GOLDEN FUTURE

金未来 GOLDEN FUTURE 中正金码

流体加注
整体解决方案
TOTAL SOLUTION FOR FLUID FILLING

济南中正金码科技有限公司

JINAN KINMARK TECHNOLOGY CO.,LTD

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用科技表达我们的爱
EXPRESSING OUR LOVE THROUGH TECHNOLOGY

公司介绍
COMPANY INTRODUCTION

济南中正金码科技有限公司始建于1996年，其前身是济南未来之路信息科技有限公司，坐落于济南市东部高新技术开发区内，以打标机作为起点，2009年开始加注机的研发工作，2010年金未来第一批加注机顺利交付。

现公司主要有流体加注、标记追溯、伺服压装、三大系列产品，主要业务涵盖整车、动力总成、汽车零部件、工程机械、家电、新能源、电子通讯、轨道交通等行业。是山东省“瞪羚”企业和“专精特新”企业，公司在上海、北京、广州、长春、重庆等城市设有办事机构及维修中心。与奔驰、宝马、丰田、大众、特斯拉、通用、日产、一汽轿车、广汽集团、长安汽车、北汽福田、广汽本田、北京现代、比亚迪、长城汽车、吉利汽车、奇瑞汽车、小鹏汽车、蔚来汽车等国内外一流汽车厂商建立了长期的合作关系，在专注汽车行业的同时，我们还为博世、博格华纳、格力、中车、美驰、爱科等世界知名企业提供自动化装配设备。

展望未来，中正金码将大力推进智慧工厂相关技术的跟踪与研发，凝聚一支具备深厚行业背景及丰富实战经验的专业团队，完美融合机器人、智能控制技术、智能图像识别及互联网智能科技，为客户构建高效节能、绿色环保的数字化工厂。

Jinan Kinmark Technology Co., Ltd. was established in 1996, formerly known as Jinan Golden Future Information Engineering Co., Ltd. Located in the Jinan eastern high-tech development zone, Kinmark started its journey with marking machines, and expanded its focus to filling machines in 2009. In 2010, the first batch of filling machines was successfully delivered.

Kinmark’ s main product lines now include marking traceability system, fluid filling system, and servo press fitting system, with the main businesses covering complete vehicles, powertrain, automotive components, engineering machinery, household appliances, new energy, electronic communications, rail transportation, and other automotive related industries. Kinmark is recognized as a “Gazalla Company” and a "Specialized, Refined, Unique, and New" Enterprise in Shandong Province. The company has offices and maintenance centers in Shanghai, Beijing, Guangzhou, Changchun, Wuhan, Chongqing, etc. It has established long-term partnerships with leading domestic and international automotive manufacturers such as Mercedes-Benz, BMW, Toyota, Volkswagen, Tesla, General Motors, Nissan, FAW Hongqi, GAC, Changan Automobile, Foton, GAC Honda, Beijing Hyundai, BYD, Great Wall Motor, Geely, Chery, XPeng, NiO, etc. While focusing on the automotive industry, we also provide relevant automation solutions for Bosch, BorgWarner, Gree, CRRC, Meritor , AGCO and other world-renowned enterprises.

Looking towards the future, Kinmark is committed to advancing the research and development of smart factory technologies. It aims to assemble a highly professional team with extensive industry expertise and abundant practical experience. By seamlessly integrating cutting-edge technologies such as robotics, intelligent control systems, intelligent image recognition and processing, and big data technology, the company strives to construct highly efficient, energy-conserving, and environmentally sustainable digital factories for its esteemed clientele.

流体加注
FLUID FILLING

伺服压装

标记追溯

智能装配

HISTORY

2010

金未来加注设备诞生。

The first batch of Kinmark filling equipment was born.

2013

成功交付集中供液项目。

The first centralized liquid supply project was successfully delivered.

2017

成功服务于郑州日产，自此同日产汽车开启了加注机领域的深度合作。

Kinmark successfully served Zhengzhou Nissan, and since then began a deep cooperation with Nissan in the field of filling machines.

2018

金未来加注机进入东风本田汽车，以优异的性能服务于东风本田。

Filling machines of Kinmark entered Dongfeng Honda Motor, providing excellent performance For Dongfeng Honda.

2019

金未来为沃尔沃变速箱车间提供加注解决方案。

Kinmark provided filling solutions for Volvo’ s transmission workshops.

2019

开始服务于小鹏汽车，为新能源提供集中供液和线边加注解决方案。

Kinmark started to serve Xiaopeng Motors, providing centralized liquid supply and inline filling solutions for new energy vehicles.

2022

向奇瑞青岛工厂交付多合一真空双随行加注机。

Kinmark delivered multi-functional vacuum dual-carrying filling machines to Chery's Qingdao factory.

汽车智能制造

Automotive Intelligent Manufacturing

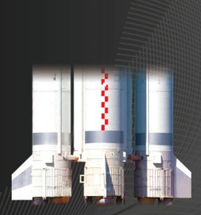
工程机械制造

Mechanical Engineering and Manufacturing

航空航天制造

Aerospace Engineering and Manufacturing

成功应用领域
APPLICATIONS

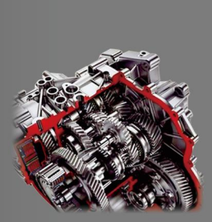


航空航天

Aerospace

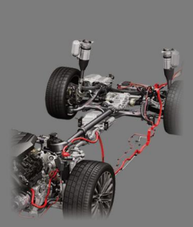
动力总成

Power assembly



变速箱

vehicle transmission



底盘系统

chassis system

新能源动力电池

New energy battery

电力驱动系统

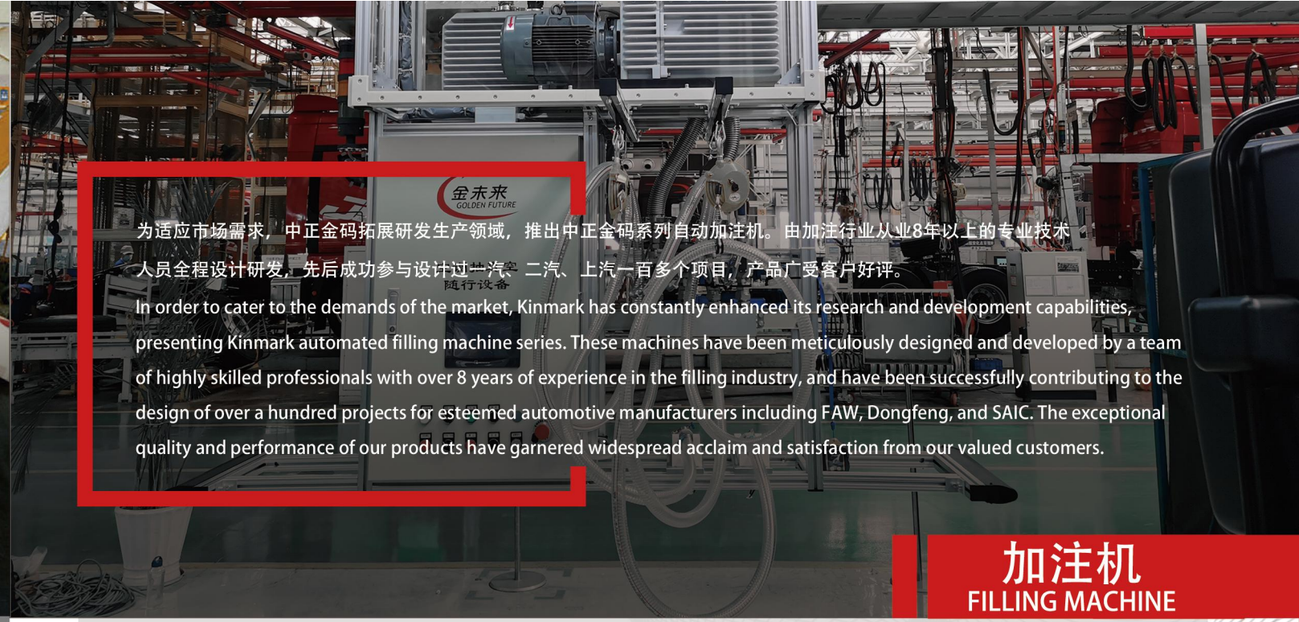
Electric drive system

工程机械

construction machinery

农业机械

Agricultural machinery



金未来 GOLDEN FUTURE

为适应市场需求，中正金码拓展研发生产领域，推出中正金码系列自动加注机。由加注行业从业8年以上的专业技术人员全程设计研发，先后成功参与设计过一汽、二汽、上汽一百多个项目，产品广受客户好评。

In order to cater to the demands of the market, Kinmark has constantly enhanced its research and development capabilities, presenting Kinmark automated filling machine series. These machines have been meticulously designed and developed by a team of highly skilled professionals with over 8 years of experience in the filling industry, and have been successfully contributing to the design of over a hundred projects for esteemed automotive manufacturers including FAW, Dongfeng, and SAIC. The exceptional quality and performance of our products have garnered widespread acclaim and satisfaction from our valued customers.

