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
InstructionManual

版本 **Revision**1.0

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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Ⅰ. 介绍 Introduction

•Somedrillingfluids, especiallylime-treated drillingfluids thicken orsolidifywhen left in adeep hot holeunderstatic conditions. This thickeningimpairs and sometimes prevents drillingandcompletion operations, such as loggingand perforating. Chuangmeng's HighTemperatureAgingCells aredesignedforuseinaging tests which help predict theperformanceofadrillingfluid understatic, high temperature conditions. Recent drillingresearch indicates that it is betterto apply pressurebeforeheatingsamples to elevated temperatures in agingtests. The pressure of nitrogen or carbon dioxide before the test is used to prevent the boiling and evaporation of the aging kettle at the temperature of the test.

•Fortemperatures up to 500^{O}F (260^{O}C) and pressures up to 1000 psi (6895 kPa), a550 ml stainless steel agingcell is available. Thiscell can hold a350 ml sample with adequate roomforexpansion. Samples aged in this cell can be analyzed in sheartests.

•Cell assemblies madeof Type303and Type316 stainless steel and othercorrosion-resistant materials can bepressurized usingtheFann High Temperature.

•Glass liners with Teflon®lids are availableforusewith 260 ml or500 ml aging cells. Theseliners keep thesample and thecell from touchingand protectfrom corrosion or contamination.

•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。

•550 毫升陈化釜，温度可达 500^{O}F (260^{O}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。

Ⅱ. 安全 Safety

•Safelaboratorypracticesand procedures should beobserved whileoperatingand maintainingtheHigh TemperatureAgingCell.

•Safelyoperatingthis agingrequiresyourunderstandingand practicingcorrect assemblyand useoftheaging cell, as well as theoven used to heat them.

•The aging cell and the oven are hot during operation. The operator should be aware of the hot areas and avoid contact with them. Burns can result from touching hot parts of the equipment during normal operation.

•The followingsections list someprecautions forsafelyoperatingand maintaining theseagingcells.

•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。

2.1 安全加压 Safe Pressurization

•Some agingcells aredesigned to bepressurized beforeheat is applied to prevent boilingthesamplewhenheated.

•Always use eithernitrogen or carbon dioxide.

•Neverconnect the aging cell to compressed oxygen orothernon- recommended or flammablegas.

•Ifnitrogen is used, it must besupplied in an approved nitrogengas cylinder, orthenitrogen supplysystem must bebuilt into thelaboratory.Nitrogen cylinders must besecured to meet all safetystandards.

•Carbon dioxideis usuallysupplied in small cartridgeswhich contain approximately900 psig(6205 kPa)pressure. These cartridges areprimarily used in the field.

•DoNOTallowthecarbondioxidecartridgestobeheatedor exposed tofire.Theycanexplodeifoverheated.

•Maintain pressureregulators in good condition.

•Neveruseoil on pressureregulators.

•Leakingpressurization systems should berepaired or replaced.

•Gauges, fittingsand hoses should bekept in goodcondition and leaks should be found and corrected.

•Periodicallytest thesafetyreliefvalves on thepressurization manifolds to verifythat theywill relieve excessivepressure. Neverplugorbypass these safetyvalves.

•When pressurizingtheagingcell, always open thesupplypressure first, and then adjust the regulator.Do not attempt to pressurizehigherthan the equipment’s pressure ratingorthereliefvalvesettings.

•When de-pressurizing, shut offthesupplypressure, and bleed pressurefrom thesystem. Then, turn the regulatorT-screw counterclockwise(left).

•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）。

2.2 加热安全 **SafeHeating**

•When the temperature of the sample is lower than 200^{O}F (93^{O}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 theoven has been turned off.

•It is not recommended that theagingcells beremoved from theheating chamberoroven until theyhavecooled to atemperaturein which theycan besafelyhandled.

•Coolingahot agingcellunder runningwateris verydangerous. This practiceis not recommended becausethereis risk ofgettingburned.Ifthe cell must be cooled quickly, beextremelycareful and wearappropriatehand protection.

