

S.Y.熔炼炉使用说明书

User Manual of S.Y. Melting Furnace



目录 CONTENTS

1-注意事项	Cautions	-----	1
2-技术参数	Technical parameters	-----	3
2.1 随机配件	Content of delivery	-----	4
3-基本操作原理	Basic principle of operation	-----	4
3.1 装配	Assembly	-----	4
3.2 功能	Functioning	-----	5
4-操作说明	Operation	-----	6
5-金属熔炼说明	Instructions for metals melting	-----	7
6-怎样更换炉丝	How to exchange the heating coil	-----	8

1-注意事项 CAUTIONS

1.1 使用电子产品的一般安全注意事项：

General safety information for the use of electrical devices:

为了避免火灾或者触电危险，使用本产品时请严格遵守安全指示。请仔细阅读本安全指示并理解其内容。请把说明书放在离本产品不远的地方以便随时参考。请提供本产品所需要的电压（要求电压请参考产品上的标签指示）及可靠接地，如有任何疑问，请让电工检查输出端是否正确地接地。禁止使用损坏的电源线。在潮湿的环境下，请不要打开本产品，如果产品受潮，请置于阳光下晒干，将本产品置于安全的位置，避免损坏此设备及伤害他人。当机器连续工作超过3小时，须等到机器冷却后再工作，不得将机器置于任何发热产品附近。清洗前，请断开电源，用柔软的湿布擦拭需要清洗的部位，不得使用潮湿布擦拭，禁止任何液体进入机器内。如所熔炼的金属含有酸、碱等物质，这些物质在高温下会产生化学反应，甚至腐蚀发热元件。这种情况，我们建议在熔炼过程中打开炉盖。机器内部的部件无须保养，未经许可拆开机器所造成的质量问题不属于保修范围。

To avoid injury from or electric shock, please ensure compliance with safety instructions when using this device. Please read the instruction carefully and make sure that you have understood it well. Keep the manual near the equipment to be able to read it at any time. Always use current sources connected to the ground and providing the necessary voltage (indicated on the label on the device). If you have any doubt, let an electrician check that unit is properly grounded. Never use a damaged power cable. Do not open the unit of solar radiation. Use the device in a protected location to avoid damaging the equipment or endangering others. Make sure the device is able to cool after 3 hours constant working, and avoid placing it too close to other devices that produce heat. Before cleaning, disconnect it. Use a soft damp cloth for cleaning. Avoid using detergent and make sure that no liquid enters the unit. If the metal contains acid or alkali materials, which may have chemical reaction to corrode heating element, in this way, please keep the top cover open during melting process. No internal element of this device needs to be maintained by the user. An opening of the device without our approval leads to a loss of warranty.

1.2 使用本产品应注意的一般安全事项：

General safety information for the use of melting furnaces:

- 使用前请培训操作人员如何正确地使用本产品。
- 确保工作环境通风好。
- 请保持紧急情况时的逃生路线并标志清楚。
- 请将灭火器置于随手可以拿到的地方。
- 使用本产品请戴好安全手套。
- 禁止将此机器放在易燃物品上或者置于易燃物体附近。
- 整个熔炼过程中须有专人监视。
- 禁止超载熔炼以避免熔炼过程中金属液体流出。
- 熔炼过程中要添加金属时，请慢慢放入坩埚内。
- The user manual should be kept close to the device and should always be accessible for the users. Instruct your employees how to use the melting furnace properly.
- Make sure your working area is well aerated.
- Keep the escape routes clear
- Keep a fire extinguisher ready for use.
- Always use safety gloves.
- Do not place melting furnaces on combustible supports or close to combustible materials.
- Do not let the device be without surveillance during the heating.
- Do not overfill the crucible, in order to prevent it from overflow during the heating.
- Add solid melting materials by inserting it slowly into the hot liquid mass.

