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# SPECIFICATION FOR APPROVAL

## Speaker

Part Number	OWS-091630LA-8B
Note	This item was compliance with the following requirements: 1. RoHS directive
Customer P/N	

	Signature / Date	Prepared	Checked	Approved
Ole Wolff		LIUYANLONG 2020/09/01		

	Signature / Date	Confirmation
Customer		

### REVISION NOTES:

Date	Rev.	Description of Revision
2020/06/09	00	Initial Release
2020/08/07	01	Updated the FR limit
2020/09/01	02	Correct weight to be 1.23g

OLE WOLFF ELEKTRONIK A/S Roedengvej 25 4180 Soroe Denmark  TEL: +45 57833830 FAX: +45 57820019	OLE WOLFF ELECTRONICS INC. 1525 McCarthy Blvd, Suite 1093 Milpitas, Ca 95035 USA  TEL: +1 408 888 8413	OLEWOLFF ELEKTRONIK GmbH Schulstrasse 15A. DE-25451 Quickborn. Germany  TEL: +49 (0) 4106 765900 FAX: +49 (0) 4106 627297	OLEWOLFF ELECTRONICS 3 Bedford Street, Woburn, Bedfordshire MK17 9QB, ENGLAND  TEL: +44 (0) 1525 290755 FAX: +44 (0) 1525 290855	OLE WOLFF ELEKTRONIK Yhöpistonkatu 26 (P.O.BOX 257) FI-40101 Jyväskylä Finland  TEL: +358 14 338 3050 FAX: +358 14 338 3059	OLE WOLFF (ASIA) LTD. Unit B, 19/F, Bold Win Ind. Bldg., No. 16-18 Wah Sing St., Kwai Chung, N.T., H.K.  TEL: +852 2424 3274 FAX: +852 2424 2219	OLE WOLFF LTD. 5 Floor, Block G, WenTao Industrial Park, YingRenShi, Bao'an District, Shenzhen, PRC  TEL: +86 755 82612542 TEL: +86 755 26406156
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## 1. SCOPE

THIS SPECIFICATION IS APPLIED FOR A DYNAMIC SPEAKER.

## 2. TEST CONDITIONS

TEMPERATURE : 15°C ~ 35°C

HUMIDITY : 45%~85% (R.H.)

ATMOSPHERE : 860 ~ 1060 hPa

## 3. GENERAL REQUIREMENTS

OPERATING TEMPERATURE RANGE: -20° C ~ 70° C

STORAGE TEMPERATUR RANGE: -40° C ~ 85° C

## 4. MECANICAL LAYOUT & DIMENSIONS

DIMENSIONS : SHOWN IN FIGURE.4

NET WEIGHT: approx 1.23g

## 5. ELECTRICAL AND ACOUSTICAL CHARACTERISTICS

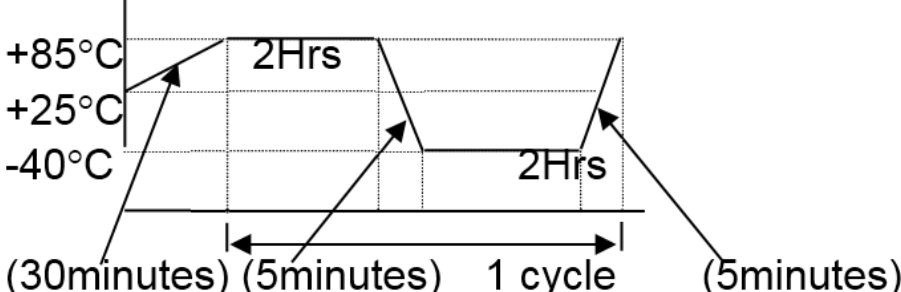
1	IMPEDANCE	$8 \pm 15\% \Omega$
2	SOUND PRESSURE LEVEL	95±3 dB(1W/10cm, in 1cc box) at ( AVG 1.0,1.18, 1.5 ) KHz, MEASUREMENT AS SHOWN IN FIGURE.1
3	FREQUENCY RESPONSE CURVE	SHOW IN FIGURE 2
4	RESONANCE FREQUENCY	950 ±20% Hz in 1cc box at 2.83Vrms
5	TOTAL HARMONIC DISTORTION (THD)	SHOW IN FIGURE 3 < 10% at 2KHz
6	BUZZ & RATTLE	DYNAMIC SPEAKER MUST BE FREE AUDIBLE NOISE AT 2.83Vrms, SINE WAVE BETWEEN 200Hz AND 2KHz FREQUENCY RANGE(in 1cc box).
7	INPUT POWER	(Nom./Max.):1.0W / 1.2W

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## 6. RELIABILITY TEST REQUIREMENTS.