•Use extreme caution when placing ahot cell in water. Hot steam that is generated when thewater contacts thehot cell cancauseseverereburns.

•当陈化釜样品的温度低于 200^{O}F（93^{O}C)，时才可以安全地打开陈化釜。

•当陈化釜样品的温度低于 200^{O}F（93^{O}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。

2.3 安全操作（滚子炉）**Safe ElectricalOperation (oven)**

•Alwaysdisconnect thepowercablebeforerepairinganoven.

•Makesuretheelectrical sourceis fusedandgrounded. Verifythepowercord on theoven is ingood condition and has thepropergroundconnection.

•Electrical problems in theoven wiringorheatersmaynot beobvious by lookingat the equipment.

•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。

•Ifanyofthesesituations occur, then thereis amalfunction and the equipment mayneed electricalrepair:

•Blows fuses ortrips thebreaker.
•Theheatingtimeseems too long.
•Thethermostat control does not repeat.

•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。

2.4 安全测试釜维护 **SafeTest CellMaintenance**

•***EXPLOSIONRISK!DoNOTheat theovenabove thetemperature ratingof thetestcell.***

•Theagingcell assemblyconstitutes apressurevessel. Thesesafetyprecautions should be followed:

•Theagingcell material should be compatiblewith thetest sample.

•Agingcell bodies that show stress cracking, severepitting, orthat have damaged threads must not beused.

•Agingcell outercaps with damaged threads orsetscrew holes must not be used.

•Damaged set screws orlow-strength, non-heat treated set screws must not beused.

•*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。

Ⅲ. 功能和规格 **FeaturesandSpecifications**

•Volume: 260 ml or500 ml
•容量：260 毫升或 500 毫升
•TemperatureRange: 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)

AgingCellSpecifications

陈化釜规格

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	℃
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

When heat agingat temperatures at 212^{O}F (100^{O}C)and greater, applythe recommended backpressure and add thevolumeofdrillingfluid .
当老化试验温度在 212^{O}F （100^{O}C)或更高，应使用推荐回压和增加钻井液的体积

Ⅳ. 加压试验程序 PressurizedTestProcedure

1.Determinethesafesamplevolume (350 ml or500ml) and theaging temperature. Pourthedrilling fluid into the agingcell.

2.Makesurethat thesealingedgeofthecell is clean.

3.Install thegasket in thegrooveoftheinner cap. Placetheinnercap onto the cell.

4.Placethepressureplate(orwasher)overtheneckoftheinnercap.

5.Screw theouter cap ontothe cell. Usethe3/16-in.set screwwrench to tighten thethreeset screws in theoutercap.Ifthecell will be rolled, install oneO-ring (P/N 205661)in thegrooveon theoutercap and oneO-ringon theflangenear thebottom ofthe cell.

6.Check the condition ofO-ringin thelowergroove, and replaceit ifnecessary.

Next, put thevalvestem (cone end)into theinnercap and twist it fullyin place. Then, loosen it one-halfturn.

7. Attach thepressurizingassembly— carbon, nitrogen, or air. Applythepressure that will prevent vaporization.

Thecarbondioxide manifoldfor theHPHT filter pressisusually usedforpressuringagingcells.

8. Afterpressuringthecell, closethevalvestem byturningit until seated.

9. Shut offthesupplypressure, and bleed pressurefrom thesystem. Then, turn the regulatorT-screw counterclockwise (left).

10. Open thevalveto bleedpressure,and then pull thelockingpin to disconnect the pressuringassembly.

11. Placethecell into theheatingchamberand heatat thetest temperatureforthe desired time.

Thetemperatureofthe sampleinthecellmust bereducedto less than200^{O}F

(93^{O}C)beforepressureisreleasedandthecell canbesafelyopened.
Useproperhandprotectionwhenhandlinghot cells.

12. Removethe cell and let it cool until thetemperature reduces to 130^{O}F (54^{O}C)or less. The cell maybecooled with orwithout water.

