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## SPINNING Solutions

### 纺纱解决方案

高速并条机

HIGH SPEED DRAWING FRAME





# 关于日发纺机

日发纺机创建于1993年，是国家重点高新技术企业、国家机械工业重点骨干企业、国家863计划CIMS工程示范企业、全国CAD应用工程示范企业、中国纺织机械协会副会长单位。现旗下控股山东日发纺织机械有限公司、安徽日发纺织机械有限公司、浙江日发纺机技术有限公司。

公司以成为“敏捷化的国际性公司”为愿景，以“为用户提供智能纺织装备系统解决方案，并协助用户逐步实现数字化工厂梦想”为使命，秉承“质量、创新、快速反应”的核心价值观，致力于机电行业的“数字科技”，已成为国内外享有高知名度的纺织装备生产企业。二十几年来已成功开发了清梳联、并条机、转杯纺纱机、喷气涡流纺纱机、倍捻机、直捻机、假捻变形机、精密并纱（络筒）机、自动穿经机、喷气织机、喷水织机、剑杆织机、毛巾织机、特种织机、针织圆机、无缝内衣机、袜机、非织造布设备等系列的上百种产品，能够为行业提供纺纱、前准备、织造、非织造等解决方案，涉及纺织行业的各个领域。产品遍及全国各地，并销往全球30多个国家和地区，在各个行业的市场占有率位居前列。

日发纺机正致力于创造崭新的“数字科技”理念，在未来的整机生产中，建立“人流、物流、信息流”的互动平台，实现科技、环境、制造的和谐统一。铸就“信息化、敏捷化、国际化”的机械制造生产基地。

安徽日发纺织机械有限公司系日发纺机全资子公司，注册成立于2013年，位于马鞍山承接产业转移示范园区内。公司主要产品为清梳联、并条机、转杯纺纱机、针刺、水刺非织造布设备，继承日发纺机二十多年的专业经验使安徽日发纺机成长为高端纺纱装备研发制造基地。



# About Us

Zhejiang Rifa textile machinery co., ltd. is founded in 1993. The company is a China national key high-tech enterprises, a key enterprise of the China national machinery industry, a demonstration enterprise of both China national 863 program CIMS engineering and China national CAD application engineering, a China national torch plan high-tech enterprise, and a vice president unit of China textile machinery association. It now holds three subsidiaries: Shandong Rifa textile machinery co., ltd. , Anhui Rifa textile machinery co., ltd. And Zhejiang Rifa textile machinery tech co., ltd.

With the vision of “become an agile and international company”, the mission of “Provide users with intelligent textile equipment system solutions, and help users gradually realize the dream of a digital factory” and the core values of “quality, innovation and rapid response”, Zhejiang Rifa Textile Machinery Co., Ltd. is devoted to the area of “digital technology” in mechanical and electrical industry, and has become a well-known textile equipment manufacturer with excellent reputation at home and abroad. For over twenty years, the company has successfully developed four solutions such as spinning, fiber preparation, weaving and non-woven, including blow-room machine, draw frame, rotor spinning machine, air jet vortex spinning machine, two-for-one twister machine, twister machine for tire cord, false-twist texturing machine, precise winding machine (precise rewinding machine), automatic warp drawing machine, air jet loom, water jet loom, rapier loom, terry towel loom, specific loom, circular knitting machine, seamless knitting machine, hosiery machine and non-woven equipment, and hundreds of machines. These products have been distributed to all areas around China and sold to more than 30 foreign countries and regions with a leading market share in each respective industry.

RIFA is devoting itself to create a whole new theory of digital technology, establishing an interactive platform of “people flow, material flow and information flow”, realizing harmony and unify of science and technology, environment and manufacturing, and aiming to become a manufacturing base of “informatization, agility and internationalization”.

Anhui Rifa Textile Machinery Co., Ltd. is a wholly owned subsidiary of Zhejiang Rifa Textile Machinery Co., Ltd., it is founded in 2013, located in Ma'an Shan City. The leading products are blow-room machine, draw frame, rotor spinning machine, needle&spunlace non-woven equipment, succeeding above 20 year professional experience from zhejiang Rifa, anhui Rifa has grown to a top grade spinning research and manufacturing base.







