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1. CAUTION INFORMATION:

Press this button , the machine will be stopped.

Moving needles can be dangerous.

Disconnect the power supply.

Don't be entangled.

Don't be clamped.

Nip point can cause injury.

High voltage can cause shock, burn, or death.

2. BRIEF INTRODUCTION

TN Series multi-head automatic embroidery machine, which are marker-oriented home and abroad. The product works with high efficiency and high-accuracy, which are widely put into use of embroidery of clothing, handbag, shoes, cap and work of art.

We have achieved ISO9002 certificate.

3. INSTALLATION

The persons who are trained for the installation must conduct the machine installation must conduct the machine installation.

3.1 machine installation environment

The machine installation environment must satisfy the following conditions to prevent malfunctions, failure, and physical damage.

3.1.1 the floor structure must be strong enough to bear the machine weight (1 to 3.5 tons)

3.1.2 dust and moisture lead to dirt and rust on the machine. Install air-conditioning equipment, and periodically clean the working area.

3.1.3 if the machine is exposed to direct sunlight over an extended period of time, the body of the machine may cause discoloration or deformation. Put curtains or shades to stop direct sunlight.

3.1.4 for the purpose of maintenance provide at least 50cm clearance among right, left, and backsides of the machine and the wall.

3.2 lifting

3.2.1 the following instructions must be observed when lifting the machine, in order to prevent accidents that may result in death or physical damage.

- (1) Use a crane, which is strong enough to suspend the machine only if it is impossible to use a crane, a forklift may be used
- (2) Use nylon slings to suspend the machine. the sling angle must be 40° or smaller.
- (3) If a forklift is used to lift the machine, the forklift must be strong enough to

withstand with stand the machine weight and large enough to move the machine. When attempting to lift the machine, use caution to align the gravity center mark with the middle of the fork arm interval to properly balance the machine as shown below.

- (4) When lifting (suspending) the machine, make sure that there is no person standing in the dangerous area around the machine, especially under the machine.

3.2.2 lifting procedure

- 1) Install the hexagon bolts so that they project from the machine side plates and fix them with hexagon nuts.
- 2) Put the square lumber used for the machine packing on the hexagon bolts mentioned (1) above.
- 3) Put two nylon slings around the machine in the manner as shown in the illustration (4) below.
- 4) NOTE: the nylon slings must not come into contact with the table.

3.2.3 MACHINE ADJUSTMENT

- 1) **Insert a vibration - preventive shoe beneath the adjusting thebolt, and make the adjusting bolts of all legs uniformly loaded.**
- 2) **Put a level gauge on the stand, to adjust the level in the right-left direction.**
- 3) **When the machine level adjustment is completed, tighten the hexagon nut to lock the adjusting bolt.**
- 4) **Stub bolt**
 - a) After adjusting the machine to the horizontal position, set a stand stud bolt at the specified position as given below to reduce the machine vibration and to maintain the machine level.
 - b) Turn the head of the adjusting bolt anti-clockwise until it contacts with the bottom side of the steel plate, and then, turn it additional 1/4 turn. Then, fix the bolt with the hexagon nut.
 - c) CAUTION: use caution not to raise the stud bolt too high.

4.CAUTIONS ON MACHINE OPERATION

- 1) This machine has been designed to perform embroidering on semi-and final textile products and similar materials. Other materials must be avoided.
Use the machine in the environment where only authorized persons are permitted

to enter, so that unauthorized persons do not manipulate the machine.

- 2) Only the persons who are sufficiently trained for the operation must operate the machine.
- 3) The working area of the machine is on the front side of the machine if need to work behind the machine, turn the power switch off.

■ **WARNING:** To prevent accidents resulting in injury or death and physical damage, the following must be observed when operating the machine.

● **Before starting the machine**

- 1) Read the instruction manual and thoroughly understand the contents of operation before starting the machine.
- 2) Wear proper proper clothes and tidy up yourself so that you can smoothly perform the operation.
- 3) Make sure that no one is working near the moving parts of the machine, and then, start the machine.

● **During the machine operation**

- 1) Do not put your hands or face near the moving parts of the machine. Moving needle, rotary hook, take-up lever, and pulleys are very dangerous.
- 2) Do not remove the covers for the shaft and pulleys when the machine is running .do not run the machine without the cover.

