

浙江亞光科技股份有限公司  
ZHEJIANG YAGUANG TECHNOLOGY CO., LTD.

胶塞/铝盖清洗机

专业的制药装备和整体方案供应商

RUBBER STOPPER/ ALUMINUM CAP WASHING MACHINE  
Professional pharmaceutical equipment and overall solution supplier

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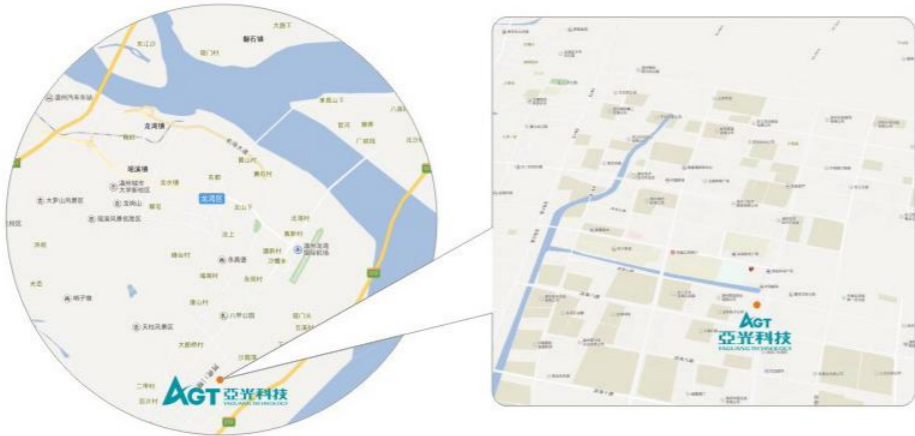
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亚光工业园 Yaguang Industrial Zone



Zhejiang Yaguang Technology Co., Ltd is a national certified high-tech enterprise specializing in the design, production and sales of pharmaceutical equipment since established on 1996. Yaguang has been focusing on pharmaceutical equipment industry for years and developed the first Rubber Stopper Washing Machine in 1997, the first Agitated Nutsche Filter Dryer and other core equipment of pharmaceutical process system in 2000, Yaguang has a leading position in China's pharmaceutical industry.

The main products of Yaguang fall into three categories: Washing Machine (including Rubber Stopper / Aluminum Cap Washing Machine), API production line (Reaction Tank, Crystallizing Tank, Agitated Nutsche Filter Dryer, Conical Pulse Mixing Dryer, Split Charging Weighing System and so on), Efficient Rotating Distillation Bed. More than that, Yaguang is the drafting unit for industry standards of Rubber Stopper Washing Machine and Agitated Nutsche Filter Dryer, has obtained more than 100 patented technologies, the equipment has passed certifications such as American FDA, EU cGMP, Japanese GMP in a number of domestic and abroad pharmaceutical industries.

Yaguang has a provincial R&D center with manufacturing licenses of D1, D2 pressure vessel in China. With the solid technical foundation, advanced management concepts and excellent corporate culture, Yaguang is developing with a steady pace and being a global professional pharmaceutical process program supplier.

### 优秀的技术和质量推动明天中国制药装备的发展

Advanced technology and excellent quality facilitate the development of pharmaceutical and chemical equipment in China



## 公司简介 Company Profile

浙江亚光科技股份有限公司创建于1996年，是专业从事制药机械的研发、生产与销售的高新技术企业。亚光公司多年来一直专注于制药装备领域，1997年研制出第一台胶塞清洗机、2000年研制出第一台过滤洗涤干燥机制药工艺系统核心设备，树立起行业产品细分市场的龙头地位。

公司的主要产品有三大类别：清洗机系列(包括胶塞、铝盖清洗机)、API精烘包生产线(反应釜、结晶罐、过滤洗涤干燥机、单锥混合干燥机、分装称重系统等)、高效旋转精馏床。其中胶塞清洗机、过滤洗涤干燥机为国家行业标准起草单位，拥有专利技术100余项，产品分别在国内外众多药企通过美国FDA、欧盟cGMP、日本GMP验证。

公司拥有一个省级研发中心，中心具有一、二级压力容器及ASME设计资质。凭借着扎实的的技术基础，先进的管理理念和优秀的企业文化，亚光公司一路稳步向前，努力将公司打造成一流的面向全球的专业制药工艺方案服务商。

