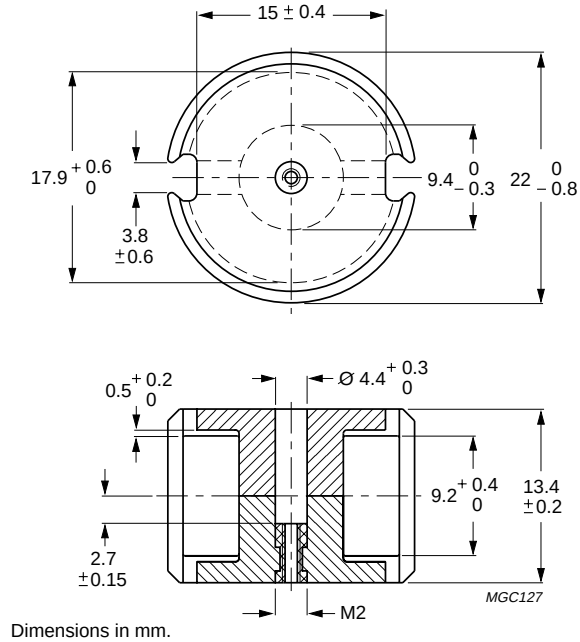
CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.497	mm^{-1}
V_e	effective volume	2000	mm^3
l_e	effective length	31.5	mm
A_e	effective area	63.4	mm^2
A_{min}	minimum area	51.3	mm^2
m	mass of set	≈12	g



Dimensions in mm.

Fig.1 P22/13 core set.

Core sets for filter applications

Clamping force 140 ±30 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER (WITH NUT)	TYPE NUMBER (WITHOUT NUT)
4C6 sup	25 ±3%	≈10	≈5600	P22/13-4C6-E25/N	P22/13-4C6-E25
	40 ±3%	≈16	≈2900	P22/13-4C6-E40/N	P22/13-4C6-E40
	63 ±3%	≈25	≈1400	P22/13-4C6-E63/N	P22/13-4C6-E63
	250 ±25%	≈100	≈0	–	P22/13-4C6
3D3 sup	40 ±3%	≈16	≈3000	P22/13-3D3-E40/N	P22/13-3D3-E40
	63 ±3%	≈25	≈1500	P22/13-3D3-E63/N	P22/13-3D3-E63
	100 ±3%	≈40	≈900	P22/13-3D3-E100/N	P22/13-3D3-E100
	160 ±3%	≈64	≈500	P22/13-3D3-E160/N	P22/13-3D3-E160
	1700 ±25%	≈670	≈0	–	P22/13-3D3
3H3 sup	160 ±3%	≈64	≈500	P22/13-3H3-E160/N	P22/13-3H3-E160
	250 ±3%	≈99	≈300	P22/13-3H3-E250/N	P22/13-3H3-E250
	315 ±3%	≈125	≈250	P22/13-3H3-E315/N	P22/13-3H3-E315
	400 ±3%	≈158	≈170	P22/13-3H3-A400/N	P22/13-3H3-A400
	630 ±3%	≈249	≈100	P22/13-3H3-A630/N	P22/13-3H3-A630
	3900 ±25%	≈1540	≈0	–	P22/13-3H3
3H1 sup	160 ±3%	≈64	≈500	P22/13-3H1-E160/N	P22/13-3H1-E160
	250 ±3%	≈99	≈300	P22/13-3H1-E250/N	P22/13-3H1-E250
	315 ±3%	≈125	≈250	P22/13-3H1-A315/N	P22/13-3H1-A315
	400 ±3%	≈158	≈170	P22/13-3H1-A400/N	P22/13-3H1-A400
	630 ±3%	≈249	≈100	P22/13-3H1-A630/N	P22/13-3H1-A630
	4300 ±25%	≈1700	≈0	–	P22/13-3H1

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER (WITH NUT)	TYPE NUMBER (WITHOUT NUT)
3B7 sup	160 ±3%	≈63	≈500	P22/13-3B7-E160/N	P22/13-3B7-E160
	250 ±3%	≈99	≈300	P22/13-3B7-E250/N	P22/13-3B7-E250
	315 ±3%	≈125	≈250	P22/13-3B7-E315/N	P22/13-3B7-E315
	400 ±3%	≈157	≈170	P22/13-3B7-A400/N	P22/13-3B7-A400
	630 ±3%	≈249	≈100	P22/13-3B7-A630/N	P22/13-3B7-A630
	4650 ±25%	≈1840	≈0	–	P22/13-3B7

