

## Film dielectric trimmers

2222 808 .....  
 Ø10 mm

### FEATURES

- Housing diameter 10 mm
- For a basic grid of 2.54 mm (0.1") or 2.50 mm
- Top and bottom or top adjustment
- Vertical and horizontal versions
- Round or hexagonal head.

### APPLICATIONS

- For consumer and industrial equipment.

### DESCRIPTION

The vanes of the trimmer are stacked on a sturdy plastic base. The colour of the base indicates the maximum capacitance (see Table 2). The dielectric is a film of polypropylene (PP), polycarbonate (PC) or polytetrafluorethylene (PTFE), which supports the vanes in such a way that good stability is ensured and no microphony can occur.

Flux absorption between the vanes is prevented.

Cleaning with solvents is not advised.

Versions are available with either a vertical spindle (see Figs 1 and 2), or a horizontal spindle (see Fig.3).

Both versions have top adjustment by means of a screwdriver or trimming key and bottom adjustment by means of a key as shown in Fig.7.

For outline drawings and dimensions see Figs 1, 2 and 3.

### QUICK REFERENCE DATA

DESCRIPTION	VALUE
$C_{min}/C_{max}$	2.5/15 to 7/105 pF
Rated voltage (DC)	150 V
Test voltage (DC) for 1 minute	300 V
Maximum contact resistance	10 mΩ
Minimum insulation resistance	10000 MΩ
Category temperature range:	
PP	-40 to +70 °C
PC, PTFE	-40 to +85 °C
Climatic category (IEC 60068):	
PP	40/070/21
PC, PTFE	40/085/21
Minimum storage temperature	-55 °C
Related specification	IEC 60418-1 and 4

### MECHANICAL DATA

DESCRIPTION	VALUE
Effective angle of rotation	180°
Operating torque	2 to 25 mNm
Maximum axial thrust	2 N

### QUALITY LEVEL

Sampling and data evaluation for quality level in accordance with "MIL-STD-105D" and "IEC 60410":

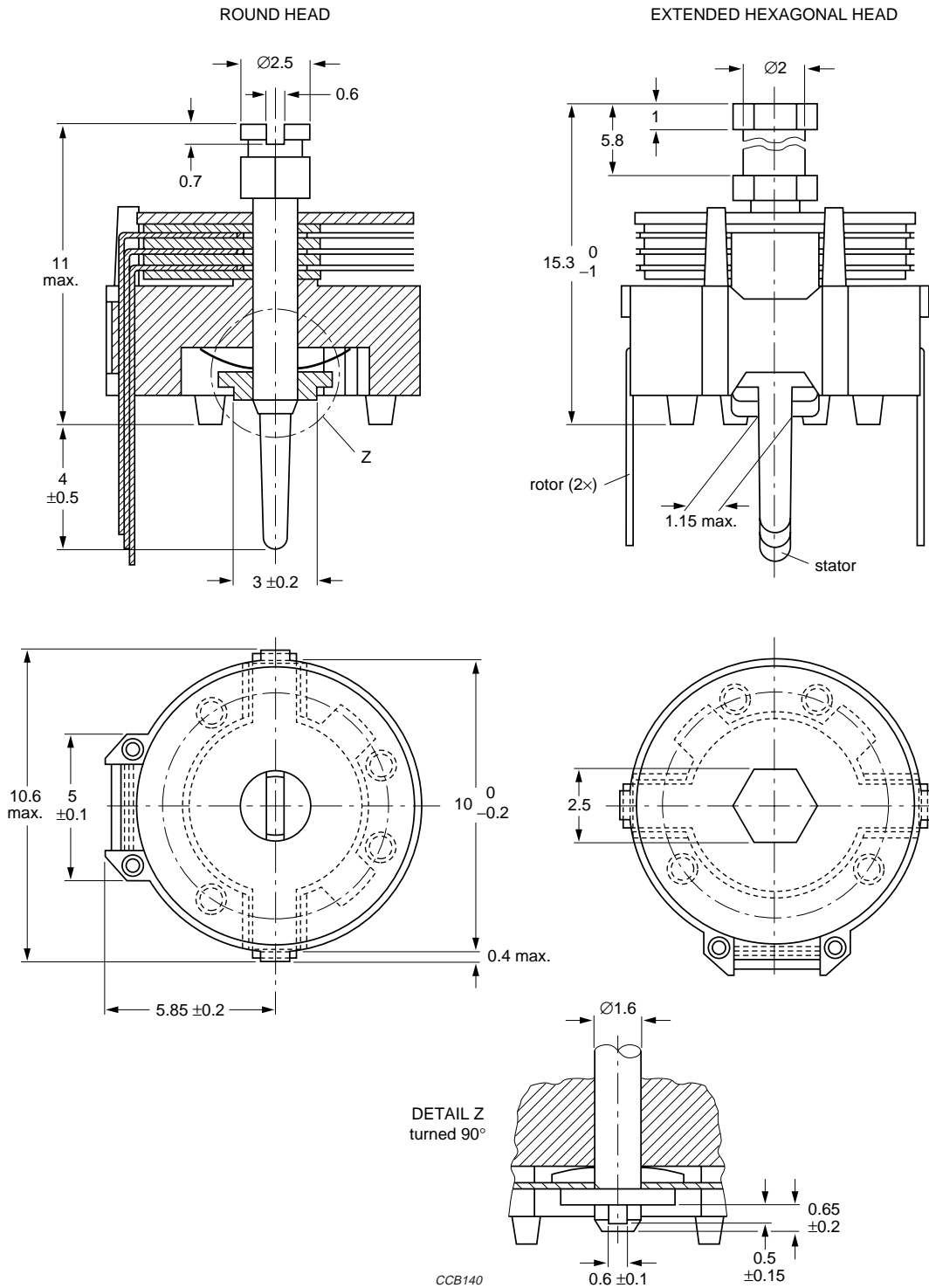
- <0.15% major defects
- <0.65% minor defects.