1.3 使用本产品应注意的特别安全事项：

Specific safety information for the use of melting furnaces:

- 为了确保本产品的耐用性以及良好的功能，强烈建议连续工作时间不能超过3个小时，使用3个小时后请停止30分钟让炉子冷却。
- 定期检查坩埚破损情况，避免损坏炉丝。
- 炉子所能达到的最高温度为1100℃，禁止超过此温度熔炼。
- 含有酸、碱的回收金、银会腐蚀炉丝，如需要熔炼此种金属，建议熔炼过程中打开炉盖，让烟气蒸发。

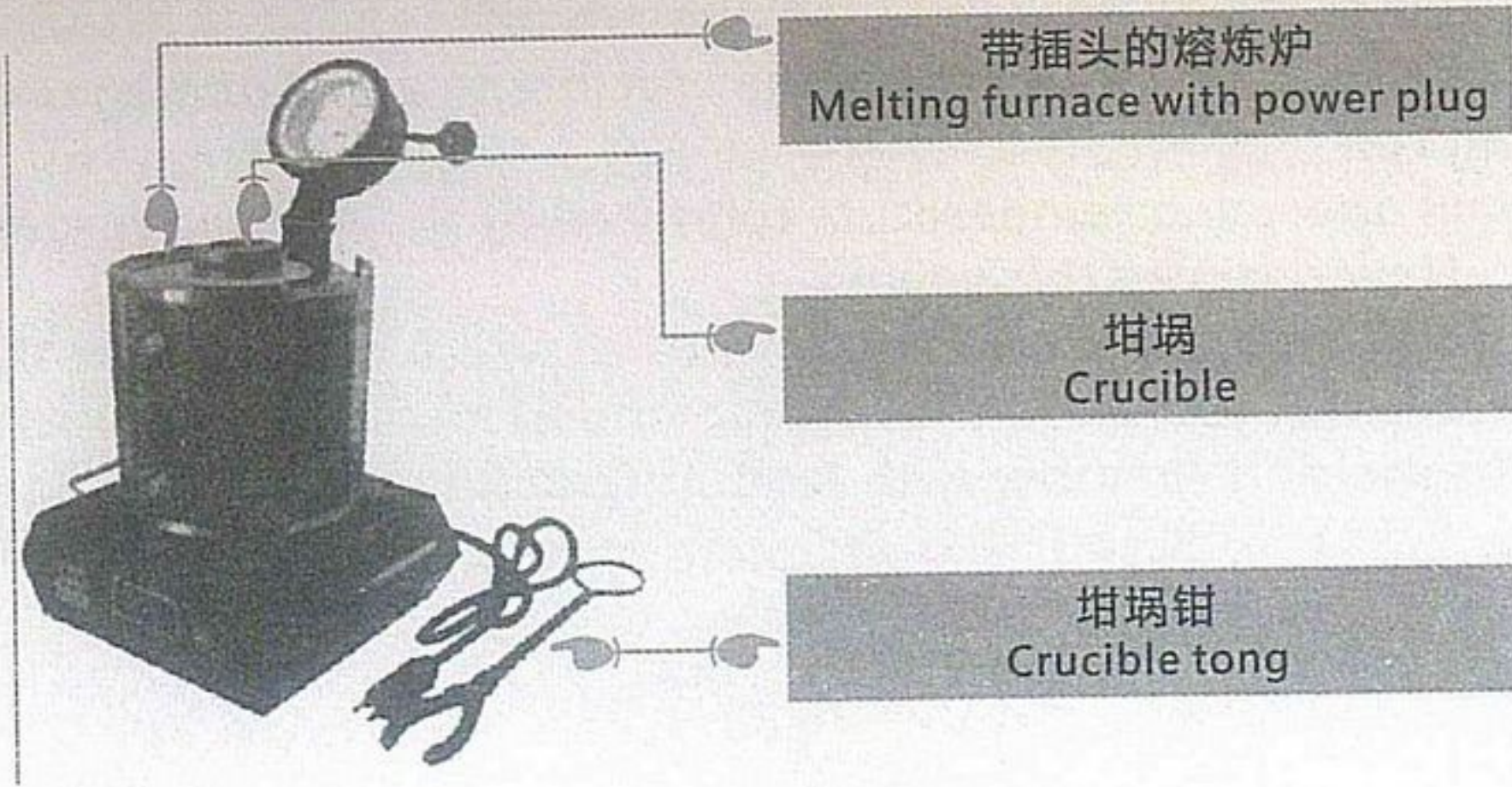
- In order to ensure a long durability and a good function of your device, we strongly advice to work less than 3 hours at once. Please ensure to stop for 30 mins after 2 hours of continuous work.
- Periodically check the intactness of the crucible, to avoid damages of the heating coil.
- The maximal operating temperature tolerated by the melting furnace is 1100°C , Never exceed this value.
- Recycled gold or silver contain acid and alkali which may corrode the heating element. If you want to melt that kind of metals, please open the cover of the melting chamber with regularity to let the toxic substances evaporate.

