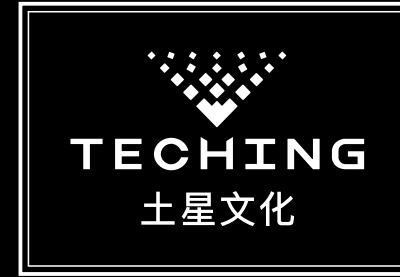


传 承 探 索 创 新
EDUCATIONAL • ORIGINAL DESIGN • P A T E N T E D



金 属 机 器
Metal machinery

组 装 模 型
Assembly model

	公 司	广州市土星文化发展有限公司
	Company	Guangzhou Teching Culture Development Co., Ltd
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	website	

土星APP
TECHING

土星官网
OFFICIAL WEBSITE

版本 (Version) : DM518

Teching Robot
土 星 机 器 人
型号(MODEL): DM518

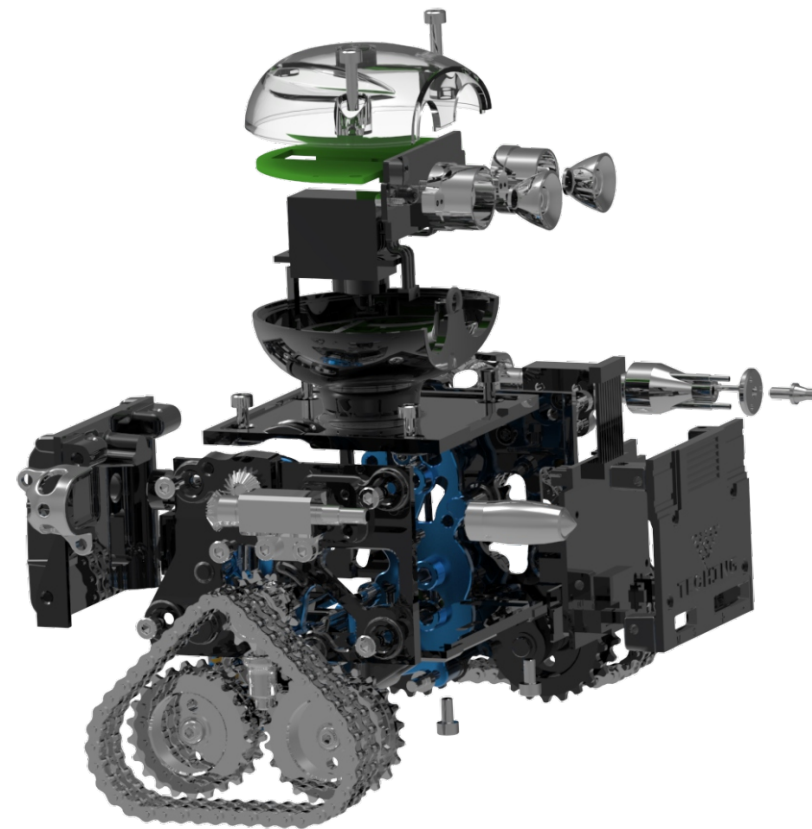


Assembly Difficulty
难度系数 ★★★★★

结构特点：

Structural features:

- 1、双减速电动机驱动机构
Double reduction motor drive mechanism
- 2、链条轮式结构
Chain wheel structure
- 3、手臂变向传动机构
Arm steering transmission mechanism
- 4、张紧轮弹簧减震系统
Tensioner spring damping system
- 5、蓝牙音响
Bluetooth audio
- 6、零件数量超过160个
The number of parts exceeds 160



真模型
Real Model

真世界
Real World

产品基本信息

一、产品参数

产品名称：土星机器人

产品型号：DM518

主要材料：阳极氧化铝+不锈钢+工程塑料

充电电压：直流5V

电池容量：2×450mAh

组装难度：III级

产品标准：GB/T9254-2008

GB/T17626.2-2006

质检：A

二、产品介绍

◆ 土星工匠师系列产品为金属机构组装模型。主要材料选用铝合金表面阳极氧化，产品结构采用真实的工业结构；

◆ 使用各种工具组装零件，安装工序及方法接近实际工业要求；

◆ 该系列产品主要用来提高用户的动手能力、专注力，培养严谨讲秩序的习惯；

◆ 认识各种工业机器，学习各种工业结构，提高用户的探究及创新力。

三、组装要求

◆ 组装前要认真阅读《标准件组装基础知识》，学会基本的标准件组装方法和工具使用；

◆ 要求组装时桌面整洁，防止丢失零件或错装。组装严谨有序，看图仔细，避免组装错误；

◆ 注意说明书中的提示语，注意零件的安装方向，防止理解错误。注意检测环节的要求；

◆ 摩擦部位尽量使用润滑油，防止运转时卡死。紧固螺丝必须安装到底，防止零件松动；

◆ 组装完成后要调试装配间隙及松紧度，有疑问可查询本公司相关网站或微信公众号；

鼓励在成人看护及确保安全的情况下，使用锉刀、砂纸等简单去材料工具，优化零件；

◆ 鼓励用户在没有安全隐患的情况下，将模型进行零部件修改或总体改装，及具备改装能力；

◆ 说明书后面附零件表，用户可根据列表拆散模型并重新装入盒中；

◆ 如果零件有丢失，可向我公司咨询或采购（土星官方网店）；

◆ 模型结构可能持续优化，如有说明书内容与实物不符，请参考公司最新组装资讯；

◆ 本产品长期不使用可能会造成电池失效、润滑油干枯、产品间隙沉积灰尘等造成产品无法运行的，请更换电池或拆解零件进行清洗。

注意事项

一、安全须知

◆ 请仔细阅读本手册中的内容，以确保您能够正面且安全的使用本产品；

◆ 该系列产品为工业级别金属机构模型，因此组装和使用该模型需要一定的安全意识，提高安全意识也是该模型的作用之一；

◆ 本模型适合14岁以上的用户使用，相关安全事项仔细阅读本说明提示；

◆ 严禁让儿童或宠物吞咬本产品或其备件，以免造其伤害；

◆ 合理使用组装工具，严格按说明书组装零件，避免强装硬拆，防止划伤。严禁工具或零件尖角部位离眼睛太近，以免挫身体；

◆ 本模型主要由金属零件组成，具有一定的硬度和重量，请妥善放置，避免产品及配件受到强烈冲击和震动，以免砸伤身体或损坏本产品；

◆ 机械运动时，请不要将手指或身体其它部位放入零件运动范围内，避免压伤；

◆ 电线接头须按说明书指示标记连接，避免错接引起电路短路或失灵；

◆ 电池充放电及放置方法请按要求进行，电池停用3个月以上建议更换电池；

◆ 请勿以任何形式强行阻碍零件运转，如需关闭请直接关闭电源即可；

◆ 如对模型进行改装，请留意相关零件参数，避免使用大功率电器动力零件或装置，导致意外；

◆ 请按说明书正确使用本产品的零件，切勿做其它用途。

二、电池和充电注意事项

◆ 本产品配备专用充电线，用户自备电源适配器，其输出DC电压需5V，其输出DC电流不小于1000mA；禁止使用高于6V的适配器给产品充电；

◆ 充电前请确保触点干燥，无脏污，产品不使用或维修拆机时请不要充电；

◆ 不可将电池投入火中，也不能将其暴露在诸如日照、火烤或类似过热的环境中，以免电池漏液、过热、爆裂或起火；

◆ 如果电池更换不当会有爆炸危险，只能用同样类型或等效型电池来更换；

- ◆ 本产品配备的锂电池，严禁拆卸、挤压、加热或燃烧电池，严禁使用尖锐物、螺丝刀等触碰、撬电池，以上操作可能会引起电池起火或燃烧；
- ◆ 如果电池在使用、充电或保存过程中有温度过高、变色、起鼓、漏液等异常现象，请停止使用并更换新电池，以免造成安全问题；
- ◆ 充电时，由于电池温度会升高，请不要将电池和易燃物放在一起（如：床头、衣物、书本等），以免引发火灾；
- ◆ 请勿在高温、潮湿等环境中充电，温度以0至35摄氏度为宜；湿度应在65%以下，产品设计使用最高环境温度为45摄氏度；
- ◆ 为减少儿童触电危险，请在家长或其他监护人的指导下操作。

三、产品声明

- ◆ 使用本产品前，请您仔细阅读并遵守本手册中的各种说明及警示。对于不正确使用或不遵守本产品相关说明使用所造成的后果，本公司概不负责；
- ◆ 本产品适合于14岁以上用户使用。因使用本产品年龄偏小或将产品给对本产品相关安全要求不熟悉者使用，造成的安全问题本公司概不负责；
- ◆ 本产品是工业机构模型，仅作为学习和体验使用。不得将产品作为其它用途使用，否则本公司不承担任何责任；

- ◆ 本公司在不断提高、完善产品的设计和使用功能，如说明书所载内容与实际产品的内容略有不同，恕无法另行通知，敬请见谅。因此任何以本说明的数据、图片或文字描述为依据的索赔要求将不予受理；
- ◆ 本着不断完善，持续发展的原则，本公司保留在不预先通知的情况下，对本手册中描述的任何产品细节进行修改和改进的权利；
- ◆ 产品说明书中的图片用于指导用户操作，仅供参考，具体请以实物为准；
- ◆ 在使用法律允许的最大限度内，在任何情况下，本公司与其供应商均不对任何特殊、偶然、附带、或间接损失承担责任，无论该损失由何种原因引起；

本手册中含有重要信息，请保留备用。

General information about product

I. Product parametersProduct Name: Teching Robot

Product model: Dm518

Main materials: anodic aluminum oxide + stainless steel + engineering plastics

Voltage: DC 5V

Battery capacity: 2 × 450mAh

Assembly difficulty: Level III

Product standard: GB /T9254-2008
GB/T17626. 2-2006

Quality inspection: A

II. Product description

- ◆ Teching Craftsman series of products are metal structure assembly models. Its primary material is aluminum alloy with anodized surface, and the product structure is a real industrial structure;
- ◆ Assemble parts using various tools with the installation procedures and methods substantially compliant with practical industrial requirements;
- ◆ This series of products are principally designed to improve users' hands-on ability and concentration, and to develop habits of "preciseness and stress on discipline";
- ◆ Learn about various industrial machines, and study various industrial structures to improve user's capability of research and innovation.

III. Assembly Requirements

- ◆ Be sure to read the Basics of Standard Parts Assembly carefully to master basic standard parts assembly procedure and the usage of tools before assembly;
- ◆ The table shall be kept tidy and clean during assembly to prevent parts being lost or incorrectly assembled. Assemble parts in a rigorous and orderly fashion, view the diagrams carefully, and avoid incorrect assembly;
- ◆ Pay attention to the prompt text in instruction manual, carefully view the part installation orientation, and avoid incorrect comprehension. Pay attention to the requirements on testing;
- ◆ Lubricating oil shall be applied to friction areas to the greatest extent to prevent jamming during operation. Fastening screws must be thoroughly mounted to prevent looseness of parts;
- ◆ If you have any doubt when adjusting any assembly clearance or tightness after the completion of assembly, please refer to our website or WeChat public account;
- ◆ Users are encouraged to optimize the parts using material removing tools like files and sand paper with adult care where the personal safety is guaranteed;

- ◆ Users are encouraged to perform part modification or overall modification of model without potential safety hazard so as to develop modification capability as soon as possible;
- ◆ The user may disassemble this model and put it in the package again according to the parts list attached hereto;
- ◆ If any part is lost, please inquire of or purchase it from us (Teching official online store);
- ◆ The model structure is subject to continual improvement. If the real object differs from the instruction manual, please refer to our latest assembly information.
- ◆ Once the product fails to function due to battery failure, lubricating oil shortage or dust accumulation in product gaps because it is left unused for long, it's advisable to change the battery or disassemble and clean its parts.

Precautions

I. Safety Instruction

- ◆ Please read this manual carefully so that you are in a position to use this product correctly and safely;
- ◆ This series of products are industrial-level metal models, so its assembly and use requires certain safety awareness; improvement of safety awareness is also a function of the model;
- ◆ This model is suitable for users aged 14 and over. Please read this manual carefully for relevant safety information;
- ◆ Strictly prohibit children or pets swallowing or biting this product or its spare parts, since this may cause injury/damage;
- ◆ Use assembly tools rationally, assemble the parts in strict conformity with the instruction manual, and avoid forcible handling to avoid scratches; keep sharp points of tools or parts away from the eyes to avoid contusions;

- ◆ This model is made up of metallic parts mainly, and has a certain level of hardness and a certain weight; please place it properly to avoid bodily injuries; Protect the products and accessories against intense shock and vibration so as to avoid personal injury and product damage;
- ◆ During mechanical movement, do not put a finger or any other part of the body within the movement range to avoid contusions;
- ◆ Wire connectors must be connected according to the marks specified in the instruction manual to avoid short-circuit or failure arising from wrong connection;
- ◆ Charge, discharge and place the battery as required; it is advised to replace the battery when it has not been used for 3 months or more;
- ◆ Do not prevent any part from running forcibly in any form; to do this, turn off the power directly;
- ◆ To refit this model, please pay attention to the relevant part parameters, and avoid using any high-power electric part or device that may result in an accident.
- ◆ Please use parts of this product properly as per instruction manual. Don't use them for other purposes.

II. Battery and charging precautions

- ◆ This product is delivered with dedicated charging cable. Users shall use their own power adapters; output DC voltage: 5V; output DC current $\geq 1000\text{mA}$;
- ◆ Please make sure the contact is dry and free of dirt before charging. Please don't charge the battery if the product is not in use or is in repair;
- ◆ Don't put the battery in fire or have it exposed to sunlight, fire or similar excessively hot environment, since this may lead to leakage, excessively high temperature, bursting or ignition of battery;
- ◆ If improper change of battery may cause explosion, the battery must be replaced with one of identical or equivalent type;

- ◆ Never disassemble, squeeze, heat and set fire to the lithium battery delivered with this product, and never touch and pry the battery using any sharp object or screwdriver, etc., since this may cause the battery to ignite or burn;
- ◆ In the case of excessively high temperature, discoloration, bulging, leakage and other anomalies during the use, charging or keeping of battery, please take it out of service and change it with a new one to avoid safety problem;
- ◆ Since the battery temperature rises when it's being charged, please don't have the battery to come into contact with inflammables (e.g. bedside, clothing and books, etc.) since this may result in a fire;
- ◆ Please don't charge the battery in a moist space with high temperature; the temperature is recommended to be $0\sim 35^{\circ}\text{C}$, and the humidity shall not exceed 65%; the design max. ambient temperature for using the product is 45°C ;
- ◆ To alleviate the risk of electric shock, children are not allowed to use the product without the help of their parents or other custodians.

