

佛山市隆广机械制造有限公司
Foshan Longguang Machinery Manufacturing Co., Ltd.

双面滚胶机使用与安全维护说明书

Double-Sided Hot Melt Glue Roller Coater
Operation & Safety Maintenance Manual

【 v2.5】

服务与技术支持热线 / Service & Tech Support: 13622526725
生产基地: 广东省佛山市顺德区容桂 / Manufacturing Base: Ronggui, Shunde, Foshan

目 录

TABLE OF CONTENTS

0. 前言与法律合规免责声明P. 3

0. Foreword & Legal Compliance Disclaimer

一、 安全守则与重大危险警示P. 3

Chapter 1: Safety Rules & Hazard Warnings

1.1 防火与防干烧特别禁令 P. 3

1.1 Fire Prevention & Anti-Dry-Heating Prohibitions

1.2 高温防烫伤安全规范 P. 3

1.2 High-Temperature Burn Prevention Standards

1.3 机械旋转防卷入与人身防护守则 P. 3

1.3 Mechanical Entanglement & Nip Hazard Rules

1.4 电气安全与可靠接地要求 P. 3

1.4 Electrical Safety & Protective Grounding

二、 设备概述与技术参数P. 4

Chapter 2: Equipment Overview & Specifications

三、 设备机械结构与各部件图解P. 5

Chapter 3: Mechanical Structure & Components

3.1 设备正面结构透视图与部件清单 P. 5

3.1 Front View Perspective & Part Breakdown

3.2 设备背面及传动机构详解 P. 6

3.2 Rear View & Drive Mechanism Components

四、 7 寸触摸屏与控制系统操作详解P. 7

Chapter 4: 7-inch Touchscreen & Control System

4.1 主界面功能与控制按钮中英对照 P. 7

4.1 Main Screen Layout & Control Functions

4.2 自动下胶控制逻辑与现场调校技巧 P. 8

4.2 Auto Glue Feeding Logic & Calibration Guide

4.3 电机 90°C 安全自锁保护机制 (防打齿防爆轴) P. 8

4.3 Motor 90°C Safety Interlock Mechanism

4.4 设置页底层参数保护与 PID 权限管理 (密码: 8315) P. 8

4.4 Settings Page & Closed-Loop PID Parameters (PIN: 8315)

五、 标准化作业规程 (SOP: 拿来即用的实操指南)P. 9

Chapter 5: Standard Operating Procedure (SOP)

六、 日常维护、清洁与防结焦保养规范P. 9

Chapter 6: Maintenance & Cleaning Protocol

七、 常见故障诊断与快速排除速查表 P. 10

Chapter 7: Troubleshooting Guide

八、 售后服务承诺与品质保修条款 (含差旅约定) P. 11
Chapter 8: Warranty, Customer Support & On-Site Policy

0. 前言与法律合规免责声明 Foreword & Legal Compliance Disclaimer

感谢您选用佛山市隆广机械制造有限公司研制生产的高性能双面过胶机（双面滚胶机）。本设备专为宽幅基材表面双面快速涂布热熔胶而设计，采用 PLC + 7 寸触摸屏工业控制架构，具备高精度 PID 温度闭环控制与电机安全自锁保护。为确保操作人员人身安全、延长设备使用寿命并获得最佳涂胶效果，在安装、接电、试机、操作及维护保养本设备前，所有相关人员必须完整、严谨地阅读并掌握本说明书的全部内容。

Thank you for choosing the high-performance double-sided hot melt glue roller coater manufactured by Foshan Longguang Machinery Manufacturing Co., Ltd. Designed for rapid double-sided hot melt adhesive application on wide-format substrates, this equipment features an industrial PLC + 7-inch touchscreen control architecture with high-precision closed-loop PID temperature regulation and motor safety interlock protection. To ensure operator safety, maximize equipment service life, and achieve optimal coating results, all personnel must thoroughly read and strictly follow this manual prior to installation, wiring, commissioning, operation, and maintenance.

【安全合规提示 / CAUTION】 法定免责与使用单位安全责任界定 / Legal Disclaimer & User Safety Responsibilities

1. 本设备属于工业加热与机械旋转强力装备，严禁未经专业电气与机械安全培训的人员上岗操作。
2. 严禁私自改装电路、短接温控保护、调大保险丝规格或解除机械防护装置。凡因私自改装、违规操作、使用不合格胶料造成的设备损坏或人身伤害，制造方概不承担任何法律与经济连带责任。
3. 特别声明：热熔胶在高温下具有易燃特性！下班离人必须切断总电源；长期不清理胶槽积碳导致自燃起火的，属于使用单位重大安全管理过失，制造方不承担任何责任！

1. This machine is an industrial high-temperature and rotating mechanical equipment. Untrained personnel are strictly prohibited from operating this equipment.
2. Unauthorized electrical modifications, bypassing safety interlocks, over-rating fuses, or dismantling protective guards are strictly prohibited. The manufacturer disclaims all legal and financial liabilities for damages or injuries resulting from unauthorized modifications, non-compliant operation, or improper adhesives.
3. SPECIAL FIRE DISCLAIMER: Hot melt adhesives are combustible at elevated temperatures! Power MUST be disconnected when unattended. Fires resulting from unmonitored heating or failure to clean carbonized glue deposits constitute gross operational negligence by the user, for which the manufacturer assumes zero liability.