● **During machine adjustment**

- 1) Disconnect the power supply to the machine before opening the electrical boxes .be sure to turn off the power switch of the machine before disconnecting the power to the machine
- 2) be sure to stop the machine before threading the needle or checking the finish of the embroidery.
- 3) Be sure to turn off the power switch before manually turning the main shaft.

● **Others**

- 1) Do not put things on the table.
- 2) Do not use bent needle.
- 3) Do not use the bar switch as a grip.

5.MAIN CONSTRUCTION

PART01:

It includes: frame sash, machine body, table, arm supports and square pipes: 12 mechanical parts, 4 electric parts, total 21000 parts and components assembled on part 01.

PART02: main shaft gearbox

Its function is for power transmission. Its position is to the left of machine body .it transfers the power of main shaft motor to the gearbox and to the upper drive shaft and under drive shaft through the belts respectively.

PART 03:encoder.

Its function is for monitoring the rotating position of the main shaft.

Its position is at the right end of under drive shaft. When the main shaft rotates a angle, the encoder sender sends the signal of the angle to the computer, the computer

feeds back the signal to the terminal of electric components, in order to perform the predetermined actions.

During every rotating circle of the main shaft motor, the encoder will send 1000 phase and zero-position pulse signals.

PART04: rotary hook base

It has two functions: rotating the rotary hook and cutting the thread

< 1 > driving the rotation of the rotary hook

The under shaft drives the rotary hook's rotation in the speed which is 2 times as much as the rotating speed of the main shaft and changes the rotating direction to 90°, an embroidery procedure is: Hooking the thread by rotary hook tip and making the upper thread slip on the bobbin case to form a thread link with the under thread.

< 2 > action of hooking, buckling and cutting .

Part04 performs actions when the color is changed and when an embroidery product is finished. Upon hooking the thread, it presses the hook on the bobbin case, make the upper thread wind two turns, at the same time the upper thread is hooked and broken .the cutting thread lever drives the moving knife to cut the under thread.

PART05: color change system.

It drives the left-right movement of the needle bar case, in order to change the color on the embroidery product.

< 1 > driving the color change :when color change is needed, the color change motor drives the cam ,make the roller move along with cam's groove . The movement of roller drives the left-right movement of the color change lever, and then drives the needle bar case, so as to accomplish the color change work.

< 2 > thread breakage detecting and needle position synchronization: When the cam is rotating, the cam shaft drives the cam shaft on the tension base and tension release system through the tooth-form belt, so as to make the every needle synchronous with the corresponding conducting cam.

PART06: arm (two function)

< 1 > driving the movement of needle bar ,the upper drive shaft drives the up-down movement of the drive slider through crank drive lever so as to drive the up-down movement needle bar in order to make the needle sting to the cloth.

< 2 > driving the movement of take –up lever :The upper drive shaft rotates, at the same time it drives the cam beside the crank and drives the sector gear, to make the sector gear half turn, so as to drive the take –up lever to taking –up the thread.

PART07: needle bar case.

< 1 > there are 9 needle bars ,it can perform embroidery of 9 colors of threads ,the color change lever moves left-right, it drives part 07,makes the needed needle aligned with the needle plate hole.

< 2 > stinging the cloth : The slider of part 06 drives the up-down movement of the connecting stud on the needle bar to perform the stinging work.

< 3 > taking-up the thread :The take-up lever is controlled by a sector gear on part 06 .the gear rotates in half degree which make the take-up lever swing up-down

so as to loosen or tighten the upper thread at appropriate time, to cooperate the needle bar performing embroidery work.

< 4 > phase diagram of needle bar and take up lever:

PART08: Y-axis drive system

It drives embroidery frame movement, the y- axis pulse motor drives three tooth form belts through drive shaft, through three-guide shaft to move the embroidery frame in y-axis direction on the surface of the table.

PART09: x-axis drive system.

Its function is to drive the movement of embroidery frame .the x axis pulse motor drive tooth form belt through drive shaft, through two guide pins to move the embroidery frame in x axis direction on the surface of the table.

Part10: tension base and tension release system

<1>Adjusting the upper thread tension each needle has its corresponding thread way.

The tension is adjusted by the knob on the thread way, It ensures appropriate tightness of the stitches, and ensures thread breakage detecting function, decrease thread breakage rate.