加注机
FILLING MACHINE

- 定量、真空加注机不断优化完善，形成一套独具特点的加注系统，其中制动液真空加注机经过多年实践摸索，加注效果保持国内领先；防冻液真空加注机经过几代加注枪的研发，2015年中正金码最新研发出双阀五路主副水箱加注专用加注枪，使加注节拍有了很大幅度的提升。

- Quantitative and Vacuum Filling Machines have been continuously optimized and improved, resulting in a unique and distinctive filling system. Among them, the vacuum filling machine for brake fluid has maintained a leading position in the domestic market through years of practical exploration. The vacuum filling machine for antifreeze solution has undergone several generations of development. In 2015, the latest dual-valve five-way dedicated filling gun for main and auxiliary tanks was introduced, significantly improving the filling efficiency.

产品列表 PRODUCT LIST

	设备名称	型号规格	加注介质	加注压力
真空加注机	防冻液	GFJZ-VP04	防冻液	1bar-3bar可调
	助力油	GFJZ-VP05	转向液	2bar-4bar可调
	制动液/离合液	GFJZ-VP06	Dot3/Dot4	3.5bar-6bar可调
	冷媒	GFJZ-VP08	R134a/R1234yf	12bar-16bar可调

产品列表 PRODUCT LIST

定量加注机	润滑油	GFJZ-NP0/1/02/03	发动机油、中后桥、变速箱油、柴油等	2-15bar可调
	燃油	GFJZ-NP07	汽油、柴油	1-6bar可调
	润滑脂	GFJZ-GP09	润滑脂	2-150bar可调
	风窗洗涤液	GFJZ-NP11	洗涤液	1-6bar可调
	尿素	GFJZ-NP14	尿素	2-4bar可调

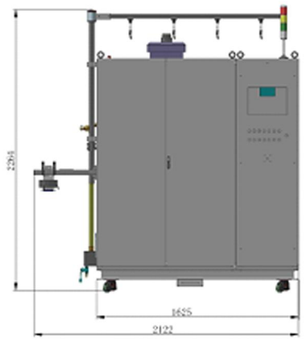
产品列表 PRODUCT LIST

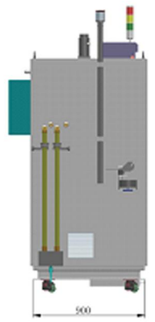
集中供液	制动液、冷媒、稀油类、防冻液、洗涤液、氮气
加注、抽油、滤油一体化设备	润滑油、液压油等稀油类介质

CONTENTS

VACUUM FILLING MACHINE

真空加注机

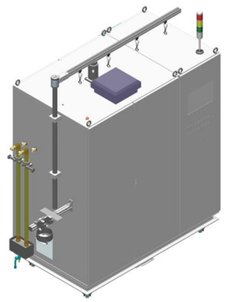




防冻液真空加注机
ANTIFREEZE LIQUID VACUUM FILLING MACHINE

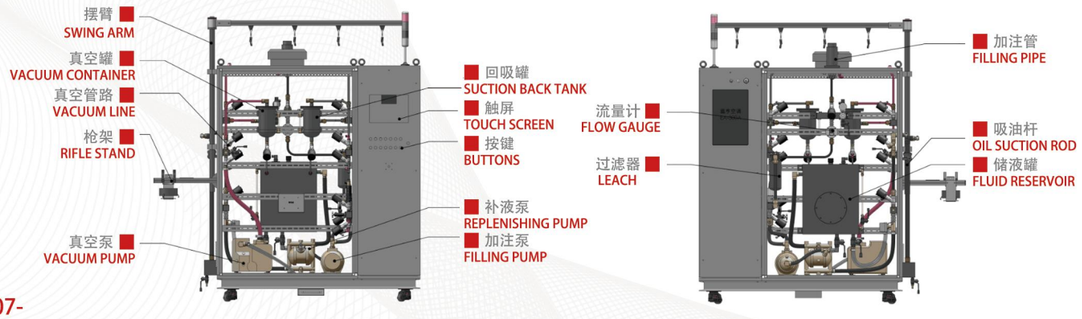
工作原理 WORKING PRINCIPLE

- 防冻液真空加注机的工作原理主要是通过PLC操作系统控制各电气动力部件，完成对需加注的容器一次真空（预抽低真空，再抽高真空），大漏、小漏检测，二次真空，定压加注，当加注到压力平衡后，通大气、回吸，将多余的液体回吸至需要的液面，从而完成一个加注循环。
- Working Principle: PLC operating system controls various electrical and pneumatic components. The machine completes a filling cycle by vacuuming (pre-pumping low vacuum, and then pumping high vacuum), leak detecting (critical and non-critical leak detection), secondary vacuuming, and constant-pressure filling; once the pressure is balanced during the filling process, atmospheric venting and back suction are performed to retrieve excess liquid to the desired liquid level.
- 加注精准，一次加注完成液面无下降，操作方便，结构紧凑，维护方便。
- Key Features: precise filling is achieved; the liquid level remains constant after filling. It is easy to operate, compact in structure, and convenient in maintenance.



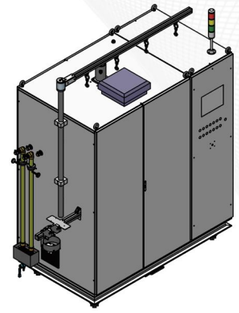
设备技术参数 EQUIPMENT TECHNICAL PARAMETER

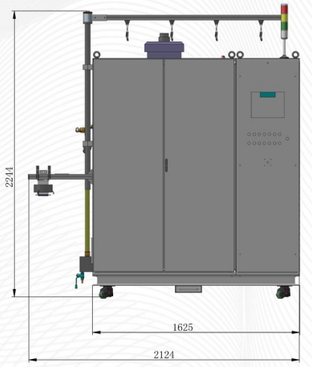
项目	内容	PROJECT	DETAILS
设备外形尺寸	1800mmx1000mmx1800mm(尺寸可定制)	Equipment dimensions	1800mmx1000mmx1800mm (Size can be customized)
设备装配指标	负压：泄露率0.5mbar/60秒。 正压：充6BAR制冷剂，漏率<1.4g/年—卤素检漏仪检验	Equipment specifications	Negative pressure: Leakage rate 0.5mbar/60 seconds. Positive pressure: charge 6BAR refrigerant, leakage rate <1.4g/ year - halogen leak detector test
加注介质	防冻液	Filling medium	antifreezing solution
密封性指标	≤1mbar 24h（泄漏量）根据现场的工位要求	Leakproofness	≤1mbar 24h (leakage) According to the requirements of the on-site workstation
加注枪端最低真空	≤15mbar	Minimum vacuum	≤15mbar
系统真空泵排气量	40m³/h、65m³/h	Displacement of vacuum pump	40m³/h、65m³/h
加注量	1-400L	Filling volume	1-400L
计量显示范围	0.0-999.9L	Measurement display range	0.0-999.9L
加注压力	1-4bar	Filling pressure	1-4bar
加注精度	定液面±2mm	Filling precision	Predetermined liquid level ± 2mm
流量计精度	±0.5%	Flow meter precision	±0.5%
最大加注速度	60L/min	Maximum filling speed	60L/min
电源电压	交流380 V ±10%,50HZ±2%	Supply voltage	Ac 380V± 10%,50HZ± 2%

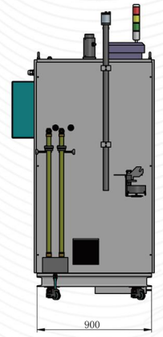


工作原理 WORKING PRINCIPLE

- 助力油真空加注机的工作原理主要是通过PLC操作系统控制各电气动力部件，完成对需加注的容器一次真空，大漏、小漏检测，二次真空，定压加注，当加注到压力平衡后，通大气、回吸，将多余的液体回吸至需要的液面，从而完成一个加注循环。
- Working Principle: PLC operating system controls various electrical and pneumatic components. The machine completes a filling cycle by vacuuming , leak detecting, secondary vacuuming, and constant-pressure filling; once the pressure is balanced during the filling process, atmospheric venting and back suction are performed to retrieve excess liquid to the desired liquid level.
- 加注精准，一次加注完成。操作方便，结构紧凑，维护方便，自动化程度高。
- Key Features: precise filling is achieved; the machine fills precise the liquid level remains constant after filling. It is easy to operate, compact in structure, convenient in maintenance, and exhibits a high level of automation



