



# 产品规格书

PRODUCT SPECIFICATION

客户名称Buyer Name	
客户料号Buyer Part No.	
客户承认签章 Buyers Approval & Signatures	

文件编号Spec No.		版本	A/1
品名描述 Product Description	LRA 扁平振动马达 LRA Coin vibration motor		
型号Part No.	VG1040001D		
送样日期Date			
设计Designed by	审核Checked by	批准Approved by	
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2020.07.01	2020.07.01	2020.07.01	

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## 1. Revision History

修改号 Rev. No.	日期 Rev. Date	页码 Page No.	修改项目 Revised Item	更改原因 Reason
A/0	2019.04.27	/	产品颁布/ Release for Production	
A/1	2020.07.01	/	changed company name from JINLONG MACHINERY to VYBRONICS, changed part # from G1040001D to VG1040001D	Rebranding

## 2. Application

This specification provides structure, function and usage condition of Linear Vibrator used in mobile communication devices for silent alert.

## 3. Operating , Storage Temperature /Humidity Conditions

No	Item	Condition
3-1	Operating Temperature Range	- 25°C ~ + 70°C
3-2	Storage Temperature Range	- 40°C ~ + 85°C
3-3	Operating Humidity Range	Max 65% RH
3-4	Storage Humidity Range	Max 65% RH

## 4. Measurement Conditions

No	Item	Condition
4-1	Temperature	20 ± 5°C
4-2	Humidity	65 ± 20%RH
4-3	Rated Input Voltage	2.0Vrms AC, Sinewave
4-4	Input Voltage Range	0.1 ~ 2.0 Vrms AC
4-5	Input Frequency	150 ~ 200Hz (f <sub>0</sub> : 170±5 Hz)
4-6	Operating Attitude	Refer to Figure 1

## ※ Measurement Method

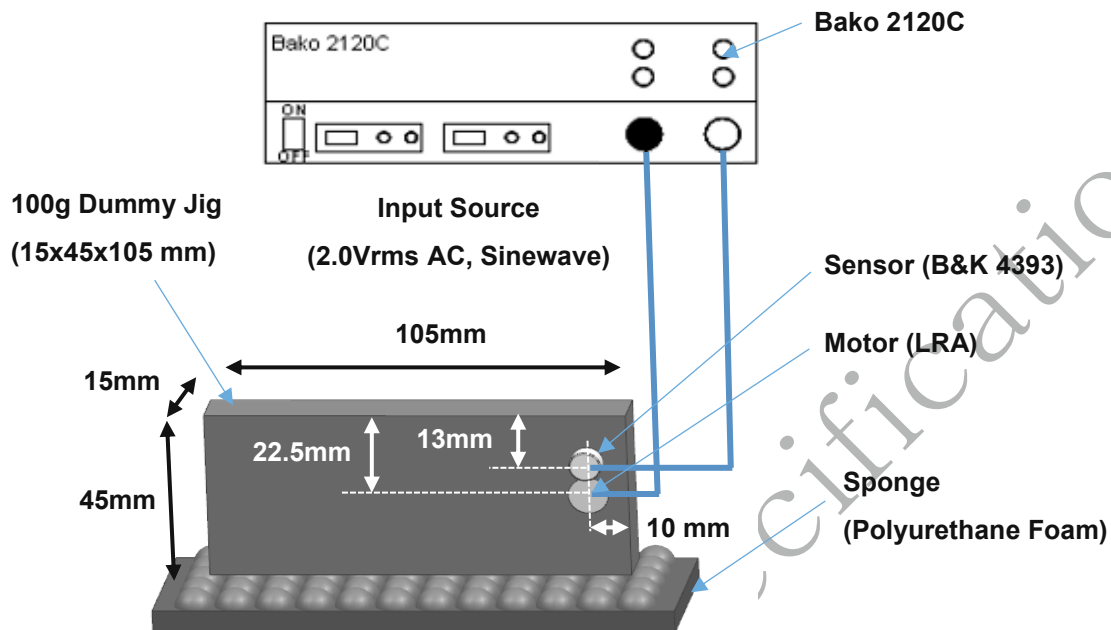


Figure 1. An Example of Measurement Method of Linear Vibrator

### Position of Linear Vibrator and Accelerometer (Refer to Figure 1)

- Linear Vibrator should be mounted to vibrate 15mm direction (y-direction) of Jig.
- Accelerometer also should be installed to measure y-direction vibration of Jig