<2>thread breakage detecting: Because the conducting cam is synchronous with the needle, when the thread is broken, through thread take-up spring and cam, the signal is sent to the computer to stop the machine or perform supplementary embroidery.

Part11: cam driver set

When performing color change and finishing the embroidery product , it cuts the under thread.

Working principle: when it is necessary to cut the thread ,when main shaft motor rotates to 290 °,the solenoids works, it drives the movement of drive pin up to the cam groove ,when cam rotates ,it drives left-right movement of the drive pin ,and drives the left-right movement of cutting lever, open the moving knife .When the main shaft rotates to 100,the solenoid stops working, the moving knife returns to original position, cutting action is finished.

Part12: embroidery frame

The embroidery frame is controlled by pulse motor and moves on the table in X direction, to perform the embroidery.

Part13: upper thread holder

When color is changed or embroidery is finished, the solenoid works, it drive the hook to hook the upper thread into felt of Part -07,wait for next embroidery procedure.

6.WORKING PRINCIPLE, PERFORMANCE AND FUNCTION

6.1 working principle

Through programming and punching, the pattern that users needle can become a message, which computer can identify, the message can be input into embroidery

machine through reader. The computer commands; the embroidery machine performs embroidery according to the determined sequence of programming. When the embroidery machine is working, the needle bar drives the up-down movement of needle and thread, embroidery product fixed on the frame moves along with X,Y-axis, so the pattern can be produced.

6.2 Main performances:

6.2.1 storage pattern number:99~200

6.2.2 storage stitch number:500,000~2,000,000

6.2.3 power supply ;AC220V,1 phase,50hz

AC380V,3phase,50hz

6.2.4electric quantity consumption :1000VA~4000VA

6.2.5Environment temperature:

5~40°C or 32~104°F (working)

-10~60°C or 14~140°F (deposited or transporting)

6.2.6 humidity: 30~95%(relative humidity)

6.2.7beam: min300lux

6.2.8 the tiptop working height: max 1000m

6.2.9 earthing: the machine must be earthed, Earthing resistance < 100 ohm

6.2.10 insulation resistance: > 100M ohm

6.2.11main shaft motor: 500~1500W

6.2.12 frame used motor: stepping motor

6.2.13 head number: 20

6.2.14 rotating speed: 200~850rpm

6.2.15 needle number: 9

6.2.16loading disk: 3.5inch

6.2.17 noise level: < 80db

6.3Main performances:

6.3.1 Automatic and repeated embroidery of the same pattern: the maximum repetition time in lengthwise direction is 9 times.

6.3.2 Pattern rotating: pattern would be rotate from 0 to 359 in increments of 1

6.3.3 High speed/low speed idle running: when you set up high speed idle running, the needle bar does not move, the frame does not move, but the stitches number on the display can vary in high speed, After the machine is stopped, the frame can return to the current stitch number position automatically. When you set up low speed idle running, the needle does not move, but the frame move along with stitch trace.

6.3.4 Automatic/manual color change: the needle position sequence can be selected arbitrarily for automatic color change. When performing color change, the machine stops, cuts thread and changes color, when the actions are finished, the machine goes on embroidering start to continue embroidery automatically.

6.3.5 Automatic/manual cutting thread: the machines can automatically stop and cut thread when color change is necessary, or when an embroidery product is finished.

6.3.6 Automatic and repeated embroidery of the same pattern

6.3.7 Complex function: The function of stitch conversion by specific size, rotation, changes density.

6.3.8 Automatically returning to the original starting point: By the auxiliary mode 4functions, you can move the pattern with the frame to the appropriate position where you can easily remove the embroidery product. When you replace it with another embroidery product, and pull the bar to start embroidery, the frame can be automatically return to the original starting point and start embroidery.

6.3.9 The function of chenille embroidery.

7.ERROR AND ELIMINATION

7.1 The main shaft cannot be started when pulling the bar to start.

Reason	Eliminating method
1.stop position is not correct	Turn the main shaft to 100°
2.frame exceeds the limit and stopped.	Adjust the limit switch position move the frame in opposite direction.
3.mechanical blocking	Find the blocking point and eliminate it.
4.main shaft motor control switch is off.	Switch on.
5.related fuse is burnt.	Replace it.

