

RM 4 Core and Accessories

	Individual parts	Part no.	Page
	Adjusting screwdriver (for assembly only)	B63399	189
	Matching handle	B63399	189
	Adjusting screw	B65539	189
	Core	B65803	185
	Clamps	B65806	188
	Insulating washer 1	B65804	188
	Coil former	B65804	187
	Core	B65803	185
	Threaded sleeve (glued-in)		
	Insulating washer 2	B65804	188

Example of an assembly set

Also available:

RM 4 low profile:

Core	B65803-P	193
Coil former	B65804	194
Clamp	B65804	195
Insulating washer 1 + 2	B65804	195
SMD coil former	B65804	196

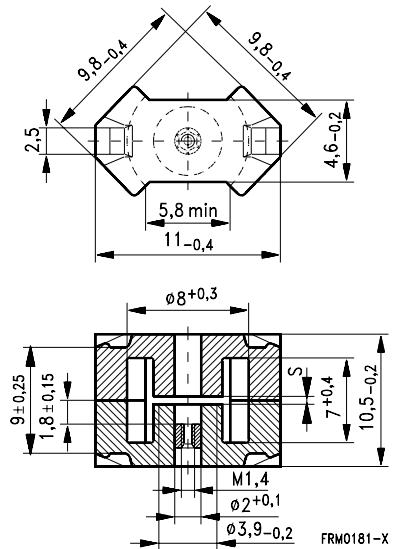
- In accordance with IEC 60431
- Core without center hole for transformer applications
- RM cores are supplied in sets

Magnetic characteristics (per set)

	with center hole	without center hole	
$\Sigma l/A$	1,9	1,7	mm ⁻¹
l_e	21	22	mm
A_e	11	13	mm ²
A_{min}	—	11,3	mm ²
V_e	232	286	mm ³

Approx. weight (per set)

m	1,45	1,65	g



Gapped

Material	A_L value	s approx. mm	μ_e	Ordering code ¹⁾ -A with center hole -N with threaded sleeve
	nH			
K1	16 ± 3 %	1,0	24,2	B65803-+16-A1
	25 ± 3 %	0,40	37,8	B65803-+25-A1
M33	40 ± 3 %	0,36	60,4	B65803-+40-A33
	63 ± 3 %	0,18	95	B65803-+63-A33
N48	63 ± 3 %	0,16	95	B65803-+63-A48
	100 ± 3 %	0,10	151	B65803-+100-A48
	160 ± 3 %	0,06	242	B65803-+160-A48

1) Replace the + by the code letter "A" or "N" for the required version.

Ungapped

Material	A_L value nH	μ_e	A_{L1min} nH	P_V W/set	Ordering code -J w/o center hole
N30	1900 + 30/- 20 %	2570			B65803-J-R30
T35	2800 + 40/- 30 %	3790			B65803-J-Y35
T38	3700 + 40/- 30 %	5000			B65803-J-Y38
N49	750 + 30/- 20 %	1010	450	0,04 (50 mT, 500 kHz, 100 °C)	B65803-J-R49
N87	1100 + 30/- 20 %	1480	650	0,20 (200 mT, 100 kHz, 100 °C)	B65803-J-R87

Coil former

Material: GFR thermosetting plastic (UL 94 V-0, insulation class to IEC 60085:
H \geq max. operating temperature 180 °C), color code black

Solderability: to IEC 60068-2-20, test Ta, method 1 (aging 3): 235 °C, 2 s

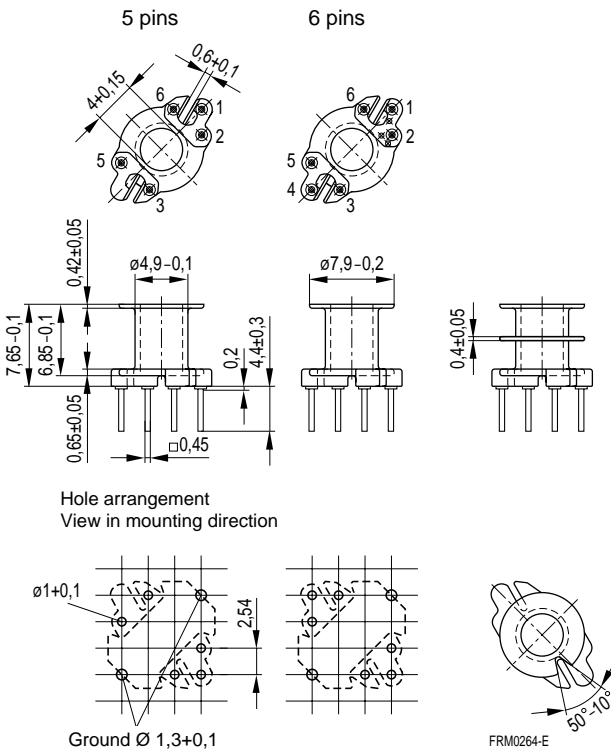
Resistance to soldering heat: to IEC 60068-2-20, test Tb, method 1B: 350 °C, 3,5 s