III. Product Declaration

- ◆ Please carefully read and observe various instructions and warnings in this manual before using this product. Our company shall not be held responsible for any consequence of failure to properly use this product or observe related operating instructions;
- ◆ This product is suitable for users aged 14 and over. Our company shall not be held responsible for any safety problem arising from the use of this product by too young users or users who are not familiar with relevant safety requirements;
- ◆ As a model in industrial structure, this product is designed exclusively for learning and experience. Do not use this product for other purposes; otherwise, we will assume no responsibility for any consequence thereof;

- ◆ We have been improving the design and operation features of our product, so separate notice will not be given for slight difference between instruction manual and actual product. Hence, any claim for compensation filed based on the data, pictures or text of this instruction manual will be rejected;
- ◆ For constant improvement and sustainable development, our company reserves the right to modify and improve any product detail given in this manual without prior notice;
- ◆ The pictures in instruction manual guide users for operation, and are thus for indication only; the real product shall prevail;
- ◆ Our company and its suppliers shall not be held responsible for any special, incidental, collateral or indirect loss in any case to the greatest extent the law permits, regardless of its cause;
- ◆ Please keep this manual properly since it contains important information.

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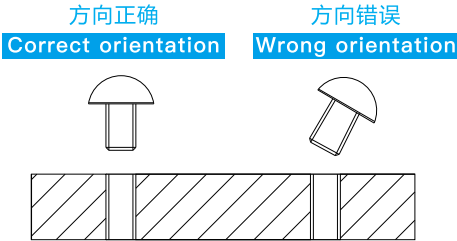
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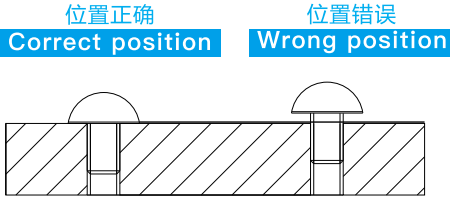
标准件组装基础知识 Basic knowledge of standard parts assembly

1、螺丝安装 Screw installation

(1) 螺丝安装方向 Screw installation direction

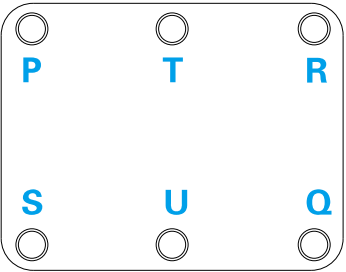


(2) 螺丝拧紧深度 Screw tightening depth

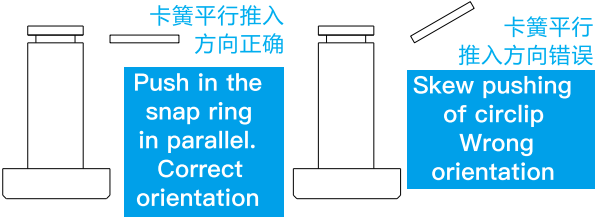


(3) 螺丝安装顺序 Screw installation sequence

按照编号顺序，对角安装螺丝
Mount the screws diagonally
in order of number



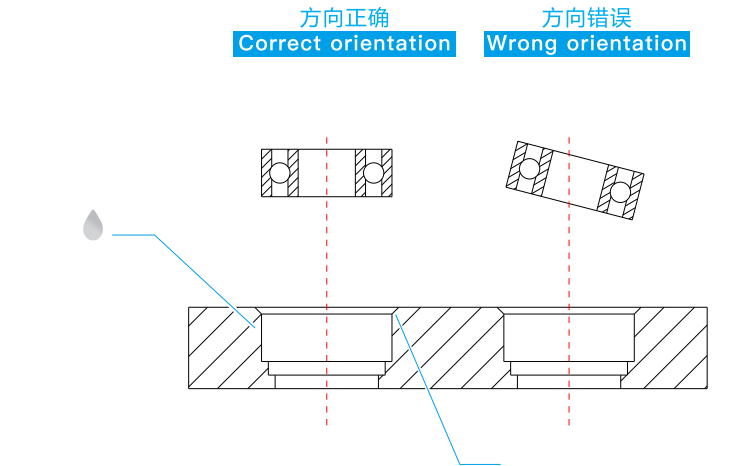
2、卡簧安装方法 Circlip installation method



3、轴承安装 Bearing installation

(1) 轴承装入轴承座孔

Insert the bearing into the bearing housing

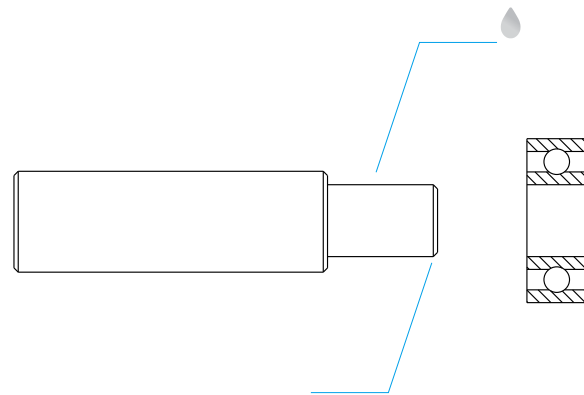


检查轴承座孔倒角及毛刺；
在轴承座孔侧面加少量润
滑油；将轴承对直装入到
底，施压部位为轴承外圈。

Check the orifice of bearing block for chamfer and burr; apply a little lubricating oil onto side face of shaft Installation point; align the bearing and mount it to the final position; pressure is applied to the inner race of bearing.

(2) 轴承装入轴

Bearing into the shaft



Check the shaft end for chamfer and burr; apply a little lubricating oil onto side face of shaft Installation point; align the bearing and mount it to the final position; pressure is applied to the inner race of bearing.

检查轴端倒角及毛刺；
在轴安装部位侧面加
量润滑油；将轴承对
直装入到底，施压部
位为轴承内圈。

一、产品组装说明

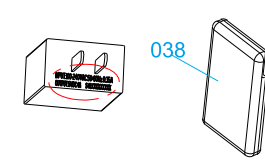
Product assembly instructions

1.1. 准备工作：检查电控系统

Preparation: check the electric control system

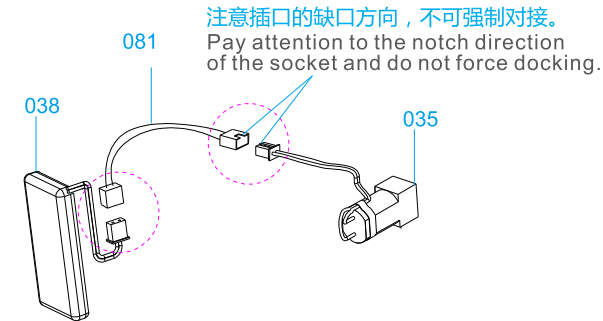
1.1.1 检查电池及充电 Check battery and charge

- 1) 检查电池无鼓胀，漏液等异常。
Check the battery for bulging, liquid leakage and other abnormalities.
- 2) 确认充电器的标识。充电器输出直流5VDC 1A (含) 以上。
Confirm the identification of the charger. Charger output DC 5VDC 1A or above.



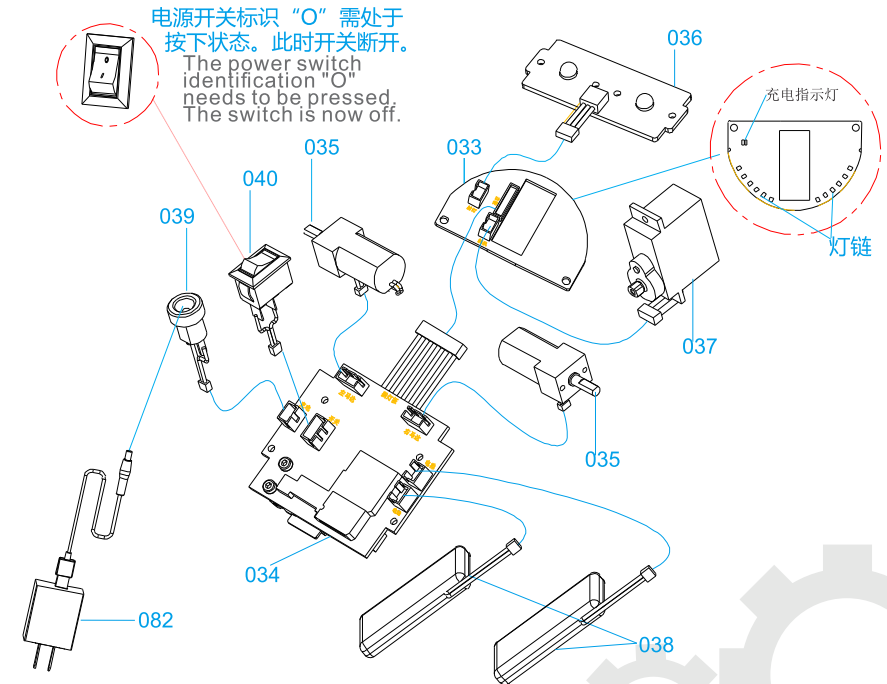
1.1.2 连接电池，检测线，电机，分别检查2个电机。

运转应连续，异响等情况。
Connect the battery, detection line and motor, and check the two motors respectively. The operation shall be continuous without abnormal noise.



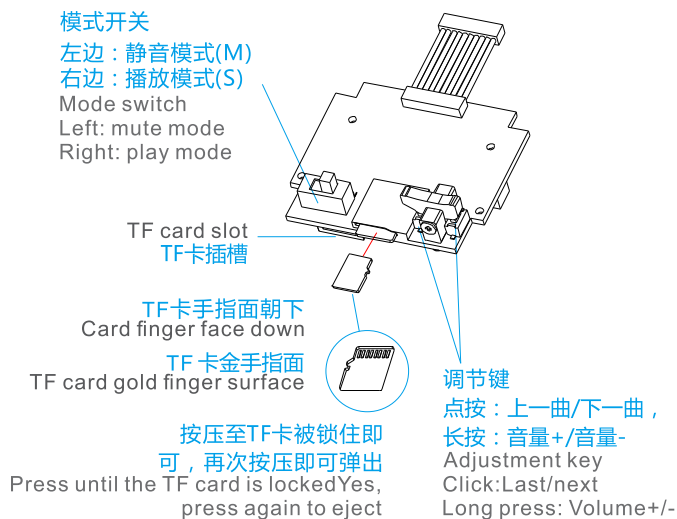
1.1.3 整个电路检查 Entire circuit check

- 1) 确保电源开关040处于断开状态。Make sure the power switch 040 is off.
- 2) 按图示对应基板标识连接电路，注意电池最后安装。对应标识接插连线。各电路间应隔离绝缘。Mark the connection circuit according to the corresponding substrate as shown in the figure, and pay attention to the final installation of the battery. Corresponding identification patch cord. Each circuit shall be isolated and insulated.
- 3) 检查无误后充电。检查充电功能：充电时033红灯亮；充满电蓝灯亮。
Charge after checking. Check the charging function: the 033 red light is on during charging; The fully charged blue light is on.
- 4) 充电至蓝灯亮，充电完成，撤去082。
Charge until the blue light is on and the charging is completed, Remove 082.



1.1.4 电路功能检查：Circuit function check

- 1) 按图插入TF卡。打开电源开关，当前处于工作状态。
033红色指示灯亮。
Insert the TF card as shown. Turn on the power switch and it is currently in working state.
033 red indicator light is on.

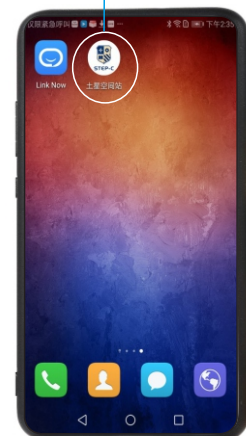
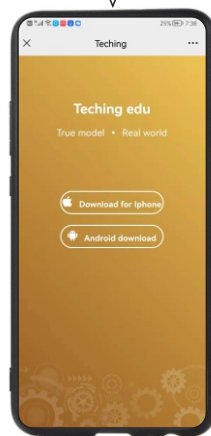


- 2) 打开手机蓝牙。Turn on Bluetooth.

- 3) 用手机扫描二维码，安装“土星空间站”APP。
Scan the QR code with your mobile phone and install the "Teching edu" app.

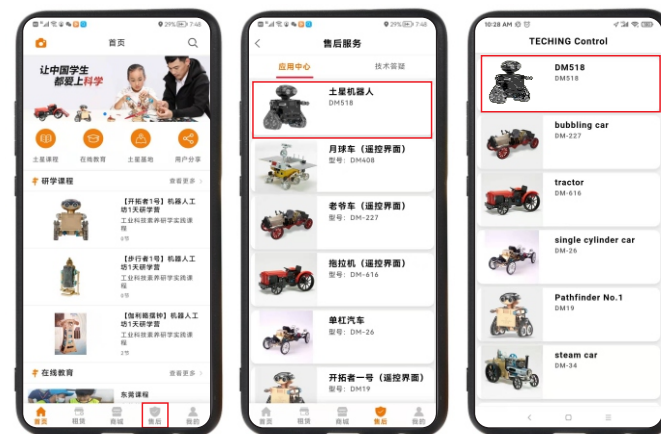


下载后的APP：土星空间站



4) 试用遥控界面

- a. 打开“土星空间站”APP，点击首页下方“售后”，进入服务界面；
b. 选择DM518 进入遥控界面；
Open the "Teching edu" APP and select "DM 518".