RFDF12该机型为双眼配自调匀整高速并条机，整机采用高精度、高强度的铸件架构，国际品牌工控机、真彩人机界面、高响应伺服系统和无“死角”智能检测传感器。双眼实现机械传动、电气控制完全独立运转，可一机双控、两用，媲美国际国内同行领先水平，最高出条速度1000m/min。配置两套乌斯特公司最新USG3型自调匀整系统，具备自动控制，智能检测，远程维护，高效运行的性能和特点，输出棉条质量稳定可靠，可有效提高成纱质量，条干CV%值改善0.6~1%，熟条重量不匀率：

1m重量不匀率  $CV1m < 0.4$

3m重量不匀率  $CV3m < 0.3$

5m重量不匀率  $CV5m < 0.2$

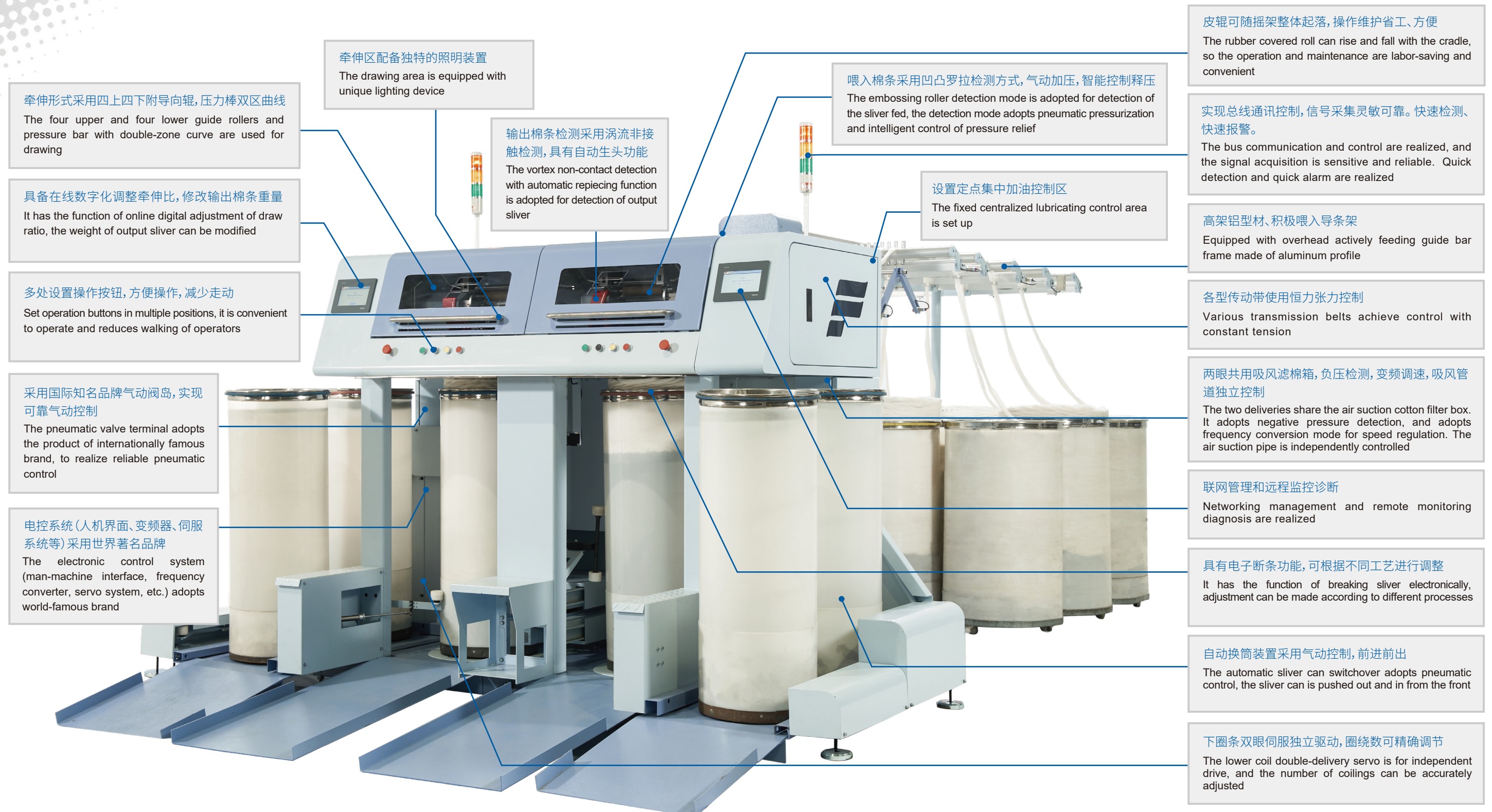
RFDF12 is a two-delivery autoleveller high-speed drawing frame. The machine adopts high-precision and high-strength casting structure, industrial control computer which is international brand, true color man-machine interface, high-response servo system and intelligent detection sensor without "blind side". The two deliveries realize mechanical transmission, and the electrical control runs completely independently, so that one machine can achieve two controls and two purposes. The machine compares favourably with the products of international and domestic famous enterprises and is in the leading level. Its sliver output speed is up to 1000m/min. Equipped with two sets of Uster USG3 autoleveller systems, it has the performance and characteristics of automatic control, intelligent detection, remote maintenance and efficient operation, the quality of output sliver is stable and reliable. The resultant yarn quality can be effectively improved, the CV% value of evenness is improved by 0.6 ~ 1%. As to the weight unevenness of ripe sliver:

For 1m ripe sliver, the weight unevenness  $CV1m$  is  $< 0.4$

For 3m ripe sliver, the weight unevenness  $CV3m$  is  $< 0.3$

For 5m ripe sliver, the weight unevenness  $CV5m$  is  $< 0.2$

### 高速并条机 HIGH SPEED DRAWING FRAME



**牵伸形式采用四上四下附导向辊, 压力棒双区曲线**  
The four upper and four lower guide rollers and pressure bar with double-zone curve are used for drawing

**具备在线数字化调整牵伸比, 修改输出棉条重量**  
It has the function of online digital adjustment of draw ratio, the weight of output sliver can be modified

**多处设置操作按钮, 方便操作, 减少走动**  
Set operation buttons in multiple positions, it is convenient to operate and reduces walking of operators

**采用国际知名品牌气动阀岛, 实现可靠气动控制**  
The pneumatic valve terminal adopts the product of internationally famous brand, to realize reliable pneumatic control

**电控系统 (人机界面、变频器、伺服系统等) 采用世界著名品牌**  
The electronic control system (man-machine interface, frequency converter, servo system, etc.) adopts world-famous brand

**牵伸区配备独特的照明装置**  
The drawing area is equipped with unique lighting device

**输出棉条检测采用涡流非接触检测, 具有自动生头功能**  
The vortex non-contact detection with automatic repiecing function is adopted for detection of output sliver

**喂入棉条采用凹凸罗拉检测方式, 气动加压, 智能控制释压**  
The embossing roller detection mode is adopted for detection of the sliver fed, the detection mode adopts pneumatic pressurization and intelligent control of pressure relief

**设置定点集中加油控制区**  
The fixed centralized lubricating control area is set up

**皮辊可随摇架整体起落, 操作维护省工、方便**  
The rubber covered roll can rise and fall with the cradle, so the operation and maintenance are labor-saving and convenient

**实现总线通讯控制, 信号采集灵敏可靠。快速检测、快速报警。**  
The bus communication and control are realized, and the signal acquisition is sensitive and reliable. Quick detection and quick alarm are realized

**高架铝型材、积极喂入导条架**  
Equipped with overhead actively feeding guide bar frame made of aluminum profile

**各型传动带使用恒力张力控制**  
Various transmission belts achieve control with constant tension

**两眼共用吸风滤棉箱, 负压检测, 变频调速, 吸风管独立控制**  
The two deliveries share the air suction cotton filter box. It adopts negative pressure detection, and adopts frequency conversion mode for speed regulation. The air suction pipe is independently controlled

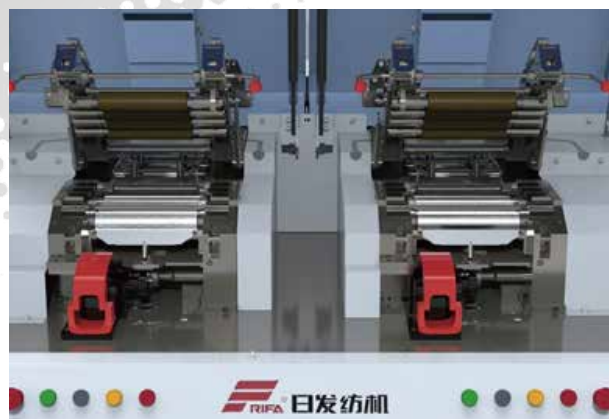
**联网管理和远程监控诊断**  
Networking management and remote monitoring diagnosis are realized

**具有电子断条功能, 可根据不同工艺进行调整**  
It has the function of breaking sliver electronically, adjustment can be made according to different processes