Winding: see page 152

Squared pins

For matching clamp and insulating washers see page 188

Sections	A_N mm ²	l_N mm	A_R value $\mu\Omega$	Pins	Ordering code
1	8,7	20,1	80	5	B65804-N1005-D1
				6	B65804-N1006-D1
2	8,1	20,1	85	5	B65804-N1005-D2
				6	B65804-N1006-D2



Clamp

- With ground terminal, made of stainless spring steel (tinned), 0,335 mm thick
- Solderability to IEC 60068-2-20, test Ta, method 1 (aging 3): 235 °C, 2 s
- Also available as strip clamp on reels

Insulating washer 1 between core and coil former

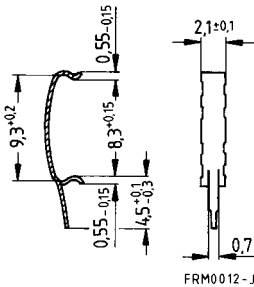
- For tolerance compensation and for insulation
- Made of polycarbonate (UL 94 V-0, insulation class to IEC 60085: E \geq 120 °C), 0,06 mm thick

Insulating washer 2 for double-clad PCBs

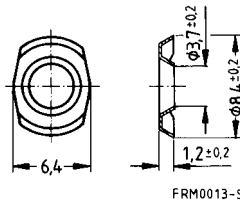
- Made of polycarbonate (UL 94 V-0, insulation class to IEC 60085: E \geq 120 °C), 0,3 mm thick

	Ordering code
Clamp (ordering code per piece, 2 are required)	B65806-A2203
Insulating washer 1 (reel packing, PU = 1 reel)	B65804-A5000
Insulating washer 2 (bulk)	B65804-C2005

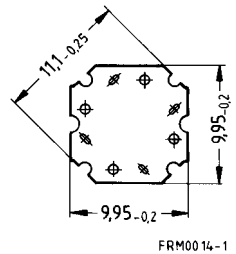
Clamp



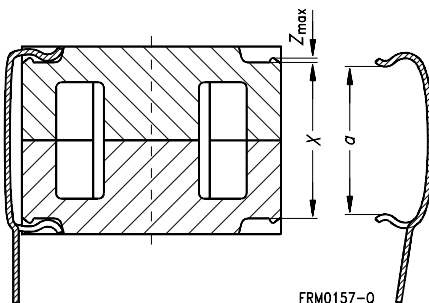
Insulating washer 1



Insulating washer 2



Clamping forces for RM 4



F_{min} : Extension of clamp from a to $a_2 = X_{min}$
 F_{max} : Extension of clamp from a to $a_1 = X_{max}$

Clamp opening a (mm)	8,3 + 0,15
Core nose Z_{max} (mm)	0,15
Height of core pair X (mm)	X_{min} 8,75 X_{max} 9,25
Clamping force F (N)	F_{min} 5 F_{max} 40

Adjusting screw

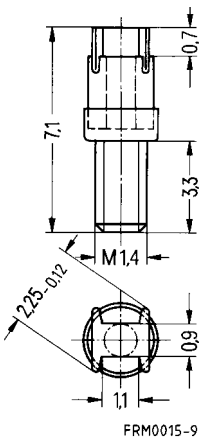
● Tube core with thread and core brake made of GFR polyterephthalate

Plastic **adjusting screwdriver** (not shown)

Plastic **handle** for adjusting screwdriver (not shown)

