500 sets)

Mounting parts		Ordering code
a	1 yoke	C61035-A17-C6
b	1 connecting board (with 4 solder terminals)	C61035-A17-B33

Ordering code B65665-C0004-X000
(Complete mounting assembly with 8 solder terminals) (PU: 500 sets)

Mounting parts		Ordering code
a	1 yoke	C61035-A17-C6
c	1 connecting board (with 8 solder terminals)	C61035-A17-B10

Drawing details for the design of mounting devices are available upon request.
Ordering code C61407-A9-A1

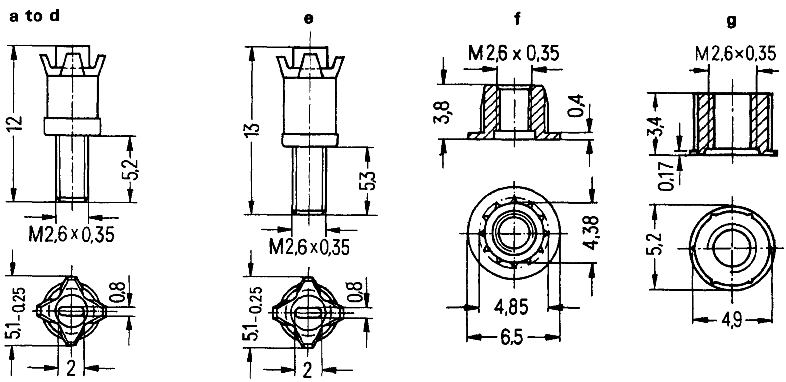
[1] Max. dimension

Adjusting devices B 65 669

Adjusting screw (a, b, c, d, e) B65669–D (E)–***, consisting of a SIFERRIT tube core on which a glass-fiber reinforced polyterephthalate thread is molded and a spring crown serving as core brake;

fits:

glass-fiber reinforced 11 polyamide **threaded flange** (f) B65669–K0002–X000;
glass-fiber reinforced 11 polyamide **threaded sleeve** (g) B65669–L0004–X000.
Adjusting screw driver B63399–B0001–X000

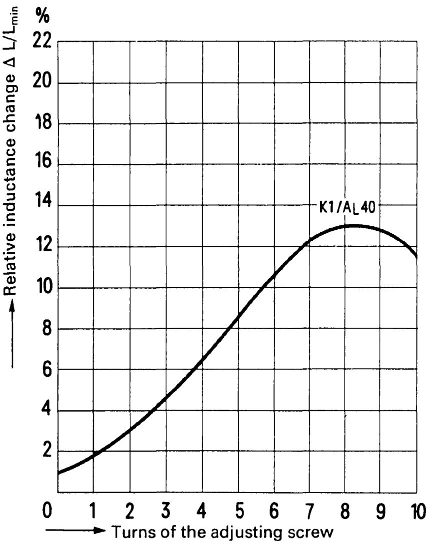


Dimensions in mm

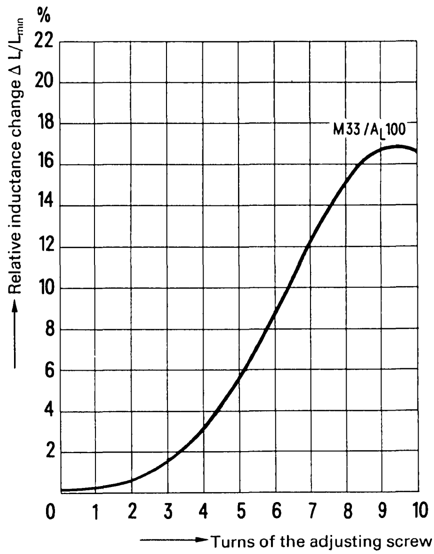
Pot cores B65661		Adjusting screw				
Material	A_L value nH	Part	Tube core dia. x length	Material	Color code	**Ordering code** (PU: 500)
K 1	40	a	3,5 x 3,5	Si 1	brown	B65669–D0010–X101
	63	b	3,5 x 4,3	K 1	blue	B65669–D0009–X001
M 33	100	a	3,5 x 3,5	K 1	green	B65669–D0010–X001
	160	b	3,5 x 4,3	K 1	blue	B65669–D0009–X001
M33,N48	160	b	3,5 x 4,3	M 25	black	B65669–D0008–X025
N 48	250	c	4,1 x 3,5	N 22	yellow	B65669–D0011–X022
	315					
	400	d	4,1 x 4,3	N 22	red	B65669–D0007–X022
	500	e	4,18 x 5,0	N 22	white	B65669–E0006–X022
	630					

Inductance adjustment curves

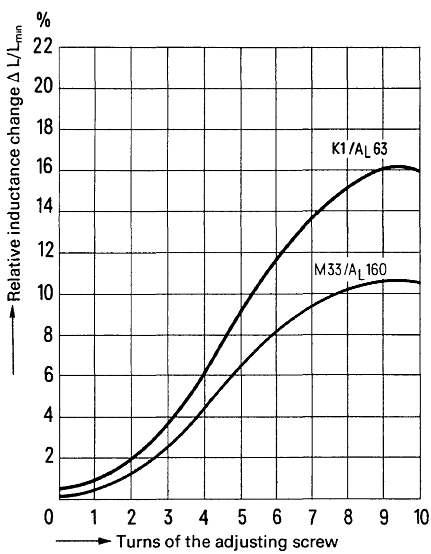
Adjusting screw B65669–D0010–X101
color code brown



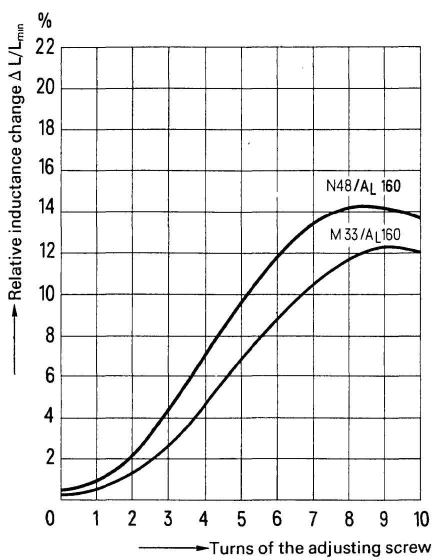
Adjusting screw B65669–D0010–X001
color code green



Adjusting screw B65669–D0009–X001
color code blue



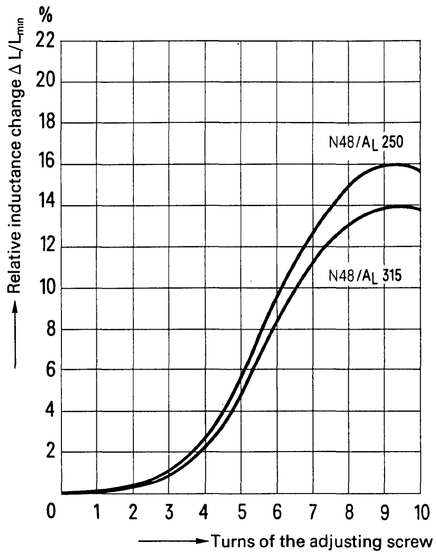
Adjusting screw B65669–D0008–X025
color code black



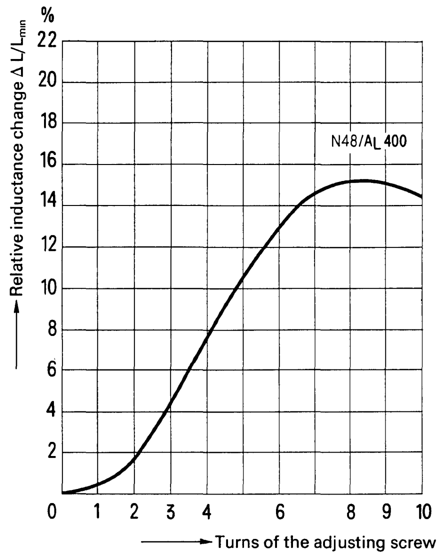
0 ≙ at least two turns engaged.

Inductance adjustment curves

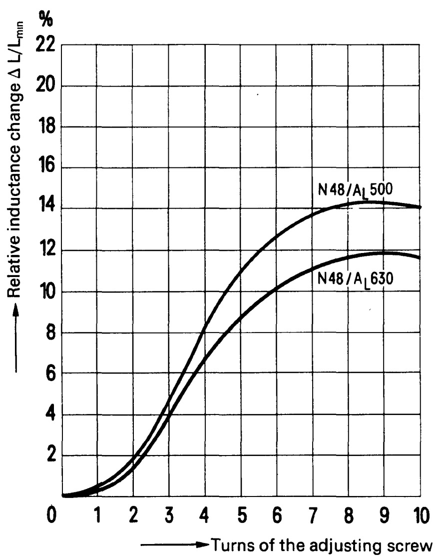
Adjusting screw B65669–D0011–X022
color code yellow



Adjusting screw B65669–D0007–X022
color code red



Adjusting screw B65669–E0006–X022
color code white



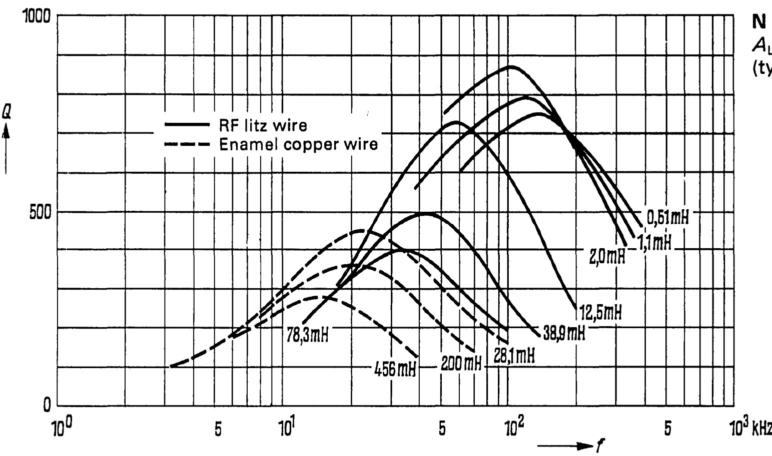
0 ≙ at least two turns engaged.

Q factor characteristics

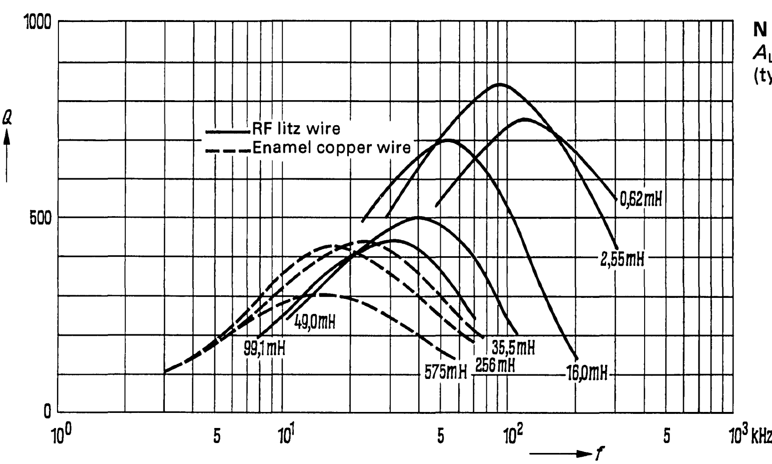
Material N 48

L (mH) for A_L = 315 nH	L (mH) for A_L = 400 nH	Turns	Wire; RF litz wire	Number of sections
456	575	1200	0,12 CuL	1
200	256	800	0,15 CuL	1
28,1	35,5	300	0,27 CuL	1
78,3	99,1	500	1 x 12 x 0,04 CuLS	1
38,9	49,0	350	1 x 15 x 0,04 CuLS	1
12,5	16,0	200	1 x 20 x 0,05 CuLS	1
2,0	2,55	80	3 x 20 x 0,05 CuLS	2
1,1	–	59	3 x 20 x 0,05 CuLS	3
0,51	–	40	3 x 20 x 0,05 CuLS	2
–	0,62	40	3 x 30 x 0,05 CuLS	2

Flux density in the core $\hat{B}$ < 1.5 mT



N 48
A_L = 315 nH
(typical values)

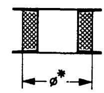


N 48
A_L = 400 nH
(typical values)

Q factor characteristics

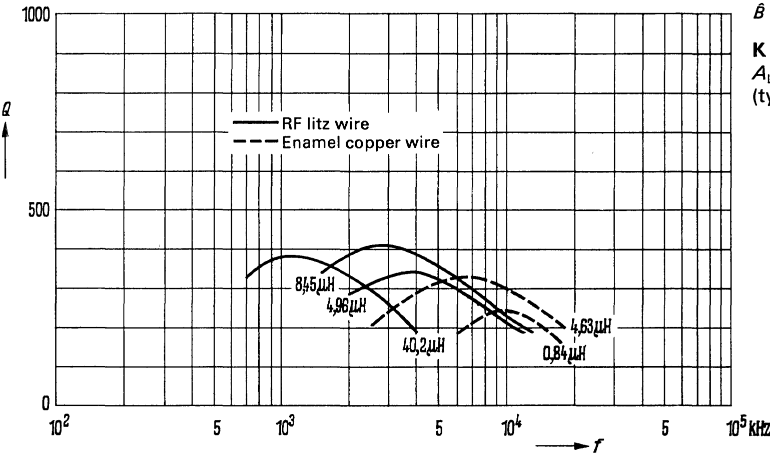
Material K 1

L (µH) for A_L = 40 nH	L (µH) for A_L = 63 nH	Turns	Wire; RF litz wire	Number of sections	∅* mm
4,63	6,74	10	0,7 CuL	1	16,1
0,84	1,17	4	1,0 CuL	1	15,5
40,2	58,0	10 + 10 + 10	1 x 45 x 0,04 CuLS	3	16,8
8,45	11,7	13	3 x 30 x 0,04 CuLS	1	16,5
4,96	7,0	10	3 x 30 x 0,04 CuLS	1	16,5

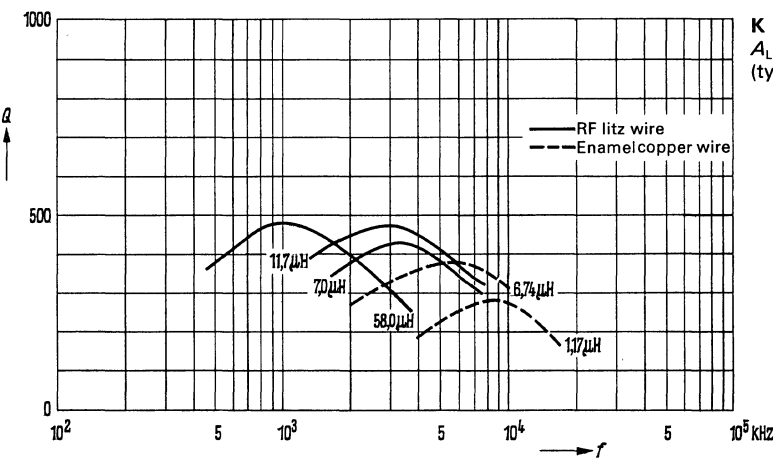


Pad of polystyrene tape up to the diameter * (valid for all sections)

Flux density in the core $\hat{B} < 0.6$ mT

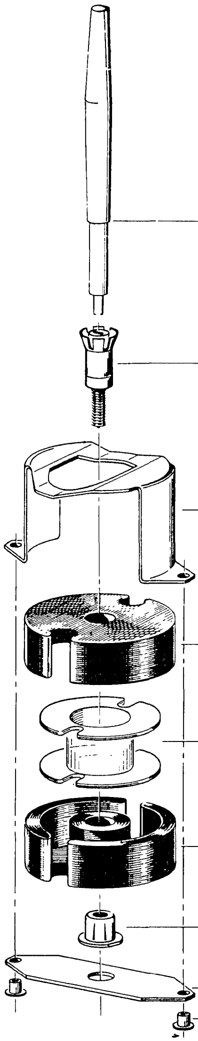


K 1
A_L = 40 nH
(typical values)



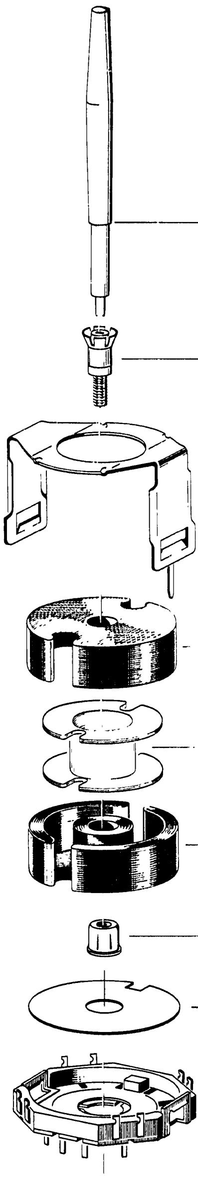
K 1
A_L = 63 nH
(typical values)

Type for chassis mounting



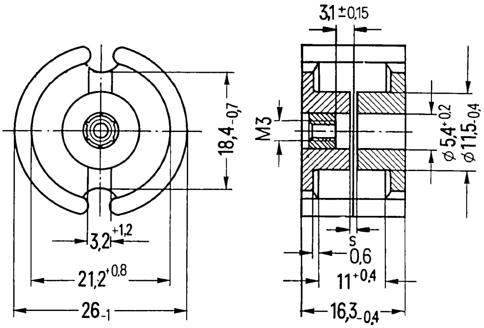
Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	339, fig. 3
Matching handle	B63399	341, fig. 6
Adjusting screw	B65679	203
Yoke	B65673	201
Pot core	B65671	199
Coil former with 1, 2, or 3 sections	B65672	200
Pot core	B65671	199
Threaded sleeve or threaded flange	B65679	203
Base plate	B65673	201
2 tubular rivets	B65673	201

Type for PC mounting



Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	339, fig. 3
Matching handle	B63399	341, fig. 6
Adjusting screw	B65679	203
Yoke	B65675	202
Pot core	B65671	199
Coil former with 1, 2, or 3 sections	B65672	200
Pot core	B65671	199
Threaded sleeve or threaded flange	B65679	203
Insulating washer	B65672	200
Connecting board with 8 solder terminals	B65675	202

Pot cores complying with DIN 41 293 or IEC publication 133



Magnetic characteristics

Core factor	$\Sigma\, l/A =$	0.4 mm^{-1}
Effective length	$l_e =$	37.2 mm
Effective area	$A_e =$	93 mm^2
Min. core cross section[1]	$A_{min} =$	74 mm^2
Effective volume	$V_e =$	3460 mm^3

Approx. weight 21 g/set

Dimensions in mm

Pot cores	**Ordering code**
without threaded sleeve	B65671–**L******–****
with threaded sleeve (fig.)	B65671–**N******–****

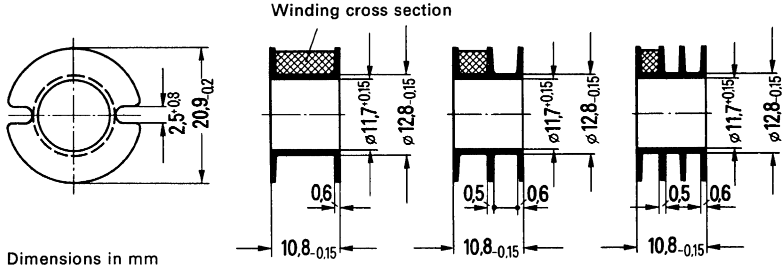
A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 200 sets)
Gapped					
63	±3%≙A	K 1	2,28	20,1	B65671–*0063–A001
◥ 100			0,90	31,9	B65671–*0100–A001
100		M 33	1,52	31,9	B65671–*0100–A033
◥ 160			0,78	51	B65671–*0160–A033
160		N 48	0,80	51	B65671–*0160–A048
250			0,40	80	B65671–*0250–A048
315			0,34	100	B65671–*0315–A048
400			0,24	127	B65671–*0400–A048
◥ 630			0,15	201	B65671–*0630–A048
800			0,11	255	B65671–*0800–A048
1000	±5%≙J		0,10	319	B65671–L1000–J048
1600	±10%≙K		0,05	510	B65671–L1600–K048
Ungapped					
270	$^{+30}_{-20}$%≙R	K 1		86	B65671–L0000–R001
4900		N 48		1560	B65671–L0000–R048
6300		N 41		2000	B65671–L0000–R041
◥ 9000		N 30		2860	B65671–L0000–R030
◥ 20000	$^{+40}_{-30}$%≙Y	T 38		6360	B65671–L0000–Y038

1) Necessary for the calculation of the max. flux density.
◥ to be preferred

Coil former and insulating washers B 65672

Glass-fiber reinforced polyterephthalate coil former, complying with DIN 41294 or IEC publication 133, flame-retardant in accordance with UL 94V-0, color code black.

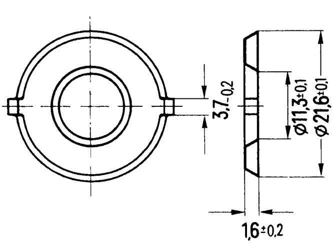
For winding details refer to page 66.



Dimensions in mm

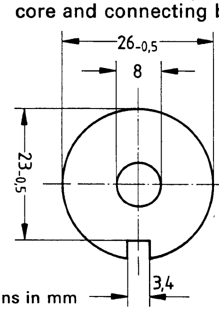
Number of sections	Useful winding cross section A_N of one section mm²	total mm²	Average length of turn l_N mm	A_R value[1] μΩ	Approx. weight g	**Ordering code** (PU: 200)
1	32	32		55	0.4	B65672–B0000–T001
2	15	30	52	59	0.5	B65672–B0000–T002
3	9.6	28.8		61	0.6	B65672–B0000–T003

0.06 mm thick insulating Makrofol spring washers for insulation and tolerance balancing between coil winding and pot core; delivered in strips.



Ordering code B65672–B5000–X000
(PU: 400)

0.05 mm thick insulating Teflon washers for increasing the dielectric strength between core and connecting board.



Dimensions in mm

Ordering code B65672–A5002–X000
(PU: 200)

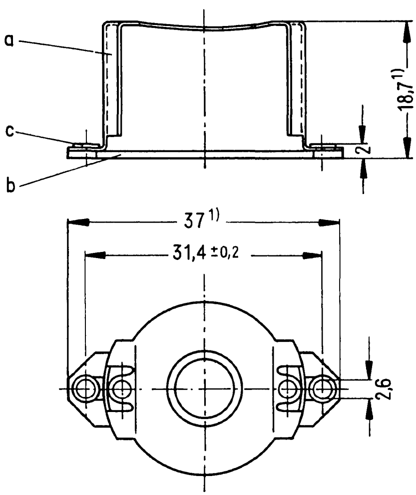
[1] $R_{CU} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

Mounting assembly for chassis mounting B 65673

Mounting assembly with metal base plate (b); fixed by screws or rivets (c).
0.4 mm thick nickel-silver spring yoke (a).

Approx. weight 7 g

B65673–A0006–X000
(without solder terminals)



Dimensions in mm

Ordering code B65673–A0006–X000
(Complete mounting assembly without solder terminals)
(PU: 200 sets)

Mounting parts		Ordering code
a	1 yoke	C60358–B3181–C116
b	1 base plate	C60358–B3181–C117
c	2 tubular rivets	C60358–B3059–C106

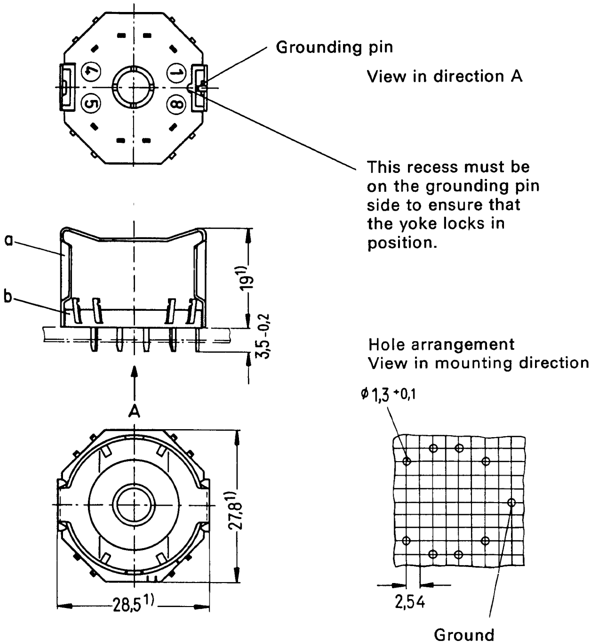
[1] Max. dimension

Mounting assembly for PC mounting B 65675

Mounting assembly with snap-in connection. Glass-fiber reinforced polyterephthalate connecting board, flame-retardant in accordance with UL 94 V-0. Max. permissible soldering temperature is 400 °C/752 °F, 2 sec. 0.4 mm thick nickel-silver spring yoke.

Approx. weight 7 g

B65675–B0005–X000
(with 8 solder terminals)



Dimensions in mm

Ordering code B65675–B0005–X000
(Complete mounting assembly with 8 solder terminals)
(PU: 200 sets)

Mounting parts		Ordering code
a	1 yoke	C61035–A11–C2
b	1 connecting board (with 8 solder terminals)	C61035–A11–B1

Drawing details for the design of mounting devices are available upon request.
Ordering code C61407–A9–A1

[1)] Max. dimension

Adjusting devices B 65 679

Adjusting screw (a, b, c) B65679-D0***-X***, consisting of a SIFERRIT or SIRUFER tube core on which a glass-fiber reinforced polyterephthalate thread is molded and a spring crown serving as core brake;

fits:

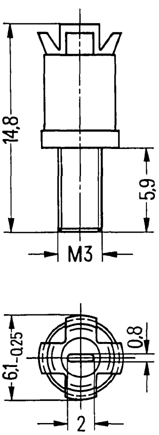
glass-fiber reinforced 11 polyamide **threaded flange** (d) B65679-J0001-X000;

glass-fiber reinforced 11 polyamide **threaded sleeve** (e) B65679-L0003-X000.

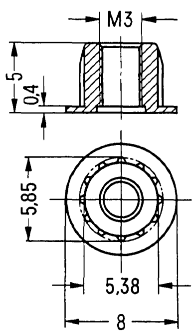
Adjusting screw driver B63399-B0001-X000

Due to the limited distance between the adjusting core B65679-D0***-X*** and the internal borehole, the complete assembly has to be centered accurately.

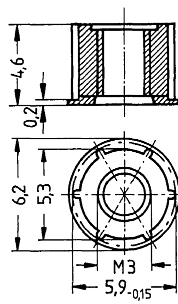
a, b, c



d



e

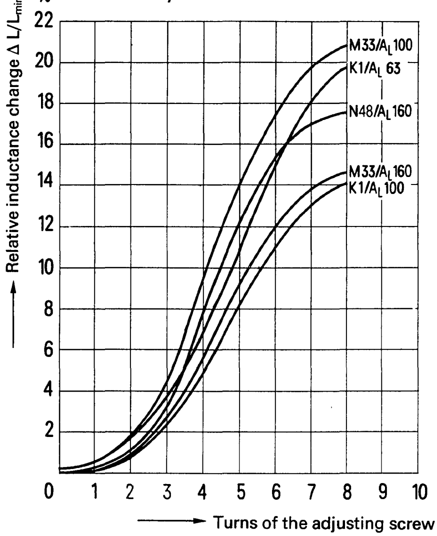


Dimensions in mm

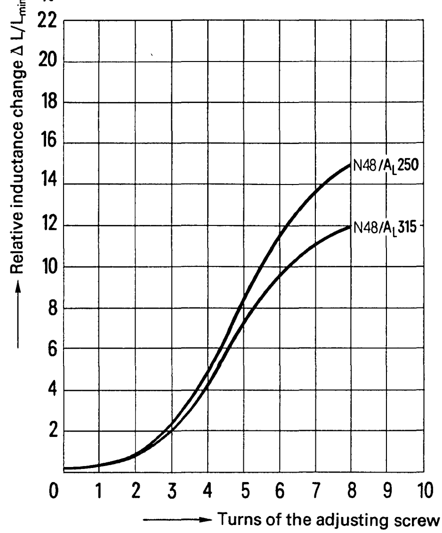
Pot cores B65671		Adjusting screw				
Material	A_L value nH	Part	Tube core dia. x length	Tube core Material	Color code	**Ordering code** (PU: 200)
K 1	63	b	4,98 x 6,3	Si 1	yellow	B65679-D0002-X101
M 33, K 1	100					
M 33, N 48	160					
N 48	250	c	4,55 x 6,3	N 22	red	B65679-D0003-X022
	315					
	315	b	4,98 x 6,3	N 22	black	B65679-D0002-X022
	400					
	630	a	5,15 x 6,3	N 22	white	B65679-D0001-X022
	800					

Inductance adjustment curves

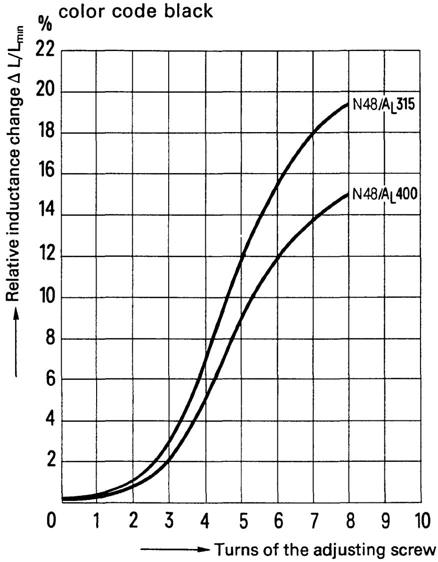
Adjustment screw B65679-D0002-X101
color code yellow



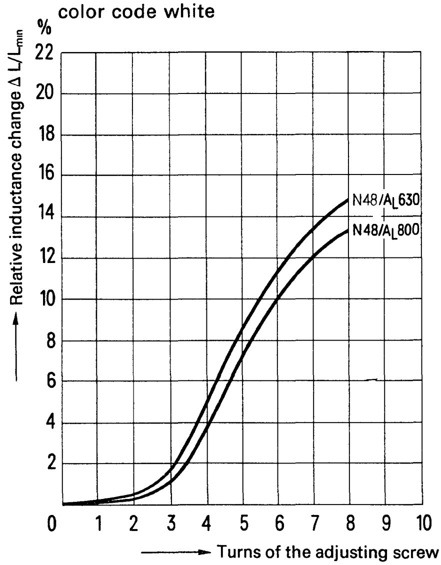
Adjusting screw B65679-D0003-X022
color code red



Adjusting screw B65679-D0002-X022
color code black



Adjusting screw B65679-D0001-X022
color code white



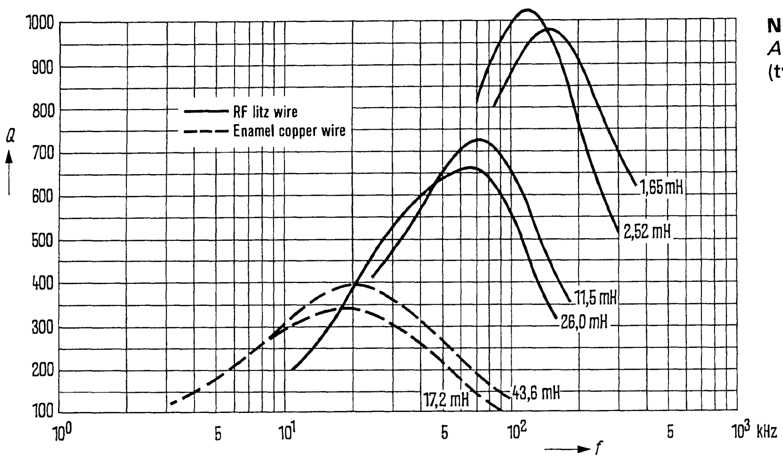
0 ≙ at least two turns engaged.

Q factor characteristics

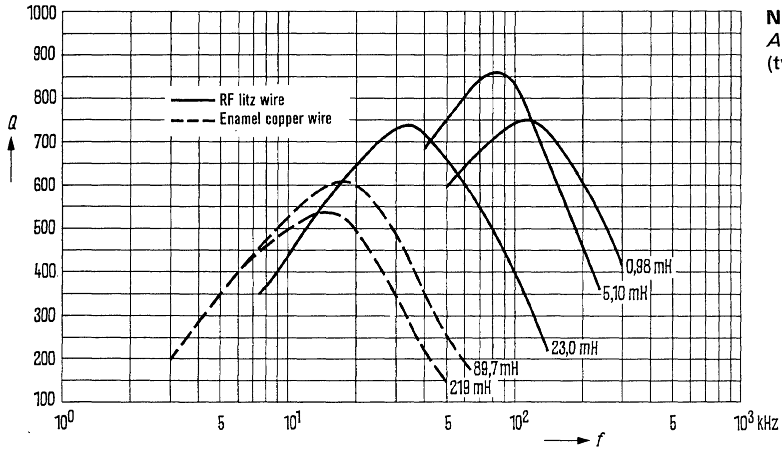
Material N 48

L (mH) for		Turns	Wire; RF litz wire	Number of sections
A_L = 315 nH	A_L = 630 nH			
–	219	600	0,20 CuL	1
43,6	89,7	385	0,27 CuL	1
17,2	–	235	0,35 CuL	1
26,0	–	290	1 x 20 x 0,05 CuLS	1
11,5	23,0	193	1 x 30 x 0,05 CuLS	1
2,52	5,10	90	3 x 30 x 0,04 CuLS	2
1,65	–	78	3 x 20 x 0,05 CuLS	3
–	0,98	39	3 x 20 x 0,07 CuLS	3

Flux density in the core $\hat{B} > 1.5$ mT



N 48
A_L = 315 nH
(typical values)

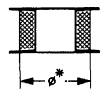


N 48
A_L = 630 nH
(typical values)

Q factor characteristics

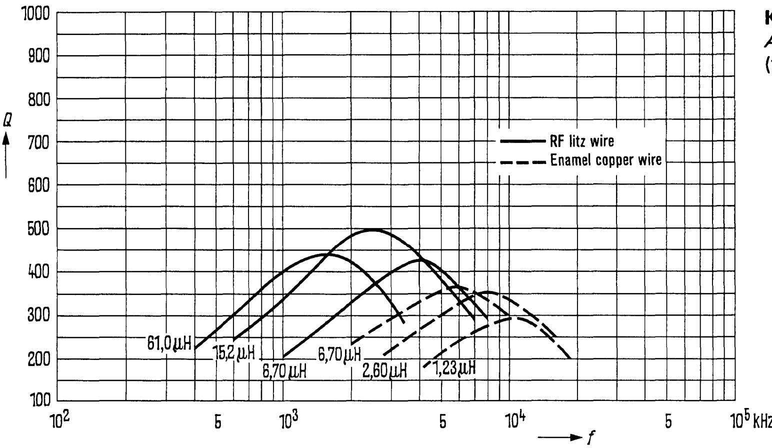
Material K 1

L (µH) for A_L = 63 nH	L (µH) for A_L = 100 nH	Turns	Wire; RF litz wire	Number of sections	⌀* mm
6,70	11,1	10	0,7 CuL	1	18,0
2,60	4,14	6	1,0 CuL	1	17,5
1,23	2,00	4	1,0 CuL	1	17,5
61,0	96,5	10+10+10	1 x 45 x 0,04 CuLS	3	18,5
15,2	24,1	15	3 x 30 x 0,04 CuLS	1	18,0
6,70	11,1	3+4+3	3 x 30 x 0,04 CuLS	3	18,0

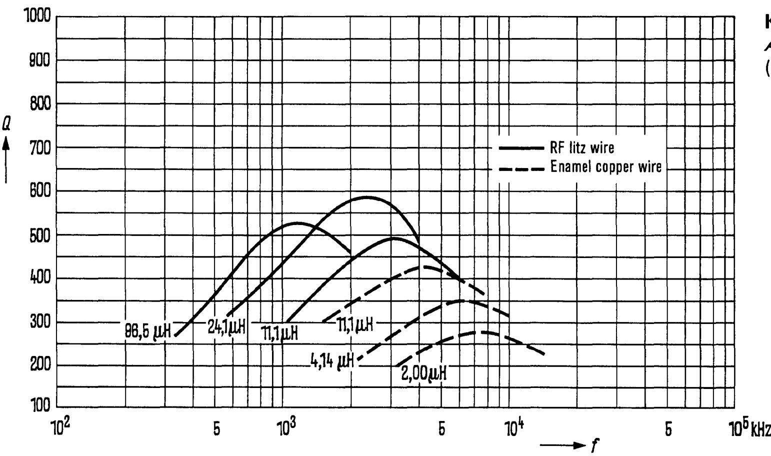


Pad of polystyrene tape up to the diameter * (valid for all sections)

Flux density in the core $\hat{B} < 0.6$ mT

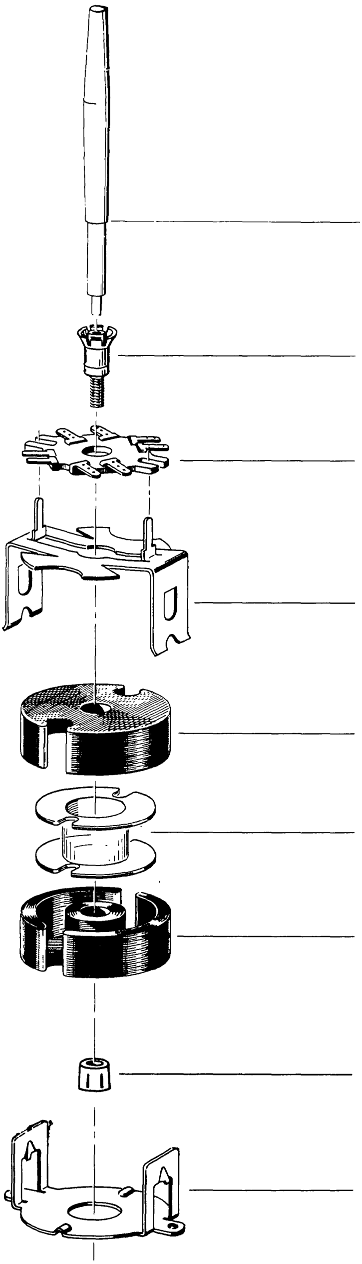


K 1
A_L = 63 nH
(typical values)



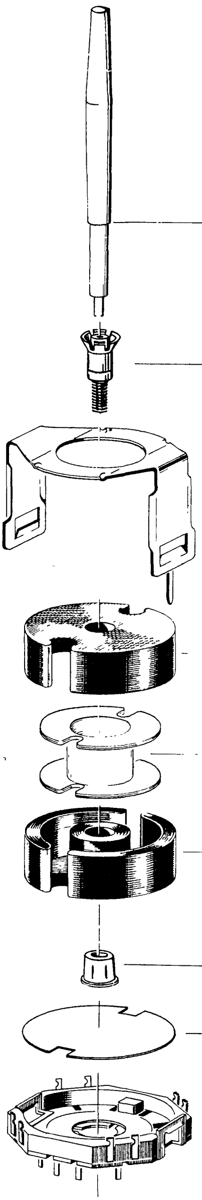
K 1
A_L = 100 nH
(typical values)

Type for chassis mounting



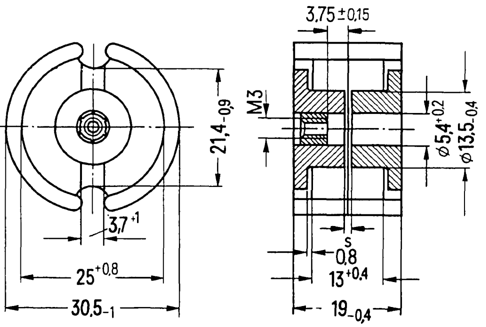
Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	339, fig. 3
Matching handle	B63399	341, fig. 6
Adjusting screw	B65679	213
Solder tag board with 8 solder terminals, if required	B65703	211
Yoke	B65703	211
Pot core	B65701	209
Coil former with 1, 2, or 3 sections	B65702	210
Pot core	B65701	209
Threaded sleeve	B65679	213
Base plate	B65703	211

Type for PC mounting



Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	339, fig. 3
Matching handle	B63399	341, fig. 6
Adjusting screw	B65679	213
Yoke	B65705	212
Pot core	B65701	209
Coil former with 1, 2, or 3 sections	B65702	210
Pot core	B65701	209
Threaded sleeve	B65679	213
Insulating washer	B65702	210
Connecting board with 8 solder terminals	B65705	212

Pot cores complying with DIN 41 293 or IEC publication 133



Dimensions in mm

Magnetic characteristics

Core factor	$\Sigma\, l/A$ =	0.33	mm^{-1}
Effective length	l_e =	45	mm
Effective area	A_e =	136	mm^2
Min. core cross section[1]	A_{min} =	112	mm^2
Effective volume	V_e =	6100	mm^3

Approx. weight 36 g/set

Pot cores	**Ordering code**
without threaded sleeve	B65701–L∗∗∗∗–∗∗∗∗
with threaded sleeve (fig.)	B65701–N∗∗∗∗–∗∗∗∗

A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 200 sets)
Gapped					
250	± 3 % ≙ A	N 48	0,72	66	B65701–∗0250–A048
400	± 3 % ≙ A	N 48	0,40	105	B65701–∗0400–A048
◥ 630	± 3 % ≙ A	N 48	0,22	166	B65701–∗0630–A048
1000	± 3 % ≙ A	N 48	0,12	263	B65701–∗1000–A048
1250	± 5 % ≙ J	N 48	0,10	328	B65701–L1250–J048
2000	± 10 % ≙ K	N 48	0,05	525	B65701–L2000–K048
Ungapped					
6200	+30/−20 % ≙ R	N 48		1630	B65701–L0000–R048
7800	+30/−20 % ≙ R	N 41		2050	B65701–L0000–R041
◥ 10500	+30/−20 % ≙ R	N 30		2760	B65701–L0000–R030
◥ 25000	+40/−30 % ≙ Y	T 38		6560	B65701–L0000–Y038

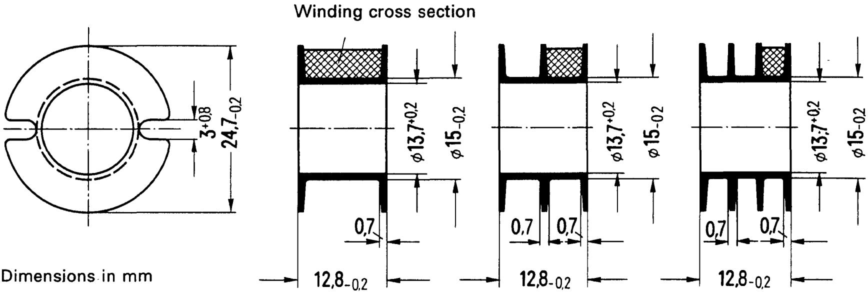
[1] Necessary for the calculation of the max. flux density

◥ to be preferred

Coil former and insulating washers B 65 702

Glass-fiber reinforced polyterephthalate coil former, complying with DIN 41 294 or IEC publication 133, flame-retardant in accordance with UL 94V-0, color code black.

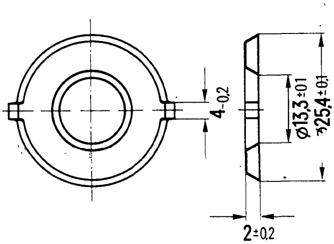
For winding details refer to page 66.



Dimensions in mm

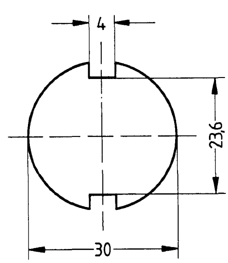
Number of sections	Useful winding cross section A_N of one section mm²	total mm²	Average length of turn l_N mm	A_R value[1] µΩ	Approx. weight g	**Ordering code** (PU: 200)
1	48	48		46	0,6	B65702-B0000-T001
2	22,5	45	60	49	0,7	B65702-B0000-T002
3	14	42		51	0,8	B65702-B0000-T003

0.06 mm thick insulating Makrofol spring washers for insulating and tolerance balancing between coil winding and pot core; delivered in strips.



Ordering code B65702-A5000-X000
(PU: 400)

0.05 mm thick insulating Teflon washers for increasing the dielectric strength between core and connecting board.



Ordering code B65702-A5002-X000
(PU: 200)

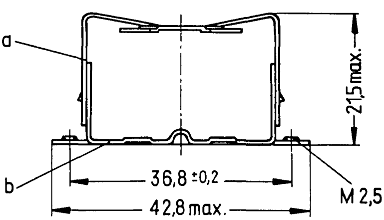
[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

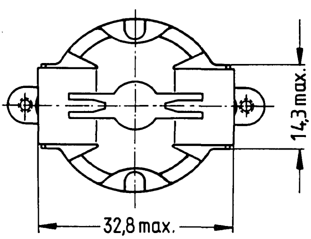
Mounting assemblies for chassis mounting B65703

Mounting assemblies with metal base plate;
fixed by M 2.3 screws.
0.5 mm thick nickel-silver spring yoke.
Types with or without solder tag board.

Approx. weight 8 g (without solder tag board)
9.5 g (with solder tag board)

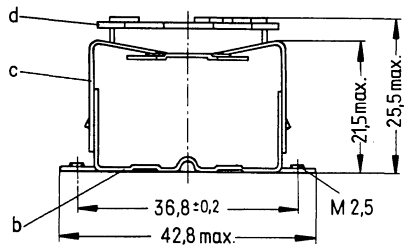
B65703-B0005-X000
(without solder tag board)

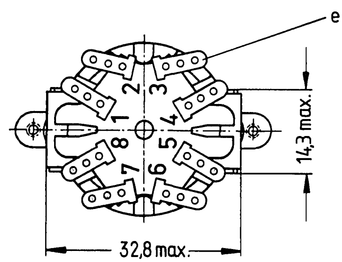




Dimensions in mm

B65703-B0006-X000
(solder tag board with 8 solder terminals)





<table>
<tr><td colspan="3">Ordering code B65703-B0005-X000
(Complete mounting assembly without solder tag board)
(PU: 200 sets)</td><td colspan="3">Ordering code B65703-B0006-X000
(Complete mounting assembly with solder tag board and 8 solder terminals)
(PU: 200 sets)</td></tr>
<tr><td colspan="2">Mounting parts</td><td>Ordering code</td><td colspan="2">Mounting parts</td><td>Ordering code</td></tr>
<tr><td>a</td><td>1 yoke</td><td>C61035-A22-C3</td><td>c</td><td>1 yoke</td><td>C61035-A22-C4</td></tr>
<tr><td>b</td><td>1 base plate</td><td>C61035-A22-C2</td><td>b</td><td>1 base plate</td><td>C61035-A22-C2</td></tr>
<tr><td></td><td></td><td></td><td>d, e</td><td>1 solder tag board complete</td><td>C40330-A74-B15</td></tr>
</table>

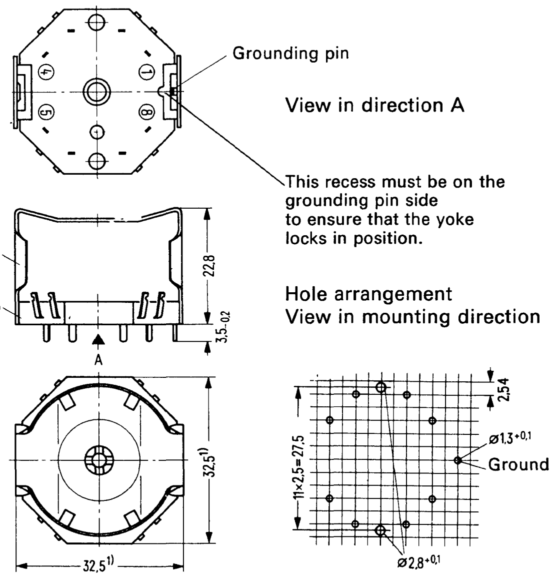
2 cylindrical screws AM 2.5 x 15 DIN 84-5 S (not included in the delivery).

Mounting assembly for PC mounting B 65705

Mounting assembly with snap-in connection. Glass-fiber reinforced polyterephthalate connecting board, flame-retardant in accordance with UL 94V-0. Max. permissible soldering temperature is 400 °C/752 °F, 2 sec. 0.5 mm thick nickel-silver spring yoke.

Approx. weight 9 g

B65705–B0003–X000
(with 8 solder terminals)



Dimensions in mm

Ordering code B65705–B0003–X000
(Complete mounting assembly with 8 solder terminals)
(PU: 200 sets)

Mounting parts		Ordering code
a	1 yoke	C61035–A40–C4
b	1 connecting board (with 8 solder terminals)	C61035–A40–B1

The 2.8 mm dia hole is only necessary for additional screw mounting with M 2.5.
Drawing details for the design of mounting devices are available upon request.
Ordering code C61407–A4–A9

[1] Max. dimension

Adjusting devices B 65679

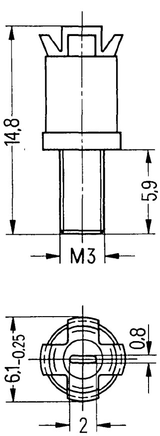
Adjusting screw (a, b, c) B65679–D0***–X***, consisting of a SIFERRIT or SIRUFER tube core on which a glass-fiber reinforced polyterephthalate thread is molded and a spring crown serving as core brake;

fits:

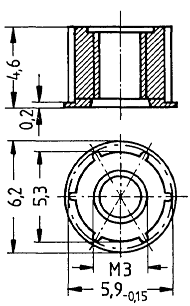
glass-fiber reinforced 11 polyamide **threaded sleeve** (d) B65679–L0003–X000.
Adjusting screw driver B63399–B0001–X000

Due to the limited distance between the adjusting core B65679–D0***–X***and the internal borehole, the complete assembly has to be centered accurately.

a, b, c



d

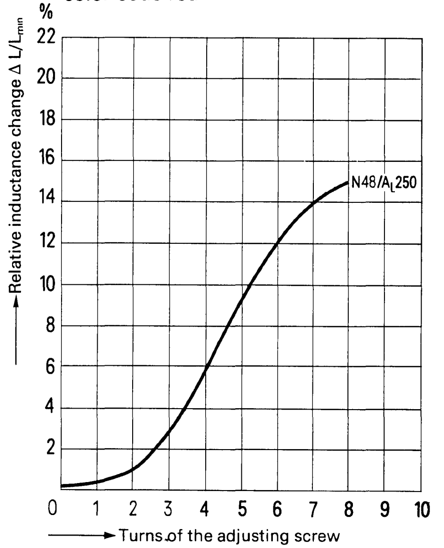


Dimensions in mm

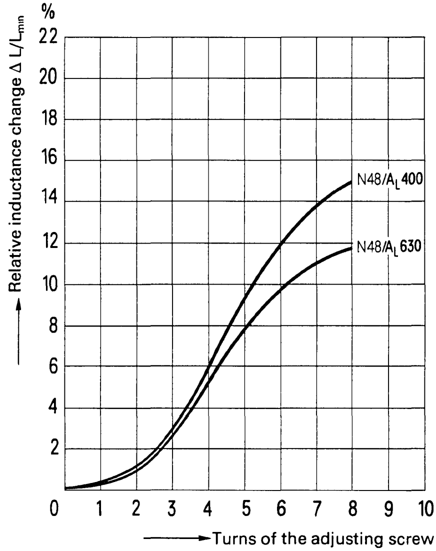
Pot cores B65701		Adjusting screw				
Material	A_L value nH	Part	Tube core dia. x length	Tube core Material	Color code	**Ordering code** (PU: 200)
N 48	250	c	4.55 x 6.3	N 22	red	B65679–D0003–X022
	400 630	b	4.98 x 6.3	N 22	black	B65679–D0002–X022
	630 1000	a	5.15 x 6.3	N 22	white	B65679–D0001–X022

Inductance adjustment curves

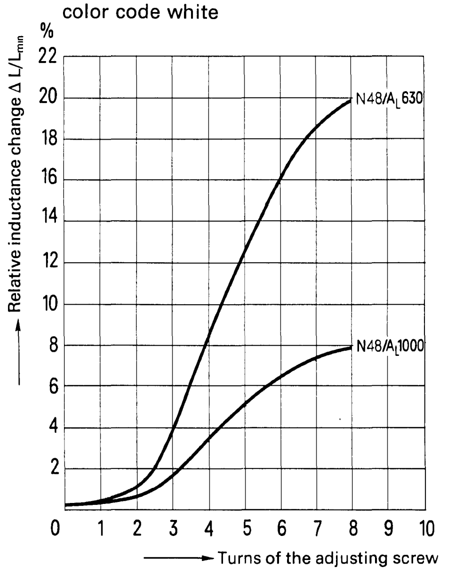
Adjusting screw B65679–D0003–X022
color code red



Adjusting screw B65679–D0002–X022
color code black



Adjusting screw B65679–D0001–X022
color code white



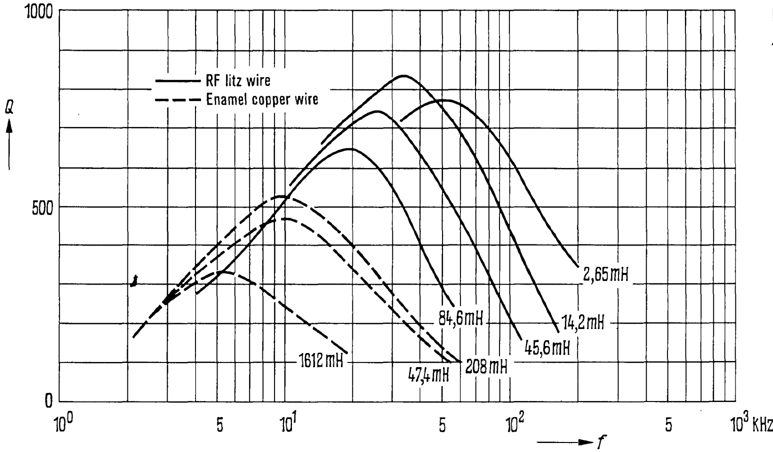
0 ≙ at least two turns engaged.

Q factor characteristics

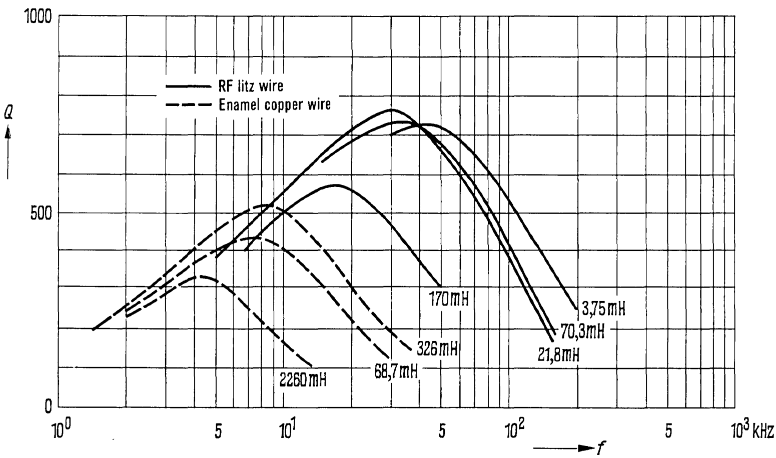
Material N 48

L (mH) for A_L = 630 nH	L (mH) for A_L = 1000 nH	Turns	Wire; RF litz wire	Number of sections
1612	2260	1600	0,15 CuL	1
208	326	570	0,25 CuL	1
47,4	68,7	350	0,40 CuL	1
–	170	420	1 x 12 x 0,04 CuLS	1
84,6	–	420	1 x 20 x 0,05 CuLS	1
45,6	70,3	270	1 x 30 x 0,05 CuLS	1
14,2	21,8	150	3 x 20 x 0,05 CuLS	1
2,65	3,75	65	3 x 20 x 0,07 CuLS	2

Flux density in the core $\hat{B} < 1.5$ mT

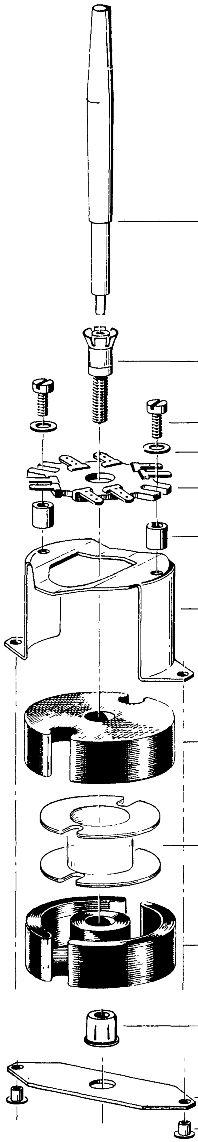


N 48
A_L = 630 nH
(typical values)



N 48
A_L = 1000 nH
(typical values)

Type for chassis mounting

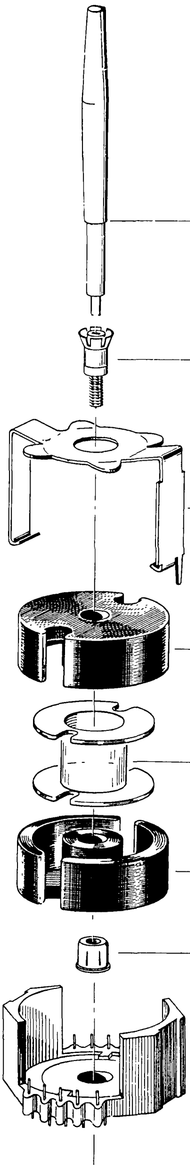


Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	339, fig. 3
Matching handle	B63399	341, fig. 6
Adjusting screw	B65679	222
Cylindrical screws[1]		
Washers[1]		
Solder tag board if required	B65613	220
Threaded bushes (only for type with solder tag board)		
Yoke	B65613	220
Pot core	B65611	218
Coil former with 1, 2, or 3 sections	B65612	219
Pot core	B65611	218
Threaded sleeve	B65679	222
Base plate with 2 tubular rivets	B65613	220

[1] These parts are supplied for types with solder tag board.

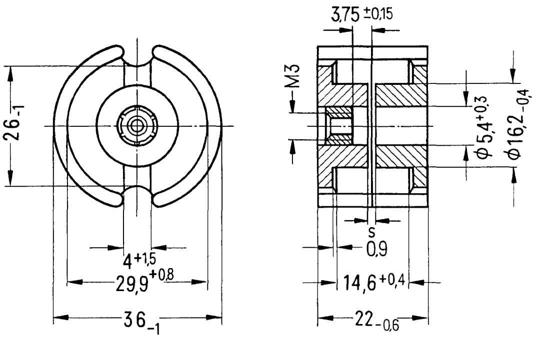
Pot Cores 36 x 22 B 65611

Type for PC mounting



Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	339, fig. 3
Matching handle	B63399	341, fig. 6
Adjusting screw	B65679	222
Yoke	B65615	221
Pot core	B65611	218
Coil former with 1, 2, or 3 sections	B65612	219
Pot core	B65611	218
Threaded sleeve	B65679	222
Connecting board with 10 solder terminals	B65615	221

Pot cores complying with DIN 41 293 or IEC publication 133



Dimensions in mm

Magnetic characteristics

Core factor	$\Sigma\, l/A$ =	0.26	mm^{-1}
Effective length	l_e =	52	mm
Effective area	A_e =	202	mm^2
Min. core cross section[1)]	A_{min} =	173	mm^2
Effective volume	V_e =	10600	mm^3

Approx. weight 57 g/set

Pot core	**Ordering code**
without threaded sleeve	B65611–**L** ****–****
with threaded sleeve (fig.)	B65611–**N******–****

A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 100 sets)
Gapped					
250	± 3 % ≙ A	N 48	1,2	52	B65611–*0250–A048
400	± 3 % ≙ A	N 48	0,62	83	B65611–*0400–A048
630	± 3 % ≙ A	N 48	0,35	130	B65611–*0630–A048
◥ 800	± 3 % ≙ A	N 48	0,3	166	B65611–*0800–A048
900	± 3 % ≙ A	N 48	0,26	186	B65611–*0900–A048
1000	± 3 % ≙ A	N 48	0,22	207	B65611–*1000–A048
1250	± 3 % ≙ A	N 48	0,16	259	B65611–*1250–A048
1600	± 5 % ≙ J	N 48	0,1	331	B65611–L1600–J048
2500	± 10 % ≙ K	N 48	0,05	518	B65611–L2500–K048
Ungapped					
7600	+30 −20 % ≙ R	N 48		1570	B65611–L0000–R048
◥ 13500	+30 −20 % ≙ R	N 30		2790	B65611–L0000–R030

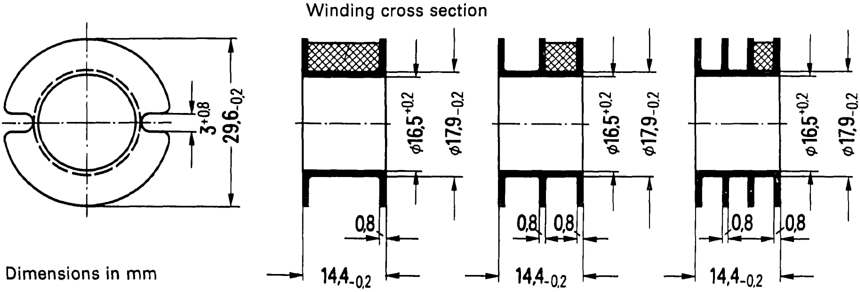
1) Necessary for the calculation of the max. flux density
◥ to be preferred

Coil former and insulating washers B 65612

Glass-fiber reinforced polyterephthalate coil former, complying with DIN 41 294 or IEC publication 133, flame-retardant in accordance with UL 94V-0, color code black.

For winding details refer to page 66.

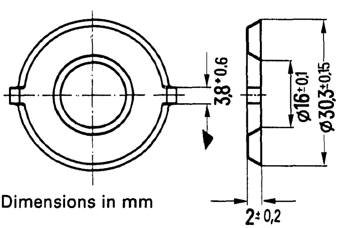
Winding cross section



Dimensions in mm

Number of sections	Useful winding cross section A_N of one section mm²	total mm²	Average length of turn l_N mm	A_R value[1)] µΩ	Approx. weight g	**Ordering code** (PU: 100)
1	63	63		39	1.4	B65612–B0000–T001
2	29.5	59	73	42	1.7	B65612–B0000–T002
3	18.3	55		44	1.9	B65612–B0000–T003

0.08 mm thick insulating Makrofol spring washers for insulation and tolerance balancing between coil winding and pot core; delivered in strips.



Dimensions in mm

Ordering code B65612–A5000–X000
(PU: 200)

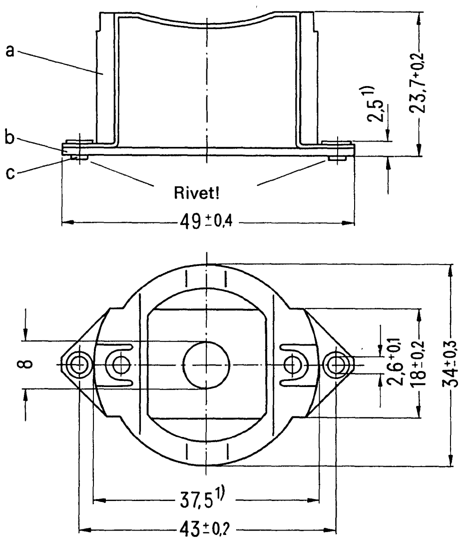
1) $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

Mounting assemblies for chassis mounting B 65 613

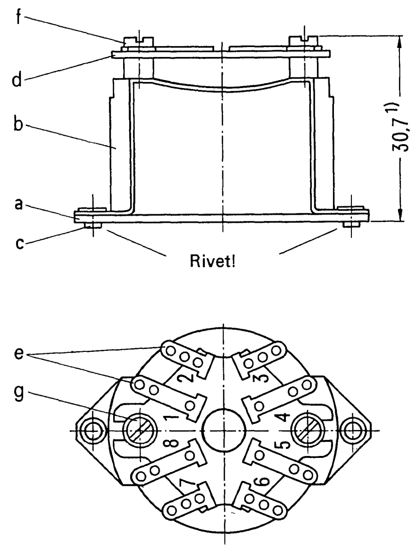
Mounting assemblies with metal base plate;
fixed by screws or rivets.
0.5 mm thick nickel-silver spring yoke.
Types with or without solder tag board.

Approx. weight 14.5 g (without solder tag board)
17.5 g (with solder tag board)

B65613–B0001–X000
(without solder tag board)



B65613–A0005–X000
(with solder tag board)



Dimensions in mm

Ordering code B65613–B0001–X000 (Complete mounting assembly without solder tag board) (PU: 100 sets)			**Ordering code** B65613–A0005–X000 (Complete mounting assembly with solder tag board) (PU: 100 sets)		
Mounting parts		Ordering code	Mounting parts		Ordering code
a	1 yoke	C40330–A78–C5	a	1 base plate	C40330–A78–C6
			b	1 yoke complete	C40330–A78–B3
b	1 base plate	C40330–A78–C6	c	2 tubular rivets	C60358–B3059–C106
			d+e	1 solder tag board complete	C40330–A78–B7
c	2 tubular rivets	C60358–B3059–C106	f	2 cylindrical screws	D84–H40–M37
			g	2 washers	D125–A25–M37

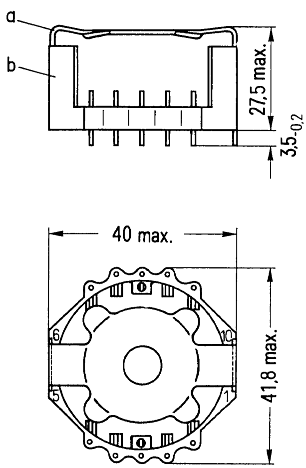
1) Max. dimension

Mounting assembly for PC mounting B 65 615

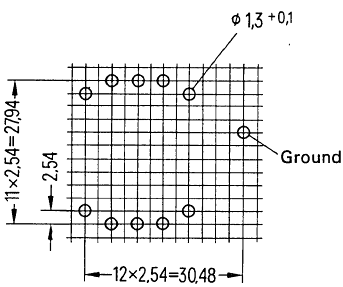
Mounting assembly with snap-in connection. Glass-fiber reinforced polyterephthalate connecting board, flame-retardant in accordance with UL 94V-0.
Max. permissible soldering temperature is 400 °C/752 °F, 2 sec.
0.5 mm thick nickel-silver spring yoke.