一、安全守则与重大危险警示 Chapter 1: Safety Rules & Hazard Warnings

1.1 防火与防干烧特别禁令 Fire Prevention & Anti-Dry-Heating Prohibitions

【特别严正警示 / DANGER】 严禁无人看守下长时间通电加热 / 火灾防范重中之重 / MANDATORY: Never Leave Heated Machine Unattended / Top Fire Prevention Rule

- 下班或操作人员离开车间时，必须按下【停止】按钮并切断车间总配电箱主空气开关！严禁设备处于通电待机自加热状态！
- 胶盘与储胶槽内无胶或胶量过低时，严禁开启加热开关（防干烧起火）！每次开机前必须确认胶槽内有足量胶块或液态胶。
- 车间设备周围 5 米范围内严禁堆放纸箱、木屑、抹布、易燃溶剂及化学危险品，并必须常备处于有效期内的 ABC 干粉灭火器或二氧化碳灭火器！

- When leaving the workshop or ending shifts, operators MUST press the [STOP] button and switch OFF the main circuit breaker! Never

leave the machine in an energized heating standby state unattended!

- Never turn on heating switches when the glue trays or reservoirs are empty or have insufficient glue (Anti-Dry-Run Rule)! Always verify adequate adhesive volume before heating.
- Flammable materials (cartons, wood chips, oily rags, solvents, chemicals) are strictly prohibited within 5 meters of the machine. Certified ABC dry-chemical or CO2 fire extinguishers MUST be readily accessible.

1.2 高温防烫伤安全规范 High-Temperature Burn Prevention Standards

- 本设备工作时，上胶盘、下胶盘、上滚筒、下滚筒及熔胶槽表面温度高达 120°C ~ 200°C。严禁肉体裸露直接接触加热区域！
- During operation, temperatures of the upper tray, lower tray, upper roller, lower roller, and melting tank reach 120°C ~ 200°C. Never touch heated zones with bare skin!
- 进行添加胶块、清理溢胶或调节手轮作业时，必须佩戴耐高温工业防烫手套（耐温 $\geq 250^{\circ}\text{C}$ ）及长袖工作服。若不慎被熔胶烫伤，切勿强行剥离皮肤上的粘固热胶，应立刻使用大量冷水冲洗降温并就医！
- When adding glue, scraping excess adhesive, or adjusting handwheels, operators MUST wear heat-resistant industrial gloves (rated $\geq 250^{\circ}\text{C}$) and long sleeves. In case of hot glue burns, DO NOT forcibly tear solidified glue from skin; immediately flush with cold water and seek medical attention!

1.3 机械旋转防卷入与人身防护守则 Mechanical Entanglement & Nip Hazard Rules

【特别严正警示 / DANGER】双滚筒对滚强力卷入危险 / 机械安全红线 / Nip Point In-Running Hazard of Counter-Rotating Rollers / Safety Redline

- 严禁佩戴棉纱宽松手套、长领带、围巾、戒指首饰操作设备；留长发者必须佩戴工帽并将头发完全盘入帽内！工作服袖口必须牢固扣紧！
- 运转过程中，严禁用手伸入进料口、滚筒啮合处或出料口拨弄物料！送入较薄或微型物料时，必须使用耐热木质或绝缘推料板！
- 急停按钮（E-STOP）设置在正面控制侧上方。遇任何卡料、卷入异物或异常声响，必须毫不犹豫在第一秒拍下急停按钮！
- Cotton yarn loose gloves, neckties, scarves, jewelry, and loose clothing are STRICTLY PROHIBITED near rollers. Long hair must be bundled inside a protective cap! Sleeves must be tightly buttoned!
- Never reach hands into the material inlet, roller nip points, or outlet while rollers are rotating! For thin or small substrates, operators MUST use a heat-resistant non-metallic push stick!
- The Emergency Stop (E-STOP) mushroom button is located on the front control panel. In case of jamming, entanglement, or abnormal sound, strike the E-STOP button immediately!

1.4 电气安全与可靠接地要求 Electrical Safety & Protective Grounding

- 本设备必须由持有国家低压电工上岗证的专业电工完成进线接驳。电源进线端必须配备额定漏电动作电流 $\leq 30\text{mA}$ 的漏电断路器（空开）。
- Electrical wiring must be completed by a certified electrician. The power feed line must be equipped with a residual current circuit breaker (RCCB) rated $\leq 30\text{mA}$.
- 设备的 PE 保护接地引脚必须牢固连接至车间标准地线排，接地电阻严禁大于 4Ω ！严禁在未接地或地线虚接状态下上电运转！

- The protective earth (PE) ground terminal must be securely bonded to the workshop grounding grid, with grounding resistance strictly $\leq 4\Omega$! Operating without proper grounding is strictly prohibited!

