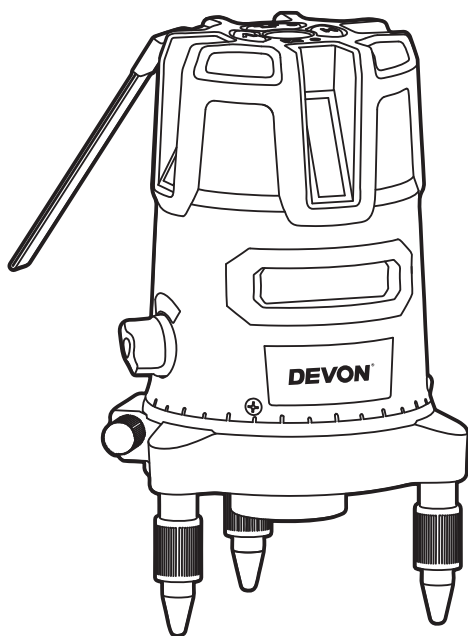


# DEVON® 大有

型号： 9319-3XG-Li  
9319-5XG-Li



中国 自平衡锂电激光标线仪

GB SELF-LEVELING LASER LEVEL

各产品外观之间可能存在差异，请以实物为准

专业电动工具

## PROFESSIONAL TOOLS

大有工具 “劲”在掌握

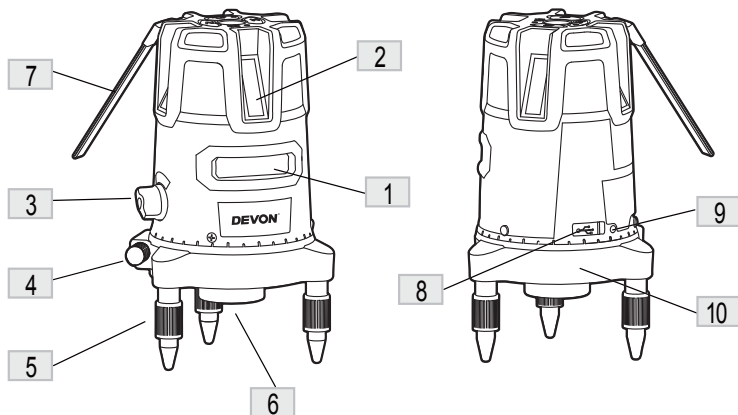
# 产品简介



本产品可分别或同时发出自动安平的可見激光水平线、垂直线和铅垂点。为室内施工放样和校准提供了精确的水平、垂直和铅垂基准，操作方便，用途广泛！

请您在使用前务必仔细阅读说明书，并严格按照说明指示使用产品！

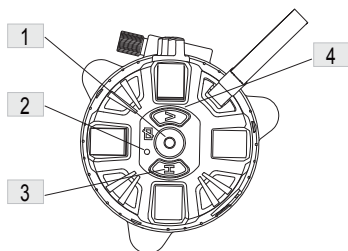
## 1. 操作控制



1. 水平激光出射窗口
2. 垂直激光出射窗口
3. 旋钮开关
4. 微调手轮
5. 可调支撑腿

6. 5/8" 三脚架螺纹孔
7. 拎带
8. 充电接口
9. 电量指示灯
10. 基座

9319-3XG-Li  
9319-5XG-Li



1. 辅助水泡
2. 倾斜指示灯
3. 水平线控制键
4. 垂直线控制键

2. 工具规格

型号	9319-3XG-Li	9319-5XG-Li
激光线配置	一条水平线；两条相互正交的垂直线；一个下垂点	一条水平线；四条相互正交的垂直线；一个下垂点
激光类型	激光线：515nm，≤2mW 下垂点：650nm，≤1mW	
激光等级	3R	
工作距离*	工作半径约20m	
自动安平范围	±2.5°	
自平衡时间	≤5S	
激光线精度	±0.2mm/m	
下垂点精度	1.5mm/m	
正交精度	±1.5'	
电池	2000mAh 4.2V锂电池	
工作时间**	约8小时	约6小时
工作温度***	-10℃~45℃	
存储温度	-20℃~70℃	
防护等级	IP54	
三脚架螺母	5/8"	

注：

- 1. 为求改进，本说明书所载规格可能不预先通告而给予更改。
- 2. \*：工作范围取决于环境亮度，在明亮的环境下工作范围会减小。
- \*\*：电池寿命是在标准的测试环境下，将仪器电量充满后打开全部激光测得的时间，关闭部分激光线可以延长使用时间。
- \*\*\*：当仪器温度接近0℃时，锂电池的充电时间和工作时间会受到低温的影响

# 安全操作须知

## 安全条款



在使用本产品之前请务必认真阅读和理解本说明书里所有的条款和操作指南。没有遵循这些安全规则和操作指南可能会导致危险的激光辐射伤害、爆炸等人身伤害。请妥善保管本说明书，并在移交产品时将本说明书一起移交。

- 1. 注意激光辐射。本产品投射的激光是符合 IEC 60825-1 标准的激光。
- 2. 请不要对激光装置进行任何方式的改装
- 3. 本产品配合其它光学仪器使用时，有可能会增加激光辐射伤害，使用前请咨询专业人士。
- 4. 本产品上贴着一张贴标，使用前请仔细阅读。



正常情况下本产品的激光不会造成光学伤害，但是请勿将激光束指向人或动物，请勿直视激光束，否则有可能扰乱视力，造成事故或者伤害眼睛。

- 5. 请将本产品放在儿童不能拿到的地方。请勿在无人监护的儿童周围使用，或者让无人监护的儿童自行使用本产品。
- 6. 使用本产品请勿放置在容易被人有意或无意直视激光束的地方。
- 7. 不要将激光束打到有高反光面的物体上，高

反光面上反射回来的激光束有可能会造成伤害。

- 8. 不要在易燃易爆环境使用本产品，如易燃液体、气体或粉尘等。
- 9. 不要试图维修或者拆解本产品，非专业人员维修可能会导致严重的激光辐射伤害。任何的维修必须由专业的人员进行。
- 10. 请使用原厂的零配件，才能确保产品的正常性能。
- 11. 注意！在使用配有蓝牙功能的产品时，其他装置和设备、飞机、医疗设备（例如心脏起搏器、助听器）可能发生故障。请不要在医疗设备、加油站，化工厂，有爆炸危险的地区附近和爆破区内使用产品，请不要在飞机上使用蓝牙功能，请避免在身体附近较长时间使用。
- 12. 不使用该仪器时将激光关闭。

## 使用注意事项

本产品是高精度的仪器，请仔细阅读并按照以下使用说明操作，以保证本产品的最佳性能。

- 1. 避免在潮湿、沙尘等恶劣环境下长时间使用或存放本产品。长时间处于恶劣环境下，有可能会损坏产品的内部器件或导致产品故障。
- 2. 将本产品从一个环境带到另一个环境时，如两个环境的温差很大，会影响产品的精度，此时请等待产品与当前环境温度大体一致后再使用。
- 3. 使用及存放时请避免本产品受到强烈撞击、挤压、长时间振动或者从高处跌落。若发生上述情况，使用前请先进行检查和校准，以确保产品精度正常。
- 4. 产品使用完毕后或者需要移动时，请先将产品关闭，并确保仪器内部已被锁定。这样可以避免产品在强烈的震动下受损。
- 5. 关闭不用的激光线/点，以减少电量损耗，延长电池续航时间。