After any following tests the S.P.L should not deviate more than  $\pm 3\text{dB}$  from initial value.

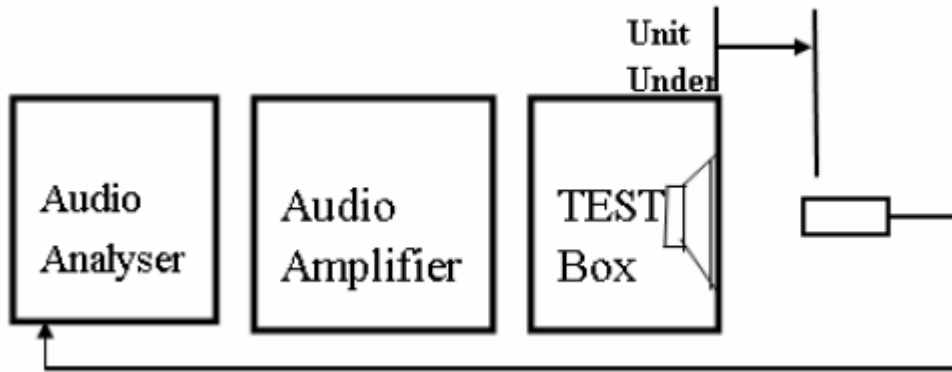
No.	ITEMS	TEST CONDITION
1.	High temp. Test	Temperature: $+85\text{ }^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Duration: 96 hours
2.	Low temp. Test	Temperature: $-40\text{ }^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Duration: 96 hours
3.	Humidity Test	Temperature: $+40\text{ }^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Relative Humidity: 90-95% RH Duration: 96 hours (recovery 6 hours)
4.	Thermal cycle test.	<p>Temperature: <math>-40^{\circ}\text{C} \pm 3^{\circ}\text{C}</math>      <math>+85^{\circ}\text{C} \pm 3^{\circ}\text{C}</math>            Duration: 2 hour      2 hour            Cycle: 12cycles (recovery 2hours)</p>  <p>(30minutes) (5minutes) 1 cycle (5minutes)</p>
5.	Vibration Test	Frequency: 10 ~ 55 ~ 10Hz Oct/min Amplitude: 1.5mm Duration: 2hours in each 3axes
6.	Drop Test	Height: 1.5m Mounted in a 100g fixture, drop samples 1.5m 2 drops on side(2*6), , 2 drops on each corner(2*4). Total 20 drops
7.	Load test	Input power: 1W, White noise 96hours in 1cc box.

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## 7. ELECTRICAL CHARACTERISTICS MEASUREMENT (FIGURE.1)