二、设备概述与技术参数 Chapter 2: Equipment Overview & Specifications

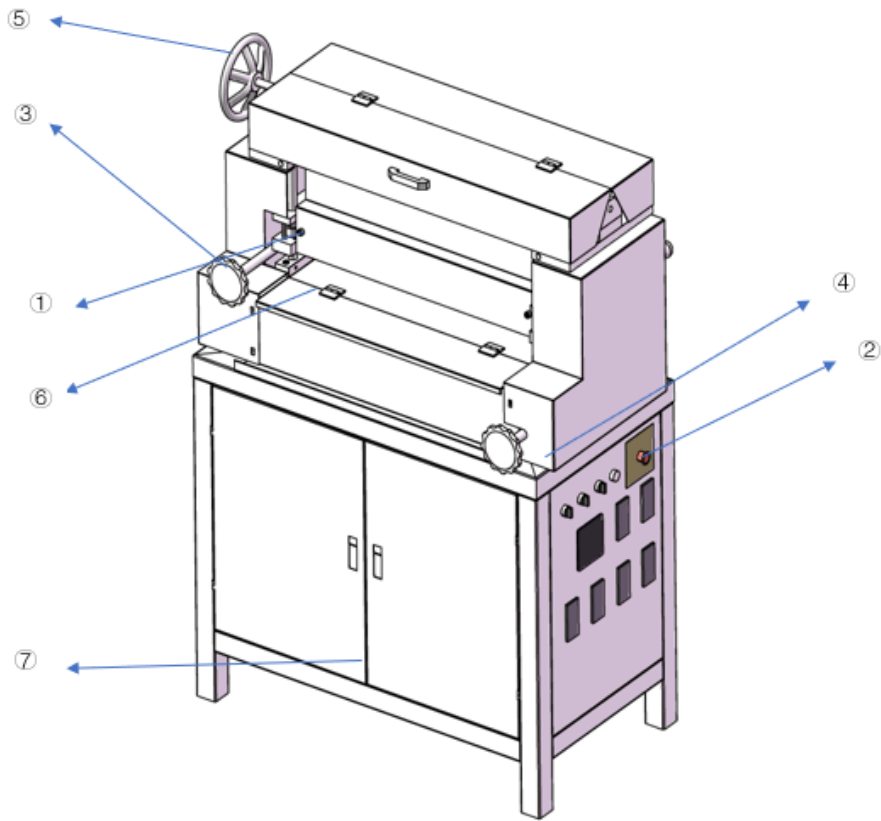
隆广机械双面过胶机是一款集成了高精度电热熔胶与双滚筒同步挤压涂布的自动化机械。设备将固态热熔胶块转化为流动性良好的液态胶膜，通过上、下同步旋转的精密镀铬/硅胶滚筒，均匀涂布于板材、卷材、蜂窝纸板、皮革等各类硬质及半硬质基材的两侧表面。整机采用 PLC 集中逻辑运算，配合 7 寸大屏触控与闭环 PID 智能算法，升温迅速、温度稳定性高、操作界面直观易懂。

The Longguang double-sided roller coater integrates high-precision thermal glue melting and synchronized dual-roller extrusion coating. The machine melts solid hot melt adhesive blocks into a fluid adhesive film and simultaneously applies it evenly onto both sides of sheets, coils, honeycomb cardboard, leather, and various rigid or semi-rigid substrates via precision counter-rotating rollers. Powered by an industrial PLC with a 7-inch touchscreen and smart PID closed-loop control, it delivers rapid heating, high temperature stability, and intuitive operation.

参数项目 / Parameter	规格指标 / Specification	备注说明 / Remarks
涂胶模式 / Coating Mode	双面同时涂胶 / Double-Sided Simultaneous	大幅提升生产节拍与均匀度
适用胶水类型 / Compatible Adhesive	EVA、聚烯烃、PUR 等热熔胶块/胶粒 / Hot Melt	严禁使用易燃易爆溶剂型胶水
工作温度范围 / Operating Temperature	室温 ~ 220°C / Ambient ~ 220°C	高精度 PID 闭环智能温控
涂胶滚筒转速 / Roller Speed	变频器无级调速 / Inverter Infinitely Variable	根据材料送进阻力自由微调
人机交互系统 / HMI & Control	7 寸工业级真彩触摸屏 + PLC / 7" Touch + PLC	带密码锁与运行曲线追溯
驱动电机功率 / Motor Power	0.75 kW ~ 1.5 kW (依据机型规格选配)	高扭矩减速电机
供电电源 / Electrical Supply	AC 380V (三相五线) 或 220V 50Hz	必须具备独立地线 PE 端子
安全保护装置 / Safety Interlocks	急停开关 + 90°C 电机低温自锁 + 漏电断路	符合 GB 5226.1 工业安全规范

