



青岛创梦仪器有限公司

Qingdao ChuangMeng Instrument Co., Ltd.

陈化釜

AgingCell

Model: 1520-1524



使用手册

Instruction Manual

版本 1.0

Version 1.0

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请你仔细阅读《使用手册》，正确掌握本产品的安装和使用方法。阅读后请将本《使用手册》妥善保管，以备今后进行检修和维护时使用。

Carefully read this User Manual to learn how to install and use the product correctly. After reading, properly keep the User Manual as a reference for future maintenance and repair.

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1、介绍 Introduction

- 有些钻井液，特别是用石灰处理过的钻井液，在静态条件下，留在深热孔时会增厚或凝固。这种增厚会影响钻井和完井作业，例如测井和射孔。高温条件下，创梦公司的高温陈化釜用于老化测试，能帮助预测静态下的钻井液性能。近期的钻探研究表明，在老化试验之前，最好是在高温前进行加压。在试验前用氮气或二氧化碳加压可以防止陈化釜在达到试验温度时沸腾和蒸发。

- 500 毫升陈化釜，温度可达 500°F (260°C)，压力高达 1000 psi (6895 kPa)。釜腔有足够的膨胀空间，可以容纳 350 毫升的样品。釜中老化的样品可以进行剪切试验。

- 釜的组件由 304 型和 316 型不锈钢等耐腐蚀材料制作，可以用于高温高压试验。

- 聚四氟乙烯衬垫可用于 260 毫升或 500 毫升陈化釜。这些衬垫防止样品和釜直接接触，能防止腐蚀或污染。

Some drilling fluids, especially those treated with lime, may thicken or solidify when left in deep hot holes under static conditions. This thickening will affect drilling and completion operations, such as logging and perforation. Under high temperature conditions, the high-temperature aging kettle of Chuangmeng Company is used for aging testing, which can help predict the performance of drilling fluid under static conditions. Recent drilling studies have shown that it is best to apply pressure before conducting aging tests at high temperatures. Pressurizing with nitrogen or carbon dioxide before the experiment can



prevent the aging kettle from boiling and evaporating when it reaches the test temperature.

500ml aging kettle with a temperature of up to 500 °F (260 °C) and a pressure of up to 1000 psi (6895 kPa). The kettle chamber has sufficient expansion space to accommodate 350 milliliters of sample. The aged samples in the kettle can undergo shear testing.

The components of the kettle are made of corrosion-resistant materials such as 304 and 316 stainless steel, which can be used for high temperature and high pressure testing.

PTFE liners can be used for 260ml or 500ml aging kettles. These pads prevent direct contact between the sample and the kettle, which can prevent corrosion or contamination.

2、安全 Safety

- 在使用和维护高温陈化釜时，应遵守安全的实验室惯例和程序。
- 安全运行老化，需要你对正确装配的理解、实践、和使用陈化釜，以及用于加热它们的烘炉。
- 陈化釜和滚子炉在运行过程中很热。操作人员应注意加热区域，避免与他们接触。在试验过程中，接触设备的发热部位会导致烧伤。
- 下面的部分列出了安全操作和维护陈化釜的一些注意事项。

When using and maintaining high-temperature aging kettles, safe laboratory practices and procedures should be followed.

Safe operation aging requires your understanding, practice, and use



of proper assembly of aging kettles, as well as the ovens used to heat them.

The aging kettle and roller furnace are very hot during operation. Operators should pay attention to the heating area and avoid contact with them. During the experiment, contact with the heating parts of the equipment can cause burns.

The following section lists some precautions for safe operation and maintenance of the aging kettle.