Each capacitor is tested for minimum  $C_{max}$  and is also subjected to the full test voltage.

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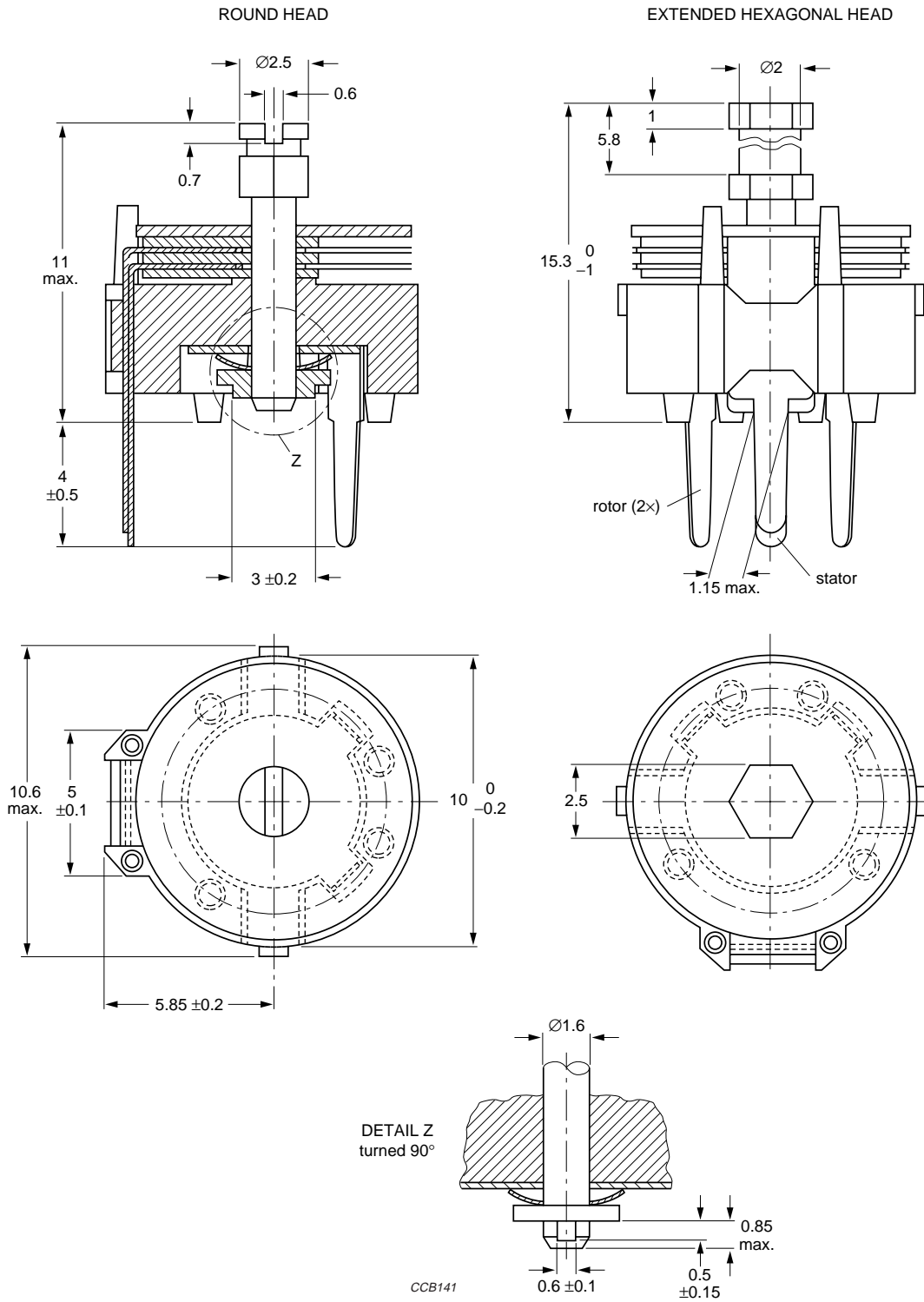
Dimensions in mm.  
Hole pattern 5 mm × 10 mm; see Fig.4.

