FED 伺服系列高精密滚筒纸分切机

FU ER DA-1400 AC SERVO HIGH SPEED SHEETER

产 品 手 册

Product Manual

深圳市富尔达机械设备有限公司

SHENZHEN FU ER DA MACHINERY EQUIPMENT CO., LTD.

前　　言 Preface

感谢您使用深圳市富尔达机械设备有限公司生产的 FED-1400、FED-1700、FED-1900 伺服系列高精密滚筒纸分切机，本产品是按欧盟制定安全指令生产的。

Congratulations and thank you for using AC servo sheeter Series manufactured by Fu'er Da Machinery Equipment Co., Ltd.

在安装和使用之前，请仔细阅读本手册。若您不遵守本手册的说明而造成的人身伤害、机器损坏及其他财物损失我们将不承担责任。如有疑问，请与我们联系，我们将及时、热情地为您提供服务。

Please read this manual carefully before installing and using. If you do not abide by this manual that result in human hurt, machine damaged or some other losses, we will not responsible for them. If you have any questions, please contact us, we will provide you in time and warm service.

本手册主要对 FED 伺服系列高精密滚筒纸分切机的结构特征、工作原理、安装与调试、使用与维护、故障分析与排除以及运输、贮存等方面作出说明。有关与物料接触部份的材质报告、主要器件（如变频器、伺服器、PLC 控制器、触摸屏等）的技术资料等，我们将以其他随机附（文）件方式向您提供。

This manual mainly describes the structure features, working principle, installation & debugging, usage & maintenance, failure analysis & solution, delivery, storage etc. We will provide some documents such as contact parts material report, technical information of main components (inverter, PLC, touch screen, etc.) in the terms of documents with machine.

本手册适用于 FED 伺服系列高精密滚筒纸分切机。分切机系列产品以及用户特殊定制的其他规格的同类产品可参照使用。

This manual is suitable Fu'er Da-1700 AC Servo High Speed Sheeter and some customize product can take this manual for reference.

本手册中出现的产品外观图或其他图例或菜单屏幕等若与实际产品有所不同，使用时以实际产品为准。

Compared the manual with actual products, if there are some differences in the attached images and other images like menu screen ,it will subject to the actual product during operation.

公司的产品技术会不断创新，产品手册也会随之更改。以后的所有更改，均不另行通知。

With constant technology innovation of our company, operation manual will change in correspondence. Data afterwards are subject to change without notice.

目　　录 Contents

0. 本手册中，将在不同地方出现表 0.1 中列出安全和警告提示，请务必注意。

Please pay special attention to the safety warning mark as Table 0.1 in this manual.

表 Table 0.1　　安全和警告提示 Safety & Alarm remind

	触电危险，可能导致死亡或重伤 Caution: Electric shock may cause death or serious injury.
	机械伤害危险，可能导致死亡或重伤 Caution: mechanism hurt, may cause death or serious injury.
	危险警告，可能导致伤害 Dangerous Don't touch
	可能导致设备故障或伤害身体 Careful hand-injury

0.2 遵守本手册的规定是保障您人身和财产安全、设备质量保障和正常运行的前提。

Abiding by the regulations of this manual is the precondition that safeguards your health, property, quality and normal running.

0.3 本手册提供 FED 伺服系列高精密滚筒纸分切机正确安装、使用和维护的重要资料，请在设备安装位置附近妥善保管。

This manual includes the important information of correct installation, using and maintenance for the Fu'er Da-1700. Please keep it safe.

1 . 安全说明 Safety introduction

下列安全说明涉及 FED 系列滚筒纸分切机的运输与储存、安装与调试、使用与维护保养，忽略这些安全说明可能造成人身伤害或财产损失，同时请注意本手册中各章节中的补充性安全说明。

The following safety introduction includes delivery & storage, installation & debugging, using & maintenance which may cause human injury or property loss (equipment, raw material or product) when ignore these safety instruction.meanwhile, please pay attention to the complementary safety introduction in per chapter or parts in this manual.

1.0 概述 General description

设备运行时有：带电部件、运动部件、发热部件；设备停机后有带电部件。

When equipment running contains: live part, movement part, generates heat part. After stopping has live part.

非受到培训的专业人员不可进行以下操作：

Professional trained personnel do the following work:

——运输 Delivery

——储存 Storage

——安装/装配 Installation

——使用 Using

——维护保养 Maintenance

进行这些操作之前，请仔细阅读以下文件资料：

Please read the following documents before the above work:

——本手册的附图 Attached drawings

——其他随机文件 Other documents with machine

——设备标志牌 Equipment mark plate

——有关设备的特别规定和要求 Special regulation and requirements about the equipment.

——有关安全和事故防范的国家/地方性规定

Country or regional regulation of prevention accidents and safety

以下情形会导致严重人身伤害和物资损失：

The following matters will cause serious injury and property loss.

——不正确的搬运 incorrect convey

——不正确的安装 incorrect installation

——使用或操作不正确 incorrect using or operation

——擅自拆除必要的安全防护装置 dismantle safety protection devices

1.1 运输与储存 Delivery and Storage

——确认运输过程中的产品防护，在收货之后请立即检查包装是否完好，若有损坏请立即通知运输单位和本公司。

Check the goods safety during the shipping. On arriving the product should be free of breach otherwise should inform shipping company and CANAAN as the precondition of claim.

——设备长期存放请遵照本手册中设备“长期存放”的规定，应在标明的地方加注足够的润滑油或润滑脂，并做好防锈措施。长期存放时应特别做好电气控制箱的防护。

The devices should be lubricated and anti-rust in case of being placed for a long time according to the regulations and the protection of the control cabinet.

1.2 安装与调试 Installation & Debugging

——本设备的安装与调试应由本公司或本公司代理商的专业人员进行，在上述人员未到达现场之前，最好先不要拆解包装，此为您对有关产品未了解安装规程建议。

The equipment must be unpacked and installed by CANAAN or the qualified personnel from the agent. Please do not unpack the package; it is one precondition of claiming for compensation.

——调试过程中出现任何不正常的现象（如振动、尖锐噪声、），应立即停机检查，直至找出原因并排除,必要时请与本公司联系。

The process of debugging any abnormal phenomenon (such as vibration, sharp noise,), check should immediately stop until the find out the reasons and to rule out the possibility. If necessary please contact us.

1.3 使用与维护保养 Maintenance

——设备使用过程中存在带电部件、高速旋转的部件、直线往复运动的部件、承负压部件，高位机型操作过程需要登台操作，请谨遵本手册的规定，以免使用过程中造成触电伤害、机械伤害或跃落伤害。

The equipment consist of electronic components, tail-wagging components, reciprocate linear motion parts, negative pressure parts, the operator should go upon the platform to operate according to the operation manual to avoid electric shock, mechanical injure or falling.

——设备运行过程中出现任何不正常的现象（如振动、尖锐噪声、超范围的温升），应立即停机检查，直至找出原因并排除，必要时请与本公司联系。

Operator should stop the machine and check for any abnormal functioning such as vibration, noise, temperature rise out of range, etc. If necessary please contact us.

——设备维护保养或故障排除过程可能涉及带电部件、皮带传动、齿轮传动或机械零部件搬移等，请谨遵本手册的规定，以免造成触电、机械伤害或碰（砸）伤，机械严禁用水清洗。

Maintenance according to this manual and keep an eye for moving the electric components, belt drive and gear drive components to avoid electric shock, mechanical injure, etc.