Core RM 4		Adjusting screw			Min. adjusting range %	Ordering code
Material	A _L value nH	Tube core Ø × length mm	Material	Color code		
K 1	16	1,81 × 2,0	Si 1	black	20	B65539-C1003-X101
	25	1,81 × 2,0	K 1	yellow	21	B65539-C1003-X1
M 33	40	1,81 × 2,0	Si 1	black	17	B65539-C1003-X101
	63	1,81 × 2,0	K 1	yellow	21	B65539-C1003-X1
N 48	63	1,81 × 2,0	Si 1	black	12	B65539-C1003-X101
	100	1,81 × 2,0	K 1	yellow	17	B65539-C1003-X1
	160	1,81 × 2,7	N 22	red	12	B65539-C1002-X22
Adjusting screwdriver						B63399-B4
Handle						B63399-B5

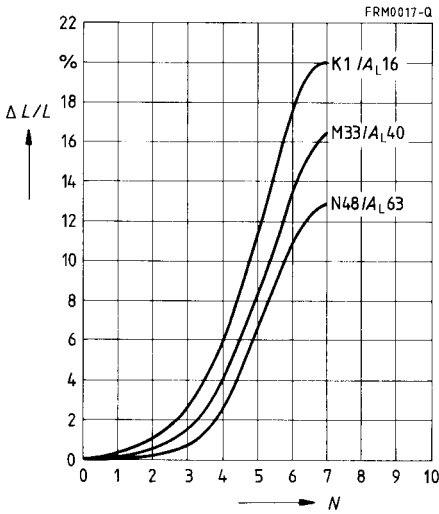
Adjusting screw



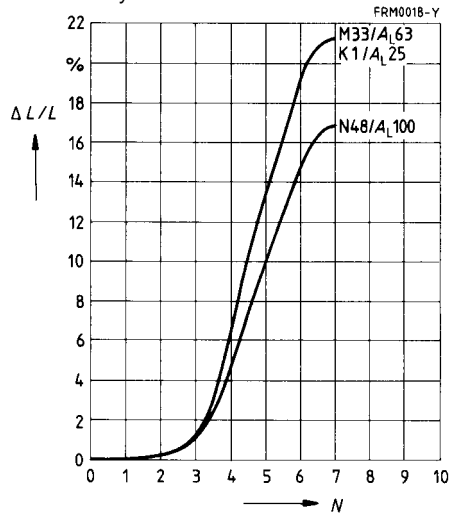
Inductance adjustment curves (nominal values)

Relative inductance change $\Delta L/L$ versus turns N of adjusting screw.
 $0 \cong$ at least 1 turn engaged.

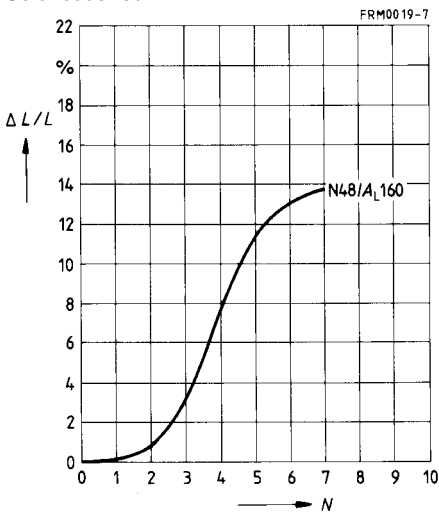
Adjusting screw B65539-C1003-X101
 Color code black



Adjusting screw B65539-C1003-X1
 Color code yellow



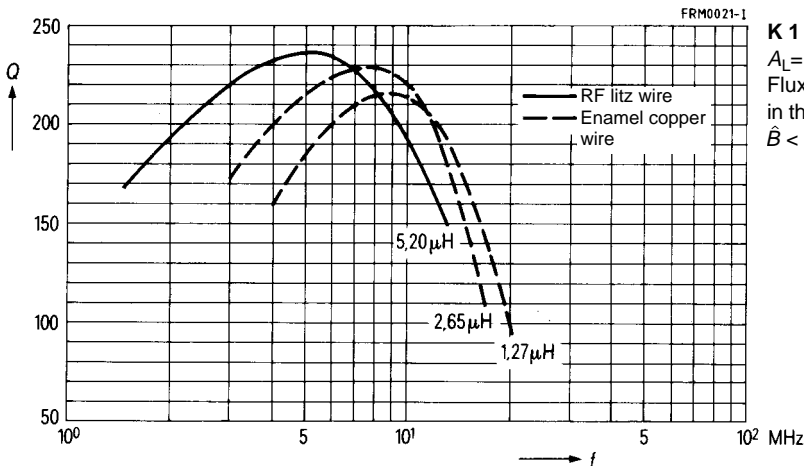
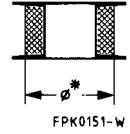
Adjusting screw B65539-C1002-X22
 Color code red