Approx. weight 11 g

B65615-B0001-X000
(with 10 solder terminals)



Hole arrangement
View in mounting direction



Dimensions in mm

Ordering code B65615-B0001-X000
(Complete mounting assembly with 10 solder terminals)
(PU: 100 sets)

Mounting parts		Ordering code
a	1 yoke	C61035-A16-C102
b	1 connecting board (with 10 solder terminals)	C61035-A16-B9

Adjusting devices B 65 679

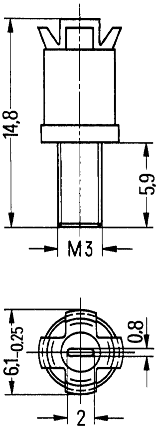
Adjusting screw (a, b, c) B65679–D0***–X***, consisting of a SIFERRIT tube core on which a glass-fiber reinforced polyterephthalate thread is molded and a spring crown serving as core brake;

fits:

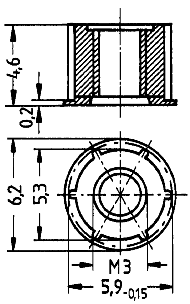
glass-fiber reinforced 11 polyamide **threaded sleeve** (d) B65679–L0003–X000.
Adjusting screw driver B63399–B0001–X000

Due to the limited distance between the adjusting core B65679–D0***–X*** and the internal borehole, the complete assembly has to be centered accurately.

a, b, c



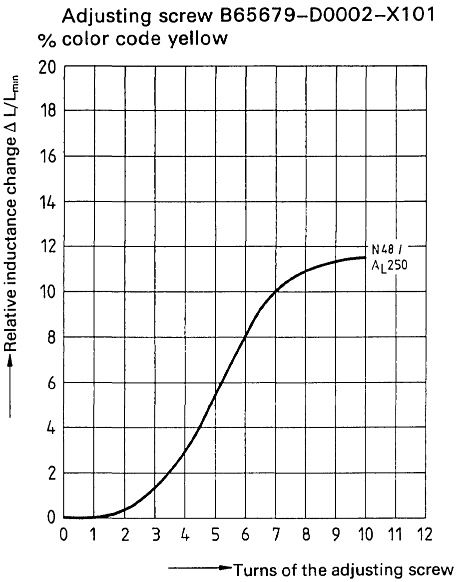
d

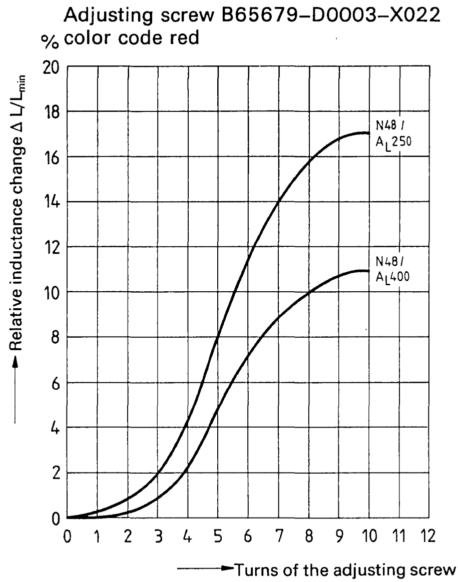


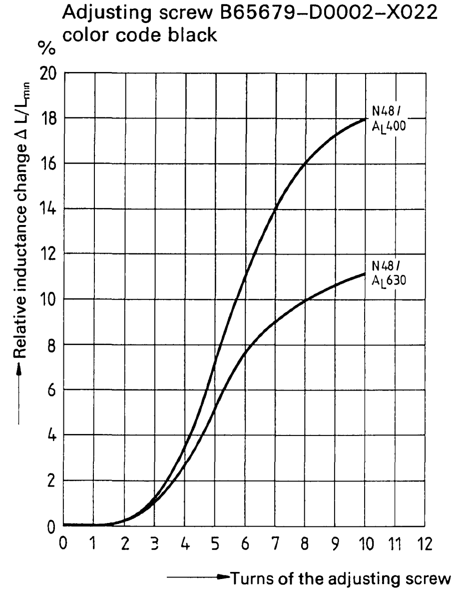
Dimensions in mm

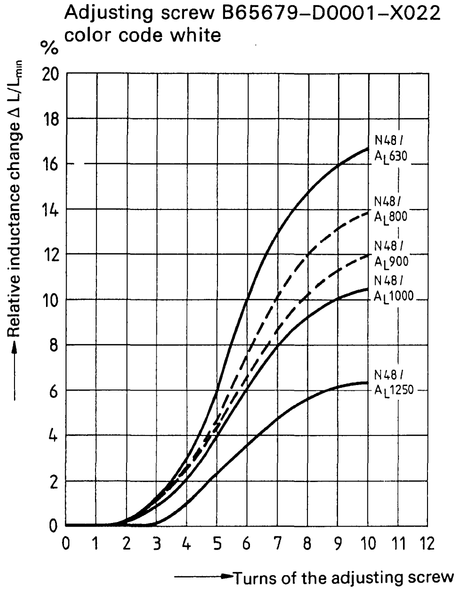
Pot cores B65611		Adjusting screw				
Material	A_L value nH	Part	Tube core dia. x length	Tube core Material	Color code	**Ordering code** (PU: 500)
N 48	250	b	4,98 x 6,3	Si 1	yellow	B65679–D0002–X101
	250 400	c	4,55 x 6,3	N 22	red	B65679–D0003–X022
	400 630	b	4,98 x 6,3	N 22	black	B65679–D0002–X022
	630 800 900 1000 1250	a	5,15 x 6,3	N 22	white	B65679–D0001–X022

Inductance adjustment curves



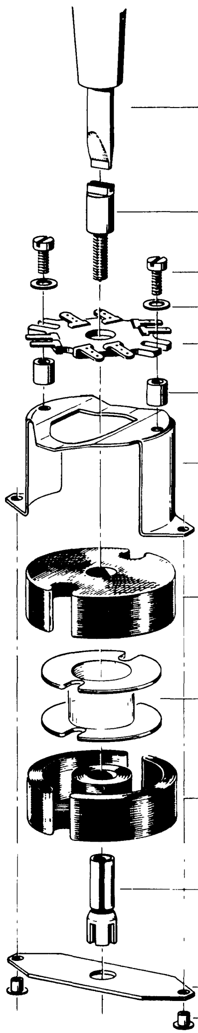






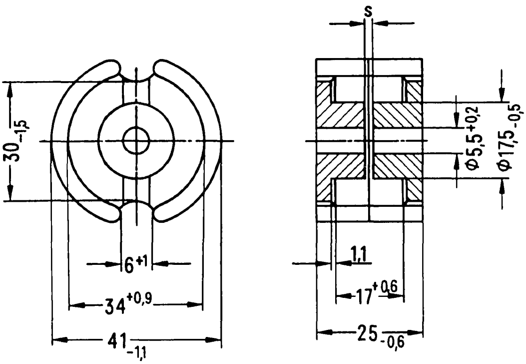
0 ≙ at least two turns engaged.

Type for chassis mounting



Individual parts	Part No.	Page
Adjusting screw driver (for assembly only) or	B63399 B63399	340,fig. 4 339,fig. 1
Adjusting screw or screw core	B65579 B63310	228
Cylindrical screws[1]		
Washers[1]		
Solder tag board if required	B65623	227
Threaded bushes (only for type with solder tag board)		
Yoke	B65623	227
Pot core	B65621	225
Coil former with 1, 2, or 3 sections	B65622	226
Pot core	B65621	225
Threaded sleeve part "c" or "e"	B65579	228
Base plate with 2 tubular rivets	B65623	227

[1] These parts are supplied for types with solder tag board.



Dimensions in mm

Magnetic characteristics

Core factor	$\Sigma\, l/A$ =	0.257	mm^{-1}
Effective length	l_e =	62.1	mm
Effective area	A_e =	242	mm^2
Min. core cross section[1]	A_{min} =	209	mm^2
Effective volume	V_e =	15000	mm^3

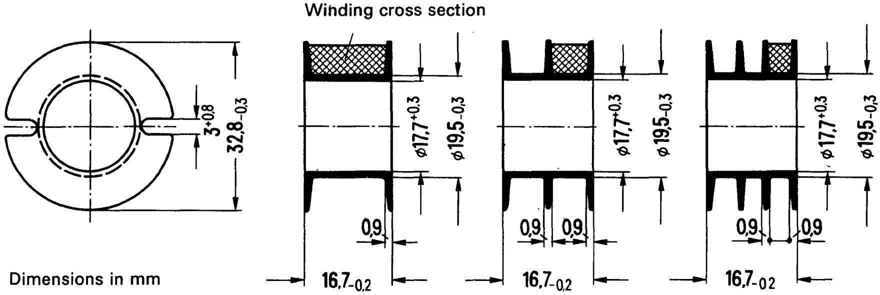
Approx. weight 90 g/set

A_L value nH	A_L value tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 100 sets)
Gapped					
250	± 3 % ≙ A	N 48	1,35	51	B65621-J0250-A048
400	± 3 % ≙ A	N 48	0,78	82	B65621-J0400-A048
630	± 3 % ≙ A	N 48	0,43	129	B65621-J0630-A048
1250	± 3 % ≙ A	N 48	0,18	256	B65621-J1250-A048
2000	± 5 % ≙ J	N 48	0,1	408	B65621-J2000-J048
3150	± 10 % ≙ K	N 48	0,05	642	B65621-J3150-K048
Ungapped					
8400	$^{+30}_{-20}$ % ≙ R	N 48		1720	B65621-J0000-R048

[1] Necessary for the calculation of the max. flux density.

Coil former B 65622

Glass-fiber reinforced polycarbonate coil former.
For winding details refer to page 67.



Dimensions in mm

Number of sections	Useful winding cross section A_N of one section mm²	total mm²	Average length of turn l_N mm	A_R value[1] μΩ	Approx. weight g	**Ordering code** (PU: 100)
1	85	85	81	33	1.7	B65622–A0000–M001
2	40	80		35	2.0	B65622–A0000–M002
3	25	75		37	2.2	B65622–A0000–M003

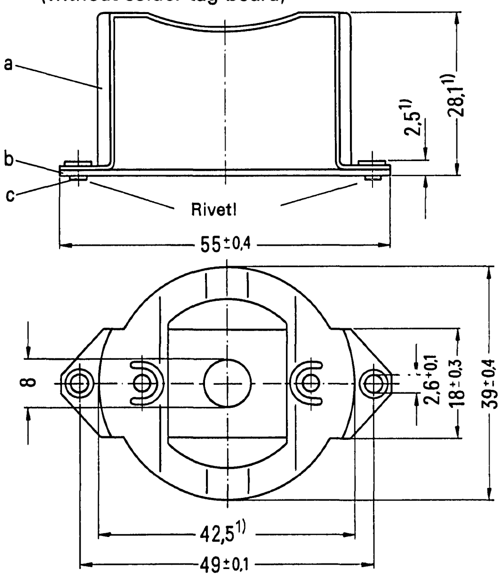
[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

Mounting assemblies for chassis mounting B 65623

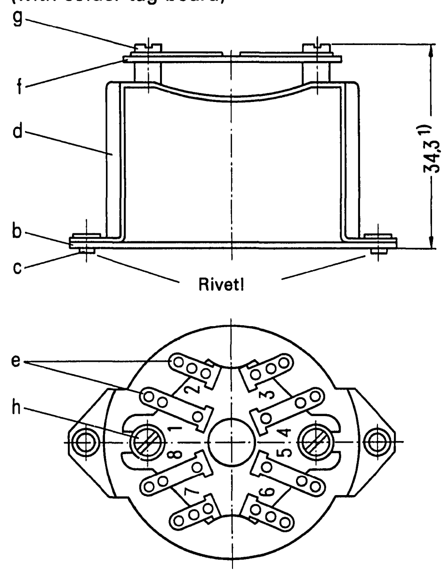
Mounting assemblies with metal base plate;
fixed by screws or rivets.
0.5 mm thick nickel-silver spring yoke.
Types with or without solder tag board.

Approx. weight 17.5 g (without solder tag board)
20.5 g (with solder tag board)

B65623-A0001-X000
(without solder tag board)



B65623-A0005-X000
(with solder tag board)



Dimensions in mm

Ordering code B65623-A0001-X000 (Complete mounting assembly without solder tag board) (PU: 100 sets)			**Ordering code** B65623-A0005-X000 (Complete mounting assembly with solder tag board) (PU: 100 sets)		
Mounting parts		Ordering code	Mounting parts		Ordering code
a	1 yoke	C40330-A79-C7	b	1 base plate	C40330-A79-C8
			c	2 tubular rivets	C60358-B3059-C106
b	1 base plate	C40330-A79-C8	d	1 yoke complete	C40330-A79-B3
			e+f	1 solder tag board complete	C40330-A78-B7
c	2 tubular rivets	C60358-B3059-C106	g	2 cylindrical screws	D84-H40-M37
			h	2 washers	D125-A25-M37

[1] Max. dimension

Adjusting devices B 65 579

Adjusting screw (a, b) B65579–B0***–X***, consisting of a SIFERRIT tube core on which a thread of glass-fiber reinforced 11 polyamide is molded;

fits:

glass-fiber reinforced polyterephthalate **threaded sleeve** (c) B65579–K0001–X000 with slotted shank serving as core brake.

Adjusting screw driver B63399–B0004–X000.

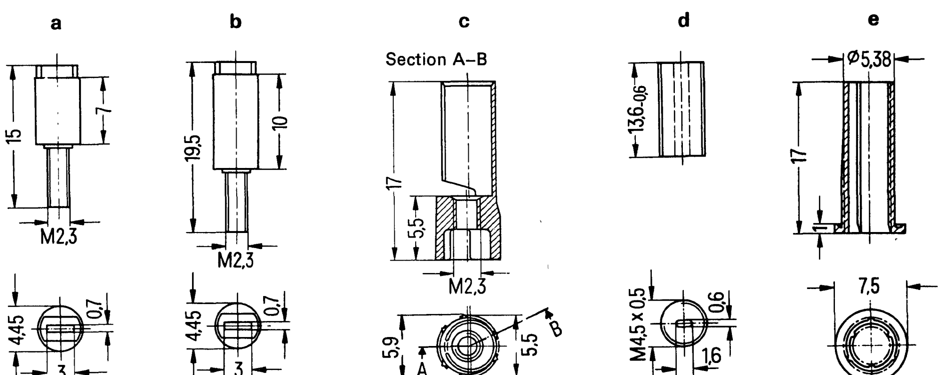
or, as required,

SIFERRIT **adjusting screw** (d) B63310–A4009–X022; this screw core cuts its own thread into the sleeve;

fits:

glass-fiber reinforced 11 polyamide **threaded sleeve** (e) B65579–J0003–X000.

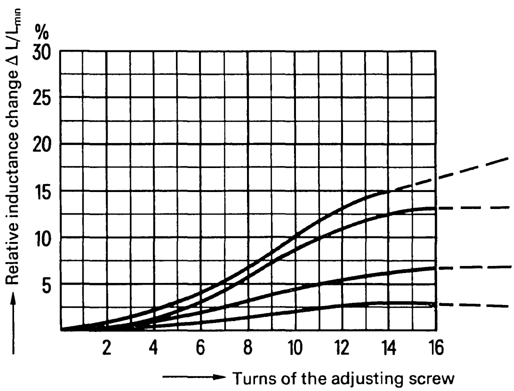
Adjusting screw driver B63399–A0001–X000.



Dimensions in mm

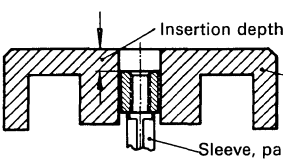
Adjusting devices	Part	Material of the adjusting core	Color code	**Ordering code** (PU: 100)
Threaded sleeve	c			B65579–K0001–X000
Associated adjusting screw as required	a	N 22	red	B65579–B0001–X023
	b	N 22	red	B65579–B0003–X023
Threaded sleeve	e			B65579–J0003–X000
Associated screw core	d	N 22	red	B63310–A4009–X022

Inductance adjustment curves

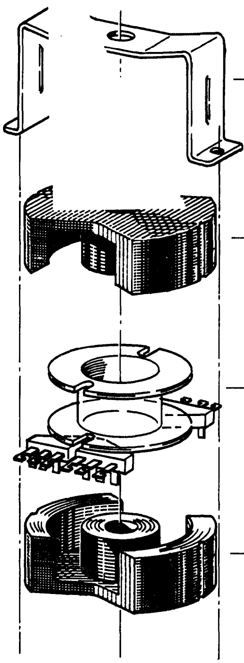


Pot core		Adjusting devices	
Material	A_L value	Adjusting screw	Insertion depth mm
N 22	250	a;B65579-B0001-X023	3
N 22	400	b;B65579-B0003-X023	3
N 22	630	b;B65579-B0003-X023	3
N 22	1250	b;B65579-B0003-X023	3

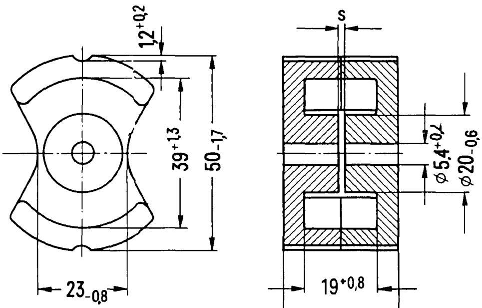
Explanation of "insertion depth"



Type for chassis and PC mounting



Individual parts	Part No.	Page
Fixing yoke	B65645	233
Pot core	B65644	231
Coil former with 10 solder terminals	B65645	232
Pot core	B65644	231



Dimensions in mm

Approx. weight 130 g/set

Magnetic characteristics

Core factor	$\Sigma\, l/A$ =	0.225	mm^{-1}
Effective length	l_e =	73	mm
Effective area	A_e =	324	mm^2
Min. core cross section[1]	A_{min} =	275	mm^2
Effective volume	V_e =	23650	mm^3

Accessories

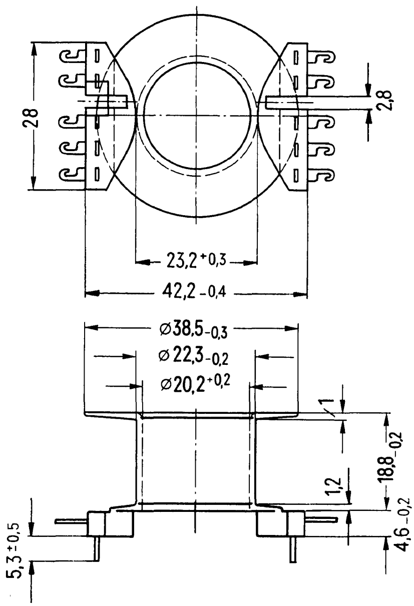
Coil former
Fixing yoke

A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 20 sets)
Gapped					
250	± 3% ≙ A	N 27	2,0	45	B65644-A0250-A027
630	± 3% ≙ A	N 27	0,6	113	B65644-A0630-A027
1250	± 3% ≙ A	N 27	0,3	224	B65644-A1250-A027
2500	± 5% ≙ J	N 27	0,1	448	B65644-A2500-J027
Ungapped					
8400	$^{+30}_{-20}$% ≙ R	N 27		1500	B65644-A0000-R027

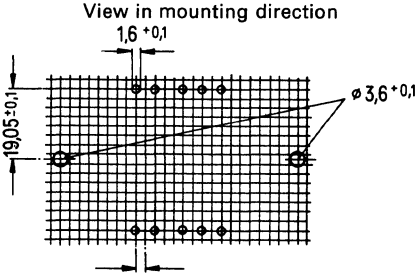
[1] Necessary for the calculation of the max. flux density.

Coil former B 65645

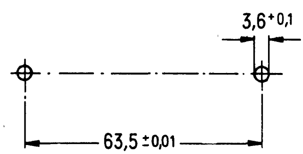
Glass-fiber reinforced polyterephthalate coil former, flame-retardant in accordance with UL 94V-0. Equipped with 10 terminals.
Permissible soldering temperature max. 400 °C/752 °F, 2 sec. For winding details refer to page 67.



Hole arrangement for PC mounting
View in mounting direction



Hole arrangement for chassis mounting
View in mounting direction



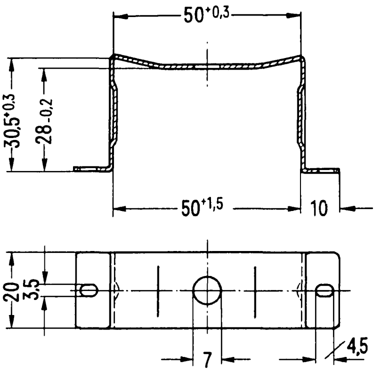
Dimensions in mm

Number of sections	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1)] µΩ	Approx. weight g	**Ordering code** (PU: 20)
1	118	96.8	28.2	4.5	B65645–B1000–T001

1) $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

Fixing yoke for chassis and PC mounting B 65 645

0.6 mm thick nickel-silver spring yoke; fixed by screws. For chassis mounting the coil former has to be mounted with the pins upwards.

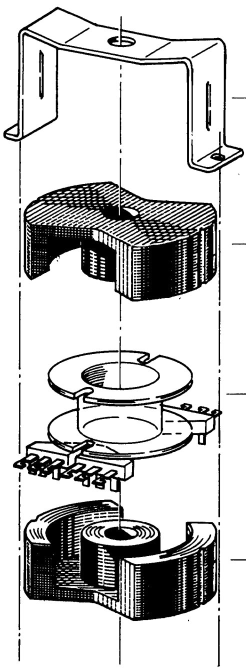


Approx. weight 18 g

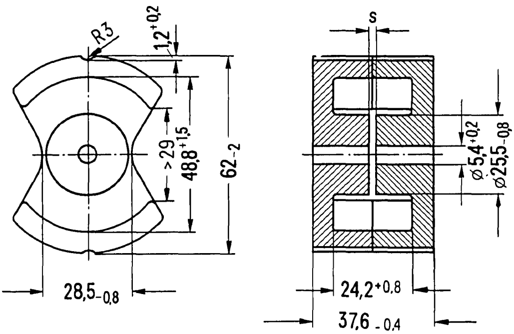
Dimensions in mm

Ordering code B65645–A2000–X000
(PU: 20)

Type for PC and chassis mounting



Individual parts	Part No.	Page
Fixing yoke	B65695	237
Pot core	B65694	235
Coil former with 12 solder terminals	B65695	236
Pot core	B65694	235



Approx. weight 250 g/set

Dimensions in mm

Magnetic characteristics

Core factor	$\Sigma\, l/A$ =	0.183	mm^{-1}
Effective length	l_e =	95	mm
Effective area	A_e =	520	mm^2
Min. core cross section[1]	A_{min} =	460	mm^2
Effective volume	V_e =	49400	mm^3

Accessories

Coil former
Fixing yoke

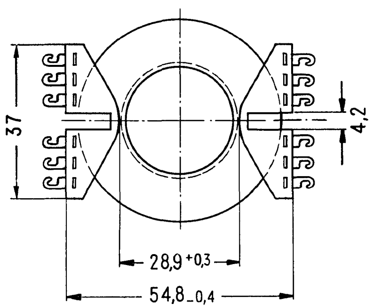
A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 20 sets)
Gapped					
1000	± 3 % ≙ A	N 27	0,6	146	B65694–A1000–A027
2500	± 10 % ≙ K	N 27	0,2	365	B65694–A2500–K027
Ungapped					
10000	$^{+30}_{-20}$ % ≙ R	N 27		1460	B65694–A0000–R027

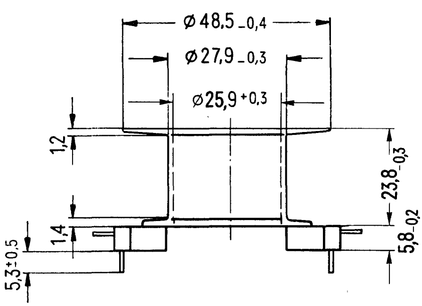
[1] Necessary for the calculation of the max. flux density.

Coil former B 65695

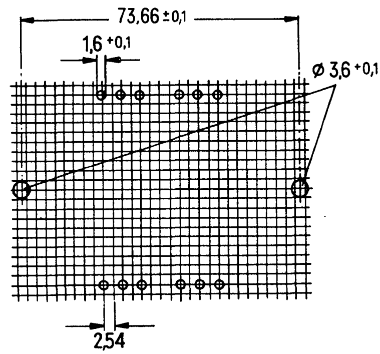
Glass-fiber reinforced polyterephthalate coil former, flame-retardant in accordance with UL 94V-0. Equipped with 12 solder terminals.

Permissible soldering temperature max. 400 °C/752 °F, 2 sec.
For winding details refer to page 67.

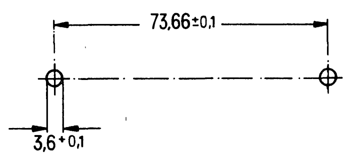




Hole arrangement for printed circuits
View in mounting direction



Hole arrangement for chassis mounting
View in mounting direction



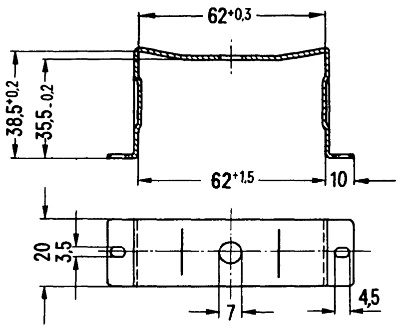
Dimensions in mm

Number of sections	Useful winding cross section A_N mm^2	Average length of turn l_N mm	A_R value[1)] µΩ	Approx. weight g	**Ordering code** (PU: 20)
1	203	120	20	8.5	B65695–C1000–T001

1) $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns^2)

Fixing yoke for chassis and PC mounting

0.6 mm thick nickel-silver spring yoke; fixed by screws. For chassis mounting the coil former has to be mounted with the pins upwards.

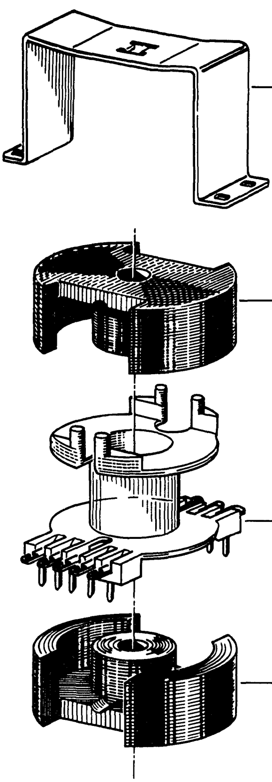


Approx. weight 25 g

Dimensions in mm

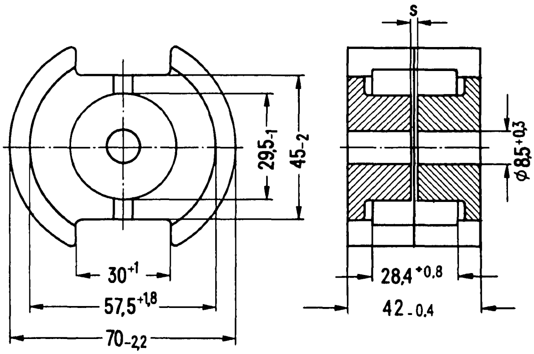
Ordering code B65695–A2000–X000
(PU: 20)

Type for chassis and PC mounting



Individual parts	Part No.	Page
Fixing yoke	B65698	241
Pot core	B65696–L	239
Coil former with 1 section; at chassis mounting to be inserted with the terminals upwards	B65697–K	240
Pot core	B65696–L	239

Pot Cores 70 x 42 — Not for new design! Replacement: PM cores 74 x 59 — B 65696



Approx. weight 360 g/set

Dimensions in mm

Magnetic characteristics

Core factor	$\Sigma\, l/A$ =	0.168	mm^{-1}
Effective length	l_e =	105	mm
Effective area	A_e =	625	mm^2
Min. core cross section[1]	A_{min} =	580	mm^2
Effective volume	V_e =	65600	mm^3

Accessories

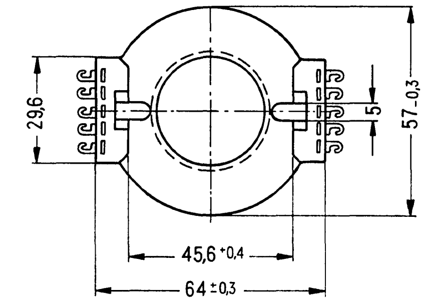
Coil former
Mounting assembly

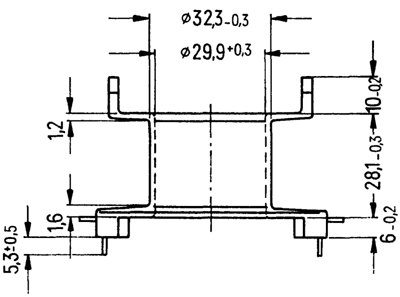
A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 20 sets)
Gapped					
1000	± 3 % ≙ A	N 27	0,8	134	B65696–L1000–A027
2500	± 10 % ≙ K	N 27	0,15	335	B65696–L2500–K027
Ungapped					
11500	$^{+30}_{-20}$ % ≙ R	N 27		1540	B65696–L0000–R027

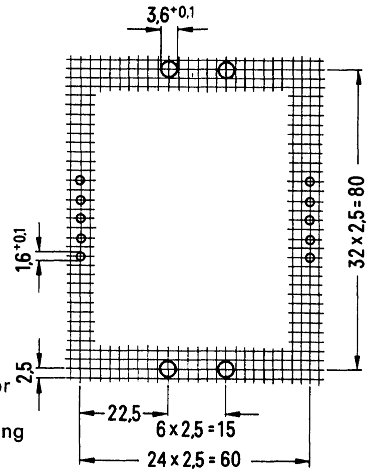
[1] Necessary for the calculation of the max. flux density.

Coil former B 65697

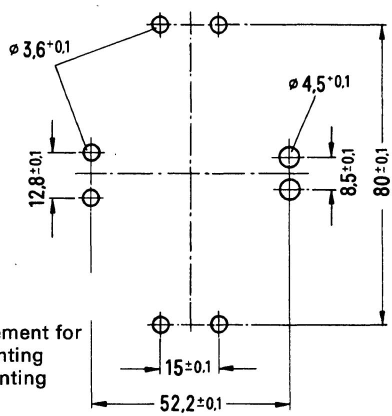
Glass-fiber reinforced polyterephthalate coil former, flame-retardant in accordance with UL 94V-0.
Equipped with 10 terminals.
Permissible soldering temperature max. 400 °C/752 °F, 2 sec.
For winding details refer to page 67.







Hole arrangement for PC mounting
View in mounting direction



Hole arrangement for chassis mounting
View in mounting direction

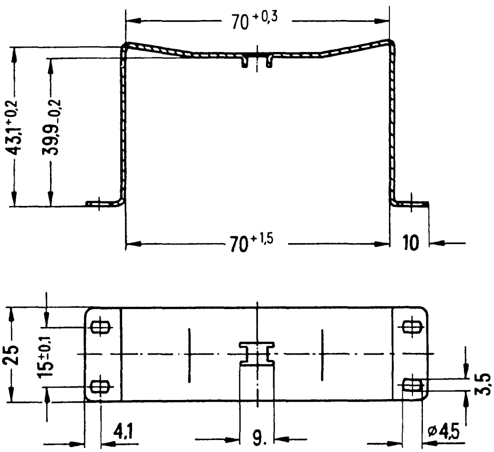
Dimensions in mm

Number of sections	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1] µΩ	Approx. weight g	**Ordering code** (PU: 10)
1	290	140	16.6	15	B65697–L0000–T001

[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

Fixing yoke for chassis and PC mounting

0.8 mm thick nickel-silver spring yoke; fixed by 4 screws. For chassis mounting the coil former has to be mounted with the pins upwards.



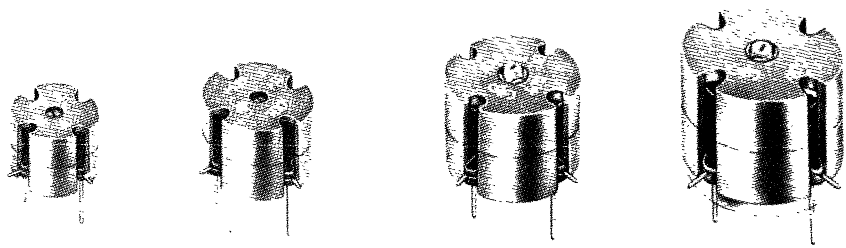
Approx. weight 35 g

Dimensions in mm

Ordering code B65698–A2000–X000
(PU: 10)

4-Slot Pot Cores

4-Slot Pot Cores



General

Apart from pot cores, complying with IEC publication 133, with two slots for bringing out the leads, there are also four-slot cores available with appropriate 4-pin coil formers (with 1 and 2 sections) as equivalent types of 14, 18, 22, and 26 mm diameter.

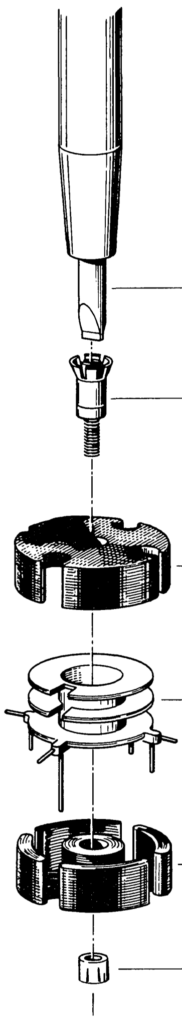
The adjustable coils are preferably made of the material N48. The materials N48, N30, and T38 are available for transformer applications.

Survey

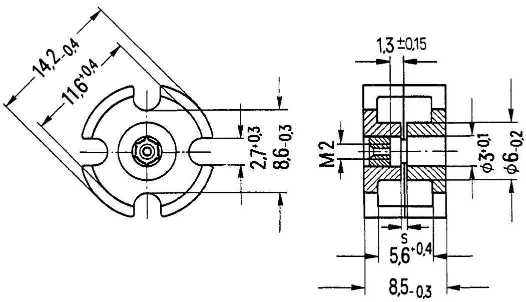
Approx. dimensions dia. x height (mm)	Drawing No.	Type	Page
14 x 8	2 x C61035–A12–C31	B65546	245
18 x 11	2 x C61035–A10–C33	B65656	248
22 x 13	2 x C61035–A17–C30	B65666	251
26 x 16	2 x C61035–A11–C21	B65676	254
Adjusting tools	–	B63399	339

4-Slot Pot Cores 14 x 8 — B 65546

Type for PC mounting



Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	340,fig. 4
Matching handle	B63399	341,fig. 6
Adjusting screw	B65549	157
Pot core	B65546	246
Coil former with 1 or 2 sections	B65547	247
Pot core	B65546	246
Threaded sleeve	B65808	157



Magnetic characteristics

Core factor	$\Sigma\, l/A$ =	0.867	mm^{-1}
Effective length	l_e =	20.4	mm
Effective area	A_e =	23.5	mm^2
Effective volume	V_e =	480	mm^3

Approx. weight 3.2 g/set

Dimensions in mm

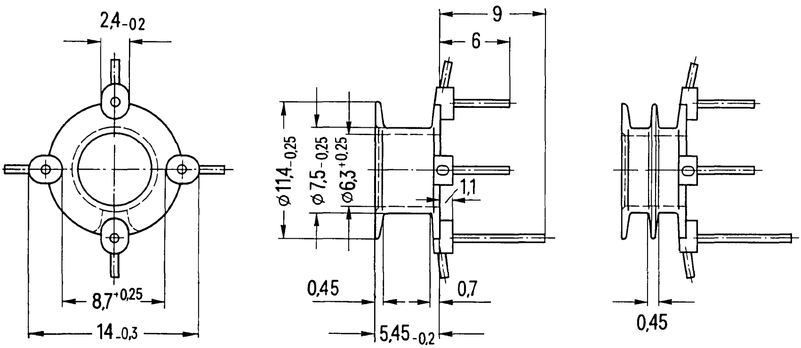
Pot cores	Ordering code
without threaded sleeve	B65546–**A******–****
with threaded sleeve (fig.)	B65546–**N******–****

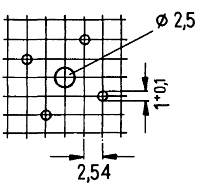
A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 500 sets)
Gapped					
160	± 3 % ≙ A	N 48	0,17	110	B65546–*0160–A048
◥ 250	± 3 % ≙ A	N 48	0,1	173	B65546–*0250–A048
315	± 3 % ≙ A	N 48	0,08	217	B65546–*0315–A048
400	± 3 % ≙ A	N 48	0,05	276	B65546–*0400–A048
Ungapped					
2100	+30/−20 % ≙ R	N 48		1450	B65546–A0000–R048
◥ 4000	+30/−20 % ≙ R	N 30		2760	B65546–A0000–R030
◥ 8700	+40/−30 % ≙ Y	T 38		6000	B65546–A0000–Y038

◥ to be preferred

Coil former B 65 547

Glass-fiber reinforced, thermosetting plastic coil former with 4 terminal pins, flame-retardant in accordance with UL 94 V-0. Permissible soldering temperature 400 °C/752 °F, 2 sec (also refer to page 85, para. 8.2). For winding details refer to page 66.





Hole arrangement
View in mounting direction

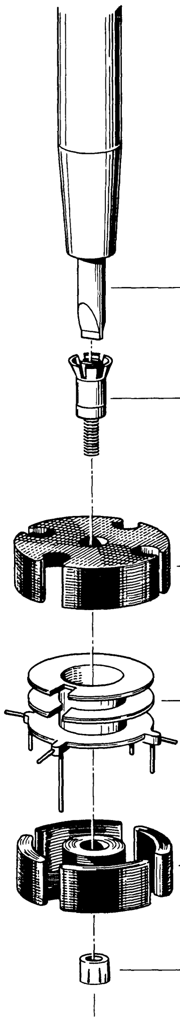
Dimension in mm

Number of sections	Useful winding cross section A_N of one section mm²	total mm²	Average length of turn l_N mm	A_R value[1] µΩ	Approx. weight g	**Ordering code** (PU: 500)
1	7.5	7.5	29.3	134	0.28	B65547-B1001-D001
2	3.3	6.6		153	0.3	B65547-B1001-D002

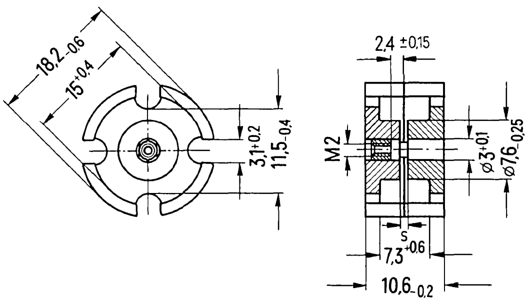
For adjusting devices and adjustment curves refer to page 157, 158.

[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

Type for PC mounting



Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	340, fig. 4
Matching handle	B63399	341, fig. 6
Adjusting screw	B65659	168
Pot core	B65656	249
Coil former with 1 or 2 sections	B65657	250
Pot core	B65656	249
Threaded sleeve	B65808	168



Dimensions in mm

Magnetic characteristics

Core factor	$\Sigma\, l/A$ =	0.678	mm^{-1}
Effective length	l_e =	26.5	mm
Effective area	A_e =	39.1	mm^2
Effective volume	V_e =	1040	mm^3

Approx. weight 6 g/set

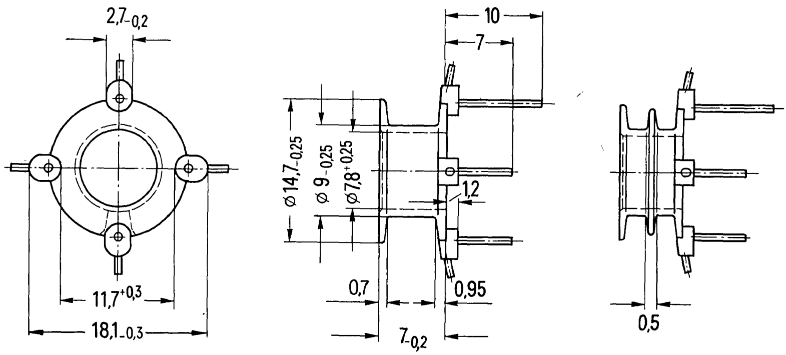
Pot cores	**Ordering code**
without threaded sleeve	B65656–**A******–****
with threaded sleeve (fig.)	B65656–**N******–****

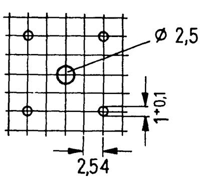
A_L value nH	tolerance	SIFERRIT material	Total air gap *s* in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 500 sets)
Gapped					
160	± 3 % ≙ A	N 48	0,32	86	B65656–*0160–A048
250			0,2	135	B65656–*0250–A048
315			0,15	170	B65656–*0315–A048
◥ 400			0,1	216	B65656–*0400–A048
500			0,07	270	B65656–*0500–A048
Ungapped					
2800	$^{+30}_{-20}$ % ≙ R	N 48		1510	B65656–A0000–R048
◥ 5000		N 30		2700	B65656–A0000–R030
◥ 11000	$^{+40}_{-30}$ % ≙ Y	T 38		5930	B65656–A0000–Y038

◥ to be preferred

Coil former B 65 657

Glass-fiber reinforced thermosetting plastic coil former with 4 terminal pins, flame-retardant in accordance with UL 94 V-0. Permissible soldering temperature max. 400 °C/752 °F, 2 sec (also refer to page 85, para. 8.2). For winding details refer to page 66.





Hole arrangement
View in mounting direction

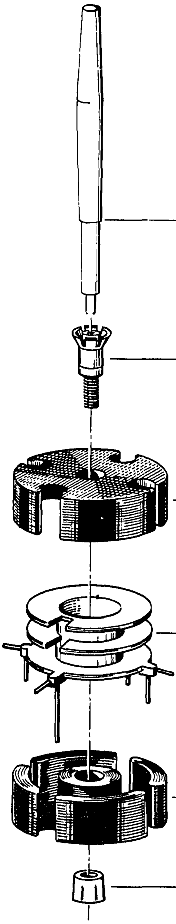
Dimensions in mm

Number of sections	Useful winding cross section A_N of one section mm²	total mm²	Average length of turn l_N mm	A_R value[1] μΩ	Approx. weight g	**Ordering code** (PU: 500)
1	14	14	36.8	90.5	0.58	B65657-B1001-D001
2	6.1	12.2		104	0.6	B65657-B1001-D002

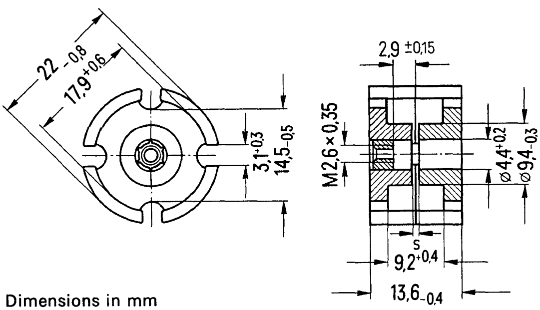
For adjusting devices and adjustment curves refer to page 168 . . . 170.

[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

Type for PC mounting



Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	339, fig. 3
Matching handle	B63399	341, fig. 6
Adjusting screw	B65669	192
Pot core	B65666	252
Coil former with 1 or 2 sections	B65667	253
Pot core	B65666	252
Threaded sleeve	B65669	192



Dimensions in mm

Approx. weight 13 g/set

Magnetic characteristics

Core factor	$\Sigma l/A =$	0.525	mm^{-1}
Effective length	$l_e =$	32.1	mm
Effective area	$A_e =$	61.2	mm^2
Effective volume	$V_e =$	1970	mm^3

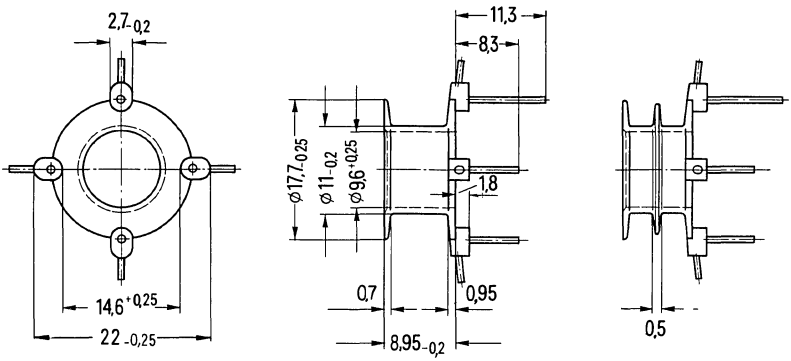
Pot cores	Ordering code
without threaded sleeve	B65666–**A******–****
with threaded sleeve (fig.)	B65666–**N******–****

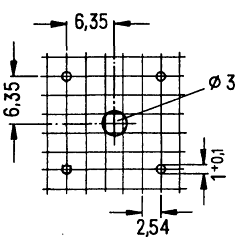
A_L value nH	tolerance	SIFERRIT material	Total air gap *s* in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 500 sets)
Gapped					
250	± 3 % ≙ A	N 48	0,29	104	B65666–*0250–A048
315			0,22	132	B65666–*0315–A048
◥ 400			0,16	167	B65666–*0400–A048
630			0,1	263	B65666–*0630–A048
Ungapped					
3600	$^{+30}_{-20}$ % ≙ R	N 48		1500	B65666–A0000–R048
◥ 6500		N 30		2720	B65666–A0000–R030
◥ 14500	$^{+40}_{-30}$ % ≙ Y	T 38		6060	B65666–A0000–Y038

◥ to be preferred

Coil former B 65 667

Glass-fiber reinforced thermosetting plastic coil former with 4 terminal pins, flame-retardant in accordance with UL 94V-0. Permissible soldering temperature 400 °C/752 °F, 2 sec (also refer to page 85, para. 8.2). For winding details refer to page 66.





Hole arrangement
View in mounting direction

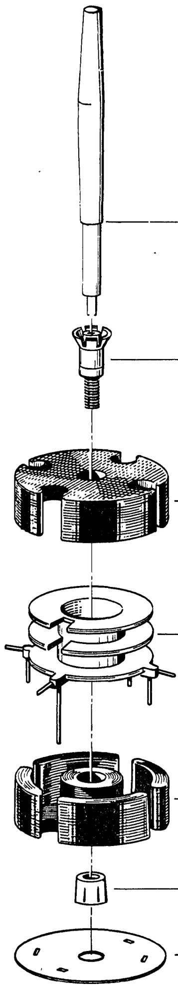
Dimensions in mm

Number of sections	Useful winding cross section A_N of one section mm²	total mm²	Average length of turn l_N mm	A_R [1] value μΩ	Approx. weight g	**Ordering code** (PU: 500)
1	23	23	44.6	66.7	0.92	B65667–B1001–D001
2	10.7	21.4		71.6	0.94	B65667–B1001–D002

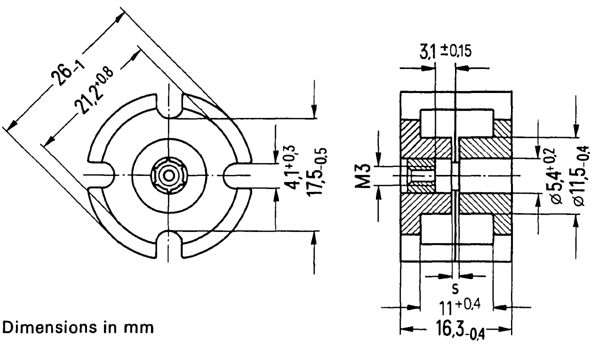
For adjusting devices and adjustment curves refer to page 192 . . . 194.

[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns^2)

Type for PC mounting



Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	339, fig. 3
Matching handle	B63399	341, fig. 6
Adjusting screw	B65679	203
Pot core	B65676	255
Coil former with 1 or 2 sections	B65677	256
Pot core	B65676	255
Threaded sleeve	B65679	203
Insulating washer	B65677	256



Dimensions in mm

Approx. weight 21 g/set

Magnetic characteristics

Core factor	$\Sigma l/A$ = 0.436	mm^{-1}
Effective length	l_e = 38.7	mm
Effective area	A_e = 88.8	mm^2
Effective volume	V_e = 3430	mm^3

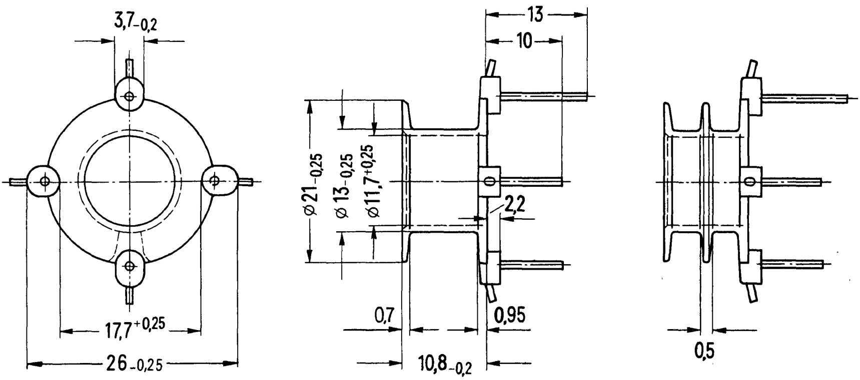
Pot cores	Ordering code
without threaded sleeve	B65676–**A**••••–••••
with threaded sleeve (fig.)	B65676–**N**••••–••••

A_L value nH	tolerance	SIFERRIT material	Total air gap *s* in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 200 sets)
Gapped					
315	± 3 % ≙ A	N 48	0,34	109	B65676–•0315–A048
400			0,24	139	B65676–•0400–A048
◥ 630			0,15	219	B65676–•0630–A048
800			0,11	278	B65676–•0800–A048
Ungapped					
4500	$^{+30}_{-20}$ % ≙ R	N 48		1560	B65676–A0000–R048
◥ 8000		N 30		2780	B65676–A0000–R030
◥ 18000	$^{+40}_{-30}$ % ≙ R	T 38		6240	B65676–A0000–Y038

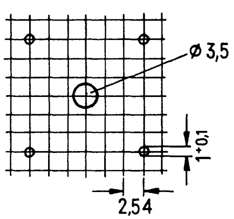
◥ to be preferred

Coil former B 65 677

Glass-fiber reinforced thermosetting plastic coil former with 4 terminal pins, flame-retardant in accordance with UL 94V-0. Permissible soldering temperature 400 °C/752 °F, 2 sec (also refer to page 85, para. 8.2). For winding details refer to page 66.

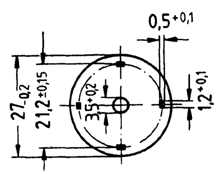


Hole arrangement
View in mounting direction



Dimensions in mm

0.2 mm thick insulating Makrofol washer for double-clad PCBs



Ordering code B65677–A2005–X000

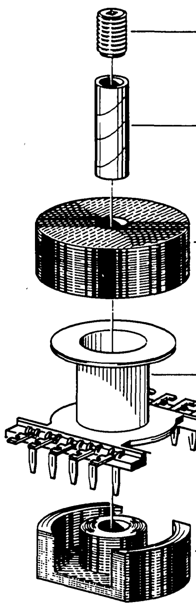
Number of sections	Useful winding cross section A_N of one section mm²	total mm²	Average length of turn l_N mm	A_R value[1] µΩ	Approx. weight g	**Ordering code** (PU: 200)
1	28	28	53	65	1.24	B65677–B1001–D001
2	13.2	26.4		69	1.26	B65677–B1001–D002

For adjusting devices and adjustment curves refer to pages 203, 204.

[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

Touch-Tone Pot Cores

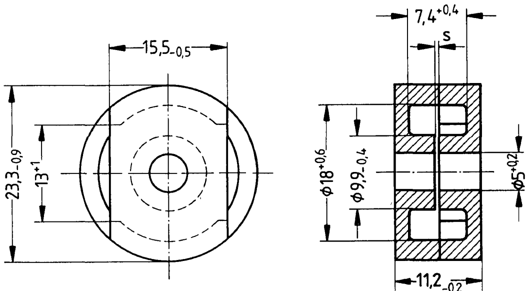
Type e.g. for use in telephone systems (push-button dialing)



Individual parts	Part No.	Page
Screw core	B63310	261
Sleeve	B65717	261
Pot core	B65716-P	260
Coil former, 1 section, with 10 pin terminals	B65717	261
Pot core	B65716-P	260

e.g. for use in telephone systems (push-button dialing)

Pot cores, suitable e.g. for application in push-button telephone sets. Because of the large slots in the lower part a higher number of connections can be brought out.



Dimensions in mm

Approx. weight 14 g/set

Magnetic characteristics

Core factor	$\Sigma l/A$ =	0.48 mm^{-1}
Effective length	l_e =	27 mm
Effective area	A_e =	56 mm^2
Effective volume	V_e =	1510 mm^3

A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 200 sets)
Gapped					
250	± 3 % ≙ A	N 48	0,33	95	B65716-P0250-A048
400	± 3 % ≙ A	N 48	0,18	153	B65716-P0400-A048
1000	± 5 % ≙ J	N 27	0,06	382	B65716-P1000-J027
Ungapped					
4000	$^{+30}_{-20}$ % ≙ R	N 27		1530	B65716-P0000-R027
7200	$^{+30}_{-20}$ % ≙ R	N 30		2750	B65716-P0000-R030

Adjustment ranges

Material	A_L value nH	Screw core	Sleeve	Adjustment range
N 48	250 400	B63310-A4021-X022	B65717-Z3002-X000	approx. 18 ... 22 % approx. 11 ... 13 %

Accessories

Glass-fiber reinforced polyamide **coil former** (figure 1) with 10 terminal pins.
Permissible soldering temperature 280 °C/536 °F, 1 sec.
For winding details refer to page 67.
Polyester-paper **sleeve** (figure 2), which is glued into the pot core hole.
SIFERRIT N 22 **screw core** (figure 3), which cuts its own guiding thread into the cams of the sleeve.

Figure 1

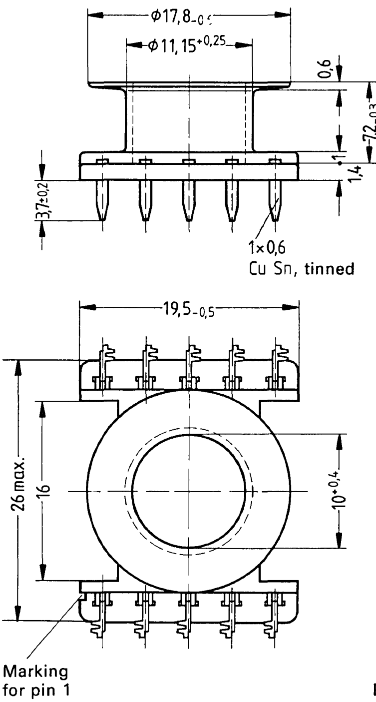
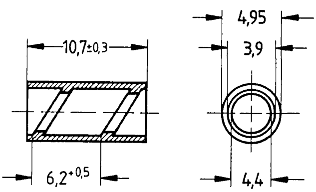
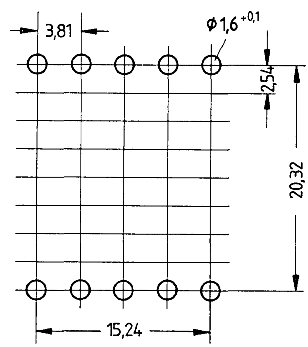


Figure 2

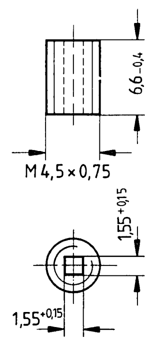




Hole arrangement
View in mounting direction

Built-in dimensions for the transformer (basic area x height): 26 x 19.5 x 11.2

Figure 3



Dimensions in mm

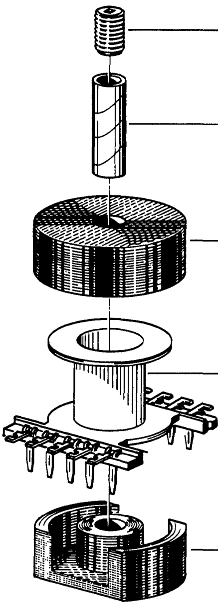
Coil former

Number of sections	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1] µΩ	Approx. weight g	**Ordering code** (PU: 200)
1	14	44.8	110	1.0	B65717-J1010-R001
Sleeve				0.1	B65717-Z3002-X000
Screw core				0.6	B63310-A4021-X022

[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

Touch-Tone Pot Cores 23/15 x 18 B 65716–A

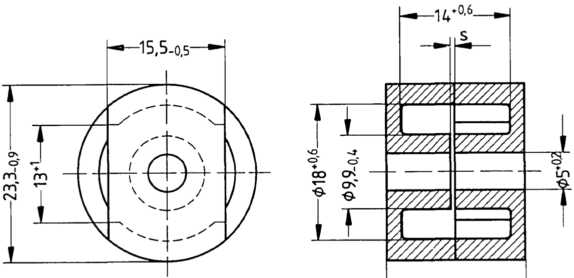
Type e.g. for use in telephone systems (push-button dialing)



Individual parts	Part No.	Page
Screw core	B63310	264
Sleeve	B65717	264
Pot core	B65716	263
Coil former, 1 section, with 10 pin terminals	B65717	264
Pot core	B65716	263

e.g. for use in telephone systems (push-button dialing)

Pot cores, suitable e.g. for application in push-button telephone sets. Because of the large slots in the lower part a higher number of connections can be brought out.



Dimensions in mm

Approx. weight 17 g/set

Magnetic characteristics

Core factor	$\Sigma l/A$ =	0.73 mm^{-1}
Effective length	l_e =	41 mm
Effective area	A_e =	56 mm^2
Effective volume	V_e =	2300 mm^3

A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 200 sets)
Gapped					
250 315 400	± 3 % ≙ A	N 48	0,32 0,24 0,17	145 183 232	B65716-A0250-A048 B65716-A0315-A048 B65716-A0400-A048
1000	±10%≙K	N 27	0,055	580	B65716-A1000-K027
Ungapped					
2500	$^{+30}_{-20}$%≙R	N 27		1450	B65716-A0000-R027
4800		N 30		2790	B65716-A0000-R030
6700		T 35		3890	B65716-A0000-R035

Adjustment ranges

Material	A_L value nH	Screw core	Sleeve	Adjustment range
N 48	250 315 400	B63310-A4020-X022	B65717-Z3001-X000	approx. 22 ... 25% approx. 18 ... 20% approx. 13 ... 15%

Accessories

Glass-fiber reinforced polyamide **coil former** (figure 1) with 10 terminal pins.
Permissible soldering temperature 280 °C/536 °F, 1 sec. For winding details refer to page 67.
Polyester-paper **sleeve** (figure 2), which is glued into the pot core hole.
SIFERRIT N 22 **screw core** (figure 3), which cuts its own guiding thread into the cams of the sleeve.

Figure 1

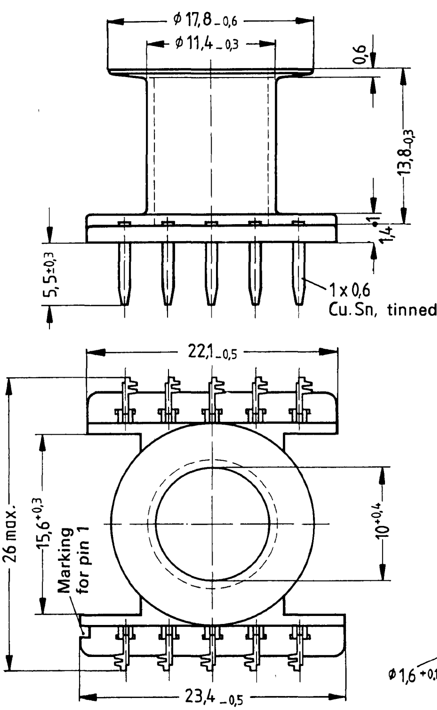
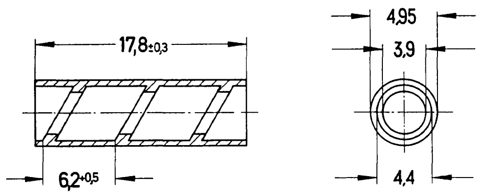


Figure 2



Built-in dimensions for the transformer (basic area x height):
26 x 19.5 x 18.4

Hole arrangement
View in mounting direction

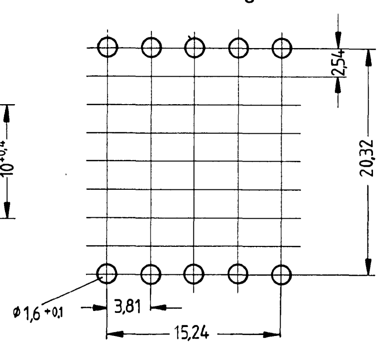
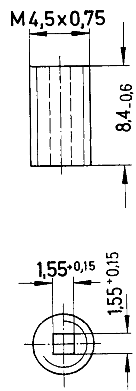


Figure 3



Dimensions in mm

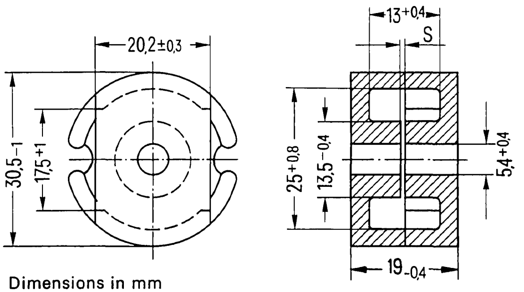
Coil former

Number of sections	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1] µΩ	Approx. weight g	**Ordering code** (PU: 200)
1	35.6	44.8	43.4	1.3	B65717-A1010-R001
Sleeve				0.2	B65717-Z3001-X000
Screw core				1.0	B63310-A4020-X022

[1] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

e.g. for use in telephone systems (push-button dialing)

Pot cores, suitable e.g. for application in push-button telephone sets. Because of the large slots in the lower part, a higher number of terminals can be brought out.



Dimensions in mm

Approx. weight 30 g/set

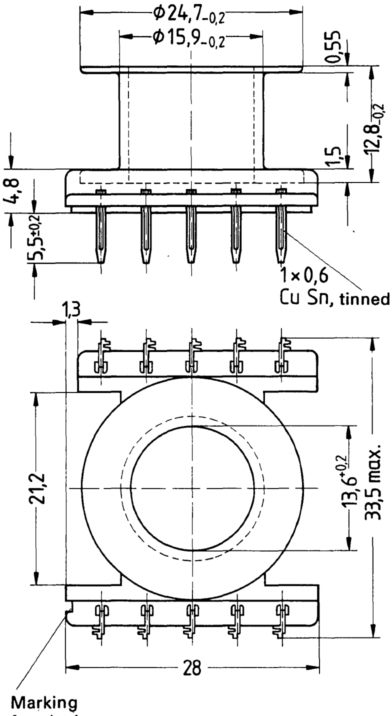
Magnetic characteristics

Core factor	$\Sigma\, l/A$ =	0.45 mm^{-1}
Effective length	l_e =	45 mm
Effective area	A_e =	100 mm^2
Effective volume	V_e =	4500 mm^3

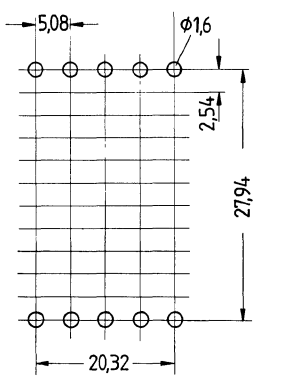
A_L value nH	tolerance	SIFERRIT material	Total air gap *s* in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 200 sets)
Gapped					
630	± 3% ≙ A	N 27	0,24	225	B65730-A0630-A027
1000	± 5% ≙ J	N 27	0,12	358	B65730-A1000-J027
Ungapped					
4700	$^{+30}_{-20}$% ≙ R	N 27		1680	B65730-A0000-R027

Coil former B 65731

Glass-fiber reinforced polyamide **coil former** with 10 terminal pins.
Permissible soldering temperature 280 °C/536 °F, 1 sec.
For winding details refer to page 67.
For **adjusting devices** (screws and threaded sleeve) refer to pot cores 30 x 19 (page 213).



Hole arrangement
View in mounting direction

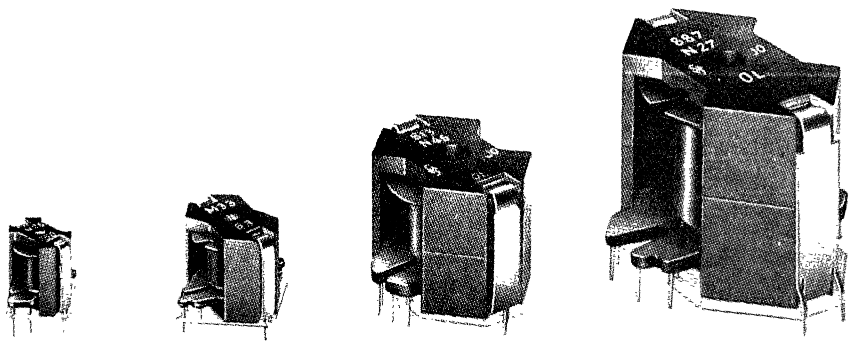


Dimensions in mm

Number of sections	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1] μΩ	Approx. weight g	**Ordering code** (PU: 200)
1	48	60	43	2.0	B65731-A1010-R001

[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

RM Cores



RM cores for inductors and transformers, general

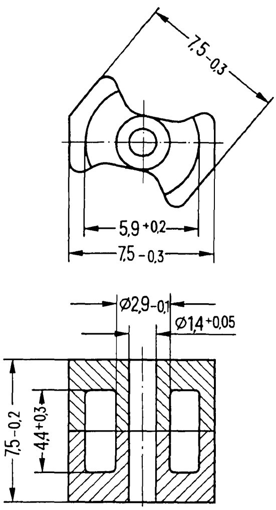
The demand for coil formers with directly attached terminal pins for the windings gave rise to the development of compact RM cores. Compared with round pot cores, the pins at the coil former require larger openings in the cores, thus ensuring an efficient winding method.

During assembly, RM cores – in addition to being well glued as recommended – are held together by means of clamps which engage in recesses in the base. The dimensions of the RM cores are matched to the hole arrangement of the printed circuit. RM 6 means, for example, that the core with coil former fills a square basic area of 6 x 6 modules = 15 x 15 mm^2. The sizes which are mainly used, RM 4 to RM 14, are specified in IEC publication 431/431 A, DIN 41980, and the coil formers in DIN 41981.

Survey

Type of core	Mounting volume basic area x height (approx.) mm	Drawing number	Type No.	Page
RM 3	$7{,}5^2 \times 7{,}5$	2 x C61035–A34–C9	B65817	271
RM 4	$10^2 \times 10{,}5$	2 x C61035–A32–C1	B65803	273
RM 5	$12{,}5^2 \times 10{,}5$	2 x C61035–A31–C8	B65805	280
RM 6	$15^2 \times 12{,}5$	2 x C61035–A26–C44 2 x C61035–A26–C57[1)]	B65807	291
R 6	$15^2 \times 12{,}5$	2 x C61035–A43–C1	B65809	303
RM 7	$17{,}5^2 \times 13{,}5$	2 x C61035–A60–C1	B65819	310
RM 8	$20^2 \times 16{,}5$	2 x C61035–A28–C21 2 x C61035–A28–C20[1)]	B65811	317
RM 10	$25^2 \times 19$	2 x C61035–A50–C1 2 x C61035–A50–C8[1)]	B65813	325
RM 12	$30^2 \times 23{,}6$	2 x C61035–A62–C5[1)]	B65815	331
RM 14	$35^2 \times 29$	2 x C61035–A44–C1	B65887	335
Adjusting tools			B63399	339

[1)] Without center hole



Dimensions in mm

Magnetic characteristics

Core factor	$\Sigma\, l/A$ =	2.1 mm^{-1}
Effective length	l_e =	13.8 mm
Effective area	A_e =	6.5 mm^2
Effective volume	V_e =	90 mm^3

Approx. weight 0.5 g/set

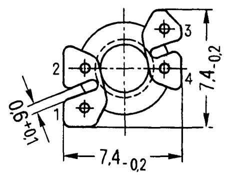
Accessory: Coil former

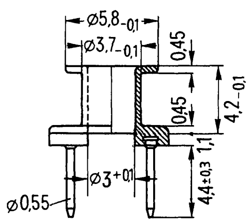
A_L value nH	tolerance	SIFERRIT material	Effective permeability μ_e	**Ordering code** (PU: 500 sets)
Ungapped				
50		K 1	84	B65817-K0000-Y001
700	$^{+40}_{-30}$ % ≙ Y	N 48	1170	B65817-K0000-Y048
◥ 1400		N 30	2340	B65817-K0000-Y030

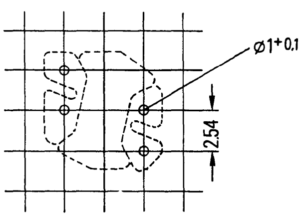
◥ to be preferred

Coil former B 65818

Glass-fiber reinforced polyterephthalate coil former with 4 terminal pins, flame-retardant in accordance with UL 94 V-0.
Permissible soldering temperature max. 400 °C/752 °F, 2 sec (also refer to page 85, para. 8.2).
For winding details refer to page 68.





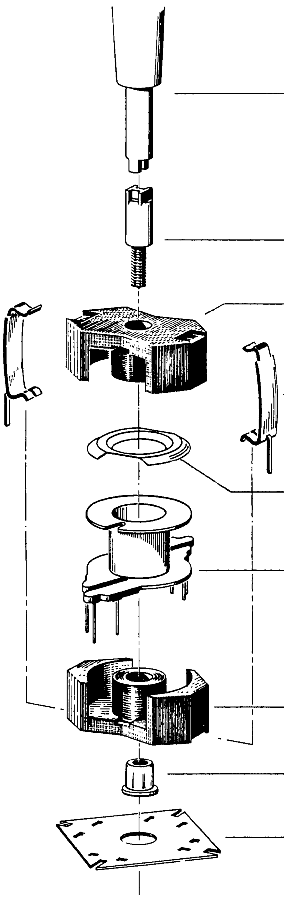


Hole arrangement
View in mounting direction

Dimensions in mm

Number of sections	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1] μΩ	Approx. weight g	**Ordering code** (PU: 500)
1	3.2	14.7	147	0.1	B65818-C1001-D001

[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

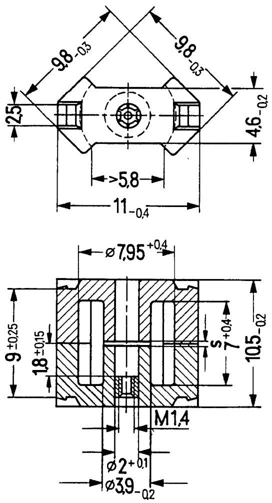


Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	340, fig. 4
Matching handle	B63399	341, fig. 6
Adjusting screw	B65539	276
Core	B65803	274
Clamps	B65806	275
Insulating washer for coil	B65804	275
Coil former with 1 or 2 sections, 5 or 6 pins	B65804	275
Core	B65803	274
Threaded sleeve	B65806	276
Insulating washer for double-clad PCBs	B65804	275

Additionally available:

Individual parts	Part No.	Page
Centering pin	B65806	276

RM 4 cores complying with DIN 41980 or IEC publication 431.