2 .设备概述 General Description

2.0 主机工作原理为：主要是把原装滚筒纸从液压式原纸架中按规程把纸穿至主机，然后经过控制程序，按客户要求尺寸规格分切，将纸张整齐收集。

Principle: Put the paper roll into the unwinding system by programme then set the programme to cut the paper roll into sheets and collect the sheets into piles at the stacker.

2.1 产品特点 Features

2.1.1 控制方式：采用了 PLC 伺服和变频控制技术，通过人机界面进行操作，系统可储存工作参数。

Control: Adopt PLC and frequency control system with HMI.

2.1.2 设备制造的主要材料采用了优质钢材，其它零部件结构采用新型设计，无死角、易保养，完全符合使用操作方对设备的要求。

The equipment adopt the exellent steels, the components adopt the newly designs, easy to maintain.

2.2 适用的环境和工作条件 Circumstance and Working conditions

2.2.1 工作环境 Circumstance

a) 环境温度：正常工作的环境空气温度在 5℃～40℃；

Temperature: The ambient temperature should be within 5℃～40℃;

b) 湿度：当环境温度为 40℃时，工作环境的相对湿度不超过 50%，较低温度下可允许较大湿度（如环境温度为 20℃时，工作环境的相对湿度不超过 90%）。

Humidity: The relative humidity≤50% when the ambient temperature reach to 40℃ and lower temperature allow high humidity (e.g. ambient temperature in 20℃ the humidity≤90%).

2.2.2 工作条件 Working conditions

a) 电源条件 Power supply：AC 380V/220V×50HZ；

b) 大气压强：6mPa～8mkPa。

Air pressure: 6mPa-8mkPa

2.3 环境影响 Ambient influence

2.3.1 设备报废 Equipment scrapping

设备经使用至无维修生产价值后将会被报废，报废物资的处理请遵守当地法律法规的规定。设备中有些部份可以回收其残值，如：

When the equipment is discarded as useless, the useless parts treatment should be according to the local laws and regulations, and the reclaim parts of the equipment as following:

——机架、电机外壳、减速机外壳、齿轮、轴及轴承等碳素钢可作为废铁；

Main frame, motor housing, reducer housing, gear, shaft, bearings, etc. as the scrap iron

——电机线圈可作为废铜；

The coil of motor as scrap copper

——其他皮带件作为废旧塑料。

Other plastic belts as scrap plastic

3. 结构特征与工作原理 Structure Feature and Working Principle

本章中插图仅为阅读本手册时的参考图例，是对器件清单的补充，使用中以实物为准。

The figures used here is reference only, subject to equipment on site.

3.0 机架及其附属物 frame and its subassemblies

机架采用优质型材组焊而成，焊成的机架经防锈处理后油漆选用美国 Valspar 公司产品,表面耐磨耐用,是整机其他各功能单元的主要支撑结构单元.

The frame is welded by high quality steel and covered with USA Valspar paint after rust-proof treatment, which is the main supporting structure for other function units.

机架附属物主要包括机架盖板、活动门、平台及护栏，扶梯等，在设备系统中起着设备防护和操作安全防护作用 The frame subassemblies consist of the cover board, door, platform and guard, and the stepladder, etc. Which play an important role in the safety operation.。

拆除机架附属物有可能造成人身伤害或设备损坏！

Remove the subassemblies will result in injury or damage.

3.1 电机说明请参阅电机技术手册/资料。

Illuminations of the motor please refer to the motor operation manual/specification.

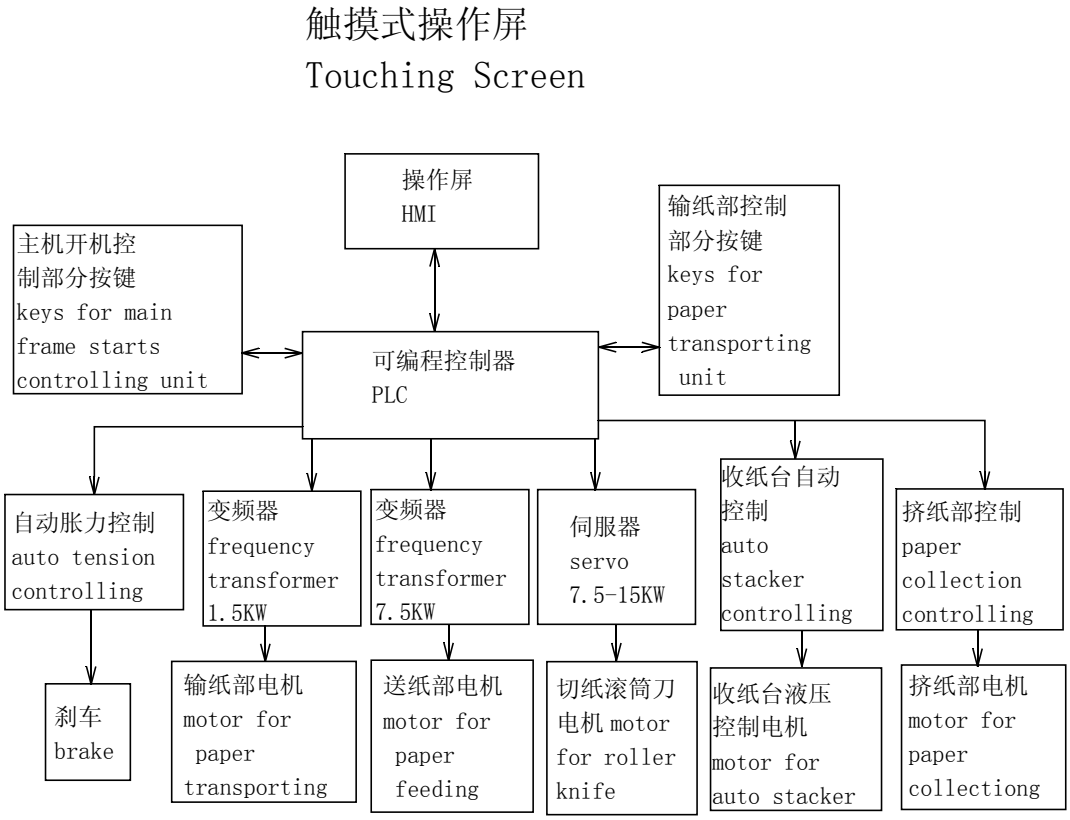
安装或调整、维修本部份时应防止皮带伤人、零件跌落伤人！

Illuminations of the motor please refer to the motor operation manual/specification.

3.2 电气控制系统（仅为原理说明，使用时以实物与随机电气文件为准）

Electric controls system (It is only for principle explanation, please follow the real and the electrical documents attached)

3.2.1 电气控制系统构造如图。Electric controls structure as show Pic



3.2.2 电气控制系统的内容 Electric controls system

电气控制系统包括：可编程控制器（PLC）、触摸屏、变频器、伺服器比例阀执行器及其他电气控制元件及线路等。除触摸屏操作按键与一些传感器外，其余电气件安装于电气箱中，电气箱采用柜门式结构，便于电器人员维修保养。

Electric controls system consists of PLC, HMI, inverter, damper actuator and other electric components and cable. Except HMI and sensors, other components are all installed in electric cabinet; cabinet is withdrawal style designed which is convenient for maintenance.