### Position of Dummy Jig

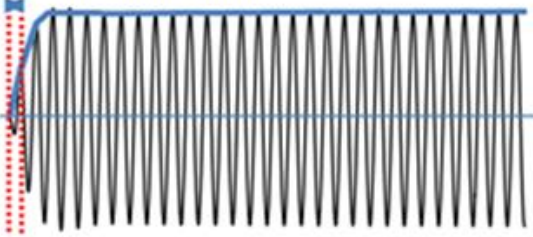
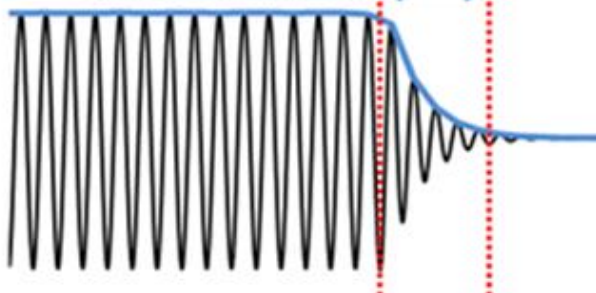
- 15mm\*105mm plane of Dummy Jig should be located on Sponge
- At measurement of acceleration, Dummy Jig should be stabilized

### Measurement of Acceleration

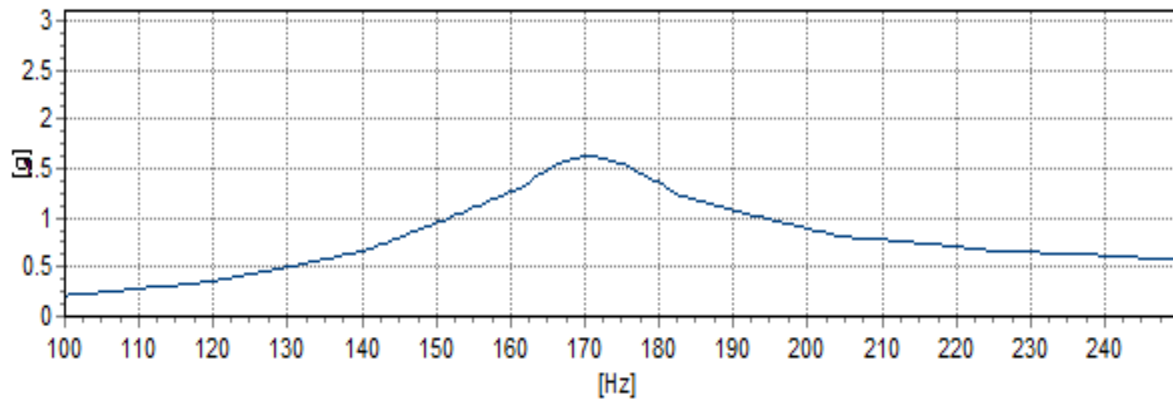
- Acceleration should be measured 2~3 second later after input source is applied
- For the precise measurement, Acceleration should be measured 3 times and adopted average value on each Linear Vibrator

