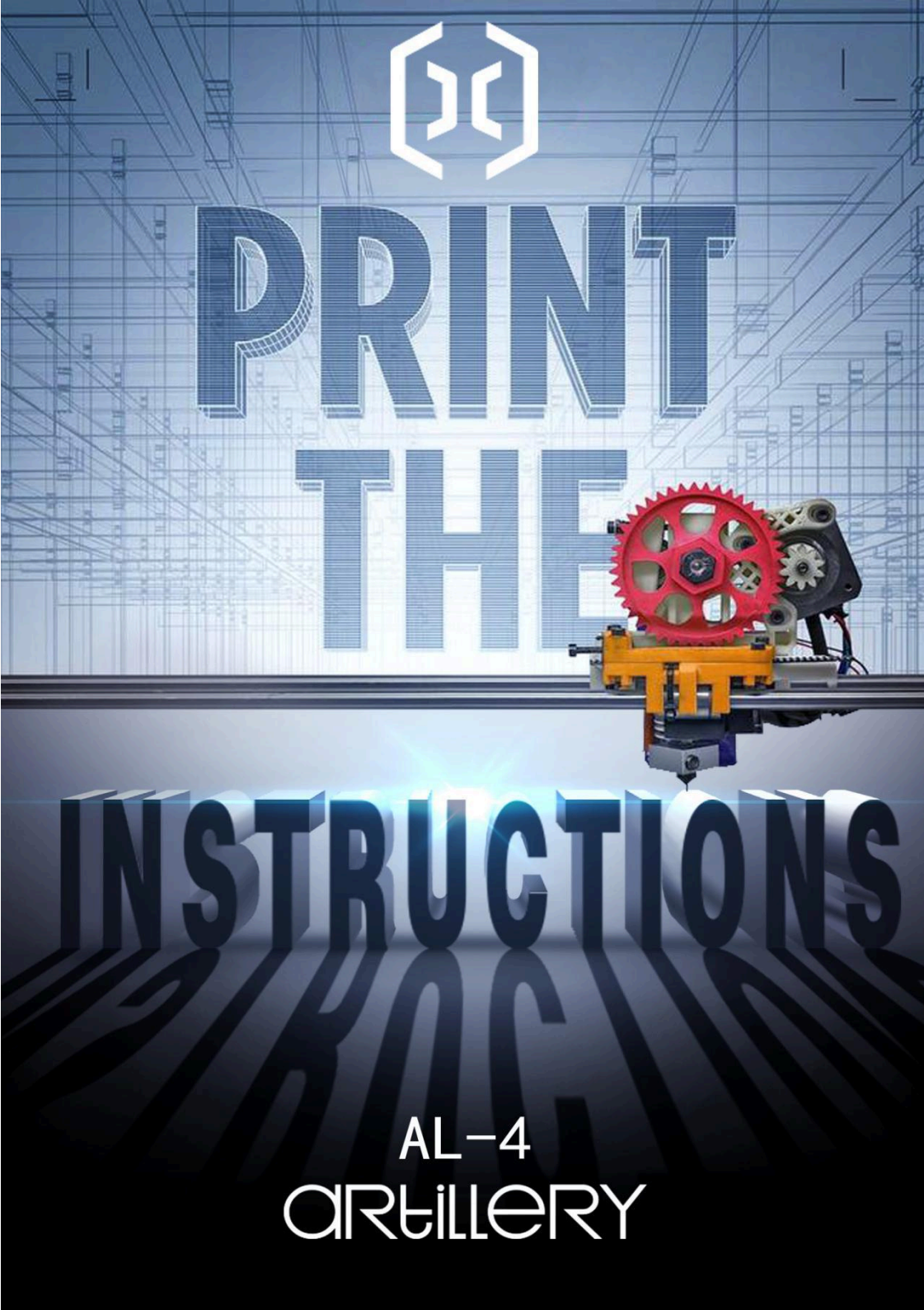
PRINT THE INSTRUCTIONS



AL-4

artillery

READ ME FIRST请阅读以下内容

READ THIS MANUAL COMPLETELY BEFORE ASSEMBLING AND POWERING UP YOUR PRINTER! 在组装和供电打印机之前，请完整阅读此手册！

Hazards and Warnings（危险与警告）

The Artillery AL-4 3D printer has motorized and heated parts. When the printer is in operation always be aware of possible hazards.Artillery AL-4 3D打印机具有电动和加热部件。打印机运行时，要注意可能出现的危险。

Electric Shock Hazard（电击危害）

Never open the electronics bay of the printer while the printer is powered on. Before removing the access door, always power down the printer and unplug the AC line cord.打印机打开电源时，不要打开打印机的电源盒。在拆卸电源盒之前，一定要把打印机的电源关掉，并拔掉AC电源线。

It is forbidden to insert or remove any terminals, especially the motor wires with electricity, which may cause irreversible damage to the control system. 禁止在带电情况下插拔任何接线端子、特别是电机线，可能会对控制系统造成不可逆转的损坏

Burn Hazard（烧伤危害）

Never touch the extruder nozzle, heater block, or the heated bed without first turnnig off the hotend (or heated bed) and allowing it to completely cool down. The hotend (or heated bed) can take up to twenty minutes to completely cool down. Also, never touch recently extruded filaments. The filament can stick to your skin and causes burn. 切勿触摸挤出机的喷嘴、加热块或热床，而应先将其加热功能关闭，并让其完全冷却。热床需要20分钟才能完全冷却。此外，不要触摸刚挤出的耗材。耗材会粘在你的皮肤上，导致灼伤。）

Fire Hazard（火灾隐患）

Never place flammable materials or liquids on or near the printer when powered on or in operation. Liquid acetone and vapours are extremely flammable. 当开机或运行时，切勿将易燃材料或液体放置在打印机上或附近。液体丙酮和蒸汽是非常易燃的

Pinch Hazard（夹伤危害）

When the printer is in operation, be careful never to put your fingers in the moving parts, including the belts, pulleys, gears, wheels or leadscrews. 当打印机在运行时，一定要小心，不要把手指放在移动的部件上，包括皮带、滑轮、齿轮、轮子或螺丝。

Static Charge（静电冲击）

Make sure to ground yourself before touching the printer, especially the electronics Electrostatic charges can damage electronic components. To ground yourself, touch a grounded source.（触摸打印机的时候 保证您的脚沾地 或者挨着绝缘体 防止触电，静电会伤害打印机的电子元件）

Age Warning（年龄限制）

For user under the ages of 18, adult supervision is recommended. Beware of choking hazards around children.（18岁以下 建议在成人监督下使用 小心会造成小孩子窒息的危险）

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Letter from Artillery 来自Artillery 的信

Dear Customer,

尊敬的顾客

Thank you for purchasing the Artillery AL-4 3D printer.

