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EASY PACKAGING

STEP LM-LY3 Full Automatic Tag Threader Machine

OPERATING MANUAL

MANUAL-EN

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Equipment Overview

1、 Equipment Overview

1） Equipment Introduction The LM-LY3 fully automatic hanging tag threading and knotting machine is the fourth generation high-speed hanging tag threading equipment independently developed by our company, designed specifically for the processing needs of popular paper hanging tags and car fragrance tablets in the printing label industry and market. The equipment integrates automatic card feeding, punching, threading, knotting, and counting full process automation functions, completing the entire process of tag processing in one go, completely replacing manual threading operations, greatly improving production efficiency and processing accuracy. This device adopts PLC program control and touch screen operation, with simple and convenient debugging and maintenance, easy to learn and understand, and no need for professional technicians to quickly get started. Compared to the old model, this device has the core advantages of more stable model, faster speed, and lighter running sound, and is suitable for mass production needs in more scenarios.

(II) Core Advantages

Fully automated process: Automatically completes card feeding, punching, threading, knotting, and counting without human intervention, solving labor problems.

1. Overcoming the pain points of low efficiency, large errors, and high costs in manual wire threading.
2. Easy to operate: PLC program control + touch screen operation, intuitive and easy-to-understand parameter settings, simple debugging and maintenance, even beginners can quickly master it.
3. Performance upgrades: Improved machine stability, faster processing speed (3600-6000 pieces/hour), lower operating noise, and a better production experience.

4. Highly adaptable: Supports paper and plastic hang tags ranging from 20*35mm to 90*150mm, compatible with materials of varying thicknesses from 180gsm to 350gsm, and can accommodate irregularly shaped hang tags as well as various hole and wire diameter requirements. Custom specifications are available upon request.
5. Precise processing: The cold-cutting blade design ensures a clean cut, and the sensor ensures precise threading and consistent knotting, improving product yield.

The divider works in tandem to ensure the drilling position,

(2) Core advantages

1.Full process automation: Automatically complete cardfeeding, punching, threading, knotting, and counting without manual intervention, solving the pain points of low efficiency, large errors, and high costs of manual threading.

2. Easy to operate: PLC program control+touch screen operation, intuitive and easy to understand parameter settings, simple debugging and maintenance, beginners can quickly master.

3. Performance upgrade: Improved stability of the body, faster processing speed (3600-6000 pieces/hour), lower operating noise, and better production experience.

4. Strong adaptability: Supports paper tags, plastic tags, etc. in the size range of 20 * 35mm-90 * 150mm, compatible with materials of different thicknesses from
180gsm to 350gsm, and can adapt to irregular tags and various aperture and wire diameter requirements. Special specifications can be customized according to samples.

5. Precise processing: The cold cutting blade design ensures smooth cutting
lines, and the sensor+divider cooperate to control the punching position, threading accuracy, and knot consistency, improving product qualification rate.

(III) Scope of Application

Professionally designed for the printing and labeling industry, capable of processing paper tags, plastic tags, and other products, widely used in clothing, etc.

Processing of hanging tags for footwear, hats, gifts, food and other industries, including threading and knotting.

II. Technical Parameters

(a) Equipment Parameters

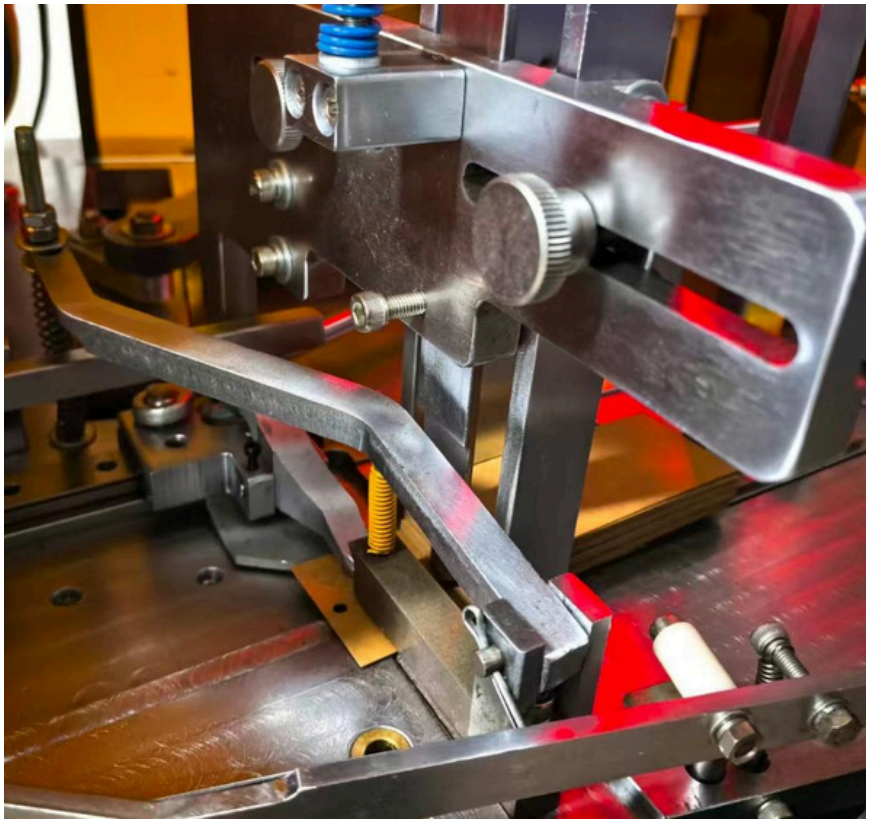
Project ITEM	Specifications PARAMETER
Model	STEP LM-LY3
Processing SPEED	3600-6000 PCS / H
Cutting method	Cold Cut
Machine weight	450KGS
Machine Size	1100L*1000W*1200Hmm
Power	220V, Single Phase, 50/60Hz
Rated Power (TOTAL POWER)	0.75KW
Control Method (CONTROL WAY)	Cam, divider, PLC program control + touch screen operation. CAM, GEAR BOX, PLC, TOUCH SCREEN.
Core Configuration	PLC + Touch screen + Inverter + Sensor + Divider + Counter. CAM, GEAR BOX, PLC, TOUCH SCREEN, COUNTER.
Core Function	Automatic card feeding, hole punching, threading, knotting, counting.
Differences from Older Models	More stable, faster, and quieter.