13. Examinethe aged drillingfluid andreport its condition: gelled, plastic, orhard.

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。使用 3/16。用螺丝扳手拧紧外盖中的三个螺钉。如果釜将被滚动，在外盖上的凹槽上安装一个 0 形环(P/N 205661)，在釜底部的凸缘上的一个 0 形圈上安装一个 0 形圈。

6.检查下槽 0 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。

对于高温高压压滤机，二氧化碳管通常用于加压陈化釜。

8.给釜加压后，通过转动阀门直到阀座关闭。

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）。

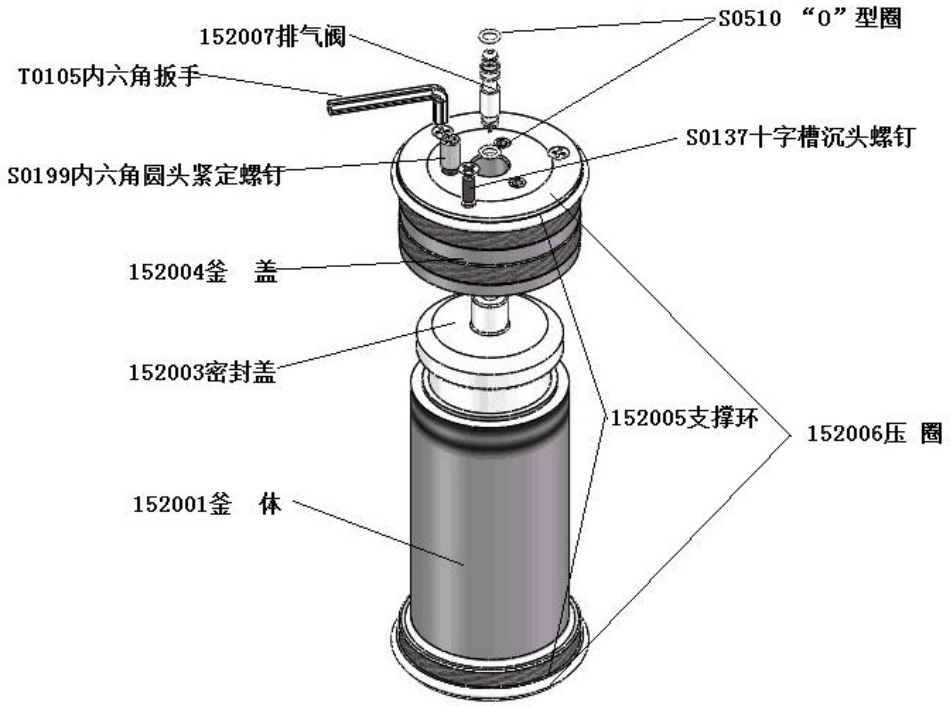
10.打开阀门放气，然后拉动锁定销断开加压装配。

11.将釜放入加热室，并在测试温度下加热所需时间。

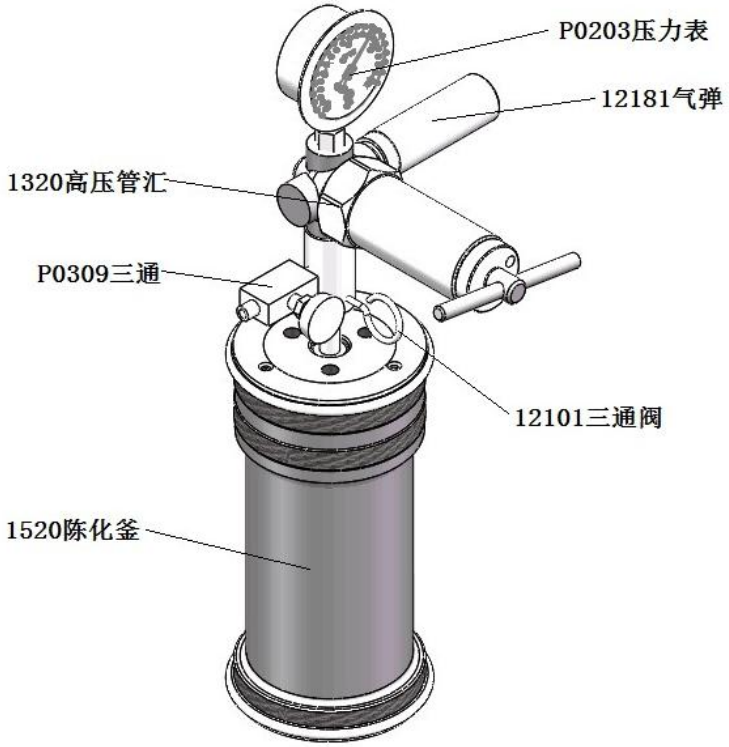
釜样品的温度必须低于 200^{O}F (93^{O}C)，压力释放后，釜可以安全地打开。
在处理热釜时使用适当的手保护。

