Vybronics

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	线性振动马达 LINEAR VIBRATION MOTOR			
型号Part No.	VLVM061930B-L20			
送样日期Date				
设计Designed by	审核Checked by		批准Approved by	
2020.07.01	2020.07.01		2020.07.01	

www.vybronics.com

sales@vybronics.com

重要提示 **IMPORTANCE NOTES:**

1. 如对电机的性能和/或寿命有任何争议，仅基于此规格书做出判断。
    If there is any argument on motor performance and/or life, judgment is to be made based on this specification only.

2. 客户方有责任确认该电机能满足您的使用要求。
    Customer has the responsibility to verify that the motor can meet the requirement of your application.

3. 如果贵公司未提供技术规格，该文件将详细叙述与贵公司商定的技术规格。
    In the event that an official specification is not being presented by customer; this document will specify the agreed technical specification.

4. 收到此规格书后，贵司应于下订单之前将规格书副本签回以示贵司已确认。如贵司未能在规定时间内签回副本，我司将认为贵司已收到并承认该规格书。
    After the receipt of this specification, customer has to send a signed copy to Vybronics as a confirmation before placing purchase order In the event of no receipt of signed copy before required date, the specification will suppose being received and acknowledged.

更 改 记 录
Revision History

修改号 Rev. No.	日期 Rev. Date	页码 Page No.	Revised Item	更改原因 Reason
A/0	2017.05.31	/	产品颁布/ Release for Production	
A/1	2020.07.01	/	changed company name from JINLONG MACHINERY to VYBRONICS, changed part # from LVM061930B-L20 to VLVM061930B-L20	Rebranding

1. 适用范围/Application

本说明书适用于线性电机VLVM061930B-L20

This specification applies to Linear Motor VLVM061930B-L20

2. 结构/Configuration

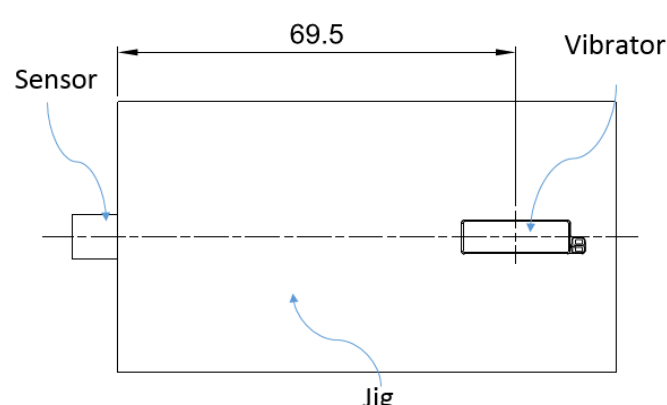| 序号 NO.	项目 Item	内容 Contents
2-1	外形尺寸 Motor structure	19mm×6mm×3mm（长×宽×高） 19mm×6mm×3mm（Length × Width × Height）
2-2	重量 Weight	约 2.6 克 2.6g（Approx.）

3. 基本规格/Basic Specifications

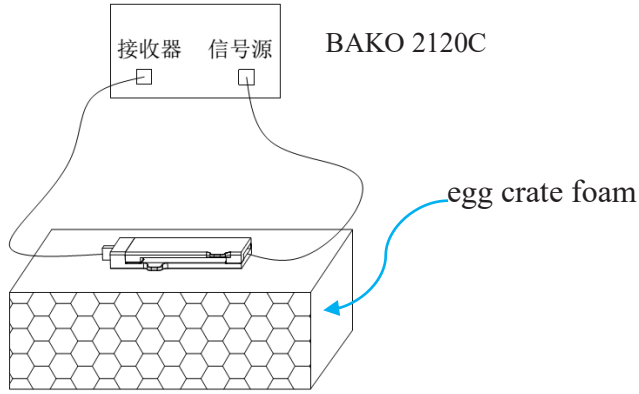| 序号 NO.	项目 Item	规格 Specification	条件/备注 Condition / Remark
3-1	操作驱动 Operation driver	信号发生器signal generator	频率为F0 点共振频率频率震动 @ F0，refer to resonant frequency
3-2	额定电压 Rated voltage	2.0Vrms	正弦波 Sinewave
3-3	额定电流 Rated current	135mA Max	输入额定电压 2.0Vrms or 2.35Vrms With rated voltage
3-4	内阻 Internal resistances	$15\pm1.5\Omega$	
3-5	Insulation resistance 绝缘阻值	Min 10 MΩ	在端子和外壳之间通 100V DC 100V DC between terminal and housing
3-6	Operating conditions 使用环境	-20℃~70℃	常规湿度，无水汽凝结 ordinary humidity ,no condensation of moisture
3-7	Storage conditions 贮存环境	-40℃~80℃	常规湿度，无水汽凝结 ordinary humidity ,no condensation of moisture