感谢您购买Artillery AL-4 3D打印机。

This guide will step you through the assembly and the first run of the printer. If you have any problems during assembly, please contact us via our purchasing platform:

本指南将引导您完成打印机的组装和第一次运行。如果您在装配过程中遇到任何问题，请通过购买的商店/渠道联系我们解决相关问题

Please make sure that the frame is completely square and tight in every angle by using a gemmetrical triangle or any other more sophisticated square tools (not supplied with the printer kit.

请通过一个几何三角形或者更复杂正方形打印件来确保每个角度的结构都是直角且没有空隙。（打印机套件中未提供此打印件）。

Best Regards
Artillery team

真挚的问候, Artillery团队

Assembly（装配）

1. Remove the parts from the box and remove any tape and padding from the parts. Inspect the parts to make sure they were not damaged in shipment.

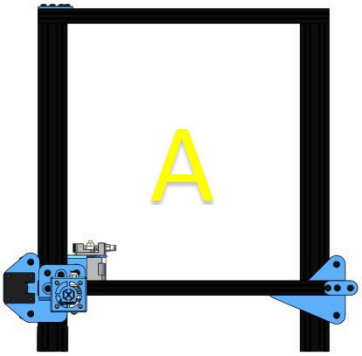
从包装箱中取出所有零件，并拆下所有胶带和填充物。检查各部件，确保它们在运输过程中没有损坏。

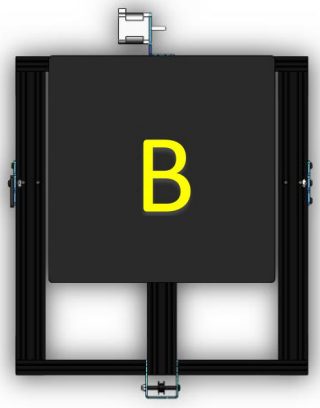
2. Install the gantry frame (A) to the base frame (B).

将型材架(A)安装到底座(B)

- On the gantry frame, make sur is on there the nozzle assembly is to the front. On the base frame, make sure the steppeer moto back.

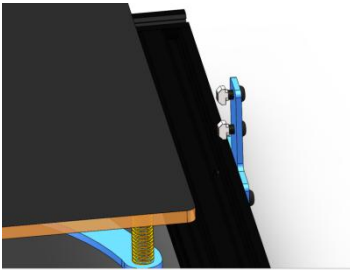
在型材架上要确保喷嘴组件位于前部。在基架/底架上要确保步进电机在后面。





3. Hand-loosen the “T" nuts slightly and keep the edge of the nuts perpendicular to the frame.

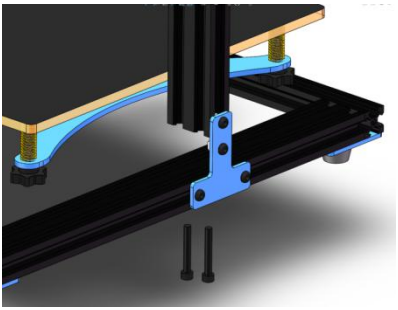
用手将型材“T型”螺母拧松，但不至于掉下的位置，保持螺母边沿垂直于底座型材。

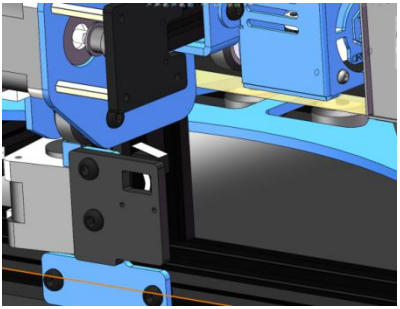


- Insert T Type Nut into the “V” socket of frame (A).
  将型材架（A）侧边V槽，延“T型”螺母插下。

- Tighten the four M5*35 screws at the bottom of both sides by using the hexagonal wrench.
  用所配内六角扳手，先拧紧两侧底部共四颗M5*35螺丝钉。

- Tighten the four T Type Nut on both sides.
  拧紧两侧共四颗“T型”螺母。





4. Connect all electrical cables. 连接所有电源

- Put the control box on the left side of the printer with the screen facing forward.
  将电源盒放在打印机的左侧，屏幕朝前。

- Connect the heater cables to the build plate.
  将加热器连接线连接到热床

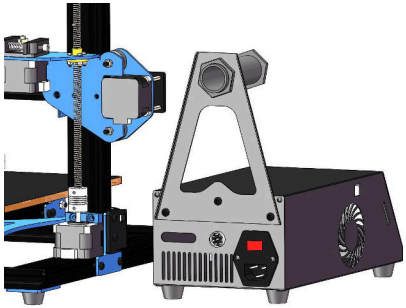
- The cable for the nozzle heater has eight pins. Rotate the connector until the pins slide easily into the socket. DO NOT force them. After the pins are fully inserted, hand-tighten the knurled nuts so they don't become unplugged.
  喷嘴加热头的连接器是8芯航空插。旋转连接器，直到引脚容易地滑进插座。切勿使用蛮力，在针完全插入后，用手拧紧滚花螺母，使它们不会被拔掉。

- Connect the stepper motor and limit switch cables.
  按照线上的标识，连接步进电机和限制开关电缆

- The Y cables go to the stepper motor and limit switch at the back of the base frame. The Z cables go to the stepper motor and limit switch on the lead screw side of the base frame. The X and E (extruder) cables go to the gantry frame. The X cables go to the stepper motor and limit switch that runs the belt and the E cables go to the stepper motor that drives the extruder.
  Y电缆连接到底座背面的步进电机和限位开关。 Z电缆连接到底座的丝杆一侧的步进电机和限位开关。 X和E（挤出机）电缆连接到型材架。 X电缆连接到步进电机和运行皮带的限位开关，E电缆连接到驱动挤出机的步进电机。