Core sets for general purpose transformers and power applications

Clamping force 140 ±30 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3B8 sup	160 ±3%	≈64	≈500	P22/13-3B8-A160
	250 ±3%	≈99	≈300	P22/13-3B8-A250
	315 ±3%	≈125	≈250	P22/13-3B8-A315
	400 ±3%	≈158	≈170	P22/13-3B8-A400
	630 ±3%	≈249	≈100	P22/13-3B8-A630
	4300 ±25%	≈1700	≈0	P22/13-3B8
3C81	160 ±3%	≈64	≈500	P22/13-3C81-A160
	250 ±3%	≈99	≈300	P22/13-3C81-A250
	315 ±3%	≈125	≈250	P22/13-3C81-A315
	400 ±3%	≈158	≈170	P22/13-3C81-A400
	630 ±3%	≈249	≈100	P22/13-3C81-A630
	5200 ±25%	≈2060	≈0	P22/13-3C81
3C85 sup	160 ±3%	≈64	≈500	P22/13-3C85-A160
	250 ±3%	≈99	≈300	P22/13-3C85-A250
	315 ±3%	≈125	≈250	P22/13-3C85-A315
	400 ±3%	≈158	≈170	P22/13-3C85-A400
	630 ±3%	≈249	≈100	P22/13-3C85-A630
	3900 ±25%	≈1540	≈0	P22/13-3C85
3F3 sup	160 ±3%	≈64	≈500	P22/13-3F3-A160
	250 ±3%	≈99	≈300	P22/13-3F3-A250
	315 ±3%	≈125	≈250	P22/13-3F3-A315
	400 ±3%	≈158	≈170	P22/13-3F3-A400
	630 ±3%	≈249	≈100	P22/13-3F3-A630
	3550 ±25%	≈1410	≈0	P22/13-3F3
3F4 sup	160 ±3%	≈64	≈500	P22/13-3F4-A160
	250 ±3%	≈99	≈300	P22/13-3F4-A250
	315 ±3%	≈125	≈250	P22/13-3F4-A315
	400 ±3%	≈158	≈170	P22/13-3F4-A400
	630 ±3%	≈249	≈100	P22/13-3F4-A630
	2000 ±25%	≈800	≈0	P22/13-3F4

Core sets of high permeability grades

Clamping force 140 ±30 N.

GRADE	A_L (nH)	μ_e	TYPE NUMBER
3E1 sup	6900 ±25%	≈2730	P22/13-3E1
3E5	≥11200	≥4430	P22/13-3E5
3E25 sup	9250 ±25%	≈3660	P22/13-3E25
3E27	9250 ±25%	≈3660	P22/13-3E27
3E4 sup	9450 +40/–30%	≈3740	P22/13-3E4

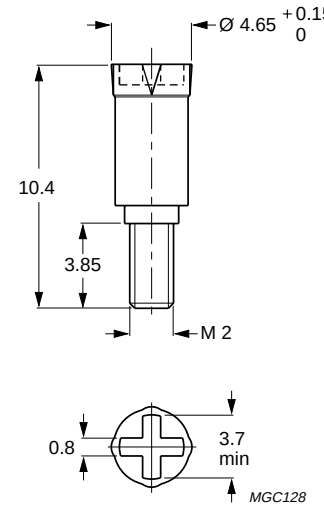
Properties of core sets under power conditions

GRADE	B (mT) at	CORE LOSS (W) at				
	H = 250 A/m; f = 25 kHz; T = 100 °C	f = 25 kHz; $\hat{B}$ = 200 mT; T = 100 °C	f = 100 kHz; $\hat{B}$ = 100 mT; T = 100 °C	f = 400 kHz; $\hat{B}$ = 50 mT; T = 100 °C	f = 1 MHz; $\hat{B}$ = 30 mT; T = 100 °C	f = 3 MHz; $\hat{B}$ = 10 mT; T = 100 °C
3B8	≥315	≤0.56	–	–	–	–
3C81	≥315	≤0.41	–	–	–	–
3C85	≥315	≤0.32	≤0.38	–	–	–
3F3	≥315	–	≤0.22	≤0.40	–	–
3F4	≥250	–	–	–	≤0.40	≤0.64

INDUCTANCE ADJUSTERS

General data

PARAMETER	SPECIFICATION
Material of head and thread	polypropylene (PP), glass fibre reinforced
Maximum operating temperature	125 °C



Dimensions in mm.