**自动换筒装置采用气动控制, 前进前出**  
The automatic sliver can switchover adopts pneumatic control, the sliver can be pushed out and in from the front

**下圈条两眼伺服独立驱动, 圈绕数可精确调节**  
The lower coil double-delivery servo is for independent drive, and the number of coilings can be accurately adjusted





#### 完全独立牵伸系统

整机出条速度采用变频控制，人机界面直接快速设定各种工艺参数。可依据不同原料和品质需求，两眼可调整合适的速度，匹配产量需求，两眼完全独立；可依据工艺需要，左右两眼可设定不同的罗拉隔距，不同的牵伸比，不同的运行速度，让生产调配更加灵活，具有少量多样快速改纺的便利性。

#### Completely independent drawing system

The sliver output speed of the machine is controlled through frequency conversion, and various process parameters are set directly and quickly on the man-machine interface. According to different raw materials and quality requirements, the two deliveries can be adjusted to the appropriate speed, so as to match the production demand, and the two deliveries are completely independent; according to the process requirements, different roller spacing, different draw ratio and different running speed can be set for the left and right deliveries, so that the production allocation is more flexible, and the convenience for modicum and varied quick spinning frame modification is realized.

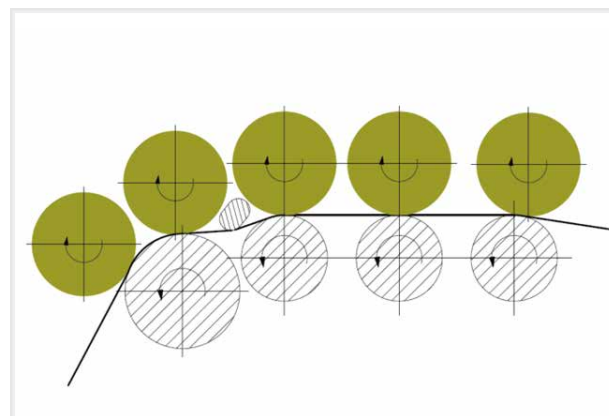


#### 集中加油设置区

整机标配牵伸区集中润滑供油方式，方便保全工操作，提高设备维护的便捷性，降低设备故障率，减轻劳动强度，提高设备的运行效率。

#### Centralized lubricating setting area

The whole machine is equipped with centralized lubrication oil supply mode for drawing area lubricating as standard, it is convenient for maintenance workers to conduct maintenance, the convenience of equipment maintenance is improved, the equipment failure rate is reduced, labor intensity is reduced and the equipment operation efficiency is raised.



#### 新型牵伸形式

牵伸形式采用四上四下附导向辊压力棒双区曲线牵伸，有利于棉条的牵伸、混合。并创新设计，可提供更小的罗拉隔距，适合不同的短纤长度；有效提高条干水平，更适应于高速运行。

#### New drawing form

The four upper and four lower guide rollers and pressure bar with double-zone curve are used for drawing, it is beneficial for drawing and mixing of slivers. And innovative design is adopted, which can provide smaller roller spacing. The machine is suitable for different lengths of staple and can effectively improve the evenness level, and is more suitable for high-speed operation.



#### 高精度牵伸罗拉

采用国内一流的牵伸罗拉，具有足够的抗弯、抗扭刚度，表面沟槽齿形和光洁度高标准制作，表面耐磨、中心坚韧的特点，确保纺纱质量和条干均匀。

#### High precision drawing roller

The drawing roller which is first-class in China is adopted, the drawing roller has enough bending stiffness and torsional stiffness. The teeth of surface groove are made according to the high standards, high smoothness is realized. It is featured wear-resistant surface and tough center, spinning quality is ensured, and unevenness of yarn sliver is avoided.



#### 皮辊可随摇架升起

牵伸摇架压力可调，弹簧压力稳定；皮辊可随摇架升起，方便挡车工操作，减轻劳动强度，提高工作效率。

#### The rubber covered roll can be raised with the cradle

The pressure of drawing cradle is adjustable and the spring pressure is stable; the rubber covered roll can be raised with the cradle, so that it is convenient for the spinner to conduct operation, the labor intensity is reduced and the working efficiency is improved.