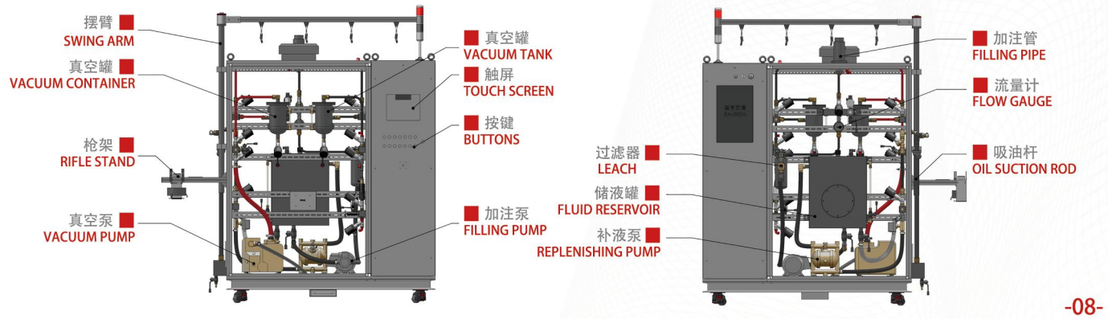


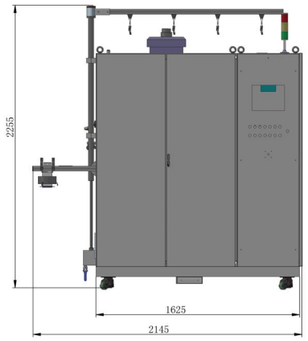


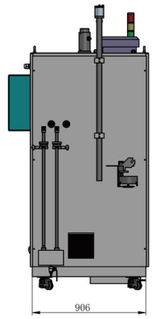
助力油真空加注机
POWER STEERING FLUID VACUUM FILLING MACHINE

设备技术参数 EQUIPMENT TECHNICAL PARAMETER

项目	内容	PROJECT	DETAILS
设备外形尺寸	1800mmx1000mmx1800mm (尺寸可定制)	Equipment dimension	1800mmx1000mmx1800mm (Size can be customized)
加注介质	助力油	Filling medium	Booster oil
加注枪端最低真空	≤3mbar	Minimum vacuum	≤3mbar
系统真空泵排气量	40m³/h、65m³/h	Displacement of vacuum pump	40m³/h、65m³/h
计量显示范围	0.0～999.9L	Measurement display range	0.0～999.9L
加注压力	1-3.5bar	Filling pressure	1-3.5bar
加注精度	定液面±2mm	Filling precision	Predetermined liquid level ± 2mm
流量计精度	±0.5%	Flow meter precision	±0.5%
最大加注速度	15L/min	Maximum filling speed	15L/min
电源电压	交流380 V ±10%,50HZ±2%	Supply voltage	Ac 380V± 10%,50HZ± 2%
适用气压	0.4—0.5Mpa	Applicable air pressure	0.4—0.5Mpa
设备功率	5KW	Power	5KW



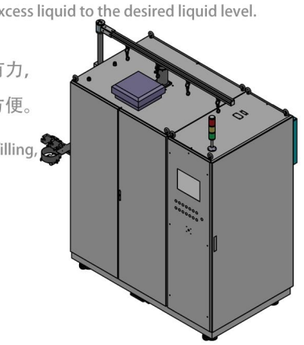




制动液真空加注机
BRAKE FLUID VACUUM FILLING MACHINE

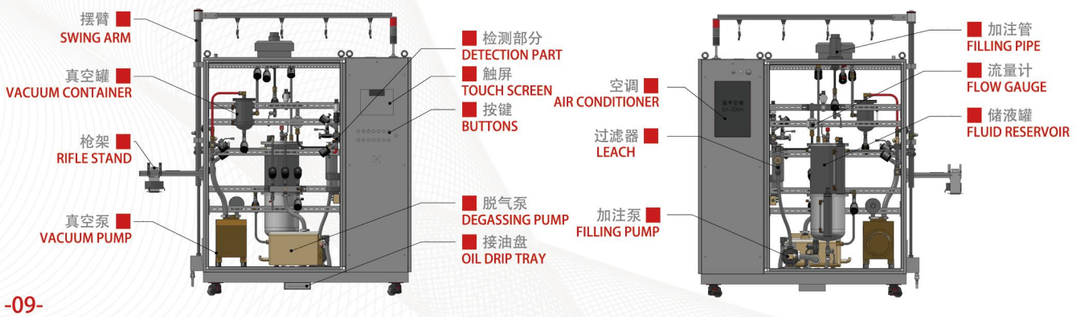
工作原理 WORKING PRINCIPLE

- 制动液真空加注机的工作原理主要是通过PLC操作系统控制各电气动力部件，完成对需加注的容器一次真空，大漏、小漏检测，二次真空，定压加注，当加注到压力平衡后，通大气、回吸，将多余的液体回吸至需要的液面，从而完成一个加注循环。
- Working Principle: PLC operating system controls various electrical and pneumatic components. The machine completes a filling cycle by vacuuming, leak detecting, secondary vacuuming, and constant-pressure filling; once the pressure is balanced during the filling process, atmospheric venting and back suction are performed to retrieve excess liquid to the desired liquid level.
- 定压加注、加注精准，刹车有力，操作方便，结构紧凑，维护方便。
- Key Features: pressure-regulated filling, precise filling, strong braking, user-friendly operation, compact structure, easy maintenance.



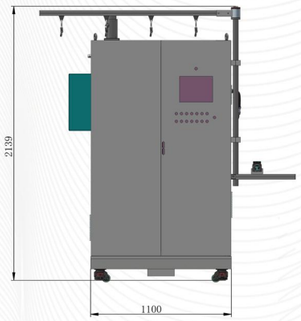
设备技术参数 EQUIPMENT TECHNICAL PARAMETER

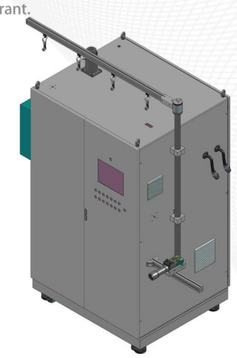
项目	内容	PROJECT	DETAILS
设备外形尺寸	1800mmx1000mmx1800mm（尺寸可定制）	Equipment dimensions	1800mmx1000mmx1800mm (Size can be customized)
设备装配指标	负压：泄露率0.5mbar/60秒。 正压：充10BAR制冷剂，漏率<4g/年—卤素检漏仪检验	Equipment specifications	Negative pressure: Leakage rate 0.5mbar/60 seconds. Positive pressure: charge 10BAR refrigerant, leakage rate <4g/ year - halogen leak detector test
加注介质	制动液	Filling medium	brake fluid
密封性指标	≤1mbar /24h（泄漏量）	Leakproofness	≤1mbar /24h (leakage)
系统真空	30m³/min	System vacuum	30m³/min
系统最大抽吸真空度	≤0.005mbar	Maximum vacuum suction	≤0.005mbar
加注枪端最低真空	≤3mbar	Minimum vacuum	≤3mbar
计量显示范围	0.0-999.99L	Measurement display range	0.0-999.99L
加注压力	0-6bar	Filling pressure	0-6bar
加注节拍	≤150秒（按单次加注量小于1L核算）	Filling beat	≤150
流量计精度	±0.5%	Flow meter precision	±0.5%
设备功率	3.5KW/h	Power	3.5KW/h



工作原理 WORKING PRINCIPLE

- 冷媒真空加注机主要是通过软件编程由控制器控制真空泵，对车体空调系统抽真空，再由专用气动柱塞泵输出冷媒，采用质量流量计进行计量，实现冷媒的高压加注。
- Working Principle: a PLC system controls the vacuum pump by the controller through software programming, vacuumizes the air conditioning system of the automobile body, then outputs the refrigerant by the special pneumatic plunger pump, and adopts the mass flow meter to conduct measurement, thereby achieving high-pressure filling of the refrigerant.
- 加注精准，一次加注完成。操作方便，结构紧凑，维护方便，自动化程度高。
- Key Features: precise filling is achieved; the machine fills precise the liquid level remains constant after filling. It is easy to operate, compact in structure, convenient in maintenance, and exhibits a high level of automation

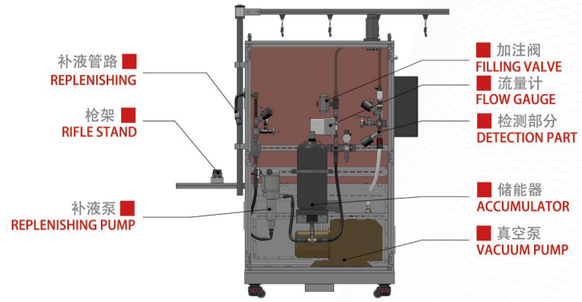




冷媒真空加注机
REFRIGERANT VACUUM FILLING MACHINE

设备技术参数 EQUIPMENT TECHNICAL PARAMETER

项目	内容	PROJECT	DETAILS
设备外形尺寸	1800mmx1000mmx1800mm（尺寸可定制）	Equipment dimension	1800mmx1000mmx1800mm(Size can be customized)
加注介质	R134A/R1234yf	Filling medium	R134A/R1234yf
加注枪端最低真空	≤2mbar	Minimum vacuum	≤2mbar
系统真空泵最大排量	30m³/h	Maximum displacement of vacuum pump	30m³/h
计量显示范围	0.0～9999mL	Metrological display	0.0～9999mL
加注压力	1-3.5bar	Filling pressure	1-3.5bar
加注精度	±5g	Filling precision	±5g
加注节拍	≤200s（按单次加注小于2kg计算）	Filling beat	≤200s
电源电压	交流380 V ±10%,50HZ±2%	Supply voltage	Ac 380V± 10%,50HZ± 2%
适用气压	0.4—0.5Mpa	Applicable air pressure	0.4—0.5Mpa
设备功率	5KW	Power	5KW