## 人力资源 Human Resource

公司始终把人才培养作为企业发展的基础，通过多层次、多形式、多渠道的培训，全方位培养各级各类人才；亚光招贤纳士，不断引进经验丰富的中高级人才，加大人才储备力度，讲究专业门类齐全、重视理论与实践经验并行，以雄厚的技术实力，为客户提供“诚信公正，优质高效”的服务。

Our company always regards talent cultivation as the foundation for enterprise development. Through trainings at various levels, in multiple forms and from varied channels, we cultivate all kinds of talents. Yaguang continuously introduces experienced senior and intermediate talents, enhances talent storing, reinforces combination of theory and practical experience and provides customers with services of "sincerity, fairness, high quality and high efficiency" with our powerful technical strength.



## 生产实力 Production Strength

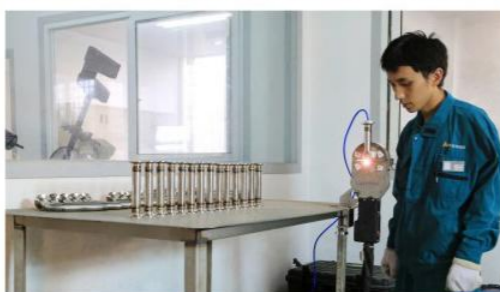
市场竞争的基础，离不开生产实力，离不开完善先进的硬件设施。深知硬件设施重要性的亚光，在同行业内率先引进国外先进的生产设备，几年来更先后投入资金对硬件设施进行更新换代，以国际化的生产设施生产出符合GMP标准的高端优质产品。

The basis of market competition, inseparable from the production capability, and can not do without an advanced hardware facilities. Fully aware of the importance of hardware facilities, Yaguang takes the lead in the introduction of foreign advanced production equipment in the industry; during recent years Yaguang has further invested in updating the hardware facilities, to produce high-end quality products with the internationalized production facilities to meet the GMP standard.



## 生产实力 Production Strength

先进的高、精、尖  
设备保证了高品质的产品  
The sophisticated  
equipment bring up high  
quality products



## 产品和服务 Products and Services

### 产品

- 1、清洗机系列：主要产品有药用胶塞清洗机、铝盖清洗机等。为胶塞清洗机国家行业标准起草单位。
- 2、固液分离和粉体处理系列：主要产品有无菌溶解罐、结晶罐、过滤洗涤干燥机、粉碎机、混合机、自动称量分装系统等。其中过滤洗涤干燥机为国家行业标准起草单位。
- 3、溶媒回收：精馏床。

### Products

1. Washing machine series: The main products include medical rubber stopper washing machines, aluminum cap washing machines and etc. Yaguang is the drafting unit of national industrial standard of rubber stopper /aluminum cap washing machines.
2. Solid-liquid separation and powder treatment series: The main products include Aseptic Dissolving Tanks, Crystallizing Tanks, Agitated Nutsche Filter Dryer, Comminutor, Mixers, Automatic Weighing and Split-charging Systems. Yaguang is the drafting unit of national industrial standard of pharmaceutical Agitated Nutsche Filter Dryer.
3. Solvent recovery: Distillation Bed.

### 服务

设备的设计、制造、安装、调试及技术支持。

### Services

Design, manufacturing, installation, commissioning and technical support for the equipment.

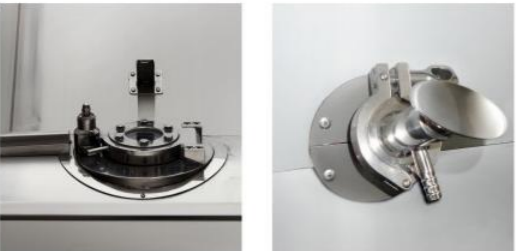


KJ系列胶塞/铝盖清洗机

KJ Series Rubber Stopper/Aluminum Cap Washing Machine

亚光公司自1996年成功开发出国内第一台胶塞/铝盖清洗、灭菌、干燥设备，伴随着中国制药工业的逐步发展而不断改进和完善，现已发展到第六代机型，形成两大系列80余种规格产品。我公司为该产品国家行业标准起草单位。

Developed since 1996, the rubber stopper/aluminum cap cleaning, sterilizing and drying equipment has been developed to the sixth generation, forming two major series of 80 specifications. We are the drafting unit of national standards of pharmaceutical rubber stopper/aluminum cap washing machine.