- c. 点击“扫描”，搜索机器人蓝牙；
Click "scan" to search for robot Bluetooth;



- d. 先点击扫描设备，出现设备名称后，点击“设备名称：518”
First click the scanning device, and then the device name appears. Click "device name: 518".



- e. 蓝牙连接成功后，即可进行机器操纵。
After the Bluetooth connection is successful, the machine can be operated.



5) 检查电路系统：

- a. 拨动主板“模式开关”至右侧播放模式（S档），喇叭应能播放；
 点击主板“调节键”左端，播放下一首歌；
 点击主板“调节键”右端，播放上一首歌；
 长按“调节键”左端，音量增加；
 长按“调节键”右端，音量减少。

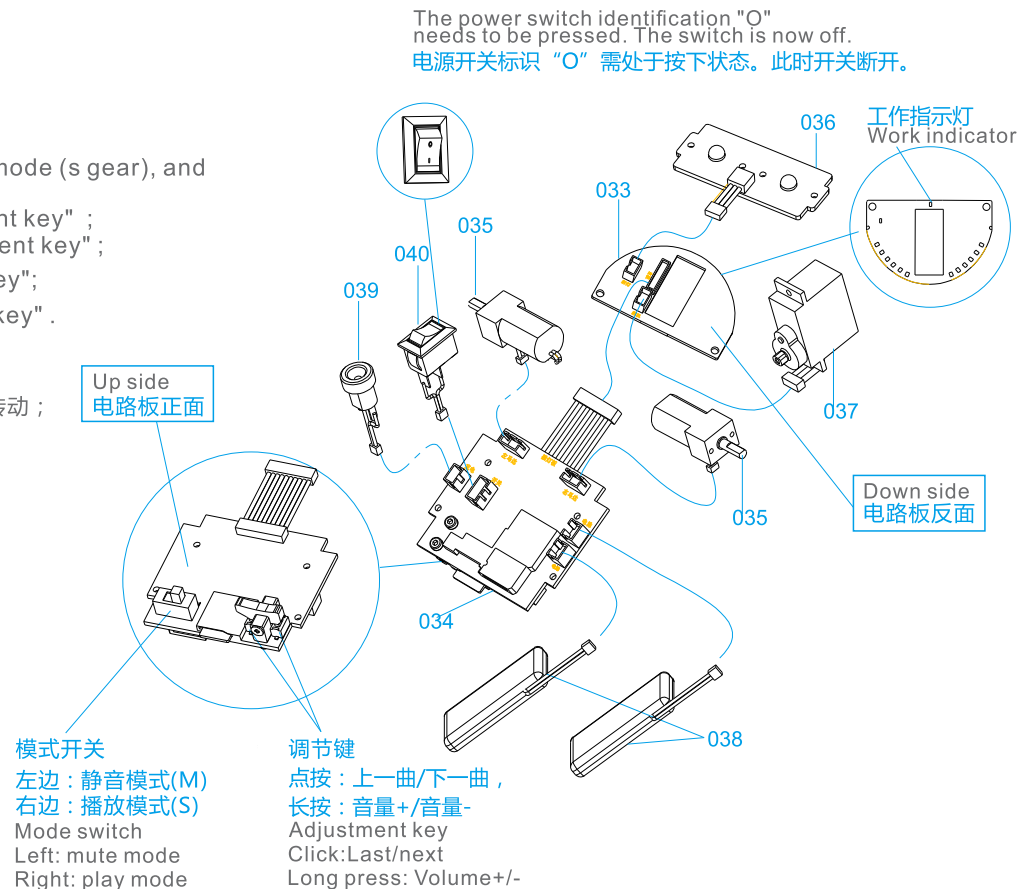
Turn the motherboard "mode switch" to the right playback mode (s gear), and the speaker should be able to play;
 Next song: click the left end of the motherboard "adjustment key";
 Last song: click the right end of the motherboard "adjustment key";
 The volume +: long press the left end of the "adjustment key";
 The volume -: long press the right end of the "adjustment key".

- b. 拨动主板“模式开关”至左侧静音模式（M档），操纵APP控制电机转动；同时电机转动时，射灯应能闪烁。

Turn the main board "mode switch" to the left mute mode (M gear), operate app to control the motor rotation; at the same time, when the motor rotates, the spotlight should flash

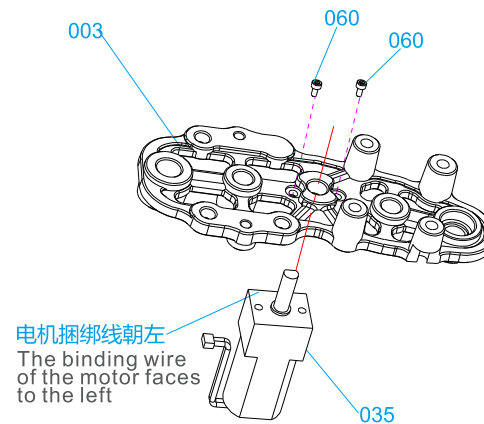
- c. 操纵APP界面中间头部转动滑块，观察舵机是否转动
 Operate the middle head of the app interface to rotate the slider and observe whether the steering gear rotates.

- d. 如以上功能正常，关闭电源。随后续安装步骤需要拆取电路。
 If the above functions are normal, turn off the power. Subsequent installationStep requires removal of the circuit.

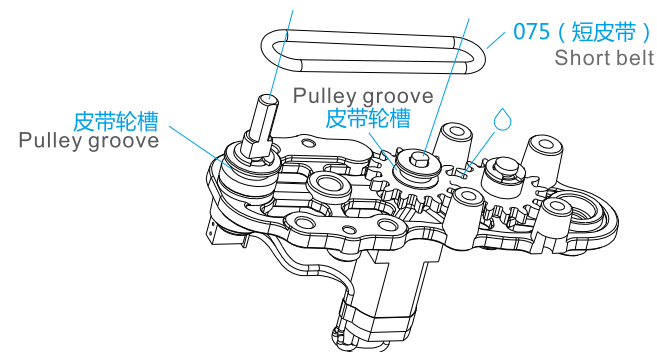
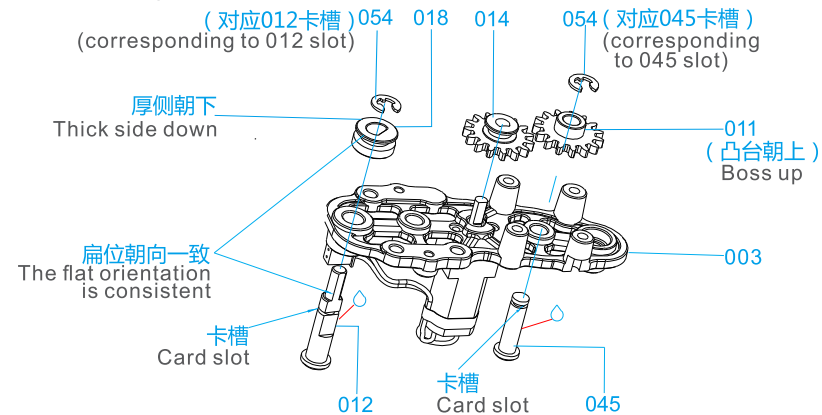


1.2 安装右侧齿轮总成 Install the right gear assembly

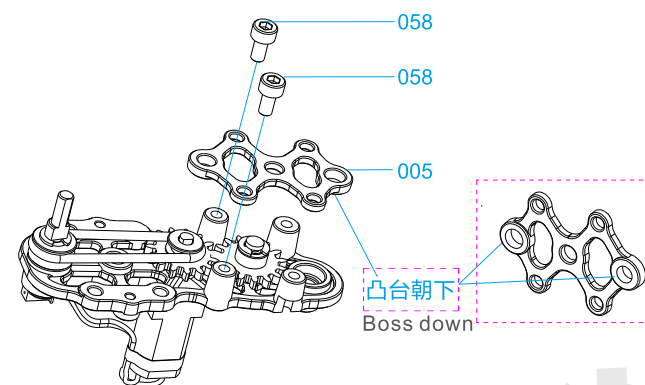
1.2.1 右侧马达组装 Right hand motor assembly



1.2.3. 组装皮带 Assembly of belt

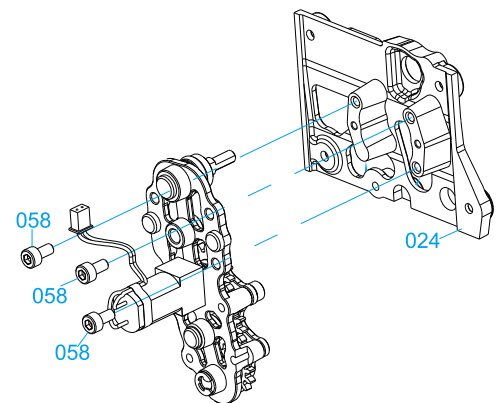
1.2.2 组装右侧齿轮及皮带轮：注意皮带轮、齿轮孔与轴扁位朝向对应。
 Assemble the right gear and pulley: pay attention to the corresponding orientation of the pulley, gear hole and shaft flat position.

1.2.4. 组装右侧齿轮护架 Assemble the right gear guard



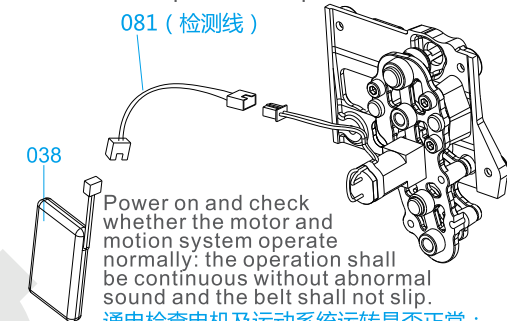
1.2.5. 组装右侧齿轮组件与主体右盖

Assembly of right gear assembly
and right cover of main body



1.2.7. 测试右侧齿轮总成 Test the right gear assembly

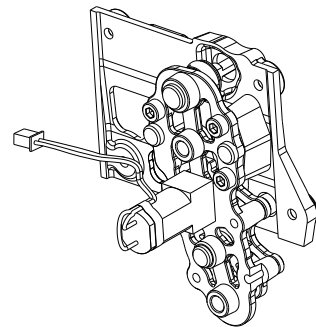
如检查正常，可绕过异常检查步骤1.2.8。
If the inspection is normal, you can bypass the
abnormal inspection step 1.2.8.



Power on and check
whether the motor and
motion system operate
normally: the operation shall
be continuous without abnormal
sound and the belt shall not slip.
通电检查电机及运动系统运转是否正常：
运行时应连续，无异响，皮带无打滑。

1.2.6. 右侧齿轮总成

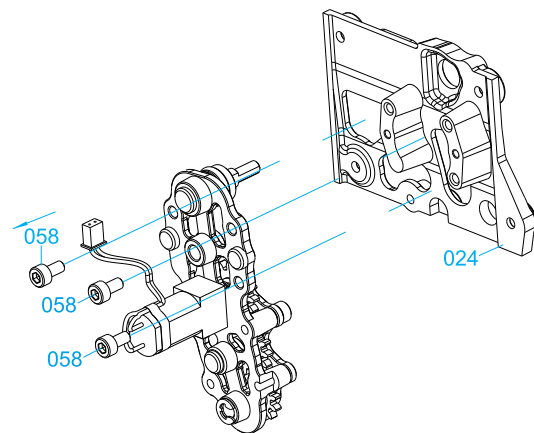
Gear gp-rh



1.2.8 齿轮组运转异常检查（若无异常，此步骤可省略）

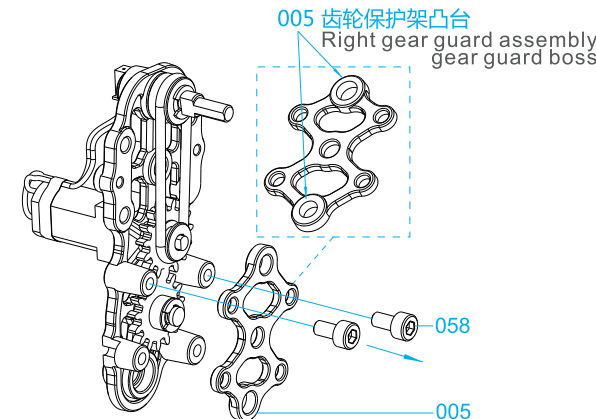
Inspection steps for abnormal operation (if there is no
abnormality, this step can be omitted)

1) 拆下主体右盖 Remove the right cover of the main body.



2) 拆下右侧齿轮保护架。

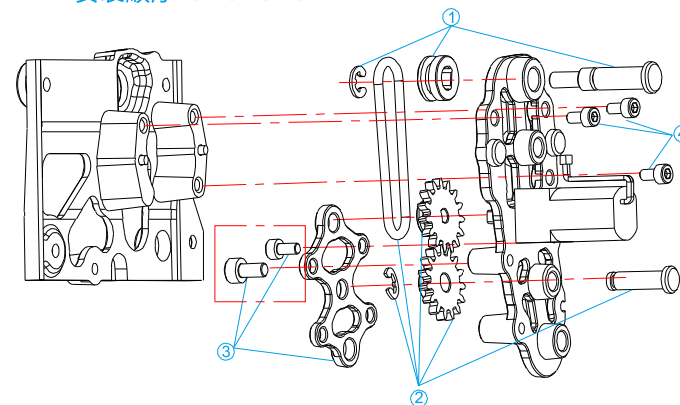
Remove the right gear guard.



4) 按下图步骤装回，检测无异常进入下一步。

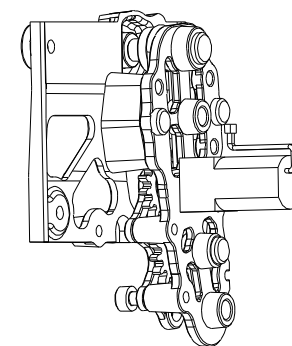
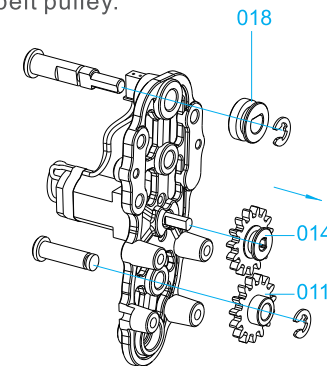
Install it again according to the steps shown in the figure below.
If there is no abnormality, go to the next step.

