



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/3 |
| 品名描述 Product Description | 线性振动马达 LINEAR VIBRATION MOTOR | | |
| 型号Part No. | VLV101040A | | |
| 送样日期Date | | | |
| 设计Designed by | 审核Checked by | 批准Approved by | |
| | | | |
| 2022.08.23 | 2022.08.23 | 2022.08.23 | |

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Contents of Specification

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1. Records of Revisions

| Rev. No. | Rev. Date | Page No. | Revised Item | Reason |
|----------|------------|----------|---|-------------------|
| A/0 | 2019.10.25 | / | Release for Production | |
| A/1 | 2020.07.01 | / | changed company name from JINLONG MACHINERY to VYBRONICS, changed part # from LV101040A to VLV101040A | Rebranding |
| A/2 | 2021.02.24 | / | Added "Reliability Test" and "Application Recommendation" | Infomation update |
| A/3 | 2022.08.23 | / | Update temperature range | |
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2. Applications

These specifications provide structure, function and usage condition of Linear Vibration Motor used in mobile communication devices for silence call.

3. Storage, Operating Temperature Conditions

| No | Item | Condition |
|----|-----------------------------|-----------------|
| 1 | Operating Temperature Range | - 25°C ~ + 70°C |
| 2 | Storage Temperature Range | - 40°C ~ + 80°C |
| 3 | Operating Humidity Range | Max 65% RH |
| 4 | Storage Humidity Range | Max 65% RH |

4. Measurement Conditions, Input Voltage

| NO | Item | Condition |
|----|---------------------|------------------------------|
| 1 | Temperature | 20 ± 5°C |
| 2 | Humidity | 65 ± 20 %RH |
| 3 | Rated Input Voltage | 2.5 Vrms, AC, Sinewave |
| 4 | Input Voltage Range | 0.1 ~ 2.5 Vrms AC |
| 5 | Input Frequency | Alert : 140 ~ 300Hz |
| 6 | Operating Attitude | Refer to Figure 1 / Figure 1 |

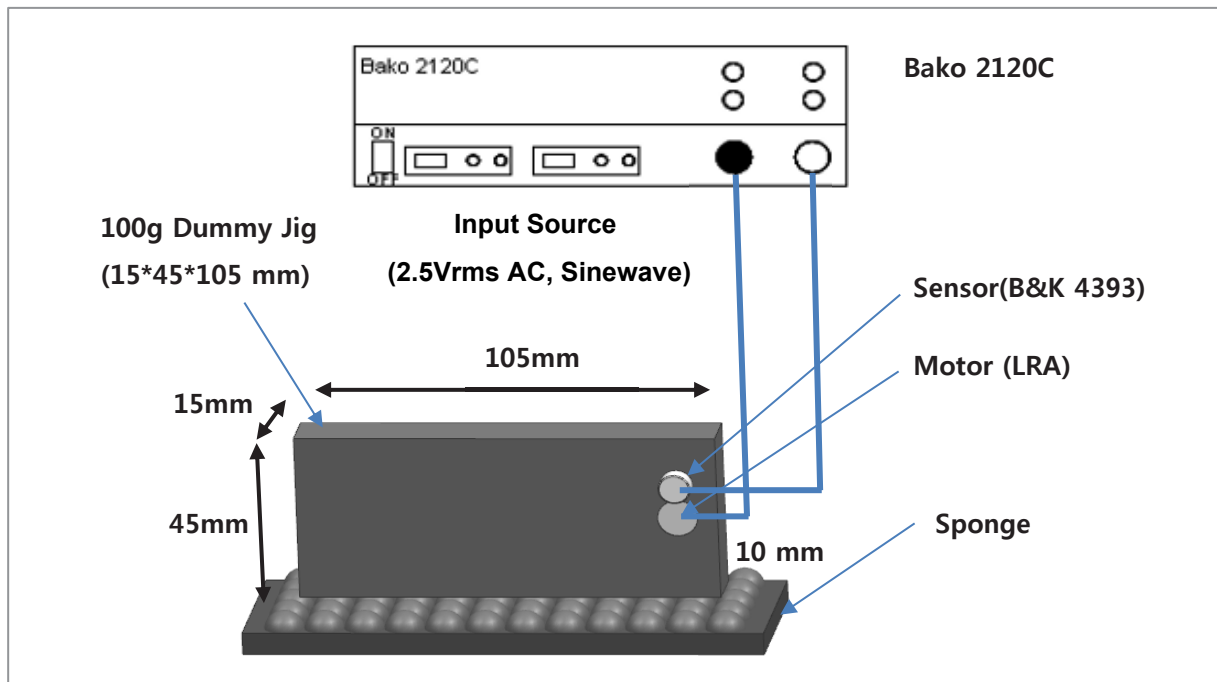
※ Test Conditions


Figure 1. Measurement Method of Linear Vibration Motor

■ Linear Vibration Motor/ Accelerometer mounting position (refer to Figure 1)