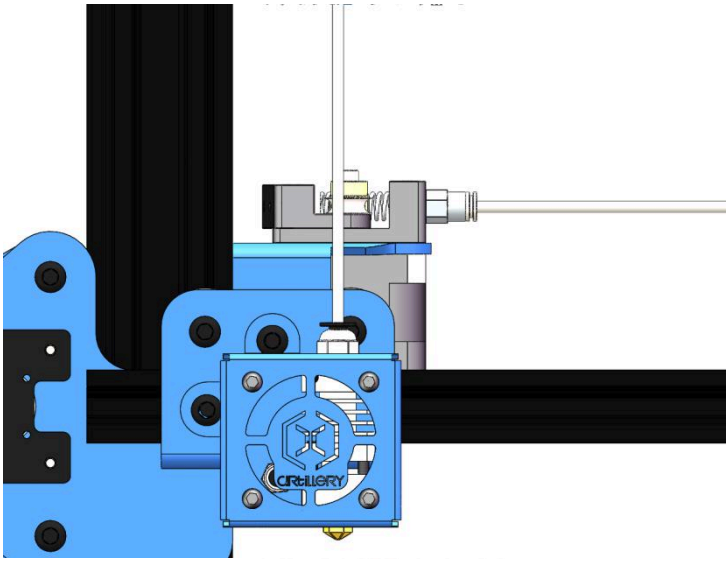
- Connect the power cord to the back of the control box and to a standard 220v/110v
- electrical outlet.
  将电源线连接到电源盒的背面，并连接到标准的220V/110V电源插座。

- Turn the power on using the switch on the back of the control box.
  使用电源盒背面的开关接通电源。



5. Make sure the PTFE tube is all the way down to nozzle in the hotend, it may come loose during transportation. Push it down all the way into the hotend. Gaps between PTFE tube and nozzle will cause clogging.

确保四氟管一直向下插入到喷嘴，在运输过程中可能会松动。如果有请把它推进去。因为四氟管与喷嘴之间的间隙会造成耗材堵塞。



Fine-Tuning（微调）

1. Adjust the tension of the build plate wheels on the Y-axis on the base frame and the eccentric nut on the build plate.
   调整热床基座y轴上的滑轮的松紧度,以及热床支架上的偏心螺母

   - Check the tension of the build plate wheels. Try to turn the wheels under the build plate without forcing it. If the wheel turns freely or without much effort, then it is too loose.
     检查滑轮的松紧度。 尝试在热床基座型材下方转动轮子而不强制它。 如果滑轮自由转动或不费力，那就太松了

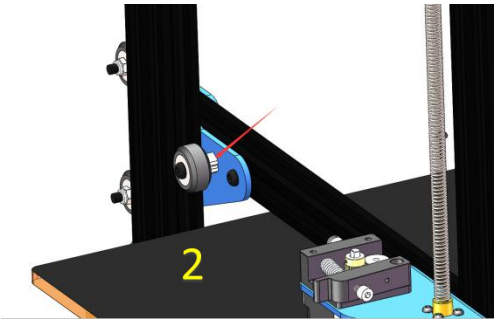
   - To tighten the wheels, rotate the eccentric nut that connect to the wheel. Use the open-end wrench to rotate the nuts slightly until the wheels is snug against the Y-axis frame.
     要拧紧滑轮，旋转连接到滑轮的偏心螺母。 使用开口扳手轻轻旋转螺母，直到轮子紧贴Y轴框架。

   - The build plate assembly and the belt should move forward and backward without much effort, and there should have no side-to-side wiggle or play.（As shown in figure 1）
     热床组件和皮带应该不费力地向前和向后移动，并且不应该有侧向摆动。如图1

2. Adjust the tension of the gantry wheels on the right pillar of the gantry frame.
   调整型材架右柱背面上的滑轮的松紧度。

   - Check the tension of the gantry plate wheels. Try to turn the wheels behind the plate without forcing it. If the wheel turns freely or without much effort, it is too loose.
     检查型材上滑轮的松紧度（张力）。 试图在不强迫它的情况下转动钣金件后面的轮子。 如果滑轮自由转动或不费力则太松。

   - To tighten the wheels, rotate the eccentric nut that connect to the wheel. Use the open-end wrench to rotate the nut slightly until the wheel is snug against the Z-axis.（As shown in figure 2）
     要拧紧滑轮，旋转连接到滑轮的偏心螺母。 使用开口扳手轻轻旋转螺母，直到轮子紧贴Z轴。如图2



3. Adjust the tension of the X-carriage wheels on the X-axis on the gantry frame..
调整型材框架上X轴X承载轮的松紧度。

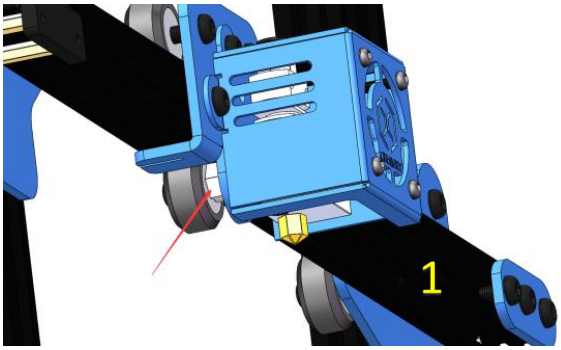
- Check the tension of the X-carriage wheels. Try to turn the wheels under the build plate without forcing it. If the wheel turns freely or without much effort, then it is too loose.
检查X-承载轮的松紧。 尝试在型材板下方转动轮子而不强制它。 如果滑轮自由转动或不费力，那就太松了。

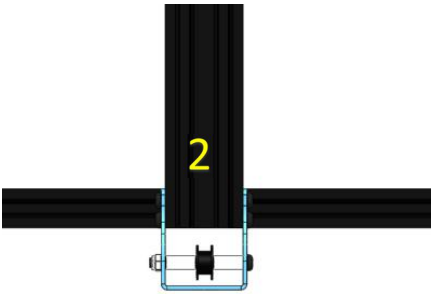
- To tighten the wheels, rotate the eccentric nut that connect to the wheel. Use the open-end wrench to rotate the nuts slightly until the wheels is snug against the X-axis frame.
要拧紧滑轮，旋转连接到滑轮的偏心螺母。 使用开口扳手轻轻旋转螺母，直到滑轮紧贴X轴框架。