7.2 The pattern gets out of shape

Reason	Eliminating method
1.the frame is too heavy.	Lighten the weight of auxiliary support of embroidery product.
2.tooth-form belt is too tight or too loose.	Check the tension of the belts of x , y direction and adjust it.

3.friction in the rail is too large, there are foreign matters in it	Clean and apply lubricating oil.
4.connection between driving pin and tooth form belt is loose.	Check the stop screw, fixing pin and tighten it.
5. Drive bearing is damaged	Check if the drive bearing is damaged .if damaged, replace it.
6.friction between frame and table is too large.	Check if the frame is deformed. Check if the screw on the frame is loose. Check if the screw on the embroidery product support is too long.
7.frame bearing is too tight or too loose.	Put on paper and tighten again.
8.pulse motor and shaft connecting bushing is loose pin is loose.	Tighten
9.embroidery material is loose	Put on paper and tighten again.
10. Data is changed because of external interference.	Input pattern again.
11.electrical reason.	Refer to the electric part “common

	trouble and eliminating method” .
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7.3 Broken thread cannot be detected. It includes: the detecting system cannot detect, or makes detecting mistake.

Reason	Eliminating method
1.the thread take-up spring is out of contact with the copper column. If the take –up spring is too loose, detecting system does not detect, if the take-up spring is too tight, detecting system makes mistake or the thread is broken.	Adjust the position of take up spring clean or replace it, adjusting method: turn the center screw in counter clock –wise direction, separate the take up spring from the copper, then turn the center screw in clockwise direction until the spring contacts with the copper and then turn about 15° .
2.thread left its way	Arrange the thread on its way again.
3. Thread tension is too loose or too tight.	Adjust 3 knobs to adjust tension of thread. When take up lever, taking up the thread, the copper cylinder, when take up lever releasing the thread, the take –up spring should leave the copper cylinder.
4.related fuse, tension bar boards are damaged or loose.	Refer to the electric part “common trouble and eliminating method” .

7.4 color change system trouble:

Reason	Eliminating method
1.stop position is not correct	Turn the main shaft to 100°
2.no needle position signal (needle position lamp dose not light up).	Turn the shaft by spanner until the two-indicator lamplight, check, part05.
3.position of color change cam is changed.	Eliminate the axial gap of cam tighten the screw.
4.take-up lever position is changed.	Check if the sector gear of part 06 is changed, loosened, or worn out, adjust the high of take-up lever.
5.mechanical blocking	Check the position of part 05,06,07.
6. Position of needle bar case is changed.	Check if the needle position is aligned with plate hole.
7.position of drive slider is changed.	Check if the position of driving slider and needle bar.
8.electrical reason.	Refer to the electric part “common trouble and eliminating method

7.5 Needle is broken

Reason	Eliminating method
1.the needle is not aligned with needle plate hole.	Turn the main shaft to 140,adjust the needle position, and loose the four screws to adjust the position of the needle bar case.
2.position of color change system is changed.	Adjust the position of color change system
3needle quality if bad, point of needle id dull.	Replace it with high quality needle.
4. Pointing of hook is not correct; the needle is contact with rotary hook bobbin case.	Check the phase of 196° ,check if the rotary hook is lose ,if the bobbin case id to the position.
5.moving knife is not returning to the correct position.	Replace it with high quality needle.
6.start the machine when you pull the thread.	Change the habit.

7.6jumping stitch (stitch are lost)

Reason	Eliminating method
1.e quality of needle is bad. The needle is not straight, or the point of needle is dull.	Replace it with high quality needle.
2. Needle code and thread, diameters are not matched.	Replace needle or thread.
3. The quality of 3.position of needlepoint and rotary hook point is changed.	Check and adjust under the condition of 196° of the main shaft.
4.height of needle bar is changed.	Check and adjust under the condition of 172° of the main shaft
5.tenght of upper thread and under thread is not well.	Adjust the tension of upper thread and under thread.
6. Embroidery product cloth is not tight, loose.	Adjust
7.sometimes the jumping solenoid does not rebounded.	Adjust
8.06-34sprng is rebounded but the force is small.	Adjust

7.7 The thread tension is not enough.

Reason	Eliminating method
1. upper thread tension is small	Adjust
2. Under thread tension is small	Adjust
3. The quality of thread is bad	Replace it with high quality thread.
4. under thread tension is not stable.	Clean the bobbin case
5. rotary hook is not lubricated well.	Apply the oil.
6. Thread tension is not matched with material.	Adjust the tension.
7. bobbin case is deformed	Replace with good bobbin case.