可编程控制器（PLC）及其软件作为控制系统的主体，是整个控制系统的心脏，主要完成分切机的机械动作、参数控制及故障检测等，对分切机的生产过程、质量控制、用户操作界面及在设备工作过程等进行实时控制和管理。

PLC is the main part of whole controls system, whose major target is to finish granulator structure action, control parameter and detect malfunction. Furthermore, to control and manage real time to manufacture process, quality control, the operation menu and WIP in place process.

触摸屏安装在操作箱上，操作按钮采用触摸键。

HMI is installed on control cabinet and operation button is touch button.

3.2.3 电气箱 Electric cabinet

电气箱独立于机械设备两侧，非防爆，其结构型式为双门式，安装于设备侧间，便于电器人员维修保养。

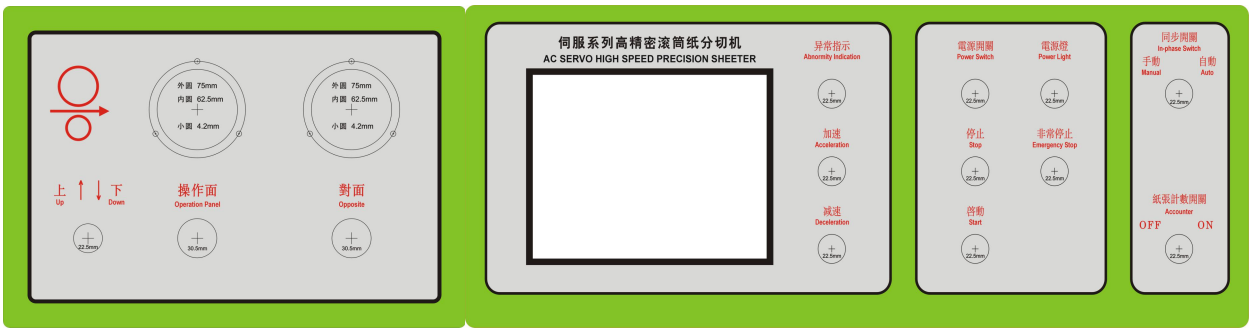
Electric cabinet separate from host system and designed non-explosion proof and double doors style, which is convenient for maintenance in operation room.

3.2.4 操作箱 Control cabinet

操作箱布局结构如图。Position sees Pic.

