



Truking Intelligent Rubber Stopper (Aluminum Capper) Washing Machine Technology

楚天智能胶塞（铝盖）清洗机技术

让世界制药工业插上智慧的翅膀

Equip global pharmaceutical manufacturing industry with intelligent wings.





立式胶塞 (铝盖) 清洗机 - 01 -

Vertical Rubber Stopper (Aluminum Capper) Washing Machine

卧式胶塞 (铝盖) 清洗机 - 04 -

Horizontal Rubber Stopper (Aluminum Capper) Washing Machine





楚天科技股份有限公司成立于2000年，是中国医药装备行业的领军企业，也是世界医药装备行业的知名企业之一。主营业务系医药装备及其整体技术解决方案，并率先推动智慧医药工厂的研究与开发。公司系中国A股上市公司。旗下拥有德国ROMACO集团、楚天华通、四川省医药设计院、楚天飞云、楚天源创、楚天微球、楚天思优特、楚天思为康、楚天华兴、楚天长兴、楚天科仪、楚天净邦、楚天派特、楚天博源、楚天新材料、楚天智能机器人等十多家全资或控股子公司，全球员工总数9000余人，总资产110亿元。

公司已有长沙和德国两大运营总部，建有长沙中央技术研究院、欧洲技术研究院和四川省医药设计院等研发机构。设有国家级企业技术中心，国家级创新基地，博士后科研工作站，院士专家工作站等多个技术与创新平台。截至2023年12月31日，共提出5466项中国专利申请，授权专利4313项，有效专利3090项。另提出54件PCT国际专利申请，在美国、俄罗斯、印度、韩国、德国、印尼、日本、欧洲等多国获得26项专利授权。牵头制订了本系统国家行业产品技术标准20多项。集团产品与服务已累计覆盖180多个国家和地区，国际市场占有率正逐年快速提升。

Founded in 2000, Truking Technology Limited has become a leading pharmaceutical equipment company in China and renowned worldwide. The company specializes in pharmaceutical equipment and integrated solutions and takes the initiative to push forward the R&D of smart pharmaceutical factories. It is a listed A-share company with multiple wholly-owned or holding subsidiaries, such as Germany-based Romaco Group, Truking Watertown, Sichuan Pharmaceuticals Design Institute, Truking Feiyun, Truking Ingenuity, Truking Micro-Sphere, Truking SUT, Truking Gene, Wachine, Truking Changxing, Truking Scientific Instrument, Truking Jingbang Engineering Technology, Truking Pitide Biotechnology, Truking Boyuan Intelligent Technology, Truking New Material, Truking Intelligent Robot etc. Truking has over 9000 employees around the globe, with a total asset of over 11 billion RMB.

Truking has two operational headquarters in Changsha, China, and Germany, with research and development institutions including Changsha Central Technology Research Institute, Europe Technology Research Institute, and Sichuan Pharmaceuticals Design Institute. It has established many platforms for technology innovation, such as the National Enterprise Technology Center, National Innovation Center, Post-Doctoral Scientific Research Station, and Academician Expert Workstation. By December 31, 2023, a total of 5,466 patent applications from China have been submitted, with 4,313 patents granted and 3,090 patents currently in force. Additionally, 54 PCT international patent applications were filed, resulting in 26 patents granted in multiple countries including the United States, Russia, India, South Korea, Germany, Indonesia, Japan, and Europe. The company has led the development of over 20 national industry product technical standards for this system. The products and services of the group have now reached over 180 countries and regions, with its international market share steadily increasing year by year.



立式胶塞 (铝盖) 清洗机

Vertical Rubber Stopper (Aluminum Capper) Washing Machine



主要用途 / Main Application

主要用于制药厂胶塞（铝盖）的清洗与灭菌，可自动完成药用胶塞（铝盖）的清洗、硅化、灭菌、干燥、冷却、无菌出料等工序。

It is mainly used for washing and sterilizing the rubber stopper (Aluminum Capper) in the pharmaceutical factory. It can automatically realize the processes of washing, siliconization, sterilization, drying, cooling and aseptic discharge of the pharmaceutical rubber stopper (Aluminum Capper).