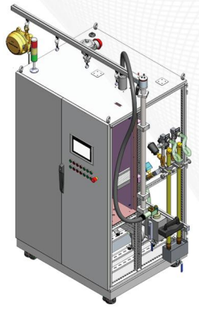
定量加注机

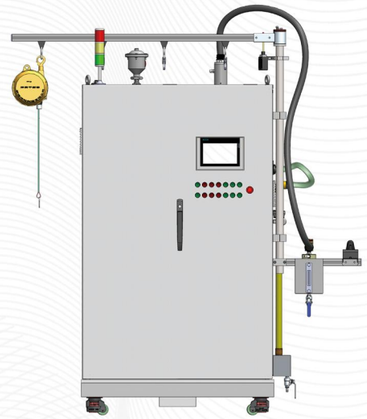
QUANTITATIVE FILLING MACHINE

工作原理

WORKING PRINCIPLE

- 主要是通过PLC操作系统控制各电气动力部件，对需加注的容器完成一次定压定量加注，从而完成一个加注循环；加注机运行时，操作系统按照预设程序对自动补液、加注等工艺技术过程进行机电一体化控制，并以较高的运行节拍完成加注过程。加注枪采用单阀定制加注枪。
- Working Principle: PLC operating system controls various electrical and pneumatic components. During operation, the control system follows preset programs to integrate the mechanical and electrical aspects to control processes such as automatic fluid replenishment and filling, The system operates at a high speed to ensure efficient filling. The filling gun utilized is a customized single-valve filling gun.
- 加注精度高,操作方便,结构紧凑,维护方便,自动化程度高。
- Key Features: high precision in filling, convenient operation, compact structure, easy maintenance, and high level of automation.





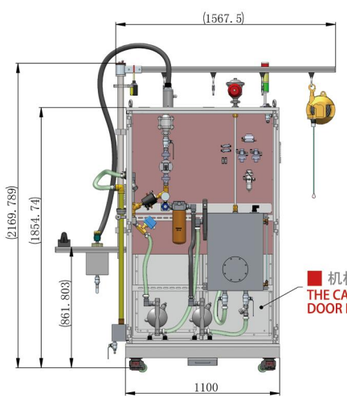
洗涤液定量加注机

WASHING LIQUID QUANTITATIVE FILLING MACHINE

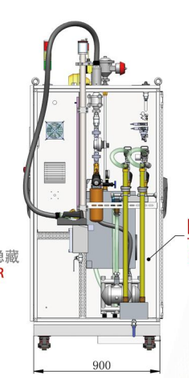
设备技术参数

EQUIPMENT TECHNICAL PARAMETER

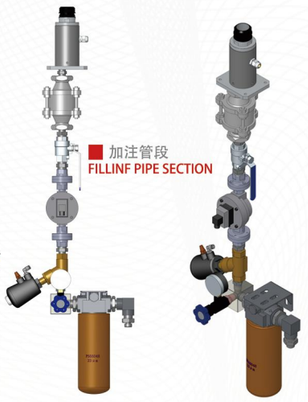
项目	内容	PROJECT	DATAILS
设备外形尺寸	1800mmx1000mmx1800mm (尺寸可定制)	Equipment dimension	1800mmx1000mmx1800mm (size can be customized)
管路模块装配指标(干式运转)	负压：泄露率0.5mbar/60秒。 正压：充10BAR制冷剂，漏率<4g/年—卤素检漏仪检验	Pipe module assembly index (dry operation)	Negative pressure: Leakage rate 0.5mbar/60 seconds. Positive pressure: charge 10BAR refrigerant, leakage rate <4g/ year - halogen leak detector test
加注介质	洗涤液	Filling medium	scrubbing solution
最大加注速度	15L/min	Maximum filling speed	15L/min
计量显示范围	0.1-999.9L	Metering display range	0.1-999.9L
加压压力	1-6bar	Filling pressure	1-6bar
补液形式	线边补液/集中供液	Liquid replenishment	Line Side Replenishment/Centralized filling
电源电压	交流380 V ±10%,50HZ±2%	Supply voltage	Ac 380V± 10%,50HZ± 2%
适用气压	0.1—0.7Mpa	Applicable air pressure	0.1—0.7Mpa
设备功率	2KW	Power	2KW



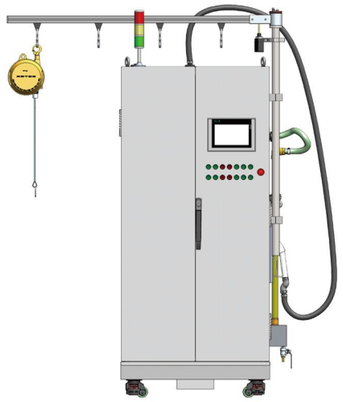
机柜后门已隐藏
THE CABINET REAR DOOR IS HIDDEN



机柜左侧板已隐藏
THE LEFT PANEL OF THE CABINET IS HIDDEN



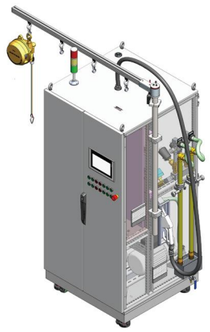
加注管段
FILLINF PIPE SECTION



尿素定量加注机
DIESEL EXHAUST FLUID QUANTITATIVE FILLING MACHINE

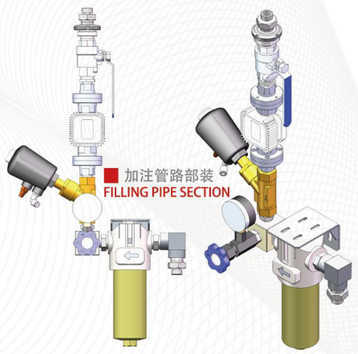
工作原理 WORKING PRINCIPLE

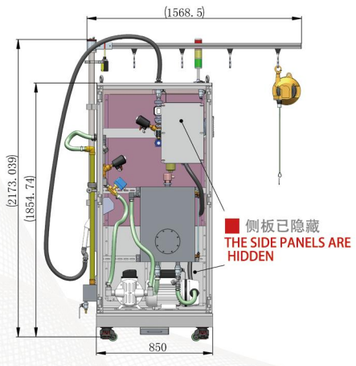
- 主要是通过PLC操作系统控制各电气动力部件，对需加注的容器完成一次定压定量加注，从而完成一个加注循环；加注机运行时，操作系统按照预设程序对自动补液、加注等工艺技术过程进行机电一体化控制，并以较高的运行节拍完成加注过程。加注枪采用尿素专用扳机枪。
- Working Principle: PLC operating system controls various electrical and pneumatic components. During operation, the control system follows preset programs to integrate the mechanical and electrical aspects to control processes such as automatic fluid replenishment and filling, The system operates at a high speed to ensure efficient filling. The filling gun utilized is a customized DEF filling gun.
- 加注精度高,抗腐蚀性强,操作方便,结构紧凑,维护方便,自动化程度高。
- Key Features: high precision in filling, strong corrosion resistance, easy operation, compact structure, easy maintenance, and high level of automation.