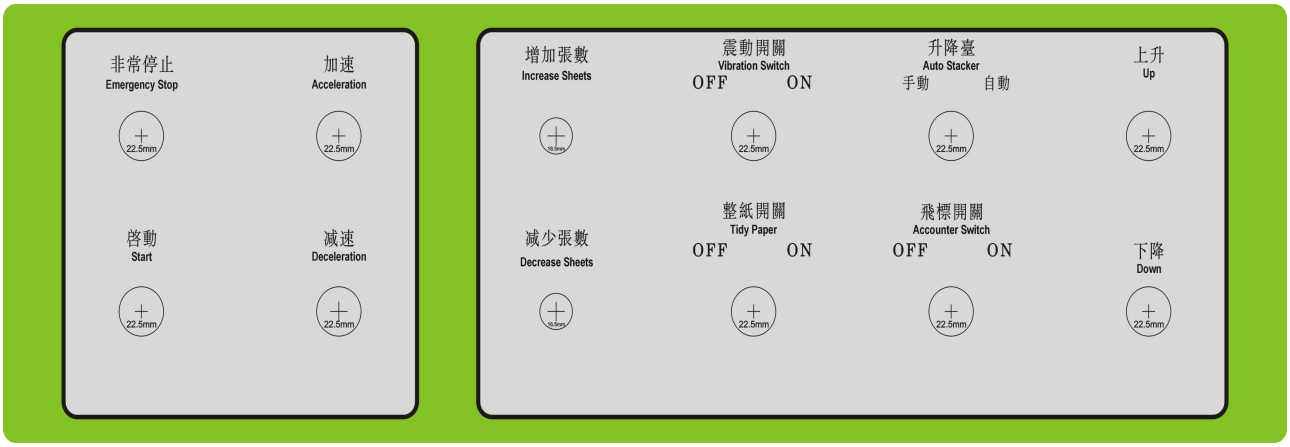
a 主机操作控制板（如有改动，以实际操作功能件为准）

a Main frame operation panel



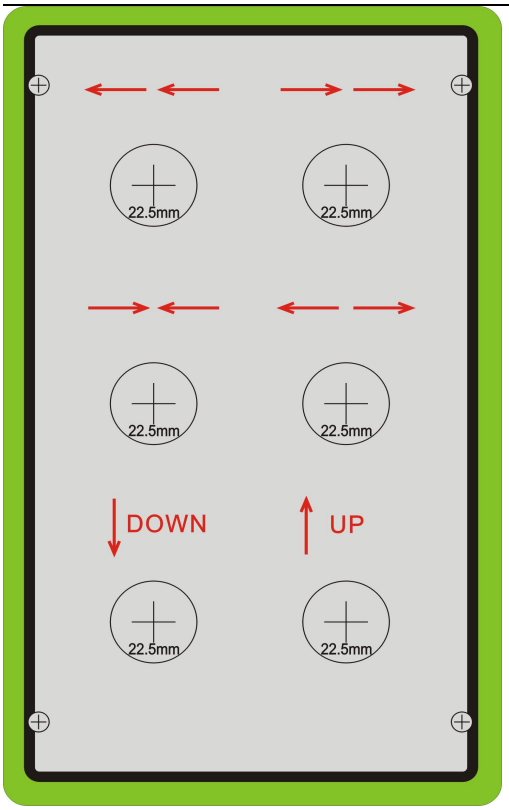
b 输纸部操作控制板

b Paper transporting unit operation panel



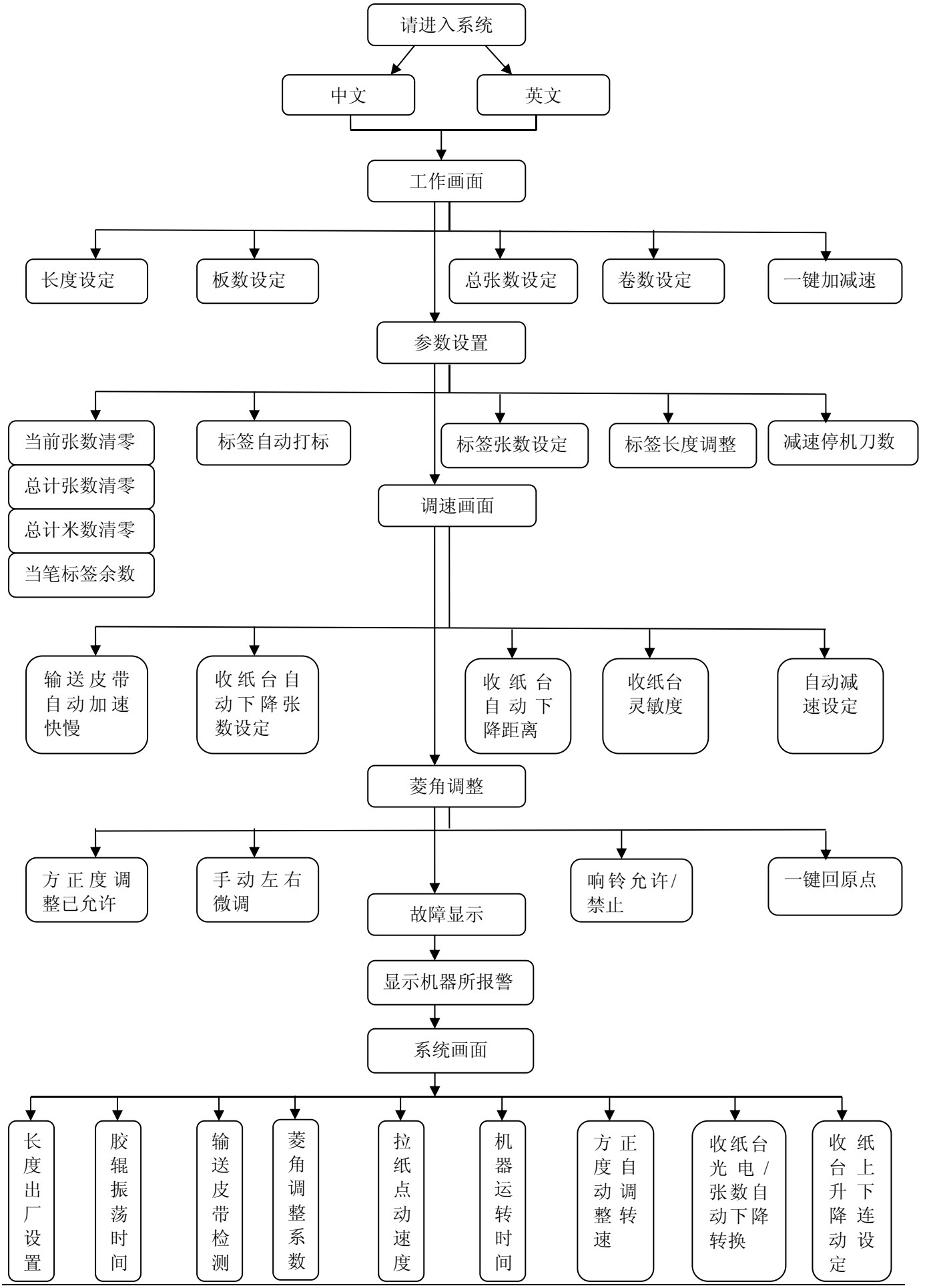
c 液压部操作控制板

c Hydraulic unit operation panel



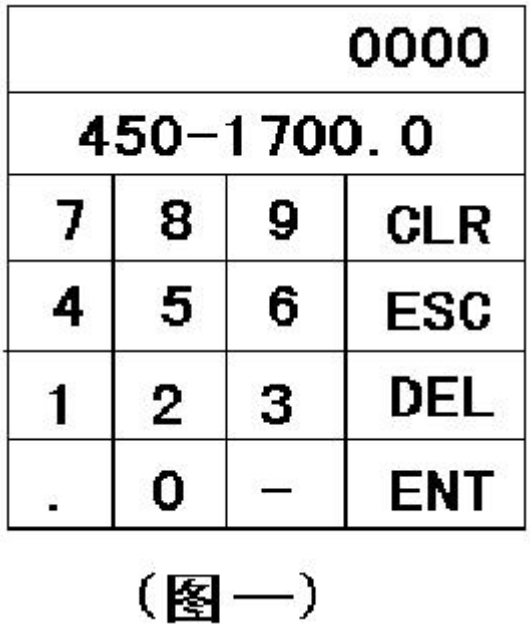
3.2.5 操作菜单功能 Menu faction

把电源开关打开 switch on the power


请进入系统
中文
英文
工作画面
长度设定
板数设定
总张数设定
卷数设定
一键加减速
参数设置
当前张数清零
总计张数清零
总计米数清零
当笔标签余数
标签自动打标
标签张数设定
标签长度调整
减速停机刀数
调速画面
输送皮带自动加速快慢
收纸台自动下降张数设定
收纸台自动下降距离
收纸台灵敏度
自动减速设定
菱角调整
方正度调整已允许
手动左右微调
故障显示
响铃允许/禁止
一键回原点
显示机器所报警
系统画面
长度出厂设置
胶辊振荡时间
输送皮带检测
菱角调整系数
拉纸点动速度
机器运转时间
方正自动调整转速
收纸台光电/张数自动下降转换
收纸台上下连升降动设定

3.3 工作画面 Working screen

3.3.1 长度设置 Length setting



（图一）

（此功能有中文和英文两种）不作通知。

在机器停止情况下，长度设置数字红色情况下，改动数字，数字显黑色情况下无法输入长度，点击功能键长度设置下方数字，操作屏会显示（图一）画面，在数字画面输入生产单长度，按“ENT”，再按“YES”确定，待长度设置闪烁停止，把急停开关反回即可。

, press the function key to set the following number, the operation panel will display as Pic 1, set the length unit and press ENT, then press YES till the number doesn't twinkle to press the emergency switch back again.

（Pic1）

3.3.2 卷数设定 Number of paper rolls setting

按生产卷数切纸设定，一般 200g-500g 单卷分切，50g-200g 可按纸质而定双卷分切，操作如（图一）设定。

According to the number of the paper rolls to set, if the paper material weight is 200g-500g, set the single roll to be cut, if it is 50g-200g, it can be set to cut two rolls. To operation as Pic 1 to show.

3.3.3 总张数设定 Total sheets setting

把所需生产单张总数量输入，操作如（图一），设备自动计数至生产量设定值后自动停机。

Input the total number of sheets, to operation as Pic 1 the equipment can stop after finishing the number of sheets.

3.4. 纸板张数设定 Sheets on stacker setting

点击设定下方数字，按（图一）操作把每板定量设置，设备在每板定量数到设定张数时，自动停 机。（如设定每板为 3500 张，生产张数到达 3500 张会自动停机）

Input the number of the sheets on the auto stacker, it stops while it finishes the number.(If it is set 3000 sheets for each stacker, it will stop after finishing the 3000 sheets.)

3.4.1 参数设置 Value setting

3.4.2 标签张数设定 Label setting

可按客户要求设定张数打标鉴条，每相隔设定值自动打标一次。

According to the requirement, set the number of the sheets that need to be marked by the label. Each number of the sheets it will insert one piece of label to mark.

3.4.3 当笔标签张数 Current sheets display

当收纸部未达到打标数值时，而前面纸卷已切完，可检查当笔标签的张数，如达到打标值时会自动清零后重新计算下一标张数，操作如（图一）。

If the paper is cut over but the number is not the number that was set to insert the label, it can display the current sheets' number, if it reaches the set value it can re-calculate.

3.4.4 减速停车切纸刀数 Sheets setting to speed down and stop

计数器运算与纸板张数设定值相近时，设备会按减速设定的刀数而降速自动停机，如（每纸板张数为 3000 张设定减速停车设定为 50 张，测设备运算到 2950 张时会自动降速停车）设定如（图一）。

If the machine runs to the set cuts value, it can speed down and stop automatically. If you set 50 sheets and the auto stacker sheets value setting is 3000, when the calculator displays 2950 sheets the speed can be slow automatically till it stops.