优势特点 / Performance Advantages

- ◎ 独特的清洗罐设计；
 - ◎ 罐体整体转动，内无机械搅拌，颗粒持续溢流排出；
 - ◎ 内筒与罐体同时清洗，无清洗死角，清洗时间较短；
 - ◎ 清洗罐独立设计，可做为转运罐与存储罐分批清洗与存储；带正压保护，物料无二次污染风险；
 - ◎ 可铝盖及胶塞同一清洗站上分筒清洗，分筒存储、转运，节约厂房空间，利于空间布局；
 - ◎ 国内首创基于气体、流体动力学原理的可控脉动悬浮清洗系统；
 - ◎ 利用真空脱泡及水汽悬浮动力对胶塞进行清洗，形成空化效应，清洗效果优良；
 - ◎ 较卧式清洗机清洗效率提高 50%，能耗降低 30%；
 - ◎ 定量的硅油加注工艺，硅化效果更均匀；
 - ◎ 罐体进出口静态充气密封，泄露风险较低；
 - ◎ 充气密封圈尺寸小，更换方便；
 - ◎ 多种出料方案，满足各种无菌转运需求；
 - ◎ 罐体和管路均采用 TIG 焊接，罐体镜面抛光 $Ra \leq 0.4\mu m$ ；
 - ◎ 可选 RTP 阀进料方式，避免二次污染。自动操作，简便安全；
 - ◎ 除菌过滤器可在线灭菌和在位完整性测试，设备使用更安全可靠；
 - ◎ 冷却水可回收再利用，用于对热排水汽喷淋混合冷却；
 - ◎ 汽水分离防倒灌装置，采用空气隔断、水封结构，带有泄压排气口，防止地漏管路反冲所带来的污染风险；
 - ◎ 温度压力实时监测，曲线实时打印并记录，形成完整的电子数据报表；
 - ◎ Portal 自控系统完全符合 GAMP5 和 21CFRPart11 的要求。
- + Unique cleaning tank design.
 - + The tank rotates without mechanical stirring inside, the particles continuously overflow and discharge to exhaust;
 - + The inner cylinder and the tank are cleaned at the same time, no blind angle, and the cleaning time is short;
 - + Cleaning tank independent designed, can be used as transfer tank and storage tank in batches to cleaning and storage; with positive pressure protection, no secondary pollution risk of materials;
 - + The aluminum capper and the rubber stopper can be cleaned, storage and transfer separately in the same cleaning station, which can save the space of the plant, it helps for space overall arrangement ;
 - + The first controllable pulsating suspension cleaning system based on gas and fluid dynamics in China;
 - + Adopt vacuum de-foaming and water vapor suspension power to clean the rubber stopper to form a cavitation effect, optimize the cleaning performance;
 - + Compared with the horizontal washing machine, the cleaning efficiency is increased by 50%, and the energy consumption is reduced by 30%;
 - + Quantitative silicone oil filling process makes the siliconization performance more uniform;
 - + Static inflatable seal for tank inlet and outlet, low risk of leakage;
 - + Inflatable sealing ring size is small, easy to replace;
 - + Multiple discharge schemes to meet various aseptic transfer requirements;
 - + Both the tank body and the pipeline are TIG welded, and the tank body is mirror polished $Ra \leq 0.4\mu m$;
 - + Optional RTP valve feeding method can avoid secondary pollution. Automatic, easy and safe;
 - + The sterilization filter can be online sterilized and in-situ integrity tested, it is safer and more reliable;
 - + The cooling water can be recycled and used for mixed cooling of hot drainage steam spray;
 - + The anti backflow device of steam water separation adopts air partition and water seal structure, with pressure relief vent to prevent the pollution risk caused by backflushing of floor drain pipeline;
 - + Temperature and pressure real-time monitoring, real-time curve printing and recording, forming a complete electronic data report;
 - + Portal automatic control system fully meets the requirements of GAMP5 and 21 CFR Part 11.



主要技术参数 / Main Technical Parameters

设计压力 (mPa) Design Pressure	-0.1/0.16	纯蒸汽压力 (mPa) Pure Steam Pressure	0.2-0.4
工作压力 (mPa) Working Pressure	-0.097/0.12	水源压力 (mPa) Water Source Pressure	0.2-0.3
设计温度 (°C) Design Temperature	130	压缩空气压力 (mPa) Compressed Air Pressure	0.6-0.8
工作温度 (°C) Working Temperature	20/120	温度均匀性 (°C) Temperature Uniformity	≤ ±1