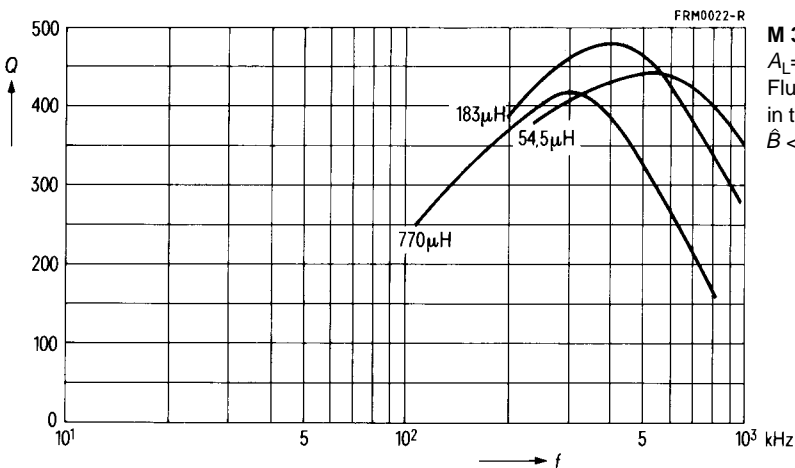
RM 4

Q factor characteristics (typical values)

Material	A_L value	L μH	Turns	Wire; RF litz wire	Sec- tions	\varnothing^* mm
K 1	25 nH	5,20	14	45 \times 0,04 CuLS	1	6,6
		2,65	10	0,5 CuL	1	6,6
		1,27	7	0,6 CuL	1	6,4
M 33	63 nH	770	100	20 \times 0,04 CuL	1	—
		183	52	45 \times 0,04 CuL	1	—
		54,5	29	90 \times 0,04 CuL	1	—



K 1
 $A_L = 25$ nH
 Flux density
 in the core
 $\hat{B} < 0,5$ mT



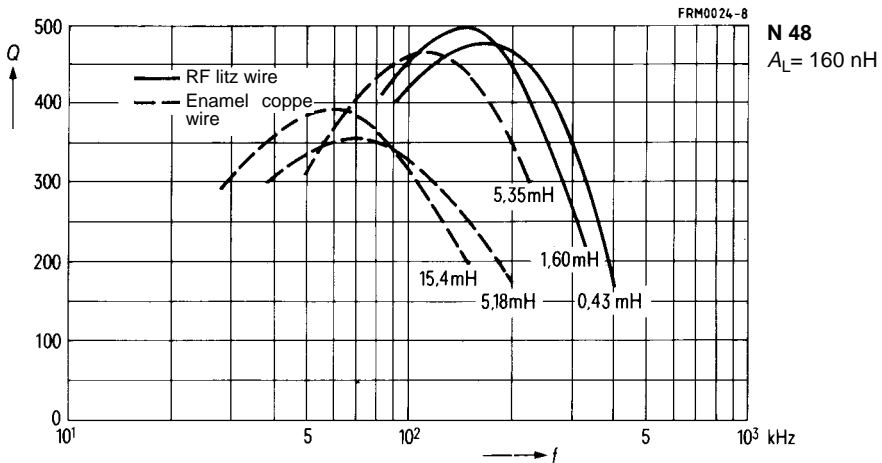
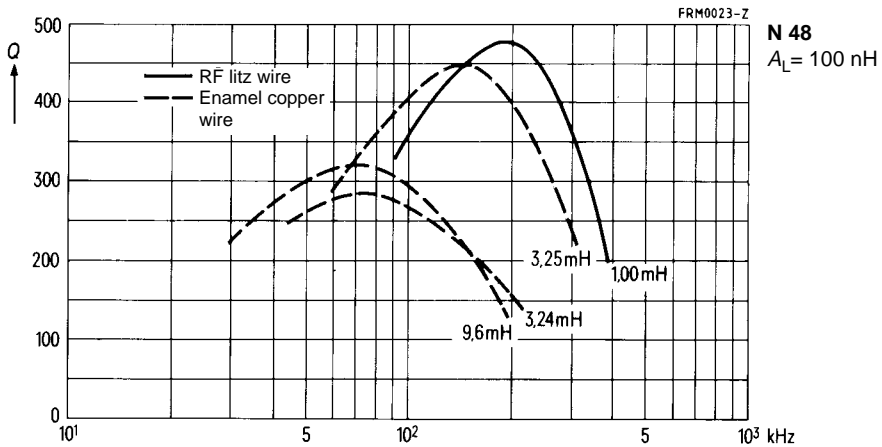
M 33
 $A_L = 63$ nH
 Flux density
 in the core
 $\hat{B} < 1$ mT