(ii) Tag and String Parameters

Project ITEMS	Specifications and Parameters
Tag Material	Paper tags, plastic tags, etc.
Tag Thickness	180gsm-350gsm (Customized equipment available upon request) SUPPORT CUSTOMIZED MACHINE BASED ON SAMPLES
Minimum Tag Size	20*35mm
Maximum Tag Size	90*150mm
Hole Diameter	3.0mm、4.0mm、5.0mm
Tag Shape	Rectangular, square, and regular-shaped hangtags
Wire Material	non-elastic rope ETC NON-ELASTIC STRING, COTTON, PAPER, PLASTIC, NYLON
Wire Thickness	0.3-2.1mm
Length After Knotting	80-200mm (excluding end cap) WITHOUT KNOT TAIL LENGTH
Knot Length	15-20mm

(III) Schematic diagram of key components

1. Detailed image of the hole punching on the hang tag: (Close-up image of the hole diameter is placed here, marked with 3.0mm/4.0mm/5.0mm hole diameter gauges)



2. Detail image of knotted product: (Here is a close-up image of the knotted product, with the knotted tail size marked as 15-20mm)

III. Installation and Debugging

(a) Installation preparation

1. Site requirements: Choose a flat, dry, and ventilated indoor site, with a ground load-bearing capacity of ≥ 500KGS/㎡, and a reserved operating space of ≥ 30cm to 60cm around the equipment, away from damp, dust, flammable and explosive environments, and strong electromagnetic interference sources.

2. Power requirements: Confirm that the power supply voltage is 220V single-phase (50/60HZ.)

3. Equipment inspection: After unpacking, check the equipment model LM-LY3 and the integrity of its components. Check whether the body, card feeding mechanism, punching mechanism, threading and knotting mechanism, cutting blade assembly, etc. are intact and whether the connection parts are loose.

4. Wire preparation: Confirm that the non elastic wire material and thickness (0.3-2.1mm) meet the requirements, and that the wire is not damaged or tangled. Sort it neatly in advance for future use.

(II) Installation steps

1. Equipment positioning: Place the machine body steadily on the preset site, adjust the bottom adjustable support feet, use a level to calibrate the body, and ensure that the equipment is level and stable without shaking.

2. Power connection: Connect the power lines (live, neutral, and ground) correctly according to the identification of the equipment distribution box, tighten the wiring terminals, ensure reliable grounding, and avoid the risk of leakage.

3. String installation: Place a roll of wire into the wire bracket, pull the wire head through the guide wheel and string feeding mechanism until it is inserted into the threading needle, ensuring smooth and unobstructed wire transportation.

4. Component inspection: Check whether key components such as punching molds, cutters, and knotting components are installed in place, whether the electrical components in the electrical box are securely wired, and whether the touch screen is properly fixed

Debugging process

1. Power on self-test: Connect the main power supply, turn on the device power switch, first press the yellow key to manually test whether the various mechanisms of the machine have no abnormal movements, and then perform automatic touch screen startup. The device enters self-test mode. Observe whether there are no abnormal movements in each institution, whether sensors and counters display normally, and whether there are no error prompts on the touch screen.

2. Adjust threading, knotting, and cutting according to the wire thickness, required knot length (80-200mm), and tail length (15-20mm).

3. Choose a processing speed (3600-6000 pieces/hour) and adjust the frequency converter parameters according to production needs to ensure stable operation.

4. Trial operation and debugging, manual mode (press the yellow key), no-load trial operation, no hang tag placed, manual operation for 2 minutes, red, then start the equipment automatically for 5-10 minutes of no-load operation, observe whether the wire feeding mechanism, punching mechanism, knotting component, and cutting blade actions are coordinated, whether the running sound is smooth, without jamming or abnormal noise.

1. Load test run: Place 100-200 hang tags to be processed (meeting size and thickness requirements) into the card feeding compartment, click the yellow button to manually operate the equipment for trial processing, and focus on checking: Whether the punching position of the hang tag is accurate and whether the aperture meets the requirements;
1) Whether the threading is smooth, without any omissions or mistakes;
2) Whether the knot is firm and neat, and whether the length of the thread and tail meet the set values;
3) Whether the cutting line of the blade is flat and free of burrs;
4) Is the counter counting accurately.

Debugging and optimization: If there are parameter deviations during trial processing (such as loose knotting, hole diameter deviation, and inconsistent wire length), adjust the mechanical structure through jog mode (manual mode), repeat trial processing until the finished product qualification rate is ≥ 99%, the equipment runs stably, and the debugging is completed.