4. 性能/Performance

序号 NO.	项目 Item	规格 Specification	条件/备注 Condition / Remark
4-1	频率 Frequency	180±10Hz	参考 5.0 性能测试条件 Refer to test conditions
4-2	振动量 Acceleration	≥0.9Grms @ 100g Jig 2.0Vrms	参考性能测试条件,在F0 点的振动量 Refer to test conditions Acceleration @ F0
4-3	启动时间 Rise Time	100ms Max	振动量从 0 上升至 90%的时间 From 0 to 90% acceleration
4-4	停止时间 Fall Time	120ms Max	振动量从 100%下降至 10%的时间 Fall from 100% to 10% acceleration
4-5	噪音	≤45dBA	距离电机 10cm处测量

	Noise		10cm from vibrator

5. Test Conditions/性能测试条件

序号 NO.	项目 Item	测试条件 Test Conditions
5-1	温度 Temperature	25±2℃
5-2	湿度 Humidity	65±20％ RH
5-3	测试机器和驱动信号 Tester and Test Driver	BAKO tester 2120C，以F0 频率驱动 signal generator frequency @ F0
5-4	驱动电压 Input Voltage Range	2.0Vrms or 2.35Vrms
5-5	测试工装材质及重量 Material & weight of jig	铝合金 100 克 Aluminum 100g
5-7	电机及传感器相对测试工装的位置 Position of vibrator and sensor in test jig	传感器在测试工装的左侧壁上，并使其位于测试工装的中心轴线上。 The sensor is on the left wall of the testing jig, also is at the center axis. 电机在测试工装中的位置需与传感器在同一轴线上，电机中心与传感器的距离为 69.5mm。 The location of the motor in test jig should be at the same axis with sensor, and the distance between motor center and sensor is 69.5mm. ![Diagram showing sensor on left, vibrator on right, distance 69.5 between them, mounted on Jig] 69.5　Vibrator Sensor Jig
5-8	固定方式 Fix method	传感器：螺纹刚性连接 Sensor: connect with test Jig by screw 电机/ Motor： 通过双面胶将电机底部固定在工装表面。双面胶型号为 Nitto Denko 5603BN Fixing the motor bottom on the jig face with double-sided glue tape. (Model of the tape: Nitto Denko 5603BN) 通过电机上方和工装间的泡棉，压紧电机。泡棉型号为：3M 467MP Tighten the motor with the foam between motor and jig. (Model of the foam: 3M 467MP)

5-9	测试方法 Test method	将测试工装置于鸡蛋棉表面的正中间。信号源输出信号使电机振动，传感器接受振感，并将信号传至接收器 Place the testing jig at the right center of eggs cotton. Signal from the signal source vibrates motor, and sensor receive the vibration and send the signal to receiver. 接收器 信号源 BAKO 2120C egg crate foam 鸡蛋棉规格为：20cm×20cm×6.5cm（长度×宽度×高度） Size of the egg crate foam:20cm×20cm×6.5cm（L×W×H）

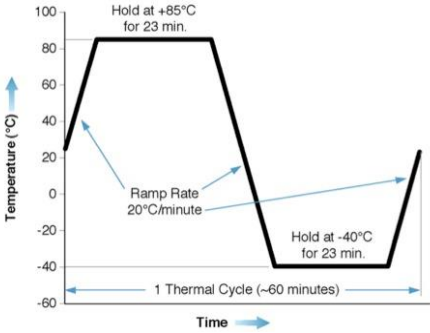## 6. Reliability Test/可靠性试验

每项试验测试 16 只电机，可靠性试验后，所有样品必须符合以下标准：

Test 16 pcs for each test. After reliability test, all sample must be meet the requirement as below:

   a) 频率变化量在原始频率±5%以内/Resonant frequency: within±5% of original

   b) 加速度/Acceleration: ≥0.80 Grms@2Vrms

   c) 噪音/Noise: ≤50dBA噪音

备注：试验后，需常温下至少放置四小时后测试电机性能。

NOTE: Test the function after at least 4 hours exposure in ordinary temperature.