规格型号 / Specification Model

型号 Model	SSW(SCW)-80	SSW(SCW)-160	SSW(SCW)-240	SSW(SCW)-350	SSW(SCW)-480
有效容积 (L) Effective Volume	80	160	240	350	480
胶塞装载量 以 20mm 冻干胶塞为例 (W) Loading Capacity of Rubber Plug Take 20 mm Lyophilized Rubber Plug As an Example	2	4	6	8.8	12
外形尺寸 (长 X 宽 X 高)(mm) Overall Dimension (WxHxD)	3400×2000×2500	3400×2000×2500	3400×2000×2500	3400×2000×2800	4200×2800×2500
冷却水用量 (kg/cycle) Cooling Water	1000	1000	1000	1000	1300
纯化水用量 (kg/cycle) Amount of Purified Water	500	700	900	1100	1600
注射水用量 (kg/cycle) Dosage of Injection Water	500	700	900	1100	1600
纯蒸汽用量 (kg/cycle) Pure Steam Consumption	50	65	75	90	150
压缩空气用量 (l/cycle) Compressed Air Consumption	80	100	120	130	220
电源 (kW) Power	6/24	6/24	6/24	6/24	6/35
净重 (kg) Net Weight	2000	2500	3000	3500	4500

卧式胶塞（铝盖）清洗机

Horizontal Rubber Stopper (Aluminum Capper) Washing Machine



主要用途 / Main Application

主要用于制药厂胶塞（铝盖）的清洗与灭菌，可自动完成药用胶塞（铝盖）的清洗、硅化、灭菌、干燥、冷却、无菌出料等工序。

Mainly used for the cleaning and sterilization of rubber stoppers (Aluminum Cappers) in pharmaceutical factories. It can automatically realize the processes of cleaning, silicization, sterilization, drying, cooling, and sterile discharge of pharmaceutical rubber stoppers (Aluminum Cappers).



优势特点 / Performance Advantages

- 先进的三重清洗系统设计，保证清洗效果；
 - 固定式出料阀，可在线清洗和灭菌，无摩擦颗粒和二次污染风险；
 - 多种出料方案，满足各种无菌转运需求；
 - 腔体大门静态密封，泄漏风险较低；
 - 罐体和管路均采用 TIG 焊接，罐体镜面抛光 $Ra \leq 0.4\mu m$ ；
 - 定量的硅油加注工艺，硅化效果更均匀；
 - 除菌过滤器可在线灭菌和在位完整性测试，设备使用更安全可靠；
 - 真空泵水冷却系统，冷却速度快，冷却能力可调节，冷却水也可进行再利用，对热排水汽进行喷淋混合冷却；
 - 汽水分离防倒灌装置：采用空气隔断、水封结构，带有汽泄压排口，防止地漏管路反冲所带来的污染风险；
- + Advanced triple cleaning system design to ensure washing performance;
 - + Fixed discharge valve, which can be cleaned and sterilized online, avoid the risk of friction particles and secondary pollution;
 - + Multiple discharge schemes meet various aseptic transfer requirements;
 - + The chamber door is statically sealed which lower the leakage risk;
 - + Both the tank and the pipeline are TIG welded and mirror polished, $Ra \leq 0.4\mu m$;
 - + Quantitative silicone oil filling process makes the silicification more uniform;
 - + The sterilization filter can be online sterilized and in-situ integrity tested, it is safer and more reliable;
 - + Vacuum pump adopt water cooling system, with faster cooling speed and adjustable cooling capacity. Cooling water also can be reused for cooling down the exhaust steam pipe;
 - + Fizzy water separation and anti-pouring device, adopts air partition and water seal structure, it is equipped with steam discharge port to prevent the risk of pollution caused by backflushing from the floor drain pipeline;

- 温度、压力是实时监测，曲线实时打印并记录，形成完整的电子数据报表；
 - Portal 自控系统完全符合 GAMP5 和 21CFRPart11 的要求。
- Temperature and pressure are monitored in real time, and curves are printed and recorded in real time to form a complete electronic data report;
 - Portal automatic control system fully meets the requirements of GAMP5 and 21 CFR Part 11.