2.1 安全加压 Safe Pressurization

- 不要让二氧化碳罐受热或暴露在火中。如果过热，它们会爆炸。
- 保持压力调节器处于良好状态。
- 不要在压力调节器上使用机油。
- 泄压系统应定期检修或更换。
- 仪表、配件和软管应保持良好状态, 如发现泄漏应及时维修。
- 定期测试增压管上的安全泄压阀, 以确认它们能释放过多的压力。永远不要堵塞或绕过这些安全阀。
- 当对陈化釜加压时, 首先打开供应压力, 然后调节调节器。不要将压力设置到高于设备的额定压力或超过安全阀设定压力。
- 一些陈化试验为防止加热时使样品沸腾, 在加热之前加压。
- 使用氮气或二氧化碳。
- 切勿将可燃性气体例如压缩氧, 注入陈化釜内。
- 如果使用氮气, 必须用合格供应商提供的氮气钢瓶, 或者将氮气供应系统安装



到实验室中。氮气钢瓶必须确保符合所有的安全标准。

- 二氧化碳气弹通常提供压力是约 900 psig (6205 kPa)，这些小气弹主要是应用在现场。
- 当减压时，关闭压力源压力，排放管路压力。然后，T 螺杆逆时针转动调节器（左）。

Do not expose the carbon dioxide tank to heat or fire. If they overheat, they will explode.

Keep the pressure regulator in good condition.

Do not use engine oil on the pressure regulator.

The pressure relief system should be regularly inspected or replaced. Instruments, accessories, and hoses should be kept in good condition, and any leaks should be promptly repaired.

Regularly test the safety relief valves on the booster pipe to confirm that they can release excessive pressure. Never block or bypass these safety valves.

When pressurizing the aging kettle, first open the supply pressure, and then adjust the regulator. Do not set the pressure above the rated pressure of the equipment or beyond the set pressure of the safety valve. Some aging tests apply pressure before heating to prevent boiling of the sample during heating.

Use nitrogen or carbon dioxide.

Do not inject flammable gases such as compressed oxygen into the aging kettle.

If nitrogen is used, a qualified supplier must provide nitrogen gas



cylinders or install the nitrogen supply system in the laboratory. Nitrogen cylinders must ensure compliance with all safety standards.

Carbon dioxide gas bombs typically provide a pressure of approximately 900 PSI (6205 kPa), These small gas bombs are mainly used on site.

When reducing pressure, turn off the pressure source pressure and discharge the pipeline pressure. Then, turn the T screw counterclockwise to adjust the regulator (left).

2.2 加热安全 SafeHeating

- 当陈化釜样品的温度低于 200°F (93°C), 时才可以安全地打开陈化釜。
- 操作滚子炉时要小心, 以避免接触滚子炉内部或陈化釜组件的意外烫伤, 因为是高温的。即使试验结束, 滚子炉已经关闭, 滚子炉和陈化釜仍处于高温危险状态。
- 在陈化釜没有冷却到安全温度前, 不建议将它们从加热室或滚子炉中取出。
- 用流动的水冷却陈化釜是非常危险的。这种做法是不推荐的, 因为有烧伤的危险。如果陈化釜必须迅速冷却, 要特别小心, 并穿戴适当的护具。
- 在水中放置热釜时要特别小心。当水接触热釜时产生的热蒸汽会导致严重烧伤。
- When the temperature of the sample is lower than 200°F (93°C), the aging cell can be safely opened.
- Caution should be exercised when operatingovens to avoid accidental injurybytouchingtheinsideoftheoven orthecell assemblywhilethese arehot. Theoven andcells arestill dangerouslyhot even afterthetest has ended and



the oven has been turned off.

- It is not recommended that the aging cells be removed from the heating chamber or oven until they have cooled to a temperature in which they can be safely handled.
- Cooling a hot aging cell under running water is very dangerous. This practice is not recommended because there is risk of getting burned. If the cell must be cooled quickly, be extremely careful and wear appropriate hand protection.
- Use extreme caution when placing a hot cell in water. Hot steam that is generated when the water contacts the hot cell can cause severe burns.