7.8 When the machine is stopped, needle bar cannot be controlled and falls down.

Reason	Eliminating method
1. no action of jumping solenoid	Check if wire and plug is damaged.
2. jumping solenoid has action, but its position is changed.	Check if it is loose, adjust the position or to the right.
3. position of connecting stud on the needle bar is changed to the right or to the left.	Check if the gap between guide plate and connecting stud is large replaces it.
4. Position of drive slider is changed or worn out, or blocked.	Check drive slider shaft and bushing find the blocking point, adjust the position, or replace it.
5. electric reason.	Refer to electric part.

7.9 The needle bar does not perform embroidery, or one of needle bar does not perform during embroidery.

Reason	Eliminating method
1. position of the positioning block the needle bar is low.	Loosen the screw adjust it under the condition of turning the main shaft to 0.
2. the driving slider does not rebounded when it turns to the right.	Check if it is mechanically blocked; check if the jumping spring is damaged.

7.10 Needle bar vibrates. Or one needle bar is still vibrating when it is locked during embroidery.

Reason	Eliminating method
1. position of the positioning block of the needle bar is low.	Loosen the screw adjust it under the condition of turning the main shaft to 0.

7.11 When performing embroidery, one strand of thread is in the needle hole and is performed, but other strand of thread is pile up near needle hole.

Reason	Eliminating method
1.thread quality is bad	Replace it with high quality thread
2.the needle bar is too high	Adjust under the condition of 196° of the main shaft.
3.hole on the thread way is not smooth	Check the holes on the thread way and polish it.

7.12 The thread can't be cut

7.12.1 Cutting position is changed.

Reason	Eliminating method
a. The moving knife and cutting thread lever is loose.	Adjust
B position of cam drive system is changed.	Adjust
c. solinoidposition is changed cam collar arising position is low.	Adjust
d. Opening and closing position of the moving knife is low.	Adjust

7.12.2 Thread cannot be cut

Reason	Eliminating method
a. Moving knife and fixed knife are not matched well.	Adjust the angle of fixed knife.
b. The knife position id change.	Adjust.
c. The edge of moving knife or fixed knife is dull.	Replace it.
d. The open and close position of moving knife is changed.	Check the open peon position under condition of turning main shaft to $293^{\circ} \pm 2^{\circ}$
e. Spring of under thread holder is deformed.	Adjust.
f. The moving knife and moving knife shaft is loose.	Tighten it.

7.12.3 after cutting, the remain thread is too short.

Reason	Eliminating method
a. The under thread tension is changed.	Adjust the under thread tension.
b. Bobbin case id deformed.	Replace it.
c. Spring position if the under thread if changed.	Adjust.
d. Spring of under thread holder is deformed.	Replace it.

e. Electric reason.	Refer to electric part.
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7.12.4 Electric reason please refers to electric part.

7.13 Hooking of upper thread cannot be performed well.

7.13.1 Upper thread cannot be cut, or the remain thread is too short.

Reason	Eliminating method
1. Position of cutting knife if.	Adjust the moving knife position.
2. Position of holder is changed.	Adjust the angle.

7.13.2 Thread cannot be hooked to the position.

Reason	Eliminating method
1. upper thread holder id locked.	Open the mechanical lock.
2. Position of hook is changed, or the hook is not to the position after hooking the thread.	Adjust the hook position.
3. The felt support of part07 is loose.	Adjust and tighten.
4. Hooking solenoid is damaged	Check the wire , replace it.