Dimensions in mm

Magnetic characteristics

Core factor	$\Sigma\, l/A$ =	1.9 mm^{-1}
Effective length	l_e =	21.0 mm
Effective area	A_e =	11.0 mm^2
Effective volume	V_e =	232.0 mm^3

Approx. weight 2 g/set

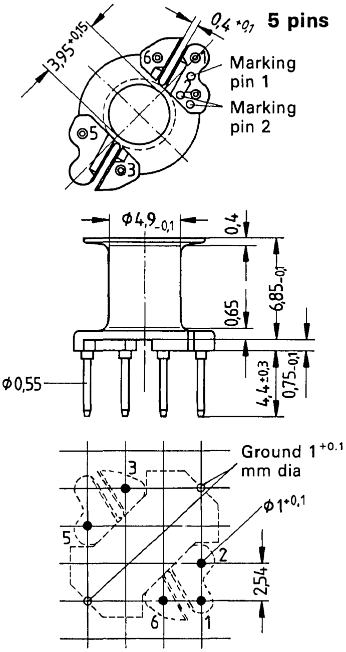
RM core	**Ordering code**
without threaded sleeve	B65803–**A**∗∗∗∗–∗∗∗∗
with threaded sleeve (fig.)	B65803–**N**∗∗∗∗–∗∗∗∗

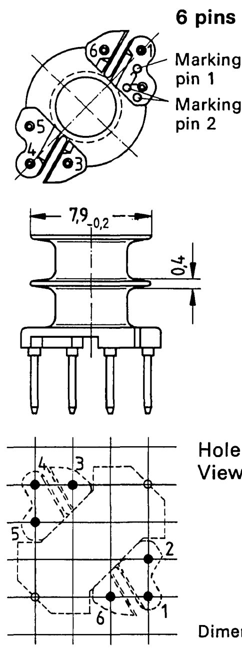
A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 500 sets)
Gapped					
◥ 16	± 3 % ≙ A	K 1	1,0	24,6	B65803–∗0016–A001
25	± 3 % ≙ A	K 1	0,40	38,4	B65803–∗0025–A001
◥ 40	± 3 % ≙ A	M 33	0,36	61,5	B65803–∗0040–A033
63	± 3 % ≙ A	M 33	0,18	97,0	B65803–∗0063–A033
63	± 3 % ≙ A	N 48	0,16	97,0	B65803–∗0063–A048
◥ 100	± 3 % ≙ A	N 48	0,10	154	B65803–∗0100–A048
160	± 3 % ≙ A	N 48	0,06	246	B65803–∗0160–A048
Ungapped					
50	$^{+30}_{-20}$ % ≙ R	K 1		76	B65803–A0000–R001
800	$^{+30}_{-20}$ % ≙ R	N 48		1210	B65803–A0000–R048
◥ 1700	$^{+30}_{-20}$ % ≙ R	N 30		2570	B65803–A0000–R030

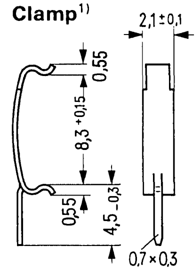
◥ to be preferred

Coil formers, insulating washers B65804, and clamps B65806

Glass-fiber reinforced thermosetting plastic **coil formers** with 5 or 6 terminal pins, complying with IEC publication 431 (DIN 41981), suitable for automatic winding machines, flame-retardant in accordance with UL 94 V-0. Permissible soldering temperature max. 400 °C/752 °F, 2 sec (also refer to page 85, para. 8.2). For winding details refer to page 68.
Spring steel **clamps** (tinned) with ground terminal.







Hole arrangement
View in mounting direction

Dimensions in mm

Coil former Number of sections	Useful winding cross section of one section mm^2	total mm^2	Average length of turn l_N mm	A_R value[2)] μΩ	Approx. weight g	Number of pins	**Ordering code** (PU: 500)
1	7.7	7.7	20	89	0.2	5	B65804–A1005–D001
						6	B65804–A1006–D001
2	3.65	7.3		94	0.23	5	B65804–A1005–D002
						6	B65804–A1006–D002
Clamp (approx. weight 0.1 g; ord. code for each clamp, 2 required)							B65806–B2001–X000
Insulating washer for double clad PCBs							B65804–B2005–X000
Insulating washer between core and coil							B65804–A5000–X000
Drawing details for the assembly of mounting devices							C61407–A3–A3

1) Pressure per clamp pair: 30 ... 45 N.

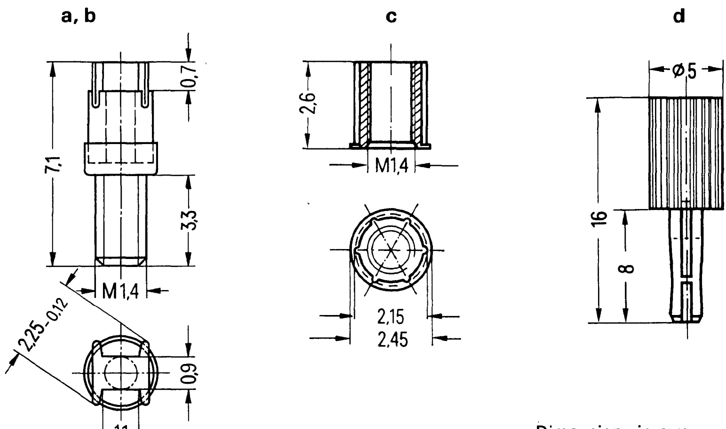
2) $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns^2)

Adjusting devices B 65 539, B 65 806

Adjusting screw (a, b) B65539–C1***–X*** consisting of a SIFERRIT or SIRUFER tube core on which a glass-fiber reinforced polyterephthalate thread is molded and 4 cam profiles, serving as core brake;

fits:

glass-fiber reinforced 11 polyamide **threaded sleeve** (c) B65806–K3002–X000, color code natural.
Centering pin (d) B65806–A2008–X000 as mounting aid for RM core centering.
Adjusting screw driver B63399–B0004–X000

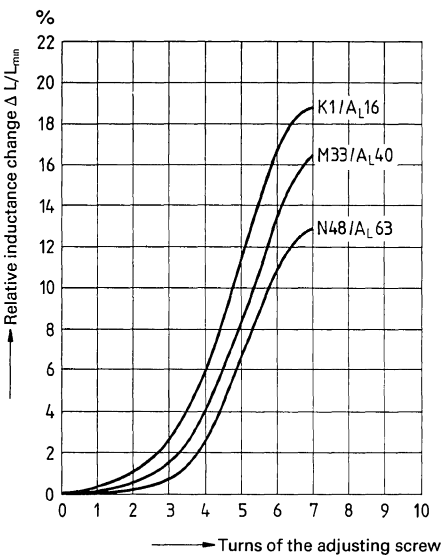


Dimensions in mm

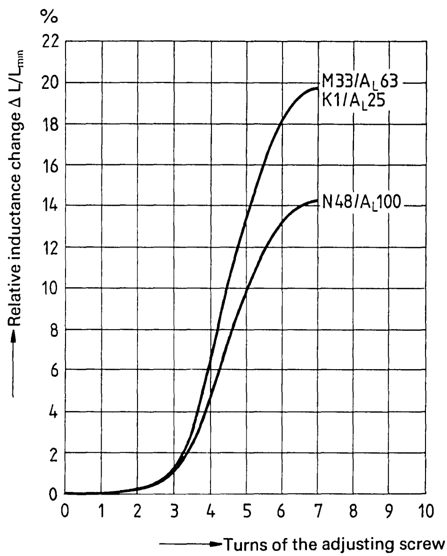
RM 4 core B65803		Adjusting screw				
Material	A_L value nH	Part	Tube core dia. x length	Tube core Material	Color code	**Ordering code** (PU: 500)
K 1	16			Si 1	black	B65539–C1003–X101
	25			K 1	yellow	B65539–C1003–X001
M 33	40			Si 1	black	B65539–C1003–X101
	63	a	1,81 x 2,0	K 1	yellow	B65539–C1003–X001
N 48	63			Si 1	black	B65539–C1003–X101
	100			K 1	yellow	B65539–C1003–X001
	160	b	1,81 x 2,7	N 22	red	B65539–C1002–X022

Inductance adjustment curves

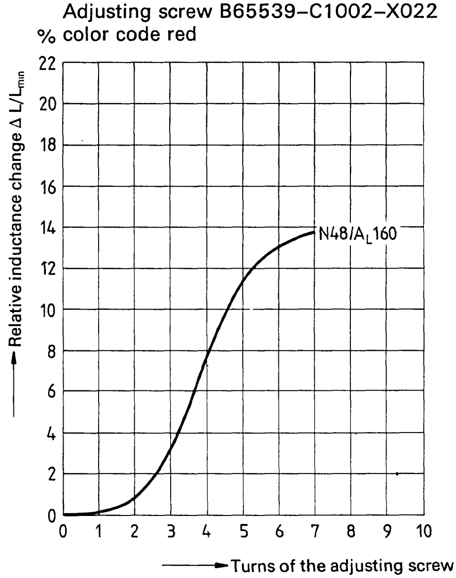
Adjusting screw B65539–C1003–X101
color code black



Adjusting screw B65539–C1003–X001
color code yellow



Adjusting screw B65539–C1002–X022
color code red



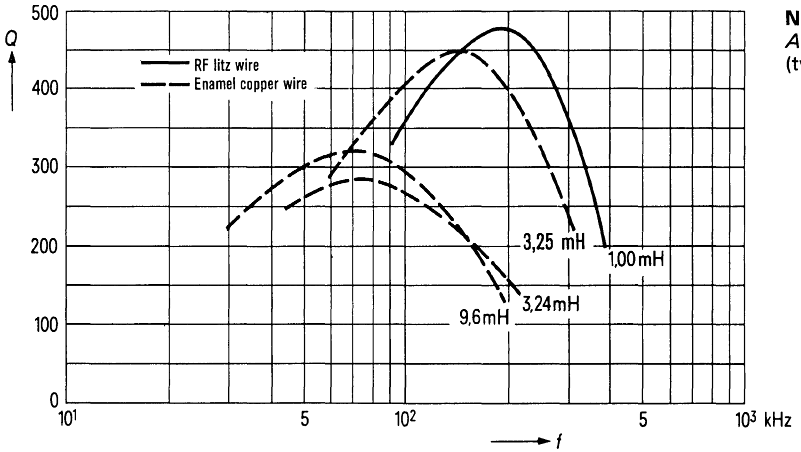
0 ≙ at least one turn engaged.

Q factor characteristics

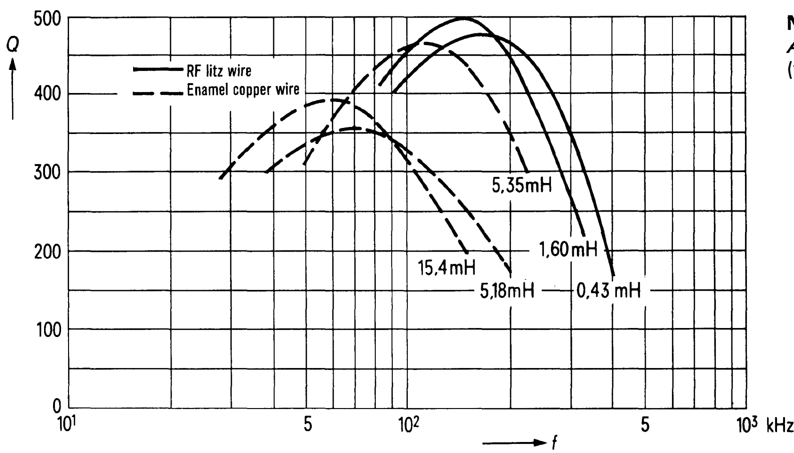
Material N 48

L (mH) for A_L = 100 nH	L (mH) for A_L = 160 nH	Turns	Wire; RF litz wire	Number of sections
–	0,43	52	45 x 0,04 CuLS	1
1,00	1,60	100	20 x 0,04 CuLS	1
3,24	5,18	180	0,18 CuL	1
9,6	15,4	310	0,14 CuL	1
3,25	5,35	183	10 x 0,05 CuL	1

Flux density in the core $\hat{B} < 1$ mT



N 48
A_L = 100 nH
(typical values)

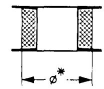


N 48
A_L = 160 nH
(typical values)

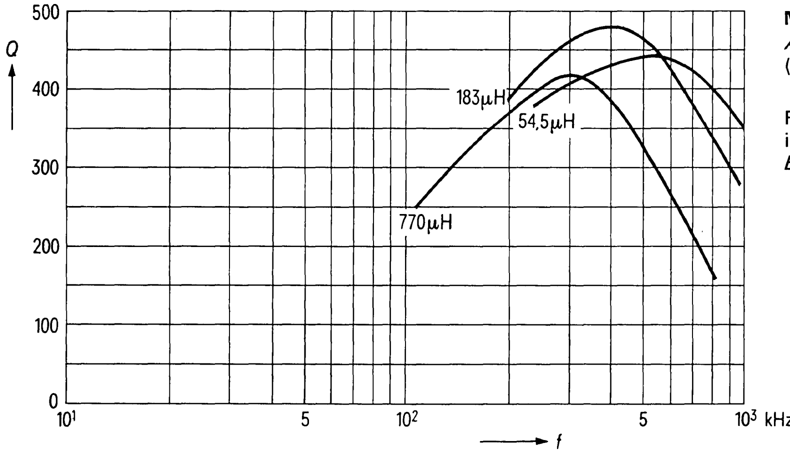
Q factor characteristics

Material M 33, K 1

	L (µH) for	Turns	Wire; RF litz wire	Number of sections	$\varnothing$* mm
M 33, A_L = 63 nH	770	100	20 x 0,04 CuL	1	–
	183	52	45 x 0,04 CuL	1	–
	54,5	29	90 x 0,04 CuL	1	–
K 1, A_L = 25 nH	5,20	14	45 x 0,04 CuLS	1	6,6
	2,65	10	0,5 CuL	1	6,6
	1,27	7	0,6 CuL	1	6,4

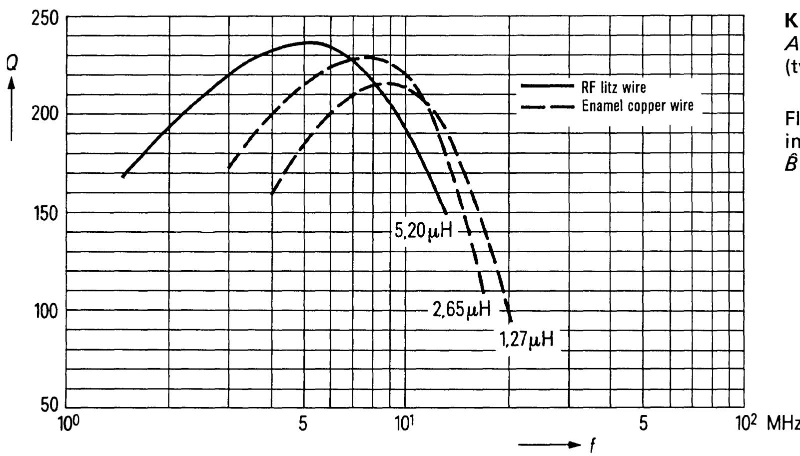


Pad of polystyrene tape up to the diameter*



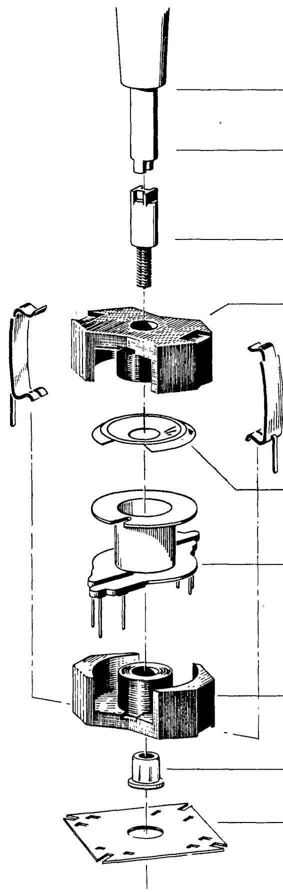
M 33
A_L = 63 nH
(typical values)

Flux density in the core
$\hat{B} < 1$ mT



K 1
A_L = 25 nH
(typical values)

Flux density in the core
$\hat{B} < 0.5$ mT

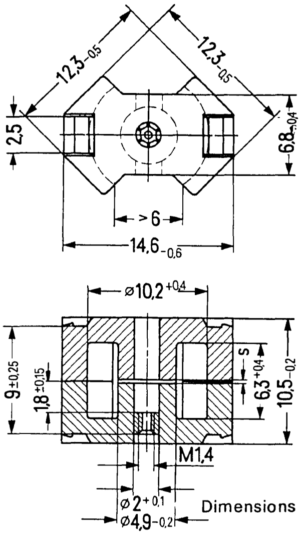


Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	340, fig. 4
Matching handle	B63399	341, fig. 6
Adjusting screw	B65539	284
Core	B65805	281
Clamps	B65806	282
Insulating washer for coil	B65806	282
Coil former with 1 or 2 sections, 4, 5, or 6 pins	B65806	282
Core	B65805	281
Threaded sleeve	B65806	284
Insulating washer for double clad PC boards	B65806	282

Additionally available:

Coil former with bent solder terminals (for litz wires)	B65806	283
Centering pin	B65806	284

RM 5 cores complying with DIN 41 980 or IEC publication 431



Dimensions in mm

Magnetic characteristics

Core factor	$\Sigma l/A$ =	1.0 mm^{-1}
Effective length	l_e =	20.8 mm
Effective area	A_e =	20.8 mm^2
Min. core cross section[1]	A_{min} =	15 mm^2
Effective volume	V_e =	430 mm^3

Approx. weight 3.1 g/set

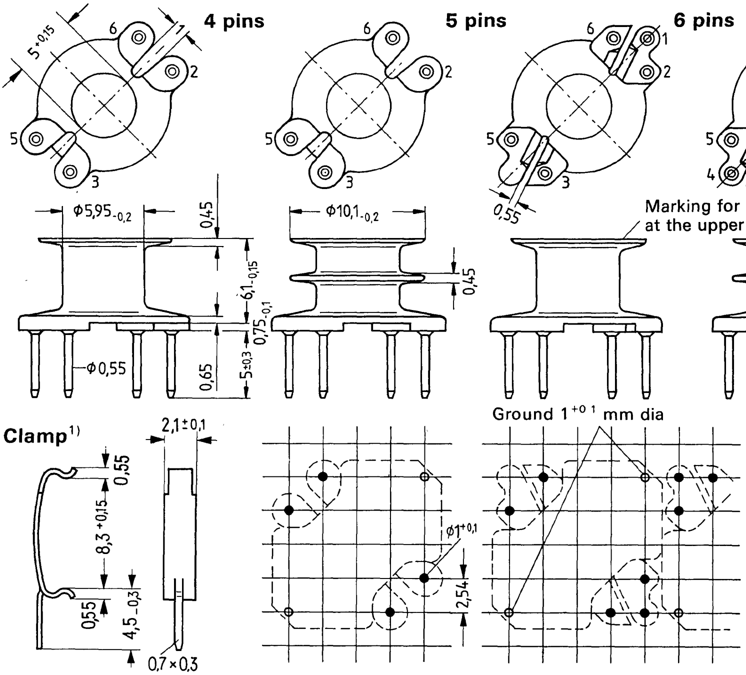
RM core	**Ordering code**
without threaded sleeve	B65805–**C******–****
with threaded sleeve (fig.)	B65805–**N******–****

A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 500 sets)
Gapped					
25	± 3 % ≙ A	K 1	1,0	20,3	B65805–*0025–A001
◥ 40			0,4	31,9	B65805–*0040–A001
63		M 33	0,4	50,2	B65805–*0063–A033
◥ 100			0,2	79,6	B65805–*0100–A033
125		N 58	0,15	100	B65805–*0125–A058
◥ 160			0,11	128	B65805–*0160–A058
200			0,08	159	B65805–*0200–A058
160		N 48	0,12	128	B65805–*0160–A048
◥ 200			0,09	159	B65805–*0200–A048
◥ 250			0,06	200	B65805–*0250–A048
315			0,03	255	B65805–*0315–A048
Ungapped					
100	$^{+30}_{-20}$ % ≙ R	K 1		80	B65805–C0000–R001
1400		N 47		1110	B65805–C0000–R047
1800		N 48		1430	B65805–C0000–R048
◥ 2400		N 41		1910	B65805–C0000–R041
◥ 3200		N 30		2550	B65805–C0000–R030
4800		T 35		3820	B65805–C0000–R035
◥ 6000	$^{+40}_{-30}$ % ≙ Y	T 38		4770	B65805–C0000–Y038
6000	$^{+80}_{-0}$ % ≙ U	T 38		4770	B65805–C6000–U638

[1] Necessary for the calculation of the max. flux density
◥ to be preferred

Coil formers, insulating washers and clamps B 65806

Glass-fiber reinforced thermosetting plastic **coil formers** with 4, 5, or 6 terminal pins, complying with IEC publication 431 (DIN 41981), suitable for automatic winding machines, flame-retardant in accordance with UL 94 V-0. Permissible soldering temperature max. 400 °C/752 °F, 2 sec. (refer to page 85, para. 8.2.). For winding details refer to page 68.
Spring steel **clamps** (tinned) with ground terminal.



Hole arrangement
View in mounting direction

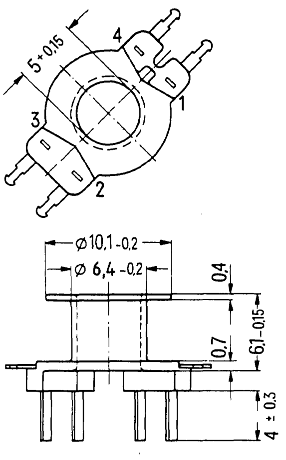
Dimensions in mm

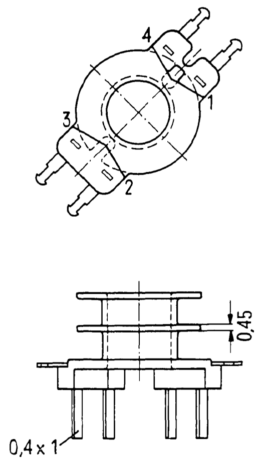
Coil former Number of sections	Useful winding cross section A_N of one section mm²	Useful winding cross section A_N total mm²	Average length of turn l_N mm	A_R value[2)] μΩ	Approx. weight g	Number of pins	**Ordering code** (PU: 500)
1	9.5	9.5	25	90	0.3	4	B65806-A1004-D001
						5	B65806-A1005-D001
						6	B65806-A1006-D001
2	4.35	8.7		94	0.4	4	B65806-A1004-D002
						5	B65806-A1005-D002
						6	B65806-A1006-D002
Clamp (approx. weight 0.1 g; ordering code for each clamp, two required)							B65806-B2001-X000
Insulating washer for double clad PCBs							B65806-B2005-X000
Insulating washer between core and coil							B65806-A5000-X000
Drawing details for the assembly of mounting devices							C61407-A3-A4

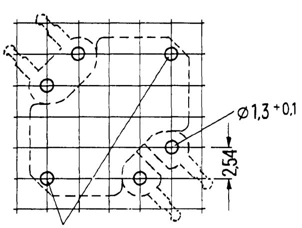
1) Pressure per clamp pair: 36 ... 45 N. 2) $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

Coil formers B 65 806–J

Glass-fiber reinforced polyterephthalate **coil formers** with special solder terminals for litz wires, flame-retardant in accordance with UL 94 V-0. Permissible soldering temperature max. 400 °C/752 °F, 2 sec (also refer to page 85, para. 8.2). For winding details refer to page 68.







Hole arrangement
View in mounting direction

Ground $1^{+0.1}$ mm dia

Dimensions in mm

Number of sections	Useful winding cross section A_N of one section mm²	Useful winding cross section A_N total mm²	Average length of turn l_N mm	A_R value[1] µΩ	Approx. weight g	Number of pins	**Ordering code** (PU: 500)
1	9.5	9.5	25	90	0.4	4	B65806–J1003–T001
2	4.35	8.7		99	0.5	4	B65806–J1003–T002

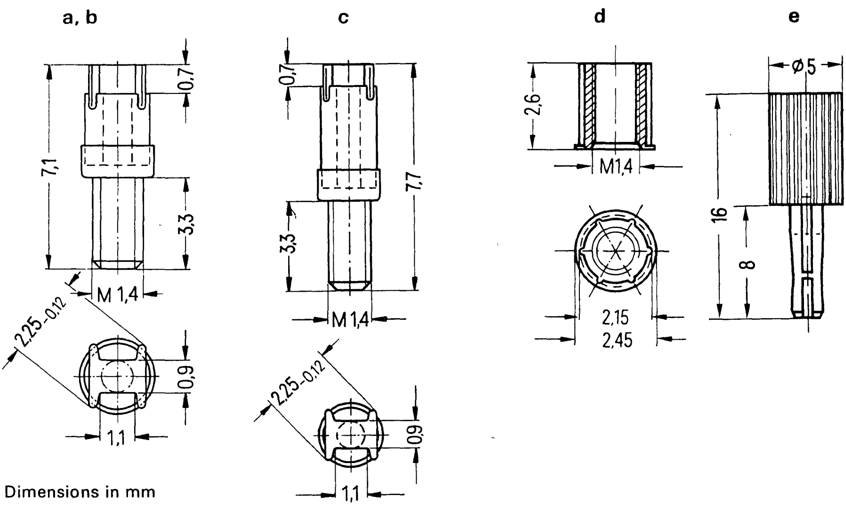
[1] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²).

Adjusting devices B 65 539, B 65 806

Adjusting screws (a, b) B65539–C1∗∗∗–X∗∗∗ and (c) B65806–C3001–X022 consisting of a SIFERRIT or SIRUFER tube core on which a glass-fiber reinforced polyterephthalate thread is molded and 4 cam profiles, serving as core brake;

fits:

Glass-fiber reinforced 11 polyamide **threaded sleeve** (d) B65806–K3002–X000, color code natural.
Centering pin (e) B65806–A2008–X000 as mounting aid for RM core centering
Adjusting screw driver B63399–B0004–X000

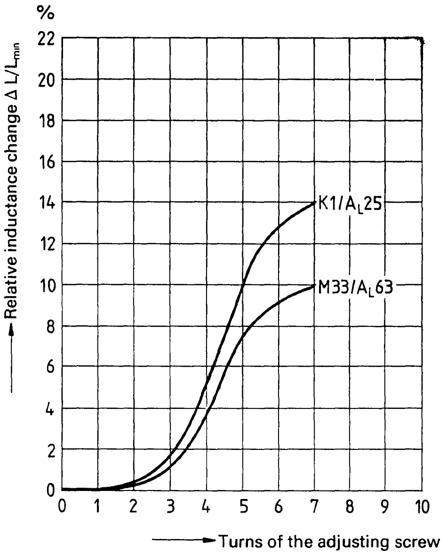


Dimensions in mm

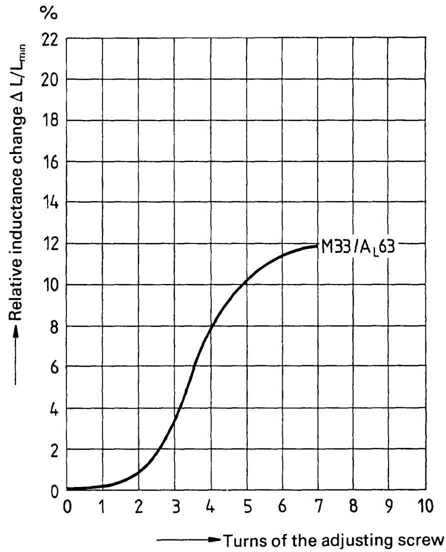
RM 5 core B65805		Adjusting screw				
Material	A_L value nH	Part	Tube core dia x length	Tube core Material	Color code	**Ordering code** (PU: 500)
K 1	25	a	1,81 x 2,0	Si 1	black	B65539–C1003–X101
	40			K 1	yellow	B65539–C1003–X001
M 33	63	b	1,81 x 2,7	Si 1	white	B65539–C1002–X101
	100	a	1,81 x 2,0	K 1	yellow	B65539–C1003–X001
N 58	125					
	160	b	1,81 x 2,7	K 1	grey	B65539–C1002–X001
	200			N 22	red	B65539–C1002–X022
N 48	160					
	200					
	250 315	c	1,85 x 3,4		green	B65806–C3001–X022

Inductance adjustment curves

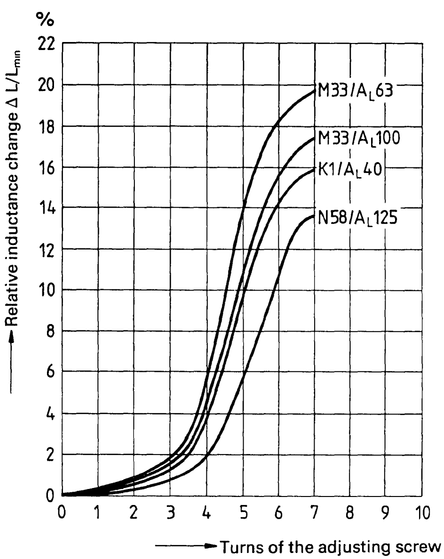
Adjusting screw B65539-C1003-X101
color code black



Adjusting screw B65539-C1002-X101
color code white



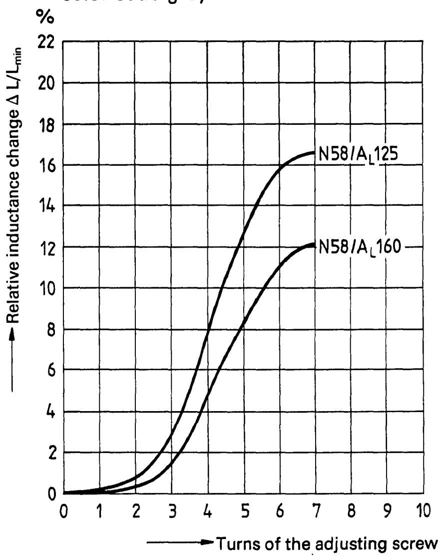
Adjusting screw B65539-C1003-X001
color code yellow



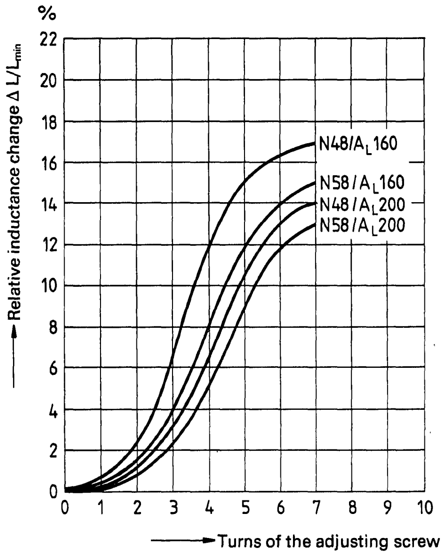
0 ≙ at least one turn engaged.

Inductance adjustment curves

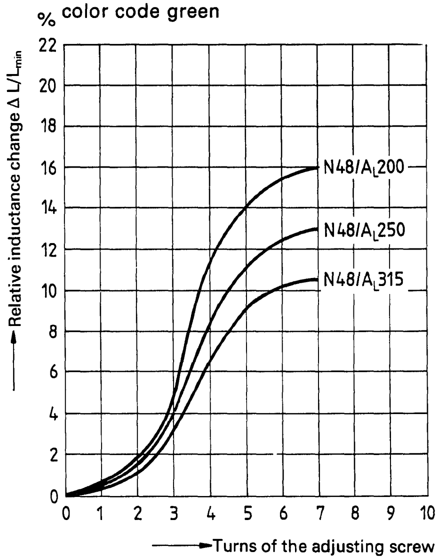
Adjusting screw B65539-C1002-X001
color code grey



Adjusting screw B65539-C1002-X022
color code red



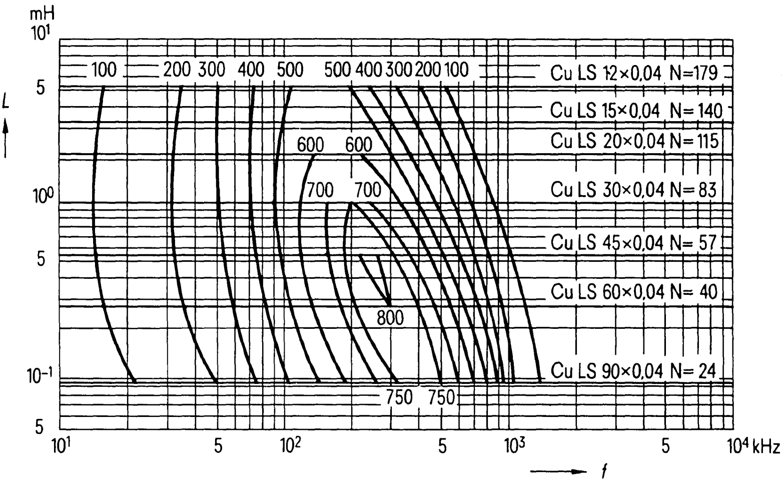
Adjusting screw B65806-C3001-X022
color code green



0 ≙ at least one turn engaged.

ISO-Q curves
Material N 58

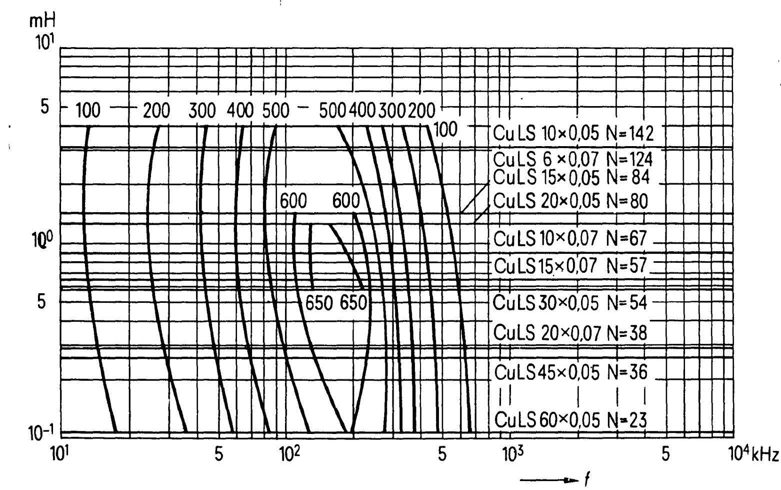
1-section winding with RF litz wire
Flux density in the core $\hat{B} < 1$ mT



N 58
A_L = 160 nH

ISO-Q curves
Material N 48

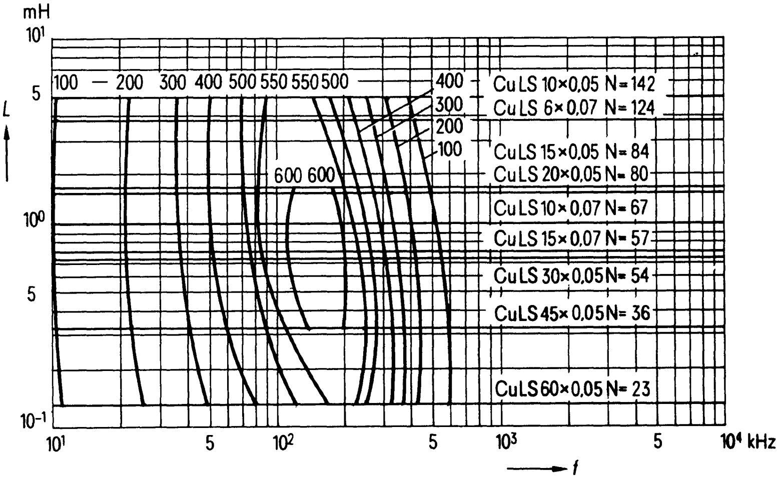
1-section winding with RF litz wire
Flux density in the core $\hat{B} < 1$ mT



N 48
A_L = 200 nH

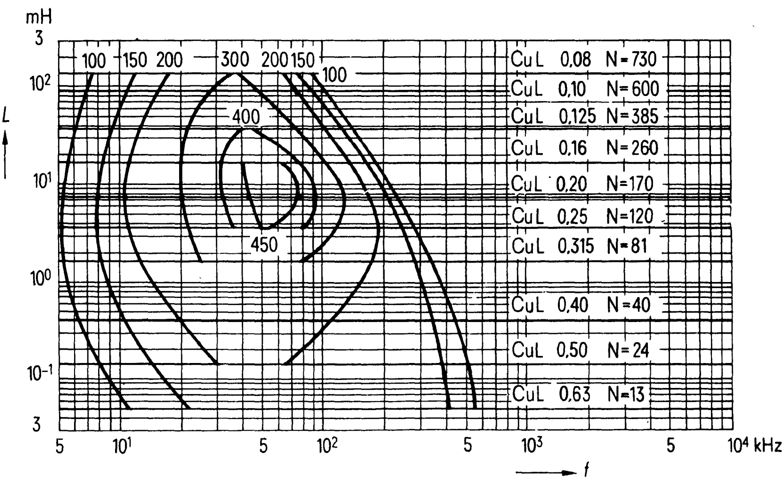
ISO-Q curves
Material N 48

1-section winding with litz wire
Flux density in the core $\hat{B} < 1$ mT



N 48
A_L = 250 nH

1-section winding with enamel copper wire
Flux density in the core $\hat{B} < 1$ mT

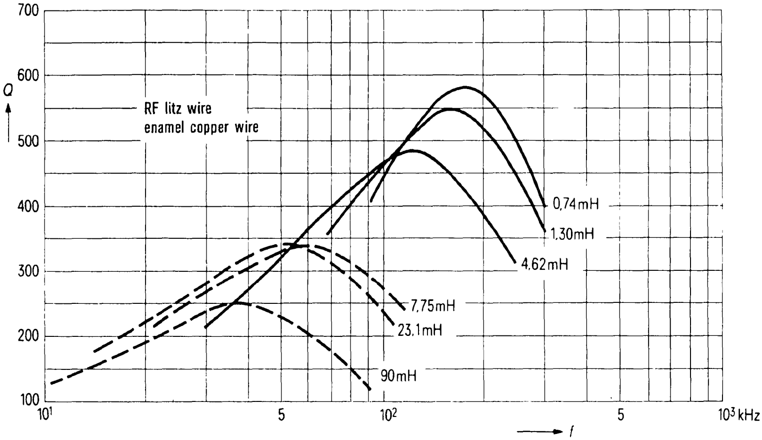


N 48
A_L = 250 nH

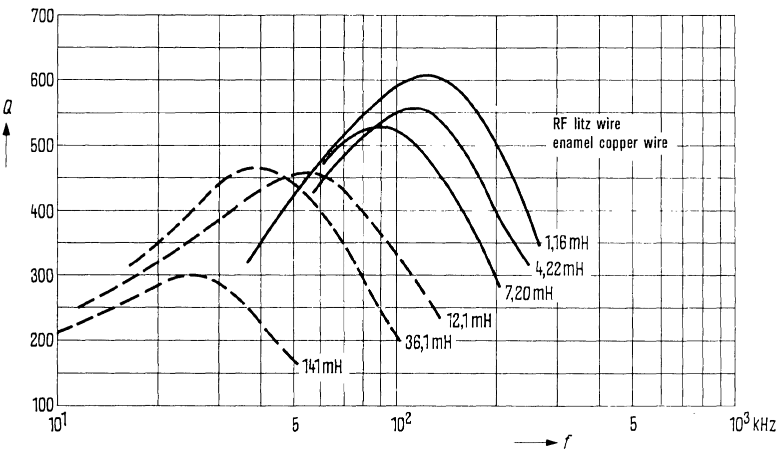
Q factor characteristics
Material N 48

L (mH) for A_L = 160 nH	*L* (mH) for A_L = 250 nH	Turns	Wire; RF litz wire	Number of sections
90	141	750	0,1 CuL	1
23,1	36,1	380	0,14 CuL	1
7,75	12,1	220	0,18 CuL	1
4,62	7,20	170	10 x 0,05 CuLS	1
–	4,22	130	20 x 0,04 CuLS	1
1,30	–	90	30 x 0,04 CuLS	1
0,74	1,16	68	45 x 0,04 CuLS	1

Flux density in the core $\hat{B} < 2$ mT



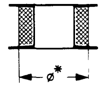
N 48
A_L = 160 nH
(typical values)



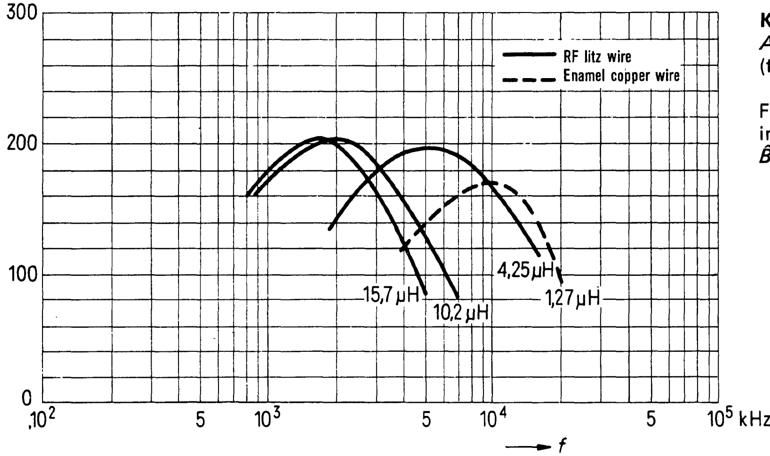
N 48
A_L = 250 nH
(typical values)

Q factor characteristics
Material K 1

L (µH) for A_L = 25 nH	A_L = 40 nH	Turns	Wire; litz wire	∅* mm
1,27	1,96	7	0,6 CuL	8,5
4,25	6,75	13	30 x 0,04 CuLS	9,0
15,7	25,0	25	30 x 0,04 CuLS	8,4
10,2	16,0	20	45 x 0,04 CuLS	8,2

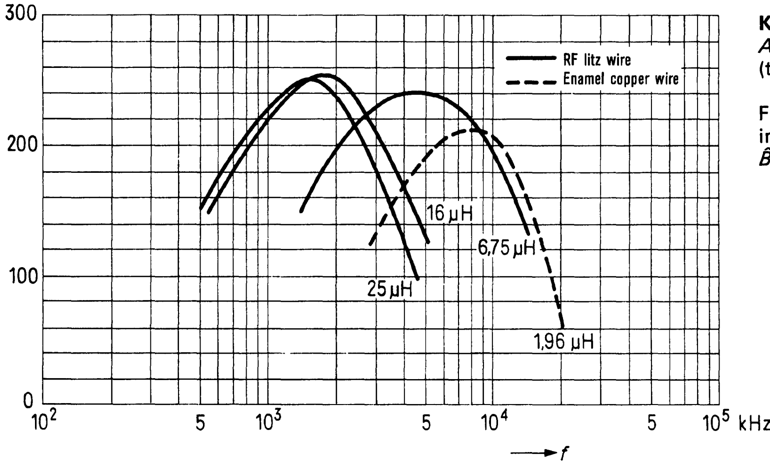


* Pad of polystyrene tape up to the diameter* (valid for 1 section)



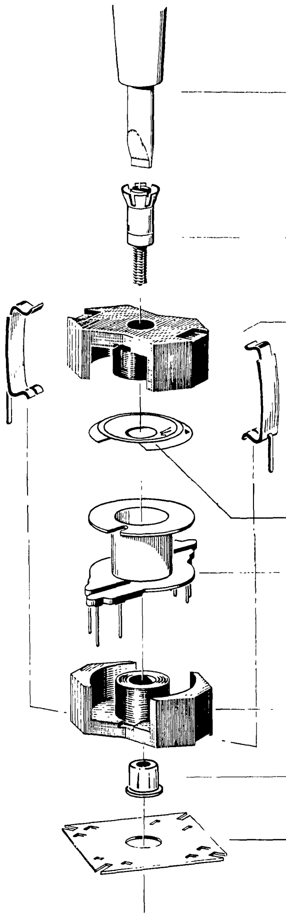
K 1
A_L = 25 nH
(typical values)

Flux density in the core
$\hat{B}$ < 0.5 mT



K 1
A_L = 40 nH
(typical values)

Flux density in the core
$\hat{B}$ < 0.6 mT

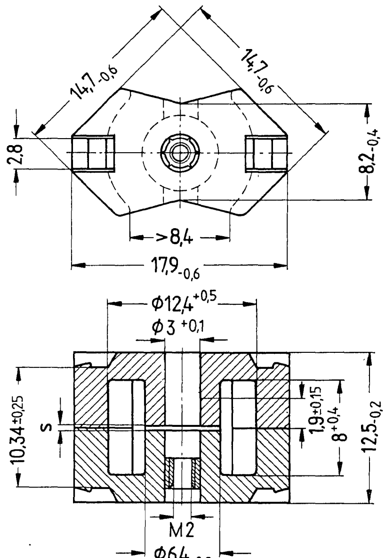


Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	340, fig. 4
Matching handle	B63399	341, fig. 6
Adjusting screw	B65659	296
Core	B65807	292
Clamps	B65808	293
Insulation washer for coil	B65808	293
Coil formers with 1 or 2 sections, 4, 5, or 6 pins	B65808	293
Core	B65807	292
Threaded sleeve	B65808	296
Insulating washer for double clad PC boards	B65808	293

Additionally available:

Coil former with bent solder terminals (for litz wires)	B65808	294
Coil former for power transformers (in preparation)	B65808	295
Centering pin	B65808	296

RM-6 cores complying with DIN 41 980 or IEC publication 431.
RM-6 cores are also available without center hole for use in transformers.



Dimensions in mm

Magnetic characteristics

	with center hole	without center hole	
Core factor $\Sigma\, l/A$ =	0.86	0.78	mm^{-1}
Effective length l_e =	26.9	28.6	mm
Effective area A_e =	31.3	36.6	mm^2
Min. core cross section[1] A_{min} =	–	31	mm^2
Effective volume V_e =	840	1050	mm^3
Approx. weight/set	4.7	5.1	g

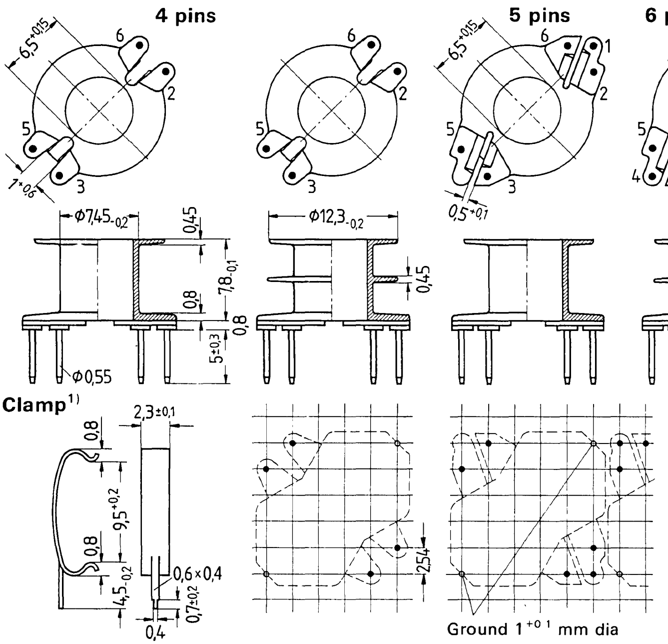
RM core	**Ordering code**
without threaded sleeve	B65807–C****–****
with threaded sleeve (fig.)	B65807–N****–****
without center hole	B65807–J****–****

A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 500 sets)
Gapped					
◥ 40	± 3 % ≙ A	K 1	0,80	27,4	B65807–*0040–A001
63		M 33	0,60	43,2	B65807–*0063–A033
100			0,38	68,5	B65807–*0100–A033
160		N 58	0,21	110	B65807–*0160–A058
◥ 200			0,16	137	B65807–*0200–A058
250			0,11	171	B65807–*0250–A058
160		N 48	0,22	110	B65807–*0160–A048
200			0,17	137	B65807–*0200–A048
◥ 250			0,12	171	B65807–*0250–A048
◥ 315			0,08	216	B65807–*0315–A048
◥ 400			0,05	274	B65807–*0400–A048
1000	± 10 % ≙ K		0,006	685	B65807–C1000–K048
Ungapped					
120	$^{+30}_{-20}$ % ≙ R	K 1		82	B65807–C0000–R001
1700		N 47		1160	B65807–C0000–R047
2000		N 48		1370	B65807–C0000–R048
3100 [2]		N 41		1920	B65807–J0000–R041
4300 [2]		N 30		2670	B65807–J0000–R030
6200 [2]		T 35		3850	B65807–J0000–R035
8600 [2]	$^{+40}_{-30}$ % ≙ Y	T 38		5340	B65807–J0000–Y038
8600 [2]	$^{+80}_{-0}$ % ≙ U	T 38		5340	B65807–J8600–U638

[1] Necessary for the calculation of the max. flux density [2] without center hole
◥ to be preferred

Coil formers, insulating washers, and clamps B 65 808

Glass-fiber reinforced thermosetting plastic **coil formers** with 4, 5, or 6 terminal pins, complying with IEC publication 431 (DIN 41 981), suitable for automatic winding machines, flame-retardant in accordance with UL 94 V-0. Permissible soldering temperature max. 400 °C/752 °F, 2 sec (also refer to page 85, para. 8.2). For winding details refer to page 68.
Spring steel **clamps** (tinned) with ground terminal.



Hole arrangement
View in mounting direction

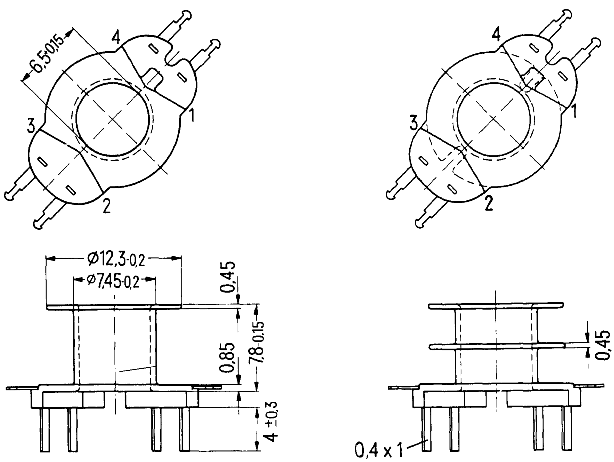
Dimensions in mm

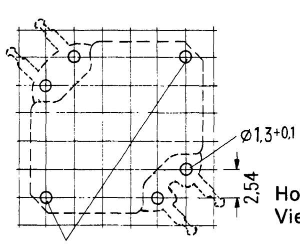
Coil former Number of sections	Useful winding cross section A_N of one section mm²	total mm²	Average length of turn l_N mm	A_R value[2] μΩ	Approx. weight g	Number of pins	**Ordering code** (PU: 500)
1	15	15	30	69	0,4	4	B65808-A1004-D001
						5	B65808-A1005-D001
						6	B65808-A1006-D001
2	7	14		73	0,6	4	B65808-A1004-D002
						5	B65808-A1005-D002
						6	B65808-A1006-D002
Clamp (approx. weight 0.12 g; ordering code for each clamp, two required)							B65808-C2002-X000
Insulating washer for double clad PCBs							B65808-B2005-X000
Insulating washer between core and coil							B65808-A5000-X000
Drawing details for the assembly of mounting devices							C61407-A3-A2

1) Pressure per clamp pair: 45 ... 60 N. 2) $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

Coil formers B 65 808–J***

Glass-fiber reinforced polyterephthalate **coil formers** with special solder terminals for litz wires, flame-retardant in accordance with UL 94 V-0. Permissible soldering temperature max. 400 °C/ 752 °F, 2 sec (refer to page 85, para. 8.2).
For winding details refer to page 68.





Hole arrangement
View in mounting direction

Ground $1^{+0.1}$ dia

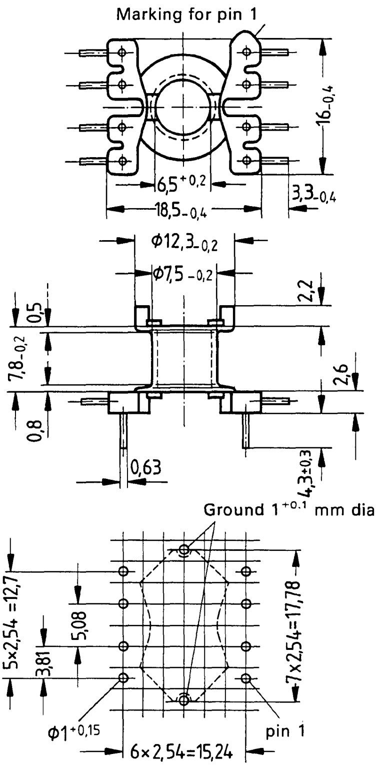
Dimensions in mm

Number of sections	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value¹⁾ µΩ	Approx. weight g	Number of pins	**Ordering code** (PU: 500)
1	15	30	69	0.5	4	B65808–J1003–T001
2	14		73	0.65	4	B65808–J1003–T002

¹⁾ $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

Coil former for power transformers B 65 808 (in preparation)

Glass-fiber reinforced polyterephthalate **coil former** with 8 terminal pins, flame-retardant in accordance with UL 94 V-0. Permissible soldering temperature max. 400 °C/752 °F, 2 sec (also refer to page 85, para. 8.2).
For winding details refer to page 68.



Hole arrangement
View in mounting direction
(Intermediate spacing
should be considered!)

Dimensions in mm

Number of sections	Useful winding cross section A_N of one section mm²	total mm²	Average length of turn l_N mm	A_R value[1] μΩ	Approx. weight g	Number of pins	**Ordering code** (PU: 200)
1	15	15	30	6	2	8	B65808–A1508–T001

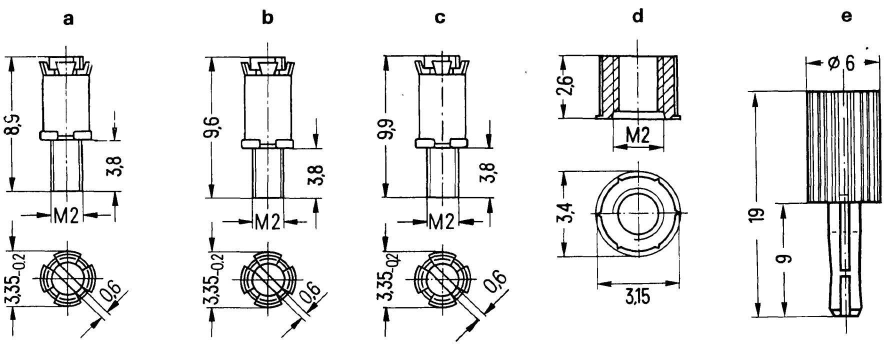
[1] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

Adjusting devices B 65659

Adjusting screw (a, b, c) B65659–E0***–X***, consisting of a SIFERRIT tube core on which a glass-fiber reinforced polyterephthalate thread is molded and a spring crown serving as core brake;

fits:

glass-fiber reinforced 11 polyamide **threaded sleeve** (d) B65808–L3002–X000
Centering pin (e) B65808–A2008–X000 as mounting aid for RM core centering.
Adjusting screw driver B63399–B0004–X000

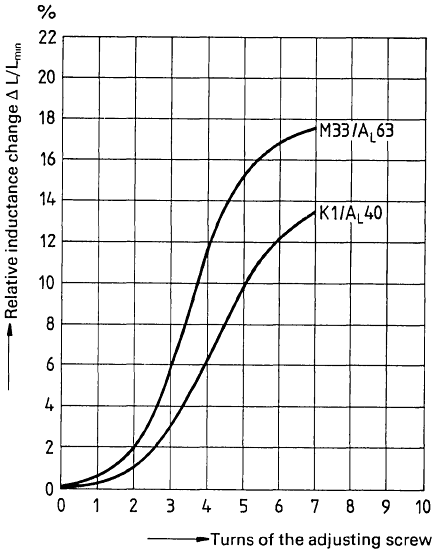


Dimensions in mm

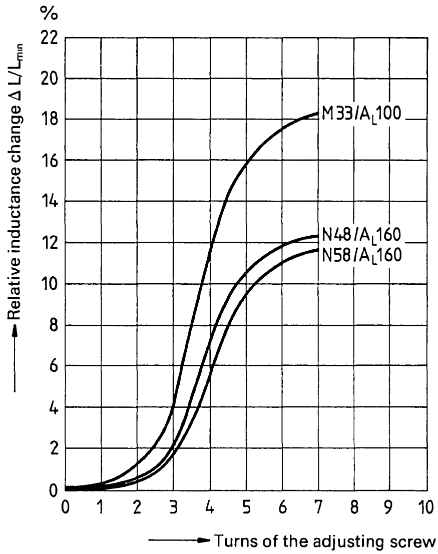
RM-6 core B65807		Adjusting screw				
Material	A_L value nH	Part	Tube core dia x length	Tube core Material	Color code	**Ordering code** (PU: 500)
K 1	40	a	2,6 x 3,7	Si 1	white	B65659–E0001–X101
M 33	63					
	100	c	2,82 x 4,4		brown	B65659–E0004–X101
N 48, N 58	160	a	2,6 x 3,7	K 1	green	B65659–E0001–X001
N 58	200			N 22	red	B65659–E0001–X023
	250	b	2,75 x 4,4		black	B65659–E0003–X023
N 48	200 250	a	2,6 x 3,7		red	B65659–E0001–X023
	315	b	2,75 x 4,4		black	B65659–E0003–X023
	400	c	2,82 x 4,4		yellow	B65659–E0004–X023

Inductance adjustment curves

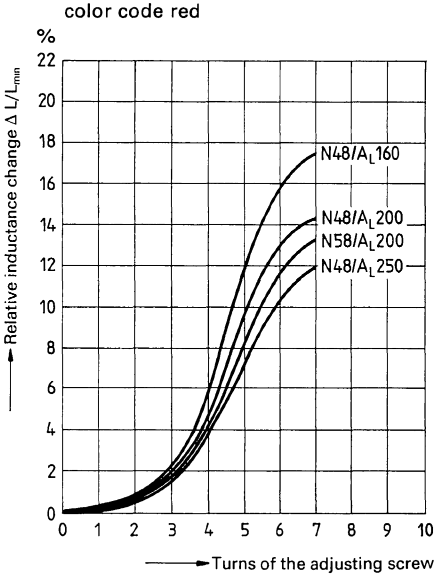
Adjusting screw B65659-E0001-X101
color code white



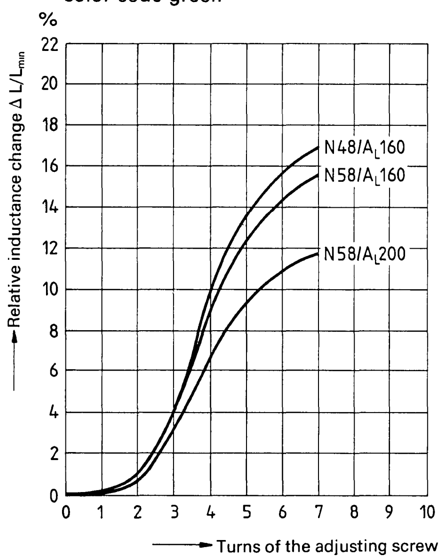
Adjusting screw B65659-E0004-X101
color code brown



Adjusting screw B65659-E0001-X023
color code red



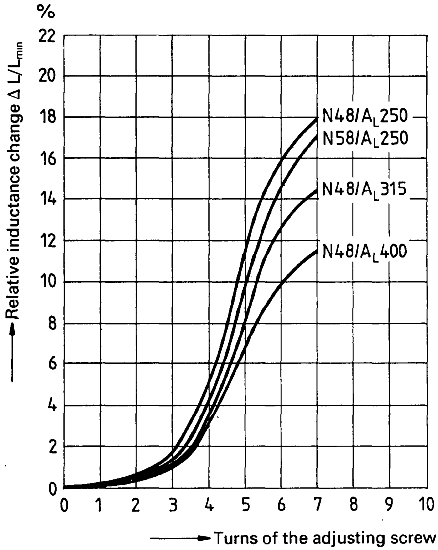
Adjusting screw B65659-E0001-X001
color code green



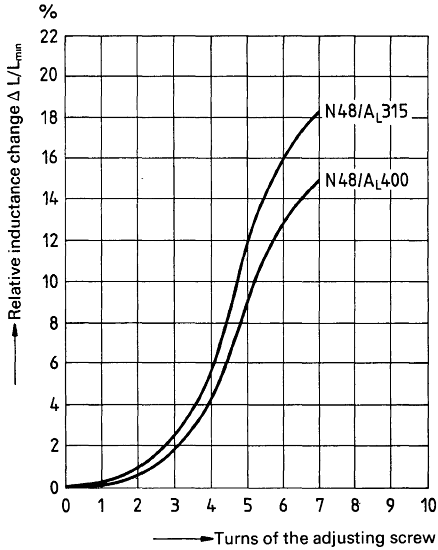
0 ≙ at least one turn engaged.

Inductance adjustment curves

Adjusting screw B65659-E0003-X023
color code black



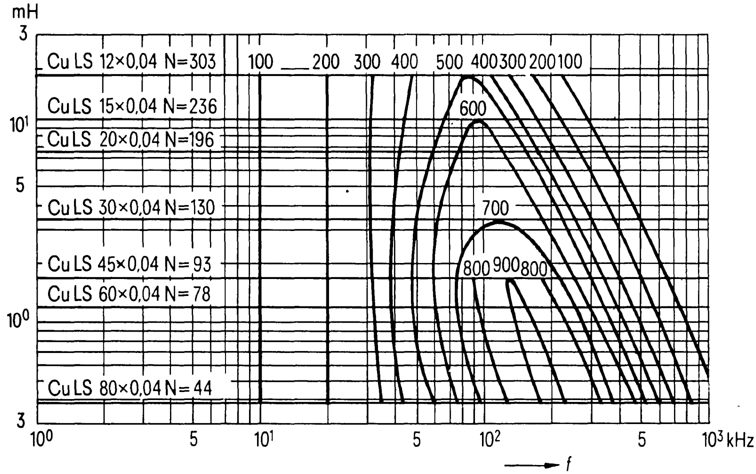
Adjusting screw B65659-E0004-X023
color code yellow



0 ≙ at least one turn engaged.