主要技术参数 / Main Technical Parameters

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设计温度 (°C) Set Temperature	130	压缩空气压力 (mPa) Compressed Air Pressure	0.6-0.8
工作温度 (°C) Operating Temperature	20/120 人	温度均匀性 (°C) Temperature Uniformity	≤ ±1



规格型号 / Specification Model

型号 Model	SWS(CWS)-80	SWS(CWS)-160	SWS(CWS)-240	SWS(CWS)-320	SWS(CWS)-400	SWS(CWS)-480
有效容积 (L) Effective Volume	80	160	240	320	400	480
胶塞装载量 以 20mm 冻干胶塞为例 (W) Loading Capacity of Rubber Plug Take 20 mm Lyophilized Rubber Plug As an Example	2	4	6	8	10	12
外形尺寸 (长 X 宽 X 高) (mm) Overall Dimension (WxHxD)	2600×2200 ×2600	2900×2200 ×2600	2900×2200 ×2600	3080×2400 ×2600	3080×2400 ×2600	3250×2400 ×2600
冷却水用量 (kg/cycle) Cooling Water	1000	1000	1000	1300	1300	1300
纯化水用量 (kg/cycle) Amount of Purified Water	800	1300	1450	1800	2100	2400
注射水用量 (kg/cycle) Dosage of Injection Water	800	1300	1450	1800	2100	2400
纯蒸汽用量 (kg/cycle) Pure Steam Consumption	65	70	80	85	90	100
压缩空气用量 (l/cycle) Compressed Air Consumption	80	80	100	110	120	120
电源 (kW) Power	24	24	24	34	34	34
净重 (kg) Net Weight	2000	2500	3000	3500	4000	4500



服务理念

400-9988-900



秉承“一切为客户着想，为一切客户着想，为客户着想一切”的理念，以“为客户创造价值”为己任，楚天专注于打造一流的研发、设计、销售、制造、服务团队及服务管理体系，为客户提供高效、优质的产品与服务。



◎ 项目规划支持

楚天拥有系列专业医药设计院、产品研究院，一批行业资深科研技术人员，无菌制药工艺的验证专家、教授等，为客户的项目提供科学、有效的技术规划支持。



◎ 过程保障服务

楚天推出的医药装备整体解决方案，实现药品生产过程的全自动化、无菌化，智能检测、分选，以及计算机验证保障，生产出让市场“放心”的产品。



◎ 走进园区服务

楚天作为设备供应商，不仅仅将行业法规标准融入到产品设计、制造中，还让法规标准以讲座、交流的形式走进园区，与药企的工艺、生产形成互动与融合。



◎ 设备管理咨询服务

楚天致力于满足客户效益最大化需求，提供一揽子的设备管理模式，协同药厂实现投入最小化，产出最大化。

- ◎ 坚持“以客户为中心”，以匠人之心打造极致服务体验，为客户创造更多价值

34 全国 34 个省（市）

365 全年 365 天

7x24 7X24 小时服务时间

- ◎ 我们随时待命为客户单位设备正常运行保驾护航

- + 现场安装、调试、验收
- + 设备工艺、操作、维护等相关培训
- + 周期性的定期上门维护与回访
- + 设备各部件性能的检测与保养
- + 备品备件的及时供应
- + 产品技术升级与技术二次开发
- + 设备大修



Service Concept

400-9988-900



Adhering to concept of “all for customers, for all customers” , and with the mission of “creating value for customers” , TRUKING focuses on building first-class R&D, design, sales, manufacturing, service teams and service management system to offer high-efficient and high-quality products and services for the customers.



◎ Project Planning Support

TRUKING has a series of professional medical and pharmaceutical design institutes, product research institutes, a group of senior scientific research and technical personnel, aseptic pharmaceutical process verification experts, professors, etc., to provide scientific and effective technical planning support for customers' projects.

◎ Process Assurance Service

TRUKING launched the overall solution for medical & pharmaceutical equipment realizing the full automation and aseptic production process, intelligent detection and sorting of the drug, as well as computer verification assurance so as to produce assured products for market.

◎ Service In The Park

As an equipment supplier, TRUKING not only integrates industrial regulations and standards into product design and manufacturing, but also introduces the industrial regulations and standards into Truking industrial park in the form of lectures and exchanges to interact and integrate with the technology and production of pharmaceutical enterprises.

◎ Equipment Management Consultation Service

TRUKING aims to satisfy the maximum benefited demands of the customer and to provide a package of equipment management services to realize minimization investment and maximization production output together with pharmaceutical factories.

◎ Adhere to the philosophy of "customer-centric", TRUKING creates the extraordinary service experience with the spirit of the craftsman, to create more value for customers.

◎ We are always ready to escort the normal operation of the customer's equipment.

- + Onsite equipment installation, commissioning, acceptance
- + Training for equipment process, operation and maintenance
- + Periodic door-to-door maintenance and return visit
- + Performance test and maintenance for machinery parts
- + Timely supply of spare parts
- + Product technology upgrading and secondary development
- + Equipment overhaul



www.truking.com



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