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

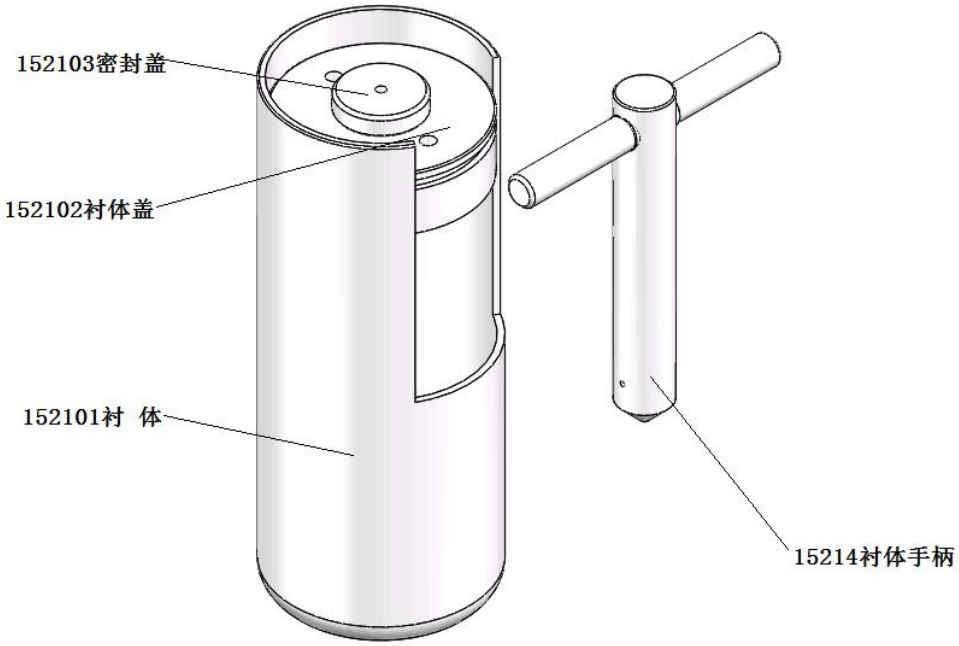
13.检查老化钻井液并报告其状况：胶凝、塑料或硬。

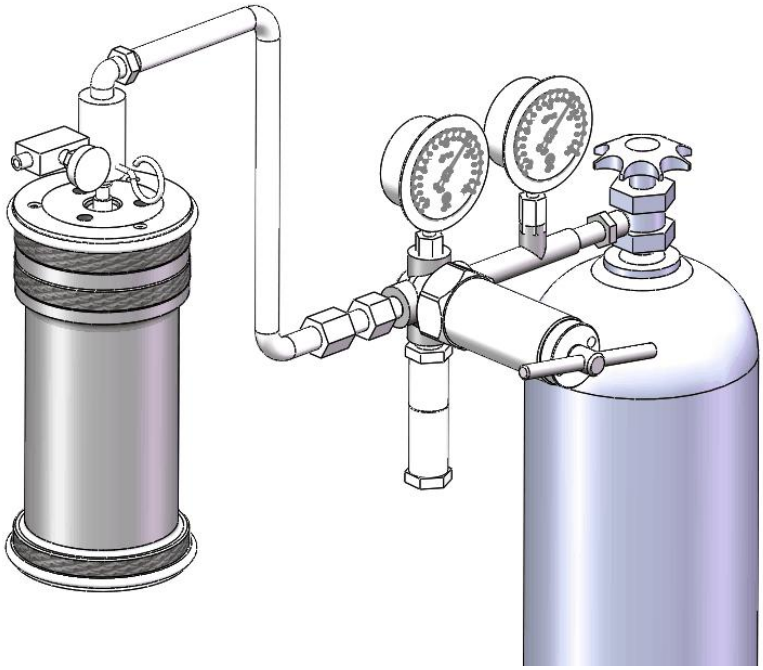


PressurizedCellAssembly 加压的釜组件



CarbonDioxidePressurizingManifold 二氧化碳增压





Ⅴ. 陈化釜的维护 MaintenanceofAging Cells

•Aftereach test, completelydisassemble and thoroughlyclean theaging cell.

•Follow theseinstructionsformaintainingtheagingcells orother equipment used in thetests:

•Replacethegasket (innercap)when it becomes distorted. Thelifeofthis gasket is greatlyreducedafterheatingat 500°F(260°C). Replacingthe gasket is

recommended.

•ExaminetheO-ringsandvalvestem. Replacethem iftheyarecut orbrittle. ***After performing testsat 400°F to500°F(205°Cto260°C), replace theO-rings.***

•Remove, clean,and lubricatetheset screws(outercap).Lubricatethem with high-quality, high-temperaturelubricant suitable for500°F (260°C) (e.g., an anti-seizelubricant).

•Clean and lubricatetheouter capand cell thread.

•Thoroughlyclean theinsideofthe cell and theinner cap. Makesurethe rounded cornerbetween thewall and thebottom ofthe cell is cleanand not corroded. Minorcorrosion maybe removed bysandblasting.

Cell corrosioncanresult incorrosionstresscracking,which impairsthesafetyof thecell.DoNOTpressureor heat acell showingstresscracks.

•Formaintainingregulators and pressurizing assemblies, seetheinstructions for regulators.