Fig.2 P22/13 inductance adjuster.

Inductance adjuster selection chart

GRADE	A_L (nH)	TYPES FOR LOW ADJUSTMENT	ΔL/L (1)	TYPES FOR MEDIUM ADJUSTMENT	ΔL/L (1)	TYPES FOR HIGH ADJUSTMENT	ΔL/L (1)
3H1; 3H3; 3B7	100	–	–	ADJ-P22/RM8-RED	16	ADJ-P22/RM8-ORANGE	21
	160	ADJ-P22/RM8-RED	11	ADJ-P22/RM8-YELLOW	18	ADJ-P22/RM8-WHITE	27
	250	ADJ-P22/RM8-YELLOW	12	ADJ-P22/RM8-WHITE	18	–	–
	315	ADJ-P22/RM8-YELLOW	9	–	–	ADJ-P22/RM8-BROWN	22
	400	ADJ-P22/RM8-WHITE	11	ADJ-P22/RM8-BROWN	17	ADJ-P22/RM8-BLACK	30
	630	ADJ-P22/RM8-BROWN	10	ADJ-P22/RM8-BLACK	18	–	–
	1000	ADJ-P22/RM8-BROWN	6	ADJ-P22/RM8-BLACK	12	–	–
	1250	ADJ-P22/RM8-BROWN	4	ADJ-P22/RM8-BLACK	7	–	–
3D3	40	–	–	–	–	ADJ-P22/RM8-ORANGE	27
	63	–	–	–	–	ADJ-P22/RM8-ORANGE	26
	100	–	–	ADJ-P22/RM8RED	16	ADJ-P22/RM8-YELLOW	27
	160	ADJ-P22/RM8-RED	10	ADJ-P22/RM8-YELLOW	17	–	–
	250	ADJ-P22/RM8-YELLOW	–	–	–	–	–
4C6	25	ADJ-P22/RM8-GREEN	14	ADJ-P22/RM8-RED	16	–	–
	40	–	–	–	–	ADJ-P22/RM8-ORANGE	24
	63	–	–	ADJ-P22/RM8-RED	15	ADJ-P22/RM8-ORANGE	19
	100	–	–	ADJ-P22/RM8-ORANGE	10	ADJ-P22/RM8-WHITE	20

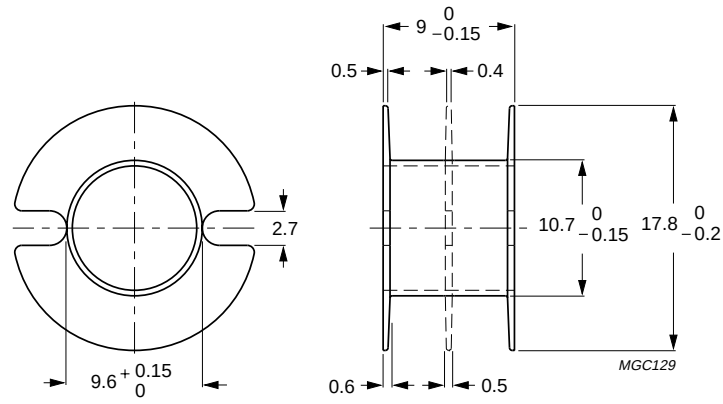
Note

1. Maximum adjustment range.

COIL FORMERS

General data CP-P22/13 coil former

PARAMETER	SPECIFICATION
Coil former material	polybutyleneterephtalate (PBT), glass reinforced, flame retardant in accordance with *"UL 94V-0"*; UL file number E45329 (R)
Maximum operating temperature	155 °C, *"IEC 85"* class F



Dimensions in mm.