2.3 安全操作（滚子炉） Safe Electrical Operation (oven)

- 修理滚子炉前要断开电源线。
- 确保总电源的保险和接地。确认滚子炉上的电源线状况良好，并有正确的接地连接。
- 通过查看设备，是看不到滚子炉电路或加热器的电气问题的。
- 如果出现这些故障，设备需要电气修理：

保险丝烧断或断路器跳闸。

加热时间过长。

温控器不运行。

Before repairing the roller furnace, disconnect the power cord.

Ensure the safety and grounding of the main power supply. Confirm that the power cord on the roller furnace is in good condition and has the



correct grounding connection.

By inspecting the equipment, it is not possible to see any electrical issues with the roller furnace circuit or heater.

If these faults occur, the equipment needs electrical repairs:

The fuse burns out or the circuit breaker trips.

Heating time is too long.

The thermostat is not running.

2.4 安全测试釜维护 SafeTest CellMaintenance

- **爆炸危险！不要将烘炉加热到测试单元的温度等级以上。**
- 陈化釜组件构成的压力容器。应遵循这些安全措施：
- 陈化釜材料应与试验样品兼容。
- 发现陈化釜釜体开裂，严重点蚀或螺纹损坏时，不得使用。
- 不能使用螺纹或固定螺钉孔损伤的釜盖。
- 不得使用损坏的固定螺钉或低强度、非热处理的固定螺钉。

Explosion hazard! Do not heat the oven above the temperature level of the testing unit.

Pressure vessel composed of aging kettle components. These safety measures should be followed:

The material of the aging kettle should be compatible with the test sample.

When cracking, severe pitting or thread damage is found on the body of the aging kettle, it should not be used.



Do not use pot covers with damaged threads or fixed screw holes.

Do not use damaged fixing screws or low strength, non heat-treated fixing screws.

3、功能和规格 Features and Specifications

- Volume: 260 ml or 500 ml
- 容量: 260 ml 或 500 ml
- Temperature Range: Ambient to 500° F (260° C)
- 温度范围: 环境至 500° F (260° C)
- Material: stainless steel (304&316)
- 材质: 不锈钢 (304&316)

陈化釜规格 Aging Cell Specifications

Part No. 零件编号	Material 材料	Volume 体积 (ml)	Maximum Working Pressure 最大工作压力		Maximum Temperature 最高温度	
			psig	kPa	°F	°C
1520	304 Stainless Steel 不锈钢	500	2500	17237	500	260
1522	316 Stainless Steel 不锈钢	500	2500	17237	500	300
1523	304 Stainless Steel 不锈钢	260	2500	17237	350	177
1524	316 Stainless Steel 不锈钢	260	2500	17237	350	177
1521	Teflon Liner For Aging Cells 陈化釜内衬	500	680	4700	460	240

当老化试验温度在 212°F (100°C) 或更高，应使用推荐回压和增加钻井液的体积

When heat aging at temperatures at 212°F (100°C) and greater, apply the recommended backpressure and add the volume of drilling fluid.



4、加压试验程序 Pressurized Test Procedure

1. 确定安全的样品体积（350 毫升或 500 毫升）和老化温度。将钻井液注入陈化釜。

2. 确保釜的密封边缘是干净的。

3. 将垫圈安装在内盖的凹槽中。把内盖放在釜上。

4. 将压力板（或垫圈）放在内盖的颈部上方。

5. 将外盖拧到釜上。用螺丝扳手拧紧外盖中的三个螺钉。

6. 检查下槽 O 形圈的情况，必要时予以更换。接下来，将阀杆（锥头）放入内盖并将其完全拧到位。然后，松开它半圈。

7. 连接增压组件-碳、氮或空气。施加防止汽化的压力。

高温高压压滤机的二氧化碳气弹可用于加压陈化釜。

8. 给釜加压后，通过转动阀杆直到阀座关闭。

9. 关闭供应压力，并从系统中排放压力。然后，T-螺杆逆时针转动调节器（左）。

10. 打开阀门放气，然后拉动锁定销断开加压装配。

11. 将釜放入加热室，并在测试温度下加热所需时间。

釜样品的温度必须低于 200°F (93°C)，压力释放后，釜可以安全地打开。

在处理热釜时使用耐高温手套。

12. 拆下釜，让它冷却，温度降低到 130°F (54°C) 或更低。釜可以用水冷却也可以不用水冷却。

13. 检查老化的钻井液并报告其状况：胶凝、塑性或坚硬。

1. Determine the safe sample volume (350 ml or 500 ml) and the aging



temperature. Pour the drilling fluid into the aging cell.