ISO-Q curves
Material N 58

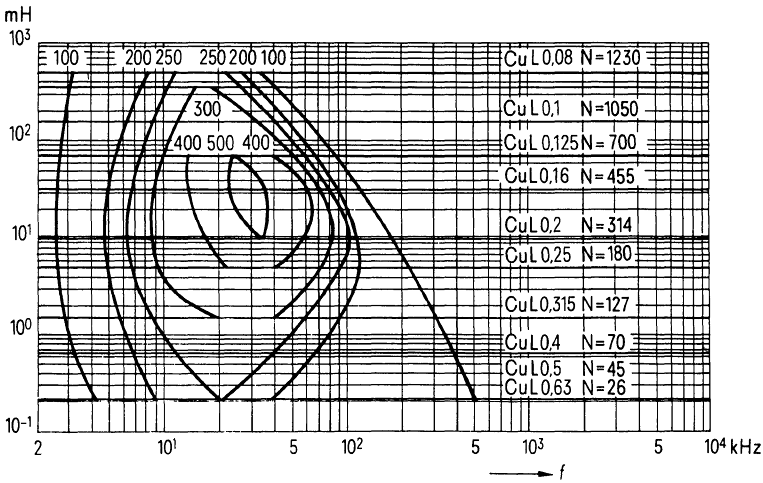
1-section winding with RF litz wire
Flux density in the core $\hat{B} < 1$ mT



N 58
A_L = 200 nH

ISO-Q curves
Material N 48

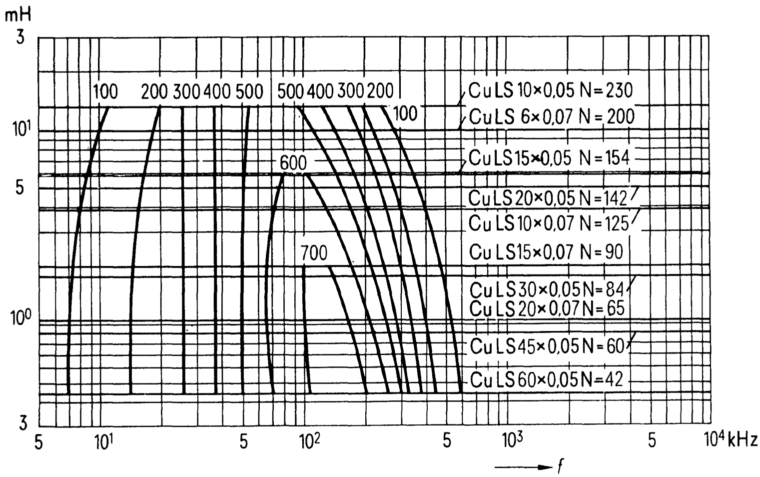
1-section winding with enamel copper wire
Flux density in the core $\hat{B} < 1$ mT



N 48
A_L = 315 nH

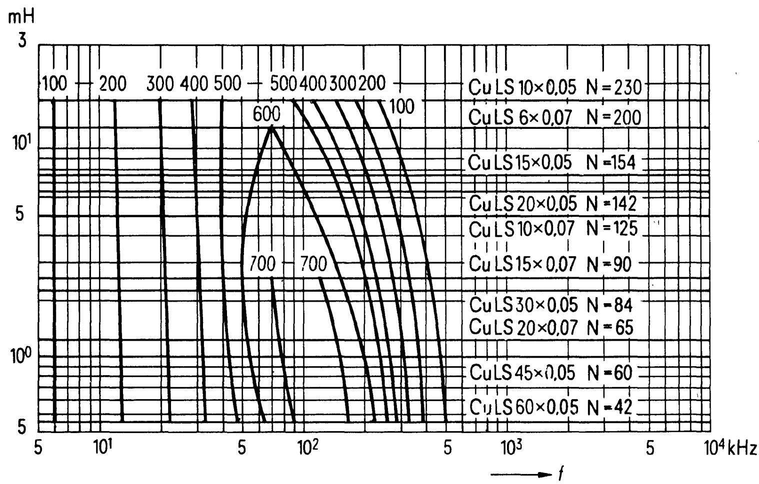
ISO-Q curves
Material N 48

1-section winding with RF litz wire
Flux density in the core $\hat{B} < 1$ mT



N 48
A_L = 250 nH

1-section winding with RF litz wire
Flux density in the core $\hat{B} < 1$ mT

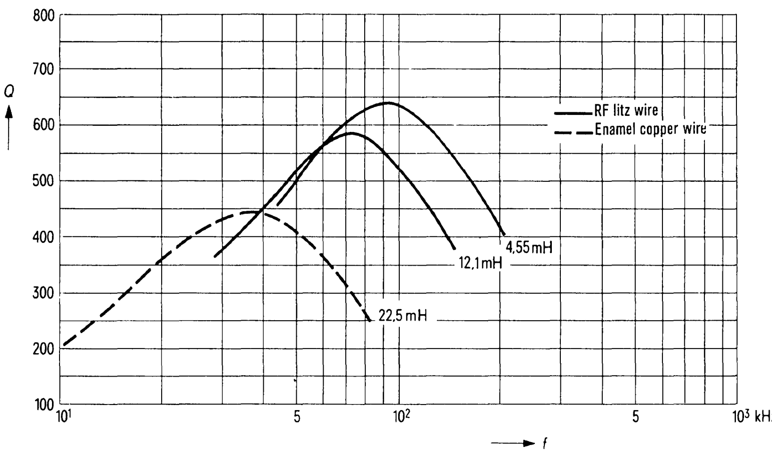


N 48
A_L = 315 nH

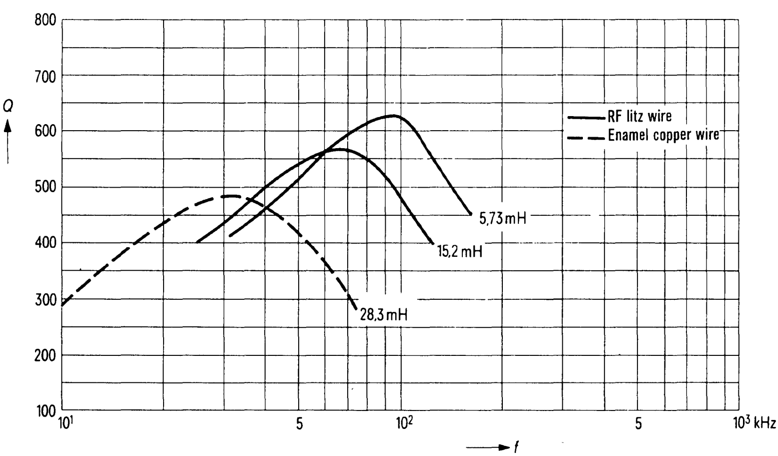
Q factor characteristics
Material N 48

L (mH) for A_L = 250 nH	*L* (mH) for A_L = 315 nH	Turns	Wire; RF litz wire	Number of sections
22,5	28,3	300	0,20 CuL	1
12,1	15,2	220	6 x 0,07 CuLS	1
4,55	5,73	135	20 x 0,05 CuLS	1

Flux density in the core $\hat{B} < 2$ mT



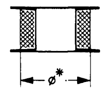
N 48
A_L = 250 nH
(typical values)



N 48
A_L = 315 nH
(typical values)

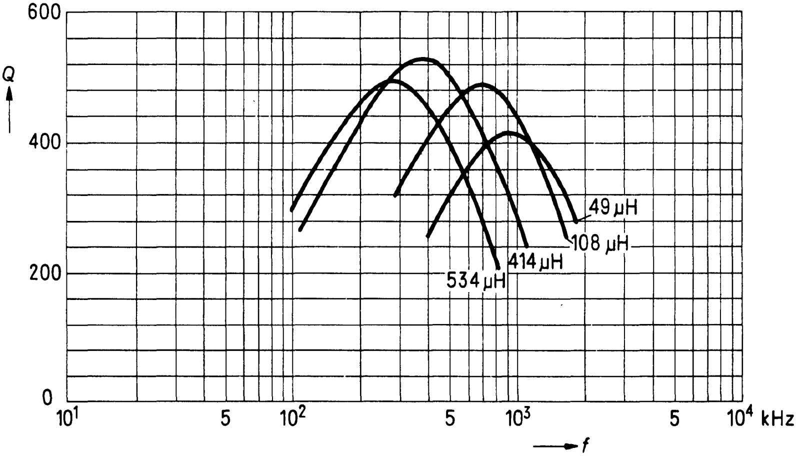
Q factor characteristics
Material M 33

L (µH) for A_L = 63 nH	A_L = 100 nH	Turns	RF litz wire	Number of sections	⌀* mm
534	847	92	45 x 0,04 CuLS	1	–
414	657	81	45 x 0,04 CuLS	2	–
108	168	41	45 x 0,04 CuLS	2	9,8
49	75	27	45 x 0,04 CuLS	2	10,6

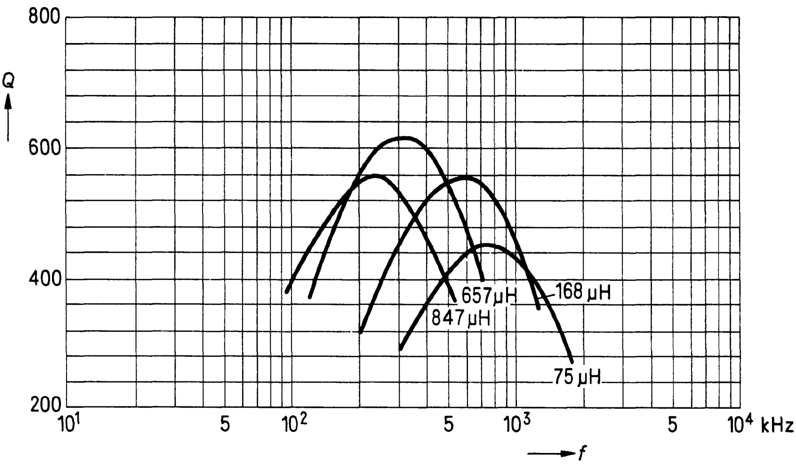


Pad of polystyrene tape up to the diameter ⌀* (valid for all sections)

Flux density in the core
$\hat{B} < 2$ mT

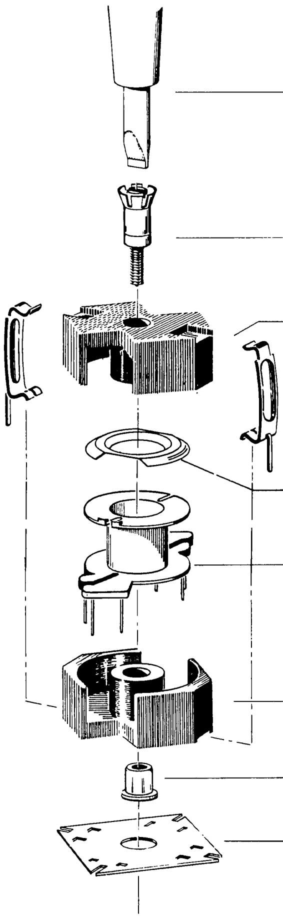


M 33
A_L = 63 nH
(typical values)



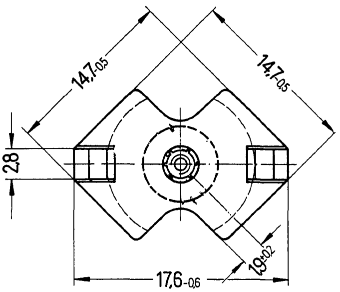
M 33
A_L = 100 nH
(typical values)

R 6 Cores B 65809



Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	340, fig. 4
Matching handle	B63399	341, fig. 6
Adjusting screw	B65810	306
Core	B65809	304
Clamps	B65808	305
Insulating washer for coil	B65808	305
Coil former with 1 or 2 sections 4, 5, or 6 pins	B65810	305
Core	B65809	304
Threaded sleeve	B65810	306
Insulating washer for double clad PC boards	B65808	305
Additionally available: Centering pin	B65808	306

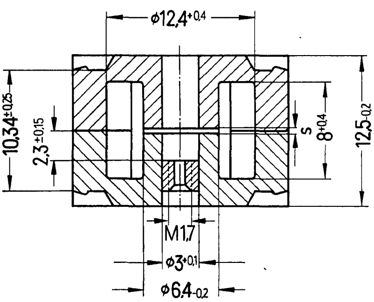
R 6 cores complying with DIN 41 980 or IEC publication 431



Magnetic characteristics

Core factor	$\Sigma\, l/A$ = 0.8 mm^{-1}
Effective length	l_e = 25.6 mm
Effective area	A_e = 32 mm^2
Effective volume	V_e = 840 mm^3

Approx. weight 5.1 g/set



R 6 cores	**Ordering code**
without threaded sleeve	B65809-A****-****
with threaded sleeve (fig.)	B65809-F****-****

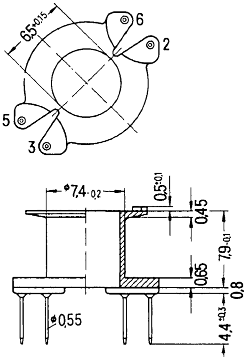
Dimensions in mm

A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 500 sets)
Gapped					
63	± 3% ≙ A	M 33	0,60	40,1	B65809-*0063-A033
100			0,38	64	B65809-*0100-A033
160		N 48	0,20	102	B65809-*0160-A048
200			0,16	127	B65809-*0200-A048
250			0,11	159	B65809-*0250-A048
315			0,08	201	B65809-*0315-A048
400			0,05	255	B65809-*0400-A048
1000	±10% ≙ K		0,006	637	B65809-A1000-K048
Ungapped					
2300	$^{+30}_{-20}$% ≙ R	N 48		1460	B65809-A0000-R048
4300		N 30		2740	B65809-A0000-R030
6000		T 35		3820	B65809-A0000-R035
8600	$^{+40}_{-30}$% ≙ Y	T 38		5470	B65809-A0000-Y038

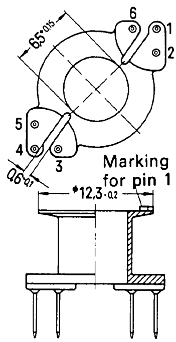
Coil formers B 65 810, clamps and insulating washers B 65 808

Glass-fiber reinforced thermosetting plastic **coil formers** with 4, 5, or 6 pin terminals, flame retardant in accordance with UL 94 V-0; permissible soldering temperature max. 400 °C/752 °F, 2 sec (also refer to page 85, para. 8.2). For winding details refer to page 68.
Spring steel **clamps** (tinned) with ground terminal.

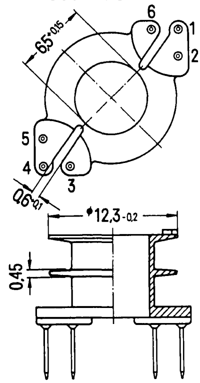
4 pins



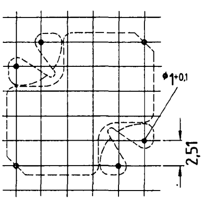
5 or 6 pins[1)]



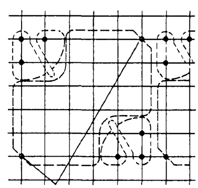
5 or 6 pins[1)]
2 sections



Hole arrangement, view in mounting direction

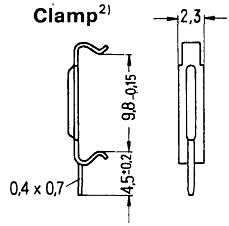


Dimensions in mm



Ground $1^{+0.1}$ mm dia

Clamp[2)]



Coil former							**Ordering code**
Number of sections	Useful winding cross section A_N of one section mm²	total mm²	Average length of turn l_N mm	A_R value[3)] µΩ	Approx. weight g	Number of pins	(PU: 500)
1	15.5	15.5	30.0	67	0.4	4	B65810-C1003-D001
						5	B65810-B1002-D001
						6	B65810-B1001-D001
2	7.25	14.5		71	0.6	5	B65810-B1002-D002
						6	B65810-B1001-D002
Clamp (Approx. weight 0.12 g; ordering code for each clamp, 2 required)							B65808-B2003-X000
Insulating washer for double clad PCBs							B65808-B2005-X000
Insulating washer between core and coil							B65808-A5000-X000
Drawing details for the assembly of mounting devices							C61407-A3-A2

1) Version with 5 pins without pin 4
2) Pressure per clamp pair: 45 ... 60 N
3) $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

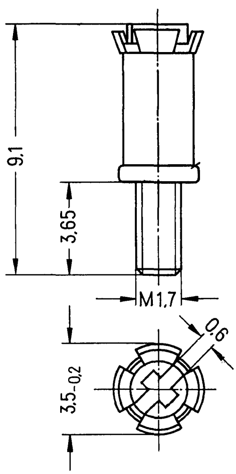
Adjusting devices B 65 810

Adjusting screw (a, b, c) B65810–C3∗∗∗–X∗∗∗, consisting of a SIFERRIT tube core on which a glass-fiber reinforced polyterephthalate thread is molded and a spring crown serving as core brake;

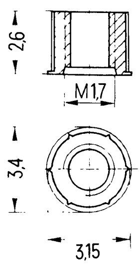
fits:

glass-fiber reinforced 11 polyamide **threaded sleeve** (d) B65810–L3002–X000 (color code yellow)
Centering pin (e) B65808–A2008–X000 as mounting aid for R core centering.
Adjusting screw driver B63399–B0004–X000

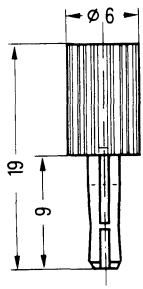
a, b, c



d



e

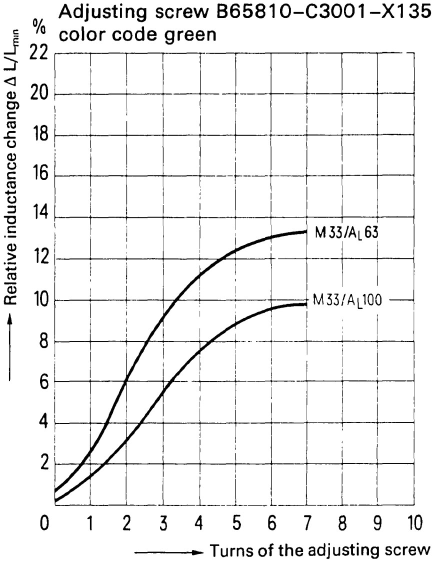


Dimensions in mm

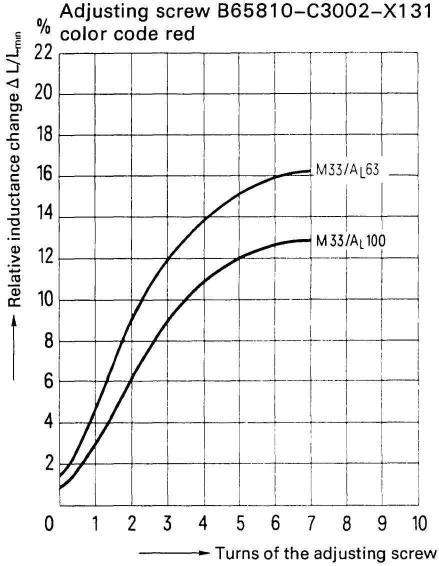
R 6 cores B65809		Adjusting screw				
Material	A_L value nH	Part	Tube core dia x length	Tube core Material	Color code	**Ordering code** (PU: 500)
M 33	63	b	2,85 x 4,05	Si 35	green	B65810–C3001–X135
	100	a	2,73 x 4,05	Si 31	red	B65810–C3002–X131
N 48	160			Si 1	yellow	B65810–C3002–X101
	200	b	2,85 x 4,05		white	B65810–C3001–X101
	250	c	2,73 x 3,45	N 22	brown	B65810–C3003–X022
	315	a	2,73 x 4,05		black	B65810–C3002–X022
	400					

Inductance adjustment curves

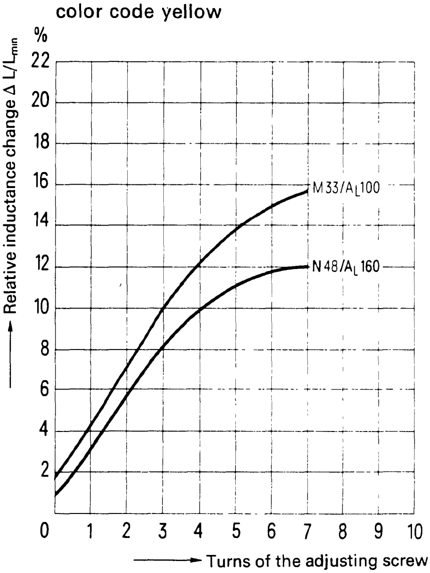
Adjusting screw B65810–C3001–X135
color code green



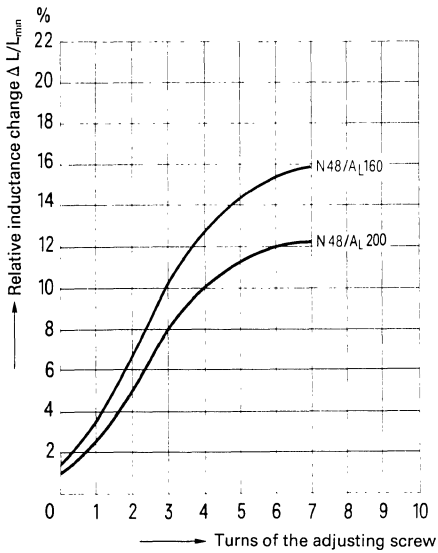
Adjusting screw B65810–C3002–X131
color code red



Adjusting screw B65810–C3002–X101
color code yellow



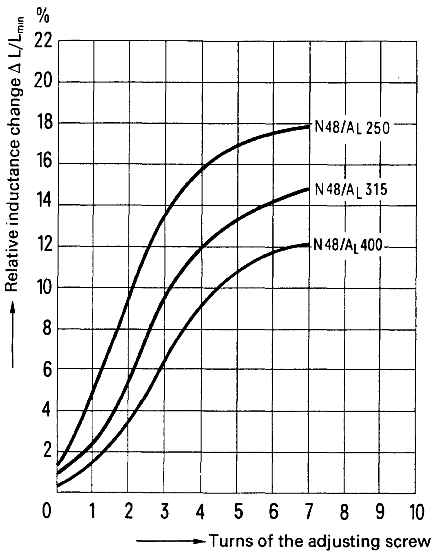
Adjusting screw B65810–C3001–X101
color code white



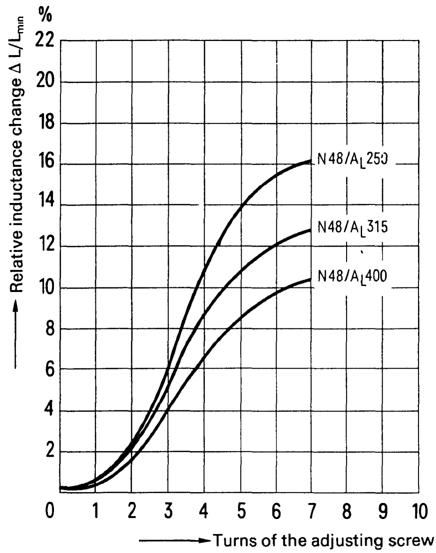
0 ≙ at least one turn engaged.

Inductance adjustment curves

Adjusting screw B65810-C3002-X022
color code black



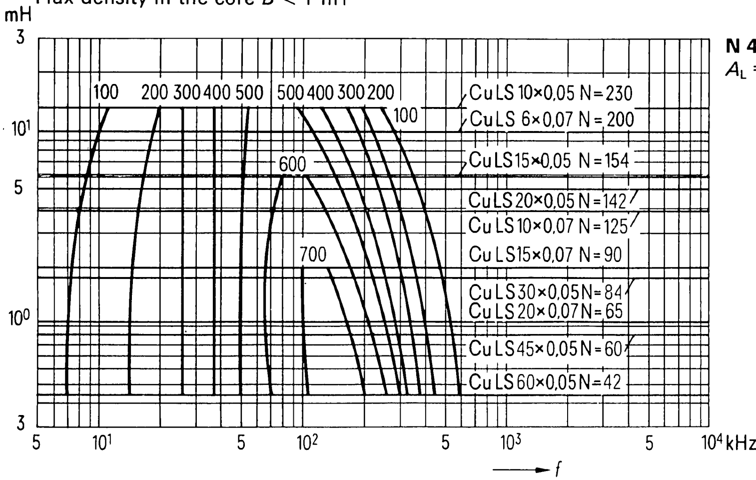
Adjusting screw B65810-C3003-X022
color code brown



0 ≙ at least one turn engaged.

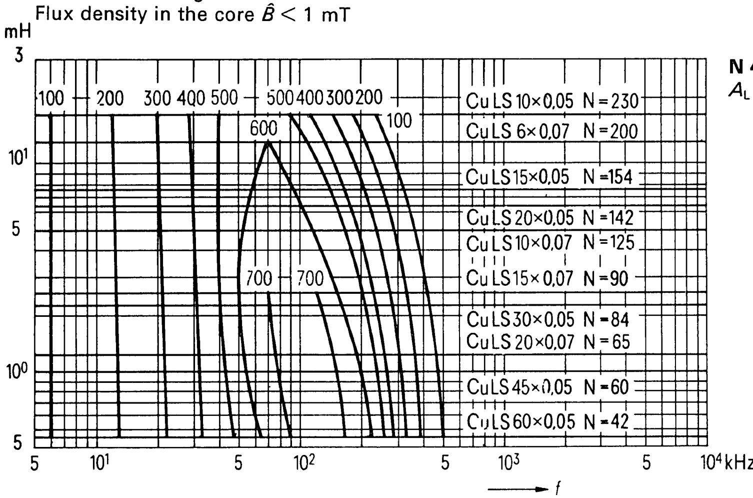
ISO-Q curves
Material N 48

1-section winding with RF litz wire
Flux density in the core $\hat{B} < 1$ mT

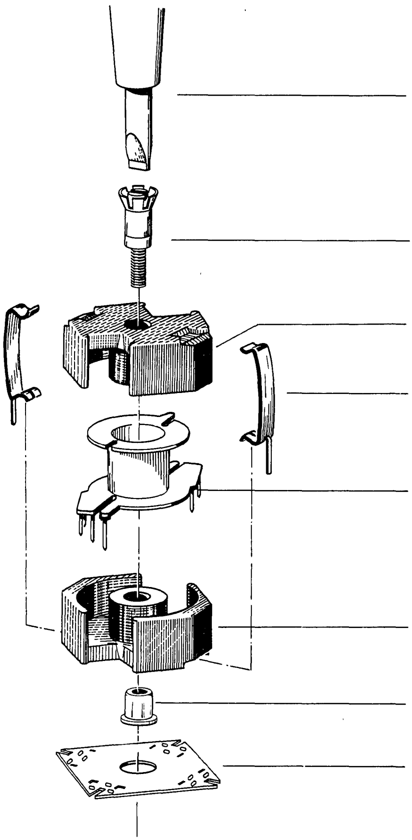


N 48
A_L = 250 nH

1-section winding with RF litz wire
Flux density in the core $\hat{B} < 1$ mT



N 48
A_L = 315 nH

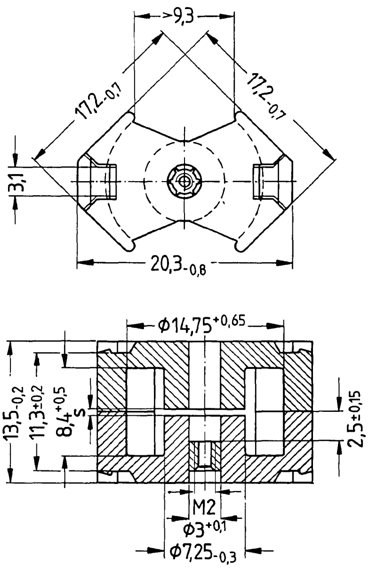


Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	340, fig. 4
Matching handle	B63399	341, fig. 6
Adjusting screw	B65659	313
Core	B65819	311
Clamps	B65820	312
Coil former with 1 or 2 sections 4, 5, or 8 pins	B65820	312
Core	B65819	311
Threaded sleeve	B65808	313
Insulating washer for double clad PC boards	B65820	312

Additionally available:

Individual parts	Part No.	Page
Centering pin	B65808	313

RM 7 cores complying with IEC publication 431



Dimensions in mm

Magnetic characteristics

Core factor	$\Sigma l/A$ =	0.74	mm^{-1}
Effective length	l_e =	29.8	mm
Effective area	A_e =	40	mm^2
Effective volume	V_e =	1200	mm^3

Approx. weight 7.2 g/set

RM 7 core	**Ordering code**
without threaded sleeve	B65819-**A******-****
with threaded sleeve (fig.)	B65819-**N******-****

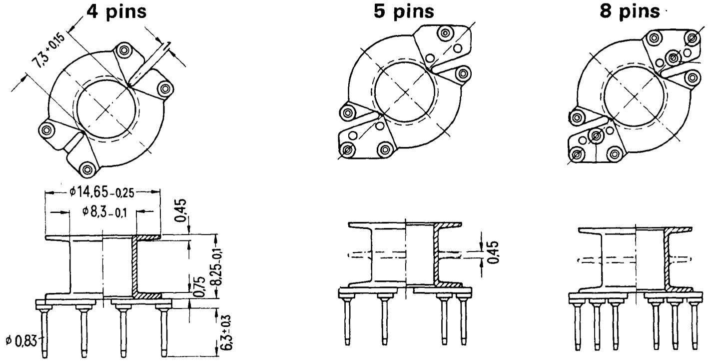
A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 500 sets)
Gapped					
40	±3% ≙ A	M 33	1,2	23,6	B65819-*0040-A033
63			0,7	37,1	B65819-*0063-A033
100			0,4	58,9	B65819-*0100-A033
160		N 48	0,28	94,3	B65819-*0160-A048
250			0,16	147	B65819-*0250-A048
315			0,12	186	B65819-*0315-A048
400			0,09	236	B65819-*0400-A048
Ungapped					
2800	$^{+30}_{-20}$% ≙ R	N 48		1650	B65819-A0000-R048
◥ 4600		N 30		2710	B65819-A0000-R030
6800		T 35		4000	B65819-A0000-R035
◥ 9500	$^{+40}_{-30}$% ≙ Y	T 38		5590	B65819-A0000-Y038

◥ to be preferred

Coil formers, clamps, and insulating washers B 65 820

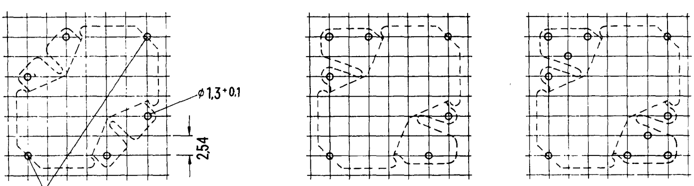
Glass-fiber reinforced thermosetting plastic **coil formers** with 4, 5, or 8 terminal pins, flame retardant in accordance with UL 94 V-0. The version with 5 or 8 terminal pins is also available with two sections. Permissible soldering temperature max. 400 °C/752 °F, 2 sec. (refer also to page 85, para. 8.2). For winding details refer to page 68.
Spring steel **clamps** (tinned) with ground terminal.

4 pins **5 pins** **8 pins**

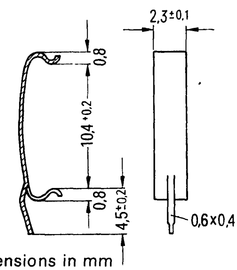


Clamp[1)]

Hole arrangement
View in mounting direction



Ground 1+0.1 mm dia



Dimensions in mm

Coil former							Ordering code
Number of sections	Useful winding cross section A_N one section mm²	total mm²	Average length of turn l_N mm	A_R value[2)] µΩ	Approx. weight g	Number of pins	(PU: 500)
1	21.4	21.4	35.6	56	0.6	4	B65820-B1001-D001
						5	B65820-B1002-D001
						8	B65820-B1003-D001
2	10.05	20.1		60	0.7	5	B65820-B1002-D002
						8	B65820-B1003-D002
Clamp (approx. weight 0.15 g; ordering code for each clamp, two required)							B65820-B2001-X000
Insulating washer for double clad PC boards							B65820-B2005-X000
Drawing details for the assembly of mounting devices							C61407-A3-A7

1) Pressure per clamp pair: 50 ... 70 N
2) $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

Adjusting devices B 65 659

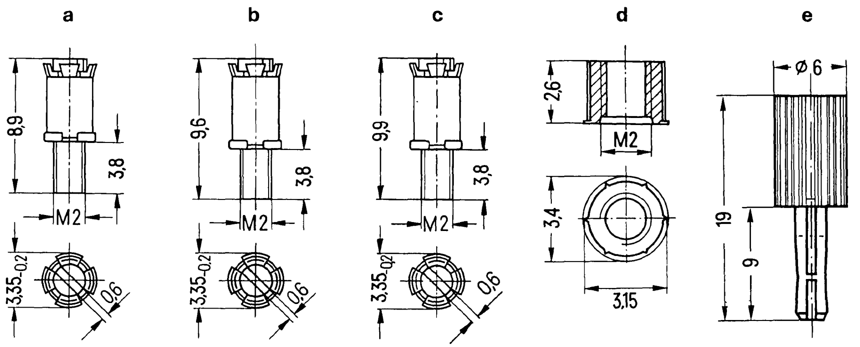
Adjusting screw (a, b, c) B65659–E000*–X***, consisting of a SIFERRIT tube core on which a glass-fiber reinforced polyterephthalate thread is molded and a spring crown serving as core brake;

fits:

Glass-fiber reinforced 11 polyamide **threaded sleeve** (d) B65808–L3002–X000

Centering pin (e) B65808–A2008–X000 as mounting aid for RM core centering.

Adjusting screw driver B63399–B0004–X000

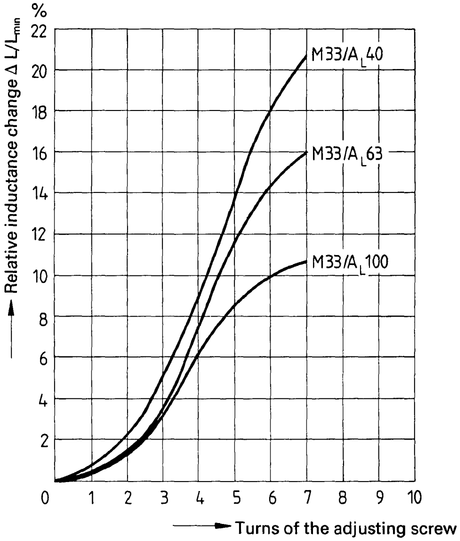


Dimensions in mm

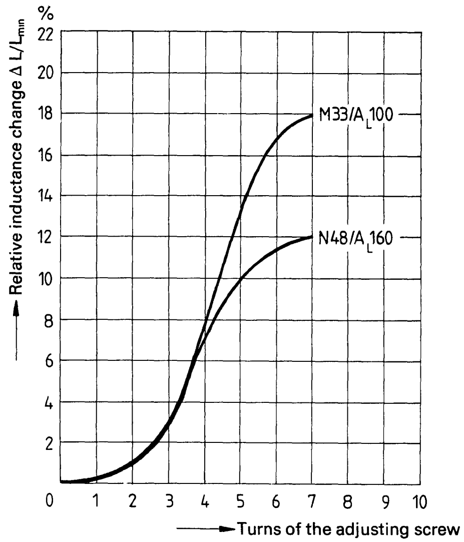
RM 7 core B65819		Adjusting screw				
Material	A_L value nH	Part	Tube core dia. x length	Tube core Material	Color code	**Ordering code** (PU: 500)
M 33	40 63	a	2,6 x 3,7	Si 1	white	B65659–E0001–X101
M 33	100	c	2,82 x 4,4	Si 1	brown	B65659–E0004–X101
N 48	160	c	2,82 x 4,4	Si 1	brown	B65659–E0004–X101
N 48	250	a	2,6 x 3,7	N 22	red	B65659–E0001–X023
N 48	315	b	2,75 x 4,4	N 22	black	B65659–E0003–X023
N 48	400	c	2,82 x 4,4	N 22	yellow	B65659–E0004–X023

Inductance adjustment curves

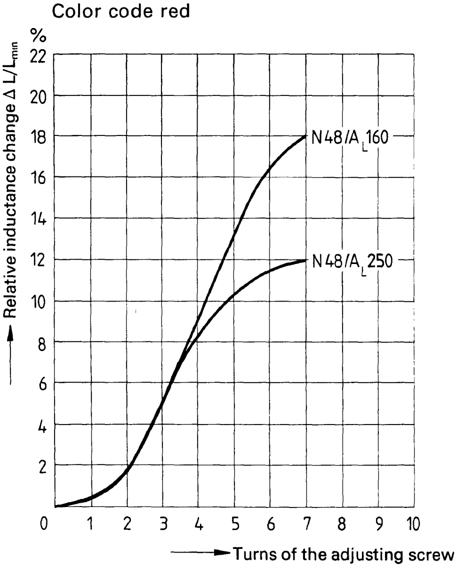
Adjusting screw B65659–E0001–X101
Color code white



Adjusting screw B65659–E0004–X101
Color code brown



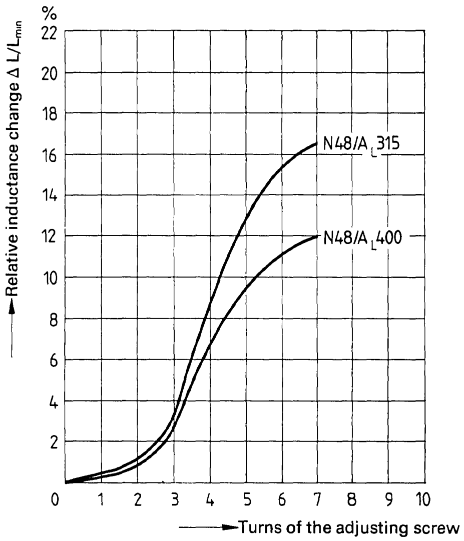
Adjusting screw B65659–E0001–X023
Color code red



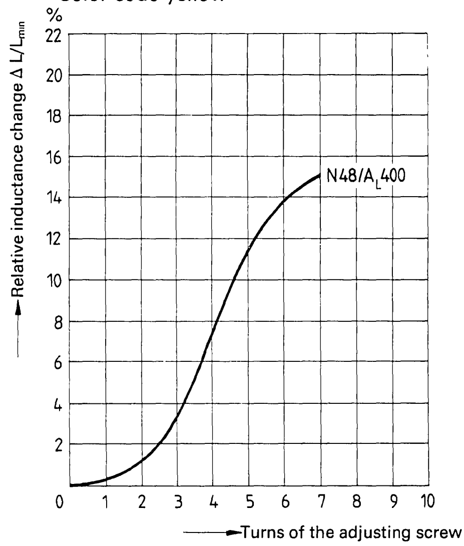
0 ≙ at least two turns engaged

Inductance adjustment curves

Adjusting screw B65659–E0003–X023
Color code black



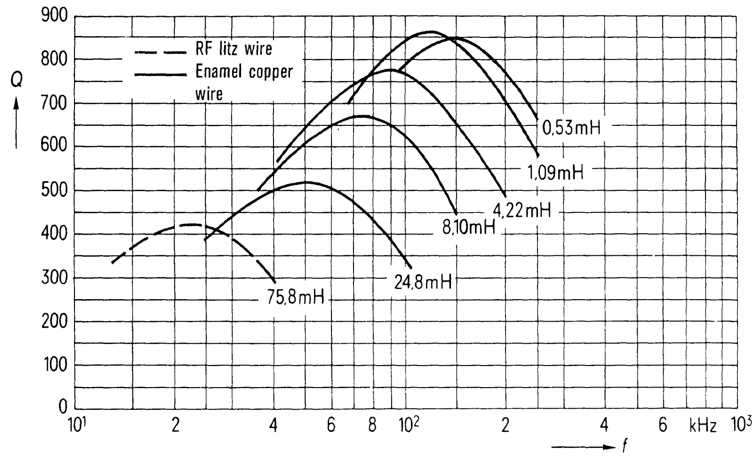
Adjusting screw B65659–E0004–X023
Color code yellow



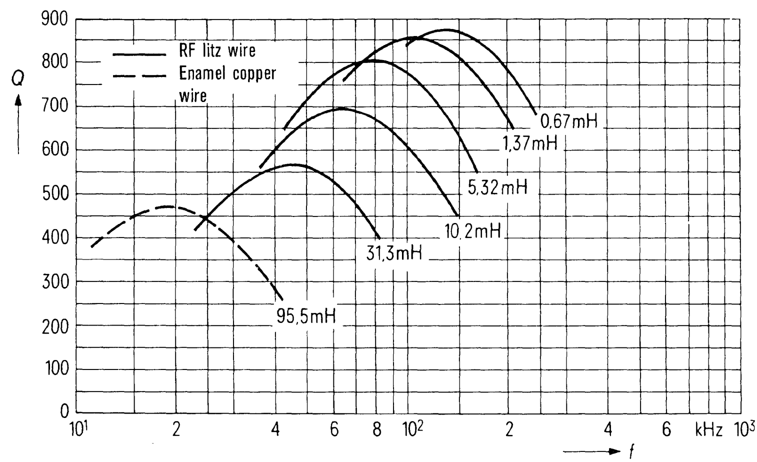
Q factor characteristics;
material N 48

L (mH) for A_L = 250 nH	A_L = 315 nH	Turns	Wire; RF litz wire	Number of sections
75,8	95,5	550	0,18 CuL	1
24,8	31,3	315	6 x 0,07 CuLS	1
8,10	10,2	180	20 x 0,05 CuLS	1
4,22	5,32	130	45 x 0,04 CuLS	1
1,09	1,37	66	90 x 0,04 CuLS	1
0,53	0,67	46	120 x 0,04 CuLS	1

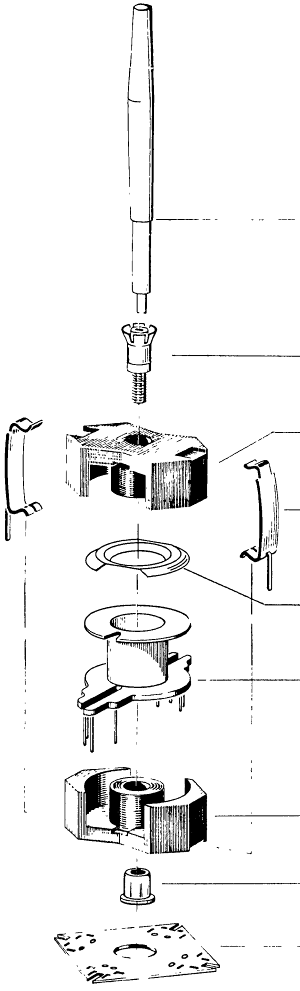
Flux density in the core $\hat{B} < 1.5$ mT



N 48
A_L = 250 nH
(typical values)



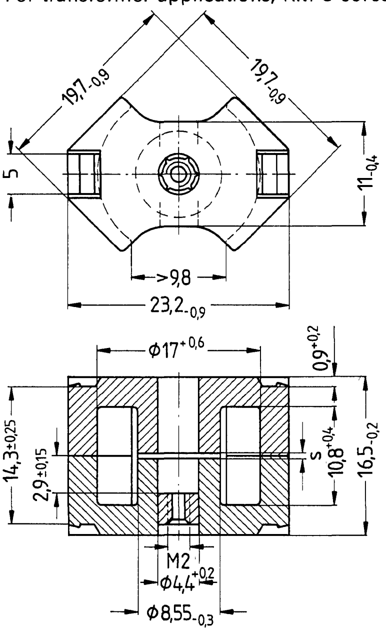
N 48
A_L = 315 nH
(typical values)



	Individual parts	Part No.	Page
	Adjusting screw driver (for assembly only)	B63399	339, fig. 3
	Matching handle	B63399	341, fig. 6
	Adjusting screw	B65812	321
	Core	B65811	318
	Clamps	B65812	319
	Insulating washer for coil	B65812	319
	Coil formers with 1 or 2 sections 5, 8, or 12 pins	B65812	319
	Core	B65811	318
	Threaded sleeve	B65812	321
	Insulating washer for double clad PC boards	B65812	319
Additionally available:	Coil former for power transformers	B65812	320

RM 8 cores complying with DIN 41 980 or IEC publication 431

For transformer applications, RM 8 cores are available without center hole.



Magnetic characteristics

		with center hole	without center hole	
Core factor	$\Sigma\, l/A$ =	0.67	0.59	mm^{-1}
Effective length	l_e =	35.1	38.0	mm
Effective area	A_e =	52	64	mm^2
Min. core cross section[1]	A_{min} =	–	55	mm^2
Effective volume	V_e =	1840	2430	mm^3
Approx. weight		10.3	13	g/set

Dimensions in mm

RM 8 core	**Ordering code**
without threaded sleeve	B65811-**D**••••-••••
with threaded sleeve (fig.)	B65811-**F**••••-••••
without center hole	B65811-**J**••••-••••

A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 500 sets)
Gapped					
100	± 3 % ≙ A	M 33	0.6	53	B65811-•0100-A033
250	± 3 % ≙ A	N 48	0,23	133	B65811-•0250-A048
◥ 315	± 3 % ≙ A	N 48	0,18	168	B65811-•0315-A048
◥ 400	± 3 % ≙ A	N 48	0,14	213	B65811-•0400-A048
500	± 3 % ≙ A	N 48	0,12	267	B65811-•0500-A048
630	± 3 % ≙ A	N 48	0,1	336	B65811-•0630-A048
250[2]	± 5 % ≙ J	N 41	0,24	117	B65811-J0250-J041
1600[2]	± 10 % ≙ K	N 41	0,04	752	B65811-J1600-K041
Ungapped					
2400[2]	+30/−20 % ≙ R	N 47		1130	B65811-J0000-R047
2500	+30/−20 % ≙ R	N 48		1330	B65811-D0000-R048
◥ 4100[2]	+30/−20 % ≙ R	N 41		1920	B65811-J0000-R041
◥ 5700[2]	+30/−20 % ≙ R	N 30		2680	B65811-J0000-R030
8400[2]	+30/−20 % ≙ R	T 35		3940	B65811-J0000-R035
◥ 12500[2]	+40/−30 % ≙ Y	T 38		5870	B65811-J0000-Y038

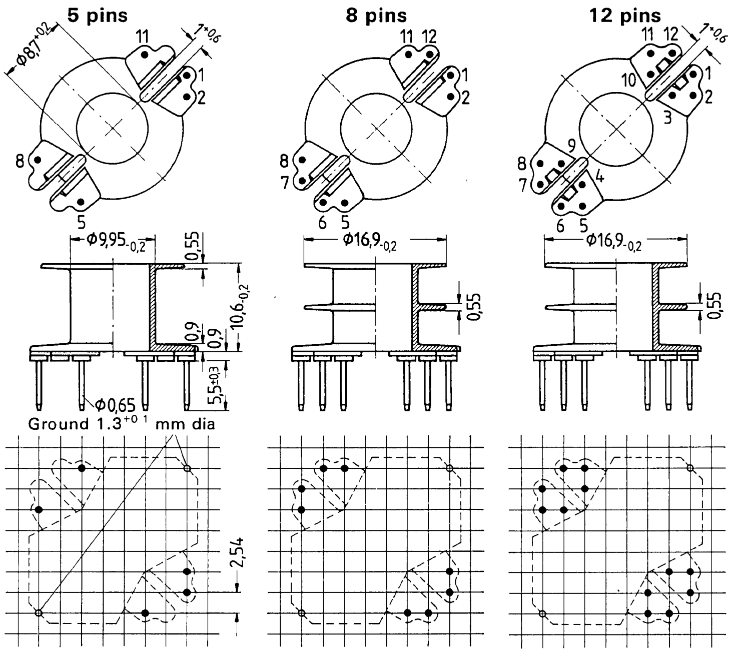
[1] Necessary for calculating the max. flux density

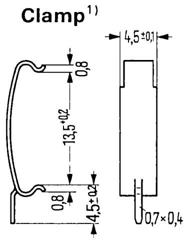
[2] without center hole

◥ to be preferred

Coil formers, clamps, and insulating washers B 65812

Glass-fiber reinforced thermosetting plastic **coil formers** with 5, 8, or 12 terminal pins, complying with IEC publication 431 (DIN 41 981) suitable for automatic winding machines, flame-retardant in accordance with UL 94 V-0. Permissible soldering temperature 400 °C/752 °F, 2 sec. (refer to page 85, para. 8.2). For winding details refer to page 68.
Spring steel **clamps** (tinned) with ground terminal.





A slot in the upper flange identifies the position of pin 1 and 2.

Hole arrangement View in mounting direction

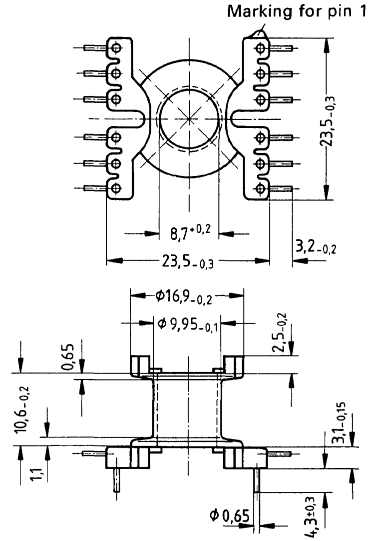
Dimensions in mm

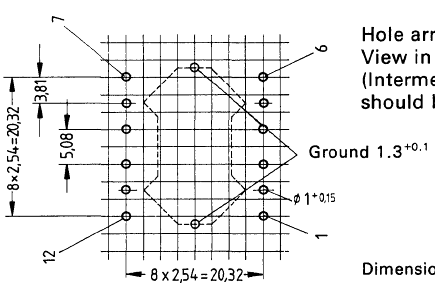
Coil former Number of sections	Useful winding cross section A_N of one section mm^2	total mm^2	Average length of turn l_N mm	A_R value[2] μΩ	Approx. weight g	Number of pins	Ordering code (PU: 500)
						5	B65812-A1005-D001
1	30	30		47	0.8	8	B65812-A1008-D001
						12	B65812-A1012-D001
			42			5	B65812-A1005-D002
2	14.2	28.4		50	0.9	8	B65812-A1008-D002
						12	B65812-A1012-D002
Clamp (approx. weight 0.3 g; ordering code for each clamp, two required)							B65812-B2001-X000
Insulating washer for double clad PC boards							B65812-B2005-X000
Insulating washer between core and coil							B65812-A5000-X000
Drawing details for the assembly of mounting devices							C61407-A3-A5

[1] Pressure per clamp pair: 50 ... 70 N. [2] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns^2).

Coil former for power transformers B 65812

Glass-fiber reinforced polyterephthalate **coil former** with 12 terminal pins, flame-retardant in accordance with UL 94 V-0. Permissible soldering temperature 400 °C/752 °F, 2 sec. (refer to page 85 paragraph 8.2). For winding details refer to page 68.





Hole arrangement
View in mounting direction
(Intermediate spacing should be considered.)

Dimensions in mm

Coil formers							Ordering code (PU: 200)
Number of sections	Useful winding cross section A_N of one section mm²	total mm²	Average length of turn l_N mm	A_R value[1] µΩ	Approx. weight g	Number of pins	
1	72	72	61	28.7	2.5	12	B65812–A1512–T001

[1] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

Adjusting devices B 65 812

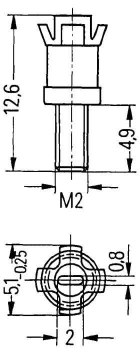
Adjusting screw (a, b, c) B65812–A3∗∗∗–X∗∗∗, consisting of a SIFERRIT tube core onto which a glass-fiber reinforced polyterephthalate thread is molded and a spring crown serving as core brake;

fits:

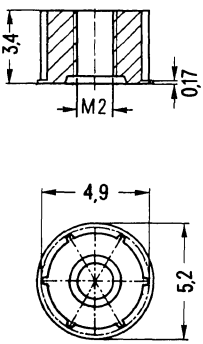
glass-fiber reinforced 11 polyamide **threaded sleeve** (d) B65812–B3001–X000 (color code yellow)

Adjusting screw driver B63399–B0001–X000

a, b, c



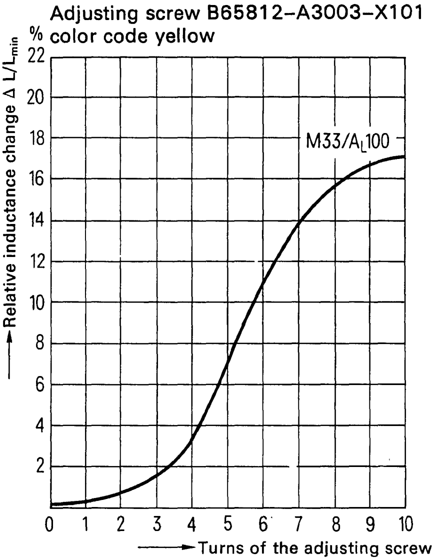
d

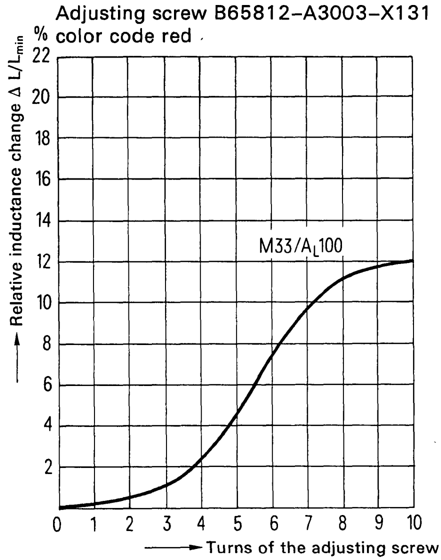


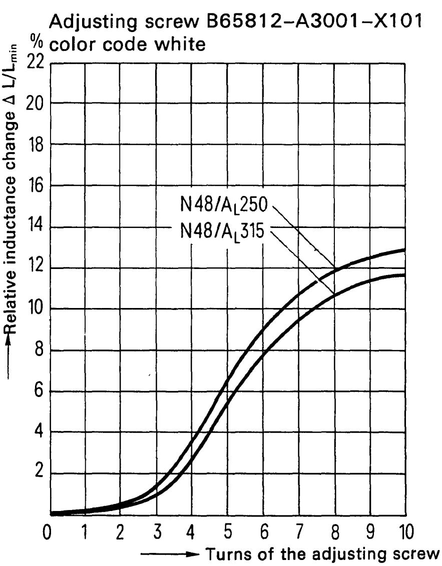
Dimensions in mm

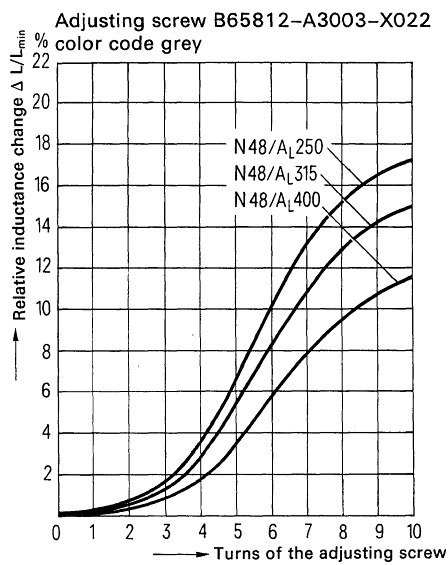
RM 8 core B65811		Adjusting screw				
Material	A_L value nH	Part	Tube core dia x length	Tube core Material	Color code	**Ordering code** (PU: 500)
M 33	100	c	3,85 x 5	Si 1	yellow	B65812–A3003–X101
				Si 31	red	B65812–A3003–X131
N 48	250	a	4,18 x 5	Si 1	white	B65812–A3001–X101
	315	c	3,85 x 5	N 22	grey	B65812–A3003–X022
	400	b	4,18 x 4	N 22	brown	B65812–A3002–X022
N 48	500 630	a	4,18 x 5	N 22	black	B65812–A3001–X022

Inductance adjustment curves



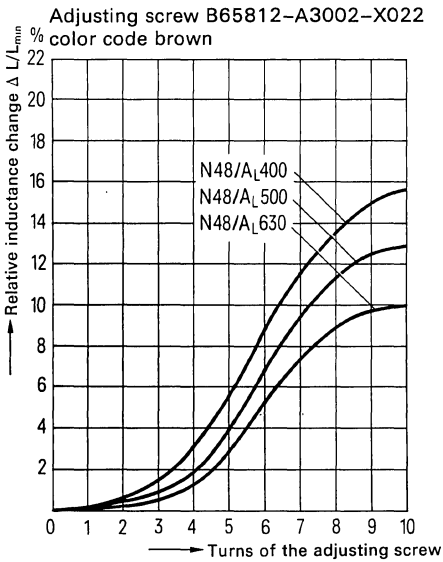


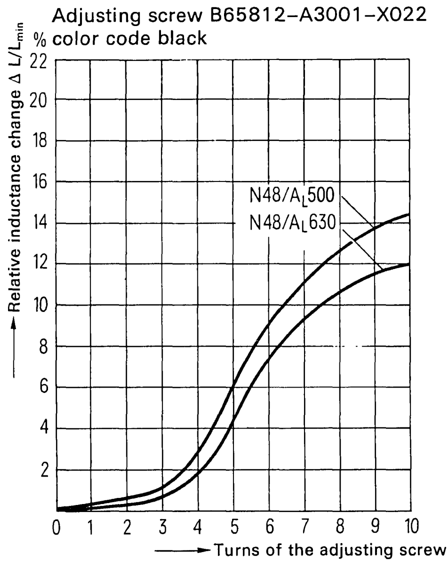




0 ≙ at least two turns engaged.

Inductance adjustment curves





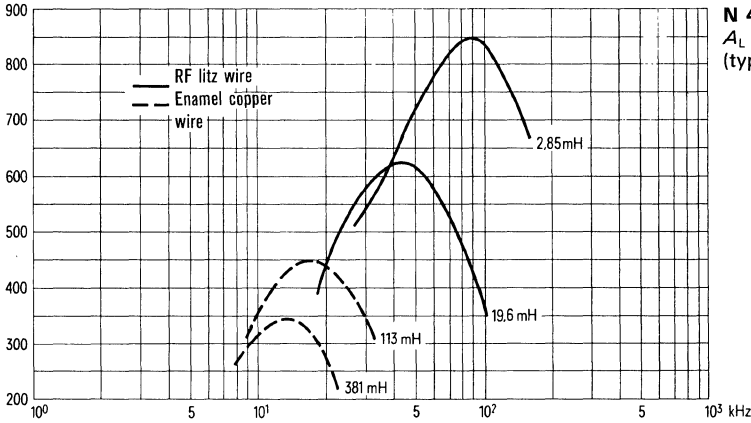
0 ≙ at least two turns engaged.

Q factor characteristics

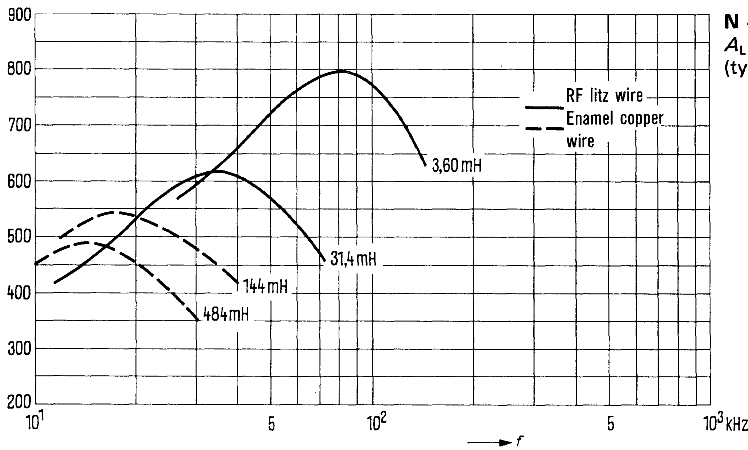
Material N 48

L (mH) for A_L = 315 nH	L (mH) for A_L = 400 nH	Turns	Wire; RF litz wire	Number of sections
381	484	1100	0,15 CuL	1
113	144	600	0,2 CuL	1
19,6	31,4	280	20 x 0,05 CuLS	1
2,85	3,60	95	60 x 0,05 CuLS	1

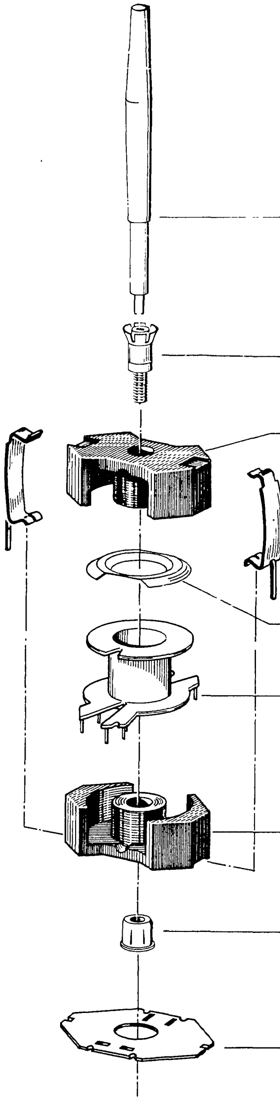
Flux density in the core $\hat{B} < 2$ mT



N 48
A_L = 315 nH
(typical values)



N 48
A_L = 400 nH
(typical values)

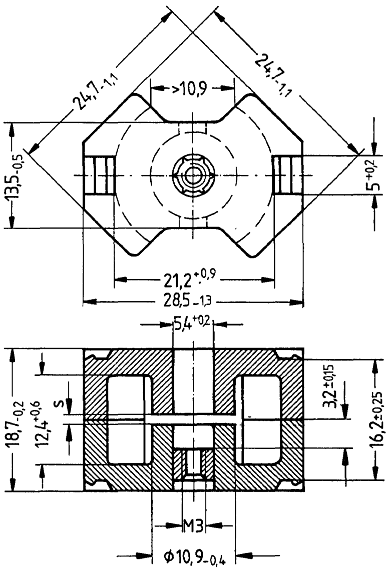


Individual parts	Part No.	Page
Adjusting screw driver (for assembly only)	B63399	339, fig. 3
Matching handle	B63399	341, fig. 6
Adjusting screw	B65679	329
Core	B65813	326
Clamps	B65814	327
Insulating washer for coil	B65814	327
Coil former with 1 or 2 sections 11 or 12 pins	B65814	327
Core	B65813	326
Threaded sleeve	B65679	329
Insulating washer for double clad PC boards	B65814	327

Additionally available:

Coil former for power transformers	B65814	328

RM 10 cores complying with DIN 41 980 or IEC publication 431. For transformer applications RM 10 cores are available without center hole.



Dimensions in mm

Magnetic characteristics

		with center hole dia 5.4$^{+0.2}$	without center hole	
Core factor	$\Sigma\, l/A$ =	0.50	0.45	mm^{-1}
Effective length	l_e =	42	44	mm
Effective area	A_e =	83	98	mm^2
Min. core cross section[1]	A_{min} =	–	90	mm^2
Effective volume	V_e =	3470	4310	mm^3
Approx. weight		20	23	g/set

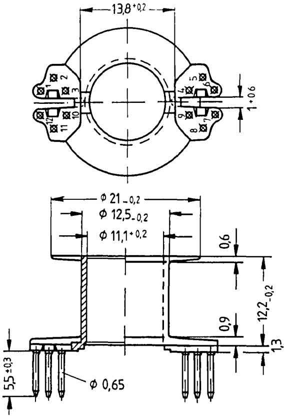
RM 10 core	**Ordering code**	
without threaded sleeve	B65813–A••••–••••	with center hole
with threaded sleeve	B65813–N••••–••••	with center hole
without center hole	B65813–J••••–••••	

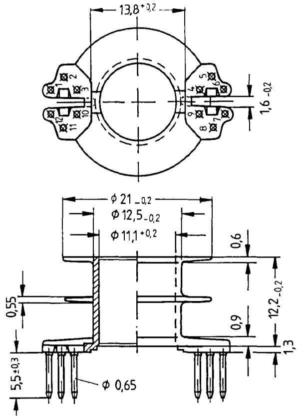
A_L value nH	tolerance	SIFERRIT material	Total air gap *s* in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 200 sets)
Gapped					
315			0,28	125	B65813–•0315–A048
◥ 400		N 48	0,21	160	B65813–•0400–A048
630	± 3 % ≙ A		0,13	250	B65813–•0630–A048
◥ 250[2]			0,44	90	B65813–J0250–A041
630[2]	± 5 % ≙ J	N 41	0,13	226	B65813–J0630–J041
1600[2]	± 10 % ≙ K		0,04	573	B65813–J1600–K041
Ungapped					
3100[2]		N 47		1110	B65813–J0000–R047
4000[2]		N 27		1430	B65813–J0000–R027
◥ 5500[2]	$^{+30}_{-20}$ % ≙ R	N 41		1970	B65813–J0000–R041
◥ 7600[2]		N 30		2720	B65813–J0000–R030
11000[2]		T 35		3940	B65813–J0000–R035
◥ 16000[2]	$^{+40}_{-30}$ % ≙ Y	T 38		5730	B65813–J0000–Y038

[1] Necessary for calculating the max. flux density
[2] without center hole
◥ to be preferred

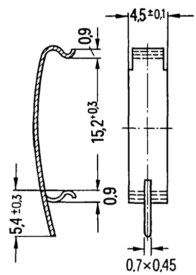
Coil formers, clamps, and insulating washers B 65814

Glass-fiber reinforced thermosetting plastic **coil formers** with 5, 8, 10, 11, or 12 terminal pins complying with IEC publication 431 (DIN 41 981), flame-retardant in accordance with UL 94 V-0. Permissible soldering temperature max. 400 °C/752 °F, 2 sec. (refer to page 85, para. 8.2). For winding details refer to page 68. Spring steel **clamps** (tinned) with ground terminal.

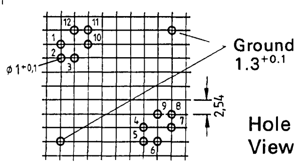




Clamp[1]



Dimensions in mm



Hole arrangement
View in mounting direction

Version	Omitted pin
11 pins	9
10 pins	2; 11
8 pins	2; 5; 8; 11
5 pins	1; 2; 5; 7; 8; 11; 12

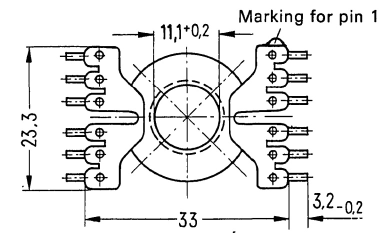
Coil formers Number of sections	Useful winding cross section A_N of one section mm²	total mm²	Average length of turn l_N mm	A_R value[2] μΩ	Approx. weight g	Number of pins	**Ordering code** (PU: 200)
1	41.5	41.5	52	43	1.5	5	B65814-A1005-D001
						8	B65814-A1008-D001
						10	B65814-A1010-D001
						11	B65814-A1011-D001
						12	B65814-A1012-D001
2	19.5	39	52	46	1.7	5	B65814-A1005-D002
						8	B65814-A1008-D002
						10	B65814-A1010-D002
						11	B65814-A1011-D002
						12	B65814-A1012-D002
Clamp (approx. weight 0.37 g; ordering code for each clamp, two required)							B65814-A2001-X000
Insulating washer for double clad PC boards							B65814-A2005-X000
Insulating washer between core and coil							B65814-A5000-X000
Drawing details for the assembly of mounting devices							C61407-A3-A8

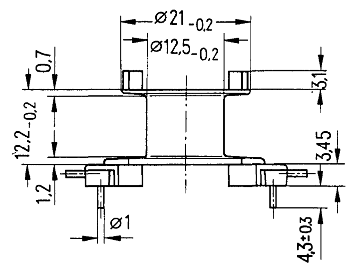
[1] Pressure per clamp pair: 50 ... 65 N

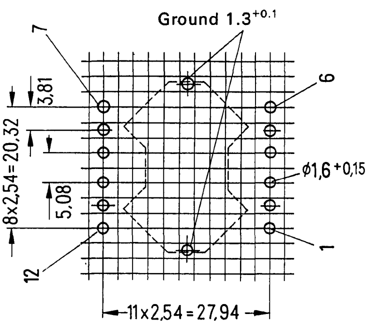
[2] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

Coil former for power transformers B 65814

Glass-fiber reinforced polyterephthalate **coil former** with 12 terminal pins, flame-retardant in accordance with UL 94 V-0. Permissible soldering temperature max. 400 °C/752 °F, 2 sec. (refer to page 85, para. 8.2).
For winding details refer to page 68.







Hole arrangement
View in mounting direction
(Intermediate spacing should be considered.)

Dimensions in mm

Coil formers							Ordering code
Number of sections	Useful winding cross section A_N of one section mm²	total mm²	Average length of turn l_N mm	A_R value[1)] µΩ	Approx. weight g	Number of pins	(PU: 200)
1	41.5	41.5	52	43	1.5	12	B65814–A1512–T001

1) $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

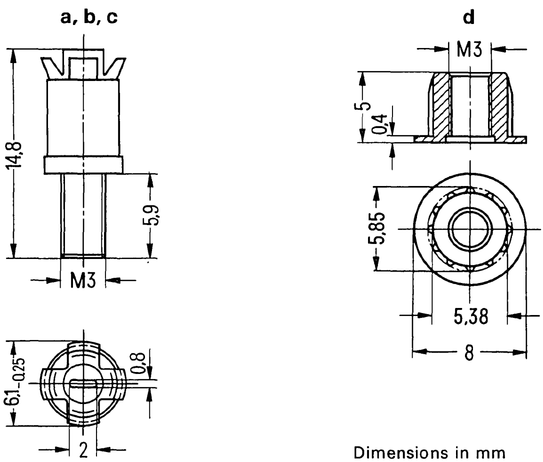
Adjusting devices B 65 679

Adjusting screw (a, b, c) B65679–D0***–X***, consisting of a SIFERRIT or SIRUFER tube core on which a polyterephthalate thread is molded and a spring crown serving as core brake;

fits:

Glass-fiber reinforced 11 polyamide **threaded sleeve** (d) B65679–L0003–X000
adjusting screw driver B63399–B0001–X000.

Due to the limited distance between the adjusting core B65679–D0***–X*** and the internal borehole the total assembly must be centered accurately.

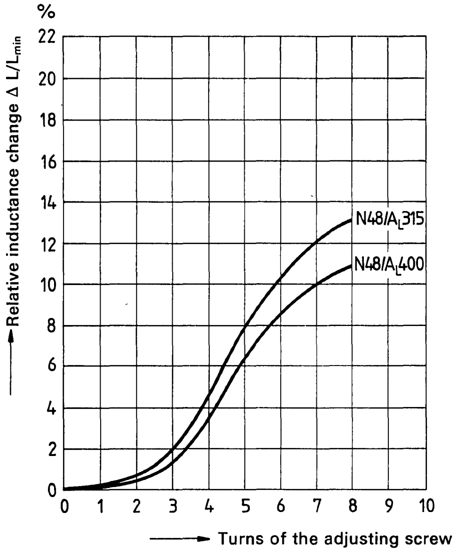


Dimensions in mm

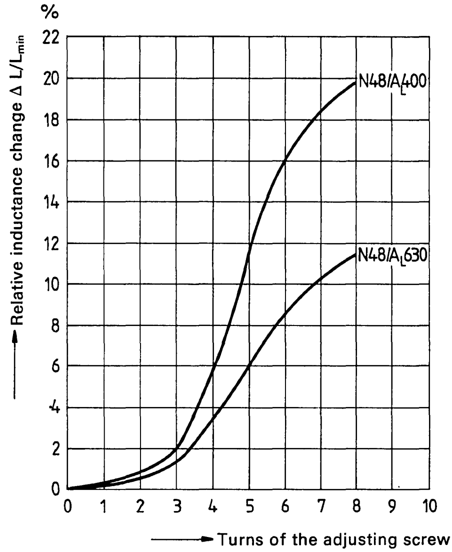
RM 10 cores B65813		Adjusting screw				
Material	A_L value nH	Part	Tube core dia x length	Tube core Material	Color code	**Ordering code** (PU: 200)
N 48	315 400	c	4.55 x 6.3	N 22	red	B65679–D0003–X022
	400 630	b	4.98 x 6.3	N 22	black	B65679–D0002–X022
	630	a	5.15 x 6.3	N 22	white	B65679–D0001–X022

Inductance adjustment curves

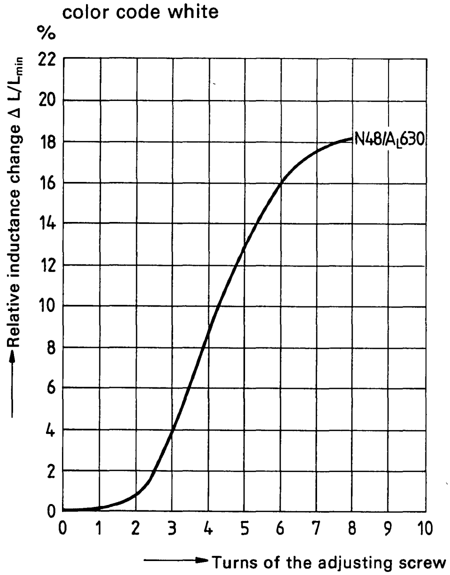
Adjusting screw B65679–D0003–X022
color code red



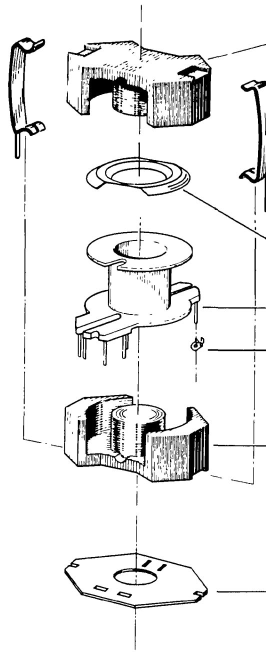
Adjusting screw B65679–D0002–X022
color code black



Adjusting screw B65679–D0001–X022
color code white



0 ≙ at least two turns engaged.