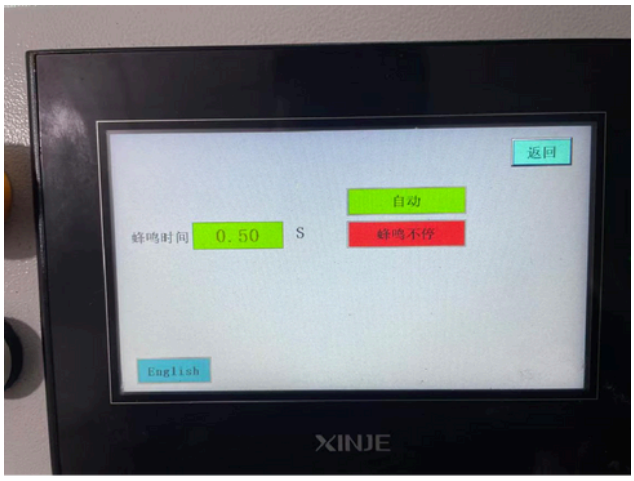
Operating Procedure

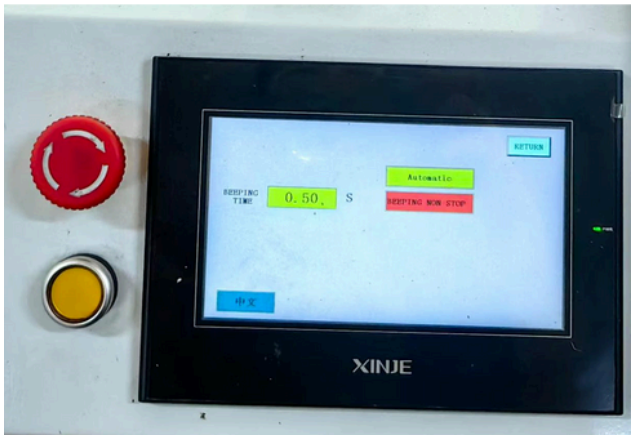
1. Electrical inspection: Confirm that the power connection is normal, without looseness or leakage, and that the appearance of electrical components such as touchscreens, sensors, and counters is intact.

2. Mechanical inspection: Check whether the card feeding compartment, punching mold, threading channel, knotting component, and cutting blade are clean and free of debris, whether the lubrication of each moving part is sufficient, and whether the wire is sufficient and transported smoothly.

3. Material inspection: The size, thickness, and material of the hang tag to be processed meet the requirements, and there is no damage or wrinkles; The thickness and material of the wire are compatible, with no hidden dangers of entanglement or breakage.

4. Parameter confirmation: Verify that the packaging quantity, speed, beeping time, and other parameters on the touch screen are consistent with production requirements and have no parameter errors.





Power on operation

1. Power on and start: Connect the main power supply, press the "yellow" button on the device control panel, run in jog mode for 1 minute, and then click the start button on the touch screen to enter the device cloud operation. The device completes self check (1 minute).

2. Material loading: Place the wire into the wire rack, install it into the tail storage device, and then thread it through the threading hole and threading needle.

3. Tap to confirm if the knotting head is OK.
4. Material loading: Place the tags to be processed neatly into the card feeding bin, ensuring that the tags are placed flat and without stacking or tilting.

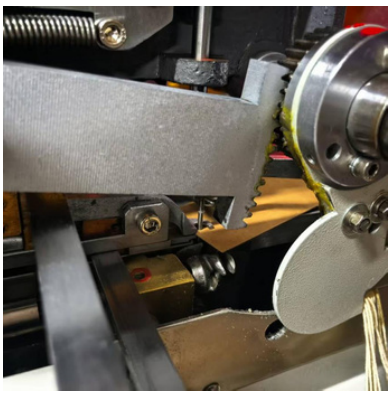
5. Click to confirm whether the hanging tag is transported, punched, threaded, knotted, and matched.

6. Start processing: Click the "Run" button on the touch screen, and the equipment will automatically start the process of card feeding, punching, threading, knotting, cutting, and counting. The finished product will be hung on the hanging plate through the discharge port.

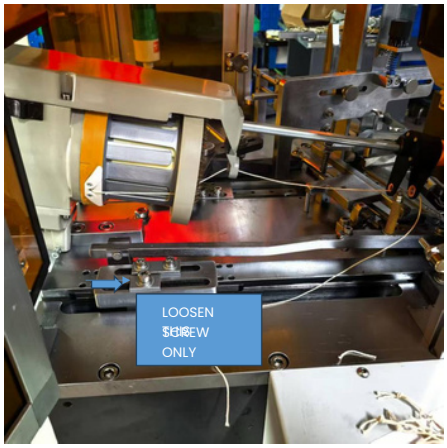
7. Process monitoring: During the processing, observe the counting display and operating status on the touch screen, regularly check the quality of the finished product (drilling accuracy, knot firmness, thread length, etc.), and promptly handle any abnormalities found.

How to adjust the string length?