- The hotend assembly and the belt should move left and right without much effort, and there should have no front-and-back wiggle or play.（As shown in figure 1）
打印头组件和皮带应该不费力气地向左右移动，并且不应有前后摆动，如图1

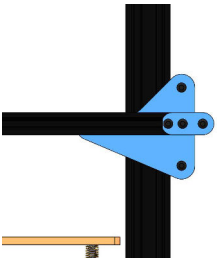
4. Check the tension of the belt driving the Y-axis (under the build plate). The belt should be taut, with no slack or slop.（As shown in figure 2）
检查驱动Y轴的皮带张力（在热床支架板下）。 皮带应该绷紧，没有松弛或倾斜。（如图2）

- If the belt is loose:如果皮带松动：
  - Loosen the four bolts at the front of the base frame holding the belt pulley.松开固定皮带轮的底座前部的四个螺栓。
  - Pull the pulley to tighten the belt. Holding the belt taut, tighten the four bolts.向前拉动皮带轮绷紧皮带然后拧紧四个螺栓。

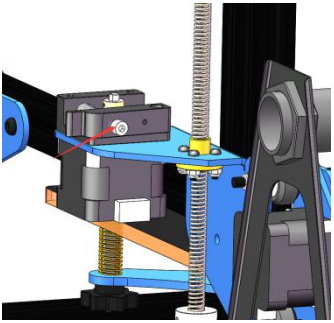




5. Check the tension of the belt driving the X-carriage. The belt should be taut, with no slack or slop.检查X轴的驱动皮带松紧， 皮带应该绷紧，没有松弛或倾斜。
   - If the belt is loose:如果皮带松动
     - Release the belt and two bolts on the "X" aluminium profile.松开皮带与X型材固定的两颗螺栓
     - Pull the pulley to the right to tighten the belt. Holding the belt taut, tighten the two bolts.向右拉动皮带轮以绷紧皮带。 拉紧皮带同时拧紧两个螺栓。



6. Adjust the tension on the Extruder with the screw shown in the picture below if the filament doesn't come out smoothly during print..（Too tight or too loose）如果在打印过程中耗材不能顺利的出来（太紧或太松），手牛刀割鸡用下图所示的螺丝调整挤出机的张力。



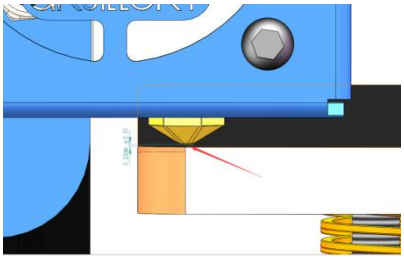
7. All pulleys and belts have been adjusted before delivery。 Please check it again, it may come loose during transportation.

所有滑轮和皮带在出厂前已经调试好。在运输过程中可能产生松动，第一次使用前必须再检查一遍。

Leveling the Build Plate 调平热床

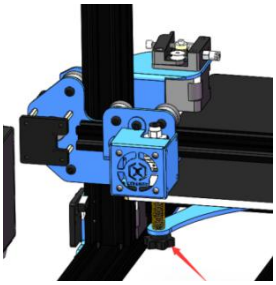
To build good parts, the build plate needs to be level, and the nozzle needs to be about 0.2mm from the build plate in all locations. This is about the thickness of a single piece of A4 paper. You may adjust the height of the build plat repeatedly so that you can barely slide the paper between the nozzle and the build plate with only a little resistance.

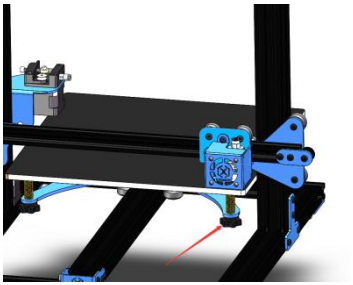
为了打印制造出好的零件，热床需要调平，所有位置的喷嘴距离热床0.2mm左右。这大约是一张A4纸的厚度。A4纸在喷嘴和热床之间滑动条有一点点阻力，但基本上比较顺畅，说明热床高度合适，这需要反复调试。

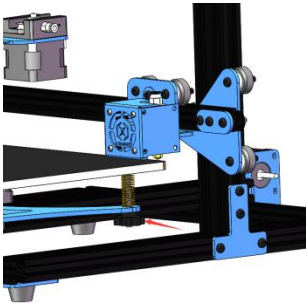


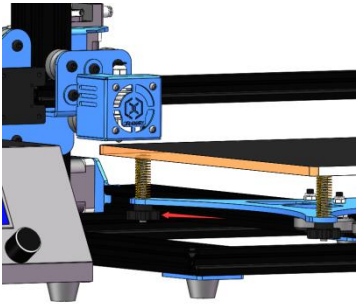
Manually move the printhead to the left front corner of the build plate, then adjust the distance from the printhead to the build plate by adjusting the nut on the bottom of the build plate repeatedly. The right front corner, the right rear corner, and the left rear corner needs to be adjusted in the same way. After adjusting, move the printhead and build plate manually and check the distance between them at different points.

*手动移动打印头到热床左前角，反复调节热床下边手拧螺母以调节喷嘴到热床的距离。如此反复依次调节右前角、右后角、左后角。调好之后手动移动打印头和热床，在不同点检查距离是否合适。









*Unscrew the 3 screws on the control box by using a wrench, retighten it after the raw material bracket was installed.

用扳手把控制盒上的3颗螺丝钉拧出，安装好耗材支架后重新拧紧。

*Unscrew the nut on the material tube and connect the material tube with the bracket and tighten it by hand.

拧出耗材管上一个螺母，把耗材管与支架对接之后再用手拧紧。

1. Select **Prepare** -> **Preheat PLA**. This will heat up the bed and the nozzle to actual printing conditions,Repeat the leveling process again to making the flatness more accurate.Please pay attention to the scald.