Fig.1 Trimmers 2222 808 ..... series, vertical version.

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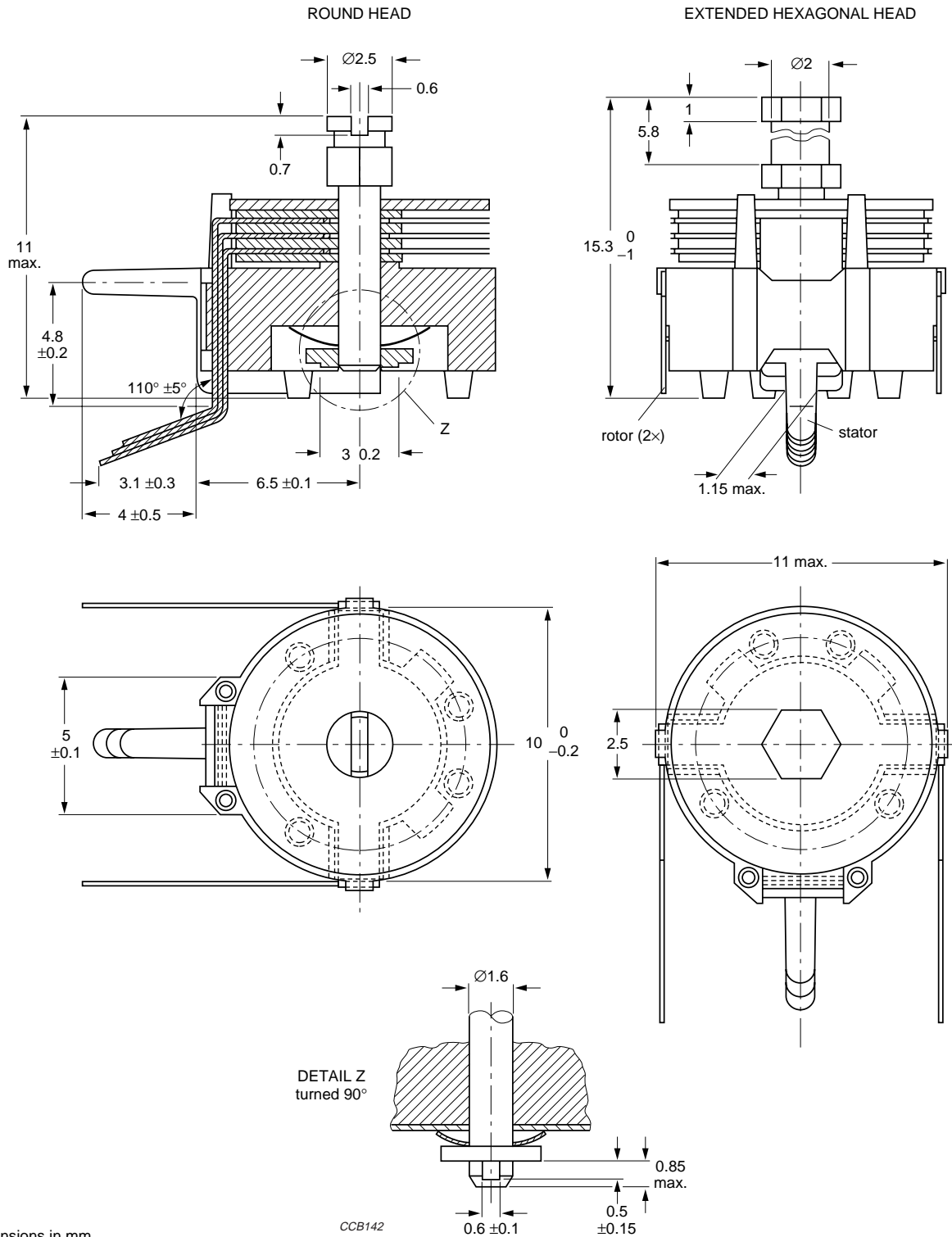
Dimensions in mm.  
Hole pattern 7.5 mm × 5 mm; see Fig.5.