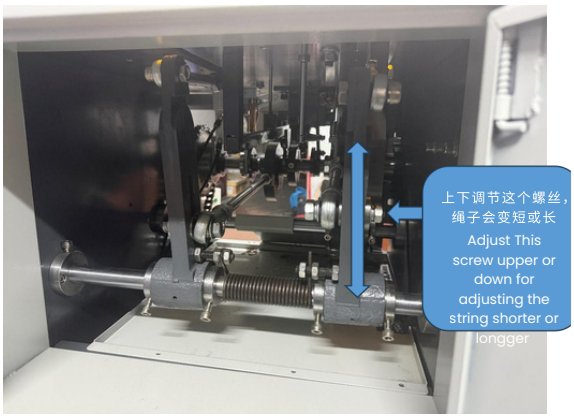
1.Press the yellow button (jog) until the threading needle enters the hook, as shown in the picture:



2. Then loosen the individualscrewsinthefollowing picture(justloosenonescrewonly).

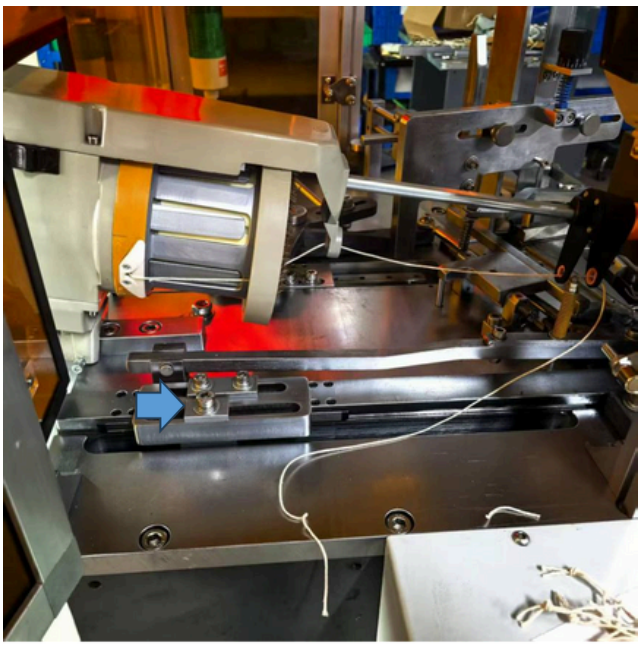


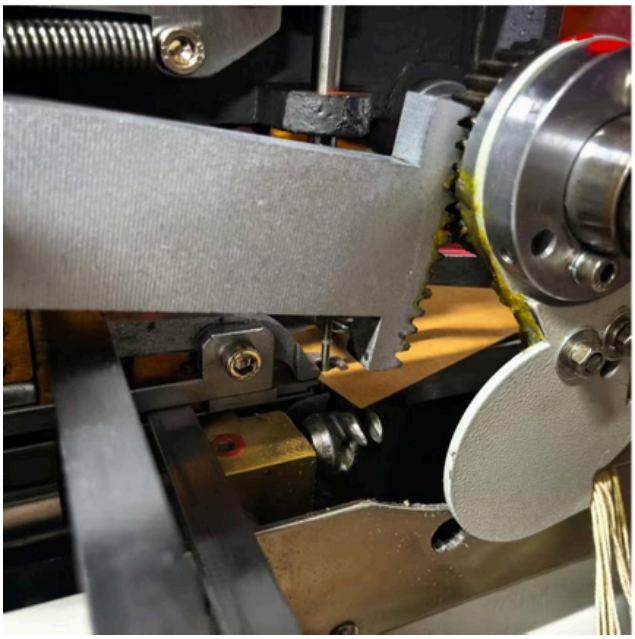
3. Next, open the cover behind the machine and find the screw for the long swing arm. loosen this screw, then use a tool to tap down on it, and then the string length will become longer. Tap this screw upwards, and the string length will become shorter. After adjusting the string length, tighten this screw.



4. Then tighten the following screw. Before tightening this screw, it is necessary to ensure that the distance between the threading needle and the hook at the top is kept at 2.0mm. Then tighten this screw .

(Do not move this screw, if you move it, the position of the hook will change)





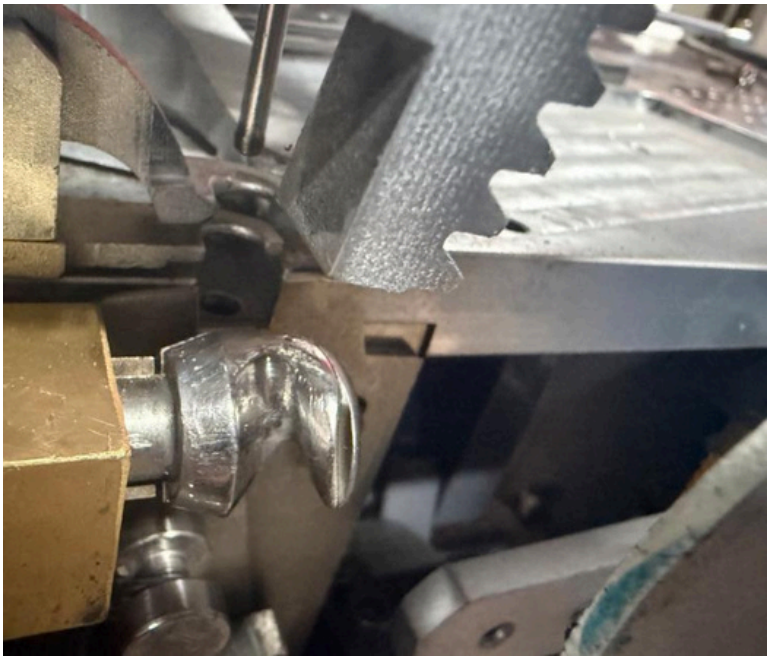
5. Finally, press the yellow button to knot 2-3pcs and confirm if the length of the string is the length you need. If it is OK, you can proceed to the next step. If it's not OK, you still need to repeat the above adjustment steps again and confirm the length of the string again.