7.14 Thread is broken.

Related factor	Reason	Eliminating method
1. Needle	1. Quality of needle is bad, needle groove, needle hole is not point well, needlepoint is dull. 2. The needle is assembled in wrong way, or in opposite direction. 3. The needle is bent, or is not assembled to the position. 4. There is glue in the needle hole. 5. Position of fix screw of needle is not correct.	Replace it with high quality needle Assemble Assemble again, upward to the top. Clean and replace it. Adjust to make the needle turn to the right, about 30°
2. Thread	1. The quality of thread is bad. 2. Thread code is not matched with the needle code. 3. Upper thread tension and under thread tension is	Replace it with high quality thread. Change the needle or thread. Adjust the tension of upper thread and under

	too tight. 4.thread joints on the thread stand are too more. 5. Thread goes out of way.	thread. Replace it. Arrange it.
3. Hole	1.Needle plate hole is too rough. 2.knob plastic washer is too rough.	Grind it or replace it. Replace it.
4. rotary hook	1.there are scratches on the rotary hook. 2.there are scratches on the rotary case. 3.bobbin case and rotary hook are deformed. 4. There are scratches on the rotary hook support. 5. Lubricating is not well.	
5. Parameter	The gap between needlepoint and rotary hook point is changed or the height of needle bar is changed.	Adjust it under the condition of 196° and 172° of main shaft , to adjust the height of needle bar.
6. Pattern	The pattern stitches are too close.	Punching again.

8.Daily maintenance, service, cleaning and inspection.

The computer embroidery machine is working in the continuous status;it is high efficiency mechanical device, so the maintenance and service is important factors for guaranteeing the normal operation and working life of the embroidery machine.

8.1 Daily maintenance

Cleaning part	Cleaning position	Period	Cleaning method
1. Rotary hook base (rase04)	Rotary hook bobbin Rotary hook support	Day	Use brush to clean foreign matters and wire end. Do not use too sharp or too harp tools.
	Fixed knife 、 moving knife 、 spring	A week	As above.

2. Needle bar case (part01)	Take-up lever 、 thread way	Day	Cleaning foreign matters and wire and.
3.y-axis (x-axis) drive System (part08, part09)	Frame railed		Clean foreign matters and thread end.
4.tension base and tension release system (part 10)	Knob plastic washer 、 take-up spring、 thread way	Clean foreign	Clean foreign matters
5. Working table	Surface and ventilation	Day	Clean, open the rear panel.
6. Surface of computer	Surface exhaust fan	Often	Clean, open the rear panel
7.power supper box, drive box	Surface and ventilation	Often	As above

8.2Daily service (Apply oil frequently, but little quantity each time.)

The computer embroidery machine is working under the condition of high speed and continuous status, so the lubrication of moving parts is very important.

Grease: 2#calcium lubricating oil. White oil: 15#white oil.

Service	Lubricating position	Oil variety	Period	Method
1.main shaft gear box (part02)	Sprocket roller chain bearing	Grease	Month	Open the box
2. Rotary hook base (part04)	bobbin、bobbin case、 shaft	White oil	Day	Needle plate hole,
	Spiral bevel gear	Grease	Month	Open needle plate
3.color change system	Cam groove, gear	Grease	Half year	Open panel
4.arm (part06)	Vertical shaft take-up	White oil	Day	Drop oil on groove oil hole.

	Needle barbering	White grease oil	Day half year	Drop oil on the upper cover. Open upper cover.
5.needle bar case (part07)	Take-up lever, needle bar	White oil	Day	Drop oil by syringe needle on the vertical groove of color change bracket.
6.y-axis and x-axis drive system (part08)	Frame rail	Grease	Month	Open cover
7.cam drive set cam (part11)	Roller chain	Grease	Hale year	As above

8.3 Daily inspections

Because the rotating speed of the machine is very high,the rotating,moving parts and components,related screws,nuts and washers may be boose .it must be inspected frequently or listen the sound carefully.if you do well.the troubles can be prevented and decreased.it is best to go on a tour of inspection frequently.

8.3.1 Observe whether there is unusual sound anywhere in the machine.if there is ,you must stop the machine to check .

8.3.2 Observe the machine whether there is unusual action,if you find it, stop the machine to check.

8.3.3 Observe whether there is unusual smell,if so,stop the machine to check.

8.3.4 Irregularly check whether the ground wire of the machine is energized,in order to ensure the safety.

8.3.5Irregularly inspect the power supply, voltage and phase.

8.3.6inspect the table surface: in order to inhibit unconcerned items were putted on it.

8.3.7 when you input one pattern into the computer, the machine power supply must

be switched off, and then the operation can be done.

8.3.8 check whether the service and applying oil is doing well.