Fig.2 Trimmers 2222 808 ..... series, vertical version.

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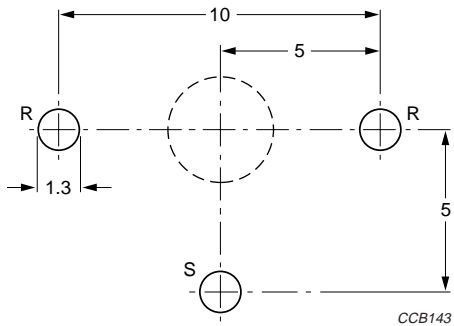


Dimensions in mm.  
Hole pattern 5 mm × 10 mm; see Fig.6.

Fig.3 Trimmers 2222 808 ..... series, horizontal version.

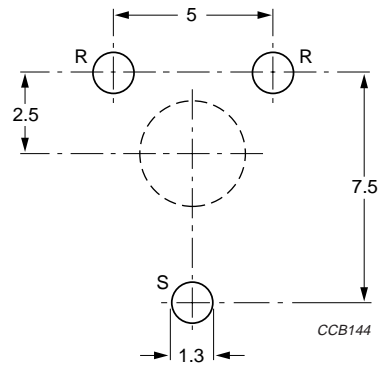
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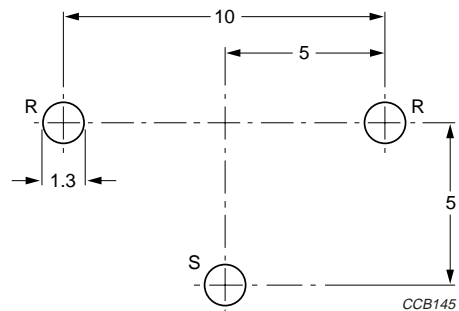
Dimensions in mm.  
 R = rotor, S = stator.  
 The large hole is for bottom adjustment and the diameter is determined by user's requirements.

Fig.4 Hole pattern; see Fig.1.



Dimensions in mm.  
 R = rotor, S = stator.

Fig.5 Hole pattern; see Fig.2.