3.4.5 注：如果当同规格生产量已分切完成，需要分切另一生产规格时，要把前次的总计张数清零、当笔张数清零、总计米数清零。

Note: If one same size paper is cut over and it needs to cut another size paper, make the previous recording for total sheets, curent sheets, total meters into zero.

3.5 刹车调整 Brake adjustment

刹车气压分为手动、自动转换，粗调、细调转换

It can be adjusted by maunal, automatically, glancing adjusting and inching adjusting

3.6. 菱角调整

3.6.1 方正度调整已允许情况下，输入长度时会自动调整方正度，禁止时应手动调整。

3.6.2 无论是自动还是手动调整，调整刻度尺应上下尺与所输入长度数据上下尺对齐。

3.6.3 在自动调整时，切出的方正度有偏离时，可以微调至正确。

3.6.4 响铃允许时，应输入长度时会发出响声，禁止时无响声。

3.6.5 一键回原点，如输入长度时无自动调整或上下尺不按所输长度对齐时一键回原点到 450，接近开关灯亮再改长度输入。

3.7 故障显示

所显示高速运行时发生急停开关断路，安全门开关断路或电器瞬间断路。

3.8 系统画面

3.8.1 胶辊振荡时间，所指启动机器情况下，长按压纸胶辊开关，胶辊会上下调动。

3.8.2 输送皮带控制，允许情况下是指张数到时，后面输送皮带会自动送完皮带上面的纸。禁止时则要手动输送。

3.8.3 菱角调整系数所指方正度自动调整马达转速时间。

3.8.4 拉纸点动速度所指寸动时速度。

3.8.5 方正度自动/手动转换 ，打开时会在输入长度时自动调整，关闭时需要手动调整。

3.8.6 收纸台光电与张数转换

3.8.6.1 传感器下降时，收纸台需光电开关感应自动下降

3.8.6.2 张数下降时，则要输入张数（如输入 100 张时）收纸台会每百张下降一次。

3.8.7 收纸台上升下降连动设定

3.8.7.1 同时按上升开关与减速开关 2-3 秒钟放手，收纸台会自动上升。

3.8.7.2 同时按下降开关与减速开关 2-3 秒钟放手，收纸台会自动下降。

3.9 手动调整 Maunal adjustment

当设备动行由 1-30 米之间用手动控制，按纸卷大小重量而设定刹车气压值，（纸卷重量大时要加大刹车气压，纸卷重量小时把刹车气压调小）。

When the speed is 1meter-30 meters it can be adjusted by manual. According to the rolls size to adjust the value of the brake. If the paper weight is large, adjust the larger brake air pressure value, otherwise adjust it respectively.

3.10 自动调整 Auto adjustment

当设备运行每分钟 30 米以上时，可由手动转为自动观察刹车力度，也可按纸卷重量大小而调整刹车值。

While the speed is over 30 meters/min it can be adjusted by auto way from the manual way to test the brake result. It also can be adjusted according to the paper rolls' size.

3.11 刹车调整分为 A B C D 轴，按生产卷数而把对应轴刹车气压调整。

Brake adjustment has shaft A, B, C, D. According t o the quantity of the paper rolls to adjust the air pressure.

3.12 调速画面 Speed adjutment screen

3.13 走纸速度 Paper feeding speed

按↑把输纸皮带速度加快，按↓把输纸皮带降速，直至把速度调整与前后相配合为准，一般把速度调至为正常值。

5

Push ↑ to make the speed of paper transporting belt higher, push ↓ to make the speed lower till the speed adjustment matches well. Generally adjust the value to 5.

Length of label

3.14 标签长度

标 签 长 度 0-30 可由调整,一般把标签调 20 整至长度为正常值。

0-30 to adjust the length of the label can be generally adjusted to the tag length of 20 normal.

3.15 系统设置 System setting

3.15.1 系统设置 System setting

此功能一般不需要调整，所以打开功能时，要按密码，出厂值为 888888888 位数，操作如（图 一）。
This system is seldom used, when it was opened, input the password, the original password is 888888888.

3.15.2 功能可作纸张长度精度调整，可以增加或减少纸张长度细调。
It is used for the adjustment of the cutting accuracy. It can increase or decrease the cutting length inch adjustment.

3.15.3 进入此功能可以观察设备运行时间。
It can be used to observe the running time.

3.15.4 收纸台联动功能，如果收纸台自动下降失效时，可把此功能打开，可设定多少张下降一次,，每次下降距离是多少，在机械设备正常使用时，如打开此功能，可能会使自动下降错乱，非一般情况不宜打开。

4. 主要技术参数 Main technical parameters

4.1 主要技术参数 Main technical parameters

序号 No.	项 目 item	FED-1400	FED-1700	FED-1900	备 注 remark
1	原纸宽度 paper width	1400mm	1700mm	1900mm	
2	最大纸张长度 Max. cutting length	1600 mm	1600 mm	1600 mm	
3	最小纸张长度 Min cutting length	450 mm	450 mm	450 mm	
4	纸台集纸重量 Max. stacker weight	2000Kg	2000Kg	2000Kg	
5	纸台收纸高度 Stacker height	1300 mm 1500mm	1300 mm 1500mm	1300 mm 1500mm	
6	最大线速度 Max. linear speed	300/min	250/min	250/min	
7	最大切刀转数 Max. cutting speed	300cuT/min	250cuT/min	250cuT/min	
8	纸张切断能力 Max. capacity of the paper weight	550GSM	550GSM	550GSM	
9	切纸幅度 Number of paper rolls	一幅	一幅	一幅	

10	纸张切断精度 Cutting accuracy	±0.5mm	±0.5mm	±0.5mm	
11	原纸架承载重量 Max. load weight of the paper roll	2000Kg	2000Kg	3000Kg	
12	电源:主机三相四线制(R.S.T.PE) 380V,220V 频率: 50-60Hz Power: Main motor had three phase and four lines (R. S. T. PE) 380V/220V/50HZ				
13	原纸架:三相五线制(R.S.T.N.PE) 380V 频率: 50-60Hz Unwinding section" three phase and five lines (R. .S. T. N. PE) 380V 50-60HZ				
14	伺服电机:Servo motor	7.5KW	11KW	15KW	
15	送纸电机:Motor for paper feeding	7.5KW	7.5KW	7.5KW	
16	输纸电机:Motor for paper transporting	1.5KW	1.5KW	1.5KW	
17	其它电机:Other motors	10KW	10KW	10KW	
18	总功率:Total power	20 KW	25 KW	30 KW	
19	外接气源: Connecting air pressure source	8kg/cm²	8kg/cm²	8kg/cm²	
20	接驳气管直径: Air pipe's diameter	8mm	8mm	8mm	
21	占地面积:Area for the equipment	12000*5500 (L*M)	12000*5500(L*M)	12000*6000 (L*M)	
22	机台重量: Total weight	10000Kg	12000Kg	14000Kg	

5.安装与调试 Installation and Debugging

本机应由专业人员安装！

Must be installed by the professional personnel.

在提供了接地标志的地方，须正确接地，并进行接地通路试验；

Correct ground connection for the position marked, and do the circuit test of ground connect with value≤4Ω.

开始安装前应保证起重设备是适当的，这些装置应具有有效的测试证书；

Check hoisting devices good condition prior to installation and the devices should have effective test certificates.