### MEASUREMENT CIRCUIT FOR DYNAMIC SPEAKER



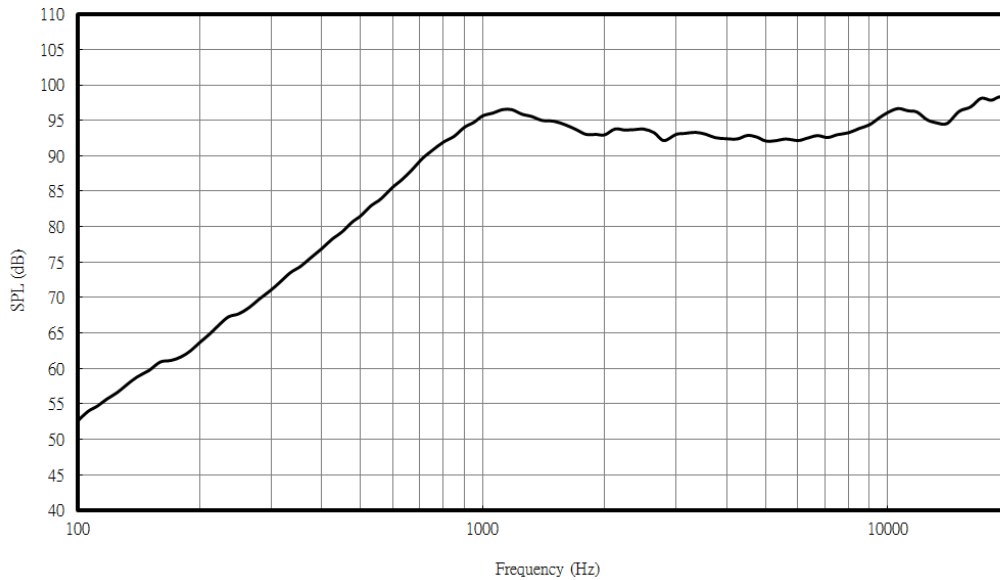
### MEASURING EQUIPMENT

NO	EQUIPMENT	REMARKS
1.0	UNIT UNDER TEST	SPEAKER
2.0	TEST BOX	OLE WOLFF STANDARD BOX
3.0	AUDIO POWER AMPLIFIER	CRATE AUDIO SPA300
4.0	ANALYZER	LISTEN SOUNDCHECK

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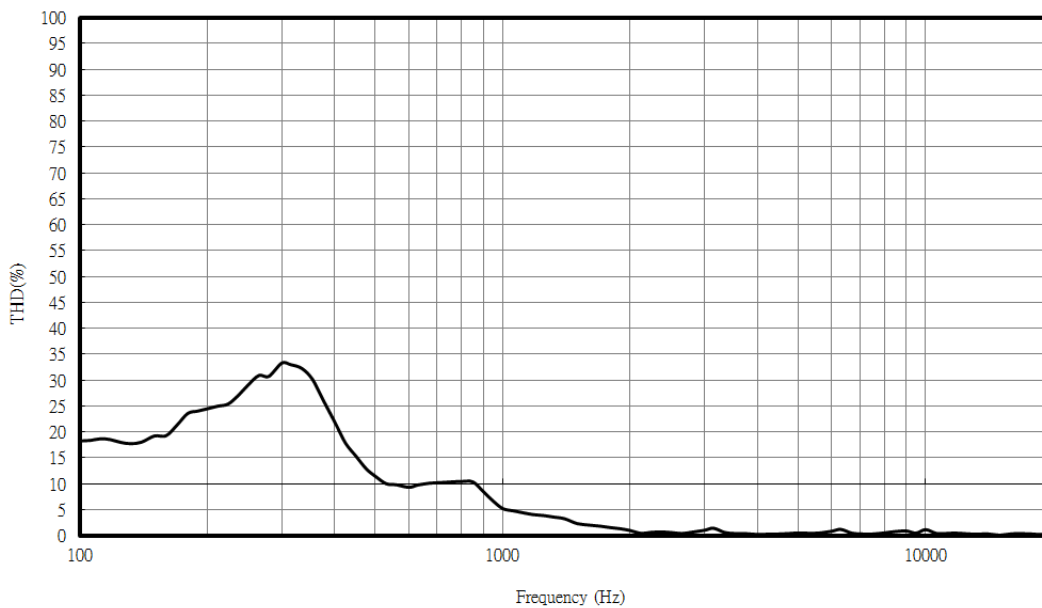
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**8. STANDARD FREQUENCY RESPONSE CURVE(FIGURE.2)**  
**2.83Vrms /10cm in 1cc BOX**



<b>Hz</b>	<b>300~1000</b>	<b>1060~4000</b>	<b>4250~10000</b>
<b>dB</b>	<b>±5</b>	<b>±4</b>	<b>±5</b>