2-技术参数 TECHNICAL PARAMETERS

型号 Model	SY0001 Generation	SY0002 Generation
功率(w) Power input	1500	1600
电源 (230v) Power supply	50Hz/7A	50Hz/7A
最高熔炼温度 Max.Heating temperature	1100°C	1100°C
温度误差 Measurement accuracy	±0.5%FS	±0.5%FS
工作环境 Working environment	0-50°C 30-85%RH	0-50°C 30-85%RH
坩埚容量 Capacity of the crucible	212.76cm ³	212.76cm ³
坩埚外尺寸(cm) External dimensions of the crucible	Diameter:7.2 Height:15.5	Diameter:7.2 Height:15.5
坩埚内尺寸(cm) Internal dimensions of the crucible	Diameter:4.4 Height:14	Diameter:4.4 Height:14
机器尺寸(cm) Dimensions (L*W*H)	21.5*23.5*37	36*25*37
包装尺寸(L*W*H) Shipping dimensions	32*31*43	37*30.5*45
机器重量 Weight(kg)	9	11
包装重量 Shipping weight(kg)	10	12

2.1 随机配件

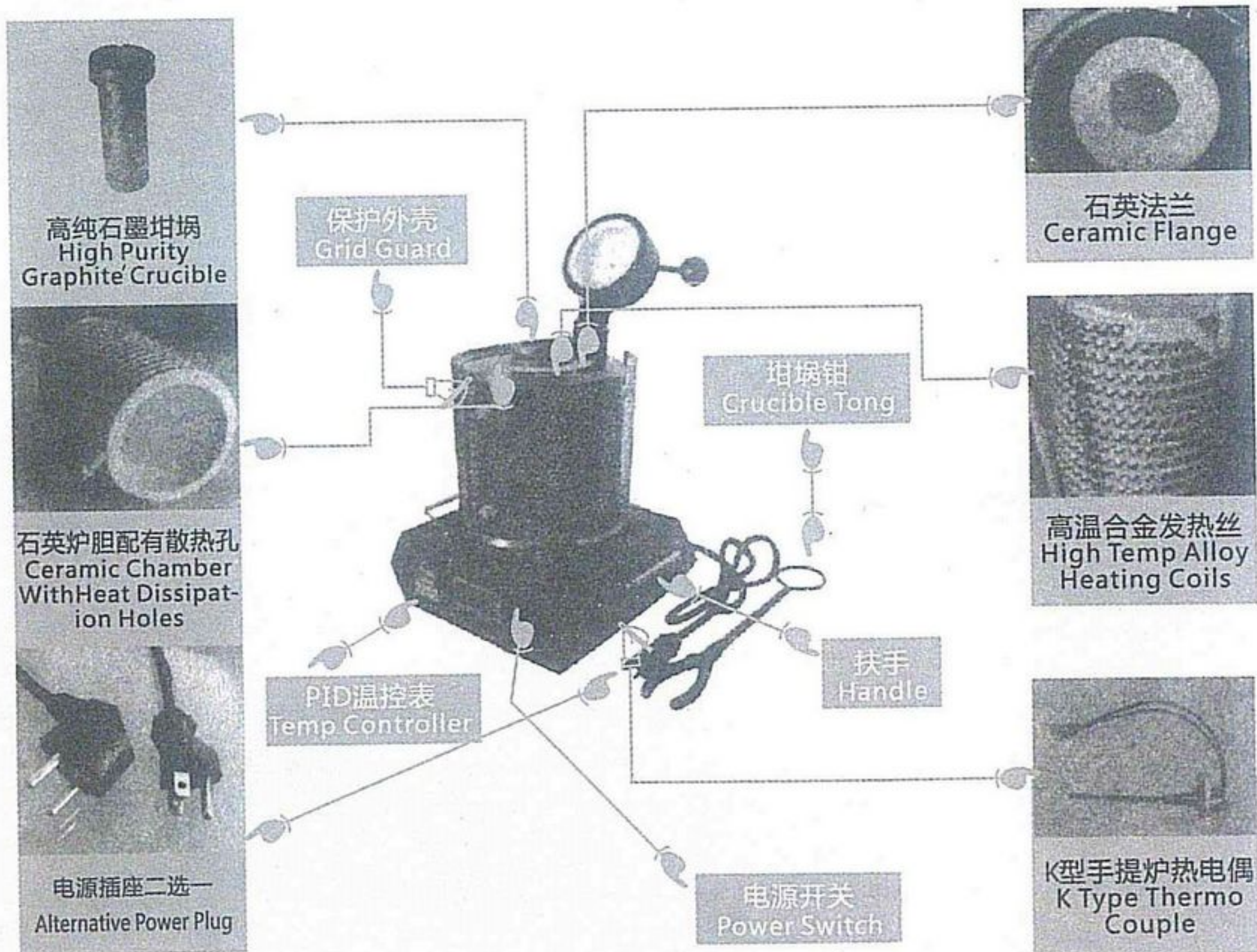
Content of delivery:



3-基本操作原理 BASIC PRINCIPLE OF OPERATION

3.1 装配

Assembly



3.2 功能

Functioning:

温控系统 控制系统: PID模式

PID系统具有2种功能: 测量及控制温度

首先是定期会间断式测量炉丝的温度, 将所量的温度传输到PID系统, 最后将PID系统得到的值 (实际温度) 显示在温控表上。

如果实际温度小于设定温度, PID系统控制炉子加热, 如果实际温度等于设定温度, PID系统控制炉子停止加热。间断式测温一般是2秒为一个段, 以确保所测温度的准确性。相比普通的温控系统, PID系统有明显的优势: 灵活性、高效性、准确性。

金属是怎么熔炼的?

PID系统控制炉丝的功率 (开/关系统)

当整个电路吸合, 炉丝开始发热并将热量传给坩埚, 随后坩埚将热量传给金属 (被动式熔炼, 无直接接触)。得到热量后金属开始发热, 达到熔点后变成液体。

Control system:the PID

The PID module has two functions:to measure and to control the heating. The temperature measurement in the heating coil is made at regular intervals. The information is transmittde to the PID module as current value.If the current value is inferior to the set value,the PID module makes the device heat.If the current value is superior or equal to the set value,the PID module stops the heating.

This cycle gets repeated at a 2-second-intervall.Therefore,a high grade of precision is ensurde.

The advantages of the PID module in comparison to a normal thermostat are the flexibility,the efficiency and the precision.

Thus,the energy consumption can be optimizde,and the material fatigue can be compensated:Therefore.

How does the metal get molten?

The PID module controls the power flow to the heating coil(ON/OFF system).When the circuit is closed,the heating coil gets warm and transfers the heat to the crucible which forwards the warmth to the metal(passive heating without direct contact).The metal gets hot and liquid when it reaches its smelting point.

4-操作说明 OPERATION

1. 接入电源。
2. 打开ON电源开关。
3. 设定温度（熔点温度）

在SV/PV正常显示状态下，按一下“Set”键，使SV显示处于闪烁状态，每位数都可以设定，通过按“<”键找到所需设定温度位数。按再使用“^”“v”改变设定温度，再按“Set”键，使仪表回到SV/PV正常显示状态，改动后的数据将自动保存。



注意：本机有显示回复功能，当操作者进行参数的设定修改等操作而忘回到主显示模式时，仪表会在30秒后自动返回主显示模式，改动过的参数不作保存。

4. 当炉子加热时，“OUT”会亮，直到实际温度达到设定值。
5. 当温度达到设置值，炉子停止加热。“OUT”灯开始闪烁，温度会持续在这个点。
6. 将熔炼后的金属倒入模具内，再将坩埚放回炉子里。
7. 如果整个熔炼过程已经完成，请关闭电源。

1.Plug the device in the power source.

2.Press the ON/OFF button.

3.Set the temperature(smelting temperature)

Press the SET button:SV(=set value)flashes.Every single digit can be set: to select the digit you want to change,press the "<" button.To change its value,use the buttons "v" "^" . To save the selected value,press SET again.

Notice:If you don' t save the selected value,the device will automatically go back to the main display mode without holding the value which was set after 30 seconds.

- 4.The device is starting the heating process.The "OUT" light is lit until the temperature reaches the chosen value.
- 5.As soon as the temperature is reached,the device stops heating.The "OUT" light flashes and the temperature remains constant.
- 6.Cast the metal into the mold and put the crucible back into the heating chamber.
- 7.Turn the furnace out as soon as the whole quantity of molten metal was used.

5-金属熔炼说明 INSTRUCTIONS FOR METALS MELTING

重要提示：石墨坩埚主要适用于金、银、铜等贵金属熔炼！
IMPORTANT: The graphite crucible is only adapted to melt gold, Silver, copper and other sev noble metals!