三、设备机械结构与各部件图解 Chapter 3: Mechanical Structure & Components

3.1 设备正面结构详解 Front View Mechanical Components

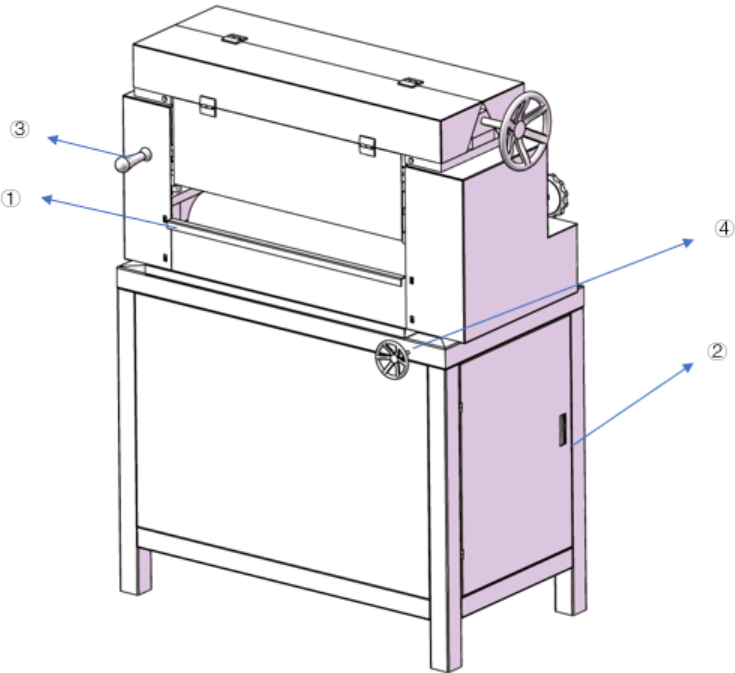


图：双面过胶机正面结构透视图 | Fig: Front Perspective View of Roller Coater

序号 / No.	部件名称 / Component Name	主要功能与安全调节操作规范 / Function & Operational Guide
①	上滚筒胶量锁紧螺丝 Upper Roller Locking Screw	用于固定上滚筒刮胶刮刀与滚筒的精密刮胶间隙。旋转松开后微调刮刀，调节完毕必须锁紧，防止涂胶中途刮刀松动跑胶。 Locks the precision blade clearance against the upper roller. Tighten securely after fine adjustments.
②	急停开关 (E-STOP) Emergency Stop Switch	突发险情时拍下立即切断加热与电机动力。顺时针旋转释放复位。严禁作为常规下班关机按钮使用！ Immediately halts heating and motor drives upon impact. Rotate clockwise to reset. Do not use as normal shutdown switch.
③	上胶盘调胶手轮 Upper Glue Tray Handwheel	调节上胶盘与上滚筒之间的储胶槽间隙，顺时针调小、逆时针调大，决定上表面送胶丰满度。 Adjusts the gap between upper glue tray and roller to meter adhesive volume on upper substrate surface.
④	下胶盘调胶手轮 Lower Glue Tray Handwheel	调节下熔胶盘与底滚筒的浸胶厚度。两端需对称调节，避免滚筒单边出胶过厚或空胶。 Adjusts lower glue reservoir clearance to control coating thickness on

		bottom surface. Balance both ends.
⑤	过料高度调胶手轮 Substrate Height Handwheel	核心间隙调节机构！根据工件板材厚度，顺/逆时针调节上滚筒整体抬升或下降。 Crucial clearance adjustment! Adjusts the vertical gap between upper and lower rollers according to substrate thickness.
⑥	入料口与安全挡料台 Material Inlet & Safety Bed	工件送入端。设有防护挡板与进料导轨。操作员双手严禁跨越安全界线，进料时请保持基材平整推进。 Substrate feeding entrance equipped with guide bed. Keep hands behind the marked warning line.
⑦	正面双开门 (电控箱/下胶槽) Front Enclosure Double Doors	内置电气主控板、温控接触器及下胶盘检修口。运转时门必须保持关闭扣紧；检修前必须断开总闸！ Access doors for electrical controls and lower tray maintenance. Must be securely closed during operation.

3.2 设备背面及传动机构详解 Rear View & Drive Mechanism Components



图：双面过胶机背面结构透视图 | Fig: Rear Perspective View of Roller Coater

序号 / No.	部件名称 / Component Name	主要功能与安全调节操作规范 / Function & Operational Guide
①	出料口与接料托架 Material Outlet & Exit Shelf	涂布完成后的工件输出端。建议配置无动力滚筒接料架或防粘托盘。严禁在出料口直接用手硬拽未完全脱辊的工件！ Coated substrate exit. Ensure exit is clear. Never yank substrates before they completely detach from rollers.
②	侧面单开门 Side Maintenance Door	内部容纳减速电机、主传动链轮及排风散热孔。机器通电运转期间严禁打开，防止肢体卷入高速旋转链条！

		Encloses gear motor and drive sprockets. Strictly prohibited to open during operation to prevent entanglement.
③	上胶盘开关 (排胶/翻转手柄) Upper Glue Tray Release Lever	用于清槽、换胶或检修时快速释放上胶盘结构。必须在胶盘降温至安全温度或穿戴防烫手套时方可扳动! Releases and tilts the upper glue tray for drainage, adhesive switching, or overhaul. Wear thermal gloves.
④	链条松紧调节手轮 Chain Tension Handwheel	调节主传动链条的张紧垂度。定期检查链条松紧，若下垂超过 15mm 需顺时针旋转张紧，防止跳齿或抖动。 Adjusts primary drive chain tension. Maintain chain sag within 5~10mm to prevent tooth skipping.