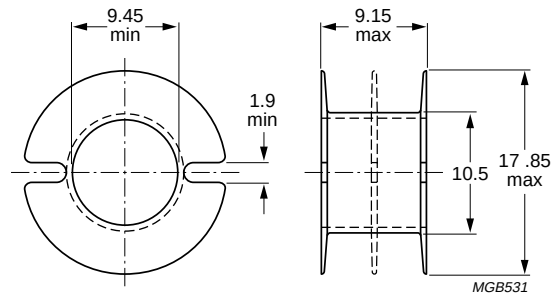
Fig.3 Coil former: CP-P22/13.

Winding data for CP-P22/13 coil former

NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm^2)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	TYPE NUMBER
1	26.2	7.5	44.5	CP-P22/13-1S
2	2×12.2	2×3.45	44.5	CP-P22/13-2S
3	3×7.6	3×2.1	44.5	CP-P22/13-3S

General data for CP-P22/13-A coil former

PARAMETER	SPECIFICATION
Coil former material	acetal (POM), glass reinforced, flame retardant in accordance with *"UL 94-HB"*; UL file number E66288(R)
Maximum operating temperature	105 °C



Dimensions in mm.

Fig.4 Coil former: CP-P22/13-A.

Winding data for CP-P22/13-A coil former

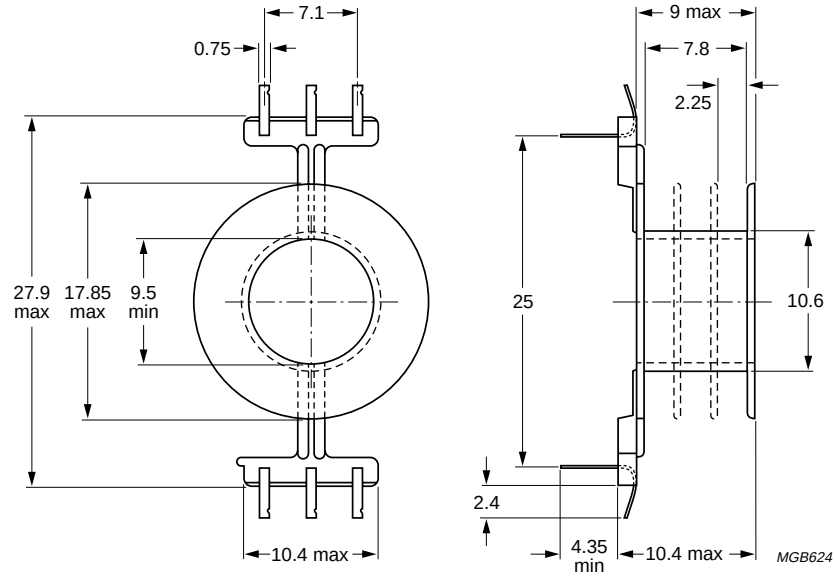
NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm^2)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	TYPE NUMBER
1	27.5	8.1	44.3	CP-P22/13-1S-A
2	2×12.9	2×3.9	44.3	CP-P22/13-2S-A
3	3×8.01	3×2.4	44.3	CP-P22/13-3S-A(1)

Note

1. In accordance with *"UL 94-HB"*.

General data 6-pins P22/13 coil former for PCB mounting

PARAMETER	SPECIFICATION
Coil former material	polyamide (PA6.6), glass reinforced, flame retardant in accordance with *"UL 94V-0"*; UL file number E41938(M)
Maximum operating temperature	130 °C
Pin material	copper-zinc alloy (CuZn), tin-lead alloy (SnPb) plated
Resistance to soldering heat	*"IEC 68-2-20"*, Part 2, Test Tb, method 1B, 350 °C, 3.5 s
Solderability	*"IEC 68-2-20"*, Part 2, Test Ta, method 1, 235 °C, 2 s



Dimensions in mm.

Fig.5 P22/13 coil former for PCB mounting; 6-pins.