Linear Vibration Motor / Accelerometer

- Linear Vibration Motor should be mounted to vibrate 15mm direction (y-direction) on Dummy Jig
- Also, Accelerometer should be mounted to measure y-direction vibration on Dummy Jig

■ Dummy Jig position/ Dummy Jig

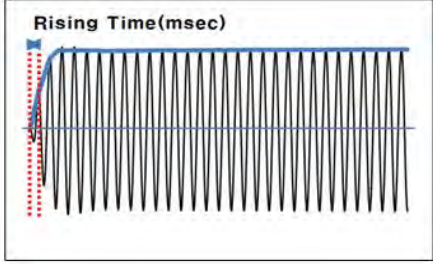
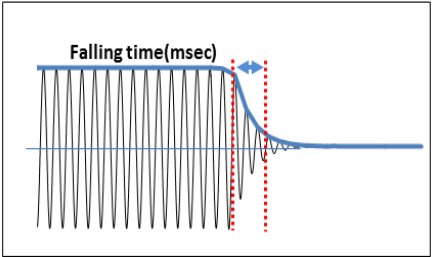
- 15mm*105mm plane of Dummy Jig should be located on Sponge
- At measurement of acceleration, Dummy Jig should be stabilized.

■ Measurement of Acceleration

- Acceleration of Linear Vibration Motor should be measured 2~3 second later when source inputed (2.5Vrms AC, Sinewave)
- For the precise measurement, Acceleration of Linear Vibration Motor is average data (repeat 3 times each Linear Vibration Motor)

5. Specifications

| NO | Item | Specification |
|----|--|--|
| 1 | Resistance | 6.0 ~ 7.5 Ohm |
| 2 | Rated Current | Max 350mA (Input Source : 140Hz, 2.5Vrms AC, Sinewave) |
| 3 | Acceleration | Min 0.9 Grms @140Hz, 300Hz Min 1.9 Grms @Sweep(120~400Hz) Max 2.75 Grms @~170Hz (Input Source : 2.5Vrms AC, Sinewave) |
| 4 | Frequency Characteristics | Refer to Figure 2 |
| 5 | Noise | Max 50 dB(A) - Back Ground Noise: Max. 30dB(A) - 100g Steel Jig - 10cm distance from microphone (Input Source : 140Hz/300Hz, 2.5Vrms AC, Sinewave) |
| 6 | Noise by mechanical Touch (Noise-T) | <ul style="list-style-type: none"> ■ SPEC - Noise-Touch : Max 35dB (Input Source : 140Hz/300Hz, 2.5Vrms AC, Sinewave) |

| NO | Item | Specification |
|----|---|---|
| 7 | Sweep Noise by mechanical Touch (Sweep Noise-T) | ■ SPEC - Noise-Touch : Max 35dB (Input Source : 2.5Vrms AC,400~120Hz Down Sweep, Sinewave) |
| 8 | Insulation Resistance | Min 10 Mega Ohm (100V DC input, between Case and Lead Wire) |
| 9 | Rising Time | Max 10msec @140Hz Time to reach 50% level of normal vibration  |
| 10 | Falling Time | Max 40msec @140Hz Time to reach 10% level of normal vibration after power off  |