   选择准备 - >预热PLA。 这会将热床和喷嘴加热到实际的打印条件，这时再重复一次调平步骤，从而使平整度更加准确。请注意被烫伤。

2. Select **Prepare** -> **Auto home**. This will move the nozzle to the home position at the front left corner of the build plate. Please turn off the power immediately and check the cables if finding abnormal impact or movement during this process.

   选择准备 - >自动归位。 这会将喷嘴移动到热床左前角的原位。此过程中若有撞机或移动异常等现象应立即关闭电源并检查各连接线。

3. Select **Prepare** -> **Disable steppers**. This will allow you to move the X-carriage and build plate by hand.

   选择准备->禁用步进。这将允许您移动x轴架并手工构建板。

4. Tips: The Z-axis stepper motor is also disabled, and you don't want it to move at all. So you should handle the printer gently during the leveling process. Keep it flat and move the X-carriage carefully.

   提示：Z轴步进电机也被释放，而调平过程中我们不希望Z轴有移动。因此，在调平过程中应动作轻盈。保持平稳，小心移动X轴滑车

5. Wait for the print bed and nozzle temperature to reach the target temperature. The info screen displays this information below the nozzle and bed icons.

   等待热床和喷嘴温度达到目标温度。信息显示屏幕在喷嘴和热床图标下面显示此信息

6. Slide a piece of paper between the nozzle and the build plate.

   在喷嘴和热床之间滑动一张纸

7. Adust each of the four thumbscrews under the bed until the piece of paper slides, with just a bit of drag, in all locations on the build plate.

   调整热床底下的四个指旋螺钉，直到一张纸在热床上的所有位置滑动（只是有一点拖拽）

8. You may need to make fine adjustments to the bed level once again when you start printing at the first beginning. The first layer of the print will show whether the distance between the nozzle and the build plate is correct. You want it to be pushed into the build surface slightly and smoothly to maximize surface area contact while still allowing good extrusion flow. Please notice that the nozzle will not hurt the build surface.

您可能需要在第一次开始打印时对热床层再次进行微调。打印的第一层将显示喷嘴与热床之间的距离是否正确。你希望它被顺利挤出，以最大限度地增加表面积接触，同时仍然允许良好的挤压流动，同时喷嘴不会划伤热床表面。

- You can try to carefully adjust the thumbscrews during the first layer of the print while the plate is moving until the distance between the nozzle and the build plate is producing smooth extruded lines.

当热床板移动时，你可以试着在打印的第一层并仔细调整手拧螺母，直到喷嘴和热床之间的距离产生平滑的挤压纹。

- After you have fine-tuned the bed level during the first layer, you may want to stop the print, clear the build plate, and restart the print. Please repeat this process for several times to achieve the best condition.

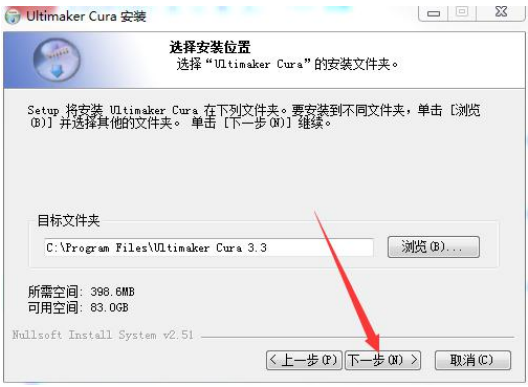
在第一层打印过程中对热床层进行微调后，可能需要停止打印，清理热床板并重新开始打印。此过程多重复几遍以达到最佳打印状态。

Preparaing Slicing Software 准备切片软件

There are numerous 3D printing and slicing softwares with different characteristics, we recommend CURA for you. You can download this software from our official website https://ultimaker.com/ for free. Different versions of CURA software in our SD card are provided for you.3D打印切片软件众多，各有优缺点，但我们为您推荐免费的CURA，我们建议您从官方网站下载软件https://ultimaker.com/,在随机SD卡中我们也为您准备了不同版本的CURA软件。

The installation steps are as follows 安装骤如下

选择安装位置Choose installation location

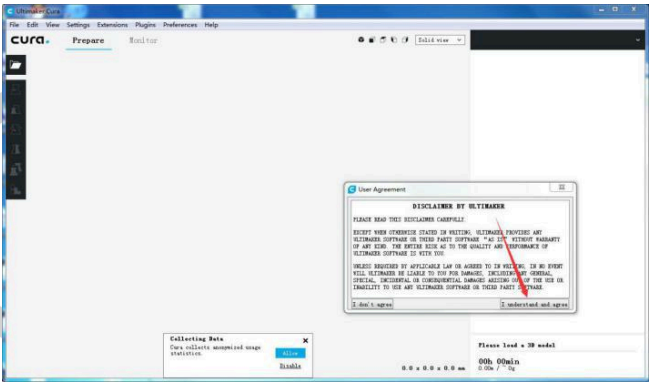


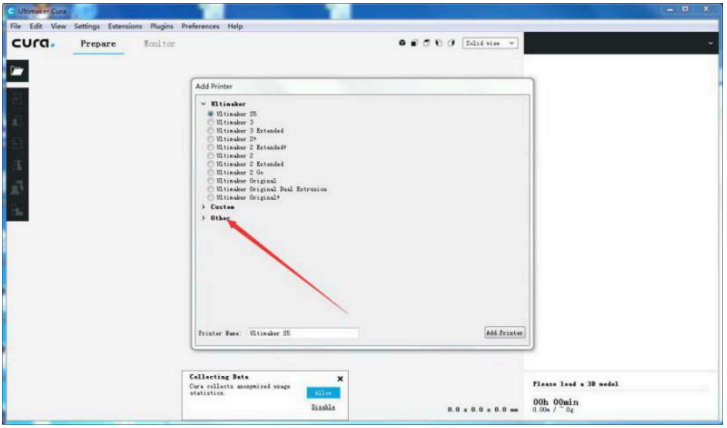
正在安装 Installing

安装完成并且运行。**Finished and run**

到此CURA软件安装完成，我们需要对他进行设置，才能让它很好的为我们服务。根据以下步骤。
打开软件

Now the CURA software installation is completed, we need to set it up. Please follow the steps as below.Open the software