9. OPERATON

9.1 selection and assembly of the needle

9.1.1needle code and thread code-matching table

Needle code	Thread code		
	Cotton thread	Nylon thread	Artificial thread
9.10	70~80	130~150	70~100
11	50~60	100~130	100~130
13.14	36~40	80~100	130~150
15.16	30~36	60~80	150~160
17.18	24~30	50~60	180~230

9.1.2the needle has different shape in the front and rear position .as shown in figure.

9.1.3when you assemble the needle, you must the needle to the uppermost position and make the needle hole faced yourself.

9.1.4 the needle fixing screw should be turned 30° to right (from the needle axis direction).

9.1.5 select high quality needle, but dull or rusted needles.

9.2thread selection and tension adjustment

9.2.1adjustment of upper thread, way and tension

1) Identify the quality of the thread:

A: Tension requirement

B: twist requirement

C: surface smoothness requirement

D: Join number of the thread

E: expiration of the thread

2) Thread way:

The upper threads have six-needle position. Every thread on each needle has its own way, thread passes holes to tension knobs. Every thread passes three knobs on its way, when the thread passes its first and second tension knob, it should be only turned two and half circles and then winded in the broken thread detecting spring and the thread goes down.

3) Upper thread tension adjustment:

The three tension knobs should be adjusted even tension, if one is loose, another is tight, that is not well, The knob with take-up spring should be adjusted after the take-up spring adjustment.

4) the adjustment method of take-up spring is: turn the screw in the center of the knob to make the spring contact with the copper column and then turn 15° by a

screwdriver.

9.2.2 under thread assembly assembly and tension adjustment

- 1) the under thread should adopt 100#~200# high quality cotton thread, and the thread should be turn-to-left thread .
- 2) The correct winding method and wring method on the bobbin is as shown in figure, wrong winding method may cause broken thread.
- 3) Assembly and tension adjustment
 1. Assemble the bobbin, which had wined with thread into bobbin case.
 2. Pull out the under thread through under groove and pass the thread the thread outlet.
 3. Pull out the under threads to see whether the rotating direction of the bobbin is in accordance with figure.
 4. Adjust the tension by the screw on the bobbin case.
 5. If you pull out the thread and feel smoothly, that is appropriate tension.
 6. Pull out 50 mm length of the thread.
 7. The under thread must pass the small spring on the bobbin case.
 8. When you assemble the bobbin case into rotary hook half, you should push parallel, if you hear a sound that is the end.
 9. 9.2.3 tension testing after the upper thread is matched with under thread.

The status of the upper thread and under thread on the embroidery product should be: turn the product for 1/3 of the thread area, the under area should account for 2/3 of there area.

9.3 bar and machine head lock

9.3.1 function of the bar: the bar is the switch by which the operator sends the command to the computer.

- 1) When you pull the bar to the right, it is to begin embroidery..
- 2) If you pull the bar to left during this time when the machine is working, the machine will stop working. When the machine stopped, if you pull the bar left, that is return, the frame returns along the switch trace.

9.3.2 machine head locking

- 1) The machine head locking is divided is into two parts: mechanical lock and electric lock, they are for locking the head, which will not perform embroidery.
- 2) When the mechanical lock is locked, a red mark on the lock hand wheel should towards towards you r right or left: when the mechanical lock is open, the red mark should face you
- 3) When the electric lock is locked, the swith should be down position (relation introduction of the switch is in sup-elementary embroidery section).
- 4) Return: in the process of embroidery , if you want to perform supplementary embroidery and make the needle go back along with the switches trace ,that is called “return” .the method is to pull the bar to the bar to the left.

10. RECORD OF MAINTENANCE, DETECTION

10.1 this process of setting up 、 maintenance must be recorded by professional, when testing embroidery is finished , both sides need write the signature in this paper.

10.2 if conked are appeared, it must be maintenance by professional, and write a record with the name of professional and date of that day.

10.3 please periodical maintenance and strict with this manual. Write a record for this .

10.4 our after service professional will inspect the machine at any time. They will write a particular record with the name of professional and date.

NOTE OF SETUP AND MAINTENANCE

SERIAL NUMBER: _____

DATE: _____ **TO** _____

RECODE: _____

Maintenance man: _____

NOTE OF MAINTENANCE AND

SERVICE

DATE: _____