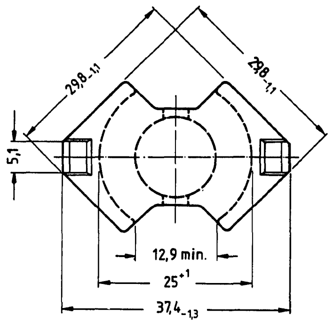


Individual parts	Part No.	Page
Core	B65815	332
Clamps	B65816	333
Insulating washer for coil	B65816	333
Coil former, 1 or 2 sections, 11 or 12 pins	B65816	333
Sliding-on solder clip for soldering thick wires	B65888	333
Core	B65815	332
Insulating washer for double clad PC boards	B65816	333

Additionally available:

Coil former for power transformers	B65816	334

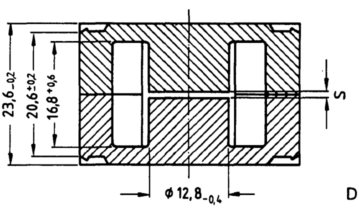
RM 12 cores without center hole are preferably available out of the material N 41, which is particularly suitable (low core loss, high amplitude permeability, even at temperatures up to 100 °C/212 °F) for transformer applications.



Magnetic characteristics

Core factor	$\Sigma\, l/A$ =	0.40 mm^{-1}
Effective length	l_e =	56.9 mm
Effective area	A_e =	140 mm^2
Min. core cross section[1]	A_{min} =	125 mm^2
Effective volume	V_e =	7960 mm^3

Approx. weight 42 g/set



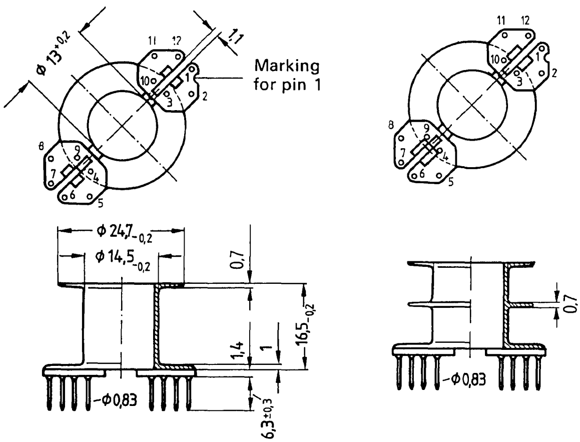
Dimensions in mm

A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 200 sets)
Gapped					
160	± 3 % ≙ A	N 41	1,2	51	B65815-J0160-A041
◥ 250			0,65	80	B65815-J0250-A041
1000	± 5 % ≙ J		0,10	320	B65815-J1000-J041
2000	± 10 % ≙ K		0,04	640	B65815-J2000-K041
Ungapped					
4400	$^{+30}_{-20}$ % ≙ R	N 27		1400	B65815-J0000-R027
6000		N 41		1910	B65815-J0000-R041
8400		N 30		2670	B65815-J0000-R030
12300		T 35		3910	B65815-J0000-R035

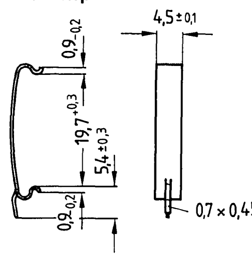
[1] Necessary for calculating the max. flux density
◥ to be preferred

Coil formers, clamps, and insulating washers B 65816

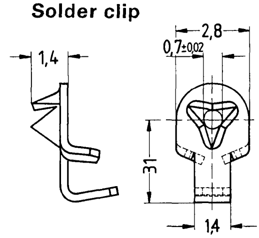
Glass-fiber reinforced thermosetting plastic **coil formers** with 11 or 12 terminal pins, suitable for automatic winding machines, flame-retardant in accordance with UL 94 V-0. Permissible soldering temperature max. 400 °C/752 °F, 2 sec (refer to page 85, para. 8.2). For winding details refer to page 68. Spring steel **clamps** (tinned) with ground terminal.



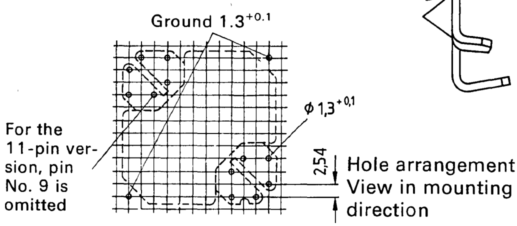
Clamp[1]



Solder clip



Dimensions in mm

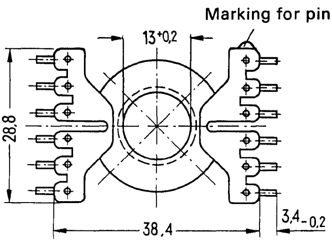


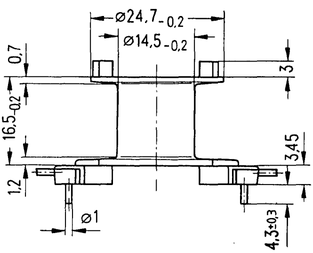
Coil former Number of sections	Useful winding cross-section A_N of one section mm²	total mm²	Average length of turn l_N mm	A_R value[2] µΩ	Approx. weight g	Number of pins	Ordering code (PU: 200)
1	73	73	61	28.7	2.5	11	B65816-A1011-D001
						12	B65816-A1012-D001
2	35	70		30	2.7	11	B65816-A1011-D002
						12	B65816-A1012-D002
Clamp (approx. weight 0.5 g; ordering code for each clamp, two required)							B65816-A2001-X000
Insulating washers for double clad PC boards							B65816-B2005-X000
Sliding-on **solder clip** for soldering thick wires							B65888-A2004-X000
Insulating washer between core and coil							B65816-A5000-X000
Drawing details for the assembly of mounting devices							C61407-A3-A9

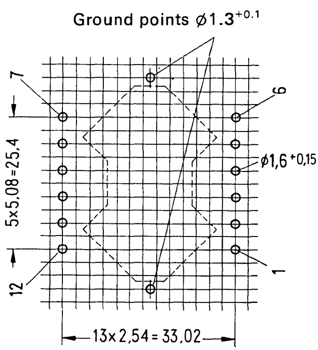
[1] Pressure per clamp pair: 55 ... 70 N   [2] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

Coil formers for power transformers B 65816

Glass-fiber reinforced polyterephthalate **coil former** with 12 terminals; flame-retardant in accordance with UL 94 V-0. Permissible soldering temperature max. 400 °C/752 °F, 2 sec (refer to page 85, paragraph 8.2). For winding details refer to page 68.





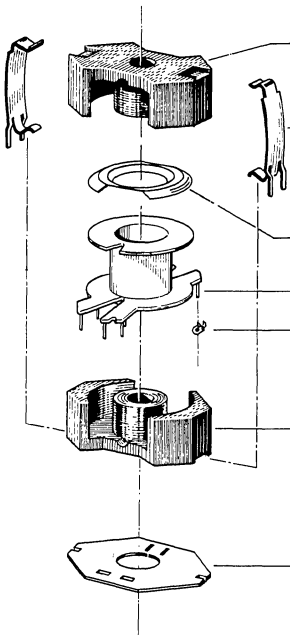


Hole arrangement
View in mounting direction
(Intermediate spacing should be considered.)

Dimensions in mm

Coil former							Ordering code (PU: 200)
Number of sections	Useful winding cross section A_N of one section mm²	total mm²	Average length of turn l_N mm	A_R value[1] µΩ	Approx. weight g	Number of pins	
1	72	72	61	28.7	2.5	12	B65816-A1512-T001

[1] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

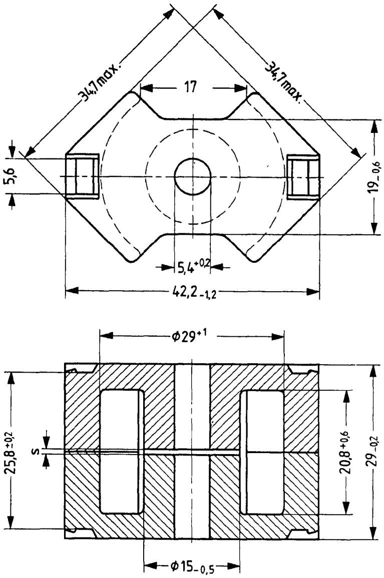


Individual parts	Part No.	Page
Core	B65887	336
Clamps	B65888	337
Insulating washer for coil	B65888	337
Coil former with 1 section, 10 or 12 pins	B65888	337
Sliding-on solder clips for soldering thick wires	B65888	337
Core	B65887	336
Insulating washer for double clad PC boards	B65888	337

Additionally available:

Coil former for power transformers	B65888	338

RM 14 cores complying with DIN 41 980 or IEC publication 431.



Magnetic characteristics

Core factor	$\Sigma\, l/A$ =	0.40	mm^{-1}
Effective length	l_e =	71	mm
Effective area	A_e =	178	mm^2
Min. core cross section[1]	A_{min} =	147	mm^2
Effective volume	V_e =	12600	mm^3

Approx. weight 65 g/set

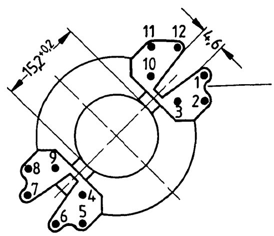
Dimensions in mm

A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 100 sets)
Gapped					
160	± 3 % ≙ A	N 41	1,9	51	B65887-A0160-A041
250			1,0	80	B65887-A0250-A041
◥ 400			0,5	127	B65887-A0400-A041
630			0,3	201	B65887-A0630-A041
1000			0,15	318	B65887-A1000-A041
1600	± 5 % ≙ J		0,07	510	B65887-A1600-J041
2500	± 10 % ≙ K		0,04	800	B65887-A2500-K041
Ungapped					
◥ 4500	$^{+30}_{-20}$ % ≙ R	N 27		1430	B65887-A0000-R027
◥ 6000		N 41		1910	B65887-A0000-R041
8700		N 30		2770	B65887-A0000-R030

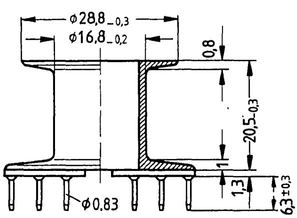
[1] Necessary for calculating the max. flux density
◥ to be preferred

Coil former, clamps, and insulating washers B 65 888

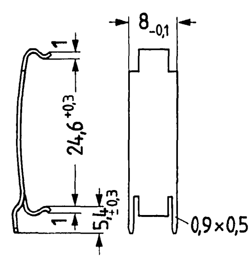
Glass-fiber reinforced thermosetting plastic coil former with 10 or 12 terminal pins, flame-retardant in accordance with UL 94 V-0. Permissible soldering temperature max. 400 °C/752 °F, 2 sec (refer also to page 85, para. 8.2). For winding details refer to page 68.
Spring steel **clamps** with ground terminal.

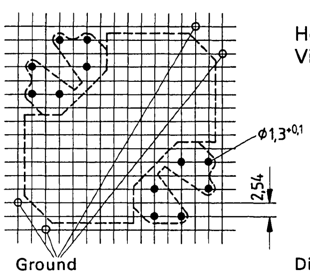


Marking groove
for pin 1
For the 10 pin-version
pins No. 5 and 8 are
omitted



Clamp[1)]

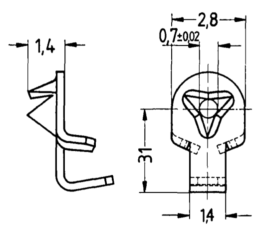




Hole arrangement
View in mounting direction

Dimensions in mm

Solder clip



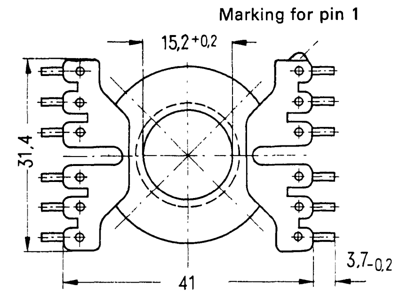
Coil former						**Ordering code**
Number of sections	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[2)] µΩ	Approx. weight g	Number of pins	(PU: 100)
1	107	71.5	23	3	10	B65888-B1001-D001
					12	B65888-B1002-D001
Clamp (approx. weight 1.0 g; ordering code for each clamp, two required)						B65888-A2001-X000
Insulating washer for double clad PC boards						B65888-A2005-X000
Sliding-on **solder clip** for soldering thick wires						B65888-A2004-X000
Insulating washer between core and coil						B65888-A5000-X000

1) Pressure per clamp pair: 65 ... 80 N

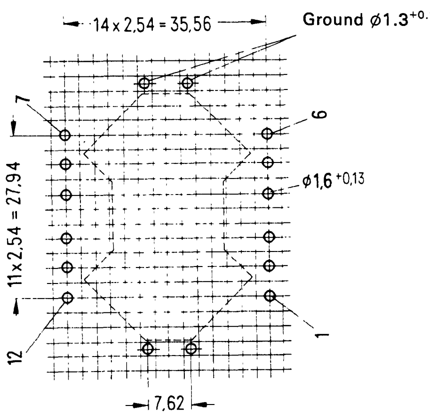
2) $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns^2)

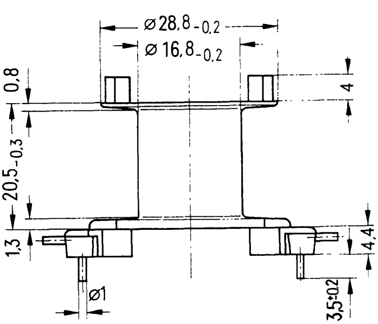
Coil former for power transformers B 65 888

Glass-fiber reinforced polyterephthalate **coil former** with 12 terminal pins, flame-retardant in accordance with UL 94 V-0. Permissible soldering temperature max. 400 °C/752 °F, 2 sec (refer also to page 85, para. 8.2). For winding details refer to page 68.



Hole arrangement
View in mounting direction
(Intermediate spacing should be considered)



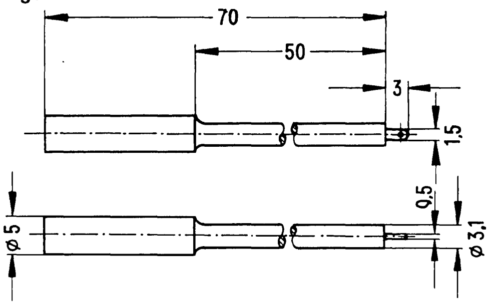


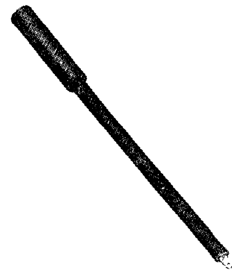
Dimensions in mm

Coil former						Ordering code (PU: 100)
Number of sections	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1)] µΩ	Approx. weight g	Number of pins	
1	106	71.5	23	3	12	B65888–A1512–T001

1) $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

Figure 1

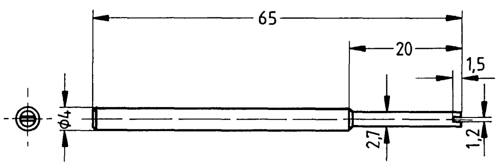


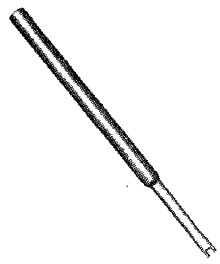


Thermosetting plastic **adjusting screw driver** with injection-molded blade for slotted screw cores.

Ordering code B63399–A0001–X000

Figure 2

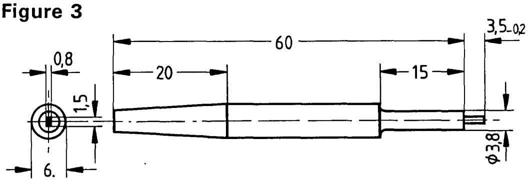


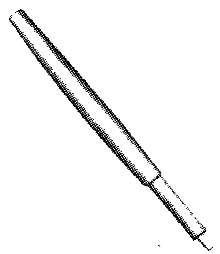


Thermosetting plastic **adjusting screw driver** for screw cores with leg.

Ordering code B63399–A0002–X000

Figure 3





Dimensions in mm

Thermosetting plastic **adjusting screw driver** with injection-molded blade for adjusting screws fitting core holes 4.4 mm and 5.4 mm according to core sizes 22 dia. x 13 up to 36 dia. x 22, as well as RM 8 and RM 10.

Ordering code B63399–B0001–X000

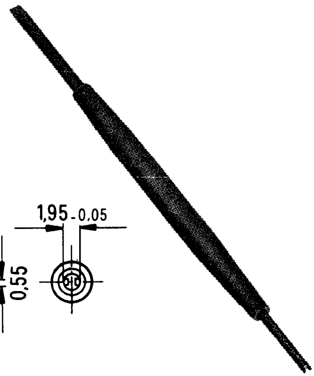
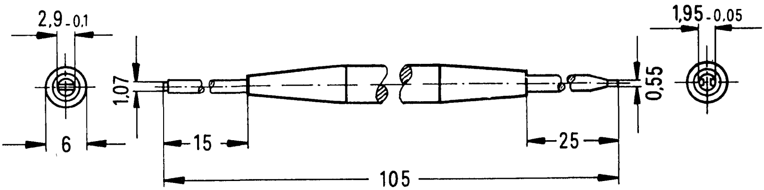


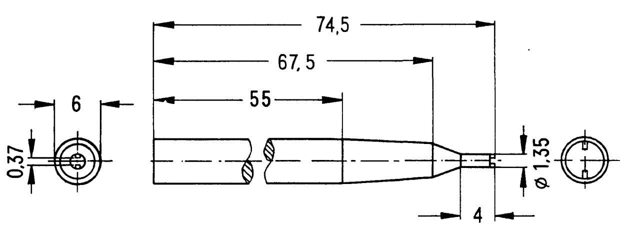
Figure 4

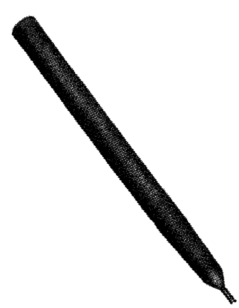


Thermosetting plastic **adjusting screw driver** for adjusting screws fitting core holes 2 mm dia. (thin end) according to core sizes 9 dia. x 5 and 11 dia. x 7, as well as RM 4 and RM 5.
The thicker end fits core holes 3 mm dia. according to the core sizes 14 dia. x 8 up to 18 dia. x 14 as well as RM 6, R 6, and RM 7.

Ordering code B63399-B0004-X000

Figure 5



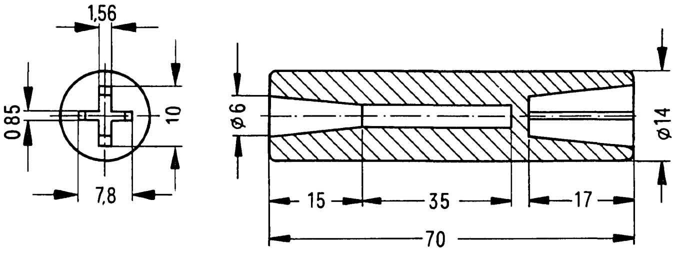


Dimensions in mm

Thermosetting plastic **adjusting screw driver**, the thinner end fitting miniature adjusting screws of core size 4.6 dia. x 4.1 and 7 dia. x 4. The thicker end fits miniature coil 4.6 dia. x 5.2 mm (cup can be screwed on).

Ordering code B63399-A1007-X000

Figure 6



Dimensions in mm

Thermosetting plastic **handle**, fitting adjusting screw driver of figure 3, 4 and 5.

Ordering code B63399–B0005–X000

PM Cores

PM Cores

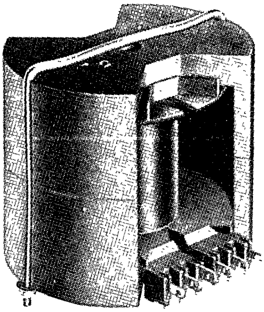


Figure 1

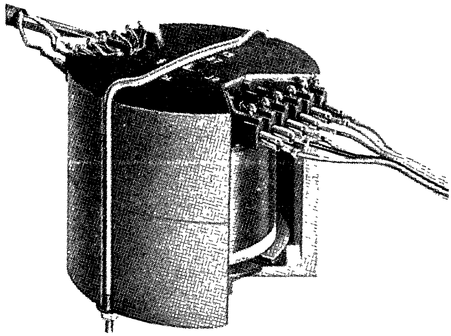


Figure 2

General

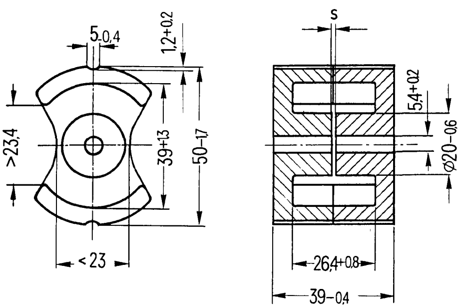
In power electronics, transformers are increasingly used for handling high powers in the medium and high frequency range, not only in switched-mode power supplies and other forms of dc/dc converters. For numerous design tasks in telecommunications and industrial electronics (e.g. power pulse transformers in radar transmitters, antenna matching networks, machine control systems, thyristor firing transformers and others), the pot core shape offers various advantages: wide flux area for high power at a minimum number of turns, thus causing only low magnetic leakage and stray capacitance; the closed form provides good shielding and precisely ground air gaps, moreover, straightforward assembly and economic mounting.

A family of large pot cores, briefly designated "PM" cores (for **P**ot core **M**odule) are introduced in the following.

Due to the weight of the fully wound transformer choke, mounting on usual PC boards may in some cases require additional mechanical support, particularly if a large core, such as that of 87 mm dia., is used. In such cases, the coil former should be mounted with its terminals upwards (refer to figure 2). Depending on the kind of equipment, the terminals may be solder tags or plug-in sleeves as flat plug terminals. Coil formers with AMP plugs, for example, are particularly recommended at high currents or for thick leads.

PM cores complying with DIN 41 989 (at present only draft)

Owing to their large apertures for bringing out the leads, these cores are particularly suitable for power transformers. For design details refer to chapter: "Cores for high power".



Approx. weight 140 g/set

Dimensions in mm

Magnetic characteristics

Core factor	$\Sigma\, l/A$ =	0.255	mm^{-1}
Effective length	l_e =	87	mm
Effective area	A_e =	340	mm^2
Min. core cross section[1]	A_{min} =	280	mm^2
Effective volume	V_e =	29600	mm^3

Accessories

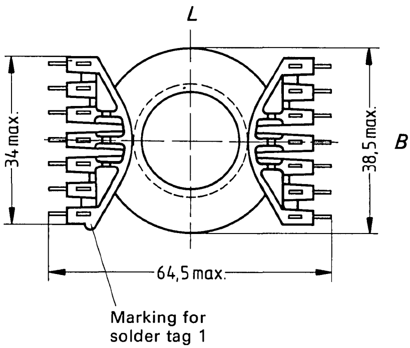
Coil former with 14 pins for vertical and horizontal mounting.
Clamping yoke with base plate.

A_L value nH	tolerance	SIFERRIT material	Total air gap *s* in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 20 sets)
Gapped					
250	±3 % ≙ A	N 27	2,0	51	B65646-A0250-A027
3150	±15 % ≙ L	N 27	0,08	639	B65646-A3150-L027
Ungapped					
7400	$^{+30}_{-20}$ % ≙ R	N 27		1500	B65646-A0000-R027

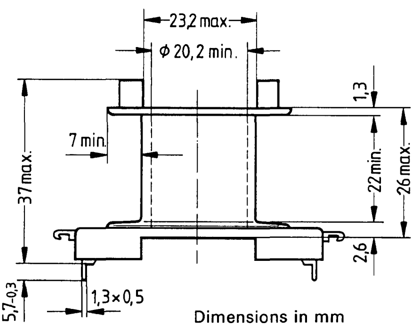
[1] Necessary for calculating the max. induction

Coil former B 65 647, for vertical mounting

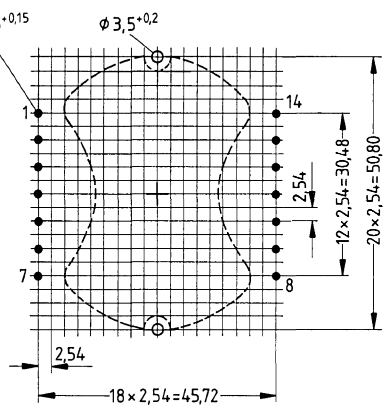
Glass-fiber reinforced polyterephthalate coil former with 14 solder terminals[1], flame-retardant in accordance with UL 94 V-0.
Permissible solder temperature 400 °C/752 °F, 2 sec.
For winding details refer to page 69.



Built-in dimensions for the transformer
L = 65 mm
B = 59 mm
H = 45 mm



Hole arrangement
View in mounting direction



Dimensions in mm

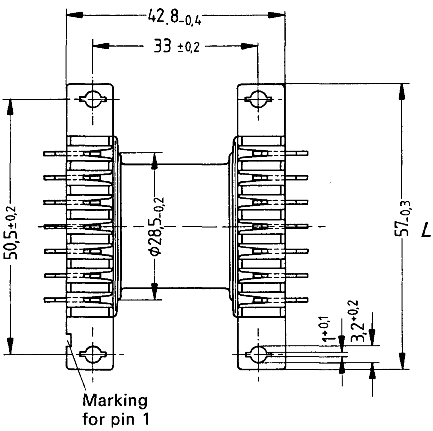
Number of sections	Useful winding cross section A_N mm^2	Average length of turn l_N mm	A_R value[2] µΩ	Approx. weight g	**Ordering code** (PU: 20)
1	154	96.8	21.6	6	B65647–B1014–T001

[1] This coil former is also available with 14 flat plugs 2.8 x 0.6 mm Ordering code B65647–A1114–T001
or without terminals Ordering code B65647–A1000–T001

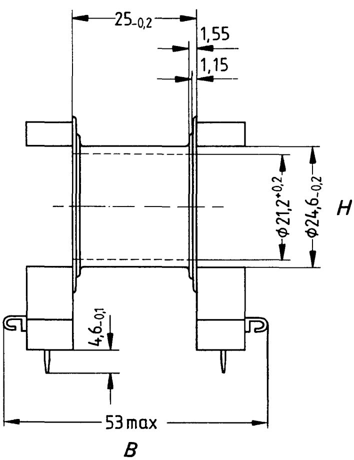
[2] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns^2)

Coil former B 65 647, for horizontal mounting

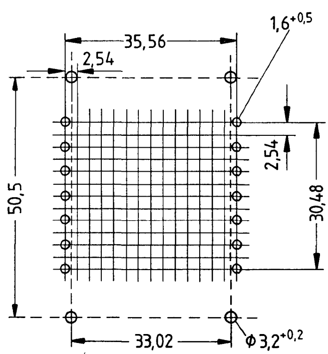
Glass-fiber reinforced polyterephthalate coil former with 14 solder terminals, flame-retardant in accordance with UL 94 V-0. Additional fixing by screws and nuts M3 is possible. Permissible solder temperature max. 400 °C/752 °F, 2 sec. For winding details refer to page 69.



Built-in dimensions for the transformer
L = 62 mm
B = 55 mm
H = 45 mm



Hole arrangement
View in mounting direction



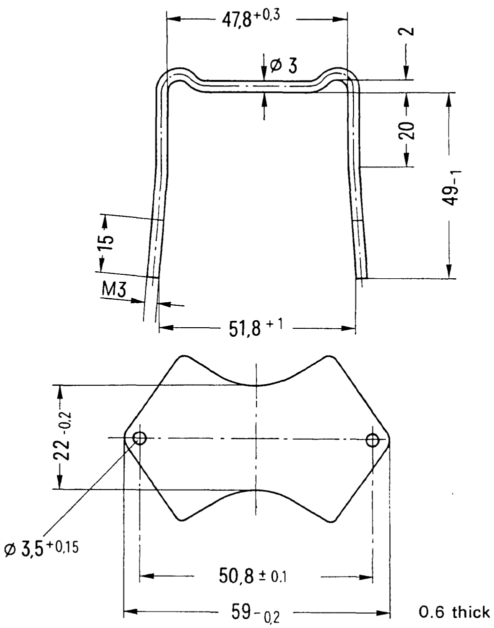
Dimensions in mm

Number of sections	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1] µΩ	Approx. weight g	**Ordering code** (PU: 20)
1	136	97	24.5	19.5	B65647-J1014-T001

[1] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

Mounting **yoke and base plate B 65 647** (for chassis mounting or PC mounting). This mounting assembly should only be used with the coil former B65647–B**** (vertical).

The mounting assembly comprises a 3 mm dia. brass clamping yoke with thread and a 0.6 mm thick aluminum base plate. Fixing nuts M 3 and washers are included in delivery. For chassis mounting, the coil former has to be mounted with its pins upwards.



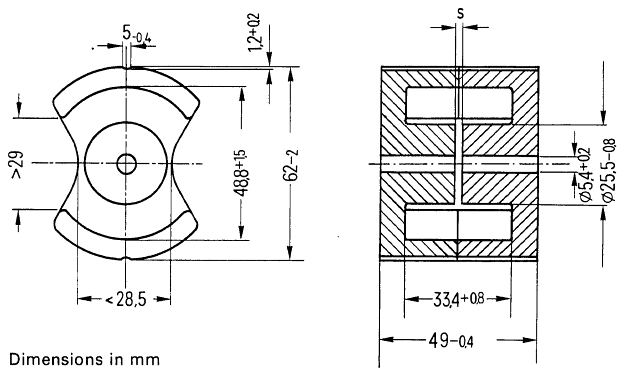
Approx. weight 15 g

Dimensions in mm

Mounting assembly B65647	Ordering code (PU: 20 sets)
Complete mounting assembly incl. nuts and washers	B65647–A2000–X000

PM cores complying with DIN 41 989 (at present only draft)

Owing to their large apertures for bringing out the leads, these cores are particularly suitable for power transformers. For design details refer to chapter: "Cores for high power".



Dimensions in mm

Approx. weight: 280 g/set

Magnetic characteristics

Core factor	$\Sigma\, l/A$ =	0.205	mm^{-1}
Effective length	l_e =	113	mm
Effective area	A_e =	550	mm^2
Min. core cross section[1]	A_{min} =	470	mm^2
Effective volume	V_e =	62200	mm^3

Accessories

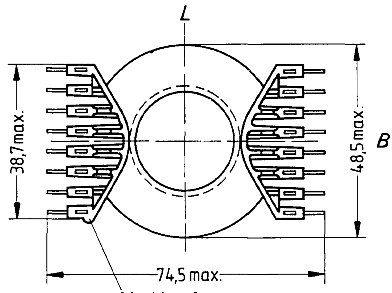
Coil former with 14 pins
Clamping yoke with base plate.

A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 20 sets)
Gapped					
315	± 3 % ≙ A	N 27	2,6	51	B65684–A0315–A027
4000	± 15 % ≙ L	N 27	0,1	652	B65684–A4000–L027
Ungapped					
9200	$^{+30}_{-20}$ % ≙ R	N 27		1500	B65684–A0000–R027

[1] Necessary for calculating the max. induction

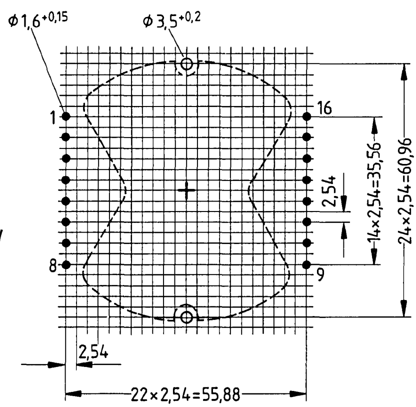
Coil former B 65 685

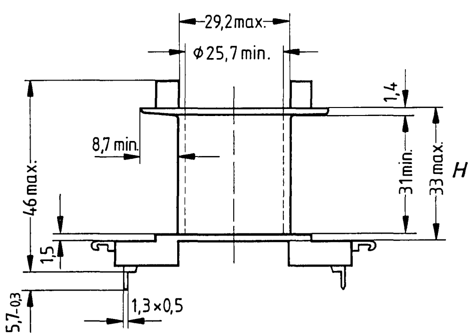
Glass-fiber reinforced polyterephthalate coil former with 16 solder terminals[1], flame-retardant in accordance with UL 94 V-0.
Permissible solder temperature 400 °C/752 °F, 2 sec.
For winding details refer to page 69.



Built-in dimensions for the transformer
L = 76 mm
B = 69 mm
H = 55 mm

Hole arrangement
View in mounting direction





Dimensions in mm

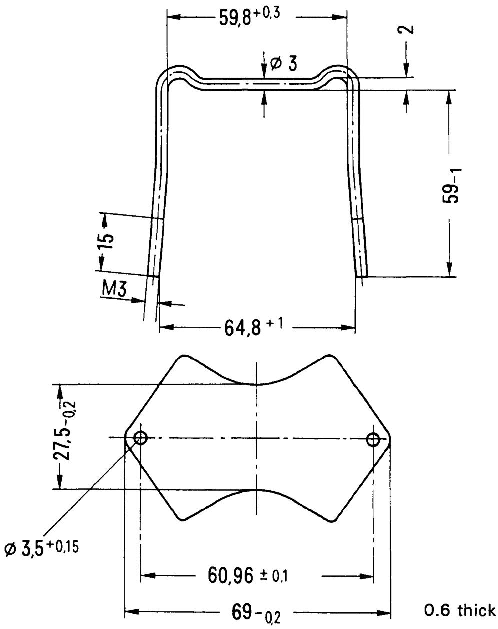
Number of sections	Useful winding cross section A_N mm^2	Average length of turn l_N mm	A_R value[2] µΩ	Approx. weight g	**Ordering code** (PU: 20)
1	270	120	15.4	10	B65685–B1016–T001

[1] This coil former is also available with 16 flat plugs 2.8 x 0.6 mm Ordering code B65685–A1116–T001
or without terminals Ordering code B65685–A1000–T001

[2] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns^2)

Mounting yoke and base plate B 65 685 (for chassis mounting or PC mounting).

The mounting assembly comprises a 3 mm dia. brass clamping yoke with thread and a 0.6 mm thick aluminum base plate. Fixing nuts M 3 and washers are included in delivery. For chassis mounting, the coil former has to be mounted with its pins upwards.



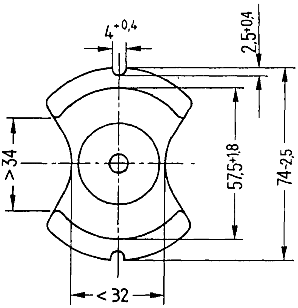
Approx. weight: 18 g

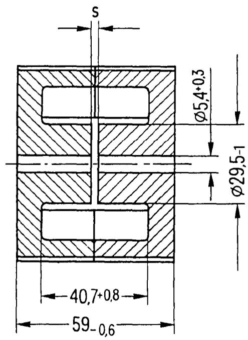
Dimensions in mm

Mounting assembly B65685	**Ordering code** (PU: 20 sets)
Complete mounting assembly incl. nuts and washers	B65685–A2000–X000

PM cores complying with DIN 41 989 (at present only draft)

Owing to their large apertures for bringing out the leads, these cores are particularly suitable for power transformers. For design details refer to chapter: "Cores for high power".





Dimensions in mm

Approx. weight 460 g/set

Magnetic characteristics

Core factor	$\Sigma\, l/A =$	0.18	mm^{-1}
Effective length	$l_e =$	133	mm
Effective area	$A_e =$	740	mm^2
Min. core cross section¹⁾	$A_{min} =$	630	mm^2
Effective volume	$V_e =$	98000	mm^3

Accessories

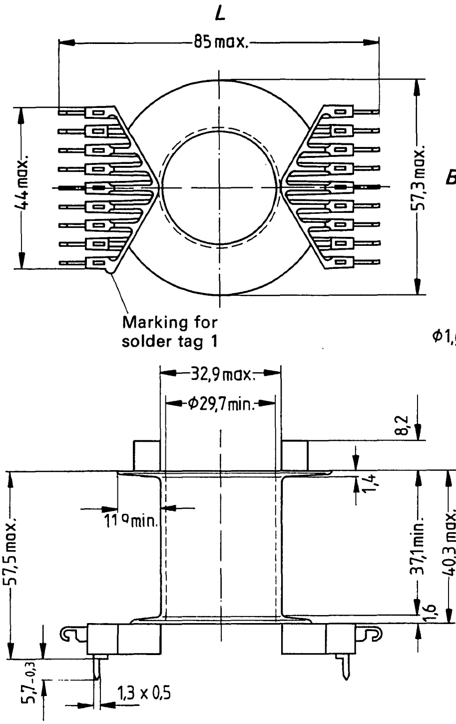
Coil former with 18 pins
Clamping yoke with base plate

A_L value nH	tolerance	SIFERRIT material	Total air gap *s* in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 10 sets)
Ungapped					
10000	$^{+30}_{-20}$ % ≙ R	N27	—	1430	B65686-A0000-R027

1) Necessary for calculating the max. induction

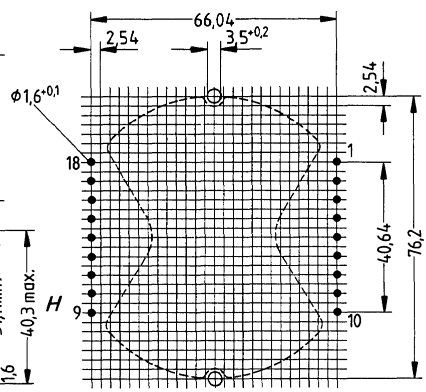
Coil former B 65 687

Glass-fiber reinforced polyterephthalate coil former with 18 solder terminals[1], flame-retardant in accordance with UL 94 V-0.
Permissible solder temperature 400 °C/752 °F, 2 sec.
For winding details refer to page 69.



Built-in dimensions for the transformer
L = 85,5 mm
B = 83,5 mm
H = 65 mm

Hole arrangement
View in mounting direction



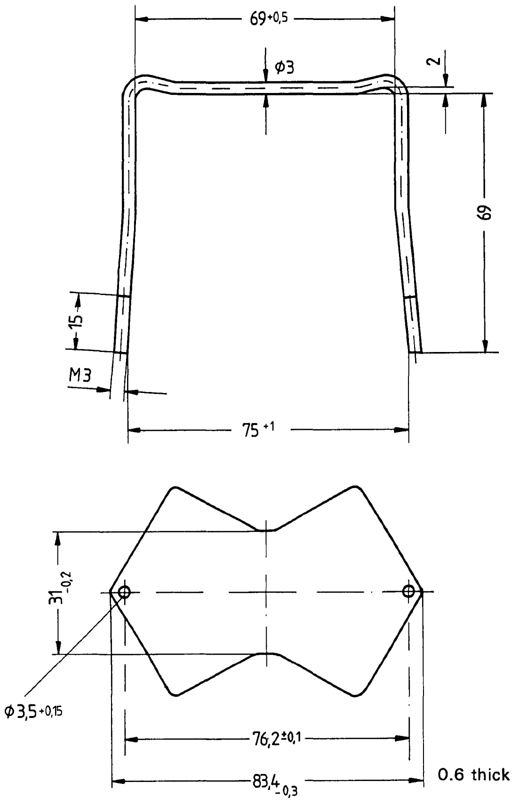
Dimensions in mm

Number of sections	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[2] µΩ	Approx. weight g	**Ordering code** (PU: 10)
1	442	140	10.9	20	B65687–A1018–T001

[1] This coil former is also available with 18 flat plugs 2.8 x 0.6 mm Ordering code B65687–A1118–T001
or without terminals Ordering code B65687–A1000–T001
[2] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

Mounting yoke and base plate B 65 687 (for chassis mounting or PC mounting).

The mounting assembly comprises a 3 mm dia. brass clamping yoke with thread and a 0.6 mm thick aluminum base plate. Fixing nuts M 3 and washers are included in delivery. For chassis mounting, the coil former has to be mounted with its pins upwards.



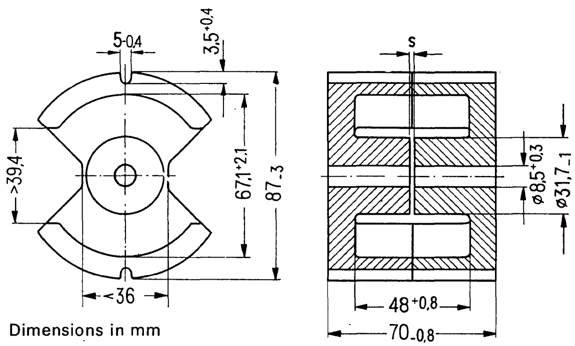
Approx. weight 19 g

Dimensions in mm

Mounting assembly B65687	Ordering code (PU: 10 sets)
Complete mounting assembly incl. nuts and washers	B65687–A2000–X000

PM cores complying with DIN 41 989 (at present only draft)

Owing to their large apertures for bringing out the leads, these cores are particularly suitable for power transformers. For design details refer to chapter: "Cores for high power".



Dimensions in mm

Approx. weight 770 g/set

Magnetic characteristics

Core factor	$\Sigma\, l/A$ =	0.167	mm^{-1}
Effective length	l_e =	153	mm
Effective area	A_e =	915	mm^2
Min. core cross section[1]	A_{min} =	700	mm^2
Effective volume	V_e =	140000	mm^3

Accessories

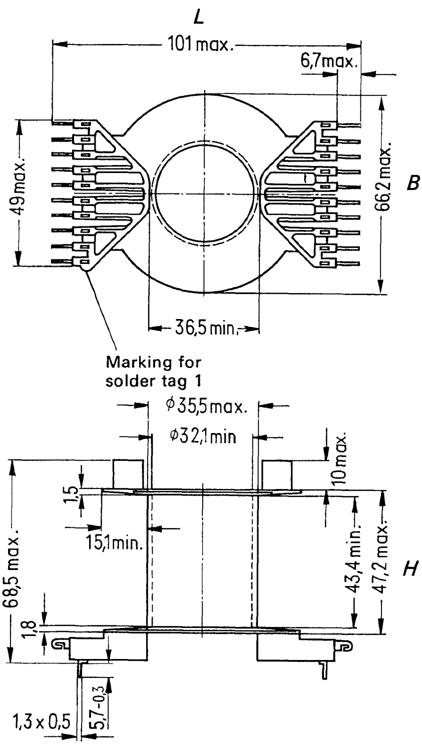
Coil former with 20 pins
Clamping yoke with base plate

A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 10 sets)
Gapped					
400	± 3 % ≙ A	N 27	3,5	53	B65713-A0400-A027
5000	± 15 % ≙ L	N 27	0,14	664	B65713-A5000-L027
Ungapped					
12000	$^{+30}_{-20}$ % ≙ R	N 27		1590	B65713-A0000-R027

[1] Necessary for calculating the max. induction

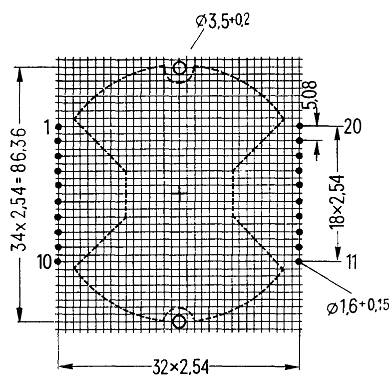
Coil former B 65714

Glass-fiber reinforced polyterephthalate coil former with 20 solder terminals[1], flame-retardant in accordance with UL 94 V-0.
Permissible solder temperature 400 °C/752 °F, 2 sec.
For winding details refer to page 69.



Built-in dimension
for the transformer
L = 103 mm
B = 95 mm
H = 76 mm

Hole arrangement
View in mounting direction



Dimensions in mm

Number of sections	Useful winding cross section A_N mm^2	Average length of turn l_N mm	A_R value[2] µΩ	Approx. weight g	**Ordering code** (PU: 10)
1	657	158	8.27	31	B65714-K1020-T001

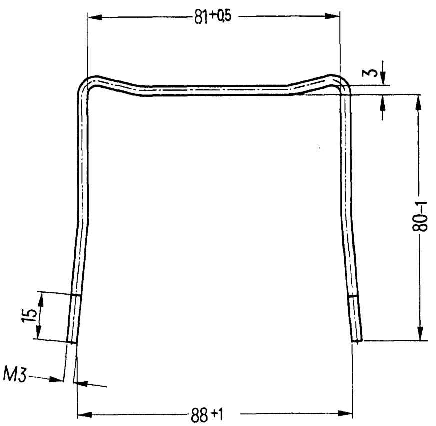
[1] This coil former is also available with 20 flat plugs 2.8 x 0.6 mm Ordering code B65714-J1120-T001
or without terminals Ordering code B65714-J1000-T001

[2] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns^2)

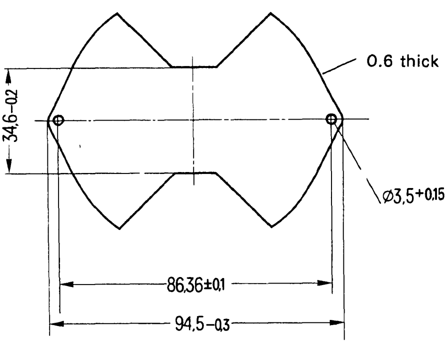
Mounting yoke and **base plate B 65714** (for chassis mounting or PC mounting).

The mounting assembly comprises a 3 mm dia. brass clamping yoke with thread and a 0.6 mm thick aluminum base plate. Fixing nuts M 3 and washers are included in delivery.

For chassis mounting, the coil former has to be mounted with its pins upwards.



Approx. weight 20 g

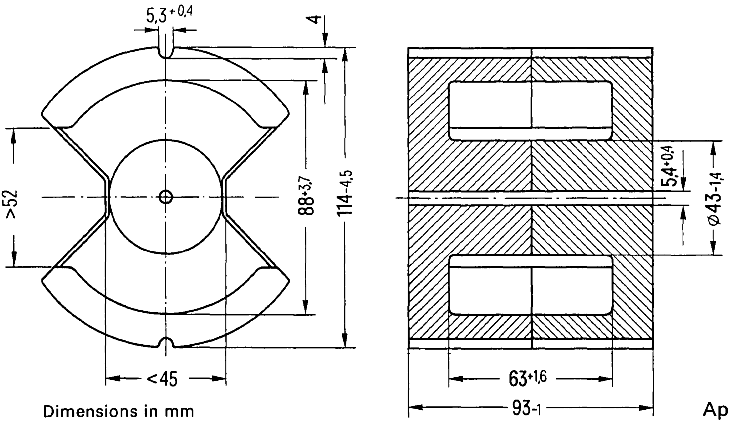


Dimensions in mm

Mounting assembly B65714	**Ordering code** (PU: 10 sets)
Complete mounting assembly incl. nuts and washers	B65714-A2000-X000

PM cores complying with DIN 41 989 (at present only draft)

Owing to their large apertures for bringing out the leads, these cores are particularly suitable for power transformers. For design details refer to chapter: "Cores for high power".



Dimensions in mm

Approx. weight 1940 g/set

Magnetic characteristics

Core factor	$\Sigma\, l/A =$	0.12 mm^{-1}
Effective length	$l_e =$	208 mm
Effective area	$A_e =$	1730 mm^2
Min. core cross section[1]	$A_{min} =$	1380 mm^2
Effective volume	$V_e =$	360000 mm^3

Accessory

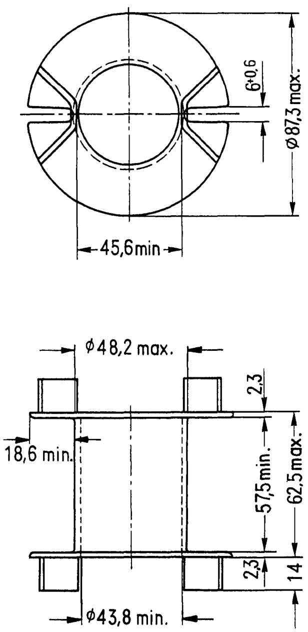
Coil former

A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 5 sets)
Gapped					
630	± 3 % ≙ A	N 27	3,8	60	B65733-A0630-A027
6300	± 15 % ≙ L	N 27	0,22	600	B65733-A6300-L027
Ungapped					
16000	$^{+30}_{-20}$ % ≙ R	N 27		1530	B65733-A0000-R027

[1] Necessary for calculating the max. induction

Coil former B 65734

Glass-fiber reinforced polyterephthalate coil former, without solder terminals, color code black. For winding details refer to page 69.



Dimensions in mm

Number of sections	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1] µΩ	Approx. weight g	**Ordering code** (PU: 5)
1	1070	210	6.75	42	B65734–B1000–T001

[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

Pot Cores for Proximity Switches

Pot Cores for Proximity Switches

General

It is the proximity switch which permits contactless handling of motions and switching functions. Application examples are: logging of the final position of conveyer belts, counting facilities at rotary parts, powerless sensing of indicating instruments in measuring and control technique.

In addition to bouncefree switching and resistance to mechanical wear – the decisive advantages of all contactless switches – inductive switches, moreover, feature insensitivity to contamination and recognition of metallic parts.

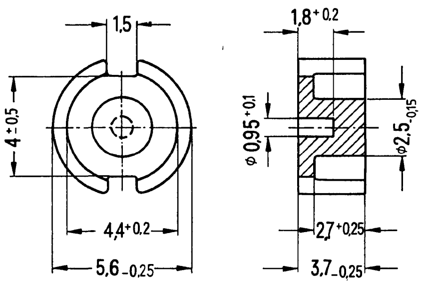
Pot cores and coil formers

A series of pot cores with diameters between 5.6 and 70 mm is available for inductive proximity switches. Their dimensions comply with the CENELEC draft standard EN 50008. Maximum response distances can thus be achieved for the various pot core sizes. The SIFERRIT material N22 is particularly suitable for applications in the main frequency range between 100 kHz and 1 MHz. The SIFERRIT material M33 is available for higher frequencies, meeting the small pot core sizes 5.6 mm dia. to 9.0 mm. For the port core sizes 7 mm dia. to 70 mm matching thermoplastic coil formers can be delivered. The operating temperature range of these coil formers covers −60 °C to +120 °C/−76 °F to +248 °F. During the potting process, the temperature may not exceed 120 °C/248 °F.

Summary

Pot core[1]			Coil former	Suitable for standard size as per EN 50008
Size (mm) dia. x height	Material	Ordering code	Ordering code	
5,6 x 3,7	N 22, M 33	B65931-C0000-X022	–	M 8 x 1
7,35 x 3,6	N 22, M 33	B65933-A0000-X022	B65512-C0000-T001	–
9 x 2,8	N 22, M 33	B65935-J0000 -X022	–	M 12 x 1
14,4 x 7,5	N 22	B65937-A0000-X022	B65542-B0000-T001	M 18 x 1
25 x 8,9	N 22	B65939-A0000-X022	B65940-A0000-M001	M 30 x 1,5
30,5 x 10,2	N 22	B65941-A0000-X022	B65942-A0000-M001	M 40 x 1,5
35 x 10,8	N 22	B65947-A0000-X022	–	–
47 x 14,9	N 22	B65943-A0000-X022	B65944-A0000-M001	–
70 x 14,5	N 22	B65945-A0000-X022	B65946-A0000-M001	–

[1] The quantity ordered does not include a pot core set (two halves) but only refers to one pot core half.



SIFERRIT material N 22

Approx. weight 0.15 g

Dimensions in mm

Ordering code
B65931-C0000-X022
(PU: 2000)

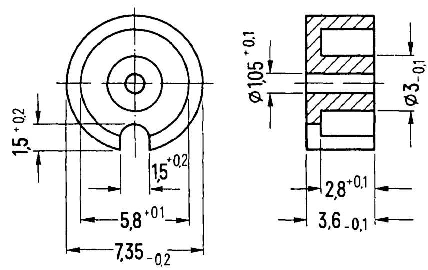
For these cores we recommend that the coil be manufactured by a formerless technique, e.g. using a lacquer-insulated wire coated with thermoplastic (self bonding wire).

Winding data for "winding without former"

Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1] µΩ
approx. 2.08	9.7	160

[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

Pot Core Halves 7.35 x 3.6 with Coil Former B 65933



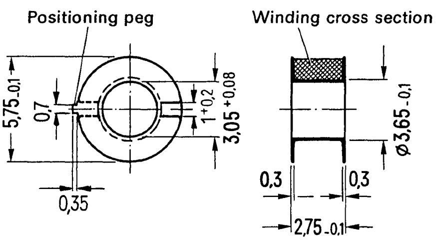
SIFERRIT material N 22

Approx. weight 0.3 g

Dimensions in mm

Ordering code
B65933–A0000–X022
(PU: 1000)

Glass-fiber reinforced polyterephthalate coil former B 65512

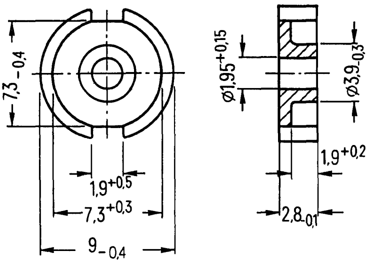


Dimensions in mm

Winding data

Useful winding cross section A_N mm^2	Average length of turn l_N mm	A_R value[1] µΩ	Approx. weight g	**Ordering code** (PU: 1000)
2.2	14.6	240	0.04	B65512–C0000–T001

[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns^2)



SIFERRIT material N 22

Approx. weight 0.6 g

Dimensions in mm

Ordering code
B65935–J0000–X022
(PU: 1000)

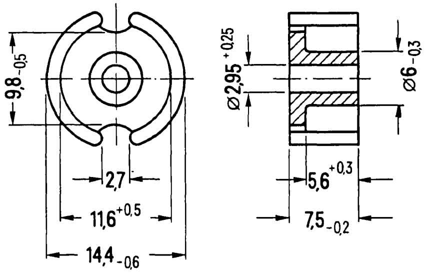
For these cores we recommend that the coil be manufactured by a formerless technique, e.g. using a lacquer-insulated wire coated with thermoplastic (self bonding wire).

Winding data for "winding without former"

Useful winding cross section A_N mm^2	Average length of turn l_N mm	A_R value[1] µΩ
2.88	17.6	210

[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns^2)

Pot Core Halves 14.4 x 7.5 with Coil Former B 65937



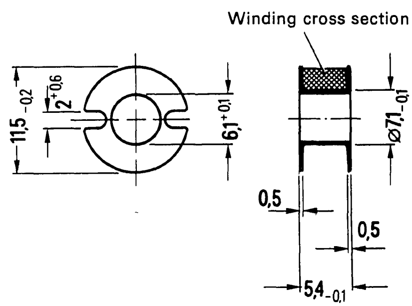
SIFERRIT material N 22

Approx. weight 2.5 g

Dimensions in mm

Ordering code
B65937-A0000-X022
(PU: 500)

Glass-fiber reinforced polyterephthalate coil former B 65542



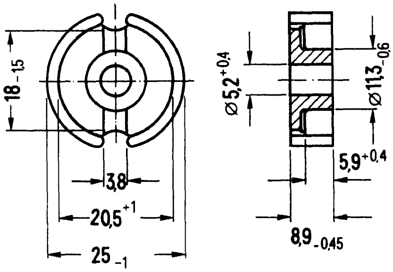
Dimensions in mm

Winding data

Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1] µΩ	Approx. weight g	**Ordering code** (PU: 500)
8.4	28	115	0.2	B65542-B0000-T001

[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

Pot Core Halves 25 x 8.9 with Coil Former B 65939



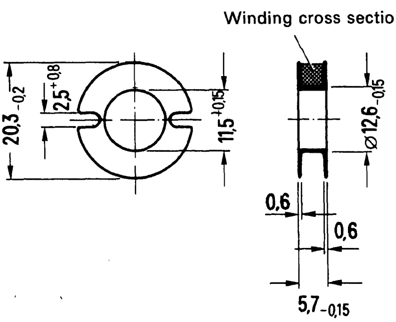
SIFERRIT material N 22

Approx. weight 9 g

Dimensions in mm

Ordering code
B65939-A0000-X022
(PU: 250)

Polycarbonate coil former B 65940



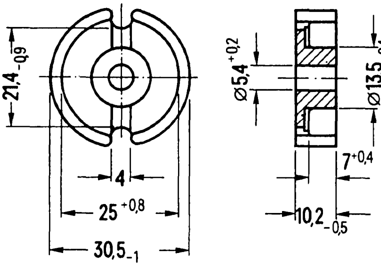
Dimensions in mm

Winding data

Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1] μΩ	Approx. weight g	**Ordering code** (PU: 250)
16.7	51	105	0.5	B65940-A0000-M001

[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

Pot Core Halves 30.5 x 10.2 with Coil former — B 65941



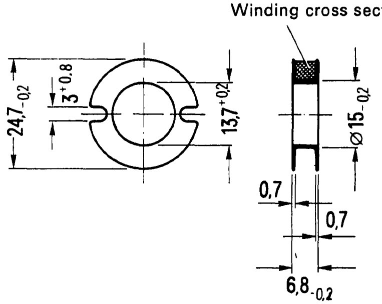
SIFERRIT material N 22

Approx. weight 18 g

Dimensions in mm

Ordering code
B65941–A0000–X022
(PU: 250)

Polycarbonate coil former — B 65942

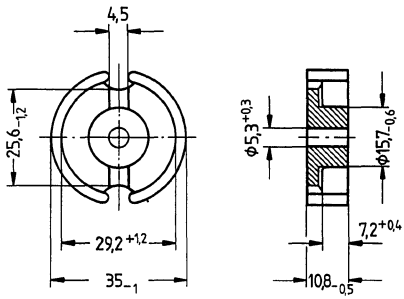


Dimensions in mm

Winding data

Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1] μΩ	Approx. weight g	**Ordering code** (PU: 250)
24.4	62	87	0.65	B65942–A0000–M001

[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

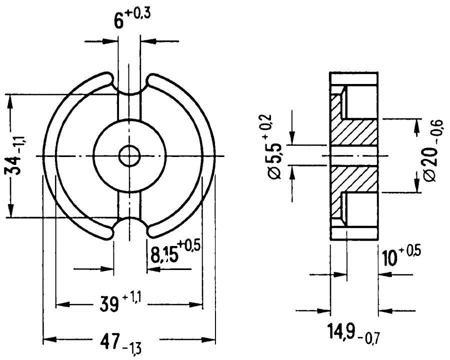


SIFERRIT material N 22

Approx. weight 28 g

Dimensions in mm

Ordering code
B65947–A0000–X022
(PU: 250)



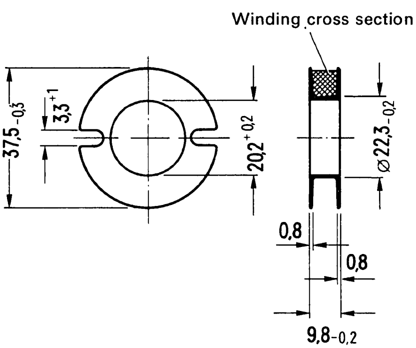
SIFERRIT material N 22

Approx. weight 62 g

Dimensions in mm

Ordering code
B65943-A0000-X022
(PU: 100)

Polycarbonate coil former B 65944



Dimensions in mm

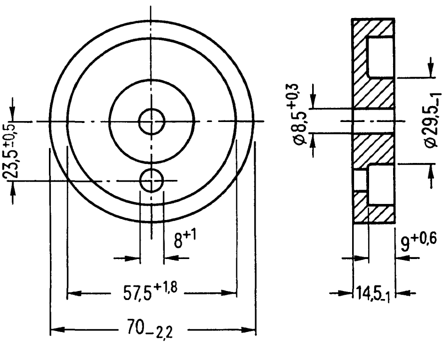
Winding data

Useful winding cross section A_N mm^2	Average length of turn l_N mm	A_R value[1] μΩ	Approx. weight g	**Ordering code** (PU: 100)
62	95	52.5	2.5	B65944-A0000-M001

[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns[2])

Pot Core Halves 70 x 14.5 with Coil Former

B 65945



SIFERRIT material N 22

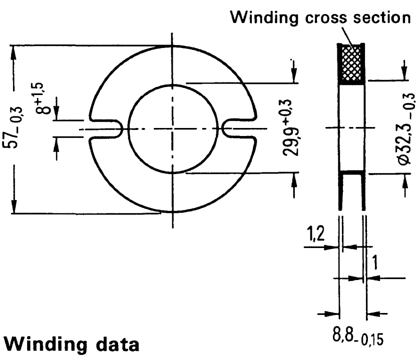
Approx. weight 130 g

Dimensions in mm

Ordering code
B65945–A0000–X022
(PU: 100)

Polycarbonate coil former

B 65946



Winding data

Useful winding cross section A_N mm^2	Average length of turn l_N mm	A_R value[1] μΩ	Approx. weight g	**Ordering code** (PU: 100)
77	140	62	5	B65946–A0000–M001

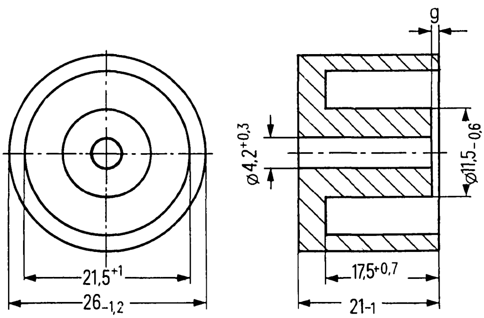
[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns^2)

CC Cores

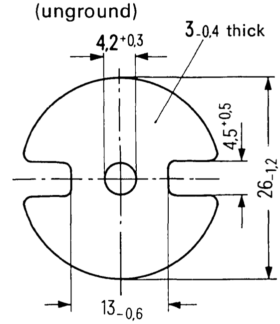
CC 26 cores with cap are particularly suitable for the construction of energy storage chokes of low leakage flux. For power applications, e.g. crossover networks in hi-fi speaker systems, the cores can also be used without cap (as C cores).

M4 screws made of non magnetic material (brass, plastic) are used for fixing the cores at their center hole.

Cup core
(unground)



Cap
(unground)



Dimensions in mm

Approx. weight:
with cap 29 g
without cap 24 g

Magnetic characteristics[1]

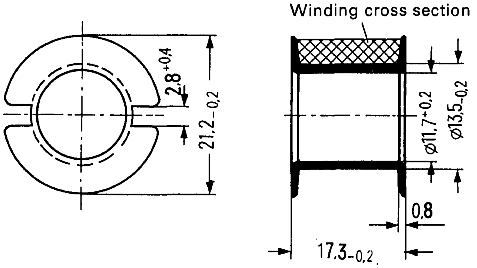
Core factor	$\Sigma\, l/A =$	0.50 mm^{-1}
Effective length	$l_e =$	52 mm
Effective area	$A_e =$	103 mm^2
Min. core cross section[2]	$A_{min} =$	84 mm^2
Effective volume	$V_e =$	5350 mm^3

Version	Air gap g mm	A_L value[1] approx. nH	SIFERRIT material	**Ordering code** (PU: 200)
Cup with air gap "g"	1 ± 0.3 ◥	210	N 27	B66442-A1000-X027
	2 ± 0.3	140		B66442-A2000-X027
	3 ± 0.3	100		B66442-A3000-X027
Cup without air gap	0			B66442-A0000-X027
Cap	–			B66442-J0000-X027

[1] with cap
[2] Necessary for calculating the max. induction
◥ to be preferred

Coil former for CC 26 cores

Glass-fiber reinforced polyterephthalate coil former; flame-retardant in accordance with UL 94 V-0.
For winding details refer to page 7.0.



Dimensions in mm

Winding data[1] for the coil former

Number of sections	Useful winding cross section A_N mm^2	Average length of turn l_N mm	A_R value[2] µΩ	Approx. weight g	**Ordering code** (PU: 200)
1	50	54	33	0.7	B66442–B1001–T001

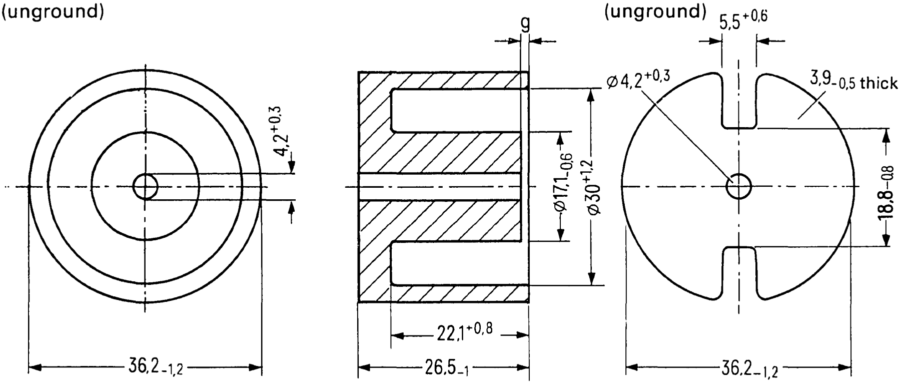
[1] The values also apply to C cores
[2] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns^2)

CC 36 cores with cap are particularly suitable for the construction of energy storage chokes of low leakage flux. For power applications, e.g. crossover networks in hi-fi speaker systems, the cores can also be used without cap (as C cores).

M4 screws made of non magnetic material (brass, plastic) are used for fixing the cores at their center hole.

Cup core (unground)

Cap (unground)



Approx. weight:
with cap 80 g
without cap 65 g

Dimensions in mm

Magnetic characteristics[1)]

Core factor	$\Sigma\, l/A =$	0.30 mm^{-1}
Effective length	$l_e =$	69 mm
Effective area	$A_e =$	230 mm^2
Min. core cross section[2)]	$A_{min} =$	204 mm^2
Effective volume	$V_e =$	15870 mm^3

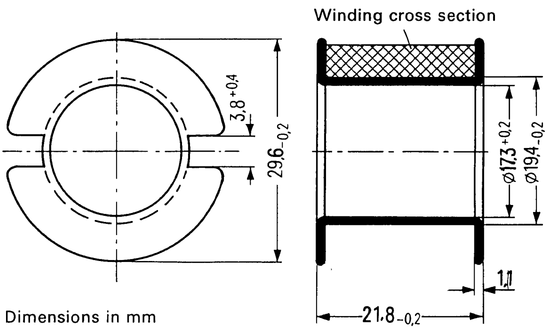
Version	Air gap *g* mm	A_L value[1)] approx. nH	SIFERRIT material	**Ordering code** (PU: 100)
Cup with air gap "g"	1 ± 0.3 ◥	400	N 27	B66443–A1000–X027
	2 ± 0.3	250		B66443–A2000–X027
	3 ± 0.3	190		B66443–A3000–X027
	4 ± 0.3	150		B66443–A4000–X027
Cup without air gap	0			B66443–A0000–X027
Cap	–			B66443–J0000–X027

[1)] with cap
[2)] Necessary for calculating the max. induction
◥ to be preferred

Coil former for CC 36 cores

Glass-fiber reinforced, thermoplastic polyterephthalate coil former; flame-retardant in accordance with UL 94 V-0.

For winding details refer to page 70.



Dimensions in mm

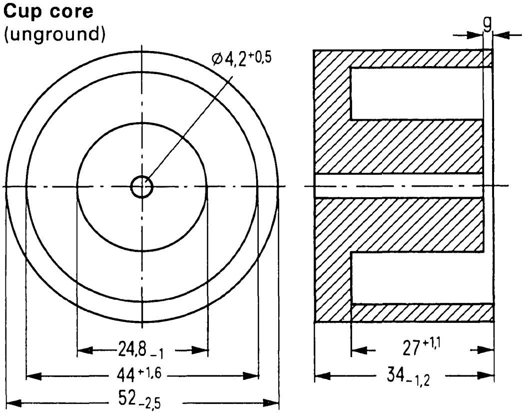
Winding data[1] for the coil former

Number of sections	Useful winding cross section A_N mm^2	Average length of turn l_N mm	A_R value[2] µΩ	Approx. weight g	**Ordering code** (PU: 100)
1	95	77	28	2.8	B66443–B1001–T001

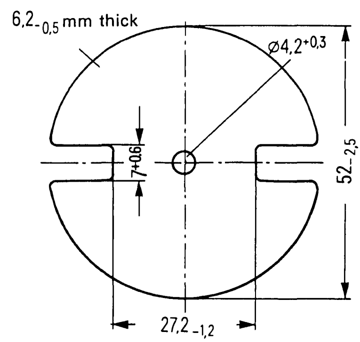
[1] The values also apply to C cores
[2] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns^2)

CC 50 cores with cap are particularly suitable for the construction of energy storage chokes of low leakage flux. For power applications, e.g. crossover networks in hi-fi speaker systems, the cores can also be used without cap (as C cores).
M4 screws made of non magnetic material (brass, plastic) are used for fixing the cores at their center hole.