Data for 6-pins P22/13 coil former for PCB mounting

NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm^2)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	MINIMUM LENGTH OF PINS (mm)	TYPE NUMBER
1	25.2	7.8	44.5	4.4	CPV-P22/13-1S-6PD
1	25.2	7.8	44.5	6.8	CPV-P22/13-1S-6PDL
2	2×11.7	2×3.6	44.5	4.4	CPV-P22/13-2S-6PD
2	2×11.7	2×3.6	44.5	6.8	CPV-P22/13-2S-6PDL
3	3×7.03	3×2.2	44.5	4.4	CPV-P22/13-3S-6PD(1)
3	3×7.03	3×2.2	44.5	6.8	CPV-P22/13-3S-6PDL(1)

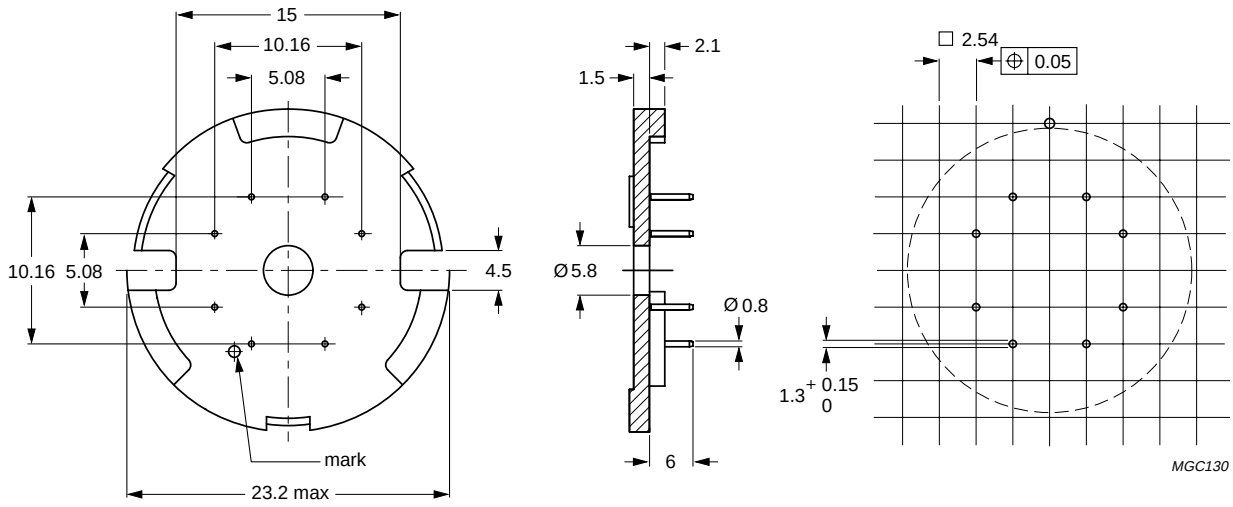
Note

1. In accordance with *"UL 94-HB"*.

MOUNTING PARTS

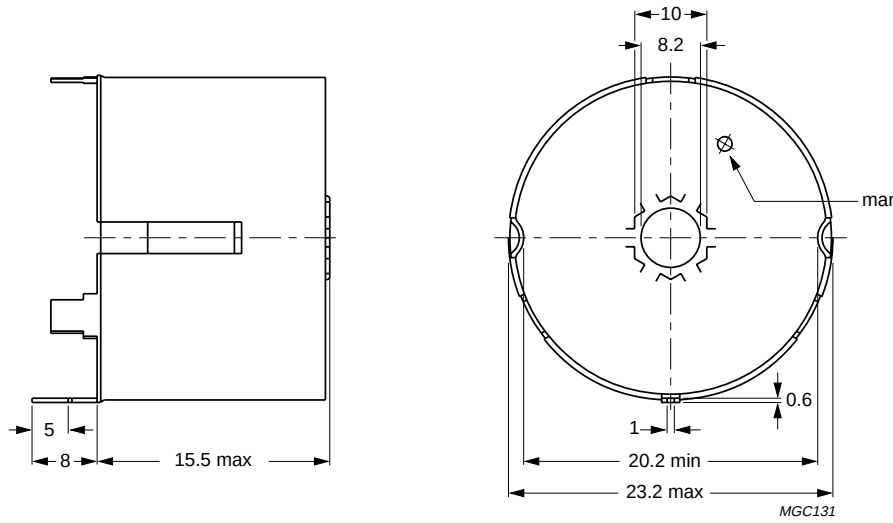
General data and ordering information

ITEM	REMARKS	FIGURE	TYPE NUMBER
Tag plate	material: phenolformaldehyde (PF), glass reinforced	6	TGP-P22/13-8P
	flame retardant: in accordance with *"UL 94V-0"*; UL file number E63312(M)		
	maximum operating temperature: 180 °C, *"IEC 85"* class H		
	pins: copper-tin alloy (CuSn), tin-lead alloy (SnPb) plated		
	resistance to soldering heat in accordance with *"IEC 68-2-20"*, Part 2, Test Tb, method 1B: 350 °C, 3.5 s		