观察/进料口 Observe / feeding nozzle    取样口 Sampling nozzle



— 胶塞清洗机  
Rubber Stopper Washing Machine



进料斗 Feeding hopper



出料口 Discharging nozzle



— 铝盖清洗机  
Aluminum Cap Washing Machine

清洗机种类、功能 Type and Function

种类 Type	适用产品 Applicable Products	主要功能 Main Functions
KJCS超声波胶塞清洗机 KJCS Ultrasonic Rubber Stopper Washing Machine	粉针胶塞、冻干胶塞、水针西林瓶胶塞、大输液胶塞  Powder Injection Rubber Stoppers, Lyophilization Rubber Stoppers, Water Injection Antibiotic Bottle Rubber Stoppers, Large Infusion Rubber Stoppers	自动进料、清洗、取样、硅化、灭菌、干燥、冷却、自动出料、CIP、SIP，全过程电脑自动控制操作  Automatic Feeding, Cleaning, Sampling, Siliconizing, Sterilizing, Drying, Cooling, Automatic Discharging, CIP, SIP, and Whole Process Automatically Computer Controlled.
KJQS气冲式胶塞清洗机 KJQS Air Impact Rubber Stopper Washing Machine		
KJSL铝盖清洗机  KJSL Aluminum Cap Washing Machine	药用铝盖、铝塑复合盖、针管胶塞和注射活塞。  Medical Aluminum Caps, Aluminum-plastic Compound Caps, Needle Tube Rubber Stoppers and Injection Pistons	人工进料、清洗、取样、灭菌、干燥、冷却、自动出料、CIP、SIP，全过程电脑自动控制操作  Manual Feeding, Cleaning, Sampling, Sterilizing, Drying, Cooling, Automatic Discharging, CIP, SIP, and Whole Process Automatically Computer Controlled.

KJ型清洗机基本技术参数 Technical Parameters of KJ series

型号 Model	产量(只) Output (piece)	水箱容积(L) Water Tank Volume	长(mm) Length	宽(mm) Width	高(mm) Height	重量(kg) Weight
KJ-1	10000	330	2200	1650	2200	1800
KJ-2	20000	620	2450	1850	2200	2200
KJ-4	40000	760	2650	1850	2200	2500
KJ-5	50000	925	2850	1850	2200	2500
KJ-6	60000	1130	3300	1850	2200	2700
KJ-8	80000	1380	2850	2100	2300	3000
KJ-10	100000	1630	3050	2100	2300	3200
KJ-12	120000	1930	3350	2100	2300	3400
KJ-15	150000	2280	3100	2450	2500	4000
KJ-18	180000	2630	3350	2450	2500	4800
KJ-20	200000	2940	3700	2450	2500	5000
KJ-22	220000	3350	3650	2600	2600	5200
KJ-24	240000	3450	3750	2600	2600	5300
KJ-26	260000	3650	3950	2600	2600	5500

注：产量中胶塞以Φ19×8.5粉针西林瓶胶塞为标准，Φ20复合铝盖与Φ19粉针胶塞充装率比约为1.5~1.7：1  
Note: Production capacity of rubber stoppers calculates by the powder injection antibiotic bottle of Φ19×8.5, the filling rate between Φ20 composite aluminum cap and Φ19 powder injection rubber stopper is about 1.5~1.7:1.

## KJ系列胶塞/铝盖清洗机

### KJ Series Rubber Stopper/Aluminum Cap Washing Machine

#### 技术特点 Technology Feature

##### 自动密闭出料装置

- ◆ 俗称“象鼻子出料装置”，能够有效避免胶塞出料时与外界接触造成污染。
- ◆ 出料系统可进行CIP和SIP。
- ◆ 可采用多种对接方式实现胶塞的密闭转运。

##### 中心喷淋、环绕喷淋技术

- ◆ 中心喷淋用于对物料的清洗，采用高压水近距离地对胶塞喷淋清洗，是胶塞热源最有效的清洗办法。
- ◆ 环绕喷淋技术用于设备的自清洁，喷淋管与内筒同步旋转，并由布置在管上的多个喷嘴对内筒和箱体进行喷淋清洗，是真正无死角的CIP技术。