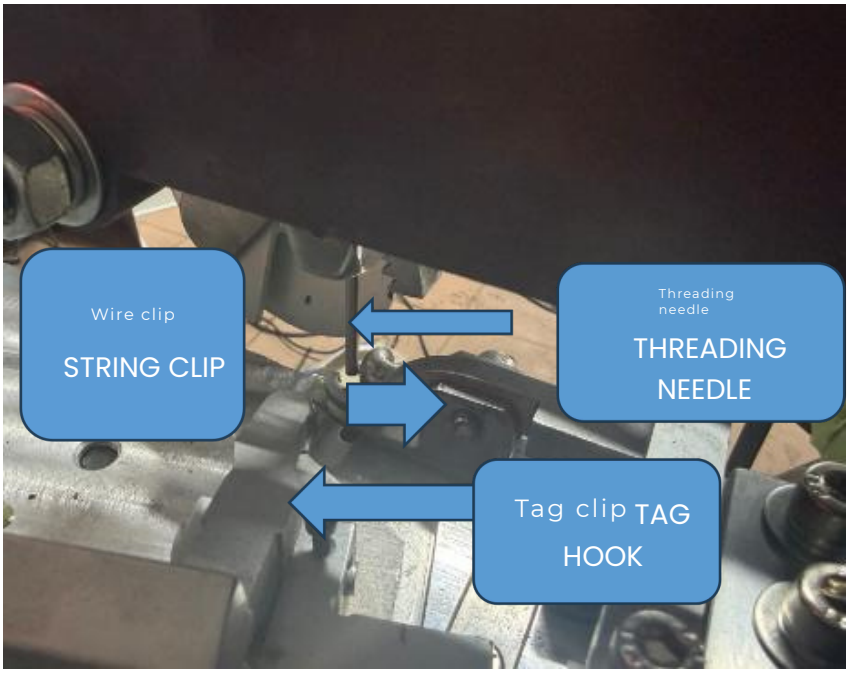
Attention: When adjusting the machine, only press the yellow button for debugging.

How to adjust different tag sizes

How to adjust different size of tags in the machine?

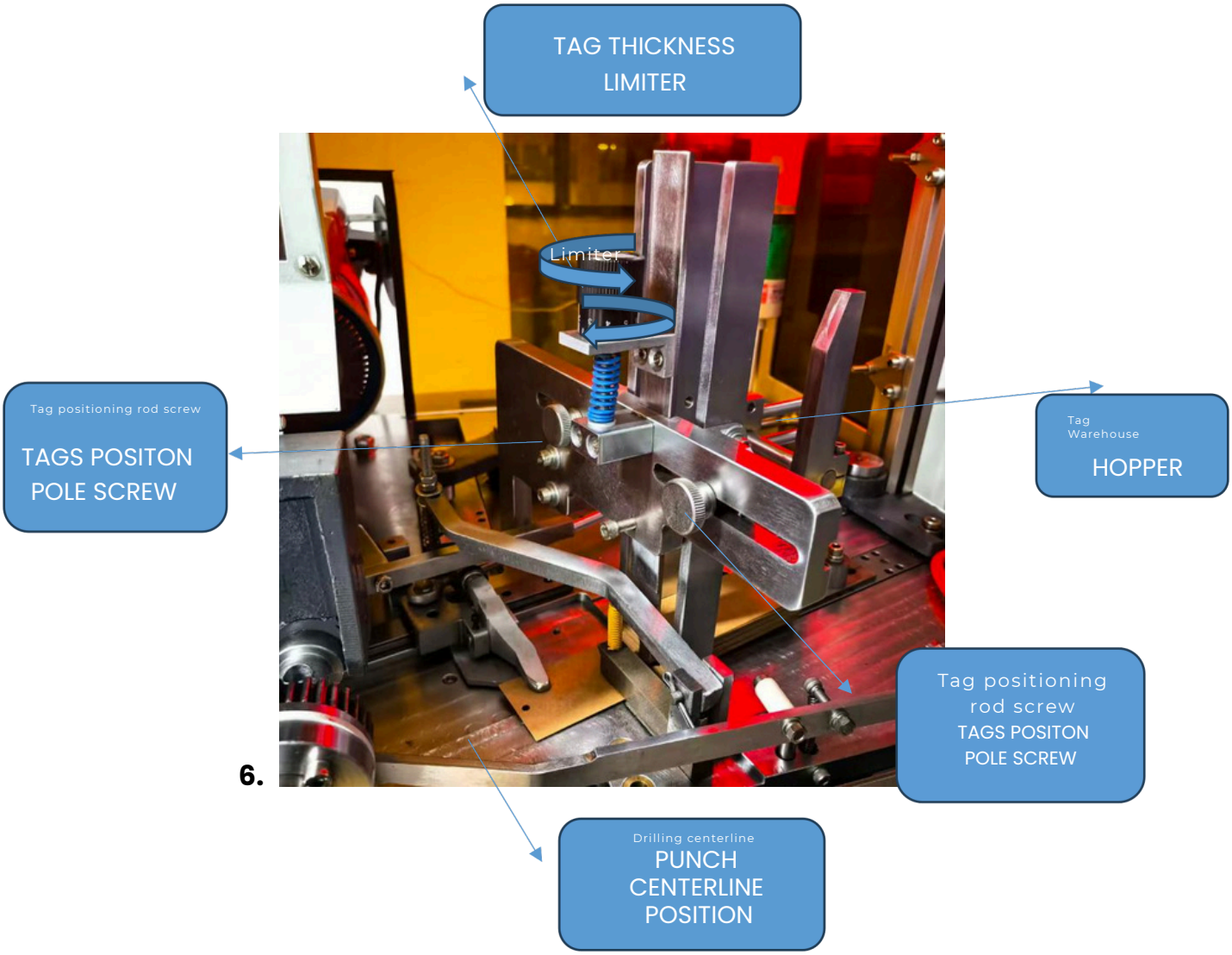
1. Please press the yellow button(jog button) to bring the hook and hang tag clip together (before the threading needle is threaded down), as shown in the following picture:

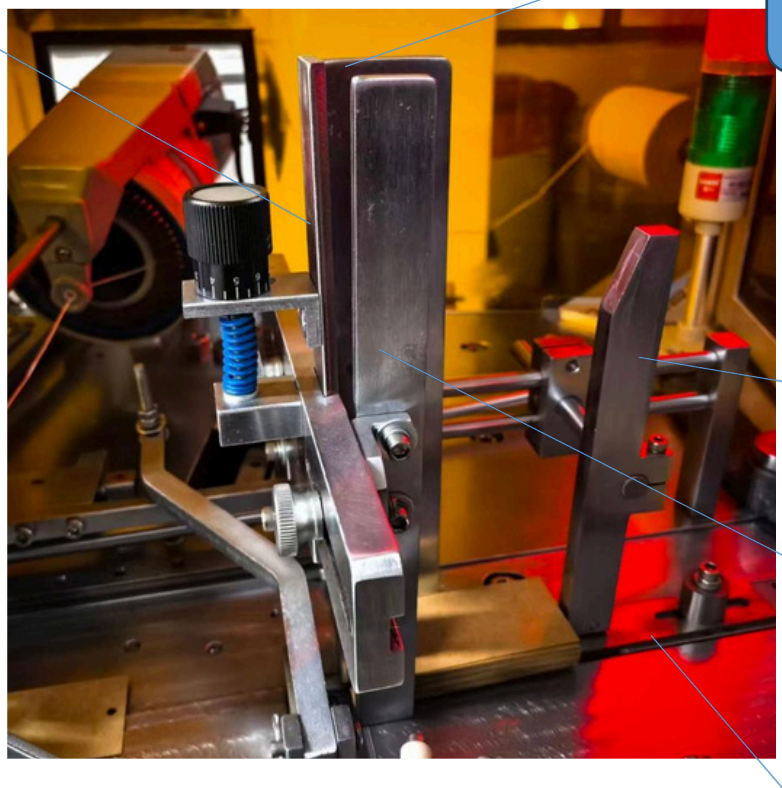




2. Then loosen the two screws of the positioning rod to adjust the width of the hang tag, take two hang tags and place them in the hang tag hopper. Adjust the height of the hang tag limiter to only allow one hang tag to pass, but two hang tags cannot pass. Rotate clockwise to lower the limit height. Rotate counterclockwise to increase the limit height. The punching center point of the hang tag needs to be aligned with the centerline of this punching line (see the picture below). Then keep a 1mm space between the two limit rods and the hang tags.

6.





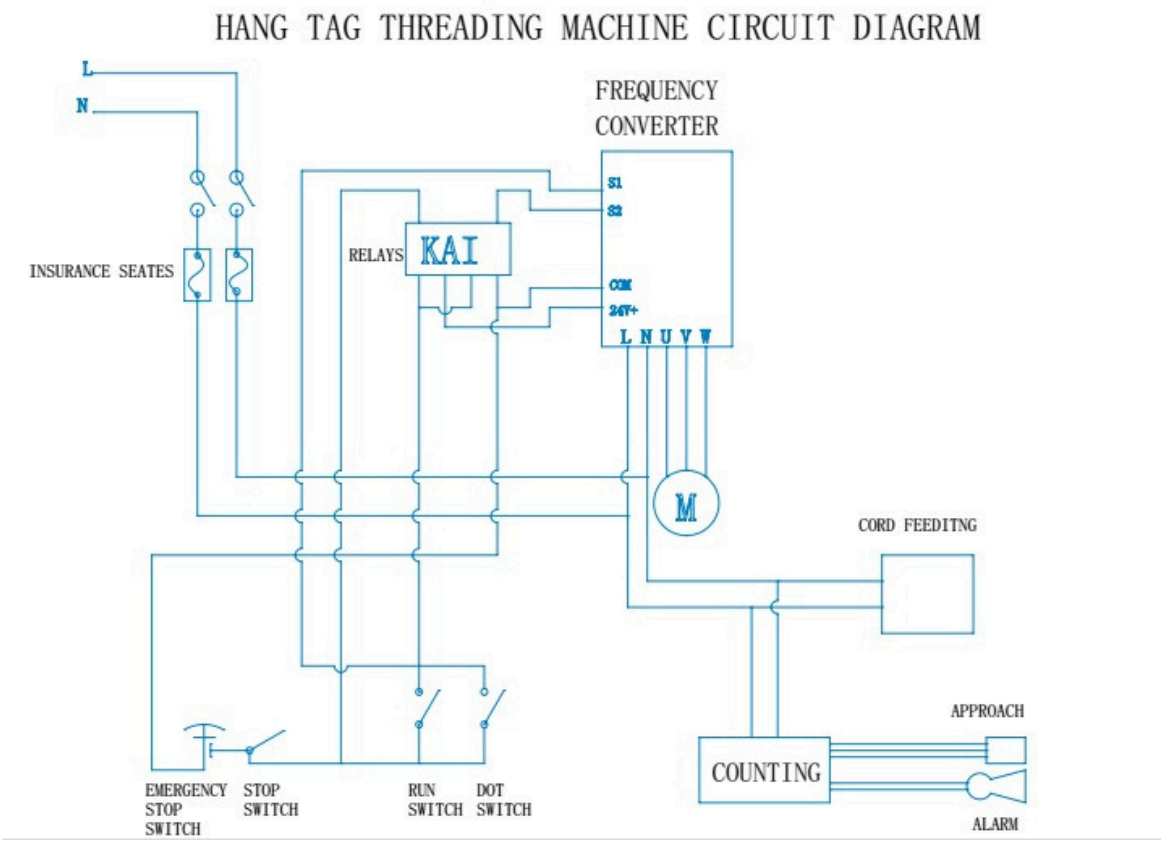
3. Adjust the position of the pushing knife and place the hang tag about 2mm below the step line of pushing knife. Then tighten the screwdriver screw. Finally, the distance between the length positioning pole of the hang tag and the tail of the hang tag is 1mm, and then tighten the screw of the length positioning pole of the hang tag.