安装顺序 ①—②—③—④



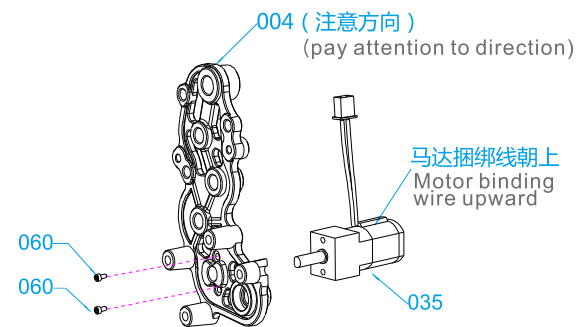
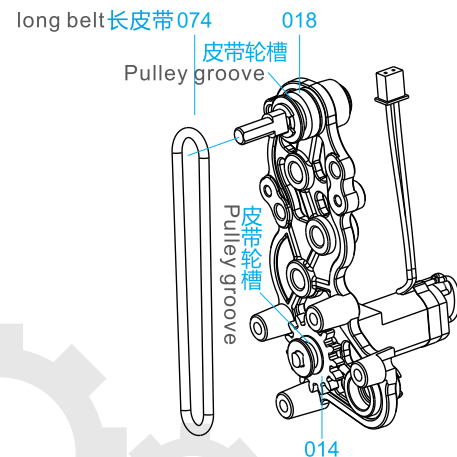
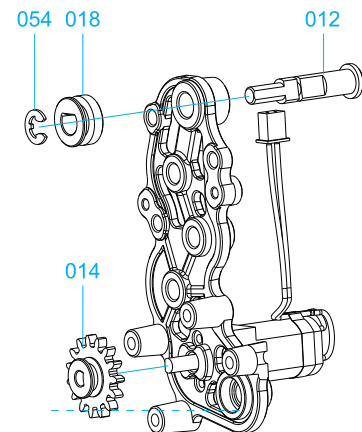
3) 拆下齿轮，皮带轮：对照1.2.2~1.2.5步骤检查齿轮011,014及小皮带轮018的两端孔内是否倒角及毛刺，有毛刺去除。检查齿轮保护架，齿轮，皮带轮安装朝向。

Remove the gear and pulley: refer to 1.2.2~1.2.5.
Step 5 check whether the holes at both ends of
gear 011014 and small belt pulley 018 are
chamfered and burred, and remove any burr.
Check the installation orientation of gear
protection frame, gear and belt pulley.

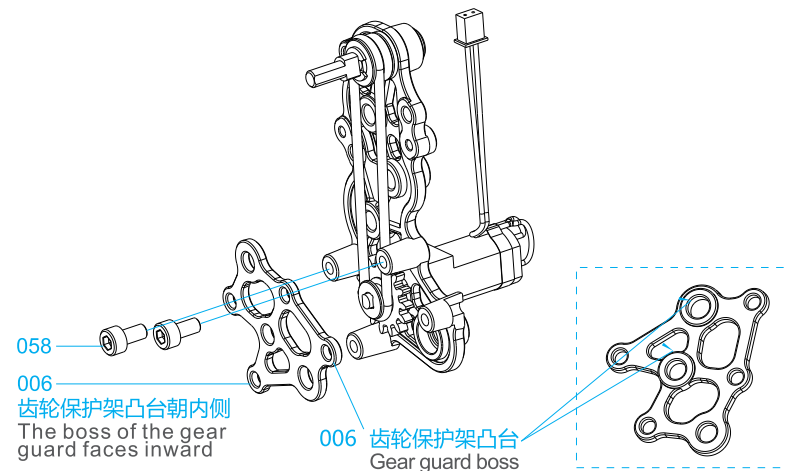
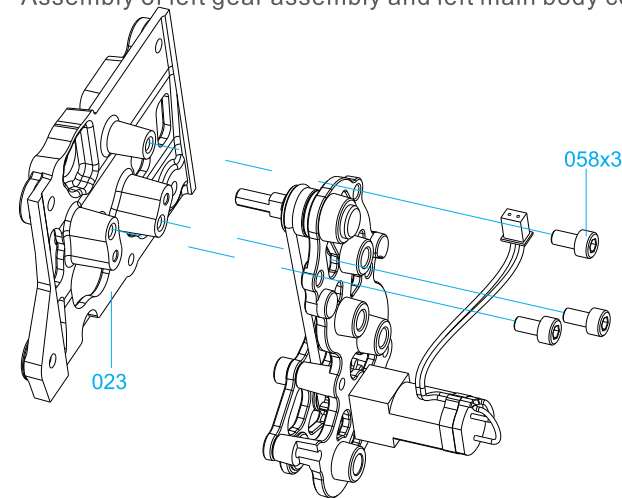
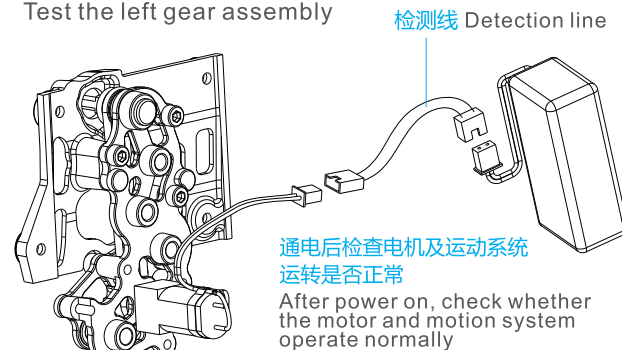
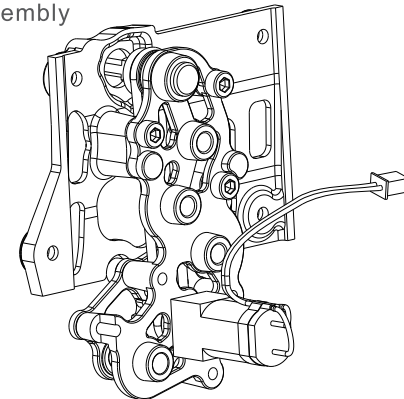
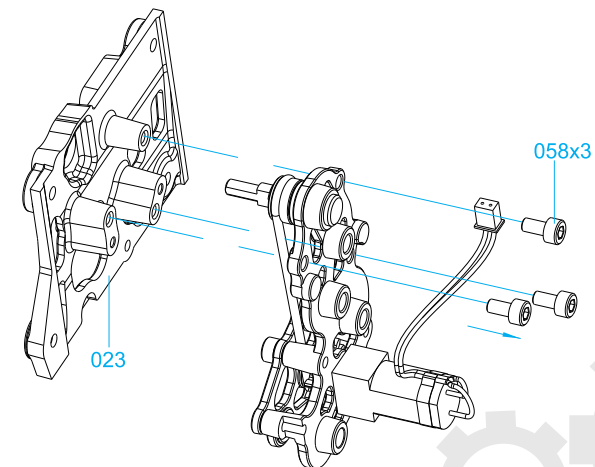


1.3 安装左侧齿轮总成 Install the left gear assembly

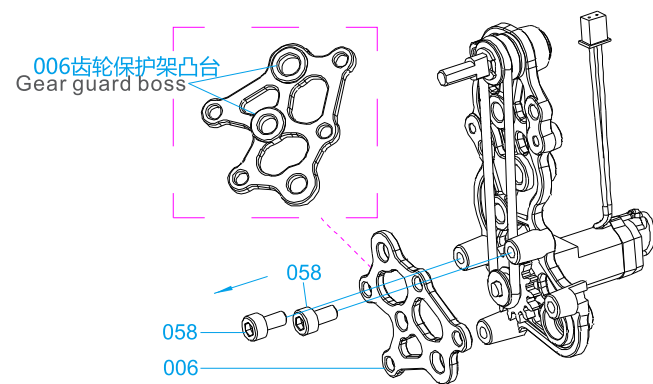
1.3.1. 左侧马达组装 Left hand motor assembly

1.3.3. 左侧皮带组装 (参考1.2.3)
Left side belt assembly (refer to 1.2.3)1.3.2. 组装左侧齿轮及皮带轮 Assembly of left gear and pulley
(安装注意事项参考1.2.2) (refer to 1.2.2 for installation precautions)

1.3.4. 左侧齿轮护架组装 Assembly of left gear guard

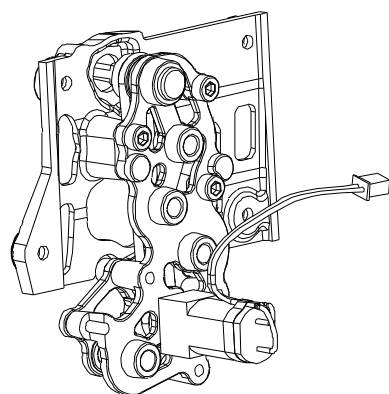
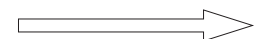
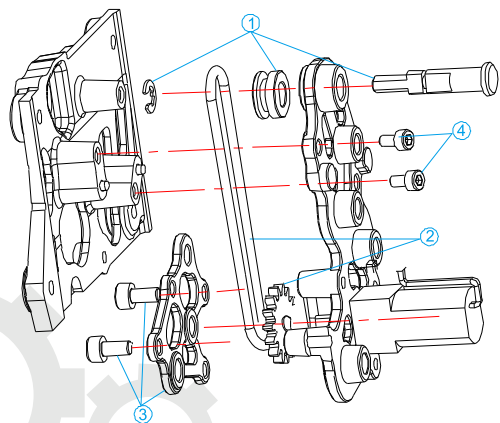
1.3.5. 左侧齿轮组件与主体左盖组装
Assembly of left gear assembly and left main body cover1.3.7. 测试左侧齿轮总成
Test the left gear assembly1.3.6. 左侧齿轮总成
Left gear assembly1.3.8 左侧齿轮组运转异常的检查 (若无异常, 此步骤可省略)
Inspection for abnormal operation of left gear set
(if there is no abnormality, this step can be omitted)1) 拆下主体左盖
Remove the left main body cover

- 2) 拆下左侧齿轮保护架。检查凸台朝向及有无毛刺，有毛刺用小刀去除。
Remove the left gear guard. Check the boss orientation and whether there are burrs. Remove the burrs with a knife.



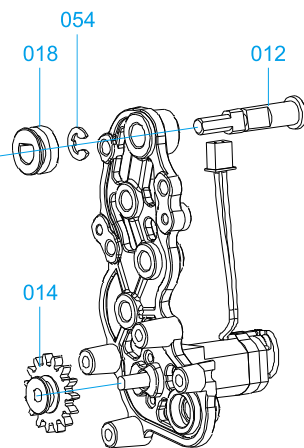
- 4) 按下图步骤装回，检测无异常进入下一步。

组装顺序 ①—②—③—④



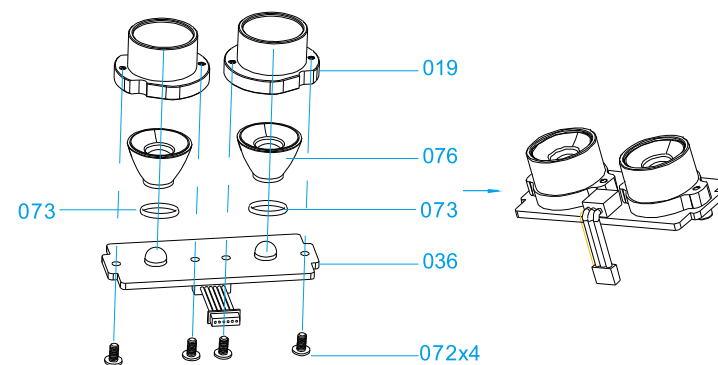
- 3) 拆下齿轮，皮带轮
Remove the gear and pulley

- a. 检查齿轮014周围齿面及轴孔有无毛刺，皮带轮018轴孔是否倒角及毛刺。
Check whether there are burrs on the tooth surface and shaft hole around gear 014. Check whether the pulley 018 shaft hole is chamfered and burred.

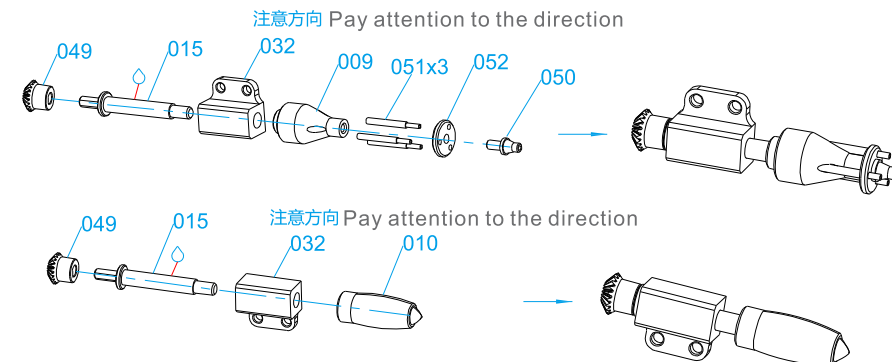


- b. 检查齿轮保护架，齿轮，皮带轮朝向。
Check the orientation of gear guard, gear and pulley.