#### 高效率的皮带传动

整机完全采用电机驱动，皮带传动，恒张力气弹簧张紧机构的方式。选用高标准、适用于高速的轴承、皮带，方便维护和工艺调整，杜绝油污，降低噪音，提高运行效率。

#### High-efficiency belt transmission

The whole machine uses motor for drive completely, uses belt for transmission, and it uses constan-tension spring tensioning mechanism. The high-standard bearing and belt suitable for high-speed operation are selected, it is convenient to conduct maintenance and process adjustment, oil pollution is avoided, noise is reduced, and operation efficiency is improved.



#### 最新一代自调匀整系统

整机采用两套独立的乌斯特公司最新自调匀整系统，该系统具有自调匀整和质量在线监测控制功能，根据喂入棉条的波动变化，适时在线控制输出棉条质量，预设报警极限，杜绝坏条进入下一工序，确保成纱质量。

#### The latest generation of autoleveller system

The whole machine adopts two sets of independent latest autoleveller systems from Uster Company, the system has the functions of autoleveller and online quality monitoring and control. According to the fluctuation of fed slivers, the quality of output slivers is timely controlled online. And the alarm limit can be preset, so as to prevent defective slivers from entering the next working procedure and ensure the



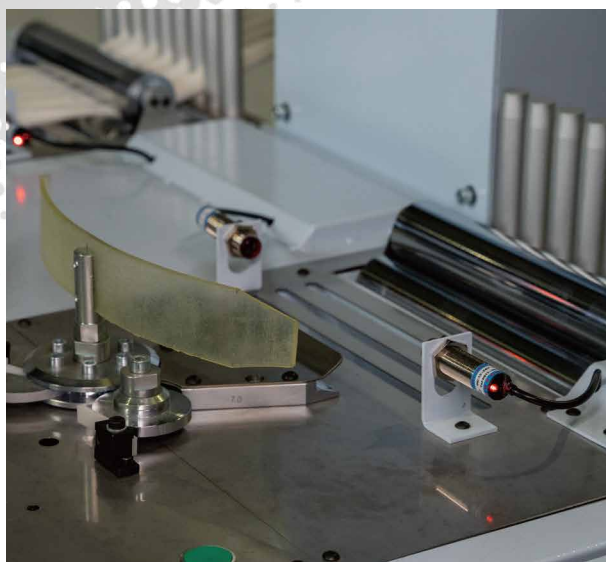
#### 智能控制的自吸风系统

自吸风系统采用负压检测，变频调速，吸风管道独立控制。可根据不同的工艺快捷调整风机运行速度，提高整机节能、清洁效果；通过负压检测预控制，提供持续不间断风压，减少棉条棉结疵点的产生。

#### Self-suction system with intelligent control

The self-suction system adopts negative pressure detection, and adopts frequency conversion mode for speed regulation. The air suction pipe is independently controlled. The running speed of the fan can be quickly adjusted according to different processes, so as to improve the energy saving and cleaning effect of the whole machine; through negative pressure detection and pre-control, the continuous uninterrupted air pressure is provided, the sliver nep defects is reduced.





#### 高精度的检测装置

喂入棉条采用凹凸罗拉检测方式，气动加压，智能控制释压。采用严格的加工工艺实现凹凸罗拉装置精度和强度；标配高精度高响应位移传感器，实现喂入棉条波动检测，有效提高动态自调匀整效果，控制范围 $\pm 25\%$ 。

#### High-precision detection device

The embossing roller detection mode is adopted for detection of the sliver fed, the detection mode adopts pneumatic pressurization and intelligent control of pressure relief. Adopt strict processing technology to realize the accuracy and strength of embossing roller device; the standard high-precision and high-response displacement sensor is equipped with, it can detect the fluctuation of fed sliver, effectively improve the dynamic autoleveller effect, and the control range is  $\pm 25\%$ .



#### 高规格电气控制系统

整机电气控制采用国际品牌工业控制器、高响应伺服系统、智能检测传感器。人性化设计操作人机界面，密码分级管理。具有远程维护、联网管理、物联网总线控制技术，可实现整机稳定、高效运行，快速响应用户的服务需求。

#### High-specification electrical control system

The electrical control of the whole machine adopts the industrial controller, high-response servo system and intelligent detection sensor which are from internationally famous brands. The man-machine interface adopts humanized design, it is convenient to carry out operation. The hierarchical management mode with password is adopted. It adopts remote maintenance, networking management and IoT bus control technologies, these technologies can realize stable and efficient operation of the whole machine and quickly respond to the service needs of users.