4. Lastly press jog button for confirming the punching position of the hang tag and whether the hang tag runs smoothly.

(v) Stop Operation

1. Normal stop: When a batch of hang tag processing is completed or needs to be paused, click the "stop" button on the touch screen. The equipment will automatically stopafter completing the current process. After all mechanisms are stationary, turn off thepower switch and disconnect the main power supply.
2. Emergency stop: If there is an emergency situation such as material jamming, string breakage, or abnormal equipment noise during the processing, immediately press the red "emergency stop" button on the front left of the equipment, and the equipment will stop instantly. After troubleshooting, rotate the emergency stop button clockwise to reset, and then restart the device according to the normal process.

Wiring Diagram



STRINGING MACHINE SPARE PARTS LIST

Name	model	QTY	Quantity Remarks
PLC		1PC	XINJIE CHINA
TOUCH SCREEN		1PC	XINJIE CHINA
FREQUENCY CONVERTER		1PC	XINJIE CHINA
MOTOR		1PC	TAIBANG CHINA
POWER SWITCH		1PC	YIJIA CHINA
JOG BUTTON		1PC	YIJIA CHINA
STOP BUTTON		1PC	YIJIA CHINA

EMERGENCY SWITCH		1	YIJIA CHINA
COUNTER		1	TAIBANG CHINA
VACUUM PUMP		1	CHINA LENO
DIVIDER		4	CHINA JIGANG
CYLINDER		2	CHINA AIRTAC

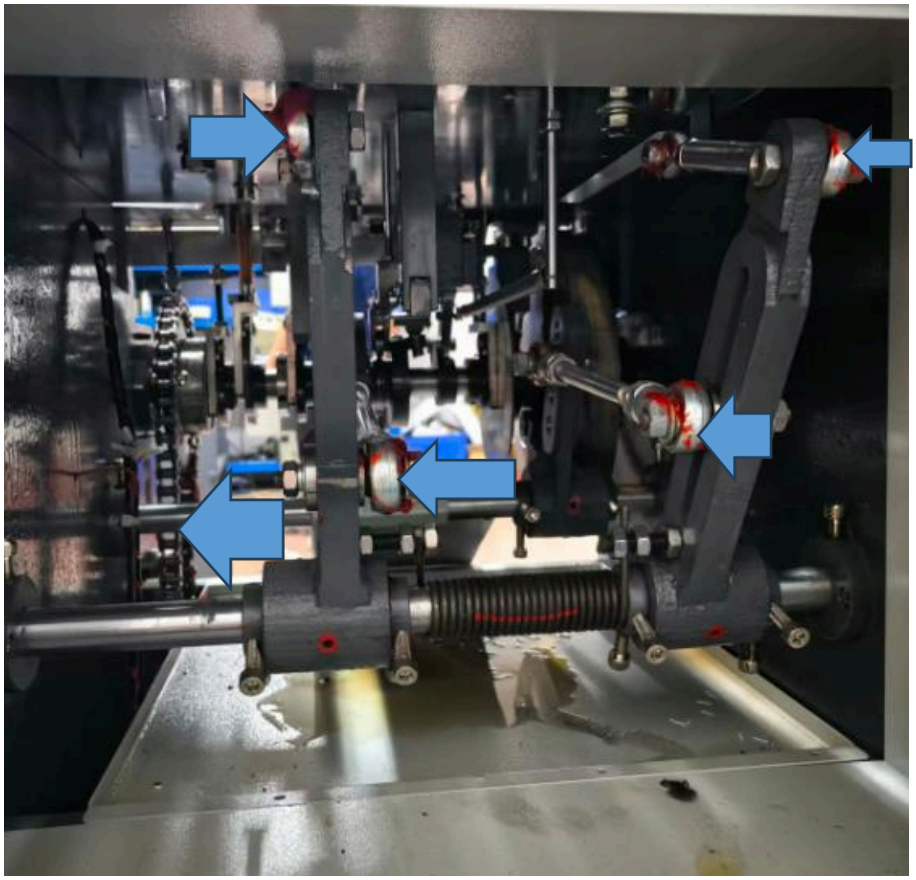
ACCESSORIES LIST

THREADINGNEEDLE	9PCS
PUSHINGKNIFE	2PCS
HOLEPUNCHING	2PCS
MOULD THREADING	9PCS
NEEDLE TOOLBOX	1PCS
ENGLISH MANUAL BOOK	1PCS
SPRING	2PCS