RM 4

Q factor characteristics (typical values)

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

Material	L (mH) for		Turns	Wire; RF litz wire	Sections
	$A_L = 100 \text{ nH}$	$A_L = 160 \text{ nH}$			
N 48	—	0,43	52	45 × 0,04 CuLS	1
	1,00	1,60	100	20 × 0,04 CuLS	1
	3,24	5,18	180	0,18 CuL	1
	9,60	15,40	310	0,14 CuL	1
	3,25	5,35	183	10 × 0,05 CuL	1



- For compact transformers with high inductance
- Without center hole
- RM cores are supplied in sets

Magnetic characteristics (per set)

$\Sigma l/A = 1,2 \text{ mm}^{-1}$

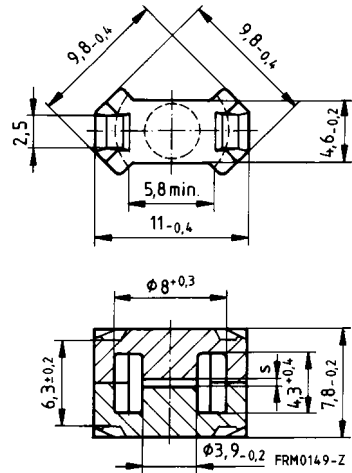
$l_e = 17,3 \text{ mm}$

$A_e = 14,5 \text{ mm}^2$

$A_{\text{min}} = 11,3 \text{ mm}^2$

$V_e = 251 \text{ mm}^3$

Approx. weight 1,2 g/set



Ungapped

Material	A_L value	μ_e	$A_{L1\text{min}}$	P_V	Ordering code
	nH		nH	W/set	
T38	5000 + 40/- 30 %	4770			B65803-P-Y38
N49	860 + 30/- 20 %	820	630	0,03 (50 mT, 500 kHz, 100 °C)	B65803-P-R49
N87	1300 + 30/- 20 %	1234	950	0,09 (200 mT, 160 kHz, 100 °C)	B65803-P-R87

Coil former

Material: GFR thermosetting plastic (UL 94 V-0, insulation class to IEC 60085:
H \geq max. operating temperature 180 °C), color code blue

Solderability: to IEC 60068-2-20, test Ta, method 1 (aging 3): 235 °C, 2 s

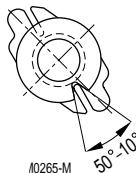
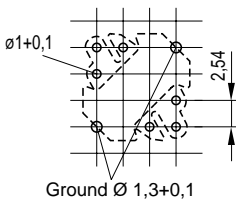
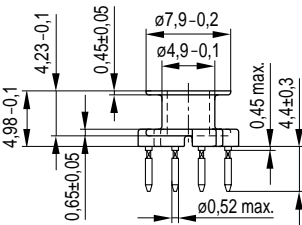
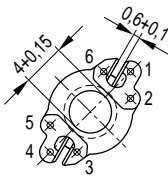
Resistance to soldering heat: to IEC 60068-2-20, test Tb, method 1B: 350 °C, 3,5 s

Winding: see page 160 (as SMD coil former)

Pins squared in the start-of-winding area

For matching clamp and insulating washers see page 195

Sections	A_N mm ²	l_N mm	A_R value $\mu\Omega$	Pins	Ordering code
1	4,7	20,1	147	6	B65804-R1006-D1