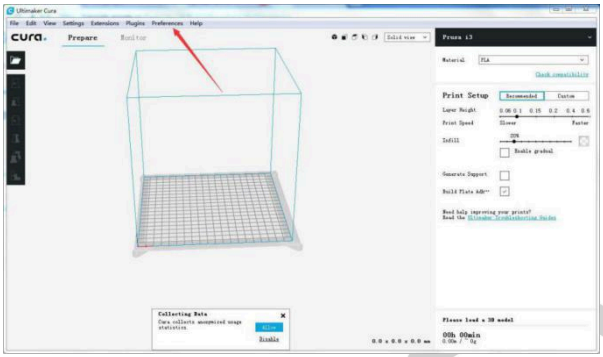


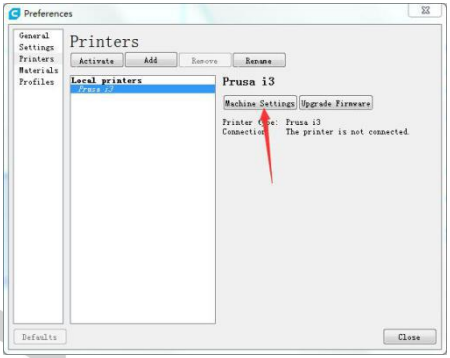
Choosing Prusa i3

我们机器属于I3结构，所以选择I3。

Preferences setting.

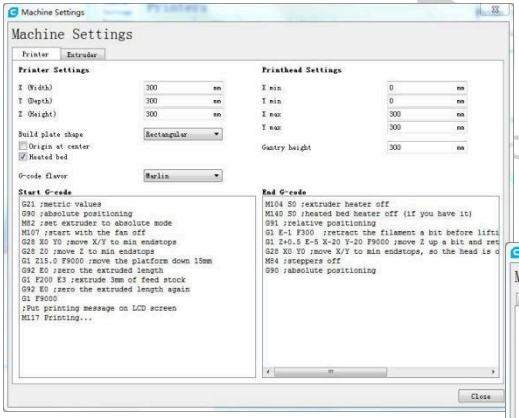
机型选择完毕，接下来进行个性设置等。

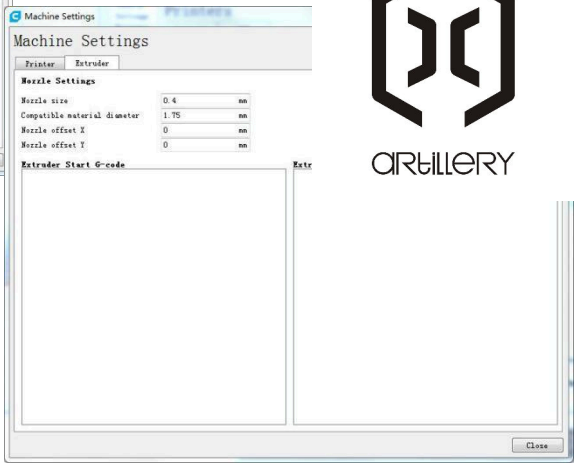




Machine Settings: Printer Settings and Printhead Settings（Very important）

设置机器尺寸及喷嘴尺寸等、此两项比较重要。





Print Setup: Extra Fine-0.06mm is meticulous but low speed. Fllow the list Extra Coarse Quality is rough but high speed.

打印质量设置，Extra Fine-0.06mm层厚0.06mm打印最精细，速度最慢。依次往下，最下边Extra Coarse Quality-0.6mm层厚0.6mm，打印最粗超，但是同时速度也最快。

The thinnest print layer thickness doesn't mean the best. Our machine nozzle diameter is 0.4mm, generally choose Draft Quality-0.2 or Low Quality-0.15 is better. Generally speaking the layer thickness should be half of the nozzle diameter.

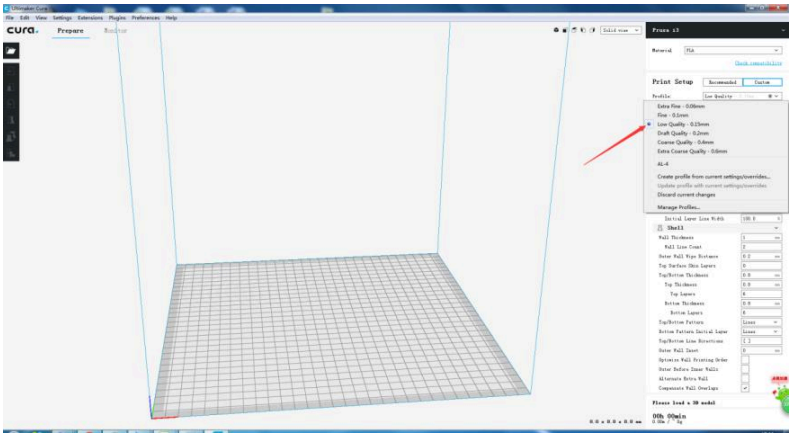
并不是打印层厚越小越好。我们机器喷嘴直径0.4mm，一般选择Draft Quality-0.2或Low Quality-0.15为最佳，选择层厚一般为喷嘴直径的一半。

Extra Fine-0.06mm is used for nozzle which diameter is 0.1mm. We can certainly choose Extra Fine-0.06mm and the machine will run according to the set command, but the printing material moves slowly in the throat with long heating time. it is relatively easy to cause blockages and malfunction. Therefore, Extra Fine-0.06mm is not recommended.

Extra Fine-0.06mm是留给喷嘴直径0.1mm使用的，我们当然可以尝试着选择Extra Fine-0.06mm，机器也会按照设置的指令运行，但是打印物料在喉管中运动比较慢，受热时间比较长，比较容易引起堵塞和变性造成故障。因此不建议选择Extra Fine-0.06mm

On the contrary, Extra Coarse Quality-0.6mm is thicker with high printing speed, but some tiny details cannot be showing. As 0.6mm thickness layer, the material will stays in the nozzle for a relatively short time, it may cause the incompletely melted material to be squeeze out by force. It will affect the viscosity, the grainy surface, etc.