Cup core
(unground)



Cap
(unground)



Dimensions in mm

Approx. weight:
with cap 220 g
without cap 165 g

Magnetic characteristics[1]

Core factor	$\Sigma\, l/A$ =	0.19 mm^{-1}
Effective length	l_e =	91 mm
Effective area	A_e =	480 mm^2
Min. core cross section[2]	A_{min} =	448 mm^2
Effective volume	V_e =	43680 mm^3

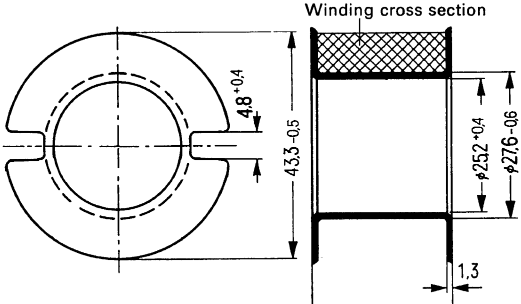
Version	Air gap mm	A_L value[1] approx. nH	SIFERRIT material	**Ordering code** (PU: 40)
Cup with air gap "g"	1 ± 0.3 ◥	730	N 27	B66446-A1000-X027
	2 ± 0.3	440		B66446-A2000-X027
	3 ± 0.3	320		B66446-A3000-X027
	4 ± 0.3	250		B66446-A4000-X027
Cup without air gap	0			B66446-A0000-X027
Cap	–			B66446-J0000-X027

[1] with cap
[2] Necessary for calculating the max. induction
◥ to be preferred

Coil former for CC 50 cores

Glass-fiber reinforced, thermoplastic polyterephthalate coil former; flame-retardant in accordance with UL 94 V-0.

For winding details refer to page 70.



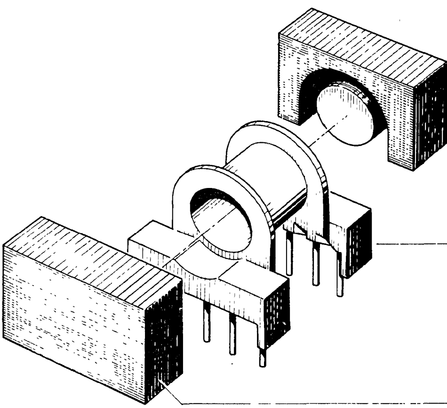
Dimensions in mm

Winding data[1] for the coil former

Number of sections	Useful winding cross section A_N mm^2	Average length of turn l_N mm	A_R value[2] µΩ	Approx. weight g	**Ordering code** (PU: 40)
1	178	111	21.5	7.4	B66446-B1001-T001

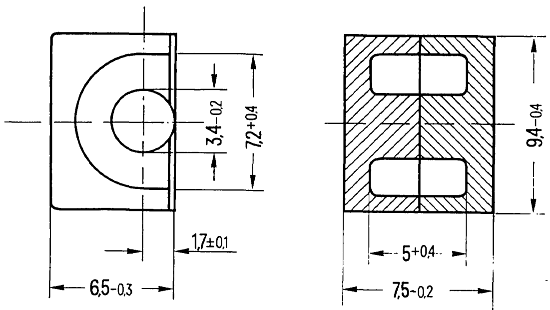
[1] The values also apply to C cores
[2] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns^2)

EP and Q Cores



Individual parts	Part No.	Page
Core	B65839	383
Coil former with 1 or 2 sections and 6 pins	B65840	384
Core	B65839	383

EP 7 cores of high permeability materials are suitable for the design of high inductance coils at high packing density. They are particularly suitable for transformers in printed circuits with up to 6 terminals. The wire ends of the winding are directly connected to the solder pins of the coil former.



Approx. weight 1.4 g/set

Dimensions in mm

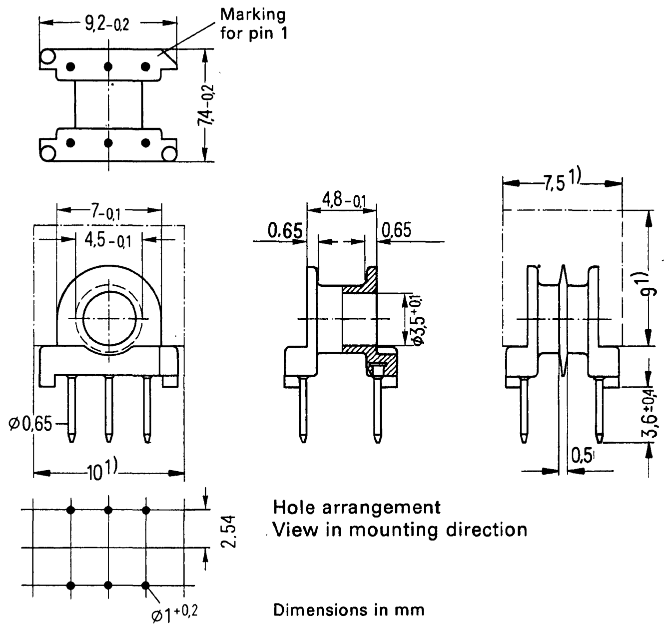
Magnetic characteristics

Core factor	$\Sigma\, l/A$ =	1.52 mm^{-1}
Effective length	l_e =	15.7 mm
Effective area	A_e =	10.3 mm^2
Effective volume	V_e =	162 mm^3

A_L value Ungapped nH	tolerance	SIFERRIT material	Effective permeability μ_e	**Ordering code** (PU: 500 sets)
1100	$^{+30}_{-20}$ % ≙ R	N 48	1330	B65839–A0000–R048
2000		N 30	2420	B65839–A0000–R030
5200	$^{+40}_{-30}$ % ≙ Y	T 38	6290	B65839–A0000–Y038

Coil former B 65 840

Glass-fiber reinforced thermosetting plastic coil former with 6 terminal pins, flame-retardant in accordance with UL 94 V-0. Permissible soldering temperature max. 400 °C/752 °F, 2 sec. (refer also to page 85, para. 8.2).
For winding details refer to page 71.

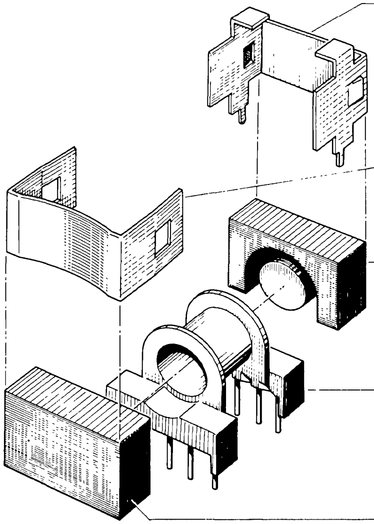


Hole arrangement
View in mounting direction

Dimensions in mm

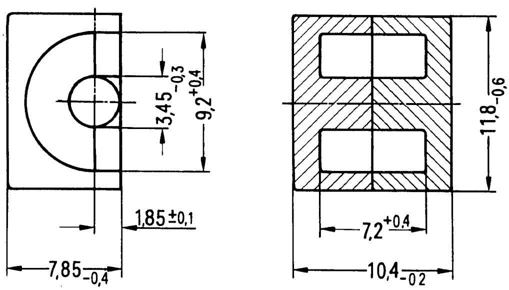
Number of sections	Useful winding cross section A_N of one section mm²	total mm²	Average length of turn l_N mm	A_R value[2] µΩ	Approx. weight g	**Ordering code** (PU: 500)
1	3.7	3.7	17.9	166	0.3	B65840-A1000-D001
2	1.6	3.2	17.9	192	0.4	B65840-A1000-D002

[1] Built-in dimension for the transformer
[2] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)



Individual parts	Part No.	Page
Yoke	B65842	388
Clamp	B65842	388
Core	B65841	386
Coil former with 1 or 2 sections, and 8 pins	B65842	387
Core	B65841	386

EP 10 cores of high permeability materials are suitable for the design of high inductance coils at high packing density. They are particularly suitable for transformers in printed circuits with up to 8 terminals. The wire ends of the winding are directly connected to the solder pins of the coil former.



Approx. weight 2.75 g/set

Dimensions in mm

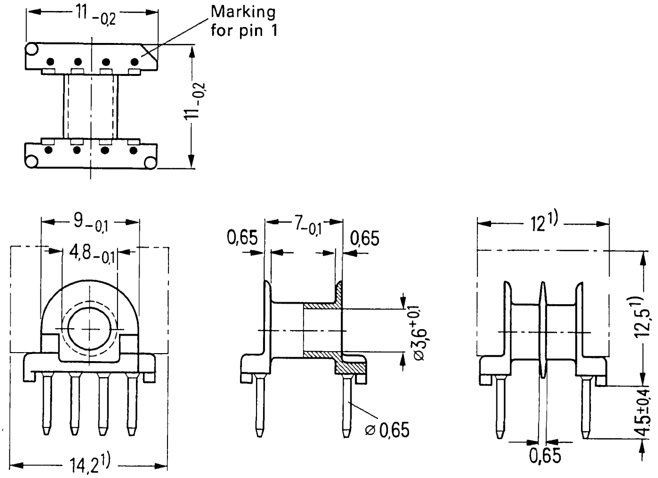
Magnetic characteristics

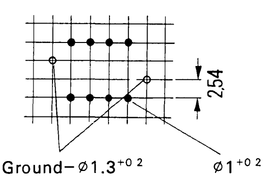
Core factor	$\Sigma\, l/A$ =	1.7 mm^{-1}
Effective length	l_e =	19.2 mm
Effective area	A_e =	11.3 mm^2
Effective volume	V_e =	217 mm^3

A_L value Ungapped nH	tolerance	SIFERRIT material	Effective permeability μ_e	**Ordering code** (PU: 200 sets)
1100	$^{+30}_{-20}$ % ≙ R	N 48	1490	B65841-A0000-R048
2000		N 30	2700	B65841-A0000-R030
3200		T 35	4330	B65841-A0000-R035
4800	$^{+40}_{-30}$ % ≙ Y	T 38	6490	B65841-A0000-Y038
4800	$^{+80}_{-0}$ % ≙ U	T 38	6490	B65841-A4800-U638

Coil former B 65 842

Glass-fiber reinforced thermosetting plastic coil former with 8 terminal pins, flame-retardant in accordance with 94 V-0. Permissible soldering temperature max. 400 °C/752 °F, 2 sec. (refer also to page 85, para. 8.2).
For winding details refer to page 71.





Hole arrangement
View in mounting direction

Dimensions in mm

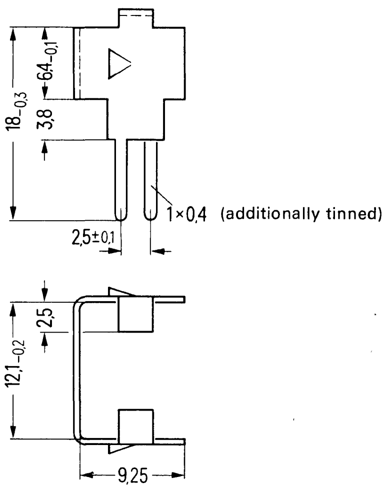
Number of sections	Useful winding cross section A_N of one section mm²	Useful winding cross section A_N total mm²	Average length of turn l_N mm	A_R value[2] μΩ	Approx. weight g	**Ordering code** (PU: 500)
1	11.4	11.4	21.5	65	0.6	B65842–A1000–D001
2	5.0	10.0		74	0.65	B65842–A1000–D002

[1] Built-in dimension for the transformer
[2] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

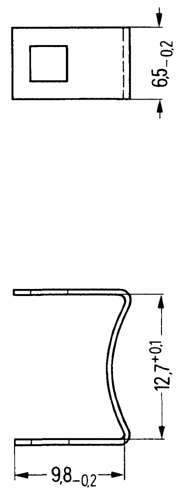
Mounting assembly B 65 842

consisting of a yoke and a spring clamp.

Yoke
made of 0.4 mm thick nickel silver



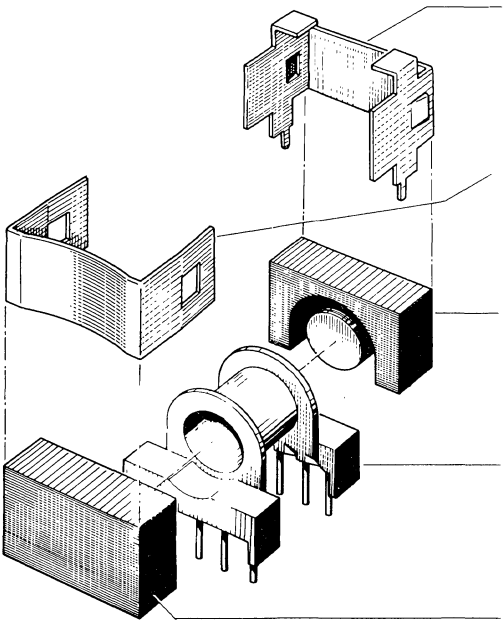
Clamp
made of 0.3 mm thick nickel silver



Dimensions in mm

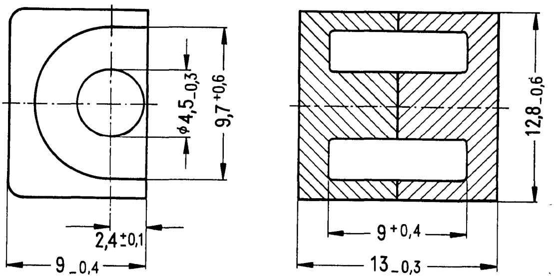
Approx. weight (yoke and clamp) 1.4 g

Ordering code (complete assembly) B65842–A2000–X000
(PU: 500)



Individual parts	Part No.	Page
Yoke	B65844	392
Clamp	B65844	392
Core	B65843	390
Coil former with 1 or 2 sections, and 10 pins	B65844	391
Core	B65843	390

EP 13 cores made of high permeability materials, are suitable for the design of high inductance coils at high packing density. These cores are particularly suitable for transformers in printed circuits with up to 10 terminals. The wire ends of the windings are directly connected to the solder pins of the coil former.



Approx. weight 5.1 g/set

Dimensions in mm

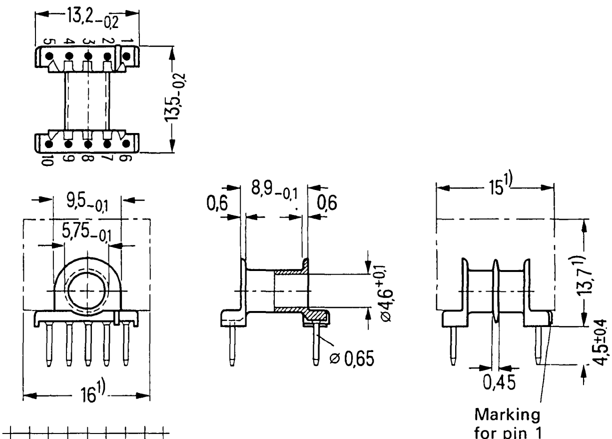
Magnetic characteristics

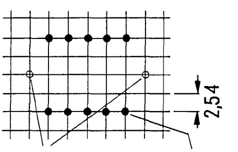
Core factor	$\Sigma\, l/A$ =	1.24 mm^{-1}
Effective length	l_e =	24.2 mm
Effective area	A_e =	19.5 mm^2
Effective volume	V_e =	472 mm^3

A_L value Ungapped nH	tolerance	SIFERRIT material	Effective permeability μ_e	**Ordering code** (PU: 500 set)
1400	$^{+30}_{-20}$ % ≙ R	N 48	1380	B65843-A0000-R048
2800		N 30	2760	B65843-A0000-R030
4400		T 35	4340	B65843-A0000-R035
7000	$^{+40}_{-30}$ % ≙ Y	T 38	6910	B65843-A0000-Y038
7000	$^{+80}_{-0}$ % ≙ U	T 38	6910	B65843-A7000-U638

Coil former B 65 844

Glass-fiber reinforced thermosetting plastic coil former with 10 terminal pins, flame-retardant in accordance with 94 V-0. Permissible soldering temperature max. 400 °C/752 °F, 2 sec. (refer also to page 85, para. 8.2).
For winding details refer to page 71.





Hole arrangement
View in mounting direction

Dimensions in mm

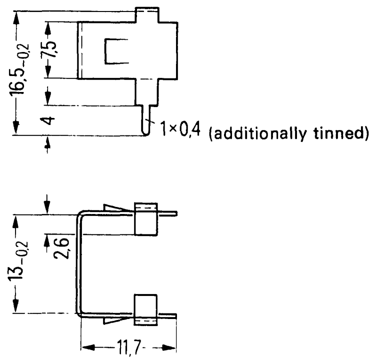
Number of sections	Useful winding cross section A_N of one section	Useful winding cross section A_N total	Average length of turn l_N	A_R value[2]	Approx. weight	**Ordering code** (PU: 500)
	mm^2	mm^2	mm	µΩ	g	
1	13.8	13.8	23.8	59.4	0.5	B65844-A1000-D001
2	6.5	13.0		63.2	0.6	B65844-A1000-D002

[1] Built-in dimension for the transformer
[2] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns[2])

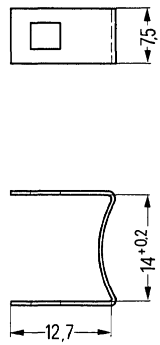
Mounting assembly B 65844

Mounting assembly consisting of a yoke and a spring clamp.

Yoke
made of 0.4 mm thick nickel silver



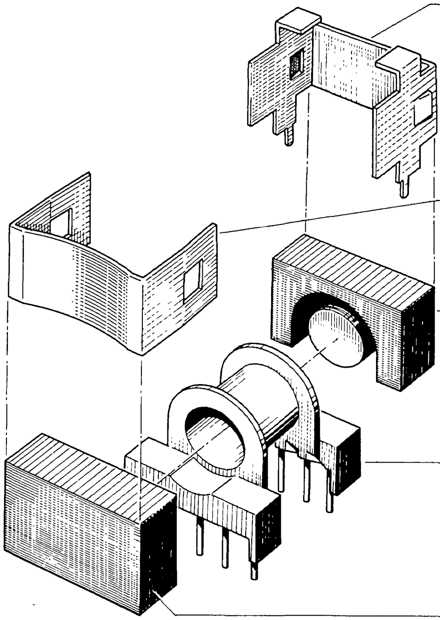
Clamp
made of 0.4 mm thick nickel silver



Dimensions in mm

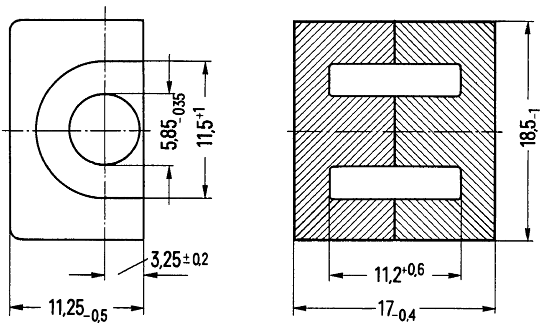
Approx. weight (yoke and clamp) 1.9 g

Ordering code (complete assembly) B65844–A2000–X000
(PU: 500)



Individual parts	Part No.	Page
Yoke	B65846	396
Clamp	B65846	396
Core	B65845	394
Coil former with 1 or 2 sections, and 8 pins	B65846	395
Core	B65845	394

EP 17 cores of high permeability materials are suitable for the design of high inductance coils at high packing density. They are especially suitable for transformers in printed circuits with up to 8 terminals. The wire ends are directly connected to the solder pins of the coil former.



Approx. weight 11.1 g/set

Dimensions in mm

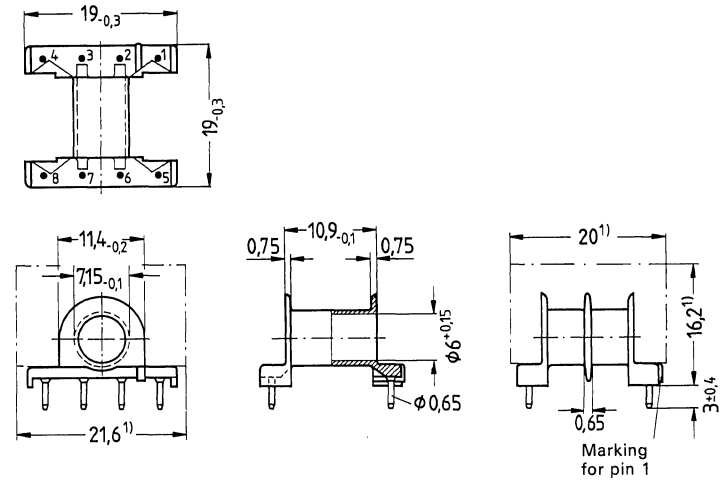
Magnetic characteristics

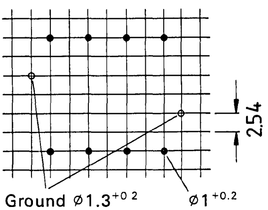
Core factor	$\Sigma\, l/A =$	0.84 mm^{-1}
Effective length	$l_e =$	28.5 mm
Effective area	$A_e =$	33.9 mm^2
Effective volume	$V_e =$	966 mm^3

A_L value Ungapped nH	tolerance	SIFERRIT material	Effective permeability μ_e	**Ordering code** (PU: 200 sets)
2400	$^{+30}_{-20}$ % ≙ R	N 48	1600	B65845-J0000-R048
4300		N 30	2870	B65845-J0000-R030
6900		T 35	4610	B65845-J0000-R035
11400	$^{+40}_{-30}$ % ≙ Y	T 38	7620	B65845-J0000-Y038
11400	$^{+80}_{-0}$ % ≙ U	T 38	7620	B65845-J0000-U638

Coil former B 65846

Glass-fiber reinforced thermosetting plastic coil former with 8 terminal pins, flame-retardant in accordance with UL 94 V-0. Permissible soldering temperature max. 400 °C/752 °F, 2 sec. (refer also to page 85, para. 8.2).
For winding details refer to page 71.





Hole arrangement
View in mounting direction

Dimensions in mm

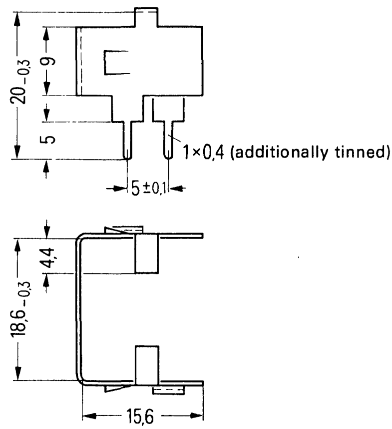
Number of sections	Useful winding cross section A_N of one section (mm²)	Useful winding cross section A_N total (mm²)	Average length of turn l_N (mm)	A_R value[2] (µΩ)	Approx. weight (g)	**Ordering code** (PU: 500)
1	18.8	18.8	28.8	52.7	1.3	B65846-L1000-D001
2	8.85	17.7		55.9	1.4	B65846-L1000-D002

[1] Built-in dimension for the transformer
[2] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

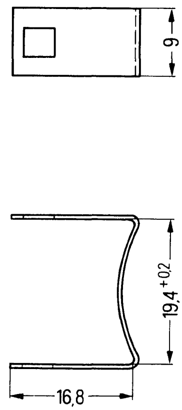
Mounting assembly B 65 846

Mounting assembly consisting of a yoke and a spring clamp.

Yoke
made of 0.4 mm thick nickel silver



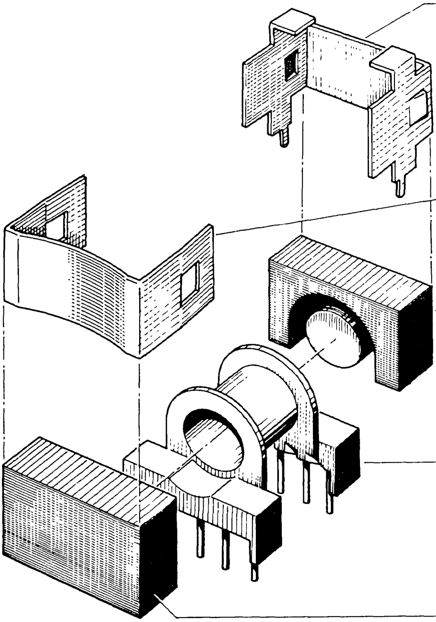
Clamp
made of 0.4 mm thick nickel silver



Dimensions in mm

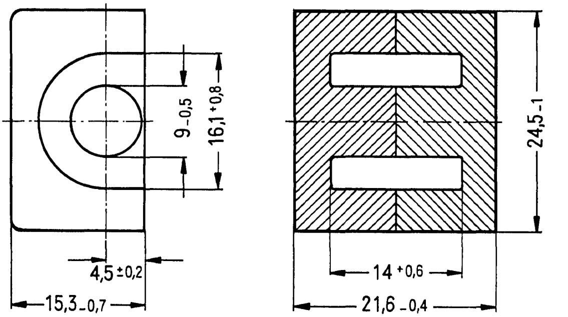
Approx. weight (yoke and clamp) 3.6 g

Ordering code (complete assembly) B65846–J2000–X000
(PU: 500)



Individual parts	Part No.	Page
Yoke	B65848	400
Clamp	B65848	400
Core	B65847	398
Coil former with 1 or 2 sections, and 10 pins	B65848	399
Core	B65847	398

EP 20 cores of high permeability materials are suitable for the design of high inductance coils at high packing density. They are especially suitable for transformers in printed circuits with up to 10 terminals. The wire ends are directly connected to the solder pins of the coil former.



Approx. weight 28.2 g/set

Dimensions in mm

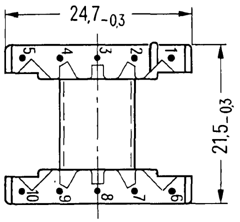
Magnetic characteristics

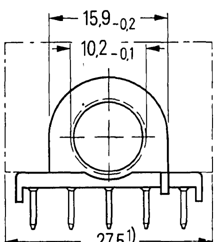
Core factor	$\Sigma\, l/A$ =	0.51 mm^{-1}
Effective length	l_e =	40 mm
Effective area	A_e =	78 mm^2
Effective volume	V_e =	3120 mm^3

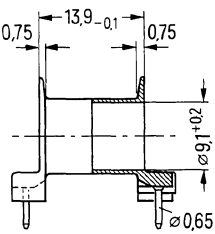
A_L value Ungapped nH	tolerance	SIFERRIT material	Effective permeability μ_e	**Ordering code** (PU: 200 sets)
3500	$^{+30}_{-20}$ % ≙ R	N 48	1420	B65847-A0000-R048
6700		N 30	2720	B65847-A0000-R030
11200		T 35	4540	B65847-A0000-R035
19300	$^{+40}_{-30}$ % ≙ Y	T 38	7830	B65847-A0000-Y038
19300	$^{+80}_{-0}$ % ≙ U	T 38	7830	B65847-A0000-U638

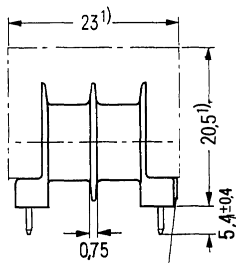
Coil former B 65 848

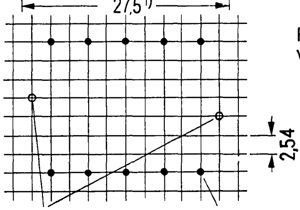
Glass-fiber reinforced thermosetting plastic coil former with 10 terminal pins, flame-retardant in accordance with UL 94 V-0. Permissible soldering temperature max. 400 °C/752 °F, 2 sec. (refer also to page 85, para. 8.2).
For winding details refer to page 71.











Hole arrangement
View in mounting direction

Dimensions in mm

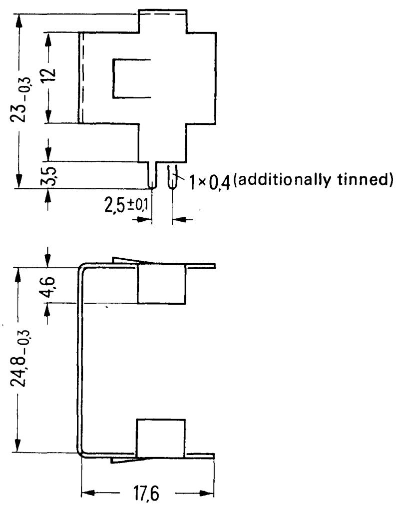
Number of sections	Useful winding cross section A_N of one section mm²	total mm²	Average length of turn l_N mm	A_R value[2] μΩ	Approx. weight g	**Ordering code** (PU: 200)
1	33.8	33.8	38.9	39.6	1.6	B65848–B1001–D001
2	15.9	31.8		42.1	1.7	B65848–B1001–D002

[1] Built-in dimension for the transformer
[2] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

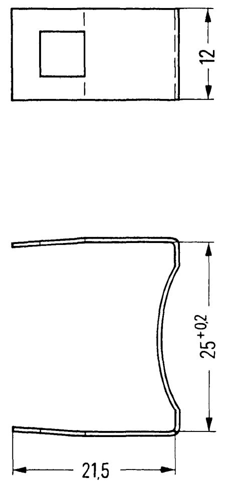
Mounting assembly B 65 848

Mounting assembly consisting of a yoke and a spring clamp.

Yoke
made of 0.4 mm thick nickel silver



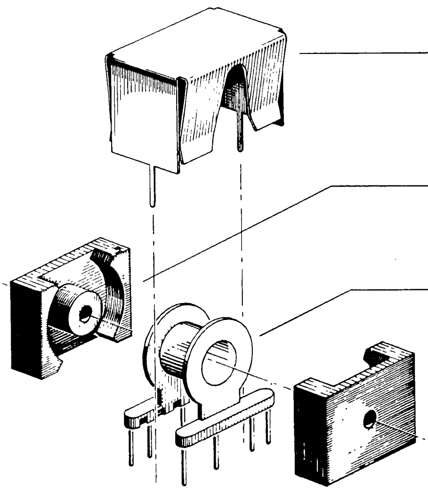
Clamp
made of 0.4 mm thick nickel silver



Dimensions in mm

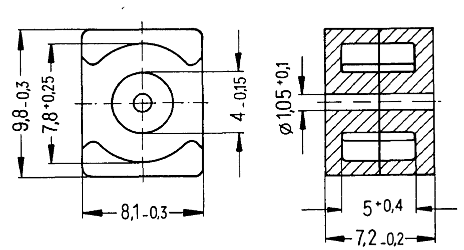
Approx. weight (yoke and clamp) 5.7 g

Ordering code (complete assembly) B65848-A2000-X000
(PU: 200)



Individual parts	Part No.	Page
Cover	B65834	403
Cube core	B65833	402
Coil former with 7 pins	B65834	403
Coil former without pins	B65834	403
Cube core	B65833	402

Compact cube cores of high permeability materials are suitable for the design of high inductance coils at high packing density. They are especially suitable for transformers used in printed circuits with up to 7 terminals. The wire ends of the winding are directly connected to the solder pins of the coil former.



Approx. weight 1.5 g/set

Dimensions in mm

Magnetic characteristics

Core factor	$\Sigma\, l/A$ =	1.25 mm^{-1}
Effective length	l_e =	16.5 mm
Effective area	A_e =	13.2 mm^2
Min. core cross section[1]	A_{min} =	11.2 mm^2
Effective volume	V_e =	217 mm^3

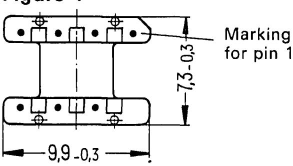
A_L value ungapped nH	tolerance	SIFERRIT material	Effective permeability μ_e	**Ordering code** (PU: 500 sets)
1000	$^{+30}_{-20}$ % ≙ R	N 47	994	B65833–A0000–R047
2500		N 30	2490	B65833–A0000–R030
5000	$^{+40}_{-30}$ % ≙ Y	T 38	4970	B65833–A0000–Y038

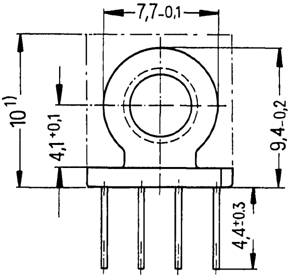
[1] Necessary for calculating the max. flux density

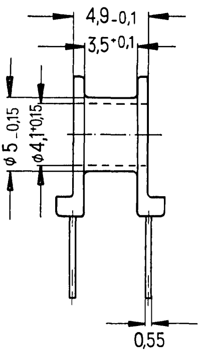
Coil formers and cover B 65 834

Glass-fiber reinforced thermosetting plastic coil former (fig. 1), with 7 terminal pins, flame-retardant in accordance with UL 94 V-0. Permissible soldering temperature max. 400 °C/752 °F, 2 sec (refer also to page 85, para. 8.2). For winding details refer to page 70.
Polycarbonate coil formers without terminal pins are also available (fig. 2).

Figure 1







Hole arrangement
View in mounting direction

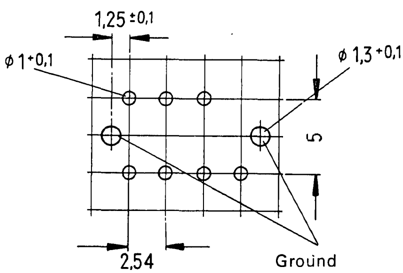
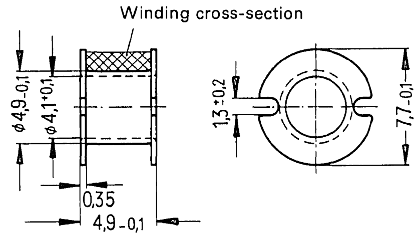


Figure 2



Dimensions in mm

Figure 3

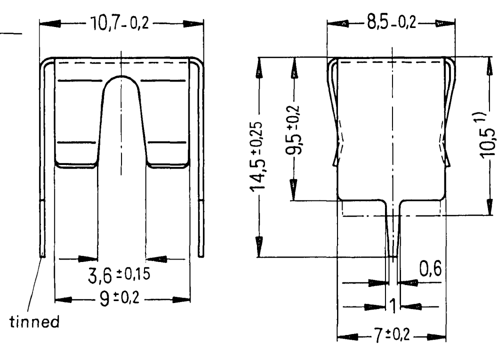
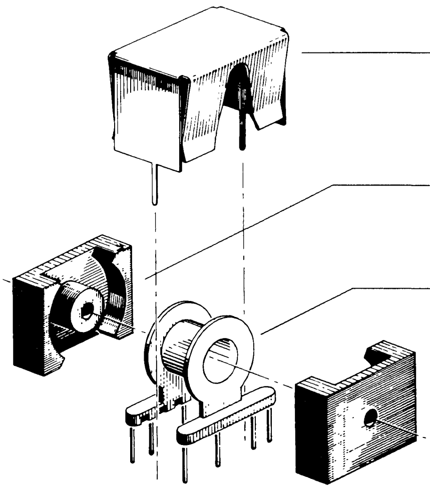


Figure	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_L value[2] μΩ	Approx. weight g	**Ordering code** (PU: 500)
1	4.7	19	143	0.25	B65834–B1001–D001
2				0.1	B65834–B1002–M001
3	0.3 mm thick nickel-silver **cover**			2	B65834–A2000–X000

[1] Max. coil height (with core), without or with cover
[2] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns

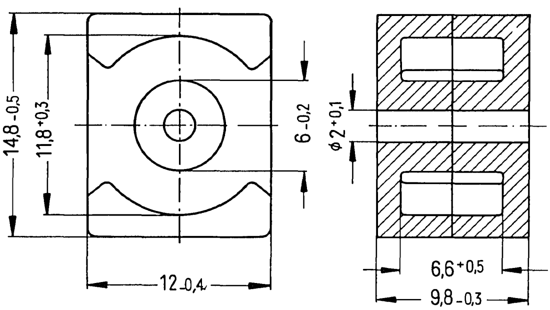
Cube Cores Q 15 B 65837



Individual parts	Part No.	Page
Cover	B65838	406
Cube core	B65837	405
Coil former with 8 pins	B65838	406
Coil former without pins	B65838	406
Cube core	B65837	405

Cube Cores Q 15

Compact cube cores of high permeability materials are suitable for the design of high inductance coils at high packing density. They are especially suitable for transformers used in printed circuits with up to 8 terminals. The wire ends of the winding are directly connected to the solder pins of the coil former.



Approx. weight 4.4 g/set

Dimensions in mm

Magnetic characteristics

Core factor	$\Sigma\, l/A =$	0.8 mm^{-1}
Effective length	$l_e =$	22.9 mm
Effective area	$A_e =$	28.6 mm^2
Min. core cross section[1]	$A_{min} =$	24 mm^2
Effective volume	$V_e =$	656 mm^3

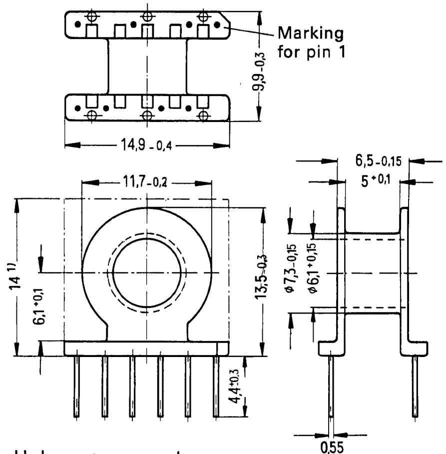
A_L value ungapped nH	tolerance	SIFERRIT material	Effective permeability μ_e	**Ordering code** (PU: 500 sets)
2100	$^{+30}_{-20}\% \triangleq$ R	N 48	1340	B65837-A0000-R048
4200		N 30	2670	B65837-A0000-R030
8500	$^{+40}_{-30}\% \triangleq$ Y	T 38	5410	B65837-A0000-Y038

[1] Necessary for calculating the max. flux density

Coil formers and cover B 65838

Glass-fiber reinforced thermosetting plastic coil former (fig. 1), with 8 terminal pins, flame-retardant in accordance with UL 94 V-0. Permissible soldering temperature max. 400 °C/752 °F, 2 sec (refer also to page 85, para. 8.2). For winding details refer to page 70.
Polycarbonate coil formers without terminal pins are also available (fig. 2).

Figure 1



Hole arrangement
View in mounting direction

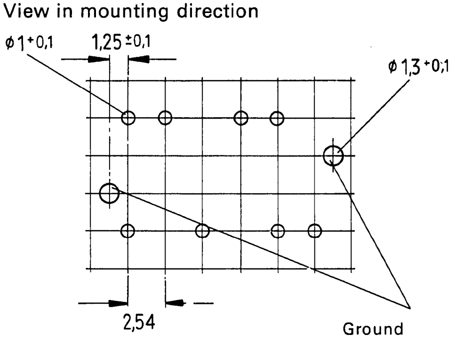
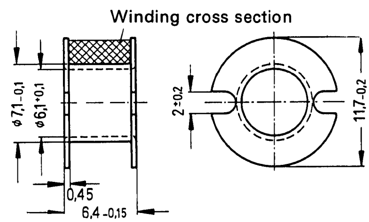


Figure 2



Dimensions in mm

Figure 3

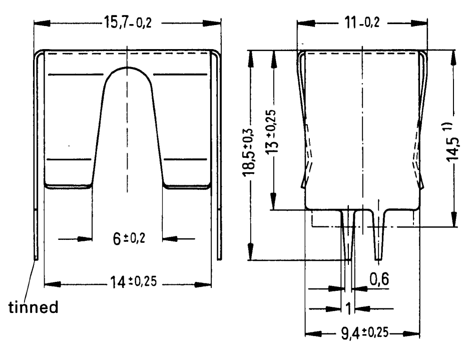


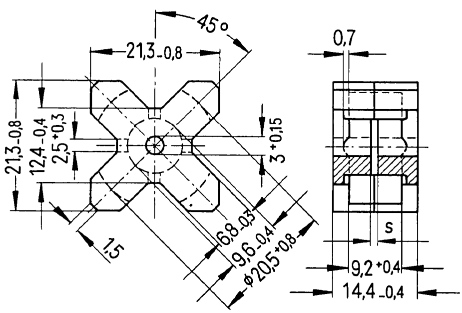
Figure	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[2] µΩ	Approx. weight g	**Ordering code** (PU: 500)
1	11.0	29	92	0.52	B65838-B1001-D001
2				0.2	B65838-B1002-M001
3	0.3 mm thick nickel-silver **cover**			3	B65838-A2000-X000

[1] Maximum coil height (with core), without or with cover
[2] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

X Cores

In accordance with DIN 41 299, sheet 1, and IEC publication 226

X 22 cores are particularly suitable for transformers used in printed circuits. They are provided with up to 8 terminals. The lead ends are directly connected to the coil former pins.



Appprox. weight 12.5 g/set

Dimensions in mm

Magnetic characteristics

Core factor	$\Sigma\, l/A$ =	0.58 mm^{-1}
Effective length	l_e =	38 mm
Effective area	A_e =	66 mm^2
Effective volume	V_e =	2510 mm^3

Accessories

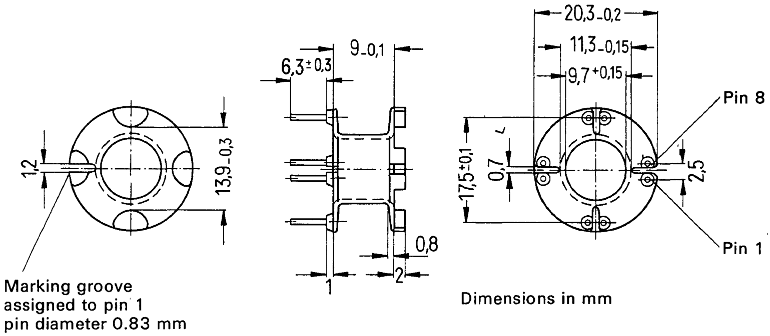
Coil former

A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 500 sets)
Gapped					
◥ 1000	±10% ≙ K	N 48	0,06	462	B65851–A1000–K048
1250			0,05	577	B65851–A1250–K048
Ungapped					
3200	$^{+30}_{-20}$ % ≙ R	N48		1480	B65851–A0000–R048
◥ 5000		N 30		2310	B65851–A0000–R030

◥ to be preferred

Coil former B 65854

Glass-fiber reinforced thermosetting plastic coil former in accordance with DIN 41 277 or IEC publication 226, with 8 terminal pins, flame-retardant in accordance with UL 94 V-0. Permissible soldering temperature max. 400 °C/752 °F, 2 sec (refer also to page 85, para. 8.2).
For winding details refer to page 71.



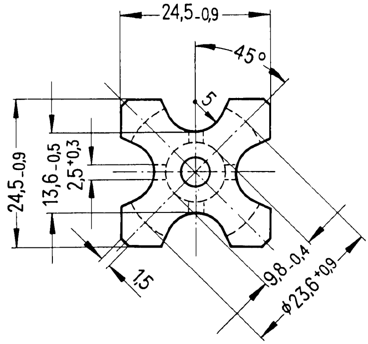
Dimensions in mm

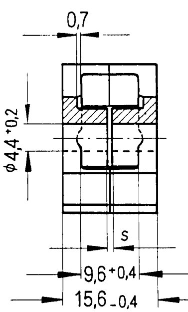
Number of sections	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1] μΩ	Approx. weight g	**Ordering code** (PU: 500)
1	30	49	56	1	B65854–A0000–D001
Insulating washer for double clad PC boards					B65854–A2005–X000

[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

In accordance with DIN 41 299, sheet 1, and IEC publication 226.

X 25 cores are particularly suitable for transformers used in printed circuits, they are provided with up to 8 fixed terminals. The lead ends are directly connected to the coil former pins.





Approx. weight 16.5 g/set

Dimensions in mm

Magnetic characteristics

Core factor	$\Sigma\, l/A$ =	0.57 mm^{-1}
Effective length	l_e =	41.5 mm
Effective area	A_e =	73 mm^2
Effective volume	V_e =	3030 mm^3

Accessories

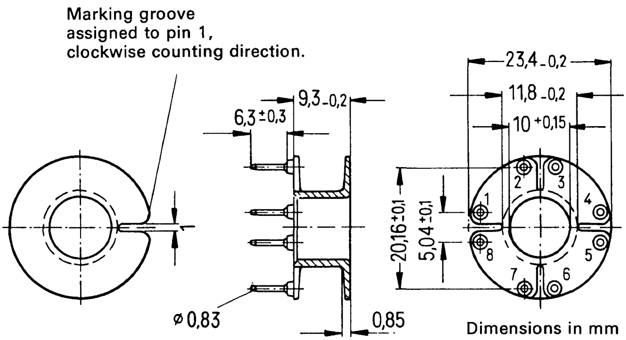
Coil former

A_L value nH	tolerance	SIFERRIT material	Total air gap *s* in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 200 sets)
Gapped					
◥ 1000	±10% ≙ K	N 48	0,05	455	B65861-J1000-K048
1600	±10% ≙ K	N 48	0,04	725	B65861-J1600-K048
Ungapped					
3300	$^{+30}_{-20}$ % ≙ R	N 48		1500	B65861-J0000-R048
◥ 5500	$^{+30}_{-20}$ % ≙ R	N 30		2490	B65861-J0000-R030

◥ to be preferred

Coil former B 65864

Glass-fiber reinforced thermosetting plastic coil former in accordance with DIN 41 277 or IEC publication 226, with 8 terminal pins, flame-retardant in accordance with UL 94 V-0. Permissible soldering temperature max. 400 °C/752 °F, 2 sec (refer also to page 85, para. 8.2).
For winding details refer to page 71.



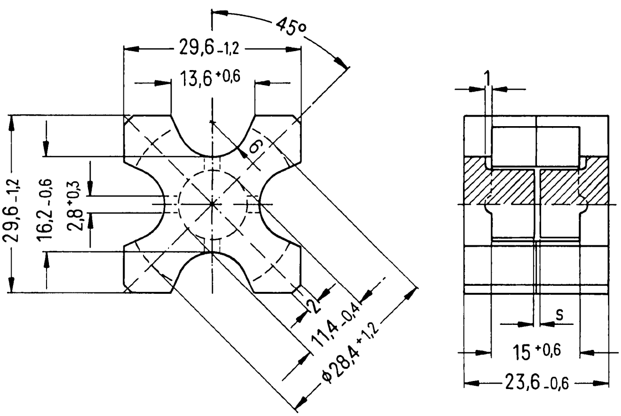
Dimensions in mm

Number of sections	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1)] µΩ	Approx. weight g	**Ordering code** (PU: 200)
1	41	55	46	1.5	B65864–A0000–D001

1) $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

In accordance with DIN 41 299, sheet 1, and IEC publication 226.

X 30 cores are particularly suitable for transformers used in printed circuits, they are provided with up to 12 fixed terminals. The lead ends are directly connected to the coil former pins.



Approx. weight 39 g/set

Dimension in mm

Magnetic characteristics

Core factor	$\Sigma\, l/A$ =	0.49 mm^{-1}
Effective length	l_e =	55 mm
Effective area	A_e =	112 mm^2
Effective volume	V_e =	6160 mm^3

Accessories

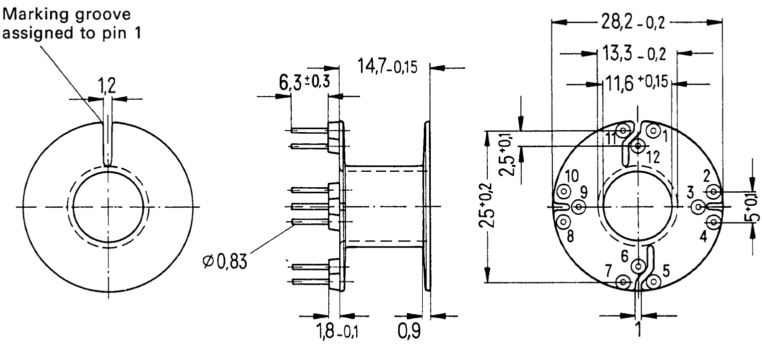
Coil former

A_L value nH	tolerance	SIFERRIT material	Total air gap s in mm approx.	Effective permeability μ_e	**Ordering code** (PU: 200 sets)
Gapped					
◥ 1000	±10% ≙ K	N 48	0,09	421	B65871-A1000-K048
2000			0,04	822	B65871-A2000-K048
Ungapped					
4200	$^{+30}_{-20}$ % ≙ R	N 48		1640	B65871-A0000-R048
◥ 6000		N 30		2340	B65871-A0000-R030

◥ to be preferred

Coil former B 65 874

Glass-fiber reinforced thermosetting plastic coil former in accordance with DIN 41 277 or IEC publication 226, with 12 terminal pins, flame-retardant in accordance with UL 94 V-0. Permissible soldering temperature max. 400 °C/752 °F, 2 sec (refer also to page 85, para. 8.2).
For winding details refer to page 71.



Dimensions in mm

Number of sections	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1] µΩ	Approx. weight g	**Ordering code** (PU: 200)
1	81	64	26	3	B65874–B0000–D001

[1] $R_{Cu} = A_R \cdot N^2$
(dc resistance = A_R · number of turns²)

E, EF, EC, and ER Cores

E, EF, EC, and ER Cores

General

For "definitions and symbols", for "SIFERRIT materials", and "coil design" refer to page 15 ff.

1. Core shape and material

E cores are made of the SIFERRIT materials N 27 and N 30. They are available with or without a ground air gap.
The types specified on the following pages comprise E cores (DIN 41 295) with dimensions according to the laminations type M (DIN 41 302), and EF cores (DIN 41 985) with dimensions according to laminations type EE (DIN 41 302). The cores manufactured in material N 27, feature high saturation magnetization and low power loss. They are particularly suitable for use in dc converters in electronic flash devices, voltage converters in switched-mode power supplies, and in transducers, e.g. for pincushion correction of for control transducers in the thyristorized line output stages of color TV sets (refer also to data in the chapter: "Cores for High Power", page 89).
Core EI 25 (DIN 41 986) is usually made of the SIFERRIT material N 41.
Because of its high magnetization and its low temperature dependance up to 100 °C/212 °F together with a remarkably high permeability, this material is particularly suitable for variable inductances by dc premagnetization (current-controlled transducers). For details refer to the appropriate data sheet, page 431.

2. Ordering and delivery

E cores are delivered individually (not as sets). The indicated packaging units (PU) should be taken into consideration. Each packaging unit only contains cores of uniform design, either with shortened or with unshortened center leg. The nominal A_L value, quoted in the individual data sheet, always refers to a combination of the ordered core with a core with unshortened center leg (dimension "g" = 0).
The curve "A_L versus total air gap", specified in the individual data sheets, aids the designer in choosing additional A_L values by appropriate combinations of gapped cores.

3. Ungapped E cores

Even with the best grinding methods known today, a certain degree of roughness on ground surfaces cannot be avoided, thus, the usual term "ungapped" does not in fact imply no air gap at all. In the A_L values specified, a certain amount of roughness of grinding, e.g. R_t 6 ≙ 6 μm, has been taken into account for the gaps. The A_L value tolerance of ungapped E cores is $^{+30}_{-20}$ %, that of EC cores approx. ±25%.

4. Winding design

A nomogram for the number of turns, inductance, and A_L values is given on page 74 to 76; the data for the usual normal and litz wires is tabulated on page 63 to 65.
The maximum number of turns for coil formers are indicated on page 73, 74, and data on winding cross sections and average lengths of turns on the appropriate pages on coil formers.

Note for the winding design

If coil formers are used for cores with square or rectangular cross sections, indication of the minimum winding height only represents a theoretical value. The use of thicker leads or litz wires results in a gradual rounding of the winding; it is thus recommended to verify the planned winding design by a winding test.

5. Effective magnetic characteristics

For the values of $\Sigma\, l/A$, l_e, A_e, A_{min}, V_e (applying to E core sets) required for calculation of field strength, flux density, and hysteresis losses refer to the core types.

6. Power loss P_v and amplitude permeability μ_a for E, EC, and ER cores

Test data (per set), material N 27, for ungapped cores.
Power loss P_v: f = 25 kHz; ϑ = 60...100 °C/140...212 °F, and $\hat{B}$ = 200 mT, sinusoidal.

Type	Max. power loss P_v W/set	**Ordering code**	Approx. weight g
E 42/15	3.3	B66325-G0000-X127	88
E 42/20	4.4	B66329-G0000-X217	116
E 55	8.5	B66335-G0000-X127	216
EC 35/17/10	1.1	B66337-G0000-X127	36
EC 41/19/12	1.8	B66339-G0000-X127	52
EC 52/24/14	2.4	B66341-G0000-X127	110
EC 70/34/17	4.8	B66343-G0000-X127	252
ER 42/22/15	3.1	B66347-G0000-X127	84
ER 48/21/21	4.9	B66333-G0000-X127	130

Amplitude permeability μ_a, for E, EC, and ER cores

Temperature ϑ °C/°F	Flux density $\hat{B}$ mT	Field strength $\hat{H}$ A/m	Amplitude permeability μ_a
20/ 68	400	≦ 210	≧ 1500
100/212	320	≦ 204	≧ 1250

Frequency: 5 kHz

7. Comparison between E cores and pot cores

Generally, pot cores are preferred to E cores due to their smaller space requirements, better shielding, and simpler mounting. The following diagram gives a comparison between both core types, each of SIFERRIT N 27 and N 30 (ungapped).

The reciprocal dc time constant R_{Cu}/L (see page 24) which – as is generally known – should be as low as possible for a coil, is plotted against the volume.

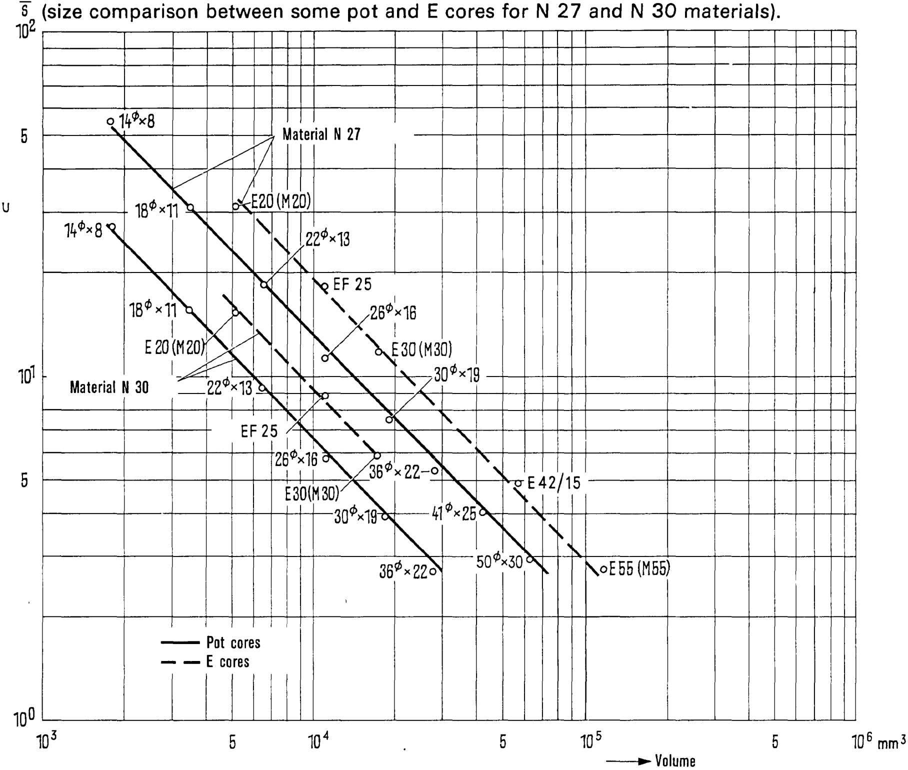
Here, the following core volumes apply:

for E cores: the square described about the E core set and the coil former (without fixing parts)

for pot cores: the square described about the pot core set (without fixing parts).

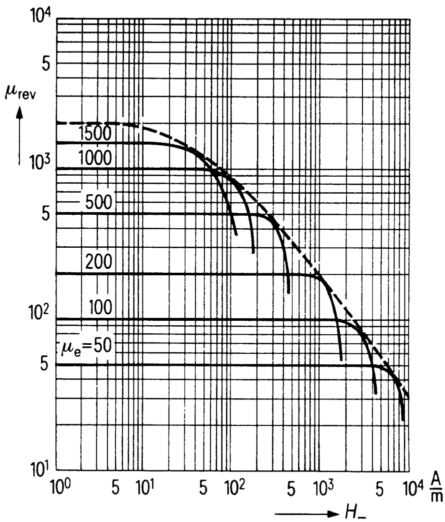
Single section, fully wound coil formers are used as a basis; a copper factor f_{Cu} of 0.5 is assumed for the winding.

Reciprocal dc time constant (typ. values) versus volume (size comparison between some pot and E cores for N 27 and N 30 materials).

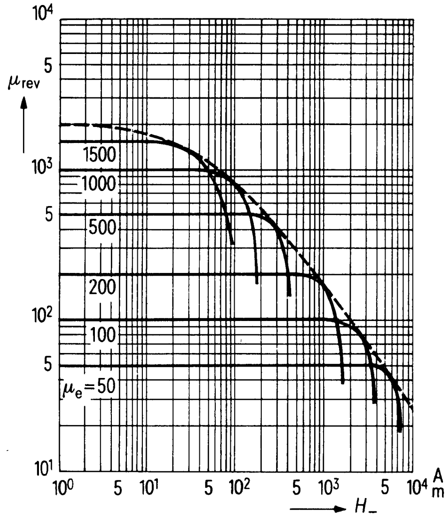


DC magnetic bias; material N 27

EF cores, E 42, E 55 cores
ER 42/15, ER 48/21



EC cores
E 20, E 30 cores



Measuring temperature 20 °C/68 °F
$\hat{B} < 1$ mT

Example

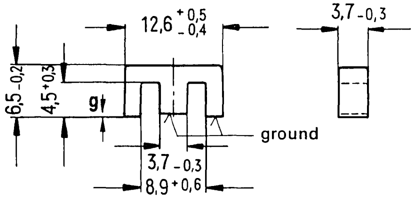
E core E 42/15 (B66325–G0500–X127 combined with B66325–G0000–X127)

g = (0.5 ± 0.05) mm
μ_e = 205
l_e = 97 mm

A higher decrease in permeability caused by premagnetization begins at a dc field strength of about 1000 A/m. This corresponds to an ampere-turns value of

$I_- \cdot N = H_- \cdot l_e = 1000 \cdot 97 \cdot 10^{-3} = 97$ A.

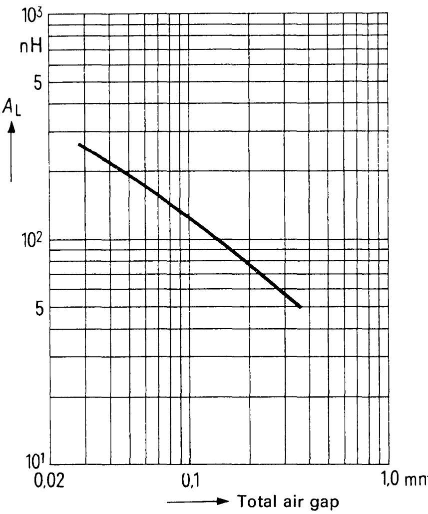
in accordance with DIN 41 985 (corresponding to the electrical sheet-steel lamination EE 12.6)



A_L value versus total air gap
for a set consisting of

one core B66305–G0000 (g appr. 0) and
one core B66305–G.... (g > 0)
or
two cores B66305–G.... (g > 0)

Material N 27



Magnetic characteristics (per set)

Core factor	$\Sigma\, l/A$ =	2.28 mm^{-1}
Effective length	l_e =	29.6 mm
Effective area	A_e =	13.0 mm^2
Effective volume	V_e =	384 mm^3

Approx. weight 1 g/item

Accessories

Coil formers
and yoke

E cores are delivered individually according to the dimension *"g"* (shortened center leg).
The tabulated A_L values apply to core sets comprising the indicated core and a core without shortened center leg (B66305–G0000).

SIFERRIT material	Dimension *"g"* mm	tolerance mm	A_L value nH	Effective permeability μ_e	**Ordering code** (per item) (PU: 1000 items)
N 30	appr. 0	–	1000^{+30}_{-20}%	approx. 1810	B66305–G0000–X130
N 27		–	800^{+30}_{-20}%	approx. 1450	B66305–G0000–X127
N 27	0.04	± 0.01	approx. 250	approx. 454	B65305–G0040–X127

Coil formers and yoke B 66 202

Glass-fiber reinforced polycarbonate **coil former** (fig. 1); 9 terminal pins, 1 section.
Glass-fiber reinforced polyterephthalate **coil former** (fig. 3), 4 terminal pins, 2 sections, flame-retardant in accordance with UL 94 V-0.
0.2 mm thick nickel-silver spring **yoke** (fig. 2). Permissible soldering temperature max. 400 °C/752 °F, 2 sec (refer also to page 85, para 8.2).
For winding details refer to page 72.

Figure 1

View in direction A

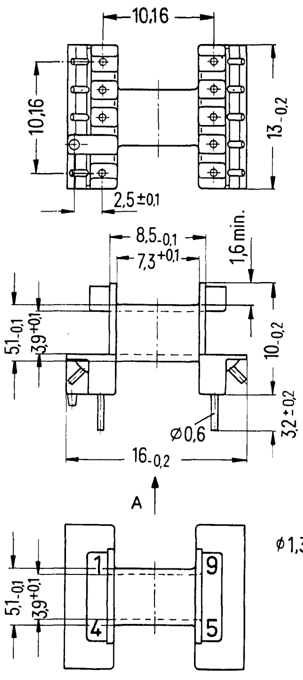
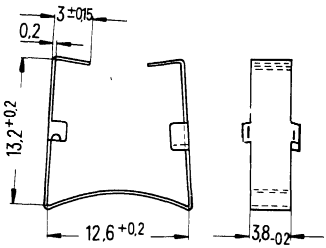
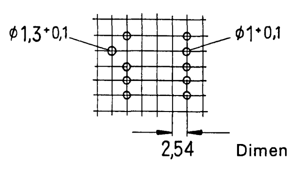


Figure 2

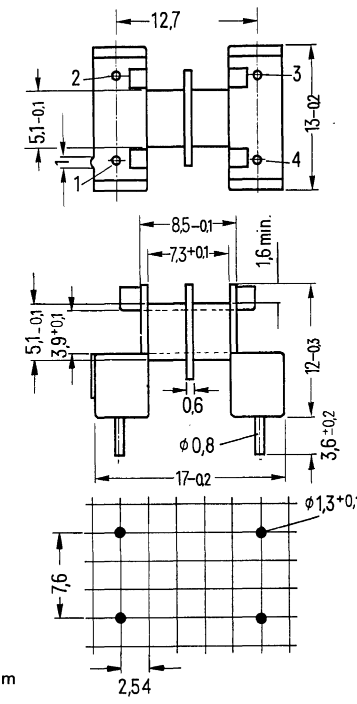


Hole arrangement
View in mounting direction



Dimensions in mm

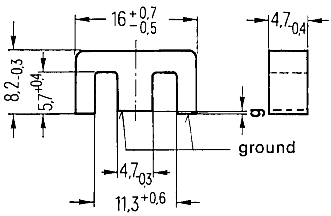
Figure 3



Coil former								Ordering code (PU: 500)
Figure	Number of sections	Useful winding cross section A_N of one section mm²	total mm²	Average length of turn l_N mm	A_R value[1] μΩ	Number of pins	Approx. weight g	
1	1	11.6	11.6	27.2	80.6	9	0.7	B66202-A1001-M001
3	2	5.35	10.7	27.2	87.5	4	1.3	B66202-A1002-T002
2	**Yoke**						1.2	B66202-A2001-X000

[1] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

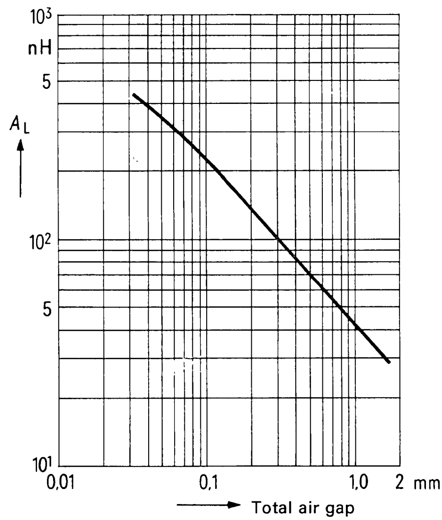
in accordance with DIN 41 985 (corresponding to the electrical sheet-steel lamination EE 16).



A_L value versus total air gap for a set consisting of

one core B66307–G0000 (g appr. 0) and
one core B66307–G∗∗∗∗ (g > 0)
or
two cores B66307–G∗∗∗∗ (g > 0)

Material N 27



Magnetic characteristics (per set)

Core factor	$\Sigma\, l/A$ =	1.87 mm^{-1}
Effective length	l_e =	37.6 mm
Effective area	A_e =	20.1 mm^2
Effective volume	V_e =	754 mm^3

Approx. weight 2.3 g/item

Accessories

Coil former
and yoke

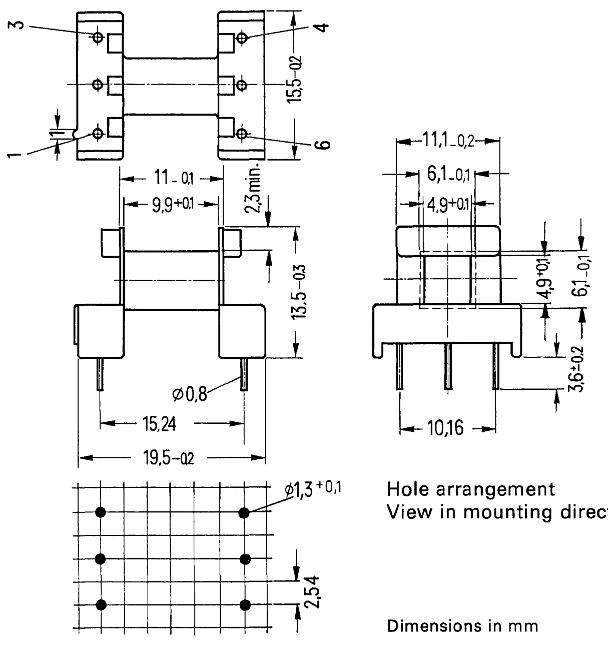
E cores are delivered individually according to the dimension "*g*" (shortened center leg).
The tabulated A_L values apply to core sets comprising the indicated core and a core without shortened center leg (B66307–G0000).

SIFERRIT material	Dimension "*g*" mm	tolerance mm	A_L value nH	Effective permeability μ_e	**Ordering code** (per item) (PU: 2000 items)
N 30	appr. 0	–	1400^{+30}_{-20}%	approx. 2080	B66307–G0000–X130
N 27 ◥	appr. 0	–	1000^{+30}_{-20}%	approx. 1490	B66307–G0000–X127
N 27 ◥	0.06	±0.01	approx. 315	approx. 469	B66307–G0060–X127
N 27	0.10	±0.02	approx. 220	approx. 328	B66307–G0100–X127
N 27	0.50	±0.05	approx. 70	approx. 104	B66307–G0500–X127

◥ to be preferred

Coil former B 66308

Glass-fiber reinforced polyterephthalate coil former, with 6 terminal pins, flame-retardant in accordance with UL 94 V-0.
Permissible soldering temperature max. 400 °C/752 °F, 2 sec (refer also to page 85, para. 8.2).
For winding details refer to page 72.



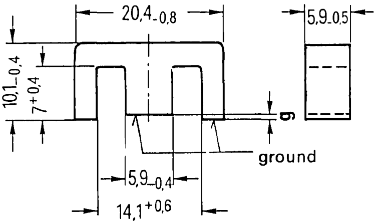
Hole arrangement
View in mounting direction

Dimensions in mm

Number of sections	Useful winding cross section A_N mm^2	Average length of turn l_N mm	A_R value[1] μΩ	Approx. weight g	**Ordering code** (PU: 1000)
1	22.3	34	52.4	1.5	B66308–A1001–T001

[1] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns^2)

in accordance with DIN 41 985 (corresponding to the electrical sheet-steel lamination EE 20).