2. Make sure that the sealing edge of the cell is clean.

3. Install the gasket in the groove of the inner cap. Place the inner cap onto the cell.

4. Place the pressure plate (or washer) over the neck of the inner cap.

5. Screw the outer cap onto the cell. Use the 3/16-in. set screw wrench to tighten the three set screws in the outer cap. If the cell will be rolled, install one O-ring (P/N 205661) in the groove on the outer cap and one O-ring on the flange near the bottom of the cell.

6. Check the condition of O-ring in the lower groove, and replace it if necessary.

Next, put the valve stem (cone end) into the inner cap and twist it fully in place. Then, loosen it one-half turn.

7. Attach the pressurizing assembly— carbon, nitrogen, or air. Apply the pressure that will prevent vaporization.

The carbon dioxide manifold for the HPHT filter press is usually used for pressuring aging cells.

8. After pressuring the cell, close the valve stem by turning it until seated.

9. Shut off the supply pressure, and bleed pressure from the system. Then, turn the regulator T-screw counterclockwise (left).

10. Open the valve to bleed pressure, and then pull the locking pin to disconnect the pressuring assembly.

11. Place the cell into the heating chamber and heat at the test

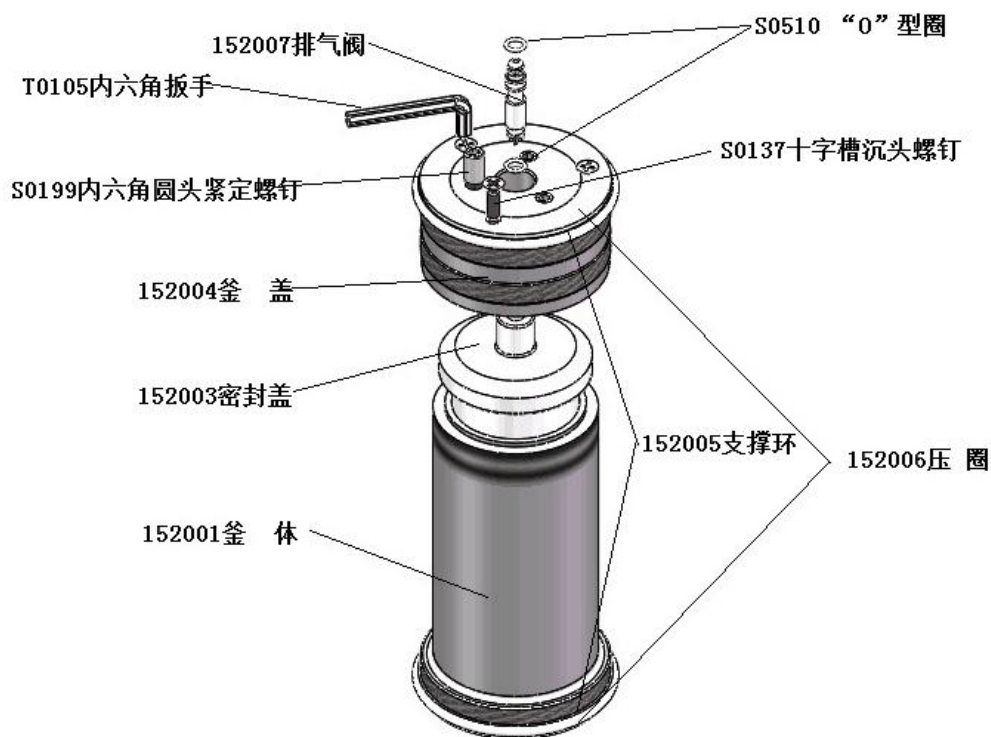
temperature for the desired time.

The temperature of the sample in the cell must be reduced to less than 200°F (93°C) before pressure is released and the cell can be safely opened.

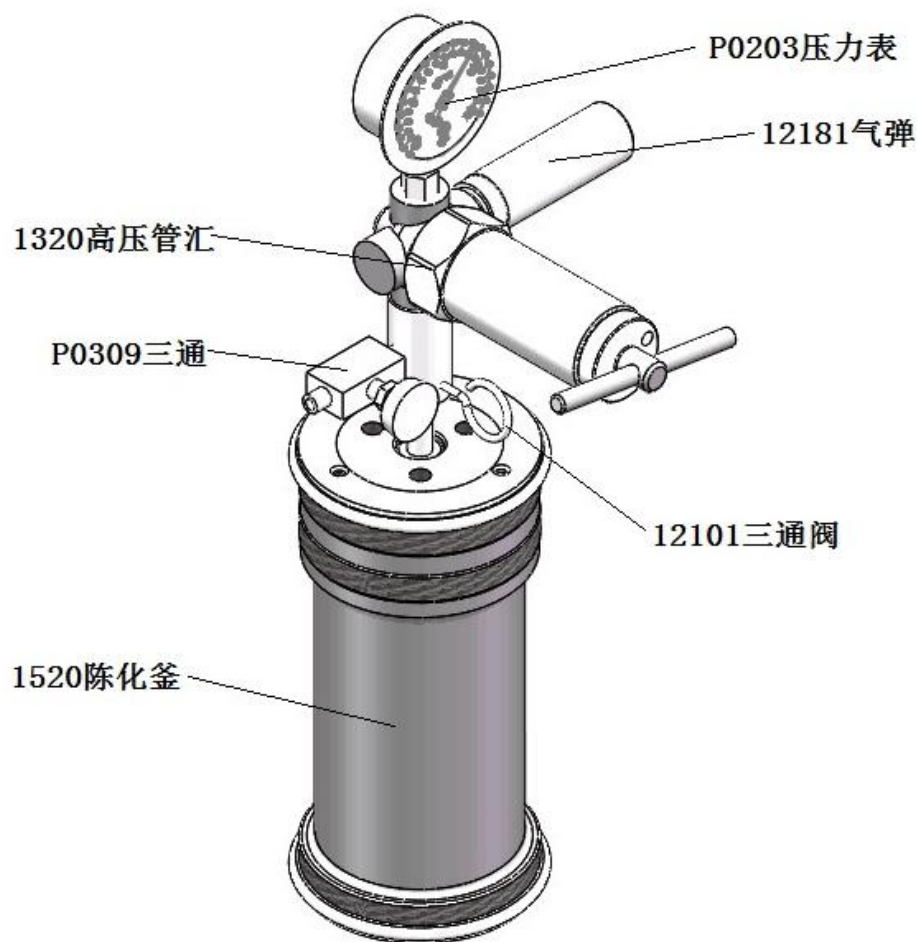
Use proper hand protection when handling hot cells.

12. Remove the cell and let it cool until the temperature reduces to 130°F (54°C) or less. The cell may be cooled with or without water.

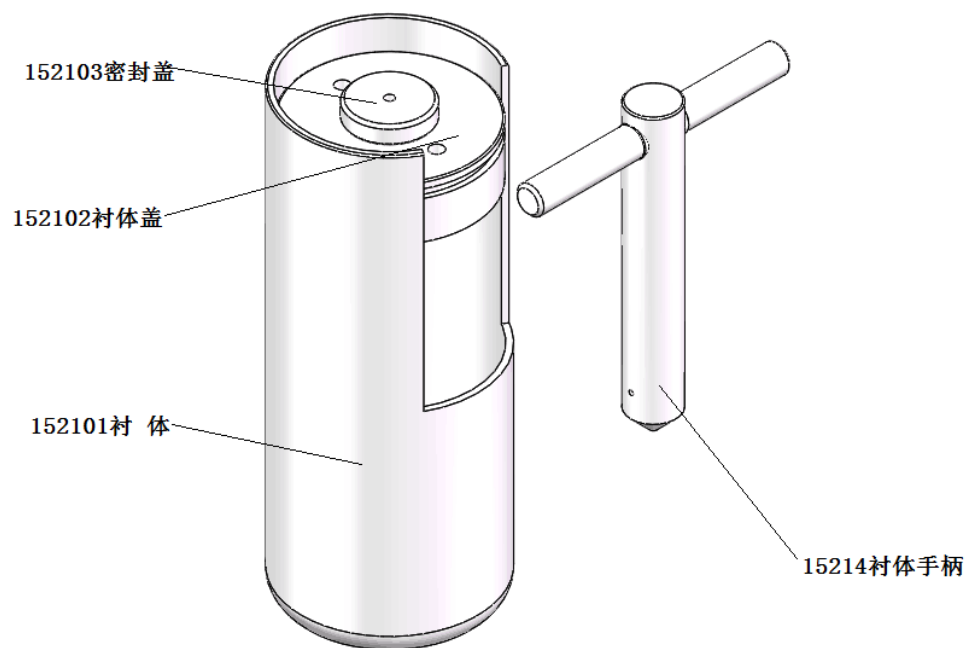
13. Examine the aged drilling fluid and report its condition: gelled, plastic, or hard.

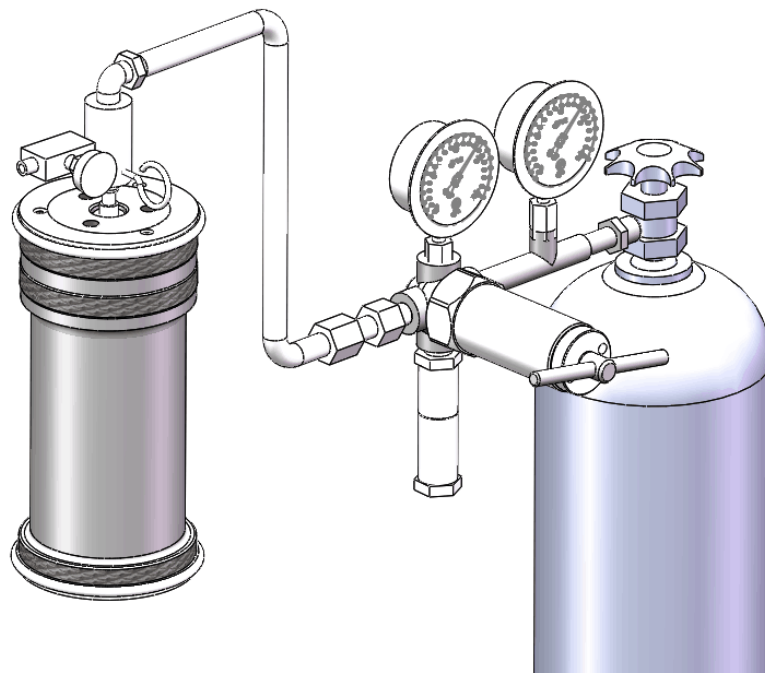


Pressurized Cell Assembly 加压的釜组件



CarbonDioxidePressurizingManifold 二氧化碳增压





5、陈化釜的维护 Maintenance of Aging Cells

- 每次测试后，彻底拆卸陈化釜进行清洗。
- 按照这些说明维护陈化釜或其他用于测试的设备：
- 垫圈（内盖）变形时更换。该垫圈在 500°F（260℃）加热后性能降低，建议更换垫圈。

- 检查“O”型圈和阀杆。如果割伤或磨损，请更换它们。

在 400°F 到 500°F（205℃ 到 260℃）进行试验后，更换 “O” 型圈。

- 拆卸、清洗和润滑固定螺钉（外盖）。用高质量的高温润滑剂润滑，适用于 500°F（260℃）（例如防粘润滑剂）。
- 清洁并润滑外盖和单元螺纹。
- 彻底清洁釜内部和内盖。确保周边和釜底部的圆角干净且不腐蚀。少量腐蚀可通过喷砂除去。



釜腐蚀会导致腐蚀应力开裂，从而影响釜的安全。不要压或加热显示应力裂缝的釜。

- 为了维护调节器和增压组件，请参见调节器的说明。

- After each test, completely disassemble and thoroughly clean the aging cell.

- Follow these instructions for maintaining the aging cells or other equipment used in the tests:

- Replace the gasket (inner cap) when it becomes distorted. The life of this gasket is greatly reduced after heating at 500°F (260°C). Replacing the gasket is recommended.

- Examine the O-rings and valve stem. Replace them if they are cut or brittle.

After performing tests at 400° F to 500° F (205 °C to 260 °C), replace the O-rings.

- Remove, clean, and lubricate the set screws (outer cap). Lubricate them with high-quality, high-temperature lubricant suitable for 500 °F (260 °C) (e.g., an anti-seize lubricant).

- Clean and lubricate the outer cap and cell thread.

- Thoroughly clean the inside of the cell and the inner cap. Make sure the rounded corner between the wall and the bottom of the cell is clean and not corroded. Minor corrosion may be removed by sandblasting.

Cell corrosion can result in corrosion stress cracking, which impairs the safety of the cell. Do NOT pressure or heat a cell



showing stress cracks.

• For maintaining regulators and pressurizing assemblies, see the instructions for regulators.

6、配件 Accessories

Part Number	Description 描述
152005	Support ring F4 支撑环 F4
12181	CO ₂ Cartridges, 10/box CO ₂ 气弹 10/盒
T0120	Solid wrench, 6-mm (Valvestem) 呆扳手, (阀杆)
S0510	O-RING (Valvestem) “O” 型圈 (阀杆)
152002	Seal ring F4 密封环 F4
152007	Valvestem 阀杆
S0137	Screw 十字槽沉头螺钉



青岛创梦仪器有限公司 装箱单

Qingdao Chuangmeng Instrument Co., Ltd. Packing list

生产企业：青岛创梦仪器有限公司

Manufacturing enterprise: Qingdao Chuangmeng Instrument Co.,Ltd.

生产地址：青岛市城阳区流亭街道兴海路 3 号

Production address: No. 3 Xinghai Road, Liuting Street, Chengyang District, Qingdao

主机型号：

Model：

出厂编号：

Manufacturing No:

序号	PartNo.	Description 描述	Quantity
1	T0105	WRENCH, HEXKEY 内六角扳手, 5mm	1
2	S0510	O-RING (VALVESTEM) O 形圈 (阀杆)	2
3	S0199	SCREWSET 螺钉	3
4	152007	VALVESTEM 阀杆	1
5	152201	CELLBODY 釜体, 260ml, 316	1
6	152204	OUTERCAP 外盖, 316	1
7	152203	INNERCAP 内盖, 316	1



产品合格证

Product Quality Certificate

出厂编号:

Manufacturing No:

产品名称: Description:	
产品型号: Model:	
检验标准: Standard:	
生产日期: Date of Manufacture:	
产品编号: Product Code:	
结论: Conclusion: 经检验, 青岛创梦仪器有限公司生产的产品符合上述标准的要求。准予出厂。 After inspection, Qingdao Chuangmeng Instrument Co., Ltd The products produced meet the requirements of the above standards. Approved for delivery.	
本企业通过: IS0014004 环境管理体系认证; IS09001:2015 质量管理体系认证; IS018000 职业健康安全管理体系认证质检科; QC Department:	