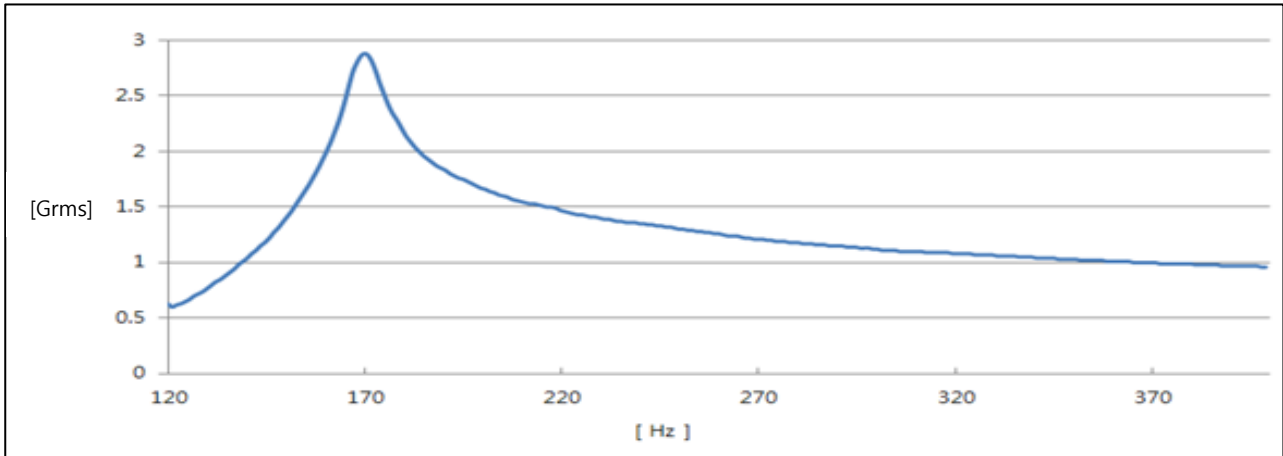


Figure 2. Frequency Characteristics

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.

6. Reliability Test Condition

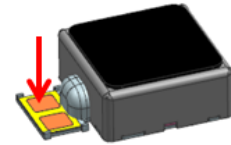
| No | Item | Condition |
|----|-------------------------------|---|
| 1 | Life test | Operating at rated input voltage(2.5Vrms AC, Sinewave), input frequency(155Hz) for 500,000 cycles. (2 sec On, 1sec Off) |
| 2 | Thermal shock test | - 40°C ~ 85°C in each of 2Hrs(1cycle), Total 15 cycles. Transition time is 5 minutes max. After the test, the Vibrator should be measured after room-temperature storage for 4Hrs. |
| 3 | High temperature storage test | +70°C, 168Hrs, After the test, the Vibrator should be measured after room-temperature storage for 4Hrs. |
| 4 | Low temperature storage test | -30°C, 168Hrs, After the test, the Vibrator should be measured after room-temperature storage for 4Hrs. |
| 5 | Static humidity test | +50°C, 95%RH, 120Hrs, After the test, the Vibrator should be measured after room-temperature storage for 4Hrs. |
| 6 | 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. |

Judgement

- ① After test, The following specifications must be satisfied.
 - Acceleration : Within initial Value \pm 30%
 - Rated Current : Max 350 mA rms
- ② There should be no abnormalities in appearance and structure.

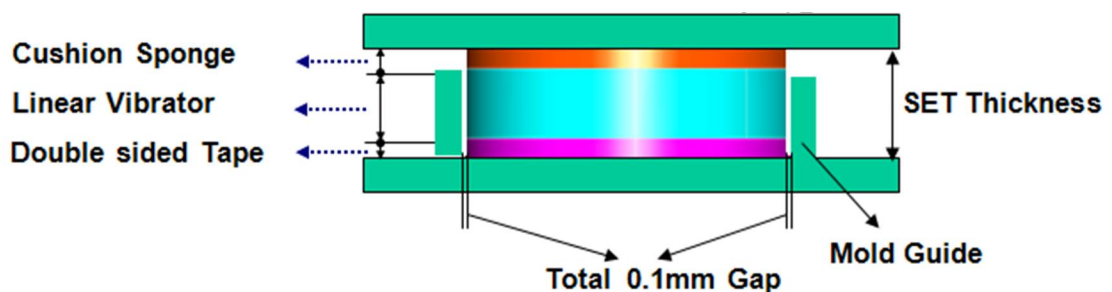
7. Cautions for Use

- (1) Do not press the product with more than 0.3kgf or drop it.
It can cause the transformation of performance or external appearance.
(In particular, if the force exerted downward in Bracket)