##### 后开门专利结构

- ◆ 采用滚筒及后盖整体移位技术（国内首创，专利技术），更加符合FDA和欧盟标准。
- ◆ 彻底解决了清洗机困扰药厂多年的夹层维修、清理的难题。
- ◆ 由于后开盖移动维修工作可以全部在十万级区进行，避免了对万级或百级的污染。
- ◆ 结构更加合理简化，为cGMP规范执行创造新思路，真正符合清洁标准。

##### 电气控制充分满足生产工艺参数历史记录的要求

- ◆ 控制系统由工业级触摸式平板电脑(Panel PC)+可编程控制器(PLC)组成，轻松实现全自动控制，运行参数可在对话框内随意调整，运行过程动态显示，报警系统能够提供报警信息并实现部件互锁，防止误操作。
- ◆ 控制软件采用FDA认可的意大利Movicon系统。能够实现权限管理、腔体泄露的自动检测、温度压力的自动校验等，并可加入企业网络，便于企业完善设备及生产管理和监测。

##### Automatic closed discharging device

- ◆ Commonly known as "elephant nose discharging device", can effectively avoid outer environmental pollution when discharging.
- ◆ CIP & SIP.
- ◆ Rubber stopper can be transferred in the confined environment with various docking systems.

##### Central spray and surround 360° spraying technology

- ◆ Central spray is by using high pressure water to spray rubber stopper closely, which is the most effective way to wash pyrogen.
- ◆ Surround 360° spraying technology is applied to equipment self-cleaning. Spray tube rotates along with inner vessel, the spray nozzles spreading on the tube spray and clean barrel and inner vessel to achieve the real no dead corner CIP technology.

##### Patented Back-Door pullout structure

- ◆ Rotating barrel and back-cover totally pull out technology (pioneer in China, patent technology), more meet FDA and EU standard.
- ◆ Thoroughly solve the problem of jacket repair and washing which troubles drug factory for many years.
- ◆ The maintenance work of movement for the rear cap can be processed in the cleaning area of D level (ISO08 level), avoiding from the pollution of the C level cleaning area (ISO7 level) or the B level cleaning area (ISO5 level).
- ◆ The construction will be more reasonable and simplification. It is conforming to the cleaning standard and creating the new ideas of cGMP standard.

##### Electrical control fully meet processing parameters historical record requirements

- ◆ Control system consists of industrial touch panel PC (Panel PC) + Programmable Logic Controller (PLC). It's easy to control full automatically. Operating parameters can adjust in dialog box and process can display dynamically. The alarm system can provide alarm information and carry out parts interlock to prevent wrong operation.
- ◆ Control software use FDA-approved Italian Movicon system. It can carry out rights management, automatic detection of chamber leakage and automatic calibration of temperature and pressure. It can joint to corporate network and easy to improve management and monitoring for equipment and production.

## DQ系列胶塞/铝盖清洗机

### DQ Series Rubber Stopper/Aluminum Cap Washing Machine

DQ系列清洗机为非压力容器设备，用于胶塞及铝盖的清洗与干燥。产品有DQXT系列(带真空、电加热干燥功能)胶塞清洗机，DQXL系列铝盖清洗机。

DQ Series washing machine is non-pressure vessel equipment for the washing and drying of rubber stopper and aluminum cap. The products including DQXT series (with vacuum, electric heating drying function) rubber stopper washing machine, DQXL series aluminum cap washing machine.

##### 主要功能：

人工进料、清洗、取样、(硅化)、干燥、冷却、螺旋翻转自动出料及CIP。

##### Main Features：

Manual feeding, washing, sampling, (siliconizing), drying, cooling, automatic discharging for spiral reversal and CIP.