5.1 炉子所配的坩埚所能熔炼的金属如下：

List of the metal types which can be molten in the crucible provided with the device:

金属 Metal	代码 Symbol	密度 Density	熔点 Density Fusion point
铜 Copper	Cu	8.92 g/cm ³	1084.62°C
银 Silver	Ag	0.49 g/cm ³	961.78°C
金 Gold	Au	19.30 g/cm ³	1064.18°C

为了达到理想效果，请不要将坩埚装满，坩埚里面装的金属过多时，炉子将不能提供所有金属熔炼需要的热量。此外，金属熔炼过程中会产生蒸汽，坩埚装载的过多的金属会导致压力加大，甚至会对用户造成危害，这种情况请打开炉子顶盖。

如需要熔炼其它金属，请找到合适的坩埚。请切记，金属熔炼过程会产生蒸气，时刻提醒自己检查炉子工作情况及兼容性。

Please consider that the crucible shouldn't be completely filled to reach an optimal result. If you overfill the crucible, the device won't be able to produce the heat needed to let the metal melt. Moreover, the melting process often produces vapors. If you overfill the crucible, it can lead to overpressure and the use of the device gets dangerous for the user, at the latest by opening the cover.

Please buy an adapted crucible to melt other metals. Always inform yourself about the production of vapors during the melting process to check the compatibility of the device with your intentions.

6-怎样更换炉丝 HOW TO EXCHANGE THE HEATING COIL

6.1 注意: 没有卖家的许可请不要拆开炉子, 由此造成的质量问题将不属于保修范围。

CAUTION: Never open the device without authorization of your seller. This can lead to a loss of warranty!

6.2 炉丝会有烧断的情况, 如需更换炉丝, 请参考以下说明:

The heating coil may get damaged, and you have to exchange it. To do it, please follow these given instructions

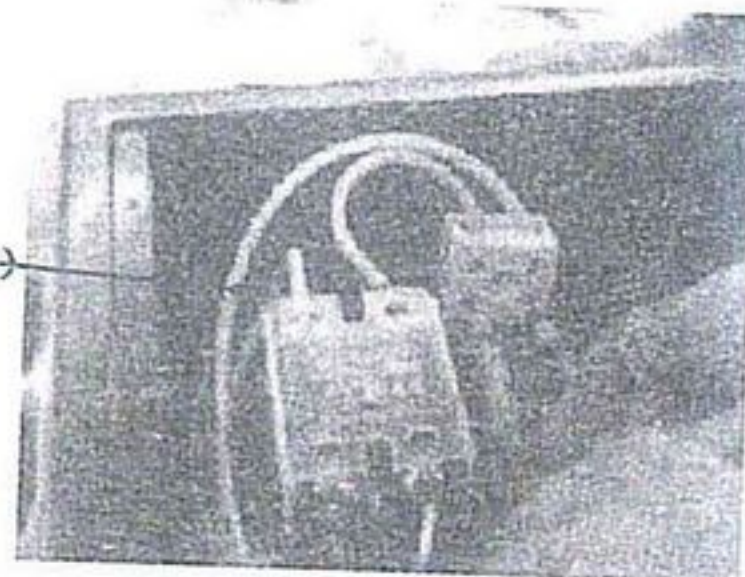
一、检测炉丝 Check the function of the heating coil

1. 打开炉子的底板。
First open the bottom of the furnace.



2. 按照图示那样检测炉丝的阻值, 如果是110V的炉丝, 阻值应该是8欧姆左右, 如果是220V的, 大概是在30欧姆左右, 如果检测的阻值无穷大, 就表示炉丝断了, 需要换炉丝。

Check the resistance of the heating coil like this: If 110V, the resistance is about 8Ω , If 220V, the resistance is about 30Ω , If the resistance is infinite, that means the heating coil is broken, then you need to change a heating coil.



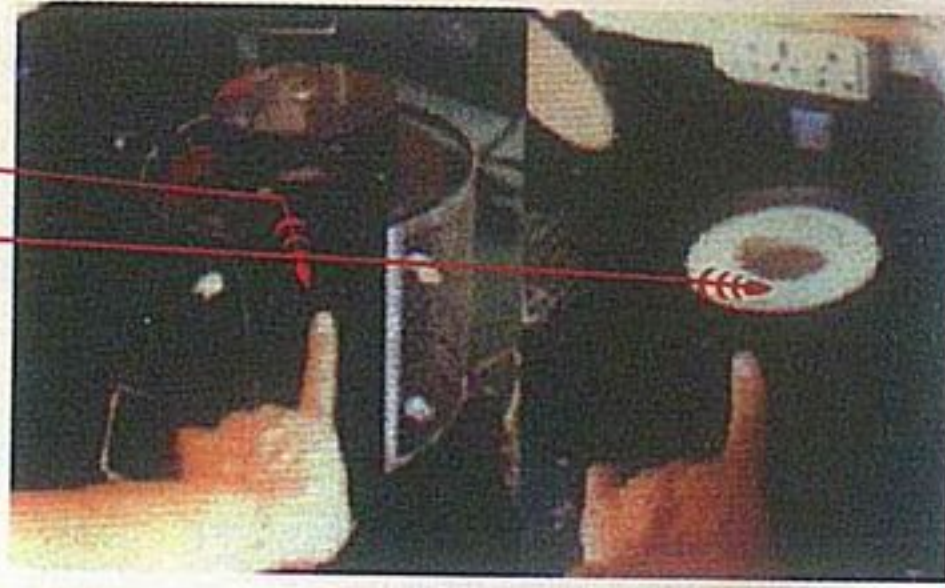
二、以下是换炉丝的步骤 Exchange

1. 卸掉图示的螺丝钉。
Take off the screws here.



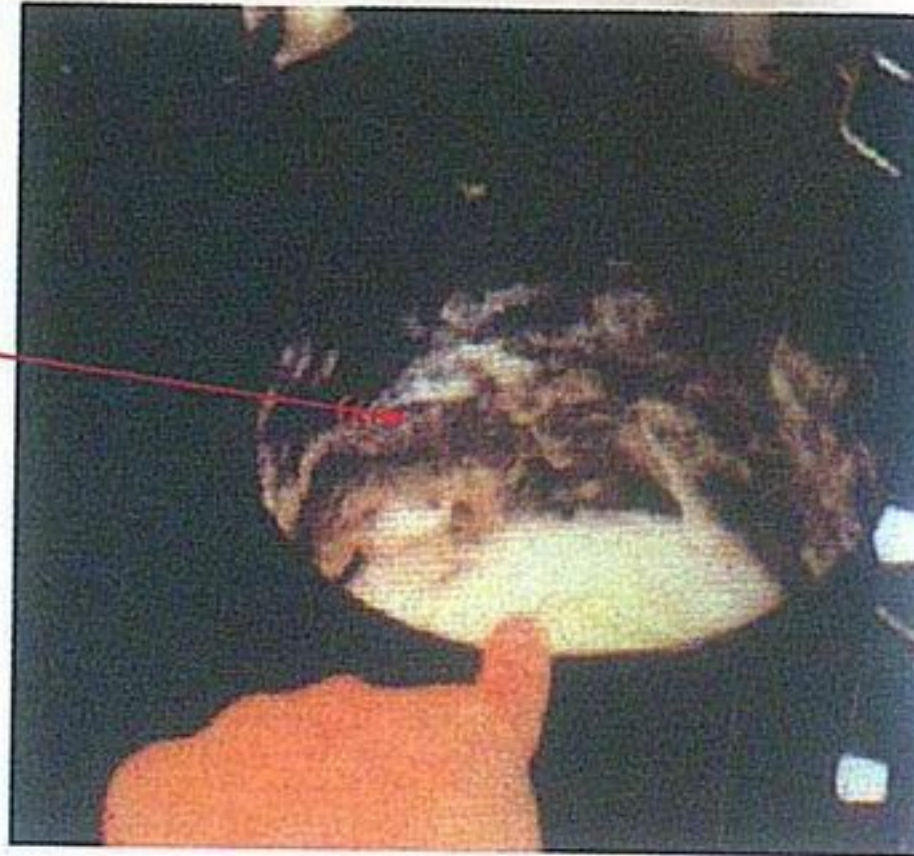
2. 打开保护罩并卸掉炉身和炉子及边沿的螺丝，然后取下法兰。

Take off the protecting sleeve, Then take off the screws on the furnace body here. There are also screws here, take off them, then you can take out the flange.



3. 然后可以取出法兰，这个图片是取出炉胆后的样子。

After take out the flange, you can take out the furnace chamber, here is the furnace without furnace chamber.



4. 把坏的炉丝取下来换一条新的炉线绕在炉胆上，把石英棒也穿回炉丝两端，最后怎么卸的怎么装上。

Take off the broken heating coil and winding a new heating coil on the furnace chamber. Don't forget the insulating rod! This is the finished furnace chamber with heating coil.