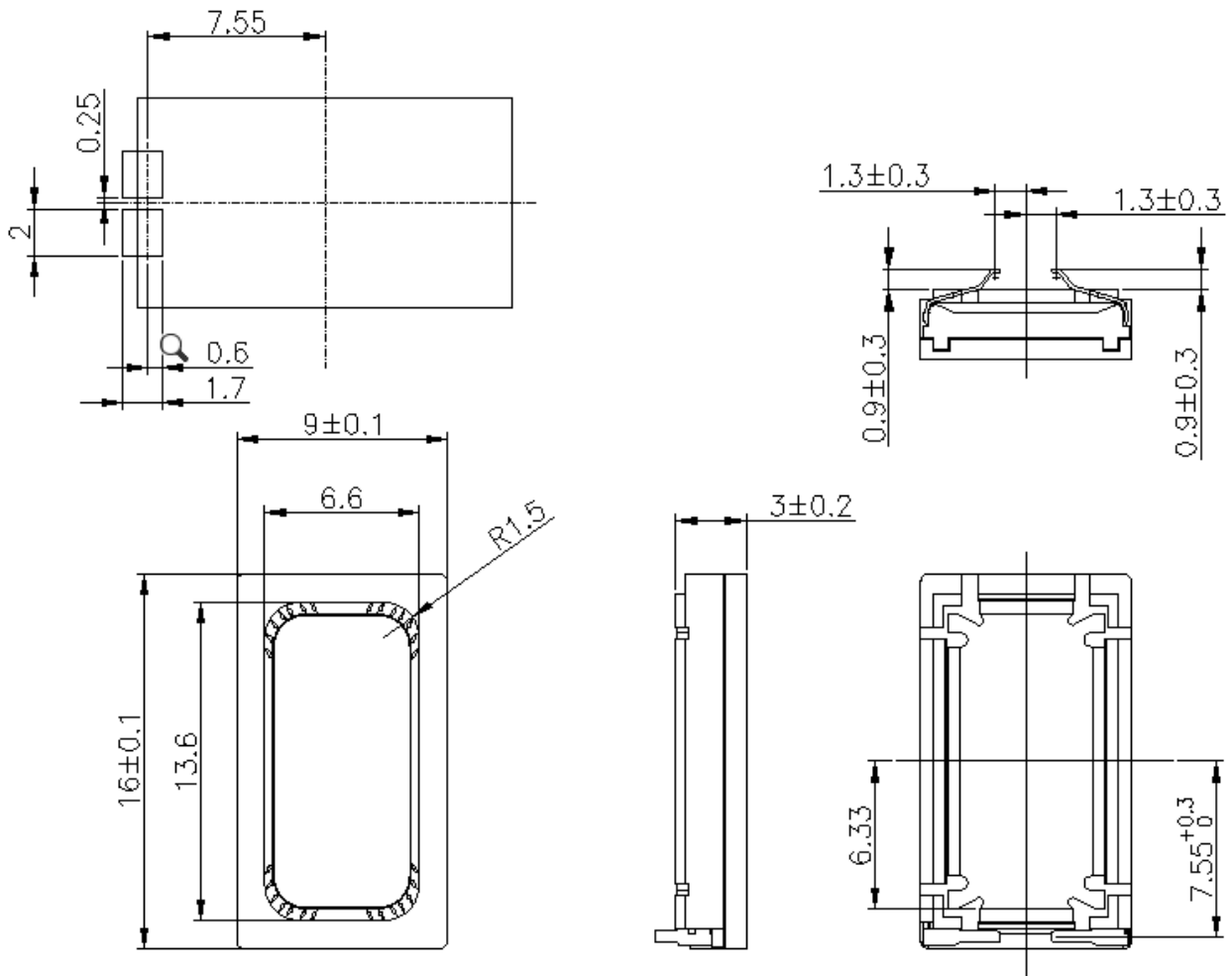
**9. STANDARD THD CURVE (FIGURE.3)**  
**2.83Vrms /10cm in 1cc BOX**



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### 10. OUTVIEW (FIGURE.4)