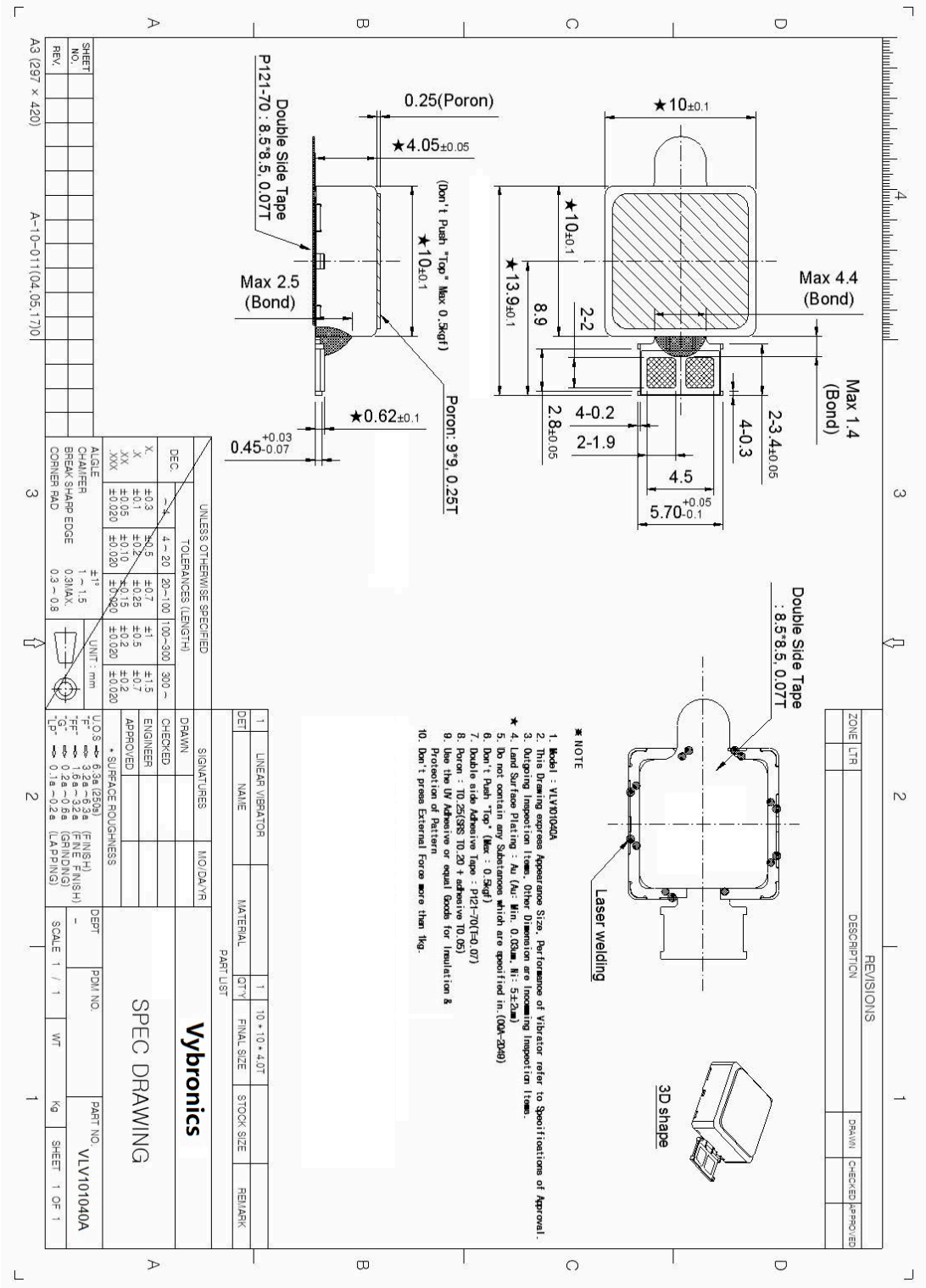


- (2) Don't use under the following conditions. It may cause a decline in performance.
- Do not drop into fluid (such as: water, alcohol, etc.)
 - Do not keep at high temperature or high humidity for extended periods of times
 - Do not use near gases which cause erosion
 - Please refrain from operating 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) Packing: Please refer to the packaging drawing.
(It can be modified by the request of the users.)
- (6) If any problems occur, 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. Application Recommendation