序号 NO.	项目 Item	测试条件 Test Conditions
6-1	常温寿命测试 Life test	以 0.5 秒开/0.5 秒关的周期测试 240 个小时。 Testing 240hours while motor is cycled at 0.5s on and 0.5s off

6-2	热循环 Thermal Cycling	从-40℃到 85℃，循环 240 次，不控制湿度，每次循环 1 个小时。细节如下所示： Cycle 240 times from -40°C to 85°C, uncontrolled RH. Each cycle is 1 hour. See details below: 电机在测试过程中不通电。 The motor should not be powered during the test.
6-3	高温高湿试验 Non Operational Heat Soak	在温度为85℃，相对湿度为85%的条件下，放置168小时。电机在测试过程中不通电。 168 hours non-operational heat soak at85°C/85%RH. The motor should not be powered during the test.
6-4	跌落测试 Standard Drop test	使用规定的跌落夹具，以 6 面， 4 角的方式使电机固定，从 1.5 米高度落下，各 2 次。参照测试顺序，使用一个可调节高度的跌落仓，从距离花岗岩表面 50 厘米的托架上，放开夹具。电机在测试过程中不通电。 Drop from 1.5m in specified drop buck onto 6 face planes and 4 corners 2 times. Follow test order, use a controlled drop tower and release the buck from the guide carrier 50cm from the granite surface. The motor should not be powered during the test.

NOTE:

● **跌落冶具/Drop buck:**

使用 6000 系列铝合金制成跌落冶具，总重量为 124±5 g(包括振动电机和装配螺钉)。

Drop buck should be made from 6000 series aluminum with a total mass of 124 ± 5g including the motor and assembly screws.

● **测试顺序/Test order :**

a) 正面/Front Face

b) 背面/Rear Face

c) 左面/Left Face

d) 右面/Right Face

e) 上面/Top Face

f) 底部/Bottom Face

g) 右上角：27±5 度/Upper Right Corner: 27 ± 5 degrees

h) 左上角：27±5 度/Upper Left Corner: 27 ± 5 degrees

i) 左下角：27±5 度/Lower Left Corner: 27 ± 5 degrees

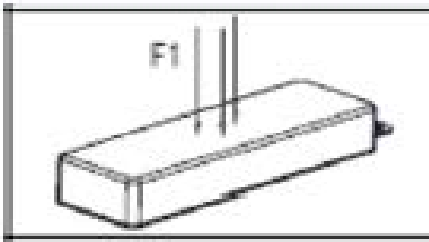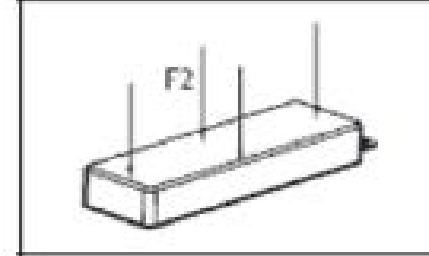j) 右下角：27±5 度/Lower Right Corner: 27 ± 5 degrees
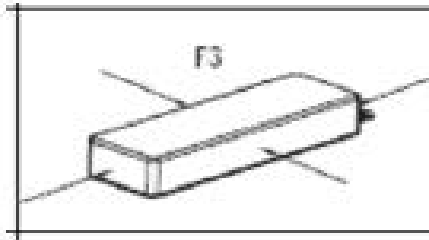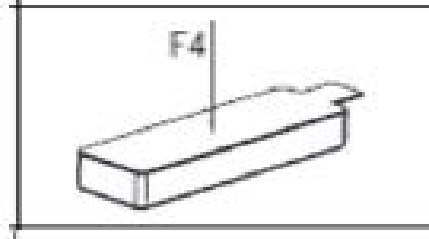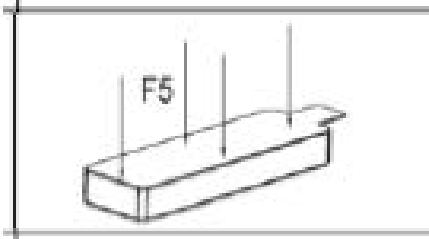
7. 外观图/Outline drawing
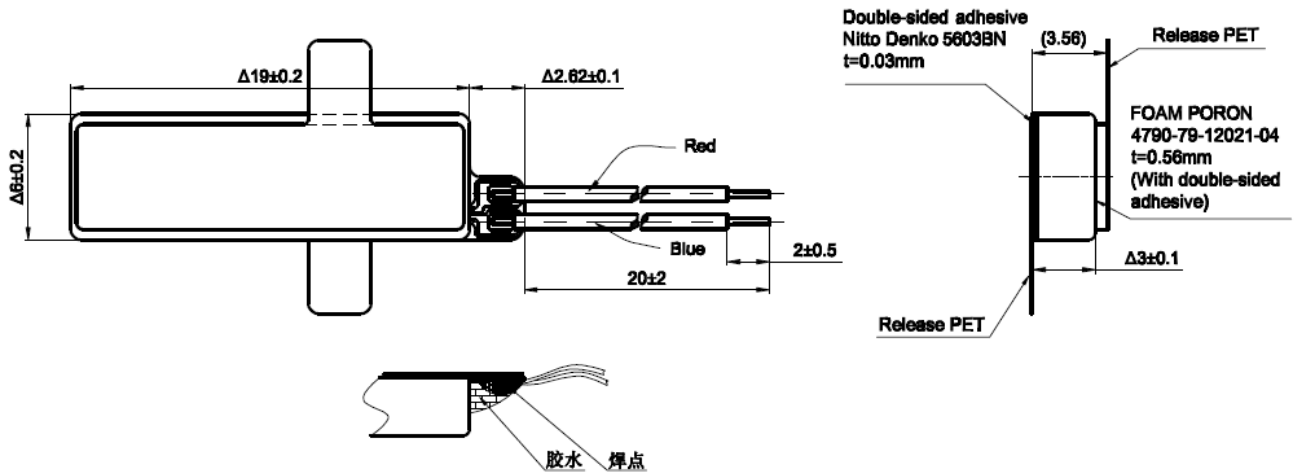
　　默认的连接形式为20mm长AWG32导线(剥头2mm)，可根据客户要求换成连接器、电极弹簧等其它连接形式。

　　The default connection is AWG32wire with a length of 20mm (stripping head 2mm), it can be replaced by connector, contact spring, etc. according to customer requirements.

## 8. 马达可承受压强 /Permitted pressure to vibrator

马达各面在规定的压强内不会造成变形或性能变化。

Vibrator each surface within the prescribed pressure won't cause deformation or performance changes.

| Test Mark	受力图示/Pressure diagram	可承受压强/ The intensity of pressure.Max(Mpa)
1	F1 — Handling force on center of crust	2.45
2	F2 — Handling force on sidewise of crust	2.45
3	F3 — Handling force on sideface of crust	1.02
4	F4 — Handling force on center of cover	2.45
5	F5 — Handling force on sidewise of cover	2.45

9. 包装/Packaging

tray, outer size L × W (mm) : 162 × 250
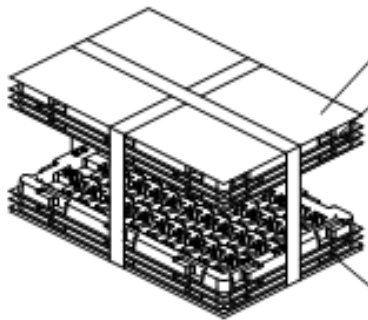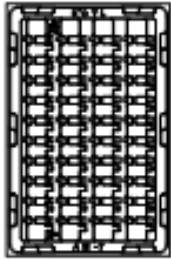
Paper board
top (empty tray)

24 pcs per tray
13 trays:
24x13=312pcs

Paper board
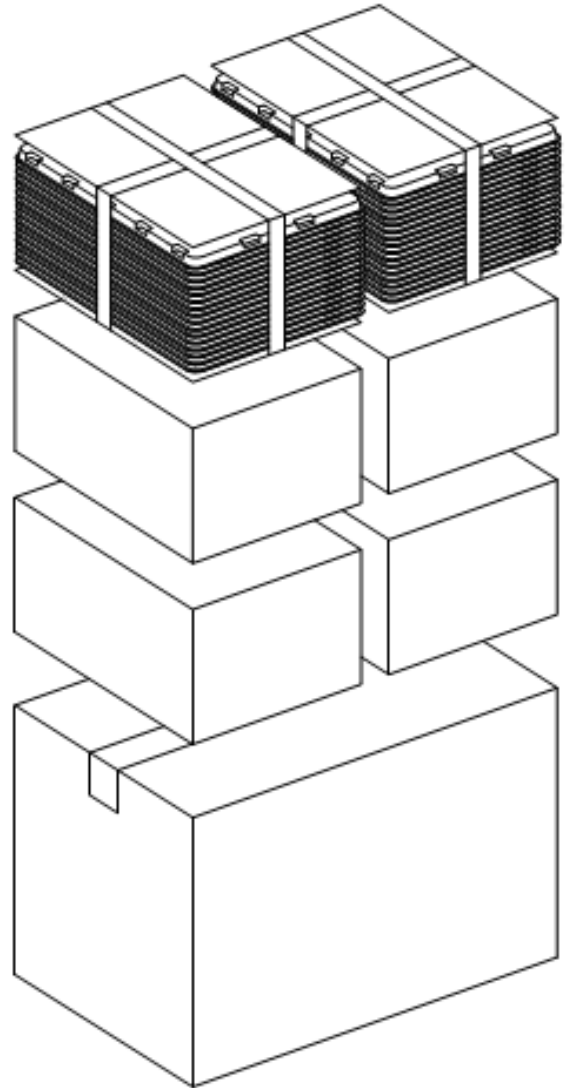
10. 注意事项/Cautions

1) 使用容差/Allowable Range for Use

注意电压及电流的使用范围，并且在本标准规定情况下使用电机，否则将相应降低电机的使用寿命和性能。

Pay attention to voltage and current ranges applied, and use the vibration motor according to captioned specifications, or the motor life and performance would be considerably reduced.

2) 移动电机/Move Motor

拿电机时，应轻拿轻放，应尽可能地利用外壳部分

请勿将其跌落或加以超过 0.5 公斤的压力。否则会引起电机的外部形态和电气特性的改变

Please take the motor gently by holding its case as possible.

Do not press the motor with more than 0.5 kgf or drop it. Otherwise, motor characteristics or external appearance could be affected.

电机在运输过程中应小心轻放，避免严重碰撞敲击引起的电机机身和性能受损。

Please lay the motors carefully in transportation to avoid any damage to the motor body or its characteristic caused by serious collision.

3) 储存/Storage

储存温度/Storage temperature：-40℃~85℃

储存湿度/Storage relative humidity: 0%RH~95%RH

避免放置在高温、潮湿的环境中

Avoids storing under high temperature and high humidity

电机应适当的操作、储存和运转环境中均不可存在腐蚀性气体。例如：

H2S、SO2、NO2、CL2等。另外存储环境中不可有诸如硅、氰、甲醛水和苯酚等能放射出腐蚀性气体的物质，在电机的机械构造或装置中，如果存在腐蚀性气体，那么这会引起电机不运转。

For proper operation, storage and operating environment must not contain corrosive gases such as H2S, SO2, NO2, CL2, etc. In addition storage environment must not have such emit corrosive gases as silicon, cyanic, formalin and phenol group. In the motor mechanical structure or device, existence of corrosive gases may cause no rotation of motor.

4) 使用电机/Attentions for Using Motor

小心拿取、使用。

Take and use motor carefully.

避免放置在磁性物体附近或接触其表面，这将影响其功效。

Do not place motor on or near magnetic object or contact the surface, or it will affect the motor performance.

避免电机叠放在一起。

Do not stack up motor.

注意操作环境，尤其注意若铁粉被磁铁吸附，将出现噪音问题，降低使用寿命。

Pay attention to operating environment, especially magnet would absorb iron power and cause noise problem reducing service life.

请勿靠近磁体或有磁场的装置存放或运行电机。

Please do not operate or store the motor near magnet or magnetic devices.

请在 6 个月内使用，请不要在高温、低温、高湿环境下存储。在使用和打开电机外包装时请避免水气凝结。

Make arrangement to limit the storage period within 6 months or less. Please do not store motor in high and low temperature and high humidity. Condensation of atmosphere must be avoided in using or opening the package of the motor.

5) 危险环境/**Hazardous Environments**

我司电机在正常环境中的抗腐蚀能力是符合要求的，但机壳上有少许区域存在的裸露金属对腐蚀比较敏感，因此未经咨询请不要在腐蚀环境中储存或使用电机。

The anti-corrosion of **Vybronics** motors is qualified in normal environments. Otherwise the bare mental on the case is easily being corroded and please do not store or use motors in corrosive environment without consultation with **Vybronics**.

6) 其它说明/**Others**

电机轴向间隙处不应有杂物（如颗粒、纤维物、头发、胶带、胶水等）

There should be no sundries (such as grain, fiber, hair, adhesive tape, glue etc.) in the shaft end play.

7) 请谨记/**Attention**

Vybronics拥有一支专业的技术支持团队，致力于解决我们的电机在新的产品或新的应用中出现的问题，我们乐意与您建立良好的合作关系，我们乐意为您解决使用中遇到的各种问题。

Vybronics owns a professional technical team committing to solve the problems in new motor products and new application. We are so glad to build good cooperation with you and always be ready to solve any problems you encounter in application.

———————— END ————————