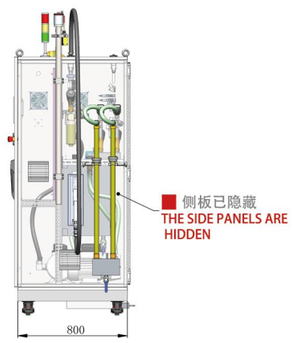


设备技术参数 EQUIPMENT TECHNICAL PARAMETER

项目	内容	PROJECT	DETAILS
设备外形尺寸	850*800*1850mm (尺寸可定制)	Equipment dimension	850*800*1850mm (Size can be customized)
加注介质	尿素	Filling medium	Diesel exhaust fluid
加注方式	正压定量加注	Filling mode	Positive pressure quantitative filling
供油方式	双桶线边补液/集中供液补液	Oil supply mode	Double bucket line edge refill/Centralized replenishment
加注压力	1～5bar	Filling pressure	1～5bar
最大加注速度	1-20L/min	Maximum filling speed	1-20L/min
计量范围	0.1-999.99L	meter range	0.1-999.99L
加注量设定范围	无级预设	Setting range of filling volume	Stepless preset
流量计精度	±1%	Accuracy of flowmeter	±1%
电源	交流三相四线 380V 50HZ	power supply	Ac three phase four wire 380V 50HZ
功率	2KW	Power	2KW

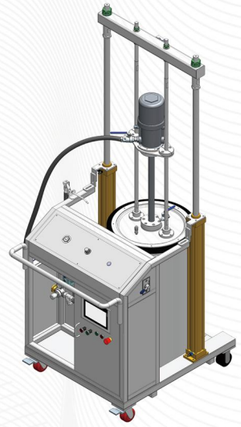






工作原理 WORKING PRINCIPLE

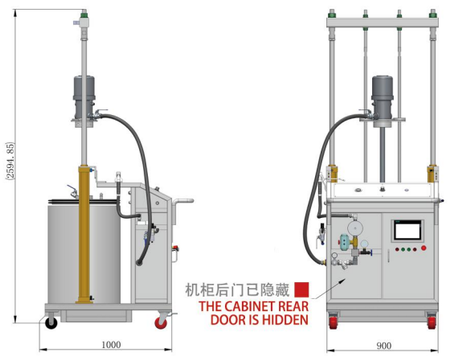
- 主要是通过PLC操作系统控制各电气动力部件，对需加注的容器完成一次定压定量加注，从而完成一个加注循环；加注机运行时，操作系统按照预设程序对自动补液、加注等工艺技术过程进行机电一体化控制，并以较高的运行节拍完成加注过程。加注枪采用润滑脂专用加注枪，操作简单方便，真正实现全程无滴漏。
- Working Principle: PLC operating system controls various electrical and pneumatic components. During operation, the control system follows preset programs to integrate the mechanical and electrical aspects to control processes such as automatic fluid replenishment and filling, The system operates at a high speed to ensure efficient filling. The filling gun utilized is a customized grease (lubricant) filling gun.
- 简易实用,操作方便,结构紧凑,维护方便,自动化程度高。
- Key Features: simple and practical, easy to operate, compact structure, easy maintenance, high degree of automation.

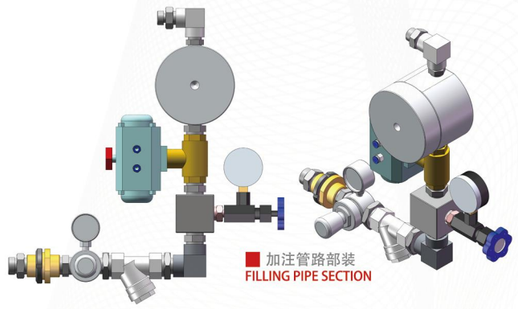


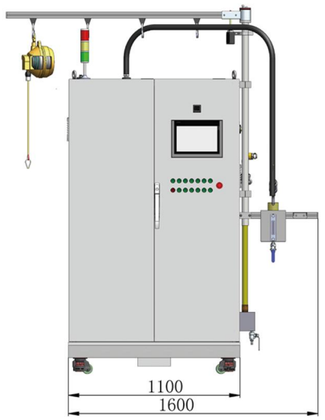
润滑脂加注机
GREASE FILLING MACHINE

设备技术参数 EQUIPMENT TECHNICAL PARAMETER

项目	内容	PROJECT	DETAILS
设备外形尺寸	1100×900×1800mm (尺寸可定制)	Equipment dimension	1100×900×1800mm (Size can be customized)
加注方式	正压定量加注	Filling mode	Positive pressure quantitative filling
加注速度	1-10L/min	Filling rate	1-10L/min
加注精度	±10g	Filling accuracy	±10g
加注量设定范围	0-999.9L	Fuilling setting range	0-999.9L
加注压力	40～100 bar	Filling pressure	40～100 bar
补液桶	55加仑/5加仑	Replenishing tank	55 gallons /5 gallons
电源电压	供电电压380V±10%&220V±10%	Supply voltage	Supply voltage 380V±10%&220V±10%
气源	≥0.3MPa	Air supply	≥0.3MPa
设备功率	3KW	KW	3KW
温控范围	20-40℃	Temperature range	20-40℃



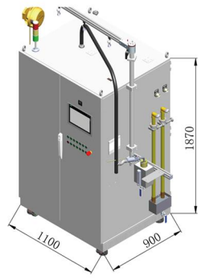




润滑油定量加注机
LUBRICATING OIL QUANTITATIVE FILLINF MACHINE

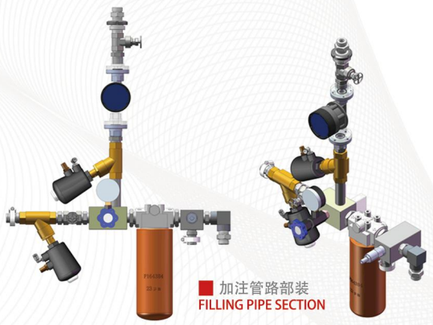
工作原理 WORKING PRINCIPLE

- 主要是通过PLC操作系统控制各电气动力部件，对需加注的容器完成一次定压定量加注，从而完成一个加注循环；加注机运行时，操作系统按照预设程序对自动补液、恒温、加注等工艺技术过程进行机电一体化控制，并以较高的运行节拍完成加注过程。加注枪采用标准防滴漏嘴进行控制，真正实现全程无滴漏。
- Mainly through the PLC operating system to control the electrical power components, the need to fill the container to complete a fixed pressure quantitative filling, so as to complete a filling cycle; When the filling machine is in operation, the operating system carries out mechatronics control on automatic replenishing, constant temperature, filling and other technological processes according to preset procedures, and completes the filling process at a higher running beat. The filling gun is controlled by the standard anti-drip nozzle to realize the whole process without dripping.
- 加注精度高,操作方便,结构紧凑,维护方便,自动化程度高。
- Key Features: high precision filling, easy operation, compact structure, easy maintenance, and high level of automation.

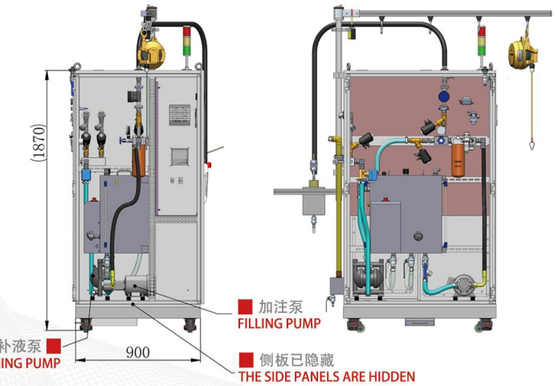


设备技术参数 EQUIPMENT TECHNICAL PARAMETER

项目	内容	PROJECT	DETAILS
设备外形尺寸	1800mmx1000mmx1800mm (尺寸可定制)	Equipment dimension	1800mmx1000mmx1800mm (Size can be customized)
加注介质	中后桥油、齿轮油、发动机油、变速箱油、柴机油等	Filling medium	Middle and rear axle oil, gear oil, engine oil, transmission oil, diesel oil, etc
加注方式	正压定量加注	Filling mode	Positive pressure quantitative filling
供油方式	线边补液/集中供液	Oil supply mode	Line Side Replenishment/Centralized filling
加注压力	2～15 bar	Filling pressure	2～15 bar
最大加注速度	60L/min	Maximum filling speed	60L/min
计量范围	0.1-9999L	meter range	0.1-9999L
温控精度	±5℃	precision of temperature control	±5℃
流量计精度	±0.5%	Accuracy of flowmeter	±0.5%
电源	交流三相四线 380V 50HZ	power supply	Ac three-phase four-wire 380V 50HZ
功率	10KW	kw	10KW



■ 加注管路部装
FILLING PIPE SECTION



■ 加注泵
FILLING PUMP

补液泵 ■
REPLENISHING PUMP

■ 侧板已隐藏
THE SIDE PANELS ARE HIDDEN

集中供液
CENTRALIZED LIQUID SUPPLY

集中供液
CENTRALIZED LIQUID SUPPLY

工作原理
WORKING PRINCIPLE

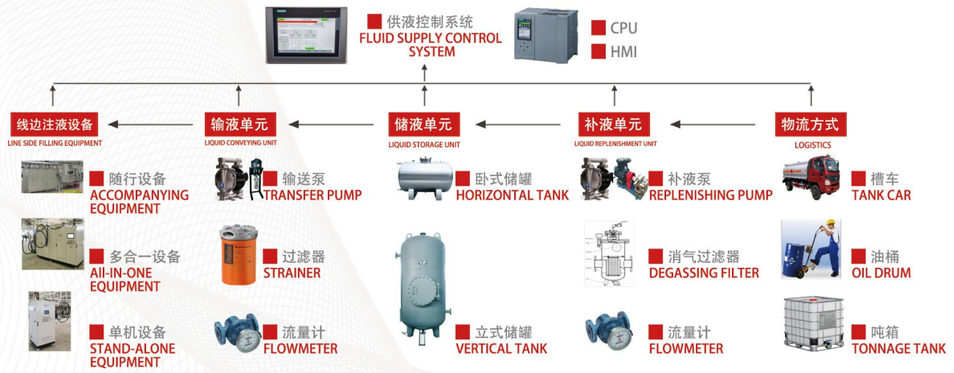
- 集中供液的工作原理主要是通过PLC操作系统控制设备各个元器件协同工作实现对需要输送介质的定压、定量输出。
- Working Principle: the PLC operating system controls the coordinated operation of each component of the equipment to achieve a constant pressure and precise output of the required conveying medium.
- 多种介质集中存放、集中管理,节省车间物料存放空间,节省车间分散补液产生的额外费用,避免车间分散补液造成的安全风险,方便车间6S管理。
- Key Features: multiple media are centrally stored and managed, saving workshop storage space for materials and reducing additional costs incurred by decentralized fluid replenishment. It also avoids the safety risks caused by decentralized fluid replenishment in the workshop and facilitates workshop 6S management.