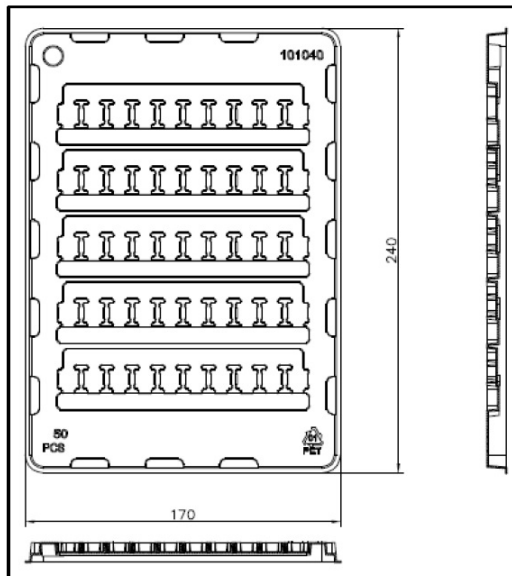
| NO | Contents | | | | | | | | | | | | | | | | | | | | | | |
|----------|---|-------|-----------|---------|--------|---------|---------|------|------|-----------|--|----------|------|------|--|------|------|------|--|-------|------|------|--|
| | <p><Mounting example></p> <ul style="list-style-type: none"> - It recommends to that it attaches in double side tape & cushion sponge in the top and bottom of Linear vibrator. (Prevention of drop damage and Noise) - The gap between vibrator and mold-guide is recommended 0.1mm. - The part which UV bond attaches must be escaped so that it is not interfered. <div style="text-align: center;">  </div> <p>◆ Mounting Example</p> <table border="1"> <thead> <tr> <th>Unit</th> <th>Before</th> <th>After</th> <th>Remark</th> <th>Picture</th> </tr> </thead> <tbody> <tr> <td>Cushion</td> <td>0.35</td> <td>0.20</td> <td>30~60% 压着</td> <td rowspan="4"></td> </tr> <tr> <td>Vibrator</td> <td>4.05</td> <td>4.05</td> <td></td> </tr> <tr> <td>Tape</td> <td>0.10</td> <td>0.10</td> <td></td> </tr> <tr> <td>Total</td> <td>4.48</td> <td>4.35</td> <td></td> </tr> </tbody> </table> | Unit | Before | After | Remark | Picture | Cushion | 0.35 | 0.20 | 30~60% 压着 | | Vibrator | 4.05 | 4.05 | | Tape | 0.10 | 0.10 | | Total | 4.48 | 4.35 | |
| Unit | Before | After | Remark | Picture | | | | | | | | | | | | | | | | | | | |
| Cushion | 0.35 | 0.20 | 30~60% 压着 | | | | | | | | | | | | | | | | | | | | |
| Vibrator | 4.05 | 4.05 | | | | | | | | | | | | | | | | | | | | | |
| Tape | 0.10 | 0.10 | | | | | | | | | | | | | | | | | | | | | |
| Total | 4.48 | 4.35 | | | | | | | | | | | | | | | | | | | | | |
| 1 | | | | | | | | | | | | | | | | | | | | | | | |

9. Spec Drawing



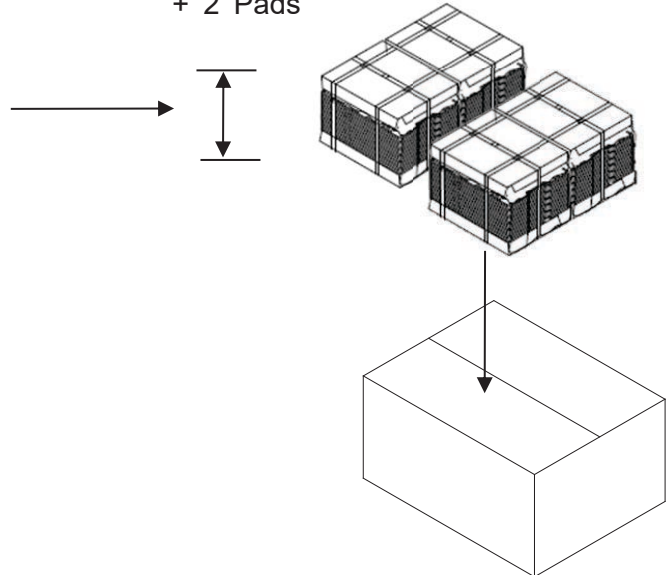
10. Packing

[Pet Tray]



20(21) Trays

+ 2 Pads



[Packing quantity]

- 50ea/ Tray
- 1 Carton box
 - 80(84) trays with a dummy tray on the top
 - 4000ea/ carton box

| No | Material | Size | Q'ty/Lot | How to Pack |
|----|---------------|--------------|----------|---|
| 1 | PET Tray | 170x240x10.9 | 80(84) | ● 80(84) trays are packed with packing vinyl. |
| 2 | Carton Box | 510x350x175 | 1 | ● The trays are bound with pad and pp band |
| 3 | Pad | | 8 | ● One bound trays are put to a carton. |
| 4 | Packing vinyl | | 4 | ● Lot Numbering |
| 5 | PP-band | | - | ● Delivery |
| | | | | ● Loading Capacity : 12 |