请勿使用带绞合缆绳、受损缆绳或打结缆绳进行起重作业；

Do not use twisted, damaged or knot cable rope for the hoisting work.

禁止使用不完好和不匹配的工具。

It is prohibited to use no good or unsuitable tools.

5.1 设备安装 Equipment installation

5.1.1 设备基础 equipment foundation

FED 系列伺服滚筒分切机安装基础应是坚实、水平的混凝土地面或楼面.

he foundation for FU'ER DA series sheetersr must be stable and horizontal concrete ground or floor, or steel platform/frame.

5.1.1.1 安装平面图见附件。

The layout of installation see attached.

5.1.2 安装技术要求 Technical requirements for installation

a）安装平面图是根据用户基础工程而设计的，机身下平面均应着地踏实，应按图示方向、位置和空间进行安装；

The installation drawing is designed according to use's foundation engineering. It should be installed according to the direction, position and space of drawing.

5.1.3 安装 Installation

a）采用适当的起重设施（吊车/叉车）将主机移至安装位置；

The use of appropriate lifting facilities (crane / forklift trucks) will host moved to the installation location;

b）在安装设备的地面按照安装平面图尺寸用冲钻钻出地脚螺栓安装孔；清除干净孔内异物，尤其孔内壁不得有灰尘、油污、水及其他液体；

To make the holes on the ground according to the installation drawings to make the bolts for fixting, remove all the mass to ensure there is no any oil, dirty water and dirt.

c）将设备摆好位置，地脚螺栓安装孔打入地脚螺栓（16xM150），保证地脚螺栓与孔壁之间充满牢固，不得有间隙

存在；

o make the machine on the right position and insert the bolts (16*M50). All the anchor bolts for main machine must be reliable and fastened, and the installation levelness should be ≤1.5/1000 after adjustment.

d）若设备进行水平调节，必要时可与机身下平面垫入垫铁片；

The connection between ladder and main machine must be reliable and firm.

e）接入电源；connect power supply.

f）接入气源；connect air supply

g）安装检查，纠正不适当处。Check the installation and correct the wrong points.

5.2 安装注意事项 Attentions for installation

5.2.1 本设备的安装与调试应由本公司或本公司代理商的专业人员进行，在上述人员未到达现场之前，请不要拆解包装。

The installation and debugging should be performed by professional personnel from our company or our agent. Please do not unpack the package until the professional personnel comes to the spot.

5.2.2 安装现场即为设备工作现场，现场环境应符合规定。

Installation spot is the working area of the equipment. The ambient there should accord with the related regulation.

5.2.3 安装之前请先确认设备现场公共服务设施（电、气、环境等）的提供是否符合本机技术要求 Before

Before installation, please confirm the supply service (water, power supply, air, vacuum, etc.) accord with the related requirements

5.2.4 安装过程中的搬运请参阅“搬运”图示。

Delivery during the installation process please sees “Delivery and Storage”. in chapter

5.3 调试 Debugging

调试状态所有安全保护措施完全被屏蔽，非专业人员不得进行调试作业！

In the debugging state, all the safety protection measures will be shielded, Only professional personnel do debugging.

5.3.1 调试前检查 Checking before debugging

表 Table 5.1 调试(整)前检查项目 Check before debugging

检查项目 Item	要求 requirement	方法 method

系统接地 ground connect	接地和保护接地电阻不大于 4Ω Ground connect and protect ground connect resistances ≤4Ω	以欧姆表检测 Test with OHM meter
各安装联接 Per install connecting	牢固可靠 Fasten and reliable	感官测试 Sense check
接通电源 Connect power supply	380V/50Hz	由专业人员进行 By professional person
接通气源 Connect air supply	气源符合表 0.8 要求 Air supply accord with 4.1 requirement	目测气压表值 Check air manometer value
设备工作区域 working area	无影响工作的杂物或无关人员 No sundries or idle persons	

5.4 电气系统调试 Debugging for electric system

复原急停开关，接通电源，从触摸屏进入系统调试画面。

Release emergency switch, shut on the power supply and enter into the system debugging state menu.

5.4.1 急停开关可靠性有效性调试 Reliable debugging for emergency stop switch and sensors

a）急停开关——用于紧急情况停机。放开急停开关，将电源开关置于 ON 的位置，此时触摸屏亮起。按下急停开关，若触摸屏提示画面显示“紧急停车未解除”，说明急停开关及其线路有效，否则应予纠正。

Emergency switch is for stopping the machine in emergency. Release emergency switch, pull the power switch (also called key switch) to the “ON” position, the touch screen lights. Press the emergency switch, if the touch screen indicates “emergency stop is not released”, it means the emergency switch and its wiring is effective and reliable. Or, it must be corrected.

b)——主机盖开启状态下，在功能选择画面按“操作功能”，若触摸屏提示“安全门开关打开”，表明门盖接近开关及其安装有效；

On the state of the main frame cover is opening, to chose the “operation function” if the touching screen diplays: the safe door’s switch on, it means the cover for the doors’ installation is valid.

c)——关闭压缩空气，在功能选择开关按动时，如锁刀、压纸轴、刹车等未动作”，表明压缩空气压力检测元件及其安装有效；

Switch off the pressed air, and push the function switch board is the lock, shaft for pressing paper, brake have nothing response, it means the pressed air and the pressure’s spare parts are valid.

d)电机转向调试 Motor’s running testing

打开电源开关，进入工作画面，按启动开关加速至每分钟 30 张/米，检查各电机转向是否正确，电机转向正确，否则应立即按下急停开关，切断电源，将电机三相电源线中任意两相对调。再重复以上操作，直至电机正常运转。

Switch on the power and enter the working picture to push the start button make the speed to 30 sheets/min for testingthe all the motors running direstion whether are right. If the running direction is not right, push the emergency stop button, cut off the power and adjust the three phase wires to make the right running direction.

6. 设备使用操作 Equipment Operation

6.1 设备启动及使用操作程序、方法 Operating procedure

6.1.1 开机 start the machine

将电源开关，旋转至“ON”位置，将急停开关复位，此时触摸屏变亮并显示开机画面，表明开启电源成功，电源已接入系统。Release the emergency switch; push the power switch and pull it to the “on” position and touch screen will show the stating up menu That means successfully starting the machine, the power has accessed system.

7. 故障分析与排除 Failure analysis and solution

设备的大多数故障会在屏幕上显示出来，以便于操作和维护人员采取相应措施。出现故障时，系统所有运行会被立即中止，工作人员应及时进行故障分析排除。

Most failures can be shown in touch screen for the convenient repair and maintenance. When there’s failure, all the running procedures will be stopped and operators must analyze and solve the failures in time.