相关配置选择
CONFIGURATION SELECTION

补液物流方式	补液泵	储罐	输送泵	Replenishment logistics mode	Replenishing pump	storage tank	transfer pump
槽车	气泵	地上卧式	气动隔膜泵	tank wagon	air pump	Ground horizontal	pneumatic diaphragm pump
1000L吨箱	电泵	地上立式	气动柱塞泵	1000L ton chest	electric pump	Aboveground vertical	ram pump
200L油桶	/	地下卧式	电动泵	200L oil drum	/	Underground horizontal	electric pump

适用介质	制动液	applicable medium	brake Fluid
	防冻液		antifreeze liquid
	液压润滑油（液压油、机油、齿轮油、磨合油等）		hydraulic lubricant (hydraulic oil, oil, gear oil, running-in oil, etc.)
	冷媒（R134a/R1234yf）		Refrigerant (R134a/R1234yf)
	洗涤液		scrubbing solution
	尿素溶液		Diesel exhaust fluid
	氮气		nitrogen

系统原理
OPERATING PRINCIPLE



随行加注机
ACCOMPANYING FILLINF MACHINE

随行加注机
ACCOMPANYING FILLING MACHINE

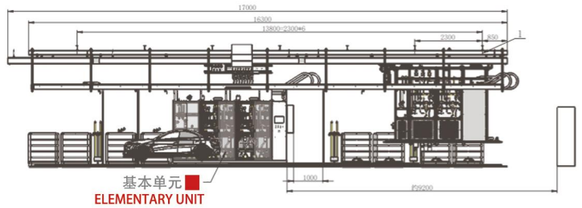
工作原理 WORKING PRINCIPLE

■ 随行加注机的工作原理主要是通过PLC操作系统控制设备各个元器件协同工作实现需加注介质的一次智能自动注液，在注液过程中保持与线体同速度运动，当加注完成枪归位后再驱动装置的作用下快速回原点。

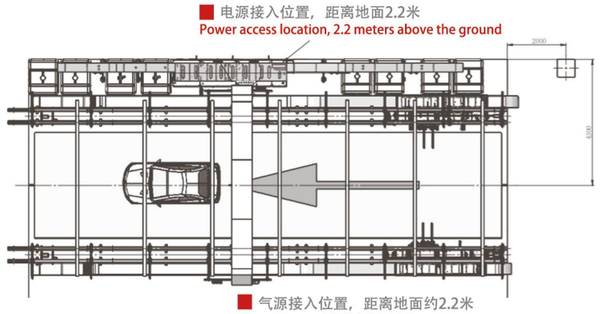
■ Working Principle: the PLC operating system controls the coordination of each component to achieve intelligent and automatic liquid filling of the required medium. During the filling process, it maintains the same speed as the production line and, once the injection is completed, quickly returns to its original position under the action of the driving device.

■ 多介质同时注液,快节拍注液,节省操作工数量,节省手动操作时间,操作方便,结构紧凑,维护方便。

■ Key Features: Simultaneous filling of multiple media, high-speed filling, reduction in the number of operators required, saving manual operation time, convenient operation, compact structure, and easy maintenance.

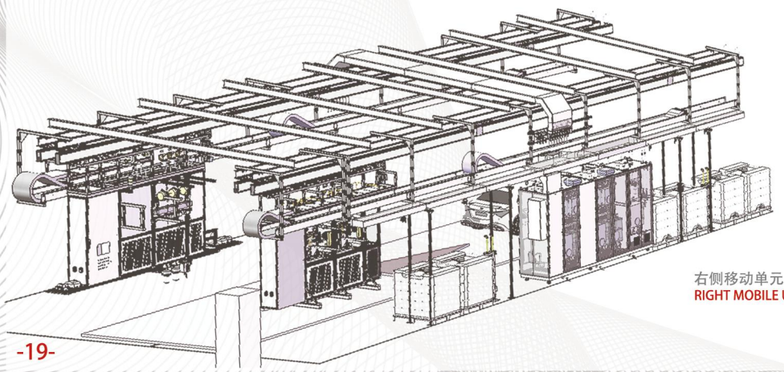


基本单元 ■
ELEMENTARY UNIT

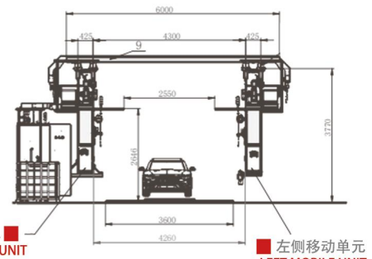


■ 电源接入位置，距离地面2.2米
Power access location, 2.2 meters above the ground

■ 气源接入位置，距离地面约2.2米
气管外径Φ12
Air source access position, about 2.2 meters from the ground. Outer diameter of the air pipe is Φ12



右侧移动单元 ■
RIGHT MOBILE UNIT



■ 左侧移动单元
LEFT MOBILE UNIT

随行设备常见组合方式 COMMON COMBINATION OF ACCOMPANYING DEVICES

■ 防冻液、制动液、冷媒三合一；防冻液、冷媒、洗涤液三合一；防冻液、制动液、冷媒、洗涤液四合一；

■ Antifreeze, brake fluid, refrigerant three in one; Antifreeze, refrigerant, washing liquid three in one; Antifreeze, brake fluid, refrigerant, washing liquid four in one;

防冻液、制动液、冷媒三合一随行设备技术参数 EQUIPMENT TECHNICAL PARAMETER

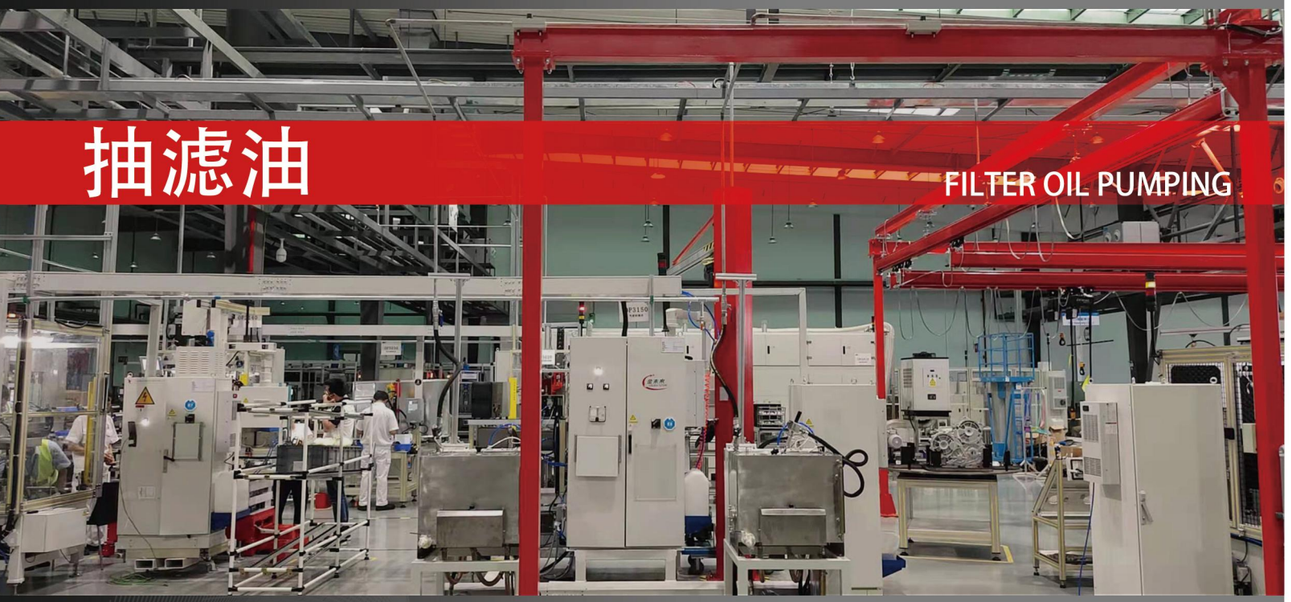
项次	防冻液	制动液	冷媒	NUMBER	ANTIFREEZE	BRAKING FLUID	COOLANTS
补液方式	双桶线边补液/集中补液	双桶线边补液/集中补液	双罐线边补液/集中补液	Supplementary	Double barrel line edge replenishment/ centralized replenishment		Double tank line replenishment/ centralized replenishment
常见加注量	＜6L/台	＜800ml/台	＜1kg/台	Filling volume	＜6L/ PC	＜800ml/PC	＜1kg/PC
加注节拍	180S	180S	180S	Filling beat	180S	180S	180S
加注过滤精度	不低于25μm	不低于25μm	不低于25μm	Filter fineness	Not less than 25μm	Not less than 25μm	Not less than 25μm
加注压力	2～3bar可调	2～5bar可调	9～15bar可调	Filling pressure	2～3bar Adjust	2～5bar Adjust	9～15bar Adjust
系统真空泵最大排气量	65m³/h	30m³/h	30m³/h	Maximum displacement	65m³/h	30m³/h	30m³/h
流量计计量精度	±0.5%	±0.5%	±0.2%	Measuring accuracy	±0.5%	±0.5%	±0.2%
加注精度	±3mm	±3mm	±10g	Filling accuracy	±3mm	±3mm	±10g
加注计量显示范围	0.0～999.99L	0.0～999.9L	0.0～9999.9g	Metering display range	0.0～999.99L	0.0～999.9L	0.0～9999.9g
电源	AC380V,4.0KW	AC380V,5.5KW	AC380V,4.0KW	KW	AC380V,4.0KW	AC380V,5.5KW	AC380V,4.0KW
气源	φ12mm，气压：4~6 bar，0.5m³/min	φ12mm，气压：4~6 bar，0.5m³/min	φ12mm，气压：4~6 bar，1.0m³/min	Air source	φ12mm，AIR：4~6 bar，0.5m³/min	φ12mm，AIR：4~6 bar，0.5m³/min	φ12mm，AIR：4~6 bar，1.0m³/min