	solderability in accordance with *"IEC 68-2-20"*, Part 2, Test Ta, method 1: 235 °C, 2 s		
Container	copper-zinc alloy (CuZn), nickel-plated	7	CON-P22/13
	earth pins: presoldered		
Spring	CrNi-steel	8	SPR-P22/13
	spring force: ≈140 N when mounted		
Nut	copper-zinc alloy, nickel-plated	9	NUT
Bush	copper-zinc alloy, nickel-plated	10	FIB
Clamp	spring steel, tin-plated	11	CLM/TS-P22/13
Washer	phenolformaldehyde (PF)	12	WAS-CLM/TS-P22/13



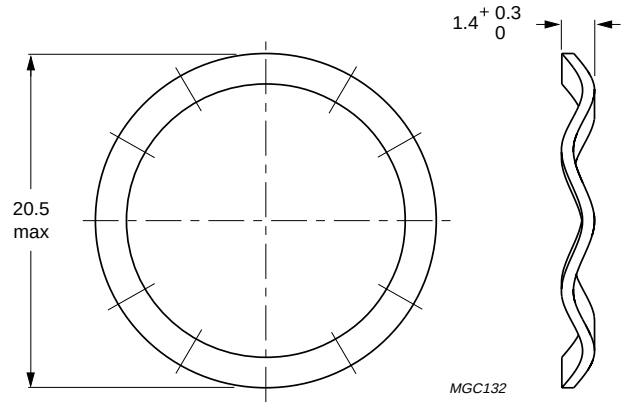
Dimensions in mm.

Fig.6 Tag plate: TGP-P22/13-8P.



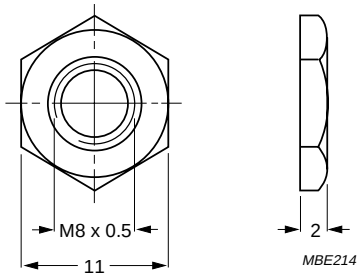
Dimensions in mm.

Fig.7 Container: CON-P22/13.



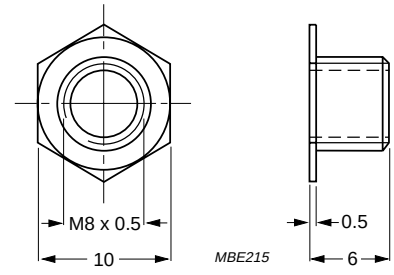
Dimensions in mm.

Fig.8 Spring: SPR-P22/13.



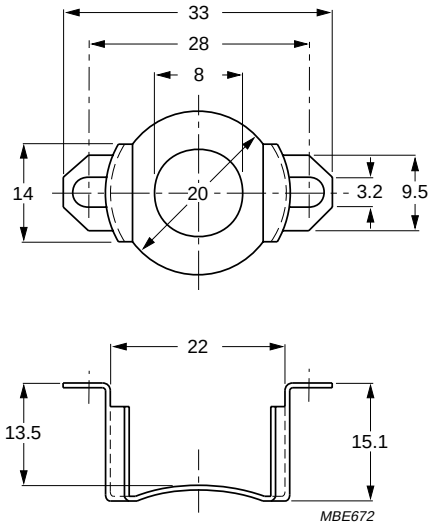
Dimensions in mm.

Fig.9 Fixing nut: NUT



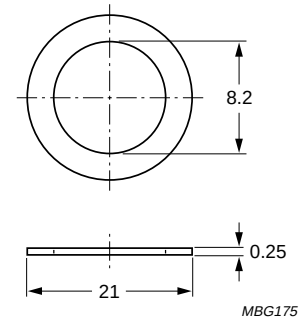
Dimensions in mm.

Fig.10 Fixing bush: FIB.



Dimensions in mm.

Fig.11 Clamp: CLM/S-P22/13.



Dimensions in mm.

Fig.12 Washer: WAS-CLM/S-P22/13.