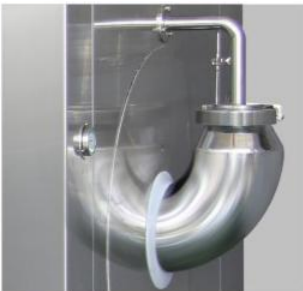
铝盖清洗机  
Aluminum Cap Washing Machine

#### DQ型清洗机基本技术参数 Technical Parameter

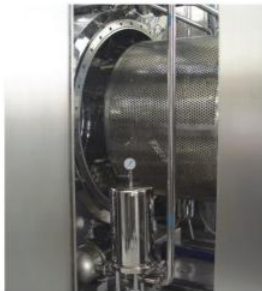
型号 Model	产量（只） Capacity (Piece)	水箱容积（L） Water Tank Volume	长（mm） Length	宽（mm） Width	高（mm） Height	重量（kg） Weight
DQ-2	20000	620	2300	1850	2200	2200
DQ-4	40000	760	2500	1850	2200	2500
DQ-5	50000	925	2700	1850	2200	2700
DQ-6	60000	1130	3180	1850	2200	2800
DQ-8	80000	1380	2700	2100	2300	3000
DQ-10	100000	1630	2920	2100	2300	3200
DQ-12	120000	1930	3220	2100	2300	3400
DQ-15	150000	2280	2970	2400	2500	4000
DQ-18	180000	2630	3220	2400	2500	4500
DQ-20	200000	2940	3580	2400	2500	4500
DQ-22	220000	3350	3520	2600	2600	5200
DQ-24	240000	3450	3620	2600	2600	5400
DQ-26	260000	3650	3820	2600	2600	5600

注：产量中胶塞以 $\phi 19 \times 8.5$ 粉针西林瓶胶塞为标准，铝盖以 $\phi 20 \times 8.2$ 铝盖为标准。

Note: Production capacity of rubber stoppers calculates by the powder injection antibiotic bottle of  $\phi 19 \times 8.5$ ; Production capacity of aluminum caps calculates by the size of  $\phi 20 \times 8.2$



出料系统  
The Discharging System



后开门装置  
The Rear Door Open System



操作设置屏  
Operation Touch Screen

# 胶塞/铝盖无菌转运系统

Sterile isolated transfer system for rubber stopper or aluminum cap

## 1 无菌袋转运 Sterile bag transfer

### 方案概述 Solution summary

清洗机出料oRABs-热熔封口机-转运小车，在隔离oRABs层流保护下，依据客户需求有四种工艺转运方式

◆单无菌袋全自动封装出料转运oRABs方案：全自动封口机

主要功能包含：自动真空抓袋、自动转移放袋、自动夹袋、自动真空开袋、出料计量控制、自动袋封口、自动出袋，全程全自动化运行。

◆双无菌袋单袋封装出料转运oRABs方案：半自动封口机

主要功能包含：采用人工依次拿内外袋，操作启动夹外袋和内袋，人工前后移动封口机，自动热封。全程采用手自半自动化运行。

◆双无菌袋单全自动双封装出料转运oRABs方案：全自动封口机+半自动封口机

主要功能包含：自动真空抓内袋、自动转移放内袋、自动夹内袋、自动真空开内袋、出料计量控制、自动内袋封口、自动出内袋，自动提升转运封装好的内袋；采用人工拿外袋，操作启动夹外袋，人工将提升盘上封装好的内袋，放入外袋，自动热封，自动出外袋。与物料接触的内袋全程采用自动化运行；外袋人工全程采用手自半自动化运行。

◆双无菌袋双全自动双封装出料转运oRABs方案：全自动封口机+全自动封口机

主要功能包含：自动真空抓内袋、自动转移放内袋、自动夹内袋、自动真空开内袋、出料计量控制、自动内袋封口、自动出内袋，自动提升转运封装好的内袋；自动真空抓外袋、自动转移放外袋、自动夹外袋、自动真空开外袋、人工将提升盘上封装好的内袋，放入外袋，自动外袋封口、自动推出封好的无菌外袋。内外袋封装全程都采用自动化运行。

Under the protection of isolated orabs laminar flow, there are four process transfer modes according to customer demand

◆Orabs scheme of single aseptic bag automatic packaging and discharging transfer: automatic sealing machine

The main functions include: automatic vacuum bag grabbing, automatic transfer bag placing, automatic bag clamping, automatic vacuum bag opening, discharge metering control, automatic bag sealing, automatic bag discharging, full automatic operation.

◆Orabs scheme of double aseptic bags and single bag packaging and discharging: semi automatic sealing machine

The main functions include: Taking the inner and outer bags in turn manually, operating and starting the outer and inner bags, manually moving the sealing machine back and forth, and automatic heat sealing. The whole process adopts manual and semi-automatic operation.