常见故障现象、原因分析及排除方法见表 7.0Normal failure analysis and solution see table 7.0

表 Table 7.0 常见故障分析及排除 Normal failure analysis and solution

序号 No.	故障现象 Description	原因分析 Analysis	排除方法 Solution
1	压缩空气压力低” “Compressed air pressure is low ”	气源故障 air supply failure	检查维修气源 check and repair it
		管路系统漏气 pipeline leakage	检查并重新连接 check and re-connect
2	系统提示“安全门开关打开” “ Chamber cover is not closed in place”	误操作 wrong operation	培训操作人员 train the operator
		门盖开关器或线路故障 chamber lid sensor of wire failure	更换门开关或检查线路 change sensor or checking circuit
3	检查 1 号变频器” 报警" No.1 frequency transformer alarming	电源故障（缺相等）power supply failure(lack phase)	检查排除 check
		变频器故障 Transformer failure	查阅变频器技术手册 refer to its manual
		电机故障 Motor failure	查阅电机技术手册 refer to its manual
4	检查 2 号变频器” 报警" No.2 frequency transformer alarming	电源故障（缺相等）power supply failure(lack phase)	检查排除 check
		变频器故障 Transformer failure	查阅变频器技术手册 refer to its manual
5	整机不通电 No power for the whole machine	总电源开关未打到 ON 位置、开关断路、保险丝断路；Main power switch is not on, switch and the fuse short circuit	开关打到 ON 位置；检查 220V 电器；更换保险丝；Switch should be on, change the fuse

6	不能启动 Can't be started	检查触摸屏是否显示报警、是否显示安全门打开、异常灯是否发亮、按启动开关 PLC 是否有反应；Check the touching screen whether displays alarming, the safe door whether is open, the abnormal light whether is burning, the PLC whether has response	按报警原因查找故障排除；according to the alarming cause to find out the root
7	送纸部正常，切刀、拉纸不转 the paper feeding is normal, the cutting knife and the paper can't be pulled	长度未输入、F7 变频器报警；the cutting length is not input, F7 transducer alarming	重新输入长度，按报警参数排除故障；iinput the length setting, and find our the cause according to the alarming reason
8	计数不准或不计数 the counting is not right or can't count	计数开关打开或断路、计数器未工作或应敏度过低；the switch for counting is not open or cut off, the counter doesn't work or the response is too slow	打开计数开关或更换调整敏度；感应器应对正皮带与皮带之间的空隙；open the switch for counting or change,adjusting the sensitive response, make the sensor is at the right position between the belt and belt's gap
9	分切纸对角不正 the cutting diagonal is not regular	未调整对角；no adjuting the diagonal	重新调整对角；生产长度不相同应重新调整 Re-adjust the diagonal
10	输纸部推纸 the paper transporting section overlaps the sheets	输纸部压纸轮未调节平衡、输纸皮带过快或过慢、送纸部压纸轮距离未调节到相应位置；the wheels for pressing sheets is not adjusted well, the belt is too slow or fast	调整距离到相应位置；调整压纸压力使纸平衡；调整皮带同步；adjust wheels for pressing sheets well to the right position or the pressing length, make the belt at the same pace

11	不打标 no label inserting	电路是否正常 220V、24V；收纸台纸板是否过高或过低、打标器压纸轮是否松动；whether the circuit is normal at 220V, 24V, the board on the stacker is too high or low, the wheels on the label inserting is loose	检查电路排除故障；调整纸板位置使之平衡进入；调整压纸轮；check circuit, adjust the board on the stacker and the wheels
12	收纸台设置自动下降或不工作 Stacker no response	检查电路、油压、接近开关；check circuit, oil pressure and approaching switch	检查电路排除故障，用手感应接近开关指示灯发亮；调整敏度；check circuit and use hand to close the approaching switch to make the light burning, adjust the sensitivity
13	拍纸不振动 no vibrating for paper clapping	振动开关是否打开、电路是否断路、调整器是否开到最大、马达是否烧坏；whether the switch open, circuit shour off, adjuster is at the max, position, motor is broken	检查电路，如有 220V 正常，更换马达；check the circuit, if the 220 V motor is abnormal, check the mortor
14	吸尘机 vacuum not working	开关是否打开、过流保护热继电器是否断开；whether the switch is open, the thermal relay is cut off	检查电路排除故障；热继电器复位；check the circuit and the air circuit, reset the thermal relay
15	空压机不打气或不停机 Air compressor not working	电路断路、气路漏气、压缩缸磨损、润滑油是否正常；circuit cut off, leakage air, compressore broken, no lubrication	检查电路排除故障；检查气路，更换漏气气管；加润滑油；check the circuit and the air circuit, change the leaking pipe, add lubrication
16	原纸架不动作 Unwinding rack not working	检查电路、继电器、液压油、马达是否反转；check the circuit, relay and the hydraulic oil, the motor is running wrongly	检查电路排除故障；检查继电器；更换、补充液压油；调整相应位置；check the circuit and relay,change or add the

			hydraulic oil
17	原纸架夹纸左右移动不顺畅 Unwinding rack arms can't move smoothly	检查相应油路、油压调节阀未同步；check oil circuit, oil pressure adjusting valve is not at the same pace	调节相应调节阀使之同步；adjust the valce make them at the same pace
18	有异响 abnormal noise	检查整机马达、传动轴轴承、过纸板；check the motor, driven bearings and the board for paper passing	检查异响方位；排除异响；Check the noise original place to find out the reason
19	无刹车 No braking	气路是否通畅、刹车气压是否设置适当、滑动开关是否合拢、刹车感应接近开关是否工作；air circuit not smooth, the setting of the air pressure is improper, whethter the gliding switch is closed, whether the approaching switch works normally	检查气路，使之有气压；重新设置气压至适当；检查刹车电路；check air circuit, make it has air pressure, re-set the air pressure setting, check the braking circuit

表 7.0

所有设备故障应由专业人员检修，故障排除后应进行确认！

All the equipment failures must be checked and repaired by the qualified personnel. Should confirm them after solution.

8. 维护及保养 Maintenance

8.0 概述 Description

本部分所包含的内容是为确保人员和设备安全和有效操作所必须进行的预防性维护程序。

This part, as a preventive maintenance procedure, must be taken to insure the safety and the effective operation.

执行维护工作的人只能是称职的工程技术人员或已经接受过此设备维护培训的人员。

The maintenance operator should be the qualified technological personnel or the persons who have been taken the maintenance training for the equipment.

这些预防性的维护项目都进行了单独的分类，日程表中引用的是它们的题目，题目简要说明了执行该项任务的时间间隔。

The preventive maintenance item has been sorted, details please see the table below.

在本机机器防护面板（罩）打开之前，必须停止运行和必要时供电与本机都隔离断开。
Before opening the defending panel plate, must be cut off the air supply and power supply.

表 Table 8.1 所列维护日程，如不适用可忽略

Maintenance calendar: can be ignored when unsuitable.

表 8.1 Table 设备维护日程 Daily maintenance

日常维护：每天使用机器前都进行的维护 For before using the machine every day.	
序号 NO	程序 Procedure
DM1	设备的视觉检查。Vision inspection
DM2	安全连锁检查。 Safety interlock
DM3	检查紧急制动按钮的操作。 Check emergency button
DM4	气压检查。 Air pressure check
DM5	操作检查。 Operation check
DM6	安全连锁清洁和检查。Safety interlock cleaning
DM7	电机轴承检查。 Motor Bearing check
DM8	紧固件和连线的检查。 Fasten parts and wiring

8.1 日常维护：使用前的检查 Daily maintenance: Before using

8.1.1 DM1 设备的视觉检查 Vision check for DM1 equipment

a) 起动前检查机器的外部有无损坏或变形，检查所有接地线是否都已正确连接；

Before starting the machine, check the surface of the machine whether damaged or have deteriorated. Check the ground wires whether are correctly connected.

8.1.2 检查紧急制动按钮操作 Check emergency button .

a) 操作之前，要检查所有的制动按钮是否操作正确。

Before operating, check every emergency brake button.

b) 确定设备已经可以进行操作之后，依次按下每个制动按钮，然后尝试起动机器，每个测试后将制动按钮复位。

To make sure the machine has been prepared for operation, then press every emergency brake button in turn and try to start machine. Reset the tested buttons.

c) 最初起动机器后，依次按下制动按钮，确保机器能够正确制动，测试后将每个制动按钮复位。

After the machine started, press the emergency button in turns, make sure that the machine can be normally brake. Reset the tested buttons.

8.1.3 气压检查 Air pressure check

a) 检测总进气压力不低于 6Mpa。必要时进行调节；

Total intake air pressure≥6Mpa. Adjust it if necessary.

8.1.4 操作检查 Operation check

启动本机，并执行以下运行检查：Start the machine to check the item as follows:

a)检查所有的设备和控制是否有异常的噪声或振动；

Check all the devices and control whether have abnormal noise or vibration.

8.2 每 2 年进行的维护或运行 10000 小时后进行的维护

Maintain every 2 year or after 10000 hours running.

8.2.1 电机轴承检查 Check the motors and the bearings

检查所有电机轴承有无异常噪声、振动和过热。如有必要更换有问题的轴承。

Air pressure for seal is too low, should increase the pressure.

8.2.2 紧固件和连线的检查 Check fasteners and the connectors

检查所有紧固件的紧密程度和电路的连线。检查损坏、变质和过热的所有配线。

Check whether all the fasteners and the bearings have noise, vibrating and over heating. If so please exchange the bearings.

8.3 长期停放时的维护与保养 Maintain In Long Time Park

8.3.1 长期停放时应：切断电源、气源；

Break up power supply, air and water source in long time park.

8.3.2 可以木箱或其他包装物对设备进行包装，设备包装前应加注符合要求的润滑剂和防锈剂；

It should be packed in wooden case or others, put lubrication into reducer before package.

8.3.3 设备应储存在通风、干燥、无腐蚀性介质、无振动的环境中；

It should be stored in ventilation, dry, no rust and vibration environment.

8.3.4 长期存放后，重新安装或开机前应再次进行设备性能确认。

After long time storage, re-install or confirm capability before turn on.

8.3.5 清理电机外壳和周围的区域，清除所有积尘和残渣。

Clean the cover of the mortor and the around area, clean all the dirts.

8.3.6 检查电机是否运行平稳、过热和异常声音。

Check all the mortors run stably, over heating and the big noise.

8.3.7 根据标准电工操作惯例，对电机进行检测。

Check mortors according to the standard regular electrician requirement.

8.3.8 完成后，清理电机外壳和周围区域，清除所有粉尘和残渣。

After all the around area of the motor and the cover of the mortor, remove all the dust and the dirts.

8.4 其他配套元器件的维护和保养请参阅相应的器件说明书

Maintain of other components refer to operation manual of parts.

8.4.1 1A3 PLC、触摸屏、变频器维护 Maintain PLC, touch screen, transducer.

请参照相关说明书或技术手册。Refer to operation manual

8.5 机械保养 Maintain the whole machine

8.5.1 整机保持清洁（注意断电检查清理）Make the whole machine clean (Note to cut off the power to clean)

a)每天上、下班前需要清理整机里外灰尘、纸粉、机械周围卫生；

Every shift before and after the working, clean the dirts, paper powder inside or out side the machine

b)每天开机前需要检查传动部位是否有异物、是否安全；

Check whether there is anything insdie the driving section to make sure the running safely

c)每天下班前需要排放空压机内积水；

Discharge the water from the air compressor

d)每天下班后应关总电源开关、机械长时间不开机应关电源；

Check whether the in-phase belts run normally

8.5.2 整机保养（要注意安全）Machine maintenance (pay attention to security)

a)每周一次检查传动部位，连接部位螺丝是否有松动，要紧固螺丝；

once a week check the transmission site, whether there is loose screw joints to tighten screws;

b)每天切纸前应运行一次、检查传动轴轴承是否有异响；

should be run once a day before cutting to check whether there are abnormal sound transmission shaft bearings;

c)要定期检查电器散热风扇是否运行、散热电器、马达是否异常；

to regularly check the electric cooling fan is running, cooling appliances, motor is an exception;

d)要定期检查同步皮带运转是否正常，有无偏离；

to regularly check the operation of synchronous belt is normal, with or without deviation;

e)机械每运行 100 小时或半个月应加注黄油一次（注：要高温黄油 300℃以上，传动部位按注油图操作）加注润滑油时应停止运行断电操作；

Every 100 hours or 15 days lubricate it (Note: the button should be over 300 centigrade, according to the lubrication drawing. While add the lubrication the machine should be off)

8.5.3 在上纸前应把导轨内杂物清理干净，确保上纸自然，检查夹臂方钢是否有沙尘，方钢表面应保持有黄油润滑，夹臂移动时是否有杂响声，观察液压部件是否漏油。

Before feeding the paper, clean the rail and whether there is any dirt on the unwinding rack's arms. (Note: The square steel must have the lubrication to make no any nosie during the arms move, observe whether there is any leakage.

9. 设备的搬运与贮存 carrying and storage

9.1 搬运 carrying

在主机机身上平面设置有标准吊环（设备安装就位后拆下），搬运时应以符合起重要求的起吊装置进行搬运；扶梯整体重量较轻，适宜用叉车或起吊装置进行搬运，其余部件可以人工搬运。

主机吊装搬运见附录《主机吊装图》。

On the plane four angles of the body of machine exist the standard hoist rings (disassemble when the equipment installed so as to install the guard easier). During transferring, use hoist device meet the weight requirement. For ladder, due to it is heavier, can use forklift or hoist accessories. Others can move by man.

9.2 运输 Transport

本设备适宜陆运和海运。It can be shipped by land and sea.

陆运时装车应注意包装上的标志，除基座外，其余部件要求包装箱不得倒置、侧放和倾斜过多。装车时还应采取适当的防护措施，以避免设备在运输过程中受潮、受振和受冲击。

When transported by land, pay attention to the package label, all the parts of the equipments, exclude base part, require the package case should not be converted, side lay down and incline too much. When loaded in the van, should take suitable protection measure to avoid wet, vibrating and impacting during the transportation.

海运时遵照海运相关规范即可。

For sea way, transport according to the relative regulation.

9.3 贮存 Storage

设备应贮存于干燥、通风、无腐蚀性介质、无振动的室内。

It should be stored in the dry、ventilated and with no corrosive medium room.

10. 开箱及检查 Unpacking And Check

10.1 开箱检查内容 check items

a) 随机文件（一般包括：装箱单、证明书、使用说明书、检验报告、随机附件清单等）；

Documents with machines(include: packing list, up to grade certificate, operation manual, inspection report, attached list, etc.).

b) 根据装箱单上记载的内容逐件核对查验，并作好记录；

Check the items according to the packing list one by one and make a record.

c) 检查设备外表是否受碰、磕、剧烈振动等引起的变形、划伤等。

Check the appearance of the machine whether has distortion, scuffing caused by knocking and strongly vibration.