•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。该垫圈的生命在 500° F（260° C）加热后大大降低，建议更换垫圈。

•检查″0″型圈和阀杆。如果割伤或磨损，请更换它们。

在 400° F 到 500° F（205° C 到 260° C）进行试验后，更换 “0” 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° C）（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。

Ⅵ.配件 Accessories

PartNumber	Description 描述
152005	Support ring F4 支撑环 F4
12181	CO2Cartridges,10/boxCO2 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

Ⅶ.零件清单 Parts List

Table7-1AgingCell, 304,Pressurized, 500ml.

PartNo.	Quantity	Description 描述
T0105	1	WRENCH,HEXKEY 内六角扳手，5mm
S0510	2	O-RING(VALVESTEM)O 形圈（阀杆）
S0199	3	SCREWSET 螺钉
152007	1	VALVESTEM 阀杆
152003	1	INNERCAP,内盖 304
152001	1	CELLBODY,釜体 500ml,304
152004	1	OUTERCAP,外盖 304

Table7-2 AgingCell,316,Pressurized, 500ml.

PartNo.	Quantity	Description 描述
T0105	1	WRENCH,HEXKEY 内六角扳手，5mm
S0510	2	O-RING(VALVESTEM) O 形圈（阀杆）
S0199	3	SCREWSET 螺钉
152007	1	VALVESTEM 阀杆
152201	1	CELLBODY,釜体 500ml,316
152204	1	OUTERCAP,316 外盖
152203	1	INNERCAP,316 内盖

Table7-3AgingCell, 303,Pressurized, 260ml.

PartNo.	Quantity	Description 描述
T0105	1	WRENCH,HEXKEY 内六角扳手，5mm
S0510	2	O-RING(VALVESTEM) O 形圈（阀杆）
S0199	3	SCREWSET 螺钉
152007	1	VALVESTEM 阀杆
152003	1	INNERCAP 内盖,304
152001	1	CELLBODY 釜体,260ml,304
152004	1	OUTERCAP 外盖,304

Table7-4AgingCell, 316,Pressurized, 260ml.

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