◆Orabs scheme of double aseptic bag single automatic double package discharge transfer: automatic sealing machine + semi-automatic sealing machine, The main functions include: automatic vacuum grasping inner bag, automatic transfer and placing inner bag, automatic clamping inner bag, automatic vacuum opening inner bag, discharge metering control, automatic inner bag sealing, automatic out inner bag, automatic lifting and transferring sealed inner bag; The outer bag is taken manually, the outer bag is clamped by operation, the inner bag sealed on the lifting plate is put into the outer bag manually, the outer bag is automatically heat sealed, and the outer bag is automatically discharged. The inner bag in contact with materials is operated automatically in the whole process, The manual operation of the outer bag is semi-automatic.

◆Double aseptic bag, double automatic, double encapsulation, discharging and transferring orabs scheme: automatic sealing machine + automatic sealing machine

The main functions include: automatic vacuum grasping inner bag, automatic transfer and placing inner bag, automatic clamping inner bag, automatic vacuum opening inner bag, discharge metering control, automatic inner bag sealing, automatic out inner bag, automatic lifting and transferring sealed inner bag; Automatic vacuum grab outer bag, automatic transfer put outer bag, automatic clip outer bag, automatic vacuum open outer bag, manual put the inner bag sealed on the lifting plate into the outer bag, automatic outer bag sealing, automatic push out the sealed sterile outer bag. Automatic operation is adopted in the whole process of inner and outer bag packaging.

### 系统组成： System components:

- ◆ 隔离柜 ◆ Isolation cabinet
- ◆ 热熔封口机 ◆ Hot melt sealing machine
- ◆ 无菌袋 ◆ Sterile bag
- ◆ 转动小车 ◆ Transfer car



### 系统优势 System superiority

- ◆内外无菌袋自动抓袋，开袋采用全自动结构——避免人工手套夹袋，开袋，对内袋污染的风险。另外自动化，减少人工劳动强度。
- ◆全自动热封机可以前后活动——热封时，没有正对清洗机出料口，避免污染清洗机内胶塞。
- ◆洁净单元的风机无极变频调控——始终保持层流保护内的要求风速。
- ◆手套门误操作报警——由于在生产过程中手套门打开会影响，隔离柜内的微正压，破坏内部的A级环境，所以手套门设置误操作报警。

- ◆The inside and outside aseptic bags are automatically grasped and opened with a fully automatic structure to avoid the risk of manual gloves clamping and opening the bags and polluting the inside bags. In addition, automation can reduce labor intensity.
- ◆The automatic heat sealing machine can move forward and backward – when heat sealing, it is not facing the outlet of the cleaning machine, so as to avoid polluting the rubber plug in the cleaning machine.
- ◆Stepless frequency conversion control of fan in clean unit: always keep the required wind speed in laminar flow protection.
- ◆Glove door misoperation alarm – because the glove door opening in the production process will affect the micro positive pressure in the isolation cabinet and damage the internal class a environment, the glove door is set with misoperation alarm.

# 胶塞/铝盖无菌转运系统

Sterile isolated transfer system for rubber stopper or aluminum cap

## 2 移动层流车转运 Movable laminar flow car transfer

### 系统组成：

- ◆ 胶塞机出料隔离柜
- ◆ 转运桶
- ◆ 防夹蝶阀
- ◆ 移动层流车

### System components:

- ◆ Isolation cabinet
- ◆ Transfer barrel
- ◆ Pinch-prevent butterfly valve
- ◆ Movable laminar flow car



### 方案概述：

工作时，将料桶置于胶塞出料端隔离柜内，打开防夹蝶阀，然后启动出料程序开始出料，装满后关闭防夹蝶阀，将转运桶转移至层流小车，利用层流车将装物料运至灌装机并与其对接，开启层流车和灌装线侧门，提升料桶与灌装线接料台齐平后将料桶转至oRABs内，进行下步工序。

### 系统特点：

- ◆ 转运过程中始终在无菌洁净A级保护下，避免暴露污染。
- ◆ 隔离柜与层流车近似无缝对接，避免外界污染。
- ◆ 层流车车轮可提升，与联动线对接时，减少人员操作。

### Solution summary：

Put the barrel in the isolation cabinet by the discharging side. Open the pinch-prevent butterfly valve. Start the discharging to make the rubber stoppers fill in to barrel. After the barrel is full, close the butterfly valve, barrel transferred to laminar flow car. Laminar flow car transfer the barrel to filling machine and link to it .Open the side door of the filling line, lift the material barrel to the same height with feed platform of filling line, transfer the barrel into the oRABs and then move to next process.