四、7 寸触摸屏与控制系统操作详解 Chapter 4: 7-inch Touchscreen & Control System

4.1 主界面功能与控制按钮中英对照 Main Screen Layout & Control Functions



图：7 寸触摸屏主操作控制界面 | Fig: 7-inch HMI Main Control Screen Interface

区号 / ID	功能名称 / Function Name	详细说明与操作准则 / Detailed Instructions & Operating Rules
1	各模块加热分控开关 Heating Zone Switches	分别独立控制：上胶盘、上滚筒、下滚筒、下胶盘的加热通断。绿色为开启，白色为关闭。开机预热时建议全部开启，若仅需单面涂胶可关闭对应胶盘加热。 Independent heating controls for Upper Tray, Upper Roller, Lower Roller, and Lower Tray. Green = ON, White = OFF.
2	自动下胶开关 Auto Glue Feeding Switch	开启后，系统根据缓冲胶盘的实时温度传感器数据，自动启闭上料阀门或泵，实现无人化平稳保胶，防止溢出。 When enabled, automatically triggers glue feeding based on real-time buffer tray temperature to prevent overflow.
3	当前温度显示区 Real-Time Temperature	清晰显示四个加热温区的实时热电偶检测值。升温阶段数字持续攀升，稳定后在目标设定值附近平稳波动。 Displays real-time thermocouple readings for all 4 zones. Fluctuates smoothly around setpoints at steady state.
4	目标温度设置区 Target Temperature Settings	点击紫色数值框弹出数字键盘输入目标温度。出厂推荐：上胶盘 150℃、上滚筒 120℃、下滚筒 120℃、下胶盘 150℃（请根据不同热熔胶熔点微调）。 Click purple boxes to input setpoints. Factory Defaults: Upper Tray 150°C, Upper Roller 120°C, Lower Roller 120°C, Lower Tray 150°C.
5	加热状态指示灯 Status Indicators	显示“加热中”（红灯高亮）或“保温中”（银灰状态）。PID 闭环自动以脉冲占空比恒温控制。 Indicates 'Heating' or 'Insulating'. The smart PID algorithm regulates power via duty cycle to maintain setpoint.
6	自动下胶说明按钮	点击可弹出自动下胶温度设定的手势指南与标定步骤。

	Auto-Feed Help Button	Click to view popup guide and temperature calibration tips for automatic glue supply.
7	自动下胶阈值设置 Auto-Feed Temperature Threshold	设定停止下胶的临界温度（出厂默认为 100℃）。此温度通常介于上胶盘与滚筒之间，当冷胶补满时温度短暂下降，以此判定液位。 Set shutoff threshold temperature (Default: 100°C). Calibrated based on temperature drop when cold glue replenishes tray.
8	电机启动保护温度 Motor Safety Temp Setting	下胶盘与上滚筒的最低防凝固启动温度（出厂强制锁定 $\geq 90^{\circ}\text{C}$ ）。只有实际温度双双超过 90°C ，电机才允许转动！ Minimum motor enable temperature (Factory locked $\geq 90^{\circ}\text{C}$). Prevents motor stall/damage against hardened solid glue.
9	手动下胶 & 电机开关 Manual Feed & Motor Switch	手动下胶：强制开阀补胶（人离开前务必关闭）；电机开关：在达到安全温度后启停滚筒旋转。 Manual Feed: Forces valve open (never leave on unattended); Motor Switch: Starts/stops roller rotation above safety temp.
10	电机频率微调 (速度控制) Motor Frequency / Speed	点击加号/减号或中间数字框设定电机变频器输出频率（0.00 ~ 50.00 Hz）。频率越高，过胶辊速越快。 Adjusts inverter driving frequency (0.00 ~ 50.00 Hz). Higher frequency increases roller rotation speed.
11	顶部核心按键组 Master Buttons (Start/Stop/Set)	【启动】：整机总使能开机；【停止】：立即停止所有加热与旋转；【设置】：输入密码 8315 进入底层工程参数。 [START]: Master system enable; [STOP]: Immediate halt of heating & motion; [SETTINGS]: Enter engineering page (PIN: 8315).

4.2 自动下胶控制逻辑与现场调校技巧 Auto Glue Feeding Logic & Calibration Guide

- 运行机理：缓冲胶盘自身不配置主动电热管，其热量依赖上胶盘热胶流入维持。当自动下胶开启后，上部料阀打开，高热胶液流满缓冲盘；当胶盘满溢且温度升至设定阈值（如 100°C ）时，系统自动关闭下胶阀门；随着胶料消耗及散热降温，系统再次开阀补胶。
- Operating Logic: The buffer tray lacks independent heaters and is warmed by glue flowing from the upper tray. When auto-feed is active, the valve opens; once hot glue fills the tray and reaches the threshold temperature (e.g., 100°C), the valve closes. As glue is consumed and cools, the valve re-opens automatically.
- 现场温度校准方法：首次换用新批次热熔胶时，先手动开胶使缓冲盘胶位达到理想刻度（8 分满），在主界面观察此时缓冲胶盘的实时温度显示（例如读数为 103°C ），将【自动下胶温度】设定为略低于此值 $2\sim 3^{\circ}\text{C}$ （即设为 $100^{\circ}\text{C}\sim 101^{\circ}\text{C}$ ）即可获得最平稳的自动保胶效果！
- Calibration Tip: When changing glue formulations, manually feed glue until the buffer tray is 80% full. Note the real-time temperature (e.g., 103°C), and set the [Auto-Feed Temperature] $2\sim 3^{\circ}\text{C}$ lower (e.g., $100^{\circ}\text{C}\sim 101^{\circ}\text{C}$) for optimal level regulation!

4.3 电机 90°C 安全自锁保护机制 (防打齿防爆轴) Motor 90°C Safety Interlock Mechanism

【安全合规提示 / CAUTION】电机低温自保护锁定原理 / Motor Low-Temperature Interlock Rationale

热熔胶在常温下是坚硬的固态塑料！如果温度未达到胶水软化点强行启动电机，胶块会死死卡死滚筒，导致：① 电机过载发热甚至烧毁变频器；② 减速机打齿报废；③ 传动链条断裂崩伤工人！
因此系统软件植入了死命令：下胶盘与上滚筒温度只要任意一路低于 90°C ，即使按下电机开关电机也绝不会动作！若操作员尝试在设置页将此保护温度改低于 90°C ，下次通电开机时系统将强制自动重置恢复为 90°C ！



五、 标准化作业规程 (SOP: 拿来即用的实操指南) Chapter 5: Standard Operating Procedure (SOP)

作业阶段 / Stage	标准作业步骤与要点 / Standard Operating Steps	安全合规红线 / Safety Compliance Rules
第 1 步：班前安全检查 Step 1: Pre-Shift Inspection	① 检查电源接地线、急停开关是否回弹正常； ② 检查储胶槽与胶盘内是否有足量固态胶块（不少于半盘）； ③ 检查滚筒间隙内是否有硬物、金属工具或上一班残留硬块； ④ 确认链条润滑正常、护罩全部关严。	严禁无胶干烧！ 严禁电线破损上电！ Never heat without glue! Inspect wiring carefully.
第 2 步：通电与加温预热 Step 2: Power-on & Preheating	① 合上车间总闸，打开机器配电门主空开； ② 屏幕自检进入主界面，根据胶水说明书核对各温区目标值； ③ 按下绿色【启动】按键，各温区加热开关亮起绿灯开始升温； ④ 静置预热 30~45 分钟，直至所有胶料彻底转化为无结块的液态。	严禁离开车间！ 升温阶段必须有人监护！ Never leave unmonitored during heating phase!
第 3 步：调机与间隙校准 Step 3: Clearance Calibration	① 确认各温区温度稳定且超过 90℃ 安全线； ② 将准备涂胶的样件板材放入进料口，摇动⑤号手轮使上下滚筒轻压样件表面，调节锁紧； ③ 旋转③号、④号手轮微调胶槽刮刀刮胶量； ④ 开启电机，设定频率为 15~20Hz 进行慢速样件试过胶，观察双面上胶丰满度及是否溢胶。	严禁戴棉线手套调节手轮！ 必须佩戴耐温绝缘手套！ Wear certified thermal gloves, never loose cotton!
第 4 步：批量涂胶作业 Step 4: Continuous Production	① 试样涂布均匀无误后，开启【自动下胶】开关； ② 调节变频调速旋钮/按键至生产所需流水节拍； ③ 均匀推送板材，出料端配置托架平稳接料； ④ 随时观察缓冲胶盘液位，若有起烟或焦糊异味立刻停机排查。	严禁用手探入两辊咬合区！ 遇卡料立刻拍急停！ Never reach into nip points! Hit E-STOP for jams!
第 5 步：下班断电清场 Step 5: Shutdown & Power-Off	① 作业完毕，先关闭【自动下胶】与【电机开关】； ② 按下屏幕【停止】按键，关闭所有温区加热分控开关； ③ 戴防烫手套，用专用木铲或软铜刮刀轻轻刮净滚筒表面残余积胶； ④ 切断设备配电箱主空开并拉下车间动力总闸！清扫周边卫生。	【强制】下班必须拉下车间总电闸！杜绝半夜干烧起火！ Cut main power at end of shift without exception!

六、 日常维护、清洁与防结焦保养规范 Chapter 6: Maintenance & Cleaning Protocol

热熔胶长期在高温状态下暴露于空气中，会不可避免地发生热氧化分解，生成黑色的炭化结焦颗粒（俗称积碳）。积碳如果长期不清理，不仅会导致涂胶表面出现黑点残渣严重损坏成品质量，更会导致电热管局部传热阻断发生剧烈局部过热，成为**引发热熔胶机自燃起火的头号火灾隐患**！必须严格执行以下保养制度：

Continuous exposure of hot melt adhesives to oxygen at high temperatures inevitably leads to thermal oxidation, forming hard black carbonized residues. If neglected, carbon deposits not only cause blemishes on coated products but also insulate heating tubes, causing dangerous localized overheating—the #1 root cause of hot melt equipment fires! Strict compliance with the following schedule is mandatory:

维护周期 / Frequency	维护保养作业内容 / Maintenance Tasks	操作注意事项 / Precautions
每日班后 (Daily) End of Shift	① 趁滚筒余温，用软铜刮刀或耐热棉布蘸取少量专用石蜡脱胶油擦拭滚筒表面残胶； ② 清理进料口与出料托台上的滴胶凝块；	严禁使用钢丝刷、铁铲或坚硬硬物刮擦镀铬滚筒，防止刮伤镜面精度！

	③ 清扫电控箱外部灰尘，确保机身通风百叶窗无杂物阻塞。	Never use steel scrapers on precision roller surfaces!
每周一次 (Weekly) Every Week	① 打开侧门，检查主传动链条与链轮齿形磨损，加注耐高温黄油（美孚二硫化钼高温润滑脂）； ② 检查并拧紧各机械调胶手轮的锁紧顶丝； ③ 检查电气柜内所有主接触器、接线端子是否松动发热变色，发现虚接及时紧固。	所有维护作业必须在总电源彻底断开、挂牌上锁（LOTO）状态下进行！ Lockout/Tagout (LOTO) mandatory before servicing!
每月一次 (Monthly) Deep Clean	① 彻底清排胶槽：扳动背面排胶手柄，将胶盘内陈旧老胶彻底排尽； ② 使用热熔胶专用环保清洗剂（如松节油或专用热熔清洗油）循环清洗胶道积碳，冲刷沉积的焦化硬块； ③ 检查热电偶探头表面是否被积碳糊住，轻轻擦亮以保证真实导热测温精度。	清除的废胶残渣属于工业固废，应按环保法规合规处置，严禁随地乱扔或靠近明火！ Dispose of purged waste glue in accordance with regulations.

七、 常见故障诊断与快速排除速查表 Chapter 7: Troubleshooting Guide

故障现象 / Symptom	可能原因分析 / Potential Root Causes	现场排查与快速处理方法 / Corrective Action
1. 点击电机开关但滚筒完全不转 Motor Does Not Run	① 温度未达到 90℃ 电机安全保护阈值； ② 急停开关处于拍下锁定状态； ③ 变频器过载保护跳闸或报故障代码； ④ 传动链条脱落或被冷态硬胶块死死卡死。	① 检查主界面上滚筒和下胶盘温度，确保双双稳定在 90℃ 以上； ② 顺时针旋转释放急停按钮； ③ 打开侧门观察变频器面板代码，断电复位； ④ 确认胶水已彻底化开，手动盘动链轮检查是否有机械卡阻。
2. 某温区温度升不上去或显示 0℃ Heating Failure or Zone Reads 0℃	① 该温区分控加热开关未在屏幕上点亮开启； ② 固态继电器损坏或加热接触器跳闸； ③ 热电偶传感器接线松动、断线（开路）； ④ 内部电热发热管老化烧断。	① 检查屏幕对应温区绿色开关是否已按下激活； ② 测量固态继电器控制端与输出端电压； ③ 重新紧固热电偶端子，若显示负数则为正负极接反； ④ 断电测量发热管阻值，烧断开路者予以更换原装配件。
3. 涂胶厚度不均匀 / 局部缺胶 Uneven Coating or Partial Dry Spots	① 左右调胶手轮调节不对称，刮胶间隙一边大一边小； ② 胶液温度过低粘度过大，流动性不良； ③ 胶槽局部滤网被碳化硬块堵塞导致供胶不足； ④ 过料高度手轮未压平板材。	① 使用精密厚薄规重新校准滚筒两端刮刀平行度； ② 适当调高目标温度 5℃~10℃ 改善胶水流平性； ③ 清除胶盘下胶滤槽内的结焦硬渣； ④ 重新微调⑤号过料手轮，使滚筒均匀贴合基材表面。
4. 出料端严重拉丝或出胶口溢胶 Excessive Stringing or Edge Spillage	① 涂胶温度偏低，热熔胶未完全熔融拉丝； ② 刮刀开度过大，供胶量远超基材吸收消耗量； ③ 滚筒转速与进料速度不匹配； ④ 胶水本身黏度指数不匹配该工件工艺。	① 检查胶水供应商技术指标，将滚筒温度适当提高 5℃~10℃ 消除拉丝； ② 顺时针微调调胶手轮收小出胶量； ③ 调高变频器频率，使滚筒线速度与生产节拍平稳匹配； ④ 更换合适熔融指数的热熔胶型号。
5. 自动下胶失效 (不下胶或频繁溢胶) Auto Glue Feed Malfunction	① 自动下胶目标阈值温度设定不合理； ② 缓冲胶盘测温探头表面粘附厚重碳化层，测温严重滞后； ③ 下胶电磁阀/气动阀门被硬胶渣卡滞在开/关位置。	① 按照说明书 4.2 节重新标定缓冲盘满胶阈值温度； ② 停机冷却后清理测温热电偶表面的硬胶壳； ③ 手动扳动阀门排渣，清理堵塞异物。
6. 滚筒运转伴随周期性异响或抖动 Abnormal Noise or Roller Vibration	① 传动链条过松（下垂超过 20mm）导致跳齿抖动； ② 轴承座缺油磨损或轴承滚珠损坏； ③ 滚筒轴头锁紧螺母松动失圆。	① 旋转背面④号手轮张紧链条并涂抹耐高温黄油； ② 向轴承加注高温润滑脂，损坏者更换深沟球轴承； ③ 紧固两端主轴固定螺栓与紧定螺钉。

八、 售后服务承诺与品质保修条款 (含现场差旅约定) Chapter 8: Warranty, Customer Support & On-Site Policy

1. 保修期限：本设备整机（非易损件）自出厂交付验收合格之日起享受为期 12 个月的免费保修服务。在保修期内，凡因制造质量或原材料缺陷引起的零配件损坏，由隆广机械提供免费维修或更换。

1. Warranty Coverage: The complete equipment (excluding consumables) is covered by a 12-month standard warranty from commissioning and delivery. Any component defects resulting from workmanship or material quality will be repaired or replaced free of charge by Longguang Machinery.

2. 易损件与免责范围：电热管、热电偶探头、输送链条、滚筒硅胶耐磨层属于正常消耗件，保修期为 3 个月。因使用非指定规格胶料、私自加装改电气回路、下班未切断总电源致火灾、长期不清洗积碳致机件烧毁等人为违规操作造成的损坏，不在免费保修范围内，制造方提供终身有偿技术支持与平价配件供应。

2. Consumables & Exceptions: Heating elements, thermocouples, drive chains, and roller coatings are normal wear parts warrantied for 3 months. Damages resulting from off-spec adhesives, unauthorized electrical tampering, unattended heating fires, or failure to clean carbon deposits are excluded from free warranty; lifetime paid technical support and parts are provided.

3. 服务响应与远程诊断：制造方提供常规工作时间（周一至周五 8:30 ~ 18:00）售后技术支持服务。接到用户故障报修后，工程师将在 2 小时内做出远程技术诊断与高清视频指导，协助用户现场电工快速排查解决绝大部分电气与操作疑问。

3. Service Response & Remote Support: We provide technical support during standard business hours (Mon-Sat 8:30-18:00). Upon service request, engineers provide remote diagnostics and video guidance within 2 hours to assist on-site electricians in troubleshooting operational queries.

4. 现场服务与差旅交通约定：

① 制造基地核心辐射区（以顺德容桂制造基地为中心，辐射半径 100 公里以内，涵盖佛山全境、中山、广州南沙/番禺、江门、东莞等珠三角核心制造业区域）：经远程确诊确属设备制造质量缺陷且必须现场处置的，制造方在 24~48 小时内派员提供免费现场维修服务；

② 辐射区以外及跨省市客户：确需技术人员现场服务的，设备保修期内所需更换的合格配件费及维修工时费全免，但买方须承担技术人员往返交通差旅费用（高铁二等座/长途汽车/自驾高速路桥油费）及在途就近食宿费用；

③ 误操作与非质量责任倒挂条款：若技术人员抵达现场后经排查查明故障系因买方违规操作、无胶干烧、擅自改线、未达 90°C 强行开机、急停未释放等误报或非设备本身质量问题所致，买方须全额承担本次往返差旅并按 600 元/人·天 结清现场技术服务工时费。

4. On-Site Service & Travel Expense Policy:

① Core Service Zone (Within 100 km radius of Ronggui, Shunde manufacturing base, covering Foshan, Zhongshan, Nansha/Panyu Guangzhou, Jiangmen, Dongguan): For confirmed manufacturing defects requiring on-site handling, technicians are dispatched within 24~48 hours free of travel charges;

② Beyond 100 km & Out-of-Province: Components and technical repair labor remain free under warranty, but the buyer MUST cover technician's round-trip travel expenses (High-speed rail 2nd class, coach, or highway tolls/fuel) and lodging/meals;

③ False Alarm & Misuse Clause: If on-site inspection determines the fault is due to user error, dry heating, unauthorized wiring, attempting cold startup below 90°C, locked E-stop, or external power issues, the buyer shall reimburse all travel expenses and pay standard technical labor fee at 600 RMB/day.