- 1.4 组装射灯板
Assemble the spotlight panel

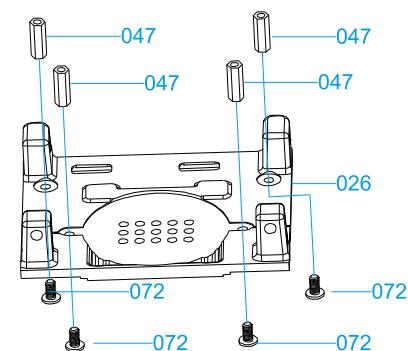


- 1.5 组装左右臂
Assemble the left and right arms

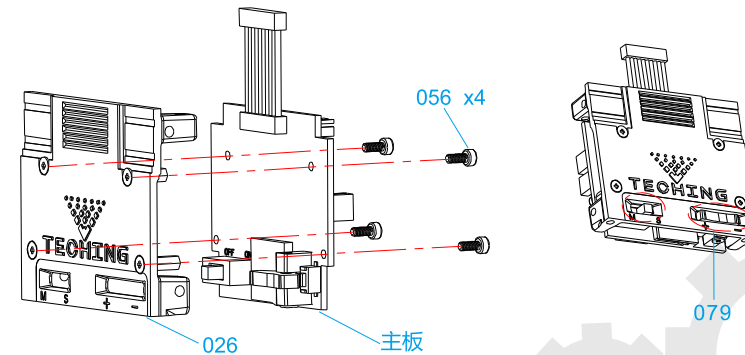


- 1.6 组装主体前盖 Assemble the main body front cover

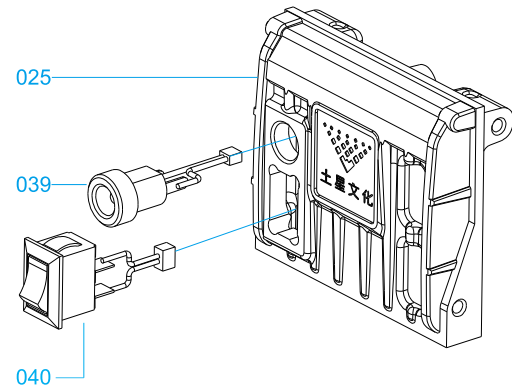
- 1.6.1 组装螺柱 Assembly stud



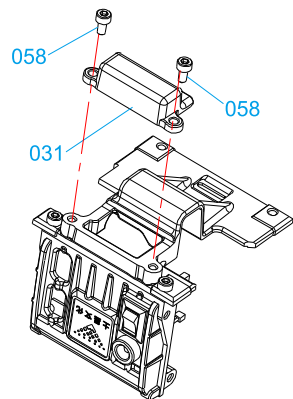
- 1.6.2 组装功能按钮：最后锁入056，检查079音量按键。
Assemble the function button: finally lock in 056 and check the 079 volume button.



1.7 组装主体后盖 Assemble the rear cover of the main body



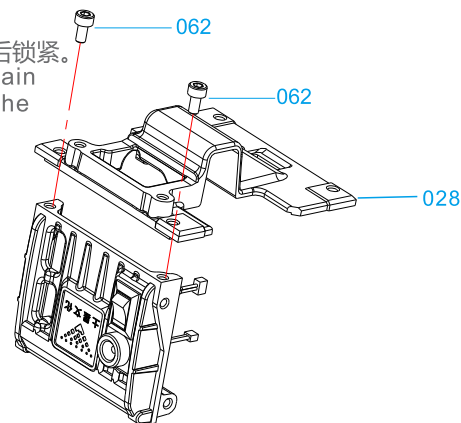
1.8.2 组装电池仓 Assembling the battery compartment



1.8 组装机身总成 Assemble the fuselage assembly

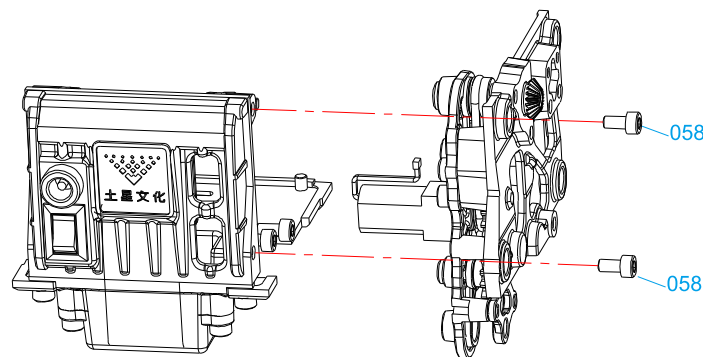
1.8.1 组装主体底盖和主体后盖

螺丝不必锁紧，机身完成后锁紧。
When assembling the main body bottom cover and the main body rear cover, the screws do not have to be locked. After the completion of the fuselage, they are locked.



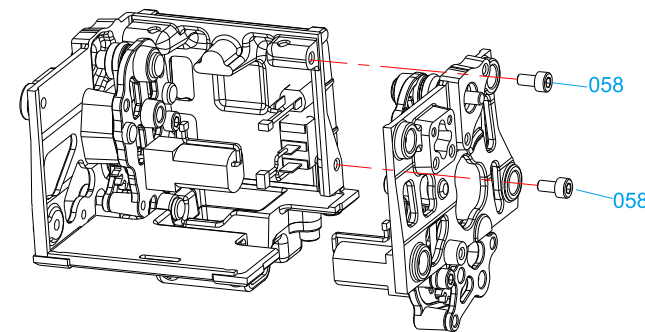
1.8.3 组装右侧齿轮总成：螺丝不必锁紧，机身完成后锁紧。

Assemble the right gear assembly: the screws do not need to be locked. After the machine body is completed, they need to be locked.



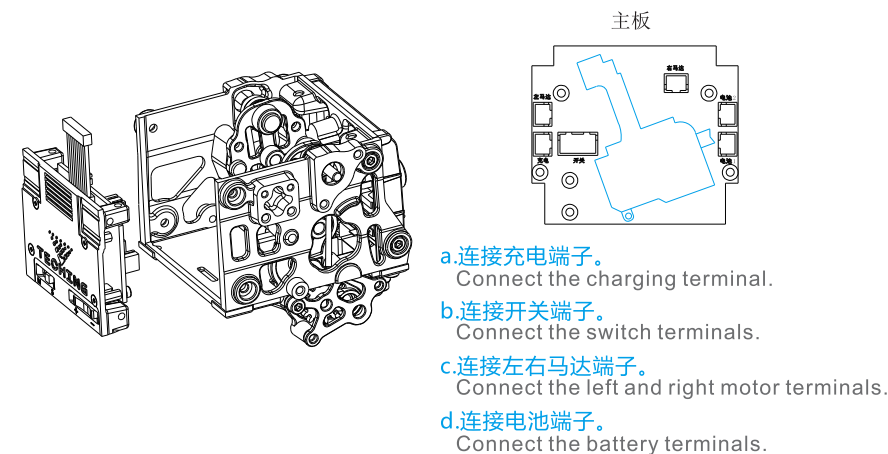
1.8.4 组装左侧齿轮总成：螺丝不必锁紧，机身完成后锁紧。

Assemble the left gear assembly: the screws do not need to be locked. After the machine body is completed, lock it.

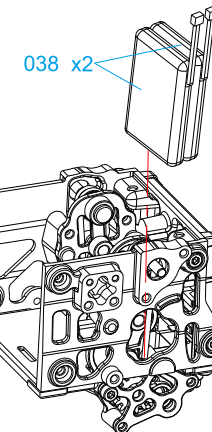


1.8.6 组装主体前盖 Assemble the main body front cover

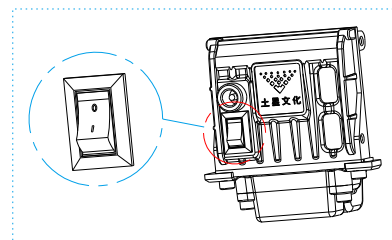
1) 连接主板端子 Connect the main board terminal.



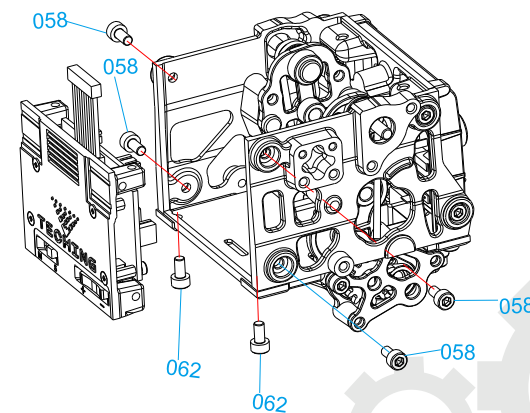
1.8.5 组装电池 Assemble the battery



电源开关处于关闭状态。
The power switch is off.

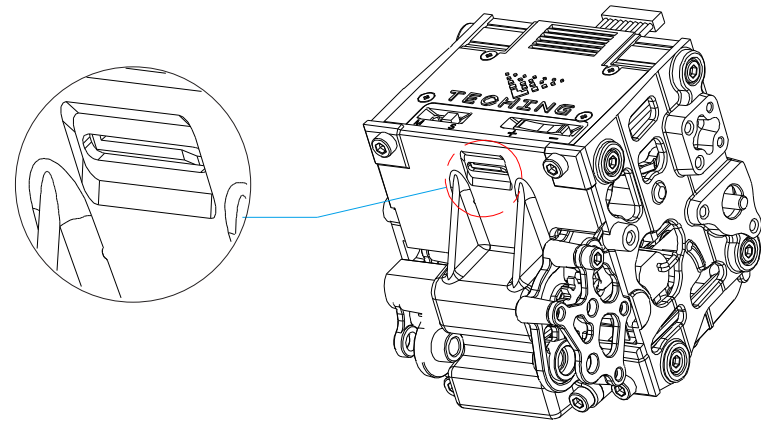


2) 组装主体前盖 Assemble the main body front cover



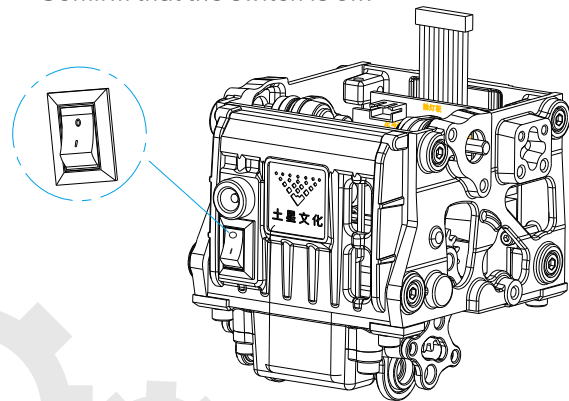
3) 确认TF卡插槽与主体底盖插槽孔对正

Confirm that the TF card slot is aligned with the slot hole on the bottom cover of the main body.



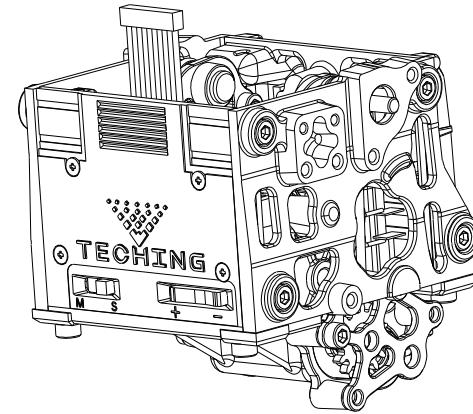
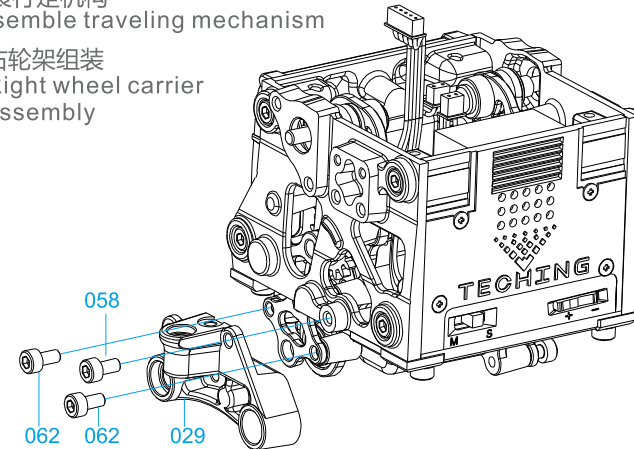
5) 确认开关处于关闭状态

Confirm that the switch is off.



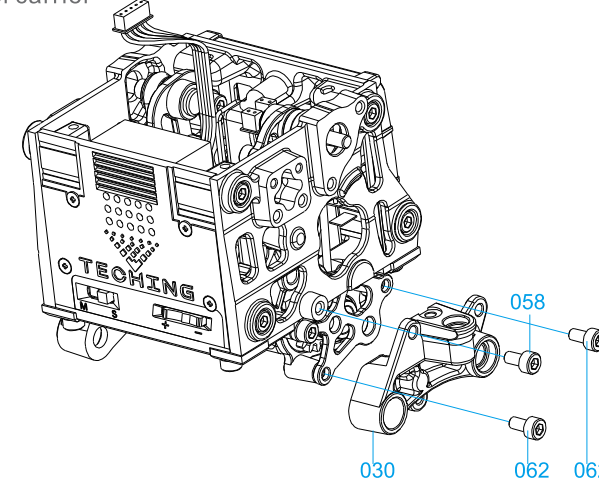
4) 确认主体各连接螺丝处于拧紧状态

Confirm that the connecting screws of the main body are tightened.