Hole arrangement
View in mounting direction

Clamp

- With and without ground terminal, made of stainless spring steel, 0,3 mm thick, clamp with ground terminal tinned
- Solderability to IEC 60068-2-20, test Ta, method 1 (aging 3): 235 °C, 2 s
- Clamping force 40 N per pair of clamps (typical value)
- Also available as strip clamp on reels on request

Insulating washer 1 between core and coil former

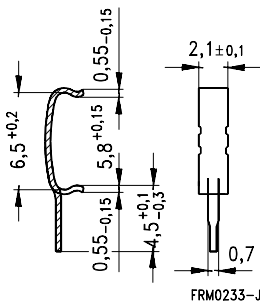
- For tolerance compensation and for insulation
- Made of polycarbonate (UL 94 V-0, insulation class to IEC 60085: E \geq 120 °C), 0,06 mm thick

Insulating washer 2 for double-clad PCBs

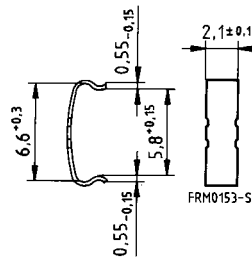
- Made of polycarbonate (UL 94 V-0, insulation class to IEC 60085: E \geq 120 °C), 0,3 mm thick

	Ordering code
Clamp with ground terminal (ordering code per piece, 2 are required)	B65804-P2203
Clamp without ground terminal (ordering code per piece, 2 are required)	B65804-P2204
Insulating washer 1 (reel packing, PU = 1 reel)	B65804-A5000
Insulating washer 2 (bulk)	B65804-C2005

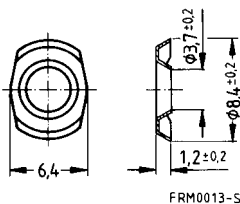
Clamp with ground terminal



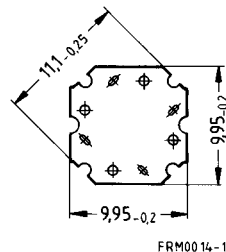
Clamp without ground terminal



Insulating washer 1



Insulating washer 2



SMD coil former with J terminals

Material: GFR liquid crystal polymer (UL 94 V-0, insulation class to IEC 60085:
F \triangleq max. operating temperature 155 °C), color code black

Solderability: to IEC 60068-2-20, test Ta, method 1 (aging 3): 235 °C, 2 s

Resistance to soldering heat: to IEC 60068-2-20, test Tb, method 1B: 350 °C, 3,5 s
permissible soldering temperature for wire-wrap connection on coil former: 400 °C, 1 s

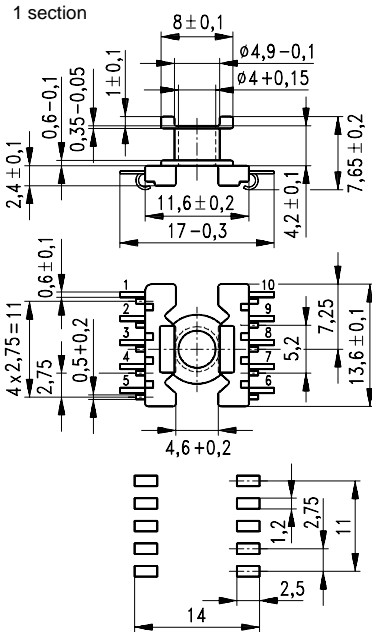
Winding: see page 160

Clamp

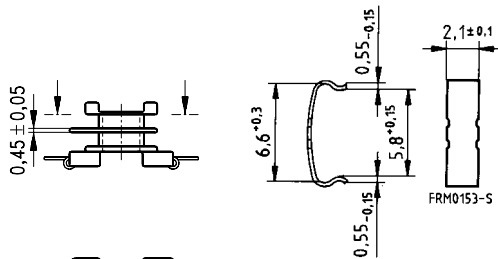
- Without ground terminal, made of stainless spring steel, 0,3 mm thick
- Also available as strip clamp (each carton containing 2 reels), also on a reel on request

Sections	A _N mm ²	l _N mm	A _R value μΩ	Termi- nals ¹⁾	Ordering code
1	5,0	20,1	138	10	B65804-B6010-T1
2	4,4	20,1	157	10	B65804-B6010-T2
Clamp	(ordering code per piece, 2 are required)				B65804-P2204

Coil former



Clamp



1) 6 and 8 terminals on request