## 配备

- 激光标线仪
- 充电线
- 充电适配器
- 产品说明书

在某些国家或某些特殊的机型，其所提供的配备，可能与以上所给的资料稍有出入。

## 操作说明

### 如何充电

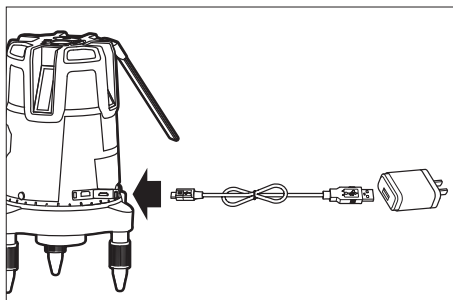
本产品使用锂电池工作。请使用原配的充电装置充电使用。

**⚠** 仪器出货前部分充电，请在初次使用前将电池充满。

**⚠** 每次使用后，不建议重复充电超过24 小时。

1. 关闭仪器，将配套的充电线的USB接口插入电源适配器或者移动电源，确保正确连接；
2. 打开仪器充电接口的防尘盖，将配套充电线的Micro USB接口头插入仪器的充电接口，确保正确连接；
3. 将电源适配器与充电线的组合连接到电源插座。电量指示灯红色闪烁，仪器开始充电；
4. 充满电后，充电指示灯变为绿色。

**⚠** 请勿在温度极高或极低的环境下充电。充电时，仪器和电源适配器会轻微发热。



注意：

1. 长期不使用本产品，请定期循环充放电一次，以延长电池使用寿命。
2. 本产品所配电池经过我司严格的内部质量管控流程和检验标准，请勿私自拆装或者更换其他品牌电池，以免造成触电、爆炸、烧伤等可能的危险。本产品所配电池享受我司的正常质保，遇到故障请交由专业维修人员或者联系我司售后进行处理。
3. 锂电池在长期使用后，一般二年，存在一定的衰减，可能并不能达到购买时的性能，属于正常情况，若有疑问请及时与当地特约维修中心或者我司售后联系。

工作中使用外接电源

1. 打开仪器；
2. 将仪器用配套的充电装置和外接电源连接，方法同充电说明；
3. 此时仪器可以继续正常工作，同时处于充电状态，充电指示灯红色闪烁；

4. 充满电后，充电指示灯变为绿色，请及时将充电装置断开，并妥善保存。

## 连接外部电源操作安全规范



连接外部电源如交流电源、移动电源时请仔细阅读并按照以下安全规范操作，否则可能会导致触电、爆炸、火灾和严重伤害事故。

1. 请使用原配的电源适配器和充电线，更换电源适配器时请选择原厂零件或从正规渠道购买输出电压5V输出电流1A并且符合当地法律认证的零件。
2. 连接交流电源时，请确保使用的适配器适用于该交流电源。
3. 连接移动电源时，请确保移动电源输出电压5V输出电流1A并且符合当地法律认证要求。
4. 保持使用的电源适配器的清洁。每次使用后，检查电源适配器、电线和插头。若发现有损坏，请不要使用或自行维修，请及时更换或交由专业人士处理，否则有触电的危险。
5. 不要在易燃表面(如纸张、纺织品等)或环境下使用电源适配器连接交流电源。电源适配器在使用过程中会发热，可能造成火灾事故。
6. 电源适配器请勿让儿童及有身体、感官、精神障碍或缺乏使用经验的人在无监护的情况下使用。

## 电量指示

仪器开机后，充电接口旁的电量指示灯会实时反映电池的电量情况。

未连接外部电源时：

1. 绿色：表示仪器电量>60%；
  2. 黄色：表示仪器电量<60%；
  3. 红色：表示仪器电量仅供工作<30分钟（激光全开情况下）；
  4. 熄灭：表示仪器处于关机状态。
- 连接外部电源时：
1. 红色闪烁：表示仪器正在充电；
  2. 绿色：表示仪器电量已经充满。

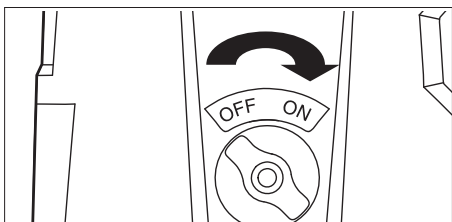
## 开/关机

1. 按图示箭头方向旋转旋钮开关至“ON”位置；
2. 仪器开机，电量指示灯点亮，进入自动安平工作模式；

9319-3XG-Li：默认水平线H和正面垂线V1点亮；

9319-5XG-Li：默认水平线H和正面垂线V1，右侧垂线V2点亮；

3. 将旋钮开关旋至“OFF”位置，电量指示灯熄灭，激光线关闭，仪器关机。

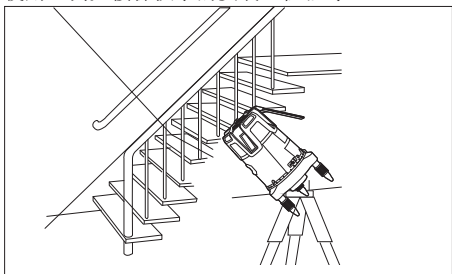


## 自动安平模式

1. 将本仪器自然放置，等待仪器内部摆体完全静止，完成自动安平后，倾斜指示灯亮绿色。此时再利用仪器射出的水平线或垂直线进行下一步作业；
2. 当未达到安平状态时，倾斜指示灯亮红色，并且伴随激光线闪烁和蜂鸣器报警；
3. 若始终无法达到安平状态，说明仪器放置倾斜角度超过其自平衡范围 $2.5^{\circ}$ ，请结合辅助水泡偏移方向，通过调整基座上的支撑腿调整仪器角度，使其尽可能处于接近水平状态（ $2.5^{\circ}$ 以内）。

## 锁定斜线模式

此模式一般用来进行斜线的线性度校准或者标线使用，例如楼梯扶手的安装、检验等。



该模式不可用于水平或垂直测量、标线。因为该模式下，仪器无论处于任意倾斜角度，即使超出自动安平范围，均不会触发报警。

1. 旋钮开关处于“OFF”位置，按压仪器顶部“H”水平线控制键或者“V”垂直线控制键，此时对应激光线点亮，仪器进入锁定斜线工作模式；
2. 此时倾斜指示灯始终亮红色。
3. 在锁定斜线工作模式下，按压仪器顶部的激光线控制键将所有激光线关闭后，电量指示灯熄灭，仪器关机；或者将旋钮开关旋至“ON”，再旋至“OFF”，完成关机。

## 激光线的选择

自动安平模式或者锁定斜线模式下，均可以通过按压“H”水平线控制键或者“V”垂直线控制键，进行激光线的选择。

1. H水平线控制键：按一次，水平激光线H亮；再按一次，水平激光线H灭，依此循环。
2. V垂直线控制键：

### 9319-3XG-Li:

按第一次，V1亮，下垂点D亮；

再按一次，V1，V2亮；

再按一次，V1，V2熄灭，下垂点D熄灭；

依此循环。

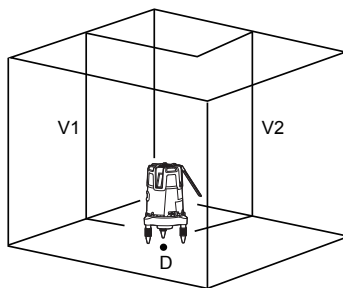
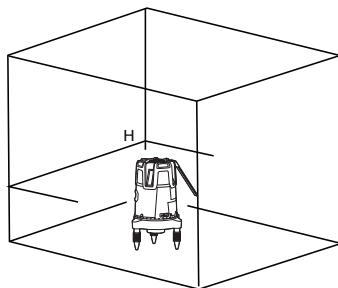
### 9319-5XG-Li

按第一次，V1，V2亮，下垂点D亮；

按第二次，V1，V2，V3，V4全亮；

按第三次，V1，V2，V3，V4全部熄灭，下垂点D熄灭；

依此循环



## 连接到三脚架使用（需另购）

使用三脚架不仅稳定性高，而且可以方便地调整仪器的高度。

安装时只须把仪器底部的三脚架连接螺母旋入一般的5/8英寸三脚架上即可。

## 精度自检

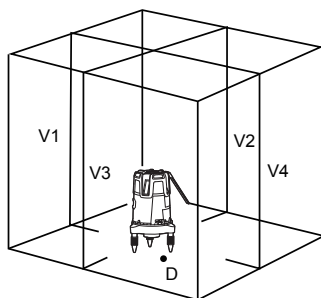
## 1. 检查水平激光线

水平激光线有两个精度，一个是激光线的高性，一个是激光线的水平性。激光线的高性反映的是仪器

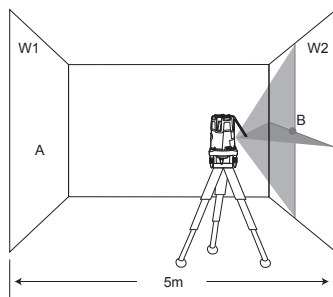
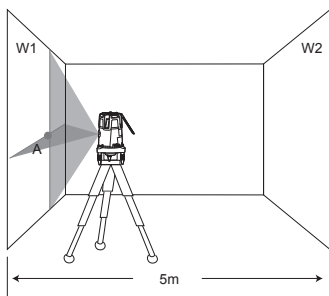
所射出的激光线是否存在上仰或下垂的问题，而激光线的水平性则是反映的线是否“直”的问题，往往激光线的水平性比等高性更重要。

### a) 激光线的等高精度检查

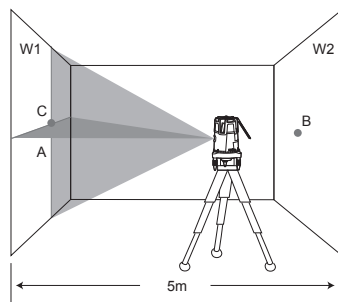
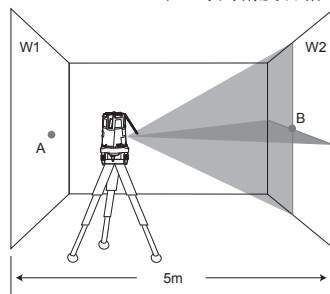
寻找一个空旷的无障碍物的房间，房间的两面墙之间的距离不小于5m；



- 将仪器安装在三脚架上，并把三角架摆在靠近墙W1的位置（约0.5m）；
- 打开仪器进入自动安平模式；
- 将激光线对准墙W1，待仪器完成自动安平后，在墙W1上激光线的交点处画上記号点，并标记为A；
- 将仪器原地旋转180°，待仪器完成自动安平后，在墙W2上激光线的交点处画上記号点，并标记为B；
- 将仪器移至靠近墙W2的位置（约0.5m），将激光线对准墙W2，调节仪器的高度，使得仪器完成自动安平后，墙W2上激光线的交点对准记号点B；
- 将仪器原地旋转对准墙W1，并使仪器完成自动安平后，墙W1上垂直激光线穿过记号点A，在墙W1上激光线的交点处画上記号点，并标记为C；



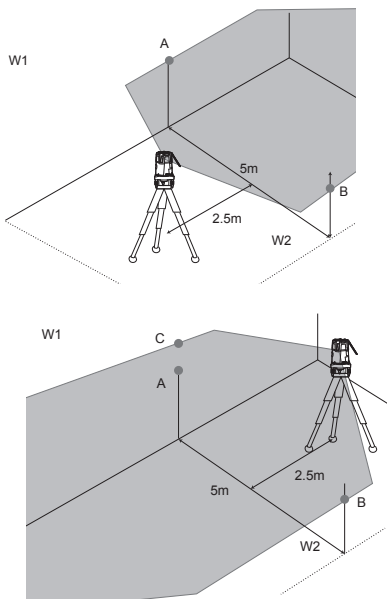
- 测量墙W1上A、C两个记号点之间的垂直方向高度差H
- 根据下述公式计算最大允许的Hmax值，与H对比，当 $H \leq H_{max}$ 时，仪器的等高精度是合格的。 $H_{max} = \text{W1W2墙面距离 (m)} \times 2 \times \text{标称线精度 (mm/m)}$   
例如W1W2墙面的距离=5m，标称线精度=0.2mm/m， $H_{max} = 5 \times 2 \times 0.2 = 2 \text{ (mm)}$   
当 $H \leq H_{max} (2\text{mm})$ 时，等高精度合格



### b) 激光线的水平精度检查

- 寻找一个空旷的无障碍的房间，至少5mX5m；
- 把仪器安装在三脚架上，放置在距离前面墙5m，距离左右两边墙各2.5m的位置；
- 打开仪器，待仪器完成自动安平后，在距离仪器前方2.5m左右两边的墙W1和W2上分别在水平激光线上做记号，标记为A和B；
- 把仪器移到前方5m远处的位置，并旋转仪器的方向，调整三角架的高度，待仪器完成自动安平后，使水平激光线穿过墙W2上的标记点B；

- 在墙W1上找到水平激光线，在水平激光线位于标记A的垂直方向位置上做记号C；
- 测量墙面W1上的A、C两个标记点之间的垂直方向高度差H；



- 根据如下公式计算最大允许的
- 根据下述公式计算最大允许的H<sub>max</sub>值，与H对比，当H≤H<sub>max</sub>时，仪器的水平精度是合格的。
- $$H_{\max} = W1W2 \text{ 墙面距离 (m)} \times 2 \times \text{标称线精度 (mm/m)}$$
- 例如W1W2墙面的距离=5m, 标称线精度=0.2mm/m,  
 $H_{\max} = 5 \times 2 \times 0.2 = 2 \text{ (mm)}$
- 当H ≤ H<sub>max</sub> (2mm) 时，水平精度合格

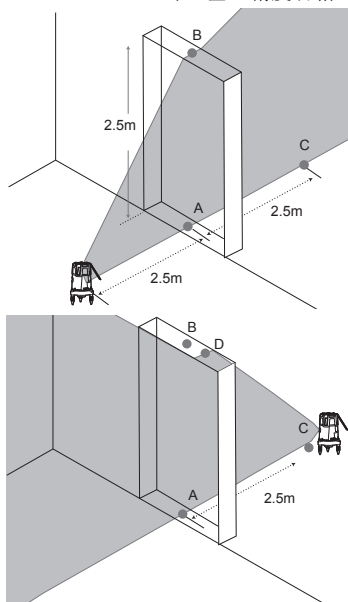
## 2) 检查垂直激光线

- 寻找一处通透门孔 (打开门即可)，门孔前后至少有2.5m的空旷距离；
- 将仪器放置在距离门孔2.5m远的一侧的地面上；
- 打开仪器，让垂直激光线穿过门孔的中间；
- 待仪器完成自动安平后，在门孔内地面上的激光线上标记点A，在门孔内上方的激光线上标记点B，距离仪器5m远的门孔另一侧地面上的激光线上标记点C；
- 将仪器移至标记点C的后面。调整垂直激光线，待仪器自动安平后，垂直激光线同时穿过标记点A和C；
- 此时在门孔内上方的激光线上标记点D；
- 测量B、D两个记号点之间的水平方向距离H；
- 根据下述公式计算最大允许的H<sub>max</sub>值，与H对比，当H≤H<sub>max</sub>时，仪器的垂直激光线精度是合格的；
- 可依此检查各根垂直激光线。

$H_{\max} = \text{门孔的高度 (m)} \times 2 \times \text{标称线精度 (mm/m)}$

例如门孔的高度=2.5m, 标称线精度为0.2mm/m,  
 $H_{\max} = 2 \times 2.5 \times 0.2 = 1 \text{ (mm)}$

当H ≤ H<sub>max</sub> (1mm) 时，垂直精度合格



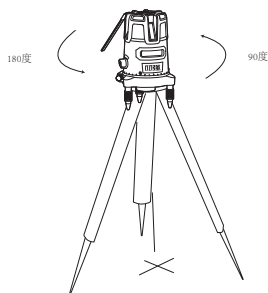
## 3) 检查下垂点

- 将仪器装到三脚架，上升到约1m高度，在下垂点光斑位置上做标记；
  - 分三次顺时针旋转机器90°，分别在下垂点光斑位置上做标记；
  - 测量四个标记点之间的最大间距H；
  - 根据下述公式计算最大允许的H<sub>max</sub>值，与H对比，当H≤H<sub>max</sub>时，仪器的下垂点精度是合格的；
- $$H_{\max} = \text{仪器的高度 (m)} \times \text{标称下垂点精度 (mm/m)} \times 2$$
- 例如仪器的高度=1m, 标称下垂点精度为1.5mm/m,  $H_{\max} = 1 \times 1.5 \times 2 = 3 \text{ (mm)}$
- 当H ≤ H<sub>max</sub> (3mm) 时，下垂点精度合格

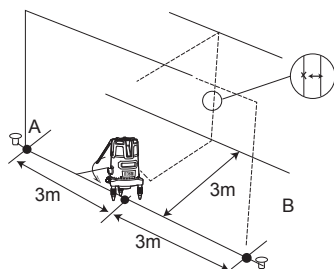
## 4) 检查垂线正交精度

- 在距离平直的墙面3m处拉一条6m长的与墙面平行的直线，将两端固定，为别标记为A和B；
- 将仪器放置在直线的中端，调整仪器，使得仪器完成自动安平后，V1垂线与直线重合，并穿过标记点A；
- 此时在墙面上V2垂线上做标记；
- 旋转仪器，使得仪器完成自动安平后，V2垂线与直线重合，并穿过标记点B；





- . 此时在墙面上V1垂线对应之前标记处的等高位置做标记；
- . 测量两处标记的水平间距H；
- . 根据下述公式计算最大允许的Hmax值，与H对比，当H≤Hmax时，仪器的垂线正交精度是合格的；
- . 可依此检查各条相邻垂线之间的正交精度。  
 $H_{\max} = 2 \times \text{直线与墙间距(m)} \times \tan(\text{标称正交精度})$   
 例如间距=3m，标称正交精度=1.5'，  
 $H_{\max} = 2 \times 3 \times \tan(1.5') = 2.6 \text{ (mm)}$   
 当H ≤ Hmax (2.6mm) 时，垂线正交精度合格



注意：



使用本产品时，若在激光点或激光线上进行标记或读数时，请选取激光点或激光线的中间位置，以确保精度准确。因为激光点的大小或激光线的宽度会随着距离而改变，中间位置相比边缘更清晰明亮，且易于判断。

### 产品维护保养

为确保为了保证仪器发挥的良好性能，请按照如下的几个简单说明，维护和使用本产品。

1. 请选择室内存放本产品，并且使用原配的包装进行携带和存放。
2. 使用本产品时要尽量远离沙尘和潮湿环境，清洁本产品时可以使用干净的软布沾清水挤干后擦拭，不要使用清洁剂或溶剂，也不能直接用水冲洗。

3. 请勿用手直接触碰或者擦拭本产品镜头。
4. 定期检查电池电量，若产品使用的是锂电池，长时间不使用产品时请定期进行一次充放电，以延长电池使用寿命；若产品使用的是干电池，不使用产品时请将电池取出。
5. 当产品提示电池电量不足时，请尽快更换电池或充电。
6. 请勿自行调试、维修本产品。任何调试、维修请交由专业人士进行。

### 环境保护



1. **DEVON**的包装可以百分之百进行回收再生处理。
2. 报废的电动工具和附件中含有大量有价值的原材料及合成材料，同样可以进行再生回收。
3. 切割时所产生的粉尘中会包含有害物质，因而不应作为普通垃圾倾倒，而应交给特殊垃圾回收站处理。

### 服务

1. 工具需要保修时，请自行送至当地特约维修中心，并提供有效保修卡及购机发票原件，遗失保修卡恕不补发。
2. 由于正常磨损、过载或不当使用而导致的损坏，不在保证范围内。

附：一般故障及排除方

现象	原因	对策
旋钮开关打开，激光线及电量指示灯不亮	1. 电池电量低	1. 连接外部电源充电
	2. 旋钮未旋到位	2. 旋至“OFF”后重新旋至“ON”的位置
	3. 仪器超出工作温度范围	3. 确保仪器的工作温度在合适的范围内
工作中激光线突然熄灭，电量指示灯熄灭	1. 电池电量低	1. 连接外部电源充电
倾斜指示灯始终亮红灯，且激光线闪烁，蜂鸣报警	1. 仪器超出自平衡工作范围	1. 移动仪器到尽量平整的位置或者结合辅助水泡偏移方向，调整仪器支撑腿、三脚架支撑腿使仪器处于大致水平状态（2.5° 以内）
激光线精度偏差	1. 仪器处于锁定斜线模式	1. 切换至自平衡模式，确保倾斜指示灯亮绿色
	2. 仪器所处的环境温度发生骤变	2. 放置一段时间使仪器温度和环境温度一致
	3. 仪器受到了强烈的碰撞或跌落	3. 送修
激光线变粗、或模糊	1. 出光口玻璃表面有灰尘	1. 用软布沾水清洁干净
激光线可见度变差	1. 环境光太亮	1. 降低环境光亮度
	2. 电池电量低	2. 连接外部电源充电

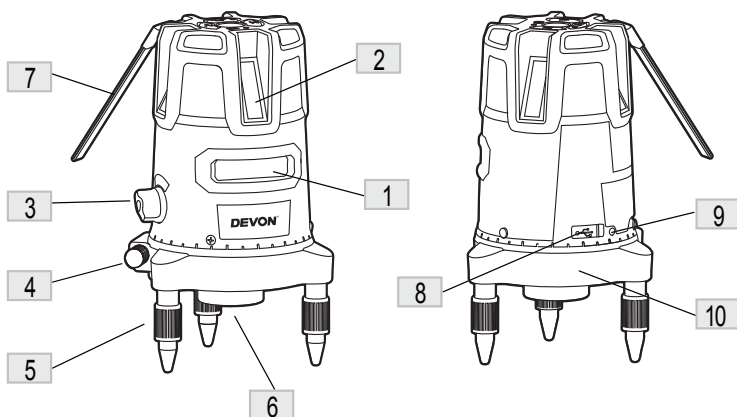
## DESCRIPTION OF THE TOOL



This product can respectively or simultaneously send auto-leveling laser lines and bottom laser dot. It provides accurate horizontal, vertical benchmark for indoor construction lofting and calibration. Convenient operation, wide range of uses.

Read, understand and follow all safety rules and instructions before using this tool.

### 1. MAIN PARTS



Horizontal laser light aperture

2. Vertical laser light aperture

3. Rotary knob switch

4. Trimmer wheel

5. Adjustable legs

6. 5/8" threaded tripod hole

7. Carry belt

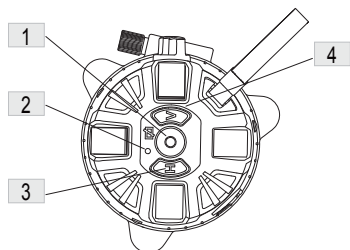
8. Charging port

9. Electricity indicator light

10. Base part

9319-3XG-Li

9319-5XG-Li



1. Auxiliary bubble

2. Tilted indicator light

3. Horizontal laser line control button

4. Vertical laser line control button

## 2.TOOL SPECIFICATIONS

Model No	9319-3XG-Li	9319-5XG-Li
Laser	One horizontal line; Four mutually orthogonal vertical laser lines; One bottom laser dot	One horizontal line; Four mutually orthogonal vertical laser lines; One bottom laser dot
Laser type	Laser line: 515nm, ≤2mW Bottom laser dot: 650nm, ≤1mW	
Laser class	3R	
Working range *	About 20m	
Auto-leveling range	±2.5°	
Self regulation time	≤5S	
Laser accuracy	±0.2mm/m	
Bottom laser dot accuracy	1.5mm/m	
Orthogonal accuracy	±1.5'	
Battery	2000mAh 4.2V lithium battery	
Working time **	About 8 hours	About 6 hours
Working temperature***	-10℃~45℃	
Storage temperature	-20℃~70℃	
IP class	IP54	
Tripod nut	5/8"	

Note:

1.Due to **DEVON**'s continuing program of development, the specifications herein are subject of change without prior notice

2.\*: The working range will be reduced in bright condition.

\*\*: The battery life is tested in standard condition with all lasers being turned on. To extend the battery life, shut off the laser line not used.

\*\*\*: When the temperature of the tool is close to 0℃, the charging time and working time of the lithium battery will be influenced.

## SAFETY RULES

BE SURE to read and understand all instructions in this manual before using this product. Failure to follow all instructions may result in hazardous radiation exposure, explosion, and/or bodily injury. save these instructions for future reference and include them with the product when giving it to a third party.

1.LASER RADIATION. Class II laser product complies with IEC 60825-1.

2.Do not attempt to modify the performance of this laser device in any way.

3.The use of optical instruments such as, but not limited to, telescopes or transits to view the laser beam will increase hazardous radiation exposure.

4.The product is provided with a warning label. Be sure to read the warning label before using the product. Do not remove or deface the warning label. Make sure the warning label on the product always recognizable.

7.Do not point the laser on high shiny and reflective surfaces such as sheet steel. The laser reflected back from the high reflective surface could present an optical hazard.

8.Do not operate the product in combustible areas, such as in the presence of flammable liquids, gases, or dust.

9.Do not attempt to repair or disassemble the product. Any repair or disassemble required on this product should be performed only by authorized service personnel, otherwise serious injury may occur.

10.Only use original spare parts to ensure that the product performance is maintained.

11. Caution!When operating the product with blue tooth, interference with other devices and systems, airplanes and medical devices (e.g., cardiac pacemakers, hearing aids) may occur. Do not operate the product in the vicinity of medical devices, petrol stations, chemical plants, areas where there is danger of explosion, and areas subject to blasting. Do not operate the product with blue tooth in airplanes. Avoid operation in direct vicinity of the body over long periods.

12.Always switch off the laser when not in use.



## OPERATION NOTES



This product is a highly accurate measuring tool. Read and follow all instructions below before operate the product to ensure that the best product performance is maintained.

1.Do not operate and store the product in wet, dusty, sandy, or other adverse environments for a long time. Be in such conditions for a long time may damage inner components and affect the accuracy.

2.When the product is brought into a warm environment from very cold conditions, or vice versa, let the product approach to the surrounding temperature before operation.

3.Avoid heavy impact, long time intense movement or falling when operate and store the product. After these situations happened, please do an accuracy check before continuing to work to ensure the product performance is alright.

4.Switch off the product and make sure the inner leveling unit locked after operation or during transport. So that to avoid the damage of leveling unit in case of intense movement.

5.Switch off the laser when not in use to extend battery life.



Normally the laser does not present an optical hazard. However, do not direct the laser at persons or animals and do not stare into the direct or reflected laser, not even from a distance. The laser may blind somebody, cause accidents or damage eyes.

5.Always keep it out of the reach of children. Do not use the product around children without supervision or allow children to operate the product without supervision.

6.Do not place the product in a position that may cause anyone to stare at the laser beam, whether intentionally or unintentionally.

## OPERATION NOTES

1. Self-leveling laser level
2. Charging wire
3. Charging adapter
4. Operator's manual

Be sure to check the accessories as it is subject to change by areas and models

## OPERATION

### Charging Description

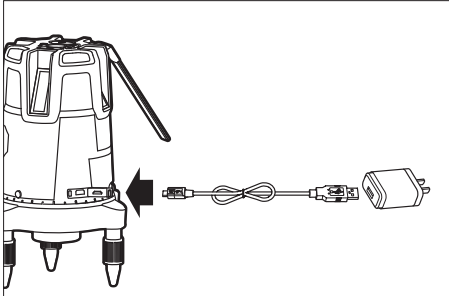
The product is equipped with Li-ion battery, charge the battery with original charging equipment.

⚠ The product is shipped partially charged. Charge the battery before first use.

⚠ It is not recommended to recharge the tool for more than 24 hours after each use.

1. Connect the USB interface charging cable into the power adapter or portable source to ensure proper connection;
2. Open the dust cover charging port on the tool, connect the Micro USB interface into the charging port to ensure proper connection ;
3. Connect with a power outlet. Charge indicator light will light red, and the charging begins;
4. After fully charged, the indicator light lights green.

⚠ Do not charge at very high or very low temperatures. While charging, the power adapter and the instrument will be a slight fever.



### Caution:

1. Please charge and discharge the battery to extend the service life of the battery, while it has not been used for long time.
2. The battery equipped has experience in strict internal quality control process and inspection standards, do not disassemble the battery or replace with other brands, so as to avoid electric shock, explosion, burn and

other possible dangers. The battery equipped enjoys the quality assurance. Any repair or disassemble required on battery should be performed only by authorized service personnel or after-sales department.

3. Some normally attenuation will happen in the Li-ion battery after long time working such as two years. Any questions, contact with local qualified service center or after-sales department.

Connect the external power supply in working

1. Turn on the tool;
2. Connect the assorted charging equipment with external power source, the same as charging instruction;
3. The machine can continue to operate normally while it is charging, charging indicator light will be red flashing;
4. When fully charged, the charge indicator turns green, please disconnect the charger, and store the charger properly.

### Safety rules of connecting external power supply



Read and follow all instructions below before connect with external power supply such as AC supply and DC mobile power. Failure to follow all instructions below may result in electric shock, explosion, fire and/or serious personal injury.

1. Only choose the original adapter and charger wire. If change the adapter, please choose the qualified and legal one which output voltage 5V and output electricity 1A.
2. Confirm the adapter suits the AC supply before do connecting.
3. Confirm the mobile power is qualified and legal , the output voltage 5V and the output electricity 1A before do connecting.
4. Keep the adapter clean. Check the adapter, cable and plug before do connecting. If damage is detected, do not use or repair by yourself, change the damaged one or get repairs performed by authorized service personnel, otherwise electric shock may occur.
5. Do not do connecting with AC supply on easily inflammable surfaces (e.g., paper, textiles, etc.) or surroundings. The heating of the adapter during using may pose a fire hazard.
6. Children or persons with physical, sensory or mental limitations or lack of experience and knowledge are not capable of securely operating the adapter unless they are being given supervision or having been instructed by a responsible person.

### Battery capacity indication

The electricity indicator light beside the charging port will reflect the real condition of the battery.

Not connected external power supply:

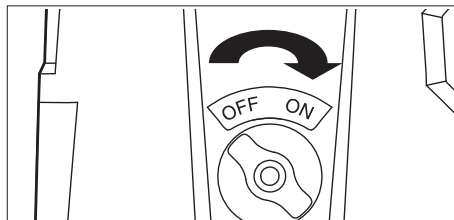
- 1.Green: battery electricity>60%;
- 2.Yellow: battery electricity<60%;
- 3.Red: the remaining working time<30min  
(all laser lights are turned on) ;
- 4.Die out: The tool is shutdown.

**Connected external power supply:**

- 1.Red flashing: The tool is charging;
- 2.Green : The tool is fully charged.

**Turn on/off**

- 1.Rotating knob switch to "on" position:
- 2.The tool is turned on and get into automatic balance mode;  
9319-3XG-Li: Defaults the frontal vertical laser V1 and horizontal laser H are turned on at the same time;
- 9319-5XG-Li : Default the horizontal laser H and frontal vertical laser V1 and right vertical laser V2 are turned on at the same time.
- 3.Rotating knob switch to "OFF" position to turn off the tool.

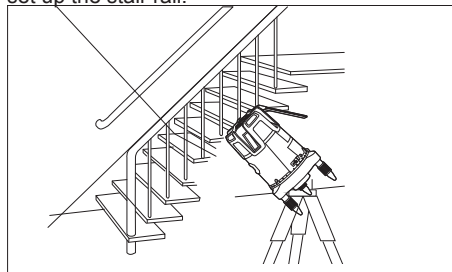


### Auto-leveling mode

- 1.Place the tool naturally, until the inner leveling unit stops swinging. The tilted indicator light will be green when the tool finish auto-leveling. Then go on working with the laser.
- 2.The laser will keep flashing with Buzzer alarming and the tilted indicator will be red, while the tool cannot finish auto-leveling.
- 3.If auto-leveling is always not possible, it means the surface where the tool stands on deviates by more than auto-leveling range 2.5° from the horizontal plane. Please place the tool in a position closed to level (≤2.5°from the horizontal plane) .

### Work without auto-leveling mode (Lock mode)

This mode always be used as adjust or mark a straight and slant line which exceeds 2.5° or more from the horizontal plane. For example, set up the stair rail.



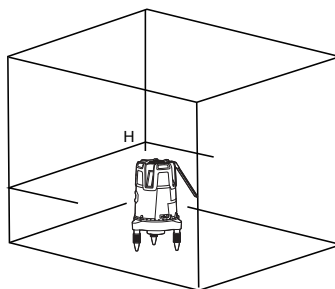
**⚠ Pay attention that the tool will not show any warning in this mode even it exceeds the auto-leveling range 2.5°. This mode cannot be used to perform horizontal or vertical leveling.**

- 1.Press the button "H" or "V" while the rotating knob switch is in "OFF" position to turn on the laser in lock mode.
- 2.The tilted indicator light will always be red to caution the function mode;
- 3.Press the button "H" or "V" to turn off the laser. The tool will shut down when all of the laser have been turned off. Rotating knob switch to "on" and then back to "off" also can turn off the tool.

### Select the laser mode

Under automatic leveling mode or lock slash mode, Press the button "H" to control the horizontal laser line and the button "V" to select the vertical laser lines in both auto-leveling mode and lock mode.

- 1.The horizontal laser line control button "H": Press once to light the horizontal laser line H; Press the button again, the horizontal laser line H will die out.



- 2.The vertical laser line control button "V":  
9319-3XG-Li:  
Press once, the vertical laser line V1 and the

bottom laser dot D light;

Press again, both of the vertical laser lines V1 and V2 light;

Press again, both of the vertical laser lines V1 and V2 and the bottom laser dot D die out.

9319-5XG-Li

Press once, the vertical laser line V1 and V2 and the bottom laser dot D light;

Press again, the vertical laser line V1, V2, V3, V4 all light;

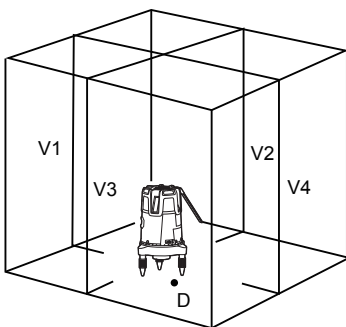
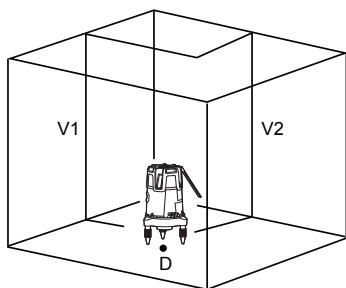
Press again, all of the vertical laser lines and the bottom laser dot die out.

### Working with the tripod (not included)

Using a tripod is not only for high stability, but also can easily adjust the height of the instrument.

This tool can be mounted on a general 5/8" tripod directly (sold separately)

### Self-inspection of the accuracy



#### 1. Check the horizontal laser line

The horizontal laser line has two kinds of accuracy. One is the contour accuracy of the laser line, the other one is the level accuracy of the laser line. The contour accuracy of the laser line reflects the problem that the laser line has rise up or dropped down. The level accuracy of the laser line reflects the problem that the laser line is straight or not. The level accuracy of the

laser line is always more important than the contour accuracy.

a) Check the contour accuracy of the horizontal laser line

1) Find an empty room without obstacle, the

distance between the two face-to-face walls of the room is at least 5m;

2) Mount the instrument on a tripod, and put the

tripod near wall W1 (the distance between them is about 0.5 m);

3) Turn on the instrument and enter auto-leveling mode;

4) Aim the laser line to wall W1, after auto-leveling finished, find the laser line intersection point on the wall W1 and mark a point as A;

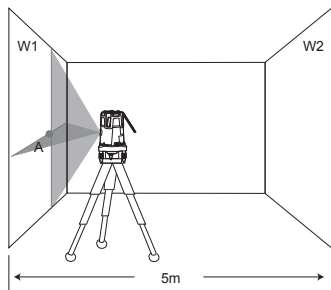
5) Rotate the instrument for 180°, after auto-leveling finished, find the laser line intersection point on the wall W2 and mark a point as B;

6) Move the instrument near wall W2 (the distance between them is about 0.5m), aim the laser line to wall W2 and adjust the height, make the laser line intersection point covered the marked point B after auto-leveling finished;

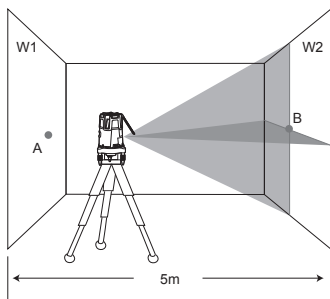
7) Rotate the instrument and aim it to wall W1, after auto-leveling finished, make the vertical laser line on wall W1 through the marked point A. Find the laser line intersection point on the wall W1 and mark a point as C;

8) Measure vertical height difference as H between two marked points A and C on wall W1;

9) According to the following formula to calculate the normal maximum value of the vertical height difference as Hmax. Compared Hmax with H, the contour accuracy of the





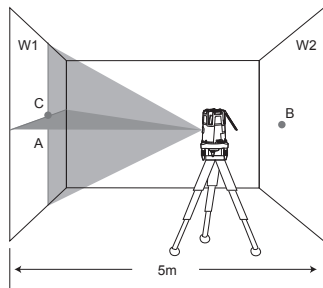
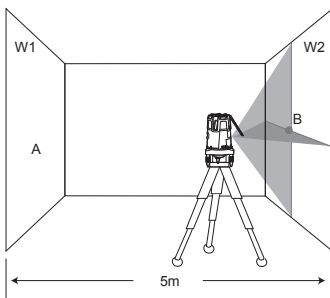


horizontal laser line is correct if  $H \leq H_{\max}$ .

$H_{\max} = \text{distance between wall W1 and W2(m)} \times 2 \times \text{line accuracy(mm/m)}$

For example: Distance between wall W1 and W2 = 5m, line accuracy = 0.2mm/m,  $H_{\max} = 5 \times 2 \times 0.2 = 2(\text{mm})$

If  $H \leq H_{\max}$  (2mm), the contour accuracy of the horizontal laser line is correct.



b) Check the level accuracy of the horizontal laser line

1) Find an empty room without obstacle which the size is at least 5mX5m;

2) Mount the instrument on a tripod, and put the tripod 5m away from the front wall and in the middle between the left and right walls W1 and W2 (distance between the instrument and both left and right walls are 2.5m);

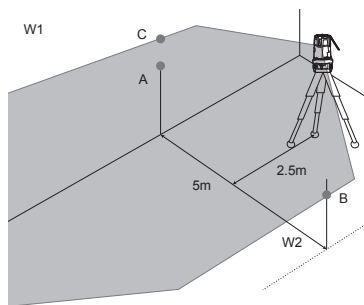
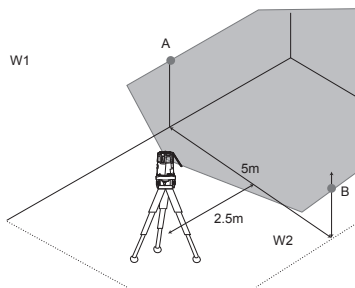
3) Turn on the instrument, after auto-leveling finished, mark two points as A and B on the horizontal laser line on W1 and W2, make sure the straight line AB is about 2.5m away from the instrument;

4) Move the instrument 5m in front of the position, and rotate the instrument for 180°, adjust the height to make the horizontal laser line through the marked point B on wall W2 after auto-leveling finished;

5) Find the horizontal laser line on the wall W1, mark a point on the laser line as C on the vertical position of marked point A;

6) Measure vertical height difference as H between two marked points A and C on wall W1;

7) According to the following formula to calculate the normal maximum value of the vertical height difference as  $H_{\max}$ . Compared  $H_{\max}$  with H, the level accuracy of the horizontal



laser line is correct if  $H \leq H_{\max}$ .

$H_{\max} = \text{distance between wall W1 and W2(m)} \times 2 \times \text{line accuracy(mm/m)}$

For example: Distance between wall W1 and W2 = 5m, line accuracy = 0.2mm/m,  $H_{\max} = 5 \times 2 \times 0.2 = 2(\text{mm})$

If  $H \leq H_{\max}$  (2mm), the level accuracy of the horizontal laser line is correct.

2. Check the vertical laser line

1) Find a transparent door opening (open the

door), there are at least 2.5m distance between the front and the back to the door opening;

2) Put the instrument on any side of the ground 2.5m away from the door opening;

3) Turn on the instrument and make the vertical laser line through the middle of the door opening;

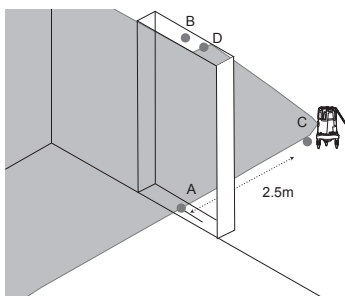
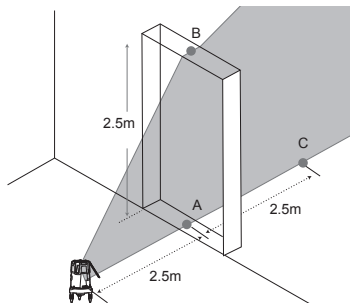
4) After auto-leveling finished, mark a point as A on the inner ground of the door opening, mark a point as B on the upper position of the door opening, mark a point on the laser line as C on the other side of the ground which is 5m away from the instrument.

5) Move the instrument to the position on marked point C. Rotate it for 180° and adjust the vertical laser line to make it through both marked point A and C at the same time after auto-leveling finished.

6) Mark a point on the laser line as D on the upper position of the door opening;

7) Measure horizontal direction length difference as H between marked points B and D;

8) According to the following formula to calculate the normal maximum value of the horizontal direction length difference as Hmax. Compared Hmax with H, the line accuracy of the vertical laser line is correct if  $H \leq H_{\max}$ ;



9) Check all of the vertical laser lines in the same way.

$H_{\max} = \text{height of the door opening (m)} \times 2 \times \text{line accuracy (mm/m)}$

For example: Height of the door opening = 2.5m, line accuracy = 0.2mm/m,  $H_{\max} = 2 \times 2.5 \times 0.2 = 1$  (mm)

If  $H \leq H_{\max}$  (1mm), the line accuracies of the vertical laser lines are correct.

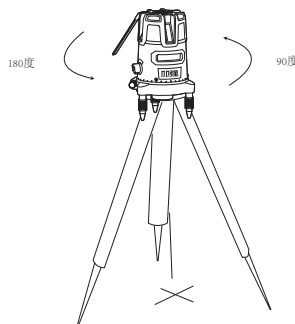
### 3. Check the bottom laser dot

1) Mount the instrument on a tripod, rise to about 1m high. Mark a point on the position of the laser dot on the ground;

2) Rotate the instrument clockwise for 90° three times. Every time mark a point on the position of the laser dot on the ground;

3) Measure maximum distance as H between the four marked points;

4) According to the following formula to calculate the normal maximum value of the distance between the four marked points as Hmax. Compared Hmax with H, the accuracy of the bottom laser dot is correct if  $H \leq H_{\max}$ ;



$H_{\max} = \text{Height of the position of the instrument (m)} \times \text{Accuracy of bottom laser dot (mm/m)} \times 2$

For example: Height of the position of the instrument = 1m, Accuracy of bottom laser dot = 1.5mm/m,  $H_{\max} = 1 \times 1.5 \times 2 = 3$  (mm)

If  $H \leq H_{\max}$  (3mm), the accuracy of the bottom laser dot is correct.

### 4. Check the vertical orthogonal accuracy of the adjacent vertical laser lines

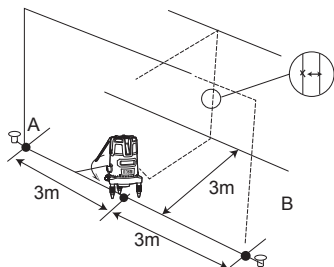
1) Set a 6m long straight line paralleled with a wall which is 3m away. Fix both two ends of the line and mark two points as A and B;

2) Put the instrument in the middle of the line. Make the vertical laser line V1 covered with the line and through the marked point A after auto-leveling finished;

3) Mark a point on the vertical laser line V2 on the wall;

4) Rotate the instrument to make the vertical laser line V2 covered the line and through the marked point B after auto-leveling finished;

- 5) Mark a point on the vertical laser line V1 on the wall in the same height position with marked point which marked based on V2 before;
- 6) Measure the level interval distance as H between the two marked points on the wall;
- 7) According to the following formula to calculate the normal maximum value of the level interval distance between the two marked points on the wall as Hmax. Compared Hmax with H, the vertical orthogonal accuracy of the vertical laser lines is correct if  $H \leq H_{\max}$ ;
- 8) Check all of the adjacent vertical laser lines in the same way.



$H_{\max} = 2 \times \text{Distance between the straight line and wall (m)} \times \tan(\text{vertical orthogonal accuracy})$

For example: Distance between the straight line and wall = 3m, vertical orthogonal accuracy = 1.5',  $H_{\max} = 2 \times 3 \times \tan(1.5') = 2.6 \text{ (mm)}$

If  $H \leq H_{\max}$  (2.6mm), the vertical orthogonal accuracies of the adjacent vertical laser lines are correct.

#### Tips:

For marking, always use only the centre of the laser point or the laser line. The size of the laser point as well as the laser line will change with distance.

## MAINTENANCE



In order to maintain the product performance, you should always follow these simple directions below.

1. Always store the product indoors. Always handle or store the product with original packaging parts.
2. Always keep the product free of dust and liquids as much as possible. Use only a clean, soft cloth for cleaning. If necessary, slightly moisten the cloth with pure alcohol or a little water. Do not use any cleaning agents or solvents. Do not Wash with water directly.

3. Do not touch the lens with your fingers.
4. While the product not been in use for long time, do regular inspection on the batteries. Take off the batteries or charge and discharge the Li-ion battery to extend the service life.
5. Charge the Li-ion battery or change the batteries when the low battery capacity warning occurs.
6. Do not attempt to repair or disassemble the product. Any repair or disassemble required on this product should be performed only by authorized service personnel, otherwise serious injury may occur.

## ENVIRONMENT PROTECTION



1. **DEVON** Packaging should be sorted for environment-friendly recycling.
2. Product and accessories at the end of their service life still contain large amounts of valuable raw materials and plastics which can likewise be fed back into a recycling process.
3. Batteries should, if possible, be discharged first, then disposed of in accordance with local regulations and laws.

## SERVICE

1. In case of guarantee, repair or purchase of replacement parts, always contact the qualified service center and supplied with the efficient service card and invoice.
2. It is out of the scope of guarantee when the product was normal wear or improper use of damage.

## TROUBLE SHOOTING

Problem	Cause	Solution
Rotary knob switch is in on position, but the laser line and the power indicator light don't light	Low battery capacity	Charge the battery
	The rotary knob switch is not rotated to the position	Rotate the rotary knob switch once again
	The instrument is out of operating temperature range	To ensure operating temperature is in a suitable range
Laser lines and electricity indicator light suddenly die out during working	Low battery capacity	Charge the battery
Tilted indicator light lights in red and the laser lines blink with buzzer warning	The surface on which the tool stands deviates by more than auto-leveling range 2.5° from the horizontal plane	Place the instrument in a new position or adjust the adjustable legs based on the direction the auxiliary bubble moves to make the instrument be within auto-leveling rang ( $\leq 2.5^\circ$ from the horizontal plane)
The laser line is not level or plumb	The instrument is in lock mode	Rotate the rotary knob switch to "on" position, make sure the tilted indicator light lights in green
	Big change of the operating temperature	Wait until the temperature of the tool is close to the room temperature
	The instrument suffers a strong impact or drop	Send the instrument to the authorized service personnel for repair
The laser line gets thicker or blurry	Dirt on the glass of the laser aperture	Clean it with soft and little wet cloths
The laser line is hard to identify	Surrounding ambient light is too bright	Reduce the room brightness
	Low battery capacity	Charge the battery

## POWER, IN YOUR HANDS

# 保修卡

## Warranty Card

<b>合格证</b> <b>PRODUCT CERTIFICATION</b>	
制造商: 南京德朔实业有限公司 地址: 江苏南京江宁经济技术开发区将军大道159号 销售商: 泉峰(中国)工具销售有限公司	检验员 

全国统一售后服务电话  
**400-828-9076**

### 重要提示

机身铭牌上的9位编码是厂家判断机器真伪及提供售后服务的重要凭证, 如您购买了编码无法辨识的机器, 可能无法得到厂家正常的保修服务

## 保修服务说明:

- 工具需要维修时, 请送至当地大有授权维修中心或寄至泉峰售后服务部, 产品保修期以购机发票/收据原件上的日期起算。
- 仅对存在质量缺陷的产品给与免费维修或免费换新, 其前提是经大有授权维修中心证明其故障是由于材料或制造缺陷所造成的, 并处于保修期内。
- 保修期及保修条款根据工具的种类而定:
  1. 交流工具:
    - 1.1. 整机保修6个月或者转子换向器直径磨损量在0.2毫米以内, 以先到为准。
  2. 直流工具:
    - 2.1. 12V产品: 机身保修12个月, 电池、充电器为12个月内包换。
    - 2.2. 14V以上产品: 机身保修6个月, 电池、充电器为6个月内包换。
  3. 光电工具:
    - 3.1. 激光测距仪: 保修24个月。
    - 3.2. 其他光电产品: 保修12个月。
- 保修不包括:
  1. 任何自然磨损以及正常使用时所发生损耗, 如气缸、齿轮、O形圈、转子换向器直径磨损量超过0.2毫米、碳刷、轴承、开关、电子线路板、电源线等。
  2. 由于不遵守操作说明、不正确使用、异常的环境条件、不适当的操作条件、过载或缺乏足够的维护和保养所导致的工具故障。
  3. 自行或非大有授权维修点拆修的所导致的工具故障。
  4. 由于使用非原装大有配件而引起的缺陷。
  5. 经过改装或增加部件的工具。
  6. 随机附送的配件或者附件。
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