1.9 组装行走机构
Assemble traveling mechanism1.9.1 右轮架组装
Right wheel carrier assembly

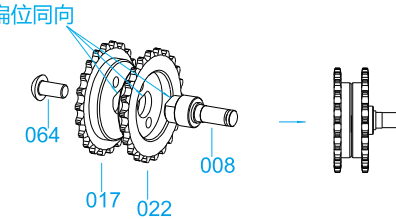
1.9.2 组装左轮架

Assemble the left wheel carrier



2) 从动轮 (短轴) 2套 Driven wheel (stub shaft) 2 sets

3 flat positions in the same direction
3个扁位同向

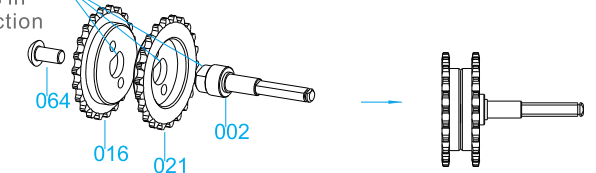


1.9.3 组装驱动链轮、从动链轮

Assemble the drive sprocket and driven sprocket

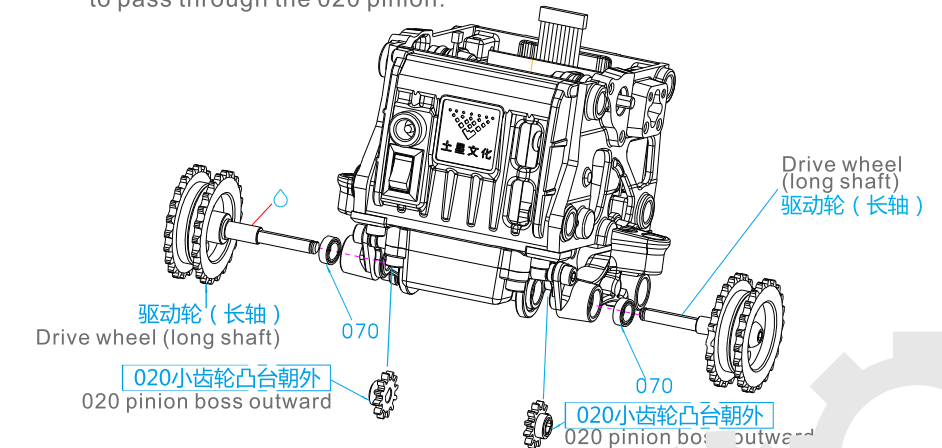
1) 驱动轮 (长轴) 2套 Drive wheel (long shaft) 2 sets

3个扁位同向
3 flat positions in the same direction

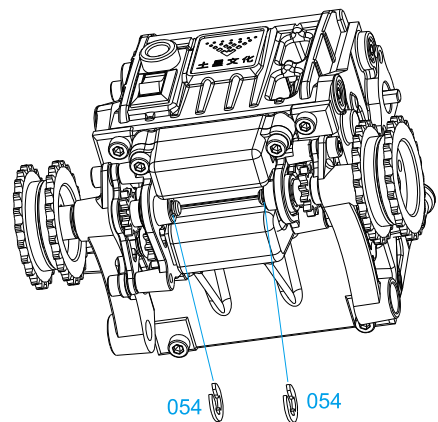


1.9.4 组装驱动链轮 Assemble the drive sprocket

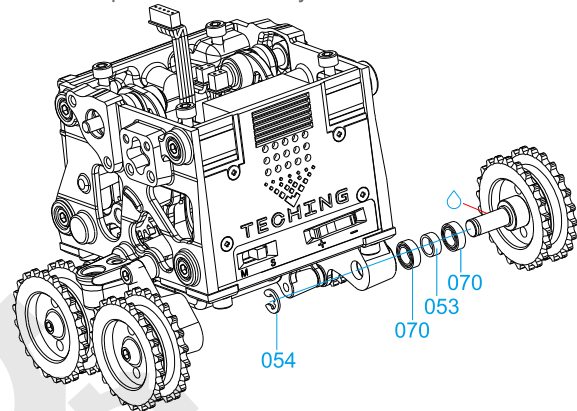
1) 先放入020齿轮,再插入驱动轮轴,稍稍转动,即可穿过020小齿轮。
First put in the 020 gear, then insert the drive axle and rotate slightly to pass through the 020 pinion.



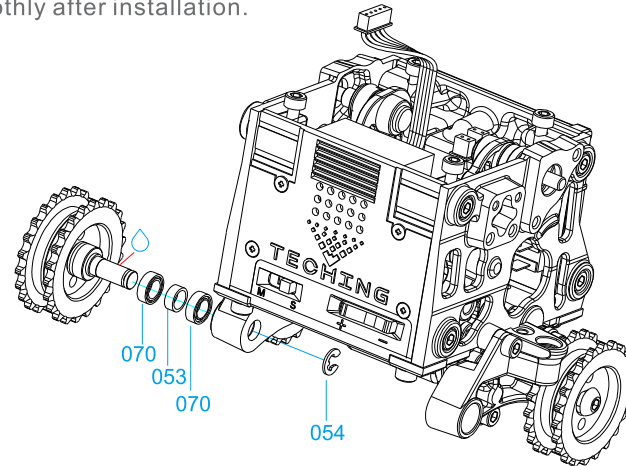
2) 组装驱动轮卡簧
Assemble the drive wheel circlip



1.9.6 左从动轮组装 Assembly of left driven wheel
安装完后旋转链轮应顺畅。
Rotate the sprocket smoothly after installation.

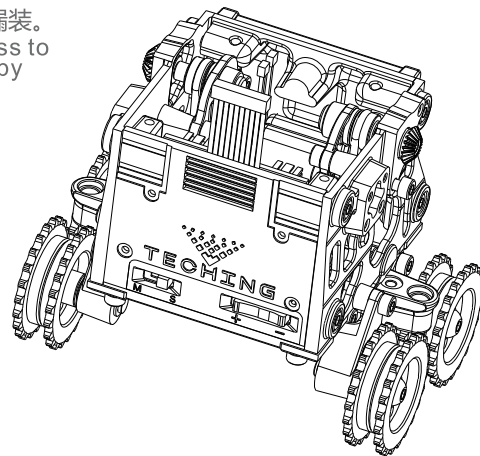


1.9.5 组装右从动链轮，安装完后旋转链轮应顺畅。
Assemble the right driven sprocket and rotate the sprocket smoothly after installation.

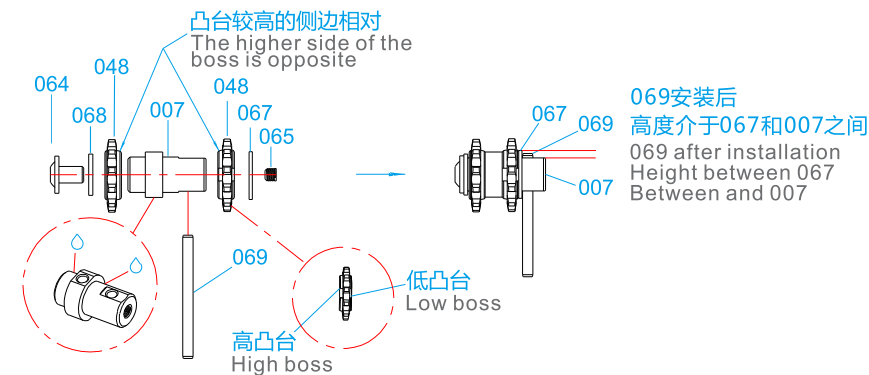


1.9.7 检查所有链轮运转情况有异常时：
Check the operation of all sprockets. In case of abnormality:

- 1) 参照装配过程检查是否误装，漏装。
Refer to the assembly process to check whether it is installed by mistake or missing.
- 2) 检查链轮齿面是否有毛刺。
有毛刺用小刀修正。
Check the sprocket tooth surface for burrs. If there are burrs, correct them with a knife.

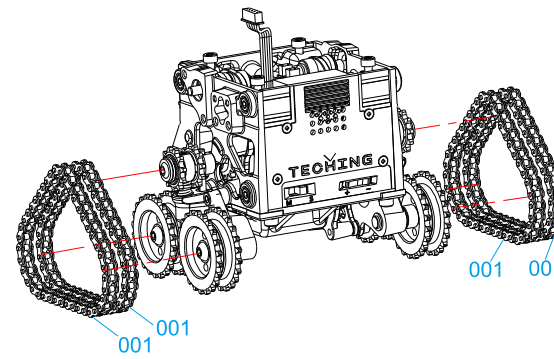


1.10.1 张紧轮组装 (2套) Tensioner assembly (2 sets)

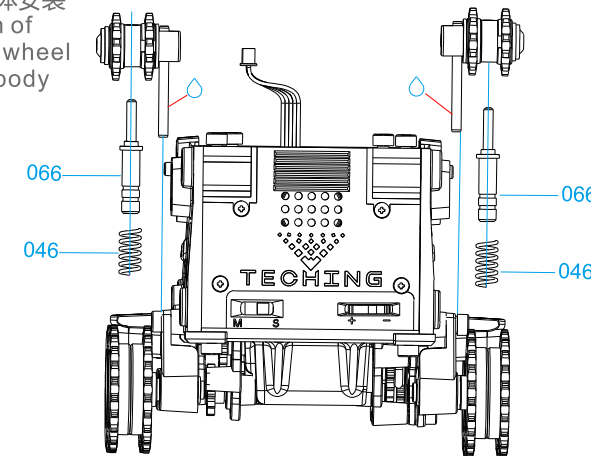


1.10.3 链条安装 Chain installation

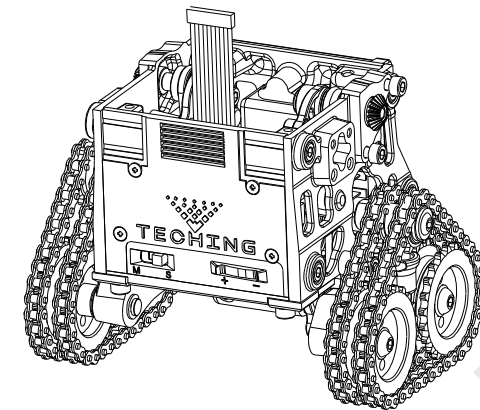
按压张紧轮，安装内侧链条时应同时越过外侧链轮。
Press the tensioning wheel and install the inner chain over the outer sprocket at the same time.
用手转动链条，检查是否卡滞。
Turn the chain by hand to check whether it is stuck.



1.10.2 张紧轮与主体安装
Installation of tensioning wheel and main body



1.10.4 检查链条运转
Check the chain operation

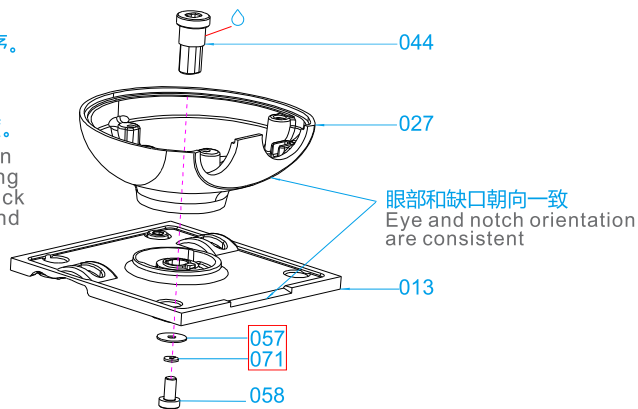
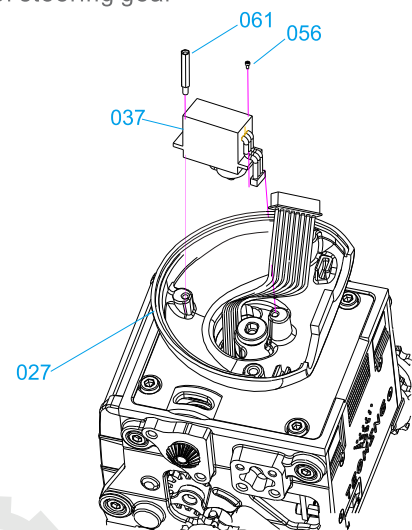
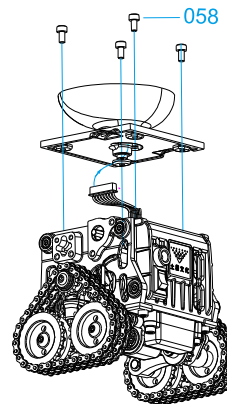


1.11 头部总成组装 Head assembly

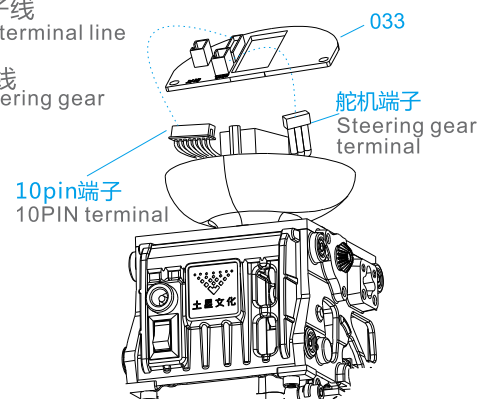
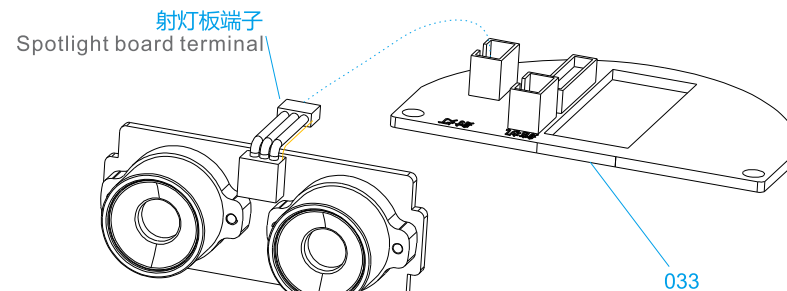
1.11.1 组装头部底盖 Assemble the head bottom cover

注意垫片和弹簧垫片的安装顺序。
安装后检查013转动是否灵活，
角度是否有限制。
如不灵活，调整058螺丝预紧度。

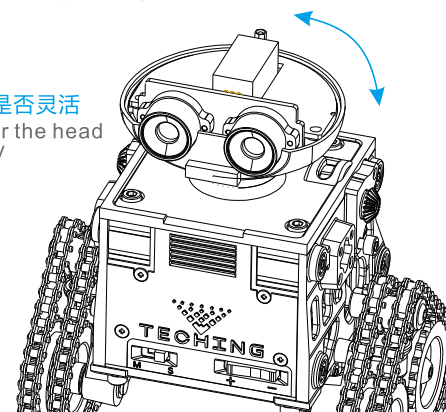
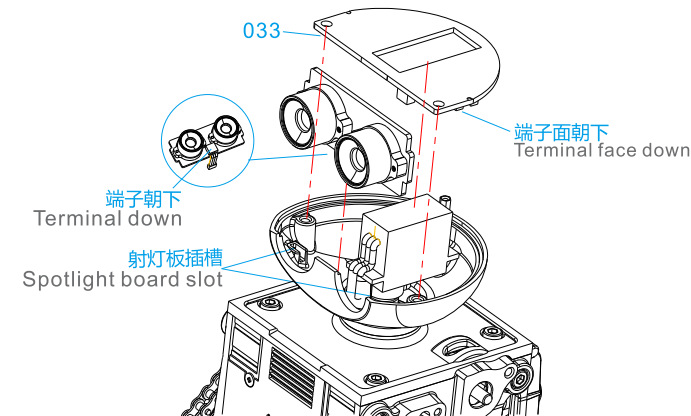
Pay attention to the installation
sequence of gaskets and spring
gaskets. After installation, check
whether 013 rotates flexibly and
whether the angle is limited.
If it is not flexible, adjust the
preload of 058 screw.