### System feature:

- ◆The whole transfer process always under the sterile clean A grade protection condition, avoid exposure pollution
- ◆Isolation cabinet link to laminar flow car without any crack, avoid ambient pollution.
- ◆Roller of the laminar flow car can be lifted, reduced personnel operation when linking to the filling line.

## 胶塞/铝盖无菌转运系统

Sterile isolated transfer system for rubber stopper or aluminum cap

### 3 整体隔离转运 Overall isolated transfer

#### 方案概述：

采用主动oRABs、传输道轨和转运料斗转移胶塞。  
在oRABs的保护下，电机带动同步带牵引转运小车，完成料斗物料的传输。出料前，转运料斗行至出料口并自动停止，启动清洗机出料程序出料至料桶。完成后，电机反向转动，牵引料斗至灌装线缓冲斗。打开料桶门自动卸料。卸料结束，进行下一批循环。

#### Solution summary：

Use active oRABs, transport rail and transit hopper to transfer rubber stoppers.  
Under the protection of oRABs, motor drive the belt, belt guide the car to finish the hopper transmission, sensitive to the hopper, motor stops rotating, start discharge procedure. After discharge, motor reverse rotate to guide the hopper to the buffer hopper of filling line. Open the barrel door automatically (manually), automatic discharge. Next circulation begins when the discharging is over.



#### 系统组成：

- ◆ 隔离柜
- ◆ 转运料斗  
(自动或手工卸料)
- ◆ 转运小车
- ◆ 传动装置

#### System components:

- ◆ Isolation cabinet
- ◆ Transfer hopper  
(automatic or manual discharging)
- ◆ Transfer car
- ◆ Drive device

#### 系统特点：

系统要求：清洗机及灌装机/轧盖机一对一生产，清洗机出料口和灌装机/轧盖机上料斗在一条直线上。  
◆ 从清洗机出料到灌装线上料始终在A级保护下。避免暴露污染。  
◆ 整个传输过程，全自动完成，减少人员干预。  
◆ 光电开关控制电机启停。  
◆ 上料速度可调。

#### System features：

System requirements: Cleaner, filling machine and capping machine produce one to one. Discharging nozzle, filling and capping machine are all in the same line.  
◆ Discharging from the cleaner to the filling line is always under A grade protection. Avoid exposure pollution.  
◆ Whole transmission process is automatic, reduce personnel interference.  
◆ Photoelectric switches control  
◆ Lift feeding speed is adjustable

## 胶塞/铝盖无菌转运系统

Sterile isolated transfer system for rubber stopper or aluminum cap

### 4 管道转运系统 Pipe transfer system



#### 方案概述：

本立案适用于胶塞清洗机与灌装机的近距离转运。在清洗机的出料口与灌装机之间连接密闭的不锈钢管，利用清洗机与灌装机的海拔差，胶塞依靠重力自然下料至灌装机进行下道工序。

#### Solution summary：

It is adopt for toe to toe of rubber stopper washing machine and filling machine. Connect by sealing stainless steel. It used the altitude difference of them. Rubber stoppers drop to filling machine.

#### 特点优势：

出料采用固定式象鼻子结构；  
下料管有保温层，可以单独或与清洗箱一道清洗和灭菌、干燥处理。  
◆ 采用360° 旋转喷淋球清洗，可以全方位覆盖清洗、喷淋转运管道内表面，清洗无死角。  
◆ 转运管道采用316L不锈钢，内表面无棱角、无死角，全部抛光  $Ra \leq 0.4 \mu m$ 。  
◆ 采用PLC进行控制，可动态显示工作流程及工作过程中的时间、温度、压力等参数，并能存储或打印输出。  
◆ 性价比高、无风险、减少人力和物力、完全符合新版GMP要求。

#### Features：

Discharge by permanent discharging structure of elephant nose. The discharging mouth can be wash, sterile, dry and cool individually or with the washing tank together.  
◆ It used the 360° rotation sprayer to wash. There are no dead space since the spray can cover the whole inner face of the transfer pipe.  
◆ The material of the pipe is 316L stainless steel. There are no corner angle and dead space. The polish rate is under  $0.4 \mu m$ .  
◆ It adopts PLC control system. The working process and the time, temperature and pressure can be show on screen.  
◆ It is effective, risk-free and capital intensive, and meets the requirement of new GMP.