## 5. Specifications

No	Item	Specification
5-1	Resistance	<b>13.8Ω ± 15%</b>
5-2	Rated Current	<b>Max 170 mArms</b> (Input Source : 2.0Vrms AC, Sinewave)
5-3	Acceleration	<b>Min 0.75 Grms @ 150Hz</b> <b>Min 0.75 Grms @ 200Hz</b> <b>Min 1.50 Grms @ f0</b> (Input Source : 2.0Vrms AC, Sinewave)
5-4	Frequency Characteristics	<b>Refer to Graph 1</b>
5-5	Motor Height	<b>4.05 ± 0.05mm</b> - Put the Case of the motor on Jig after zero setting and measure center point of bracket by Height Gauge.
5-6	Noise	<b>Max. 60 dB(A)</b> - 10cm distance from microphone, (Input Source : 2.0Vrms AC, Sinewave)
5-7	Noise by mechanical touch (Noise_T)	<b>Max 35dB</b> (Input Source : 2.0Vrms AC, Sinewave) - This is full inspection method in the mass production instead of measurement of 5-6 Noise - Measurement method · Equipment : Bako 2120C · It measures Noise touch(Mechanical touch) through vibration signal by acceleration sensor
5-8	Insulation Resistance	<b>Min 10 MΩ</b> (Input 100V DC, the insulation resistance between the vibrator case and terminal)

No	Item	Specification
5-9	Rising Time	<p><b>Max 10msec</b></p> <p>- The time reaching to 50% of normal acceleration from power on</p> <p><b>Rising Time(msec)</b></p> 
5-10	Falling Time	<p><b>Max 50msec</b></p> <p>- The time reaching to 10% of normal acceleration from power off</p> <p><b>Falling Time(msec)</b></p> 

Preliminary



Graph 1. Frequency Characteristics

Preliminary Specification



## 6. Reliability Test Condition

No	Item	Condition
6-1	Life test	Operating at rated input voltage and input frequency for 1,000,000 cycles. 1 cycle is 2 Sec On, 1 Sec Off.
6-2	Thermal shock test	- 40°C ~ 85°C in each of 2Hrs(1cycle), Total 15 cycles. Transition time is 5 minutes max. After the test, the Vibrator should be measured after room-temperature storage for 4Hrs.
6-3	High temperature storage test	+70°C, 168Hrs, After the test, the Vibrator should be measured after room-temperature storage for 4Hrs.
6-4	Low temperature storage test	-30°C, 168Hrs, After the test, the Vibrator should be measured after room-temperature storage for 4Hrs.
6-5	Static humidity test	+50°C, 95%RH, 120Hrs, After the test, the Vibrator should be measured after room-temperature storage for 4Hrs.
6-6	Vibration test	Vibrator that is attached to a 160g dummy jig is vibrated with 2.2G, 10~55Hz/min for 10min in each of X,Y,Z axis..
6-7	Mechanical shock test	The Vibrator that is attached to a 160g dummy jig is dropped to a steel floor 30 times(6 face, 5 times in each of X,Y,Z axis) from 1.5m in height.

**Due to this LRA's wide bandwidth , the use of Haptic drivers that make use of "auto-resonance" detection can not be used. Please use the [Dongwoon Anatech Part # DW7914A](#) or equivalent.**

**Judgement**

① After test, The following specifications must be satisfied.

- Acceleration : Within initial Value  $\pm$  30%
- Rated Current : Max 170 mA rms
- Noise\_T : Max. 35dB

② There should be no abnormalities in appearance and structure.

Preliminary Specification

## 7. Cautions for Use

- (1) Do not press the product with more than 0.5Kgf or drop it.  
It can cause the transformation of performance or external appearance.
- (2) Do not use under the following conditions. It may cause a decline in performance
  - Do not drop into fluid (such as water, alcohol etc.)
  - Do not keep at high temperature or high humidity for extended periods of times
  - Do not use near gases which cause erosion
  - Please refrain from operating the vibrator near magnetic devices.
- (3) The vibrator has a strong magnet. So please be aware that it has a magnetic force on the surface of the bracket.
- (4) To optimize the vibration force, Rated frequency and voltage could be changed as to assemble condition.
- (5) Please refer to the packaging drawing. It can be modified by the request of the user.
- (6) If any problems are occurred, Both the user and Vybronic shall try to solve the problem by mutual agreement and on reflection of the specification sheet.
- (7) The storage condition is 5°C~35°C, 15%~65% RH, 1year about packing.

### 8. Drawing