Maintenance

(a) Daily maintenance (before and after processing)

1. Cleaning and maintenance: After turning off the power, wipe the surface of the equipment, touch screen, tag feeding compartment, discharge port and other parts with a dry soft cloth to remove dust, hole paper waste, and string waste ; Use compressed air gun to blow away residual debris from punching molds, threading channels, knotting components, and cutting knives to avoid blockages.
2. Lubrication and maintenance: Apply a small amount of specialized lubricating oil to the moving parts such as the guide rail of the tag feeding mechanism and gripper knotting component to ensure smooth movement and reduce wear. Lubricating oil needs to be added before starting up every day (marked with a red marker on the machine). Lubricating oil should be added twice a day
2. Lubricate grease for gears, chains, connecting rods, eccentric axles, splitter chains, etc. once a month.




FAST
slow
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Re gular Maintenance

(a) Daily maintenance (before and after processing)

Weekly maintenance:

1. Check whether the tension of the non elastic wire storage tail is uniform, adjust the wire feeding pressure to avoid wire stretching and deformation;
2. Check if the cam screw is loose. If it is loose, it needs to be locked immediately. Check the screws of the divider (tensioning sleeve screws), 8 screws, for looseness, and tighten them immediately.

Monthly maintenance:

1. Thoroughly clean the interior of the equipment
1. Fully lubricate the equipment, check the stability of the body structure, and ensure long-term efficient operation of the equipment

Annual maintenance:

1. Check the wear of the punching needle of the punching mold. If the punching is not round or has burrs, it needs to be polished or replaced.
2. Component inspection: Check if the cutter is sharp, worn, or deformed. If the cutting line is uneven, it should be replaced in a timely manner; Check whether the wire guide wheel and string feeding roller rotate smoothly and whether there is any jamming; Check if all connecting screws are loose and tighten them in a timely manner.

Special maintenance (when the equipment is idle for a long time):

1. Thoroughly clean the inside and outside of the equipment, remove all debris and dust, and apply rust proof oil to metal parts;
2. Remove the remaining wires from the wire compartment, store them properly, and avoid moisture and aging;
3. Turn off the main power, cover the equipment with a dust cover, and place it in a dry and ventilated environment to avoid direct sunlight and moisture erosion.

Note:

1. Operators must undergo professional training and be familiar with the equipment operation process and parameter settings before they can take up their posts. Non professionals are strictly prohibited from operating the equipment without authorization
2. It is strictly prohibited to insert hands, tools, etc. into moving parts such as the card feeding compartment, punching mechanism, and knotting components during the operation process to avoid pinching and scratching; The safety protection door (if any) must not be opened during equipment operation.

3. It is strictly prohibited to insert hands, tools, etc. into moving parts such as the card feeding compartment, punching mechanism, and knotting components during the operation process to avoid pinching and scratching; The safety protection door (if any) must not be opened during equipment operation

4. If special specifications of hang tags need to be processed (such as thickness not within the range of 180gsm-350gsm), it is necessary to contact the manufacturer in advance to customize the equipment based on samples, and self modification is not allowed.
5. If there is any jamming during the operation of the equipment, it is necessary to stop the machine and disconnect the power supply first, and then manually clean the stuck hanging tags or strings. It is strictly prohibited to clean them directly by hand during the operation of the equipment.
6. When replacing components such as threading needles, cutting knives, punching molds, and push knives, protective gloves should be worn to avoid scratching the hands with the cutting edge; When replacing electrical components, the power must be disconnected first to prevent electric shock
7. The touch screen is a precision component that needs to be lightly touched with fingers during operation. It is strictly prohibited to scratch the screen with sharp objects (such as pen tips and nails). When cleaning, use specialized screen cleaner and soft cloth to wipe it.

VII. Common Faults and Troubleshooting

Common faults	Possible reasons	Exclusion method
Deviation in drilling position of hang tag	1. The hang tags are not neatly arranged. 2. The tag positioning rod is not adjusted properly	1. The hang tags are not neatly arranged; 2. Check the hang tag dimensions and align them with the punching positions.
Difficulty in threading and leakage	1. String winding. 2. Insufficient wire pressure.	1. Sort out the strings and eliminate entanglement.

	Blockage of string threading needle	3. Adjust the pressure of the wire feeding mechanism; 4. Blow the threading channel with compressed air to remove debris.
Knotting is not firm and easy to loosen	1. The knotting time is incorrect; 2.Adjust the knotting time (minutes)	(Alternatively, adjust the knotting time by turning counterclockwise or counterclockwise.) 2. Adjust the scissor cam (fine-tune clockwise or counterclockwise); 3. Adjust the scissor cam (clockwise or counterclockwise fine adjustment) by moving the wire cutter upwards or downwards. Fine tune the wire cutter upwards or downwards
Uneven cut lines or rough edges: 1. The cutter is worn or dull; 1. Replace with a new cutter.		
Uneven tangent lines with burrs	1.Blade wear and dullness 2.Insufficient cutting pressure	1.Replace the cutter with a new one; 2. Adjust the cutting blade pressure to ensure moderate cutting force
Excessive noise during equipment	1. Oil shortage in moving parts	1. Supplement lubricating oil to

operation	Loose components 3. Excessive tension in the string	1. moving parts. 2. Check and tighten all connecting screws. 3. Adjust wire tension to reduce wire feeding pressure

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