防冻液、冷媒、洗涤液三合一随行设备技术参数 EQUIPMENT TECHNICAL PARAMETER

项次	防冻液	冷媒	洗涤液	NUMBER	ANTIFREEZE	COOLANTS	WASHINGS
补液方式	双桶线边补液/集中补液	双罐线边补液/集中补液	双罐线边补液/集中补液	Supplementary	Double barrel line edge replenishment/ centralized replenishment	Double tank line replenishment/ centralized replenishment	
常见加注量	＜6L/台	＜1kg/台	＜3L/台	Filling volume	＜6L/ PC	＜1kg/PC	＜3L/PC
加注节拍	180S	180S	180S	Filling beat	180S	180S	180S
加注过滤精度	不低于25μm	不低于25μm	不低于25μm	Filter fineness	Not less than 25μm	Not less than 25μm	Not less than 25μm
加注压力	2～3bar可调	9～15bar可调	2～5bar可调	Filling pressure	2～3bar Adjust	9～15bar Adjust	2～5bar Adjust
系统真空泵最大排气量	65m³/h	30m³/h	\	Maximum displacement	65m³/h	30m³/h	\
流量计计量精度	±0.5%	±0.2%	±0.5%	Measuring accuracy	±0.5%	±0.2%	±0.5%
加注精度	±3mm	±10g	±20ml	Filling accuracy	±3mm	±10g	±20ml
加注计量显示范围	0.0～999.99L	0.0～9999.9g	0.0～999.99L	Metering display range	0.0～999.99L	0.0～9999.9g	0.0～999.99L
电源	AC380V,4.0KW	AC380V,4.0KW	AC380V,1.0KW	KW	AC380V,4.0KW	AC380V,4.0KW	AC380V,1.0KW
气源	φ12mm，气压：4~6 bar，0.5m³/min	φ12mm，气压：4~6 bar，1.0m³/min	φ12mm，气压：4~6 bar，1.0m³/min	Air source	φ12mm，AIR：4~6 bar，0.5m³/min	φ12mm，AIR：4~6 bar，1.0m³/min	φ12mm，气压：4~6 bar，1.0m³/min

防冻液、制动液、冷媒、洗涤液四合一随行设备技术参数 EQUIPMENT TECHNICAL PARAMETER

防冻液	制动液	冷媒	洗涤液	ANTIFREEZE	BRAKING FLUID	COOLANTS	WASHINGS
双桶线边补液/集中补液	双桶线边补液/集中补液	双罐线边补液/集中补液	双罐线边补液/集中补液	Double barrel line edge replenishment/ centralized replenishment		Double tank line replenishment/ centralized replenishment	
＜6L/台	＜800ml/台	＜1kg/台	＜3L/台	＜6L/ PC	＜800ml/PC	＜1kg/PC	＜3L/PC
180S	180S	180S	180S	180S	180S	180S	180S
不低于25μm	不低于25μm	不低于25μm	不低于25μm	Not less than 25μm	Not less than 25μm	Not less than 25μm	Not less than 25μm
2～3bar可调	2～5bar可调	9～15bar可调	2～5bar可调	2～3bar Adjust	2～5bar Adjust	9～15bar Adjust	2～5bar Adjust
65m³/h	30m³/h	30m³/h	\	65m³/h	30m³/h	30m³/h	\
±0.5%	±0.5%	±0.2%	±0.5%	±0.5%	±0.5%	±0.2%	±0.5%
±3mm	±3mm	±10g	±20ml	±3mm	±3mm	±10g	±20ml
0.0～999.99L	0.0～999.9L	0.0～9999.9g	0.0～999.99L	0.0～999.99L	0.0～999.9L	0.0～9999.9g	0.0～999.99L
AC380V,4.0KW	AC380V,5.5KW	AC380V,4.0KW	AC380V,1.0KW	AC380V,4.0KW	AC380V,5.5KW	AC380V,4.0KW	AC380V,1.0KW
φ12mm，气压：4~6 bar，0.5m³/min	φ12mm，气压：4~6 bar，0.5m³/min	φ12mm，气压：4~6 bar，1.0m³/min	φ12mm，气压：4~6 bar，1.0m³/min	φ12mm，AIR：4~6 bar，0.5m³/min	φ12mm，AIR：4~6 bar，0.5m³/min	φ12mm，AIR：4~6 bar，1.0m³/min	φ12mm，气压：4~6 bar，1.0m³/min



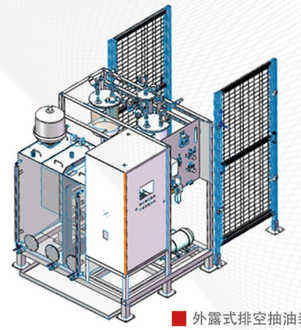
抽滤油

FILTER OIL PUMPING

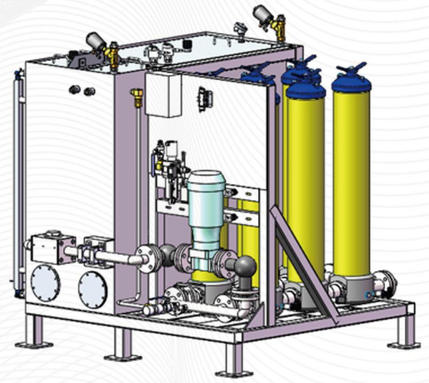
工作原理

WORKING PRINCIPLE

- 抽滤油的工作原理主要是通过PLC操作系统控制设备各个元器件协同工作实现对相应工件的抽油、过滤和定量加注。
- Working Principle: the PLC operating system controls each component of the equipment to achieve oil pumping, filtering and quantitative filling of the corresponding work-pieces.
- 加注精度高,抽油精度高,抽油快速、彻底,过滤效果好,操作方便,结构紧凑,维护方便,自动化程度高。
- Key Features: high accuracy in filling, fast and thorough oil extraction and efficient filtration, convenient operation, compact structure, easy maintenance, and high level of automation.