1.11.3 组装舵机
Assembly of steering gear1.11.2 头部组件与主体组装
Head assembly and main body assembly1.11.4 组装头部电路板
Assemble the head circuit board

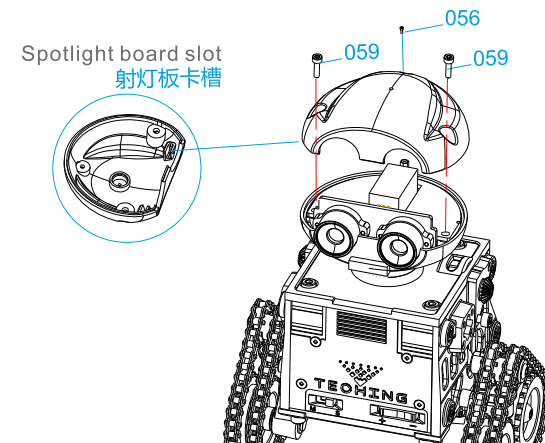
- 1) 连接10pin端子线
Connect 10PIN terminal line
- 2) 连接舵机端子线
Connect the steering gear
terminal line

3) 连接射灯板
Connect the spotlight panel5) 头部总成线路检查
Head assembly wiring inspection

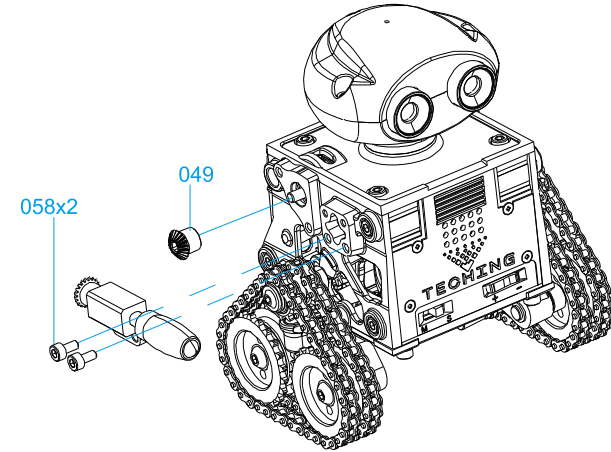
检查头部转动是否灵活
Check whether the head
rotates flexibly

4) 组装头部电路板
Assemble the head circuit board

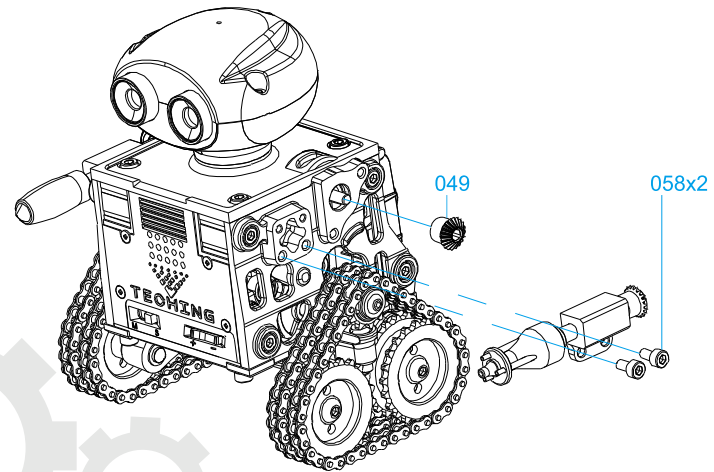
1.11.5 组装头部上盖 Assemble the head upper cover



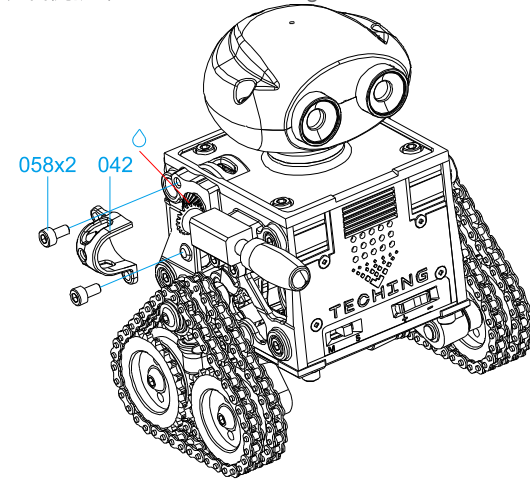
1.12.1 组装右侧手臂组件 Install the right arm assembly



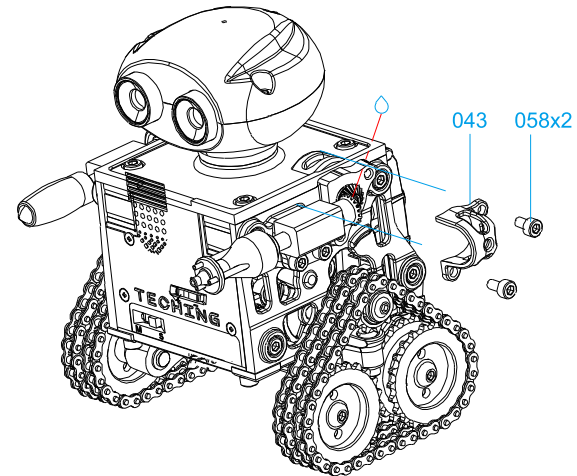
1.12.3 组装左侧手臂 Install the left arm



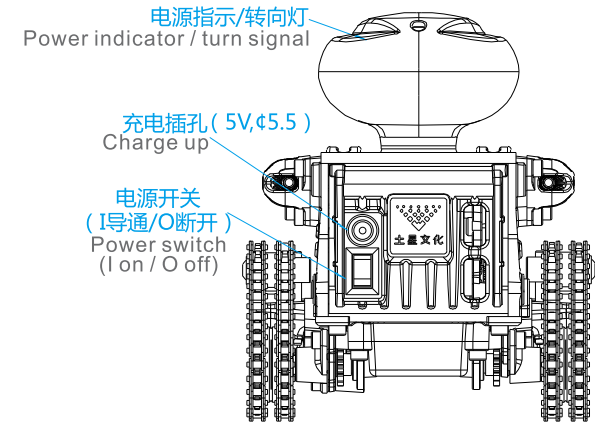
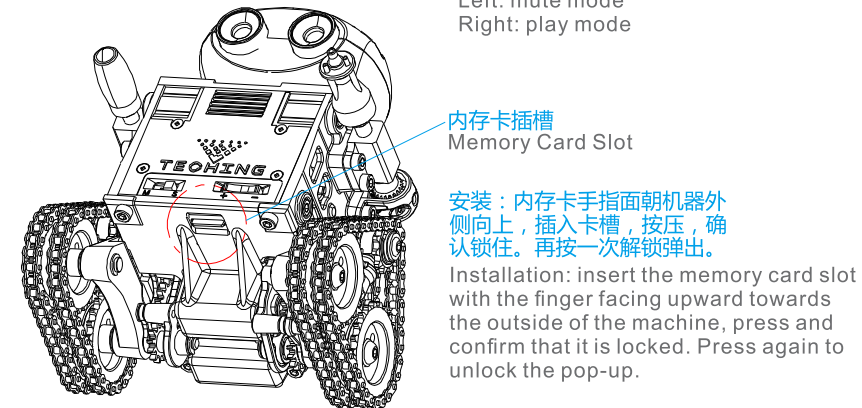
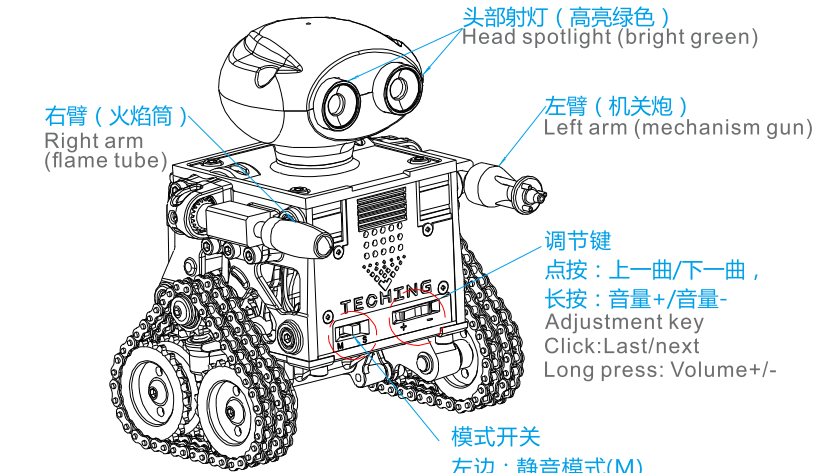
1.12.2 组装右侧护罩 Assemble the right-hand shield



1.12.4 组装左侧护罩 Install the left-hand shield



二、功能说明：



组装测试完成后，参照第五页 4) 试用遥控界面，开始进行操作。

After the assembly test, refer to 4) on page 5 to try out the remote control interface, Start the operation.

三、故障分析及排除：

一）机械故障排除：

组装完毕，打开开关如果运动异常，首先检查个运动部位是否按提示涂上润滑油，然后对照说明书

逐一检查组装顺序，如未发现问题，请按以下步骤排查：

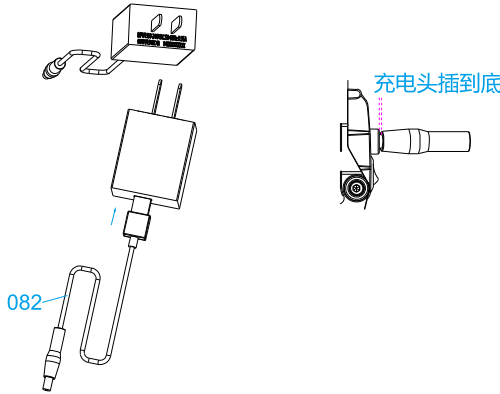
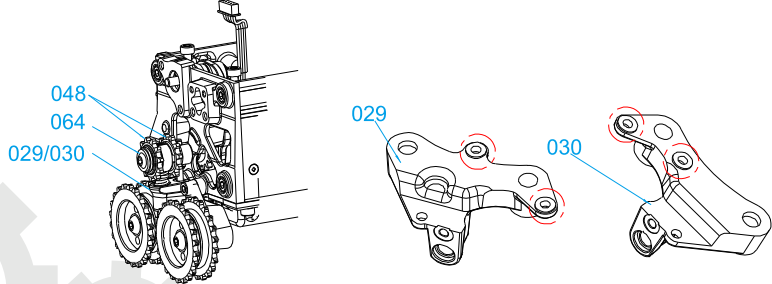
- 1.零件安装方向是否正确。
- 2.螺丝固定是否旋紧。
- 3.相似零件是否反装。
- 4.按压两端张紧轮048到底后松开，检查是否可回弹。如不能回弹，请检查029/030（驱动轮架左、右）的销钉孔内是否有毛刺或者垃圾。可用小刀刮削毛刺，并清理干净。检查046是否超出了066的最大台阶。

如有用尖嘴钳捏紧弹簧端部，使弹簧顶住066最大位置台阶面。

- 5.用手分别拨动两张张紧轮048转动是否顺畅，若不顺畅，请对照说明书检查张紧轮方向是否装反或

有毛刺之类，如有，做调整或刮除处理；如正确可把螺钉064拧松半圈使其顺畅。

- 6.按照说明书的顺序逆向拆开029/030（驱动轮架左/右）。检查图示小凸台高度是否一致或完全没有，如有不一样，重新组装起来，凸台矮的位置螺丝反向拧松半圈，其它螺丝都拧紧。



二）电子故障排除：

1.不充电

1）充电器不匹配

检查充电器输出直流5VDC 1A（含）以上。用土星专用USB转圆头充电线插入产品充电口即可。如图所示。

2）充电线圆形插头没有插到底。

3）充电座接线未正确接入主板充电插口。拆下主体上盖，检查并正确接入对应接口。

充电并确认充电功能是否正常。充电时033红灯常亮，充满电时蓝灯常亮。

2.电机不转

1）电池电量不足。充满电后再开机检查。

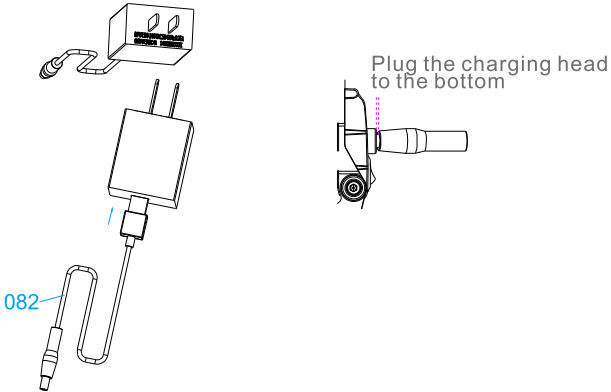
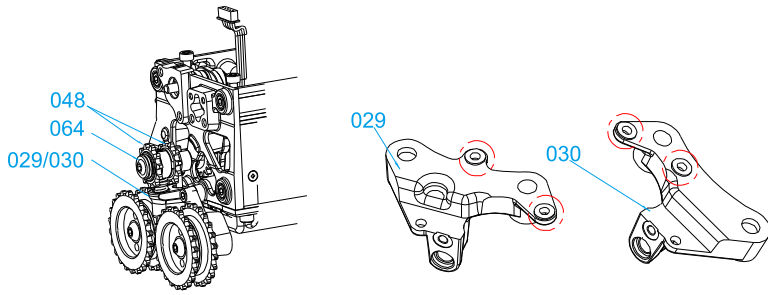
2）电机线材未正确接入主板。检查2电机线和主板插座标识是否对应。

3.电机自身故障:拆下电机单独测试，检查电机是否运转。

Fault analysis and Troubleshooting:

I. Mechanical troubleshooting:After assembly, turn on the switch. If the movement is abnormal, first check whether the moving parts are coated with lubricating oil according to the prompts, and then refer to the instructionsCheck the assembly sequence one by one. If no problem is found, please follow the following steps:

- 1) Whether the installation direction of parts is correct.
- 2) Whether the fixing screws are tightened.
- 3) Whether similar parts are installed reversely.
- 4) Press the tensioning wheels 048 at both ends to the bottom and loosen them to check whether they can rebound. If it cannot rebound, please check 029 / 030 (left and right of drive wheel frame)Check whether there is burr or garbage in the pin hole. The burr can be scraped with a knife and cleaned. Check if 046 exceeds the maximum step of 066.If necessary, pinch the end of the spring with pointed nose pliers to make the spring stand against the step surface at the maximum position of 066.
- 5) Manually move the two tensioning wheels 048 at the tensioning end to check whether the rotation is smooth. If not, please check whether the direction of the tensioning wheel is installed reversely or not according to the manuallf there are burrs, adjust or scrape them; If it is correct, loosen the screw 064 by half a turn to make it smooth.
- 6) Disassemble 029 / 030 (left / right of the drive wheel frame) in the reverse order according to the instructions. Check whether the height of the small boss in the figure is consistent or not at all. If it is different, reassemble it. Loosen the screw at the low position of the boss by half a turn in the reverse direction, and tighten other screws..