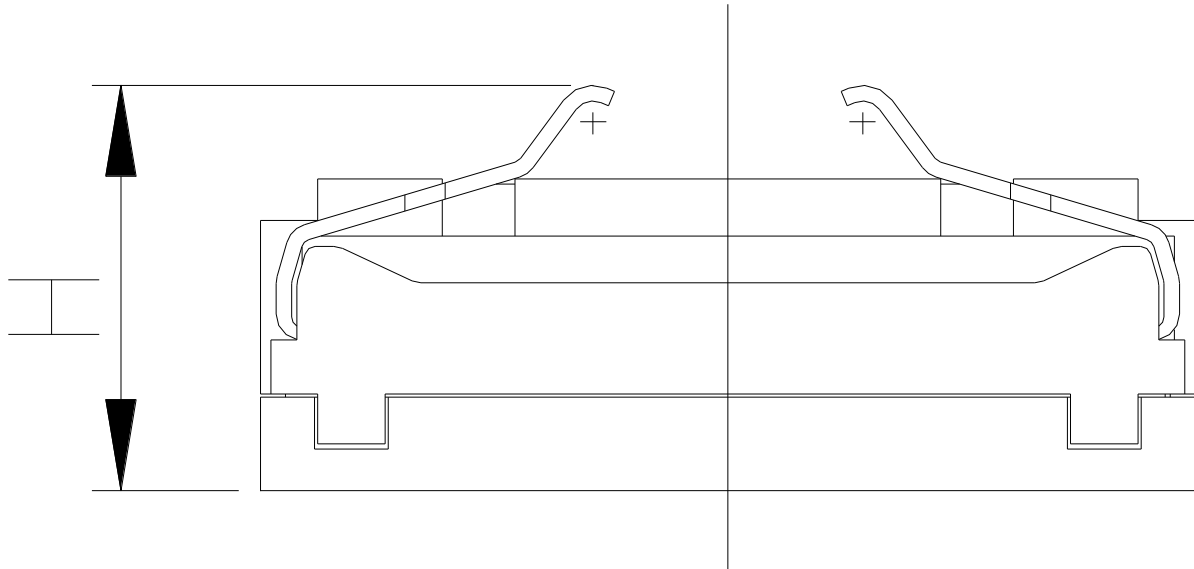
Plating: #EP 40-60u"ni 0.07u"Au

Unless otherwise specified, tolerance: ±0.2 (unit:mm)

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## 11. SPRING FORCE (FIGURE.5)

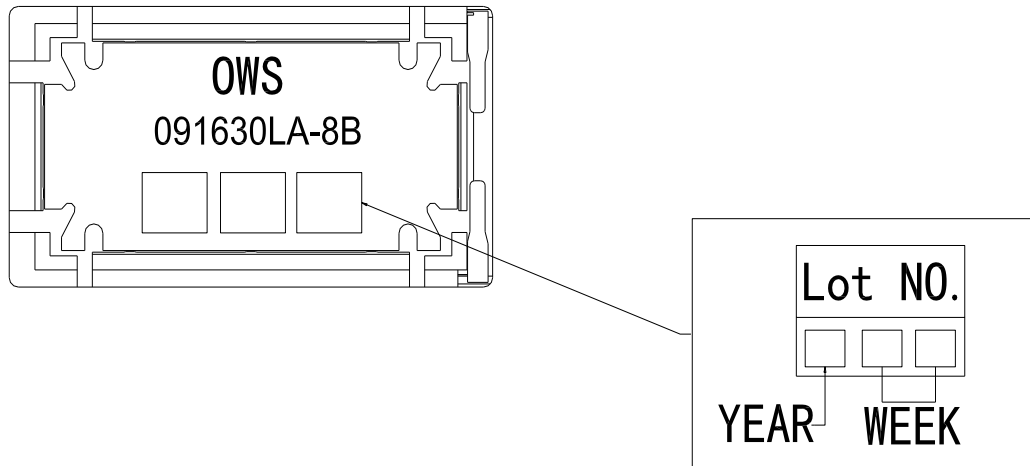


Spring state	Force (the single spring force)	Contact point displacement
Uncompressed	0 N	3.9 ± 0.3 mm
Start of working area	Min. 0.5 N	3.5mm
Fully compressed	Max.2.5N	3.0mm

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## 12. MARKING(FIGURE.6)



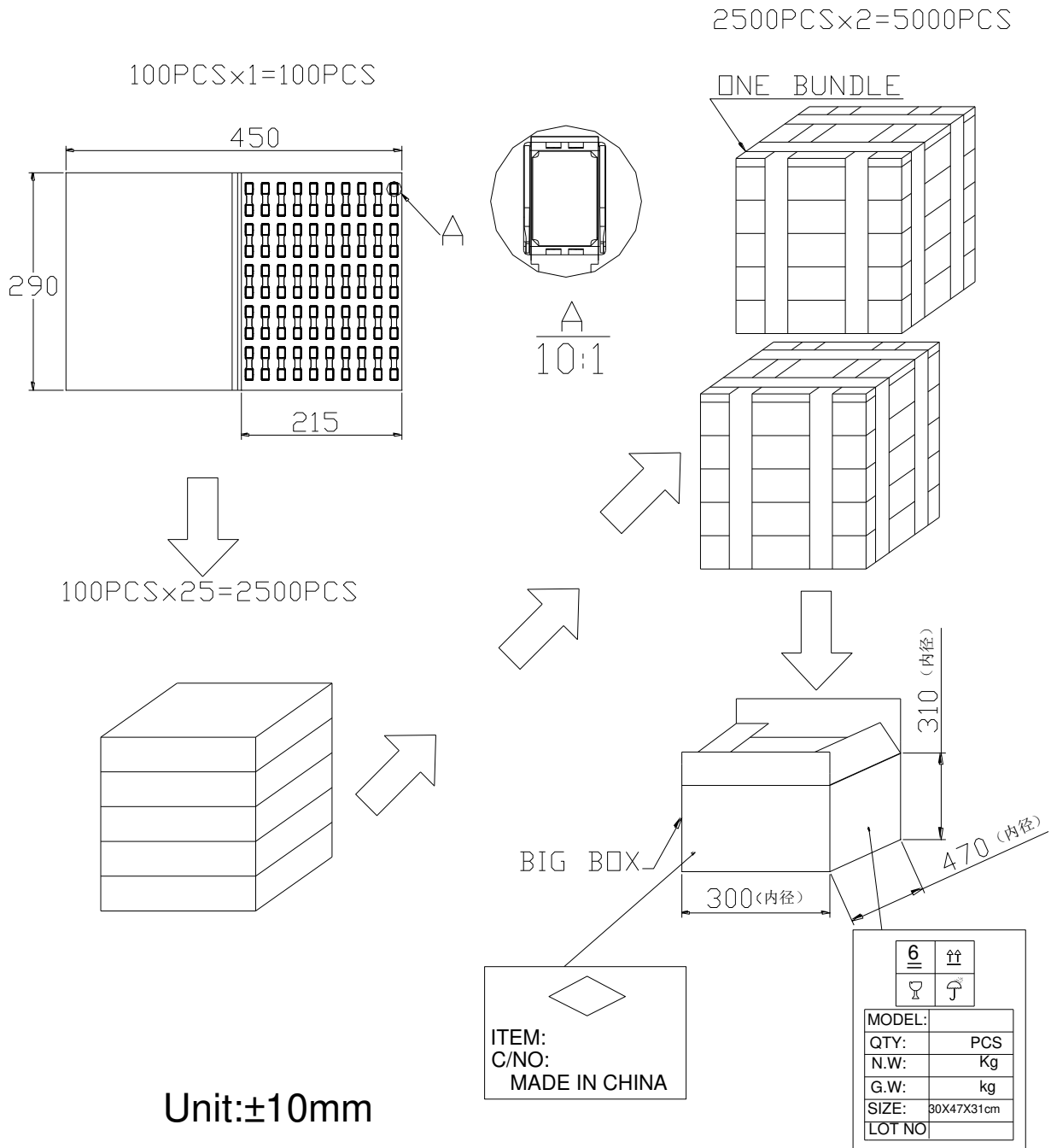
YEAR <sup>Ⓟ</sup>		WEEK <sup>Ⓟ</sup>	
year <sup>Ⓟ</sup>	marking <sup>Ⓟ</sup>	week <sup>Ⓟ</sup>	marking <sup>Ⓟ</sup>
2015 <sup>Ⓟ</sup>	5 <sup>Ⓟ</sup>	1 <sup>Ⓟ</sup>	01 <sup>Ⓟ</sup>
2016 <sup>Ⓟ</sup>	6 <sup>Ⓟ</sup>	2 <sup>Ⓟ</sup>	02 <sup>Ⓟ</sup>
2017 <sup>Ⓟ</sup>	7 <sup>Ⓟ</sup>	3 <sup>Ⓟ</sup>	03 <sup>Ⓟ</sup>
2018 <sup>Ⓟ</sup>	8 <sup>Ⓟ</sup>	4 <sup>Ⓟ</sup>	04 <sup>Ⓟ</sup>
2019 <sup>Ⓟ</sup>	9 <sup>Ⓟ</sup>	5 <sup>Ⓟ</sup>	05 <sup>Ⓟ</sup>
2020 <sup>Ⓟ</sup>	0 <sup>Ⓟ</sup>	↓	↓
2021 <sup>Ⓟ</sup>	1 <sup>Ⓟ</sup>		
2022 <sup>Ⓟ</sup>	2 <sup>Ⓟ</sup>		
Ⓟ	Ⓟ	50 <sup>Ⓟ</sup>	50 <sup>Ⓟ</sup>
Ⓟ	Ⓟ	51 <sup>Ⓟ</sup>	51 <sup>Ⓟ</sup>
Ⓟ	Ⓟ	52 <sup>Ⓟ</sup>	52 <sup>Ⓟ</sup>
Ⓟ	Ⓟ	53 <sup>Ⓟ</sup>	53 <sup>Ⓟ</sup>

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### 13. PACKING(Figure.7)



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