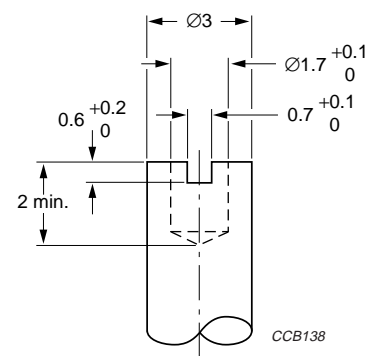


Dimensions in mm.  
 R = rotor, S = stator.

Fig.6 Hole pattern; see Fig.3.

**Adjustment**

For top adjustment a screwdriver or trimming key can be used; for bottom adjustment a key is required as shown in Fig.7.



Dimensions in mm.

Fig.7 Bottom adjustment key.

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## ORDERING INFORMATION

Table 1 Selection chart

$C_{min}/C_{max}$ (pF)	CATALOGUE NUMBER 2222 808 .....						
	HORIZONTAL VERSION		VERTICAL VERSION				
	HOLE PATTERN 5 mm × 10 mm		HOLE PATTERN 5 mm × 10 mm		HOLE PATTERN 7.5 mm × 5 mm		
	ROUND HEAD	HEX HEAD	ROUND HEAD	HEX. HEAD	ROUND HEAD	HEX. HEAD	ROUND HEAD
	TOP AND BOTTOM ADJUSTMENT		TOP AND BOTTOM ADJUSTMENT				TOP ADJUSTMENT
2.5/15	61159	–	31159	–	32159	–	–
3/22.5	61229	–	31229	–	32229	–	–
5.5/40	61409	–	31409	–	32409	–	–
5.5/50	–	–	01029	–	01006	–	–
5.5/65	61659	64659	31659	34659	32659	–	01001
6/80	61809	64809	31809	34809	32809	35809	–
7/105	61101	64101	31101	–	32101	–	–
6/120	–	–	31121	–	–	–	–

## MOUNTING

The trimmer can be mounted on printed-circuit boards with a grid of 2.50 mm or 2.54 mm and a minimum hole diameter of 1.25 mm. For hole patterns see Figs 4, 5 and 6.

## PACKAGING

Bulk packaged in cardboard boxes lined with expanded plastic. For smallest packaging quantities (SPQ) see Table 2.

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## ELECTRICAL DATA

Table 2 Electrical characteristics and catalogue numbers

GUARANTEED MAX. C <sub>min</sub> / MIN. C <sub>max</sub> at 200 kHz (pF)	SPINDLE	SHAPE OF HEAD	FIG.	ADJ. MODE	DIEL.	tan δ at C <sub>max</sub> × 10 <sup>-4</sup>		TEMP. COEFF. (10 <sup>-6</sup> /K)	MIN. f <sub>res</sub> at C <sub>max</sub> (MHz)	COL. OF BASE	SPQ	CATALOGUE NUMBER
						1 MHz	100 MHz					
2.5/15	vertical	round	1	top + bottom	PP	≤10	≤25	-200 ±700	420	blue	800	2222 808 31159
			2								800	2222 808 32159
	horizontal		3								700	2222 808 61159
3/22.5	vertical	round	1	top + bottom	PP	≤10	≤25	-200 ±700	200	green	800	2222 808 31229
			2								800	2222 808 32229
	horizontal		3								700	2222 808 61229
5.5/40	vertical	round	1	top + bottom	PP	≤10	≤25	-200 ±400	200	grey	800	2222 808 31409
			2								800	2222 808 32409
	horizontal		3								700	2222 808 61409
5.5/50	vertical	round	1	top + bottom	PTFE	≤10	≤25	-200 ±400	170	yellow	800	2222 808 01029
			2								800	2222 808 01006
5.5/65	vertical	round	2	top	PP	≤10	≤25	-200 ±500	170	yellow	800	2222 808 01001
		round	1	top + bottom							800	2222 808 31659
		round	2								800	2222 808 32659
		hexag.	1								700	2222 808 34659
	horizontal	round	3								700	2222 808 61659
		hexag.	3	600							2222 808 64659	
6/80	vertical	round	1	top + bottom	PC	≤70	-	-50 ±400	170	red	800	2222 808 31809
		hexag.	1								700	2222 808 34809
		round	2								800	2222 808 32809
		hexag.	2								700	2222 808 35809
	horizontal	round	3								700	2222 808 61809
		hexag.	3								600	2222 808 64809
7/105	vertical	round	1	top + bottom	PC	≤70	-	-50 ±400	170	violet	800	2222 808 31101
		round	2								800	2222 808 32101
	horizontal	round	3								700	2222 808 61101
		hexag.	3								600	2222 808 64101
6/120	vertical	round	2	top + bottom	PC	≤70	-	-50 ±400	170	violet	800	2222 808 31121