II. Electronic Troubleshooting:

- 1. No charging
 - 1) Charger mismatchCheck that the charger output DC 5VDC is above 1a (included). Insert the Saturn special USB round head charging cable into the product charging port, as shown in the figure.
 - 2) The round plug of the charging line is not fully plugged in.
 - 3) The wiring of the charging base is not correctly connected to the charging socket of the main board. Remove the upper cover of the main body, check and correctly connect to the corresponding interface.Charge and confirm whether the charging function is normal. The 033 red light is always on when charging and the blue light is always on when fully charged.
- 2. The motor does not rotate
 - 1) The battery is low. Start the machine for inspection after it is fully charged.
 - 2) The motor wire is not correctly connected to the main board. Check whether the 2 motor cable corresponds to the main board socket identification.
 - 3. Motor failure: remove the motor for separate test and check whether the motor operates.

四、产品零部件列表 Product parts list

序号 Serial Number	产品图片 Product Image	产品名称 Product Name	数量 Quantity
001		链条 Chain	4
002		链轮驱动轴 Sprocket drive shaft	2
003		齿轮架(右) Gear carrier (right)	1
004		齿轮架(左) Gear carrier (left)	1
005		齿轮架护板(右) Gear carrier guard (right)	1
006		齿轮架护板(左) Gear carrier guard (left)	1
007		张紧轴 Tensioning shaft	2
008		链轮从动轴 Sprocket driven shaft	2

序号 Serial Number	产品图片 Product Image	产品名称 Product Name	数量 Quantity
009		机炮架 Machine gun frame	1
010		旋转臂 Rotating arm	1
011		过渡齿轮 Transition gear	1
012		伞齿轴 Bevel gear shaft	2
013		主体上盖 Main body upper cover	1
014		启动电机齿轮 Starting motor gear	2
015		手臂轴 Arm axis	2
016 017		主动轮 Driving wheel	4

序号 Serial Number	产品图片 Product Image	产品名称 Product Name	数量 Quantity
018		小皮带轮 Small pulley	2
019		射灯座 Spotlight holder	2
020		驱动轴齿轮 Drive shaft gear	2
021 022		主动轮 Driving wheel	4
023		主体左盖 Left cover of main body	1
024		主体右盖 Right cover of main body	1
025		主体后盖 Main body rear cover	1
026		主体前盖 Main body front cover	1

序号 Serial Number	产品图片 Product Image	产品名称 Product Name	数量 Quantity
027		头部底盖 Head bottom cover	1
028		主体下盖 Lower cover of main body	1
029		驱动轮架(右) Drive wheel frame (right)	1
030		驱动轮架(左) Drive wheel frame (left)	1
031		电池底盖 Battery bottom cover	1
032		手臂支架 Arm support	2
033		灯板 Lamp board	1
034		主板 A main board	1

序号 Serial Number	产品图片 Product Image	产品名称 Product Name	数量 Quantity
035		启动电机 Starting motor	2
036		射灯PCB Spotlight PCB	1
037		舵机(M2中心牙孔) Steering gear (M2 center tooth hole)	1
038		电池组 Battery pack	2
039		充电插头 charging plug	1
040		电源开关 power switch	1
041		头部上盖 Head upper cover	1
042		伞齿护套(右) Bevel gear sheath (right)	1


序号 Serial Number	产品图片 Product Image	产品名称 Product Name	数量 Quantity
043		伞齿护套(左) charging plug	1
044		头部固定轴 Head fixed shaft	1
045		过渡齿轮轴 Transition gear shaft	1
046		张紧弹簧 Tension spring	2
047		六方铜柱 Hexagonal copper column	4
048		张紧轮 Tensioning wheel	4
049		伞齿 Umbrella tooth	4
050		机炮固定轴 Machine gun fixed shaft	1

序号 Serial Number	产品图片 Product Image	产品名称 Product Name	数量 Quantity
051		机炮管 Machine gun barrel	3
052		机炮法兰 Machine gun flange	1
053		轴承固定套 Bearing fixing sleeve	2
054		M3卡簧 M3 snap ring	8
056		M3X5内六角圆柱头 M3x5 hexagon socket head	10
057		M3垫片 M3 gasket	1
058		M3X6内六角圆柱头螺钉 M3x6 hexagon socket head cap screw	35

序号 Serial Number	产品图片 Product Image	产品名称 Product Name	数量 Quantity
059		M3X12内六角圆 柱头螺钉 M3x12 hexagon socket head cap screw	2
060		M1.6X4内六角 圆柱头螺钉 M1. 6x4 hexagon socket head cap screw	4
061		连接柱 Connecting column	1
062		M3X8内六角 圆柱头螺钉 M3x8 hexagon socket head cap screw	8
063		M3X20内六角 圆柱头螺钉 M3x20 hexagon socket Cylindrical head screw	2
064		M4X6内六角圆柱 头带垫螺钉 M4x6 hexagon socket head cap screw with cushion	6
065		M3X3紧定螺钉 M3x3 set screw	4
066		张紧定位轴 Tensioning positioning shaft	2

序号 Serial Number	产品图片 Product Image	产品名称 Product Name	数量 Quantity
067		垫片 shim	2
068		M4垫片 M4 gasket	2
069		φ2.5定位销 φ 2.5 locating pin	2
070		轴承(D8d5L2.5) Bearing (d8d5l2.5)	6
071		M3弹垫 M3 spring pad	2
072		CM头螺钉M2X4 Cm head screw m2x4	10
073		光杯圈 Light cup ring	2
074 075		皮带1 皮带2	2

序号 Serial Number	产品图片 Product Image	产品名称 Product Name	数量 Quantity
076		光 杯 front wheel	2
077		喇叭EVA垫 Horn EVA pad	1
078		音量支座 Volume support	1
079		音量按键 Volume key	1
080		CM头螺钉M2X12 Cm head screw m2x12	1
081		Dm19检测线 Dm19 detection line	1
082		USB/圆头充电线 USB / round head charging cable	1
083		读卡器 Card reader	1

序号 Serial Number	产品图片 Product Image	产品名称 Product Name	数量 Quantity
084		TF卡 TF Memory card	1

保修说明

一、 保修须知

- 购买本产品，请仔细阅读以下保修条款，以确保产品得到有效保修。
- 1、本产品为组装体验式产品，拆包装后无质量问题不支持7天无理由退换货。不拆包装的情况下从购买之日起7天可以退换货；
 - 2、购买本产品时，由销售商协助在保修卡上完整、真实的填写您的相关信息，并索要有效发票或购买凭证，且妥善保管；
 - 3、用户需要保修时，必须出具购机发票或有效三包凭证。如果用户丢失有效发票或三包凭证且不能提供复印件的，根据机器的生产日期后延60日为保修的起始日期，提供一年的保修服务；
 - 4、保修对象为用户购机后及使用前有质量问题的零件。对于用户不合理使用而损坏的零件，本公司提供收费服务；
 - 5、本公司保留对售后服务条款的最终解释权及修改权限。

二、 售后服务及保修内容

- 1、自产品签收日起，电机、电池、电路板三个月保修，其它零件提供一年保修；
- 2、购新机时如发现零件缺失，凭保修卡的购买日期30天内厂家予以免费补发缺失的零件，超过30天则需要用户到土星官方网站购买；
- 3、用户组装完成后产品出现无法运转或不良的情况，可向厂家咨询原因，也可寄回厂家免费检测或调试；

- 4、用户碰到任何产品问题，本公司或授权机构提供技术咨询或指导；
- 5、所有在保修范围内被更换下来的零件，零件和附件归本公司所有。用户必须提供有质量问题的零件，向本公司换取新零件。

三、 非保修内容

- 1、超过三包有效期的；
- 2、未按产品使用说明书要求使用、维护、保管不当造成损坏的；
- 3、非本公司或授权销售网点销售的产品；
- 4、无有效发票或三包凭证的，或擅自涂改售后服务卡的（能够证明在三包有限期的产品除外）
- 5、售后服务卡上的产品型号或编号与商品不相符的；
- 6、因不可抗力力（如：水灾、火灾、地震、雷击等）造成伤害的；
- 7、产品使用中的自然磨损，如：产品间隙变大、润滑油干涩、电池长期老化等造成的问题；
- 8、对于非产品本身品质原因造成的故障（如：进水、受潮、摔坏、外力挤压、变形、使用不当等）
- 9、经销商对保修内容作出的约定，凡超出本保修协议的，不在保修范围内。

Warranty description

I. Warranty Instruction

- Please carefully read the following warranty terms when purchasing this product so as to assure effective warranty for the product:
- 1. Since this product is for assembly experience, "7-day no-hassle return/change policy" is not available if no quality defect is found after unpacking. "7-day no-hassle return policy" is available if the package is not removed;
 - 2. When this product is purchased, your dealer will assist you to write down your complete real information on the warranty card, when you should ask the dealer for effective invoice or purchase voucher; then, the invoice and voucher shall be properly kept;
 - 3. Users who apply for warranty have to show their purchase invoices or effective "three guarantees" certificate. For users who lost their effective voices or "three guarantees" certificate and fail to provide their copies, the warranty period is one year from the 60th day after the manufacturing of machine;
 - 4. The warranty object is the parts that are found with defects after purchase and before use. We provide paid services for parts damaged by improper use by users;
 - 5. We reserve the right to interpret and modify the terms & conditions of after-sales service.

II. Items of After-sales Service and Warranty

- 1. The warranty period for motor, battery and circuit board is three months from the day on which they are received and accepted; the warranty period for other parts is one year from the day on which they are received and accepted;
- 2. The user who finds some part missed when purchasing a new machine could request the manufacturer to supply the missed part within 30 days after the purchase date on warranty card; the user has to purchase that

- part at Teching's official website after the said 30 days;
- 3. If the assembled product fails to run or run properly, the user could either consult the manufacturer for possible causes, or send the product back to the manufacturer for free testing or debugging;
- 4. We and our authorized agencies provide free technical advice or instruction for users who encounter any product problem;
- 5. All parts and accessories replaced within the scope of the warranty belong to our company. Users have to provide defective parts so that we can exchange them with new ones.

III. Items outside Scope of Warranty

- 1. Beyond the "three guarantees" period;
- 2. Damage is caused by failure to use, maintain and keep the product as per instruction manual;
- 3. Products that are not sold by us or our authorized sales outlets;
- 4. Those who hold no valid invoice or "three guarantees" certificate, or those who modify the after-sales service card without permission (except the case where the product is confirmed to be within the "three guarantees" period);
- 5. The product model or serial number on after-sales service card fail to match the commodity;
- 6. Damage caused by force majeure (e.g. flood, fire, earthquake, lightning strike, etc.);
- 7. Natural wear during the use of product, e.g. the problems arising from product gaps expansion, lubricating oil shortage, and battery aging, etc.;
- 8. For the faults (e.g. moisture invasion, dampness, breakage, external force extrusion, deformation and improper use, etc.) caused by other factors than product quality;
- 9. Dealers shall make agreement on warranty coverage; the situations outside this warranty agreement are not covered by the warranty.

售后服务

- 1、可以扫描土星小助手二维码，进行技术咨询；
- 2、可以进入土星文化公众号，获得相关技术咨询；
- 3、可以直接拨打本公司400电话，咨询本公司技术人员；
- 4、可以用邮件的形式向本公司进行技术咨询；
- 5、可以向附近的授权机构提出技术咨询；
- 6、可以以各种方式对公司产品提出意见、建议和新产品期望。

检验编号：

售后服务卡

用 户 名 ：_____ 联系电话：_____

产品名称：_____ 产品编号：_____

产品流水号： _____

问题描述： _____

服务内容

- ☐ 零件补缺
- ☐ 零件更换
- ☐ 检测服务
- ☐ 需退换货

销售单位： _____

销售地点： _____

经 办 人 ： _____ 售后完成时间： _____

公 司：广州市土星文化发展有限公司

地 址：广州市黄埔区宏明路宝盛大厦

热线电话：0086-13924277386 4001-020-019

售后邮箱：sales@techingedu.com.cn



Sales service card

Account name: _____ Tel: _____

Product name: _____ Product No.: _____

Serial number of product: _____

Problem description: _____

Service content:
☐ Part replenishment ☐ Testing service
☐ Part replacement ☐ Return and change of goods needed

Sales unit: _____

Place of sale: _____

Operator: _____ After-sales completion time: _____

Company:
Guangzhou Teching Cultural Development Co., Ltd.
Address:
Baosheng Building, Hongming Road,
Huangpu District, Guangzhou City, China
After-sales email: sales@techingedu.com.cn
Hotline: 0086-13924277386 4001-020-019



Sales Service

- 1. Scan the Teching Assistant QR code for technical consultation;
- 2. Relevant technical information is available at Teching's official account;
- 3. You can call our hotline directly and consult our technician;
- 4. Technical consultation can be sent to us by mail;
- 5. Technical advice can be obtained from nearby authorized agencies;
- 6. You are encouraged to bring forward your comments and suggestions on our products and your expectations for new products in various manners.

Inspection No.:

