

Bullmer

G7

Automatic Fabric Spreading Machine Operation Manual

Please read this manual carefully before operating the machine.

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1. Pre-Operation Precautions

- If the machine moves while power is off, it must be homed after power-on. Otherwise, no homing is required.
- When the proximity switch passes the sensing point in reverse direction, the current position is reset to 0.00. This serves as the machine's reference point for position calculation. Each time the proximity switch passes the sensing point in reverse, the current position is reset to 0.00.
- When using two or more cutting beds, after moving from Bed A to Bed B, the first required action is: power on — apply power — gently push the machine forward to backward, so that the proximity switch passes the sensing point. Only then can the machine establish its reference position.
- If the machine suddenly loses power during operation, it will immediately engage the brake. However, the reference position will be lost. In such cases, after re-powering, manually move the machine back to zero, and perform homing again: the proximity switch must pass the zero point from front to back to re-establish the reference position.

Note: If the switch is faulty, homing will fail.

2. Panel Introduction

Button	Function Description
	Four-way joystick: manual forward, manual backward, up, down
	Unwinding roller rotation (clockwise/counter-clockwise)
	Pause
	Reset: after releasing the emergency stop button, confirm the machine is normal, then press Reset to re-energize the motor. Also required after startup to energize the motor.

		Power switch
		USB port

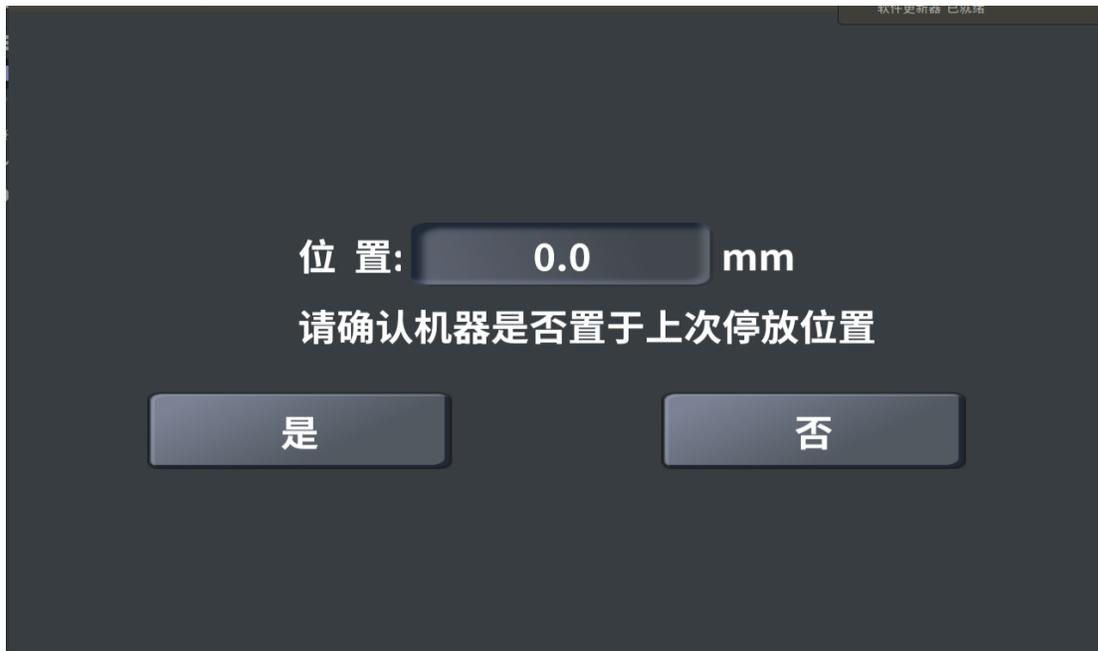
3. Software Introduction

3.1 Startup Screen

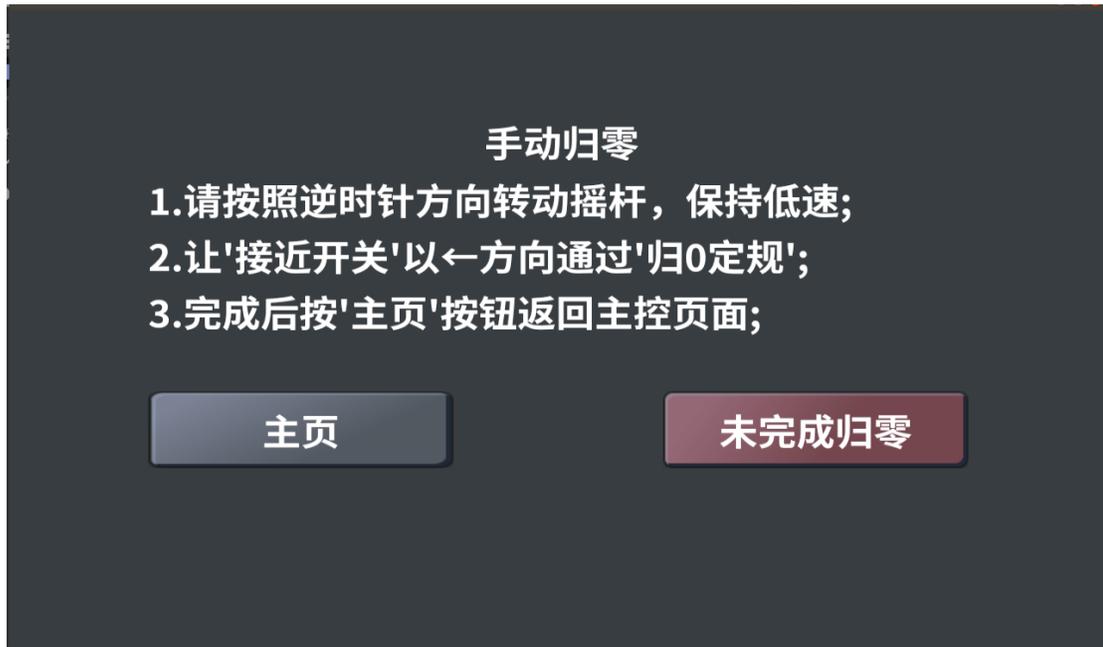


Button	Function Description
	Language switching
	Enter system
L/R	Left operation / Right operation

3.2 Position Judgment



- If the machine has not moved during power-off, select **Yes** to enter the main screen.
- If the machine has moved, select **No** to enter the manual homing screen.

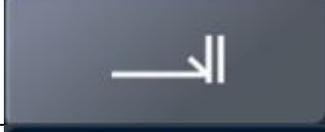


Use the joystick to manually move backward. When the machine detects the zero point, it automatically enters the main screen — homing successful.

3.3 Main Screen



Button	Function Description
	Unwinding roller rotates counter-clockwise, fabric feeds clockwise;
	Unwinding roller rotates clockwise, fabric feeds counter-clockwise;
	Unwind fabric
	Wind fabric
	Dual pull / Single pull
	Piece fabric / Roll fabric

		Cut
		Sharpen blade
		Left stop
		Right stop
<p>长度(mm)</p> <p>0.0</p>		Length input; unit can be mm, yard, inch. Long-press current speed display to switch units.
<p>速度(m/s)</p> <p>0.00</p>		Real-time machine speed display; positive/negative indicates direction. Long-press to switch units (mm, yard, inch).
<p>位置(mm)</p> <p>0.0</p>		Current machine position display. Long-press to write value into length input.
<p>当前层</p> <p>+ 0 -</p>		Number of layers already laid; can be increased/decreased. Long-press to clear.
<p>预设层</p> <p>0</p>		Target number of layers to lay
<p>针织模式</p>		Knitting / Woven fabric laying mode; distinguishes elastic and non-elastic fabrics; program adjusts acceleration/deceleration accordingly.

		<p>Fabric release slot switch, also edge alignment switch, unwinding roller switch</p>
		<p>Auto operation / Stop operation</p>
		<p>Move left/right; upper input box corresponds to segment speed</p>
		<p>Fabric tension value; adjust based on actual conditions</p>
		<p>Return to previous page; commonly used for language switching, clearing origin error, returning to origin</p>
		<p>Status bar; displays alarm messages. Tap to enter alarm interface and view alarm details</p>
		<p>Count layers separately per roll; IoT order dispatch, parameter settings</p>
		<p>Count layers individually; each box represents one roll. Manually select box, increase/decrease layer count. No fabric, manually move backward — auto-jump to next box. Total indicates total layers</p>

3.4 Common Parameters

返回	功能	伺服/变频参数	系统参数
布斗松紧 + 0.00 -	自动磨刀层数 0	双拉左回收距离(mm)	0.0
升降高度(ms) + 0 -	自动磨刀时间(s) 0.0	双拉右回收距离(mm)	0.0
切刀速度(Hz) + 0 -	自动磨刀开关 OFF	双拉左吐布时间(ms)	0
切刀宽度(cm) + 0 -	起点爬行功能 OFF	双拉右吐布时间(ms)	0
恢复出厂设置	拉索启动开关 OFF	单拉切断前吐布时间(ms)	0
	拨边装置开关 OFF	单拉切断前回收时间(ms)	0
	自动松紧开关 OFF	单拉右吐布时间(ms)	0
	压布提前打开 OFF		

Parameter	Description
布斗松紧 + 0.00 -	Adjust fabric amount at release slot; Factory setting: 1.00
升降高度(ms) + 0 -	Automatic height increase per layer; Factory setting: 80
切刀速度(Hz) + 0 -	Cutting speed; Factory setting: 20
切刀宽度(cm) + 0 -	Cutting width; Factory setting: 190
恢复出厂设置	Restore all parameters to factory defaults
自动磨刀层数 0 自动磨刀时间(s) 0.0 自动磨刀开关 OFF	Automatic sharpening layer count: Factory 60 Automatic sharpening time: Factory 1.5
起点爬行功能 OFF	Start-up creep function: slow start speed, suitable for smooth fabrics
拉索启动开关 OFF	External rope control: enabled → start/stop function; disabled → pause only

拨边装置开关	OFF		Belt edge alignment function at fabric slot
自动松紧开关	OFF		Adjust tension before single-pull cutting to improve precision
压布提前打开	OFF		Compatible with folding device
双拉左回收距离(mm)	0.0		Adjust fabric tension at both ends during dual-pull use
双拉右回收距离(mm)	0.0		
双拉左吐布时间(ms)	0		
双拉右吐布时间(ms)	0		
单拉切断前吐布时间(ms)	0		Adjust fabric tension at both ends during single-pull use
单拉切断前回收时间(ms)	0		
单拉右吐布时间(ms)	0		
伺服/变频参数			Data here is set by factory engineer during debugging; no further adjustment needed. Protected by password.
系统参数			

3.5 Alarm Information

Alarm Message	Description
Layer/Length Not Set	Preset layers and length are zero
Layer Reached	Preset layer count equals current layer
Input Length Exceeds Limit	Input length exceeds table length
Edge Alignment Reached Limit	Edge alignment reaches leftmost or rightmost limit; machine stops, yellow light flashes, buzzer sounds
Travel Overrun	Machine runs beyond set length range during auto operation. This alarm appears with origin position alarm. Check: external encoder is tightly against table edge; guide wheels are not loose; no foreign objects on travel wheels; re-zero travel wheels. Manually move machine; if travel motor is normal and position changes correctly, press RST or fault reset. Origin position alarm cannot be manually reset — must perform homing.
Position Deviation Too Large	External encoder and travel wheel show deviation during operation. Check: encoder status, motor status. Clean table edge, travel wheels, encoder wheel. High-speed

	emergency stop may trigger this error — normal behavior; reset resolves. Origin position alarm cannot be manually reset — must perform homing.
Origin Position Not Confirmed	Perform manual homing. Return to previous page, select "Yes" in "Confirm Current Position" dialog
Encoder Disconnected	External encoder failure
Encoder Reversed	External encoder failure
Reverse Not Hit Origin	Distance between zero block and sensor too large; sensor damaged
Collision Prevention Triggered	Photoelectric collision prevention triggered during operation
Cutting Seat Not at Origin	Blade not at origin
Driver Alarm	Travel / Fabric Ejection / Inverter alarm. Press RST / Alarm Reset / Restart to recover
Emergency Stop Triggered / Not Reset After Power-On	Press blue Reset button
Servo Initialization, Please Wait	Servo power-on time; wait 5 seconds
Travel Servo Alarm Code Fabric Ejection Servo Alarm Code Fabric Reel Inverter Alarm Code	See Huachuan Servo Manual for details

3.6 PLC I/O Monitoring

PLC input/output monitoring to check sensor status.

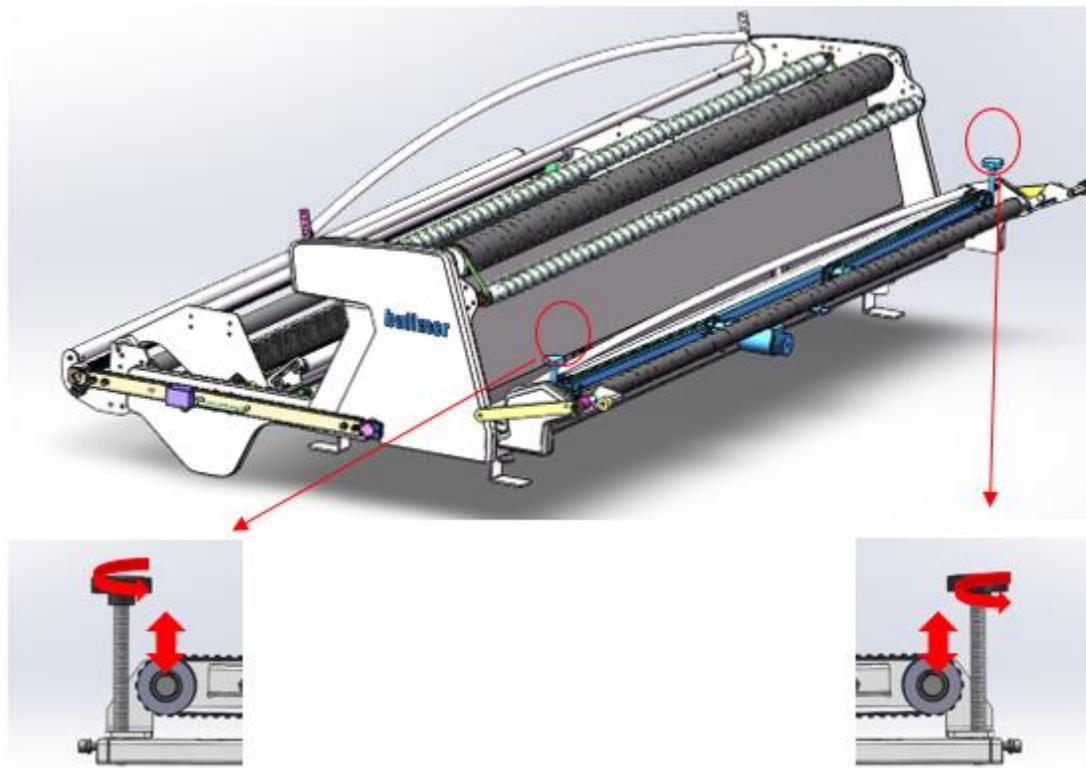
4. Hardware Introduction

Component	Description
Q1	Cam switch
Q2	Circuit breaker
K1	Contactors
T1	24V power supply
A1	Travel servo driver
M1	Travel servo motor
R1	Travel brake resistor
A2	Fabric ejection servo driver
M2	Fabric ejection servo motor
R2	Fabric ejection brake resistor
A3	Assist drop / cutting inverter
A4	Fabric reel inverter
M3	Assist drop motor
M4	Blade travel motor
M5	Fabric reel motor
A5	Safety relay

A6	PLC
T2	Transformer
F1	Edge alignment fuse
M6	Edge alignment motor
R5	Brake resistor
M8	Circular blade motor
U1	Sharpening solenoid
M7	Lift motor
F3	Lift fuse
M9	Fabric clamp motor
A7	Fabric clamp controller
A8	Edge alignment controller
A9	Touch screen

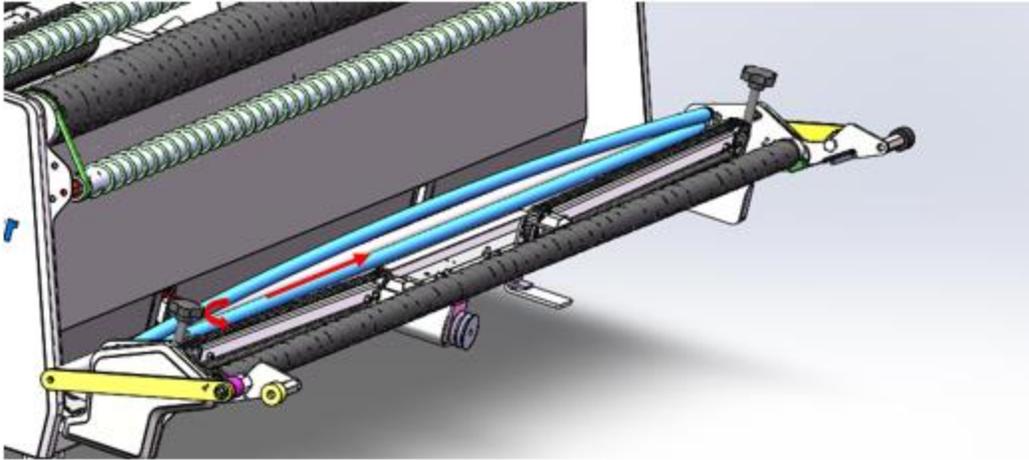
5. Mechanical Introduction

5.1 Upper Main Frame



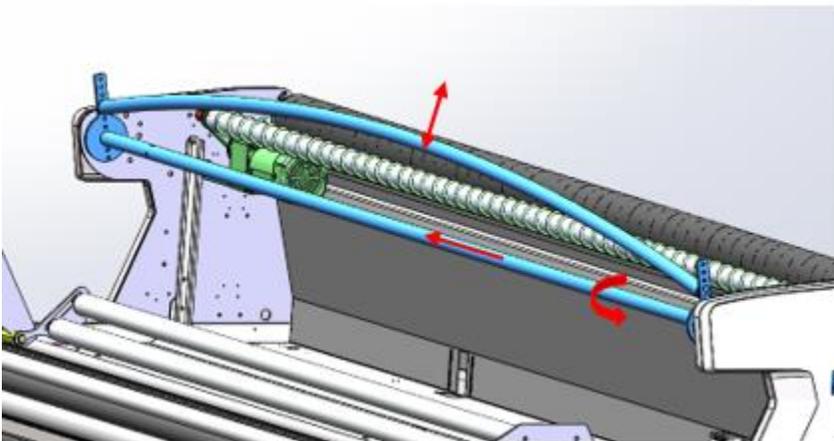
Primary Edge Guide Roller Adjustment:

Adjust roller height by rotating both side nuts to modify the edge guide effect.



Arc Rod Adjustment:

Push the arc rod in the arrow direction, then rotate to the desired angle as needed.



Unwinding Rod Adjustment:

- **Method 1:** Push the unwinding rod assembly slightly in the arrow direction, then rotate to required angle.

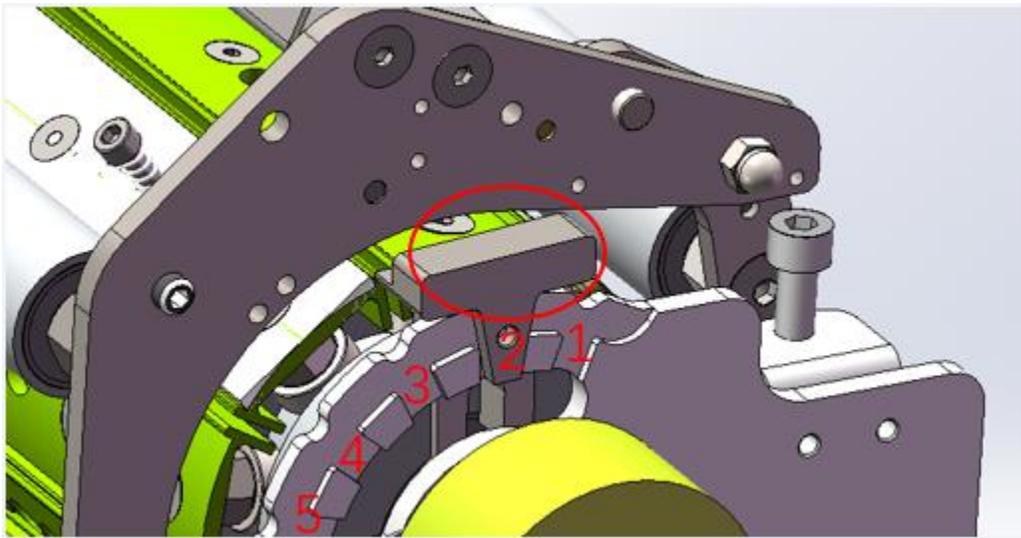
- **Method 2:** Unscrew the two end screws of the unwinding tube, adjust height, then re-tighten screws.



Front Assist Drop Roller:

Brake Adjustment: Adjust the tightening length of the screw to control the braking force of the buffer pad on the front column roller.

5.2 Lift Mechanism



Tension Adjustment Use Cases:

1. Wrinkle-prone or elastic fabrics

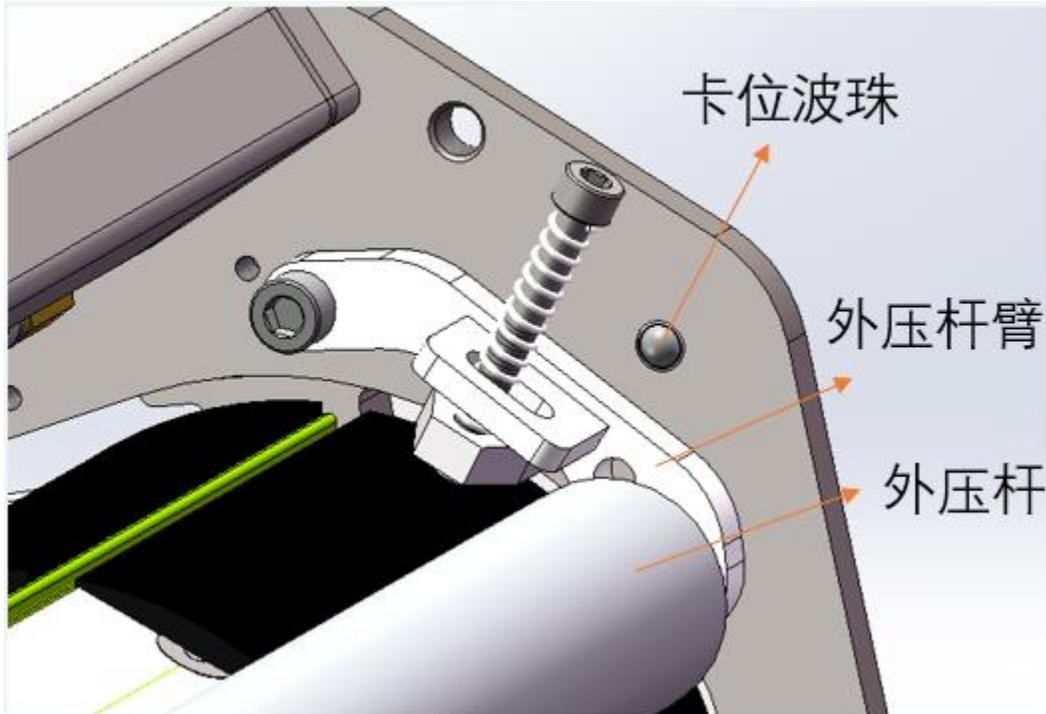
Usage:

1. As shown, the tension adjustment block controls the opening/closing size of the blades within the unwinding roller's working area, pulling wrinkled fabric.

- **Position 1:** Blades open/close equally within the working area → fabric moves straight in

and out → no pulling effect.

- **Position 2:** Gradual opening/closing difference appears → pulling effect begins. Position 5 is Maximum opening/closing difference → strongest pulling effect. Effect increases from position 2 to 5.

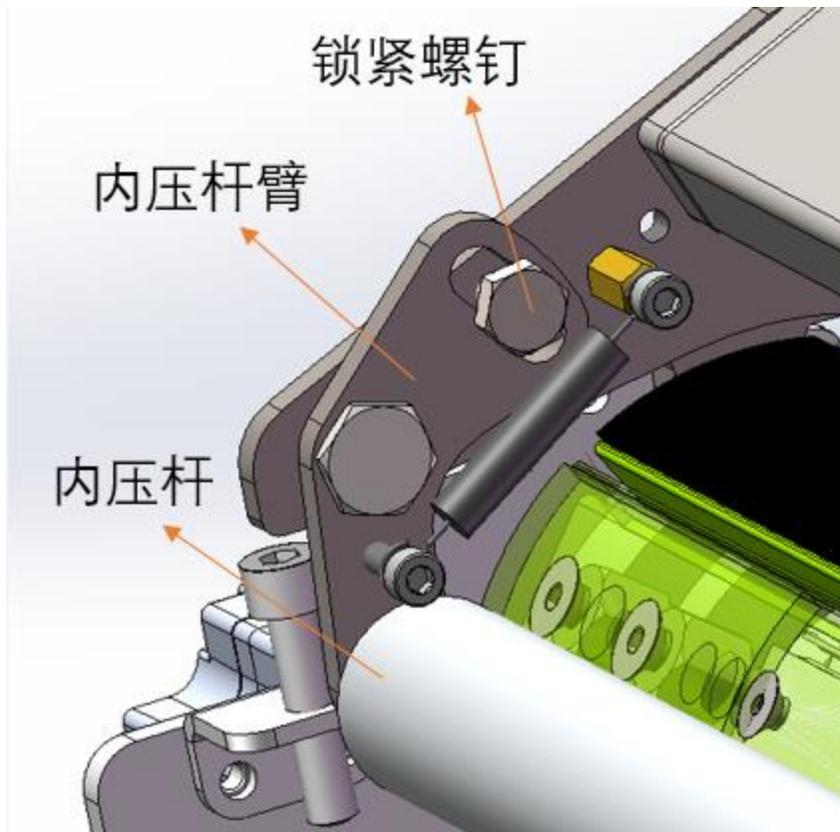


External Pressure Rod Adjustment Use Cases:

1. Thin, slippery fabrics (e.g., down fabric)
2. Slippage or fabric dragging at unwinding roller

Usage:

1. For normal fabrics, lift the external pressure rod; the holes on both arms engage with the ball detent → rod inactive.
2. For special fabrics (thin/slippy), press the external pressure rod down. The rod applies pressure via spring and gravity to prevent fabric slippage.



Internal Pressure Rod Adjustment Use Cases:

1. New fabric of different thickness
2. Slippage persists even after external rod is lowered

Usage:

1. Function similar to external pressure rod — keeps fabric tightly against the unwinding roller profile to prevent slippage.

After factory adjustment, the locking screw is tightened, leaving ~5mm gap between rod and roller surface. Normally no adjustment needed. When external rod is insufficient, loosen locking screw and press rod tightly against roller surface to increase friction.

7. Troubleshooting

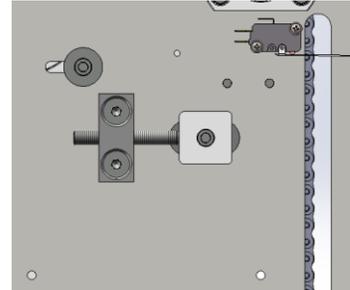
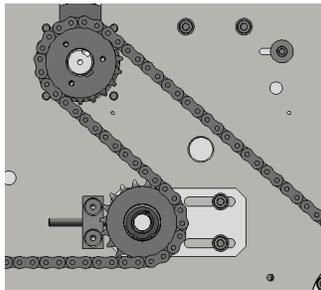
Condition	Cause	Solution
Blade does not rotate	<ol style="list-style-type: none"> 1. Fuse F2 blown 2. Relay failure 3. Circular blade motor damaged 	<ol style="list-style-type: none"> 1. Check fuse. 2. Measure DC voltage (~24V) at blade output connector. If no voltage, replace PCB. 3. Motor lifespan: 1.5–3 years; recommend full motor replacement. 4. Use multimeter to check transformer input voltage: AC 20V
Edge alignment fabric table does not move	<ol style="list-style-type: none"> 1. Fuse F1 blown 2. Thyristor damaged 3. Edge alignment motor failure 	<ol style="list-style-type: none"> 1. Check fuse. 2. Cover sensor, measure DC voltage (~24V) at edge alignment output connector. No voltage → replace PCB. 3. Motor rarely fails unless impacted. 4. Use multimeter to check transformer input: AC 24V
Cannot auto-travel	<p>Is blade at origin? Driver alarm?</p>	<p>Return blade to origin Restart</p>
Cannot sharpen blade	<ol style="list-style-type: none"> 1. Fuse F2 blown 2. Coil damaged 3. Sharpening solenoid failure 	<ol style="list-style-type: none"> 1. Check fuse. 2. After sharpening, measure DC voltage (~24V) at output connector. No voltage → replace PCB. 3. Solenoid rarely fails. 4. Use multimeter to check transformer input: AC 24V
Edge alignment not working	<p>Driver overload protection Edge alignment motor fault</p>	<p>Check if driver light flashes red → power off → restart driver or machine 2. Replace edge alignment motor</p>
Lift mechanism not working	<ol style="list-style-type: none"> 1. Fuse F3 blown 2. PCB damaged 3. Lift motor failure 	<ol style="list-style-type: none"> 1. Check fuse. 2. Press "Up" — measure AC 220V between PCB terminals 43 and 40. Press "Down" — measure AC 220V between 43 and 41. If not, replace PCB. 3. Check circuit and motor. 4. Use multimeter to verify AC 220V input
Fabric clamp mechanism not working / abnormal	<ol style="list-style-type: none"> 1. Limit switch failure 2. Relay damaged 3. Clamp motor failure 	<ol style="list-style-type: none"> 1. Adjust limit switch position; ensure one switch triggers when clamp is open

		or closed.2. Replace clamp relay.3. Check circuit and motor.4. Use multimeter to verify DC 24V input
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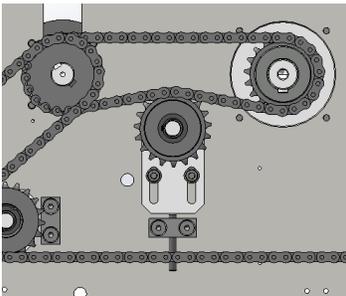
8. Maintenance

8.1 Daily Maintenance

1. Clean dust and thread from machine surface and all rollers daily using an air gun.
2. Clean internal electrical parts daily using an air gun — no need to open housing; clean



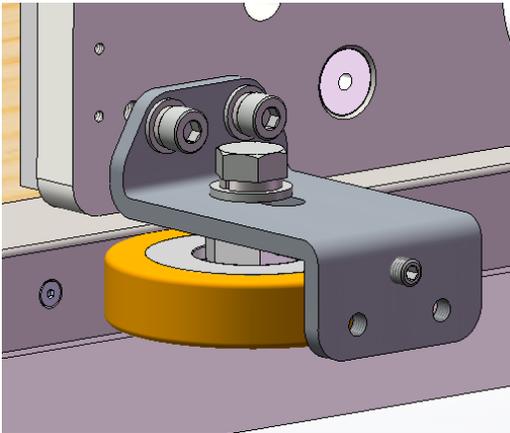
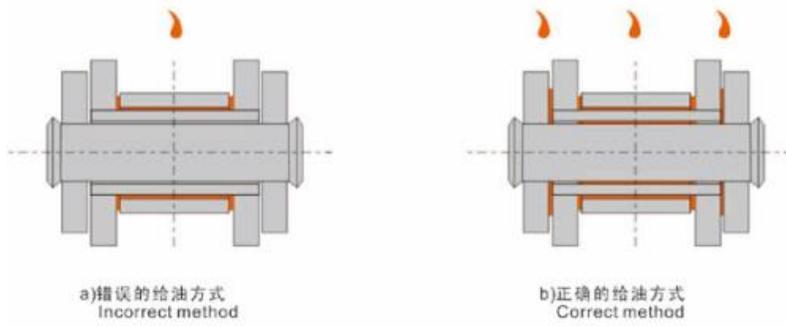
through housing gaps.



3. Remove thread and debris from travel wheels daily.
4. Clean machine travel track on cutting table — ensure no adhesive, water, oil, or foreign matter remains.
5. Clean all electronic sensors daily to ensure clean surface.
6. Check blade edge daily and clean glue or residue promptly.

8.2 Monthly Maintenance

1. Chain tension should be appropriate — not too loose or tight. Slight manual push on slack side is acceptable. Check and adjust tension when slack side visibly sags. Also clean fabric debris.
2. Lubricate chain monthly using ISO VG 150 (N150) viscosity lubricant. Apply with brush to gaps in chain joints (between pin and bushing, bushing and roller).



3. Check lower guide wheel tightness monthly and adjust as needed.
4. Inspect all cables and plugs before startup — check for cracks or exposed wires. Stop use and repair immediately if issues found.

8.3 Annual Maintenance

1. Inspect foam on rollers and replace periodically.
 2. Inspect blade and sharpening stone; replace as needed.
 3. Inspect all conveyor belts and replace as required.
 4. Inspect relays; check for blackened contacts and replace as needed.
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