外露式排空抽油装置
动力源：真空泵
Exposed drain pumping device
Power source: vacuum pump



外露式三级循环过滤装置
Exposed three-stage circulating filter

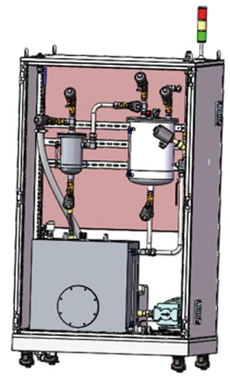
抽滤油加注机

PUMPING FILTER OIL FILLING MACHINE

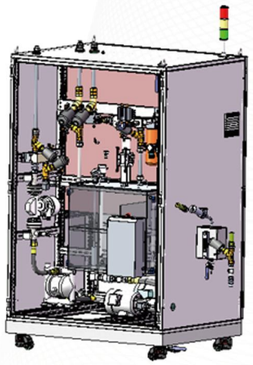
设备技术参数

EQUIPMENT TECHNICAL PARAMETER

项目	内容	PROJECT	DETAILS
设备外形尺寸	可定制	contour size of the unit(s)	customizable
供油方式	线边补液/集中供液	Oil supply mode	1.Line Side Replenishment/Centralized liquid supply
加注介质	中后桥油、齿轮油、发动机油、变速箱油、柴机油等	Filling medium	Middle and rear axle oil, gear oil, engine oil, transmission oil, diesel oil, etc
最大加注速度	60L/min	Maximum filling speed	60L/min
真空泵最大抽油速度	20L/min	rate of pumping	20L/min
加注压力	2～15 bar	Filling pressure	2～15 bar
齿轮泵最大抽油速度	40L/min	Maximum pumping speed	40L/min
计量范围	0.1-999.9L	meter range	0.1-999.9L
流量计精度	±0.5%	Accuracy of flowmeter	±0.5%
过滤器精度	7μm	Filter accuracy	7μm
循环过滤能力	70L/min	Cyclic filtration capacity	70L/min
油液清洁度	可达NAS 6级	Oil cleanliness	Up to NAS Level 6
温控精度	±5℃	temperature control	±5℃
电源电压	交流三相四线 380V 50HZ	supply voltage	Ac three-phase four-wire 380V 50HZ



封闭式定量抽油装置
动力源：真空泵
Enclosed quantitative pumping unit
Power source: vacuum pump



封闭式定量抽油装置
动力源：齿轮泵
Enclosed quantitative pumping unit
Power source: gear pump

新能源冷却系统

NEW ENERGY COOLING SYSTEM

工作原理

WORKING PRINCIPLE

- 通过PLC操作系统控制各电气动力部件，完成对储能柜的一次真空（预抽低真空，再抽高真空），大漏、小漏检测，二次真空，定压/定量注液，当注液到压力平衡后，通大气、回吸，将多余的液体回吸至设定的液面，从而完成一个注液循环。

- Working Principle: PLC operating system controls various electrical and pneumatic components. The machine completes a filling cycle by vacuuming (pre-pumping low vacuum, and then pumping high vacuum), leak detecting (critical and non-critical leak detection), secondary vacuuming, and constant-pressure filling; once the pressure is balanced during the filling process, atmospheric venting and back suction are performed to retrieve excess liquid to the desired liquid level.

储能柜冷却液注液机

ENERGY STORAGE CABINET COOLANT INJECTION MACHINE

- 抽真空和注液全自动完成，省略掉传统电柜注液方式所需要的注液--循环排气--注液的繁琐流程。 可实现扫码智能注液，自动判断电柜类型、自动智能注液、注液信息存储可追踪。可集成气密检漏，节省工位、提升节拍、节约成本。可支持不同注液量（1-500L/台）、不同注液口样式的一次性智能注液。

- Key Features: vacuum extraction and liquid filling are completed automatically, so the traditional cumbersome filling process (liquid filling -- circulation exhaust -- liquid filling) can be omitted. It enables smart liquid filling through QR code scanning, automatically identifies the type of electrical cabinet, performs intelligent liquid injection, and stores traceable injection information. Air tightness and leakage detection are also integrated, which saves workspace, improves production efficiency, and reduces costs. It supports different liquid filling volumes (1-500L/unit) and various types of liquid filling ports for one-time intelligent liquid filling.

操作流程

OPERATION PROCEDURE

JOB SELECTION
工件选择

- 扫码选择
  Scan and select
- MES下发选择
  MES delivers selections
- 触摸屏手动输入
  manually input through touch screen

→

INJECTION HEAD CONNECTION
对接注液头

- 对接注液头
  Connect injection head
- 按下绿色按钮
  Press the green button
- 设备进入自动流程
  The device enters the automatic flow

→

AUTOMATIC INJECTION
自动注液

- 抽真空、检漏
  Vacuum and leak detection
- 正压/定量作业
  Positive pressure/quantitative operation
- 注液完成，自动记录数据
  Complete injection and record data automatically

→

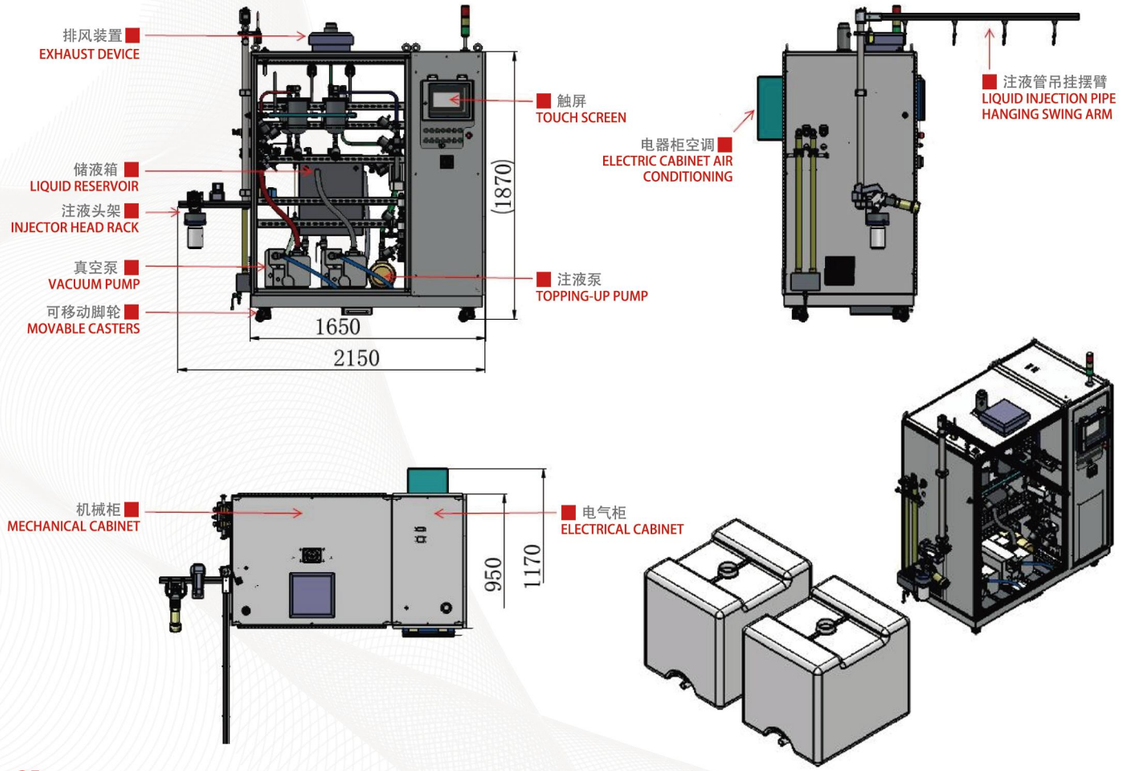
Remove the injection head/complete the injection
取下注液头/完成注液

- 按下红色按钮，注液头移开过程中自动回吸防滴
  press the red button; drip prevention is automatically achieved when injection head moves

设备技术参数

EQUIPMENT TECHNICAL PARAMETER

项目	内容	PROJECT	DETAILS
设备外形尺寸	长1650mm×宽900mm×高1870mm	contour size of the unit(s)	Length 1650mm x width 900mm x height 1870mm
装配指标	负压：泄露率0.5mbar/60秒。正压：充6BAR制冷剂，漏率<1.4g/年—卤素检漏仪检验	Assembly index	Negative pressure: Leakage rate 0.5mbar/60 seconds. Positive pressure: charge 6BAR refrigerant, leakage rate <1.4g/ year - halogen leak detector test
注液介质	冷却液	Filling medium	liquid coolant
密封性指标	≤1mbar 24h (泄漏量) (根据现场的工位要求)	Sealability index	≤1mbar 24h (leakage) (according to site station requirements)
加注枪端最低真空	≤15mbar	Minimum vacuum at the end of the filling gun	≤15mbar
注液管长度	8m	Length of filling pipe	8m
系统真空泵排气量	40m³/h、65m³/h	System vacuum pump displacement	40m³/h、65m³/h
注液量	1-500L	Amount of liquid injected	1-500L
注液压力	1-4bar	Injection fluid pressure	1-4bar
注液精度	定液面±2mm	Injection accuracy	The liquid level is ±2mm
流量计精度	±0.5%	Accuracy of flowmeter	±0.5%
最大注液速度	60L/min	Maximum filling rate	60L/min
补液形式	双桶线边补液/集中供液	Rehydration form	Double bucket line edge refill/Centralized replenishment
电源电压	交流380V±10%,50HZ±2%	mains input	Ac 380V± 10%,50HZ± 2%
设备功率	6KW/h	KW	6KW/h
生产噪音	≤75db	Production noise	≤75db
注液头形式	手动装夹、自动夹紧	Injection head form	Manual clamping and automatic clamping
注液枪/管路安装形式	摆臂随行/滑轨随行	Injection gun/ pipeline installation form	Swing arm follow/slide follow
系统附属配置	真空校准接口装置、机柜工业空调、柜内照明灯、以太网接口、扫描枪	System attachment configuration	Vacuum calibration interface device, cabinet industrial air conditioning, cabinet lighting, Ethernet interface, scanning gun



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