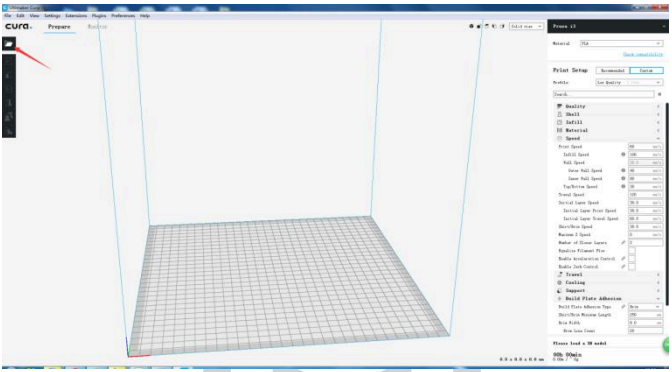
相反的Extra Coarse Quality-0.6mm层厚比较厚，打印速度比较快，但是有些微小的细节表现不了。因为0.6mm的层厚，物料在喷嘴中停留的时间比较短，有可能会造成物料未完全融化就被强制挤出，影响粘度、造成表面颗粒感比较严重等等。。。



method to open the model and run the slice(打开模型和运行切片的方法）

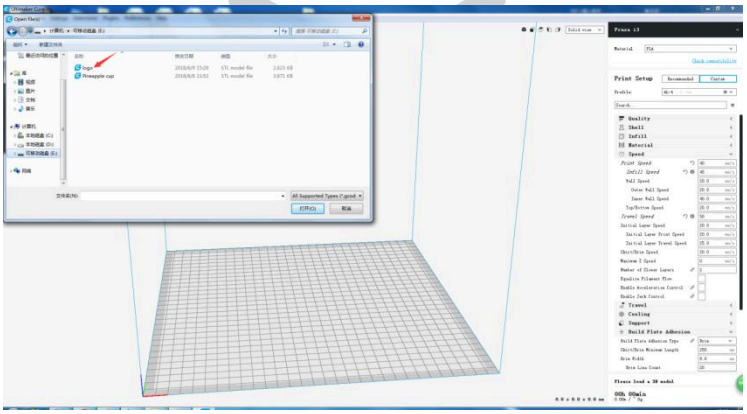
Below is the method to open the model and run the slice

下边是打开模型和运行切片的方法：



从随机附送的SD卡中选择一个STL格式模型文件。

Select an STL format model file from the included SD card.



The left side of the interface can set the size and position of the model. After setting, click Prepare to slice. The small model can be completed in 10 seconds. It takes longer for large, complex models.

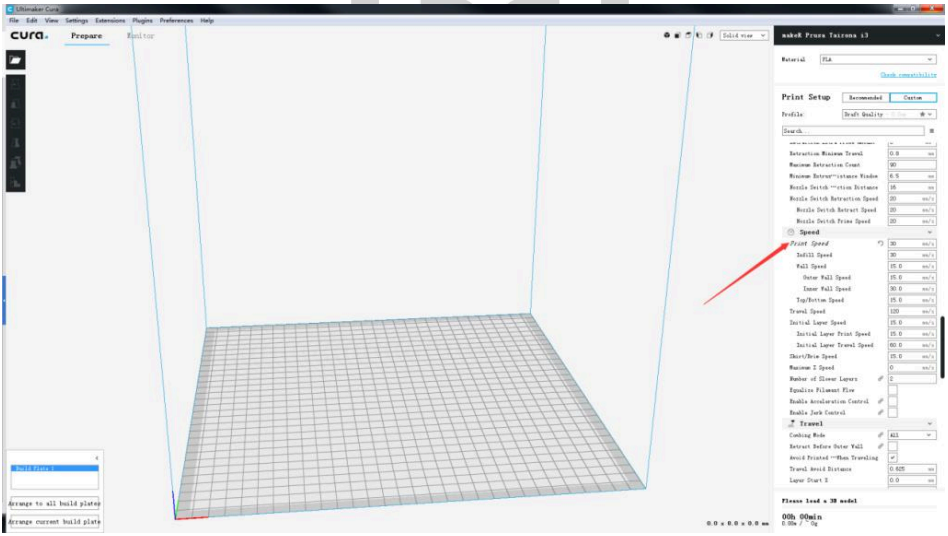
界面左侧可以对模型的大小及位置进行设置。设置好了之后点击Prepare进行切片，小模型十几秒钟就能完成，对于大的、复杂的模型需要的时间会长一些。

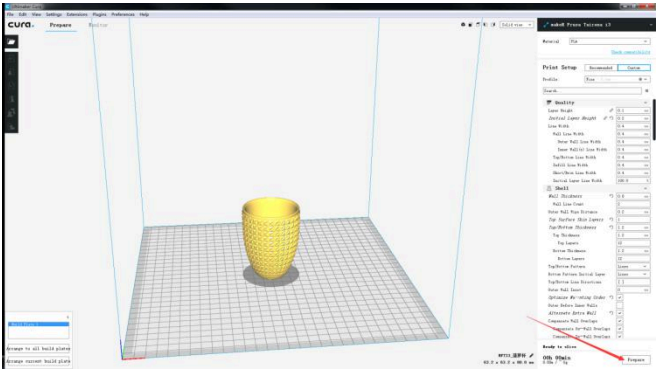
Printing speed is a parameter that has a great influence on print quality. The software defaults to 60mm/s, but for beginners or newcomers, we strongly recommend reducing the speed to 30mm/s. We could slowly increase the printing speed after we are familiar with the performance of the machine , mastering the printing skills, and the machine reaching the best condition.

打印速度也是对打印质量影响很大的一个参数，软件默认60mm/S，但是对于新手或者刚接触这台机器的用户来说，我们强烈建议把速度降到30mm/s,等机器调试到最佳状态、熟悉了机器的性能、掌握了打印技巧之后再慢慢提升打印速度。

CURA contains very strong "personalized" setting, there are more than a hundred parameters that affect the print performance and quality, users can set according to their needs and preferences.