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## TESTS AND REQUIREMENTS

Table 3 Test procedures and requirements

IEC 60418-1 CLAUSE	IEC 60068 TEST METHOD	TEST	PROCEDURE	REQUIREMENTS
4.2		method of mounting	method A	
14		capacitance drift	after TC measurement	$\Delta C/C: \leq 4.5\%$ for $C_{\max} < 40$ pF; $\Delta C/C: \leq 2.5\%$ for $C_{\max} \geq 40$ pF
19		thrust	axial thrust of 2 N	$\Delta C/C: \leq 0.3\%$
21		robustness of terminations:		
21.1	Ua	tensile	1 N	no damage
21.2	Ub	bending	1 cycle	no damage
22	Na	rapid change of temperature	1 cycle; 0.5 hours at lower and 0.5 hours at upper category temperature	$\Delta C/C: \leq 1.5\%$
23	T	soldering:		
	Ta	solderability	solder bath immersion 3 mm; 235 °C; 2 s	good wetting no mechanical damage
	Tb	resistance to heat	solder bath: 260 °C; 10 s	no mechanical damage
24	Eb	impact bump	4000 ±10 bumps; 40 g; 6 ms	$\Delta C/C: \leq 0.4\%$ ; no mechanical damage
25	Fc	vibration	frequency 10 to 55 Hz; amplitude 0.35 mm; 1.5 hours	$\Delta C/C: \leq 0.8\%$ ; no mechanical damage
26		climatic sequence:		
26.1	B	dry heat	16 hours at upper category temperature	$\Delta C/C: \leq 3\%$ for $C_{\max} < 80$ pF; $\Delta C/C: \leq 6\%$ for $C_{\max} \geq 80$ pF $\tan \delta: \leq 15 \times 10^{-4}$ for $C_{\max} < 80$ pF; $\tan \delta: \leq 80 \times 10^{-4}$ for $C_{\max} \geq 80$ pF $R_{\text{ins.}}: \geq 10000$ MΩ; rotor contact R: $\leq 10$ mΩ
26.2	D	damp heat accelerated, first cycle	1 cycle; 24 hours; +40 °C; 95 to 100% RH	voltage proof: 300 V for 1 minute
26.3	Aa	cold	16 hours; -40 °C	visual examination: no mechanical damage
26.5		damp heat accelerated, remaining cycles	1 cycle; 24 hours; +40 °C; 95 to 100% RH	operating torque: 2 to 35 mNm



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IEC 60418-1 CLAUSE	IEC 60068 TEST METHOD	TEST	PROCEDURE	REQUIREMENTS
27	Ca	damp heat steady state	21 days; +40 °C; 90 to 95% RH	$\Delta C/C$ : $\leq 3\%$ for $C_{\max} < 100$ pF; $\leq 3.5\%$ for $C_{\max} \geq 100$ pF $\tan \delta$ : $\leq 20 \times 10^{-4}$ for $C_{\max} < 80$ pF; $\tan \delta$ : $\leq 80 \times 10^{-4}$ for $C_{\max} \geq 80$ pF $R_{\text{ins}}$ : $\geq 10000$ M $\Omega$ ; rotor contact R: $\leq 10$ m $\Omega$ voltage proof: 300 V for 1 minute visual examination: no mechanical damage operating torque: 2 to 35 mNm
29		mechanical endurance	10 cycles	$\Delta C/C$ : $\leq 1\%$ $\Delta C/C$ after axial thrust: $\leq 0.4\%$ ; rotor contact R: $\leq 10$ m $\Omega$ voltage proof: 300 V for 1 minute visual examination: no mechanical damage operating torque: 1.5 to 37 mNm