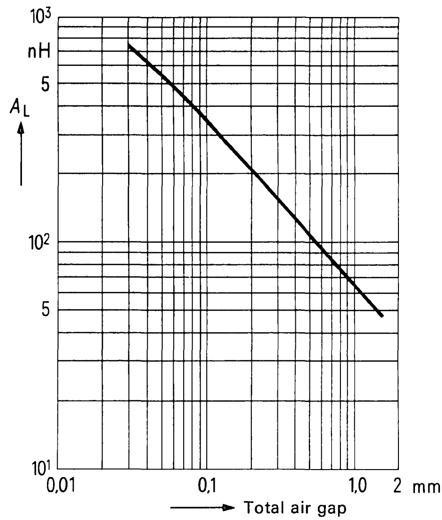


Dimensions in mm

A_L value versus total air gap
for a set consisting of

one core B66311–G0000 (g appr. 0) and
one core B66311–G.... (g > 0)
or
two cores B66311–G.... (g > 0)

Material N 27



Magnetic characteristics (per set)

Core factor	$\Sigma\, l/A$ =	1.34 mm^{-1}
Effective length	l_e =	44.9 mm
Effective area	A_e =	33.5 mm^2
Effective volume	V_e =	1500 mm^3

Approx. weight 3.7 g/item

Accessories

Coil formers
and yoke

E cores are delivered individually according to the dimension *"g"* (shortened center leg).
The tabulated A_L values apply to core sets comprising the indicated core and a core without shortened center leg (B66311–G0000).

SIFERRIT material	Dimension *"g"* mm	tolerance mm	A_L value nH	Effective permeability μ_e	**Ordering code** (per item) (PU: 600 items)
N 30	appr. 0	–	2500^{+30}_{-20}%	approx. 2670	B66311–G0000–X130
N 27 ◥		–	1300^{+30}_{-20}%	approx. 1390	B66311–G0000–X127
N 27 ◥	0.09	±0.01	approx. 400	approx. 429	B66311–G0090–X127
	0.17	±0.02	approx. 250	approx. 268	B66311–G0170–X127
	0.25	±0.03	approx. 180	approx. 192	B66311–G0250–X127
	0.50	±0.05	approx. 110	approx. 117	B66311–G0500–X127

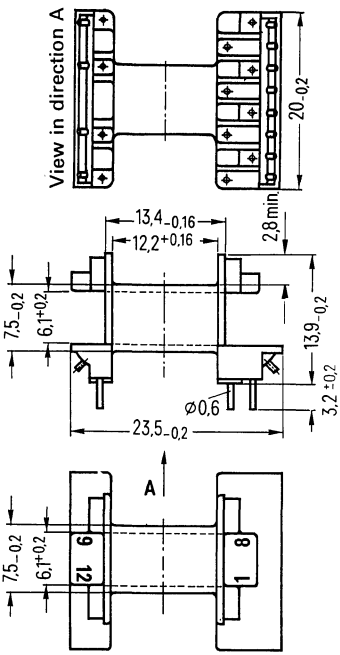
◥ to be preferred

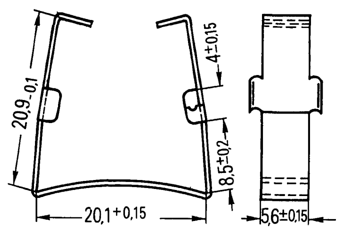
Coil formers and yoke B 66 206

Coil former horizontal (fig. 1) with 12 terminal pins,
Coil former vertical (fig. 3) with 6 terminal pins
made of glass-fiber reinforced polyterephthalate, flame-retardant in accordance with UL 94 V-0. 0.3 mm thick nickel-silver spring yoke (fig. 2). Permissible soldering temperature max. 400 °C/ 752 °F, 2 sec (refer also to page 85, para. 8.2).
For winding details refer to page 72.

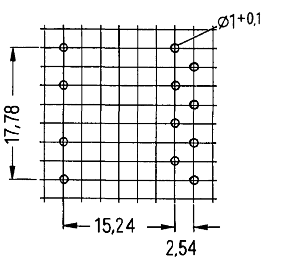
Figure 1 **Figure 2** **Figure 3**

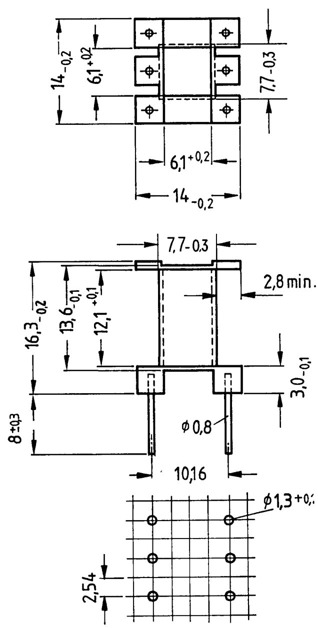
View in mounting direction A





Hole arrangement
View in mounting direction



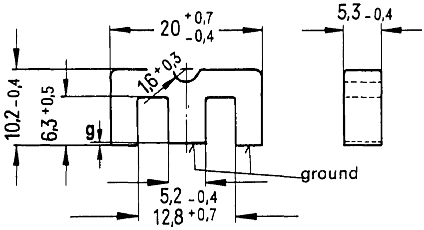


Dimensions in mm

Coil former							Ordering code (PU: 300)
Figure	Number of sections	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1] µΩ	Number of pins	Approx. weight g	
1	1	34	41.2	42	12	1.6	B66206-A1012-T001
3					6	1.4	B66206-A1006-T001
2	**Yoke**					2.2	B66206-A2001-X000

[1] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

in accordance with DIN 41 295 (corresponding to the electrical sheet-steel lamination M 20).



Dimensions in mm

Magnetic characteristics (per set)

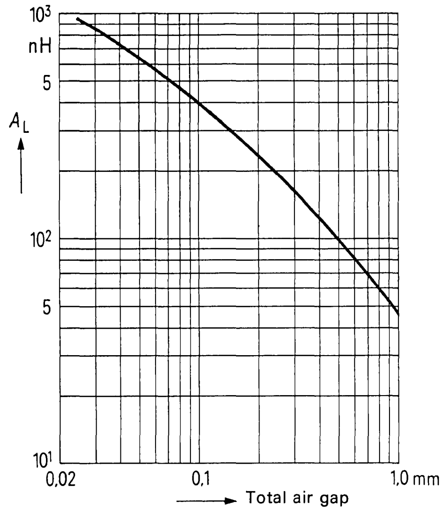
Core factor	$\Sigma\, l/A$ =	1.38 mm^{-1}
Effective length	l_e =	43 mm
Effective area	A_e =	31 mm^2
Min. core cross section[1]	A_{min} =	25.5 mm^2
Effective volume	V_e =	1340 mm^3

Approx. weight 3.6 g/item

A_L value versus total air gap
for a set consisting of

one core B66313–G0000 (g appr. 0) and
one core B66313–G∗∗∗∗ (g > 0)
or
two cores B66313–G∗∗∗∗ (g > 0)

Material N 27



Accessories

Coil former

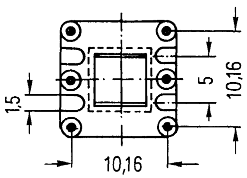
E cores are delivered individually dimension *"g"* (shortened center leg).
The tabulated A_L values apply to core sets comprising the indicated core and a core without shortened center leg (B66313–G0000).

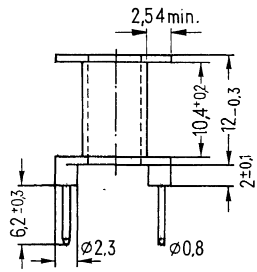
SIFERRIT material	Dimension *"g"* mm	tolerance mm	A_L value nH	Effective permeability μ_e	**Ordering code** (per item) (PU: 600 items)
N 30	appr. 0	–	$2500^{+30}_{-20}\%$	approx. 2740	B66313–G0000–X130
N 27 ◥	appr. 0	–	$1300^{+30}_{-20}\%$	approx. 1430	B66313–G0000–X127
N 27 ◥	0.09	±0.01	approx. 400	approx. 436	B66313–G0090–X127
N 27	0.17	±0.02	approx. 250	approx. 273	B66313–G0170–X127
N 27	0.40	±0.03	approx. 125	approx. 137	B66313–G0400–X127

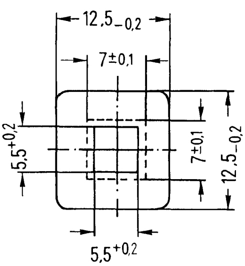
[1] Necessary for calculating the max. flux density
◥ to be preferred

Coil former B 66222

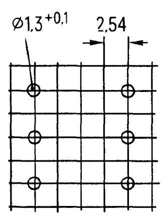
Glass-fiber reinforced thermosetting plastic coil former with 6 terminal pins, flame-retardant in accordance with UL 94 V-0.
Permissible soldering temperature max. 400 °C/752 °F, 2 sec (refer also to page 85, para. 8.2).
For winding details refer to page 72.







Hole arrangement
View in mounting direction

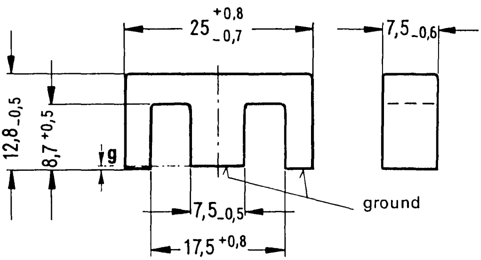


Dimensions in mm

Number of sections	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1] µΩ	Approx. weight g	**Ordering code** (PU: 300)
1	25	30	41	0.3	B66222-B0000-D001

[1] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

in accordance with DIN 41 985 (corresponding to the electrical sheet-steel lamination EE 25).

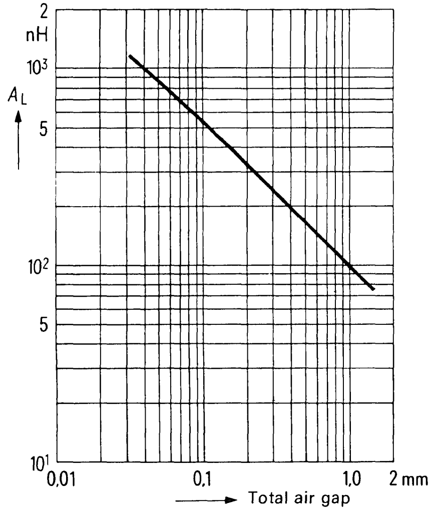


Dimensions in mm

A_L value versus total air gap
for a set consisting of

one core B66317–G0000 (g appr. 0) and
one core B66317–G∗∗∗∗ (g > 0)
or
two cores B66317–G∗∗∗∗ (g > 0)

Material N 27



Magnetic characteristics (per set)

Core factor	$\Sigma\, l/A$ =	1.09 mm^{-1}
Effective length	l_e =	57.5 mm
Effective area	A_e =	52.5 mm^2
Effective volume	V_e =	3020 mm^3

Approx. weight 8 g/item

Accessories

Coil formers
and yoke

E cores are delivered individually according to the dimension *"g"* (shortened center leg).
The tabulated A_L values apply to core sets comprising the indicated core and a core without shortened center leg (B66317–G0000).

SIFERRIT material	Dimension *"g"* mm	tolerance mm	A_L value nH	Effective permeability μ_e	**Ordering code** (per item) (PU: 600 items)
N 30	appr. 0	–	$3100^{+30}_{-20}\%$	approx. 2330	B66317–G0000–X130
N 27 ◥		–	$1750^{+30}_{-20}\%$	approx. 1520	B66317–G0000–X127
N 27	0.10 ◥	±0.02	approx. 550	approx. 477	B66317–G0100–X127
	0.16	±0.02	approx. 400	approx. 347	B66317–G0160–X127
	0.25	±0.03	approx. 270	approx. 234	B66317–G0250–X127
	0.50	±0.05	approx. 165	approx. 143	B66317–G0500–X127
	1.00	±0.1	approx. 100	approx. 87	B66317–G1000–X127

◥ to be preferred

Coil formers and yoke B 66 208

Glass-fiber reinforced 6 polyamide **coil former**, horizontal (fig. 1) with 8 terminal pins.
Permissible soldering temperature max. 280 °C/536 °F, 1 sec.
0.3 mm thick nickel-silver **yoke** (fig. 2) with 2 GND terminals.

Glass-fiber reinforced thermosetting plastic **coil former** (fig. 3) with 6 terminal pins, flame-retardant in accordance with UL 94 V-0.
Permissible soldering temperature max. 400 °C/752 °F, 2 sec (refer also to page 85, para. 8.2).
For winding details refer to page 72.

Figure 1
View in direction A

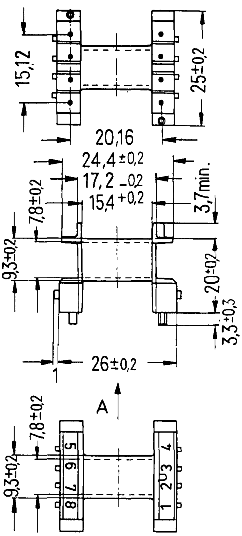
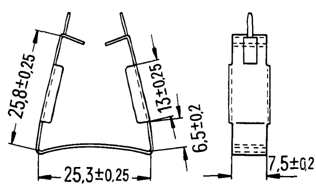


Figure 2



Hole arrangement
View in mounting direction

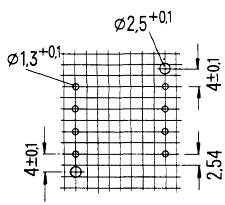
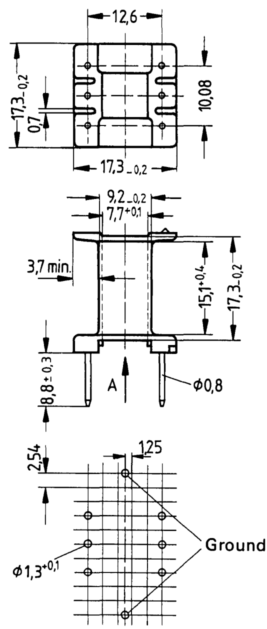


Figure 3
View in direction A



Dimensions in mm

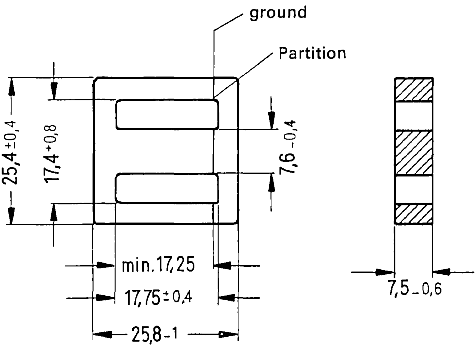
Coil former							Ordering code (PU: 300)
Figure	Number of sections	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1] µΩ	Number of pins	Approx. weight g	
1	1	56	52	32	8	1.5	B66208-A1003-R001
3					6	3	B66208-J1006-D001
2	**Yoke**					2.5	B66208-A2001-X000

[1] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

in accordance with DIN 41 986 (corresponding to the electrical sheet-steel lamination EE 25).

E core sets EI 25 are preferably suitable for use as transducers in color TV sets. In this connection, the eccentric air gap is advantageous. The air gap can optionally be set by inserting a foil.

Coil former and yoke in accordance with EF 25 (B66317) are suitable for winding a center leg.



Magnetic characteristics

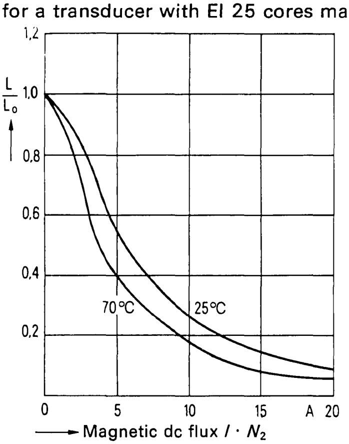
Core factor	$\Sigma\, l/A$ =	1.09 mm^{-1}
Effective length	l_e =	57.5 mm
Effective area	A_e =	52.5 mm^2
Effective volume	V_e =	3020 mm^3

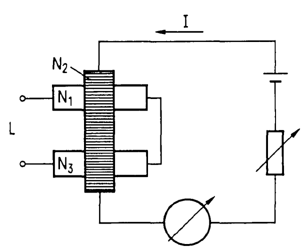
Approx. weight 16 g/set

Dimensions in mm

SIFERRIT material	Temperature ϑ °C	Flux density $\hat{B}$ mT	Field strength $\hat{H}$ A/m	Amplitude permeability[1]	**Ordering code** (PU: 500 sets)
N 41	20 100	400 320	≦ 180 ≦ 196	≧ 1800 ≧ 1300	B66217-A0000-R041

Characteristic curves and measuring arrangement
for a transducer with EI 25 cores made of SIFERRIT N 41

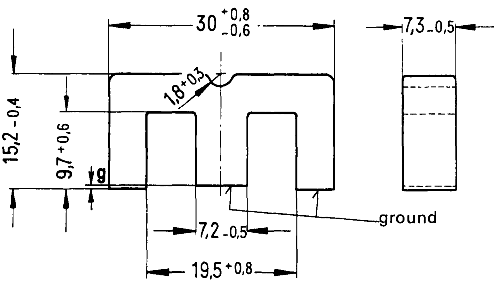




·Measuring flux density $\hat{B} < 1$ mT

[1] For the measuring process see DIN 41 296, sheet 10

in accordance with DIN 41 295 (corresponding to the electrical sheet-steel lamination M 30)

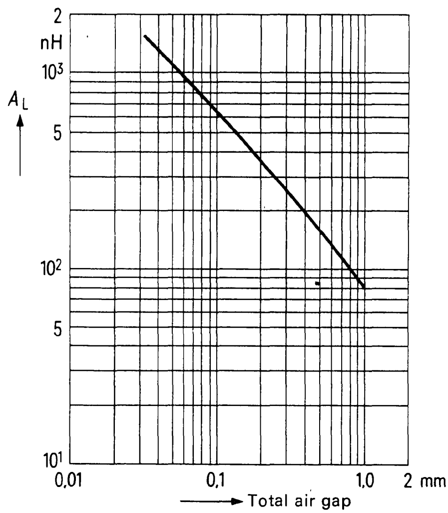


Dimensions in mm

A_L value versus total air gap
for a set consisting of

one core B66319–G0000 (g appr. 0) and
one core B66319–G∗∗∗∗ (g > 0)
or
two cores B66319–G∗∗∗∗ (g > 0)

Material N 27



Magnetic characteristics (per set)

Core factor	$\Sigma\, l/A$ =	1.12 mm^{-1}
Effective length	l_e =	67 mm
Effective area	A_e =	60 mm^2
Min. core cross section[1]	A_{min} =	49 mm^2
Effective volume	V_e =	4000 mm^3

Approx. weight 11 g/item

Accessories

Coil former

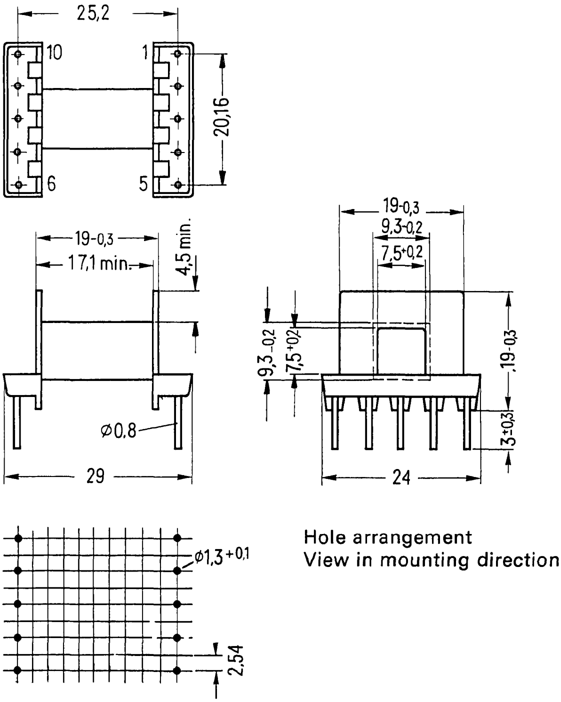
E cores are delivered individually according to the dimension *"g"* (shortened center leg). The tabulated A_L values apply to core sets comprising the indicated core and a core without shortened center leg (B66319–G0000).

SIFERRIT material	Dimension *"g"* mm	tolerance mm	A_L value nH	Effective permeability μ_e	**Ordering code** (PU: 600 items)
N 30	appr. 0	–	3300^{+30}_{-20}%	approx. 2940	B66319–G0000–X130
N 27 ◥		–	1800^{+30}_{-20}%	approx. 1600	B66319–G0000–X127
N 27 ◥	0.10	±0.02	approx. 630	approx. 562	B66319–G0100–X127
	0.18	±0.02	approx. 400	approx. 353	B66319–G0180–X127
	0.34	±0.03	approx. 200	approx. 179	B66319–G0340–X127

[1] Necessary for calculating the max. flux. density
◥ to be preferred

Coil former B 66 232

Glass-fiber reinforced thermosetting plastic coil former with 10 terminal pins, flame-retardant in accordance with UL 94 V-0.
Permissible soldering temperature max. 400 °C/752 °F, 2 sec (refer also to page 85, para. 8.2).
For winding details refer to page 72.



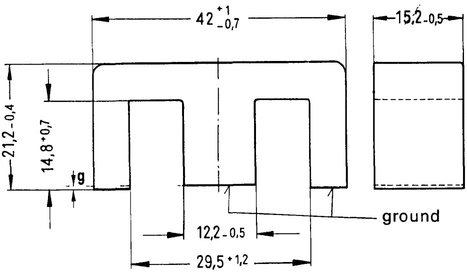
Hole arrangement
View in mounting direction

Dimensions in mm

Number of sections	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1] μΩ	Approx. weight g	**Ordering code** (PU: 300)
1	77	44	20	2.5	B66232-A1001-D001

[1] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

in accordance with DIN 41 295

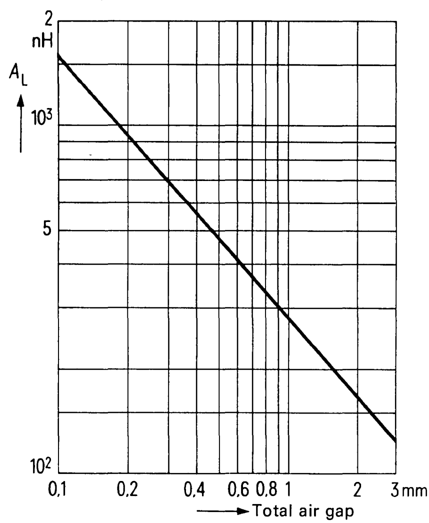


Dimensions in mm

A_L **value versus total air gap**
for a set consisting of

one core B66325–G0000 (g appr. 0) and
one core B66325–G**** (g > 0)
or
two cores B66325–G**** (g > 0)

Material N 27



Magnetic characteristics (per set)

Core factor	$\Sigma\, l/A$ =	0.535	mm^{-1}
Effective length	l_e =	97	mm
Effective area	A_e =	181	mm^2
Effective volume	V_e =	17600	mm^3

Approx. weight 44 g/item

Accessories

Coil formers

E cores are delivered individually according to the dimension *"g"* (shortened center leg). The tabulated A_L values apply to core sets comprising the indicated core and a core without shortened center leg (B66325–G0000).

SIFERRIT material	Dimension *"g"* mm	tolerance mm	A_L value nH	Effective permeability μ_e	**Ordering code** (PU: 400 items)
N 27 ◥	appr. 0	–	$3500^{+30}_{-20}\%$	approx. 1490	B66325–G0000–X127
N 27 ◥	0.10	±0.02	approx. 1600	approx. 680	B66325–G0100–X127
	0.25	±0.03	approx. 800	approx. 340	B66325–G0250–X127
	0.50	±0.05	approx. 480	approx. 205	B66325–G0500–X127
	0.64	±0.05	approx. 400	approx. 170	B66325–G0640–X127
	1.00	±0.1	approx. 280	approx. 119	B66325–G1000–X127

For power loss P_v and amplitude permeability μ_a refer to page 418.

◥ to be preferred

Coil formers B 66 242

Glass-fiber reinforced 6 polyamide coil former (fig. 1) with 10 terminal pins. Permissible soldering temperature 400 °C/752 °F, 2 sec (refer also to page 85, para. 8.2).
Glass-fiber reinforced polyterephthalate coil former (fig. 2) without terminal pins, flame-retardant in accordance with UL 94 V-0, color code black.
For winding details refer to page 72.

Figure 1 (B66242–J...)

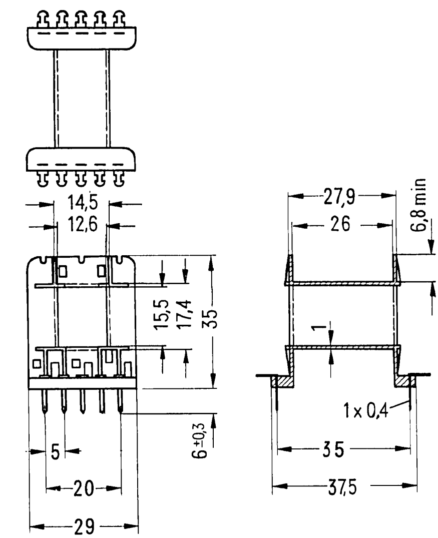
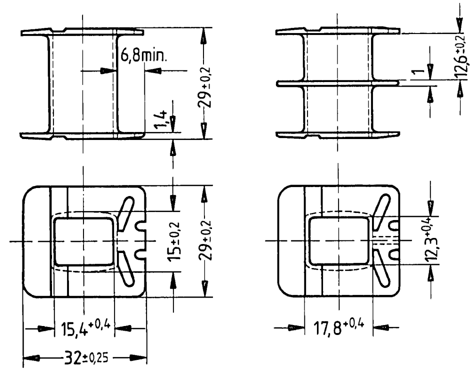
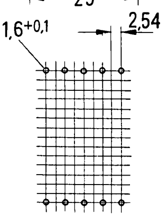


Figure 2 (B66242–B...)





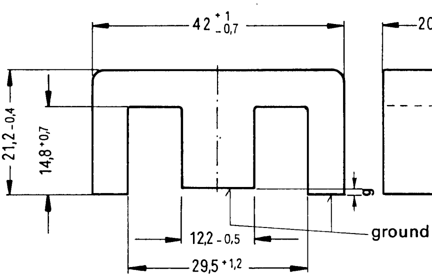
Hole arrangement
View in mounting direction

Dimensions in mm

Fig.	Number of sections	Useful winding cross section A_N of one section mm²	total mm²	Average length of turn l_N mm	A_R value[1] µΩ	Approx. weight g	**Ordering code** (PU: 200)
1	1	177	177		17	7.5	B66242–J1000–D001
2	1	177	177	87	17	4.5	B66242–B0000–T001
	2	85	170		18	5.3	B66242–B0000–T002

[1] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

in accordance with DIN 41 295

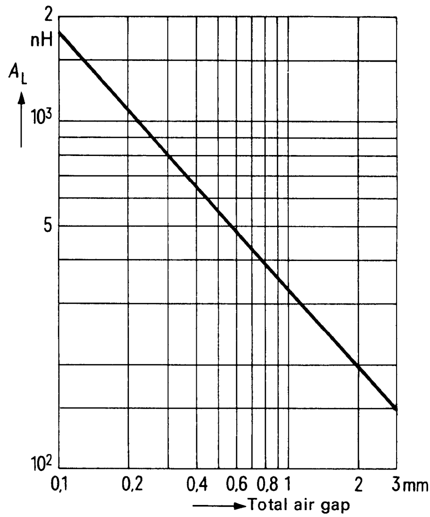


Dimensions in mm

A_L **value versus total air gap**
for a set consisting of

one core B66329–G0000 (g appr. 0) and
one core B66329–G**** (g > 0)
or
two cores B66329–G**** (g > 0)

Material N 27



Magnetic characteristics (per set)

Core factor	$\Sigma\, l/A$ =	0.405 mm^{-1}
Effective length	l_e =	97 mm
Effective area	A_e =	240 mm^2
Effective volume	V_e =	23300 mm^3

Approx. weight 58 g/item

Accessories

Coil formers

E cores are delivered individually according to the dimension *"g"* (shortened center leg). The tabulated A_L value apply to core sets comprising the indicated core and a core without shortened center leg (B66329–G0000).

SIFERRIT material	Dimension *"g"* mm	tolerance mm	A_L value nH	Effective permeability μ_e	**Ordering code** (PU: 400 items)
N 27 ◥	appr. 0	–	4750^{+30}_{-20}%	approx. 1530	B66329–G0000–X127
N 27 ◥	0.25	±0.03	approx. 925	approx. 298	B66329–G0250–X127
	0.50	±0.05	approx. 560	approx. 180	B66329–G0500–X127
	1.00	±0.1	approx. 340	approx. 110	B66329–G1000–X127
	1.50	±0.1	approx. 250	approx. 81	B66329–G1500–X127

For power loss P_v and amplitude permeability μ_a refer to page 418.

◥ to be preferred

Coil formers B 66 243

Polycarbonate coil former with 12 terminal pins (fig. 1), color code blue; without terminal pins (fig. 2), color code black.
Permissible soldering temperature max. 400 °C/752 °F, 2 sec (refer also to page 85, para. 8.2).
For winding details refer to page 72.

Figure 1

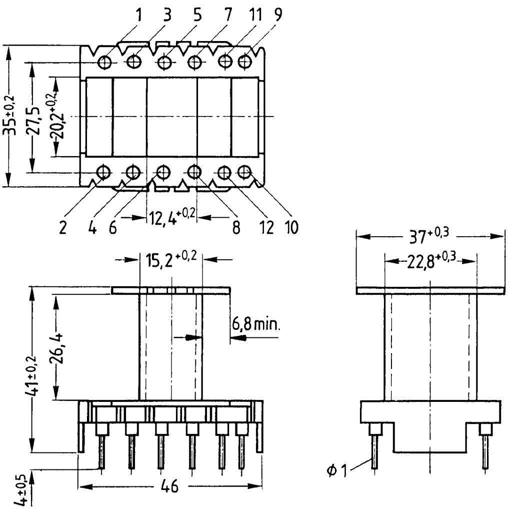
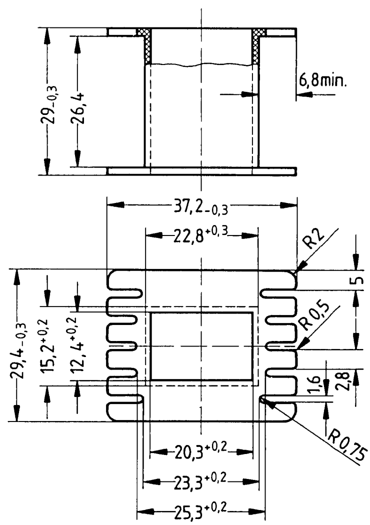
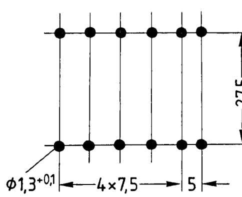


Figure 2





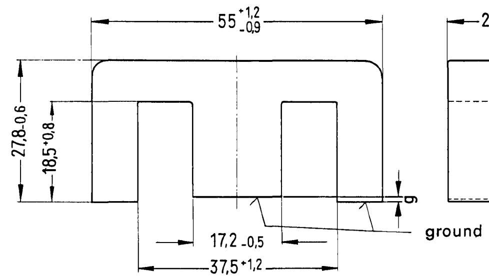
Hole arrangement
View in mounting direction

Dimensions in mm

Figure	Number of sections	Useful winding cross section A_N mm^2	Average length of turn l_N mm	A_R value[1] μΩ	Approx. weight g	Number of pins	**Ordering code** (PU: 200)
1	1	180	100	19	5	12	B66243-A1012-M001
2					3	–	B66243-A1000-M001

[1] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns^2)

in accordance with DIN 41 295 (corresponding to the electrical sheet-steel lamination M 55)

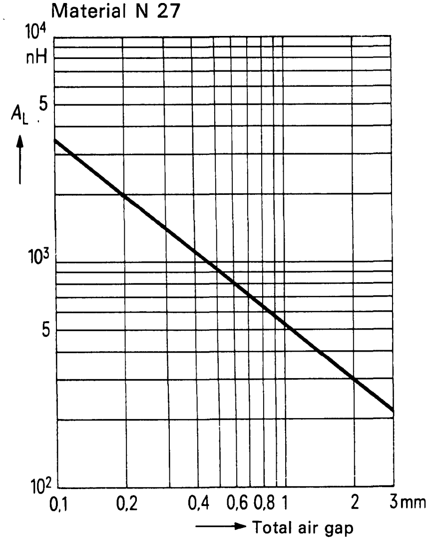


Dimensions in mm

A_L value versus total air gap
for a set consisting of

one core B66335–G0000 (g appr. 0) and
one core B66335–G∗∗∗∗ (g > 0)
or
two cores B66335–G∗∗∗∗ (g > 0)

Material N 27



Magnetic characteristics (per set)

Core factor	$\Sigma\, l/A$ =	0.34	mm^{-1}
Effective length	l_e =	120	mm
Effective area	A_e =	354	mm^2
Effective volume	V_e =	42500	mm^3

Approx. weight 108 g/item

Accessories

Coil former

E cores are delivered individually according to the dimension *"g"* (shortened center leg). The tabulated A_L value apply to wire sets comprising the indicated core and a core without shortened center leg (B66335–G0000).

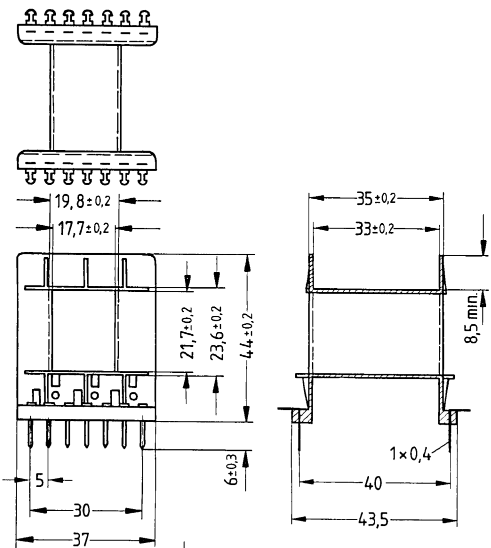
SIFERRIT material	Dimension *"g"* mm	tolerance mm	A_L value nH	Effective permeability μ_e	**Ordering code** (PU: 100 items)
N 27 ◥	appr. 0	–	5800^{+30}_{-20}%	approx. 1570	B66335–G0000–X127
N 27	0.50 ◥	±0.05	approx. 930	approx. 252	B66335–G0500–X127
	1.00	±0.1	approx. 520	approx. 141	B66335–G1000–X127
	1.50	±0.1	approx. 380	approx. 103	B66335–G1500–X127
	2.00	±0.15	approx. 300	approx. 81	B66335–G2000–X127

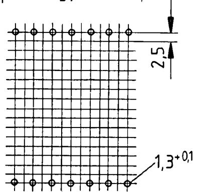
For power loss P_v and amplitude permeability μ_a refer to page 418.

◥ to be preferred

Coil former B 66 252

Glass-fiber reinforced 6 polyamide coil former with 14 terminal pins.
Permissible soldering temperature max. 400 °C/752 °F, 2 sec (refer also to page 85, para. 8.2).
For winding details refer to page 72.





Hole arrangement
View in mounting direction

Dimensions in mm

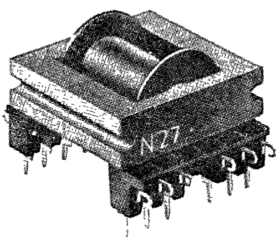
Number of sections	Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1)] µΩ	Approx. weight g	**Ordering code** (PU: 50)
1	280	113	14	10.0	B66252–B0000–M001

[1)] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

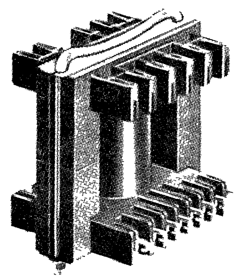
EC Cores

General

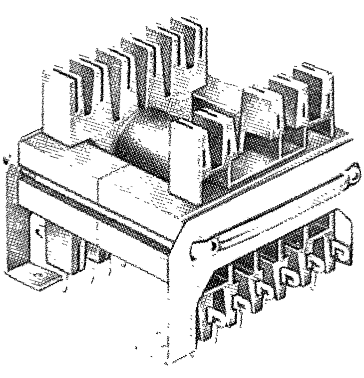
These E cores with round center leg provide a large space for the windings and permit even thick wires to be brought out conveniently. Owing to the large width for the winding good coupling between the windings is obtained. Coil formers with solder tags for vertical or horizontal magnetic axes are available.



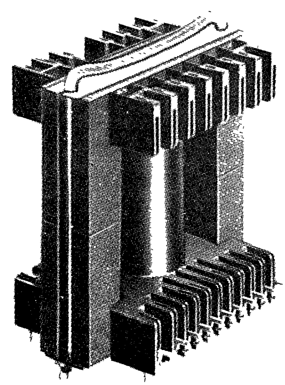
EC 35, magnetic axis horizontal



EC 41, EC 52
magnetic axis vertical



EC 41, EC 52, EC 70
magnetic axis horizontal

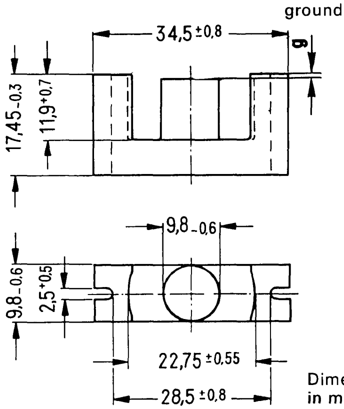


EC 70, magnetic axis vertical

Coil formers for EC cores

The coil formers, made of glass-fiber reinforced polyterephthalate, are flame-retardant in accordance with UL 94 V-0. They are available for the EC 35 core as horizontal version, for the EC 41, 52, and 70 cores also as vertical version with differing numbers of terminals (see following pages). Operating temperature range: between −60 °C/−76 °F and +120 °C/+248 °F.

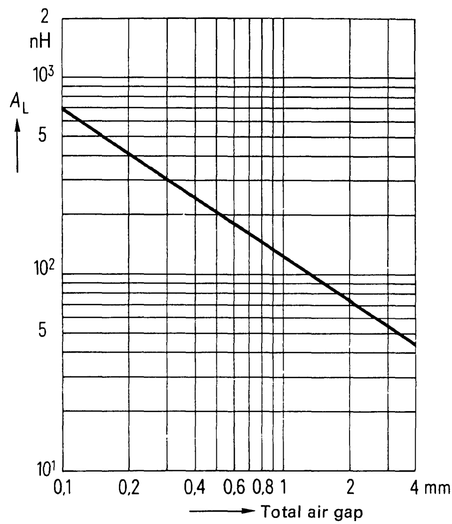
in accordance with IEC publication 647



Dimensions in mm

A_L value versus total air gap
for a set consisting of

one core B66337–G0000 (g approx. 0)
and
one core B66337–G**** (g > 0)
or
two cores B66337–G**** (g > 0)



Magnetic characteristics (per set)

Core factor	$\Sigma\, l/A$ =	0.918	mm^{-1}
Effective length	l_e =	77.4	mm
Effective area	A_e =	84.3	mm^2
Min. core cross section[1]	A_{min} =	66	mm^2
Effective volume	V_e =	6530	mm^3

Approx. weight 18 g/item

Accessories

Coil former

EC cores are delivered individually according to the dimension *"g"* (shortened center leg). The tabulated A_L values apply to core sets comprising the indicated core and a core without shortened center leg (B66337–G0000).

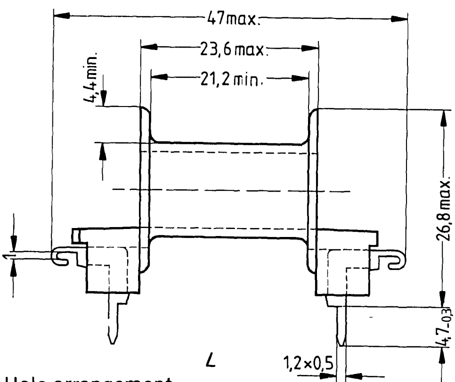
SIFERRIT material	Dimension *"g"* mm	tolerance mm	A_L value nH	Effective permeability μ_e	**Ordering code** (PU: 400 items)
N 27 ◥	appr. 0	–	approx. 2100	approx. 1530	B66337–G0000–X127
N 27 ◥	0.10	±0.02	approx. 680	approx. 500	B66337–G0100–X127
	0.25	±0.03	approx. 340	approx. 249	B66337–G0250–X127
	0.50	±0.05	approx. 205	approx. 150	B66337–G0500–X127
	1.00	±0.1	approx. 122	approx. 89	B66337–G1000–X127

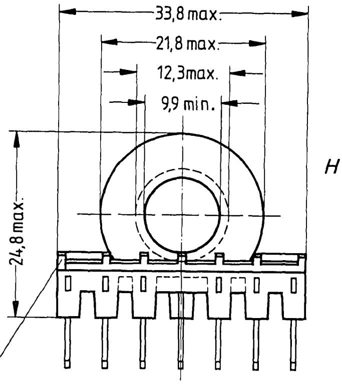
For power loss P_v and amplitude permeability μ_a refer to page 418.

[1] Necessary for calculating the max. flux density
◥ to be preferred

Coil former B 66 272

Glass-fiber reinforced polyterephthalate coil former, flame-retardant in accordance with UL 94 V-0.
Available with 11 or 13 solder terminals, as required.
Permissible soldering temperature max. 400 °C/752 °F, 2 sec.
For winding details refer to page 73.

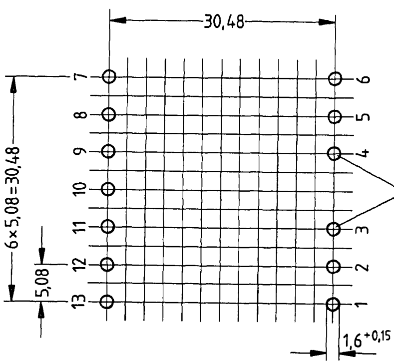




Marking for pin 1

B

Hole arrangement
View in mounting direction



Pins 3 and 4 not needed for type B66272-A1001-T001

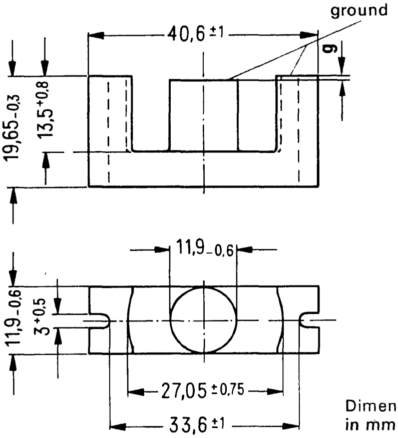
Built-in dimensions for the transformer
L = 47 mm
B = 36 mm
H = 26 mm

Dimensions in mm

Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1] µΩ	Approx. weight g	Number of terminals	**Ordering code** (PU: 200)
97	53	18.8	7	11	B66272-A1001-T001
				13	B66272-A1002-T001

[1] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)

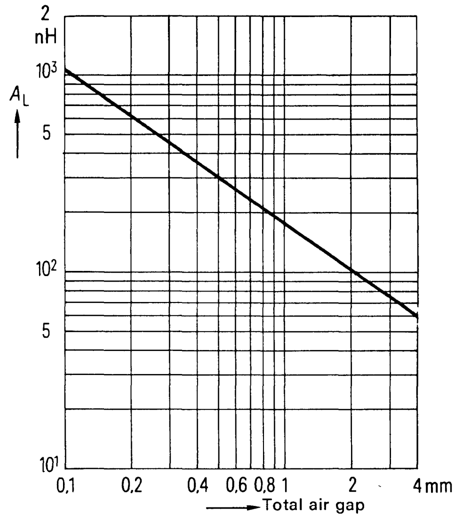
in accordance with IEC publication 647



Dimensions in mm

A_L value versus total air gap
for a set consisting of

one core B66339–G0000 (g approx. 0)
and
one core B66339–G**** (g > 0)
or
two cores B66339–G**** (g > 0)



Magnetic characteristics (per set)

Core factor	$\Sigma\, l/A$ =	0.735	mm^{-1}
Effective length	l_e =	89.3	mm
Effective area	A_e =	121	mm^2
Min. core cross section[1]	A_{min} =	100	mm^2
Effective volume	V_e =	10800	mm^3

Approx. weight 26 g/item

Accessories

Coil formers and mounting assembly

E cores are delivered individually according to the dimension *"g"* (shortened center leg). The tabulated A_L values apply to core sets comprising the indicated core and a core without shortened center leg (B66339–G0000).

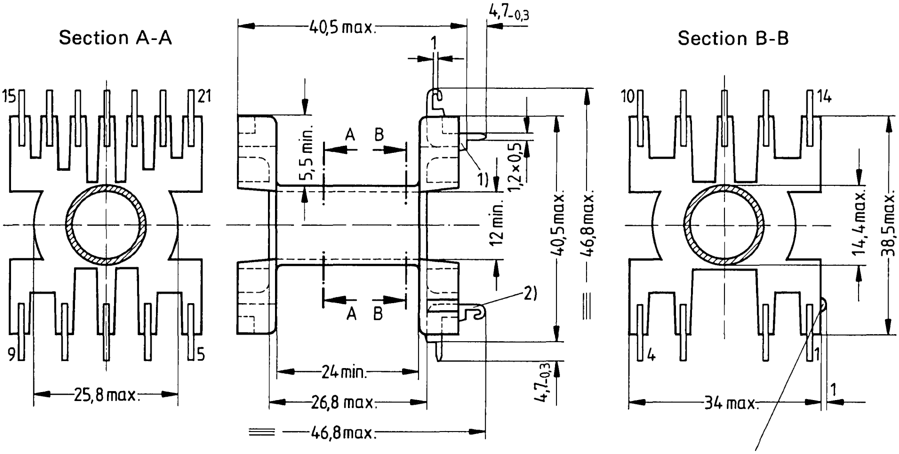
SIFERRIT material	Dimension *"g"* mm	tolerance mm	A_L value nH	Effective permeability μ_e	**Ordering code** (PU: 400 items)
N 27 ◥	appr. 0	–	approx. 2700	approx. 1580	B66339–G0000–X127
N 27 ◥	0.10	±0.02	approx. 1100	approx. 644	B66339–G0100–X127
	0.25	±0.03	approx. 530	approx. 310	B66339–G0250–X127
	0.50	±0.05	approx. 305	approx. 179	B66339–G0500–X127
	1.00	±0.1	approx. 180	approx. 105	B66339–G1000–X127

For power loss P_v and amplitude permeability μ_a refer to page 418.

[1] Necessary for calculating the max. flux density
◥ to be preferred

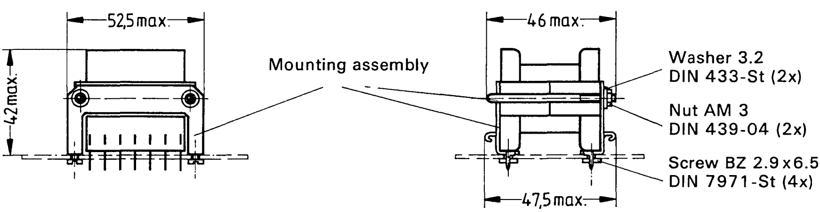
Coil former and mounting assembly B 66 274

Glass-fiber reinforced polyterephthalate, flame-retardant in accordance with UL 94 V-0. Horizontal or vertical versions with 9 or 12 solder terminals are available, as required. Permissible soldering temperature max. 400 °C/752 °F, 2 sec.
For winding details refer to page 73.



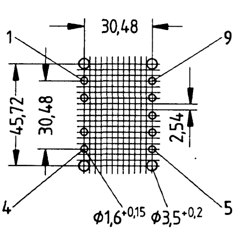
1) Installation of solder tag for vertical version
2) Installation of solder tag for horizontal version

Horizontal version: cores with accessories assembled

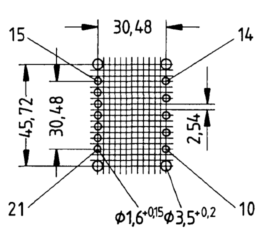


Hole arrangement, view in mounting direction

9 terminals

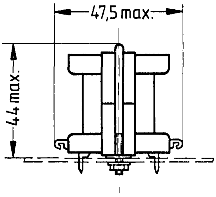


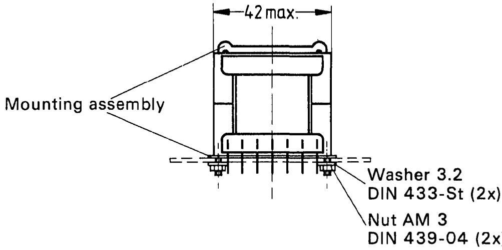
12 terminals



Dimensions in mm

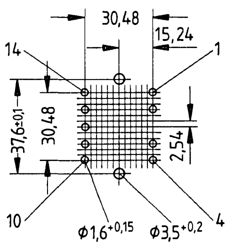
Vertical version: cores with accessories assembled



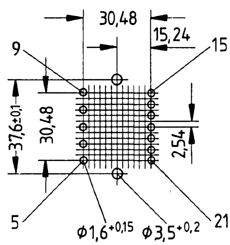


Hole arrangements, view in mounting direction

9 terminals



12 terminals



Dimensions in mm

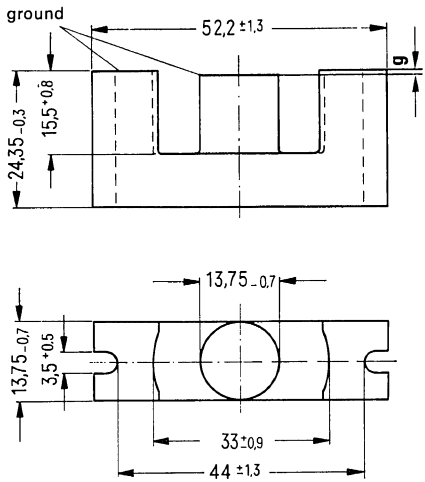
Coil former B 66 274

Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1] μΩ	Approx. weight g	Version	Number of terminals	**Ordering code** (PU: 200)
134	62	15.9	12	horizontal	9 ◥	B66274-A1001-T001
					12	B66274-A1002-T001
				vertical	9	B66274-A1011-T001
					12	B66274-A1012-T001

Mounting assembly B 66 274		**Ordering code** (PU: 200)
Horizontal ◥	Complete mounting assembly with hex nuts and washers	B66274-B2001-X000
Vertical	Complete mounting assembly with hex nuts and washers	B66274-B2002-X000

[1] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)
◥ to be preferred

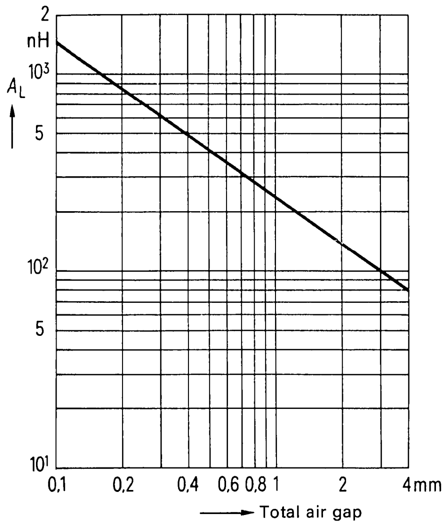
in accordance with IEC publication 647



Dimensions in mm

A_L value versus total air gap
for a set consisting of

one core B66341–G0000 (g approx. 0)
and
one core B66341–G**** (g > 0)
or
two cores B66341–G**** (g > 0)



Magnetic characteristics (per set)

Core factor	$\Sigma\, l/A$ =	0.58 mm^{-1}
Effective length	l_e =	105 mm
Effective area	A_e =	180 mm^2
Min. core cross section[1]	A_{min} =	134 mm^2
Effective volume	V_e =	18800 mm^3

Approx. weight 55 g/item

Accessories

Coil formers and mounting assembly

E cores are delivered individually according to the dimension *"g"* (shortened center leg). The tabulated A_L values apply to core sets comprising the indicated core and a core without shortened center leg (B66341–G0000).

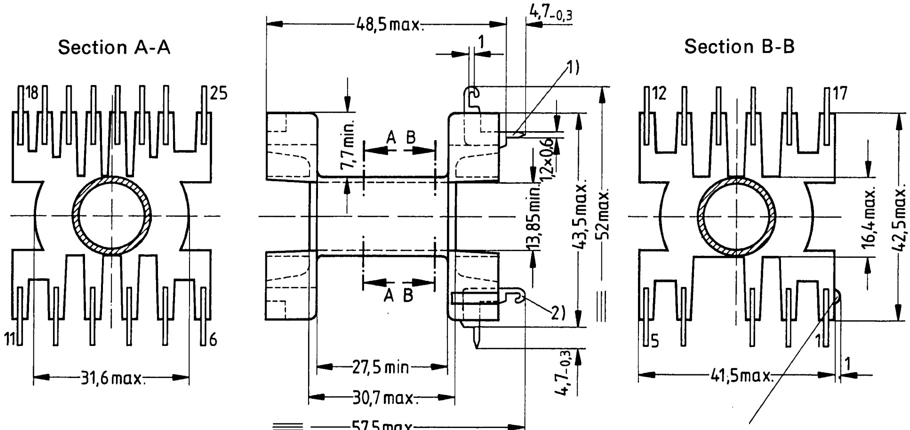
SIFERRIT material	Dimension *"g"* mm	tolerance mm	A_L value nH	Effective permeability μ_e	**Ordering code** (PU: 200 items)
N 27	◥ appr. 0	–	approx. 3400	approx. 1570	B66341–G0000–X127
N 27	◥ 0.25	±0.03	approx. 725	approx. 335	B66341–G0250–X127
	0.50	±0.05	approx. 420	approx. 194	B66341–G0500–X127
	1.00	±0.1	approx. 240	approx. 111	B66341–G1000–X127
	1.50	±0.1	approx. 175	approx. 81	B66341–G1500–X127

For power loss P_v and amplitude permeability μ_a refer to page 418.

[1] Necessary for calculating the max. flux density
◥ to be preferred

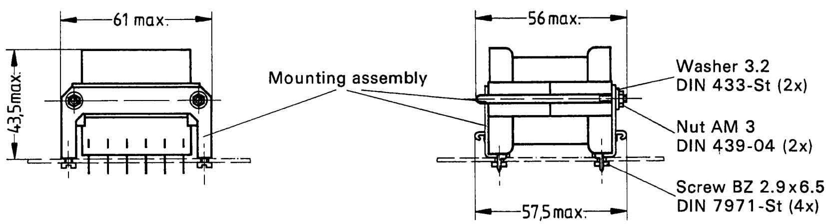
Coil former and mounting assembly B 66 276

Glass-fiber reinforced polyterephthalate, flame-retardant in accordace with UL 94 V-0. Horizontal or vertical versions with 11 or 14 solder terminals are available, as required. Permissible soldering temperature max. 400 °C/752 °F, 2 sec.
For winding details refer to page 73.



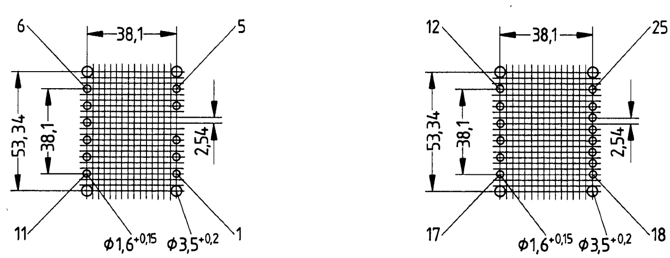
1) Installation of solder tag for vertical version
2) Installation of solder tag for horizontal version

Horizontal version: cores with accessories assembled



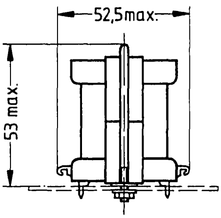
Hole arrangement, view in mounting direction

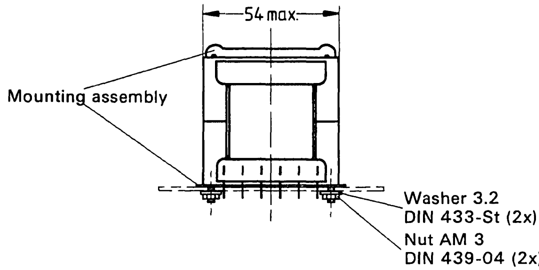
11 terminals 14 terminals



Dimensions in mm

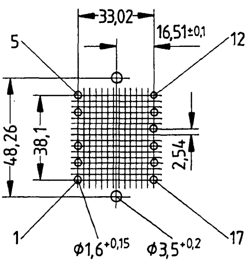
Vertical version: cores with accessories assembled



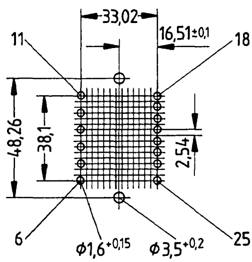


Hole arrangements, view in mounting direction

11 terminals



14 terminals



Dimensions in mm

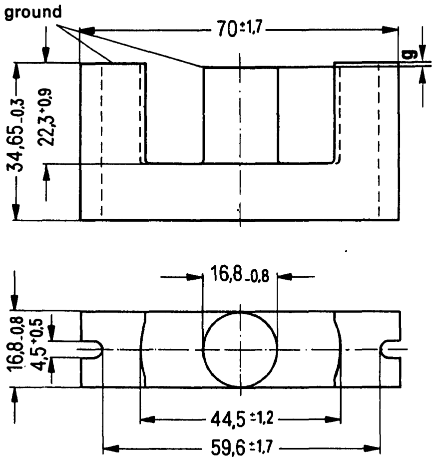
Coil former B 66 276

Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1] µΩ	Approx. weight g	Version	Number of terminals	**Ordering code** (PU: 100)
212	74	12.0	18	horizontal	11	◥ B66276-A1001-T001
					14	B66276-A1002-T001
				vertical	11	B66276-A1011-T001
					14	B66276-A1012-T001

Mounting assembly B66276		**Ordering code** (PU: 100)
Horizontal ◥	Complete mounting assembly with hex nuts and washers	B66276-B2001-X000
Vertical	Complete mounting assembly with hex nuts and washers	B66276-B2002-X000

[1] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)
◥ to be preferred

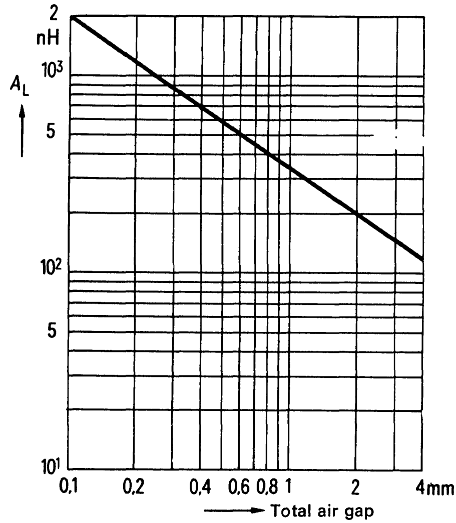
in accordance with IEC publication 647



Dimensions in mm

A_L value versus total air gap
for a set consisting of

one core B66343–G0000 (g approx. 0)
and
one core B66343–G∗∗∗∗ (g > 0)
or
two cores B66343–G∗∗∗∗ (g > 0)



Magnetic characteristics (per set)

Core factor	$\Sigma\, l/A$ =	0.514 mm^{-1}
Effective length	l_e =	144 mm
Effective area	A_e =	279 mm^2
Min. core cross section[1]	A_{min} =	201 mm^2
Effective volume	V_e =	40100 mm^3

Approx. weight 126 g/item

Accessories

Coil formers and mounting assembly

E cores are delivered individually according to the dimension *"g"* (shortened center leg). The tabulated A_L values apply to core sets comprising the indicated core and a core without shortened center leg (B66343–G0000).

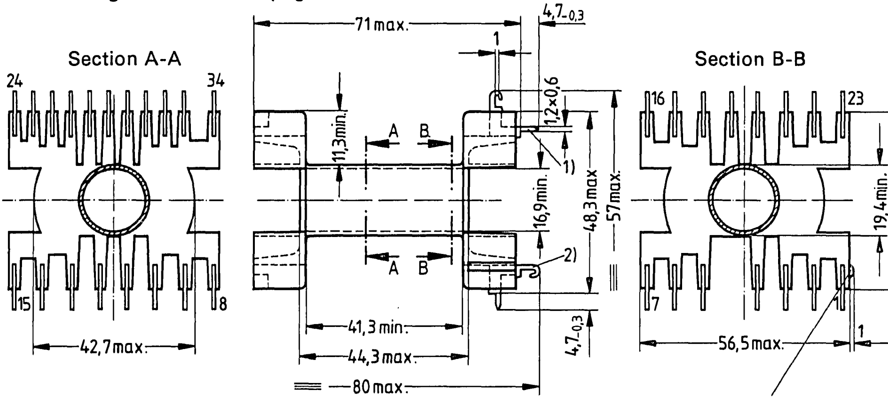
SIFERRIT material	Dimension *"g"* mm	tolerance mm	A_L value nH	Effective permeability μ_e	**Ordering code** (PU: 200 items)
N 27	◥ appr. 0	–	approx. 3900	approx. 1590	B66343–G0000–X127
N 27	◥ 0.25	±0.03	approx. 1000	approx. 409	B66343–G0250–X127
	0.50	±0.05	approx. 580	approx. 237	B66343–G0500–X127
	1.00	±0.1	approx. 340	approx. 139	B66343–G1000–X127
	2.00	±0.15	approx. 200	approx. 82	B66343–G2000–X127

For power loss P_v and amplitude permeability μ_a see page 418.

1) Necessary for calculating the max. flux density
◥ to be preferred

Coil former and mounting assembly B 66 278

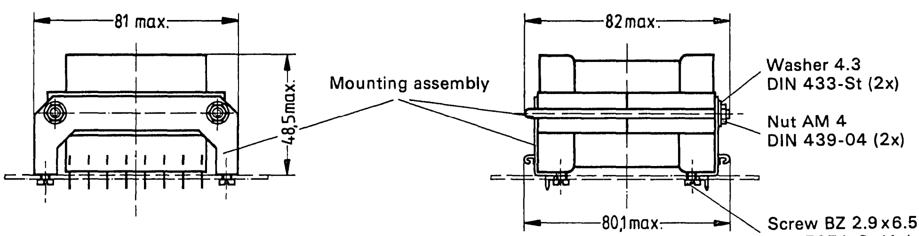
Glass-fiber reinforced polyterephthalate, flame-retardant in accordance with UL 94 V-0. Horizontal or vertical versions with 15 or 19 solder terminals are available, as required. Permissible soldering temperature max. 400 °C/752 °F, 2 sec.
For winding details refer to page 73.



1) Installation of solder tag for vertical version
2) Installation of solder tag for horizontal version

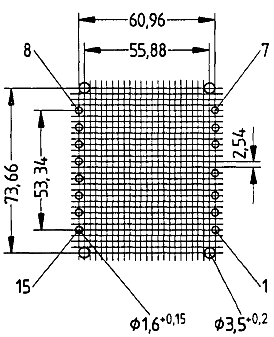
Marking for pin 1

Horizontal version: cores with accessories assembled



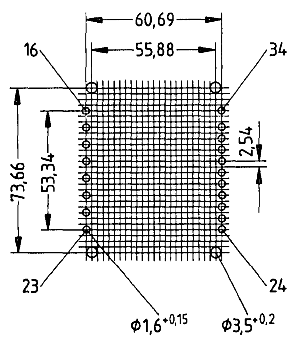
Hole arrangements, view in mounting direction

15 terminals

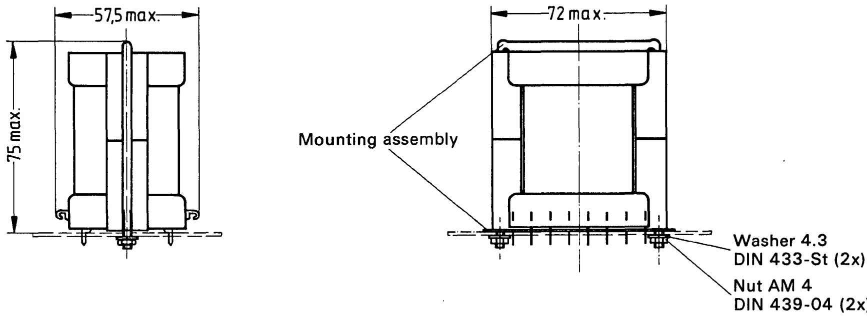


Dimensions in mm

19 terminals

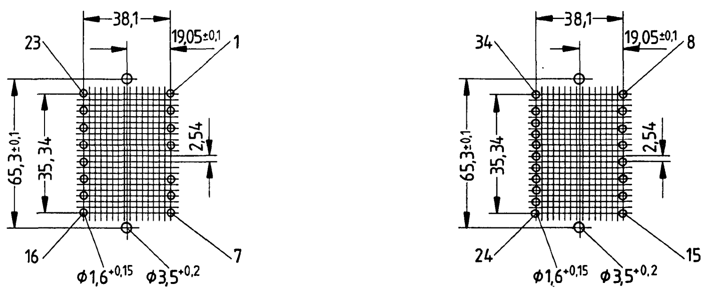


Vertical version: cores with accessories assembled



Hole arrangements, view in mounting direction

15 terminals   19 terminals



Dimensions in mm

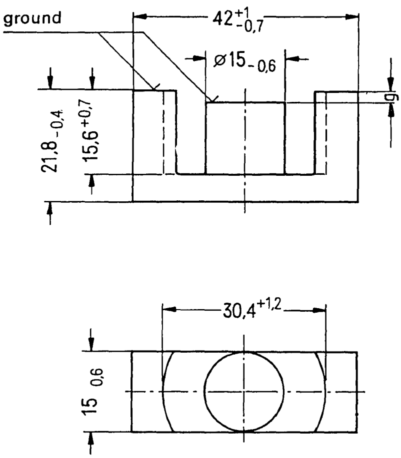
Coil former B 66 278

Useful winding cross section A_N mm²	Average length of turn l_N mm	A_R value[1)] µΩ	Approx. weight g	Version	Number of terminals	**Ordering code** (PU: 100)
469	97	7.1	30	horizontal	15 ◥	B66278-A1001-T001
					19	B66278-A1002-T001
				vertical	15	B66278-A1011-T001
					19	B66278-A1012-T001

Mounting assembly B66278		**Ordering code** (PU: 100)
Horizontal ◥	Complete mounting assembly with hex nuts and washers	B66278-B2001-X000
Vertical	Complete mounting assembly with hex nuts and washers	B66278-B2002-X000

1) $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns²)
◥ to be preferred

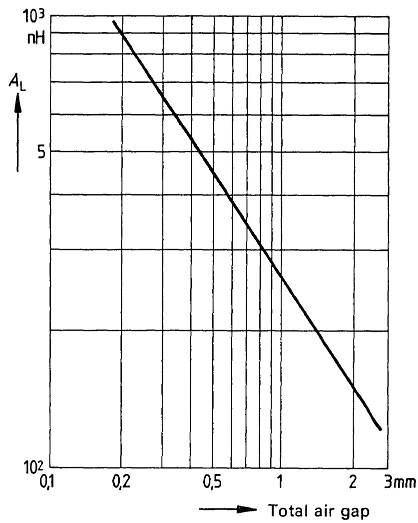
The round center leg of these E cores is of particular advantage when thick wires or tapes are used. Their application results in a compact winding design featuring low stray inductances.



Dimensions in mm

A_L value versus total air gap
for a set consisting of

one core B66347–G0000 (g approx. 0)
and
one core B66347–G.... (g > 0)
or
two cores B66347–G.... (g > 0)



Magnetic characteristics (per set)

Core factor	$\Sigma\, l/A$ =	0.58 mm^{-1}
Effective length	l_e =	99 mm
Effective area	A_e =	170 mm^2
Effective volume	V_e =	16800 mm^3

Approx. weight 42 g/item

Accessories

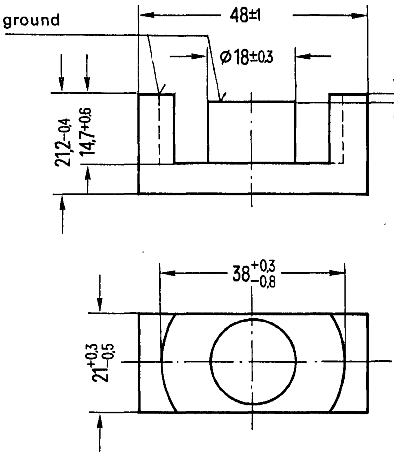
Coil former in preparation

E cores are delivered individually according to the dimension *"g"* (shortened center leg). The tabulated A_L values apply to core sets comprising the indicated core and a core without shortened center leg (B66347–G0000).

SIFERRIT material	Dimension *"g"* mm	tolerance mm	A_L value nH	Effective permeability μ_e	**Ordering code** (PU: 400 items)
N 27	appr. 0	–	approx. 3200	approx. 1480	B66347–G0000–X127
N 27	1	±0.1	approx. 260	approx. 120	B66347–G1000–X127
	1.5	±0.1	approx. 190	approx. 88	B66347–G1500–X127

For power loss P_v and amplitude permeability μ_a refer to page 418.

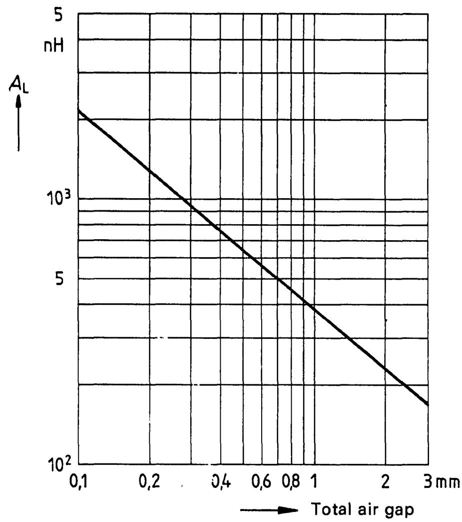
The round center leg of these E cores is of particular advantage when thick wires or tapes are used. Their application results in a compact winding design featuring low stray inductances.



Dimensions in mm

A_L value versus total air gap
for a set consisting of

one core B66333–G0000 (g approx. 0)
and
one core B66333–G.... (g > 0)
or
two cores B66333–G.... (g > 0)



Magnetic characteristics (per set)

Core factor	$\Sigma\, l/A$ =	0.394	mm^{-1}
Effective length	l_e =	100	mm
Effective area	A_e =	254	mm^2
Effective volume	V_e =	25400	mm^3

Approx. weight 65 g/item

E cores are delivered individually according to the dimension *"g"* (shortened center leg). The tabulated A_L values apply to core sets comprising the indicated core and a core without shortened center leg (B66333–G0000).

SIFERRIT material	Dimension *"g"* mm	tolerance mm	A_L value nH	Effective permeability μ_e	**Ordering code** (PU: 100)
N 27	appr. 0	–	approx. 4800	approx. 1500	B66333–G0000–X127
N 27	1.2	±0.1	approx. 320	approx. 101	B66333–G1200–X127
	1.5	±0.1	approx. 270	approx. 85	B66333–G1500–X127

For power loss P_v and amplitude permeability μ_a refer to page 418.

Cores for switched-mode power supplies

ETD cores (economic transformer design) are intended for switched-mode power supply transformer design with optimum weight-referred power at small volume. The dimensioning of the cores enables construction of compact windings together with coil formers suitable for automatic assembly. The cores have been designed with respect to the multiple outputs in case of mains isolation.

ETD 34

SIFERRIT material	Dimension g mm	Dimension g Tolerance mm	A_L value[1]) nH	Ordering code (packaging unit 250 items)
N 27	≈0	–	≈2400	B66361-G-X127
N 27	0.1	±0.02	≈ 800	B66361-G100-X127
N 27	0.2	±0.03	≈ 480	B66361-G200-X127
N 27	0.5	±0.05	≈ 230	B66361-G500-X127
N 27	1.0	±0.1	≈ 140	B66361-G1000-X127

ETD 39

SIFERRIT material	Dimension g mm	Dimension g Tolerance mm	A_L value[1]) nH	Ordering code (packaging unit 200 items)
N 27	≈0	–	≈2700	B66363-G-X127
N 27	0.1	±0.02	≈1000	B66363-G100-X127
N 27	0.2	±0.03	≈ 600	B66363-G200-X127
N 27	0.5	±0.05	≈ 295	B66363-G500-X127
N 27	1.0	±0.1	≈ 170	B66363-G1000-X127

ETD 44

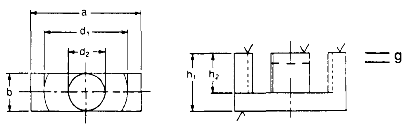
SIFERRIT material	Dimension g mm	Dimension g Tolerance mm	A_L value[1]) nH	Ordering code (packaging unit 250 items)
N 27	≈0	–	≈3300	B66365-G-X127
N 27	0.2	±0.03	≈ 800	B66365-G200-X127
N 27	0.5	±0.05	≈ 400	B66365-G500-X127
N 27	1.0	±0.1	≈ 230	B66365-G1000-X127
N 27	1.5	±0.15	≈ 170	B66365-G1500-X127

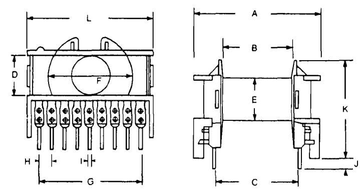
ETD 49

SIFERRIT material	Dimension g mm	Dimension g Tolerance mm	A_L value[1]) nH	Ordering code (packaging unit 100 items)
N 27	≈0	–	≈3700	B66367-G-X127
N 27	0.2	±0.03	≈1000	B66367-G200-X127
N 27	0.5	±0.05	≈ 480	B66367-G500-X127
N 27	1.0	±0.1	≈ 270	B66367-G1000-X127
N 27	2.0	±0.2	≈ 150	B66367-G2000-X127

1) Measuring temperature 25°C, measuring flux density ≤ 1000G

Outline drawing and dimensions





Nominal Dimensions (mm)

Core Type	a	d_1	d_2	h_1	h_2 min.	b
ETD 34	34.2 ±0.8	25.6 +1.4	11.1 −0.6	17.5 −0.4	11.8	11.1 −0.6
ETD 39	39.1 ±0.9	29.3 +1.6	12.8 −0.6	20.0 −0.4	14.2	12.8 −0.6
ETD 44	$43.8^{+1.2}_{-0.8}$	32.5 +1.6	15.2 −0.8	22.5 −0.4	16.1	15.2 −0.8
ETD 49	48.7 ±1.1	36.1 +1.8	16.7 −0.8	24.9 −0.4	17.7	16.7 −0.8

Core Constants

Core Type	Ae (mm²)	le (mm)	Ve (mm³)	Aw (mm²)	Weight (g) Approx.	Power Handling @ 25 KHz
ETD 34	97.1	78.6	7640	1.25	20.5	60 watts
ETD 39	125.	92.2	11500	1.8	30	90 watts
ETD 44	173.	103.	17800	2.2	47	150 watts
ETD 49	211.	114.	24000	2.75	63	240 watts

Electrical Properties of Ungapped Core Sets

Core Type	A_LMin 1G, 20°C	A_LMin 3200G, 100°C	Core Losses 25kHz, 2000G, 100°C
ETD 34	1900	1265	1.6 W
ETD 39	2100	1400	2.2 W
ETD 44	2600	1735	3.6 W
ETD 49	3000	2000	4.6 W

Bobbins

Dimensions (ins.)	Bobbin Type			
	ETD 34	ETD 39	ETD 44	ETD 49
A	1.685	1.882	2.067	2.264
B	.827	1.016	1.165	1.291
C	1.000	1.200	1.400	1.600
D	.449	.516	.610	.669
E	.528	.595	.689	.748
F	.996	1.142	1.266	1.409
G	1.200	1.400	1.600	1.800
H	.200	.200	.200	.200
I	.039	.039	.039	.039
J	.169	.169	.169	.169
K	1.374	1.480	1.591	1.691
L	1.559	1.752	1.945	2.146

Hardware

Pins	Bobbin P/N	Clamp (2 required)	Ground Strap
14	B66362-A1014-T1 ETD 34	B66362-A2000	B66362-A2001
16	B66364-A1016-T1 ETD 39	B66364-A2000	B66364-A2001
18	B66366-A1018-T1 ETD 44	B66366-A2000	B66366-A2001
20	B66368-A1020-T1 ETD 49	B66368-A2000	B66368-A2001

U and UI Cores

U and UI Cores

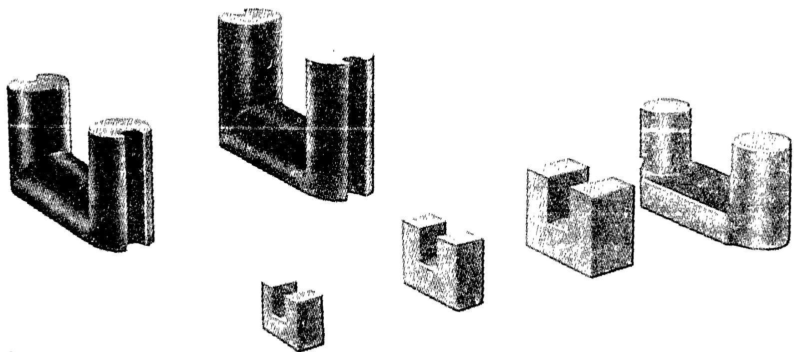


Figure 1

General

By virtue of their high saturation flux density level, high Curie temperature, and low power losses, U and UI cores made of SIFERRIT N 27 are suitable for use in power, pulse, and high-voltage transformers, e.g. in line deflection transformers for black-and-white and color TV, in energy storage chokes, ignition transformers, etc.
Relevant SIFERRIT material data and general information on power dissipation and amplitude permeability versus temperature, magnetic flux density, and frequency may be obtained from the materials survey and from the following curves.

Power transformers with UI and UU cores

For transformers with high power ratings (> 1 kW) we manufacture U and I cores of rectangular section which can be combined in various ways like building blocks to form UU cores of larger cross-section or EE-shapes that are suitable for transformers in the kilowatt range (fig. 2).

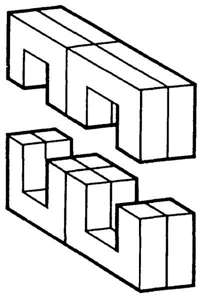


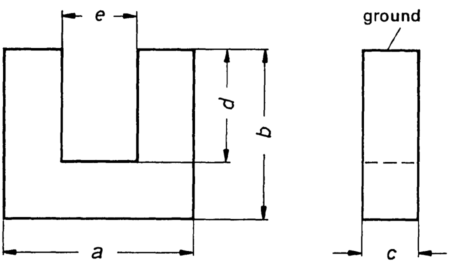
Figure 2

Information on the design of power transformers and energy storage chokes is to be found on page 89 ... 103.

Survey

Core type	**Ordering code**	Main application
U15 U20 U25	B67350–A0001–X027 B67348–A0001–X027 B67352–A0001–X027	Energy storage chokes and transformers for TV sets
U29/18/16 U37/25/18 U37/29/18 U47/25/18 U57/28/16 U59/36/17	B67354–A0001–X027 B67356–A0001–X027 B67358–A0001–X027 B67353–A0001–X042 B67334–Z0001–X042 B67333–Z0001–X043	Line deflection transformers for TV sets
U93/76/30 U93/76/16 I 93/28/30 I 93/28/16	B67345–A0001–X027 B67345–A0003–X027 B67345–A0002–X027 B67345–A0004–X027	for power ratings $\geqq$ 1.5 kW

U cores of rectangular cross section are preferably available made of the SIFERRIT material N 27.
PU: 500 items

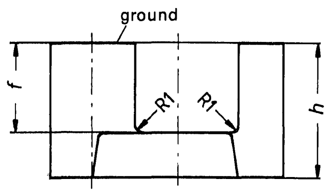


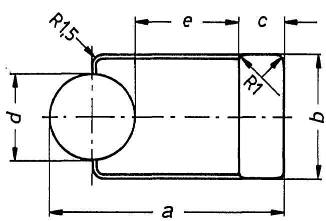
		U 15	U 20	U 25
Dimensions (mm)	a	15,2 ± 0,7	2.8 ± 0.6	24,8 ± 0,7
	b	11,7 − 1	15.9 − 0.6	20 − 1
	c	6,7 − 0,5	7.8 − 0.5	13 − 0,5
	d	5,7 + 0,7	8 + 0.6	11 + 0,5
	e	5,2 ± 0,3	6,3 ± 0,3	8,2 ± 0,3
Magnetic characteristics per set				
Effective length	l_e mm	48	68	86
Effective area	A_e mm^2	32	55	105
Effective volume	V_e mm^3	1540	3750	9030
Core factor	$\sum \frac{l_e}{A_e}$ mm^{-1}	1,5	1,24	0,82
Test data[1] **at 16 kHz** $P_V \left[\frac{W}{Set}\right]$ $\hat{B}$ = 200 mT/60 ... 100 °C		≦ 0,19	≦ 0,42	≦ 1
μ_a $\hat{B}$ = 400 mT/ 20 °C $\hat{B}$ = 320 mT/100 °C			> 1330 > 1000	
Approx. weight	g/item	4,3	9,5	23
Ordering code		B67350-A0001-X027	B67348-A0001-X027	B67352-A0001-X027

[1] Sinusoidal test voltage

U Cores U 29/18/16 B 67354
U 37/25/18; U 37/29/18 B 67356; B 67358

U cores with round center leg for attaching the coil former and the winding. They are particularly suitable for the construction of high voltage and line transformers.
PU: 500 items

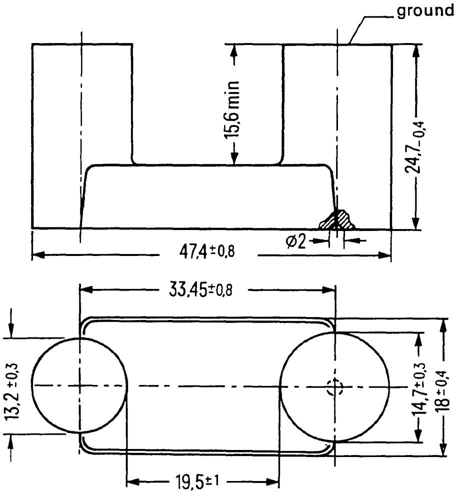




		U 29/18/16	U 37/25/18	U 37/29/18
Dimensions (mm)	a	29 ± 0,7	36,9 ± 0,8	36,9 ± 0,8
	b	16 ± 0,4	18 ± 0,4	18 ± 0,4
	c	5,8 ± 0,2	7,3 ± 0,2	7,3 ± 0,2
	d	11 ± 0,3	14,7 ± 0,3	14,7 ± 0,3
	e	> 11	> 13,9	> 13,9
	f	> 11,5	> 16,3	> 19,9
	h	18 − 0,4	25,4 − 0,4	29 − 0,4
Magnetic characteristics per set				
Effective length	l_e mm	95	125	140
Effective area	A_e mm²	94	150	150
Effective volume	V_e mm³	8930	18750	21000
Test data[1] at 16 kHz $P_V\left[\frac{W}{set}\right]$ $\hat{B}$ = 200 mT/60 ... 100 °C		≦ 0,95	≦ 2,1	≦ 2,3
μ_a $\hat{B}$ = 400 mT/ 20 °C $\hat{B}$ = 320 mT/100 °C			> 1500 > 1250	
Approx. weight	g/item	22	48	54
Ordering code		B67354-A0001-X027	B67356-A0001-X027	B67358-A0001-X027

[1] Sinusoidal test voltage

U cores of round cross section, without hole, without notch, made of SIFERRIT N 42 for line deflection transformers in color TV sets



Dimensions in mm

Magnetic characteristics (per set)

Effective length	l_e =	145 mm
Effective area[1]	A_e =	153 mm^2
Effective volume	V_e =	22190 mm^3

Approx. weight 56 g/item

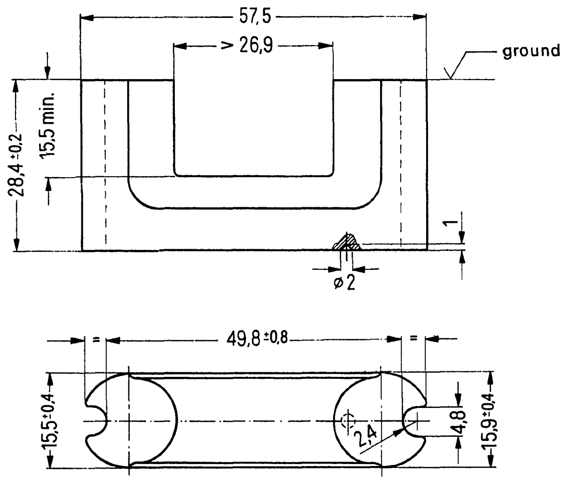
Ordering code: B67353-A0001-X042
(PU: 500 items)

Test data (per set)
Measuring frequency 16 kHz
Test voltage: sinusoidal

SIFERRIT material	Temperature ϑ °C	Flux density $\hat{B}$ mT	Field strength $\hat{H}$ A/m	Amplitude permeability μ_e	Power loss P_v W/set
N 42[2]	20	400	≦ 265	≧ 1200	–
	100	320	≦ 340	≧ 750	–
	60 ... 100	200	–	–	≦ 3.1

[1] The smallest core cross section of 137 mm^2 is decisive for the test flux density.
[2] Curie temperature ϑ_C > 190 °C/374 °F.

U cores of round cross section complying with DIN 41 296, page 2, made of SIFERRIT N 42 for line deflection transformers in color TV sets.



Dimensions in mm

Magnetic characteristics (per set)

Effective length	l_e =	163 mm
Effective area	A_e =	171 mm^2
Effective volume	V_e =	27900 mm^3

Approx. weight 70 g/item

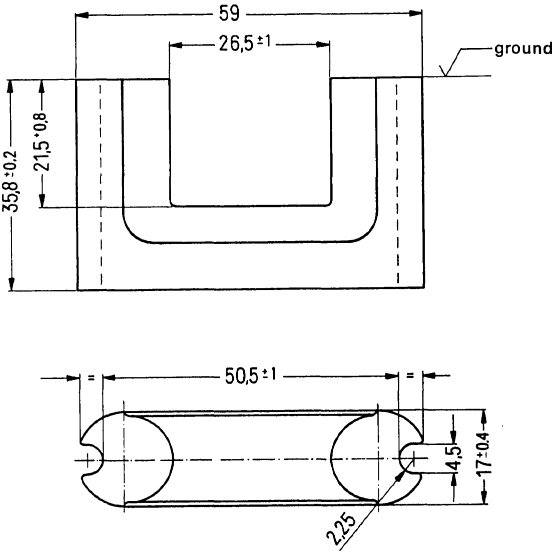
Ordering code: B67334–Z0001–X042
(PU: 500 items)

Test data (per set)
Measuring frequency 16 kHz
Test voltage: sinusoidal

SIFERRIT material	Temperature ϑ °C	Flux density $\hat{B}$ mT	Field strength $\hat{H}$ A/m	Amplitude permeability μ_e	Power loss P_v W/set
N 42[1]	20	400	≦ 265	≧ 1200	–
	100	320	≦ 340	≧ 750	–
	60...100	200	–	–	≦ 3.9

[1] Curie temperature ϑ_C > 190 °C/374 °F.

U cores of round cross section complying with DIN 41 296, page 5, made of SIFERRIT N 43 for line deflection transformers in color TV sets.



Dimensions in mm

Magnetic characteristics (per set)

Effective length	l_e =	189 mm
Effective area	A_e =	210 mm^2
Effective volume	V_e =	39700 mm^3

Approx. weight 100 g/item

Ordering code: B67333-Z0001-X043
(PU: 500 items)

Test data (per set)
Measuring frequency 16 kHz
Test voltage: sinusoidal

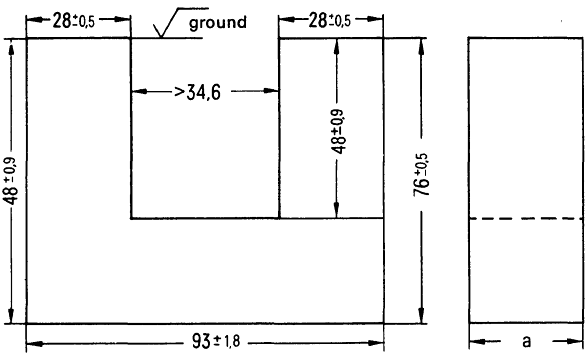
SIFERRIT material	Temperature ϑ °C	Flux density $\hat{B}$ mT	Field strength $\hat{H}$ A/m	Amplitude permeability μ_a	Power loss P_v W/set
	20	400	≦ 240	≧ 1330	–
N 43[1]	100	320	≦ 270	≧ 950	–
	60 ... 100	200	–	–	≦ 4.8

[1] Curie temperature ϑ_C > 190 °C/374 °F.

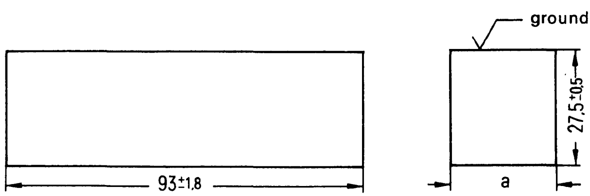
U Cores UU 93/152/30 UI Cores UI 93/104/30 B 67345
UU 93/152/16 UI 93/104/16

with rectangular cross-section

In addition to PM 87 cores and PM 112 cores, these U and UI cores made of SIFERRIT N 27 are suitable for the construction of power transformers > 1 kW (20 kHz). They are delivered individually, either as U cores or as I cores, and may also be combined to E cores or M cores (refer to "General" on U cores).



U core



I core

Dimensions in mm

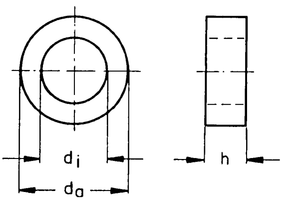
Magnetic characteristics (per set)

		UU 93/152/30	UI 93/104/30	UU 93/152/16	UI 93/104/16	
Effective length	l_e =	345	259	345	259	mm
Effective area	A_e =	826	826	441	441	mm^2
Effective volume	V_e =	285 000	214 000	152 000	114 000	mm^3
Approx. weight	=	1 500	1 100	800	600	g

Type		a	**Ordering code** (per item) (PU: 10 items)
U core	U 93/76/30	30 ± 0,6	B67345-A0001-X027
I core	I 93/28/30		B67345-A0002-X027
U core	U 93/76/16	16 ± 0,5	B67345-A0003-X027
I core	I 93/28/16		B67345-A0004-X027

Toroids and Multi-Aperture Cores

Survey



SIFERRIT toroids are mainly used for transformers, such as pulse, wideband, and power transformers, balanced mixers, and chokes.
The higher permeability of the magnetically closed circuit results in high inductance at low volume; the stray field is negligible.

Type	Dimensions[1] d_a mm	d_i mm	h mm	Approx. weight g	Technical data l_e/A_e mm^{-1}	l_e mm	A_e mm^2	V_e mm^3
R 2,5 [2]	2,5±0,12	1,5±0,1	1,0±0,1	0,02	12,2	6,1	0,5	3,0
R 4 [2]	4,0±0,15	2,4±0,15	1,6±0,1	0,07	7,65	9,7	1,27	12,3
R 6,3 [2]	6,3±0,2	3,8±0,15	2,5±0,12	0,3	4,95	15,3	3,1	47,5
R10 [2]	10 ±0,25	6,0±0,15	4,0±0,15	0,9	3,06	24,5	8,0	196
R12,5	12,5±0,3	7,5±0,2	5 ±0,15	2	2,45	30,4	12,0	380
R16[2]	16 ±0,4	9,6±0,3	6,3±0,2	3	1,95	38,7	20,0	770
R25/10	25,3±0,7	14,8±0,5	10 ±0,2	16	1,24	63,0	51,0	3210
R34/12,5	34 ±0,7	20,5±0,5	12,5±0,3	33	0,99	82,0	83,0	6800
R42	41,8±1	26,2±0,6	12,5±0,3	45	1,08	102,5	95,0	9750
R58	58,3±1	40,8±0,8	17,6±0,4	110	1,00	153,0	153,0	23400
Toroids, mainly for RFI suppression applications								
R25/10	25,3±0,7	14,8±0,5	10 ±0,2	16	1,24	63	51	3210
R25/15	25,3±0,7	14,8±0,5	15 ±0,4	24	0,83	63	76	4780
R25/20	25,3±0,7	14,8±0,5	20 ±0,5	32	0,62	63	102	6420
R34/10	34,0±0,7	20,5±0,5	10 ±0,3	26	1,24	82	66	5400
R34/12,5	34,0±0,7	20,5±0,5	12,5±0,3	33	0,99	82	83	6800

Surface protection	**Ordering code**
without surface protection	B64290–**A**....
lacquer protected, thickness of layer < 0.1 mm (only R 2.5)	B64290–**J**....
plastic coated, thickness of coat 0.3 ... 0.5 mm, depending on core size	B64290–**K**....

The appropriate surface available is indicated for the individual types.

[1] Dimensions for uncoated cores
[2] External and internal diameter in accordance with IEC publication 525, core height, however, deviating as follows:

	IEC	Siemens
Core height h	$\frac{d_i}{2}$	$\frac{d_i}{1.5}$

Measuring flux density $\hat{B} < 1$ mT

Material	Type	A_L value in nH	Ordering code without surface protection	Ordering code with surface protection	PU
K 1[1]	μ_i = 80, A_L tolerance ± 25 %				
	R 4	13		B64290-K0036-X001	5000
	R 6,3	20		B64290-K0037-X001	2000
	R 10	33		B64290-K0038-X001	500
M 33	μ_i = 750, A_L tolerance ± 25 %				
	R 4	123		B64290-K0036-X033	5000
	R 6,3	190		B64290-K0037-X033	2000
	R 10	308		B64290-K0038-X033	500
N 27	μ_i = 2000, A_L minimum value				
	R 12,5	770		B64290-K0044-X027	500
	R 16	970		B64290-K0045-X027	500
	R 25/10	1520		B64290-K0618-X027	50
	R 34/12,5	1900		B64290-K0048-X027	50
N 30	μ_i = 4300, A_L tolerance ± 25 %				
	R 2,5	440	B64290-A0035-X830	B64290-J0035-X830	10000
	R 4	710	B64290-A0036-X830	B64290-K0036-X830	5000
	R 6,3	1090	B64290-A0037-X830	B64290-K0037-X830	2000
	R 10	1760	B64290-A0038-X830	B64290-K0038-X830	500
	R 12,5	2210	B64290-A0044-X830	B64290-K0044-X830	500
	R 16	2770	B64290-A0045-X830	B64290-K0045-X830	500
	R 25/10	4400[3]	B64290-A0618-X830	B64290-K0618-X830	50
	R 42	5000	B64290-A0022-X830	B64290-K0022-X830	50
	R 58	5400	B64290-A0040-X830	B64290-K0040-X830	10
T 38	μ_i = 10000, A_L tolerance ± 30 %[2]				
	R 2,5	1030	B64290-A0035-X038	B64290-J0035-X038	10000
	R 4	1640	B64290-A0036-X038	B64290-K0036-X038	5000
	R 6,3	2540	B64290-A0037-X038	B64290-K0037-X038	2000
	R 10	4100	B64290-A0038-X038	B64290-K0038-X038	500

In addition to the versions indicated, the following cores are mainly used for RFI suppression purposes, A_L tolerance: $^{+30}_{-20}$ %

N 30	R 25/10	4400		B64290-K0618-X830	50
	R 25/15	6600		B64290-K0615-X830	50
	R 25/20	8800		B64290-K0616-X830	50
	R 34/10	4400		B64290-K0058-X830	50
	R 34/12,5	5000		B64290-K0048-X830	50

[1] The dimensions for toroids made of K 1, indicated on page 467, may be by approx. 5 % larger.
[2] The A_L values of the plastic coated version (B64290-K•••) are by 20 % lower.
[3] A_L tolerance $^{+30}_{-20}$ %.

Toroids for chokes and wideband transformers

The materials and core shapes listed on page 467 and 468 are also suitable for use in chokes and wideband transformers.
Materials of lower permeability are applicable at frequencies above 1 MHz, e.g. R 6.3 ring cores are preferably available (refer to page 468).

Material	μ_i	A_L value nH	tolerance	**Ordering code** (PU: 2000)
K 1	80	20	±25 %	B64290-K0037-X001
M 33	750	190		B64290-K0037-X033

Toroids for pulse transformers

The main field of application for toroids are pulse transformers.
Some definitions and design principles are described in the following:

Definitions

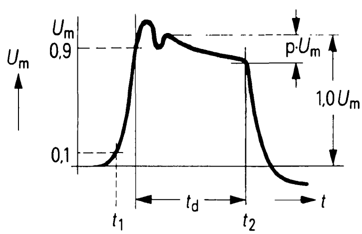


Figure 1 Voltage shape of a primary pulse

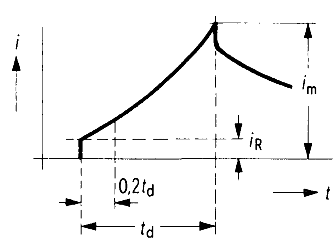


Figure 2 Current shape of a primary pulse

Pulse permeability

$$\mu_p = \frac{1}{\mu_0} \cdot \frac{\Delta B}{\Delta H}$$

$$\Delta B = \frac{t \int^{t_2} U \cdot d_t}{N \cdot A_e} \approx \frac{U_m \cdot t_d}{N \cdot A_e}$$

$$\Delta H = \frac{\Delta i \cdot N}{l_e}$$

$$L_p = \mu_p \cdot \mu_0 \cdot \frac{N^2 \cdot A_e}{l_e} = \frac{U_m \cdot t_d}{\Delta i}$$

From this equation one obtains μ_p as permeability determined by flux density and field strength deviations at pulse operation. The magnetizing current pulse – shown in fig. 2 – has in its initial and final part a current step, generated by the core losses, and an inductive current step $i_m - i_R$ with an approx. linearly rising characteristic.

Since in many cases the current step i_R can be neglected for pulse permeability calculations, the peak value of the magnetizing current i_m can be introduced as the current difference Δ_i when the field strength deviaton ΔH should be calculated.

When the value of ΔB increases, mainly at higher pulse repetition frequencies and an increasing pulse duty factor, the current step i_R – as a proportion of the total current – may be of greater importance.

Figure 5 shows, therefore, $\mu_{p\ 0.2}$ referred to a flux density ΔB during the interval $t_d - 0.2\ t_d$ and an accordingly increasing magnetizing current $\Delta i = i_m - i_{0.2}\ t_d$ (disregarding the current step at the beginning of the pulse).

Test conditions

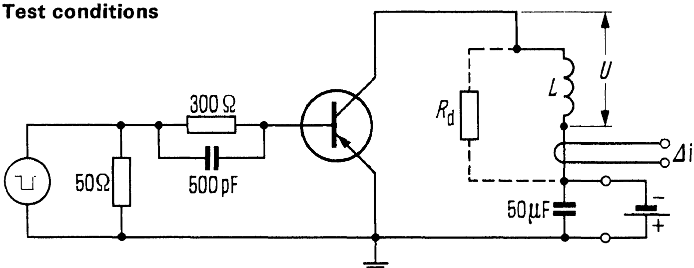


Figure 3 Measuring circuit

For a specified material, the pulse permeability depends upon the flux density deviation, the pulse repetition frequency, and the core temperature. Preferred test operation conditions are as follows:

ϑ = 25 °C/77 °F

f_p	10 kHz	100 kHz	1 MHz
t_d	1 μs	1 μs	0.5 μs

The time constant of the circuit (figure 3) has been determined such that the pulse current of the preceding pulse has approximately decayed to zero when the next pulse starts to rise. The resistance R_d causes the voltage peak value to decrease when the current has been disconnected.

The core heating mainly depends on the heat conductive medium, e.g. copper winding, mounting, encapsulation etc. The data in the test curve for continuous operation and short term measurement refers to 6.3 mm diameter toroids with N approx. 20/CuL, freely suspended.

Material data

Pulse permeability versus flux density deviation

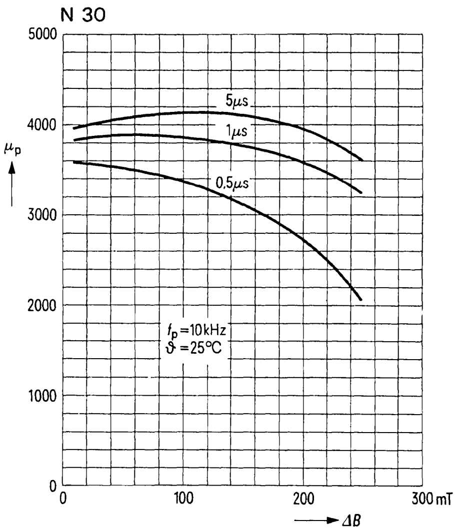


Figure 4

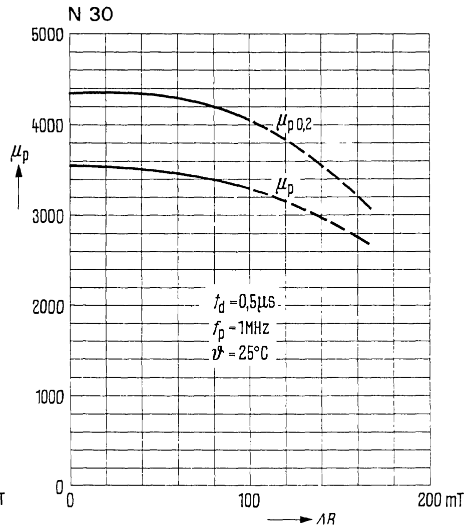


Figure 5 – – – only intermittent operation possible (dependent on the heat conductivity)

Variation of pulse permeability with temperature at various flux density deviations

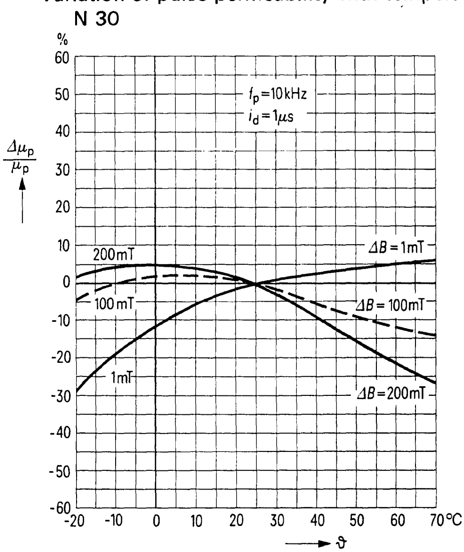


Figure 6

Material data – calculation

Pulse permeability versus flux density deviation

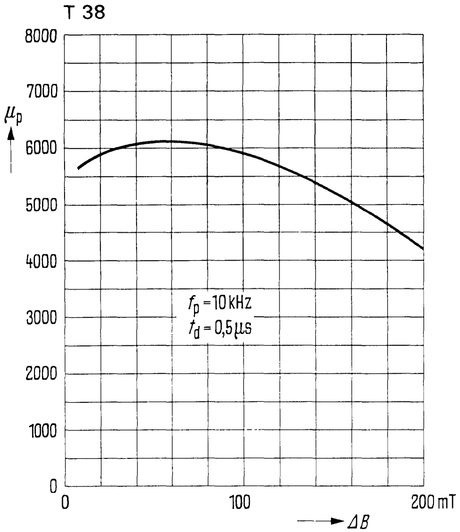


Figure 7

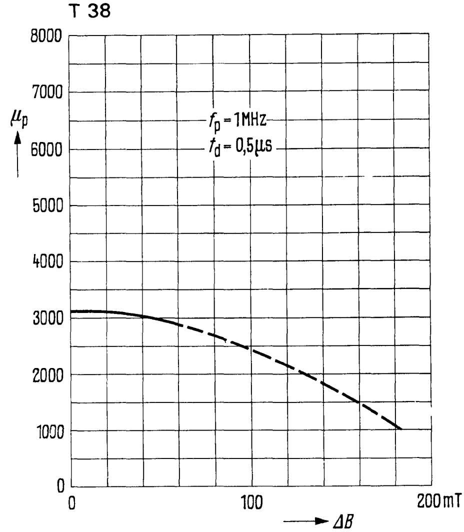


Figure 8 – – – only intermittent operation possible (depending on the heat conductivity)

Example

The required secondary pulses must have an amplitude I_2 = 120 mA, a duration t_d = 0.5 μs, and a maximum tilt of p = 5 %. The terminating resistance R_2 is 50 Ω, the source resistance R_i = 200 Ω and the turns ratio n = 2 : 1. The maximum core temperature is 70 °C/158 °F. (Definitions in accordance with DIN 41 284).

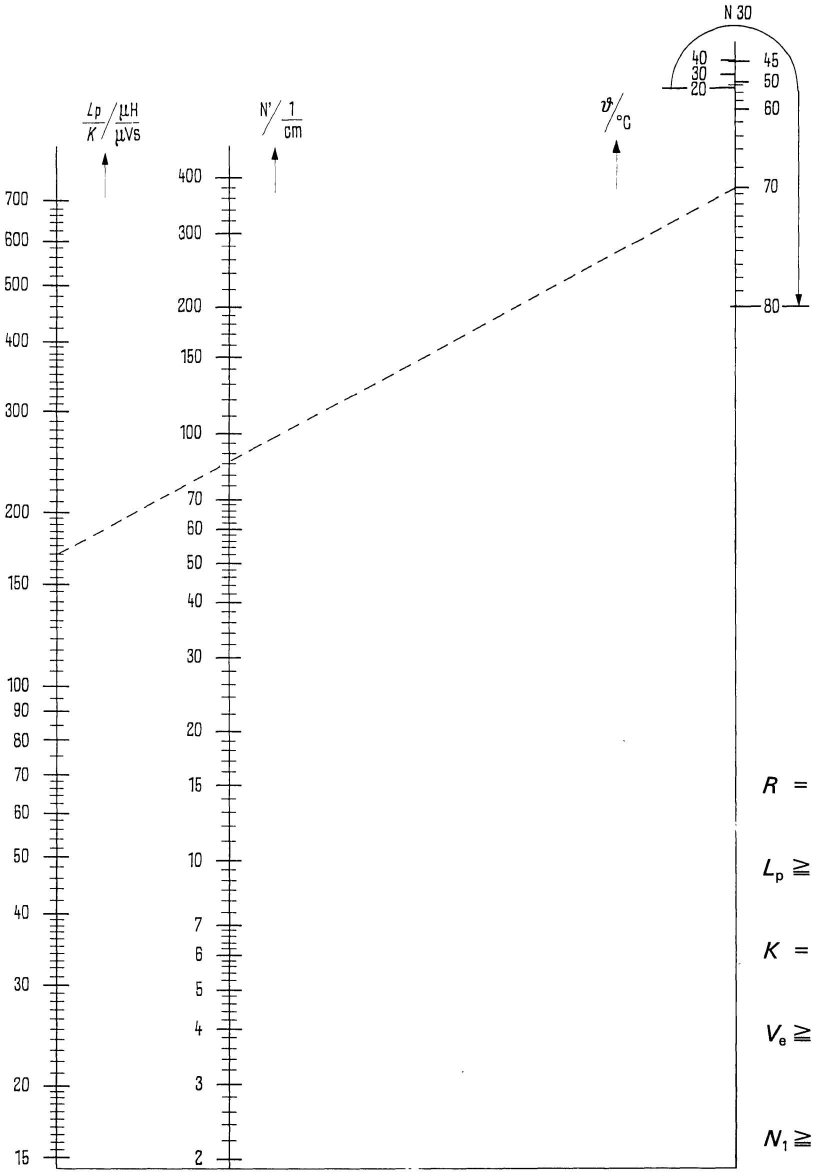
The provided material is SIFERRIT N 30.

Equation (1) yields R = 100 Ω, equation (2) L_p = 1000 µH and equation (3) K = 6.0 µVs and hence L_p/K = 167 µH/µVs. From the nomogram one obtains N′ = 85 cm^{-1}. As shown in figure 4, a permeability µ of approx. 1800 can be assumed for SIFERRIT N 30 at t_d = 0.5 μs. Equation (4) yields V_e = 0.006 cm^3, i.e. the toroid R 4 having a V_e = 12.3 mm^3 can be chosen. N_1 = 58 is calculated form equation (5). The magnetic field constant $\mu_0 = 4\,\pi \cdot 10^{-9}$ Vs/Acm.

Hence the transformer can be designed as follows:

SIFERRIT toroidal core R 4, of N 30 material, N_1 = 58, N_2 = 29.

Nomogram for the calculation of pulse transformers



$$R = \frac{n^2 R_i R_2}{R_i + n^2 R_2} \quad (1)$$

$$L_p \geqq \frac{t_d R}{p} \quad (2)$$

$$K = n I_2 R_2 t_d \quad (3)$$

$$V_e \geqq \frac{L_p}{\mu \mu_0 N'^2} \quad (4)$$

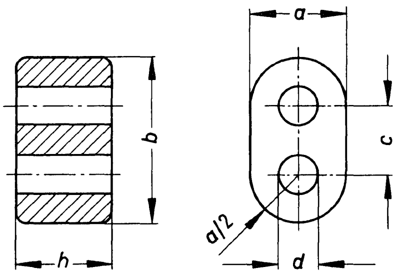
$$N_1 \geqq \sqrt{\frac{L_p \cdot l_e}{\mu \mu_0 A_e}} \quad (5)$$

Double aperture cores are used for wideband transformers up to high frequencies, e.g. made of the materials

SIFERRIT K 1 for matching transformers and balanced mixers up to 250 MHz in antenna feeders or in input circuits of VHF and TV receivers

SIFERRIT U 17 for the same applications up to 500 MHz

SIFERRIT N 30 for lower frequencies and pulse applications



Dimensions in mm

Dimensions *h* mm	*b* mm	*a* mm	*c* mm	*d* mm	Approx. weight g	Material	**Ordering code** (PU: 1000)
14.5_{-1} 1)	14.5_{-1}	$8.5_{-0.5}$	5.85 ± 0.25	$3.4^{+0.8}$	4.0	K 1	B62152-A0001-X001
$8.3_{-0.6}$ 1)	14.5_{-1}	$8.5_{-0.5}$	5.85 ± 0.25	$3.4^{+0.6}$	2.5	U 17	B62152-A0004-X017
						K 12	B62152-A0004-X001
						N 30	B62152-A0004-X030
$6.2_{-0.5}$ 1)	$7.25_{-0.5}$	$4.2_{-0.4}$	2.9 ± 0.15	$1.7^{+0.3}$	0.4	U 17	B62152-A0007-X017
						K 1	B62152-A0007-X001
						N 30	B62152-A0007-X030
$2.5_{-0.3}$	$3.6_{-0.3}$	$2.1_{-0.2}$	1.45 ± 0.1	$0.8^{+0.15}$	0.1	U 17	B62152-A0008-X017
						N 30	B62152-A0008-X030

1) In accordance with DIN 41 279, shape G

Six aperture cores made of the material SIFERRIT N 22 are preferably used for choke coils to reduce radio interference, e.g. in small motors and switches as well as in high frequency appliances.

Fully wound six aperture cores are also available as complete chokes (see data book 1982/83, "RFI Suppression Components").

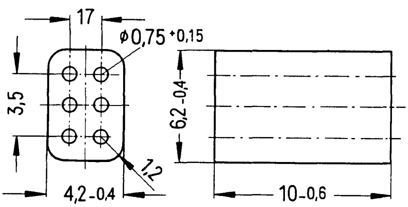


Figure 1

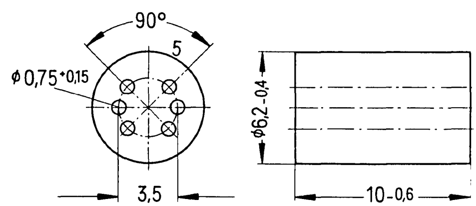


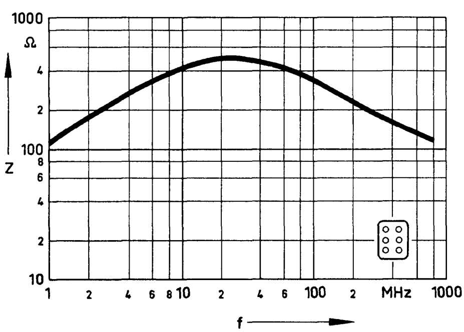
Figure 2

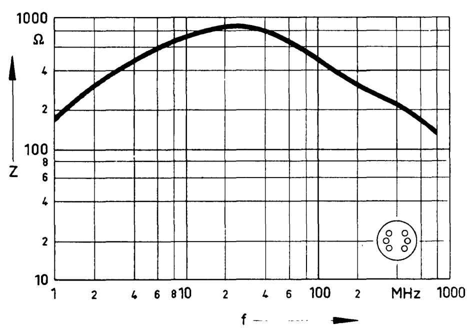
Dimensions in mm

Figure	SIFERRIT material	Approx. weight g	**Ordering code** (PU: 1000)
1	N 22	0.9	B62152-A0005-X022
2	N 22	1.1	B62152-A0006-X022

Impedance characteristics of choke coils
with 2.5 turns at low field strength (< 1 A/m)
(typical values)

SIFERRIT material N 22





Cylindrical, Tube, Screw Cores, Antenna Rods

SIFERRIT cylindrical cores complying with IEC publication 220 and DIN 41 291 are available in the following materials[1]:
U 17, K 1, M 33.

For core diameters and core lengths to be preferred refer to page 480.

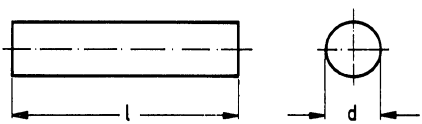
Tolerance of the apparent permeability μ_{app}: ±5 % (typical value);
closer μ_{app} tolerance upon request.
The μ_{app} tolerance can be up to ±10 % for ferrites of lower permeability ($\mu_i < 40$) and a high size ratio ($l : d > 5$).
The deviation of longer unground cores can be up to 1 % of the core length.

These cores can be checked with tubular gauges of the following dimensions:

Gauge diameter = d_{max} + 1 % of core length

Gauge length ≧ core length

Testing of magnetic characteristics in accordance with DIN 41 276, sheet 1.



Core length l mm	Tolerance mm
5 ... 6,3	−0,4
> 6,3 ... 8	−0,5
> 8 ... 10	−0,6
> 10 ... 12,5	−0,7
> 12,5 ... 16	−0,8
> 16 ... 31,5	−0,9
> 31,5	−4%

d[1]	Unground		Ground		PU
	Tolerance for d	Core lengths l	Tolerance for d	Core lengths l	
mm	mm	mm	mm	mm	
1,6	−0,2	5 ... 25	−0,05	5 ... 8	5000
2	−0,2	5 ... 30	−0,05	5 ... 10	
2,5	−0,25	5 ... 40	−0,05	5 ... 16	
3	−0,25	5 ... 40	−0,05	5 ... 20	
4	−0,3	6,3 ... 50	−0,05	6,3 ... 31,5	
5	−0,3	8 ... 60	−0,1	6,3 ... 50	1000
6	−0,3	10 ... 80	−0,1	6,3 ... 50	
8	−0,4	10 ... 80	−0,1	6,3 ... 50	
10	−0,5	10 ... 80	−0,1	6,3 ... 50	

Ordering example

B61110 K 1; 2.5 x 18 unground
(B61110 ≙ type; K 1 ≙ material; 2.5 x 18 ≙ d x l in mm;
unground or ground ≙ diameter tolerance).

[1] On orders of at least 10000 items, also the materials K 12, N 22, as well as other core diameters (up to 12 mm) and core lengths can be supplied.

Preferred types

Cores in the following sizes, made of the materials U 17, K 1, M 33, are preferably available.

d x *l* mm	Ordering code (PU: 5000)	*d* x *l* mm	Ordering code (PU: 1000)
$1{,}6_{-0{,}05} \times 7{,}5_{-0{,}5}$	B61110–A1023–XO**	$5_{-0{,}3} \times 15_{-0{,}8}$	B61110–A5002–XO**
$1{,}6_{-0{,}2} \times 12{,}5_{-0{,}7}$	B61110–A1031–XO**	$5_{-0{,}3} \times 20_{-0{,}9}$	B61110–A5005–XO**
$1{,}6_{-0{,}2} \times 15_{-0{,}8}$	B61110–A1035–XO**	$5_{-0{,}3} \times 30_{-1{,}2}$	B61110–A5012–XO**
$2_{-0{,}2} \times 10_{-0{,}6}$	B61110–A2045–XO**	$6_{-0{,}3} \times 15_{-0{,}8}$	B61110–A6007–XO**
$2_{-0{,}2} \times 15_{-0{,}8}$	B61110–A2050–XO**	$6_{-0{,}3} \times 30_{-1{,}2}$	B61110–A6003–XO**
$2_{-0{,}2} \times 20_{-0{,}9}$	B61110–A2009–XO**	$6_{-0{,}3} \times 45_{-1{,}8}$	B61110–A6010–XO**
$3_{-0{,}25} \times 10_{-0{,}6}$	B61110–A3008–XO**	$8_{-0{,}4} \times 20_{-0{,}9}$	B61110–A8007–XO**
$3_{-0{,}25} \times 15_{-0{,}8}$	B61110–A3021–XO**	$8_{-0{,}4} \times 30_{-1{,}2}$	B61110–A8008–XO**
$3_{-0{,}25} \times 20_{-0{,}9}$	B61110–A3022–XO**	$8_{-0{,}4} \times 60_{-2{,}4}$	B61110–A8010–XO**
$4_{-0{,}3} \times 10_{-0{,}6}$	B61110–A4005–XO**	$10_{-0{,}5} \times 30_{-1{,}2}$	B61110–J1004–XO**
$4_{-0{,}3} \times 15_{-0{,}8}$	B61110–A4007–XO**	$10_{-0{,}5} \times 60_{-2{,}4}$	B61110–J1005–XO**
$4_{-0{,}3} \times 20_{-0{,}9}$	B61110–A4030–XO**	$10_{-0{,}5} \times 80_{-3{,}2}$	B61110–J1006–XO**
$4_{-0{,}3} \times 30_{-1{,}2}$	B61110–A4016–XO**		

** Here, the symbol for the desired SIFERRIT material should be inserted:
for U 17 ≙ 17; K 1 ≙ 01; M 33 ≙ 33.

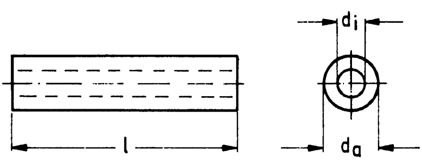
SIFERRIT tube cores complying with IEC publication 220 are available in the following materials[1]:
U 17, K 1, M 33.

For core diameters and core lengths to be preferred refer to page 482.

Tolerance of the apparent permeability μ_{app}: ±5% (typical value);
closer μ_{app} tolerance upon request.
The μ_{app} tolerance can be up to ±10% with ferrites of lower permeability ($\mu_i < 40$) and cores with a high size ratio ($l{:}d > 5$).
The deviation of unground cores can be up to 1% of the core length.
These cores can be checked with tubular gauges of the following dimensions:

Gauge diameter = $d_{a\,max}$ + 1% of core length
Gauge length ≧ core length

Testing of magnetic characteristics in accordance with DIN 41 276, sheet 1.



Core length *l* mm	Tolerance mm
6 ... 8	−0,5
> 8 ... 10	−0,6
> 10 ... 12,5	−0,7
> 12,5 ... 16	−0,8
> 16 ... 20	−0,9
> 20	−4%

d_a[1]	d_i		Unground		Ground		PU
	Nom. dimension	Tolerance	Tolerance for d_a	Core lengths *l*	Tolerance for d_a	Core lengths *l*	
mm	mm	mm	mm	mm	mm	mm	
3	1	+ 0.15	− 0.25	5 ... 30	− 0.05	5 ... 20	5000
3.5	1.6	+ 0.15	− 0.3	6 ... 30		6 ... 25	
4	1.6	+ 0.15	− 0.3	6 ... 50		6 ... 30	
5	2	+ 0.2	− 0.3	6 ... 50	− 0.1	6 ... 30	1000
6	3	+ 0.2	− 0.3	10 ... 80		6 ... 30	
8	4	+ 0.3	− 0.4	10 ... 80		–	
10	6	+ 0.3	− 0.5	10 ... 80		–	

Ordering example

B62110 K 1; 5 x 2 x 20 unground
(B62110 ≙ type; K 1 ≙ material; 5 x 2 x 20 ≙ core dimensions: d_a x d_i x *l* in mm;
unground or ground ≙ diameter tolerance)

[1] On orders of at least 10000 items also the materials K 12, N 22, as well as other core diameters (up to 15 mm) and core lengths can be supplied.

Preferred types

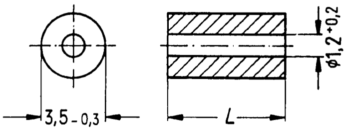
Cores in the following sizes made of the materials **U 17, K 1, M 33** are preferably available.

d_a mm	d_i mm	l mm	**Ordering code**	PU
$3{,}5_{-0,3}$	$1{,}6^{+0,15}$	$5_{-0,4}$ $10_{-0,6}$	B62110-A3048-X0** B62110-A3049-X033	5000
$4_{-0,3}$	$1{,}6^{+0,15}$	$6_{-0,4}$ $10_{-0,6}$	B62110-A4045-X0** B62110-A4046-X033	
$5_{-0,3}$	$2^{+0,2}$	$6_{-0,4}$ $10_{-0,6}$ $18_{-0,9}$	B62110-A5028-X0** B62110-A5024-X033 B62110-A5025-X033	1000
$6_{-0,3}$	$3^{+0,2}$	$10_{-0,6}$ $18_{-0,9}$ $30_{-1,2}$	B62110-A6020-X0** B62110-A6021-X033 B62110-A6022-X033	
$8_{-0,4}$	$4^{+0,3}$	$18_{-0,9}$ $30_{-1,2}$ 50_{-2}	B62110-A8017-X033 B62110-A8018-X033 B62110-A8006-X033	
$10_{-0,5}$	$6^{+0,3}$	$18_{-0,9}$ $30_{-1,2}$ 50_{-2}	B62110-J1020-X033 B62110-J1021-X033 B62110-J1022-X033	

** Here the symbol for the desired SIFERRIT material should be inserted:
U 17 ≙ 17; K 1 ≙ 01; M 33 ≙ 33.

Damping pearls are made of SIFERRIT N 22 and are suitable for use in the short-wave range as well as up to the ultrashort-wave range.

Slipped over a conductor, the pearls generate a damping effect, which increases with the number of pearls. Premagnetization of the pearls reduces the damping effect.



Dimensions in mm

L mm	Ordering code (PU: 5000)
$3{,}3_{-0{,}5}$	B62110-A3011-X022
$5{,}2_{-0{,}5}$	B62110-A3007-X022
$8_{-0{,}6}$	B62110-A3063-X022
$16_{-0{,}8}$	B62110-A3064-X022

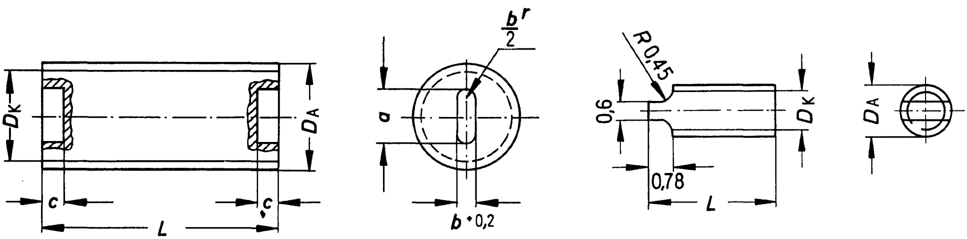
Ground thread

SIFERRIT screw cores are available in the following materials[1]:
U 17, K 1, M 33. Screw cores M 8 made of the material N 27 are also available.

For preferred core lengths see table.

Tolerance of the apparent permeability μ_{app}: ±5 % (typical value); lower μ_{app} tolerance upon request.

Testing of magnetic characteristics in accordance with DIN 41 276, sheet 1.



Dimensions in mm

Screw core suitable for nut-thread DIN 13, 518; 519	Core length[1] L mm	Thread limit dimensions $D_{A\,max.}$ mm	$D_{A\,min.}$ mm	$D_{K\,max.}$ mm	Slot dimensions a mm	b mm	c min. dimension mm
1,7 x 0,35	$4{,}2_{-0{,}3}$	1,7	1,67	1,34	–	–	–
3 x 0,5	$6{,}3_{-0{,}6}$ $8{,}3_{-0{,}6}$	2,7	2,65	2,25	$1{,}3^{+0{,}2}$	0,5	1
3,5 x 0,5	$6{,}3_{-0{,}6}$ $8{,}3_{-0{,}6}$ $10{,}3_{-0{,}6}$	3,20	3,15	2,75	$1{,}7^{+0{,}2}$	0,6	1,2
4 x 0,5	$6{,}3_{-0{,}6}$ $8{,}3_{-0{,}6}$ $10{,}3_{-0{,}6}$ $12{,}3_{-0{,}6}$	3,7	3,65	3,20	$2^{+0{,}2}$	0,7	1,2
5 x 0,75	$8{,}3_{-0{,}6}$ $13{,}3_{-0{,}6}$	4,6	4,55	3,9	$2{,}5^{+0{,}3}$	1	1,2
6 x 0,75	$13{,}3_{-0{,}6}$	5,6	5,55	4,9	$3^{+0{,}3}$	1	1,2
7 x 1	$12{,}3_{-0{,}6}$ $17{,}4_{-0{,}8}$	6,6	6,5	5,55	$3^{+0{,}3}$	1	[2]
8 x 0,75	$17{,}4_{-0{,}8}$ $28{,}5_{-1}$	7,6	7,55	6,9	$4^{+0{,}4}$	1	[2]
8 x 1,25	$28{,}5_{-1}$	7,5	7,4	6,2	$3{,}5^{+0{,}4}$	1	[2]

[1] On orders of at least 10000 items also the materials K 12, N 22, as well as other core lengths can be supplied.
[2] Through slots.

Ground thread

The screw cores comply with DIN 41 286, sheet 1 to 3. The thread dimensions include the usual elastic inserts (core brake) between nut thread and screw core.

The screw cores are also available upon request with core brake (elastic material which clings to the core). Ordering code: (code letter 9 in the 9th position of the ordering code) e.g. B63310–B2908–X0**.

To avoid damaging the slot, the insulating screw driver B63399–A0001–X000 (with flat blade, refer to page 339) should be used.

Ordering codes and weights for screw cores

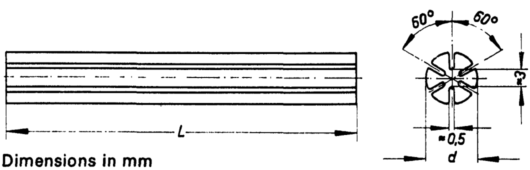
Screw core suitable for nut thread DIN 13, 518, 519	Core length L mm	Approx. weight g	**Ordering code**	PU
1,7 x 0,35	$4{,}2_{-0{,}3}$	0,2	B63310–A1001–X0**	5000
3 x 0,5	$6{,}3_{-0{,}6}$	0,25	B63310–B2009–X0**	
	$8{,}3_{-0{,}6}$	0,3	B63310–B2008–X0**	
3,5 x 0,5	$6{,}3_{-0{,}6}$	0,3	B63310–B3028–X0**	
	$8{,}3_{-0{,}6}$	0,33	B63310–B3029–X0**	
	$10{,}3_{-0{,}6}$	0,35	B63310–B3021–X0**	
4 x 0,5	$6{,}3_{-0{,}6}$	0,35	B63310–B3030–X0**	
	$8{,}3_{-0{,}6}$	0,4	B63310–B3020–X0**	
	$10{,}3_{-0{,}6}$	0,45	B63310–B3019–X0**	
	$12{,}3_{-0{,}6}$	0,6	B63310–B3018–X0**	
5 x 0,75	$8{,}3_{-0{,}6}$	0,75	B63310–B4017–X0**	1000
	$13{,}3_{-0{,}6}$	1,1	B63310–B4018–X0**	
6 x 0,75	$13{,}3_{-0{,}6}$	2,4	B63310–B5019–X0**	
7 x 1	$12{,}3_{-0{,}6}$	1,9	B63310–A6009–X0**	
	$17{,}4_{-0{,}8}$	2,6	B63310–A6007–X0**	
8 x 0,75	$17{,}4_{-0{,}8}$	3,4	B63310–A7002–X0**	
	$28{,}5_{-1}$	5,6	B63310–A7008–X0**	
8 x 1,25	$28{,}5_{-1}$	5,6	B63310–A7010–X0**	

** Here the symbol for the desired SIFERRIT material should be inserted:
For U 17 ≙ 17; K 12 ≙ 12; K 1 ≙ 01; M 33 ≙ 33; N 22 ≙ 22; N 27 ≙ 27 (only for M 8).

Round antenna rods, complying with IEC publication 223, with longitudinal slots.

Round slotted antenna rods are only available in the material M 33. In addition to the advantage of high quality and high permeability, this material features also a low temperature coefficient. For a rod of 10 mm dia. x 160 and a centrally located coil of 40 turns it amounts, e.g., to approx. + 200 x 10^{-6}/°C.
The deviaton of the rods may be up to 1 % of their length.

Permissible μ_{app} tolerance, measured with standard coil Sp 97 in accordance with DIN 41 291, sheet 3.



Dimensions in mm

Rod length L mm	Permissible μ_{app} tolerance %
90 ... 140	±6
>140 ... 170	±7
>170 ... 200	±8

Permissible Q factor tolerance: ±20% at 1.5 MHz, measured with standard coil Sp 25 in accordance with DIN 41 291, sheet 3. It is recommended to use reference cores, supplied by the plant.

Diameter d mm	Length L mm	Approx. weight g/mm	**Ordering code** (PU: 500)	Tubular gauge
$8_{-0,4}$	109 ± 2,2 125 ± 2,5 140 ± 2,8 160 ± 3,2	0.2	B61610-A8015-X033 B61610-A8006-X033 B61610-A8001-X033 B61610-A8002-X033	$8.64^{+0.02}$ dia. x $80^{+0.1}$
$10_{-0,5}$	140 ± 2,8 160 ± 3,2 180 ± 3,6 200 ± 4	0.3	B61610-J1017-X033 B61610-J1022-X033 B61610-J1008-X033 B61610-J1004-X033	$10.64^{+0.02}$ dia. x $80^{+0.1}$

Round rods for RF welding apparatus (for profile refer to dimensional drawing for antenna rods)

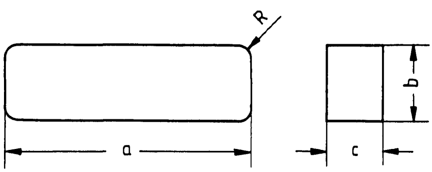
Material N 27

Diameter d mm	Length L mm	Approx. weight g/mm	**Ordring code** (PU: 500)	Tubular gauge
$8_{-0,4}$	140 ± 2,8 160 ± 3,2 200 ± 4	0.2	B61610-A8018-X027 B61610-A8019-X027 B61610-A8020-X027	$9^{+0.05}$ dia. x $200^{+0.3}$
$10_{-0,5}$	140 ± 2,8 160 ± 3,2 200 ± 4	0.3	B61610-J1025-X027 B61610-J1026-X027 B61610-J1027-X027	$11^{+0.06}$ dia. x $200^{+0.3}$

Cube Cores

B 67410
B 67499

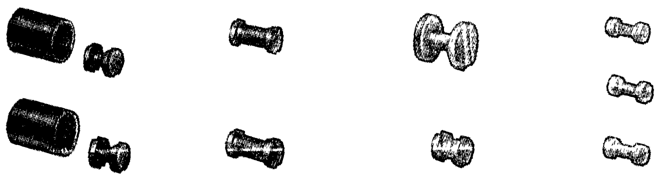
Frequently, there are certain cases of application, which require plate- or quad-shaped ferrite parts. To meet this requirement, cores, preferably made of SIFERRIT N 22, (quantity upon request) are available in the following sizes. (The deviation of unground cores may be up to 1 % of their length).



Dimensions a mm	b mm	c mm	R approx. mm	Approx. weight g	Ordering code
82 ± 2	9,9 ± 0,2	3 − 0,3	1,3	11	B67499-A0027-X022
82 ± 2	9,9 ± 0,2	6,6 − 0,3	1,3	25	B67499-A0024-X022
82 ± 2	9,9 ± 0,2	9,2 − 0,4	1,3	34	B67499-A0025-X022
82 ± 2	13 ± 0,3	4,4 − 0,3	1,3	21	B67499-A0004-X022
82 ± 2	13 ± 0,3	7 − 0,3	1,3	34	B67499-A0007-X022
82 ± 2	13 ± 0,3	9,8 − 0,4	1,3	48	B67499-A0009-X022
82 ± 2	27,6 ± 0,6	2,7 − 0,3	1,3	27	B67499-A0014-X022
82 ± 2	27,6 ± 0,6	5,3 − 0,3	1,3	55	B67499-A0016-X022
82 ± 2	27,6 ± 0,6	10,5 − 0,4	1,3	110	B67499-A0019-X022
93 ± 2	28,4 ± 0,7	16,5 − 1	< 0,5	200	B67410-A0073-X027
93 ± 2	28,4 ± 0,7	30,6 − 1,2	< 0,5	370	B67410-A0072-X027
209 ± 4	29 ± 0,7	9,8 − 0,6	< 0,5	270	B67410-J0040-X022
61,5 ± 1,5[1)]	61,5 ± 1,5	4 − 0,5	1	67	B67499-A0034-X022

[1)] Impressed marking on one area.

Cores for RF Choke Coils



Apart from adjustable inductors as used for IF filter coils, filters for oscillator circuits, ect., fixed inductors are also applied in electronic equipment in order to suppress undesired RF interference. The frequency range of such choke coils approximately covers 10^3 to 10^8 Hz. In most cases, the basic shapes include cylindrical cores featuring a single layer winding and axial leads. Cores with side flanges (yarn roller core) which can be wound in multilayer construction are in particular available for higher inductance values.

Figure 1

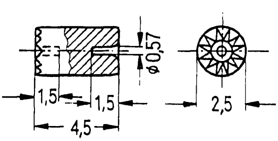


Figure 2

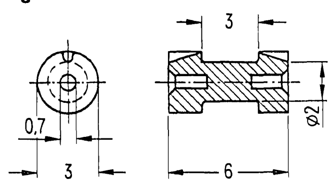


Figure 3

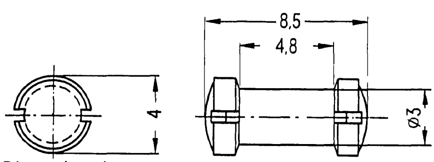
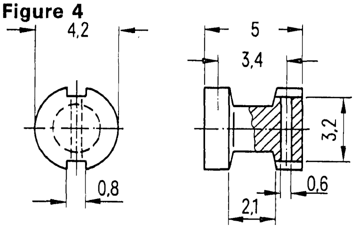


Figure 4



Dimensions in mm

Figure	Type	Typical values for		**Ordering code**	PU
		A_L value nH	A_R value[1] μΩ		
1	Drum core	10	1000	B67416-C0010-X002	10000
2	Drum core	13	200	B67416-C0005-X002	10000
3	Drum core	15	200	B67416-C0001-X002	5000
4	Drum core	20	170	B67416-C0006-X002	5000

The self-capacitance of coils with drum cores is approx. 0.5 pF, measured between the terminals.

[1] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns[2])

Drum and cup cores can be combined if increased inductance values are required.

Figure 5

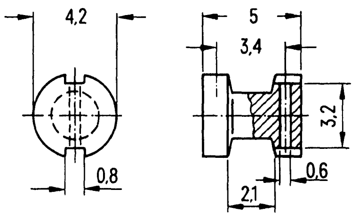
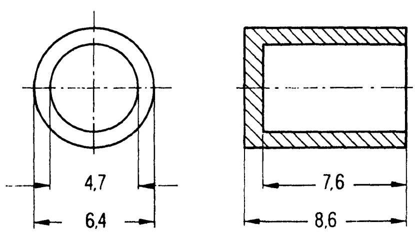


Figure 6



Dimensions in mm

Figure	Type	Typical values for A_L value nH	A_R value[1] μΩ	**Ordering code**	PU
5	Drum core	50	170	B67416-C0006-X002	5000
6	Cup core			B67416-C0007-X022	5000

The self-capacitance of coils with drum cores is approx. 0.5 pF, measured between the terminals.

[1] $R_{Cu} = A_R \cdot N^2$ (dc resistance = A_R · number of turns^2)

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