#### 多规格高精密度圈条盘

采用国内一流的高规格圈条盘，具有重量轻、成型好、不毛条等特点，根据工艺要求可提供多规格的圈条盘。

#### High-precision coils with various specifications

The domestic first-class high-specification coiler is adopted, which has the characteristics of light weight, good molding and no tops, etc. According to the process requirements, the coils with various specifications can be provided.



#### 导条架积极喂入机构

采用高规格的铝型材积极喂入式导条架，确保架子不变形，运行平稳，棉条不会发生意外牵伸。同时，多处设有断条数码检测光电，操作按钮，提高喂入棉条质量、减轻劳动强度和提高工作效率。

#### Actively feeding guide bar frame mechanism

Adopt the actively feeding guide bar frame made of high-specification aluminum profile, to ensure that the frame does not deform, the operation is smooth, and the sliver will have no accidental drawing. At the same time, at several positions, the photoelectric operation buttons are set for digital detection of broken slivers, so as to improve the quality of fed slivers, reduce labor intensity and improve work efficiency.



#### 自动换筒机构

整机采用两套完全独立的自动换筒机构。自动换筒机构为气动控制，为前进前出形式，换筒效率高，节省空间，维护方便，可根据用户需求增加备用空筒数量。

#### Automatic sliver can switchover

The whole machine adopts two completely independent automatic sliver can switchover. The automatic sliver can switchover adopts pneumatic control mode, it is in the form of pushing sliver can out and in from the front, the sliver can change efficiency is high, the space is saved, and the maintenance is convenient. And the quantity of spare empty sliver cans can be increased according to the needs of users.



#### 下圈条驱动机构

整机采用两套完全独立的下圈条驱动机构。该机构为独立伺服驱动，可实现圈绕数的自由精确调整、控制。改变了传统机械结构传动模式，传动路线简洁，节省空间，维护方便。

#### Lower coil drive mechanism

The whole machine adopts two completely independent lower coil drive mechanisms. The mechanism is driven by independent servo, it can realize free and accurate adjustment and control of the number of coilings. The transmission mode of traditional mechanical structure is changed, the transmission route is simple, the space is saved, and the maintenance is convenient.

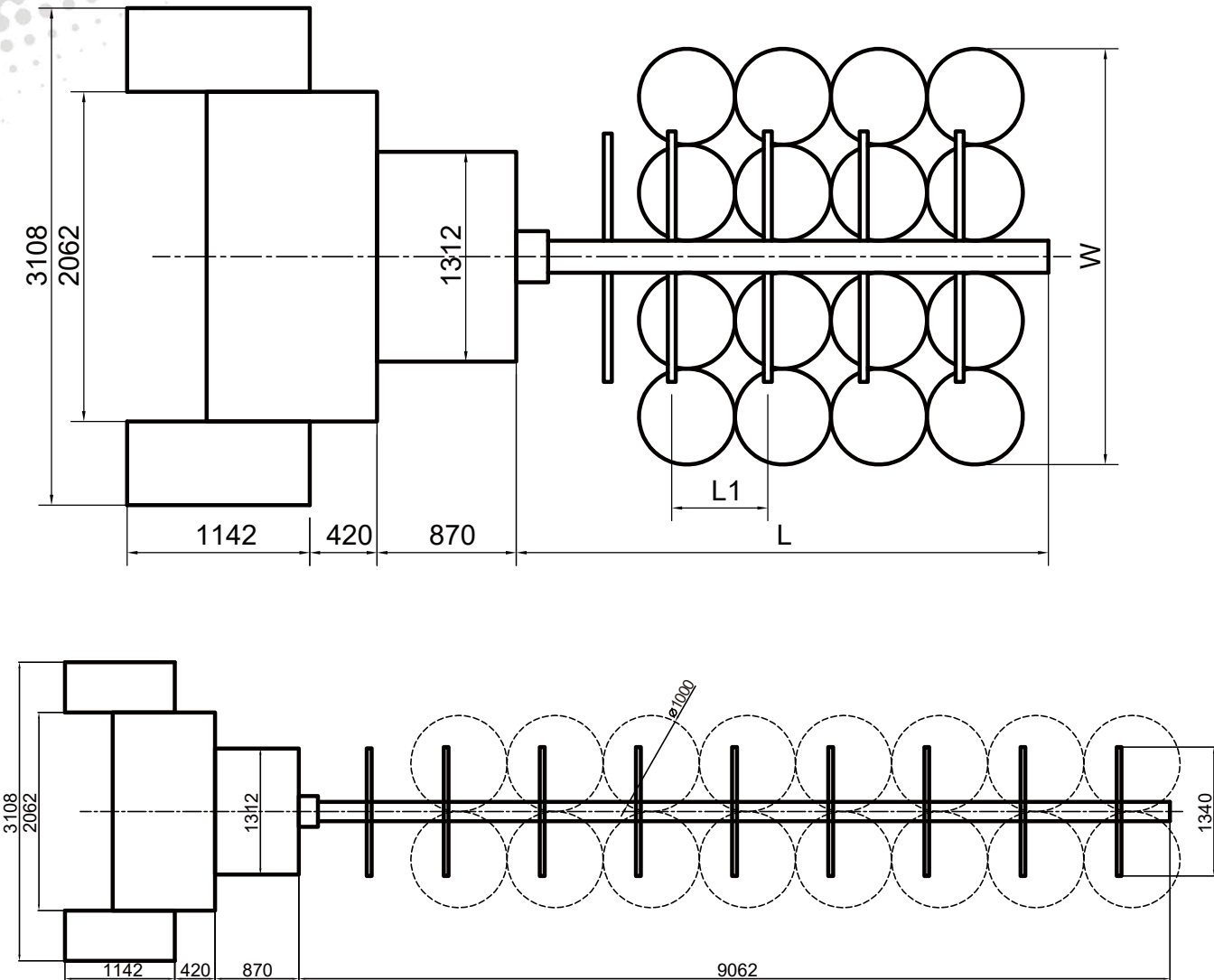


规格		RFDF12
眼数		独立双眼
最高输出速度 (m/min)		1000
适纺原料		棉、各类化纤、粘胶等及其混纺等
适纺纤维长度 (mm)		16~80
牵伸范围		5.3~10.2
并合数		6~8
输出棉条定量 (Ktex)		2.2~8.8
牵伸形式		四上四下附导向辊, 压力棒双区曲线牵伸
牵伸倍数调整		电子调整(调整范围大时需更换带轮)
摇架加压形式		弹簧加压, 皮辊随摇架起落
导条架		铝型材高架积极喂入
圈条形式		大圈条
清洁方式		金属擦棍或刮片
吸风系统		集中自动落棉
皮辊直径 (mm)		φ38×φ38×φ38×φ38×φ38
罗拉直径 (mm)		φ40×φ30×φ30×φ30
自调匀整系统	自调匀整	USG-3
	在线检测	涡流传感器
主电机功率 (kW)		2×5.5
风机功率 (kW)		1.5
伺服电机功率 (kW)		2×1.5
下圈条伺服电机功率 (kW)		2×0.75
喂入条筒 (mm)	直径	φ500、φ600、φ1000
	高度	1100、1200
输出条筒 (mm)	直径	φ400、φ450、φ500
	高度	900、1100
设备外形尺寸 (mm) 长×宽		2432×3108
设备重量 (kg)		2350
用气规格 (bar)		6以上

Specifications		RFDF12
Number of deliveries		Independent double deliveries
Maximum output speed (m/min)		1000
Spinnable raw material		Cotton, various chemical fibers, viscose and their blends, etc.
Spinnable fiber length (mm)		16 ~ 80
Drawing scope		5.3 ~ 10.2
Combination number		6 ~ 8
Output sliver allowance (Ktex)		2.2 ~ 8.8
Drawing form		The four upper and four lower guide rollers and pressure bar with double-zone curve
Adjustment of drawing multiple		Electronic adjustment (it needs to change the belt pulley when the adjustment range is large)
Form of cradle pressurization		When the spring is pressurized, the leather series rises and falls with the cradle
Guide bar frame		Overhead aluminum profile for actively feeding
Coil form		Large coil
Cleaning way		Metal wiper stick or scraper
Air suction system		Centralized automatic noil
Diameter of rubber covered roll (mm)		φ38×φ38×φ38×φ38×φ38
Roller diameter (mm)		φ40×φ30×φ30×φ30
Autoleveller system	Autoleveller	USG-3
	On-line detection	Vortex sensor
Power of main motor (kW)		2×5.5
Fan power (kW)		1.5
Servo motor power (kW)		2×1.5
Power of lower coil servo motor (kW)		2×0.75
Feed can (mm)	Diameter	φ500、φ600、φ1000
	Height	1100、1200
Output can (mm)	Diameter	φ400、φ450、φ500
	Height	900、1100
Overall dimensions of equipment (mm) Length x width		2432×3108
Equipment weight (kg)		2350
Air use (bar)		6以上

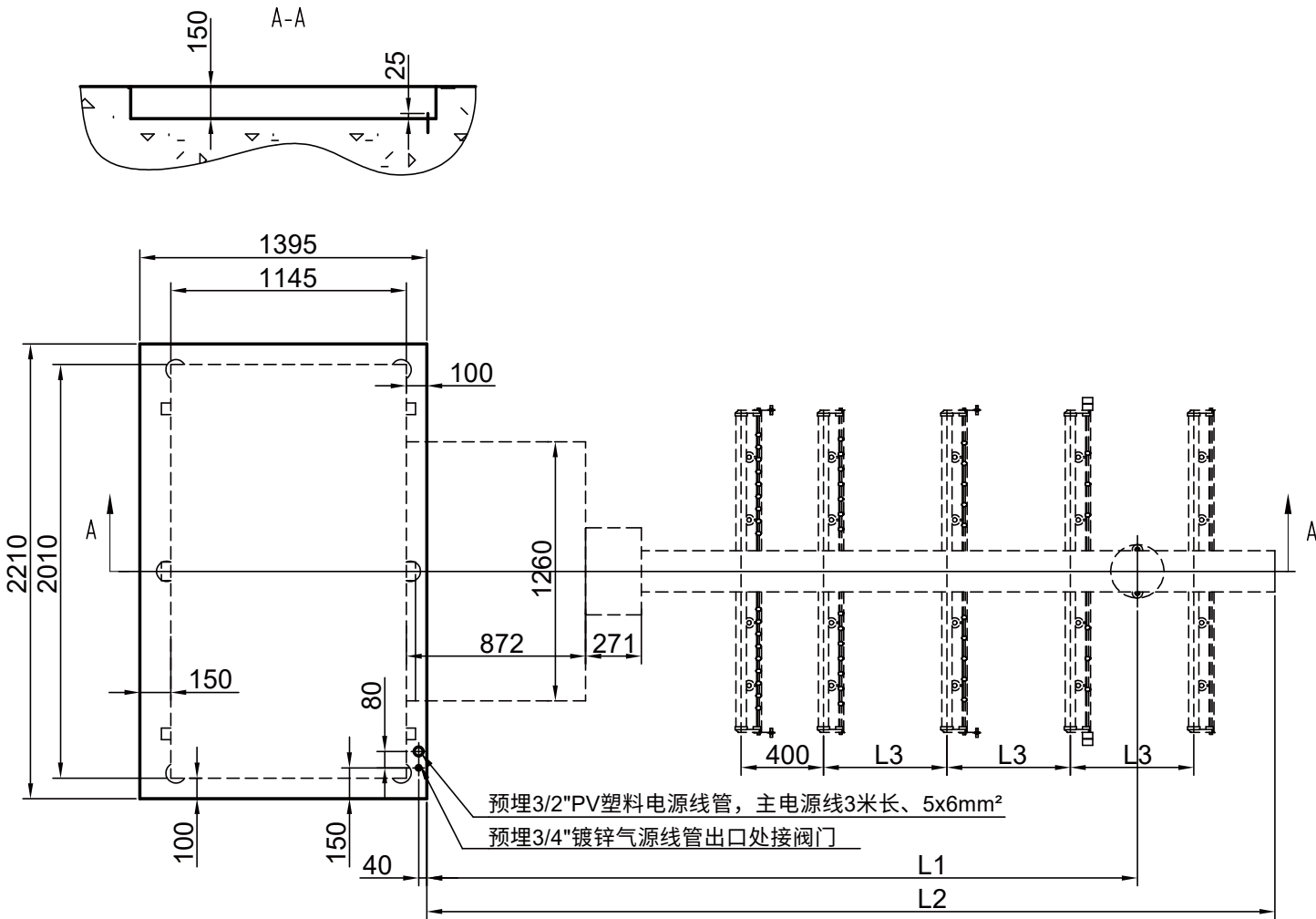


外形尺寸图 Machine Dimension Drawing



喂入条桶	L1	L	W
φ600双列	600	3328	2600
φ1000双列	1000	5855	3738
φ1000单列	1000	9062	2200

地基尺寸图 Foundation Size



Feed can	L1	L	W
φ600 dual-column	600	3328	2600
φ1000 dual-column	1000	5855	3738
φ1000 single-column	1000	9062	2200