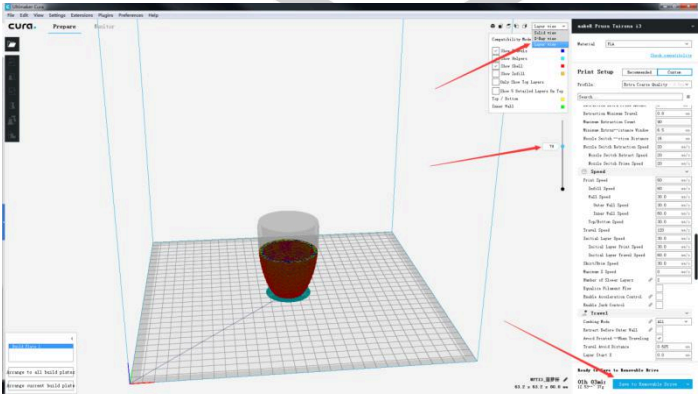
CURA个性化设置比较强，对打印性能和质量有影响的参数还有一百多项，用户可以按照自己需要和喜好去设置，会有不同的打印效果。





After each parameter is adjusted and run “Prepare”, we can click the pull-down menu in the upper right corner to show slice preview. You can drag the slider, middle mouse button , right mouse button to move ,zoom and rotate to perform a multi-directional preview of the model. Click “Save to Removable Drive” to save the slice data to the SD card for offline printing.

每调完一项参数运行Prepare后，我们可以点击右上角下拉菜单进行切片预览，可以拖动滑动条、鼠标中键移动和放大、右键旋转等操作，对模型进行多方位预览检查效果。点击Save to Removable Drive将切片数据保存到SD卡进行脱机打印。

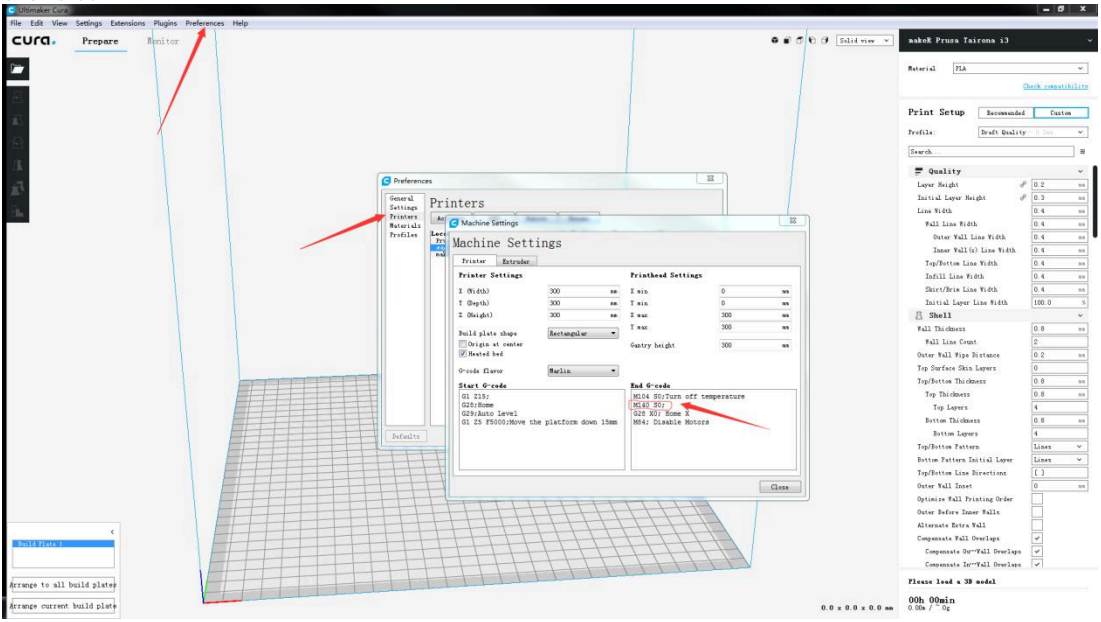


Now, the slicing data file names can be composed of English, numbers, letters, and some symbols. Chinese German, French, and other file names are not supported.

目前机器只支持英文、数字、字母、部分符号组成的切片数据文件名，暂不支持中文、德语、法语等文件名。

In some cases, the solution to the problem that the hot bed can't be closed automatically after printing: add code" M140 S0； "in" end g-code ".Set the temperature of the hot bed to zero to close it, so that the machine will close the hot bed automatically after the end of printing. After the hot bed is cooled, the model can be easily removed.

对于某些用户，解决打印后不自动关闭热床的方案：在“endg-code”中添加代码“M140 S0；”。将热床的温度设置为零以关闭热床，这样 打印结束后机器会自动关闭热床。 热床冷却后，模型可以轻松移除。



Artillery AL-4 After-Sales 售后销售

Dear Customer,亲爱的客户，

Thank you for purchasing Artillery 3D printer. We are dedicated to producing low price, high quality 3D printers and hope you have as much fun using it as we did creating it!

感谢您购买Artillery AL-4 打印机。我们致力于生产低价格、高质量的3D打印机，希望您在使用它的同时也能享受到我们创造的乐趣!

SERVICE INFORMATION:服务信息：

REPLACEMENT PARTS 零部件：

1.1. Missing/Damaged/Defective Parts Missing /损坏/有缺陷的零件

1.1.1. **Within 7 days** of the delivery date, Artillery will replace any parts free of charge including shipping fees.
交货日期后7天内，Artillery将免费更换任何部件，包括运费。

1.1.2. **After 7 days** of the delivery date, Artillery will replace any parts free of charge BUT the customer will be responsible for shipping fees.
交货日期7天后，Artillery将免费更换任何部件，但客户将负责运输费用。

1.2. Customer Damaged Parts
客户受损部件

1.2.1. The customer shall pay for the cost of the parts AND the shipping fees.
客户应支付部件费用和运输费用。

2. CARRIER LOSS, MIISSING, DAMAGED, AND DEFECTIVE PARTS

CARRIER损失，丢失，损坏及缺陷的部件

2.1. Claims for lost or damaged shipments must be reported to the carrier within the carrier's claim window, the customer needs to inform Artillery within **7 days** of the delivery date.
货物丢失或损坏的索赔必须在运输公司的索赔窗口内报告给运输公司，客户需要在交货日期的7天内通知Artillery。

ARTILLERY

artillery